# calibrated{Q}
## XD Decode

**User Guide**

**Calibrated Software, Inc.**

## Calibrated{Q} XD Options application contains the following source code:

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# Contents

# Getting Started

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## Overview

Calibrated{Q} XD Decode is a multi-threaded QuickTime Codec(Decode Only) that enables you to view QuickTime XDCAM HD/EX and HDV .MOV Movies in QuickTime Player and other 3rd party applications that support QuickTime.

Please see the Supported Formats Section in this Chapter for information regarding supported file types and formats.

The Calibrated{Q} XD Decode Options application sets Global Options for use with the Calibrated{Q} XD Decode codec (see Chapter: Global Options).

## DEMO MODE Limitation

When run in DEMO MODE, Calibrated{Q} XD Decode will show the Calibrated{Q} XD Decode Logo as a watermark over the video –  this is the only DEMO MODE limitation. In every other way, Calibrated{Q} XD Decode is fully functional. Using the software in DEMO MODE is for testing only and should not be used for commercial purposes.

# Known Issues and Limitations

The following known issues and limitations are associated with Calibrated{Q} XD Decode codec:

- Calibrated{Q} XD Decode will crash if run on a computer system that does not support SSE3 instructions which were introduced in Pentium 4 processors circa 2004 (see the Windows Requirements section).

- Due to the long GOP nature of HDV and XDCAM, the Calibrated{Q} XD Decode codec stores two uncompressed frames per clip. QuickTime does ask the codec to delete the uncompressed frames very often (i.e. flush the frames) so this can lead to a slightly higher memory usage when opening many XDCAM/ HDV clips. Please note this is **NOT** a memory leak.

- Some older applications may not be able to open/view XDCAM, HDV, XDCAM EX, or XDCAM 422 QuickTime Movies due to the fact that applications must support new QuickTime enhancements for the viewing of video with temporal compression.

- In extremely rare circumstances, XDCAM video frames can have errors in the MPEG2 stream – these MPEG2 errors can cause crashes and/or artifacts when trying to playback or view the video.

- To import XDCAM HD 'slowmo' MOV files into Avid MC via AMA Linking, (while Avid MC is closed) please enable the 'Enable Avid MC AMA Patch' in the Calibrated{Q} XD Options application – see the section 'Avid AMA Patch' in this User Guide for more details.

- If you get a '-2002' QuickTime 'atom' error when attempting to open a HDV .MOV file in QuickTime Player or you cannot import the HDV .MOV file in an application that supports QuickTime which previously worked AND you have installed iTunes 10.5 and/or QuickTime Player 7.7 – the reason is that due to security enhancements in iTunes 10.5 and QuickTime Player 7.7, QuickTime is no longer able to open the HDV .MOV file. Please note that this is not an issue with Calibrated{Q} XD Decode and so it is not an issue we can correct. Please contact the software company or hardware company that generated the HDV .MOV file to learn of any possible workarounds or when/if the issue will be resolved in a future release of iTunes and/or QuickTime Player.

- For reasons unknown, performance in Quantel applications will be extremely slow – apprx. 1 frame a second.

- For reasons unknown, playback performance in Vegas on Windows will not be in realtime.

- Playback of files is dependent on both the speed of your CPU and harddrive, as well as the application that you are using the movie files in. Please note that Calibrated{Q} XD Decode can be used in a wide-variety of applications; however some applications do not use the QuickTime SDK in an optimized way (i.e. the Software Developer's Kit that applications use to integrate QuickTime) which would cause a notable decrease in playback performance in those applications. *Before purchasing a Software License, please test the software in DEMO MODE using your own computers and applications to ensure performance is suitable for your particular workflow needs. Using Calibrated{Q} XD Decode in DEMO MODE is fully functional (including performance speed) except for the watermark over the video.* **Please see the 'Performance' section for more details.**

- **CATDV**: If you experience any problems in creating proxies and/or playback in CatDV, please enable Protected Mode in CatDV. To enable 'Protected Mode', go to the CatDV Preferences and select 'Media Playback' and then check the option *'Protected player: Use separate QuickTime helper process'.* Playback performance is a little less smooth in 'Protected Mode' but it will be more stable. Also, in newer version of CatDV you may wish to also disable *'scrub audio when dragging play head'* in the 'Media Playback' CatDV Preferences to make scrubbing in CatDV faster.

- **When using XDCAM MXF files in conjunction with Calibrated{Q} MXF Import:** If you are working with MXF files where the audio is stored in its own separate MXF file (i.e. Panasonic P2, Ikegami GFCAM, Avid, Sony SAM) it can help in CatDV to enable the **Audio Small Segments** in the Calibrated{Q} MXF Import Options application. Please see *the BETA Features - Audio Only MXF Segment Size* in the Calibrated{Q} MXF Import User Guide for more details.

- BETA Only Support for 10.9 (Mavericks) - QuickTime Player X and Finder Preview in Mavericks do not work with our software. The workaround for QT Player X is to install QuickTime Player 7 and use that for playback. You can

download QuickTime Player 7 from Apple here: http://support.apple.com/kb/DL923 and it will install into the /Applications/Utilities folder and can co-exist fine with QT Player X on the same computer.

- **Mountain Lion (OSX 10.8)**. QuickTime Player X may show the DEMO MODE watermarks over the video if you are licensed due to the license file being 'sandboxed' by OSX 10.8. This issue is being investigated – the workaround is to install QuickTime Player 7 and use that for playback. You can download QuickTime Player 7 from Apple here: http://support.apple.com/kb/DL923 and it will install into the /Applications/Utilities folder and can co-exist fine with QT Player X on the same computer.

# QuickTime Gamma

QuickTime Gamma Correction (by Default ) is TURNED OFF – we have found that this is what the vast MAJORITY of users prefer – however in certain applications this can produce rendered video that is slightly brighter/darker than the source video usually when rendering to another QuickTime codec - to correct please TURN ON QuickTime Gamma Correction. Please see the Gamma Settings in the Global Options Chapter.

# Important note about 8-bit YUV colorspace

Calibrated{Q} XD Decode supports decoding to 8-bit YUV422 (the colorspace that XD is encoded in*) - however it is up to the application using Calibrated{Q} XD Decode to request 8-bit YUV422 colorspace.  Many applications that support importing MOV files only request 8-bit RGB(A) 444(4) colorspace, which requires a colorspace conversion of YUV->RGB in the codec – which slows down performance. Please see the Colorspace Watermark in the Global Options Chapter to see which colorspace on application is requesting, and also see the Enable 8-bit YUV, Enable High-Precision YUV, and Enable 16-bit RGB(A) in the Global Options Chapter to learn more about the various colorspace support.

