



Future Technology Devices International Ltd.

Application Note AN_134

FTDI Drivers Installation guide for MAC OS X

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The purpose of this application note is to provide users of FTDI chips with a simple procedure for installing FTDI drivers for FTDI devices used under MAC OS X.

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1 Introduction

The purpose of this application note is to provide users of FTDI chips with a simple procedure for installing FTDI drivers for their devices under MAC OS X.

2 Getting FTDI Device Drivers

FTDI drivers may be obtained from the FTDI website.

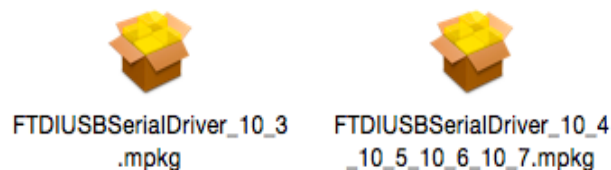
There are two types of driver. The first one is the Virtual Com Port driver (VCP) which creates a virtual com port on the MAC and allows applications that use the POSIX programming interface to communicate with the device. This is effectively the same as using a legacy com port.

The download at: <http://www.ftdichip.com/Drivers/VCP.htm>

Download the version relevant to your OS version.

Clicking the weblink starts a download.

Inside the FTDIUSBSerialDriver_v2_2_18.dmg there are 2 package files:



FTDIUSBSerialDriver_10_3.mpkg which is specific to OS X 10.3 (Panther)

FTDIUSBSerialDriver_10_4_10_5_10_6_10_7.mpkg which is specific to OS X 10.4 (Tiger), OS X 10.5 (Leopard), 10.6 (Snow Leopard), 10.7 (Lion) and 10.8 (Mountain Lion).

Inside the FTDIUSBSerialDriver_v2_3.dmg there is 1 package file:



FTDIUSBSerial.pkg is specific to OS X 10.9 (Mavericks) & OS X 10.10 (Yosemite).

The second driver version is the D2xx driver and uses FTDI's D2xx programming interface.

The download is at: <http://www.ftdichip.com/Drivers/D2XX/MacOSX/D2XX1.2.2.dmg>

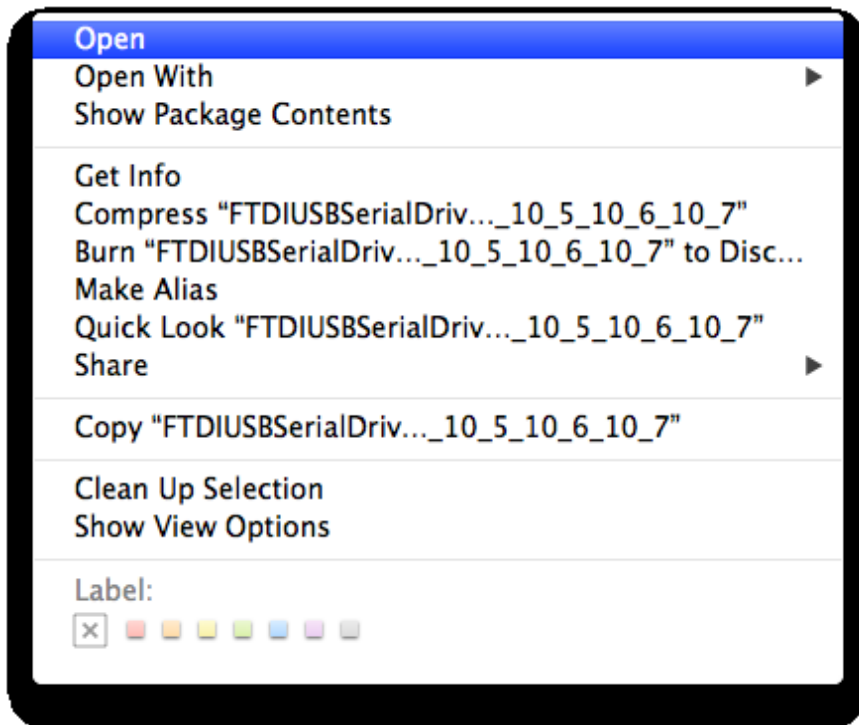
This is for the current version at the time of writing (version 1.2.2) The same instructions should apply for any future updates.

3 Installing Drivers

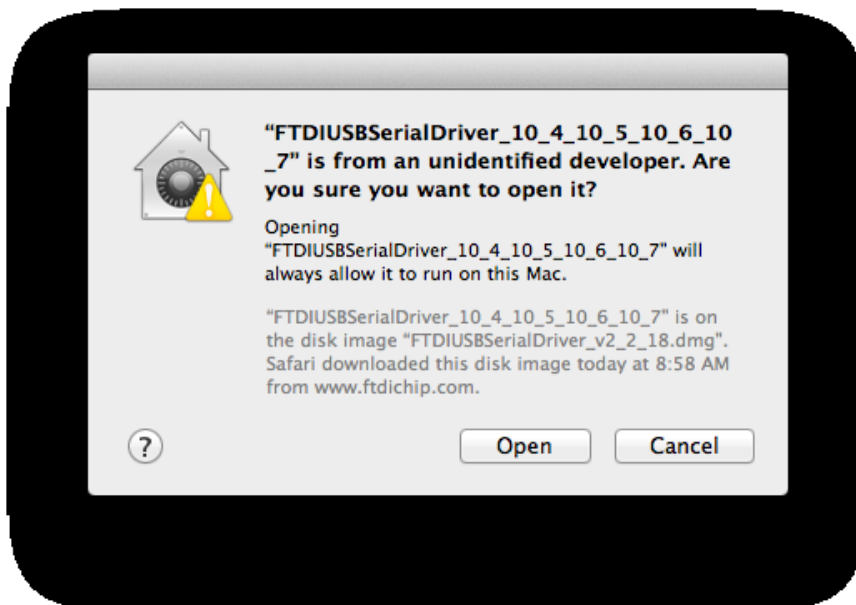
3.1 Installing VCP Drivers on OS X 10.3 to OS X 10.8

To install the driver on the MAC you simply click on the .mpkg that matches your version of OS X.

