

Managing Cameras with the Thesycon IEEE 1384 Bus Driver

Overview

The Thesycon driver is an alternate implementation for the internal IEEE 1394 (firewire) stack which many firewire cameras use to connect to the computer. The Thesycon driver replaces Microsoft's implementation of the firewire stack. Replacing the Microsoft implementation can have adverse affects, as not all cameras are compatible with the Thesycon driver. This document covers identifying if you have the Thesycon driver installed and how to install, uninstall, or switch firewire drivers. It will also discuss some of the compatibility concerns with current firewire cameras.

The Thesycon driver stack is only a concern when using firewire/1394 cameras. You do not need to install or remove the driver if you do not have a firewire camera. The Thesycon driver affects the internal firewire device bus, which means it may affect all firewire devices on the computer.

Thesycon Camera Compatibility

QImaging: QImaging firewire cameras require the Thesycon driver. QCam driver installations will install the Thesycon driver as part of installing the camera driver.

Photometrics: Photometrics firewire cameras benefit from the Thesycon driver. With the default Microsoft IEEE 1394 implementation Photometrics firewire cameras can experience image tearing, interference lines, dark or black images, and reduced readout. PVCam does not automatically install the Thesycon driver. Photometric provides an installer for its customers on its website (you can find the link in the References section of this document).

Hamamatsu: Hamamatsu firewire cameras are not compatible with the Thesycon driver. The Thesycon driver must not be installed when the DCam and the camera are connected to the computer. If the Thesycon driver is present when the camera is attached the camera will not be recognized. If the Thesycon driver is installed during the installation of DCam, then removed prior to connecting the camera the camera will behave poorly, including: slow acquisition, duplicate, or quadruplicate images, and delayed and/or mirrored portions of the image. The Thesycon driver should be removed prior to installing DCam.

Olympus: Olympus firewire cameras are not compatible with the Thesycon driver. An Olympus camera will not be detected properly if the Thesycon driver is present when attaching the camera.

Background

In the summer of 2008, there were two updates to how Microsoft implemented its IEEE 1394 (firewire) stack (see the hotfix # 952824 and # 951410 in the references). These two updates caused problems using firewire cards and devices used by many of the camera providers we work with (see Microsoft KB #958149 in the references section and the compatibility section of this document). The Thesycon driver provides an alternate implementation of the IEEE 1394 bus driver which avoids these problems and also adds support for the IEEE 1394b standards.

Not all cameras can use with the Thesycon driver, and so using the driver or mixing camera manufacturers on the same computer can lead to compatibility problems. For example QImaging cameras use the Thesycon driver, and its installer will install the driver automatically. Hamamatsu

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PRODUCTS
MetaMorph®
MetaFluor®
MetaVue®

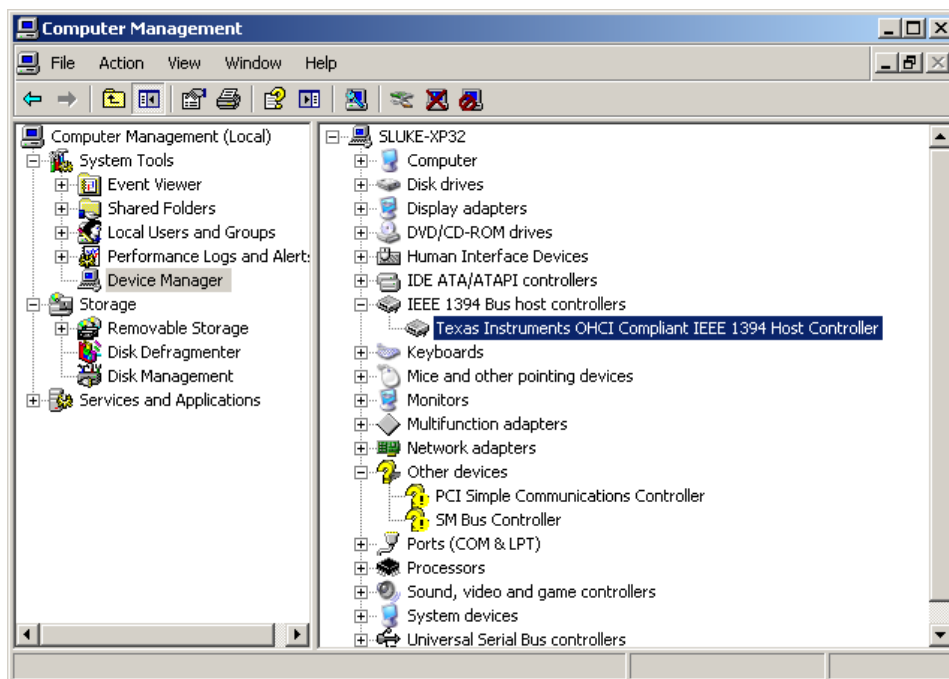
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02-March-2010

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cameras can not use the Thesycon driver. If you have a system with a QImaging and a Hamamatsu camera you will have to switch between using the Thesycon driver and the Microsoft driver. See below about some resolutions to incompatibility.

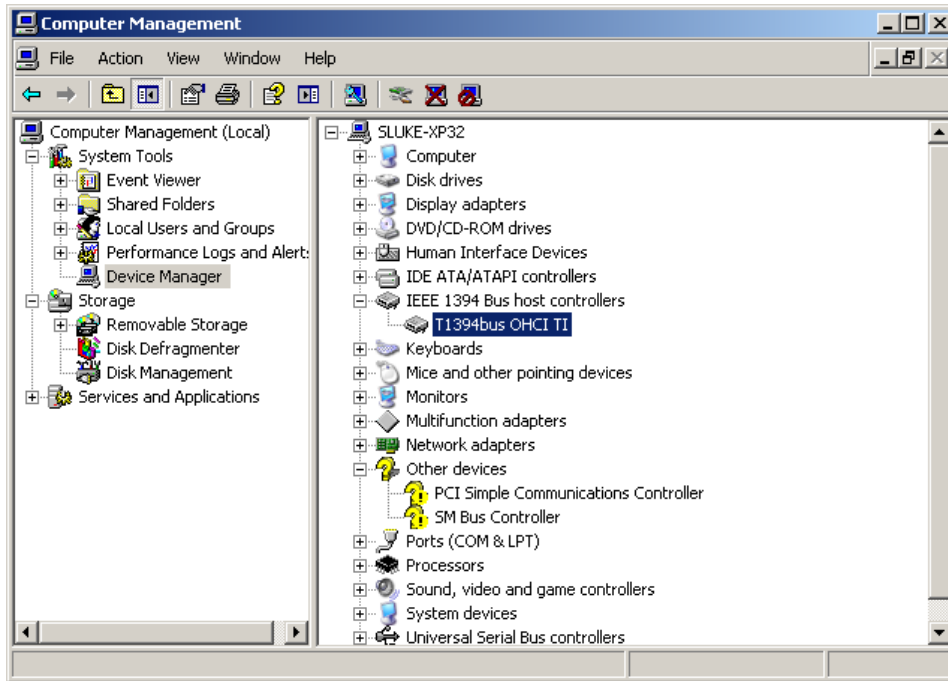
Is Thesycon Installed?

