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The ITC Windows inf installer package supports all InstruTECH data acquisition hardware, including interfaces built-in the Heka elektronik EPC 9/x, EPC 10/x and EPC 10Plus amplifiers. The inf installer will also install the utility programs ITCControl, ITCDemoG and ITCUpdater. Please note that this installer is only for Windows XP and Vista. For older operating systems please contact us.

***Please note that you must be logged in either as “Administrator” or as a user with administrative rights for the drivers to install correctly.***

### **XP Driver installation:**

The inf installer uses the Windows "Device Manager" for installing the driver files. To setup the hardware please do the following:

1. Before the hardware is installed, extract the driver files to a temporary directory of your choice.
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.



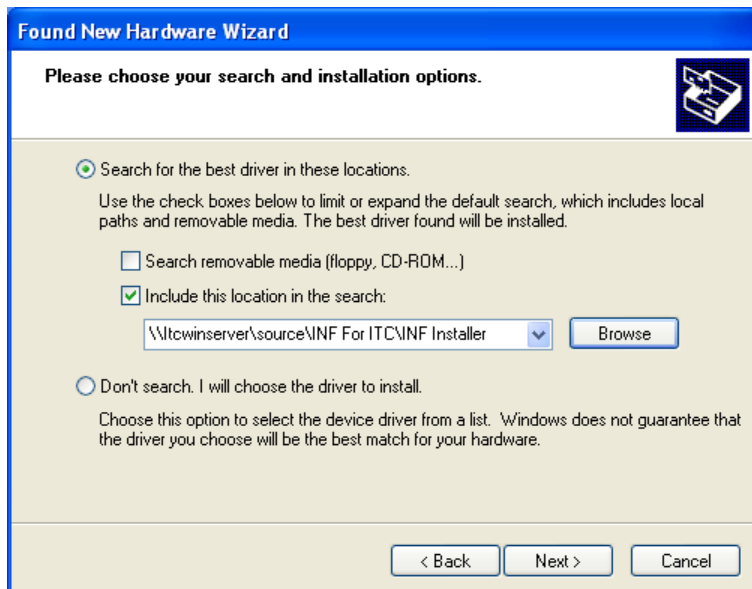
Select “No, not this time” and click “Next” to continue.

4. The next window will display the device name and prompt for the type of installation to perform. Please note that if a PCI-1600 or PCI-1600e host interface is used, the device name displayed will be “Multimedia controller”. This name will be changed once the driver files are properly installed.



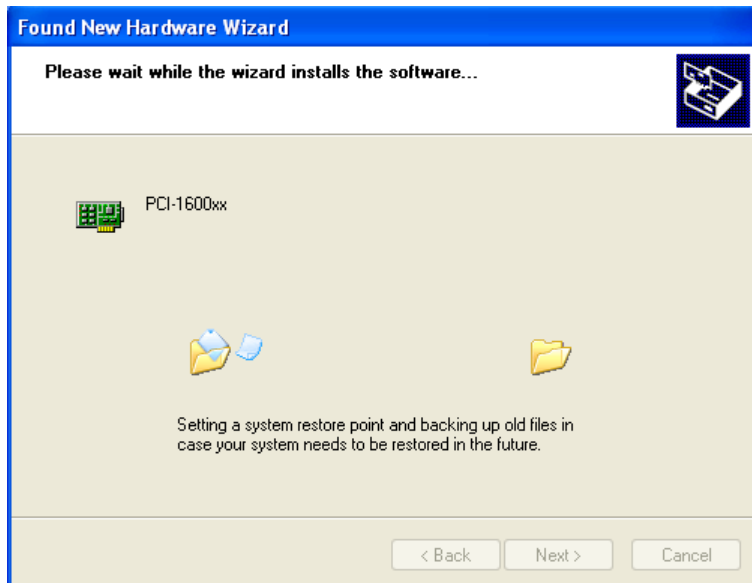
Select “Install from a list or specific location” and click on “next” to continue.

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



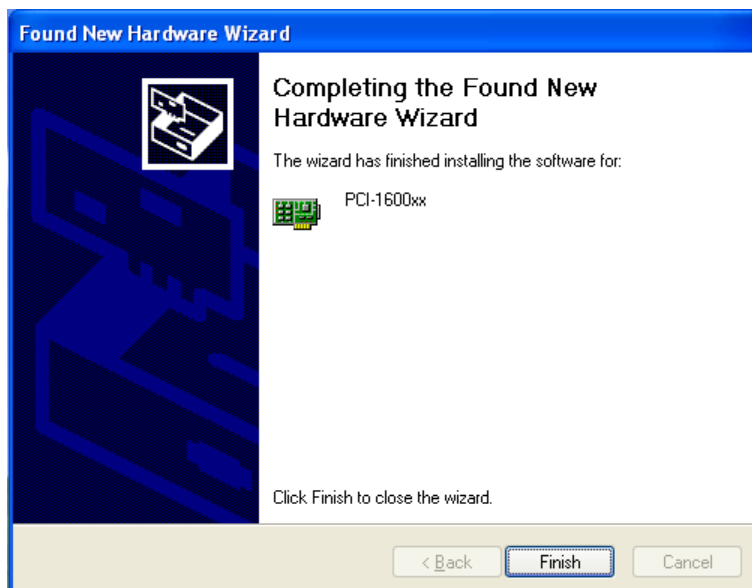
The option “Search for the best driver in these locations” should be selected. If the option “Search removable media” is checked, then uncheck it. Select “Include this location in the search”. Then click on the “Browse” button. When the file dialog appears select the folder where the driver files are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

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

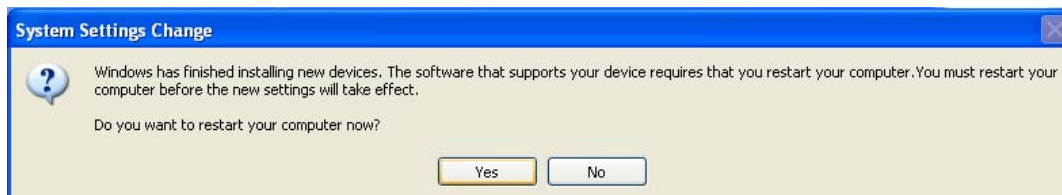


The “Device Manager” will copy all of the appropriate driver and utility files. Please note that when the file copying is in progress the selection buttons will be disabled. When installation has completed select “Next” to continue.

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.



8. A system dialog will be displayed to restart the computer. We recommend that Windows be restarted so the driver files can be automatically loaded. If this is the only device or software to be installed then select “Yes” to restart. If other devices or software are to be installed then select “No” to return to the operating system.



9. Congratulations the drive has been properly installed and ready for use.

## **Vista Driver installation:**

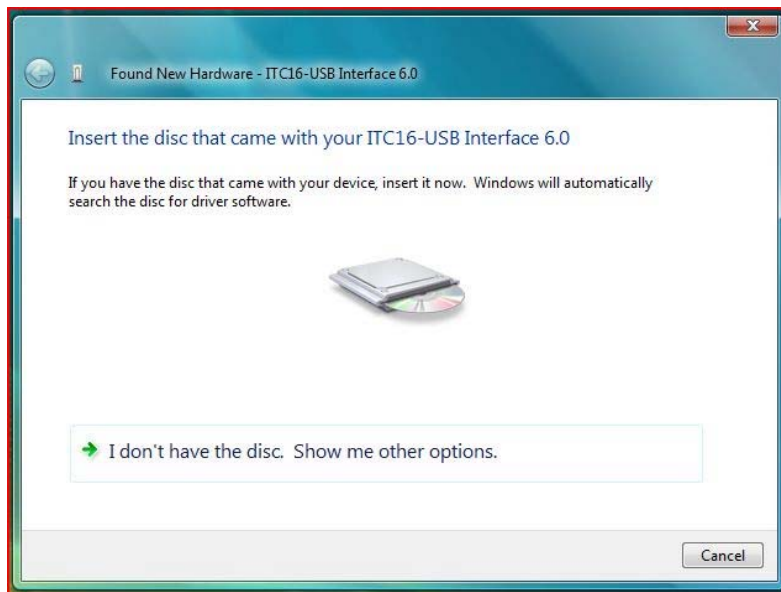
The inf installer uses the Windows "Device Manager" for installing the driver files. To setup the hardware please do the following:

1. Before the hardware is installed, extract the driver files to a temporary directory of your choice. In the following installation steps we extracted the files to the C:\temp\Instrutech folder.
2. If a PCI-xx host interface is used then power down the computer and install the hardware as specified in the user's manual. For an USB-xx host interface there is no need to power down the system. Connect the USB cable to an available hi-speed USB2.0 port.
3. Once Windows has detected the new hardware the "Found New Hardware" window will be displayed. Please note that USB-xx device names are read from the USB controller and are properly identified. PCI-xx devices will be properly named later on in the installation.