With Lion and Mountain Lion, you will need to bypass the new Gatekeeper security function to install the pkg file. Simply press **Ctrl-Click** when you select FTDIUSBSerialDriver_10_4_10_5_10_6_10_7.pkg. This will bring up a pop-up menu. Select Open from this menu:



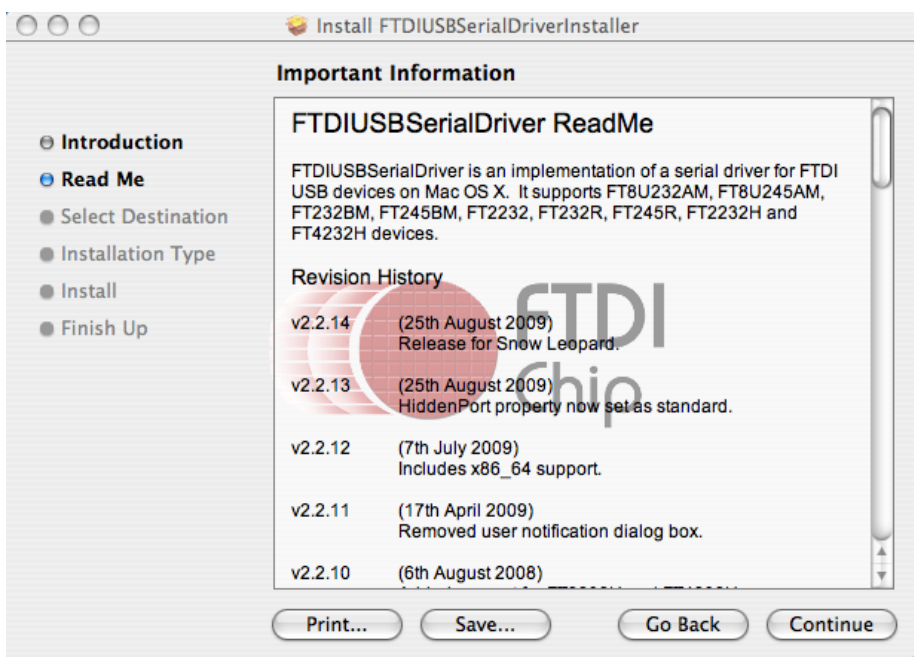
The following pop-up will appear:



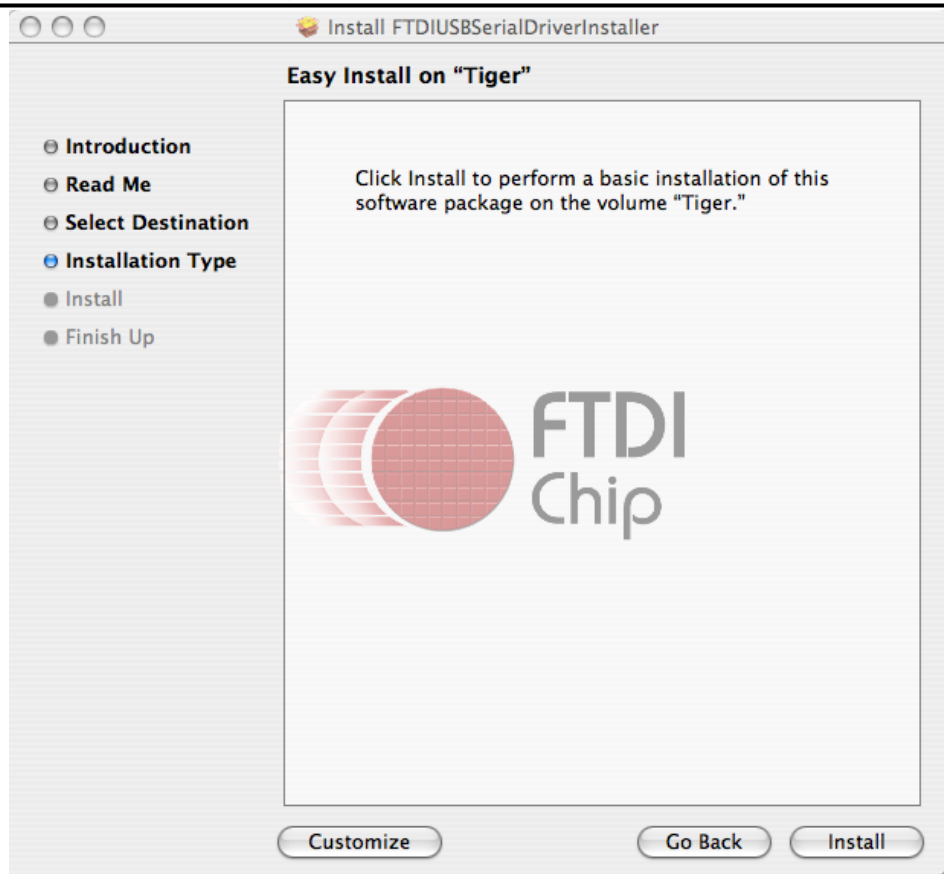
Select "Open" and the VCP driver install process will begin (see next page).



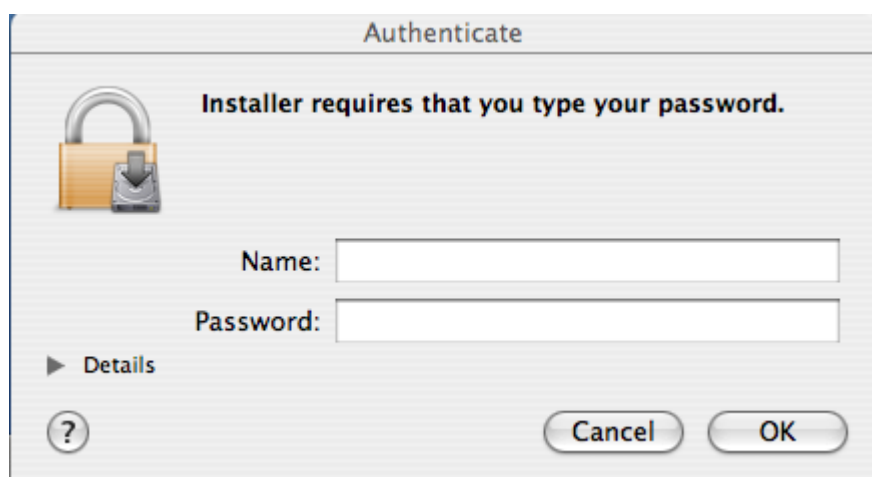
Select continue to install the driver.

