Contents

List of Figures

1 Content and Basics

This application note provides a step-by-step example for USB driver installation for IDT's SSC Communication Board (CB) using the latest USB driver from the IDT website or SSC Evaluation Software DVD and a Win7 64-bit Operating System (OS) or WinXP OS. Instructions are also included for creating a virtual COM port on the user's USB port by installing the second part of the USBdriver. Both these drivers are needed when using the CB.

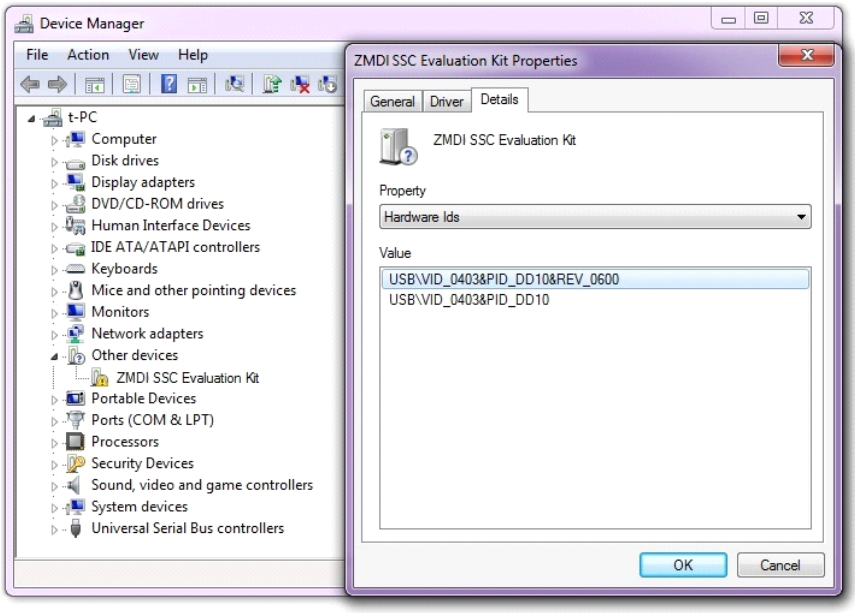
Since Microsoft Windows® Vista and Microsoft Windows® Server 2008, the kernel at the core of the OS has been improved by some substantial enhancements.[1] One of the improvements in the kernel is the option to install hardware in the OS. Therefore a certification process must be completed. Because the USB device identification of the SSC Communication Board is not certified by Microsoft®, a change of the Product ID (PID) can be used to suppress error messages during the installation process and use FTDI's certified driver. This is needed if the security requirements of the user's IT department do not allow using non-WHQL-certified drivers.

For USB communication, the CB uses an integrated circuit from FTDI. The second part of the procedure in this application note describes how to reprogram IDT's CB's PID 0xDD10 to FTDI's default PID 0x6001 in order to use the approved FTDI driver.[2]

To detect which kind of PID the CB uses, the Windows® Device Manager can be used. The following steps are recommended.[3]

- Open the Device Manager tool on the user's PC.
- Select the SSC CB. Note: The location for the CB ("ZMDI SSC Evaluation Kit") depends on successful installation of the driver (either "Other devices" or "Ports (COM & LPT)").
- Right-click on "ZMDI SSC Evaluation Kit" → select "Properties."
- Go to the "Details" tab and select "Hardware Ids" in the "Property" pull-down menu.

Figure 1.1 Product ID for SSC Communication Board V3.3 using IDT's Default Product ID



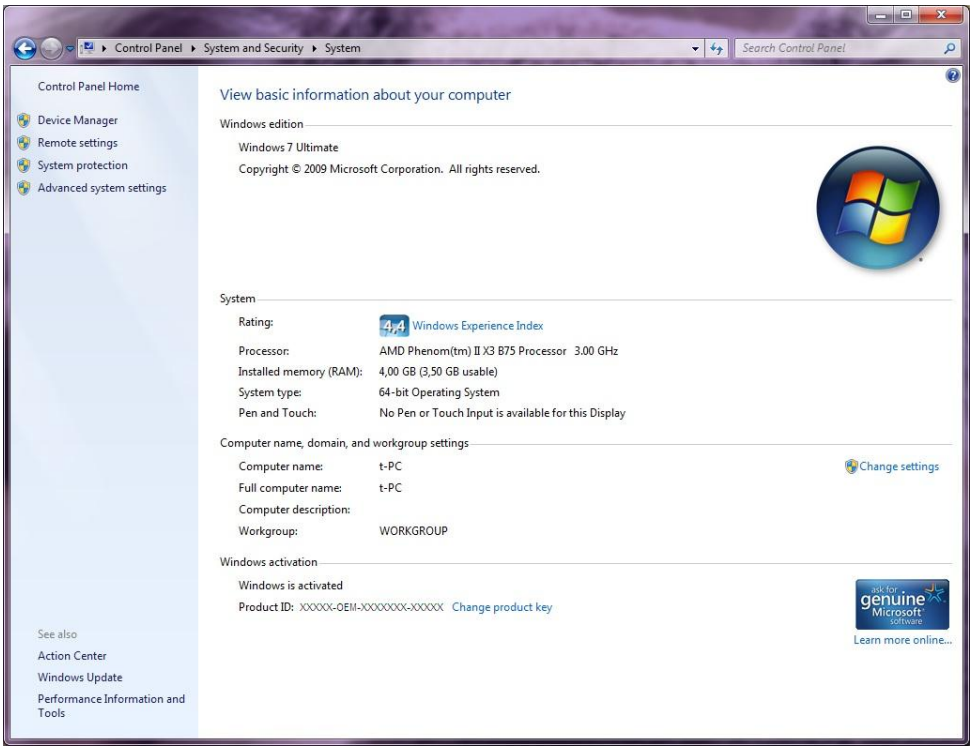
[1] Please refer to articles on the Microsoft ™ website for further information (http://www.microsoft.com/whdc/system/vista/kernel-en.mspx).
[2] Note: The procedures for changing the PID require Microsoft .NET Framework 2.0 (see section 4.1).
[3] These steps are related to Win 7 OS. With other operating systems, these steps might vary.

2 USB Driver Installation for a WIN7 Operating Systems

This section describes the procedure for USB driver installation using IDT's USB driver from IDT's website or the SSC Evaluation Software DVD and an example PC system with 64–bit WIN7 OS as shown in Figure 2.1. The installation procedure for a 32–bit WIN7 OS is identical. Before starting the installation procedure, check IDT's website for the latest USB driver version.[1]

Important: System administrator rights are required to install the USB driver on your PC!

Figure 2.1 Hardware and Software Used for USB Driver Installation



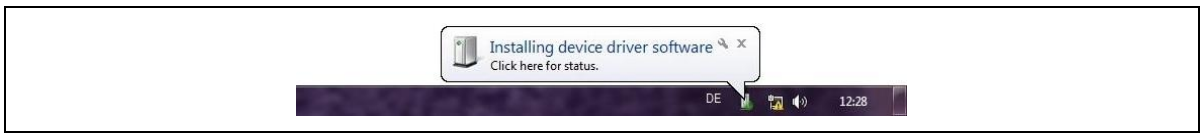
2.1. Installing the Basic USB Driver

Use the following steps to install the USB driver:

Step 1: Close all programs currently running and disconnect all FTDI parts connected via USB.

Step 2: Connect the CB using the USB cable included with the IDT Evaluation Kit.