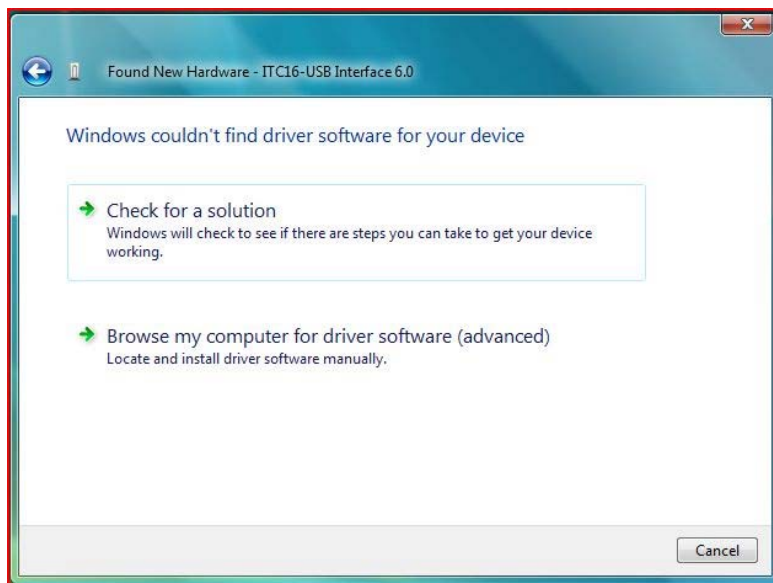
Select "Locate and install driver software".

4. The next window will prompt for the disk with the device drivers.



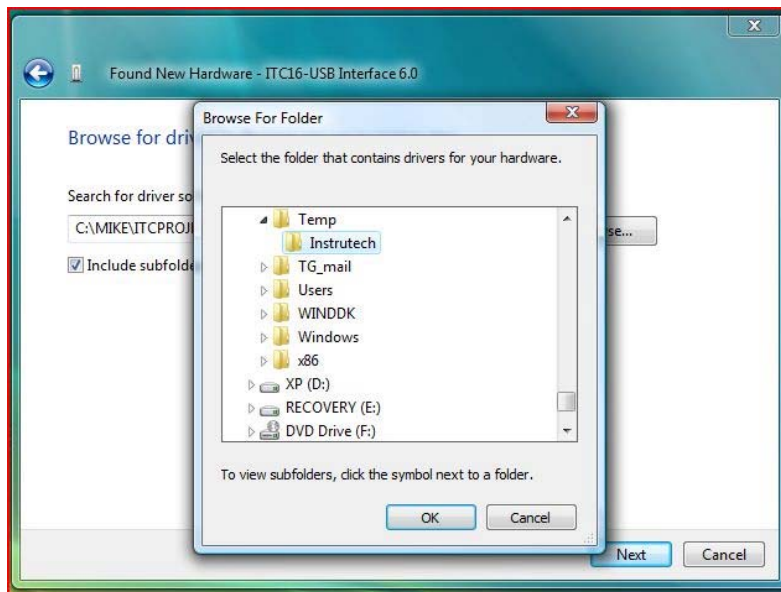
If the driver files are located on a CD then insert the CD disk into the CD drive. Windows will search for the files automatically. If the driver is located on any other location (i.e. hard drive, USB memory stick, etc) then select “I don’t have the disc. Show me other options”.

5. The Windows Device Manager will first look for driver file information in the Windows inf database. If driver file information is found then the installation will begin immediately. Otherwise additional prompts will be displayed.

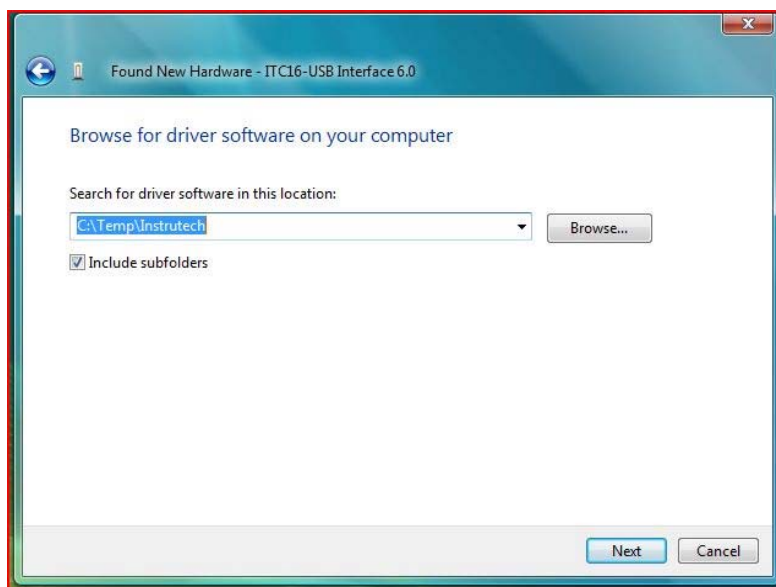


Select “Browse my computer for driver software” to continue.

6. The next window will display the default path to search for the driver files. If this location is not correct select “Browse”, which will activate the file selector window.

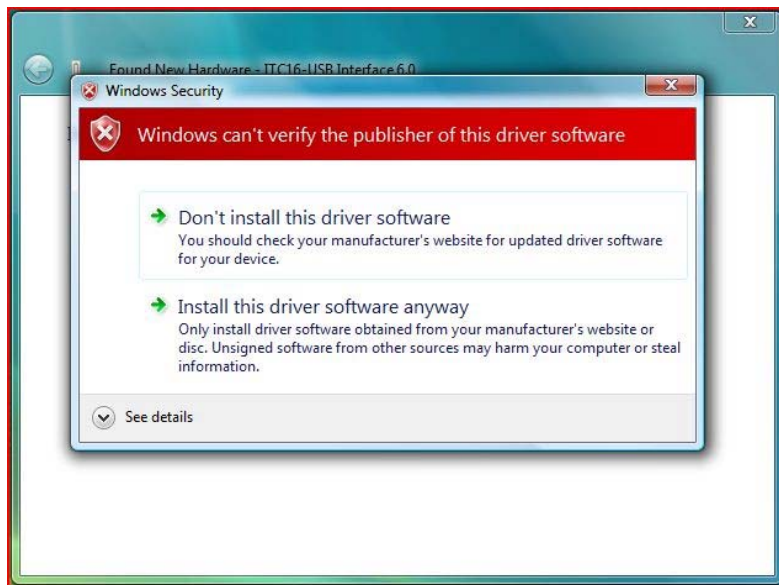


Select the folder where the driver files are located. Please note that if proper driver installation files are not found the “OK” button will not be active. Select “Ok” to continue, the file selector will close and the new path will be displayed.

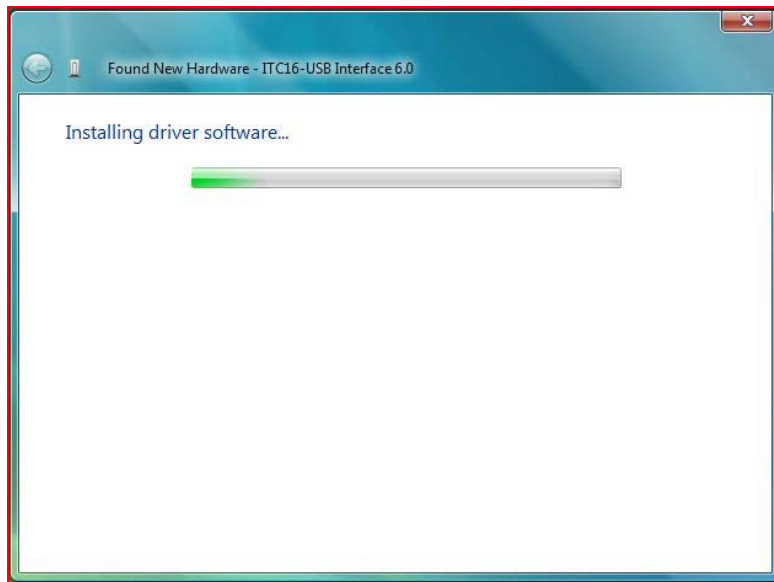


Select “Next” to continue.

