TEDIA USB converters UC-232 and UC-485
(description of the converters and the Windows driver)

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1. Introduction

This manual describes the USB converters TEDIA UC-232 and UC-485 including the installation and uninstallation instructions for the Windows system driver, which is necessary for the converters proper function.

TEDIA USB converters have unique serial numbers (necessary for the concurrent installation of more than one converter). This requires to install the system driver for the first time a converter with a unique serial number is connected to your PC regardless of whether a converter of the same type (but of a different serial number) has previously been connected to the computer. When reconnecting the converter with the same serial number, the driver is no longer installed, even if the converter is connected to another USB port.

The driver type: CDM driver FTDI Ltd., modified to be suitable for the TEDIA USB converters.

Supported operating systems:
- Windows XP [1], Windows XP x64 [1]
- Windows Vista, Windows Vista x64
- Windows 7, Windows 7 x64
- Windows 8, Windows 8 x64
- Windows 10, Windows 10 x64
- Windows Server 2003 [1], Server 2003 x64 [1]
- Windows Server 2008 , Server 2008 x64
- Windows Server 2008-R2
- Windows Server 2012
- Windows Server 2012-R2

Note [1]: *The current driver version 2.12.28 is no longer compatible with the highlighted operating systems, but the previous version 2.08.28 can be used.*
Operating system Windows Server 2016 is not supported.

The latest driver supports the following USB converters:
- UC-232 (USB VID =A600, USB PID=E410)
- UC-485 (USB VID =A600, USB PID=E411)

See https://www.tedia.eu/uc for the latest information about the drivers and USB converters.

2. UC-232 Converter

TEDIA UC-232 converter is a tiny isolated converter intended for expanding the number of RS-232 COM ports using the PC USB peripheral.

The RS-232 circuits are isolated from the USB port; modern circuits providing high tolerance against inductive overvoltage have been used for the design.

The converters provide two LED indicators; TXD indicates the data are being transmitted (from PC to the RS-232), while RXD indicates the data are being received (from the RS-232 to PC).

Connecting of the RS-232 signals (TXD, RXD, GND) is realised by a wire terminal allowing easy making and quick attaching of the line wires. See Fig. 1 or the converter label for the wiring diagram.

| Supported Signals	TXD, RXD
Transfer Rate	460 kBd max.
Isolation Voltage	2.5 kV$_{RMS}$
ESD Protection	8 kV (IEC 61000-4-2, contact discharge) 15 kV (IEC 61000-4-2, air discharge)
Additional Protection	TVS 12V/200W (5A, 8/20 µs pulse, IEC 61000-4-5)
LED Indicators	TXD and RXD
Supply Voltage	5 V (supplied from the PC USB port)
Current consumption	250 mA max.
Dimensions	66 x 20 x 12 mm (inc. terminals and USB connector)
Terminals	1 mm^2
USB controller	FT232R, USB 2.0 Full Speed compatible

Tab. 1. UC-232 Converter Specifications.
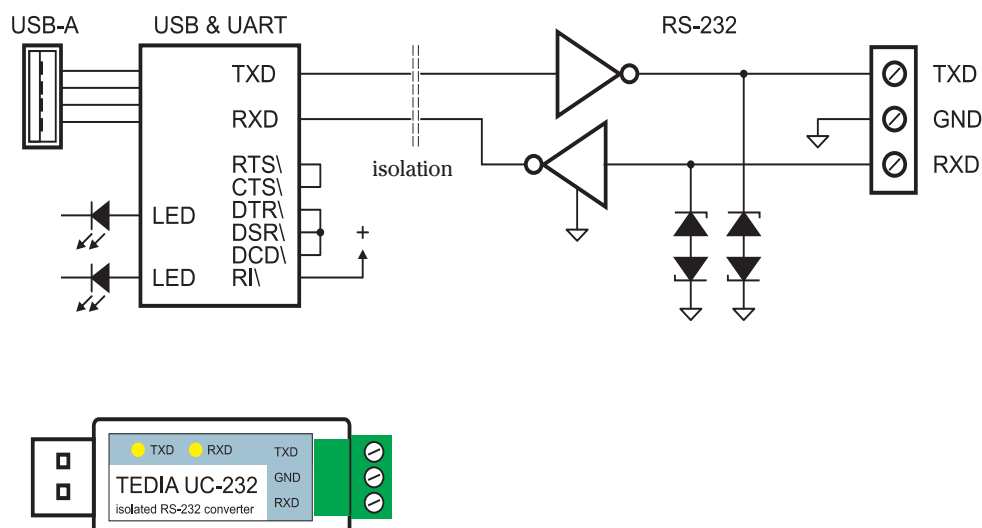
Fig. 1. UC-232 Internal Circuit Schematics.

