

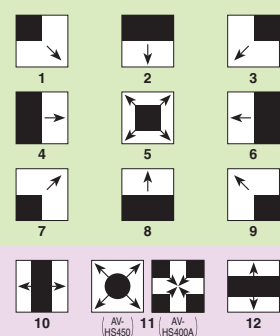
Wipe patterns

AV-HS450

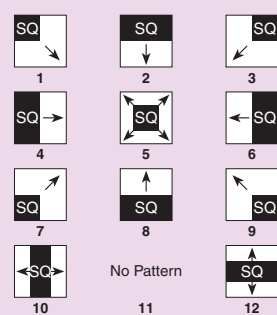
AV-HS400A

AV-HS300

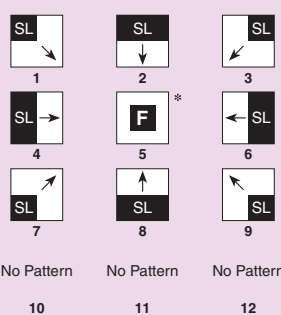
WIPE



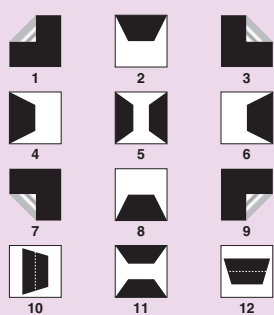
SQ (Squeeze)



SL (Slide)

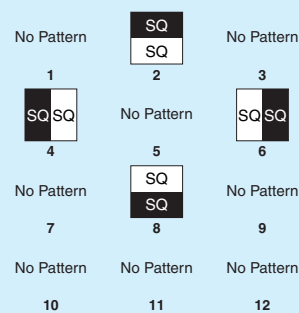


3D (3 Dimension)

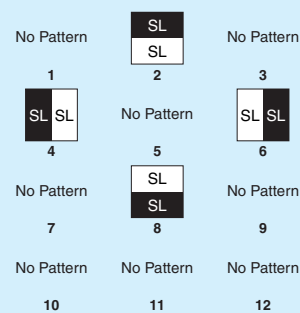


* Key transition only.

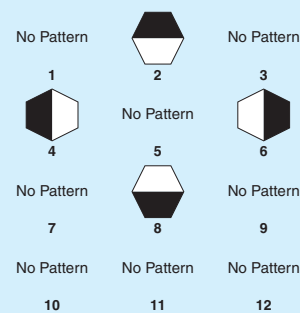
SQ2 (Squeeze2)



SL2 (Slide2)



3D2 (3 Dimension2)



- Specifications and functions are subject to change without notice.
- The image on the screen is a composite image. ● Composite images, photographs, and illustrations are included for reference use only.

Panasonic®

<http://panasonic.net/pss/broad/>

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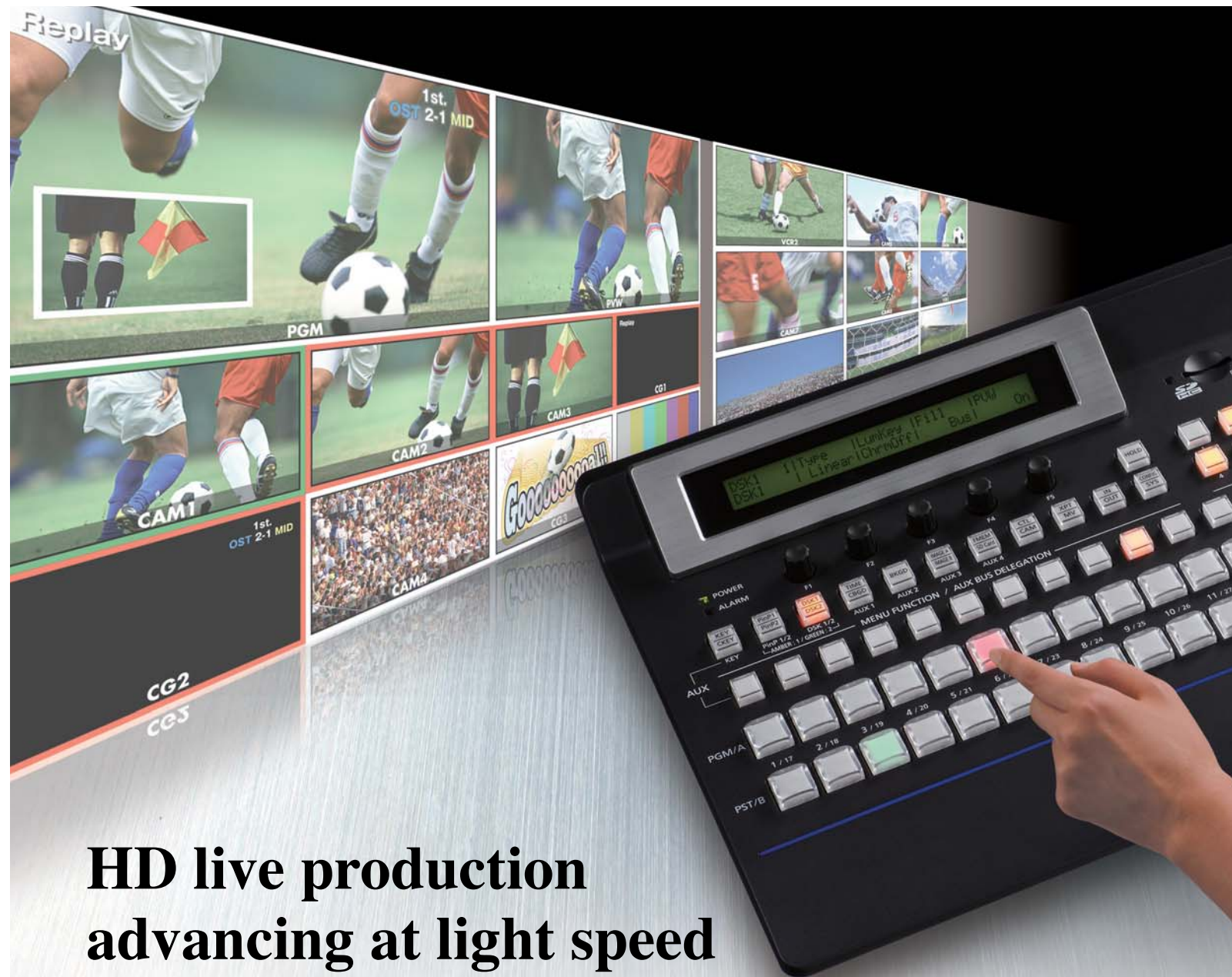
Panasonic
ideas for life

50 Hz

9/2009

Multi-format Live Switchers

AV-HS450
AV-HS400A
AV-HS300



HD live production
advancing at light speed

● Multi-format Live Switchers



AV-HS450



AV-HS400A



AV-HS300

Advanced broadcast quality HD technology in a compact form.

A global line-up suitable for myriad applications.



AV-HS400A

HD 1080/59.94i,50i, 720/59.94p,50p **SD** 480/59.94i,576/50i

An all-in-one, 1ME switcher supplied with a MultiViewer, dual 3D-DVE, AUX Bus, and much more.

The HS400A is equipped with four HD/SD-SDI inputs and three outputs, and expandable to eight-in and seven-out. Standard equipment includes PinP (Picture in Picture), Chroma Keyer and DSK (Downstream Keyer), Frame Sync, PTZ camera control, SD Card, and Ethernet Graphics Transfer.



Ten Split MultiViewer Display



AV-HS450

HD 1080/59.94i,50i,23.98PsF*,24PsF* **SD** 480/59.94i,576/50i

* AV-HS04M1 through M7 cards do not support 24 or 23.98PsF.

HD switcher with 16 SDI inputs, 4 SDI outputs, 2 DVI outputs, and Dual-screen MultiViewer as standard equipment.

Expandable to 20 inputs or 10 outputs, this powerful 2-piece switcher includes a wide range of standard functions, including dual PinP, dual DSK, dual channel 3D DVE, four AUX busses, shot and PinP memories, a powerful chroma keyer, PTZ camera control with preset memories, dual redundant power supplies and much more.



Sixteen Split

Can simultaneously display up to 20 windows on two screens.



Quad Split

AV-HS300

HD 1080/59.94i,50i, 720/59.94p,50p **SD** 480/59.94i,576/50i

Professional HD production has never been easier. A compact switcher offering great portability.