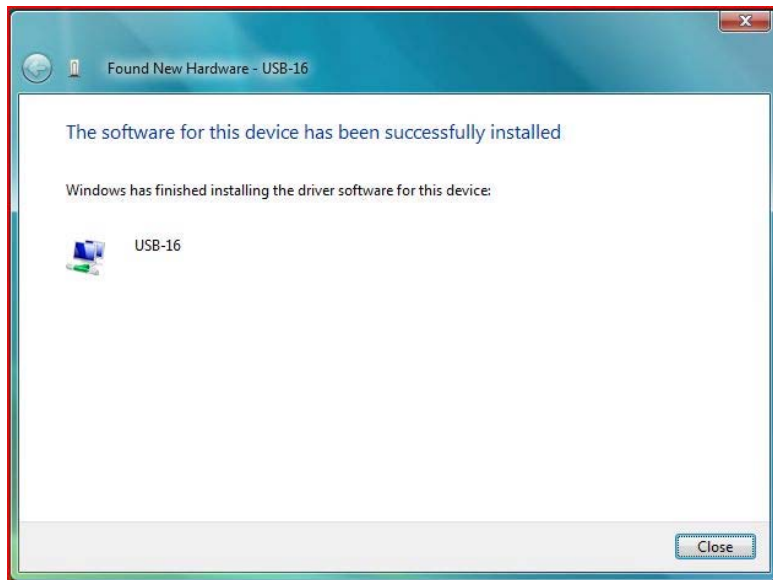
7. The next window will display a security message. This message is displayed because currently our driver is not “digitally signed” by Microsoft Corporation. It is safe to install our driver.



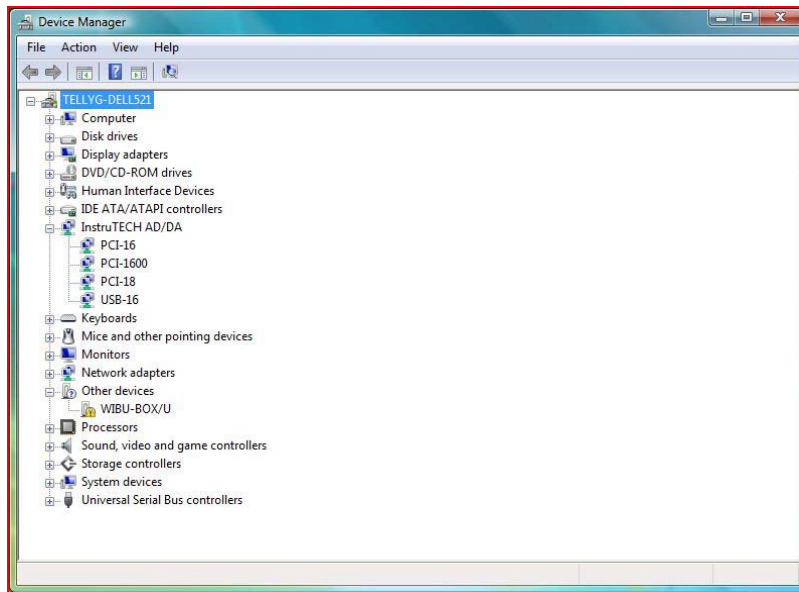
Select "Install this driver software anyway". The "Device Manager" will copy all of the appropriate driver and utility files.



8. If the driver installation is successful a window will display the status including the proper device name. To complete the installation, select "Close".



9. To verify the installation go to Control Panel – Device Manager. There will be a new device group labeled “InstruTECH AD/DA” with the device name(s) displayed. Please note that if multiple InstruTECH devices are installed they will all be displayed.



10. Congratulations the driver installation is complete.

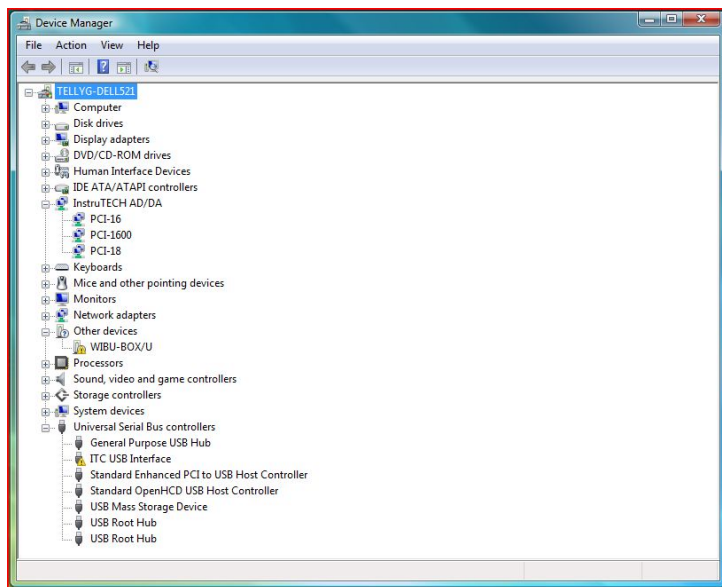
## **Vista Driver update:**

Any of our older pre –Vista driver installers will install but not function properly on Vista systems. The best way to resolve this problem is to perform a driver update. To update the hardware driver please do the following:

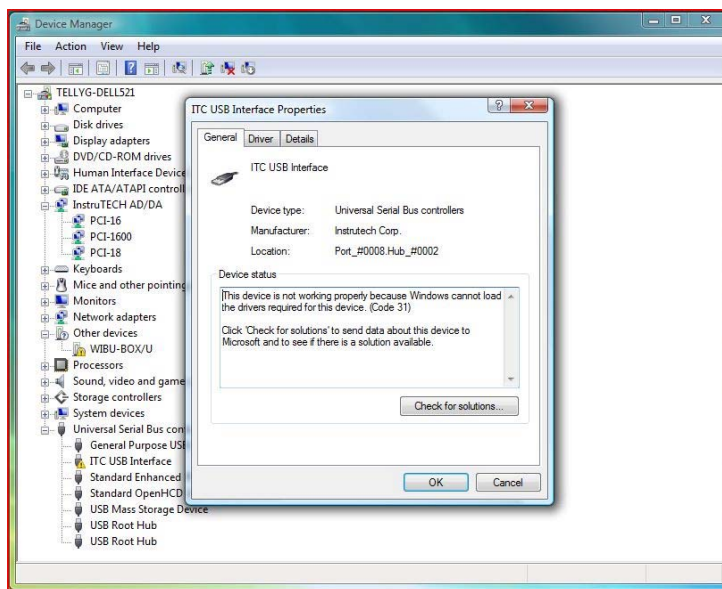
1. Extract the driver files to a temporary directory of your choice. In the following installation steps we extracted the files to the C:\temp\Instrutech folder.
2. Go to Control panel –Device Manger and locate the device. If the host interface were a PCI-xx card then it would appear under the device group “InstruTECH AD/DA”. For a USB-xx host interface the



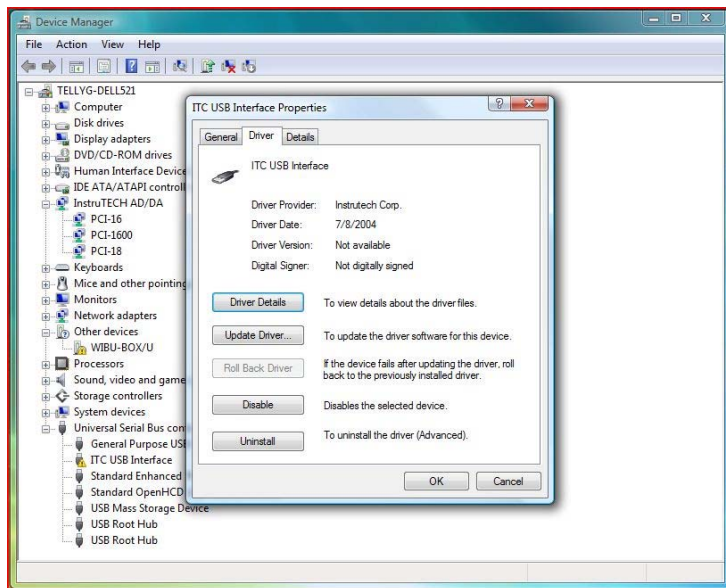
device would be listed under the device group “Universal Serial Bus controllers”.



Go to the device and right click with the mouse. Select “properties”.