Open up the Device Manager (Right Click on 'My Computer' select Manage from the context menu, and choose Device Manager)

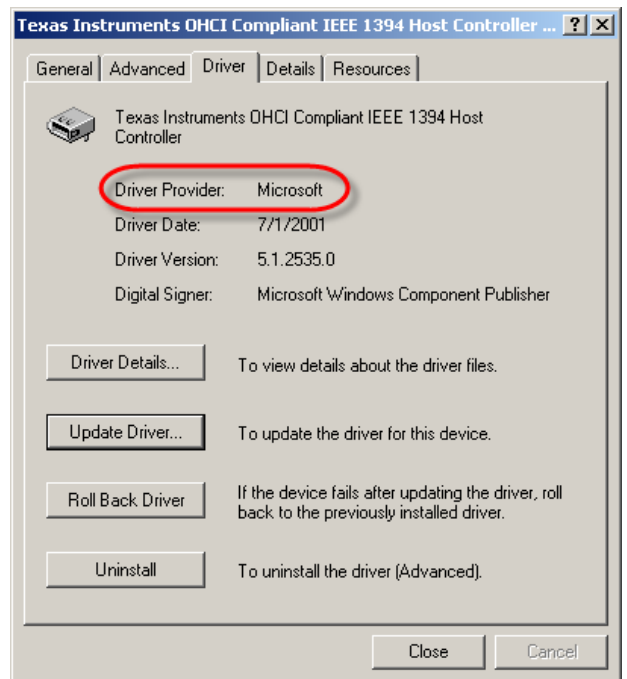
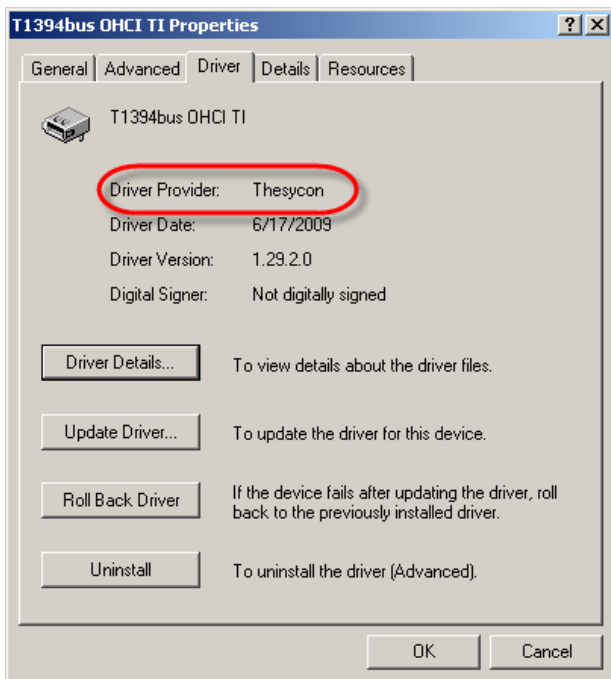


Open up the IEEE 1384 Bus Host Controller tree from the device list.

- 1) If the device is listed as shown above, as 'Texas Instruments OHCI Compliant IEEE 1394 Host Controller' then it is using the Microsoft driver.
- 2) If the device is listed as shown below, as 'T1394bus OHCI TI' then it is using the Thesycon driver.
- 3) You may have multiple devices – one for each firewire card in the computer, and one for any built in firewire controllers. Each card/controller may have different drivers installed.



You can get specific information about the installed driver as well. Double click the 1394 device to get its Properties page. Select the Driver tab to view the driver information.



Should I install the Thesycon driver?

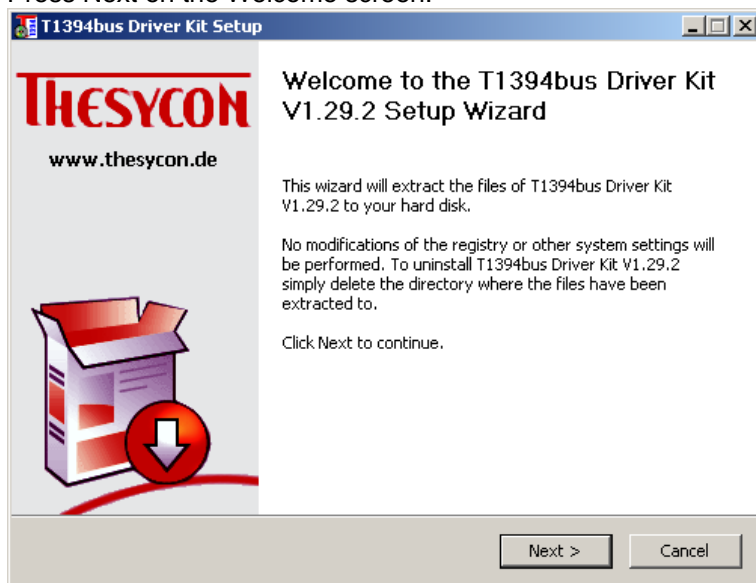
If you have a QImaging or Photometrics camera and you do not already have the Thesycon driver installed, then you should install the Thesycon 1394 bus driver. For other cameras you should not install the Thesycon driver unless you are specifically instructed to by the camera manufacturer.

How do I install the Thesycon driver?

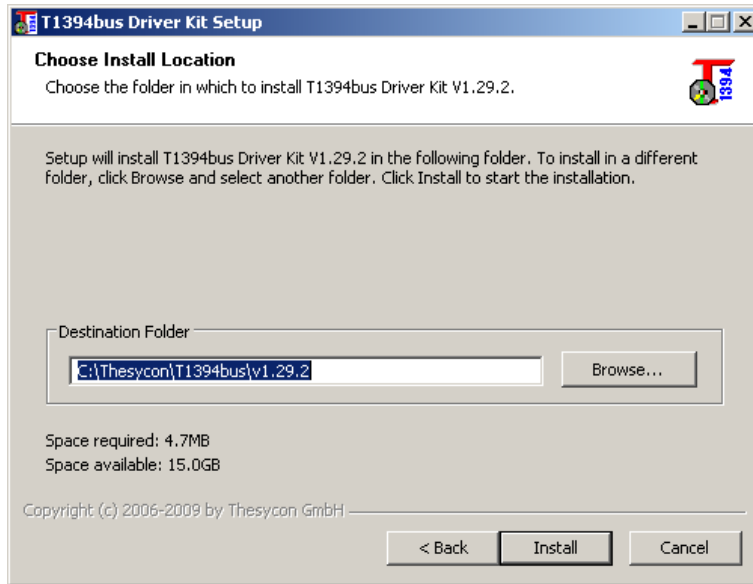
If you have a QImaging camera and do not already have the Thesycon driver installed then you should update to a newer version of QCam (version 2.0.82 at the time of this document), which will install the proper Thesycon driver for you.

If you have a Photometrics camera then download the proper version of the Thesycon driver from the Photometrics Download page (found in the references section of this document) and follow the below instructions.

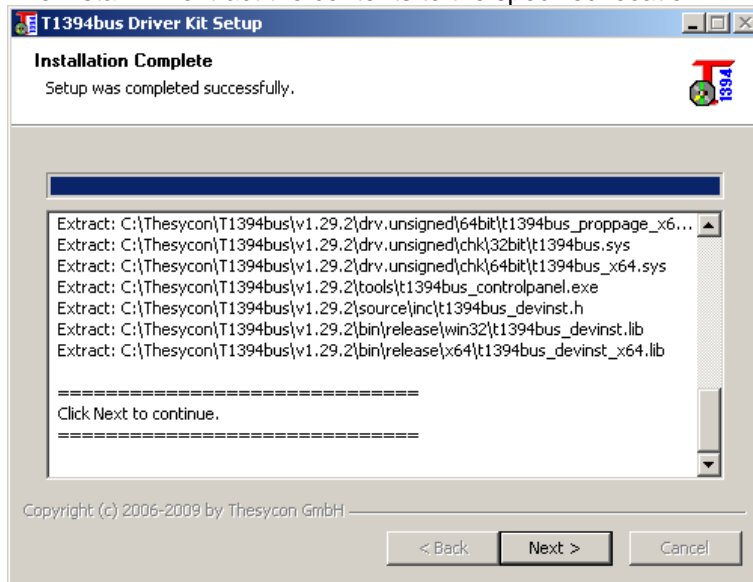
- 1) Download the Thesycon-Installer.zip file from the Photometrics download page
- 2) Unpack the ZIP file into a desired location. There should be two files:
 - a) T1394bus_v1.29.2_full.exe (The current version of the Thesycon Driver Installer as of the making of this document. Version and file name may change).
 - b) How to Update the Thesycon Stack v1.0.pdf (A how to run the installer, which is also part of this document).
- 3) Run the T1394bus_v1.29.2_ful.exe file, which will unpack the Installer.
 - a) Press Next on the Welcome screen.



