

Image Acquisition Toolbox™

Release Notes

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Image Acquisition Toolbox™ Release Notes

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Summary by Version

This table provides quick access to what's new in each version. For clarification, see "Using Release Notes" on page 2.

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Latest Version V4.3 (R2012a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V4.2 (R2011b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V4.1 (R2011a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V4.0 (R2010b)	Yes Details	No	Bug Reports Includes fixes
V3.5 (R2010a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.4 (R2009b)	Yes Details	No	Bug Reports Includes fixes
V3.3 (R2009a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.2 (R2008b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.1 (R2008a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V3.0 (R2007b)	Yes Details	Yes Summary	Bug Reports Includes fixes
V2.1 (R2007a)	Yes Details	Yes Summary	Bug Reports Includes fixes
V2.0 (R2006b)	Yes Details	No	Bug Reports Includes fixes
V1.10 (R2006a)	Yes Details	No	Bug Reports Includes fixes

Version (Release)	New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
V1.9.x (R14SP3)	Yes Details	No	Bug Reports Includes fixes
V1.8 (R14SP2)	Yes Details	No	Fixed bugs
V1.7 (R14SP1)	Yes Details	No	Fixed bugs
V1.6 (R14+)	Yes Details	No	Fixed bugs
V1.5 (R14)	Yes Details	No	Fixed bugs
V1.1 (R13SP1)	Yes Details	No	Fixed bugs
V1.0 (R13.0.1+)	Yes Details	No	No

Using Release Notes

Use release notes when upgrading to a newer version to learn about:

- New features
- Changes
- Potential impact on your existing files and practices

Review the release notes for other MathWorks® products required for this product (for example, MATLAB® or Simulink®). Determine if enhancements, bugs, or compatibility considerations in other products impact you.

If you are upgrading from a software version other than the most recent one, review the current release notes and all interim versions. For example, when you upgrade from V1.0 to V1.2, review the release notes for V1.1 and V1.2.

What Is in the Release Notes

New Features and Changes

- New functionality
- Changes to existing functionality

Version Compatibility Considerations

When a new feature or change introduces a reported incompatibility between versions, the **Compatibility Considerations** subsection explains the impact.

Compatibility issues reported after the product release appear under Bug Reports at the MathWorks Web site. Bug fixes can sometimes result in incompatibilities, so review the fixed bugs in Bug Reports for any compatibility impact.

Fixed Bugs and Known Problems

MathWorks offers a user-searchable Bug Reports database so you can view Bug Reports. The development team updates this database at release time and as more information becomes available. Bug Reports include provisions for any known workarounds or file replacements. Information is available for bugs existing in or fixed in Release 14SP2 or later. Information is not available for all bugs in earlier releases.

Access Bug Reports using your MathWorks Account.

Documentation on the MathWorks Web Site

Related documentation is available on mathworks.com for the latest release and for previous releases:

- Latest product documentation
- Archived documentation

Version 4.3 (R2012a) Image Acquisition Toolbox Software

This table summarizes what's new in Version 4.3 (R2012a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “GenTL Support for GigE Vision, USB, and FireWire Devices” on page 4
- “Windows 64 Support on DCAM” on page 4
- “VideoDevice System Object” on page 5
- “From Video Device Block Enhancements” on page 5
- “New Hardware Support – National Instruments” on page 5
- “Test Suite for Third-Party Adaptor Developers and Camera Vendors” on page 5
- “DCAM Adaptor Improvement” on page 5
- “Linuxvideo Adaptor Improvement” on page 6
- “Invisible Properties in GigE Vision Adaptor Are No Longer Exposed” on page 6
- “QImaging Color Wheel Property Change” on page 6
- “Change ObjectConstructor Property Name” on page 6

GenTL Support for GigE Vision, USB, and FireWire Devices

A new adaptor type, GenTL, is now available for GigE Vision, USB, and FireWire cameras.

Windows 64 Support on DCAM

The DCAM adaptor support is now extended to 64-bit Windows®.

VideoDevice System Object

The Image Acquisition Toolbox™ introduces the VideoDevice System Object, which allows single-frame image acquisition and code generation from MATLAB.

You use the `imaq.VideoDevice` function to create the System Object. It supports the same adaptors and hardware that the `videoinput` object supports; however, it has different functions and properties associated with it. For example, the System Object uses the `step` function to acquire single frames.

For more information on using the System Object, use this command in MATLAB:

```
help imaq.VideoDevice
```

From Video Device Block Enhancements

Several enhancements have been added to the From Video Device block for doing image acquisition in Simulink. Options for setting color space and Bayer Sensor Alignment are now included in the block properties.

New Hardware Support – National Instruments

Support has been added for additional National Instruments® hardware.

- PCI-1433
- PXI-1435

Test Suite for Third-Party Adaptor Developers and Camera Vendors

As part of the Image Acquisition Toolbox Adaptor Kit, we now offer a test suite for third-party adaptor developers and camera vendors to test adaptors and hardware against the toolbox.

DCAM Adaptor Improvement

Support has been added for strobe outputs to the DCAM adaptor on Windows.

Linuxvideo Adaptor Improvement

Improved support has been added for V4L1 cameras with the linuxvideo adaptor when using the V4L1 compatibility library provided by the libv4l project.

Invisible Properties in GigE Vision Adaptor Are No Longer Exposed

In the GigE adaptor, invisible properties (those designated as such by camera vendors) should not be shown. They have been, but are now not available.

Compatibility Considerations

Device-specific invisible properties that previously existed may no longer exist. If you had not used any invisible properties, you will not be affected by this change. If you had used them, you will receive an error.

QImaging Color Wheel Property Change

In the QImaging® adaptor, black has been removed as a valid value for the Color Wheel property.

Compatibility Considerations

You can no longer use black as a value for the Color Wheel property. This value is never allowed by the driver anyway, so it is unlikely to be used in any code. If you do use it, you will now receive an error.

Change ObjectConstructor Property Name

When you use the `imaqhwinfo` function, with adaptor name and device ID, the information returned includes a field called `ObjectConstructor`. For example, if you ran this code:

```
imaqhwinfo('winvideo',1)
```

for a `videoinput` object you created with adaptor `winvideo` and Device ID of 1, one of the lines of the output was:

```
ObjectConstructor: 'videoinput('winvideo',1)'
```

The `ObjectConstructor` property name has been changed to `VideoInputConstructor`. So the output now looks like this:

```
VideoInputConstructor: 'videoinput('winvideo',1)'
```

This change was made because there is now a second object type, the new `VideoDevice System` object. The object constructor field for that object is called `VideoDeviceConstructor`.

Compatibility Considerations

The field previously called `ObjectConstructor` in `imaqhwinfo` output, is now called `VideoInputConstructor`. It is unlikely that any code would use this name, but if you have code that uses it, you will need to update it to the new name.

Version 4.2 (R2011b) Image Acquisition Toolbox Software

This table summarizes what's new in Version 4.2 (R2011b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “VideoWriter in Image Acquisition Tool” on page 8
- “New Hardware Support – QImaging” on page 8
- “Support for GigE Vision on Macintosh” on page 9
- “GigE Vision Upgrade to GeniCam 2.2” on page 9
- “Additional Properties in GigE Vision for Packet Loss” on page 10
- “GigE Vision Property Removal” on page 10

VideoWriter in Image Acquisition Tool

Support for VideoWriter has been added to the disk logging for the Image Acquisition Tool. This was added to the Image Acquisition Toolbox (command-line) in version R2011a, and is now also available in the Image Acquisition Tool.

This provides additional codecs, including MJPEG2000, and large file support.

For more information on using VideoWriter for logging, see “Logging Your Data” or the Desktop Help for the **Logging** tab in the Tool.

New Hardware Support – QImaging

The QImaging support has been upgraded to use the version 2.x of the QImaging drivers.

The toolbox supports the use of the QImaging scientific cameras, including the following:

- EXi Aqua
- EXi Blue
- Retiga-4000DC
- Retiga-2000DC
- Retiga-SRV
- Retiga-4000R
- Retiga-2000R
- Rolera-MGi Plus
- Rolera EM-C²
- Rolera-XR
- QIClick
- QICAM Fast

Support for GigE Vision on Macintosh

The GigE Vision toolbox support has been extended to include the Macintosh® 64-bit platform. You can now use the GigE Vision adaptor on Windows, Linux®, and Mac® platforms.

