Reference Manual

STREAMING VIDEO SWITCHER

V-160HD

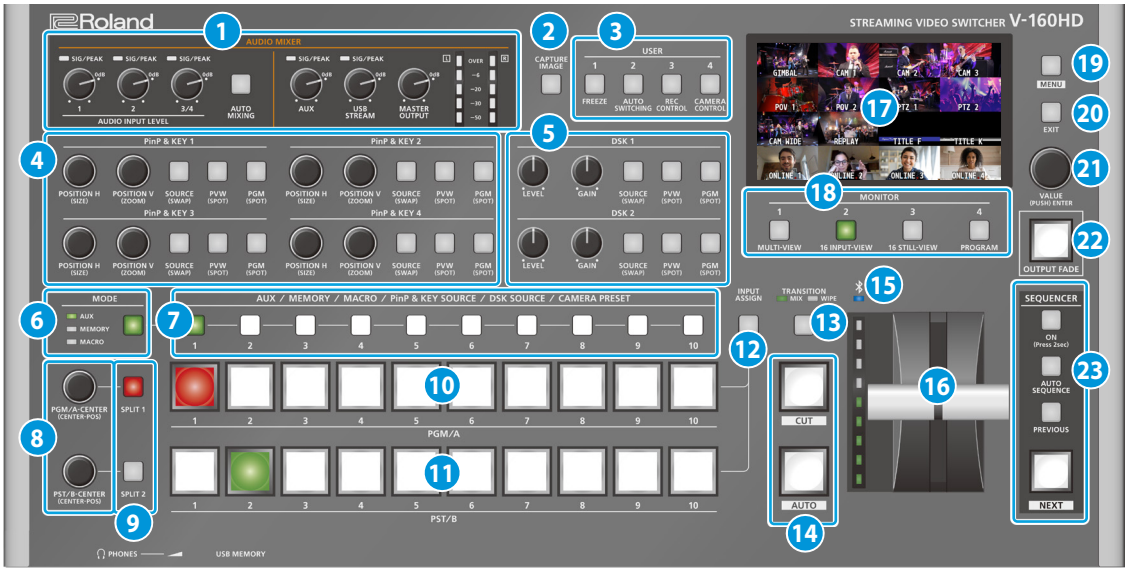
Version 3.30 and later

Bluetooth®

Contents

Panel Descriptions

Top Panel



1 AUDIO MIXER

SIG/PEAK indicators (1, 2, 3/4)

Shows the volume level for the AUDIO IN 1, 2, or 3/4.

Indicator	Status
Red	Volume is excessive (0 dB or higher)
Yellow	Volume is appropriate (-20 – -1 dB).
Green	Volume is insufficient (-50– -21 dB).

AUDIO INPUT LEVEL [1] [2] [3/4] knobs

Adjust the volume of the AUDIO IN 1, 2, or 3/4.

[AUTO MIXING] button

Turns the auto-mixing function (used to automatically control the volume) on/off.

SIG/PEAK indicators (AUX, USB STREAM)

Shows the volume level for the AUX bus and USB output.

[AUX] knob

Adjusts the volume of the AUX bus output.

[USB STREAM] knob

Adjusts the volume of the USB output.

[MASTER OUTPUT] knob

Adjusts the overall volume.

Level meter

Indicates the volume level of the overall output.

2 [CAPTURE IMAGE] button

Turns the still image capture mode on/off.

3 USER [1]–[4] buttons

These buttons execute pre-assigned functions.
With the factory settings, the following functions are assigned.

Button	Explanation
USER [1]	**FREEZE** Turns the freeze function (freeze the input video) on/off.
USER [2]	**AUTO SWITCHING** Turns the auto switching function (used to automatically switch between videos) on/off.
USER [3]	**REC CONTROL** Controls the recorder's video record start/stop if a recorder that supports REC control functionality is connected.
USER [4]	**CAMERA CONTROL** Turns the camera control function on/off. When this is on (lit), the 7 CAMERA PRESET [1]–[10] buttons are used to recall the presets.

4 PinP & KEY 1–4

This uses PinP and KEY 1–4 layers to composite video using PinP, or picture-in-picture (p. 31).

[POSITION H] knob

Adjusts the horizontal position of the inset screen.

By turning the knob while pressing it, you can adjusts the size of the inset screen.

[POSITION V] knob

Adjusts the vertical position of the inset screen.

By turning the knob while pressing it, you can adjust the zoom of the video shown in the inset screen.

[SOURCE] button

When this is on (lit), you can select the video source for the inset screens using the 7 PinP & KEY SOURCE [1]–[10] buttons.

[PVW] button

Turns the inset screen preview output on/off.

[PGM] button

Turns PinP composition on/off.

5 DSK 1, 2

This uses DSK layer 1 or 2 to composite video using a downstream keyer (p. 33).

[LEVEL] knob

Adjusts the degree of extraction (transparency) for the key.

[GAIN] knob

Adjusts the degree of edge blur (semi-transmissive region) for the key.

[SOURCE] button

When this is on (lit), you can select the DSK video source using the 7 PinP & KEY SOURCE [1]–[10] buttons.

[PVW] button

Turns the preview output of the DSK compositing result on/off.

[PGM] button

This switches DSK composition on or off.

6 [MODE] button

7 Switches the functioning of the AUX / MEMORY / MACRO [1]–[10] buttons. An indicator located at the left of the [MODE] button is lit to indicate the current function.

7 AUX / MEMORY / MACRO / PinP & KEY SOURCE / DSK SOURCE / CAMERA PRESET [1]–[10] buttons

The functions of these buttons change as shown in the table below.

When button is lit	Functions of buttons [1]–[10]
[MODE]	**AUX** Select the video that is sent to the AUX 1 bus. Press and hold down the [MODE] button to switch to the mode which selects the video that is sent to the AUX 2 and 3 buses.
	MEMORY Recalls the preset memory (the video/audio and other data that is saved). Long-press a button to save the current settings in a preset memory.
	MACRO Executes a macro (a series of recorded operations).
PinP & KEY 1–4 [SOURCE]	**PinP & KEY SOURCE** Select the video source for the inset screen (p. 31).
DSK 1, 2 [SOURCE]	**DSK SOURCE** Selects the DSK video source (p. 33).
USER [4] (CAMERA CONTROL)	**CAMERA PRESET** Recalls the registered preset (camera position, focus settings, etc.) from the connected camera.

8 [PGM/A-CENTER] [PST/B-CENTER] knobs

Adjust the split compositing settings (p. 30).

Knob	Explanation
[PGM/A-CENTER]	Adjusts the horizontal/vertical position of the video that's shown in the left or upper area. **Turn while pressing:** Adjusts the position of the boundary.
[PST/B-CENTER]	Adjusts the horizontal/vertical position of the video that's shown in the right or lower area. **Turn while pressing:** Adjusts the position of the boundary.

9 [SPLIT 1] [SPLIT 2] buttons

Turns on/off video compositing using split (p. 30).

10 PGM/A cross-point [1]–[10] buttons

Selects the video to input to bus PGM/A. The selected button lights up.

11 PST/B cross-point [1]–[10] buttons

Selects the video to input to bus PST/B. The selected button lights up.

12 [INPUT ASSIGN] button

Press a cross-point button while holding down the [INPUT ASSIGN] button to change the video source for the buttons you pressed.

The video source changes in the following order each time you press the button.

- **[INPUT ASSIGN] + PGM/A cross-point buttons**

  STILL 16 → 1 → SDI 8 → 1 → HDMI 8 → 1

- **[INPUT ASSIGN] + PST/B cross-point buttons**

  HDMI 1 → 8 → SDI 1 → 8 → STILL 1 → 16

13 [TRANSITION] button

Selects the video transition effects (MIX, WIPE).

The MIX or WIPE indicator lights to show that it is selected.

14 [CUT] [AUTO] button

Automatically switch between the videos being input to bus PGM/A and PST/B, and send them to the final output.

Button	Explanation
[CUT]	The picture switches instantly.
[AUTO]	A transition effect is applied and the video is switched automatically.

15 (Bluetooth®) indicator

Shows the Bluetooth connection status.

Lit	Connected	**Rapid blinking**	Now pairing
Unlit	Bluetooth off	**Blinking**	Waiting for connection

You can input audio from an audio device that uses Bluetooth, or use dedicated app on your iPad to remotely control the V-160HD.

16 Video fader

Manually switch between the videos being input to bus PGM/A and PST/B, and send them to the final output.

Transition indicator

The indicators light up to show the video fader position.

When the video fader is pushed all the way down, only the topmost or bottommost transition indicator lights.

17 Monitor

Shows the input/output video, a loaded still image, or a menu.

* The same video as that shown on the monitor of this unit is output from the HDMI OUT 3 connector.

18 MONITOR [1]–[4] buttons

Switches between the video to monitor. Both the display from the monitor of this unit and the output video from the HDMI OUT 3 connector switch at the same time.

Button	Explanation
MONITOR [1]	**MULTI-VIEW** The final output video, preview output video and the videos allocated to the cross-point [1]–[8] buttons are shown in sections of the display.
MONITOR [2]	**16 INPUT-VIEW** The input video from the HDMI IN connectors and the SDI IN connectors are shown as 16 separate sections on the screen.
MONITOR [3]	**16 STILL-VIEW** Shows the loaded still images in 16 separate sections on the screen.
MONITOR [4]	**PROGRAM** Shows the final output video.

* The settings described above are the factory defaults. You can also assign different video to each button.

19 [MENU] button

Switches the menu between visible and hidden.

The menu appears on the built-in monitor and the display connected to the HDMI OUT 3 connector.

20 [EXIT] button

Returns you to the menu one level higher.

21 [VALUE] knob

Selects a menu item, or edits the value of a setting.

Press this knob to confirm the menu item you selected or the value that you edited.

22 [OUTPUT FADE] button

The final output video and audio fade in/out.

Lit	Fade-out completed
Blinking	Now fading-in/out
Unlit	Normal output

23 SEQUENCER

Use this to execute operations such as macros or recalling preset memories (sequencer function) in the order that you have specified beforehand.

[ON] button

Long-press to turn sequencer function on/off.

[AUTO SEQUENCE] button

Turns the auto sequence function on/off.

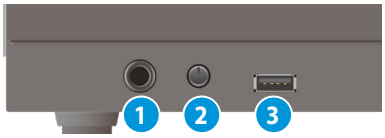
[PREVIOUS] button

Returns to the previous operation.

[NEXT] button

Advances to the next operation. The button blinks while the operation is executing.

Front Panel



1 PHONES jack

Connect headphones.

2 [PHONES] knob

Adjusts the volume of the headphones.

3 USB MEMORY port

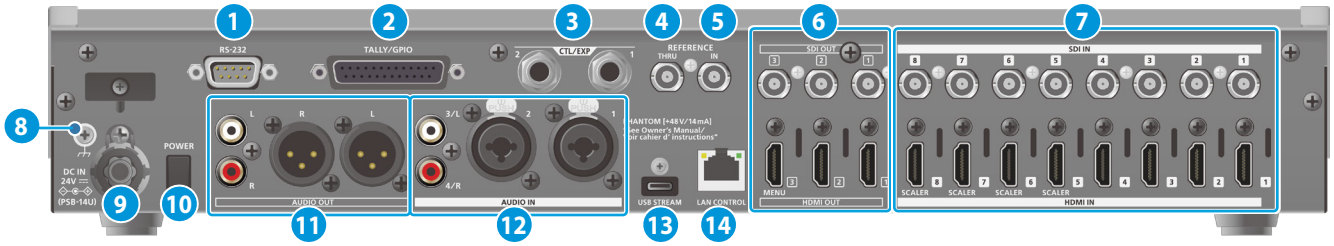
Connect a USB flash drive or a USB numeric keypad.

USB flash drive.	Use this to save/load the settings of this unit, and to load/save still images.
USB numeric keypad	Use this when you want to control video transitions or other operations from a numeric keypad.

* Never turn off the power or remove the USB flash drive while the USB flash drive is being accessed.

Rear Panel

* To prevent malfunction and equipment failure, always turn down the volume, and turn off all the units before making any connections.
* Do not block the cooling-fan intake and exhaust ports on the side panels. If the cooling-fan intake and exhaust ports are blocked, the internal temperatures may rise, causing malfunctions due to excessive heat.



Pin assignment of AUDIO OUT jacks (XLR)

1: GND — 2: HOT
3: COLD

Pin assignment of AUDIO IN 1 and 2 jacks (XLR/TRS)

2: HOT — 1: GND
3: COLD

TIP: HOT
RING: COLD
SLEEVE: GND

1 RS-232 connector

You can connect this to a computer equipped with an RS-232 connector, and remotely control the V-160HD.

2 TALLY/GPIO connector

Use this to connect to devices that have a tally indicator feature, or to connect to devices that have a control signal input/output function.

3 CTL/EXP 1, 2 jacks

Connect footswitches (sold separately: BOSS FS-6, etc.) or expression pedals (sold separately: EV-5, etc.). This is used when using your foot to control operations such as video switching.

* Use only the specified expression pedal (sold separately: EV-5, BOSS FV-500L, or FV-500H). By connecting any other expression pedals, you risk causing malfunction and/or damage to the unit.

4 REFERENCE THRU connector

Sends the synchronization signal that is inputted to the V-160HD to an external device that is connected to this unit.

5 REFERENCE IN connector

Connect an external source device for synchronization in order to input a sync signal.

6 HDMI OUT 1–3 connectors, SDI OUT 1–3 connectors

These connectors output video. Choose the connectors that are appropriate for the connected devices.

For each connector, you can change the video bus that is assigned for output from that connector. With the factory settings, the bus assignments are as follows.

Connector	Bus
SDI/HDMI OUT 1	PROGRAM (final output video)
SDI/HDMI OUT 2	PREVIEW (preview output video)
SDI/HDMI OUT 3	MULTI-VIEW

7 HDMI IN 1–8 connectors, SDI IN 1–8 connectors

These connectors input video. Choose the connectors that are adaptor for the connected devices.

The input format is automatically recognized.

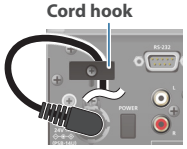
8 Ground terminal

Connect this to an external earth or ground if necessary.

9 DC IN jack

Connect the included AC adaptor to this jack.

* Use the cord hook to secure the cord of the AC adaptor as shown in the illustration.
If you have trouble running the cord through, loosen the screw a little on the cord hook.



10 [POWER] button

Turns the power on/off.

11 AUDIO OUT jacks (XLR, RCA)

These jacks output audio. Choose the jacks that are appropriate for the connected devices.

For each jack, you can change the audio bus (MASTER OUTPUT, AUX) that is assigned for output from that jack.

12 AUDIO IN 1, 2, 3/L, 4/R jacks

These jacks input audio. Choose the jacks that are appropriate for the connected devices.

* **About phantom power**

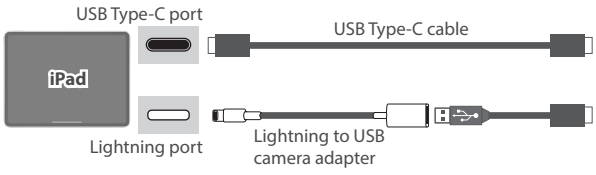
You can supply phantom power (+48 V) from the AUDIO IN 1 and 2 jacks (XLR). Turn on phantom power when you're using a condenser microphone that requires phantom power.

Use the [MENU] button → "AUDIO INPUT" → "AUDIO IN 1" or "AUDIO IN 2" → set "PHANTOM +48V" to "ON".

13 USB STREAM port (USB Type-C®)

- Outputs the audio and video to your computer. This is also used to input audio played on your computer to the V-160HD.
- Use the dedicated app to remotely control the V-160HD from a computer or iPad that is connected.

Connecting an iPad



* If you are outputting HD video via USB, connect this to a USB 3.0 port of your computer.
* If you connect via an extension cable or a USB hub, the computer might not recognize this unit.

14 LAN CONTROL port

- Lets you remotely control the V-160HD by using terminal app, etc.
- Use the dedicated app to remotely control the V-160HD from a computer or iPad that is connected.
- Use the V-160HD to remotely control a camera that is connected.
- Displays a tally on your iOS or Android device (this is the "smart tally" function).

Connecting Bluetooth® Devices

Use the Bluetooth features of the V-160HD to connect it to your Bluetooth-compatible mobile device. This lets you do the following:

- Input the audio signals from your Bluetooth audio device.
- Use dedicated app "V-160HD Remote" to remotely control the V-160HD from an iPad (p. 85).

  * For more on connecting (pairing) with a dedicated app, see the app's Owner's Manual.

Registering a Bluetooth Audio Device (Pairing)

To connect a Bluetooth device to this unit, you must pair (register) the device with the unit.

Once you pair the device with this unit, there is no need to do it again.

* To connect a Bluetooth device that's already paired, refer to "Connecting an Already-Paired Bluetooth Device" on this page.

* See the Owner's Manual for the Bluetooth device you want to pair for details on the necessary operations.

1. Place the Bluetooth device nearby the V-160HD.

2. [MENU] button → "SYSTEM" → "Bluetooth" → select "Bluetooth", and press the [VALUE] knob.

3. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

The V-160HD's Bluetooth function turns on.

4. Use the [VALUE] knob to select "PAIRING", and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

5. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

Pairing begins.

6. Turn on the Bluetooth function of the Bluetooth device.

7. Display the Bluetooth device screen on your Bluetooth device, and select "Roland V-160HD Audio".

Once pairing is successful, the message on the V-160HD changes to "COMPLETE".

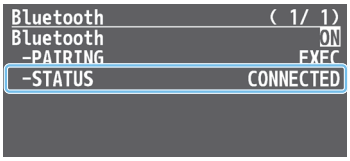
8. Press the [MENU] button to close the menu.

Connecting an Already-Paired Bluetooth Device

1. Turn on the Bluetooth function of the Bluetooth device.

2. Turn on the Bluetooth function of the V-160HD.

The onscreen STATUS display on the V-160HD changes to "CONNECTED" when the connection is successful.



* If connection does not succeed, select "Roland V-160HD Audio" in the Bluetooth device screen on your Bluetooth device.

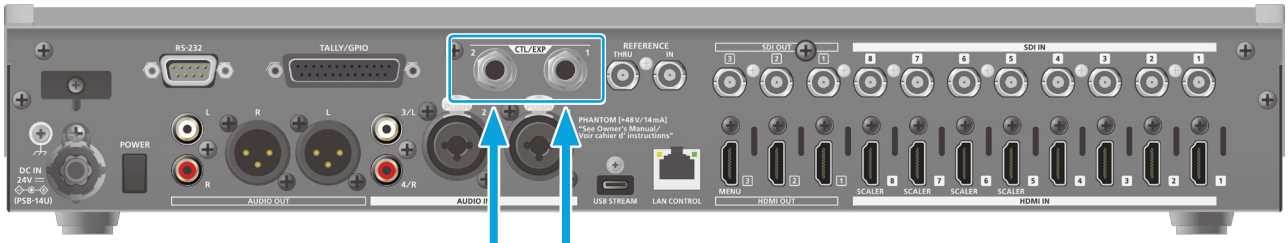
MEMO

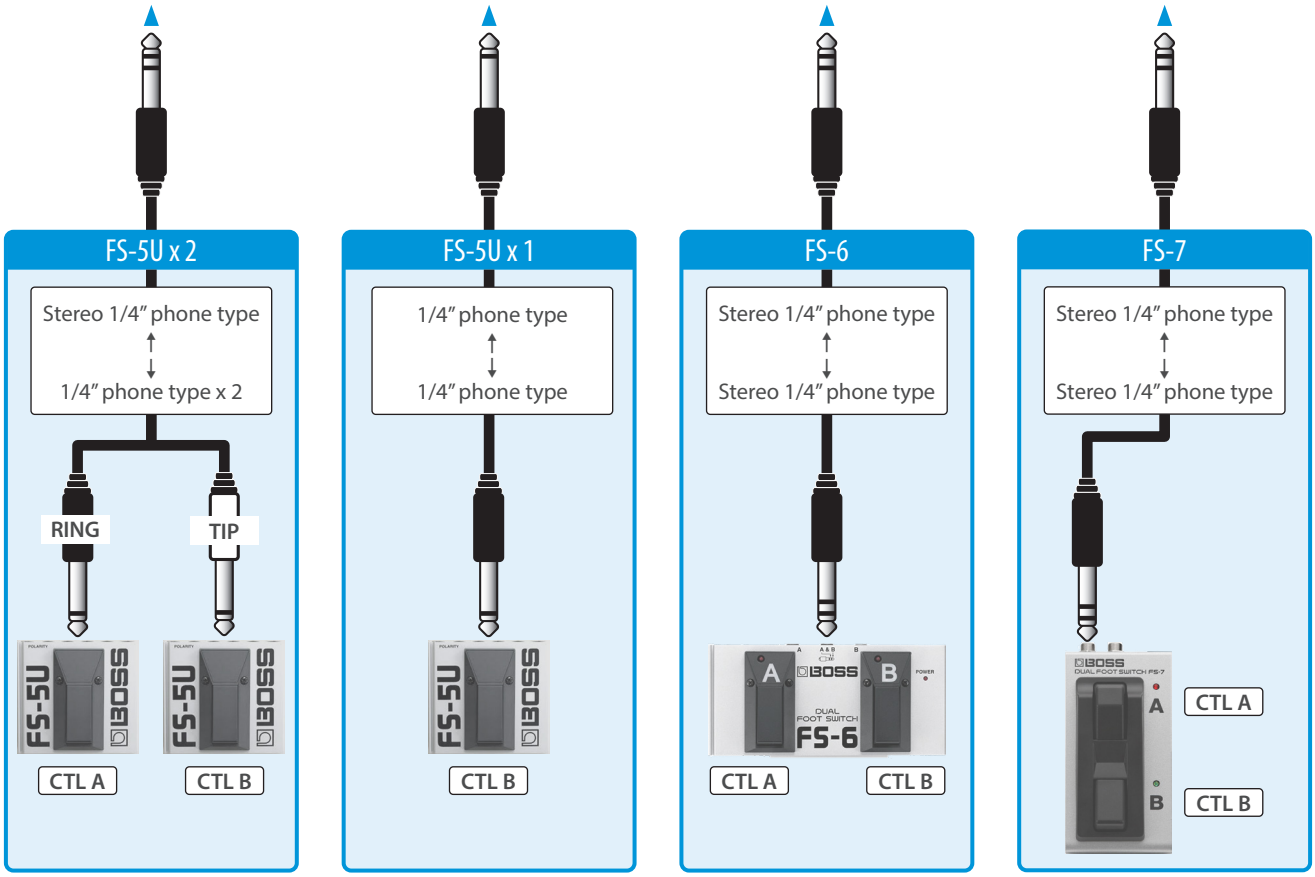
- You can also check the (Bluetooth) indicator for the connection status.

Lit	Connected	**Rapid blinking**	Now pairing
Unlit	Bluetooth off	**Blinking**	Waiting for connection

- Pair again in the following cases:
  - When the pairing data has been deleted from the Bluetooth device
  - When the V-160HD has been reset to its factory-set state (p. 84).
- To remove the Bluetooth connection, deactivate Bluetooth on the V-160HD or on your Bluetooth device.
- You can assign a function to a USER button for switching Bluetooth on/off, or for pairing (p. 74).

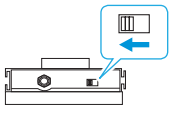
Connecting a Footswitch



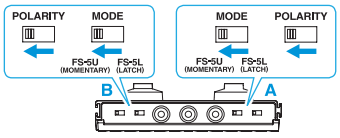


MODE/POLARITY switch

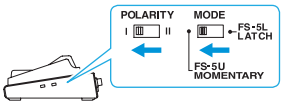
FS-5U



FS-6



FS-7



NOTE

The BOSS FS-6's A, B, and A&B jacks also act as the power switch. The power turns on when you insert a plug into the jack, and turns off when you remove the plug.

To prevent the batteries from running down, remove the plugs from the jacks when you're not using the BOSS FS-6.

Turning the Power On/Off

* Before turning the unit on/off, always be sure to turn the volume down. Even with the volume turned down, you might hear some sound when switching the unit on/off. However, this is normal and does not indicate a malfunction.

Turning the Power On

1. Make sure that all devices are powered-off.

2. Press the V-160HD's [POWER] button to turn on the power.

3. Turn on the power in the order of source devices → output devices.

Turning the Power Off

1. Turn off the power in the order of output devices → source devices.

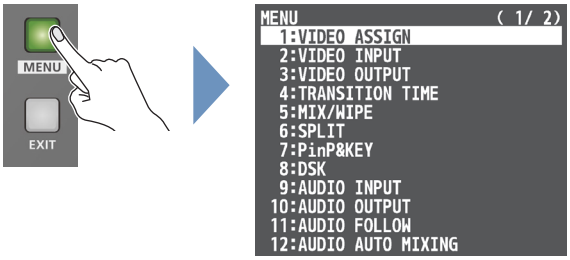
2. Press the V-160HD's [POWER] button to turn off the power.

Operating the Menu

Here's how to access the menu, and make video/audio settings and settings for this unit.

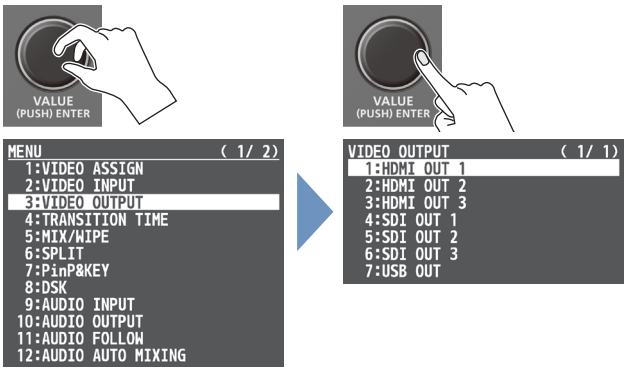
The menu is also appears on the display connected to the HDMI OUT 3 connector.

1. Press the [MENU] button to display the menu.



The menu is organized into functions.

2. Turn the [VALUE] knob to select the menu item that you want to edit, and press the [VALUE] knob to confirm.



3. Repeat step 2 as needed.

Pressing the [EXIT] button moves you back one level higher.

4. Turn the [VALUE] knob to change the setting value, and then press the [VALUE] knob to confirm.

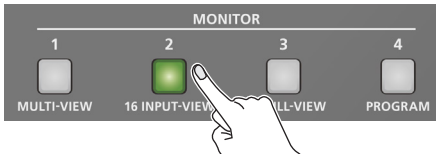
- By turning the [VALUE] knob while pressing it, you can change the value more greatly.
- Long-pressing the [VALUE] knob returns the current menu item you're setting to its default value.

5. Press the [MENU] button to quit the menu.

Switching the Monitor View

Aside from multi-view display, you can switch between videos to monitor such as the input video or a list of still images, according to your needs.

1. Press one of the MONITOR [1], [2], [3] or [4] buttons.



The selected button is lit, and both the display from the monitor of this unit and the output video from the HDMI OUT 3 connector switch at the same time.

* The display from the monitor of this unit and the output from the HDMI OUT 3 connector always switch together.

MONITOR [1] (MULTI-VIEW) button

The final output video, preview output video and the videos allocated to the cross-point [1]–[8] buttons are shown in sections of the display (multi-view).

1 PVW (preview) section

Displays the preview output video (the video to be output next).

* The fade-in/out effect (p. 29) is not reflected here.

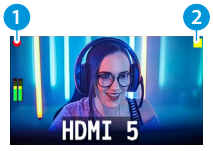
2 PGM (program) section

Displays the final output video.

3 Cross-point [1]–[8] button video

Displays the video assigned to each cross-point button.

The final video output and preview output video are displayed with tally frames (red and green).



1 REC indicator

If a camera that supports the REC status function is connected, this is shown when the camera's REC button is pressed.

2 AUX/SOURCE indicator

This displays as follows.

Yellow	PinP & KEY inset screen
Magenta	DSK video source
Green	AUX bus video source

MONITOR [2] (16 INPUT-VIEW) button

The input video from the HDMI IN connectors and the SDI IN connectors are shown as 16 separate sections on the screen.

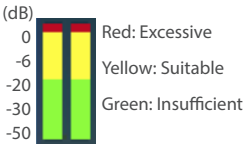
MONITOR [3] (16 STILL-VIEW) button

Shows the loaded still images in 16 separate sections on the screen.

MONITOR [4] (PROGRAM) button

Shows the final output video.

Audio level meter indication



- You can set the audio level meter to show or hide. You can also individually set where each audio level meter in the multi-view is displayed.

  Configure the settings of the following menu items from the [MENU] button → "SYSTEM".

Menu item	Explanation
AUDIO LEVEL METER	Sets whether to show or hide the audio level meter.
MASTER OUTPUT	Sets the display position of the audio level meter. When this is "OFF", the level meter is always hidden.
AUX 1-3	
USB OUT	
AUDIO IN/USB/ Bluetooth	

- The following status marks are shown below the audio level meter.

MT	The mute function (p. 48) is on.
A.F	The audio follow function (p. 47) is on.

* This is not shown on this unit's display.

MEMO

- You can change the monitoring videos assigned to the MONITOR [1]–[4] buttons.

  To make this setting, use the [MENU] button → "SYSTEM" → "MONITOR SW ASSIGN" → "MONITOR 1 SW" –"MONITOR 4 SW".

- **Items shown on the monitor**

  You can individually set whether items like the tally frame, label and so on are shown or hidden.

  Configure the settings of the following menu items from the [MENU] button → "SYSTEM".

Menu item	Explanation
TALLY FRAME	Tally frame
AUX/SOURCE INDICATOR	AUX/SOURCE indicator
REC INDICATOR	REC indicator
AUDIO LEVEL METER	Audio level meter
MULTI-VIEW LABEL	Label

- You can change the label names that are shown in the monitor.

  Edit this from the [MENU] button → "SYSTEM" → "MULTI-VIEW LABEL EDIT".

- For details on the cameras that support the REC status function, refer to the Roland website.

  https://proav.roland.com/

Video Input/Output Settings

Setting the Video Input/Output Format

Here's how to specify the input/output format as appropriate for the device that's connected.

Setting the System Format

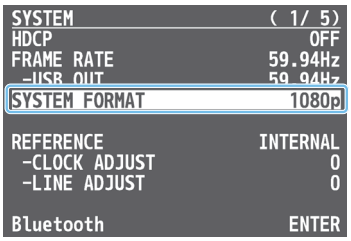
On the V-160HD, the input/output format is determined according to the system format. You set the input/output format to match the connected equipment.

System format	Input format (*1) HDMI IN 1–4 connectors SDI IN 1–8 connectors	Output format (*2) HDMI OUT 1 and 2 connectors SDI OUT 1–3 connectors
1080p	1080p, 1080i	1080p 1080i
720p	720p	720p

(*1) You can specify separate individual input formats for the HDMI IN 5–8 connectors, regardless of the system format.
For details, refer to "Setting the Input Format for the HDMI IN 5–8 Connectors" on this page.

(*2) The output format at the HDMI OUT 3 connector is fixed at "1080p".

1. [MENU] button → "SYSTEM" → select "SYSTEM FORMAT", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "1080p", "1080i", or "720p", and press the [VALUE] knob.

* A change in the setting is not applied until you press the [VALUE] knob to confirm.

3. Press the [MENU] button to close the menu.

Internal processing

The V-160HD's internal processing is progressive. Interlaced input video is automatically converted to a progressive signal.

The video might appear jagged at this time, or the video in a PinP inset screen or on the multi-view might waver.

This is due to progressive conversion, and is not a malfunction.

About frame rate

You can change the frame rate of the V-160HD from the [MENU] button → "SYSTEM" → "FRAME RATE".

Setting the Input Format for the HDMI IN 5–8 Connectors

Using the factory settings, the EDID assignment for the HDMI IN 5–8 connectors is "INTERNAL" (so that EDID values of all formats that can be input are sent).

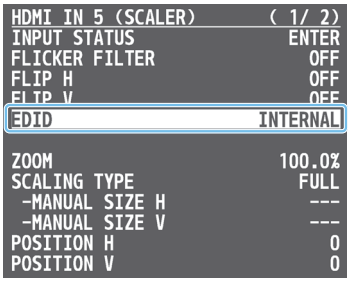
To specify an input format of your choice, change the setting of the EDID information being sent so that it matches the incoming video signal.

What is EDID?

EDID is data that is transmitted from the V-160HD to the source device when the V-160HD is connected to a source device. EDID contains data such as the formats that can be input to the V-160HD (resolution, color space, color depth) and audio information.

Based on the EDID information that the source device receives, it will output the most appropriate video format to the V-160HD.

1. [MENU] button → "VIDEO INPUT" → "HDMI IN 5 (SCALER)"–"HDMI IN 8 (SCALER) → select "EDID", and press the [VALUE] knob.



2. Use the [VALUE] knob to set the input format (the EDID information to send), and press the [VALUE] knob.

* A change in the setting is not applied until you press the [VALUE] knob to confirm.

Value	
INTERNAL (EDID information for all inputtable formats is sent.)	
SXGA+ (1400 x 1050)	UXGA (1600 x 1200)
SVGA (800 x 600)	WUXGA (1920 x 1200)
XGA (1024 x 768)	720p
WXGA (1280 x 800)	1080i
FWXGA (1366 x 768)	1080p
SXGA (1280 x 1024)	

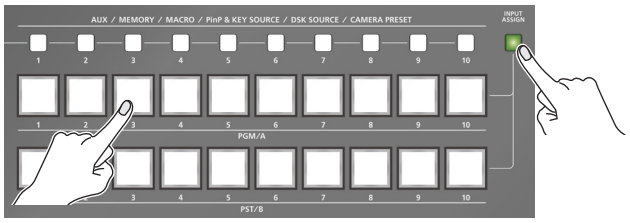
3. Press the [MENU] button to close the menu.

Assigning Video Sources

Here's how to assign the video sources (input video and still images) to the cross-point [1]–[10] buttons.

Using the buttons

1. Press a cross-point button while holding down the [INPUT ASSIGN] button.



The video source changes in the following order each time you press the button.

[INPUT ASSIGN] + PGM/A cross-point buttons

STILL 16 → 1 → SDI 8 → 1 → HDMI 8 → 1

[INPUT ASSIGN] + PST/B cross-point buttons

HDMI 1 → 8 → SDI 1 → 8 → STILL 1 → 16

Using the menus

1. [MENU] button → "VIDEO ASSIGN" → select "INPUT 1"–"INPUT 10", and press the [VALUE] knob.

```
VIDEO ASSIGN              ( 1/ 2)
INPUT 1                    HDMI 1
INPUT 2                    HDMI 2
INPUT 3                    HDMI 3
INPUT 4                    HDMI 4
INPUT 5                    HDMI 5
INPUT 6                    HDMI 6
INPUT 7                    HDMI 7
INPUT 8                    HDMI 8
INPUT 9                   STILL 1
INPUT 10                  STILL 2
```

2. Use the [VALUE] knob to select the video source, and press the [VALUE] knob.

3. Press the [MENU] button to close the menu.

MEMO

You can import still images by using the following methods.

➡"Loading a Still Image from a USB Flash Drive" (p. 25)
➡"Capturing a Still Image from Input/Output Video" (p. 26)

Adjusting Output Video

Here's how to adjust the output image appropriately for the device that's receiving the V-160HD's output.

1. [MENU] button → "VIDEO OUTPUT" → select "HDMI OUT 1–3" or "SDI OUT 1–3", and press the [VALUE] knob.

```
VIDEO OUTPUT              ( 1/ 1)
  1:HDMI OUT 1
  2:HDMI OUT 2
  3:HDMI OUT 3
  4:SDI OUT 1
  5:SDI OUT 2
  6:SDI OUT 3
  7:USB OUT
```

2. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.

HDMI OUT 1–3

```
HDMI OUT 1                ( 1/ 1)
OUTPUT STATUS         NOT CONNECTED
COLOR SPACE           YPbPr(4:4:4)
DVI-D/HDMI SIGNAL            HDMI
BRIGHTNESS                      0
CONTRAST                        0
SATURATION                      0
RED                             0
GREEN                           0
BLUE                            0
REC CONTROL                    ON
```

Value	Explanation
OUTPUT STATUS	Shows the format and an HDCP signal presence.
COLOR SPACE	Specifies the color space.
DVI-D/HDMI SIGNAL	Specifies the type of output signal.
BRIGHTNESS	Adjusts the brightness.
CONTRAST	Adjusts the contrast.
SATURATION	Adjusts the saturation.
RED	Adjusts the red level.
GREEN	Adjusts the green level.
BLUE	Adjusts the blue level.

SDI OUT 1–3

```
SDI OUT 1                 ( 1/ 1)
OUTPUT STATUS          1080/59.94p
3G-SDI MAPPING            LEVEL-B
BRIGHTNESS                      0
CONTRAST                        0
SATURATION                      0
```

Value	Explanation
OUTPUT STATUS	Shows the format.
3G-SDI MAPPING	Specifies the mapping structure of the 3G-SDI output.
BRIGHTNESS	Adjusts the brightness.
CONTRAST	Adjusts the contrast.
SATURATION	Adjusts the saturation.

3. Use the [VALUE] knob to edit the value of the setting, and press the [VALUE] knob.

4. Press the [MENU] button to close the menu.

MEMO

You can output a test pattern, useful for adjusting the image quality of a display.

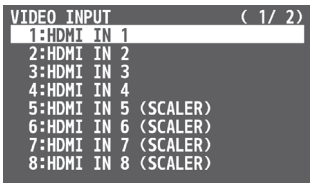
Use the [MENU] button → "SYSTEM" → "TEST PATTERN" to specify the test pattern.

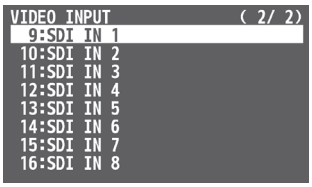
Adjusting Input Video

Here's how to adjust the quality of the input video signals.

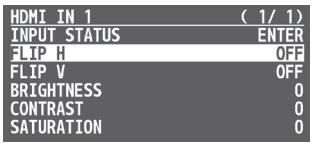
For the HDMI IN 5–8 connectors, you can also adjust the scaling.

1. [MENU] button → "VIDEO INPUT" → select "HDMI IN 1–8 (SCALER)" or "SDI IN 1–8", and press the [VALUE] knob.





2. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.



Menu item	Explanation
INPUT STATUS	Displays information about the incoming video.
FLIP H	When this is "ON", the video is input with left and right flipped.
FLIP V	When this is "ON", the video is input with top and bottom flipped.
BRIGHTNESS	Adjusts the brightness.
CONTRAST	Adjusts the contrast.
SATURATION	Adjusts the saturation.

* The following parameters are only for HDMI IN 5–8 (SCALER).

FLICKER FILTER	When this is "ON", flickering is reduced.
EDID	Specifies the input format (EDID) (p. 12).
ZOOM	Adjusts the zoom ratio.
SCALING TYPE	Specifies the scaling type.
MANUAL SIZE H	Adjusts the horizontal size when scaling type is set to "MANUAL".
MANUAL SIZE V	Adjusts the vertical size when scaling type is set to "MANUAL".
POSITION H	Adjusts the position in the horizontal direction.
POSITION V	Adjusts the position in the vertical direction.
RED	Adjusts the red level.
GREEN	Adjusts the green level.
BLUE	Adjusts the blue level.

3. Use the [VALUE] knob to edit the value of the setting, and press the [VALUE] knob.

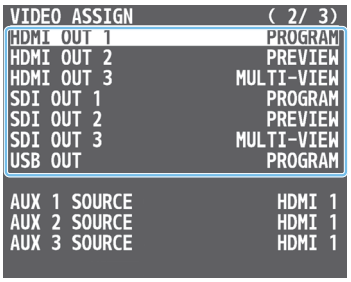
4. Press the [MENU] button to close the menu.

Assigning Video Buses to Output Connectors

The V-160HD features seven types of video buses. You can respectively assign the video bus you like to the HDMI OUT and SDI OUT connectors as well as the USB STREAM port.

Video bus	Explanation
PROGRAM	Final output video
SUB PROGRAM	Same video as the PROGRAM bus The SUB PROGRAM bus lets you set whether to display or hide the PinP & key layers and the DSK layers, separately from the PROGRAM bus. You can edit the layer settings to output a different video from that of the PROGRAM bus.
PREVIEW	Preview output video (the video to be output next) * The fade-in/out effect (p. 29) is not reflected here.
AUX 1-3	Video of your choice sent to the AUX 1-3 buses (p. 15) This lets you allocate a separate output that is independent of the final output, such as when you want a specific input video to be a fixed output.
DSK 1, 2 SOURCE	Video selected as the DSK video source (p. 33) This lets you allocate a separate output that is independent of the final output, such as when you want a specific input video to be a fixed output.
MULTI-VIEW	The final output video, preview output video and the videos allocated to the cross-point [1]–[8] buttons (multi-view)
16 INPUT-VIEW	The input video from the HDMI IN and SDI IN connectors (shown as 16 separate sections on the screen)
16 STILL-VIEW	Still images loaded into the unit (shown as 16 separate sections on the screen)

1. [MENU] button → "VIDEO ASSIGN" → select "HDMI OUT 1–3", "SDI OUT 1–3", or "USB OUT", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the video bus that you want to assign, and press the [VALUE] knob.

3. Press the [MENU] button to close the menu.

MEMO

- The tally frame, audio level meter, label and so on are shown only for the output from the HDMI OUT 3 connector.
- When you change the video bus assigned to the HDMI OUT 3 connector, the display on the monitor of this unit changes as well.

About audio outputs assigned to video buses

You can also assign the desired audio buses (MASTER OUTPUT, AUX) for each jack, apart from the video bus (p. 51).

●Audio output from the HDMI OUT and SDI OUT connectors

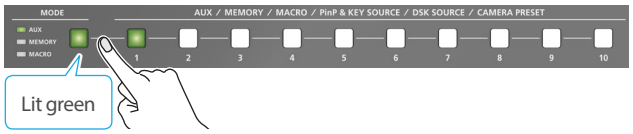
The audio bus assignments automatically change according to the video bus as shown below with the factory settings.

Video bus	Audio bus
Others besides AUX/DSK	MASTER OUTPUT
AUX 1-3	AUX 1-3
DSK 1,2 SOURCE	DSK 1,2 video source

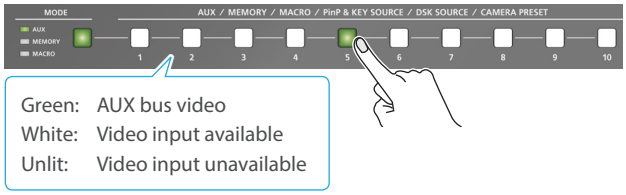
Selecting the Video Sent to the AUX 1 Bus

Here's how to send the video of your choice to the AUX 1 bus. This lets you allocate a separate output that is independent of the final output, such as when you want a specific input video to be a fixed output.

1. Press the [MODE] button several times to select "AUX".



2. Press a AUX [1]–[10] buttons to select the video that is sent to the AUX bus.



The video is switched for the output connector to which the AUX 1 bus is assigned.

* When selecting a video not assigned to INPUT 1–10, set this from the [MENU] button → "VIDEO ASSIGN" → "AUX 1 SOURCE".

MEMO

- With the default factory settings, the audio is automatically sent to the AUX bus (audio bus) in tandem with the video selection.

  You can adjust how much audio is sent to the AUX bus.

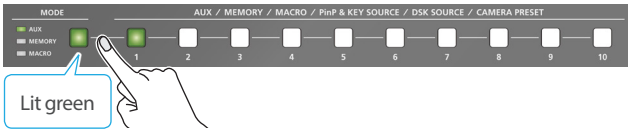
- **Sending the same video as the final output to the AUX bus (AUX link)**

  You can use the AUX link function to send the same video as the final output video to the AUX bus. The video sent to the AUX bus automatically switches in tandem with the video transitions.

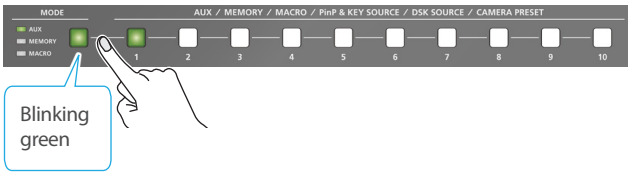
  From the [MENU] button → "SYSTEM", set the "AUX LINKED PGM" to "AUTO LINK" or "MANUAL LINK" (p. 119).

Selecting the Video Sent to the AUX 2 Bus and AUX 3 Bus

1. Press the [MODE] button several times to select "AUX".

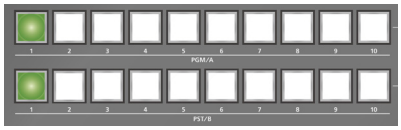


2. Press and hold down the [MODE] button.



The indicator blinks green, and it switches to the mode of sending video to AUX 2 and AUX 3 buses.

3. While holding down the [MODE] button, use the PGM/A [1]-[10] buttons to select the video that is sent to the AUX 2 bus, or use the PST/B [1]-[10] buttons to select the video that is sent to the AUX 3 bus.



The video is switched for the output connector to which the AUX 2 bus or AUX 3 bus is assigned.

* When selecting a video not assigned to INPUT 1–10, set this from the [MENU] button → "VIDEO ASSIGN" → "AUX 2 SOURCE" or "AUX 3 SOURCE".

Inputting Copy-Protected (HDCP) Video

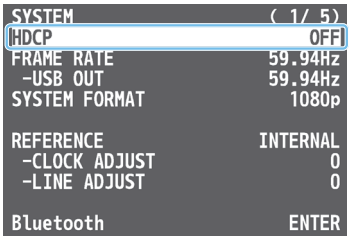
If you want to input HDCP-protected video from a BD player or other device, you can enable HDCP input.

* If you want to output copy-protected (HDCP) video or audio, connect a device that supports HDCP.

What's HDCP?

HDCP is copyright-protection technology that prevents unlawful copying of content by encoding the path when sending digital signals from a video playback device to a display monitor or other display equipment.

1. [MENU] button → "SYSTEM" → select "HDCP", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

Value	Explanation
ON	Copy-protected (HDCP) video can be input. HDCP is also added to the video that is output. * Video/audio from the SDI OUT connectors and the USB STREAM port are not outputted.
OFF	Copy-protected (HDCP) video cannot be input.

* A change in the setting is not applied until you press the [VALUE] knob to confirm.

3. Press the [MENU] button to close the menu.

Checking for HDCP-capable devices

Source devices

You can check the HDCP support status of the source device from the menu.

Use the [MENU] button → "VIDEO INPUT" → "HDMI IN 1–8 (SCALER)" → "INPUT STATUS" to display the HDCP status.

When inputting copy-protected (HDCP) video, "DETECT" is displayed.

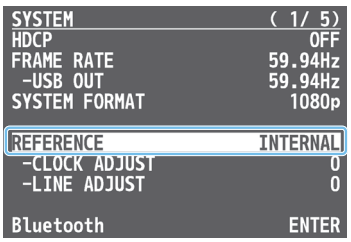
Output devices

If a device that supports HDCP is connected, "HDCP" is displayed when you press the [MENU] button and select "VIDEO OUTPUT" → "HDMI OUT 1–3" → "OUTPUT STATUS".

Specifying a Reference Clock

You can specify a clock to which operation of the V-160HD is referenced (a reference clock).

1. [MENU] button → "SYSTEM" → select "REFERENCE", and press the [VALUE] knob.



2. Use the [VALUE] knob to specify the reference clock, and press the [VALUE] knob.

Value	Explanation
INTERNAL	The V-160HD's internal clock is used as the reference clock.
EXTERNAL	A synchronizing signal input via the REFERENCE IN connector is used as the reference clock. Black-burst (frame synchronization), bi-level, and tri-level synchronizing signals are supported.
SDI 1–8	A signal input via one of the SDI IN 1–8 connectors is used as the reference clock. The VSYNC (vertical synchronizing) signal output from the V-160HD is synchronized to the VSYNC signal input via SDI.

- **When set to "EXTERNAL" or "SDI 1–8"**

  Adjust the following menu items as needed.

Menu item	Explanation
CLOCK ADJUST	This adjusts the phase horizontally. Adjust this when output is horizontally out of sync with the operation of other devices using the same clock.
LINE ADJUST	This adjusts the phase vertically. Adjust this when output is vertically out of sync with or field-shifted from the operation of other devices using the same clock.

3. Press the [MENU] button to close the menu.

Switching the Video

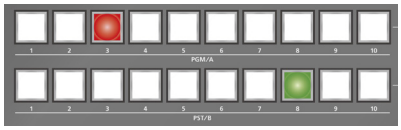
You can switch between the videos of the PGM/A bus and PST/B bus to specify the final output.

Setting the Operation Mode

There are four operation modes for switching the video: the "PGM/PST mode", the "A/B mode", the "DISSOLVE mode", and the "PGM/PST(20) mode".

Video on the PGM/A bus

Video on the PST/B bus



PGM/PST mode (factory settings)

The video on the PGM/A bus is always the final output. The video on the PST/B bus is preview output video (the video to be output next).

Operating the video fader or the [CUT] or [AUTO] button makes the final video output and the preview output video change places.

A/B mode

When you operate the video fader, the video of the bus toward which the video fader is flipped always becomes the final output. The video of the other bus becomes the preview output video (the video that is output next).

When the [CUT] or [AUTO] button is operated, the video on the PGM/A bus and the video on the PST/B bus become the final output in alternation.

DISSOLVE mode

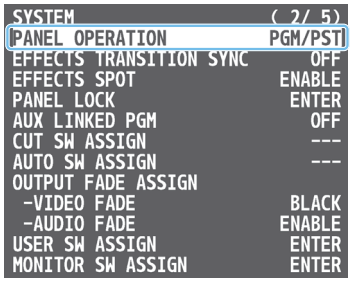
This mode selects the video to output and immediately outputs it to the PGM bus.

Press the [CUT] or [AUTO] button to select what happens when you switch between videos.

PGM/PST(20) mode

In this mode, all 20 buttons including the PGM/A [1]–[10] and PST/B [1]–[10] buttons are used as cross-point buttons for PST/B.

1. Press the [MENU] button → "SYSTEM" → select "PANEL OPERATION", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the operation mode, and press the [VALUE] knob.

3. Press the [MENU] button to close the menu.

Switching in the PGM/PST Mode

Here are the steps when selecting "PGM/PST mode" in the operation mode settings.

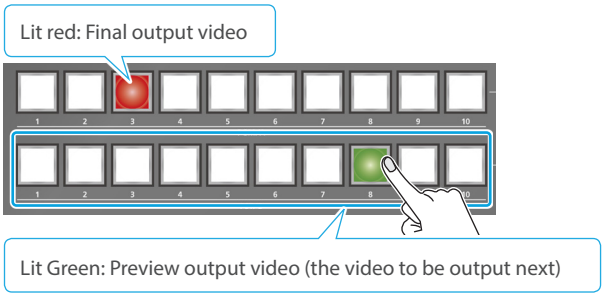
1. Flip the video fader all the way upward or downward.

The video on the PGM/A bus is the final output.

When the video fader is pushed all the way down, only the topmost or bottommost transition indicator lights.

2. Press a PST/B cross-point [1]–[10] button to select the preview output video (the video to be output next).

You can check the preview output video in the PVW section of the multi-view.



3. Press the [TRANSITION] button to select the transition effect (MIX, WIPE).

Mix

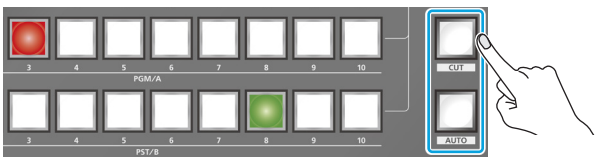
The two videos are mixed as the transition occurs.

Wipe

The next video moves across to replace the original video.

Using the buttons to switch

4. Press the [AUTO] or [CUT] button.



Button	Explanation
[CUT]	The picture switches instantly.
[AUTO]	The video is switched automatically. The [AUTO] button flashes while the video transition is in progress. To specify the video transition time, use the [MENU] button → "TRANSITION TIME" → "MIX/WIPE TIME".

Using the fader to switch

4. Move the video fader in the direction opposite to the direction in step 1.

The video is switched according to the movement of the video fader.

MEMO

- You can change the transition pattern used for a wipe or mix transition.

