A Compact, Lightweight P2 HD Portable Recorder with HD SDI Input for High-Quality AVC-Intra Recording

New AVC-Intra Circuit Raises Image Quality and Lowers Power Consumption

The AVC-Intra codec in the AG-HPG20 provides high-quality HD recording with full 1920 x 1080/10-bit 4:2:2 sampling. This new AVC-Intra circuit also lowers power consumption at the same time.

P2 Portability Enhances Field Mobility

The solid-state memory card offers unparalleled reliability. Designed for professional applications, the P2 card combines inherent toughness with a large capacity and fast data transfers. The advanced file-based IT function further speeds up acquisition.

HD/SD SDI Input for Line Recording

The AG-HPG20 can be used both with a P2 cam and with a wide range of cameras/camcorders, including conventional tape-based models. Synchro backup enables Rec Start/Stop operation in sync with the Camcorder.

Easy File Previewing from an External HDD

The AG-HPG20 has a USB 2.0 interface and a new HDD Preview function that simplifies the playback* of P2 motion images from files copied to an external hard-disk drive.

*HDD Preview uses a lower frame rate to refresh the display.

The AG-HPG20 is a P2 portable recorder that records HD images with an AVC-Intra codec. It features a rugged body, two P2 card slots, a 3.5" LCD monitor and HD/SD multi-format recording. Its HD/SD SDI interface enables versatile line recording, and a USB 2.0 interface makes it easy to backup data onto an external hard-disk drive. A new HDD Preview* function also lets you preview P2 content stored on a hard-disk drive. These and other features allow the AG-HPG20 to handle a wide range of applications, including HD field recording; high-quality, large-screen playback, and easy file transfers to a hard-disk drive or PC-based nonlinear editor.

* HDD Preview uses a lower frame rate to refresh the display.

P2 Memory Card Recorder: Lower Operating Costs, Better for the Environment

P2 Reduces Total Cost of Ownership

(1) Faster, easier editing because digitization is not necessary
(2) Lower media costs because memory cards are reusable
(3) Lower maintenance costs because there is no moving mechanism

Reducing editing, media and maintenance costs, P2 can help improve your bottom line. Users can also take advantage of a special five-year free-repair service program that Panasonic offers for P2 HD equipment.

The P2 Card Helps Preserve the Environment: Repeated Reusability and Low Power Consumption

Allowing repeated file copying and initialization, a single P2 card can be used and re-used, again and again. When combined with an IT-based workflow that requires no dubbing, P2 cards can greatly reduce storage media expenses. And because a memory card recorder has no moving mechanism, it uses less power. For example, the AG-HPG20 uses about 95% less power than the tape-based AJ-HD3700 recorder.
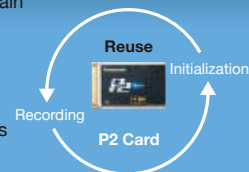
Reuse
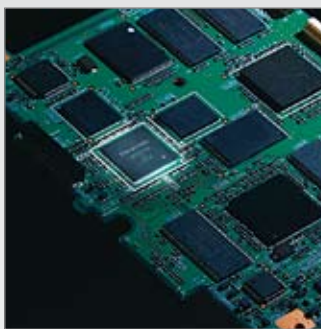Recording
Initialization
P2 Card
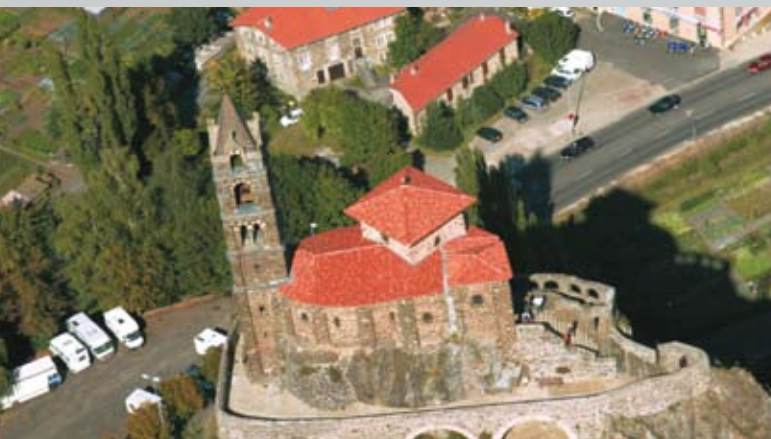
Sample Images of Intraframe Preduction   Left: Original image Center: Intra-frame predictive image   Right: Difference image obtained from subtracting the intra-frame