For information on configuring a GigE Vision device on the Mac platform, see the Mac subsections of “Network Adaptor Configuration Notes” and “Software Configuration”.

GigE Vision Upgrade to GenICam 2.2

The GigE Vision adaptor now uses the GenICam 2.2 driver. This is an upgrade from version 2.0.

As a result of the version upgrade, environment variables have changed for the GenICam installation. See “Software Configuration” for the updated environment variable examples.

Additional Properties in GigE Vision for Packet Loss

If you have a slower computer and experience packet loss using the GigE Vision adaptor, you can now set a packet delay to avoid overloading the computer. This is useful in solving the performance issue if you cannot achieve your camera's frame rate.

The new `PacketDelay` property will initially be set to use the value that is your camera's default value. You can then adjust the value if needed. The `TimeStampTickFrequency` property is read-only but is available for calculating the actual packet delay value is being used.

For more information on the new `PacketDelay` property and how to calculate packet delay, see this solution:

<http://www.mathworks.com/support/solutions/en/data/1-F36R0R/index.html>

GigE Vision Property Removal

In R2011a, support for non-standard vendor-specific properties for GigE Vision hardware was added to the toolbox. As part of this support, the `AcquisitionMode` property was accidentally exposed. However, this property did not work – you could set the property, but the toolbox would reset it every time an acquisition started. Therefore the property is being removed.

Compatibility Considerations

The `AcquisitionMode` property is being removed, since it was not meant to be exposed. If you used this property in R2011a, you should remove it from your scripts. Using the property will result in an error, which can be avoided by removing the use of the property from any code or scripts.

If you need to modify how an acquisition is performed, you can use standard toolbox triggering properties, such as `FramesPerTrigger`, `TriggerRepeat`, etc.

Version 4.1 (R2011a) Image Acquisition Toolbox Software

This table summarizes what's new in Version 4.1 (R2011a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “GigE Vision Enhancements” on page 11
- “Added VideoWriter and New Codecs to Disc Logging” on page 11
- “New Hardware Support — Matrox” on page 12
- “New Hardware Support — Dalsa” on page 12
- “Changes in Coreco and Sapera Support” on page 13
- “GigE Vision Triggering Properties Now Device-Specific” on page 14

GigE Vision Enhancements

Support for vendor-specific properties is now available in the GigE Vision adaptor. In addition to the general source properties, you can now use most vendor-specific properties that your hardware supports.

You can use these vendor-specific properties both in the command-line toolbox, and the Image Acquisition Tool. In the Image Acquisition Tool, they are available on the **Device Properties** tab. You can also access them when using the From Video Device block, using the **Edit Properties** button on the Source Block Parameters dialog box.

You can get property help for device-specific properties using the `imaqhelp` function. See `imaqhelp` for more information.

Added VideoWriter and New Codecs to Disc Logging

Support for VideoWriter has been added to the disc logging for the toolbox. This provides additional codecs, including MJPEG2000, and large file support.

Note that this support is only available in the command-line toolbox. It is not supported in the Image Acquisition Tool.

For more information on using VideoWriter, see *Acquiring Image Data > Logging Image Data to Disk > Logging Data to Disk Using VideoWriter* in the Image Acquisition User's Guide.

New Hardware Support – Matrox

Support has been added for additional Matrox® hardware.

Support has also been added for Matrox hardware on 64-bit Windows.

In addition to the Solios and Helios families of frame grabbers, the Radient family is now supported. This includes support for these new boards:

- Radient eCL
- Solios eV-CL

New Hardware Support – Dalsa

Support has also been added for DALSA® hardware on 64-bit Windows.

Support has been added for additional DALSA hardware:

- Xcelera-CL LX1 Base
- Xcelera-CL PX4 Dual
- Xcelera-CL PX4 Full
- Xcelera-CL PX4 SE
- Xcelera-CL + PX8 Full (Preliminary)
- Xcelera-HS PX8 (Preliminary)
- Xcelera-LVDS PX4
- XRI-1600
- Xcelera-AN LX1 Quad

Changes in Coreco and Sapera Support

The following changes have been made in order to update DALSA support for 64-bit operating systems and for Windows 7:

- Rename the coreco adaptor to dalsa.
- Drop support for custom errors when using Sapera 5.
- Transition support for the IFC adaptor to a new adaptor called dalsaifc.

Compatibility Considerations

The coreco adaptor has been renamed dalsa.

The `imaqhwinfo` and `videoinput` commands will detect if a user uses the adaptor name `coreco`, and will replace it with `dalsa`. This will be accompanied by a warning.

Loading of saved resources in `.mat`, `.iat`, and `.mdl` files will be transitioned to the new name in the same manner, and also be accompanied by a warning.

Support for custom errors when using Sapera 5 is discontinued, in order to better support Sapera 6 and 7.

In R2008b the toolbox discontinued support of version 5 of Sapera and began to generate an error if it was used. This error no longer appears, and the old adaptor will not load.

Support for the IFC adaptor is transitioned to a new adaptor called `dalsaifc`.

The original `coreco` adaptor could be used for both IFC and Sapera. In order to support upgrades to the current `dalsa` adaptor, we have broken out the IFC support into a separate adaptor called `dalsaifc`.

The `imaqhwinfo` and `videoinput` commands will detect if a user specifies the adaptor name `coreco` and `dalsaifc` is loadable on the system, then it will replace it with `dalsaifc`. This will be accompanied by a warning.

Loading of saved resources in `.mat`, `.iat`, and `.mdl` files is transitioned to the new name in the same manner, and is accompanied by a warning.

GigE Vision Triggering Properties Now Device-Specific

In order to allow for vendor-specific properties to be supported in the GigE Vision adaptor, triggering properties will be set as device-specific properties. This affects only customers who adopted the use of the GigE adaptor that was released in R2010b and who are using hard-coded calls to `triggerconfig` for hardware triggering. You will now be able to set up more advanced triggering properties using the vendor-specific properties that your hardware supports.

Compatibility Considerations

If you used a general `TriggerCondition` property value such as `FallingEdge` or `RisingEdge`, or a `TriggerSource` property value such as `Line1-FrameStart`, you need to use a device-specific property going forward.

For example, you might now use a `TriggerCondition` property value such as `DeviceSpecific` and a `TriggerSource` property value such as `DeviceSpecific`, and then set the `FrameStartTriggerSource` device-specific property to `Line1`, `FrameStartTriggerMode` to `On`, and `FrameStartTriggerActivation` to `RisingEdge`.

If you continue to use the general `triggerconfig` values, you will get a warning, though the toolbox attempts to set device-specific values for you.

An example warning:

```
Warning: With the current version of the GigE Vision adaptor, hardware triggering has changed. However, we will attempt to configure the hardware trigger as specified.
```

In R2011a, the old trigger configurations are removed and a warning is issued, as described above, and the toolbox sets device-specific properties if it can detect them. In a future release, the toolbox will error if an old trigger configuration is used.

Version 4.0 (R2010b) Image Acquisition Toolbox Software

This table summarizes what's new in Version 4.0 (R2010b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “GigE Vision Support” on page 15
- “Linux Support” on page 15
- “Deployable Code Generation in the From Video Device Block” on page 16
- “Macintosh Support” on page 16
- “New Matrox Hardware Support” on page 16

GigE Vision Support

GigE Vision hardware is now supported.

For information on installing and configuring GigE Vision devices, see “Configuring GigE Vision Devices”.

For troubleshooting information, see “GigE Vision Hardware”.

Linux Support

The Image Acquisition Toolbox software and the Image Acquisition Tool are now supported for use on Linux systems.

For troubleshooting information, see “Linux Video Hardware” and “Linux DCAM IEEE® 1394 Hardware”.

Deployable Code Generation in the From Video Device Block

The Image Acquisition Toolbox software's Simulink block, the From Video Device block, now supports deployable code generation. You can generate code from the block.

