TEXAS INSTRUMENTS

# Stellaris® In-Circuit Debug Interface (ICDI) and Virtual COM Port

Tiva™ C Series evaluation and reference design kits provide an integrated Stellaris In-Circuit Debug Interface (ICDI) which allows programming and debugging of the onboard LM4F microcontroller. The Stellaris ICDI can be used with the Stellaris LM Flash Programmer as well as any of the Tiva C Series-supported toolchains such as Texas Instruments' Code Composer Studio. Only JTAG is supported. This document presents the instructions for installing the appropriate drivers on the host computer.

## 1    Stellaris ICDI Drivers

To debug and download the custom application in the microcontroller's Flash memory and use Virtual COM Port connectivity, install the following drivers on the host computer:

- Stellaris Virtual Serial Port
- Stellaris ICDI JTAG/SWD Interface
- Stellaris ICDI DFU

> **NOTE:**  The host PC should be running the Microsoft Windows® 2000, Windows XP, Windows 7, or Windows 8 operating systems (OSs). This document describes how to install drivers on the Windows XP OS (see the Driver Installation Using Windows XP section) as well as the Windows 7 and Windows 8 OSs (see the Driver Installation Using Windows 7 or Windows 8 section).

These drivers provide the debugger with access to the JTAG interface and the host PC with access to the Virtual COM Port.

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## 1.1 Validate Installed Drivers

To see which drivers are currently installed on the host computer, check the system hardware properties using the Windows Device Manager.

**Windows XP or Windows 7**

To perform this action on Windows XP or Windows 7, follow these steps (see next section for Windows 8 instructions):

1. Right-click the *My Computer* (Windows XP) or *Computer* (Windows 7) menu item from the Windows **Start** button; select *Manage* from the drop-down menu.
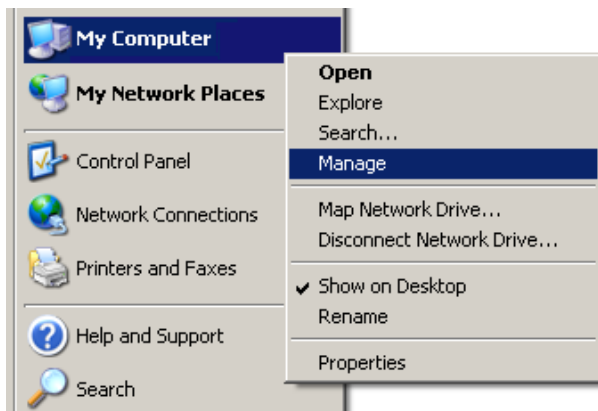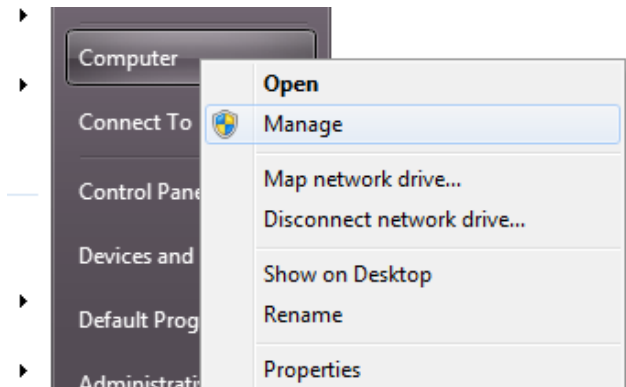


Figure 1. Windows XP



Figure 2. Windows 7

2. Click *Device Manager* under Computer Management→System Tools. The Device Manager window displays a list of hardware devices installed on your computer and allows the properties to be set for each device.
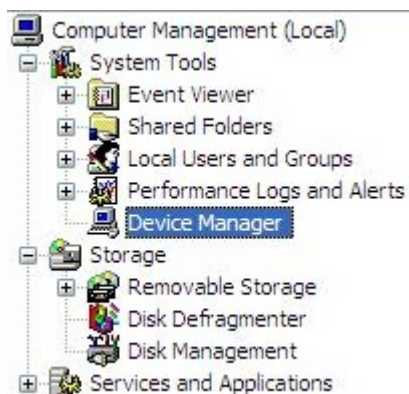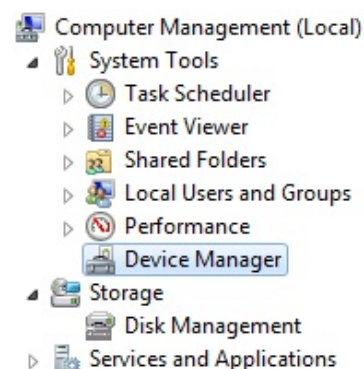


