Compact, High-Performance, Multi-Format Live Switcher with Multi-view display

AV-HS400

MULTI FORMAT
DIGITAL SWITCHER SYSTEM
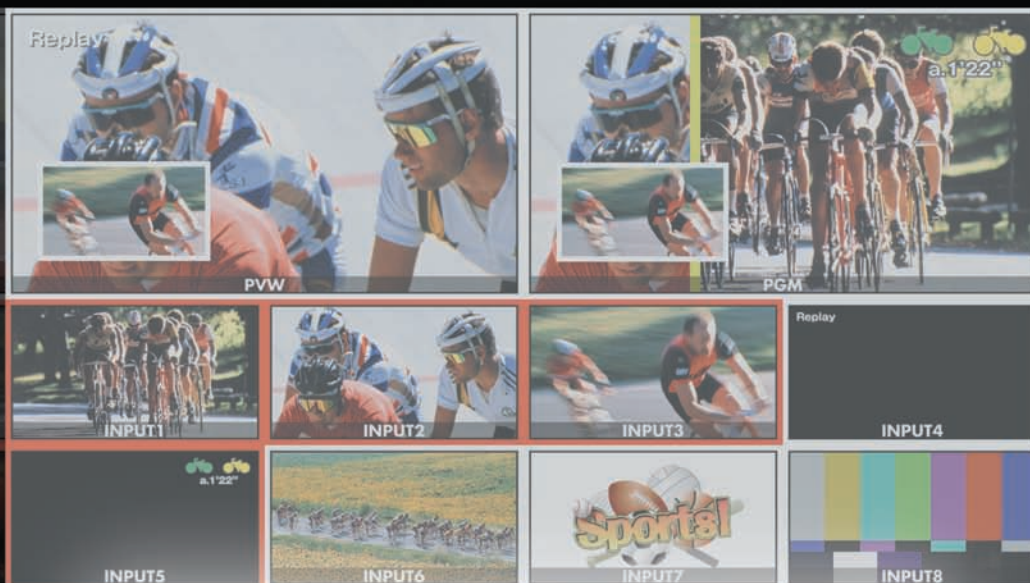
Full Production Quality from Compact 1M/E Digital Video Switcher

News Magazine Show

P2HD
Memory Card Camera-Recorder

MULTI FORMAT
DIGITAL CAMERA SYSTEM

HD-SDI Multi-purpose Camera
AK-HC1500

Worldwide Production

P2HD
Memory Card Camera-Recorder

P2HD
Memory Card Camera-Recorder

Educational Solution

P2HD
Memory Card Camera-Recorder

Multi-Format HD/SD Compatibility for Worldwide Use

Compatibility with various HD/SD formats will help you meet changing production needs as video moves towards HD on a global scale.
The AV-HS400 lets you up-convert and mix SD signals with HD,
to provide an easy transition to full HD production.
The AV-HS400 is compatible with virtually all common input devices.

MULTI FORMAT
DIGITAL SWITCHER SYSTEM

Compatible formats

| H D | 1080/59.94i , 1080/50i , 720/59.94p , 720/50p |
| S D | 480/59.94i , 576/50i |

∗ The multi-format logo indicates a model that supports two or more formats including the HD format.

Built-in Frame Synchronizers for Versatile Operation

Each input features a built-in 10-bit Frame Synchronizer for smooth switching, even with asynchronous sources, such as DVDs or satellite feeds.
Reference (black burst) signal outputs are provided to enable synchronization with external systems.
The main unit and control panel are integrated in a compact body,
ideal for small studios and mobile production.

