Register now!!
This product is eligible for the P2HD 5 Year Warranty Repair Program.
For details, see page 90 of Vol.2.
http://panasonic.biz/sav/pass_e/

Panasonic

Operating Instructions Vol.1

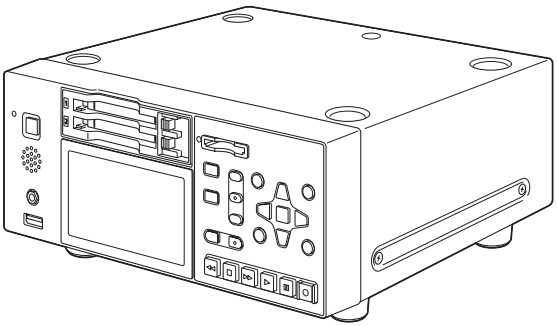
Memory Card Portable Recorder

Model No. AG-HPD24P

Model No. AG-HPD24E

Volume 1

Note that Operation Instructions Vol.1 describes basic operations of the Memory Card Portable Recorder.
For instructions on advanced operations of the Memory Card Portable Recorder, refer to Operating Instructions Vol. 2 (pdf file) contained in the supplied CD-ROM.

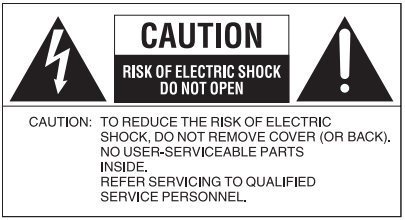


Before operating this product, please read the instructions carefully and save this manual for future use.

SS0711TO1043 -PS
Printed in japan

ENGLISH
VQT3S21-1

indicates safety information.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

This equipment must be grounded.
To ensure safe operation, the three-pin plug must be inserted only into a standard three-pin power outlet which is effectively grounded through normal household wiring. Extension cords used with the equipment must have three cores and be correctly wired to provide connection to the ground. Wrongly wired extension cords are a major cause of fatalities. The fact that the equipment operates satisfactorily does not imply that the power outlet is grounded or that the installation is completely safe. For your safety, if you are in any doubt about the effective grounding of the power outlet, please consult a qualified electrician.

WARNING:

- To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.
- To reduce the risk of fire or electric shock hazard, keep this equipment away from all liquids. Use and store only in locations which are not exposed to the risk of dripping or splashing liquids, and do not place any liquid containers on top of the equipment.

WARNING:

Always keep memory cards (optional accessory) out of the reach of babies and small children.

CAUTION:

The mains plug of the power supply cord shall remain readily operable.
The AC receptacle (mains socket outlet) shall be installed near the equipment and shall be easily accessible.
To completely disconnect this equipment from the AC mains, disconnect the mains plug from the AC receptacle.

CAUTION:

Danger of explosion or fire if battery is incorrectly replaced or mistreated.

- Do not disassemble the battery or dispose of it in fire.
- Do not store in temperatures over 60 °C (140 °F).
- Do not expose the battery to excessive heat such as sunshine, fire or the like.

For Battery Pack

- Use specified charger.
- Replace only with same or specified type.

CAUTION:

In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

CAUTION:

To reduce the risk of fire or electric shock and annoying interference, use the recommended accessories only.

CAUTION:

This apparatus can be operated at a voltage in the range of 100 – 240 V AC.
Voltages other than 120 V are not intended for U.S.A. and Canada.
Operation at a voltage other than 120 V AC may require the use of a different AC plug. Please contact either a local or foreign Panasonic authorized service center for assistance in selecting an alternate AC plug.

CAUTION:

Excessive sound pressure from earphones and headphones can cause hearing loss.

indicates safety information.

FCC NOTICE (USA)

Declaration of Conformity

Model Number: AG-HPD24P
Trade Name: Panasonic
Responsible Party: Panasonic Corporation of North America One Panasonic Way, Secaucus, NJ 07094
Support contact: 1-800-524-1448

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
To assure continued compliance, follow the attached installation instructions and do not make any unauthorized modifications.

CAUTION:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the booklet “Something About Interference” available from FCC local regional offices helpful.

FCC Warning:

To assure continued FCC emission limit compliance, follow the attached installation instructions and the user must use only shielded interface cables when connecting to host computer or peripheral devices. Also any unauthorized changes or modifications to this equipment could void the user’s authority to operate this device.

NOTIFICATION (Canada)

This class B digital apparatus complies with Canadian ICES-003.

A lithium ion/polymer battery that is recyclable powers the product you have purchased. Please call 1-800-8-BATTERY for information on how to recycle this battery.

Notice (U.S.A. only):

Disposal may be regulated in your community due to Environmental considerations. For disposal or recycling information, please visit Panasonic website: http://www.panasonic.com/environmental or call 1-888-769-0149.

Note:

Recorder
The rating plate is on the underside of the recorder.
AC Adaptor
The rating plate is on the underside of the AC Adaptor. Disconnect the AC mains plug from the AC mains socket when not in use.

Brazil Only
Brasil Apenas

■ Manuseio de baterias usadas

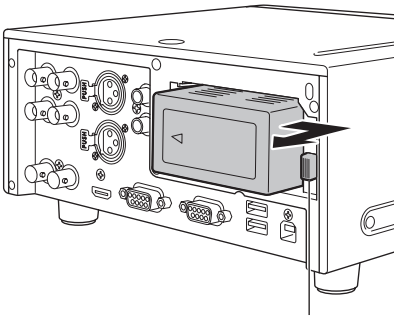
BRASIL
Após o uso, as pilhas e/ou baterias deverão ser entregues ao estabelecimento comercial ou rede de assistência técnica autorizada.

Cobrir os terminais positivo (+) e negativo (-) com uma fita isolante adesiva, antes de depositar numa caixa destinada para o recolhimento. O contato entre partes metálicas pode causar vazamentos, gerar calor, romper a blindagem e produzir fogo.
Não desmonte, não remova o invólucro, nem amasse a bateria. O gás liberado pela bateria pode irritar a garganta, danificar o lacre do invólucro ou o vazamento provocar calor, ruptura da blindagem e produzir fogo devido ao curto circuito dos terminais.
Não incinere nem aqueça as baterias, elas não podem ficar expostas a temperaturas superiores a 100 °C (212 °F). O gás liberado pela bateria pode irritar a garganta,danificar o lacre do invólucro ou o vazamento provocar calor, ruptura da blindagem e produzir fogo devido ao curto circuito dos terminais provocado internamente.
Evite o contato com o liquido que vazar das baterias. Caso isto ocorra, lave bem a parte afetada com bastante água. Caso haja irritação, consulte um médico.

■ Para remover a bateria

Bateria Principal de Energia

Pressione o botão para liberar a bateria.



Botão de liberação da bateria

IMPORTANT SAFETY INSTRUCTIONS

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

indicates safety information.

WARNING:

This equipment must be earthed.
To ensure safe operation, the three-pin plug must be inserted only into a standard three-pin power point which is effectively earthed through normal household wiring.
Extension cords used with the equipment must have three cores and be correctly wired to provide connection to the earth. Wrongly wired extension cords are a major cause of fatalities.
The fact that the equipment operates satisfactorily does not imply that the power point is earthed or that the installation is completely safe. For your safety, if you are in any doubt about the effective earthing of the power point, please consult a qualified electrician.

WARNING:

- To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.
- To reduce the risk of fire or electric shock hazard, keep this equipment away from all liquids. Use and store only in locations which are not exposed to the risk of dripping or splashing liquids, and do not place any liquid containers on top of the equipment.

WARNING:

Always keep memory cards (optional accessory) out of the reach of babies and small children.

CAUTION:

To reduce the risk of fire or electric shock and annoying interference, use the recommended accessories only.

CAUTION:

Do not remove panel covers by unscrewing them.
To reduce the risk of electric shock, do not remove the covers. No user serviceable parts inside.
Refer servicing to qualified service personnel.

CAUTION:

In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

CAUTION:

Danger of explosion or fire if battery is incorrectly replaced or mistreated.

- Do not disassemble the battery or dispose of it in fire.
- Do not store in temperatures over 60 °C.
- Do not expose the battery to excessive heat such as sunshine, fire or the like.

For Battery Pack

- Use specified charger.
- Replace only with same or specified type.

CAUTION:

The mains plug of the power supply cord shall remain readily operable.
The AC receptacle (mains socket outlet) shall be installed near the equipment and shall be easily accessible.
To completely disconnect this equipment from the AC mains, disconnect the mains plug from the AC receptacle.

CAUTION:

Excessive sound pressure from earphones and headphones can cause hearing loss.

The rating plate is on the underside of the Recorder.

EEE Yönetmeliğine Uygundur.
EEE Complies with Directive of Turkey.

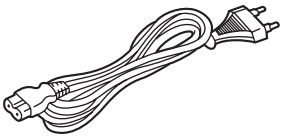
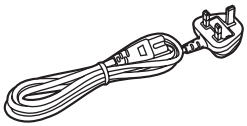
indicates safety information.

Caution for AC Mains Lead

For battery charger

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.
This product is equipped with 2 types of AC mains cable. One is for continental Europe, etc. and the other one is only for U.K.

Appropriate mains cable must be used in each local area, since the other type of mains cable isnot suitable.

FOR CONTINENTAL EUROPE, ETC. Not to be used in the U.K.	FOR U.K. ONLY
	

FOR U.K. ONLY

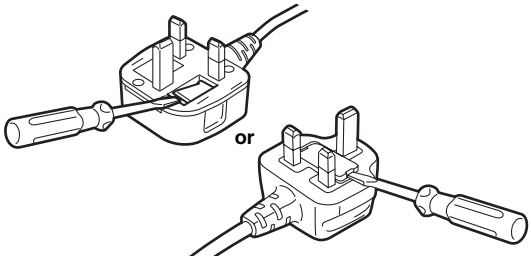
This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5 amp fuse is fitted in this plug. Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amps and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark ⓐ or the BSI mark ⓚ on the body of the fuse.

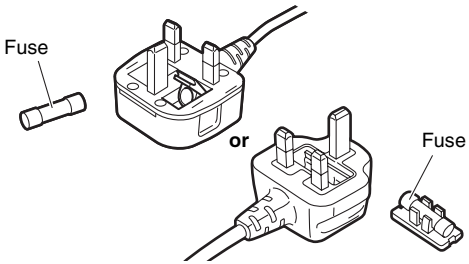
If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.

How to replace the fuse

1. Open the fuse compartment with a screwdriver.



2. Replace the fuse



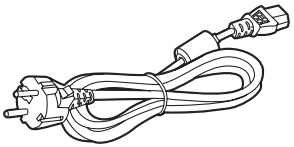
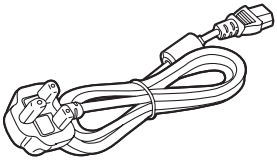
indicates safety information.

Caution for AC Mains Lead

For AC adaptor

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.
This product is equipped with 2 types of AC mains cable. One is for continental Europe, etc. and the other one is only for U.K.

Appropriate mains cable must be used in each local area, since the other type of mains cable isnot suitable.

FOR CONTINENTAL EUROPE, ETC. **Not to be used in the U.K.**	**FOR U.K. ONLY**
	

FOR U.K. ONLY

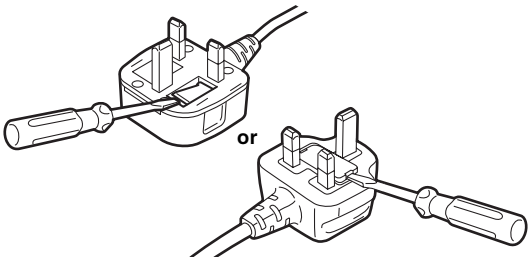
This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 13 amp fuse is fitted in this plug. Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 13 amps and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark ⓐ or the BSI mark ⓚ on the body of the fuse.

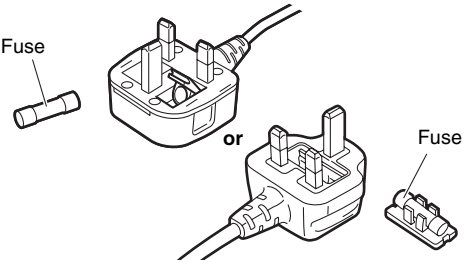
If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local Panasonic Dealer.

