Panasonic
ideas for life

Apr. 2012

Switcher and AV Mixer Catalog

AV-HS450

AV-HS410

AW-HS50

AG-HMX100

picture simulated

picture simulated

AV-HS450 (AV-HS450N, AV-HS450E)

Multi-Format Live Switcher

This high-performance switcher handles the switching needs of broadcast studios, OB vans and multi-camera systems anywhere. It comes standard with 16 inputs (SDI) and six outputs (four SDI and two DVI-D). It's also 3D compatible,*1 letting you switch up to nine*2 pairs of 3D images.

1: Requires the optional AV-HS04M7D 3D SDI Output Board.
2: For 3D, eight pairs of inputs are standard. Addition of the AV-HS04M1 SDI Input Board enables a maximum of nine pairs of inputs.

AV-HS410 (AV-HS410N, AV-HS410E)

Live Switcher

This compact, integrated unit includes levels of performance and function that approach many high-end switchers. It comes standard with nine inputs (eight SDI and one DVI-D) and six outputs (five SDI and one DVI-D).
It also features a 178 mm (seven inches) LCD monitor and a superb user interface.

Panasonic Live Switchers Meet Virtually All Broadcasting, Live Performance, and Image Production Needs with High Picture Quality, Excellent Versatility, and Easy Operation.

AW-HS50 (AW-HS50N, AW-HS50E)

Compact Live Switcher

Highly versatile functions are packed into the half-rack size of this compact body. It features five inputs (four SDI and one DVI-D) and three outputs (two SDI and one DVI-D), and a MultiViewer Display function. Ideal for professional use in an HD image environment.

AG-HMX100 (AG-HMX100P, AG-HMX100E)

Digital AV Mixer

This compact, all-in-one unit integrates a video switcher and an audio mixer, making it especially convenient for on-air transmission of live events. It comes standard with seven inputs (four SDI, two HDMI or Analog Video, and one DVI-D) and six outputs (four SDI*1 and two DVI-D).*2 It also lets you switch two pairs of 3D video inputs (or a total of four pairs of inputs by linking two units).*3

*1: PGM (Program), PVW (Preview), AUX (Auxiliary), MULTIVIEW
*2: PGM (Program), MULTIVIEW
*3: For image switching only. Effects are not supported.

3D PROFESSIONAL

AV-HS450 (AV-HS450N, AV-HS450E)

Multi-Format Live Switcher

HD	1080/59.94i, 50i, 24PsF*, 23.98PsF*, 720/59.94p, 50p
SD	480/59.94i, 576/50i

* AV-HS04M1, M2, M3, M4, M5, M6, M7, M7D, and M8 cards do not support 1080/24PsF or 1080/23.98PsF.

This 1M/E live switcher has a separate mainframe and control panel, and comes standard with 16 SDI inputs, four SDI outputs, and two DVI outputs. It also features a variety of standard effect functions, including luminance and chroma keying, two DSK channels, two P-in-P buses, and two DVE channels. Ideal for medium-scale, multi-camera, on-air transmission and recording for broadcast studios, OB vans and image production applications. Addition of the optional AV-HS04M7D 3D SDI Output Board also enables 3D compatibility for switching effects such as wipes and mixes. And it features a number of display functions for 3D camera assist use.

16 Standard Inputs/Six Standard Outputs (Max. 20 Inputs/10 Outputs)

The AV-HS450 comes standard with 16 SDI (HD/SD) inputs and six outputs (four SDI (HD/SD) and two DVI-D). Two expansion slots accommodate either input or output optional boards, providing a maximum of 20 inputs,*1 and 10 outputs.*2

*1: When using two AV-HS04M1, M2, M6, or M8 Input Boards.
*2: When using two AV-HS04M4 or M7 Output Boards.

HD/SD Multi-Format Support

The AV-HS450 supports a variety of HD/SD formats, including 1080/24PsF,* as standard. System frequency is 59.94 Hz/ 50 Hz/24 Hz switchable. This makes it ideal for digital cinema production and worldwide operation. A wide range of optional boards also allows the input and output of analog component and various other signals.
(Please see the table on page 10 for details.)

* 1080/24PsF (or 23.98PsF) input signals are supported only by the standard input terminals of the AV-HS450. These signals are not supported by the optional AV-HS04M1/M2/M3/M4/ M5/M6/M7/M7D/M8 boards.

Built-in Frame Synchronizer for All Input Channels

All standard input channels feature a built-in frame synchronizer for use in switching unsynchronized video signals. A gen-lock function also supports synchronizing systems based on external sync signals (black burst or tri-level).

Up-Converter, Dot by Dot and Video Processing

The AV-HS450 is equipped with an SD/HD up-converter function for four standard inputs, and a dot by dot function for 16 inputs. Dot by dot input can be used for P-in-P display of HD images from SD footage without degradation. A video processing function with color correction is also provided for eight inputs.

Four Aux Buses and Two P-in-P

Two P-in-P buses and four Aux buses are included. Borders and soft-edge effects can be applied to the P-in-P buses. In addition to a Cut transition, the Bus transition function (P-in-P bus and Aux bus* switching effect) also enables a Mix transition (Aux 1 only). Flexible operation is achieved by combining Aux buses and M/E sections.

* Embedded audio on SDI input signals can be passed through PGM, PVM, and MV.

A Wide Range of Transitions and Effects

In addition to standard wipe, mix, and cut transitions, powerful 2D and 3D DVE effects, such as squeeze, slide, rotation and page turn, are 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.

Primatte® High-Quality Chroma Key

Linear, luminance and chroma keying are provided. Chroma keying employs the Primatte® algorithm, which is widely used as a plug-in for nonlinear editors. The same excellent Primatte® image quality that is used worldwide for movies, TV programs, music videos and commercials is achieved by the AV-HS450's real-time processing. Superior blue-spill processing naturally combines translucent objects, such as thin cloth and glass, with background colors. Extremely fine objects, such as individual strands of hair, are faithfully reproduced. Two DSK channels are also provided to add borders, shadows, and other edge effects.

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Shot Memory

Up to 10 image effects, such as background transition patterns, P-in-P sizes and border widths, can be registered in shot memory for instant retrieval. The AV-HS450's Effect Dissolve function enables smooth switching from a current image to one of the images or operations registered in the shot memory.

Up to 20 Windows, Dual-Monitor MultiViewer Display

The AV-HS450 comes with a standard dual-monitor MultiViewer Display function. A maximum of 20 channels, including program (PGM), preview (PVW), and an input video signal can be simultaneously displayed on two screens. The exclusive feature lets you work comfortably with only two monitors, even at large-scale events. You can select from 4, 9, 10 and 16 split-screens.

Superior PTZ Camera System Control

The AV-HS450 offers advanced control of Panasonic pan-tilt camera systems,*1 including AW-HE120/HE50S/HE50H*2 HD Integrated PTZ Cameras. You can control one camera via direct serial connection, or up to five in conjunction with system controllers.*3 Up to 10 preset positions can be stored or recalled for each camera.

*1: Compatible models: AW-PH400/AW-PH405/AW-PH360.
*2: An HDMI/DVI-D conversion cable is required.
*3: Compatible models: AW-RP655/AW-RP555.

Redundant Power Supply

The standard redundant power supply increases reliability for use at live events.

Transition and Effect Display Example

Mozaic

Defocus

Circle wipe

2 channel 3D

Primatte® High-Quality Chroma Key

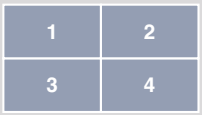
Primatte®
Chroma key
(picture simulated)

Conventional
Chroma key
(picture simulated)

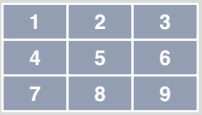
Shot Memory Display Example

You can call up the stored images and effects by pressing the select button.

MultiViewer Display Example

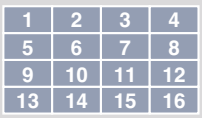


4 Split



9 Split

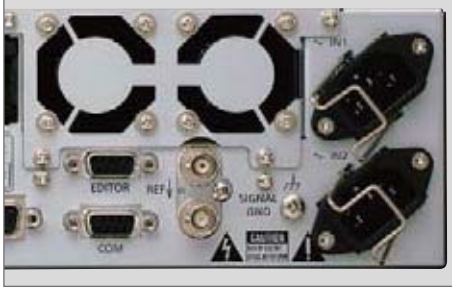
10 Split



16 Split

Dual-Monitor MultiViewer Display
(10 splits+ 9 splits)

Redundant Power Supply



3D PROFESSIONAL

3D Compatibility: Switch up to Nine 3D Image Inputs

Mounting the optional AV-HS04M7D 3D SDI Output Board provides 3D compatibility. Eight pairs of 3D images standard, and a maximum of nine pairs of 3D images, can be input by dual SDI from 3D cameras and other sources, with two-channel bus switching. Transitions include cut, dissolve and wipe. Ideal for 3D sports acquisition, TV commercial production, and event recording.

• **Compatible video formats in 3D mode:** 1080/59.94i, 1080/50i, 720/59.94p, 720/50p

AG-3DP1G Integrated Twin-Lens 3D Camera Recorder

Primatte® Chroma Keying

Primatte® chroma keying also supports 3D images (one channel each, left and right). This enables real-time, high-precision chroma keying on-site.