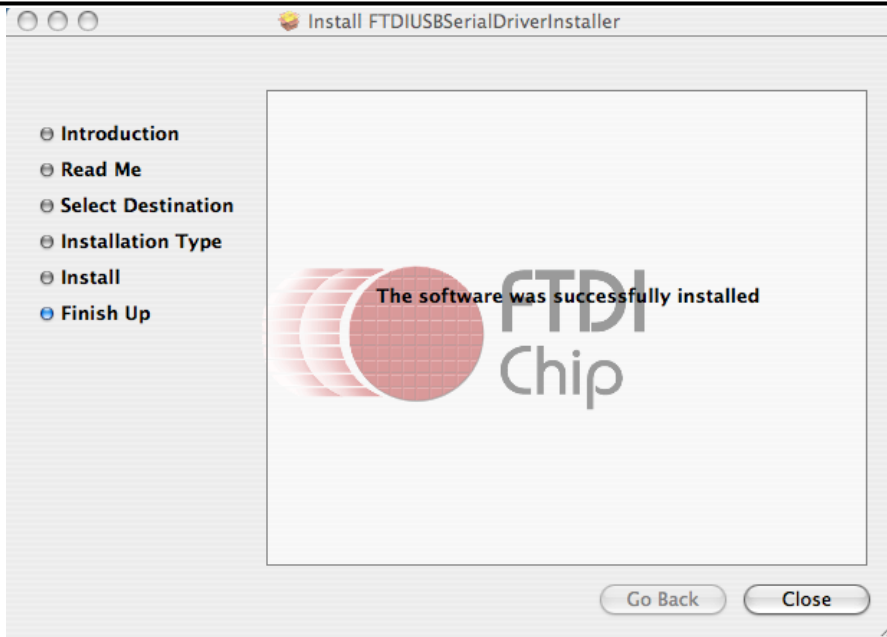


Select continue at the ReadMe screen.



Select Install. At this point you may be asked for your password to authenticate the installation. This is just the same as you would do to log into the machine to begin using it.





After authentication select close to complete the installation.

Now plug the device in.

If the device is installed properly, you will see entries in the /dev directory:

/dev/cu.usbserial-xxxxxxx

/dev/tty.usbserial-xxxxxxx

where xxxxxxxx is either the device's serial number or, for unserialized devices, a location string that depends on which USB port your device is connected to. Note that for FT2232D devices port A is denoted by the serial number appended with "A" and port B is designated by the serial number appended with "B".

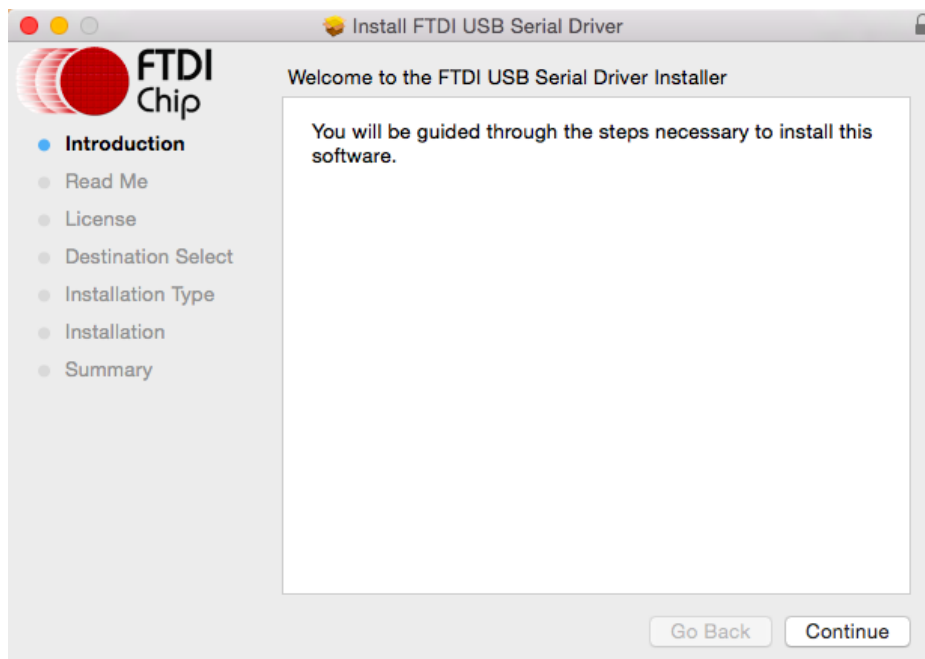
/dev can be accessed through the Terminal application. The Terminal application can be launched by selecting Go > Applications > Utilities > Terminal. Type the following lines in the Terminal window to produce the file list:

```
cd /dev  
ls-l
```

