2ME Live Switcher with complete system adaptability, intuitive operations, high reliability, and advanced 4K compatibility*

* Firmware Ver. 4 or later required.
Excellent Live Operability Meets Creativity

Excellent Value System Capability

32 SDI and two DVI inputs, 16 SDI outputs*

Despite its compact 3RU body, this mainframe provides wide variety of inputs/outputs with frame synchronizer, format converter, and color correctors. Colors can be adjusted to correspond to different video source formats, camera properties, and displays, enabling trouble-free production.

[Input]
- 34 inputs in total, with 32 SDI and two DVI inputs.
- All SDI inputs are provided with a 10 bit frame synchronizer.
- Eight inputs equipped with color correctors.
- Four inputs equipped with up-converters. Signals can be delayed by up to eight frames.

[Output]
- 16 SDI outputs with two outputs per channel.
- Four outputs equipped with color correctors.
- Two outputs equipped with downconverters.

Supported Formats

<table>
<thead>
<tr>
<th>Input</th>
<th>Output 50I/60I</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDI</td>
<td>480/59.94i, 576/50i</td>
</tr>
<tr>
<td></td>
<td>720/59.94p, 50p</td>
</tr>
<tr>
<td></td>
<td>1080/23.98PsF</td>
</tr>
<tr>
<td></td>
<td>1080/59.94p, 50p (3G mode)</td>
</tr>
<tr>
<td></td>
<td>2160/59.94p, 50p (4K mode)</td>
</tr>
</tbody>
</table>

DVI-D

<table>
<thead>
<tr>
<th>Input</th>
<th>Output 60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1024 x 768 (XGA)</td>
</tr>
<tr>
<td></td>
<td>1280 x 768 (WXGA)</td>
</tr>
<tr>
<td></td>
<td>1280 x 1024 (SXGA)</td>
</tr>
<tr>
<td></td>
<td>1680 x 1050 (WSXGA+)</td>
</tr>
<tr>
<td></td>
<td>1600 x 1200 (UXGA)</td>
</tr>
<tr>
<td></td>
<td>1920 x 1200 (WUXGA)</td>
</tr>
</tbody>
</table>

Excellent Live Operability

Meets Creativity

System Functionality*

32 SDI and two DVI inputs and 16 SDI outputs, with a wide variety of keyers and DVEs. Versatile transition modes and extensive video production features are achieved with high cost effectiveness. Functions are scalable using plug-in software.

Operability

Intuitive operation is realized by Multi-Selection Panel, cross point buttons with color grouping function, and an OLED source name display panel. These functions to enhance visibility helps quick and accurate switching.

Reliability

The power supply for the mainframe and control panel is redundant. Up to three panels can be operated through an IP connection to provide stable system operation.

*1: Some functions differ when 3G/4K mode is selected. See page 5 for details.

Two types of Control Panels

Control Panel AV-HS60C2

Control Panel AV-HS60C4

Model nos. | ME Number | XPT | Power Supply | Width
---|---|---|---|---
AV-HS60C2 | 2 ME | 24 XPT | Redundant Power Supply | 380 mm (15-1/16 inches)
AV-HS60C4 | 2 ME | 16 XPT | Redundant Power Supply | 610 mm (24-1/4 inches)
Diverse DVE Transitions*1

In addition to wipe, mix, and cut transitions, DVE transitions with 3D DVE 2ch, such as size reduction and sliding, can be performed. Diverse rendering of image effects such as mosaic or defocus are possible.

• 4ch of 3D DVE and 2ch of 2D DVE systems are provided to support background and keys for each ME. *1: Some functions differ when 3G/4K mode is selected. See page 5 for details.

Various Keyers*2

Featuring variety of keyers, HS6000 supports creative live content creation. A luminance key, linear key, chroma key, full key, and PinP are provided for 4ch per ME (8ch in total), plus 4ch of DSK, for a total 12keyers, with 4ch of upstream key (USK).

• Chroma key: By implementing the Primatte®3 algorithm, real time and high quality key composition are possible.
• PinP: 4ch per ME (8ch total). Through the flying key effect, move, expand and shrink the input key signals using DVE effects.
• Key preset: Key Preset function allows easy store and recall of the settings for key. Four settings for each channel of key and four settings for each channel of DSK can be registered.
• Upstream key: 4ch of USK are convenient for usage such as adding the CG sources to fill the gap of 4:3 image to 16:9 image.
• Downstream key: 4ch are available. Can be assigned to PGM1/PGM2.