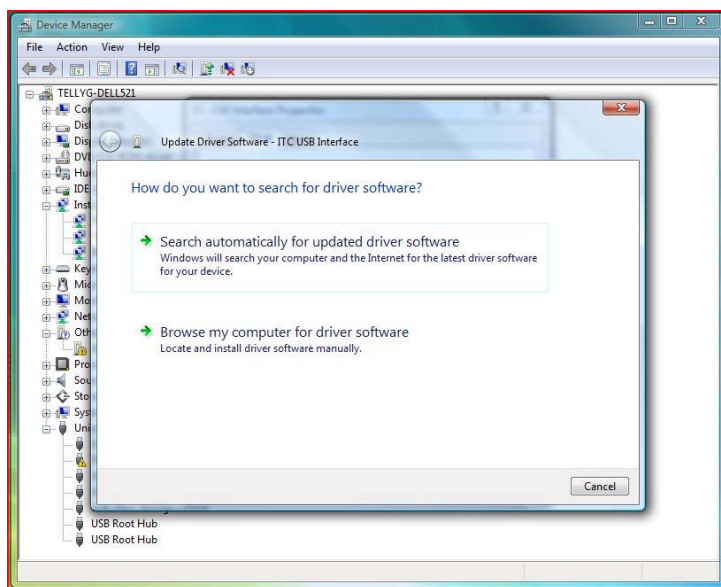


A new dialog will display the device properties. Select the “Driver” tab.



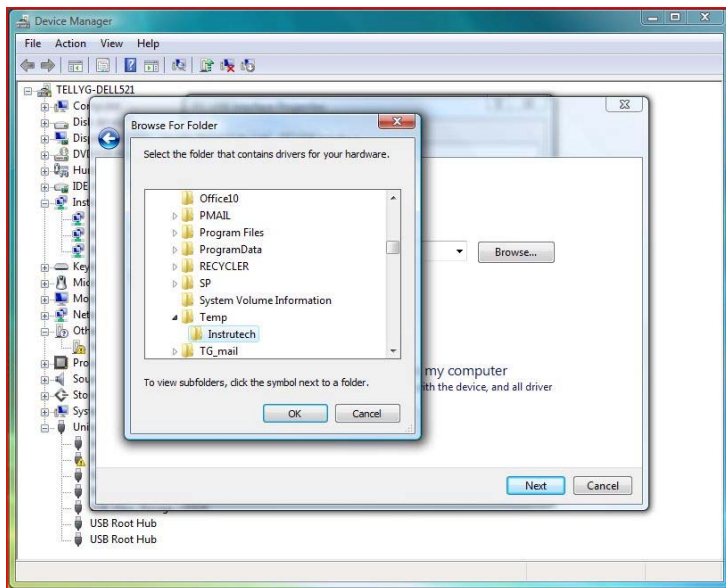
Select “Update Driver” to continue.

3. The Windows Device Manager will display prompts to locate the new driver.

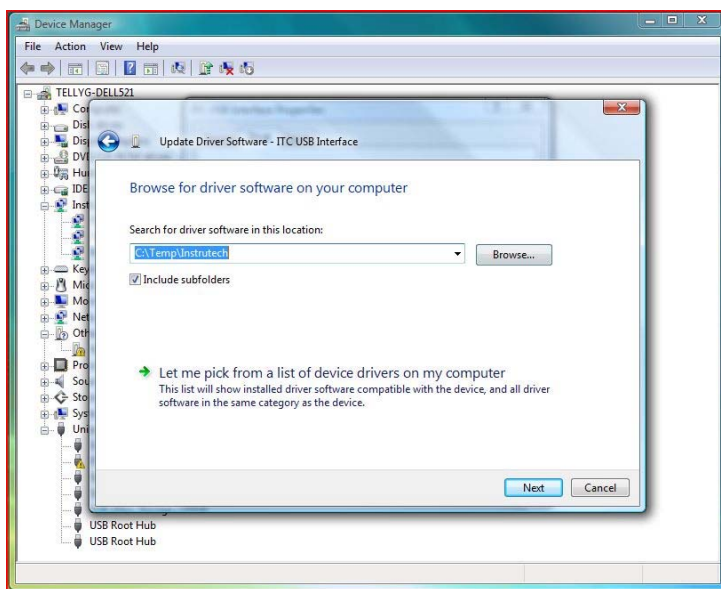


Select “Browse my computer for driver software”.

4. The next window will display the default path to search for the driver files. If this location is not correct select “Browse” which will activate the file selector window.

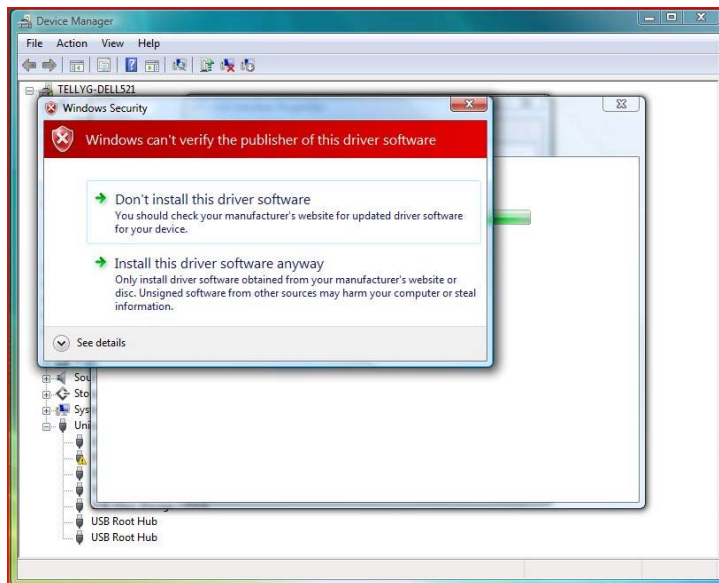


Select the folder where the driver files are located. Please note that if proper driver installation files are not found the “OK” button will not be active. Select “Ok” to continue, the file selector will close and the new path will be displayed.



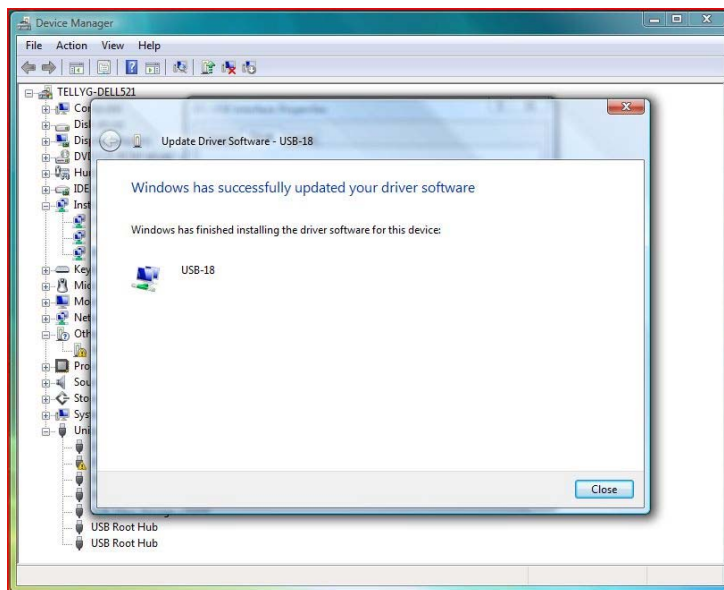
Select “Next” to continue.

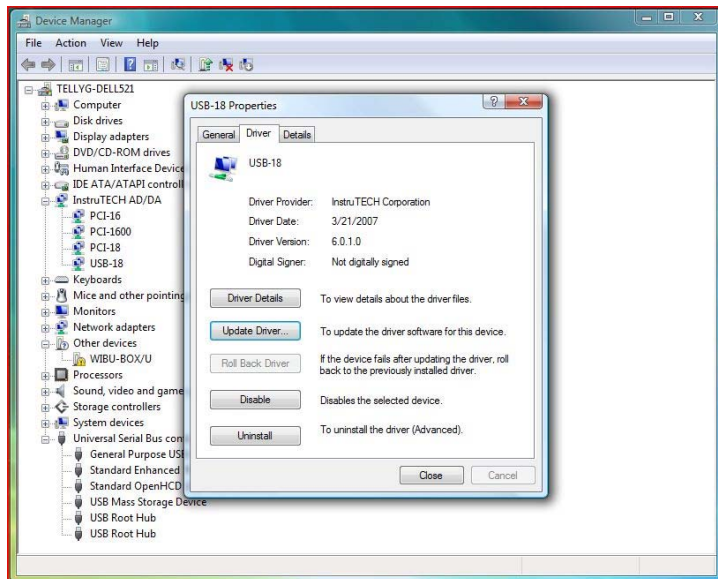
5. The next window will display a security message. This message is displayed because currently our driver is not “digitally signed” by Microsoft Corporation. It is safe to install our driver.