Incorporating a New AVC-Intra Codec Circuit

The AG-HPG20 comes with a newly developed AVC-Intra codec board that greatly lowers power consumption. AVC-Intra is a new codec that further advances HD production. It complies with the MPEG-4 AVC/H.264 international standard based on advanced image compression technology, and offers both superb image quality and highly efficient compression. It uses an intra-frame compression system to bring important advantages to professional editing. The AG-HPG20 can record in AVC-Intra 100 for maximum picture quality or in AVC-Intra 50, which has a lower compression rate, for versatile operation. It also supports DVCPRO HD codec recording.
• **AVC-Intra 100:** With the same bit rate as DVCPRO HD, this mode supports full 10-bit recordings with 1920 x 1080 pixels. It enables the AG-HPG to capture master-quality video for high-end video production.
• **AVC-Intra 50:** This mode delivers video quality very similar to DVCPRO HD, yet is able to do so at bit rates usually associated with standard definition (e.g., DVCPRO 50). AVC-Intra 50's lower bit rate doubles the recording time per P2 card over DVCPRO HD and lowers storage requirements for editing.

HD/SD Multi-Format Recording

The AG-HPG20 supports HD/SD multi-formats and multi-codec recording. See the table below.

	AVC-Intra 100	AVC-Intra 50	DVCPRO HD	DVCPRO 50	DVCPRO	DV
1080/60i	✓	✓	✓			
1080/50i	✓	✓	✓			
720/60p	✓	✓	✓			
720/50p	✓	✓	✓			
525/60i				✓	✓	✓
625/50i				✓	✓	✓

*The AG-HPG20 plays back in 24p, 25p and 30p. It also plays P2 content in over 60i/50i, over 60p/50p, pN (native) and pA (advanced). For details, see the specifications at the end of the brochure.

Down-Conversion/Up-Conversion/Cross-Conversion Output

During playback, the AG-HPG20 can down-convert HD to SD and output it, letting you view HD content on an SD monitor. The image aspect can be selected from squeeze, letterbox and side cut. The AG-HPG20 can also up-convert SD to HD, and cross-convert between 720 and 1080.

High-Quality 16-Bit, 48-kHz, 8-Channel Digital Audio

The AG-HPG20 is SDI embedded audio ready, and records and plays up to 8 channels of 16-bit digital audio with SDI input.

The P2 Card: Reliable, Reusable and with Extended Recording Time

The P2 card offers a large capacity of 64 GB* (AJ-P2C064AG) in a small, lightweight package. Its rugged design withstands even harsh professional use. It is highly resistant to temperature fluctuations, dust, impact and vibrations, and is free of the problems that are common in tapes, such as condensation, head clogging and dropouts. The P2 card promises solid reliability and excellent mobility under the often difficult conditions of field recording. Because data is automatically recorded in blank card spaces, there is no need for cueing and the risk of accidentally overwriting valuable data is eliminated.