*2: Some functions differ when 3G/4K mode is selected. See page 5 for details.

Key Types

<table>
<thead>
<tr>
<th></th>
<th>USK</th>
<th>KEY</th>
<th>DSK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luminance key</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear key</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Chroma key</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full key</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Picture in Picture</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
</tbody>
</table>

Available Functions

<table>
<thead>
<tr>
<th></th>
<th>(KEY1)</th>
<th>(KEY2)</th>
<th>(KEY3)</th>
<th>(KEY4)</th>
<th>DSK1–4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition</td>
<td>CUT/MIX/WIPE</td>
<td>CUT/MIX/WIPE</td>
<td>CUT/MIX/WIPE</td>
<td>CUT/MIX/WIPE</td>
<td>CUT/MIX</td>
</tr>
<tr>
<td>Chroma key</td>
<td>Standard</td>
<td>optional</td>
<td>optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PinP*3</td>
<td>3D effect</td>
<td>3D effect</td>
<td>2D effect</td>
<td>2D effect</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Key Formation

*3: Primatte® is a registered trademark of IMAGICA DIGIX Inc. The copyright of Primatte® belong to IMAGICA DIGIX Inc. The patents for Primatte® belong to IMAGICA DIGIX Inc.
*4: Includes the flying key effect.
Memory Functions*1

Using memory function, setting, video and effects can be easily stored and recalled. It allows quick operation of switching and recalling effects in live video production, supports efficient operation and making it easy to perform video effects for more complicated operations.

- **Shot memory**: This function recalls background transition patterns or other video effects, including PinP size, position, border width, and key on (maximum of 81 memories). Effect dissolve can be set to ensure smooth switching from the current effect to the next effect registered in shot memory.

- **Event memory**: This function allows continuous image effects to be to be registered and played back in a timeline.

- **Macro memory**: This function allows record and playback of a series of operations on the Control Panel. It can also record and playback setting information, such as input/output and keyers. Macro memories can be played back by assigning them to the cross point buttons, such as macro bus, PGM, and PST.

- **Video memory**: Moving image (Clip) and still image (Still) can be recorded in 4ch each (maximum of 81 memories*) for use as video sources. Maximum 60 seconds of moving images can be saved in standard mode, and Maximum 30 seconds in high image quality mode. Moving image (Clip) allows audio recording and playback.

Intuitive Switching

- **Multi-Selection Panel**: A color panel that can display thumbnail images with high visibility. The switches provide a tactile response which allows quick and precise memory operation.

- **Animation wipe**: With moving images (clip) and still images (still) recorded in video memory, animation wipes can be created easily.

| Split Screen Outputs to Fit the Setup |

**Built-in 4ch MultiViewer Function*3**

An independent 4ch MultiViewer output function is provided as standard, enabling displays of up to 16 split screens (a total of nine patterns). All of these functions are available without the need for a specialized device.

- MultiViewer can be selected from a total of nine patterns, including four split, five split (two patterns), six split (two patterns), nine split, 10 split (two patterns), and 16 split.

- Source names, tallies, audio level meters, clock and safety markers can be displayed.

- Select between fit mode, in which the video image is the same size as the split frame, and squeeze mode, which places the source name and level meter outside the image.

*1: Some functions differ when 3G/4K mode is selected. See page 5 for details.

*2: Storage module is required separately.

*3: Some functions differ when 3G/4K mode is selected. See page 5 for details.
Flexible Scalability and Secure Operability

System Scalability*1

- 16 AUX buses are provided. MIX transition is available from the AUX1 to AUX4 buses.
- Menu operations can be performed from a PC or tablet via a network connection.
- Various interfaces and plug-in software installation capability to expand the connectivity with other devices. Seven plug-in software is provided and customized plug-in software can be created using SDK.

Plug-in software

* For information on downloading plug-in software, see “Software download” on the Panasonic website (http://pro-av.panasonic.net/en/).

EXT_Control

This software allows sending and receiving information on source switching or source name for AV-HS6000 buses between external devices such as system controllers or tally interfaces connected via network. Control can be done via router control systems from Evertz and Utah Scientific.*2

P2_Control

This software allows connection and control of Panasonic P2 devices via RS-422 serial communications.

GVG200

This software allows control such as crosspoint switching or transition on GVG200 protocol compliant external controllers, editors, etc. by RS-422 serial communications. (External controllers and control software are sold separately.)

