

# Camera Control Release Notes

## January 2010 Release

### ● Camera Control

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#### January 2010

New progress dialogs for Timelapse acquires (Full Acquire and Multi-D).

Fix for Multi-D filename creation when filter name causes final filename to be too long.

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#### November 2008

Fixes the error message when summing into an existing window of the wrong data type.

Fixed a bug that caused the PVCam device module to return an all-zero image when grabbing into the front window.

Updates the Orca DCAM device module to support the dual digitizers in the R2 model, and Includes the latest Hamamatsu DCAM drivers.

#### September 2008

When using the Sum option in Full Acquire, the resulting image will be the next-larger data type. Eight-bit cameras will sum into 16-bit images and 10- to 16-bit cameras will sum into 32-bit images. When averaging, the larger buffer will be averaged into the standard-sized image.

Fixed a bug in the Multi-D preview palette where changing the Gain, E-Gain, or Offset and then switching tabs to change the ROI or binning would reset the earlier change.

Fixes a bug where a scripted Full Acquire command that uses a shutter could cause a crash if the shutter is removed from Device Select.

Fixed the image tiling in Multi-D to add a 3-column option and not reposition the frames multiple times when doing a timelapse.

QImaging: A fix was made to correct the colors on the Retiga 2000R color camera.

#### July 2008

The Grab To Disk dialog for Full Acquire now limits the length of the filename to avoid later truncation by the addition of index numbers and file extensions.

Hamamatsu: The July 2008 DCAM-API installer is included.

### May 2008

Fixes a bug introduced with iVision 4.0.10 that resulted in the addition of an incorrect file extension to files saved by the Full Acquire and Multi-D save-to-disk options.

Hamamatsu DCAM: fixes a bug with binnings greater than 2 on the C9100-02.

QImaging: adds support for the Retiga-EXL (14 bit, 30 MHz).

Includes newer driver installers for the Hamamatsu, QImaging and Scion cameras.

### **Note:**

QImaging: The new QImaging drivers exclude certain older cameras.

Scion: You must be running release 10.5.2 or later of OS 10.5 for the Scion camera to be found.

### March 2008

Fixes the “Display After Each” option in the RGB Timelapse command.

In the Preview control panel, the Color Balance button is named “Re-Color Balance” if color balancing is already in effect.

The values in the Set Color Balance command dialog are now kept up to date with the values in use during a live Preview.

Hamamatsu: Fixes support for the Orca-1 model to properly list the available bit depths.

QImaging: Color Balance was not being maintained when the exposure time was changed. Now it is.

Scion: Includes latest drivers for use with 10.4 and 10.5.

### January 2008

Changes to the SensiCam (Cooke) and Orca-DCAM (Hamamatsu) device modules.

### December 2007

Recalculates the normalization values more often when using Display After Each with timelapse captures.

Improves truncation of MultiD grab-to-disk file name when the filter position name is very long.

Properly calculates the MultiD timelapse interval or frame count when the other two values come from variables.

### October 2007

In the Preview palettes, typing an “=” in the exposure time field will cause the current value to be applied (as if you clicked the “Apply” button).

Updated the Hamamatsu drivers and added support for the C9100-13 ImageEM model.

QImaging: fixed a bug that could cause a crash when using the MicroPublisher.

### July 2007

Renamed the "Preview" button in the Timelapse progress dialogs to "Live View". Matched the behavior of the shutter control buttons in the preview palette with the behavior in the Multi-D palette (the Close button keeps the shutter closed until Open or Keep Open is used or the preview is paused and re-started).

Corrected a problem with timelapse acquires (from June update) where the shutter would not always sync with the capture.

QImaging: fixed problem with certain cases of timelapse acquires (see notes).

### June 2007

Added a Gamma slider to the Preview palettes for all commands.

Changed the names of the Preview/Pause and Grab/Start buttons in the Preview palettes.

Fixed the "Display After Each" option in the Full Acquire timelapse command.

Improved memory usage when using the Preview option for Full Acquire.

If the Snapshot command is used while a preview is running, the snapshot will be placed behind the Preview window.