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

Advanced Recording Functions Employing Two Card Slots

In addition to continuous, double-card recording, the AG-HPG20 enables some useful recording functions that are possible only with memory cards.
• **Hot-swap rec:** Thanks to the two card slots, you can hot-swap P2 cards for continuous non-stop recording. With multiple cards you can record for hours without interruption.
• **Loop rec:** This function continuously records video data onto available memory card areas. When the card becomes full, older data is deleted to free up the recording area, resulting in loss-less, endless recording. When used with cameras for time-sensitive information gathering like weather and news reporting, the loop rec function holds the latest video data for a predetermined time period.
• **UMID recording:** UMID data input from a camera can be recorded and played.

Clip Copying and Editing

P2 records a scene as a clip (file). To play back or delete a clip, or to check and edit its metadata (file information) or add or delete a shot marker, just select the clip from the thumbnail display on the built-in 3.5" LCD monitor.
The AG-HPG20 also provides a number of functions that are convenient in the field, including:
• **Clip Copy:** The two card slots let you copy clips from one P2 card to another. You can copy only the usable scenes to use the card's capacity more effectively.
• **Thumbnail Image Change:** By default, the first image in a clip is used as the thumbnail. At a desired location within a clip, you can change the thumbnail to a different image.
• **Clip Metadata Edit:** A clip's metadata can contain such information as the camera operator's name, reporter's name and shooting location. The AG-HPG20 lets you check this information and edit the text.
• **Text Memo:** When recording or previewing a clip, you can attach a memo (similar to a bookmark) at a desired location (up to 100 locations on a frame basis). Later you can display or delete a memo, or add a new one. The simplified editing function lets you copy a segment between memos and create a new clip. Text information can be added to a memo using the AG-HPG20 or a PC* (with P2 Viewer installed).
• **Shot Marker:** During or after recording, you can mark each clip with OK, NG or another designation.

* Read "Notes Regarding the Handling of P2 Files Using a PC" on the back page.

predictive image from the original image. This shows the high accuracy of intra prediction.

Versatile Playback Functions Meet Diverse Needs

• **Format Auto Playback:** This automatically detects the video format and codec for each video clip when starting playback and signal output.

• **Variable Speed Playback:** For slow-motion and double-speed playback.

• **Resume Playback:** If you press the Stop key during playback, the AG-HPG20 temporarily "bookmarks" the stop position until another operation is performed. When you press the Play key, playback resumes at the bookmarked position.

* The bookmark memory is reset when the power is turned off. The Resume Playback function is factory-set to OFF.

• **Single-Clip Playback:** This convenient function plays back one video clip with a one-touch operation.

• **Repeat Playback:** For presentations and demonstrations, use AG-HPG20 (P2 Portable) for repeated playback of a selected clip or multiple clips.*
Playback is seamless, with no need for rewinding or cueing. There is no wear or image deterioration even after extended, continuous playback.

*The clips must be in the same format.

AVC INTRA *Technology*

Intra-Frame (I-Frame Only) Compression Superiority

Motion-image compression can be divided roughly into two methods: I-Frame Only compression, which completes all processing within each frame, and Long GOP compression, which processes across multiple frames. AVC-Intra and DVCPRO HD use I-Frame Only compression, while HDV and XDCAM HD uses Long GOP compression.
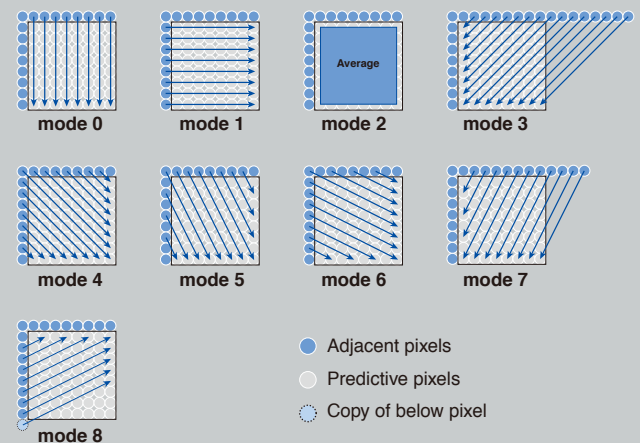The MPEG-4 AVC/H.264 standard encompasses both methods.
When the images of adjacent frames are similar, Long GOP compression achieves an advantageously low bit rate. However, this trait is not often seen in broadcasts like, fast-action sports, and music shows with confetti and electronic displays. Also, because processing is performed frame-by-frame in I-Frame Only, new-generation multi-core CPUs offer high-speed parallel processing. This makes I-Frame Only compression more suitable for nonlinear editing than Long GOP, for which parallel processing is difficult due to its inter-frame dependence. With its I-Frame Only compression, AVC-Intra produces remarkably stable images that are unaffected by adjacent frames, and meets professional needs in virtually all situations and workflows.

