

Roland

# V-40HD

MULTI-FORMAT VIDEO SWITCHER

HDMI

DVI-D

RGB

COMPONENT

COMPOSITE

Four Multi-Format Channels  
at the Pinnacle of HD Picture Quality.



# Easy operation and a diverse range of features for the expert or casual user.

## A multi-format video switcher featuring four inputs and three outputs.



The V-40HD is equipped with four input systems (Inputs 1-4). Each of these systems has three types of input connectors — HDMI, RGB/Component, and Composite — allowing you to connect a total of twelve video devices. For output, the V-40HD provides three systems: Output 1 (HDMI/RGB/Component/Composite), Output 2 (HDMI/RGB/Component), and Preview (HDMI).

## Stellar Image Quality at 1080p



Supports 1080p video signals - twice the rate of conventional HD and uses 4:4:4/10-bit internal signal processing. This asserts all the vividness of high-realism, high-detail camera and computer sources.

\*Output signal processing is 4:2:2/8-bit.

## True HDCP mode. Switching and composition are possible even for fully HDCP-encoded output signals



The V-40HD features an HDCP mode that lets you input and switch commercial digital video from sources such as Blu-ray Discs or game consoles encoded using HDCP digital copyright management technology. This lets you produce video with unrestricted freedom — for instance, compositing a video feed from a Blu-ray Disc or tablet computer against a background from a live camera. Output to a display can be made via HDMI.

\*Commercial use of content requires the permission of the copyright-holder.

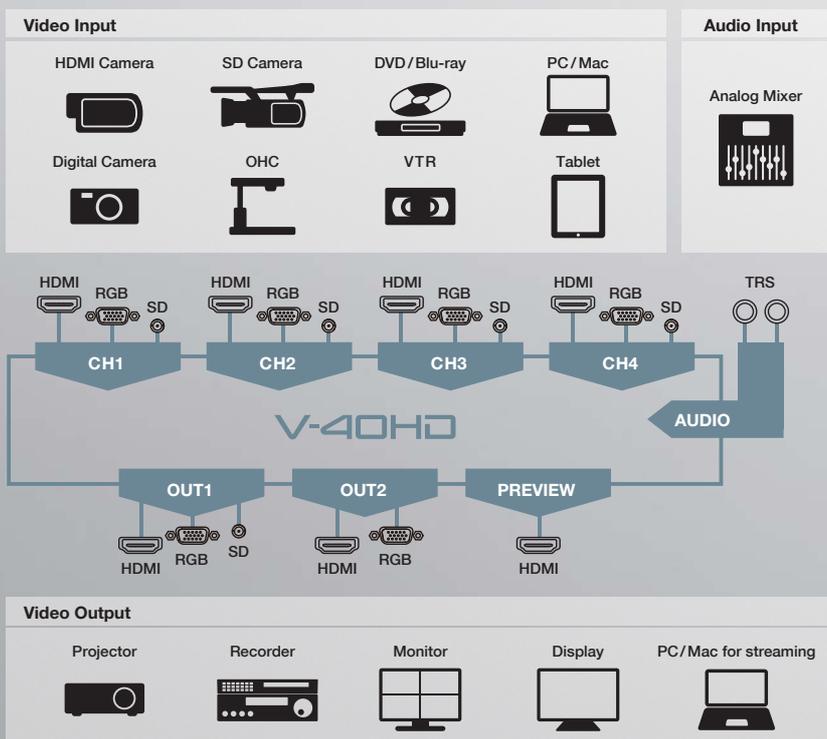
\*In HDCP mode, only DVI-D/HDMI output can be used. Use of Component and Composite output is not possible.

\*The display or projector connected to DVI-D/HDMI output must support HDCP.

## Audio embedding feature makes it possible to insert and synchronize analog audio input with HDMI-output video.



The V-40HD can input background music, narration, or other analog sound sources, mix and sync the video and audio, and then output the result via HDMI.



\*RGB connectors support RGB or component signals.



