



Future Technology Devices International Ltd.

Technical Note TN_105

**Adding Support for New FTDI Devices to MAC Serial Driver
Maintenance and configuration of the FTDI MAC VCP Driver**

Document Reference No.: FT_000107

Version 1.1

Issue Date: 2009-09-23

This FTDI technical note details how to add support for new FTDI devices to MAC FTDI Virtual COM port (VCP) driver. It also describes how to modify configurable parameters in the driver.

Future Technology Devices International Limited (FTDI)

Unit1, 2 Seaward Place, Centurion Business Park,, Glasgow G41 1HH United Kingdom

Tel.: +44 (0) 141 429 2777 Fax: + 44 (0) 141 429 2758

E-Mail (Support): support1@ftdichip.com Web: <http://www.ftdichip.com>

Copyright © 2009 Future Technology Devices International Limited



Table of Contents

1	Introduction.....	2
2	Procedure for Adding Support for New FTDI Devices to Mac Driver.	3
3	Driver configuration (optional)	4
3.1	Configuring PID and VID	4
3.2	Aliasing Baud Rates	5
3.3	MIDI Devices	6
3.4	Latency Timer	6
3.5	Read Buffer Size	6
3.6	Port Name.....	7
4	Acronyms and Abbreviations	8
5	Contact Information.....	9
	Appendix A – Format of Info.plist.....	11
	Appendix B - Creating Packages.....	18
	Appendix C - Revision History.....	21
	Revision Record Sheet.....	22



1 Introduction

This technical note shows MAC users an easy way to add support for new FTDI devices to MAC FTDI Virtual COM port driver. The driver has several parameters, which are configurable, such as baud rate, latency timer, read buffer size, port name and MIDI support. These parameters are setup in the ConfigData dictionary, an optional field in a device entry. For an example, see the device entry for FT2XXB in the listing of Info.plist in the appendix A.

2 Procedure for Adding Support for New FTDI Devices to Mac Driver

1. Download the Mac VCP driver disk image (dmg) for your appropriate processor from the FTDI website:
<http://www.ftdichip.com/Drivers/VCP.htm>
2. Install the OEM version of the serial driver. For instructions how to do it, please download Mac OS X Installation Guide from link below.
http://www.ftdichip.com/Documents/InstallGuides/Mac_OS_X_Installation_Guide.pdf
Follow the instructions in the guide.
3. After rebooting your computer, make sure that driver has been installed successfully. Information from Mac_OS_X Installation Guide will explain you how to do it.
4. Having confirmed that driver has installed successfully copy
`/System/Library/Extensions/FTDIUSBSerialDriver.kext` to a temporary location. For example the tmp folder in your Users folder can be used.
Open *Terminal Window* by clicking the Go menu at the top of your screen and choose Utilities. In pop up select Terminal and type in the commands:

```
Mkdir /Users/<your login name>/tmp/FTDIUSBSerialDriver.kext  
cp -R /System/Library/Extensions/FTDIUSBSerialDriver.kext /Users/<your login name>/tmp/FTDIUSBSerialDriver.kext
```
5. Now having copied the folder you should delete the `/System/Library/Extensions/FTDIUSBSerialDriver.kext` folder.

```
rm -d -r /System/Library/Extensions/FTDIUSBSerialDriver.kext
```
6. In your temporary location (in our example `/Users/<your login name>/tmp`), edit the property list file `FTDIUSBSerialDriver.kext/Contents/Info.plist`
The property list file, the info.plist file, can be edited with the Apple developer tool, Property List Editor. For example, TextEdit. The Info.plist file contains entries for various FTDI devices in the IOKitPersonalities dictionary. A new entry for an OEM device can be created by copying the personality of the equivalent FTDI device. In the simplest case, only the new device's name and idProduct key have to be provided. FTDI recommends that new OEM device personalities are added to the plist file, and existing FTDI personalities are retained
7. When the info.plist file editing has been completed and saved, copy the `FTDIUSBSerialDriver.kext` from temporary location back to `/System/Library/Extensions`.
In our example it would be the following command:

```
cp -R /Users/<your login name>/tmp /System/Library/Extensions
```
8. Reboot the computer.