∗ AC 220 V to 240 V power supply.
· The unit is not waterproof so please avoid direct contact with rain and water.
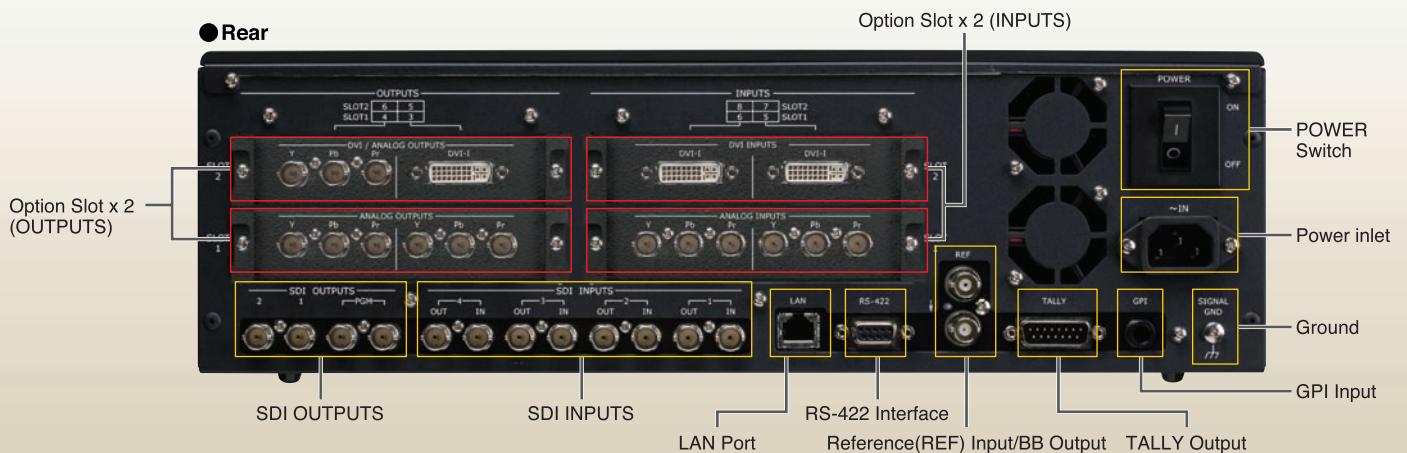
Versatile Support for Remote Production

Built-in HD-SDI Interfaces with DVI, Component, and SDI Options for up to 8 Inputs and 8 Outputs

- Four HD-SDI inputs and four HD-SDI outputs[1] are standard equipment.
- Optional input and output expansion boards include.

  Input..... Up to four HD/SD-SDI inputs (with AV-HS04M1 x 2) or four HD/SD analog inputs (with AV-HS04M2 x 2) or up to four DVI inputs[2] (with AV-HS04M3 x 2) can be added.
  Optional input boards feature up-converters.

  Output... Up to four HD/SD analog outputs (with AV-HS04M4 x 2) or up to two DVI outputs[3] (with AV-HS04M5 x 2) (scaleable to 1980 x 1080) can be added.

- Input/output features 10-bit video processing and 4:2:2 signal processing.
- Tally outputs for up to eight cameras for extra convenience.
- RS-422 compatible (GVG protocol compatible) control jack.

[1] Two interfaces assignable as PGM, PVW, AUX, multi-screen and keyout.   [2] Compatible with XGA, SXGA, WXGA.
[3] Compatible with XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024)[4], WSXGA+ (1680 x 1050)[4], UXGA (1600 x 1200)[4], WUXGA (1920 x 1200)
[4] Digital only

●Rear

Option Slot x 2 (INPUTS)

POWER Switch

Power inlet

Ground

GPI Input

Option Slot x 2 (OUTPUTS)

SDI OUTPUTS   SDI INPUTS   RS-422 Interface

LAN Port   Reference(REF) Input/BB Output   TALLY Output

Optional boards enable expansion of inputs/outputs (up to two of each).

The photograph above is an image with the AV-HS04M3 (top right)/AV-HS04M2 (bottom right)/ AV-HS04M5 (top left)/ AV-HS04M4 (bottom left) added.

Multi-system compatibility for extra flexibility
"Compact" –– with all the functions you need

■ The main unit and control panel are integrated in a compact body.

Cross-point Buttons for AUX Bus Only
Selects CLN, PVW and PGM material that is selectable with the AUX bus only.

USER Assignable Buttons
Some functions from the menu can be assigned to these two buttons.