Select "Install this driver software anyway". The "Device Manager" will copy all of the appropriate driver and utility files.

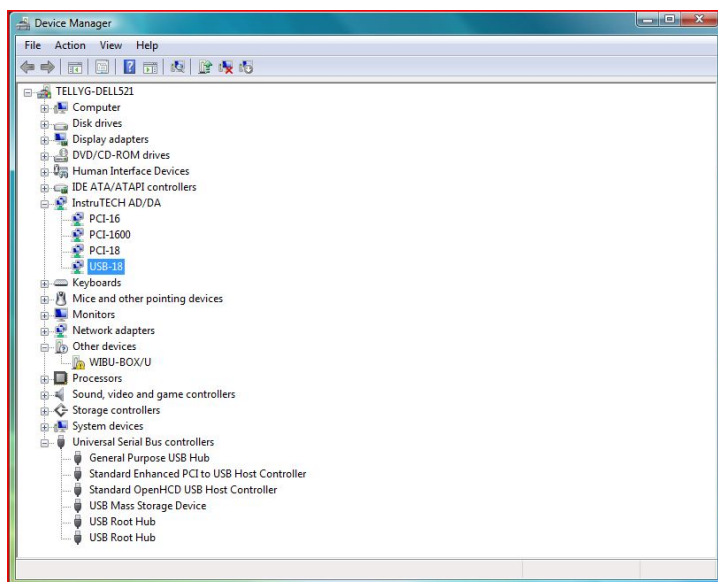
6. If the driver update is successful a window will display the status and prompt you to select "Close".





The driver properties dialog will reappear. The driver file information will be automatically updated. Select “Close” to return to the Device Manager.

7. The Device Manager will now update the device tree. The USB-xx host interface will be removed from the “Universal Serial Bus controller” group and displayed under “InstruTECH AD/DA” instead.



8. Congratulations the driver update is complete. If multiple InstruTECH devices are installed repeat these steps for all devices.

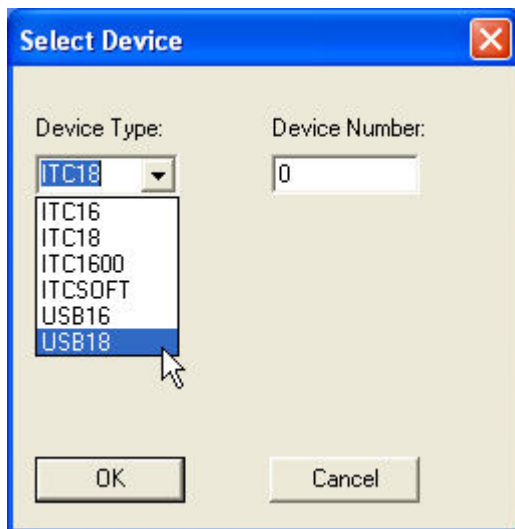
## **Utility program usage instructions:**

The program ITCDemoG and ITC\_Control can be used to verify the driver installation and if the hardware is properly installed and working. The program ITC-Updater can be used to update the device firmware. Please note that firmware update files will be posted on our web site as they become available.

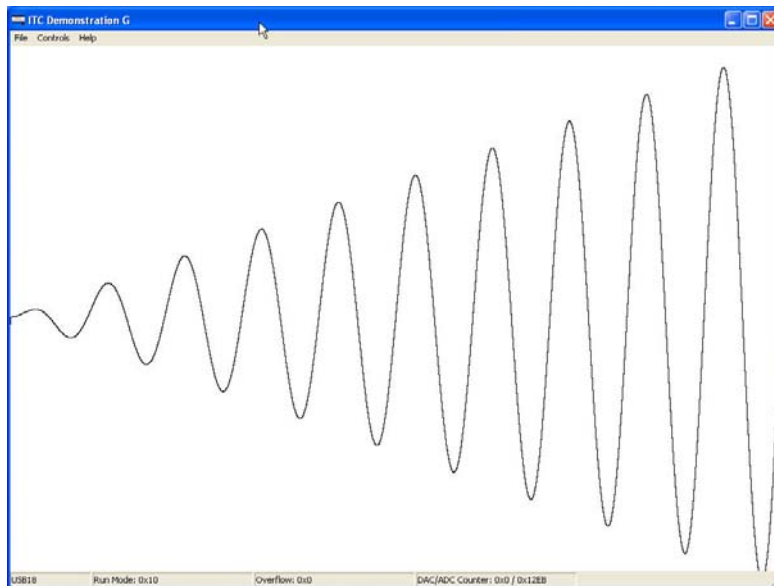
### ***ITCDemoG:***

The ITCDemoG 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 can be read back on ADC input 0.

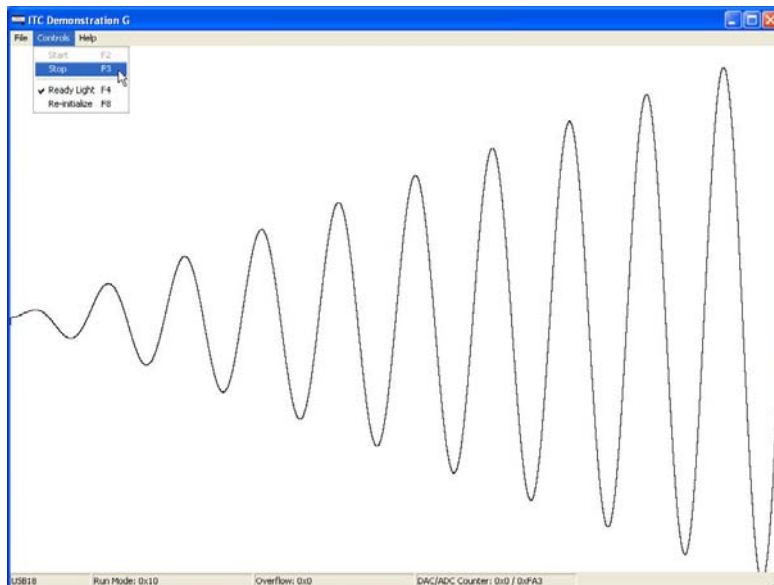
1. Connect a BNC cable between DAC 0 and ADC 0.
2. Execute ITCDemoG from the program group InstruTECH.
3. Select the device to test. Please note that for an ITC-18 with a USB-18 host the device USB-18 must be selected. For an ITC-16 with a USB-16 host the device USB-16 must be selected.



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.

