Panasonic
ideas for life

AG-HMX100
Digital AV Mixer

3D PROFESSIONAL

HD/SD and 3D Compatible Digital AV Mixer

INTEGRATED DIGITAL A/V MIXER

pact, All-in-One, Easy-to-Use, Low-Cost System.
/SD Multi-Format Use, and 3D Image Switching.

The AG-HMX100 is a compact, all-in-one, digital AV mixer with a built-in HD/SD multi-format*[1] video switcher, audio mixer, frame synchronizer and digital effector. It serves as an audio/video switcher, adds a variety of effects, and transmits signals - all by itself.

A Multi-View function displays all source images on a single monitor, while keeping the system configuration simple and clean. Users benefit from easy delivery, set-up and removal at event sites, as well as low-cost operation. Wide-ranging SDI (HD/SD), PC (DVI-I) and HDMI (HD only) inputs, versatile digital effects, and comfortable Matrix Menu operation join with advanced functions, such as control of Panasonic professional projectors,*[2] to configure a low-cost system that supports a wide variety of applications, from live relays and broadcasting to production. The AG-HMX100 can also operate as a 3D video switcher with dual SDI inputs.*[3] By combining it with several 3D cameras and 3D projectors, it can serve as a 3D live switching system for low-cost, easy-to-use, 3D image broadcasting and production systems.

System Example (2D)

picture simulated
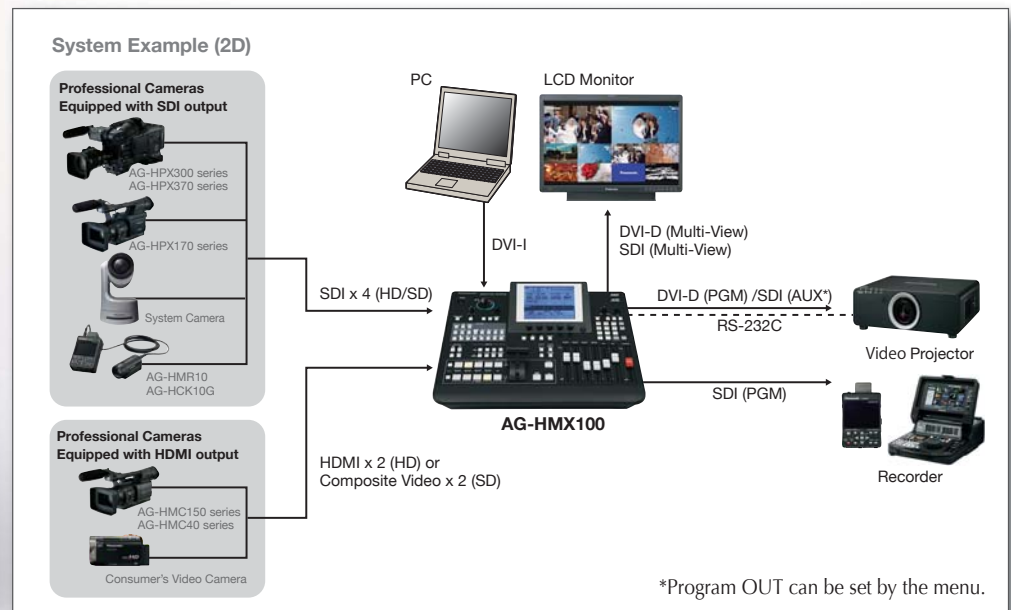
- **HD/SD multi video format compatibility.***[1]

- **Digital interfaces of SDI (HD/SD) input/output and HDMI (HD) input.**

- **DVI-I input accommodates both motion and still images from a PC.**

- **Multi-View function displays Preview (PVW), Program (PGM), and all source images on a single monitor.**

- **A waveform monitor (WFM) is built-in, and source names and audio levels are superimposed on the monitor.**

- **Remote control of power on/off and shutter on/off for the Panasonic projectors***[2]**.**

- **Supports switching of 3D images, using dual SDI inputs.***[3]

---

*1: Mixed operation of different video formats (1080i/720p, HD/SD and 50Hz/59.94Hz) is not possible.
*2: Limited to models with an RS-232C interface.   *3: Effects are not supported.