  ➡ "Changing the Mix/Wipe Pattern" (p. 20)

- When you use the [AUTO] or [CUT] button to switch video, the actual output might come to differ from the position of the video fader.

  If you operate the video fader in this state, the output does not change until the position of the video fader matches the actual output.

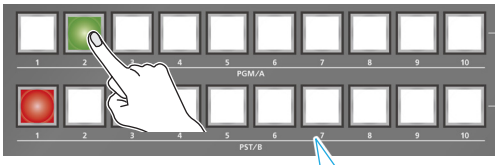
Switching in the A/B Mode

Here are the steps when selecting "A/B mode" (p. 17) in the operation mode settings.

1. Flip the video fader all the way upward or downward.

The video of the bus toward which you pull down the video fader becomes the final output.

2. Press a cross-point [1]–[10] button at the end to which the video fader is not flipped to select the preview output video (the video to output next).

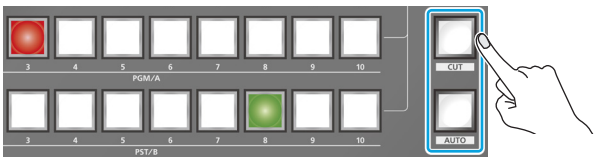


Lit red: Final output video
Lit Green: Preview output video (the video to be output next)

3. Press the [TRANSITION] button to select the transition effect (MIX, WIPE).

Using the buttons to switch

4. Press the [AUTO] or [CUT] button.



Button	Explanation
[CUT]	The picture switches instantly.
[AUTO]	The video is switched automatically. The [AUTO] button flashes while the video transition is in progress. To specify the video transition time, use the [MENU] button → "TRANSITION" → "MIX/WIPE TIME".

Using the fader to switch

4. Move the video fader in the direction opposite to the direction in step 1.

The video is switched according to the movement of the video fader.

MEMO

- You can change the transition pattern used for a wipe or mix transition.

  ➡"Changing the Mix/Wipe Pattern" (p. 20)

- You can change what happens when you press the [CUT] and [AUTO] buttons.

  ➡"Changing the Functions of the [CUT] and [AUTO] Buttons" (p. 20)

- When you use the [CUT] or [AUTO] button to switch video, the actual output might come to differ from the position of the video fader.

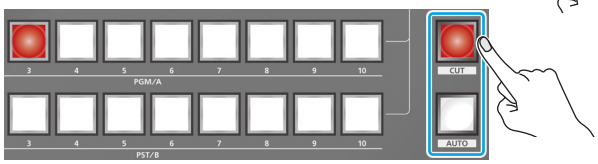
  If you operate the video fader in this state, the output does not change until the position of the video fader matches the actual output.

Switching in the DISSOLVE Mode

Here are the steps when selecting "DISSOLVE mode" (p. 17) in the operation mode settings.

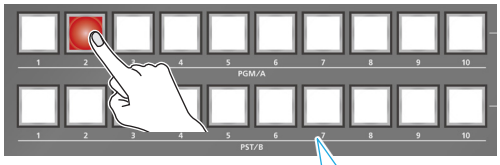
1. Press the [TRANSITION] button to select the transition effect (MIX, WIPE).

2. Press the [AUTO] or [CUT] button.



Button	Explanation
[CUT]	The picture switches instantly.
[AUTO]	A transition effect is applied and the video switches automatically. To specify the video transition time, use the [MENU] button → "TRANSITION TIME" → "MIX/WIPE TIME".

3. Press a cross-point button to select the final output video.



Lit red: Final output video
Blinking red: When the transition effect is applied

Switching in the PGM/PST(20) Mode

Here are the steps when selecting "PGM/PST(20)" (p. 17) in the operation mode settings.

1. Flip the video fader all the way upward or downward.

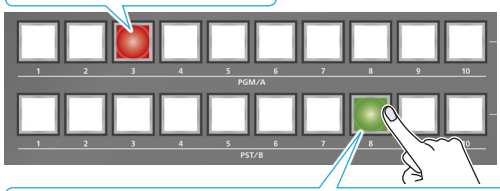
The video on the PGM/A bus is the final output.

When the video fader is pushed all the way down, only the topmost or bottommost transition indicator lights.

2. Press the PST/A cross-point [1]–[10] and PST/B cross-point [1]–[10] buttons to select the preview output video (the video to be output next).

You can check the preview output video in the PVW section of the multi-view.

Lit red: Final output video



Lit Green: Preview output video (the video to be output next)

3. Press the [TRANSITION] button to select the transition effect (MIX, WIPE).

Using the buttons to switch

4. Press the [AUTO] or [CUT] button.

Button	Explanation
[CUT]	The picture switches instantly.
[AUTO]	The video is switched automatically. The [AUTO] button flashes while the video transition is in progress. To specify the video transition time, use the [MENU] button → "TRANSITION TIME" → "MIX/WIPE TIME".

Using the fader to switch

4. Move the video fader in the direction opposite to the direction in step 1.

The video is switched according to the movement of the video fader.

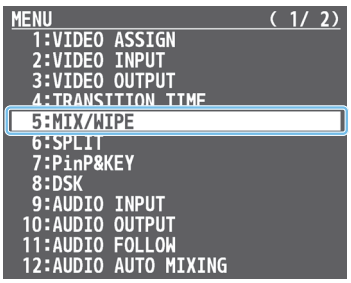
MEMO

- You can change the transition pattern used for a wipe or mix transition.
  ➡"Changing the Mix/Wipe Pattern" (p. 20)
- You can change what happens when you press the [CUT] and [AUTO] buttons.
  ➡"Changing the Functions of the [CUT] and [AUTO] Buttons" (p. 20)
- When you use the [CUT] or [AUTO] button to switch video, the actual output might come to differ from the position of the video fader.
  If you operate the video fader in this state, the output does not change until the position of the video fader matches the actual output.

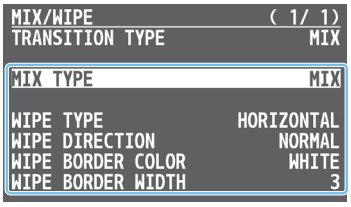
Changing the Mix/Wipe Pattern

You can change the transition pattern by which the mix/wipe occurs and the direction of the wipe.

1. [MENU] button → select "MIX/WIPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.



Menu item	Explanation
MIX TYPE	Specifies the transition pattern for mix.
WIPE TYPE	Specifies the transition pattern for wipe.
WIPE DIRECTION	Specifies the direction of wipe.
WIPE BORDER COLOR	Specifies the color of the border added to the edge of the wipe area.
WIPE BORDER WIDTH	Specifies the width of the border added to the edge of the wipe area.

3. Use the [VALUE] knob to change the value of the setting, and press the [VALUE] knob.

4. Press the [MENU] button to close the menu.

MEMO

You can change the settings of the MIX/WIPE menu by holding down the [TRANSITION] button and turning the [PGM/A-CENTER] or [PST/B-CENTER] knob.

When mix is selected

Operation	Explanation
[TRANSITION] + [PGM/A-CENTER]	MIX TYPE

When wipe is selected

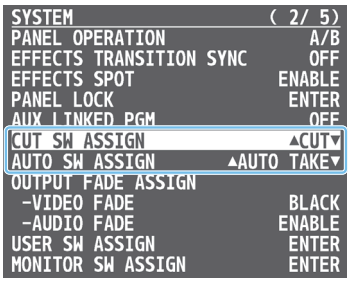
Operation	Explanation
[TRANSITION] + [PGM/A-CENTER]	WIPE TYPE
[TRANSITION] + [PST/B-CENTER]	WIPE DIRECTION
[TRANSITION] + [PGM/A-CENTER] (Turn while pressing)	WIPE BORDER COLOR
[TRANSITION] + [PST/B-CENTER] (Turn while pressing)	WIPE BORDER WIDTH

Changing the Functions of the [CUT] and [AUTO] Buttons

You can change what happens when you press the [CUT] and [AUTO] buttons.

* In PGM/PST mode (p. 17), the functions of the [CUT] and [AUTO] buttons are fixed.

1. [MENU] button → "SYSTEM" → select "CUT SW ASSIGN" or "AUTO SW ASSIGN", and press the [VALUE] knob.



2. Use the [VALUE] knob to select a function of the button, and press the [VALUE] knob.

Value	Explanation
CUT SW ASSIGN	
▲AUTO TAKE	When the video of the PST/B bus is selected, switches to the video of the PGM/A bus.
▲AUTO TAKE▼	Switches the video between PGM/A bus and PST/B bus.
▲CUT	When the video of the PST/B bus is selected, switches to the video of the PGM/A bus as a cut.
▲CUT▼	Switches the video between PGM/A bus and PST/B bus as a cut.
▲TRANSFORM	When the video of the PST/B bus is selected, switches to the video of the PGM/A bus as a cut only while you're holding down the button.
AUTO SW ASSIGN	
AUTO TAKE▼	When the video of the PGM/A bus is selected, switches to the video of the PST/B bus.
▲AUTO TAKE▼	Switches the video between PGM/A bus and PST/B bus.
CUT▼	When the video of the PGM/A bus is selected, switches to the video of the PST/B bus as a cut.
▲CUT▼	Switches the video between PGM/A bus and PST/B bus as a cut.
TRANSFORM▼	When the video of the PGM/A bus is selected, switches to the video of the PST/B bus as a cut only while you're holding down the button.

3. Press the [MENU] button to close the menu.

Switching the Video Automatically (Auto Switching)

The video of INPUT 1–10 or of preset memories (p. 54) can be switched automatically (the auto switching function).

You can make operation easier by letting the video switch automatically.

About the Operation Mode

Auto switching provides five operation modes that you can select as appropriate for your situation: "input scan", "preset memory scan", "BPM sync", "PinP & KEY scan", and "DSK scan".

Switching at a specified interval (Input scan)

This automatically switches the INPUT 1–10 video when a specified length of time elapses. You can change the duration that each video is shown, and also switch randomly between videos.

This is convenient when you want to switch between video signals of multiple cameras, for example when live-streaming a singer-instrumentalist.

* If there is no video input, this is skipped.

Switching preset memories (Preset memory scan)

This automatically recalls between preset memories 1–30. The video and audio are switched according to the settings that are saved in each preset memory.

* Preset memories in which no settings have been saved are skipped.

Switching in synchronization with the BPM (BPM sync)

This automatically switches the video at specified BPM intervals.

This lets you create video transitions that are synchronized with the music, for example when live-streaming a DJ performance or a musical performance.

Switching between picture-in-picture (PinP) content (PinP & key scan)

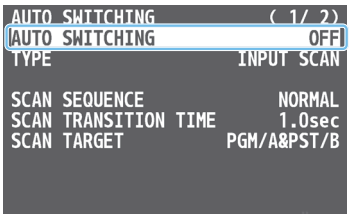
The inset screen video automatically changes after a specified length of time. You can change how long each video is shown and switch randomly between videos.

Switching between downstream keyer (DSK) content (DSK scan)

The caption video automatically changes after a specified length of time. You can change how long each video is shown and switch randomly between videos.

Turning the Auto Switching Function On/Off

1. [MENU] button → "AUTO SWITCHING" → select "AUTO SWITCHING", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON" or "OFF".

3. Press the [MENU] button to close the menu.

MEMO

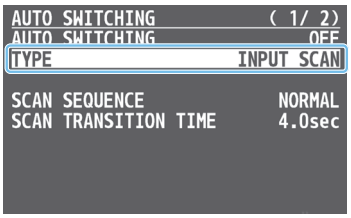
You can assign the function to a USER button and turn auto switching on/off (p. 74).

The on/off function for auto-switching is assigned to the USER [2] button by factory default.

Setting the Operation Mode

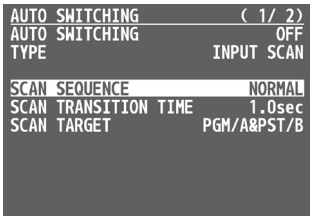
Input scan

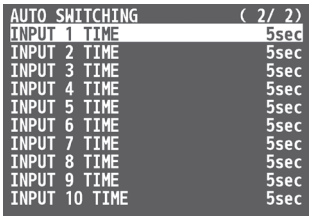
1. [MENU] button → "AUTO SWITCHING" → select "TYPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "INPUT SCAN", and press the [VALUE] knob.

3. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.





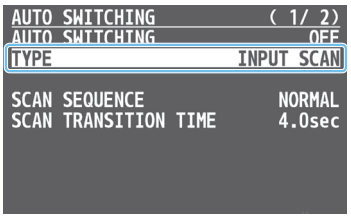
Menu item	Explanation
SCAN SEQUENCE	Specifies the order in which video signals are shown. **NORMAL:** Switches in the order of INPUT 1→10. **REVERSE:** Switches in the order of INPUT 10→1. **RANDOM:** Switches randomly.
SCAN TARGET	Sets the video to which auto switching is applied. **PGM/A & PST/B:** Final output video and preview video **PinP & KEY 1–4:** PinP and key layer (inset screen) video **DSK 1, 2:** DSK layer video
SCAN TRANSITION TIME	Specifies the video transition time.
INPUT 1–10 TIME	Specifies the time that the video is shown. Turn this "OFF" to skip.

4. Use the [VALUE] knob to change the value of the setting.

5. Press the [MENU] button to close the menu.

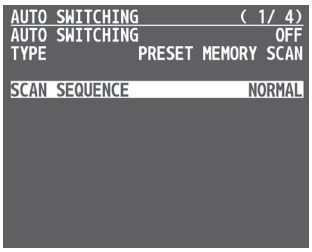
Preset memory scan

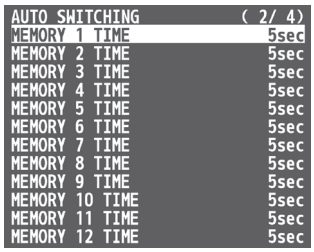
1. [MENU] button → "AUTO SWITCHING" → select "TYPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "PRESET MEMORY SCAN", and press the [VALUE] knob.

3. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.





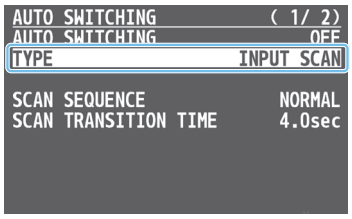
Menu item	Explanation
SCAN SEQUENCE	Specifies the order in which preset memories are switched. **NORMAL:** Switches in the order of preset memory 1→30. **REVERSE:** Switches in the order of preset memory 30→1. **RANDOM:** Switches randomly.
MEMORY 1–30 TIME	Specifies the time it takes to switch to the next preset memory. Turn this "OFF" to skip.

4. Use the [VALUE] knob to change the value of the setting.

5. Press the [MENU] button to close the menu.

BPM sync

1. [MENU] button → "AUTO SWITCHING" → select "TYPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "BPM SYNC", and press the [VALUE] knob.

3. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.

Menu item	Explanation
BPM	Specifies the BPM.
MODE	Specifies how the video is switched. **TRANSITION:** The video switches using the currently selected transition effect (mix or wipe). **CUT:** The video switches as a cut.
SPEED	Specifies the video switching speed as a multiple of the specified BPM.

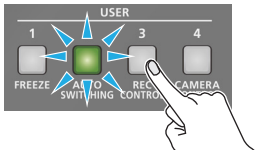
4. Use the [VALUE] knob to change the value of the setting.

5. Press the [MENU] button to close the menu.

MEMO

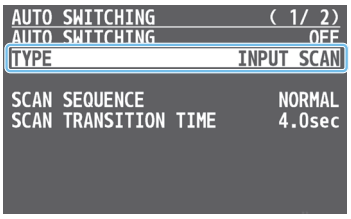
By assigning the "BPM TAP" function for auto-switching to a USER button (p. 74), you can set the BPM according to the tempo at which you press the button.

The USER buttons blink in sync with the current BPM setting.



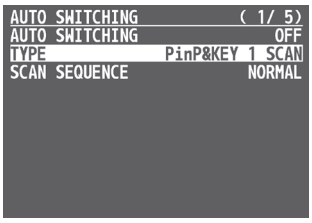
PinP & KEY scan

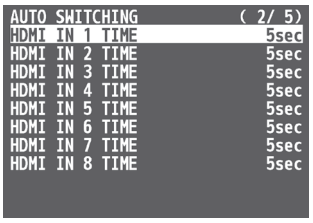
1. [MENU] button → "AUTO SWITCHING" → select "TYPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "PinP & KEY 1–4 SCAN", and press the [VALUE] knob.

3. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.





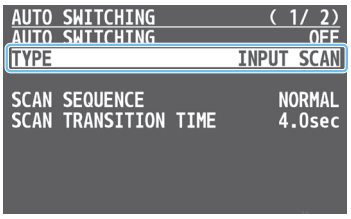
Menu item	Explanation
SCAN SEQUENCE	Specifies the order in which video signals are shown. **NORMAL:** Switches in the order of HDMI 1→8, SDI 1→8, STILL 1→16. **REVERSE:** Switches in the order of STILL 16→1, SDI 8→1, HDMI 8→1. **RANDOM:** Switches randomly.
HDMI IN 1–8	Specifies the time that the video is shown. Turn this "OFF" to skip.
SDI IN 1–8	Specifies the time that the video is shown. Turn this "OFF" to skip.
STILL 1–8	Specifies the time that the still image is shown. Turn this "OFF" to skip.

4. Use the [VALUE] knob to change the value of the setting.

5. Press the [MENU] button to close the menu.

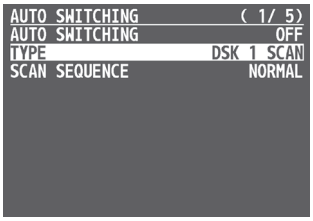
DSK scan

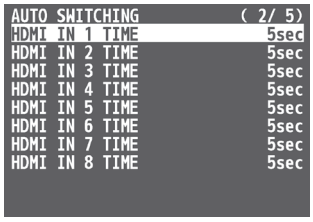
1. [MENU] button → "AUTO SWITCHING" → select "TYPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "DSK 1, 2 SCAN", and press the [VALUE] knob.

3. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.





Menu item	Explanation
SCAN SEQUENCE	Specifies the order in which video signals are shown. **NORMAL:** Switches in the order of HDMI 1→8, SDI 1→8, STILL 1→16. **REVERSE:** Switches in the order of STILL 16→1, SDI 8→1, HDMI 8→1. **RANDOM:** Switches randomly.
HDMI IN 1–8	Specifies the time that the video is shown. Turn this "OFF" to skip.
SDI IN 1–8	Specifies the time that the video is shown. Turn this "OFF" to skip.
STILL 1–8	Specifies the time that the still image is shown. Turn this "OFF" to skip.

4. Use the [VALUE] knob to change the value of the setting.

5. Press the [MENU] button to close the menu.

Loading a Still Image

You can load a still image, and output it in the same way as video (p. 28) or use it as a source for DSK compositing (p. 33). There are two ways to load a still image: you can load from a USB flash drive, or you can capture from input video.

You can save up to sixteen still images in the unit.

* When still images are saved in the unit, startup takes longer time according to image size and the number of still images saved.

Loading a Still Image from a USB Flash Drive

Here's how to load a still image from a USB flash drive into the unit.

NOTE

- Still images cannot be scaled. In advance, you must prepare still images of the resolution that is appropriate for your output format.
- When using a USB flash drive for the first time, you must format it using the V-160HD (p. 73).
- Never turn off the power or remove the USB flash drive while the message "PLEASE WAIT" is shown.
- Depending on the USB flash drive, recognition of the flash drive might take some time.

Formats supported for loading

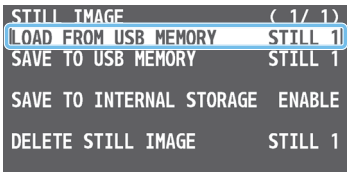
Format	Bitmap file (.bmp), 24-bit color, uncompressed
	PNG file (.png), 24-bit color * Alpha channel supported
	JPEG file (.jpg), 24-bit color
Resolution	In conformity with system format
File name	No more than 64 single-byte alphanumeric characters * The extension ".bmp", ".png", or ".jpg" must be added.

Loading a still image

1. Save the still image in the root directory of the USB flash drive.

2. Connect the USB flash drive containing the still image to the USB MEMORY port.

3. [MENU] button → "STILL IMAGE" → select "LOAD FROM USB MEMORY", and press the [VALUE] knob.



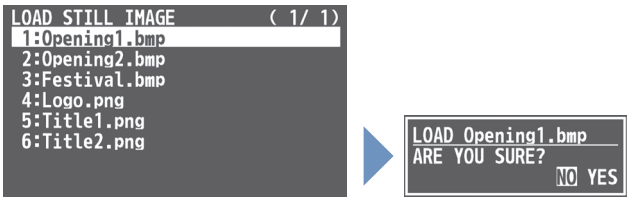
A "✱" symbol is displayed for memory where a still image is already saved.

4. Use the [VALUE] knob to select the loading destination for the still image (STILL 1–16), and press the [VALUE] knob.

A list of the still images in the USB flash drive is shown.

5. Use the [VALUE] knob to select the still image file you want to load, and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

6. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The still image is loaded into the unit. When the operation is finished, the message "COMPLETE" appears.

* Large-size still-image files and PNG files might take some time to load.

7. Press the [MENU] button to close the menu.

MEMO

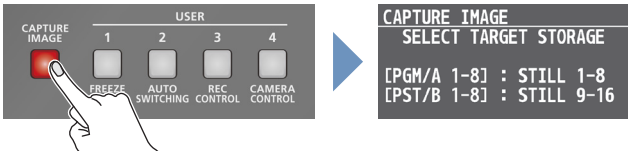
You can set the method of saving still images to "temporarily save". When you turn off the power, the loaded still image is deleted.

From the [MENU] button → "STILL IMAGE", set "SAVE TO INTERNAL STORAGE" to "DISABLE", and then load the still image.

Capturing a Still Image from Input/Output Video

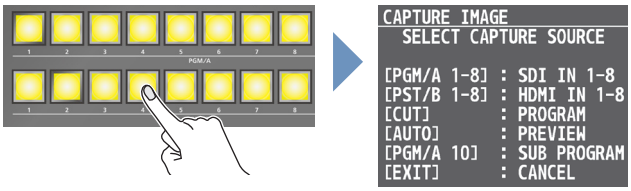
Here's how to capture a still image from the input/output video.

1. Press the [CAPTURE IMAGE] button to turn on (lit).



CAPTURE IMAGE screen appears, and the cross-point [1]–[8] buttons blink yellow.

2. Press a PGM/A or PST/B cross-point [1]–[8] button to select a save destination memory (STILL 1–16) for the captured still image.

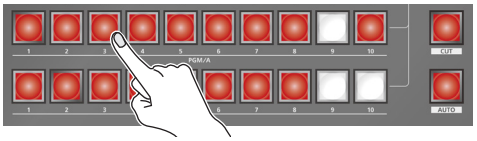


●Button assignments

PGM/A cross-point [1]–[8]	STILL 1–8
PST/B cross-point [1]–[8]	STILL 9–16

* If you decide to cancel, press the [EXIT] button.

3. Press a button that is blinking red to select the input/output video from which you want to capture.



●Button assignments

PGM/A cross-point [1]–[8]	SDI IN 1–8
PST/B cross-point [1]–[8]	HDMI IN 1–8
[CUT]	Final output
[AUTO]	Preview output
PGM/A cross-point [10]	SUB PROGRAM bus

The capture is executed. When the operation is finished, the message "COMPLETE" appears.

4. Press the [CAPTURE IMAGE] button to exit the operation.

MEMO

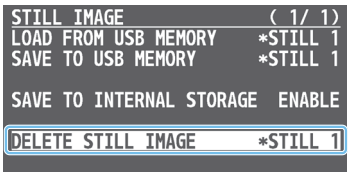
- You can set the method of saving still images to "temporarily save".When you turn off the power, the captured still image is deleted.

  From the [MENU] button → "STILL IMAGE", set "SAVE TO INTERNAL STORAGE" to "DISABLE", and then capture the image.
- Depending on the format of the input video, completion of still-image capture might take some time.
- If you capture when HDCP (p. 16) is on, the still image that is created is handled in the same way as HDCP-protected video. It cannot be used if HDCP is off.

Deleting a Still Image

Here's how to delete the still image that's saved in the unit.

1. [MENU] button → "STILL IMAGE" → select "DELETE STILL IMAGE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the still image (ALL, STILL 1–16) you want to delete, and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The still image is deleted. When the operation is finished, the message "COMPLETE" appears.

4. Press the [MENU] button to close the menu.

Saving a Still Image to a USB Flash Drive

Here's how a still image captured from the input/output video (p. 26) can be saved to a USB flash drive.

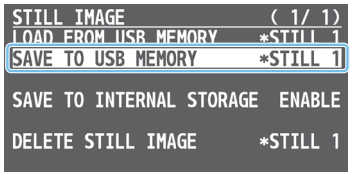
* You can't export still images that were created while HDCP (p. 16) was set to "ON".

NOTE

- When using a USB flash drive for the first time, you must format it using the V-160HD (p. 73).
- Never turn off the power or remove the USB flash drive while the message "PLEASE WAIT" is shown.
- Depending on the USB flash drive, recognition of the flash drive might take some time.

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

2. [MENU] button → "STILL IMAGE" → "SAVE TO USB MEMORY", and press the [VALUE] knob.

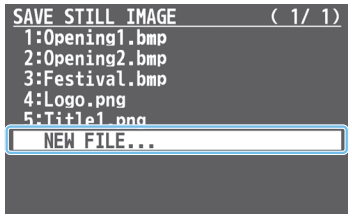


A "✱" symbol is displayed for memory where a still image is already saved.

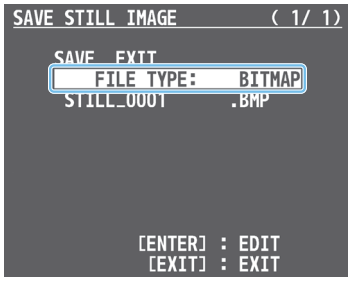
3. Use the [VALUE] knob to select the memory (STILL 1–16) for the still image that you want to save.

A list of the still images in the USB flash drive is shown.

4. Use the [VALUE] knob to select "NEW FILE...", and press the [VALUE] knob.



5. Select the file format.



① **Use the [VALUE] knob to select "FILE TYPE", and press the [VALUE] knob.**

② **Use the [VALUE] knob to select "BITMAP", "PNG", or "JPEG", and press the [VALUE] knob.**

6. Enter a file name.

* You can input up to 16 characters.

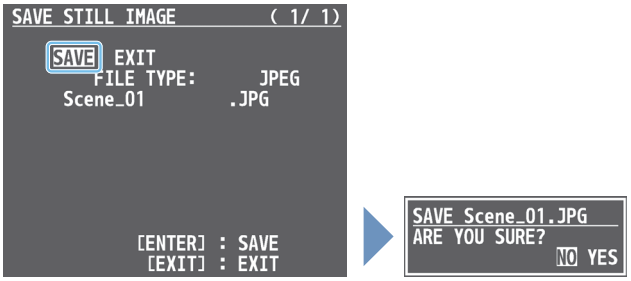
① **Use the [VALUE] knob to move the cursor.**
Pressing the [EXIT] button deletes the character at the cursor location.

② **Press the [VALUE] knob to highlight the character at the cursor location.**

③ **Use the [VALUE] knob to change the character, and press the [VALUE] knob.**

7. When you finish entering the name, use the [VALUE] knob to select "SAVE", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

8. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The still image is written to the USB flash drive.

9. Press the [MENU] button to close the menu.

MEMO

Overwriting a still image

You can overwrite a still image by selecting an existing still image file in step 4 and pressing the [VALUE] knob.

Editing the filename and saving the image

When you select an existing still image file in step 4 and long-press the [VALUE] knob, the edit screen appears. Edit the filename and file format as necessary to save it as a different file or in a different format.

Outputting a Loaded Still Image

You can assign a still image to the cross-point [1]–[10] buttons and output it in the same way as with video, or momentarily stop the final output to output the still image.

* When outputting a still image (.png) with an alpha channel, the alpha channel (transparency) data is ignored.

Assigning a Still Image to the Cross-point Buttons

A still image loaded into this unit can be assigned to the cross-point [1]–[10] buttons, and output in the same way as video.

1. Load a still image into this unit as described by the following procedures.

➡"Loading a Still Image from a USB Flash Drive" (p. 25)

➡"Capturing a Still Image from Input/Output Video" (p. 26)

2. Assign the still image to a cross-point button by following the steps in "Assigning Video Sources" (p. 13).

3. Follow the steps in "Switching the Video" (p. 17) to output the still image.

Inserting a Still Image in the Final Output

You can pause the final output, and output a still image of your choice as a cut.

Still images can be directly output without being assigned to the cross-point [1]–[10] buttons.

* The same still image as the final output is also output to the preview.

Use the following methods to output still images.

Using the USER buttons

➡"Assigning Functions to the USER Buttons" (p. 74)

Using a footswitch

➡"Using a Footswitch" (p. 78)

Using an expression pedal

➡"Using an Expression Pedal" (p. 79)

Inputting an external control signal (GPI)

➡"Inputting a Control Signal" (p. 80)

MEMO

Outputting a still image with a fade-in effect

Use the [OUTPUT FADE] button to add a fade-in effect and output the still image.

Assign a still image to the AUX bus (p. 15) and edit the function for the [OUTPUT FADE] button as shown below.

Use the [MENU] button ➞ "SYSTEM" ➞ and set OUTPUT FADE ASSIGN "VIDEO FADE" to "AUX".

Freezing the Input Video (Freeze)

Here's how to temporarily freeze the input video (freeze function).

You can apply transition effects during a video freeze.

Setting the Operation mode

There are two freeze modes: the "ALL mode" for freezing all input video, and the "SELECT mode" that freezes only the input video you specify. Set the mode that matches your needs.

1. [MENU] button ➞ "FREEZE" ➞ select "TYPE", and press the [VALUE] knob.

2. Use the [VALUE] knob to select "ALL" or "SELECT", and press the [VALUE] knob.

Value	Explanation
ALL	Freezes all video that is being input.
SELECT	Freezes only the specified input video.

If "SELECT" is selected

3. Use the [VALUE] knob to select "INPUT 1"–"INPUT 10", and press the [VALUE] knob.

4. Use the [VALUE] knob to select "ENABLE" or "DISABLE", and press the [VALUE] knob.

Value	Explanation
ENABLE	The input video freezes.
DISABLE	The input video does not freeze.

5. Press the [MENU] button to close the menu.

Freezing the Input Video

1. [MENU] button ➞ "FREEZE" ➞ select "FREEZE", and press the [VALUE] knob.

2. User the [VALUE] knob to select "ON", and press the [VALUE] knob.

The freeze function turns on, and the input video freezes.

3. Press the [MENU] button to close the menu.

MEMO

You can assign the freeze function to a USER button and turn it on/off (p. 74).

With the factory settings, the USER [1] button is assigned the freeze function.

Fading-In/Out the Final Output Video

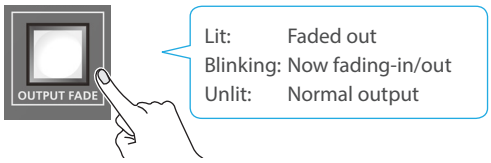
Here's how to perform a fade-out from the final output video to a black screen, or a fade-in from a black screen to the final output video.

A scene that you don't want to output as video can be changed to a black screen.

* The final output video and audio fades in/out together when using the factory default settings.

* The fade-in/out effect is applied only to the final output.

1. Press the [OUTPUT FADE] button.



The final output video fades-out to a black screen.

When fade-out is complete, the [OUTPUT FADE] button is lit.

2. To fade-in, press the [OUTPUT FADE] button once again.

The [OUTPUT FADE] button blinks, and final output begins.

When fade-in is complete, the [OUTPUT FADE] button goes dark.

MEMO

- You can use a white screen or the video from the AUX 1-3 buses to add a fade-in/out effect.

  To make this setting, use the [MENU] button → "SYSTEM" → OUTPUT FADE ASSIGN "VIDEO FADE".

- To create a fade-in/out effect for the video without changing the volume, set "AUDIO FADE" in "OUTPUT FADE ASSIGN" from the [MENU] button → "SYSTEM" to "DISABLE".

- To specify fade-in/out time, use the [MENU] button → "TRANSITION TIME" → "MIX/WIPE TIME".

Video Composition Operations

Compositing Video with Split

Here's how to composite two videos in dividing the screen into left/right or upper/lower.

Positioning a video

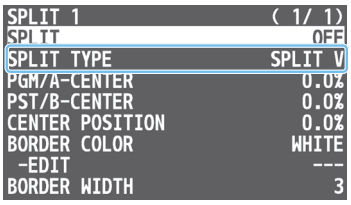
Left or upper: Video on the PGM/A bus

Right or lower: Video on the PST/B bus

Configuring the Screen Layout

You can configure the screen layout separately for the [SPLIT 1] and [SPLIT 2] buttons.

1. [MENU] button → "SPLIT" → "SPLIT 1" or "SPLIT 2" → select "SPLIT TYPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "SPLIT V" or "SPLIT H", and press the [VALUE] knob.

Value	Explanation
SPLIT V	This vertically crops the center section of the video (split left/right). 
SPLIT H	This horizontally crops the center section of the video (split upper/lower). 

3. Press the [MENU] button to quit the menu.

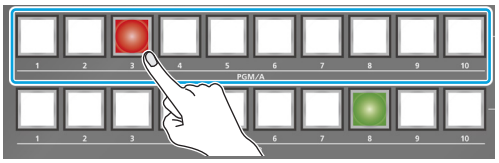
MEMO

You can change the color and width of the boundary.

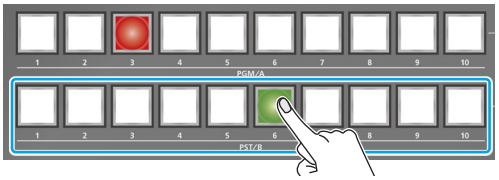
To make this setting, use the [MENU] button → "SPLIT" → "SPLIT 1" or "SPLIT 2" → "BORDER COLOR" and "BORDER WIDTH".

Compositing Using SPLIT

1. Press a PGM/A cross-point [1]–[10] button to select the video you want to display upper or on the left.

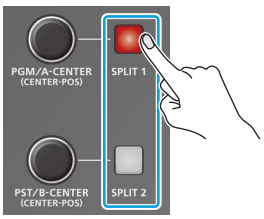


2. Press a PST/B cross-point [1]–[10] button to select the video you want to display lower or on the right.

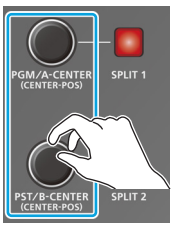


3. Press the [SPLIT 1] or [SPLIT 2] button to turn on split compositing (lit).

The video you selected in steps 1 and 2 is composited.



4. Use the [PGM/A-CENTER] and [PST/B-CENTER] knob to adjust the position of the video or boundary.

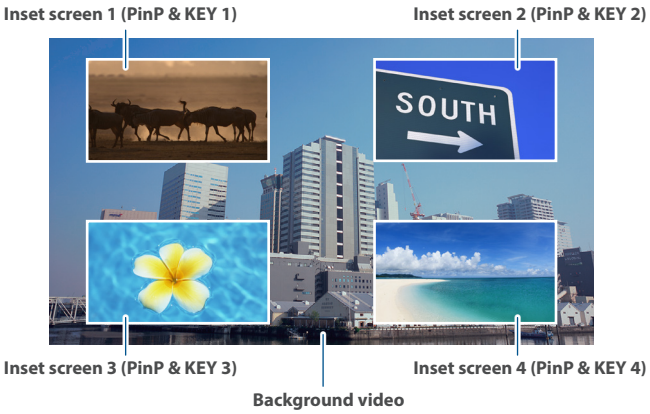


Knob	Explanation
[PGM/A-CENTER]	Adjusts the horizontal/vertical position of the video that's shown in the left or upper area. **Turn while pressing:** Adjusts the position of the boundary.
[PST/B-CENTER]	Adjusts the horizontal/vertical position of the video that's shown in the right or lower area. **Turn while pressing:** Adjusts the position of the boundary.

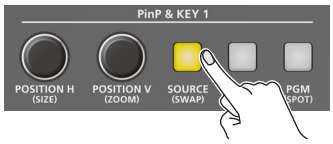
5. To turn off split compositing, press the [SPLIT 1] or [SPLIT 2] button once again.

Compositing Video with Picture-in-Picture (PinP)

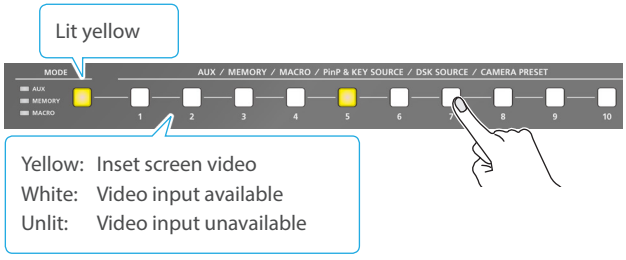
Here's how to composite an inset screen onto the background video. You can use PinP & KEY 1–4 at the same time to display four inset screens.
This example shows you how to composite video using "PinP & KEY 1".The operation is the same when using "PinP & KEY 2–4".



1. Press the PinP & KEY 1 [SOURCE] button to turn it on (the button lights up).

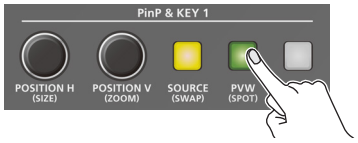


2. Press a PinP & KEY SOURCE [1]–[10] button to select the video you want to make the inset screen.



* When selecting a video not assigned to INPUT 1–10, set this from the [MENU] button → "PinP & KEY" → "PinP & KEY 1" → "PinP SOURCE".

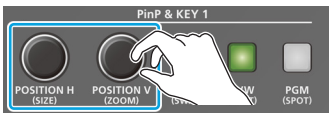
3. Press the PinP & KEY 1 [PVW] button to turn on the inset screen preview output (lit).



The inset screen appears in the PVW section of the multi-view, allowing you to check the inset screen's location and size.

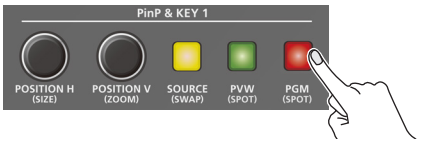
At this stage, the final output has not yet been changed.

4. Use the PinP & KEY 1 [POSITION H] [POSITION V] knobs to adjust the inset screen.



Knob	Explanation
[POSITION H]	Adjusts the horizontal position of the inset screen. **Turn while pressing:** Adjusts the size of the inset screen.
[POSITION V]	Adjusts the vertical position of the inset screen. **Turn while pressing:** Adjusts the zoom of the video shown in the inset screen.

5. Press the PinP & KEY 1 [PGM] button to turn on PinP compositing (lit).



The inset screen is displayed on the final output.

6. To turn off PinP compositing, press the PinP & KEY 1 [PGM] button once again.

Turning PinP/DSK composition on/off in tandem with video transitions

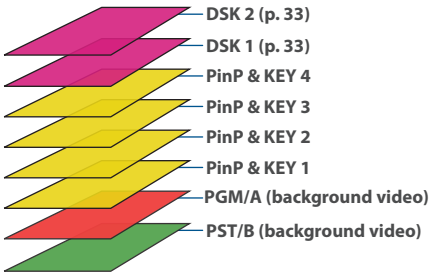
You can make PinP/DSK composition (p. 33) turn on/off in tandem with the video transitions.

From the [MENU] button → "SYSTEM", set "EFFECTS TRANSITION SYNC" to "ON".

After step 4, use the [AUTO] and [CUT] buttons or operate the video fader to switch the video. PinP composition turns on, and the composited result that is previewed is sent to final output.

MEMO

- The output video layers are structured as shown in the illustration below.



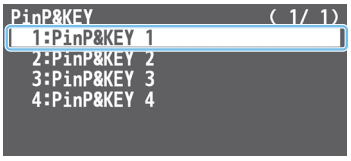
Long-pressing the [PVW] or [PGM] button for each layer shows only the layer that is targeted for the operation while the button is pressed (this is the spot function).

- Set the fade-in/out time for the inset screen from the [MENU] button → "TRANSITION TIME" → "PinP & KEY 1–4 TIME".

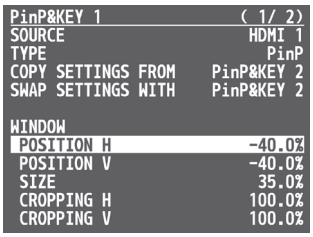
Making Detailed Settings for the Inset Screen

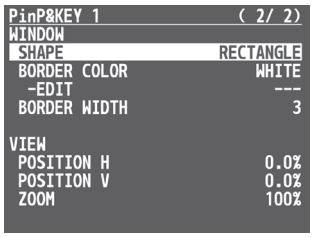
Detailed settings for size, shape, and border width etc. can be made for the inset screens.

1. [MENU] button → "PinP & KEY" → "PinP & KEY 1"–"PinP & KEY 4", and press the [VALUE] knob.



2. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.





Menu item	Explanation
WINDOW	Adjusts the inset screen.
POSITION H	Adjusts the horizontal position.
POSITION V	Adjusts the vertical position.
SIZE	Adjusts the size.
CROPPING H	Adjusts the horizontal size.
CROPPING V	Adjusts the vertical size.
SHAPE	Specifies the shape (rectangle, circle, diamond).
BORDER COLOR	Specifies the color of the border.
BORDER WIDTH	Adjusts the width of the border.
VIEW	Adjusts the video that is shown in the inset screen.
POSITION H	Adjusts the horizontal position.
POSITION V	Adjusts the vertical position.
ZOOM	Adjusts the zoom of the video.

3. Use the [VALUE] knob to change the value of the setting.

4. Press the [MENU] button to quit the menu.

MEMO

Swapping the settings

You can change the stacking order of the inset screens by swapping the settings of the other PinP and key layers.

① **Hold down the PinP & KEY [SOURCE] button of the swap source layer to make it light up.**

② **Press a PinP & KEY [SOURCE] button that is blinking to select the swap destination.**
This swaps the settings of the layers.

Copying settings

You can copy settings from other PinP and key layers.

From "COPY SETTINGS FROM" in the PinP & KEY 1–4 menu, select the copy source and press the [VALUE] knob to execute.

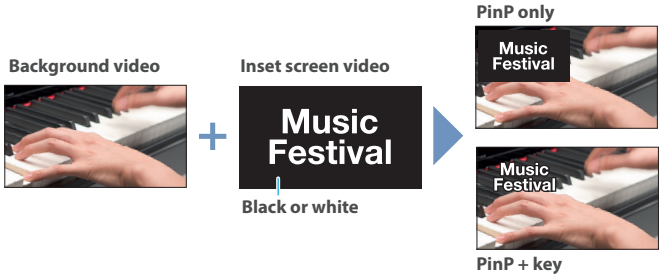
Key Compositing the Inset Screen

This process makes part of the inset screen transparent, and composites the image with the background video.

You can use luminance key with either a black or a white background, or a chroma key with either a blue or green background.

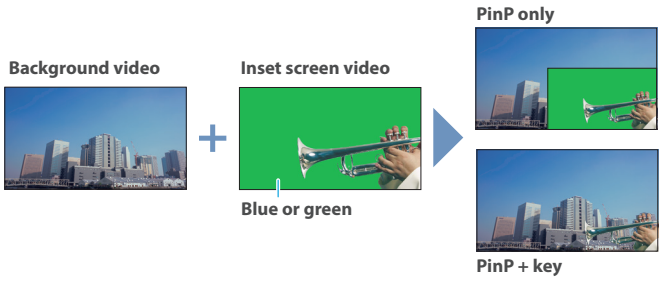
Luminance key

You can cut out text or an image by turning its black or white portion transparent, and then superimpose it on the background video.

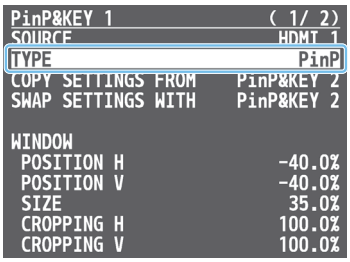


Chroma key

You can cut out a video by turning its blue or green portion transparent, and then superimpose it on the background video.



1. [MENU] button → "PinP & KEY" → "PinP & KEY 1"–"PinP & KEY 4 → select "TYPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the type of PinP compositing, and press the [VALUE] knob.

Menu item	Explanation
LUMINANCE-WHITE KEY	A combination of PinP and luminance key (white). Makes the white portions of the inset screen transparent, and composites the image with the background.
LUMINANCE-BLACK KEY	A combination of PinP and luminance key (black). Makes the black portions of the inset screen transparent, and composites the image with the background.
CHROMA KEY	A combination of PinP and chroma key. Makes the specified key color portions of the inset screen transparent, and composites the image with the background.

3. Select the menu item and adjust the intensity of the effect.

* For details on the menu items, refer to "7: PinP & KEY" (p. 92).

4. Press the [MENU] button to quit the menu.

Compositing Video with Downstream Keyer (DSK)

You can further composite titles, subtitles/captions and other video on video composited using split (p. 30) or PinP (p. 31).

There are two DSK series on the V-160HD. DSK layers are shown in front of other layers (➡ memo on p. 31).

About DSK Mode

There are three DSK composition modes, "self key", "alpha key" and "external key".

The following video compositing is available according to the DSK mode.

Self key

Luminance key (p. 34)

You can cut out text or an image by turning its black or white portion transparent, and then superimpose it on the background video.

Chroma key (p. 36)

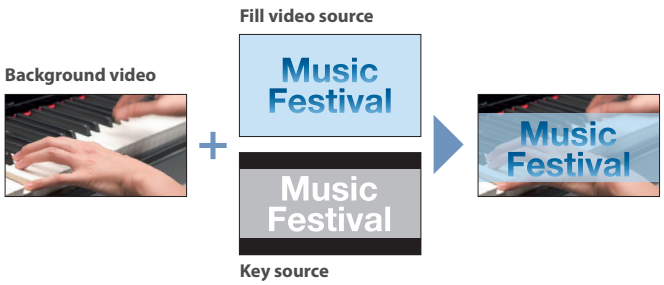
You can cut out a video by turning its blue or green portion transparent, and then superimpose it on the background video. You can select a color from the video material to set as the key color.

Alpha key (p. 38)

Use alpha channels (areas which contain transparency data) to cut out still images and place them against different background video as a composite.

External key (p. 39)

Sets the key signal (the shape to be cut out) and the fill video (the video to be composited) separately. This uses the key signal to cut out the fill video and superimpose it on the background video to create the composite.

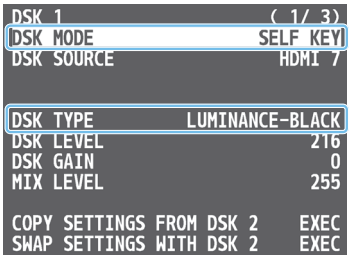


Compositing a Caption or Image (Luminance Key)

Here's how you can cut out text or image by turning its black or white portion transparent, and then superimpose it on the background video.

Setting the DSK mode and DSK type

1. [MENU] button → "DSK" → "DSK 1" or "DSK 2 → select "DSK MODE" or "DSK TYPE", and press the [VALUE] knob.



2. Use the [VALUE] knob to change the setting as shown below.

Menu item	Setting
DSK MODE	SELF KEY
DSK TYPE	LUMINANCE-WHITE (Makes white portions transparent according to brightness.)
	LUMINANCE-BLACK (Makes black portions transparent according to brightness.)

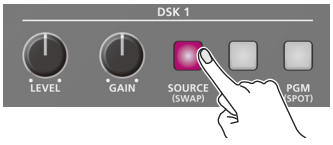
3. Press the [MENU] button to quit the menu.

Compositing using DSK

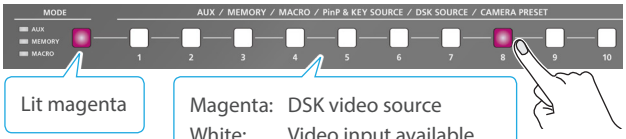
Here we explain how to use "DSK 1" for compositing images.

The operation is the same when using "DSK 2".

1. Press the DSK 1 [SOURCE] button to turn it on (the button lights up).



2. Press a DSK SOURCE [1]–[10] button to select the DSK video source.



Lit magenta

Magenta: DSK video source
White: Video input available
Unlit: Video input unavailable

* When selecting a video not assigned to INPUT 1–10, set this from the [MENU] button → "DSK" → "DSK 1" → "DSK SOURCE".

3. Press the DSK 1 [PVW] button to turn on the preview output (lit).

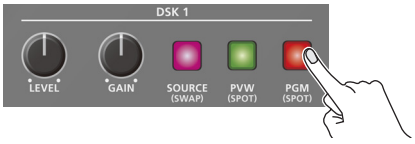
A preview of the composition results is displayed in the PVW section of the multi-view.

At this stage, the final output has not yet been changed.

4. Use the DSK 1 [LEVEL] and [GAIN] knob to adjust the degree of effect applied.

Knob	Explanation
[LEVEL]	Adjusts the degree of extraction (transparency) for the key.
[GAIN]	Adjusts the degree of edge blur (semi-transmissive region) for the key.

5. Press the DSK 1 [PGM] button to turn on DSK compositing (lit).



The composition results is sent to final output.

6. To turn off DSK compositing, press the DSK 1 [PGM] button once again.

MEMO

Set the fade-in/out time for the DSK video to superimpose from the [MENU] button → "TRANSITION TIME" → "DSK 1 TIME" or "DSK 2 TIME".

Turning DSK/PinP composition on/off in tandem with video transitions

You can make DSK/PinP composition (p. 31) turn on/off in tandem with the video transitions.

From the [MENU] button → "SYSTEM", set "EFFECTS TRANSITION SYNC" to "ON".

After step 4, use the [AUTO] and [CUT] buttons or operate the video fader to switch the video. DSK composition turns on, and the composited result that is previewed is sent to final output.

Modifying the caption or image

You can fill-in the superimposed caption or image, or add an edge to it.

Use the [MENU] button → "DSK" → "DSK 1" or "DSK 2" to make the settings for the following menu items.

Menu item	Explanation
FILL TYPE	If this is set to "MATTE", the superimposed caption or video is filled in with the color specified in "MATTE COLOR".
MATTE COLOR	
EDGE TYPE	Specifies the type of edge.
EDGE COLOR	Specifies the color of the edge.
EDGE WIDTH	Specifies the width of the edge.

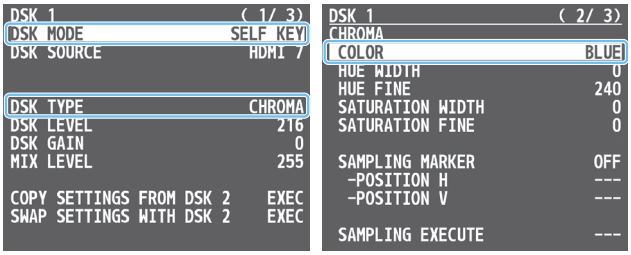
* This setting is in common with chroma key (p. 36).

Compositing a Subject and Background (Chroma Key)

Here's how you can cut out a video by turning its blue or green portion transparent, and then superimpose it on the background video. This lets you composite a subject that's photographed against a blue background or green background.

Setting the DSK mode and DSK type

1. [MENU] button → "DSK" → "DSK 1" or "DSK 2 → select "DSK MODE", "DSK TYPE", or "COLOR", and press the [VALUE] knob.



2. Use the [VALUE] knob to change the setting as shown below.

Menu item	Setting
DSK MODE	SELF KEY
DSK TYPE	CHROMA
COLOR	Specify either "GREEN" or "BLUE" as the key color. You can also specify a color you desire as the key color (p. 37).

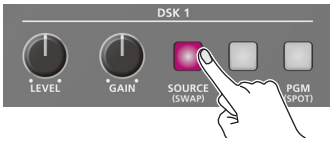
3. Press the [MENU] button to quit the menu.

Compositing using DSK

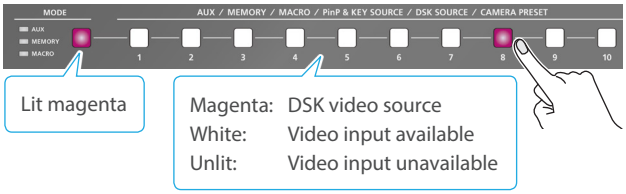
Here we explain how to use "DSK 1" for compositing videos.

