Panasonic
ideas for life

P2HD

AG-HPX250
P2 Handheld Memory Card Camera Recorder
(AG-HPX250P, AG-HPX250EJ, AG-HPX250EN)

AVC INTRA   DVCPRO HD   DVCPRO 50   DVCPRO   DV

Shoulder-Type Performance and Functions in a Professional Handheld Camera Recorder

The high-performance AG-HPX250 P2 handheld fills out the P2HD Series by incorporating the newest technologies throughout — in the lens, camera and recorder sections. The newly developed 22x zoom lens covers a wide shooting range, from wide-angle to telephoto, and features three manual rings for precise control. Imaging is optimized by the high-sensitivity, low-noise 1/3-type 2.2-megapixel U.L.T. (Ultra Luminance Technology) 3MOS image sensor. And the AG-HPX250 is the first handheld model to support AVC-Intra codecs. This combination produces a level of performance that rivals many full-size shoulder-type camera recorders, and adds the high-quality acquisition of Full-HD (1920 x 1080) and 10 bit, 4:2:2 full sample, broadcast-level images. Image expression is also boosted by the Variable Frame Rate (VFR) function, and system expansion for broadcasting and other production applications is provided by multi-camera synchronizing. The stylish design of the AG-HPX250 adds further to both mobility and operating ease, and opens a new stage for news gathering and image acquisition.

28 mm to 616 mm, 22x Zoom Lens
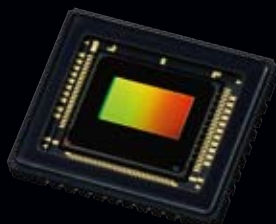
2.2-Megapixel U.L.T. Image Sensors

1920 × 1080 10 bit 4:2:2 AVC-Intra Codec

Full HD (1920 x 1080 Pixels) & 10 bit 4:2:2 Full Sampling Recording

22x Panasonic Lens — Zooming in on New Levels of Image Expression

Packed with Panasonic Optical Technology

The high-performance zoom lens was developed specifically for professional HD video production. While inheriting the wide-angle capabilities of the DVX and HVX Series, it adds the same level of operating ease as you'd expect from an interchangeable lens model for broadcasting and other professional uses. Combining 18 lens elements in 12 groups, this advanced lens unit further adds a UHR (Ultra High Refractive) glass element, a low dispersion element and aspherical lenses. This newest optical technology can provide high resolution. In addition, it is combined with a unique Panasonic digital signal processing technology called Chromatic Aberration Compensation (CAC) to minimize color bleeding in the surrounding image and achieve rich expression with finely rendered nuances and excellent shading. Zooming from 28mm to 616mm (35mm equivalent), this 22x zoom lens covers a wide field of view, from wide-angle to telephoto, without a conversion lens.

Wide 28 mm | Tele 616 mm (22x) | 22x optical zoom x 10x digital zoom (220x)

Three Manual Rings — Zoom, Focus and Iris

The lens unit is provided with three rings — a mechanical (cam-driven) zoom ring, a focus ring, and an iris ring. You can operate them manually almost like an interchangeable lens including rugged operation of zoom ring.

Optical Image Stabilizer, Digital Zoom, and ND Filter

• Hand-shake correction with the Optical Image Stabilizer (OIS).
• Digital Zoom function.* It can be assigned to an user button and close up to 2x, 5x, and 10x. In combination with the optical zoom, this function provides a telephoto capability up to 220x.
• Four-position (OFF, 1/4 ND, 1/16 ND, 1/64 ND) optical neutral density filter wheel.

* The digital zoom cannot be used while operating the Dynamic Range Stretch (DRS) or Scan Reverse functions. If either function is operated while digital zooming, the zoom will be automatically turned off. Also, Flash Band Compensation (FBC) will not operate while digital zooming.

Focus Ring — Zoom Ring — Iris Ring

High-Sensitivity, Low-Noise U.L.T. Image Sensor
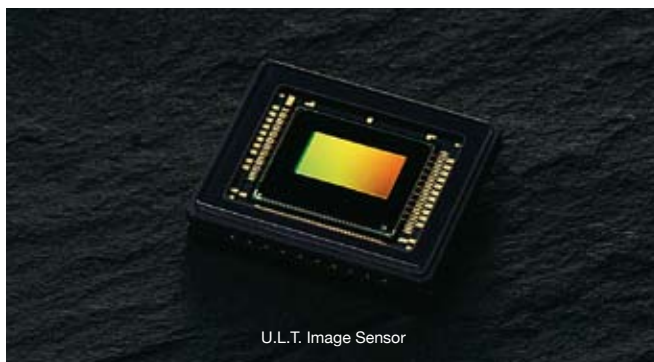
U.L.T. Image Sensor

High-Sensitivity F10*, 2.2-Megapixel, Low-Noise U.L.T. Image Sensor and Optimized Signal Processing Circuit
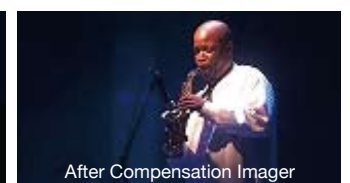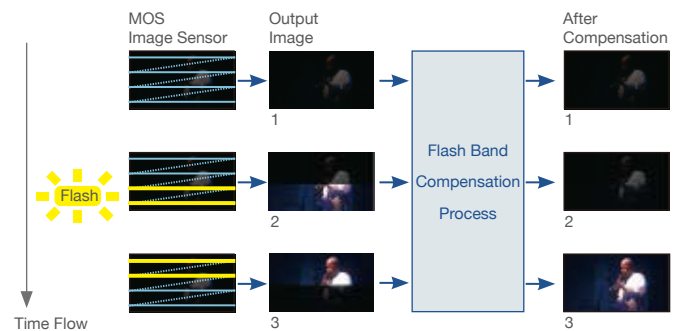
The AG-HPX250 features the Ultra Luminance Technology (U.L.T.) 1/3-type 2.2-megapixel 3MOS image sensor that is incorporated in our shoulder-type P2HD camera recorders. This advanced image sensor is set to maximize the performance of the lens and signal processing circuit under standard shooting conditions. Progressive Advanced Processing (PAP) technology, which is driven by 3D adaptive processing, has also been further refined to enable high-sensitivity F10*, low-noise shooting in dimly lit places.

