SONY

REF 4-529-818-**13** (1)

HD Video Recorder

Instructions for Use

Before operating the unit, please read this manual thoroughly and retain it for future reference.

HVO-500MD/550MD

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Caution

Federal law (United States of America) restricts this device to sale by or on the order of a licensed healthcare practitioner.

Owner's Record

The model and serial numbers are located at the rear. Record these numbers in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____
Serial No. _____

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

No modification of this equipment is allowed.

Caution

For HVO-550MD

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

For HVO-550MD

This HD Video Recorder is classified as a CLASS 1 LASER PRODUCT.

Caution

For HVO-550MD

The use of optical instruments with this product will increase eye hazard.

IMPORTANT

The nameplate is located on the bottom.

Symbols on the products

General warning sign
Follow the warnings in the Instructions for Use for parts of the unit on which this mark appears.
NOTE Background colour: Yellow
Triangular band: Black
Symbol: Black

Consult the Instructions for Use
Follow the directions in the Instructions for Use for parts of the unit on which this mark appears.

This symbol indicates the manufacturer, and appears next to the manufacturer's name and address.

This symbol indicates the European Community representative, and appears next to the European Community representative's name and address.

This symbol indicates the equipotential terminal which brings the various parts of a system to the same potential.

CAUTION

Do not install the appliance in a confined space, such as book case or built-in cabinet.

WARNING

Excessive sound pressure from earphones and headphones can cause hearing loss.
In order to use this product safely, avoid prolonged listening at excessive sound pressure levels.

For the customers in the U.S.A.

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 or more 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.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.
All interface cables used to connect peripherals must be shielded in order to comply with the limits for a digital device pursuant to Subpart B of part 15 of FCC Rules.

If you have any questions about this product, you may call; Sony Customer Information Service Center 1-800-222-7669 or http://www.sony.com/

Declaration of Conformity

Trade Name	: SONY
Model	: HVO-500MD/550MD
Responsible party	: Sony Electronics Inc.
Address	: 16530 Via Esprillo, San Diego, CA 92127 U.S.A.
Telephone Number	: 858-942-2230

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.

For the customers in Canada

CAN ICES-3 (B)/NMB-3(B)

This unit has been certified according to Standard CAN/CSA-C22.2 No.60601-1.

Important safeguards/notices for use in the medical environments

1. All the equipments connected to this unit shall be certified according to Standard IEC60601-1, IEC60950-1, IEC60065 or other IEC/ISO Standards applicable to the equipments.

2. Furthermore all configurations shall comply with the system standard IEC60601-1-1. Everybody who connects additional equipment to the signal input part or signal output part configures a medical system, and is therefore, responsible that the system complies with the requirements of the system standard IEC60601-1-1. If in doubt, consult the qualified service personnel.

3. The leakage current could increase when connected to other equipment.

4. For this particular equipment, all accessory equipment connected as noted above, must be connected to mains via an additional isolation transformer conforming with the construction requirements of IEC60601-1 and providing at least Basic Insulation.

5. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference to other equipment. If this unit causes interference (which can be determined by unplugging the power cord from the unit), try these measures: Relocate the unit with respect to the susceptible equipment. Plug this unit and the susceptible equipment into different branch circuit.

Consult your dealer. (According to standard IEC60601-1-2 and CISPR11, Class B, Group 1)

Important EMC notices for use in the medical environments

- The HVO-500MD/550MD needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in this Instructions for Use.
- The portable and mobile RF communications equipment such as cellular phones can affect the HVO-500MD/550MD.

Warning

The use of accessories and cables other than those specified, with the exception of replacement parts sold by Sony Corporation, may result in increased emissions or decreased immunity of the HVO-500MD/550MD.

<table>
<tr><th colspan="3">Guidance and manufacturer's declaration-electromagnetic emissions</th></tr>
<tr><td colspan="3">The HVO-500MD/550MD is intended for use in the electromagnetic environment specified below.
The customer or the user of the HVO-500MD/550MD should assure that it is used in such an environment.</td></tr>
<tr><td>Emission test</td><td>Compliance</td><td>Electromagnetic environment-guidance</td></tr>
<tr><td>RF emissions

CISPR 11</td><td>Group 1</td><td>The HVO-500MD/550MD uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.</td></tr>
<tr><td>RF emissions

CISPR 11</td><td>Class B</td><td rowspan="3">The HVO-500MD/550MD is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.</td></tr>
<tr><td>Harmonic emissions

IEC 61000-3-2</td><td>Not applicable</td></tr>
<tr><td>Voltage fluctuations/ flicker emissions

IEC 61000-3-3</td><td>Not applicable</td></tr>
</table>

WARNING

If the HVO-500MD/550MD should be used adjacent to or stacked with other equipment, it should be observed to verify normal operation in the configuration in which it will be used.

Guidance and manufacturer's declaration - electromagnetic immunity			
The HVO-500MD/550MD is intended for use in the electromagnetic environment specified below. The customer or the user of the HVO-500MD/550MD should assure that it is used in such as environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/ output lines	 ±1 kV for input/ output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5% U_T (> 95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (> 95% dip in U_T) for 5 sec	Not applicable	Mains power quality should be that of a typical commercial or hospital environment. If the user of the HVO-500MD/550MD requires continued operation during power mains interruptions, it is recommended that the HVO-500MD/550MD be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at least characteristic of a typical location in a typical commercial or hospital environment.
NOTE: U_T is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer's declaration - electromagnetic immunity			
The HVO-500MD/550MD is intended for use in the electromagnetic environment specified below. The customer or the user of the HVO-500MD/550MD should assure that it is used in such as environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the HVO-500MD/550MD, including cables, than the recommended separation distance calculated from the equation appliance to the frequency of the transmitter. **Recommended separation distance** $d = 1.2\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b] Interference may occur in the vicinity of equipment marked with following symbol:
NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the HVO-500MD/550MD is used exceeds the applicable RF compliance level above, the HVO-500MD/550MD should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the HVO-500MD/550MD. b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

Recommended separation distances between portable and mobile RF communications equipment and the HVO-500MD/550MD			
The HVO-500MD/550MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the HVO-500MD/550MD can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the HVO-500MD/550MD as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

CAUTION

When you dispose of the unit or accessories, you must obey the laws in the relative area or country and the regulations in the relative hospital.

For the customers in Europe

This product has been manufactured by or on behalf of Sony Corporation, 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan.
Inquiries related to product compliance based on European Union legislation shall be addressed to the authorized representative, Sony Deutschland GmbH, Hedelfinger Strasse 61, 70327 Stuttgart, Germany.
For any service or guarantee matters, please refer to the addresses provided in the separate service or guarantee documents.

For the State of California, USA only

Perchlorate Material - special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate

For the customers in Taiwan only

廢電池請回收

For the customers in the U.S.A.
SONY LIMITED WARRANTY - Please visit http://www.sony.com/psa/warranty for important information and complete terms and conditions of Sony's limited warranty applicable to this product.

For the customers in Canada
SONY LIMITED WARRANTY - Please visit http://www.sonybiz.ca/solutions/Support.do for important information and complete terms and conditions of Sony's limited warranty applicable to this product.

For the customers in Europe
Sony Professional Solutions Europe - Standard Warranty and Exceptions on Standard Warranty.
Please visit http://www.pro.sony.eu/warranty for important information and complete terms and conditions.

For the customers in Korea
SONY LIMITED WARRANTY - Please visit http://bpeng.sony.co.kr/handler/BPAS-Start for important information and complete terms and conditions of Sony's limited warranty applicable to this product.

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- Reproduction or duplication, in whole or part, of the software or operation manual supplied with the recorder, as well as renting or leasing of the software without the authorization of the right holder is prohibited under copyright law.
- Sony assumes no responsibility for damages, loss of income, or any claims from a third party arising out of use of the recorder or supplied software.
- For complete terms and conditions of the warranty for the recorder, refer to the warranty card included in the package.
- The software supplied with the recorder cannot be used with any other recorders.
- It is not possible to install any software into the equipment other than the software supplied by Sony specifically for use with the equipment.
- Note that the specifications of the recorder and supplied software are subject to change for improvement without prior notice.

Please Read First

Copyright

Using this unit for video and/or audio recording, or distribution over the network or otherwise may in some cases require the permission of the copyright holder of the video or audio. To protect copyright, observe the following points carefully when using this unit.

- When connecting a recording device to this and recording video or audio, carefully observe laws relating to copyright.
- Without the permission of the copyright holder, the showing or distribution of video or audio material of which the copyright is held by a third party, or the act of recording on the hard disk of this unit, sharing folders, and permitting of access to a private group or to the public is prohibited by law.
- With a software upgrade or functional extension, with the object of protecting copyright, the specifications for the video and audio signals that can be input may be changed without notice.
- Under copyright law, you may not use recorded video or audio other than for your personal enjoyment without the permission of the copyright holder. Note that at live performances, shows and exhibitions, even for your personal entertainment shooting may be restricted.

Disclaimer of Liability for Recorded Data

Sony Corporation does not accept any liability whatsoever for any problems arising from a failure to record, or from damage or erasure of recorded content on this equipment, for any reason. This includes claims for compensation of recorded content, and for any concomitant and consequential damages. Sony Corporation will not repair, restore, or duplicate any recorded content. Your use of this product is subject to these conditions.
Problems may occur if you perform the following operations:

- When you use a disc recorded using another DVD recorder or DVD drive of a personal computer with this unit. Additional recording to discs recorded using other DVD recorders or computers is not supported.

On security

SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND RESULTING FROM A FAILURE TO IMPLEMENT PROPER SECURITY MEASURES ON TRANSMISSION DEVICES, UNAVOIDABLE DATA LEAKS RESULTING FROM TRANSMISSION SPECIFICATIONS, OR SECURITY PROBLEMS OF ANY KIND.

On moisture condensation

If the unit is suddenly taken from a cold to a warm location, or if ambient temperature suddenly rises, moisture may form on the outer surface of the unit and/or inside of the unit. This is known as condensation. If condensation occurs, turn off the unit and wait until the condensation clears before operating the unit. Operating the unit while condensation is present may damage the unit.