This enables models containing the From Video Device block to run successfully in Accelerator, Rapid Accelerator, External, and Deployed Modes. The block also now supports the use of the packNGo function from the Real-Time Workshop® software.

For more information, see “Code Generation”.

Macintosh Support

The Image Acquisition Toolbox software and the Image Acquisition Tool are now supported for use on Macintosh systems.

For troubleshooting information, see “Macintosh Video Hardware” and “Macintosh DCAM IEEE 1394 Hardware”.

New Matrox Hardware Support

Support has been added for the following Matrox hardware:

- Solios GigE
- Helios eD/XD
- Solios eA
- Solios eCL
- Morphis
- Morphis QxT
- Vio

For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.

Version 3.5 (R2010a) Image Acquisition Toolbox Software

This table summarizes what's new in Version 3.5 (R2010a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “Session Log in the Image Acquisition Tool” on page 17
- “Additional Export Location in the Image Acquisition Tool” on page 17
- “Support for Additional DCAM Trigger Modes” on page 18
- “Disk Logging on Windows Vista 64-bit Platforms” on page 18
- “WhiteReference Property Ignored for Matrox Devices” on page 18

Session Log in the Image Acquisition Tool

The new session log dynamically records every action you perform in the Image Acquisition Tool. The corresponding command-line functionality for actions on a videoinput object or videosource object is reflected in the log. The title displays the name of the device, as shown in the **Hardware Browser**.

You can save the contents of the session log to a MATLAB code file or copy it to another source. For more information, see “Saving and Copying the Image Acquisition Tool Session Log”.

Additional Export Location in the Image Acquisition Tool

You can now export data to an .avi file after it has been acquired. Previously you could export data to a MAT-file, the MATLAB Workspace, or a tool in the Image Processing Toolbox™ (Image Tool, Image File, or Movie Player). Now you can also export to an .avi file and set .avi file options, such as compression, on the export.

For more information, see “Exporting Data in the Image Acquisition Tool”.

Support for Additional DCAM Trigger Modes

You can now use all trigger modes and all trigger inputs supported by DCAM cameras, as of R2010a. Previous toolbox releases supported only trigger mode 0. Support for the additional trigger modes and inputs will not affect any existing code you may be using.

For information on the additional trigger modes, including use of parameters, see “Setting DCAM-Specific Trigger Modes”.

Disk Logging on Windows Vista 64-bit Platforms

When using Windows Vista™ 64-bit platforms, if you used disk logging to an .avi file, you could see a crash if there was no colormap set. With other versions of Windows, you could see corrupted data.

Compatibility Considerations

Now if you use disk logging to an .avi file without setting a colormap, you will get a warning and a default grayscale colormap will be set in order to avoid this problem.

WhiteReference Property Ignored for Matrox Devices

In previous versions of the Matrox adaptor, the properties `WhiteReference`, `BlackReference`, and `InputGain` could all be used. Starting in R2010a, the `WhiteReference` property will be ignored.

This applies to the following devices:

- Matrox Helios XA
- Matrox Odyssey XA
- Matrox Solios XA

Compatibility Considerations

The first phase of deprecating this property is that the `WhiteReference` property will be ignored. You should use the `BlackReference` property and the `InputGain` property. You will receive a warning if you use the `WhiteReference` property and it will be ignored. The warning specifies that you can use `BlackReference` property and the `InputGain` property together.

The second phase of the deprecation, in a future release, is that you will receive an error. The third stage, in a future release, will be removal of the property.

Version 3.4 (R2009b) Image Acquisition Toolbox Software

This table summarizes what's new in Version 3.4 (R2009b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New features and changes introduced in this version are:

Custom getter in the Adaptor Kit

You can now query properties from a camera in the adaptor kit using the custom getter. This allows you to return the current value of a dynamically changing property, and execute a function when you get the property value.

Suppose you have a camera that has a cooler to control the temperature of the camera. You may need to make an acquisition when it reaches a certain temperature. You could use the custom getter to query the temperature property of the camera.

This custom getter functionality works for properties that have an underlying storage type of `double`, `int`, `double array`, and `int array`.

See *Querying Device Properties* in the Image Acquisition Toolbox Adaptor Kit User's Guide for information on this feature.

Version 3.3 (R2009a) Image Acquisition Toolbox Software

This table summarizes what's new in Version 3.3 (R2009a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “Windows 64 Support” on page 21
- “Image Acquisition Tool Enhancements” on page 22
- “New Hamamatsu Hardware Support” on page 22
- “Bug Fix: Changing ROI Now Affects the Frame Rates for QImaging Devices” on page 22
- “Property Removed from Matrox Helios XA and Solios XA Boards” on page 23
- “Bug Fix: Trigger Names for Matrox Helios XA and Solios XA Boards Fixed” on page 23
- “Bug Fix: Image Acquisition Tool Disk Logging Now Works on Systems with Non-US Locales” on page 24
- “New Trigger Configuration Names for Some DALSA Sopera Boards” on page 24

Windows 64 Support

Support for 64-bit versions of Windows for the following adaptors has been added:

- National Instruments
- Hamamatsu
- QImaging
- Winvideo

Note The Image Acquisition Toolbox software does not impose any restrictions on the Windows 64 support for the above listed vendors. However, the vendors may impose restrictions. If you encounter any problems, please see your vendor or driver documentation.

Image Acquisition Tool Enhancements

Minor enhancements have been added to the Image Acquisition Tool, including the ability to register third-party adaptors.

To register a third-party adaptor, click **Tools > Register a Third-Party Adaptor** on the Image Acquisition Tool menu.

New Hamamatsu Hardware Support

Support has been added for the following Hamamatsu hardware:

- 1394b S800 ORCA-R2
- C9300-221

For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.

Bug Fix: Changing ROI Now Affects the Frame Rates for QImaging Devices

A previous bug where you could not increase the frame rate by specifying the region of interest for QImaging devices is fixed. It is now possible to increase the frame rate by specifying the region of interest.

For example, the following code where ROIPosition is changed would now affect the frame rate:

```
video_object =videoinput('qimaging',1,'MON016_512x512');
set(video_object,'ROIPosition',[XOffset, YOffset, Width, Height]);
start(video_object);
for i=1:number_of_frames
```

```
tic
trigger(video_object);
wait(video_object,15,'logging');
elapsedTime = elapsedTime + toc;
frameNumber = frameNumber + 1;
end
```

Property Removed from Matrox Helios XA and Solios XA Boards

Support for the `TriggerFormat` property is being removed for the following Matrox boards:

- Helios XA
- Solios XA

Compatibility Considerations

Customers who use the `TriggerFormat` property for these boards are affected. This property is no longer supported. The trigger format can be specified in the DCF camera configuration file created by Matrox Intellicam.

Bug Fix: Trigger Names for Matrox Helios XA and Solios XA Boards Fixed

The trigger names for the Helios XA boards were not correct. The timer trigger sources for the Solios XA and the Helios XA boards were also not correct. In both cases, they were using the XCL trigger names.

These have been corrected and now the XA boards are using the XA triggers and the XCL boards are using the XCL triggers.

Compatibility Considerations

Customers who were using the old trigger names will need to update their code to use the correct trigger names.

Bug Fix: Image Acquisition Tool Disk Logging Now Works on Systems with Non-US Locales

There was a bug that prevented the Image Acquisition Tool from working properly when used on systems with non-US locales and when using the disk logging feature. Now when you use the disk logging feature on a non-US system, it will work properly.

New Trigger Configuration Names for Some DALSA Spera Boards

In previous releases of the Spera adaptor, some boards had trigger sources `trigger3`, `trigger4`, and `trigger5`. In the current release of the Spera driver, these trigger sources have actual names. Note that the sources `trigger1` and `trigger2` correspond with actual inputs on the board, while trigger sources 3, 4, and 5 do not.

Compatibility Considerations

The only customers that will be impacted are those that were using previously supported boards and the improper trigger source names. These boards are:

- x64-CL iPro
- x64-LVDS
- x64 Full
- x64 Dual

For these boards, in R2008b the trigger sources use their actual names:

- **trigger3** – `boardSync`
- **trigger4** – `toBoardSync`
- **trigger5** – `cameraControlToBoardSync`

In R2008b if you attempt to set the trigger source to `trigger3-5`, you will receive a warning and the new trigger source name will be used. In R2009a, you will receive an error message, and in R2009b, you will receive the standard invalid trigger source error message.

