



Phantom Cine AMA for Avid  
Macintosh

“Phantom,” “Miro,” “Phantom Flex,” “Phantom HD”, “Phantom 65”, “Phantom Flex”, “Phantom Flex 4K,” “V Series” are trademarks of Vision Research Inc.

Avid and the Avid logo are trademarks or registered trademarks of Avid Technology, Inc. in the United States and/or other countries.

Copyright 2013, Glue Tools LLC.

Glue Tools LLC

P.O. Box 24124  
Santa Barbara, CA, 93121  
United States

Tel: +1 805 456 7997

Email: [support@gluetools.com](mailto:support@gluetools.com)

<http://www.gluetools.com>

<b>System Requirements</b>	<b>4</b>
<b>Minimum Hardware and Software Configuration</b>	<b>4</b>
<b>Recommended Hardware and Software Configuration (Playback)</b>	<b>4</b>
<b>Playback Requirements</b>	<b>4</b>
<b>Overview</b>	<b>5</b>
<b>Avid Media Composer AMA Plugin</b>	<b>5</b>
<b>Installation and Demo Mode</b>	<b>5</b>
<b>Installation</b>	<b>5</b>
<b>Demo Restrictions</b>	<b>5</b>
<b>PhantomCineAMAResister Licensing Tool</b>	<b>5</b>
<b>Licensing</b>	<b>6</b>
<b>License Activation</b>	<b>6</b>
<b>Revoking/De-authorizing a License</b>	<b>6</b>
<b>License Troubleshooting</b>	<b>6</b>
<b>A Quick Word...</b>	<b>7</b>
<b>Important Notes about Phantom Cine File Format</b>	<b>7</b>
<b>File Naming Convention</b>	<b>7</b>
<b>Phantom Cine AMA Reference</b>	<b>8</b>
<b>AMA Linking a Phantom Cine file</b>	<b>8</b>
<b>Selecting the Rendering Precision</b>	<b>8</b>
<b>Changing the Phantom Cine Color Processing</b>	<b>9</b>
<b>General Reference</b>	<b>10</b>
<b>Bayer Pattern</b>	<b>10</b>
<b>SMPTE Time Code and Phantom Cine footage</b>	<b>10</b>

## System Requirements

### Minimum Hardware and Software Configuration

- A late model Intel Macintosh
- Mac OS X 10.7.5
- Avid Media Composer 6.5.2

### Recommended Hardware and Software Configuration (Playback)

- 8 or 12-Core Intel MacPro System
- MacOSX 10.8.4 (or later)
- 8 Gigabytes of RAM or more
- Dual 1920 x 1200 displays
- High Speed storage, such as a Thunderbolt, SAS RAID, SATA2 RAID or SAN
- Avid Media Composer 7.0 (or later)

### Playback Requirements

Vision Research's Phantom Cine files contain uncompressed raw sensor data from their cameras. As a result, Cine movies often range from Megabytes to Gigabytes in size. Movies that were created by these cameras with Standard Def resolutions, play with ease on many systems and possibly even on laptops. Phantom Flex, HD Gold and Phantom 65 Movies will require machines with better performance. It is suggested that a minimum of 8-Core Mac Pros be used.

Playback of Phantom Flex, Phantom Flex 4K, Phantom HD and Phantom 65 movies will also require systems with high speed storage. At minimum, a dedicated eSATA RAID storage array, Thunderbolt or SAS Storage array, or 4G/b based directly attached Fiber-Channel storage is suggested.

## Overview

### Avid Media Composer AMA Plugin

The Phantom Cine AMA Plugin will perform all of the importing, playback, de-bayer, white balancing, and color correction functions to the Cine file. Once installed, Avid Media Composer can import and play these files without any sort of conversion, rendering or preprocessing steps. Phantom Cine files will play back as if they were always natively supported by Avid.

## Installation and Demo Mode

### Installation

Installation is performed by double-clicking on the installer package, and selecting the disk that Avid Media Composer is installed on. Once the AMA plugin is installed, you will want to reboot your machine.

