

CINEMA RAW DEVELOPMENT

INSTRUCTION MANUAL

Version 1.1

Mac OS

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About Cinema RAW Development

Cinema RAW Development allows you to develop, play back and export Canon RAW files (referred to as "RAW clips" in this manual) shot with Canon digital cinema cameras. The following are the main features of Cinema RAW Development.

Develop and play back Develop RAW clips stored on your computer and simultaneously

play the clips back.

Develop and exportDevelop RAW clips stored on your computer and export the clips

as DPX files , OpenEXR files or MOV files. You can also copy

RAW clips as is.

(i) NOTES

When you use this software, make sure to set your computer so that it does not enter sleep mode.

Conventions in the Manual

Important precautions related to the software's operation.

(i) Additional information that complements the main procedure.

Reference page number in this instruction manual.

File > Open This font is used to indicate menu options and commands, as they appear onscreen.

• For the most part, screens shown in this manual were captured on a computer running Mac OS X, ver. 10.7. Actual screens may differ slightly.

Disclaimers

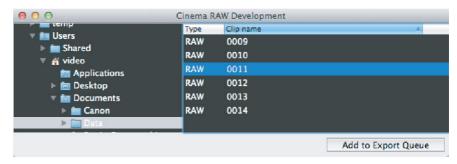
- This software was developed for exclusive use with RAW clips created using a Canon digital cinema camera and external recorder compatible with Canon RAW data.
- While every effort has been made to ensure that the information contained in this manual is accurate and complete, Canon shall not be liable for any damages resulting from corrupted or lost data due to mistaken operation or malfunction of the software.
- Your camera may not support all of the features and functions described in this manual. Screens show clips recorded using a Canon EOS C500 digital cinema camera and external recorder.
- The software records internal operations, including full path information of the clips used, on a log file kept on the hard disk. The information recorded will be used only for the purpose of providing technical support in case of a problem with the software.

Running Cinema RAW Development

Starting Up Cinema RAW Development

Click on the Cinema RAW Development icon on the dock. After a short while, the application's main window will appear.





(i) NOTES

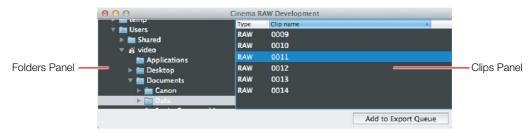
- Multiple instances of Cinema RAW Development cannot be opened simultaneously.
- If your computer is running resident software that periodically accesses the hard disk, such as an antivirus application, computer performance when playing back and exporting clips may decrease.

Exiting Cinema RAW Development

Using the menu: Click **Cinema RAW Development** > **Quit Cinema RAW Development**. From the main window: Click the (Close) icon on the top left corner of the window.

Overview of the Main Window

The main window shows the folders panel and clips panel.



Folders Panel

Shows a list of folders on your computer. Select the folder that contains the desired clips.



Clips Panel

After you select a folder in the folders panel, the clips panel will display a list of the clips saved in that folder. The list shows the clip types (RAW, DPX and OpenEXR) and clip names. From the list, you can select which RAW clips* to play back or export.

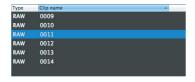
* RAW clips are folders that are comprised of video, audio and management files.

Selecting clips

To play back or export a clip, you must first select it. When exporting, you can select multiple RAW clips.

In the clips panel, click on the desired clips.

- To select multiple, non-successive clips: Click the desired clips while holding the # key (# + Click).
- To select multiple, successive clips: Click the first clip and then click the last clip while holding the Shift (û) key (Shift + Click).



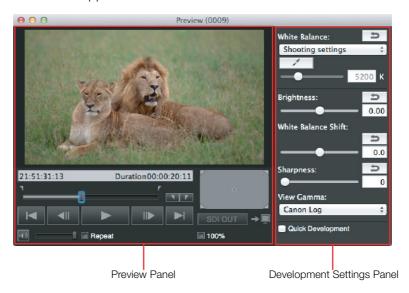
Playing Back and Developing Clips

Displaying the Preview Window

The preview window shows the preview panel and development settings panel. You can develop and play back the RAW clip currently selected in the clips panel.

