

Manual 1.2



## **Driver Installation**

for HEKA Computer controlled devices

**HEKA**

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# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Devices . . . . .	1
1.2	Support Hotline . . . . .	2
<b>2</b>	<b>Windows XP</b>	<b>3</b>
2.1	Software Preparation . . . . .	3
2.2	Driver Installation . . . . .	6
2.3	Updating an older Driver version . . . . .	11
<b>3</b>	<b>Windows Vista</b>	<b>19</b>
3.1	Software Preparation . . . . .	19
3.2	Driver Installation . . . . .	22
3.3	Updating an older Driver version . . . . .	29
3.4	Windows UAC . . . . .	31
<b>4</b>	<b>Windows 7</b>	<b>35</b>
4.1	Software Preparation . . . . .	35
4.2	Driver Installation . . . . .	37
4.3	Updating an older Driver version . . . . .	45
4.4	Windows UAC . . . . .	45
4.5	Run as Administrator . . . . .	49
<b>5</b>	<b>MacOSX</b>	<b>53</b>

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5.1	Driver Installation . . . . .	53
5.2	Updating an older Driver version . . . . .	57
5.3	64-bit kernel . . . . .	57
5.4	Troubleshooting using the Apple System Profiler . . . . .	58
<b>6</b>	<b>Windows Test Programs</b>	<b>67</b>
6.1	ITCDemoGxx . . . . .	67
6.1.1	File Menu commands . . . . .	69
6.1.2	Controls Menu commands . . . . .	69
6.2	ITCControlxx . . . . .	70

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# 1. Introduction

This release of the HEKA Driver, Windows version, no longer requires programs to be run "as administrator". The MacOS X version now uses a combined installer for both PPC and Intel based computers.

## 1.1 Devices

The HEKA Driver installer packages is required for the following HEKA products:

- ITC-16 (PCI and USB)
- ITC-18 (PCI and USB)
- ITC-1600 (PCI and PCIexpress)
- LIH 1600 (PCI and PCIexpress)
- EPC 9 (PCI and USB)
- EPC 10 (PCI and PCIexpress)
- EPC 10Plus (PCI and USB)
- PG 300 series (PCI and USB)

The following HEKA products do not require this driver package. The host operating system treats these devices the same as it would a Flash memory drive. Therefore only standard operating system files are required.

- LIH 8+8
  - EPC 10 USB series
-

- PG 300 USB series

Two installer packages are available, one for Windows (32 and 64-bits) XP, Vista and Windows 7 and one for MacOSX (10.4 and above). The Windows installer package will also install the utility programs ITCControlxx and ITCDemoGxx. For 64-bit OS versions both the 32 and 64-bit native versions will be installed.

*Note: For older operating system please contact HEKA.*

## 1.2 Support Hotline

If you have any question, suggestion, or improvement, please contact HEKA's support team. The best way is to send us an e-mail or fax specifying the following:

- Your postal and E-mail address (or fax number)
- The program name: PATCHMASTER, PULSE, PULSEFIT, TIDA etc.
- The program version number: v8.31, v8.53
- Your operating system and its version: MAC OS 10.5, Windows XP, Windows Vista, etc.
- Your type of computer: MAC G5, Pentium IV 600 MHz, etc.
- Your acquisition hardware, if applicable: EPC 10, LIH 1600, ITC-18
- Your amplifier, if applicable: EPC 10, EPC 10 Double, Axon 200B, etc.
- The series number and version of your EPC 10, if applicable: EPC 10 single, version "520552".
- The questions, problems, or suggestions you have
- Under which conditions and how often the problem occurs

We will address the problem as soon as possible.

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## 2. Windows XP

The HEKA Driver Installer is a Windows inf installer which uses the Windows Device Manager to install the required driver and any additional associated files. The HEKA Driver Installer can be installed on either a Windows XP 32 or 64-bit system. Service pack 3 including all required windows updates is highly recommended before installation is attempted.

### 2.1 Software Preparation

The driver installation package is supplied as a single compressed file (.zip) that includes all of the necessary files for proper driver installation. Before this driver can be accessed by the host operating system these files must be uncompressed to a known location. Typically, extracting the files to the desktop so they are readily available is recommended. Once the installation process has been completed the folder may be deleted.

Following is an example of the steps required to extract the driver files.

1. Download or copy the `Heka_driver.zip` file to the desktop.
2. Double click on the file which will open a Windows Explorer window.

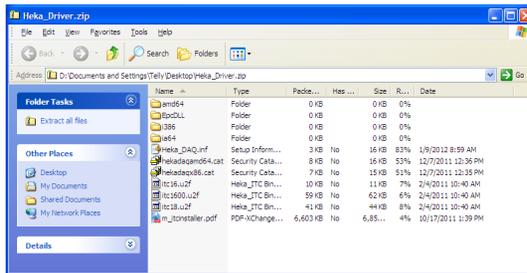


Figure 2.1: Compressed file view

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3. In the section labeled **Folder Tasks** select the option **Extract all files**. Alternatively instead of double clicking on the zip file, select(high-light) the file `Heka_driver.zip`, right click with the mouse and select the option **Extract all files**.

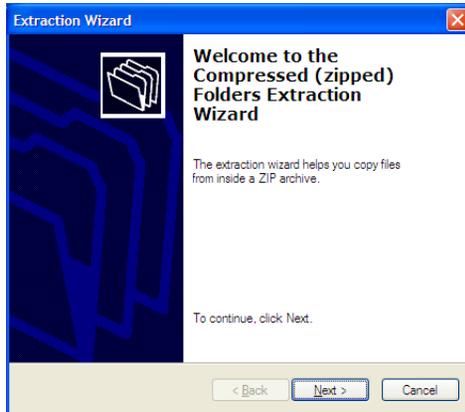


Figure 2.2: Extraction wizard

Select **Next** to continue.

4. A destination folder is needed for extracting the uncompressed files. By default, Windows will display a folder whose location and name are derived from the origins of the compressed file. In this case a folder named `Heka_driver` will be created on the desktop once the **Next** button is selected.

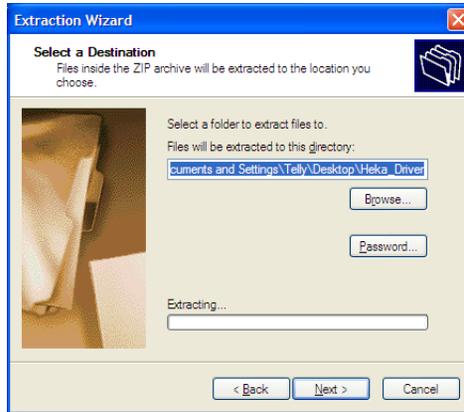


Figure 2.3: Select a destination

5. If the Windows extraction wizard has successfully extracted all of the files then the Extraction Complete window will appear.



Figure 2.4: Extraction complete

By default the option **Show extracted files** is enabled which will open a Windows Explorer window to display the extracted contents

once the **Finish** button has been selected. To bypass this additional window clear the **Show extracted files** options before selecting the **Finish** button.

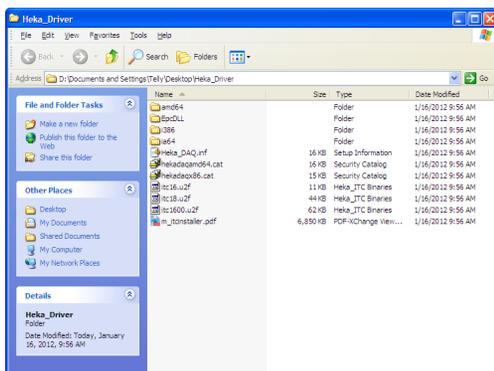


Figure 2.5: Display extracted files

## 2.2 Driver Installation

The HEKA Driver Installer is a Windows inf installer which uses the Windows Device Manager for installing the driver and associated files. For proper installation please follow the outlined steps.

1. Follow the steps outlined above for extracting the driver files.
2. If a PCI-xx host interface is used then power down the computer and install the card as specified in the user's manual. For an USB-xx host interface there is no need to power down the system just connect the USB cable to an available hi-speed USB2.0 port.
3. Once Windows has detected the new hardware the Found New Hardware Wizard window will be displayed.



Figure 2.6: Found new hardware

Select **No, not this time** and click **Next** to continue.

4. The next window will display the device name and prompt for the type of installation to perform.

**Important note:** For the PCI-16xx and PCI-18xx the device will be initially labeled PCI device, while for the PCI-1600 or PCI-1600e Multimedia controller. These names will change to their appropriate device names once the driver files are properly installed.

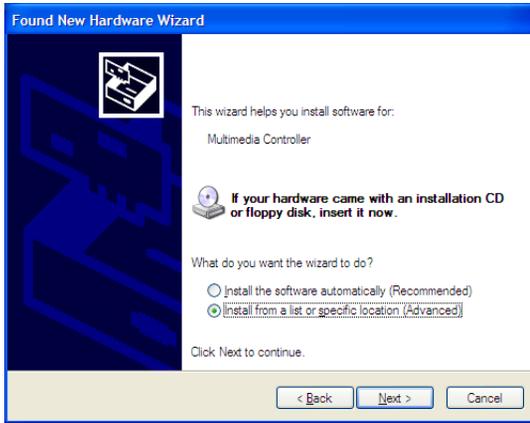


Figure 2.7: Install from list

Select **Install from a list or specific location** and click on **Next** to continue.

5. The next window will prompt you to select the search and installation options.



Figure 2.8: Installation options

The option **Search for the best driver in these locations** should be selected. If the option **Search removable media** is checked, then uncheck it. Select **Include this location in the search**. Then click on the **Browse** button. When the file dialog appears select the folder where the driver files are located. Please note that if proper driver installation files are not found the **OK** button will not be active.



Figure 2.9: Browse for Folder

6. The next window will show the status of the driver installation.

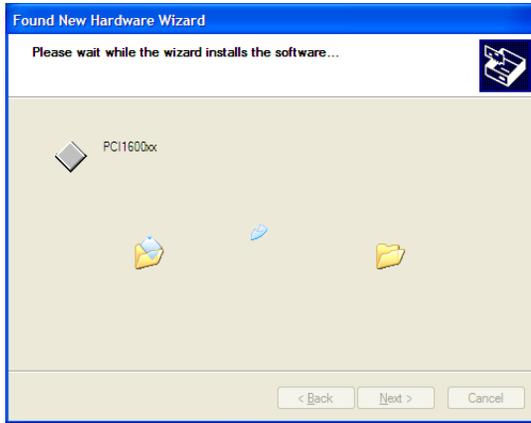


Figure 2.10: Install software

The Windows Device Manager will now copy all of the appropriate driver and utility files. Please note that when the file copying is in progress the selection buttons will be disabled. When installation has completed select **Next** to continue.

7. If the driver installation is successful then the status window will be displayed with a prompt to finish the wizard. Select **Finish** to complete the installation.



Figure 2.11: New Hardware Wizard completed

Driver installation has been completed! For PCI host interfaces the system will need to be rebooted for the driver to properly load. For USB host interfaces the device is ready to be used.



Figure 2.12: Restart Windows

## 2.3 Updating an older Driver version

To update an older driver installations please follow the outlined steps.

1. Follow the steps outlined above for extracting the driver files.
2. Open the **Windows Control Panel**. Find the item **System** and double click to execute. The following window will appear:

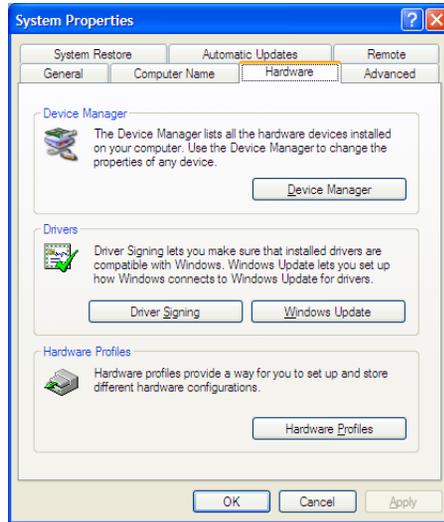


Figure 2.13: System Properties

Select the tab **Hardware** and then click on **Device Manager**. The Device tree will be displayed. Look for the Device Type InstruTECH AD/DA. Click on the + to expand the device tree. A list of all installed devices will be displayed.