### Demo Restrictions

If no license is purchased, the Phantom Cine Images are drawn and exported with a large colored bar through the center of the image. Also, Time Code will report back a start time of 09:09:09:00 and the frame rate will be fixed at 24 FPS.

Once a license has been installed, these limitations will be removed and the software will work as expected.

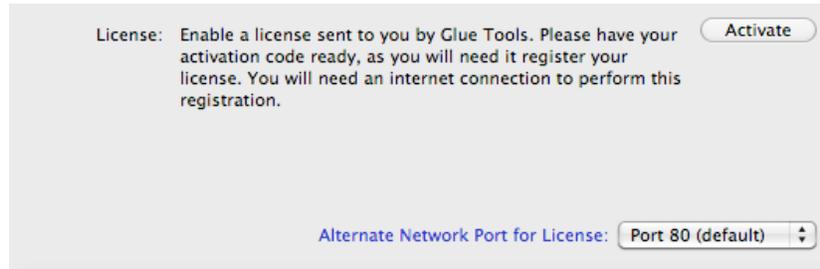
### PhantomCineAMARegister Licensing Tool

The Glue Tools PhantomCineAMARegister tool is installed in the “/Applications/Glue Tools” folder on your hard drive. If you have purchased a license, you will need to use this tool to activate the software.

## Licensing

### License Activation

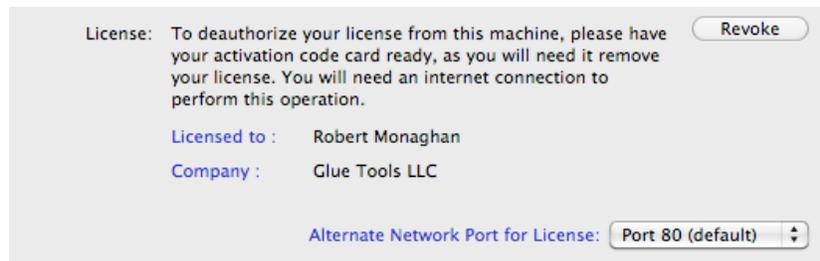
**Licensing must be done while connected to the Internet.** If you do not have an internet connection, you will not be able to activate the license. In many cases any type of network connection will get you up and running. Once activated, you will not be required to have a network connection, **unless you want to move the license to another Macintosh.**



To activate the license, you will need the Registration Code that was emailed to you. Open the **PhantomCineAMARegistration** Tool in the **/Applications/Glue Tools** folder.

Click on the “Activate” button which will then open the panel for the Registration Code. You can then cut and paste the encryption string from the email, into the “Activation Code” field. Once you click on the “Activate” button, the software will verify the license with our server and create a permanent license for you. Until you decide to move the license, this will be the only time that the internet is used for licensing.

### Revoking/De-authorizing a License



If you need to move a license to another machine, you can use the same license code to “Revoke” the license from the machine that you are on. Just as you had done with the license activation, Open the **PhantomCineAMARegistration** Tool in the **/Applications/Glue Tools** folder. Click on the “Revoke” button. You can now cut and paste the same activation code into the “Activation Code” field. Then click on the “Revoke” button. Once deactivated, the license will be free so that another machine can be used.

### License Troubleshooting

If you encounter a problem with your licensing because of network issues, consult with your IT Dept. The most common cause of problems is a blocked internet port or a Firewall Proxy system. The licensing can be modified to use one of 2 internet ports: Port 80, which is the default port or Port 44333 (an alternate port). Select either of these ports to try to perform a license authorization.

Alternate Network Port for License: Port 80 (default)

If the problem persists, email [support@gluetools.com](mailto:support@gluetools.com) for further assistance.

## A Quick Word...

### Important Notes about Phantom Cine File Format

Vision Research has been in business for a number of years, building high speed digital cameras. As time has gone on, the camera capabilities have greatly improved. As a result, each generation of camera has required the Cine file format to expand and change. Vision Research's more modern cameras create Cine movies that have a different image payload from the cameras that the company originally built several years ago. As a result, some legacy cameras create a movie file that is not supported with this software.

