



See the possibilities

User's Manual

JAI Control Tool Operation Manual

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Manufacturer is :

JAI, Inc.
625 River Oaks Parkway,
San Jose, CA 95134.
Tel: (408) 383-0300
Tel: (800) 445-5444
Fax: (408) 383-0301
E-mail: imaging@jai.com
www.jai.com

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JAI Control Tool

Operation Manual

1 JAI Control Tool Software Use and Installation Introduction

The JAI software development kit (SDK) includes the JAI Control Tool, a GigE Vision and GenICam compliant tool that discovers and provides access to the features of attached GigE cameras. To obtain the JAI Control Tool Software visit the JAI Inc. web site at <http://www.jai.com>.

Be sure the camera hardware is correctly connected and powered up. For specific details see the operating manual for the particular camera hardware.

1.1 Software Installation Preparation

Following are the instructions to install the JAI SDK software on a PC.

1.1.1 Before Installing the JAI Control Tool Software

Please note the following requirements.

- Your computer must be running Microsoft Windows XP Professional with SP2 or Windows Vista.
- Software installation requires up to 37 MB of free space in your PC hard disk.

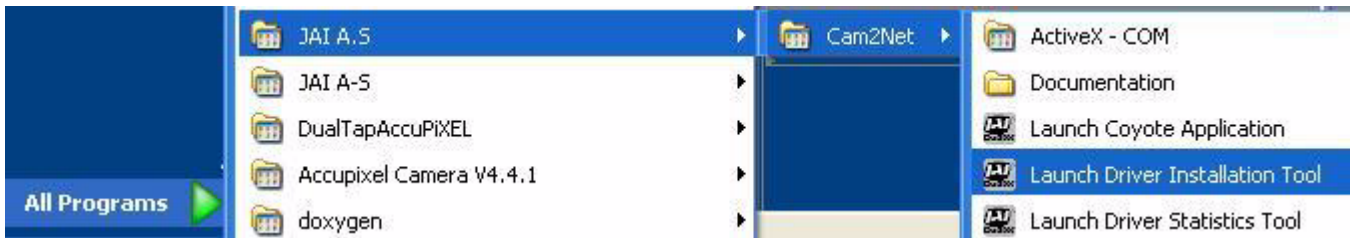
1.1.2 Reconfigure High Performance Drivers

Many computers used for image capture purpose have high performance drivers installed. The JAI Camera Tool Software does not use the high performance driver; instead it installs the JAI Filter Driver. If you intend to use this adapter with the JAI Camera Tool Software it is necessary to reconfigure the high performance adapter.

1.1.2 (a) If Coyote software is installed reconfigure the adapter as follows:

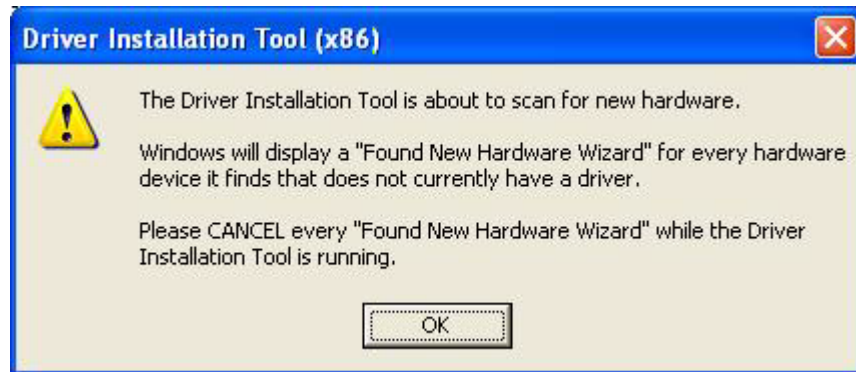
Locate the Coyote shortcut using the Start button. (Start=>All Programs=>JAI A.S=>Cam2Net=>Launch Driver Installation Tool.) Click on Launch Driver Installation Tool link.

Figure 1. Launch the Driver Installation tool.



Allow the tool to scan for the high performance driver.

Figure 2. Searching for drivers.



Locate the driver in the window displayed by the scan. Right click and select to install the Intel network driver. This process will uninstall the high performance driver and install the ethernet driver. When the Intel network driver installs, the Device Class description changes to Net. Close the driver installation tool.

Figure 3. Changing Drivers

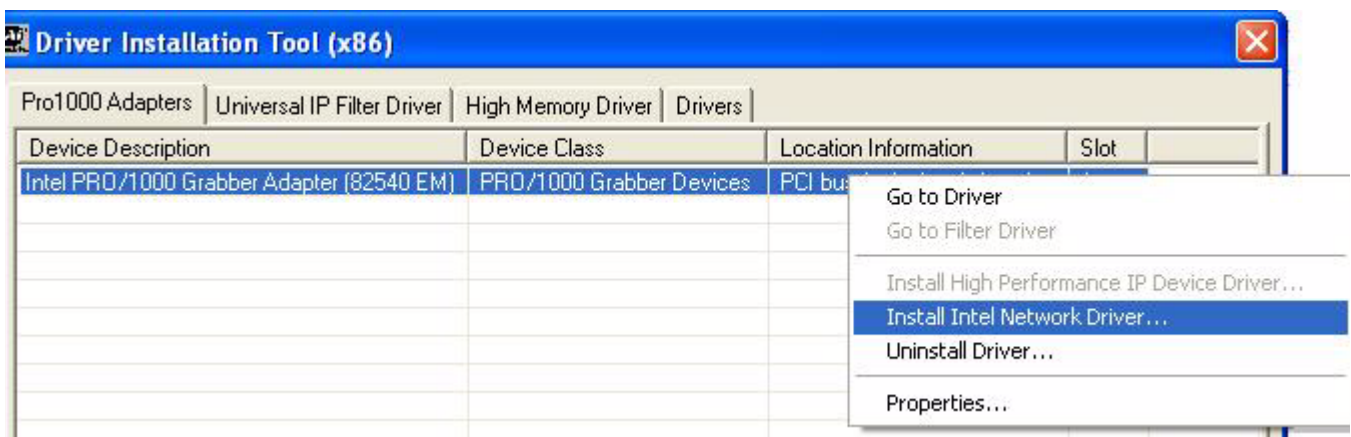
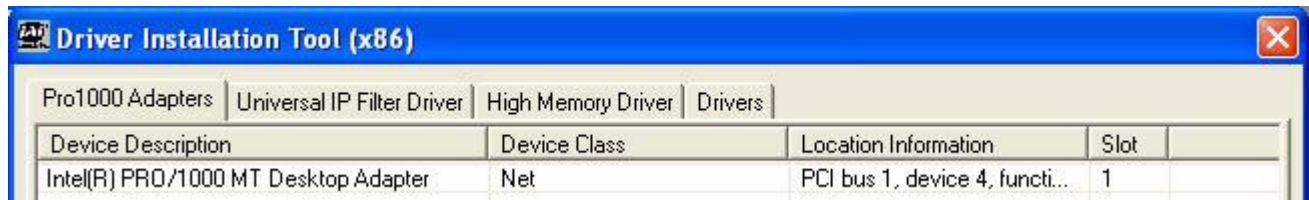


Figure 4. The driver changes to a network driver.



1.2 Installing the JAI Control Tool Software

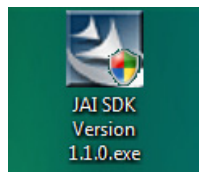
To install the JAI Control Tool Software obtain the software from the JAI web site. Follow the installer instructions to install the application code.

1. To obtain the JAI Control Tool Software visit the JAI Inc. web site at <http://www.jai.com>
2. Click the Support link
3. Click the Software Downloads link under the Customer Support menu
4. Select the JAI SDK Software.

Note: The JAI Control Tool Software file is compressed.