SUMMER LIVE  
Drum and Bass Session



## MULTI-FORMAT VIDEO SWITCHER V-40HD

- 4 Inputs (HDMI/RGB/Component), 3 Outputs (HDMI/RGB/Component/Composite + HDMI/RGB/Component + HDMI)
- 4:4:4/10-bit Internal Processing (\*4:2:2/8-bit Output Processing)
- 1 M/E (PinP) + DSK
- Built-in frame synchronizers and scalers on all inputs
- Input status LEDs
- Full HDCP support
- Preview monitor output (Four-way split screen for Inputs, PST, PGM, or DSK)
- Audio embedding
- Audio delay to align the timing with video for perfect lip sync

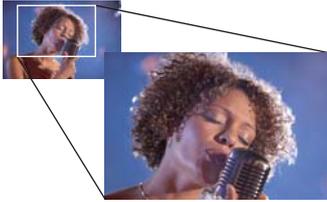
# Intuitive operation for a wide range of features.

## INPUT

### SCALING

#### Zoom and Adjustment.

The V-40HD features scalers that let you make settings independently for every input source. With these, you can take input sources of different resolutions and adjust to any sizing.



### INPUT Selectors

Select from among HDMI, RGB/Component, and Composite as the connector for each input.

With just one touch, you can access the video source from any of the three pieces of equipment connected to the respective inputs.

### INPUT Connectors 1 - 4

Support for three formats per input. [HDMI] Up to WUXGA, 1080p [RGB/Component] Up to WUXGA, 1080p [Composite] 480i or 576i

HDMI inputs support an embedded audio signal.

### AUDIO INPUT

#### Mix analog audio into HDMI video.

The V-40HD is equipped with inputs for analog audio equipment. This enables you to embed analog audio in the HDMI video output.

### FANLESS

Designed for low-noise operation that won't get in the way of your production.

The design of the V-40HD features excellent heat-radiating efficiency, resulting in fanless operation. In addition to ensuring quietness, this eliminates the space needs for a cooling fan, achieving a compact size even with a large number of connectors.





## OUTPUT

### OUTPUT Selectors

Three types of output formats to choose from.

Select SD, HD, or RGB simply by pressing a button.

Default Settings (can be changed)

SD	480i
HD	1080i
RGB	XGA (1024 x 768)

\*You can select other format on the menu.

\*The format of PVW OUT cannot be changed. (1920x1080/60Hz fixed)

### PVW (Preview) Selectors

Chooses the view displayed on a preview monitor.

Select a four-way split screen, PST, PGM or DSK to display.

\*The resolution and refresh rate of monitor output is fixed at 1920 x 1080/60 Hz (progressive).

\*Use an HDMI monitor that supports HDCP and 60p signals.

\*When INPUT is selected (four-way split), the sources are displayed using a reduced frame rate.



### Output Connectors

Connect monitors, projectors, or recording equipment.  
 [HDMI] Up to WUXGA, 1080p  
 [RGB/Component] Up to WUXGA, 1080p  
 [Composite] 480i or 576i

\*In HDCP mode, no video signals are output from the RGB/Component and composite connectors.

## EFFECTS

### DSK (Downstream Keyer)

Composite logos and text into output video.

You can overlay logos and text onto composited and switched video. Scene transitions underneath logos or text that remain displayed is possible.



### PinP

Two images can be combined into one video image.

You can select any of four positions for an inset screen: top left, bottom left, top right, or bottom right. You can also freely adjust the size of the inset screen.



### WIPE PATTERN

Easy selection of video transition effects.



### VIDEO FADER

Switch the sources at the speed you want.

Using the video fader (T-bar) lets you carry out scene transitions, fade-ins, and fade-outs manually at exactly the speed you want.

## FUNCTIONS

### MEMORY

Save panel settings.

You can save the V-40HD's settings in internal memory. Each of the five memory banks can hold five sets of settings, letting you save a total of 25 configurations.