Figure 3. Windows XP



Figure 4. Windows 7

**Windows 8**

To check the hardware properties using the Windows Device Manager on Windows 8, follow these steps (see previous section for Windows XP or Windows 7 instructions):

1. Open the Windows Start Screen and click *Computer Management*.



**Figure 5. Windows 8**

2. Click *Device Manager* under Computer Management→System Tools (refer to Figure 3). The Device Manager window displays a list of hardware devices installed on your computer and allows the properties to be set for each device.

## 1.2    Update Drivers

When the board is connected to the computer for the first time, the computer detects the onboard ICDI interface and the Tiva C Series microcontroller. Drivers that are not yet installed display a yellow exclamation mark in the Device Manager window.



**Figure 6.**

Download the necessary drivers for your Tiva evaluation or reference design kit from the Stellaris ICDI Drivers tool folder on the TI website. Extract the files from the compressed folder to a known location on your Windows-enabled host PC.

Using the included USB cable, connect the Tiva board to your host PC as specified by the *README First* document for the respective kit.

## 2    Driver Installation Using Windows XP

Follow these directions to install the drivers on a host PC that is running Windows XP.

When the Tiva board is connected to the host PC for the first time, Windows starts the *Found New Hardware* Wizard and prompts to install the drivers for the Stellaris Virtual Serial Port. Select *Install from a list or specific location (Advanced)* and then click Next.



