

## 4K VIDEO SCALER VC-100UHD



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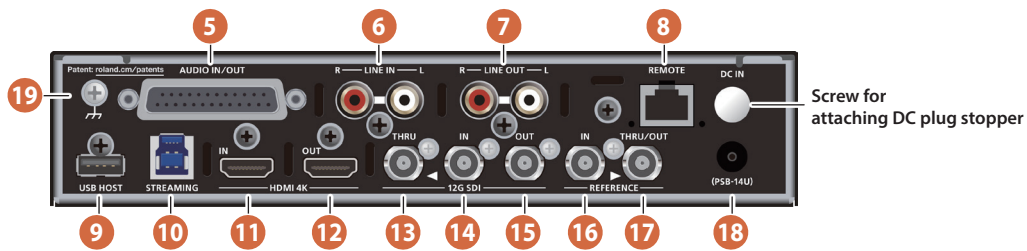
# Panel Descriptions

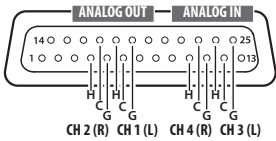
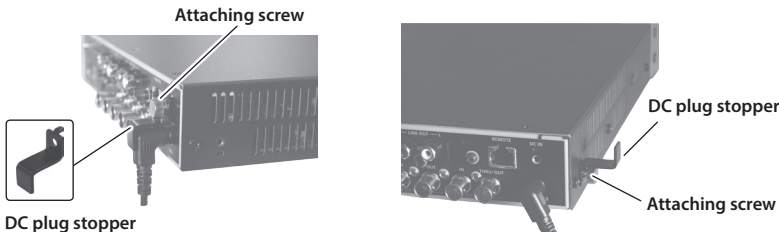
## Front Panel



Name	Explanation								
<b>1</b> Display	This shows various information about the VC-100UHD.								
<b>2</b> [SETUP] button	<ul style="list-style-type: none"> <li>• If you press this when it is unlit, the setup menu screen appears.</li> <li>• If you press this when it is lit green, you move from the setup menu screen to the status screen, and the button goes dark.</li> <li>• If a lower level of the setup menu screen is shown, this button operates as the [EXIT] button, so that each press of the button returns to the screen of the next higher level.</li> </ul> <p>The illuminated color of the button indicates the state of this unit.</p> <table border="1"> <thead> <tr> <th>Indicator</th> <th>Explanation</th> </tr> </thead> <tbody> <tr> <td>Unlit</td> <td>The status screen is shown.</td> </tr> <tr> <td>Lit green</td> <td>The setup menu screen is shown. Alternatively, panel lock is on (display unlit).</td> </tr> <tr> <td>Blink red</td> <td>A problem has occurred with this unit while panel lock is on (display unlit).</td> </tr> </tbody> </table>	Indicator	Explanation	Unlit	The status screen is shown.	Lit green	The setup menu screen is shown. Alternatively, panel lock is on (display unlit).	Blink red	A problem has occurred with this unit while panel lock is on (display unlit).
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Blink red	A problem has occurred with this unit while panel lock is on (display unlit).								
<b>3</b> [PAGE/CURSOR] knob	<p>When the upper right of the screen indicates "ENTER," pressing the [PAGE/CURSOR] knob confirms the edited value. Alternatively, it executes the operation.</p> <table border="1"> <thead> <tr> <th>[SETUP] button</th> <th>Explanation</th> </tr> </thead> <tbody> <tr> <td>Lit green</td> <td>Moves the cursor in the setup menu screen.</td> </tr> <tr> <td>Unlit</td> <td>Switches pages in the status screen.</td> </tr> </tbody> </table>	[SETUP] button	Explanation	Lit green	Moves the cursor in the setup menu screen.	Unlit	Switches pages in the status screen.		
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<b>4</b> [VALUE] knob	<p>In the status screen or the setup menu screen, use this to enter a value. If you turn the knob while pressing it, the value changes more greatly. ➔ "Operating the [VALUE] Knob" (p. 5)</p>								

# Rear Panel



Name	Explanation
5 AUDIO IN/OUT connector	<p>This connector provides analog audio signal input/output (two balanced inputs and two balanced outputs). The output signal is the same as the output signal of the LINE OUT jacks.</p> 
6 LINE IN jacks (L, R)	These jacks input audio. Connect them to an audio mixer, CD player, or other audio or video device. CH 1 is L and CH 2 is R.
7 LINE OUT jacks (L, R)	These jacks output audio. Connect them to an audio recorder, amp, or speaker. CH 1 is L and CH 2 is R.
8 REMOTE connector	This allows you to remotely control this unit from a computer using terminal software.
9 USB HOST port	<p>A USB flash drive can be connected to this port. This is used when saving/loading settings for the unit or when updating the system program.</p> <p>* While the screen indicates "Processing," never turn off the power or disconnect the USB flash drive.</p>
10 STREAMING port	<p>This is a USB 3.0 B-type port for video/audio output.</p> <p>When you connect it to a USB port of your computer, this device is recognized as a web camera.</p>
11 HDMI 4K IN connector	This connector can input video up to 4K. Connect a video device or computer here. HDMI 2.0b 18 Gbps HDCP 2.2 is supported.
12 HDMI 4K OUT connector	This connector can output video up to 4K. Connect a video recording device or display here. Depending on the setup settings, the signal of the HDMI 4K IN connector can be "thru-output" from here. HDMI 2.0b 18 Gbps HDCP 2.2 is supported.
13 12G-SDI THRU connector	The video that is input from the 12G-SDI IN connector is output without change from this connector. A re-clocker is built in.
14 12G-SDI IN connector	This connector can input video up to 4K. Connect a video camera or similar device here. Input up to 12G-SDI is supported.
15 12G-SDI OUT connector	This connector can output video up to 4K. Connect a video recording device or display here. Output up to 12G-SDI is supported.
16 REFERENCE IN connector	This connector inputs an analog external synchronization signal. Black burst/2-value/3-value synchronization signals are supported.
17 REFERENCE THRU/OUT connector	<p>When this unit is operating with internal synchronization, the internal synchronization signal of the unit is output as black burst.</p> <p>When this unit is operating with external synchronization, the external synchronization input is "thru-output."</p>
18 DC IN jack	<p>Connect the included AC adaptor to this jack.</p> <p>You can secure the plug of the AC adaptor by attaching the included DC plug stopper.</p> <p>* The DC plug stopper can also be attached to the left side of the unit and used as a cable holder.</p> 
19 Ground terminal	Connect this to an external earth or ground. Connect this if necessary.

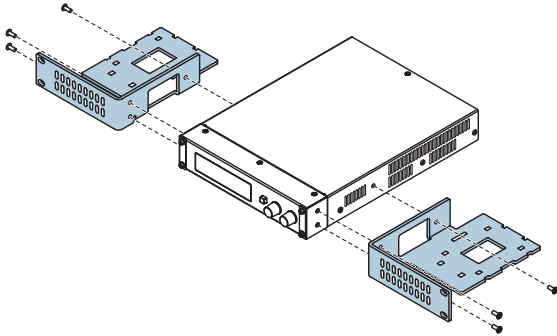
# Setup and Preparations

## Rack-Mounting

### Attaching the rack-mount angles

By attaching the included rack-mount angles to this unit, you can mount it in a rack.

1. Remove the screws from the side panels.
2. Using the screws that you removed, attach the rack-mount angles as shown in the illustration.



#### NOTE

- Install in a well-ventilated location.
- Do not block the cooling vents located on the unit's side panels.
- Avoid mounting the unit in a sealed-type rack. Warm air within the rack cannot escape and is sucked into the unit, making efficient cooling impossible.
- If the back of the rack cannot be opened, install an exhaust port or ventilation fan at the top back surface of the rack, where warm air collects.
- When using the unit while mounted in a movable case (portable rack), remove the front and rear rack covers so that the front and back of the unit are not obstructed.
- Take care not to pinch your fingers etc. while mounting the unit in a rack.

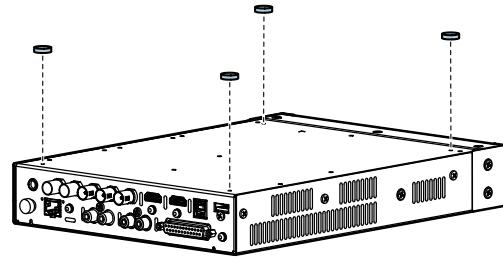


## Free-Standing Use

### Attaching the rubber feet

If you will be placing this unit on a desk or shelf for use, attach the included rubber feet (4 pcs.). This prevents the unit from slipping or from scratching the surface on which it is placed.

1. Remove the rubber feet from the sheet.
2. Peel the double-sided tape off the rubber feet, and affix the feet so that they cover the four guide holes on the bottom of the unit.



## Turning the Power On/Off

#### NOTE

This unit does not have a power switch.

We recommend that you use a commercially available power supply control device to control the AC power of this unit.

When powering up	Turn on the power in the order of VC-100UHD → source devices → output devices.
When powering down	Turn off the power in the order of output devices → source devices → VC-100UHD.

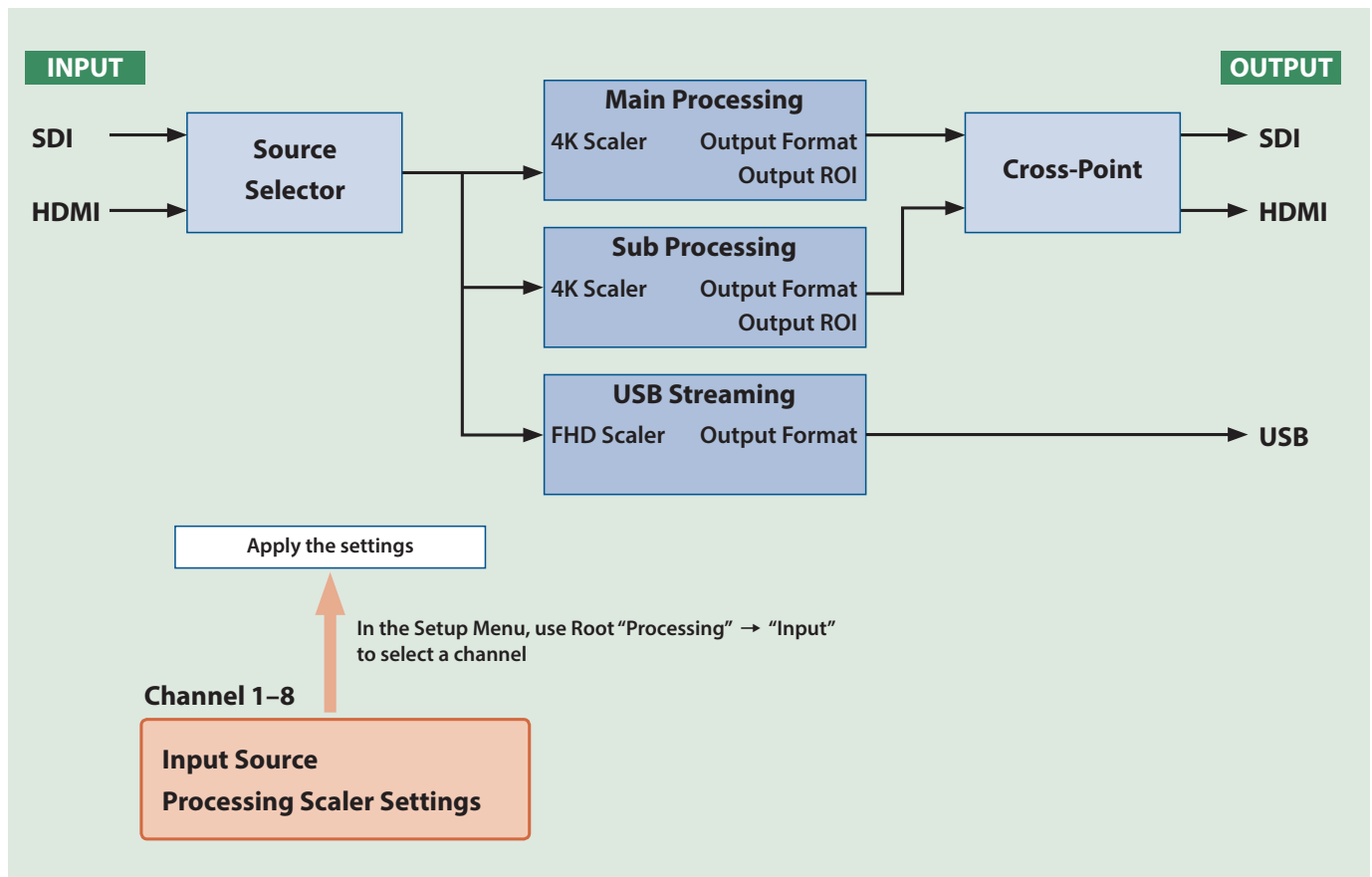
# Basic Operations

## Video Processing in the VC-100UHD (Overview)

This unit is a scaler equipped with SDI and HDMI inputs and outputs. It can convert between SDI and HDMI, and perform format conversion. It has three processing systems, MAIN, SUB, and USB, and you can individually specify scaling and output format for each of these. These processing settings are managed in units called “channels.”