3. UC-485 Converter

TEDIA UC-485 converter is a tiny isolated converter intended for expanding the number of RS-485 COM ports using the PC USB peripheral.

The RS-485 circuits are isolated from the USB port; modern circuits providing high tolerance against inductive overvoltage have been used for the design.

The converters provide two LED indicators; TXD indicates the data are being transmitted (from PC to the RS-485), while RXD indicates the data are being received (from the RS-485 to PC).

Connecting of the RS-485 signals (DATA-, DATA+, GND) is realised by a wire terminal allowing easy making and quick attaching of the line wires. See Fig. 2 or the converter label for the wiring diagram.

The converter provides the termination impedance which can be activated by the DIP switch (both segments ON; if both segments are OFF, the termination impedance is disconnected), see Fig. 2.

Supported signals	DATA+, DATA-
Terminating Impedance	120 Ohm, active topology
Transfer Rate	460 kBd max.
Isolation Voltage	2.5 kV$_{RMS}$
ESD Protection	8 kV (IEC 61000-4-2, contact discharge) 15 kV (IEC 61000-4-2, air discharge)
Additional Protection	TVS 5V/200W (20A, 8/20 µs pulse, IEC 61000-4-5)
LED Indicators	TXD a RXD
Supply Voltage	5 V (supplied from the PC USB port)
Current consumption	350 mA max.
Dimensions	66 x 20 x 12 mm (inc. terminals and USB connector)
Terminals	1 mm^2
USB controller	FT232R, USB 2.0 Full Speed compatible

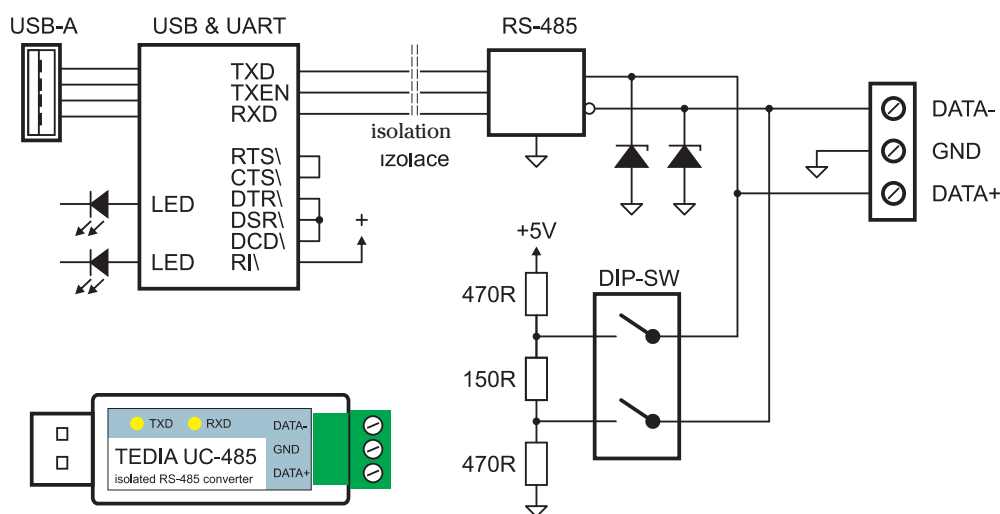*Tab. 2. UC-485 Converter Specifications.*

Fig. 2. UC-485 Internal Circuit Schematics.