Note that the old names will only show up in the warning, and will not show up in the output from `triggerinfo` or `triggerconfig`.

Loading saved objects is not an issue. Potentially an object saved in R2008a would not load in R2009a or beyond once the warning message is turned into an error. However, trigger configurations of `videoinput` objects are not saved. Therefore trigger configurations which will be invalid in R2009a will not be saved for objects in R2008a or earlier.

Version 3.2 (R2008b) Image Acquisition Toolbox Software

This table summarizes what's new in Version 3.2 (R2008b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “Interactive ROI Tool” on page 26
- “Additional Export Locations” on page 27
- “New .avi File Save Option” on page 27
- “Improved Device Properties Tab” on page 27
- “Preview Window Has 16-Bit Data Support” on page 28
- “Additional DALSA Hardware Support” on page 28
- “The Image Processing Toolbox Software Required to Use the Image Acquisition Toolbox Software” on page 28
- “New Trigger Configuration Names for Some DALSA Sopera Boards” on page 29

Interactive ROI Tool

You can now select a region of interest (ROI) interactively while previewing your image data in the Image Acquisition Tool. The interactive tool lets you select and adjust a region of interest in the **Preview Window** while previewing. The drag-and-draw mechanism makes setting a region of interest much easier and faster.

For more information on this feature see [Setting a Region of Interest Interactively in the Image Acquisition Toolbox documentation](#).

Additional Export Locations

You can export data that has been acquired in memory in the Image Acquisition Tool to a MAT-file or the MATLAB Workspace. In R2008b you can export to additional locations, including Image Tool and Image File for single-frame acquisitions, and Movie Player for multiple-frame acquisitions. These three options are provided by the Image Processing Toolbox software.

For more information on exporting data, see [Exporting Data in the Image Acquisition Toolbox documentation](#).

New .avi File Save Option

In the Image Acquisition Tool, when you log an acquisition to disk, it is saved as an .avi file. In version R2008b an option was added to automatically increment the .avi file names. This is useful if you want to acquire multiple videos of one or more subjects. For example, a lab technician may want to acquire 10 seconds of video on a group of five different cultures and save them for later analysis. The technician may want resulting file names such as `sample_0001.avi`, `sample_0002.avi`, etc. This new option allows for automatic file name incrementing like this example.

For more information on logging data to .avi files, see [Disk Logging in the Image Acquisition Toolbox documentation](#).

Improved Device Properties Tab

The **Device Properties** tab in the Image Acquisition Tool is used to set device-specific properties. In R2008b, the **Device Properties** pane has been improved. Most properties now feature a slider for setting the value, in addition to the capability of setting it manually. You can adjust the slider while previewing and see the results dynamically.

Property help was also added in the pane. Right-click a property name and select **What's This?** to see the help on that property.

For more information on setting device properties, see [Setting Device-Specific Parameters in the Image Acquisition Toolbox documentation](#).

Preview Window Has 16-Bit Data Support

The Image Acquisition Toolbox Preview window and the Preview window that is built into the Image Acquisition Tool now support the display of up to 16-bit image data. The Preview window was designed to only show 8-bit data, but many cameras return 10-, 12-, 14-, or 16-bit data. The Preview window display now supports these higher bit-depth cameras.

Additional DALSA Hardware Support

Support has been added for the following new DALSA hardware:

- X64 Xcelera-CL PX4 Dual™
- X64 Xcelera-CL PX4 Full™
- X64-CL-Express™
- PC2-Comp™ Express

For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.

The Image Processing Toolbox Software Required to Use the Image Acquisition Toolbox Software

The Image Acquisition Toolbox product, including the Image Acquisition Tool, now requires you to have a license for the Image Processing Toolbox product starting in R2008b.

If you already have the Image Processing Toolbox product, you do not need to do anything.

If you do not have the Image Processing Toolbox product, the Image Acquisition Toolbox software R2008a and earlier will continue to work. If you want to use R2008b or future releases, and you have a current active license for the Image Acquisition Toolbox software, you can download the Image Processing Toolbox product for free. New customers will need to purchase both products to use the Image Acquisition Toolbox product.

If you have any questions, please contact MathWorks customer service.

New Trigger Configuration Names for Some DALSA Sopera Boards

In previous releases of the Sopera adaptor, some boards had trigger sources `trigger3`, `trigger4`, and `trigger5`. In the current release of the Sopera driver, these trigger sources have actual names. Note that the sources `trigger1` and `trigger2` correspond with actual inputs on the board, while trigger sources 3, 4, and 5 do not.

Compatibility Considerations

The only customers that will be impacted are those that were using previously supported boards and the improper trigger source names. These boards are:

- x64-CL iPro
- x64-LVDS
- x64 Full
- x64 Dual

For these boards, in R2008b the trigger sources will use their actual names:

- **`trigger3`** – `boardSync`
- **`trigger4`** – `toBoardSync`
- **`trigger5`** – `cameraControlToBoardSync`

In R2008b if you attempt to set the trigger source to `trigger3-5`, you will receive a warning and the new trigger source name will be used. In R2009a, you will receive an error message, and in R2009b, you will receive the standard invalid trigger source error message.

Note that the old names will only show up in the warning, and will not show up in the output from `triggerinfo` or `triggerconfig`.

Loading saved objects is not an issue. Potentially an object saved in R2008a would not load in R2009a or beyond once the warning message is turned into an error. However, trigger configurations of `videoinput` objects are not saved. Therefore trigger configurations which will be invalid in R2009a will not be saved for objects in R2008a or earlier.

Version 3.1 (R2008a) Image Acquisition Toolbox Software

This table summarizes what's new in Version 3.1 (R2008a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “New Hamamatsu Hardware Support” on page 30
- “National Instruments RTSI Support” on page 30
- “Corrected Spelling of Two QImaging Device-Specific Property Values – Phase 3” on page 31

New Hamamatsu Hardware Support

Support has been added for the following new hardware:

- Hamamatsu C9100–13

For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.

National Instruments RTSI Support

Some National Instruments boards support RTSI, which is a real-time system interface that allows you to use multiple boards together. This feature involves hardware synchronization. The Image Acquisition Toolbox software now supports use of the RTSI functionality in National Instruments boards that are supported by the toolbox.

Corrected Spelling of Two QImaging Device-Specific Property Values – Phase 3

In release R2007a, the following QImaging device-specific property values were changed to correct the spelling:

- The fan speed property value `ThreeQuater` is now correctly spelled `ThreeQuarter`.
- The readout speed property value `2M5` is now correctly spelled `2.5M`.

Compatibility Considerations

In R2007a, use of the incorrect spelling produced a warning. In R2007b, use of the incorrect spelling produced an error. In this release, the incorrectly spelled property name will no longer work.

For detailed information on the property spelling changes and the new error, see [Compatibility Considerations for R2007a](#).

Version 3.0 (R2007b) Image Acquisition Toolbox Software

This table summarizes what's new in Version 3.0 (R2007b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “Introduction of the Image Acquisition Tool” on page 32
- “Support for National Instruments Hardware” on page 32
- “Corrected Spelling of Two QImaging Device-Specific Property Values – Phase 2” on page 33

Introduction of the Image Acquisition Tool

The functionality of the Image Acquisition Toolbox software is now available in a desktop application. You connect directly to your hardware in the tool and can preview and acquire image data. You can log the data to MATLAB in several formats, and also generate an AVI file, right from the tool.

The Image Acquisition Tool provides a desktop environment that integrates a preview/acquisition area with acquisition parameters so that you can change settings and see the changes dynamically applied to your image data.

You can open the Image Acquisition Tool by doing one of the following:

- Type `imaqtool` at the MATLAB command line.
- Select **Start > Toolboxes > Image Acquisition > Image Acquisition Tool** from MATLAB.