The HS300 is a portable, one-piece, switchable HD/SD switcher with 5 SDI inputs 1 DVI input, and basic keying functions. Powered with an optional 12 VDC power supply (e.g. AW-PS505A) the HS300 is ideal for field production.

- The switcher is not water-proof, and should only be used in a dry environment.



**Multi-format
HD/SD compatibility
for worldwide use**

Compatibility with various HD/SD formats will help you meet changing production needs as video production shifts towards HD on a global scale. You can also use optional cards to combine a variety of HD and SD signals in a flexible system, as you make a smooth transition from SD to HD.



**Built-in
Frame Synchronizers
suitable for field operation**

Each input features a built-in high-performance 10-bit Frame Synchronizer. You can also smoothly switch asynchronous video signals without experiencing shock or freeze. It is also compatible with the reference (black burst) signal input, so you can synchronize with external systems.



Versatile inputs/outputs and dual-screen Multi Viewer for powerful, cost effective production.



Control panel

Multi-format Live Switcher AV-HS450



Mainframe

Built-in 4 up-converters and 8 color correctors. Also comes with redundant power supply.

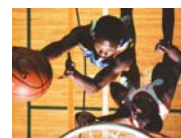
The compact 2RU mainframe size switcher is standardly equipped with 16 HD/SD-SDI input channels. All inputs feature a built-in Frame Synchronizer. It is also mounted with 4 up-converters and 8 color correctors. Its standard output configuration includes 4 HD/SD-SDI output channels and 2 DVI-D output channels. In addition, it features 4 Aux busses*1, and the Aux 1 comes with a MIX transition function. In combination with mix effects, the switcher enables a flexible production workflow, and the redundant power supply ensures smooth field operation.

*1 You can also add an SDI embedded audio input.

An extensive range of inputs and outputs will help you build a versatile system. Excellent performance in various situations from broadcasting, entertainment, to education.



News Magazine Show



Sports Arena



Education



Halls / Theaters

Built-in dual-monitor multi display function with up to 20 windows.

Standardly equipped with a dual-monitor multi display function. A maximum of 20 channels including program (PGM), preview (PVW), and input video signal can be simultaneously displayed on 2 screens. The exclusive feature lets you work comfortably with only two monitors, even at large-scale events.



You can split your screens into 4, 9, 10, and 16 sections.
A maximum of 20 channels may be simultaneously displayed on 2 screens.



Four Split Pictures (images)



Sixteen Split Pictures (images)



Ten Split Pictures (images)



Nine Split Pictures (images)

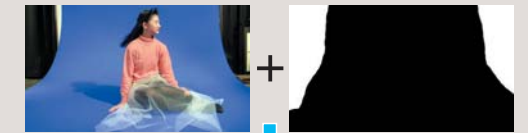
Standard configuration includes dedicated hardware for 2 DSK and 2 PinP channels.

The built-in upstream keyer includes luminance and chroma key functions. The HS450 chroma keyer employs the powerful Primatte® algorithm, previously only available for use with high-end non-linear editing systems. Widely used in motion picture and TV production, incorporation of Primatte's algorithm into the HS450 now provides easy to adjust, high-precision compositing technology for live production. In addition, the switcher comes equipped with dedicated hardware for 2 DSK and 2 independent channels of picture-in-picture.

- Primatte® is a registered trademark of IMAGICA DIGIX Inc.
- The copyrights of Primatte® belong to IMAGICA DIGIX Inc.
- The patents for Primatte® belong to IMAGICA DIGIX Inc.

Embedded with high-grade chroma key technology

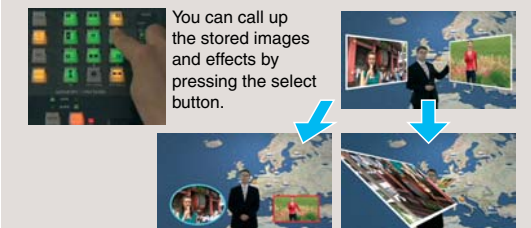
By matching transparent materials such as silk and glass to the background color, the superb spill removal function produces natural, realistic results. Reproduces details of elaborate content such as hair with great precision.



Enhanced shot memory and PinP memory for streamlined operation.

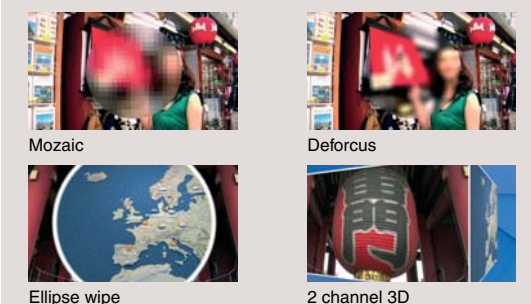
You can store up to 10 memorized image states for background transition pattern, PinP size, position and border width. The switcher is also equipped with an effect dissolve function*2. These enhanced memory functions enable a smoother and more intuitive production workflow.

*2 You can smoothly switch from the current image to the image or operation store in the SHOT memory.



A wide range of 2D and 3D effects enhance creative expression.

In addition to standard wipe, mix, and cut transitions, powerful 2D and 3D DVE effects such as squeeze, slide, rotation, and page turn are now available. Dual channel DVE effects are also available for dramatic key effects and other creative transitions. Useful new effects include variable mosaic and selectable defocus.



Superior PTZ camera system control with preset recall and save functions.

The HS450 offers advanced control of Panasonic pan-tilt camera systems, including the AW-HE100 HD integrated PTZ camera. You can control one camera via direct serial connection, or up to 5 in conjunction with system controllers such as the AW-RP655. Up to 10 preset positions may be stored or recalled for each camera.

Control camera and pan-tilt systems right from the switcher to easily capture perfectly framed video.



A compact, high-performance, global standard model compatible with multi-view display.



Multi-format Live Switcher
AV-HS400A

A compact switcher equipped with every function needed for great video production.

The control panel, switching circuitry, connection panel, and MultiViewer are integrated into a single compact unit, providing great portability and ease of use. The HS400A comes equipped with all the features required for high-level video production, and a simple, streamlined control panel layout makes creative switching a breeze.



The Built-in MultiViewer Can Reduce System Cost, Save Space, and Streamline Production Workflow.

Reduce the number of monitors and build an environmentally conscious system by dividing the screen to display numerous sources on a single monitor. You can edit the label of source windows, turn the labels on or off, adjust label brightness, and turn off the label background bar. You can also adjust the frame line brightness, or turn the frame lines off for use as a multi-image program display.



Selectable Split-screen Quantity and Location

- The window layout can be selected: 4, 8, or 10.
- Split-screen labels may customized or selected from menus.
- Red/Green Program/Preview tally indicators may be displayed*1.
- When splitting screens into 10/8 sections, the upper 2 windows may be selected from PGM/PVW/AUX BUS/KEYOUT images.



Ten Split Pictures (images)



Eight Split Pictures (images)



Four Split Pictures (images)

*1 The tally output connector is not compatible to green tally output.

Basic HD/SD configuration includes 4 SDI inputs and 3 assignable SDI output channels*2.

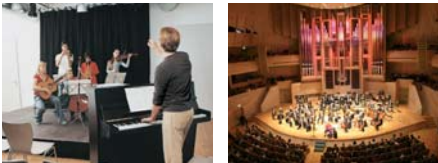
Using optional I/O boards, the HS400A can be expanded to a maximum of 8 input and 7 output channels.

The HS400A may be easily expanded to suit a wide range of applications through the use of optional input and output boards. Tally connections for up to 8 cameras are included as standard equipment, as is an RS-422 control port compatible with the basic GVG protocol.

- Optional input and output boards include:
 - Inputs: AV-HS04M1: Dual HD/SD-SDI with Up-conversion
 - AV-HS04M2: Dual HD/SD Analog Component with Up-conversion
 - AV-HS04M3: Dual Scalable DVI
 - AV-HS04M6: Dual SD Analog Composite with Up-conversion
 - Outputs: AV-HS04M4: Dual HD Analog Component
 - AV-HS04M5: Scalable DVI and HD Analog Component
 - AV-HS04M7: Dual HD/SD-SDI with Down-conversion

*2 Two interfaces assignable as PGM,PVW, AUX, multi-screen, and keyout.

The wide range of input and output configurations are ideal for many applications.