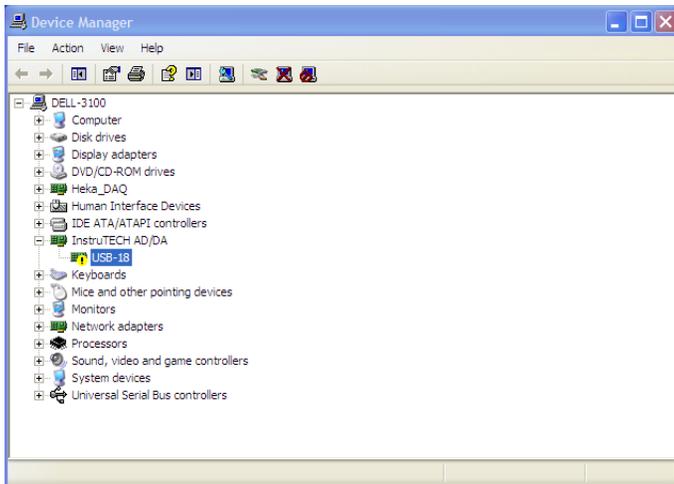


Figure 2.14: Device Manager Tree

Select the device to be updated and right click with the mouse. A list of commands will be displayed, select **Update Driver**.

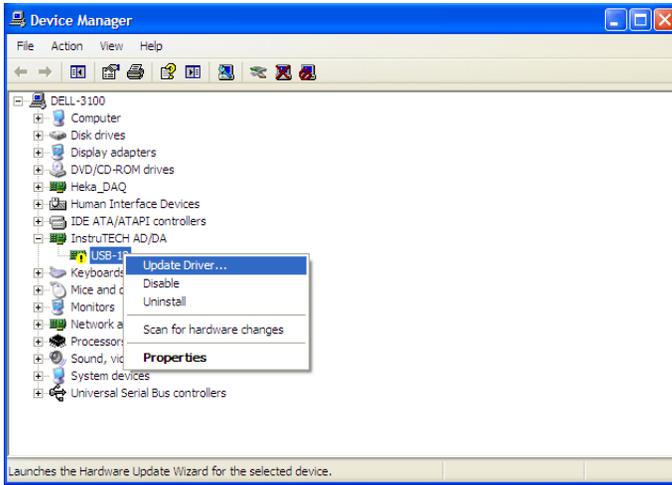


Figure 2.15: Update Driver

3. The Hardware Update wizard will start.



Figure 2.16: Hardware Update Wizard

Select No, not this time and click Next to continue.

4. The Hardware update wizard will display the name of the device to be updated.

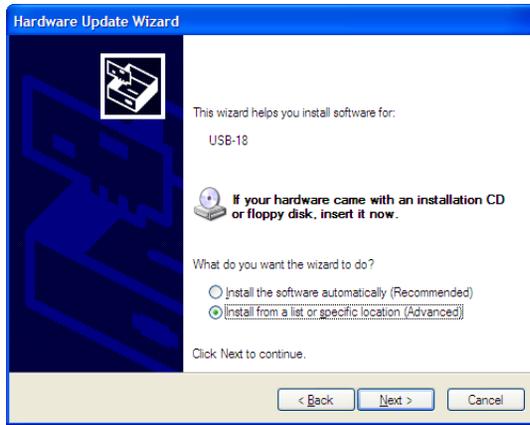


Figure 2.17: Install Software

Select **Install from a list or specific location** and click on **Next** to continue.

5. The next window will prompt you to select the search and installation options.

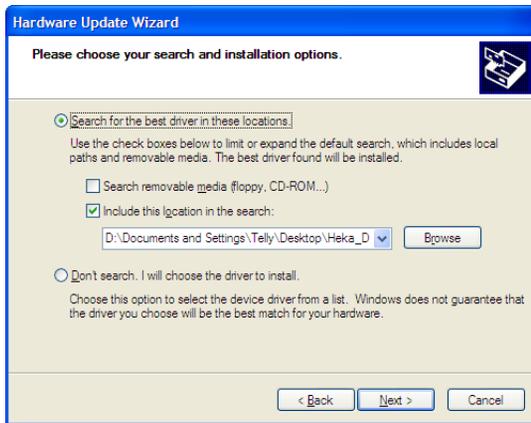


Figure 2.18: Installation options

The option **Search for the best driver in these locations** should be selected. If the option **Search removable media** is checked, then uncheck it. Select **Include this location in the search**. Then click on the **Browse** button. When the file dialog appears select the folder where the driver files are located.



Figure 2.19: Browse for driver files

Please note that if proper driver installation files are not found the OK button will not be active.

6. The next window will show the status of the driver installation.

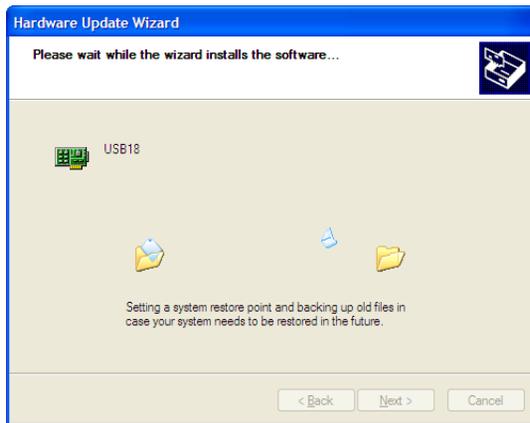


Figure 2.20: Install software

The Windows Device Manager will now copy all of the appropriate driver and utility files. Please note that when the file copying is in progress the selection buttons will be disabled. When installation has completed select **Finish** to close the update wizard.

7. If the driver installation is successful then the status window will be displayed with a prompt to finish the wizard. Select **Finish** to complete the installation.

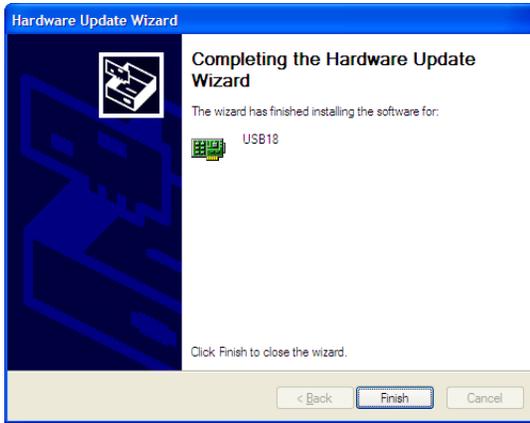


Figure 2.21: Hardware Update Wizard completed

Driver update has been completed! The device is ready to be used. If the original Device Tree was named InstruTECH AD/DA it may or may not be changed to the current name.

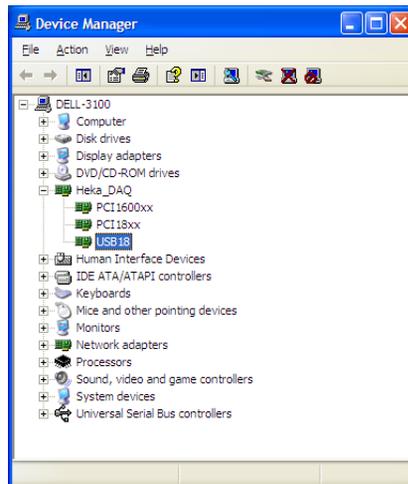


Figure 2.22: Updated Device Tree

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## 3. Windows Vista

The HEKA Driver Installer package is a Windows inf installer which uses the Windows Device Manager to install the required driver files and any additional associated files. The HEKA Driver Installer package can be installed on either a Windows Vista 32 or 64-bit system. Service pack 2 including all required windows updates is highly recommended.

***Important note:** Driver installation requires administrator rights!*

### 3.1 Software Preparation

The driver installation package is supplied as a single compressed file (.zip) that includes all of the necessary files for proper driver installation. Before this driver can be accessed by the host operating system these files must be uncompressed to a known location. Typically, extracting the files to the desktop so they are readily available is recommended. Once the installation process has been completed the folder may be deleted.

Following is an example of the steps required to extract the driver files.

1. Download or copy the `Heka_Driver.zip` file to the desktop.
  2. Double click on the file which will open a Windows Explorer window.
-

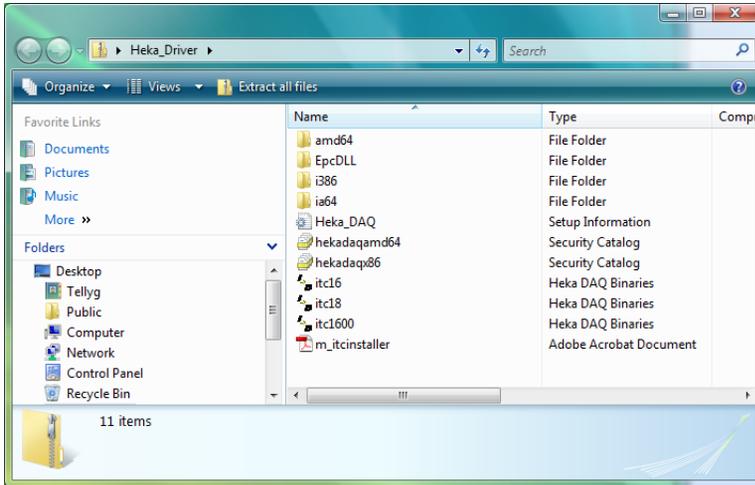


Figure 3.1: Compressed file view

3. In the windows command bar select the option **Extract all files**. Alternatively instead of double clicking on the zip file, select (highlight) the file **Heka\_Driver.zip**, right click with the mouse and select the option **Extract all files**.
4. A destination folder is needed for extracting the uncompressed files. By default, Windows will display a folder whose location and name are derived from the origins of the compressed file. In this case a folder named **Heka\_Driver** will be created on the desktop once the **Next** button is selected.

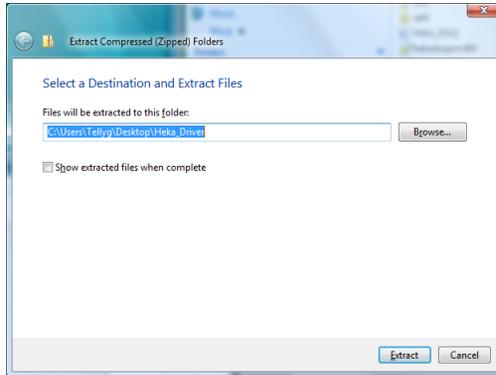


Figure 3.2: Select a destination

By default the option **Show extracted files when complete** is enabled which will open a Windows Explorer window to display the extracted contents once the **Extract** button has been selected. To bypass this additional window clear the **Show extracted files when complete** options before selecting **Extract**.

5. A progress window will appear to display the status of the extraction task.

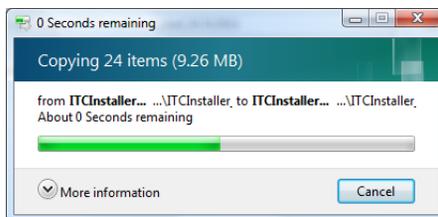


Figure 3.3: Extraction complete

When the extraction task has completed the progress window will disappear. The files are now ready for use.

## 3.2 Driver Installation

The HEKA Driver Installer is a Windows inf installer which uses the Windows Device Manager for installing the driver and associated files. Windows Vista driver installation behavior is specified by the settings **Windows Update Driver Settings** located in Control Panels - System Properties - Hardware tab.