The snapshots record the current preview's gain and offset now.

Some crashes caused by running out of memory have been fixed.

QImaging: added an option for setting the camera readout speed.

### February 2007

Fixed a bug in the Multi-D preview palette that would cause a crash when the Next/Previous filter buttons were clicked and you were already on the last/first filter. Now they "wrap" to the other end of the list.

QImaging updated to add support for Sync B on the External Trigger Board.

PVCam updated to improve handling of HQ2 gain, and allow exposures over 65 seconds in length. The latest PVCam driver installer (2.7.7.2) is included for use with FireWire cameras.

Added support for the Scion FireWire monochrome and color cameras.

### January 2007

Released version 4.0.0 of iVision.

The new Snapshot command provides quick capture of an image, with fewer options to set.

A new toolbar allows quick access to: Preview, Snapshot, Full Acquire, and Multi-D Acquire.

### September 2006

Released version 3.9.6 for iVision.

Updated Sensicam Device Module to fix bug in Options dialog that reset trigger

polarity.

### July 2006

The new Snapshot command provides quick capture of an image, with fewer options to set.

Added software AutoFocus command.

Added a Camera Toolbar to provide quick access to the Preview, Snapshot, Full Acquire, and Multi-D commands.

Updated the QImaging device module for the Retiga SRV, and allowed access to multiple QImaging cameras (see below).

The Hamamatsu drivers have been updated to the latest Mach-O release.

### April 2006

Fixed a crash that could occur if the Preview window in the RGB Acquire or Multi-D Acquire commands was closed with the close button instead of the **Cancel** or **Done** buttons in the palette.

Restored the keyboard focus to the Preview palette after using Auto -Exposure.

Improved error handling of out-of-memory conditions during Preview.

Updated PVCam Device Module (see below).

Updated Diagnostic Instruments SpotCam installer to 4.5.9.2.

Update QImaging installer to version 1.81.

### October 2005

The color swatches for the QImaging and SpotCam filter positions were all gray. They now match the names (Red, Green, Blue).

Further changes to SpotCam to improve support for Slider models (see below).

### August 2005

Released version 3.9.5 for use with IPLab 3.9.5.

The timelapse progress dialog now includes a pause button.

The Multi-D preview dialog suggests an optimum step size for Z-stacks.

Saved images now preserve a larger amount of device information at the time of capture (e.g. camera settings, filter and objective settings, stage positions, etc.).

### December 2004

When using "Untitled" image names, the index should always increment by 1 now, instead of by 2 or 3.

When using "Display After Each" during timelapse acquires, the normalization was not correct; this has been fixed.

Multi-D could crash if a non-filter device was used as a filter; this has been fixed.

Multi-D could not always be cancelled during a timelapse; this has been fixed.

Multi-D could crash if binning was set with a variable and the variable held an illegal value (e.g. 0); this has been fixed.

Multi-D now checks the length of the saved image name before starting the first

capture.

#### September 2004

The default target value for auto-exposure no longer defaults to zero.

Quitting the Preview dialog (excluding Multi-D) could cause PVCam cameras to hang.

Multi-D now treats exposure times in the dialog and in variables as seconds, not milliseconds.

In Multi-D there are now two options for keeping the shutter open: during Preview and during Z stack capture.

A conflict between the Multi-D command and the Orca device module that could cause IPLab to hang was fixed.

#### August 2004

The Multi-D command now stores the timelapse delay for T-stacks in the image.

Diagnostic's SpotCam library has been updated with a bug fix for supporting older "chipinfo.dat" files.

#### July 2004

The Multi-D command now stores the inter-plane distance for Z stacks in the image.

#### June 2004

When grabbing a sequence with the "Trigger First" option, the window title would prematurely display "Grabbing" when, in fact, the camera was still waiting for the trigger. This has been fixed.

#### March 2004

The Multi-Filter Acquire command has been replaced with a new Multi-D Acquire command that allows control of shutters, filters, and Z axis as part of a single capture command.

The "Number of Frames" field in the Image Size dialog has been removed. It is now set only in the Timelapse dialog.

#### October 2003

Color48 captures are now supported.