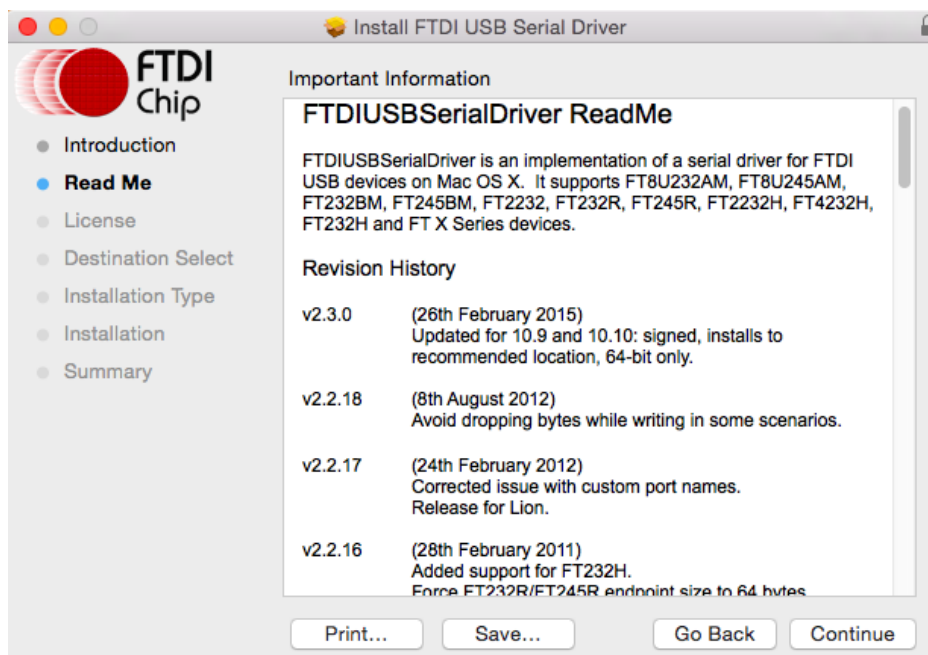

3.2 Installing VCP Drivers on OS X 10.9 & OS X 10.10

First uninstall the Apple-provided FTDI VCP driver as per section 7.0.

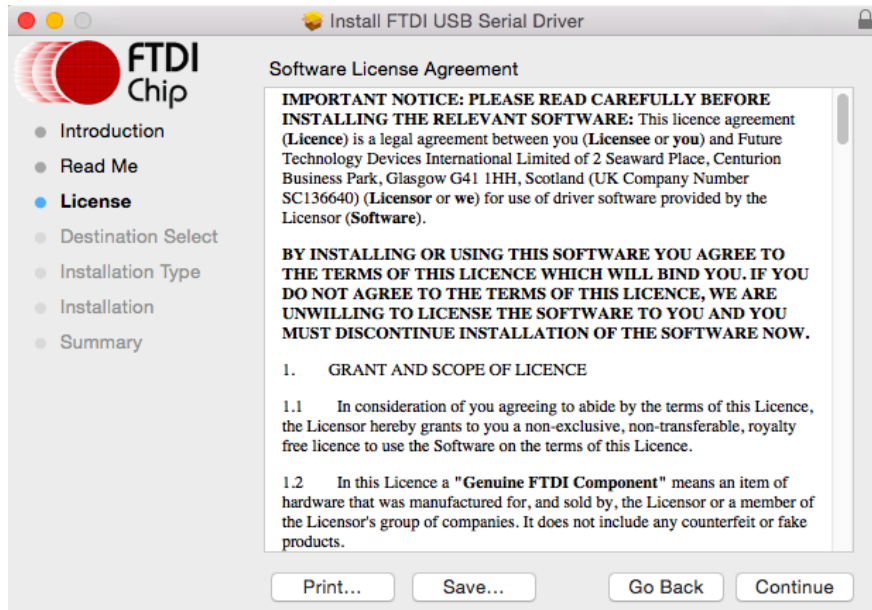
To install the driver on the MAC, simply click on the FTDIUSBSerial.pkg shown in section 2.



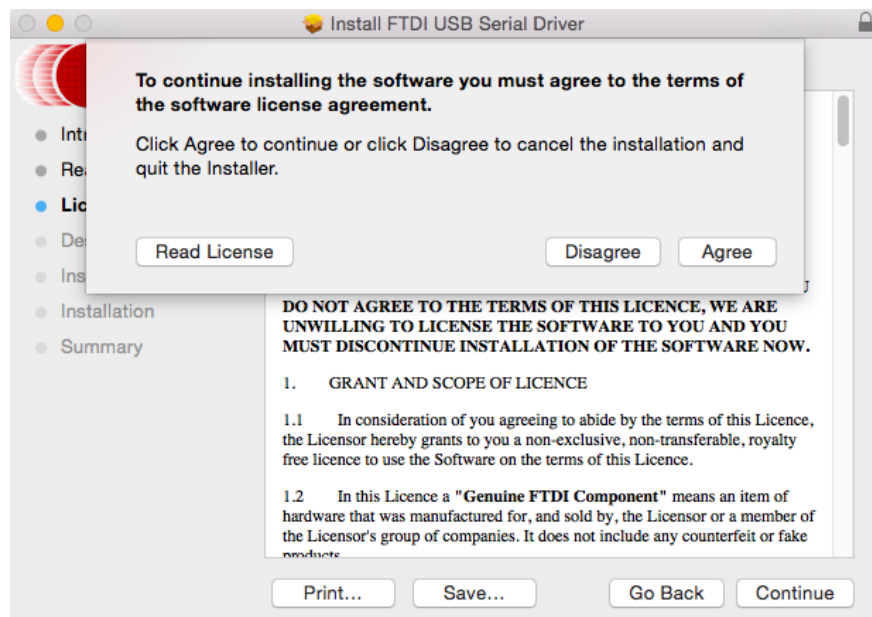
Select Continue



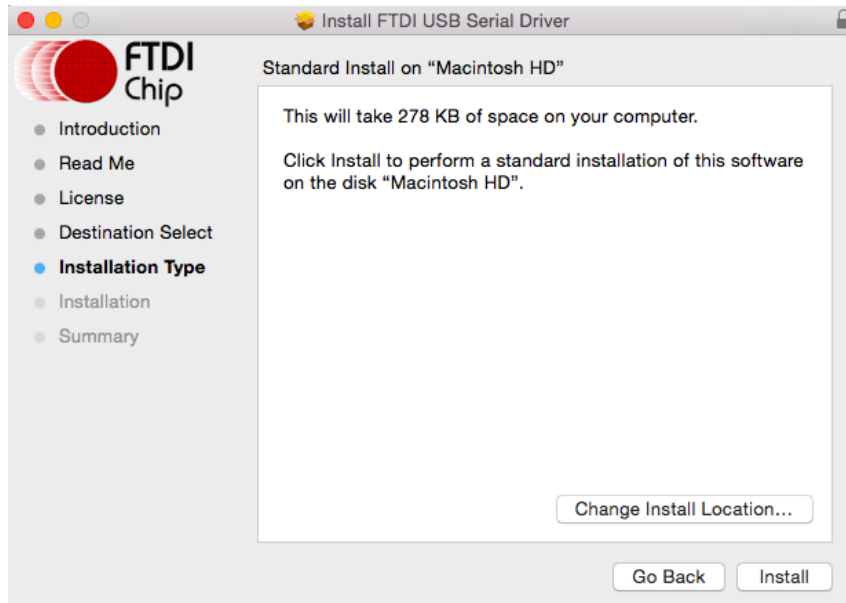
Select Continue on the Read Me screen.