AUX_IP

This software allows crosspoint switching from a remote operation panel (VS-R45) via an IP network. (VS-R45 is a product of Venetex Corp.)

Serial TALLY

This software provides tally output and source names to an external tally display or interface by RS-422 serial communications with UMD protocol Ver. 3.1 compliant devices.

EXT_PANEL_IP

This software allows crosspoint switching, executing transitions, and controlling macro playback from a remote operation panel via an IP network. Control can be done from LAWO LBP series remote operation panel.*3

CAM_Control

This software enables the preset memory recall and PAN/TILT/ZOOM/FOCUS/IRIS control of the AW-HE/UE series integrated camera. Up to 10 cameras can be controlled.

Backup System for Peace of Mind

- A redundant power supply is provided for the mainframe and control panel.
- Operation of up to three control panels is possible through an IP connection.
- ME rows can be switched by swapping the ME panel and changing the output of the system when ME faults.
- A web browser is provided to allow access to the GUI menu from a remote PC.
- System settings and memory information can be stored on SD cards, PC’s, and other optional storage devices.

3G/4K format compatibility (Advanced support for high-definition)

This advanced switcher can be used to produce 4K*4 high-definition video as well as HD/SD-SDI and 3G-SDI by switching between three use modes.

*4: Firmware Ver. 4 or later required. For details, see “Service and Support” on the Panasonic website (http://pro-av.panasonic.net/en/).

Functions supported by format

<table>
<thead>
<tr>
<th>Functions by format</th>
<th>Standard mode</th>
<th>3G mode</th>
<th>4K mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of SDI inputs</td>
<td>32</td>
<td>16(3G Level A/B)*1</td>
<td>8(3QD/2SD Level A/B¹ × 4)</td>
</tr>
<tr>
<td>Number of DVI inputs</td>
<td>2</td>
<td>Not possible</td>
<td>Not possible</td>
</tr>
<tr>
<td>Number of up-converter channel</td>
<td>4</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Number of delay function channel</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Number of color corrector channel</td>
<td>4</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Number of upstream keyer channel</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Number of SDI output</td>
<td>16</td>
<td>8</td>
<td>3(3QD 3G Level B × 4)</td>
</tr>
<tr>
<td>Number of downstream converter channel</td>
<td>2</td>
<td>2¹</td>
<td>2¹</td>
</tr>
<tr>
<td>Number of color converter channel</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Number of utility bus</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Number of utility bus</td>
<td>4</td>
<td>2²</td>
<td>2²</td>
</tr>
<tr>
<td>Number of DSK keyer</td>
<td>4</td>
<td>2</td>
<td>2²</td>
</tr>
<tr>
<td>Number of still image (Still) memory channel</td>
<td>4</td>
<td>2²</td>
<td>2²</td>
</tr>
<tr>
<td>Moving image (Clip) memory function</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recording time per channel (standard image quality)</td>
<td>Approximately 60 seconds</td>
<td>Approximately 30 seconds</td>
<td>Approximately 30 seconds</td>
</tr>
<tr>
<td>Recording time per channel (high image quality)</td>
<td>Approximately 30 seconds</td>
<td>Approximately 15 seconds</td>
<td>Approximately 15 seconds</td>
</tr>
<tr>
<td>Number of MultiViewer</td>
<td>4</td>
<td>2</td>
<td>2²</td>
</tr>
<tr>
<td>Number of AUX</td>
<td>16</td>
<td>8</td>
<td>8²</td>
</tr>
</tbody>
</table>

*¹: When FS function is active and 3G/SDI Level A signal is input, it is converted to Level B signal to perform signal processing. When FS function is on and SDI/SD-SDI signal is input, a black screen will be displayed. FS function is always ON when in 4K mode.*2: SDI OUT 14 outputs down-converted HD-SDI signal of SDI OUT 13, and SDI OUT 16 outputs down-converted HD-SDI signal of SDI OUT 15. *3: Please inquire with LAWO regarding remote operation panel settings.

Various interfaces and plug-in software installation capability to expand the connectivity with other devices. Seven plug-in software is provided and customized plug-in software can be created using SDK.
Easy Direct Switching by Touch and Mouse Operations

Software Control Panel AV-SF6000G
(Free download for Mac and Windows)

The AV-HS6000 control panel is also available as a PC based application software. Equipped with the MJPEG codec, it allows display of video and image in the application. Intuitive and simple operations while viewing source video or using the display as a sub-panel is possible.

