

Scion Camera Driver for Micro-Manager

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Getting Started

Introduction

This manual describes the Scion FireWire Camera Driver for Micro-Manager . The program supports the Scion Monochrome and Color FireWire cameras.

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

Features

The program Features include:

- Integration into Micro-Manager program
- Allows frame capture, providing scientific quality color and grayscale video images using Scion Monochrome and Color Firewire cameras.
- Allows for setting of Gain, Contrast and Black level.
- Gamma control with a range of values.
- Exposure control from .010 seconds up to 100 seconds.
- Frame rates and image depth can be set.

System Requirements

To use the program, you need:

- An processor running at 2GHz or higher for Windows; or a Macintosh G5 or higher
- Microsoft Windows 2000, XP or Vista; or Mac OS 10.4 or higher
- Scion Monochrome or Color Firewire camera
- 1 Gb of RAM or more recommended
- FireWire or IEEE-1394 port
- Installation of Micro-Manager required for Windows version

Installation

Please follow the steps below to install the Scion Camera Driver for Micro-Manger on your computer.

Windows Installation

1. Insert the “Scion Camera Software” CD into the CD-ROM or DVD drive.
2. A window containing the contents of the CD will appear. If it does not appear then open Windows Explorer and find the CD.
3. Double-click the “Micro-Manager” folder.

4. Double-click the “Setup.exe” file to start the installation. If you downloaded the Scion Camera Driver for Micro Manager from our website then double-click the “SFWMM.exe” program to start the installation.
5. If running Windows Vista, a User Account control dialog will appear asking for permission to run the installation. If logged in as a Standard User then enter the administrator password. If logged in as an administrator then click “Allow”.
6. Follow the on screen prompts and choose a destination for the software. Make sure to install this in the same location as your current installation of the Micro-Manager program.
7. Now that the installation is complete, the Micro-Manager program can be run.
8. Once Micro-Manager is running the “MMConfig_scion.cfg” can be loaded. This shows example settings for the Scion FireWire Cameras and can be modified.
9. See the documentation that is installed with the program for more information on configuration settings.

Mac Installation

1. Insert the “Scion Camera Software CD” into the CD-ROM or DVD drive.
2. A window containing the contents of the CD will appear. If it does not then double-click the “Scion CD” icon located on the Desktop.
3. Double-click the “Micro-Manager” folder.
4. There are two installations available. The “SFWMicroManager_Intel.dmg” supports Mac computers that are running with the Intel processor. The “SFWMicroManager_PPC.dmg” supports older Mac computers with the PowerPC processor. Double-click the appropriate file to mount the installation volume.
5. A new icon will appear on the desktop. Double-click the “ScionCam_mmgr_Mac” icon to open the volume.
6. Here you will find the Scion Camera Driver manual for Micro-Manager and the “Micro-Manager” folder.
7. The “Micro-Manager” folder can be copied to the desktop or to the Applications folder by just dragging the folder to one of these locations.
8. Double-clicking the “Micro-Manager” folder and then double-clicking the “ImageJ” icon will start Micro-Manager.
9. Once Micro-Manager is running the “MMConfig_scion.cfg” can be loaded. This shows example settings for the Scion FireWire Cameras and can be modified.
10. See the documentation that is installed with the program for more information on configuration settings.

Scion Property Browser Settings

This section defines each of the device settings for the Scion Firewire cameras in the Property Browser of the Micro Manager program. Some of the below settings are read only and cannot be changed.

Binning

Setting this to “1” will disable Binning mode. Setting this to “2” will enable the Binning mode. Binning creates each pixel in the image by summing four adjacent pixels (2 x 2). The default setting is “1”.

BlackLevel

This setting lets the user change the Black Level setting. Sets the level of brightness at the darkest (black) part of the image. It can be in the range of “0” V to “0.06” V. The default is “0.01” V.

BlueBoost

Digital calculation to increase the Blue Gain. Used in specific imaging circumstances. This can be set to “On” or “Off”, with “Off” being the default setting.

Blue Gain

Adjustment for the blue gain in the camera. The Blue Gain range is “-2” dB to “10.2” dB. The default value is “4.7” dB.

CameraID

This is a read only entry showing the model camera that is currently connected.

CameraName

This is a read only entry showing the full name and model of the camera that is currently connected.

CameraSerialNo

This is a read only entry showing the serial number of the currently connected camera.

Contrast

This will allow setting a variable Contrast in the live image. Contrast changes the difference between the light and dark tones. It is a relative scale from “-127” to “128” where “0” is no contrast change. The default setting is “0”.

Description

This is a read only entry describing the currently installed camera adapter.

Exposure

This allows the Exposure setting to be set to the time specified. This is useful with low light subjects such as Gel Analysis and Fluorescence. The range can be from “1” ms to “100000” ms. When setting Exposure to a high number, make sure that capturing is stopped and the Snap is used. When the capturing is Live and the Exposure is set high, then stopping the capture will require another cycle of exposure. The default setting is “125” ms.