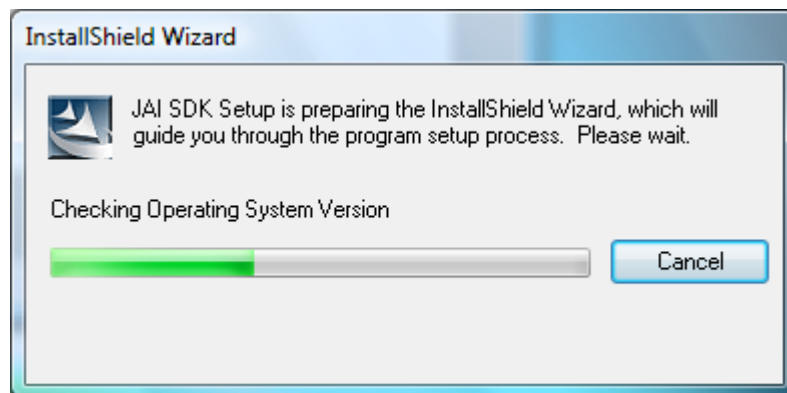
5. Double click on the Setup icon.
 - It is not necessary to decompress the files, the setup process takes care of this.

Figure 5. Double click to start the JAI SDK Version 1.1.0. install shield.



1.2.1 The Installer Initializes

Figure 6. The install shield decompresses.



1.2.2 JAI SDK Software Installer

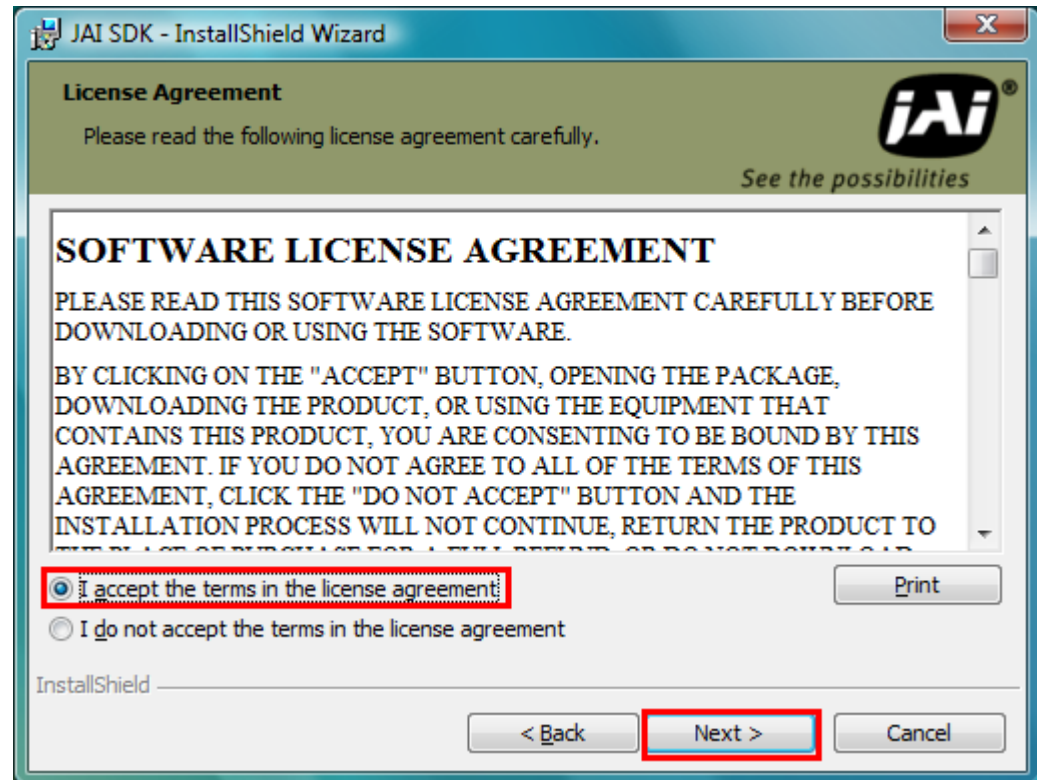
The installer looks for several programs, including Microsoft .NET Framework 2.0, Windows Installer 3.1, and Visual C++ 2005 Redistributable. If these are not found on the system, the installer has the software included in the SDK, and provides an option to install the applications. Allow the installations or the installation closes. Certain software must be present on the system for the software to run, and is included in the installation.

Figure 7. JAI SDK Setup screen



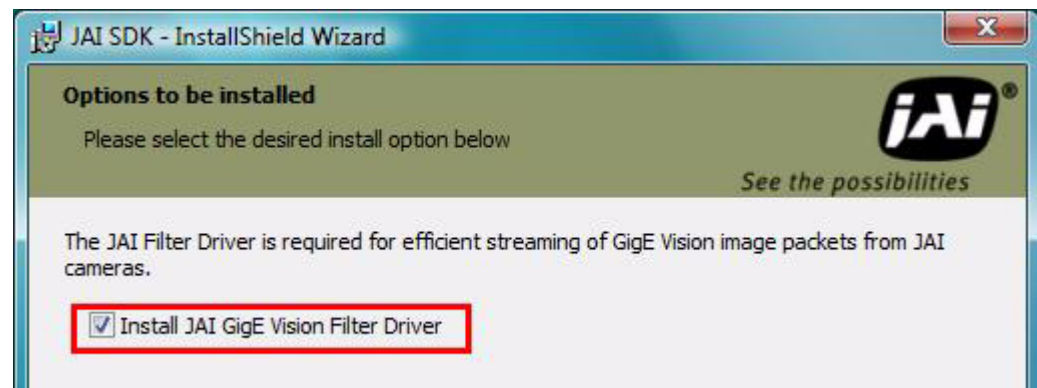
1.2.3 Accept the License Agreement

Figure 8. Read and accept the license agreement.



1.2.4 Install the JAI Filter Driver

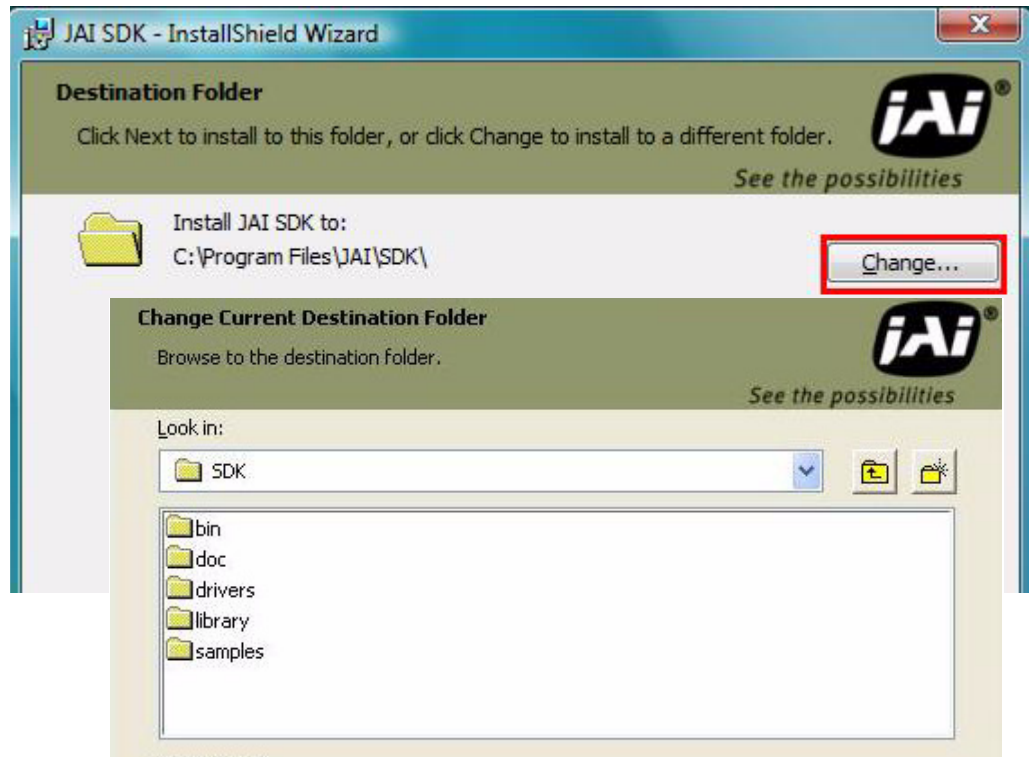
Figure 9. The software offers the Filter Driver if it supported.



1.2.5 Software Installation Location

The software offers a default location, or select your own path.