Click View > Preview.

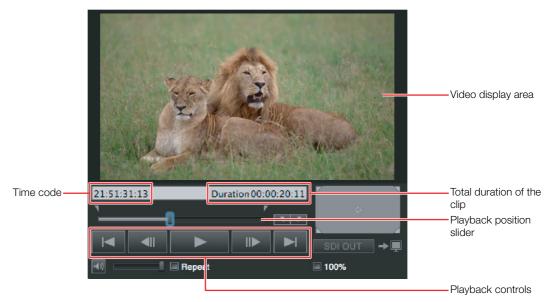
• The preview window will appear.



Playing Back Clips

This software features basic playback functionality of your clips. You can play back the RAW clip currently selected in the clips panel and display it in the preview panel. During playback, you can use the playback controls under the video display area. RAW clips will be played back using quick development (\coprod 10).

- 1. In the clips panel, select the clip you want to play back (\square 5).
 - The video display area will show the first frame from the clip.
 - After selecting a RAW clip, it is developed according to the settings in the development settings panel (
 10) and then displayed.
- 2. Click ► to start the playback.
 - The clip will be played back. The playback position slider and time code display will advance as the clip is played back.
 - During the clip's playback, the
 button will change to ■.
- 3. Click to stop the playback.
 - Selecting a different clip in the clips panel will also stop the playback of the current clip.



IMPORTANT

Your computer's performance can affect the playback quality. In certain cases, you may notice some of the following anomalies.

- Playback is not smooth and frames are dropped.
- The displayed time code does not match the actual frame being displayed.
- Parts of the screen freeze or take longer to be refreshed.

(i) NOTES

- You can play back RAW clips shot with Canon digital cinema cameras.
- When the input focus* is on the playback position slider in the preview panel, you can press the space key or K key to start/stop the playback.
 - * "Input focus" refers to the window or item that can receive keyboard input from the user.

Changing the way video is displayed

You can change how video is displayed in the video display area.

 $\label{eq:click_view} \mbox{Click } \mbox{\bf View} > \mbox{Desired option}.$

Options

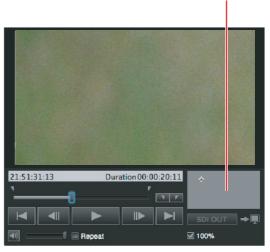
Fit to Preview Area
Display at 100%

Displays the entire video so that the entire picture is visible.

Displays the video at actual size. As such, only a portion of the video will be displayed. A display area graphic will appear to the right of the playback position slider indicating what portion is being displayed. You can use the mouse to drag the picture in the video display area to change what is being displayed.







Display area graphic

Display at 100% setting

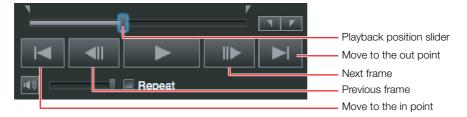
Adjusting the volume

Drag the volume slider to adjust the playback volume. You can click the \blacksquare) button to temporarily mute the sound.



Changing the playback position

You can change the playback position during playback or in playback pause mode in the following ways.



Mouse operation	Keyboard shortcut*	Action
H	home	Move to the in point. Move to the first frame if the current frame position is before the in point.
M	end	Move to the out point. Move to the last frame if the current frame position is after the out point.
∢ II	J	Go back one frame.
II►	L	Advance one frame.

^{*} Usable when the input focus is on the playback position slider in the preview panel.

Playing Back and Developing Clips

Repeating playback of a clip

When you place a check in the **Repeat** box, you can have the clip repeat playback. After playing back to the out point, playback starts again from the in point.