The operation is the same when using "DSK 2".

1. Press the DSK 1 [SOURCE] button to turn it on (the button lights up).



2. Press a DSK SOURCE [1]–[10] button to select the DSK video source.



* When selecting a video not assigned to INPUT 1–10, set this from the [MENU] button → "DSK" → "DSK 1" → "DSK SOURCE".

3. Press the DSK 1 [PVW] button to turn on the preview output (lit).

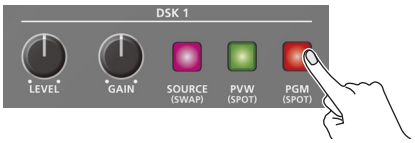
A preview of the composition results is displayed in the PVW section of the multi-view.

At this stage, the final output has not yet been changed.

4. Use the DSK 1 [LEVEL] and [GAIN] knob to adjust the degree of effect applied.

Knob	Explanation
[LEVEL]	Adjusts the degree of extraction (transparency) for the key.
[GAIN]	Adjusts the degree of edge blur (semi-transmissive region) for the key.

5. Press the DSK 1 [PGM] button to turn on DSK compositing (lit).



The composition results is sent to final output.

6. To turn off DSK compositing, press the DSK 1 [PGM] button once again.

MEMO

Set the fade-in/out time for the DSK video to superimpose from the [MENU] button → "TRANSITION TIME" → "DSK 1 TIME" or "DSK 2 TIME".

Turning DSK/PinP composition on/off in tandem with video transitions

You can make DSK/PinP composition (p. 31) turn on/off in tandem with the video transitions.

From the [MENU] button → "SYSTEM", set "EFFECTS TRANSITION SYNC" to "ON".

After step 4, use the [AUTO] and [CUT] buttons or operate the video fader to switch the video. DSK composition turns on, and the composited result that is previewed is sent to final output.

Finely adjusting the key color

You can make fine adjustments to the key color.

Use the [MENU] button → "DSK" → "DSK 1" or "DSK 2" to make the settings for the following menu items.

Menu item	Explanation
CHROMA	
HUE WIDTH	Adjusts the hue width.
HUE FINE	Adjusts the center position of the hue.
SATURATION WIDTH	Adjusts the saturation width.
SATURATION FINE	Adjusts the center position of saturation.
VALUE WIDTH	Adjusts the brightness width.
VALUE FINE	Adjusts the center position of the brightness.
DESPILL	Sets the spill removal (despill).

Modifying the superimposed video

You can fill-in the superimposed video, or add an edge to it.

Use the [MENU] button → "DSK" → "DSK 1" or "DSK 2" to make the settings for the following menu items.

Menu item	Explanation
FILL TYPE	If this is set to "MATTE", the superimposed video is filled in with the color specified in "MATTE COLOR".
MATTE COLOR	
EDGE TYPE	Specifies the type of edge.
EDGE COLOR	Specifies the color of the edge.
EDGE WIDTH	Specifies the width of the edge.

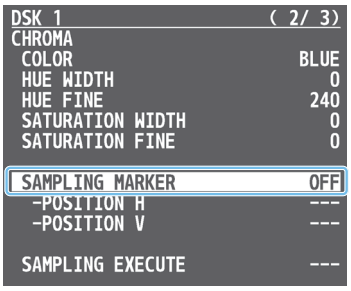
* This setting is in common with luminance key (p. 34).

Specifying a desired color as the key color (sampling marker)

You can specify the key color to be made transparent by sampling (detecting) a color from the video (sampling marker function).

You can also specify a key color other than green or blue.

1. [MENU] button → "DSK" → "DSK 1" or "DSK 2 → select "SAMPLING MARKER", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

The sampling marker ( ) used to sample (detect) the key color is shown on the monitor of this unit and in the HDMI OUT 3 connector's output video.

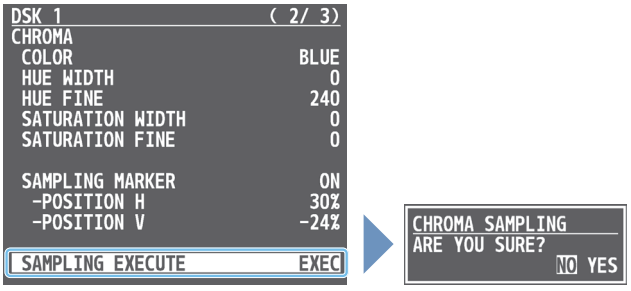
3. Use the [VALUE] knob to select "POSITION H" or "POSITION V", and press the [VALUE] knob.

4. Use the [VALUE] knob to adjust the position of the sampling marker.

Menu item	Explanation
POSITION H	Adjusts the horizontal position.
POSITION V	Adjusts the vertical position.

5. Use the [VALUE] knob to select "SAMPLING EXECUTE", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

6. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The key color is sampled.

The "HUE WIDTH", "HUE FINE", "SATURATION WIDTH", and "SATURATION FINE" settings are adjusted automatically.

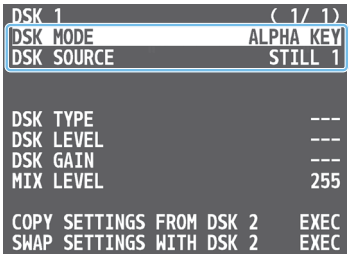
7. Press the [MENU] button to quit the menu.

Compositing a Still Image with Alpha Channel

Use alpha channels (areas which contain transparency data) to cut out still images and place them against different background video as a composite.

Setting the DSK mode or a still image to composite

1. [MENU] button → "DSK" → "DSK 1" or "DSK 2 → select "DSK MODE" or "DSK SOURCE", and press the [VALUE] knob.



2. Use the [VALUE] knob to change the setting as shown below.

Menu item	Setting
DSK MODE	ALPHA KEY
DSK SOURCE	Specifies the still image with alpha channel.

3. Press the [MENU] button to quit the menu.

MEMO

You can also select the still images assigned to INPUT 1–10 as a DSK video source with the buttons.

Press the DSK 1 or DSK 2 [SOURCE] button to turn it on (the button lights), and then select using the DSK SOURCE [1]–[10] buttons.

Compositing using DSK

In this example, we explain how to compose a still image using "DSK 1".

The operation is the same when using "DSK 2".

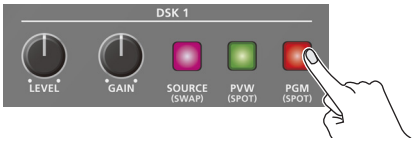
1. Press the DSK 1 [SOURCE] button to turn it on (the button lights up).

2. Press the DSK 1 [PVW] button to turn on the preview output (lit).

A preview of the composition results is displayed in the PVW section of the multi-view.

At this stage, the final output has not yet been changed.

3. Press the DSK 1 [PGM] button to turn on DSK compositing (lit).



The composition results is sent to final output.

4. To turn off DSK compositing, press the DSK 1 [PGM] button once again.

MEMO

Set the fade-in/out time for the still image to superimpose from the [MENU] button → "TRANSITION TIME" → "DSK 1 TIME" or "DSK 2 TIME".

Turning DSK/PinP composition on/off in tandem with video transitions

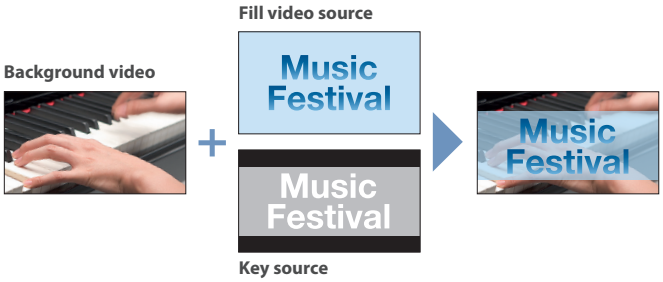
You can make DSK/PinP composition (p. 31) turn on/off in tandem with the video transitions.

From the [MENU] button → "SYSTEM", set "EFFECTS TRANSITION SYNC" to "ON".

After step 2, use the [AUTO] and [CUT] buttons or operate the video fader to switch the video. DSK composition turns on, and the composited result that is previewed is sent to final output.

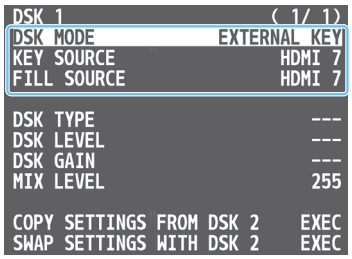
Using an External Key

This sets the key signal (the shape to be cut out) and the fill video (the video to be composited) separately. With an external key, the key signal is used to cut out the fill video and superimpose it on the background video to create the composite.



Setting the DSK mode or key/fill video

1. [MENU] button → "DSK" → "DSK 1" or "DSK 2 → select "DSK MODE", "KEY SOURCE", or "FILL SOURCE", and press the [VALUE] knob.



2. Use the [VALUE] knob to change the setting as shown below.

Menu item	Setting
DSK MODE	EXTERNAL KEY
KEY SOURCE	Specifies the video to use as the key signal.
FILL SOURCE	Specifies the fill video source.

3. Press the [MENU] button to quit the menu.

MEMO

You can also use the buttons to select the videos assigned to INPUT 1–10 as a fill video source.

Press the DSK 1 or DSK 2 [SOURCE] button to turn it on (the button lights), and then select using the DSK SOURCE [1]–[10] buttons.

Compositing using DSK

Here we explain how to use "DSK 1" for compositing videos.

The operation is the same when using "DSK 2".

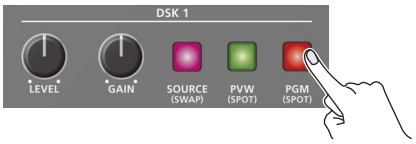
1. Press the DSK 1 [SOURCE] button to turn it on (the button lights up).

2. Press the DSK 1 [PVW] button to turn on the preview output (lit).

A preview of the composition results is displayed in the PVW section of the multi-view.

At this stage, the final output has not yet been changed.

3. Press the DSK 1 [PGM] button to turn on DSK compositing (lit).



The composition results is sent to final output.

4. To turn off DSK compositing, press the DSK 1 [PGM] button once again.

MEMO

Set the fade-in/out time for the DSK video to superimpose from the [MENU] button → "TRANSITION TIME" → "DSK 1 TIME" or "DSK 2 TIME".

Turning DSK/PinP composition on/off in tandem with video transitions

You can make DSK/PinP composition (p. 31) turn on/off in tandem with the video transitions.

From the [MENU] button → "SYSTEM", set "EFFECTS TRANSITION SYNC" to "ON".

After step 2, use the [AUTO] and [CUT] buttons or operate the video fader to switch the video. DSK composition turns on, and the composited result that is previewed is sent to final output.

Compositing Content from Graphics Presenter (Roland FILL+KEY mode)

You can use the dedicated Roland Graphics Presenter app to input and composite content (titles, images and videos) from your computer to the V-160HD using a single HDMI cable. No adjustments are required on this unit for key compositing.

Roland Graphics Presenter (hereafter "Graphics Presenter") is available for download from the Roland website.

https://proav.roland.com/

* Graphics Presenter is a dedicated application for Windows.

* For detailed operating instructions, refer to the "Graphics Presenter Owner's Manual" (Roland website).

Required items

- V-160HD
- A Windows PC with Graphics Presenter installed
- HDMI cable (1)

Compositing using DSK

Here are the steps for compositing Graphics Presenter content using DSK 1.

The steps are the same when using DSK 2.

Connecting your computer

1. Press the [MENU] button to select "Roland FILL+KEY", and press the [VALUE] knob.

2. Use the [VALUE] knob to select "MODE", and then press the [VALUE] knob.

3. Select "DSK 1" and press the [VALUE] knob.

Roland FILL+KEY mode is ON.

4. Press the [VALUE] knob to close the dialog box.

5. Press the [EXIT] button to return to the previous screen.

6. Use an HDMI cable to connect the HDMI connector on your computer to the HDMI IN 8 connector on the V-160HD.

The video signal from the computer is shown for HDMI IN 8 on the V-160HD.

Compositing using DSK

7. Launch "Graphics Presenter" on your computer.

8. Click on the [ON AIR] button in Graphics Presenter.

The [ON AIR] button lights up red, and a black image is shown for HDMI IN 8 on the V-160HD.

9. Use "Graphics Presenter" to output the content.

The contents outputted from Graphics Presenter are shown for HDMI IN 8 on the V-160HD.

10. Press the DSK 1 [PVW] button or the [PGM] button to turn them on (lit).

The Graphics Presenter content is composited into the preview or final output from the V-160HD.

Turning Roland FILL+KEY mode OFF

When you turn off Roland FILL+KEY mode, be sure to do so as follows.

NOTE

If you do not follow these instructions, the video output may not come out as expected.

1. Press the DSK [PVW] button or the [PGM] button to turn them off (unlit).

2. Press the [MENU] button to select "Roland FILL+KEY", and press the [VALUE] knob.

3. Use the [VALUE] knob to select "MODE", and set the value to "OFF".

This turns off Roland FILL+KEY mode.

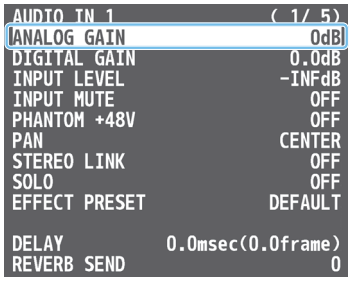
Adjusting the Input Gain (Sensitivity)

Here's how to adjust the input gain so that the AUDIO IN 1 or 2 audio is at the appropriate level.

1. Move the AUDIO INPUT LEVEL [1] or [2] knob to a position near "0dB".

2. Move the [MASTER OUTPUT] knob to a position near "0 dB".

3. [MENU] button → "AUDIO INPUT" → "AUDIO IN 1" or "AUDIO IN 2" → "ANALOG GAIN", and press the [VALUE] knob.



4. Turn the [VALUE] knob fully counter-clockwise, minimizing (0dB) the input gain.

5. While producing the sound that will actually be input, slowly turn the [VALUE] knob clockwise to adjust the input gain.

Raise the input gain as high as possible without allowing the SIG/PEAK indicator of AUDIO INPUT LEVEL 1 or 2 to light red when the loudest sound level occurs.

6. Press the [MENU] button to close the menu.

MEMO

Stereo link function

You can link AUDIO IN 1 and 2 to operate them as a stereo channel.

Use the [MENU] button → "AUDIO INPUT" → "AUDIO IN 1" or "AUDIO IN 2" → set "STEREO LINK" to "ON".

* When stereo link is on, the settings of AUDIO IN 1 are applied to AUDIO IN 2.
* When stereo link is on, the operation of the AUDIO INPUT LEVEL [2] knob has the same effect as the AUDIO INPUT LEVEL [1] knob.
* When phantom power is on and you switch the stereo link setting on/off, phantom power automatically turns off.

Adjusting the mic position (pan)

The left/right positioning of the sound is called "pan".If you're using two mics to stream a performance, panning the two mics to left and right will give the sound a more spacious feel.

To make adjustments, use the [MENU] button → "AUDIO INPUT" → "AUDIO IN 1" or "AUDIO IN 2" → "PAN".

SIG/PEAK indicator

Indicator	Status
Red	Volume is excessive (0 dB or higher)
Yellow	Volume is appropriate (-20 – -1 dB).
Green	Volume is insufficient (-50– -21 dB).

Adjusting the digital gain

You can adjust the digital gain for all inputs. Analog gain adjusts the analog sound, and digital gain adjusts the digital sound.

When a high-level audio signal is input to the HDMI or SDI digital audio inputs, distortion may occur due to effect processing.

You can use digital gain to keep the input level down so that there is no impact on effect processing.

Adjusting the Volume Balance

Here's how to adjust the volume balance of each input and the overall volume.

1. Move the [MASTER OUTPUT] knob to a position near "0dB".

2. While monitoring the audio via speakers or headphones, adjust the volume balance for the respective inputs.

Raise the volume level of audio you want to make more prominent, for example, an emcee microphone, and lower the volume level for other audio.

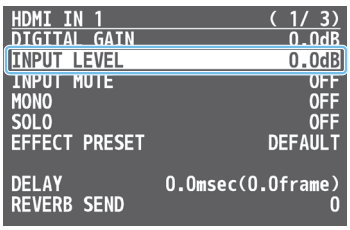
When no audio is input, and for audio that is unused, lower the volume level to minimum (-INF dB).

AUDIO IN 1–3/4

① **Use the AUDIO INPUT LEVEL [1] [2] [3/4] knobs to adjust the volume.**

USB IN, Bluetooth IN, HDMI IN 1–8, SDI IN 1–8

① **[MENU] button → "AUDIO INPUT" → "USB IN", "Bluetooth IN", "HDMI 1–8", or "SDI 1–8" → select "INPUT LEVEL", and press the [VALUE] knob.**

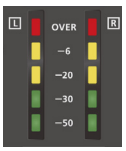


② **Use the [VALUE] knob to adjust the volume, and press the [VALUE] knob.**

③ **Press the [MENU] button to close the menu.**

3. Use the [MASTER OUTPUT] knob to adjust the volume of the output.

The level meter will light yellow at the appropriate volume.



Indicator	Status
Red	Volume is excessive (0 dB or higher)
Yellow	Volume is appropriate (-20 – -1 dB).
Green	Volume is insufficient (-50– -21 dB).

* The SIG/PEAK indicators for AUX and USB STREAM light up in the same manner.

MEMO

- With the factory settings, if you use the [OUTPUT FADE] button to fade-in/out the final output video, the output audio also fades-in/out simultaneously (p. 29).
- **Adjusting the volume of the USB output**

  The volume of the USB output can be adjusted separately. Use the [USB STREAM] knob to make fine adjustments to the volume of the master output.

  If the AUX bus is assigned to the USB STREAM port (p. 51), this fine adjusts the volume of the AUX bus.
- You can output a test tone that is useful when making volume adjustments.

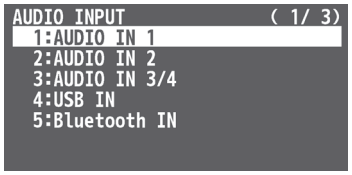
  Use the [MENU] button → "SYSTEM" → "TEST TONE" to select the test tone that will be output.

Applying Effects to Input Audio

You can apply effects to the input audio to adjust the character of the sound. The following table shows the effects that are available.

Input audio	High-pass filter	Echo canceller	Anti-feedback	Noise gate	De-esser	Compressor	Equalizer	Voice changer	Delay	Reverb
AUDIO IN 1, 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AUDIO IN 3/4	✓	—	—	✓	—	✓	✓	—	✓	✓
USB IN	✓	—	—	✓	—	✓	✓	—	✓	✓
Bluetooth IN	✓	—	—	✓	—	✓	✓	—	✓	✓
HDMI IN, SDI IN	✓	—	—	✓	—	✓	✓	—	✓	✓

1. [MENU] button → "AUDIO INPUT" → select "AUDIO IN 1"–"SDI IN 8", and press the [VALUE] knob.



2. Using the [VALUE] knob, select the menu item of the effect you want to use, and press the [VALUE] knob.

* For details on the menu items, refer to "10: AUDIO INPUT" (p. 96)

3. Use the [VALUE] knob to change the value of the setting, and press the [VALUE] knob.

4. Press the [MENU] button to close the menu.

●High-pass filter
Cuts off unneeded low-band audio. The cutoff frequency is 80 Hz.

●Echo canceller (p. 44)
Suppresses the voice echo that can occur when using a web conferencing system that includes a speaker and mic.

●Anti-feedback (p. 44)
Suppresses audio feedback.

●Noise gate
Eliminates audio that is lower than the specified threshold level. This is effective when the noise that you want to remove is separate from the audio that you want to keep, and can be used to remove hiss or other noise that is heard during periods of silence.

●De-esser
Reduces sibilant noise (the sounds you hear when pronouncing "s" words and other hissing sounds).

●Compressor
Audio that exceeds the specified threshold level is compressed. This reduces the difference between the maximum volume and minimum volume, making the audio more comfortable for listening.

●Equalizer
This is a three-band equalizer. It lets you adjust the volume by boosting or cutting three frequency regions.

●Voice changer (p. 45)
Transforms the pitch or character of the voice.

●Delay (p. 45)
Outputs audio with a delay.

●Reverb (p. 46)
Adds reverberation to the sound.

Using an Effect Preset

The V-160HD is equipped with effects that are adjusted for specific environments. These are called "effect presets".

The effect presets are created using a combination of three effects (high-pass filter, compressor, equalizer).

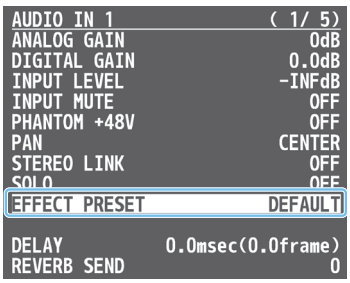
Simply by selecting an effect preset, you can easily apply an effect that's appropriate for your situation.

MEMO

- If you want to make fine adjustments to a preset, use the AUDIO INPUT menu to edit the high-pass filter, compressor, and equalizer settings.
- You cannot overwrite the effect presets. Use the preset memories to save the settings for presets you've edited (p. 54).
- When you load an effect preset, each preset setting is restored to its default setting (factory defaults).

1. [MENU] button → "AUDIO INPUT" → select "AUDIO IN 1"–"SDI IN 8", and press the [VALUE] knob.

2. Use the [VALUE] knob to select "EFFECT PRESET", and press the [VALUE] knob.



3. Use the [VALUE] knob to select an effect preset, and press the [VALUE] knob.

Value	Explanation
DEFAULT	For line input (default setting)
MEETING	For meetings
INTERVIEW	For interviews
AMBIENT MIC	For capturing ambient sound
WINDY FIELD	For capturing ambient sound in a windy area

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

4. Use the [VALUE] knob to select "OK", and press the [VALUE] knob.

The effect preset is loaded. When the operation is finished, the message "COMPLETE" appears.

5. Press the [MENU] button to close the menu.

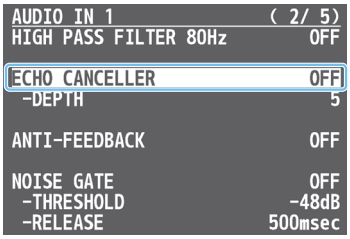
Suppressing Echo in a Web Conference System (Echo Canceller)

In a conversation using the speaker and mic of a web conference system, an echo can occur when the other person's voice heard through the speaker is picked up by the mic and sent back to the other person.

When you use the echo canceller, the echo component is removed from the voice that is picked up by a mic connected to the V-160HD, so that only your own voice is sent to the other party.

* This only works on the input audio from the AUDIO IN 1, 2 jacks.

1. [MENU] button → "AUDIO INPUT" → "AUDIO IN 1" or "AUDIO IN 2" → select "ECHO CHANGER", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

The echo canceller turns on.

3. Use the [VALUE] knob to select "DEPTH", and press the [VALUE] knob.

4. Use the [VALUE] knob to adjust the depth (1–10) of the echo canceller, and press the [VALUE] knob.

Use the setting that produces the greatest reduction in the echo.

5. Press the [MENU] button to close the menu.

MEMO

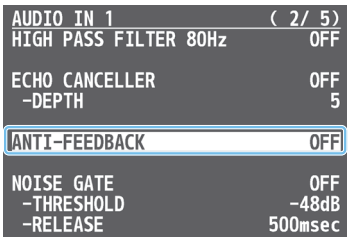
- The echo canceller supports rooms that are approximately 20m^2 (215 sq ft).
- If your own voice returns to you as an echo, you'll need the other party to make echo canceller settings.
- The echo canceller works based on audio input from the USB IN port.

Reducing Acoustic Feedback (Anti-Feedback)

Here's how to reduce the acoustic feedback that can occur when a mic is brought near a speaker.

* This only works on the input audio from the AUDIO IN 1, 2 jacks.

1. [MENU] button → "AUDIO INPUT" → "AUDIO IN 1" or "AUDIO IN 2" → select "ANTI-FEEDBACK", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

The anti-feedback turns on.

3. Press the [MENU] button to close the menu.

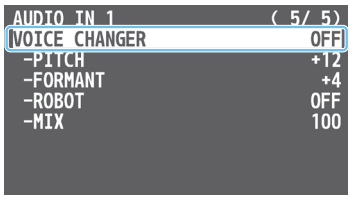
Changing the Character of a Voice (Voice Changer)

Here's how to modify the pitch or character of the voice that's input from a mic.

You can create transformations such as "from a female to a male voice", "from a male to a female voice", or "robot voice".

* This only works on the input audio from the AUDIO IN 1, 2 jacks.

1. [MENU] button → "AUDIO INPUT" → "AUDIO IN 1" or "AUDIO IN 2" → select "VOICE CHANGER", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

The voice changer turns on.

3. Use the [VALUE] knob to select a menu item shown below, and press the [VALUE] knob.

Menu item	Explanation
PITCH	Adjusts the pitch of the voice in semitone steps. A setting of "0" is the original pitch.
FORMANT	Adjusts the character (formant) of the voice. Settings in the negative (–) direction produce a more masculine vocal character, and settings in the positive (+) direction produce a more feminine vocal character. A setting of "0" is the original voice.
ROBOT	When this is "ON", the voice is held at a fixed pitch, creating a mechanical robot-like impression.
MIX	Adjusts the balance between the unprocessed voice (0) and the voice processed by the effect (100).

4. Use the [VALUE] knob to edit the value of the setting, and press the [VALUE] knob.

5. Press the [MENU] button to close the menu.

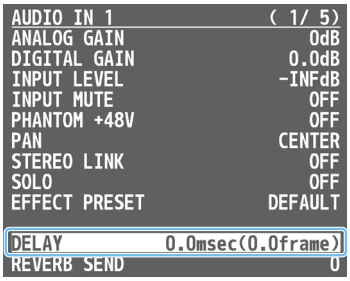
MEMO

You can assign the function to a USER button and turn voice changer on/off (p. 74).

Correcting a Time Difference Between Video and Audio (Delay)

If there is a timing discrepancy between the video and audio, you can correct the output timing by delaying the input audio.

1. [MENU] button → "AUDIO INPUT" → "AUDIO IN 1"–"SDI IN 8" → select "DELAY", and press the [VALUE] knob.



2. Use the [VALUE] knob to adjust the delay time of the input audio.

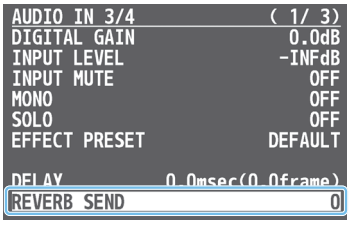
3. Press the [MENU] button to close the menu.

Applying Reverb

This adds reverberation to the sound.

Adjusting how much reverb to send

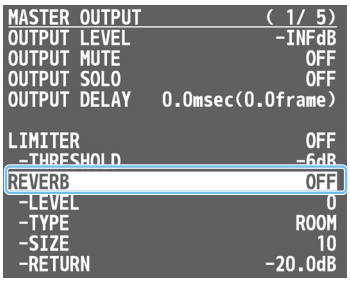
1. [MENU] button → "AUDIO INPUT" → select "AUDIO IN 1"–"SDI IN 8", and press the [VALUE] knob.
2. Use the [VALUE] knob to select "REVERB SEND", and press the [VALUE] knob.



3. Use the [VALUE] knob to adjust the amount of sound that is sent to reverb (reverb depth).
4. Press the [MENU] button to close the menu.

Adjusting how much reverb is returned

1. [MENU] button → "AUDIO OUTPUT" → "MASTER OUTPUT" → select "REVERB", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

   Reverb turns on.

3. Use the [VALUE] knob to select "LEVEL", "TYPE", or "SIZE", and press the [VALUE] knob.

Menu item	Explanation
LEVEL	Specifies the amount of sound that is returned from the reverb (return level). This adjusts the depth of the overall reverb.
TYPE	Specifies the reverb type. ROOM: Produces the natural-sounding reverberation of a room. HALL: Produces the reverberation that is typical of a performance in a concert hall.
SIZE	Specifies the size of the room. The larger the value, the longer the reverb time.

4. Use the [VALUE] knob to change the value of the setting, and press the [VALUE] knob.
5. Press the [MENU] button to close the menu.

MEMO

You can assign the function to a USER button and turn reverb on/off (p. 74).

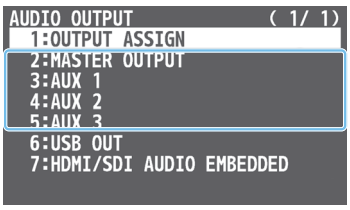
Applying Effects to Output Audio

Here's how to modify the tonal character by applying effects.

The following table shows the effects that are available.

Effect	MASTER OUTPUT	AUX 1-3
Reverb	✓	✓
Equalizer	✓	—
Delay	✓	✓
Multi-band compressor	✓	—
Limiter	✓	✓
Loudness AGC	✓	—
Adaptive NR	✓	—

1. [MENU] button → "AUDIO OUTPUT" → select "MASTER OUTPUT" or "AUX 1-3", and press the [VALUE] knob.



2. Using the [VALUE] knob, select the menu item of the effect you want to use, and press the [VALUE] knob.

   * For details on the menu items, refer to "11: AUDIO OUTPUT" (p. 103).

3. Use the [VALUE] knob to change the value of the setting, and press the [VALUE] knob.
4. Press the [MENU] button to close the menu.

●Equalizer

This is a three-band equalizer. It lets you adjust the volume by boosting or cutting three frequency regions.

●Delay

Outputs audio with a delay. Delaying the output lets you correct timing problems in the audio signal that is input to the output destination device.

●Multi-band compressor

Applies separate compressors in individual frequency band.

●Limiter

Limits the output volume so that is does not exceed the specified threshold level.

* Distortion will occur if audio that exceeds the allowable range of the limiter is input.

●Adaptive Noise Reduction (p. 49)

By continuously monitoring the input audio to detect noise during periods of silence, this removes only the noise component.

●Loudness Auto Gain Control (p. 50)

The long-term average loudness is measured, and the volume is adjusted so that it is appropriate overall.

MEMO

Adjusting the equalizer/delay for the USB output audio

For USB output, you can also apply equalizer and delay effects to fine-tune the sound assigned to the bus.

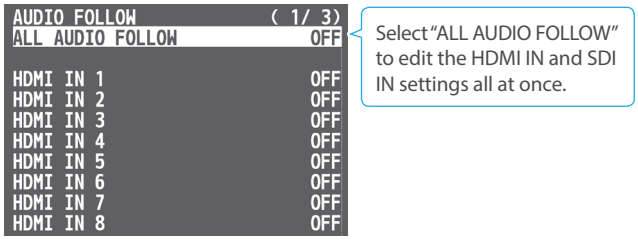
Adjust the equalizer and delay parameters from the [MENU] button → "AUDIO OUTPUT" → "USB OUT".

Interlinking Audio Output to Video Switching (Audio Follow)

Here's how the audio output can be automatically switched in tandem with video switching (the audio follow function).

1. [MENU] button → select "AUDIO FOLLOW", and press the [VALUE] knob.

2. Use the [VALUE] knob to select the input video that you want to use with Audio Follow, and press the [VALUE] knob.



3. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

Value	Explanation
ON	The audio is output only when the video is selected. The audio is automatically muted if another video is selected.
OFF	The audio is always output regardless of the video selection.

4. Press the [MENU] button to close the menu.

Adding an Object for Audio Follow

You can set Audio Follow to apply to the audio from the AUDIO IN, USB IN or Bluetooth IN.

1. [MENU] button → "AUDIO FOLLOW" → and select the audio input that will be the object of Audio Follow, and press the [VALUE] knob.

2. Use the [VALUE] knob to select one of "INPUT 1"–"INPUT 10", and press the [VALUE] knob.

Value	Explanation
HDMI 1–10	For each audio source, these settings specify the input video that will use the audio follow function. Audio is output only when the specified input video is selected.
SDI 1-8	
STILL 1-16	
INPUT 1-20	
OFF	The audio is always output regardless of the video selection.

3. Press the [MENU] button to close the menu.

MEMO

The level meter indicates the audio follow setting.

The "A.F" symbol is shown to indicate audio for which audio follow is on.

Controlling the Volume Automatically (Auto Mixing)

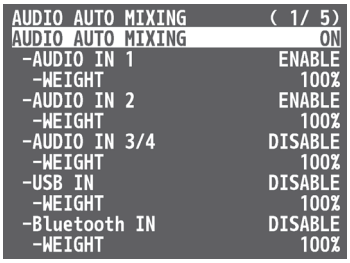
The volume adjustments that would normally be done by the operator can be controlled automatically (auto mixing function).

Since this lets you leave the volume adjustments up to the V-160HD, it can be used in situations where there is no dedicated operator. This is especially useful for meetings, discussions, debates, and other situations where multiple microphones are used.

1. Press the [AUTO MIXING] button to turn the auto mixing function on (lit).

2. [MENU] button → select "AUDIO AUTO MIXING", and press the [VALUE] knob.

The AUDIO AUTO MIXING menu appears.



3. Specify whether the selected audio is affected or is not affected by auto mixing.

① Use the [VALUE] knob to select the audio whose setting you want to specify.

② Use the [VALUE] knob to specify whether the selected audio is affected (ENABLE) or is not affected (DISABLE) by auto mixing, and press the [VALUE] knob.

For audio that does not require auto mixing, such as background music, choose "DISABLE".

4. Specify the priority level for volume-level distribution.

If there is audio that you want to make more prominent, such as when you want to raise the volume level of an emcee microphone, raise the weight level of that audio to emphasize it, and lower the weight level for other audio.

① Use the [VALUE] knob to select "WEIGHT", and press the [VALUE] knob.

② Use the [VALUE] knob to set the priority level for volume-level distribution (from 0 to 100%), and press the [VALUE] knob.

When air-conditioner noise or the like is a concern, specify the weight level to a low value.

5. Press the [MENU] button to close the menu.

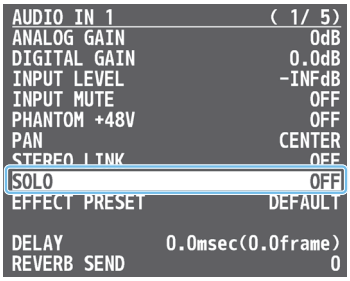
6. To turn the auto mixing function off, press the [AUTO MIXING] button once again.

Checking a Specific Audio Input (Solo)

Here's how you can temporarily monitor a specific audio input via the headphones (solo function).

* The solo function applies to the headphone output. It does not affect output other than the headphones.

1. [MENU] button → "AUDIO INPUT" → "AUDIO IN 1"–"SDI IN 8" → select "SOLO", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

In the headphones, you hear only the audio for which this is on.

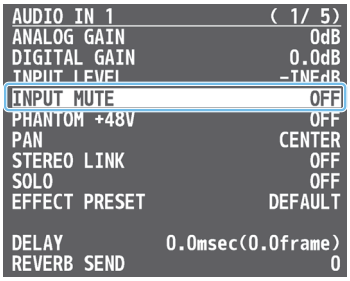
3. Press the [MENU] button to close the menu.

Silencing Only Specific Audio (Mute)

Here's how you can temporarily mute specific audio (the mute function).

Muting Input Audio

1. [MENU] button → "AUDIO INPUT" → "AUDIO IN 1"–"SDI IN 8" → select "INPUT MUTE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

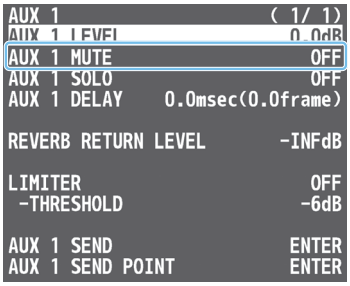
3. Press the [MENU] button to close the menu.

Muting Output Audio

This shows you how to mute the audio from the master output, USB output, and AUX 1-3 buses.

1. [MENU] button → "AUDIO OUTPUT" → select the menu item shown below, and press the [VALUE] knob.

Master	"MASTER OUTPUT" → "OUTPUT MUTE"
AUX 1-3 buses	"AUX 1-3" → "AUX 1-3 MUTE"
USB	"USB OUT" → "USB OUT MUTE"



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

3. Press the [MENU] button to close the menu.

MEMO

- You can assign the mute function to a USER button and turn it on/off (p. 74).
- The level meter indicates the mute setting.

  The "MT" symbol is shown to indicate audio for which muting is on.

Removing Noise from the Audio (Adaptive Noise Reduction / Low Frequency Cut)

You can remove noise from the input audio. Two effects are provided: "adaptive noise reduction" and "low frequency cut.

●Adaptive Noise Reduction

By continuously monitoring the input audio to detect noise during periods of silence, this removes only the noise component. Unlike conventional noise reduction that removes sound of a specified frequency, this analyzes the frequency of the noise and removes it as appropriate for the environment, resulting in a more natural sound.

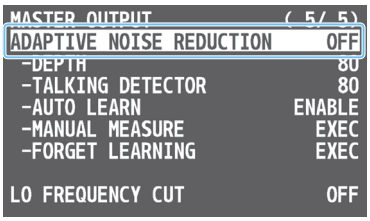
* The presence or absence of voice in the input signal is determined according to the "Talking Detector" settings.

●Low Frequency Cut

This divides the region below 200 Hz into four bands, and cuts unneeded low-frequency regions while continuously analyzing each band. Unlike conventional low cut, this does not weaken the sound of the low-frequency region.

Adaptive Noise Reduction

1. [MENU] button → "AUDIO OUTPUT" → "MASTER OUTPUT" → select "ADAPTIVE NOISE REDUCTION", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

3. Touch <AUTO LEARN> to set it to "ENABLE".

The noise is automatically detected, and the noise is reduced.

* If you want to detect noise manually, touch MANUAL MEASURE <EXEC>.
When you touch MANUAL MEASURE <EXEC>, measurement occurs automatically. When measurement finishes, the message "COMPLETED" appears.

4. Touch <DEPTH> to set the depth (how aggressive the noise reduction is).

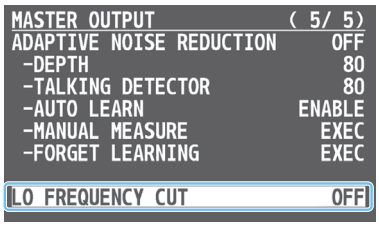
5. If the ambient noise level is high, touch <TALKING DETECTOR> to adjust the sensitivity.

* Increasing the value raises the sensitivity of the talking detector, making detection easier even in noisy environments.

6. If you want to reset the noise-reduced result to its original state, touch <FORGET LEARNING>.

Low Frequency Cut

1. [MENU] button → "AUDIO OUTPUT" → select "LO FREQUENCY CUT", and press the [VALUE] knob.



2. Use the [VALUE] knob to select "ON", and press the [VALUE] knob.

Automatically Setting a Comfortable Volume (Auto Mastering Effect)

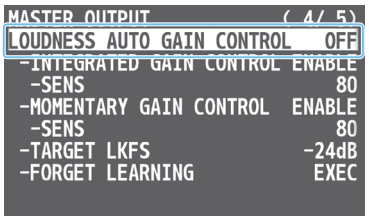
Based on "loudness" (an index of perceptual volume), this automatically adjusts the volume appropriately for broadcast. Loudness measurement can be either long-term or short-term; these differ in the interval of time to which volume adjustment applies.

●Loudness Auto Gain Control (Loudness AGC)

The long-term average loudness is measured, and the volume is adjusted so that it is appropriate overall. Use this for audio whose dynamics you want to preserve, such as music.

Loudness Auto Gain Control (Loudness AGC)

1. **[MENU] button → "AUDIO OUTPUT" → "MASTER OUTPUT" → select "LOUDNESS AUTO GAIN CONTROL", and press the [VALUE] knob.**



2. **Use the [VALUE] knob to select "ON", and press the [VALUE] knob.**

3. **Touch <TARGET LKFS> to set the target level for the output audio.**

4. **Touch <SENS> to adjust the speed at which the target level (TARGET LKFS) is approached.**

5. **To reset the adjusted value and return to the original state, touch <FORGET LEARNING>.**

Outputting AUX-bus Audio

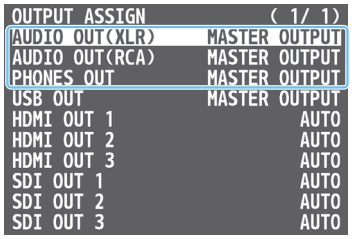
The V-160HD has four types of audio buses: MASTER OUTPUT and AUX 1-3. You can assign a desired bus to each output connector.

Audio bus	Explanation
MASTER OUTPUT	All input audio is mixed and output (master output).
AUX 1-3	This mixes and outputs only the input audio that is sent to the AUX 1-3 buses. This allows you to output audio that is different than the master output. For example, in a live event, you might output a mix of all audio inputs, while separately outputting a mix of only specific audio inputs for recording or streaming.

Assigning the AUX Bus

AUDIO OUT jacks, PHONES jack

1. [MENU] button → "AUDIO OUTPUT" → "OUTPUT ASSIGN" → select the output jack, and press the [VALUE] knob.



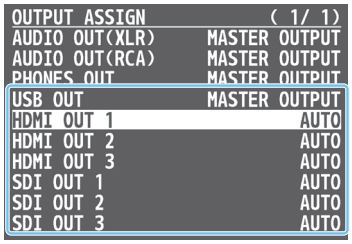
2. Use the [VALUE] knob to select "AUX", and press the [VALUE] knob.

Value	Explanation
MASTER OUTPUT	Output the audio of the MASTER OUTPUT bus.
AUX 1-3	Output the audio of the AUX 1-3 buses.

3. Press the [MENU] button to close the menu.

HDMI OUT connectors, SDI OUT connectors, USB STREAM port

1. [MENU] button → "AUDIO OUTPUT" → "OUTPUT ASSIGN" → select the output connector, and press the [VALUE] knob.



2. Use the [VALUE] knob to select "AUX" or "AUTO", and press the [VALUE] knob.

Value	Explanation
AUTO	The audio bus automatically switches according to the video bus assignment (p. 14). Video bus / Audio bus: Others besides AUX/DSK → MASTER OUTPUT AUX 1-3 → AUX 1-3 DSK 1, 2 SOURCE → DSK 1, 2 video source
MASTER OUTPUT	Output the audio of the MASTER OUTPUT bus.
AUX 1-3	Output the audio of the AUX 1-3 buses.

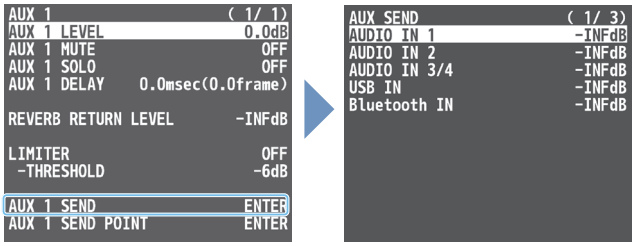
3. Press the [MENU] button to close the menu.

Sending Audio to the AUX Bus

* Use the [AUX] knob to adjust the volume of audio output from the AUX 1 bus. You can adjust the volume of audio output from the AUX 2 and 3 buses from the menu.

1. [MENU] button → "AUDIO OUTPUT" → "AUX 1-3" → select "AUX 1-3 SEND", and press the [VALUE] knob.

The AUX 1-3 SEND menu appears.



2. Use the [VALUE] knob to select the input audio, and press the [VALUE] knob.

* You can select HDMI IN and SDI IN by setting "AUX 1-3 SEND VIDEO" to "MANUAL".

When this is set to "AUTO", the audio is automatically sent to the AUX 1-3 buses in tandem with the AUX 1-3 bus video selections.

3. Use the [VALUE] knob to adjust the amount that is sent to the AUX 1-3 buses, and press the [VALUE] knob.

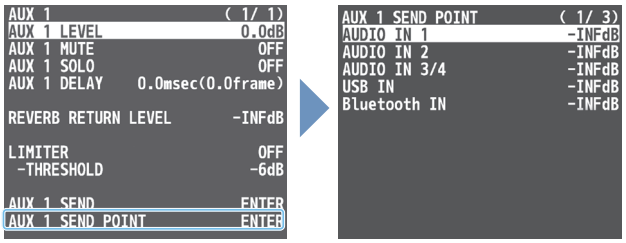
4. Press the [MENU] button to close the menu.

Setting the character of the sound

You can select whether to send either the original audio or the audio processed with effects to the AUX bus.

1. [MENU] button → "AUDIO OUTPUT" → "AUX 1-3" → select "AUX 1-3 SEND POINT", and press the [VALUE] knob.

The AUX 1-3 SEND POINT menu appears.



2. Use the [VALUE] knob to select the input audio, and press the [VALUE] knob.

3. Use the [VALUE] knob to select "DRY", "PRE FADE", or "POST FADER", and press the [VALUE] knob.

Value	Explanation
DRY	Sends the source audio with no effects applied.
PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).

4. Press the [MENU] button to close the menu.

Adding Input Audio to an HDMI or SDI Video for Output

The HDMI OUT and SDI OUT connectors support 8-channel embedded audio. You can add input audio (sound) to an HDMI or SDI video that is output.

Assigning HDMI/SDI embedded audio and sound

You can assign the input audio signal you like to channels 3–8 of HDMI or SDI embedded audio.

* These settings are common for the HDMI OUT 1–3 and SDI OUT 1–3 connectors.

Embedded-audio	Audio
Channel 1	Maser output (L) or AUX bus (L)
Channel 2	Maser output (R) or AUX bus (R)
Channel 3/4	AUDIO IN 1/2
Channel 5/6	AUDIO IN 3/4 USB IN, Bluetooth IN
Channel 7/8	HDMI 1–8, SDI 1–8

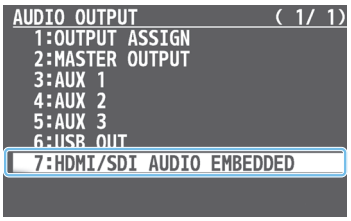
As a backup for visual or sound recording...

Digital audio is extracted from the HDMI or SDI embedded audio one channel at a time, so after visual recording or sound recording, you can edit the audio channel by channel.

For multilingual support...

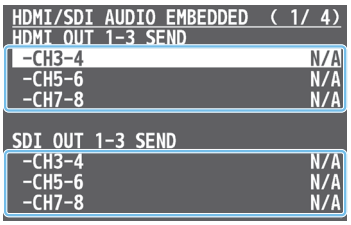
Taking multilingual narration or other such audio, making it embedded audio and adding it to HDMI video or SDI video lets you later extract and use the digital audio for the required language.

1. [MENU] button → "AUDIO OUTPUT" → select "HDMI/SDI AUDIO EMBEDDED", and press the [VALUE] knob.



Assigning the audio

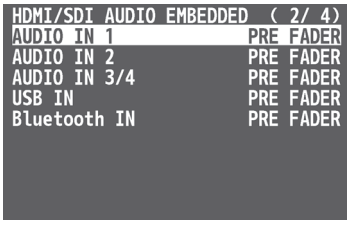
2. Use the [VALUE] knob to select the HDMI or SDI embedded audio channel, and press the [VALUE] knob.



3. Use the [VALUE] knob to select the input audio you wish to assign to the channel, and press the [VALUE] knob.

Setting the character of the sound

4. Use the [VALUE] knob to select the input audio, and press the [VALUE] knob.



5. Use the [VALUE] knob to select "DRY", "PRE FADER", or "POST FADER", and press the [VALUE] knob.

Value	Explanation
OFF	Audio is not sent.
DRY	Sends the source audio with no effects applied.
PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).

6. Press the [MENU] button to close the menu.

The audio including channel 3–8 embedded audio is output from the HDMI OUT 1–3 connectors or the SDI OUT 1–3 connectors.

Outputting Video/Audio to a Computer for Streaming

Here's how the video and audio mixed by the V-160HD can be output to a connected computer. You can also input audio that's played back by the computer.

By using an internet-connected computer with streaming app, you can distribute content as a live internet stream.

In order for the audio and video from the V-160HD to be correctly viewed on the computer, app that supports the USB video class and USB audio class must be installed on the computer.

* For the latest operating requirements, refer to the Roland website (**https://proav.roland.com/**).

Outputting Video and Audio to the Computer

1. **Using a USB 3.0 cable, connect a USB 3.0 port on the computer to the USB STREAM port on the V-160HD.**
2. **Turn on the power to the V-160HD.**
3. **Start the computer.**

   When communication with the computer has been established, the computer recognizes the V-160HD as a USB video device and USB audio device. The first time that the V-160HD is connected to the computer, the standard drivers of the operating system are installed automatically.
4. **Operate the V-160HD to prepare the video and audio that you want to output to the computer.**
5. **On your computer, verify the input from the V-160HD.**

   Start app that supports the USB video class and audio class, and verify the video and audio that are being input from the V-160HD.

MEMO

If the video is garbled or operation is otherwise unstable

Press the [MENU] button → "VIDEO OUTPUT" → USB OUT" → execute "CONNECTION RESET" to try reconnecting the computer with the V-160HD.

Video formats

You can change the USB output video format and compression method from the livestreaming app or other app used at the output destination.

The following video formats are supported.

USB OUT frame rate	Video formats		
59.94 Hz	1080/59.94p	720/59.94p	640 x 480/59.94p
60 Hz	1080/60p	720/60p	640x480/60p
29.97 Hz	1080/29.97p	720/29.97p	640 x 480/29.97p
30 Hz	1080/30p	720/30p	640 x 480/30p
50 Hz	1080/50p	720/50p	640 x 480/50p
25 Hz	1080/25p	720/25p	640 x 480/25p
23.98 Hz	1080/23.98p	720/23.98p	640×480/23.98p
24 Hz	1080/24p	720/24p	640×480/24p

* Uncompressed (YUY2) and compressed (Motion JPEG) video are supported.

Using the Loopback Function

Audio from the computer can be input to the V-160HD via USB, mixed with other audio, and returned to the computer (the loopback function).

You can add a narration to music that's played back from your computer and live-stream it, or record it using app on your computer.

Streaming Video from a Computer

Use the dedicated "Roland Live Streamer" app to stream the video and audio from the USB output of the V-160HD with your computer.

For details on operation, refer to the Owner's Manual of "Roland Live Streamer".

You can download "Roland Live Streamer" from the Roland website.

https://proav.roland.com/

* Compressed (Motion JPEG) video is not supported.

Capturing Video on the Computer

Using dedicated "Roland Live Recorder" app, the video and audio that are output from the V-160HD via USB can be recorded on your computer.

For details on operation, refer to the Owner's Manual of "Roland Live Recorder".

You can download "Roland Live Recorder" from the Roland website.

https://proav.roland.com/

* Compressed (Motion JPEG) video is not supported.

What to do when an HD video (1920 x 1080) output via USB changes to SD video (640 x 480)

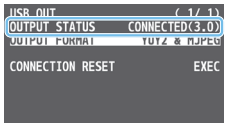
If you are using a USB cable that doesn't conform to USB 3.0 specs or later, the video output resolution is changed to SD (640 x 480). To output video for streaming to your computer in HD (1920 x 1080), be sure to use a cable that meets the USB 3.0 specs (or later).

* If you connect via an extension cable or a USB hub, the computer might not recognize the unit.

You can check the status of the connected USB cable by following these steps.

1. **[MENU] button → "VIDEO OUTPUT" → select "USB OUT", and press the [VALUE] knob.**

   This shows the status of the USB cable that's connected.



OUTPUT STATUS	Status
CONNECTED (3.0)	Connected using USB 3.0.
CONNECTED (2.0)	Connected using USB 2.0.
NOT CONNECTED	No connection.

Saving/Recalling Settings (Preset Memory)

You can save the current settings, including the video/audio settings and the state of the operating panel, in preset memory and recall those settings for use when necessary. The V-160HD is provided with thirty memories.

About the Last Memory function

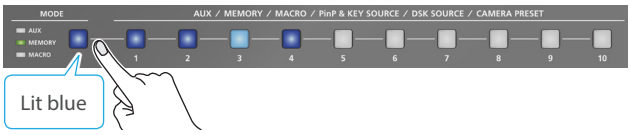
The V-160HD has a built-in Last Memory feature. Last Memory is a feature that saves the state of the unit that is in effect immediately before power-down, and automatically restores the state at the next startup. The Last Memory feature is enabled by default.

If you want the unit to recall a preset memory when it starts up, press the [MENU] button → "PRESET MEMORY" → "START UP" to specify the preset memory number.