**\*XDCAM EX and XDCAM HD 35Mb are encoded using 8-bit YUV4:2:0 – however since the YUV422 colorspace has much wider support in QuickTime and applications that support QuickTime, YUV422 is used instead of YUV420. The YUV420 is quickly converted to YUV422 with little loss in performance when 8-bit YUV422 colorspace is requested from XD Decode by an application.**

# Performance

Playback of files is dependent on both the speed of your CPU and harddrive, as well as the application that you are using the movie files in. Please note that Calibrated{Q} XD Decode can be used in a wide-variety of applications; however some applications do not use the QuickTime SDK in an optimized way (i.e. the Software Developer's Kit that applications use to integrate QuickTime) which would cause a notable decrease in playback performance in those applications. One of the main reasons that Calibrated{Q} XD Decode will perform slower in some applications is if the application is requesting video frames to be decoded in the RGB colorspace and not in the YUV colorspace. XDCAM compressed video will natively decode to YUV but if an application requests RGB video data then Calibrated{Q} XD Decode must decompress the frame to YUV and then convert the YUV to RGB data which then takes more CPU time.

*Before purchasing a Software License, please test the software in DEMO MODE using your own computers and applications to ensure performance is suitable for your particular workflow needs. Using Calibrated{Q} XD Decode in DEMO MODE is fully functional (including performance speed) except for the watermark over the video.*

- If playback is NOT realtime in QuickTime Player, your computer might not be fast enough to playback the video. This could mean either the CPU is not fast enough, the hard drive is not fast enough, or a combination of both.

- If you're playing back the video in an application other than QuickTime Player, the third-party application may not be optimized to playback MOV files or the third-party application may not be taking advantage of optimizations in Calibrated{Q} XD Decode for realtime performance.

- If you are playing the MOV files from a (i) DVD-ROM or Blu-Ray ROM disc, (ii) USB 2.0 external harddrive, (iii) FlashDrive, (iv) Compact Flash Card or (v) another type of removable storage or camera card media then playback performance would not be reliable, and playback could be extremely choppy. It is recommended to playback media from a 7200RPM SATA harddrive( preferably 2 or more harddrives striped at RAID0) that's either a local harddrive(s), or if an external harddrive then have an (at the minimum) eSata or FireWire800 connection.

- If you are on Windows, using our software is not supported on a Virtual Operating System (i.e. using Parallels or VMWare) and performance could be much slower in a Virtual Operating System.

- If you are on Windows, playing files off of a MacFormatted Harddrive could also decrease performance. It is recommended to use harddrives with a NTFS file system on Windows computers.

- You can improve Playback Performance in *OLDER* computers by disabling the Auto-Prefetching. Please see the Performance Settings in the Global Options Chapter. (Please note

- If you're using an Adobe CS5.0.3/5.5.0 application – please see the Section *Special Note: Adobe CS5.0.3/5.5.0 Performance Enhancement* in this User Guide to increase performance in Adobe CS5.0.3/5.5.0 applications

- You can also improve performance for applications that request frames in the RGB colorspace by enabling the **'MT YUV->RGB' or 'MT-X YUV->RGB'** option – see the Section *Performance Options* for more details.

- For Avid Media Composer, linking XDCAM HD/EX or HDV MOV files via AMA can have sluggish playback/scrubbing – it is recommend to transcode/consolidate files after linking via AMA

- For reasons unknown, performance in Quantel applications will be extremely slow – apprx. 1 frame a second.

- For reasons unknown, playback performance in Vegas on Windows will not be in realtime.

- **CATDV**: Please see the section '*Special Note: CatDV'* in this User Guide for information about performance.

- **When using XDCAM MXF files in conjunction with Calibrated{Q} MXF Import:** If you are working with MXF files where the audio is stored in its own separate MXF file (i.e. Panasonic P2, Ikegami GFCAM, Avid, Sony SAM) it can help in CatDV to enable the **Audio Small Segments** in the Calibrated{Q} MXF Import Options application. Please see *the BETA Features - Audio Only MXF Segment Size* in the Calibrated{Q} MXF Import User Guide for more details

# Supported Formats

**.MOV File Formats** *
*Please note that .MOV files must be using an Apple FourCC tag*

Calibrated{Q} XD Decode supports the Apple XDCAM HD/EX and HDV .MOV formats:

**HDV:** 1080i30, 1080i25, 1080p24, 1080p25, 1080p30, 720p60, 720p50, 720p24, 720p25, 720p30

**XDCAM HD (35Mb VBR):** 1080i30, 1080i25, 1080p24, 1080p25, 1080p30

**XDCAM EX:** 1080i30, 1080i25, 1080p24, 1080p25, 1080p30, 720p60, 720p50, 720p24, 720p25, 720p30

**XDCAM HD 50Mb 422:** 1080i30, 1080i25, 1080p24, 1080p25, 1080p30, 720p60, 720p50

**XDCAM HD 50Mb 422:** XDCAM F800/F355 Overcranked/Undercranked support


**.MXF File Formats***
*(For Windows or Mac computers without FC Pro/Studio/Server)*
When Calibrated{Q} XD Decode is used in conjunction with Calibrated{Q} MXF Import, XDCAM MXF Files can be viewed and used in applications such as QuickTime Player and CatDV, see the Calibrated{Q} MXF Import User Guide (PDF) for more details. ***Please note that Calibrated{Q} MXF Import and Calibrated{Q} XD Decode are separate products and each product requires its own purchased Software License.***


**.MP4 File Formats***
*(For Windows or Mac computers without FC Pro/Studio/Server)*
When Calibrated{Q} XD Decode is  used in conjunction with Calibrated{Q} MP4-EX Import, XDCAM EX MP4 Files can be viewed and used in applications such as QuickTime Player and CatDV, see the Calibrated{Q} MP4-EX Import User Guide (PDF) for more details. ***Please note that Calibrated{Q} MP4-EX Import and Calibrated{Q} XD Decode are separate products and each product requires its own purchased Software License.***


*Playback performance can vary widely in different applications depending on how an application uses QuickTime, and running the software in a virtual OS is not supported. See Performance section for more details.