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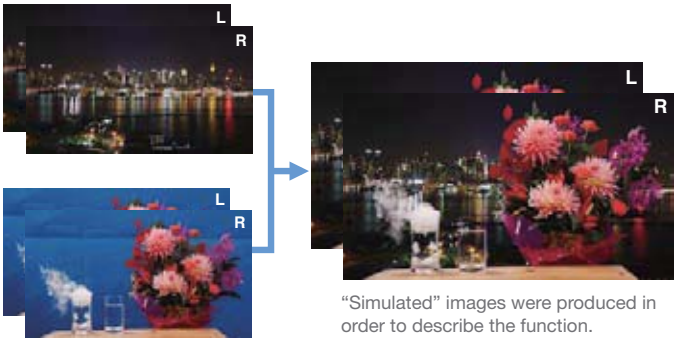


"Simulated" images were produced in order to describe the function.

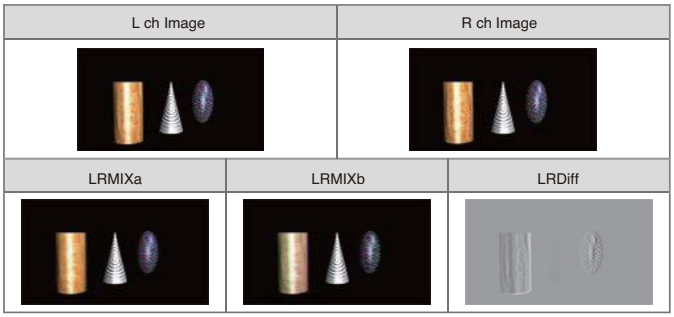
Three LR Mix Outputs

The LR mix image output function allows the left and right channels of stereo 3D images to be checked on a 2D monitor.

• **LRMIXa (LR mix a):** The L channel and R channel images are mixed.

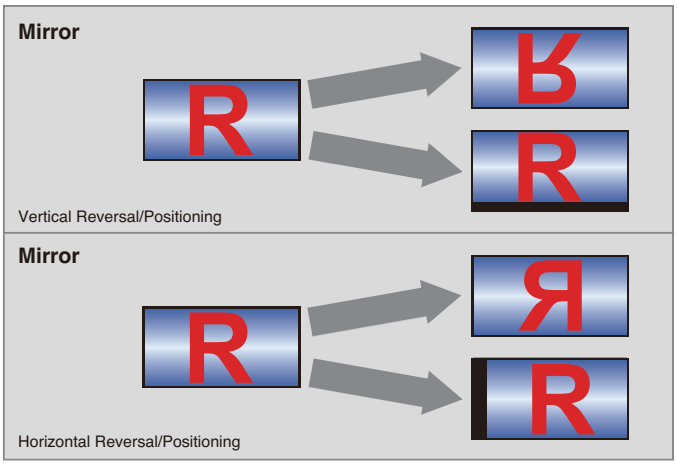
• **LRMIXb (LR mix b):** Magenta is mixed within the L channel image and green is mixed within the R channel image.

• **LRDiff (LR difference display):** The luminance components of the L channel and R channel images are compared, and the difference between them is displayed using a gray scale. This makes it easier to see the differences between the L and R channels.



Rig-Type 3D Camera Correction Assist

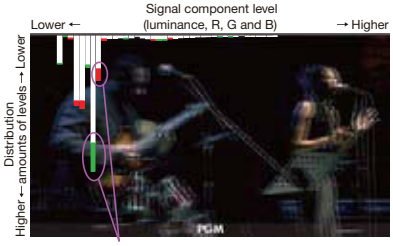
Vertical/horizontal reversing and position correction are possible for all 16 channels of SDI standard inputs. This helps to adjust the optical axis of a rig-type 3D camera when producing 3D footage.



3D Video Signal Status Monitor Displays

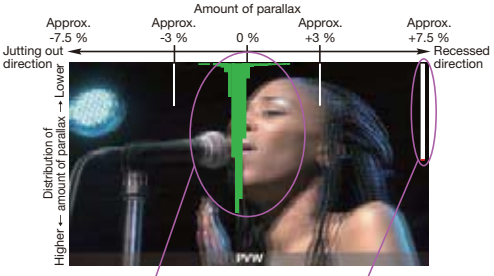
This function overlays 3D video signal status monitor (brightness, RGB distribution, LR difference, grid) on 3D image onto the PGM output and PVW output (1/4 size only) of the MultiViewer Display. Being able to check the differences in the leaping effect and depth of the PGM and PVW without having to wear 3D glasses makes 3D switching easier and smoother. Even when 3D assist information cannot be displayed on the monitor or viewfinder of a rig-type or other 3D camera, this function will feed back PVW output to the camera so you can correct the brightness and horizontal/vertical positioning right on the camera.

•Distribution of Lch and Rch signal components
Lum, Red, Green, Blue



Green display area:
Indicates a distribution with many L ch components.
Red display area:
Indicates a distribution with many R ch components.

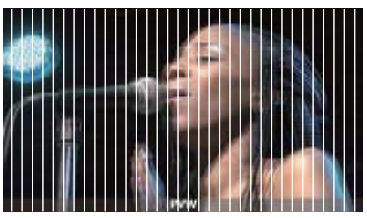
•Distribution of amount of parallax in 3D images
Prllx



Histogram of amount of parallax (L ch and R ch)

Bar used for input signal (L ch and R ch) compensation

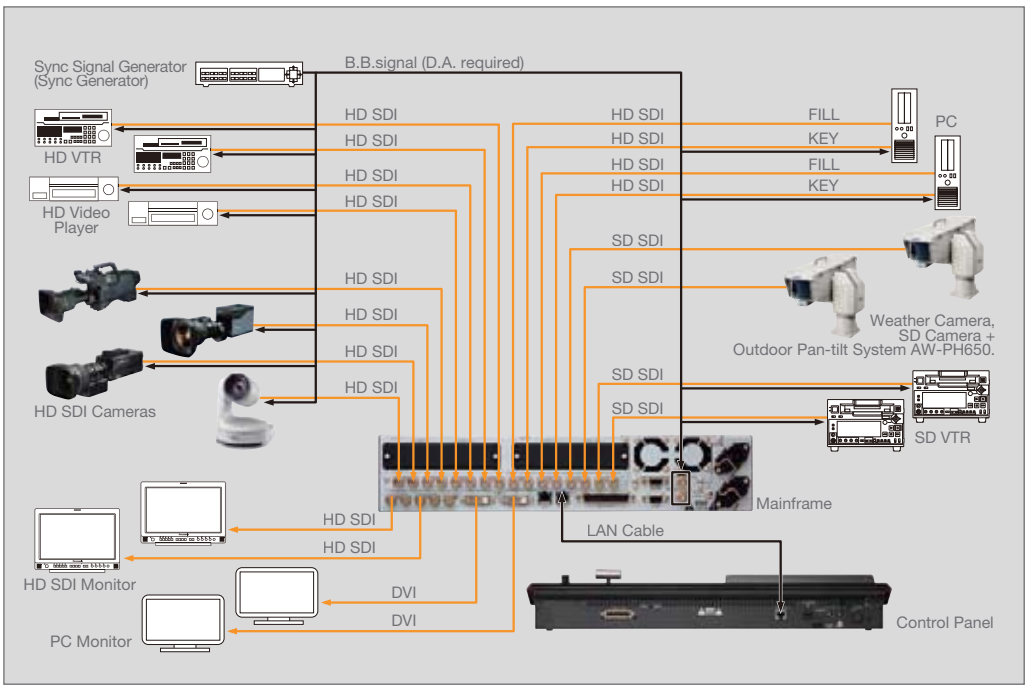
•A grid is displayed at intervals of about 3 % along the width of the screen.
Grid



Select LRMIXa or LRMIXb as the 3D output format, and shoot so that the amount of parallax between Lch and Rch come within the grid width.

HD/SD Production System

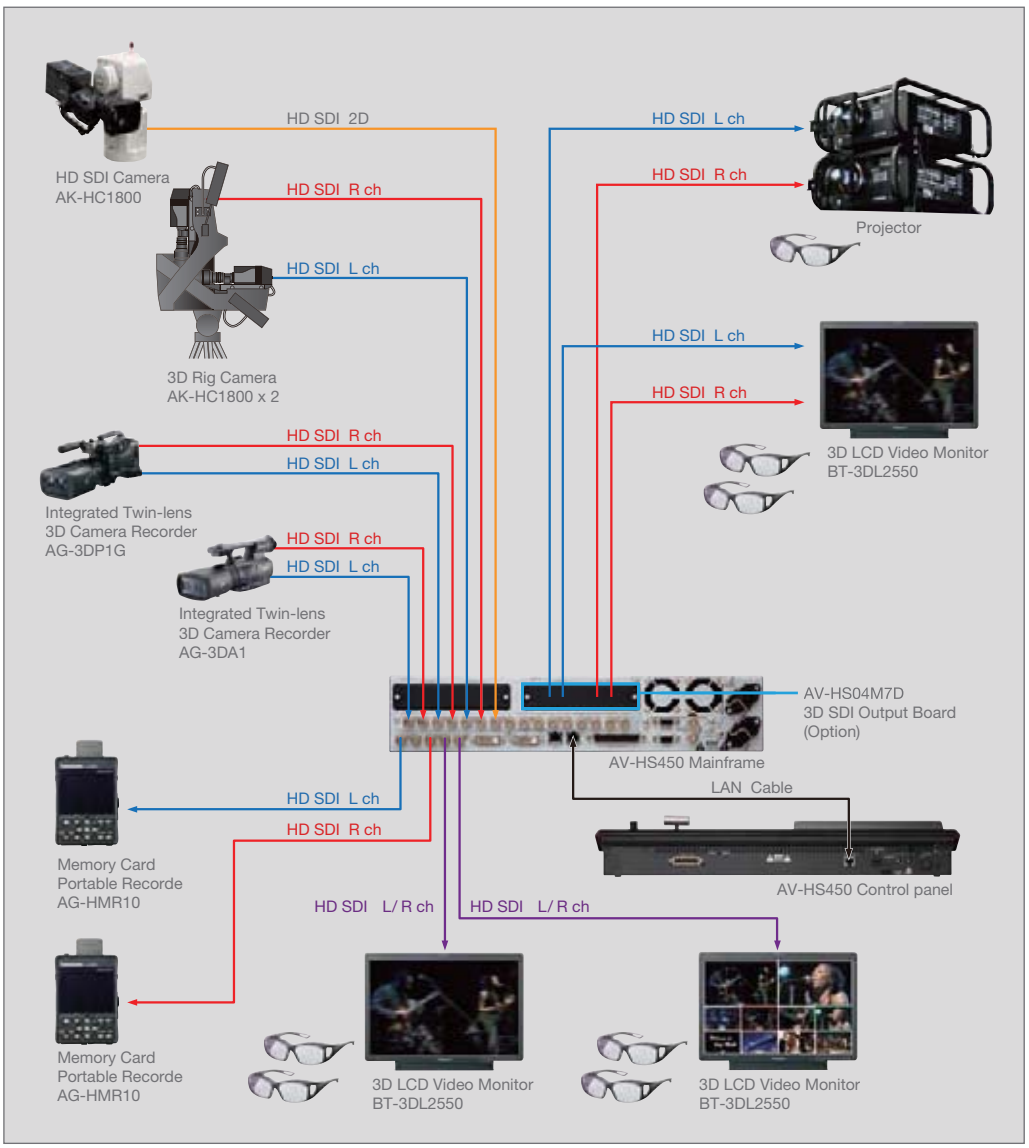
This system features a large number of channels and functions, making it optimal for multi-camera recording in broadcast studios and image production applications, and for medium-scale production in studios and OB vans.



