● 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
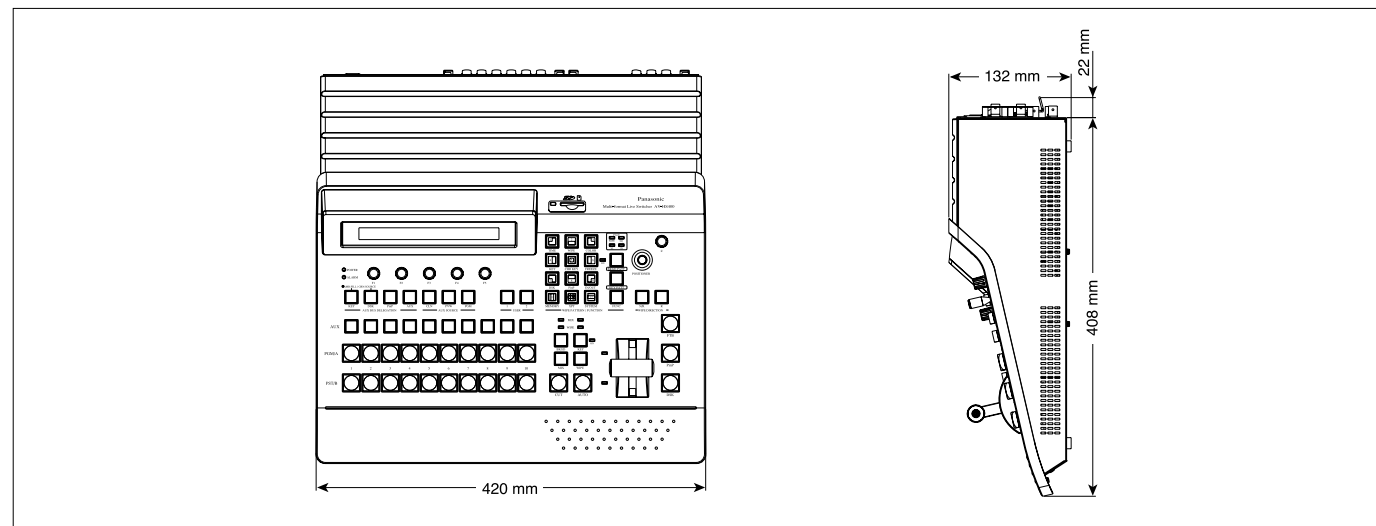
132 mm
22 mm
408 mm
420 mm

● SD Logo is a trademark.

[Countries and Regions]

Argentina	+54 1 308 1610	Kuwait	+965 481 2123	Sweden	+46 (8) 680 26 41
Australia	+61 2 9986 7400	Lebanon	+961 1 216827	Switzerland	+41 (0)41 259 96 32
Austria	+43 (0)1 610 80 773	Malaysia	+60 3 5549 5422	Taiwan	+886 2 2725 9100
Bahrain	+973 252292	Mexico	+52 5 488 1000	Thailand	+66 2 731 8888
Belgium	+32 (0)2 481 04 57	Montenegro, Serbia		Turkey	+90 216 578 3700
Bulgaria	+359 2 946 0786		+41 (0)26 466 25 20	U.A.E.	+971 4 282201
Brazil	+55 11 3889 4035	Netherlands	+31 73 64 02 577	Ukraine	+380 44 4903437
Canada	+1 905 624 5010	New Zealand	+64 9 272 0100		+380 44 4903438
China	+86 10 6515 8828	Norway	+47 67 91 78 00		[ext. 112]
(Hong Kong	+852 2313 0888)	Pakistan	+92 5370320 21	U.K.	+44 (0) 1344 70 69 20
Czech Republic	+420 236 032 552/511	Panama	+507 229 2955	U.S.A.	+1 201 348 5300
Denmark	+45 43 20 08 57	Peru	+51 145 29470		+1 800 528 8601
Egypt	+20 2 3938151	Philippines	+63 2 633 6162	Vietnam	+84 88370280
Finland, Latvia, Lithuania, Estonia		Poland	+48 (22)338 1100		
	+358 (9)521 52 53	Portugal	+351 21 425 77 04		
France	+33 (0)1 49 46 43 59	Puerto Rico	+1 787 750 4300		
Germany	+49 (0)611 235 401	Romania	+40 21 211 4855		
Greece	+30 210 96 92 300	Russia & CIS	+7 495 980 42 06		
Hungary	+36 (1)382 60 60	Saudi Arabia	+966 1 465 0709		
Indonesia	+62 21 385 9449	Singapore	+65 6270 0110		
Iran	+98 21 2271463	Slovak Republic	+421 (0)2 52 92 14 23		
Italy	+39 02 67 88 449	Slovenia, Croatia, Bosnia, Macedonia			
Jordan	+961 6 586 1914		+44 (0)20 76 63 36 57		
Kazakhstan	+7 3272 980 891	South Africa	+27 11 313 1400		
Korea	+82 2 2106 6666	Spain	+34 (93) 425 93 00		

