Specifications

		AV-HS450	AV-HS410	AW-HS50	AG-HMX100
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	DC 12 V ±10 % (AC adapter provided), 2.0 A	AC 100 V to 240 V, 50 Hz/60 Hz, 60 W
Operating Temperature		0 ℃ to 40 ℃ (32 °F to 104 °F)	0 ℃ to 40 ℃ (32 °F to 104 °F)	0 ℃ to 40℃ (32 °F to 104 °F)	5 ℃ to 40 ℃ (41 °F to 104 °F)
Operating Humidity		10 % to 90 % (no condensation)	10 % to 90 % (no condensation)	10 % to 90 % (no condensation)	10 % to 80 % (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)	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)
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)	Approx. 1.4 kg (3.1 lb) (without options)	Approx. 7.9 kg (17.4 lbs) (without options)
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	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.
Video Processing		Y:Cʙ:Cʀ 4:2:2, 10 bit (8 bit for FMEM) /RGB 4:4:4, 8 bit	Y:Cʙ:Cʀ 4:2:2, 10 bit (8 bit for video memory) /RGB 4:4:4, 8 bit	Y:Cʙ:Cʀ 4:2:2, 10 bit (8 bit for FMEM)/ RGB 4:4:4, 8 bit	Y:Pʙ:Pʀ:Key 4:2:2:4, 12 bit (Internal process)
ME		1ME	1ME	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)	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
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)	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)
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 formats, 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.	—	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/Output		—	—	—	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
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	—	D-sub 9 pin x 1, RS-232C
	TALLY/GPI	Mainframe: D-sub 50 pin x 1 (8 IN, 31 OUT and 1 ALARM 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)	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
	LAN	Mainframe, RJ45 x 1, 10 BASE-T/100 BASE-TX	RJ45, 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)	CD-ROM (Operating instructions / Image transmission software), AC adapter	CD-ROM (Operating instructions), Power code (3 core cable)
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	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
	Transition Type	Cut, Mix, Wipe (including DVE)	Cut, Mix, Wipe (including DVE)	Cut, Mix, Wipe	Cut, Mix, Wipe (including DVE)
	Image	Image effect: PGM/A, PST/B BUS Effect: Mosaic, Defocus, Mono, Paint	—	—	Image effect: PGM/A, PST/B BUS Effect: Mosaic, Defocus, Mono, Time effects, Decay, Paint, Nega, Mirror
KEYER	Number of Keys	1	1	1	1
	Key Type	Linear key, Luminance key, Chroma key, Full key	Linear key, Luminance key, Chroma key, Full key*8	Linear key, Luminance key, Chroma key*8	Linear key, Luminance key, Chroma key, Full key
	Transition Type	Cut, Mix, Wipe (including DVE)	Cut, Mix, Wipe (including DVE)	Mix	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	—	Wipe x 6
DSK	Number of Keys	2	1	—	1
	Key Type	Linear key, Luminance key	Linear key, Luminance key	—	Luminance key
	Transition Type	Mix	Mix	—	Mix
P in P	Number of PinP	2	2	1	1
	Transition Type	Mix	Mix	Mix	Mix
AUX BUS		AUX Bus 1 to 4*4	AUX Bus 1 to 4*4	AUX BUS1	—
Input Function	Frame Synchronizer	IN 1 to 16*5	IN 1 to 9 (IN 9 is always-on)*5	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
	Freeze	IN 1 to 16*5	IN 1 to 9*5	SDI-IN1 to 4, DVI-IN	SDI-IN 1 to 4, DVI-I IN, HDMI 1 to 2/Composite video 1 to 2
	Up-Converter	IN13 to 16*5	IN5 to 8*5	SDI-IN3, 4	—
	Color Corrector	IN9 to 16	—	—	—
	Video Processing	—	IN1 to 8*5	SDI-IN 1 to 4	Every A/B bus
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)	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)
	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)	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)
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.)	—	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
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	PinP Preset, Effect dissolve function	Event memory (100 patterns), Key learning (20 patterns)

*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.

*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.