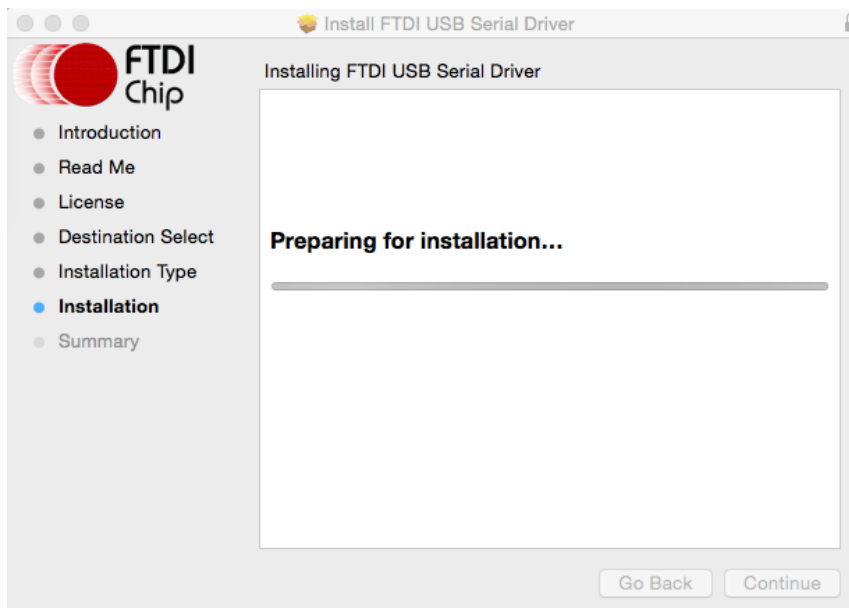
After reading the Software License Agreement, press Continue.



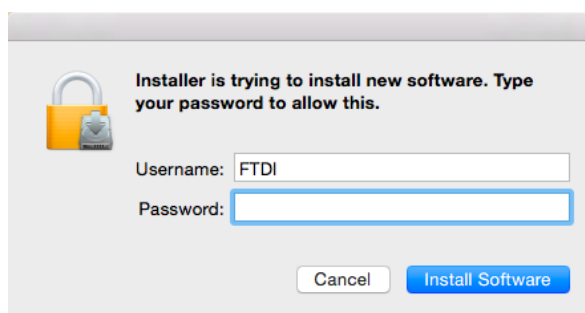
Click agree to continue or disagree to abort installation.



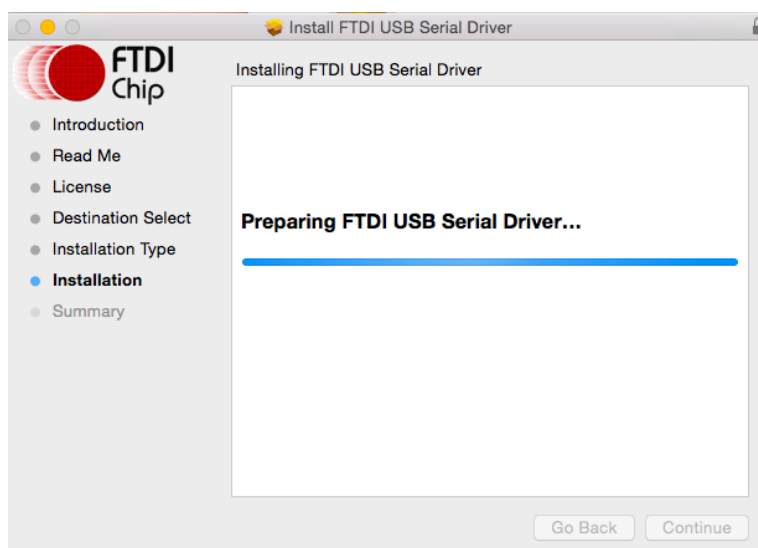
Select Install.



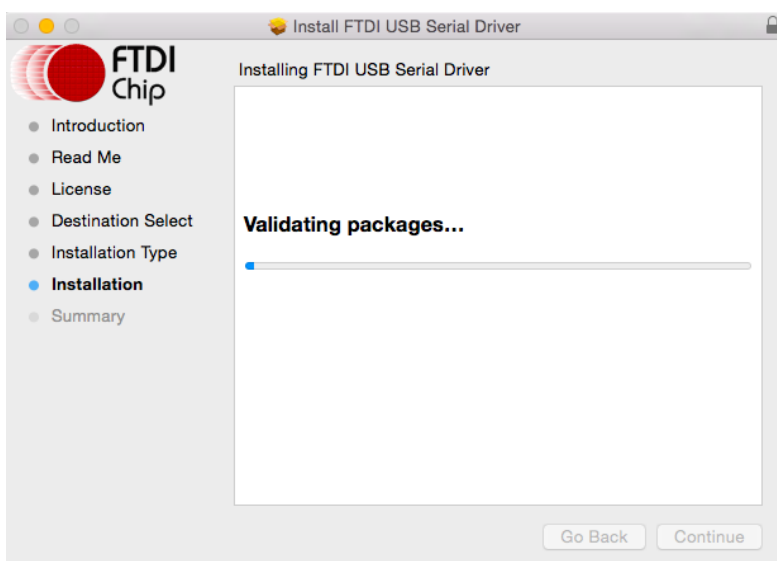
Screen will briefly show 'Preparing for installation...'