# Windows Requirements and Installation

Ensure your PC meets the following requirements prior to installing Calibrated{Q} XD Decode:

- Pentium 4 processor with SSE3 support or greater; recommended at least Intel Core 2 Duo with two cores or two physical processors
- 32/64-bit Windows 7 or Vista (Business or Ultimate) or Windows 32-bit XP with SP3
- BETA Support for 32/64-bit Windows 8 - our software should work fine on Windows 8; however QuickTime Player does not officially support Windows 8 yet.
- QuickTime 7.6.6 or higher
- Virtual OS is not supported
- QT Lite is not supported

## *Installing on Windows*

To install Calibrated{Q} XD Decode on a Windows Computer:

1. Quit any applications using QuickTime.
2. Run the Calibrated{Q} XD Decode Installer. The install program creates a folder named **Calibrated** in the **[System Drive]\Program Files** directory. The **Calibrated** folder will contain the Calibrated{Q} XD Options application and User Guide.
3. Restart your computer

After running the Calibrated{Q} XD Decode installer, you will be able to access the Calibrated{Q} XD Options application (CalibratedQXDOptions.exe) in  this location:

**[System Drive]\Program Files\Calibrated\Applications\Options\**

The CalibratedXDQ.qtx will be auto-copied to the [System Drive]\Program Files\QuickTime\QTComponents directory.

## *Uninstalling on Windows*

To uninstall Calibrated{Q} XD Decode on a Windows Computer:

1. Go to the **Control Panel>Add/Remove Programs**.
2. Select and uninstall **Calibrated{Q} XD** from the list of programs.
3. Restart your computer.

# MAC OSX Requirements and Installation

Ensure your Mac meets the following requirements prior to installing Calibrated{Q} XD Decode:

- MacIntel Computer Only; recommended at least Intel Core 2 Duo with two cores or two physical processors
- Mac Intel with OSX 10.5.8(Leopard) or 10.6.8(Snow Leopard) or 10.7.5(Lion) or 10.8.5(Mountain Lion)
- *BETA Only Support for 10.9 (Mavericks) - QuickTime Player X and Finder Preview in Mavericks do not work with our software. The workaround for QT Player X is to install QuickTime Player 7 and use that for playback. You can download QuickTime Player 7 from Apple here: http://support.apple.com/kb/DL923 and it will install into the /Applications/Utilities folder and can co-exist fine with QT Player X on the same computer.*
- QuickTime 7.6.5 or higher
- Calibrated{Q} XD Decode no longer loads in Final Cut Pro, SoundTrack Pro, LiveType, DVD Studio Pro, Compressor, Color, Cinema Tools
- Not for use when Final Cut Pro, Final Cut Studio, Compressor or Final Cut Server is installed

## Installing on Mac OSX

To install Calibrated{Q} XD Decode on a Mac Computer:

1. Quit any applications using QuickTime.
   Run the Calibrated{Q} XD Decode Installer. The install program creates a folder named **Calibrated** in the **/Applications** directory. The **Calibrated** folder will contain the Calibrated{Q} XD Options application and User Guide
2. The CalibratedXDCodec.component will be auto-copied to the "/Library/QuickTime" directory.
3. Restart your computer

After running the Calibrated{Q} XD Decode installer, you will be able to access the Calibrated{Q} XD Options application (CalibratedQXDOptions.app) in this location:
**/Applications/Calibrated/Applications/Options/**

## Uninstalling on Mac OSX

To uninstall Calibrated{Q} XD Decode on a Mac Computer:

1. If no other Calibrated Software is installed, then delete the directory:

   /Applications/Calibrated

   and skip Step 2 and go to Step 3

2. If other Calibrated Software is installed, then only delete:

   a. /Applications/Calibrated/Applications/Options/CalibratedQXDOptions.app
   b. /Applications/Calibrated/Plugins/QuickTime/CalibratedXDCodec.component
   c. /Applications/Calibrated/Docs/ CalibratedQXD-UserGuide.pdf

3. Delete the file:

   /Library/QuickTime/CalibratedXDCodec.component

    (that's the Library folder on the Main Harddrive NOT the Library folder in the User Directory)

4. Restart your computer.

# Special Note: Avid Applications

Avid Media Composer v5.0.3.1, Avid NewsCutter v9.0.3.1 and Avid Symphony v5.0.3.1 now supports Exporting Long-GOP QuickTime Reference Movies through their Export process. If you want to play the exported movie in QuickTime, Avid recommends Calibrated{Q} XD Decode.

Please see http://cdn.avid.com/Patches/MediaComposer/ReadMe_v5.0.3.1and_v9.0.3.1.pdf for more information.

*Avid AMA Linking* - linking XDCAM HD/EX or HDV MOV files via AMA can have sluggish playback/scrubbing – it is recommend to transcode/consolidate files after linking via AMA

# Special Note: Adobe CS5.0.3/5.5.0 Performance Enhancement

If you are using the following Adobe CS 5.0.3/5.5.0 Applications:

After Effects, Premiere Pro, Photoshop, and Encore

decoding performance of Calibrated{Q} Decode codecs can be greatly enhanced by installing an Adobe XML patch file that we've created. The XML patch file enables the above Adobe applications to decode from the Calibrated{Q} Decode codecs at 8-bit YUV422 or 10-bit YUV422* colorspace which will greatly improve decode performance in the above Adobe applications.

*10-bit YUV422 support is intended for Calibrated{Q} AVC-Intra Decode when working with AVC-Intra files.

You can download the XML patch file here http://www.calibratedsoftware.com/downloads/AdobeCSXMLpatchv1.zip

Adobe CS6 already includes the necessary modifications so the above XML Patch file is not needed in CS6.

# Special Note: CatDV

**IMPORTANT**: If you experience any problems in creating proxies and/or playback in CatDV, please enable Protected Mode in CatDV. To enable 'Protected Mode', go to the CatDV Preferences and select 'Media Playback' and then check the option *'Protected player: Use separate QuickTime helper process'*. Playback performance is a little less smooth in 'Protected Mode' but it will be more stable. Also, in newer versions of CatDV you may wish to also disable the *'scrub audio when dragging play head'* option in the 'Media Playback' CatDV Preferences to make scrubbing in CatDV faster.

**When using XDCAM MXF files in conjunction with Calibrated{Q} MXF Import:** If you are working with MXF files where the audio is stored in its own separate MXF file (i.e. Panasonic P2, Ikegami GFCAM, Avid, Sony SAM) it can help in CatDV to enable the **Audio Small Segments** in the Calibrated{Q} MXF Import Options application. Please see *the BETA Features - Audio Only MXF Segment Size* in the Calibrated{Q} MXF Import User Guide for more details.

