

# **Scion Java Package For ImageJ Macintosh/Windows**

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# Getting Started

## Introduction

This manual describes the Scion Java Package that can be used to import video images into ImageJ. The Scion Java Package works in both the Macintosh and Windows environment. It currently supports all Scion Frame Grabber boards, which include the CG-7 PCI, LG-3 PCI, VG-5 PCI and AG-5 PCI. This manual describes the installation and use of the Scion Java Package.

Please take a few moments to read through this manual before you begin using the Scion Java Package as it should answer some questions that you may have. Please contact Scion Corporation should you encounter difficulty at any time, or if you have any questions.

## System Requirements

Scion Java Package has the following system requirements for Macintosh OS 9.1:

- G3 Macintosh or better

- Mac OS 9.1

- Minimum RAM Recommended: 128MB

- ImageJ (<http://rsb.info.nih.gov/ij/>)

- Scion Frame Grabber Board and Drivers for Mac OS 9.1

- MRJ 2.2.4 or higher (<http://developer.apple.com/java>, go to Mac OS Classic Java)

Scion Java Package has the following requirements for Macintosh OS X:

- G3 Macintosh or better

- Mac OS X version 10.0 or higher

- Minimum RAM Recommended: 128MB

- ImageJ (<http://rsb.info.nih.gov/ij/>)

- Scion Frame Grabber Board Drivers for Mac OS X

Scion Java Package has the following system requirements for Windows:

- Pentium III 600MHz or better

- Microsoft Windows 95, 98, Millennium, NT 4.0, 2000 or XP required.

- Minimum RAM Recommended: 128MB

- 256-color VGA (SVGA True Color with 2MB Video RAM recommended)

- Microsoft Mouse or compatible pointing device

- ImageJ (<http://rsb.info.nih.gov/ij/>)

- Scion Frame Grabber Board and Drivers

- Sun JRE 1.18 (<http://java.sun.com/>, go to Products and API's)

# Installation

This installation installs ImageJ and the Java runtime in addition to the Scion Java Package. This installation may overwrite files from a previous version of ImageJ, which did not include the Scion Java Package and the user should take steps to save any configuration or modifications that have been made to these directories.

## Macintosh OS 9.1 Install

1. Insert the CD labeled “Scion Application CD” into the CDROM drive. If you downloaded the Scion Java Package for Mac OS 9 then proceed to step number 4.
2. A window containing the contents of the CD will appear. If it does not then double-click the “Scion CD” icon located on the Desktop.
3. Double-click the “ImageJ for Mac OS 9” folder.
4. Double-click the “Scion\_Java.sea” file to start the extraction and installation. If you downloaded the Scion Java Package from our website then the program will automatically extract and start installation.
5. Follow the on-screen prompts and choose a destination for the software.

## Macintosh OS X Install

1. Insert the CD labeled “Scion Application CD” into the CDROM drive. If you downloaded the Scion Java Package for Mac OS X then proceed to step number 5.
2. A window containing the contents of the CD will appear. If it does not then double-click the “Scion CD” icon located on the Desktop.
3. Make sure that the driver is installed before proceeding. See the Software Installation sheet included with the frame grabber. It is also located in the “Install Sheets” folder on the “Scion Application CD”
4. Double-click the “ImageJ for Mac OS X” folder.
5. Copy the “SImageJ24.sit.gz” file to the desktop.
6. Double-click the “SImageJ24.sit.gz” on the desktop.
7. The file expands into the “SImageJ24.sit” file and the “ImageJ (OS X)” folder, both located on the desktop.
8. You may delete the “SImageJ24.sit.gz” and “SImageJ24.sit” files when the installation is complete.

## Windows PC Install

1. Insert the CD labeled “Scion Application CD” into the CDROM drive. If you downloaded the Scion Java Package then proceed to step number 4.
2. A window containing the contents of the CD will appear. If it does not appear then open Windows Explorer and find the CDROM.
3. Double-click the “ImageJ” folder.
4. Double-click the “Setup.exe” file to start the installation. If you downloaded the Scion Java Package from our website then double-click the “Scion\_Java.exe” program to start the installation.
5. Follow the on-screen prompts and choose a destination for the software.

## Notes for Existing Users of ImageJ

If a version of ImageJ already exists on this machine then one of two things can be done. If this version does not have any extra plugins or modifications then uninstall this version and use the Scion Java Package version. If the existing version of ImageJ has many modifications and plugins have been added then the following steps can be used to add the Scion Java Package. First install the Scion Java Package into a different folder than the existing version of ImageJ.