3D Production System

Mounting the optional AV-HS04M7D 3D SDI Output Board makes this system 3D compatible. The combination of AG-3DP1G/AG-3DA1 Integrated Twin-Lens 3D Camera Recorders and BT-3DL2550 3D LCD Monitors results in a high-level 3D production system. In addition to switching dual 3D images, it also has a number of correction assist functions for rig-type 3D cameras. The right chart system is an excellent example of an HD SDI configuration that requires no genlock.

AV-HS04M7D
3D SDI Output Board
Mounting this board makes the AV-HS450 compatible with 3D images. Each of the two SDI outputs (LR pairs) also features an HD/SD Down-Converter function.



picture simulated

AV-HS410 (AV-HS410N, AV-HS410E)

Live Switcher

HD	1080/59.94i, 50i, 24PsF*, 23.98PsF*, 720/59.94p, 50p
SD	480/59.94i, 576/50i

* AV-HS04M1, M2, M3, M4, M5, M6, M7, M7D, and M8 cards do not support 1080/24PsF or 1080/23.98PsF.

This integrated video switcher is optimal for use at live events. It comes standard with nine inputs (eight SDI and one DVI) and six outputs (five SDI and one DVI), with the ability to add four inputs and outputs as an option. High-performance functions include high-quality chroma keying and versatile transitions such as DVE effects. The 178mm (seven inches) color LCD enables a multi-display with a menu, video monitor, waveform and etc. A Memory Preview function lets you check image effects in advance, and direct-control buttons enhance operating ease. An API function simplifies system expansion by enabling external control and camera operation, and outputting status data.

Nine Standard Inputs/Six Standard Outputs (Max. 13 Inputs/10 Outputs)

The AV-HS410 comes standard with nine inputs (eight SDI (HD/SD) and one DVI-D) and six outputs (five SDI (HD/SD) and one DVI-D). Two expansion slots accommodate optional input or output boards, providing a maximum of 13 inputs,*1 and 10 outputs.*2

*1: When using two AV-HS04M1, M2, M6, or M8 Input Boards.
*2: When using two AV-HS04M4 or M7 Output Boards.

HD/SD Multi-Format Support

The AV-HS410 supports a variety of HD/SD formats, including 1080/24PsF, as standard. System frequency is 59.94 Hz/50 Hz/24 Hz switchable. This makes it ideal for digital cinema production and worldwide operation. A wide range of optional boards also allows the input and output of analog component and various other signals. (Please see the table on page 10 for details.)

Built-in Frame Synchronizer for All Input Channels

All standard input channels feature a built-in frame synchronizer for use in switching unsynchronized video signals. A gen-lock function also supports synchronizing systems based on external sync signals (black burst or tri-level).

Up-Converter, Dot by Dot and Video Processing

The AV-HS410 is equipped with an SD/HD up-converter function for four standard inputs, and a dot by dot function for eight inputs. Dot by dot input can be used for P-in-P display of HD images from SD footage without degradation. A video processing function with brightness, pedestal level, saturation, and color phase correction is also provided for eight inputs.

Four Aux Buses and Two P-in-P Buses

Four Aux buses and two P-in-P buses are provided. Borders or soft-edge effects can be applied to the P-in-P buses. In addition to a Cut transition, the Bus transition function (P-in-P bus and Aux bus switching effect) also enables a Mix transition (Aux 1 only). Flexible operation is achieved by combining Aux buses and M/E sections.

Versatile Transitions and Effects

In addition to standard wipe, mix and cut effects, DVE transition patterns using two channels, such as reduce, slide, squeeze and 3D wipe are included.

Primatte® High-Quality Chroma Key

Linear, luminance and chroma keying are provided. Chroma keying employs the Primatte® algorithm, which is widely used as a plug-in for nonlinear editors. The same excellent Primatte® image quality that is used worldwide for movies, TV programs, music videos and commercials is achieved by the AV-HS410's real-time processing. Superior blue-spill processing naturally combines translucent objects, such as thin cloth and glass, with background colors. Extremely fine objects, such as individual strands of hair, are faithfully reproduced. Two DSK channels are also provided to add borders, shadows, and other edge effects.

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Shot Memory
Up to 100 image effects, such as background transition patterns, P-in-P sizes and border widths, can be registered in shot memory for instant retrieval. The AV-HS410's Effect Dissolve function enables smooth switching from a current image to one of the images or operations registered in the shot memory.

Event Memory
Up to 64 of the image effects that are registered in the shot memory can be sequentially registered in the event memory for instant retrieval. This allows highly expressive consecutive effects to be easily and smoothly executed. Up to 100 event memories can be registered.

New Memory Preview
This new function lets you preview the shot memory and event memory content. It allows image effects to be easily confirmed while on-air with this 1 M/E switcher. This is particularly convenient for live operation.

* The resolution of the Memory Preview video output is lower than ordinary resolution.

Video Memory Function for Two Inputs
Two inputs for still (STILL) and moving (CLIP) images can be saved in Video Memory, and selected as bus footage. Moving images can be recorded and played with key signals (for a maximum of approximately 20 seconds/600 frames in 59.94i). The files can also be transferred from an SDHC/SD Memory Card or PC.

* Uploading of still and moving images from an Ethernet LAN will be supported in the future.

SDHC/SD Memory Card Slot
Video memory, shot memory, event memory and set-up data can be saved to SDHC/SD Memory Cards.

Built-in 178 mm (seven inches) Color LCD Monitor with Multi-Mode Display
A 178 mm (seven inches) color LCD monitor with WVGA (800 x 480) resolution is built into the control panel. It can be switched to a wide variety of display modes, including setting menus, image monitoring and waveform/vectorscope. It also supports the MultiViewer Display and Memory Preview functions.

MultiViewer Display
The MultiViewer Display function lets you split the screen to display PGM, PVW and all source images on a single screen. It enables 4/5/6/9/10/16 split screens. The input signal name, audio level meter and 4:3/16:9 marker can also be overlaid onto each screen, and a clock can be displayed.

Easy-to-Use Panel Layout
Features such as a total of 12 crosspoint buttons in each A bus and B bus (for a maximum of 22 with the Shift function) allow direct control with this simple panel layout. Function settings and registrations are made quickly and intuitively with the LCD monitor's matrix menu and rotary switches. Various functions can also be assigned to eight user buttons for one-touch operation. This level of easy operation supports speed and accuracy in live-relay operation.

Plug-in Software Created with a Software Development Kit*
Plug-ins allow flexible expansion of software-based functions. A Software Development Kit is provided so that third parties or system integrators can freely develop the software to add new functions to the AV-HS410. This will enable the system to meet an even wider range of needs, such as controlling the AV-HS410 with an external controller or PC, operating cameras and other devices from the AV-HS410, and outputting status data related to the live switcher or image sources.

* Please ask your dealer for details.