*AG-HPX250 sensitivity is selectable, F10 is PAP Filter Type1 and F7 is PAP Filter Type2 in 59.94Hz mode. In 50Hz mode, F11 is PAP Filter Type1 and F8 is PAP Filter Type2. The default setting is PAP Filter Type2.

Flash Band Compensation

In contrast with the CCD image sensor, which accumulates still images of single frames that are exposed with identical timing, the MOS image sensor uses a rolling shutter system that sequentially scans each line of pixels. This lowers power consumption and enables high-speed drive, but because the exposure timing differs for each line, when an external flash is used, it tends to produce images where the brightness is divided between the top and bottom of the image. This is called the flash band effect. The AG-HPX250 is equipped with highly accurate flash band detection and compensation software. By generating pairs of frames containing flash bands, and frames in which a flash extends from the previous frame to the entire screen, and then using the compensation process to adjust the level, the flash band effect of MOS-based imagers is eliminated.

MOS Image Sensor | Output Image | Flash Band Compensation Process | After Compensation

Flash

Time Flow

MOS Output Imager | After Compensation Imager

The High-Quality DSP Matches Image Processing and Quality to match Each Shooting Situation

20 bit Digital Signal Processor

The AG-HPX250 incorporates a high-performance 20 bit DSP that handles image rendering processes such as gamma and various detail enhancement functions with exceptional precision.

DSP Processor
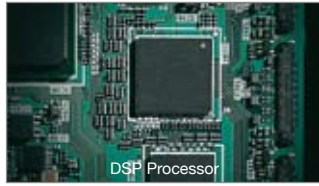
HD NORM mode

CINE-LIKE D mode

Dynamic Range Stretch (DRS)

In scenes with mixed contrast, such as when panning from indoors to outdoors, the DRS function automatically suppresses blocked shadows and blown highlights. A gamma curve and knee slope are estimated to match the contrast of each pixel, and applied in real time. When dark, bright, and intermediate shades are all contained in the same scene, this produces excellent gradation for each shade and minimizes blocked shadows and blown highlights.

* The DRS function does not operate in 1080/24p, 1080/25p or 1080/30p mode.
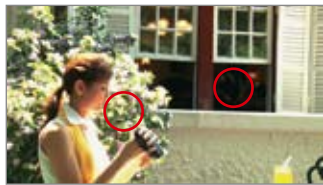
DRS OFF

DRS ON

7-Mode Gamma for Richer Gradation

Drawing on technologies developed for the VariCam, Panasonic has equipped the AG-HPX250 with advanced gamma functions that address seven different shooting scenarios, including two Cine-Like Gammas.

AG-HPX250 Gamma Modes

HD NORM:	Suitable for standard HD recording.
LOW:	Works to flatten out a high contrast scene.
SD NORM:	Normal setting for SD.
HIGH:	Expands the tone of dark parts and makes a brighter image. The contrast softens.
B.PRESS:	Makes the contrast sharper than LOW.
CINE-LIKE D:	The Cine-Like mode shifted to prioritize dynamic range.
CINE-LIKE V:	The Cine-Like mode shifted to prioritize contrast.

Other Camera Image Settings

- Variable shutter speed from 1/6 to 1/2000 sec. plus Synchro Scan function.
- Matrix setting including a Cine-Like mode
- Adjustable H detail level, V detail level, detail coring and skin tone detail.
- Adjustable chroma level, chroma phase, color temp and master pedestal.
- Knee point settings: Auto, Low, Mid and High.

Rapid Response with Agile Shooting Assist Functions

Focus Assist Functions

Press the Focus Assist button and the center section of the screen expands in size, making it easier to determine if the focus is correct. Also, the Focus Bar that visually indicates the focus level can be displayed on the screen.

Focus Assist OFF

Focus Assist ON

Scene File / User File

Set Scene dial for an instant set of shooting conditions. Six preset files are provided, and you can change any of the six file names and their settings as desired. One set can be stored internally in the AG-HPX250, and four sets on an SD Memory Card. One file with camera setting values can also be stored internally, and four files on an SD Memory Card.

Scene File Description

F1: —	Standard settings
F2: FLUO.	Indoor shooting under fluorescent lights
F3: SPARK	Highlighting subjects at receptions, events etc.
F4: B-STR	Enhanced gradations of luminance in low light scenes
F5: CINE V	Cine-Like setting shifted to prioritize contrast*
F6: CINE D	Cine-Like setting shifted to prioritize dynamic range*

* Selecting a scene file does not change the video recording format. If you want to switch to 25p, 24p and 30p, you must do so as a separate procedure.

3-Position Gain Selector plus 30dB Super Gain Function

There is a 3-position gain selector, with L, M and H settings. To each setting you can assign a gain value from 0, +3, +6, +9, +12, +15 and +18 dB. There is also a Super Gain such as +24 dB and +30 dB.

Simplified Waveform and Vectorscope Display

The AG-HPX250 has Waveform and Vectorscope Display functions for the captured video signal on the LCD monitor.

Waveform

Vectorscope

Five User Buttons

There are a total of five User buttons: User Main, User 1 to 3 on the top panel, and User 4 on the rear of the AG-HPX250. Based on user's requirements, customized operation can be set by assigned 18 versatile functions to these user buttons.