#### *Windows*

First a modification needs to be made to the shortcut for the existing version of ImageJ. The `-mx128m` parameter and the `scion.jar` must be specified when executing the `jre.exe` Java Runtime Program. Refer to ImageJ documentation on how to invoke the ImageJ program. The following files must also be copied from the Scion Java Package install to the folder of the existing version of ImageJ:

#### Plugins Folder

- Capture\_Grayscale.class
- Capture\_Grayscale.java
- Capture\_Grayscale\_HR.class
- Capture\_Grayscale\_HR.java
- Capture\_RGB.class
- Capture\_RGB.java
- Capture\_RGB\_HR.class
- Capture\_RGB\_HR.java
- Live\_Capture.class
- Live\_Capture.java

#### ImageJ Folder

- Scion\_prefs.txt
- Jscioncc.dll
- Jscionfg.dll
- Scion ReadMe.wri
- Scion.jar
- The entire Scion folder

#### *Macintosh OS 9*

A modification needs to be made to the ImageJ program file. The memory parameter needs to be increased to 128MB and the `scion.jar` file must be specified. See the ImageJ documentation on how to make this modification. The following files must also be copied from the Scion Java Package install to the folder of the existing version of ImageJ:

#### Plugins Folder

- Capture\_Grayscale.class
- Capture\_Grayscale.java
- Capture\_Grayscale\_HR.class
- Capture\_Grayscale\_HR.java
- Capture\_RGB.class
- Capture\_RGB.java
- Capture\_RGB\_HR.class
- Capture\_RGB\_HR.java
- Live\_Capture.class

Live\_Capture.java

ImageJ Folder

- Scion FG Java Lib
- Scion FG Support Lib
- Scion IP Lib
- Scion.jar
- The entire Scion folder

*Macintosh OS X*

The following files must be copied from the Scion Java Package install to the folder of the existing version of ImageJ:

Plugins Folder

- Capture\_Grayscale.class
- Capture\_Grayscale.java
- Capture\_Grayscale\_HR.class
- Capture\_Grayscale\_HR.java
- Capture\_RGB.class
- Capture\_RGB.java
- Capture\_RGB\_HR.class
- Capture\_RGB\_HR.java
- Live\_Capture.class
- Live\_Capture.java

ImageJ Folder

- Libjcionfg.jnilib
- The entire Scion folder

Package Contents of ImageJ

(To open the Package Contents: Highlight the ImageJ.app. Hold down the Control Key and select Show Package Contents)

Contents\Resources\Java\scion.jar

The last item that needs to be done is that the MRJApp.properties needs to be modified. It is located in the Package Contents of ImageJ in Contents/Resources. You can modify it with the MRJApp program. If this is not available you can open it with Text Edit and make the following modification.

Change:

com.apple.mrj.application.classpath=Contents/Resources/Java/ij.jar

To:

com.apple.mrj.application.classpath=Contents/Resources/Java/ij.jar:Contents/Resources/Java/scion.jar

# Using The Scion Java Package

## Start Using

Now that installation of the Scion Java Package is complete it is time to start using the Plugins. Open the ImageJ program and go to the Plugins menu, you will see a menu similar to the following:



Choosing *Live Capture* from the menu will bring up the Scion Live Capture interface. This interface is where images can be previewed, captured, summed, averaged and integrated. The following sections explain the interface in greater detail.

Scion has also included four other plugins that work with the *Live Capture* plugin. In all of these cases, the capture configuration is based on the Stored Preferences that are originally set from within the *Live Capture* plugin. If multiple boards are installed then these plugins will use the frame grabber board that was last used:

*Capture Grayscale* will capture a single grayscale image into ImageJ for analysis.

*Capture Grayscale HR* will capture a single high resolution grayscale image with the CG-7 PCI frame grabber into ImageJ. If a Scion board other than the CG-7 PCI is used then the image will be standard size.