Support for National Instruments Hardware

The Image Acquisition Toolbox software now supports image hardware from National Instruments. The following hardware is supported:

- PCI-1405, PCI-1407, PCI-1409, PCI-1410, PCI-1411, PCI-1422, PCI-1424, PCI-1426, and PCI-1428
- PCIe-1427, PCIe-1429, and PCIe-1430
- PXI™-1407, PXI™-1409, PXI™-1411, PXI™-1422, and PXI™-1428

For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.

Corrected Spelling of Two QImaging Device-Specific Property Values – Phase 2

In the previous release, R2007a, the following QImaging device-specific property values were changed to correct the spelling:

- The fan speed property value `ThreeQuater` is now correctly spelled `ThreeQuarter`.
- The readout speed property value `2M5` is now correctly spelled `2.5M`.

Compatibility Considerations

In R2007a, use of the incorrect spelling produced a warning. In this release, R2007b, use of the incorrect spelling will produce an error.

For detailed information on the property spelling changes and the new error, see [Compatibility Considerations for R2007a](#).

Version 2.1 (R2007a) Image Acquisition Toolbox Software

This table summarizes what's new in Version 2.1 (R2007a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	Yes Summary	Bug Reports Includes fixes

New features and changes introduced in this version are:

- “New Image Acquisition Toolbox Simulink Block” on page 34
- “New Hardware Support” on page 34
- “Improved DCAM Driver” on page 35
- “Corrected Spelling of Two QImaging Device-Specific Property Values” on page 35

New Image Acquisition Toolbox Simulink Block

A new Simulink block, the From Video Device block, allows Simulink users to acquire image and video data streams from image acquisition devices such as cameras and frame grabbers in order to incorporate the image data into a Simulink model. The new block also offers the ability to configure and preview the acquisition directly from Simulink.

Compatibility Considerations

The former Image Acquisition Toolbox block, the Video Input block, is obsolete. If you have models that use the Video Input block, you should change them to use the new From Video Device block, which offers additional functionality and features.

New Hardware Support

- **Support for additional QImaging devices** – Retiga 2000RV, Retiga 4000RV, and Rolera MGi.
- **Support for additional Matrox devices** – Helios XA and Solios XA.

For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.

Improved DCAM Driver

The Image Acquisition Toolbox software now uses an improved DCAM adaptor, which uses version 6.4.2 of the CMU DCAM driver. The new driver supports 1394B firewire and DCAM 1.3.1. It also supports new frame rates of 120 and 240 frames per second.

Corrected Spelling of Two QImaging Device-Specific Property Values

The following QImaging device-specific property values have changed to correct the spelling:

- The fan speed property value `ThreeQuater` is now correctly spelled `ThreeQuarter`.
- The readout speed property value `2M5` is now correctly spelled `2.5M`.

Compatibility Considerations

Fan Speed Property

Some QImaging video input source objects have a fan speed property if the camera supports it. If they do, one of the possible values is $\frac{3}{4}$ speed. This property value was misspelled as `ThreeQuater` instead of `ThreeQuarter` (when the QImaging adaptor was introduced in the Image Acquisition Toolbox software Version 1.9, Release 2006a). The change allows the correct spelling to work instead of causing an error.

VIDEOINPUT objects: When loaded from MAT files, any misspelling will be silently corrected. You could notice the value is different if you inspect the `FanSpeed` property. Misspellings saved in R2006a/R2006b would load seamlessly in R2007a (backward compatible). Corrected spellings saved in R2007a, however, would error (not load) in R2006a/R2006b (forward incompatible).

SET: The misspelling will be obsoleted over several releases. In R2007a both spellings will be supported (backward compatible) but the misspelling will generate a warning. In the next significant release (IAT v2.1+1), the warning will be changed to an error that suggests correct spelling. In the following significant release (IAT v2.1+2), the error will become the standard incorrect property value response. Corrections written in R2007a would error in R2006a/R2006b (forward incompatible).

GET: Will return the correctly spelled value, even if `set` is called with the misspelling.

Readout Speed Property

Most/all QImaging video input source objects have a readout speed property. If they do, one of the possible values is 2.5 MHz. This property value was misspelled as 2M5 instead of 2.5M (when the QImaging adaptor was introduced in the Image Acquisition Toolbox software Version 1.9, Release 2006a). The change will allow the correct spelling to work instead of erroring.

VIDEOINPUT objects: When loaded from MAT files, any misspelling will be silently corrected. You could notice the value is different if you inspect the `Readout` property. Misspellings saved in R2006a/R2006b would load seamlessly in R2007a (backward compatible). Corrected spellings saved in R2007a, however, would error (not load) in R2006a/R2006b (forward incompatible).

SET: The misspelling will be obsoleted over several releases. In R2007a both spellings will be supported (backward compatible) but the misspelling will generate a warning. In the next significant release (IAT v2.1+1), the warning will be changed to an error that suggests correct spelling. In the following significant release (IAT v2.1+2), the error will become the standard incorrect property value response. Corrections written in R2007a would error in R2006a/R2006b (forward incompatible).

GET: Will return the correctly spelled value, even if `set` is called with the misspelling.

Version 2.0 (R2006b) Image Acquisition Toolbox Software

This table summarizes what's new in Version 2.0 (R2006b):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New features and changes introduced in this version are

- Hamamatsu hardware support.

(For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.)

Version 1.10 (R2006a) Image Acquisition Toolbox Software

This table summarizes what's new in Version 1.10 (R2006a):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New features and changes introduced in this version are:

- Support for additional Coreco boards.
- Support for the Coreco Sapera driver. The Image Acquisition Toolbox software now supports both the Coreco IFC driver and the Coreco Sapera driver.
- Support for additional Matrox boards.
- Support for QImaging devices.

For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.

- Native Bayer Demosaicing. This new color space setting will interpolate Bayer pattern encoded images into standard RGB images. If your camera uses Bayer filtering, the Image Acquisition Toolbox software now supports the Bayer pattern and can return color if desired.

Version 1.9.x (R14SP3) Image Acquisition Toolbox Software

This table summarizes what's new in Version 1.9.x (R14SP3):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Bug Reports Includes fixes

New Features in Version 1.9. New features introduced in this version are:

- Support for the Matrox Meteor-II/Camera Link frame grabber
For the latest information about supported hardware, visit the Image Acquisition Toolbox product page at the MathWorks Web site www.mathworks.com/products/imaq.
- Significant improvements to the Video Input block for use with Simulink
- Improved performance of the Video Preview window (the version built with Handle Graphics® components)

In addition, this version includes the inaugural release of the Image Acquisition Toolbox Adaptor Kit, Version 1.0. The adaptor kit is a C++ framework for developing hardware adaptors. You can use this kit to add support for additional hardware to the toolbox.

New Features in Version 1.9.1. This version introduces support for the Matrox Helios XCL camera link frame grabber. Note that this device requires Matrox Imaging Library (MIL), Version 8.0.

Upgrading from an Earlier Release. The following issue is related to upgrading from a previous release:

- The Helios XCL requires Matrox Imaging Library (MIL), Version 8.0.

Version 1.8 (R14SP2) Image Acquisition Toolbox Software

This table summarizes what's new in Version 1.8 (R14SP2):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Yes Details below

New features and changes introduced in this version are:

- “User-Customizable Video Preview Window”
- “Support for Format 7 Added to the DCAM Adaptor”
- “Getting Information About the Native Data Type”
- “Acquiring Data in Single-Precision Format”

User-Customizable Video Preview Window

The Image Acquisition Toolbox software includes a new open-architecture reimplementaion of the Video Preview window. The new Video Preview window provides the same capabilities as its predecessor: it displays a live preview of the video stream from a particular video input object, with information about the video resolution, video frame timestamp, and the status of the video input object.

In addition, because this previewing capability is built using standard MATLAB Handle Graphics features, you can access the video data using standard Handle Graphics techniques. For example, you can now use the `preview` function to direct the live preview video stream to any Handle Graphics image object. This lets you include the previewing capability in GUIs of your own creation.

To start the Video Preview window, use the `preview` function, as follows:

```
vid = videoinput('winvideo');
preview(vid)
```

The Video Preview window displays a preview of the live video stream being provided by the device.



