

CvpFileEditor

User's Guide Version 4.30



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Overview

Some Sony camera models are equipped with a User Gamma function that allows users to set desired tone curves at will by editing gamma data.

CvpFileEditor is an application for freely editing the gamma data that can be used with these cameras.

A function for creating MLUT (Monitor Look-Up Table) data for recordings that use S-Log is also available, allowing you to obtain images suited to on-screen monitoring of the camera's monitor and viewfinder outputs.

ASC CDL (American Society of Cinematographer Color Decision List) data that was created in a postproduction studio can be loaded while preparing to shoot to apply the studio's image on-location. Conversely, settings can be changed on-location, and those changes can be applied to the postproduction studio's settings.

Created MLUT data can be loaded into a camera via a Memory Stick or LAN in the same manner as with gamma data.

Cameras on which gammas created by CvpFileEditor can be used

- HDC-900 series (AT Ver. 1.3 or later)
- HDC-F950
- HDW-F900 (AT Ver. 2.xx or later)
- HDW-F900R
- F23
- F35
- HDC-1000/1500/1000R/1500R series (optional HZC-UG444 required)
- HDC-2000 series
- SRW-9000
- PMW-F55

Cameras on which MLUT/ASC CDL created by CvpFileEditor can be used

- F23 (MAIN/NET V1.5 or later)
- F35 (MAIN/NET V1.5 or later)
- SRW-9000

VTR on which MLUT created by CvpFileEditor can be used

- SRPC-1
- SRW-5000 series

Gamma Compensation Functions

Smooth contrast characterizing that surpasses knee compensation

Knee compensation is a function that compresses the contrast for high luminance by a polygonal curve from about 90% to 100% video output. As the contrast characteristics change sharply at the point of the curve, the turnoff of the curve may be visible on a subject that has smooth gradation. In addition, skin color of high luminance is prone to coming out yellow. By configuring the user gamma settings, smooth gradation can be reproduced without the sharp turnoff that may be seen with knee compensation, while maintaining high-luminance contrast.

Optimum characterizing according to the dynamic range of each camera

Editing via CvpFileEditor enables gamma curve editing to obtain the optimum dynamic range performance of each camera at ranges of up to 1000%.

Optimum characterizing for postproduction

With a curve set for usual video materials to mainly compress high-luminance contrast, color grading processing for high luminance is not sufficiently allowed. User gamma data permits you to decrease total contrast for easy postproduction processes.

Image creation by directly adjusting camera outputs

If direct outputs from the camera are used without assuming postproduction, user gamma can be used as a function for real-time tone control.

Major Gamma Control Functions of CvpFileEditor

Management of gamma data and user gamma files

You can manage created gamma data with a list. As the data can be grouped as a user gamma file to install in a camera, it is easy to replace gammas in a camera, depending on shooting scenes and conditions. A title and various comments can accompany your gamma data, which can be used as a reminder of the recording condition or tips when editing other gamma data.

Strongly enhanced curve editing functions

Parameter Edit mode allows you to arbitrarily specify elemental parameters that determine gamma, such as dynamic range, white limit, 18% gray (middle tone), black level, and initial gain, to automatically create an optimum gamma curve. You can also intuitively change these parameters by operating a graphic display with your mouse.

Custom Edit mode is also available for more detailed gamma data editing, permitting you to freely edit without parameter setting.

Hyper Gamma selectable

As a function for parameter editing, hyper gamma can be selected. Hyper gamma is a gamma curve based on an algorithm unique to Sony. It reproduces natural contrast and colors from middle tone to high luminance on a monitor screen.

It features convenient adjustability to record images to be used as-is for video materials or as raw materials to be processed in postproduction.

Image confirmation by immediate transmission of gamma data

In addition to the conventional installation method that uses a “Memory Stick,” edited data can be sent in a few seconds to a camera (if it is F23 or F35) via LAN for checking the characteristics of the curve on the spot. This may be especially convenient for real-time process of the tone curve according to actual images.

Consolidated operation screen

Management and editing operations for gamma data, as well as transmission to a camera can be performed from a single window. Window tools, such as Zoom Manager for easy graph scaling, are also included.

Mutual data conversion with other color grading tools

1D LUT data, often used in postproduction, can be imported and converted to a user gamma for your camera. Conversely, user gamma you create can be exported as 1D LUT data for other systems.

Defining the bit length and output of inverse gamma data are also enabled.

Smooth transition from previous versions

Application files (*.cfe files) created with a previous version (V2.2 or V3.0) of CvpFileEditor can be directly read and converted for usage. Data created with previous versions can be read and converted for usage.

CvpFileEditor’s versions and application file compatibility

The file saving format of v4.3 is *.ce2.

Version	File saving format	Compatibility
V4.2_Mac	*.ce2	V3.0/V4.0/V4.12_Windows/ V4.12_Mac/V4.2_Windows/ V4.2_Mac
V4.3_Windows	*.ce2	V3.0/V4.0/4.12_Windows/ 4.12_Mac/4.2_Windows/ 4.2_Mac/4.3_Windows/ 4.3_Mac
V4.3_Mac	*.ce2	V3.0/V4.0/4.12_Windows/ 4.12_Mac/4.2_Windows/ 4.3_Windows/4.3_Mac

Note

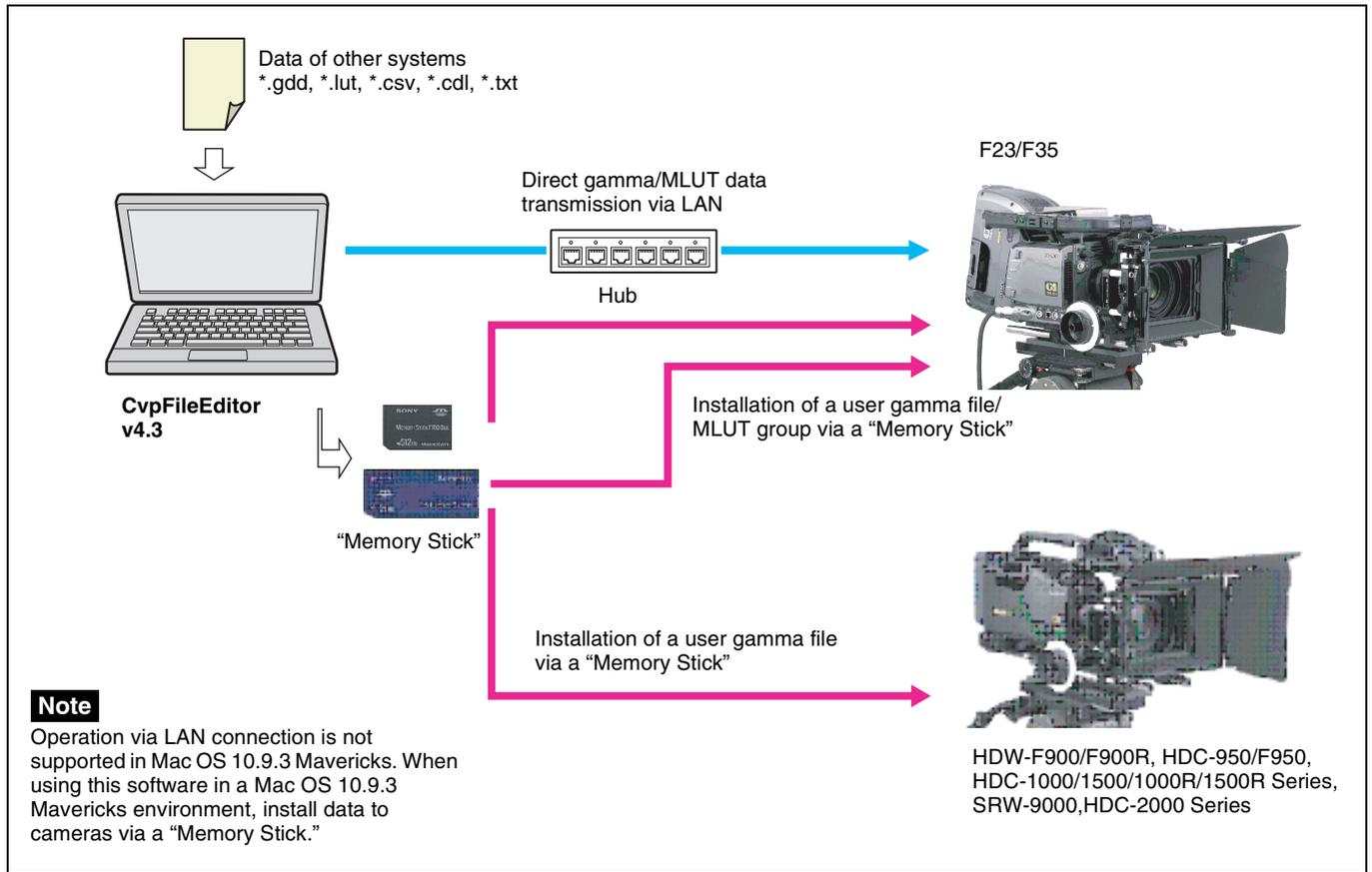
You cannot open the same single ce2 file simultaneously on multiple machines to edit with Mac OS.

Version	File saving format	Compatibility
V3.0	*.cfe	V3.0
V4.0	*.ce2	V3.0/V4.0
V4.12_Windows	*.ce2	V3.0/V4.0/V4.12_Windows/ V4.12_Mac
V4.12_Mac	*.ce2	V3.0/V4.0/V4.12_Windows/ V4.12_Mac
V4.2_Windows	*.ce2	V3.0/V4.0/V4.12_Windows/ V4.12_Mac/V4.2_Windows/ V4.2_Mac

System Configuration

You can create gamma data using those of other systems, the built-in library, or the parameter edit function. MLUT data which contain ASC CDL information can also be

created. The created data can be installed in a camera via a “Memory Stick” or LAN.



For Windows

How to use the application on Windows

Installation/ Uninstallation of the Program

Operational Environment for CvpFileEditor V4.3

A computer that meets the following:

CPU

Intel Pentium III 1GHz equivalent or higher (Intel Pentium D 3GHz or higher recommended)

Memory

2 GB or more (4 GB or more recommended)

Display

Screen resolution 1280×800 or more

OS (verified editions)

- Microsoft Windows 7 Home Premium (64-bit version)
- Microsoft Windows 7 Ultimate (64-bit version)
- Microsoft Windows 8.1 (64-bit version)
- Microsoft Windows 8.1 Pro (64-bit version)
- Microsoft Windows 8.1 Update (64-bit version)

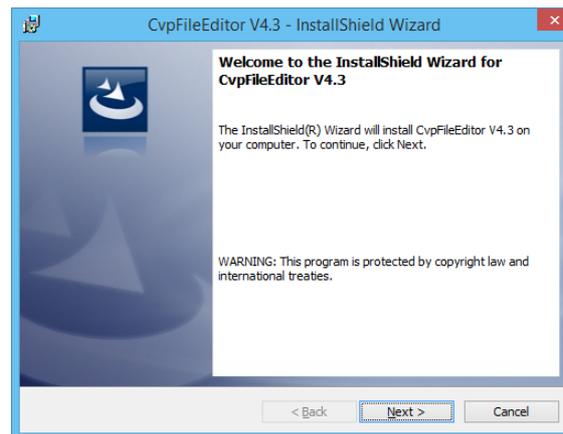
Note

If CvpFileEditor of an earlier version has been installed, first uninstall it then install CvpFileEditor V4.3.

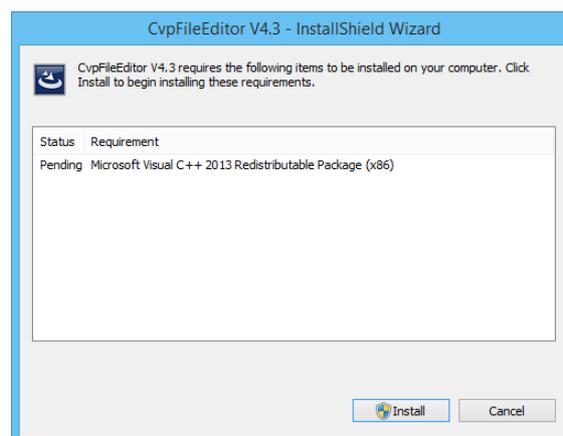
To Install

- 1 Start up the installation program.

The Welcome window of the Setup Wizard opens.



If .NET Framework 4.5 has not been installed on your computer, the following window opens to request installation of .NET Framework 4.5. Install it by following the displayed messages.



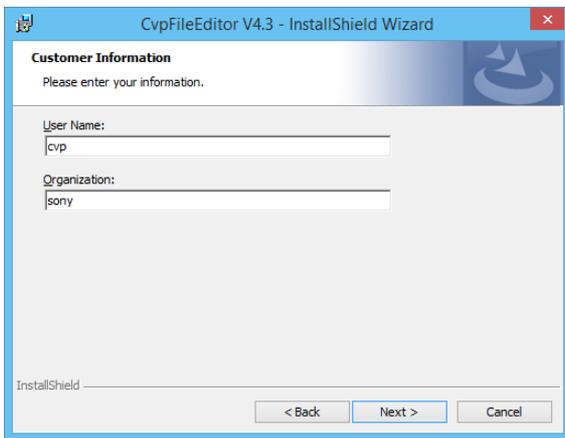
- 2 Click on the Next button in the Welcome window.

The License Agreement window opens.



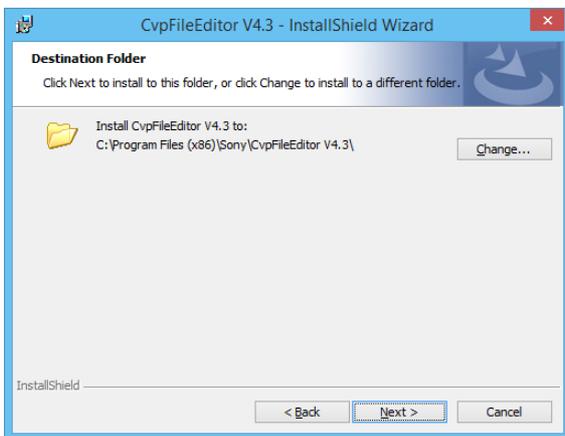
- 3 Select "I Agree" and click on the Next button.

The Customer Information window opens.



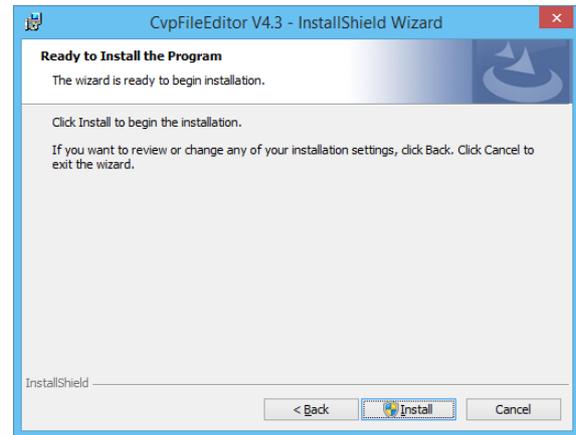
- 4 Enter your name and organization then click on the Next button.

The path to the installation folder is displayed. (The folder can be changed if required.)



- 5 Confirm the folder in which to install the program and click on the Next button.

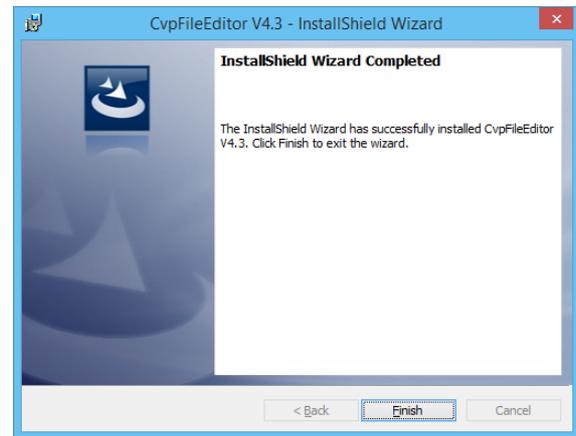
A confirmation message is displayed.



- 6 Click on the Next button.

Installation begins.

When installation is completed, a completion window opens.



- 7 Click on the Close button to close the completion window.

To Uninstall

CvpFileEditor can be uninstalled with either of the following procedures:

Uninstallation of CvpFileEditor V4.3 from Control Panel

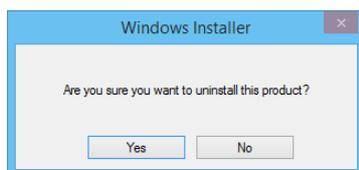
- 1 Open the Control Panel and select “Add/Remove Programs.”
- 2 Select “CvpFileEditor V4.3” from the list, and click on the Uninstall button.

CvpFileEditor will be uninstalled by your following the displayed messages.

Uninstallation of CvpFileEditor V4.3 from the Start menu

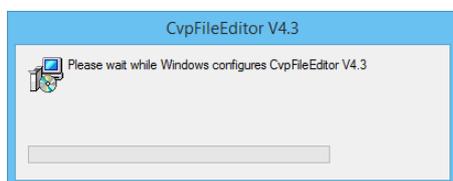
- 1 Select “Uninstall.exe” of CvpFileEditor from the Start menu.

A confirmation dialog box appears.



- 2 Click on the Yes button.

The following window opens in its place, to indicate the progress of uninstallation.



To cancel uninstallation

If you click on the Cancel button during uninstallation, a confirmation message is displayed.

Clicking on the Yes button aborts uninstallation.

When you open an existing ce2 file, CvpFileEditor will be automatically reinstalled.

Basic Operation Flow

The flow of gamma and MLUT creation is roughly indicated below.

Starting operation

Start up CvpFileEditor and open the sample file or an existing ce2 file by selecting “Open” or “New” from the File menu or using the CE file operation button (page 16). The Gamma operation windows (page 15) will be displayed.

Switching between Gamma and MLUT operation windows

The Gamma and MLUT select tabs (page 16) located on the left of the operation windows permit you to switch between Gamma operation windows (page 15) and MLUT operation windows (page 35).

Switching is also possible using Mode menu on the menu bar.

Note

You cannot switch between Gamma and MLUT when the camera is connected via LAN. An error message appears if you click on the Gamma or MLUT tab.

Creating gamma data

There are three methods for creating gamma data.

1. Newly creating gamma data (using Parameter Edit mode)

Select “New” from the Data menu for the Gamma operation windows (page 15) to create new gamma data. Parameter Edit mode is selected to permit you to enter the characteristics required for gamma.

For details, see “To start editing in Parameter Edit mode” (page 21).

2. Loading library data and edit them in Custom Edit mode

You can select fundamental characteristics, such as ITU-R709, Hyper Gamma, or S-LOG, from the library and finely adjust them in Custom Edit mode.

To load the library data, select “Library” from the Data menu for the Gamma operation windows (page 15) then start editing.

For details, see “To import library data” (page 17) and “To switch to Custom Edit mode” (page 26).

3. Importing data of different systems

When you wish to install data created with another grading tool, use the import function.

Select “Import File” from the Data menu for the Gamma operation windows (page 15).

For details, see “Importing and Exporting Gamma Data Files of Other Types” (page 31).

Creating MLUT data

Select “New” from the Data menu for the MLUT operation windows (page 35) to create new MLUT data. You can add CDL information to the created MLUT by using the ASC CDL adjustment function.

Installing the created data in a camera

The data can be installed in the camera via a Memory Stick or LAN.

1. Via a Memory Stick

Gamma or MLUT data (five sets at maximum) are installed as a file. The user gamma or MLUT data in the camera are overwritten.

For details, see “To install user gamma via a Memory Stick into a camera” (page 19) or “To install an MLUT group via a Memory Stick into a camera” (page 38).

2. Via LAN

This is valid only for an F23/F35 having LAN control capability. You can directly transmit data being edited to the camera.

For details, see “Camera Gamma Select Window and Gamma Send Operation Bar” (page 29) or “Camera MLUT Select Window and MLUT Send Operation Bar” (page 44).

Functions and Operations of the Gamma Windows

Window Layout

The following windows are used for gamma operations:

Gamma/MLUT select tabs

CE file operation buttons (page 33)

Menu bar (page 33)

Gamma Data window (page 16)
Used for gamma data management.

Name	Type	Comment1	Co
709_800_3P	3.0	ITU-R709_800	
HG8009G33 3P	3.0	HG8009G33	
HG8009G40 3P	3.0	HG8009G40	
Hyper Gamma	3.0		
ITU-R709	3.0		
S-LOG A	3.0	TLOGNMXA10A	

User Gamma window (page 18)
Used for user gamma file management for grouping gamma data to install them in a camera.

Name	Type	Comment1	Comm
User Gamma1			
User Gamma2			
User Gamma3			

Connect button
Click on the button to connect or disconnect communication with a camera. When connection is established, the indicator changes color from red to green. For details, see "To connect a camera" (page 30).

Graph View/Edit window (page 20)
Displays gamma curves and various gamma data. You can edit the data by entering parameters or operating the mouse.

Select Camera Gamma window (page 29)
Used to transmit gamma data via LAN or to change the gamma selection on the camera.

Zoom manager window (page 29)
Used to expand/reduce the size of the graph or change the display area.

CE File Operation Buttons

Operate CE2 files.

Icon	Designation	Function
	Open CE2 file	To open an existing ce2 file.
	Save CE2 file	To save the ce2 file.
	Save As CE2 file	To the ce2 file with another filename.

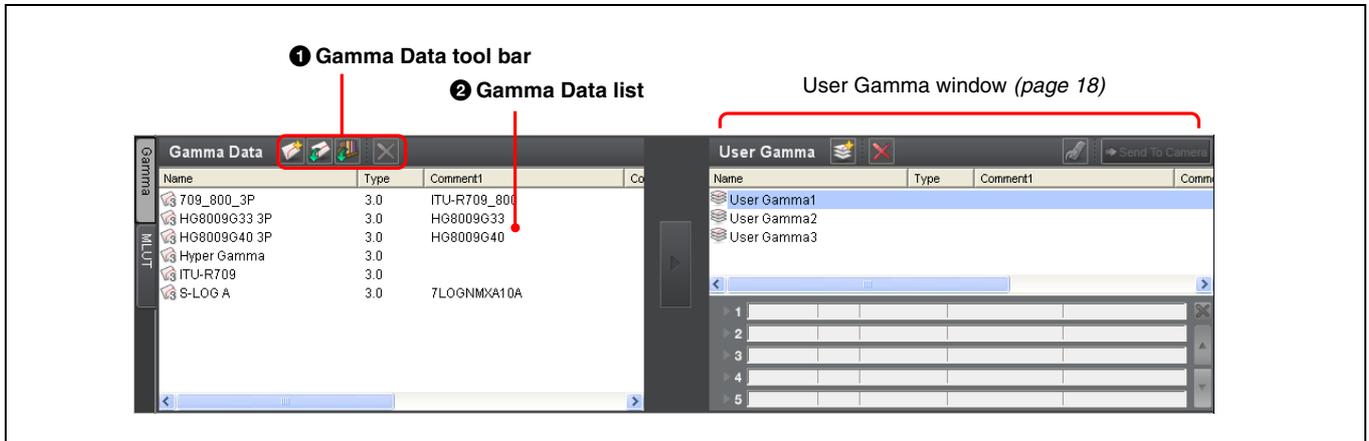
Gamma/MLUT select tabs

Select the operation mode.

Icon	Designation	Function
	Gamma	To select Gamma operation mode.
	MLUT	To select MLUT operation mode.

Gamma Data Window

Manage gamma data in the Gamma Data window.



1 Gamma Data tool bar

Icon	Designation	Function
	New	To newly create gamma data. Parameter Edit mode is automatically activated.
	Import File	To import a file (gdd, csv, or lut file) and convert it to gamma data. <i>For details, see "Importing and Exporting Gamma Data Files of Other Types" (page 31).</i>
	Import Library	To import gamma data from the internal libraries of CvpFileEditor.
	File Delete	To delete the specified gamma data.

2 Gamma Data list

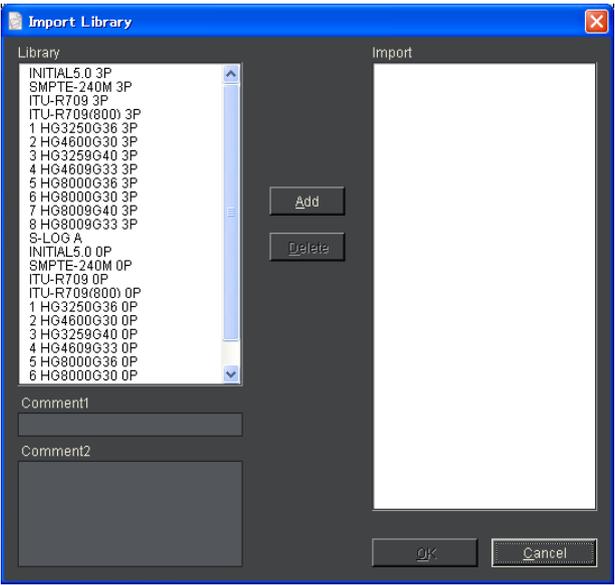
Designation	Contents
Name	Designation of the gamma data, which is displayed on the camera menu screen when being installed in a camera.
Type	Type of gamma data. Note that the type of gamma depends on the camera model. 3.0: F23, F35, HDC-1000/1500 series cameras, SRW-9000, HDC-2000 series, PMW-F55 2.0: HDC-950, HDW-F900/F900R, etc. The type can be changed in the Graph View/Edit window when editing the gamma data.
Comment1	A short comment to be displayed on the camera menu screen. You can enter up to 12 alphanumeric characters.
Comment2	A comment to be recorded inside CvpFileEditor. Up to 1000 characters can be entered.

Designation	Contents
Base	Information on the original data of the gamma. If one of the libraries was used, the name of the library is displayed. For a newly created gamma, "Param" (abbreviation for Parameter Edit mode) is displayed.
Update	The year, month, day, and time of updating are displayed.

Clicking on the title of each column changes the display order on the list.
 Right-clicking on a gamma data line permits you to enter comments, rename, copy, or delete the data.

To import library data

Clicking on the  (Import Library) icon on the tool bar or selecting "Library" from the Data menu opens the Import Library window, which permits you to select internal library data.



Move the Library data to be imported to the Import list by clicking on the Add button.
 Use the Delete button to remove it from the Import list.
 When you specify the gamma data in the Library list, the comment 1 and comment 2 for the selected data are displayed in the respective columns.

Note

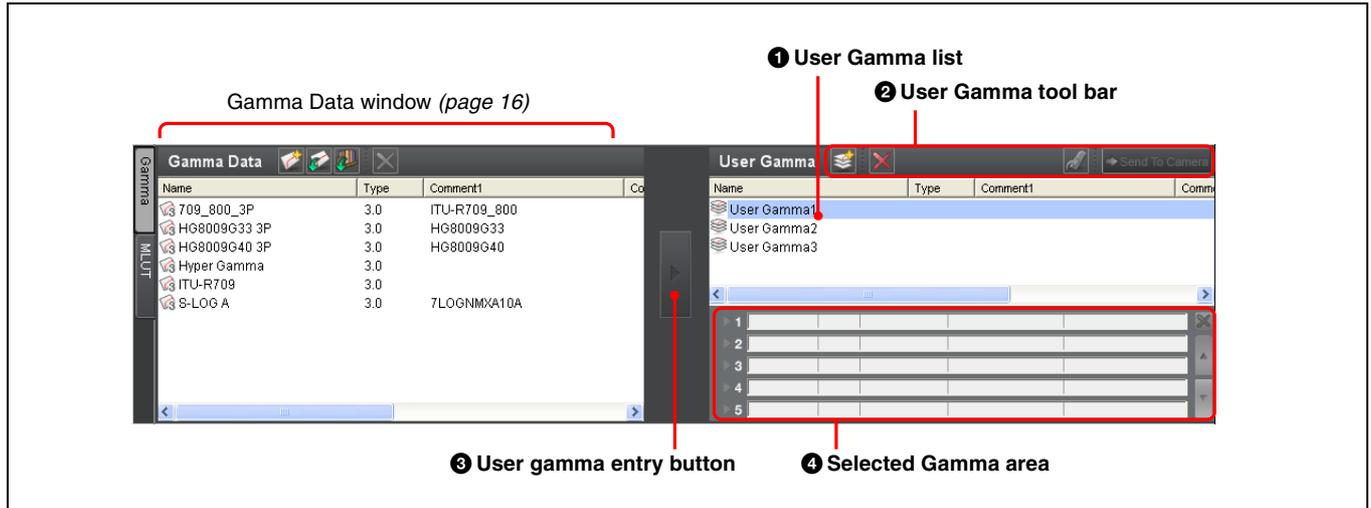
If there is a gamma having the same name as a library to be imported in the Gamma Data window, the name of the imported file will be automatically changed by adding a number (1, 2, etc. in ascending order) to the end of the original name. If the name exceeds 12 characters when a number is added, the last character will be replaced with the number so that the name will not exceed 12 characters.