User button allotment function

SPOTLIGHT, BACKLIGHT, ATW, ATW LOCK, S.GAIN, D.ZOOM, Y GET, DRS, TEXT MEMO, SLOT SEL, SHOT MARK, MAG A. LVL, LVL METER, PRE REC, WFM, LAST CLIP, FBC, LCD B.L.

Full-Pixel, Full-Sample AVC-Intra Recording

This is the first handheld camera-recorder to support the AVC-Intra codecs of the P2HD Series for HD recording of broadcast and movie images. Featuring a high compression ratio based on the new MPEG-4 AVC/H.264 moving picture compression technology, this advanced system maintains intra-frame compression to provide both high image quality and excellent editing performance. It offers recording and playback of both AVC-Intra 100 and AVC-Intra 50 modes, and also supports DVCPRO HD recording and playback.

AVC-Intra Codec LSI

•**AVC-Intra 100: 1920 x 1080,* 10 bit, 4:2:2**
High-quality images with full-pixel HD and full sampling are recorded at the same bit rate as DVCPRO HD, bringing agile mobility to high-end production.

•**AVC-Intra 50: 1440 x 1080,* 10 bit, 4:2:0**
Image quality is the same level as DVCPRO HD, but with the SD (DVCPRO 50) bit rate. You get twice the recording time of DVCPRO HD, and about half the required data transmission time.

* These figures are for 1080i/p mode. The AG-HPX250 also supports 720p mode.

Multi-Format Recording with Native 24p/25p Support and More

•**Native recording modes:** In addition to 1080/59.94i with the AVC-Intra codec, native recording is supported at 1080/23.98p or 1080/29.97p and 1080/25pN or 720/25pN. In 720p, native recording is possible for both DVCPRO HD and AVC-Intra, making it possible to extend recording time by 2 to 2.5 times in comparison with pull-down recording.

*Camera image output and playback image output are pulled-down 59.94 (50) frames.

•**Pulldown record mode:** This VariCam-compatible mode records[1] with the DVCPRO HD codec. A 2:3 pulldown is applied to 23.98p, and a 2:2 pulldown is applied to 29.97p, to record 1080/59.94i or 720/59.94p and 1080/25p over 50i or 720/25p over 50p. The 23.98pA (2:3:3:2 advanced pulldown) mode is also supported, allowing editing on applicable nonlinear systems[2] with little image degradation.

•**59.94Hz/50Hz selector:** Supports worldwide HD/SD production.
•**SD image acquisition:** The DVCPRO 50/DVCPRO/DV multi-codec enables 480/576 image acquisition, with aspect ratio conversion. Select from Side Crop, Letter Box and Squeeze modes.

*1: Not compatible with the AVC-Intra codecs.
*2: See the following website for details on applicable systems.
   http://pro-av.panasonic.net/en/sales_o/p2comp/index.html

High Quality/16 bit, 4-Channel Digital Audio

The AG-HPX250 can record high quality/16 bit digital audio on all four channels. You can freely select the audio source for each channel, choosing from built-in mic, external mic and line-in. Level volume is also supported on all four channels.

Double Slot System with Two P2 Card Slots

In addition to allowing continuous recording onto two P2 cards, this system offers the following functions.
• **Card select:** The recording slot can be switched in Standby mode.
• **Hot-swap recording:** The card in the standby slot can be exchanged while the other card is being recorded on.

P2 Card Recording Offers High Reliability and a Proven Record for Broadcasting

The P2 card was originally developed for broadcast use. In addition to its large 64 GB* capacity, it strongly resists impacts, vibration and temperature changes, and withstands repeated recording and initialization cycles for extended recording use. The card connector section is designed specifically for professional use, resulting in extremely high durability for insertion and removal. The P2 card and P2HD Series are widely used in broadcast and movie production studios and have a proven track record for reliability, durability and easy operation.

*Total card capacity includes space for data management such as system data; therefore, the actual usable area is less than the capacity indicated on the card.

Versatile MXF File-Based Recording

File-based recording onto memory cards enables high-speed starts, recording starts with no need for cueing, and protection against accidental data overwriting. The recorded data is organized into MXF files. The files can be transferred to a nonlinear editor or over a network without the need for digitizing.*

*PCs must be installed with the included P2 driver in order to mount P2 cards. For editing, PCs must be installed with P2-compatible editing software available from various companies. Read "Notes Regarding the Handling of P2 Files Using a PC" on the back page.

AG-HPX250 Recording Format & Recording Time

HD Format	Pull down	Codec & Recording Time (with two 64 GB P2 Card)		
		DVCPRO HD	AVC-Intra 100	AVC-Intra 50
1080/59.94i	—	Approx. 128 min.	Approx. 128 min.	Approx. 256 min.
1080/29.97p over 59.94i	2-2		—	—
1080/23.98p over 59.94i	2-3		—	—
1080/23.98pA over 59.94i	2-3-3-2		—	—
1080/29.97pN (Native)[1]	—	—	Approx. 128 min.	Approx. 256 min.
1080/23.98pN (Native)[1]	—	—	Approx. 160 min.	Approx. 320 min.
1080/50i	—	Approx. 128 min.	Approx. 128 min.	Approx. 256 min.
1080/25p (over 50i)	—		—	—
1080/25pN (Native)[1]	—	—	Approx. 128 min.	Approx. 256 min.
720/59.94p	—	Approx.128 min.	Approx. 128 min.	Approx. 256 min.
720/50p	—		Approx. 128 min.	Approx. 256 min.
720/29.97p over 59.94p[2]	2-2		—	—
720/25p over 50p[3]	2-2		—	—
720/23.98p over 59.94p[2]	2-3		—	—
720/29.97pN (Native)[1]	—	Approx. 256 min.	Approx. 256 min.	Approx. 512 min.
720/25pN (Native)[1]	—			
720/23.98pN (Native)[1]	—	Approx. 320 min.	Approx. 320 min.	Approx. 640 min.