Camera setup is now performed in the Device Setup command (Control menu). All cameras are connected when IPLab starts. Any connection errors are displayed in the Device Setup dialog.

Camera Select now simply allows you to select among the connected cameras; it does not have any options in it (see Camera Settings command). When you select a different camera all of the parameters for the commands in the Camera menu will

switch to those last used for this camera (this does not affect scripted commands).

The "Focus" command has been renamed "Preview".

A new command, "Camera Settings", contains the configuration settings for the currently selected camera (e.g. color or grayscale, depth, trigger options, etc.). This replaces the "More" dialogs in each command.

There is a new command "RGB Color Acquire" that performs a three-pass RGB color grab from a monochrome camera with an external filter. Unlike the Multi-Filter Acquire, you use Color Balance to adjust the colors, rather than changing exposure times.

The Preview control panel now includes a "Snapshot" button. It now allows you to change the binning during Preview. You can now use the mouse to draw an ROI in the Preview window and then change the Preview to use that ROI.

## ● Cameras

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[Roper Photometrics](#)

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"KEXT" Warnings:

Occasionally, after installing a driver for a camera and restarting the machine, you will get a message saying that the KEXT (kernel extension) for the camera was not installed properly and will not be used.

If that happens try the following:

Run the **Disk Utility** program (found in the Utilities folder within the Applications folder). Select the name of the disk in the column on the left, click on the "First Aid" tab, and then press the "Repair Disk Permissions" button. This might take a few minutes, depending on the contents of your disk. Once that is finished, re-run the camera driver installer and reboot. If the problem is still not resolved, call or e-mail us ([info@biovis.com](mailto:info@biovis.com)).

iChat:

Connecting a FireWire camera can cause iChat to open. To stop this, you must first get past the iChat setup screen by pressing Continue until it closes. Then go to the Preferences item in the iChat menu and click on the "Video" icon at the top of the Preferences window. Then uncheck the box at the bottom titled "Automatically open iChat when a camera is turned on".

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## Cooke SensiCam Cameras:

January 2008:

Corrects a bug that could cause an error or crash when grabbing a full frame image at a binning of greater than 1x1.

July 2006:

Corrects a bug in the Options dialog that would reset the trigger polarity option.

August 2005:

Works with new driver from Cooke to correct problems with QE cameras introduced with support for the EM. (The first frame of a sequence would commonly be noise, not an image).

### **IMPORTANT:**

The July 2005 drivers from Cooke **require OS X version 10.3.9** or later. OS X 10.3.8 or earlier will not work; iVision will report it "can't load the framework".

April 2005:

Corrects a problem with the driver installer that would prevent the library from being recognized as a framework.

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## Diagnostic Spot Cameras:

PCI cards are only supported on PowerPC Macs, not Intel-based Macintoshes. The final G5 model with PCI Express slots is also not supported.

April 2006:

Updated to the 4.6.3 driver and framework.

October 2005:

The separate Filter Position command for Slider models has been removed. Select the filter in Device Select and use the device toolbar instead. The toolbar can be used while IPLab's preview is running. The option to select a filter for use when the camera is in Monochrome mode has also been removed. Use the device toolbar to select which filter to use. If you use the camera in Color mode and then switch to Monochrome, the camera will automatically switch to the Red filter. Either move the slider out or use IPLab to change the filter to Clear if you don't want to use the Red filter.

**IMPORTANT:** If you have run any SpotPCI.pkg installer dated before October 2003, you should repair the permissions on your boot disk. Following the instructions above, under "KEXT Warnings".

Some Spot cameras come with a camera-specific data file that has a description of the "bad pixels" in your particular camera. This file can be found on the CD that came with your camera.

This file must be placed in the IPLab 3.9 Folder (at the same level as the IPLab application). An alternative location is the /Library/Preferences/Spot Prefs folder that will exist if you have installed the Spot application.

Spot 2, Spot Enhanced:  
The file is named "chipinfo.dat".

Spot SE and KE:  
In this case the file name has the serial number of the camera in it and ends with .cif (for example "D123456.cif").