On consumable parts

- The HDD, fan, battery, and DVD drive are consumable parts that will need periodic replacement. When operating at room temperature, a normal replacement cycle will be about 2 to 3 years.
  However, this replacement cycle represents only a general guideline and does not imply that the life expectancy of these parts is guaranteed. For details on parts replacement, contact your dealer.
- The life expectancy of the AC adapter and the electrolytic capacitor is about 5 years under normal operating temperatures and normal usage (8 hours per day; 25 days per month). If usage exceeds the above normal usage frequency, the life expectancy may be reduced correspondingly.

Precautions for products with built-in HDD

This unit has a built-in hard disk drive (HDD). The HDD is a precision device. If subject to shock, vibration, static electricity, high temperature or humidity, data loss can occur. When installing and using the unit, closely observe the following precautions.

Protect from shocks and vibrations

When subject to shocks or vibrations, the HDD can be damaged and loss of data on the HDD can occur.

- When transporting the unit, use the specified packing material. When transporting on a dolly or similar, use a type which does not transmit excessive vibrations. Excessive shocks and vibrations can damage the HDD.
- Never move the unit while it is powered.
- Do not remove panels or outer parts of the unit.
- When placing the unit on a floor or other surface, make sure that the unit is equipped with the specified rubber feet, and put the unit down carefully. If there are no feet, mount the rubber feet first.
- Do not place the unit near other devices that may become a source of vibrations.

Wait for 30 seconds after turning power off

For a brief interval after the power is turned off, the platters inside the HDD will still keep spinning and the heads will be in an insecure position. During this interval, the unit is more susceptible to shocks and vibrations than during normal operation. For a period of at least 30 seconds after turning power off, avoid subjecting the unit even to very

light shocks. After this period, the hard disk will be fully stopped and the unit can be manipulated.

Temperature and humidity related precautions

Use and store the unit only in locations where the specified temperature and humidity ranges are not exceeded. (Be sure to use the unit that conforms fully to the specifications of this unit.)

When HDD seems to be faulty

Even if the HDD is showing signs of malfunction, be sure to observe all the above precautions. This will prevent further damage from occurring until the problem can be diagnosed and corrected.

Replacement of the HDD and other consumable parts

The HDD and battery are consumable parts that will need periodic replacement. When operating at room temperature, a normal replacement cycle will be about two to three years. However, this replacement cycle represents only a general guideline and does not imply that the life expectancy of these parts is guaranteed. For details on parts replacement, contact your dealer.

Discs recorded in the AVCHD format

Please do not set the disc recorded in the AVCHD format to the AVCHD-not-ready appliances. The appliances may malfunction.
And the AVCHD-not-ready appliances don't support the playback of the disc recorded in the AVCHD format.

Notes on media

Operation with all optical media or USB media is not guaranteed. Contact your dealer regarding the type of media you intend to use.

HDMI/DVI-D inputs

If HDMI/DVI-D input images are not displayed, turn on the unit first and make sure that startup is complete (i.e., "READY" appears in the front panel display) before turning on the video input device.

Usage Notes

Do not block the vents

To prevent the interior of the unit from overheating, maintain a clearance of at least 10 cm (4 in.) around the unit.

Do not subject the unit to severe shocks

The internal mechanism may be damaged or the body warped.

Do not cover the unit while operating

Doing so will cause temperatures to rise inside the unit, possibly resulting in failure.

After use

Turn off the on/standby switch.
If you plan not to use the unit for a long period of time, disconnect the AC adapter as well.

Shipping

- Remove the disc before transporting the unit.
- If sending the unit by truck, ship, air or other transportation service, pack it in the shipping carton of the unit.

Care of the unit

If the casing, or panel becomes dirty, wipe them gently with a soft, dry cloth.
For stubborn dirt, use a cloth wet with mild liquid detergent to wipe the unit, and then wipe it with a dry cloth.
Using alcohol, thinner, benzine, insecticides, or other volatile substances may damage the surface of the unit or remove the finish.
Use isopropyl alcohol with a concentration of 50% to 70% (v/v) or ethanol with a concentration of 76.9% to 81.4 % (v/v) to clean the surface of the unit.

In the event of operating problems

If you should experience problems with the unit, contact your Sony dealer.

Overview

Chapter 1

Features

The Sony HVO-500MD/550MD HD Video Recorder is intended to record HD video from ultrasound, digital X-ray and other compatible diagnostic imaging systems. These medical grade video recorders can save recorded images to an internal hard disk drive, a portable USB drive, optical disk (HVO-550MD model only) or to a compatible network server. The recorded images can be used for the patient record, training or education or for sending to referring physicians. The video recorders are suitable for use in hospital radiology and operating rooms, diagnostic imaging centers, clinics, doctors' offices and similar medical environments.

Improved efficiency during and after exams

Video image recording

Record videos from devices, such as ultrasonography equipment. HD/SD-compatibility allows recording and playback in high definition.

Simultaneous saving to external storage media

Data saving to external storage media is completed at roughly the same timing as the end of the exam.

Support for a variety of external storage media

Record simultaneously to USB-compatible external hard drives and USB memory devices via simple controls, or copy the data at a later time. This is useful when you want to edit recorded images on a computer.

Warning

Using this unit for medical purposes

The connectors on this unit are not isolated.
Always use USB-compatible external hard drives and USB memory devices that operate solely on the power supplied by the unit.

Connecting a device that operates on an AC power supply may result in an influx of leakage currents from the connected device, which may in turn result in electric shocks to the patient and operator.
If use of such devices cannot be avoided, be sure to connect an isolation transformer to the power supply of the connected device or connect an isolator between the connection cables to isolate the power supply, and verify that the risk of electric shock from the system has been sufficiently reduced to levels that conform to IEC60601-1 standards.

Editing recorded data

Record images to external media, and use commercially available software to play back or edit the images on a computer as necessary.

Network file transfer

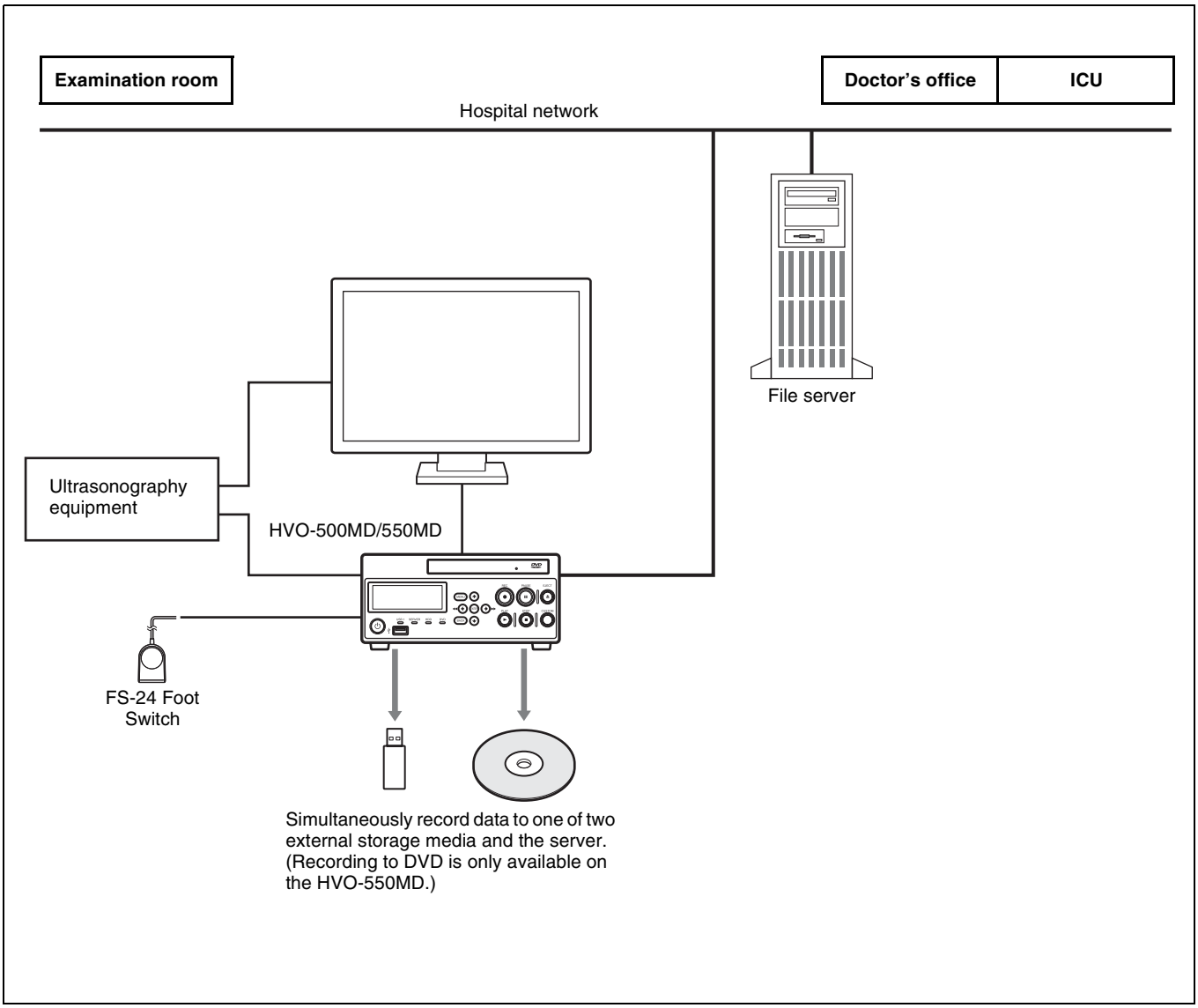
Transfer recorded data from the examination room directly to computers within the hospital network.

Warning

Using this unit for medical purposes

This equipment's connectors are not isolated.
Do not connect any device other than one which conforms to IEC60601-1.
When an information technology device or AV device that uses an alternating current is connected, current leakage may result in an electric shock to the patient or operator. If use of such a device is unavoidable, isolate its power supply by connecting an isolation transformer, or by connecting an isolator between the connecting cables. After implementing these measures, confirm that the reduced risk now conforms to IEC60601-1.