SD Card Section
Still images recorded on an SD Card can be used as background or key images.
SD Cards can also be used to store frame memory images and settings data.

* SD Card is not included.

Rotary Encoder F1-F5
Sets parameters displayed in the menu.

LCD
Displays settings menu.

POWER Indicator

ALARM Indicator

AUX BUS DELEGATION Buttons
Switches AUX Bus Crosspoint button application between KEY, DSK and PinP buses.

KEY/AUX Bus Cross-point row
Select the source of the bus switched with the KEY/AUX Bus Cross-point row.

PGM/A Bus Cross-point row
Select the PGM/A-Bus video signal.

WIPE PATTERN/FUNCTION Selection Buttons

Pattern Page Indicator
Lights indicate wipe, squeeze, slide or 3D.

Encoder for Adjustment(Z)
In conjunction with the positioner (X, Y), used to set PinP and wipe location, chroma key range and other parameters.

POSITIONER(X,Y)

WIPE PATTERN/FUNCTION Mode Selection Buttons
Selects from background wipe, KEY wipe or FUNCTION for WIPE PATTERN/FUNCTION Selection buttons.

WIPE DIRECTION Selection Buttons

Independent Transition Execution Buttons
Switches FTB (Fade-to-Black), PinP and DSK ON/OFF.
KEY ON/OFF or disable can be set in the FTB menu.

Fader Lever

PST/B Bus Cross-point row
Select the PST/B-Bus video signal.

Next Transition Selection Buttons
Select transition image from background and key.

Transition Type Selection Buttons
Selects the transition type option, selected with,
Next Transition selection buttons for background and KEY.
• MIX - Switches A-/B-bus images while overlapping.
• WIPE - Performs transition using the pattern selected with the Wipe Pattern Selection button.

MIX/WIPE Selection Status Indicator
Indicates background and KEY transition type selection status.

Bus Tally Indicator
Indicates A-, B-Bus output status.

KEY ON Status Indicator

Transition Execution Buttons
• AUTO - Executes automatic transition at a set time.
• CUT - Executes instant transition.

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in the field and studio.
for superb results.

■ Multi-view display Preview on a Single Monitor

Multi-view display lets you view PGM, PVW, and inputs (up to 10) on a single screen, reducing the number of monitors required.
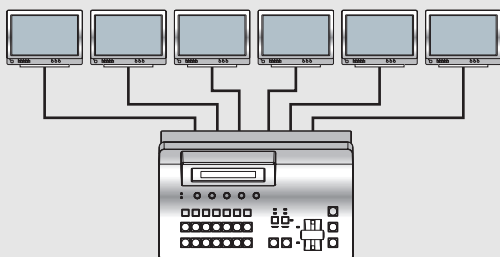
Example of an AV-HS400 monitor system

Simultaneous split-screen preview with a single monitor.

Example of conventional monitor system

Connection of separate monitors is required for each input, PVW and PGM.

∗ The image shows loop-through outputs connected to switcher inputs.

■ Number and Location of Images is Selectable

· Display of signal name in each screen (ON/OFF possible).
· Display of red tally indications in frames for PGM output.
· Left/right switching of PGM and PVW screens possible.
· Arrangement of the images can be changed.

Ten Split Pictures (images)

Eight Split Pictures (images)

Four Split Pictures (images)