SD Format	Pull down	Codec & Recording Time (with two 64 GB P2 Card)		
		DVCPRO 50	DVCPRO	DV
480/59.94i	—	Approx. 256 min.	Approx. 512 min.	Approx.512 min.
480/29.97p over 59.94i	2-2			
480/23.98p over 59.94i	2-3			
480/23.98pA over 59.94i	2-3-3-2			
576/50i	—	Approx. 256 min.	Approx. 512 min.	Approx. 512 min.
576/25p (over 50i)	2-2			

*1: Native modes record only the effective frames.
*2: When you select 24 FRAME/30 FRAME in VFR mode in DVCPRO HD 59.94p mode.
*3: When you select 25 FRAME in VFR mode in DVCPRO HD 50p mode.

Variable Frame Rate Function Enhances the Image Expression

Variable Frame Rate — Also Supported in 1080p Mode

The Variable Frame Rate (VFR) function was inherited from the Panasonic VariCam, which is widely used for producing movies, TV series, and TV commercials. It creates a wide range of film-camera-like images, such as overcranking for slow-motion and undercranking for quick-motion effects.

Image Modes and Variable Frame Rates

1080/59.94i, 23.98p, 29.97p:	1/2/4/6/9/12/15/18/20/21/22/24/25/26/27/28/30 fps (frames per second)
1080/50i, 25p:	1/2/4/6/9/12/15/18/20/21/22/23/24/25 fps
720/59.94p, 23.98p, 29.97p:	1/2/4/6/9/12/15/18/20/21/22/24/25/26/27/28/30/32/34/36/40/44/48/54/60 fps
720/50p, 25p:	1/2/4/6/9/12/15/18/20/21/22/23/24/25/26/27/28/30/32/34/37/42/45/48/50 fps

• **Normal cinematic shooting (at 24 fps, 25 fps or 30 fps)** refers to the same rate as used in film cameras. The AG-HPX250 can record in 24 fps. Note that 25 fps and 30 fps are the standard frame rates used in the production of TV commercials, music clips and video media.
• **Overcranking (higher-speed shooting)** produces a slow-motion effect. This is especially effective for high-action scenes like car chases or crashes, or to create a dramatic impact in a scene. For example, when a scene is shot at 48 fps and played at 24 fps, a slow-motion effect of 1/2x is attained.
• **Undercranking (lower-speed shooting)** gives you a quick-motion effect. This technique can be combined with a warp-speed effect to give special emphasis to flowing water, fast-moving clouds, etc. For example, when a scene is shot at 12 fps and played at 24 fps, a quick-motion effect of 2x is attained.

Undercranking (lower-speed shooting)

Overcranking (higher-speed shooting)

Versatile Recording Functions Enabled by File-Based Recording

Clip Thumbnail Display and Clip Editing

Recorded clips are automatically allocated a thumbnail image and metadata. This lets you display the thumbnail images on the LCD monitor, delete clips, and confirm or edit metadata (using the built-in Software Keyboard function).
• **Last clip delete:** The clip that was most recently recorded is deleted with a single touch.
• **Rec check:** The beginning and ending of the clip that was most recently recorded are checked with a single touch.

Shot Marker and Text Memo[*1]

• **Shot marker:** Clips can be marked during or after recording. When mounted to a PC,[*2] the user can display only the marked clips if desired.
• **Text memo:** This lets you post a memo on any scene of any clip, up to 100 memos in all, similar to a sticky note.

*1: Shot marker and text memo cannot be used in loop rec, interval rec, or one-shot rec.
*2: When using P2 viewer, a Windows PC viewing application that can be downloaded free of charge by P2 users. See the following website for details.
http://pro-av.panasonic.net/en/sales_o/p2/index.html

One-Clip Rec Mode

Whereas normal Rec mode produces a clip for each Rec start/stop cut, One-Clip Rec mode records up to 99 consecutive cuts as a single clip, which greatly improves the nonlinear editing work that follows. A text memo is automatically attached when recording begins, making it easy to find desired cuts within the clip.
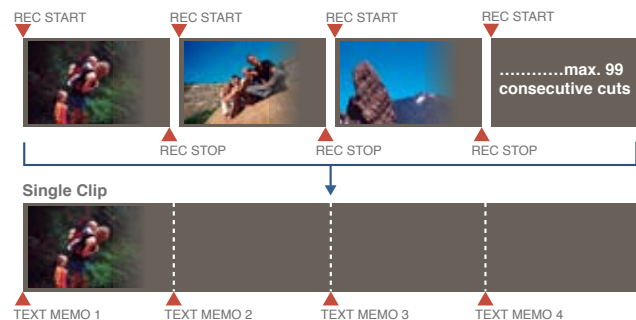
### Recording Modes That Meet a Wide Variety of Needs

• **Loop rec:** This repeatedly re-records a particular recurring time slot, always maintaining a recording of the most recent period.
• **Pre-rec*:** While in standby mode, you can continuously store, and subsequently record, up to 3 seconds in HD (7 seconds in SD). This will help you to get the shot you want every time.
• **Interval rec*:** This gives you automatic intermittent recording based on a set interval and recording time.
• **One-shot rec*:** This frame-shot recording function is useful for producing animations.
• **Time stamp:** The date and time can be stamped onto recorded images. Commonly used for evidential images.

* These functions cannot be used during Variable Frame Rate recording.

System Functions for Multi-Camera and Other Broadcast Applications

Multi-Camera Synchronizing with Genlock IN and TC IN/OUT
The AG-HPX250 is the first handheld camera recorder to support multi-camera synchronizing. It features a built-in SMPTE time-code generator/reader, TC input/output, and Genlock input, ideal for multi-camera live relay and recording systems.