System Configuration Example



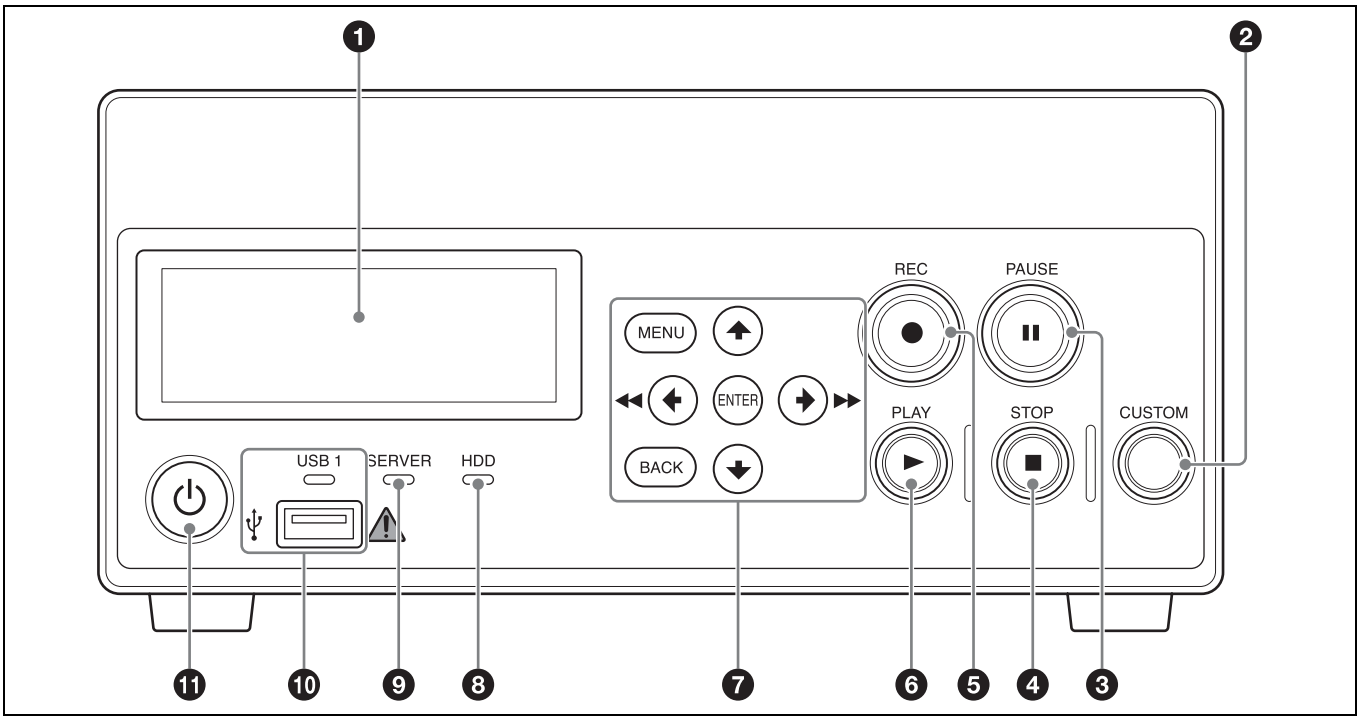
Caution

The FS-24 has an Ingress Protection rating of IPx3. Therefore, do not operate it environments exposed to splashing liquids (e.g., surgical operating rooms). For safety, use a device with a rating of IPx6 or higher when operating in such environments.

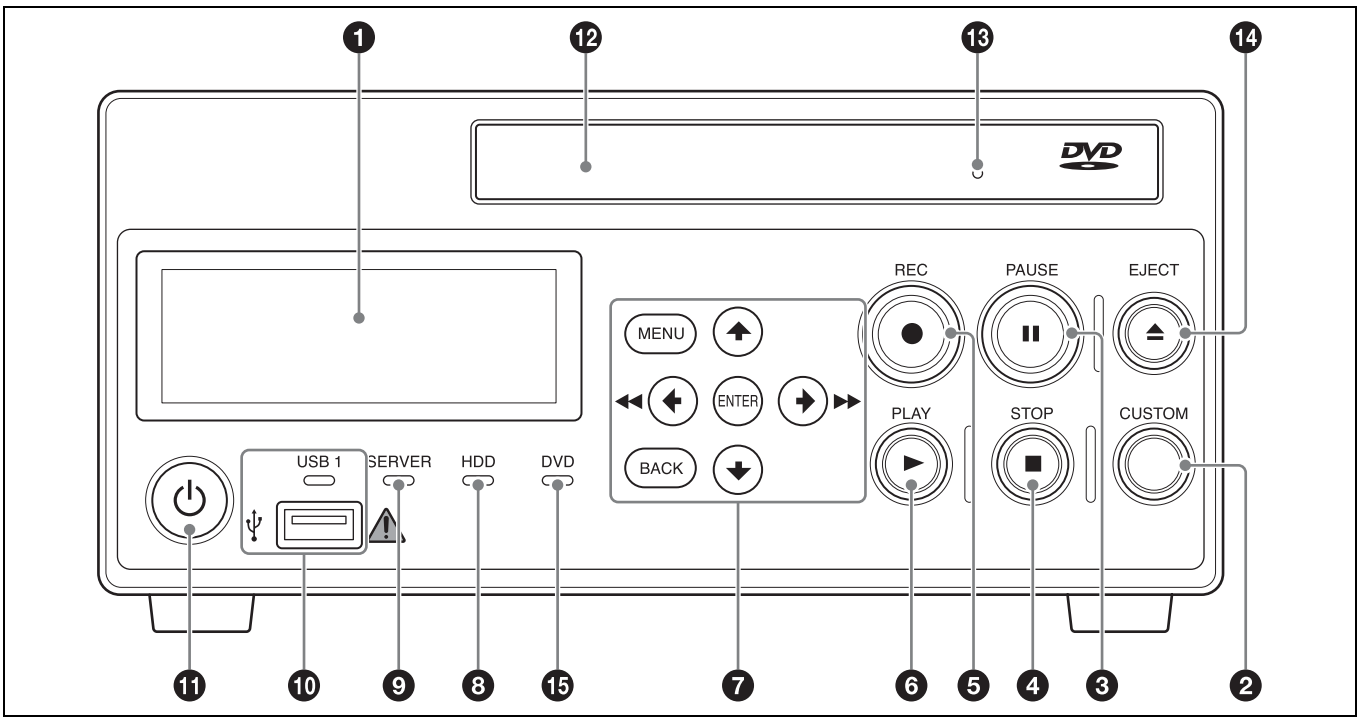
Names and Functions of Parts

Front

HVO-500MD



HVO-550MD



Note

(HVO-550MD only)

Do not touch the laser pickup inside the DVD drive

The discharge of static electricity that may result from touching the pickup may cause the drive to hang up, preventing the ability to write data. If a hang up occurs, try turning the recorder off and turning it on again.

❶ **Front panel display**
Displays the current status and messages.

❷ **CUSTOM button**
Execute the function assigned to this button.

For details on assigning functions, see "[CUSTOM Button Control]" under "[General 2] Tab" (page 57).

❸ **❚❚ PAUSE button**
Use this while recording is in progress to pause recording. Press this button again to resume recording. A chapter separator is also created at the position in which recording was paused.
You can also use this button to pause playback.
To resume playback, press this button again or press the ▶ PLAY button.
"PAUSE" appears on the front panel display during pause.

❹ **■ STOP button**
Use this to stop playback or recording.
A recorded data separator is also created at the position in which recording was stopped.

❺ **● REC button**
Use this to start video/audio recording.
"REC" appears on the front panel display during recording, in addition to the recording time.

For details on use, see "Manual Recording" (page 32).

❻ **▶ PLAY button**
- Use this to play back the most recent recorded data stored on the internal hard disk.
- Press this button while playback is paused to resume playback.

❼ **Menu navigation buttons**
Use these to navigate menus.

MENU button
Display or hide the menu.

↑ button
Use this to move the cursor up or select an item that is above the current item.

← / ◀◀ button
Use this to move the cursor left or select an item that is to the left of the current item.
You can also use this button to rewind during playback of recorded data.

↓ button
Use this to move the cursor down or select an item that is below the current item.
You can also use this button during playback to pause the playback image (i.e., freeze ON).

→ / ▶▶ button
Use this to move the cursor right or select an item that is to the right of the current item.
You can also use this button to fast forward during playback of recorded data.

ENTER button
Use this to confirm a currently selected menu or item, and execute operations. When recording or playback is not in progress, holding this button for 5 seconds switches the input signal as follows with each long press: DVI-D ⟶ HDMI ⟶ VIDEO ⟶ S VIDEO

BACK button
Use this to return to a previous screen during menu or operation screen displays.

❽ **HDD indicator**
Displays the status of the internal hard disk.

Indicator	Status
Blinking green	The internal hard disk is being accessed.
Lit green	The recording area of the internal hard disk is full. Delete any unnecessary recorded data.
Lit orange	An error has occurred.

❾ **SERVER indicator**
Displays the server access status.

Indicator	Status
Blinking green	The server is being accessed.
Lit green	The recording area of the server is full.
Lit orange	An error has occurred.

❿ **USB 1 port/indicator**
Connect USB memory devices, external hard disks, and other USB media here.
The indicators display the status of USB media access.

Indicator	Status
Blinking green	Data is being written to the USB media.

Indicator	Status
Lit green	The recording area of the USB media is full. Delete any unnecessary recorded data, or insert different media.
Lit orange	An error has occurred.

Note

Never remove the USB media when these indicators are blinking green.

⓫ **⏻ (on/standby) switch**
Use this switch to turn on the unit and the front panel display.

Tip

To completely shut off the power supply, disconnect the power cord of the AC adapter.

⓬ **Disc tray (HVO-550MD only)**
Insert discs here.

⓭ **Emergency eject hole (HVO-550MD only)**
If the disc tray does not open when you press the ⏏ EJECT button, insert a long, thin object such as a straightened paper clip into this hole to open the disc tray.

⓮ **⏏ EJECT button (HVO-550MD only)**
Use this to open the disc tray.

⓯ **DVD indicator (HVO-550MD only)**
Displays the status of the DVD drive.