The Phantom Cine Toolkit currently supports the following cameras: Phantom Flex, Miro "M" series, Phantom 65, Phantom HD, Phantom Flex, Phantom Flex 4K, v12, v10, v9x, Miro series, and v7x cameras. Earlier camera models are not supported. When the Phantom Cine Toolkit is installed, you can do a "Get Info" on Cine file, and see which camera model created the Cine file.

### File Naming Convention

Along with the fact that some cameras have a long life-span, the software that the cameras uses, has also gone through a few changes. One change that is important to this package is the way that the files are named. Originally, the software for these cameras used DOS and early versions of Microsoft Windows. Because of this, files could only have a three character file extension. As a result, the camera software would create files with an extension ".cin" (such as "my-movie.cin"). This conflicted with another widely used file format in the Motion Picture Industry (the Cineon file from Kodak). To make life easier, Vision Research has now changed the extension of the files so that they are created with the new ".cine" extension.

This is important as the Phantom Cine Toolkit will only open files with a ".cine" extension. Files with a ".cin" extension will be confused with the Cineon file format. So, if you are using older Phantom Camera software from Vision Research, check to see that the extension is set properly.

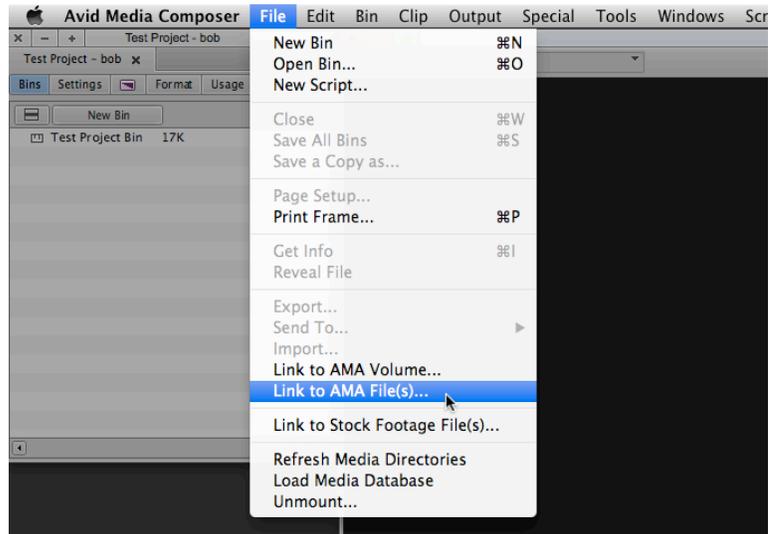
## Phantom Cine AMA Reference

### AMA Linking a Phantom Cine file

You can simply import Phantom Cine files directly into the Media Composer timeline, without any transcoding or rendering.

To import Phantom Cine footage using Media Composer 6.5, select the “File...->Link to AMA File(s)...” (or “File...->Link to AMA Volume...”) menu item. A panel will open, allowing you to select any Cine file that you have available.

Once selected, your Phantom Cine file will appear in your Bin. At this point you can drag the clip onto the timeline and start working with it. No rendering required.



### Selecting the Rendering Precision

The Phantom Cine AMA plugin automatically adjusts the resolution and Debayering mode, depending upon what you are doing. While this generally does a good job, you may want to set the rendering mode yourself.



You can click on the “Video Quality Menu Button” along the bottom edge of the Timeline. It is going to be either “Yellow”, “Yellow/Green” or “Green.”

- Yellow is a “Performance” Quality. (Low)
- Yellow/Green is “Draft Quality” (Medium)
- Green is “High Quality”. (High)

Depending upon your hardware, High quality will impact playback speed. Low quality will playback smoothly, but will not look very good.

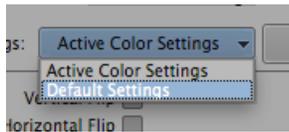
By default, Draft Quality is selected.

