Reprogramming the LFBDMPGMR's USB-to-Serial Adapter for Windows 64-bit Compatibility

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Introduction

The LFBDMPGMR (a.k.a. Flash Gordon) Programmer was developed to provide a fast, efficient, low cost method to program the Flash and/or EEPROM on M68HC12, S12 and S12X target devices. When the LFBDMPGMR hardware was designed, USB connection to a host computer was achieved through the use of Silicon Laboratories CP2102 USB-to-Serial interface device. The CP2102 has the ability to be customized with USB Vendor Identifier (VID) and Product Identifier (PID), among other USB parameters that are unique to the target hardware.

While Silicon Laboratories provides both 32-bit and 64-bit digitally signed drivers for the CP2102, the 32-bit USB drivers distributed with the LFBDMPGMR installer were 'customized' to match the VID (0x15a2) and PID (0x003c) programmed into the CP2102 that is used in the LFBDMPGMR. Unfortunately, customizing the Silicon Laboratories 64-bit drivers for the Freescale VID and PID requires the driver package to be 're-signed' by Microsoft. Something for which resources are not available at this time.

Currently, two solutions are available to allow installing and running the LFBDMPGMR software in Windows 7. For older software, Microsoft has provided a software package known as Windows XP Mode for Windows 7 (http://windows.microsoft.com/en-US/windows7/install-and-use-windows-xp-mode-in-windows-7). Windows XP Mode essentially provides a virtual XP operating system environment to allow older software that is not compatible with Windows 7, to run. While this provides a relative simple solution, many IT departments in an enterprise environment will not allow the installation of Windows XP Mode due to security concerns.

Because the LFBDMPGMR also contains an RS-232 interface via its DB-9 connector, an external USB-to-Serial interface that has 64-bit digitally signed drivers available may be used. The downside to this solution is the additional piece of hardware required and the fact that the LFBDMPGMR PC software limits the serial communications speed to 230,400 baud for such a connection.

A more permanent solution to the problem is to reprogram the CP2102's VID and PID parameters to match the original values, thus allowing the use of the 64-bit digitally signed drivers provided by Silicon Laboratories. The process is not complicated, but requires a PC running Windows 7 64-bit.

Note: Once the following procedure has been successfully completed, the Silicon Labs drivers and the BDM Programmer PC software are the only pieces of software that need to be installed on additional PCs.

Procedure

Before beginning the process, software that needs to be downloaded from the Internet. First, go to Silicon Laboratories web site (www.silabs.com) and search for "CP210x". The top search hits should provide a link to "Silicon Labs→Products→MCUs→USB to UART Bridge VCP Drivers" where the page is titled "CP210x USB to UART Bridge VCP Drivers". Download the VCP drivers for Windows XP/Server 2003/Vista/7/8/8.1.
The associated zip file contains both the 32-bit and 64-bit Windows drivers for the CP210x products.

Note: Before proceeding, make sure to disconnect ALL LFBDMPGMRs from the computer's USB ports.

After downloading and unzipping the Silicon Labs drivers, locate and double click on the "CP210xVCPInstaller_x64.exe" installer application.

After completing the installation of the Silicon Labs drivers, apply power to the LFBDMPGMR and connect it to one of the computer's USB ports. Windows 7 should begin its 'Found New Hardware' process but will state that drivers could not be found for the connected hardware.

Open the Device Manager and click the disclosure triangle next to "Ports (COM & LPT)". The LFBDMPGMR should appear with a yellow exclamation point on the connector icon of the Freescale BDM Flash Programmer indicating that no drivers were loaded. Right click on the Freescale BDM Flash Programmer and select "Update Driver Software…" as shown below.

Note: At this point in the process, on some machines, the LFBDMPGMR may appear under the "Other Devices" category rather that under "Ports (COM & LPT)".