Place a check in the box to repeatedly play back the

(i) NOTES

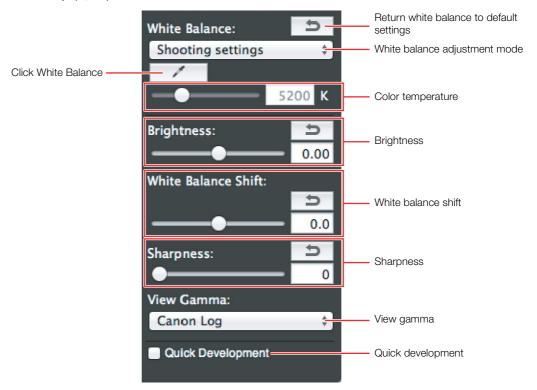
- If you select a DPX or OpenEXR clip in the clips panel that was exported with this software, you can display a desired frame. Use the playback position slider, and the ◀▮ (go back one frame) and ▮▶ (advance one frame) controls to select a frame.
- OpenEXR clips are displayed in a different color from RAW clips before export.
- This software displays OpenEXR clips by applying the Reference Rendering Transform (RRT), which is stipulated in the ACES specifications, and Output Device Transform (ODT) into Rec. 709.

Developing Clips

Adjusting the development settings

RAW clips must be developed before they can be played back or exported. You can adjust various development settings using the development settings panel.

- 1. Select the desired RAW clip from the clips panel.
 - The clip will be developed and the video display area will show the first frame from the clip.
- 2. In the development settings panel, adjust the desired settings.
 - The clip is developed again based on the new settings and then displayed in the video display area.
- 3. Play back the clip (\square 6).



Development settings

Default settings are underlined.

Setting	Setting options	Function
White balance adjustment mode	Shooting Settings, Click White Balance, Color temperature	Selects how the white balance is adjusted.
Click White Balance	_	Adjusts the white point. After clicking the / button, click in the video display area to adjust the white balance by using the color of the location clicked as the white point.
Color Temperature	2,000 to 15,000 K (<u>5200</u>)	Allows you to adjust the color temperature using the slider or by directly entering a value (in increments of 100 K). You can click to return the setting to its default value.
Brightness	-3.0 to 3.0 (<u>0.00</u>)	Allows you to adjust the brightness using the slider or by directly entering a value (in increments of 0.01). You can click to return the setting to its default value.

Setting	Setting options	Function
White Balance Shift	-10.0 to 10.0 (<u>0.0</u>)	Allows you to adjust the white balance shift using the slider or by directly entering a value (in increments of 0.1). You can click $\stackrel{\bigstar}{\longrightarrow}$ to return the setting to its default value.
Sharpness	0 to 10 (<u>0</u>)	Allows you to adjust the sharpness using the slider or by directly entering a value (in increments of 1). You can click to return the setting to its default value.
View Gamma	Canon Log, Rec. 709, Wide DR	Selects the gamma setting for development that will be applied during playback of a RAW clip. This setting will be applied to the preview panel and the picture output through the SDI terminal (13).
Quick Development	<u>Off,</u> On	When exporting a RAW clip or during playback pause mode, processing is simplified to shorten the development time. Because some processes such as false color reduction will not be implemented, the color and resolution will differ from the result obtained using normal development. During playback, quick development is always enabled, regardless of this setting.

(i) NOTES

- Use a computer with a GPU supported by this software to develop clips. Although it is possible to develop clips using a computer that does not have a GPU supported by this software, it is not recommend to do so. For the latest information on this software, including system requirements, visit your local Canon Web site.
- Development settings cannot be changed while playing back a RAW clip.
- You cannot adjust the sharpness of RAW clips that were recorded in HRAW recording mode (4096x1080, 3840x1080)

Playing Back and Developing Clips

Setting In and Out Points

You can set the in and out points (starting and ending points) of a range of frames in a clip. By default, the first frame of the clip will be the in point and the last frame will be the out point. However, you can change these points. The in and out points will be represented by the \P and \mathbb{F} icons, respectively.

Mouse operation	Keyboard shortcut*	Action
•	I	Sets the current frame as the in point.
F	0	Sets the current frame as the out point.

 $^{^{\}star}$ Usable when the input focus is on the playback position slider in the preview panel.



(i) NOTES

You can set in and out points to export only a specific portion of a clip (16).