Multi-Camera Recording System
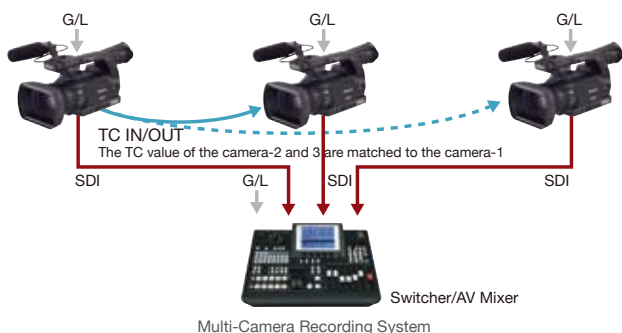
Digital A/V Output with SDI and HDMI
• **SDI OUT (HD/SD):** Allows camera-through output during HD/SD recording, or outputs high-quality 10 bit, 4:2:2 images for playback of AVC-Intra 100 footage. Includes embedded audio, and supports Rec S/S linked backup recording with a Panasonic recorder equipped with HD SDI input. When outputting SD SDI down-converted from an HD source, the Aspect Ratio Conversion mode can also be selected.
• **HDMI OUT:** This is a next-generation interface for HD video and audio. It allows digital A/V output from a wide range of devices with both professional and consumer specifications.
• **VIDEO OUT:** SD composite output. HD playback is down-converted.

Other Interfaces
• **USB 2.0 HOST:** This allows files to be copied between an external HDD and a P2 card *[1], and lets you view the thumbnails of P2 files saved onto the HDD.
• **USB 2.0 DEVICE:** Uploads P2 card files to a PC/Mac.
• **DVCPRO/DV (IEEE 1394):** Enables backup recording and dubbing by inputting or outputting a DV stream, including DVCPRO HD.*[2]
• **Camera Remote:** Controls focus, iris, zoom and REC start/stop.
• **XLR audio input:** 2-channel mic/line inputs supporting 48V phantom power supply.

*[1]: AG-HPX250EJ does not support to copy the files onto a P2 card via USB 2.0.
*[2]: Excluding 720p native mode. Does not support AVC-Intra input/output. Also does not output loop rec, interval rec or one-shot rec content. AG-HPX250EJ does not support input.

Advanced Design and Versatile Specifications Facilitate Interviews and Production Work

New, Stylish Design Boosts Mobility
Even with its high-powered zoom lens, the integrated camera and recorder sections are compact and stylish. Shifting the handle grip and LCD position forward (toward the lens) has improved the weight balance and visibility for handheld shooting, enabling a comfortably wide view. The magnesium alloy die cast chassis also excels in both ruggedness and durability.

Low-Angle Shots and Interviews
• The upper part of the handle grip contains both the Rec Start/Stop button and a lens zoom speed control (three speed revels). This design assures easy shooting even at low angles.
• The LCD monitor mirror mode is convenient when shooting interviews.

High Resolution and High Brightness Color Viewfinder and LCD
The AG-HPX250's color EVF uses a 11.43 mm (0.45 inches), approximately 1,226,000 dot-equivalent (852 x 480 x 3 [RGB]) LCOS (liquid crystal on silicon) display panel. It delivers bright, detailed, high-resolution images and a high response speed. The AG-HPX250's LCD monitor has a 87.63 mm (3.45 inches), approximately 921,000-dot (1920 x 480) high-resolution panel.


LCOS Color EVF   Color LCD Monitor

Other Functions
• **White Balance Selector:** Two values (A/B) memory and one value preset.
• **ATW** (Automatic Tracing White balance) function.
• **Mode check:** Displays a list of the camera settings on the viewfinder and LCD monitor.
• **Zebra:** Select any two levels from among 50% to 109%, in 1% steps.
• **Y-GET:** Measures brightness at the screen center and displays precise numerical data.
• **Tally lamps:** Provided on the unit's front and rear.
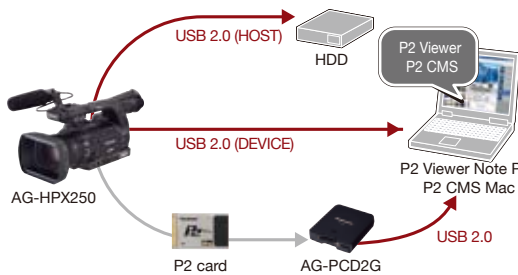
With a Portable HDD or Notebook PC

Files recorded by the AG-HPX250 can be copied using only a portable HDD. Or, a notebook PC* can be used for viewing the results and editing metadata and text memos.

* A Windows PC or Mac with P2 Viewer viewing software (available free of charge) installed.
* For details, see the rear cover page (Notes Regarding the Handling of P2 Files Using a PC).
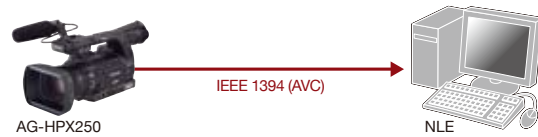
Linking with DVCPRO (HD/50M/25M) and DV Devices

The AG-HPX250's DVCPRO/DV terminal (IEEE 1394 interface) links to conventional DVCPRO/DV codec-based systems.

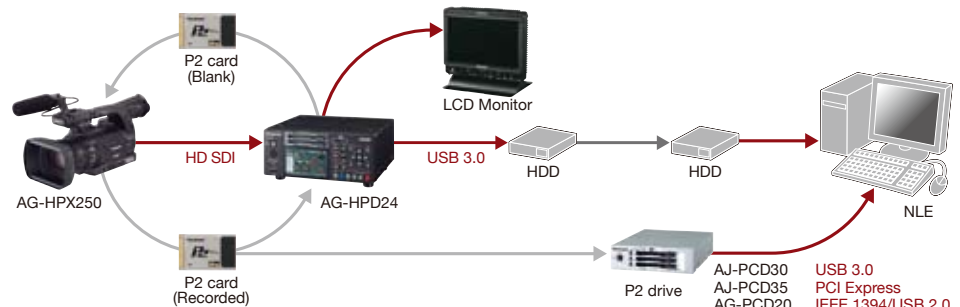**Interview Workflow —**
Maximizing Mobility and Speed

Files can be copied at high speed from a P2 card to the removable SSD of the AG-MSU10 Mobile Storage Unit.* Or, the P2 card can be mounted to a PC via the P2 drive, which is equipped with USB 3.0 (2.0), PCI Express, and IEEE 1394 interfaces.