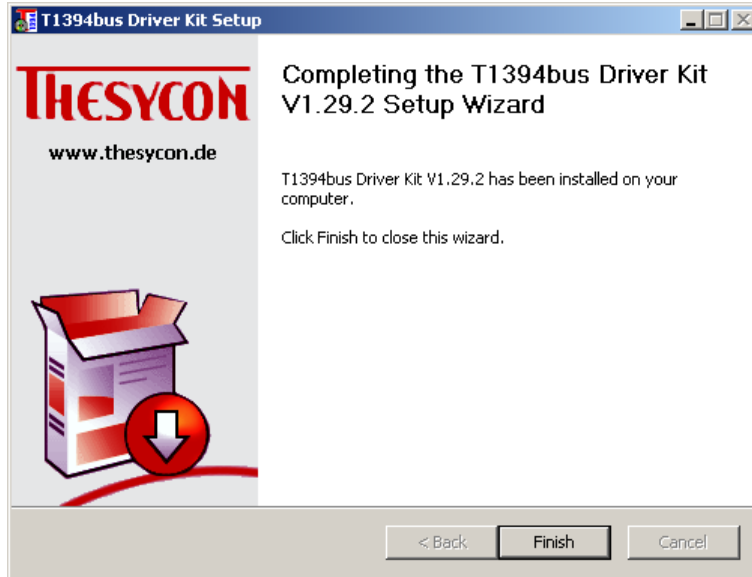
- b) Choose an appropriate location to unpack the installer to using the Browse button and press the Install button.



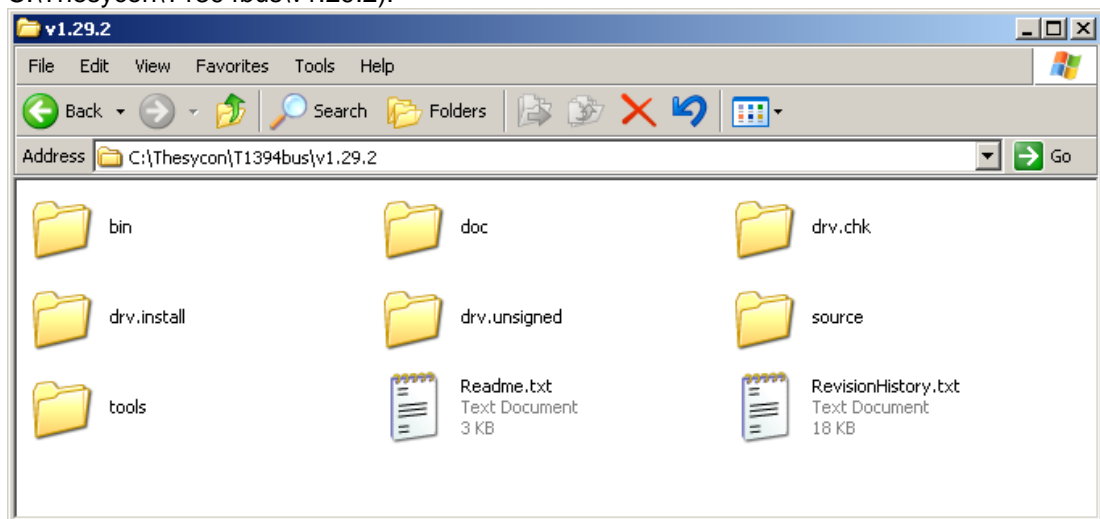
- c) The install will extract the contents to the specified location. Press Next to continue.



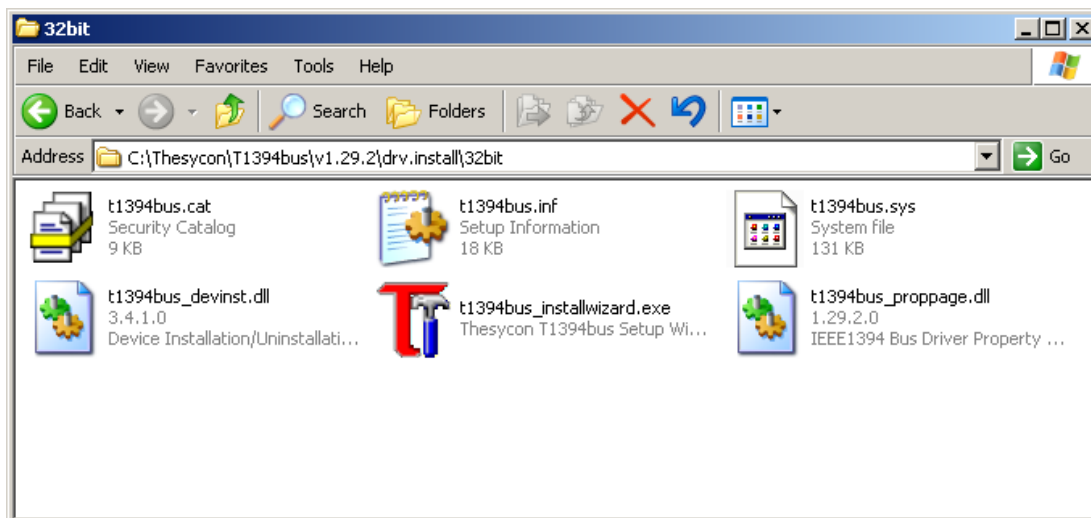
- d) The install wizard completes. Press Finish to close it.



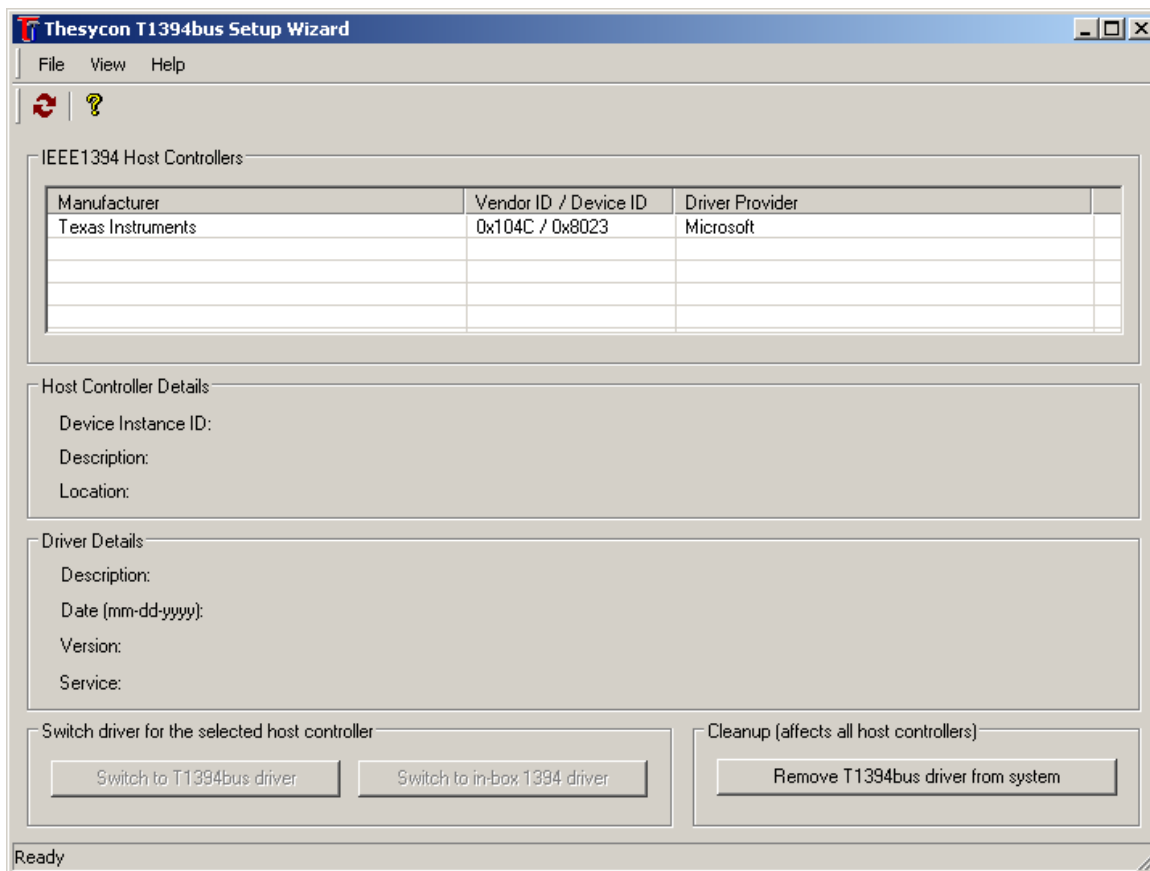
- e) Navigate to the directory where the installer was extracted to (step 2 above: defaults to C:\Thesycon\T1394bus\v1.29.2).