How to replace the fuse

1. Open the fuse compartment with a screwdriver.



2. Replace the fuse



EMC NOTICE FOR THE PURCHASER/USER OF THE APPARATUS

1. Applicable standards and operating environment (AJ-HPD24E)

The apparatus is compliant with:

- standards EN55103-1 and EN55103-2, and
- electromagnetic environments E1, E2, E3 and E4

2. Pre-requisite conditions to achieving compliance with the above standards

<1> Peripheral equipment to be connected to the apparatus and special connecting cables

- The purchaser/user is urged to use only equipment which has been recommended by us as peripheral equipment to be connected to the apparatus.
- The purchaser/user is urged to use only the connecting cables described below.

<2> For the connecting cables, use shielded cables which suit the intended purpose of the apparatus.

- Video signal connecting cables
  Use double shielded coaxial cables, which are designed for 75-ohm type high-frequency applications, for SDI (Serial Digital Interface).
  Coaxial cables, which are designed for 75-ohm type high-frequency applications, are recommended for analog video signals.
- Audio signal connecting cables
  If your apparatus supports AES/EBU serial digital audio signals, use cables designed for AES/EBU.
  Use shielded cables, which provide quality performance for high-frequency transmission applications, for analog audio signals.
- Other connecting cables (IEEE1394, USB)
  Use shielded cables, which provide quality performance for high-frequency applications, as connecting cables.
- When connecting to the DVI signal terminal, use a cable with a ferrite core.
- If your apparatus is supplied with ferrite core(s), they must be attached on cable(s) following instructions in this manual.

3. Performance level

The performance level of the apparatus is equivalent to or better than the performance level required by these standards.

However, the apparatus may be adversely affected by interference if it is being used in an EMC environment, such as an area where strong electromagnetic fields are generated (by the presence of signal transmission towers, cellular phones, etc.). In order to minimize the adverse effects of the interference on the apparatus in cases like this, it is recommended that the following steps be taken with the apparatus being affected and with its operating environment:

1. Place the apparatus at a distance from the source of the interference.
2. Change the direction of the apparatus.
3. Change the connection method used for the apparatus.
4. Connect the apparatus to another power outlet where the power is not shared by any other appliances.

Manufactured by: Panasonic Corporation, Osaka, Japan
Importer's name and address of pursuant to EU rules:
Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg, Germany

Note regarding the Power Management function specified under COMMISSION REGULATION (EC) No 1275/2008 implementing Directive 2009/125/EC of the European Parliament and of the Council.

This device is designed and manufactured for use at a broadcasting station and/or in a similar environment. This device is not equipped with a Power Management function or the Power Management function is set to OFF as it will prevent the device from fulfilling its intended purpose for the reasons below.

1. If the device is a Studio Camera, a Weather Camera, a Mixer or other processor:
   A Power Management function may cause the device to suddenly stop during recording or while On Air.
2. If the device is a Studio Monitor:
   A Power Management function may cause video for the confirmation of whether a signal is normal, or whether the signal has been lost, to be un-viewable.
3. If the device is a Camera Recorder:
   A professional camera recorder must be able to start quickly at any time, but a Power Management function will cause an increase in the time taken to resume from Stand-by mode.

■ About batteries that you can use with this unit (Correct as of August 2011)

The battery that can be used with this unit is CGA-D54.

- The unit has a function for distinguishing batteries which can be used safety. The dedicated battery (CGA-D54) supports this function. The only batteries suitable for use with this unit are genuine Panasonic products and batteries manufactured by other companies and certified by Panasonic. (Batteries which do not support this function cannot be used). Panasonic cannot in any way guarantee the quality, performance or safety of batteries which have been manufactured by other companies and are not genuine Panasonic products.

It has been found that counterfeit battery packs which look very similar to the genuine product are made available to purchase in some markets. Some of these battery packs are not adequately protected with internal protection to meet the requirements of appropriate safety standards. There is a possibility that these battery packs may lead to fire or explosion. Please be advised that we are not liable for any accident or failure occurring as a result of use of a counterfeit battery pack. To ensure that safe products are used we would recommend that a genuine Panasonic battery pack is used.

EU

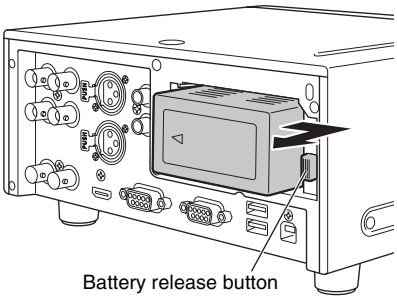
To remove the battery

Main Power Battery

Press the battery release button.

Back-up Battery

- For the removal of the battery for disposal at the end of its service life, please consult your dealer.



3D image viewing

- When viewing 3D images, observe the viewing precautions indicated in the operating instructions of the monitor. If you continue viewing 3D images in incorrect conditions, it may cause eyestrain or other adverse effects.

- The SDHC logo is a trademark of SD-3C, LLC.
- HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC of the United States and/or other countries.
- Microsoft® and Windows® are registered trademarks or trademarks of Microsoft Corporation® of the United States and/or other countries.
- Apple and Macintosh are registered trademarks of Apple Inc. of the United States and other countries.
- Microsoft product screen shots reprinted with permission from Microsoft Corporation.
- Names of products, brands, etc., appearing in this manual are trademarks or registered trademarks of their respective owners.

Illustrations in this manual

- Note that illustrations of the unit and menu screens may differ from those you actually see.

Note concerning screenshots in these instructions

- Screenshots from the AG-HPD24P are used in these operating instructions.

Page references

- In this manual, references to pages are indicated as: (→ page 00).

Terminology

- The term “SD memory card” is used below as a generic term for both SD and SDHC memory cards.
- A memory card with the “P2” logo (for example the separately sold AJ-P2E064XG) is referred to as a “P2 card.”
- A recordable media device such as an external hard disk drive connected to a USB port is referred to as a “storage device.”
- A single continuous video recording is referred to as a “clip.”
- Orange button labels indicate alternate functions enabled by holding the SHIFT button. The operating instructions refer to the buttons only by label, without mentioning the SHIFT button.

Website URL

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

About copyrights

- Copyright laws may prohibit use, except for personal pleasure, of your recorded video and audio content without permission of the rights holder.

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Volume 2

Available Modes

Main Mode

USB Device Mode

3D Recording/Playback Mode (3D REC/PB)

Synchronous Playback Mode (SYNC PB)

Screen Display

Time Code, User Bits, CTL

Setup Menu

Using a Keyboard

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Usage Precautions

Regarding this unit

■ Panasonic makes no guarantees for your recordings

- Please understand that Panasonic makes no guarantees for your recordings in cases where video and/or audio were not recorded as you intended due to problems with this unit, P2 cards, or SD memory cards.

■ Be careful to avoid getting water inside the unit when using it in rainy or snowy weather, or near the sea shore.

- The unit or card may be damaged. (In some cases, it may become unrepairable.)

■ Do not install this unit in a location exposed to direct sunlight

- This may deform the cabinet or damage the LCD screen.

■ Keep the unit away from elecromagnetic devices (such as TVs and video game machines).

- Using the unit on or near a TV may result in distorted video or audio due to electromagnetic radiation.
- The strong magnetic field produced by loudspeakers and large monitors can damage recordings or distort video images.
- Electromagnetic radiation from computers can distort video and audio.
- If a malfunction is suspected to have occurred due to the influence of a magnetic device, turn the unit off and remove the battery or unplug the AC adaptor. Then re-install the battery or reconnect the AC adaptor. Finally, turn the unit back on.

■ Do not use the unit near a radio transmitter or high-voltage equipment.

- Recorded video and audio may be disrupted if used near a radio transmitter or high-voltage equipment.

■ When using the unit at the sea shore, be careful to avoid allowing sand or dust to get inside.

- Sand and dust can damage the unit or card. (Be especially careful when inserting and removing cards.)

■ When carrying the unit, be careful not to drop it.

- The unit can be damaged by strong shocks, and may malfunction.

■ Keep the unit away from contact with insecticides or other volatile materials.

- Insecticides and other volatile materials can deform the unit and dissolve the finish.
- Do not leave the unit in contact with rubber or vinyl products for long periods.

■ Secure deletion of data from memory cards and storage devices prior to disposal or transfer of the unit.

- The format and delete functions on this unit or a PC will only change the file management data and leave data on the memory card or storage device intact. It is recommended that cards or storage devices either be physically destroyed or that commercially sold software be used to completely delete any data they contain. Management of data on memory cards and storage devices is the sole responsibility of the user.

■ Liquid crystal displays

- The pixels of the LCD monitor are controlled to obtain high precision with 99.99 % of the effective pixels. This leaves less than 0.01 % of pixels that may not light or may remain on all the time. These phenomena are normal and will have no effect on the images you shoot.
- There may be some unevenness on the screen depending on the image displayed.
- Wiping or rubbing the LCD screen with a rough cloth may damage it.

- A temporary afterimage (burn-in) may occur when the same image or text is displayed for a long time, although it can be recovered by turning power off for several hours.
- LCD response and brightness vary with operating temperature.
- In a high-temperature and high-humidity location, the LCD panel characteristics may change and result in uneven image quality.

■ Information on software for this product

1. Included with this product is software licensed under the GNU General Public License (GPL) and GNU Lesser General Public License (LGPL), and users are hereby informed that they have the right to obtain, change and redistribute the source codes of this software.
   Details on GPL and LGPL can be found on the installation CD provided with the unit. Refer to the folder called “LDOC”.
   (Details are given in the original (English-language) text.)
   See our website (→ “Website URL” page 11) to obtain the source code.
   The manufacturer asks users to refrain from directing inquiries concerning the source codes they have obtained and other details to its representatives.
2. Included with this product is software which is licensed under MIT-License.

This information is provided in the LDOC folder (in the original English language text) on the install CD-ROM supplied with the unit.

AC adaptor

Use the supplied AC adaptor. Read the Operating Instructions (→ “Using the AC adaptor” page 26) before use.

Battery

Use the supplied battery. (CGA-D54 for the AG-HPD24P / CGA-D54s for the AG-HPD24E)

Battery characteristics

This unit uses a rechargeable lithiumion battery that uses its internal chemical reaction to generate electrical energy. This reaction is easily influenced by the ambient temperature and humidity, and the battery’s effective operating time is reduced as the temperature rises or falls. In very low temperatures, the battery may last only 5 minutes.
Protective circuitry functions if you use the battery where it is very hot and you will have to wait before you can use it again.

Remove the battery after use.

Completely remove the battery. (The battery continues to be used even if you have turned the unit off.) The battery can over discharge if you leave it in the unit and it may become impossible to recharge it.

Before Use

Always confirm the year, month, day, time and time zone, and set as necessary

The clock setting affects management of recorded content and playback control. Before recording, confirm the correct year, month, day, time and time zone settings. (→ "Setting the Year, Month, Day and Time" page 28)

Compatible storage media

The following types of storage media can be used. See the specified pages for details.

- P2 Card (→ "Handling P2 Card Recording" Vol. 2, page 91)
- SD/SDHC Memory Cards* (→ "Use of SD/SDHC Memory Cards" Vol. 2, page 92)

  * SD/SDHC memory cards cannot be used with this unit for video/audio recording and playback.

Supplied Accessories, Optional Accessories

Supplied Accessories

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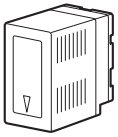
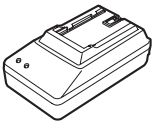
<td>Battery
 
For part numbers for the battery, see “Optional Accessories” below.</td>
<td>Battery charger / AC power supply cables
 
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 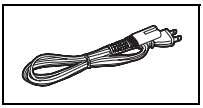
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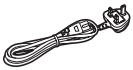
(For the U.K.)
 
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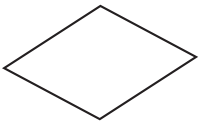
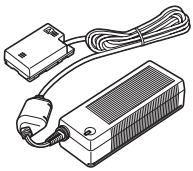
  </td>
<td>AC adaptor / AC power supply cables
 
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 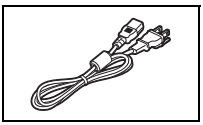
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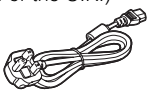
(For the U.K.)
 
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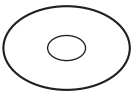
  </td>
<td></td>
</tr>
</table>

- After unpacking, dispose of the AC power supply cable caps and packing materials properly.