A channel saves the input source selection, the scaler settings for each processing, and the audio settings (p. 13); when you use Setup Menu screen → Root “Processing” → “Input” to select a channel, the settings saved in the channel are applied to the processing.

Each processing differs in functionality such as the effects that are provided. There are also some functions such as the main processing’s rotate function or HDMI thru function that can be obtained by limiting the operation of the sub processing.



## Operating the [VALUE] Knob

Although you can change the value more greatly by turning the [VALUE] knob while pressing it, you can use the following functions to edit the value even more efficiently.

- (1) If you turn the [VALUE] knob while pressing it, and then stop turning it but continue to press it, the value changes continuously.
- (2) If you continue pressing the knob and repeat operation (1), the change becomes faster each time you repeat this.
- (3) If you continue pressing the [VALUE] knob and then press the [SETUP] button, the value returns to the original value before editing.
- (4) If you continue pressing the [VALUE] knob and then long-press the [SETUP] button, the value returns to the default value.

## Operations in the Status/Setup Menu Screens

On this unit you'll use the "status screen" or the "setup menu screen" to make various settings.

The status screen is shown when the [SETUP] button is unlit, and the setup menu screen is shown when the button is lit green.

### Status screen

Here you can check the status of this unit's signals. This also provides shortcuts to frequently-used parameters.

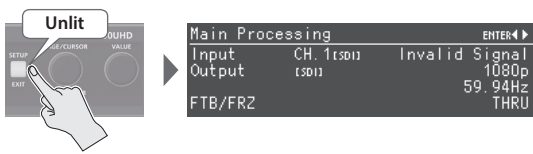
### Setup Menu screen

Here you can make operation settings for this unit.

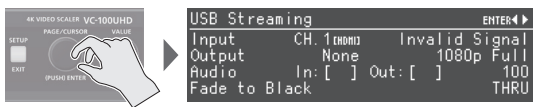
## Operations in the Status Screen

### 1. Press the [SETUP] button to make the button go dark.

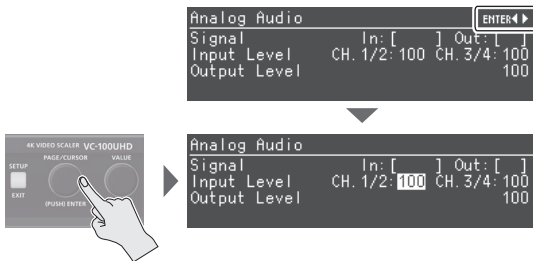
The status screen appears.



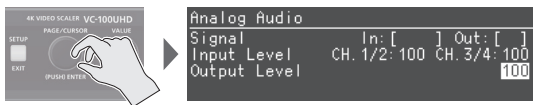
### 2. Turn the [PAGE/CURSOR] knob to switch pages.



### 3. When the upper right of the screen indicates "ENTER," press the [PAGE/CURSOR] knob.

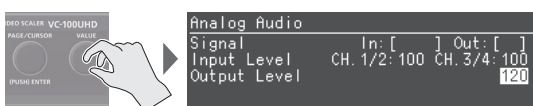


### 4. Turn the [PAGE/CURSOR] knob to select a parameter.



### 5. Turn the [VALUE] knob to change the value of the setting.

➔ "Operating the [VALUE] Knob" (p. 5)

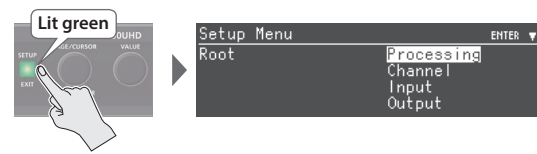


### 6. Press the [SETUP] button to complete the change in settings.

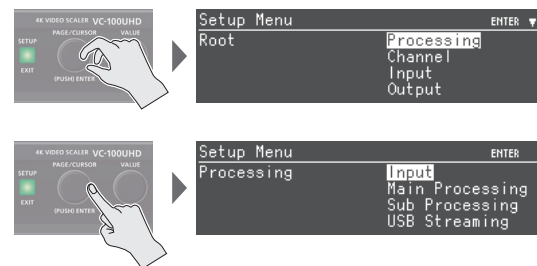
## Operations in the Setup Menu Screen

### 1. Press the [SETUP] button to make the button light green.

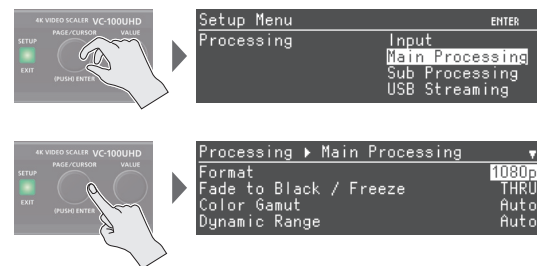
The Root menu screen in the Setup Menu appears.



### 2. Turn the [PAGE/CURSOR] knob to select a main item in the Root menu, and then press the [PAGE/CURSOR] knob.

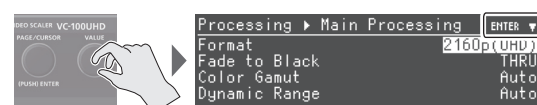


### 3. Turn the [PAGE/CURSOR] knob to select a subsidiary item, and then press the [PAGE/CURSOR] knob.



### 4. Turn the [PAGE/CURSOR] knob to select a parameter, and then turn the [VALUE] knob to change the value of the setting.

➔ "Operating the [VALUE] Knob" (p. 5)



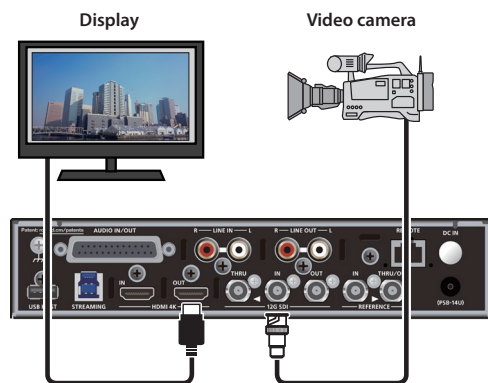
### MEMO

- Pressing the [SETUP] button moves you back one level higher.
- When the upper right of the screen indicates "ENTER," press the [PAGE/CURSOR] knob to confirm the value.

## Zooming the Video In/Out

Here we explain basic use of this unit.

In this example, we explain how, starting with the settings following factory reset, we can scale the SDI input to 1080p and output it from HDMI.



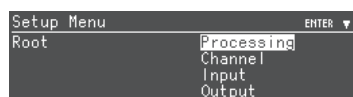
### Factory reset

Press the [SETUP] button to access the Setup Menu screen → Root menu "System" → "Factory Reset," and then press the [PAGE/CURSOR] knob to execute.

## Specifying the Output Format

1. Press the [SETUP] button to make the button light green.

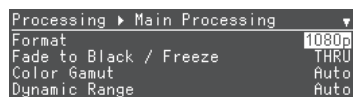
The Root menu screen in the Setup Menu appears.



2. Turn the [PAGE/CURSOR] knob to select the Root menu item "Processing," and then press the [PAGE/CURSOR] knob.



3. Turn the [PAGE/CURSOR] knob to select "Main Processing," and then press the [PAGE/CURSOR] knob.



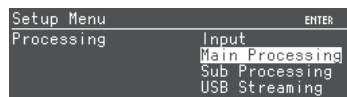
4. Turn the [PAGE/CURSOR] knob to select "Format," and then turn the [VALUE] knob to specify the output format (1080p in this example).

5. Press the [SETUP] button twice to return to the Root menu screen.

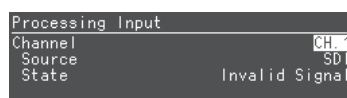
## Specifying the Video Input Connector

Here we specify the video input as SDI for channel 1.

1. In the Root menu screen, turn the [PAGE/CURSOR] knob to select "Processing," and then press the [PAGE/CURSOR] knob.



2. Turn the [PAGE/CURSOR] knob to select "Input," and then press the [PAGE/CURSOR] knob.



\* With the factory settings, the CH.1 input is SDI. "Source" shows the input jack of the currently selected channel, and "State" shows the status of the input signal. To change the settings, use the Root menu's "Channel" to select the channel, then → select "Source."

3. Press the [SETUP] button twice to return to the Root menu screen.

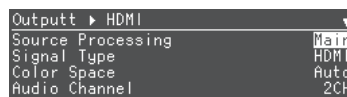
## Specifying the Video Output Connector

In order to output the video from HDMI, we specify that the output of the main processing is connected to HDMI.

1. In the Root menu screen, turn the [PAGE/CURSOR] knob to select "Output," and then press the [PAGE/CURSOR] knob.



2. Turn the [PAGE/CURSOR] knob to select "HDMI," and then press the [PAGE/CURSOR] knob.

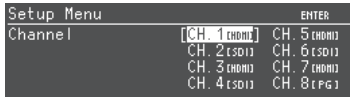


3. Turn the [PAGE/CURSOR] knob to select "Source Processing," and then turn the [VALUE] knob to select "Main."

4. Press the [SETUP] button twice to return to the Root menu screen.

## Scaling

1. In the Root menu screen, turn the [PAGE/CURSOR] knob to select “Channel,” and then press the [PAGE/CURSOR] knob.

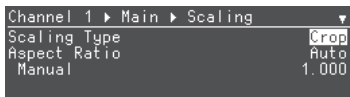


The currently selected channel is shown with square brackets [ ].

2. Turn the [PAGE/CURSOR] knob to select “CH. 1,” and then press the [PAGE/CURSOR] knob.



3. Turn the [PAGE/CURSOR] knob to select “Scaling,” and then press the [PAGE/CURSOR] knob.



4. Turn the [PAGE/CURSOR] knob to select the following parameters, and then turn the [VALUE] knob to adjust the output video.

Parameter	Explanation
Type	Specifies the scaling type.
Aspect Ratio	When you change Size “Zoom,” the zoom in/out maintains the aspect ratio that you specify here. You can choose whether to use the aspect ratio of the input format (Auto) or the aspect ratio that you specify as Manual.
Size	Zoom H V
Position	H V

### MEMO

The same settings can be made in “Pan/Zoom HDMI Output” of the status screen. This is a shortcut to the currently selected channel.

5. Press the [SETUP] button twice to return to the Root menu screen.



# Video Operations

## List of Compatible Video Formats

### Input video formats

1080i/50 Hz, 59.94 Hz, 60 Hz	1920 x 1080/144 Hz (346.5 MHz)	(*1) (*2)
1080p/50 Hz, 59.94 Hz, 60 Hz	1920 x 1080/240 Hz (556.8 MHz)	(*1) (*2)
1080p/119.88 Hz, 120 Hz, 239.76 Hz, 240 Hz (*1)	1920 x 1080/240 Hz (567.0 MHz)	(*1) (*2)
2160p (UHD 3840 x 2160)/50 Hz, 59.94 Hz, 60 Hz		
2160p (DCI 4096 x 2160)/50 Hz, 59.94 Hz, 60 Hz		
1280 x 1024/60 Hz (*1)		
1920 x 1200/60 Hz (*1) (*2)		
2560 x 1440/60 Hz (*1) (*2)		
1920 x 1080/120 Hz (*1) (*2)		

- (\*1) Only HDMI input  
(\*2) Reduced Blanking

### Output video formats

Processing			Frame rate (Hz)		
Main	Sub	USB	50.00	59.94	60.00
2160pDCI	2160pDCI		✓	✓	-
2160pUHD	2160pUHD		✓	✓	-
1080p	1080p	1080p	✓	✓	-
		720p	✓	✓	-
1080i	1080i		✓	✓	-
4096 x 2160 DCI	4096 x 2160 DCI		-	-	✓
3840 x 2160 UHD	3840 x 2160 UHD		-	-	✓
2560 x 1440 RB	2560 x 1440 RB		-	-	✓
1920 x 1200 RB	1920 x 1200 RB		-	-	✓
1920 x 1080 FHD	1920 x 1080 FHD		-	-	✓
1280 x 1024	1280 x 1024		-	-	✓
		640 x 480	✓	✓	✓

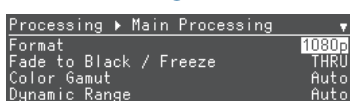
- The selectable formats for each processing system differ depending on the system's "Frame Rate" value (p. 31).
- For USB streaming, the system frame rate value is halved when the "USB Streaming → Frame Rate" (p. 25) is set to "Half."