Figure 2.2 "New Hardware Found" Message



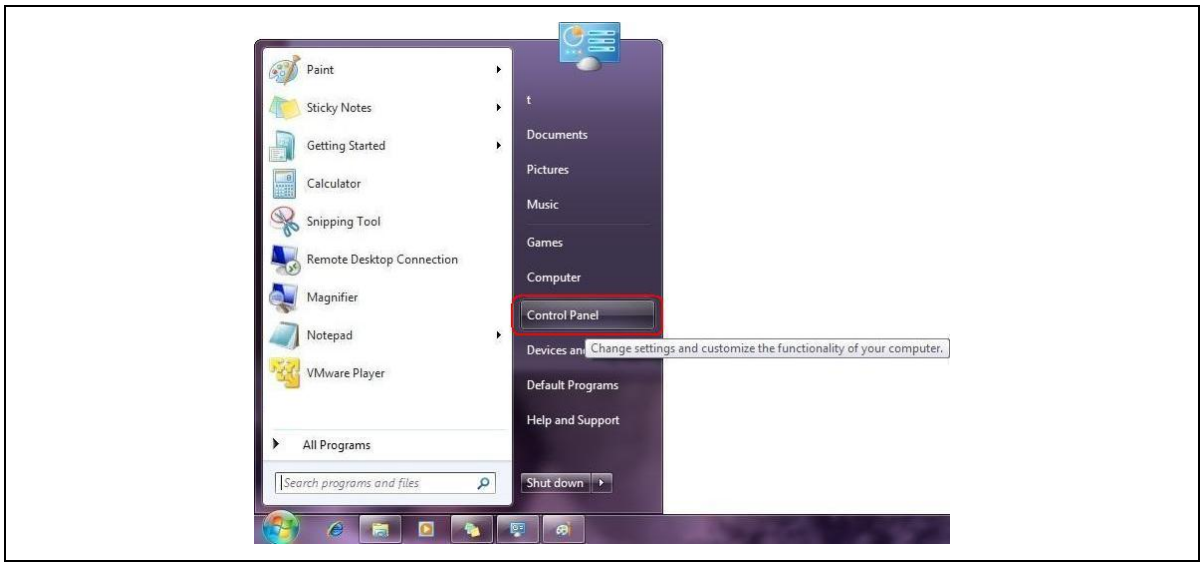
[1] http://www.idt.com/SSC-COMM-BD

Step 3: Because IDT's USB driver is not WHQL-certified, Windows will not be able to detect the device automatically.

Figure 2.3 "Installation Failed" Message

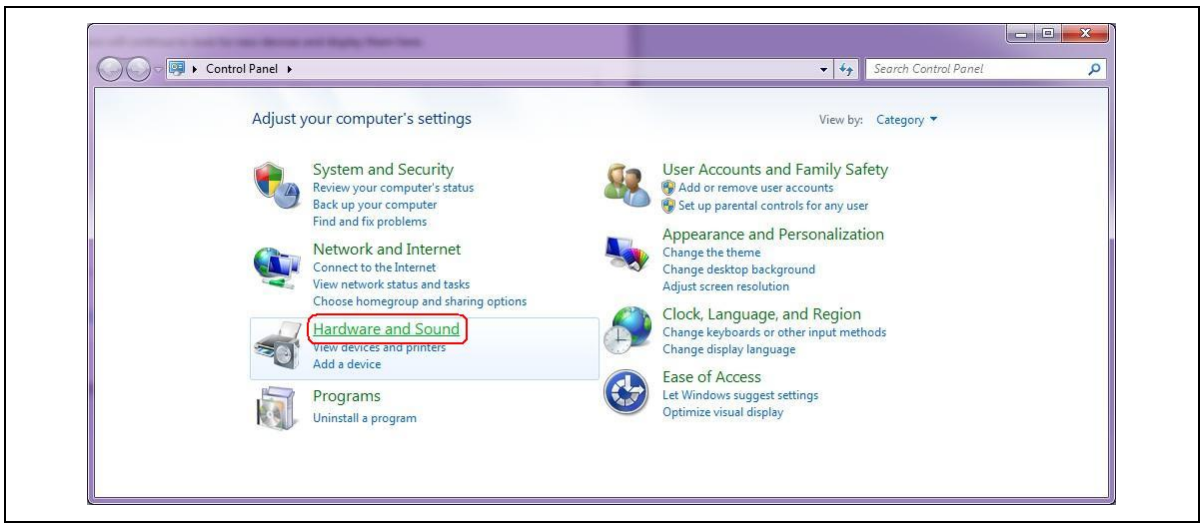
Step 4: Open the "Control Panel" menu.

Figure 2.4 Control Panel



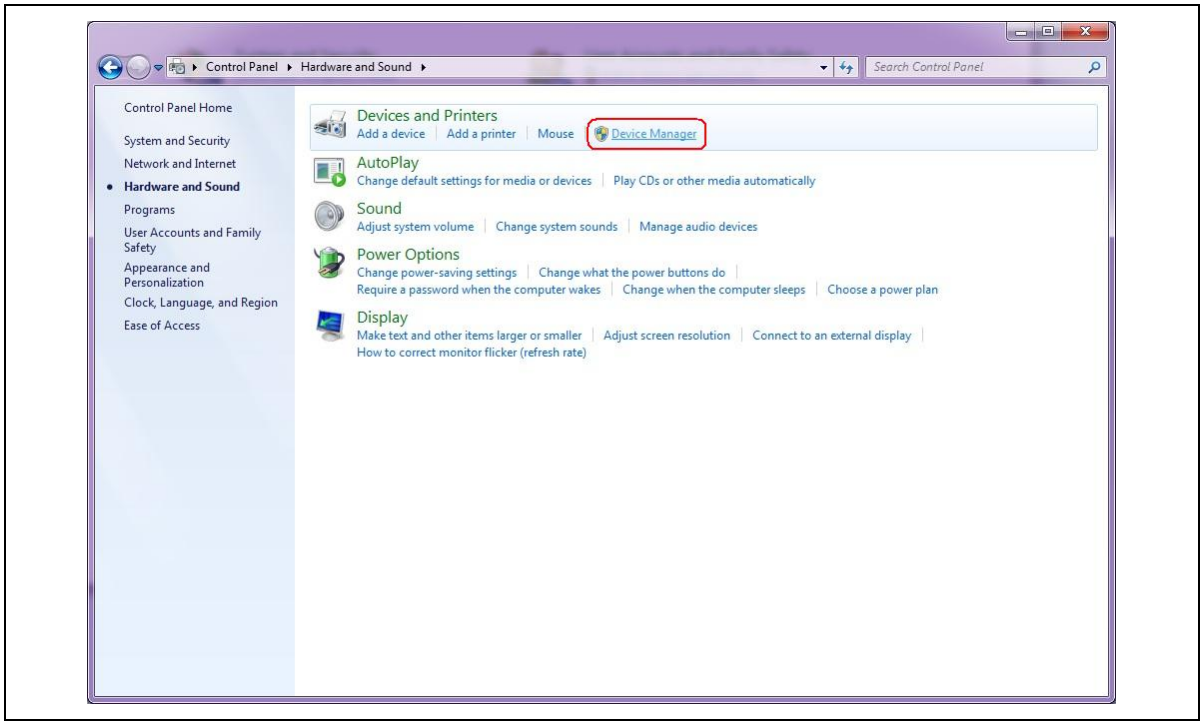
Step 5: Open the "Hardware and Sound" menu.

Figure 2.5 "Hardware and Sound" Menu



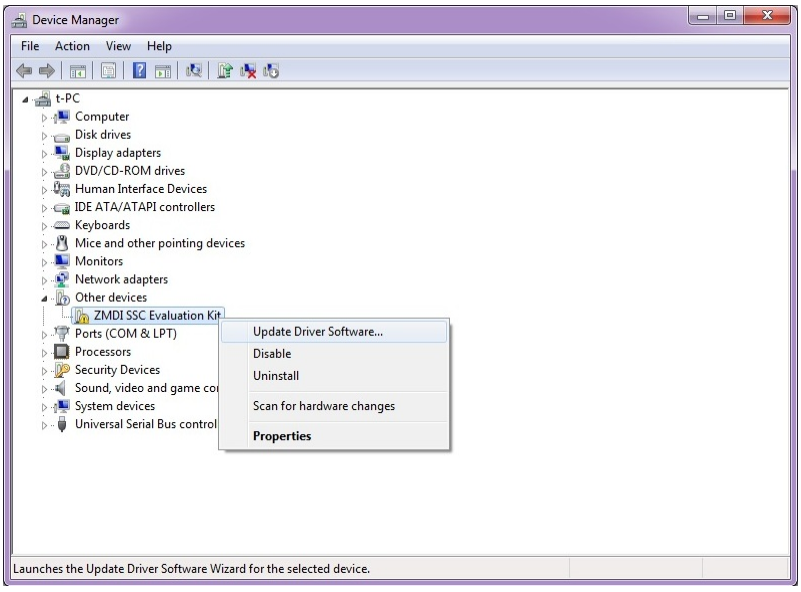
Step 6: Open the “Device Manager” menu.