### CONTROL INTERFACE

#### [MIDI]

Controllable the V-40HD via any MIDI device.

A Roland digital audio mixer like the M-200i V-Mixer can link to the V-40HD for audio-follows-video application. Connect another V-40HD for more inputs.



#### [RS-232C]

Use RS-232C for integrated remote control.

It's possible to connect a computer, wall panel or other remote device and use it to control switching, effects, and other operations.

### USB PORT

For saving the internal memory.

This lets you connect a USB flash drive and save the internal memory to it.

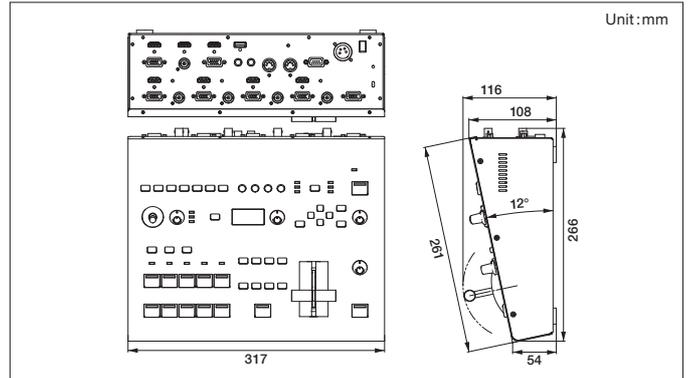
## What's HDCP?

HDCP is encoding technology present in the HDMI output from sources such as commercial Blu-ray Discs, digital broadcast tuners, and game consoles that prevents illicit copying. With ordinary HDMI equipment, it's not possible to process or composite HDCP-encoded video sources. Equipment that has an HDCP mode, such as the V-40HD, is capable of using these video sources. It can combine HDCP-encoded sources with each other and with other content to achieve switching, compositing, and display.

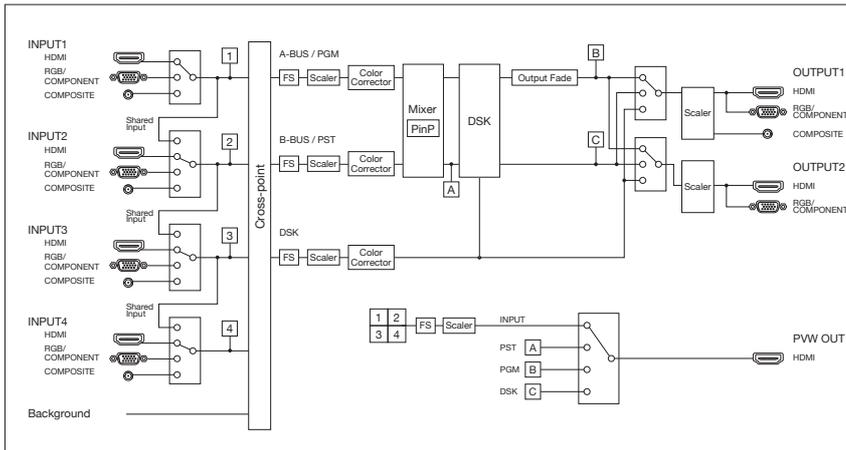
## Specifications V-40HD: Multi-Format Video Switcher