* For information on downloading software control panel, see “Software download” on the Panasonic website (http://pro-av.panasonic.net/en/).

- **Operation menu part**
  - Switches ME to be operated.
  - Selects PST, PGM, UTIL 1 to 2, and KEY 1 to 4.

- **Source assignment part**
  - Selects movie to be assigned to the bus selected with operation menu part.
  - A total of 54 sources can be displayed on three pages by displaying 18 sources on one page and switching pages.
  - Displays tally status in red and green frames.

- **Operation panel part-1**
  - Operates transitions (fader, AUTO, CUT).
  - Selects key type and transition type for KEY 1 to 4 and sets transition time.
  - Sets key type for DSK 1 to 4.
  - Displays thumbnail for source assigned to KEY and DSK.

- **Operation panel part-2**
  - Controls shot memory, event memory, and macro memory.
  - Video memory (still/clip) can be controlled.
  - Stills and clips can be loaded from the built-in SSD or a PC.

- **Input and output windows**
  - Displays PGM and PST for the selected ME.
  - Displays DSK PGM1 for PGM when PGM (+DSK) button is selected.
  - Displays Next Transition setting status superimposed on window for PST.

- **Page button**
  - Switches display of operation panel part.

- **Mode selection part**
  - Switches between Control Mode, Menu Panel, and Video Status modes.
  - Displays mainframe communications status and error status.
  - Switches between connected mainframes by inputting the IP address.
  - Allows free arrangement of sources displayed on the input and output windows.

- **Control Mode screen**
  - Displays menu panel operation display, showing ME1, ME2 and PGM on left side. It is possible to operate menu panel or to check the result while checking the PGM output.

- **Video Status screen**
  - Displays menu panel operation display, showing ME1, ME2 and PGM on left side. It is possible to operate menu panel or to check the result while checking the PGM output.

- **Macro Edit screen**
  - Added editing function which are adding and deleting operations, wait time setting, etc., recorded Macro memory for more convenience.

- **Maintenance screen**
  - This function searches for IP addresses of AV-HS6000 on the same network and easily connects to the software control panel.

- **Examples of Other Major Screens**

*Specification subject to change without notice to improve the functionality.*
Operability Enhanced with Ergonomically Designed Panels

The graphical user interface combines excellent visibility with ease of operation.

Control Panel
AV-HS60C2 (redundant power supply model)

**ME1 KEY bus selector buttons**

*KEY BUS DELEGATION*

1. Select KEY 1 to 4 key source/key fill bus (key source/key fill link coupling function available)
2. Select AUX1 to 16 bus (AUX1 to 4 support the MIX transition function)
3. Select Display -DSP- bus (*1)*. This bus selects images to be displayed on Menu Panel (AV-HS60C3)
4. Select Utility bus*2 (*2: This bus selects sources to be inserted in border background or key edge)
5. Select MACRO bus*3 (*3: This bus plays back the macro memory)

**ME2 KEY bus selector buttons**

*KEY BUS DELEGATION*

1. Select KEY 1 to 4 key source/key fill bus (key source/key fill link coupling function available)
2. Select DSK 1 to 4 key source/key fill bus (can be assigned to PST bus or AUX bus buttons)
3. Select Utility bus*2 (*2: This bus selects sources to be inserted in border background or key edge)
4. Select MACRO bus*3 (*3: This bus plays back the macro memory)

**Crosspoint buttons**

1. Eight colors can be used for grouping to matched sources
2. Switching is possible among 24 crosspoints x four pages (96 total crosspoints)
3. Assign and play back the macro memory

**Source name display panel**

- Displays crosspoint numbers, source display names, and macro names. Bit map characters can be displayed for source names.

**KEY bus crosspoint buttons**

- Select source for the bus switched with KEY bus select buttons
- Can playback macro memory

**Positioner**

- Provides cursor operation for positioning

**Transition**

1. Background/key transition: operate fader, AUTO, or CUT transitions
2. Switch transition type: select from WIPE, MIX, or NAM transitions
3. Switch on/off the macro memory attachment function (macro attach): enable/disable the macro memory play back trigger assigned to PGM bus, PST bus, or AUX bus buttons
4. Fader play back of the event memory (EMEM link): performs fader operation of the event memory
5. ME change: switches the Control Panel ME1/ME2 columns

**Menu Panel**

AV-HS60C3G

- 10.1-type (256.5 mm) Menu Panel with touch screen allows quick and easy menu operation
- Display mode can be selected for either full screen or split screen (WFM/VECT).
- On-screen software keyboard/numerical keypad available.
- General-purpose DVI monitor can be used instead of Menu Panel

*When using software control panel AV-SF6000G, menu panel and DVI monitor do not display moving video, WFM, or VECT.