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Multi-Format Live Switcher
AV-HS400

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

Sports Arena

HD-SDI Multi-purpose Camera
AK-HC1500

MULTI FORMAT
DIGITAL CAMERA SYSTEM

P2HD Memory Card Camera-Recorder

P2HD Memory Card Camera-Recorder

P2HD Memory Card Camera-Recorder

P2HD Memory Card Camera-Recorder

News Magazine Show

Worldwide Production

Educational Solution

Hall

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.
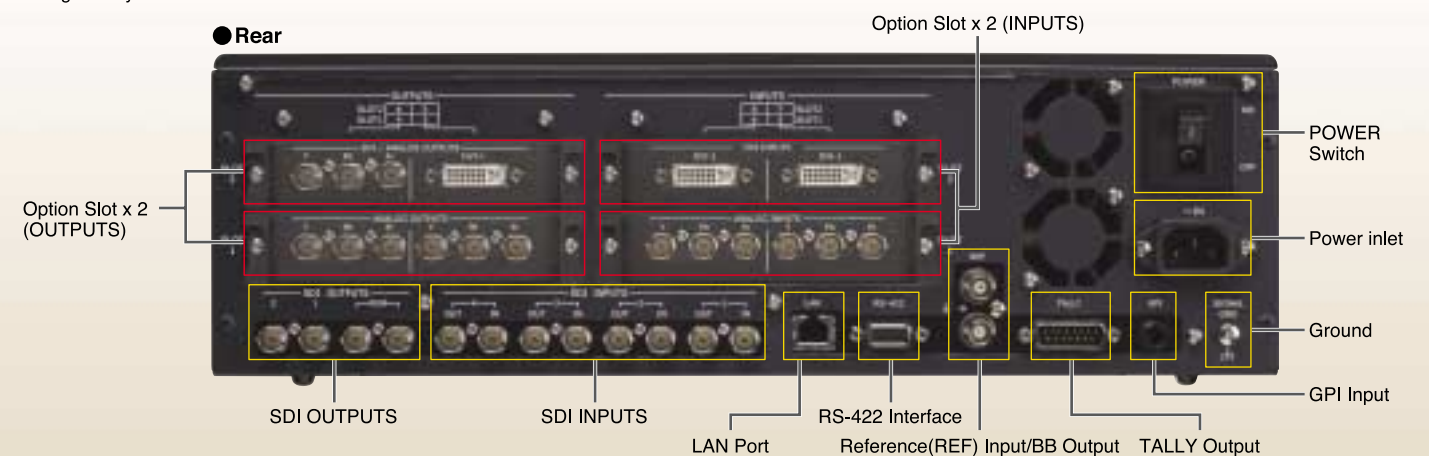Reference (black burst) signal outputs are provided to enable synchronization with external systems.
The main unit and control panel are integrated in a compact body, ideal for small studios and mobile production.

* 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)

Option Slot x 2 (OUTPUTS)