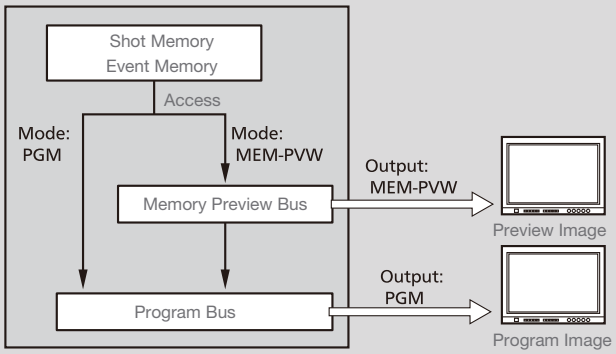
Transition and Effect Display Example

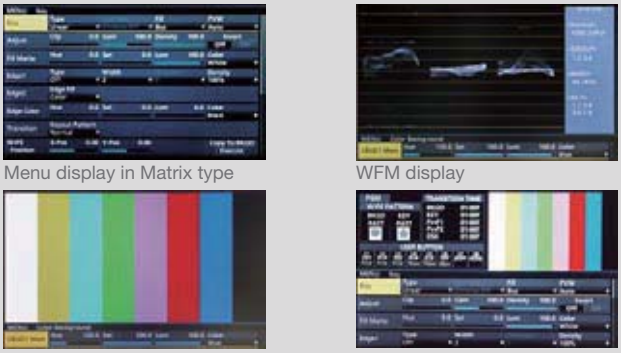
Circle wipe　　Page turn

Primatte® High-Quality Chroma Key

Primatte® Chroma key (picture simulated)

Conventional Chroma key (picture simulated)

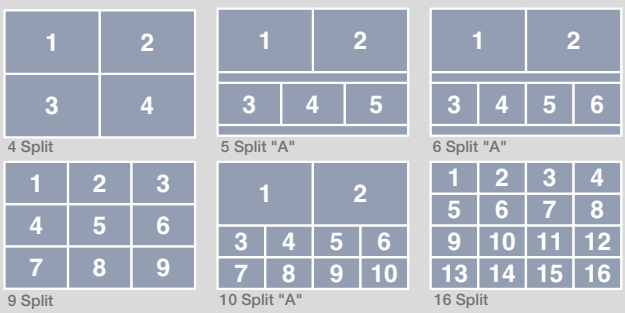
Memory Preview Functional Block Diagram


Color LCD Display Example

Menu display in Matrix type

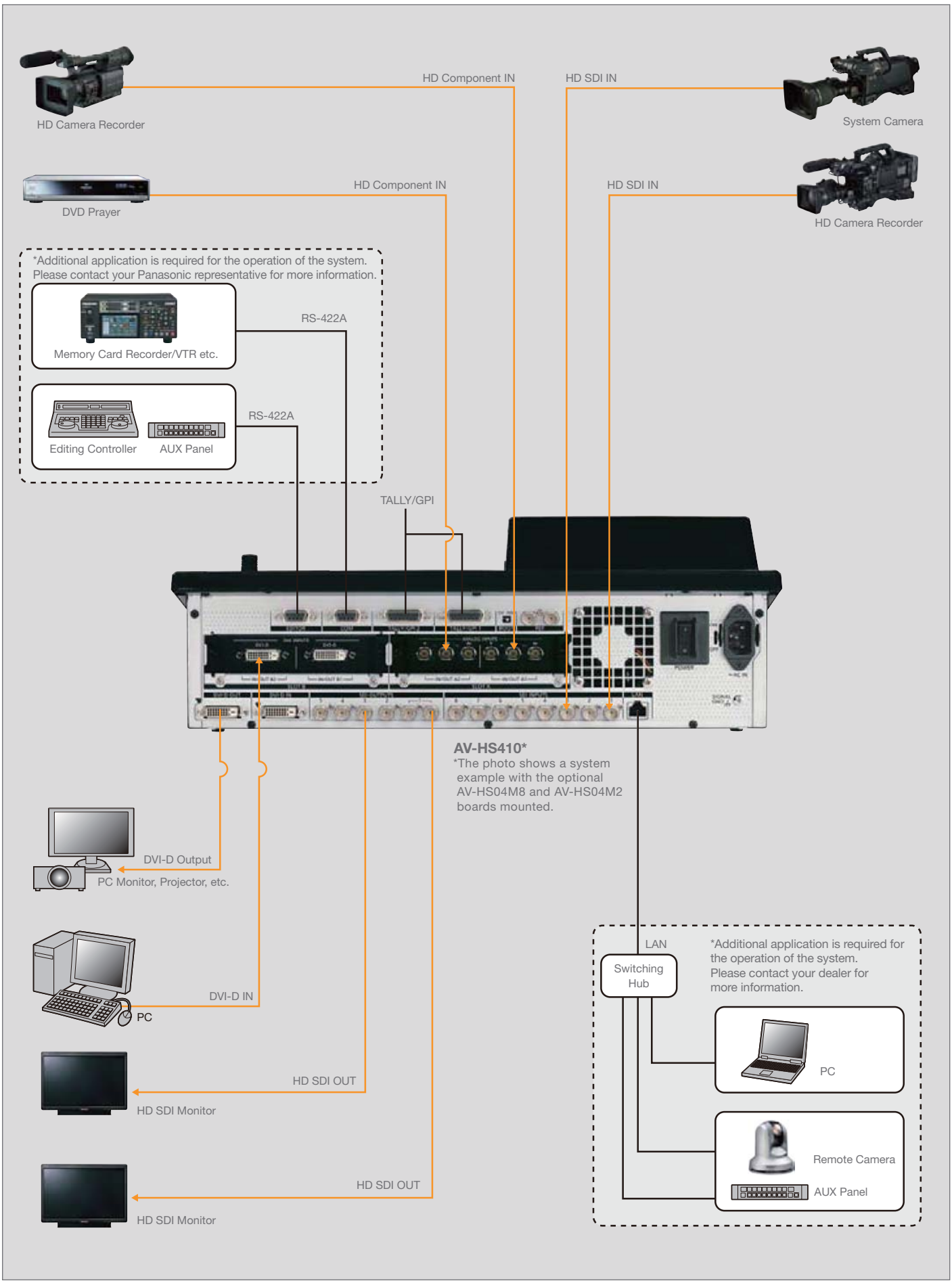
WFM display

One line of menu display on a image monitor

Menu display/Subscreen/ Image display

MultiViewer Display Split Screen Example


AV-HS410 System Configuration Examples



Input/output formats compatible with the AV-HS450

Input/Output Signal		Standard			Option Board								
					AV-HS 04M1	AV-HS 04M2	AV-HS 04M3	AV-HS 04M4	AV-HS 04M5	AV-HS 04M6	AV-HS 04M7	AV-HS 04M7D *1	AV-HS 04M8
Video Signal	Video Format	SDI x 16	SDI x 4	DVI-D x 2	SDI x 2	COMP x 2	DVI-I x 2	COMP x 2	DVI-I/ COMP	COMPSIT x 2	SDI x 2	SDI x 2	DVI-D x 2
		IN	OUT	OUT	IN	IN	IN	OUT	OUT	IN	OUT	OUT	IN
SDI	480/59.94i	√	√		√						√	√ *2	
	576/50i	√	√		√						√	√ *2	
	1080/59.94i	√	√		√						√	√	
	1080/50i	√	√		√						√	√	
	720/59.94p	√	√		√						√	√	
	720/50p	√	√		√						√	√	
	1080/24PsF	√	√										
	1080/23.98PsF	√	√										
DVI Analog	XGA (1024 x 768) 60 Hz/50 Hz						√		√				
	WXGA (1280 x 768) 60 Hz/50 Hz						√		√				
	SXGA (1280 x 1024) 60 Hz/50 Hz						√		√				
DVI Digital (PC)	XGA (1024 x 768) 60 Hz/50 Hz			√			√		√				√
	WXGA (1280 x 768) 60 Hz/50 Hz			√			√		√				√
	SXGA (1280 x 1024) 60 Hz/50 Hz			√			√		√				√
	UXGA (1600 x 1200) 60 Hz/50 Hz			√					√				√
	WSXGA+ (1680 x 1050) 60 Hz/50 Hz			√					√				√
	WUXGA (1920 x 1200) 60 Hz/50 Hz			√					√				√
DVI Digital (VIDEO)	1080/59.94p			√									√
	1080/50p			√									√
Analog Component	NTSC									√			
	PAL									√			
Analog Composite	480/59.94i					√		√	√				
	576/50i					√		√	√				
	1080/59.94i					√		√	√				
	1080/50i					√		√	√				
	720/59.94p					√		√	√				
	720/50p					√		√	√				

*1: AV-HS450 manufactured before February 2011 requires a software version upgrade to use AV-HS04M7D. Contact a local sales outlet for details.
*2: 3D mode is not available.

Input/output formats compatible with the AV-HS410

Input/Output Signal		Standard				Option Board							
						AV-HS 04M1	AV-HS 04M2	AV-HS 04M3	AV-HS 04M4	AV-HS 04M5	AV-HS 04M6	AV-HS 04M7	AV-HS 04M8
Video Signal	Video Format	SDI x 8	DVI-D x 1	SDI x 5	DVI-D x 1	SDI x 2	COMP x 2	DVI-I x 2	COMP x 2	DVI-I/ COMP	VIDEO x 2	SDI x 2	DVI-D x 2
		IN	IN	OUT	OUT	IN	IN	IN	OUT	OUT	IN	OUT	IN
SDI	480/59.94i	√		√		√						√	
	576/50i	√		√		√						√	
	1080/59.94i	√		√		√						√	
	1080/50i	√		√		√						√	
	720/59.94p	√		√		√						√	
	720/50p	√		√		√						√	
	1080/24PsF	√		√									
	1080/23.98PsF	√		√									
DVI Analog	XGA (1024×768) 60 Hz/50 Hz							√		√			
	WXGA (1280×768) 60 Hz/50 Hz							√		√			
	SXGA (1280×1024) 60 Hz/50 Hz							√		√			
DVI Digital (PC)	XGA (1024 x 768) 60 Hz/50 Hz		√		√			√		√			√
	WXGA (1280 x 768) 60 Hz/50 Hz		√		√			√		√			√
	SXGA (1280 x 1024) 60 Hz/50 Hz		√		√			√		√			√
	UXGA (1600 x 1200) 60 Hz/50 Hz		√		√					√			√
	WSXGA+ (1680 x 1050) 60 Hz/50 Hz		√		√					√			√
	WUXGA (1920 x 1200) 60 Hz/50 Hz		√		√					√			√
DVI Digital (VIDEO)	1080/59.94i		√		√								
	1080/59.94p		√		√								√
	1080/50i		√		√								
	1080/50p		√		√								√
	720/59.94p		√		√								
	720/50p		√		√								
Analog Component	NTSC										√		
	PAL										√		
Analog Composite	480/59.94i						√		√	√			
	576/50i						√		√	√			
	1080/59.94i						√		√	√			
	1080/50i						√		√	√			
	720/59.94p						√		√	√			
	720/50p						√		√	√			

Input Option Boards

(As of April, 2012)

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

AV-HS04M2
Analog Component Input Board
HD/SD Analog Component x 2 (Y/PB/PR)
(Built-in Up-converter)

AV-HS04M3
DVI Input Board
DVI-I x 2 (Built-in Scaler)

AV-HS04M6
Analog Composite Input Board
Analog Composite x 2
(Built-in Up-converter)

AV-HS04M8
Full HD DVI Input Board
DVI-D x 2 (compatible with WUXGA)

Output Option Boards

(As of April, 2012)

AV-HS04M4
Analog Output Board
HD/SD Analog Component x 2 (Y/PB/PR)

AV-HS04M5
DVI/Analog Output Board
DVI-I ×1, HD/SD Analog Component x 1
(Y/PB/PR)

AV-HS04M7
SDI Output Board
SDI (HD/SD) x 2 (Each one has 2 outputs)
(BNC) (Built-in Down-converter)

AV-HS04M7D*
3D SDI Output Board
SDI (HD/SD) x 2 (Each one has 2 outputs)
(BNC) (Built-in Down-converter)
*AV-HS450 manufactured before February 2011 requires a software version upgrade to use AV-HS04M7D. Contact your dealer details.