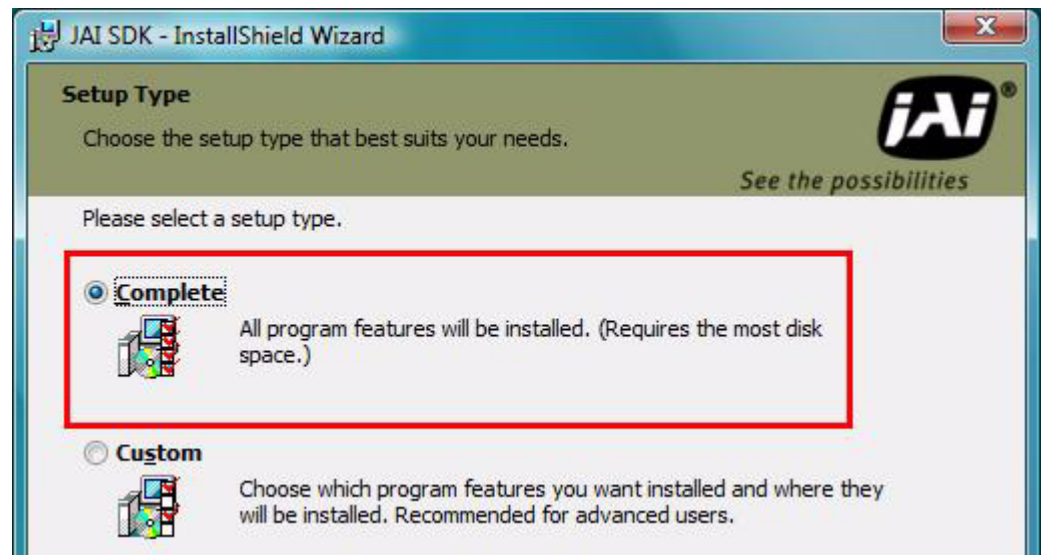
Figure 10. The software offers a default location, or select your own path.



1.2.6 Select Complete Setup

Normal setup installs the entire program, custom allows omission of portions of the install.

Figure 11. Normal install is recommended.



1.2.7 Custom Setup

The user can choose not to install some portions of the JAI Control Tool Software. If changes to the installation are configured, click the Next button. If no alterations are made click the Back button and use the Complete option.

Figure 12. Custom Install Option

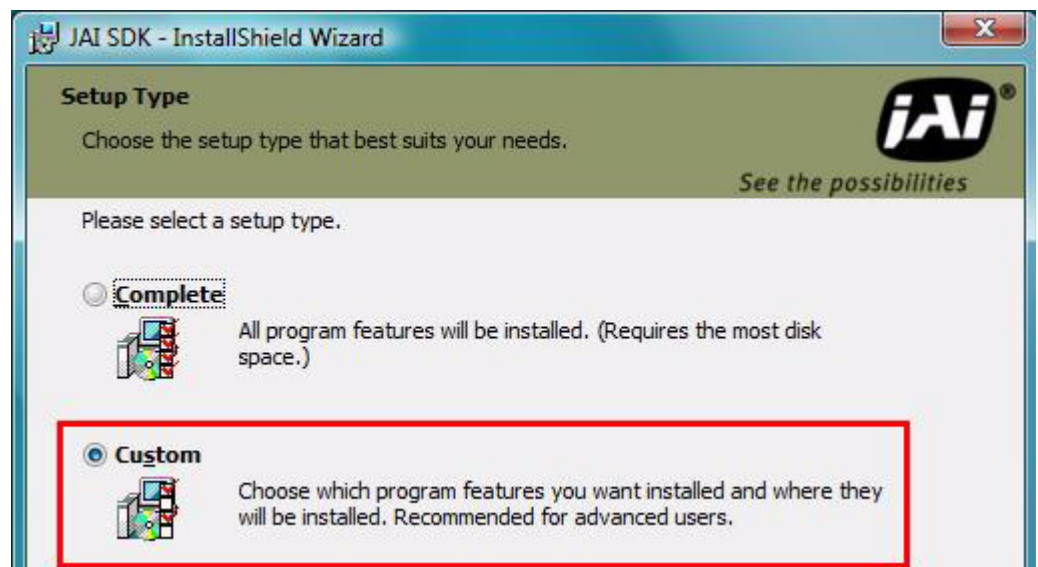
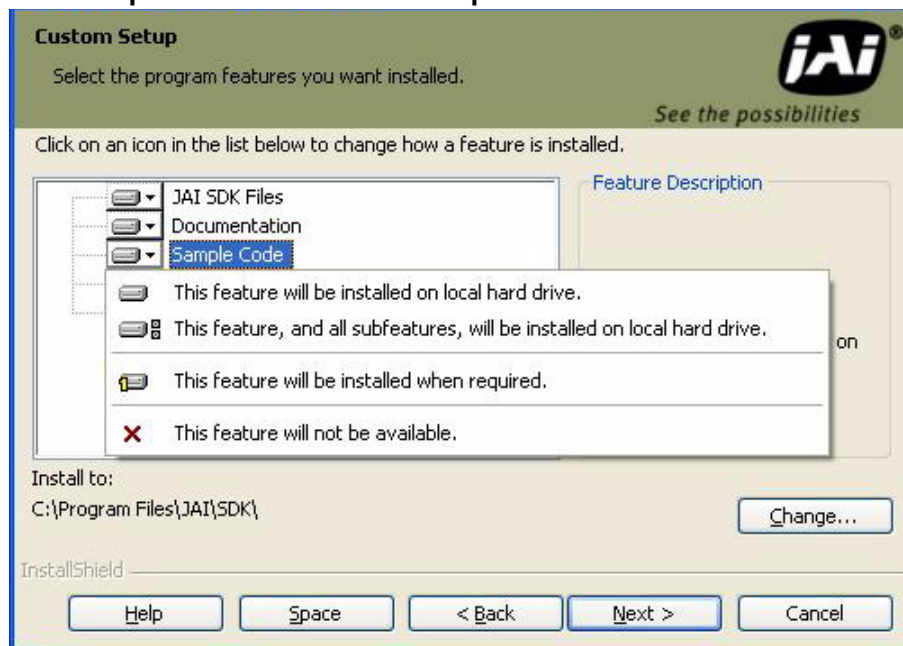


Figure 13. An example of the Custom Setup screen.



1.2.8 Filter Driver Installation Warnings

Depending on which Windows Operating System the JAI SDK is being installed on, different warnings display during the filter driver installation.

1.2.8 (a) Security Warning on Windows Vista

The Windows Security driver software installation warning appears before Windows Vista will install the filter driver. If you check the “Always trust software from ‘JAI Inc.’” box, future installations will not ask for permission to install JAI, Inc. software.

Figure 14. Windows Security driver software installation warning.



1.2.8 (b) Windows Logo Testing warning on Windows XP

The Windows Logo testing warning appears before Windows XP will install the filter driver. Continue with the installation by clicking on the Continue Anyway button.

Note: *The Windows Logo Warning serves two purposes. It asks if you want to install the device driver, and it warns that the driver has not passed Windows Logo testing to verify it is compatible with Windows XP.*

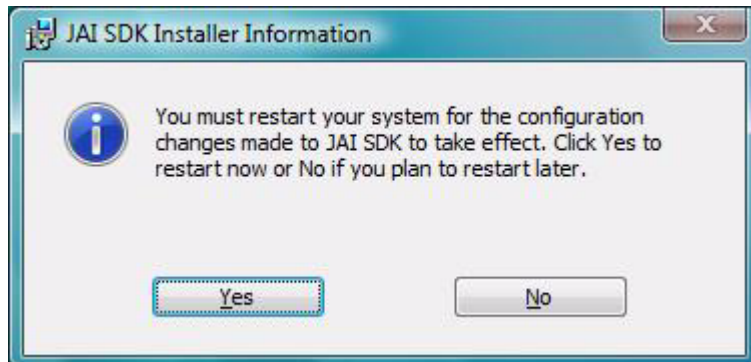
Figure 15. Windows XP Filter Driver Logo Warning.



1.2.9 Reboot

When the installer finishes, reboot the computer.

Figure 16. Reboot after installation.



1.2.10 Running the Installed Program

Start the JAI Control Tool with the shortcut configured during the software installation. Click on the Start button, and select the JAI Control Tool shortcut. You can also select the JAI SDK from the programs listing when you click the Start menu.