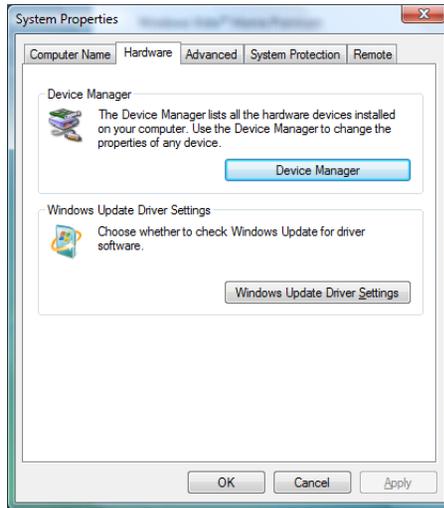


Figure 3.4: System Properties - Hardware

The default setting is **Check for drivers automatically**.

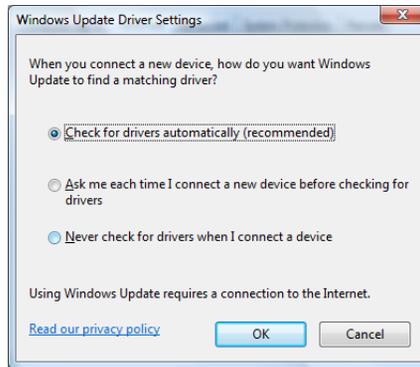


Figure 3.5: Windows Update Driver Settings

With this setting the Vista Device Manager will do the following when installing new devices:

- Go to Windows Update on the internet and check for the proper driver files.
- Search the local Windows driver database for the proper driver.
- Ask for driver files from user.

This behavior is assumed for the installation instructions outlined below.

1. Follow the steps outlined above for extracting the driver files.
2. If a PCI-xx host interface is used then power down the computer and install the card as specified in the user's manual. For an USB-xx host interface there is no need to power down the system just connect the USB cable to an available hi-speed USB2.0 port.
3. When new devices are attached to a Vista computer the Device manager will start the **Found New Hardware Wizard**.

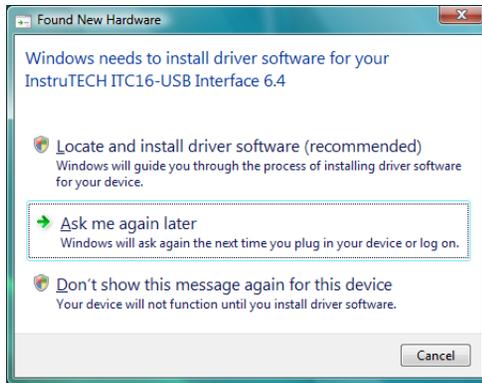


Figure 3.6: Found new hardware

Select **Locate and install driver software**.

The Device manager will now start the Driver Update process as outlined above. This task could be very time consuming. Do not assume that it has failed if it seems like nothing is working! To verify the status click on the Device Manager icon on the taskbar, which will display a spinning motion while it's busy. The following window will then appear.

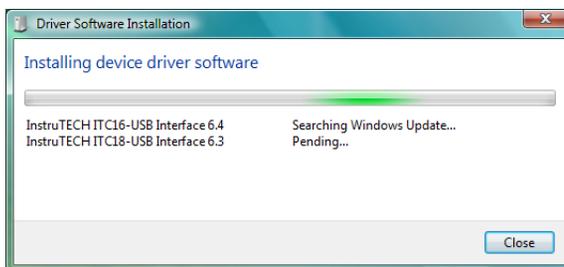


Figure 3.7: Device Manager status

***Important note:*** *The devices shown will vary based on the actual devices attached to the computer.*

4. The next window will display the device name and prompt for the driver file disk.

**Important note:** For the PCI-16xx and PCI-18xx the device will be initially labeled PCI device, while for the PCI-1600 or PCI-1600e Multimedia controller. These names will change to their appropriate device names once the driver files are properly installed.

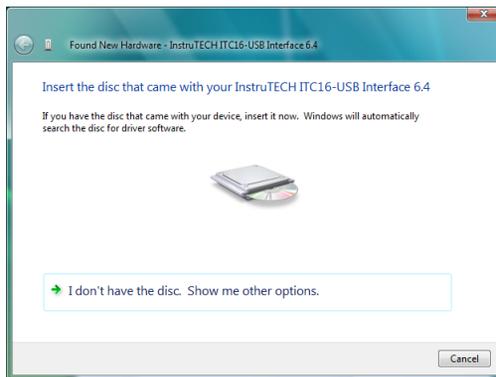


Figure 3.8: Insert install disk

Since the Device Manager could not find driver files either on the internet or the local driver database. The user will now be prompted to provide the driver files. Once the window appears select I don't have the disc. Show me other options.

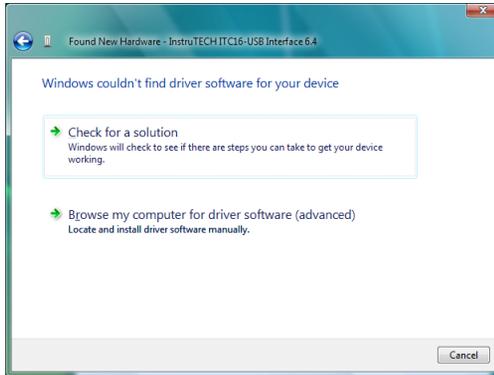


Figure 3.9: Windows couldn't find driver software

Select **Browse my computer for driver software**.

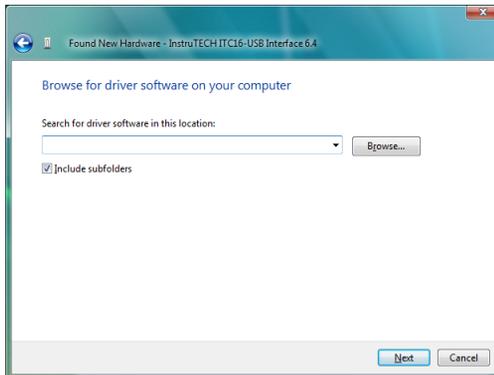


Figure 3.10: Browse for driver software

Once the window appears a default path may already be entered in the path field. This path is usually the last one used by this wizard. To select a new path select the **Browse** button. When the file dialog appears select the folder where the driver files are located, in this case **Heka\_Driver**. Please note that if proper driver installation files are not found the **OK** button will not be active.

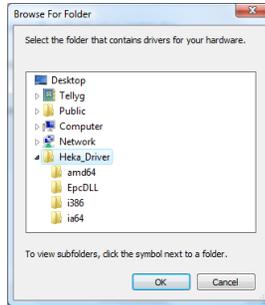


Figure 3.11: Browse for folder

Select **OK**. The **Search for driver software in this location** will now be updated with the correct driver file location.

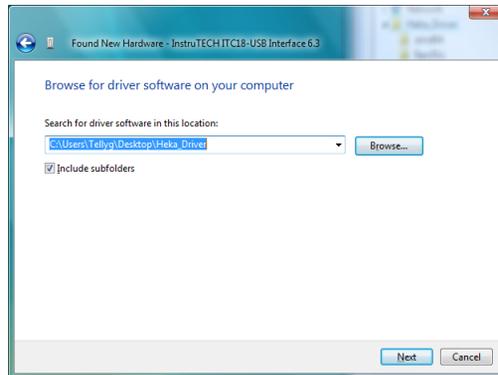


Figure 3.12: Browse for driver software

Select **Next** to start the driver installation process.

5. Windows security will now display a prompt for driver installation.



Figure 3.13: Windows Security

Select **Install**. The Windows Device Manager will now copy all of the appropriate driver and utility files. A progress window will appear while the driver installation task is running.

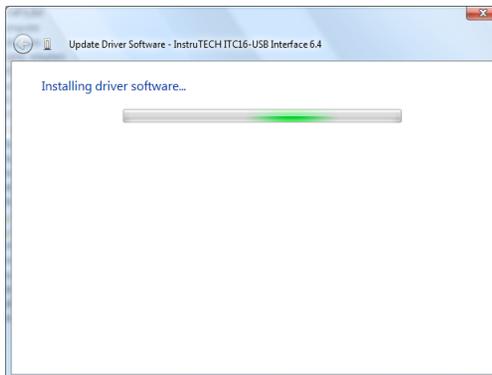


Figure 3.14: Installing driver software

6. If the driver installation is successful then the status window will be displayed with a prompt to close the wizard. Select **Close** to complete the installation.

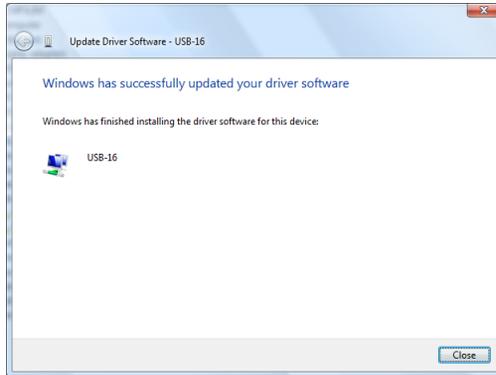


Figure 3.15: New Hardware Wizard completed

Driver installation has been completed! The device is ready to be used.

### 3.3 Updating an older Driver version

To update an older driver installations please follow the outlined steps.

1. Follow the steps outlined above for extracting the driver files.
2. Open the Windows Control Panel. Find Device Manager and double click to execute. The Device tree will be displayed. Look for the Device Type InstruTECH ADDA or HEKA\_ITC. Click on the + to expand the device tree. A list of all installed devices will be displayed.

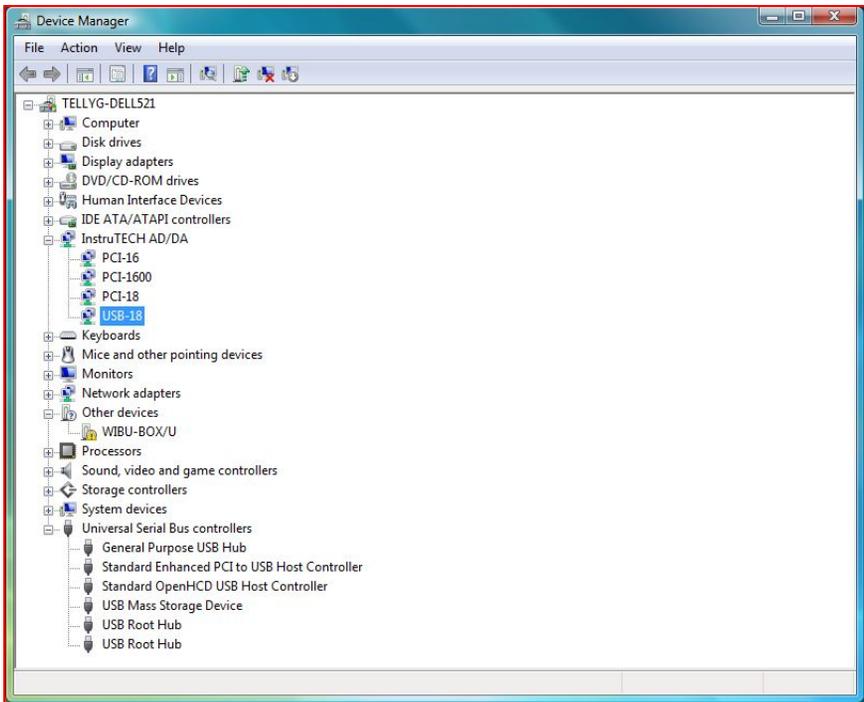


Figure 3.16: Device Manager tree list

Select the device to be updated and right click with the mouse. A list of commands will be displayed, select **Update Driver...**. The **Hardware update wizard** will start with the name of the device to be updated.

3. The steps for updating the driver files are the same as installing a new driver. Follow the steps outlined above!

***Note:** If the original Device Tree was named InstruTECH ADDA or HEKA ITC it will not be changed to the current name.*

## 3.4 Windows UAC

The current release of the HEKA Driver (dated 12/6/2011) does not need to be run as administrator, as with previous versions. The instructions outlined below are only required for troubleshooting.