User Gamma Window

The User Gamma window is used to group created gamma data as a user gamma to install the data in a camera. Five sets of gamma data at maximum can be

grouped as a user gamma. The user gamma that groups gamma data can be installed via a Memory Stick or LAN.

For Windows



1 User Gamma list

The list shows the information on the user gamma. Operations as those for gamma data can be made by right-clicking on the list.

Note

In the same manner as gamma data, a user gamma has a type attribute, either Type 2.0 or Type 3.0. Gamma data of different types cannot be included in a single user gamma. The type of user gamma is determined by the type of the first registered gamma data.

2 User Gamma tool bar

Icon	Designation	Function
	New	To create a new user gamma file.
	Delete User Gamma	To delete the selected user gamma file from the list. The registered gamma data are not erased (remaining in the Gamma Data window).
	Export to Memory Stick	To export the selected user gamma file to a Memory Stick. Note Export is not executed if no gamma data are registered in the user gamma file.
	Send To Camera	To send the selected user gamma curve to a camera.

3 User gamma entry button

To enter the gamma data selected in the left Gamma Data window in the user gamma file selected on the User Gamma list.

4 Selected Gamma area

Information on the gamma data registered in a user gamma file is displayed. Clicking on the gamma data line permits you to preview the form of the gamma curve.

Icon	Designation	Function
	Delete Selected Gamma Data from User Gamma	To delete the selected gamma data from the file. The gamma data are not erased (remaining in the Gamma Data window).
	Up	To move the order of gamma data up on the registration list.
	Down	To move the order of the gamma data down on the registration list.

To install user gamma via a Memory Stick into a camera

1 Create a user gamma file.

① Click on the  (New) icon to display the New User Gamma dialog box.



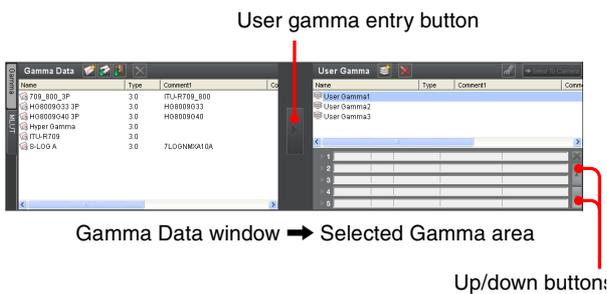
② Enter a filename for the user gamma file.



2 Register gamma data to the user gamma file.

Select the gamma data to be registered in the Gamma Data window and click on the user gamma entry button.

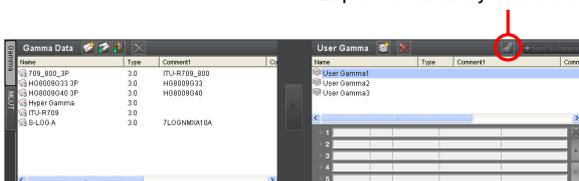
Up to five gammas can be registered. The order of the registered gammas can be changed, using the up/down buttons.



3 Export the user gamma file to a Memory Stick.

Click on the  (Export to Memory Stick) icon and specify the target Memory Stick on the directory.

Export to Memory Stick icon



4 Using the camera's menu, load the user gamma from the Memory Stick into the camera.

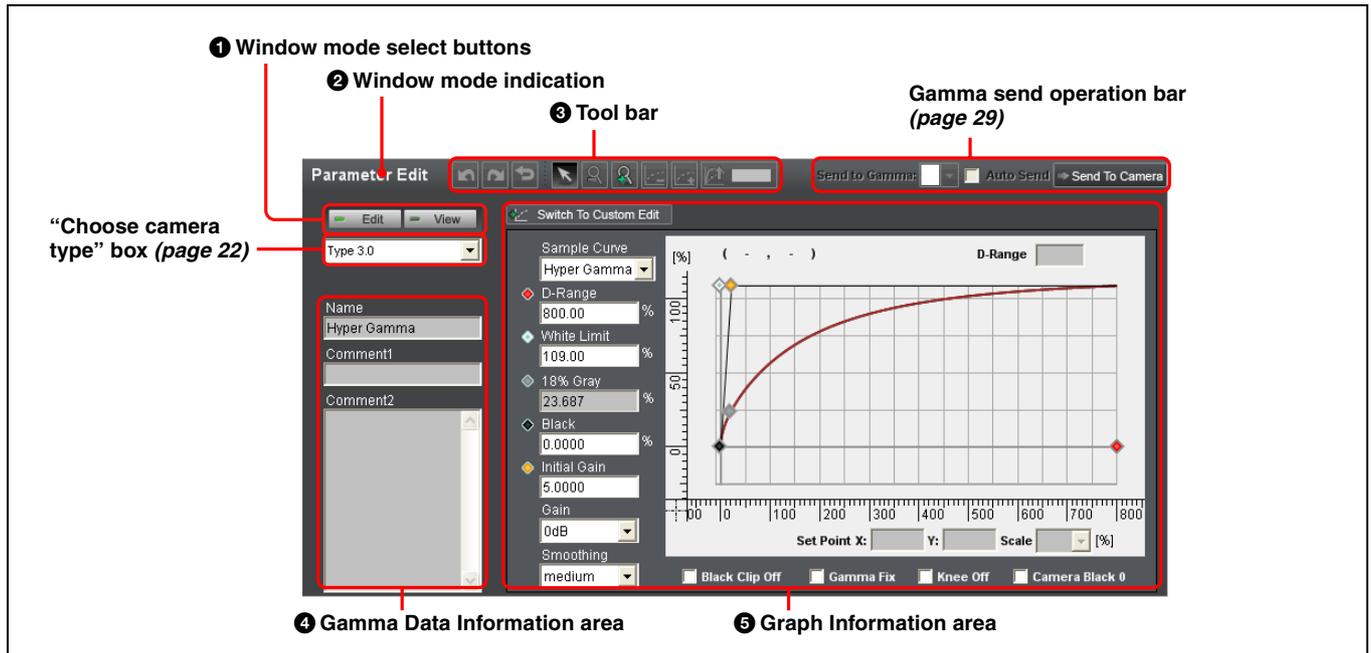
For details on menu operations on the camera, refer to the operation manual of the camera.

For operations to export the data via LAN, see "Camera Gamma Select Window and Gamma Send Operation Bar" (page 29).

Graph View/Edit Window

The window displays the characteristics of the gamma data with a graph. Editing the comments is also possible.

The window has a view mode and two edit modes (Parameter Edit mode and Custom Edit mode).



1 Window mode select buttons

To switch between View mode for displaying the detailed information on the selected gamma data and the edit modes for editing the selected gamma data.

Button	Function
	To use edit modes for editing the curve and information of gamma.
	To select View mode for display only without editing.

2 Window mode indication

Indication	Mode description
Graph View	View mode for confirming the characteristics or information on gamma data without editing
Parameter Edit	Parameter Edit mode for editing gamma data by specifying several parameters (function added to CvpFileEditor V4.0 and later)
Custom Edit	Custom Edit mode for editing gamma data by setting three points on the graph and moving the center point (function available since CvpFileEditor V3.0 and earlier)

3 Tool bar

Valid only in edit modes.

Icon	Designation	Function
	Undo	To undo the last graph operation (invalid for the comment areas).
	Redo	To redo the last undone operation (invalid for the comment areas).
	Restore the curve	To restore the original status of the curve before editing (invalid for the comment areas).
	Allow tool	To set the edit points in Custom Edit mode.
	Zoom out	To reduce the gamma graph. (Clicking on the icon initiates Expand/Reduce mode, and editing is disabled. To exit Expand/Reduce mode, press the ESC key or click on the Allow tool.)
	Zoom in	To expand the gamma graph. (Clicking on the icon initiates Expand/Reduce mode, and editing is disabled. To exit Expand/Reduce mode, press the ESC key or click on the Allow tool.)

Icon	Designation	Function
	Delete all points	Valid in Custom Edit mode. Clicking on the icon removes all the edit points specified on the graph.
	Auto add points	Valid in Custom Edit mode, where three adjustment points are normally specified, using the mouse. Clicking on this icon after specifying the following values automatically adds three edit points on the graph. Input Point [%]: Enter the value for the center point to be edited on the graph (in %). Width [%]: Enter the value of the width between two points to be edited (in %).
	Move curve holistically	To holistically move the curve in vertical directions in Custom Edit mode. If you enter a value (%) in the text box, the curve moves as far as specified.

4 Gamma Data Information area

The gamma data name, comment 1, and comment 2 are displayed.

Entering/editing of comment 1 and comment 2 is enabled when you double-click on the respective text boxes in an edit mode.

5 Graph Information area

The characteristics of gamma data are displayed in Graph View mode. In edit modes, operations are different between Parameter Edit mode and Custom Edit mode.

Clicking on the Edit mode switch button at the left end of the title bar switches the modes.

Edit mode switch button	Function
 (Displayed in Parameter Edit mode)	To select Custom Edit mode for editing with three points you specified with the Allow tool.
 (Displayed in Custom Edit mode)	To select Parameter Edit mode for editing gamma data with parameters. Note Once data are edited in Custom Edit mode, the data can no longer edited in Parameter Edit mode.

To start editing in Parameter Edit mode

Parameter Edit mode permits you to easily create a gamma curve by specifying some values (parameters) that determine the gamma.

Parameter editing can be started with either of the following two methods:

1. Newly creating gamma data

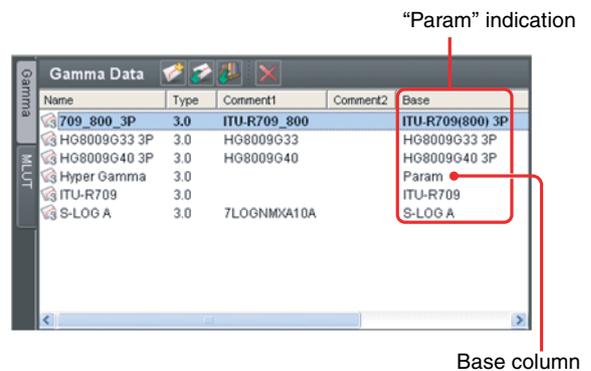
Select “New Gamma Data” from the Data menu to open the New User Gamma dialog box.

Specify Name for the gamma and press the Enter key (or click on OK) to start editing in Parameter Edit mode.

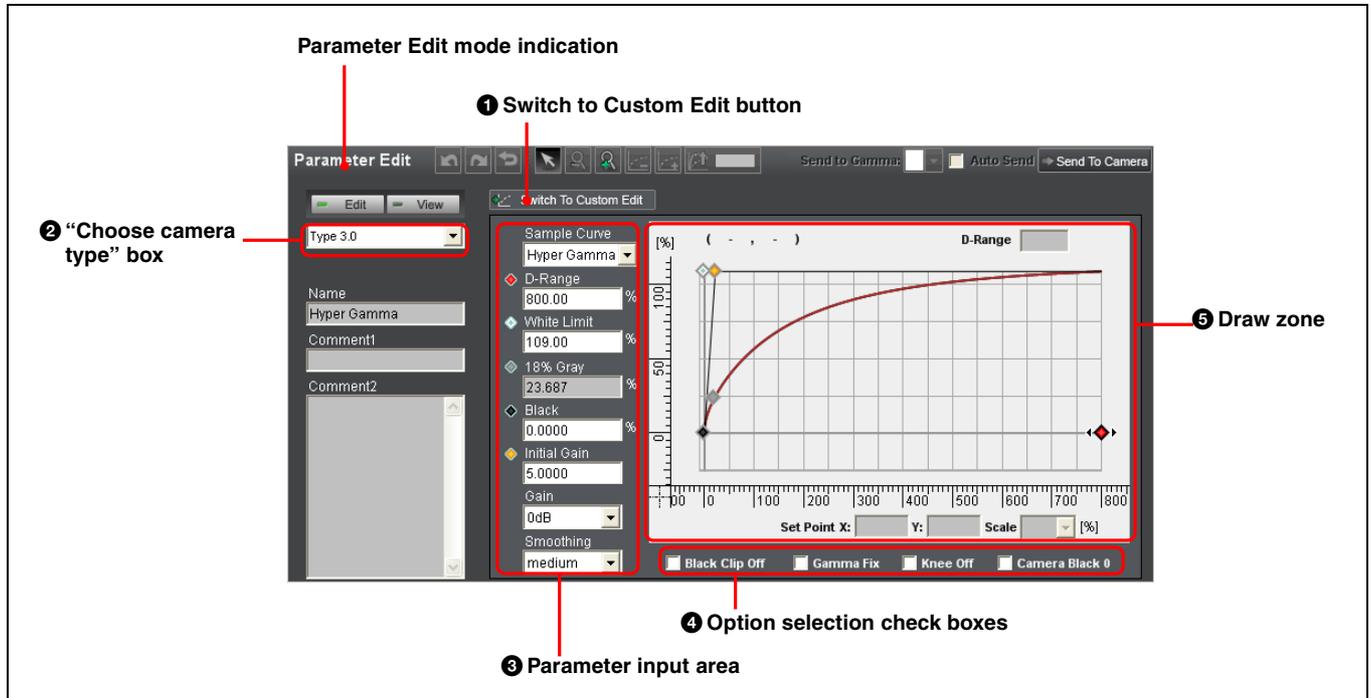
2. Double-clicking on the gamma data on the list whose Base is “Param”

Parameter editing is enabled for a curve for which Parameter editing once has been done as long as the curve has not been edited thereafter in Custom Edit mode.

The gamma data whose Base column of the list shows “Param” can be edited in Parameter Edit mode. Double-click on the gamma data on the list to start editing in Parameter Edit mode.



Graph View/Edit window in Parameter Edit mode



1 Switch to Custom Edit button

Click on the button to switch from Parameter Edit mode to Custom Edit mode. Note that if data have been edited in Custom Edit mode, they cannot be returned to Parameter Edit mode.

2 “Choose camera type” box

The gamma data type depends on the camera model. Select the type according to your camera. For Type 2.0, additionally select from among Table 0 to 2.

If you wish to create gamma data of both Type 2.0 and Type 3.0

Select the gamma data on the gamma data list and make a duplication by right-clicking on it and selecting “Copy” from the context menu. Then change the Type setting.

Note

Gamma data of different types cannot be included in the same user gamma file.

3 Parameter input area

You can specify a value for each parameter as follows:

Icon	Designation	Function
—	Sample Curve	<p>Select the basic characteristics of the curve.</p> <p>Hyper Gamma: To use hyper gamma as the base, which provides the middle tone with characteristics close to ITU-R709 optimum for video monitoring and whose high luminance area is naturally compressed, achieving superior gradation expression and color reproduction. This setting is also used for shooting that assumes color grading processing in postproduction.</p> <p>Log: To set characteristics close to the sensitometric characteristics of negative film. This setting is used for digital processing in postproduction equivalent to digital image scanning for film.</p> <p>Power: To set the characteristics close to those of the luminance reproduction of a CRT. Characteristics near the built-in ITU-R709 or INITIAL 5.0 characteristics are provided.</p>

Icon	Designation	Function
	D-Range	To specify how much of the input light intensity (dynamic range) of a subject to be used for output. To use a wide range, set it to 600–800%. When a large value is specified, the middle luminance (18% Gray) is decreased. To increase the middle luminance, set the dynamic range to 400% or less or increase the 18% Gray setting. The dynamic range of HDW- and HDC-series cameras is 460% at maximum. That of F23/F35 is 800% at maximum.
	White Limit	To set the upper limit of the high-luminance output. The setting must be the output level corresponding to the White Limit setting in postproduction or a camera system. Note This adjustment determines the white clip of the gamma curve. To use the value you set here, turn the white clip of the camera off.
	18% Gray	To change the luminance of middle tone. Set the output level with respect to the input level of a test chart of 18% reflection. Note If Hyper Gamma is selected for Sample Curve, you cannot specify it by a numeric value. Move the icon on the graph, using the mouse or arrow keys.
	Black	Set this item to include the master black level of a subject in the gamma. Normally set to 3%. You can achieve the same adjustment using the built-in master black function of a camera. Note This item cannot be adjusted in Scale Log mode.
	Initial Gain	To specify the gradation expression for black parts. Normally set to 4.5- to 5-times gain. To improve the S/N at black parts or emphasize the middle tone, select a small value.
–	Gain	To decrease the total level while maintaining the characteristics. You can select among from four values; 0 dB, –6 dB (–1 f-stop), –12 dB (–2 f-stops), and –18 dB (–3 f-stops).

Icon	Designation	Function
–	Smoothing	To smoothly connect the initial gain and the curve of the base characteristics. You can select from among four types: off, narrow, medium, and wide. Selecting “narrow” affects a narrow range, and selecting “wide” affects a wide range.

④ Option selection check boxes

Black Clip Off

To turn off the Black Clip function that limits video characteristics on the minus side. Checking the box opts for the characteristics on the minus side to be output. Use the output of characteristics on the minus side to maintain the characteristics for noises. When you use this option, note that proper display may not be obtained on other monitors. Normally it is recommended to set the black to 3 to 5% and not use this option.

Gamma Fix

To inhibit the gamma gain and step gain functions of cameras. Sony cameras are equipped with these functions for fine adjustments of gamma, mainly ITU-R709-based gammas.

As these functions may not operate as precisely as you intend when using hyper gamma or Log-based gamma having a wide dynamic range, it is recommended to check this box to turn the option ON.

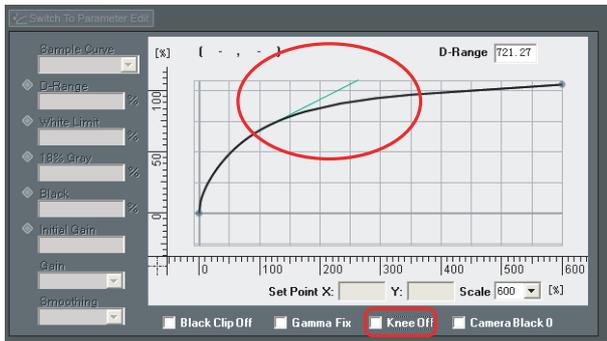
Knee Off

The Knee Off function forcibly turns off the Knee function of a camera. The purpose of this option slightly differs between the types of gamma data.

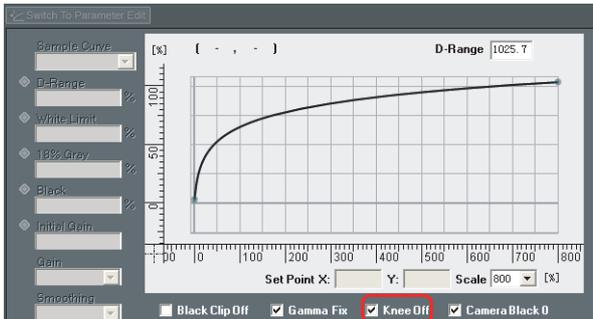
Type 3.0: It is recommended to turn this option ON to prevent the Knee function from inadvertently being turned on when you have created a gamma curve for usage that does not require the Knee function.

Type 2.0: As a camera of this data type has a limitation in creating a high-luminance gamma curve, use this option to create the curve with the Knee function activated (see the figures shown on the next page). It is recommended to turn this option ON when creating a gamma curve having a wide dynamic range. If the Gamma Fix option is turned ON for a Type 2.0 curve, the Knee Off option will also be automatically turned ON.

Knee Off unchecked



Knee Off checked



Camera Black 0 (zero)

When the black level is set for the gamma, the master black value of the camera must be set to 0. By turning this option ON, the camera's master black is fixed to 0. Turn this option OFF if you set the master black on the camera.

Note

The maximum point cannot be edited for a gamma file of Type 2.0.

5 Draw zone

You can change the setting by directly dragging the icon on the graph with the mouse or moving it with the arrow keys on the keyboard.

Using the View menu on the menu bar, either Scale Linear mode or Scale Log mode can be selected for the draw zone.

Scale Linear mode: To draw the graph by linear scaling.

Scale Log mode: To draw the graph by log scaling of the X axis.

Operations in the draw zone in Parameter Edit mode

Scale Linear mode

Sample Curve: Select the basic characteristics for the sample curve.

You can directly enter numeric values.

Gain: You can create a curve by decreasing the total gain from the sample curve.

◆ Set the white clip level to determine the upper limit of the white level.

◆ Adjust the initial gain (slant) that determines the characteristics of black parts.

◆ Adjust the middle tone.

◆ Adjust the black level.

◆ Clicking on a point near the maximum point displays the adjustment buttons at the left and right of the icon, permitting you to adjust the dynamic range.

To decrease the dynamic range value. To increase the dynamic range value.

Scale Log mode

Sample Curve: Select the basic characteristics for the sample curve.

You can directly enter numeric values. (The black level cannot be adjusted.)

Gain: You can create a curve by decreasing the total gain from the sample curve.

Set the white clip level to determine the upper limit of the white level.

Adjust the initial gain (slant) that determines the characteristics of black parts.

Adjust the middle tone.

Clicking on a point near the maximum point displays the adjustment buttons at the left and right of the icon, permitting you to adjust the dynamic range.

To decrease the dynamic range value.

To increase the dynamic range value.

The screenshot shows a software interface for adjusting a sample curve. On the left is a control panel with the following settings: Sample Curve (Hyper Gamma), D-Range (5.4739 FStop), White Limit (109.00%), 18% Gray (23.687%), Black (0.0000%), Initial Gain (5.0000), Gain (0dB), and Smoothing (medium). The main area is a graph with a grid. The x-axis is labeled 'Set Point X' and ranges from -7 to 6. The y-axis is labeled 'Y' and ranges from 0 to 80. A red curve is plotted, starting near the origin and rising towards the right. Several diamond-shaped icons are placed on the curve and in the graph area, with red arrows pointing to them from text annotations. A 'D-Range' field is visible in the top right of the graph area. At the bottom of the graph area, there are checkboxes for 'Black Clip Off', 'Gamma Fix', 'Knee Off', and 'Camera Black 0'.

Smoothing

The smoothing function is to smoothly connect the slope of the initial gain and the base curve. You can select from among four types: off, narrow, medium, and wide.

Note

if the setting cannot be changed, owing to the limits of the camera settings, an exclamation symbol, as shown below, appears on the graph.

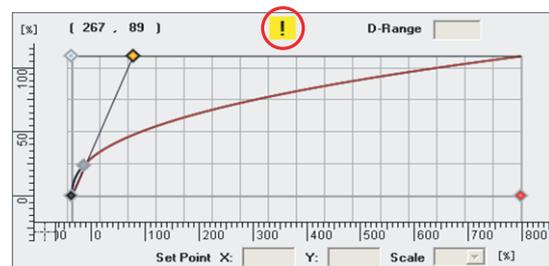
Linear curve of the initial gain

Curve after smoothing (red)

Sample curve (black)

Select the effective range of smoothing.

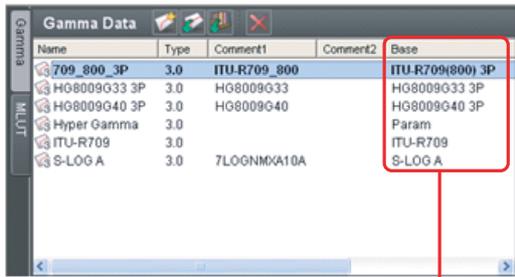
The screenshot shows the 'Smoothing' function interface. The control panel on the left has 'Smoothing' set to 'wide'. The graph shows a black line representing the 'Sample curve' and a red line representing the 'Curve after smoothing'. The x-axis is labeled 'Set Point X' and ranges from -10 to 50. The y-axis is labeled 'Y' and ranges from 0 to 25. A red arrow points to the 'Smoothing' dropdown menu in the control panel.



To switch to Custom Edit mode

Custom Edit mode is used for fine editing that cannot be done in Parameter Edit mode.

Double-clicking on a gamma data on the list whose Base column does not show “Param” activates Custom Edit mode.



Base column

The following adjustments can be made in Custom Edit mode:

- White level/dynamic range adjustment
See “To adjust the white level and dynamic range” (page 27).
- Black adjustment
See “To adjust the black (Scale Linear mode only)” (page 27).
- Middle tone adjustment
See “To adjust the middle tone” (page 27).
- Minus data adjustment
See “To adjust the minus data” (page 28).
- Three-point adjustment
See “To perform 3-point adjustment” (page 28).
- Vertical shift of the curve
See “To move the curve holistically in vertical directions” (page 28).

Graph View/Edit window in Custom Edit mode

Custom Edit mode indication

Editing is done in the draw zone.
For the draw zone, you can select Scale Linear mode or Scale Log mode with the View menu. (The figure shows the draw zone in Scale Linear mode.)

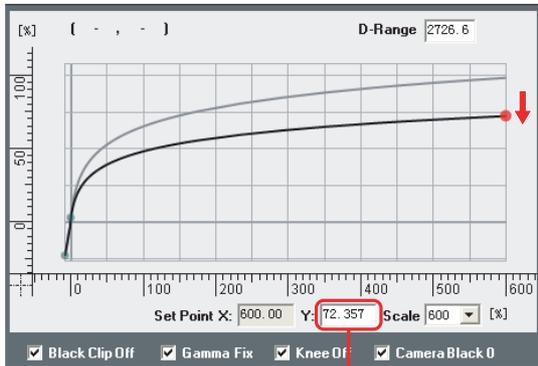
The parameter input area becomes invalid.

Option check boxes are active.

To adjust the white level and dynamic range

The maximum point of the curve can be adjusted by dragging it with the mouse, without moving the zero point.

You can also move it by directly entering a value in the Set Point Y box.

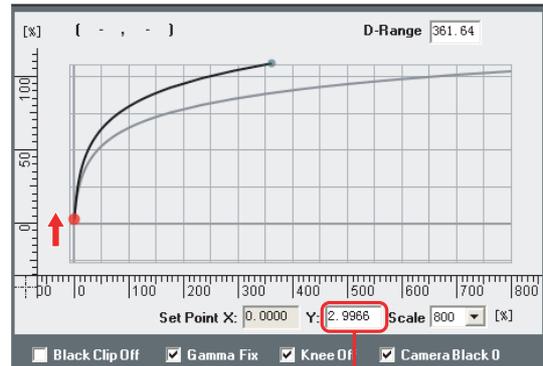


Set Point Y box

To adjust the black (Scale Linear mode only)

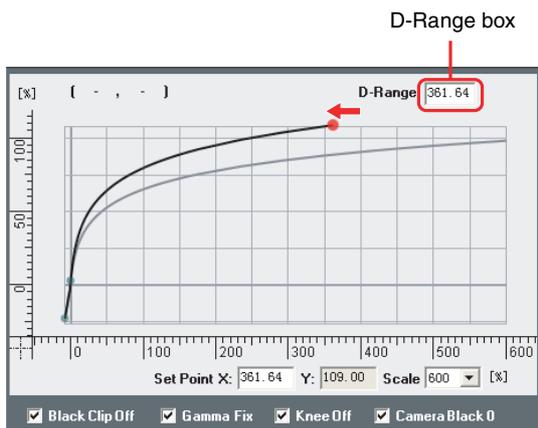
The black can be adjusted by dragging the origin point on the X axis with the mouse.