Optional Accessories

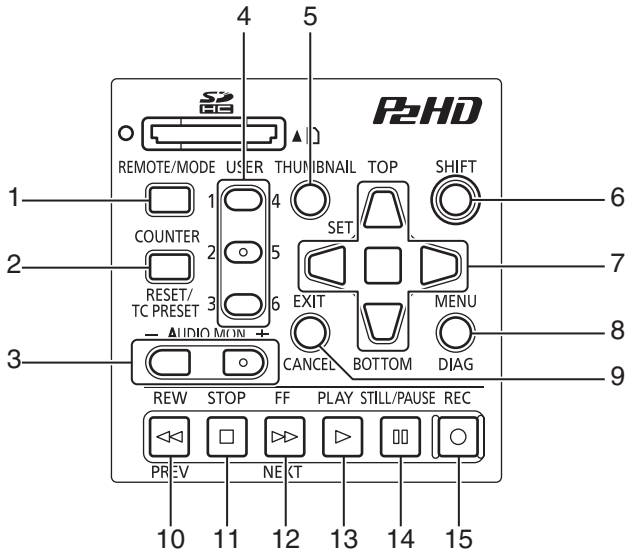
- Battery

  CGA-D54 (7.2 V, 5400 mAh: equivalent to accessory battery for the AG-HPD24P)

  CGA-D54s (7.2 V, 5400 mAh: equivalent to accessory battery for the AG-HPD24E)

Control Reference Guide

Controls



About button labels:Orange labels indicate alternate functions enabled by simultaneously pressing SHIFT.

<Example> Press the SHIFT and REMOTE/MODE buttons at the same time to execute the MODE button function.

1. REMOTE/MODE button

REMOTE button:

Enables remote control of the unit via the REMOTE connector.

MODE button:

Selects the USB device mode (USB DEVICE), 3D recording/playback mode (3D REC/PB), or synchronous playback mode (SYNC PB).

USB DEVICE

Enables access to the P2 card in the P2 card slot of this unit as a mass storage device on a personal computer connected via USB 2.0.

3D REC/PB

Synchronizes the operation of two units to record and playback Dual P2 3D clips (page 38).

SYNC PB

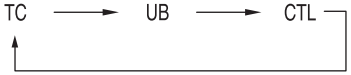
Synchronizes the operation of two units to play back 3D clips (page 48) on P2 cards that were recorded using machines that do not have native support for Dual P2 3D.

2. COUNTER, RESET/TC PRESET button

COUNTER button:

Selects the type of data for the counter display, in the following sequence.

(→ "Time Code, User Bits, CTL" Vol. 2, page 47)



RESET/TC PRESET button:

Resets the CTL counter when displayed. When the counter displays TC or UB, presets the time code/user bits.

3. AUDIO MON button

Monitor audio volume adjustment:

Press either the + or –, AUDIO MON button to display the loudspeaker/headphone audio volume level, and hold the button to adjust. Wait a short time or press SET or EXIT to return the display to normal.

Recording audio volume adjustment:

(→ "Recording Clips" Vol. 2, page 6)

4. USER1-3, 4-6buttons

Users can assign any functions to these buttons.

(→ "Setup Menu" Vol. 2, page 50)

5. THUMBNAIL button

Selects whether to show or hide the thumbnail screen.

(→ "Thumbnail Screen Display" page 34)

6. SHIFT button

Hold this button while pressing another button to perform the alternate function of that button.

Functions of the SHIFT button that are not indicated by orange button labels:

To select the group of clips from immediately before the select clip to the clip at the current cursor position

SHIFT + SET buttons

(→ "Selecting and Deselecting Clips" Vol. 2, page 16)

Combine display of selected storage device partition/folder thumbnails

SHIFT + SET buttons

(→ "Operations in the EXPLORE screen" Vol. 2, page 32)

Moving storage device partitions/folders

SHIFT + +/– buttons

(→ "Displaying thumbnails of clips on storage devices and viewing video on the monitor" Vol. 2, page 33)

7. Cursor control buttons

Up/Down/Left/Right cursor buttons:

- Controls cursor movement for thumbnails and menus.
- During playback, press the Left/Right cursor buttons to activate SHTL mode to change playback speed.
  (→ "Playing Back at Variable Speed" Vol. 2, page 43)
- Press the SET button to pause variable speed playback.
- While paused, press the Up/Down cursor buttons to step one frame forward or back.
  (→ "Frame-by-frame playback" Vol. 2, page 8)
- These buttons also adjust recording audio volume.
  (→ "Recording Clips" Vol. 2, page 6)

TOP/BOTTOM buttons:

Move the cursor to the first (TOP) or last (BOTTOM) thumbnail.

SET button:

Selects thumbnails or menu items.

◆ **NOTE:**

- No selection occurs if SET is held too long.

8. MENU, DIAG button

MENU button:

This button displays the menu.

DIAG button:

When the menu is not displayed, pressing this button displays a diagnostics screen showing various conditions.

(→ "Deck Information (DIAG) Icons" Vol. 2, page 45)

9. EXIT, CANCEL button

EXIT button:

Closes the menu, or returns from the storage explorer to normal display.

CANCEL button:

This button cancels a selection or interrupts copying.

10. REW, PREV ⏮ button

REW button:

Fast rewind during playback. Speed is selectable from the menu setting SETUP - BASIC - FF.REW MAX.

PREV button:

During playback, cues the previous clip or clip and text note location.

In 3D REC/PB and SYNC PB modes, cues a clip when paused.

◆ NOTE:

- Cueing during playback is not available in 3D REC/PB mode.
- Cueing is only available when paused in SYNC PB mode.

11. STOP ⏹ button

Stops playback or recording.

12. FF, NEXT ⏭ button

FF button:

Executes fast forward during playback. Speed is selectable by the menu setting SETUP - BASIC - FF.REW MAX.

NEXT button:

During playback, cues the next clip or clip and text note location.

In 3D REC/PB and SYNC PB modes, cues a clip when paused.

◆ NOTE:

- Cueing during playback is not available in 3D REC/PB mode.
- Cueing is only available when paused in SYNC PB mode.

13. PLAY ▶ button

Activates playback.

(→ “Playback” page 45, → “Playing Back Clips” Vol. 2, page 43)

14. STILL/PAUSE ⏸ button

Press during playback to pause (STILL) and display a still image.

Press during recording to toggle recording standby (PAUSE).

Press to resume recording from standby.

15. REC ⏺ button

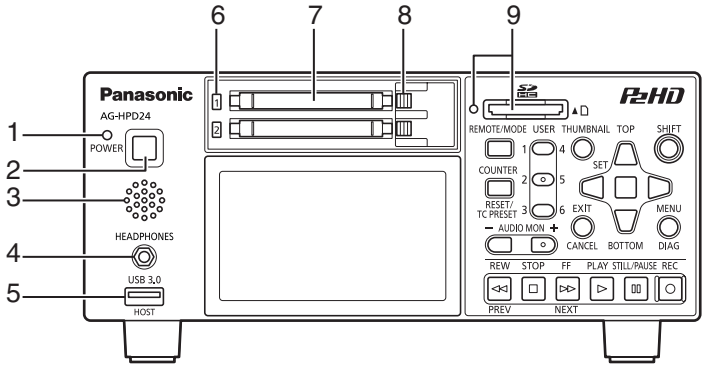
During playback, press this button to check video and audio in EE mode on the recording/playback screen (with the thumbnail screen disabled). Except when stopped, pressing this button activates EE mode, which remains active until you press another button. EE mode monitoring is only available when the playback video format matches the SETUP - SYSTEM - FORMAT menu setting.

Press this button and the PLAY button simultaneously to start recording.

Press this button and the STILL/PAUSE button simultaneously to activate recording standby. Remote camera recording can be enabled from the menu. The SETUP - BASIC - AUTO REC menu setting enables remote recording.

(→ “Setup Menu” Vol. 2, page 50)

Slots, etc.



1. POWER lamp

(→ "Turning Power On and Off" page 27)

2. POWER button

Press and hold to turn power on and off.

(→ "Turning Power On and Off" page 27)

3. Speaker

Outputs monitored audio. Speaker output is disabled when headphones are connected.

4. Headphone jack

Headphones can be plugged in here.

Outputs monitored audio when headphones are connected.

5. USB HOST port (USB 3.0 Type A)

(→ "USB HOST" page 37)

◆ **NOTE:**

- Use double-shielded cable to connect to this port.
- Use a USB 3.0 compliant cable to connect USB 3.0 compatible storage devices.

6. P2 card access lamps

(→ "P2 Card Access Lamp and P2 Card Status" page 29)

7. P2 card slots

(→ "Inserting a P2 Card" page 29)

8. EJECT buttons

(→ "Inserting a P2 Card" page 29)

9. SD/SDHC memory card slot and access lamp

Insert an SD/SDHC memory card.

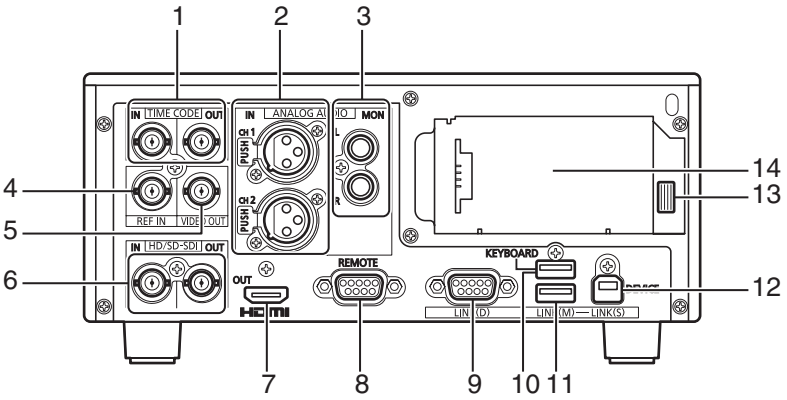
Insert the card cut-corner-edge first and label-side up, until it latches into place.

To remove it, ensure that the green lamp is off, then release the latch by gently pushing the card in again.

See the following for details.

(→ "Use of SD/SDHC Memory Cards" Vol. 2, page 92)

I/O Connectors



1. TIME CODE IN/OUT Jacks

TIME CODE IN:	Accepts an external time code for recording onto P2 cards.
TIME CODE OUT:	Outputs the playback time code during playback. Outputs the time code from the internal time code generator during recording.

2. ANALOG AUDIO IN jacks

These accept analog audio input.

3. ANALOG AUDIO MON output jacks

The audio signal (CH1 to CH8) selected from the SETUP - AUDIO - MONITOR CH menu setting (→ "Setup Menu" Vol. 2, page 50) is output here.

4. REF IN jack

Input connectors for HD and SD reference video signals.

Connect to the VIDEO OUT jack of the slave device when using 3D REC/PB and SYNC PB modes.

(→ "3D Signal Recording and Playback" page 38, → "Synchronous Playback" page 48)

◆ **NOTE:**

- The HD reference video signals must be positive and negative polarity tri-level sync signals. These signals must match the format of the input signal and SYSTEM data format.
- The HD reference is only usable with menu settings SETUP - SYSTEM - FREQUENCY 23.98 Hz, 24 Hz, 59-23, or 60-24.
- SD reference video must include a black burst signal that complies with SMPTE 170M and ITU 624-4.
- In both 3D REC/PB and SYNC PB modes, when the menu setting SETUP - SYSTEM - FREQUENCY is 59.94 or 50 Hz, only a black burst reference signal can be used. When the setting is 23.98 or 24 Hz, only the HD reference can be used.
- Video and audio output signals may be degraded when no reference video signal is provided. We recommend using this unit in systems that provide a reference video signal for input.

- When recording 720p with an HD reference or no reference input, the recorded phase may be shifted from the input signal.
- When the SETUP - SYSTEM - FREQUENCY menu setting is 59-23 or 60-24, the HD reference signal can only synchronize playback.

5. VIDEO OUT jack

Provides analog composite video signal output.
No signal is output when the SETUP - SYSTEM - FREQUENCY menu setting is 24 Hz or 60-24.
In both 3D REC/PB and SYNC PB modes, the sync signal output here is exclusively for use by another AG-HPD24.
(→ "3D Signal Recording and Playback" page 38, → "Synchronous Playback" page 48)

6. HD/SD-SDI IN/OUT jacks

These provide input and output of serial digital component audio/video signals.