# Quick Note: Final Cut Pro and FC Studio Applications

In the past Calibrated{Q} Decode codecs stated they were not meant for any computers with Final Cut Pro or Final Cut Studio installed. This was because Calibrated{Q} Decode codecs for the most part were not necessary in FC Studio and could conflict with the Apple codecs that come with Final Cut Studio – the conflicts would not cause crashes; however the conflicts mainly centered around RT performance in FCP and the use of QuickTime Gamma in YUV->RGB conversion (Calibrated{Q} Decode codecs by default have QuickTime Gamma correction disabled; while the Apple codecs use QuickTime Gamma in YUV->RGB conversions)

With newer versions (see the 'Version History' chapter), Calibrated{Q} Decode codecs no longer loads in Final Cut Pro, SoundTrack Pro, LiveType, DVD Studio Pro, Compressor, Color, Cinema Tools. Please use the Apple codecs that come with Final Cut Studio in those applications.

## Overview

This chapter describes the features available in the Calibrated{Q} XD Decode Options interface.

*Important Note:* You must set options within the Calibrated{Q} XD Decode Options application before opening an application that supports QuickTime and before attempting to open any MXF and/or QuickTime XDCAM movie in any application that supports QuickTime. If you set options while the QuickTime-supported application is opened, you will have to restart the application before the Calibrated{Q} XD options take effect.

Starting with v1.8.0 your settings are all global for all users on the computer and stored in:

**(Windows)** "[SystemDrive]:\Program Data\Calibrated" for Vista and Windows 7 or  "[SystemDrive]:\Documents and Settings\All users\Application Data\Calibrated" for Win XP. The Options now require Admin Rights to change and are the same for all users on the computer.

**(Mac OSX)**  "/Library/Application Support/Calibrated". The Options now require Admin Rights to change and are the same for all users on the computer.

## Options Interface

The Calibrated{Q} XD Decode Options interface has an OpenGL GUI with two pages: **about** and **options**.

The **about** page displays by default page when the Calibrated{Q} XD Decode Options application is started. The **about** page contains the version number of the currently installed Calibrated{Q} XD Decode codec and indicates whether the codec is running in DEMO MODE or LICENSED MODE.

You access the **options** page by clicking **options** located at the top of the page. This page contains all of the global options for the Calibrated{Q} XD Decode codec.

# 'about' page
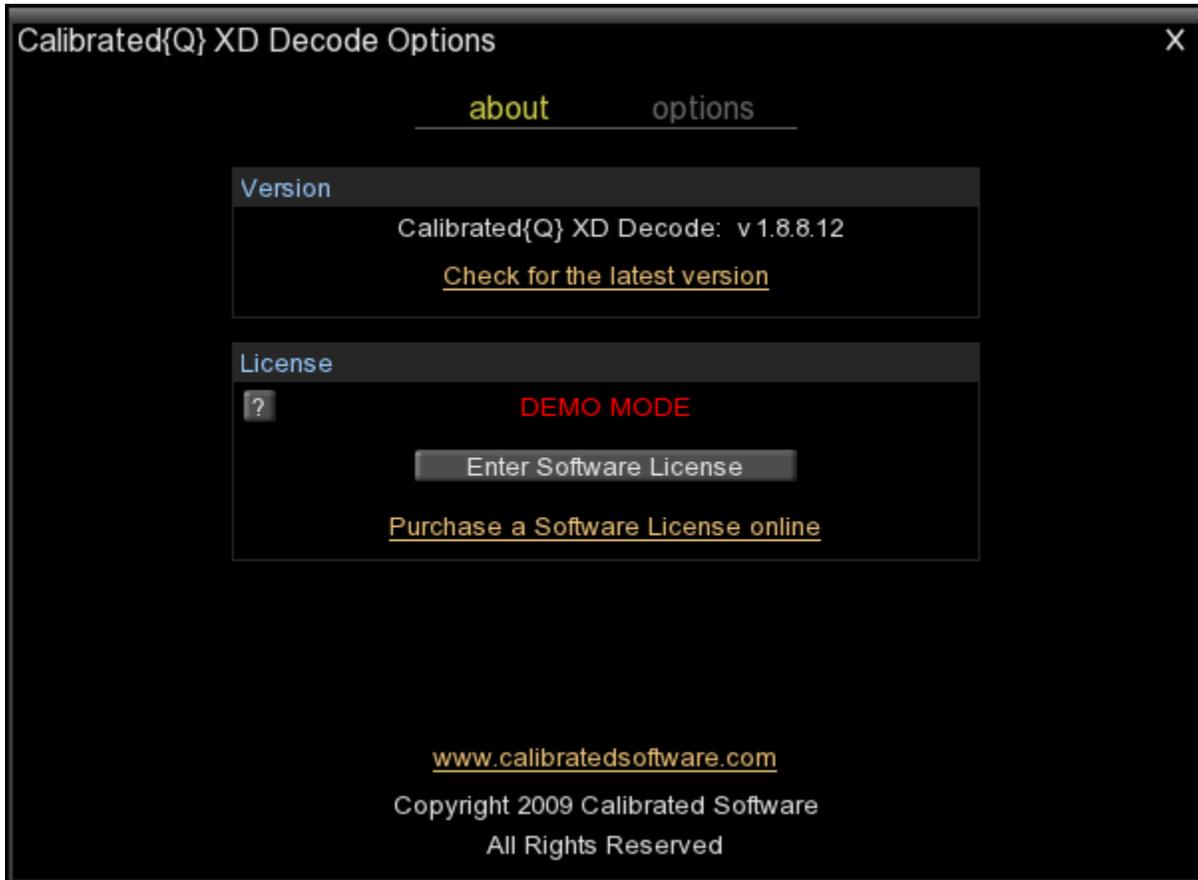


## Version
The version box shows the version of Calibrated{Q} XD Decode you are running and it display a webpage link of where to download the latest version.

## License
The license box is where you enter in your Software License after purchase. It will display a green LICENSED if you are properly licensed. Please see the 'Software License' chapter in this User Guide for more information.