POWER Switch

Power inlet

Ground

GPI Input

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.
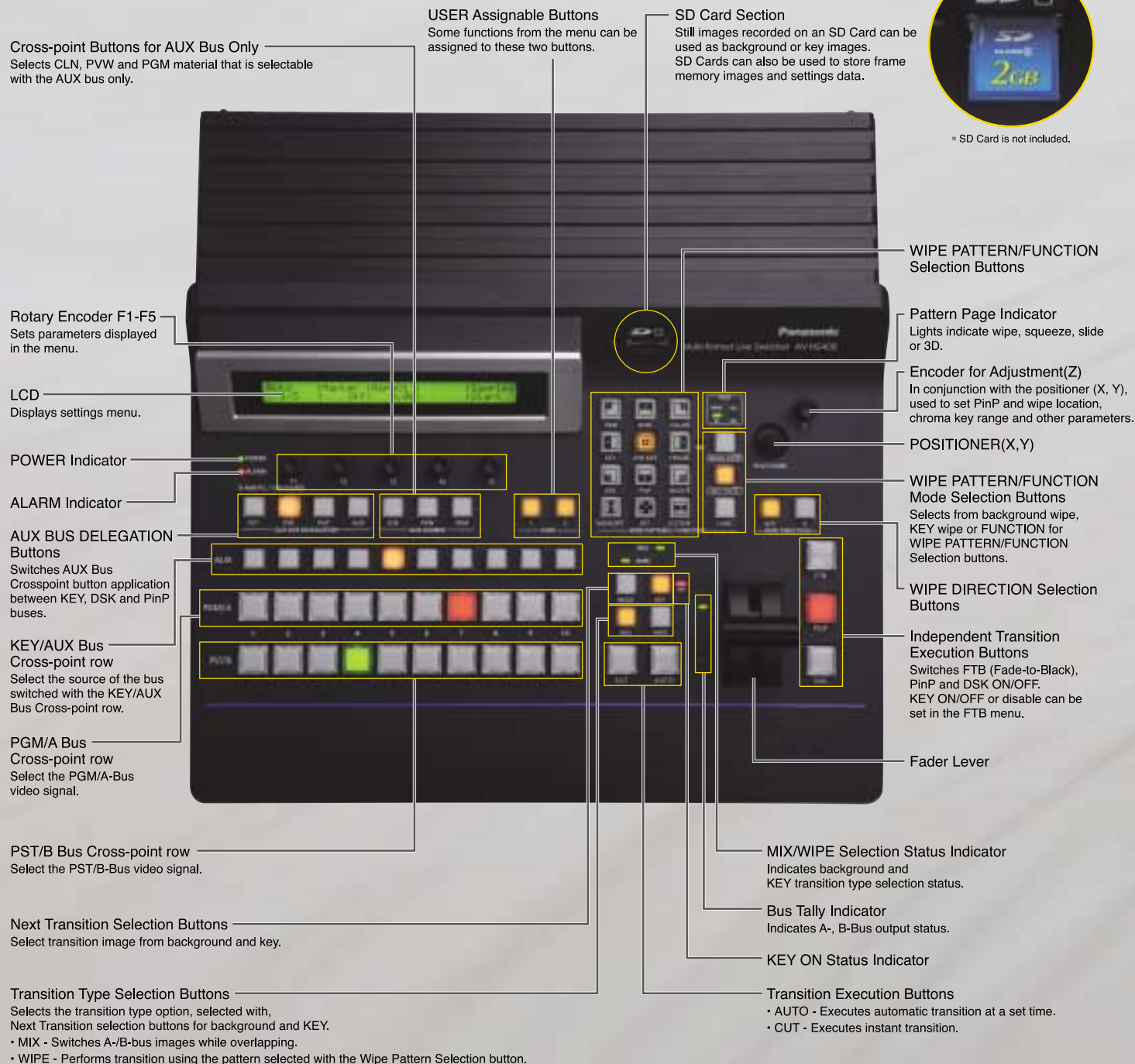
Multi-system compatibility for extra flexibility in the field and studio. "Compact" –– with all the functions you need for superb results.

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

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.

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

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.

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.

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

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.

■ 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.
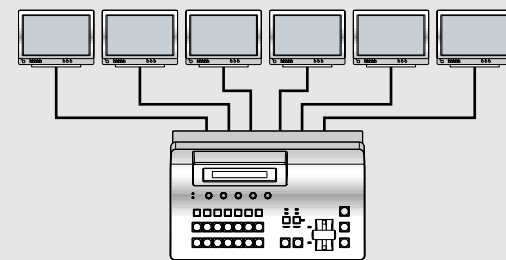
Example of an AV-HS400 monitor system

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.
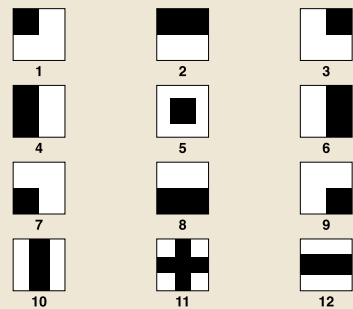
■ A total of 43 effects offer great creative flexibility

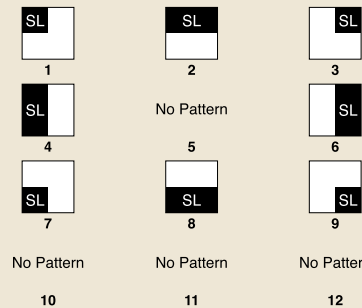### WIPE

Switching between 12 wipe patterns.