HD/SD Multi-Format
High-Quality Image Processing

The AG-HMX100 supports 1080i/720p HD and SD images (see table below). A wipe pattern lets you switch between 16:9 and 4:3 aspect ratios. Full 4:2:2:4 digital component 12bit internal processing ensures broadcast-grade images.

Supported Video Format

Video Input	Video Format	
HD (SDI/HDMI)	1080/59.94i	
	1080/50i	
	720/59.94p	
	720/50p	
SD (SDI/VIDEO)	480/59.94i	
	576/50i	
PC (DVI-I)	1080/60p	1920 x 1080 (60Hz)
	1080/50p	1920 x 1080 (50Hz)
	SXGA	1280 x 1024 (60Hz)
	WXGA	1280 x 768 (60Hz)
	XGA	1024 x 768 (60Hz)

* Mixed operation of different video formats (1080i/720p, HD/SD and 50Hz/59.94Hz) is not possible. PC (DVI-I) can be input to any system format, but it would be resized to match and displayed.

7 Video Inputs with PC Image Support and 6 Video Outputs

• **7 video inputs:** SDI (HD/SD switchable) x 4 channels, HDMI (HD only/HDCP and VIERA Link not supported) or video (composite) x 2 channels, and a DVI-I input capable of inputting motion or still images from a PC. This provides up to 7 channels of video input.
• **6 video outputs:** 4 SDI outputs (Program (PGM), Preview (PVW), Multipurpose (AUX), and Multi-View), and 2 DVI-D outputs (Program (PGM) and Multi-View).

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 8 audio inputs from 4 SDI embedded audio inputs (L/R), 2 HDMI embedded audio inputs (L/R), and 4 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 terminal (L/R) analog outputs.
• **Audio effects:** Pan, 3 band equalizer, voice changer (pitch/level), and mute.
• **Level meter:** Displayed as a Multi-View overlay on the LCD screen.

New Multi-View Function, Built-in Waveform Monitor

The Multi-View function and Multi-View output terminal (SDI/DVI-D) provide a split display of the PVW, PGM, and all source images on a single screen. Displays of each of the input signal names and audio level meters can also be overlaid. The built-in Waveform Monitor (WFM) function displays the waveforms of video Y signals, allowing multi-channel systems to be operated with a single monitor.
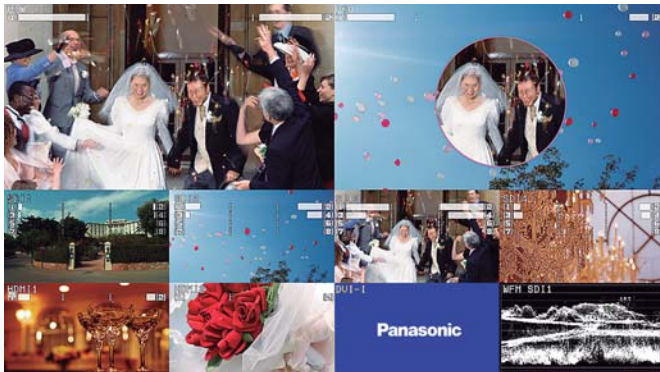

Multi-View Screen (simulated image)

Matrix Menu and Rotary Switch

The large LCD panel allows easy monitoring of system status.
The 5 column, 3 row matrix menu automatically displays setting items according to the operating status, so the relevant settings can be quickly checked or changed. Settings that have a large number of selections can also be quickly and intuitively displayed and set by using the rotary switch. This provides easy, comfortable settings control for the AG-HMX100's many diverse functions.