Video processing		Other jacks		Audio effects	
<b>Sampling rate</b> 4:4:4 (Y/Pb/Pr), 10 bits *Output signal processing is 4:2:2/8-bit.		<b>Tally</b> HD DB-15 type x 1 (max input: 12 V/200 mA, Open collector type)		<b>Delay</b> 0.0-12.0 frames	
<b>Audio processing</b>		<b>MIDI</b> 5 pins DIN type x 2 (IN, OUT/THRU)		<b>Others</b>	
<b>Sampling rate</b> 24 bits/48 kHz, 2ch		<b>RS-232C</b> 9 pins D-sub type x 1		<b>Display</b> 7 segments, 3 characters LED	
<b>Input formats</b>		<b>USB</b> A type x 1 (host, for USB memories)		<b>Power Supply</b> DC 12 V (AC Adaptor)	
<b>HDMI video</b> 480/59.94i, 576/50i, 480/59.94p, 576/50p, 720/59.94p, 720/50p, 1080/59.94i, 1080/50i, 1080/59.94p, 1080/50p 640 x 480/60 Hz, 800 x 600/60 Hz, 1024 x 768/60 Hz, 1280 x 768/60 Hz, 1280 x 1024/60 Hz, 1366 x 768/60 Hz, 1400 x 1050/60 Hz, 1600 x 1200/60 Hz, 1920 x 1080/60 Hz, 1920 x 1200/60 Hz * The video signal frame rate must match with the unit's frame rate setting. * Conforms to VESA DMT Version 1.0 Revision 11. * 1920 x 1200/60Hz: Reduced blanking		<b>Signal level / Impedance</b>		<b>Current Draw</b> 2.6A	
<b>HDMI audio</b> Linear PCM, 24 bits/48 kHz, 2ch		<b>RGB/Component</b> Signal level: 0.7Vp-p (H,V:5VTTL) Impedance: 75 ohms		<b>Dimensions</b> 317(W) x 266(D) x 108(H) mm, 12-1/2(W) x 10-1/2(D) x 4-1/4(H) inches	
<b>RGB/Component</b> 480/59.94i, 576/50i, 480/59.94p, 576/50p, 720/59.94p, 720/50p, 1080/59.94i, 1080/50i, 1080/59.94p, 1080/50p 640 x 480/60 Hz, 800 x 600/60 Hz, 1024 x 768/60 Hz, 1280 x 768/60 Hz, 1280 x 1024/60 Hz, 1366 x 768/60 Hz, 1400 x 1050/60 Hz, 1600 x 1200/60 Hz, 1920 x 1080/60 Hz, 1920 x 1200/60 Hz * The video signal frame rate must match with the unit's frame rate setting. * Conforms to VESA DMT Version 1.0 Revision 11. * 1920 x 1200/60Hz: Reduced blanking		<b>Composite</b> Signal level: 1.0 Vp-p (luminance), 0.286 Vp-p (chroma(NTSC)), 0.3 Vp-p (chroma(PAL)) Impedance: 75 ohms		<b>Weight</b> 3.4 kg, 7 lbs 8 oz (excluding AC Adaptor)	
<b>Composite</b> NTSC, PAL		<b>Analog audio</b> Nominal input level: +4 dBu Maximum Input Level: +22 dBu Impedance: 15 k ohms		<b>Accessories</b> AC Adaptor (4 pins XLR type connector), Power Cord, RCA-BNC conversion plug x 4, Owner's manual	
<b>Output formats</b>		<b>Video effects</b>		<b>*0dBu = 0.775 Vrms</b>	
<b>HDMI video</b> 480/59.94i, 576/50i, 480/59.94p, 576/50p, 720/59.94p, 720/50p, 1080/59.94i, 1080/50i, 1080/59.94p, 1080/50p 640 x 480/60 Hz, 800 x 600/60 Hz, 1024 x 768/60 Hz, 1280 x 768/60 Hz, 1280 x 1024/60 Hz, 1366 x 768/60 Hz, 1400 x 1050/60 Hz, 1600 x 1200/60 Hz, 1920 x 1080/60 Hz * The output refresh rates of 640 x 480-1400 x 1050 are 75 Hz when the unit's frame rate setting is 50 Hz. * Conforms to VESA DMT Version 1.0 Revision 11. * 1920 x 1200/60Hz: Reduced blanking		<b>Transition</b> Mix, Cut, Wipe (9 patterns)			
<b>HDMI audio</b> Linear PCM, 24 bits/48 kHz, 2ch		<b>Composition</b> Picture in Picture, DSK (Luminance Key, Chroma Key)			
<b>RGB/Component</b> 480/59.94p, 576/50p, 720/59.94p, 720/50p, 1080/59.94p, 1080/50p 640 x 480/60 Hz, 800 x 600/60 Hz, 1024 x 768/60 Hz, 1280 x 768/60 Hz, 1280 x 1024/60 Hz, 1366 x 768/60 Hz, 1400 x 1050/60 Hz, 1600 x 1200/60 Hz, 1920 x 1080/60 Hz * The output refresh rates of 640 x 480-1400 x 1050 are 75 Hz when the unit's frame rate setting is 50 Hz. * Conforms to VESA DMT Version 1.0 Revision 11. * 1920 x 1200/60Hz: Reduced blanking		<b>Others</b> Output Fade			
<b>Composite</b> NTSC, PAL					
<b>Preview (HDMI)</b> Video: 1920 x 1080/60 Hz (fixed) *When INPUT is selected, the sources are displayed using a reduced frame rate. Audio: Linear PCM, 24 bits/48 kHz, 2ch					
<b>Input jacks</b>					
<b>Video/Audio</b> HDMI: Type A (19 pins) x 4 (INPUT 1-4) RGB/Component: HD DB-15 type x 4 (INPUT 1-4) Composite: BNC type x 4 (INPUT 1-4)					
<b>Audio</b> 1/4-inch TRS phone type (balanced/unbalanced) x 1 pair (AUDIO INPUT)					
<b>Output jacks</b>					
<b>Video/Audio</b> HDMI: Type A (19 pins) x 2 (OUTPUT 1/2) RGB/Component: HD DB-15 type x 2 (OUTPUT 1/2) Composite: BNC type x 1 (OUTPUT 1)					
<b>Preview</b> HDMI: Type A (19 pins) x 1					