The following are a set of instructions for setting up a program to run as administrator. There are a number of ways that this can be done. We will only address the **Advanced Properties** option which will allow the program to run as administrator whenever it's executed. For additional options please search the internet. There are many good articles that focus on different approaches.

***Important note:** Making these changes requires administrator rights!*

1. Right click on the program shortcut or program .exe file, in this example the ITCDemoG program is used. Click on **Properties**, and then the **Shortcut** tab, if it's not already opened.

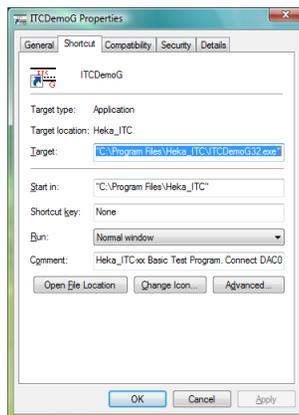


Figure 3.17: ITCDemoG properties

2. Click on the **Advanced** button.



Figure 3.18: Advanced properties

To always run this program as an administrator, check the Run as administrator box. Then click on OK which will return to the properties window.

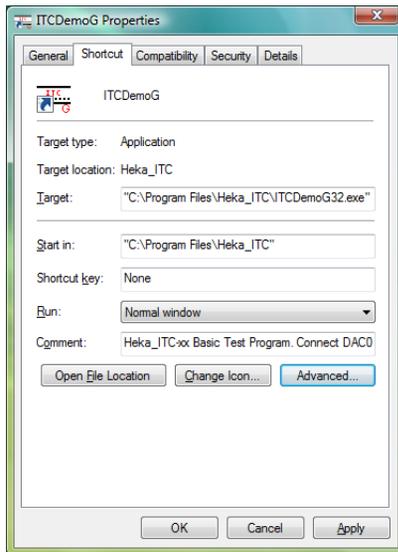


Figure 3.19: Advanced properties

3. Click on OK or Apply for the changes to be saved. An Access warning dialog will appear.

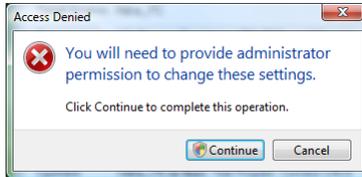


Figure 3.20: Access Denied

Click on **Continue**. An additional **User Account Control** warning dialog will appear with the message **Windows needs your permission to continue!** Click on **Continue** once again.



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## 4. Windows 7

The HEKA Driver Installer is a Windows inf installer which uses the Windows Device Manager to install the required driver files and any additional associated files. The HEKA Driver Installer can be installed on either a Windows7 32 or 64-bit systems. Service pack 1 including all required windows updates are highly recommended.

***Important note:** Driver installation requires administrator rights!*

### 4.1 Software Preparation

The driver installation package is supplied as a single compressed file (.zip) that includes all of the necessary files for proper driver installation. Before this driver can be accessed by the host operating system these files must be uncompressed to a known location. Typically, extracting the files to the desktop so they are readily available is recommended. Once the installation process has been completed the folder may be deleted.

Following is an example of the steps required to extract the driver files.

1. Download or copy the `Heka_Driver.zip` file to the desktop.
  2. Double click on the file which will open a Windows Explorer window.
-

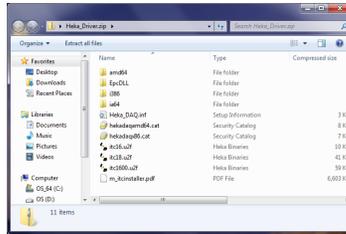


Figure 4.1: Compressed file view

3. In the windows command bar select the option **Extract all files**. Alternatively instead of double clicking on the zip file, select (highlight) the file **Heka\_Driver.zip**, right click with the mouse and select the option **Extract all files**.
4. A destination folder is needed for extracting the uncompressed files. By default, Windows will display a folder whose location and name are derived from the origins of the compressed file. In this case a folder named **Heka\_Driver** will be created on the desktop once the **Next** button is selected.

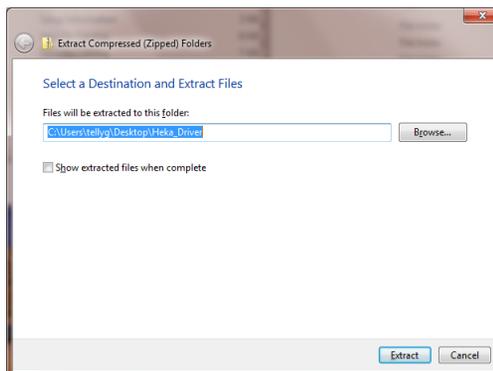


Figure 4.2: Select a destination

By default the option **Show extracted files when complete** is enabled which will open a Windows Explorer window to display the ex-

tracted contents once the **Extract** button has been selected. To bypass this additional window clear the **Show extracted files when complete** options before selecting **Extract**.

5. A progress window will appear to display the status of the extraction task.

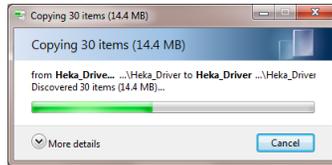


Figure 4.3: Extraction complete

When the extraction task has completed the progress window will disappear. The files are now ready for use.

## 4.2 Driver Installation

The HEKA Driver Installer is a Windows inf installer which uses the Windows Device Manager for installing the driver and associated files. Windows7 driver installation behavior is specified by the settings **Device Installation Settings** located in Control Panels - System Properties - Hardware tab.

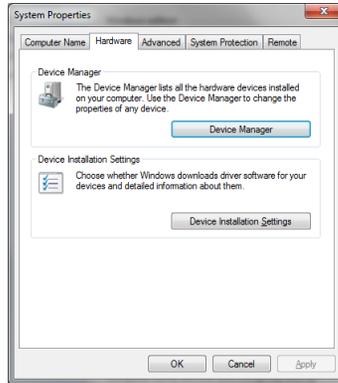


Figure 4.4: System Properties - Hardware

The default setting is Yes, do this automatically.

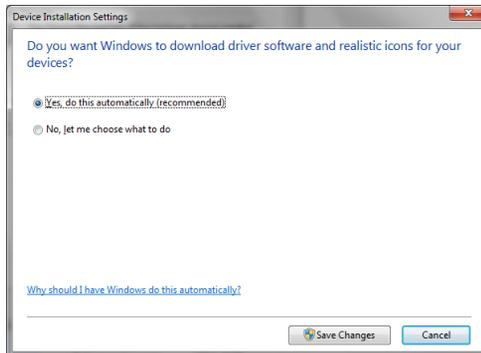


Figure 4.5: Device Installation Settings

With this setting the Windows7 Device Manager will do the following when installing new devices:

- Go to Windows Update on the internet and check for the proper driver files.

- Search the local Windows driver database for the proper driver.
- Ask for driver files from user.

This behavior is assumed for the installation instructions outlined below.

1. Follow the steps outlined above for extracting the driver files.
2. If a PCI-xx host interface is used then power down the computer and install the card as specified in the user's manual. For an USB-xx host interface there is no need to power down the system just connect the USB cable to an available hi-speed USB2.0 port.
3. When new devices are attached to a Windows7 computer the Device manager will start the **Device Driver installation task** as outlined above.

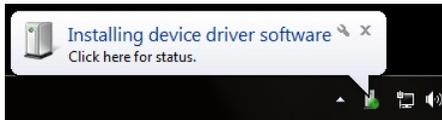


Figure 4.6: Installing device drivers

This task could be very time consuming. Do not assume that it has failed if it seems like nothing is working! Since the Device Manager could not find driver files either on the internet or the local driver database the following message will appear.

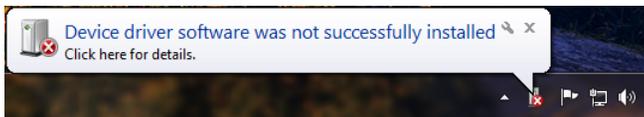


Figure 4.7: Device driver software failed

Click on the Device Manager icon to display the status window.



Figure 4.8: Device Manager status

**Important note:** *The devices shown will vary based on the actual devices attached to the computer.*

Select the **Close** to exit this window.

4. Go to Control Panels and open the Device Manager. The Device tree will be displayed.

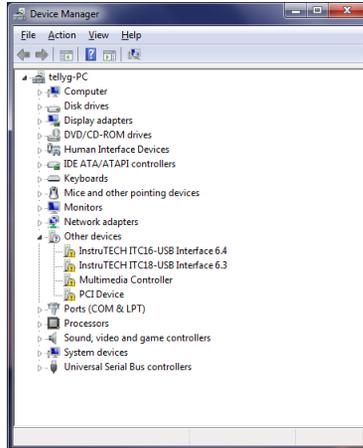


Figure 4.9: Device Manager tree

**Important note:** *For the PCI-16xx and PCI-18xx the device will be initially labeled PCI device, while for the PCI-*

*1600 or PCI-1600e Multimedia controller. These names will change to their appropriate device names once the driver files are properly installed.*

5. The devices that have failed the Driver Installation are placed in the Device Tree under the category **Other devices**. Right click on the device to update and select **Update Driver Software**.

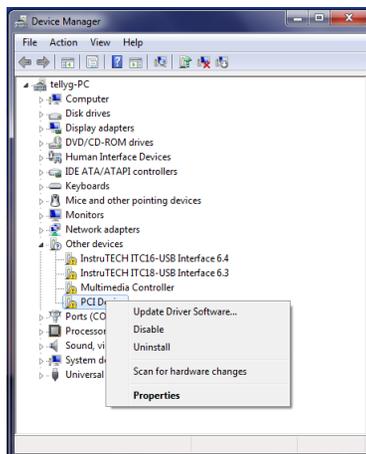


Figure 4.10: Update Driver Software

The Update Driver wizard will now start. The user will now be prompted on what search method to use for locating the appropriate driver files. Since the driver files are located in the folder that was created on the desktop select **Browse my computer for driver software**.

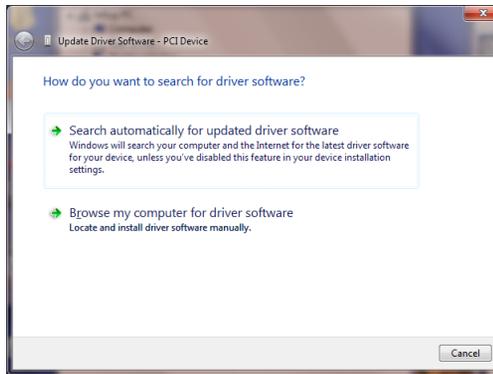


Figure 4.11: Search for driver software

The Browse for driver search window will appear. A default path may already be entered in the search path field. This path is usually the last one used by this wizard. To select a new path select the **Browse** button. When the file dialog appears select the folder where the driver files are located, in this case `Heka_Driver`. Please note that if proper driver installation files are not found the **OK** button will not be active.

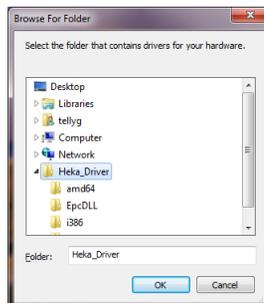


Figure 4.12: Browse for folder

Select **OK**. The **Search for driver software in this location** will now be updated with the correct driver file location.

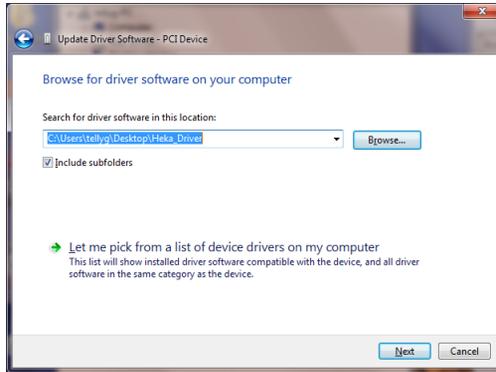


Figure 4.13: Browse for driver software

Select **Next** to start the driver installation process.