Education

Halls / Theaters



Studio Use

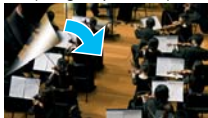
Comes with a great diversity of effects to expand your creative expression.

In addition to standard wipe patterns, you can employ slide, size-reduction, and a variety of 3D effects. 3D transitions can also be applied independently to the upstream key function, for dramatic graphic and titling effects to luminance and chroma keys. PinP and DSK functions are also included as standard equipment.

WIPE (images: pattern4)



3D (images: pattern1)



Example of a compound effect

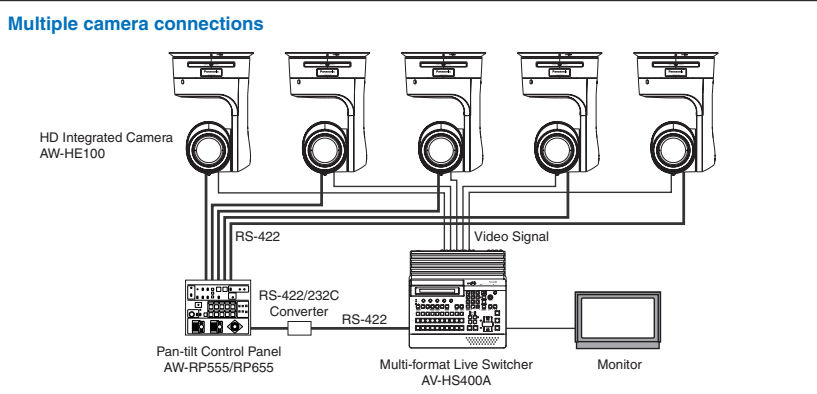
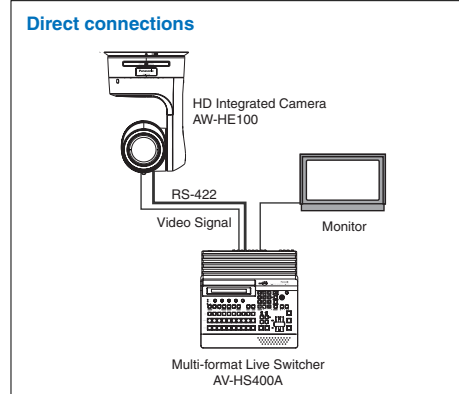


(images)

Remotely control the AW-HE100 and other Panasonic pan-tilt systems*3.

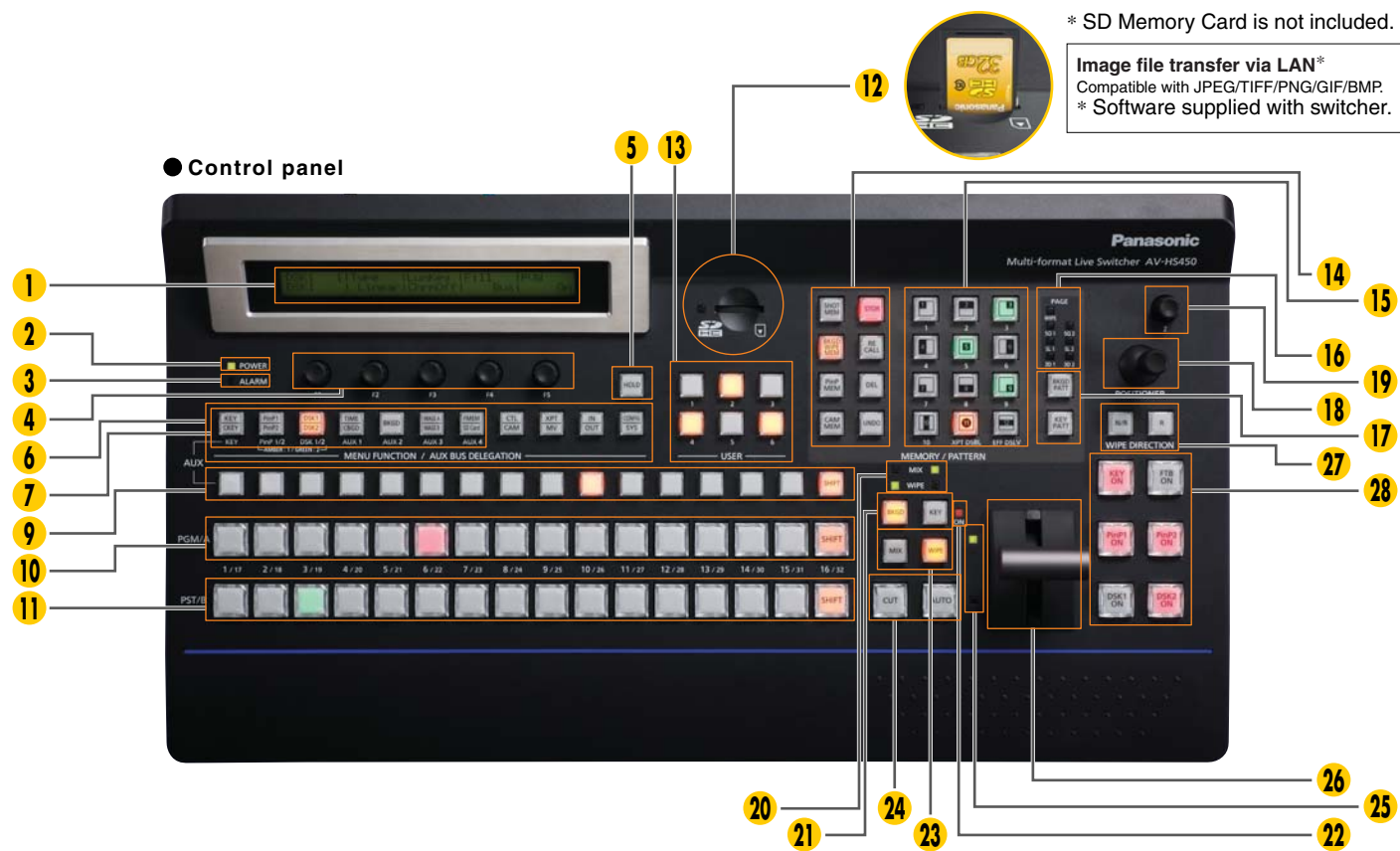
Directly connecting the AW-HE100 3CCD integrated pan/tilt/zoom camera or a Panasonic camera/pan-tilt system*3 allows control over pan, tilt, zoom, and focus using the HS400A's positioner. Moreover, by also connecting a Panasonic control panel*4 you can switch between and operate up to 5 cameras and pan-tilt heads*3.

*3 Compatible models: AW-PH400/AW-PH405/AW-PH360. *4 Compatible models: AW-RP655/AW-RP555.

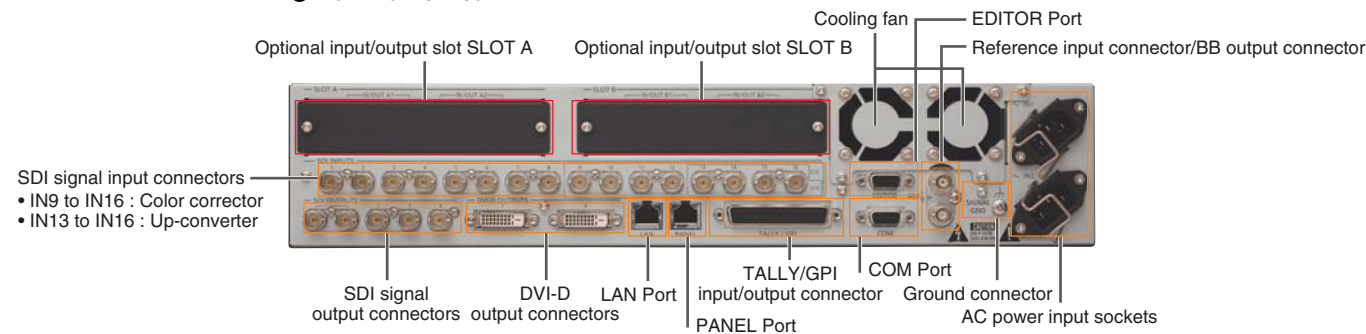


● You can upgrade the existing AV-HS400. Please contact Panasonic for more information.