Twice the Compression Efficiency of MPEG-2

By selecting the most effective compression techniques from among those in compliance with the H.264 standard, AVC-Intra has doubled the compression ratio of MPEG-2, even with I-Frame Only compression. Its intra-frame predictive and context-adaptive entropy coding are particularly effective methods for boosting compression efficiency.

Intra-frame predictive coding (intra prediction)

This process generates predictive images based on adjacent blocks of 8 x 8 pixels. Selecting the most suitable predictive mode from among nine luminance signal modes (see illustration) and four color signal modes, it generates accurate predictive images. The residual data (obtained by subtracting a predictive image from the original input image) is recorded together with the predictive image. Because the prediction accuracy is high, there's minimal residual data, and thus high compression is achieved. This process is conducted within the frame, so prediction accuracy remains high even with fast-motion images.

mode 0   mode 1   mode 2 (Average)   mode 3
mode 4   mode 5   mode 6   mode 7
mode 8

● Adjacent pixels
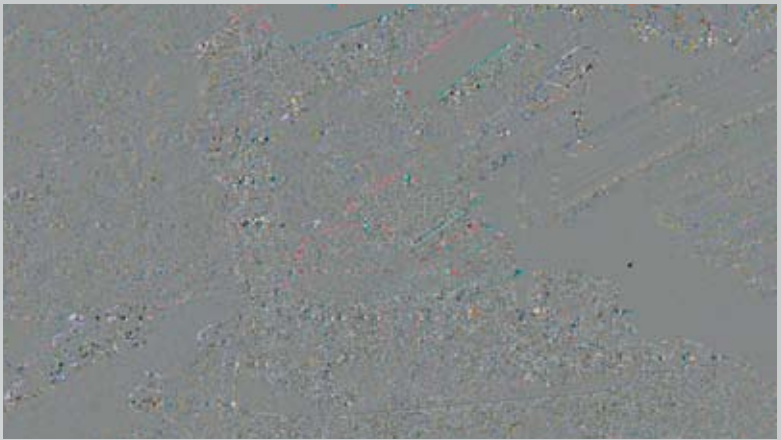○ Predictive pixels
◌ Copy of below pixel

Context-adaptive entropy coding

The entropy coding process used in MPEG-4 AVC/H.264 utilizes CAVLC (Context Adaptive VLC) and CABAC (Context Adaptive Binary Arithmetic Coding), both of which are context adaptive. MPEG-2 uses a fixed table when performing the VLC coding, with the result that compression efficiency is low with some types of images. In context-adaptive coding, on the other hand, operation varies with different kinds of images and high compression efficiency is maintained at all times.

For further information about MPEG-4 AVC/H.264, including an explanatory video, please visit:
https://eww.pavc.panasonic.co.jp/pro-av/technology/

Nimble, Easy Operation and a Wealth of Interfaces for Active Field Recording

User Buttons and User File

The three User buttons on the AG-HPG20 are set with the System Format (User 1), Exit (User 2) and Alt (User 3) functions by default. These User buttons can also be assigned other functions by the user. Up to four User files containing button settings can be stored in an SD/SDHC card.