You can also move it by directly entering a value in the Set Point Y box.



Set Point Y box

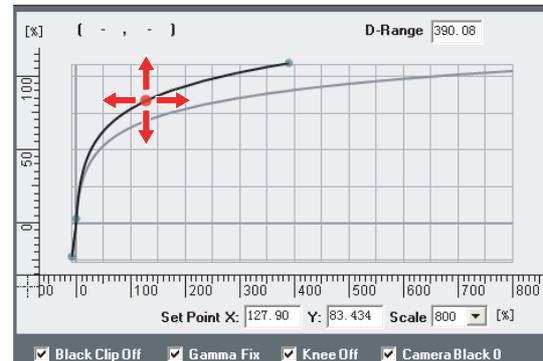
Moving the mouse to the left changes the dynamic range. You can also move it by directly entering a value in the D-Range box.



D-Range box

To adjust the middle tone

When you click on the curve, an adjustment point is added. You can change the shape of the curve by dragging the point with the mouse.



To use the D-Range box

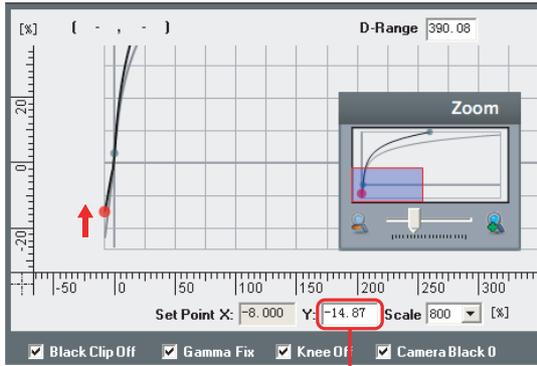
The D-Range box shows the abscissa value for the point of ordinate 109.

The point of ordinate 109 is changed according to the entered abscissa value.

If a value over 9999 is entered, it is regarded as invalid, and the curve is not modified.

To adjust the minus data

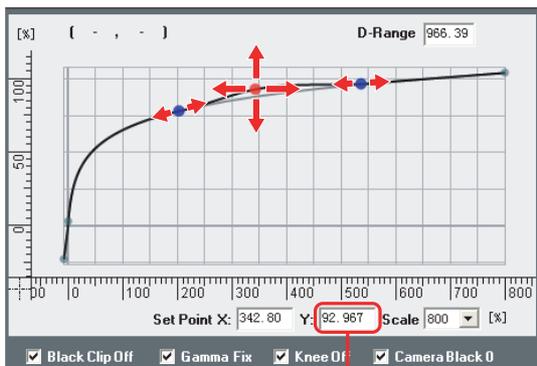
You can adjust the data in the minus area.
 You can also move it by directly entering a value in the Set Point Y box.



Set Point Y box

To perform 3-point adjustment

Perform three-point adjustment when you wish to restrict the change area.
 Specify three points on the graph, using the mouse. You can change the curve by moving the center point. The curve will not change in the areas outside the side two points.
 The side points can be moved along the curve.
 The center point can also be moved by entering a value in the Set Point Y box.

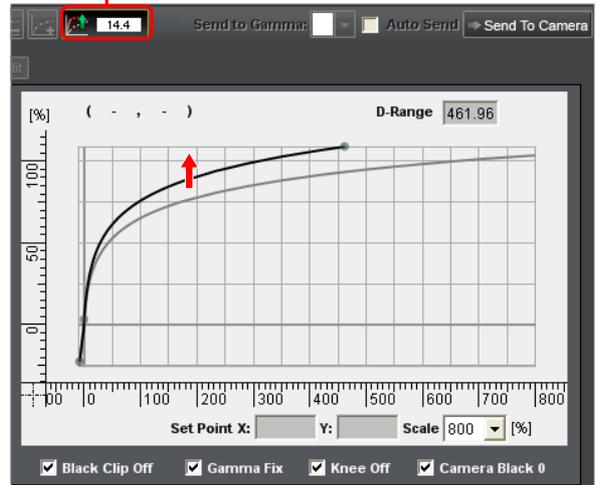


Set Point Y box

To move the curve holistically in vertical directions

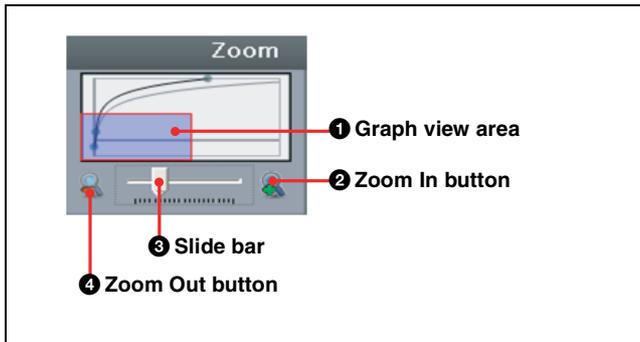
Clicking on the  (Move curve holistically) icon on the tool bar activates Vertical move mode. You can move the curve by dragging it with the mouse in this mode. You can also move the curve by entering a value (in %) in the box to the right of the icon then pressing the Enter key.

"Move curve holistically" icon and value input box



Zoom Manager Window

The Zoom manager window permits you to expand/reduce the graph in the draw zone.



1 Graph view area

The purple area indicates the area displayed in the draw zone. The mouse pointer changes to the hand icon in this area. Dragging it moves the view area.

2 Zoom In button

Click on it to expand the graph in the draw zone.

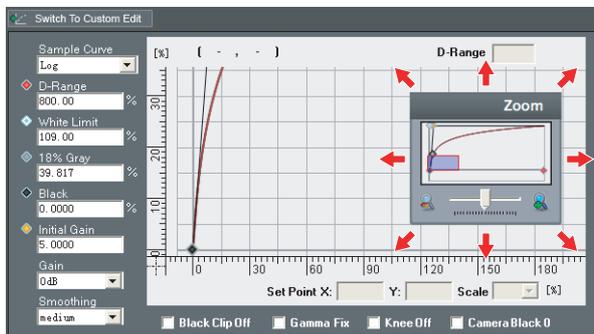
3 Slide bar

Dragging the pointer to the right with the mouse expands the graph in the draw zone, and dragging it to the left reduces it.

4 Zoom Out button

Click on it to reduce the graph in the draw zone.

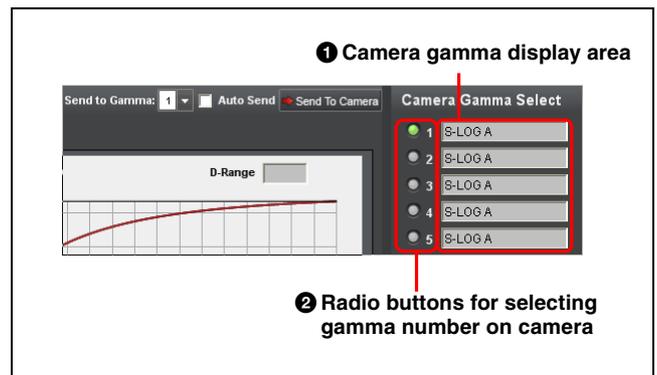
You can move the Zoom manager window to anywhere over other windows.



Camera Gamma Select Window and Gamma Send Operation Bar

You can transmit a gamma to a camera connected via LAN or a group of gammas as a user gamma file. The names of the gammas loaded in a camera are displayed, permitting you to change the current gamma selection on the camera.

Camera Gamma Select window



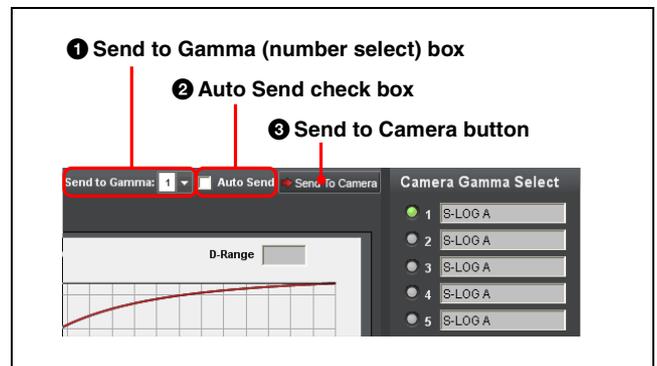
1 Camera gamma display area

The names of the user gammas installed in the connected camera are displayed.

2 Radio buttons for selecting gamma number on camera

You can switch the user gamma on the camera by using the radio buttons.

Gamma send operation bar



1 Send to Gamma (number select) box

Select the destination user gamma of the camera.

2 Auto Send check box

Check this box to automatically send the data to a camera each time you edit the graph. This is convenient to immediately confirm the results of editing.

Note

Responses to graph operations may become slower, as data are transmitted each time you change the graph.

3 Send to Camera button

To send the gamma selected in the User Gamma window (page 18) to a camera as the user gamma of the number specified in the Send to Gamma (number select) box.

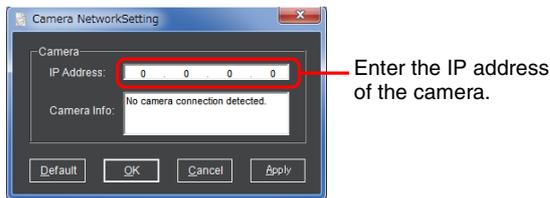
To connect a camera

- 1 Connect the CvpFileEditor-installed computer to the camera via a hub or directly via a cross cable.

Note

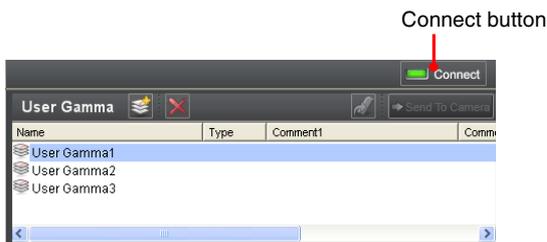
When connecting the computer to a camera directly, always use a cross cable. When using a straight cable, connect via a hub. Communication may not be possible using other connection methods.

- 2 Select “Camera Setting” from the User Gamma menu to open the Camera NetworkSetting window.
- 3 Enter the IP address of the camera then click on OK to close the Camera NetworkSetting window.



- 4 Click on the Connect button at the right end of the tool bar (page 15).

The connection to the camera is established, and the indicator of the button changes color to green.

**To transmit the data to the connected camera**

- 1 Specify the target user gamma number with the Send to Gamma (number select) box on the Gamma send operation bar.
- 2 Click on the Send to Camera button on the Gamma send operation bar.

The display is automatically updated when transmission is completed.

Importing and Exporting Gamma Data Files of Other Types

In addition to ce2, the following three file types are supported.

Files of gdd

Input and output data in pairs are displayed in %.

```
//
// CineAlta Camera Gamma lookup table GDD DATA
//
NAME= S-LOG A
COMMENT1= 7LOGNMXA10A
COMMENT2=
XMAP= 100
YMAP= 100
DATE= 2008/07/29

BEGIN DATA
-8.000000,      -22.829900
-6.392694,      -18.007990
-4.566210,      -12.528540
-3.652968,      -9.795895
-2.739726,      -7.155842
-1.826484,      -4.630630
-1.369863,      -3.179451
-0.913242,      -1.570156
-0.456621,      0.713210
0.000000,       2.996575
0.456621,       5.150352
0.913242,       7.090106
1.369863,       8.844646
1.826484,      10.442590
2.283105,      11.912430
2.739726,      13.282390
3.196347,      14.567840
3.652968,      15.751120
4.109589,      16.879020
4.566210,      17.946570
5.479452,      19.901290
```

The data area described in the following format:

Character	Meaning
//	Comment description
NAME	Gamma name to be displayed in the Gamma Data list.
COMMENT1	Comment 1 information
COMMENT2	Comment 2 information
XMAP	Multiplying factor for input values. Set to 100 to indicate in %.
YMAP	Multiplying factor for output values. Set to 100 to indicate in %.
DATE	Date of creation
BEGIN DATA	Beginning of data

Character	Meaning
Numerical values	Input and output values are described separated with a comma and space.
END DATA	End of data

Files of csv

The format is almost the same as a gdd file except commas after data values only.

```
//
// CineAlta Camera Gamma lookup table CSV DATA
//
NAME= S-LOG A,
COMMENT1= 7LOGNMXA10A,
COMMENT2= ,
XMAP= 100,
YMAP= 100,
DATE= 2008/07/29,

BEGIN DATA // X(%) Y(%)
-8.000000,      -22.829900,
-6.392694,      -18.007990,
-4.566210,      -12.528540,
-3.652968,      -9.795895,
-2.739726,      -7.155842,
-1.826484,      -4.630630,
-1.369863,      -3.179451,
-0.913242,      -1.570156,
-0.456621,      0.713210,
0.000000,       2.996575,
0.456621,       5.150352,
0.913242,       7.090106,
1.369863,       8.844646,
1.826484,      10.442590,
2.283105,      11.912430,
```

Files of lut

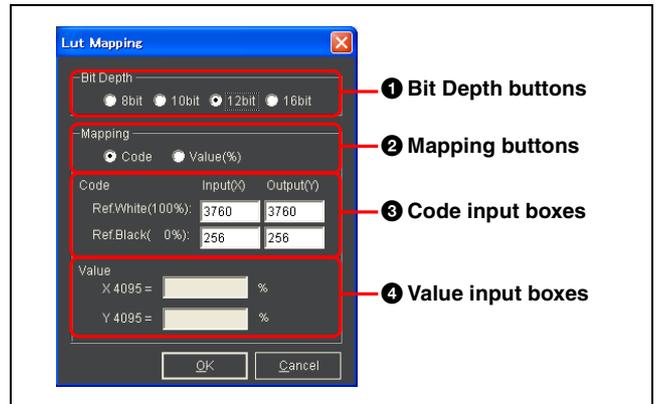
Data are described with digital codes of the specified bit length.

```
#
# CineAlta Camera Gamma lookup table LUT DATA
#
LUT: 3 1024
#Red
90
95
99
104
108
112
116
120
124
128
131
135
139
142
145
149
152
155
158
161
164
167
170
173
176
```

Character	Meaning
#	Comment description
LUT: 3 X	Always enter "3" at the beginning, as data are composed of three channels (R, G, and B). Enter a value of the bit length for X (e.g. 1024 for 10 bits).
Numeric values	Enter the digital codes for output data as much as the required number for the specified bit length (e.g. 1024 values of 0 to 1024 for 10-bit data). The same numeric value string must be repeated three times, as they are required for each of the R, G, and B channels.

Export options for a lut file

When exporting, the Lut Mapping window opens, permitting you to change the lut file format.



1 Bit Depth buttons

To specify the bit length.

2 Mapping buttons

To determine whether to output the data in digital codes or in % values.

3 Code input boxes

When you select "Code" for Mapping, enter the codes for 100% White and 0% Black.

The codes can be specified independently for Input and Output.

4 Value input boxes

When you select "Value(%)" for Mapping, specify the percentages of the maximum values of input codes.

The X and Y values vary depending on the Bit Depth selections.

Exporting the Inverse Characteristics

The Inverse ability of the program enables conversion of camera output to a linear curve to which no gamma is applied.

You can output the characteristics of the inverse function of gamma data as an inverse file.

Select Export Inverse File from the Data menu.

Note

A curve of inverse characteristics cannot be imported.

Functions and Shortcuts Operations of Gamma Operation Menus

File menu

Command	Shortcut	Function
Open	Alt + F + O or Ctrl + O	To open an application file (*.ce2)
New	Alt + F + N or Ctrl + N	To create a new application file
Close	Alt + F + C	To close the current application file
Save	Alt + F + S or Ctrl + S	To save the current application file
Save As	Alt + F + A	To save the current application file under another filename
Print Setup	Alt + F + U	To set up screen printing
Print Preview	Alt + F + V	To preview screen printing
Print	Alt + F + P or Ctrl + P	To print the screen
Recent CE2 Files	Alt + F + R + Number	To open a recent application file
Exit	Alt + F + E	To exit the application

Data menu

Command	Shortcut	Function
New	Alt + D + N	To create new gamma data in Parameter Edit mode
Library	Alt + D + L	To read gamma data from a library
Import	Alt + D + I	To read a file of another format as gamma data
Export	Alt + D + E	To export the current gamma data to a file of another format.
Export Inverse File	Alt + D + V	To export inverse characteristics as an inverse file

Edit menu

In Parameter Edit mode

Command	Shortcut	Function
Undo	Alt + E + U or Ctrl + Z	To cancel the previous curve adjustment operation
Redo	Alt + E + R or Ctrl + Y	To execute the undone curve adjustment operation again
Restore	Alt + E + S	To restore the curve to its original status before editing
Zoom In	Alt + E + I or the mouse wheel (+)	To expand the graph
Zoom Out	Alt + E + O or the mouse wheel (-)	To reduce the graph
Custom Edit	Alt + E + C	To shift to Custom Edit mode

In Custom Edit mode

Command	Shortcut	Function
Undo	Alt + E + U or Ctrl + Z	To cancel the previous curve adjustment operation
Redo	Alt + E + R or Ctrl + Y	To execute the undone curve adjustment operation again
Restore	Alt + E + S	To restore the curve to its original status before editing
Zoom In	Alt + E + I or the mouse wheel (+)	To expand the graph
Zoom Out	Alt + E + O or the mouse wheel (-)	To reduce the graph
Auto Add Points	Alt + E + A	To automatically add three edit points for the curve
Delete All Points	Alt + E + D	To delete all the edit points on the curve
Move	Alt + E + M	To turn Vertical Move mode on or off

User Gamma menu

Command	Shortcut	Function
New	Alt + U + N	To create a new user gamma file
Export	Alt + U + E	To export the selected user gamma to a Memory Stick
Camera Setting	Alt + U + S	To set the IP address of the camera

View menu

Command	Shortcut	Function
Data List	Alt + V + D	To turn the Gamma Data and User Gamma windows on or off
Camera Gamma Select	Alt + V + C	To turn the Camera Control window on or off
Graph	Alt + V + G	To turn the Graph View/Edit window on or off
Zoom Manager	Alt + V + Z	To turn the Zoom manager window on or off
Scale Linear	Alt + V + N	To draw the graph by linear scaling
Scale Log	Alt + V + L	To draw the graph by log scaling of the X axis

Mode menu

Command	Shortcut	Function
Gamma	Alt + M + G	To select Gamma operation mode
MLUT	Alt + M + M	To select MLUT operation mode

Help menu

Command	Shortcut	Function
About	Alt + H + A	To display the software version

Functions and Operations of the MLUT Windows

Window Layout

If you click on the MLUT tab, the following MLUT windows are displayed:

Gamma/MLUT select tabs (page 16)

CE file operation buttons (page 16)

Menu bar (page 47)

MLUT Data window (page 36)
Used for MLUT data management.

MLUT Group window (page 37)
Used for MLUT group management for grouping MLUT data to install them in a camera.

Connect button
Click on the button to connect or disconnect communication with a camera. When connection is established, the indicator changes color from red to green.
For details, see "To connect a camera" (page 45).

MLUT Data window (page 36)

Name	Work Space	ASC CDL
709(800%)	S-Log	OFF
HG8009G33	S-Log	OFF
HG8009G40	S-Log	OFF
SlogTo709	S-Log	OFF
SlogTo709CDL	Cineon	ON

MLUT Group window (page 37)

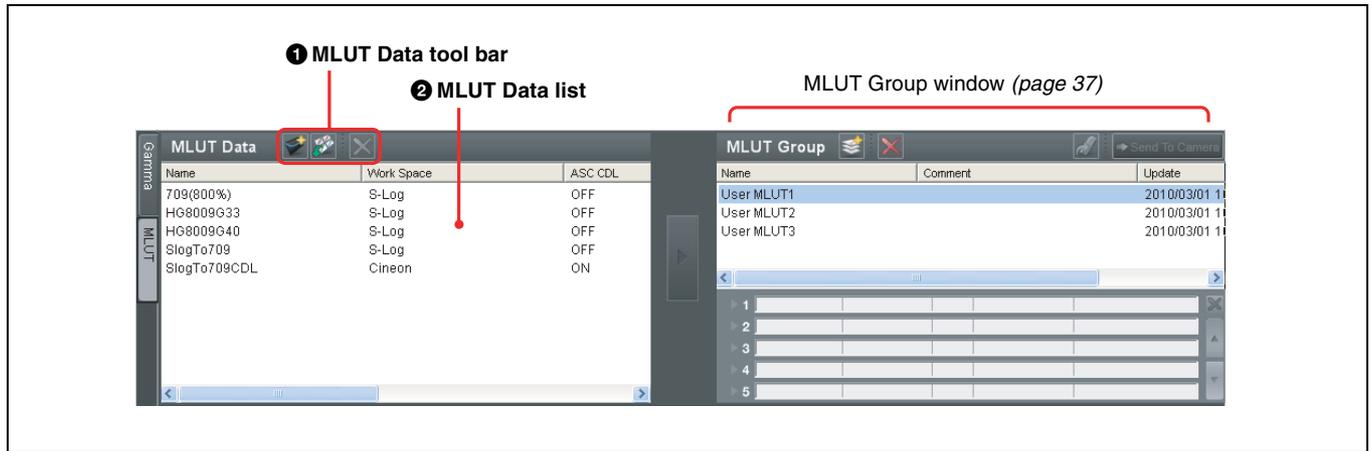
Name	Comment	Update
User MLUT1		2010/03/01 1
User MLUT2		2010/03/01 1
User MLUT3		2010/03/01 1

MLUT Adjust window (page 39)
You can adjust the CDL values by using the keyboard or the mouse.

Camera MLUT window (page 44)
Used to transmit MLUT data via LAN or to change the MLUT selection on the camera.

MLUT Data Window

Manage MLUT data in the MLUT Data window.



1 MLUT Data tool bar

Icon	Designation	Function
	New	To create a new MLUT.
	Import	To import an ASC CDL file. <i>For details, see "File Types for MLUT" (page 46).</i>
	Delete	To delete the specified MLUT data.

2 MLUT Data list

Designation	Contents
Name	Designation of the MLUT data, which is displayed on the camera menu screen when the data are installed in a camera.
Work Space	Type of gamma (S-Log A, Cineon, etc.) converted in ICT (input conversion transform). Select the same Gamma setting to be used for grading in postproduction.
ASC CDL	Whether any ASC CDL adjustment value is included in the MLUT data ON: Included OFF: Not included
Display	Gamma setting for display outputs (Default: ITU-R709)
Comment	Additional information on the MLUT. Up to 1000 characters can be entered. The information is not added in data exporting.
Update	The year, month, day, and time of updating are displayed.

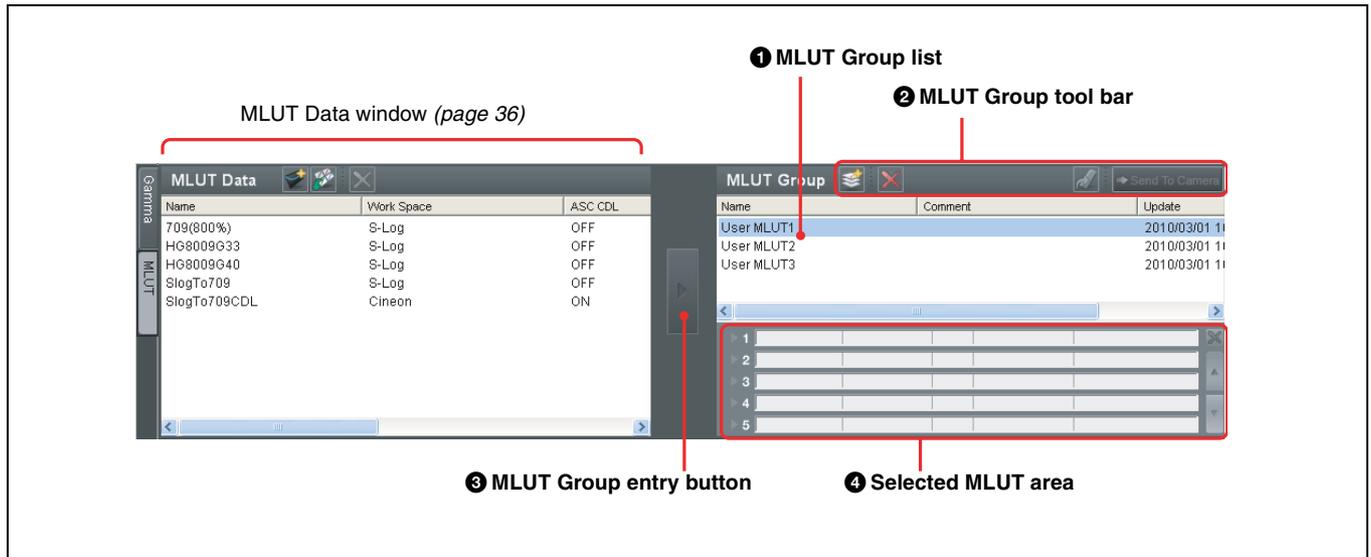
Clicking on the title of each column changes the display order on the list.

Right-clicking on an MLUT data line permits you to import or export an MLUT or ASC CDL, create another MLUT, delete or rename the data, or edit the comment.

MLUT Group Window

The MLUT Group window is used to group created MLUT data as user MLUTs to install the data in a camera

via a Memory Stick or a LAN. Five sets of MLUT data at maximum can be grouped as an MLUT group.



1 MLUT Group list

The list shows the information on the MLUT group. Operations as those for MLUT data can be made by right-clicking on the list.

2 MLUT Group tool bar

Icon	Designation	Function
	New	To create a new MLUT group.
	Delete	To delete the selected MLUT group from the list. The registered MLUT data are not erased (remaining in the MLUT Data window).
	Export	To export the selected MLUT group as a file of lut type to a Memory Stick. Note Export is not executed if no MLUT data are registered in the MLUT group.
	Send To Camera	To send the selected MLUT group to a camera.

3 MLUT Group entry button

To enter the MLUT data selected in the left MLUT Data window in the MLUT group selected on the MLUT Group list.

4 Selected MLUT area

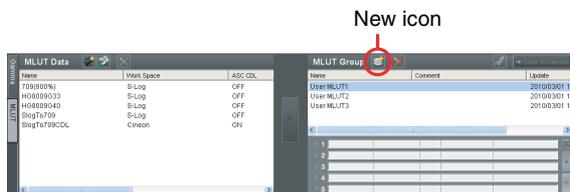
Information on the MLUT data registered for an MLUT group is displayed.

Icon	Designation	Function
	Delete MLUT	To delete the selected MLUT data from the group. The MLUT data are not erased (remaining in the MLUT Data window).
	Up	To move the order of MLUT data up on the registration list.
	Down	To move the order of the MLUT data down on the registration list.

To install an MLUT group via a Memory Stick into a camera

1 Create an MLUT group.

- ① Click on the  (New) icon to display the New MLUT Group dialog box.



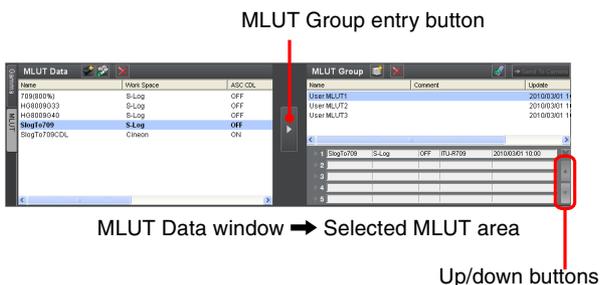
- ② Enter a filename for the MLUT group.