3 Driver configuration (optional)

Some MAC VCP driver parameters are configurable, namely the baud rate, latency timer, read buffer size, port name and MIDI support. These parameters are setup in the ConfigData dictionary, an optional field in a device entry.

3.1 Configuring PID and VID

To change idProduct (PID) it is necessary to alter value under key idProduct for your type of the device. The value is stored in **DECIMAL**. In order to get hexadecimal value of 0x6001, the idProduct key has to have the decimal value of 24577.

The same applies to the VID. To change VID it is necessary to modify idVendor key as a **DECIMAL value**. To enter hexadecimal equivalent of 0x403, it is required to use decimal 1027.

This is illustrated below, which shows an extract from the info.plist file for the FT2XXB devices.

```
<key>FT2XXB</key>
  <dict>
    <key>CFBundleIdentifier</key>
    <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
    <key>ConfigData</key>
    <dict>
      <key>LatencyTimer</key>
      <integer>16</integer>
      <key>MIDI</key>
      <false/>
    </dict>
    <key>IOClass</key>
    <string>FTDIUSBSerialDriver</string>
    <key>IOProviderClass</key>
    <string>IOUSBInterface</string>
    <key>bConfigurationValue</key>
    <integer>1</integer>
    <key>bInterfaceNumber</key>
    <integer>0</integer>
    <key>bcdDevice</key>
    <integer>1024</integer>
    <key>idProduct</key>
    <integer>24577</integer>
    <key>idVendor</key>
    <integer>1027</integer>
  </dict>
```

3.2 Aliasing Baud Rates

Aliased baud rates are supported through the BaudRates dictionary under ConfigData, an optional field in a device entry. Aliasing a baud rate allows a user to achieve non-standard baud rate values. For example, aliasing 300Baud with 250kBaud means that the device will operate at 250kBaud whenever 300Baud is selected.

This is illustrated below, which shows an extract from the info.plist file.

```
<key>ConfigData</key>
<dict>
  <key>BaudRates</key>
  <dict>
    <key>B300</key>
    <integer>250000</integer>
  </dict>
</dict>
```

The identifiers for standard baud rates are as follows: B300, B600, B1200, B2400, B4800, B9600, B19200, B38400, B57600, B115200 and B230400. The aliased value is a decimal integer.

More than one baud rate can be aliased. In the example below, which is an extract from the info.plist file, the device operates at 250kBaud when 300Baud is selected and 625kBaud when 600Baud is selected. All other standard baud rates are unaffected.

```
<key>ConfigData</key>
<dict>
  <key>BaudRates</key>
  <dict>
    <key>B300</key>
    <integer>250000</integer>
    <key>B600</key>
    <integer>625000</integer>
  </dict>
</dict>
```

The identifier BAUDALL can be used to set a device to operate at a single baud rate. In the following example, the device will only operate at 115200Baud.

```
<key>ConfigData</key>
<dict>
  <key>BaudRates</key>
  <dict>
    <key>BAUDALL</key>
    <integer>115200</integer>
  </dict>
</dict>
```

3.3 MIDI Devices

MIDI is Musical Instrument Digital Interface which is used for interconnecting devices such as synthesizers, controllers and sequencers.

MIDI devices can be supported by setting the MIDI key under ConfigData to true. Here is sample extract from the info.plist file how to do it.

```
<key>ConfigData</key>
<dict>
  <key>MIDI</key>
  <true/>
</dict>
```

This has the effect of aliasing B300 to 31250baud. MIDI is a boolean value, and its default value is false.

3.4 Latency Timer

Latency Timer helps to speed up the transfer of short packets. Changing the device's latency timer is supported through the LatencyTimer key under ConfigData, an optional field in a device entry. For example, the following entry from the info.plist file would allow the device to operate with a latency timer of 8ms.

```
<key>ConfigData</key>
<dict>
  <key>LatencyTimer</key>
  <integer>8</integer>
</dict>
```

The latency timer value is a decimal integer in the range 1-255. Its default value is 16ms.