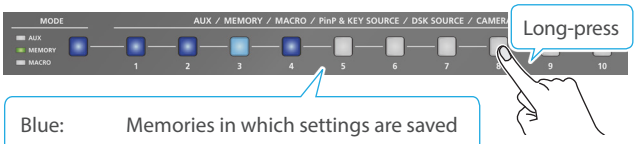
Saving to a Preset Memory

Preset memory 1–10

1. Press the [MODE] button several times to select "MEMORY".



2. Long-press the MEMORY button for the number where you want to save the settings.



Blue:	Memories in which settings are saved
Light blue:	Currently selected memory
Unlit:	Memories with no settings

All of the MEMORY [1]–[10] buttons are briefly illuminated in light blue, and the current settings are saved in the selected preset memory.

Preset memory 11–30

1. Press the [MENU] button and select the memory number from "PRESET MEMORY" → "SAVE", and press the [VALUE] knob.

MEMO

- **About preset memories 11–30**

  You can use the buttons to save or recall preset memories 11–30.

  Use the [MENU] button → "PRESET MEMORY" → and set "NUMBER OF MEMORY SW" to "30".

  The buttons listed below work as memory selection buttons.

Memory no.	Button
1–10	MEMORY [1]–[10] buttons
11–20	PGM/A [1]–[10] buttons
21–30	PST/B [1]–[10] buttons

- You can prohibit settings from being saved or initialized (p. 55) to protect the preset memories.

  Use the [MENU] button → "PRESET MEMORY" → and set "MEMORY PROTECT" to "ON".

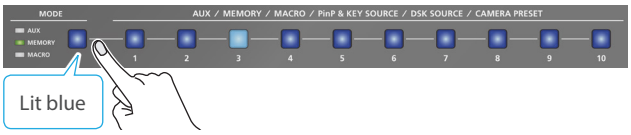
- Since settings related to the system, network and so on are common to the entire unit, they are not saved in a memory.

  For details, refer to "SAVE" in "14: PRESET MEMORY" (p. 107).

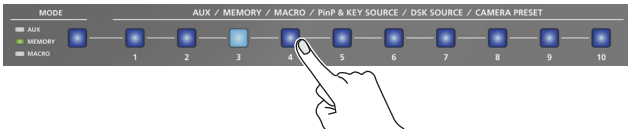
Recalling a Preset Memory

Preset memory 1–10

1. Press the [MODE] button several times to select "MEMORY".



2. Press the MEMORY button for the number whose setting you want to recall.



The settings are recalled.

Preset memory 11–30

1. Press the [MENU] button and select the memory number from "PRESET MEMORY" → "LOAD", and press the [VALUE] knob.

MEMO

- You can choose not to recall a certain setting when recalling a preset memory.

  For each item selected using the [MENU] button → "PRESET MEMORY" → "LOAD PARAMETER", you can set whether to recall that setting.

- You can apply video transition effects, make an inset screen fade in and so on when you recall a preset memory.

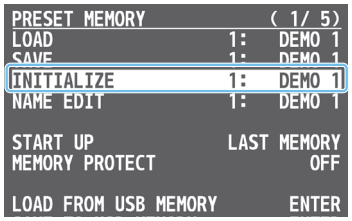
  Configure the settings of the following menu items from the [MENU] button → "PRESET MEMORY".

Menu item	Explanation
FADE TIME	Sets how long the transition to the next video takes when recalling a preset memory. * The time you set is used for the parameters below.
MIX/WIPE	When this is "ON", the transition effect is applied when the preset memory is recalled.
PinP & KEY 1–4	When this is "ON", the inset screen fades in when you recall a preset memory that includes a PinP composite.
DSK 1, 2	When this is "ON", the superimposed caption and video fades in when you recall a preset memory that includes a DSK composite.

Initializing a Preset Memory

Here's how you can initialize the settings of a specific preset memory to the factory-set condition.

1. [MENU] button → "PRESET MEMORY" → select "INITIALIZE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the preset memory (ALL, 1–30) that you want to initialize, and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

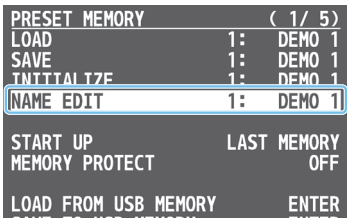
The preset memory is initialized. When the operation is finished, the message "COMPLETE" appears.

4. Press the [MENU] button to close the menu.

Renaming a Preset Memory

Here's how to rename a preset memory.

1. [MENU] button → "PRESET MEMORY" → select "NAME EDIT", and press the [VALUE] knob.

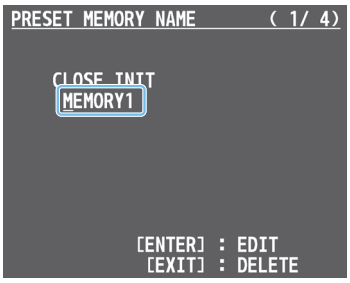


2. Use the [VALUE] knob to select the preset memory (1–30) that you want to rename, and then press the [VALUE] knob.

The PRESET MEMORY NAME screen appears.

3. Input the preset memory name.

* You can input up to 8 characters.



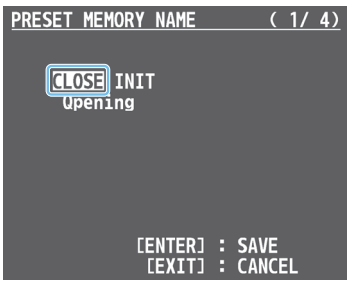
INIT:
Initializes the name.

① **Use the [VALUE] knob to move the cursor.**
Pressing the [EXIT] button deletes the character at the cursor location.

② **Press the [VALUE] knob to highlight the character at the cursor location.**

③ **Use the [VALUE] knob to change the character, and press the [VALUE] knob.**

4. When you have finished inputting the name, use the [VALUE] knob to select "CLOSE", and then press the [VALUE] knob.



* If you decide to cancel, press the [EXIT] button.

5. Press the [MENU] button to close the menu.

Saving Preset Memories to a USB Flash Drive

You can group together the preset memories (1–24) into a single file (.V16preset) and save this to a USB flash drive connected to the USB MEMORY port. You can access saved preset files on the USB flash drive and load them into the unit to use as needed.

NOTE

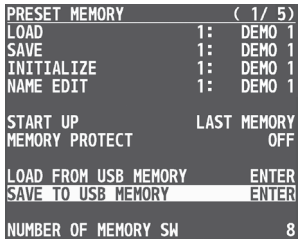
- When using a USB flash drive for the first time, you must format it using the V-160HD (p. 73).
- Depending on the USB flash drive, recognition of the flash drive might take some time.

Saving

Saving a new file

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

2. Press the [MENU] button → "PRESET MEMORY" → select "SAVE TO USB MEMORY", and press the [VALUE] knob.



The preset files on the USB flash drive are shown as a list.

3. Use the [VALUE] knob to select "NEW FILE...", and press the [VALUE] knob.

4. Enter the file name.

* You can enter a text string of up to 8 characters in length.

① **Use the [VALUE] knob to move the cursor.**
Pressing the [EXIT] button deletes the character at the cursor location.

② **Press the [VALUE] knob to highlight the character at the cursor location.**

③ **Use the [VALUE] knob to change the character, and press the [VALUE] knob.**

5. When you finish entering the name, use the [VALUE] knob to select "SAVE", and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

6. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

This saves the preset file (.V16preset) to the USB flash drive. When the operation is finished, the message "COMPLETE" appears.

7. Press the [MENU] button to close the menu.

Overwrite-saving a file

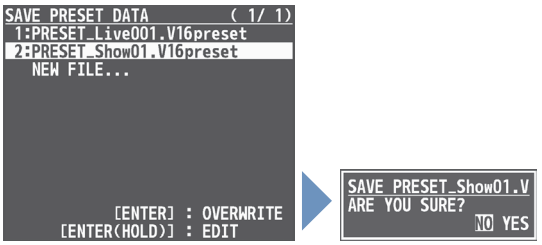
1. Connect the USB flash drive to the USB MEMORY port.

2. Press the [MENU] button → "PRESET MEMORY" → select "SAVE TO USB MEMORY", and press the [VALUE] knob.

The preset files on the USB flash drive are shown as a list.

3. Use the [VALUE] knob select the preset file that you want to overwrite, and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

4. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

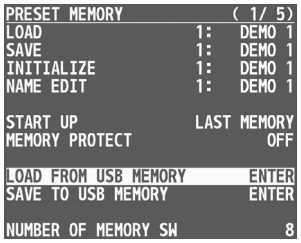
The preset file is overwritten. When the operation is finished, the message "COMPLETE" appears.

5. Press the [MENU] button to close the menu.

Loading

Here's how to load the preset memory settings that are saved on a USB flash drive. Doing this overwrites the preset memory (1–24) settings.

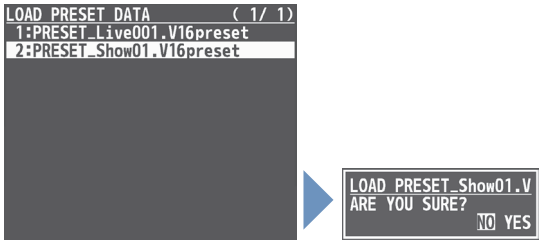
1. Press the [MENU] button → "PRESET MEMORY" → select "LOAD FROM USB MEMORY", and press the [VALUE] knob.



The preset files on the USB flash drive are shown as a list.

2. Use the [VALUE] knob to select the macro settings file that you want to load, and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The preset memory is recalled. When the operation is finished, the message "COMPLETE" appears.

4. Press the [MENU] button to close the menu.

Recording Multiple Operations to Automatically Execute (Macros)

This feature lets you record multiple operations and then automatically execute them (as a macro function). You only need to record the macro operation beforehand and then select the macro to perform the series of operations you recorded. This function is useful for executing exactly the same operations, even when a different operator is using the unit.

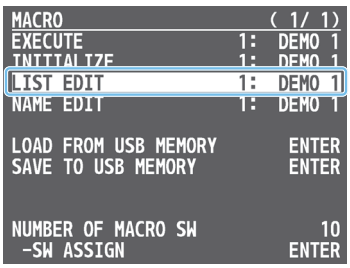
You can create up to 100 macros.

Recording a Macro

A single macro can contain up to 10 different operations. You can include a macro within another macro, to make a single macro execute a more complicated set of functions.

* The demo macro data in this unit that's available by factory default includes some recorded operations.

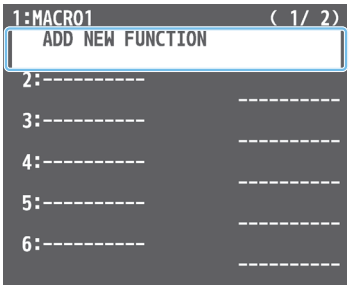
1. **[MENU] button → "MACRO" → select "LIST EDIT", and press the [VALUE] knob.**



2. **Use the [VALUE] knob to select the macro (1–100) you want to edit, and press the [VALUE] knob.**

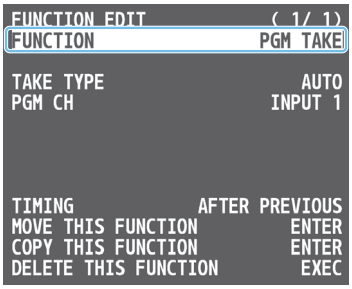
The list of operations recorded in the macro is shown.

3. **Use the [VALUE] knob to select "ADD NEW FUNCTION", and press the [VALUE] knob.**



The FUNCTION EDIT menu appears.

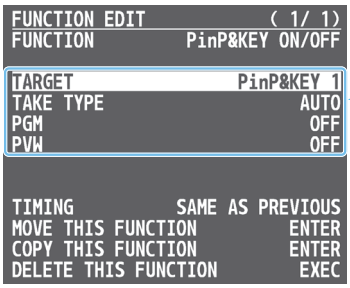
4. **Use the [VALUE] knob to select "FUNCTION", and press the [VALUE] knob.**



5. **Select the operation to record to the macro using the [VALUE] knob, and then press the [VALUE] knob.**

* For details on the operations you can record, see "FUNCTION" in "FUNCTION EDIT" (p. 108).

6. **Use the [VALUE] knob to set the related menu item.**



The related menu is shown according to the operation you selected in step 5.

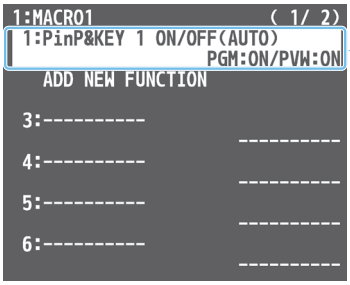
7. **Use the [VALUE] knob to select "TIMING", and press the [VALUE] knob.**

8. **Use the [VALUE] knob to set the timing at which the operation is executed, and then press the [VALUE] knob.**

Value	Explanation
AFTER PREVIOUS	The function is executed after the preceding one. The next sequential list number is used.
SAME AS PREVIOUS	Executes the operation at the same time as the preceding one. The same list number as the previous operation is used.

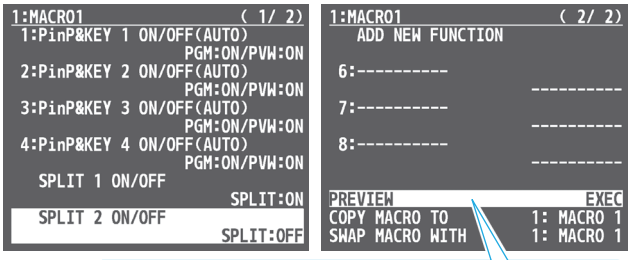
* If you place a function at the beginning of the macro, setting the timing has no effect.

9. **Press the [EXIT] button to return to the previous screen.**



The operation is added to the list.

10. **Repeat steps 3–9 to finish making the macro.**



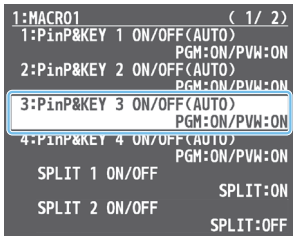
PREVIEW: Press the [VALUE] knob to preview the macro.

11. **Press the [MENU] button to close the menu.**

Editing a macro

You can edit the contents of a function, change the order in which it is executed, or copy/delete a function either while creating a macro or after the macro is finished.

1. In step 3 of "Recording a Macro" (p. 58), select the function you want to edit in the list, and press the [VALUE] knob.

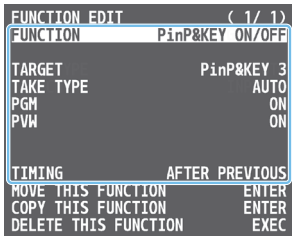


The FUNCTION EDIT menu appears.

2. Edit, move, copy or delete the function.

Editing the contents of a function

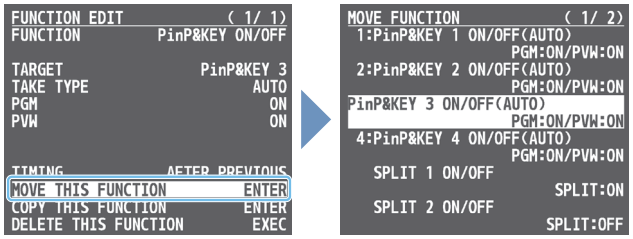
① Follow steps 4–9 in "Recording a Macro" (p. 58) to edit the contents of the function.



Moving a function

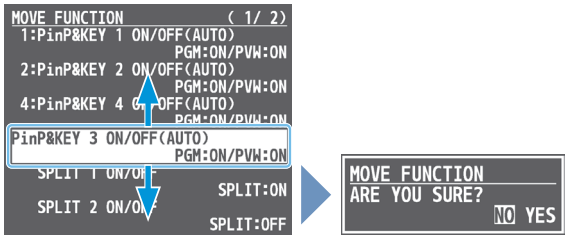
① Use the [VALUE] knob to select "MOVE THIS FUNCTION", and press the [VALUE] knob.

MOVE FUNCTION screen appears.



② Use the [VALUE] knob to select where you want to move the function, and then press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

③ Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

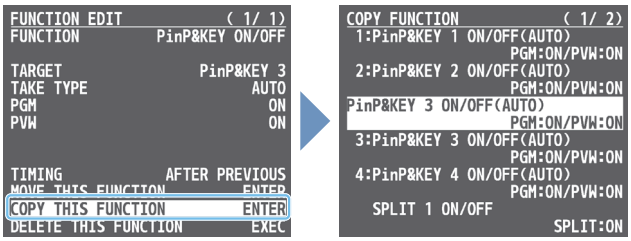
The function is moved, and the message "COMPLETE" appears.

Copying a function

* Copying is disabled if the number of recorded functions have reached the limit (10).

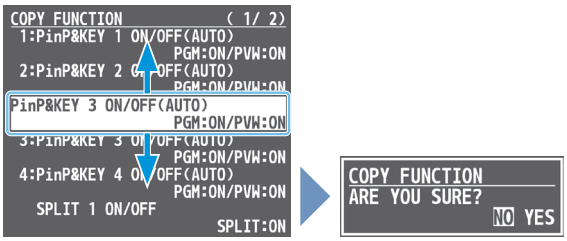
① Use the [VALUE] knob to select "COPY THIS FUNCTION", and press the [VALUE] knob.

The COPY FUNCTION screen appears.



② Use the [VALUE] knob to select where you want to copy the function to, and then press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

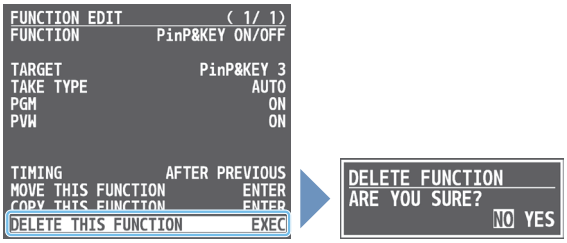
③ Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The function is copied, and the message "COMPLETE" appears.

Deleting a function

① Use the [VALUE] knob to select "DELETE THIS FUNCTION", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

② Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

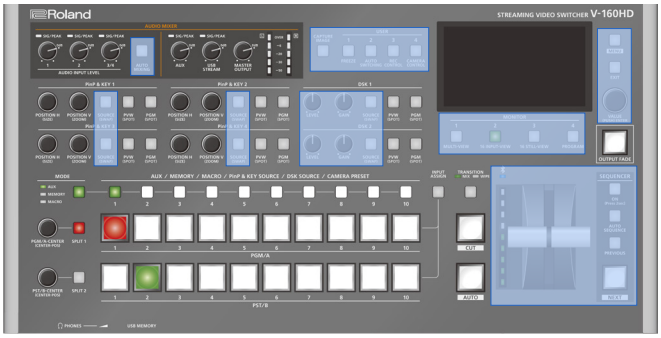
The function is deleted, and the message "COMPLETE" appears.

3. Press the [MENU] button to close the menu.

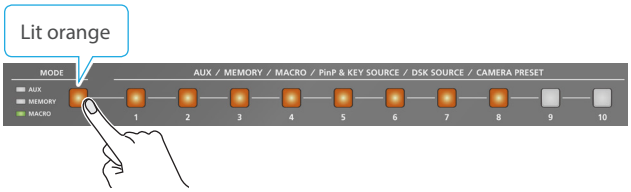
Recording Macros Using the Panel

You can record macros by operating the panel.

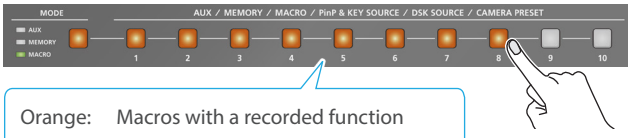
: Panel controllers that can't be recorded in a macro



1. Press the [MODE] button several times to select "MACRO".



2. Long-press the MACRO button corresponding to the number of the macro you wish to record.



Orange: Macros with a recorded function
Unlit: Macros without a recorded function

The MACRO button blinks, and the list of operations is shown.

```
RECORD TO 1:DEMO 1        ( 1/ 2)
 1:----------
                          ----------
 2:----------
                          ----------
 3:----------
                          ----------
 4:----------
                          ----------
 5:----------
                          ----------
 6:----------
                          ----------
```

3. Use the panel controls to record the macro.

```
RECORD TO 1:DEMO 1        ( 1/ 2)
 1:PGM/PST SELECT
           PGM:INPUT 1/PST:----
 2:PGM/PST SELECT
           PGM:INPUT 2/PST:----
 3:PGM/PST SELECT
           PGM:INPUT 3/PST:----
 4:PGM/PST SELECT
           PGM:INPUT 4/PST:----
 5:PGM/PST SELECT
           PGM:INPUT 5/PST:----
 6:PGM/PST SELECT
           PGM:INPUT 6/PST:----
```

4. Once the macro is finished, turn the [VALUE] knob to select "APPLY" and press the [VALUE] knob.

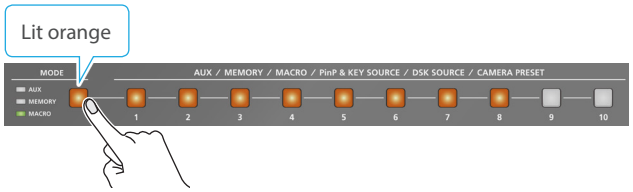
```
RECORD TO 1:DEMO 1        ( 2/ 2)
 7:PGM/PST SELECT
           PGM:INPUT 7/PST:----
 8:PGM/PST SELECT
           PGM:INPUT 8/PST:----
 9:PGM/PST SELECT
           PGM:INPUT 9/PST:----
10:PGM/PST SELECT
           PGM:INPUT 10/PST:----
CLEAR                     EXEC
APPLY                     EXEC

          [EXIT] : CANCEL
```

When you execute "CLEAR", the contents of the recorded macro are erased, and the macro is initialized.

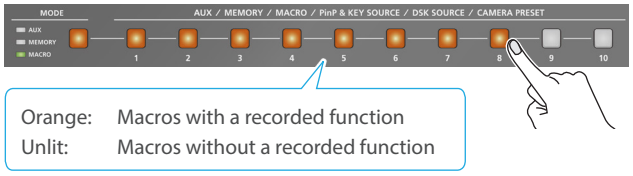
Executing a Macro

Using the buttons (Macro 1–10)

1. Press the [MODE] button several times to select "MACRO".



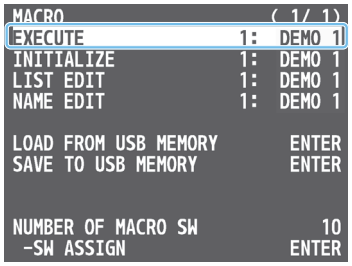
2. Press the MACRO button corresponding to the number of the macro you wish to execute.



This executes the macro.

Using the menus

1. [MENU] button → "MACRO" → select "EXECUTE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the macro (1–100) that you want to execute, and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The macro is executed.

4. Press the [MENU] button to close the menu.

MEMO

Using the cross-point buttons to select macros

When "MACRO" is selected on the [MODE] button, the cross-point buttons function as macro selection buttons.

Use the [MENU] button → "MACRO" → and set "NUMBER OF MACRO SW" to "30".

Changing the macro assigned to a button

You can change the macros assigned to the buttons.

From the [MENU] button → "MACRO" → "SW ASSIGN", specify a macro (1–100) to assign to the respective button, using the menu items shown below.

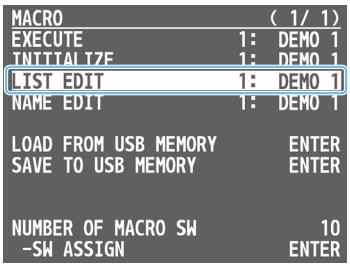
Menu item	Explanation
MACRO 1–10	MACRO [1]–[10] buttons
PGM/A 1–10 (*1)	PGM/A [1]–[10] buttons
PST/B 1–10 (*1)	PST/B [1]–[10] buttons

(*1) This can be set if "NUMBER OF MACRO SW" is "30".

Copying Macro Settings

Here's how to copy the settings from one macro to another.

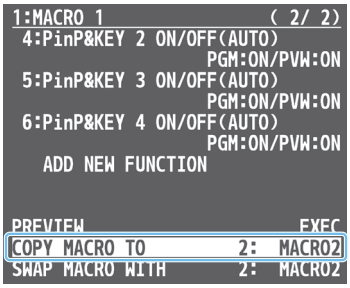
1. **[MENU] button → "MACRO" → select "LIST EDIT", and press the [VALUE] knob.**



2. **Use the [VALUE] knob to select the copy source macro (1–100), and press the [VALUE] knob.**

The list of operations recorded in the macro is shown.

3. **Use the [VALUE] knob to select "COPY MACRO TO", and press the [VALUE] knob.**



4. **Use the [VALUE] knob to select the copy destination macro, and then press the [VALUE] knob.**

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

5. **Use the [VALUE] knob to select "YES", and press the [VALUE] knob.**

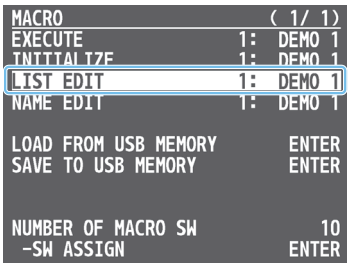
The macro settings are copied. When the operation is finished, the message "COMPLETE" appears.

6. **Press the [MENU] button to close the menu.**

Swapping the Macro Settings

Here's how to swap settings between macros.

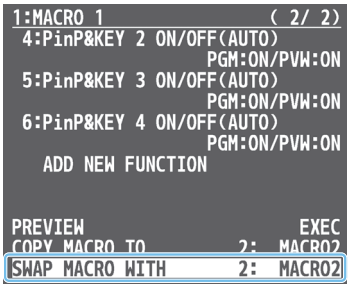
1. **[MENU] button → "MACRO" → select "LIST EDIT", and press the [VALUE] knob.**



2. **Use the [VALUE] knob to select the swap source macro (1–100), and press the [VALUE] knob.**

The list of operations recorded in the macro is shown.

3. **Use the [VALUE] knob to select "SWAP MACRO WITH", and press the [VALUE] knob.**



4. **Use the [VALUE] knob to select the swap destination macro, and press the [VALUE] knob.**

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

5. **Use the [VALUE] knob to select "YES", and press the [VALUE] knob.**

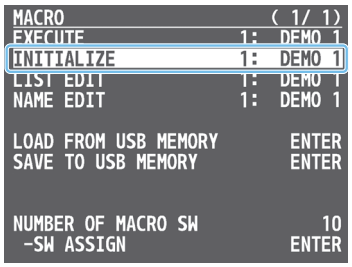
This swaps the settings of the macros. When the operation is finished, the message "COMPLETE" appears.

6. **Press the [MENU] button to close the menu.**

Initializing a Macro

You can initialize a macro and completely erase its settings.

1. [MENU] button → "MACRO" → select "INITIALIZE", and press the [VALUE] knob.



2. Turn the [VALUE] knob to the macro you wish to select (ALL, 1–100), and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The macro is initialized. When the operation is finished, the message "COMPLETE" appears.

4. Press the [MENU] button to close the menu.

MEMO

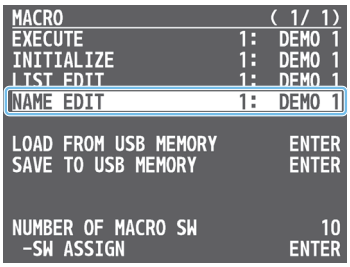
About the macro demo data

Once you perform a factory reset (p. 84), any demo data you have edited or deleted is restored to its factory default settings.

Renaming a Macro

Here's how to rename a macro.

1. [MENU] button → "MACRO" → select "NAME EDIT", and press the [VALUE] knob.

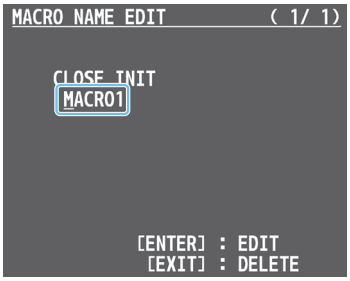


2. Use the [VALUE] knob to select the macro (1–100) that you want to rename, and then press the [VALUE] knob.

The MACRO NAME EDIT screen appears.

3. Input the macro name.

* You can input up to 8 characters.



INIT:
Initializes the name.

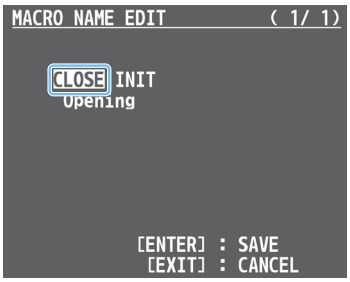
① Use the [VALUE] knob to move the cursor.

Pressing the [EXIT] button deletes the character at the cursor location.

② Press the [VALUE] knob to highlight the character at the cursor location.

③ Use the [VALUE] knob to change the character, and press the [VALUE] knob.

4. When you have finished inputting the name, use the [VALUE] knob to select "CLOSE", and then press the [VALUE] knob.



* If you decide to cancel, press the [EXIT] button.

5. Press the [MENU] button to close the menu.

Saving/Loading the Macro Settings

You can group together the macro settings (1–100) into a single file (.RMC) and save it to a USB flash drive connected to the USB MEMORY port. You can access the saved macro setting file on the USB flash drive and load it into the unit for use when needed.

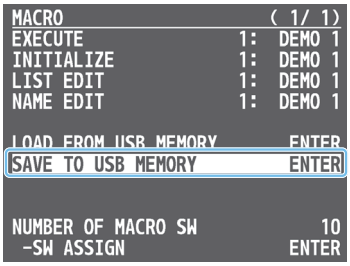
NOTE

- When using a USB flash drive for the first time, you must format it using the V-160HD (p. 73).
- Never turn off the power or remove the USB flash drive while the message "PLEASE WAIT" is shown.
- Depending on the USB flash drive, recognition of the flash drive might take some time.

Saving a new file

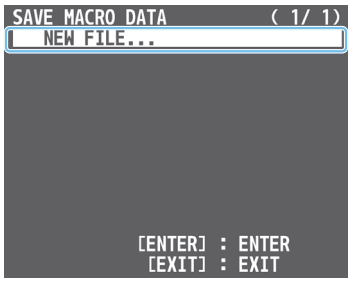
1. Connect the USB flash drive to the USB MEMORY port.

2. [MENU] button → "MACRO" → select "SAVE TO USB MEMORY", and press the [VALUE] knob.



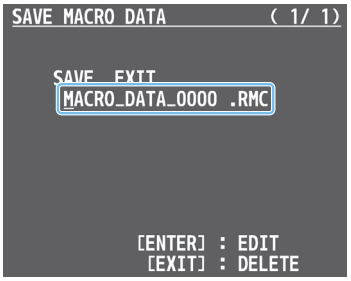
The macro setting files in the USB flash drive are listed.

3. Use the [VALUE] knob to select "NEW FILE...", and press the [VALUE] knob.



4. Enter the file name.

* You can enter a text string of up to 16 characters in length.



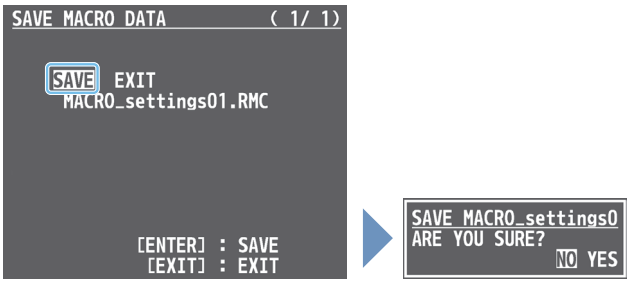
① **Use the [VALUE] knob to move the cursor.**
Pressing the [EXIT] button deletes the character at the cursor location.

② **Press the [VALUE] knob to highlight the character at the cursor location.**

③ **Use the [VALUE] knob to change the character, and press the [VALUE] knob.**

5. When you finish entering the name, use the [VALUE] knob to select "SAVE", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

6. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The macro settings file (.RMC) is saved to the USB flash drive. When the operation is finished, the message "COMPLETE" appears.

7. Press the [MENU] button to close the menu.

Overwrite-saving

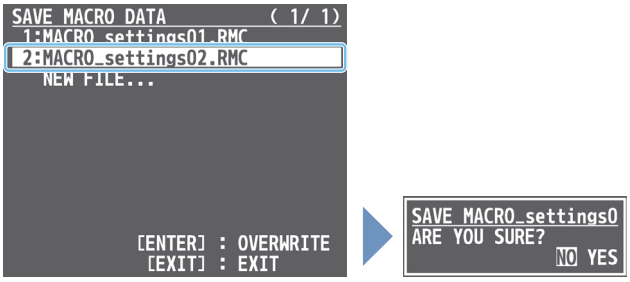
1. Connect the USB flash drive to the USB MEMORY port.

2. [MENU] button → "MACRO" → select "SAVE TO USB MEMORY", and press the [VALUE] knob.

The macro setting files in the USB flash drive are listed.

3. Use the [VALUE] knob select the macro settings file that you want to overwrite, and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

4. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

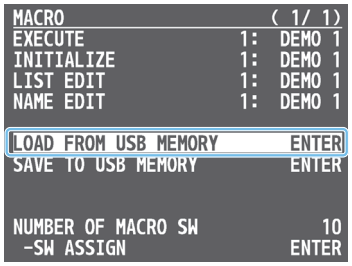
The macro settings file is overwritten. When the operation is finished, the message "COMPLETE" appears.

5. Press the [MENU] button to close the menu.

Loading

Here's how to load the macro settings that are saved on a USB flash drive. Loading the settings overwrites the current settings for the macros (1–100).

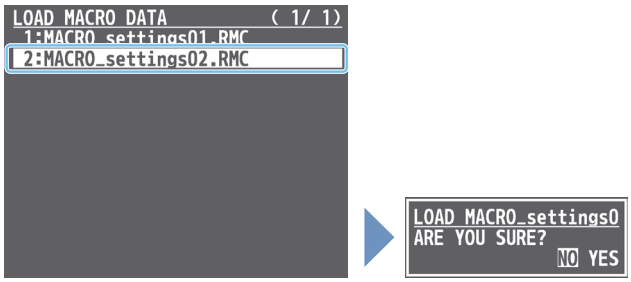
1. [MENU] button → "MACRO" → select "LOAD FROM USB MEMORY", and press the [VALUE] knob.



The macro setting files in the USB flash drive are listed.

2. Use the [VALUE] knob to select the macro settings file that you want to load, and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The macro settings are loaded. When the operation is finished, the message "COMPLETE" appears.

4. Press the [MENU] button to close the menu.

Combining Preset Memories and Macros for Operations (Sequencer)

The sequencer function lets you record functions such as recalling preset memories or macros, and then execute them in the order you specify.

This lets you recreate the desired functions like editing the screen layout or inserting a title, by preparing the functions in line with how the events progress and then simply pressing the [NEXT] button. This feature is useful for smoothly carrying out operations at the place where you're working.

Recording to the Sequencer

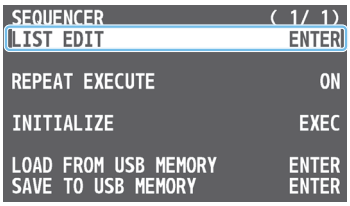
Three types of functions can be recorded in the sequencer, including recalling a preset memory, executing a macro and switching between final output videos. Create a list of the functions you want to execute in order.

A list can contain up to 1,000 functions.

MEMO

The demo data in this unit that's available by factory default includes a list of recorded functions. You can completely erase the contents of this list by initializing it (p. 71).

1. [MENU] button → "SEQUENCER" → select "LIST EDIT", and press the [VALUE] knob.

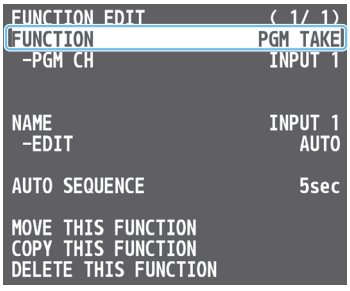


The list of operations recorded in the sequencer is shown.

2. Use the [VALUE] knob to select "ADD NEW FUNCTION", and press the [VALUE] knob.

The FUNCTION EDIT menu appears.

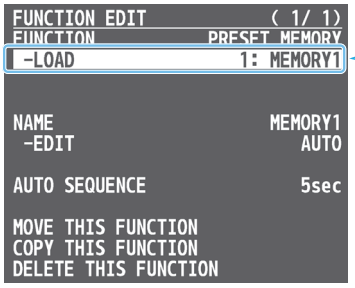
3. Use the [VALUE] knob to select "FUNCTION", and press the [VALUE] knob.



4. Use the [VALUE] knob to select the function to record to the sequencer, and then press the [VALUE] knob.

Value	Explanation
PGM TAKE	Switches the final output video.
PRESET MEMORY	Recalls a preset memory.
MACRO	Executes a macro.

5. Use the [VALUE] knob to set the related menu item.

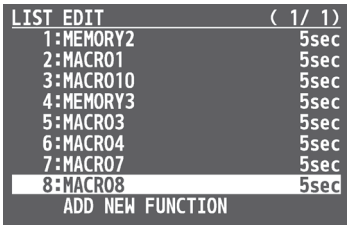


The related menu is shown according to the operation you selected in step 4.

6. Press the [EXIT] button to return to the previous screen.

The operation is added to the list.

7. Repeat steps 2–6 to finish making the list.

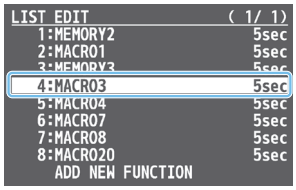


8. Press the [MENU] button to close the menu.

Editing a list

You can edit the contents of a function, change the order in which it is executed, or copy/delete a function while creating a list or after you've finished the list.

1. In step 2 of "Recording to the Sequencer" (p. 66), select the function you want to edit in the list, and press the [VALUE] knob.

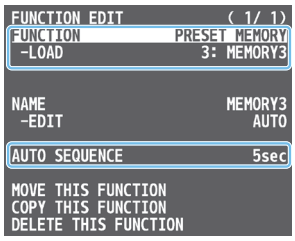


The FUNCTION EDIT menu appears.

2. Edit, move, copy or delete the function.

Editing the contents of a function

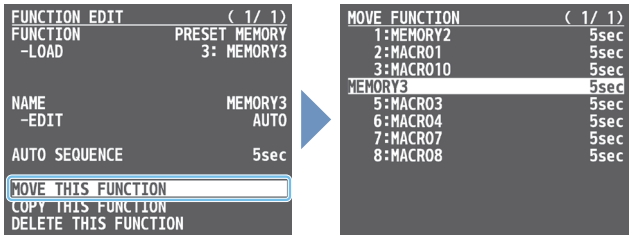
① Follow steps 3–6 in "Recording to the Sequencer" (p. 66) to edit the contents of the function.



Moving a function

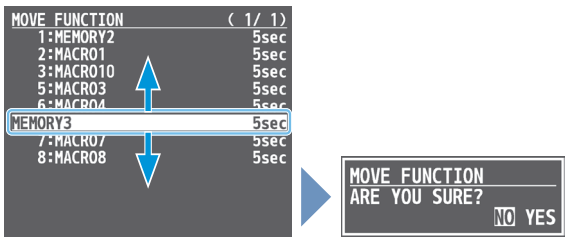
① Use the [VALUE] knob to select "MOVE THIS FUNCTION", and press the [VALUE] knob.

The MOVE FUNCTION screen appears.



② Use the [VALUE] knob to select where you want to move the function, and then press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

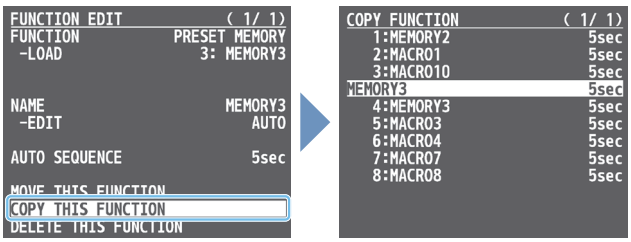
③ Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The function is moved, and the message "COMPLETE" appears.

Copying a function

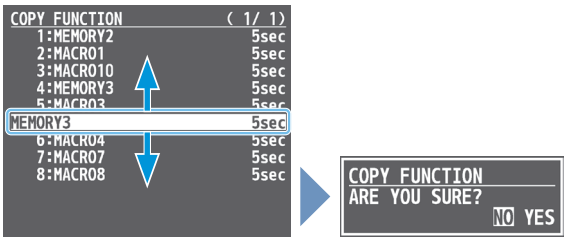
① Use the [VALUE] knob to select "COPY THIS FUNCTION", and press the [VALUE] knob.

The COPY FUNCTION screen appears.



② Use the [VALUE] knob to select where you want to copy the function to, and then press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

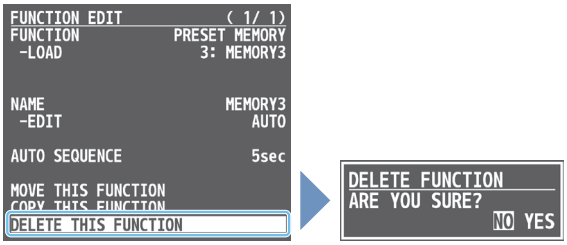
③ Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The function is copied, and the message "COMPLETE" appears.

Deleting a function

① Use the [VALUE] knob to select "DELETE THIS FUNCTION", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

② Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The function is deleted, and the message "COMPLETE" appears.

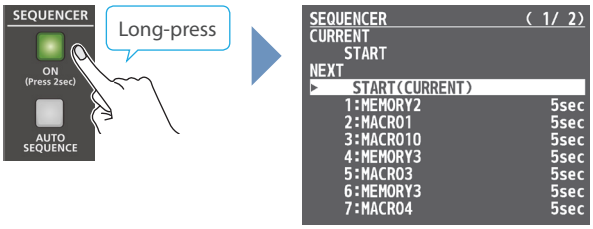
3. Press the [MENU] button to close the menu.

Running the Sequencer

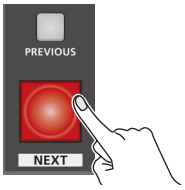
Press the button to make the functions recorded in the sequencer execute one at a time.

1. Long-press the SEQUENCER [ON] button to turn the sequencer function on (the button lights up).

The list of operations recorded in the sequencer is shown.



2. Press the [NEXT] button.



The first function in the list is executed.

The button blinks while the function is executing. When the function ends, the button remains lit.

3. Press the [NEXT] button at the timing when you want the next function to execute.

The function is executed.

[PREVIOUS] button

Press the [PREVIOUS] button if you want to return to the state at which the previous function was completed.

4. Repeat step 3.

5. Long-press the SEQUENCER [ON] button again to turn the sequencer function off.

MEMO

Repeatedly executing a function in the list

You can repeatedly execute functions that are in a list. Once the last function is finished, press the [NEXT] button to execute the function at the beginning of the list.

Use the [MENU] button → "SEQUENCER" → and set "REPEAT EXECUTE" to "ON".

Executing a function from the middle of the list

Use the [VALUE] knob to select a function from the list, and then press the [VALUE] knob to set the selected function to its completed state. You can press the [NEXT] button to execute the next function afterwards.

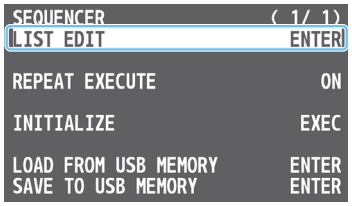
Making the Sequencer Run Automatically (Auto Sequence)

Use the auto sequence feature when you want to make the functions recorded in the sequencer execute automatically.

Configuring the auto sequence settings

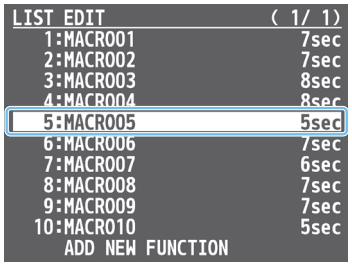
Set the action or function that's executed when the sequencer advances to the next function. You can add some delay time before the next function is executed, or pause the execution of a function.

1. [MENU] button → "SEQUENCER" → select "LIST EDIT", and press the [VALUE] knob.



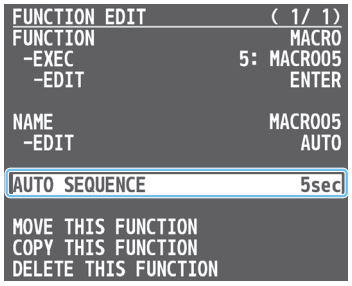
The list of operations recorded in the sequencer is shown.

2. Select the function in the list, and press the [VALUE] knob.



The FUNCTION EDIT menu appears.

3. Use the [VALUE] knob to select "AUTO SEQUENCE", and press the [VALUE] knob.



4. Use the [VALUE] knob to set the action that's executed when the sequencer advances to the next function, and then press the [VALUE] knob.

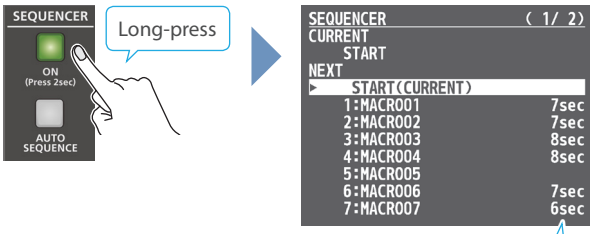
Value	Explanation
PAUSE	Pauses the auto sequence.
AUTO	Executes the next operation in the sequence.
1–120sec	Executes the next operation after delaying for a specified amount of time.

5. Press the [MENU] button to close the menu.

Running the auto sequence

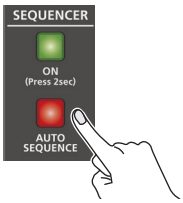
1. Long-press the SEQUENCER [ON] button to turn the sequencer function on (the button lights up).

The list of operations recorded in the sequencer is shown.



Check which action is executed when the sequencer moves to the next function. When this is set to "PAUSE", this is blank.

2. Press the [AUTO SEQUENCE] button to turn the auto sequence function on (the button lights up).



The functions in the list are executed, starting at the beginning. The [NEXT] button blinks while a function is executing.

When the last function is finished, the sequence stops automatically.

When a function is set to "PAUSE"

When the function is finished, the [AUTO SEQUENCE] button blinks and auto sequence is paused. You can press the [NEXT] button to manually execute the next function.

* When executing a function that's set to a value other than "PAUSE", the auto sequence is resumed.

3. Press the [AUTO SEQUENCE] button again to turn off the auto sequence.

4. Long-press the SEQUENCER [ON] button again to turn the sequencer function off.

MEMO

You can repeatedly execute functions that are in a list. When the last function is finished, the sequencer returns to the beginning.

Use the [MENU] button → "SEQUENCER" → and set "REPEAT EXECUTE" to "ON".

Saving/Loading the Sequencer Settings

You can save the sequencer settings as a single file (.RSQ) to a USB flash drive connected to the USB MEMORY port.

You can access the saved sequence file on the USB flash drive and load it into the unit for use when needed.

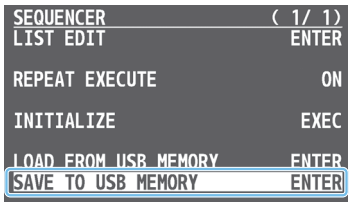
NOTE

- When using a USB flash drive for the first time, you must format it using the V-160HD (p. 73).
- Never turn off the power or remove the USB flash drive while the message "PLEASE WAIT" is shown.
- Depending on the USB flash drive, recognition of the flash drive might take some time.

Saving a new file

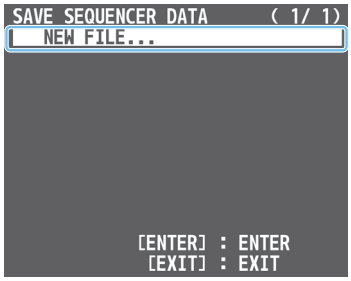
1. Connect the USB flash drive to the USB MEMORY port.

2. [MENU] button → "SEQUENCER" → select "SAVE TO USB MEMORY", and press the [VALUE] knob.



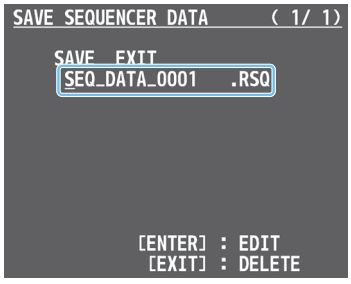
The sequence files in the USB flash drive are listed.

3. Use the [VALUE] knob to select "NEW FILE...", and press the [VALUE] knob.



4. Enter the file name.

* You can enter a text string of up to 16 characters in length.



① **Use the [VALUE] knob to move the cursor.**
Pressing the [EXIT] button deletes the character at the cursor location.

② **Press the [VALUE] knob to highlight the character at the cursor location.**

③ **Use the [VALUE] knob to change the character, and press the [VALUE] knob.**

5. When you finish entering the name, use the [VALUE] knob to select "SAVE", and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

6. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The sequence file (.RSQ) is saved to the USB flash drive. When the operation is finished, the message "COMPLETE" appears.

7. Press the [MENU] button to close the menu.

Overwrite-saving

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

2. [MENU] button → "SEQUENCER" → select "SAVE TO USB MEMORY", and press the [VALUE] knob.

The sequence files in the USB flash drive are listed.

3. Use the [VALUE] knob select the sequence file that you want to overwrite, and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

4. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

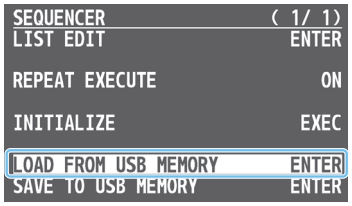
The sequence file is overwritten. When the operation is finished, the message "COMPLETE" appears.

5. Press the [MENU] button to close the menu.

Loading

Here's how to load the sequencer settings that are saved on a USB flash drive. When you load settings, the current sequencer settings are overwritten.

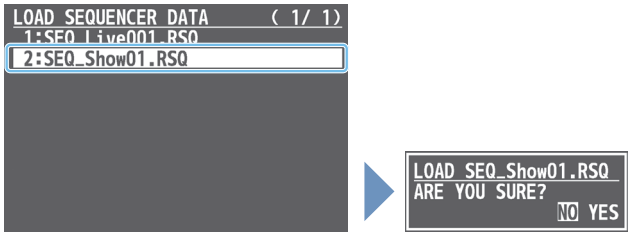
1. [MENU] button → "SEQUENCER" → select "LOAD FROM USB MEMORY", and press the [VALUE] knob.



The sequence files in the USB flash drive are listed.

2. Use the [VALUE] knob to select the sequence file that you want to load, and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The sequencer settings are loaded. When the operation is finished, the message "COMPLETE" appears.

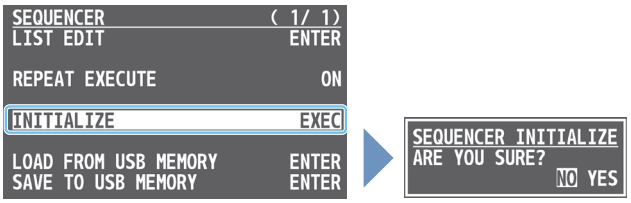
4. Press the [MENU] button to close the menu.

Initializing the Sequencer

Here's how to initialize the sequencer and erase all the settings.

1. [MENU] button → "SEQUENCER" → select "INITIALIZE", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

2. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The sequencer is initialized. When the operation is finished, the message "COMPLETE" appears.

3. Press the [MENU] button to close the menu.

MEMO

About the sequencer demo data

Once you perform a factory reset (p. 84), any demo data you have edited or deleted is restored to its factory default settings.

Backing Up and Restoring the Unit's Settings

You can group together the unit's settings into a single file (.V16) and back up it to a USB flash drive connected to the USB MEMORY port. You can access the backed up setting file on the USB flash drive and restore it into the unit for use when needed.

NOTE

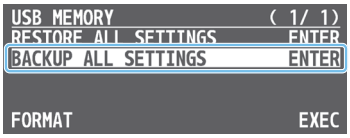
- When using a USB flash drive for the first time, you must format it using the V-160HD (p. 73).
- Never turn off the power or remove the USB flash drive while the message "PLEASE WAIT" is shown.
- Depending on the USB flash drive, recognition of the flash drive might take some time.

Backing Up

Saving a new file

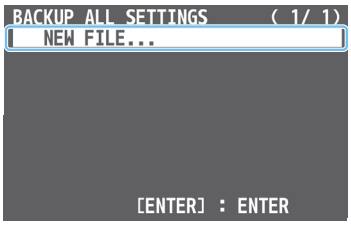
1. Connect the USB flash drive to the USB MEMORY port.