2 Register MLUT data for the MLUT group.

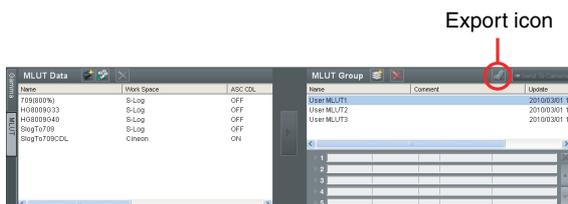
Select the MLUT data to be registered in the MLUT Data window and click on the MLUT Group entry button.

Up to five MLUTs can be registered. The order of the registered MLUTs can be changed, using the up/down buttons.



3 Export the MLUT group to a Memory Stick.

Click on the  (Export) icon and specify the target Memory Stick on the directory.



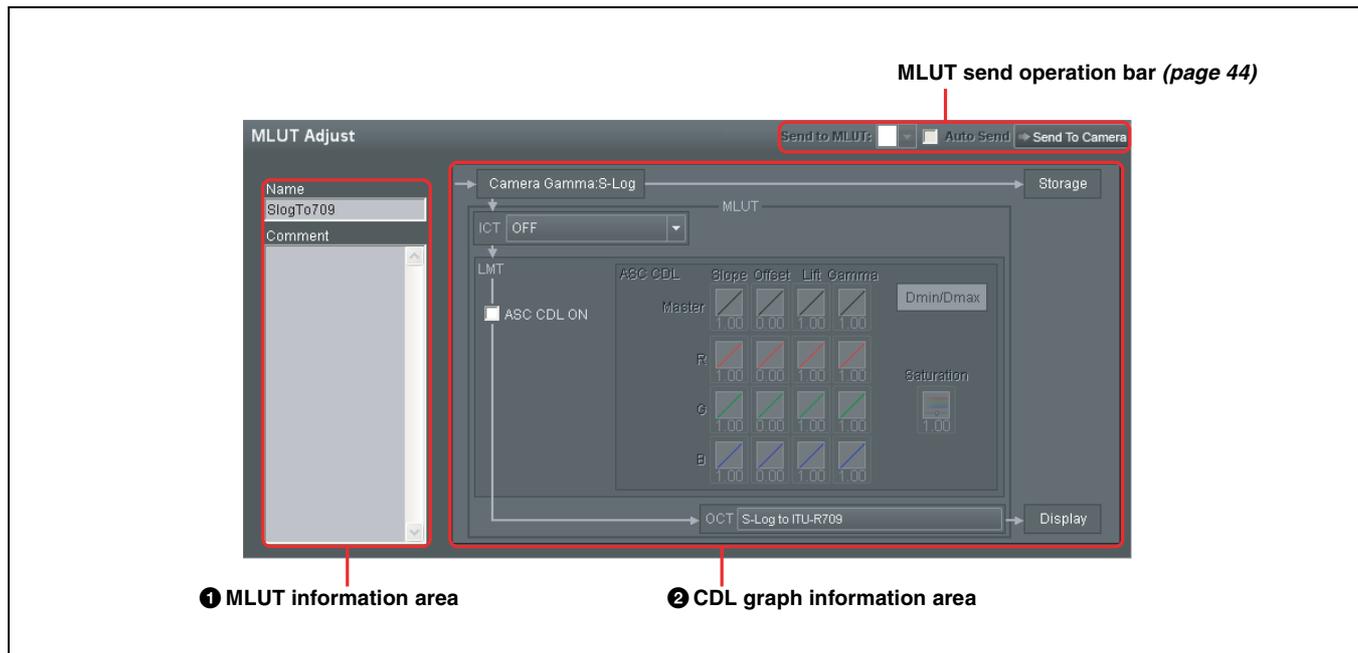
- 4 Open the USER GAMMA page of the camera's FILE menu, load the MLUT group from the Memory Stick into the camera with the MONI LUT READ function.
- 5 Set MLUT/PB MIX to MLUT and select the type for MLUT SEL on the PB/MONI LUT page of the camera's OPERATION menu.

For details on menu operations on the camera, refer to the operation manual of the camera.

For operations to export the data via LAN, see "Camera MLUT Select Window and MLUT Send Operation Bar" (page 44).

MLUT Adjust Window

The MLUT Adjust window permits you to adjust the CDL information of the selected MLUT.



1 MLUT information area

The MLUT data name and any comment are displayed. Entering/editing of the comment is enabled when you double-click on the text box.

2 CDL graph information area

The CDL-related information is displayed. This area enables you to select the ICT (input conversion transform) and OCT (output conversion transform) types and adjust the CDL values.

The area is grayed and inoperative when no MLUT is selected in the MLUT Data window (page 36) or an MLUT group is selected in the MLUT Group window (page 37).

It has multiple operation modes, CDL OFF, CDL Edit, and Sub Edit, and operable items are different among the modes.

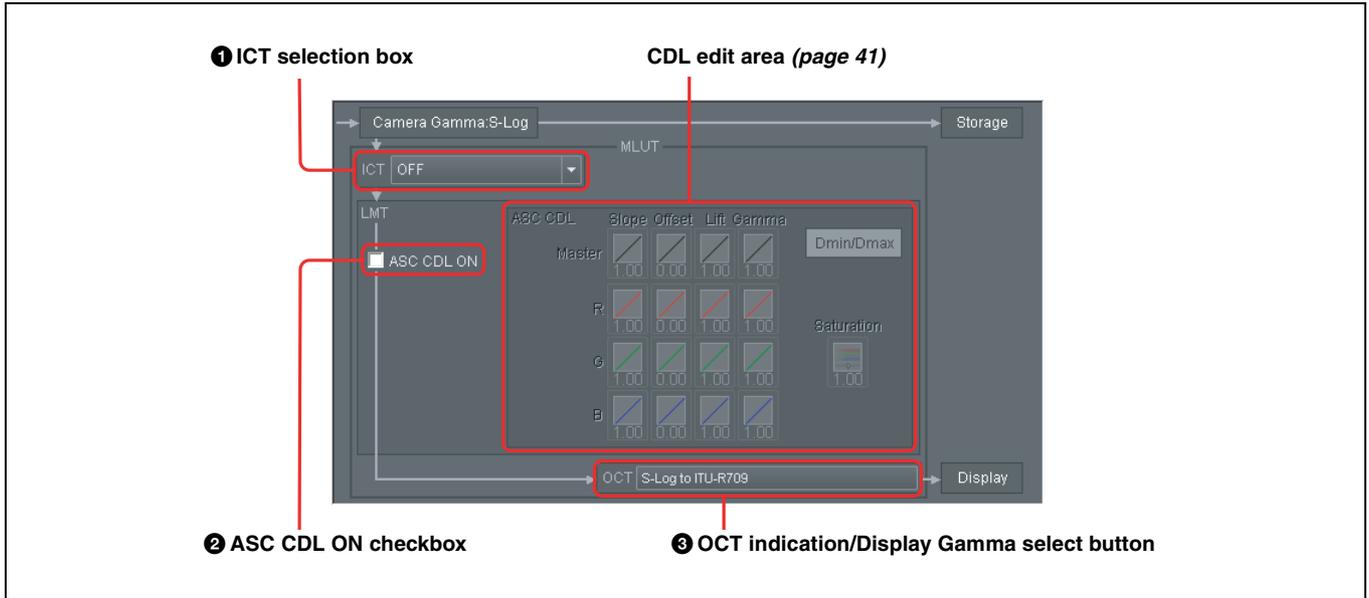
Note

Operation is enabled only when the camera gamma is S-Log A with V4.3.

CDL OFF Mode

When you select an MLUT whose CDL attribute is OFF in the MLUT Data window (page 36), the CDL graph information area enters CDL OFF mode, activating the

ICT selection box, ASC CDL ON checkbox, and OCT indication/Display Gamma selection button.



1 ICT (Input Conversion Transform) selection box

When using ASC CDL, set it according to the Work Space to be used in postproduction. When ASC CDL is not used, this setting is invalid, as conversion to the gamma set in OCT (output conversion transform) is made.

Designation	Contents
S-Log to Scene Linear	To convert S-Log A to Scene Linear. The OCT indication shows "Scene Linear to xxx."
S-Log to Cineon	To convert S-Log A to Cineon. The OCT indication shows "Cineon to xxx."
OFF	No conversion is made. S-Log A is used without conversion.

2 ASC CDL ON checkbox

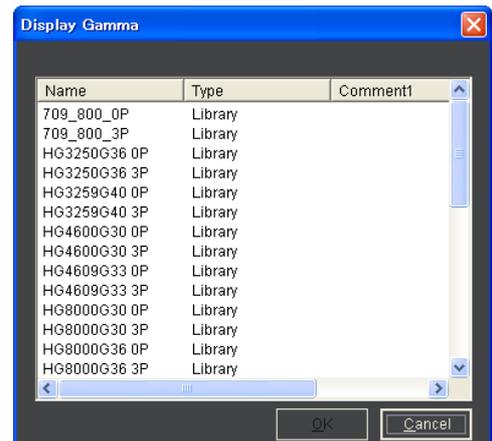
When you check this box, the CDL graph information area switches to CDL Edit mode (page 41), activating the CDL edit area.

The ASC CDL attribute of the selected MLUT becomes ON when the box is checked. It returns to OFF when the box is unchecked.

If you select ASC CDL ON for an MLUT whose Display Gamma is other than ITU-R709, an alarm message is displayed and Display Gamma is forcibly changed to ITU-R709.

3 OCT (Output Conversion Transform) indication/Display Gamma select button

The gamma for output to displays can be selected. When ASC CDL is ON, it is forcibly set to ITU-R709. When ASC CDL is OFF, user gamma selection is enabled. When you click on the button, the Display Gamma selection dialog opens, permitting you to select the user gamma to be applied to displays.



Note

This setting converts S-Log A of the main line to the selected gamma.

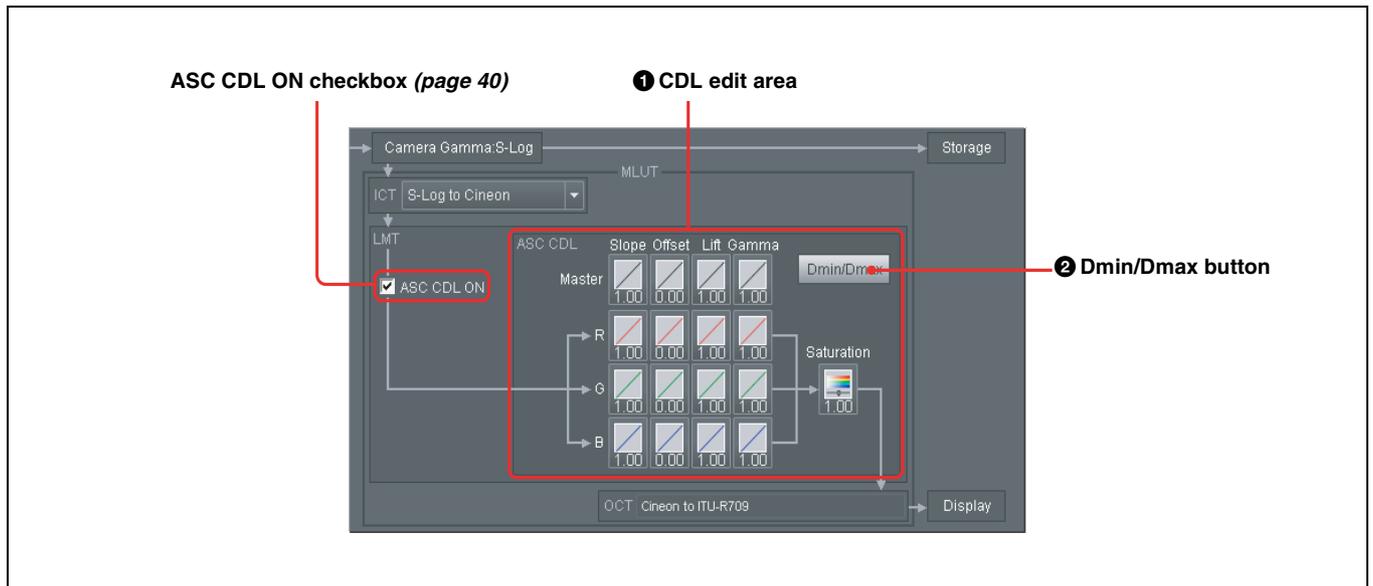
There are two types of data included on the Gamma list with V4.3 MLUT data; Library data and gamma data of Type 3.0.

Selecting a gamma of Type 3.0 here disables operations, such as deletion, renaming, and editing of the gamma in Gamma Operation mode.

CDL Edit Mode

When you check the ASC CDL ON checkbox or select an MLUT whose CDL attribute is ON, the CDL graph information area enters CDL Edit mode.

The Dmin/Dmax button and the CDL edit area become operable and the default values and thumbnail images of 17 CDL items are displayed. The Display Gamma select button (*page 40*) is disabled in this mode.

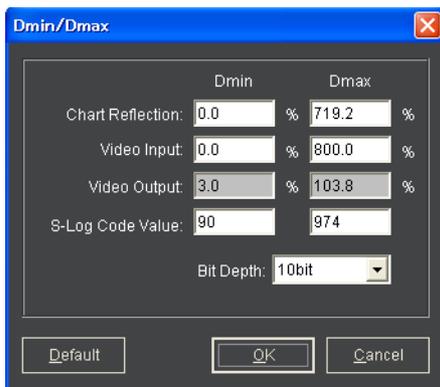


1 CDL edit area

The default values and thumbnail images of the ASC CDL adjustment items (Slop, Offset, Lift, Gamma, and Saturation) are displayed. For Slop, Offset, Lift, and Gamma, the master, R, G, and B values are displayed. Clicking on a thumbnail image opens the edit window (*see page 42*) for the corresponding item.

2 Dmin/Dmax button

Clicking on this button opens the Dmin/Dmax window, enabling the adjustments.

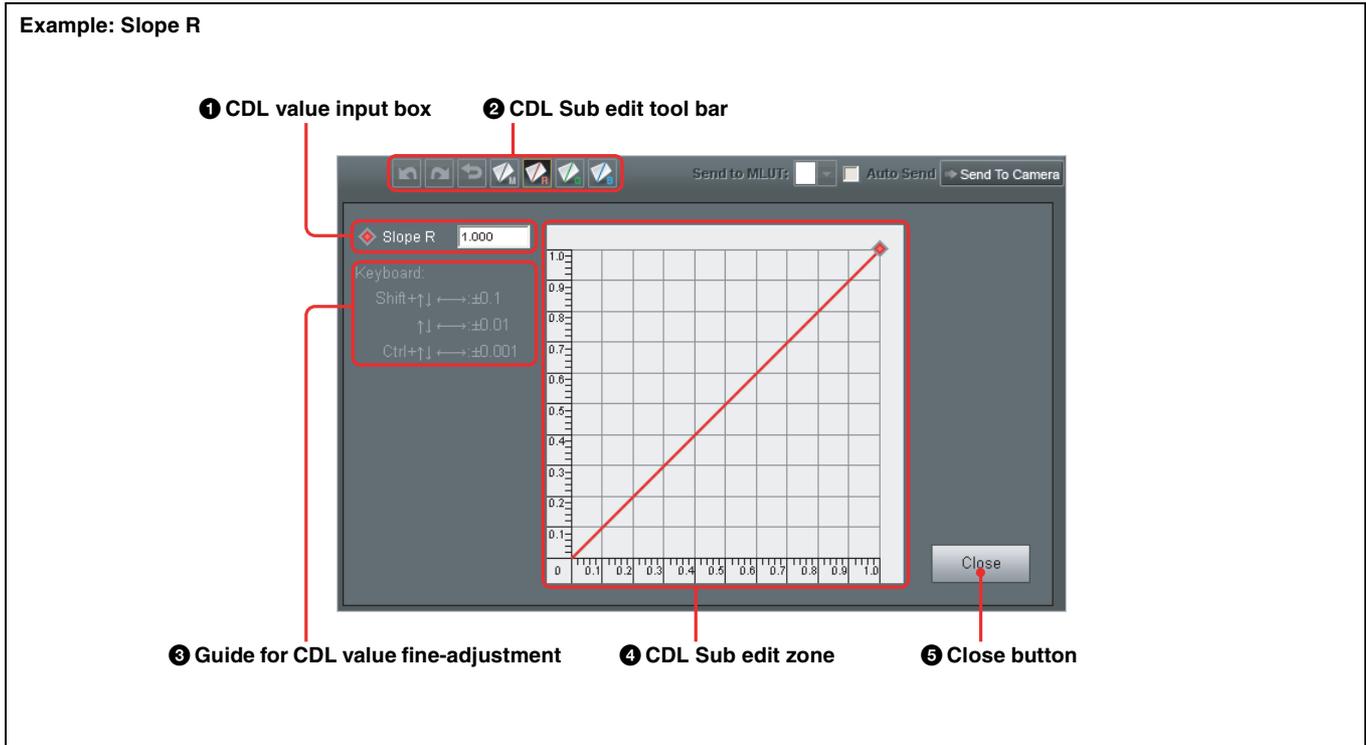


CDL Edit Windows

Clicking on a thumbnail image in the CDL edit area in CDL Edit mode opens the edit window for the

corresponding item. This permits you to adjust the CDL value, using the mouse or keyboard.

For Windows



1 CDL value input box

Adjustment is achieved by entering a value. The range of adjustment values differ among the items. If you enter a value out of the range, an error message is displayed.

Icon	Designation	Function
◆	Slope M	0 to 99.990
	Offset M	-1 to 1
	Lift M	0 to 99.990
	Gamma M	0 to 140
◆	Slope R	0 to 99.990
	Offset R	-1 to 1
	Lift R	0 to 99.990
	Gamma R	0 to 140
◆	Slope G	0 to 99.990
	Offset G	-1 to 1
	Lift G	0 to 99.990
	Gamma G	0 to 140
◆	Slope B	0 to 99.990
	Offset B	-1 to 1
	Lift B	0 to 99.990
	Gamma B	0 to 140
	Saturation	0 to 2

2 CDL Sub Edit Tool bar

For edit reoperation or switching M, R, G, and B edit windows for Slope, Offset, Lift or Gamma.

Icon	Designation	Function
	Undo	To undo the last operation.
	Redo	To redo the last undone operation.
	Restore	To restore the original status of the item.
	Master	To switch to the edit window of the master value of the same item.
	Red	To switch to the edit window of the R value of the same item.
	Green	To switch to the edit window of the G value of the same item.
	Blue	To switch to the edit window of the B value of the same item.

3 Guides for CDL value fine-adjustment

Operation guides for fine-adjustment from the keyboard are displayed.

Example: Shift + ↓ ↑ ← → ±0.1

Pressing an arrow key with the Shift key held pressed moves the adjustment point (icon) by 0.1 on the graph in the direction of the arrow.

4 CDL Sub edit zone

You can edit Slope, Offset, Lift, Gamma, and Saturation.

Slope: For an effect equivalent to ISO sensitivity adjustment of the camera or the f-stop adjustment of the lens.

Offset: For black level adjustment without changing the overall contrast.

Lift: For black level adjustment while maintaining high-luminance areas.

Gamma: To change the brightness at middle luminance.

Saturation: To adjust vividness of colors.

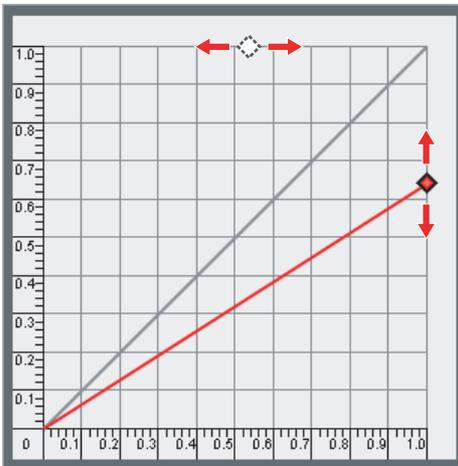
Notes

- Adjustments are performed in the sequence of Slope, Offset, then Gamma. Lift is adjusted internally, using Slope and Offset.
- The saturation function for ASC CDL is applied for monitor images only. It is different from “Saturation” of the MAINTENANCE menu of cameras.

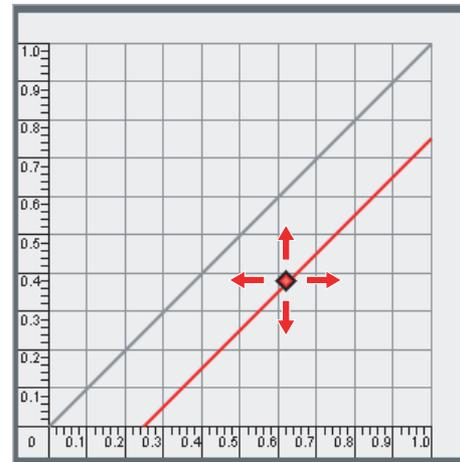
In the edit zone for Slope, Offset, Lift, and Gamma, you can change the value by directly dragging the icon (common to that for the CDL value input box) displayed on the graph with the mouse or moving it with arrow keys on the keyboard (see “Guides for CDL value fine-adjustment” above). The gray line indicates the default setting.

In the edit zone for Saturation, you can change the value by directly dragging the slide bar with the mouse or moving it with arrow keys.

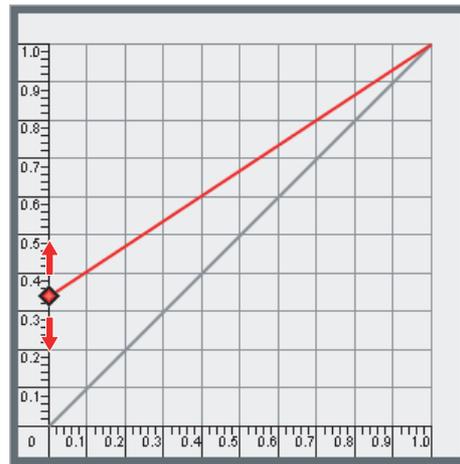
Slope adjustment (example: R)



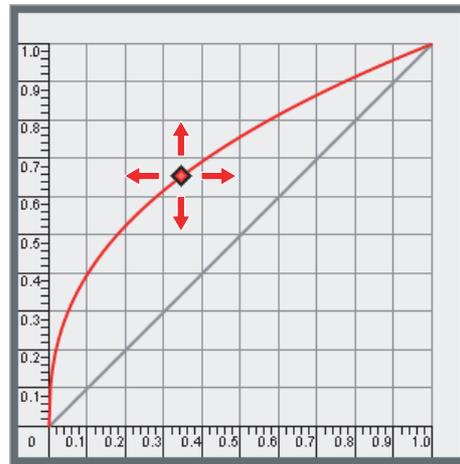
Offset adjustment (example: R)



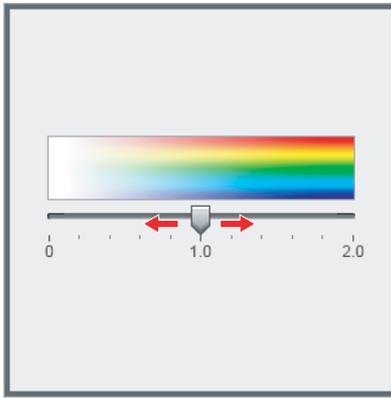
Lift adjustment (example: R)



Gamma adjustment (example: R)



Saturation adjustment



For Windows

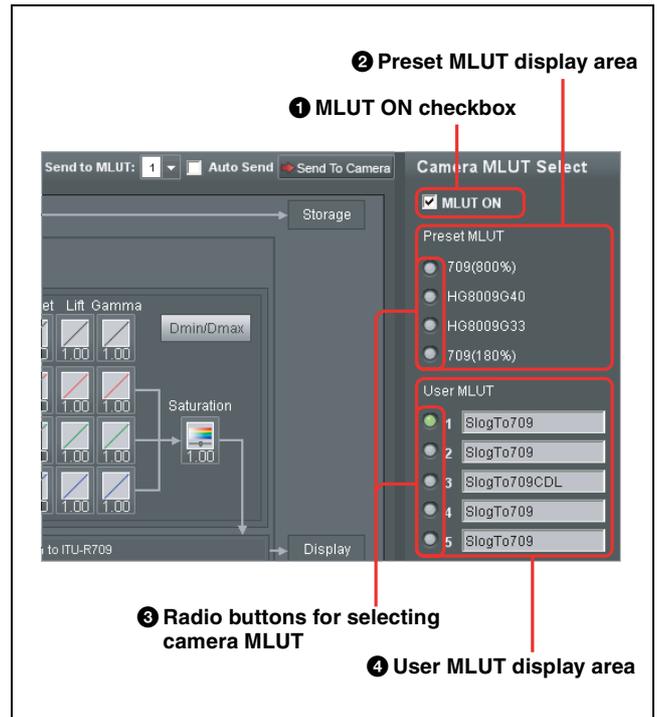
④ Close button

Clicking on the button closes the edit window, returning to CDL Edit mode. (You can also close the edit window by pressing the space bar.)

Camera MLUT Select Window and MLUT Send Operation Bar

You can transmit an MLUT to a camera connected via LAN or a group of MLUTs as an MLUT group. The names of the MLUTs loaded in a camera are displayed, permitting you to change the current MLUT selection on the camera.

Camera MLUT Select window



① MLUT ON checkbox

Check this box to operate MLUTs in the camera connected via LAN.

The checkbox is not effective when no LAN connection is established or the camera version is 1.5 or earlier.

② Preset MLUT display area

The names of the default MLUTs in the connected camera are displayed. You can switch the preset MLUT installed in the camera by using the radio buttons.

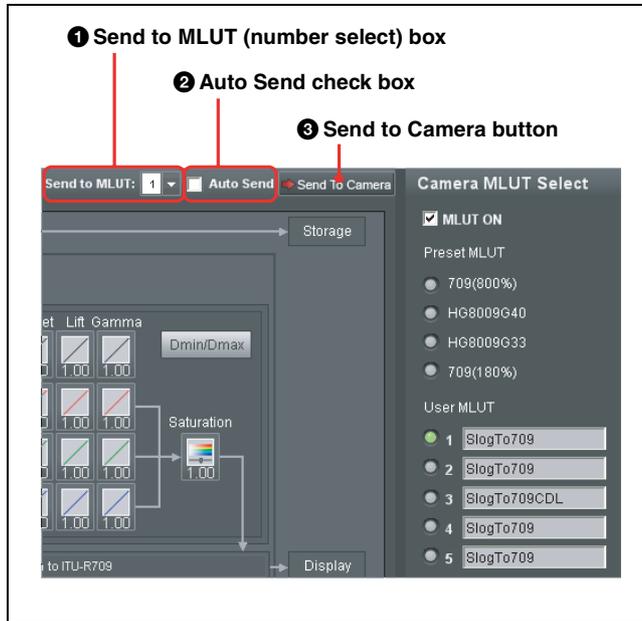
③ Radio buttons for selecting MLUT on the camera

You can switch the MLUT on the camera by using the radio buttons.

④ User MLUT display area

The names of the User MLUTs installed in the connected camera are displayed.

MLUT send operation bar



1 Send to MLUT (number select) box
Select the destination MLUT number of the camera.

2 Auto Send check box
Check this box to automatically send the data to a camera each time you edit the CDL. This is convenient to immediately confirm the results of editing.

Note
Responses to operations may become slower, as data are transmitted each time you change the setting.

3 Send to Camera button
To send the MLUT selected in the MLUT data window (page 36) to a camera as the MLUT data of the number specified in the Send to MLUT (number select) box.

To connect a camera

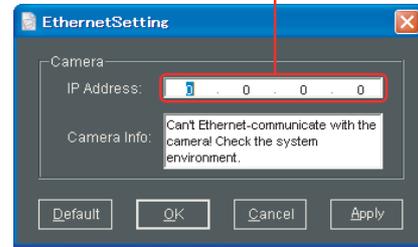
1 Connect the CvpFileEditor-installed computer to the camera via a hub or directly via a cross cable.