(images:pattern4)
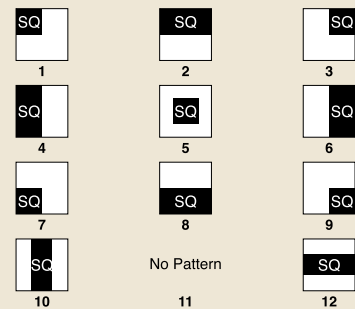
SQ (Squeeze)

Switching between 11 types of squeeze including center, top and bottom.
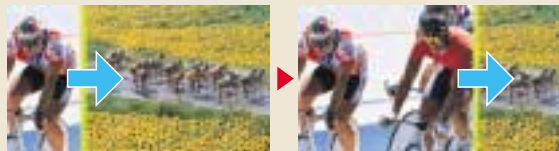
(images:pattern4)

SL (Slide)

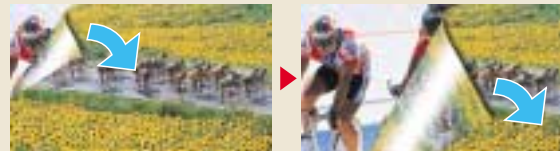Switching between up, down, left, right and diagonal slide effects.
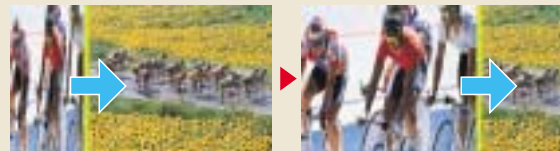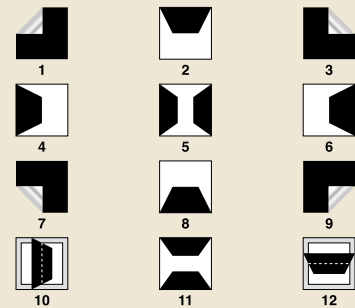
(images:pattern4)

3D (3 Dimension)

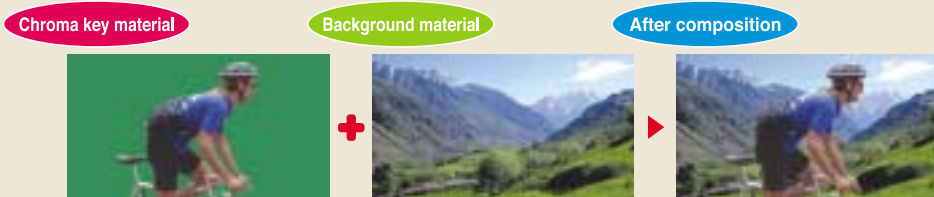Switching between 3D effects such as page turn and rotate.

(images:pattern1)

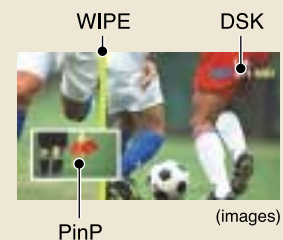## ■ Chroma key for broadcast quality composite images

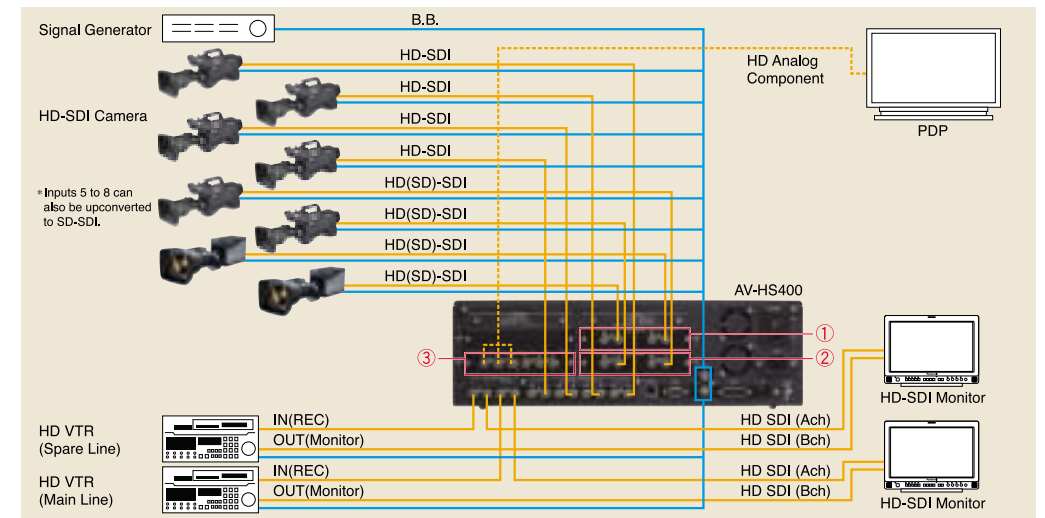High-quality chroma key for broadcast and commercial production applications.