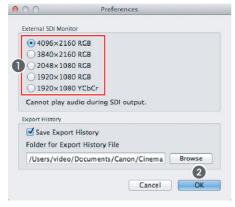
Connecting to an External Monitor Using SDI Output

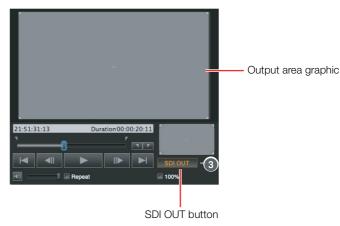
If your computer has an expansion card with SDI output capability, you can use this software to play back clips on an external monitor using your computer's SDI terminal*. During output, an output area graphic (see the illustration below for an example) will be available to select what portion of the playback picture is displayed but the playback picture itself will not appear in the graphic. Refer also to the instruction manual of the expansion card.

- * The picture resulting from playing back a clip with this software will be referred to hereafter as the "playback picture".
- 1. Connect the external monitor to the computer's SDI terminal.
 - Follow the procedure in the instruction manual of the expansion card.
- 2. Click Cinema RAW Development > Preferences.
- 3. Select the video output configuration that matches the external monitor's capability (1).
- 4. Click OK (2).
- 5. Click the SDI OUT button (3).
 - A graphic will appear in the video display area indicating what portion of the picture is being displayed.
 - Click the SDI OUT button again to disable SDI output.
- 6. Play back the clip (6).
 - The playback picture will be output from the SDI terminal.
 - The size of the output picture will automatically be enlarged or reduced depending on the aspect
 ratio of the playback picture and the resolution selected in step 3 for External SDI Monitor. If the
 aspect ratios are different, the output picture will be letterboxed or pillarboxed.
- To play back without reducing the size

Place a check in the 100% box.

• During playback pause, you can use the mouse to drag the picture on the output area graphic to change what is being displayed.





Preferences dialog box

i NOTES

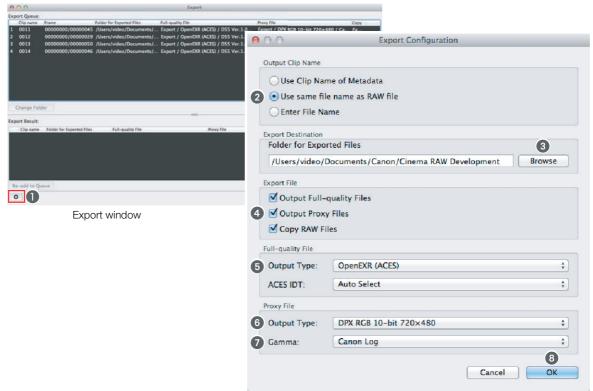
- For External SDI Monitor, if you select 4096x2160 RGB, 3840x2160 RGB or 2048x1080 RGB, clips with a frame rate of 59.94P or 29.97P will be output at 23.98P and those with a frame rate of 50.00P will be output at 25.00P. If you select 1920x1080 RGB, clips with a frame rate of 59.94P will be output at 29.97P and those with a frame rate of 50.00P will be output at 25.00P.
- If the playback picture size is reduced, moiré patterns or other artifacts may appear.
- If the resolution of the clip and SDI monitor differ, dropped frames may occur during playback.

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Exporting Clips

Adjusting the Export Settings

You can select the type of file exported, the file name and the destination folder. You must perform the settings before adding the desired RAW clip to the export queue.



Export settings dialog box

- 1. Click View > Export.
 - The export window will appear.
- 2. Click the Dutton (11).
 - The export settings dialog box will appear.
- 3. Select how the exported file's name will be generated (2).

Use Clip Name of Metadata

For clips other than MOV clips:

[metadata clip name]¹_[number corresponding with the RAW file].[file extension]

For MOV clips:

[metadata clip name].MOV

Use same file name as RAW file

For clips other than MOV clips:

[RAW file name].[file extension]

For MOV clips:

[RAW file name].MOV

Enter File Name

For clips other than MOV clips:

[file name input by user²][_consecutive clip number³]_[number corresponding with the RAW file].[file extension]

For MOV clips:

[file name input by user¹][_consecutive clip number²].MOV

¹ This is the clip name that was given to the clip recorded on the CF card at the same time the RAW clip was recorded. If no clip was recorded on the CF card when the RAW clip was recorded, then the file name method will be the same as that of "Enter File Name".