2. [MENU] button → "USB MEMORY" → select "BACKUP ALL SETTINGS", and press the [VALUE] knob.



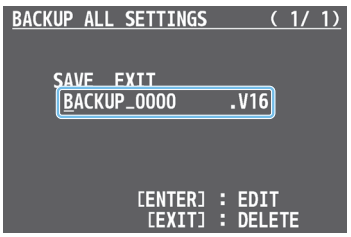
The settings files in the USB flash drive are listed.

3. Use the [VALUE] knob to select "NEW FILE...", and press the [VALUE] knob.



4. Enter the file name.

* You can enter a text string of up to 16 characters in length.



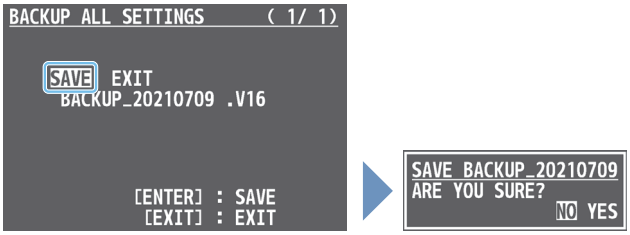
① **Use the [VALUE] knob to move the cursor.**
Pressing the [EXIT] button deletes the character at the cursor location.

② **Press the [VALUE] knob to highlight the character at the cursor location.**

③ **Use the [VALUE] knob to change the character, and press the [VALUE] knob.**

5. When you finish entering the name, use the [VALUE] knob to select "SAVE", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

6. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The settings file (.V16) is backed up on the USB flash drive. When the operation is finished, the message "COMPLETE" appears.

7. Press the [MENU] button to close the menu.

Overwrite-saving

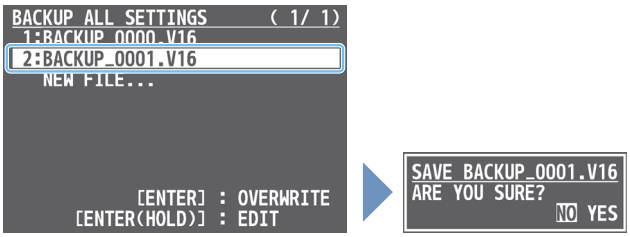
1. Connect the USB flash drive to the USB MEMORY port.

2. [MENU] button → "USB MEMORY" → select "BACKUP ALL SETTINGS", and press the [VALUE] knob.

The settings files in the USB flash drive are listed.

3. Use the [VALUE] knob select the settings file that you want to overwrite, and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

4. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The settings file is overwrite-saved. When the operation is finished, the message "COMPLETE" appears.

5. Press the [MENU] button to close the menu.

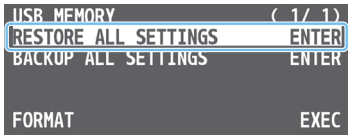
MEMO

- When you select a settings file in step 3 and long-press the [VALUE] knob, the edit screen appears with the file name preserved. Edit the file name as necessary to save it as a different file.
- Some settings are not saved to the file, such as the "TEST PATTERN" and "TEST TONE" settings in the SYSTEM menu.

Restoring

Here's how to restore this unit's settings that you saved on a USB flash drive. When you restore settings, the current settings are overwritten.

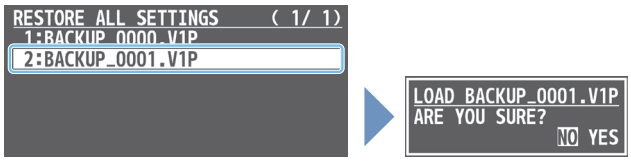
1. [MENU] button → "USB MEMORY" → select "RESTORE ALL SETTINGS", and press the [VALUE] knob.



The settings files in the USB flash drive are listed.

2. Use the [VALUE] knob to select the file you want to restore, and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The settings are restored. When the operation is finished, the message "COMPLETE" appears.

4. Press the [MENU] button to close the menu.

Formatting a USB Flash Drive

The first time that you use a USB flash drive, you must use the V-160HD to format it.

NOTE

- You may not be able to normally use USB flash drives on the V-160HD that are formatted on a different device. Be sure to format the media on the V-160HD (in FAT32 format).

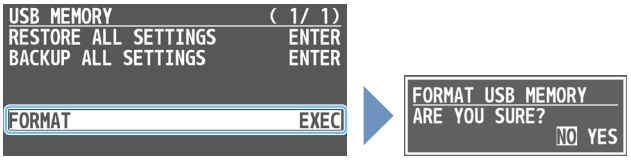
  If an error message like "USB memory is not ready".is shown, format the media on the V-160HD so that you can use it.
- Never turn off the power or remove the USB flash drive while the message "PLEASE WAIT" is shown.
- When you format a USB flash drive, all data on that USB flash drive is erased. If the drive contains important data, back it up to your computer before you format the drive.

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

* Ensure that the USB flash drive is oriented correctly, and insert it all the way into the port. Do not use excessive force.

2. [MENU] button → "USB MEMORY" → select "FORMAT", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

3. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

Formatting is executed. When the operation is finished, the message "COMPLETE" appears.

4. Press the [MENU] button to close the menu.

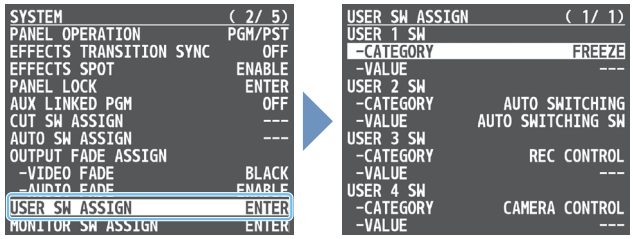
Assigning Functions to the USER Buttons

You can assign the functions you want to the USER [1]–[4] buttons. By doing this, the function you assigned is executed when you press a USER button.

* The functions printed on the operation panel are assigned to the USER buttons by factory default.

1. [MENU] button → "SYSTEM" → select "USER SW ASSIGN", and press the [VALUE] knob.

The USER SW ASSIGN menu appears.



2. Use the [VALUE] knob to select USER 1–4 "CATEGORY" and "VALUE", and press the [VALUE] knob.

3. Use the [VALUE] knob to select the functions assigned to the USER [1]–[4] buttons and then press the [VALUE] knob.

●CATEGORY

Menu item	Explanation
N/A	No function is assigned.
FREEZE	Turns the freeze function on/off.
AUTO SWITCHING	**AUTO SWITCHING SW:** Turns the auto switching function on/off. **BPM TAP:** When "TYPE" in the AUTO SWITCHING menu is "BPM SYNC", you can set the BPM according to the tempo at which you press the button. The buttons flash in sync with the current BPM setting.
INPUT ASSIGN	Each time you press a button, the video source assigned to the specified cross-point button switches to the following sources in order: HDMI 1 → 8 → SDI 1 → 8 → STILL 1 → 16
STILL OUTPUT	Pauses the normal output, and previews or final outputs a cut of the still image.
AUDIO INPUT MUTE	Turns the mute function on/off for the input audio.
AUDIO OUTPUT MUTE	Turns the mute function on/off for the output audio.
VOICE CHANGER SW	Turns the voice changer on/off.
REVERB (MOMENTARY)	Reverb turns on only while the button is pressed.
REVERB (ALTERNATE)	Turns reverb on/off.
LOAD MEMORY	Recalls a preset memory.
INPUT SCAN	Each time you press a button, the INPUT 1–20 video changes in order.
MEMORY SCAN	Each time you press a button, preset memories 1–30 are recalled in order.
PinP & KEY 1–4 SCAN	The PinP & KEY 1–4 inset screen videos switch in order each time you press the button.
DSK 1, 2 SCAN	The DSK 1 and 2 caption video switches in order each time you press the button.
MACRO EXECUTE	Executes a macro (a series of recorded operations).
REC CONTROL	Controls the recorder's video record start/stop if a recorder that supports REC control functionality is connected (p. 75).
GPO (ONE SHOT)	Outputs a control signal for 0.5 seconds.
GPO (ALTERNATE)	The control signal output is switched on/off while the button is pressed.
CAMERA CONTROL	Controls the camera, such as turning the camera control function on/off.
GRAPHICS PRESENTER	Sends commands for the Graphics Presenter dedicated Windows PC app.
VC-100UHD CONTROL	Switches between channels on a VC-100UHD connected via LAN.
SYSTEM	**Bluetooth:** Turns the Bluetooth function on/off. Long-press the button to begin pairing. **EFFECTS TRANSITION SYNC:** Turns the EFFECTS TRANSITION SYNC function on/off.

●VALUE

Configures the detailed settings related to "CATEGORY".

4. Press the [MENU] button to close the menu.

Controlling an External Recorder's Video Record Start/Stop from the V-160HD

Connect a recorder that supports REC control functionality via HDMI to control REC START/STOP on the recorder from the V-160HD (REC control function).

For more about recorders that support the REC control function, refer to the Roland website.

https://proav.roland.com/

Settings

USER button functions

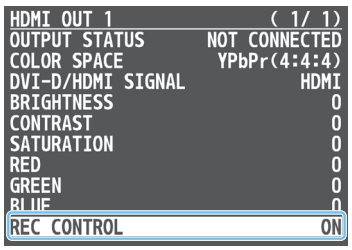
To use the REC control function, you need to assign the recorder's video recording start/stop functions to a USER button.

* The record start/stop function is assigned to the USER [3] button by factory default.

1. Following the steps in "Assigning Functions to the USER Buttons" on this page, assign the "REC CONTROL" function to a USER button.

Turning REC control on/off

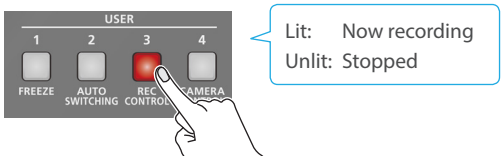
1. [MENU] button → "VIDEO OUTPUT" → "HDMI OUT 1–3" → and set "REC CONTROL" to "ON".



Operation

1. Press the USER button to which REC START/STOP is assigned.

Each time you press the button, the recorder switches between video record start/stop.



NOTE

The lights of the USER buttons show the status of the V-160HD, and are not linked with the recorder's status.

For instance, if the recorder stops recording for some reason while the USER button are lit, these buttons do not automatically go dark in response.

Remotely Controlling a PTZ Camera

You can connect up to sixteen cameras via the LAN CONTROL port and remotely control them from the V-160HD.

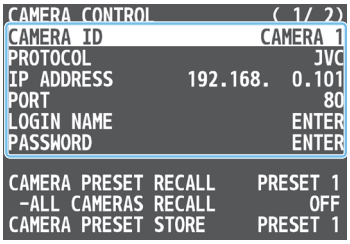
This allows you to control cameras made by JVC, Panasonic, Canon, PTZOptics, and Avonic, and cameras that support VISCA over IP (such as Sony).

* Refer also to the owner's manual of your camera.

Network Settings on the Camera

In order to control a camera from the V-160HD, you need to make network settings on the camera. You can register up to sixteen cameras.

1. [MENU] button → "CAMERA CONTROL" → select the menu item shown below, and press the [VALUE] knob.



Menu item	Explanation
CAMERA ID	Selects the camera to be controlled.
PROTOCOL	Specifies the camera's protocol.
IP ADDRESS	Input the camera's IP address.
PORT	**When "PROTOCOL" is "PTZOPTICS" or "AVONIC"** Sets the port number for connecting with the camera.
LOGIN NAME	**When "PROTOCOL" is "JVC"** Press the [VALUE] knob to display the LOGIN NAME screen. Enter the log-in name needed to connect with the camera.
PASSWORD	**When "PROTOCOL" is "JVC"** Press the [VALUE] knob to display the PASSWORD screen. Enter the password needed to connect with the camera.

2. Use the [VALUE] knob to change the value of the setting, and press the [VALUE] knob.

3. Press the [MENU] button to close the menu.

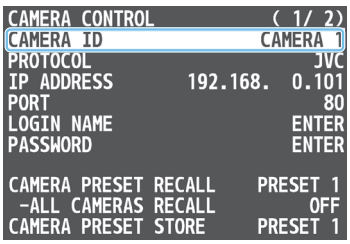
Registering Camera Settings in a Preset

Up to ten sets of settings such as camera position and focus can be registered as presets.

A registered preset can be recalled when needed.

* Presets are saved in the camera itself.

1. [MENU] button → "CAMERA CONTROL" → select "CAMERA ID", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the camera that you want to control, and press the [VALUE] knob.

3. Use the [VALUE] knob to select the menu item shown below, and press the [VALUE] knob.

Menu item	Explanation
PAN	Adjusts the horizontal position. (*1)
TILT	Adjusts the vertical position. (*1)
SPEED	Adjusts the speed at which the camera changes direction.
ZOOM	Adjusts the zoom position. (*1)
FOCUS	Adjusts the focal point. (*1)
AUTO FOCUS	When this is "ON", the focal point is set automatically.
EXPOSURE	Specifies the exposure mode.
TALLY CH	Specifies the connector from which the camera video is input. When the camera video from the V-160HD is the final output, the camera's tally light is lit.

(*1) You can control the camera while holding down the [VALUE] knob.

4. Use the [VALUE] knob to apply the setting.

5. Use the [VALUE] knob to select "CAMERA PRESET STORE", and press the [VALUE] knob.

6. Use the [VALUE] knob to select the preset number (PRESET 1–10) in which you want to register the settings, and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

7. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

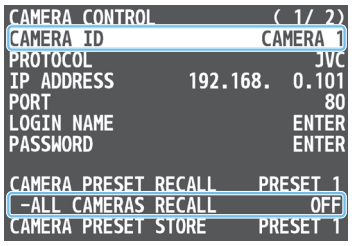
The camera settings are registered in the preset.

8. Press the [MENU] button to close the menu.

Recalling a Preset

This shows you how to recall the presets registered in your camera. You can also recall presets from multiple cameras at the same time.

1. [MENU] button → "CAMERA CONTROL" → select the menu item shown below, and press the [VALUE] knob.



Recalling presets from a single camera

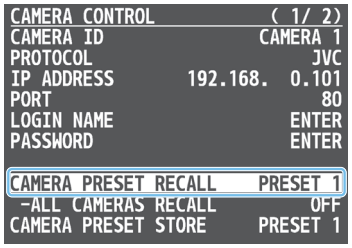
Menu item	Explanation
CAMERA ID	Select the camera from which you want to recall a preset.
ALL CAMERAS RECALL	Choose "OFF".

Recalling from all cameras simultaneously

Menu item	Explanation
ALL CAMERAS RECALL	Choose "ON".

2. Use the [VALUE] knob to change the value of the setting, and press the [VALUE] knob.

3. Use the [VALUE] knob to select "CAMERA PRESET RECALL", and press the [VALUE] knob.



4. Use the [VALUE] knob to select the preset number (PRESET 1–10) that you want to recall, and press the [VALUE] knob.

A confirmation message appears.

* If you decide to cancel, press the [EXIT] button.

5. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

The settings are recalled from the cameras. When the operation is finished, the message "COMPLETE" appears.

6. Press the [MENU] button to close the menu.

Recalling presets with the buttons

By assigning a USER button to the camera control function, you can recall presets using the button.

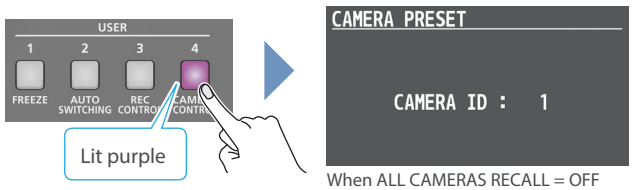
In this example, we'll explain how to use the USER [4] button to recall presets.

* The camera control function is assigned to the USER [4] button by factory default.

1. From the [MENU] button → "CAMERA CONTROL", set "ALL CAMERAS RECALL" to "ON" (all cameras) or "OFF" (single camera only).

2. Following the steps in "Assigning Functions to the USER Buttons" (p. 74), assign the "CAMERA CONTROL" function to the USER [4] button.

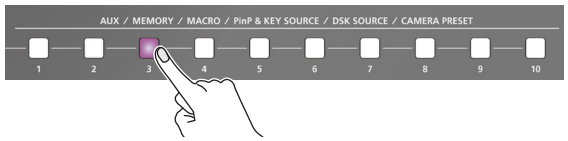
3. Press the USER [4] button to turn the camera control function on (lit).



When ALL CAMERAS RECALL = OFF

4. If this is set to "OFF" in step 1, change the value to "CAMERA ID" with the [VALUE] knob, and select the camera (1–16) from which to recall the presets.

5. Press the CAMERA PRESET button for the preset number whose setting you want to recall.



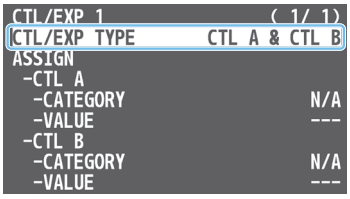
The settings are recalled from the cameras.

6. To turn the camera control function off, press the USER [4] button once again.

Using a Footswitch

You can use a footswitch connected to the CTL/EXP 1 and 2 jacks to control the V-160HD with your foot. You can assign various functions to the footswitch.

1. [MENU] button → "CTL/EXP" → "CTL/EXP 1" or "CTL/EXP 2" → select "CTL/EXP TYPE", and press the [VALUE] knob.



2. Set the connected device to "CTL A & CTL B" (the footswitch) using the [VALUE] knob, and press the [VALUE] knob.

3. Use the [VALUE] knob to select CTL A or CTL B "CATEGORY" and "VALUE", and press the [VALUE] knob.

4. Use the [VALUE] knob to select the function that you want to assign to CTL A or CTL B of the footswitch, and press the [VALUE] knob.

●CATEGORY

Value	Explanation
N/A	No function is assigned.
PGM CH SELECT	Switches the PGM/A cross-point buttons.
PST CH SELECT	Switches the PST/B cross-point buttons.
AUX 1-3 CH SELECT	Switches the video sent to the AUX 1-3 buses.
INPUT 1–20 ASSIGN	Changes the video assigned to INPUT 1–20.
STILL OUTPUT	Pauses the normal output, and previews or final outputs a cut of the still image.
PinP & KEY 1–4 SOURCE	Switches the video source of the inset screen.
DSK 1, 2 SOURCE	Switches the DSK video source.
SW CONTROL	This works the same as when you press the button selected in "VALUE".
TAKE	Switches the video between PGM/A bus and PST/B bus.
AUDIO INPUT MUTE	Turns the mute function on/off for the input audio.
AUDIO OUTPUT MUTE	Turns the mute function on/off for the output audio.
AUDIO INPUT SOLO	Turns the solo function on/off for the input audio.
AUDIO OUTPUT SOLO	Turns the solo function on/off for the output audio.
VOICE CHANGER SW	Turns the voice changer on/off.
REVERB (MOMENTARY)	Reverb turns on only while you press the footswitch.
REVERB (ALTERNATE)	Turns reverb on/off.
OUTPUT FADE	The final output video fades in/out.
LOAD MEMORY	Recalls a preset memory.
INPUT SCAN	Each time you press the footswitch, the INPUT 1–20 video changes in order.
MEMORY SCAN	Each time you press the footswitch, preset memories 1–30 are recalled in order.
PinP & KEY 1–4 SCAN	The PinP & KEY 1–4 inset screen videos switch in order each time you press the footswitch.
DSK 1, 2 SCAN	The DSK 1 and 2 caption video switches in order each time you press the footswitch.
MACRO EXECUTE	Executes a macro (a series of recorded operations).
SEQUENCER	When the sequencer function is on, this works the same as when you press the button selected in "VALUE".
GPO (ONE SHOT)	Outputs a control signal for 0.5 seconds.
GPO (ALTERNATE)	The control signal output is switched on/off with each press of the footswitch.
CAMERA CONTROL	Controls the camera, such as turning the camera control function on/off.
GRAPHICS PRESENTER	Sends commands for the Graphics Presenter dedicated Windows PC app.
VC-100UHD CONTROL	Switches between channels on a VC-100UHD connected via LAN.

●VALUE

Configures the detailed settings related to "CATEGORY".

5. Press the [MENU] button to close the menu.

MEMO

- See "Connecting a Footswitch" (p. 9) for how to connect a footswitch to this unit.
- If a single-pedal type footswitch such as the BOSS FS-5U is connected using a phone cable (mono), the function assigned by "CTL B" is enabled.

Using an Expression Pedal

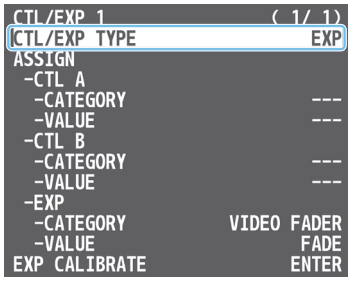
You can use an expression pedal connected to the CTL/EXP 1 and 2 jacks to control the V-160HD with your foot.

Adjusting the Pedal (Pedal Calibration)

The first time you use an expression pedal, you must calibrate (adjust) the pedal so that it will operate optimally.

In some cases, an expression pedal might no longer operate optimally due to the passage of time or changes in the operating conditions. If you notice problems such as slight movements of the pedal causing a major change in volume, or if the video fails to switch when you press the pedal, you should execute calibration.

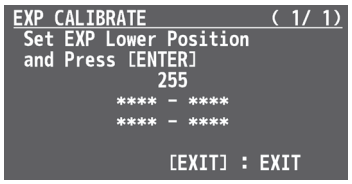
1. [MENU] button → "CTL/EXP" → "CTL/EXP 1" or "CTL/EXP 2" → select "CTL/EXP TYPE", and press the [VALUE] knob.



2. Set the connected device to "EXP" (the expression pedal) using the [VALUE] knob, and press the [VALUE] knob.

3. Use the [VALUE] knob to select "EXP CALIBRATE", and press the [VALUE] knob.

EXP CALIBRATE screen appears.



4. As directed by the screen, step on the pedal in the fully heel-down position, and press the [VALUE] knob.

5. As directed by the screen, step on the pedal in the fully toe-down position, and press the [VALUE] knob.

When the "COMPLETE" indication appears, calibration is completed.

6. Press the [MENU] button to close the menu.

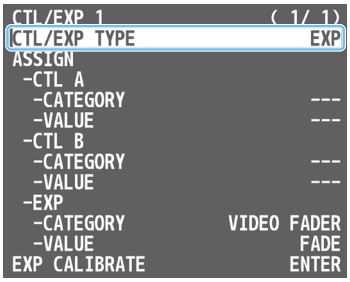
MEMO

You should normally use the EV-5 with its minimum volume knob left in the zero position. If you change the position of the minimum volume knob, you must execute pedal calibration.

Assigning a Function to the Pedal

You can assign various functions to the expression pedal.

1. [MENU] button → "CTL/EXP" → "CTL/EXP 1" or "CTL/EXP 2" → select "CTL/EXP TYPE", and press the [VALUE] knob.



2. Set the connected device to "EXP" (the expression pedal) using the [VALUE] knob, and press the [VALUE] knob.

3. Use the [VALUE] knob to select EXP "CATEGORY" and "VALUE", and press the [VALUE] knob.

4. Use the [VALUE] knob to select the function that you want to assign to the expression pedal, and press the [VALUE] knob.

●CATEGORY

Value	Explanation
N/A	No function is assigned.
VIDEO FADER	**FADE:** Operates the video fader.
	▲CUT▼: Switches the video between PGM/A bus and PST/B bus as a cut.
STILL OUTPUT	Pauses the normal output, and previews or final outputs a cut of the still image.
AUDIO INPUT LEVEL	Adjusts the input volume.
AUDIO OUTPUT LEVEL	Adjusts the output volume.
VOICE CHANGER MIX	Adjusts the balance between the unprocessed voice (0) and the voice processed by the effect (100).
REVERB LEVEL	Adjusts the amount of sound that is returned from the reverb (return level).

●VALUE

Configures the detailed settings related to "CATEGORY".

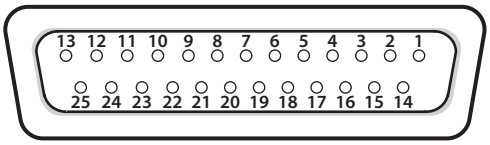
5. Press the [MENU] button to close the menu.

Control Using the TALLY/GPIO Connector

You can use control signals inputted to the TALLY/GPIO connector via GPI to remotely control the V-160HD from an external device.
Also, you can output tally signals or GPO control signals from the TALLY/GPIO connector.

Specification of the TALLY/GPIO Connector

Pin layout



DB-25 type (female)

Tally output

Trigger method	Open collector
Maximum input	12 V/120 mA

Control input

Trigger method	No-voltage contact (make-contact) triggering
Contact capacity	DC 24 V 0.1 A or higher
Input method	Photocoupler

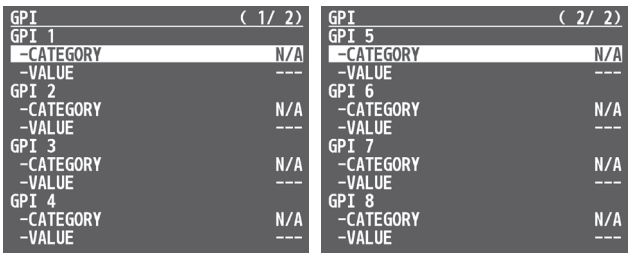
Pin assignments

Pin no.	Pin name	Function (default value)
1	TALLY/GPO 1	PGM HDMI 1
2	TALLY/GPO 2	PST HDMI 1
3	TALLY/GPO 3	PGM HDMI 2
4	TALLY/GPO 4	PST HDMI 2
5	TALLY/GPO 5	PGM HDMI 3
6	TALLY/GPO 6	PST HDMI 3
7	TALLY/GPO 7	PGM HDMI 4
8	TALLY/GPO 8	PST HDMI 4
9	TALLY/GPO 9	PGM HDMI 5
10	TALLY/GPO 10	PST HDMI 5
11	TALLY/GPO 11	PGM HDMI 6
12	TALLY/GPO 12	PST HDMI 6
13	TALLY/GPO 13	PGM HDMI 7
14	TALLY/GPO 14	PST HDMI 7
15	TALLY/GPO 15	PGM HDMI 8
16	TALLY/GPO 16	PST HDMI 8
17	GND	
18	GPI 1	Not assigned
19	GPI 2	Not assigned
20	GPI 3	Not assigned
21	GPI 4	Not assigned
22	GPI 5	Not assigned
23	GPI 6	Not assigned
24	GPI 7	Not assigned
25	GPI 8	Not assigned

Inputting a Control Signal

When an external control signal is input, the functions assigned to GPI 1–8 are executed.

1. [MENU] button → "RS-232/TALLY/GPO/GPI/KEY" → "GPI" → select GPI 1–8 "CATEGORY" and "VALUE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the functions assigned to GPI 1–8, and then press [VALUE].

●CATEGORY

Value	Explanation
N/A	No function is assigned.
PGM CH SELECT	Switches the PGM/A cross-point buttons.
PST CH SELECT	Switches the PST/B cross-point buttons.
AUX 1-3 CH SELECT	Switches the video sent to the AUX 1-3 buses.
INPUT 1–20 ASSIGN	Changes the video assigned to INPUT 1–20.
STILL OUTPUT	Pauses the normal output, and previews or final outputs a cut of the still image.
PinP & KEY 1–4 SOURCE	Switches the video source of the inset screen.
DSK 1, 2 SOURCE	Switches the DSK video source.
SW CONTROL	This works the same as when you press the button selected in "VALUE".
TAKE	Switches the video between PGM/A bus and PST/B bus.
AUDIO INPUT MUTE	Turns the mute function on/off for the input audio.
AUDIO OUTPUT MUTE	Turns the mute function on/off for the output audio.
AUDIO INPUT SOLO	Turns the solo function on/off for the input audio.
AUDIO OUTPUT SOLO	Turns the solo function on/off for the output audio.
VOICE CHANGER SW	Turns the voice changer on/off.
REVERB (MOMENTARY)	Reverb turns on only while a control signal is input.
REVERB (ALTERNATE)	Turns reverb on/off.
OUTPUT FADE	The final output video fades in/out.
LOAD MEMORY	Recalls a preset memory.
INPUT SCAN	Each time a control signal is input, the INPUT 1–20 video changes in order.
MEMORY SCAN	Each time a control signal is input preset memories 1–30 are recalled in order.
PinP & KEY 1–4 SCAN	The PinP & KEY 1–4 inset screen videos switch in order each time a control signal is input.
DSK 1, 2 SCAN	The DSK 1 and 2 caption video switches in order each time a control signal is input.
MACRO EXECUTE	Executes a macro (a series of recorded operations).
SEQUENCER	When the sequencer function is on, this works the same as when you press the button selected in "VALUE".
GPO (ONE SHOT)	Outputs a control signal for 0.5 seconds.

Value	Explanation
GPO (ALTERNATE)	The control signal output is switched on/off each time a control signal is input.
CAMERA CONTROL	Controls the camera, such as turning the camera control function on/off.
GRAPHICS PRESENTER	Sends commands for the Graphics Presenter dedicated Windows PC app.
VC-100UHD CONTROL	Switches between channels on a VC-100UHD connected via LAN.

●VALUE

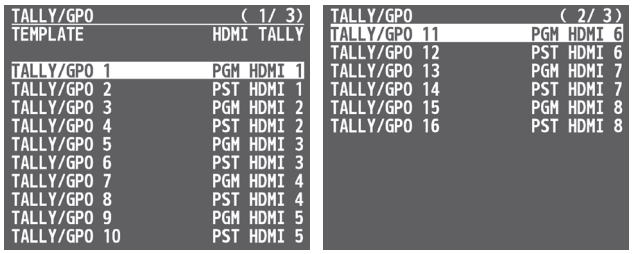
Configures the detailed settings related to "CATEGORY".

3. Press the [MENU] button to close the menu.

Outputting a Tally Signal

Pins 1–16 of the TALLY/GPIO connector can be used to output a tally. A tally signal is output from the connector pins whenever a cross-point button is selected.

1. [MENU] button → "RS-232/TALLY/GPO/GPI/KEY" → "TALLY/GPO" → select "TALLY/GPO 1"–"TALLY/GPO 16", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the tally signal assigned to the connector pins and then press the [VALUE] knob.

Value	Explanation
PGM HDMI 1–8	Video for which the final output is HDMI IN 1–8.
PGM SDI 1–8	Video for which the final output is SDI IN 1–8.
PGM STILL 1–16	The final output is still images 1–16.
PGM INPUT 1–20	Final video that is assigned to the cross-point buttons.
PST HDMI 1–8	Video for which the preview output is HDMI IN 1–8.
PST SDI 1–8	Video for which the preview output is SDI IN 1–8.
PST STILL 1–16	The preview output is still images 1–16.
PST INPUT 1–20	Preview output video that is assigned to the cross-point buttons.

3. Press the [MENU] button to close the menu.

MEMO

- Use a settings template to change the assignments for the connector pins all at once.

  Select a template from "TEMPLATE" in the TALLY/GPO menu and then press the [VALUE] knob to apply the settings.
- You can reflect the PinP & KEY, DSK, and AUX bus video output status in the tally information.

  When you set each "TALLY SETTINGS" item in the TALLY/GPO menu to "ENABLE", the status of video output to the relevant bus is reflected in the tally information (p. 114).

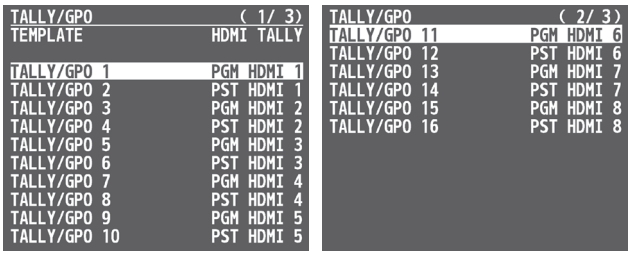
Outputting a Control Signal

You can use connector pins 1–16 of the TALLY/GPIO connector as GPOs to output control signals.

Assigning the GPOs

You can assign pins 1–16 of the TALLY/GPIO connector to the GPOs (1–16) in order to output control signals.

1. [MENU] button → "RS-232/TALLY/GPO/GPI/KEY" → "TALLY/GPO" → select "TALLY/GPO 1"–"TALLY/GPO 16", and press the [VALUE] knob.



2. Use the [VALUE] knob to select one of "GPO 1"–"GPO 16", and press the [VALUE] knob.

3. Press the [MENU] button to close the menu.

MEMO

Use a settings template to change the assignments for the connector pins all at once.

Select a template from "TEMPLATE" in the TALLY/GPO menu and then press the [VALUE] knob to apply the settings.

Outputting a control signal

Control signals are outputted when you operate a USER button, footswitch or other control to which a GPO output function has been assigned.

Using the USER buttons

The USER buttons light up while control signals are being output.

➡"Assigning Functions to the USER Buttons" (p. 74)

Using a footswitch

➡"Using a Footswitch" (p. 78)

Inputting an external control signal (GPI)

➡"Inputting a Control Signal" (p. 80)

Control Using the USB Numeric Keypad

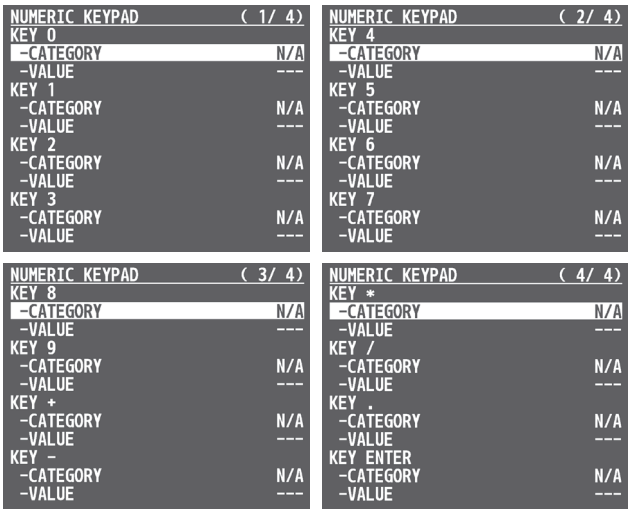
You can connect a USB numeric keypad to the USB MEMORY port to control video transitions and perform other operations.

When you press a USB numeric keypad, the functions assigned to KEYPAD 0–ENTER are executed.

NOTE

To control using a USB numeric keypad, make sure that Numlock is activated on the USB numeric keypad.

1. [MENU] button → "RS-232/TALLY/GPO/GPI/KEY" → "GPI" → select KEYPAD 0–ENTER "CATEGORY" and "VALUE", and press the [VALUE] knob.



2. Use the [VALUE] knob to select the functions assigned to KEYPAD 0–ENTER, and then press [VALUE].

●CATEGORY

Value	Explanation
N/A	No function is assigned.
PGM CH SELECT	Switches the PGM/A cross-point buttons.
PST CH SELECT	Switches the PST/B cross-point buttons.
AUX 1-3 CH SELECT	Switches the video sent to the AUX 1-3 buses.
INPUT 1–20 ASSIGN	Changes the video assigned to INPUT 1–20.
STILL OUTPUT	Pauses the normal output, and previews or final outputs a cut of the still image.
PinP & KEY 1–4 SOURCE	Switches the video source of the inset screen.
DSK 1, 2 SOURCE	Switches the DSK video source.
SW CONTROL	This works the same as when you press the button selected in "VALUE".
TAKE	Switches the video between PGM/A bus and PST/B bus.
AUDIO INPUT MUTE	Turns the mute function on/off for the input audio.
AUDIO OUTPUT MUTE	Turns the mute function on/off for the output audio.
AUDIO INPUT SOLO	Turns the solo function on/off for the input audio.
AUDIO OUTPUT SOLO	Turns the solo function on/off for the output audio.
VOICE CHANGER SW	Turns the voice changer on/off.
REVERB (MOMENTARY)	Reverb turns on only while the key is pressed.
REVERB (ALTERNATE)	Turns reverb on/off.
OUTPUT FADE	The final output video fades in/out.
LOAD MEMORY	Recalls a preset memory.
INPUT SCAN	Each time you press a key, the INPUT 1–20 video changes in order.
MEMORY SCAN	Each time you press a key, preset memories 1–30 are recalled in order.
PinP & KEY 1–4 SCAN	The PinP & KEY 1–4 inset screen videos switch in order each time you press the key.
DSK 1, 2 SCAN	The DSK 1 and 2 caption video switches in order each time you press the key.
MACRO EXECUTE	Executes a macro (a series of recorded operations).
SEQUENCER	When the sequencer function is on, this works the same as when you press the button selected in "VALUE".
GPO (ONE SHOT)	Outputs a control signal for 0.5 seconds.
GPO (ALTERNATE)	The control signal output is switched on/off while the key is pressed.
CAMERA CONTROL	Controls the camera, such as turning the camera control function on/off.
GRAPHICS PRESENTER	Sends commands for the Graphics Presenter dedicated Windows PC app.
VC-100UHD CONTROL	Switches between channels on a VC-100UHD connected via LAN.

●VALUE

Configures the detailed settings related to "CATEGORY".

3. Press the [MENU] button to close the menu.

Using Smart Tally

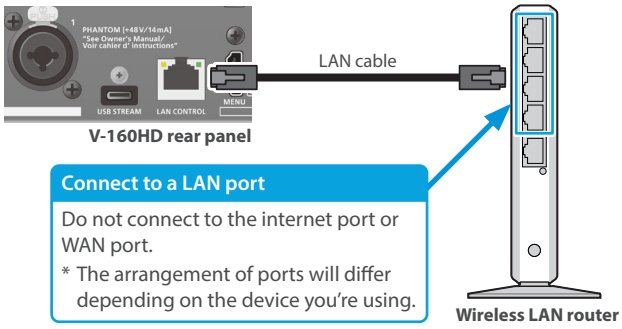
Roland's own Smart Tally system turns your smart device or computer that's connected to the V-160HD into a tally box. This lets you access your smart device or computer via a wireless LAN access point to display a tally on that device.

Connecting via a Wireless LAN Router

Connect your Wi-Fi enabled smart device or computer to the wireless LAN router via Wi-Fi.

* If you connect multiple smart devices or computers, operation might be slower.

1. Use a LAN cable to connect the LAN port on your wireless LAN master device to the LAN CONTROL port on the V-160HD.



Connect to a LAN port

Do not connect to the internet port or WAN port.

* The arrangement of ports will differ depending on the device you're using.

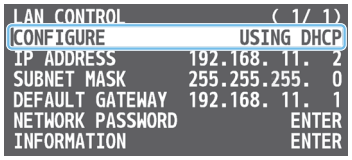
2. Turn on the wireless LAN master device, and connect your smart device or computer via wireless LAN (Wi-Fi).

Enable the DHCP function of the wireless LAN router.

* For details on how to connect the wireless LAN (Wi-Fi), refer to the manual of the device that you're using.

3. Power-on the V-160HD.

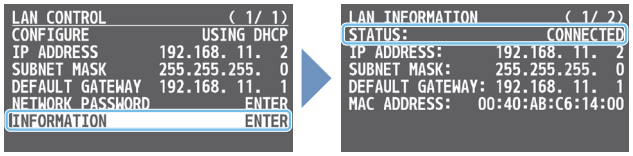
4. [MENU] button → "LAN CONTROL" → set "CONFIGURE" to "USING DHCP", and press the [VALUE] knob.



The IP address, subnet mask, and default gateway are obtained automatically.

5. Use the [VALUE] knob to select "INFORMATION", and press the [VALUE] knob.

The LAN INFORMATION screen appears.



When "STATUS" indicates "CONNECTED", the connection settings are complete.

MEMO

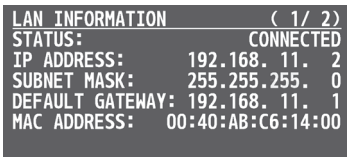
If you fix the IP address, you'll always be able to start Smart Tally with the same IP address.

For details on how to specify a fixed IP address, refer to the manual of the wireless LAN router that you're using.

Starting Smart Tally

1. From the V-160HD's [MENU] button → "LAN CONTROL" → select "INFORMATION", and press the [VALUE] knob.

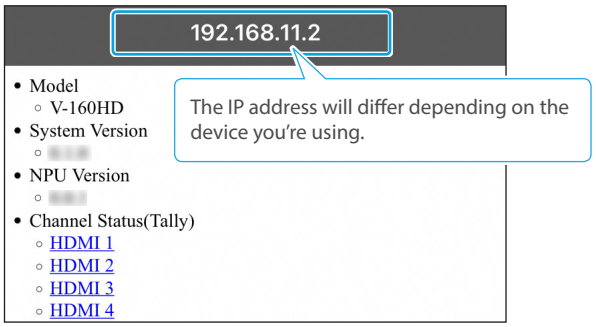
The LAN INFORMATION screen appears.



2. Start a browser on your smart device or computer.

3. In the URL input field of your browser, enter the IP address that's shown in the LAN INFORMATION screen to access the website.

The Smart Tally settings screen appears.



- You can also access the website by scanning a QR code. Turn the [VALUE] knob clockwise at the screen in step 1 to display the QR code.

4. In "Channel Status(Tally)", select the video source that you want to assign to the smart device or computer.

The device's display switches to the tally information screen.

This shows the tally information corresponding to the video source output from the V-160HD.

Red: PGM/A **Green: PST/B** **Gray: Not selected**

NOTE

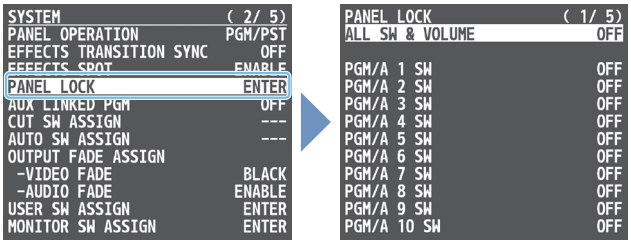
- Depending on the network conditions, the wireless LAN (Wi-Fi) communication speed or connection might be unstable, so that the tally indication is not displayed correctly. In this case, reload the page.
- Depending on the version of the browser that you're using, the tally indication might not be displayed correctly. Use the latest version of the browser whenever possible.

Preventing Unintended Operation (Panel Lock)

You can disable operation of the panel's buttons and knobs to prevent unintended operations (Panel Lock function).

1. [MENU] button → "SYSTEM" → select "PANEL LOCK", and press the [VALUE] knob.

The PANEL LOCK menu appears.



2. Use the [VALUE] knob to select a target for panel lock, and press the [VALUE] knob.

Menu item	Explanation
ALL SW & VOLUME	The following settings are turned on/off together.
PGM/A 1–10 SW	PGM/A cross-point [1]–[10] buttons
PST/B 1–10 SW	PST/B cross-point [1]–[10] buttons
INPUT ASSIGN SW	[INPUT ASSIGN] button
CUT SW	[CUT] button
AUTO SW	[AUTO] button
MODE SW	[MODE] button
AUX SW	AUX [1]–[10] buttons
MEMORY SW	MEMORY [1]–[10] buttons
MACRO SW	MACRO [1]–[10] buttons
TRANSITION SW	[TRANSITION] button
VIDEO FADER	Video fader
SPLIT BLOCK	[SPLIT 1] [SPLIT 2] buttons [PGM/A-CENTER] [PST/B-CENTER] knobs
SEQUENCER BLOCK	Buttons in the SEQUENCER section
PinP & KEY 1–4 BLOCK	Buttons and knobs in the PinP & KEY sections
DSK 1, 2 BLOCK	Buttons and knobs in the DSK sections
MONITOR 1–4 SW	MONITOR [1]–[4] buttons
OUTPUT FADE SW	[OUTPUT FADE] button
CAPTURE IMAGE SW	[CAPTURE IMAGE] button
USER 1–4 SW	USER [1]–[4] buttons
AUDIO IN 1–3/4 VOLUME	AUDIO INPUT LEVEL [1] [2] [3/4] knobs
AUTO MIXING SW	[AUTO MIXING] button
AUX VOLUME	[AUX] knob
USB STREAM VOLUME	[USB STREAM] knob
MASTER OUTPUT VOLUME	[MASTER OUTPUT] knob

3. Use the [VALUE] knob to specify whether panel lock is enable (ON) or disable (OFF), and press the [VALUE] knob.

4. Press the [MENU] button to close the menu.

MEMO

The [MENU] button blinks when you try to operate a locked button, knob or other control.

Returning to the Factory Settings (Factory Reset)

Here's how you can return the settings of the V-160HD to their factory-set state.

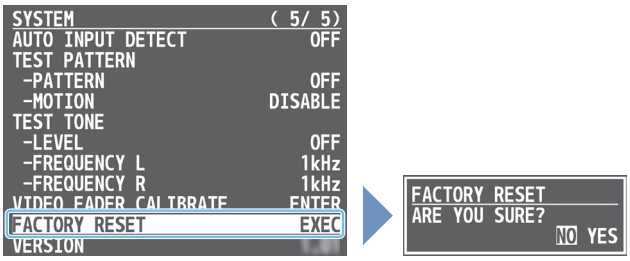
If following the procedures described in this manual does not cause the result you expect, try executing a factory reset.

NOTE

- When you execute a factory reset, all the settings you've made as well as the data saved on the V-160HD (preset memory, macros, sequencer, and still images) is lost.
- Do not turn off the power while the message "PLEASE WAIT" is shown.

1. [MENU] button → "SYSTEM" → select "FACTORY RESET", and press the [VALUE] knob.

A confirmation message appears.



* If you decide to cancel, press the [EXIT] button.

2. Use the [VALUE] knob to select "YES", and press the [VALUE] knob.

Factory reset is executed. When the operation is finished, the message "COMPLETE" appears.

3. Press the [MENU] button to close the menu.

Remotely Controlling the V-160HD

To remotely control the V-160HD, you can use an external device to send control signals to the unit (p. 80), use a dedicated app, or use LAN/RS-232 commands.

Using the dedicated apps "V-160HD RCS" and "V-160HD Remote"

Dedicated apps are available for computers ("V-160HD RCS") and for the iPad ("V-160HD Remote").

These apps can be downloaded from the Roland website.

https://proav.roland.com/

* For details on operation, refer to the Owner's Manual of "V-160HD RCS" or "V-160HD Remote".

V-160HD RCS

Use the dedicated "V-160HD RCS" app to operate the V-160HD from your computer.

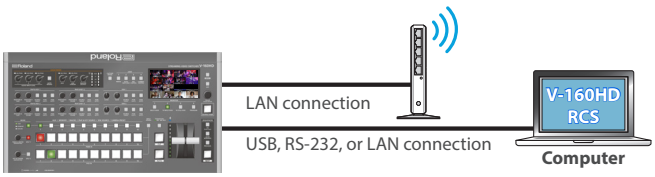
You can connect either wirelessly or via cable.

Wireless connection

- Connection via wireless LAN master device (Wi-Fi)

Wired connection (via cable)

- USB connection (USB Type-C cable)
- LAN connection (LAN cable)
- RS-232 connection (RS-232 cable)



V-160HD Remote

Use the dedicated "V-160HD Remote" app to operate the V-160HD from your iPad.

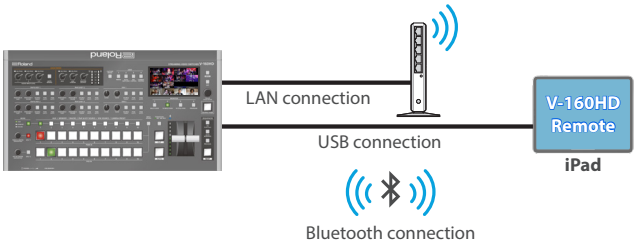
You can connect either wirelessly or via cable.

Wireless connection

- Bluetooth connection
- Connection via wireless LAN master device (Wi-Fi)

Wired connection (via cable)

USB connection (USB Type-C cable, Lightning to USB camera adapter)



LAN/RS-232 command

The V-160HD support two types of remote-interface communication: LAN and RS-232.

Using the LAN CONTROL port or RS-232 connector to send specific commands to the V-160HD from a controlling device lets you operate the V-160HD.

See "Remote Control Guide" (Roland website) for details on each interface and for a list of LAN/RS-232 commands.

https://proav.roland.com/manuals/

MEMO

MIDI implementation

The V-160HD supports MIDI remote control.

See "MIDI Implementation" in the "Remote Control Guide" (Roland website) for details.

Maximum number of simultaneous connections

You can use "V-160HD RCS" and "V-160HD Remote" on up to four devices at the same time. The maximum quantity for each type of connection is as below.