## Setting the Output Format

This sets the output format for each processing system (Main Processing/Sub Processing/USB Streaming) to match the connected device.

\* When an output format for a processing system is edited, the output for all processing is paused.

1. Select Root menu "Processing" → "Main Processing"–  
"USB Streaming" → "Format."



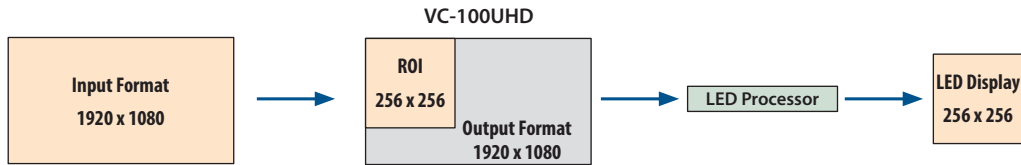
2. Turn the [VALUE] knob to select the output format.
3. Press the [SETUP] button twice to return to the Root menu screen.

## Adjusting the Display Region (ROI)

ROI (Region of Interest) is a function for limiting the display region beforehand.

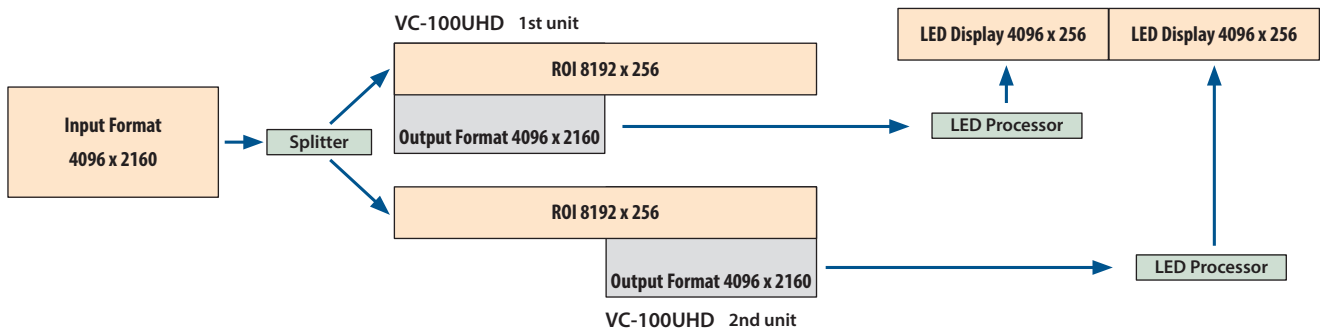
As shown in example 1, when outputting to a display such as an LED display that does not use a 16:9 aspect ratio, you can use the ROI function to specify the display region in advance, which lets you adjust the picture according to the region in which the video is actually shown.

### Example 1: Video output to a 256 x 256 LED display



Even in the case of example 2 where the resolution of the final display is 4K or greater, you can use multiple VC-100UHD to handle this. In this situation, use the same settings for the scaler and ROI size on each VC-100UHD. For the ROI position, set this individually according to the output.

### Example 2: Video output to an 8192 x 256 LED display



You can select a color outside of the ROI range. This color can be used to define the respective boundaries when setting the final output and ROI.

### 1. Select Root menu “Processing” → “Main Processing” or “Sub Processing” → ROI item.

```
Processing ▶ Main Processing
ROI (Region of Interest) Disabled
Size      H: 1920 V: 1080
Position  H: 0   V: 0
Masking Color Black
```

### 2. Turn the [VALUE] knob to set the ROI.

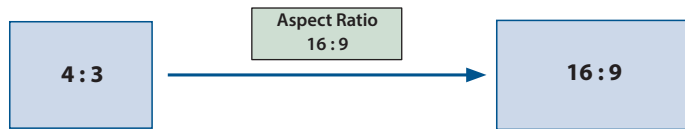
Parameter	Explanation	
ROI	Enables/disables the ROI function.	
Size	H	Sets the ROI's horizontal size in pixels.
	V	Sets the ROI's vertical size in pixels.
Position	H	Sets the ROI's horizontal position in pixels.
	V	Sets the ROI's vertical position in pixels.
Masking Color	Sets the color of the area outside of the ROI.	

### 3. Press the [SETUP] button twice to return to the Root menu screen.

## Specifying the Aspect Ratio

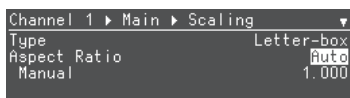
This shows you how to specify the aspect ratio for the input video.

When the input resolution and video use different aspect ratios, such as with squeezed video, specify the aspect ratio of the original video to maintain a correct aspect ratio for the processing system that follows.



\* This is disabled when the scaling type is "Fill" or "Dot by Dot."

1. Select Root menu "Channel" → "CH. 1"–"CH. 8" → Main Processing or Sub Processing "Scaling" → "Aspect Ratio."



2. Turn the [VALUE] knob to set the aspect ratio.

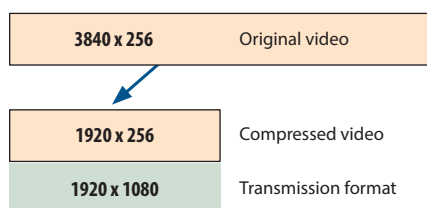
Value	Explanation
Auto	Sets the same aspect ratio as the input resolution.
Manual	Sets the numeric aspect ratio. Set the numbers using the "Manual" parameter.
1:1, 3:2, 4:3, 5:4, 16:9, 16:10	These are preset aspect ratios.

3. Press the [SETUP] button twice to return to the Root menu screen.

## Calculating the aspect ratio

Here's how to calculate the aspect ratio when "Aspect Ratio" is set to "Manual."

**Example:** Let's say you've compressed your video to a resolution of 1920 x 256, in order to transmit the original video made for an LED display of 3840 x 256 pixels using a resolution of 1920 x 1080 pixels. In this case, what would the aspect ratio be?



You can find the conversion aspect ratio using this formula: (transmission format H/V resolution) / (compressed H/V size) x (original H/V size).

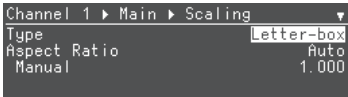
When calculating with the above figures, the formula is as follows: (1920/1080) / (1920/256) x (3840/256) = 3.555555556.

Thus, the aspect ratio to set is 3.555 (dropping everything from the fourth decimal place).


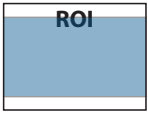


## Specifying How the Input Video Is Scaled (Type)

This sets how the input video is enlarged or reduced (the scaling type), according to the ROI or output resolution.

1. Select Root menu “Channel” → “CH. 1”–“CH. 8” → Main Processing or Sub Processing “Scaling” → “Type.”



2. Turn the [VALUE] knob to set the scaling type.

Value	Explanation
Fill	Always displays the picture expanded to full screen, irrespective of the aspect ratio of the input video. 
Letter-box	Enlarges or reduces the incoming video to a full-screen view while keeping the aspect ratio unchanged. 
Crop	Enlarges or reduces the incoming video so that the output picture has no blank margins while keeping the aspect ratio unchanged. 
Dot by Dot	Displays at the input resolution, ignoring the scaling. 

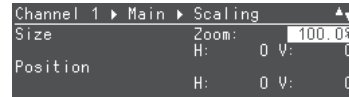
\* The standard is set as Size Zoom: 100%, Size H: 0, Size V: 0; Position H: 0, Position V: 0.

3. Press the [SETUP] button twice to return to the Root menu screen.

## Scaling


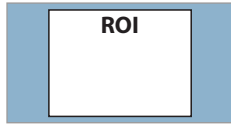
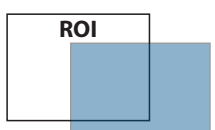
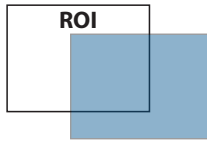
This further enlarges or reduces the image, using the standards specified by the “Type” parameter.

1. Select Root menu “Channel” → “CH. 1”–“CH. 8” → Main Processing or Sub Processing “Scaling” → “Size” or “Position.”



2. Turn the [VALUE] knob to adjust the video.

\* You can set the reference point for enlargement/reduction in “System” → “Orientation.” The default values are set at center.

Parameter	Explanation
Size	Scales the picture as a percentage, while maintaining the aspect ratio. If the aspect ratio has changed due to the “Size H” or “Size V” settings, the picture is scaled while keeping the aspect ratio after the values were changed. 
H	Sets the horizontal (H)/vertical (V) size in pixels. The aspect ratio is not maintained. 
V	Sets the horizontal (H)/vertical (V) size in pixels. The aspect ratio is not maintained. 
Position	Adjusts the horizontal (H)/vertical (V) position. 

3. Press the [SETUP] button twice to return to the Root menu screen.

# Audio Operations

## How the Audio Is Configured

On this unit, you can freely assign the audio input from the 12G-SDI IN, HDMI 4K IN, STREAMING, LINE IN and AUDIO IN/OUT to each processing system, adjust the delay settings and volume and output the audio to 12G-SDI OUT, HDMI 4K OUT, STREAMING, LINE OUT and AUDIO IN/OUT.

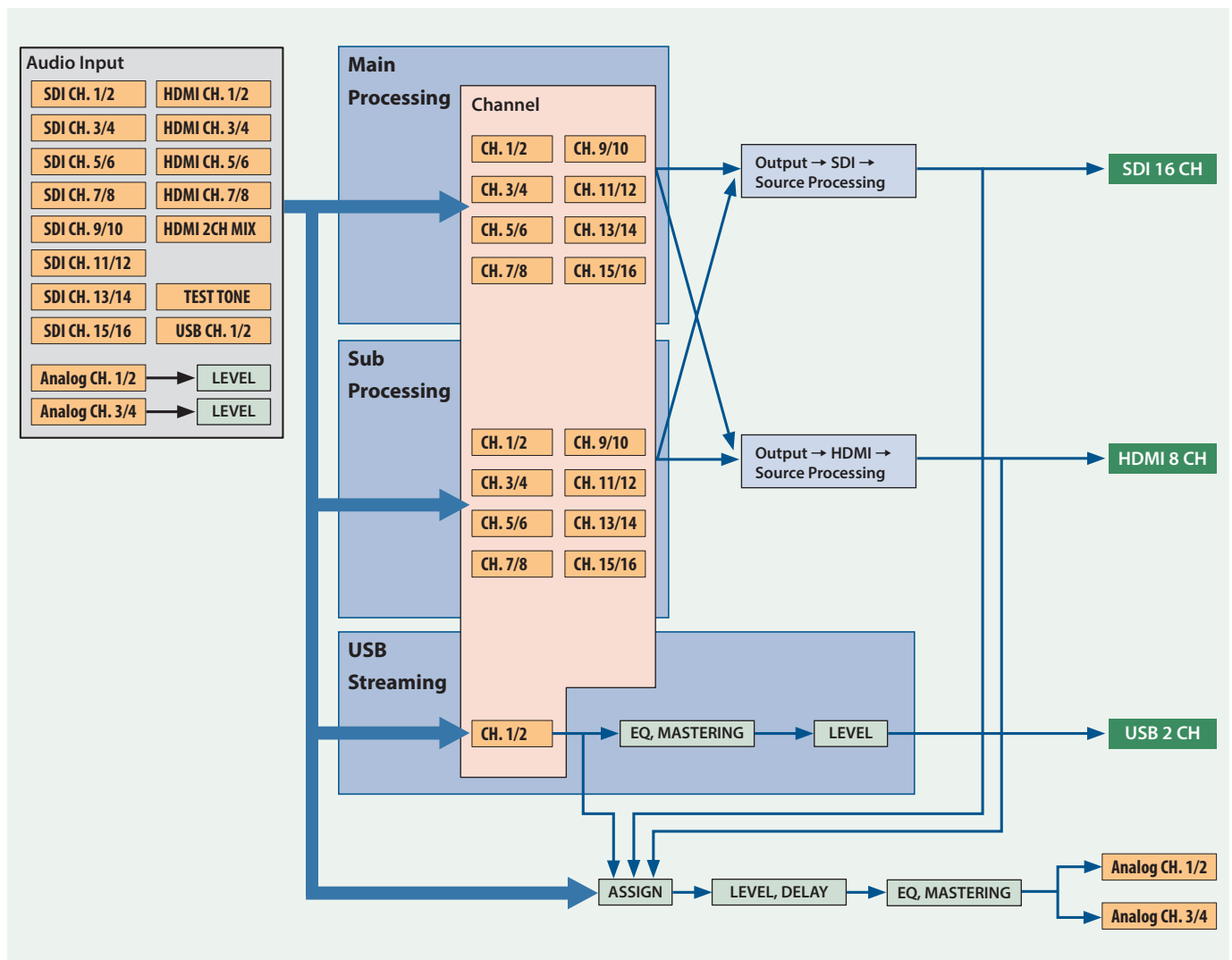
The equalizer and mastering effects can be applied to both analog and USB streaming output.