Multiple Effects for Stunning Results

In addition to standard wipe patterns, the DVE allows you to enjoy squeeze and slide effects, and different types of 3D. Luminance key, chroma key and DSK are also provided as standard. Plus PinP (Picture-in-Picture), with extremely simple operation.
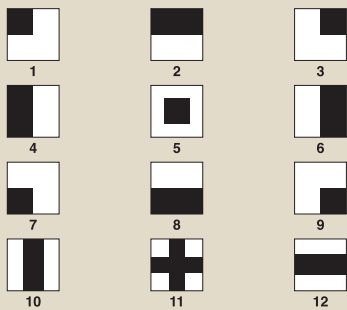
A total of 43 effects offer great creative flexibility
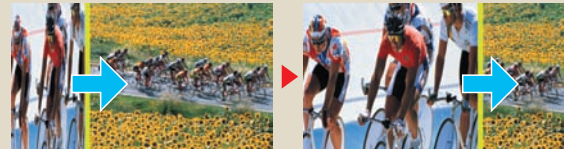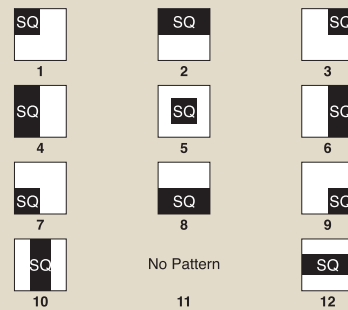
WIPE
Switching between 12 wipe patterns.
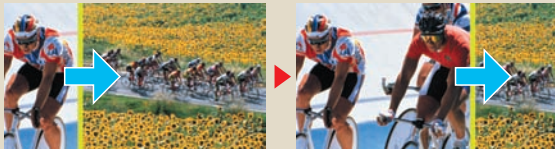
(images:pattern4)

SQ (Squeeze)
Switching between 11 types of squeeze including center, top and bottom.

(images:pattern4)

No Pattern

SL (Slide)
Switching between up, down, left, right and diagonal slide effects.

(images:pattern4)

No Pattern

No Pattern   No Pattern   No Pattern
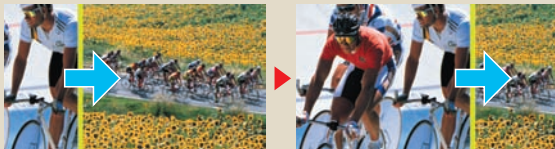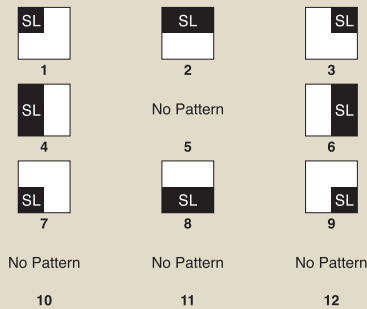
3D (3 Dimension)
Switching between 3D effects such as page turn and rotate.
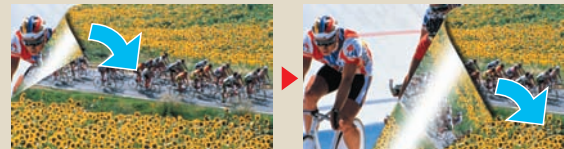
(images:pattern1)
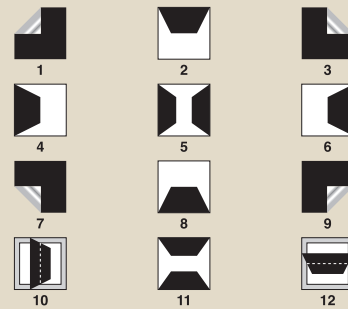
Chroma key for broadcast quality composite images
High-quality chroma key for broadcast and commercial production applications.

Chroma key material   Background material   After composition

Example of composite effect

WIPE   DSK

PinP

(images)

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● Ready for broadcast and studio production applications.

HD-SDI camera environment (with Genlock)