**Figure 7.**

Select *Search for the best driver in these locations*, and check the *Include this location in the search* option. Click Browse. Browse to the known location on your host PC of the driver installation files. Click OK, then click Next.
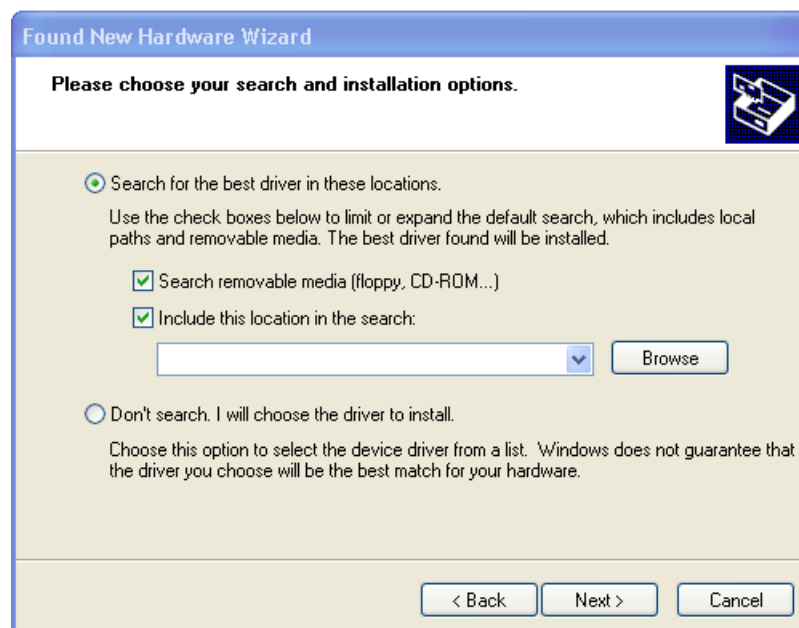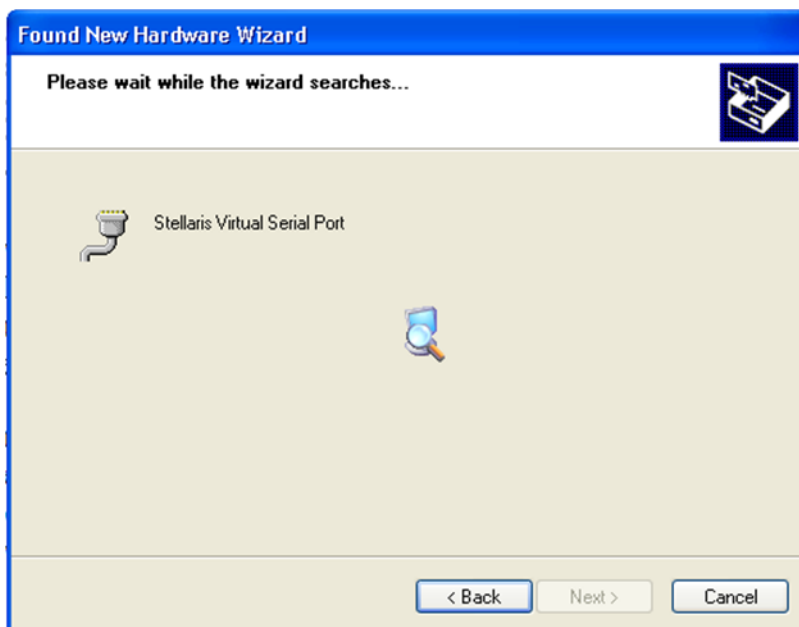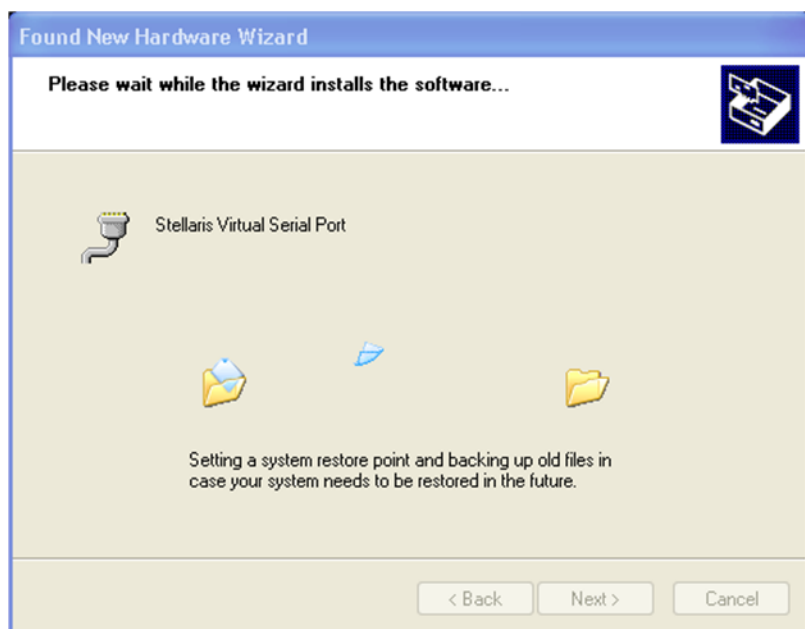


**Figure 8.**

A warning may appear during the installation process to caution that the driver is not signed; click Continue Anyway to proceed. The wizard displays a *Please wait while the wizard searches…* status window. No user action is required at this point.



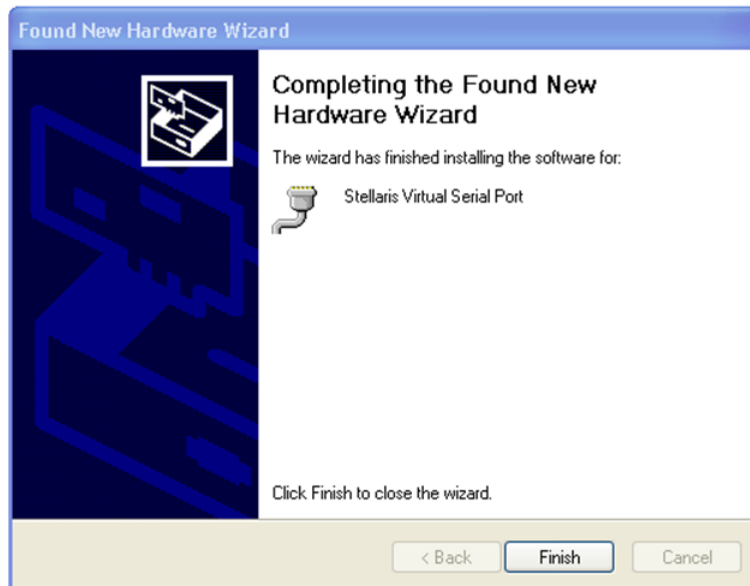**Figure 9.**

The wizard then displays a *Please wait while the wizard installs the software…* status window as the software is installed.



