2ME Live Switcher with wide system adaptability and intuitive operability provides high reliability.
Excellent Live Operability Meets Creativity

Excellent Value System Capability

32 SDI and 2 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.

Supported Formats

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDI</td>
<td>SDI/16</td>
</tr>
<tr>
<td>1080/59.94i, 50i</td>
<td>-</td>
</tr>
<tr>
<td>1080/59.94p, 50p</td>
<td>-</td>
</tr>
<tr>
<td>1080/24PsF</td>
<td>-</td>
</tr>
<tr>
<td>1080/23.98PsF</td>
<td>-</td>
</tr>
<tr>
<td>1080/25PsF, 29.97PsF</td>
<td>-</td>
</tr>
</tbody>
</table>

Input
- 34 inputs in total, with 32 SDI and 2 DVI inputs.
- All SDI inputs are provided with a 10 bit frame synchronizer.
- 8 inputs equipped with color correctors.
- 4 inputs equipped with up-converters. Signals can be delayed by up to 8 frames.

Output
- 16 SDI outputs with 2 outputs per channel.
- 4 outputs equipped with color correctors.
- 2 outputs equipped with downconverters.

* Some functions differ when 3G mode is selected. See page 9 for details.

Operability

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

Reliability

The power supply for the mainframe and control panel is redundant. Up to 3 panels can be operated through an IP connection to provide stable system operation.

* : Some functions differ when 3G mode is selected. See page 9 for details.

Built-in 4ch MultiViewer Function*

An independent 4ch MultiViewer output function is provided as standard, enabling displays of up to 16 split screens (a total of 9 patterns).

All of these functions are available without the need for a specialized device.
- MultiViewer can be selected from a total of 9 patterns, including 4 split, 5 split (2 patterns), 6 split (2 patterns), 9 split, 10 split (2 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.

* : Some functions differ when 3G mode is selected. See page 9 for details.

System Functionality*

32 SDI and 2 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.
**Effects to Enhance Your Creativity**

**Diverse DVE Transitions**

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.

  * Some functions differ when 3G mode is selected. See page 9 for details.

**Various Keyers**

Featuring a 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 USK for upstream key (USK).

- Chroma key: By implementing the Primatte® algorithm, real time and high quality key composition is 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. 4 settings for each channel of key and 4 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.

**Key Types**

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

**Available Functions**

<table>
<thead>
<tr>
<th>(KEY1)</th>
<th>(KEY2)</th>
<th>(KEY3)</th>
<th>(KEY4)</th>
<th>DSK1-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition</td>
<td>CUSTOM WIPES</td>
<td>CUSTOM WIPES</td>
<td>CUSTOM WIPES</td>
<td>CUT/WIX</td>
</tr>
<tr>
<td>Chroma key</td>
<td>Standard</td>
<td>optional</td>
<td>optional</td>
<td>optional</td>
</tr>
<tr>
<td>PinP*2</td>
<td>3D effect</td>
<td>3D effect</td>
<td>2D effect</td>
<td>2D effect</td>
</tr>
</tbody>
</table>

**Memory Functions**

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 PIS.
- **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.

**Flexible Scalability and Secure Operability**

**System Scalability**

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

**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.

**P2_Control**

This software allows control and connection 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 VS-R45 serial communications with UNO protocol Ver. 3.1 compliant devices.

**Backup System for Peace of Mind**

- A redundant power supply is provided for the mainframe and control panel.
- Operation of up to 3 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.
Operability Enhanced with Ergonomically Designed Panels

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

Control Panel
- AV-HS60C (single power supply model)
- AV-HS60C (dual power supply model)

Menu Panel
- 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

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

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

Control Panel
- AV-HS60C (single power supply model)
- AV-HS60C (dual power supply model)

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

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

Positioner
- Provides cursor operation for positioning WIPE / PinP, size adjustment, chroma key

Transition
- Background/key transition: operate fader, AUTO, or CUT transitions
- Select transition type: select from WIPE, MIX, or NAM transitions
- 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
- Fader play back of the event memory (EMEM link): performs fader operation of the event memory
- ME change: switches the Control Panel ME1/ME2 columns