Spot RT:  
These cameras do not need such a file; the information is stored in the camera itself.

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### **Hamamatsu Orca DCAM Cameras:**

This release includes the latest DCAM drivers from Hamamatsu. They support FireWire cameras as well as cameras connected by the Phoenix CamLink PCI card (C9100 model) and the Phoenix DIG36 PCI card (Orca II models). PCI cards are only supported on PowerPC Macs, not Intel-based Macintoshes.

December 2009:

Adds a debug option to make technical support easier.

Includes December 2008 DCAM-API installer (later ones have a problem with PCI-based cameras on MacPros).

November 2008:

Includes the November 2008 DCAM-API installer.

May 2008:

Includes the April 2008 DCAM-API installer.

Fixes a bug with binnings greater than 2 on the C9100-02.

March 2008:

Fixes support for the Orca-1 model to properly list and use the available bit depths for the camera.

January 2008:

When synchronizing exposure to an input signal, the "Pulses per Exposure" value can now be set from a variable.

August 2007:

The latest DCAM driver installer from Hamamatsu is included. The Camera settings have been updated to include support for features of the C9100-13 model.

This camera includes 2 readout ports. One port uses the EM (electron multiplier)

circuit, the other (“Normal”) does not. Each port has its own list of readout speeds (all at 16–bits per pixel).

The camera includes an arithmetic logic unit (ALU) which can preprocess images. The Photon Imaging mode increases the signal from the EM port. When it is used the EM gain is set to the maximum.

The camera can be set to trigger each exposure from an incoming TTL pulse, such as that provided by confocal spinning disks. The exposure lasts for the given number of incoming pulses.

The temperature readout will update every 2 seconds.

June 2006:

The latest DCAM driver installer from Hamamatsu is included.

August 2005:

The latest DCAM driver installer from Hamamatsu is included.

The Sum and Averaging options for this device module did not work correctly when an ROI was used. This has been fixed.

April 2005:

The maximum exposure time was incorrectly set too low. It has been corrected to 4200 seconds.

December 2004:

The speed of externally triggered captures has been increased.

The “Low Light / High Light” mode can be set in the Camera Options dialog for cameras which support that mode.

Newer drivers from Hamamatsu are included.

September 2004:

A conflict with Multi–D that could cause IPLab to hang was fixed. A picture of the Phoenix board was added to show the correct position of the jumpers. An option (“Allow Fastest Capture”) was added for use in non–shuttered capture. On some pre–G5 machines this results in bad frames being captured, depending on binning and exposure times

July 2004:

Fixed a bug where odd width ROIs could produce a skewed image when you changed to a higher binning during Preview.

May 2004:

Fixed support for external triggers.

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## **QImaging Cameras:**

December 2009

Improved cooling options.

Updated expected driver version to 2.0.6.

Removed spurious “Not Supported” error when trigger board is used.

September 2008

A fix was made for the Retiga 2000R color camera where the CCD's color pattern was misinterpreted.

May 2008

Adds support for the Retiga-EXL camera (14-bit, up to 30MHz readout speed).

We are now including the QImaging installer for the 2.0.5 version of their drivers. These drivers **exclude support** for some older cameras:

If you own any MicroImager or PMI camera it is not supported by QCam 2.0 and higher. Additionally any 10-bit QICam, Retiga EX, or Retiga 1300 with recessed FireWire 1394a connectors (as shown below) is no longer supported by QCam 2.0 and higher. To use these cameras, use the 1.81 release of the QImaging Drivers.



March 2008:

Now properly maintains color balance when exposure time is changed during preview.

September 2007:

A crash was fixed that could occur when working with the MicroPublisher model, especially when binning above 1x1.

July 2007:

If a timelapse sequence was being captured and there was no shutter, filter, or external trigger in use (or the shutter was set to stay open during acquire), then the final frames in the sequence would be taken at the following times:

Frame 0: Time 0

Frame 1: Time 0 + exposure time

Frame 2: Time 0 + timelapse delay

Frame 3: Time 0 + (2 \* timelapse delay), etc.