Figure 2.6 Device Manager



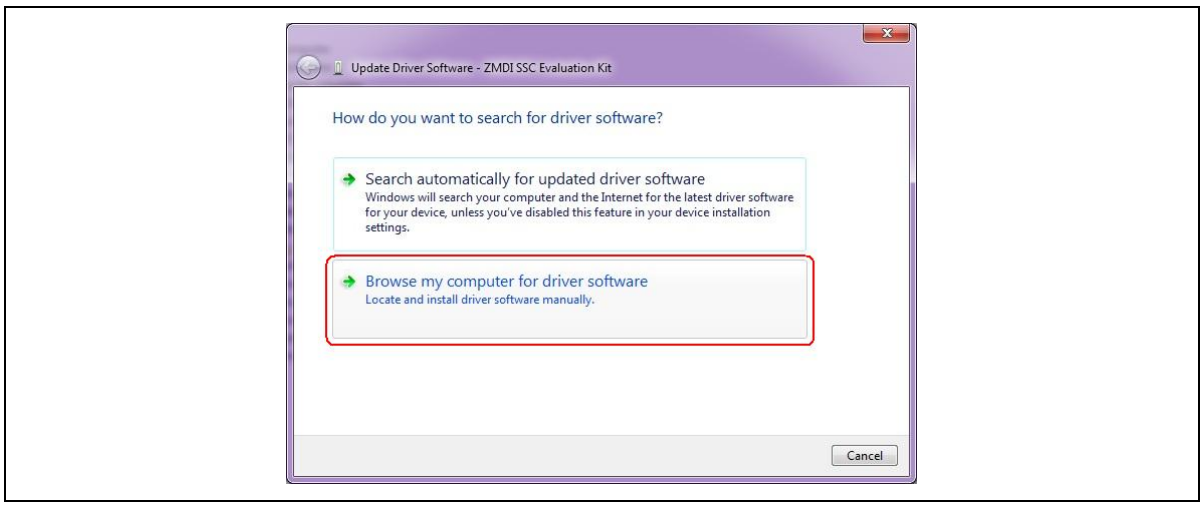
Step 7: Open “Other devices,” which will include the “ZMDI SSC Evaluation Kit.” Right-click on “ZMDI SSC Evaluation Kit” to open the context menu and select “Update Driver Software.”

Figure 2.7 “Update Driver Software”



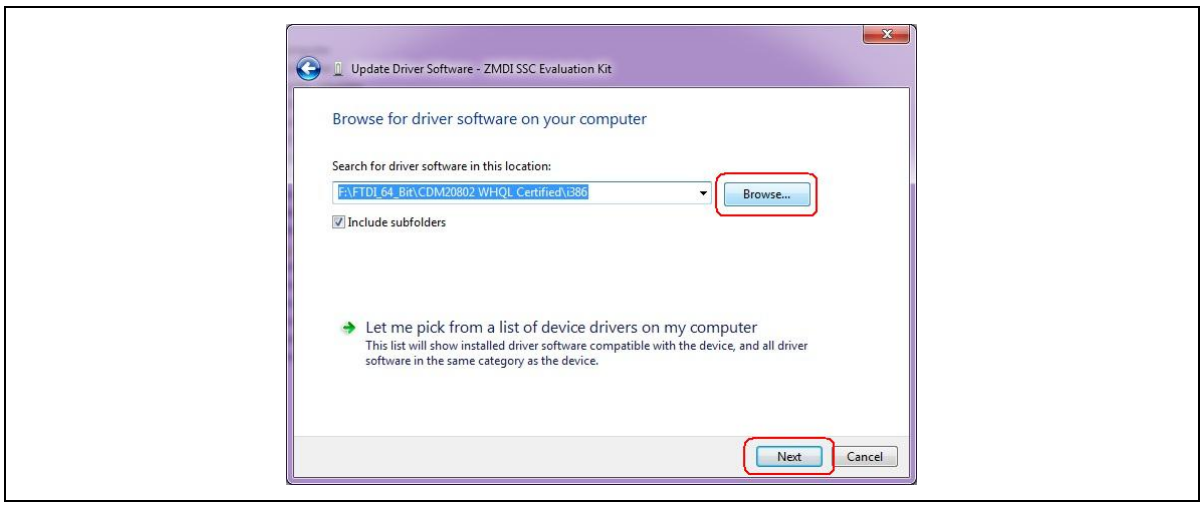
Step 8: Select “Browse my computer for driver software” in the next menu.

Figure 2.8 Search for Driver



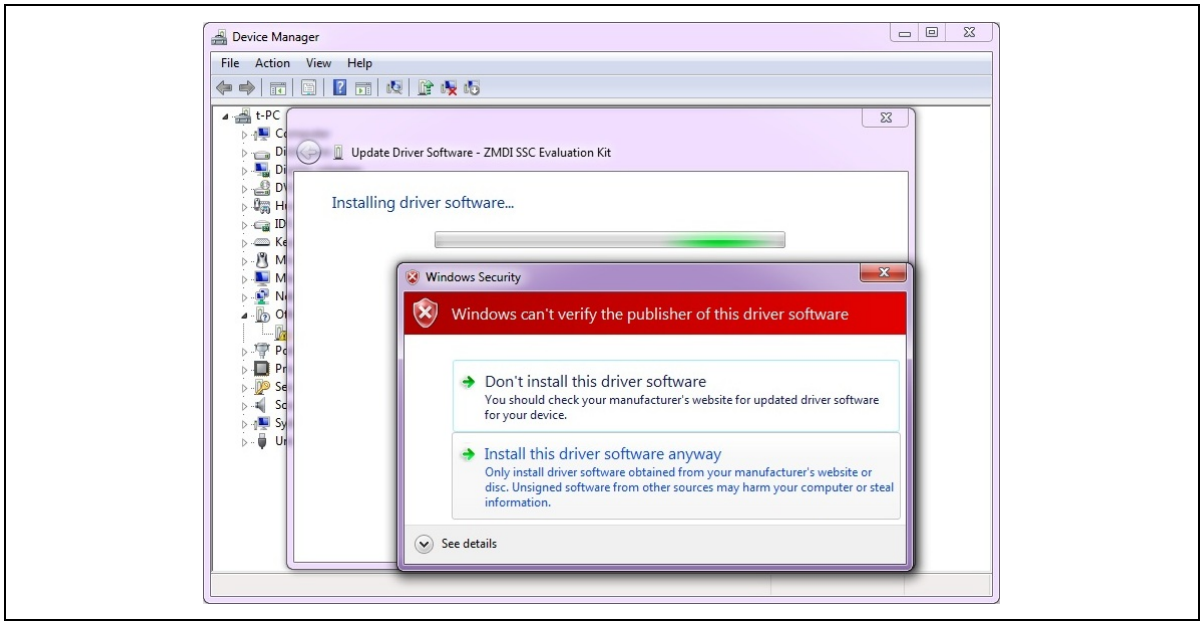
Step 9: Select the location where IDT’s driver has been stored, browsing as needed to select either the DVD drive or the directory where the USB driver from IDT’s website was stored. When the correct driver is selected, click “Next.”

Figure 2.9 Browse for IDT’s USB Driver



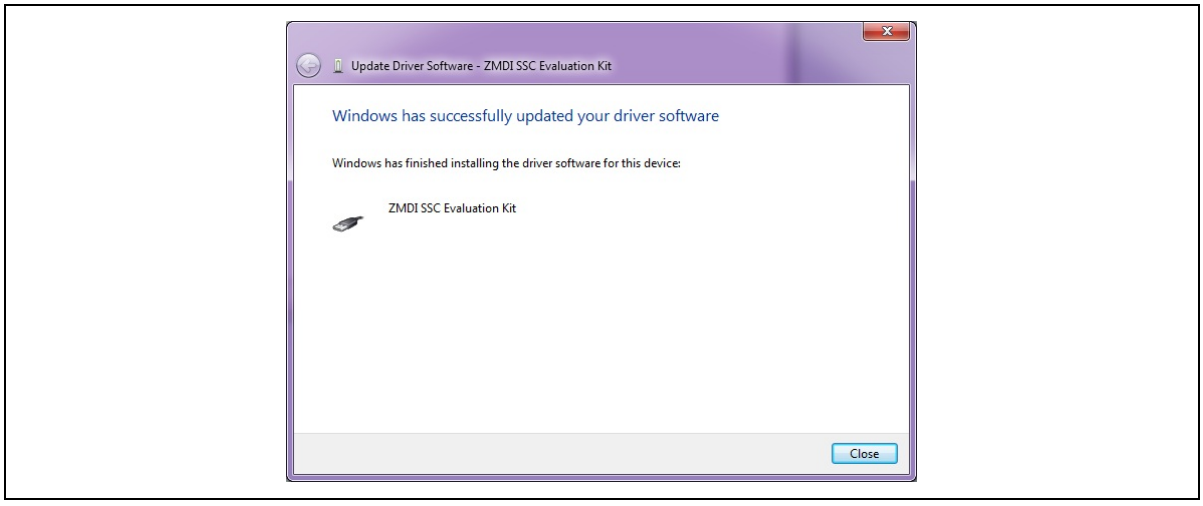
Step 10: Because IDT's USB driver is not WHQL-certified, a Windows® security message will occur. Select "Install this driver software anyway," and the driver installation process will move on.