² If you add a clip to the export queue, the file name settings dialog will appear.

- ³ This consecutive number is added when multiple clips are added to the export queue at once.
- For proxy files, "Proxy_" will be added to the beginning of the file name.
- 4. Under Export Destination, click Browse and then select the export destination folder (3).
- 5. Under Export File, select the development process (4).

Output Full-quality Files The RAW clip that is output is developed normally so that the gener-

ated file will have image quality as close as possible to the original

RAW clip.

Output Proxy Files The RAW clip that is output is partially developed and reduced in size

so that the generated file will be easier to edit.

Copy RAW Files The RAW file is copied to the export destination folder.

- 6. If you selected Only Full-Quality File in step 5, select the file type (5).
 - For the file type, you can select **DPX RGB 10-bit, DPX RGB 16-bit, OpenEXR (ACES)*** or **Apple ProRes 4444**.
 - * If you selected OpenEXR, select Auto Select, Daylight or Tungsten for ACES IDT.

If you selected DPX or **Apple ProRes** for the file type, the **Canon Log** gamma setting will be applied; if you selected **OpenEXR** (**ACES**), the file will be output as scene-linear data without a gamma setting.

If you selected Only Proxy File in step 5, select the file type (6) and gamma setting (7).

- For the file type, you can select **DPX RGB 10-bit 720x480**, **DPX RGB 10-bit 1920x1080**, **Apple ProRes 4444 720x480** or **Apple ProRes 4444 1920x1080**.
- For the gamma setting, you can select Canon Log, Rec. 709 or Wide DR.

7. Click **OK** (**8**).

Processing and file types

Development process	File type	Characteristics	Gamma
Output Full-quality	DPX	RGB 10-bit	Canon Log
Files		RGB 16-bit	
	MOV	Apple ProRes 4444	
	OpenEXR	RGB 16-bit	Linear
Output Proxy Files	DPX	RGB 10-bit 720x480	Canon Log,
		RGB 10-bit 1920x1080	Rec. 709, Wide DR
	MOV	Apple ProRes 4444 720x480	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
		Apple ProRes 4444 1920x1080	

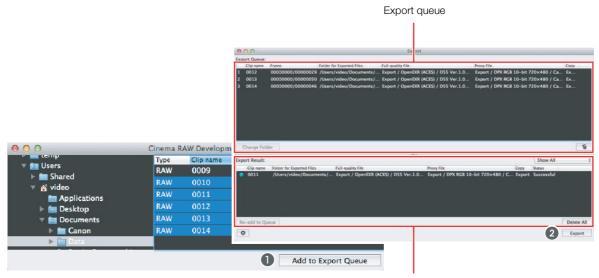
i NOTES

- Files will be saved in subfolders in the folder you selected in step 4. For full-quality files, the subfolder name will have the same name as the RAW clip. For proxy files, the subfolder name will have the same name as the RAW clip with "Proxy_" added to the beginning. For RAW copied files, the subfolder name will have the same name as the RAW clip with "Copy_" added to the beginning.
- When an OpenEXR clip is exported, it will be converted into a color space defined by the Academy Color Encoding System (ACES), which was proposed by the Academy of Motion Picture Arts and Sciences (AMPAS).

Developing and Exporting RAW Clips

You can develop a RAW clip and export it as a standard file type.