Figure 17. Camera Tool Startup Shortcut

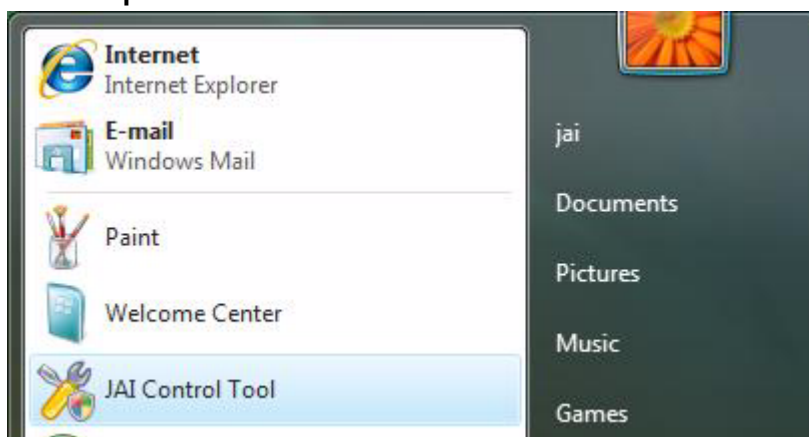
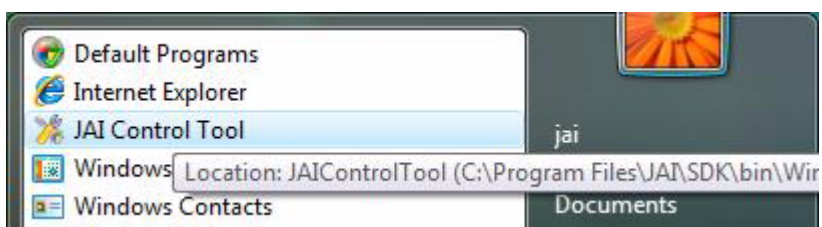
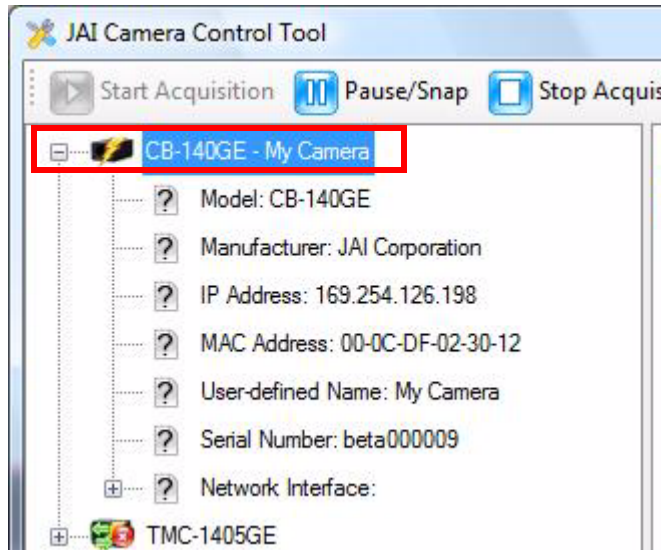


Figure 18. Vista Programs Listing



When the JAI Camera Control Tool opens, the only information displayed is the camera model of all found cameras. Click on the plus (+) icon to expand the heading for more details. Expand the Network heading for additional network information.

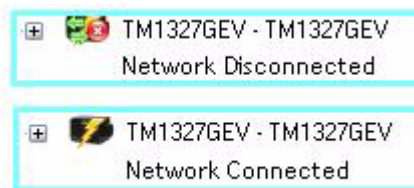
Figure 19. JAI Camera Tool Software with camera information expanded. .



Select a camera by clicking on the camera it in the Control Tool screen. This automatically establishes a connection. The connection loads the camera configuration (xml-file) from the camera and all available features display in the Feature Properties tab. The first time a connection is made to the camera the xml-file loads directly from the camera to the PC. After the original display if the camera is accessed again during the session, the Control Tool improves performance by displaying the local copy of the xml-file.

The software displays the connection status by showing a steady lightning icon when the camera is connected, and a searching icon if there is no connections. When a connection is being made the software alternates the icons for a flashing effect.

Figure 20. Making a network connection.



1.2.11 Camera Tree View Menus

Right click on the camera tree view menu to access further controls.

If there is more than one camera present, select the desired camera from the tree view menu. The second choice, Close Selected Cameras, allows undesired cameras to be closed from the tree view menu. Click on the Search for Cameras menu to locate cameras that may not be presently showing on the screen.

1.2.12 Right click for camera menus in the tree view screen.

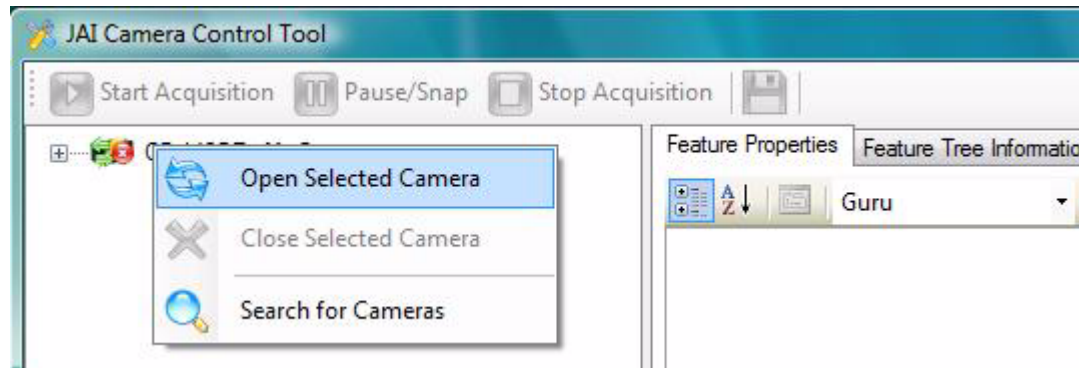
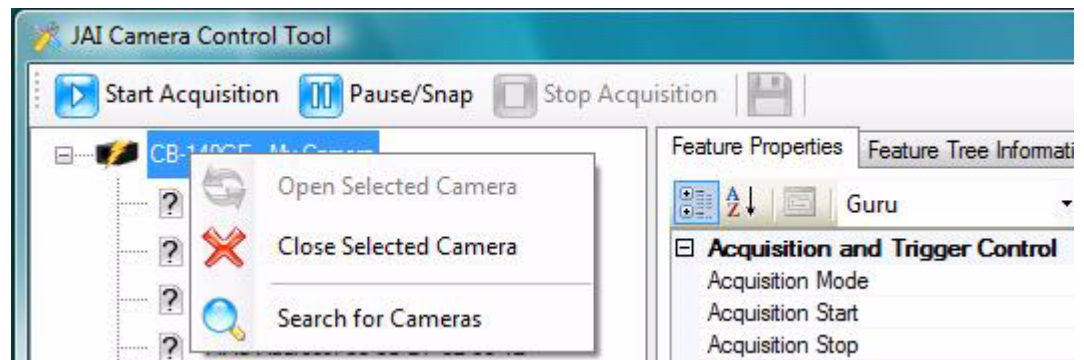


Figure 21. Right Clicking allows starting and stopping cameras inside the SDK frame.



1.2.13 Feature Properties Tab

The interface is set to Beginner level by default. Settings that have significant impact on the camera and are difficult to reconfigure are placed under higher user levels to prevent casual changes that may greatly impact a camera. Not all cameras have Expert and Guru features.

Clicking the A-Z button sorts the categories A to Z, and the sub-categories A to Z.

Selecting the alphabetic view sorts all contents in alphabetical order without considering the category where a listing belongs.