Figure 2.10 Windows® Security Message



Step 11: The first part of the driver installation has been successfully completed if the message shown in Figure 2.11 appears. The next steps explain the steps for installation of the virtual COM port that is used for communication. This window can be closed.

Figure 2.11 Successful Hardware Installation



2.2. Installing the Virtual Com Port USB Driver

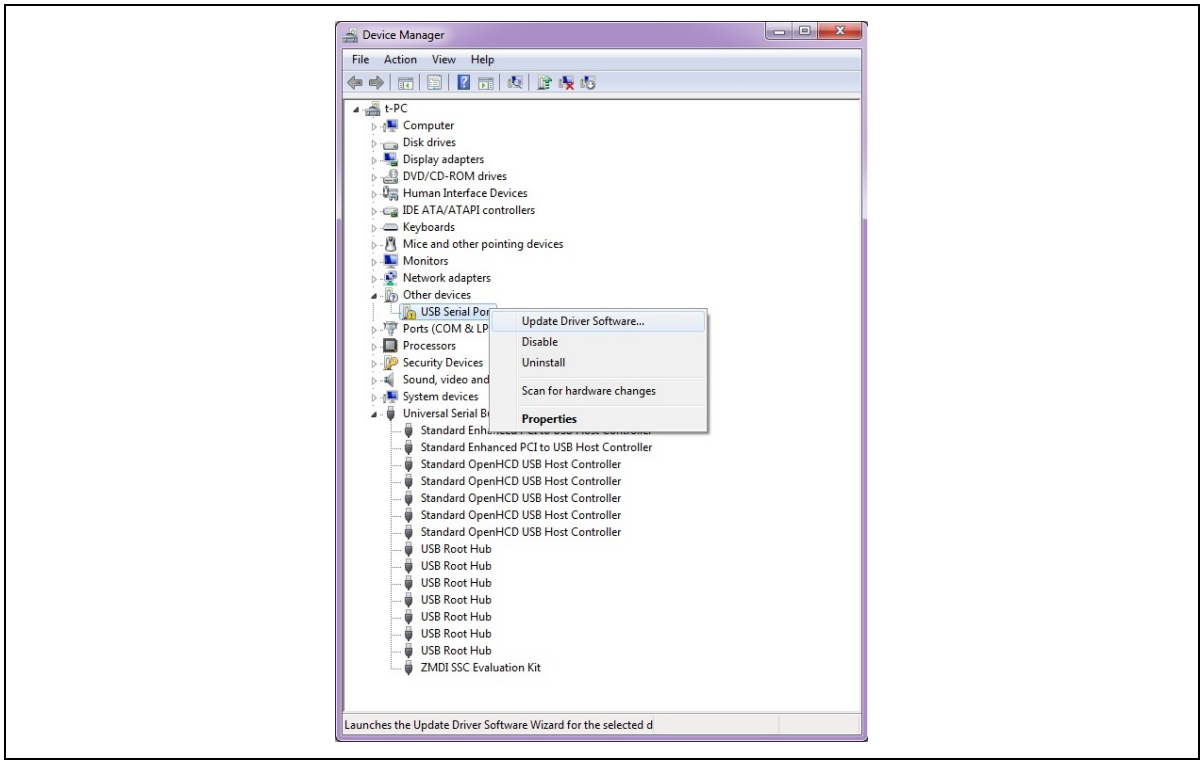
The following steps are needed to install the second part of the USB driver that will establish communication between the PC and the CB using the virtual COM port. The USB driver will causes the USB device to appear to the system as a virtual COM port. The steps are similar to them under Installing the Basic USB Driver.

Use the following steps to install the USB driver:

Step 1: The following steps are needed to establish communication between the PC and the CB using the virtual COM port. The Device Manager will have changed because the “ZMDI SSC Evaluation Kit” will now be listed under “Universal Serial Bus.” Under “Other devices,” locate “USB Serial Port.”

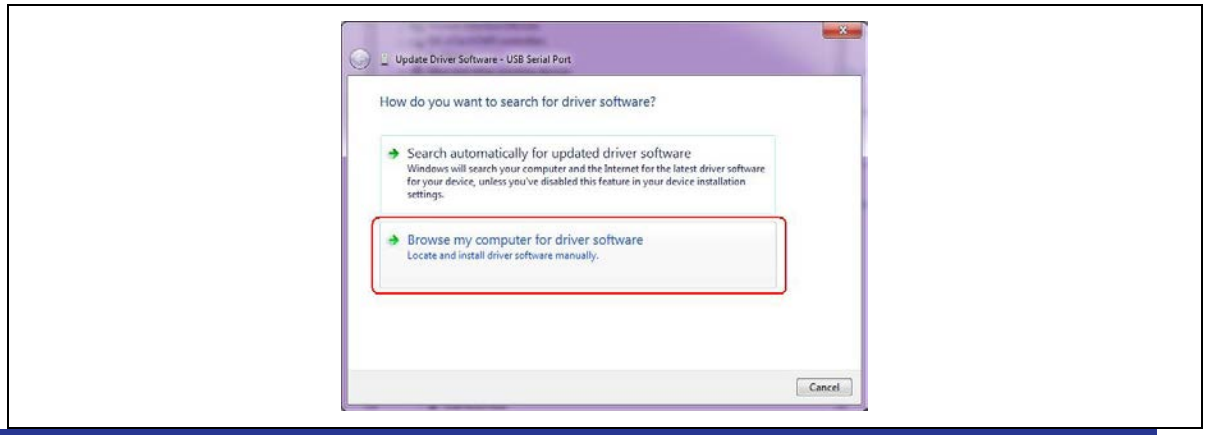
Right-click on “USB Serial Port” and open the “Update Driver Software” menu.

Figure 2.12 “Update Driver Software”



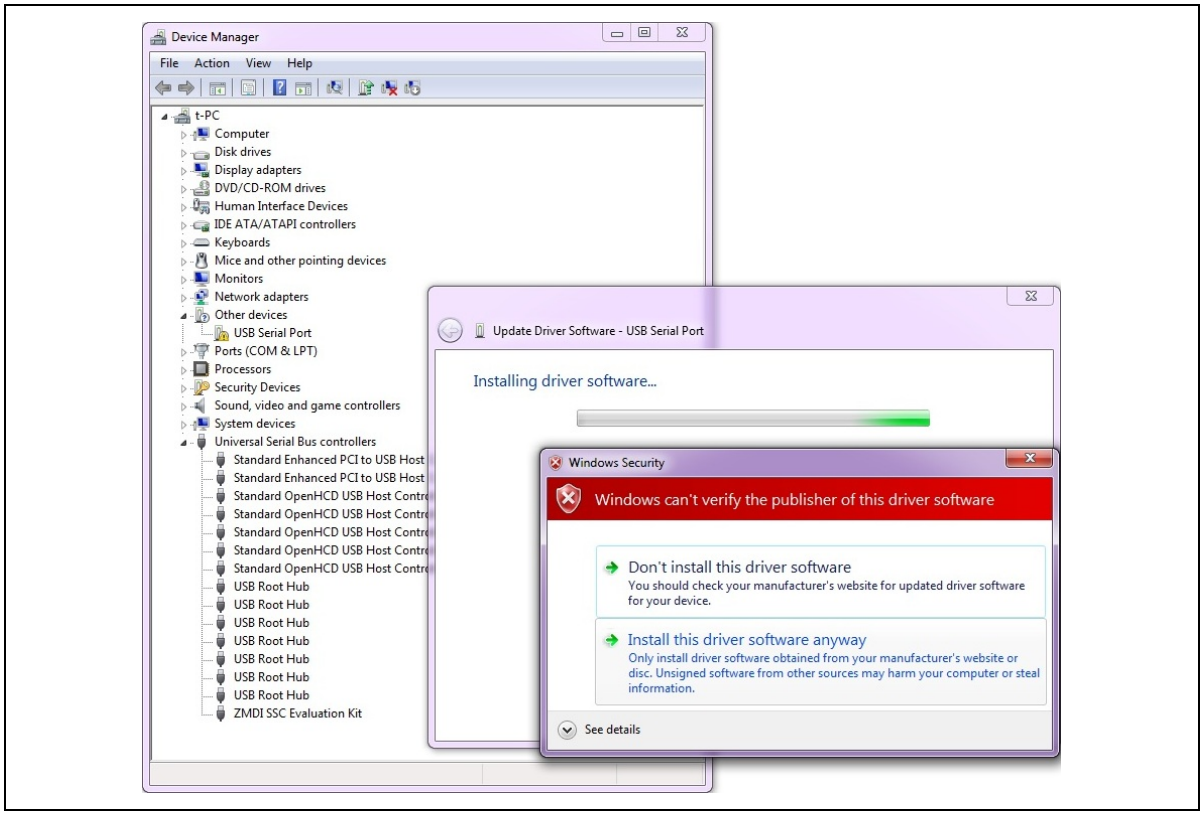
Step 2: Select “Browse my computer for driver software” in the next menu.