Stopping the Live Preview Video Stream

The toolbox includes a new function, `stoppreview`, that you can use to stop the live preview video stream for a specific video input object. For example, the following code stops the preview video stream started in the previous example:

```
stoppreview(vid)
```

Support for Format 7 Added to the DCAM Adaptor

The Image Acquisition Toolbox DCAM adaptor now supports DCAM Format 7 (also called partial scan format). When creating a video input object with the DCAM adaptor, the prefix `F7_` identifies Format 7 video formats in the list of formats returned by `imaqhwinfo`.

Getting Information About the Native Data Type

With this release, `imaqhwinfo` now includes information about the native data type of a device, based on the video format used to create the video input object.

To get this information, call the `imaqhwinfo` function specifying a video input object as an argument. `imaqhwinfo` returns a structure

containing information about the object and this structure now contains a `NativeDataType` field that contains this information.

Acquiring Data in Single-Precision Format

The `getdata` function can now return image data in single-precision format.

Major Bug Fixes

Version 1.8 of the Image Acquisition Toolbox software includes the following bug fixes.

DCAM Monochrome 16-Bit Formats Returned as Big-Endian

The DCAM adaptor now correctly returns data in Mono 16-bit format as big-endian, as specified in the DCAM specification (1.30). Previously, the DCAM adaptor returned Mono 16-bit data in little-endian.

Preview No Longer Produces Errors when ROIPosition Is Set for Matrox Meteor-II/1394

You can now preview data from the Matrox Meteor-II/1394 board after configuring the `ROIPosition` property. Previously, previewing produced the following error:

```
??? matrox: DigControl Error  
Value is out of range  
(Error detected on 1394 system)
```

Miscellaneous Fixes to Video Input Block

This release includes several fixes to the Video Input block in the Image Acquisition Block Library. The fixes include the following:

- The Source Block Parameters dialog box now updates the **Input video format** list when you change the selected device.
- The Source Block Parameters dialog box no longer contains duplicate entries in the **Input video format** list.

Upgrading from a Previous Release

The following issue is related to upgrading from a previous release.

Update of the IFC Libraries Used with Coreco Devices

The Image Acquisition Toolbox software now requires Version 5.8.0 of the IFC libraries when you are working with Coreco devices.

Known Software and Documentation Issues

This section describes some known software issues with Version 1.8:

- “General Issues” on page 43
- “Matrox Matrox Devices” on page 45
- “Data Translation Devices” on page 46
- “Image Acquisition Block Library” on page 47

General Issues

- Warning messages indicating that the toolbox was unable to allocate memory can be displayed multiple times under the following scenario:
 - 1 The Video Preview window is open.
 - 2 The `imaqmem` function is used to limit memory to a very small amount.
 - 3 Hardware trigger executes, initiating an acquisition.

To prevent this problem, close the Video Preview window.

- You might encounter a problem logging data to an AVI file. For example, the value of the `DiskLoggerFrameCount` property might remain at 0 (zero). To remedy this problem, try changing the value of the AVI file object's `Compression` property to `'none'`.

Video Preview Window Performance Issues. The Video Preview window may experience performance issues when previewing large images or when previewing image data from multiple devices. If performance problems occur, or MATLAB appears to stop responding, the following actions may help alleviate some of these issues:

- Try reducing the size of the image being previewed. You can reduce the size by either:
 - Using the `ROIPosition` property to configure a smaller resolution
 - Resizing the preview window such that the entire image is not visible
 - Creating a custom preview window GUI by following the example in “Previewing Data in Custom GUIs” in the Image Acquisition Toolbox User’s Guide documentation. Doing so will allow you to scale the image size down when the preview window is resized.
- Avoid previewing multiple video input objects simultaneously. In general, for best performance, preview only one video input object at a time.

If performance issues persist, you can disable the new Video Preview window and use the preview window included in previous releases. Use the following commands to disable the new Video Preview window. Note, however, that when you disable the new Video Preview window, the Handle Graphics customization features of the preview function will be unavailable.

```
imaqreset  
imaqmex('feature', '-useObsoletePreview', true)
```

Restarting MATLAB will reenables the MATLAB Handle Graphics based Video Preview window. To manually reenables the new Video Preview window, execute the following commands:

```
imaqreset  
imaqmex('feature', '-useObsoletePreview', false)
```

Generic Windows Windows Acquisition Devices.

- You cannot create multiple video input objects for the same device when the device is active. The toolbox issues an error. For example:

```
vid = videoinput('winvideo', 1);  
preview(vid)  
newvid = videoinput('winvideo', 1, 'RGB24_160x120');  
??? Cannot access information on the image acquisition device. One  
or more arguments are invalid. Make sure no other objects or  
applications are accessing the same device.
```


If you close the preview window, you can create the object.

```
closepreview(vid)
newvid = videoinput('winvideo', 1, 'RGB24_160x120');
preview(newvid)
```

- There are known issues with the USB Creative WebCam drivers that can lead to crashes and computer reboots. It is recommended that you only install one of these devices per system.
- Some device drivers, most commonly Video for Windows (VFW) drivers, might request a device to be selected via a dialog box. By choosing a device from the dialog box, you can associate an image acquisition object with an installed device.

TV Tuner Devices. The following list covers known issues with TV Tuner Devices (devices with an `AnalogVideoFormat` video source property):

- Video input objects associated with a TV tuner card like the ATI Rage Theater Video Capture card might be created with an invalid analog format selected. To correct this, modify the value of the `AnalogVideoFormat` property on the currently selected video source object. (Use the `getselectedsource` function to retrieve the currently selected video source object.)
- While accessing a TV tuner card, a blue screen crash can occur if you repeatedly open and close the Video Preview window.

Matrox Matrox Devices

- The Matrox MIL or MIL-Lite Library is required and must be installed before you can use the toolbox.
- The Gencout program, which is related to the Genesis board, will start when you first try to use the toolbox. This causes MATLAB to lose focus. To work around this behavior, uninstall the Genesis Native Library. Gencout is not used by the Image Acquisition Toolbox software, but it is installed by default by the installation program for the Genesis drivers.
- It is recommended that MIL's nonpaged reserved memory be greater than the size of four incoming images. You can change this value using the Matrox MIL Configuration utility, provided with MIL.

- For standard RS170 and CCIR monochrome formats, at least 2 MB of nonpaged memory is recommended.
- For standard NTSC and PAL color formats, at least 8 MB is recommended.
- Two- and four-band images are not supported. Dual-channel video, however, is supported via a DCF file if the resulting image is a single band.
- UARTs are not supported.
- If the device supports exposure timers, they are exposed as video source object properties using the prefix `Timer`. These properties are implemented using the manual bypass exposure model as described in the *Matrox MIL User's Guide*. Do not set these parameters while the object is previewing or running, to avoid invalid combinations of parameters while the object is accessing the device.
- User digital inputs are not currently supported. User digital output values are exposed as video source object properties using the prefix `UserOutputBit`.

Data Translation Devices

- You should update device drivers to Imaging Omni CD 2.2 drivers. These drivers are available from the support page at datatranslation.com.
- Data Translation® drivers allow for the reservation of nonpaged, nonvolatile memory. Set this value as follows:

Devices	Reserved Memory Recommendations
3120 313x 3152	Nonpaged reserved memory must be greater than the size of four incoming images. Recommended values are: For standard RS170 and CCIR monochrome formats, at least 2 MB of nonpaged memory For standard NTSC and PAL color formats, at least 8 MB

Devices	Reserved Memory Recommendations
	You can change this value in the DT driver properties; see the Data Translation <i>User's Guide</i> for your hardware for more information.
3152-LS 3153 3154 3155 3157	Nonpaged reserved memory must be greater than the size of the total number of frames provided by the hardware for a whole trigger. Use this equation to determine the size of the total number of frames: total = FramesPerTrigger * FrameGrabInterval where FramesPerTrigger and FrameGrabInterval are properties of the video input object. Refer to the Image Acquisition Toolbox documentation for more information on these properties.