Figure 22. Multiple User Level Settings

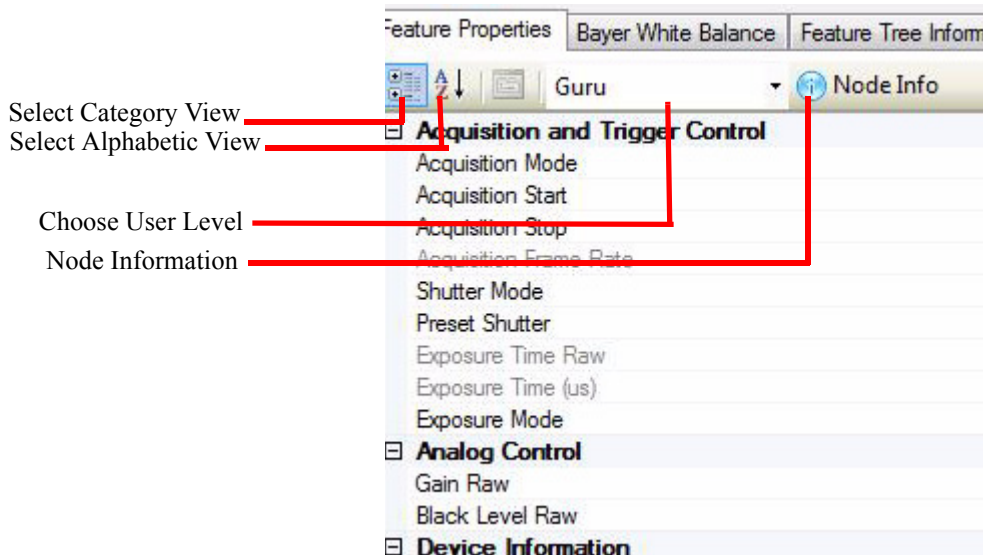


Figure 23. Category View

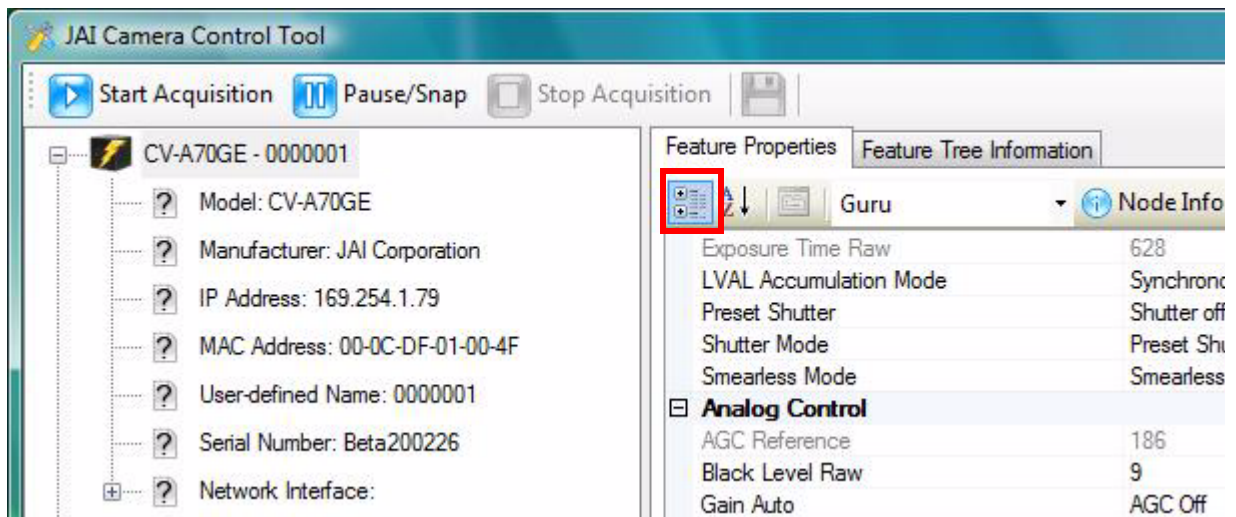
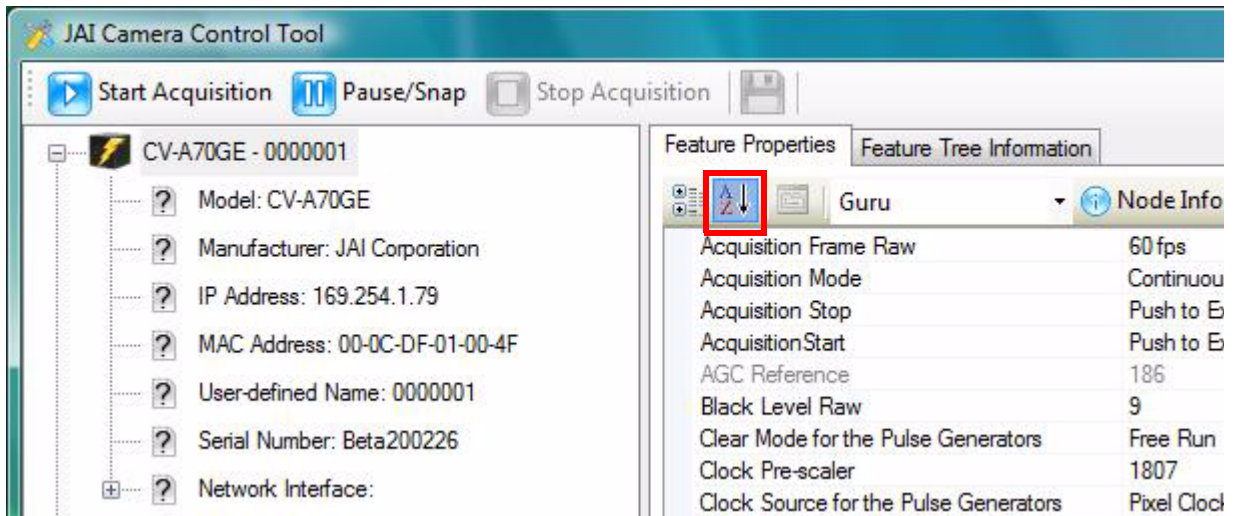


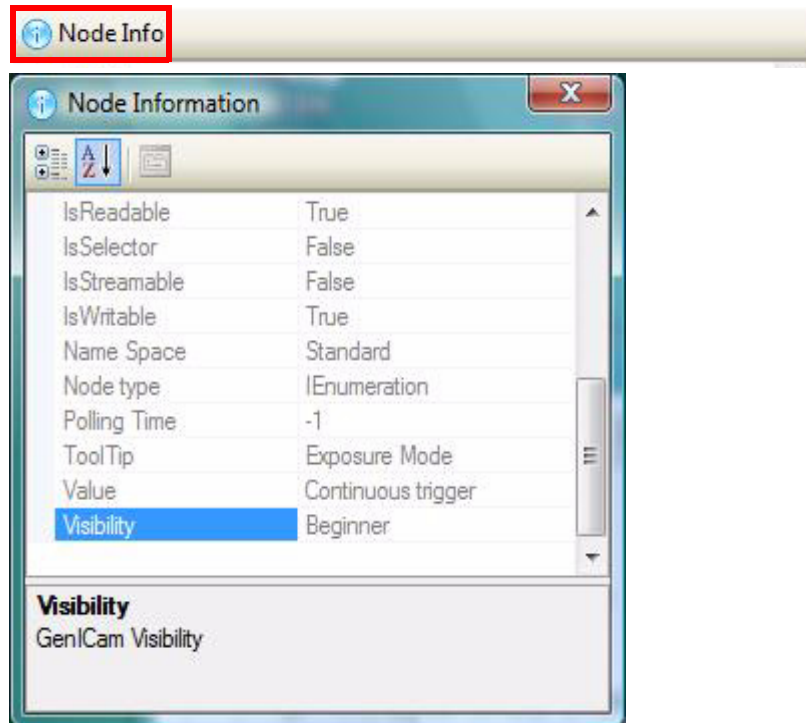
Figure 24. Alphabetical Listing View



1.2.13 (a) Node Info Button

Click on the Node Info button to open the node information window. This window shows additional information about the GenICam properties of each feature.

Figure 25. Click on the Node button for a properties display.