Note
When connecting the computer to a camera directly, always use a cross cable. When using a straight cable, connect via a hub. Communication may not be possible using other connection methods.

2 Select “Camera Setting” from the MLUT Group menu to open the Ethernet Setting window.

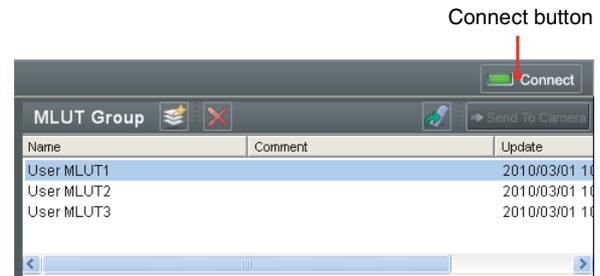
3 Enter the IP address specified by the NETWORK menu of the camera then click on OK to close the Ethernet Setting window.

Enter the IP address of the camera.



4 Click on the Connect button at the right end of the tool bar (page 35).

The connection to the camera is established, and the indicator of the button changes color to green.



To transmit the data to the connected camera

1 Specify the target MLUT number with the Send to MLUT (number select) box on the MLUT send operation bar.

2 Click on the Send to Camera button on the MLUT send operation bar.

The display is automatically updated when transmission is completed.

File Types for MLUT

Files of lut type is used when exporting MLUTs to a Memory Stick.
To exchange ASC CDL with another system, use files of cdl type.

Files of lut

Data are described with digital codes of the specified bit length.

```
#
#
#"$S-LOG A""SlogTo709CDL"
#%"ITU-R709"
#?Metadata_start
#?UserLut_Name:"SlogTo709CDL"
#?Slope_R:0.641
#?Slope_G:1.000
#?Slope_B:1.000
#?Offset_R:-0.247
#?Offset_G:0.000
#?Offset_B:0.000
#?Power_R:0.400
#?Power_G:1.000
#?Power_B:1.000
#?Saturation:1.000
#?Video_Dmin:0.0
#?Video_Dmax:800.0
#?Reflection_Dmin:0.0
#?Reflection_Dmax:719.2
#?CodeValue_Dmin:90
#?CodeValue_Dmax:974
#?BitDepth:10
#?ICT_Name:"1""S-Log to Cineon"
#?OCT_Name:"Cineon to ITU-R709"
#?Metadata_end
LUT: 3 1024
#Red
64
```

Character	Meaning
#	Comment description
#\$	Name of the gamma used in the MLUT
#%	Name of the display gamma
#?	CDL information

Character	Meaning
LUT: 3	Always enter "3" at the beginning, as data are composed of three channels (R, G, and B). Enter a value of the bit length for X (e.g. 1024 for 10 bits).
Numeric values	Enter the digital codes for output data as much as the required number for the specified bit length (e.g. 1024 values of 0 to 1024 for 10-bit data). The same numeric value string must be repeated three times, as they are required for each of the R, G, and B channels.

Files of cdl

```
<ColorCorrectionCollection xmlns="" >
  <InputDescription>S-LOG A</InputDescription>
  <ViewingDescription>ITU-R709</ViewingDescription>
  <ColorCorrection id="" >
    <SOPNode>
      <Slope>0.641 1.000 1.000</Slope>
      <Offset>-0.247 0.000 0.000</Offset>
      <Power>0.400 1.000 1.000</Power>
    </SOPNode>
    <SATNode>
      <Saturation>1.000</Saturation>
    </SATNode>
  </ColorCorrection>
</ColorCorrectionCollection>
```

The data area described in the following format:

Character	Meaning
Input Description	Name of the gamma used in the MLUT
Viewing Description	Name of the display gamma
Slope	Values for R, G and B channels of the slope
Offset	Values for R, G and B channels of the offset
Gamma	Values for R, G and B channels of the gamma

Functions and Shortcuts Operations of MLUT Operation Menus

File menu

Command	Shortcut	Function
Open	Alt + F + O or Ctrl + O	To open an application file (*.ce2)
New	Alt + F + N or Ctrl + N	To create a new application file
Close	Alt + F + C	To close the current application file
Save	Alt + F + S or Ctrl + S	To save the current application file
Save As	Alt + F + A	To save the current application file under another filename
Print Setup	Alt + F + U	To set up screen printing
Print Preview	Alt + F + V	To preview screen printing
Print	Alt + F + P or Ctrl + P	To print the screen
Recent CE2 Files	Alt + F + R + Number	To open a recent application file
Exit	Alt + F + E	To exit the application

Data menu

Command	Shortcut	Function
New	Alt + D + G	To create new MLUT data
Import	Alt + D + I	To read a file of another format as MLUT data
Export MLUT	Alt + D + E	To export the current MLUT data to a file of another format.
Export ASC CDL	Alt + D + V	To export the current ASC CDL data to a file of another format.

Edit menu

Command	Shortcut	Function
Undo	Alt + E + U or Ctrl + Z	To cancel the previous CDL adjustment operation
Redo	Alt + E + R or Ctrl + Y	To execute the undone CDL adjustment operation again

Command	Shortcut	Function
Restore	Alt + E + T	To restore the CDL to its original status before editing
Slope	Alt + E + S	To open the CDL Slope adjustment window
Offset	Alt + E + O	To open the CDL Offset adjustment window
Lift	Alt + E + L	To open the CDL Lift adjustment window
Gamma	Alt + E + G	To open the CDL Gamma adjustment window
Saturation	Alt + E + A	To open the CDL Saturation adjustment window
Dmin/Dmax	Alt + E + D	To open the Dmin/Dmax adjustment window

Group menu

Command	Shortcut	Function
New	Alt + G + N	To create a new MLUT group
Export	Alt + G + E	To export the selected MLUT group to a Memory Stick
Camera Setting	Alt + G + C	To set the IP address of the camera

View menu

Command	Shortcut	Function
Data List	Alt + V + D	To turn the MLUT Data and MLUT Group windows on or off
Camera MLUT Select	Alt + V + C	To turn the Camera MLUT Select window on or off
MLUT Adjust	Alt + V + M	To turn the MLUT Adjust window on or off

Mode menu

Command	Shortcut	Function
Gamma	Alt + M + G	To activate Gamma Operation mode
MLUT	Alt + M + M	To activate MLUT Operation mode

Help menu

Command	Shortcut	Function
About	Alt + H + A	To display the software version

For Mac OS

How to use the application on Mac OS

Installation of the Program

Operational Environment for CvpFileEditor

A computer that meets the following:

CPU

2.0GHz Intel Core 2 Duo equivalent or higher

Memory

2 GB or more (4 GB or more recommended)

Display

Screen resolution 1280×800 or more

OS

- Mac OS X 10.8 Mountain Lion (64-bit version)
- Mac OS X 10.9.3 Mavericks (64-bit version)

Note

When using this software in a Mac OS 10.9.3 Mavericks environment, operation with cameras connected via LAN is not supported. Perform operations using a Memory Stick. Delayed refreshing of displays may occur during editing operations when cameras are connected via LAN.

To Install

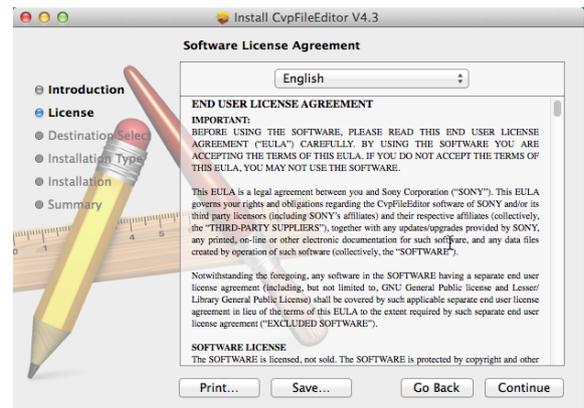
- 1 Start up the installation program.

The Welcome window of the Setup Wizard opens.



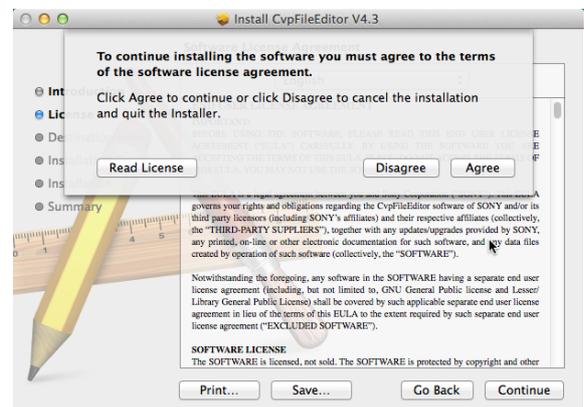
- 2 Click on the Continue button in the Welcome window.

The License Agreement window opens.



- 3 Click on the Continue button.

The Confirmation window pops up.



- 4 Click on the Agree button.

The Standard Install window opens.



To change the disk to install the CvpFileEditor, click on the Change Install Location button to change it on the Destination Select window. Clicking on the Continue button restores the Standard Install window.

- 5 Click on the Install button.

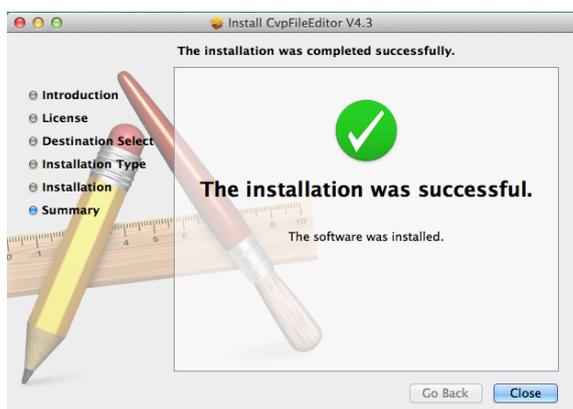
The Password input window opens.



- 6 Enter the Name and Password specified for the computer and click on the OK button.

Installation begins.

When installation is completed, a completion window opens.



- 7 Click on the Close button to close the completion window.

To Uninstall

Move the CvpFileEditor Folder (Default; /Application/CvpFileEditor) to the Trash.

Basic Operation Flow

The flow of gamma and MLUT creation is roughly indicated below.

Starting operation

Start up CvpFileEditor and open the sample file or an existing ce2 file by selecting “Open” or “New” from the File menu or using the CE file operation button (page 54). The Gamma operation windows (page 53) will be displayed.

Switching between Gamma and MLUT operation windows

The Gamma and MLUT select tabs (page 54) located on the left of the operation windows permit you to switch between Gamma operation windows (page 53) and MLUT operation windows (page 73). Switching is also possible using Mode menu on the menu bar.

Note

You cannot switch between Gamma and MLUT when the camera is connected via LAN. An error message appears if you click on the Gamma or MLUT tab.

Creating gamma data

There are three methods for creating gamma data.

1. Newly creating gamma data (using Parameter Edit mode)

Select “New” from the Data menu for the Gamma operation windows (page 53) to create new gamma data. Parameter Edit mode is selected to permit you to enter the characteristics required for gamma.

For details, see “To start editing in Parameter Edit mode” (page 59).

2. Loading library data and edit them in Custom Edit mode

You can select fundamental characteristics, such as ITU-R709, Hyper Gamma, or S-LOG, from the library and finely adjust them in Custom Edit mode.

To load the library data, select “Library” from the Data menu for the Gamma operation windows (page 53) then start editing.

For details, see “To import library data” (page 55) and “To switch to Custom Edit mode” (page 64).

3. Importing data of different systems

When you wish to install data created with another grading tool, use the import function.

Select “Import File” from the Data menu for the Gamma operation windows (page 53).

For details, see “Importing and Exporting Gamma Data Files of Other Types” (page 69).

Creating MLUT data

Select “New” from the Data menu for the MLUT operation windows (page 73) to create new MLUT data. You can add CDL information to the created MLUT by using the ASC CDL adjustment function.

Installing the gamma data in a camera

The data can be installed in the camera via a Memory Stick or LAN.

1. Via a Memory Stick

Gamma or MLUT data (five sets at maximum) are installed as a file. The user gamma or MLUT data in the camera are overwritten.

For details, see “To install user gamma via a Memory Stick into a camera” (page 57) or “To install MLUT group via a Memory Stick into a camera” (page 76).

2. Via LAN

This is valid only for an F23/F35 having LAN control capability. You can directly transmit data being edited to the camera.

Note

Installation via LAN is only supported in Mac OS X 10.8 Mountain Lion. In a Mac OS X 10.9.3 Mavericks environment, do not connect via LAN and perform installation via a Memory Stick.

For details, see “Camera Gamma Select Window and Gamma Send Operation Bar” (page 67) or “Camera MLUT Select Window and MLUT Send Operation Bar” (page 82).

Functions and Operations of the Gamma Windows

Window Layout

The following windows are used for gamma operations:

Gamma/MLUT buttons

CE file operation buttons (page 54)

Menu bar (page 71)

Gamma Data window (page 54)
Used for gamma data management.

User Gamma window (page 56)
Used for user gamma file management for grouping gamma data to install them in a camera.

Connect button
Click on the button to connect or disconnect communication with a camera. When connection is established, the indicator changes color from red to green. For details, see "To connect a camera" (page 68).

Graph View/Edit window (page 58)
Displays gamma curves and various gamma data. You can edit the data by entering parameters or operating the mouse.

Select Camera Gamma window (page 67)
Used to transmit gamma data via LAN or to change the gamma selection on the camera.

Zoom manager window (page 67)
Used to expand/reduce the size of the graph or change the display area.

The screenshot shows the CvpFileEditor application window with a menu bar (File, Data, Edit, User Gamma, View, Window, Mode) and a toolbar. The main workspace contains several windows: 'Gamma Data' with a table of gamma data, 'User Gamma' with a list of user gamma files, 'Graph View' with a graph and parameter controls, and 'Camera Gamma Select' with radio buttons for selecting a camera gamma. A 'Zoom' window is also visible in the bottom right corner.

Name	Type	Comment1	Comment2
709_800_3P	3.0	ITU-R709_800	
HC8009G33 3P	3.0	HC8009G33	
HC8009G40 3P	3.0	HC8009G40	
Hyper Gamma	3.0		
ITU-R709	3.0		
S-LOG A	3.0	7LOGNMXA10A	

Name	Type	Comment1	Comment2
User Gamma1			20
User Gamma2			20
User Gamma3			20

CE File Operation Buttons

Operate CE2 files.

Icon	Designation	Function
	Open CE2 file	To open an existing ce2 file.
	Save CE2 file	To save the ce2 file.
	Save As CE2 file	To the ce2 file with another filename.

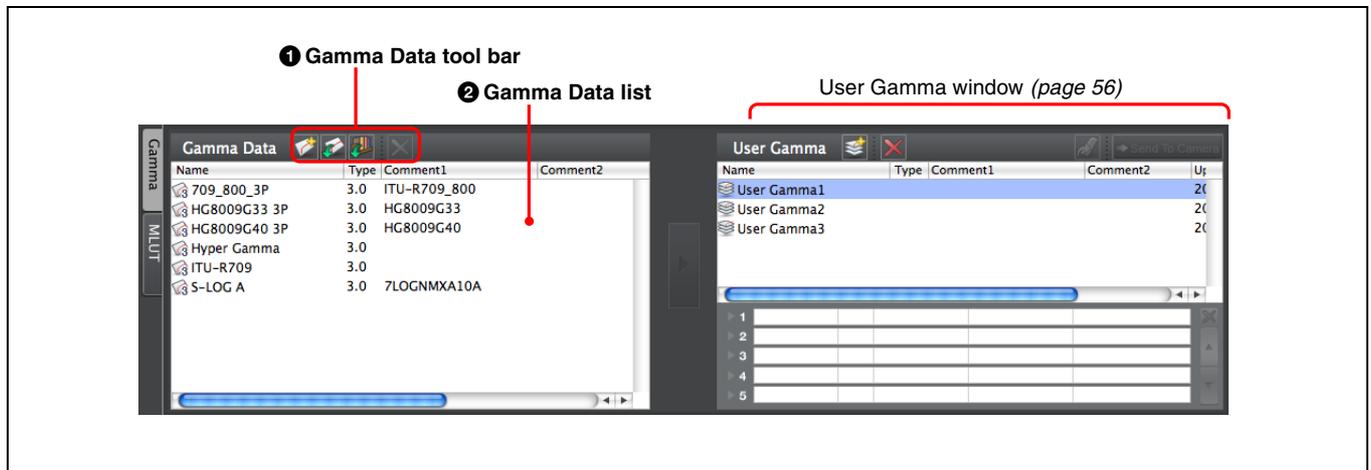
Gamma/MLUT select tabs

Select the operation mode.

Icon	Designation	Function
	Gamma	To select Gamma operation mode.
	MLUT	To select MLUT operation mode.

Gamma Data Window

Manage gamma data in the Gamma Data window.



1 Gamma Data tool bar

Icon	Designation	Function
	New	To newly create gamma data. Parameter Edit mode is automatically activated.
	Import File	To import a file (gdd, csv, or lut file) and convert it to gamma data. <i>For details, see "Importing and Exporting Gamma Data Files of Other Types" (page 69).</i>
	Import Library	To import gamma data from the internal libraries of CvpFileEditor.
	File Delete	To delete the specified gamma data.

2 Gamma Data list

Designation	Contents
Name	Designation of the gamma data, which is displayed on the camera menu screen when being installed in a camera.
Type	Type of gamma data. Note that the type of gamma depends on the camera model. 3.0: F23, F35, HDC-1000/1500 series cameras, SRW-9000, HDC-2000 series, PMW-F55 2.0: HDC-950, HDW-F900/F900R, etc. The type can be changed in the Graph View/Edit window when editing the gamma data.
Comment1	A short comment to be displayed on the camera menu screen. You can enter up to 12 alphanumeric characters.

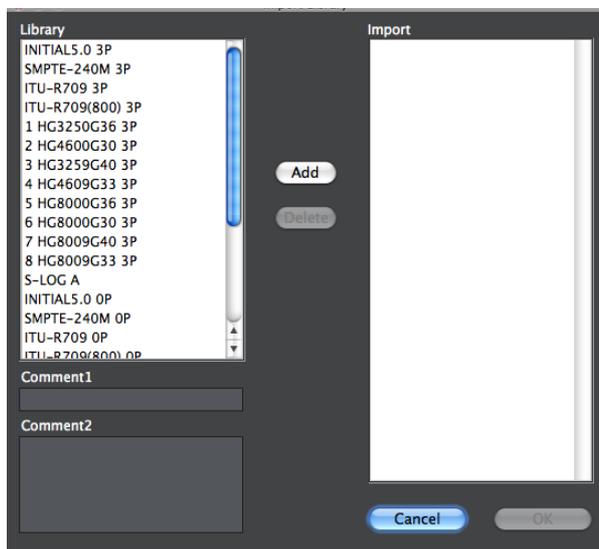
Designation	Contents
Comment2	A comment to be recorded inside CvpFileEditor. Up to 1000 characters can be entered.
Base	Information on the original data of the gamma. If one of the libraries was used, the name of the library is displayed. For a newly created gamma, "Param" (abbreviation for Parameter Edit mode) is displayed.
Update	The year, month, day, and time of updating are displayed.

Clicking on the title of each column changes the display order on the list.

Right-clicking on a gamma data line permits you to enter comments, rename, copy, or delete the data.

To import library data

Clicking on the  (Import Library) icon on the tool bar or selecting "Library" from the Data menu opens the Import Library window, which permits you to select internal library data.



Move the Library data to be imported to the Import list by clicking on the Add button.

Use the Delete button to remove it from the Import list. When you specify the gamma data in the Library list, the comment 1 and comment 2 for the selected data are displayed in the respective columns.

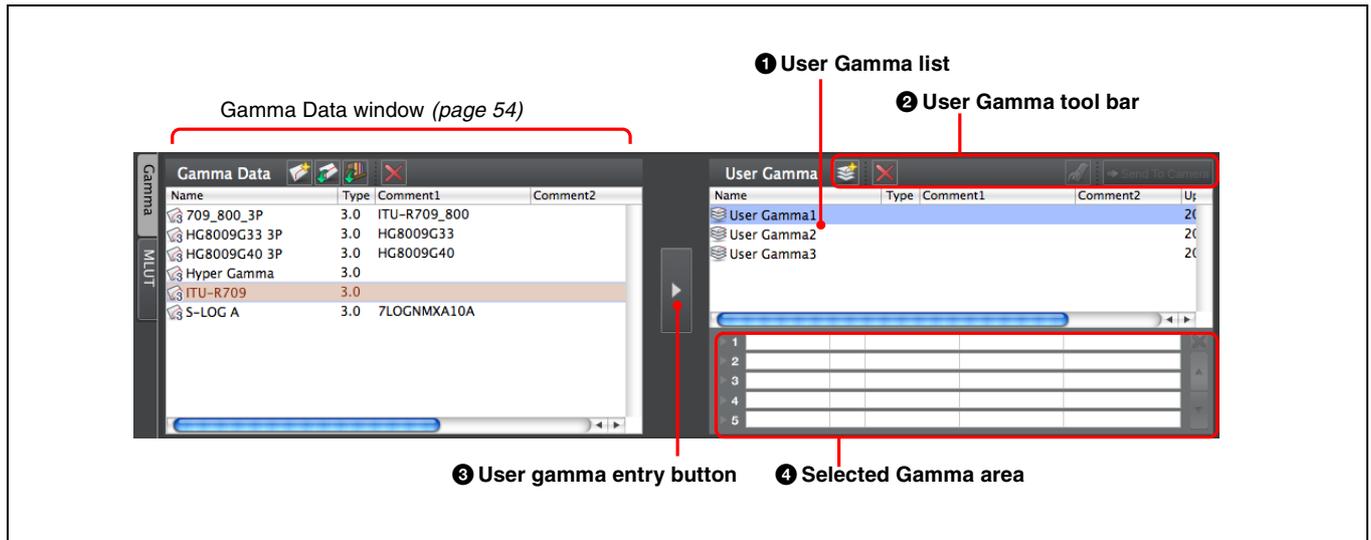
Note

If there is a gamma having the same name as a library to be imported in the Gamma Data window, the name of the imported file will be automatically changed by adding a number (1, 2, etc. in ascending order) to the end of the original name. If the name exceeds 12 characters when a number is added, the last character will be replaced with the number so that the name will not exceed 12 characters.

User Gamma Window

The User Gamma window is used to group created gamma data as a user gamma to install the data in a camera. Five sets of gamma data at maximum can be

grouped as a user gamma. The user gamma that groups gamma data can be installed via a Memory Stick or LAN.



1 User Gamma list

The list shows the information on the user gamma. Operations as those for gamma data can be made by right-clicking on the list.

Note

In the same manner as gamma data, a user gamma has a type attribute, either Type 2.0 or Type 3.0. Gamma data of different types cannot be included in a single user gamma. The type of user gamma is determined by the type of the first registered gamma data.

2 User Gamma tool bar

Icon	Designation	Function
	New	To create a new user gamma file.
	Delete User Gamma	To delete the selected user gamma file from the list. The registered gamma data are not erased (remaining in the Gamma Data window).
	Export to Memory Stick	To export the selected user gamma file to a Memory Stick. Note Export is not executed if no gamma data are registered in the user gamma file.

Icon	Designation	Function
	Send To Camera	To send the selected user gamma curve to a camera.
	Send to camera	

3 User gamma entry button

To enter the gamma data selected in the left Gamma Data window in the user gamma file selected on the User Gamma list.

4 Selected Gamma area

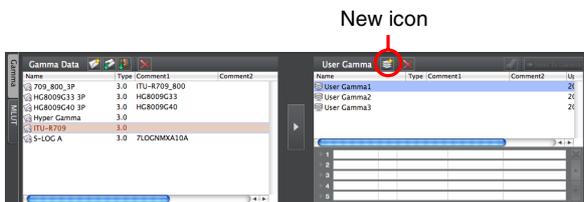
Information on the gamma data registered in a user gamma file is displayed. Clicking on the gamma data line permits you to preview the form of the gamma curve.

Icon	Designation	Function
	Delete Selected Gamma Data from User Gamma	To delete the selected gamma data from the file. The gamma data are not erased (remaining in the Gamma Data window).
	Up	To move the order of gamma data up on the registration list.
	Down	To move the order of the gamma data down on the registration list.

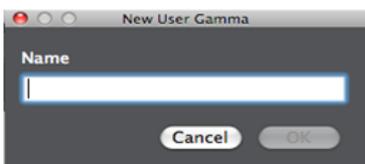
To install user gamma via a Memory Stick into a camera

1 Create a user gamma file.

① Click on the  (New) icon to display the New User Gamma dialog box.



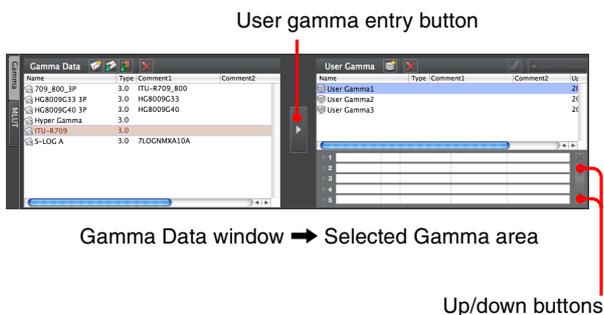
② Enter a filename for the user gamma file.



2 Register gamma data to the user gamma file.

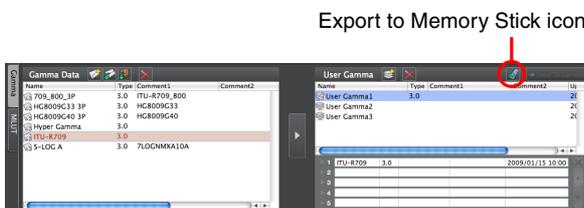
Select the gamma data to be registered in the Gamma Data window and click on the user gamma entry button.

Up to five gammas can be registered. The order of the registered gammas can be changed, using the up/down buttons.



3 Export the user gamma file to a Memory Stick.

Click on the  (Export to Memory Stick) icon and specify the target Memory Stick on the directory.



4 Using the camera's menu, load the user gamma from the Memory Stick into the camera.

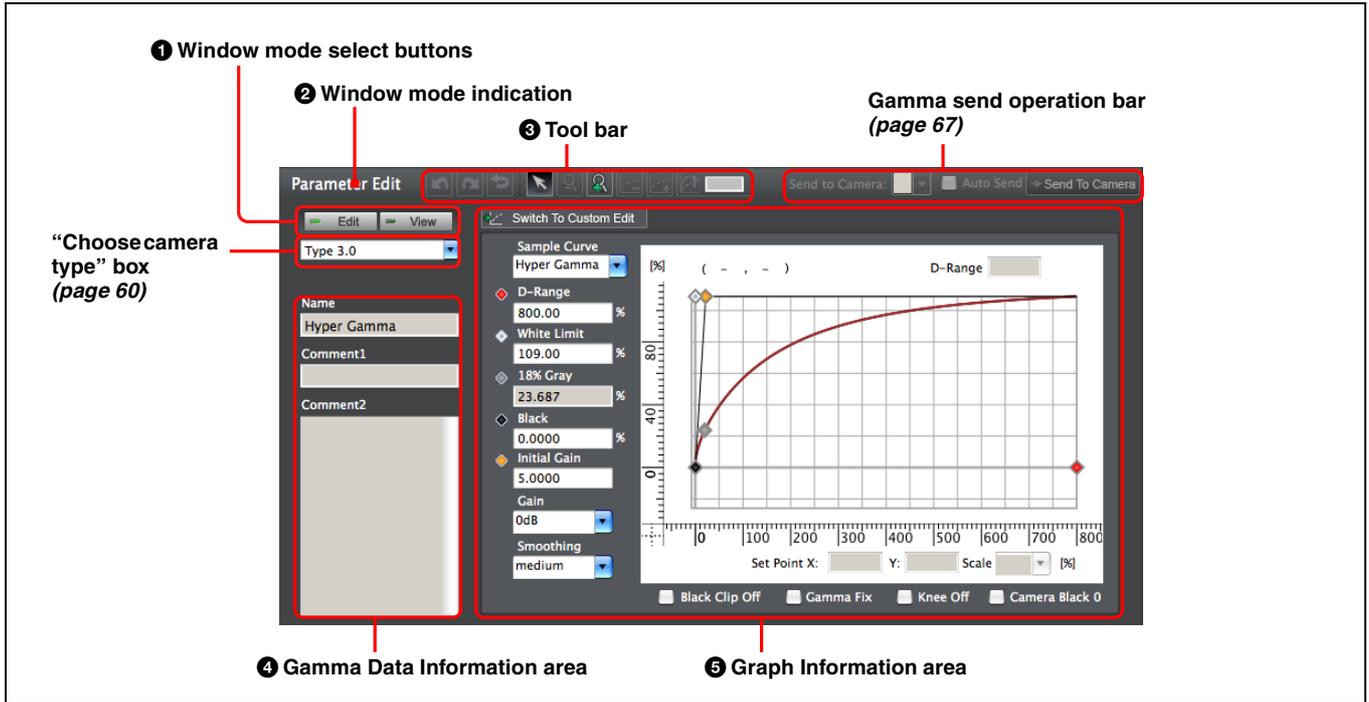
For details on menu operations on the camera, refer to the operation manual of the camera.