- Line scan mode for the 3152-LS is not supported.
- For the 3152-LS, 3153, 3154, 3155, and 3157 devices in immediate trigger mode, the last image frame of a trigger and the first image frame of the next trigger might not be adjacent frames in the incoming video; that is, one or more frames might be dropped between triggers.
- The 3152 might require certain color depths from your video card in order to fully function. To determine whether the proper color depth is selected, start DTAcquire (provided with your hardware) and verify that both 'Passthru' and 'Single Frame Acquire' function properly. If 'Passthru' fails, try using a different color depth, e.g., 24-bit truecolor instead of 32-bit truecolor.

Image Acquisition Block Library

The following are known issues with the Image Acquisition Block Library:

- Support limited to Windows video devices compatible with DirectX® — The Video Input block only supports Windows video devices that are compatible with DirectX. To determine whether a device is DirectX compatible, use the AMCAP.EXE utility included with the Image Acquisition Toolbox software in the toolbox\imaq\imaq directory. You can also download this utility from the MathWorks FTP site.

<ftp://ftp.mathworks.com/pub/tech-support/solutions/s1-1B4VP/AMCap.exe>

- Invalid devices in the Device name list — When you first open the Video Input block mask, MATLAB searches your computer and populates the Device name list in the Block Parameters dialog box with all the image acquisition devices available on your system. If you disconnect or change the device connected to the computer while MATLAB is running, the mask will not reflect these hardware changes. The Device name list continues to list the devices initially found when the mask was first opened. The only way to update this list is to restart MATLAB; using the Image Acquisition Toolbox function `imaqreset` has no effect.
- No support for DV camcorders — The Image Acquisition block library does not currently support DV camcorders. Attempting to access the Image Acquisition block library while a DV camcorder is connected to your system will cause MATLAB to hang. This will be addressed in a future release.
- Support only for RGB24 formats — The Video Input block only supports RGB24 formats. Other video formats, such as RGB8 and Y422, cause an error when the model is run. This will be corrected in a future release.
- No preview or configuration capabilities — The Video Input block does not support a preview window, nor does it provide access to device configuration parameters. To configure a device or see a preview of the acquired data, you must use utility programs supplied with the device or third-party applications, such as the Microsoft® `AMCAP.EXE` utility. The `AMCAP.EXE` utility is included with the Image Acquisition Toolbox software in the `toolbox\imaq\imaq` directory. Any device configuration performed using a third-party application will affect the device in the Simulink model.

Note Make sure to close whatever third-party application you use for previewing or configuration before running your Simulink model.

Version 1.7 (R14SP1) Image Acquisition Toolbox Software

This table summarizes what's new in Version 1.7 (R14SP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Yes Details below

New features and changes introduced in this version are:

- **Matrox Meteor-II/1394** — The Matrox adaptor now supports the Matrox Meteor-II/1394 adaptor board for digital video acquisition. The Meteor-II/1394 board supports IEEE 1394 video cameras based on the IIDC Digital Camera Specification using Matrox Imaging Library (MIL).

Known Software and Documentation Issues

This section describes some known software problems with Version 1.7.

Limitations of Matrox Meteor-II/1394 Support

The support for the Matrox Meteor-II/1394 board includes the following limitations:

- Automatic mode for properties is not supported.
- DCAM absolute properties are not supported.

These settings are not exposed by the Matrox Imaging Library and are therefore unavailable.

Known Issue with the Matrox Meteor-II/1394 Support

The Matrox Meteor-II/1394 board provides only limited support for the `ROIPosition` property. You can define a region of interest using the `ROIPosition` property, specifying the value as a four-element vector of the form

```
[XOffset YOffset Width Height]
```

However, for the Meteor-II/1394 board, the value of the Xoffset and Yoffset elements of the position vector must be 0 (zero).

Other Issues

See the issues described in Known Software and Documentation Issues for Version 1.8.

Version 1.6 (R14+) Image Acquisition Toolbox Software

This table summarizes what's new in Version 1.6 (R14+):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Yes Details below

New features and changes introduced in this version are:

- New Image Acquisition Block Library
- DCAM Adaptor Now Supports Absolute Values
- Performance Enhancements

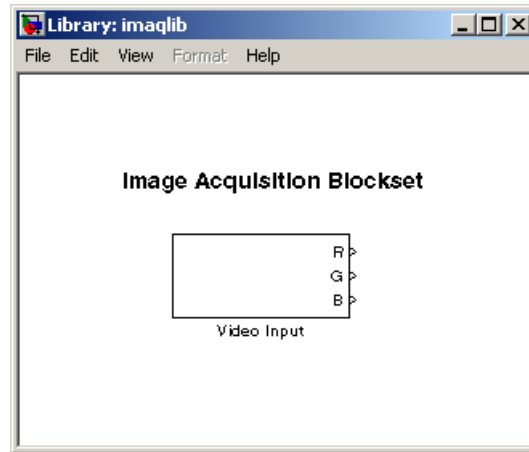
New Image Acquisition Block Library

The Image Acquisition Toolbox software now includes a Simulink block library, called the Image Acquisition Block Library. The block library contains one block: the Video Input block. You can use this block to bring live video data into a simulation.

To open the Image Acquisition Block Library, enter

```
imaqlib
```

at the MATLAB prompt. MATLAB displays the contents of the block library in a separate window:



DCAM Adaptor Now Supports Absolute Values

The DCAM adaptor now supports properties that let you specify the value of a property as an absolute value, if the device supports that capability for a particular feature.

As defined by the IIDC DCAM specification, the values specified for properties can be interpreted as either relative or absolute. Relative values only have meaning in relation to a device-specific reference point. For example, if you set the shutter speed property to 4000, this value might be interpreted as 4000 seconds for one device, but 4000 milliseconds for another device. Previously, the DCAM adaptor device-specific properties only supported relative values.

To provide more precise control, the IIDC DCAM specification also defines absolute values, where the units are specified as part of the definition. For example, the DCAM specification defines the units for shutter speed property as seconds. So, if you specify a value of 0.10032 for this property, any DCAM device that supports absolute values would interpret the value as 100.32 milliseconds. To find out the units used with a feature that supports absolute values, see Appendix B of the IIDC 1394-based DCAM specification or check the documentation that came with your device.

New Properties

To support both absolute and relative values, the DCAM adaptor now provides additional device-specific properties. If a device supports absolute values for a particular feature, the DCAM adaptor creates a property, using the same feature name as the relative property but with the word “Absolute” appended to it. For example, if a device supports both relative and absolute values for shutter speed, the DCAM adaptor creates properties named `Shutter` and `ShutterAbsolute`.

When it creates an absolute value property, the DCAM adaptor also creates a property to control the type of value the device uses. This property has the same name as the feature with the word “Control” appended to it. For example, if the DCAM adaptor created the `ShutterAbsolute` property, it also creates a `ShutterControl` property.

If you set either the relative or absolute properties, the corresponding mode property is set to 'manual'. For example, if you set the `ShutterAbsolute` property, the value of the `ShutterMode` property changes to 'manual'. Setting the control property has no effect on the mode property.

Performance Enhancements

Because of a number of enhancements to the way that the toolbox handles video frames, you might notice increased performance in the following areas:

- Faster acquisition with the `getdata`, `peekdata`, and `getsnapshot` functions.
- Previewing should consume less CPU overhead.
- Frame handling during acquisition should be faster.

Note The actual performance improvement achieved depends on factors such as video format, resolution, and CPU speed.

Major Bug Fixes

This release includes the following major bug fix:

- For long acquisitions, the metadata information reported from `getdata` was sometimes incorrect. This included reporting the wrong values for the `AbsTime` and `FrameNumber` fields of the `getdata` metadata structure. This has been fixed.

Upgrading from a Previous Release

The following are some changes from previous releases:

- The `FieldStart` property for the Coreco PC-Vision device has been removed. To specify which field the device uses as the first field for an interlaced video signal, use the `StartingField` property.
- The way the toolbox determines the default value of device-specific properties for Matrox devices has changed. In some cases, the initial value of the property at object creation time (and the default value returned by the `propinfo` function) might be different than what was returned in previous releases. To ensure that properties that are important to your application have the value you expect, you should explicitly set them. Do not depend on the default value.