- 1. In the clips panel, select the RAW clip to be exported.
- 2. Adjust the development settings as necessary (10).
- 3. In the main window, click the **Add to Export Queue** button (1).
 - If a dialog box appears prompting you to change the file name, enter a file name and click OK.
 - The selected RAW clip will be added to the bottom of the export queue.
 - You can also drag a clip from the clips panel and drop it on the export queue to add it.
- 4. Repeat steps 1 to 3 as necessary to add other RAW clips to the export queue.
 - You can change the export settings for each clip separately (14).
- 5. Click the Export button (2).
 - The RAW clips in the export queue will be exported in order starting from the file on the top.
 - The range of frames from the in point to the out point will be exported.
 - RAW clips that have been exported will be removed from the export queue and then be added to the export result list.
 - For clips that are displayed in the export result list, you can select **Show All, Show Error Clips** or **Show Successful Clips**.
 - The **Export** button will change to **Cancel**, which you can click to cancel the export process.
 - You can click the Delete All button to clear the export result list.
 - You can develop full-quality files using quick development. Proxy files will always use quick development regardless of the **Quick Development** setting.



Export result list

Items displayed in the export queue and export result list

Item	Description
Clip name	Shows the name of the RAW clips.
Frames	Shows the number of frames processed on the left and the total number of frames on the right. The number on the left will be updated while RAW clips are being exported. This appears only in the export queue.
Destination folder	Shows the folder to which exported files are saved.
Full-quality file	Determines whether a full-quality file is output, the output format and ACES IDT (for OpenEXR files only).
Proxy file	Determines whether a proxy file is output, the output format and the gamma setting.

Item	Description
Сору	Determines whether the file is copied.
Export results	The (blue) icon indicates that the file was successfully exported while the (red) icon indicates an error.
Status	Shows details of the export results (explains the reason an error occurred).

Messages displayed in the status column

Item	Description	
Successful	Clip export was completed successfully.	
Development Error	The RAW clip is corrupted. Use backup data.	
Destination drive does not exist.	Cannot access the drive that contains the destination folder. Check the drive.	
Insufficient Available Size	The drive that contains the destination folder does not have enough available space. Select a different drive for the destination folder.	
Read Error	The RAW clip is corrupted. Use backup data.	
Write Error	Could not write to the destination folder. Check that the folder	
Cannot Create a Folder	permissions allow for writing.	
Unknown Error	An error not covered by the other error messages in this list, such as a lack of memory error, has occurred. After restarting your computer, perform the operation again.	

(i) NOTES

The following operations cannot be performed during export.

- Playing back a clip
- Adjusting development settings
- Viewing clip information or frame information

Removing clips from the export queue

Follow the steps below to remove a RAW clip from the export queue.

- 1. Select the RAW clip to remove from the export queue.
 - You can select multiple clips at once.
- 2. Click in the export panel.
 - The selected RAW clip will be removed from the export queue.

Changing the destination folder

You can change the destination folder for clips added to the export queue.

- 1. Select a RAW clip in the export queue.
 - You can select multiple clips at once.
- 2. In the export window, click **Change Folder** and select the destination folder.

Adding a RAW clip in the export result list to the export queue again

You may find it convenient to add a RAW clip in the export result list to the export queue again in cases such as when an error has occurred.

- 1. Select a RAW clip in the export result list.
 - You can select multiple clips at once.
- 2. In the export window, click Re-add to Queue.
 - The selected RAW clips will be added to the export queue with their previous settings.
 - If necessary, you can also change the destination folder.

Saving the export log

- 1. In the Cinema RAW Development menu, select Preferences.
- 2. Place a check in the Save Export History box.
- 3. Click Browse under Destination folder and select a destination folder.
- 4. Click OK.
 - The export log from this point on will be saved in an export log file (CSV format).
 - Export log files are generated on a daily basis on days in which files are exported. The file's name will appear in the destination folder as [CRD_Export_YYYYMMDD].CSV where YYYYMMDD represents the year, month and day.

Data recorded in the export log file

Item	Description	
Status	Shows the result of the export process.	
Date	Shows the date in which the file was exported.	
Time	Shows the time in which the file was exported.	
Source	Shows the file path of the RAW clip.	
Destination	Shows the file path of the exported file.	
Туре	Shows the output format of the exported file. If the file was copied, this appears as RMF .	
Resolution	Shows the resolution of the exported file.	
Gamma	Shows the gamma settings for the exported file. For OpenEXR files, this appears as Linear .	
IDT	Shows the IDT setting applied to OpenEXR files.	
Start TC	Shows the starting time code for the exported file.	
End TC	Shows the ending time code for the exported file.	