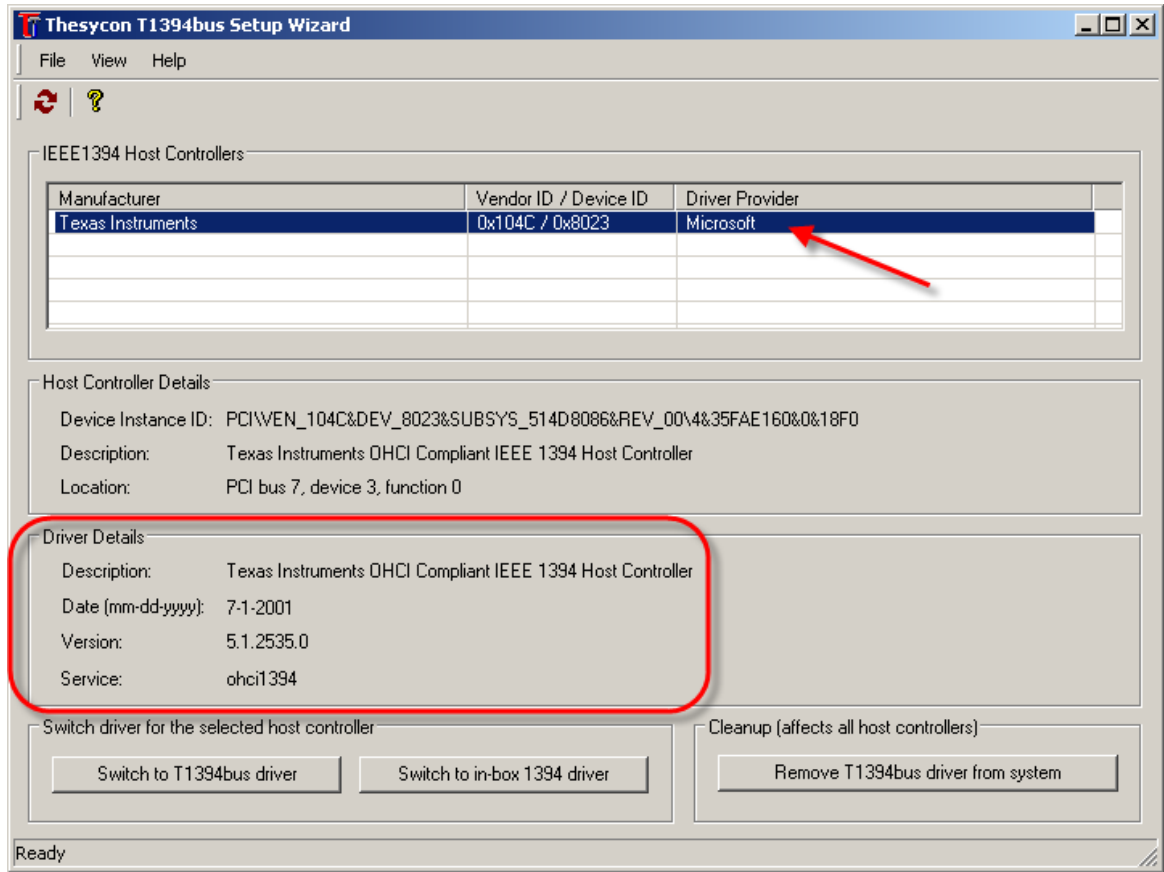
- f) Open up the drv.install folder, and then the sub directory which matches your system architecture (32bit or 64bit)



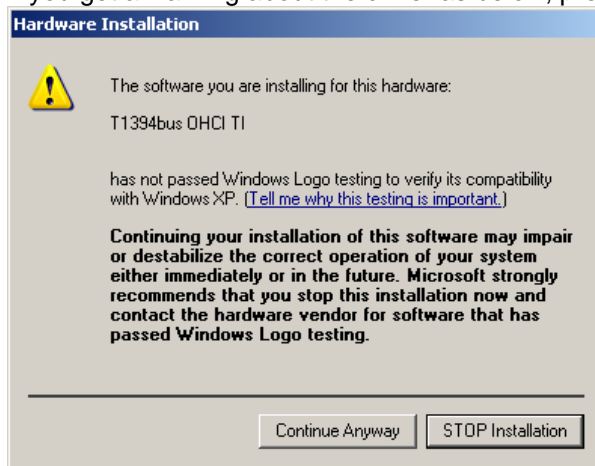
g) Run t1394bus_installwizard.exe



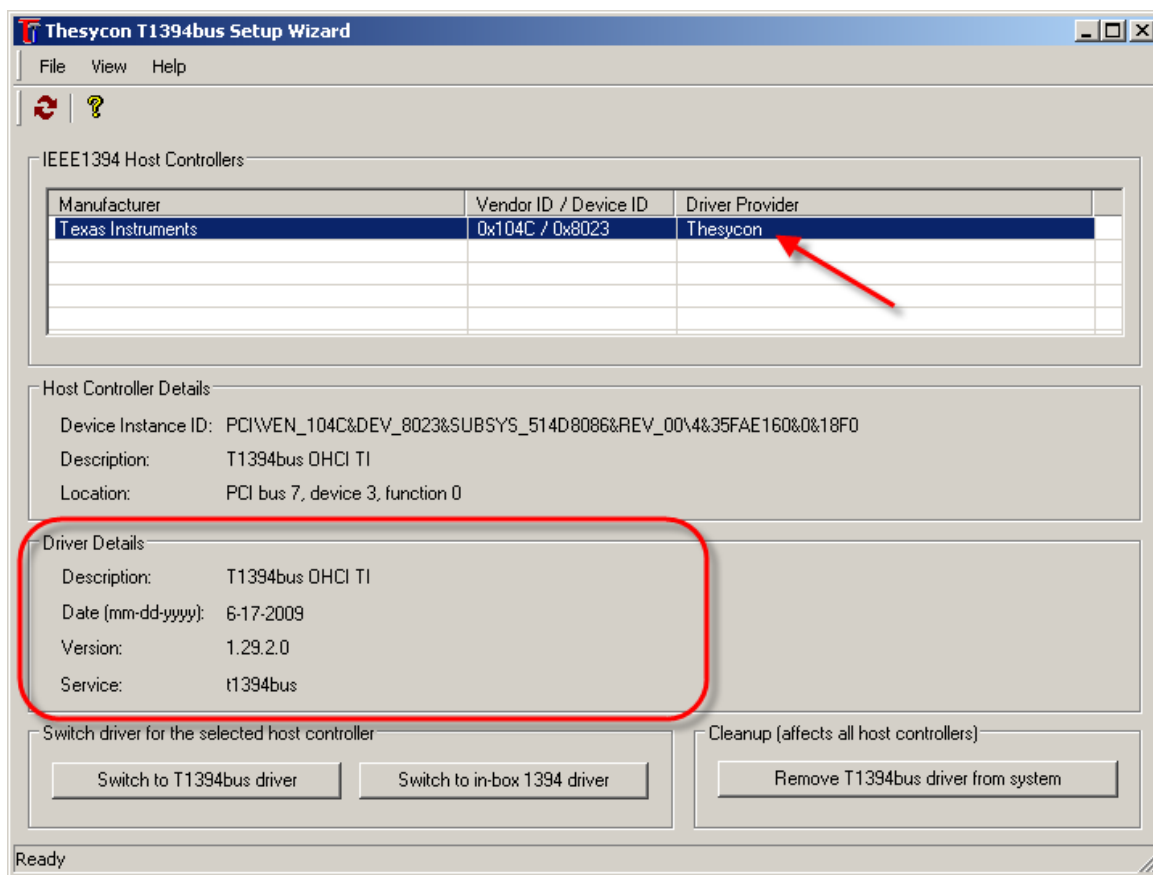
h) Select the firewire card of interest. If you have multiple firewire cards you can install the Thesycon driver on any or all of them.