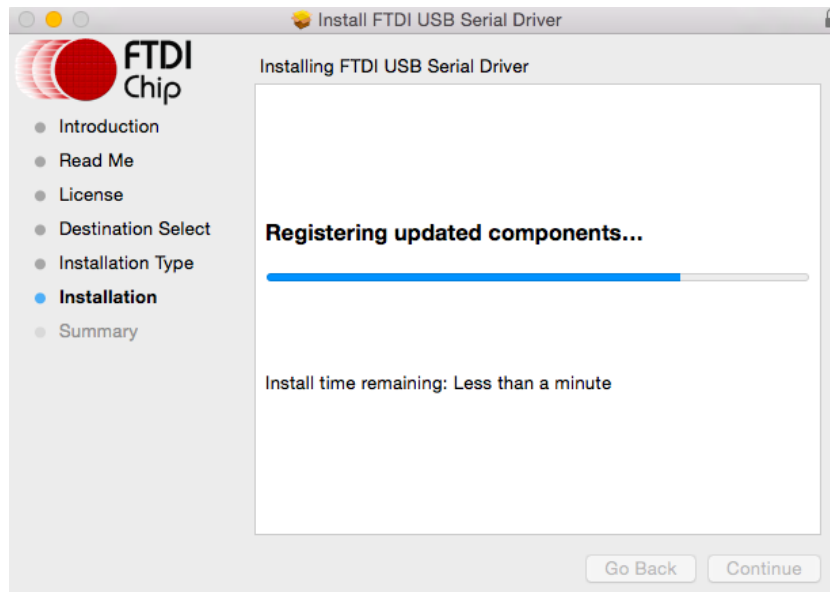
At this point you may be asked for your password to authenticate the installation. This is just the same as you would do to log into the machine to begin using it. Then select Install Software.



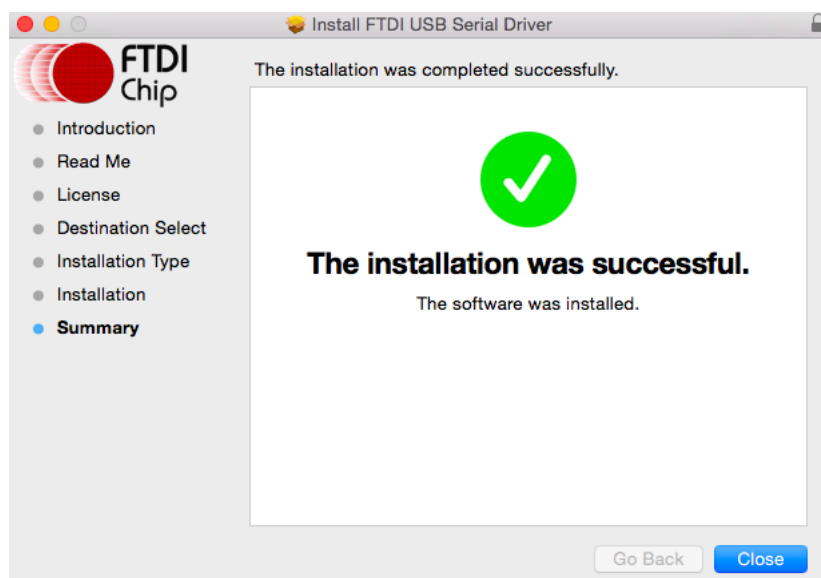
The screen will show 'Preparing FTDI USB Serial Driver...'



The screen will show 'Validating packages...'



The screen will show 'Registering updated components...'



The final screen should show that the installation was successful. Select close and then reboot.

Now plug the device in.

If the device is installed properly, you will see entries in the /dev directory:

```
/dev/cu.usbserial-xxxxxxx
```

```
/dev/tty.usbserial-xxxxxxx
```

where xxxxxxxx is either the device's serial number or, for unserialized devices, a location string that depends on which USB port your device is connected to. Note that for FT2232D devices port A is denoted by the serial number appended with "A" and port B is designated by the serial number appended with "B".

/dev can be accessed through the Terminal application. The Terminal application can be launched by selecting Go > Applications > Utilities > Terminal. Type the following lines in the Terminal window to produce the file list:

```
cd /dev
```

```
ls-l
```

3.3 Installing D2xx Drivers

Download the driver to the MAC as per section 2 of this document.

(Please note: if using OS X 10.9 or OS X 10.10 and default FTDI VID & PID, then the Apple-provided VCP driver for FTDI USB to serial converters must be disabled first – see section 7.)

Start a Terminal session (Go > Applications > Utilities > Terminal)

Copy libftd2xx.dylib to the /usr/local/lib directory (cp Desktop/D2XX/bin/libftd2xx.1.2.2 /usr/local/lib)

Change directory to the /usr/local/lib (cd /usr/local/lib)

Create a symbolic link to the library (ln -sf libftd2xx.1.2.2.dylib libftd2xx.dylib)

The driver is now installed.

Samples written in C are provided to show how to use the library and verify the installation. These are command line based applications that must be executed from the Terminal window. To compile and run the samples perform the following steps (these assume you have copied all of the distribution files to the desktop and installed the library as per the Installation section above):

Open a Terminal window (Go > Applications > Utilities > Terminal).

Change directory to the root samples directory (cd Desktop/D2XX/Samples).

Build the samples by typing "make" then return. If you have issues at this stage revisit the installation section above to ensure the library is correctly installed. Read the error messages and try to determine the source of the problem. If you still have issues then contact support detailing your issue with as much information as possible.

To run an application, have a suitable FTDI device with default VID (0x0403) and PID (0x6001) and change to the Simple directory (cd Simple) then type "./simple" followed by return (make sure the dot and the forward slash precede the simple command).

If you have issues at this stage then consult the troubleshooting section later in this document. If the troubleshooting section doesn't help then contact support with your problem details.

4 Uninstalling FTDI Drivers on OS X

Follow the procedures below if you wish to remove the FTDI-provided drivers from your MAC.