◆ **NOTE:**
- Use 5C-FB or equivalent double-shielded cable for connections.

7. HDMI OUT port

Connects to a monitor or TV using an HDMI cable. In 3D REC/PB and SYNC PB modes, 3D video can be displayed by connecting a 3D monitor.
(→ "3D Signal Recording and Playback" page 38, → "Synchronous Playback" page 48)

◆ **NOTE:**
- This machine does not support VIERA link. Connecting it to a VIERA link compatible device with an HDMI cable may cause VIERA link to malfunction on that device.

8. REMOTE connector

Connect to an external controller to remotely control the unit.

◆ **NOTE:**
- Use double-shielded cable for connections.

9. LINK(D) connector

Use this connector to link two units for 3D REC/PB and SYNC PB modes.
(→ "3D Signal Recording and Playback" page 38, → "Synchronous Playback" page 48)

◆ **NOTE:**
- Use a double-shielded RS-422A cable not longer than 1 m long for connection.

10. KEYBOARD port (USB 2.0 Type A)

Connect an external USB keyboard to enter meta data.
(→ "Using a Keyboard" Vol. 2, page 80)

11. LINK(M) port (USB 2.0 Type A)

(→ "3D Signal Recording and Playback" page 38, → "Synchronous Playback" page 48)

◆ **NOTE:**
- Use double-shielded cable for connections.

12. USB2.0 device/LINK(S) port (Type B)

(→ "USB Device" page 37, → "3D Signal Recording and Playback" page 38, → "Synchronous Playback" page 48)

◆ **NOTE:**
- Use double-shielded cable for connections.

13. Battery latch release button

(→ "Using a battery" page 25)

14. Power supply/battery mounting location

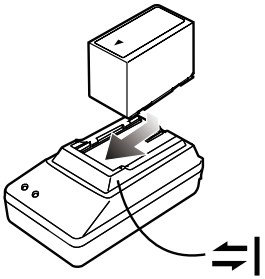
(→ "Power Preparations" page 25)

Preparation

Charging the battery

The battery is not charged when the product is purchased. Use the steps below to fully charge the battery using the supplied charger. We recommend keeping one spare battery on hand.

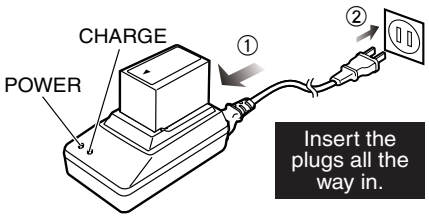
1 Place the battery level on the charger and slide it in the direction of the arrows ⇌| on the charger.



2 Plug the battery charger's AC power supply cable into the charger, and then into a power outlet.

Connect the AC power supply cable in ①-② order.

- The POWER lamp and CHARGE lamp on the charger light indicating that charging has started.
- If the CHARGE lamp does not light when the battery is installed, reinstall the battery correctly.



- The CHARGE lamp on the charger goes out when charging ends.

3 Slide the battery off the charger.

■ Charging time and battery life estimates for the supplied battery

Capacity	5400 mAh
Charging time	Approx. 330 min.
Continuous playback time	Approx. 160 min.

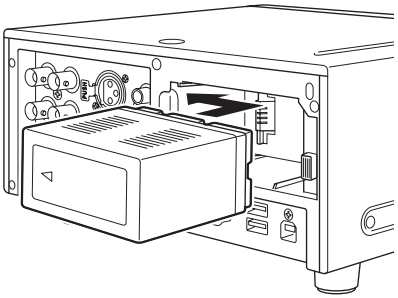
- The above times are estimates for playing back continuously recorded clips in AVC-Intra 100 to an E-series P2 card.
- The above values apply at ambient 20 °C (68 °F) and 60 % relative humidity. Charging time may be longer under other conditions.
- The battery becomes hot during usage and charging.
- When the battery temperature becomes excessively high or low, or it has become discharged after a long period of inactivity, the CHARGE lamp may flash two or three times before automatic charging starts.
- If the CHARGE lamp continues flashing when the battery is at normal temperature, it may be defective and you should contact your supplier.
- Charging time becomes longer for a hot battery.
- Using the charger or AC adaptor near a radio may interfere with radio reception. Place the charger or AC adaptor at least 1 meter away from a radio.
- The charger may emit noise during charging. This is not a malfunction.
- No guarantees are given for the operation of the CGR-D16/CGR-D16s (1600 mAh) battery pack.

Power Preparations

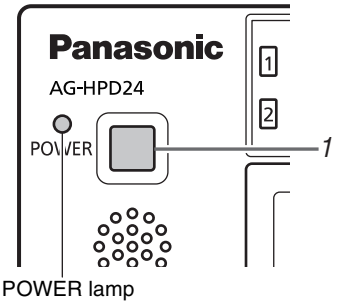
Using a battery

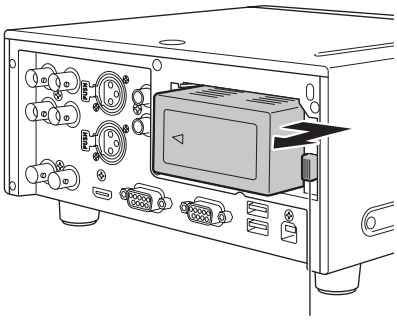
Installation

1 Slide in the battery until it clicks into place.



Removal





1 Hold the POWER button for two seconds to turn the power off, and confirm that the POWER lamp is off.

2 Press the battery lock release button to slide out the battery.
Hold the battery to prevent it from falling out.

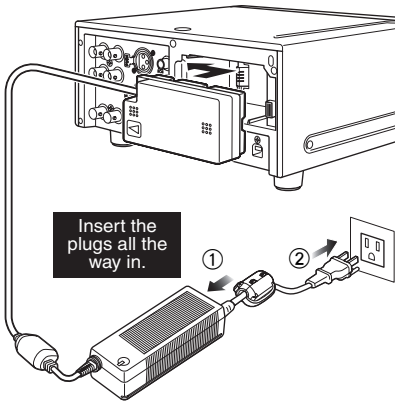
◆ **NOTE:**
- Always be sure that the unit is turned off before removing the battery.

Using the AC adaptor

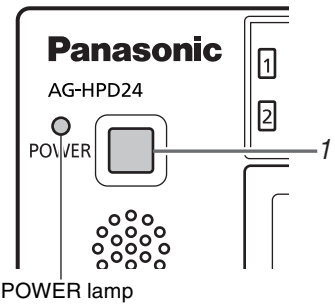
Installation

1 Plug the AC adaptor's AC power supply cable into the adaptor, and then into a power outlet.
Connect the AC power supply cable in ①-② order.

2 Slide in the DC power supply cable plate until it clicks into place.



Removal



POWER lamp

1 Hold the POWER button for two seconds to turn the power off, and confirm that the POWER lamp is off.

2 Press the battery lock release button and slide out the DC power supply cable plate.

◆ **NOTE:**
- Always be sure that the unit is turned off before removing the DC cord connector plate.

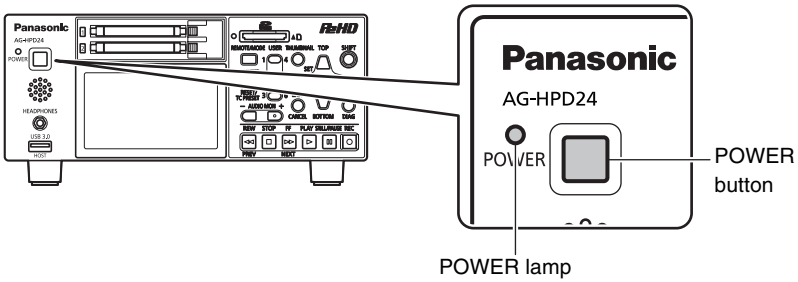
3 Unplug the adaptor's AC power supply cable from the wall outlet.

◆ **NOTE:**
- The AC Adaptor is designed to operate on world-wide mains voltages (100 to 240 V) and frequencies (50/60 Hz). However, power outlet configurations differ in different countries. Use a plug that is designed for the country of operation. If necessary, contact your supplier to obtain the appropriate plug adaptor.
- When not using the unit, unplug the adaptor's AC power supply cable from the wall outlet.
- The power lamp on the AC adaptor normally remains lit for a while after it is unplugged from the wall outlet.

Turning Power On and Off

Turning On

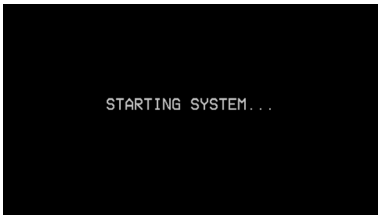
From the power-off state, hold the POWER button for one second to turn the unit on.
When on, the POWER lamp lights green.



◆ **NOTE:**

The following messages appear during startup.

- "STARTING SYSTEM...": blinks during startup.
- "AUTO POWER OFF = ✻ min": where "✻" is the time configured under the menu setting SETUP - SYSTEM - AUTO POWER OFF. When the menu setting is OFF, AUTO POWER OFF is not displayed.



Turning Off

From the power-on state, hold the POWER button for two seconds to turn the unit off.
The POWER lamp blinks during shutdown processing, until the unit turns off.

◆ **NOTE:**

- When a battery fault occurs, turn the power off and replace with a charged battery or switch to the AC adaptor before turning power back on.

About Auto Power Off during operation

The Auto Power Off function automatically turns the unit off after a short period if no operation such as recording, playback, copying or formatting is performed during that time. To resume operation after Auto Power Off, press the POWER button again.

◆ **NOTE:**

- The Auto Power Off time can be changed by the SETUP - SYSTEM - AUTO POWER OFF menu setting (→ "Setup Menu" Vol. 2, page 50).

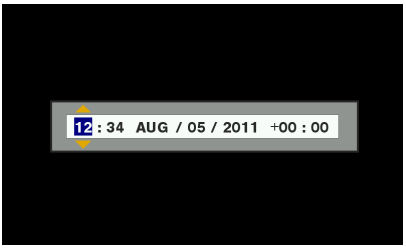
Setting the Year, Month, Day and Time

Set the clock before using the unit the first time.

1 Hold the POWER button for one second to turn the unit on.

2 Press the MENU button to open the menu. (→ "Menu Operations" page 32)

3 Use the Up/Down/Left/Right cursor buttons to select the SETUP - SYSTEM - CLOCK SET menu item, and press the SET button.
The clock setting screen is displayed. The default values are the current time settings.



4 Use the Left/Right cursor buttons to select the digits to be set.

- The AG-HPD24P clock is displayed in hour:minute, month/day/year, and time zone sequence.
  (The AG-HPD24E clock is displayed in hour:minute, day/month/year, and time zone sequence.)
- In time zone, set the difference in hours from Greenwich Mean Time.
- Hours are displayed in 24-hour format.

5 Press the Up/Down cursor buttons to set the year, month, day, time and time zone.

6 Set the calendar and press the SET button.
Pressing the SET button sets the clock to the set time.

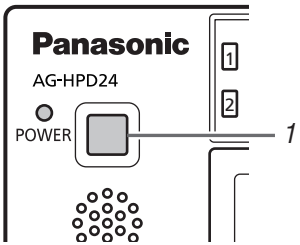
◆ **NOTE:**

- Since the clock is affected by deviation, it should be checked before use.
- If you require an exact time setting, check and reset the time before use.
- The date format on the setting screen can be changed by the SETUP - THUMBNAIL - DATE FORMAT menu selection.
- During 3D REC/PB and SYNC PB modes, the slave unit temporarily synchronizes with the clock setting on the master unit, and returns to its original setting upon exiting these modes.