- i) When you select a firewire card it will give you information about which driver currently being used by that device, as well as more details about the driver's version.
- j) To set a device to begin using the Thesycon driver press the Switch to T1394bus driver button.
- k) If you get a warning about the driver as below, press the Continue Anyway button.



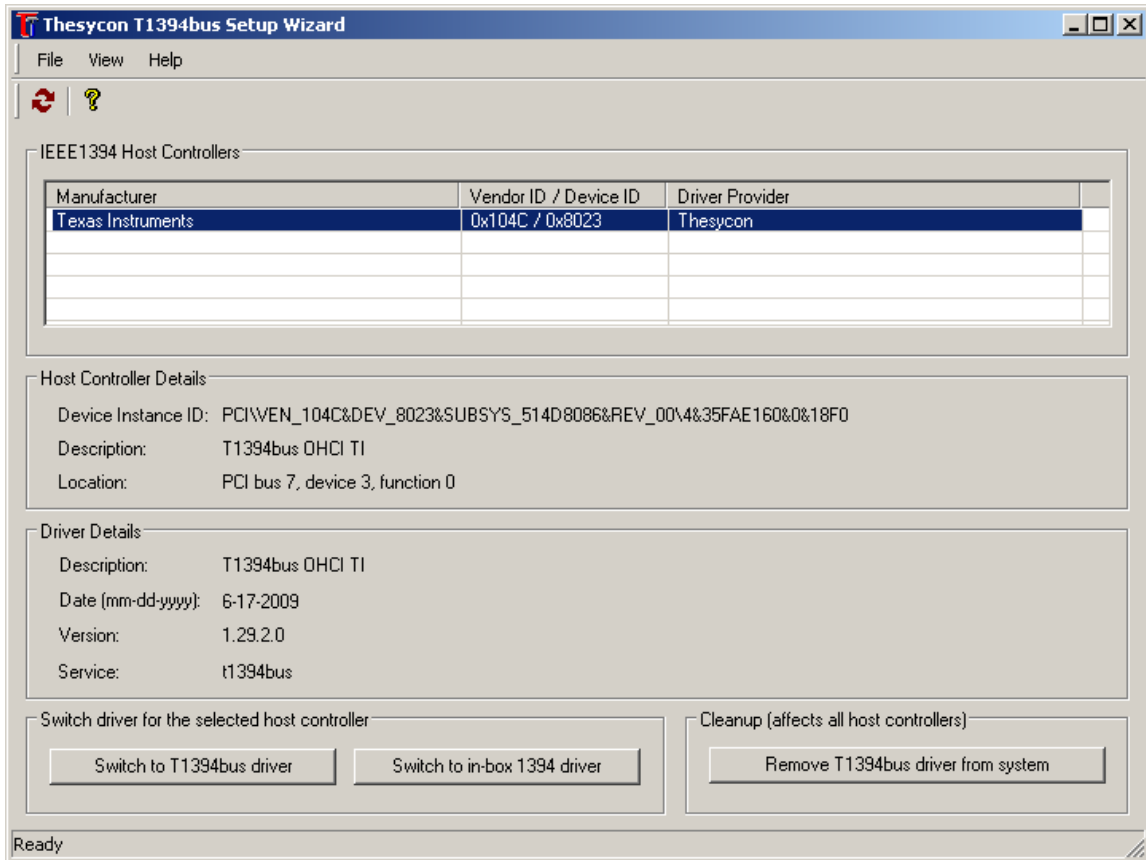
- l) After installation the Thesycon Setup Wizard reflects the current state of the firewire controller.



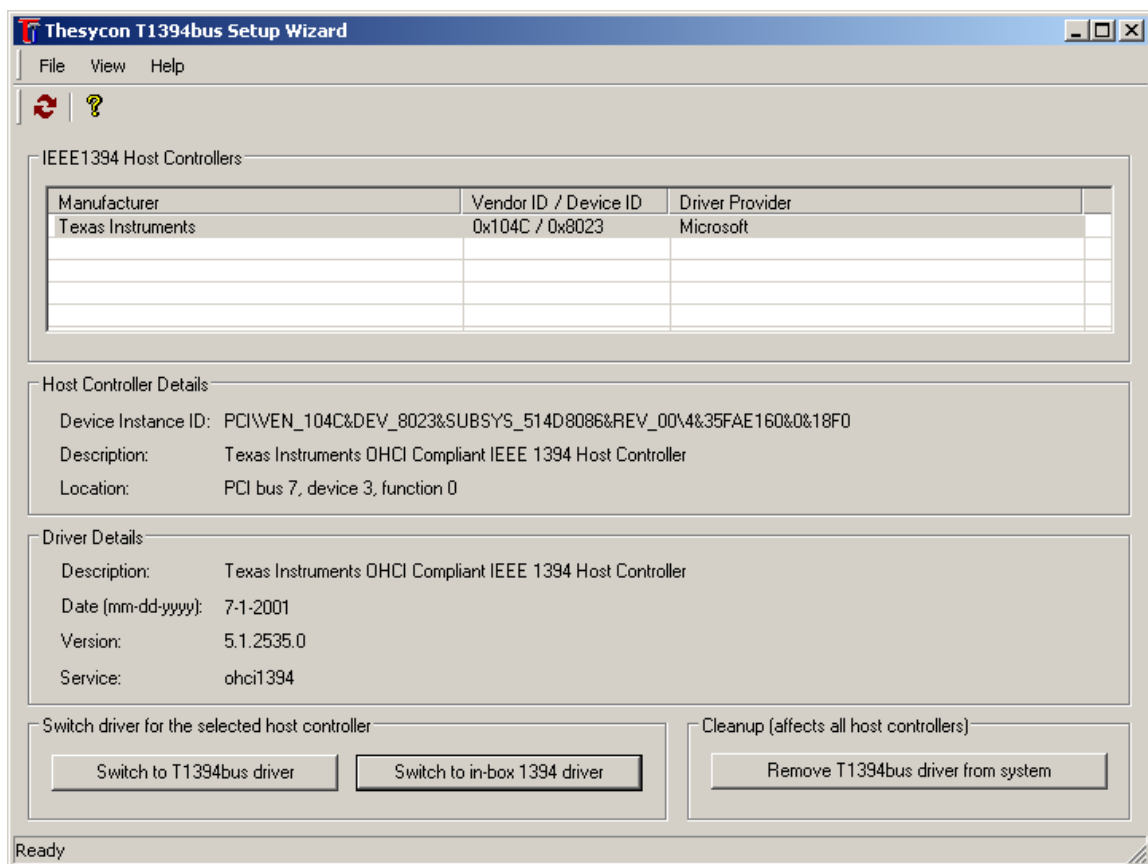
How do I uninstall the Thesycon driver?

If you have a camera which is not compatible with the Thesycon driver you will need to uninstall the driver.