### Changing the Phantom Cine Color Processing

Because the files are Raw files, you can non-destructively change the color settings to suit your needs. Once you have a Cine imported into a Bin, you can right-click on it and select “Set Source Settings...”

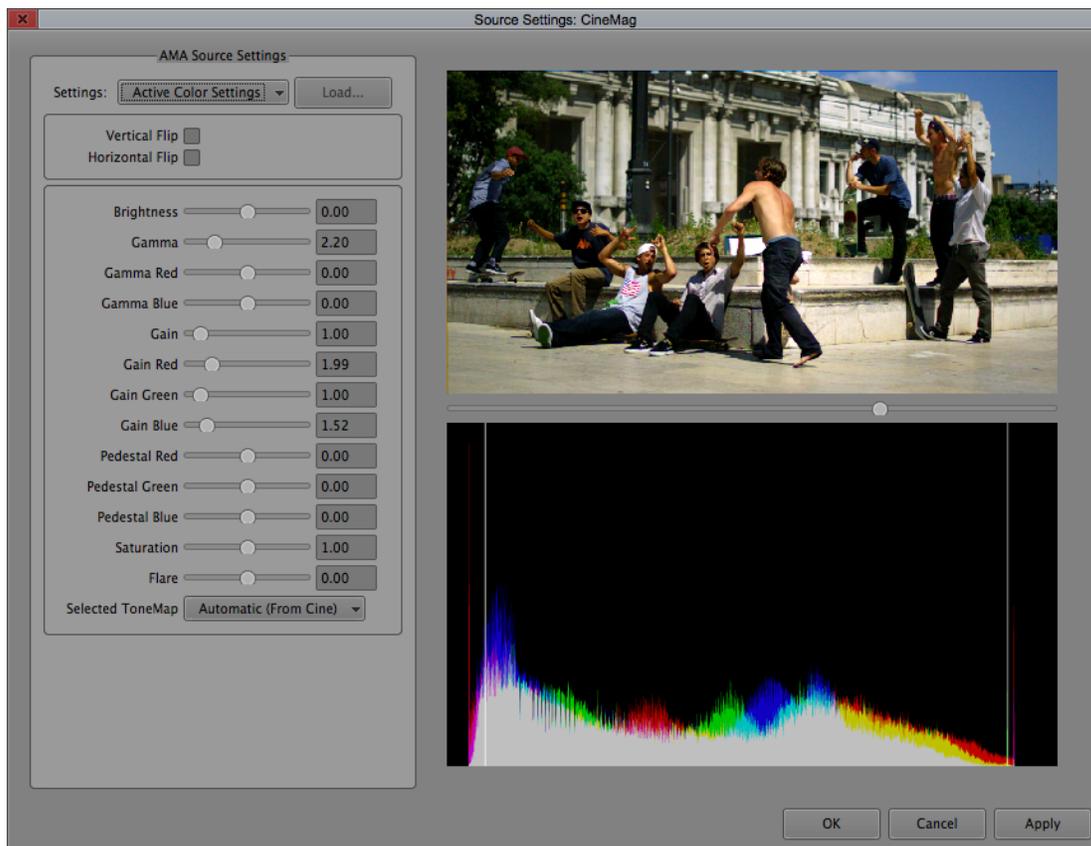
This opens a new “Source Settings” panel, in which you can adjust color of your Cine file. The controls provided use the very same color science available in Glue Tool’s Séance package or Vision Research’s PCC Camera package. When you adjust these settings, you are adjusting the image the very same way that the camera hardware would.

These sliders are populated by values that are stored in the Phantom Cine file’s header. Any changes that you make to these values will be saved inside the Avid MC project file. The original Cine is never modified.



Resetting the values back to the Cine’s original values is as simple as selecting the “Settings” popup menu, and choosing “Default Settings.” This will restore your image back to the way it was originally saved.