[____] =Option Boards
① SDI INPUTS(AV-HS04M1)
② SDI INPUTS(AV-HS04M1)
③ ANALOG OUTPUTS(AV-HS04M4)
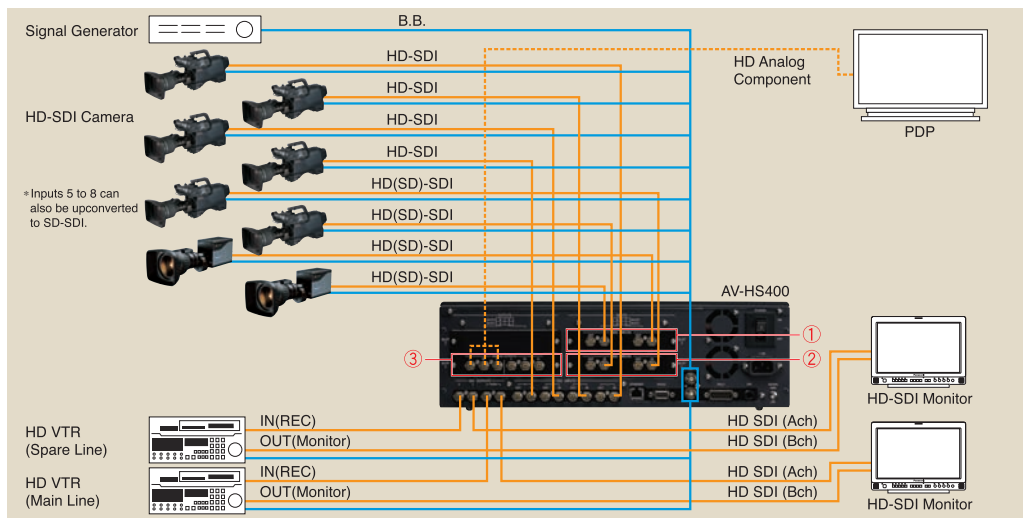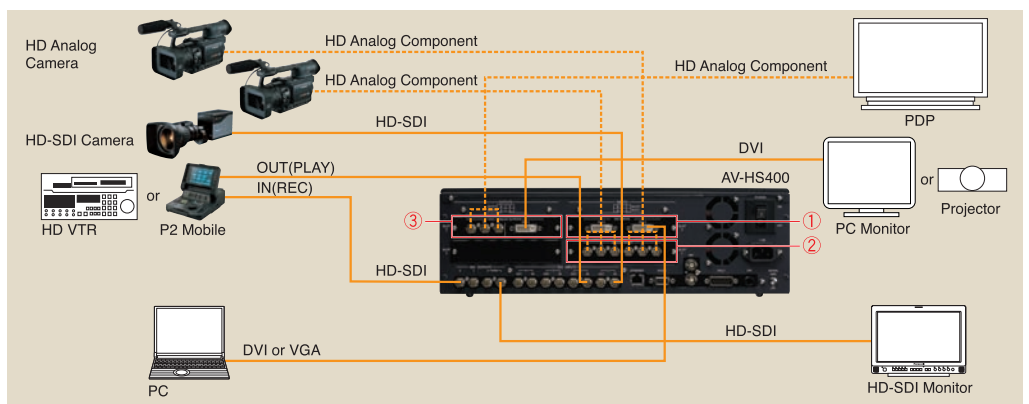
Signal Generator
B.B.
HD-SDI
HD-SDI
HD-SDI Camera
HD-SDI
HD-SDI
HD(SD)-SDI
*Inputs 5 to 8 can also be upconverted to SD-SDI.
HD(SD)-SDI
HD(SD)-SDI
HD(SD)-SDI
HD Analog Component
PDP
AV-HS400
①
③
②

HD VTR (Spare Line)
IN(REC)
OUT(Monitor)
HD VTR (Main Line)
IN(REC)
OUT(Monitor)
HD SDI (Ach)
HD SDI (Bch)
HD SDI (Ach)
HD SDI (Bch)
HD-SDI Monitor
HD-SDI Monitor

● Ideal for use with simple systems at CATV stations, schools and other locations.

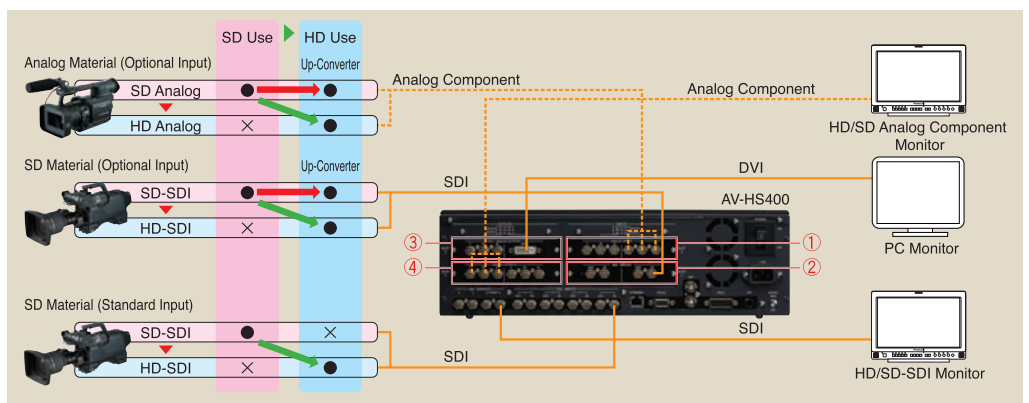### HD camera environment (no Genlock): Using the HD Analog component option