AV-HS450 Controls and functions



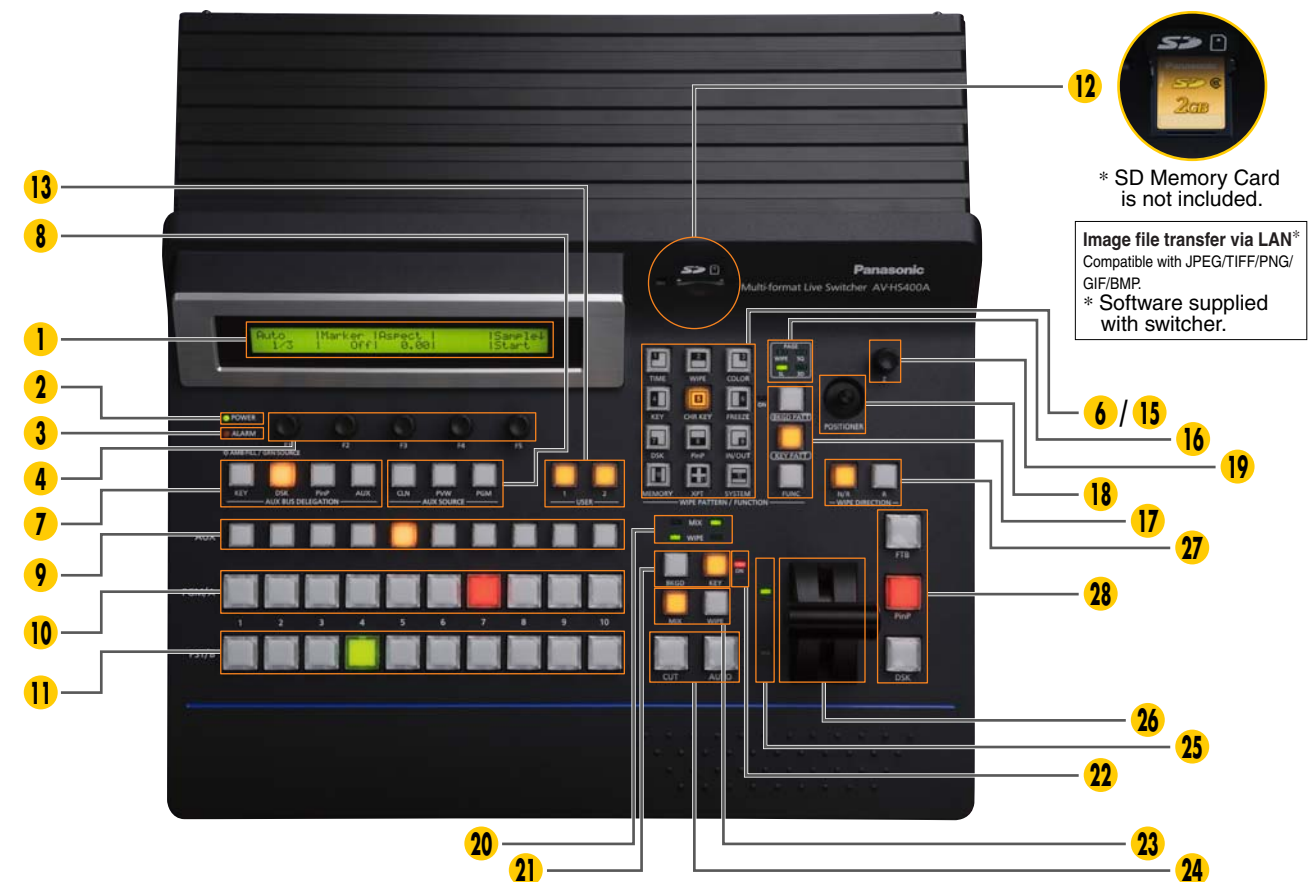
Mainframe Rear



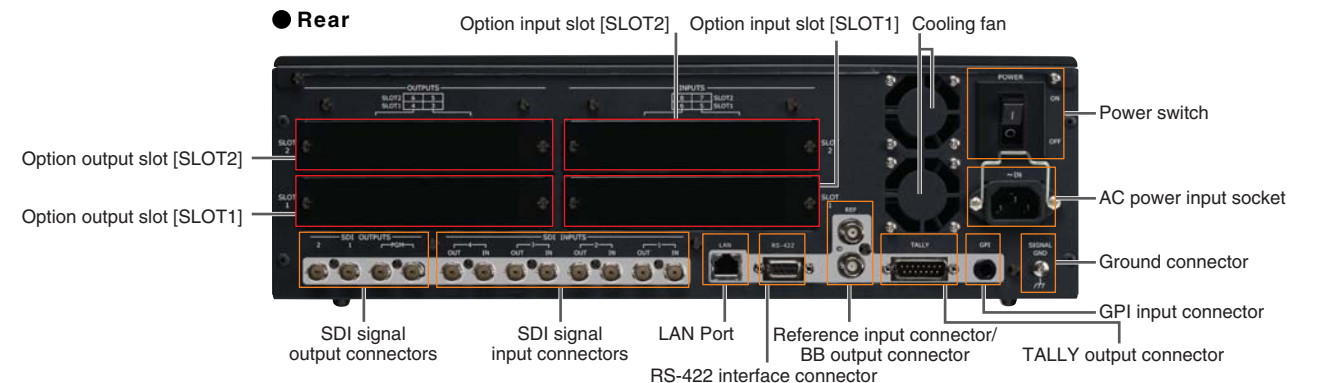
●Up to two optional boards can be added via input/output slots.

- 1 LCD**
Displays settings menus.
- 2 Power indicator**
- 3 Alarm indicator**
- 4 Rotary encoders [F1] to [F5]**
Sets parameters displayed in the menu.
- 5 [HOLD] button** (only applies to AV-HS450)
Prohibits switching to Menu and AUX bus select buttons.
- 6 Menu function buttons**
For direct selection of many menu functions.
- 7 AUX bus selector buttons**
Switches AUX Bus Crosspoint button application between KEY, DSK and PinP buses.
- 8 AUX bus dedicated crosspoint buttons** (only applies to AV-HS400A)
Selects CLN, PVW and PGM material that is selectable with the AUX bus only.
- 9 AUX bus crosspoint buttons**
Select the source of the bus switched with the KEY/AUX Bus Cross-point row.
- 10 PGM/A bus crosspoint buttons**
Select the PGM/A-Bus video signal.
- 11 PST/B bus crosspoint buttons**
Select the PST/B-Bus video signal.
- 12 SD memory card slot**
Still images (JPEG, BMP) recorded on an SD Memory Card can be used as background or key images. SD Memory Cards can also be used to store frame memory images and settings data.
 - The AV-HS450 is compatible with SD/SDHC Memory Cards.
 - The AV-HS400A is compatible with SD Memory Cards.
 - SDHC/SD logos are registered trademarks.
- 13 User buttons**
You can assign various menu functions to these button for one-touch access.
- 14 Memory operation buttons** (only applies to AV-HS450)
- 15 Wipe pattern selector buttons**
 - With the AV-HS450, data can be stored in the memories of buttons 1 to 10 or recalled from these memories while one of the memory operation buttons.

AV-HS400A Controls and functions



Rear



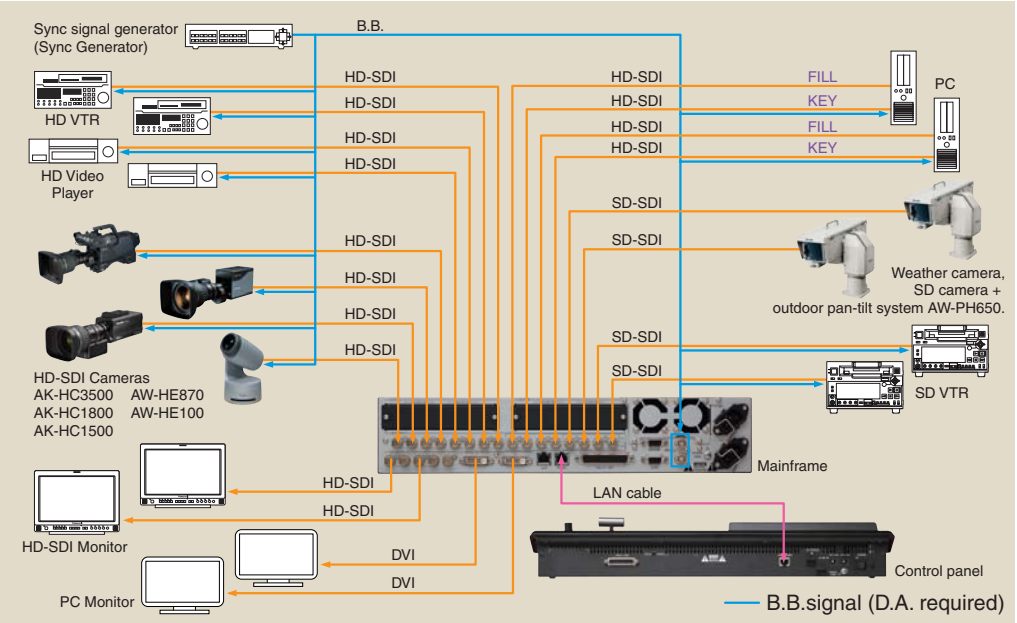
●You can add up to two optional input cards and two optional output cards via the dedicated slots.