AW-HS50 (AW-HS50N, AW-HS50E)

Compact Live Switcher

HD	1080/59.94i, 50i, 24PsF, 23.98PsF, 720/59.94p, 50p
SD	480/59.94i, 576/50i

This is a half-rack size digital video switcher. In spite of its compact size, it features four SDI inputs, one DVI-D input, two SDI outputs, and one DVI-D output. A MultiViewer Display function lets you split the screen in eight different ways, and a Frame Synchronizer ensures easy, high-quality switching. By combining the AW-HS50 with the AW-HE50S HD Integrated Camera and AW-RP50 Remote Camera Controller, a space-saving, low-cost HD image production system can be configured for business use.

Five Inputs/Three Outputs

• **Five inputs:** Four SDI inputs and one DVI-D input come standard.
• **Three outputs:** Two SDI outputs and one DVI-D output come standard.

HD/SD Multi-Format

The AW-HS50 supports a variety of HD/SD formats, including 1080/24PsF, as standard. System frequency is 59.94 Hz/50 Hz/24 Hz switchable. This makes it ideal for digital cinema production and worldwide operation.

Frame Synchronizers on All Inputs

A Frame Synchronizer is embedded in all inputs. This enables asynchronous video signals to be switched without glitches.

Up-Converter, Dot by Dot and Video Processing

The AW-HS50 is equipped with an SD/HD up-converter function for two inputs (SDI IN 3/SDI IN 4), and a dot by dot function that can be used for P-in-P display of HD images from SD footage without degradation. A video processing function with brightness, pedestal level, saturation, and color phase correction is also provided for four inputs.

Versatile Effect Functions

• Transitions: 13 wipe patterns and mixes.
• The built-in key function lets you select from linear, luminance and chroma keying.
• One P-in-P bus and one Aux bus are included. A Bus transition function (P-in-P bus and Aux bus switching effect) enables Mix transitions.

Frame Memory (2 Screens)

Two 8 bit still images can be saved in Frame Memory, and used as bus footage. The still images can also be transferred from a PC over a LAN network.

Simple and Flexible Control Buttons

Five crosspoint buttons in each A bus and B bus (for a maximum of 10 with the Shift function), a Cut button, a P-in-P button, a Key button and an FTB button allow direct control with this simple panel layout. A slide lever also provides easy control of transitions, P-in-P, and Key Fade In/Out. Various functions can also be assigned to two user buttons (for a maximum of four with the Shift function) for one-touch operation.

Up to 10 Split-Screen, MultiViewer Display

The built-in MultiViewer Display function can simultaneously display various images, including program (PGM), preview (PVW) and input signals, on a single monitor. The screen may be split into 4, 5a/5b, 6a/6b, 9 and 10a/10b sections.

On-Screen Display (OSD)

The OSD increases operating ease by outputting setting menus to a monitor screen. (SDI OUT 2 or DVI OUT only)

Audio Level Meter

This function displays the level of the embedded audio signals (group 1/1ch, 2ch) superimposed on the SDI input signal.

Linking with a Remote Camera Controller

By linking the AW-HS50 to the optional AW-RP50 Remote Camera Controller with an IP connection* over a network, a number of remote operations become possible, such as operating the optional AW-HE50S or AW-HE120 HD Integrated Camera. The AW-HS50 and AW-RP50 have a unified design and half-rack size, so they can be mounted side by side in a single rack.

AW-RP50 and AW-HS50 Linking Functions

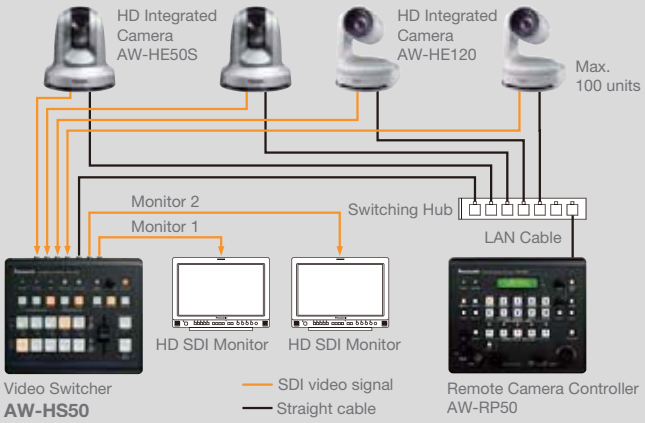
• The setting data (iris, gain, etc.) for the AW-HE50S or AW-HE120
HD Integrated Camera can be displayed on a split screen using the switcher's Aux output or MultiViewer output.
• The switcher's On-Air tally data can be sent to the Camera Controller.
• The switcher's bus footage (Aux, PVW, P-in-P, Key-F) can be selected at the Camera Controller. Switching of the bus footage can also be linked to the camera selection.
• The switcher's MultiViewer Display can also be changed at the Camera Controller to a full-screen display of the camera image (Aux bus only). This supports the camera's Focus Assist function.
• The Pan/Tilt lever and Zoom button on the Camera Controller can be used to change switcher parameters.

* Only one AW-RP50 can be connected to the switcher via an IP connection. And connection is not possible with a public network.

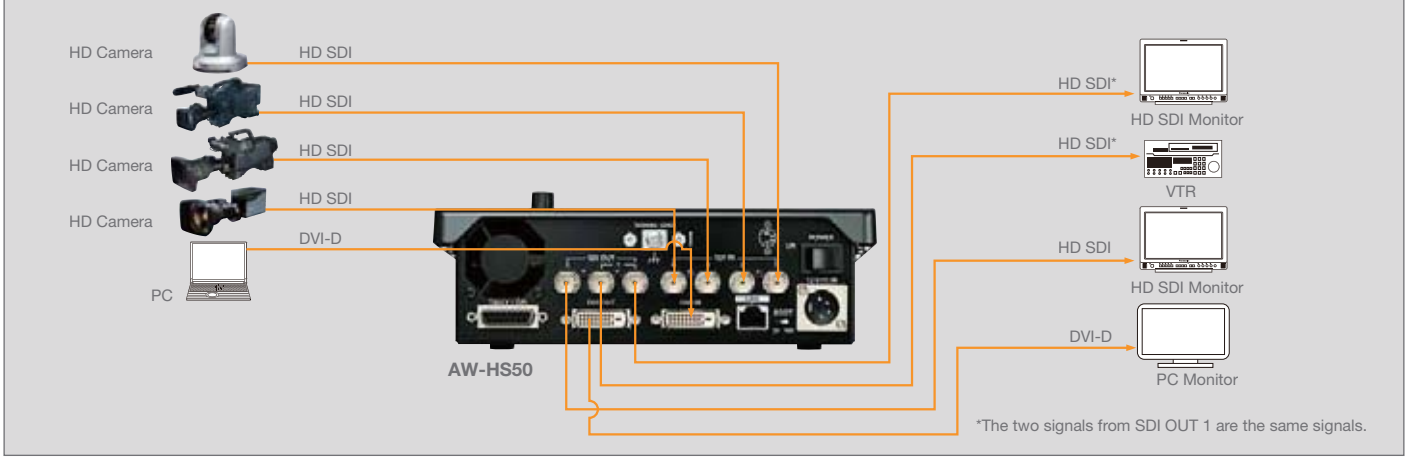
MultiViewer Display Example

Audio Level Meter Display Example

System Example: the remote camera controller (AW-RP50) via IP



System Example: Small-scale Studio System



3D PROFESSIONAL

AG-HMX100 (AG-HMX100P, AG-HMX100E)

Digital AV Mixer

HD	1080/59.94i, 50i, 23.98PsF (3D only), 720/59.94p, 50p
SD	480/59.94i, 576/50i

*Mixed operation of different video formats is not possible.

This all-in-one digital AV mixer integrates a video switcher with seven inputs (four SDI, two HDMI/analog video, and one DVI-I) and six outputs (four SDI*1 and two DVI-D*2), and an AV mixer. This single unit switches HD/SD images and audio sources, and provides effects and on-air transmission. Its MultiViewer Display function displays all sources on a single monitor, and forms a simple configuration to ensure easy transport and setup at event venues, plus low-cost operation. It is also compatible*3 with 3D image switching.

*1: PGM (Program), PVW (Preview), AUX (Auxiliary), MULTIVIEW. *2: PGM (Program), MULTIVIEW. *3: For image switching only. Effects are not supported.