For operations to export the data via LAN, see "Camera Gamma Select Window and Gamma Send Operation Bar" (page 67).

Graph View/Edit Window

The window displays the characteristics of the gamma data with a graph. Editing the comments is also possible.

The window has a view mode and two edit modes (Parameter Edit mode and Custom Edit mode).



1 Window mode select buttons

To switch between View mode for displaying the detailed information on the selected gamma data and the edit modes for editing the selected gamma data.

Button	Function
	To use edit modes for editing the curve and information of gamma.
	To select View mode for display only without editing.

2 Window mode indication

Indication	Mode description
Graph View	View mode for confirming the characteristics or information on gamma data without editing
Parameter Edit	Parameter Edit mode for editing gamma data by specifying several parameters (function added to CvpFileEditor V4.0 and later)
Custom Edit	Custom Edit mode for editing gamma data by setting three points on the graph and moving the center point (function available since CvpFileEditor V3.0 and earlier)

3 Tool bar

Valid only in edit modes.

Icon	Designation	Function
	Undo	To undo the last graph operation (invalid for the comment areas)
	Redo	To redo the last undone operation (invalid for the comment areas)
	Restore the curve	To restore the original status of the curve before editing (invalid for the comment areas).
	Allow tool	To set the edit points in Custom Edit mode.
	Zoom out	To reduce the gamma graph. (Clicking on the icon initiates Expand/Reduce mode, and editing is disabled. To exit Expand/Reduce mode, press the ESC key or click on the Allow tool.)
	Zoom in	To expand the gamma graph. (Clicking on the icon initiates Expand/Reduce mode, and editing is disabled. To exit Expand/Reduce mode, press the ESC key or click on the Allow tool.)

Icon	Designation	Function
	Delete all points	Valid in Custom Edit mode. Clicking on the icon removes all the edit points specified on the graph.
	Auto add points	Valid in Custom Edit mode, where three adjustment points are normally specified, using the mouse. Clicking on this icon after specifying the following values automatically adds three edit points on the graph. Input Point [%]: Enter the value for the center point to be edited on the graph (in %). Width [%]: Enter the value of the width between two points to be edited (in %).
	Move curve holistically	To holistically move the curve in vertical directions in Custom Edit mode. If you enter a value (%) in the text box, the curve moves as far as specified.

4 Gamma Data Information area

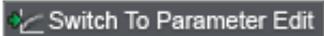
The gamma data name, comment 1, and comment 2 are displayed.

Entering/editing of comment 1 and comment 2 is enabled when you double-click on the respective text boxes in an edit mode.

5 Graph Information area

The characteristics of gamma data are displayed in Graph View mode. In edit modes, operations are different between Parameter Edit mode and Custom Edit mode.

Clicking on the Edit mode switch button at the left end of the title bar switches the modes.

Edit mode switch button	Function
 (Displayed in Parameter Edit mode)	To select Custom Edit mode for editing with three points you specified with the Allow tool.
 (Displayed in Custom Edit mode)	To select Parameter Edit mode for editing gamma data with parameters. Note Once data are edited in Custom Edit mode, the data can no longer edited in Parameter Edit mode.

To start editing in Parameter Edit mode

Parameter Edit mode permits you to easily create a gamma curve by specifying some values (parameters) that determine the gamma.

Parameter editing can be started with either of the following two methods:

1. Newly creating gamma data

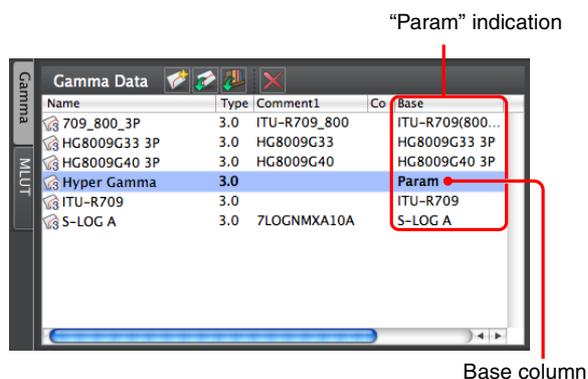
Select “New Gamma Data” from the Data menu to open the New User Gamma dialog box.

Specify Name for the gamma and press the Enter key (or click on OK) to start editing in Parameter Edit mode.

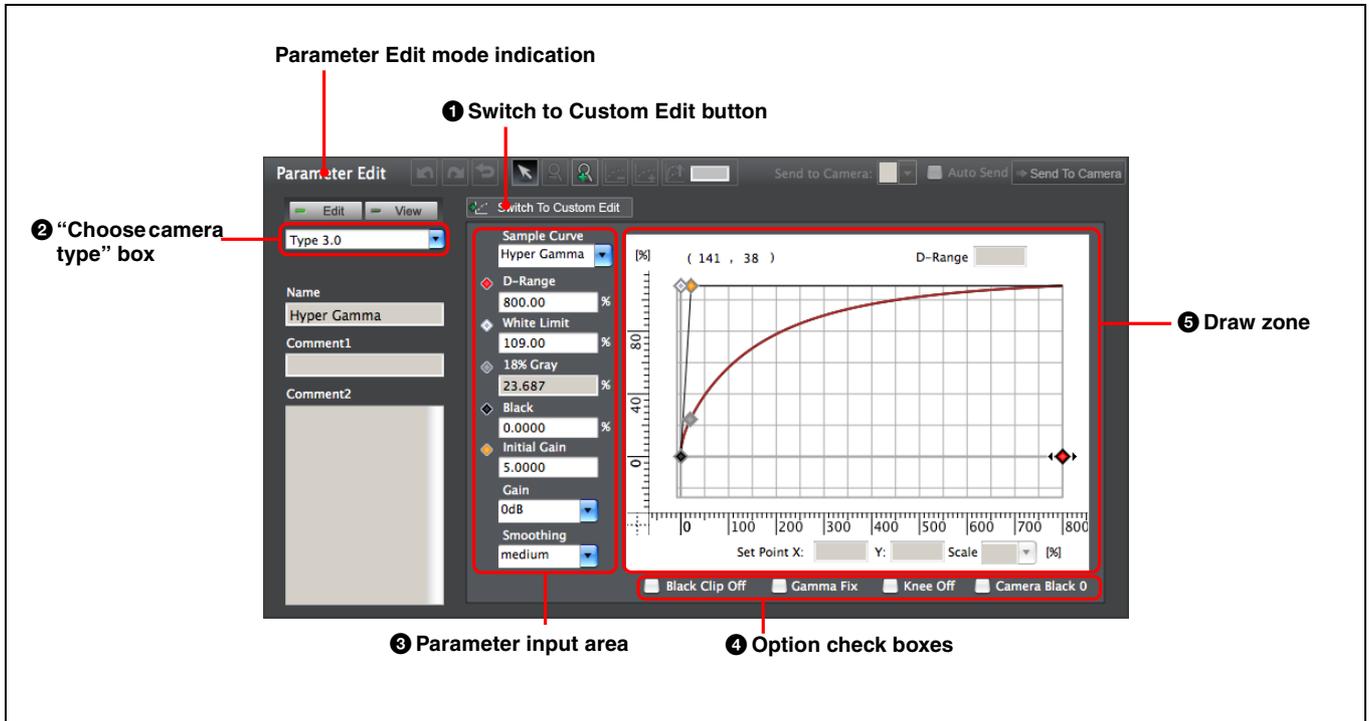
2. Double-clicking on the gamma data on the list whose Base is “Param”

Parameter editing is enabled for a curve for which Parameter editing once has been done as long as the curve has not been edited thereafter in Custom Edit mode.

The gamma data whose Base column of the list shows “Param” can be edited in Parameter Edit mode. Double-click on the gamma data on the list to start editing in Parameter Edit mode.



Graph View/Edit window in Parameter Edit mode



1 Switch to Custom Edit button

Click on the button to switch from Parameter Edit mode to Custom Edit mode. Note that if data have been edited in Custom Edit mode, they cannot be returned to Parameter Edit mode.

2 “Choose camera type” box

The gamma data type depends on the camera model. Select the type according to your camera. For Type 2.0, additionally select from among Table 0 to 2.

If you wish to create gamma data of both Type 2.0 and Type 3.0

Select the gamma data on the gamma data list and make a duplication by right-clicking on it and selecting “Copy” from the context menu. Then change the Type setting.

Note

Gamma data of different types cannot be included in the same user gamma file.

3 Parameter input area

You can specify a value for each parameter as follows:

Icon	Designation	Function
—	Sample Curve	<p>Select the basic characteristics of the curve.</p> <p>Hyper Gamma: To use hyper gamma as the base, which provides the middle tone with characteristics close to ITU-R709 optimum for video monitoring and whose high luminance area is naturally compressed, achieving superior gradation expression and color reproduction. This setting is also used for shooting that assumes color grading processing in postproduction.</p> <p>Log: To set characteristics close to the sensitometric characteristics of negative film. This setting is used for digital processing in postproduction equivalent to digital image scanning for film.</p> <p>Power: To set the characteristics close to those of the luminance reproduction of a CRT. Characteristics near the built-in ITU-R709 or INITIAL 5.0 characteristics are provided.</p>

Icon	Designation	Function
	D-Range	To specify how much of the input light intensity (dynamic range) of a subject to be used for output. To use a wide range, set it to 600–800%. When a large value is specified, the middle luminance (18% Gray) is decreased. To increase the middle luminance, set the dynamic range to 400% or less or increase the 18% Gray setting. The dynamic range of HDW- and HDC-series cameras is 460% at maximum. That of F23/F35 is 800% at maximum.
	White Limit	To set the upper limit of the high-luminance output. The setting must be the output level corresponding to the White Limit setting in postproduction or a camera system. Note This adjustment determines the white clip of the gamma curve. To use the value you set here, turn the white clip of the camera off.
	18% Gray	To change the luminance of middle tone. Set the output level with respect to the input level of a test chart of 18% reflection. Note If Hyper Gamma is selected for Sample Curve, you cannot specify it by a numeric value. Move the icon on the graph, using the mouse or arrow keys.
	Black	Set this item to include the master black level of a subject in the gamma. Normally set to 3%. You can achieve the same adjustment using the built-in master black function of a camera. Note This item cannot be adjusted in Scale Log mode.
	Initial Gain	To specify the gradation expression for black parts. Normally set to 4.5- to 5-times gain. To improve the S/N at black parts or emphasize the middle tone, select a small value.
–	Gain	To decrease the total level while maintaining the characteristics. You can select among from four values; 0 dB, –6 dB (–1 f-stop), –12 dB (–2 f-stops), and –18 dB (–3 f-stops).

Icon	Designation	Function
–	Smoothing	To smoothly connect the initial gain and the curve of the base characteristics. You can select from among four types: off, narrow, medium, and wide. Selecting “narrow” affects a narrow range, and selecting “wide” affects a wide range.

④ Option selection check boxes

Black Clip Off

To turn off the Black Clip function that limits video characteristics on the minus side. Checking the box opts for the characteristics on the minus side to be output. Use the output of characteristics on the minus side to maintain the characteristics for noises. When you use this option, note that proper display may not be obtained on other monitors. Normally it is recommended to set the black to 3 to 5% and not use this option.

Gamma Fix

To inhibit the gamma gain and step gain functions of cameras. Sony cameras are equipped with these functions for fine adjustments of gamma, mainly ITU-R709-based gammas.

As these functions may not operate as precisely as you intend when using hyper gamma or Log-based gamma having a wide dynamic range, it is recommended to check this box to turn the option ON.

Knee Off

The Knee Off function forcibly turns off the Knee function of a camera. The purpose of this option slightly differs between the types of gamma data.

Type 3.0: It is recommended to turn this option ON to prevent the Knee function from inadvertently being turned on when you have created a gamma curve for usage that does not require the Knee function.

Type 2.0: As a camera of this data type has a limitation in creating a high-luminance gamma curve, use this option to create the curve with the Knee function activated (see the figures shown on the next page). It is recommended to turn this option ON when creating a gamma curve having a wide dynamic range. If the Gamma Fix option is turned ON for a Type 2.0 curve, the Knee Off option will also be automatically turned ON.

Knee Off unchecked



Knee Off checked



Camera Black 0 (zero)

When the black level is set for the gamma, the master black level of the camera must be set to 0. By turning this option ON, the camera's master black is fixed to 0. Turn this option OFF if you set the master black on the camera.

Note

The maximum point cannot be edited for a gamma file of Type 2.0.

5 Draw zone

You can change the setting by directly dragging the icon on the graph with the mouse or moving it with the arrow keys on the keyboard.

Using the View menu on the menu bar, either Scale Linear mode or Scale Log mode can be selected for the draw zone.

Scale Linear mode: To draw the graph by linear scaling.

Scale Log mode: To draw the graph by log scaling of the X axis.

Operations in the draw zone in Parameter Edit mode

Scale Linear mode

Sample Curve: Select the basic characteristics for the sample curve.

You can directly enter numeric values.

Gain: You can create a curve by decreasing the total gain from the sample curve.

Set the white clip level to determine the upper limit of the white level.

Adjust the initial gain (slant) that determines the characteristics of black parts.

Adjust the black level.

Adjust the middle tone.

Clicking on a point near the maximum point displays the adjustment buttons at the left and right of the icon, permitting you to adjust the dynamic range.

To decrease the dynamic range value.

To increase the dynamic range value.

Scale Log mode

Sample Curve: Select the basic characteristics for the sample curve.

You can directly enter numeric values. (The black level cannot be adjusted.)

Gain: You can create a curve by decreasing the total gain from the sample curve.

Set the white clip level to determine the upper limit of the white level.

Adjust the initial gain (slant) that determines the characteristics of black parts.

Adjust the middle tone.

Clicking on a point near the maximum point displays the adjustment buttons at the left and right of the icon, permitting you to adjust the dynamic range.

To decrease the dynamic range value.

To increase the dynamic range value.

Smoothing

The smoothing function is to smoothly connect the slope of the initial gain and the base curve. You can select from among four types: off, narrow, medium, and wide.

Note

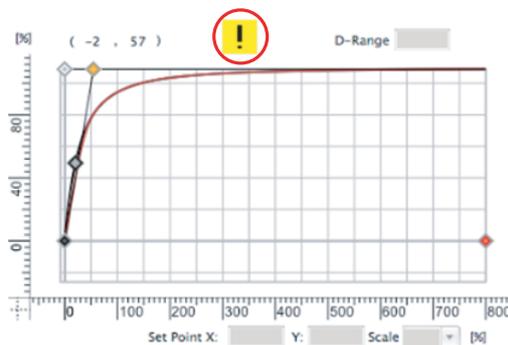
if the setting cannot be changed, owing to the limits of the camera settings, an exclamation symbol, as shown below, appears on the graph.

Linear curve of the initial gain

Curve after smoothing (red)

Sample curve (black)

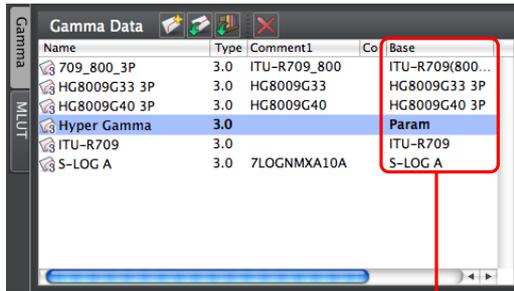
Select the effective range of smoothing.



To switch to Custom Edit mode

Custom Edit mode is used for fine editing that cannot be done in Parameter Edit mode.

Double-clicking on a gamma data on the list whose Base column does not show “Param” activates Custom Edit mode.



Base column

The following adjustments can be made in Custom Edit mode:

- White level/dynamic range adjustment
See “To adjust the white level and dynamic range” (page 65).
- Black adjustment
See “To adjust the black (Scale Linear mode only)” (page 65).
- Middle tone adjustment
See “To adjust the middle tone” (page 65).
- Minus data adjustment
See “To adjust the minus data” (page 66).
- Three-point adjustment
See “To perform 3-point adjustment” (page 66).
- Vertical shift of the curve
See “To move the curve holistically in vertical directions” (page 66).

Graph View/Edit window in Custom Edit mode

Custom Edit mode indication

Editing is done in the draw zone.
For the draw zone, you can select Scale Linear mode or Scale Log mode with the View menu. (The figure shows the draw zone in Scale Linear mode.)

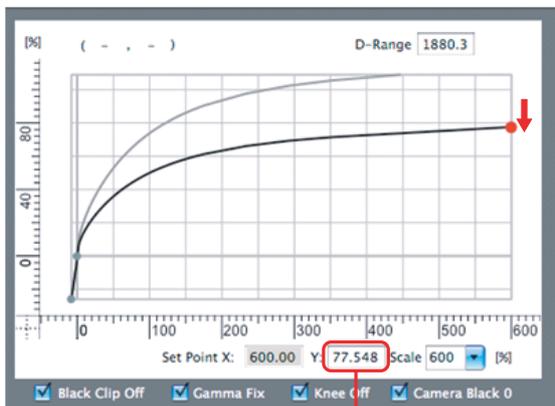
The parameter input area becomes invalid.

Option check boxes are active.

To adjust the white level and dynamic range

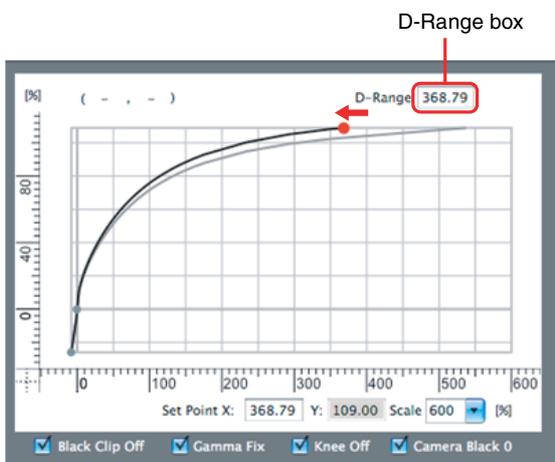
The maximum point of the curve can be adjusted by dragging it with the mouse, without moving the zero point.

You can also move it by directly entering a value in the Set Point Y box.



Set Point Y box

Moving the mouse to the left changes the dynamic range. You can also move it by directly entering a value in the D-Range box.



D-Range box

To use the D-Range box

The D-Range box shows the abscissa value for the point of ordinate 109.

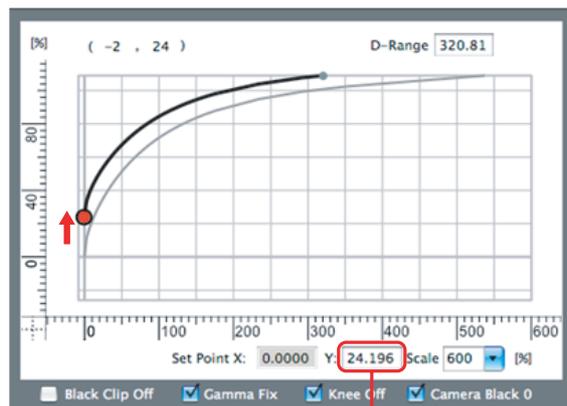
The point of ordinate 109 is changed according to the entered abscissa value.

If a value over 9999 is entered, it is regarded as invalid, and the curve is not modified.

To adjust the black (Scale Linear mode only)

The black can be adjusted by dragging the origin point on the X axis with the mouse.

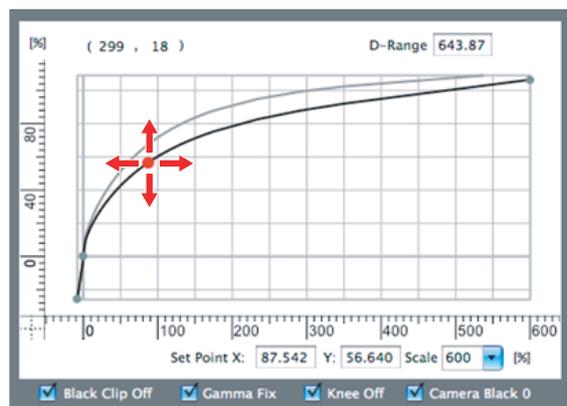
You can also move it by directly entering a value in the Set Point Y box.



Set Point Y box

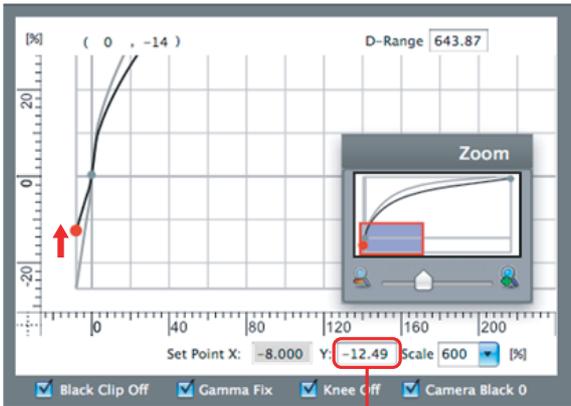
To adjust the middle tone

When you click on the curve, an adjustment point is added. You can change the shape of the curve by dragging the point with the mouse.



To adjust the minus data

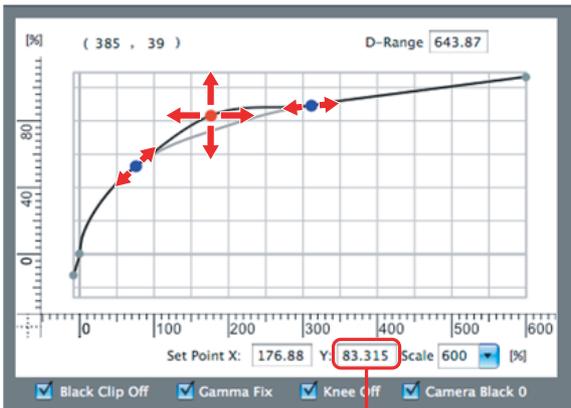
You can adjust the data in the minus area.
 You can also move it by directly entering a value in the Set Point Y box.



Set Point Y box

To perform 3-point adjustment

Perform three-point adjustment when you wish to restrict the change area.
 Specify three points on the graph, using the mouse. You can change the curve by moving the center point. The curve will not change in the areas outside the side two points.
 The side points can be moved along the curve.
 The center point can also be moved by entering a value in the Set Point Y box.

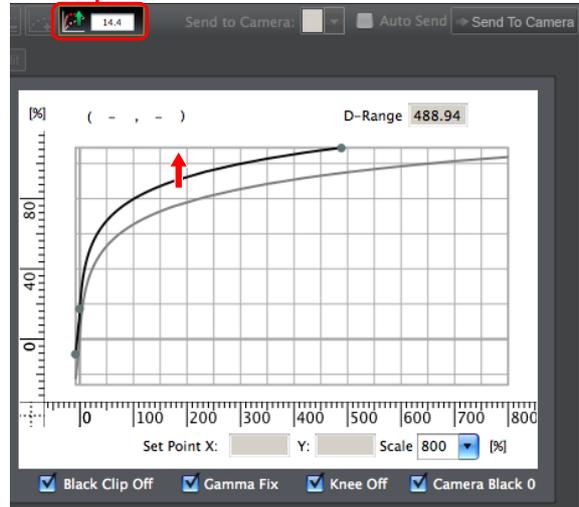


Set Point Y box

To move the curve holistically in vertical directions

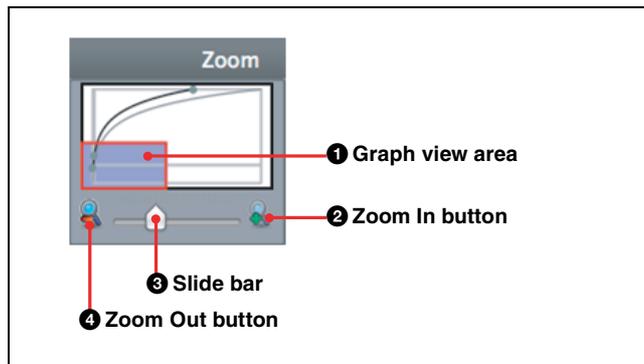
Clicking on the  (Move curve holistically) icon on the tool bar activates Vertical move mode. You can move the curve by dragging it with the mouse in this mode. You can also move the curve by entering a value (in %) in the box to the right of the icon then pressing the Enter key.

"Move curve holistically" icon and value input box



Zoom Manager Window

The Zoom manager window permits you to expand/reduce the graph in the draw zone.



1 Graph view area

The purple area indicates the area displayed in the draw zone. The mouse pointer changes to the hand icon in this area. Dragging it moves the view area.

2 Zoom In button

Click on it to expand the graph in the draw zone.

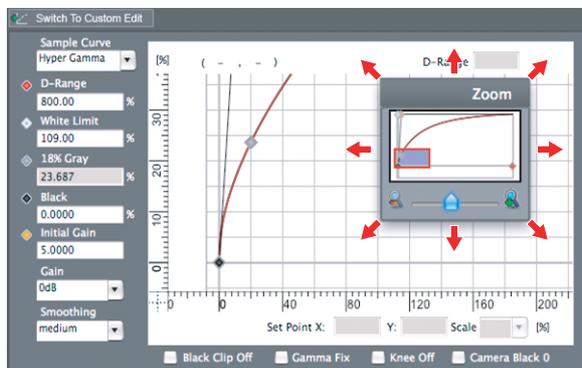
3 Slide bar

Dragging the pointer to the right with the mouse expands the graph in the draw zone, and dragging it to the left reduces it.

4 Zoom Out button

Click on it to reduce the graph in the draw zone.

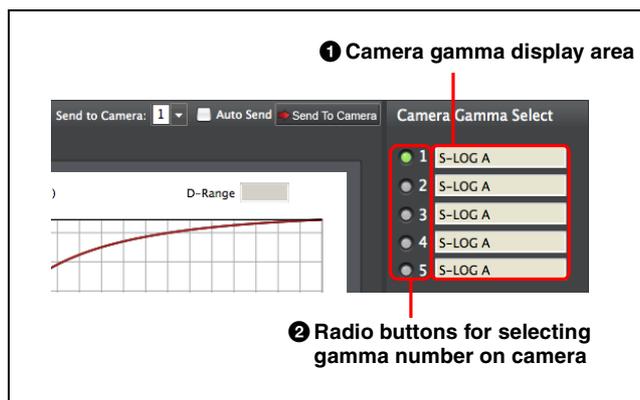
You can move the Zoom manager window to anywhere over other windows.