6. Windows security will now display a prompt for driver installation.



Figure 4.14: Windows Security

Select **Install**. The Windows Device Manager will now copy all of the appropriate driver and utility files. A progress window will appear while the driver installation task is running.

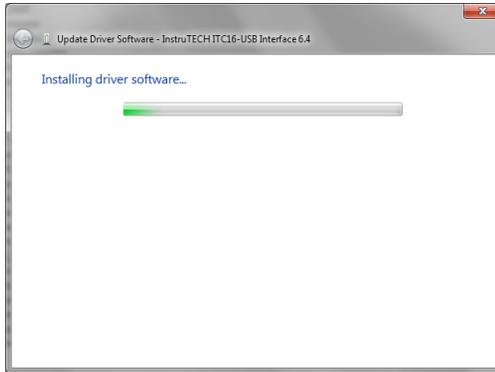


Figure 4.15: Installing driver software

7. If the driver installation is successful then the status window will be displayed with a prompt to close the wizard. Select **C**lose to complete the installation.

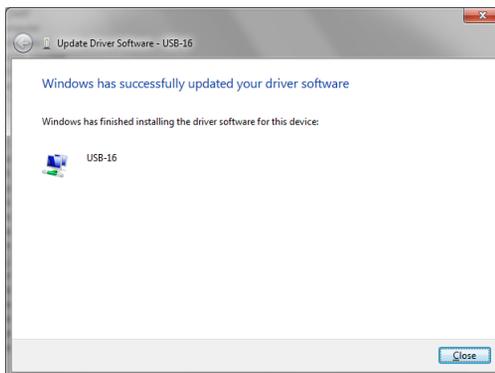


Figure 4.16: Update Driver Software completed

8. The Device tree in the Device manager will be updated to reflect the changes.

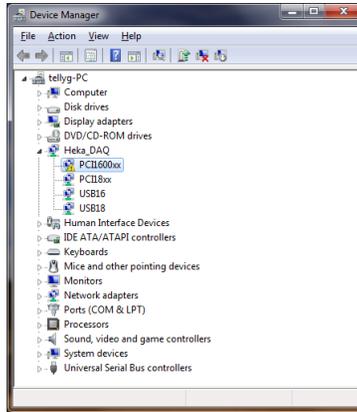


Figure 4.17: Updated Device Tree

Driver installation has been completed! The device is ready to be used.

**Important note:** *If the device shows a yellow warning triangle next to the device name then the system needs to be rebooted before it can be used!*

## 4.3 Updating an older Driver version

Updating an older driver installations follows the same exact steps as outlined above. The only difference is the device will be displayed in the device tree in it's proper position and not **Other devices**.

## 4.4 Windows UAC

Windows7 just like Vista has User Access Controls to improve security. Unlike Vista Windows7 allows the UAC security level to be adjusted by the user. Following is a brief description on how to make these changes so not to be constantly bothered by security messages.

1. Open Control Panels - System.

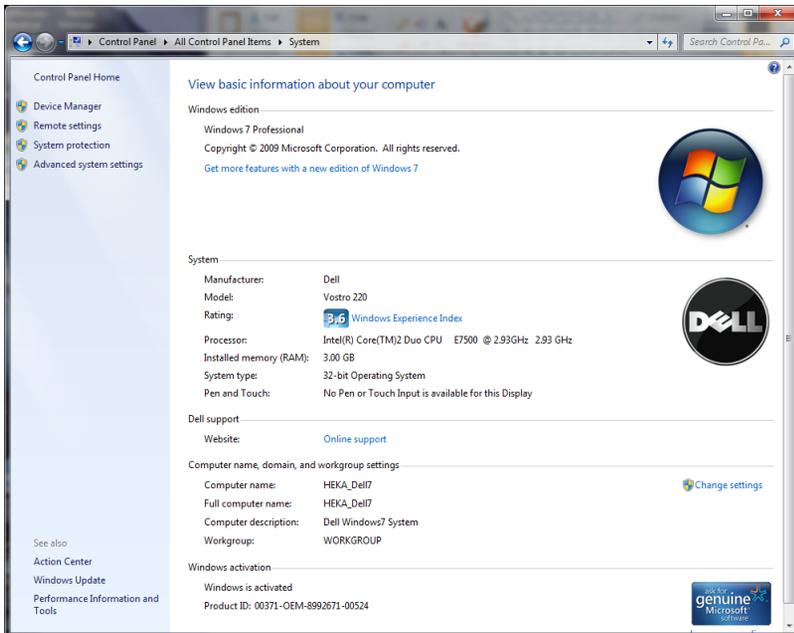


Figure 4.18: System Control Panel

2. Select **Action Center** located on the bottom left corner of this window.

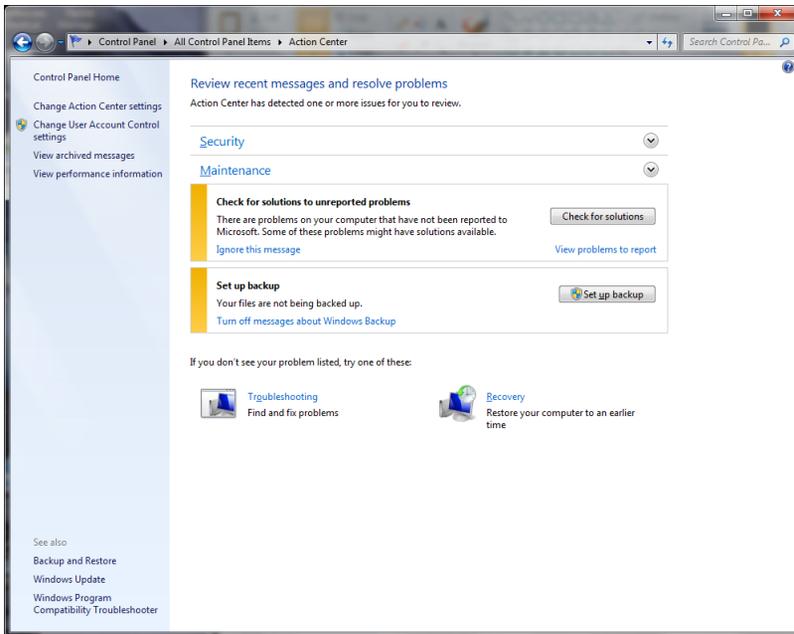


Figure 4.19: Action Center Control Panel

3. Select **Change User Account Control settings** located on the top left corner of this window.

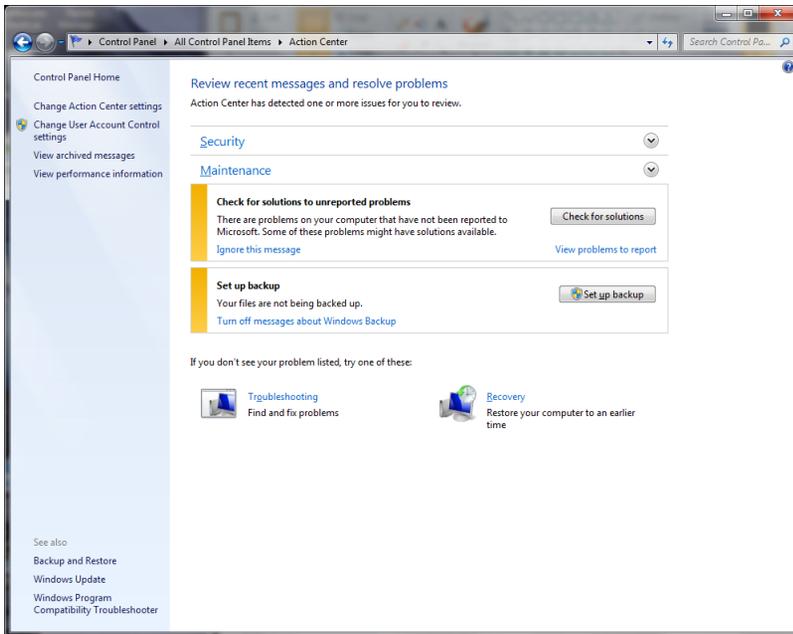


Figure 4.20: Action Center Control Panel

4. Using the slider control change the setting to one of the lower security settings.

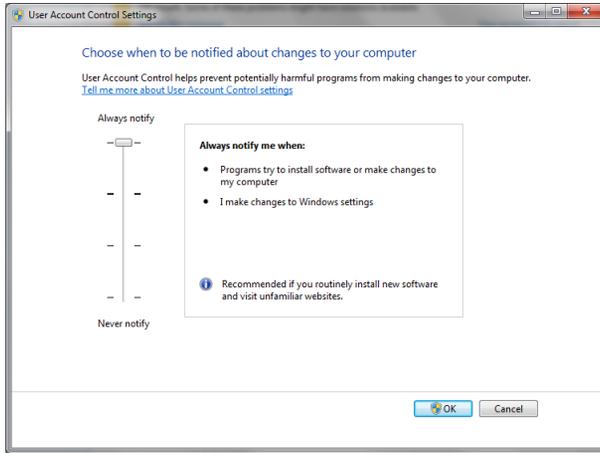


Figure 4.21: User Account Control Settings

Select OK to save changes.

## 4.5 Run as Administrator

The current release of the HEKA Driver (dated 12/6/2011) does not need to be run as administrator, as with previous versions. The instructions outlined below are only required for troubleshooting.

The following are a set of instructions for setting up a program to run as administrator. There are a number of ways that this can be done. We will only address the **Advanced Properties** option which will allow the program to run as administrator whenever it's executed. For additional options please search the internet. There are many good articles that focus on different approaches.

***Important note:*** Making these changes requires administrator rights!

1. Right click on the program shortcut or program .exe file, in this example the ITCDemoG program is used.

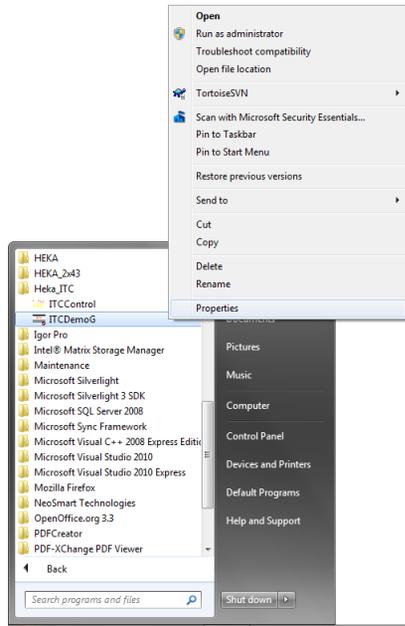


Figure 4.22: Program properties

Click on **Properties**, and then the **Shortcut** tab, if it's not already opened.

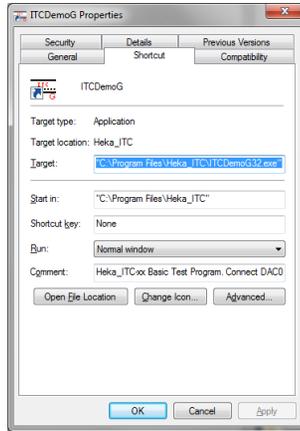


Figure 4.23: ITCDemoG properties

2. Click on the Advanced button.



Figure 4.24: Advanced properties

To always run this program as an administrator, check the Run as administrator box. Then click on OK which will return to the properties window.

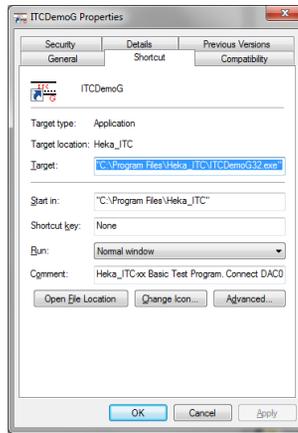


Figure 4.25: Advanced properties

3. Click on **OK** or **Apply** for the changes to be saved. An Access warning dialog will appear.

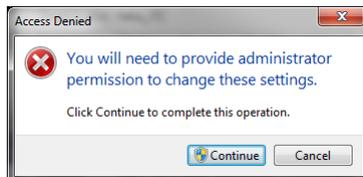


Figure 4.26: Access Denied

Click on **Continue**. An additional User Account Control warning dialog will appear with the message Windows needs your permission to continue! Click on **Continue** once again.