Seven Video Inputs/Six Outputs

The AG-HMX100 is equipped with a total of seven video inputs: four SDI (HD/SD switchable) video inputs, two HDMI (HD only, HDCP not supported, VIERA Link not supported) or video (composite) inputs, and one DVI-I input capable of inputting still and moving images from a PC. It has a total of six outputs: four SDI outputs (PGM, PVW, AUX, MULTIVIEW) and two DVI-D outputs (PGM, MULTIVIEW).

HD/SD Multi-Format* High-Quality Image Processing

The AG-HMX100 supports 1080i/720p HD and SD images. Full 4:2:2:4 digital component and 12 bit internal processing ensure broadcast-grade images.

* Mixed format operation is not possible.

Built-in Frame Synchronizer for All Input Channels

All input channels feature a built-in frame synchronizer for use in switching unsynchronized video signals. A gen-lock function also supports synchronizing systems based on external sync signals (black burst).

Transitions and Digital Effects

• **Transitions:** Over 100 wipe patterns and mixes combine with effects like chroma keying, luminance keying, DSK, and fading. M/E preview and DSK preview are also supported.
• **Digital Effects:** Built-in digital effects include mosaic, defocus, monocolor, still, strobe, multi-strobe, decay, paint, negative and mirror. Still, strobe and multi-strobe effects allow selection of field or frame displays.

Embedded Digital Audio and Analog Audio Mixing

• **10 audio inputs:** Select up to eight audio inputs from four SDI embedded audio inputs (L/R), two HDMI embedded audio inputs (L/R), and four XLR audio inputs (L/R). You can mix the 10 audio sources, including AUX input and MIC input, using a fader control.
• **Audio output:** SDI embedded audio is output from PGM, PVW, and AUX terminals, and has XLR (L/R) and pin jack (L/R) analog outputs.
• **Audio effects:** Pan, 3-band equalizer, voice changer (pitch/level),and mute.
• **Level meter:** Shown as a MultiViewer Display overlay on the LCD screen.

MultiViewer Display, Built-in Waveform Monitor

The MultiViewer Display output (SDI/DVI-D) provides a split display of the PVW, PGM, and all source images on a single screen. Audio level meters can also be overlaid. The built-in WFM function displays the waveforms of video Y signals.

Matrix Menu and Rotary Switch

The large LCD panel allows easy system status monitoring. The 5-column, 3-row matrix menu automatically displays setting items according to the operating status, for quick checking or changing. Settings can also be easily displayed and set with the rotary switch.

Functions for More Comfortable Operation

• **Pattern preset:** Up to seven transition patterns and six key patterns can be directly registered, for retrieval with a single touch.

• **Event memory:** Records the setting conditions of the effects. Over 100 settings can be stored in memory, and instantly retrieved with pattern numbers.

• **Key learn:** Records and retrieves the key frame settings (positions/levels/modifiers) and reproduces animation effects. Up to 20 patterns can be stored in memory, with a maximum of 20 frames per pattern.

• **Joystick controller:** Enables intuitive operation of effect position setting and color correction/color selection.

Supports Switched Transmission of 3D Camera Images

The AG-HMX100 can operate as a 3D video switcher with dual SDI signal inputs from 3D cameras. It comes with two pairs of inputs and one pair of outputs for 3D video signals. It is possible to configure a 3D live switching system by combining it with several 3D cameras and 3D projection systems. Both Simul and Side-by-Side 3D output methods are supported. When two AG-HMX100 units are connected, they can serve as a 3D video switcher for up to four 3D camera systems.

* Only the switcher function operates. Effects such as ME cannot be used. Other functions, such as MultiViewer Display, WFM, and title mix, are not supported. For details, visit the 3D special site. (http://pro-av.panasonic.net/en/3d/)

Versatile Interfaces

• **Tally:** Outputs support up to eight input sources. Ideal for live relays.

• **GPI:** Visual effects including key/transition, downstream key, and fading can be externally controlled with GPI trigger signal inputs.

• **AUX output:** Selects from PGM/PVW/MultiView Display output signals, or an SDI/HDMI input through-out signal.

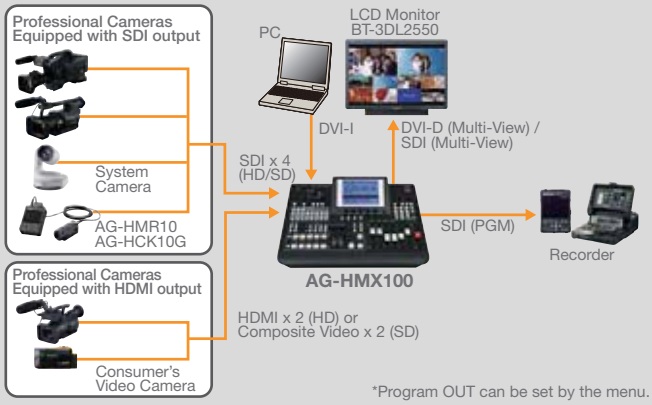
Power-Saving Eco Design

• **Power-saving design:** HD images are supported, while power consumption is decreased by 15% compared to our previous model.*

• **Power management:** This function automatically switches the power off when there is no input or operation for a preset period of time. Can be powered on with a secondary switch on the control panel.

* Compared with the 70 W power consumption of the AG-MX70 (a model introduced in 2004).

System Example (2D)



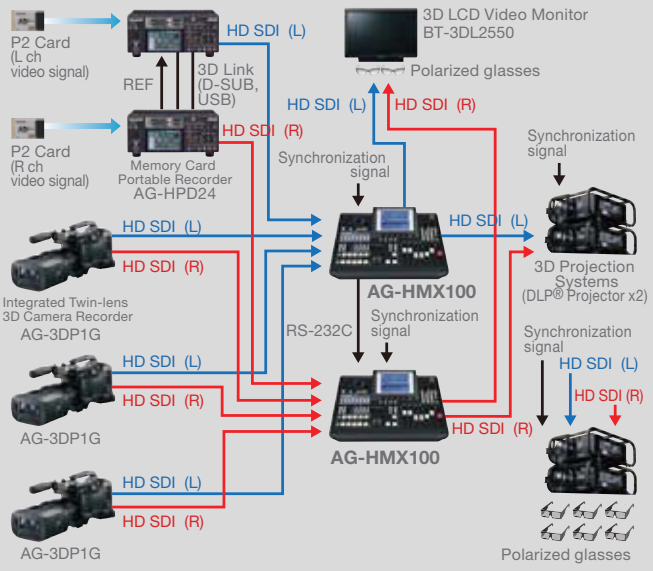
*Program OUT can be set by the menu.

MultiViewer Display Example

(picture simulated)

3D Live Display System

This system produces 3D live images by using two AG-3DP1G Integrated Twin-Lens 3D Camera Recorders and switching the image transmission for display on a professional DLP® projector.
It is also possible to monitor the PGM image with the BT-3DL2550 3D-Compatible LCD Monitor.



Control Panels and Rear Panel Interfaces

AV-HS450 Control Panel

AW-HS50 Control Panel

AV-HS410 Control Panel

AG-HMX100 Control Panel

AV-HS450 Rear Panel Interfaces (Mainframe)