4. Driver Installation (Windows XP, Windows Server 2003)

This chapter is intended to guide the reader through the process of installing the system driver for the Windows operating systems. The screenshots in this chapter are taken from Windows XP, the installation process for other listed OS is analogical, otherwise the differences are stated in text.

If you are running Windows XP SP 1, temporarily disconnect your PC from the Internet. This can be done by either removing the network cable from your PC or by disabling your network card by going to the „Control Panel\Network and Dial-Up Connections", right-clicking on the appropriate connection and selecting „Disable" from the menu. The connection can be re-enabled after the installation is complete. This is not necessary under Windows XP SP 2 if configured to ask before connecting to Windows Update. Windows XP SP 2 can have the settings for Windows Update changed through „Control Panel\System" then select the „Hardware" tab and click „Windows Update".

1)   Turn on the PC, log in as a user with administrator privileges and connect the device to a spare USB port on your PC.

Fig. 3. Found New Hardware Wizard.

2)   The Windows Found New Hardware Wizard will launch and the screen shown in Figure 3 is displayed. Select „No, not this time" from the options available and then click „Next" to proceed with the installation.

3)   Under Windows XP select „Install from a list or specific location (Advanced)" as shown in Figure 4, then click „Next".
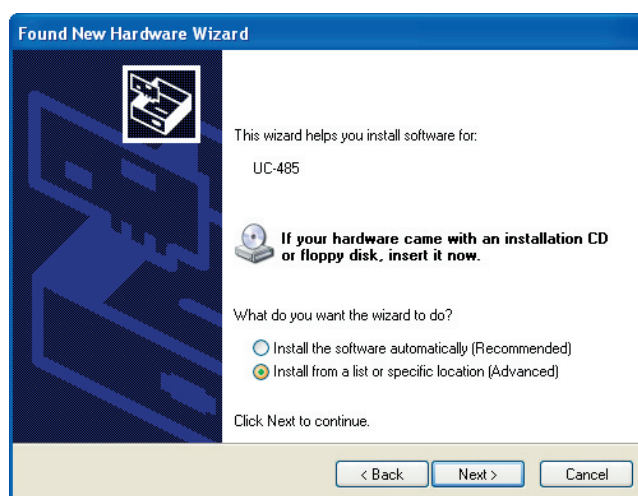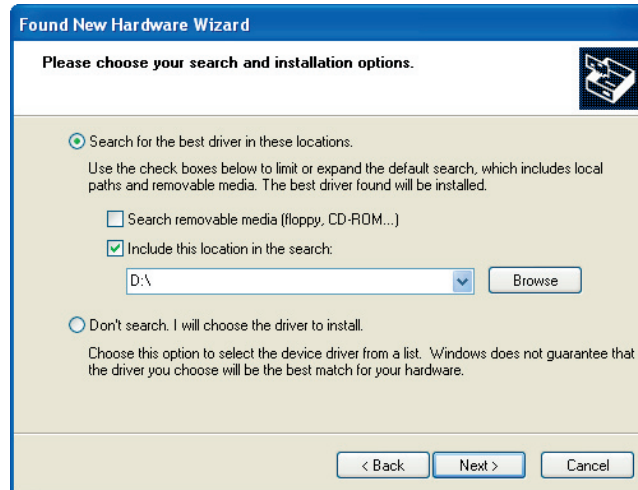

Fig. 4. Windows XP dialog box.

4) Insert the TEDIA InfoCD, or download the latest driver from https://www.tedia.eu/uc.