* The optional AG-MBX10G Removable Interface Box is required to connect the SSD to a nonlinear editor via USB 2.0 or eSATA.
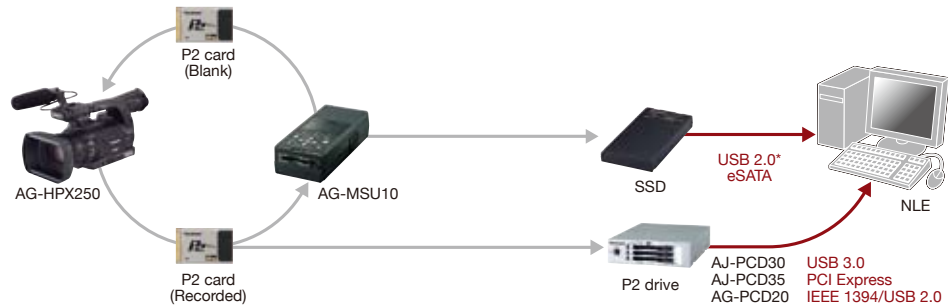
Field Recording Workflow for TV Program Production

Combination with the AG-HPD24 P2 deck provides a variety of functions, including backup recording, viewing, metadata editing, and high-speed copying to an external HDD.


News Workflow — Interviews, Flash Reports, and Data Transmission

The AG-HPX250's file-based format allows full use of IT infrastructures for instantaneous response and operation.

The AJ-HPM200 Memory Card Portable Recorder/Player supports everything from on-location news production to on-air broadcasting, network transmission, and copying to an HDD.

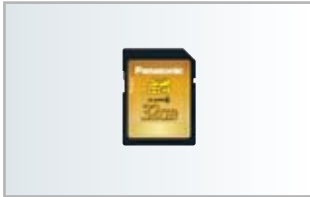* The optional AJ-YCX250G AVCHD Codec Board is required for AVCHD file conversion and output.
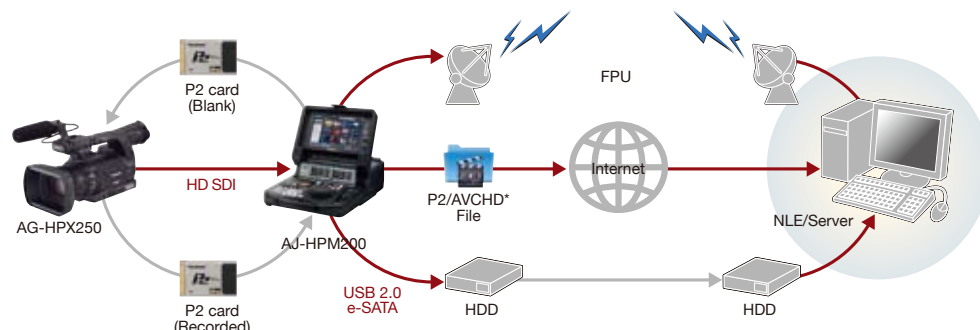
AG-MC200G
XLR Microphone

- Sensitivity: –40 dB ±3.5 dB
  (0 dB=1V/Pa, 1 kHz)
- Maximum input level: 127 dB
  (1000 Hz, distortion within 1%)
- S/N: more than 69 dB

CGA-D54/CGA-D54s
Battery Pack
(5,400 mAh)

AG-B25
AC Adaptor Kit[1]

AJ-P2E064XG
AJ-P2E032XG
AJ-P2E016XG
Memory Card (P2 card E series)

SD/SDHC Memory Card

BT-LH910G
228.6 mm (9 inches)
HD/SD LCD monitor

P2 Viewer 3.6
Viewing Software
(download free)

Supports P2 HD. This Windows PC
utility makes it easy to view and copy
P2 files and edit Metadata.[2]

P2 CMS 1.4
Content Management Software
(download free)

Easy to Ingest and Manage P2
Content. The newest version is
compatible with Mac OS X 10.6
"Snow Leopard".[2]

AJ-PCD2G
Memory Card Drive
"P2 drive"

USB-Bus-powered 1-Slot P2 drive
ideal for mobile application.

AJ-PCD30 NEW
Memory Card Drive
"P2 drive"

3-slot drive with USB 3.0 interface for
high-speed 1.5 Gbps data transfer.

AJ-PCD35[3]
Memory Card Drive
"P2 drive"

High-speed PCI Express interface.

AJ-PCD20
Memory Card Drive
"P2 drive"

USB2.0 and IEEE 1394b interface.

AG-MSU10
Mobile Storage Unit
"P2 MSU"

Fast copying from P2 cards to a
removable solid-state drive[4].
It simplifies backing-up P2 content in
the field.

AG-HPG20
Memory Card Portable Recorder
"P2 portable"

AVC-Intra supported. SDI-Input
available.

AG-HPD24 NEW
Memory Card Portable Recorder
"P2 portable deck"

Equipped with USB 3.0 and RS-422A
interfaces, this compact 2-slot P2 deck
supports 3D recording.

AJ-HPM200
Memory Card Recorder/Player
"P2 mobile"

Advanced P2 mobile with versatile
functions such as networking, AVCHD
compatibility (option) and eSATA
interface.