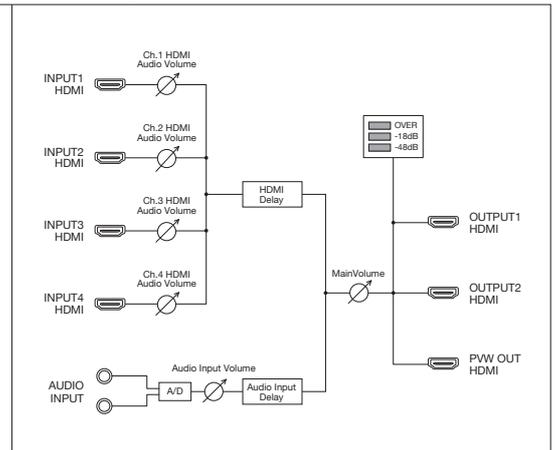
## Dimensions



## Block Diagram (Video)



## Block Diagram (Audio)



MIDI Visual Control is an internationally-used recommended practice that was added to the MIDI specification so that visual expression could be linked with musical performance. Video equipment that is compatible with MIDI Visual Control can be connected to electronic musical instruments via MIDI in order to control video equipment in tandem with a performance.



Using V-LINK, musicians can "play" video from their electronic instrument when used with Roland video products. With V-LINK, musicians have a powerful interface for realtime audio and video integration.



Roland Systems Group, a member of the worldwide group of Roland companies, is dedicated to the support of audio and video professionals demanding excellence in both performance and system design. Through the development and support of video and audio products, we endeavor to improve workflow and maximize creative possibilities.

## Ensuring high quality while protecting the environment: Roland is ISO9001 and ISO14001 certified

At Roland, several group companies have obtained ISO9001 certification. In addition, in January 1999, Roland also received ISO14001 international environmental management system certification. We're actively seeking ways to maintain harmony with the environment.

(ISO=International Standardization Organization: an organization for the promotion of standardization of international units and terms. They provide different categories of certification: ISO9001 Series certification is a product quality certification for products that undergo a certain level of quality control from the design stage to the after service stage; ISO14001 Series certification is for environment-related standards. Each member of the Roland Group is striving to obtain certification.)



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