# 'options' page



The following decode options are available in the Calibrated{Q} XD Decode Options application:

# YUV Matrix and Gamma Settings

## *Quick Setup*
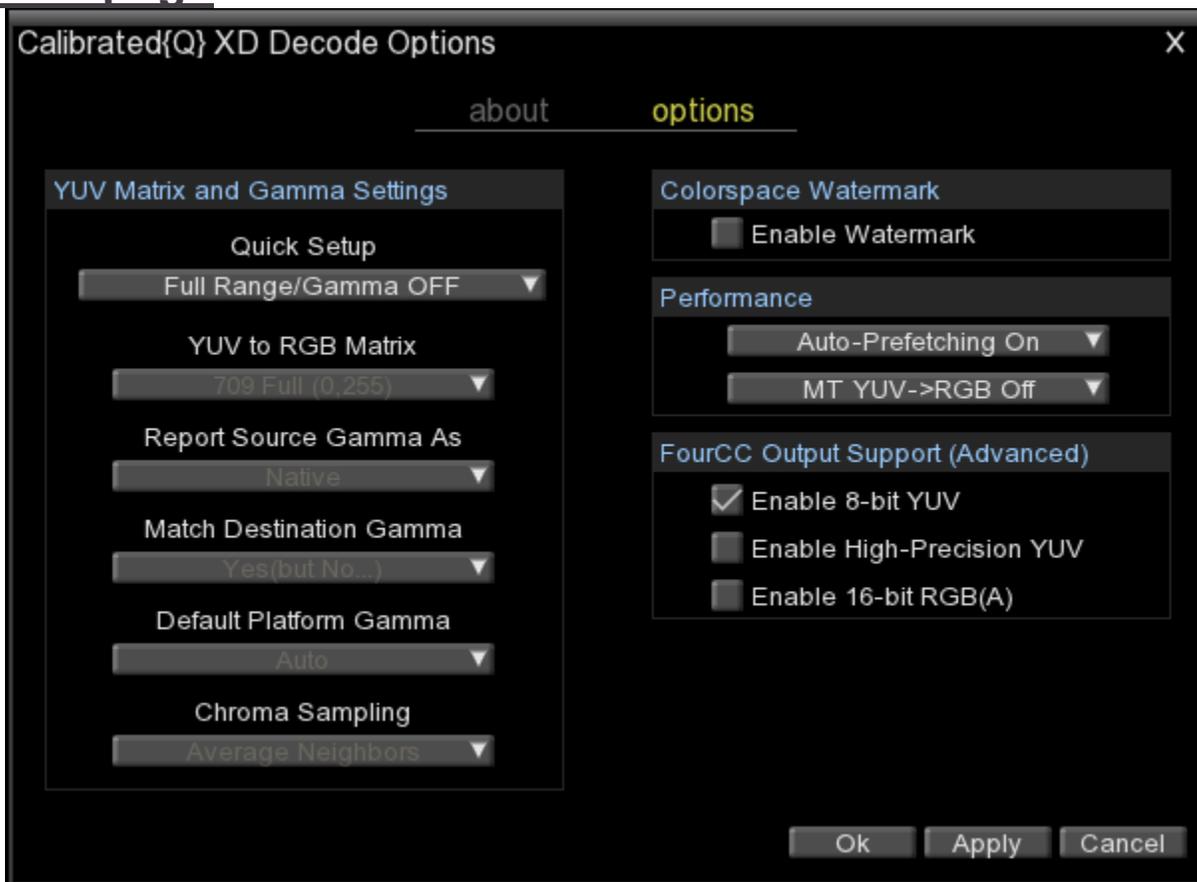
These are five different quick settings for the Full Range/Gamma OFF, Full Range/Gamma ON(Auto), Full Range/Gamma ON(Swap), SMPTE Range/Gamma OFF and Custom that you might prefer depending on your particular workflow. You should consider the setting information that follows as guidelines only in regards to QuickTime Gamma Correction. Different applications behave differently with respect to QuickTime Gamma Correction.

**Full Range/Gamma OFF (DEFAULT)**: These are the default settings and are probably what most users prefer. QuickTime Gamma Correction will be disabled in the codec and RGB data will have the same Gamma as the native YUV. This may produce slightly brighter/darker video in some applications when rendering to different QuickTime video codecs as those QuickTime video codecs may be expecting RGB with Gamma Correction.

**Full Range/Gamma ON (Auto)**: This setting enables QuickTime Gamma Correction when converting to RGB with the default Platform Gamma (1.8 for Apple computers and 2.5 for Windows computers). In most applications, this setting may produce darker or brighter RGB video frames when converting from YUV to RGB. However, this *should* correct the slightly brighter/darker video when rendering to different QuickTime video codecs.

**Full Range/Gamma ON (Swap)**: This is an ADVANCED setting that enables QuickTime Gamma Correction when converting to RGB with the **opposite** Platform Gamma (2.5 for Apple computers and 1.8 for Windows computers). This should only be used in **ADVANCED** workflows.

**SMPTE Range/Gamma OFF**: This setting should only be used with applications that can accept RGB video data in the SMPTE range of 16-235.

**Custom**: Use this option to specify your own YUV Matrix and QuickTime Gamma options.

## YUV to RGB Matrix

With Calibrated{Q} XD you have the ability to enable/disable support for various YUV/RGB colorspaces Setting the YUV Matrix enables you to control how YUV is converted to RGB in SD and HD.

There are four **YUV to RGB Matrix** options:

- 601 SMPTE (16,235)
- 601 Full (0,255)
- 709 SMPTE (16,235)
- 709 Full (0,255)

Generally, 601 equations are used for SD video and 709 equations are used for HD video.

The Full option (the default value) converts YUV, which has black-white levels of 16-235, to RGB with black-white levels of 0-255. The SMPTE option will convert YUV to RGB with black-white levels of 16-235. The Full option is usually the preferred workflow option since RGB is viewed at having a black/white level of 0-255 for 8-bit RGB material in most applications. Using the SMPTE option, users can preserve the super black/white values of YUV data when converting to RGB, but this option should only be used for specific workflow where you will be able to work with RGB data in the broadcast range (for example, 16-235).

*Important Note*: The **YUV to RGB Matrix** setting will ONLY be used if an application requests RGB data for a video frame. If an application requests YUV data for a video frame, which is typical behavior for the QuickTime Player, the **YUV to RGB Matrix** setting will have no effect on the YUV data being handed to the application.


## Report Source Gamma As

Gamma is perhaps one of the most confusing and frustrating features for many users of QuickTime movies in their workflow. In fact, there are many articles about how differently QuickTime Gamma is treated in various applications. The ability to adjust the reported Gamma is a feature in the Calibrated{Q} Decode codecs to help you alleviate the problems associated with QuickTime Gamma.