Basic Operation

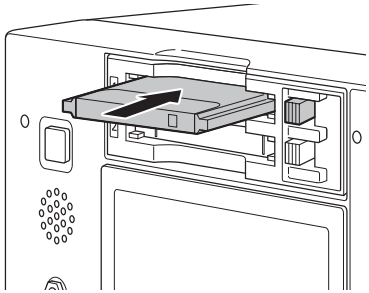
About P2 Cards

Inserting a P2 Card

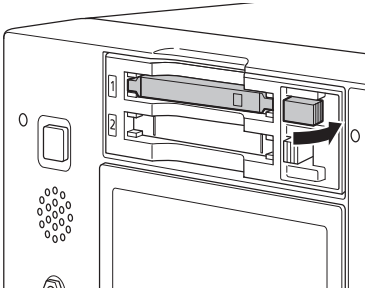


1 Hold the POWER button for one second to turn the unit on.

2 Insert a P2 card into a P2 card slot until the EJECT button pops out.



3 Fold the EJECT button toward the right.



P2 Card Access Lamp and P2 Card Status

P2 Card Access Lamp	P2 Card Status
Lights green	Writing and reading are enabled.
Lights orange	Writing and reading are enabled for the current recording (including LOOP REC).
Flashing orange	Writing or reading is in progress. Currently accessing P2 card using USB device mode. **NOTE:** • Do not turn the unit off or eject the P2 card when the lamp is flashing orange, such as while recording.
Fast flashing orange	P2 card being recognized.
Flashing green	No available space on the P2 card. Only reading is possible.
	The P2 card contains the maximum number of clips. Only reading is possible.
	The write-protect switch on the P2 card is set to PROTECT. Only reading is possible.

Extinguished	The P2 card is not formatted properly. Reformat it in this unit.
	The card is incompatible with this unit. Replace the card.
	The P2 card is not inserted.
	The P2 card is not accessible using USB device mode.

About P2 Card Recording Times

P2 card recording times

■ Recording time on a single 64 GB card

HD Mode

Video format	Recording format and time		
	DVCPRO HD	AVC-Intra 100	AVC-Intra 50
1080-59.94/50i*1	Approx. 64 min.	Approx. 64 min.	Approx. 128 min.
1080-24PN (Native)	----	Approx. 80 min.	Approx. 160 min.
720-59.94P/50P*1	Approx. 64 min.	Approx. 64 min.	Approx. 128 min.
720-24PN (Native)	Approx. 160 min.	Approx. 160 min.	Approx. 320 min.

*1: Includes recording of DVCPRO HD with pull-down at 30P, 24P and 25P.

SD Mode

Video format	Recording format and time		
	DVCPRO 50	DVCPRO*2	DV*2
480-59.94i/576-50i*3	Approx. 128 min.	Approx. 256 min.	Approx. 256 min.

*2: For 2-channel audio recording

*3: Includes recording with pull-down at 30P, 24P and 25P.

◆ **NOTE:**

- AJ-P2C002SG (2 GB) cards cannot be used.
- 32 GB, 16 GB and 8 GB P2 cards have recording times of 1/2, 1/4 and 1/8th of that provided by a 64 GB P2 card, respectively.
- 3D recording and playback times may be shorter than those listed above.

■ About P2 cards and SD/SDHC memory cards

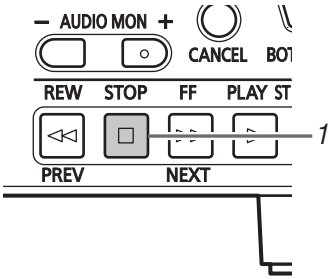
Visit the P2 support desk page at the website below for the latest information on P2 cards and SD/SDHC memory cards. (→ "Website URL" page 11)

Dividing clips over 4 GB in length

With an 8 GB P2 card, continuous recordings longer than the durations listed below result in automatic division of the recording into multiple clips. Despite that, on a P2 device, such recordings are handled as a single clip for thumbnail operations (display, delete, repair, copy, etc.).
Such recordings can be handled as separate clips in nonlinear editing software or on a PC.

Recording format	Recording duration
DVCPRO HD	Approx. 5 min.
DVCPRO50	Approx. 10 min.
DVCPRO/DV	Approx. 20 min.
AVC-Intra 50	Approx. 10 min.
AVC-Intra 100	Approx. 5 min.

Removing P2 Cards

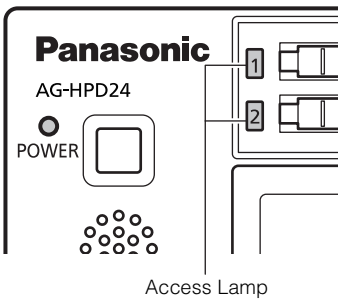


1 Press the STOP button.

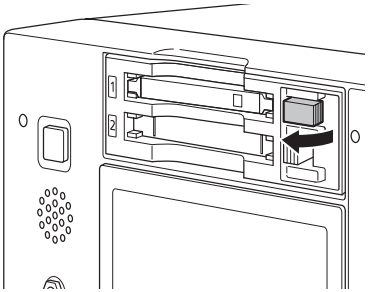
If the access lamp of the P2 card to be removed is blinking in orange, you can press the STOP button to stop recording or playback and to abort ongoing operations such as clip copying and deleting or just wait for the operation to finish.

◆ **NOTE:**

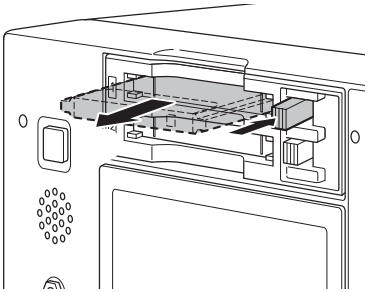
- In the USB Device mode, confirm that the access lamp is off.



2 Raise the EJECT button.

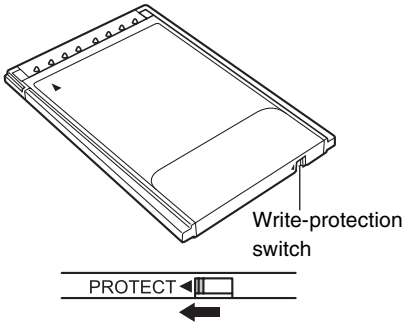


3 Press the EJECT button to eject the P2 card.



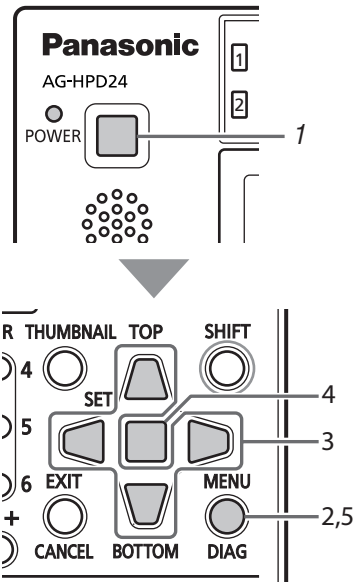
Preventing Accidental Deletion

Set the write-protection switch to PROTECT to prevent accidental deletion of data recorded on a P2 card.



Menu Operations

The menu operations are as follows.



1 Hold the POWER button for one second to turn the unit on.

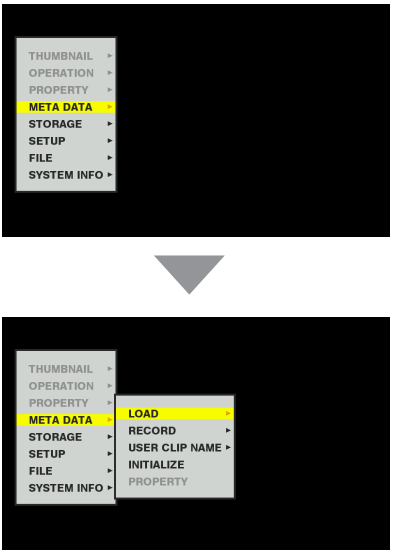
2 Press the MENU button to open the menu.

3 Use the Up/Down/Left/Right cursor buttons to place the cursor on menu items.

"►" appears where a lower-level menu exists.

◆ **NOTE:**

- Use the Up/Down buttons to move the cursor up and down.
- Press the Right cursor or SET button to open a lower-level menu.
- Press the Left cursor or EXIT button to return to a higher-level menu.



4 Press the SET button.

◆ **NOTE:**

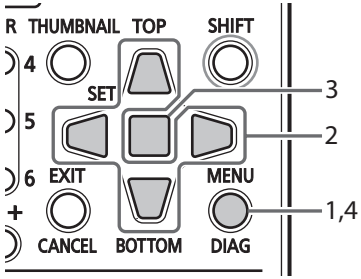
- Some menu items may display a confirmation dialog.
- Use the Up/Down/Left/Right cursor buttons to select a process, and press the SET button.
- A check mark appears next to the process selected by the SET button.
- Some menu items display a dialog for numerical value setting.
- Changing the system frequency requires rebooting the unit.

5 Press the MENU button to exit the menu.

◆ **NOTE:**

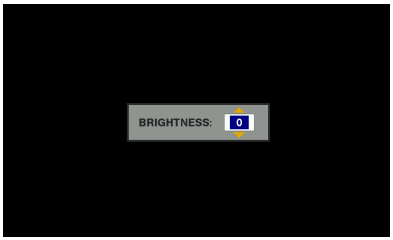
- Some menu items revert to the previous screen automatically.

LCD Monitor Settings



1 Press the MENU button to open the menu.

2 On the SETUP - LCD menu, use the cursor buttons to select an adjustment.
Available adjustments are BACKLIGHT, COLOR LEVEL, BRIGHTNESS, and CONTRAST.



3 Press the SET button.
Change the selected adjustment value with the Up/Down cursor buttons, and confirm with the SET button.

◆ **NOTE:**
- Press the RESET button during adjustment to return the value to its factory default.

4 Press the MENU button to exit the menu.

Thumbnail Screen Display

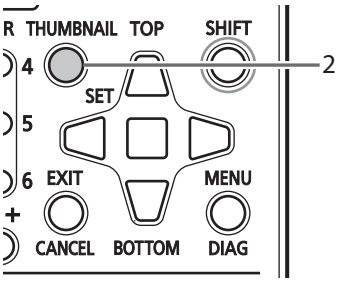
This unit provides a thumbnail screen for managing clips. A “clip” consists of a set of video, audio and additional information such as meta data, and a “shot” is a clip generated by single normal start-to-stop recording operation. A shot that spans multiple P2 cards is handled as a single clip.
The thumbnail screen displays a list of thumbnails of recorded clips. These thumbnails allow you to browse and also perform the following clip management operations.

- Play back, copy, delete and repair clips
- Attach text memos to clips
- Browse and delete text memos
- Display and delete shot marks
- Format P2 cards
- Show clip properties
- Show P2 card status

◆ **NOTE:**

- Because thumbnails are generated from only a sample of the recorded video, they appear coarser than the actual video.

Displaying the Thumbnail Screen



1 Hold the POWER button for one second to turn the unit on.

◆ **NOTE:**

- To cause the thumbnail screen to appear at power-on, select SETUP - BASIC - POWER ON GUI, and then THUMBNAIL.

2 Press the THUMBNAIL button.

The thumbnail screen appears on the LCD monitor.
Press the THUMBNAIL button again to close the thumbnail screen and return to the record/playback screen (video).

◆ **NOTE:**

- The SETUP - DISPLAY - OSD OUTPUT menu setting allows selecting VIDEO OUT or SDI OUT outputs.
  Signals at the output jacks have some limitations according to the selected format and frequency.

Recording

1 Hold the POWER button for one second to turn the unit on.
In the menu, select the frequency, format and input signal to be recorded, as necessary. (→ "List of Compatible Input and Output Formats" Vol. 2, page 78)

2 Insert a P2 card.

3 Press the REC and PLAY buttons simultaneously.
Recording begins on the P2 card in the slot with its access lamp lit orange.

◆ **NOTE:**
- Recording is disabled when the thumbnail screen is open. Close the thumbnail screen before starting to record.

4 Press the STOP button to stop recording.

- See the following for various recording details. (→ "Recording Clips" Vol. 2, page 6, "Adjusting the recording volume" Vol. 2, page 6)

Playback

Playback from the Record/ Playback Screen (Thumbnail Screen Off)

1 Hold the POWER button for one second to turn the unit on.
Set the system frequency in the menu as necessary. (→ "Setup Menu" - "SYSTEM" Vol. 2, page 71)

2 Insert a P2 card.

3 Press the PLAY button.
Clips play back in the order they were recorded on the card. Press the FF/REW buttons to fast forward or fast rewind, and press STILL/PAUSE to pause.
See the following for other special playback operations. (→ "Playing Back at Variable Speed" Vol. 2, page 43)

4 Press the STOP button to stop playback.

Playback from the Thumbnail Screen

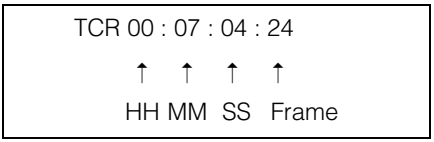
Push the playback button to start playing the yellow-framed clip selected by the cursor buttons. On the thumbnail screen, clip playback can be limited and re-ordered by selecting clips or switching display arrangement. (→ "Playing Back Clips" Vol. 2, page 38)

- See the following for details on displaying the thumbnail screen, (→ "Thumbnail Screen Display" page 34).