Select „Search for the best driver in these locations" and enter the file path in the combo-box (see Figure 5) or browse to it by clicking the browse button. Once the file path has been entered in the box, click next to proceed.

Fig. 5. Found New Hardware Wizard.

5) Due to the formal change of the orginal FTDI driver to be suitable for the TEDIA USB convertes (specific VID/PID), the supplied driver does not provide the Microsoft WHQL signature. However, it was digitally signed by TEDIA to ensure the user it has not been modified by a third party.

The Windows XP may be configured to warn when unsigned (non-WHQL certified) drivers are about to be installed (see Control Panel -> System -> Hardware -> Driver Signing Options; Figure 6), the message dialogue shown in Figure 7 will be displayed. Click on „Continue Anyway" to continue with the installation.
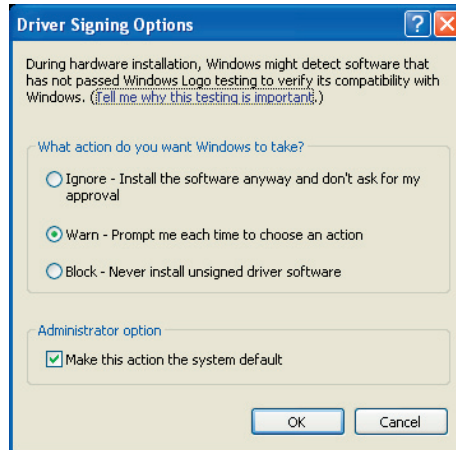

Fig. 6. Driver Signing Options.

If Windows XP is configured to ignore file signature warnings, no message will appear.
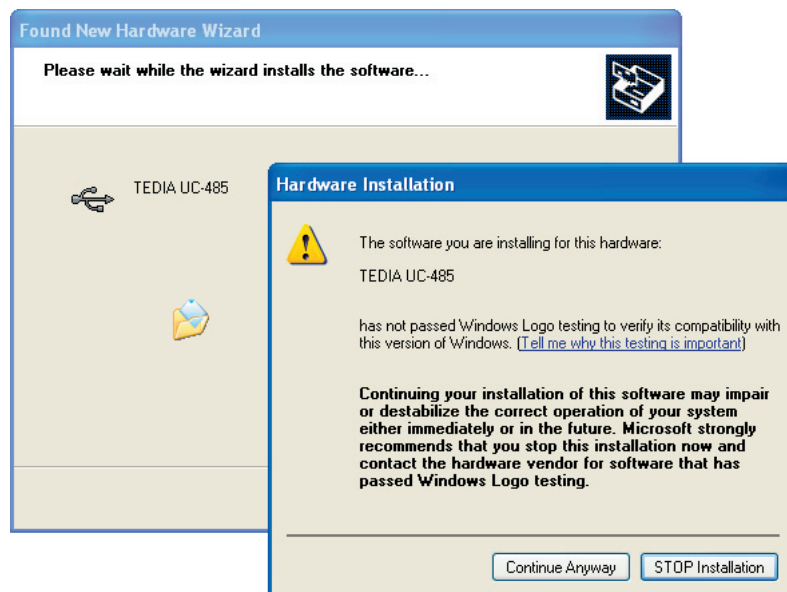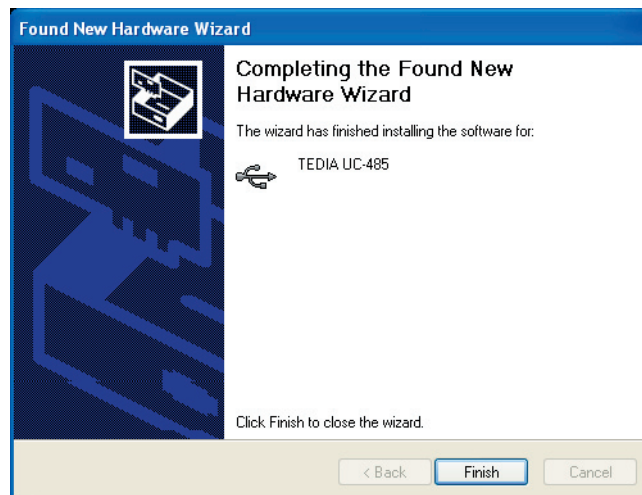

Fig. 7. Hardware installation Warning.