*1: It can be used as a battery charger only. It cannot be used as a AC adaptor for AG-HPX250. *2: For P2 Viewer or P2 CMS download and operating requirement information, visit WEB site
http://pro-av.panasonic.net/en/index.html *3: Before using P2 card E series, you must install the latest version of the software in the AJ-PCD35. For the latest version information, please go to the P2 support
page from the Panasonic WEB site https://eww.pavc.panasonic.co.jp/pro-av/ *4: Use a commercially available removable SSD that is recommended by Panasonic. In addition to the removable SSD interface box
that comes with the AG-MSU10 as a standard accessory, an additional AG-MBX10 can be purchased as an option. Do not use a hard disk drive instead of an SSD. For compatible SSD information, please refer to
the following WEB site: http://pro-av.panasonic.net/en/sales_o/p2/ag-msu10/

General Specification

Supply Voltage:	DC 7.2 V (when the battery is used) DC 7.9 V (when the AC adaptor is used)
Power Consumption:	15.0 W (when the LCD monitor is used)
Operating Temperature:	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity:	10% to 80% (no condensation)
Weight:	Approx. 2.5 kg (5.5 lb) excluding battery and accessories
Dimensions (W x H x D):	180 mm x 195 mm x 438 mm (7 inches x 7-11/16 inches x 17-1/4 inches) excluding battery, accessories and protrusions

Camera Section

Pickup Devices:	1/3-type progressive, 2.2-megapixel, 3MOS sensor
Effective Pixels:	1920 (H)×1080 (V)
Lens:	Optical image stabilizer lens, 22x motorized zoom, F1.6 – 3.2 (f=3.9 mm – 86 mm), 35 mm conversion: 28 mm – 616 mm (16:9)
Filter Diameter:	72 mm
Optical System:	Prism color separation
ND filter:	OFF, 1/4, 1/16, 1/64
Minimum Shooting Distance:	Approx. 1 m
Hood:	Large-sized lens hood with wide angle of view
Gain Settings:	0/+3/+6/+9/+12/+15/+18/+24/+30 dB, (+24 dB, +30 dB: USER SW allocation only)
Shutter Speed Settings:	• 60i/60p mode: 1/60 (OFF), 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 30p mode: 1/30 (OFF), 1/60, 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 24p mode: 1/24 (OFF),1/60, 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 50i/50p mode: 1/50 (OFF),1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 25p mode: 1/25 (OFF), 1/50, 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec.
Slow Shutter:	• 60i/60p mode: 1/15 sec., 1/30 sec. • 30p mode: 1/7.5 sec., 1/15 sec. • 24p mode: 1/6 sec., 1/12 sec. • 50i/50p mode: 1/12.5 sec., 1/25 sec. • 25P mode: 1/6.25 sec., 1/12.5 sec.
Synchro Shutter:	• 60i/60p mode: 1/60.0 sec. to 1/249.8 sec. • 30p mode: 1/30.0 sec. to 1/249.8 sec. • 24p mode: 1/24.0 sec. to 1/249.8 sec. • 50i/50p mode: 1/50.0 sec. to 1/250.0 sec. • 25p mode: 1/25.0 sec. to 1/250.0 sec.
Shutter Opening Angle:	3 degrees to 359.5 degrees in 0.5 degree increments
Frame Rates:	• 59.94 Hz mode: 1080p: 1/2/4/6/9/12/15/18/20/21/22/24/25/26/ 27/28/30 fps (frames per second) 17 step 720p: 1/2/4/6/9/12/15/18/20/21/22/24/25/26/ 27/28/30/32/34/36/40/44/48/54/60 fps, 25 step • 50 Hz mode: 1080p: 1/2/4/6/9/12/15/18/20/21/22/23/24/25 fps (frames per second) 14 step 720p: 1/2/4/6/9/12/15/18/20/21/22/23/24/25/ 26/27/28/30/32/34/37/42/45/48/50 fps, 25 step
Sensitivity:	• 59.94 Hz mode: (at 2000 lx, 3200 K, 89.9% reflection) F7 (1080/59.94i, P.A.P FILTER: TYPE2) F10 (1080/59.94i, P.A.P FILTER: TYPE1) • 50 Hz mode: (at 2000 lx, 3200 K, 89.9% reflection) F8 (1080/50i, P.A.P FILTER: TYPE2) F11 (1080/50i, P.A.P FILTER: TYPE1)
Minimum Illumination:	0.2 lx (F1.6, Gain +30 dB, shutter speed 1/30 sec., P.A.P FILTER: TYPE1)
Digital Zoom:	×2, ×5, ×10

Memory Card Recorder Section

Recording Media:	P2 card
Recording Formats:	AVC-Intra 100/AVC-Intra 50/DVCPRO HD/ DVCPRO50/DVCPRO/DV formats switchable
Recording/Playback Time[1]: with a 64 GB P2 card	AVC-Intra 100/DVCPRO HD: approx. 64 min AVC-Intra 50/DVCPRO50: approx. 128 min DVCPRO/DV: approx. 256 min
with a 32 GB P2 card	AVC-Intra 100/DVCPRO HD: approx. 32 min AVC-Intra 50/DVCPRO50: approx. 64 min DVCPRO/DV: approx. 128 min
with a 16 GB P2 card	AVC-Intra 100/DVCPRO HD: approx. 16 min AVC-Intra 50/DVCPRO50: approx. 32 min DVCPRO/DV: approx. 64 min