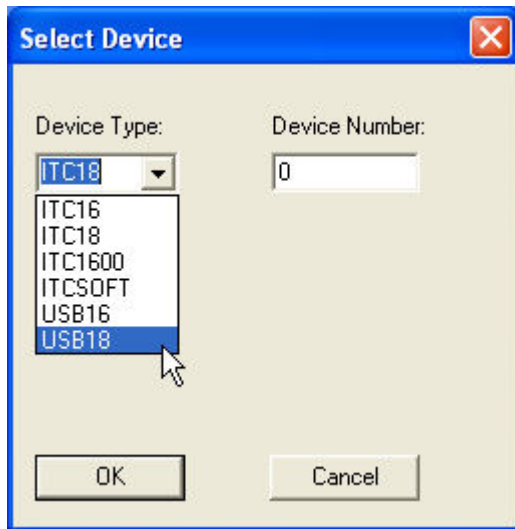


6. To terminate acquisition select "Stop" from the Controls pull down menu.

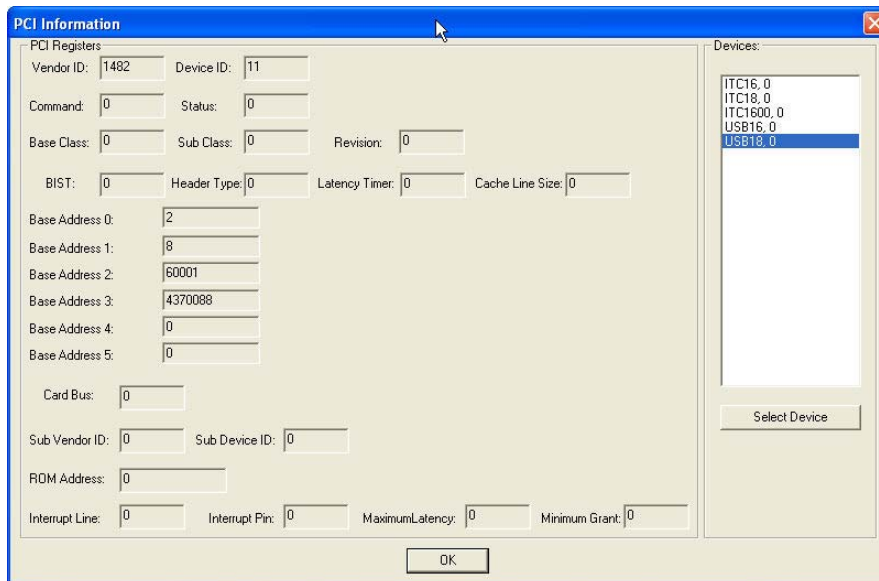


**File menu commands:**

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

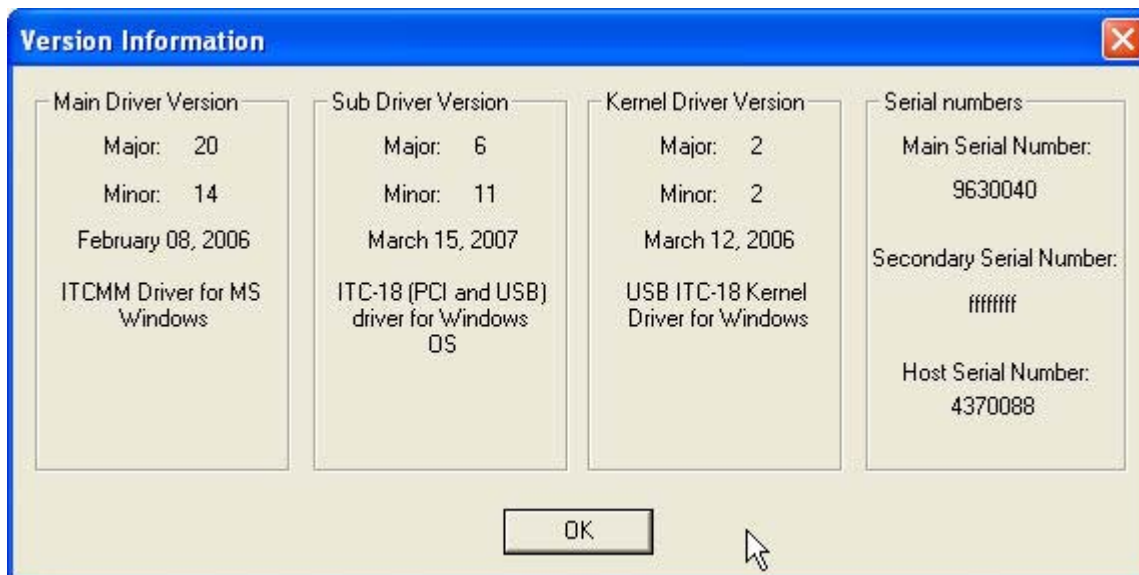


2. PCI Information (F6): Opens the PCI information window.



3. This window will display hardware specific information. This information is only helpful for InstruTECH personnel when troubleshooting a problem.
4. Versions (F7): Opens the version display window.





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

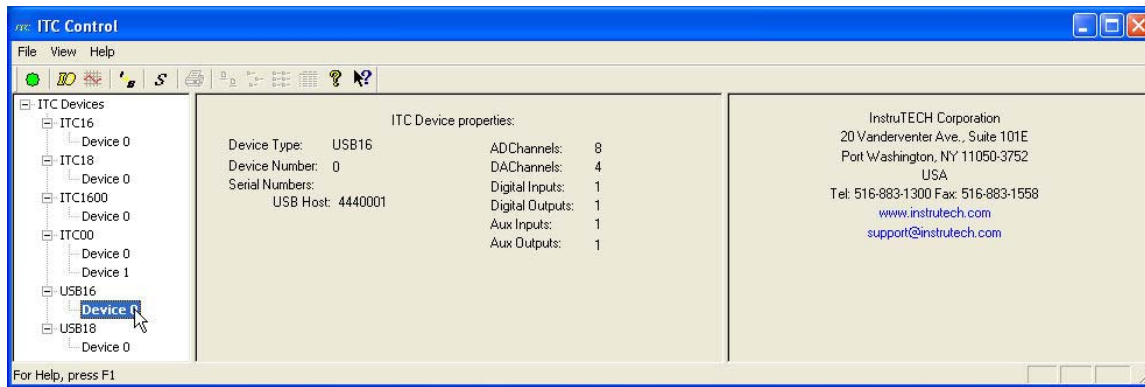
#### **Controls menu commands:**

1. Start (F2): start acquisition. This item will only be active when acquisition is not running.
2. Stop (F3): stop acquisition. This item will only be active when acquisition is running.
3. 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.
4. Re-initialize (F8): re-initialize the interface. This option will reload all of the internal hardware to their default state.

### ***ITCControl***

The ITC\_Control program is a more extensive acquisition test utility. This program supports all of our ITC interfaces and allows you to use all of the analog and digital channels for that device.

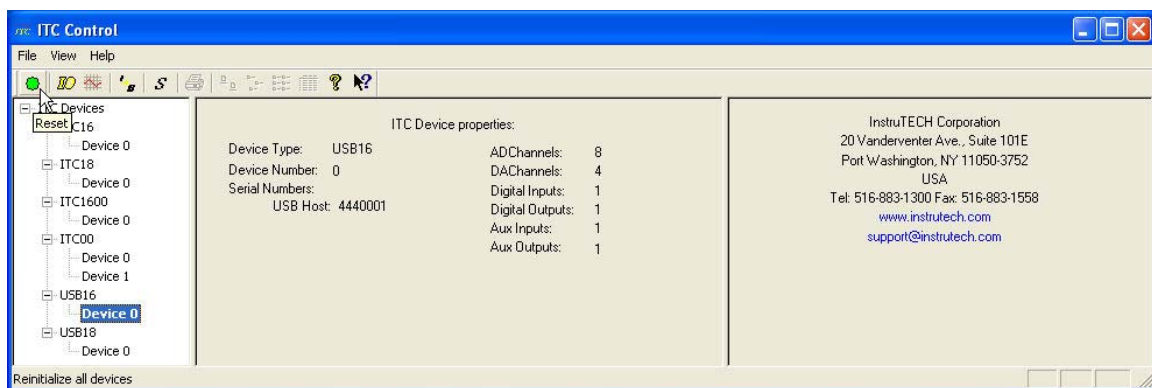
1. Execute ITC\_Control from the program group InstruTECH.
2. The program will search your system for all InstruTECH devices. A device tree will be created that lists all of the attached devices.



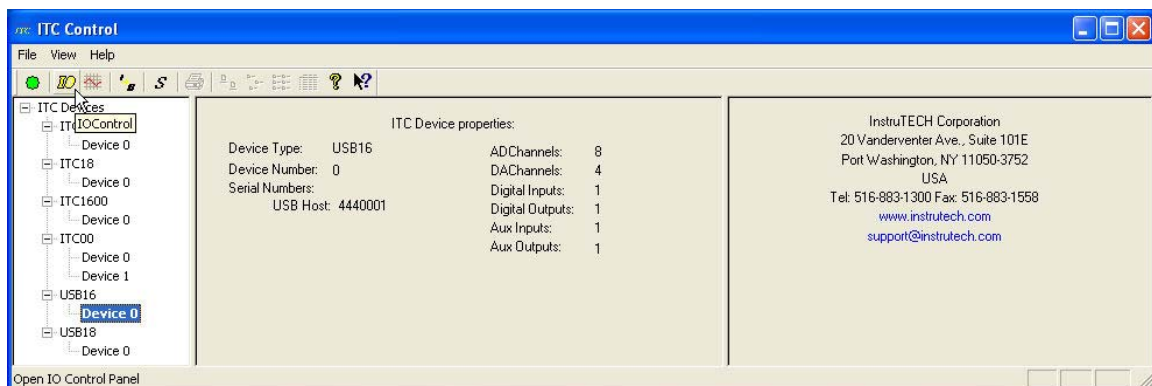
3. If more than one device is listed select the device to be tested. Please note that for an ITC-18 with a USB-18 host, the device USB-18 must be selected. For an ITC-16 with a USB-16 host, the device USB-16 must be selected. Once the device is selected the properties for the device are displayed. Some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