There are five **Source Gamma** options:

- Native
- 2.22
- 2.20
- 2.50
- 1.8
- Match Destination

QuickTime requires any codec to report the Source Gamma of the video. QuickTime recommends reporting a Gamma of 2.20 for SD YUV and 2.22. for HD YUV and reporting either Apple(1.8) or Window(2.5) Gamma for RGB video, depending on the platform you are using. The **Match Destination** setting is unique in the Calibrated{Q} Decode codecs in that the codec will report the Source Video Gamma for the video as whatever the requested Destination Video Gamma is, thereby sidestepping the need for QuickTime or other applications to try to match the different Gammas of the Source and Destination video. This can come in handy if you are converting the YUV source data to RGB destination data.


## Match Destination Gamma

There are three **Match Destination Gamma** options:

- No
- Yes
- Yes (but No…)

When the Gamma differs between the Source Gamma and Destination Gamma, QuickTime asks the codec if it can match the Gammas (for example, convert the footage from Source Gamma to Destination Gamma). The default value is **Yes**

**(but no…)**, which means the codec notifies QuickTime that it will perform Gamma conversions, but in actuality it does not perform any Gamma conversion.

You can set the **Match Destination Gamma** option to **No**, which means the codec cannot perform Gamma conversion. This option may cause QuickTime to try to perform the Gamma conversion itself. You can also set this option to **Yes** and the codec will perform any Gamma conversions. If you set the **Report Source Gamma  As** option to **Match Destination**, then the **Match Destination Gamma** option should not matter since the codec will always report Source and Destination Gamma as equal.

### Default Platform Gamma

There are three options:

- Auto (**DEFAULT**)
- Apple Platform Gamma
- Windows Platform Gamma

When Auto is selected, QuickTime Windows Platform Gamma of 2.5 is used on Windows computers and QuickTime Apple Platform Gamma of 1.8 is used on Apple computers when Gamma Correction is enabled. You can override and swap the default platform values – this should only be done in advanced workflows.

### Chroma Sampling

There are two options:

- Duplicate Values
- Average Neighbors (**DEFAULT**)

This controls how chroma is interpolated when converting from YUV 422 -> RGB 444. 'Average Neighbors' will produce smoother colors when converting; 'Duplicate Values' was added to essentially 'turn off' the averaging for a few customer's custom workflows.

### Important Note about QuickTime Gamma Settings

**Please Note:** Even with the above settings to adjust Gamma, it is imperative that a user test out the settings in their own workflows due to the fact that QuickTime Player and 3rd party applications can still disregard the Gamma information from a codec and still attempt to adjust Gamma on their own.

# Performance Options

### Enabled Auto-Prefetching

The Calibrated{Q} XD Decode codec will auto-prefetch B-frames, this helps performance in faster computers but actually hurts performance in slower computers. The reasoning for this is that in faster computers there is enough CPU speed to do extra work in decompressing frames that are far ahead; however slower computers will get overburdened with the extra 'work' decompressing video and drop even more frames. If QuickTime Player does not play back at or near RealTime then try disabling this option to boost performance.

### MT YUV->RGB

This option can enable/disable multi-threading YUV to RGB conversions if an application is requesting frames in the RGB colorspace.

### MT-X YUV->RGB

DEFAULT – This option can enable/disable multi-threading YUV to RGB conversions with OPTIMIZED 8-bit color-conversion routines if an application is requesting frames in the 8-bit RGB colorspace when the Quick Setup is set to either "Full Range/Gamma OFF" or "SMPTE Range/Gamma OFF".

# Colorspace Watermark

This option watermarks the video in the top-left corner – it is IMPORTANT to disable this option when doing production work or rendering as the watermark will be a part of the video – this option is just meant for quick checks for the user to see what colorspace Calibrated{Q} XD Decode is handing to the calling application. The watermark is a black rectangle. The top text will either be 8-bit YUV422 or 8-bit YUV420 – this indicates what the XDCAM video was decompressed as. The bottom text will either say Deliver 8-bit YUV422, Deliver High Precision YUV, Deliver 8-bit RGB444, Deliver 8-bit RGBA4444, Deliver 16-bit RGB444, or Deliver 16-bit RGBA4444 – this indicates what colorspace the video frame is delivered at to the calling application.

# FourCC Output Support(Advanced)

All QuickTime codecs must be able to decompress to 8-bit RGBA and 8-bit RGB as a base colorspace format. QuickTime codecs can also declare that they can decompress to other types of colorspaces as well, which can be useful in certain workflows and applications.

### Important Note about FourrCC Output Support

Even though Calibrated{Q} XD Decode supports decoding to 8-bit YUV422, 16-bit RGB(A) 444(4) and other YUV colorspaces (i.e. High-Precision YUV) - it is up to an application using Calibrated{Q} XD Decode to request those colorspaces – most applications though only request 8-bit RGB(A) 444(4) from QuickTime codecs.

The FourCC options enable you to set which colorspaces, beyond the base 8-bit RGBA/RGBA, that Calibrated{Q} XD Decode codec will declare to applications that it supports.

There are three FourCC options:

- Enable 8-bit YUV (enabled by default)
- Enable High-Precision YUV
- Enable 16-bit RGB(A)

### Enable 8-bit YUV

 Enable/disable support for 8-bit YUV422 '2vuy' colorspace. This colorspace is the natural colorspace to which the codec will decompress. This option enables the QuickTime Player to perform decoding at its fastest speed and is necessary for the best playback performance in the QuickTime Player. The decompression speed also greatly improves in any other application that is capable of recognizing that the codec can decompress to 8-bit YUV422 data.

However, disabling this option can sometimes be useful when using the codec with various compositing applications or trying to export to another codec from QuickTime Player Pro. By disabling this option, the chance of gamma or color conversion from YUV-> problems with QuickTime are reduced, however, the tradeoff is that applications that understand and prefer 2vuy video data will be slower because the codec will only report to them as using RGB data. Thus, the YUV->RGB color-space transformation will be forced to happen in the codec, using the matrix set in the **YUV to RGB Matrix** option.

### Enable High-Precision YUV

This option enables/disables support for 8-bit YUVA4444 'v408', 8-bit YUVA4444 'r408', 32-bit float YUVA4444 'r4fl', 8-bit YUV444 'v308', and  10-bit YUV422 'v210'colorspaces. Enabling this option will not make the image better; however enabling this option can help in certain applications that support these formats in their rendering pipelines.