As with the video settings, the audio settings are controlled in “channels,” and you can switch between audio channels at the same time as you switch video channels.

The input source for audio assigned to each processing system for channels 1–8 are selected in the channel settings (“Channel” → “CH. 1” → “CH. 8” → “Main Processing” → “USB Streaming” → “Audio”). When making these assignments, you can also configure the delay and volume.

The output jacks for audio follow the settings in “Output” → “SDI” or “HDMI” → “Source Processing.”

\* If the output destination is “HDMI,” up to eight channels are available.

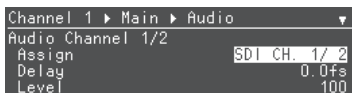


## Configuring the Audio Input

### Assigning an Audio Input Source

Assign the audio input sources for the audio channels provided in each processing system of channels 1–8.

1. Select Root menu “Channel” → “CH. 1”–“CH. 8” → “Main Processing”–“USB Streaming” → “Audio” → “Audio Channel 1/2”–“Audio Channel 15/16” → “Assign.”



2. Turn the [VALUE] knob to set the audio input source.

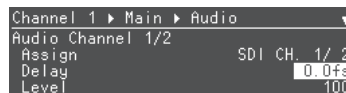
Value	Explanation
SDI CH. 1/2–15/16	Each channel of the 12G-SDI IN connector
HDMI CH. 1/2–7/8	Each channel of the HDMI 4K IN connector
HDMI 2 CH MIX	Two channels are assigned, down mixed with the audio from the HDMI 4K IN connector.
USB CH. 1/2	STREAMING port audio
Analog CH. 1/2	LINE IN jacks audio
Analog CH. 3/4	AUDIO IN/OUT connector audio
Test Tone	Test tone
None	Not assigned

3. Press the [SETUP] button twice to return to the Root menu screen.

### Adjusting the SDI/HDMI/USB Input Audio

This adjusts the delay settings and volume for the audio from the 12G-SDI IN connector, HDMI 4K IN connector, and USB STREAMING port.

1. Select Root menu “Channel” → “CH. 1”–“CH. 8” → “Main Processing”–“USB Streaming” → “Audio” → “Audio Channel 1/2”–“Audio Channel 15/16” → “Delay” or “Level.”



2. Turn the [VALUE] knob to set the delay or volume.

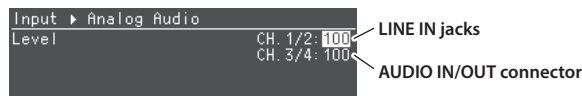
Value	Explanation
<b>Delay</b>	
0.0–16.0fs (frames)	If there is a timing discrepancy between the video and audio, you can correct the output timing by delaying the audio output.
<b>Level</b>	
0–127	Sets the volume.

3. Press the [SETUP] button twice to return to the Root menu screen.

### Adjusting the Analog Audio Signal Volume

This adjusts the volume for the audio from the LINE IN and AUDIO IN/OUT connectors.

1. Select Root menu “Input” → “Analog Audio” → Level “CH. 1/2” or “CH. 3/4.”



2. Turn the [VALUE] knob to set the volume.

Value	0–127
-------	-------

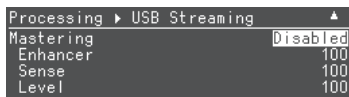
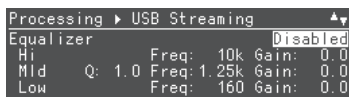
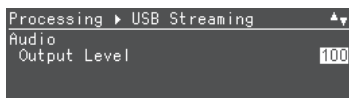
3. Press the [SETUP] button twice to return to the Root menu screen.

## Configuring the Audio Output

### Adjusting the USB Audio Signal

This configures the output level, equalizer and mastering effects for the STREAMING port audio.

1. Select Root menu “Processing” → “USB Streaming” → “Audio,” “Equalizer,” “Mastering” parameters.



2. Turn the [VALUE] knob to set the parameter.

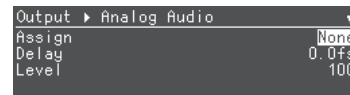
Parameter	Explanation	
Delay	If there is a timing discrepancy between the video and audio, you can correct the output timing by delaying the audio output.	
Level	Adjusts the output level.	
Equalizer	Enables/disables the equalizer.	
Hi	Freq	Specifies the center frequency when changing the tone quality in the high band.
	Gain	Boosts or attenuates the high band.
Mid	Q	Adjusts the width of the frequency band when boosting or attenuating the middle band.
	Freq	Specifies the center frequency when changing the tone quality in the middle band.
	Gain	Boosts or attenuates the middle band.
Low	Freq	Specifies the center frequency when changing the tone quality in the low band.
	Gain	Boosts or attenuates the low band.
Mastering	Enables/disables the mastering.	
Enhancer	Adjusts the audio clarity.	
Sense	Adjusts how much the mastering effects are applied.	
Level	Adjusts the volume of the mastered sound.	

3. Press the [SETUP] button twice to return to the Root menu screen.

### Setting the Output Destination of the Analog Audio Signal

This sets the signal to output from the AUDIO IN/OUT connector and LINE OUT jacks.

1. Select Root menu “Output” → “Analog Audio” → “Assign.”



2. Turn the [VALUE] knob to set the output destination.

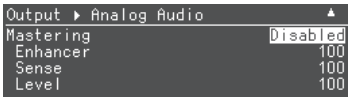
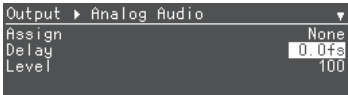
Value	Explanation
SDI OUT CH. 1/2–15/16	Each channel of the 12G-SDI OUT connector
HDMI OUT CH. 1/2–7/8	Each channel of the HDMI 4K OUT connector
USB OUT CH. 1/2	STREAMING port
SDI IN CH. 1/2–15/16	Each channel of the 12G-SDI IN connector
HDMI 2 CH MIX	Two channels are output, down mixed with the audio from the HDMI 4K IN connector.
USB IN CH. 1/2	STREAMING port
Analog IN CH. 1/2	LINE IN jacks
Analog IN CH. 3/4	AUDIO IN/OUT connector
Test Tone	Outputs a test tone.
NONE	Not assigned

3. Press the [SETUP] button twice to return to the Root menu screen.

## Adjusting the Analog Audio Signal

This configures the delay/output level, equalizer and mastering effects for the analog audio signal.

1. Select Root menu “Output” → “Analog Audio” → “Delay,” “Level,” “Equalizer,” “Mastering” parameters.



2. Turn the [VALUE] knob to set the parameter.

Parameter	Explanation	
Delay	If there is a timing discrepancy between the video and audio, you can correct the output timing by delaying the audio output.	
Level	Adjusts the output level.	
Equalizer	Enables/disables the equalizer.	
Hi	Freq	Specifies the center frequency when changing the tone quality in the high band.
	Gain	Boosts or attenuates the high band.
Mid	Q	Adjusts the width of the frequency band when boosting or attenuating the middle band.
	Freq	Specifies the center frequency when changing the tone quality in the middle band.
	Gain	Boosts or attenuates the middle band.
Low	Freq	Specifies the center frequency when changing the tone quality in the low band.
	Gain	Boosts or attenuates the low band.
Mastering	Enables/disables the mastering.	
Enhancer	Adjusts the audio clarity.	
Sense	Adjusts how much the mastering effects are applied.	
Level	Adjusts the volume of the mastered sound.	

3. Press the [SETUP] button twice to return to the Root menu screen.



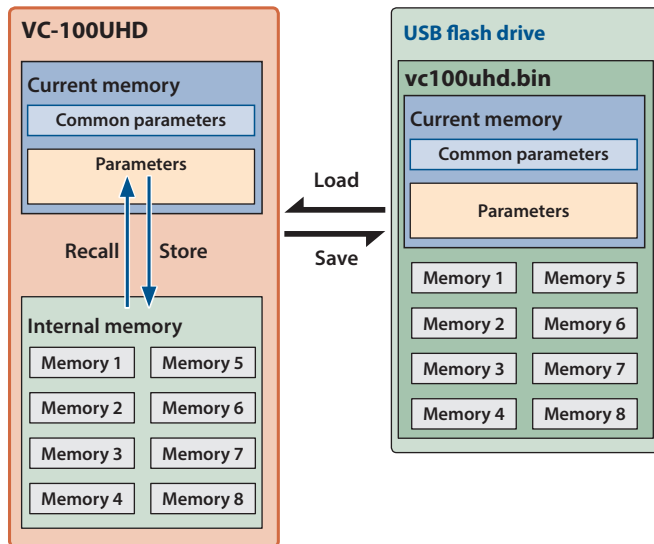
# Using the Memory

## How the Memory Is Configured

This unit operates with the settings saved in “current memory.”

The current memory consists of “common parameter memory” and “parameter memory.”

The settings in current memory are automatically saved when editing with this unit, and are loaded when you turn on the power.



### Common parameter memory

Saves the LCD, network and panel lock settings.

### Parameter memory

Saves the input/output and channel settings.

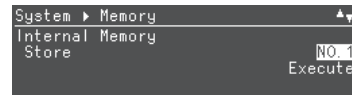
Up to eight parameter memories can be saved to internal memory.

Also, you can save all settings as a single set to a USB flash drive.

## Saving to Internal Memory

This saves the parameter memory settings to internal memory.

1. Select Root menu “System” → “Memory” → Internal Memory “Store.”



2. Turn the [VALUE] knob to select the save-destination memory (NO. 1–8).
3. Turn the [PAGE/CURSOR] knob to select “Execute,” and then press the [PAGE/CURSOR] knob.

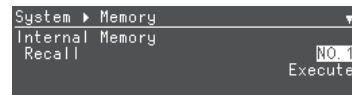
The current settings are saved.

When the operation is finished, the message “Done.” appears.

## Recalling the Saved Settings

This recalls the settings saved in internal memory. When these settings are recalled, the contents of the parameter memories that are in current memory are overwritten.

1. Select Root menu “System” → “Memory” → Internal Memory “Recall.”



2. Turn the [VALUE] knob to select the memory (NO. 1–8) that you want to recall.
3. Turn the [PAGE/CURSOR] knob to select “Execute,” and then press the [PAGE/CURSOR] knob.

The settings are recalled.

When the operation is finished, the message “Done.” appears.

# Saving the Unit's Settings on a USB Flash Drive

## Formatting a USB Flash Drive

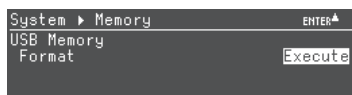
The first time that you use a USB flash drive, you must use the unit to format it.

### NOTE

- A USB flash drive that was not formatted by this unit will not be recognized.
- Never turn off the power or remove the USB flash drive while the message "Processing." is shown.
- When you format a USB flash drive, all data on that USB flash drive is erased. If the drive contains important data, back it up to your computer before you format the drive.

1. Connect the USB flash drive to the USB HOST port.

2. Select Root menu "System" → "Memory" → USB Memory "Format."



3. Press the [PAGE/CURSOR] knob.

Formatting is executed.

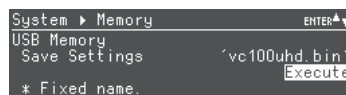
4. Press the [SETUP] button twice to return to the Root menu screen.

## Saving

This saves all settings as a single file to a USB flash drive.

The settings are saved in the root directory with the "vc100uhd.bin" filename.

1. Select Root menu "System" → "Memory" → USB Memory "Save Settings."



2. Press the [PAGE/CURSOR] knob.

### NOTE

Never turn off the power or remove the USB flash drive while the message "Processing." is shown.

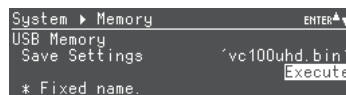
3. Press the [SETUP] button twice to return to the Root menu screen.

## Recalling

Loads the settings saved on a USB flash drive into this unit.

This overwrites all settings on this unit.

1. Select Root menu "System" → "Memory" → USB Memory "Load Settings."



2. Press the [PAGE/CURSOR] knob.

### NOTE

Never turn off the power or remove the USB flash drive while the message "Processing." is shown.

3. Press the [SETUP] button twice to return to the Root menu screen.

# Other Functions

## Network Connections and Settings

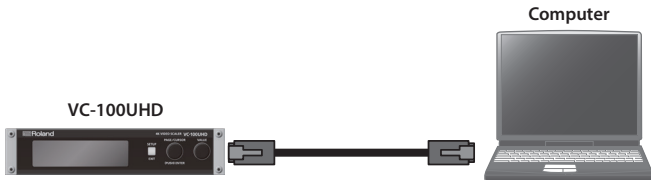
You can send commands from your computer on the network to remotely control the unit's settings.

\* For details on the commands to transmit, refer to "LAN Command Reference" (p. 33).

The content of the settings depends on your network environment.