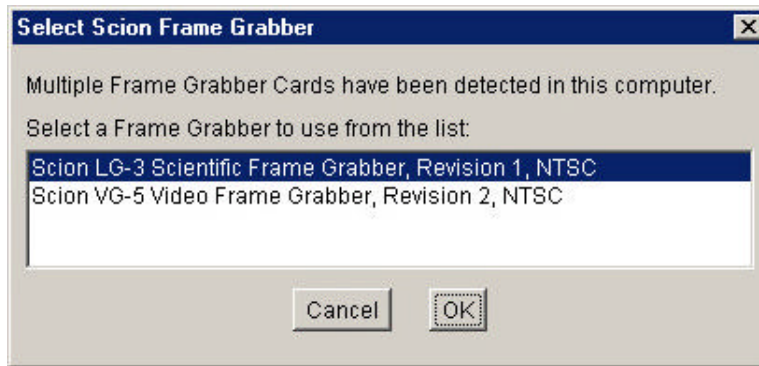
*Capture RGB* will capture a single RGB image into ImageJ for analysis. If an RGB camera is not connected to the frame grabber then a grayscale image will be captured instead.

*Capture RGB HR* will capture a single high resolution RGB image with the CG-7 PCI frame grabber into ImageJ. If a Scion board other than the CG-7 PCI is used then the image will be standard size. Again, if an RGB camera is not connected to the frame grabber then a grayscale image will be capture instead.

Source code for the plugins mentioned above is included in the Scion Java Package install. They can be used as samples for developing new plugins or can be modified to suit specific needs.

## Multiple Frame Grabber Boards

If multiple frame grabber boards are installed, a dialog box like the following will appear:



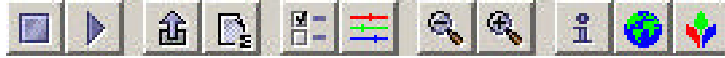
This will show a list of the currently installed Scion frame grabber boards. It gives the model number, revision number and video type setting.

The Scion Live Capture Plugin also has the ability to run multiple copies simultaneously. So, this means that a preview from the LG-3 board could be occurring at the same time a preview of the VG-5 board was occurring. By doing this the computer system will be slowed as a result.

# Interface

## Tool Bar

The Tool Bar is located immediately below the menu bar and contains buttons that afford easy access to selected commands.



**Stop Live Video:** Use this button to stop live video capturing.



**Start Live Video:** This command is used to start live video capturing.



**Export Image:** This will send the current image to ImageJ for later processing. If there is a live preview then the Plug-In will automatically stop and capture the image.



**Frame Processing:** Accumulation and Integration options can be set here. Support also for high resolution capture with the CG-7 PCI is also supported.



**Video Control:** Displays a dialog box that allows for interactively controlling capturing.



**Color Balance:** This will allow adjustment of Brightness and Contrast for each frame grabber channel or the average of all channels.



**Zoom Out:** This will zoom out the live image to make it larger or is also used to zoom back to full size. Captured images will always be full size.



**Zoom In:** This will zoom in the live image to make it smaller. This helps to speed up the capturing process on slower computers. Captured images will always be full size.



**FG Information:** This shows the current frame grabber used and its configuration.



**Scion On The Web:** Clicking this button will open your web browser and attempt to go to the Scion Corporation website.



**About Scion:** This will bring up a window with contact information for Scion Corporation and the Plug-In version number.

## Status Bar

The Status Bar gives information about the live preview.



The left side of the Status Bar gives information about the state of the Plug-In. Messages will appear dealing with Capturing, Frame Processing, etc.

The middle section tells the size of the captured image. Standard NTSC is 640 x 480 pixels, while Grayscale PAL is 768 x 512 and Color PAL is 768 x 576 pixels. Using the High Resolution feature on the CG-7 will give an NTSC image of 1280 x 960 pixels and a PAL image of 1536 x 1152 pixels.

The right side of the Status Bar gives an indication of the Zoom level. Zoom levels are 1:1, 1:2, 1:4 and 1:8.

# Menus

## File Menu

### Export Image

Use “Export Image” to send the image to ImageJ for later analyzing. The “Export Image” button located in the Tool Bar may also be used. If there is a Live Preview then the Plug-in will automatically stop and capture the image.

### Store Preferences

The “Store Preferences” command will save all settings in the program. This includes the Video Control, Color Balance, Frame Processing, Zoom, Tool Bar and Status Bar settings.

### Quit

Choosing “Quit” will close the Scion Live Capture Plug-in and all associated windows.