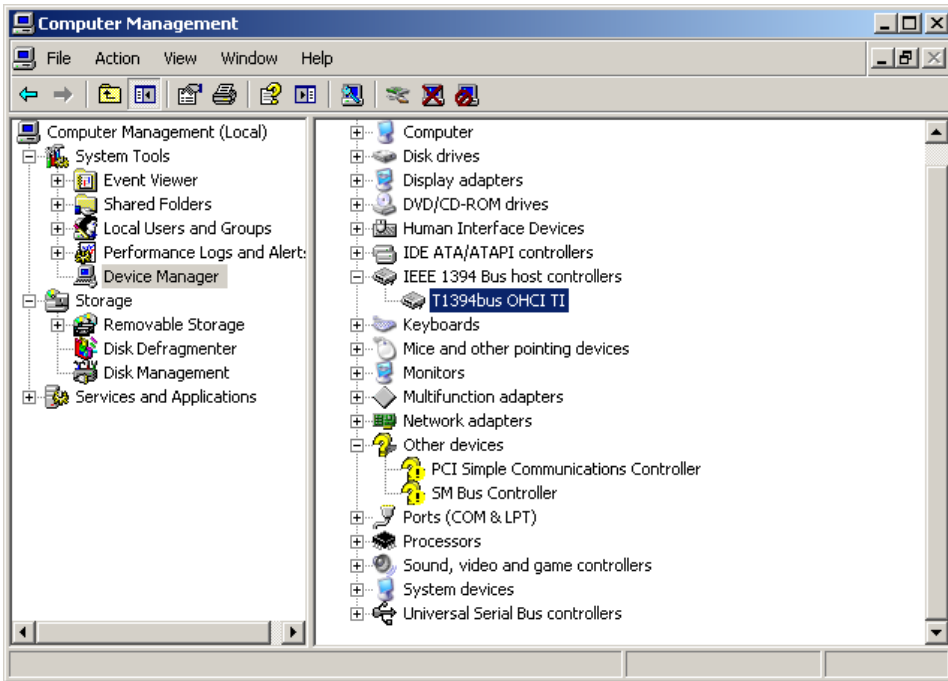
- A) If you installed the Thesycon Setup Wizard as detailed in the previous section, follow these directions.
1. Open up the directory where the Thesycon Setup Wizard is located. By default the Thesycon drivers are installed in C:\Thesycon\T1394bus\v1.29.2. Open up the drv.install sub directory, then either the 32bit or 64bit sub directory as is appropriate for your architecture.
 2. Run t1394bus_installwizard.exe to start the Thesycon Setup Wizard.



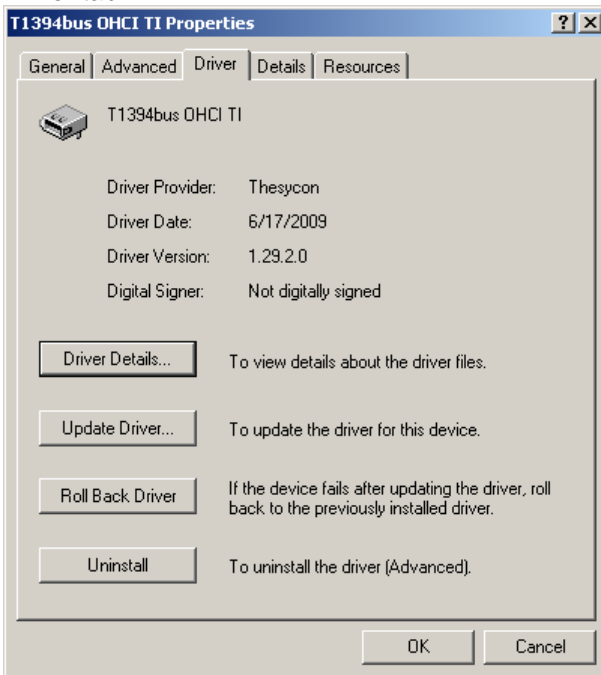
3. Select the card which you want to remove the Thesycon driver from and press the Switch to in-box 1394 driver button.



4. This reverts back to the firewire driver which was present prior to running the Thesycon installer. Note that you can remove the Thesycon driver from all firewire cards at the same time by using the Remove T1394bus driver from system button.
 5. Note that this does not remove the Thesycon Setup Wizard, so you can continue to use it to switch firewire drivers when necessary.
- B) If you do not have the Thesycon Setup Wizard, follow these directions.
1. Open up the Device Manager by right-clicking on 'My Computer', selecting Manage from the context menu, and selecting Device Manager from the list on the left side.
 2. Open up the IEEE 1394 Bus host controllers device tree and select the device named T1394bus OHCI TI from the list



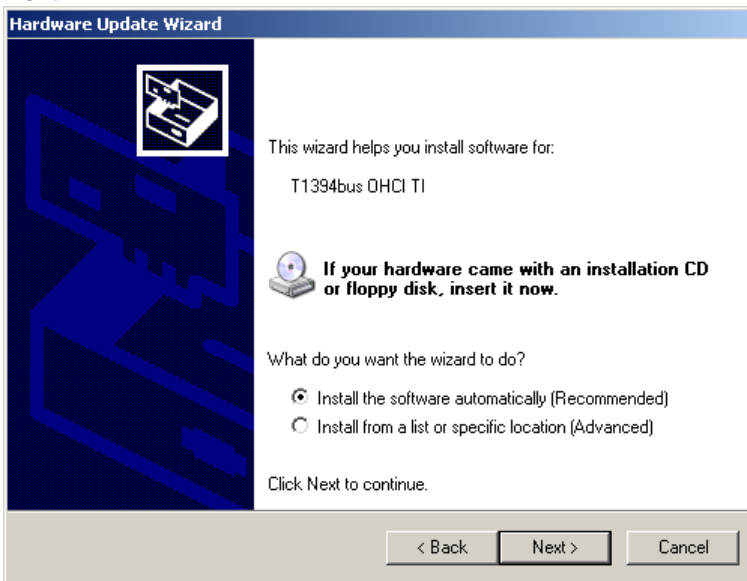
3. Double click on the T1394bus OHCI TI device to open up its Properties dialog and select the Driver tab.



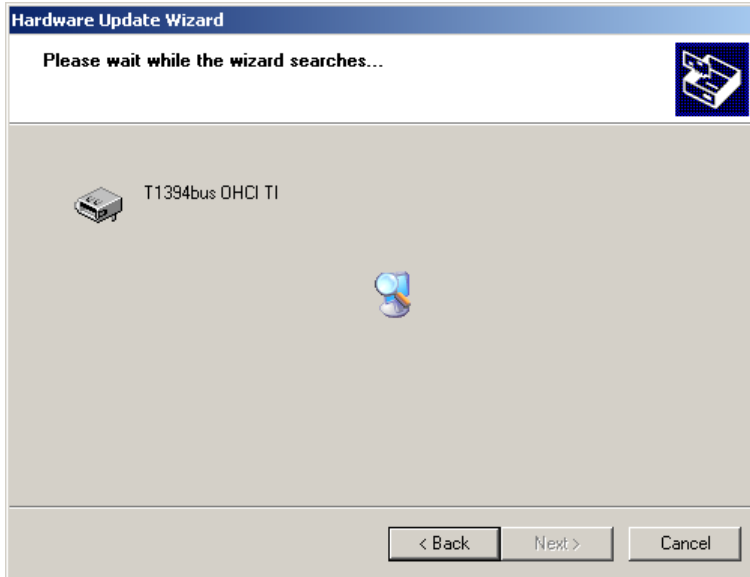
4. Press the Update Driver... button to begin searching the Windows Driver Library for an appropriate driver.