- 16 Pattern page indicator LEDs**
Indicates the status of the pattern page selection such as "WIPE (wipe) / SQ1 (squeeze 1) / SL1 (slide 1) / 3D1 (3 dimension 1) / SQ2 (squeeze 2) / SL2 (slide 2) / 3D2 (3 dimension 2)" for AV-HS450 and "WIPE (wipe) / SQ (squeeze) / SL (slide) / 3D (3 dimension)" for AV-HS400A.
- 17 BKGD,KEY pattern selector buttons**
Selects from background wipe, KEY wipe or FUNCTION (only applies for AV-HS400A) for WIPE PATTERN/FUNCTION Selection buttons.
- 18 Positioner [X/Y]**
- 19 Rotary encoder [Z]**
In conjunction with the positioner (X, Y), used to set PinP and wipe location, chroma key range and other parameters.
- 20 MIX, WIPE selection status tally LEDs**
Indicates background and KEY transition type selection status.
- 21 Next transition selection buttons**
Select transition image from background and key.
- 22 KEY ON tally LED**
- 23 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.
- 24 Transition execution buttons**
 - AUTO - Executes automatic transition of a selected duration.
 - CUT - Executes instant transition.
- 25 Bus tally LEDs**
Indicates A-, B-Bus output status.
- 26 Fader lever**
- 27 Wipe direction selection buttons**
- 28 Transition execution buttons**
Switches FTB (Fade-to-Black), PinP and DSK ON/OFF. With the AV-HS400A, you can disable or change the FTB to KEY ON/OFF.

AV-HS450 / AV-HS400A System Diagrams

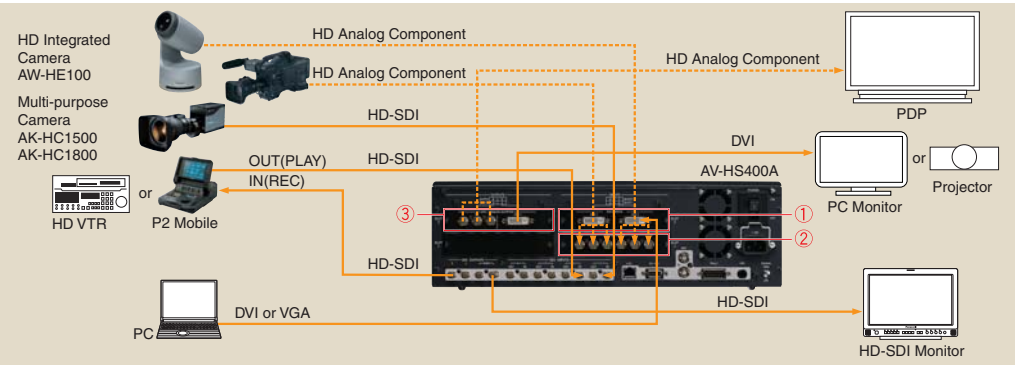
AV-HS450

- Ideal for use at broadcast stations, production companies, as well as in mid-sized studios and production vans.
- This example employs HD/SD-SDI cards for all cameras and uses an external sync generator for Genlock reference.



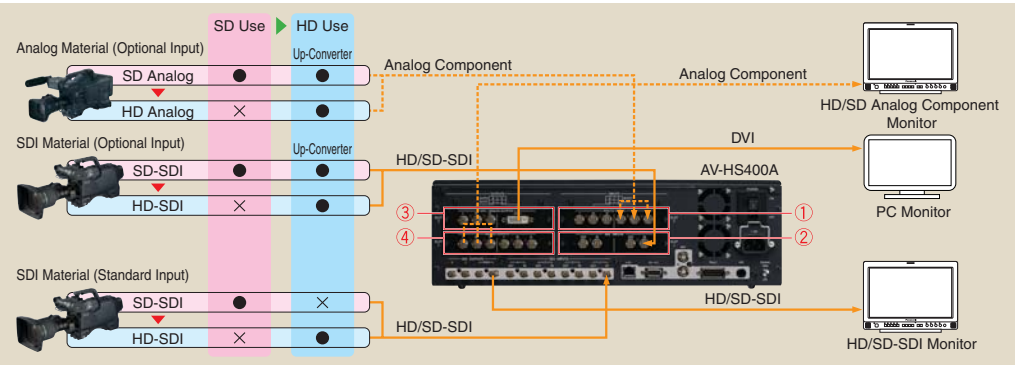
AV-HS400A

- Ideal for use with smaller systems at cable stations, schools, and for mobile flypacks.
- This example employs HD Analog and other option cards, and does not require Genlock.

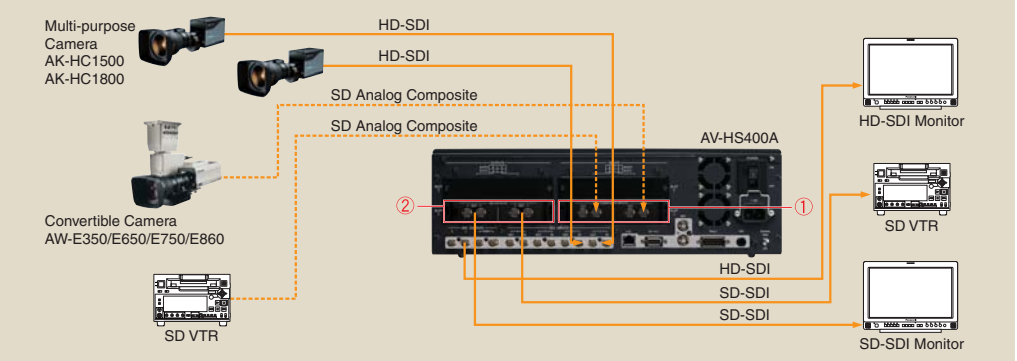


- Provides the flexibility required for facilities moving from SD to HD production.

- 1. A combined HD/SD-SDI and HD/SD analog component environment without Genlock.





- 2. A combined HD/SD-SDI and analog composite environment without Genlock.