3.5 Read Buffer Size

Read Buffer Size can increase or decrease the speed of the transfer of packets, depending on type of the data you are transferring.

Changing the device's read buffer size is supported through the InBufferSize key under ConfigData, an optional field in a device entry. In the following example from the info.plist file, the read buffer size is set to 256 bytes.

```
<key>ConfigData</key>
<dict>
  <key>InBufferSize</key>
  <integer>256</integer>
</dict>
```

The read buffer size is a decimal integer. Its default value is 4096 bytes.

3.6 Port Name

The Port name is a description string assigned to your device. This name will be used as a label for your device in the system.

The port name of a device can be changed through the PortName key under ConfigData, an optional field in a device entry. In the following example from the info.plist file, the port name is set to MyGreatDevice.

```
<key>ConfigData</key>
<dict>
  <key>PortName</key>
  <string>MyGreatDevice</string>
</dict>
```

The port name is a string (of up to 63 characters). Its default value is usbserial.

4 Acronyms and Abbreviations

Terms	Description
VCP	Virtual Com Port
cp	Mac OS and Unix command for copy. -R parameter tells to include subfolders. For full description please use manual: cp man
rm	Mac OS and Unix command for remove/delete. -d parameter tells to remove directories. For full description please use manual: rm man
Terminal Window	A Unix and Mac OS application similar to Windows' "Command Prompt"
TextEdit	One of the text editors included in Mac OS

Table 4.1 Acronyms and Abbreviations



5 Contact Information

Head Office – Glasgow, UK

Future Technology Devices International Limited
Unit 1, 2 Seaward Place,
Glasgow G41 1HH
United Kingdom
Tel: +44 (0) 141 429 2777
Fax: +44 (0) 141 429 2758

E-mail (Sales) vinculum.sales@ftdichip.com
E-mail (Support) vinculum.support@ftdichip.com
E-mail (General Enquiries) admin1@ftdichip.com
Web Site URL <http://www.ftdichip.com>
Web Shop URL <http://www.ftdichip.com>

Branch Office – Taipei, Taiwan

Future Technology Devices International Limited (Taiwan)
2F, No. 516, Sec. 1, NeiHu Road
Taipei 114
Taiwan, R.O.C.
Tel: +886 (0) 2 8797 1330
Fax: +886 (0) 2 8751 9737

E-mail (Sales) tw.sales1@ftdichip.com
E-mail (Support) tw.support1@ftdichip.com
E-mail (General Enquiries) tw.admin1@ftdichip.com
Web Site URL <http://www.ftdichip.com>

Branch Office – Hillsboro, Oregon, USA

Future Technology Devices International Limited (USA)
7235 NW Evergreen Parkway, Suite 600
Hillsboro, OR 97123-5803
USA
Tel: +1 (503) 547 0988
Fax: +1 (503) 547 0987

E-Mail (Sales) us.sales@ftdichip.com
E-Mail (Support) us.admin@ftdichip.com
Web Site URL <http://www.ftdichip.com>

Branch Office – Shanghai, China

Future Technology Devices International Limited (China)
Room 408, 317 Xianxia Road,
ChangNing District,
ShangHai, China

Tel: +86 (21) 62351596
Fax: +86(21) 62351595

E-Mail (Sales): cn.sales@ftdichip.com
E-Mail (Support): cn.support@ftdichip.com
E-Mail (General Enquiries): cn.admin1@ftdichip.com
Web Site URL: <http://www.ftdichip.com>



Distributor and Sales Representatives

Please visit the Sales Network page of the FTDI Web site for the contact details of our distributor(s) and sales representative(s) in your country.