Assignable Functions

Functions that are assignable include input select, system format select, Rec format SD, Rec format HD, Shot mark, Text memo, LCD backlight, OSD output select, Audio output signal select, Card slot select, LCD reverse display, WFM/VECTOR display, One clip playback

Waveform, Vector and 4:3 Marker

The AG-HPG20 has waveform and vectorscope display functions of the captured video signal on the LCD monitor. With HD video, a 4:3 marker can be displayed on the LCD monitor.

Waveform **Vectorscope** **4:3 Marker**

Play Back Variable Frame-Rate Sources

The AG-HPG20 supports the variable frame-rate recording widely used in creative video production. Use AG-HPG20 (P2 Portable) for on-the-spot previewing of slow-motion and other special effects recorded in 720pN (native) mode with a P2 HD Camcorder.

*The AG-HPG20 itself is not capable of native mode recording. It performs pull-down conversion for playback.

Small, Lightweight and Fully Mobile

The AG-HPG20 (P2 Portable) main unit weighs just 1.1 kilograms (2.5 lbs) and is small enough to use with one hand. Thanks to its rugged construction, it's tough enough to withstand rigorous field use. A powerful 5400-mAh battery pack mounts to the main unit's back. The AG-HPG20 can also use the AG-HVX200 series's battery, or plug it into an ordinary AC outlet using the adaptor provided.

HD/SD SDI Input/Output Terminals for Line Recording

The AG-HPG20 comes with HD/SD SDI input and output terminals as standard equipment. This supports high-quality line recording using signals from a video camera or switcher. When connected to a Camcorder, the AG-HPG20 syncs Rec Start/Stop with the camera trigger.

Preview of External HDD Content

The new HDD Preview function on the AG-HPG20 plays back P2 files from an external hard-disk drive connected via USB 2.0 (Host) for on-screen visual checks. This adds extra convenience to data backup operations.

*HDD Preview uses a lower frame rate to refresh the display.

USB 2.0 Host/Device Interfaces

The USB 2.0 interface includes both host and device modes, for flexible interfacing with an external hard-disk drive and nonlinear editor.
• HOST mode lets you copy files between a P2 card and a hard-disk drive and make backup copies of video clips. USB bus power (5 V, 0.5 A) is provided to power the external drive. It is also possible to rename the drive.
• DEVICE mode lets you upload and download files, just as you would with a P2 drive.

IEEE 1394 Interface

The IEEE 1394 interface can be used for a variety of purposes, such as streaming output (DVCPRO HD, DVCPRO50, DVCPRO, DV) to a nonlinear editor, backup recording for a Panasonic camcorder, and copying data from a DVCPRO HD VTR to a P2 card.

Analog Outputs

The AG-HPG20 has composite video output and audio output (CH1/CH2 pin jacks).

• **Line Recording:** The HD/SD SDI input terminal allows AVC-Intra recording from a wide range of sources, including existing tape-based Camcorders. Use the IEEE 1394 interface for connecting Panasonic DVCPRO equipment.

*The IEEE 1394 input/ouput terminals do not support the AVC-Intra 100 or AVC-Intra 50 codec.

• **Playback, Preview and Output:** The AG-HPG20 provides easy, convenient video viewing. It can play video files stored on a P2 card or in an external hard-disk drive. Because the AG-HPG20 offers high picture and sound quality and includes a Repeat function, it can also be used for applications such as exhibitions and showrooms.

Specifications

General Specification

Power Source:	DC7.2V/7.9V
Power Consumption:	12W
Operating Temperature:	0°C to 40°C (32°F to 104°F)
Operating Humidity:	10% to 80% (no condensation)
Storage Temperature:	−20°C to 50°C (−4°F to 122°F)
Storage Humidity:	10% to 85% (no condensation)
Weight:	Approx. 1.1 kilograms (2.5 lbs)
Dimensions (W x H x D):	104 x 83 x 227 mm (4-3/32″ x 3-9/32″ x 8-15/16″, without rubber shoe)
Recording Media:	P2 card