This is an example of how to directly connect the VC-100UHD to your computer using a LAN cable.

### Connection



#### MEMO

The LAN cable can be either a cross-cable or a straight cable.

### Specifying the unit's network settings

1. Select Root menu "System" → "Network" → "DHCP"
2. Turn the [PAGE/CURSOR] knob to select "Static," and then press the [PAGE/CURSOR] knob.

Value	Explanation
Client	The IP address and other information needed for connecting to the network is obtained automatically from the DHCP server of the LAN.
Static	The IP address, subnet mask, and default gateway are specified manually.

3. Turn the [PAGE/CURSOR] knob to select "Static Address," and then press the [PAGE/CURSOR] knob.

```

Network ▶ Static Address
IP Address      192.168.010.010
Subnet Mask    255.255.255.000
Default Gateway 192.168.010.001
    
```

4. Configure the IP address, subnet mask and default gateway as shown below.

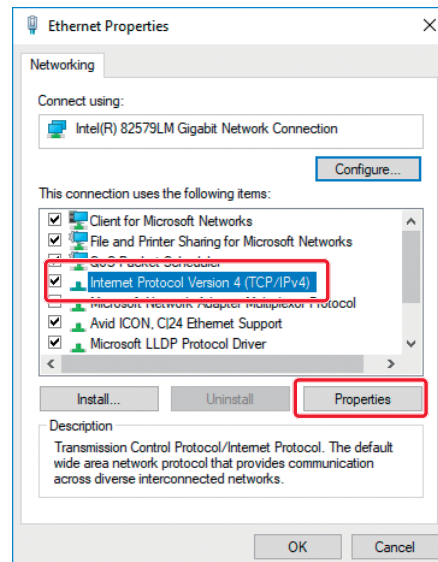
Parameter	Setting
IP Address	192.168.010.010
Subnet Mask	255.255.255.000
Default Gateway	192.168.010.001

5. Press the [SETUP] button three times to return to the Root menu screen.

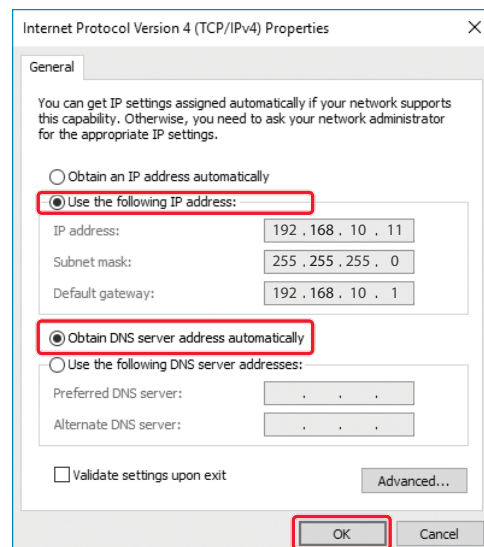
### Specifying your computer's network settings

#### Windows

1. Working in sequence, click the [Start] button → "Settings" (gear icon).
2. Click "Network and Internet."
3. Click "Change Adapter Options."
4. Right-click the network connection you're using, then click "Properties."



5. Select "Internet Protocol Version 4 (TCP/IPv4)" and click the [Properties] button.



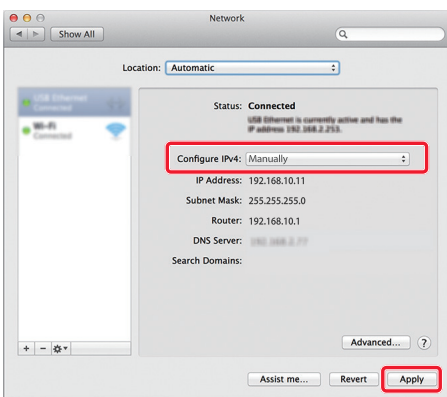
6. Select the “Use the following IP address” check box, and input the numbers shown below.

IP address	192.168.10.11
Subnet mask	255.255.255.0
Default gateway	192.168.10.1

7. Select the “Obtain DNS server address automatically” option, and then click the [OK] button.

### Mac OS

1. Display the Apple menu → “System Preferences” → “Network.”



2. From the list on the left, select the network connection service you’re using.
3. Set “Configure IPv4” to “Manually,” and input the numbers shown below.

IP Address	192.168.10.11
Subnet Mask	255.255.255.0
Router	192.168.10.1

4. Click the [Apply] button.

## Returning to the Factory Settings (Factory Reset)

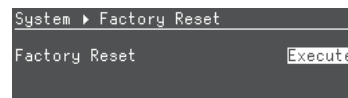
Here’s how you can return the settings of the unit to their factory-set state.

If following the procedures described in this manual does not cause the result you expect, try executing a factory reset.

### NOTE

The contents of all settings you’ve made thus far, and the settings saved in internal memory are lost when you perform a factory reset.

1. Select Root menu “System” → “Factory Reset,” and then press the [PAGE/CURSOR] knob.



2. Press the [PAGE/CURSOR] knob.

Factory reset is executed.

When the operation is finished, the message “Done.” appears.

# Status Screen Parameters

Parameters that are marked as “Configurable” can be edited after you press the [PAGE/CURSOR] knob.

Parameter	Content displayed		Setup menu
<b>■ Main Processing</b>			
Input	Channels input to main processing	(*1) Configurable	Processing → Input → Channel
	Signal status of source selected in channel		
Output	Connector used to output main processing	(*1) Configurable	Output → SDI → Source Processing Output → HDMI → Source Processing
	Output format	Configurable	Processing → Main Processing → Format
	System frame rate	(*1) Configurable	System → Frame Rate
Fade to Black	FTB function settings	Configurable	Processing → Main Processing → Fade to Black
<b>■ Sub Processing</b>			
Input	Channels input to sub processing	(*1) Configurable	Processing → Input → Channel
	Signal status of source selected in channel		
Output	Connector used to output sub processing	(*1) Configurable	Output → SDI → Source Processing Output → HDMI → Source Processing
	Output format	Configurable	Processing → Main Processing → Format
	System frame rate	(*1) Configurable	System → Frame Rate
Fade to Black	FTB function settings	Configurable	Processing → Sub Processing → Fade to Black
<b>■ USB Streaming</b>			
Input	Channels input to USB streaming	(*1) Configurable	Processing → Input → Channel
	Signal status of source selected in channel		
Output	USB connection status		
	Output format	Configurable	Processing → USB Streaming → Format
	Output frame rate	Configurable	Processing → USB Streaming → Frame Rate
Audio	Display of USB audio input (In) and output (Out) signals		
	USB audio signal output level	Configurable	Processing → USB Streaming → Audio Output Level
Fade to Black	FTB function settings	Configurable	Processing → USB Streaming → Fade to Black
(*1) This has an effect on other processing systems when edited, as the settings are common with them.			
<b>■ SDI Input</b>			
Format	Format of video input to the 12G-SDI IN connector		
Audio	Audio level of each channel input to the 12G-SDI IN connector		
<b>■ HDMI Input</b>			
Format	Format of video input to the HDMI 4K IN connector		
Audio	Audio level of each channel input to the HDMI 4K IN connector		
HDCP	HDCP status of the HDMI 4K IN connector		
EDID	Status of EDID configured as the HDMI input		
<b>■ SDI Output</b>			
Format	Format of video output from the 12G-SDI OUT connector		
Audio	Audio levels of each channel output from the 12G-SDI OUT connector		
Genlock	Genlock status		
<b>■ HDMI Output</b>			
Format	Format of video output from the HDMI 4K OUT connector		
Audio	Audio levels of each channel output from the HDMI 4K OUT connector		
HDCP	HDCP status of the HDMI 4K OUT connector		

## Status Screen Parameters

Parameter	Content displayed	Setup menu
<b>■ Analog Audio</b>		
Signal In	Signal level of analog audio input (CH 1–4) (*2)	
Signal Out	Signal level of analog audio output (CH 1, 2) (*3)	
Input Level CH. 1/2	Audio level of analog audio input (CH 1, 2) (*2)	Configurable
Input Level CH. 3/4	Audio level of analog audio input (CH 3, 4) (*2)	Configurable
Output Level	Audio level of analog audio output (CH 1, 2) (*3)	Configurable

(\*2) LINE IN jacks L: CH 1 / R: CH 2, AUDIO IN/OUT connector L: CH 3 / R: CH 4

(\*3) LINE OUT jacks L: CH 1 / R: CH 2, AUDIO IN/OUT connector L: CH 1 / R: CH 2

### ■ Pan / Zoom SDI Output

Shows the scaling settings for processing output from the 12G-SDI OUT connector.

Zoom	Zoom ratio	Configurable	
Size H	Horizontal size	Configurable	Channel → CH. 1–8 → Main Processing, Sub Processing → Scaling → Size
Size V	Vertical size	Configurable	
Position H	Display position in the horizontal direction	Configurable	Channel → CH. 1–8 → Main Processing, Sub Processing → Scaling → Position
Position V	Display position in the vertical direction	Configurable	

### ■ Pan / Zoom HDMI Output

Shows the scaling settings for processing output from the HDMI 4K OUT connector.

Zoom	Zoom ratio	Configurable	
Size H	Horizontal size	Configurable	Channel → CH. 1–8 → Main Processing, Sub Processing → Scaling → Size
Size V	Vertical size	Configurable	
Position H	Display position in the horizontal direction	Configurable	Channel → CH. 1–8 → Main Processing, Sub Processing → Scaling → Position
Position V	Display position in the vertical direction	Configurable	

### ■ Test Pattern / Tone

Press the [PAGE/CURSOR] knob to automatically show the color bars from all outputs. Press the [SETUP] button to return to the previous state.

Pattern	Type of test pattern	Configurable	–	
Motion	How fast the motion test pattern moves	Configurable	–	
Tone	Type of test tone The test tone is a sine wave of different frequencies output to the left and right channels (two channels each).	Configurable	–	
	<b>Value (Bold: default)</b>			
	<b>Disabled</b>			9: 1 KHz 10: 2 KHz
	1: 1 KHz 2: 2 KHz			11: 1 KHz 12: 2 KHz
	3: 1 KHz 4: 2 KHz			13: 1 KHz 14: 2 KHz
	5: 1 KHz 6: 2 KHz			15: 1 KHz 16: 2 KHz
7: 1 KHz 8: 2 KHz				

Parameter	Content displayed	Setup menu
<b>■ System Message Log</b>		
00: 00: 00: 00	<p>The amount of time the unit has been operating since it was powered on. ("Day: Hour: Minute: Seconds" format)</p> <p>The times at which system events occur are logged, and a maximum of 16 events are shown from the latest to the oldest. Check the past events by pressing and then turning the [PAGE/CURSOR] knob.</p> <p>➔ "System Message List"</p>	
<b>■ Panel lock</b>		
Press the [ENTER] button.	<p>Press the [PAGE/CURSOR] knob to lock the panel (the display goes dark).</p> <p>Hold down the [SETUP] button to unlock the panel lock.</p> <p>* The [SETUP] button blinks red if an event occurs while the panel is locked.</p>	

## System Message List

Message	Explanation
SDI in invalid signal	A signal in an unsupported format was detected from the 12G-SDI IN connector input.
SDI in no signal	Signal input from the 12G-SDI IN connector has stopped.
SDI in valid signal	A signal in a supported format was detected from the 12G-SDI IN connector input.
HDMI in invalid signal	A signal in an unsupported format was detected from the HDMI 4K IN connector input.
HDMI in no signal	Signal input from the HDMI 4K IN connector has stopped.
HDMI in valid signal	A signal in a supported format was detected from the HDMI 4K IN connector input.
HDMI out disconnected	No connected device was detected at the HDMI 4K OUT connector.
HDMI out connected	A connected device was detected at the HDMI 4K OUT connector.
USB disconnected	The connection between the STREAMING port and the computer has been severed.
USB connected	A connection was made between the STREAMING port and the computer.
FPGA high temperature	The unit's internal temperature has heated up considerably. Try placing the unit somewhere else to keep it cooler.
FAN malfunction	The built-in fan is malfunctioning. Stop using this unit and have the fan repaired.
Reference signal lost	The reference input signal has stopped.
Reference signal found	The reference input signal was detected, and sync operations began.
LAN offline	A problem with the LAN connection has occurred.
LAN online	A LAN connection was established.
USB Dropped Frames	Some video from the STREAMING port could not be transferred. Check your computer's settings.

# Setup Menu List

## Processing

### Input

Menu item (Parameter)	Value (Bold: default)	Explanation
Channel	<b>CH. 1</b> –8	Selects the channels to input to the processing system. If the input source is the same before and after switching, the video cuts to the next one. If the input source differs, the video switches by fading to black.
Source	–	Shows the source selected for the channel.
State	–	Shows the status of the signal from the source selected for the channel.