Neither the whole nor any part of the information contained in, or the product described in this manual, may be adapted or reproduced in any material or electronic form without the prior written consent of the copyright holder. This product and its documentation are supplied on an as-is basis and no warranty as to their suitability for any particular purpose is either made or implied. Future Technology Devices International Ltd will not accept any claim for damages howsoever arising as a result of use or failure of this product. Your statutory rights are not affected. This product or any variant of it is not intended for use in any medical appliance, device or system in which the failure of the product might reasonably be expected to result in personal injury. This document provides preliminary information that may be subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Future Technology Devices International Ltd, Unit 1, 2 Seaward Place, Centurion Business Park, Glasgow G41 1HH United Kingdom. Scotland Registered Number: SC136640

Appendix A – Format of Info.plist

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple Computer//DTD PLIST 1.0//EN" "http://www.apple.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
  <key>CFBundleDevelopmentRegion</key>
  <string>English</string>
  <key>CFBundleExecutable</key>
  <string>FTDIUSBSerialDriver</string>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>CFBundleInfoDictionaryVersion</key>
  <string>6.0</string>
  <key>CFBundleName</key>
  <string>I/O Kit Driver for FTDI USB Devices</string>
  <key>CFBundlePackageType</key>
  <string>KEXT</string>
  <key>CFBundleShortVersionString</key>
  <string>2.2.10</string>
  <key>CFBundleSignature</key>
  <string>????</string>
  <key>CFBundleVersion</key>
  <string>2.2.10</string>
  <key>IOKitPersonalities</key>
  <dict>
    <key>FT2232H_A</key>
    <dict>
      <key>CFBundleIdentifier</key>
      <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
      <key>IOClass</key>
      <string>FTDIUSBSerialDriver</string>
      <key>IOProviderClass</key>
      <string>IOUSBInterface</string>
      <key>bConfigurationValue</key>
      <integer>1</integer>
      <key>bInterfaceNumber</key>
      <integer>0</integer>
      <key>bcdDevice</key>
      <integer>1792</integer>
      <key>idProduct</key>
      <integer>24592</integer>
```



```
<key>idVendor</key>
<integer>1027</integer>
</dict>
<key>FT2232H_B</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>1</integer>
  <key>bcdDevice</key>
  <integer>1792</integer>
  <key>idProduct</key>
  <integer>24592</integer>
  <key>idVendor</key>
  <integer>1027</integer>
</dict>
<key>FT2232_A</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>0</integer>
  <key>idProduct</key>
  <integer>24592</integer>
  <key>idVendor</key>
  <integer>1027</integer>
</dict>
<key>FT2232_B</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
```



```
<string>FTDIUSBSerialDriver</string>
<key>IOProviderClass</key>
<string>IOUSBInterface</string>
<key>bConfigurationValue</key>
<integer>1</integer>
<key>bInterfaceNumber</key>
<integer>1</integer>
<key>idProduct</key>
<integer>24592</integer>
<key>idVendor</key>
<integer>1027</integer>
</dict>
<key>FT2XXB</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>ConfigData</key>
  <dict>
    <key>LatencyTimer</key>
    <integer>16</integer>
    <key>MIDI</key>
    <false/>
  </dict>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>0</integer>
  <key>bcdDevice</key>
  <integer>1024</integer>
  <key>idProduct</key>
  <integer>24577</integer>
  <key>idVendor</key>
  <integer>1027</integer>
</dict>
<key>FT2XXR</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
```



```
<key>IOProviderClass</key>
<string>IOUSBInterface</string>
<key>bConfigurationValue</key>
<integer>1</integer>
<key>bInterfaceNumber</key>
<integer>0</integer>
<key>bcdDevice</key>
<integer>1536</integer>
<key>idProduct</key>
<integer>24577</integer>
<key>idVendor</key>
<integer>1027</integer>
</dict>
<key>FT4232H_A</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>0</integer>
  <key>bcdDevice</key>
  <integer>2048</integer>
  <key>idProduct</key>
  <integer>24593</integer>
  <key>idVendor</key>
  <integer>1027</integer>
</dict>
<key>FT4232H_B</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>1</integer>
```