Figure 2.13 Search for the Driver



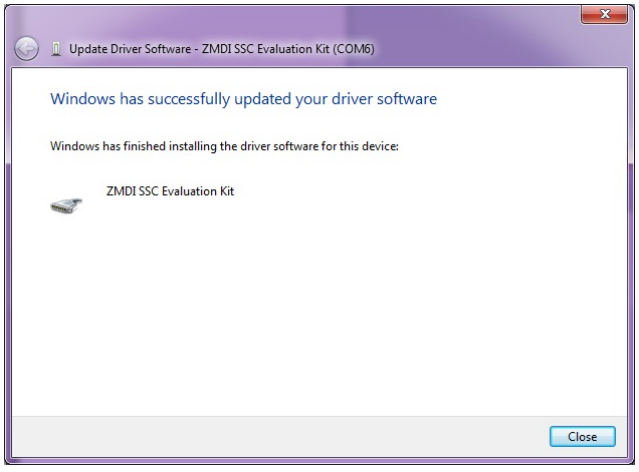
Step 3: Because this part of IDT's USB driver is also not WHQL-certified, a Windows® security message will occur again. Select "Install this driver software anyway," and the driver installation process will move on.

Figure 2.14 Windows Security Message



Step 4: The second part of the USB driver installation has been successfully completed if the message shown in Figure 2.15 appears. This window can be closed.

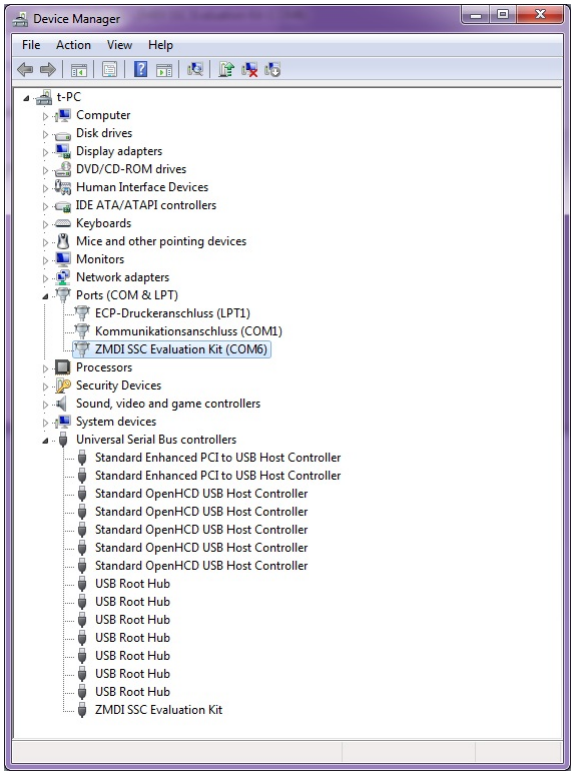
Figure 2.15 Successful Hardware Installation



2.3. Checking USB Port Operation

The Device Manager will have changed again because both drivers are successfully installed. The Device Manager can be used to detect the number of the virtual COM port used for communication between the PC and SSC CB.

Figure 2.16 Contents of the Device Manager after Successful Installation



The successful installation of both IDT's and FTDI's default USB driver is necessary to run any IDT SSC Evaluation Software or establish communication with the CB. Using a virtual COM port from 1 to 8 is recommended because it is guaranteed that all IDT software will be able to detect the CB in this range.

3 USB Driver Installation for a WIN XP Operating Systems

This section describes the procedure for USB driver installation using IDT's USB driver from IDT's website or the SSC Evaluation Software DVD and a PC system with WIN XP OS. Before starting the installation procedure, check IDT's website for the latest USB driver version.[1]

Important: System administrator rights are required to install the USB driver on your PC!

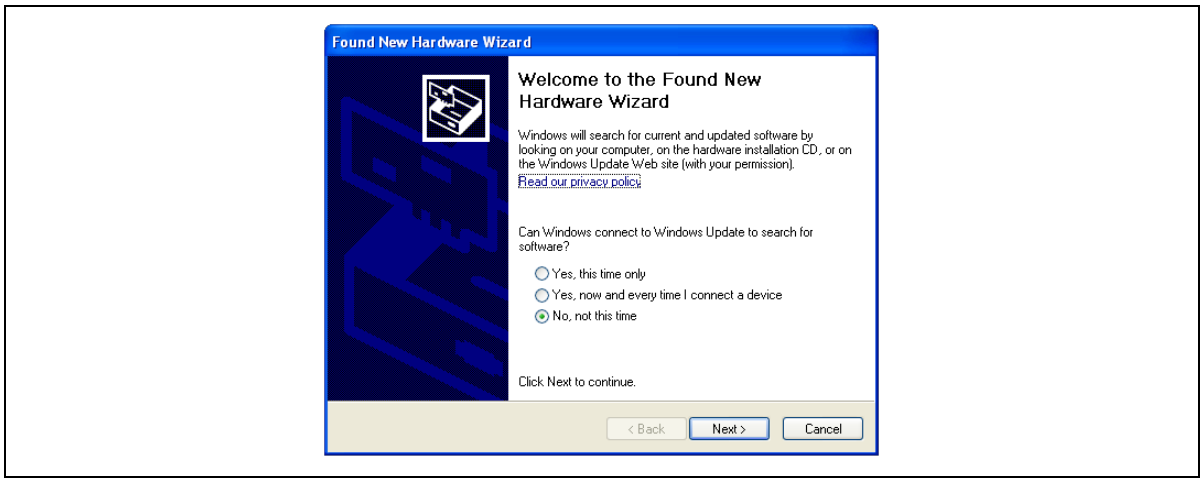
3.1. Installing the Basic USB Driver

Use the following steps to install the USB driver:

Step 1: Close all programs currently running and disconnect all FTDI parts connected via USB.

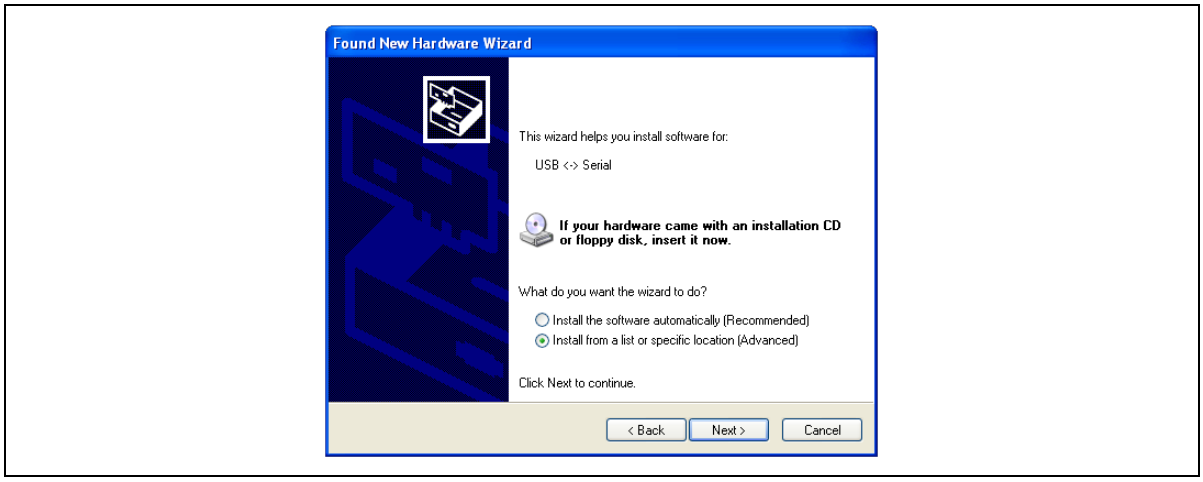
Step 2: The "Found New Hardware" wizard launches and brings up the following dialog box. Select "No, not this time," and click "Next."