**Figure 10.**

After the installation of the Stellaris Virtual Serial Port drivers completes, click Finish to close the dialog box.



**Figure 11.**

The drivers for the Stellaris Virtual Serial Port have now been installed.

The *Found New Hardware* Wizard appears a second time for the Stellaris ICDI JTAG/SWD Interface, and then one more time for the Stellaris ICDI DFU Device drivers. Follow the same instructions to install the drivers for these two devices.

Confirmation that these device driver installed correctly can be found by launching the Windows Device Manager and right-clicking to select *Scan for Hardware Changes*. This scan updates the Device Manager properties list. Most of the time, the Device Manager refreshes the properties list automatically. The Stellaris Virtual Serial Port, the Stellaris ICDI JTAG/SWD Interface, and the Stellaris ICDI DFU Device should now appear in the list. This action indicates that the drivers have been successfully installed.

When these drivers are properly installed, Windows automatically detects any new Tiva boards (with a Stellaris-based ICDI) that are connected to the computer, and installs the required drivers.

## 3 Driver Installation Using Windows 7 or Windows 8

Follow these directions to install the drivers on a host PC that is running Windows 7 or Windows 8.

When the Tiva board is connected for the first time, the Windows 7 or Windows 8 system immediately searches for signed drivers. Wait until this process times out. The following screen appears:
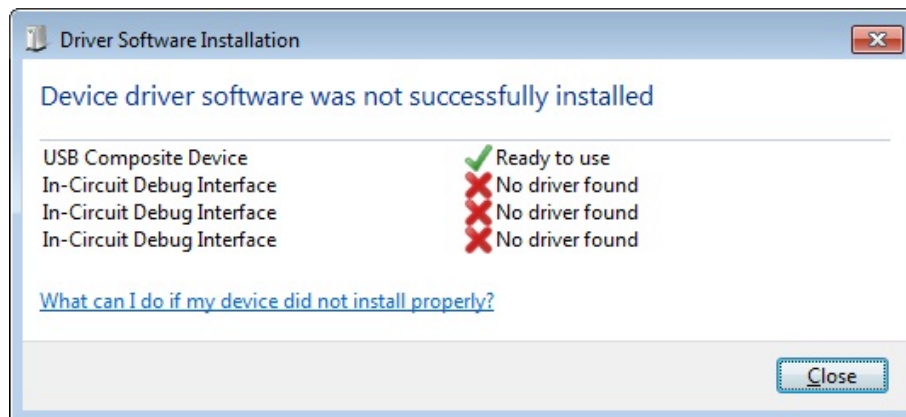


**Figure 12.**

Open the Windows Device Manager. Under the category *Other devices*, you should see three In-Circuit Debug Interface devices with yellow exclamation marks.