### Main Processing

Menu item (Parameter)	Value (Bold: default)	Explanation
Format	Refer to “Output video formats” (p. 9)	Sets the output format. * The selectable formats differ depending on the system’s “Frame Rate” value (p. 31).
Fade to Black	This sets whether the fade effect applied to the output video uses the FTB function or not.	
	<b>THRU</b>	The FTB function is not used.
	FTB	The FTB function is used to fade the output video to black. * The fade time is set in the “Fade Time” system parameter (p. 31).
Color Gamut	REC.601, REC.709, REC.2020, <b>Auto</b>	Specifies the color gamut.
Dynamic Range	SDR, HDR PQ, HDR HLG, <b>Auto</b>	Specifies the dynamic range.
Flip H	<b>Disabled</b> , Enabled	Set this to “Enabled” to flip (invert) the video horizontally.
Flip V	<b>Disabled</b> , Enabled	Set this to “Enabled” to flip (invert) the video vertically.
Rotation	<b>Disabled</b> , Enabled	Set this to “Enabled” to rotate the video clockwise 90°.
ROI (Region of Interest)	<b>Disabled</b> , Enabled	Enables/disables the ROI function.
Size H	0–16384	Sets the ROI’s horizontal size in pixels.
Size V	0–4320	Sets the ROI’s vertical size in pixels.
Position H	-16384– <b>0</b> –+16384	Sets the ROI’s horizontal position in pixels.
Position V	-4320– <b>0</b> –+4320	Sets the ROI’s vertical position in pixels.
Masking Color	<b>Black</b> , White, Red, Green, Blue, Yellow, Cyan, Magenta	Sets the color of the area outside of the ROI.

### Sub Processing

Menu item (Parameter)	Value (Bold: default)	Explanation
Sub Processing	<b>Disabled</b> , Enabled	Enables/disables the sub processing. * Set this to “Disabled” when EDID (p. 29) is set to “Sink Through” in “Input” → “HDMI,” or when “Rotation” (p. 24) in Main Processing is set to “Disabled.”
Format	Refer to “Output video formats” (p. 9)	Sets the output format. * The selectable formats differ depending on the system’s “Frame Rate” value (p. 31).
Fade to Black	This sets whether the fade effect applied to the output video uses the FTB function or not.	
	<b>THRU</b>	The FTB function is not used.
	FTB	The FTB function is used to fade the output video to black. * The fade time is set in the “Fade Time” system parameter (p. 31).
Color Gamut	REC.601, REC.709, REC.2020, <b>Auto</b>	Specifies the color gamut.
Dynamic Range	SDR, HDR PQ, HDR HLG, <b>Auto</b>	Specifies the dynamic range.
Flip H	<b>Disabled</b> , Enabled	Set this to “Enabled” to flip (invert) the video horizontally.
Flip V	<b>Disabled</b> , Enabled	Set this to “Enabled” to flip (invert) the video vertically.
Rotation	<b>Disabled</b> , Enabled	Set this to “Enabled” to rotate the video clockwise 90°.
ROI (Region of Interest)	<b>Disabled</b> , Enabled	Enables/disables the ROI function.
Size H	0–16384	Sets the ROI’s horizontal size in pixels.
Size V	0–4320	Sets the ROI’s vertical size in pixels.
Position H	-16384– <b>0</b> –+16384	Sets the ROI’s horizontal position in pixels.
Position V	-4320– <b>0</b> –+4320	Sets the ROI’s vertical position in pixels.
Masking Color	<b>Black</b> , White, Red, Green, Blue, Yellow, Cyan, Magenta	Sets the color of the area outside of the ROI.



## USB Streaming

Menu item (Parameter)	Value (Bold: default)	Explanation
<b>Format</b>	Refer to "Output video formats" (p. 9)	Sets the output format. * The selectable formats differ depending on the system's "Frame Rate" value (p. 31).
<b>Frame Rate</b>	Sets the frame rate for USB streaming.	
	Full	Uses the same frame rate as the system.
	Half	Sets the frame rate to half of the system's frame rate.
<b>Fade to Black</b>	This sets whether the fade effect applied to the output video uses the FTB function or not.	
	<b>THRU</b>	The FTB function is not used.
	FTB	The FTB function is used to fade the output video to black. * The fade time is set in the "Fade Time" system parameter (p. 31).
<b>Connection</b>	–	Shows the connection status.
	(Reset)	Press the [PAGE/CURSOR] knob to reconnect.
<b>Audio Output Level</b>	0– <b>100</b> –127	Adjusts the USB audio signal output level.
<b>Equalizer</b>	<b>Disabled</b> , Enabled	Enables/disables the equalizer.
<b>Hi Freq</b>	20– <b>10k</b> –20k	Specifies the center frequency when changing the tone quality in the high band.
<b>Hi Gain</b>	-12– <b>0.0</b> –+12	Boosts or attenuates the high band.
<b>Mid Q</b>	0.3– <b>1.0</b> –16	Adjusts the width of the frequency band when boosting or attenuating the middle band.
<b>Mid Freq</b>	20– <b>1.25k</b> – 20k	Specifies the center frequency when changing the tone quality in the middle band.
<b>Mid Gain</b>	-12– <b>0.0</b> –+12	Boosts or attenuates the middle band.
<b>Lo Freq</b>	20– <b>160</b> –20k	Specifies the center frequency when changing the tone quality in the low band.
<b>Lo Gain</b>	-12– <b>0.0</b> –+12	Boosts or attenuates the low band.
<b>Mastering</b>	<b>Disabled</b> , Enabled	Enables/disables the mastering.
<b>Enhancer</b>	-24– <b>0</b> –12dB	Adjusts the audio clarity.
<b>Sense</b>	<b>0</b> –24	Adjusts how much the mastering effects are applied.
<b>Level</b>	-24– <b>0</b> dB	Adjusts the volume of the mastered sound.

# Channel

## CH. 1–8 → Source

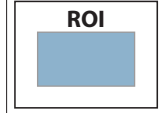
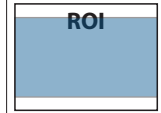
Menu item (Parameter)	Value (Bold: default)	Explanation
Source	<b>SDI</b> , HDMI, Pattern Generator	Selects the input source.



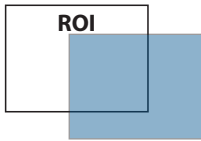
## CH. 1–8 → Main Processing, Sub Processing → Effects

Menu item (Parameter)	Value (Bold: default)	Explanation
Dynamic Range Correction	-64- <b>0</b> -+63	Calibrates the dynamic range.
Gamma Correction	-0.30- <b>1.00</b> -3.30	Adjusts the gamma value.
Upscale Interpolation	Nearest-neighbor, Bilinear, Bicubic	Sets the method of interpolation when the video is enlarged.
Edge Enhancer	0-15	Adjusts how much the edges of objects in the image are emphasized. This produces good results when you are sitting back a certain distance from your LED display. * The effect differs depending on the "Upscale Interpolation" setting.
Color Correction	Calibrates the color.	
Brightness	-128- <b>0</b> -+127	Adjusts the brightness.
Contrast	-128- <b>0</b> -+127	Adjusts the saturation.
Saturation	-128- <b>0</b> -+127	Adjusts the contrast.
Red	-128- <b>0</b> -+127	Adjusts the red level.
Green	-128- <b>0</b> -+127	Adjusts the green level.
Blue	-128- <b>0</b> -+127	Adjusts the blue level.
Copy Settings from	Previous, Initial, Main Proc., Sub Proc., USB Streaming, Channel 1-8	Copies the parameter settings in "Effects" from another channel or other source. Previous: The last value set Initial: The default value
	(Execute)	Press the [PAGE/CURSOR] knob to copy the settings.

## CH. 1–8 → Main Processing, Sub Processing → Scaling

Menu item (Parameter)	Value (Bold: default)	Explanation
Type	This sets how the input video is enlarged or reduced (the scaling type).	
	Fill	Always displays the picture expanded to full screen, irrespective of the aspect ratio of the input video.
	Letter-box	Enlarges or reduces the incoming video to a full-screen view while keeping the aspect ratio unchanged.
	Crop	Enlarges or reduces the incoming video so that the output picture has no blank margins while keeping the aspect ratio unchanged.
Dot by Dot	Displays at the input resolution, ignoring the scaling.	



Menu item (Parameter)	Value (Bold: default)	Explanation	
Aspect Ratio	Sets the aspect ratio.		
	Auto	Sets the same aspect ratio as the input resolution.	
	Manual	Sets the numeric aspect ratio. Set the numbers using the "Manual" parameter.	
	1:1, 3:2, 4:3, 5:4, 16:9, 16:10	These are preset aspect ratios.	
Manual	0.250– <b>1.000</b> –10.000	Sets the aspect ratio to its value when "Aspect Ratio" is set to "Manual."	
Size	Adjusts the display size.		
Zoom	1.0%–1000.0%	Adjusts the zoom ratio.	
H	-40960– <b>0</b> +40960	Adjusts the horizontal size.	
V	-21600– <b>0</b> +21600	Adjusts the vertical size.	
Position	Adjusts the display position.		
H	-40960– <b>0</b> +40960	Adjusts the display position in the horizontal direction.	
V	-21600– <b>0</b> +21600	Adjusts the display position in the vertical direction.	
Copy Settings from	Previous, Initial, Main Proc., Sub Proc., USB Streaming, Channel 1–8	Copies the parameter settings in "Scaling" from another channel or other source. Previous: The last value set Initial: The default value	
	(Execute)	Press the [PAGE/CURSOR] knob to copy the settings.	

## CH. 1–8 → Main Processing, Sub Processing → Audio

Menu item (Parameter)	Value (Bold: default)	Explanation
Audio Channel 1/2– 15/16		
Assign	Sets the input source for audio assigned to audio channels 1/2–15/16.	
	SDI CH. 1/2–15/16	Each channel of the 12G-SDI IN connector
	HDMI CH. 1/2–7/8	Each channel of the HDMI 4K IN connector
	HDMI 2 CH MIX	Two channels are assigned, down mixed with the audio from the HDMI 4K IN connector.
	USB CH. 1/2	STREAMING port audio
	Analog CH. 1/2	LINE IN jacks audio
	Analog CH. 3/4	AUDIO IN/OUT connector audio
	Test Tone	Test tone
None	Not assigned	
Delay	0.0–16.0fs (frames)	Adjusts the audio delay time. Delays the output of the audio by the specified time.
Level	0– <b>100</b> –127	Adjusts the volume.
Copy Settings from	Previous, Initial, Main Proc., Sub Proc., USB Streaming, Channel 1–8	Copies the parameter settings in "Audio" from another channel or other source. Previous: The last value set Initial: The default value
	(Execute)	Press the [PAGE/CURSOR] knob to copy the settings.

CH. 1–8 → USB Streaming → **Effects**

Menu item (Parameter)	Value (Bold: default)	Explanation
Dynamic Range Correction	-64- <b>0</b> -+63	Calibrates the dynamic range.
Gamma Correction	-0.30- <b>1.00</b> -3.30	Adjusts the gamma value.
Color Correction	Calibrates the color.	
Brightness	-128- <b>0</b> -+127	Adjusts the brightness.
Contrast	-128- <b>0</b> -+127	Adjusts the saturation.
Saturation	-128- <b>0</b> -+127	Adjusts the contrast.
Red	-128- <b>0</b> -+127	Adjusts the red level.
Green	-128- <b>0</b> -+127	Adjusts the green level.
Blue	-128- <b>0</b> -+127	Adjusts the blue level.
Copy Settings from	Previous, Initial, Sub Proc., USB Streaming, Channel 1–8	Copies the parameter settings in “Effects” from another channel or other source. Previous: The last value set Initial: The default value
	(Execute)	Press the [PAGE/CURSOR] knob to copy the settings.

CH. 1–8 → USB Streaming → **Audio**

Menu item (Parameter)	Value (Bold: default)	Explanation
Audio Channel 1/2		
Assign	Sets the input source for audio assigned to audio channels 1/2.	
	SDI CH. 1/2–15/16	Each channel of the 12G-SDI IN connector
	HDMI CH. 1/2–7/8	Each channel of the HDMI 4K IN connector
	HDMI 2 CH MIX	Two channels are assigned, down mixed with the audio from the HDMI 4K IN connector.
	USB CH. 1/2	STREAMING port audio
	Analog CH. 1/2	LINE IN jacks audio
	Analog CH. 3/4	AUDIO IN/OUT connector audio
	Test Tone	Test tone
None	Not assigned	
Delay	0.0–16.0fs (frames)	Adjusts the audio delay time. Delays the output of the audio by the specified time.
Level	0- <b>100</b> -127	Adjusts the volume.
Copy Settings from	Previous, Initial, Main Proc., Sub Proc., USB Streaming, Channel 1–8	Copies the parameter settings in “Audio” from another channel or other source. Previous: The last value set Initial: The default value
	(Execute)	Press the [PAGE/CURSOR] knob to copy the settings.