**Memory Card Slot**

- Settings and log data can be stored/accessed on an SD memory card or SDHC memory card
- *SD memory card and SDHC card are sold separately

**Multi-Selection Panel**

- Easy-to-use colored switches with tactile response
- Wipe patterns, Event memory, Shot memory, Video memory (CLIP/STILL) can be registered and recalled

**Key, DSK operation**

1. KEY/DISK transition: operates KEY 1 to 4, DSK 1 to 4 AUTO, CUT transition of each ME
2. Key preset: For KEY 1 to 4 and DSK 1 to 4 of each ME, register and access key preset
AV-HS6000 Block Diagram (Standard mode)

**Input Matrix**
- SDI 1-24
- SDI 25-32
- DVI 1-2
- Internal Source: CBGD 1-2, CBAR, Black
- Video Memory: volatile, Clip (V/K) 1-4, Still (V/K) 1-4

**Output Matrix**
- SDI 1-12
- SDI 13-16
- DISP

**Up Stream Key**
- ME1, ME2
- BKGD
- MIX
- WIPE (SQ, SL, 3D is not usable)
- DSK1-4
- AUX1-16
- MV1-4

**Menu Panel**
- Input and output is by odd-numbered terminals only.
- 1080i format signals where half of the lines are thinned out from OUT13 and OUT15 (1080p) format signals are output from OUT14 and OUT16 terminals.

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AV-HS6000 Block Diagram (3G mode)

**Input Matrix**
- SDI 1, 3 ... 23
- SDI 25, 29 (CC)
- SDI 27, 31 (CC/DL)
- Internal Source: CBGD 1-2, CBAR, Black
- Video Memory: volatile, Clip (V/K) 1-4, Still (V/K) 1-4

**Output Matrix**
- SDI 1, 3 ... 11
- SDI 13, 15
- SDI 14, 16
- DISP

**Up Stream Key**
- ME1
- BKGD
- MIX
- WIPE (SQ, SL, 3D is not usable)
- DSK1-2
- AUX1-8
- MV1-2

**Menu Panel**
- Input and output is by odd-numbered terminals only.
- 1080i format signals where half of the lines are thinned out from OUT13 and OUT15 (1080p) format signals are output from OUT14 and OUT16 terminals.

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AV-HS6000 Block Diagram (4K mode)

**Input Matrix**
- SDI 1, 3 ... 23
- SDI 25, 29 (CC)
- SDI 27, 31 (CC/DL)
- Internal Source: CBGD 1-2, CBAR, Black
- Video Memory: volatile, Clip (V/K) 1-4, Still (V/K) 1-4

**Output Matrix**
- SDI 1, 3 ... 11
- SDI 13, 15
- SDI 14, 16
- DISP

**Up Stream Key**
- ME1 Processing 2K
- BKGD
- MIX
- WIPE (SQ, SL, 3D is not usable)
- DSK1-2
- AUX1-4 Processing 2K
- MV1-2 Processing 2K

**Menu Panel**
- Input and output is by odd-numbered terminals only.
- 1080i format signals where half of the lines are thinned out from OUT13 and OUT15 (1080p) format signals are output from OUT14 and OUT16 terminals.
## Product Range

### AV-HS6000 Series Composition

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AV-HS60U2P/AV-HS60U2E</td>
<td>AV-HS60C2P/AV-HS60C2E</td>
<td></td>
<td>AV-HS60C4P/AV-HS60C4E</td>
<td></td>
<td></td>
<td>AV-HS60C3G</td>
<td></td>
<td>AV-HS60D1G</td>
<td></td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

## Dimensions: mm (inch)

### Control Panel AV-HS60C2P/AV-HS60C2E

![Control Panel AV-HS60C2P/AV-HS60C2E Diagram]

### Control Panel AV-HS60C4P/AV-HS60C4E

![Control Panel AV-HS60C4P/AV-HS60C4E Diagram]

### Menu Panel

![Menu Panel Diagram]