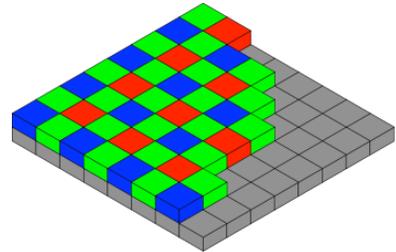
The Color Controls, including --- Brightness, Gamma, Gamma Red, Gamma Blue, Gain, Gain Red, Gain Green, Gain Blue, Pedestal Red, Green and Blue, Saturation, Flare and Tone Map --- Each controls how the image is rendered on screen. As you adjust each of these values, you will be able to see the preview image update. Once you have adjusted the imagery, you can select “OK” or “Cancel” to exit the panel. The updated settings should now be applied to the Cine.



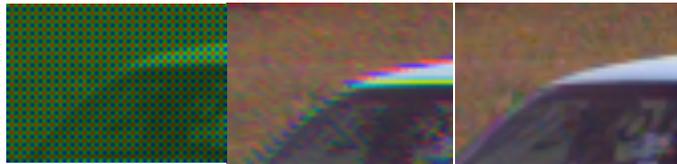
## General Reference

### Bayer Pattern

Traditionally, you would assume that each pixel is a combination of Red, Green and Blue channels to make each pixel. With single sensor digital cameras, each pixel is in-fact a single color. The "Bayer Pattern" was invented by Dr. Bryce E. Bayer at Kodak, who came up with the "bayer pattern" color filter array. He came up with the way each color is arranged on the camera sensor (see attached graphic). Each line on the sensor contains alternating pixels of Green and Red, and the next line below alternates Blue and Green. By using a "de-bayer" algorithm, a proper RGB image can be reconstructed. Different types of de-bayer algorithms will reproduce different levels of image quality. Typically, "fast" de-bayer algorithms are of a poor quality. "Slow" algorithms are typically much better. (Image courtesy of Wikipedia).



Here are examples of some de-bayer algorithms. On the left, is a "Raw" Bayer Pattern. In the centre is a "fast" Nearest-Neighbour de-bayer pattern and on the right a "slower" Pixel Grouping de-bayer pattern. As you can see, there will be a substantial quality difference, depending upon the de-bayer algorithm you choose. Our best de-bayer mode is also our slowest. GT Hybrid A will render a very nice image. However, playback is probably not possible on older systems. In this case you will want to use Pixel Grouping as this is a high quality de-bayer algorithm, designed to permit playback. Naturally, as computers improve, we will take advantage of them to increase performance.



### SMPTTE Time Code and Phantom Cine footage

Time Code is an integral part of tracking and editing a project. For Film and Broadcast, Time Code is an essential tool for identifying a specific frame in a specific piece of footage. Currently, the system that is used is known as SMPTE 12M or simply SMPTE Time Code. This time code system is designed to work with the common frame rates used for film and video. Typically this means anywhere from 23.976 FPS up to 30 FPS. SMPTE Time Code will not track frames faster than 30 FPS.

"But Hey! My Phantom footage is 500 FPS!"

This is where the difficulty lies. SMPTE is not able to work with higher frame rates at all. To get around this, we came up with a way to convert the faster frame rates to a slower frame rate. First, it isn't likely that the high speed footage will be played at real time. (ie: You won't playback at 500fps.) So we don't need to invent a 500fps SMPTE Time Code. Instead, we playback at 24 (25 or 30) fps. Because of this, we can use the SMPTE Time Code system and artificially create a start time.

To overcome this, Vision Research has come up with a standard way to calculate a SMPTE Time Code from the high speed time code. To make SMPTE Time Code easier to use, Vision Research has now embedded the Time Code into the Cine Header. Even if an older file is loaded, the PhantomCine AMA will calculate one, using the same formula that Vision Research uses.

## Technical Support

Support for these tools can be obtained by posting support question at <http://support.gluetools.com>.

Online support also includes an Knowledge base section. The Knowledge base is a great place to to find commonly asked questions questions.

Telephone Support is available Monday to Friday, 9AM to 5PM PST/PDT.

Questions regarding XYZ Matrices for specific Vision Research cameras, should be directed to Vision Research's technical support. Visit <http://www.visionresearch.com> for more information.