The last frame acquired would not be included. So Frame 1 was being inserted into the sequence when it shouldn't have been and thus throwing off the time base of

the subsequent frames. This has been fixed.

April 2007:

Added an option to set the readout speed of the chip. Note that the QImaging driver may still set a lower speed based on the camera and FireWire capabilities. The last speed used is displayed in the Camera Settings dialog.

February 2007:

Added options for use with the External Trigger board. The signal on the Sync B port allows a shutter to be triggered directly by the camera. The options are:

**Open During Capture:** The shutter will remain open throughout any capture command, including preview and timelapse captures. This is actually the same behavior as not using the board at all.

**Open During Exposure:** This will open the shutter during the exposure and readout of a frame. During Preview the shutter will open and close for each frame. For a timelapse capture the shutter will stay closed during the delay between frames.

**Trigger Mask:** The output signal will be high when the camera will not accept another trigger input signal.

June 2006:

Added support for the following features of the Retiga SRV camera: High Sensitivity mode, Blackout mode, Fan Speed, Regulated temperature.

If there is more than one QImaging camera connected when IPLab starts, it is now possible to select the one you want to use, and then change the selection without leaving IPLab.

April 2006:

Updated to the 1.81.0 driver and framework.

August 2005:

Updated to the 1.73.0 driver and framework.

April 2005:

Updated to the 1.71.0 driver and framework.

December 2004:

Includes the latest drivers (1.70.0) from QImaging.

September 2004:

Fixed the Gain slider so that the minimum value is within the camera's range.

May 2004:

Added a message for intensifier gain errors and removed a debugging message.

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## Roper Photometrics PVCam Cameras:

PCI cards are only supported on PowerPC Macs, not Intel-based Macintoshes. The final G5 model with PCI Express slots is also not supported.

**IMPORTANT UPGRADE INSTRUCTIONS for G5 owners:**

If you have a G5 model that was introduced in mid-2004, the Photometrics PCI card must be updated to firmware version 33 to work with this model. Earlier versions of the firmware will cause a kernel panic anytime the card is accessed. Since the card can not be used until the firmware is updated, you must perform the update on an earlier model Macintosh, or on a PC. Use the PCIloaderX program to install the PCIROM33.HEX file onto the card. You can then move the card to the G5.

December 2009:

Adds a debug option to make technical support easier.

February 2007:

The 2.7.7.2 driver release is included for use with FireWire-based cameras. BioVision has not tested the 2.7.7 drivers with PCI-based cameras. If you are currently using an older driver with a PCI camera, there is no reason to update the driver.

The HQ2 provides two gain options: calibrated and un-calibrated. IVision only provides access to the calibrated gain option.

Exposure times were previously limited to 65 seconds. They can now extend over several hours (i.e. more than is practical to actually use)

April 2006:

For camera models with built-in shutters (e.g. Quantix and Sensys), a new shutter mode was added: "Keep Open Always". This restores a feature from older versions of IPLab.

August 2005:

Adds recognition of the Cascade II.

April 2005:

Setting the Gain or Offset on Quantix cameras could cause the camera to stop responding. This was fixed by adding a delay to these operations (for Quantix cameras only).

December 2004:

This release includes new firmware for the Photometrics 3.3v PCI card. This firmware is required to use the card with G5 models introduced in mid-2004.

September 2004:

Added "Use Timed Mode" switch to the Setup dialog. This is needed by a few early model CoolSnaps. Contact [iplab\\_support@bd.com](mailto:iplab_support@bd.com) for more information.

May 2004:

Updated to the latest drivers from Roper. Moved the Speed Table selection to the Camera Settings command so that it can be scripted. Removed the Readout Port selection because it is not yet supported by the Roper drivers.

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## **Scion Corporation FireWire Cameras:**

December 2009:

Includes the installer for version 2.4 of the Scion drivers for OS X 10.4 and 10.5.

April 2008:

Includes the installer for version 2.1 of the Scion drivers for OS X 10.4 and 10.5.

**Note:** you must be running release 10.5.2 or later of 10.5 for the Scion camera to be found.

February 2007:

Initial support added to iVision for both Monochrome and Color cameras.