Connection type	Device	Maximum quantity
Bluetooth connection	iPad	up to 1 unit
USB connection	iPad or computer	up to 1 unit
LAN connection	iPad or computer	up to 1 unit
RS-232 connection	Computer	up to 1 unit

1: VIDEO ASSIGN

Menu item	Value (bold text: default value)	Explanation
When PANEL OPERATION = A/B or PGM/PST		
INPUT 1–10	HDMI 1–8, SDI 1–8, STILL 1–16, N/A The default values are as follows. INPUT 1: **HDMI 1** INPUT 2: **HDMI 2** INPUT 3: **HDMI 3** INPUT 4: **HDMI 4** INPUT 5: **HDMI 5** INPUT 6: **HDMI 6** INPUT 7: **HDMI 7** INPUT 8: **HDMI 8** INPUT 9: **STILL 1** INPUT 10: **STILL 2**	Sets the video source (input video and still images) to assign to the cross-point [1]–[10] buttons.
When PANEL OPERATION = DISSOLVE or PGM/PST(20)		
INPUT 1–20	HDMI 1–8, SDI 1–8, STILL 1–16, N/A The default values are as follows. INPUT 1: **HDMI 1** INPUT 11: **SDI 1** INPUT 2: **HDMI 2** INPUT 12: **SDI 2** INPUT 3: **HDMI 3** INPUT 13: **SDI 3** INPUT 4: **HDMI 4** INPUT 14: **SDI 4** INPUT 5: **HDMI 5** INPUT 15: **SDI 5** INPUT 6: **HDMI 6** INPUT 16: **SDI 6** INPUT 7: **HDMI 7** INPUT 17: **SDI 7** INPUT 8: **HDMI 8** INPUT 18: **SDI 8** INPUT 9: **STILL 1** INPUT 19: **STILL 1** INPUT 10: **STILL 2** INPUT 20: **STILL 2**	Sets the video source (input video and still images) to assign to the PGM/A cross-point [1]–[10] and PST/B cross-point [1]–[10] buttons.
HDMI OUT 1–3	Specifies the video bus that is assigned to the HDMI OUT 1–3 connectors. * When you change the settings assigned to "HDMI OUT 3", the display on the monitor of this unit changes as well.	
	PROGRAM	Final output video. This is the default setting for "HDMI OUT 1".
	SUB PROGRAM	SUB PROGRAM bus video
	PREVIEW	Preview output video. This is the default setting for "HDMI OUT 2".
	AUX 1-3	AUX 1-3 bus video
	DSK 1, 2 SOURCE	Video selected as the DSK 1, 2 video source
	MULTI-VIEW	Multi-view. This is the default setting for "HDMI OUT 3".
	16 INPUT-VIEW	The input video from the HDMI IN and SDI IN connectors (shown as 16 separate sections on the screen)
	16 STILL-VIEW	Still images loaded into the unit (shown as 16 separate sections on the screen)
SDI OUT 1–3	Specifies the video bus that is assigned to the SDI OUT 1–3 connectors.	
	PROGRAM	Final output video. This is the default setting for "SDI OUT 1".
	SUB PROGRAM	SUB PROGRAM bus video
	PREVIEW	Preview output video. This is the default setting for "SDI OUT 2".
	AUX 1-3	AUX 1-3 bus video
	DSK 1, 2 SOURCE	Video selected as the DSK 1, 2 video source
	MULTI-VIEW	Multi-view. This is the default setting for "SDI OUT 3".
	16 INPUT-VIEW	The input video from the HDMI IN and SDI IN connectors (shown as 16 separate sections on the screen)
	16 STILL-VIEW	Still images loaded into the unit (shown as 16 separate sections on the screen)
USB OUT	Specifies the video bus that is assigned to the USB STREAM port.	
	PROGRAM	Final output video.
	SUB PROGRAM	SUB PROGRAM bus video
	PREVIEW	Preview output video.
	AUX 1-3	AUX 1-3 bus video
	DSK 1, 2 SOURCE	Video selected as the DSK 1, 2 video source
	MULTI-VIEW	Multi-view.
	16 INPUT-VIEW	The input video from the HDMI IN and SDI IN connectors (shown as 16 separate sections on the screen)
	16 STILL-VIEW	Still images loaded into the unit (shown as 16 separate sections on the screen)

<table>
<tr><th>Menu item</th><th>Value (bold text: default value)</th><th>Explanation</th></tr>
<tr><td>AUX 1-3 SOURCE</td><td>HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1-20</td><td>Selects the video that is sent to the AUX 1-3 buses.
When “AUX” is selected on the [MODE] button, you can select the video that is sent to the AUX 1-3 buses with following operations.
<table>
<tr><th>Bus</th><th>Operation</th></tr>
<tr><td>AUX 1</td><td>Press a AUX [1]-[10] button.</td></tr>
<tr><td>AUX 2</td><td>While holding down the [MODE] button, press a PGM/A [1]-[10] button.</td></tr>
<tr><td>AUX 3</td><td>While holding down the [MODE] button, press a PST/B [1]-[10] button.</td></tr>
</table></td></tr>
<tr><td rowspan="2">PROGRAM LAYER</td><td>ENTER</td><td>Displays the PROGRAM LAYER menu.</td></tr>
<tr><td colspan="2">
<table>
<tr><th>Menu item</th><th>Value</th><th>Explanation</th></tr>
<tr><td>PinP & KEY 1–4</td><td>DISABLE, ENABLE</td><td rowspan="2">Sets whether each layer is displayed (ENABLE) or hidden (DISABLE) in the final output video.</td></tr>
<tr><td>DSK 1, 2</td><td>DISABLE, ENABLE</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">SUB PROGRAM LAYER</td><td>ENTER</td><td>Displays the SUB PROGRAM LAYER menu.</td></tr>
<tr><td colspan="2">
<table>
<tr><th>Menu item</th><th>Value</th><th>Explanation</th></tr>
<tr><td>PinP & KEY 1–4</td><td>DISABLE, ENABLE</td><td rowspan="2">Sets whether each layer is displayed (ENABLE) or hidden (DISABLE) in the SUB PROGRAM bus video.</td></tr>
<tr><td>DSK 1, 2</td><td>DISABLE, ENABLE</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">AUX 1-3 LAYER</td><td>ENTER</td><td>Displays the AUX LAYER menu.</td></tr>
<tr><td colspan="2">
<table>
<tr><th>Menu item</th><th>Value</th><th>Explanation</th></tr>
<tr><td>PinP & KEY 1–4</td><td>OFF, PGM SYNC, ON</td><td rowspan="2">Sets whether each layer in the AUX bus video is shown (ON), synced with PGM (PGM SYNC) or hidden (OFF).</td></tr>
<tr><td>DSK 1, 2</td><td>OFF, PGM SYNC, ON</td></tr>
</table>
</td></tr>
</table>

2: VIDEO INPUT

Menu item	Value (bold text: default value)	Explanation
HDMI IN 1–4	Adjusts the video that is input from the HDMI IN 1–4 connectors.	
INPUT STATUS	ENTER	Displays information about the incoming video (format, size, etc.).
FLIP H	**OFF**, ON	When this is "ON", the video is input with left and right flipped.
FLIP V	**OFF**, ON	When this is "ON", the video is input with top and bottom flipped.
BRIGHTNESS	-32–**0**–31	Adjusts the brightness.
CONTRAST	-32–**0**–31	Adjusts the contrast.
SATURATION	-32–**0**–31	Adjusts the saturation.
HDMI IN 5–8 (SCALER)	Adjusts the video that is input from the HDMI IN 5–8 connectors.	
INPUT STATUS	ENTER	Displays information about the incoming video (format, size, etc.).
TEST PATTERNS	OFF, COLOR BARS 75%, COLOR BARS100%, RAMP, STEP, HATCH, DIAMOND, CIRCLE, COLOR BARS 75%-SP, COLOR BARS100%-SP, RAMP-SP, STEP-SP, HATCH-SP	Selects the test pattern to display.
FLICKER FILTER	**OFF**, ON	When this is "ON", flickering is reduced.
FLIP H	**OFF**, ON	When this is "ON", the video is input with left and right flipped.
FLIP V	**OFF**, ON	When this is "ON", the video is input with top and bottom flipped.
EDID (*1)	**INTERNAL** SVGA (800 x 600) XGA (1024 x 768) WXGA (1280 x 800) FWXGA (1366 x 768) SXGA (1280 x 1024) SXGA+ (1400 x 1050) UXGA (1600 x 1200) WUXGA (1920 x 1200) 720p, 1080i, 1080p	Specifies the input format (EDID). When this is "INTERNAL", EDID information for all formats that can be input to the V-160HD will be transmitted. **What is EDID?** EDID is data that is transmitted from the V-160HD to the source device when the V-160HD is connected to a source device. EDID contains data such as the formats that can be input to the V-160HD (resolution, color space, color depth) and audio information. Based on the EDID information that the source device receives, it will output the most appropriate video format to the V-160HD.
ZOOM	10.0–**100.0**–1000.0% (*2)	Adjusts the zoom ratio.
SCALING TYPE	Specifies the scaling type.	
	FULL	Always displays the picture expanded to full screen, irrespective of the aspect ratio of the input video.
	LETTERBOX	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. Video extending beyond the borders is cut off.
	DOT BY DOT	Performs no scaling.
	MANUAL	Scale according to the "MANUAL SIZE H" and "MANUAL SIZE V" settings below.
MANUAL SIZE H (*3)	-2000–**0**–2000 (*2)	Adjusts the horizontal size.
MANUAL SIZE V (*3)	-2000–**0**–2000 (*2)	Adjusts the vertical size.
POSITION H	-1920–**0**–1920	Adjusts the position in the horizontal direction.
POSITION V	-1200–**0**–1200	Adjusts the position in the vertical direction.
BRIGHTNESS	-32–**0**–31	Adjusts the brightness.
CONTRAST	-32–**0**–31	Adjusts the contrast.
SATURATION	-32–**0**–31	Adjusts the saturation.
RED	-64–**0**–63	Adjusts the red level.
GREEN	-64–**0**–63	Adjusts the green level.
BLUE	-64–**0**–63	Adjusts the blue level.
SDI IN 1–8	Adjusts the video that is input from the SDI IN 1–8 connectors.	
INPUT STATUS	ENTER	Displays information about the incoming video (format, size, etc.).
FLIP H	**OFF**, ON	When this is "ON", the video is input with left and right flipped.
FLIP V	**OFF**, ON	When this is "ON", the video is input with top and bottom flipped.
BRIGHTNESS	-32–**0**–31	Adjusts the brightness.
CONTRAST	-32–**0**–31	Adjusts the contrast.
SATURATION	-32–**0**–31	Adjusts the saturation.

(*1) A change in the setting is not applied until you press the [VALUE] knob to confirm.

(*2) The valid range of setting values depends on conditions such as the input/output format.

(*3) This can be set if "SCALING TYPE" is "MANUAL".

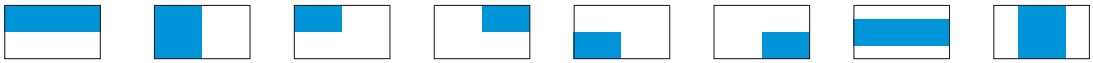
3: VIDEO OUTPUT

Menu item	Value (bold text: default value)	Explanation
HDMI OUT 1–3	Adjusts the video that is output from the HDMI OUT 1–3 connectors.	
OUTPUT STATUS	—	Shows the format and an HDCP signal presence. If there is no connection, "NOT CONNECTED" is shown.
COLOR SPACE	**YPbPr (4: 4: 4)**, YPbPr (4: 2: 2), RGB (0–255), RGB (16–235)	Specifies the color space.
DVI-D/HDMI SIGNAL	**HDMI**, DVI-D	Specifies the type of output signal.
BRIGHTNESS	-64–**0**–63	Adjusts the brightness.
CONTRAST	-64–**0**–63	Adjusts the contrast.
SATURATION	-64–**0**–63	Adjusts the saturation.
RED	-64–**0**–63	Adjusts the red level.
GREEN	-64–**0**–63	Adjusts the green level.
BLUE	-64–**0**–63	Adjusts the blue level.
REC CONTROL	OFF, **ON**	Turns the REC control on/off. When this is "ON", REC START/STOP commands can be sent to a recorder that supports REC control functionality. To use the REC control function, the REC START/STOP functions must be assigned to the USER button. From the SYSTEM menu → "USER SW ASSIGN" → "USER 1 SW"–"USER 4 SW", set "CATEGORY" to "REC CONTROL".
SDI OUT 1–3	Adjusts the video that is output from the SDI OUT 1–3 connectors.	
OUTPUT STATUS	—	Shows the format. * When "HDCP" in the SYSTEM menu is "ON", "HDCP MASKED" is displayed, and video/audio is not outputted from the SDI OUT connectors.
3G-SDI MAPPING	LEVEL-A, **LEVEL-B**	Specifies the mapping structure of the 3G-SDI output.
BRIGHTNESS	-64–**0**–63	Adjusts the brightness.
CONTRAST	-64–**0**–63	Adjusts the contrast.
SATURATION	-64–**0**–63	Adjusts the saturation.
USB OUT	Adjusts the video that is output from the USB STREAM port. * You can edit the USB output video format and compression method from the livestreaming app or other app used at the output destination.	
OUTPUT STATUS	—	Indicates whether the connection uses USB 2.0 (HIGH SPEED) or USB 3.0 (SUPER SPEED). If not connected to a computer, this indicates "NOT CONNECTED". * When "HDCP" in the SYSTEM menu is "ON", "HDCP MASKED" is displayed, and video/audio is not outputted from the USB STREAM port.
OUTPUT FORMAT	Sets the output destination formats that can be selected from the livestreaming app.	
	YUY2 & MJPEG	YUY2 and Motion JPEG are selectable.
	YUY2	Only YUY2 is selectable.
CONNECTION RESET	EXEC	Reconnects the computer and the V-160HD when the video is garbled or when operation is otherwise unstable.

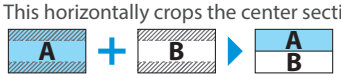
4: TRANSITION TIME

Menu item	Value (bold text: default value)	Explanation
MIX/WIPE TIME	0.0–**1.0**–4.0sec	Specifies the video transition time.
PinP & KEY 1– 4 TIME	0.0–**1.0**–4.0sec	For PinP compositing, specifies the fade-in/out time for the inset screen.
DSK 1, 2 TIME	0.0–**1.0**–4.0sec	For DSK compositing, specifies the fade-in/out time for the overlay caption or video.
OUTPUT FADE TIME	0.0–**1.0**–4.0sec	Sets the time it takes for the video and audio to fade in/out when you press the [OUTPUT FADE] button.

5: MIX/WIPE

Menu item	Value (bold text: default value)	Explanation
TRANSITION TYPE	Selects the transition effect. You can also use the [TRANSITION] button to switch between MIX and WIPE.	
	MIX	The two videos are mixed as the transition occurs. 
	WIPE	The next video moves across to replace the original video. 
MIX TYPE	Specifies the transition pattern for mix.	
	MIX	The two videos are mixed as the transition occurs.
	FAM	Video transitions are made with the luminance levels of the two video streams maintained unchanged. This is an abbreviation of "full additive mix".
	NAM	The two video streams are compared, and transitions are made with display during transition starting with levels of high luminance. This is an abbreviation of "non-additive mix".
WIPE TYPE	Specifies the transition pattern for wipe.	
	HORIZONTAL VERTICAL UPPER LEFT UPPER RIGHT LOWER LEFT LOWER RIGHT H-CENTER V-CENTER 	
WIPE DIRECTION	**NORMAL**, REVERSE, ROUND TRIP	Specifies the direction of wipe.
WIPE BORDER COLOR	**WHITE**, YELLOW, CYAN, GREEN, MAGENTA, RED, BLUE, BLACK, CUSTOM, SOFT EDGE	Specifies the color of the border added to the edge of the wipe area. When this is set to "SOFT EDGE", the wipe border is blurred.
EDIT	**---**	Adjusts the color of the border when "WIPE BORDER COLOR" is set to "CUSTOM".
WIPE BORDER WIDTH	0–**3**–14	Specifies the width of the border added to the edge of the wipe area.

6: SPLIT

Menu item	Value (bold text: default value)	Explanation
SPLIT 1, 2	These are the detailed settings for the split composite.	
SPLIT	**OFF**, ON	Turns the split composition on/off. You can also use the [SPLIT 1] or [SPLIT 2] button to turn this on/off.
SPLIT TYPE	These parameters configure the split screen layout.	
	SPLIT V	This vertically crops the center section of the video (split left/right). 
	SPLIT H	This horizontally crops the center section of the video (split upper/lower). 
PGM/A-CENTER	-50.0–**0.0**–50.0%	**When at SPLIT V** Adjusts the horizontal position of the video placed on the left. You can also adjust this by turning the [PGM/A-CENTER] knob. **When at SPLIT H** Adjusts the horizontal position of the video placed above. You can also adjust this by turning the [PST/B-CENTER] knob. * This positions the PGM/A bus video to the left or upper side.
PST/B-CENTER	-50.0–**0.0**–50.0%	**When at SPLIT V** Adjusts the horizontal position of the video placed on the right. You can also adjust this by turning the [PGM/A-CENTER] knob. **When at SPLIT H** Adjusts the horizontal position of the video placed below. You can also adjust this by turning the [PST/B-CENTER] knob. * This positions the PST/B bus video to the right or lower side.
CENTER POSITION	-50.0–**0.0**–50.0%	Adjusts the position of the boundary. You can adjust this by turning the [PGM/A-CENTER] or [PST/B-CENTER] knob while pressing it.
BORDER COLOR	**WHITE**, YELLOW, CYAN, GREEN, MAGENTA, RED, BLUE, BLACK, CUSTOM	Specifies the color of the border.
EDIT	**---**	Adjusts the color of the border when "BORDER COLOR" is set to "CUSTOM".
BORDER WIDTH	0–**3**–14	Adjusts the width of the border.

7: PinP & KEY

Menu item	Value (bold text: default value)	Explanation
PinP & KEY 1–4	These are the detailed settings for PinP and key composition for each PinP and key layer.	
PinP & KEY SOURCE	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1-20	Specifies the video source of the inset screen.
TYPE	Specifies the type of PinP compositing.	
	PinP	Composites the inset screen on top of the background video.
	LUMINANCE-WHITE KEY	A combination of PinP and luminance key (white). Makes the white portions of the inset screen transparent, and composites the image with the background.
	LUMINANCE-BLACK KEY	A combination of PinP and luminance key (black). Makes the black portions of the inset screen transparent, and composites the image with the background.
	CHROMA KEY	A combination of PinP and chroma key. Makes the specified key color portions of the inset screen transparent, and composites the image with the background.
COPY SETTINGS FROM	PinP & KEY 1–4	Specifies the copy source for the PinP and key settings. Press the [VALUE] knob to copy the settings.
SWAP SETTINGS WITH	PinP & KEY 1–4	Specifies the swap destination for the PinP and key settings. Press the [VALUE] knob to swap the settings.
When TYPE = PinP		
WINDOW	Adjusts the inset screen.	
POSITION H	-50.0– **-40.0**–50.0%	Adjusts the horizontal position of the inset screen. You can also adjust this by turning the [POSITION H] knob.
POSITION V	-50.0– **-40.0**–50.0%	Adjusts the vertical position of the inset screen. You can also adjust this by turning the [POSITION V] knob.
SIZE	0.0–**35.0**–100.0%	Adjusts the size of the inset screen. You can adjust this by turning the [POSITION H] knob while pressing it.
CROPPING H	0.0–**100.0%**	Adjusts the horizontal size of the inset screen.
CROPPING V	0.0–**100.0%**	Adjusts the vertical size of the inset screen.
SHAPE	**RECTANGLE**, CIRCLE, DIAMOND	Specifies the shape of the inset screen.
BORDER COLOR	**WHITE**, YELLOW, CYAN, GREEN, MAGENTA, RED, BLUE, BLACK, CUSTOM, SOFT EDGE	Specifies the color of the border for the inset screen. When this is set to "SOFT EDGE", the edge of the inset screen is blurred.
EDIT	**---**	Adjusts the color of the border when "BORDER COLOR" is set to "CUSTOM".
BORDER WIDTH	0–**3**–14	Adjusts the width of the border for the inset screen.
VIEW	Adjusts the video that is shown in the inset screen.	
POSITION H	-50.0–**0.0**–50.0%	Adjusts the horizontal position at which the inset screen is shown.
POSITION V	-50.0–**0.0**–50.0%	Adjusts the vertical position at which the inset screen is shown.
ZOOM	**100**–400%	Adjusts the zoom of the video shown in the inset screen. You can adjust this by turning the [POSITION V] knob while pressing it.
When TYPE = LUMINANCE-WHITE KEY or LUMINANCE-BLACK KEY		
WINDOW	Adjusts the inset screen.	
POSITION H	-50.0– **-40.0**–50.0%	Adjusts the horizontal position of the inset screen. You can also adjust this by turning the [POSITION H] knob.
POSITION V	-50.0– **-40.0**–50.0%	Adjusts the vertical position of the inset screen. You can also adjust this by turning the [POSITION V] knob.
SIZE	0.0–**35.0**–100.0%	Adjusts the size of the inset screen. You can adjust this by turning the [POSITION H] knob while pressing it.
CROPPING H	0.0–**100.0%**	Adjusts the horizontal size of the inset screen.
CROPPING V	0.0–**100.0%**	Adjusts the vertical size of the inset screen.
VIEW	Adjusts the video that is shown in the inset screen.	
POSITION H	-50.0–**0.0**–50.0%	Adjusts the horizontal position at which the inset screen is shown.
POSITION V	-50.0–**0.0**–50.0%	Adjusts the vertical position at which the inset screen is shown.
ZOOM	**100**–400%	Adjusts the zoom of the video shown in the inset screen. You can adjust this by turning the [POSITION V] knob while pressing it.
KEY LEVEL	0–**64**–255	Adjusts the degree of extraction (transparency) for the key.
KEY GAIN	**0**–255	Adjusts the degree of edge blur (semi-transmissive region) for the key.
MIX LEVEL	0–**255**	Adjusts the key's overall density (output level).

Menu item	Value (bold text: default value)	Explanation
When TYPE = CHROMA KEY		
WINDOW	Adjusts the inset screen.	
POSITION H	-50.0– **-40.0**–50.0%	Adjusts the horizontal position of the inset screen. You can also adjust this by turning the [POSITION H] knob.
POSITION V	-50.0– **-40.0**–50.0%	Adjusts the vertical position of the inset screen. You can also adjust this by turning the [POSITION V] knob.
SIZE	0.0–**35.0**–100.0%	Adjusts the size of the inset screen. You can adjust this by turning the [POSITION H] knob while pressing it.
CROPPING H	0.0–**100.0%**	Adjusts the horizontal size of the inset screen.
CROPPING V	0.0–**100.0%**	Adjusts the vertical size of the inset screen.
VIEW	Adjusts the video that is shown in the inset screen.	
POSITION H	-50.0–**0.0**–50.0%	Adjusts the horizontal position at which the inset screen is shown.
POSITION V	-50.0–**0.0**–50.0%	Adjusts the vertical position at which the inset screen is shown.
ZOOM	**100**–400%	Adjusts the zoom of the video shown in the inset screen. You can adjust this by turning the [POSITION V] knob while pressing it.
KEY LEVEL	0–**64**–255	Adjusts the degree of extraction (transparency) for the key.
KEY GAIN	**0**–255	Adjusts the degree of edge blur (semi-transmissive region) for the key.
MIX LEVEL	0–**255**	Adjusts the key's overall density (output level).
CHROMA	Make detailed settings for chroma key.	
COLOR	GREEN, **BLUE**	Specifies green or blue as the key color (the color to be removed). If you want a color other than green or blue to turn transparent, use "SAMPLING MARKER" to specify the key color.
HUE WIDTH	-30–**0**–30	Adjusts the hue width for the key color.
HUE FINE	0–**240**–360	Adjusts the center position of the hue for the key color.
SATURATION WIDTH	-128–**0**–127	Adjusts the saturation width for the key color.
SATURATION FINE	**0**–255	Adjusts the center position of saturation for the key color.
VALUE WIDTH	-128–**0**–127	Adjusts the brightness width for the key color.
VALUE FINE	**0**–255	Adjusts the center position of the brightness for the key color.
DESPILL	**OFF**, ON	Sets the spill removal (despill) for the key color.
SAMPLING MARKER	**OFF**, ON	When this is "ON", a sampling marker ( ) is shown for you to sample (detect) the key color. When you execute sampling, the setting automatically turns "OFF".
POSITION H (*4)	-50–**0**–50%	Adjusts the horizontal position of the sampling marker.
POSITION V (*4)	-50–**0**–50%	Adjusts the vertical position of the sampling marker.
SAMPLING EXECUTE (*4)	EXEC	Executes key color sampling. The "HUE WIDTH", "HUE FINE", "SATURATION WIDTH", and "SATURATION FINE" settings are adjusted automatically.

(*4) This can be set if "SAMPLING MARKER" is "ON".

8: DSK

Menu item	Value (bold text: default value)	Explanation
DSK 1, 2	These settings configure the DSK composite details for each DSK layer.	
DSK MODE	Sets the DSK mode.	
	SELF KEY	Uses the luminance key (brightness) and chroma key (color) to cut out the video image and create a composite by overlaying the video on a background video.
	ALPHA KEY	Uses alpha channels (areas which contain transparency data) to cut out still images and place them against different background video as a composite.
	EXTERNAL KEY	Sets the key signal (the shape to be cut out) and the fill video (the video to be composited) separately (external key). This uses the key signal to cut out the fill video and superimpose it on the background video to create the composite.
	Roland FILL+KEY	The content (title, images and video) in the dedicated Graphics Presenter app is superimposed and composited on the background image. * If you select "DSK 1" or "DSK 2" under Mode in the Roland FILL+KEY menu, the setting automatically switches to "Roland FILL+KEY".
DSK SOURCE	**HDMI** 1–**7**–8, SDI 1–8, STILL 1–16, INPUT 1-20 * When DSK MODE = SELF KEY	Specifies the source of the caption or video that is overlaid.
	STILL 1–16 * When DSK MODE = ALPHA KEY	
KEY SOURCE (*5)	**HDMI** 1–**7**–8, SDI 1–8, STILL 1–16, INPUT 1-20	Sets the video to use as the key signal (the shape to be cut out).
FILL SOURCE (*5)	**HDMI** 1–**7**–8, SDI 1–8, STILL 1–16, INPUT 1-20	Specifies the fill video (the video to be composited) source.
DSK TYPE (*6)	Specifies the DSK type used during DSK composition.	
	LUMINANCE-WHITE	Composite using luminance key. Makes white portions transparent according to brightness.
	LUMINANCE-BLACK	Composite using luminance key. Makes black portions transparent according to brightness.
	CHROMA	Composite using chroma key. Makes the specified key color transparent according to hue.
DSK LEVEL (*6)	0–**64**–255	Adjusts the degree of extraction (transparency) for the key.
DSK GAIN (*6)	**0**–255	Adjusts the degree of edge blur (semi-transmissive region) for the key.
MIX LEVEL	0–**255**	Adjusts the key's overall density (output level).
COPY SETTING FROM DSK 2 (or **DSK 1**)	EXEC	Copies the other DSK settings.
SWAP SETTING WITH DSK 2 (or **DSK 1**)	EXEC	Exchanges the settings of DSK 1 and DSK 2.
CHROMA (*7)	Make detailed settings for chroma key.	
COLOR	GREEN, **BLUE**	Specifies green or blue as the key color. If you want a color other than green or blue to turn transparent, use "SAMPLING MARKER" to specify the key color.
HUE WIDTH	-30–**0**–30	Adjusts the hue width for the key color.
HUE FINE	0–**240**–360	Adjusts the center position of the hue for the key color.
SATURATION WIDTH	-128–**0**–127	Adjusts the saturation width for the key color.
SATURATION FINE	**0**–255	Adjusts the center position of saturation for the key color.
VALUE WIDTH	-128–**0**–127	Adjusts the brightness width for the key color.
VALUE FINE	**0**–255	Adjusts the center position of the brightness for the key color.
DESPILL	**OFF**, ON	Sets the spill removal (despill) for the key color.
SAMPLING MARKER	**OFF**, ON	When this is "ON", a sampling marker ( ) is shown for you to sample (detect) the key color. When you execute sampling, the setting automatically turns "OFF".
POSITION H (*8)	-50–**0**–50%	Adjusts the horizontal position of the sampling marker.
POSITION V (*8)	-50–**0**–50%	Adjusts the vertical position of the sampling marker.
SAMPLING EXECUTE (*8)	EXEC	Executes key color sampling. The "HUE WIDTH", "HUE FINE", "SATURATION WIDTH", and "SATURATION FINE" settings are adjusted automatically.

(*5) This can be set if "DSK MODE" is "EXTERNAL KEY".
(*6) This can be set if "DSK MODE" is "SELF KEY".
(*7) This can be set if "DSK TYPE" is "CHROMA".
(*8) This can be set if "SAMPLING MARKER" is "ON".

Menu item	Value (bold text: default value)	Explanation
FILL TYPE	Sets the fill material type (the video used for key compositing).	
	BUS	Uses the video specified in "DSK SOURCE".
	MATTE	Uses the internal color matte (a single-color image). The superimposed caption or video is filled in with the matte color. Specify the matte color using the "MATTE COLOR" setting below.
MATTE COLOR (*9)	WHITE, YELLOW, CYAN, GREEN, MAGENTA, **RED**, BLUE, BLACK, CUSTOM	Specifies the matte color.
EDIT	**---**	Adjusts the matte color when "MATTE COLOR" is set to "CUSTOM".
EDGE TYPE	**OFF**, BORDER, DROP, SHADOW, OUTLINE	Specifies the type of edge applied to the superimposed caption or video.
EDGE COLOR	WHITE, YELLOW, CYAN, GREEN, MAGENTA, RED, BLUE, **BLACK**, CUSTOM	Specifies the color of the edge applied to the superimposed caption or video.
EDIT	**---**	Adjusts the color of the edge when "EDGE COLOR" is set to "CUSTOM".
EDGE WIDTH	0–**3**–14	Specifies the width of the edge applied to the superimposed caption or video.

(*9) This can be set if "FILL TYPE" is "MATTE".

9: AUDIO KNOB ASSIGN

Menu item	Value (bold text: default value)	Explanation
INPUT KNOB AUDIO IN 1–3/4	AUDIO IN 1-3/4, USB IN, Bluetooth IN, HDMI 1–8, SDI 1-8 The default values are as follows. AUDIO IN 1: **AUDIO IN 1** AUDIO IN 2: **AUDIO IN 2** AUDIO IN 3/4: **AUDIO IN 3/4**	Selects the audio input to assign to each knob.
OUTPUT KNOB AUX USB STREAM MASTER OUTPUT	MASTER OUTPUT, AUX 1–3, USB OUT The default values are as follows. AUX: **AUX 1** USB STREAM: **USB OUT** MASTER OUTPUT: **MASTER OUTPUT**	Selects the audio output to assign to each knob.

10: AUDIO INPUT

Menu item	Value (bold text: default value)	Explanation
AUDIO IN 1, 2 **AUDIO IN 1/2 (LINKED)**	Adjusts the audio that is input from the AUDIO IN 1 and 2 jacks. * "AUDIO IN 1/2 (LINKED)" is shown when "STEREO LINK" is "ON".	
ANALOG GAIN	**0**–64dB	Adjusts the input gain (sensitivity) in the analog domain.
DIGITAL GAIN	-42.0–**0.0**–42.0dB	Adjusts the input gain (sensitivity) in the digital domain (after conversion from analog to digital).
INPUT LEVEL	-INF–**0.0**–10.0dB	Adjusts the input volume. This can also be adjusted by the AUDIO INPUT LEVEL [1] or [2] knob. (*10)
INPUT MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the input audio is temporarily silenced.
PHANTOM +48V	**OFF**, ON	Turns the phantom power on/off. When this is "ON", phantom power is supplied via the AUDIO IN jacks (XLR). * Changing "STEREO LINK" settings automatically turns "PHANTOM +48V" settings "OFF".
PAN (*11)	LEFT–**CENTER**–RIGHT	Adjusts the stereo position (pan).
STEREO LINK	**OFF**, ON	Turns the stereo link function on/off. When this is "ON", AUDIO IN 1 and 2 are linked, and operate as a stereo channel. * When stereo link is turned on, the settings of AUDIO IN 1 are applied to AUDIO IN 2.
SOLO	**OFF**, ON	Turns the solo function on/off. Only the audio for which this is "ON" is heard in the headphones. * The solo function applies to the headphone output. It does not affect output other than the headphones.
EFFECT PRESET	Specifies an effect preset (high-pass filter, compressor, and equalizer). When you change an effect preset, the settings of each effect are overwritten.	
	DEFAULT	For line input (default setting)
	MEETING	For meetings
	INTERVIEW	For interviews
	AMBIENT MIC	For capturing ambient sound
	WINDY FIELD	For capturing ambient sound in a windy area
DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
REVERB SEND	**0**–127	Adjusts the amount of audio sent to reverb.
MASTER OUTPUT	This configures the MASTER OUTPUT.	
SEND	OFF, **ON**	When this is "ON", audio is sent to the MASTER OUTPUT.
AUX 1-3	This configures the AUX 1-3 buses.	
SEND LEVEL	**-INF**–10.0dB	These parameters adjust the amount of audio sent to the AUX 1-3 buses.
SEND POINT	DRY	Sends the source audio with no effects applied.
	PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
	POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).
HIGH PASS FILTER 80Hz	**OFF**, ON	Turns the high-pass filter on/off. Effect Cuts off unneeded low-band audio. The cutoff frequency is 80 Hz.
ECHO CANCELLER	**OFF**, ON	Turns the echo canceller on/off. Effect Suppresses the voice echo that can occur when using a web conferencing system that includes a speaker and mic.
DEPTH	1–**5**–10	Adjusts the depth of the echo canceller.
ANTI-FEEDBACK	**OFF**, ON	Turns the anti-feedback on/off. Effect Suppresses audio feedback.
NOISE GATE	**OFF**, ON	Turns the noise gate on/off. Effect Eliminates audio that is lower than the specified threshold level. This is effective when the noise that you want to remove is separate from the audio that you want to keep, and can be used to remove hiss or other noise that is heard during periods of silence.
THRESHOLD	-80– **-48**–0dB	Specifies the level used as the threshold for removing audio. Audio below the level set here is removed.
RELEASE	30–**500**–5000msec	Adjusts the length of time until the audio is fully attenuated after audio falls below the threshold.
DE-ESSER	**OFF**, ON	Turns the de-esser on/off. Effect Reduces sibilant noise (the sounds you hear when pronouncing "s" words and other hissing sounds).
SENS	0–**80**–100	Adjusts the sensitivity with which sibilants are detected.
DEPTH	0–**64**–100	Adjusts the intensity of the effect.

(*10) The AUDIO INPUT LEVEL [2] knob is disabled when "STEREO LINK" is "ON".

(*11) This can be set if "STEREO LINK" is "OFF".

Menu item	Value (bold text: default value)	Explanation
COMPRESSOR	**OFF**, ON	Turns the compressor on/off. Effect Audio that exceeds the specified threshold level is compressed. This reduces the difference between the maximum volume and minimum volume, making the audio more comfortable for listening.
THRESHOLD	-50–**-8**–0dB	Specifies the level used as the threshold at which the compressor is applied. Compression is applied to audio that exceeds the threshold.
RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, **2.50 : 1**, 3.20 : 1, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the degree of compression applied to the audio. The state in which no compression is applied is defined as "1".
ATTACK	0.0–**30**–100msec	Specifies the time until compression starts when audio exceeding the threshold is input.
RELEASE	30–**250**–5000msec	Adjusts the length of time until compression ends after audio falls below the threshold.
MAKEUP GAIN	-40–**0**–40dB	Adjusts the final output volume level after applying the compressor.
EQUALIZER	**OFF**, ON	Turns the equalizer on/off. Effect Adjusts the volume for each frequency band.
Hi GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the high band.
Hi FREQUENCY	1.00–**10.0**–20.0kHz	Adjusts the center frequency when changing the volume in the high band.
Mid GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the middle band.
Mid FREQUENCY	20Hz–**2.00kHz**–20.0kHz	Adjusts the center frequency when changing the volume in the middle band.
Mid Q	0.5–**1.0**–16.0	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Lo GAIN	-12.0–**0.0**–12.0dB	Boosts or attenuates the low band.
Lo FREQUENCY	20Hz–**100Hz**–2.00kHz	Adjusts the center frequency when changing the volume in the low band.
VOICE CHANGER	**OFF**, ON	Turns the voice changer on/off. Effect Transforms the pitch or character of the voice.
PITCH	-12–**+12**	Adjusts the pitch of the voice in semitone steps. A setting of "0" is the original pitch.
FORMANT	-10– **+4**– +10	Adjusts the character (formant) of the voice. Settings in the negative (–) direction produce a more masculine vocal character, and settings in the positive (+) direction produce a more feminine vocal character. A setting of "0" is the original voice.
ROBOT	**OFF**, ON	When this is "ON", the voice is held at a fixed pitch, creating a mechanical robot-like impression.
MIX	0–**100**	Adjusts the balance between the unprocessed voice (0) and the voice processed by the effect (100).
AUDIO IN 3/4	Adjusts the audio that is input from the AUDIO IN 3/L and 4/R jacks.	
DIGITAL GAIN	-42.0–**0.0**–42.0dB	Adjusts the digital gain.
INPUT LEVEL	**-INF**–10.0dB	Adjusts the input volume. This can also be adjusted by the AUDIO INPUT LEVEL [3/4] knob.
INPUT MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the input audio is temporarily silenced.
MONO	Converts the input audio from stereo to mono.	
	OFF	Sends the stereo input audio without change.
	L ONLY	The audio of the L channel is sent to both L and R.
	R ONLY	The audio of the R channel is sent to both L and R.
	LR MIX	The audio of the L channel and R channel is mixed, and sent to both L and R.
SOLO	**OFF**, ON	Turns the solo function on/off. Only the audio for which this is "ON" is heard in the headphones. * The solo function applies to the headphone output. It does not affect output other than the headphones.
EFFECT PRESET	Specifies an effect preset (high-pass filter, compressor, and equalizer). When you change an effect preset, the settings of each effect are overwritten.	
	DEFAULT	For line input (default setting)
	MEETING	For meetings
	INTERVIEW	For interviews
	AMBIENT MIC	For capturing ambient sound
	WINDY FIELD	For capturing ambient sound in a windy area
DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
REVERB SEND	**0**–127	Adjusts the amount of audio sent to reverb.
MASTER OUTPUT	This configures the MASTER OUTPUT.	
SEND	OFF, **ON**	When this is "ON", audio is sent to the MASTER OUTPUT.
AUX 1-3	This configures the AUX 1-3 buses.	
SEND LEVEL	**-INF**–10.0dB	These parameters adjust the amount of audio sent to the AUX 1-3 buses.
SEND POINT	DRY	Sends the source audio with no effects applied.
	PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
	POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).

Menu item	Value (bold text: default value)	Explanation
HIGH PASS FILTER 80Hz	**OFF**, ON	Turns the high-pass filter on/off. Effect Cuts off unneeded low-band audio. The cutoff frequency is 80 Hz.
NOISE GATE	**OFF**, ON	Turns the noise gate on/off. Effect Eliminates audio that is lower than the specified threshold level. This is effective when the noise that you want to remove is separate from the audio that you want to keep, and can be used to remove hiss or other noise that is heard during periods of silence.
THRESHOLD	-80– **-48**–0dB	Specifies the level used as the threshold for removing audio. Audio below the level set here is removed.
RELEASE	30–**500**–5000msec	Adjusts the length of time until the audio is fully attenuated after audio falls below the threshold.
COMPRESSOR	**OFF**, ON	Turns the compressor on/off. Effect Audio that exceeds the specified threshold level is compressed. This reduces the difference between the maximum volume and minimum volume, making the audio more comfortable for listening.
THRESHOLD	-50– **-8**–0dB	Specifies the level used as the threshold at which the compressor is applied. Compression is applied to audio that exceeds the threshold.
RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, **2.50 : 1**, 3.20 : 1, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the degree of compression applied to the audio. The state in which no compression is applied is defined as "1".
ATTACK	0.0–**30**–100msec	Specifies the time until compression starts when audio exceeding the threshold is input.
RELEASE	30–**250**–5000msec	Adjusts the length of time until compression ends after audio falls below the threshold.
MAKEUP GAIN	-40–**0**–40dB	Adjusts the final output volume level after applying the compressor.
EQUALIZER	**OFF**, ON	Turns the equalizer on/off. Effect Adjusts the volume for each frequency band.
Hi GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the high band.
Hi FREQUENCY	1.00–**10.0**–20.0kHz	Adjusts the center frequency when changing the volume in the high band.
Mid GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the middle band.
Mid FREQUENCY	20Hz–**2.00kHz**–20.0kHz	Adjusts the center frequency when changing the volume in the middle band.
Mid Q	0.5–**1.0**–16.0	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Lo GAIN	-12.0–**0.0**–12.0dB	Boosts or attenuates the low band.
Lo FREQUENCY	20Hz–**100Hz**–2.00kHz	Adjusts the center frequency when changing the volume in the low band.
USB IN	Adjusts the audio that is input from the USB STREAM port.	
DIGITAL GAIN	-42.0–**0.0**–42.0dB	Adjusts the digital gain.
INPUT LEVEL	-INF–**0.0**–10.0dB	Adjusts the input volume.
INPUT MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the input audio is temporarily silenced.
MONO	Converts the input audio from stereo to mono.	
	OFF	Sends the stereo input audio without change.
	L ONLY	The audio of the L channel is sent to both L and R.
	R ONLY	The audio of the R channel is sent to both L and R.
	LR MIX	The audio of the L channel and R channel is mixed, and sent to both L and R.
SOLO	**OFF**, ON	Turns the solo function on/off. Only the audio for which this is "ON" is heard in the headphones. * The solo function applies to the headphone output. It does not affect output other than the headphones.
EFFECT PRESET	Specifies an effect preset (high-pass filter, compressor, and equalizer). When you change an effect preset, the settings of each effect are overwritten.	
	DEFAULT	For line input (default setting)
	MEETING	For meetings
	INTERVIEW	For interviews
	AMBIENT MIC	For capturing ambient sound
	WINDY FIELD	For capturing ambient sound in a windy area
DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
REVERB SEND	**0**–127	Adjusts the amount of audio sent to reverb.
MASTER OUTPUT	This configures the MASTER OUTPUT.	
SEND	OFF, **ON**	When this is "ON", audio is sent to the MASTER OUTPUT.
AUX 1-3	This configures the AUX 1-3 buses.	
SEND LEVEL	**-INF**–10.0dB	These parameters adjust the amount of audio sent to the AUX 1-3 buses.
SEND POINT	DRY	Sends the source audio with no effects applied.
	PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
	POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).

Menu item	Value (bold text: default value)	Explanation
HIGH PASS FILTER 80Hz	**OFF**, ON	Turns the high-pass filter on/off. Effect Cuts off unneeded low-band audio. The cutoff frequency is 80 Hz.
NOISE GATE	**OFF**, ON	Turns the noise gate on/off. Effect Eliminates audio that is lower than the specified threshold level. This is effective when the noise that you want to remove is separate from the audio that you want to keep, and can be used to remove hiss or other noise that is heard during periods of silence.
THRESHOLD	-80– **-48**–0dB	Specifies the level used as the threshold for removing audio. Audio below the level set here is removed.
RELEASE	30–**500**–5000msec	Adjusts the length of time until the audio is fully attenuated after audio falls below the threshold.
COMPRESSOR	**OFF**, ON	Turns the compressor on/off. Effect Audio that exceeds the specified threshold level is compressed. This reduces the difference between the maximum volume and minimum volume, making the audio more comfortable for listening.
THRESHOLD	-50– **-8**–0dB	Specifies the level used as the threshold at which the compressor is applied. Compression is applied to audio that exceeds the threshold.
RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, **2.50 : 1**, 3.20 : 1, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the degree of compression applied to the audio. The state in which no compression is applied is defined as "1".
ATTACK	0.0–**30**–100msec	Specifies the time until compression starts when audio exceeding the threshold is input.
RELEASE	30–**250**–5000msec	Adjusts the length of time until compression ends after audio falls below the threshold.
MAKEUP GAIN	-40–**0**–40dB	Adjusts the final output volume level after applying the compressor.
EQUALIZER	**OFF**, ON	Turns the equalizer on/off. Effect Adjusts the volume for each frequency band.
Hi GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the high band.
Hi FREQUENCY	1.00–**10.0**–20.0kHz	Adjusts the center frequency when changing the volume in the high band.
Mid GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the middle band.
Mid FREQUENCY	20Hz–**2.00kHz**–20.0kHz	Adjusts the center frequency when changing the volume in the middle band.
Mid Q	0.5–**1.0**–16.0	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Lo GAIN	-12.0–**0.0**–12.0dB	Boosts or attenuates the low band.
Lo FREQUENCY	20Hz–**100Hz**–2.00kHz	Adjusts the center frequency when changing the volume in the low band.
Bluetooth IN	These parameters adjust the audio input via Bluetooth connection.	
DIGITAL GAIN	-42.0–**0.0**–42.0dB	Adjusts the digital gain.
INPUT LEVEL	-INF–**0.0**–10.0dB	Adjusts the input volume.
INPUT MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the input audio is temporarily silenced.
MONO	Converts the input audio from stereo to mono.	
	OFF	Sends the stereo input audio without change.
	L ONLY	The audio of the L channel is sent to both L and R.
	R ONLY	The audio of the R channel is sent to both L and R.
	LR MIX	The audio of the L channel and R channel is mixed, and sent to both L and R.
SOLO	**OFF**, ON	Turns the solo function on/off. Only the audio for which this is "ON" is heard in the headphones. * The solo function applies to the headphone output. It does not affect output other than the headphones.
EFFECT PRESET	Specifies an effect preset (high-pass filter, compressor, and equalizer). When you change an effect preset, the settings of each effect are overwritten.	
	DEFAULT	For line input (default setting)
	MEETING	For meetings
	INTERVIEW	For interviews
	AMBIENT MIC	For capturing ambient sound
	WINDY FIELD	For capturing ambient sound in a windy area
DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
REVERB SEND	**0**–127	Adjusts the amount of audio sent to reverb.
MASTER OUTPUT	This configures the MASTER OUTPUT.	
SEND	OFF, **ON**	When this is "ON", audio is sent to the MASTER OUTPUT.
AUX 1-3	This configures the AUX 1-3 buses.	
SEND LEVEL	**-INF**–10.0dB	These parameters adjust the amount of audio sent to the AUX 1-3 buses.
SEND POINT	DRY	Sends the source audio with no effects applied.
	PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
	POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).

Menu item	Value (bold text: default value)	Explanation
HIGH PASS FILTER 80Hz	**OFF**, ON	Turns the high-pass filter on/off. Effect Cuts off unneeded low-band audio. The cutoff frequency is 80 Hz.
NOISE GATE	**OFF**, ON	Turns the noise gate on/off. Effect Eliminates audio that is lower than the specified threshold level. This is effective when the noise that you want to remove is separate from the audio that you want to keep, and can be used to remove hiss or other noise that is heard during periods of silence.
THRESHOLD	-80– **-48**–0dB	Specifies the level used as the threshold for removing audio. Audio below the level set here is removed.
RELEASE	30–**500**–5000msec	Adjusts the length of time until the audio is fully attenuated after audio falls below the threshold.
COMPRESSOR	**OFF**, ON	Turns the compressor on/off. Effect Audio that exceeds the specified threshold level is compressed. This reduces the difference between the maximum volume and minimum volume, making the audio more comfortable for listening.
THRESHOLD	-50– **-8**–0dB	Specifies the level used as the threshold at which the compressor is applied. Compression is applied to audio that exceeds the threshold.
RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, **2.50 : 1**, 3.20 : 1, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the degree of compression applied to the audio. The state in which no compression is applied is defined as "1".
ATTACK	0.0–**30**–100msec	Specifies the time until compression starts when audio exceeding the threshold is input.
RELEASE	30–**250**–5000msec	Adjusts the length of time until compression ends after audio falls below the threshold.
MAKEUP GAIN	-40–**0**–40dB	Adjusts the final output volume level after applying the compressor.
EQUALIZER	**OFF**, ON	Turns the equalizer on/off. Effect Adjusts the volume for each frequency band.
Hi GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the high band.
Hi FREQUENCY	1.00–**10.0**–20.0kHz	Adjusts the center frequency when changing the volume in the high band.
Mid GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the middle band.
Mid FREQUENCY	20Hz–**2.00kHz**–20.0kHz	Adjusts the center frequency when changing the volume in the middle band.
Mid Q	0.5–**1.0**–16.0	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Lo GAIN	-12.0–**0.0**–12.0dB	Boosts or attenuates the low band.
Lo FREQUENCY	20Hz–**100Hz**–2.00kHz	Adjusts the center frequency when changing the volume in the low band.
HDMI IN 1–8	Adjusts the audio that is input from the HDMI IN 1–8 connectors.	
EMBEDDED AUDIO CH	**1/2**, 3/4, 5/6, 7/8	Selects the embedded audio channel.
DIGITAL GAIN	-42.0–**0.0**–42.0dB	Adjusts the digital gain.
INPUT LEVEL	-INF–**0.0**–10.0dB	Adjusts the input volume.
INPUT MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the input audio is temporarily silenced.
MONO	Converts the input audio from stereo to mono.	
	OFF	Sends the stereo input audio without change.
	L ONLY	The audio of the L channel is sent to both L and R.
	R ONLY	The audio of the R channel is sent to both L and R.
	LR MIX	The audio of the L channel and R channel is mixed, and sent to both L and R.
SOLO	**OFF**, ON	Turns the solo function on/off. Only the audio for which this is "ON" is heard in the headphones. * The solo function applies to the headphone output. It does not affect output other than the headphones.
EFFECT PRESET	Specifies an effect preset (high-pass filter, compressor, and equalizer). When you change an effect preset, the settings of each effect are overwritten.	
	DEFAULT	For line input (default setting)
	MEETING	For meetings
	INTERVIEW	For interviews
	AMBIENT MIC	For capturing ambient sound
	WINDY FIELD	For capturing ambient sound in a windy area
DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
REVERB SEND	**0**–127	Adjusts the amount of audio sent to reverb.
MASTER OUTPUT	This configures the MASTER OUTPUT.	
SEND	OFF, **ON**	When this is "ON", audio is sent to the MASTER OUTPUT.

Menu item	Value (bold text: default value)	Explanation
AUX 1-3	This configures the AUX 1-3 buses.	
SEND LEVEL (*12)	**-INF**–10.0dB DRY	These parameters adjust the amount of audio sent to the AUX 1-3 buses. Sends the source audio with no effects applied.
SEND POINT	**PRE FADER**	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
	POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).
HIGH PASS FILTER 80Hz	**OFF**, ON	Turns the high-pass filter on/off. Effect Cuts off unneeded low-band audio. The cutoff frequency is 80 Hz.
NOISE GATE	**OFF**, ON	Turns the noise gate on/off. Effect Eliminates audio that is lower than the specified threshold level. This is effective when the noise that you want to remove is separate from the audio that you want to keep, and can be used to remove hiss or other noise that is heard during periods of silence.
THRESHOLD	-80– **-48**–0dB	Specifies the level used as the threshold for removing audio. Audio below the level set here is removed.
RELEASE	30–**500**–5000msec	Adjusts the length of time until the audio is fully attenuated after audio falls below the threshold.
COMPRESSOR	**OFF**, ON	Turns the compressor on/off. Effect Audio that exceeds the specified threshold level is compressed. This reduces the difference between the maximum volume and minimum volume, making the audio more comfortable for listening.
THRESHOLD	-50– **-8**–0dB	Specifies the level used as the threshold at which the compressor is applied. Compression is applied to audio that exceeds the threshold.
RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, **2.50 : 1**, 3.20 : 1, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the degree of compression applied to the audio. The state in which no compression is applied is defined as "1".
ATTACK	0.0–**30**–100msec	Specifies the time until compression starts when audio exceeding the threshold is input.
RELEASE	30–**250**–5000msec	Adjusts the length of time until compression ends after audio falls below the threshold.
MAKEUP GAIN	-40–**0**–40dB	Adjusts the final output volume level after applying the compressor.
EQUALIZER	**OFF**, ON	Turns the equalizer on/off. Effect Adjusts the volume for each frequency band.
Hi GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the high band.
Hi FREQUENCY	1.00–**10.0**–20.0kHz	Adjusts the center frequency when changing the volume in the high band.
Mid GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the middle band.
Mid FREQUENCY	20Hz–**2.00kHz**–20.0kHz	Adjusts the center frequency when changing the volume in the middle band.
Mid Q	0.5–**1.0**–16.0	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Lo GAIN	-12.0–**0.0**–12.0dB	Boosts or attenuates the low band.
Lo FREQUENCY	20Hz–**100Hz**–2.00kHz	Adjusts the center frequency when changing the volume in the low band.
SDI IN 1–8	Adjusts the audio that is input from the SDI IN 1–8 connectors.	
EMBEDDED AUDIO CH	**1/2**, 3/4, 5/6, 7/8	Selects the embedded audio channel.
DIGITAL GAIN	-42.0–**0.0**–42.0dB	Adjusts the digital gain.
INPUT LEVEL	-INF–**0.0**–10.0dB	Adjusts the input volume.
INPUT MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the input audio is temporarily silenced.
MONO	Converts the input audio from stereo to mono.	
	OFF	Sends the stereo input audio without change.
	L ONLY	The audio of the L channel is sent to both L and R.
	R ONLY	The audio of the R channel is sent to both L and R.
	LR MIX	The audio of the L channel and R channel is mixed, and sent to both L and R.
SOLO	**OFF**, ON	Turns the solo function on/off. Only the audio for which this is "ON" is heard in the headphones. * The solo function applies to the headphone output. It does not affect output other than the headphones.
EFFECT PRESET	Specifies an effect preset (high-pass filter, compressor, and equalizer). When you change an effect preset, the settings of each effect are overwritten.	
	DEFAULT	For line input (default setting)
	MEETING	For meetings
	INTERVIEW	For interviews
	AMBIENT MIC	For capturing ambient sound
	WINDY FIELD	For capturing ambient sound in a windy area
DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
REVERB SEND	**0**–127	Adjusts the amount of audio sent to reverb.

Menu item	Value (bold text: default value)	Explanation
MASTER OUTPUT	This configures the MASTER OUTPUT.	
SEND	OFF, **ON**	When this is "ON", audio is sent to the MASTER OUTPUT.
AUX 1-3	This configures the AUX 1-3 buses.	
SEND LEVEL (*12)	**-INF**–10.0dB	These parameters adjust the amount of audio sent to the AUX 1-3 buses.
SEND POINT	DRY	Sends the source audio with no effects applied.
	PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
	POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).
HIGH PASS FILTER 80Hz	**OFF**, ON	Turns the high-pass filter on/off. Effect Cuts off unneeded low-band audio. The cutoff frequency is 80 Hz.
NOISE GATE	**OFF**, ON	Turns the noise gate on/off. Effect Eliminates audio that is lower than the specified threshold level. This is effective when the noise that you want to remove is separate from the audio that you want to keep, and can be used to remove hiss or other noise that is heard during periods of silence.
THRESHOLD	-80– **-48**–0dB	Specifies the level used as the threshold for removing audio. Audio below the level set here is removed.
RELEASE	30–**500**–5000msec	Adjusts the length of time until the audio is fully attenuated after audio falls below the threshold.
COMPRESSOR	**OFF**, ON	Turns the compressor on/off. Effect Audio that exceeds the specified threshold level is compressed. This reduces the difference between the maximum volume and minimum volume, making the audio more comfortable for listening.
THRESHOLD	-50– **-8**–0dB	Specifies the level used as the threshold at which the compressor is applied. Compression is applied to audio that exceeds the threshold.
RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, **2.50 : 1**, 3.20 : 1, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the degree of compression applied to the audio. The state in which no compression is applied is defined as "1".
ATTACK	0.0–**30**–100msec	Specifies the time until compression starts when audio exceeding the threshold is input.
RELEASE	30–**250**–5000msec	Adjusts the length of time until compression ends after audio falls below the threshold.
MAKEUP GAIN	-40–**0**–40dB	Adjusts the final output volume level after applying the compressor.
EQUALIZER	**OFF**, ON	Turns the equalizer on/off. Effect Adjusts the volume for each frequency band.
Hi GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the high band.
Hi FREQUENCY	1.00–**10.0**–20.0kHz	Adjusts the center frequency when changing the volume in the high band.
Mid GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the middle band.
Mid FREQUENCY	20Hz–**2.00kHz**–20.0kHz	Adjusts the center frequency when changing the volume in the middle band.
Mid Q	0.5–**1.0**–16.0	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Lo GAIN	-12.0–**0.0**–12.0dB	Boosts or attenuates the low band.
Lo FREQUENCY	20Hz–**100Hz**–2.00kHz	Adjusts the center frequency when changing the volume in the low band.