Time Code, User Bits and CTL

Time Code

The time code is the recorded signal output from the time code generator. The time code can be displayed on the LCD or superimposed on the video.



User Bits

“User Bits” refers to the 32-bit data frame within the time code signal in which users can record eight 4-bit user data digits, such as an operator number. The User Bits contain user data digit values 0 - 9 and A - F.

CTL

During playback, the counter displays the current playing position relative to the start position. Recording starts from the counter value 0:00:00:00. When recording stops, the counter shows the current position relative to the start position.

◆ **NOTE:**

- When menu setting SETUP - SYSTEM - FREQUENCY is set to 23.98 Hz, 24 Hz, 59-23, or 60-24, a 1-frame delay occurs between playback video and CTL.
- For time code setting details, see (→ “Setting Time Code and User Bits” Vol. 2, page 47).
- See (→ “Thumbnail Screen Display” page 34) for details of display contents.

External Connections

USB Device

A P2 card in this unit's P2 card slot can be accessed as a mass storage device by connecting the unit to a PC using USB 2.0. In this case, the PC must have a driver installed (for USB 2.0). Clips recorded on P2 cards can also be viewed on a PC using our free P2 Viewer, downloadable from our website
(→ "Website URL" page 11).
(→ "USB Device Mode" Vol. 2, page 36)

- To change the USB device mode, press the MODE button, select USB DEVICE using the Up/Down cursor buttons, and press SET.

USB HOST

Connect a USB2.0 or USB3.0 storage device to the USB 3.0 HOST port (→ "Slots, etc." page 21, no. 5 in the illustration) to save P2 card data to the external storage device, view saved clip thumbnails, and write the data back to a P2 card. Clips on the external storage device can be easily played back for review. To use the USB 3.0 HOST port for an external storage device, set STORAGE - UBS HOST to ENABLE in the menu.
(→ "Connecting an External Device via the USB HOST Connector" Vol. 2, page 27)

◆ **NOTE:**

- Recording is disabled when STORAGE - UBS HOST is set to ENABLE in the menu.
- The USB HOST port is only enabled in the main mode.
- The ENABLE setting is automatically reset to DISABLE when power is turned off.
- Use a USB 3.0-standard compliant cable to connect to the USB 3.0 port.
- If a USB 2.0 cable is used, the storage device will be recongized as USB 2.0.

3D Signal Recording and Playback

Connect two AG-HPD24 units and press the MODE button to select the 3D recording and playback mode (3D REC/PB), for dual P2 3D recording on a pair of P2 cards. Dual P2 3D clips recorded in the 3D REC/PB mode can be played back in 3D.
For recording and playback, the left (L) eye signal is handled by the master unit, and the right (R) eye signal by the slave unit.

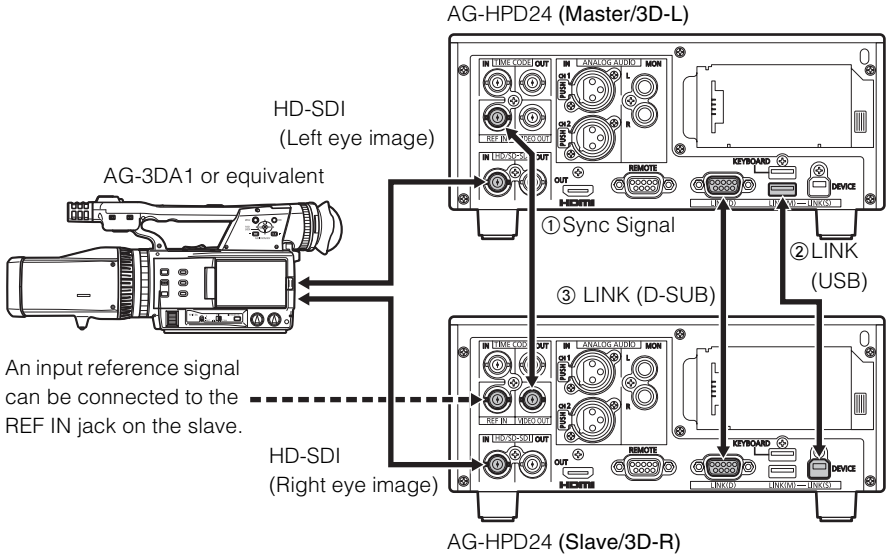
◆ **NOTE:**

- Be sure to connect the left eye signal to the master side, and the right eye signal to the slave side. If the left/right signals are connected in reverse, viewing the resulting reverse-vision recording content can cause asthenopia or eyestrain.
- Insert the P2 cards with the left-eye (L) and right-eye (R) recordings into P2 card slots on the master side and slave sides, respectively.

Dual P2 3D Clip:
This is a clip that complies with the P2 content specification for 3D video recording on two P2 cards.

Connections

Recording Connection Example



	Master (L) Jack	Slave (R) Jack	Remarks
①	REF IN	VIDEO OUT	BNC cable
②	LINK (M) USB Type A	LINK (S) USB Type B	USB 2.0 cable
③	LINK (D) 9P D-SUB	LINK (D) 9P D-SUB	RS-422A-compliant cable, Length 1 m or less

Connect the master and slave units as illustrated. With these connections, setting the units to 3D REC/PB mode enables recording and playback of 3D video clips.

Press the REC and PLAY buttons on the master unit to record the input signals as a Dual P2 3D clip.

Also, a reference signal can be applied to the slave's REF IN jack to synchronize playback with an external system.

◆ **NOTE:**

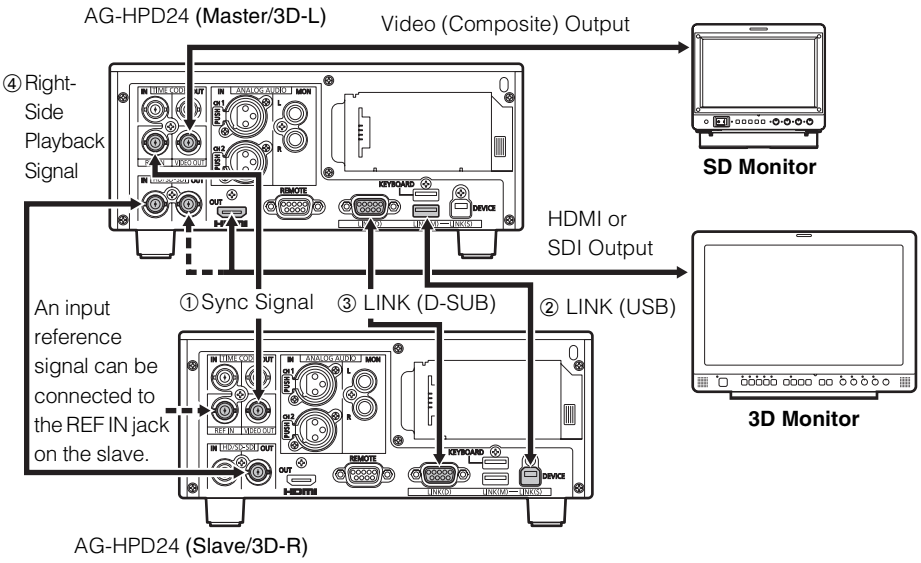
- Be sure to correctly connect the left and right input and output signals. Reversed left/right connections produce a reverse-vision condition that can cause asthenopia or eyestrain.

Playback Connection Example

When connecting a 3D monitor for viewing 3D video, select the signal connector and format to suit the monitor type or display method. The unit's output connector and signal format are selected by the SETUP - VIDEO - OUTPUT SEL menu setting.

OUTPUT SEL	SDI OUT Jack	HDMI OUT Port
DISCRETE L / R	Discrete left and right output	No output
SDI (S / S)	Side-by-side (half) method output	No output
HDMI (S/S)	No output	Side-by-side (half) method output
HDMI (FP)	No output	Frame packing method output

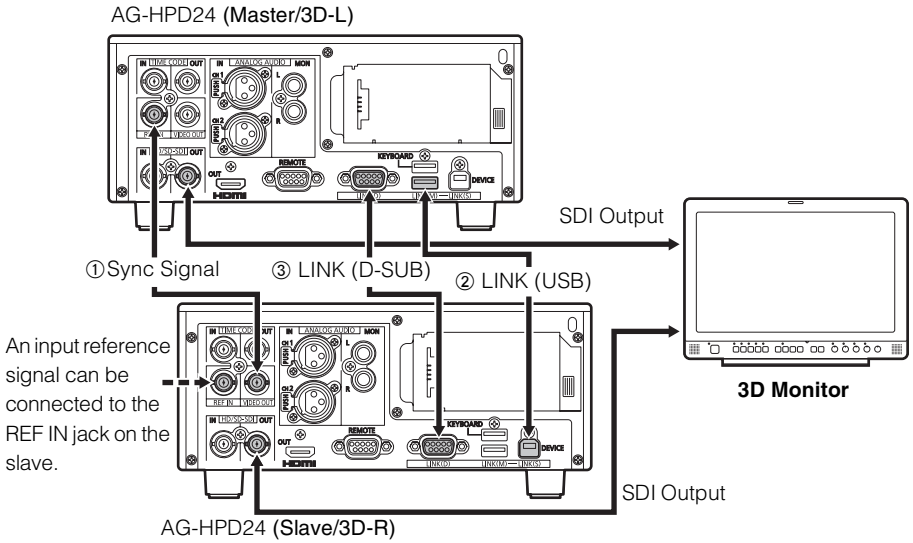
3D Single-Signal Output (Side-By-Side/Frame Packing) Connection Example



Connect the master and slave units together with a USB 2.0 cable between the LINK (USB) ports, an RS-422A/D-SUB9P cable between the LINK (D-SUB) connectors, and BNC cables between the synchronizing jacks, as illustrated. With these connections, setting the units to 3D REC/PB mode enables 3D playback. The 3D side-by-side or frame packing (HDMI-only) signal is output from the master (L) SDI or HDMI output connector, and 3D video can be viewed on the 3D monitor.

	Master (L) Jack	Slave (R) Jack	Remarks
①	REF IN	VIDEO OUT	BNC cable
②	LINK (M) USB Type A	LINK (S) USB Type B	USB 2.0 cable
③	LINK (D) 9P D-SUB	LINK (D) 9P D-SUB	RS-422A-compliant cable, Length 1 m or less
④	SDI IN	SDI OUT	BNC cable

Discrete Left/Right Signal Output Connection Example



Connect the master and slave units together with a USB 2.0 cable between the LINK (USB) ports, an RS-422A/D-SUB9P cable between the LINK (D-SUB) connectors, and BNC cables between the synchronizing jacks, as illustrated. With these connections, setting the units to 3D REC/PB mode enables 3D playback. During playback, the 3D left-eye image is output from the master unit's (L) SDI output jack, and the 3D right-eye image is output from the slave unit's (R) SDI output jack, for 3D (simultaneous) viewing on the 3D monitor.

	Master (L) Jack	Slave (R) Jack	Remarks
①	REF IN	VIDEO OUT	BNC cable
②	LINK (M) USB Type A	LINK (S) USB Type B	USB 2.0 cable
③	LINK (D) 9P D-SUB	LINK (D) 9P D-SUB	RS-422-compliant cable, Length 1 m or less

Selecting the 3D REC/PB Mode

1 Connect two units with the appropriate cables according to the connection examples.

◆ **NOTE:**

- The system frequency cannot be changed when 3D REC/PB mode is enabled. Set the frequency before selecting the mode.
- Set the master and slave units to the same frequency.
- The 3D REC/PB mode cannot be enabled when the system frequency is set to "59-23" or "60-24". Select the frequency to be used before selecting the 3D REC/PB mode.