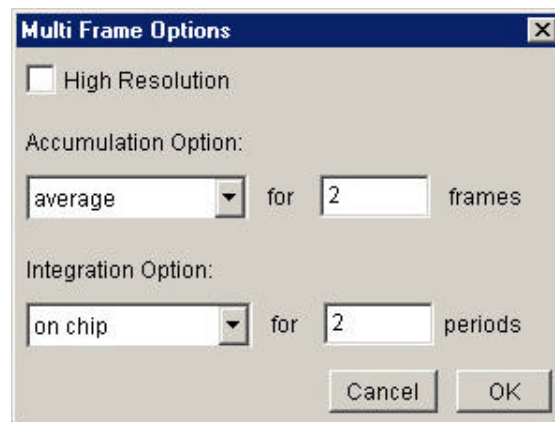
## Image Menu

### Start (Stop) Live Video

“Start Live Video” continuously displays live video using the selected Scion Frame Grabber board, you can also use the “Start Live Video” button in the Tool Bar. Notice how, during continuous capture, the name of this command changes to “Stop Live Video (capture)” and “Live Video In Progress” appears in the Status Bar. To capture the image, select “Stop Live Video” or click the “Stop Live Video” button on the Tool Bar. While capturing, you are allowed to change Brightness and Contrast for each of the RGB or grayscale channels in the “Color Balance” dialog window.

### Frame Processing...

Averages, sum's or integrates 2 to 127 video frames to reduce time-varying random noise and increase image brightness. A single high resolution image can be captured or a high resolution image can be captured using the accumulation and integration options. Accumulation and integration will be done on the entire image. The “Frame Processing” button on the Tool Bar will also bring up this dialog window. Using “Store Preferences” will save all settings.



*High Resolution* will use the frame grabber's ability to capture an image twice the size of a standard image (1280 x 560 NTSC or 1536 x 1152 PAL). The high resolution image will be captured using the selected Accumulation and Integration Options. If No Accumulation and No Integration are selected then a single high resolution image will be captured. The Scion CG-7 board is the only board to support this feature.

#### *Accumulation Option:*

*Average* will average the number of frames specified. This is used to reduce random noise in the image. This option can be used in addition to the Integration Options. If *High Resolution* is checked then the averaged image will be a high resolution image.

*Sum* will add the number of frames specified. This is used to make the resultant image brighter. This option can be used in addition to the Integration Options. If *High Resolution* is checked then the summed image will be a high resolution image.

*No Accumulation* specifies that no accumulation operations will be done.

### *Integration Option:*

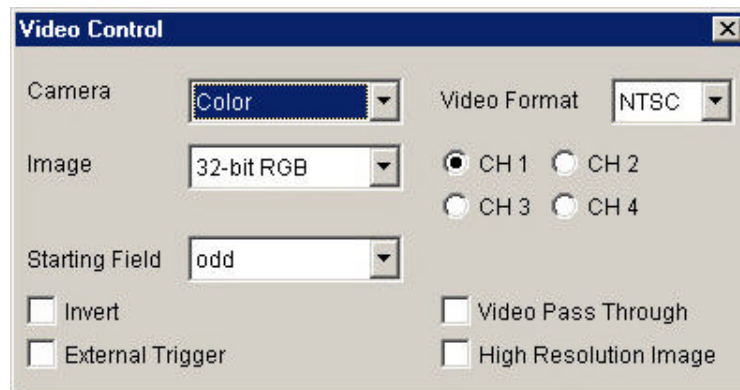
*On Chip* will do on-chip integration for the number of frame periods specified, using certain models of Cohu series or Dage-MTI cameras, see Scion for details. The purpose is to brighten the image in a low light situation; this is better than summing because the camera is generating the integrated image. The camera will integrate on-chip for the specified number of frame periods and the frame grabber will capture the integrated frame. On-chip integration requires a special cable, available from Scion, for connecting the integration input of the camera to the frame grabber. This can be used in addition to the Averaging Options. If *High Resolution* is checked then the image will be a high resolution image.

*On Trigger* will wait for an external trigger pulse before capturing the image. This can be used in addition to the Averaging Options. If *High Resolution* is checked then the captured image will be a high resolution image.

*No Integration* specifies that no integration operations will be done.

### **Video Control...**

Displays a dialog box that allows you to interactively control video capturing. This dialog box will also come up if the “Video Control” button is chosen in the Tool Bar. Using “Store Preferences” will save all settings.



*Camera* specifies if the frame grabber is connected to a *Color* or *Grayscale* camera. When *Color* is selected the frame grabber will look for the Sync signal on Channel 4. If *Grayscale* is selected then the frame grabber will look for the Video on the Channel selected.