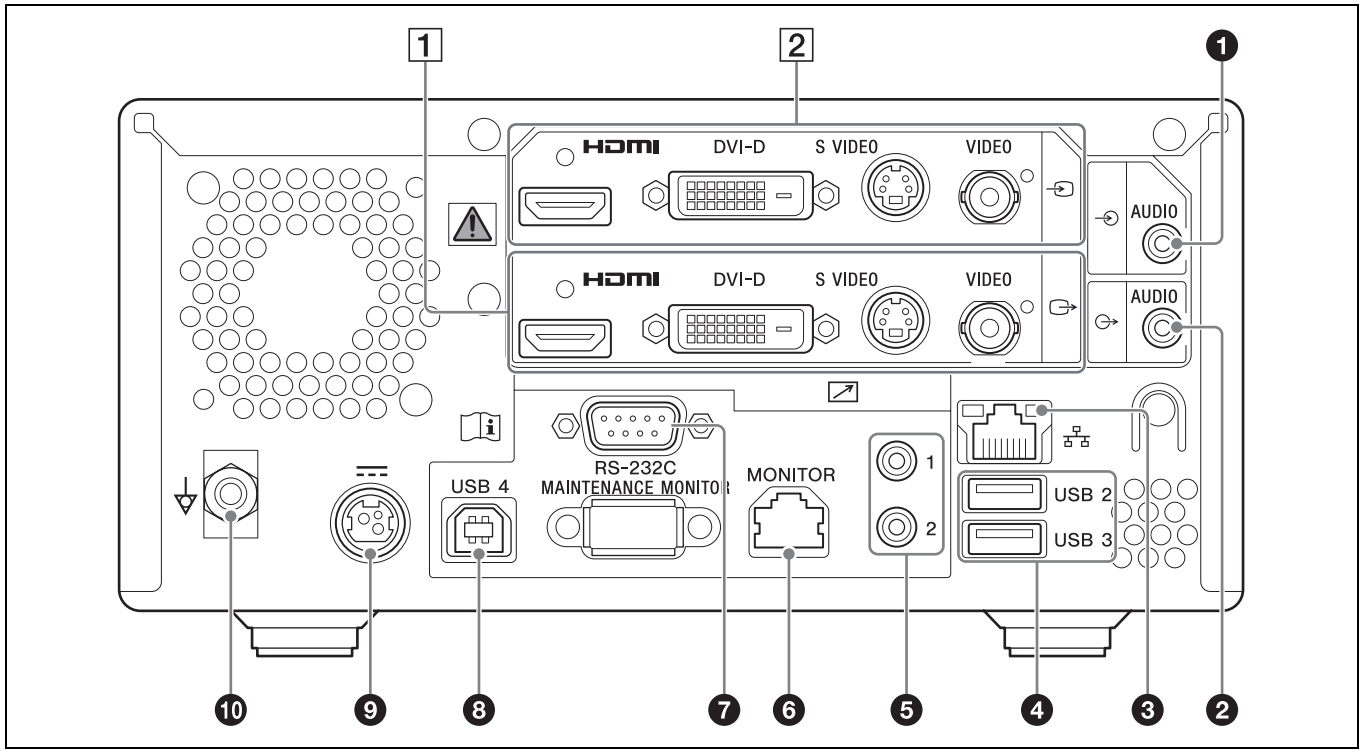
Indicator	Status
Blinking green	Data is being written to the DVD disc.
Lit green	The recording area of the DVD disc is full. Insert a different disc.
Lit orange	An error has occurred.

Note

You cannot remove the disc when this indicator is blinking green.

Rear

HVO-500MD/550MD



Warning

Using this unit for medical purposes

This equipment's connectors are not isolated.
Do not connect any device other than one which conforms to IEC60601-1.
When an information technology device or AV device that uses an alternating current is connected, current leakage may result in an electric shock to the patient or operator. If use of such a device is unavoidable, isolate its power supply by connecting an isolation transformer, or by connecting an isolator between the connecting cables. After implementing these measures, confirm that the reduced risk now conforms to IEC60601-1.

Caution

Do not come into contact with the terminals of the rear panel connectors and patients at the same time.
Doing so may result in a generation of voltage that can be harmful to patients if the unit is malfunctioning.
Always disconnect the power cord before connecting and disconnecting connectors.

❶ **AUDIO (analog audio signal) input connector (stereo mini jack)**
Inputs analog audio signals.

❷ **AUDIO (analog audio signal) output connector (stereo mini jack)**
Outputs analog audio signals.

❸ **Network connector (RJ-45)**
Connect a 1000 Base-T or 100 Base-TX network cable here.

Caution

- For safety, do not connect the connector for peripheral device wiring that might have excessive voltage to this port. Follow the instructions for this port.
- When you connect the LAN cable of the unit to peripheral device, use a shielded-type cable to prevent malfunction due to radiation noise.

❹ **USB 2 and 3 ports**
Connect USB devices here.

Tip

Supported USB devices

- Use Sony USB media formatted in the FAT32 file system.
- The connectors do not support all USB devices.
- USB hubs and devices with built-in hubs are not supported.

Warning

Using this unit for medical purposes

The connectors on this unit are not isolated.
Always use USB-compatible external hard drives and USB memory devices that operate solely on the power supplied by the unit.
Connecting a device that operates on an AC power supply may result in an influx of leakage currents from the connected device, which may in turn result in electric shocks to the patient and operator.
If use of such devices cannot be avoided, be sure to connect an isolation transformer to the power supply of the connected device or connect an isolator between the connection cables to isolate the power supply, and verify that the risk of electric shock from the system has been sufficiently reduced to levels that conform to IEC60601-1 standards.

❺ **REMOTE contact switch connectors 1 to 2 (stereo mini jack)**
Use these to control the unit via contact switches.

For details on contact switches, see "[Contact Switch] Tab" (page 64).

❻ **REMOTE MONITOR connector (RJ-45)**
Use this to perform monitor controls.

For details on monitor controls, see "[Contact Switch] Tab" (page 64).

❼ **REMOTE RS-232C connector (9-pin D-sub)**
Use this connector when controlling this unit or external devices from a serial interface device.

❽ **USB 4 port**
Connect USB devices here. The same controls that can be performed on an RS-232C device can be performed on a connected USB device.

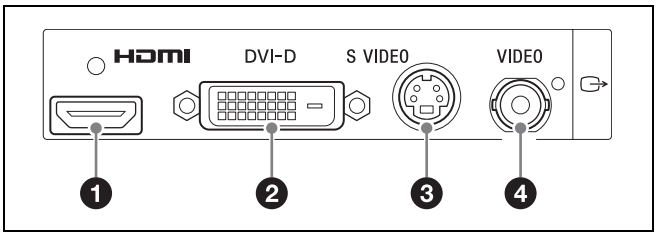
❾ **DC IN connector**
Connect the DC power cable of the supplied AC adapter here.

Caution

Connecting the DC connector to the unit before connecting the AC power cord from the AC adapter. Conversely, disconnect the AC power cord from the AC adapter before disconnecting the DC connector.
Do not touch the patient while touching the pins the DC connector. The 24 V voltage applied to the pins of the DC connector may adversely the patient.

❿ **Equipotential grounding terminal**
Use this for equipotential grounding connections.

1 Video output block



❶ **HDMI output connector (Type A)**
Outputs HDMI signals.

Note

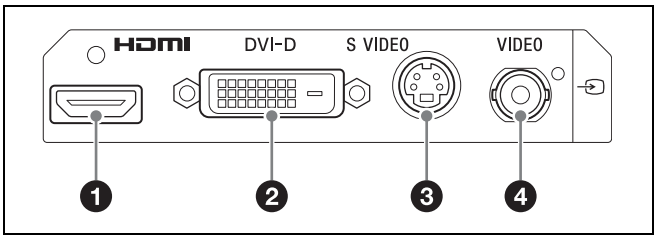
We recommend using a Sony HDMI cable (not supplied).

❷ **DVI-D output connector (19-pin DVI)**
Outputs DVI-D signals.

❸ **S VIDEO output connector (4-pin mini DIN)**
Outputs analog S-Video signals.

❹ **VIDEO output connector (BNC type)**
Outputs analog composite video signals.

2 Video input block



❶ **HDMI input connector (Type A)**
Inputs HDMI signals.

Note

We recommend using a Sony HDMI cable (not supplied).

❷ **DVI-D input connector (19-pin DVI)**
Inputs DVI-D signals.

❸ **S VIDEO input connector (4-pin mini DIN)**
Inputs analog S-Video signals.

❹ **VIDEO input connector (BNC type)**
Inputs analog composite video signals.

Tip

If HDMI/DVI-D input images are not displayed, turn on the unit first and make sure that startup is complete (i.e., "READY" appears in the front panel display) before turning on the video input device.

Preparation

Chapter 2

Connections

1 Connect the DC power cable of the supplied AC adapter to the DC IN connector on the rear of the unit.

2 Connect the output signal of the medical equipment to a video input connector on the rear of the unit.

Connect the cable to the appropriate connector based on the signal type (HDMI, DVI-D, S-Video, composite video).

Tip

The default setting when you start the unit for the first time is DVI-D. If you do not have a monitor that supports DVI-D input, hold the ENTER button for at least 5 seconds to switch the input signal setting while confirming selections in the front panel display.

3 Connect the AC power cord of the AC adapter to an AC power supply.

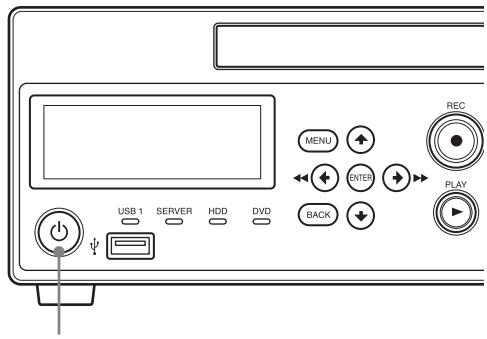
4 Turn on the medical equipment that will act as the signal source.

Turning the Unit On and Off

To turn on the unit

Press the ⏻ (on/standby) switch on the front panel of the unit.

Front panel



⏻ (on/standby) switch

When the unit turns on, the front panel display lights and "WELCOME" appears.
When the front panel display changes from "BOOTING..." to "READY" you can perform the following operations.

To turn on power or enter standby during normal operation

Use the ⏻ (on/standby) switch on the front panel to switch between turning the unit on and entering the standby mode. When you turn off the unit, "FINISHING" appears on the front panel display while the unit is shutting down. "GOODBYE" appears and the display and the unit turn off when shutdown is complete.

Tip

To completely shut off the power supply, disconnect the power cord of the AC adapter.

Configuring System Settings

Be sure to configure the system settings before you begin operating the unit. The system settings should be configured by the system administrator.

For details on system settings, see "System Administrator Settings" (page 51).