Figure 3.1 Found New Hardware Wizard – Welcome Window



Step 3: Select "Install from a list or specific location (Advanced)." Click "Next."

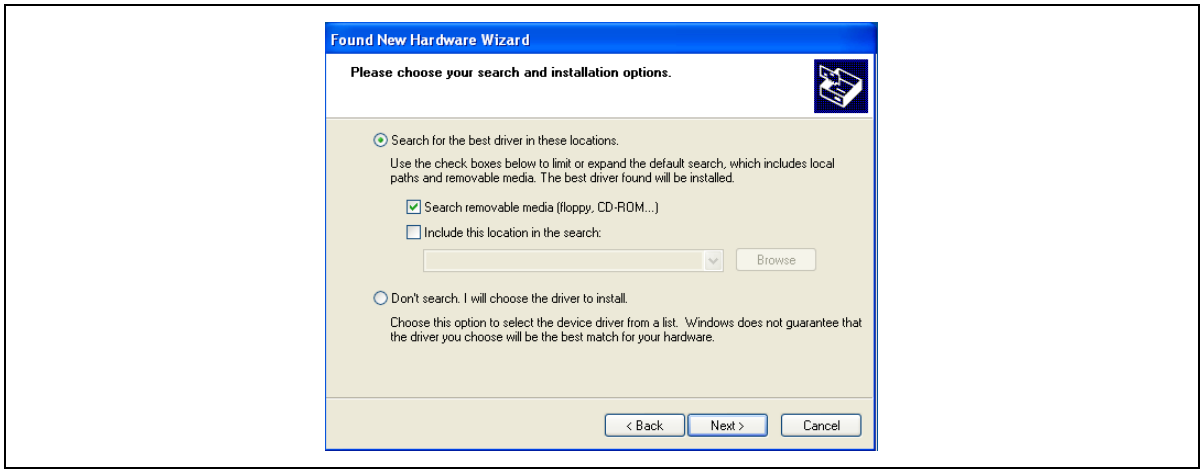
Figure 3.2 Select USB Driver



[1] http://www.idt.com/SSC-COMM-BD

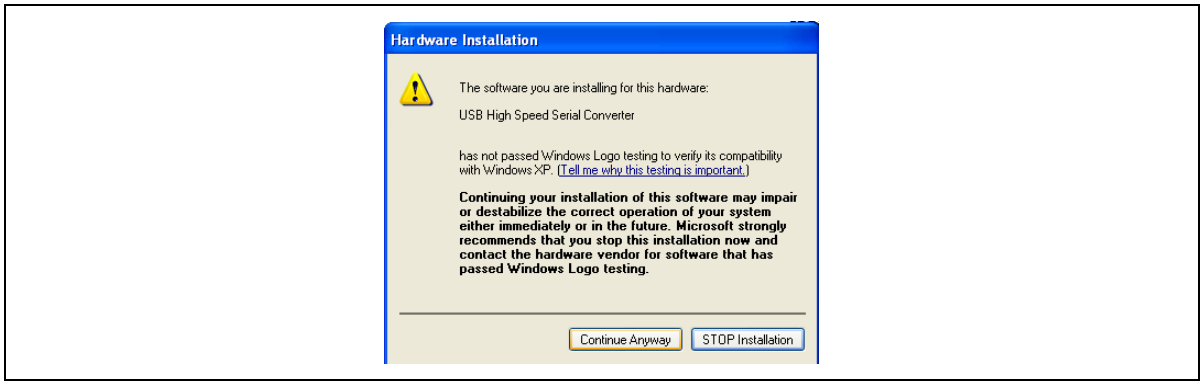
Step 4: Select “Search removable media (floppy, CD-ROM),” and click “Next.”

Figure 3.3 Search for USB Driver



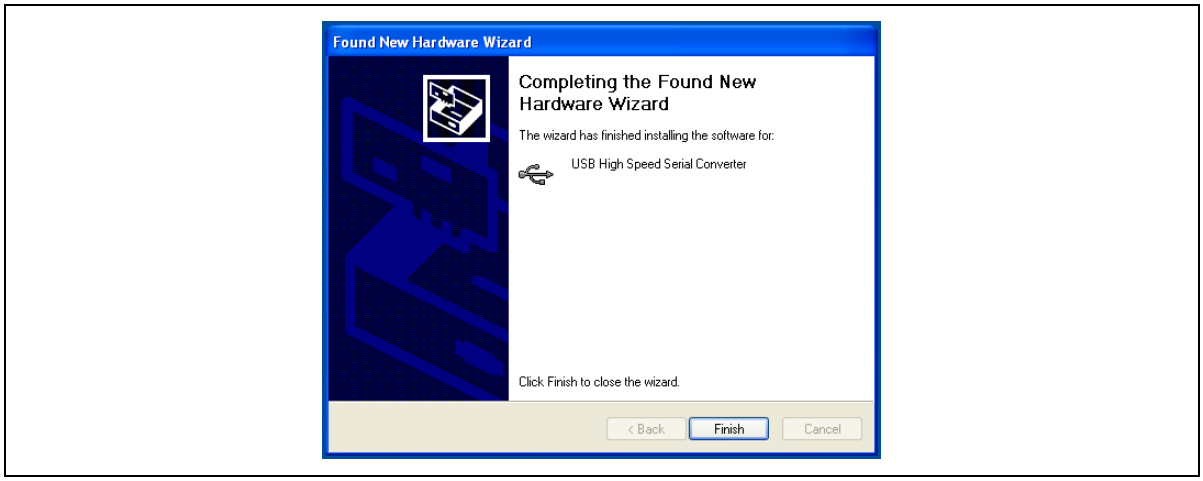
Step 5: When the warning about failing logo testing appears, click “Continue Anyway” because this concern is not applicable.

Figure 3.4 Windows® XP – Logo Test



Step 6: Finish the driver installation by clicking “Finish.”