Digital Video Specification

Recorded Video Signals:	1080/59.94i, 1080/29.97p, 1080/29.97pN, 1080/23.98p, 1080/23.98pA, 1080/23.98pN, 720/59.94p, 720/29.97p, 720/29.97pN, 720/23.98p, 720/23.98pN, 480/59.94i, 480/29.97p, 480/23.98p, 480/23.98pA, 1080/50i, 1080/25p, 1080/25pN, 720/50p, 720/25p, 720/25pN, 576/50i, 576/25p
Sampling Frequency:	AVC-Intra 100/DVCPRO HD: Y: 74.1758 MHz, P_B/P_R: 37.0879 MHz (59.94 Hz) Y: 74.2500 MHz, P_B/P_R: 37.1250 MHz (50 Hz) DVCPRO50: Y: 13.5 MHz, P_B/P_R: 6.75 MHz DVCPRO: Y: 13.5 MHz, P_B/P_R: 3.375 MHz
Quantizing:	AVC-Intra 100/AVC-Intra 50: 10 bits DVCPRO HD/DVCPRO50/DVCPRO/DV: 8 bits
Video Compression:	AVC-Intra 100/AVC-Intra 50: MPEG-4 AVC/H.264 Intra Profile DVCPRO HD: DV-Based Compression (SMPTE 370M) DVCPRO50/DVCPRO: DV-Based Compression (SMPTE 314M) DV: DV Compression (IEC 61834-2)

Digital Audio Specification

Recording Audio Signal:	AVC-Intra 100/AVC-Intra 50/DVCPRO HD: 48 kHz/16 bits, 4CH DVCPRO50: 48 kHz/16 bits, 4CH DVCPRO/DV: 48 kHz/16 bits, 2CH/4CH switchable

Video Input/Output

GENLOCK IN:	BNC × 1, 1.0 V [p-p], 75Ω
VIDEO OUT:	Pin jack × 1, 1.0 V [p-p], 75Ω
SDI OUT:	BNC × 1, 0.8 V [p-p], 75Ω, HD/SD switching via menu, 10 bit 4:2:2 via camera through out
HDMI OUT:	HDMI TypeA

Audio Input/Output

Built-In MIC IN:	Supports stereo microphones
AUDIO IN:	XLR 3 pin × 2 (INPUT 1, INPUT 2) LINE/MIC/+48 V switchable, LINE: 0 dBu, MIC: –40 dBu/–50d Bu/–60 dBu switching via menu
AUDIO OUT:	Pin jack × 2 (CH1/CH2), Output: 316 mV, 600 Ω
Headphone:	ø3.5 mm stereo mini jack × 1

Other Input/Output

TC IN/OUT:	BNC× 1, IN: 0.5 V [p-p] to 8 V [p-p], 10 kΩ OUT: low impedance, 2.0±0.5 V [p-p]
Camera Remote:	2.5 mm diameter, Super mini jack × 1 (ZOOM, S/S) 3.5 mm diameter Mini jack × 1 (FOCUS, IRIS)
IEEE 1394[2]:	6 pin, digital input/output (compliant with IEEE 1394)
USB 2.0 (DEVICE)[2]:	Type-miniB, 4 pin USB (compliant with USB ver. 2.0)
USB 2.0 (HOST)[2]:	Type-A, 4 pin USB (compliant with USB ver. 2.0)

Monitor, EVF and Seaker

LCD Monitor:	87.63 mm (3.45 inches) color LCD monitor with approx. 921,000 dots (16:9)
EVF:	11.43 mm (0.45 inches) color LCD monitor with approx. 1,226,000 dots (16:9)
Internal Speaker:	20 mm diameter × 1

Included Accessories

AC adaptor Battery charger, AC cord, DC cord, 5400 mAh battery pack,
Wireless remote controller with button-type battery, Microphone holder,
Eye cup, Shoulder strap, P2 card driver software install CD-ROM

*1: The Recording/playback times listed left can be continuously recorded as one clip. The number of recording clips will reduce the left figures somewhat.
*2: AG-HPX250EJ does not support input via IEEE 1394 and USB 2.0.

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

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P2HD
5 year extended warranty program
1st year Basic Warranty
2nd year
3rd year
4th year
5th year with the warranty program

Extended for free upon registration
* Availability of this extended service program and service content may depend on country/region and model.
* A maximum 5 year or pre-specified hours of operation from the date of purchase, whichever comes first.
* Not all repair work is covered by this extended warranty program.

Informative product-related content also available with equipment registration.

Please refer to the latest Non-linear Compatibilty Information, P2 Support, Downlord and Service Information, etc. at the following Panasonic web site.

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

Notes Regarding the Handling of P2 Files Using a PC

Mounting and Transferring Files
The PC must be installed with the included P2 driver in order to recognize, copy and transfer P2 files. This driver is also necessary when using the PC card slot and when handling P2 files stored on a hard-disk device, such as the P2 store. The included P2 driver is compatible with Windows Vista, Windows XP, Windows 2000 and Mac OSX. For other operating requirements, refer to the P2 installation manual. The P2 driver and the P2 installation manual can be downloaded free from the following Panasonic website. Visit https://eww.pavc.panasonic.co.jp/pro-av/ and click "P2 Support and Download."

Preview and Nonlinear Editing
To preview (play) P2 files on a PC, it is necessary to install the P2 Viewer software (downloadable for free, for Windows only) or P2 CMS content management software (downloadable for free, for both Windows and Mac), both from Panasonic, or P2-compatible editing software available from other companies (for details, visit https://eww.pavc.panasonic.co.jp/pro-av/sales_o/p2/partners.html). Note that each software places specific requirements on the operating environment, and the operating environment must meet additional requirements to play and edit HD content on Windows PCs and Macs. For P2 Viewer or P2 CMS download and operating requirement information, visit https://eww.pavc.panasonic.co.jp/pro-av/. For operating requirements and details of other P2 editing software, visit the website of the relevant software manufacturer.

*P2HD, AVC-Intra, DVCPRO HD" and "DVCPRO 50" logo are registered trademark of Panasonic Corporation. SD Logo is a trademark. SDHC logo marks are a registered trademark.

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JQA CERTIFIED MANAGEMENT SYSTEM
ISO 9001
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ISO 14001 JACO
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051

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

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