### Mainframe

![Mainframe Diagram]

As of December, 2016
Mainframe AV-HS60U2P/E

Specifications

Power Supply
AC100 V to 240 V, 50 Hz/60 Hz

Power Consumption
110 W

Ambient Operating Temperature
0°C to 40°C (32°F to 104°F)

Operating Ambient Humidity
10% to 90% (no condensation)

Storage Temperature
-20°C to 50°C (-4°F to 122°F)

Storage Humidity
10% to 90% (no condensation)

Weight
Approx. 13.5 kg (29.7 lbs) (excluding accessories)

Dimensions (WxHxD)
482 mm x 312 mm x 418 mm

(SD-1) to (SDI OUT 16) Terminals

Video Terminal

- SDI IN 1 to SDI IN 32 Terminals
  During Standard mode, 12 lines
  • Connectors: BNCx2
  • SDI IN 27, SDI IN 28, SDI IN 31, SDI IN 32 terminals are equipped with color correctors.

- HD-SDI
  SMPTE292M (BTA S-004) standard compliant
  • 0.8 V [p-p] ±10% (75 Ω)
  • Automatic equalizer 100 m (328 ft) (when 1.5 Gbps/SC-FB cable is used)

- HD-SDI
  SMPTE292M standard compliant
  • 0.8 V [p-p] ±10% (75 Ω)
  • Automatic equalizer 200 m (656 ft) (when SC-2V cable is used)

- During 3G mode, 16 lines
  • Connector: BNCx16 (only the odd numbered terminals can be used)
  • The even numbered terminals <SDI IN 2>, <SDI IN 4>...<SDI IN 32> cannot be used.
  • <SDI IN 25>, <SDI IN 27>, <SDI IN 29>, and <SDI IN 31> terminals are equipped with color correctors.

- During 4K mode
  4K signal x 8 lines
  • Connector: BNC x 32 (3G-SDI x 4 SDI2/SDI4)
  • Can use the 4K signal in S3G SDI format and S5I format

- 3G-SDI
  3G serial digital, SMPTE244M standard compliant
  • 0.8 V [p-p] ±10% (75 Ω)
  • 3G-SDI Level B Mapping

- DVI-D IN 1 to DVI-D IN 2 Terminals
  2 lines
  Digital R, B, G (1024×768), WXGA (1280×768), SXGA (1280×1024), WSXGA+ (1920×1200), WUXGA (2048×1200) Vertical frequency: 60 Hz
  Video format inputs: 1080i(59.94p, 60i, 50i), 1080p(59.94, 60i, 50i), 720p(50p, 50i, 60i)
  • Connectors: DVI-Dx2
  • The terminals do not support HDCP.
  • The DVI-I connector cable cannot be used.
  • For the DVI-I connector cable, use a cable with a length of up to 5 m (16.4 ft)
  • <DVI-IN 1> to <DVI-D IN 2> terminals cannot be used during 3G mode and 4K mode.

- SDI OUT 1 to SDI OUT 16 Terminals
  During Standard mode
  16 lines (2 distributed outputs per line)
  • Connectors: BNCx2
  • ME1PGM, ME1PVW, ME1CLN, ME1KEYPVW, ME2PGM, ME2PVW, ME2CLN, ME2KEYPVW, DSKPGM2, DSKPVW2, DSK1CLN, DSK2CLN, SEL KEYPVW, MV1 to MV2, and AUX1 to AUX8 can be assigned.
  • SDI OUT 1 and SDI OUT 16 terminals are equipped with color correctors. The same color corrector setting is also applied to <SDI OUT 14> and <SDI OUT 16> terminals.

- SDI OUT 1 to SDI OUT 16 Terminals
  During 4K mode
  4K signal output: 3 lines (two distributed outputs per line)
  2K signal output: 2 lines (two distributed outputs per line)
  • Connectors: BNCx4 (for 4K signal): BNC x 24 (terminal number 1 to 12)
  • Connectors: BNC x 4 (for 2K signal)
  • HD-SDI (for 2K signal): BNC x 4 (terminal number 14 and 16)
  • The 3G signal is output in S3G format.
  • The HD-SDI signal converted to the 1080i format is output from the <SDI OUT 14> and <SDI OUT 16> terminals. This signal is converted to the 1080p format by decimating the 1080ip signal output from the <SDI OUT 13> and <SDI OUT 15> terminals.
  • ME1PGM, ME1PVW, ME1CLN, ME1KEYPVW, ME2PGM, ME2PVW, ME2CLN, DSKPGM1, DSKPVW1, DSKPVW2, DSK1CLN, DSK2CLN, SEL KEYPVW, MV1 to MV2, and AUX1 to AUX8 can be assigned.