4. There are 3 main sections to this program:

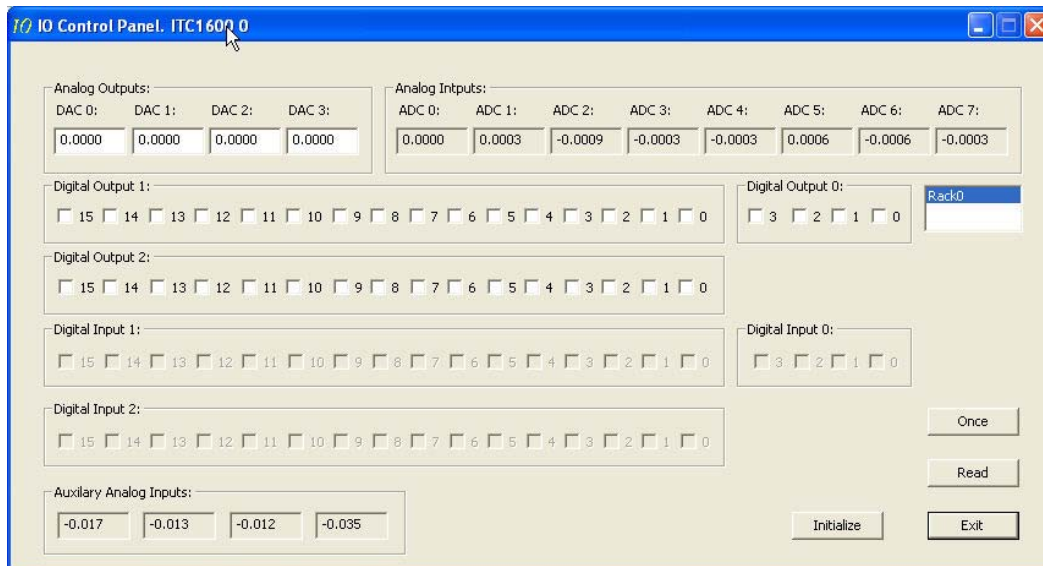
- a. To re-initialize (Reset) a device select the green "led" button or go to "Re-Initialize" in the "File" pull down menu.



- b. To go to the I/O control window select the I/O icon or go to "IO Control" in the "File" pull down menu.

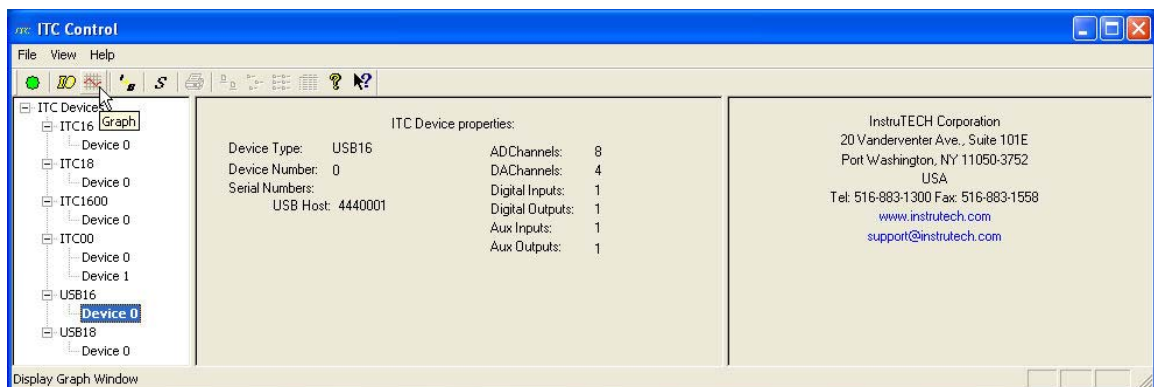


The I/O control window can be used to perform static tests on any of the input and output channels including digital I/O. When an output is selected with either a key or mouse command a single read on all of the inputs will be performed as well.

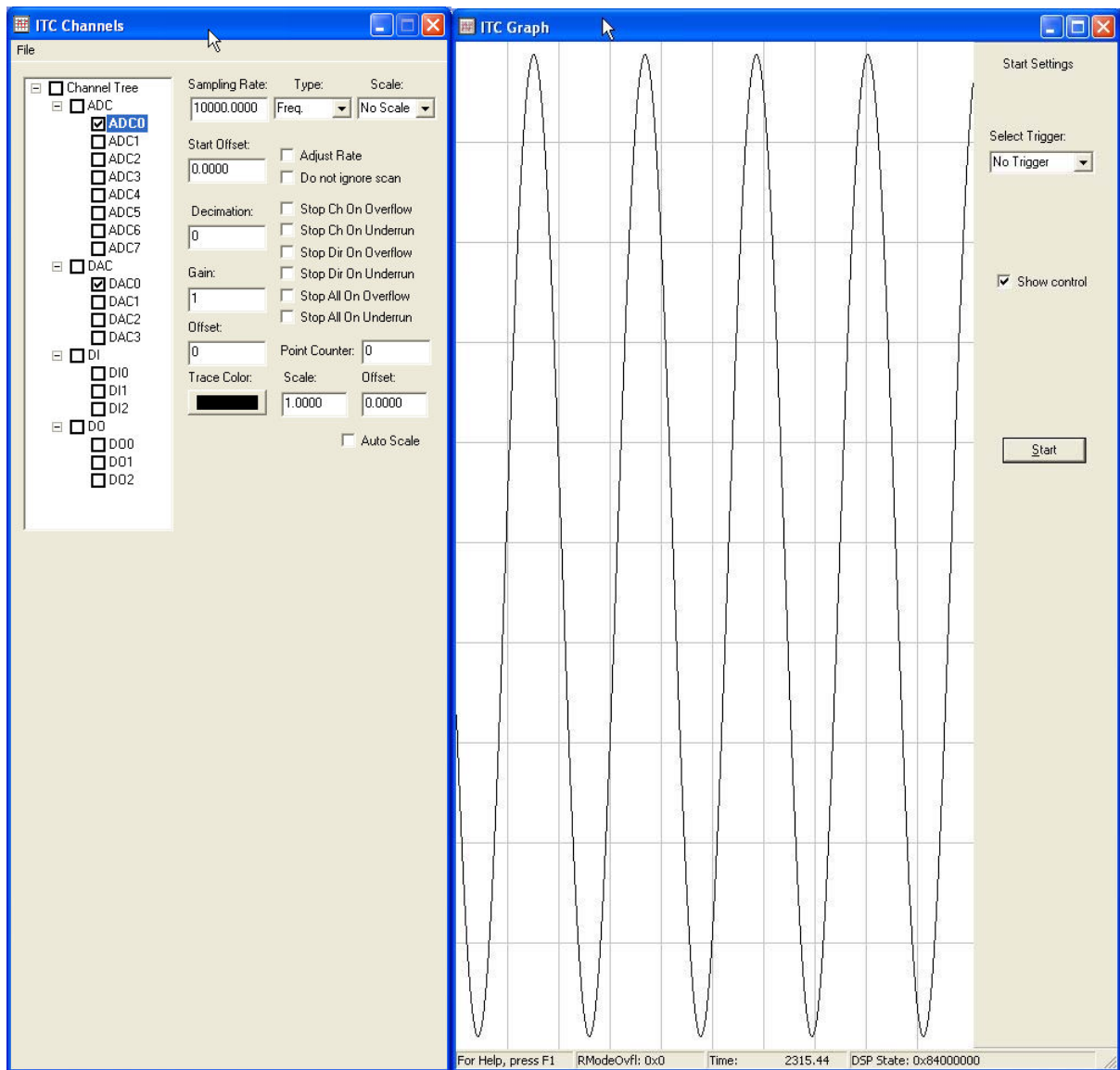


For example if a BNC cable was connected between DAC 0 and ADC 0. When a new value is entered in the DAC 0 field as soon as the return key is hit ADC 0 would also be updated with the read value. To continuously read the inputs select the "read" button. Please note that this window will be different for each interface since they have number of available channels.

- c. To go to the Graph window select the graph icon or go to "Graph" in the "File" pull down menu.



The Graph window can be used to send out and read data waves on any or all selected channels. The channel tree will display all of the available channels for the selected device.



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). The same is true when a DAC output channels is selected. 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. To use external triggered acquisition select the trigger type from the "Select trigger" control.