[____] =Option Boards
① DVI INPUTS(AV-HS04M3)
② ANALOG INPUTS(AV-HS04M2)
③ DVI/ANALOG OUTPUTS(AV-HS04M5)

HD Analog Camera
HD Analog Component
HD Analog Component
HD Analog Component
HD-SDI Camera
HD-SDI
PDP
DVI
AV-HS400
or
HD VTR
P2 Mobile
OUT(PLAY)
IN(REC)
③
①
②
PC Monitor
or
Projector
HD-SDI
DVI or VGA
PC
HD-SDI
HD-SDI Monitor

● Provides the flexibility required for facilities moving from SD to HD production.

A combined HD/SD environment without Genlock.

[____] =Option Boards
① ANALOG INPUTS(AV-HS04M2)
② SDI INPUTS(AV-HS04M1)
③ DVI/ANALOG OUTPUTS(AV-HS04M5)
④ ANALOG OUTPUTS(AV-HS04M4)

Analog Material (Optional Input)
SD Use
HD Use
Up-Converter
SD Analog
HD Analog
Analog Component
Analog Component
HD/SD Analog Component Monitor
SD Material (Optional Input)
Up-Converter
SD-SDI
HD-SDI
SDI
DVI
AV-HS400
③
④
①
②
PC Monitor
SD Material (Standard Input)
SD-SDI
HD-SDI
SDI
SDI
HD/SD-SDI Monitor

■ Option Boards   You can expand inputs/outputs to match your system.

INPUTS

SDI INPUTS
AV-HS04M1
INPUTS: HD/SD-SDI x 2(BNC)(Built-in Up-converter)

DVI INPUTS
AV-HS04M3
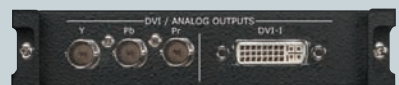INPUTS: DVI-I x 2(Built-in Scaler)

ANALOG INPUTS
AV-HS04M2
INPUTS: HD/SD ANALOG Component x 2(Y/Pb/Pr) (Built-in Up-converter)