Gain

Allows the setting of the Gain on the camera. Changes are interactively displayed if the camera is in live capturing mode. The Gain level for Color cameras can be set in the range of “-12.40” dB to “23.81” dB. The Gain level for the Monochrome cameras can be set in the range of “-7.9” dB to “28.31” dB. The default value is “0.03”dB.

Gamma

The scale ranges from “0.20” to “4.75” where “1” is no Gamma correction. When disabled the video signal has no compensation and is output linearly. The default value is “0.49”.

GammaMode

With this enabled the video signal will be compensated to produce natural-tone images. This can be “On” or “Off”, with the default value set to “Off”.

GreenGain

Adjustment for the green gain in the camera. The Green Gain range is “-2” dB to “10.2” dB. The default value is “3.9”dB.

Name

This is a read only entry naming the camera adapter.

PixelFormat

This setting is for changing the depth of the image. This can be set to “8bit”, “10bit” or “12bit” depending on which Scion camera is installed. The default value is “8bit”.

PreviewMode

This will enable preview mode. This will increase the capture rates to aid in positioning and focusing of the camera. This can be “On” or “Off”, with the default value set to “Off”.

ReadoutSpeed

Allows for the setting of the live readout speed of the camera. Depending on the camera installed the settings can be “28Mhz”, “14Mhz” and “7Mhz”. The default value is “14Mhz”.

RedBoost

Digital calculation to increase the Red Gain. Used in specific imaging circumstances. This can be set to “On” or “Off”, with “Off” being the default setting.

RedGain

Adjustment for the red gain in the camera. The Red Gain range is “-2” dB to “10.2” dB. The default value is “3.0”dB.

StreamMode

This setting will enable or disable double buffering. Double buffering will help to make the live image rate faster. Option can be set to “Stream” to enable or “NoStream” to disable double buffering. However, set this to “NoStream” if the experiment is time sensitive. Artifacts and image copy problems may result with stream enabled on a slower computer. “NoStream” is the default setting.

TestMode

Set this “On” to test the camera. Usually this will only be used by technical support if there is a problem with the camera. Settings are “On” or “Off”, with “Off” being the default setting.

Scion Configuration File Settings

Below is a listing of settings and properties that can be called in the configuration file. Some of the items have already been defined above; they are included here for completeness.

Device ID

The Device ID in the “Device” section of the configuration file can be set to find the first camera on the bus by using the “ScionCam” setting. Or, a specific camera can be selected by using “Scion_*Model*” where *Model* is CFW1310M, CFW1310C, CFW1612M, etc.

Binning

Setting this to “1” will disable Binning mode. Setting this to “2” will enable the Binning mode. Binning creates each pixel in the image by summing four adjacent pixels (2 x 2). The default setting is “1”.

BlackLevel

This setting lets the user change the Black Level setting. Sets the level of brightness at the darkest (black) part of the image. It can be in the range of “0” V to “0.06” V. The default is “0.01” V.

BlueBoost

Digital calculation to increase the Blue Gain. Used in specific imaging circumstances. This can be set to “On” or “Off”, with “Off” being the default setting.

Blue Gain

Adjustment for the blue gain in the camera. The Blue Gain range is “-2” dB to “10.2” dB. The default value is “4.7”dB.

Contrast

This will allow setting a variable Contrast in the live image. Contrast changes the difference between the light and dark tones. It is a relative scale from “-127” to “128” where “0” is no contrast change. The default setting is “0”.

Exposure

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Gain

Allows the setting of the Gain on the camera. Changes are interactively displayed if the camera is in live capturing mode. The Gain level for Color cameras can be set in the range of “-12.40” dB to “23.81” dB. The Gain level for the Monochrome cameras can be set in the range of “-7.9” dB to “28.31” dB. The default value is “0.03”dB.

Gamma

The scale ranges from “0.20” to “4.75” where “1” is no Gamma correction. When disabled the video signal has no compensation and is output linearly. The default value is “0.49”.

GammaMode

With this enabled the video signal will be compensated to produce natural-tone images. This can be “On” or “Off”, with the default value set to “Off”.

GreenGain

Adjustment for the green gain in the camera. The Green Gain range is “-2” dB to “10.2” dB. The default value is “3.9”dB.

PixelType

This setting is for changing the depth of the image. This can be set to “8bit”, “10bit” or “12bit” depending on which Scion camera is installed. The default value is “8bit”.

PreviewMode

This will enable preview mode. This will increase the capture rates to aid in positioning and focusing of the camera. This can be “On” or “Off”, with the default value set to “Off”.

ReadoutSpeed

Allows for the setting of the live readout speed of the camera. Depending on the camera installed the settings can be “28Mhz”, “14Mhz” and “7Mhz”. The default value is “14Mhz”.

RedBoost

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