Configuring Recording Settings (User Settings)

Select image inputs and configure image quality settings in the [User Settings] screen.
You can navigate menus using the navigation buttons on the front panel of the unit.

Tip

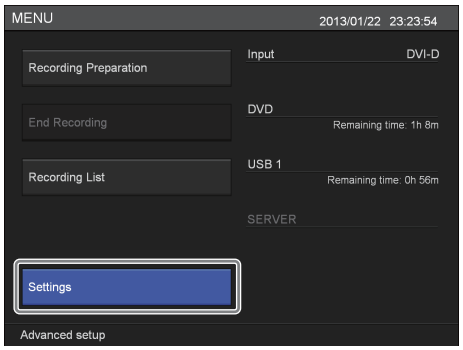
After the unit is turned off, any settings configured in the [User Settings] screen (except those in the [Select Input] tab) will revert to the settings configured under [System Admin Settings].

Displaying the [User Settings] Screen

1 Press the MENU button.

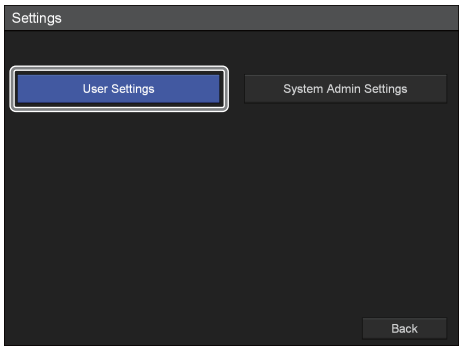
The [MENU] screen appears.

2 Use the ↑ and ↓ buttons to select [Settings], and press the ENTER button.



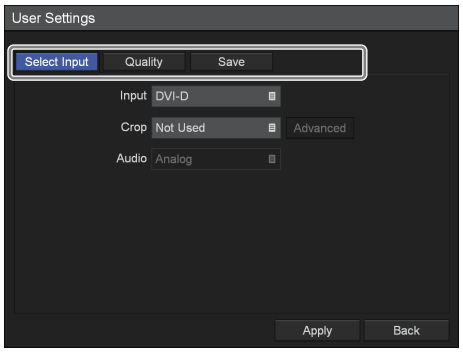
The [Settings] screen appears.

3 Use the ← and → buttons to select [User Settings], and press the ENTER button.



The [User Settings] screen appears.

4 Use the ← and → buttons to select a tab, and press the ENTER button.



5 Configure the settings in each tab as necessary.

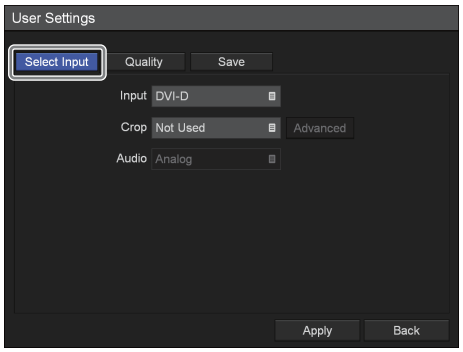
6 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

The [Settings] screen appears again.

Configuring Input Signal Settings

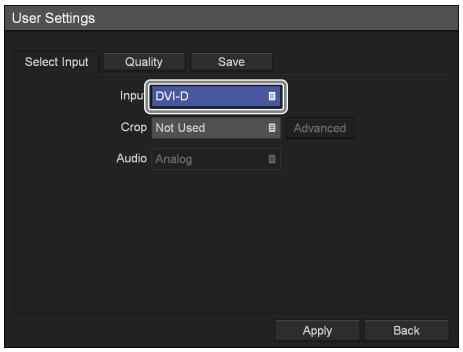
Select video and audio input signals, and configure crop settings for the input video.

1 Use the ← and → buttons to select the [Select Input] tab.



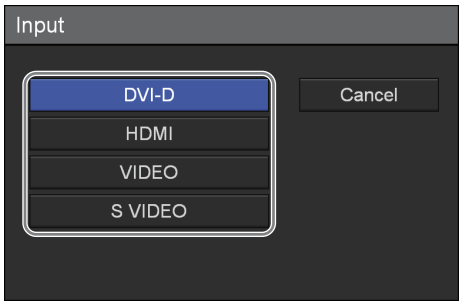
2 Configure each setting.

Use the ↑, ↓, ←, and → buttons to select an item, and press the ENTER button to display the setting screen for that item.



[Input]

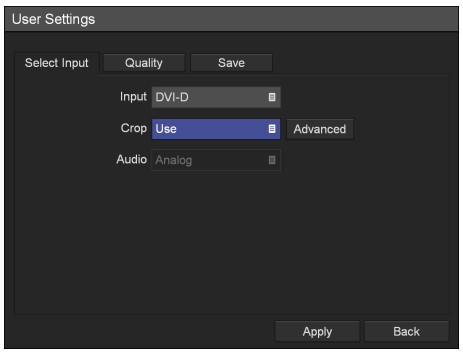
Select a video input signal in the setting screen that appears, and press the ENTER button.



For details on the resolutions that are supported for each input signal type, contact your local Sony representative.

[Crop]

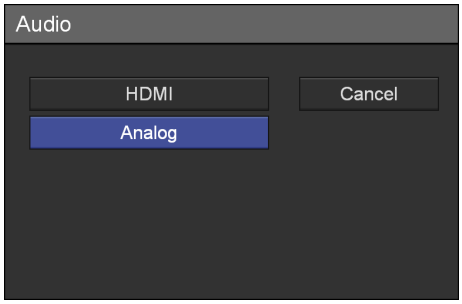
Select whether to crop the input video. The input video will be recorded in expanded or shrunken form based on the specified crop size.
[Advanced] appears when you select [Use].



For details on this setting, see "To configure advanced crop settings" (page 23).

[Audio]

When the input signal is set to [HDMI], select the audio input signal to record in the setting screen that appears, and press the ENTER button.
The default setting is [HDMI].



3 To configure image quality settings, proceed to *"Configuring Image Quality Settings" (page 24).*

If you are finished configuring, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

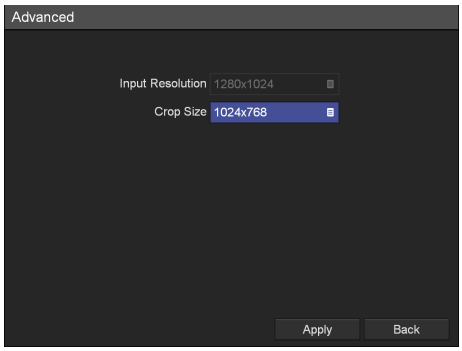
To configure advanced crop settings

Configure the crop size. Input resolutions appear in the [Advanced] settings screen.

1 Use the ← and → buttons to select [Advanced], and press the ENTER button.

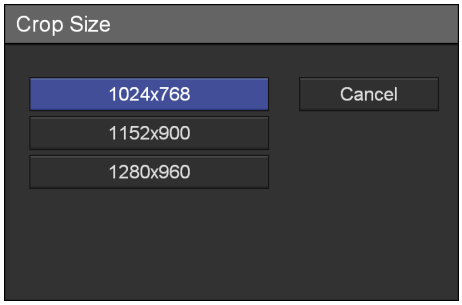
The [Advanced] settings screen appears.

2 Use the ↓ button to select [Crop Size], and press the ENTER button.



The crop size setting screen appears.

3 Use the ↑ and ↓ buttons to select a crop size, and press the ENTER button.



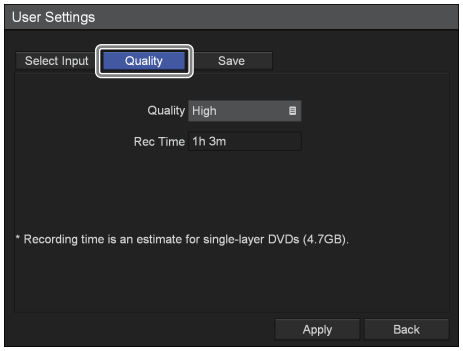
Tip

If the crop size does not match the recording resolution, black bars will appear at the top, bottom, left, and right of the image.

Configuring Image Quality Settings

Configure image quality settings for videos.

1 Use the ← and → buttons to select the [Quality] tab.



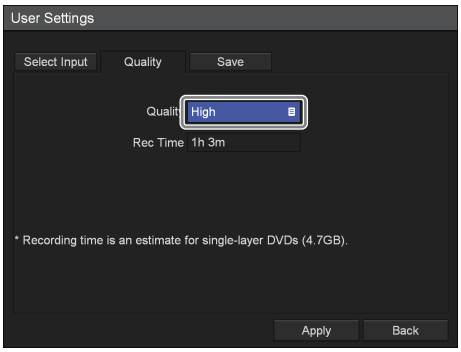
Tip

[Rec Time] displays the following information.

- For the HVO-500MD: Estimated recording time available for USB media (500 GB).
- For the HVO-550MD: Estimated recording time available for single-layer DVD-R1 discs (4.7 GB).

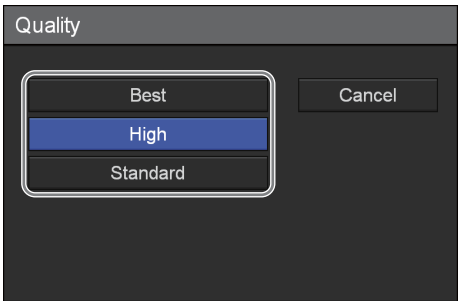
2 Configure the video settings.

① Use the ↓ button to select the [Quality] box, and press the ENTER button.



The [Quality] screen appears.

② Use the ↑ and ↓ buttons to select the image quality, and press the ENTER button.



The [Quality] screen closes, and the [Quality] tab appears again.

Tip

The setting configured here will be used as the initial value for the [Video Quality] setting in the [Recording Preparation] screen.

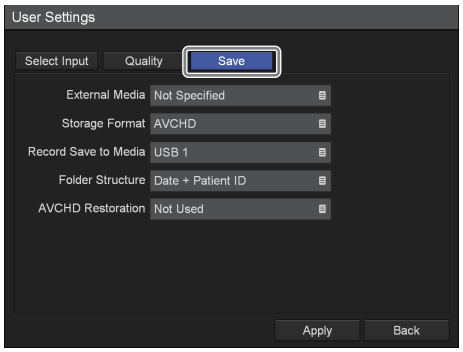
3 To configure save settings, proceed to *"Configuring Save Settings" (page 24)*.