6)   After Windows XP copies the required driver files, Windows display a message indicating that the installation was successful (Figure 8). Click „Finish" to complete the installation.

Fig. 8. Successful driver installation.

7)   The next step is the installation of virtual COM port emulation drivers. The procedure for installing is identical to that for installing the system driver from the first screen of the Found New Hardware Wizard (step 2).
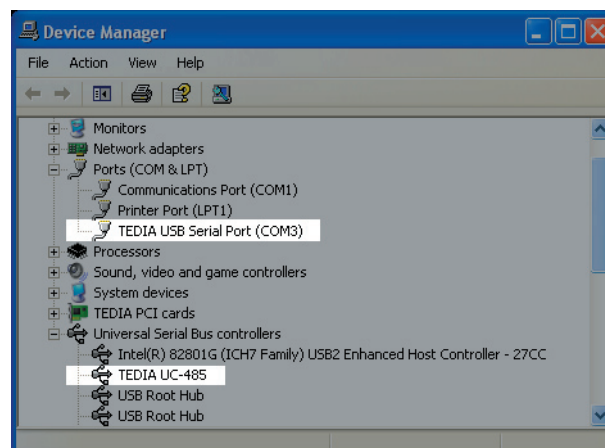
Fig. 9. TEDIA USB converter with the virtual COM port successfully installed.

8)   Both the system driver and virtual COM port driver is now installed. You can verify the correct installation in the Device Manager under "Ports (COM & LPT)" and "Universal Serial Bus Controllers" sections (see Figure 9). The device is now ready to use on COM3.

Note: *Not all devices will install to COM3. The COM port allocation is determined by the installation wizard on the basis of the next free com port as designated in the PC registry.*

5. Driver Installation (Windows Vista/7/8.x/10, Windows Server 2008/2008-R2/2012/2012-R2)

This chapter is intended to guide the reader through the process of installing the system driver for the Windows operating systems. The screenshots in this chapter are taken from Windows 7, the installation process for other listed OS is analogical, otherwise the differences are stated in text.

1) Turn on the PC, log in as a user with administrator privileges and connect the device to a spare USB port on your PC.

2) Press the Windows start button and select "Control Panel". In the Control Panel window select Hardware and Sound. At the next screen select Device Manager.

3) In the Device Manager window there will be a device under Other Devices with a yellow warning symbol (see Figure 10) to indicate a problem (no driver installed).
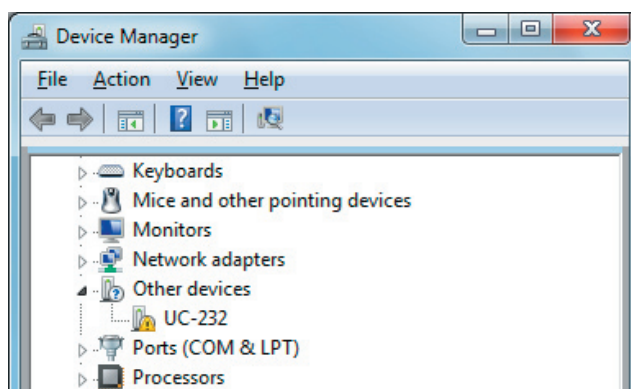

Fig. 10. Device manager - Device with a Yellow Warning Symbol.