---

## 5. MacOSX

The HEKA Driver Installer contains installation scripts that are used to properly install the required driver files and any additional associated files. The installer script will install one of the two MacOSX drivers. Version 21.02 will be installed on MacOSX systems 10.4 and 10.5. This version supports 32-bit PPC and Intel based systems. Version 22.4 will be installed on Intel based systems with MacOSX 10.6 and above. This version supports both 32 and 64-bit operating system.

***Note:** MacOSX 10.6 and above does not support the PPC architecture.*

### 5.1 Driver Installation

The driver installation package is supplied as a single compressed disk image file that includes all of the necessary files for proper driver installation. Before this driver can be used it must be uncompressed and mounted.

1. Download or copy the ITC\_Driver\_Installer.zip file to the desktop.
  2. Double click on the file which will uncompress the disk image.
-



Figure 5.1: Uncompressed file view

Alternatively, instead of double clicking on the zip file, select (highlight) the file `ITC_Driver_Installer.zip`, click with the mouse and select `Open With Archive Utility` or any other file uncompression utility that may be available.

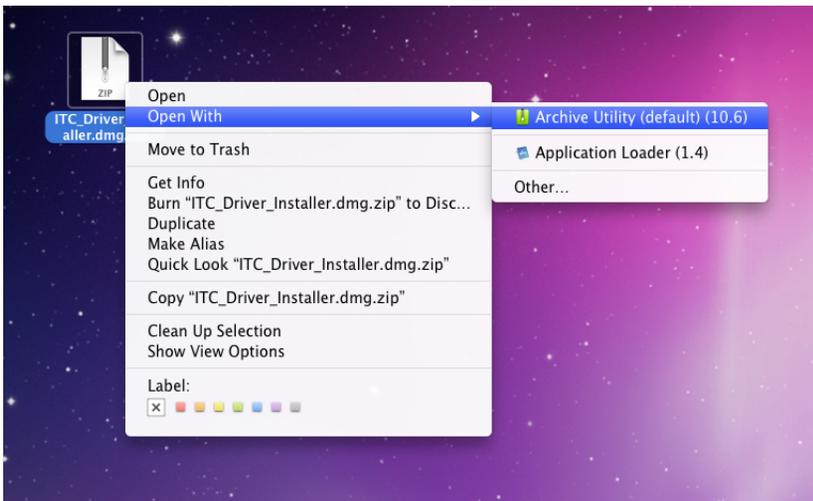


Figure 5.2: Select application

3. Double click on the `ITC_Driver_Installer` disk image to mount it on the desktop.



Figure 5.3: ITC Driver Installer disk image

4. Double click on the `ITC_Driver_Installer` disk icon to view the drive contents.



Figure 5.4: Driver file view

5. Double click on the `Install ITCDriver` to run the installation script. A prompt will appear to either `Deinstall`, `Cancel` or `Install` the driver.

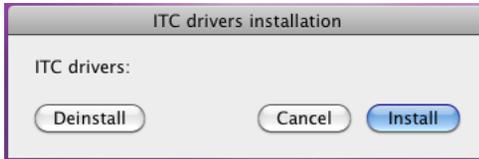


Figure 5.5: Installation Prompt

***Note:** If an older version of the ITCDriver is already installed there is no need to uninstall it.*

6. Driver installation requires authentication therefore a security prompt will appear. Type the administrator password and select the option OK to continue.



Figure 5.6: Password authentication

7. If the driver installation is successful then the status window will be displayed. Select the option OK to finish the script.

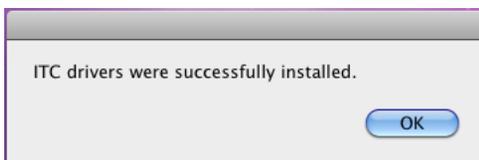


Figure 5.7: Installation successful

Driver installation has been completed! The device is ready to be used.

## 5.2 Updating an older Driver version

Updating an older driver installations is handled exactly in the same manner as a new installation. Please follow the steps outlined above.

## 5.3 64-bit kernel

Version 22.4 of the ITC Driver can be installed with either the 32 or 64-bit kernel running. Once the driver is installed it will load properly with either kernel version. We have tested a number of 32-bit application running on the 64-bit kernel. If an issue exists with a particular application the system kernel can be changed for testing. Booting a different kernel can be accomplished by using one of the following methods:

1. Method 1: Startup key combination (for current startup only)

If MacOS X uses the 64-bit kernel by default, the 32-bit kernel can be started by holding the 3 and 2 keys during startup. To start up using the 64-bit kernel hold the 6 and 4 keys during startup.

***Note:** MacOS X will revert to the default kernel the next time the Macintosh is rebooted.*

2. Method 2: On-disk setting (persistent)

To select the 32-bit kernel for the current startup disk, use the following command in Terminal:

```
sudo systemsetup -setkernelbootarchitecture i386
```

To select the 64-bit kernel for the current startup disk, use the following command in Terminal:

```
sudo systemsetup -setkernelbootarchitecture x86_64
```

***Note:** This setting is stored in the `/Library/Preferences/SystemConfiguration/com.apple.Boot.plist` file and will take effect every time you start up from this disk. If you start up from a different disk, the setting on that disk, or the hardware default, will take effect.*

## 5.4 Troubleshooting using the Apple System Profiler

The System Profiler software is a great tool for checking driver and hardware specific information.

To load go to Applications - Utilities - System profiler.

The profiler is divided into the following categories: Hardware, Network and Software.

For PCI card information select **PCI Cards** under the Hardware category. The following screen will appear depending on the PCI host interface attached.

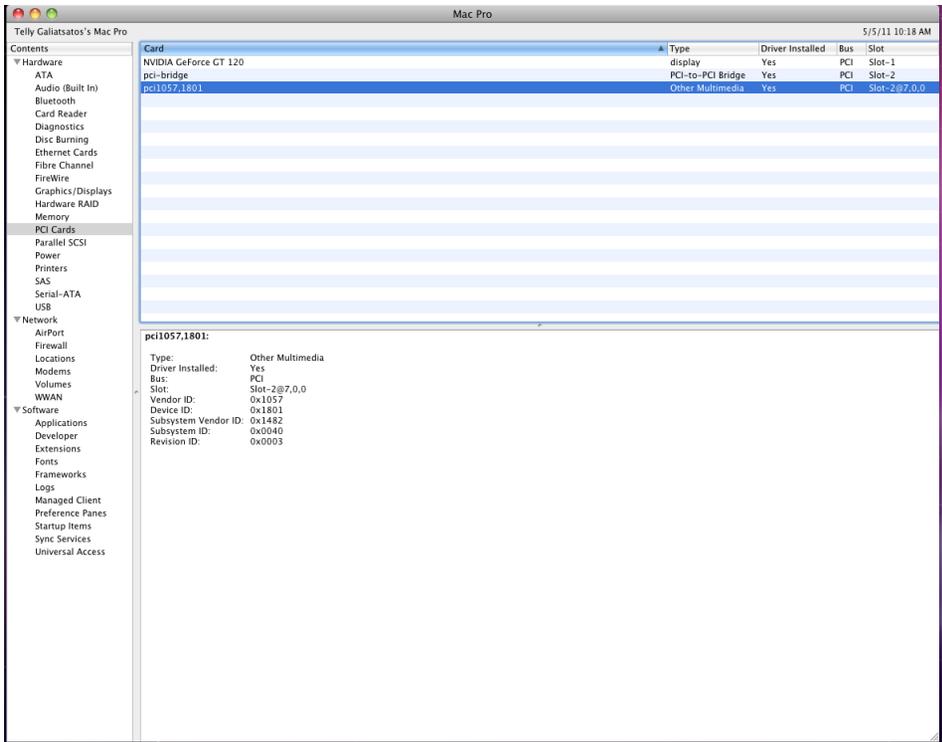


Figure 5.8: PCI-1600x information

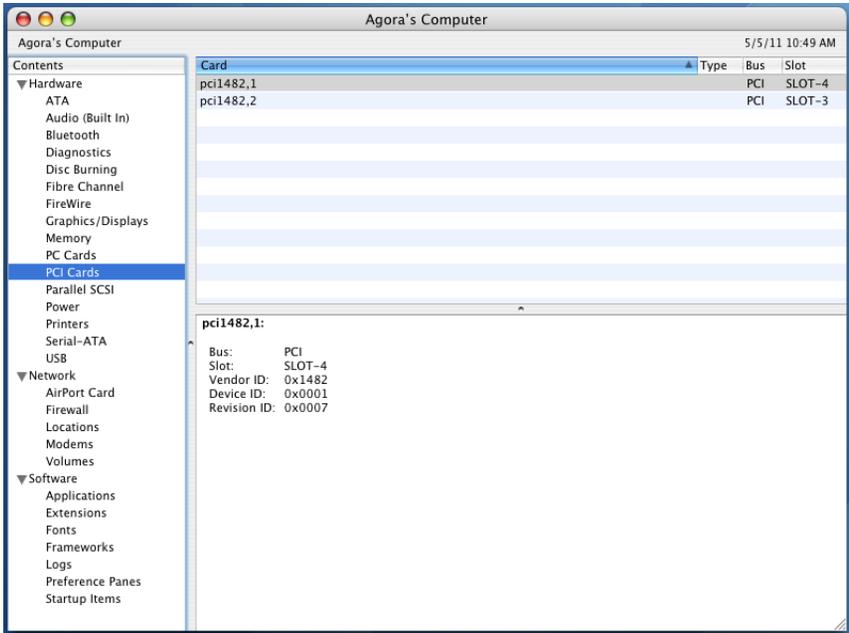


Figure 5.9: PCI-16x information

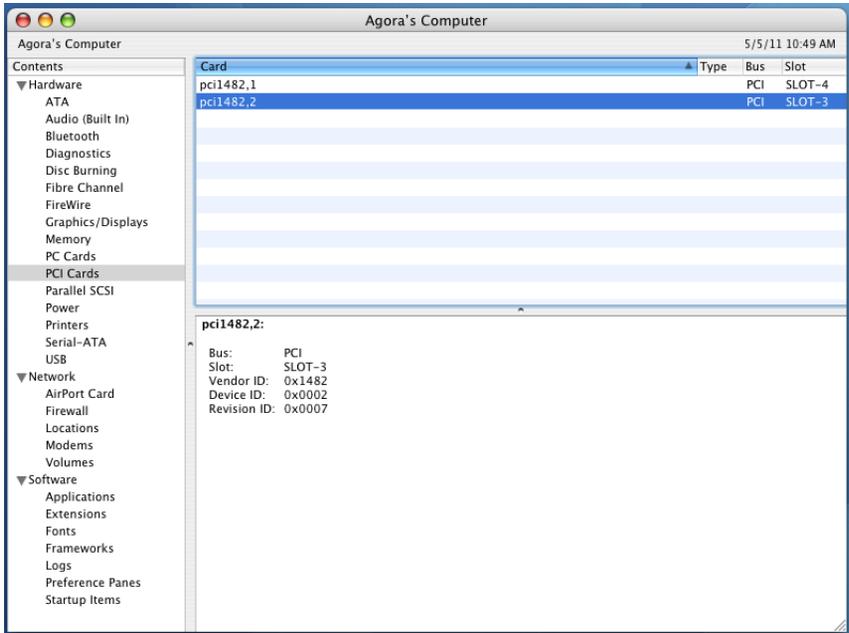


Figure 5.10: PCI-18x information

For USB host interface information select **USB** under the Hardware category. The following screen will appear depending on the USB host interface attached.