Other Issues

See the issues described in [Known Software and Documentation Issues for Version 1.8](#).

Version 1.5 (R14) Image Acquisition Toolbox Software

This table summarizes what's new in Version 1.5 (R14):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Yes Details below

New features and changes introduced in this version are:

- Additional Hardware Support
- New Utility Functions
- Changes to Existing Functions

Additional Hardware Support

The Image Acquisition Toolbox software provides support for specific image acquisition devices by providing adaptors that enable a connection between MATLAB and devices. The toolbox supports devices from specific hardware vendors, such as Matrox or Data Translation, or for general categories of devices, such as consumer-level video devices that support a connection via DirectX or Video for Windows drivers.

This release provides support for the following additional vendors and device categories:

- Coreco Imaging, Inc. image acquisition devices, including the PC2-Vision™, the PCVision, the PCVisionplus, the PC-RGB, and the PC-DIG
- Matrox CronosPlus
- Digital cameras that comply with the IIDC 1394-based Digital Camera (DCAM) Specification

New Utility Functions

The toolbox includes the following new utility functions:

- `isrunning` — Determines if a video input object is running

- `islogging` — Determines if a video input object is logging
- `obj2mfile` — Saves a video input object by creating an M-file containing the commands necessary to recreate the object

Changes to Existing Functions

The toolbox includes the following enhancements to existing functions and properties:

- You can now specify the color space of the returned image data by setting the value of the `ReturnedColorSpace` property.
- The `imaqmem` function can now retrieve specific fields by field name.
- `flushdata` now accepts an array of video input objects
- The `wait` function can now wait until an object stops running or logging. Previously, this function only waited until an object stopped running.

Major Bug Fixes

The Image Acquisition Toolbox software 1.5 includes several important bug fixes made since Version 1.1.

Limitations from the Previous Version Lifted

The following are limitations that existed in previous versions of the toolbox that are no longer issues:

- Matrox acquisition devices that support image scaling now scale images correctly for any selected video source object. Previously, the toolbox only honored the `XScaleFactor` and `YScaleFactor` properties of the first video source object.
- DV devices, such as camcorders, were limited to the default 'dvsd' format provided by the device. Additional formats are now available for these devices.
- DV devices, such as camcorders, no longer experience a short lag between the preview window display, and what is actually captured by the device.

Incorrect MIL-Lite Version No Longer Crashes MATLAB

The Image Acquisition Toolbox software requires MIL-Lite Version 7.0 or later. Now, if you attempt to create a video input object for a Matrox device and the installed version of the Matrox MIL-Lite library is earlier than Version 7.0, the toolbox issues an error.

The trigger Function Now Accepts Vector of Video Input Objects

You can now pass a vector of video input objects to the `trigger` function. Previously, this function only accepted a single video input object.

The winvideo Adaptor Works with Devices That Provide Input/Output Capabilities

The toolbox `winvideo` adaptor now lets you acquire video from devices that support video output and video input on the same card, such as the nVidia TV tuner card.

Known Software and Documentation Problems

See the issues described in [Known Software and Documentation Issues for Version 1.8](#).

Version 1.1 (R13SP1) Image Acquisition Toolbox Software

This table summarizes what's new in Version 1.1 (R13SP1):

New Features and Changes	Version Compatibility Considerations	Fixed Bugs and Known Problems
Yes Details below	No	Yes Details below

New features and changes introduced in this version are:

- Region of interest (ROI) configurations using the `ROIPosition` property are now supported for all hardware devices.
- A troubleshooting utility is now included in the `matlabroot/toolbox/imaq/imaq` directory called `AMCap.exe`. This utility can be used to verify that Windows video devices are working properly.
- Enhanced memory management is now provided to optimize image frame storage efficiency.
- A warning is issued when accessing Windows video hardware using an incorrect DirectX version.

Major Bug Fixes

The Image Acquisition Toolbox software 1.1 includes several bug fixes made since Version 1.0. This section describes the particularly important Version 1.1 bug fixes.

- A memory leak associated with running `peekdata` has been fixed.
- The toolbox now stops acquisition hardware when you press **Ctrl+C** to interrupt the `getsnapshot` function.
- When using Matrox DCF camera files, the toolbox now configures all video source objects according to the camera file settings.
- A MATLAB segmentation fault that occurred when using old versions of the Matrox MIL library has been fixed. The toolbox now displays a message instead.

- A segmentation fault associated with accessing the Data Translation 3157 frame grabber has been fixed.

Version 1.0 (R13.0.1+) Image Acquisition Toolbox Software

Introduction to the Image Acquisition Toolbox Software

The Image Acquisition Toolbox software 1.0 is a new product from The MathWorks® that lets you connect to an image acquisition device from within a MATLAB session. Based on MATLAB object technology, the Image Acquisition Toolbox software provides functions for creating objects that represent the connection to the device.

For example, the following command creates an object `vid` associated with a Matrox frame grabber. (Use the `imaqhwinfo` function to retrieve the object constructor syntax for the device installed on your system.)

```
vid = videoinput('matrox');
```

Using the properties of the `vid` object, you can control various aspects of the connection to the device.

Software and Hardware Requirements

The toolbox requires the device drivers for the installed image acquisition hardware. For the most up-to-date list of supported hardware, go to the Image Acquisition Toolbox product page (www.mathworks.com/products/imaq).

Compatibility Summary for Image Acquisition Toolbox Software

This table summarizes new features and changes that might cause incompatibilities when you upgrade from an earlier version, or when you use files on multiple versions. Details are provided in the description of the new feature or change.

Version (Release)	New Features and Changes with Version Compatibility Impact
Latest Version V4.3 (R2012a)	See the Compatibility Considerations subheading for this change: <ul style="list-style-type: none"> • “Invisible Properties in GigE Vision Adaptor Are No Longer Exposed” on page 6 • “QImaging Color Wheel Property Change” on page 6 • “Change ObjectConstructor Property Name” on page 6
V4.2 (R2011b)	See the Compatibility Considerations subheading for this change: <ul style="list-style-type: none"> • GigE Vision Property Removal
V4.1 (R2011a)	See the Compatibility Considerations subheading for this change: <ul style="list-style-type: none"> • Changes in Coreco and Sopera Support
V4.0 (R2010b)	None

Version (Release)	New Features and Changes with Version Compatibility Impact
V3.5 (R2010a)	See the Compatibility Considerations subheading for this change: <ul style="list-style-type: none">• Disk Logging on Windows Vista 64-bit• WhiteReference Property Ignored for Matrox Devices
V3.4 (R2009b)	None
V3.3 (R2009a)	See the Compatibility Considerations subheading for each of these new features or changes: <ul style="list-style-type: none">• New Trigger Configuration Names for Some Dalsa-Coreco Boards• Property Removed from Matrox Helios XA and Solios XA Boards• Trigger Names for Matrox Helios XA and Solios XA Boards Fixed
V3.2 (R2008b)	See the Compatibility Considerations subheading for each of these new features or changes: <ul style="list-style-type: none">• New Trigger Configuration Names for Some Dalsa-Coreco Boards

Version (Release)	New Features and Changes with Version Compatibility Impact
V3.1 (R2008a)	<p>See the Compatibility Considerations subheading for this change:</p> <ul style="list-style-type: none"> • Corrected Spelling of Two QImaging Device-Specific Property Values
V3.0 (R2007b)	<p>See the Compatibility Considerations subheading for this change:</p> <ul style="list-style-type: none"> • Corrected Spelling of Two QImaging Device-Specific Property Values
V2.1 (R2007a)	<p>See the Compatibility Considerations subheading for each of these new features or changes:</p> <ul style="list-style-type: none"> • Corrected Spelling of Two QImaging Device-Specific Property Values • New Image Acquisition Toolbox Simulink Block
V2.0 (R2006b)	None
V1.10 (R2006a)	None
V1.9.x (R14SP3)	None
V1.8 (R14SP2)	None
V1.7 (R14SP1)	None
V1.6 (R14+)	None
V1.5 (R14)	None

Version (Release)	New Features and Changes with Version Compatibility Impact
V1.1 (R13SP1)	None
V1.0 (R13.0.1+)	None