Figure 3.5 Successful Hardware Installation

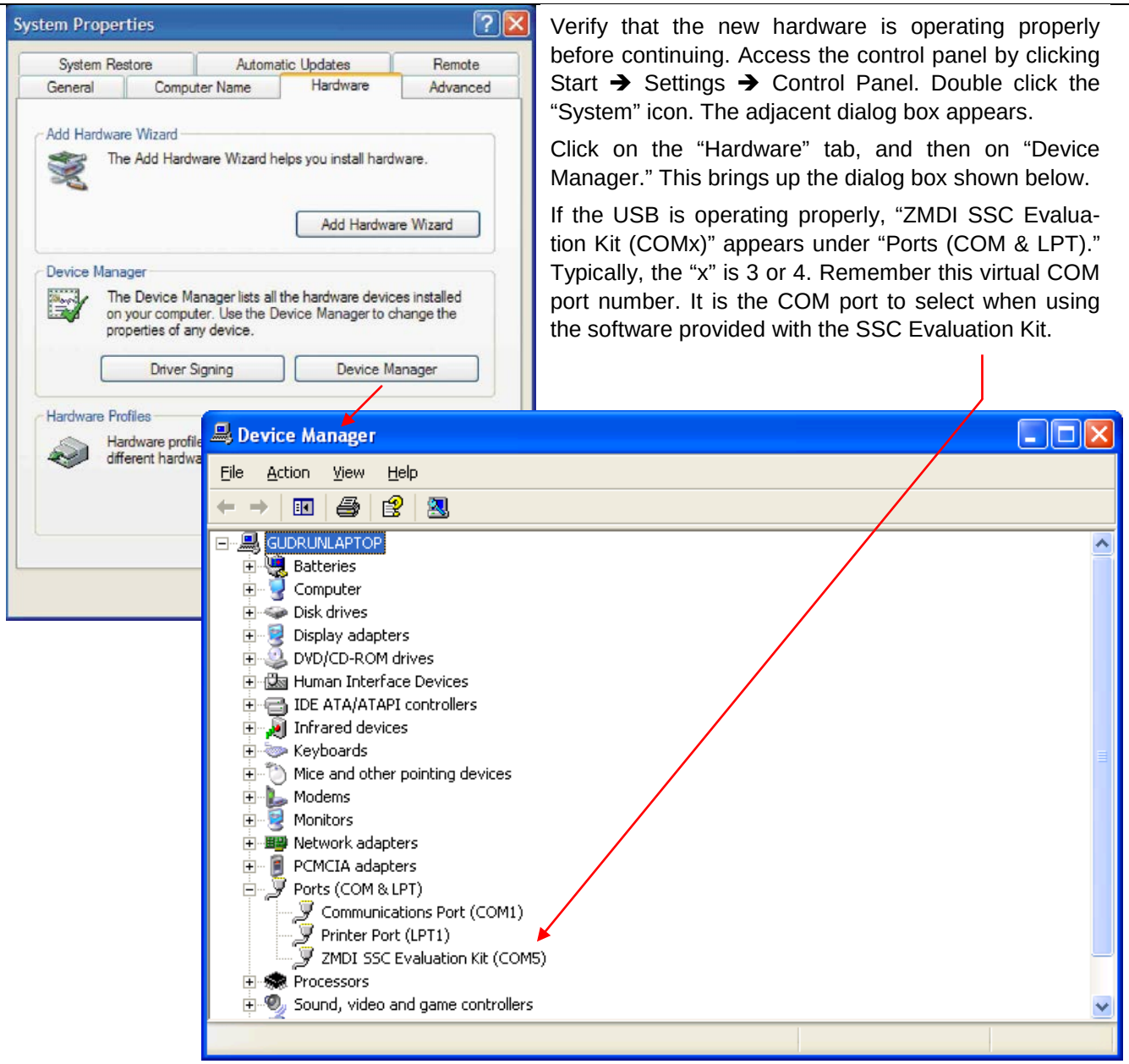


3.2. Installing the Virtual Com Port USB Driver

The second required USB driver causes the USB device to appear to the system as a virtual COM port. Follow the same steps as outlined under Installing the Basic USB Driver above to complete this second driver installation.

3.3. Checking USB Port Operation

Figure 3.6 Successful Hardware Installation



Verify that the new hardware is operating properly before continuing. Access the control panel by clicking Start ➔ Settings ➔ Control Panel. Double click the "System" icon. The adjacent dialog box appears.

Click on the "Hardware" tab, and then on "Device Manager." This brings up the dialog box shown below.

If the USB is operating properly, "ZMDI SSC Evaluation Kit (COMx)" appears under "Ports (COM & LPT)." Typically, the "x" is 3 or 4. Remember this virtual COM port number. It is the COM port to select when using the software provided with the SSC Evaluation Kit.

4 Changing the Product ID of the SSC Communication Board V3.3

This section describes the procedure for changing the Product ID (PID) of the CB. This is only needed if the message shown in Figure 2.10 and Figure 2.14 should be prevented and the default FTDI driver should be used. This can be the case if the security requirements of the user's IT department do not allow using non-WHQL-certified drivers.

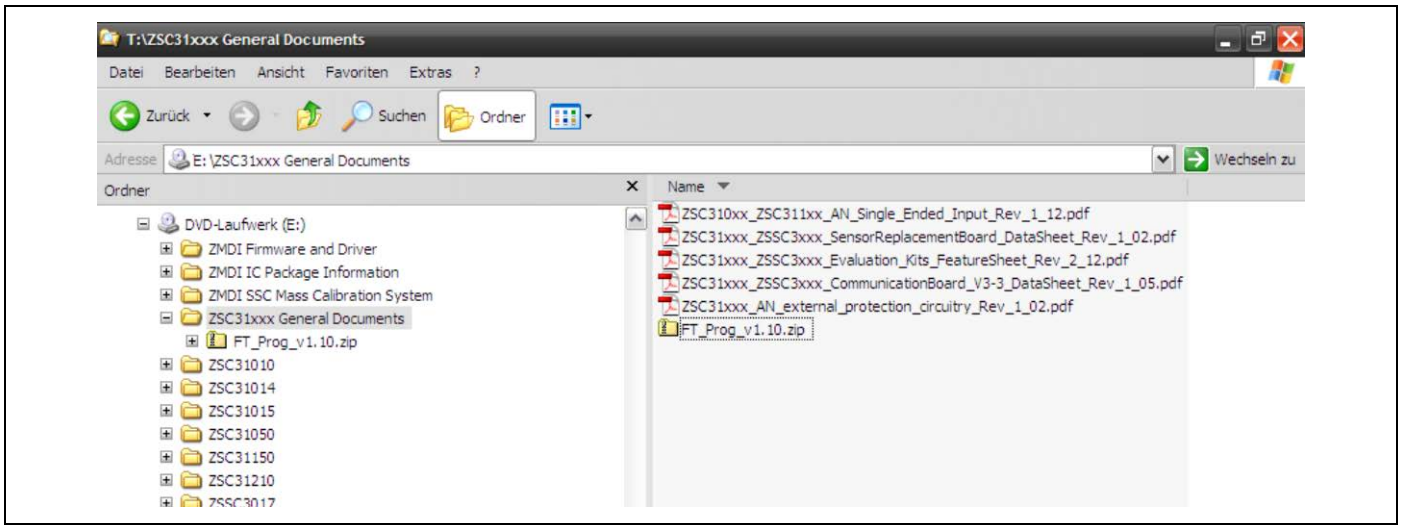
4.1. FT_Prog Tool for Changing the PID

FT_PROG, a tool from FTDI, can be used to change the PID of the CB. Version 1.10 of this tool can be downloaded from FTDI's website [1] or found on the DVD of IDT's SSC Evaluation Kit or Mass Calibration System. This tool does not require an installation process, and it is only necessary to unzip the file.

Note: Reprogramming the PID requires an installed USB driver. Otherwise the FT_PROG tool is not able to detect the SSC CB!

Note: FT_PROG requires Microsoft .NET Framework 2.0 installed on the user's system. [2]

Figure 4.1 Location of FT_Prog_v1.10.zip on the SSC Evaluation Software DVD



[1] http://www.ftdichip.com/Support/Utilities.htm (Use the search function of the browser and look for FT_PROG.)
[2] Microsoft .NET Framework 2.0 can be downloaded from the Microsoft website: http://www.microsoft.com/downloads/details.aspx?FamilyID=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en

4.2. Procedure for Changing the PID

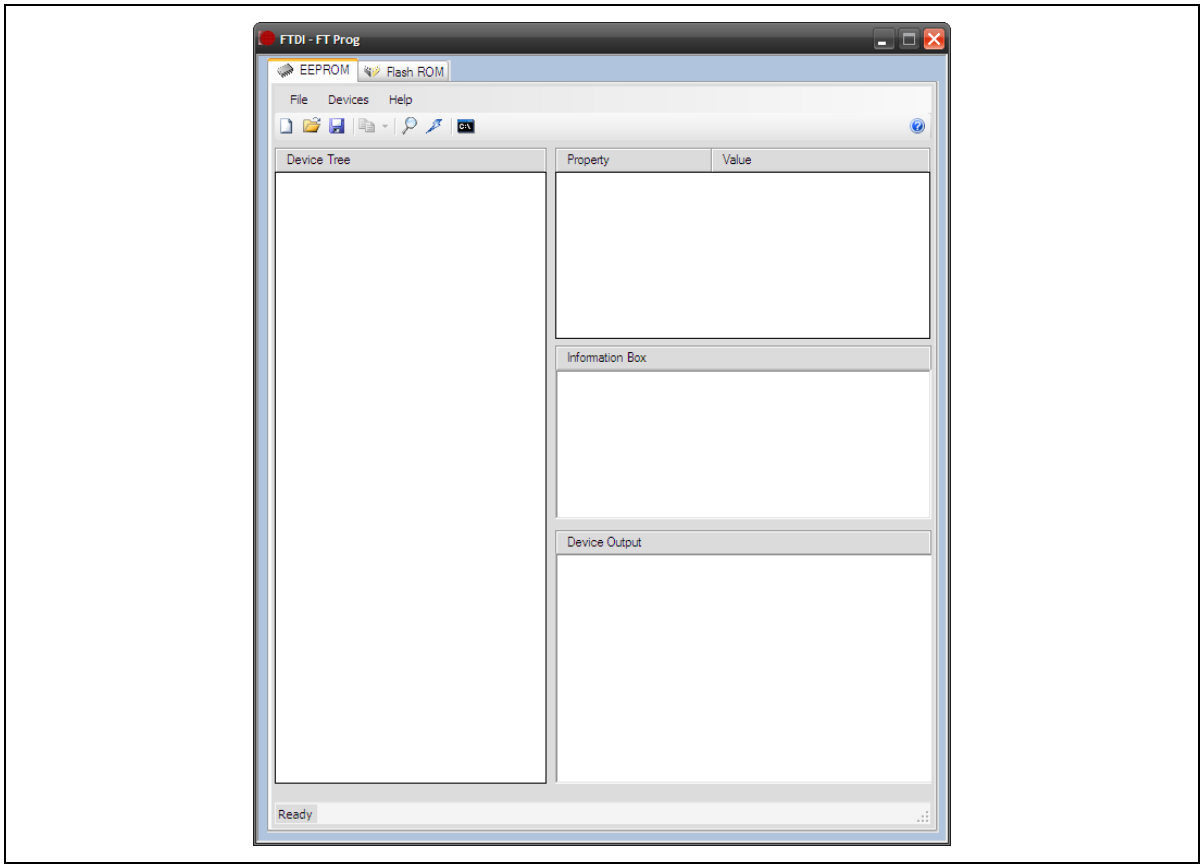
Use the following steps for reprogramming the PID. (Screenshots were recorded with Windows XP 32 bit.)