Video Specification

Recording Format:	1080/59.94i, 1080/50i, 720/59.94p, 720/50p (AVC-Intra100/AVC-Intra50/DVCPRO HD) 480/59.94i, 576/50i (DVCPRO50/DVCPRO/DV) *Not available AVC-Intra 100/50 recording via IEEE 1394.
Playback Format:	AVC-Intra100/AVC-Intra50 1080/59.94i 1080/50i 1080/29.97pN (Native) 1080/23.98pN (Native) 1080/25pN (Native) 720/59.94p 720/29.97pN (Native) 720/23.98pN (Native) 720/50p 720/25pN (Native)
	DVCPRO HD 1080/59.94i (29.97p over 59.94i, 23.98p over 59.94i,) 23.98pA over 59.94i, 1080/50i (25p over 50i) 720/59.94p (29.97p over 59.94p, 23.98p over 59.94p) 720/29.97pN (Native) 720/23.98pN (Native) 720/50p (25p over 50p) 720/25pN (Native)
	DVCPRO50/DVCPRO/DV 480/59.94i (29.97p over 59.94i, 23.98p over 59.94i, 23.98pA over 59.94i) 576/50i (25p over 50i) *Pull-down playback for native-mode recorded source.
Sampling Frequncy :	AVC-Intra100/DVCPRO HD: Y: 74.176MHz (59.94Hz), 74.25MHz (50Hz) PB/PR: 37.088MHz (59.94Hz), 37.125MHz (50Hz) DVCPRO50: Y: 13.5MHz, PB/PR: 6.75MHz DVCPRO/DV: Y: 13.5MHz, PB/PR: 3.375MHz
Quantizing :	AVC-Intra100/AVC-Intra50: 10bits DVCPRO HD/DVCPRO50/DVCPRO/DV: 8bits
Video Compression Format:	AVC-Intra100/AVC-Intra50: MPEG-4 AVC/H.264 Intra Profile DVCPRO HD: DV Base (SMPTE 370M) DVCPRO50/DVCPRO: DV Base (SMPTE 314M) DV: DV (IEC 61834-2)

Audio Specification

Recording Format:	AVC-Intra100, AVC-Intra50: 48kHz/16bit/8CH DVCPRO HD: 48kHz/16bit/8CH (4CH via IEEE 1394 input) DVCPRO50: 48kHz/16bit/4CH DVCPRO/DV: 48kHz 16bit/2CH or 4CH (DV 32kHz/12bits/4CH Input is converted to 48kHz/16bits/4CH) 48 kHz/16-bit, 2CH/4CH (DVCPRO/DV)
Headroom:	12 dB/18 dB/20 dB selectable

Video Input

HD/SD SDI:	BNC x 1 (selectable) HD: SMPTE292M/296M/299M Standard (Return loss does not satisfy standard) SD: SMPTE 259M-C/272M-A/ITU-R BT 656-4 Standard

Video Output

HD/SD SDI:	BNC x 1 (selectable) HD: SMPTE292M/296M/299M Standard (Return loss does not satisfy standard) SD: SMPTE 259M-C/272M-A/ITU-R BT 656-4 Standard
VIDEO:	BNC x 1, Analog Composite, 1.0V [p-p], (75Ω)

Audio Output

SDI Input:	BNC x 1 (HD: SMPTE 292M/296M/299M Standard SD: SMPTE 259M-C/272M-A/ITU-R BT.656-4 Standard)
SDI Output:	BNC x 1 (HD: SMPTE 292M/296M/299M Standard SD: SMPTE 259M-C/272M-A/ITU-R BT.656-4 Standard)
LINE Output:	Pin jack x 2 (CH1 / CH2)
Headphones:	Stereo Mini Jack x 1 (3.5 mm diameter)
Speaker:	20 mm round x 1 (mono)