### Enable 16-bit RGB(A)

This option enables/disables support for 16-bit RGB 'b48r' and 16-bit RGBA 'b64a' colorspaces. Enabling this option will not make the image better; however enabling this option can help in certain applications that support these formats in their rendering pipelines.

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# After Purchase - Software License Instructions
After payment is received for your order, you will be able to generate a Software License in your Customer Account on our website for Calibrated{Q} XD Decode. **Please note that one(1) Software License is for a single activation on one(1) physical computer (a Software License is tied to the computer's motherboard), and you cannot deactivate/activate a Software License from one computer to another computer. Orders are allowed a limited number of Software License reset(s)** – where you can reset your Software License in your Customer Account in the event of a new motherboard on your current computer or if you upgrade to a new computer  – please check your order to see how many Software License reset(s) your order came with – once you have used up all Software License reset(s) then you would have to purchase a new Software License. You can only reset a Software License in your Customer Account if **(A)** you have removed the software from the previous computer and **(B)** it has been at least 30 days since you previously generated or reset your Software License.

## *Instructions - Generating a new Software License*

### Step 1: Download and install the software
Skip this step if you have already downloaded and installed the software. If you have NOT already done so, please download and install Calibrated{Q} XD Decode on the computer you want to license. Please remember that if you purchased a Software License for Mac OSX then you can only generate a Software License for a Mac OSX computer, and likewise for Windows.

### Step 2: Retrieve your 'Computer ID' from the software
Go to the folder:

***Windows***: C:\Program Files\Calibrated\Applications\Options folder
***Mac OSX***: /Applications/Calibrated/Applications/Options folder

Open the **"Calibrated{Q} XD Decode Options" application** located in the above folder and then press the 'Enter Software License' button and copy our 'Computer ID' from the window that pops up.

### Step 3: Generate your Software License in your Customer Account
Sign in to your Customer Account on the Calibrated Software website and then click on the 'license' tab  in our Customer Account and then press the green "Generate" button and paste in your 'Computer ID' on the website when prompted. Your Software License will then be generated and presented to you, and saved in your Customer Account. This Software License is tied to your computer's motherboard and will only work on this specific computer.

### Step 4: Enter in your Software License into the software
Go back to the 'about' page of "Calibrated{Q} XD Decode Options" application and press the "Enter Software License" button and paste in your Software License in the window that pops up, press the 'Apply' button and then restart your computer. After restarting, your software will have the DEMO MODE limitation removed and be fully functional.

*Instructions – Resetting a saved Software License*

**Please Note: Orders are allowed a limited number of Software License reset(s)** – where you can reset your Software License in your Customer Account in the event of a new motherboard on your current computer or if you upgrade to a new computer – please check your order to see how many Software License reset(s) your order came with – once you have used up all Software License reset(s) then you would have to purchase a new Software License. You can only reset a Software License in your Customer Account if **(A)** you have removed the software from the previous computer and **(B)** it has been at least 30 days since you previously generated or reset your Software License.

**Step 1: Remove the software from the older computer and install the software on the new computer**
Skip this step if you have already downloaded and installed the software. . If you have NOT already done so, please download and install Calibrated{Q} XD Decode on the computer you want to license. Please remember that if you purchased a Software License for Mac OSX then you can only reset a Software License for a Mac OSX computer, and likewise for Windows.

**Step 2: Retrieve your 'Computer ID' from the software on the new computer**
Go to the folder:

*Windows*: C:\Program Files\Calibrated\Applications\Options folder
*Mac OSX*: /Applications/Calibrated/Applications/Options folder

Open the **"Calibrated{Q} XD Decode Options" application** located in the above folder and then press the 'Enter Software License' button and copy our 'Computer ID' from the window that pops up.

**Step 3: Reset your Software License in your Customer Account**
Sign in to your Customer Account on the Calibrated Software website and then click on the 'license' tab in our Customer Account and then press the blue "View" button. In the window that pops up, find the name of your previous computer in the 'Computer Name' column and press the blue "Reset" button in that row, and then paste in your 'Computer ID' on the website when prompted. Your Software License will then be reset to the new computer and presented to you, and saved in your Customer Account. This Software License is tied to your new computer's motherboard and will only work on this new computer.

**Step 4: Enter in your Software License into the software**
Go back to the 'about' page of "Calibrated{Q} XD Decode Options" application and press the "Enter Software License" button and paste in your Software License in the window that pops up, press the 'Apply' button and then restart your computer. After restarting, your software will have the DEMO MODE limitation removed and be fully functional.

# Refund Policy
A refund for the purchase price of an order may only be given if you have NOT generated a Software License for your order, AND the refund request is within 30 days of the order purchase date. For more details see our refund policy.

# Seeing a white or black screen after installing

1.  Is Calibrated{Q} XD Decode installed properly?

    On Mac OSX, please make sure that the CalibratedXDCodec.component is in the /Library/QuickTime folder (that's the Library folder on the Main Harddrive NOT the Library folder in the User directory)

    On Windows, make sure QuickTime Player 7.6.6 is installed, and that the CalibratedXDQ.qtx component is in the [System Drive]/Program Files/QuickTime/QTComponents folder (on Windows 64-bit systems it would be the Program Files (x86) folder)

2.  Did you restart your computer after installing?

    If you haven't, then please restart

3.  Did you re-import the files into your application?

    With some applications it is necessary to re-import your files.

4.  Are you sure the files are XDCAM compressed?

    To check if they are, please open the XDCAM files in QT Player and open the 'Movie Inspector' Window and check what is reported as the 'Format' - it should be a type of XDCAM HD, XDCAM EX or HDV.

5.  I can see the XDCAM files in QT Player but not the application that I want to use them in?

    If you already tried restarting and re-importing the files into the application you want to use then perhaps the application you want to use does not support QuickTime or the QuickTime 7.0 SDK.

# DEMO MODE watermark still visible after licensing

1.  Did you restart your computer after licensing?

    If you haven't, then please restart

2.  Did you re-import the files into your application?

    With some applications it is necessary to re-import your files or if you had rendered the files while in DEMO MODE then the DEMO MODE watermark would be 'burned' into the rendered files – please re-render the files.

3.  Are you sure the files are XDCAM compressed?

    To check if they are, please open the XDCAM files in QT Player and open the 'Movie Inspector' Window and check what is reported as the 'Format' - it should be a type of XDCAM HD, XDCAM EX or HDV.

4.  Did you generate and enter in your Software License?

    If not, please see the 'Software License' chapter in this User Guide on how to generate and enter in your Software License after purchase. If you are properly licensed, then the 'about' page of the Calibrated{Q} XD Options applications should say LICENSED in green.