(*12) This can be set if "AUDIO OUTPUT" → "AUX 1-3" → "AUX 1-3 SEND" → "AUX 1-3 SEND VIDEO" is "MANUAL".

11: AUDIO OUTPUT

Menu item	Value (bold text: default value)	Explanation
OUTPUT ASSIGN	Specifies the audio bus that is assigned to each connector.	
AUDIO OUT (XLR)	**MASTER OUTPUT**, AUX 1-3	**MASTER OUTPUT:** All input audio is mixed and output (master output). **AUX 1-3:** Only the input audio sent to the AUX 1-3 buses is mixed and output. This allows you to output audio that is different than the master output. **AUTO:** The audio bus automatically switches according to the video bus assignment. **Video bus** / **Audio bus** **Others besides AUX/DSK** / MASTER OUTPUT **AUX 1-3** / AUX 1-3 **DSK 1,2 SOURCE** / DSK 1,2 video source
AUDIO OUT (RCA)	**MASTER OUTPUT**, AUX 1-3	
PHONES OUT	**MASTER OUTPUT**, AUX 1-3	
USB OUT	**AUTO**, MASTER OUTPUT, AUX 1-3	
HDMI OUT 1–3	**AUTO**, MASTER OUTPUT, AUX 1-3	
SDI OUT 1–3	**AUTO**, MASTER OUTPUT, AUX 1-3	
MASTER OUTPUT	Adjusts the audio of the MASTER OUTPUT bus.	
OUTPUT LEVEL	-INF–**0.0**–10.0dB	Adjusts the output volume. This can also be adjusted by the [MASTER OUTPUT] knob.
OUTPUT MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the output audio is temporarily silenced.
OUTPUT SOLO	**OFF**, ON	Turns the solo function on/off. In the headphones, you hear only the audio of the channels that are set to solo. * The solo function applies to the headphone output. It does not affect output other than the headphones.
OUTPUT DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
LIMITER	**OFF**, ON	Turns the limiter on/off. Effect Limits the output volume so that is does not exceed the specified threshold level. * Distortion will occur if audio that exceeds the allowable range of the limiter is input.
THRESHOLD	-40– **-6**–0dB	Adjusts the level that becomes the threshold at which the limiter is applied. Compression is applied to audio that exceeds the threshold. The volume level of audio that is output is limited so as to stay to below the threshold.
REVERB	**OFF**, ON	Turns reverb on/off. Effect Adds reverberation to the sound.
LEVEL	**0**–127	Adjusts the depth of the overall reverb.
TYPE	Specifies the reverb type.	
	ROOM	Produces the natural-sounding reverberation of a room.
	HALL	Produces the reverberation that is typical of a performance in a concert hall.
SIZE	1–**10**–20	Specifies the size of the room. The larger the value, the longer the reverb time.
RETURN LEVEL	-INF–**20.0dB**–10.0dB	Adjusts how much reverb is sent back to the MASTER OUTPUT.
EQUALIZER	**OFF**, ON	Turns the equalizer on/off. Effect Adjusts the volume for each frequency band.
Hi GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the high band.
Hi FREQUENCY	1.00–**10.0**–20.0kHz	Adjusts the center frequency when changing the volume in the high band.
Mid GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the middle band.
Mid FREQUENCY	20Hz–**2.00kHz**–20.0kHz	Adjusts the center frequency when changing the volume in the middle band.
Mid Q	0.5–**1.0**–16.0	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Lo GAIN	-12.0–**0.0**–12.0dB	Boosts or attenuates the low band.
Lo FREQUENCY	20Hz–**100Hz**–2.00kHz	Adjusts the center frequency when changing the volume in the low band.
MULTI BAND COMPRESSOR	**OFF**, ON	Turns the multi-band compressor on/off. Effect Applies separate compressors in individual frequency band.
Hi THRESHOLD	-40– **-20**–0dB	Specifies the threshold level at which the compressor is applied to the high band. Compression is applied to audio that exceeds the threshold.
Hi RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, 2.50 : 1, **3.20 : 1**, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the amount of compression applied in the high band. The state in which no compression is applied is defined as "1".
Mid THRESHOLD	-40– **-16**–0dB	Specifies the threshold level at which the compressor is applied to the middle band. Compression is applied to audio that exceeds the threshold.

Menu item	Value (bold text: default value)	Explanation
Mid RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, **2.50 : 1**, 3.20 : 1, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the amount of compression applied in the middle band. The state in which no compression is applied is defined as "1".
Lo THRESHOLD	-50–**-20**–0dB	Specifies the threshold level at which the compressor is applied to the low band. Compression is applied to audio that exceeds the threshold.
Lo RATIO	1.00 : 1, 1.12 : 1, 1.25 : 1, 1.40 : 1, 1.60 : 1, 1.80 : 1, 2.00 : 1, 2.50 : 1, **3.20 : 1**, 4.00 : 1, 5.60 : 1, 8.00 : 1, 16.0 : 1, INF : 1	Specifies the amount of compression applied in the low band. The state in which no compression is applied is defined as "1".
LOUDNESS AUTO GAIN CONTROL	**OFF**, ON	Turns Loudness Auto Gain Control on/off. Effect The long-term average loudness is measured, and the volume is adjusted so that it is appropriate overall.
INTEGRATED GAIN CONTROL	DISABLE, **ENABLE**	Specifies whether the extended interval auto control is enabled (ENABLE) or disabled (DISABLE).
SENS	0–**80**–127	Adjusts the speed at which the target level (TARGET LKFS) is approached.
MOMENTARY GAIN CONTROL	DISABLE, **ENABLE**	Specifies whether the momentary auto control is enabled (ENABLE) or disabled (DISABLE).
SENS	0–**80**–127	Adjusts the speed at which the target level (TARGET LKFS) is approached.
TARGET LKFS	-34– **-24**–-10dB	Specifies the target loudness value.
FORGET LEARNING	EXEC	Resets the learned parameters. Reset applies to the parameters of loudness auto gain control.
ADAPTIVE NOISE REDUCTION	**OFF**, ON	Turns Adaptive Noise Reduction on/off. Effect By continuously monitoring the input audio to detect noise during periods of silence, this removes only the noise component.
DEPTH	0–**80**–127	Specifies the strength at which noise reduction is applied.
TALKING DETECTOR	0–**80**–127	Specifies the sensitivity of the talking detector. Higher values raise the sensitivity, so that it will be easier to detect the presence or absence of talking even in a noisy environment.
AUTO LEARN	DISABLE, **ENABLE**	Enables automatic noise detection.
MANUAL MEASURE	EXEC	Performs noise detection manually.
FORGET LEARNING	EXEC	Resets the learned parameters. Reset applies to the parameters of adaptive noise reduction.
LO FREQUENCY CUT	**OFF**, ON	Turns Lo Frequency Cut on/off.
AUX 1-3	Adjusts the audio of the AUX 1-3 buses.	
AUX 1-3 LEVEL	-INF–**0.0**–10.0dB	Adjusts the output volume. This can also be adjusted by the [AUX] knob.
AUX 1-3 MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the output audio is temporarily silenced.
AUX 1-3 SOLO	**OFF**, ON	Turns the solo function on/off. In the headphones, you hear only the audio of the channels that are set to solo. * The solo function applies to the headphone output. It does not affect output other than the headphones.
AUX 1-3 DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
REVERB RETURN LEVEL	**-INF**–10.0dB	Adjusts how much reverb is sent back to the AUX 1-3 buses.
LIMITER	**OFF**, ON	Turns the limiter on/off. Effect Limits the output volume so that is does not exceed the specified threshold level. * Distortion will occur if audio that exceeds the allowable range of the limiter is input.
THRESHOLD	-40– **-6**–0dB	Adjusts the level that becomes the threshold at which the limiter is applied. Compression is applied to audio that exceeds the threshold. The volume level of audio that is output is limited so as to stay to below the threshold.
AUX 1-3 SEND	ENTER	Displays the AUX SEND menu.

Menu item	Value	Explanation
AUDIO IN 1–3/4	**-INF**–0dB	Adjusts the amount of audio sent to the AUX bus for each input.
USB IN	**-INF**–0dB	
Bluetooth IN	**-INF**–0dB	
AUX 1-3 SEND VIDEO	Selects how to configure the amount of signal sent to the AUX bus for HDMI/SDI IN 1–8.	
	AUTO	Audio is automatically sent to the AUX bus in tandem with the AUX bus video selection.
	MANUAL	The amount of audio to send is adjusted manually.
HDMI IN 1–8	**-INF**–0dB	Adjusts the amount of audio sent to the AUX bus for each input. * This can be set if "AUX SEND VIDEO" is "MANUAL".
SDI IN 1–8	**-INF**–0dB	

Menu item	Value (bold text: default value)	Explanation
AUX 1-3 SEND POINT	ENTER	Displays the AUX EFFECT menu.

Menu item	Value	Explanation
AUDIO IN 1–3/4 USB IN Bluetooth IN HDMI IN 1–8 SDI IN 1–8	Sets whether to send audio from each input to the AUX bus with effects applied or not.	
	DRY	Sends the source audio with no effects applied.
	PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
	POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).

USB OUT	Adjusts the audio that is output from the USB STREAM port.	
USB OUTPUT LEVEL	-INF–**0.0**–10.0dB	Adjusts the output volume. This can also be adjusted by the [USB STREAM] knob.
USB OUTPUT MUTE	**OFF**, ON	Turns the mute function on/off. When this is "ON", the output audio is temporarily silenced.
USB OUTPUT DELAY	**0.0**–500msec (**0**–25.0/29.9/30.0frame)	Adjusts the delay time of the audio. Effect Outputs audio with a delay.
EQUALIZER	**OFF**, ON	Turns the equalizer on/off. Effect Adjusts the volume for each frequency band.
Hi GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the high band.
Hi FREQUENCY	1.00–**10.0**–20.0kHz	Adjusts the center frequency when changing the volume in the high band.
Mid GAIN	-15.0–**0.0**–15.0dB	Boosts or attenuates the middle band.
Mid FREQUENCY	20Hz–**2.00kHz**–20.0kHz	Adjusts the center frequency when changing the volume in the middle band.
Mid Q	0.5–**1.0**–16.0	Adjusts the width of the frequency band when boosting or attenuating the middle band.
Lo GAIN	-12.0–**0.0**–12.0dB	Boosts or attenuates the low band.
Lo FREQUENCY	20Hz–**100Hz**–2.00kHz	Adjusts the center frequency when changing the volume in the low band.
HDMI/SDI AUDIO EMBEDDED	Settings related to embedded audio for the HDMI/SDI output.	
HDMI OUT 1-3 SEND	These parameters set the input audio to send to HDMI embedded audio channels 3–8.	
CH 3/4 CH 5/6 CH 7/8	**N/A**, AUDIO IN 1/2, AUDIO IN 3/4, USB IN, Bluetooth IN, HDMI 1–8, SDI 1–8	When this is set to "N/A", no audio is sent. * The following audio buses are assigned for channels 1 and 2. Channel 1: MASTER OUTPUT (L) or AUX (L) Channel 2: MASTER OUTPUT (R) or AUX (R)
SDI OUT 1-3 SEND	These parameters set the input audio to send to SDI embedded audio channels 3–8.	
CH 3/4 CH 5/6 CH 7/8	**N/A**, AUDIO IN 1/2, AUDIO IN 3/4, USB IN, Bluetooth IN, HDMI 1–8, SDI 1–8	When this is set to "N/A", no audio is sent. * The following audio buses are assigned for channels 1 and 2. Channel 1: MASTER OUTPUT (L) or AUX (L) Channel 2: MASTER OUTPUT (R) or AUX (R)
AUDIO IN 1–3/4 USB IN Bluetooth IN HDMI IN 1–8 SDI IN 1–8	Sets whether to send audio with effects applied from each input to the HDMI/SDI embedded audio channels (3–8).	
	OFF	Audio is not sent.
	DRY	Sends the source audio with no effects applied.
	PRE FADER	Sends the effect-applied audio. The send volume is constant, regardless of the volume (INPUT LEVEL).
	POST FADER	Sends the effect-applied audio. The send volume can be changed by adjusting the volume (INPUT LEVEL).

12: AUDIO FOLLOW

Menu item	Value (bold text: default value)	Explanation
ALL AUDIO FOLLOW	**OFF**, ON	Turns on/off the audio follow function for HDMI 1–8 and SDI 1–8 in a single action.
HDMI 1–8 SDI 1–8	Turns the audio follow function on/off. Audio follow is a function that automatically switches the audio output in tandem with video switching.	
	OFF	The audio is always output regardless of the video selection.
	ON	The audio is output only when the video is selected. The audio is automatically muted if another video is selected.
AUDIO IN 1–3/4	**OFF**, HDMI 1-8, SDI 1-8, STILL 1-16, INPUT 1–20	For each audio source, these settings specify the input video that will use the audio follow function. Audio is output only when the specified input video is selected. When this is "OFF", the audio is always output regardless of the video selection.
USB IN		
Bluetooth IN		
PinP & KEY 1 FOLLOW–PinP & KEY 4 FOLLOW	OFF, **ON**	When PinP & KEY 1–4 is "ON", this sets whether the audio is linked to the source video.
DSK 1 FOLLOW, DSK 2 FOLLOW	OFF, **ON**	When DSK 1, 2 is "ON", this sets whether the audio is linked to the source video.

13: AUDIO AUTO MIXING

Menu item	Value (bold text: default value)	Explanation
AUDIO AUTO MIXING	**OFF**, ON	Turns the auto mixing function on/off. Auto mixing is a function that automatically controls the volume adjustments.
AUDIO IN 1, 2	DISABLE, **ENABLE**	Specifies whether Auto Mixing is applied (ENABLE) or not applied (DISABLE).
AUDIO IN 3/4	DISABLE, **ENABLE**	
USB IN	**DISABLE**, ENABLE	
Bluetooth IN	**DISABLE**, ENABLE	
HDMI 1–8	**DISABLE**, ENABLE	
SDI 1–8	**DISABLE**, ENABLE	
WEIGHT	0–**100%**	Specifies the weight level (the priority of volume distribution). * Setting the weight level to "0" results in no audio output.

14: PRESET MEMORY

Menu item	Value (bold text: default value)	Explanation
LOAD	**1: MEMORY 1**– 30: MEMORY 30 (*13)	Selects the preset memory to load. Pressing the [VALUE] knob lets you load the preset memory. When "MEMORY" is selected on the [MODE] button, you can use the MEMORY [1]–[10] buttons to recall preset memories 1–10.
SAVE	**1: MEMORY 1**– 30: MEMORY 30 (*13)	Selects a preset memory for saving settings. Pressing the [VALUE] knob lets you save the settings to the preset memory. When "MEMORY" is selected on the [MODE] button, you can long-press the MEMORY [1]–[10] buttons to save the settings to preset memories 1–10. * The following settings are not saved in preset memory. • PRESET MEMORY menu • MACRO menu • SEQUENCER menu • STILL IMAGE menu • FREEZE menu • AUTO SWITCHING menu • CTL/EXP menu • RS-232/TALLY/GPO/GPI menu • LAN CONTROL menu • CAMERA CONTROL menu • USB MEMORY menu • SYSTEM menu
INITIALIZE	ALL, **1: MEMORY 1**– 30: MEMORY 30 (*13)	Selects the preset memory to be initialized. Press the [VALUE] knob to initialize the preset memory.
NAME EDIT	**1: MEMORY 1**– 30: MEMORY 30 (*13)	Selects the preset memory to be renamed. Press the [VALUE] knob to access the screen for editing the name.
START UP	Specifies the settings loaded at startup.	
	LAST MEMORY	Restores the state that was in effect immediately before the power was turned off (Last Memory feature). The current settings (Last Memory values) are saved every 4 seconds, and when you exit a menu.
	1: MEMORY 1– 30: MEMORY 30 (*13)	Recall the settings at the selected preset memory.
LOAD FROM USB MEMORY	ENTER	Shows a list of the preset memory setting files (.V16preset) that are on the USB flash drive. You can select a preset memory setting to load the preset memory settings into this unit. The current preset memory settings are overwritten.
SAVE TO USB MEMORY	ENTER	Shows a list of the preset memory setting files (.V16preset) that are on the USB flash drive. You can select a preset memory setting file to save the current preset memory settings to the USB flash drive. If you selected "NEW FILE...", a new preset memory setting file is saved.
MEMORY PROTECT	**OFF,** ON	When this is "ON", prohibits settings from being saved or initialized. This protects the preset memories. * Protected preset memories are erased if you perform a factory reset.
NUMBER OF MEMORY SW	When "MEMORY" is selected on the [MODE] button, this sets how many buttons function as memory selection buttons.	
	10	Preset memory 1–10: MEMORY [1]–[10] buttons
	30	Preset memory 1–10: MEMORY [1]–[10] buttons Preset memory 11–20: PGM/A [1]–[10] buttons Preset memory 21–30: PST/B [1]–[10] buttons
FADE TIME	**0.0**–4.0sec	Sets how long the transition to the next video takes when recalling a preset memory. * The time you set is used for the parameters below.
MIX/WIPE	OFF, **ON**	When this is "ON", the transition effect is applied when the preset memory is recalled.
PinP & KEY 1–4	OFF, **ON**	When this is "ON", the inset screen fades in when you recall a preset memory that includes a PinP composite.
DSK 1, 2	OFF, **ON**	When this is "ON", the superimposed caption and video fades in when you recall a preset memory that includes a DSK composite.
LOAD PARAMETER	Specifies whether to recall the following items when recalling a preset memory. Items that are turned off are excluded from the preset memories that are recalled.	
VIDEO ASSIGN	OFF, **ON**	VIDEO ASSIGN menu
VIDEO INPUT	OFF, **ON**	VIDEO INPUT menu
VIDEO OUTPUT	OFF, **ON**	VIDEO OUTPUT menu
TRANSITION TIME	OFF, **ON**	TRANSITION TIME menu
MIX/WIPE	OFF, **ON**	MIX/WIPE menu
SPLIT 1, 2	OFF, **ON**	SPLIT 1, 2 menu
PinP & KEY 1–4	OFF, **ON**	PinP 1–4 menu
DSK 1, 2	OFF, **ON**	DSK 1, 2 menu
PGM/A, PST/B	OFF, **ON**	Cross-point button state
VIDEO FADER	**INITIALIZE**, ON	Video fader position When set to "INITIALIZE", the video fader position is recalled when the video fader is pushed all the way up or pulled all the way down.
AUX 1–3 SOURCE	OFF, **ON**	AUX 1–3 SOURCE setting
AUDIO INPUT	OFF, **ON**	AUDIO INPUT menu
AUDIO OUTPUT	OFF, **ON**	AUDIO OUTPUT menu
AUDIO FOLLOW	OFF, **ON**	AUDIO FOLLOW menu
AUDIO AUTO MIXING	OFF, **ON**	AUDIO AUTO MIXING menu

(*13) If you edited a preset memory's name using "NAME EDIT", the edited name is shown.

15: MACRO

Menu item	Value (bold text: default value)	Explanation
EXECUTE	**1: DEMO 1**– 100: MACRO100 (*14)	Select a macro (a series of recorded operations) to execute. Press the [VALUE] knob to execute the macro. When "MACRO" is selected on the [MODE] button, you can use the MACRO [1]–[10] buttons to execute macros 1–10.
INITIALIZE	ALL, **1: DEMO 1**– 100: MACRO100 (*14)	Selects the macro to be initialized. Press the [VALUE] knob to initialize the macro.
LIST EDIT	**1: DEMO 1**– 100: MACRO100 (*14)	Selects the macro to edit. Press the [VALUE] knob to show the operations recorded in the macro.

Menu item	Value	Explanation
1: (operation name)– 10: (operation name)	—	Shows the list of operations recorded in the macro. "----------" is shown if no operations are recorded. Select an operation or "ADD NEW FUNCTION" and press the [VALUE] knob to display the FUNCTION EDIT menu (shown below) for editing the operation.
PREVIEW	EXEC	Previews the macro.
COPY MACRO TO	1: DEMO 1– 100: MACRO100 (*14)	Specifies the macro copy source. Press the [VALUE] knob to copy the macro.
SWAP MACRO WITH	1: DEMO 1– 100: MACRO100 (*14)	Specifies the macro swap destination. Press the [VALUE] knob to swap the macro.

NAME EDIT	**1: DEMO 1**– 100: MACRO100 (*14)	Selects the macro to be renamed. Press the [VALUE] knob to access the screen for editing the name.
LOAD FROM USB MEMORY	ENTER	Shows a list of the macro setting files (.RMC) that are on the USB flash drive. You can select a macro setting file and load the macro (1–100) into the unit.
SAVE TO USB MEMORY	ENTER	Shows a list of the macro setting files (.RMC) that are on the USB flash drive. You can select the macro settings file used to save the macro (1–100) to the USB flash drive. If you selected "NEW FILE...", a new macro settings file is saved.
NUMBER OF MACRO SW	When "MACRO" is selected on the [MODE] button, this sets how many buttons function as macro selection buttons.	
	10	MACRO [1]–[10] buttons
	30	MACRO [1]–[10] buttons, PGM/A [1]–[10] buttons, PST/B [1]–[10] buttons
SW ASSIGN	ENTER	Displays the SW ASSIGN menu.

Specifies the macro assigned to each button.

Menu item	Value	Explanation
MACRO 1–10	1: DEMO 1– 100: MACRO100 (*14)	MACRO [1]–[10] buttons
PGM/A 1–10 (*15)		PGM/A [1]–[10] buttons
PST/B 1–10 (*15)		PST/B [1]–[10] buttons

(*14) If you edited a macro's name using "NAME EDIT", the edited name is shown.

(*15) This can be set if "NUMBER OF MACRO SW" is "30".

FUNCTION EDIT

Menu item	Value (bold text: default value)		Explanation
FUNCTION	PGM TAKE PGM/PST SELECT AUX SELECT INPUT ASSIGN TRANSITION TIME TRANSITION TYPE PinP & KEY ON/OFF PinP & KEY SOURCE PinP & KEY WINDOW DSK ON/OFF DSK SOURCE SPLIT ON/OFF SPLIT TYPE SPLIT POSITION AUDIO INPUT LEVEL	AUDIO INPUT MUTE AUDIO OUTPUT LEVEL AUDIO OUTPUT MUTE PRESET MEMORY MEMORY FADE TIME MEMORY FADE ON/OFF MACRO OUTPUT FADE REC CONTROL GPO ONE SHOT GPO ALTERNATE CAMERA PRESET RECALL VC-100UHD CONTROL WAIT	Sets the operation to record to the macro. * The related menu is shown according to the operation you set. **WAIT:** Sets the waiting time before the next operation is executed.
TIMING	Sets the timing of the operation to execute.		
	AFTER PREVIOUS		The function is executed after the preceding one. The next sequential list number is used.
	SAME AS PREVIOUS		Executes the operation at the same time as the preceding one. The same list number as the previous operation is used.
MOVE THIS FUNCTION	ENTER		Moves the operation being edited and resorts the list.
COPY THIS FUNCTION	ENTER		Copies the operation being edited into a position in the list you desire.
DELETE THIS FUNCTION	EXEC		Deletes the operation being edited.

16: SEQUENCER

Menu item	Value (bold text: default value)	Explanation
LIST EDIT	ENTER	Shows a list of operations recorded in the sequencer. Select an operation or "ADD NEW FUNCTION" and press the [VALUE] knob to show the FUNCTION EDIT menu, where you can edit the operation.

Menu item	Value	Explanation
FUNCTION	Sets the operation to record to the sequencer. * The related menu is shown according to the operation you set.	
	PGM TAKE	Switches the final output video.
	PRESET MEMORY	Recalls a preset memory.
	MACRO	Executes a macro (a series of recorded operations).
NAME	—	Shows the name of the operation.
EDIT	Sets how naming is done.	
	AUTO	Names are automatically given.
	CUSTOM	Names can be assigned as you like. Press the [VALUE] knob to access the screen for editing the name.
AUTO SEQUENCE	Sets the operation when auto sequence is on.	
	PAUSE	Pauses the auto sequence.
	AUTO	Executes the next operation in the sequence.
	1–**5**–120sec	Executes the next operation after delaying for a specified amount of time.
MOVE THIS FUNCTION	ENTER	Moves the operation being edited and resorts the list.
COPY THIS FUNCTION	ENTER	Copies the operation being edited into a position in the list you desire.
DELETE THIS FUNCTION	ENTER	Deletes the operation being edited.

REPEAT EXECUTE	**OFF**, ON	When this is "ON", the recorded operation is repeatedly executed.
INITIALIZE	EXEC	Initializes the sequencer.
LOAD FROM USB MEMORY	ENTER	Shows a list of the sequence files (.RSQ) that are on the USB flash drive. You can select a sequence file to load the sequencer settings into this unit. The current sequencer settings are overwritten.
SAVE TO USB MEMORY	ENTER	Shows a list of the sequence files (.RSQ) that are on the USB flash drive. You can select a sequence file to save the current sequencer settings to the USB flash drive. If you selected "NEW FILE...", a new sequence file is saved.

17: STILL IMAGE

Menu item	Value (bold text: default value)	Explanation
LOAD FROM USB MEMORY	**STILL 1**–16	Specifies where to save still images imported from a USB flash drive to this unit's internal memory. Press the [VALUE] knob to load the still images. * A "✱" symbol is displayed for internal memory where a still image is already saved. **Formats supported for loading** Format: Bitmap file (.bmp), 24-bit color, uncompressed / PNG file (.png), 24-bit color * Alpha channel supported / JPEG file (.jpg), 24-bit color Resolution: In conformity with system format File name: No more than 64 single-byte alphanumeric characters * The extension ".bmp", ".png", or ".jpg" must be added.
SAVE TO USB MEMORY	**STILL 1**–16	Selects the still images to export to the USB flash drive. Press the [VALUE] knob to display a list of still images stored on the USB flash drive (in the root directory). Select still images in the list to export them to the USB flash drive. * A "✱" symbol is displayed for internal memory where a still image is already saved. * The file formats of the still images that can be saved are the same as in "Formats supported for loading", above. * You can't export still images that were created while "HDCP" in the SYSTEM menu was "ON".
SAVE TO INTERNAL STORAGE	Use this to set whether to save still images you've captured or loaded to this unit's internal memory.	
	DISABLE	Temporarily saves still images to internal memory. When you turn off the power, the still image is deleted.
	ENABLE	Saves still images to internal memory.
DELETE STILL IMAGE	ALL, **STILL 1**–16	Selects the still images to delete. Press the [VALUE] knob to delete the still images. * An internal memory in which a still image is loaded is indicated by a "✱" symbol.

18: Roland FILL+KEY

Menu item	Value (bold text: default value)	Explanation
MODE	**OFF**, DSK 1, DSK 2	Sets the DSK layer (DSK 1 or DSK 2) to use when in Roland FILL+KEY mode. * If you select "DSK 1" or "DSK 2", the DSK Mode setting in the DSK menu is automatically set to "Roland FILL+KEY", and the unit switches to Roland FILL+KEY mode.

19: FREEZE

Menu item	Value (bold text: default value)	Explanation
FREEZE	**OFF**, ON	Turns the freeze function on/off. When this is "ON", the input video is temporarily frozen.
TYPE	Specifies the operation mode for freezes.	
	ALL	Freezes all video that is being input.
	SELECT	Freezes only the specified input video.
HDMI 1–8 (*16)	DISABLE, **ENABLE**	For each input, specifies whether the freeze function is enabled (ENABLE) or disabled (DISABLE).
SDI 1 1–8 (*16)	DISABLE, **ENABLE**	

(*16) This can be set if "TYPE" is "SELECT".

20: AUTO SWITCHING

Menu item	Value (bold text: default value)	Explanation
AUTO SWITCHING	**OFF**, ON	Turns the auto switching function on/off. When this is "ON", the video or preset memory are switched automatically.
TYPE	Specifies the operation mode for auto switching.	
	INPUT SCAN	Automatically switches to the video of INPUT 1–10 when the specified interval.
	PRESET MEMORY SCAN	Automatically recalls preset memories 1–30 at the specified interval. The video and audio are switched according to the settings that are saved in each preset memory.
	BPM SYNC	Synchronizes the PGM/A bus and PST/B bus video, so that they switch automatically in sync with the BPM (number of beats per minute) you set.
	PinP & KEY 1–4 SCAN	Automatically switches to the video of PinP & KEY when the specified interval.
	DSK 1, 2 SCAN	Automatically switches to the video of DSK when the specified interval.
When TYPE = INPUT SCAN		
SCAN SEQUENCE	Specifies the order in which video signals are shown. * If there is no video input, this is skipped.	
	NORMAL	Switches in the order of INPUT 1 →10.
	REVERSE	Switches in the order of INPUT 10 →1.
	RANDOM	Switches randomly.
SCAN TRANSITION TIME (*17)	0.0–**1.0**–4.0sec	Specifies the video transition time.
SCAN TARGET	Sets the video to which auto switching is applied.	
	PGM/A & PST/B	Final output video and preview video
	PinP & KEY 1–4	PinP and key layer (inset screen) video
	DSK 1, 2	DSK layer video
INPUT 1–10 TIME	OFF, 1–**5**–120sec	Specifies the time that the video is shown. Turn this "OFF" to skip.
When TYPE = PRESET MEMORY SCAN		
SCAN SEQUENCE	Specifies the order in which preset memories are switched. * Preset memories in which no settings have been saved are skipped.	
	NORMAL	Switches in the order of preset memory 1→30.
	REVERSE	Switches in the order of preset memory 30 →1.
	RANDOM	Switches randomly.
MEMORY 1–30 TIME	OFF, 1–**5**–120sec	Specifies the time it takes to switch to the next preset memory. Turn this "OFF" to skip.
When TYPE = BPM SYNC		
BPM	20–**120**–250	Specifies the BPM (number of beats per minute). If the "BPM TAP" function is assigned to the USER button, you can set the BPM according to the tempo at which you press the button. The button flashes in sync with the current BPM setting.
MODE	Specifies how the video is switched.	
	TRANSITION	The video switches using the currently selected transition effect (mix or wipe).
	CUT	The video switches as a cut.
SPEED	x1/4, x1/2, **x1**, x2	Specifies the video switching speed as a multiple of the specified BPM.
When TYPE = PinP & KEY 1–4 SCAN or DSK 1, 2 SCAN		
SCAN SEQUENCE	Specifies the order in which preset memories are switched. * Preset memories in which no settings have been saved are skipped.	
	NORMAL	Switches in the order of preset memory 1→30.
	REVERSE	Switches in the order of preset memory 30 →1.
	RANDOM	Switches randomly.
HDMI IN 1–8	OFF, 1–**5**–120sec	Specifies the time that the video is shown. Turn this "OFF" to skip.
SDI IN 1–8	OFF, 1–**5**–120sec	Specifies the time that the video is shown. Turn this "OFF" to skip.
STILL 1–8	OFF, 1–**5**–120sec	Specifies the time that the still image is shown. Turn this "OFF" to skip.

(*17) This can be set if "SCAN TARGET" is "PGM/A & PST/B".

21: CTL/EXP

Menu item	Value (bold text: default value)		Explanation
CTL/EXP 1, 2	These settings for the footswitch or expression pedal connected to the CTL/EXP 1, 2 jacks.		
CTL/EXP TYPE	Settings for the devices (footswitch or expression pedal) connected to the CTL/EXP 1, 2 jacks.		
	OFF		Disables the CTL/EXP jack.
	CTL A & CTL B		Choose this if a footswitch is connected.
	EXP		Choose this if an expression pedal is connected.
When CTL/EXP TYPE = CTL A & CTL B			
ASSIGN	Specifies the functions that are assigned to CTL A and CTL B of the footswitch.		
CTL A CTL B	CATEGORY	VALUE	Explanation
	N/A	**---**	No function is assigned.
	PGM CH SELECT	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the video sent to the PGM/A bus.
	PST CH SELECT	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the video sent to the PST/B bus.
	AUX 1-3 CH SELECT	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the video sent to the AUX 1-3 buses.
	INPUT 1–20 ASSIGN	HDMI 1–8, SDI 1–8, STILL 1–16, N/A	Changes the video assigned to INPUT 1–20.
	STILL OUTPUT	STILL 1–16	Pauses the normal output, and previews or final outputs a cut of the still image. Press the footswitch again to return to normal output.
	PinP & KEY 1–4 SOURCE	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the video source of the inset screen.
	DSK 1, 2 SOURCE	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the DSK video source.
	SW CONTROL	CUT SW, AUTO SW TRANSITION SW, MODE SW SPLIT 1 SW, SPLIT 2 SW PinP & KEY 1–4 PVW SW PinP & KEY 1–4 PGM SW DSK 1, 2 PVW SW DSK 1, 2 PGM SW AUTO MIXING SW OUTPUT FADE SW USER 1–4 SW	This works the same as when you press the button selected in "VALUE".
	TAKE	▲AUTO TAKE▼	Automatically switches the PGM/A bus and PST/B bus videos.
		▲CUT▼	Switches the video between PGM/A bus and PST/B bus as a cut.
	AUDIO INPUT MUTE	AUDIO IN 1–3/4, USB IN, Bluetooth IN, HDMI 1–8, SDI 1–8	Turns the mute function on/off for the input audio.
	AUDIO OUTPUT MUTE	MASTER OUTPUT, AUX 1-3, USB OUT	Turns the mute function on/off for the output audio.
	AUDIO INPUT SOLO	AUDIO IN 1–3/4, USB IN, Bluetooth IN, HDMI 1–8, SDI 1–8	Turns the solo function on/off for the input audio.
	AUDIO OUTPUT SOLO	MASTER OUTPUT, AUX 1-3	Turns the solo function on/off for the output audio.
	VOICE CHANGER SW	AUDIO IN 1, 2	Turns the voice changer on/off.
	REVERB (MOMENTARY)	---	Reverb turns on only while you press the footswitch.
	REVERB (ALTERNATE)	---	Turns reverb on/off.
	OUTPUT FADE	---	The final output video fades in/out.
	LOAD MEMORY	MEMORY 1–30	Recalls a preset memory.
	INPUT SCAN	NORMAL	Each time you press the footswitch, the final output switches from INPUT 1–10 in sequential order.
		REVERSE	Each time you press the footswitch, the final output switches from INPUT 1–10 in reverse order.
	MEMORY SCAN	NORMAL	Each time you press the footswitch, preset memories 1–30 are recalled in sequential order.
		REVERSE	Each time you press the footswitch, preset memories are recalled in reverse order from 30 through 1.
	PinP & KEY 1–4 SCAN	NORMAL	The PinP & KEY 1–4 inset screen videos switch between HDMI 1→8, SDI 1→8 and STILL 1→16 in order each time you press the footswitch.
		REVERSE	The PinP & KEY 1–4 inset screen videos switch between STILL 16→1, SDI 8→1 and HDMI 8→1 in order each time you press the footswitch.

Menu item	Value (bold text: default value)	Explanation	
CTL A CTL B	DSK 1, 2 SCAN	NORMAL	The DSK 1 and 2 caption videos switch between HDMI 1→8, SDI 1→8 and STILL 1→16 in order each time you press the footswitch.
		REVERSE	The DSK 1 and 2 caption videos switch between STILL 16→1, SDI 8→1 and HDMI 8→1 in order each time you press the footswitch.
	MACRO EXECUTE	MACRO 1–100	Executes a macro (a series of recorded operations).
	SEQUENCER	MODE ON/OFF, NEXT, PREVIOUS, AUTO SEQUENCE	When the sequencer function is on, this works the same as when you press the button selected in "VALUE".
	GPO (ONE SHOT)	GPO 1–16	Outputs a control signal for 0.5 seconds.
	GPO (ALTERNATE)	GPO 1–16	The control signal output is switched on/off with each press of the footswitch.
	CAMERA CONTROL	MODE	Turns the camera control function on/off. When this is on, the CAMERA PRESET [1]–[10] buttons can be used to recall the presets.
		PAN LEFT	While you press the footswitch, the camera faces left.
		PAN RIGHT	While you press the footswitch, the camera faces right.
		TILT DOWN	While you press the footswitch, the camera faces down.
		TILT UP	While you press the footswitch, the camera faces up.
		ZOOM WIDE(SLOW)	While you press the footswitch, the camera zooms-out at low speed.
		ZOOM WIDE(FAST)	While you press the footswitch, the camera zooms-out at high speed.
		ZOOM TELE(SLOW)	While you press the footswitch, the camera zooms-in at low speed.
		ZOOM TELE(FAST)	While you press the footswitch, the camera zooms-in at high speed.
		FOCUS NEAR	While you press the footswitch, the focal point moves closer.
		FOCUS FAR	While you press the footswitch, the focal point moves farther away.
		AUTO FOCUS	Turns the auto focus function on/off.
		AUTO EXPOSURE	Each time you press the footswitch, the exposure mode switches between "MANUAL" and "AUTO".
		PRESET 1–10 RECALL	When you press the footswitch, you can recall the presets from the camera.
	GRAPHICS PRESENTER	SELECT NEXT CONTENT, SELECT CONTENT 1–124, HIDE FRONT CONTENTS, HIDE BACKGROUND CONTENTS, ON AIR SWITCH	Sends commands for the Graphics Presenter dedicated Windows PC app.
	VC-100UHD CONTROL	SELECT CHANNEL 1–8	Switches between channels on a VC-100UHD connected via LAN.
When CTL/EXP TYPE = EXP			
ASSIGN	Specifies the function that is assigned to the expression pedal.		
EXP	**CATEGORY**	**VALUE**	**Explanation**
	N/A	---	No function is assigned.
	VIDEO FADER	**FADE**	Operates the video fader.
		▲CUT▼	Switches the video between PGM/A bus and PST/B bus as a cut.
	STILL OUTPUT	STILL 1–16	Pauses the normal output, and previews or final outputs a cut of the still image.
	AUDIO INPUT LEVEL	AUDIO IN 1–3/4, USB IN, Bluetooth IN, HDMI 1–8, SDI 1–8,	Adjusts the input volume.
	AUDIO OUTPUT LEVEL	MASTER OUTPUT, AUX 1-3, USB OUT	Adjusts the output volume.
	VOICE CHANGER MIX	AUDIO IN 1, 2	Adjusts the balance between the unprocessed voice (0) and the voice processed by the effect (100).
	REVERB LEVEL	---	Adjusts the amount of sound that is returned from the reverb (return level).
EXP CALIBRATE	ENTER	Displays the EXP CALIBRATE screen. Following the direction on the screen, calibrate (adjust) the expression pedal. The first time you use the expression pedal, be sure to execute calibration so that the pedal will operate optimally. In some cases, the expression pedal might no longer be operating optimally because of the passage of time or the conditions of use. In such cases you should also execute expression pedal calibration.	

22: RS-232/TALLY/GPO/GPI/KEY

Menu item	Value (bold text: default value)	Explanation
RS-232	These are the settings for transmitting/receiving RS-232 commands.	
RS-232	OFF, **ON**	When this is "ON", RS-232 commands can be transmitted and received.
BAUDRATE	9600, 38400, **115200**	Specifies the communication speed (bps) of the RS-232 connector.
TALLY/GPO	These are settings for tally signals or control signals that are output from the TALLY/GPIO connector.	
TEMPLATE	**HDMI TALLY**, SDI TALLY, GPO, HDMI TALLY/GPO, SDI TALLY/GPO	Selects a TALLY/GPO 1–16 settings template. Press the [VALUE] knob to apply the template settings to "TALLY/GPO 1–16".
TALLY/GPO 1–16	Assigns the tally signal to TALLY/GPIO connector pins 1–16.	
	PGM HDMI 1–8 PGM SDI 1–8	A tally signal is output when the video sent from the connector in question is the final output.
	PST HDMI 1–8 PST SDI 1–8	A tally signal is output when the video sent from the connector in question is the preview output.
	PGM STILL 1–16	A tally signal is output when the still image in question is the final output.
	PST STILL 1–16	A tally signal is output when the still image in question is the preview output.
	PGM INPUT 1–10	A tally signal is output when the final output video is selected using the cross-point button in question (the button lights up red).
	PST INPUT 1–10	A tally signal is output when the preview output video is selected using the cross-point button in question (the button lights up green).
	PGM HDMI 1–8, PGM SDI 1–8 PST HDMI 1–8, PST SDI 1–8	A tally signal is output from the connector pins whenever a cross-point button is selected.
	Assigns the GPO to TALLY/GPIO connector pins 1–16.	
	GPO 1–16	A control signal is output when you press a USER button or the footswitch, or assign a GPO output function to a GPI pin.
TALLY SETTINGS		
AUX 1–3 PinP & KEY 1–4 DSK 1, 2	DISABLE, ENABLE	When set to "ENABLE", the output status of the relevant video bus is reflected in the tally information.
GPI, NUMERIC KEYPAD	These settings assign the functions to the GPI or a numeric keypad.	
GPI 1–8 KEYPAD 1–9, +, -, *, /, ., ENTER	When an external control signal is input or you press a key, the assigned functions are executed.	

CATEGORY	VALUE	Explanation
N/A	**---**	No function is assigned.
PGM CH SELECT	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the video sent to the PGM/A bus.
PST CH SELECT	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the video sent to the PST/B bus.
AUX 1-3 CH SELECT	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the video sent to the AUX 1-3 buses.
INPUT 1–20 ASSIGN	HDMI 1–8, SDI 1–8, STILL 1–16, N/A	Changes the video assigned to INPUT 1–20.
STILL OUTPUT	STILL 1–16	Pauses the normal output, and previews or final outputs a cut of the still image. When a control signal or input again or you press a key, the signal output returns to normal.
PinP & KEY 1–4 SOURCE	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the video source of the inset screen.
DSK 1, 2 SOURCE	HDMI 1–8, SDI 1–8, STILL 1–16, INPUT 1–20	Switches the DSK video source.
SW CONTROL	CUT SW, AUTO SW TRANSITION SW, MODE SW SPLIT 1 SW, SPLIT 2 SW PinP & KEY 1–4 PVW SW PinP & KEY 1–4 PGM SW DSK 1, 2 PVW SW DSK 1, 2 PGM SW AUTO MIXING SW OUTPUT FADE SW, USER 1–4 SW	This works the same as when you press the button selected in "VALUE".
TAKE	▲AUTO TAKE▼	Automatically switches the PGM/A bus and PST/B bus videos.
	▲CUT▼	Switches the video between PGM/A bus and PST/B bus as a cut.
AUDIO INPUT MUTE	AUDIO IN 1–3/4, USB IN, Bluetooth IN, HDMI 1–8, SDI 1–8	Turns the mute function on/off for the input audio.
AUDIO OUTPUT MUTE	MASTER OUTPUT, AUX 1-3, USB OUT	Turns the mute function on/off for the output audio.

Menu item	Value (bold text: default value)	Explanation	
GPI 1–8 KEYPAD 1–9, +, -, *, /, ., ENTER	AUDIO INPUT SOLO	AUDIO IN 1–3/4, USB IN, Bluetooth IN, HDMI 1–8, SDI 1–8	Turns the solo function on/off for the input audio.
	AUDIO OUTPUT SOLO	MASTER OUTPUT, AUX 1-3	Turns the solo function on/off for the output audio.
	VOICE CHANGER SW	AUDIO IN 1, 2	Turns the voice changer on/off.
	REVERB (MOMENTARY)	---	Reverb turns on only while a control signal is input or press a key.
	REVERB (ALTERNATE)	---	Turns reverb on/off.
	OUTPUT FADE	---	The final output video fades in/out.
	LOAD MEMORY	MEMORY 1–30	Recalls a preset memory.
	INPUT SCAN	NORMAL	Each time a control signal is input or press a key, the final output switches from INPUT 1–10 in sequential order.
		REVERSE	Each time a control signal is input or press a key, the final output switches from INPUT 1–10 in reverse order.
	MEMORY SCAN	NORMAL	The preset memories 1 through 30 are recalled in order each time a control signal is input or press a key.
		REVERSE	The preset memories are recalled in reverse order from 30 through 1 each time a control signal is input or press a key.
	PinP & KEY 1–4 SCAN	NORMAL	The PinP & KEY 1–4 inset screen videos switch between HDMI 1→8, SDI 1→8 and STILL 1→16 in order each time you input a control signal or press a key.
		REVERSE	The PinP & KEY 1–4 inset screen videos switch between STILL 16→1, SDI 8→1 and HDMI 8→1 in order each time you input a control signal or press a key.
	DSK 1, 2 SCAN	NORMAL	The DSK 1 and 2 caption videos switch between HDMI 1→8, SDI 1→8 and STILL 1→16 in order each time you input a control signal or press a key.
		REVERSE	The DSK 1 and 2 caption videos switch between STILL 16→1, SDI 8→1 and HDMI 8→1 in order each time you input a control signal or press a key.
	MACRO EXECUTE	MACRO 1–100	Executes a macro (a series of recorded operations).
	SEQUENCER	MODE ON/OFF, NEXT, PREVIOUS, AUTO SEQUENCE	When the sequencer function is on, this works the same as when you press the button selected in "VALUE".
	GPO (ONE SHOT)	GPO 1–16	Outputs a control signal for 0.5 seconds.
	GPO (ALTERNATE)	GPO 1–16	The control signal output is switched on/off each time you input a control signal or press a key.
	CAMERA CONTROL	MODE	Turns the camera control function on/off. When this is on, the CAMERA PRESET [1]–[10] buttons can be used to recall the presets.
		PAN LEFT	While you input a control signal or press a key, the camera faces left.
		PAN RIGHT	While you input a control signal or press a key, the camera faces right.
		TILT DOWN	While you input a control signal or press a key, the camera faces down.
		TILT UP	While you input a control signal or press a key, the camera faces up.
		ZOOM WIDE(SLOW)	While you input a control signal or press a key, the camera zooms-out at low speed.
		ZOOM WIDE(FAST)	While you input a control signal or press a key, the camera zooms-out at high speed.
		ZOOM TELE(SLOW)	While you input a control signal or press a key, the camera zooms-in at low speed.
		ZOOM TELE(FAST)	While you input a control signal or press a key, the camera zooms-in at high speed.
		FOCUS NEAR	While you input a control signal or press a key, the focal point moves closer.
		FOCUS FAR	While you input a control signal or press a key, the focal point moves farther away.
		AUTO FOCUS	Turns the auto focus function on/off.
		AUTO EXPOSURE	Each time you input a control signal or press a key, the exposure mode switches between "MANUAL" and "AUTO".
		PRESET 1–10 RECALL	When you input a control signal or press a key, you can recall the presets from the camera.
	GRAPHICS PRESENTER	SELECT NEXT CONTENT, SELECT CONTENT 1–124, HIDE FRONT CONTENTS, HIDE BACKGROUND CONTENTS, ON AIR SWITCH	Sends commands for the Graphics Presenter dedicated Windows PC app.
	VC-100UHD CONTROL	SELECT CHANNEL 1–8	Switches between channels on a VC-100UHD connected via LAN.

23: LAN CONTROL

<table>
<tr><th>Menu item</th><th>Value (bold text: default value)</th><th>Explanation</th></tr>
<tr><td rowspan="3">CONFIGURE</td><td colspan="2">Selects how settings are made for the IP address, subnet mask, and default gateway.</td></tr>
<tr><td>MANUAL</td><td>This is to be configured manually.</td></tr>
<tr><td>USING DHCP</td><td>The IP address and other information needed for connecting to the network is obtained automatically from the DHCP server of the LAN.</td></tr>
<tr><td>IP ADDRESS (*18)</td><td>---.---.---.---</td><td>Specifies the IP address as appropriate for the network to which the unit is connected.</td></tr>
<tr><td>SUBNET MASK (*18)</td><td>---.---.---.---</td><td>Specifies the subnet mask as appropriate for the network to which the unit is connected.</td></tr>
<tr><td>DEFAULT GATEWAY (*18)</td><td>---.---.---.---</td><td>Specifies the default gateway as appropriate for the network to which the unit is connected.</td></tr>
<tr><td>NETWORK PASSWORD</td><td>ENTER</td><td>Displays the NETWORK PASSWORD screen.
Set the necessary password for network connection, using four characters.
Show password
<table><tr><td>Password not set</td><td>– – – –</td></tr><tr><td>Password set</td><td>✻✻✻✻</td></tr></table>* Input the password that's set here when connecting a computer or other device on the same network to access the V-160HD.</td></tr>
<tr><td rowspan="2">INFORMATION</td><td>ENTER</td><td>Displays the LAN INFORMATION screen.</td></tr>
<tr><td colspan="2">Displays the following information.<table><tr><th>Item</th><th>Explanation</th></tr><tr><td>STATUS</td><td>Connection status</td></tr><tr><td>IP ADDRESS</td><td>IP address</td></tr><tr><td>SUBNET MASK</td><td>Subnet mask.</td></tr><tr><td>DEFAULT GATEWAY</td><td>Default gateway</td></tr><tr><td>MAC ADDRESS</td><td>MAC address</td></tr><tr><td>QR code</td><td>QR code for accessing the Smart Tally settings screen (Web)
* Note that the QR code is not shown if the V-160HD is disconnected from the network.</td></tr></table></td></tr>
<tr><td rowspan="11">VC-100UHD CONTROL</td><td>ENTER</td><td>Displays the VC-100UHD CONTROL menu.</td></tr>
<tr><td colspan="2"><table><tr><th>Menu item</th><th>Value</th><th>Explanation</th></tr><tr><td>CONTROL</td><td>OFF, ON</td><td>Turns the VC-100UHD control function on/off.
When this is "ON", you can switch the channel of a VC-100UHD that's connected to the same network from the V-160HD.
* Connect the VC-100UHD and V-160HD with a LAN cable.
The following methods are available for switching the channel.
• Operating the USER button (p. 74, 121)
• Operating a footswitch (p. 78, 112)
• Operating from a USB numeric keypad (p. 82)
• GPI control (p. 80, 114)</td></tr><tr><td>IP ADDRESS</td><td>---.---.---.---</td><td>Input the network connection password that's set on the VC-100UHD.</td></tr><tr><td>PASSWORD</td><td>ENTER</td><td>Displays the VC-100UHD PASSWORD screen.
Input the network connection password that's set on the VC-100UHD.</td></tr><tr><td rowspan="6">STATUS</td><td colspan="2">This indicates the network connection status with the VC-100UHD.</td></tr><tr><td>NOT CONNECTED</td><td>No connection</td></tr><tr><td>CONNECTING</td><td>Connected</td></tr><tr><td>NOT FOUND</td><td>No VC-100UHD detected</td></tr><tr><td>NO REMOTE PASSWORD</td><td>Password not set on VC-100UHD</td></tr><tr><td>NO LOCAL PASSWORD</td><td>"PASSWORD" not inputted</td></tr><tr><td>PASSWORD MISMATCH</td><td>Password inputted in "PASSWORD" does not match the password set on the VC-100UHD</td></tr></table></td></tr>
</table>

(*18) This can be set if "CONFIGURE" is "MANUAL".