AW-HS50 Rear Panel Interfaces

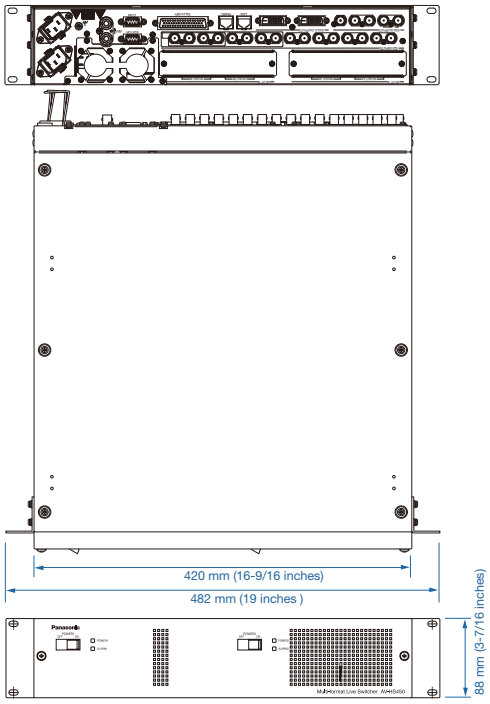
AV-HS410 Rear Panel Interfaces

AG-HMX100 Rear Panel Interfaces

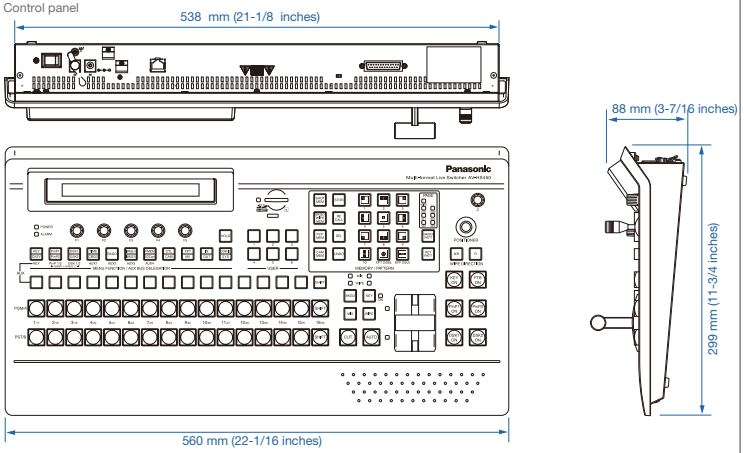
Dimensions

AV-HS450

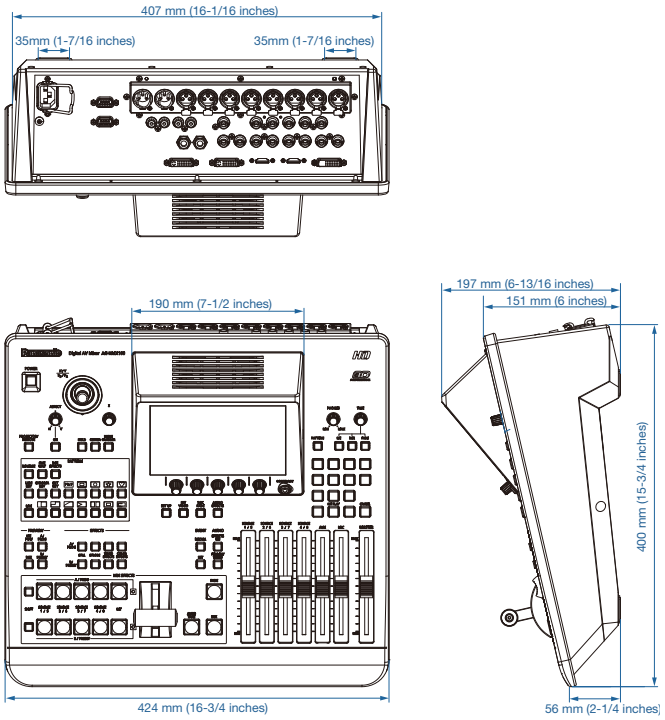
Mainframe



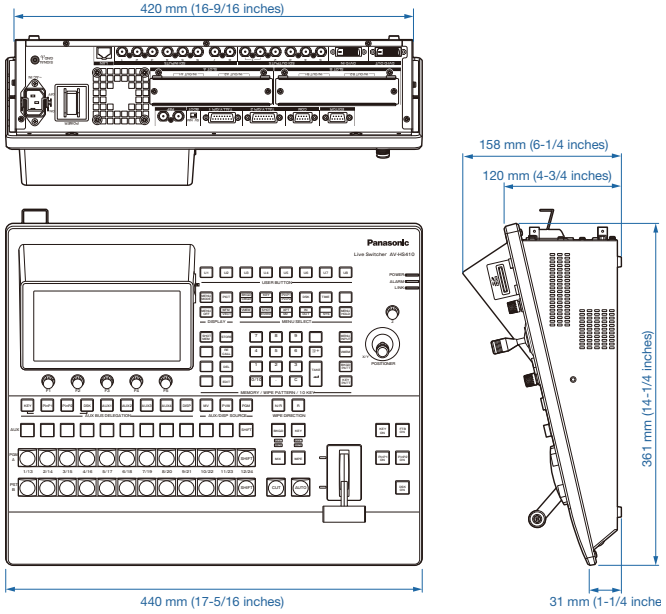
Control panel



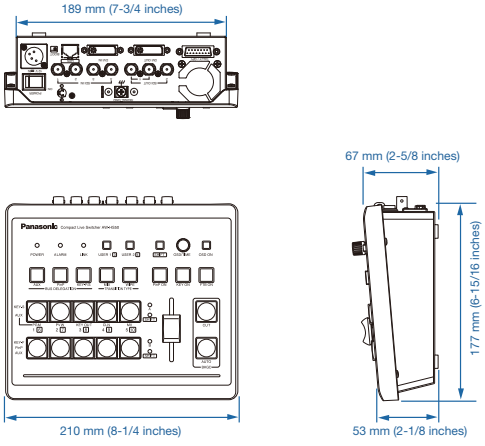
AG-HMX100



AV-HS410



AW-HS50



Specifications

		AV-HS450	AV-HS410
Specifications			
Power Requirement		Mainframe: AC 100 V to 120 V(N)/AC 220 V to 240 V(E), 50 Hz/60 Hz, 120 W Control Panel: DC12 V ±10 % (AC adapter provided), 0.8 A	AC 100 V to 240 V, 50 Hz/60 Hz, 88 W
Operating Temperature		0 °C to 40 °C (32 °F to 104 °F)	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity		10 % to 90 % (no condensation)	10 % to 90 % (no condensation)
Dimensions (W x H x D)		Mainframe: (2RU) 482 mm x 88 mm x 471 mm (19 inches x 3-7/16 inches x 18-9/16 inches) (excluding protrusions) Control Panel: 560 mm x 88 mm x 299 mm (22-1/16 inches x 3-7/16 inches x 11-3/4 inches) (excluding protrusions)	440 mm x 158 mm x 361 mm (17-5/16 inches x 6-7/32 inches x 14-7/32 inches) (excluding protrusions)
Weight		Mainframe: Approx. 9.8 kg (21.6 lb) (without options/excluding accessories) Approx. 10.3 kg (22.7 lb) (with full options/excluding accessories) Control Panel: Approx. 3.9 kg (8.6 lb) (excluding accessories)	Approx. 6.2 kg (13.669 lb) (without options/excluding accessories) Approx. 6.6 kg (14.550 lb) e (with full options/excluding accessories)
Video Format		HD: 1080/59.94i, 1080/50i, 1080/24PsF*1, 1080/23.98PsF*1, 720/59.94p, 720/50p SD: 480/59.94i, 576/50i	HD: 1080/59.94i, 1080/50i, 1080/24PsF*2, 1080/23.98PsF*2, 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 (8 bit for video memory) /RGB 4:4:4, 8 bit
ME		1ME	1ME
Video Input*3		Mainframe, A maximum of 20 inputs Standard SDI: 16 lines, BNC x 16 (IN 1 to 16) HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω) 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 13 inputs Standard SDI: 8 lines, BNC x 8 (IN 1 to 8) (Up-convert support with IN 5 to 8) HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω) Standard DVI-D: 1 line, DVI-D x 1 (Analog input signals are not supported) 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)
Video Output*3		Mainframe, A maximum of 10 outputs Standard SDI: 4 lines, BNC x 5 (OUT 1 to 4 x each, 2 output distribution for OUT 1) HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω) Standard DVI-D: 2 lines, DVI-D x 2, (OUT 5, 6) (Analog output signals are not supported) Optional: Maximum of 12 outputs (OUT A1, A2, B1, B2) (Up to 2 optional boards may be inserted into the 2 input/output optional slots)	A maximum of 10 outputs Standard SDI: 5 lines, BNC x 6 (OUT 1 to 5 x each, 2 output distribution for OUT 1) HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω) Standard DVI-D: 1 line, DVI-D x 1 (Analog output signals are not supported) Optional: Maximum of 4 outputs (OUT A1, A2, B1, B2) (Up to 2 optional boards may be inserted into the 2 input/output optional slots)
Reference Input/Output		Mainframe GENLOCK mode: Black burst or Tri-level Sync input signals (with loop-through) Internal sync mode: Black burst output signals x 2 • Same field frequencies as those of the system formats supported. • With the 1080/23.98PsF, 1080/24PsF format, only GENLOCK mode supported. • With the 1080/23.98PsF format, black burst with 10F-ID (SMPTE318M standard met) or TRI signals supported.	GENLOCK mode: Black burst or Tri-level Sync input signals (with loop-through) Internal sync mode: Black burst output signals x 2 • Same field frequencies as those of the system formats supported. • With the 1080/24PsF format, only GENLOCK mode supported. • With the 1080/23.98PsF format, black burst with 10F-ID (SMPTE318M standard met) or TRI signals supported.
Audio Input/Output		—	—
Interface	PANEL/MAINFRAME	RJ45 x 1, 100 Mbps (to connect between the mainframe and the control panel)	—
	EDITOR	Mainframe, D-sub 9 pin x 1, RS-422 (GVG protocol compatible)	DD-sub 9 pin x 1, RS-422
	COM	Mainframe, D-sub 9 pin x 1, RS-422 (pan-tilt system control)	D-sub 9 pin x 1, RS-422
	TALLY/GPI	Mainframe: D-sub 50 pin x 1 (8 IN, 31 OUT and 1 ALARN OUT may be set) Control Panel: D-sub 25 pin x 1 (8 IN and 8 OUT may be set)	D-sub15 pin x 2 (IN 8, OUT 19, ALARM OUT 1)
	LAN	Mainframe, RJ45 x 1, 10 BASE-T/100 BASE-TX	RJ45, 10 BASE-T/100 BASE-TX
Removable Media	SD Memory Card	Supported by the control panel, Capacity: Maximum 32 GB (SDHC Memory Card compatible) Still image file: Loading/saving, setup data: backup	Capacity: Maximum 32 GB (SDHC Memory Card compatible) Still image file/movie clip file/shot memory/event memory: Loading/saving, Setup data: backup
Standard Accessories		CD-ROM (Operating instructions / Image transmission software), AC adapter (for control panel),Power cable (for mainframe and AC adapter), CAT5E cable (STP, straight cable, 10 m (32.8 feet) long)	CD-ROM (Operating instructions/DVI input level adjustment file), Power cable (2 m (6.6 feet) long)
Function			
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 16, Squeeze x 16, Slide x 8, 3D 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, Paint	—
KEYER	Number of Keys	1	1
	Key Type	Linear key, Luminance key, Chroma key, Full key	Linear key, Luminance key, Chroma key, Full key*8
	Transition Type	Cut, Mix, Wipe (including DVE)	Cut, Mix, Wipe (including DVE)
	Wipe/DVE Pattern	Wipe x 12, Squeeze x 11, Slide x 9, 3D x 12	Wipe x 16, Squeeze x 16, Slide x 8, 3D x 12
DSK	Number of Keys	2	1
	Key Type	Linear key, Luminance key	Linear key, Luminance key
	Transition Type	Mix	Mix
P in P	Number of PinP	2	2
	Transition Type	Mix	Mix
AUX BUS		AUX Bus 1 to 4*4	AUX Bus 1 to 4*4
Input Function	Frame Synchronizer	IN 1 to 16*5	IN 1 to 9 (IN 9 is always-on)*5
	Freeze	IN 1 to 16*5	IN 1 to 9*5
	Up-Converter	IN13 to 16*5	IN5 to 8*5
	Color Corrector	IN9 to 16	—
	Video Processing	—	IN1 to 8*5
Output Function	MultiViewer	2 systems, Labels, Tally indication, Split-screen (the screen may be split into 4, 9, 10 and 16 sections)*6	1 system, Labels, Tally indication, Split-screen (9 Patterns: 4, 5a/5b, 6a/6b, 9, 10a/10b and 16 sections)
	Other Function	OSD (PVW and several MULTI outputs), Phase adjustment, Chroma key sample marker, Down converter (SDI output board only)	Phase adjustment, Chroma key sample marker, Down converter (SDI output board only)
Frame Memory		4 channels (The data for the images stored in the frame memories can be retained even when the power is turned off by saving it in the flash memory area which is incorporated inside the unit.)	—
Video Memory		—	2 systems: still images and movie clips (The data for the images stored in the frame memories can be retained even when the power is turned off by saving it in the flash memory*9 area which is incorporated inside the unit.)
Memory Function		Shot memory, BKGD/Wipe memory, PinP memory, Camera memory *7, Effect dissolve function	Shot memory, Event memory, Effect dissolve function