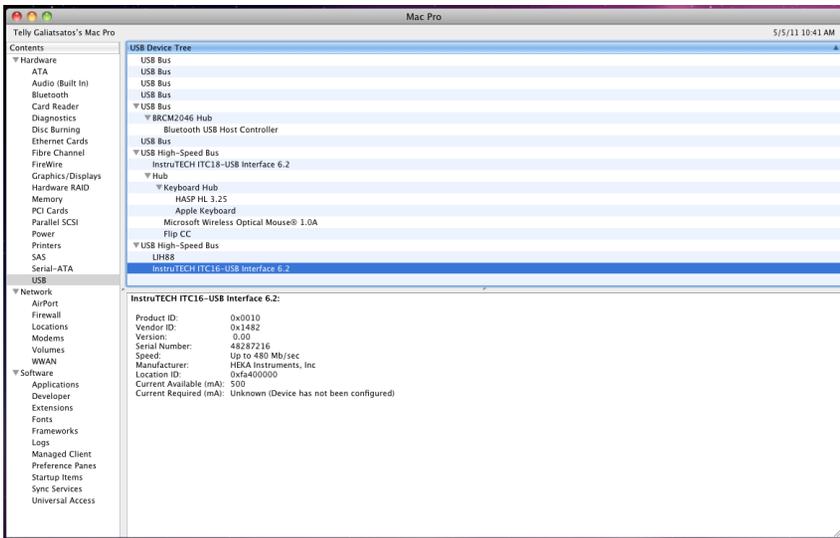


Figure 5.11: USB-16 information

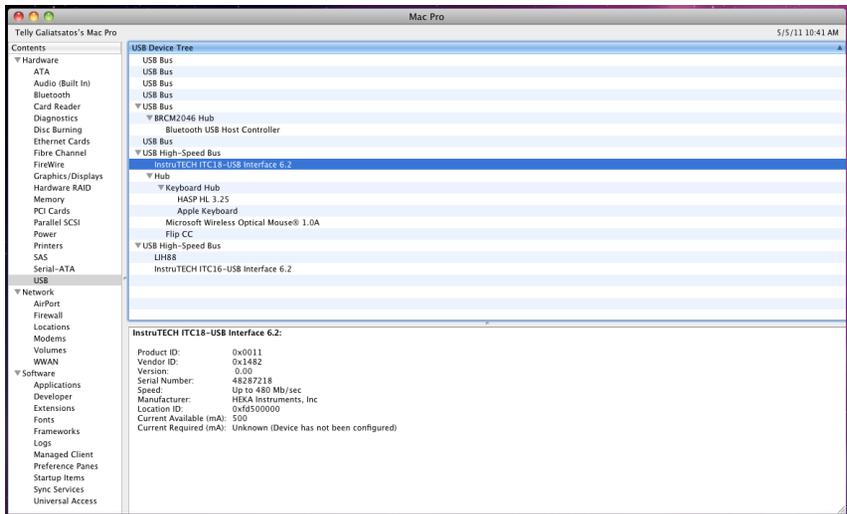


Figure 5.12: USB-18 information

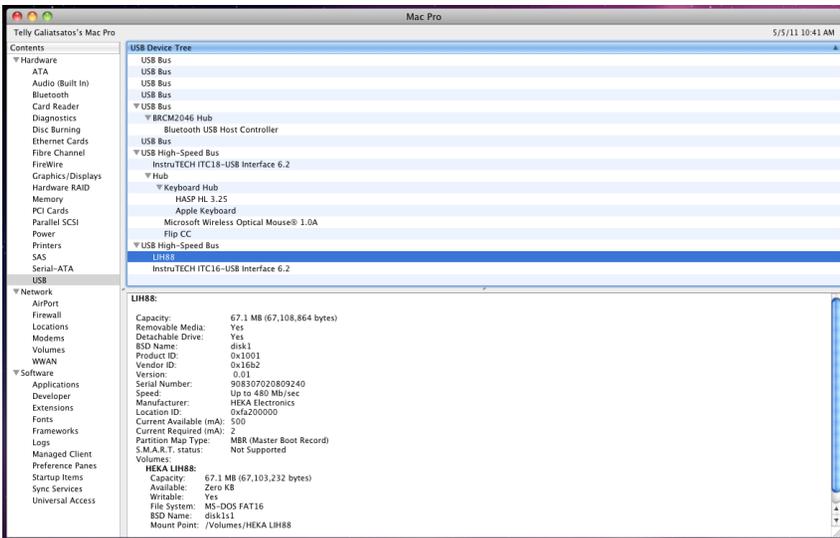


Figure 5.13: LIH 88 information

If the host cards appear on these lists then the hardware has been properly detected. Now we need to check if the driver is also properly installed for that we go to **Extensions** under the Software category. Scroll down the list and look for **ITC\_Driver**.

Contents	Extension Name	Version	Last Modified	Kind	64-Bit (Intel)
Hardware	IOBSDStorageFamily	1.6	11/4/09 2:50 AM	Intel	Yes
ATA	IOBluetoothFamily	2.4.0	11/4/09 2:31 AM	Universal	Yes
Audio (Built In)	IOBluetoothSerialManager	2.4.0	11/4/09 2:31 AM	Universal	Yes
Bluetooth	IOCDStorageFamily	1.6	5/29/09 3:12 AM	Intel	Yes
Card Reader	IOVDStorageFamily	1.6	11/4/09 2:51 AM	Intel	Yes
Diagnostics	IOFireWireFamily	4.2.6	11/4/09 2:51 AM	Universal	Yes
Disc Burning	IOFireWireIP	2.0.3	5/29/09 3:11 AM	Intel	Yes
Ethernet Cards	IOGraphicsFamily	2.2	4/4/11 1:44 PM	Intel	Yes
Fibre Channel	IOHDAFamily	1.9.9	11/4/09 2:26 AM	Intel	Yes
FireWire	IOHDXController	10.6.5	11/4/09 2:46 AM	Intel	Yes
Graphics/Displays	IOHDAFamily	1.6.5	11/4/09 2:19 AM	Intel	Yes
Hardware RAID	IOKit	10.7.0	4/4/11 1:44 PM	Universal	Yes
Memory	IOKitG.0	7.9.9	4/4/11 1:44 PM	Intel	No
PCI Cards	IONDRVSupport	2.2	4/4/11 1:44 PM	Intel	Yes
Parallel SCSI	IONetworkingFamily	3.1.0	11/4/09 2:52 AM	Intel	Yes
Power	IOPCIFamily	2.6	4/4/11 1:44 PM	Intel	Yes
Printers	IOPlatformPluginFamily	4.5.0	11/4/09 2:53 AM	Intel	Yes
SAS	IOCSArchitectureModelFamily	2.6.5	11/4/09 2:24 AM	Universal	Yes
Serial-ATA	IOCSIBlockCommandsDevice	2.6.5	11/4/09 2:24 AM	Universal	Yes
USB	IOCSIMultiMediaCommandsDevice	2.6.5	11/4/09 2:24 AM	Universal	Yes
Network	IOSerialFamily	10.0.3	5/29/09 3:16 AM	Intel	Yes
AirPort	IOSMBFamily	3.1	5/29/09 3:13 AM	Intel	Yes
Firewall	IOStorageFamily	1.6.2	5/29/09 3:10 AM	Intel	Yes
Locations	IOSurface	74.2	11/4/09 2:17 AM	Intel	Yes
Modems	IOUSBCompositeDriver	3.9.0	11/4/09 2:21 AM	Intel	Yes
Volumes	IOUSBFamily	4.1.8	5/29/09 3:09 AM	Intel	Yes
WWAN	IOUSBHDDDriver	4.1.5	11/4/09 2:21 AM	Intel	Yes
Software	IOUSBMassStorageClass	2.6.5	11/4/09 2:26 AM	Intel	Yes
Applications	IOUSBUserClient	4.1.5	11/4/09 2:21 AM	Intel	Yes
Developer	ITC_Driver	ITC Driver for MacOSX, Version 21.3	5/5/11 11:15 AM	Universal	No
Extensions	ITC_Driver:				
Fonts	Version: ITC Driver for MacOSX, Version 21.3				
Frameworks	Last Modified: 5/5/11 11:15 AM				
Logs	Get Info String: ITC Driver for MacOSX (Universal), Version 21.3. Copyright (c) 2007-2011 HEKA Instruments Inc				
Managed Client	Kind: Universal				
Preference Panes	Architectures: i386, ppc				
Startup Items	64-bit (Intel): No				
Sync Services	Location: /System/Library/Extensions/ITC_Driver.kext				
Universal Access	Kext Version: 21.3				
	Load Address: 0x59fee000				
	Valid: Yes				
	Authentic: Yes				
	Dependencies: Satisfied				

Figure 5.14: PCI-1600x information

If the driver is listed then it is also loaded and running. If not then please reinstall the driver by following the instructions outlined above.

***Note:** If an LIH 88 interface is installed then the ITC Driver is not required and therefore not loaded.*



---

# 6. Windows Test Programs

The program ITCDemoGxx and ITCControlxx can be used to verify the driver installation and hardware functionality.

## 6.1 ITCDemoGxx

The ITCDemoGxx program will initialize the selected device, start acquisition and continuously display the result. DAC output 0 will send out an increasing amplitude sine wave that is read by ADC input 0 and displayed.

1. Connect a BNC cable between DAC 0 and ADC 0.
2. Execute ITCDemoGxx from the program group Heka\_ITC.

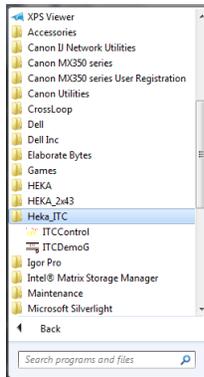


Figure 6.1: Select application

3. Select the device to test. Please note that for an ITC-18 with a USB-18 host the device USB-18 must be selected. For an ITC-16 with a USB-16 host the device USB-16 must be selected.
-



Figure 6.2: Select device

4. By default the program will start with Device Number 0. If more than one of the same device types is installed, selecting another **Device Number** will make that interface the active one. For most users the default of 0 will be the only choice.
5. Once OK is selected the program will initialize the device and start acquisition. If the increasing sine wave is displayed then the device and driver installation were successful

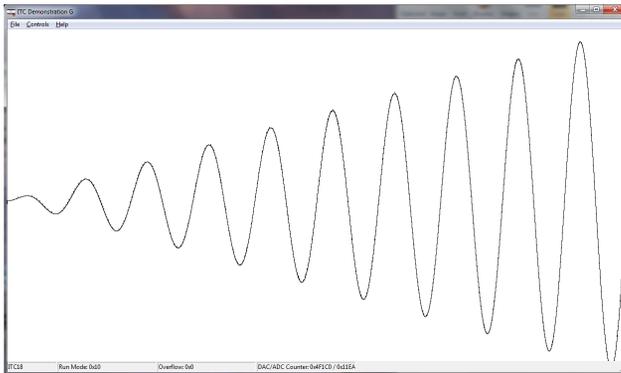


Figure 6.3: Acquisition running

6. To terminate acquisition select **Stop** from the Controls pull down menu.

### 6.1.1 File Menu commands

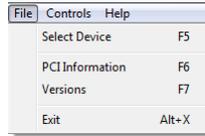


Figure 6.4: File menu

**Select Device (F5):** Opens the device selection window.

**PCI Information (F6):** Opens the PCI information window.

This window will display hardware specific information. This information is only helpful for support personnel when troubleshooting a problem.

**Versions (F7):** Opens the version display window.

This window will display driver file version information as well as device serial numbers (if available). This information is only helpful for support personnel when troubleshooting a problem.

### 6.1.2 Controls Menu commands

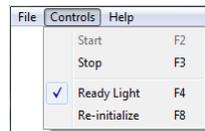


Figure 6.5: Controls menu

**Start (F2):** start acquisition. This item will only be active when acquisition is not running.

**Stop (F3):** stop acquisition. This item will only be active when acquisition is running.

**Ready Light (F4):** control the status (ON /OFF) of the Ready LED. Please note that this option will not work with ITC-16 or USB-16 interfaces.