Projector Control Function

The power switch and shutter for Panasonic professional projectors can be turned on and off by RS-232C remote control. This allows convenient projector use during live events.

AG-HMX100 — Video — DVI-D or SDI — Control — RS-232C — Projector
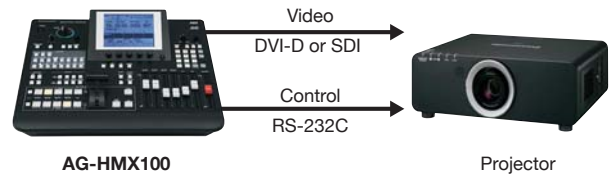
Functions for More Comfortable Operation

• **Pattern preset:** Up to 7 transition patterns and 6 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.
• **Numerical keypad:** For setting numbers, such as pattern numbers.

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:** Select from PGM/PVW/Multiview 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 SD-Type AG-MX70 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.

AG-HMX100 Rear

Professional HD 3D Production System Functions

3D PROFESSIONAL

A Professional HD 3D Production System

The AG-HMX100 Digital AV Mixer fully supports the Panasonic shift toward 3D world. Combined with the Panasonic AG-3DA1 Integrated Twin-Lens 3D Camera Recorder, and the 3D-compatible BT-3DL2550 Professional LCD Video Monitor, which lets you view 3D footage on-site, this professional HD 3D production system makes it easy to produce and transmit high-quality 3D images.
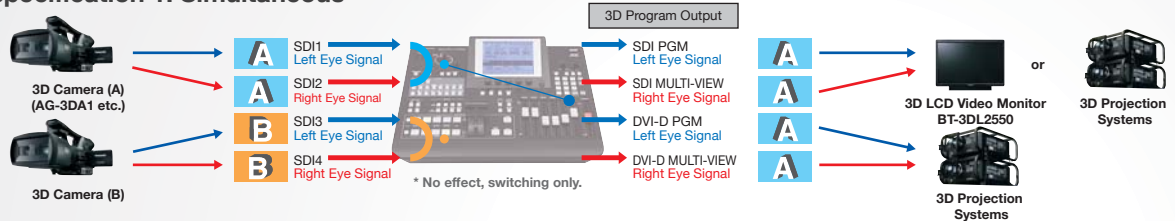
Supports Switched Transmission of 3D Camera Images

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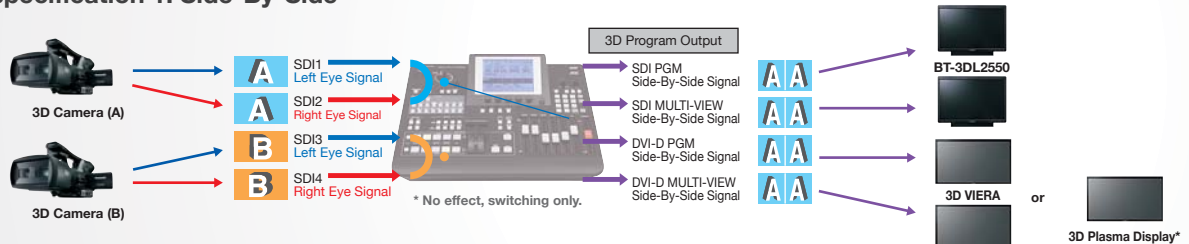
*Only the switcher function operates. Effects such as ME cannot be used. Other functions, such as Multi-View, WFM, and title mix, are not supported. For details, visit the 3D special site. (http://pro-av.panasonic.net/en/3d/)

Switching specifications in 3D mode

specification 1: Simultaneous

3D Camera (A) (AG-3DA1 etc.)
3D Camera (B)

A — SDI1 Left Eye Signal
A — SDI2 Right Eye Signal
B — SDI3 Left Eye Signal
B — SDI4 Right Eye Signal

* No effect, switching only.