Displaying and Editing Metadata

Displaying Clip Information

When you display the clip information window, you can display the clip information in the metadata associated with the RAW clip that is selected in the clips panel.

Click View > Clip Information.

• The clip information window will appear.



Entering and editing clip information

- 1. In the clip information window, double-click Clip Title, Creator or Description.
 - The Edit Clip Information dialog box will appear.
- 2. Enter text or edit the fields as necessary.
 - You can enter up to 1000 characters into the description field and a maximum of 100 characters for the other fields.
- 3. Click OK.
 - The user information will be saved with the RAW clip.

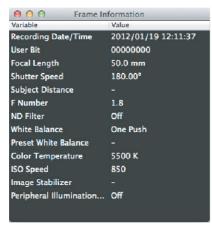


Displaying Frame Information

When you display the frame information window, you can display the frame information (information on each frame in the RAW clip) recorded in the metadata of the frame that currently appears in the preview window. During playback, the information will be updated to match the frame being played back.

Click View > Frame Information.

• The frame information window will appear.



Reference and General Information

Menus and Keyboard Shortcuts

Menu bar

Menu submenu	Keyboard Shortcut	Function	
Cinema RAW Developmen	t		
About Cinema RAW Development	_	Displays details about the software's version.	_
Preferences	₩+,	Opens the Preferences dialog box.	13
Services	_	Standard option for Mac OS.	_
Hide Cinema RAW Development	₩ + H	Standard option for Mac OS.	_
Hide Others	_+\#+H	Standard option for Mac OS.	_
Show All	_	Standard option for Mac OS.	_
Quit Cinema RAW Development	₩ + Q	Exits Cinema RAW Development.	4
File			
Export Configuration	_	Opens a dialog box where you can adjust export settings.	14
Add to Export Queue	_	Adds the clip currently selected in the clips panel to the export queue.	_
Start Export	_	Starts export.	16
Cancel Export	_	Stops export.	16
Edit		1	
Cut	₩ + X	Standard option for Mac OS.	_
Сору	₩ + C	Standard option for Mac OS.	_
Paste	₩ + V	Standard option for Mac OS.	_
Delete	×	Standard option for Mac OS.	_
Select All	₩ + A	Standard option for Mac OS.	_
Special Characters	∵+#+T	Standard option for Mac OS.	_
View			!
Preview	_	Opens or closes the preview window.	6
Export	_	Opens or closes the export window.	14
Clip Information	_	Opens or closes the clip information window.	19
Frame Information	_	Opens or closes the frame information window.	20
Fit to Preview Area	_	Adjusts the size of the video so that the entire picture is visible.	. 7
Display at 100%	_	Displays the picture in the preview panel at 100% size.	′
Windows			
Minimize	₩ + M	Standard option for Mac OS.	_
Zoom	_	Standard option for Mac OS.	_

Reference and General Information

Menu submenu	Keyboard Shortcut	Function	Ü
Bring All to Front	_	Standard option for Mac OS.	_
Cinema RAW Development	_	Brings Cinema RAW Development to the front.	_
Help			
View Instruction Manual	_	Open's Cinema RAW Development's instruction manual (this PDF file).	_

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Troubleshooting Error Messages

Following is a partial list of error messages in alphabetical order.

Cannot add clips. Export queue has reached the maximum number of clips.

• The export queue already contains RAW clips. You can add other RAW clips after export has finished.

Cannot start program due to insufficient memory.

Close other applications and then start this software again.

Cinema RAW Development has already been started by other user.

 Multiple users cannot open the software simultaneously on the same computer. The user who has already started the software must exit it.

Trademark Acknowledgements

- Mac OS is a trademark of Apple Inc., registered in the U.S. and other countries.
- Other names and products not mentioned above may be trademarks or registered trademarks of their respective companies.

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Reference and General Information

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