4) Right click on the other device (UC-232 in this example) to bring up a menu as shown in Figure 11. From the displayed menu select "Update Driver Software…"
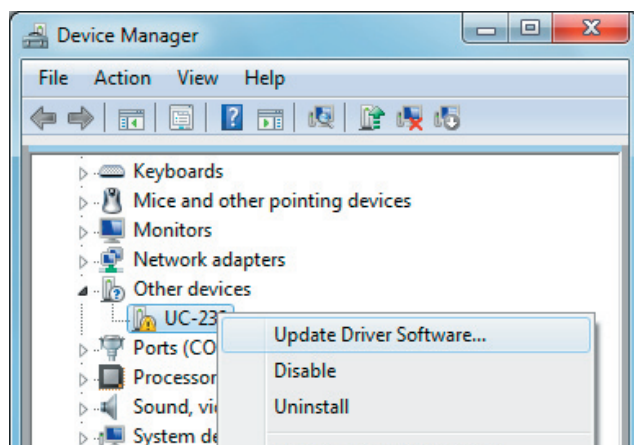

Fig. 11. Device Manager - Update Driver Software.

5) This then displays the option for an automatic search or a manual search. Select the second option to browse manually (see Figure 12).

6) In the address box put the exact location where the drivers have been saved to, or select "Browse" for choosing the location (see Figure 13). This may be on a CD or in a folder on the PC. It is not necessarily the exact same location as shown in the screenshot. After entering the address select "Next" to start the installation. After the window "Would you like to install this device software" appears, select "Install" (as can be seen in Figure 14).