**Figure 13.**

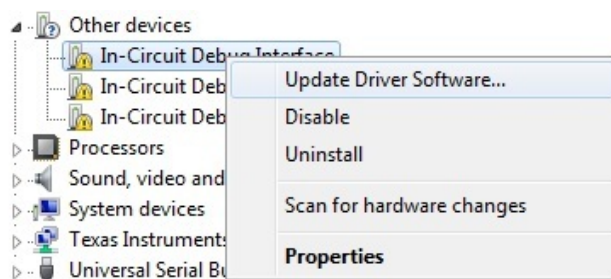Right-click one of these device entries and select *Update Driver Software*.
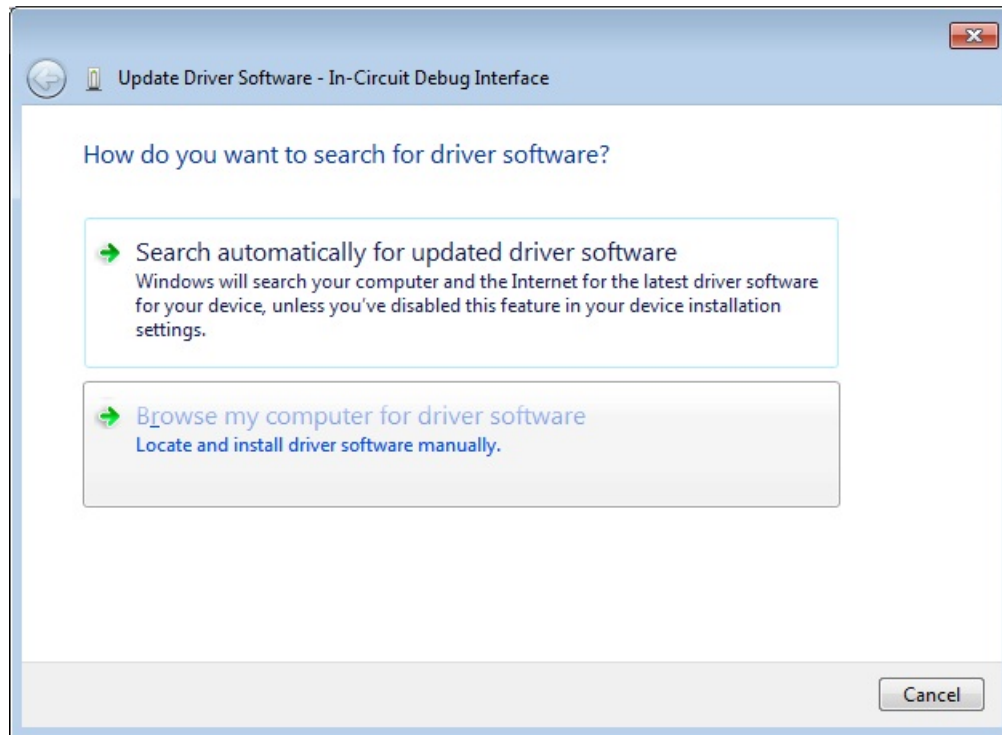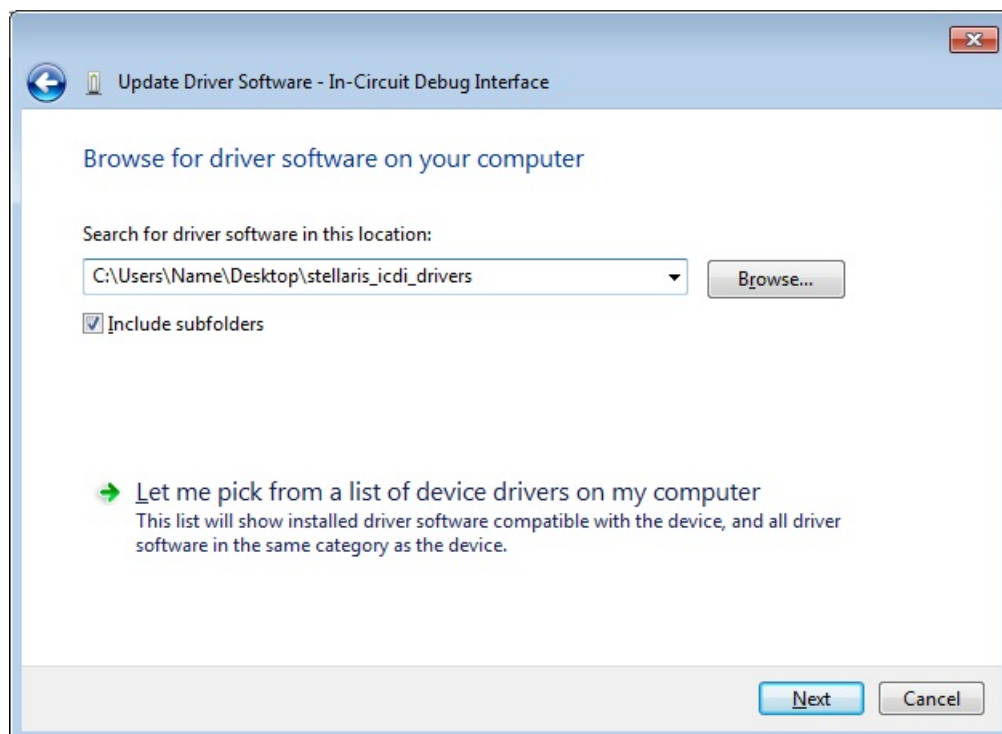


**Figure 14.**

A Windows prompt asks: *How do you want to search for driver software?* Select *Browse my computer for driver software*.