*Image* specifies if the image capturing will be done in *RGB Color* or *Grayscale*. If *Grayscale* is chosen in the *Camera* option then grayscale will automatically be enabled for the *Image* option. If *Grayscale* is chosen, you have a choice of which of the four input channels will be used. The Scion LG-3 PCI, VG-5 PCI and AG-5 PCI frame grabber boards only support *Grayscale* mode.

*Starting Field* can be *Odd* field first or *Even* field first. The default is *Even* field first.

*Video Format* allows users of the CG-7 PCI frame grabber to select between NTSC or PAL video signals. This setting will not be selectable for Scion grayscale boards, but will show the current configuration of the board.

*Invert* will invert the captured and live image.

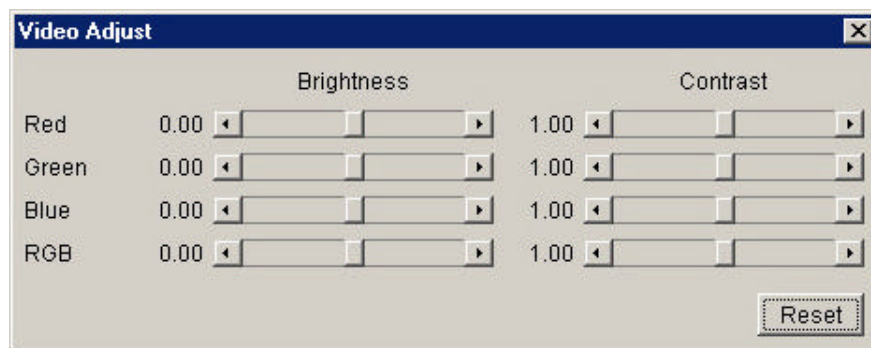
*External Trigger* allows the Plug-in to wait for an external trigger signal to be applied to the frame grabber during the *Stop Live Capture* command. The Plug-In will only wait for the trigger signal during the *Stop Live Capture* and *Export Image* commands. Live Capturing will proceed normally.

*Video Pass Through* enables the real-time display of digitized video on external monitors using the VG-5 PCI or CG-7 PCI color frame grabbers

*High Resolution Image* will enable high resolution capturing for the CG-7 PCI frame grabber board. With this selected all Live Previews and Captures will be in High Resolution mode.

## Color Balance...

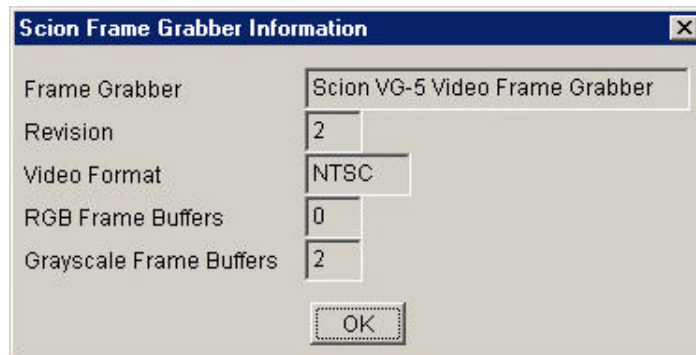
This item allows you to adjust the *Brightness* and *Contrast*, for each channel or the average of all the channels, of the frame grabber card. Changes are interactively displayed in live video mode. The objective when using these controls is to optimize the image brightness and contrast. *Brightness* has values from -1 to 1 with 0 as the default reset value. *Contrast* has values from .5 to 2 with 1 as the default reset value. If you are capturing in grayscale mode then you will only be allowed to adjust that channel's *Brightness* and *Contrast*.



Use "Store Preferences" to save these settings. All *Brightness* and *Contrast* settings will be set back to their default if the Reset button is clicked. The "Color Balance" command can also be executed by clicking the "Color Balance" button on the Tool Bar.

## FG Information...

This shows the current frame grabber installed and the configuration. This can also be executed by clicking the "FG Information" button on the Tool Bar.



*Frame Grabber* displays the model frame grabber that is being used to capture.

*Revision* gives the current revision of the frame grabber board. This is mainly used for Technical Support purposes.

*Video Format* tells what video format the frame grabber is configured for. Only the CG-7 PCI frame grabber can be changed via software.

*RGB Frame Buffers* shows the number of RGB frames that the board can hold.

*Grayscale Frame Buffers* shows the number of Grayscale frames that the board can hold.