CH. 1–8 → **Copy Settings from**

Menu item (Parameter)	Value (Bold: default)	Explanation
Copy Settings from	Initial, Channel 1–8	Copies the parameter settings in “Channel” from another channel or other source. Initial: The default value
	(Execute)	Press the [PAGE/CURSOR] knob to copy the settings.

## INPUT

### SDI

Menu item (Parameter)	Value (Bold: default)	Explanation
Color Gamut	REC.601, REC.709, REC.2020, <b>Auto</b>	Specifies the color gamut.
Dynamic Range	SDR, HDR PQ, HDR HLG, <b>Auto</b>	Specifies the dynamic range.

### HDMI

Menu item (Parameter)	Value (Bold: default)	Explanation
EDID	This selects the EDID to set in the built-in EDID emulator.	
	1080i/50.00	2160p (UHD)/59.94/60.00 1920 x 1080/144RB (346.5)
	1080i/59.94/60.00	2160p (DCI)/50.00 1920 x 1080/240RB (556.8)
	1080p/50.00	2160p (DCI)/59.94/60.00 1920 x 1080/240RB (567.0)
	1080p/59.94/60.00	1280 x 1024/60 <b>Default</b>
	1080p/119.88/120.00	1920 x 1200/60RB
	1080p/239.76/240.00	2560 x 1440/60RB
	2160p (UHD)/50.00	1920 x 1080/120RB
Color Gamut	REC.601, REC.709, REC.2020, <b>Auto</b>	Specifies the color gamut.
Dynamic Range	SDR, HDR PQ, HDR HLG, <b>Auto</b>	Specifies the dynamic range.
Color Space	<b>Auto</b> , YUV422, YUV444, RGB Full, RGB Limit	Sets the color space.

### Pattern Generator

Menu item (Parameter)	Value (Bold: default)	Explanation
Pattern	<b>Disabled</b> , Color Bars, Color Sweep, H Ramp, V Ramp, HV Ramp, Hatch, Checker, Red, Green, Blue, Black, White	Selects the test pattern.
Motion	<b>Disabled</b> , Slow, Fast	Sets how fast the motion test pattern moves.

### Analog Audio

Menu item (Parameter)	Value (Bold: default)	Explanation
Level CH. 1/2	0- <b>100</b> -127	Adjusts the volume of audio from the LINE IN jacks.
Level CH. 3/4	0- <b>100</b> -127	Adjusts the volume of audio from the AUDIO IN/OUT connector.

## Output

### SDI

Menu item (Parameter)	Value (Bold: default)	Explanation
Source Processing	<b>Main</b> , Sub	Sets the processing system output from the 12G-SDI OUT connector.
3G-SDI Mapping	<b>Level A</b> , Level B	Sets the mapping of the 3G-SDI output.

### HDMI

Menu item (Parameter)	Value (Bold: default)	Explanation
Source Processing	<b>Main</b> , Sub	Sets the processing system output from the HDMI 4K OUT connector.
Signal Type	<b>HDMI</b> , DVI-D	Sets the standard used for the output signal.
Color Space	<b>Auto</b> , YUV422, YUV444, RGB Full, RGB Limit	Sets the color space used during output.
Audio Channel	2CH, 5.1CH, 7.1CH	Sets the maximum number of audio channels used during output.
Input Through	<b>Disabled</b> , Enabled	When this is set to "Enabled," signals input through the HDMI 4K IN connector are output as-is from the HDMI 4K OUT connector. * When "Input Through" is set to "Enabled," set "Sub Processing" (p. 24) to "Disabled."

### Analog Audio

Menu item (Parameter)	Value (Bold: default)	Explanation
Assign	Sets the output destination for the analog audio signal.	
	SDI OUT CH. 1/2–15/16	Each channel of the 12G-SDI OUT connector
	HDMI OUT CH. 1/2–7/8	Each channel of the HDMI 4K OUT connector
	USB OUT CH. 1/2–15/16	STREAMING port
	SDI IN CH. 1/2–15/16	Each channel of the 12G-SDI IN connector
	HDMI 2 CH MIX	Two channels are output, down mixed with the audio from the HDMI 4K IN connector.
	USB IN CH. 1/2	STREAMING port
	Analog IN CH. 1/2	LINE IN jacks
	Analog IN CH. 3/4	AUDIO IN/OUT connector
	Test Tone	Outputs a test tone.
None	Not assigned	
Delay	0.0–16.0fs (frames)	Adjusts the audio delay time. Delays the output of the audio by the specified time.
Level	0– <b>100</b> –127	Adjusts the output level.
Equalizer	<b>Disabled</b> , Enabled	Enables/disables the equalizer.
Hi Freq	20– <b>10k</b> –20k	Specifies the center frequency when changing the tone quality in the high band.
Hi Gain	-12– <b>0.0</b> –+12	Boosts or attenuates the high band.
Mid Q	0.3– <b>1.0</b> –16	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Mid Freq	20– <b>1.25k</b> –20k	Specifies the center frequency when changing the tone quality in the middle band.
Mid Gain	-12– <b>0.0</b> –+12	Boosts or attenuates the middle band.
Low Freq	20– <b>1.25k</b> –20k	Specifies the center frequency when changing the tone quality in the low band.
Low Gain	-12– <b>0.0</b> –+12	Boosts or attenuates the low band.
Mastering	<b>Disabled</b> , Enabled	Enables/disables the mastering.
Enhancer	-24– <b>0</b> –-12dB	Adjusts the audio clarity.
Sense	<b>0</b> –24	Adjusts how much the mastering effects are applied.
Level	-24– <b>0</b> dB	Adjusts the volume of the mastered sound.

## System

### Frame Rate

Menu item (Parameter)	Value (Bold: default)	Explanation
Frame Rate	50.00 Hz, <b>59.94 Hz</b> , 60.00 Hz	Sets the system's frame rate. The configurable formats change for each processing system.

### Genlock

Menu item (Parameter)	Value (Bold: default)	Explanation
Source	This sets the genlock source.	
	<b>Internal</b>	Sets the source to internal sync (free-run).
	External	Syncs to the analog external sync signal input to the REFERENCE IN connector.
	SDI	Syncs to the input from the 12G-SDI IN connector.
	<b>About the output from the REFERENCE THRU/OUT connector</b> When this unit is operating with sync set to "Internal" or "SDI," the sync signal inside the unit is output as a black burst. When this unit is operating with sync set to "External" or "SDI," the external sync input is output as-is.	
Line Adjust	-2160- <b>0</b> +2160	Corrects delays in the genlock line.

### HDCP

Menu item (Parameter)	Value (Bold: default)	Explanation
HDCP	<b>Disabled</b> , Enabled	If this is set to "Enabled," copy-protected (HDCP) video can be input. Also, HDCP is applied to the video that is output. * If this is set to "Enabled," video is not output from the 12G-SDI OUT connector and STREAMING port.

### Fade Time

Menu item (Parameter)	Value (Bold: default)	Explanation
Fade Time	0.0s- <b>0.5s</b> -1.0s	Sets the fade time.

### Orientation

Menu item (Parameter)	Value (Bold: default)	Explanation
Orientation	<b>Center</b> , Top Left	Sets the reference point when scaling.

### Panel Lock

Menu item (Parameter)	Value (Bold: default)	Explanation
Panel Lock	<b>Disabled</b> , Enabled	Enables/disables the panel lock function. When this is set to "Enabled," the panel automatically locks (the display goes dark) when it is not operated for at least one minute. Hold down the [SETUP] button to unlock the panel.

## Network

Menu item (Parameter)	Value (Bold: default)	Explanation
IP Address	–	Shows the IP address.
Subnet Mask	–	Shows the subnet mask.
Default Gateway	–	Shows the default gateway.
MAC Address	–	Shows the MAC address.
DHCP	Selects how to configure the IP address, subnet mask and default gateway. When selected, press the [PAGE/CURSORS] knob.	
	Client	The IP address and other information needed for connecting to the network is obtained automatically from the DHCP server of the LAN.
	Static	The IP address, subnet mask, and default gateway are specified manually.
	Static Address	Press the [PAGE/CURSORS] knob to configure the IP address, subnet mask and default gateway manually.
	IP Address	000.000.000.000– <b>192.168.010.010</b> –255.255.255.255
	Subnet Mask	000.000.000.000– <b>255.255.255.000</b> –255.255.255.255
	Default Gateway	000.000.000.000 – <b>192.168.010.001</b> –255.255.255.255

## LCD

Menu item (Parameter)	Value (Bold: default)	Explanation
Contrast	1– <b>16</b>	Adjusts the contrast of this unit's display.
Brightness	1– <b>8</b> –16	Adjusts the brightness of this unit's display.

## Memory

Menu item (Parameter)	Value (Bold: default)	Explanation
Internal Memory	This recalls and saves the settings to/from internal memory.	
Recall	<b>NO. 1</b> –8 (Execute)	Selects the settings to recall to current memory from internal memory. Press the [PAGE/CURSORS] knob to recall the selected settings.
Store	<b>NO. 1</b> –8 (Execute)	Selects where to save the parameter memories. Press the [PAGE/CURSORS] knob to save the parameter memories.
USB Memory	These parameters load or save files to/from a USB flash drive.	
Load Settings	vc100uhd.bin (Execute)	Loads the file named "vc100uhd.bin" from the USB flash drive. Press the [PAGE/CURSORS] knob to load the file.
Save Settings	vc100uhd.bin (Execute)	Saves the file named "vc100uhd.bin" to the USB flash drive. Press the [PAGE/CURSORS] knob to save the file.
Format	(Execute)	Formats the USB flash drive. When you press the [PAGE/CURSORS] knob, format is executed.

## Factory Reset

Menu item (Parameter)	Value (Bold: default)	Explanation
Factory Reset	(Execute)	Returns the settings of the unit to their factory-set state. When you press the [PAGE/CURSORS] knob, factory reset is executed.

## System Reboot

Menu item (Parameter)	Value (Bold: default)	Explanation
System Reboot	(Execute)	Reboot VC-100UHD. When you hold down the [PAGE/CURSORS] knob and press the [VALUE] knob, reboot is executed.

## Information

Menu item (Parameter)	Value (Bold: default)	Explanation
Version	–	Displays the system program version.
Uptime	–	Shows how long this unit has been operating.
FPGA	–	Shows the internal IC temperature.
FAN	–	Shows the rotation speed (rpm) of the internal fan.



# LAN Command Reference

Using the REMOTE connector to send specific commands to the unit from a controlling device lets you operate the unit remotely.

## LAN Interface

This uses the REMOTE connector on the unit.  
You use Telnet to operate the unit remotely over a LAN (TCP/IP protocol).

### Communication standards

Port	LAN port (supports 100BASE-TX)
TCP port number	23

For methods of connecting to a network, refer to "Network Connections and Settings" (p. 19).

## Command Format

### Transmitted commands (control device → VC-100UHD)

Transmit specific commands from the control device to this unit.

Command	Format										
ver	Obtains the model name and version information. <table border="1"> <tr> <td>ver</td> <td>If</td> </tr> </table>	ver	If								
ver	If										
set	Sets a parameter. <table border="1"> <tr> <td>set</td> <td>,</td> <td>Category</td> <td>,</td> <td>ID</td> <td>,</td> <td>Sub-ID</td> <td>,</td> <td>Value</td> <td>If</td> </tr> </table>	set	,	Category	,	ID	,	Sub-ID	,	Value	If
set	,	Category	,	ID	,	Sub-ID	,	Value	If		
get	Obtains the current parameter value. <table border="1"> <tr> <td>get</td> <td>,</td> <td>Category</td> <td>,</td> <td>ID</td> <td>,</td> <td>Sub-ID</td> <td>If</td> </tr> </table> <p>When this unit correctly receives a command, it returns set,[category],[ID],[sub-ID],[value][If].</p>	get	,	Category	,	ID	,	Sub-ID	If		
get	,	Category	,	ID	,	Sub-ID	If				

\* "If" is the ASCII code "0aH," and is a control code that indicates the end of the command. H indicates a hexadecimal value.

### ack response (VC-100UHD → control device)

When this unit correctly receives a command, it returns ack.  
The ack response commands are described in "List of Commands."

### Error response (VC-100UHD → control device)

When this unit could not correctly receive a command, it returns an error.

err	,	Transmitted command	If
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\* When sending a sequence of commands to the unit from a controller, after each one, be sure to verify that an "ack" response is returned before sending the next command.