AV-HS450 / AV-HS400A Option Boards

Input/output formats compatible with the AV-HS450/HS400A

																						
		AV-HS450											AV-HS400A									
		Standard	Standard	Standard	M1	M2	M3	M4	M5	M6	M7	M8	Standard	Standard	M1	M2	M3	M4	M5	M6	M7	
		SDI x16	SDI x4	DVI-D x2	SDI x2	COMP x2	DVI-I x2	COMP x2	DVI-I/COMP	COMPSIT x2	SDI x2	DVI-D x2	SDI x4	SD x3	SDI x2	COMP x2	DVI-I x2	COMP x2	DVI-I/COMP	COMPSIT x2	SDI x2	
		IN	OUT	OUT	IN	IN	OUT	OUT	IN	OUT	IN	IN	OUT	IN	IN	IN	OUT	OUT	IN	OUT		
Analog composite	NTSC								✓										✓			
	PAL								✓										✓			
Analog component	480/59.94i					✓		✓	✓						✓		✓	✓				
	576/50i					✓		✓	✓						✓		✓	✓				
	1080/59.94i					✓		✓	✓						✓		✓	✓				
	1080/50i					✓		✓	✓						✓		✓	✓				
	720/59.94p					✓		✓	✓						✓		✓	✓				
	720/50p					✓		✓	✓						✓		✓	✓				
SDI	480/59.94i	✓	✓		✓					✓		✓	✓	✓						✓		
	576/50i	✓	✓		✓					✓		✓	✓	✓						✓		
	1080/59.94i	✓	✓		✓					✓		✓	✓	✓						✓		
	1080/50i	✓	✓		✓					✓		✓	✓	✓						✓		
	720/59.94p	✓	✓		✓					✓		✓	✓	✓						✓		
	720/50p	✓	✓		✓					✓		✓	✓	✓						✓		
	1080/24PsF	✓	✓																			
	1080/23.98PsF	✓	✓																			
DVI analog	XGA (1024 x 768) 60Hz						✓		✓							✓		✓				
	WXGA (1280 x 768) 60Hz						✓		✓							✓		✓				
	SXGA (1280 x 1024) 60Hz						✓		✓							✓		✓				
DVI digital (PC)	XGA (1024 x 768) 60Hz			✓			✓		✓		✓					✓		✓				
	WXGA (1280 x 768) 60Hz			✓			✓		✓		✓					✓		✓				
	SXGA (1280 x 1024) 60Hz			✓			✓		✓		✓					✓		✓				
	UXGA (1600 x 1200) 60Hz			✓					✓		✓							✓				
	WSXGA+ (1680 x 1050) 60Hz			✓					✓		✓							✓				
	WUXGA (1920 x 1200) 60Hz			✓					✓		✓							✓				
DVI digital (VIDEO)	1080/59.94p			✓							✓											
	1080/50p			✓							✓											

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

- You can add up to 2 boards to the input/output option board slots of the AV-HS450, and up to 2 input and 2 output boards to the option board slots of the AV-HS400A. These option boards cannot be added to the AV-HS300.

INPUTS

SDI Input Board
AV-HS04M1
INPUTS : HD/SD-SDI x2 (BNC)(Built-in Up-converter)

Analog Component Input Board
AV-HS04M2
INPUTS : HD/SD Analog Component x2(Y/Pb/Pr) (Built-in Up-converter)

DVI Input Board
AV-HS04M3
INPUTS : DVI-I x2 (Built-in Scaler)

Analog Composite Input Board
AV-HS04M6 *1
INPUTS : Analog Composite x2 (Built-in Up-converter)

Full HD DVI input board (for AV-HS450 only)
AV-HS04M8 *2
INPUTS : DVI-D x2 (compatible with WUXGA)

OUTPUTS

Analog Output Board
AV-HS04M4
OUTPUTS : HD/SD Analog Component x2 (Y/Pb/Pr)

DVI/Analog Output Board
AV-HS04M5
OUTPUTS : DVI-I x1, Analog Component x1 (Y/Pb/Pr)

SDI Output Board
AV-HS04M7 *1
OUTPUTS : HD/SD-SDI x2 (Each one has 2 outputs)(BNC) (Built-in Down-converter)

*1 AV-HS04M6/HS04M7 are for the AV-HS450/HS400A. To use with the AV-HS400, system software must be upgraded. Please contact Panasonic for more information. *2 The AV-HS04M8 is only compatible with the AV-HS450.(As of September 2009.)

Makes HD production easier and more accessible than ever!

High-tech, compact body offers high cost performance.



Multi-format Live Switcher
AV-HS300

Easily portable, light, compact body.

Optimal live operation with a 12 VDC external power supply.

This highly portable switcher is ideal for a wide range of applications. All inputs include a 10-bit Frame Synchronizer for smooth transitions with either synchronous or asynchronous sources. Using the appropriate optional 12 VDC power supply, the HS300 may be used for indoor or outdoor live production.

- The switcher is not waterproof. Avoid exposure to rain or excess moisture.



Compact, all-in-one design offers flexibility and convenience.

A compact body with 6 input channels/ 3 output channels.

Equipped with serial, tally, and network interfaces.

Standard setup includes 6 input channels (5 SDI inputs, 1 DVI-I input) and 3 SDI output channels (PGM, PVW, AUX). The switcher is compatible with the optional HD analog component with 5 input channels. Also embedded with six channel tally outputs and an RS-422 interface, the switcher offers a wide range of live switching systems. There is also a built-in network interface, so you can easily import background images from a PC. The switcher is great for classrooms, and small-scale productions.

Offers numerous effect and key functions.

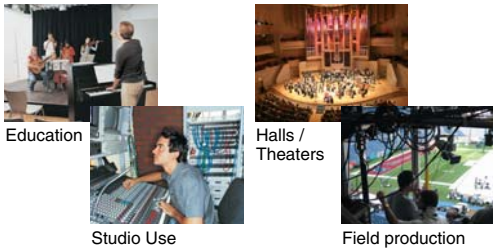
You can now easily add switch effects and titles.

There are 9 wipe patterns and a variety of border and soft effects. The key synthesizer is compatible with self and linear keying, as well as key invert. You can add borders to titles and specify border colors for more versatile titling.



Simple operation lets you quickly take advantage of a selection of wipe patterns and directions, an ideal feature for live situations where speed is required. You can also cut and mix.

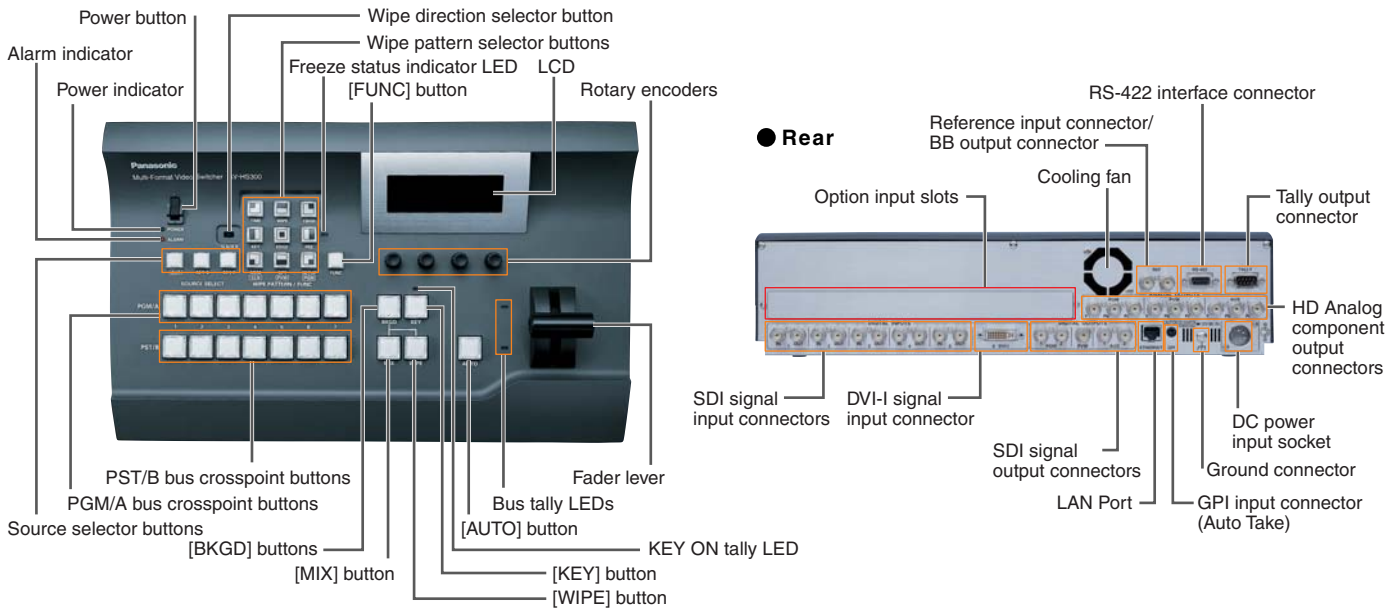
Optimal for live events, classrooms, and small scale productions.