3D Program Output
SDI PGM Left Eye Signal
SDI MULTI-VIEW Right Eye Signal
DVI-D PGM Left Eye Signal
DVI-D MULTI-VIEW Right Eye Signal

3D LCD Video Monitor BT-3DL2550 or 3D Projection Systems
3D Projection Systems

specification 1: Side-By-Side

3D Camera (A)
3D Camera (B)

A — SDI1 Left Eye Signal
A — SDI2 Right Eye Signal
B — SDI3 Left Eye Signal
B — SDI4 Right Eye Signal

* No effect, switching only.

3D Program Output
SDI PGM Side-By-Side Signal
SDI MULTI-VIEW Side-By-Side Signal
DVI-D PGM Side-By-Side Signal
DVI-D MULTI-VIEW Side-By-Side Signal

BT-3DL2550
3D VIERA or 3D Plasma Display*

specification 1: Simultaneous

EXT-REF

3D Camera (A)
3D Camera (B)
3D Camera (C)
3D Camera (D)

A — SDI1 Left Eye Signal
B — SDI2 Left Eye Signal
C — SDI3 Left Eye Signal
D — SDI4 Left Eye Signal

A — SDI1 Right Eye Signal
B — SDI2 Right Eye Signal
C — SDI3 Right Eye Signal
D — SDI4 Right Eye Signal

EXT-REF   RS-232C

* No effect, switching only.

3D Program Output
SDI PGM Left Eye Signal
SDI MULTI-VIEW Left Eye Signal
DVI-D PGM Left Eye Signal
DVI-D MULTI-VIEW Left Eye Signal

SDI PGM Right Eye Signal
SDI MULTI-VIEW Right Eye Signal
DVI-D PGM Right Eye Signal
DVI-D MULTI-VIEW Right Eye Signal

BT-3DL2550 or 3D Projection Systems
BT-3DL2550 or 3D Projection Systems
3D Projection Systems
3D Projection Systems

Supported signals: 1080/59.94i, 1080/50i, 720/59.94p, 720/50p, 1080/23.98psf

*3D Plasma Display is scheduled for release in Autumn of 2010. Please refer to the latest 3D Plasma Display Information at Panasonic website. < http://panasonic.net/proplasma/ >
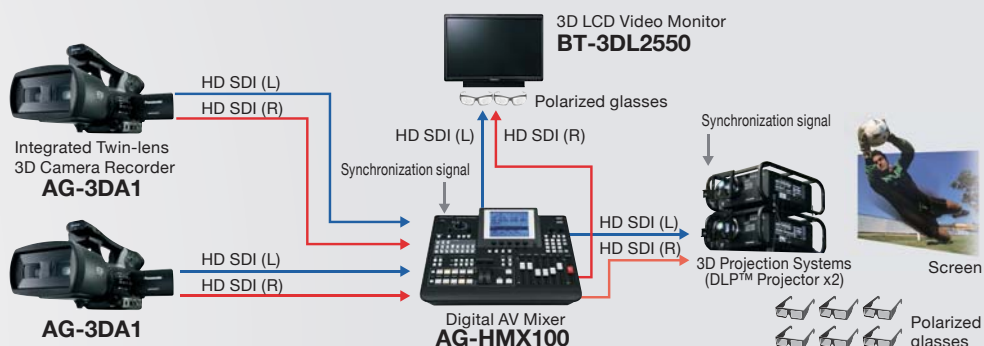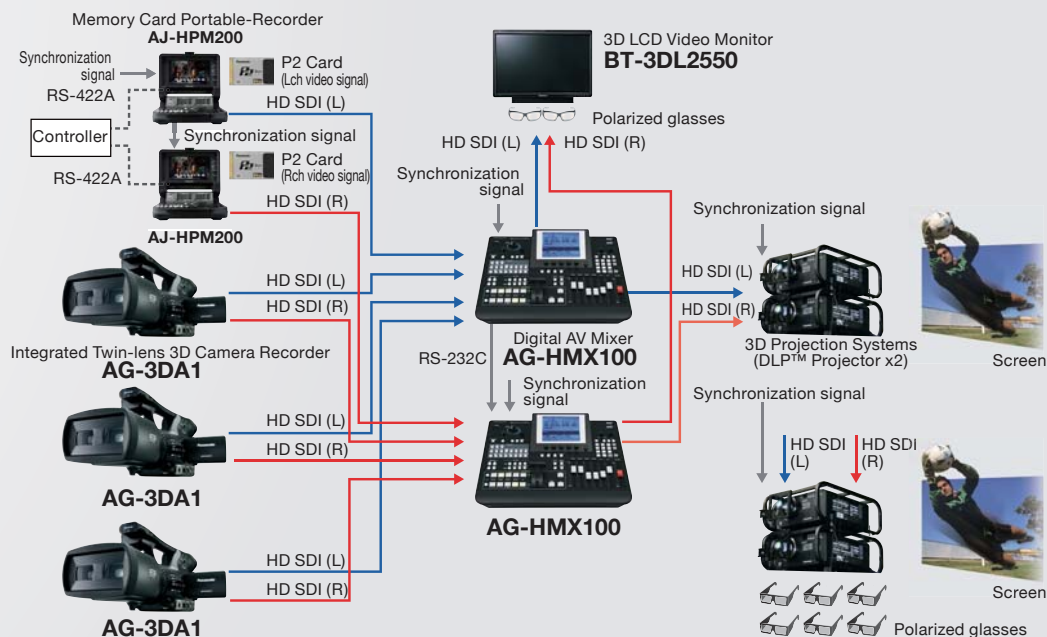
picture simulated