24: CAMERA CONTROL

Menu item	Value (bold text: default value)	Explanation
CAMERA ID	**CAMERA 1**–16	Selects the camera to be controlled.
PROTOCOL	N/A, JVC, Panasonic, Canon PTZ, VISCA over IP, PTZOptics, Avonic	Specifies the camera's protocol.
IP ADDRESS	**192.168.0.101**	Input the camera's IP address.
PORT	0–**5678**–65535	Sets the port number for connecting with the camera when "PROTOCOL" is "PTZOPTICS" or "AVONIC".
LOGIN NAME	ENTER	Displays the LOGIN NAME screen. Enter the log-in name needed to connect with the camera when "PROTOCOL" is "JVC".
PASSWORD	ENTER	Displays the PASSWORD screen. Enter the password needed to connect with the camera when "PROTOCOL" is "JVC".
CAMERA PRESET RECALL	**PRESET 1**–10	Selects a preset in which camera settings are preset. By pressing the [VALUE] knob you can recall a preset from the camera. By assigning a USER button to the camera control function, you can recall presets using the buttons (p. 77).
ALL CAMERAS RECALL	Specifies how presets are recalled.	
	OFF	Recall presets from the camera that is being controlled.
	ON	Simultaneously recall presets from all cameras (CAMERA 1–16).
CAMERA PRESET STORE	**PRESET 1**–10	This selects the preset in which camera settings will be registered. By pressing the [VALUE] knob you can register the camera settings to a preset. * Presets are saved in the camera itself.
PAN	Adjusts the horizontal position of the camera. When the cursor is located at this value, you can control the camera.	
	LEFT	While you hold down the [VALUE] knob, the camera faces left.
	RIGHT	While you hold down the [VALUE] knob, the camera faces right.
TILT	Adjusts the vertical position of the camera. When the cursor is located at this value, you can control the camera.	
	DOWN	While you hold down the [VALUE] knob, the camera faces down.
	UP	While you hold down the [VALUE] knob, the camera faces up.
SPEED	1–**12**–24	Adjusts the speed at which the camera changes direction.
ZOOM	Adjusts the camera's zoom position. When the cursor is located at this value, you can control the camera.	
	WIDE (FAST)	While you hold down the [VALUE] knob, the camera zooms-out at high speed.
	WIDE (SLOW)	While you hold down the [VALUE] knob, the camera zooms-out at low speed.
	TELE (SLOW)	While you hold down the [VALUE] knob, the camera zooms-in at low speed.
	TELE (FAST)	While you hold down the [VALUE] knob, the camera zooms-in at high speed.
FOCUS (*19)	Adjusts the focal point of the camera. When the cursor is located at this value, you can control the camera.	
	NEAR	While you hold down the [VALUE] knob, the focal point moves closer.
	FAR	While you hold down the [VALUE] knob, the focal point moves farther away.
AUTO FOCUS	OFF, **ON**	When this is "ON", the focal point is set automatically.
AUTO EXPOSURE	**OFF**, ON	Specifies the exposure mode.
TALLY CH	**HDMI 1**–8, SDI 1–8	Specifies the connector from which the camera video is input. When the camera video from the V-160HD is the final output, the camera's tally light is lit.

(*19) This can be set if "AUTO FOCUS" is "OFF".

25: USB MEMORY

Menu item	Value (bold text: default value)	Explanation
RESTORE ALL SETTINGS	ENTER	Shows a list of the setting files (.V16) that are on the USB flash drive. You can select a setting file and restore the settings into the unit. The current settings are overwritten.
BACKUP ALL SETTINGS	ENTER	Shows a list of the setting files (.V16) that are on the USB flash drive. You can select the settings file used to back up the current settings to the USB flash drive. If you selected "NEW FILE...", a new settings file is saved. * Some settings are not saved to the file, such as the "TEST PATTERN" and "TEST TONE" settings in the SYSTEM menu.
FORMAT	EXEC	Formats the USB flash drive.

26: SYSTEM

Menu item	Value (bold text: default value)	Explanation
HDCP (*20)	Specifies whether HDCP is enabled (ON) or disabled (OFF).	
	OFF	Copy-protected (HDCP) video cannot be input.
	ON	Copy-protected (HDCP) video can be input. HDCP is also added to the video that is output. * Video/audio from the SDI OUT connectors and the USB STREAM port are not outputted.
OUTPUT FORMAT (*20)	ENTER	Specifies the output format.
SYSTEM FORMAT (*20)	**1080p**, 720p	Specifies the system format. The output format is the same as the system format. * The output format of the HDMI OUT 3 connector is fixed at 1080p.
HDMI OUT 1–3	**1080p**, 1080i, 720p	Specifies the output format of the HDMI Out 1–3 connectors.
SDI OUT 1–3	**1080p**, 1080i, 720p	Specifies the output format of the SDI Out 1–3 connectors.
USB OUT	**1080p**, 720p	Specifies the output format of the USB STREAM port.
FRAME RATE (*20)	60, **59.94**, 50, 30, 29.97, 25, 24, 23.976Hz	Specifies the frame rate.
USB OUT (*20)	30, 60Hz 29.97, **59.94Hz** 25, 50Hz	Specifies the frame rate of the USB STREAM port. * The value differs depending on the "FRAME RATE" setting.
REFERENCE	Specifies the reference clock of the V-160HD.	
	INTERNAL	The V-160HD's internal clock is used as the reference clock
	EXTERNAL	A synchronizing signal input via the REFERENCE IN connector is used as the reference clock. Black-burst (frame synchronization), bi-level, and tri-level synchronizing signals are supported.
	SDI 1–8	A signal input via one of the SDI IN 1–8 connectors is used as the reference clock. The VSYNC (vertical synchronizing) signal output from the V-160HD is synchronized to the VSYNC signal input via SDI.
CLOCK ADJUST	-1920–**0**–1920	This adjusts the phase horizontally. Adjust this when output is horizontally out of sync with the operation of other devices using the same clock.
LINE ADJUST	-1200–**0**–1200	This adjusts the phase vertically. Adjust this when output is vertically out of sync with or field-shifted from the operation of other devices using the same clock.
Bluetooth	ENTER	Displays the Bluetooth menu.

Menu item	Value	Explanation
Bluetooth	**OFF**, ON	Turns the Bluetooth function on/off.
PAIRING	EXEC	Begins pairing with a Bluetooth device.
STATUS	Displays the Bluetooth connection status.	
	OFF	Bluetooth off
	PAIRING MODE	Now pairing
	NOT CONNECTED	Waiting for connection
	CONNECTED	Connected

PANEL OPERATION	Specifies the operation mode for video transitions.	
	A/B	The video of the bus toward which the video fader is flipped always becomes the final output.
	PGM/PST	The video on the PGM/A bus is always the final output. Select the preview output video (the video to be output next) for the PST/B bus side.
	DISSOLVE	This mode selects the video to output and immediately outputs it to the PGM bus.
	PGM/PST(20)	In this mode, all 20 buttons including the PGM/A [1]–[10] and PST/B [1]–[10] buttons are used as cross-point buttons for PST/B.
EFFECTS TRANSITION SYNC	**OFF**, ON	Sets whether the PinP/DSK composites are switched on and off in tandem with the video transitions. When this is "ON", the PinP/DSK composition turn on/off in tandem with the video transitions. The composited result that is previewed is sent to final output when transitioning to a different video.
EFFECTS SPOT	DISABLE, **ENABLE**	Specifies whether the spot function for the [PVW] and [PGM] buttons is enabled (ENABLE) or disabled (DISABLE). With the spot function, long-pressing the [PVW] or [PGM] button for each layer shows only the layer that is targeted for the operation while the button is pressed.

(*20) A change in the setting is not applied until you press the [VALUE] knob to confirm.

Menu item	Value (bold text: default value)	Explanation
PANEL LOCK	ENTER	Displays the PANEL LOCK menu.

Enable (ON) or disable (OFF) the panel lock.

Menu item	Value	Explanation
ALL SW & VOLUME	**OFF**, ON	The following settings are turned on/off together.
PGM/A 1–10 SW	**OFF**, ON	PGM/A cross-point [1]–[10] buttons
PST/B 1–10 SW	**OFF**, ON	PST/B cross-point [1]–[10] buttons
INPUT ASSIGN SW	**OFF**, ON	[INPUT ASSIGN] button
CUT SW	**OFF**, ON	[CUT] button
AUTO SW	**OFF**, ON	[AUTO] button
MODE SW	**OFF**, ON	[MODE] button
AUX SW	**OFF**, ON	AUX [1]–[10] buttons
MEMORY SW	**OFF**, ON	MEMORY [1]–[10] buttons
MACRO SW	**OFF**, ON	MACRO [1]–[10] buttons
TRANSITION SW	**OFF**, ON	[TRANSITION] button
VIDEO FADER	**OFF**, ON	Video fader
SPLIT 1, 2 BLOCK	**OFF**, ON	[SPLIT 1] [SPLIT 2] buttons, [PGM/A-CENTER] [PST/B-CENTER] knobs
SEQUENCER BLOCK	**OFF**, ON	Buttons in the SEQUENCER section
PinP & KEY 1–4 ALL	**OFF**, ON	Buttons and knobs in the PinP & KEY sections
POSITION H	**OFF**, ON	[POSITION H] knob
POSITION V	**OFF**, ON	[POSITION V] knob
SOURCE SW	**OFF**, ON	[SOURCE] button
PVW SW	**OFF**, ON	[PVW] button
PGM SW	**OFF**, ON	[PGM] button
DSK 1, 2 ALL	**OFF**, ON	Buttons and knobs in the DSK sections
POSITION H	**OFF**, ON	[POSITION H] knob
POSITION V	**OFF**, ON	[POSITION V] knob
SOURCE SW	**OFF**, ON	[SOURCE] button
PVW SW	**OFF**, ON	[PVW] button
PGM SW	**OFF**, ON	[PGM] button
MONITOR 1–4 SW	**OFF**, ON	MONITOR [1]–[4] buttons
OUTPUT FADE SW	**OFF**, ON	[OUTPUT FADE] button
CAPTURE IMAGE SW	**OFF**, ON	[CAPTURE IMAGE] button
USER 1–4 SW	**OFF**, ON	USER [1]–[4] buttons
AUDIO IN 1–3/4 VOLUME	**OFF**, ON	AUDIO INPUT LEVEL [1] [2] [3/4] knobs
AUTO MIXING SW	**OFF**, ON	[AUTO MIXING] button
AUX VOLUME	**OFF**, ON	[AUX] knob
USB STREAM VOLUME	**OFF**, ON	[USB STREAM] knob
MASTER OUTPUT VOLUME	**OFF**, ON	[MASTER OUTPUT] knob

AUX LINKED PGM	ENTER	Displays the AUX LINKED PGM screen.

Specifies whether the same video as the final output is sent to the AUX bus (AUX link).

Menu item	Value	Explanation
AUX LINKED PGM	**OFF**	Use the AUX [1]–[10] buttons to select the video of the AUX bus. When selecting a video that is not assigned to INPUT 1–10, set this in "AUX SOURCE" under the VIDEO ASSIGN menu.
	AUTO LINK	AUX link is enabled, and the same video as the final output is sent to the AUX bus. **Temporarily disabling AUX link** When you press an AUX [1]–[10] button, the selection of the AUX [1]–[10] button is enabled (lit green). You can select the video you want to send to the AUX bus. **Re-enabling AUX link** **AUTO LINK**: When you operate the [AUTO] button etc. to switch the final output video, AUX link is automatically enabled. **MANUAL LINK**: When you press the AUX [1]–[8] button that is currently selected (lit green), AUX link is enabled.
	MANUAL LINK	
AUX 1-3	---, OFF, ON	When this is "OFF", AUX link is forcibly disabled. When this is "ON", the settings of the"AUX LINKED PGM" item are applied.

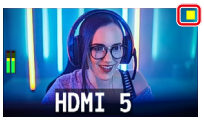
Menu item	Value (bold text: default value)	Explanation
CUT SW ASSIGN (*21)	Specifies the function of the [CUT] button.	
	▲AUTO TAKE	When the video of the PST/B bus is selected, switches to the video of the PGM/A bus. The transition time is specified by the TRANSITION TIME menu item "WIPE/MIX TIME".
	▲AUTO TAKE▼	Switches the video between PGM/A bus and PST/B bus. The transition time is specified by the TRANSITION TIME menu item "WIPE/MIX TIME".
	▲CUT	When the video of the PST/B bus is selected, switches to the video of the PGM/B bus as a cut.
	▲CUT▼	Switches the video between PGM/A bus and PST/B bus as a cut.
	▲TRANSFORM	When the video of the PST/B bus is selected, switches to the video of the PGM/A bus as a cut only while you're holding down the button.
AUTO SW ASSIGN (*21)	Specifies the function of the [AUTO] button.	
	AUTO TAKE▼	When the video of the PGM/A bus is selected, switches to the video of the PST/B bus. The transition time is specified by the TRANSITION TIME menu item "WIPE/MIX TIME".
	▲AUTO TAKE▼	Switches the video between PGM/A bus and PST/B bus. The transition time is specified by the TRANSITION TIME menu item "WIPE/MIX TIME".
	CUT▼	When the video of the PGM/A bus is selected, switches to the video of the PST/B bus as a cut.
	▲CUT▼	Switches the video between PGM/A bus and PST/B bus as a cut.
	TRANSFORM▼	When the video of the PGM/A bus is selected, switches to the video of the PST/B bus as a cut only while you're holding down the button.
OUTPUT FADE ASSIGN	Specifies the function of the [OUTPUT FADE] button.	
VIDEO FADE	N/A, **BLACK**, WHITE, AUX 1–3	The final output video is faded-in/out to the specified video.
AUDIO FADE	DISABLE, **ENABLE**	When this is set to "ENABLE", the output audio also fades in/out along with the video.

(*21) This can be set if "PANEL OPERATION" is "A/B".

Menu item	Value (bold text: default value)	Explanation
USER SW ASSIGN	ENTER	Displays the USER SW ASSIGN menu.

Specifies the function that is assigned to the USER [1]–[4] button.

USER SW 1–4		
CATEGORY	**VALUE**	**Explanation**
N/A	**---**	No function is assigned.
FREEZE	---	Turns the freeze function on/off.
AUTO SWITCHING	AUTO SWITCHING SW	Turns the auto switching function on/off.
	BPM TAP	When "TYPE" in the AUTO SWITCHING menu is "BPM SYNC", you can set the BPM according to the tempo at which you press the button. The buttons flash in sync with the current BPM setting.
INPUT ASSIGN	INPUT 1–20	Each time you press a button, the video source assigned to the specified cross-point button switches to the following sources in order: HDMI 1 → 8 → SDI 1 → 8 → STILL 1 → 16.
STILL OUTPUT	STILL 1–16	Pauses the normal output, and previews or final outputs a cut of the still image.
AUDIO INPUT MUTE	AUDIO IN 1–3/4 USB IN, Bluetooth IN HDMI 1–8, SDI 1–8	Turns the mute function on/off for the input audio.
AUDIO OUTPUT MUTE	MASTER OUTPUT AUX 1-3, USB OUT	Turns the mute function on/off for the output audio.
VOICE CHANGER SW	AUDIO IN 1, 2	Turns the voice changer on/off.
REVERB (MOMENTARY)	---	Reverb turns on only while the button is pressed.
REVERB (ALTERNATE)	---	Turns reverb on/off.
PRESET MEMORY	MEMORY 1–30	Recalls a preset memory. Long-press the button to save the current settings in preset memory.
INPUT SCAN	NORMAL	Each time you press a button, the final output switches from INPUT 1–10 in sequential order.
	REVERSE	Each time you press a button, the final output switches from INPUT 1–10 in reverse order.
MEMORY SCAN	NORMAL	Each time you press a button, preset memories 1–30 are recalled in sequential order.
	REVERSE	Each time you press a button, preset memories are recalled in reverse order from 30 through 1.
PinP & KEY 1–4 SCAN	NORMAL	The PinP & KEY 1–4 inset screen videos switch between HDMI 1→8, SDI 1→8 and STILL 1→16 in order each time you press the button.
	REVERSE	The PinP & KEY 1–4 inset screen videos switch between STILL 16→1, SDI 8→1 and HDMI 8→1 in order each time you press the button.
DSK 1, 2 SCAN	NORMAL	The DSK 1 and 2 caption videos switch between HDMI 1→8, SDI 1→8 and STILL 1→16 in order each time you press the button.
	REVERSE	The DSK 1 and 2 caption videos switch between STILL 16→1, SDI 8→1 and HDMI 8→1 in order each time you press the button.
MACRO EXECUTE	MACRO 1–100	Executes a macro (a series of recorded operations).
REC CONTROL	---	Controls the recorder's video record start/stop if a recorder that supports REC control functionality is connected.
GPO (ONE SHOT)	GPO 1–16	Outputs a control signal for 0.5 seconds.
GPO (ALTERNATE)	GPO 1–16	The control signal output is switched on/off while the button is pressed.
CAMERA CONTROL	MODE	Turns the camera control function on/off. When this is on, the CAMERA PRESET [1]–[10] buttons can be used to recall the presets.
	PAN LEFT	While you press a button, the camera faces left.
	PAN RIGHT	While you press a button, the camera faces right.
	TILT DOWN	While you press a button, the camera faces down.
	TILT UP	While you press a button, the camera faces up.
	ZOOM WIDE(SLOW)	While you press a button, the camera zooms-out at low speed.
	ZOOM WIDE(FAST)	While you press a button, the camera zooms-out at high speed.
	ZOOM TELE(SLOW)	While you press a button, the camera zooms-in at low speed.
	ZOOM TELE(FAST)	While you press a button, the camera zooms-in at high speed.
	FOCUS NEAR	While you press a button, the focal point moves closer.
	FOCUS FAR	While you press a button, the focal point moves farther away.
	AUTO FOCUS	Turns the auto focus function on/off.
	EXPOSURE	Each time you press a button, the exposure mode switches between "MANUAL" and "AUTO".
GRAPHICS PRESENTER	SELECT NEXT CONTENT, SELECT CONTENT 1–124, HIDE FRONT CONTENTS, HIDE BACKGROUND CONTENTS, ON AIR SWITCH	Sends commands for the Graphics Presenter dedicated Windows PC app.
VC-100UHD CONTROL	SELECT CHANNEL 1–8	Switches between channels on a VC-100UHD connected via LAN.
SYSTEM	EFFECTS TRANSITION SYNC Bluetooth CONTROL	Turns the Bluetooth function and Effects Transition Sync function on/off. Long-press the button to begin pairing.

<table>
<tr><th>Menu item</th><th>Value (bold text: default value)</th><th>Explanation</th></tr>
<tr><td rowspan="2">MONITOR SW ASSIGN</td><td>ENTER</td><td>Displays the MONITOR SW ASSIGN menu.</td></tr>
<tr><td colspan="2">These settings are for the monitoring video assigned to the MONITOR [1]–[4] buttons.
<table>
<tr><th>Menu item</th><th>Value</th><th>Explanation</th></tr>
<tr><td rowspan="8">MONITOR 1–4 SW</td><td>N/A</td><td>No video is assigned.</td></tr>
<tr><td>MULTI-VIEW</td><td>The final output video, preview output video and the videos allocated to the cross-point [1]–[8] buttons are shown in sections of the display (multi-view).</td></tr>
<tr><td>16 INPUT-VIEW</td><td>The input video from the HDMI IN connectors and the SDI IN connectors are shown as 16 separate sections on the screen</td></tr>
<tr><td>16 STILL-VIEW</td><td>Shows the loaded still images in 16 separate sections on the screen.</td></tr>
<tr><td>PROGRAM</td><td>Shows the final output video.</td></tr>
<tr><td>SUB PROGRAM</td><td>Shows the SUB PROGRAM bus video.</td></tr>
<tr><td>PREVIEW</td><td>Shows the preview output video.</td></tr>
<tr><td>AUX 1-3</td><td>Shows the AUX bus video.</td></tr>
</table></td></tr>
<tr><td>LED DIMMER</td><td>1–8</td><td>Adjusts the brightness when the buttons or indicators are lit.</td></tr>
<tr><td>LCD DIMMER</td><td>1–8</td><td>Adjusts the brightness of this unit’s monitor.</td></tr>
<tr><td>ON SCREEN MENU</td><td>UPPER LEFT, UPPER RIGHT, LOWER LEFT, LOWER RIGHT</td><td>Sets where the menu is displayed.</td></tr>
<tr><td>TALLY FRAME</td><td>OFF, ON</td><td>Sets whether to display the tally frame or not in the monitor.</td></tr>
<tr><td>AUX/SOURCE INDICATOR</td><td>OFF, ON</td><td>Sets whether to display the AUX/SOURCE indicators in the monitor.
 

<table>
<tr><th>Color</th><th>Explanation</th></tr>
<tr><td>Yellow</td><td>Shows that this has been selected as an inset screen for the PinP & KEY.</td></tr>
<tr><td>Magenta</td><td>Shows that this has been selected as a DSK video source.</td></tr>
<tr><td>Green</td><td>Shows that this has been selected as an AUX bus video source.</td></tr>
</table></td></tr>
<tr><td>REC INDICATOR</td><td>OFF, ON</td><td>Sets whether to display the REC indicator in the monitor.
When this is “ON”, a REC indicator showing that the camera’s REC button has been pressed is displayed, if the unit is connected to a camera that supports the REC status function.</td></tr>
<tr><td>AUDIO LEVEL METER</td><td>OFF, ON</td><td>Specifies whether to display the audio level meter in the monitor.</td></tr>
<tr><td>MASTER OUTPUT</td><td>OFF, LEFT, RIGHT</td><td rowspan="4">Sets the display position of the audio level meter.
When this is “OFF”, the level meter is always hidden.
* This is displayed in the multi-view.</td></tr>
<tr><td>AUX 1-3</td><td>OFF, LEFT, RIGHT</td></tr>
<tr><td>USB OUT</td><td>OFF, LEFT, RIGHT</td></tr>
<tr><td>AUDIO IN/USB/Bluetooth</td><td>OFF, LOWER, UPPER</td></tr>
<tr><td>MULTI-VIEW LABEL</td><td>OFF, ON</td><td>Specifies whether to display the label in the monitor.</td></tr>
<tr><td>AUTO HIDE</td><td>OFF, ON</td><td>When this is “ON”, the label is hidden while the menu is open.</td></tr>
<tr><td>MULTI-VIEW LABEL EDIT</td><td>HDMI 1– 8, SDI 1–8, STILL 1–16, PGM, SUB PGM, PVW, AUX 1-3, DSK 1, 2</td><td>Edit the label name shown in the monitor.
Press the [VALUE] knob to access the LABEL EDIT screen.</td></tr>
<tr><td>MULTI-VIEW LABEL SIZE</td><td>SMALL, NORMAL</td><td>Specifies the text size of the label shown in the monitor.</td></tr>
<tr><td>MULTI-VIEW LAYOUT</td><td colspan="2">Specifies the videos to be shown in the PVW section (LEFT) and PGM section (RIGHT) in the multi-view.</td></tr>
<tr><td rowspan="7">LEFT
RIGHT</td><td>PROGRAM</td><td>Final output video. This is the default setting for “RIGHT”.</td></tr>
<tr><td>SUB PROGRAM</td><td>SUB PROGRAM bus video</td></tr>
<tr><td>PREVIEW</td><td>Preview output video. This is the default setting for “LEFT”.</td></tr>
<tr><td>AUX 1-3</td><td>AUX 1-3 bus video</td></tr>
<tr><td>DSK 1, 2</td><td>Video selected as the DSK1, 2 video source</td></tr>
<tr><td>BLACK</td><td>Black screen</td></tr>
</table>

<table>
<tr><th>Menu item</th><th>Value (bold text: default value)</th><th>Explanation</th></tr>
<tr><td rowspan="2">16 INPUT-VIEW LAYOUT</td><td>ENTER</td><td>Displays the 16 INPUT-VIEW LAYOUT menu.</td></tr>
<tr><td colspan="2">
<table>
<tr><th>Menu item</th><th>Value</th><th>Explanation</th></tr>
<tr><td>INPUT 1–16</td><td>N/A, HDMI 1–8,
SDI 1–8, STILL 1–16,
INPUT 1–20

The default values are as follows.
INPUT 1: HDMI 1
INPUT 2: HDMI 2
INPUT 3: HDMI 3
INPUT 4: HDMI 4
INPUT 5: HDMI 5
INPUT 6: HDMI 6
INPUT 7: HDMI 7
INPUT 8: HDMI 8
INPUT 9: SDI 1
INPUT 10: SDI 2
INPUT 11: SDI 3
INPUT 12: SDI 4
INPUT 13: SDI 5
INPUT 14: SDI 6
INPUT 15: SDI 7
INPUT 16: SDI 8</td><td>Sets the input video that’s shown in the monitor (in 16 separate sections) from the HDMI IN connectors and the SDI IN connectors.</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">HDMI OUT 3 OSD</td><td>ENTER</td><td>Displays the HDMI OUT 3 OSD menu.</td></tr>
<tr><td colspan="2">Sets whether to show the menu and other display elements in the video output from the HDMI OUT 3 connector.
<table>
<tr><th>Menu item</th><th>Value</th><th>Explanation</th></tr>
<tr><td>ON SCREEN MENU</td><td>OFF, ON</td><td>Menu</td></tr>
<tr><td>TALLY FRAME</td><td>OFF, ON</td><td>Tally frame</td></tr>
<tr><td>LABEL/LEVEL METER/INDICATOR</td><td>OFF, ON</td><td>Label, audio level meter, REC/AUX/SOURCE indicator</td></tr>
</table>
</td></tr>
<tr><td>AUTO INPUT DETECT</td><td>OFF, ON</td><td>Turns the auto input detect function on/off.
When this is “ON”, input is automatically detected, and the video is switched when input from the final output video is interrupted.</td></tr>
<tr><td>TEST PATTERN</td><td colspan="2">Specifies the test pattern.</td></tr>
<tr><td>PATTERN</td><td>OFF, 75% COLOR BAR,
100% COLOR BAR, RAMP,
STEP, HATCH</td><td>Selects the test pattern to display.</td></tr>
<tr><td>MOTION</td><td>DISABLE, SLOW, FAST</td><td>Specifies the scroll speed of the test pattern.</td></tr>
<tr><td>TEST TONE</td><td colspan="2">Specifies the test tone.</td></tr>
<tr><td>LEVEL</td><td>OFF, -20– -10–0dB</td><td>Adjusts the test tone volume.</td></tr>
<tr><td>FREQUENCY L</td><td>500Hz–1kHz–2kHz</td><td>Specifies the frequency of the test tone for the L-channel.</td></tr>
<tr><td>FREQUENCY R</td><td>500Hz–1kHz–2kHz</td><td>Specifies the frequency of the test tone for the R-channel.</td></tr>
<tr><td>VIDEO FADER CALIBRATE</td><td>ENTER</td><td>Displays the VIDEO FADER SET screen.
Following the instructions on the screen, calibrate (adjust) the video fader.
In some cases, because of continued use or transport, the video output might not reach 100% even if you flip the video fader all the way upward or downward. Execute video fader calibration in this case as well.</td></tr>
<tr><td>FACTORY RESET</td><td>EXEC</td><td>Returns the unit to its factory defaults.</td></tr>
<tr><td>VERSION</td><td>—</td><td>Displays the version of the system program.</td></tr>
</table>

List of Shortcut Keys

You can set the following items without showing a menu.

Menu item	Operation
MIX/WIPE (When mix is selected)	
MIX TYPE	Hold down the [TRANSITION] button and turn the [PGM/A-CENTER] knob
MIX/WIPE (When wipe is selected)	
WIPE TYPE	Hold down the [TRANSITION] button and turn the [PGM/A-CENTER] knob
WIPE DIRECTION	Hold down the [TRANSITION] button and turn the [PST/B-CENTER] knob
WIPE BORDER COLOR	Hold down the [TRANSITION] button and turn the [PGM/A-CENTER] knob while pressing
WIPE BORDER WIDTH	Hold down the [TRANSITION] button and turn the [PST/B-CENTER] knob while pressing
SPLIT 1	
SPLIT TYPE	Hold down the [SPLIT 1] button and turn the [PGM/A-CENTER] knob
SPLIT 2	
SPLIT TYPE	Hold down the [SPLIT 2] button and turn the [PST/B-CENTER] knob

When the shortcut key is operated, the following menu screen is shown.

Menu	Operation
DSK 1	Hold down the DSK 1 [PVW] button and press the [MENU] button
DSK 2	Hold down the DSK 2 [PVW] button and press the [MENU] button
PinP & KEY 1	Hold down the PinP & KEY 1 [PVW] button and press the [MENU] button
PinP & KEY 2	Hold down the PinP & KEY 2 [PVW] button and press the [MENU] button
PinP & KEY 3	Hold down the PinP & KEY 3 [PVW] button and press the [MENU] button
PinP & KEY 4	Hold down the PinP & KEY 4 [PVW] button and press the [MENU] button
SPLIT 1	Hold down the [SPLIT 1] button and press the [MENU] button
SPLIT 2	Hold down the [SPLIT 2] button and press the [MENU] button
MIX/WIPE	Hold down the [TRANSITION] button and press the [MENU] button

The following knobs can be adjusted in steps of 1/10.

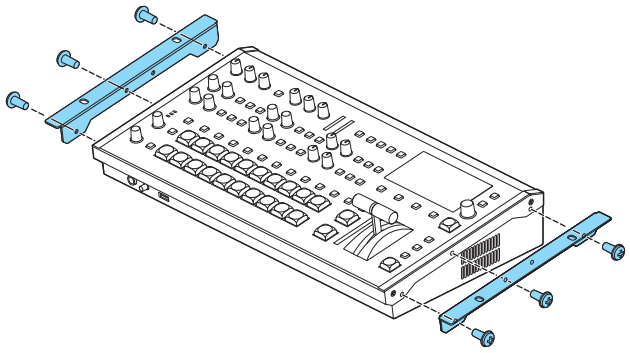
Menu	Operation
PinP & KEY 1-4 [POSITION H]	Hold down the [EXIT] button and turn the PinP & KEY 1-4 [POSITION H] knob
PinP & KEY 1-4 [POSITION V]	Hold down the [EXIT] button and turn the PinP & KEY 1-4 [POSITION V] knob
[PGM/A-CENTER]	Hold down the [EXIT] button and turn the [PGM/A-CENTER] knob
[PST/B-CENTER]	Hold down the [EXIT] button and turn the [PST/B-CENTER] knob

About Rack Mounting

Attaching the included rack-mount angles lets you install the V-160HD in a 19-inch rack.

Attaching the Rack-Mount Angles

1. **Turn off the power to the V-160HD and disconnect the power cord and all connection cables.**
2. **Use the included mounting screws (three per side) to attach the rack-mount angles.**



* Both of the rack-mount angles have the same shape; there is no difference between left and right.

NOTE

When uninstalling the rack-mount angles

Before uninstalling the rack-mount angles, turn off the power to the V-160HD and disconnect the power cord and all connector cables.

Important Notes on Rack Mounting

- Before mounting, turn off the power to the V-160HD and detach the power cord and all connection cables.
- When mounting the unit, take care not to pinch your fingers etc.
- To prevent incorrect operation or malfunction, take care not to subject areas protruding beyond the rack to accidental impact.
- To ensure room for connectors and cables, leave 2U of clearance above the unit.
- Use all threaded holes (at 2 locations on each side, for a total of 4) to secure the unit to the rack using screws. Screws for rackmounting are not included.
- Never transport the rack with the unit installed in it. The impact of shaking or vibration might deform the rack-mount angles.
- When mounting the V-160HD in a rack, pay attention to the following points to ensure efficient cooling.
  - Install in a well-ventilated location.
  - Avoid blocking the cooling-fan intake and exhaust ports on the side panels of the V-160HD.
  - Avoid mounting the unit in a sealed-type rack. Warm air within the rack cannot escape, 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.
- Also read the "Placement" (the leaflet "USING THE UNIT SAFELY" and the "Startup Guide") under "IMPORTANT NOTES".

Main Specifications

Video

Video Processing

4:2:2 (Y/Pb/Pr), 8-bit

Number of video channels

16 channels

Input formats

HDMI IN 1–4
SDI IN 1–8

System format: 720p

Frame rate	
29.97 Hz, 30 Hz, 59.94 Hz, 60 Hz	25 Hz, 50 Hz
720/59.94p	720/50p

System format: 1080p

Frame rate		
29.97 Hz, 30 Hz, 59.94 Hz, 60 Hz		25 Hz, 50 Hz
1080/59.94i	1080/59.94p	1080/50i
1080/60p		1080/50p
1080/29.97p	1080/30p	1080/25p
1080/23.98p	1080/24p	1080/23.98p
		1080/24p

* The input interlaced video signal is converted to progressive video signal by internal processing.

HDMI IN 5–8

480/59.94i	480/59.94p	720/59.94p	1080/59.94i
1080/59.94p	1080/60p	1080/29.97p	1080/30p
576/50i	576/50p	720/50p	1080/50i
1080/50p	1080/25p	1080/23.98p	1080/24p
VGA (640×480/60 Hz)		SVGA (800×600/60 Hz)	
XGA (1024×768/60 Hz)		WXGA (1280×800/60 Hz)	
SXGA (1280×1024/60 Hz)		FWXGA (1366×768/60 Hz)	
SXGA+ (1400×1050/60 Hz)		UXGA (1600×1200/60 Hz)	
WUXGA (1920×1200/60 Hz)			

* The refresh rate is the maximum value of each resolution.
* Conforms to CEA-861-E, VESA DMT Version 1.0 Revision 11.
* 1920 x 1200/60 Hz: Reduced blanking
* The input interlaced video signal is converted to progressive video signal by internal processing.
* The input refresh rates of SVGA (800 x 600)-SXGA+ (1400 x 1050) are 75 Hz when the unit's frame rate setting is 50 Hz.
* HDMI IN 8 supports Roland FILL+KEY signal

Output formats

HDMI OUT 1–2
SDI OUT 1–3

System format	Frame rate			
	59.94 Hz	60 Hz	29.97 Hz	30 Hz
720p	720/59.94p	720/60p	–	–
1080p	1080/59.94i	1080/60i	–	–
	1080/59.94p	1080/60p	1080/29.97p	1080/30p

System format	Frame rate			
	50 Hz	25 Hz	23.98 Hz	24 Hz
720p	720/50p	–	–	–
1080p	1080/50i	–	–	–
	1080/50p	1080/25p	1080/23.98p	1080/24p

HDMI OUT 3

FRAME RATE setting			
59.94 Hz	60 Hz	29.97 Hz	30 Hz
1080/59.94p	1080/60p	1080/29.97p	1080/30p

FRAME RATE setting			
50 Hz	25 Hz	23.98 Hz	24 Hz
1080/50p	1080/25p	1080/23.98p	1080/24p

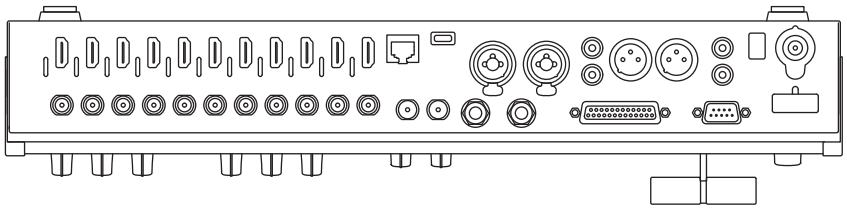
<table>
<tr><td rowspan="2">Output formats</td><td rowspan="2">USB STREAM</td><td>
<table>
<tr><th colspan="4">FRAME RATE (USB OUT) setting</th></tr>
<tr><th>59.94 Hz</th><th>60 Hz</th><th>29.97 Hz</th><th>30 Hz</th></tr>
<tr><td>1080/59.94p</td><td>1080/60p</td><td>1080/29.97p</td><td>1080/30p</td></tr>
<tr><td>720/59.94p</td><td>720/60p</td><td>720/29.97p</td><td>720/30p</td></tr>
<tr><td>640×480/59.94p</td><td>640×480/60p</td><td>640×480/29.97p</td><td>640×480/30p</td></tr>
</table>
<table>
<tr><th colspan="4">FRAME RATE (USB OUT) setting</th></tr>
<tr><th>50 Hz</th><th>25 Hz</th><th>23.98 Hz</th><th>24 Hz</th></tr>
<tr><td>1080/50p</td><td>1080/25p</td><td>1080/23.98p</td><td>1080/24p</td></tr>
<tr><td>720/50p</td><td>720/25p</td><td>720/23.98p</td><td>720/24p</td></tr>
<tr><td>640×480/50p</td><td>640×480/25p</td><td>640×480/23.98p</td><td>640×480/24p</td></tr>
</table>
* Uncompressed format (YUY2) and Compressed format (Motion JPEG) supported.
</td></tr>
<tr><td rowspan="4">Still Image</td><td>Bitmap file (.bmp)</td><td>Maximum 1920 x 1080 pixels, 24-bit color, uncompressed</td></tr>
<tr><td>PNG file (.png)</td><td>Maximum 1920 x 1080 pixels, 24-bit color</td></tr>
<tr><td>JPG File (.jpg, .jpeg)</td><td>Maximum 1920 x 1080 pixels, 24-bit color</td></tr>
<tr><td colspan="2">* It can be stored up to 16 files in the internal memory.
* It can be exported in the USB flash drive.
* PNG alpha channel supported.</td></tr>
<tr><td rowspan="3">Video Effects</td><td>Transition</td><td>CUT, MIX (DISSOLVE/FAM/NAM), WIPE (8 types), SPLIT (2 types)</td></tr>
<tr><td>Composition</td><td>PinP x 4 (SQUARE, CIRCLE, DIAMOND), Keyer x 4 (Luminance Key, Chroma Key)
DSK x 2 (Luminance Key, Chroma Key, Alpha Key, External Key, Roland FILL+KEY Mode)</td></tr>
<tr><td>Other</td><td>Multi-View (3 types), Flip horizontal, Flip vertical, Still Image Capture, Still Image Playback
Output fade (Audio, Video: WHITE or BLACK), Test pattern output</td></tr>
<tr><td colspan="3">■ Audio</td></tr>
<tr><td>Audio Processing</td><td>Sample rate</td><td>24 bits/48 kHz</td></tr>
<tr><td>Number of audio channels</td><td colspan="2">40 channels</td></tr>
<tr><td rowspan="6">Audio formats</td><td>USB STREAM (input/output)</td><td>Linear PCM, 24 bits/48 kHz, 2 ch</td></tr>
<tr><td>Bluetooth (input)</td><td>Linear PCM, 24 bits/48 kHz, 2 ch</td></tr>
<tr><td>HDMI IN</td><td>Linear PCM, 24 bits/48 kHz, 2 ch</td></tr>
<tr><td>HDMI OUT</td><td>Linear PCM, 24 bits/48 kHz, 8 ch</td></tr>
<tr><td>SDI IN</td><td>Linear PCM, 24 bits/48 kHz, 2 ch (Conforms to SMPTE 299M)</td></tr>
<tr><td>SDI OUT</td><td>Linear PCM, 24 bits/48 kHz, 8 ch (Conforms to SMPTE 299M)</td></tr>
<tr><td rowspan="3">Audio Effects</td><td>Channel Effects</td><td>High pass filter, Echo canceller, Anti-feedback, Noise gate, De-esser, Compressor, 3-Band equalizer, Voice changer, Delay, Auto mixing</td></tr>
<tr><td>Master Effects</td><td>Reverb, 3-Band equalizer, Multi-band compressor, Loudness Auto Gain Control, Adaptive Noise Reduction, Low Frequency Cut, Delay, Limiter</td></tr>
<tr><td>Others</td><td>Output fade, Test tone output</td></tr>
<tr><td colspan="3">■ Common Section</td></tr>
<tr><td rowspan="10">Other Functions</td><td colspan="2">Preset Memory (30 types)</td></tr>
<tr><td colspan="2">Macro Control (100 types)</td></tr>
<tr><td colspan="2">Sequencer Control</td></tr>
<tr><td colspan="2">Panel lock function</td></tr>
<tr><td colspan="2">EDID Emulator</td></tr>
<tr><td colspan="2">Auto Switching</td></tr>
<tr><td colspan="2">Auto Input Detect</td></tr>
<tr><td colspan="2">Smart Tally</td></tr>
<tr><td colspan="2">Remote Camera Control (Up to 16 units)</td></tr>
<tr><td colspan="2">External Rec Control</td></tr>
</table>

Connectors			
Video Input Connectors		HDMI IN 1–4	HDMI type A x 4 * HDCP supported
		HDMI IN 5–8	HDMI type A x 4 * HDCP and multi-format supported
		SDI IN 1–8	BNC type x 8 * Conforms to SMPTE 424M (SMPTE 425M-AB), 292M
Video Output Connectors		HDMI OUT 1–3	HDMI type A x 3 * HDCP Supported
		SDI OUT 1–3	BNC type x 3 * Conforms to SMPTE 424M (SMPTE 425M-AB), 292M
		USB STREAM	USB Type-C®
Audio Input Connectors	Analog	AUDIO IN 1, 2	Combo type (XLR, 1/4-inch TRS phone), phantom power DC 48 V (unloaded maximum), 14 mA (maximum load)
		AUDIO IN 3/L, 4/R	RCA phono type
	Digital	USB STREAM	USB Type-C®
		Bluetooth	
		HDMI IN 1–8	HDMI type A x 8
		SDI IN 1–8	BNC type x 8
Audio Output Connectors	Analog	AUDIO OUT	XLR type
		AUDIO OUT	RCA phono type
		PHONES	Stereo 1/4-inch phone type
	Digital	USB STREAM	USB Type-C®
		HDMI OUT 1–3	HDMI type A x 3
		SDI OUT 1–3	BNC type x 3
Other Connectors		USB MEMORY	USB A type (for USB flash drive, for remote control from USB Numeric Keypad)
		USB STREAM	USB Type-C® (for remote control from PC and iPad, Graphics Presenter supported)
		Bluetooth	For remote control from iPad
		CTL/EXP	1/4-inch TRS phone type (for remote control from footswitch and expression pedal)
		TALLY/GPIO	DB-25 type (Female)(Tally/GPO: 16, GPI: 8)
		RS-232	DB-9 type (Male) (for Remote Control)
		LAN CONTROL	RJ45 100BASE-TX (for Remote Control)
		Reference IN/THRU	BNC type * Black Burst (Sync to frames), Bi-Level, Tri-Level
Audio Input/Output Characteristics			
Input Level		AUDIO IN 1, 2	-60– +4 dBu (Maximum: +24 dBu)
		AUDIO IN 3/L, 4/R	-10 dBu (Maximum: +10 dBu)
Input Impedance		AUDIO IN 1, 2	9.4 kΩ (ANALOG GAIN 0 < 24 dBu), 74.4 kΩ (ANALOG GAIN ≥ 24 dBu)
		AUDIO IN 3/L, 4/R	47 kΩ
Output Level		AUDIO OUT (XLR)	+4 dBu (Maximum: +24 dBu)
		AUDIO OUT (RCA)	-10 dBu (Maximum: +10 dBu)
		PHONES	92 mW + 92 mW (32 Ω)
Output Impedance		AUDIO OUT (XLR)	600 Ω
		AUDIO OUT (RCA)	1 kΩ
		PHONES	10 Ω

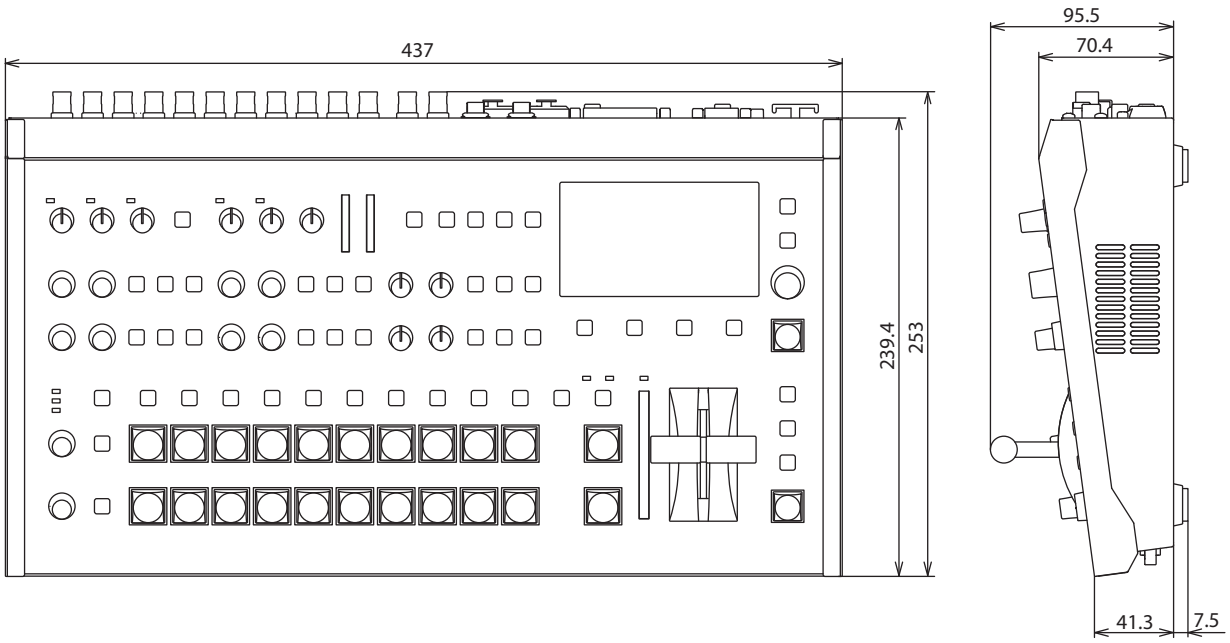
Others		
Bluetooth	Ver 4.2	
	Profile Support	A2DP (Audio), GATT (MIDI over Bluetooth Low Energy)
	Codec	SBC (Support to the content protection of the SCMS-T method)
Display	4.3 inches TFT Color LCD: 480 x 272 dots	
Power Supply	AC Adaptor	
Current Draw	2.5 A	
Power Consumption	55 W	
Operation Temperature	+0 to +40 degrees Celsius +32 to +104 degrees Fahrenheit	
Dimensions	437 (W) x 253 (D) x 103 (H) mm 17-1/4 (W) x 10 (D) x 4-1/16 (H) inches	
	480 (W) x 253 (D) x 103 (H) mm 18-15/16 (W) x 10 (D) x 4-1/16 (H) inches * When rack-mount angles are fitted.	
Weight (excluding AC adaptor)	3.9 kg 8 lbs 10 oz	
Accessories	Startup Guide, Leaflet "USING THE UNIT SAFELY", AC adaptor, Power cord, Rack-mount angle x 2 Rack-mount angle mounting screw x 6	
Options (sold separately)	Footswitch: BOSS FS-5U, FS-6, FS-7 Expression Pedal: EV-5, EV-30, BOSS FV-500L, FV-500H	

* 0 dBu = 0.775 Vrms
* This product is a Class A digital device under FCC part 15.
* The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI Trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.
* 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.

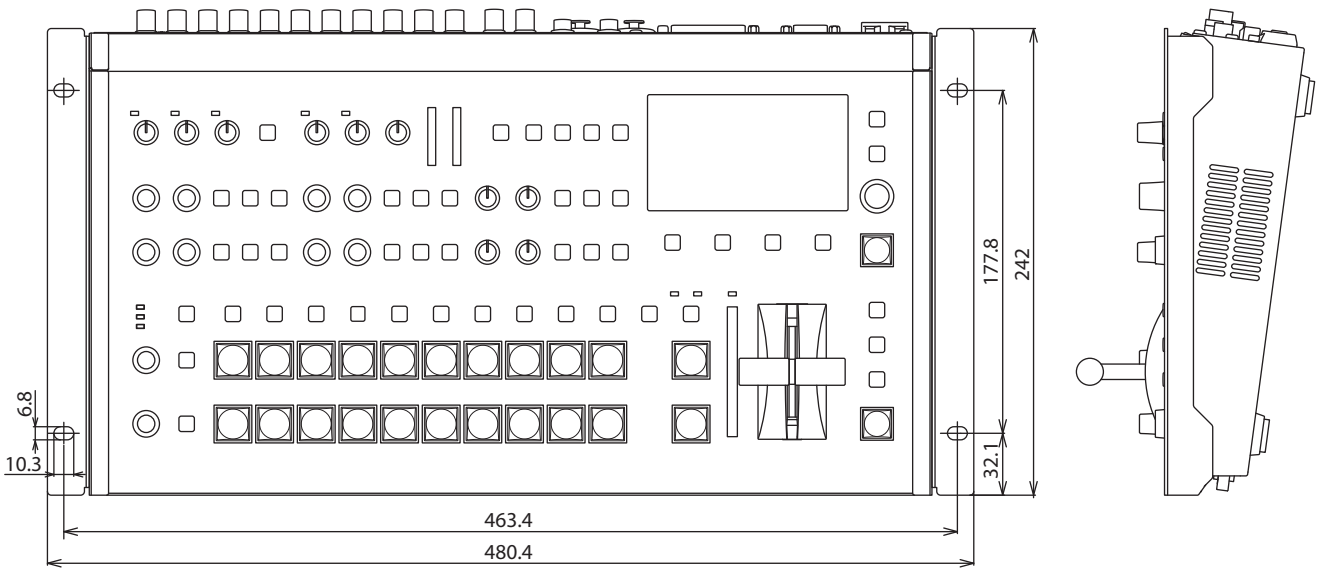
Dimensions



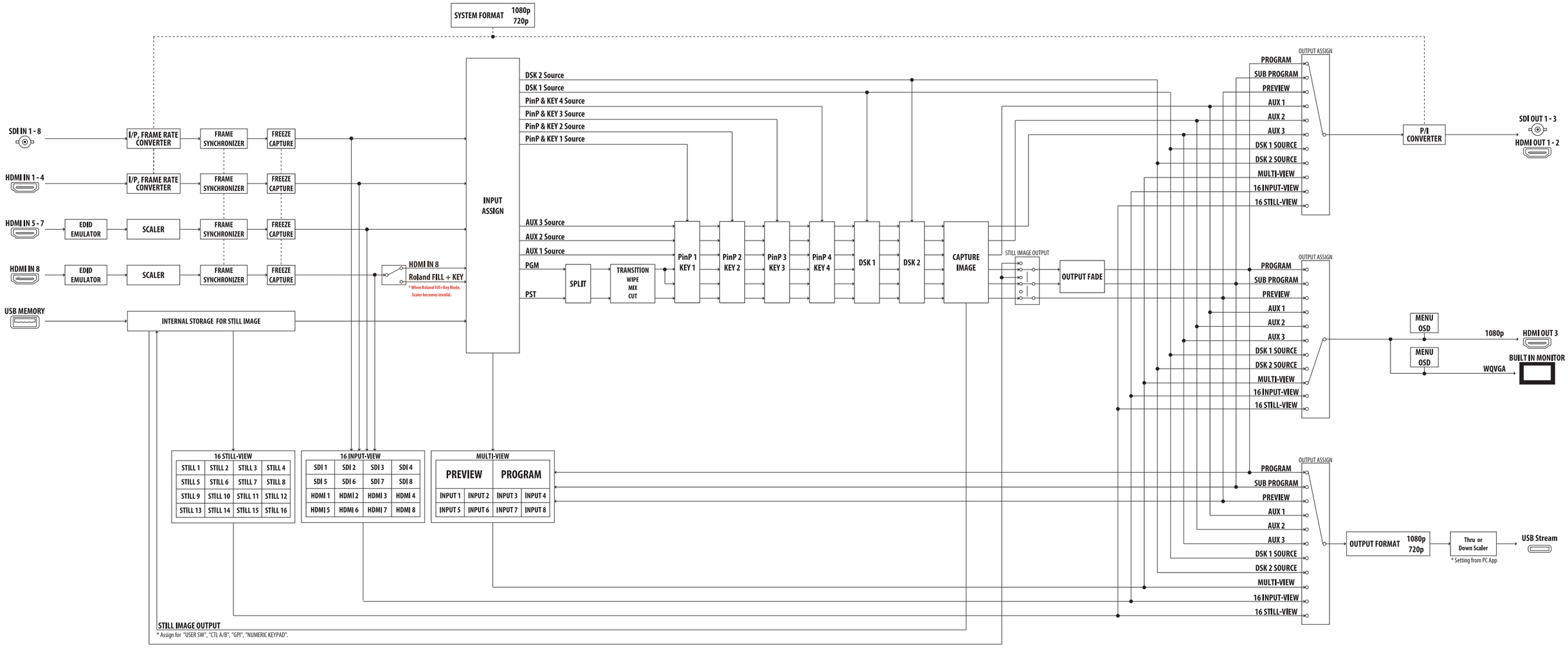
Unit: mm



When rack-mount angles are attached



Video Block Diagram



Audio Block Diagram