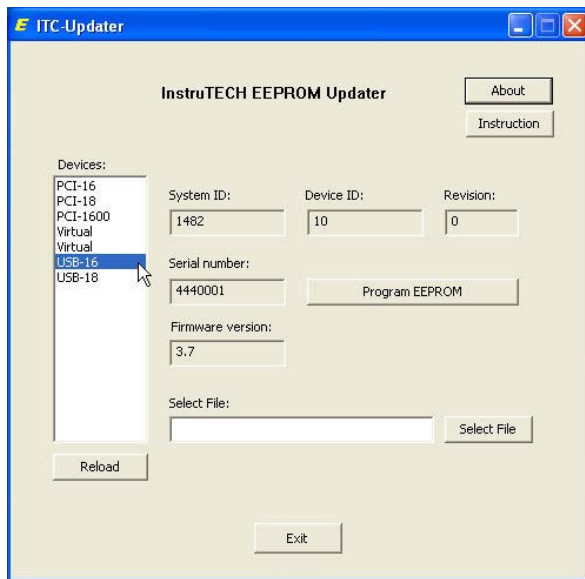
### ***ITC-Updater:***

The ITC-Updater program is used to perform firmware updating on PCI-16, PCI-16V3, PCI-18, PCI-18V3, PCI-1600, PCI-1600e, USB-16 and USB-18 host interfaces. **Please note that for most applications this is not required. The ITC-Updater program should only be used when instructed to do so by InstruTECH technical support.**

To update the firmware please do the following:

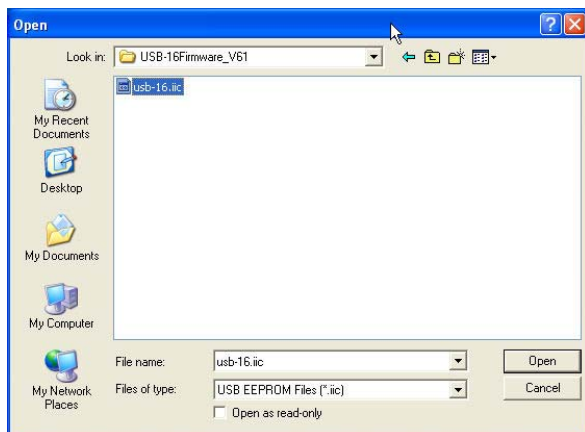
1. Before a device can be programmed it must be physically installed in the system and the InstruTECH drivers must be installed and working properly. PCI cards require that a jumper to be installed across

the pins labeled “WE”. Install this shunt with the computer powered off. After this shunt is installed power on the computer and run the ITC-Updater software. USB hosts do not require any jumpers, but must be attached to a hi-speed USB2.0 port.

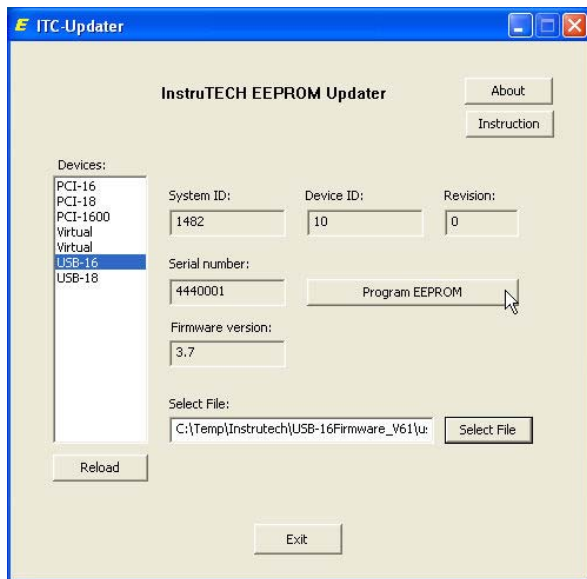


When the ITC-Updater loads it will check the system for all available devices and create a device tree list. When a device is selected from the “Devices” tree current firmware information will be displayed. In this example we have selected the USB-16.

2. To select a new firmware file to load click on the button "Select File".

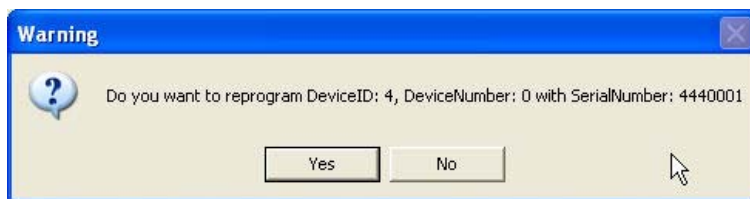


A file selector window will now appear. The firmware files for the PCI cards will have an extension of ".lbn" while the USB files will have an ".iic" extension. In our example the firmware file for the USB-16 would be named "usb-16.iic". Select the file and then “Open” to continue.

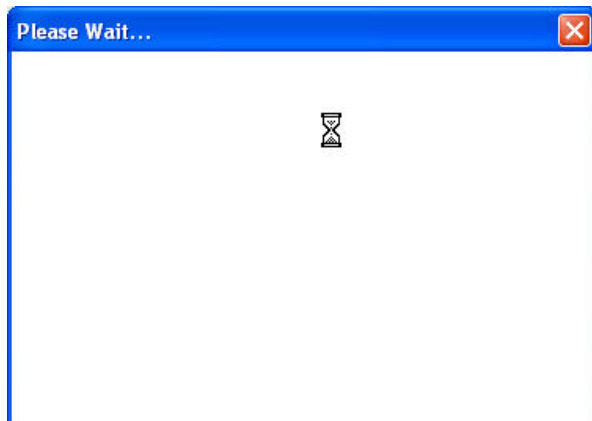


The path and file selected will now be displayed.

3. Click on the button "Program EEPROM" to start the programming sequence.

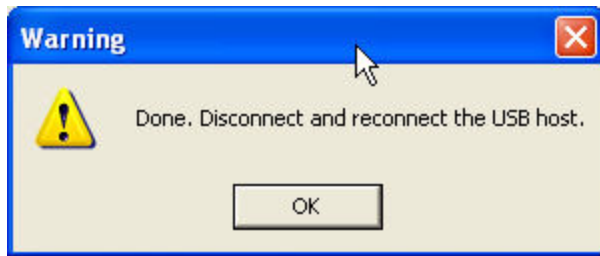


A warning will be displayed for confirmation, select YES to continue.

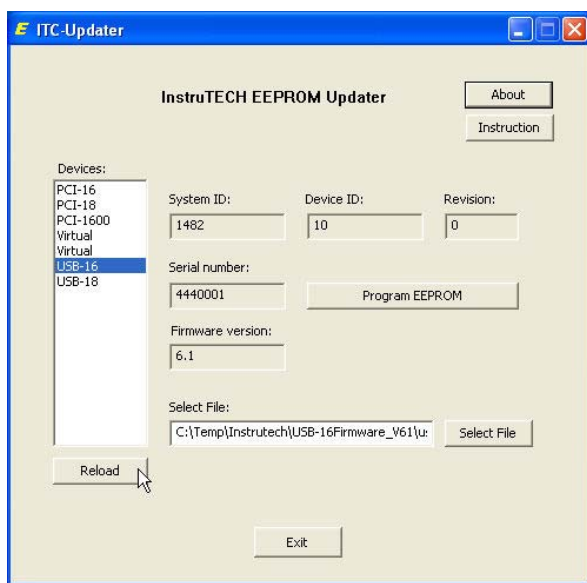


A blank window will appear while the device is programmed. DO NOT DISTURB either the device or computer system while firmware programming is active.

4. For either a USB-16 or USB-18 a message to disconnect / connect USB will be displayed.



This step is required to reset the USB controller and must be performed. By disconnecting / reconnecting the USB host, Windows will unload and then reload the driver which will reset the USB controller. Please note that on Windows systems that have sound enabled, an audio alert will be heard when the USB driver has unloaded / loaded. When the USB host is disconnected wait for the alert to be heard before reconnecting the USB cable. When the cable is reconnected the audio alert will be heard again once the USB driver is loaded. To check if the firmware update has completed, select "reload" under the device list the new firmware version should now be displayed.



5. For PCI hosts, the system must first be shutdown and the jumper from the pins "WE" must be removed. Restart the computer. To check if the firmware update has completed, run the ITC-Updater program again and check the firmware version displayed in the device list.
6. If after the update the device is not detected please contact us.

Source for ITCDemoG or ITCControl programs can be made available for developers who would like to support our interfaces.