Camera Gamma Select Window and Gamma Send Operation Bar

You can transmit a gamma to a camera connected via LAN or a group of gammas as a user gamma file. The names of the gammas loaded in a camera are displayed, permitting you to change the current gamma selection on the camera.

Camera Gamma Select window



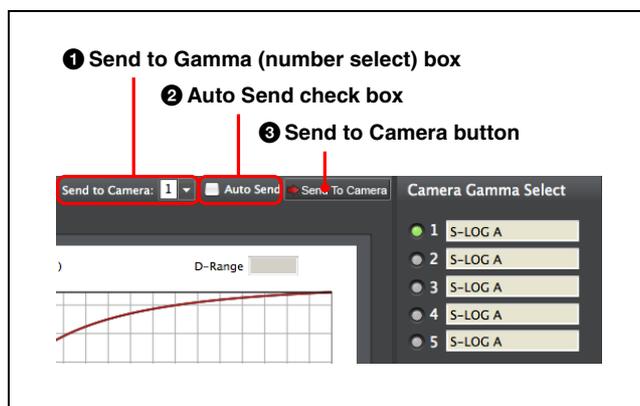
1 Camera gamma display area

The names of the user gammas installed in the connected camera are displayed.

2 Radio buttons for selecting gamma number on camera

You can switch the user gamma on the camera by using the radio buttons.

Gamma send operation bar



1 Send to Gamma (number select) box

Select the destination user gamma of the camera.

2 Auto Send check box

Check this box to automatically send the data to a camera each time you edit the graph. This is convenient to immediately confirm the results of editing.

Note

Responses to graph operations may become slower, as data are transmitted each time you change the graph.

3 Send to Camera button

To send the gamma selected in the User Gamma window (page 56) to a camera as the user gamma of the number specified in the Send to Gamma (number select) box.

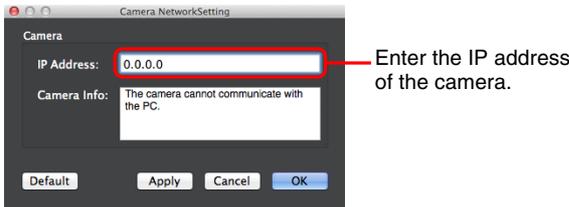
To connect a camera

- 1 Connect the CvpFileEditor-installed computer to the camera via a hub or directly via a cross cable.

Note

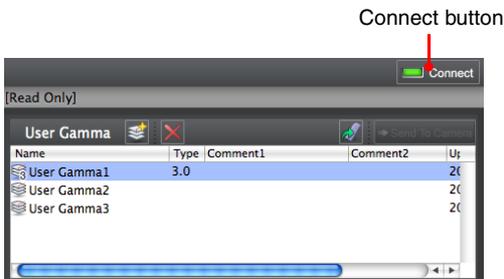
When connecting the computer to a camera directly, always use a cross cable. When using a straight cable, connect via a hub. Communication may not be possible using other connection methods.

- 2 Select "Camera Setting" from the User Gamma menu to open the Camera NetworkSetting window.
- 3 Enter the IP address of the camera then click on OK to close the Camera NetworkSetting window.



- 4 Click on the Connect button at the right end of the tool bar.

The connection to the camera is established, and the indicator of the button changes color to green.



To transmit the data to the connected camera

- 1 Specify the target user gamma number with the Send to Gamma (number select) box on the Gamma send operation bar.
- 2 Click on the Send to Camera button on the Gamma send operation bar.

The display is automatically updated when transmission is completed.

Importing and Exporting Gamma Data Files of Other Types

In addition to ce2, the following three file types are supported.

Files of gdd

Input and output data in pairs are displayed in %.

```
//
// CineAlta Camera Gamma lookup table GDD DATA
//

NAME= pam-lut
COMMENT1=
COMMENT2=
XMAP= 100
YMAP= 100
DATE= 2008/11/14

BEGIN DATA
0.000000,      0.000000
0.856164,      4.252283
1.712329,      6.906393
2.568493,      8.476027
3.424658,      9.703196
4.280822,      10.816210
5.136986,      11.815068
5.993151,      12.756849
6.849315,      13.613014
7.705479,      14.440639
8.561644,      15.239726
9.417808,      15.981735
10.273973,     16.695205
11.130137,     17.408676
11.986301,     18.093607
12.842466,     18.750000
13.698630,     19.377854
14.554795,     20.005708
```

The data area described in the following format:

Character	Meaning
//	Comment description
NAME	Gamma name to be displayed in the Gamma Data list.
COMMENT1	Comment 1 information
COMMENT2	Comment 2 information
XMAP	Multiplying factor for input values. Set to 100 to indicate in %.
YMAP	Multiplying factor for output values. Set to 100 to indicate in %.
DATE	Date of creation
BEGIN DATA	Beginning of data
Numerical values	Input and output values are described separated with a comma and space.
END DATA	End of data

Files of csv

The format is almost the same as a gdd file except commas after data values only.

```
//
// CineAlta Camera Gamma lookup table CSV DATA
//

NAME= INITIAL5.0,
COMMENT1= ,
COMMENT2= BBC Gamma 0.45,
XMAP= 100,
YMAP= 100,
DATE= 2007/09/26,

BEGIN DATA // X(%) Y(%)
0.000000, 0.000000,
0.456621, 1.724579,
0.913242, 3.449159,
1.369863, 5.162999,
1.826484, 6.874320,
2.283105, 8.569201,
2.739726, 10.254010,
3.196347, 11.921710,
3.652968, 13.566740,
4.109589, 15.199040,
4.566210, 16.791040,
5.479452, 19.905430,
6.392694, 22.888440,
7.305936, 25.718570,
8.219178, 28.374370,
9.132420, 30.834340,
10.045660, 33.077470,
10.958900, 35.077420,
```

Files of lut

Data are described with digital codes of the specified bit length.

```
#
# CineAlta Camera Gamma lookup table LUT DATA
#

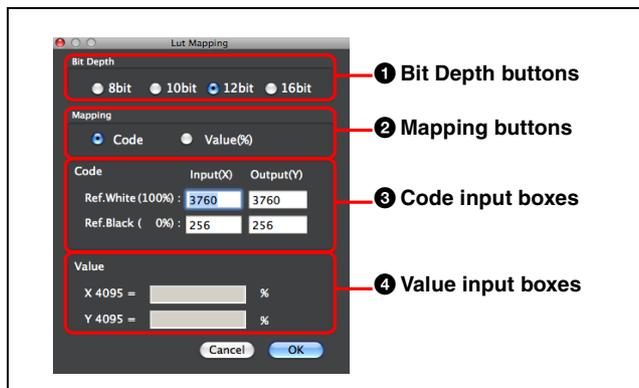
LUT: 3 4096

#Red
123
128
133
138
142
147
152
157
162
166
171
176
180
185
189
194
199
203
208
212
216
221
225
```

Character	Meaning
#	Comment description
LUT: 3 X	Always enter "3" at the beginning, as data are composed of three channels (R, G, and B). Enter a value of the bit length for X. (e.g. 1024 for 10 bits)
Numeric values	Enter the digital codes for output data as much as the required number for the specified bit length (e.g. 1024 values of 0 to 1024 for 10-bit data). The same numeric value string must be repeated three times, as they are required for each of the R, G, and B channels.

Export options for a lut file

When exporting, the Lut Mapping window opens, permitting you to change the lut file format.



1 Bit Depth buttons

To specify the bit length.

2 Mapping buttons

To determine whether to output the data in digital codes or in % values.

3 Code input boxes

When you select "Code" for Mapping, enter the codes for 100% White and 0% Black. The codes can be specified independently for Input and Output.

4 Value input boxes

When you select "Value(%)" for Mapping, specify the percentages of the maximum values of input codes. The X and Y values vary depending on the Bit Depth selections.

Exporting the Inverse Characteristics

The Inverse ability of the program enables conversion of camera output to a linear curve to which no gamma is applied.

You can output the characteristics of the inverse function of gamma data as an inverse file.

Select Export Inverse File from the Data menu.

Note

A curve of inverse characteristics cannot be imported.

Functions and Shortcuts Operations of Gamma Operation Menus

CvpFileEditor menu

Command	Shortcut	Function
About CvpFileEditor	Shift + Command + A	To display the CvpFileEditor version
Preference		To open the Preference window
Services		To display service information
Hide CvpFileEditor	Command + H	To hide CvpFileEditor
Hide Others	Option + Command + H	To hide other applications
Show All		To display all applications
Quit CvpFileEditor	Command + Q	To quit CvpFileEditor.

File menu

Command	Shortcut	Function
Open	Command + O	To open an application file (*.ce2)
New	Command + N	To create a new application file
Close	Command + W	To close the current application file
Save	Command + S	To save the current application file
Save As	Shift + Command + S	To save the current application file under another filename
Print Setup	Command + U	To set up screen printing
Print	Command + P	To print the screen
Recent CE2 Files		To open a recent application file

Data menu

Command	Shortcut	Function
New	Command + G	To create new gamma data in Parameter Edit mode
Library	Command + L	To read gamma data from a library

Command	Shortcut	Function
Import	Command + I	To read a file of another format as gamma data
Export	Shift + Command + G	To export the current gamma data to a gdd file
	Shift + Command + C	To export the current gamma data to a csv file
	Shift + Control + L	To export the current gamma data to a lut file
Export Inverse File	Option + Command + G	To export inverse characteristics as an inverse file of the gdd format
	Option + Command + C	To export inverse characteristics as an inverse file of the csv format
	Option + Command + L	To export inverse characteristics as an inverse file of the lut format

Edit menu

In Parameter Edit mode

Command	Shortcut	Function
Undo	Command + Z	To cancel the previous curve adjustment operation
Redo	Command + Y	To execute the undone curve adjustment operation again
Restore	Command + R	To restore the curve to its original status before editing
Zoom In	Command + =	To expand the graph
Zoom Out	Command + -	To reduce the graph
Custom Edit	Shift + Command + E	To shift to Custom Edit mode

In Custom Edit mode

Command	Shortcut	Function
Undo	Command + Z	To cancel the previous curve adjustment operation
Redo	Command + Y	To execute the undone curve adjustment operation again
Restore	Command + R	To restore the curve to its original status before editing
Zoom In	Command + =	To expand the graph
Zoom Out	Command + -	To reduce the graph

Command	Shortcut	Function
Auto Add Points	Command + A	To automatically add three edit points for the curve
Delete All Points	Command + D	To delete all the edit points on the curve
Move	Shift + Command + M	To turn Vertical Move mode on or off

User Gamma menu

Command	Shortcut	Function
New	Shift + Command + U	To create a new user gamma file
Export	Command + E	To export the selected user gamma to a Memory Stick
Camera Setting	Shift + Command + T	To set the IP address of the camera

View menu

Command	Shortcut	Function
Data List	Option + D	To turn the Gamma Data and User Gamma windows on or off
Camera Gamma Select	Option + C	To turn the Camera Control window on or off
Graph	Option + G	To turn the Graph View/Edit window on or off
Zoom Manager	Option + Z	To turn the Zoom manager window on or off
Scale Linear	Option + V	To draw the graph by linear scaling
Scale Log	Option + L	To draw the graph by log scaling of the X axis

Window menu

Command	Shortcut	Function
Minimize	Command + M	To minimize the CE2 window
Zoom		To zoom in the CE2 window
Bring All to Front		To bring all windows to the front

Mode menu

Command	Shortcut	Function
Gamma	Option + Command + A	To select Gamma operation mode
MLUT	Option + Command + M	To select MLUT operation mode

Functions and Operations of the MLUT Windows

Window Layout

If you click on the MLUT tab, the following MLUT windows are displayed:

Gamma/MLUT select tabs (page 16)
 Located on the left side of the interface, these tabs allow switching between Gamma and MLUT views.

Menu bar (page 85)
 The top bar of the application window containing standard menu items like File, Data, Edit, Group, View, Window, and Mode.

CE file operation buttons (page 16)
 A set of icons in the top-left corner used for file operations.

MLUT Data window (page 74)
 Used for MLUT data management. It displays a table of MLUT data:

Name	Work Space	ASC CDL	Display	Com
709(800%)	S-Log	OFF	709_800_3P	
HG8009G33	S-Log	OFF	HG8009G33...	
HG8009G40	S-Log	OFF	HG8009G40...	
SlogTo709	S-Log	OFF	ITU-R709	
SlogTo709CDL	Cineon	ON	ITU-R709	

MLUT Group window (page 75)
 Used for MLUT group management for grouping MLUT data to install them in a camera. It displays a table of MLUT groups:

Name	Comment	Update
User MLUT1		2010/03/01 10:00
User MLUT2		2010/03/01 10:00
User MLUT3		2010/03/01 10:00

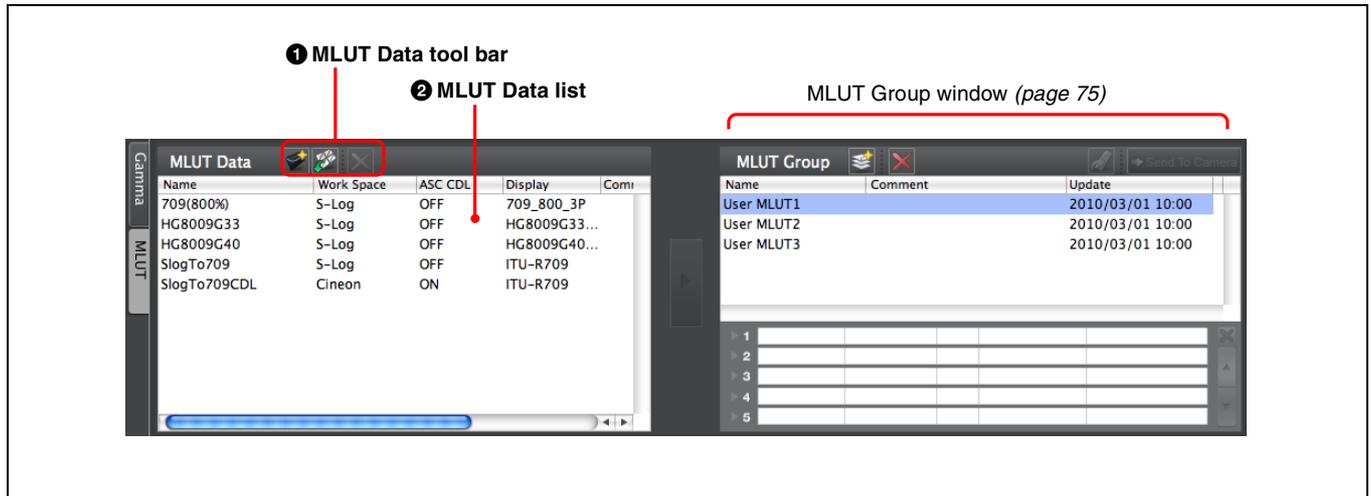
MLUT Adjust window (page 77)
 You can adjust the CDL values by using the keyboard or the mouse. It features a grid for adjusting parameters like LMT, ASC CDL, Slope, Offset, Lift, Gamma, and Saturation.

Camera MLUT window (page 82)
 Used to transmit MLUT data via LAN or to change the MLUT selection on the camera. It includes a 'Send To Camera' button and a list of MLUT selections.

Connect button
 Click on the button to connect or disconnect communication with a camera. When connection is established, the indicator changes color from red to green. For details, see "To connect a camera" (page 83).

MLUT Data Window

Manage MLUT data in the MLUT Data window.



1 MLUT Data tool bar

Icon	Designation	Function
	New	To create a new MLUT.
	Import	To import an ASC CDL file. <i>For details, see "File Types for MLUT" (page 84).</i>
	Delete	To delete the specified MLUT data.

2 MLUT Data list

Designation	Contents
Name	Designation of the MLUT data, which is displayed on the camera menu screen when the data are installed in a camera.
Work Space	Type of gamma (S-Log A, Cineon, etc.) converted in ICT (input conversion transform). Select the same Gamma setting to be used for grading in postproduction.
ASC CDL	Whether any ASC CDL adjustment value is included in the MLUT data ON: Included OFF: Not included
Display	Gamma setting for display outputs (Default: ITU-R709)
Comment	Additional information on the MLUT. Up to 1000 characters can be entered. The information is not added in data exporting.
Update	The year, month, day, and time of updating are displayed.

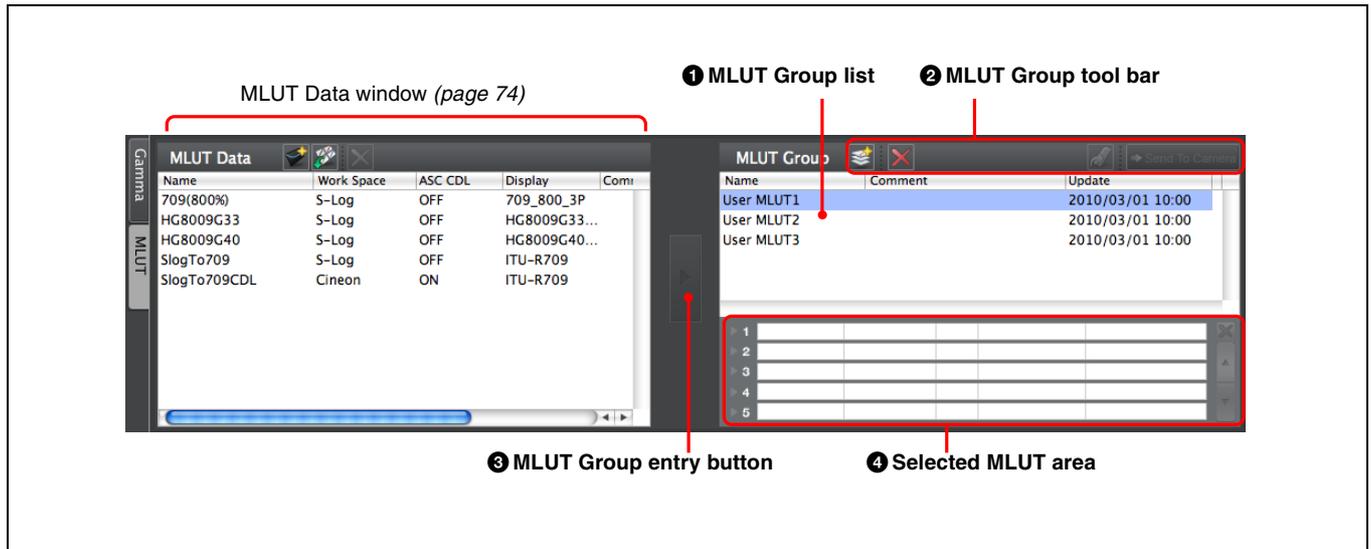
Clicking on the title of each column changes the display order on the list.

Right-clicking on an MLUT data line permits you to import or export an MLUT or ASC CDL, create another MLUT, delete or rename the data, or edit the comment.

MLUT Group Window

The MLUT Group window is used to group created MLUT data as user MLUTs to install the data in a camera

via a Memory Stick or a LAN. Five sets of MLUT data at maximum can be grouped as an MLUT group.



1 MLUT Group list

The list shows the information on the MLUT group. Operations as those for MLUT data can be made by right-clicking on the list.

2 MLUT Group tool bar

Icon	Designation	Function
	New	To create a new MLUT group.
	Delete	To delete the selected MLUT group from the list. The registered MLUT data are not erased (remaining in the MLUT Data window).
	Export	To export the selected MLUT group to a Memory Stick. Note Export is not executed if no MLUT data are registered in the MLUT group.
	Send To Camera	To send the selected MLUT group to a camera.

3 MLUT Group entry button

To enter the MLUT data selected in the left MLUT Data window in the MLUT group selected on the MLUT Group list.

4 Selected MLUT area

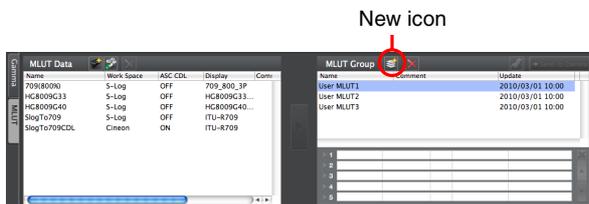
Information on the MLUT data registered for an MLUT group is displayed.

Icon	Designation	Function
	Delete MLUT	To delete the selected MLUT data from the group. The MLUT data are not erased (remaining in the MLUT Data window).
	Up	To move the order of MLUT data up on the registration list.
	Down	To move the order of the MLUT data down on the registration list.

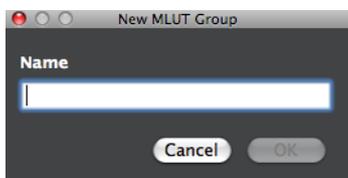
To install MLUT group via a Memory Stick into a camera

1 Create an MLUT group.

- Click on the  (New) icon to display the New MLUT Group dialog box.



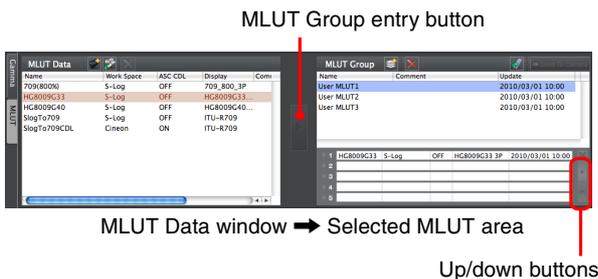
- Enter a filename for the MLUT group.



2 Register MLUT data for the MLUT group.

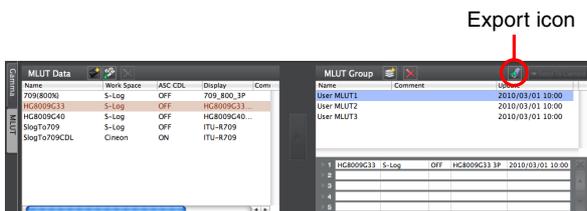
Select the MLUT data to be registered in the MLUT Data window and click on the MLUT Group entry button.

Up to five MLUTs can be registered. The order of the registered MLUTs can be changed, using the up/down buttons.



3 Export the MLUT group to a Memory Stick.

Click on the  (Export) icon and specify the target Memory Stick on the directory.



- Open the USER GAMMA page of the camera's FILE menu, load the MLUT group from the Memory Stick into the camera with the MONI LUT READ function.

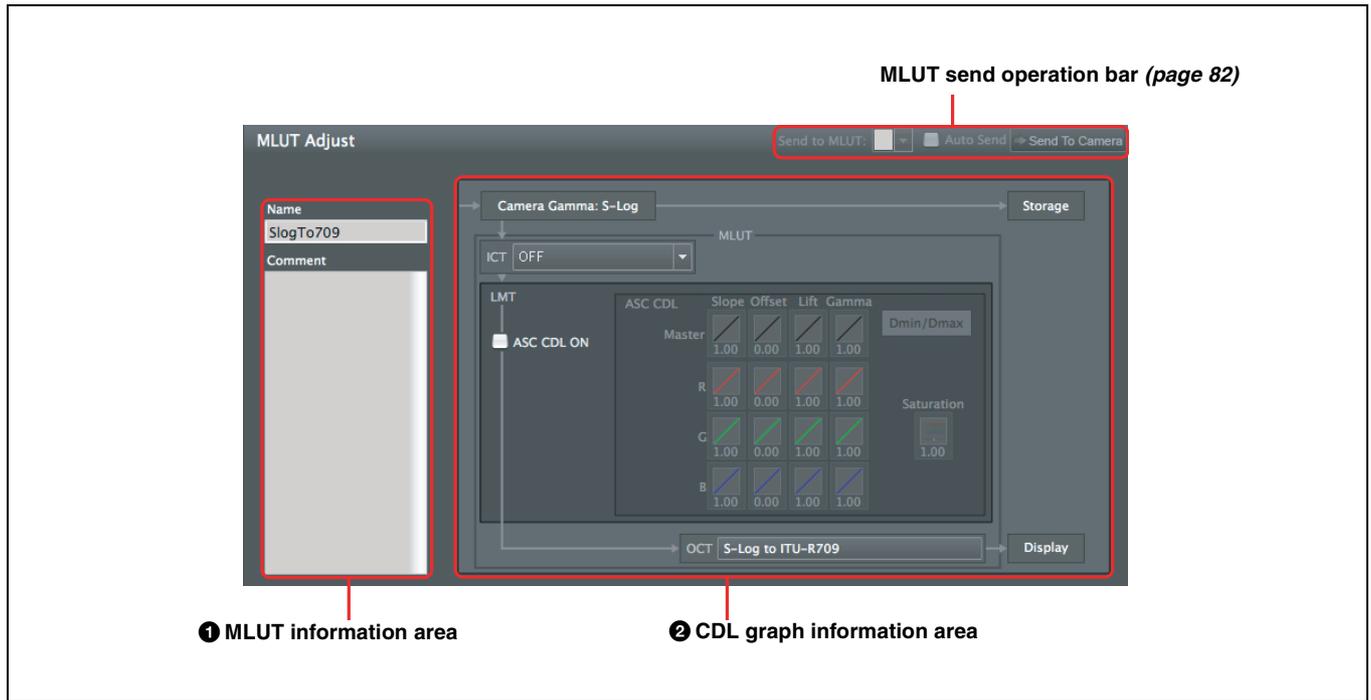
- Set MLUT/PB MIX to MLUT and select the type for MLUT SEL on the PB/MONI LUT page of the camera's OPERATION menu.

For details on menu operations on the camera, refer to the operation manual of the camera.

For operations to export the data via LAN, see "Camera MLUT Select Window and MLUT Send Operation Bar" (page 82).

MLUT Adjust Window

The MLUT Adjust window permits you to adjust the CDL information of the selected MLUT.



1 MLUT information area

The MLUT data name and any comment are displayed. Entering/editing of the comment is enabled when you double-click on the text box.

2 CDL graph information area

The CDL-related information is displayed. This area enables you to select the ICT (input conversion transform) and OCT (output conversion transform) types and adjust the CDL values. The area is grayed and inoperative when no MLUT is selected in the MLUT Data window (page 74) or an MLUT group is selected in the MLUT Group window (page 75). It has multiple operation modes, CDL OFF, CDL Edit, and Sub Edit, and operable items are different among the modes.

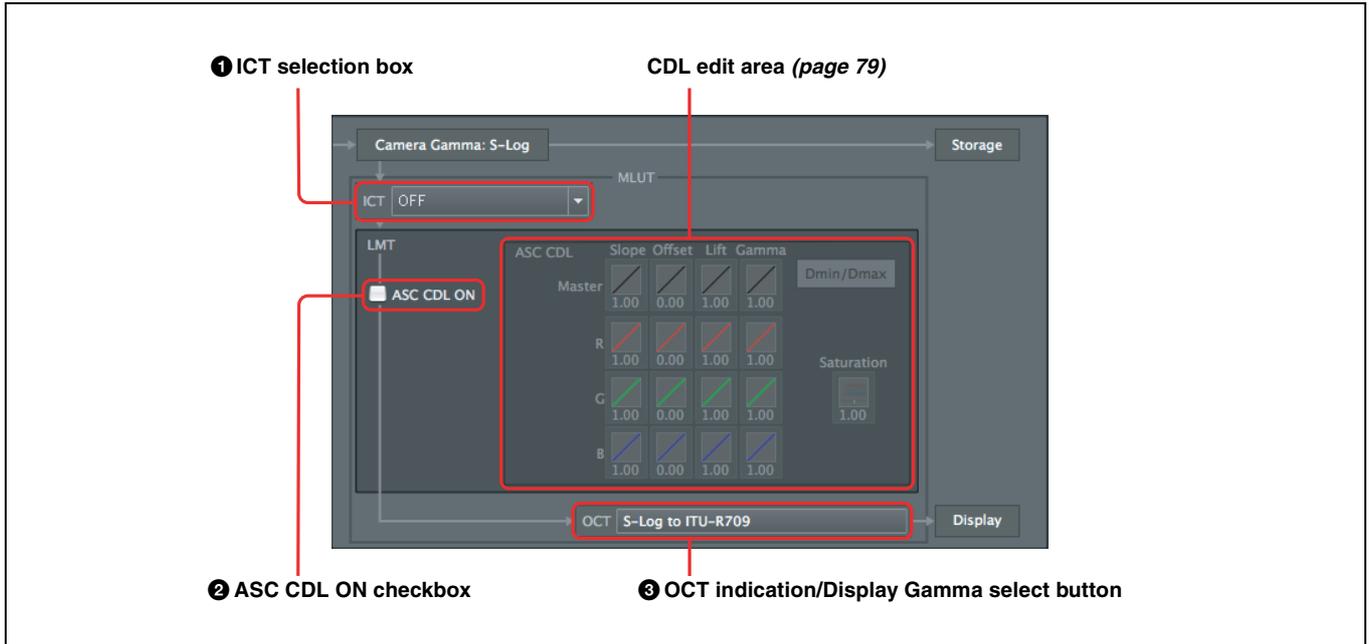
Note

Operation is enabled only when the camera gamma is S-Log A with V4.3.