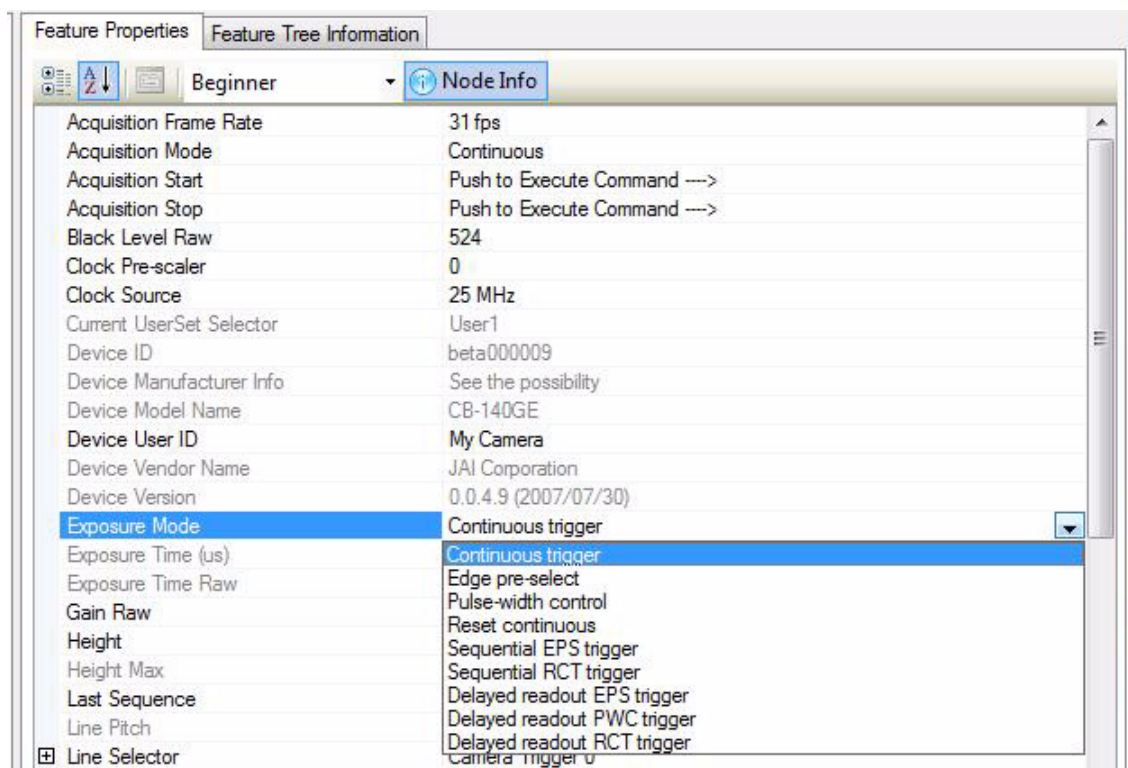
1.2.13 (b) Managing Settings with the control tool.

The control tool is GigE Vision and GenICam compliant. It can discover and provide access to the various camera controls on a GigE compatible camera. The controls that are available for manipulation are shown in normal type. Those that are part of the camera interface, but cannot be changed in their present configuration are grayed out, and remain that way until conditions are met to make them available. Some controls offer a variety of selections in a drop-down menu. The presence of an arrow in a menu indicates there are several options.

The Feature Properties tab opens with the properties showing in expanded mode. The categories can be minimized to lessen the scrolling necessary in the window.

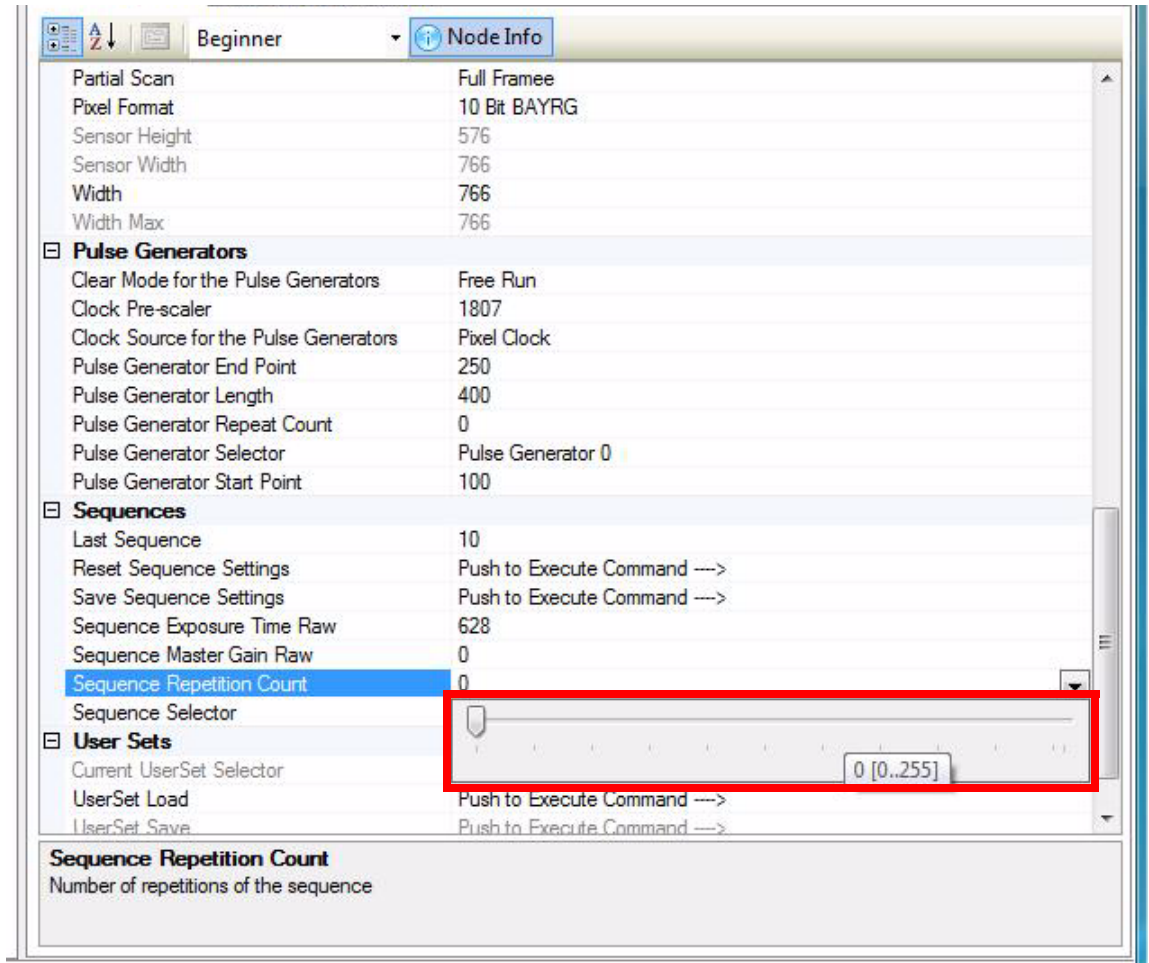
To access all the feature of a particular line, click on the listing. The listing will display expanded information, not shown by casually viewing the list.

Figure 26. Exposure mode with drop-down menu selected.



The slider bar provides an upper and lower limit to assist in selecting number settings. It is also possible to input numbers into the control using the keyboard.

Figure 27. Selecting Numbers



The menu provides additional information about a selected function at the bottom of the screen. When the user returns to the control, the list shows the current state of the camera as selected on the drop-down list box.

1.2.13 (c) Naming a Camera

When a computer controls several different cameras, especially if they are the same model, it can be useful to assign names to the cameras. Click on the device information category of a specified camera to assign a unique name. In this example the camera name was changed from a number to "My Camera".

The name stays with the camera until it is removed or changed. Some older cameras do not accept an assigned name.