- Signal Formats
  SD 480i/540i, 576i/625i
  HD 1080i/59.94p, 1080i/50p, 720p/59.94p, 720p/50p
  3G 1080i/24PsF, 1080i/25PsF, 1080i/29.97PsF

- Signal Processing
  1:Ps:Ph 2:1.5:1 10 bit
  R=0: B=4.4:4.4 8 bit

- ME Number
  2 ME

Synchronous Terminal

- REF Terminal
  Connectors: BNC
  • Same field frequencies as those of the system formats supported in Genlock mode: Black burst or Tri-level Sync input signals (with loop-through)
  • If the loop-through output is not used, provide a 75 Ω termination.
  • When using the 1080/24PsF and 1080/23.98PsF formats, only Genlock mode supported.
  • In the 1080/23.98PsF format, black burst signals with 10 Field ID (SMPTE318M standard compliant) or Tri-level Sync signals supported
  • In the 1080/24PsF format, Tri-level Sync signals supported
  • In internal sync mode: Black burst output signal x2

- LTC IN Terminal
  This is the LTC (linear time code) input terminal.
  • Connectors: BNC
  • Impedance: 1 kΩ
  • Level: 1 to 2 V [p-p]

- Video Delay Time
  During Standard mode
  1 line (H)
  • When the frame synchronizer is set to “Off”, and the up-converter is set to “Off”
  2 field (V)
  • When the frame synchronizer is set to “On”, and the up-converter is set to “On”

  During 3G mode
  2 line (H)
  • When the frame synchronizer is set to “Off”
  2 frame (V)
  • When the frame synchronizer is set to “On”
  • Maximum of 2 frame delay is added to each when passed through PinP, DVE, MultiView, down-converter, or DVI-IN, a maximum delay of 1 frame is applied in each case.

Control Terminal

- LAN Terminal
  Compatible with 10Base-TX and AUTO-MDIx (for IP Control)
  • Connection cable: LAN cable (CAT5E), max. 100 m (328 ft), STP (Shielded Twisted Pair) recommended
  • Connector: RJ-45

- PANEL Terminal
  Compatible with 10Base-TX and AUTO-MDIx (for Control Panel AV-HS60CU2/AV-HS60CU4 connection)
  • Connection cable (supplied with AV-HS60CU2/AV-HS60CU4): LAN cable (CAT5E), straight cable, STP (Shielded Twisted Pair), 10 m (32.8 ft)
  • Connector: RJ-45

- COM1(M)/COM2(M)/COM3(M) Terminals
  RS-422 Control Terminal
  For master connection for controlling external devices
  • Connector: D-sub 9-pin (female) x 3, inch screw

- COM4(M) Terminal
  RS-422 Control Terminal
  For master/slave connection for controlling external devices
  • Connector: D-sub 9-pin (female), inch screw
  • Switch between master connection and slave connection via menu

- GPI IN Terminal
  GPI IN: 8 inputs, general-purpose, photocoupler sensing
  • ALARM OUT: 1 output, open collector output (negative logic)
  • Connectors: D-sub 9-pin (female), inch screw
  • Switch between master connection and slave connection via menu

- GPI OUT/GPI OUT 2 terminal
  GPI OUT: 48 outputs, selected from general purpose, tally
  • Open collector output
  • Connectors: D-sub 9-pin (male) x 2, inch screw

Accessories
  • AC cable AV-HS60U2P: 2 cables
  • AV-HS60U2E: 4 cables
  • Rack-mounted rear panel support bracket
  • Screws for the rack-mounted rear panel support bracket: 8 screws
  • Operating Guide for the AV-HS6000 series (Excerpted Version)
**Control Panel AV-HS60C2P/E**

- **Power Supply**: AC100 V to 240 V, 50 Hz/60 Hz (AV-HS60C2 supports redundant power supply)
- **Power Consumption**: 40 W
- **Operating Ambient Temperature**: 0°C to 40°C (32°F to 104°F)
- **Operating Ambient Humidity**: 10% to 90% (no condensation)
- **Storage Temperature**: 0°C to 40°C (32°F to 104°F)
- **Storage Humidity**: 10% to 90% (no condensation)
- **Weight**: Approx. 13.9 kg (30.6 lbs.)(excluding accessories)
- **Dimensions (WxHxD)**: (11-13/32 inches×6-31/32 inches×1-13/16 inches) (excluding protrusions)