4.1 Uninstalling FTDI VCP Drivers on OS X 10.3 to OS X 10.8

To remove the drivers from Mac OS X, the user must be logged on as root.
Root is a reserved username that has the privileges required to access all files.

Start a Terminal session (Go > Applications > Utilities > Terminal) and enter the following commands at the command prompt:

```
cd /System/Library/Extensions
rm -r FTDIUSBSerialDriver.kext

cd /Library/Receipts
rm -r ftdiusbserialdriver.pkg
rm -r ftdiusbserialdriverinstallerPostflight.pkg
rm -r ftdiusbserialdriverinstallerPreflight.pkg
```

To temporarily operate as the root user you can use sudo at the beginning of the command

e.g.

```
cd /System/Library/Extensions
sudo rm -r FTDIUSBSerialDriver.kext

cd /Library/Receipts
sudo rm -r ftdiusbserialdriver.pkg
sudo rm -r ftdiusbserialdriverinstallerPostflight.pkg
sudo rm -r ftdiusbserialdriverinstallerPreflight.pkg
```

The driver will then be removed from the system.

4.2 Uninstalling FTDI VCP Drivers on OS X 10.9 onwards

To remove the drivers from Mac OS X 10.9 onwards, the user must be logged on as root.
Root is a reserved username that has the privileges required to access all files.

Start a Terminal session (Go > Applications > Utilities > Terminal) and enter the following commands at the command prompt:

```
cd /Library/Extensions
rm -r FTDIUSBSerialDriver.kext
```

then reboot

To temporarily operate as the root user you can use sudo at the beginning of the command

e.g.

```
cd /Library/Extensions
sudo rm -r FTDIUSBSerialDriver.kext
```

then reboot

The driver will then be removed from the system.

4.3 Uninstalling D2XX Drivers

To uninstall the D2XX driver, simply delete the library and the symbolic link:

Start a Terminal session (Go > Applications > Utilities > Terminal)

Change directory to the /usr/local/lib (cd /usr/local/lib)

Delete the library (rm libftd2xx.1.2.2.dylib)

Delete the symbolic link (rm libftd2xx.dylib)

5 VCP Troubleshooting

5.1 How do I know what my deviceID is?

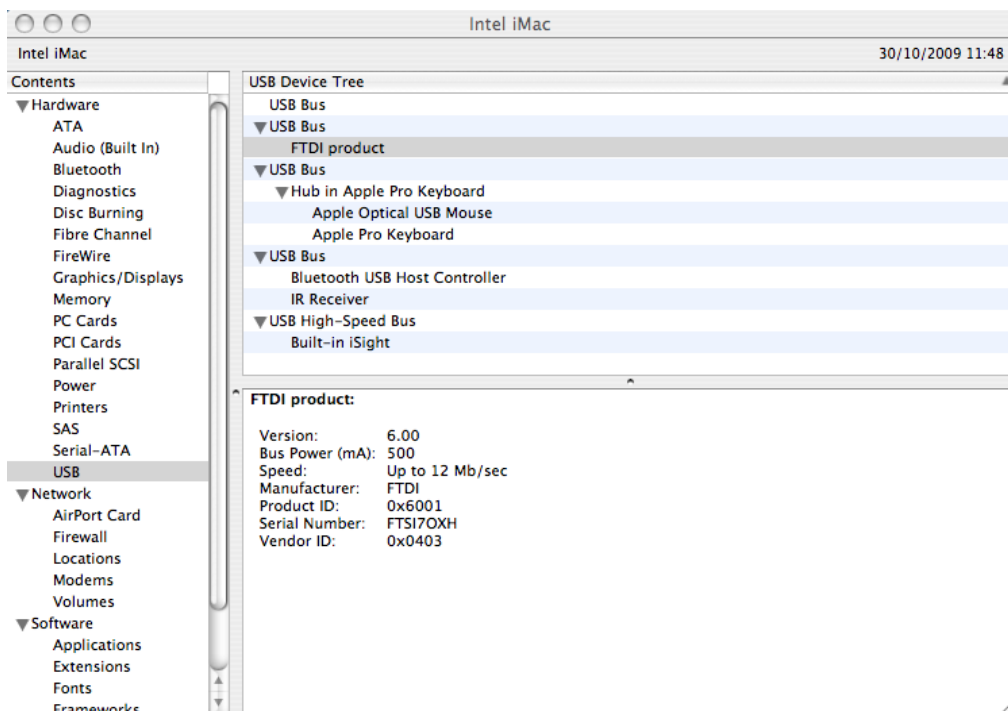
Launch the System Profiler utility, or Apple System Profiler for earlier versions of OS X. This can be accessed by going to the Finder and selecting Applications from the Go menu, then open the Utilities folder.

Select USB under Hardware in the panel to the left and then select the appropriate device from the USB Device Tree.

In the screen shot below (from OS 10.4), the device has a deviceID given by:

Vendor ID: 0x0403

Product ID: 0x6001



If the device does not work after installing the driver, it is likely to be because the PID is not supported by the driver. If this is the case, contact the vendor of your product to determine if they provide an edited driver to support their product. If they do not provide an edited driver you can make the edits yourself by following the instructions in TN_105 Adding Support for New Devices to MAC Driver from the FTDI website

http://www.ftdichip.com/Documents/TechnicalNotes/TN_105%20Adding%20Support%20for%20New%20FTDI%20Devices%20to%20Mac%20Driver.pdf

Please note that editing the kext to add a VID/PID, or alias a baud rate now requires re-signing with a kext-signing certificate.

If the VID is not 0x0403, it is likely that the device is not an FTDI device and we cannot support it.

5.2 The device does not appear in the /dev directory

FTDIUSBSerialDriver does not support your deviceID (VID and PID).

Disable the EEPROM so that the device reverts to its default deviceID, then replug.