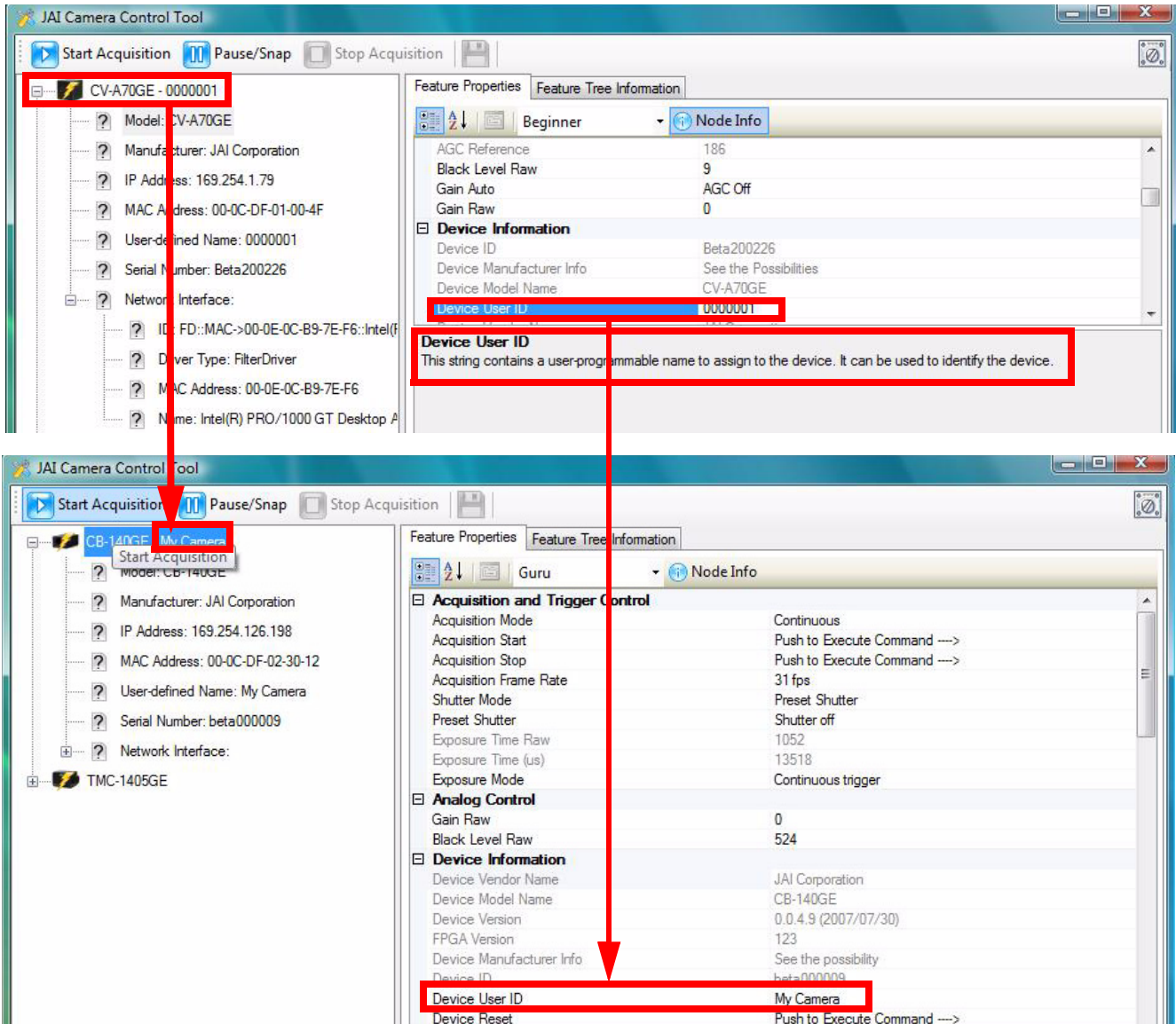
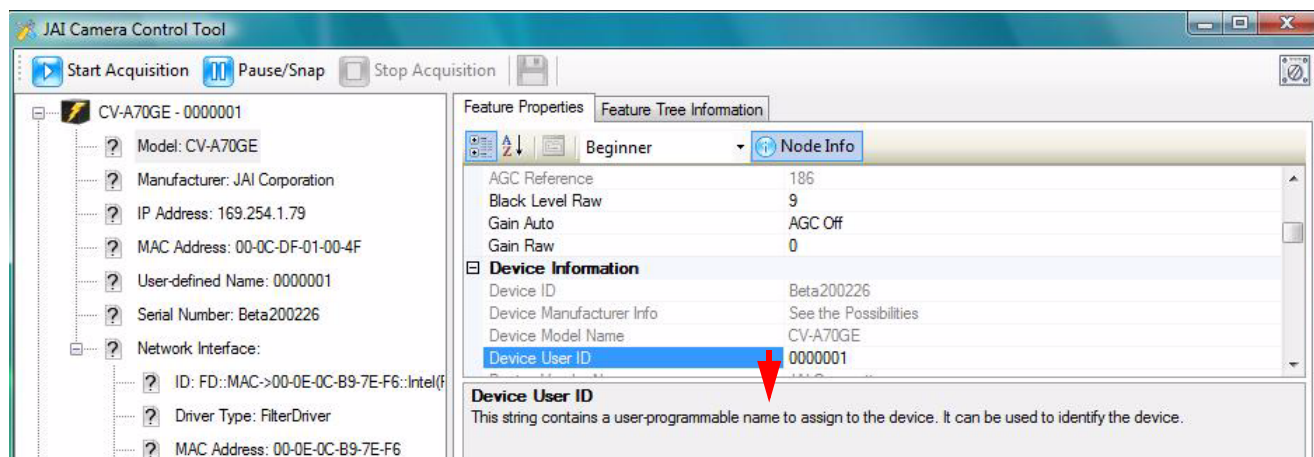


Figure 28. The information bar adds details about some camera controls.

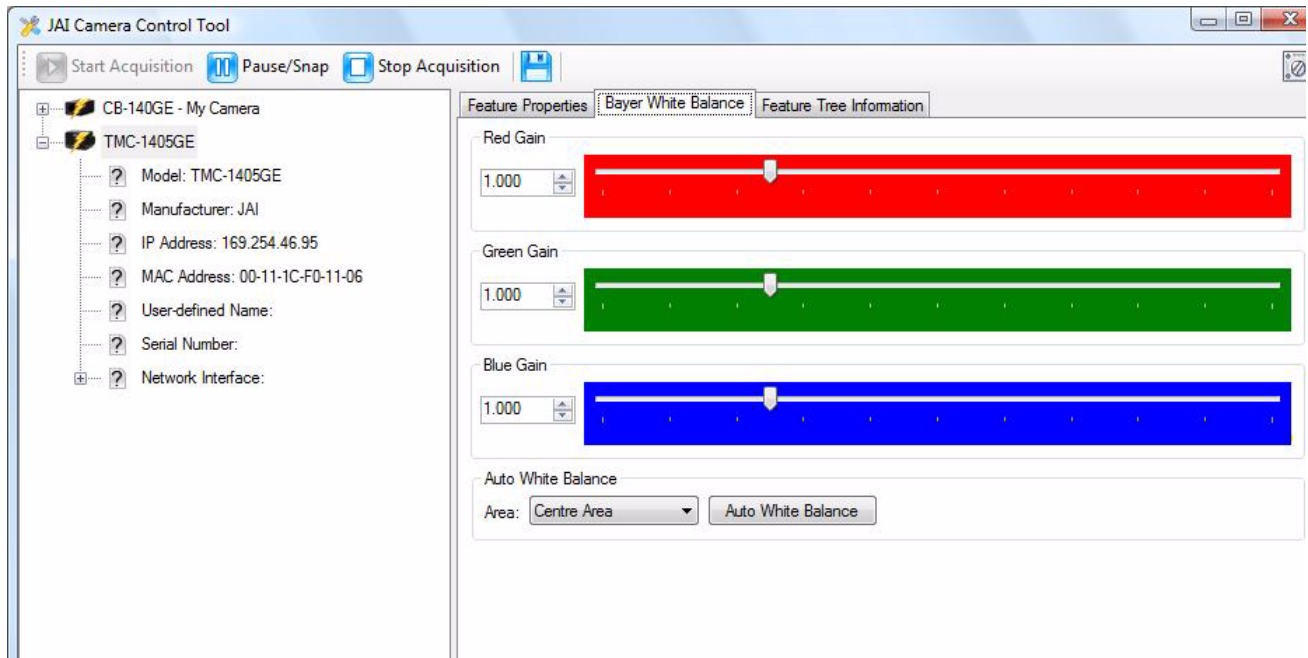


1.2.14 Bayer White Balance

Cameras that use Bayer color interpolation on the PC-side have access to color settings inside the Bayer White Balance tab. These cameras send non-interpolated color images to the control tool. The control tool automatically converts the images to color. The white balance control is used only in display. No settings are affected in the cameras.