```
<key>bcdDevice</key>
<integer>2048</integer>
<key>idProduct</key>
<integer>24593</integer>
<key>idVendor</key>
<integer>1027</integer>
</dict>
<key>FT4232H_C</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>2</integer>
  <key>bcdDevice</key>
  <integer>2048</integer>
  <key>idProduct</key>
  <integer>24593</integer>
  <key>idVendor</key>
  <integer>1027</integer>
</dict>
<key>FT4232H_D</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>3</integer>
  <key>bcdDevice</key>
  <integer>2048</integer>
  <key>idProduct</key>
  <integer>24593</integer>
  <key>idVendor</key>
  <integer>1027</integer>
```

```
</dict>
<key>FT8U2XXAM</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>0</integer>
  <key>bcdDevice</key>
  <integer>512</integer>
  <key>idProduct</key>
  <integer>24577</integer>
  <key>idVendor</key>
  <integer>1027</integer>
</dict>
<key>FTDI Recovery PID</key>
<dict>
  <key>CFBundleIdentifier</key>
  <string>com.FTDI.driver.FTDIUSBSerialDriver</string>
  <key>IOClass</key>
  <string>FTDIUSBSerialDriver</string>
  <key>IOProviderClass</key>
  <string>IOUSBInterface</string>
  <key>bConfigurationValue</key>
  <integer>1</integer>
  <key>bInterfaceNumber</key>
  <integer>0</integer>
  <key>idProduct</key>
  <integer>24582</integer>
  <key>idVendor</key>
  <integer>1027</integer>
</dict>
</dict>
<key>OSBundleLibraries</key>
<dict>
  <key>com.apple.iokit.IOSerialFamily</key>
  <string>1.0.4</string>
  <key>com.apple.iokit.IOUSBFamily</key>
  <string>1.8</string>
```



</dict>

</dict>

</plist>

Appendix B - Creating Packages

For distribution purposes a customer may chose to create a package for the driver.

The simplest mechanism for creating a package is to use the free PackageMaker tool provided by Apple.