3D system configuration example

3D Live Display System

This system produces 3D live images by using two AG-3DA1 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.

Integrated Twin-lens 3D Camera Recorder
AG-3DA1

HD SDI (L)
HD SDI (R)

AG-3DA1

HD SDI (L)
HD SDI (R)

Digital AV Mixer
AG-HMX100

Synchronization signal

3D LCD Video Monitor
BT-3DL2550

Polarized glasses

HD SDI (L) HD SDI (R)

HD SDI (L)
HD SDI (R)

Synchronization signal

3D Projection Systems
(DLP™ Projector x2)

Screen

Polarized glasses

3D x 4-Input System

This 4-input switching system creates 3D content by using two P2 Mobile units to combine the images from three 3D cameras. When two AG-HMX100 units are connected, they can serve as a 3D video switcher for up to four 3D cameras. Dynamic 3D live videos can be displayed on a large screen for high-brightness, high-contrast 3D projection by using two professional DLP® projectors.

Memory Card Portable-Recorder
AJ-HPM200

Synchronization signal
RS-422A

Controller

RS-422A

P2 Card
(Lch video signal)

HD SDI (L)

Synchronization signal

P2 Card
(Rch video signal)

AJ-HPM200

HD SDI (R)

Integrated Twin-lens 3D Camera Recorder
AG-3DA1

HD SDI (L)
HD SDI (R)

AG-3DA1

HD SDI (L)
HD SDI (R)

AG-3DA1

HD SDI (L)
HD SDI (R)

RS-232C

Digital AV Mixer
AG-HMX100

Synchronization signal

Digital AV Mixer
AG-HMX100

3D LCD Video Monitor
BT-3DL2550

Polarized glasses

HD SDI (L) HD SDI (R)

Synchronization signal

HD SDI (L)
HD SDI (R)

Synchronization signal

3D Projection Systems
(DLP™ Projector x2)

Screen

Synchronization signal

HD SDI (L) HD SDI (R)

Screen

Polarized glasses

GENERAL

Power Source:	100 V — 240 V AC, 50 Hz/60 Hz
Power Consumption:	60 W
Operating Temperature:	5 °C to 40 °C (41 °F to 104 °F)
Operating Humidity:	10 % to 80 % (no condensation)
Storage Temperature:	–20 °C to 60 °C (–4 °F to 140 °F)
Storage Humidity:	10 % to 80 % (no condensation)
Weight:	7.9 kg (17.4 lbs)
Dimensions:	424 mm (W) x 197 mm (H) x 400 mm (D)
	16-3/4 inches (W) x 7-3/4 inches (H) x 15-3/4 inches (D)

VIDEO SPECIFICATION

System Format*:
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
(1080i/720p, HD/SD and 50Hz/59.94Hz) is not possible. .