*1: 1080/24PsF and 23.98PsF are not compatible with optional boards AV-HS04 M1, M2, M3, M4, M5, M6, M7, M7D and M8. *2: 1080/24PsF and 23.98PsF are not compatible with optional boards AV-HS04 M1, M2, M3, M4, M5, M6 and M7. *3: For information on input/output signals, see page 10, "Input Formats." *4: AUX BUS 1 is compatible with MIX transition. *5: Specifications for IN A1, A2, B1, and B2 depend on the specs of the mounted optional equipment. *6: Maximum 20 channels may be simultaneously displayed on two screens.

	AW-HS50	AG-HMX100
	DC 12 V ±10 % (AC adapter provided), 2.0 A	AC 100 V to 240 V, 50 Hz/60 Hz, 60 W
	0 °C to 40°C (32 °F to 104 °F)	5 °C to 40 °C (41 °F to 104 °F)
	10 % to 90 % (no condensation)	10 % to 80 % (no condensation)
	210 mm x 67 mm x 177 mm (8-1/4 inches x 2-5/8 inches x 6-15/16 inches) (excluding protrusions)	424 mm x 197 mm x 400 mm (16-3/4 inches x 7-3/4 inches x 15-3/4 inches) (excluding protrusions)
	Approx. 1.4 kg (3.1 lb) (without options)	Approx. 7.9 kg (17.4 lbs) (without options)
	HD: 1080/59.94i, 1080/50i, 1080/24PsF, 1080/23.98PsF, 720/59.94p, 720/50p SD: 480/59.94i, 576/50i	HD: 1080/23.98PsF (for 3D only), 1080/59.94i, 1080/50i, 720/59.94p, 720/50p SD: 480/59.94i, 576/50i *Mixed operation of different video formats is not possible.
	Y:CB:CR 4:2:2, 10 bit (8 bit for FMEM)/ RGB 4:4:4, 8 bit	Y:PB:PR:Key 4:2:2:4, 12 bit (Internal process)
	1ME	1ME
	SDI: 4 lines, BNC x 4 HD (SMPTE292M)/SD (SMPTE259M) standard 0.8 V [p-p] ±10 % (75 Ω) DVI-D: 1 signal line, DVI-D x 1 (Analog input signals are not supported)	VIDEO: 2 lines, BNC x 2, Analog Composite, 1.0 V[p-p] (75 Ω) SDI: 4 lines, BNC x 4 HD (SMPTE292M/296M/299M) /SD (SMPTE259M-C/272M-A, ITU-R. BT.656-4) standard HDMI: 2 signal lines, HDMI x 2 (Type A connector), incompatible with HDCP Link and VIERA Link DVI-I: TMDS single link (incompatible with HDCP), compatible with digital/analog RGB
	SDI: 2 lines, BNC x 3 (2 output distribution for OUT1) HD (SMPTE292M)/SD (SMPTE259M) standard 0.8 V [p-p] ±10 % (75 Ω) DVI-D: 1 signal line, DVI-D x 1 (Analog output signals are not supported.)	SDI: 4 lines, BNC x 4 (PGM/PVW/AUX/MULTIVIEW x each) HD (SMPTE292M/296M/299M) /SD (SMPTE259M-C/272M-A, ITU-R. BT.656-4) standard DVI-D: 2 lines, DVI-D x 2 (PGM/MULTIVIEW x each) TMDS single link (not compatible with HDCP)
	—	External reference (G/L) input: BNC x 2 (with loop-through), 1.0 V [p-p] (75 Ω), Analog composite (NTSC/PAL) Advanced reference (ADV-REF) output: BNC x 1, 75 Ω, Analog composite Sync: 0.286 V [p-p] (NTSC)/0.3 V [p-p] (PAL) Burst: 0.286 V [p-p] (NTSC)/0.3 V [p-p] (PAL)
	—	AUDIO input: XLR: 4 lines (L and R), +4/0/–3 dBm switchable, balanced, 600 Ω SDI (embedded audio): 4 lines, HD (SMPTE292M/296M/299M)/SD (SMPTE259M-C/272M-A, ITU-R BT.656-4) standard HDMI (embedded audio): 2 lines, Type A connector (not compatible with HDCP) AUX input: Pin jack: 1 line (L and R),–10 dBV, High impedance, unbalanced MIC input: M6 x 1 line, –60 dBV, 2 kΩ, monaural, unbalanced AUDIO output: PGM: XLR: 1 line (L and R), +4/0/–3 dBm switchable, Low impedance, balanced Pin jack: 1 line (L and R), –10 dBV, Low impedance, unbalanced PGM/PVW/AUX OUT: SDI (Embedded Audio) x 1, HD (SMPTE292M/296M/299M)/SD (SMPTE259M-C/272M-A, ITU-R BT.656-4) standard PHONES output: M6 x 1, 8 Ω, stereo, unbalanced, –∞ dBu to –20 dBu
	—	—
	—	—
	—	D-sub 9 pin x 1, RS-232C
	D-sub 15 pin x 1, GPI INPUT x 5 channels (photocoupler sensing), GPI OUTPUT x 7 channels (open collector output)	TALLY output: D-sub 9 pin x 1, 8 Cross point, Open-collector, Maximum current: Less than 50 mA, Maximum Voltage: 35 VDC GPI: BNC x 1, Make-Contact
	RJ45, 10 BASE-T/100 BASE-TX	—
	—	—
	CD-ROM (Operating instructions / Image transmission software), AC adapter	CD-ROM (Operating instructions), Power code (3 core cable)
	Wipe x 13	Wipe (BASIC1+2) x 37, Wipe (+MULTI) x 16, Wipe (BLIND) x 23, Wipe (MATRIX) x 7, Squeeze (COMP+SINGLE) x 13, 2ch Squeeze (COMP+BOTH) x 8, Slide x 8
	Cut, Mix, Wipe	Cut, Mix, Wipe (including DVE)
	—	Image effect: PGM/A, PST/B BUS Effect: Mosaic, Defocus, Mono, Time effects, Decay, Paint, Nega, Mirror
	1	1
	Linear key, Luminance key, Chroma key*8	Linear key, Luminance key, Chroma key, Full key
	Mix	Cut, Mix, Wipe (including DVE)
	—	Wipe x 6
	—	1
	—	Luminance key
	—	Mix
	1	1
	Mix	Mix
	AUX BUS1	—
	SDI-IN 1 to 4, DVI-IN (always-on)	SDI-IN 1 to 4, DVI-I IN, HDMI 1 to 2/Composite video 1 to 2
	SDI-IN1 to 4, DVI-IN	SDI-IN 1 to 4, DVI-I IN, HDMI 1 to 2/Composite video 1 to 2
	SDI-IN3, 4	—
	—	—
	SDI-IN 1 to 4	Every A/B bus
	1 system*10, Labels, Tally indication, Split-screen (8 Patterns: 4, 5a/5b, 6a/6b, 9 and 10a/10b sections)	1 system Labels, Tally indication, Split-screen (the screen split into 10a only)
	OSD [Single Screen Display: SDI-OUT 2,DVI-OUT (unshown on SDI-OUT 1)], Chroma key sample marker, Audio Level Meter: SDI embedded audio (group1/ 1 ch, 2 ch)	OSD (several MULTI outputs), WFM, Audio level meter, Embedded audio(SDI, HDMI)
	2 channels *11 (The data for the images stored in the frame memories can be retained even when the power is turned off by saving it in the flash memory area which is incorporated inside the unit.)	1 systems: still images and movie clips
	—	—
	PinP Preset, Effect dissolve function	Event memory (100 patterns), Key learning (20 patterns)

*7: May store and recall up to 10 presets (per camera) with current Panasonic pan-tilt systems. *8: May also be used for DSK applications by changing the key layer. *9: Plans call for supporting this function in the future. *10: OSD, MV frames, Labels, Tally indications, Audio Level Meters, and Camera setting information are not shown on SDI-OUT 1. *11: OSD, MV frames, Labels, Tally indications, Audio Level Meters, and Camera setting information for MultiViewer Display are not stored in the Frame Memory.

Please refer to the latest information, etc. at the following Panasonic web site.

http://pro-av.panasonic.net/

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Factories of Business Solutions Business Group have received ISO14001:2004-the Environmental Management System certification. (Except for 3rd party's peripherals.)

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