Wipe Convenience with 9 Patterns in 3 Directions



AV-HS300 Controls and their Functions



AV-HS300 Option Board / AC adaptor

HD ANALOG INPUTS
AV-HSB300
INPUTS: HD Analog Component x 5 (Y/Pb/Pr)

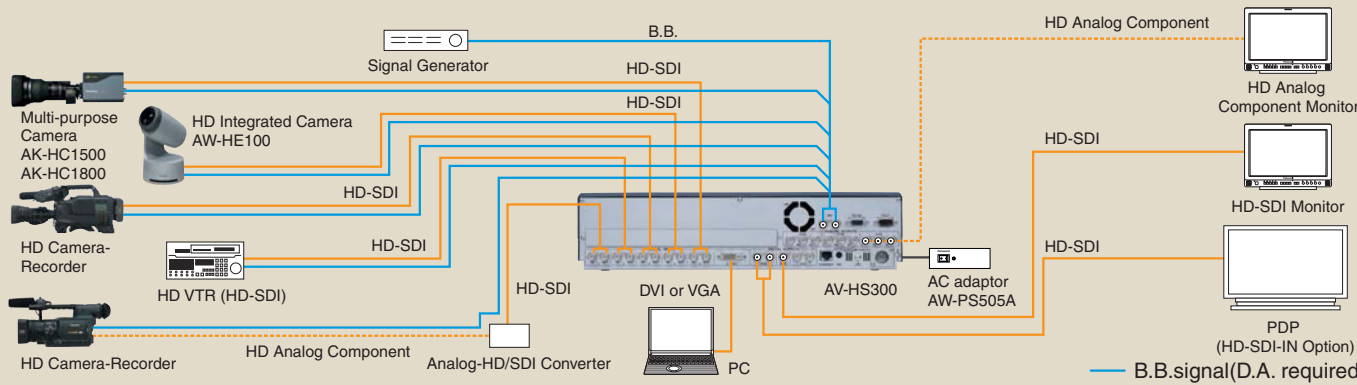


Optional Adaptor is required for A.C. Operation
AC adaptor
AW-PS505A
Power supply: AC120 V/AC220 V to 240 V*
Power consumption: Approx.76 W
Dimensions (width x height x depth): 132 mm x 51 mm x 275 mm
Weight: Approx. 1.6 kg
Accessories: DC cable with 4-pin Canon connector (for AW-RP400, etc.): Approx.2 m,
DC cable with ø 5.5 plug (for AW-RC400, etc.): Approx.3 m, DC cable with ø 6.5 plug (for convertible cameras): Approx.3 m * The value vary depending on the region.

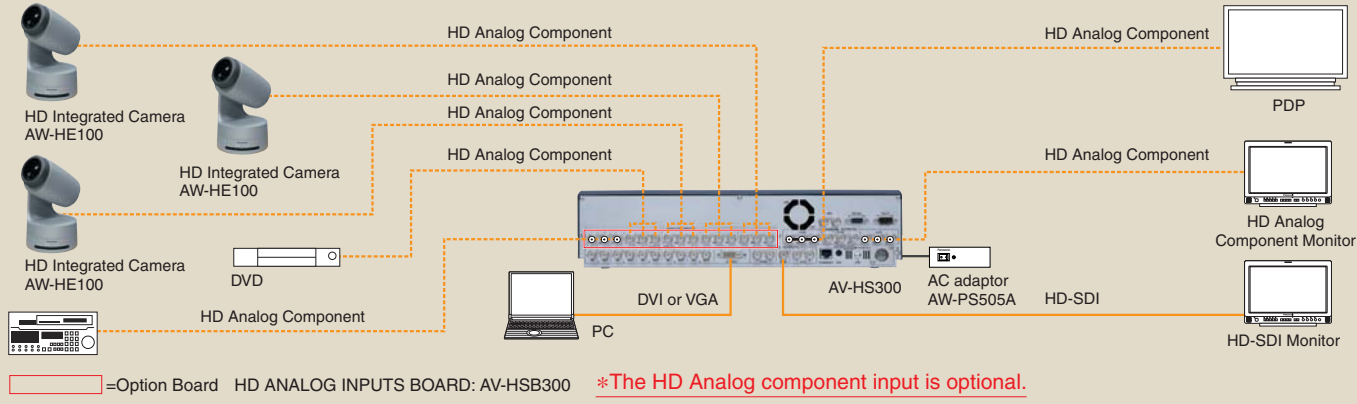


AV-HS300 System Examples

Solid support for full-scale program production at CATV and other broadcast stations. - HD-SDI camera environment (with Gen-Lock)



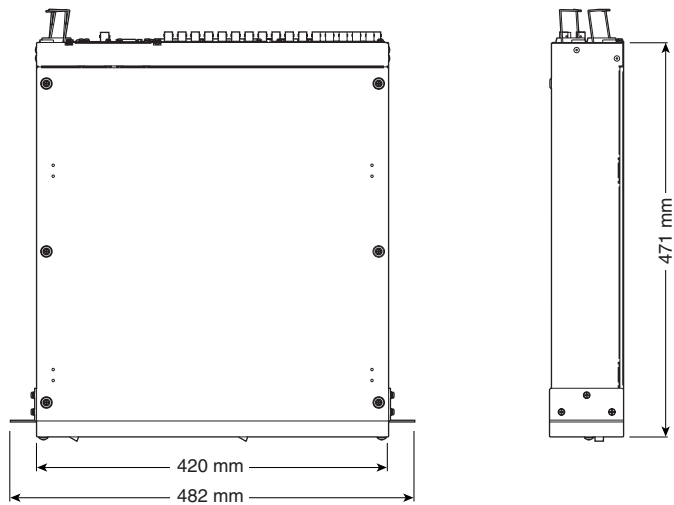
Easy operation also assured for school education and other systems. - HD camera environment (no Gen-Lock): Using the HD Analog component option



