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Reconfiguration Instructions

From: Andrew Kalman
To: CubeSat Kit (TM) Users
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Instructions for using the CubeSat Kit over USB in Windows 10 and above

Changelog

Rev	Date	Author	Comments
A	20181018	AEK	Initial revision.

Overview

Since the mid-2000s, Pumpkin has shipped CubeSat Kit™ (CSK) components that utilize FTDI[1] USB-to-serial converters, using a custom USB PID issued to Pumpkin by FTDI.

Since the advent of Microsoft® Windows® 10 and its driver signing requirements, it is difficult to install drivers for these CubeSat Kit components. Rather than instruct CubeSat Kit users in how to bypass driver signing, Pumpkin has decided to stop using its unique PID on these products. By (re-)programming the CubeSat Kit devices with FTDI's default PID (and VID) while keeping the other CubeSat-Kit specific configuration settings, Windows 10 will automatically recognize a compliant device and install the correct drivers.

This document outlines a procedure to "wipe" the non-default PID from a CubeSat Kit's FTDI FT232R serial-to-USB converter chip, so that Windows 10 will automatically install the requisite drivers when the newly-reprogrammed CubeSat Kit components is attached to the Windows 10 PC via USB.

Requirements & Prerequisites

This procedure requires access to a Windows machine running Windows 7 or earlier. [2]

Download and unzip Pumpkin's Windows 7 CubeSat Kit driver package from `http://cubesatkit.com/driver/usb/windows/win7/cskdriverswin7.zip` onto a Windows 7 PC.

Download and unzip FTDI's MProg.exe v3.5 FTDI chip reprogramming utility `https://www.ftdichip.com/Support/Utilities/MProg3.5.zip` onto a Windows 7 PC.

Download the MProg configuration file **`CSK with FTDI default PID and VID.ept`** from Pumpkin.

[1] http://www.ftdichip.com/.

[2] It may also be possible to achieve the same results using Linux or a Mac, but that is not covered here.

Procedure

1. Attach a CubeSat Kit Development Board (Dev Board) or Motherboard Module (MB) to the Windows 7 PC via USB. When Windows asks for drivers, navigate to the folder where you unzipped the Pumpkin CSK USB drivers. Using the drivers in that folder, Windows will install both a USB device and a virtual COM port associated with the attached CSK hardware. Confirm that a new virtual COM port has successfully been installed by checking the Ports (COM & LPT) type of connection in Windows Device Manager.

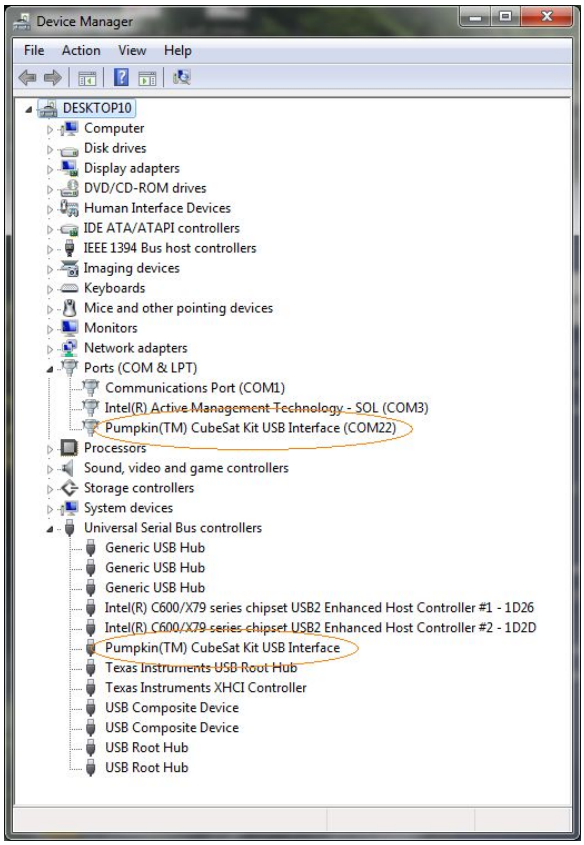

Figure 1: Win7 Device Manager with Pumpkin CSK module connected

2. Disconnect any other USB devices from the PC.

3. Launch MProg.

4. In MProg, select Device → Scan. Upon success, MProg will show that it has found one programmed device, the CSK hardware.

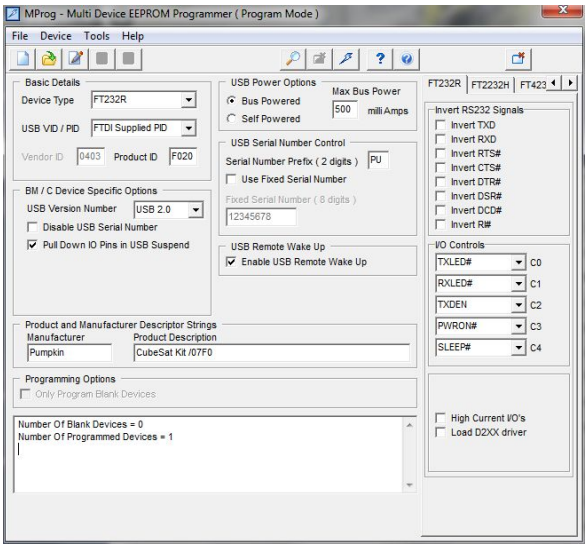

Figure 2: MProg having detected connected Pumpkin CSK module

5. In MProg, select File → Open, and select the **`CSK with FTDI default PID and VID.ept`** configuration file that Pumpkin provides for this purpose. MProg will display a screen as shown below. Note in particular that the FT232R has been chosen, the FT232R is configured for 500mA max bus power, and FTDI's default VID and PID will be used.