2 Press the MODE button on the master unit.
The mode selection menu appears.

3 Use the Up/Down cursor buttons to place a "✻" next to 3D REC/PB, and press the SET button.

4 Both master and slave units restart in 3D REC/PB mode.

◆ **NOTE:**

- The 3D REC/PB mode state is preserved internally when power is turned off, and resumes when power is turned back on. To return to the main mode, turn the power off during the "WAITING FOR CONNECTION" state, or press the MODE button after startup in 3D REC/PB mode.
- If a LINK cable is not connected, the "WAITING FOR CONNECTION" state occurs.
  (→ "Warning information displayed in 3D REC/PB mode and SYNC PB mode" Vol. 2, page 89)

- An error occurs when a connection is interrupted, such as by a disconnected LINK cable. Reconnect the cable and turn the power off and back on.
  (→ "Warning and Error Messages" Vol. 2, page 83)
- An error occurs when the connected units are not the same model and version.
- If you inadvertently switch to the 3D REC/PB mode and activate the "WAITING FOR CONNECTION" state, turn the power off and back on to re-enable the (normal) main mode.

Turning Power On and Off

Turning On

From the power-off state, hold the POWER button for one second to turn the unit on.
When on, the POWER lamp lights green.

◆ **NOTE:**

- Turning on the master unit does not turn on the slave. Turn on both the master and slave units.
- When the 3D REC/PB mode was selected before power was turned off, it is automatically enabled when power is turned back on.
- Upon power-on, the normal startup message appears, followed by the 3D REC/PB mode startup message.

Turning Off

From the power-on state, hold the POWER button for two seconds to turn the unit off.
The POWER lamp blinks during shutdown processing, until the unit turns off.

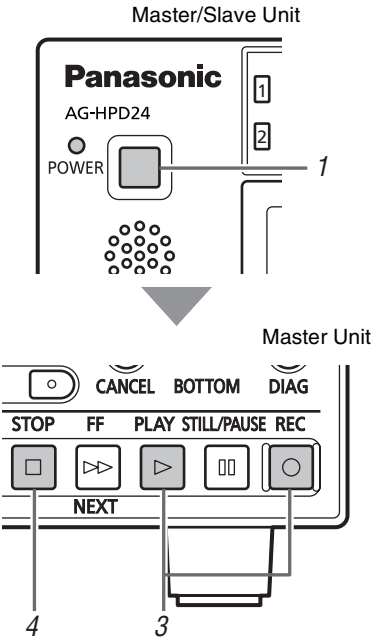
◆ **NOTE:**

- Both units turn off when either the master or slave is turned off.

Recording and Playback

When the 3D REC/PB mode is enabled, all operations are performed from the master unit. Slave unit operations are disabled.

Recording



1 Hold each unit's POWER button for one second to turn the master and slave units on.

Set the format, input signal, and etc.
(→ "Setup Menu" Vol. 2, page 50)

◆ **NOTE:**

- The recording frequency must be set in the main mode beforehand.
- Only the AVC-Intra format can be used for 3D recording.

2 Insert P2 cards in the corresponding slots in both master and slave units.

◆ **NOTE:**

- Card insertion confirmation on both master and slave units requires more time than card confirmation and recording preparation in normal main mode. If recording perparation fails, "CANNOT REC" or "E-62 SLAVE WARNING" may be displayed.

3 Press the master unit's REC and PLAY buttons simultaneously.

Recording begins on the P2 card in the slot with its access lamp lit orange.

◆ **NOTE:**

- Recording is disabled when the thumbnail screen is open. Close the thumbnail screen before starting to record.
- Recording is disabled when 3D single-signal output (side-by-side or frame packing) is enabled.
- LOOP REC and variable frame rate recording are disabled.
- Recording is possible on the master and slave unit only for recordable slots (when the write protect switch is not set to PROTECT).
- The remaining 3D recording time is the shortest remaining time on the cards in both master and slave units.

4 Press the STOP button to stop recording.

Playback

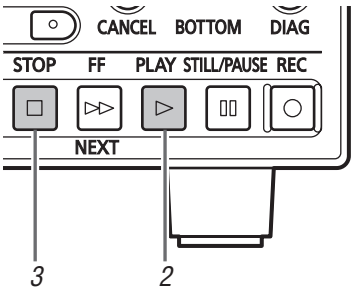
SDI and HDMI 3D video playback output is available only during PLAY and STILL/PAUSE.

- Discrete left and right output:
  Special playback is only displayed on the LCD, and is not available as SDI output.
  However, video is available at the master unit's SDI output when the SETUP - VIDEO - DISCRETE BLACK menu setting is OFF.
- Single-unit left/right (side-by-side or frame packing) signal output method:
  The LCD monitor displays both L and R special playback images, but only the L signal is output (as both L and R images) to SDI/HDMI.

◆ NOTE:

- Clips to be played back can be from different slots in the master and slave units, but slots for left and right video must correspond.
- 3D playback requires that the L (left-eye) clip be present on the master unit, and the R (right-eye) clip on the slave.

Playback from the Record/Playback Screen (Thumbnail Screen Off)



1 Insert a P2 card.

2 Press the PLAY button.
Clips play back in the order they were recorded on the card.

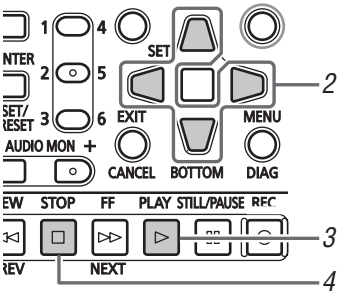
3 Press the STOP button to stop playback.

Playback from the Thumbnail Screen

Pressing the PLAY button starts playback from the yellow-framed clip (selected by the cursor buttons). On the thumbnail screen, clip playback can be limited and re-ordered by selecting clips or changing the display.
(→ "3D Recording/Playback Mode (3D REC/PB)" Vol. 2, page 37)

◆ NOTE:

- Black numbers indicate clips available for playback.
- 3D REC/PB mode does not support slot selection by the THUMBNAIL - SLOT CLIPS menu setting.



1 Insert a P2 card.

2 Use the Up/Down/Left/Right cursor buttons to place the cursor on a clip to playback.

3 Press the PLAY button.
Playback occurs in the order thumbnails are displayed.

4 Press the STOP button to stop playback.
The thumbnail screen reappears when playback stops.

Displaying 3D Thumbnails

3D thumbnails can be displayed in the same way as normal thumbnails.

Displaying the Thumbnail Screen

1 Turn both master and slave units on by holding each unit's POWER button for one second.

◆ **NOTE:**

- To cause the thumbnail screen to appear at power-on, select SETUP - BASIC - POWER ON GUI, and then THUMBNAIL.

2 Press the THUMBNAIL button.

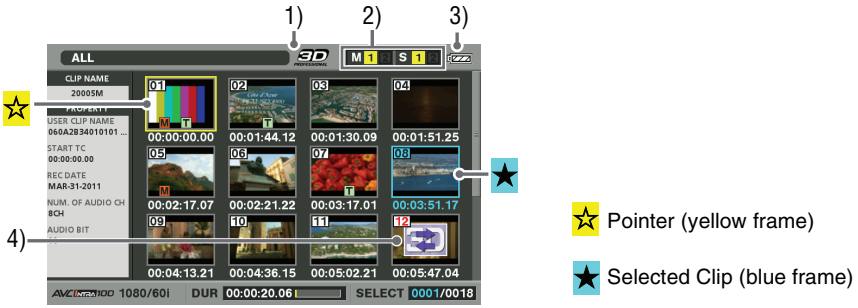
The thumbnails are displayed.

Press the THUMBNAIL button again to close the thumbnail screen and return to the record/playback screen (video).

Thumbnail Screen Names and Functions

◆ **NOTE:**

- Different points from the main mode's thumbnail screen are described here. For more details, see (→ "Thumbnail Screen" Vol. 2, page 10).
- Only Dual P2 3D clips recorded by this unit or another compatible 3D P2 device are displayed on the thumbnail screen. Normal P2 clips cannot be displayed, so be careful not to erase them accidentally when reformatting.



1) "3D" Logo

Indicates the 3D status of the displayed thumbnails.

2) Slot status indicators

The M and S indicators show the status of master and slave P2 cards, respectively. For details of display contents, see (→ "Thumbnail Screen" Vol. 2, page 10).

3) Battery level indicator

Indicates the remaining charge in the master unit's battery.

◆ **NOTE:**

• The remaining charge in the slave unit's battery is displayed on the slave.

4) Dual P2 3D clip fault indicator

This is displayed when there is a problem with a Dual 3D P2 clip, such as reversed left-right card insertion.

: The clip's left-channel card is inserted in the slave unit, or the clip's right-channel card is inserted in the master unit. Insert the card to the correct unit.

: The clip's left- or right-channel card is not inserted. Insert the card with the missing clip channel.

Synchronous Playback

Left/right 3D clip pairs not recorded in dual P2 3D mode can be played back using the synchronous playback (SYNC PB) mode. Connect two AG-HPD24 units in the same way as for 3D REC/PB mode, and press the MODE button to select the SYNC PB mode for synchronous video playback operation of the slave with the master unit. However, this mode does not support clip operations other than playback (that is, recording, copying and deleting).

3D clip content not recorded as a Dual P2 3D clip:
Clips dubbed from material recorded on an AG-3DA1 with their starting points trued up and length set to be equal using an AJ-HPM200, or clips edited using a non-linear editor and dubbed to a P2 unit that does not support Dual P2 3D recording.
The L and R clips are required to have the same time code start point, length, and clip sequence.

◆ **NOTE:**

- Insert the P2 cards with the left-eye (L) and right-eye (R) recordings into P2 card slots on the master side and slave sides, respectively.

Connections

Connections are the same as for 3D REC/PB mode. (→ "3D Signal Recording and Playback" - "Connections" page 39)

Selecting SYNC PB Mode

1 Connect two units according to the connection examples.

◆ **NOTE:**

- The system frequency cannot be changed when SYNC PB mode is enabled. Set the frequency before selecting the mode.
- Set the master and slave units to the same frequency.
- The SYNC PB mode cannot be enabled when the system frequency is set to "59-23" or "60-24". Select the frequency to be used before selecting the SYNC PB mode.

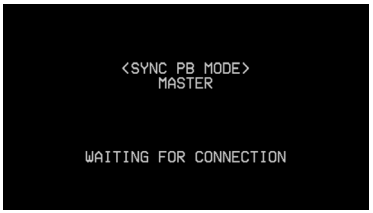
2 Press the MODE button on the master unit.
The mode selection menu appears.

3 Select SYNC PB.
Use the Up/Down cursor buttons to place a "✻" at SYNC PB, and press the SET button.

4 Both master and slave units restart in SYNC PB mode.

◆ **NOTE:**

- The SYNC PB mode selection is preserved internally when power is turned off, and resumes when power is turned back on. To return to the main mode from the SYNC PB mode, turn the power off during the "WAITING FOR CONNECTION" state, or press the MODE button after startup in SYNC PB mode.
- If a LINK cable is not connected, the "WAITING FOR CONNECTION" state occurs.
- An error occurs when a connection is interrupted, such as by disconnecting a LINK cable. Reconnect the cable and turn power off and back on.
  (→ "Warning and Error Messages" Vol. 2, page 83)
- An error occurs when the connected units are not the same model and version.
- If you inadvertently switch to the SYNC PB mode and activate the "WAITING FOR CONNECTION" state, turn the power off and back on to re-enable the (normal) main mode.
- Power on/off operation is the same as for 3D REC/PB mode (→ "Turning Power On and Off" page 43).



Playback

When the SYNC PB mode is enabled, all operations are performed from the master unit. The only operation available on the slave unit is pressing the THUMBNAIL button to display the thumbnail screen.

Correctly Synchronizing Playback

Two clips are played back on different devices by synchronizing the order of the clip numbers, although the following requirements apply to obtain correct clip synchronization.

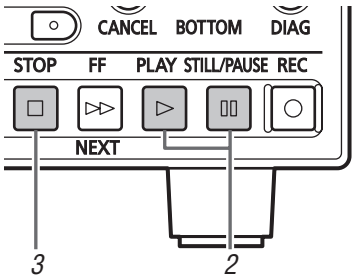
- About the Clip Order
  Clips play back in the order they were recorded. The clips on the P2 card must be in pairs and the recording dates and times within each pair must be the same. If the number of clips or the recording dates and times do not match, playback order on the master and slave differs, causing incorrect playback.
- About Clip Length
  Each pair of video clips must have the same starting point and length. If the clip lengths are different, subsequent playback will be incorrect.
- Clip Time Codes
  Each pair of recorded clips must have the same continuous time code. If the time codes are different or discontinuous, playback cueing may not operate correctly, causing incorrect playback.