# Misc.

1.  The files do not play real time.

    Please see the 'Performance' sub-chapter at the beginning of this User Guide for information on this topic.

2.  The files crash when I try to open up QT Player in Windows?

    It sounds like you are on an older computer (circa 2005/2006 or earlier) that does not support SSE3 processor instructions. A computer with a processor that supports SSE3 instructions is a requirement.

3.  CatDV crashes or locks up when playing XDCAM  MXF or XDCAM MOV files.

    If you experience any problems in creating proxies and/or playback in CatDV, please enable Protected Mode in CatDV. To enable 'Protected Mode', go to the CatDV Preferences and select 'Media Playback' and then check the option 'Protected player: Use separate QuickTime helper process'. Playback performance is a little less smooth in 'Protected Mode' but it will be more stable. Also, in newer versions of CatDV you may wish to also disable the *'scrub audio when dragging play head'* option in the 'Media Playback' CatDV Preferences to make scrubbing in CatDV faster.

    *When using XDCAM MXF files in conjunction with Calibrated{Q} MXF Import:* If you are working with MXF files where the audio is stored in its own separate MXF file (i.e. Panasonic P2, Ikegami GFCAM, Avid, Sony SAM) it can help in CatDV to enable the **Audio Small Segments** in the Calibrated{Q} MXF Import Options application. Please see *the BETA Features - Audio Only MXF Segment Size* in the Calibrated{Q} MXF Import User Guide for more details.

4.  After licensing on OSX 10.9 Mavericks, the DEMO MODE watermarks are still present in some applications.

    *BETA Only Support for 10.9 (Mavericks) - QuickTime Player X and Finder Preview in Mavericks do not work with our software. The workaround for QT Player X is to install QuickTime Player 7 and use that for playback. You can download QuickTime Player 7 from Apple here: http://support.apple.com/kb/DL923 and it will install into the /Applications/Utilities folder and can co-exist fine with QT Player X on the same computer.*

**Version 1.9.6**
> **BETA Only Support for 10.9 (Mavericks)** - QuickTime Player X and Finder Preview in Mavericks do not work with our software. The workaround for QT Player X is to install QuickTime Player 7 and use that for playback. You can download QuickTime Player 7 from Apple here: http://support.apple.com/kb/DL923 and it will

**Version 1.9.5**
- **[Mac OSX]** Fixed issue with sandboxing of license file and settings file in QT Player X on OSX 10.8 (Mountain Lion)

**Version 1.9.4**
- Minor speed improvement

- Updated User Guide

- Installer is now 'digitally signed' to verify that it came from Calibrated Software

**Version 1.9.3**
- [Windows Only Fix] – Fixed rare crash in the Calibrated{Q} XD Decode Options application

**Version 1.9.2**
- "MT-X YUV->RGB On" is now enabled as the default YUV->RGB conversion. If you had installed a previous version of Calibrated{Q} XD Decode then you will have to manually enable the 'MT-X YUV->RGB' option in the Calibrated{Q} XD Decode Options application.

**Version 1.9.1**
- Added BETA Feature – in the 'Performance' Options you can enable "MT-X YUV->RGB On" – this will greatly speed up YUV->RGB conversions when the Quick Setup is set to either "Full Range/Gamma OFF" or "SMPTE Range/Gamma OFF"

**Version 1.9.0**
- Lion OSX Support
- Fixed rare issue where certain types of HDV files could produce  a single green line at the bottom of the frame in rendered files.

**Version 1.8.8**
- Avid AMA Patch is now enabled as default.

**Version 1.8.7**
- Added new QuickSetup, added ability to swap Platform Gamma, added ability to change Chroma Sampling

**Version 1.8.6**
- Fixed issue where in extremely rare circumstances, XDCAM/HDV MOV files captured via FireWire or exported out of a FCP Sequence without recompressing frames in Final Cut Pro can exhibit breaks in the QTSampleTable (internal QuickTime structure) in the MOV file – which will exhibit as two B-Frames showing only 'green' at the point of the QTSampleTable break since the previous GOP had been flushed by QuickTime.

**Version 1.8.5**
- Updated Adobe CS XML patch file for CS5.5.0

- BETA - Added option for multi-threading any YUV->RGB conversions

- Minor optimizations

- BETA - Add patch for importing XDCAM HD 'slow-mo' MOV files into Avid MC 5 (or greater) via AMA Linking (see the section 'Avid AMA Patch' in this User Guide for more details)

**Version 1.8.4**
- Minor optimization

**Version 1.8.3**
- Updated text in Options application

**Version 1.8.2**
- Added Adobe CS5.0.3 XML patch file for faster decoding

- Updated User Guide

- Fixed issue when using Google Chrome on Mac OSX to generate your Software License

**Version 1.8.1**
- Updated User Guide

- Updated Options application

**Version 1.8.0**
- Updated User Guide

- **(Windows)** Global Options are now stored in "[SystemDrive]:\Program Data\Calibrated" for Vista and Windows 7 or "[SystemDrive]:\Documents and Settings\All users\Application Data\Calibrated" for Win XP. The Options now require Admin Rights to change and are the same for all users on the computer.

- **(Mac OSX)** Global Options are now stored in "/Library/Application Support/Calibrated". The Options now require Admin Rights to change and are the same for all users on the computer.

- Updated 'about' page of the Calibrated{Q} XD Options application

- **(Mac OSX)** Calibrated{Q} Decode codecs no longer loads in Final Cut Pro, SoundTrack Pro, LiveType, DVD Studio Pro, Compressor, Color, Cinema Tools

**Version 1.7.0**
- Optimizations

- Added XDCAM F800/F355 Overcranked/Undercranked codec support

- **(Mac OSX)** Tiger version has been discontinued

**Version 1.6.7**
- Updated Manual

- Added support for 1920x540 XDCAM HD 422 'slow-mo' files (BETA).

**Version 1.6.5**
- Updated Calibrated{Q} XD Options application interface

### Version 1.6.0

- **(Windows)** License file is now stored in "[SystemDrive]:\Program Data\Calibrated" for Vista and Windows 7 or "[SystemDrive]:\Documents and Settings\All users\Application Data\Calibrated" for Win XP  – this does not affect any previous license files. All previous license files are still valid and will work fine.

- **(Mac OSX)** License file is now stored in "/Library/Application Support/Calibrated" folder – this will not affect any previous license files. All previous license files are still valid and will work fine.

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