Other Input and Output

IEEE 1394 In/Out:	6pin x 1, IEEE 1394a
USB2.0:	HOST x 1 (A-type, bus power compatible) DEVICE x 1 (B-type)

Card Slot/ Monitor

P2 card Slot:	2 slots
SD Memory Card Slot:	1 slot (Not supporting Multimedia card)
LCD Monitor:	3.5-Inch, 210,000 pixels, color LCD

Accessories

AC Adaptor:	Weight:	160 grams (0.35 lbs)
	Dimensions:	70 mm x 44.5 mm x 116 mm
	(W x H x D)	(2-3/4″ x 1-3/4″ x 4-9/16″)
	Rated Input:	100V-240V AC, 50/60Hz 24W
	Rated Output:	7.9V DC, 1.9A/8.4V DC, 1.2A (for charge)
Battery:	5400 mAh (Equal to CGA-D54)	
Other:	AC code, DC code, P2 card driver software (CD-ROM)	

Memory Card

Recording Playback Time*:			by single card	using 2 card slots
64GB Card	DVCPRO/DV	(Audio 2CH/4CH)	Approx. 256 min.	Approx. 512 min.
	DVCPRO 50	(Audio 4CH)	Approx. 128 min.	Approx. 256 min.
	DVCPRO HD	(Audio 8CH)	Approx. 64 min.	Approx. 128 min.
	AVC-Intra 50	(Audio 8CH)	Approx. 128 min.	Approx. 256 min.
	AVC-Intra 100	(Audio 8CH)	Approx. 64 min.	Approx. 128 min.
32GB Card	DVCPRO/DV	(Audio 2CH/4CH)	Approx. 128 min.	Approx. 256 min.
	DVCPRO 50	(Audio 4CH)	Approx. 64 min.	Approx. 128 min.
	DVCPRO HD	(Audio 8CH)	Approx. 32 min.	Approx. 64 min.
	AVC-Intra 50	(Audio 8CH)	Approx. 64 min.	Approx. 128 min.
	AVC-Intra 100	(Audio 8CH)	Approx. 32 min.	Approx. 64 min.
16GB Card:	DVCPRO/DV	(Audio 2CH/4CH)	Approx. 64 min.	Approx. 128 min.
	DVCPRO 50	(Audio 4CH)	Approx. 32 min.	Approx. 64 min.
	DVCPRO HD	(Audio 8CH)	Approx. 16 min.	Approx. 32 min.
	AVC-Intra 50	(Audio 8CH)	Approx. 32 min.	Approx. 64 min.
	AVC-Intra 100	(Audio 8CH)	Approx. 16 min.	Approx. 32 min.

*Time shown above is when you record a series of 1 shot to P2 card. Depending on numbers of shots you record, time will get shorter than the number shown above.

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

Optional Accessories

CGA-D54 (5400mAh)
Lithium Ion Battery

AG-B25
AC Adapter kit

AJ-P2C064AG
AJ-P2C032AG
AJ-P2C032RG
AJ-P2C016AG
AJ-P2C016RG
Memory Card

BT-LH80WU
7.9" HD/SD LCD monitor

BT-LH900A
8.4" HD/SD LCD monitor

BT-LH1710
17" HD/SD LCD monitor

BT-LH1760
17" 100Hz/120Hz
HD/SD LCD monitor

BT-LH2550
25.5" HD/SD LCD monitor

P2HD 5 Year Warranty Repair Program[*1]

Customers who register as users on the website will receive an extended warranty valid for up to five years.

	1st year	2nd year	3rd year	4th year	5th year[*5]
P2HD device[*2]	Basic warranty[*3]	Extended warranty repair[*4]			

*1: Please note this extended warranty is not available in some countries/regions. See web site below for details. *2: Not all models are eligible for extended warranty coverage. *3: The basic warranty period may vary depending on the country/region. See enclosed warranty sheet for warranty coverage. *4: Not all repair work is covered by this extended warranty. See enclosed warranty sheet for warranty coverage. *5: The maximum warranty period may be adjusted dependig on the number of hours the device has been used.