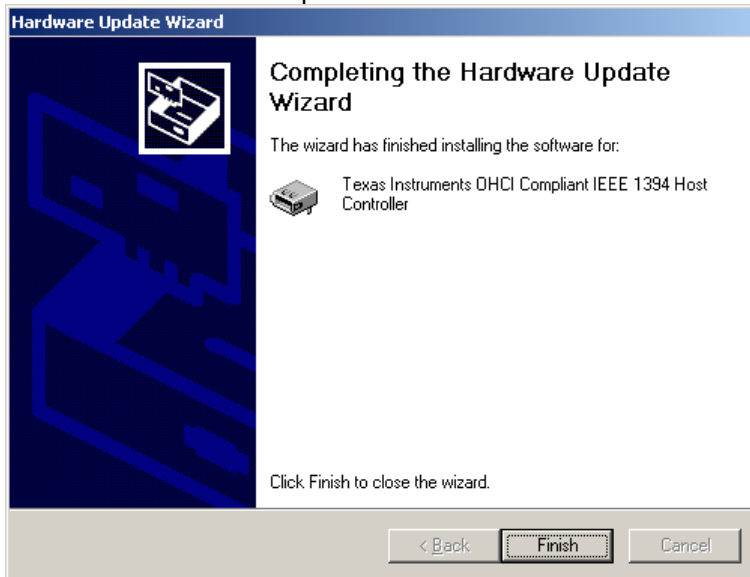
5. Choose one of the Yes options to get the most up to date driver for your hardware and press Next.



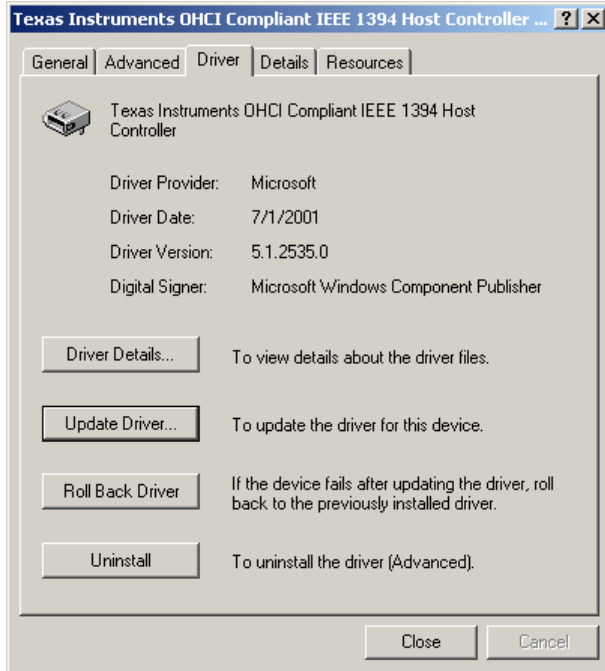
6. Choose the Install the software automatically option and press Next.



7. Windows will search its update site to find the latest driver and inform you when it is finished.



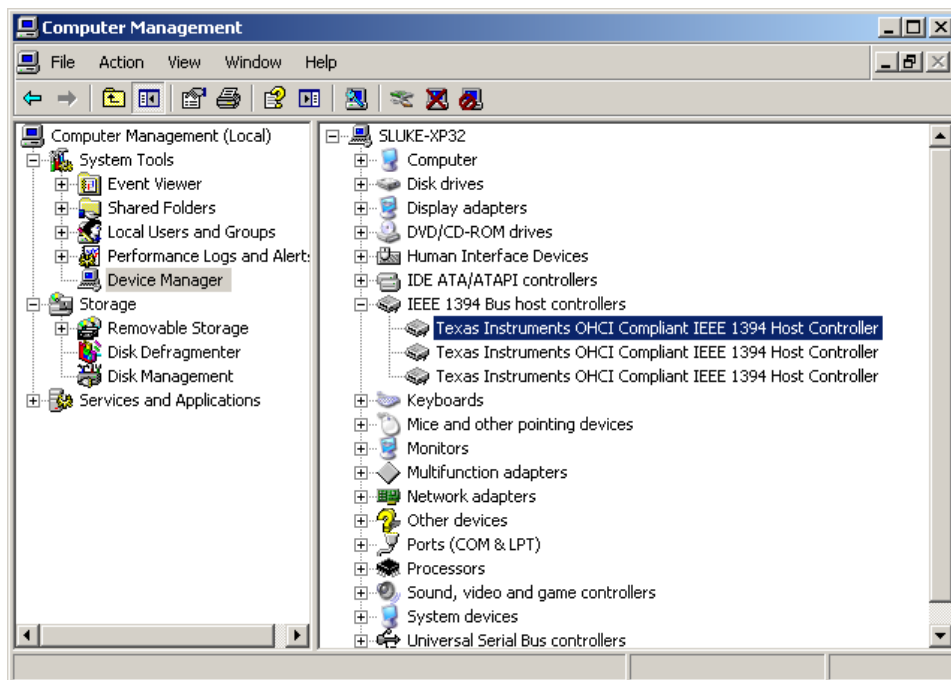
Press the Finish button and the Thesycon driver is removed and replaced with the latest Microsoft IEEE 1394 driver.



How can I resolve different firewire driver requirements?

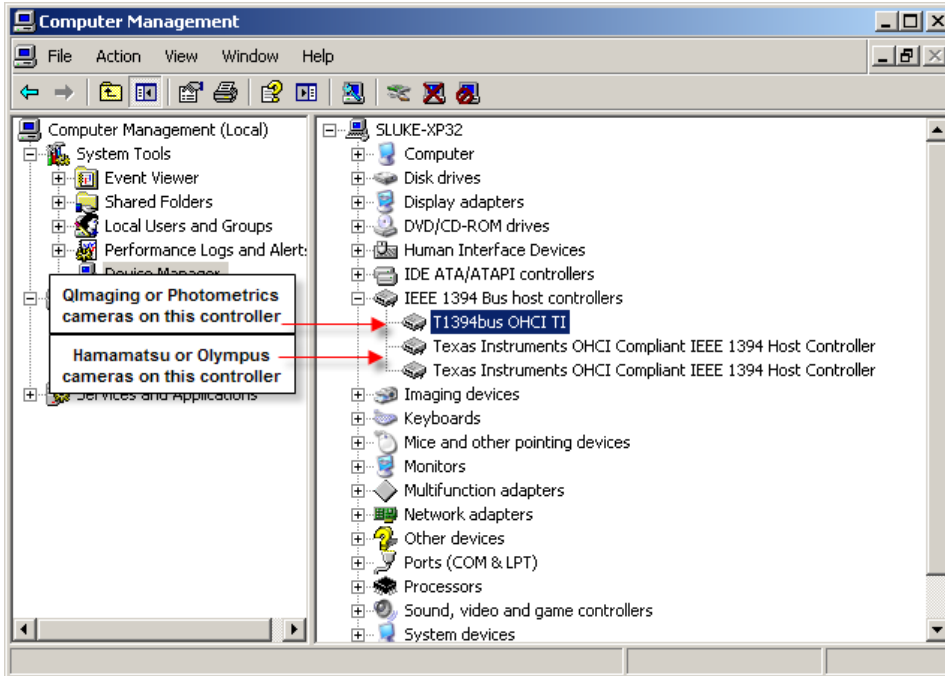
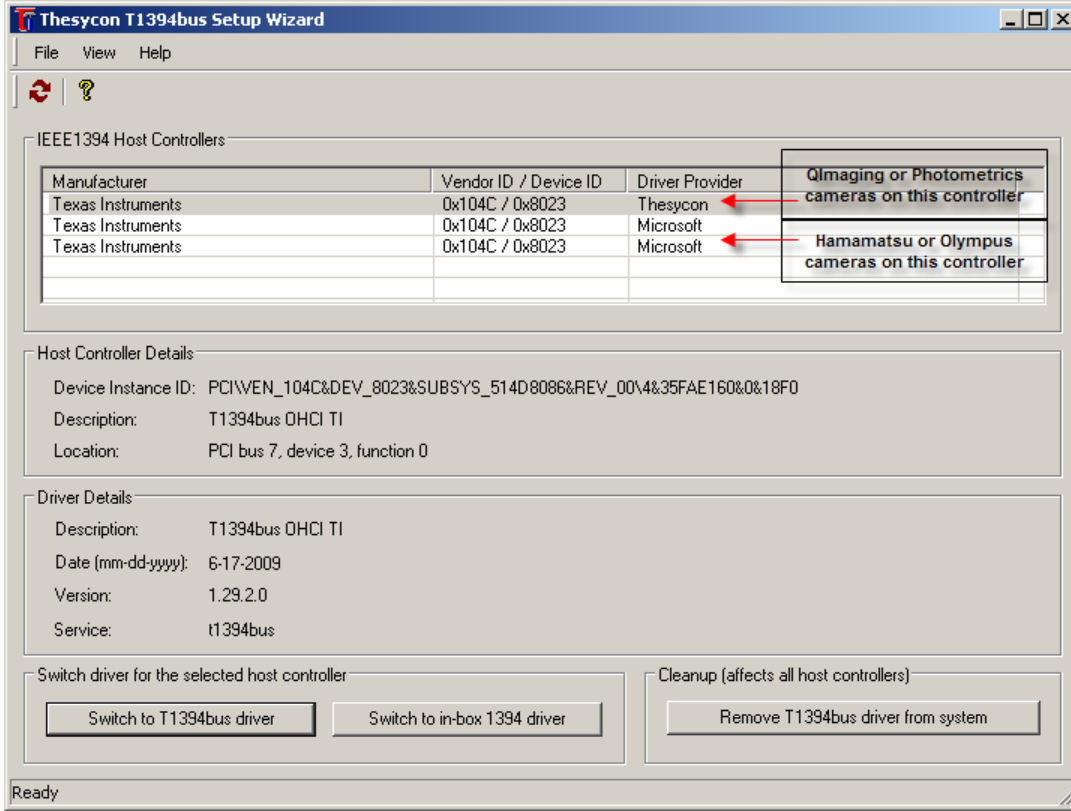
Some cameras require the Thesycon driver, while others are incompatible with it, so what happens if I have two cameras, one which requires the Thesycon driver like the Photometrics HQ2, and one which can not use it, like the Hamamatsu Orca-ER?

