

Key	Type Linear ▼	Lum Key Chroma Off ▼	Fill Bus ▼	PVW Auto ▼
Adjust	Clip 0.0 _____	Gain 100.0 _____	Density 100.0 _____	Invert Off <input type="checkbox"/> On <input type="checkbox"/>
Fill Matte	Hue 0.0 _____	Sat 0.0 _____	Lum 100.0 _____	Color White ▼
Edge1	Type Off ▼	Width 2 ▼	Direction 0 ▼	Density 100% ▼
Edge2	Edge Fill Color ▼			
Edge Color	Hue 0.0 _____	Sat 0.0 _____	Lum 0.0 _____	Color Black ▼
Transition	Keyout Pattern Normal ▼			
WIPE	X-Pos 0.00	Y-Pos 0.00		Copy To BKGD

## Live Switcher

# AV-HS410

Live switcher with substantially improved user interface and excellent expandability

### Key Features

High-End Performance and Functions

Expandable 1ME Switcher

HD/SD Multi-Format with 9 Inputs Standard, 13 Inputs Maximum

New Memory Functions and Versatile, High-Quality Effects

177.8 mm (7 inches) color LCD monitor for easy-to-see setting screen



## AV-HS410

<https://eu.connect.panasonic.com/lu/en/products/broadcast-proav/av-hs410>

### General

**Power Supply** AC 100 V to 240 V, 50/60 Hz

**Power Consumption** 88 W

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

**Humidity** 10 % to 90 % (no condensation)

**Dimensions (W x H x D)** 440 mm x 158 mm x 361 mm

(17-5/16 inches x 6-7/32 inches x 14-7/32 inches)

[excluding protrusions]

**Mass** Approx. 6.2 kg (13.669 lb)

[excluding accessory parts when no options have been installed]

Approx. 6.6 kg (14.550 lb)

[excluding accessory parts when all the possible options have been installed]

### Video Terminal

**Video Inputs (13 Signal Lines, Maximum)** Standard SDI: 8 signal lines BNC x 8 (SDI INPUT 1 to SDI INPUT 8)

• The up-converter function can be used for the SDI INPUT 5 to SDI INPUT 8 connectors.

Standard DVI-D: 1 signal line DVI-D x 1

Optional: Up to 4 additional signal lines (IN A1, IN A2, IN B1, IN B2) (Up to two option boards can be installed in the two input/output slots.)

**Video Outputs (10 Signal Lines, Maximum)**

Standard SDI: 5 signal lines BNC x 6 (SDI OUTPUT 1 to SDI OUTPUT 5 x 1 line each,

2 distributed outputs for SDI OUTPUT 1 only)

Standard DVI-D: 1 signal line DVI-D x 1

Optional: Up to 4 additional lines (OUT A1, OUT A2, OUT B1, OUT B2) (Up to two option boards can be installed in the two input/output slots.)

• PGM, PVW, AUX1 to AUX4, MV (MULTI\_VIEW), CLN, KEYOUT and MEM PVW can be assigned to SDI OUTPUT 1 to SDI OUTPUT 5, DVI-D, OUT, OUT A1, OUT A2, OUT B1 and OUT B2.

• CLN can be pre-selected from KEY or DSK using a menu.

**Signal Formats**

SD: 480/59.94i, 576/50i

HD: 1080/59.94i, 1080/50i, 720/59.94p, 720/50p, 1080/24PsF\*, 1080/23.98PsF\*

\*The following option boards are not supported:

AV-HS04M1, AV-HS04M2, AV-HS04M3, AV-HS04M4, AV-HS04M5, AV-HS04M6, AV-HS04M7

Y:Pb:Pr 4: 2: 2, 10 bit (8 bits for video memory)

**Signal Processing**

RGB 4:4:4, 8 bit

**ME Number**

1 ME

**SDI Inputs**

HD-SDI: HD Serial digital (SMPTE 292M)

SD-SDI: SD Serial digital (SMPTE 259M)

8 signal lines, standard: IN1 to IN8

12 signal lines, maximum: IN A1, IN A2, IN B1, IN B2

(When two AV-HS04M1 boards are used; with active through)

HD: SMPTE 292M (BTA S-004B) standard complied with

• 0.8 V [p-p] ±10 % (75 Ω)