If you are finished configuring, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

Configuring Save Settings

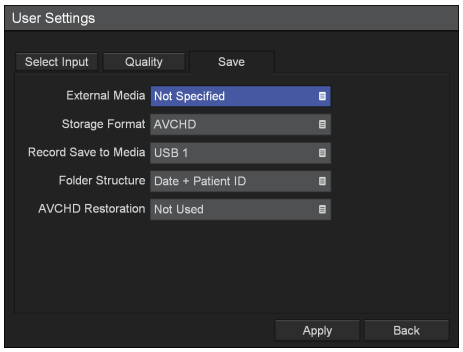
Configure settings related to external media used to store recorded data, and specify whether to output metadata.

1 Use the ← and → buttons to select the [Save] tab.



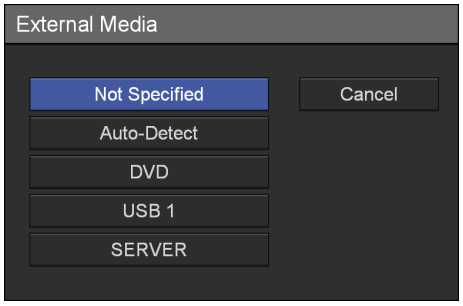
2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



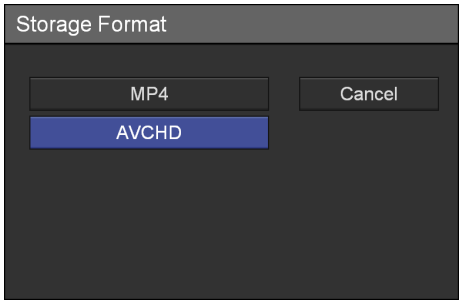
[External Media]

Select the external storage destinations in the setting screens that appear, and press the ENTER button.



[Storage Format]

Select the storage format in the setting screen that appears, and press the ENTER button.

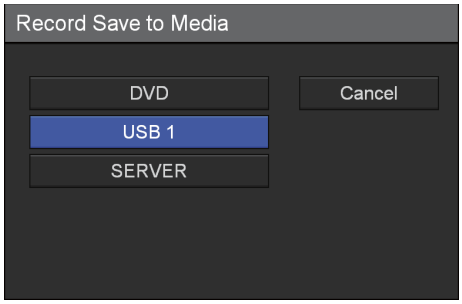


Note

When saving recorded data in AVCHD format to servers, do not specify the same share name (i.e., share folder) on the same server as the storage destination for multiple recorders. Performing multiple saving operations at the same time may result in damage to the recorded data.

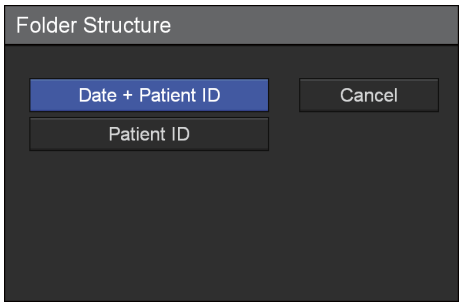
[Record Save to Media]

Select the external storage media to which to copy the recording list in the setting screen that appears, and press the ENTER button.



[Folder Structure]

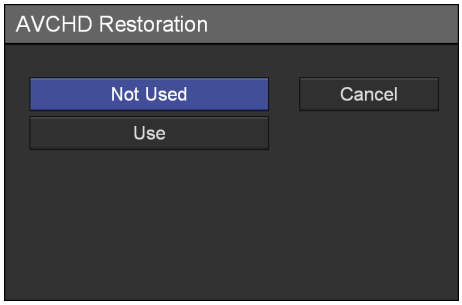
Select the directory structure that will be used when writing to external media in the setting screen that appears, and press the ENTER button.



When recorded data with the same patient ID is created, a new recording date folder is created under the patient ID folder, and the recorded data is saved to the new folder.

[AVCHD Restoration]

Select whether to perform restoration when AVCHD files are damaged or additional recording is otherwise no longer possible in the setting screen that appears, and press the ENTER button. The target files for restoration will be moved to a backup folder, and additional recording will resume.



3 When you finish configuration, use the ↑, ←, →, and ↓ buttons to select [Apply], and press the ENTER button.

The [Settings] screen appears again.

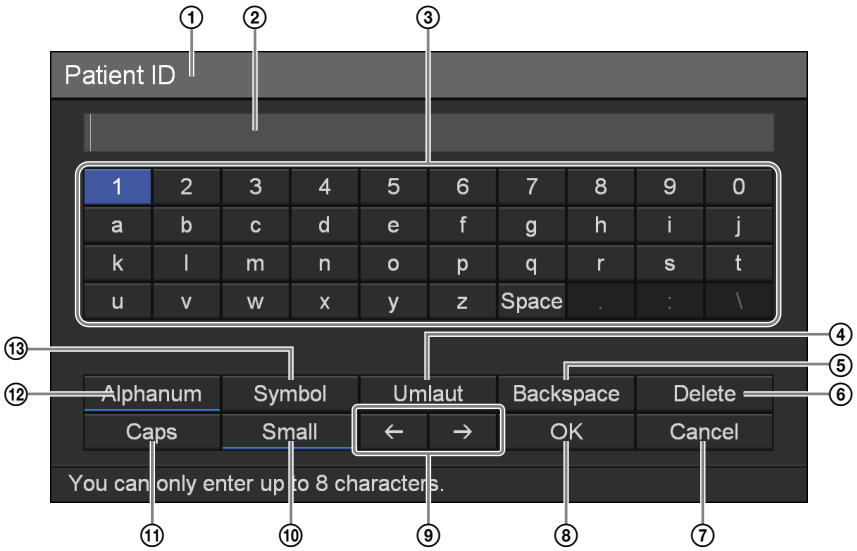
Using the On-Screen Keyboard (Text Entry)

When text entry is necessary, an on-screen keyboard appears.

Names and Functions of Parts (On-Screen Keyboard)

You can display an alphanumeric, symbol, or umlaut character set on the on-screen keyboard.
The name and function of each part on the keyboard is as follows.

Example: On-screen keyboard during alphanumeric character display



① Title bar
The name of the setting item for which the on-screen keyboard was opened is displayed here.

② Entry box
Characters selected on the keyboard are entered here.

Tip

Characters input on a hardware keyboard are also entered here.

③ Keyboard
When you select a character you want to input using the ↑, ↓, ←, and → buttons and then press the ENTER button, the character is entered in the ② entry box.

④ [Umlaut]
Select this and press the ENTER button to switch the keyboard to umlaut character display.

⑤ [Backspace]
Select this and press the ENTER button to discard the character immediately preceding the cursor.

⑥ [Delete]
Select this and press the ENTER button to discard the character immediately following the cursor.

⑦ [Cancel]
Select this and press the ENTER button to cancel text entry and close the on-screen keyboard.

⑧ [OK]
When you select this and press the ENTER button, the text that appears in the entry box is applied and input in the settings screen.

⑨ ← / →
Select this and press the ENTER button to move the cursor one space to the left or right.

⑩ [Small]
Select this and press the ENTER button to switch the keyboard to lower case display.

⑪ **[Caps]**
Select this and press the ENTER button to switch the keyboard to upper case display.

⑫ **[Alphanum]**
Select this and press the ENTER button to switch the keyboard to alphanumeric character display.

⑬ **[Symbol]**
Select this and press the ENTER button to switch the keyboard to symbol display.

Handling Discs

Compatible discs

This unit supports the following DVD disc.
- DVD-R (single layer)

Note

If you play back a DVD disc that was recorded using this unit on a computer running Windows XP, additional recording to that disc may become disabled.

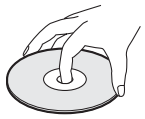
Disc formatting

This unit automatically formats new and previously unused discs.

Notes on Handling

Handling

- Do not touch the recording or playback surface of the disc. Handle the disc by its edge.



- Do not use the following types of disc. Doing so may cause the unit to malfunction.
  – A disc on which a paper label or a seal is attached
  – A disc on which the glue of cellophane tape or a label, or on which a portion of a label still remains
  – A cracked disc
  – A cracked disc which has been mended using glue (or a similar substance)

Storage

- Do not store discs where they may be subjected to direct sunlight, or in other places where the temperature or humidity is high.
- Store discs in their cases.
- Finger prints or dust accumulated on the disc cause deterioration of picture quality. Keep the disc clean.

Cleaning

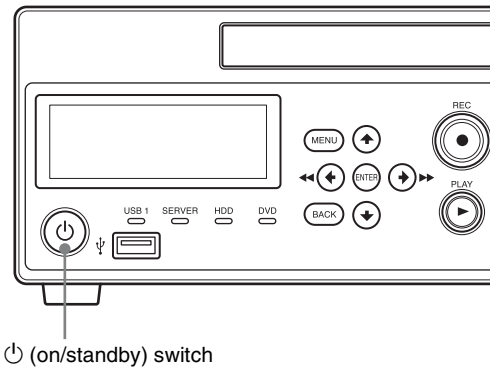
- Clean the disc with a soft cloth, wiping it from the center out. If the dust is heavy, wipe it with a soft cloth moistened with water, then wipe off the water with a dry cloth.

- Do not use solvents such as benzene, thinner, commercially available record cleaners, or anti-static spray. Using these products may damage discs.

Inserting and Removing Discs

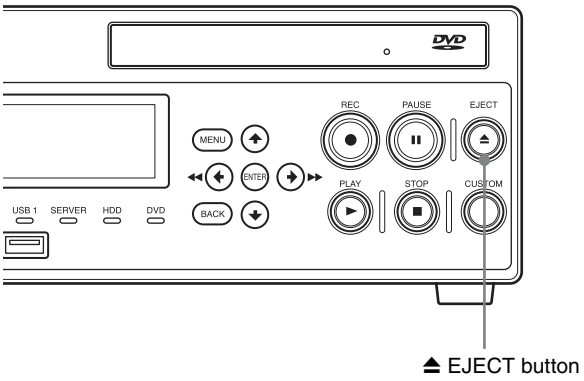
To insert a disc

1 Press the ⏻ (on/standby) switch to exit standby mode.



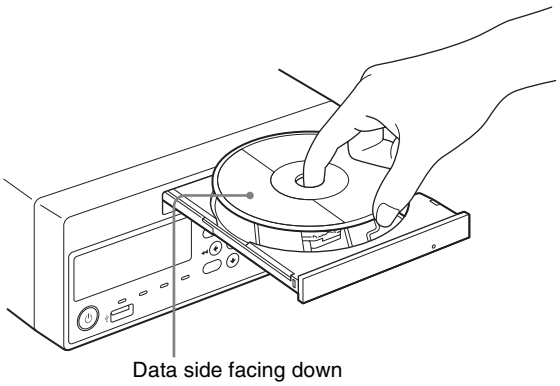
"WELCOME" appears on the front panel display. When the "READY" message appears, proceed to the following steps.