The safest thing to do is to have two different firewire bus host controllers installed on your system. For example many computers have built in firewire capacity, even if there are two firewire ports they run on the same controller and so should be used to run just a single firewire camera. If you have a second firewire camera install a firewire card (or a second firewire card) to add a second firewire bus controller.

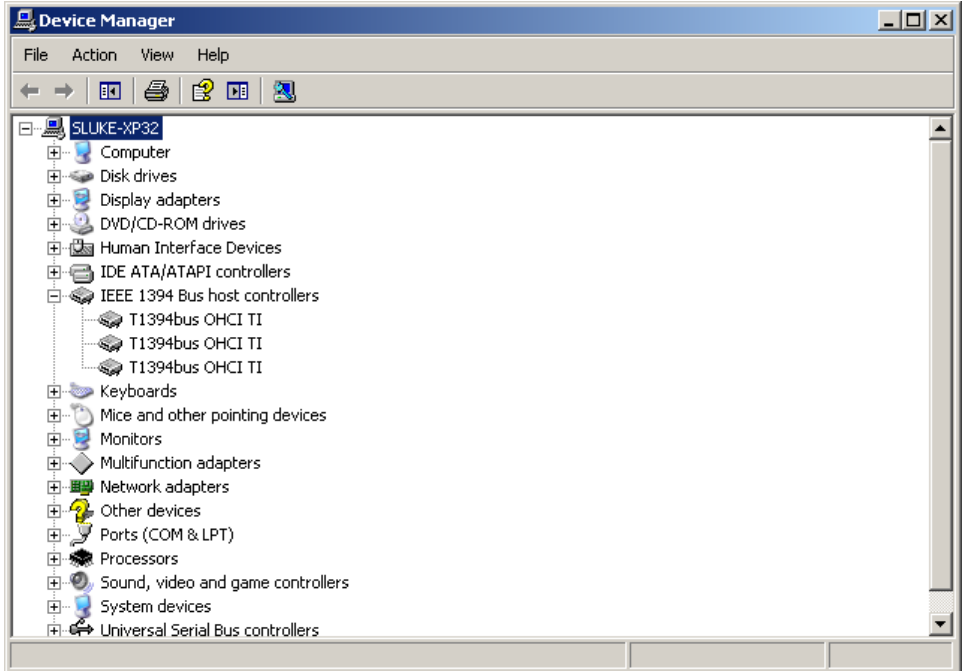


NOTE: THIS COMPUTER HAS A BUILT IN FIREWIRE BUS CONTROLLER AND AN ADDITIONAL FIREWIRE CARD. THE ADDITIONAL CARD PROVIDES 2 FIREWIRE PORTS, BUT BECAUSE THEY ARE ON THE SAME CARD, THEY SHOULD BOTH USE THE SAME DRIVER.

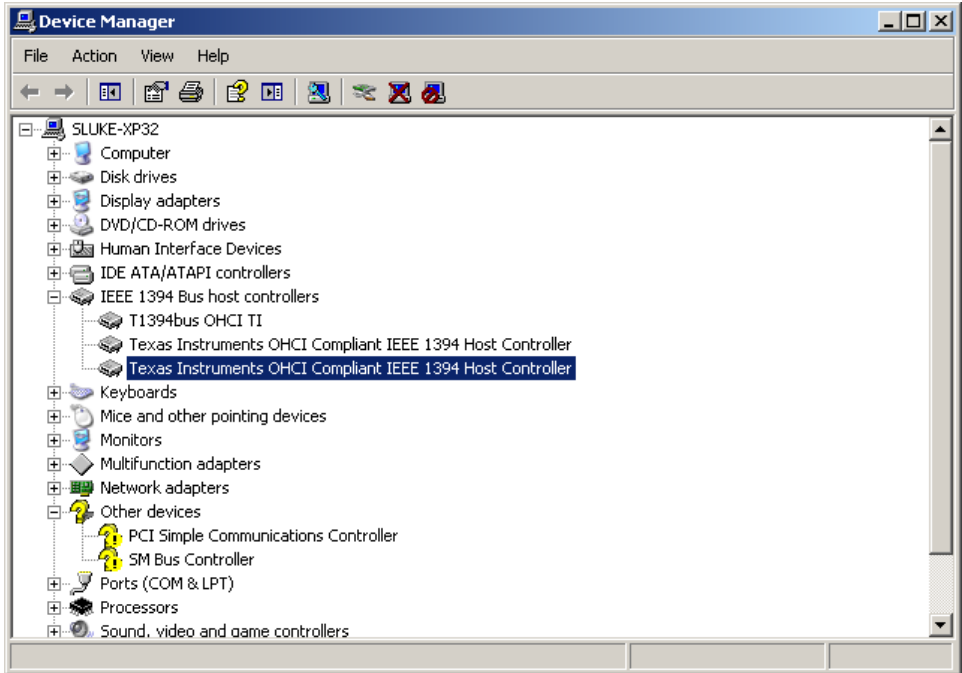
When you have two controllers installed, you can install the Thesycon on one or more of the controllers as required by the cameras. This allows you to run those cameras that need the Thesycon driver on one firewire controller, and other cameras which can not use Thesycon drivers on the same computer.



When you have multiple firewire controllers, as in the above example, and you install the QImaging driver all of the IEEE 1394 bus host controllers will be switched to using the Thesycon driver.



When this occurs, uninstall the Thesycon driver for any firewire controller that will not be used to run the QImaging camera.



References

- Thesycon Bus Driver for Windows: <http://www.thesycon.de/eng/t1394bus.shtml>
- Photometrics Download Page: <http://www.photomet.com/support/downloads/index.php>
- Windows Hotfix 952824: <http://support.microsoft.com/kb/952824>
- Windows Hotfix 951410: <http://support.microsoft.com/kb/951410>
- Microsoft KB #958149: <http://support.microsoft.com/kb/958149>

If you have any further questions, please contact Technical support at 800-635-5577 x1820 or support.dtn@moldev.com.