Chroma key material
Background material
After composition

■ Example of composite effect

WIPE   DSK

PinP

(images)

● **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 Camera
HD-SDI
HD-SDI
HD-SDI
HD-SDI
HD(SD)-SDI
HD(SD)-SDI
HD(SD)-SDI
HD(SD)-SDI
*Inputs 5 to 8 can also be upconverted to SD-SDI.
HD Analog Component
PDP
AV-HS400
HD-SDI Monitor
HD VTR (Spare Line)   IN(REC)   OUT(Monitor)   HD SDI (Ach)   HD SDI (Bch)
HD VTR (Main Line)   IN(REC)   OUT(Monitor)   HD SDI (Ach)   HD SDI (Bch)
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
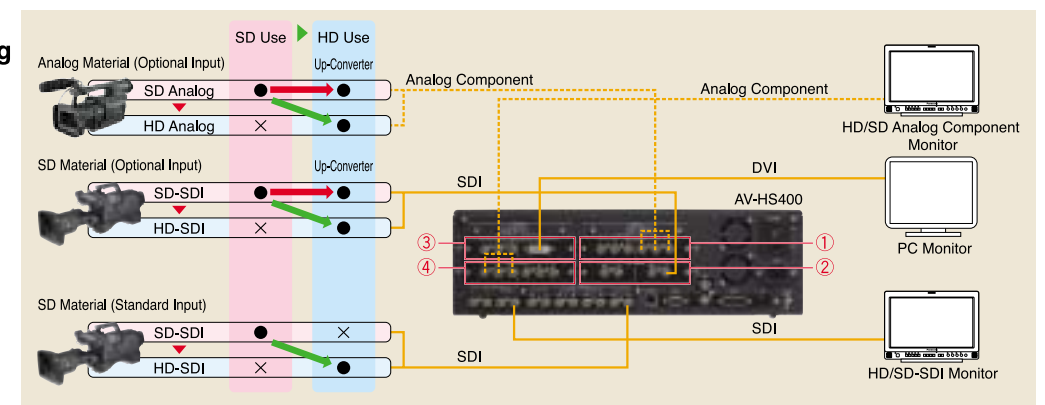
=Option Boards
① DVI INPUTS(AV-HS04M3)
② ANALOG INPUTS(AV-HS04M2)
③ DVI/ANALOG OUTPUTS(AV-HS04M5)

HD Analog Camera   HD Analog Component
HD Analog Component   HD Analog Component
HD-SDI Camera   HD-SDI
DVI   PDP
OUT(PLAY)   IN(REC)   AV-HS400
HD VTR   P2 Mobile   or
HD-SDI   PC Monitor   or   Projector
DVI or VGA   HD-SDI
PC   HD-SDI Monitor
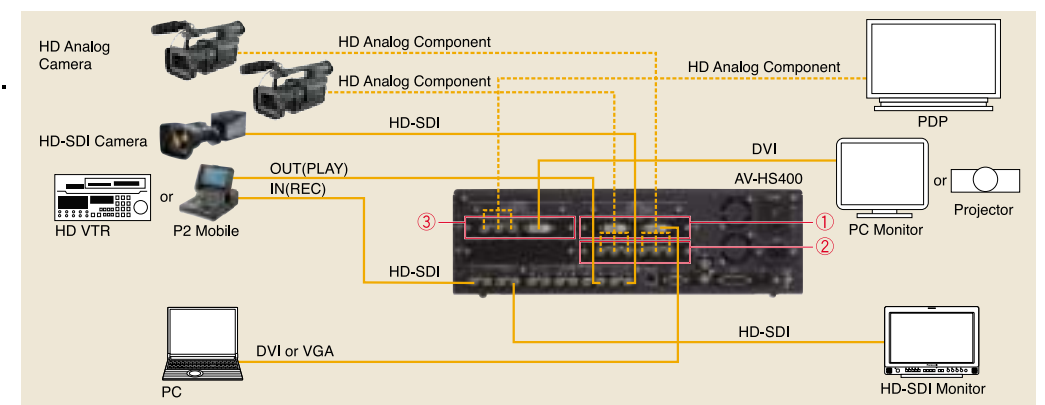
● **Provides the flexibility required for facilities moving from SD to HD production.**
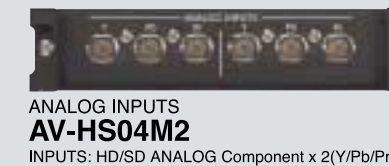
A combined HD/SD environment without Genlock.

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

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