## List of Commands

Item	Transmitted command	Response command	Parameter
Select input channel for processing system	set,0,9,0,[a][If]	ack,0,9,0,[a][If]	a: 0-7 Channel 1-8
Fade the main processing output to black	set,0,32,0,[a][If]	ack,0,32,0,[a][If]	a: 0 Cancel fade, 1 Execute fade
Fade the sub processing output to black	set,0,52,0,[a][If]	ack,0,52,0,[a][If]	a: 0 Cancel fade, 1 Execute fade
Fade the USB streaming output to black	set,0,57,0,[a][If]	ack,0,57,0,[a][If]	a: 0 Cancel fade, 1 Execute fade
Audio output level for USB streaming	set,0,217,0,[a][If]	ack,0,217,0,[a][If]	a: 0-127 Volume
Level of analog audio output	set,0,232,0,[a][If]	ack,0,232,0,[a][If]	a: 0-127 Volume
Retrieve SDI input status	get,0,9,0[If]	ack,0,9,0[If] set,0,9,0,[a][If]	a: 0 Unsupported signal input, 1 Normal signal input, 2 No signal
Retrieve HDMI input status	get,0,16,0[If]	ack,0,16,0[If] set,0,16,0,[a][If]	a: 0 Unsupported signal input, 1 Normal signal input, 2 No signal
Acquire version information	ver[If]	ack,ver[If] ver,VC-100UHD,[a][If]	a: Version * The version info is ASCII text strings.

# Appendix

## Main Specifications

Video		
Processing	4:4:4 (Y/Pb/Pr), 10-bit	
Formats	SDI	2160p (DCI)/59.94 Hz, 50 Hz (SMPTE ST2048)
		2160p (UHD)/59.94 Hz, 50 Hz (SMPTE ST2036)
		1080p/59.94 Hz, 50 Hz (SMPTE ST274)
		1080i/59.94 Hz, 50 Hz (SMPTE ST274)
	HDMI (*1)	2160p (DCI)/59.94 Hz, 50 Hz (CEA-861-F)
		2160p (UHD)/59.94 Hz, 50 Hz (CEA-861-F)
		1080p/59.94 Hz, 50 Hz (CEA-861-F)
		1080i/59.94 Hz, 50 Hz (CEA-861-F)
		4096 x 2160/60 Hz (CEA-861-F)
		3840 x 2160/60 Hz (CEA-861-F)
		2560 x 1440/60 Hz (VESA CVT Reduced blanking)
		1920 x 1200/60 Hz (VESA CVT Reduced blanking)
		1280 x 1024/60 Hz (VESA DMT)
1920 x 1080/240 Hz (Pixel Clock 556.8 MHz, 567.0 MHz) (*2)		
1920 x 1080/144 Hz (Pixel Clock 346.54 MHz) (*2)		
1920 x 1080/120 Hz (VESA CVT Reduced blanking) (*2)		
1920 x 1080/60 Hz (CEA-861-F)		
USB Streaming (*3) (*4) (*5)	1080p, 720p, 640 x 480	
Functions	4K Scaler	
	FHD Down Scaler for USB Streaming	
	Fade to Black	
	Test Pattern Generator	
	Rotation (*6)	
	Flip H, V	
	Edge Enhancer	
	Motion Adaptive Deinterlacer	
	Color Correction	
	Dynamic Range Conversion	
	Frame Rate Conversion (up to 240 Hz)	

(\*1) HDCP 1.4, 2.2 supported.

(\*2) Input and through output.

(\*3) UVC (USB Video Class) Uncompressed Video 4:2:2 (Y/Pb/Pr), 8-bit

(\*4) The video signal frame rate can be selected Full or Half of System frame rate.

(\*5) Color Gamut: Rec.601, Rec.709, Dynamic Range: SDR

(\*6) The following functions cannot be used at the same time. Sub Processing, Rotation, HDMI Through.

Audio		
Processing	24 bits/48 kHz	
Formats	12G-SDI	Linear PCM, 24 bits/48 kHz, 16 ch (SMPTE 299M)
	HDMI 4K	Linear PCM, 24 bits/48 kHz, 8 ch
	STREAMING	Linear PCM, 16 bits/48 kHz, 2 ch (UAC (USB Audio Class))
Input Level	LINE IN	-10 dBu (Maximum: +8 dBu)
	AUDIO IN	+4 dBu (Maximum: +24 dBu)
Input Impedance	LINE IN	38 kΩ
	AUDIO IN	15 kΩ
Output Level	LINE OUT	-10 dBu (Maximum: +8 dBu)
	AUDIO OUT	+4 dBu (Maximum: +24 dBu)
Output Impedance	LINE OUT	1 kΩ
	AUDIO OUT	600 Ω
Functions	Output Level	
	Patchbay	
	Delay	
	Equalizer	
	Mastering	
Test Tone Generator		

■ Connectors		
Input Connectors	12G-SDI IN	BNC type (SMPTE 2082, 2081, 424M (SMPTE 425M-AB), 292M, 259M)
	HDMI 4K IN	HDMI type A
	STREAMING	USB type B (USB3.0)
	LINE IN	RCA phono type
	AUDIO IN	DB-25 female type (Balanced audio 2 ch)
	REFERENCE IN	BNC type (Black Burst (Sync to frames), Bi-Level, Tri-Level)
Output Connectors	12G-SDI OUT	BNC type (SMPTE 2082, 2081, 424M (SMPTE 425M-AB), 292M, 259M)
	12G-SDI THRU	BNC type
	HDMI 4K OUT	HDMI type A
	STREAMING	USB type B (USB3.0)
	LINE OUT	RCA phono type
	AUDIO OUT	DB-25 female type (Balanced audio 2 ch)
	REFERENCE THRU/OUT	BNC type (Black Burst)
Other Connectors	USB HOST	USB A type (USB2.0) (for USB flash drive)
	REMOTE	RJ45 type, 100BASE-TX

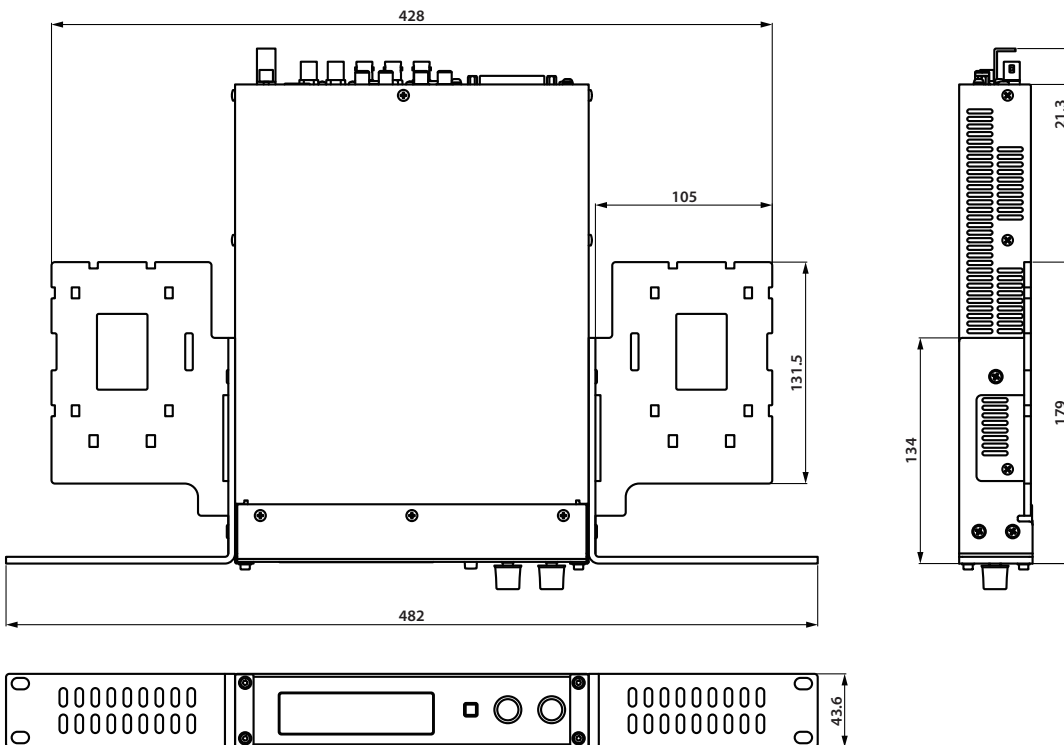
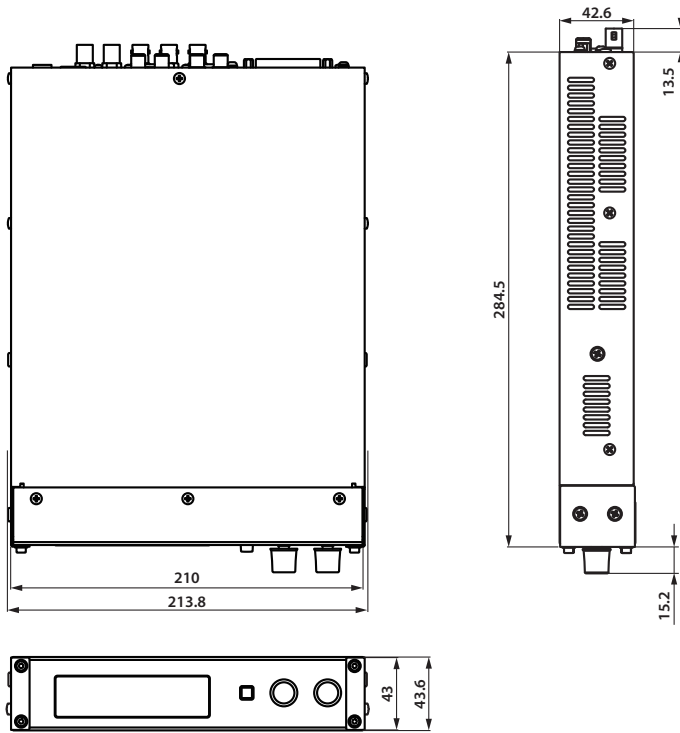
■ Others	
Functions	EDID emulator
	Genlock
	Preset memory x 8
Display	Graphic LCD 256 x 64 dots
Power Supply	AC adaptor
Current Draw	2.3 A (DC 24 V)
Power Consumption	55 W
Operation Temperature	+0 to +40 degrees Celsius
	+32 to +104 degrees Fahrenheit
Dimensions	210 (W) x 284.5 (D) x 43 (H) mm
	8-5/16 (W) x 11-1/4 (D) x 1-3/4 (H) inches
Weight (excluding Accessories)	2.2 kg
	4 lbs 14 oz
Accessories	Owner's Manual
	Leaflet "USING THE UNIT SAFELY"
	AC adaptor
	Power cord
	Rubber feet (4 pcs.)
	Rack mount angle set
	DC plug stopper

\* 0 dBu = 0.775 Vrms

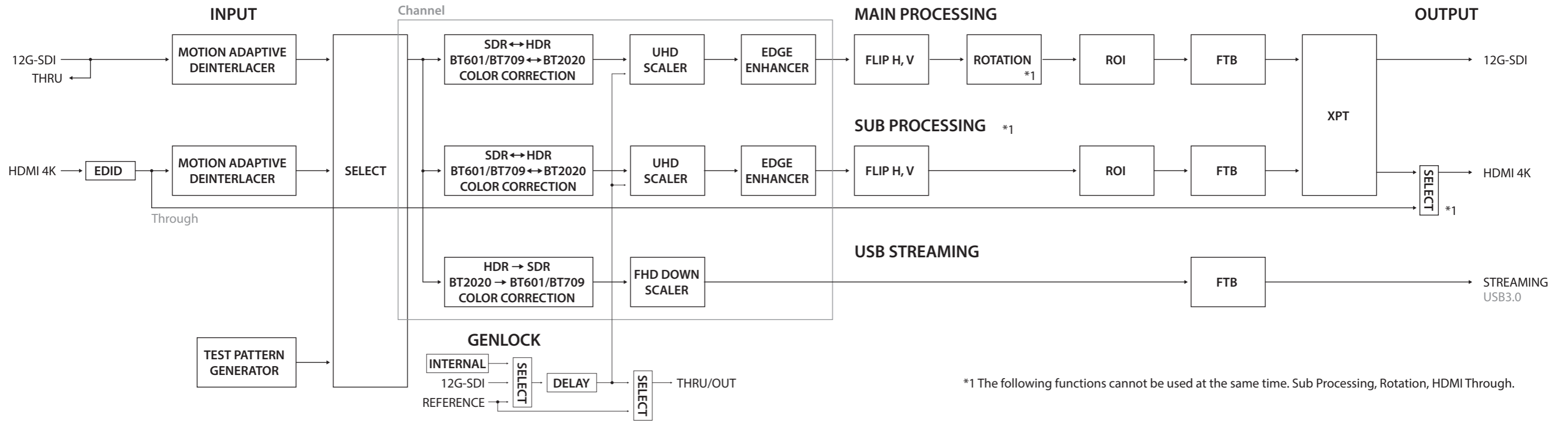
\* This document explains the specifications of the product at the time that the document was issued. For the latest information, refer to the Roland website.

Dimensions

Unit: mm



VIDEO Block Diagram



AUDIO Block Diagram