**Figure 15.**

Under *Search for driver software in this location*, click Browse. Browse to the known location on your host PC of the driver installation files. Click OK. Check the *Include subfolders* option, and then click Next.



**Figure 16.**

Windows now displays a status window that shows where it is currently searching for the drivers. No user action is required at this point.
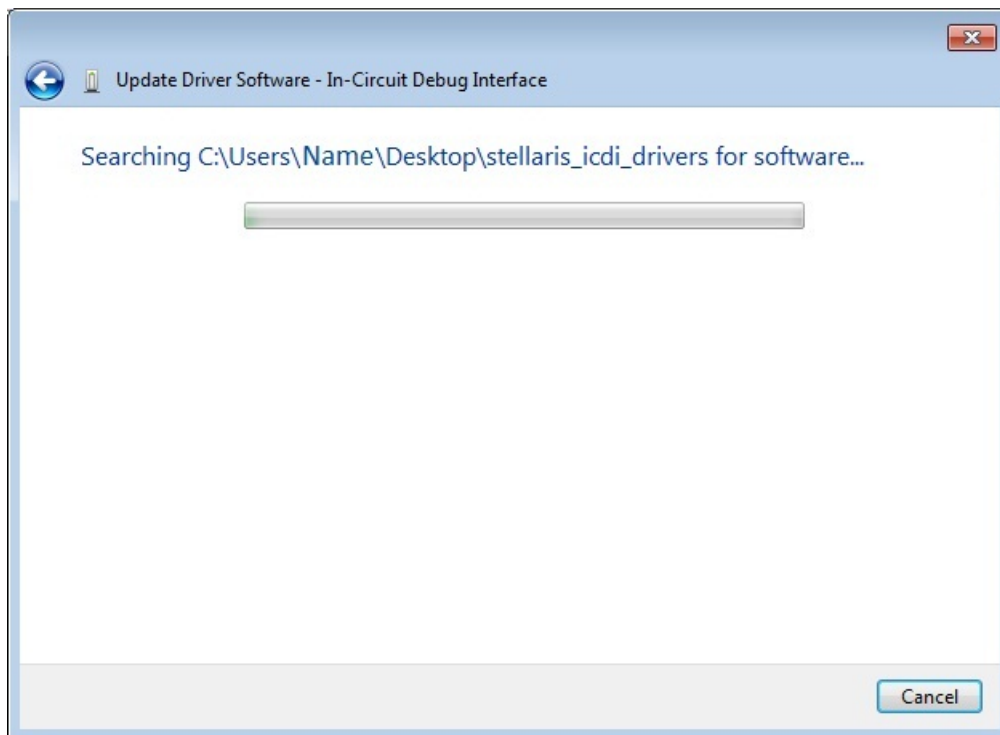


**Figure 17.**

The system then displays an *Installing driver software…* status window; this message indicates that the drivers were found in the specified location, and that they are being installed.



**Figure 18.**

A warning may appear that says *Windows can't verify the publisher of this driver software*. This message appears because the driver is not signed. Click *Install this driver software anyway* to proceed.