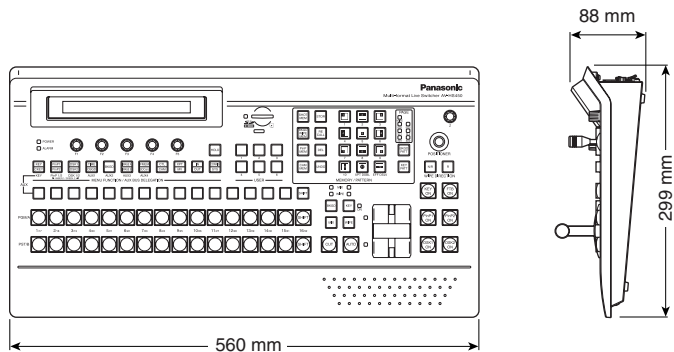
Dimensions

AV-HS450

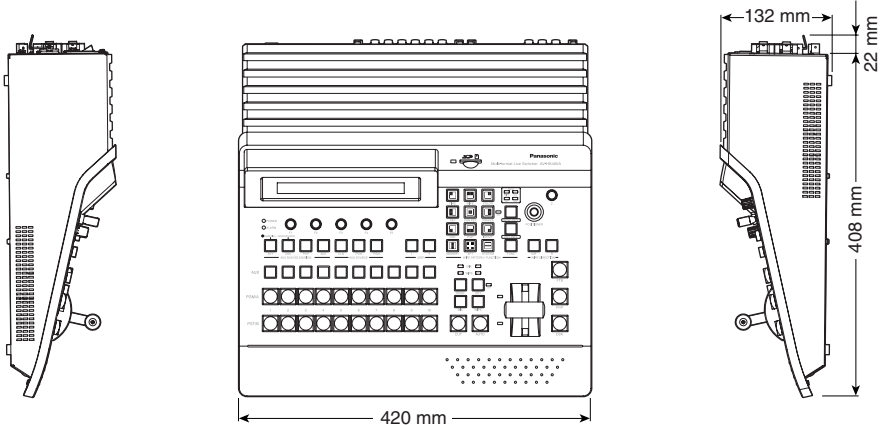
• Mainframe



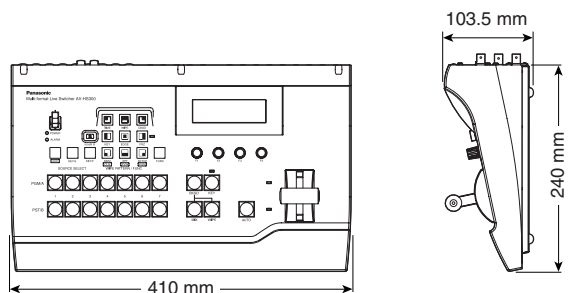
• Control panel



AV-HS400A



AV-HS300



Specifications

• Mainframe

	AV-HS450 (Part number: AV-HS450U1)	AV-HS400A	AV-HS300
Video format	HD (1080/59.94i, 1080/50i, 1080/23.98PsF ^{*1} , 1080/24PsF ^{*1} , 720/59.94p, 720/50p) SD (480/59.94i, 576/50i)	HD (1080/59.94i, 1080/50i, 720/59.94p, 720/50p) SD (480/59.94i, 576/50i)	HD (1080/59.94i, 1080/50i, 720/59.94p, 720/50p) SD (480/59.94i, 576/50i),
Video processing	Y:Cb:Cr, 4:2:2 10 bit (8 bit for FMEM) RGB, 4:4:4 8 bit	Y:Cb:Cr, 4:2:2 10 bit RGB, 4:4:4 8 bit	Y:Cb:Cr, 4:2:2 10 bit RGB, 4:4:4 8 bit
M/E	1 M/E	1 M/E	1 M/E
Video Input	A maximum of 20 inputs Standard: 16 SDI inputs (IN 1 to 16) Optional: Maximum of 4 inputs (IN A1, A2, B1, B2) (Up to 2 optional boards may be inserted into the 2 input/output optional slots)	A maximum of 8 inputs Standard: 4 SDI inputs (IN 1 to 4) Optional: Maximum of 4 inputs (IN 5 to 8) (Up to 2 optional boards may be inserted into the 2 input/output slots)	Maximum 6 inputs Standard: 5 SDI inputs (IN 1 to 5) 1 DVI-I input (IN 6) Optional: 5 HD analog component inputs (IN 1 to 5)
Reference input	Black burst or tri sync signal input (with loop through) x 1 ^{*2 ①/2}	Black burst or tri sync signal input (with loop through) x 1 ^{*2 ①}	Black burst or tri sync signal input (with loop through) x 1 ^{*2 ①}
Video output	A maximum of 10 outputs Standard: 4 SDI outputs (OUT 1 to 4 each, 2 output distribution for OUT 1) Option: Maximum of 4 outputs (OUT A1, A2, B1, B2) (Up to 2 optional boards may be inserted into the 2 input/output optional slots) Standard: 2 DVI-D outputs (OUT 5, OUT 6) ^{*3} XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA + (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz 1080/50p, 1080/59.94p	Maximum 7 outputs Standard: 3 SDI outputs (OUT 1 to 2 each, PGM x 2) Optional: Maximum 4 outputs (OUT 3 to 6 each) (Up to 2 optional boards may be added to the 2 optional output slots)	3 outputs 3 SDI outputs (PGM, PVW, AUX) 3 HD analog component outputs (PGM, PVW, AUX)
Reference output	Gen-lock mode: Loop through x 1 Internal sync: black burst signal x 2	Gen-lock mode: Loop through x 1 Internal sync: black burst signal x 2	Gen-lock mode: Loop through x 1 Internal sync: black burst signal x 2
BKGD	Wipe/DVE pattern	Wipe x 12, Squeeze x 11, Slide x 8, 3D x 12, 2ch squeeze x 4, 2ch slide x 4, 2ch 3D x 4	Wipe x 12, Squeeze x 11, Slide x 8, 3D DVE x 12
	Transition type	Cut, Mix, Wipe (including DVE)	Cut, Mix, Wipe (including DVE)
Image	Image effect	PGM/A, PST/B BUS	-
	Effect	Mosaic, Defocus, Mono color, Paint	-
KEYER	Number of keys	1	1
	Key type	Linear key, Luminance key, Chroma key, Full key	Self key, Linear key
Transition type	Transition type	Cut, Mix, Wipe (including DVE)	Mix
	Wipe/DVE pattern	Wipe x 12, Squeeze x 11, Slide x 9, 3D x 12	-
DSK	Number of keys	2	1
	Key type	Linear key, Luminance key	Linear key, Luminance key
Transition type	Transition type	Mix	Mix
	PinP	2	1
Transition type	Transition type	Mix	Mix
	AUX BUS	AUX Bus 1-4 ^{*4 *5}	AUX Bus 1 ^{*5}
Input	Frame Synchronizer	IN 1 to 16 ^{*6}	IN 1 to 4 ^{*7}
	Freeze	IN 1 to 16 ^{*6}	IN 1 to 4 ^{*7}
Up-converter	Up-converter	IN 13 to 16 ^{*6}	With optional input board ^{*7}
	Color collector	IN 9 to 16	-
Output function	Multi Viewer	2 systems Labels, Tally indication, Split-screen (the screen may be split into 4, 9, 10 and 16 sections) ^{*9}	1 system Labels, Tally indication, Split-screen (the screen may be split into 4, 8 and 10 sections)
	Other function	OSD (PVW and several MULTI outputs), phase adjustment, chroma key sample marker, down converter (SDI output board only)	OSD (PVW and several MULTI outputs), phase adjustment, chroma key sample marker, down converter (SDI output board only)
Frame memory	4 channels	2 channels	1 channel
Memory function	Shot memory, BKGD/Wipe memory, PinP memory, Camera memory ^{*10}	Preset memory	Preset memory
Interface	PANEL	RJ45, 100 Mbps x 1 (to connect to the control panel)	-
	EDITOR	D-sub 9 pin x 1, RS-422 (GVG protocol compatible)	D-sub 9 pin x 1, RS-422
COM	COM	D-sub 9 pin x 1, pan-tilt system control	-
	TALLY/GPI	D-sub 50 pin x 1 (8 IN and 31 OUT may be set)	D-sub 15 pin x 1, open collector output ø 3.5 Stereo mini jack x 1 (2 Ports)
LAN	LAN	RJ45, 100 Mbps / 10 Mbps x 1	D-sub 9 pin x 1: 6 ch, open collector output ø 3.5 Stereo plug x 1 (auto take)
	SD memory card	-	RJ45 x 1, 100 Mbps / 10 Mbps x 1
Removable media	SD memory card	Capacity: Maximum 2 GB (SD Memory Card compatible) Still image file: Loading/saving, setup data: backup	-
Power supply/Power consumption	AC 220 V to 240 V, 50 Hz/60 Hz 120 W	AC 220 V to 240 V, 50 Hz/60 Hz 98 W	DC 12 V / 45 W
Operating temperature	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Operating humidity	10 % to 90 % (no condensation)	10 % to 90 % (no condensation)	10 % to 90 % (no condensation)
Dimensions (W x H x D)	(2RU) 482 mm x 88 mm x 471 mm (excluding protrusions)	420 mm x 132 mm x 408 mm (excluding protrusions)	410 mm x 103.5 mm x 240 mm (Exclusive of protrusion)
Weight	Approx. 9.8 kg (without options/excluding accessories) Approx. 10.3 kg (with full options/excluding accessories)	Approx. 6.4 kg (without options/excluding accessories) Approx. 7.2 kg (with full options/excluding accessories)	Approx. 2.9 kg (without options/excluding accessories) Approx. 3.2 kg (with full options/excluding accessories)

• Control panel

	AV-HS450 (Part number: AV-HS450C1)
Interface	Mainframe RJ45, 100 Mbps x 1 (to connect to the mainframe) TALLY/GPI D-sub 25 pin x 1 (8 IN and 8 OUT may be set)
Removable media	SD memory card Capacity: Maximum 32 GB (SDHC Memory Card compatible) Still image file: Loading/saving, setup data: backup
Operating temperature	0 °C to +40 °C
Operating humidity	10 % to 90 % (no condensation)
Power supply/Power consumption	DC 12 V 0.8 A (accessory AC adapter) Power consumption with AC adapter: AC 14 W Accessory AC adapter: DC 12 V, 2.5 A, 30 W (rated output) Accessory power cord: AC 250 V (maximum rating)
Dimensions (W x H x D)	560 mm x 88 mm x 299 mm (excluding protrusions)
Weight	Approx. 3.9 kg (excluding accessories)

*1 1080/23.98PsF and 24PsF are not compatible with optional boards AV-HS04 M1, M2, M3, M4, M5, M6 and M7.

*2 ① Compatible with the same field frequencies of the system format.
② 1080/23.98PsF format is compatible with black burst (SMPTE318M-compliant) with 10F-ID, or tri-level sync signal.

*3 Analog output not supported.

*4 AUX BUS1 is compatible with MIX transition.

*5 May be routed through the SDI embedded audio input.

*6 Specifications for IN A1, A2, B1, and B2 depend on the specs of the mounted optional equipment.

*7 Specifications for IN 5 to IN 8 depend on the specs of the mounted optional equipment.

*8 Option [HD analog component]: IN 1 to 5 may also be used.

*9 Maximum 20 channels may be simultaneously displayed on 2 screens.

*10 May store and recall up to 10 presets (per camera) with current Panasonic pan-tilt systems.