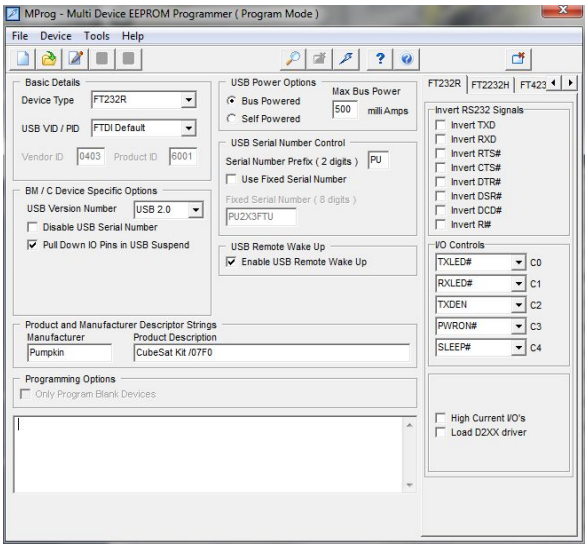

Figure 3: MProg ready to reprogram Pumpkin CSK module

6. In MProg, select Device → Program. This will re-program the CSK hardware with the settings from the **`.ept`** file. When done, the result will be a newly programmed FTDI FT232R on the CSK hardware, compatible with the CSK hardware, with FTDI's default VID and PID, and with a (semi-random) new serial number, as shown below:[3]

[3] It's important to use the Pumpkin-supplied .ept file, as it sets certain features like the C0 and C1 settings that differ from FTDI's default settings for the FT232R chip.

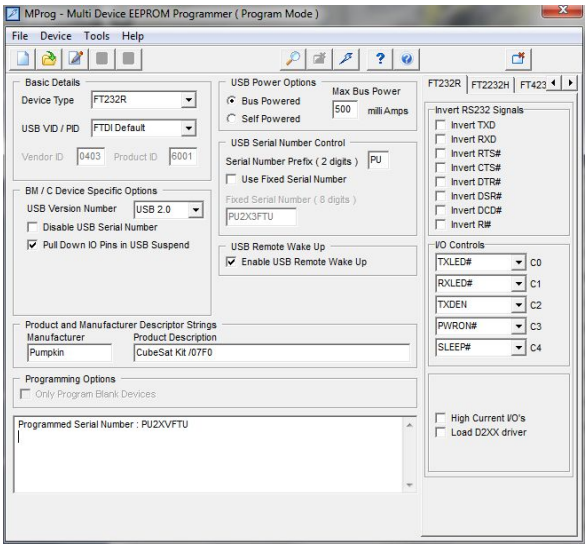

Figure 4: MProg having successfully reprogrammed Pumpkin CSK module

7. Close MProg.

8. Remove the CSK device from the Windows 7 PC.

9. Connect the CSK device to a Windows 10 PC. Windows 10 will recognize the device, and will install signed drivers from FTDI. This process make take a few minutes, if this is the first time an FTDI device has been attached to the Windows 10 PC.

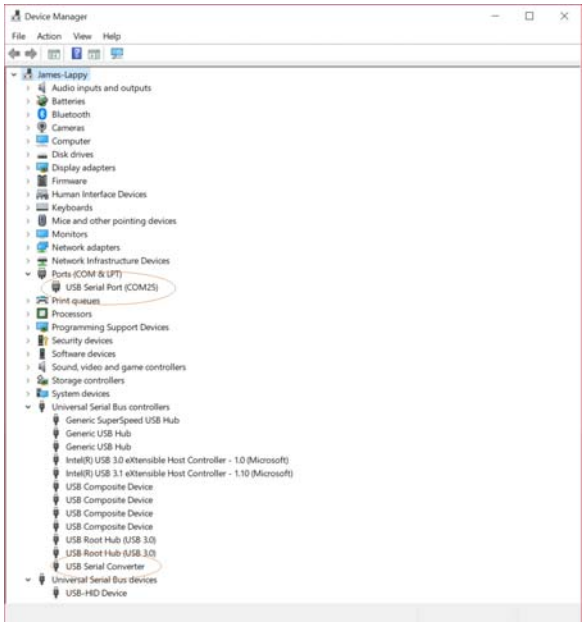

Figure 5: Win10 Device Manager with Pumpkin CSK module connected [4]

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[4] Note that despite the CubeSat Kit /07F0 product description programmed into the FT232R, the CubeSat Kit module appears as a generic USB serial converter and USB serial port.

Summary

By changing the USB PID of a Pumpkin CubeSat Kit module to FTDI's default, it can easily be connected to a Windows 10 PC over USB, because in this configuration, Windows 10 will use the default, signed FTDI drivers.

Sincerely,

Andrew Kalman
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Pumpkin, Inc.