Note: *Due to the formal change of the orginal FTDI driver to be suitable for the TEDIA USB convertes (specific VID/PID), the supplied driver does not provide the Microsoft WHQL signature. However, it was digitally signed to ensure the user it has not been modified by a third party.*
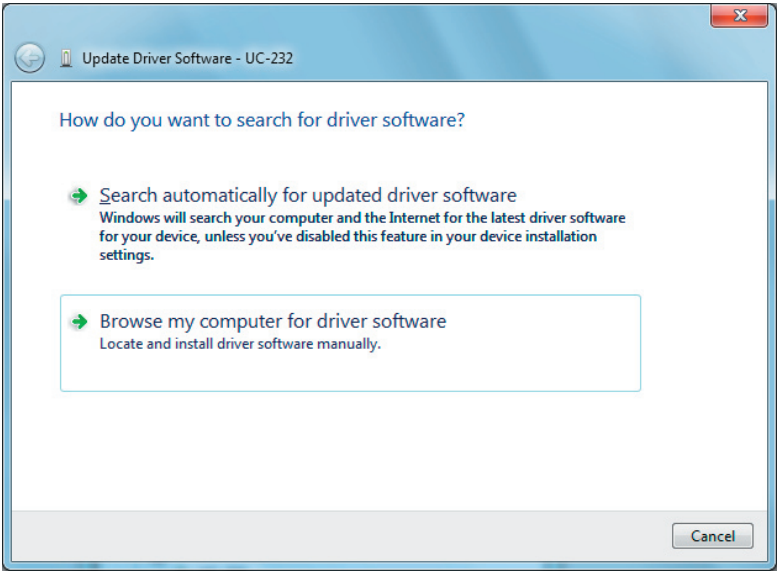
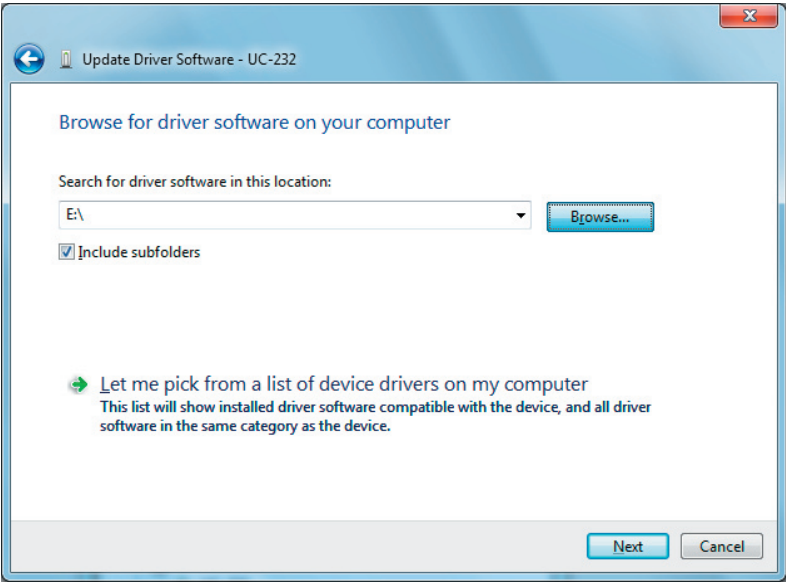*Fig. 12. Update Driver Software Procedure.*
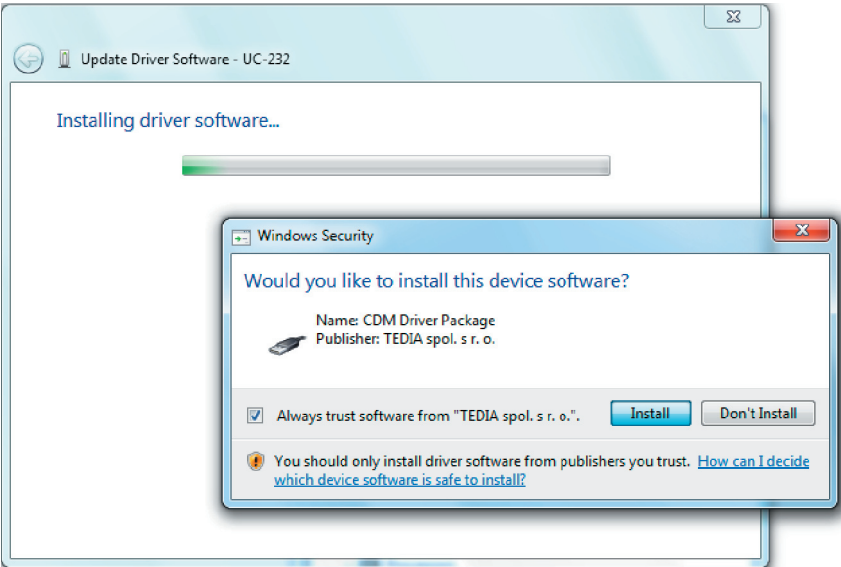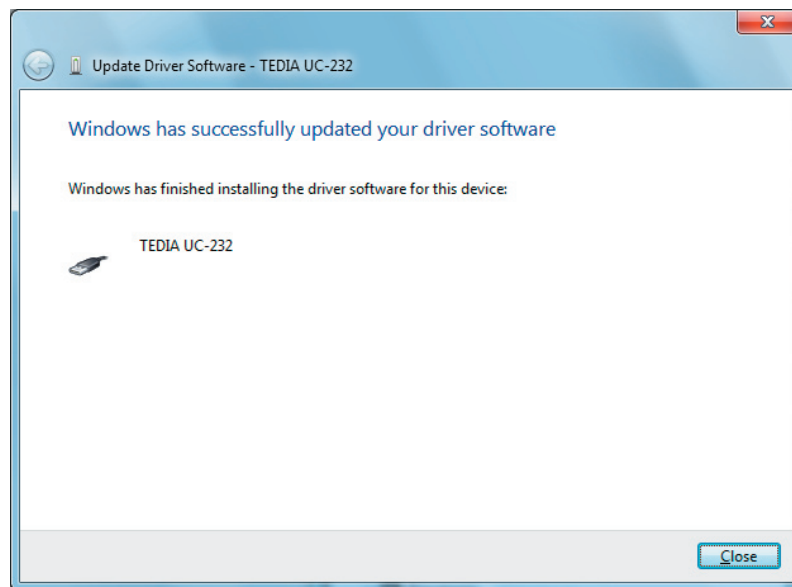

Fig. 13. Update Driver Software Procedure.