Step 1: Unzip *FT_Prog_v1.10.zip* from the SSC Evaluation Kit or Mass Calibration System DVD (or the file from FTDI's website).

Step 2: Disconnect the CB (and all other USB devices) from the PC.

Step 3: Start *FT_PROG.exe*. [1]

Figure 4.2 Main Window of FT_PROG Revision 1.10

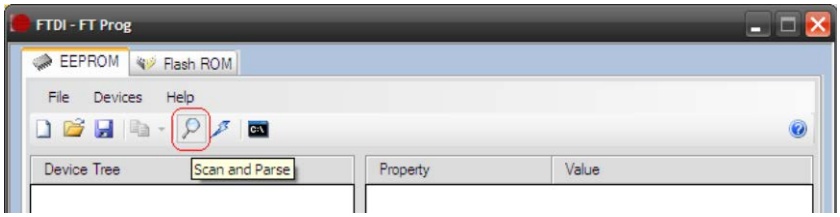


Step 4: Connect the CB and PC via the USB cable included with the IDT Evaluation Kit.

Step 5: Find the connected CB by clicking the "Scan and Parse" button (magnifying glass icon), which should be marked with a red outline.

[1] It can happen that the main window of the program does not show up very quickly. Please check the Task Manager before starting the program multiple times!

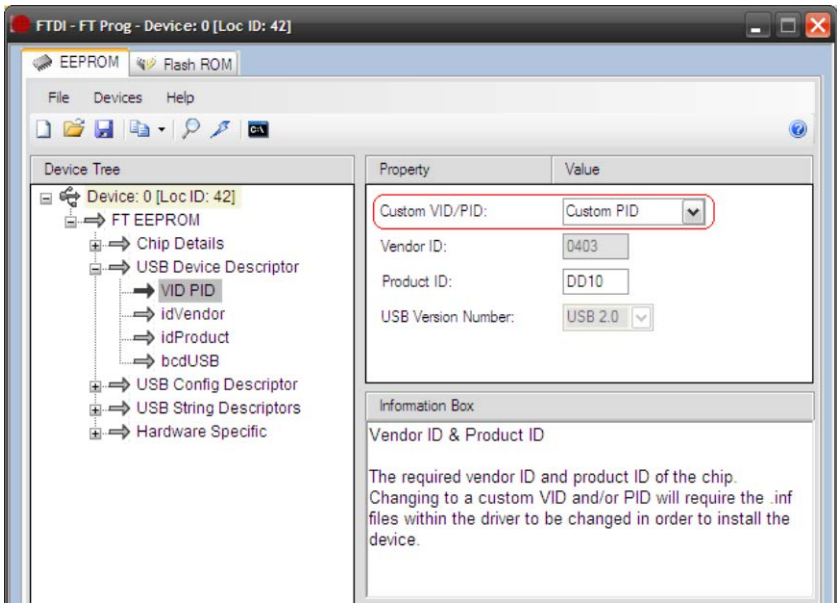
Figure 4.3 Searching for the Connected SSC Communication Board



Step 6: Extend “USB Device Descriptor” and select “VID PID.”

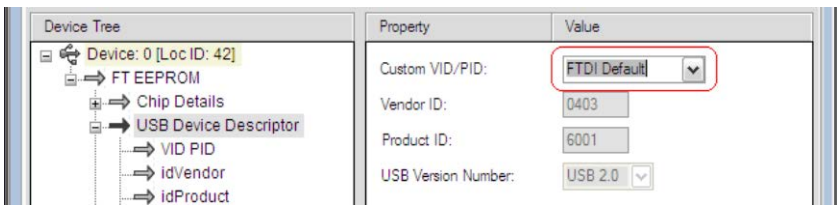
Note: If the user’s device uses “FTDI default” as the value for “Custom VID PID,” it is not necessary to change settings at the FTDI device and the SSC is ready to use FTDI’s certified USB driver.[1]

Figure 4.4 SSC Communication Board with IDT Product ID Detected



Step 7: Change the value for “Custom VID/PID” to “FTDI default.” The input boxes for “Vendor ID” and “Product ID” are disabled.

Figure 4.5 Changes Required for 64-Bit OS



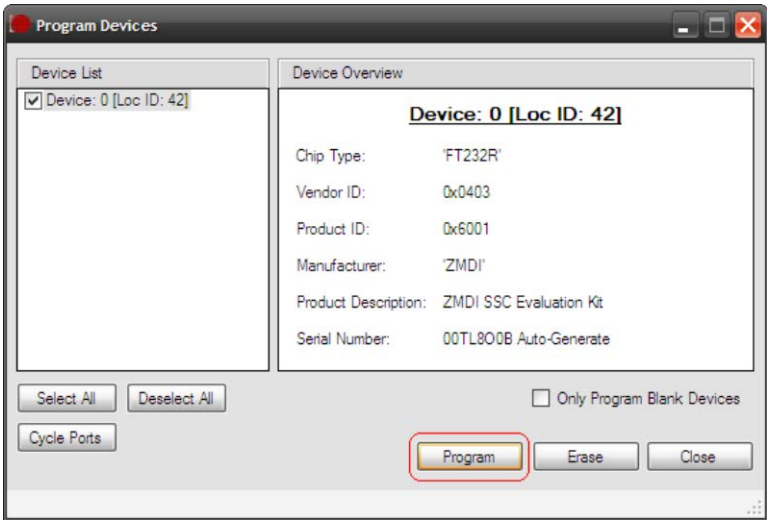
Step 8: Click on the “Program Devices” button to open the programming menu.

[1] Since no settings need to be changed, the program can be closed without any change on FTDI’s device.

Figure 4.6 "Program Devices" Button

Step 9: Start the programming procedure by clicking on the "Program" button.

Figure 4.7 Start Programming Procedure



Step 10: Reprogramming is complete when "Finished Programming" appears.

Figure 4.8 Programming Finished

Now the SSC Communication Board V3.3 is ready to use the original WHQL-certified USB driver from FTDI and FT_Prog can be closed. Disconnect and then reconnect the CB to the PC so that Windows® will use the new PID.

5 Related Documents

Document
SSC Communication Board Datasheet

Visit IDT's website http://www.idt.com/SSC-COMM-BD or contact your nearest sales office for the latest version of these documents.

6 Glossary

Term	Description
CB	Communication Board
OS	Operating System
PID	Product ID
SSC	Sensor Signal Conditioner
VID	Vendor ID
WHQL	Microsoft's Windows Hardware Quality Labs

7 Document Revision History

Revision	Date	Description
1.00	November 18, 2010	First release of document.
1.01	November 25, 2010	Add section "USB Driver Installation" Remove all hints related to 64bit OS in "PID description" rename AN to "Installation of USB driver" because the AN describes complete characteristics of ZMDI's USB driver (previous name: "Change PID")
1.02	June 8, 2011	Revision of company name references from ZMD to ZMDI. Minor edits. Add section "USB Driver Installation for a WIN XP Operating Systems"
	April 20, 2016	Changed to IDT branding.

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