Sampling Frequency:
HD: Y: 74.176 MHz, P_B/P_R: 37.088 MHz
(1080/59.94i, 720/59.94p, 1080/23.98PsF)
Y: 74.25 MHz, P_B/P_R: 37.125 MHz (1080/50i, 720/50p)
SD: Y: 13.5 MHz, P_B/P_R: 6.75 MHz

Signal Processing: 4:2:2:4, 12 bit Internal process

AUDIO SPECIFICATION

Sampling Frequency:	48 kHz
Quantization:	16 bit for HDMI Input, 24 bit for SDI Input, 20 bit for analog input
Frequency Response:	–1.0 dB/1.0 dB at 20 Hz to 20 kHz (digital) –1.0 dB/1.0 dB at 20 Hz to 20 kHz (analog)
Dynamic Range:	More than 90 dB at 1 kHz (digital), More than 85 dB at 1 kHz (analog)
THD:	Less than 0.05 % at 1 kHz (digital), Less than 0.08 % at 1 kHz (analog)
Cross Talk:	Less than –80 dB at 1 kHz, between any two channels (digital) Less than –70 dB at 1 kHz, between any two channels (analog)
Headroom:	20 dB and 18 dB switchable

VIDEO INPUT/OUTPUT

Analog composite input (VIDEO IN): BNC x 2 sets, 1.0 V [p-p], 75 Ω termination

SDI input: BNC x 4 sets
SD serial digital signal: SMPTE259M-C/272M-A and
ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M/299M standards

HDMI input: HDMI connector x 2 sets (Type A connector),
incompatible with HDCP Link and VIERA Link

DVI-I input: TMDS single link (incompatible with HDCP),
compatible with digital/analog RGB

Reference input: BNC x 2 (with loop-through), 1.0 V [p-p], 75 Ω auto termination
Composite signal (NTSC/PAL)

Program (PGM) output: SDI (BNC) x 1
SD serial digital signal: SMPTE259M-C/272M-A and
ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M/299M standards
DVI-D x 1, TMDS single link (imcompatible with HDCP)

Preview (PVW) output: SDI (BNC) x 1
SD serial digital signal: SMPTE259M-C/272M-A and
ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M/299M standards

AUX output: SDI (BNC) x 1
SD serial digital signal: SMPTE259M-C/272M-A and
ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M/299M standards

MULTI VIEW output: SDI (BNC) x 1
SD serial digital signal: SMPTE259M-C and ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M standards
DVI-D x 1, TMDS single link (imcompatible with HDCP)

Advanced reference output (ADV-REF): BNC x 1, 75 Ω
Composite signal   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 (AUDIO IN): XLR: 4 sets (L and R), 4/0/–3 dBm switchable, balanced, 10 kΩ
SDI (BNC) (Embedded Audio): 4 sets
SD serial digital signal: SMPTE259M-C/272M-A and
ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M/299M standards
HDMI (Embedded Audio): connector x 2 sets (Type A connector),
incompatible with HDCP and VIERA Link

AUX input: Pin jack x 1 (L and R), –10 dBv, High impedance, unbalanced

Microphone input (MIC): M6 x 1, –60 dBV, 2 kΩ, monaural, unbalanced

Audio output (AUDIO OUT):
Program (PGM) output: XLR x 1 (L and R), 4/0/–3 dBu switchable, Low impedance, balanced
SDI (BNC) (Embedded Audio) x 1
SD serial digital signal: SMPTE259M-C/272M-A and
ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M/299M standards
Pin jack x 1 (L and R), –10 dBV, Low impedance, unbalanced