OUTPUTS

ANALOG OUTPUTS
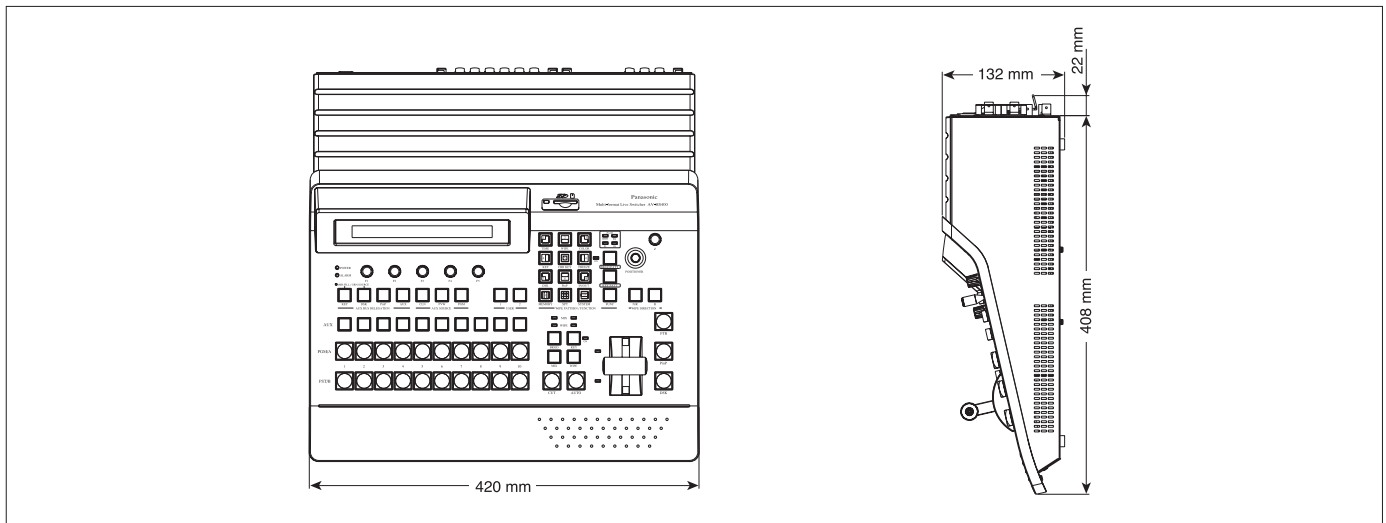**AV-HS04M4**
OUTPUTS: Analog Component x 2(Y/Pb/Pr)

DVI/ANALOG OUTPUTS
AV-HS04M5
OUTPUTS: DVI-I x 1, Analog x 1

● Specifications

Video processing	Video format	SD (480/59.94i, 576/50i), HD (1080/59.94i, 1080/50i, 720/59.94p, 720/50p)
M/E		1M/E
Input	Video processing	Y:Cb:Cr, 4:2:2 10 bit RGB, 4:4:4 8 bit
	Video	4 inputs (HD/SD-SDI) Option: A maximum of four inputs (up to 2 boards each of 2 of 3 types of input boards can be added: HD/SD-SDI x 2, HD/SD-analog x 2, DVI/RGB x 2).
	Key	Assign one out of video inputs
	DSK	Assign one out of video inputs
	Reference	Black burst/TRI (loop through) x 1
Output	Video	Standard: Four outputs (PGM x 2, general-purpose x 2, each HD/SD-SDI) Option: A maximum of four outputs (up to 2 boards each of 2 types of output boards can be added: general-purpose x 4, each HD/SD-analog x 2, DVI/analog x 1 each). The six general-purpose output interfaces (OUT1 to 6) above are assignable as PGM, PVW, AUX, multi-screen and keyout.
	Reference	Loop through x 1 (Genlock), Black burst x 1 (internal synchronization)

WIPE/DVE	Pattern	WIPE x 12, Squeeze x 11, SLIDE x 8, 3D DVE x 12 (3 directions) Excluding 3D, selection with key transition is possible independently of background.
Transition	Transition method	FADER, AUTO
	Transition type	Cut, mix, wipe (including DVE), background and key can be selected.
KEYER	Key source	BUS
	Key fill	BUS, MATTE
	Key mode	Linear key, Lum key, Chroma key (Key only)
PinP	Transition method	AUTO (PinP only)
	Transition type	MIX
Interface	Serial (EDITOR)	Dsub9pin x 1: RS422A (GVG protocol compatible)
	Tally output	Dsub15pin x 1, open collector output
	GPI	ø 3.5 Stereo mini jack
	Ethernet	100 Mbps/10 Mbps x 1 (Service purpose)
Removable media	SD memory card slot	1 (for transferring still image files and providing an upgrade capability)
Power		AC 220 V to 240 V, 50 Hz/60 Hz
Dimensions (W x H x D)		420 mm x 132 mm x 408 mm (excluding protrusions)

＊ Features and specifications in this document are subject to change without notice due to continual improvements.

● Dimensions

132 mm　　22 mm　　408 mm　　420 mm

● SD Logo is a trademark.

[Countries and Regions]

Argentina	+54 1 308 1610	Kuwait	+965 481 2123	Sweden	+46 (8) 680 26 41
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