**Control Terminal**

- **Mainframe Terminal**: Compatible with 100Base-TX and AUTO-MDIx (For Mainframe AV-HS60U2 connection)
- **Connection cable (supplied with AV-HS60C2):** LAN cable (CAT5E), Straight cable, STP (Shielded Twisted Pair), 10 m (32.8 ft)
  - **Connector**: RJ-45
- **Display Selector Switch**: Switch for selecting <MENU PANEL> terminal or <DVI-D> terminal
  - For DVI monitor menu operation
  - **Connector**: USB (type A, female)
  - **Cannot be used concurrently with the <MENU PANEL> terminal.
- **USB Terminal**: For DVI monitor menu operation
  - **Connector**: USB (type A, female)
  - **Cannot be used for the Menu Panel AV-HS60C2C.
- **Display Selector Switch**: For selecting <MENU PANEL> terminal or <DVI-D> terminal
- **COM1(M) Terminal**: RS-422 Control Terminal
  - **For master connection for controlling external devices**
  - **Connector**: D-sub 9-pin (male), inch screw
- **COM2(RS-232) Terminal**: RS-232 Control Terminal
  - **For external device control connections**
  - **Connector**: D-sub 9-pin (male), inch screw
- **GPI I/O Terminals**
  - **GPI IN**: 8 inputs, general-purpose, photo-coupler sensing
    - **ALARM OUT**: 1 output, open collector output (negative logic)
    - **GPI OUT**: 10 outputs, selected from general purpose, tally
      - **Open collector output**
      - **Connector**: D-sub 25-pin (female), inch screw
  - **ME Number**: 2 ME

**Accessories**

- **AC Cable**: 2 cables
- **LAN Cable**: 1 cable (used to connect with the Mainframe AV-HS60U2)
- **Switch blank cap (large)**: 16 caps
- **Switch blank cap (small)**: 12 caps
- **LAN Cable: 1 cable (used to connect with the Mainframe AV-HS60U2)**
- **AV-HS60D1 Installation Guide**

**Menu Panel AV-HS60C3G**

- **Power Supply**: DC7 V±5.4 A (Supports AV-HS60C2/AV-HS60C4 using the supplied cable)
- **Power Consumption**: 6.48 W
- **Operating Ambient Temperature**: 0°C to 40°C (32°F to 104°F)
- **Operating Ambient Humidity**: 10% to 90% (no condensation)
- **Storage Temperature**: 0°C to 40°C (32°F to 104°F)
- **Storage Humidity**: 10% to 90% (no condensation)
- **Weight**: Approx. 1.7 kg (3.7 lbs.) (excluding accessories)
- **Dimensions (WxHxD)**: 290 mm×177 mm×46.1 mm (11-13/32 inches×6-31/32 inches×1-13/16 inches) (excluding protrusions)

**Control Terminal**

- **Control Panel Terminal**: Used only for the Control Panel AV-HS60C2/AV-HS60C4
  - **Connectors**: DVI-D
  - **Because an independent signal format is used,DVI-D source cannot be displayed.**
  - **Cannot be used concurrently with a DVI-D monitor connected to the <DVI-D> terminal.**

**Accessories**

- **Connecting cable** (with ferrite core) for the Control Panel AV-HS60C2
  - **AV-HS60C4**: 1 cable
- **Bracket for mounting the Control Panel AV-HS60C2/AV-HS60C4**
- **Screws for the bracket for mounting the Control Panel AV-HS60C2**
  - **AV-HS60D4**: 8 screws

**Storage Module AV-HS60D1G**

- **Weight**: Approx. 7.0 kg (15.4 lbs.)
- **Dimensions (WxHxD)**: 29.85 mm×4.0 mm×50.8 mm (1-3/16 inches×5/32 inches×2 inches)

**Accessories**

- **AV-HS60D1 Installation Guide**

Due to device characteristics, the storage module AV-HS60D1G is subject to data damage and overwriting restrictions. Backup of important data is recommended.

*Specifications are subject to change without notice.*
Please refer to the latest Non-linear Compatibility Information, P2 Support, Download and Service Information, etc. at the following Panasonic web site.

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