2 Press the ⏏ EJECT button.



The disc tray opens.

3 Insert the disc.



4 Gently push in the disc tray.

The disc tray closes.

When an incompatible disc is inserted

The DVD indicator lights orange, and a message notifying you of the incompatible media appears on the menu screen. Remove the disc, and insert a compatible disc.

To remove a disc

1 Press the ⏏ EJECT button while the unit is turned on.

The disc tray opens.

2 Remove the disc.

3 Gently push in the disc tray to close it.

Tips

- The disc tray may take some time to open if finalization is in progress. Wait a moment for the finalization process to complete.
- The disc tray cannot be opened while recording is in progress or paused when simultaneously saving to a DVD.

Basic Recorder Operations

Chapter 3

Operation Flow

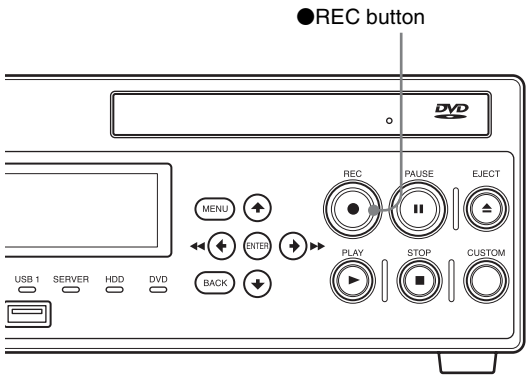
This chapter describes how to record and perform quick playback for videos while viewing the display on the front panel of the unit and using the buttons on the front panel.

Step 1 Record	Use the buttons on front panel of the unit to perform manual recording.
↓	
Step 2 Quick Playback	Play back recently recorded data.
↓	
Step 3 Stop Recording	Stop recording operations.

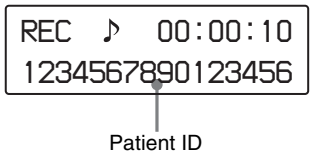
For details on operations while viewing the [MENU] screen, see "Chapter 4 Recording and Playback" (page 32).

Step 1 Record

1 Press the ● REC button.



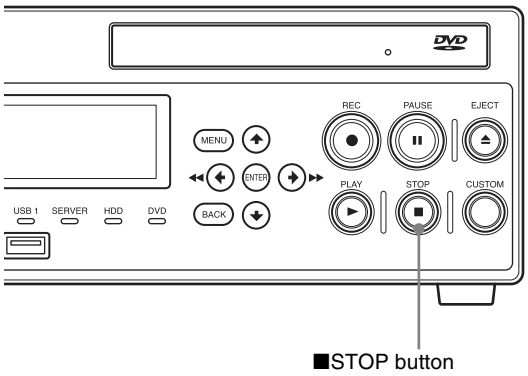
Recording starts.
"REC" appears on the front panel display of the unit while recording is in progress.



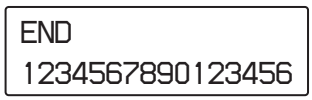
Tip

If images are recorded and patient information has not been entered in the [Recording Preparation] screen, patient IDs will be automatically assigned. The letter "U" appears at the beginning of automatically assigned patient IDs.

2 Press the ■ STOP button to stop recording.



Recording stops, and the following appears.



Tip

If you press the ● REC button again, recording will start again as a new recorded data entry.

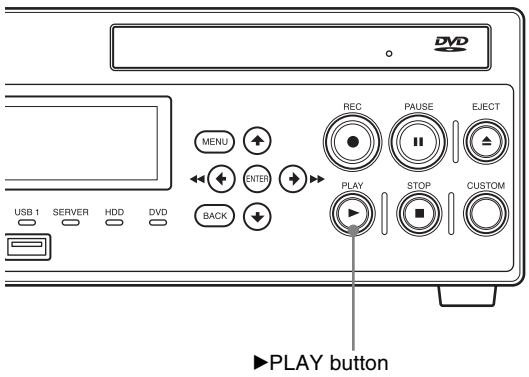
Step 2 Quick Playback

Play back data recorded in Step 1.

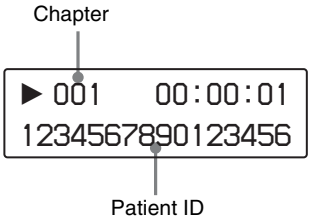
What is quick playback?

"Quick playback" is a function that allows you to play back the most recent data recorded to the internal hard disk with a simple press of the ▶ PLAY button.

Press the ▶ PLAY button.



The most recent recorded data plays back.
The following appears during playback.



You can also perform the following operations during playback.

Fast forward playback

Press the ▶▶ FF button.

Tip

Depending on the structure of the data, fast forward playback may not be possible for the entire recording.

Rewind playback

Press the ◀◀ REW button.

Pause playback

Press the ❚❚ PAUSE button.
To resume playback, press the ❚❚ PAUSE button again or press the ▶ PLAY button.

Stop playback

Press the ■ STOP button.

When playback stops, the following appears.

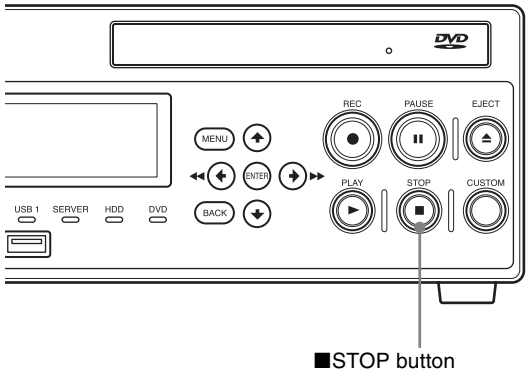
READY

Tips

- If you press the MENU button during playback, the [Repeat Playback Settings] screen appears.
- When NTSC is selected as the video format under the system administrator settings, PAL-format recorded data cannot be played back properly. Conversely, when PAL is selected, NTSC-format recorded data cannot be played back properly.

Step 3 Stop Recording

Press the ■ STOP button.



■STOP button

Recording stops, and the following appears.

END
1234567890123456

Tip

Recording will take longer to stop if data is being saved to external media, in addition to the internal hard disk. Wait a moment for the writing process to complete.

Recording and Playback

Chapter 4

Recording

Images can be recorded manually or via contact switch. This section describes how to record manually.

For details on configuring patient information and storage destinations for recorded data beforehand, see "Recording Preparation" (page 37).

Tip

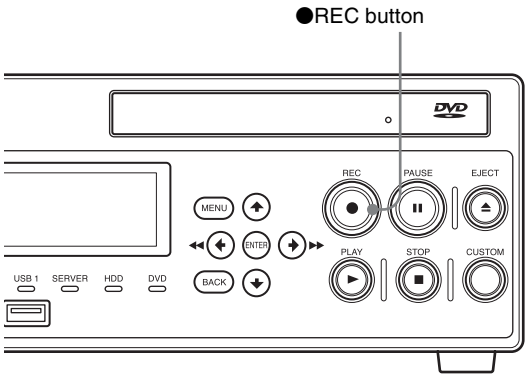
For details on how to record via contact switch, contact your local Sony representative.

Note on the auto delete function for recorded data

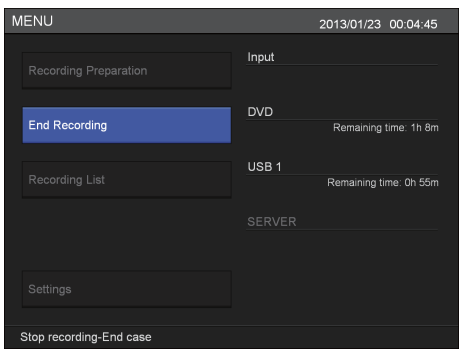
When the auto delete function is set to [Use] in the [System Admin Settings], the function automatically deletes recorded data, starting with recorded data on external media with the oldest start dates for recording, whenever the remaining capacity on the unit's internal hard disk becomes low. This is done to maintain free space on the unit's internal hard disk at all times.

Manual Recording

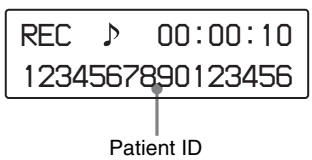
1 Press the ● REC button on the front panel of the unit.



Recording starts.
If you press the MENU button while recording is in progress, the following screen appears.

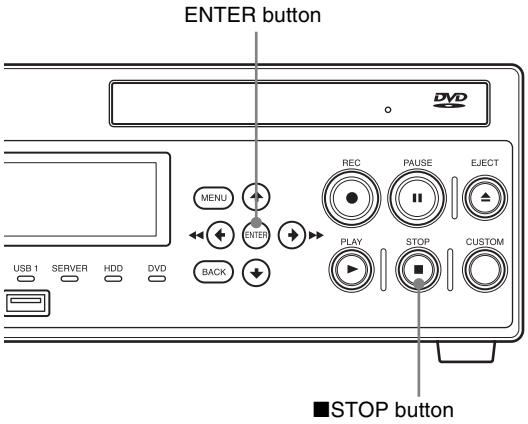


In addition, "REC" appears on the front panel of the unit while recording is in progress.



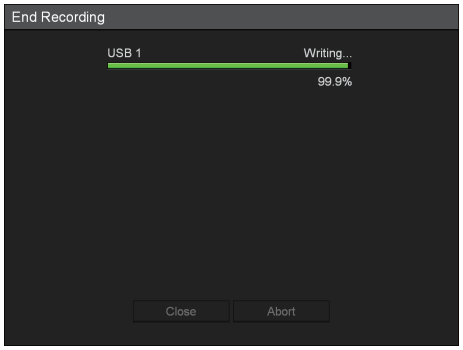
2 To stop recording, press the ■ STOP button on the front panel of the unit.