• Automatic equalizer More than 100 m (328 ft) (when 1.5 Gbps/5C-FB cable is used)

SD: SMPTE 259M standard complied with

• 0.8 V [p-p] ±10 % (75 Ω)

• Automatic equalizer 200 m (656 ft) (when 5C-2V cable is used)

<b>SDI Outputs</b>	HD-SDI: HD Serial digital (SMPTE 292M)
	SD-SDI: SD Serial digital (SMPTE 259M)
	<p>5 signal lines, standard: OUT1 x 2; OUT2 to OUT5 x 1 each</p> <p>9 signal lines, maximum: OUT A1, OUT A2, OUT B1, OUT B2 (When two AV-HS04M7 boards are used)</p> <p>HD: SMPTE 292M (BTA S-004B) standard complied with</p> <ul style="list-style-type: none"> <li>• Output level: 0.8 V [p-p]±10 %</li> <li>• Rise time: HD: Less than 270 ps</li> <li>• Fall time: HD: Less than 270 ps</li> <li>• Difference between rise time and fall time: HD: Less than 100 ps</li> <li>• Alignment jitter: HD: Less than 0.2 UI (130 ps)</li> <li>• Timing jitter: HD: Less than 1.0 UI</li> <li>• Eye aperture ratio: More than 90 %</li> <li>• DC offset: 0 ±0.5 V</li> </ul> <p>SD: SMPTE 259M standard complied with</p> <ul style="list-style-type: none"> <li>• Output level: 0.8 V [p-p] ±10 %</li> <li>• Rise time: Less than 1.5 ns</li> <li>• Fall time: Less than 1.5 ns</li> <li>• Difference between rise time and fall time: Less than 0.5 ns</li> <li>• Jitter: Less than 0.2 UI</li> </ul>
<b>Composite Input (Option Board)</b>	Analog composite signal (NTSC/PAL) (1.0 V [p-p], 75 Ω)
	4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M6 boards are used; with loop-through)
<b>Analog Input (Option Board)</b>	SD/HD analog component Y/Pb/Pr (1.0 V [p-p], 75 Ω)
	4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M2 boards are used)
<b>Analog Output (Option Board)</b>	SD/HD analog component Y/Pb/Pr (1.0 V [p-p], 75 Ω)
	4 signal lines, maximum: OUT A1, OUT A2, OUT B1, OUT B2 (When two AV-HS04M4 boards are used)
	• 2 signal lines (OUT A1, OUT B1) when two AV-HS04M5 boards are used.
<b>DVI-I Input (Option Board)</b>	Analog/digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024)
	Vertical frequency: 60 Hz
	• This connector does not support the HDCP technologies.
	4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M3 boards are used)
<b>DVI-I Output (Option Board)</b>	Analog/digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+* (1680 x 1050), UXGA* (1600 x 1200), WUXGA* (1920 x 1200)
	*Selectable only when digital signals are output.
	Vertical frequency: 60 Hz
	• This connector does not support the HDCP technologies.
	2 signal lines, maximum: OUT A2, OUT B2 (When two AV-HS04M5 boards are used)
<b>DVI-D Input (Option Board)</b>	Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200)
	Vertical frequency: 60 Hz
	Digital RGB: 1080/50p, 1080/59.94p
	• Analog input signals are not supported.
	• This connector does not support the HDCP technologies.
	4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M8 boards are used)
	• The DVI-I connector cable cannot be used.
	• For the DVI-D connector cable, use a cable with a length of up to 5 m (16.4 ft).