To get support for your deviceID built into FTDIUSBSerialDriver, contact the vendor of your product to determine if they provide an edited driver to support their product. If they do not provide an edited driver

you can make the edits yourself by following the instructions in TN_105 Adding Support for New Devices to MAC Driver from the FTDI website

http://www.ftdichip.com/Documents/TechnicalNotes/TN_105%20Adding%20Support%20for%20New%20FTDI%20Devices%20to%20Mac%20Driver.pdf

5.3 The text "NewPort Detected" is not displayed in System Preferences-Network

The device does not show in the System Preferences Network window as Apple requested we remove this.

5.4 The device cannot be accessed even though the deviceID is supported in FTDIUSBSerialDriver

An ownership or permissions problem is preventing the system from making the device accessible.

Check that the driver is owned by root and wheel. The most common symptom is the group for FTDIUSBSerialDriver is not wheel.

To change the group, login as root and perform the following script in a Terminal window (Go > Applications > Utilities > Terminal):

```
cd /system/library/extensions  
chgrp -R wheel FTDIUSBSerialDriver.kext
```

Reboot for the change to take effect.

5.5 How do I open a Terminal window?

A Terminal window can be started by selecting

Go > Applications > Utilities > Terminal

The terminal window is equivalent to a DOS prompt in Windows.

6 D2XX Troubleshooting

6.1 I can't open a port even though the installation has been successful

This is possibly due to the FTDI serial driver holding the port with your VID and PID.

Solution is to uninstall the serial driver . To completely eradicate the possibility of this occurring in future, it is recommended a new VID and PID is used to distinguish between devices.

Another possibility is an incorrect VID/PID. Try changing your application to use the FT_SetVIDPID API call to quickly determine if this is the case.

6.2 After running an application two or three times, communication stops

It is always recommended that you close a file handle obtained by FT_Open/FT_OpenEx before exiting an application. Side effects of not closing the handle with the multithreaded setting (as illustrated above) can be future communication with the device fails (always test this prior to enabling this setting).

The Sample applications demonstrate a method of trapping an abnormal exit (control C operation) and closing each handle in turn.

If you cannot find a work around then try setting the USB Reset After Open bit in the ftd2xx.cfg file but only as a last resort.

6.3 Problems upgrading to the latest D2XX driver

Upgrading the D2XX library can cause problems, such as a reported bug fix does not appear to be fixed. This is most likely related to the application executable pointing to a previous version of the library.

To determine which D2XX library your application is using perform the following steps (examples in brackets assume you have copied all of the files to the desktop and successfully compiled the samples as described in the Samples section):

Open a Terminal window (Go > Applications > Utilities > Terminal).

Change directory to the application executable folder (cd Desktop/D2XX/Samples/Simple)

Use otool to determine the library path (otool -L simple).

The following text is an example of what is displayed

simple:

```
/usr/local/lib/libftd2xx.1.2.2.dylib (compatibility version 1.2.2, current version 1.2.2)
/usr/lib/libSystem.B.dylib (compatibility version 1.0.0, current version 88.1.6)
```

As illustrated the, simple application is pointing to libftd2xx.1.2.2.dylib.

To alter the library so that the simple sample points to use the install_name_tool (e.g install_name_tool -change /usr/local/lib/libftd2xx.1.2.2.dylib /usr/local/lib/libftd2xx.dylib simple).

Please note you may need to change user mode to perform this function depending on the file permissions set on the executable.

Run the otool (illustrated in step 3 above) to confirm that the library pointed to by the application has changed and is correct.

7 OS X 10.9 (Mavericks) & OS X 10.10 (Yosemite)

7.1 Using Apple-provided VCP or D2XX with OS X 10.9 & 10.10

A VCP driver for FTDI USB to serial converters (except the FT-X series) is provided as part of the kernel in OS X 10.9, therefore no driver installation is required to create a virtual COM port in Mavericks. If D2XX operation is desired, then the built-in VCP driver must be disabled before the D2XX driver can be used. To do this, the relevant kext file needs to be renamed by following the procedure below:

Start a terminal session (Go > Applications > Utilities > Terminal) and copy/paste the following text to the command prompt:

```
cd /System/Library/Extensions/IOUSBFamily.kext/Contents/Plugins
sudo mv AppleUSBFTDI.kext AppleUSBFTDI.disabled
sudo touch /System/Library/Extensions
```

then reboot

To re-enable VCP, rename AppleUSBFTDI.disabled back to AppleUSBFTDI.kext

```
cd /System/Library/Extensions/IOUSBFamily.kext/Contents/Plugins
sudo mv AppleUSBFTDI.disabled AppleUSBFTDI.kext
sudo touch /System/Library/Extensions
```

then reboot

As an alternative, the kextunload command can be used instead of copying the kext directory:

```
sudo kextunload -b com.apple.driver.AppleUSBFTDI
```

(If a warning message indicates that the kext can't be unloaded, then reboot and retry the above command.)

The kextunload and kextload commands can be run in any directory. Note also that kextunload is temporary – the Apple-provided driver will be reloaded at the next reboot.

Now proceed as before with the instructions as per [section 3.2](#) to symbolically link your dll.

If the driver was disabled via the kextunload command, use kextload to re-enable it as follows:

```
sudo kextload -b com.apple.driver.AppleUSBFTDI
```

NOTE: If your VCP devices and D2xx devices have mutually exclusive VID/PID then both VCP and D2xx can be active at the same time.

8 Contact Information

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Appendix A – Abbreviations

| Terms | Description |
|------------|--|
| PID | Product ID, a unique product identification issued by the holder of the |
| VID | Vendor ID, a unique vendor identification number issued by the USB |
| USB | USB Universal Serial Bus |
| OS | Operating System |

Appendix B – Revision History

Document Title: FTDI Drivers Installation guide for MAC OS X
Document Reference No.: FT_000201
Clearance No.: FTDI# 123
Product Page: <http://www.ftdichip.com/FTProducts.htm>
Document Feedback: [Send Feedback](#)

| Revision | Changes | Date |
|----------|----------------------------|------------|
| 0.1 | First Draft | 2009-08-21 |
| 1.0 | First Release | 2009-11-06 |
| 1.1 | Add Mavericks instructions | 2013-11-25 |
| 1.2 | Updated for OS X 10.10 | 2015-04-15 |
| | | |
| | | |