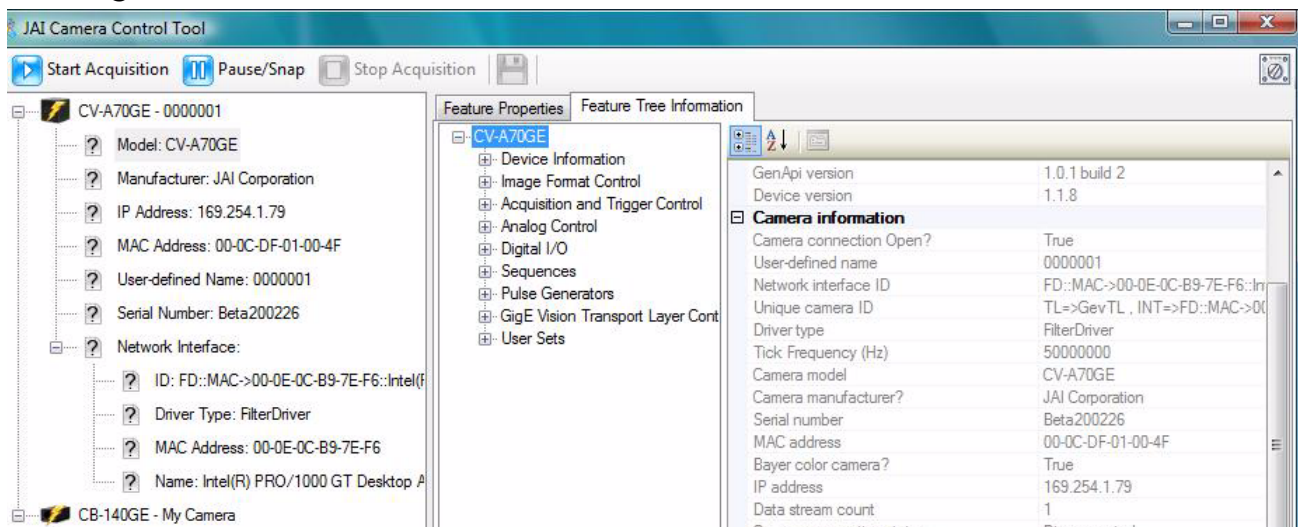
Pressing the Auto White Balance button causes the control tool to evaluate the images from the camera and calculate red and blue color based on the result.

Note: The camera must be in acquisition mode for the Bayer White Balance Tab to be visible.

Figure 29. Bayer White Balance Tab

1.2.15 The Feature Tree Information Tab

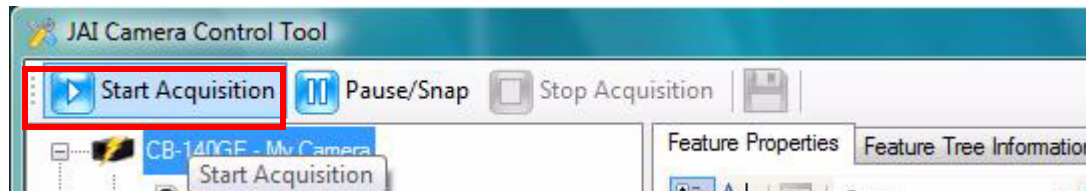
This table displays a more detailed feature tree than shown on the left side of the screen. Select a camera on the left of the screen to make the tab active. Use the buttons on top to expand or minimize listings, and to sort in ascending or descending order. The Property Pages permits viewing of accessible attributes.

Figure 30. Feature Tree Information Tab

1.2.16 Start Acquisition

Click on the desired camera. The Acquisition tab becomes active once a camera is selected. Click on the Start Acquisition button to begin capturing images.

Figure 31. Start Acquisition Button



1.2.17 Stop Acquisition



Clicking on this button stops the camera when it is in Acquisition mode.

1.2.18 Save Next Frame

This button allows the user to save a copy of the next captured frame on the computer running the control tool.

Figure 32. Click Stop Acquisition to shut off the camera.



During image acquisition the average frame rate and the timestamp from the image display. The timestamp displays using ticks. The timestamp can be converted into a time base such as a millisecond, microsecond or second by dividing the timestamp values by the tick frequency.

1.2.19 Settings Button

The Settings button provides user access to the Control Tool configuration.

The settings window allows the user to specify how the internet is configured, the video display, and the level of controls they can access. Clicking on any control opens a drop-down list box to allow selection of the desired control options.

Feature Properties

The Feature Properties let you decide at what level to view controls. If you are concerned that your changes may mess up the camera, and you do not really know if you could return it to proper configuration, it is better to choose a Beginner setting than Guru.

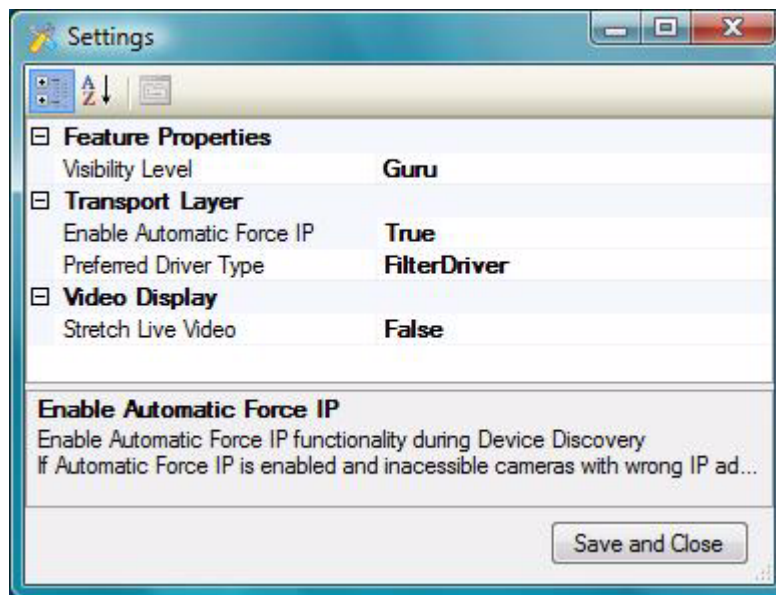
Transport Layer

Decide if the transport layer will automatically assign IP addresses to inaccessible cameras on a different subnet using a force IP command.

Video Display

The video display allows you to decide if the image should be resized to fit the monitor, or if it should be displayed inside a resizable window.

Figure 33. The Settings Window



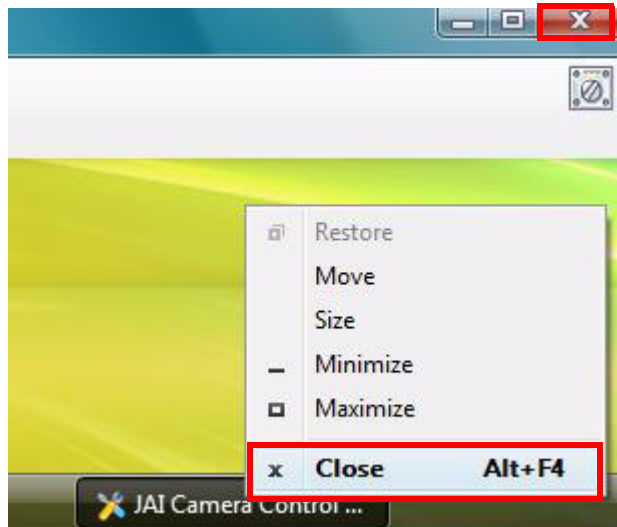
Chose True to enable a forced IP address. Be careful when setting a permanent IP address. If the address is not on the same subnet as the computer, the camera will not be accessible using the Control tool. Generally the first three sets of digits need to be the same as the computer IP address.

Note: If the host computer receives an internet address using DHCP, it is probably better not to create a forced IP address on the camera, since it will have to be reset every time the computer is restarted. The GenICam software is designed to assign an address close to that of the host computer when it is set for automatic configuration, this way the camera can always be seen by the software.

1.2.20 Closing a Session

Close the JAI Control Tool software by clicking on the window close button. Alternatively click on the icon on bottom of the Windows XP operating system.

Figure 34. Software Shutdown



Europe, Middle East & Africa

Phone +45 4457 8888

Fax +45 4457 8880

Asia Pacific

Phone +81 45 440 0154

Fax +81 45 440 0166

Americas

Phone (Toll Free) 1 800 445 5444

Phone 1 408 383 0301



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