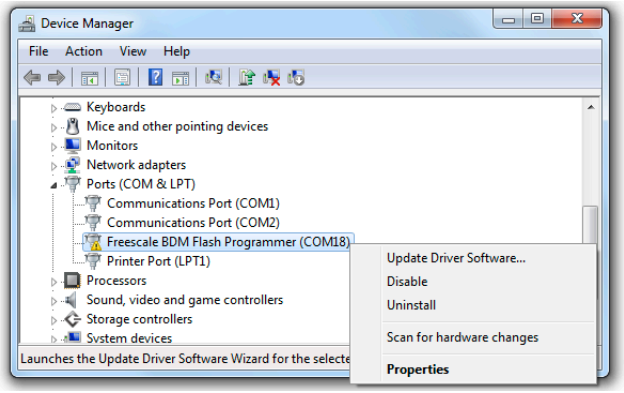
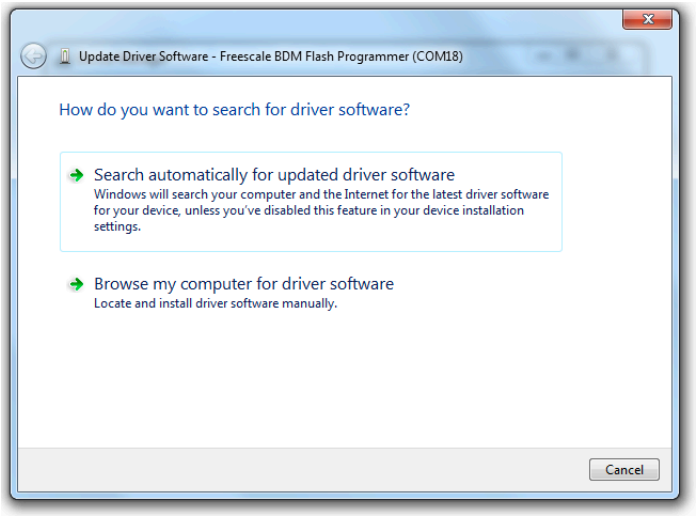
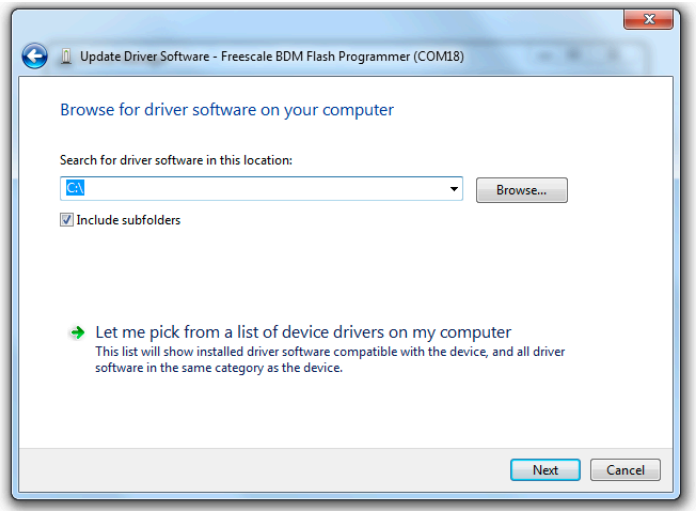


Figure 1, Use Device Manager To Update Driver Software

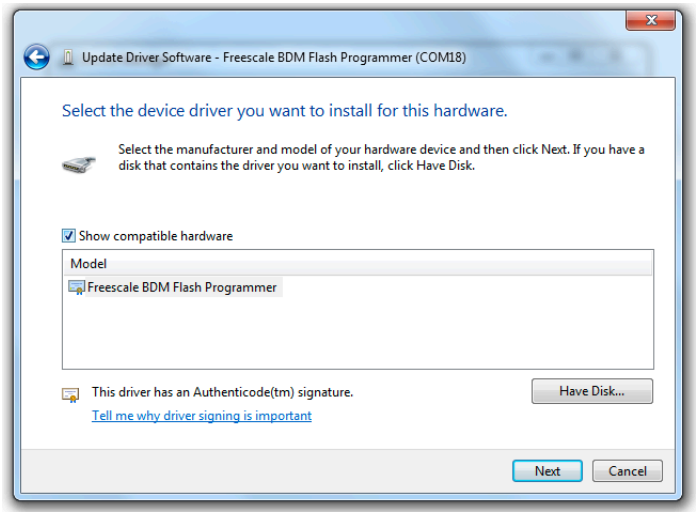
Selecting “Update Driver Software…” will result in the following:



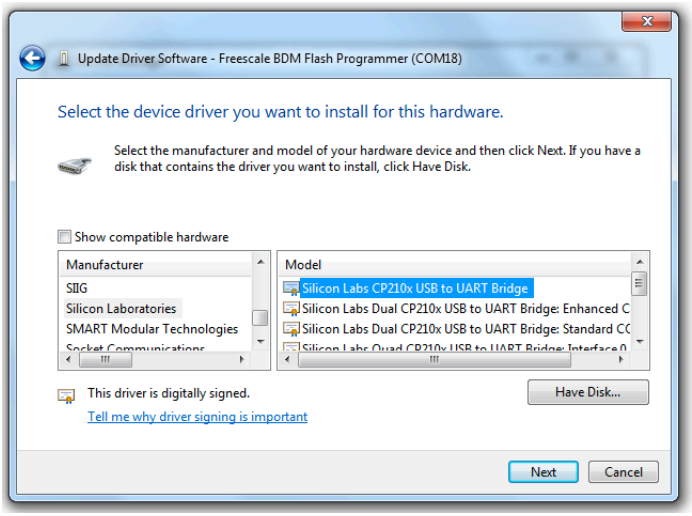
Click on “Browse my computer for driver software” which will display the following:



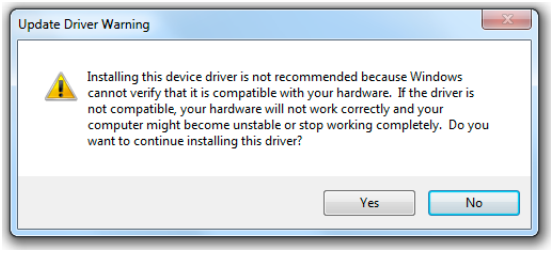
Click on “Let me pick from a list of device drivers on my computer” which will display the following:



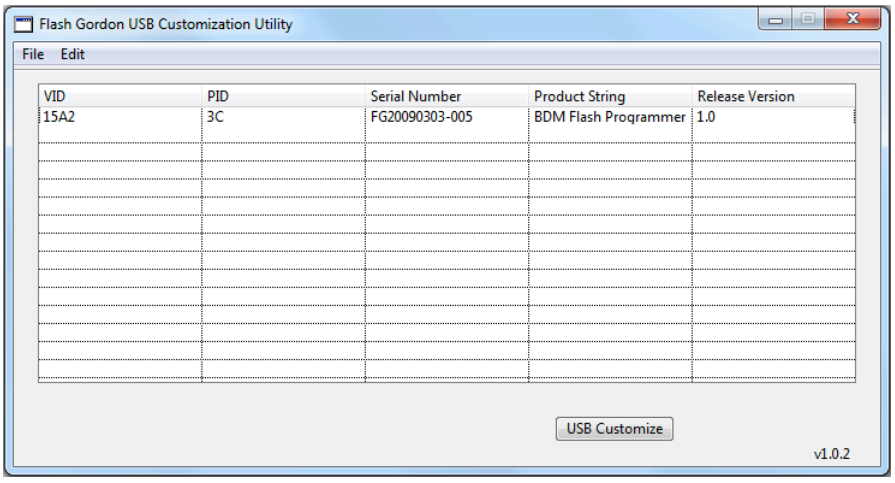
Uncheck the “Show compatible hardware” checkbox. This will change the dialog box to the following:



Scroll down the list under “Manufacturer” and select “Silicon Laboratories”. Then, under the “Model” list, select “Silicon Labs CP210x USB to UART Bridge” and click “Next”. The warning dialog box below will be displayed. Click “Yes” to continue.



The device manager should now show that the LFBDMPGMR has the Silicon Labs drivers associated with it. However, the CP2102 USB-to-Serial device still has the Freescale VID and PID programmed in it. Locate the FG USB Customization.exe program that was included as part of this package and run the program. The window below should appear.



Clicking on the 'USB Customize' button will reprogram the LFBDMPGMR's USB-to-Serial interface device with the Silicon Labs VID and PID allowing the 64-bit digitally signed Silicon Labs drivers to be properly associated with the LFBDMPGMR.

Once this operation has been performed, remove power from the LFBDMPGMR and restart the computer. After the computer has restarted, reapply power to the Programmer. Windows should proceed through its 'Found New Hardware" process and indicate that the new hardware is ready to use.

Finally, the BDM Programmer PC software can be installed by double clicking on "BDMProgrammer.exe".