*Fig. 14. Update Driver Software Procedure.*

7) When the installation has finished a completion screen is displayed. You can close this window by selecting "Close".

Fig. 15. Sucessfully Installed Driver.

8) Go back to the Device Manager. The next step is the installation of virtual COM port emulation drivers (another device with yellow sign under "Other Devices"). The procedure for installing is identical to that for installing the system driver from the first screen with the Device Manager (step 2).

9) Both the system driver and virtual COM port driver is now installed. You can verify the correct installation in the Device Manager under "Ports (COM & LPT)" and "Universal Serial Bus Controllers" sections (see Figure 16). The device is now ready to use on COM3.
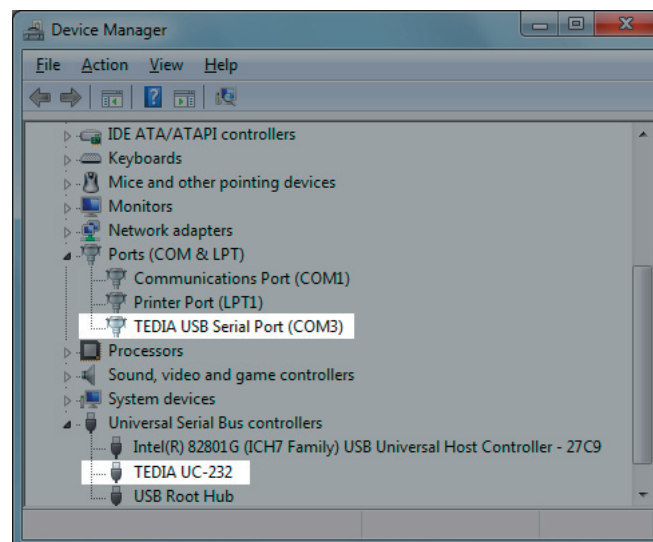
Fig. 16. Sucessfully Installed Driver under Device Manager.

Note: *Not all devices will install to COM3. The COM port allocation is determined by the installation wizard on the basis of the next free com port as designated in the PC registry.*

6. Driver Uninstallation

With the release of Microsoft Windows 7, the FTDI uninstaller has been rendered unusable due to Windows Resource Protection preventing the executable from deleting driver files and associated registry values. Windows 7 will only allow the system itself to modify files and registry values in these locations.

Devices can be removed using the Device Manager by simply right-clicking on the mouse and selecting „Uninstall". This will delete the associated registry entries for that device only. Windows 7 provides an automatic method to delete driver files via a check box to „Delete the driver software for this device" on the uninstall dialog box.

This stage is done twice. Once for the device under Ports (COM & LPT) and once for the device under Universal Serial Bus Controllers. (see Figures 17 and 18).

Fig. 17. Device Driver Uninstallation.

Fig. 18. Device Driver Uninstallation.

Some points to note about the un-installation method:

•   Windows XP and Server 2003 do not have this check box, so driver files and OEM INF and PNF files must be removed manually or by using a custom application. Please contact the TEDIA technical support if you need to unistall the driver manually.

•   The COM port driver should be uninstalled before the bus (system) driver. If the bus is removed first, the COM port will no longer appear in the Device Manager.

• If the files are deleted while other installed devices still require them those devices will not work correctly. This can be fixed by right clicking the device and selecting „Reinstall Driver" which will replace the missing files.

7. Troubleshooting

1)   If a device of the same type has been installed on your machine before and the drivers that are about to be installed are different from those installed already, the original drivers need to be uninstalled. Please refer to the original driver documentation for further details of this procedure.

If the user is unable to unistall the original driver, it is necessary to remove the driver manually. In such case please contact the TEDIA technical support.