◆ **NOTE:**

- When a clip fails to play back correctly, a warning is displayed, SDI is muted, and black is output (with DISCRETE L/R setting), or only the left image is output (with side-by-side or frame packing settings).
- Playback of mixed-format clips is possible, but may be discontinuous, and subsequent playback wil be incorrect.
- Discontinuous time codes may cause an error code to appear when cueing the start and end of clips and during frame-by-frame playback of clips with different start and end time codes. To recover, press the STOP button and after

stopping, select the clips to be paired on the thumbnail screen and press PLAY or STILL/PAUSE to synchronize the clips correctly.

Playback from the Playback Screen (Thumbnail Screen Off)



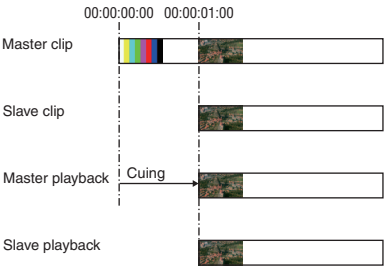
1 Insert P2 cards in both master and slave units.

2 Press the PLAY or STILL/PAUSE button on the master unit.

Pressing the button automatically cues the slave position to the master (matches the clip numbers and time codes). Pressing PLAY also starts playback.

◆ **NOTE:**

- When the first position of the master clip is earlier than that of the slave, the master is cued to the first position of the slave.



3 Press the STOP button on the master unit to stop playback.

◆ **NOTE:**

- When stopped, no image (black screen) is displayed.
- Signal output is as follows.

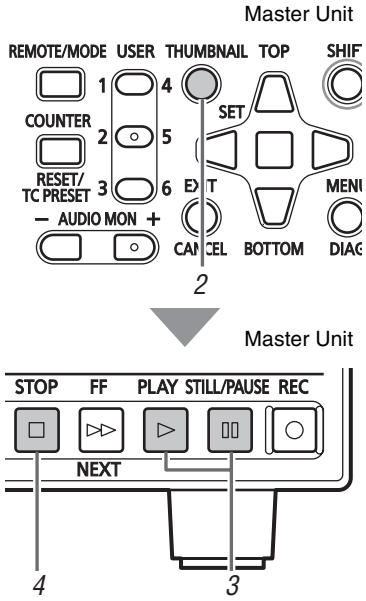
Discrete left and right output method:

Special playback video and video when left and right signals are invalid (such as TC mismatch) is displayed only on the LCD monitor, but is not output as SDI. However, video is available at the master unit's SD output when the SETUP - VIDEO - DISCRETE BLACK menu setting is OFF.

3D single-unit (side-by-side or frame packing) signal output method:

Special playback video and video when left and right images are invalid (such as TC mismatch) appears as both L and R images on the LCD monitor, but only the L signal is output (as both L and R images) to SDI/HDMI.

Playback from the Thumbnail Screen



1 Insert P2 cards in both master and slave units.

2 Press the THUMBNAIL button on the master unit, and move the cursor to the clip to play back.

◆ **NOTE:**

- All clips are displayed as thumbnails.
- On the slave unit, only the THUMBNAIL and Up/Down/Left/Right cursor buttons are enabled for checking clip order. Playback control is not available on the slave unit while the thumbnails are displayed.

3 Press the PLAY or STILL/PAUSE button on the master unit.

Pressing either button automatically cues the slave position to match the master's clip number and time code position.
Pressing the PLAY button also starts playback.

◆ **NOTE:**

- When the clip time codes are different, incorrect synchronization prevents correct playback.
- When the first position of the master clip is earlier than that of the slave, the master is cued to the first position of the slave.
- The slave unit starts playback from the clip with the same clip number as on the master.

4 Press the STOP button on the master unit to stop playback.

◆ **NOTE:**

- When stopped, no image (black screen) is displayed.

Setup Menu

THUMBNAIL	Thumbnail display selection settings	Vol. 2, page 50
OPERATION	Operations such as formatting	Vol. 2, page 51
PROPERTY	Displays clip properties	Vol. 2, page 53
META DATA	Meta data setting and display	Vol. 2, page 54
STORAGE	Storage device operations and display	Vol. 2, page 55
SETUP	Various settings	Vol. 2, page 56
THUMBNAIL	Thumbnail-related settings	Vol. 2, page 56
BASIC	Basic operation settings	Vol. 2, page 59
TC/UB/CTL	Time-code-related settings	Vol. 2, page 62
VIDEO	Video-related settings	Vol. 2, page 63
AUDIO	Audio-related settings	Vol. 2, page 66
DISPLAY	Display-related settings	Vol. 2, page 67
LCD	LCD-related settings	Vol. 2, page 69
USER BUTTON	User-defined button settings	Vol. 2, page 70
SYSTEM	System device settings such as frequency	Vol. 2, page 71
FILE	Saving and loading menu settings	Vol. 2, page 74
SYSTEM INFO	Device information display	Vol. 2, page 77

Specifications

General

Operating voltage: 7.2 V DC / 7.9 V DC
Power consumption: 19.8 W

indicates safety information.

Ambient operating temperature:	0 °C to 40 °C
Ambient operating humidity:	10 % to 80 % (non-condensating)
Ambient storage temperature:	–20 °C to 50 °C (–4 °F to 122 °F)
Mass:	2 kg (4.41 lb) (without battery) 2.3 kg (5.07 lb) (with supplied battery)
Dimensions (W×H×D):	214 mm × 88 mm × 200 mm (8-7/16 inches × 3-7/16 inches × 7-7/8 inches) (not including the support legs)
Recording media:	P2 Card
Recording formats:	AVC-Intra 100/AVC-Intra 50/DVCPRO HD/DVCPRO50/ DVCPRO/DV (selectable) Note: 3D recording in AVC-Intra format only
Video recording signals:	1080/59.94i, 1080/50i, 1080/23.98p, 1080/24p, 720/59.94p, 720/50p, 480/59.94i, 576/50i
Audio recording signals:	AVC-Intra 100/AVC-Intra 50: 48 kHz, 16 bits, 8 channels 48 kHz, 24 bits, 4 channels
	DVCPRO HD: 48 kHz, 16 bits, 8 channels
	DVCPRO50: 48 kHz, 16 bits, 4 channels
	DVCPRO/DV: 48 kHz, 16 bits, 2/4 channels selectable

Recording times:

Card	Recording format		
	AVC-Intra 100/ DVCPRO HD	AVC-Intra 50/ DVCPRO50	DVCPRO/DV
8 GB × 1	Approx. 8 min.	Approx. 16 min.	Approx. 32 min.
16 GB × 1	Approx. 16 min.	Approx. 32 min.	Approx. 64 min.
32 GB × 1	Approx. 32 min.	Approx. 64 min.	Approx. 128 min.
64 GB × 1	Approx. 64 min.	Approx. 128 min.	Approx. 256 min.

◆ **NOTE:**

- The above times apply when single clips are recorded sequentially on a P2 card.
- Depending on the number of clips recorded, recording time may be shorter than listed above.
- 3D recording times may be shorter than listed above.

VIDEO

DIGITAL VIDEO

Sampling frequencies:	AVC-Intra 100/DVCPRO HD: (59.94 Hz) Y: 74.1758 MHz, P_B/P_R: 37.0879 MHz (50 Hz) Y: 74.2500 MHz, P_B/P_R: 37.1250 MHz
	DVCPRO50: Y: 13.5 MHz, P_B/P_R: 6.75 MHz
	DVCPRO: Y: 13.5 MHz, P_B/P_R: 3.375 MHz
Quantization:	AVC-Intra 100/AVC-Intra 50: 10 bits
	DVCPRO HD/DVCPRO50/DVCPRO/DV: 8 bits
Video compression methods:	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 (IEC61834-2)
Color sampling:	AVC-Intra 100: $Y:P_B:P_R$ = 4:2:2

Resolution:	AVC-Intra 100: 1920 × 1080 (1080/59.94i, 1080/50i) 1280 × 720 (720/59.94p, 720/50p)
	AVC-Intra 50: 1440 × 1080 (1080/59.94i, 1080/50i) 960 × 720 (720/59.94p, 720/50p)

VIDEO INPUT

Reference input:	BNC × 1, Auto switching of black burst / HD 3-value sync*1
SDI input:	BNC × 1

*1: In both 3D REC/PB and SYNC PB modes, when the menu setting SETUP - SYSTEM - FREQUENCY is 59.94 or 50 Hz, black burst is the only acceptable reference signal input.
When the setting is 23.98 or 24 Hz, HD3 value SYNC is the only acceptable reference signal input.

VIDEO OUTPUT

SD analog composite output:	BNC × 1
HD serial digital / SD serial digital output (switchable):	BNC × 1
HDMI port:	HDMI × 1 (HDMI type A), 3D supported (VIERA link not supported) • When system frequency is 59.94 Hz 1080/59.94i Frame Packing / Side-by-Side selectable (3D only) 720/59.94p Frame Packing / Side-by-Side selectable (3D only) 1080/59.94i, 720/59.94p, 480/59.94p • When system frequency is 50 Hz 1080/50i Frame Packing / Side-by-Side selectable (3D only) 720/50p Frame Packing / Side-by-Side selectable (3D only) 1080/50i, 720/50p, 576/50p • When system frequency is 23.98 Hz 1080/23.98p Frame Packing / Side-by-Side selectable (3D only) ◆ **NOTE:** • HDMI output does not support 480i/576i. Convert to 480p/576p for output.

AUDIO

DIGITAL AUDIO

Sampling frequency:	48 kHz (synchronized with video)
Quantization:	16 bits (DVCPRO HD/DVCPRO50/DVCPRO/DV)
	16/24 bits selectabgle (AVC-Intra 100/AVC-Intra 50)
Headroom:	12/18/20 dB (selectable)
De-emphasis:	T1=50 µs, T2=15 µs (auto on/off)

AUDIO INPUT

Analog inputs (CH1, CH2):	XLR × 2
SDI input:	BNC × 1

AUDIO OUTPUT

SDI output:	BNC × 1
Monitor outputs:	Pin jacks × 2, –10 dBV, 600 Ω
Headphone output:	Stereo mini jack (3.5 mm dia.), 8 Ω, variable level
HDMI outputs:	2 channels (linear PCM)
Internal speaker:	Round, × 1 (monaural)

OTHER I/O

Time code input:	BNC × 1, 0.5 V[p-p] to 8.0 V[p-p], 10 kΩ
Time code output:	BNC × 1, low impedance, 2.0 V ±0.5 V[p-p]
RS-422A I/O:	9-pin D-SUB × 1, RS-422A interface
USB HOST:	USB 3.0 (Type A) × 1
Connection for USB devices/3D REC/PB mode/SYNC PB mode:	USB 2.0 Device (Type B) × 1
For 3D REC/PB mode/SYNC PB mode connection:	9-pin D-SUB × 1, RS-422A interface
For keyboard:	USB 2.0 (Type A) × 1 (100 mA maximum)
	◆ **NOTE:** • This port is intended for keyboard connection. If the keyboard draws more than 100 mA, a protective circuit may shut down the machine.

AC ADAPTOR

Rated input: 100 – 240 V AC, 50 Hz – 60 Hz, 0.55 A
Rated output: 7.9 V DC, 2.53 A

indicates safety information.

Dimensions (W × H × D):	42 mm × 31 mm × 104 mm (1-5/8 inches × 1-1/4 inches × 4-1/8 inches)
Mass:	220 g (0.48 lb)

BATTERY CHARGER

Rated input: 100 – 240 V AC, 50 Hz/60 Hz, 0.4 A
Rated output: 8.4 V DC, 1.2 A

indicates safety information.

Dimensions (W × H × D):	70.0 mm × 44.5 mm × 116.0 mm (2-3/4 inches × 1-3/4 inches × 4-9/16 inches)
Mass:	160 g (0.35 lb)

Inrush current, measured according to European standard EN551303-1: 6.5 A

Mass and dimensions are approximate values.
Specifications are subject to change without notice.

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MEMO

MEMO

Information for Users on Collection and Disposal of Old Equipment and used Batteries

These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.
For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

EU

For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

EU

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union

These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

Cd

Note for the battery symbol (bottom two symbol examples):

This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

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