Key, DSK operation
- KEY/DSK transition: operates KEY 1 to 4, DSK 1 to 4 AUTO, CUT transition of each ME
- Key preset: For KEY 1 to 4 and DSK 1 to 4 of each ME, register and access key preset

Wipe Pattern
- Shot memory
- Video memory (STILL)
- Event memory
- Video memory (CLIP)

Top menu
- buttons
- Split-screen buttons
- Rotary encoders

Menu Panel
- VECT
- WFM
-...
Operability Enhanced with Ergonomically Designed Panels

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

**Control Panel**
- AV-HS60C1 (single power supply model)
- AV-HS60C2 (redundant power supply model)

**Menu Panel**
- 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.

**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.

**Source name display panel**
- Displays crosspoint numbers, source display names, and macro names. Bitmap characters can be displayed for source names.

**Crosspoint buttons**
- 8 colors can be used for grouping to match sources.
- Switching is possible among 24 crosspoints x 4 pages (96 total crosspoints).
- Assign and play back the macro memory.

**ME2 KEY bus selector buttons**
- Switches bus column and functions operated by ME2 KEY bus.
- 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 PGM1/PGM2).
- 3. Select Utility bus*2 (*2: This bus selects sources to be inserted in the border background or key edge).
- 4. Select MACRO bus (*3, *3: This bus plays back the macro memory).

**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.

**Positioner**
- Provides cursor operation for positioning WIPE/PinP, size adjustment, chroma key.

**Transition**
- Background/key transition: operate fader, AUTO, or CUT transitions.
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**Key, DSK operation**
- KEY/DSK transition: operates KEY 1 to 4, DSK 1 to 4 AUTO, CUT transition of each ME.
- Key preset: For KEY 1 to 4 and DSK 1 to 4 of each ME, register and access key preset.

**Wipe Pattern**
- Shot memory Video memory (STILL) Event memory Video memory (CLIP)
### 3G format compatibility

AV-HS6000 can be used as a 1.5 ME switcher compatible with 3G video formats when it is set to 3G mode.

#### Functions supported by format

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<thead>
<tr>
<th>Signal formats</th>
<th>Standard mode</th>
<th>3G mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDI 1-24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDI 25-32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDI 1-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDI 13-16, DVI 1,2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Input function

- **Number of SDI inputs**: 16
- **Number of DVI inputs**: 2
- **Number of up-converter channel**: 4
- **Down by one**: Not possible
- **Number of delay function channel**: 4
- **Number of color corrector channel**: 4
- **Number of upstream keyer channel**: 4
- **Number of SDI output**: 8
- **Number of color corrector channel**: 4

#### Output function

- **Number of utility bus**: 2
- **Number of DVE channel**: 4
- **Number of utility bus**: 2
- **Number of DVE channel**: 4

#### DSK function

**Number of keyers**: 4
**Number of utility bus**: 2
**Number of DSK keyers**: 2
**Number of still image (Still) memory channel**: 2
**Number of moving image (Clip) memory function**: 2

#### Moving image (Clip) memory function

- **Recording time per channel (standard image quality)**: Approximately 60 seconds
- **Recording time per channel (high image quality)**: Approximately 30 seconds

#### Number of MultiViewer

- **AV-HS6000 (Standard mode)**: 4
- **AV-HS6000 (3G mode)**: 4

#### Number of AUX

- **AV-HS6000 (Standard mode)**: 8
- **AV-HS6000 (3G mode)**: 8

### AV-HS6000 Block Diagram (Standard mode)

![AV-HS6000 Block Diagram (Standard mode)](image)

- **SDI 1-24**
- **SDI 25-22**
- **SDI 1-2**
- **DVI 1,2**
- **Internal Source (CBGD 1-2, CBAR Back)**
- **Video Memory (still): AUX 1-8, Still (V/K) 1-4**
- **Video Memory (moving): AUX 1-8, Clip (V/K) 1-4**

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* Input and output is by odd-numbered terminals only.