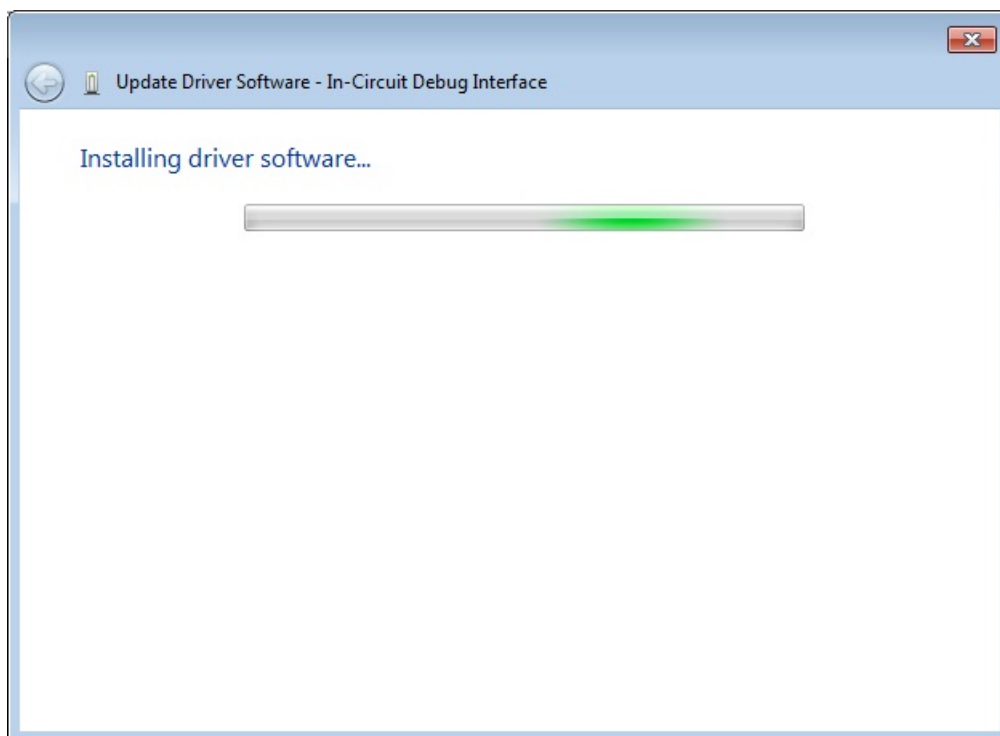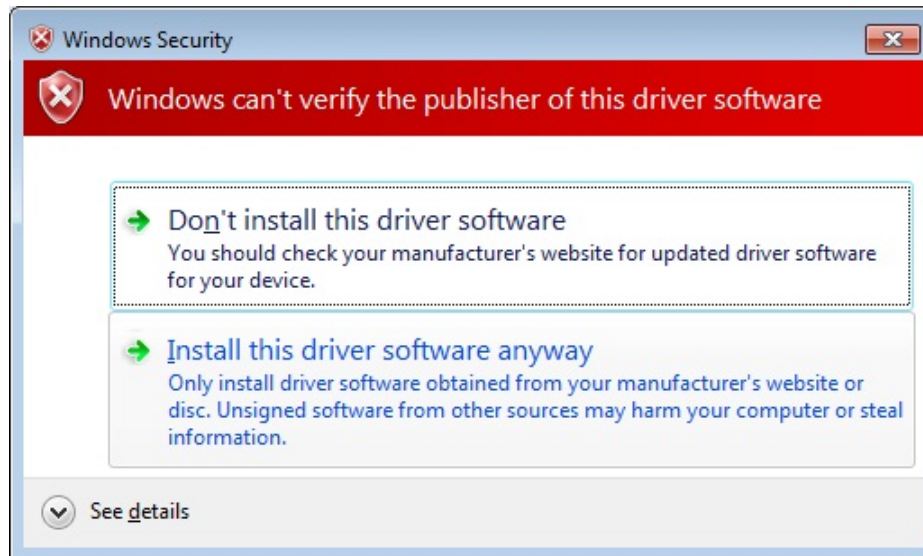

**Figure 19.**

When the installation is complete, Windows displays a message that says *Windows has successfully updated your driver software*. On the same message window, one of these three devices should be listed:

* Stellaris Virtual Serial Port
* Stellaris ICDI DFU Device
* Stellaris ICDI JTAG/SWD Interface