Preview (PVW) output: SDI (BNC) (Embedded Audio) x 1
SD serial digital signal: SMPTE259M-C/272M-A and
ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M/299M standards

AUX output: SDI (BNC) (Embedded Audio) x 1
SD serial digital signal: SMPTE259M-C/272M-A and
ITU-R BT.656-4 standards
HD serial digital signal: SMPTE292M/296M/299M standards

Headphones output (PHONES): M6 x 1, 8 Ω, stereo, unbalanced, –∞ dBu to –20 dBu

OTHER PORT

TALLY: D-sub 9 pin, Open-Collector x 8 CH
Maximum Current: Less than 50 mA,
Maximum Voltage: 35 VDC

GPI: BNC x 1, Make-Contact

RS-232C: D-sub 9 pin x 1

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Please refer to the latest Digital AV Mixer Information at Panasonic website.

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

Panasonic®

[Countries and Regions]

Argentina	+54 1 308 1610	Kuwait	+96 522431385	Switzerland	+41 (0) 41 259 96 32
Australia	+61 2 9986 7400	Lebanon	+96 11665557	Syria	+963 11 2318422/4
Bahrain	+973 252292	Malaysia	+60 3 7809 7888	Taiwan	+886 2 2227 6214
Belgium	+32 (0) 2 481 04 57	Mexico	+52 55 5488 1000	Thailand	+66 2 731 8888
Bulgaria	+359 2 946 0786	Montenegro, Serbia		Turkey	+90 216 578 3700
Brazil	+55 11 3889 4035		+41 (0) 26 466 25 20	U.A.E. (for All Middle East)	
Canada	+1 905 624 5010	Netherlands	+31 73 64 02 577		+971 4 8862142
China	+86 10 6515 8828	New Zealand	+64 9 272 0100	Ukraine	+380 44 4903437
(Hong Kong	+852 2313 0888)	Norway	+47 67 91 78 00		+44 (0)1344 70 69 20
Czech Republic	+420 236 032 552/511	Pakistan	+92 5370320 (SNT)	U.S.A.	+1 877 803 8492
Denmark	+45 43 20 08 57	Palestine	+972 2 2988750	Vietnam	+848 38370280
Egypt	+20 2 23938151	Panama	+507 229 2955		
Finland, Latvia, Lithuania, Estonia		Peru	+51 1 614 0000		JQA-0443
	+358 (9) 521 52 53	Philippines	+63 2 633 6163		
France	+33 (0) 1 55 93 66 67	Poland	+48 (22) 338 1100		
Germany, Austria	+49 (0)611 235 0	Portugal	+351 21 425 77 04		
Greece	+30 210 96 92 300	Puerto Rico	+1 787 750 4300		
Hungary	+36 (1) 382 60 60	Romania	+40 21 211 4855		
India	+91 120 247 1000	Russia & CIS	+7 495 9804206		
Indonesia	+62 21 385 9449	Saudi Arabia	+96 626444072		
Iran		Singapore	+65 6270 0110		
(Vida)	+98 21 2271463	Slovak Republic	+421 (0) 2 52 92 14 23		
(Panasonic Office)	+98 2188791102	Slovenia, Croatia, Bosnia, Macedonia			
Italy	+39 02 6788 367		+44 (0) 20 76 63 36 57		
Jordan	+962 6 5859801	South Africa	+27 11 3131622		
Kazakhstan	+7 727 298 0891	Spain	+34 (93) 425 93 00		
Korea	+82 2 2106 6641	Sweden	+46 (8) 680 26 41		

ISO 9001

ISO 14001 JACO EC98J2010 / UKAS ENVIRONMENTAL MANAGEMENT 051

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

SP-HMX100PE

25K201008ZP-1   Printed in Japan