**Re-initialize (F8):** re-initialize the interface. This option will reload all of the internal hardware to their default state.

## 6.2 ITCControlxx

The ITCControlxx program is a more extensive acquisition test utility. This program supports all of the InstruTECH interfaces and allows the use of all of the analog and digital channels for the selected device.

Execute ITCControlxx from the program group `Heka_ITC`.

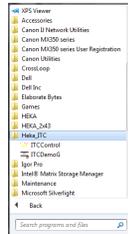


Figure 6.6: Select application

The program will search your system for all InstruTECH devices. A device tree will be created that lists all of the attached devices.

If more than one device is listed select the device to be tested. Please note that for an ITC-18 with a USB-18 host, the device USB-18 must be selected. For an ITC-16 with a USB-16 host, the device USB-16 must be selected. Once the device is selected the properties for the device are displayed. Some devices have serial numbers written to their internal firmware which will also be displayed.

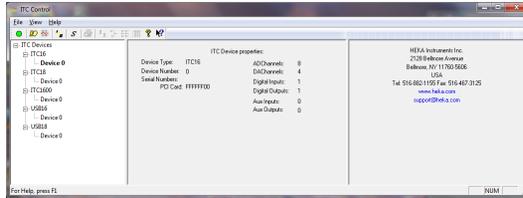


Figure 6.7: ITCControlxx main screen

There are 3 main sections to this program which can be accessed either from the **Toolbar** or the **File** menu.



Figure 6.8: Toolbar

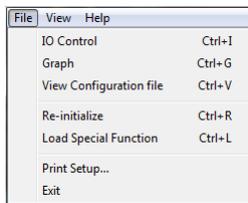


Figure 6.9: File menu

**IO Control (Ctrl+I):** To activate the I/O control window select the I/O icon on the toolbar or select **IO Control** in the **File** pull down menu.

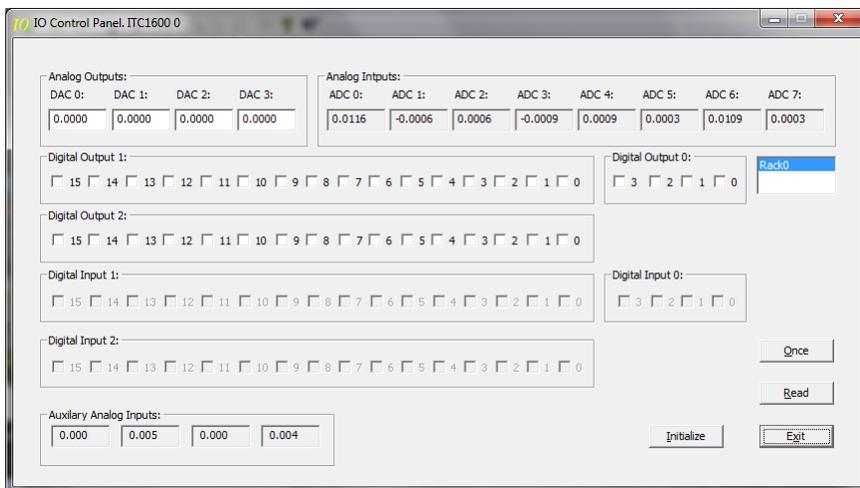


Figure 6.10: IO control window

The I/O control window can be used to perform static tests on any of the input and output channels including digital I/O. When an output is selected with either a key or mouse command a single read on all of the inputs will be performed. This can also be accomplished by selecting the **Once** button. For continuous updates select **Read** instead.

For example if a BNC cable was connected between DAC 0 and ADC 0. When a new value is entered in the DAC 0 field as soon as the return key is hit ADC 0 would be read and the display will be updated with the new value.

***Important note:*** Please note that this window will be different for each interface since they have number of available channels.

**Graph (Ctrl+G):** To activate the Graph window select the graph icon on the toolbar or select **Graph** in the **File** pull down menu.

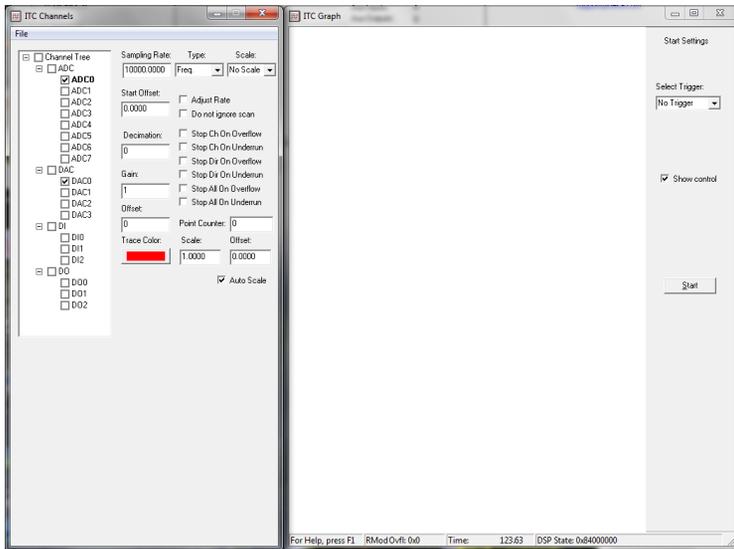


Figure 6.11: Graph windows

The Graph window is used to perform acquisition / control. The graph window is split into two windows, the Channel tree and the Oscilloscope display. The channel tree will display all of the available channels for the selected (active) device. Each of the channels parameters can be individually set by activating the channel. This is done by clicking on the channel name (i.e ADC0, DAC 0 etc) on the left hand side of the channel tree. When an ADC or DAC channel is selected the parameters for that channel are displayed. For example if ADC 0 is selected the parameters for that channel are displayed and can be changed (i.e. trace color, sampling rate, overflow flags, etc). To use a channel in an acquisition sequence select the checkbox next to the channel name. For example the picture above illustrates that ADC0 and DAC0 will be used.

Once the channels and parameters are specified select **Start** to begin acquisition. The **Start** button will be renamed to **Stop** and can now be used to stop the acquisition.

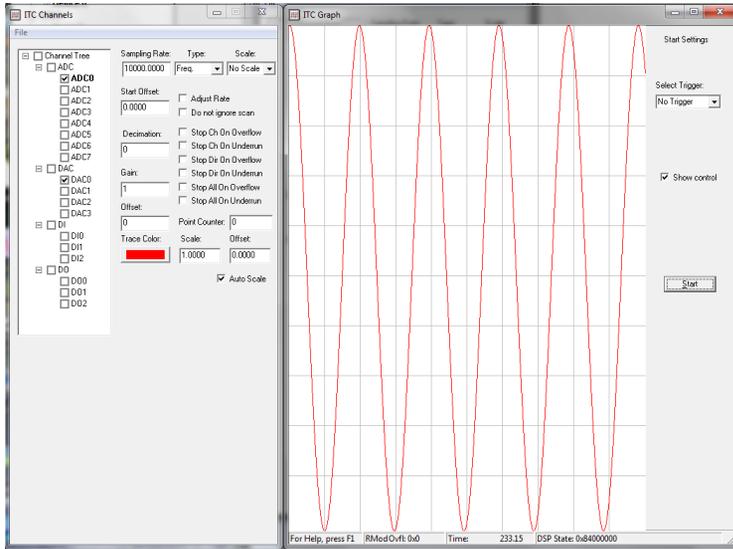


Figure 6.12: Active Graph window

To use external triggered acquisition select the trigger type from the **Select trigger** control.

**Re-initialize (Ctrl+R)**: Reset all of the devices displayed in the device tree. Resetting the devices will reload the device to its default startup settings. This can be accomplished by either selecting the green led button from the toolbar or from **Re-Initialize** in the **File** pull down menu.

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## List of Figures

2.1	Compressed file view . . . . .	3
2.2	Extraction wizard . . . . .	4
2.3	Select a destination . . . . .	5
2.4	Extraction complete . . . . .	5
2.5	Display extracted files . . . . .	6
2.6	Found new hardware . . . . .	7
2.7	Install from list . . . . .	8
2.8	Installation options . . . . .	8
2.9	Browse for Folder . . . . .	9
2.10	Install software . . . . .	10
2.11	New Hardware Wizard completed . . . . .	11
2.12	Restart Windows . . . . .	11
2.13	System Properties . . . . .	12
2.14	Device Manager Tree . . . . .	13
2.15	Update Driver . . . . .	14
2.16	Hardware Update Wizard . . . . .	14
2.17	Install Software . . . . .	15
2.18	Installation options . . . . .	16
2.19	Browse for driver files . . . . .	16
2.20	Install software . . . . .	17
2.21	Hardware Update Wizard completed . . . . .	18
2.22	Updated Device Tree . . . . .	18

---

---

3.1	Compressed file view . . . . .	20
3.2	Select a destination . . . . .	21
3.3	Extraction complete . . . . .	21
3.4	System Properties - Hardware . . . . .	22
3.5	Windows Update Driver Settings . . . . .	23
3.6	Found new hardware . . . . .	24
3.7	Device Manager status . . . . .	24
3.8	Insert install disk . . . . .	25
3.9	Windows couldn't find driver software . . . . .	26
3.10	Browse for driver software . . . . .	26
3.11	Browse for folder . . . . .	27
3.12	Browse for driver software . . . . .	27
3.13	Windows Security . . . . .	28
3.14	Installing driver software . . . . .	28
3.15	New Hardware Wizard completed . . . . .	29
3.16	Device Manager tree list . . . . .	30
3.17	ITCDemoG properties . . . . .	31
3.18	Advanced properties . . . . .	32
3.19	Advanced properties . . . . .	32
3.20	Access Denied . . . . .	33
4.1	Compressed file view . . . . .	36
4.2	Select a destination . . . . .	36
4.3	Extraction complete . . . . .	37
4.4	System Properties - Hardware . . . . .	38
4.5	Device Installation Settings . . . . .	38

---

4.6	Installing device drivers . . . . .	39
4.7	Device driver software failed . . . . .	39
4.8	Device Manager status . . . . .	40
4.9	Device Manager tree . . . . .	40
4.10	Update Driver Software . . . . .	41
4.11	Search for driver software . . . . .	42
4.12	Browse for folder . . . . .	42
4.13	Browse for driver software . . . . .	43
4.14	Windows Security . . . . .	43
4.15	Installing driver software . . . . .	44
4.16	Update Driver Software completed . . . . .	44
4.17	Updated Device Tree . . . . .	45
4.18	System Control Panel . . . . .	46
4.19	Action Center Control Panel . . . . .	47
4.20	Action Center Control Panel . . . . .	48
4.21	User Account Control Settings . . . . .	49
4.22	Program properties . . . . .	50
4.23	ITCDemoG properties . . . . .	51
4.24	Advanced properties . . . . .	51
4.25	Advanced properties . . . . .	52
4.26	Access Denied . . . . .	52
5.1	Uncompressed file view . . . . .	54
5.2	Select application . . . . .	54
5.3	ITC Driver Installer disk image . . . . .	55
5.4	Driver file view . . . . .	55

---

5.5	Installation Prompt . . . . .	56
5.6	Password authentication . . . . .	56
5.7	Installation successful . . . . .	56
5.8	PCI-1600x information . . . . .	59
5.9	PCI-16x information . . . . .	60
5.10	PCI-18x information . . . . .	61
5.11	USB-16 information . . . . .	62
5.12	USB-18 information . . . . .	63
5.13	LIH 88 information . . . . .	64
5.14	PCI-1600x information . . . . .	65
6.1	Select application . . . . .	67
6.2	Select device . . . . .	68
6.3	Acquisition running . . . . .	68
6.4	File menu . . . . .	69
6.5	Controls menu . . . . .	69
6.6	Select application . . . . .	70
6.7	ITCControlxx main screen . . . . .	71
6.8	Toolbar . . . . .	71
6.9	File menu . . . . .	71
6.10	IO control window . . . . .	72
6.11	Graph windows . . . . .	73
6.12	Active Graph window . . . . .	74