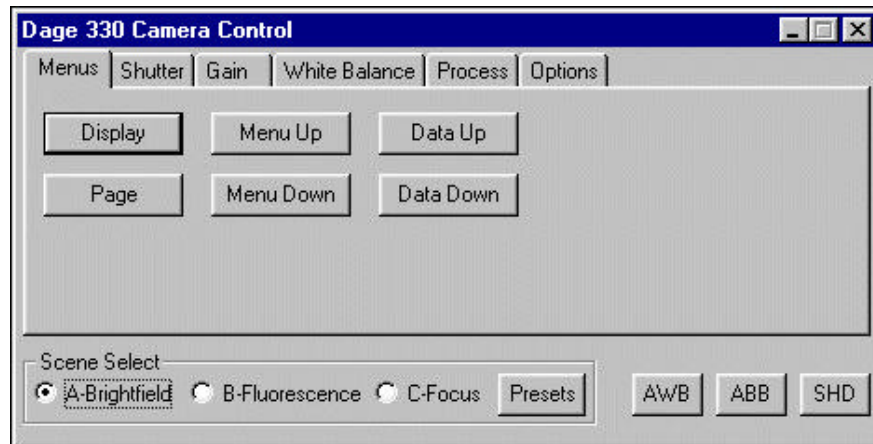
## Camera Menu

The items in this menu will allow control of certain Dage/MTI and Sony cameras. This menu will only appear on a Windows PC using a CG-7 PCI Frame Grabber board. Camera control is not supported on the Macintosh.

### Dage 330 Control...

This menu will allow serial control of the Dage DC330 Color Camera with the Scion CG-7 frame grabber. The function will mimic the internal menus and front panel switches of the Dage DC330 camera. For an explanation of each setting please refer to the Dage DC330 camera manual.

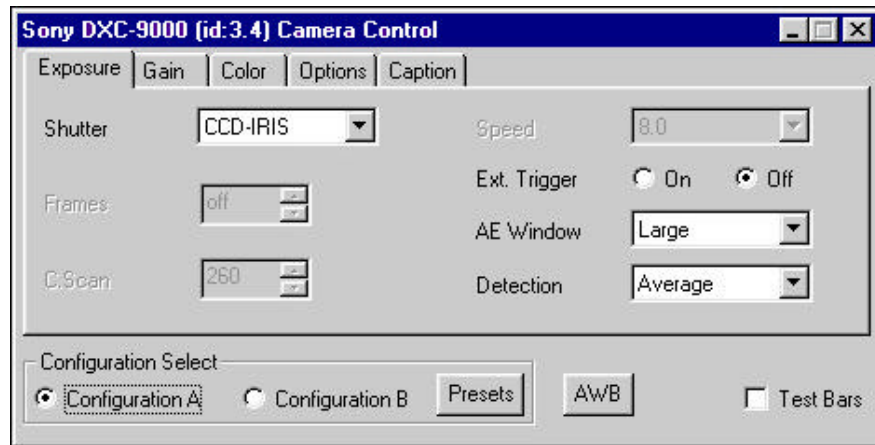
Please note that the serial control will only work if the DC330 is connected to the CG-7 via the Cab-DC330S-CG7 cable. Serial control of the Dage DC-330 and the Scion LG-3, VG-5 or AG-5 boards are not possible.



### Sony Control...

This menu will allow serial control of Sony DXC-390, DXC-970MD, DXC-950MD, DXC-9000 and DXC-9001 Color Cameras with the Scion CG-7 frame grabber. The function will mimic the internal menus of the Sony camera. For an explanation of each setting please refer to the Sony camera manual.

Please note that the serial control will only work if the Sony camera is connected to the CG-7 via the Cab-DX9Ser-CG7 cable. Serial control of the Sony camera and the Scion LG-3, VG-5 or AG-5 board are not possible.



## **View Menu**

### **Zoom In**

This command will zoom in the live image to make it smaller. This helps to speed the capturing process on slower computers. The captured image will always be full size. The “Zoom In” button located on the Tool Bar can also be used to zoom the live image.

### **Zoom Out**

Use this command to zoom out the live image to make it larger or to zoom it back to full size. The captured image will always be full size. The “Zoom Out” button located on the Tool Bar can also be used to zoom out the live image.

### **Tool Bar**

This command toggles the Tool Bar on or off.

### **Status Bar**

This command toggles the Status Bar on or off.

## **Help**

### **Scion On The Web**

This contains a sub menu to various locations of the Scion Corporation website.

### **About Scion**

This brings a window with contact information for Scion Corporation and the Scion Java Package version number.

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