<b>DVI-D Input/Output</b>	<p>Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200)</p> <p>Vertical frequency: 60 Hz</p> <p>Video format inputs:</p> <p>Digital RGB: 1080/50p, 1080/59.94p</p> <p>Vertical frequency: Same as system formats</p> <p>Video format outputs:</p> <p>Digital RGB: 1080/50p, 1080/59.94p, 1080/50i, 1080/59.94i, 720/50p, 720/59.94p</p> <ul style="list-style-type: none"> <li>• The input and output of analog signals are not supported.</li> <li>• Output support the high-resolution multi view mode:</li> </ul> <p>Signals are output with a high resolution even when SD is set as the system mode. (When high-resolution multi view mode has been enabled, MV is selected as the DVI-D OUT output, and it is not possible to select MV with SDI OUT.)</p> <ul style="list-style-type: none"> <li>• This connector does not support the HDCP technologies.</li> </ul> <p>Standard input/output: 1 line each (DVI-D IN, DVI-D OUT)</p> <ul style="list-style-type: none"> <li>• The DVI-I connector cable cannot be used.</li> <li>• For the DVI-D connector cable, use a cable with a length of up to 5 m (16.4 ft).</li> </ul>
<b>Synchronous Terminal Reference Input/Output</b>	<p>In gen-lock mode: Black burst or Tri-level Sync input signals (with loop-through)</p> <p>In internal sync mode: Black burst output signals x 2</p> <ul style="list-style-type: none"> <li>• Same field frequencies as those of the system formats supported.</li> <li>• With the 1080/24PsF format, only gen-lock mode supported.</li> <li>• With the 1080/23.98PsF format, black burst with 10F-ID (SMPTE318M standard met) or TRI signals supported.</li> </ul>
<b>Video Delay Time</b>	<p>1 line (H)</p> <p>When the frame synchronizer setting is "Off" and the up-converter setting is "Off".</p> <p>1 frame (F)</p> <p>When the frame synchronizer setting is "On" or the up-converter setting is "On".</p> <ul style="list-style-type: none"> <li>• When the signals have passed through PinP, DVE, multi view, down-converter, DVI-IN or DVI-OUT, a maximum delay of 1 frame is applied in each case.</li> </ul>
<b>Control Terminal</b>	
<b>LAN</b>	<p>RJ-45 x 1</p> <p>10BASE-T/100BASE-TX (For IP control)</p> <p>Connecting cable:</p> <p>LAN cable (category 5 or above), max. 100 m (328 ft), STP (Shielded Twisted Pair) cable recommended</p> <ul style="list-style-type: none"> <li>• When connecting to a hub (switching hub), use a straight cable. Use a crossover cable when connecting the unit and computer on a 1:1 basis without going through a hub.</li> <li>• Use with the same segment is recommended for the equipment which is connected to the unit. If the unit is connected to equipment whose segments are different, events dependent upon the settings inherent to the network equipment, for instance, may occur so thoroughly check the connections with the equipment to which the unit will be connected prior to the start of operation.</li> </ul>
<b>Editor</b>	<p>D-sub, 9-pin, female</p> <p>Used to control an editor</p> <p>RS-422 control connector</p> <p>Communication format</p> <p>Baud rate: 38400 bps</p> <p>Character length: 8 bit</p> <p>Parity: Odd</p> <p>Stop bit: 1 bit</p> <p>Flow control: None</p>

<b>COM</b>	<p>D-sub, 9-pin, female</p> <p>Used to control an external device</p> <p>RS-422 control connector</p> <p>Communication format (selected using a menu)</p> <ul style="list-style-type: none"> <li>• Mode: 1 (default setting)</li> </ul> <p>Baud rate: 9600 bps</p> <p>Character length: 8 bit</p> <p>Parity: None</p> <p>Stop bit: 1 bit</p> <p>Flow control: None</p> <ul style="list-style-type: none"> <li>• Mode: 2</li> </ul> <p>Baud rate: 38400 bps</p> <p>Character length: 8 bit</p> <p>Parity: Odd</p> <p>Stop bit: 1 bit</p> <p>Flow control: None</p> <ul style="list-style-type: none"> <li>• Mode: 3</li> </ul> <p>Baud rate: 38400 bps</p> <p>Character length: 8 bit</p> <p>Parity: None</p> <p>Stop bit: 1 bit</p> <p>Flow control: None</p>
<b>Tally/GPI 1, Tally/GPI 2</b>	<p>D-sub, 15-pin, female ( x 2)</p> <p>Input: 8 inputs, general-purpose, photocoupler sensing</p> <p>Output: 19 outputs; selected from R/G tally, general-purpose</p> <p>Alarm: 1 output, open collector output (negative logic)</p>
<b>Other</b>	<p>BOOT switch [SV/NM (service/normal)] (for maintenance purposes)</p> <p>Normally, this switch is used as the "NM" position.</p>
<b>Accessories</b>	<p>CD-ROM (Operating Instructions , Operating Instructions , User Guide "AV-HS410 Image Transmission Software", DVI input level adjustment file (BW.bmp), Image Transmission Software (ImageTrans.exe)), Power cable (2 m [6.6 ft])</p>