CDL OFF Mode

When you select an MLUT whose CDL attribute is OFF in the MLUT Data window (page 74), the CDL graph information area enters CDL OFF mode, activating the

ICT selection box, ASC CDL ON checkbox, and OCT indication/Display Gamma selection button.

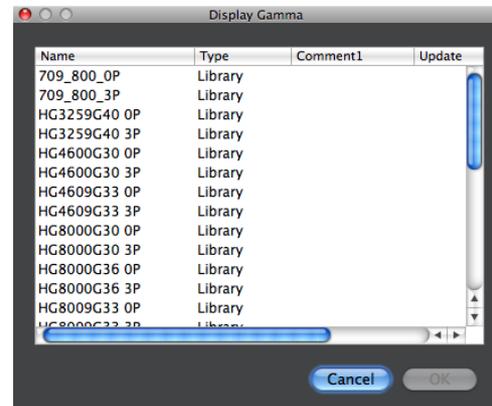


1 ICT (Input Conversion Transform) selection box
When using ASC CDL, set it according to the Work Space to be used in postproduction. When ASC CDL is not used, this setting is invalid, as conversion to the gamma set in OCT (output conversion transform) is made.

3 OCT (Output Conversion Transform) indication/ Display Gamma select button
The gamma for output to displays can be selected. When ASC CDL is ON, it is forcibly set to ITU-R709. When ASC CDL is OFF, user gamma selection is enabled. When you click on the button, the Display Gamma selection dialog opens, permitting you to select the user gamma to be applied to displays.

Designation	Contents
S-Log to Scene Linear	To convert S-Log A to Scene Linear. The OCT indication shows "Scene Linear to xxx."
S-Log to Cineon	To convert S-Log A to Cineon. The OCT indication shows "Cineon to xxx."
OFF	No conversion is made. S-Log A is used without conversion.

2 ASC CDL ON checkbox
When you check this box, the CDL graph information area switches to CDL Edit mode (page 79), activating the CDL edit area. The ASC CDL attribute of the selected MLUT becomes ON when the box is checked. It returns to OFF when the box is unchecked. If you select ASC CDL ON for an MLUT whose Display Gamma is other than ITU-R709, an alarm message is displayed and Display Gamma is forcibly changed to ITU-R709.

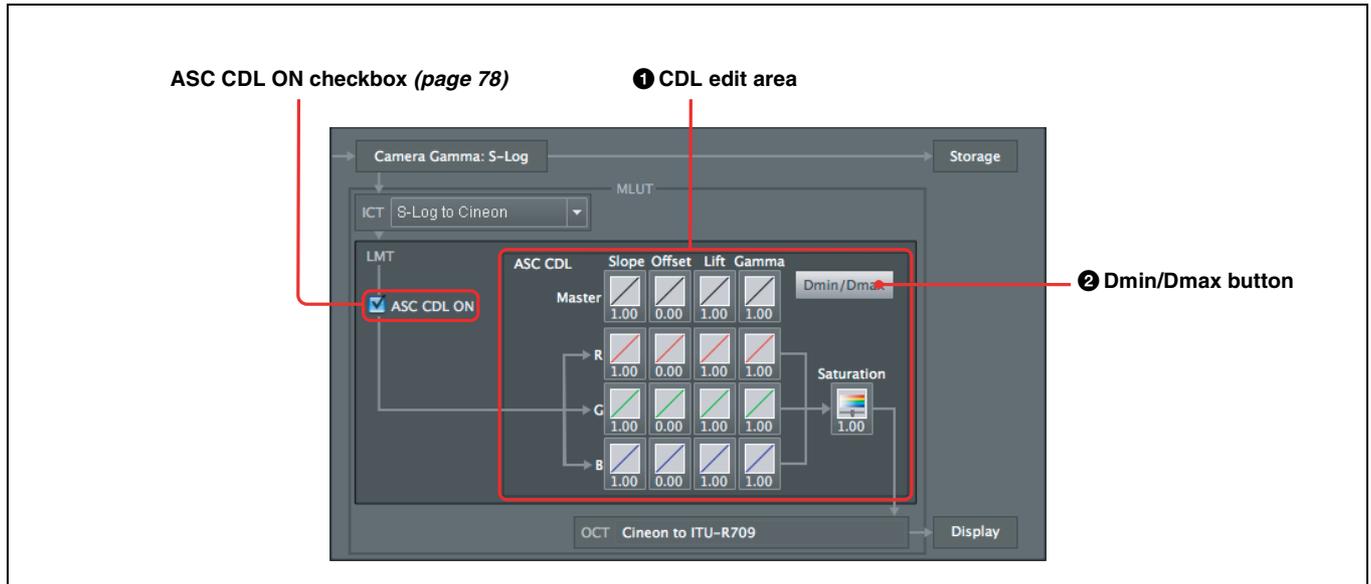


Note
This setting converts S-Log A of the main line to the selected gamma. There are two types of data included on the Gamma list with V4.3 MLUT data; Library data and gamma data of Type 3.0. Selecting a gamma of Type 3.0 here disables operations, such as deletion, renaming, and editing of the gamma in Gamma Operation mode.

CDL Edit Mode

When you check the ASC CDL ON checkbox or select an MLUT whose CDL attribute is ON, the CDL graph information area enters CDL Edit mode.

The Dmin/Dmax button and the CDL edit area become operable and the default values and thumbnail images of 17 CDL items are displayed. The Display Gamma select button (*page 78*) is disabled in this mode.

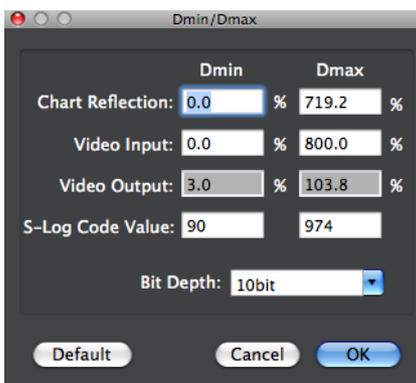


1 CDL edit area

The default values and thumbnail images of the ASC CDL adjustment items (Slop, Offset, Lift, Gamma, and Saturation) are displayed. For Slop, Offset, Lift, and Gamma, the master, R, G, and B values are displayed. Clicking on a thumbnail image opens the edit window (*see page 80*) for the corresponding item.

2 Dmin/Dmax button

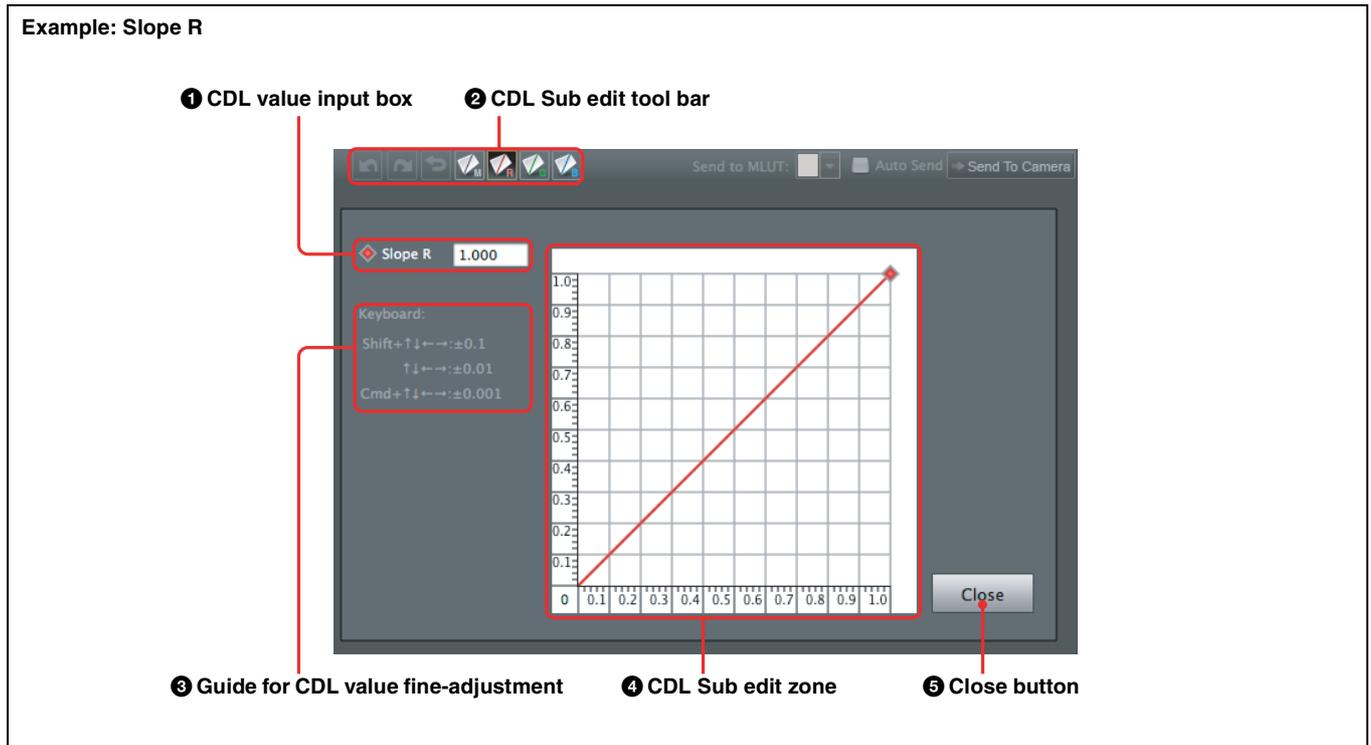
Clicking on this button opens the Dmin/Dmax window, enabling the adjustments.



CDL Edit Windows

Clicking on a thumbnail image in the CDL edit area in CDL Edit mode opens the edit window for the

corresponding item. This permits you to adjust the CDL value, using the mouse or keyboard.



1 CDL value input box

Adjustment is achieved by entering a value. The range of adjustment values differ among the items. If you enter a value out of the range, an error message is displayed.

Icon	Designation	Function
◆	Slope M	0 to 99.990
	Offset M	-1 to 1
	Lift M	0 to 99.990
	Gamma M	0 to 140
◆	Slope R	0 to 99.990
	Offset R	-1 to 1
	Lift R	0 to 99.990
	Gamma R	0 to 140
◆	Slope G	0 to 99.990
	Offset G	-1 to 1
	Lift G	0 to 99.990
	Gamma G	0 to 140
◆	Slope B	0 to 99.990
	Offset B	-1 to 1
	Lift B	0 to 99.990
	Gamma B	0 to 140
	Saturation	0 to 2

2 CDL Sub Edit Tool bar

For edit reoperation or switching M, R, G, and B edit windows for Slope, Offset, Lift or Gamma.

Icon	Designation	Function
	Undo	To undo the last operation.
	Redo	To redo the last undone operation.
	Restore	To restore the original status of the item.
	Master	To switch to the edit window of the master value of the same item.
	Red	To switch to the edit window of the R value of the same item.
	Green	To switch to the edit window of the G value of the same item.
	Blue	To switch to the edit window of the B value of the same item.

③ Guides for CDL value fine-adjustment

Operation guides for fine-adjustment from the keyboard are displayed.

Example: Shift + ↓ ↑ ← → ±0.1

Pressing an arrow key with the Shift key held pressed moves the adjustment point (icon) by 0.1 on the graph in the direction of the arrow.

④ CDL Sub edit zone

You can edit Slope, Offset, Lift, Gamma, and Saturation.

Slope: For an effect equivalent to ISO sensitivity adjustment of the camera or the f-stop adjustment of the lens.

Offset: For black level adjustment without changing the overall contrast.

Lift: For black level adjustment while maintaining high-luminance areas.

Gamma: To change the brightness at middle luminance.

Saturation: To adjust vividness of colors.

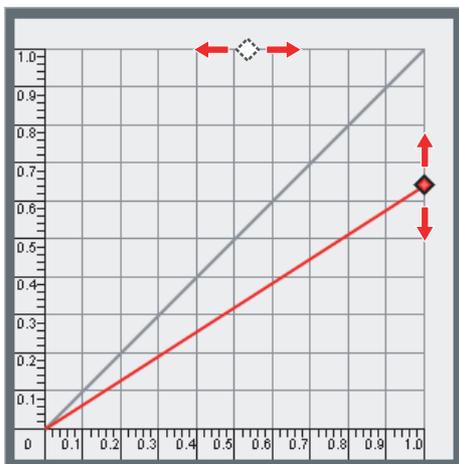
Notes

- Adjustments are performed in the sequence of Slope, Offset, then Gamma. Lift is adjusted internally, using Slope and Offset.
- The saturation function for ASC CDL is applied for monitor images only. It is different from “Saturation” of the MAINTENANCE menu of cameras.

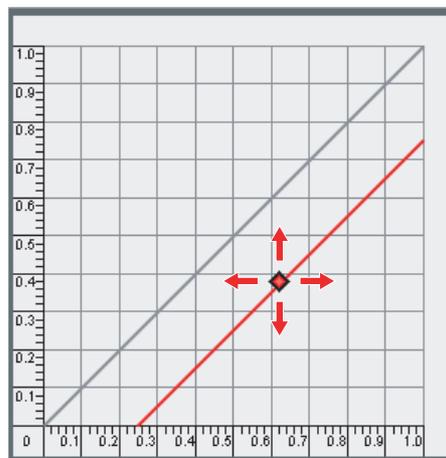
In the edit zone for Slope, Offset, Lift, and Gamma, you can change the value by directly dragging the icon (common to that for the CDL value input box) displayed on the graph with the mouse or moving it with arrow keys on the keyboard (see “Guides for CDL value fine-adjustment” above). The gray line indicates the default setting.

In the edit zone for Saturation, you can change the value by directly dragging the slide bar with the mouse or moving it with arrow keys.

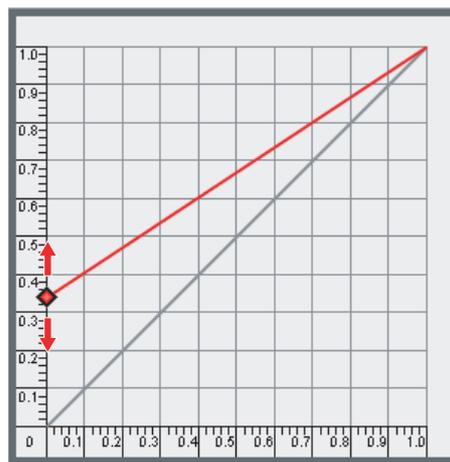
Slope adjustment (example: R)



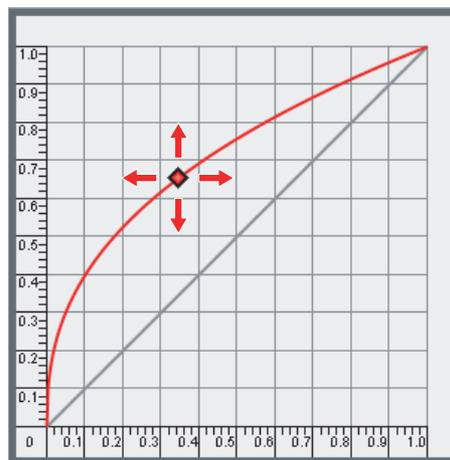
Offset adjustment (example: R)



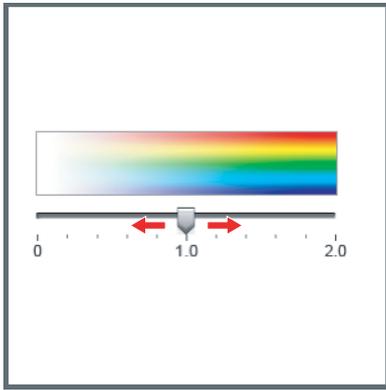
Lift adjustment (example: R)



Gamma adjustment (example: R)



Saturation adjustment



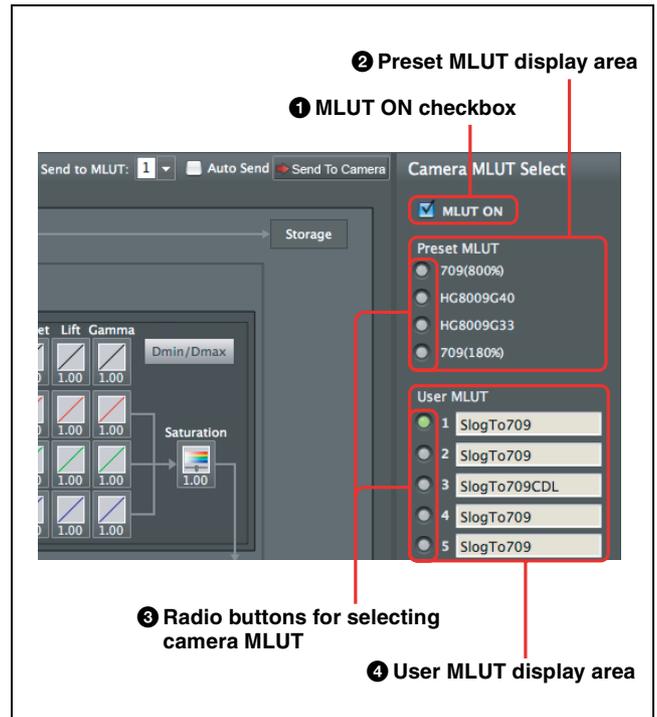
④ Close button

Clicking on the button closes the edit window, returning to CDL Edit mode. (You can also close the edit window by pressing the space bar.)

Camera MLUT Select Window and MLUT Send Operation Bar

You can transmit an MLUT to a camera connected via LAN or a group of MLUTs as an MLUT group. The names of the MLUTs loaded in a camera are displayed, permitting you to change the current MLUT selection on the camera.

Camera MLUT Select window



① MLUT ON checkbox

Check this box to operate MLUTs in the camera connected via LAN.

The checkbox is not effective when no LAN connection is established or the camera version is 1.5 or earlier.

② Preset MLUT display area

The names of the default MLUTs in the connected camera are displayed. You can switch the preset MLUT installed in the camera by using the radio buttons.

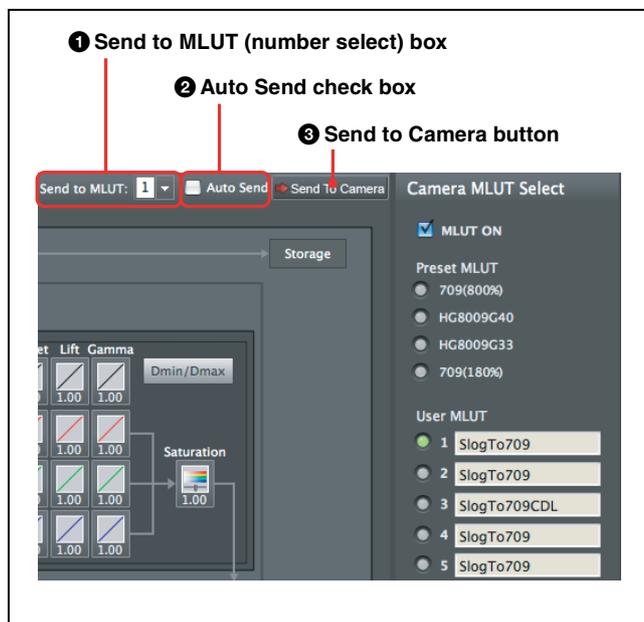
③ Radio buttons for selecting MLUT on the camera

You can switch the MLUT on the camera by using the radio buttons.

④ User MLUT display area

The names of the User MLUTs installed in the connected camera are displayed.

MLUT send operation bar



1 Send to MLUT (number select) box

Select the destination MLUT number of the camera.

2 Auto Send check box

Check this box to automatically send the data to a camera each time you edit the CDL. This is convenient to immediately confirm the results of editing.

Note

Responses to operations may become slower, as data are transmitted each time you change the setting.

3 Send to Camera button

To send the MLUT selected in the MLUT data window (page 74) to a camera as the MLUT data of the number specified in the Send to MLUT (number select) box.

To connect a camera

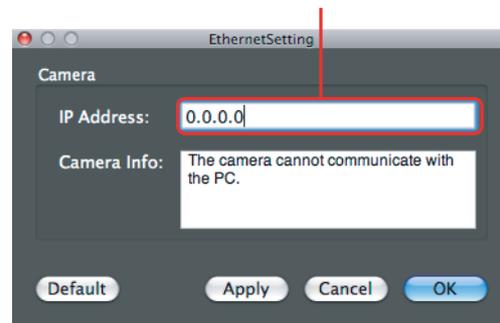
- 1 Connect the CvpFileEditor-installed computer to the camera via a hub or directly via a cross cable.

Note

When connecting the computer to a camera directly, always use a cross cable. When using a straight cable, connect via a hub. Communication may not be possible using other connection methods.

- 2 Select "Camera Setting" from the MLUT Group menu to open the Ethernet Setting window.
- 3 Enter the IP address specified by the NETWORK menu of the camera then click on OK to close the Ethernet Setting window.

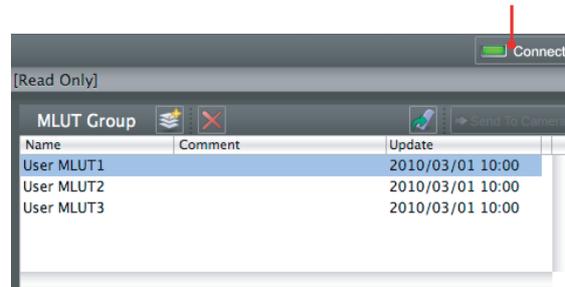
Enter the IP address of the camera.



- 4 Click on the Connect button at the right end of the tool bar (page 73).

The connection to the camera is established, and the indicator of the button changes color to green.

Connect button



To transmit the data to the connected camera

- 1 Specify the target MLUT number with the Send to MLUT (number select) box on the MLUT send operation bar.
- 2 Click on the Send to Camera button on the MLUT send operation bar.

The display is automatically updated when transmission is completed.

File Types for MLUT

Files of lut type is used when exporting MLUTs to a Memory Stick.
To exchange ASC CDL with another system, use files of cdl type.

Files of lut

Data are described with digital codes of the specified bit length.

```

#
#
#"$S-LOG A""SlogTo709CDL"
#%"ITU-R709"
#?Metadata_start
#?UserLut_Name:"SlogTo709CDL"
#?Slope_R:1.000
#?Slope_G:1.000
#?Slope_B:1.000
#?Offset_R:0.000
#?Offset_G:0.000
#?Offset_B:0.000
#?Power_R:1.000
#?Power_G:1.000
#?Power_B:1.000
#?Saturation:1.000
#?Video_Dmin:0.0
#?Video_Dmax:800.0
#?Reflection_Dmin:0.0
#?Reflection_Dmax:719.2
#?CodeValue_Dmin:90
#?CodeValue_Dmax:974
#?BitDepth:10
#?ICT_Name:"1""S-Log to Cineon"
#?OCT_Name:"Cineon to ITU-R709"
#?Metadata_end
LUT: 3 1024
#Red
64
    
```

Character	Meaning
#	Comment description
#\$	Name of the gamma used in the MLUT
##	Name of the display gamma
#?	CDL information

Character	Meaning
LUT: 3	Always enter "3" at the beginning, as data are composed of three channels (R, G, and B). Enter a value of the bit length for X (e.g. 1024 for 10 bits).
Numeric values	Enter the digital codes for output data as much as the required number for the specified bit length (e.g. 1024 values of 0 to 1024 for 10-bit data). The same numeric value string must be repeated three times, as they are required for each of the R, G, and B channels.

Files of cdl

```

<ColorCorrectionCollection xmlns=" ">
  <InputDescription>S-LOG A</InputDescription>
  <ViewingDescription>ITU-R709</ViewingDescription>
  <ColorCorrection id=" ">
    <SOPNode>
      <Slope>1.000 1.000 1.000</Slope>
      <Offset>0.000 0.000 0.000</Offset>
      <Power>1.000 1.000 1.000</Power>
    </SOPNode>
    <SATNode>
      <Saturation>1.000</Saturation>
    </SATNode>
  </ColorCorrection>
</ColorCorrectionCollection>
    
```

Character	Meaning
Input Description	Name of the gamma used in the MLUT
Viewing Description	Name of the display gamma
Slope	Values for R, G and B channels of the slope
Offset	Values for R, G and B channels of the offset
Gamma	Values for R, G and B channels of the gamma

Functions and Shortcuts Operations of MLUT Operation Menus

CvpFileEditor menu

Command	Shortcut	Function
About CvpFileEditor	Shift + Command + A	To display the CvpFileEditor version
Preference		To open the Preference window
Services		To display service information
Hide CvpFileEditor	Command + H	To hide CvpFileEditor
Hide Others	Option + Command + H	To hide other applications
Show All		To display all applications
Quit CvpFileEditor	Command + Q	To quit CvpFileEditor.

File menu

Command	Shortcut	Function
Open	Command + O	To open an application file (*.ce2)
New	Command + N	To create a new application file
Close	Command + W	To close the current application file
Save	Command + S	To save the current application file
Save As	Shift + Command + S	To save the current application file under another filename
Print Setup	Command + U	To set up screen printing
Print	Command + P	To print the screen
Recent CE2 Files		To open a recent application file

Data menu

Command	Shortcut	Function
New	Command + M	To create new MLUT data
Import	Command + I	To read a file of another format as MLUT data

Command	Shortcut	Function
Export MLUT	Option + U	To export the current MLUT data to a file of another format.
Export ASC CDL	Option + A	To export the current ASC CDL data to a file of another format.

Edit menu

Command	Shortcut	Function
Undo	Command + Z	To cancel the previous CDL adjustment operation
Redo	Command + Y	To execute the undone CDL adjustment operation again
Restore	Command + R	To restore the CDL to its original status before editing
Slope		To open the CDL Slope adjustment window
Offset		To open the CDL Offset adjustment window
Lift		To open the CDL Lift adjustment window
Gamma		To open the CDL Gamma adjustment window
Saturation	Option + R	To open the CDL Saturation adjustment window
Dmin/Dmax	Option + I	To open the Dmin/Dmax adjustment window

Group menu

Command	Shortcut	Function
New	Shift + Command + G	To create a new MLUT group
Export	Shift + Command + P	To export the selected MLUT group to a Memory Stick
Camera Setting	Shift + Command + N	To set the IP address of the camera

View menu

Command	Shortcut	Function
Data List	Control + Shift + D	To turn the MLUT Data and MLUT Group windows on or off
Camera MLUT Select	Control + Shift + E	To turn the Camera MLUT Select window on or off
MLUT Adjust	Control + Shift + J	To turn the MLUT Adjust window on or off

Window menu

Command	Shortcut	Function
Minimize	Command + M	To minimize the CE2 window
Zoom		To zoom in the CE2 window
Bring All to Front		To bring all windows to the front

Mode menu

Command	Shortcut	Function
Gamma	Option + Command + A	To select Gamma operation mode
MLUT	Option + Command + M	To select MLUT operation mode