* 3G format signals where half of the lines are thinned out from 1080p format signals are output from OUT14 and OUT16 terminals.
## Specifications

### Mainframe: AV-HS60U1P/E, AV-HS60U2P/E

- **Power Supply**: AC100 V to 240 V, 50 Hz to 60 Hz (HS60U1P/E: swaps redundant power supply)
- **Power Consumption**: 150 W
- **Network Operating 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)
- **Dimensions (WxHxD)**: 482 mm x 298 mm x 80 mm

### Video Terminal

#### SDI OUT 1 to SDI OUT 16

- **Connectors**: BNC (32 lines)
- **During Standard mode**: 3G-SDI 3G serial digital, SMPTE424M standard compliant
- **During 3G mode**: HD-SDI SMPTE292M (BTA S-004) standard compliant

- **Output level**: 0.8 V [p-p] ±10%
- **Impedance**: 1 kΩ

- **(SMPTE318M standard compliant) or Tri-level Sync signals supported
- **In the 1080/23.98PsF format, black burst signals with 10 Field ID after each frame are added up to 5 fields.**

### Control Terminal

#### GPI IN Terminal

- **GPI IN**: 18 inputs, general-purpose, photocoupler sensing

#### COM1 (RS-232) Terminal

- **RS-232 Control Terminal**: Used only for the Control Panel AV-HS60C1P/E, AV-HS60C2P/E
  - **Connectors**: D-sub 9-pin (female), inch screw
  - **Function**: For control character output

#### COM2 (RS-422) Terminal

- **RS-422 Control Terminal**: For external device control connections
  - **Connectors**: D-sub 25-pin (female), inch screw

#### GPI OUT: 10 outputs, selected from general purpose, tally

#### ALARM OUT: 1 output, open collector output (negative logic)

#### DVI-D Terminal

- **Used for displaying menus to the DVI monitor
  - **Connectors**: DVI-D
  - **Function**: For master connection for controlling external devices

### Storage Module: AV-HS60D1G

- **Weight**: Approx. 7.0 g (0.3 ozs.)

- **(Supplied from AV-HS60C1/AV-HS60C2 using the supplied cable)

### Control Panel: AV-HS60C1P/E, AV-HS60C2P/E

- **Power Supply**: DC12 V (+5 V, -12 V) 4 A
- **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)
- **Dimensions (WxHxD)**: 296 mm x 13.2 mm x 150 mm

### Accessories

- **Connecting cable (with ferrite core)** for the Control Panel AV-HS60C1P/E, AV-HS60C2P/E
- **For external device control connections
- **Rack-mounted rear panel support bracket**
- **Maintenance guide**

### Control Panel: AV-HS60D1G

- **Weight**: Approx. 1.3 g (0.003 ozs.)

- **(When 5C-2V cable is used)

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Power Supply</td>
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<td>Power Consumption</td>
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### Video Terminal

<table>
<thead>
<tr>
<th>Output Format</th>
<th>Connector</th>
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<tbody>
<tr>
<td>SDI OUT 1 to SDI OUT 16</td>
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| Output Level | 0.8 V [p-p] ±10% |
| Impedance | 1 kΩ |

### Control Terminal

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<th>Terminal</th>
<th>Function</th>
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<tbody>
<tr>
<td>GPI IN</td>
<td>18 inputs, general-purpose, photocoupler sensing</td>
</tr>
<tr>
<td>COM1</td>
<td>RS-232 Control Terminal, For control character output</td>
</tr>
<tr>
<td>COM2</td>
<td>RS-422 Control Terminal, For external device control connections</td>
</tr>
<tr>
<td>GPI OUT</td>
<td>10 outputs, general-purpose, tally</td>
</tr>
<tr>
<td>ALARM OUT</td>
<td>1 output, open collector output (negative logic)</td>
</tr>
<tr>
<td>DVI-D</td>
<td>For displaying menus to the DVI monitor</td>
</tr>
</tbody>
</table>

### Storage Module: AV-HS60D1G

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<td>For the Control Panel AV-HS60C1P/E, AV-HS60C2P/E</td>
</tr>
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### Control Panel: AV-HS60C1P/E, AV-HS60C2P/E

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<td></td>
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