For example, Figure 20 shows when the driver for the Stellaris Virtual Serial Port has been successfully installed. Click Close to close the dialog box.
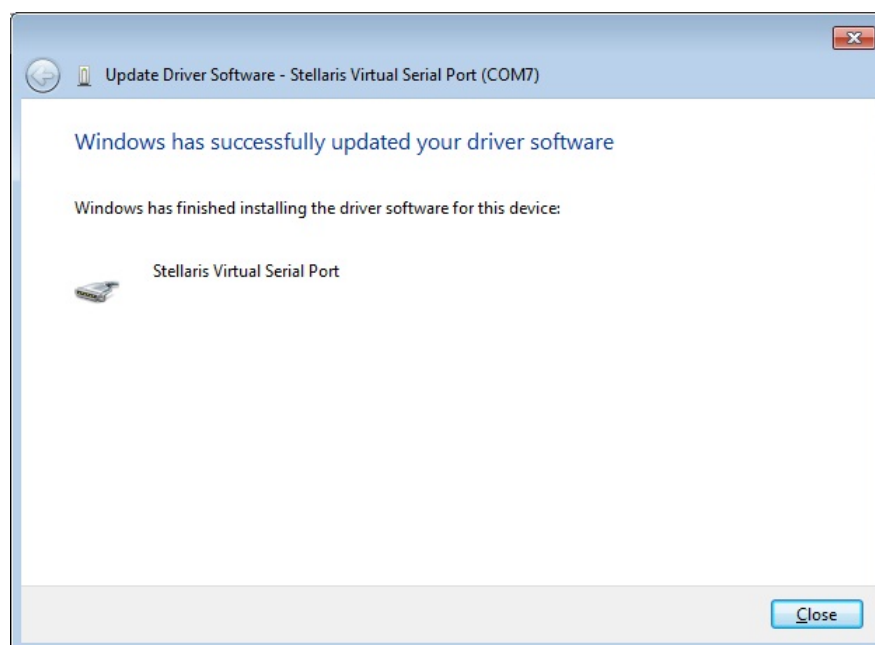


**Figure 20.**

Confirmation these device drivers installed correctly can be found by launching the Windows Device Manager and right-clicking to select *Scan for Hardware Changes*. This scan updates the Device Manager properties list. Most of the time, the Device Manager refreshes the properties list automatically. This action indicates that the drivers have been successfully installed. You should either see the Stellaris Virtual Serial Port under the *Ports* category (COM and LPT), or else the Stellaris ICDI DFU Device or the Stellaris ICDI JTAG/SWD Interface under the *Stellaris In-Circuit Debug Interface* category.

Repeat the same process to install the drivers for the remaining two devices.
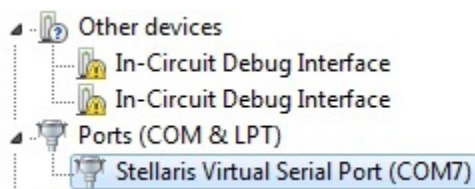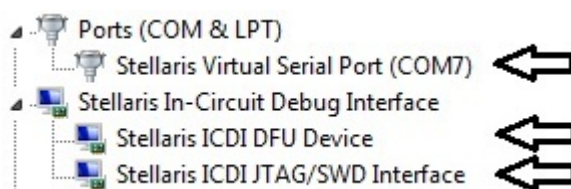


**Figure 21.**

After all three device drivers have been successfully installed, the Stellaris Virtual Serial Port should appear under the *Ports* (COM and LPT) category and both the Stellaris ICDI DFU Device and the Stellaris ICDI JTAG/SWD Interface under the *Stellaris In-Circuit Debug Interface* category. If installed correctly, none of the drivers shows a yellow exclamation mark.



**Figure 22.**

# 4    Conclusion

You are now ready to program your Tiva device with the LM Flash Programmer or any of the Tiva C Series-supported toolchains.

# 5    References

In addition to this document, the following references are available for download at www.ti.com/tiva-c (click the *Technical Documents* tab):

*   Tiva C Series Development and Evaluation Kits for Code Composer Studio™ Quickstart Guide (SPMU132).
*   Tiva C Series Development and Evaluation Kits for Keil™ Quickstart Guide (SPMU355).
*   Tiva C Series Development and Evaluation Kits for IAR Quickstart Guide (SPMU354).
*   Tiva C Series Development and Evaluation Kits for CodeBench™ Quickstart Guide (SPMU356).
*   Tiva C Series Microcontroller Data Sheet (individual device documents available through product selection tool).
*   Tiva C Series Evaluation or Reference Design Kit User's Manual (individual kit documents available)
*   Tiva C Series Evaluation Kit README First (individual kit documents available)
*   TivaWare for C Series Driver Library. Available for download at www.ti.com/tool/sw-tm4c-drl.
*   TivaWare for C Series Driver Library User's Manual, publication SW-DRL-UG (SPMU928).

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No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have *not* been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

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