Purchase P2 product → Register online within 1 month → "Registration Notice" e-mail sent → **5 years of Warranty Repairs**
Make sure to save the "Registration Notice" e-mail during the warranty period.

Details about user registration and the extended warranty: http://panasonic.biz/sav/pass_e

Please refer to the latest nonlinear compatibilty Information, P2 Support and Downlord and Service Information, etc. at panasonic web site.
https://eww.pavc.panasonic.co.jp/pro-av/index.html

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 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 a 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 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.

Panasonic®

Panasonic Corporation
Systems Business Group
2-15 Matsuba-cho, Kadoma, Osaka 571-8503
Japan
Phone +81 6 6901 1161 Fax +81 6 6908 5969
https://eww.pavc.panasonic.co.jp/pro-av/

[Countries and Regions]

Argentina	+54 1 308 1610
Australia	+61 2 9986 7400
Bahrain	+973 252292
Belgium	+32 (0) 2 481 04 57
Bulgaria	+359 2 946 0786
Brazil	+55 11 3889 4035
Canada	+1 905 624 5010
China	+86 10 6515 8828
(Hong Kong)	+852 2313 0888)
Czech Republic	+420 236 032 552/511
Denmark	+45 43 20 08 57
Egypt	+20 2 23938151
Finland, Latvia, Lithuania, Estonia	
	+358 (9) 521 52 53
France	+33 (0) 1 55 93 66 67
Germany, Austria	+49 (0) 611 235 401
Greece	+30 210 96 92 300
Hungary	+36 (1) 382 60 60
India	+91 11 2437 9961 to 4
Indonesia	+62 21 385 9449
Iran	
(Vida)	+98 21 2271463
(Panasonic Office)	+98 2188791102
Italy	+39 02 6788 367
Jordan	+962 6 5859801
Kazakhstan	+7 727 298 0891
Korea	+82 2 2106 6641

Kuwait	+96 522431385
Lebanon	+96 11665557
Malaysia (PM & PSE)	
	+60 3 7809 7888
Mexico	+52 55 5488 1000
Montenegro, Serbia	
	+41 (0) 26 466 25 20
Netherlands	+31 73 64 02 577
New Zealand	+64 9 272 0100
Norway	+47 67 91 78 00
Pakistan	+92 5370320 (SNT)
Palestine	+972 2 2988750
Panama	+507 229 2955
Peru	+51 1 614 0000
Philippines	+63 2 633 6162
Poland	+48 (22) 338 1100
Portugal	+351 21 425 77 04
Puerto Rico	+1 787 750 4300
Romania	+40 21 211 4855
Russia & CIS	+7 095 980 4206
Saudi Arabia	+96 626444072
Singapore	+65 6270 0110
Slovak Republic	+421 (0) 2 52 92 14 23
Slovenia, Croatia, Bosnia, Macedonia	
	+44 (0) 20 76 63 36 57
South Africa	+27 11 3131622
Spain	+34 (93) 425 93 00

Sweden	+46 (8) 680 26 41
Switzerland	+41 (0) 41 259 96 32
Syria	+963 11 2318422/4
Taiwan	+886 2 2227 6214
Thailand	+66 2 731 8888
Turkey	+90 216 578 3700
U.A.E. (for All Middle East)	
	+971 4 8862142
Ukraine	+380 44 4903437
U.K	+44 (0)1344 70 69 20
U.S.A.	+1 201 348 5300
Vietnam	+848 38370280

JQA CERTIFIED MANAGEMENT SYSTEM
ISO 9001
JQA-0443

ISO 14001 JACO
EC98J2010
UKAS ENVIRONMENTAL MANAGEMENT
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Factories of Systems Business Group have received ISO14001:2004-the Environmental Management System certification. (Except for 3rd party's peripherals.)

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