The PackageMaker tool is located in /Developer/Applications folder. This assumes that the user has downloaded and installed the developer tools.

This appendix will show how to create a simple package. For more detailed instructions on PackageMaker usage please visit the Apple website.

Step1:

Create a directory structure such as:

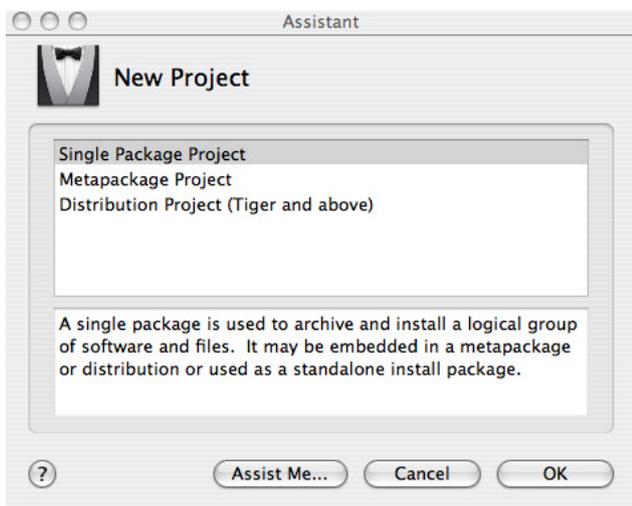
```
Dummy_root
  -System
    -Library
      -Extensions
        -FTDIUSBSerialDriver.kext
          -Content
```

In this last folder (Content) copy all your edited files e.g.

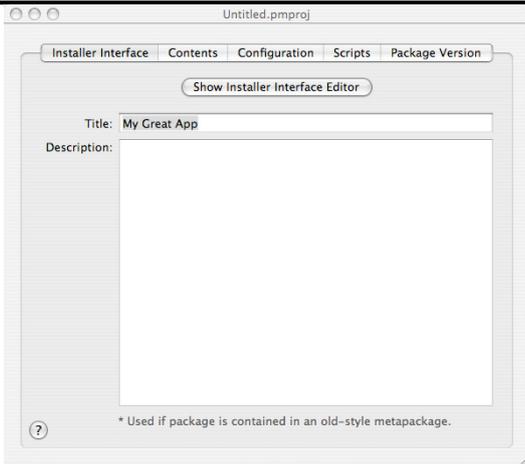
Info.plist, MacOS and Resources from your /tmp/FTDIUSBSerialDriver.kext/Content folder.

Step 2:

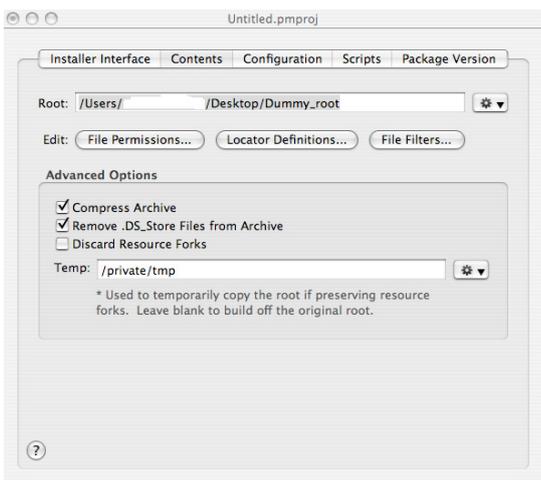
Open PackageMaker. The new project screen (shown below) will appear.



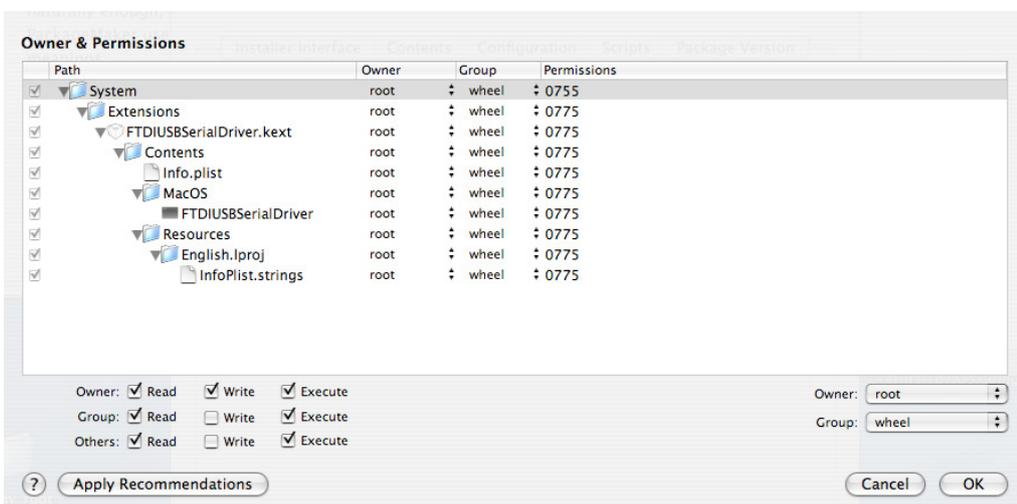
Select Single Package Project to bring up the next screen.



Select the contents tab and add the users root directory `/Users/myaccount/Dummy_root`.
 (Note: myaccount is my account).
 Other settings may be left as default.



Select the File Permissions tab and setup as shown.



Apply any changes required to your files and select OK.

The user has the option to now update the package version information, but fundamentally the package is ready to build.

From the toolbar at the top of the screen select Project -> Build.

From the next screen select the directory you want to save the package to and the filename you want to use.

Then select SAVE.

The package is now built.



Appendix C - Revision History

Revision History

Draft	Initial Draft	November, 2008
Rev 1.0	Initial Release	27 th January, 2009
Rev 1.1	Added Appendix B for creating a package	23 rd Sept 2009