If the [MENU] screen is displayed, you can also press the ENTER button to stop recording. In such cases, continue with the following steps.

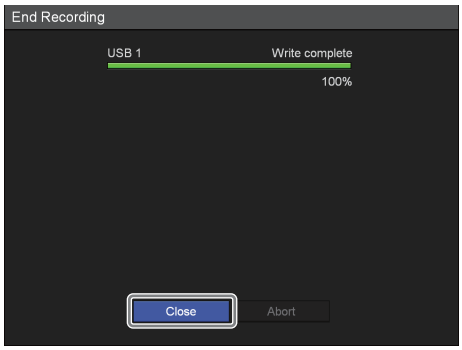


3 If the [MENU] screen is displayed, a confirmation message appears. Use the ← and → buttons to select [Yes], and press the ENTER button.

Recording stops.
A recorded data separator is created when recording stops.
If simultaneous saving to external media is enabled in addition to saving to the unit's internal hard disk, the following screen appears. Wait a moment for the data transfer to complete.



4 When the data transfer is complete, select [Close], and press the ENTER button.



The [MENU] screen appears again.

Tip

You can record up to 24 continuous hours in one session, including the recording preparation time. After 24 hours, recording will stop automatically.

Recorded data directory

Video data is stored in one of the following directories, depending on the system administrator settings.

Video data directory

<uppermost folder of the external media>/<recording start date (year, month, day, hour, minute, second)_patient ID>/MOVIE/
or
<uppermost folder of the external media>/<patient ID>/<recording start date (year, month, day, hour, minute, second)>/MOVIE/

Pre-rec function

The pre-rec function records video 5 seconds before the recording start time to ensure that the recording of important video is not missed.
To use the pre-rec function, set [Pre-Rec] to [Use] in the [System Admin Settings] screen - [Function Settings] screen - [Video 2] tab.

Tips

- The order of the year, month, and day of the recording date used in the storage directory is based on the date format of the system settings.
- If the power supply is disconnected before the writing of the data is complete, the validity of the written data cannot be guaranteed.
- When recording to external media, the media can be switched out up to three times for a single piece of recorded data. When this limit is exceeded, the "Exchange media limit exceeded" message appears on the [End Recording] screen.

To Stop recording to external media

Perform the following to stop recording operations to external media that are in progress.

1 If you want to display the [MENU] screen, press the MENU button.

2 Press the ENTER button.

The stop recording confirmation message appears on the screen.
The "CANCEL YES/NO" message appears on the front panel display.

3 Select [Yes] on the screen or [YES] on the front panel display.

Recording to the external media stops.

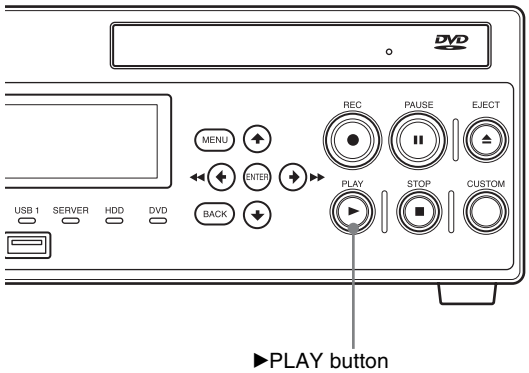
Playback

You can play back the most recent recorded data stored on the unit's internal hard disk via simple controls.

You can also play back recorded data from search results. For details, see "Image Search" (page 40).

Playing Back the Most Recent Data (Quick Playback)

When you press the ▶ PLAY button on the front panel of the unit, the most recent recorded data that is stored on the unit's internal hard disk will play back.



Playback operations

You can use the buttons on the front panel of the unit to perform the following playback operations.

To fast forward playback

Press the ▶▶ FF button.

Tip

Depending on the structure of the data, fast forward playback may not be possible for the entire recording.

To rewind playback

Press the ◀◀ REW button.

To pause playback

Press the ❚❚ PAUSE button.
To resume playback, press the ❚❚ PAUSE button again or press the ▶ PLAY button.

To stop playback

Press the ■ STOP button.

Tips

- If you press the MENU button during playback, the [Repeat Playback Settings] screen appears.

- When NTSC is selected as the video format under the system administrator settings, PAL-format recorded data cannot be played back properly. Conversely, when PAL is selected, NTSC-format recorded data cannot be played back properly.
- The playback video will be output from the connector that corresponds to the input connector that was used during recording. If the input connector used for recording was changed anytime before you start playback, playback video will not be displayed.

Repeat Playback Function

Repeat playback of sections of recorded data that you want to review. The following types of repeat playback operations are possible.

- Repeat playback between any two points (Repeat A to B) (page 35)
- Repeat playback of chapters (page 36)
- Repeat playback of titles (page 36)

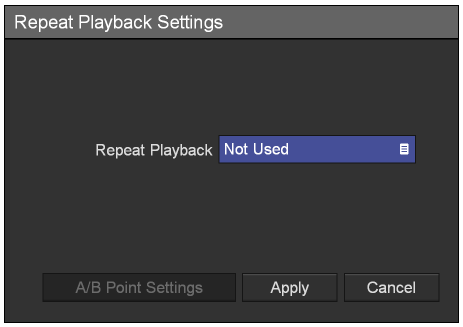
Repeat playback between any two points (Repeat A to B)

Specify two points (A and B) anywhere in the recorded data being played back, and repeat playback for the section between the points.

1 Press the MENU button on the front panel during playback.

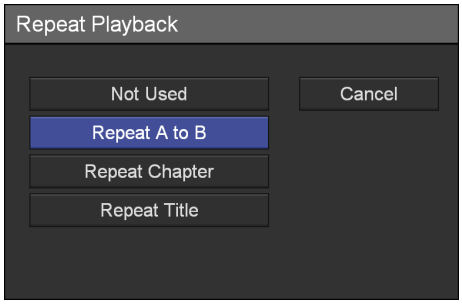
The [Repeat Playback Settings] screen appears.

2 Use the ↑ and ↓ buttons to select [Repeat Playback], and press the ENTER button.



The [Repeat Playback] screen appears.

3 Use the ↑ and ↓ buttons to select [Repeat A to B], and press the ENTER button.



4 Specify points A and B.

① Use the ↑ and ↓ buttons to select [A/B Point Settings], and press the ENTER button.
The menu screen disappears, and the unit enters A-point setting mode.

② Press the ENTER button at the point you want to specify as point A.
The unit enters B-point setting mode.

③ Press the ENTER button at the point you want to specify as point B.
Repeat playback of the specified section between points A and B starts.

To stop A to B repeat playback

1 Press the MENU button on the front panel during playback.

The [Repeat Playback Settings] screen appears.

2 Use the ↑ and ↓ buttons to select [Repeat Playback], and press the ENTER button.

The [Repeat Playback] screen appears.

3 Use the ↑ and ↓ buttons to select [Not Used], and press the ENTER button.

4 Use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.

Repeat playback of the section between points A and B stops.

Tips

- If you stop playback without specifying a B point, the specified A point will be discarded.
- Specification of points A and B cannot be performed during repeat playback.
- If you delete the title that contains points A and B or perform a search or sort operation, the A and B points you specified will be discarded.

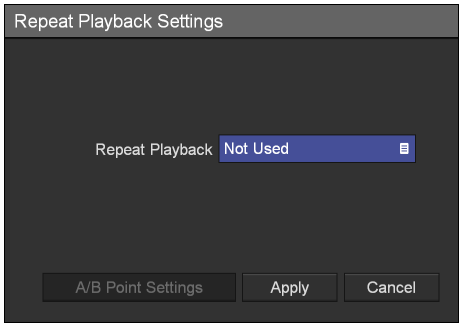
Repeat playback of chapters

Perform repeat playback for the chapter that is currently being played.

1 Press the MENU button on the front panel during playback.

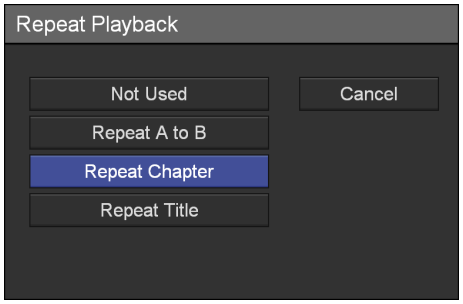
The [Repeat Playback Settings] screen appears.

2 Use the ↑ and ↓ buttons to select [Repeat Playback], and press the ENTER button.



The [Repeat Playback] screen appears.

3 Use the ↑ and ↓ buttons to select [Repeat Chapter], and press the ENTER button.



4 Use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.

Repeat playback of the current chapter starts.

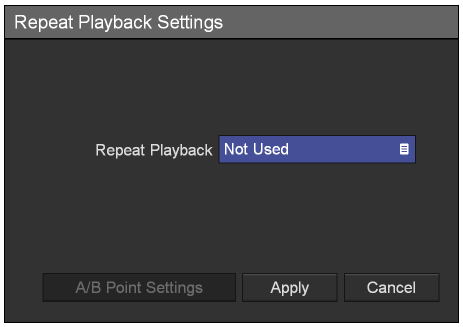
Repeat playback of titles

Perform repeat playback for the title that is currently being played.

1 Press the MENU button on the front panel during playback.

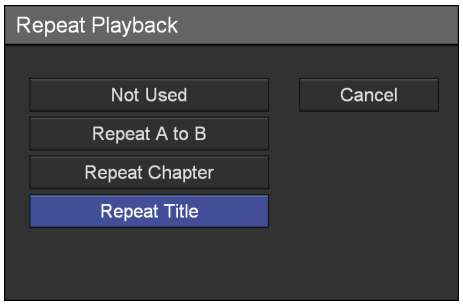
The [Repeat Playback Settings] screen appears.

2 Use the ↑ and ↓ buttons to select [Repeat Playback], and press the ENTER button.



The [Repeat Playback] screen appears.

3 Use the ↑ and ↓ buttons to select [Repeat Title], and press the ENTER button.



4 Use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.

Repeat playback of the current title starts.

Recording Preparation

Before starting to record, enter information regarding the exam patient, configure the storage destination and quality settings for recorded data, and then perform a test recording.
You can prepare for recording and test record in the [Recording Preparation] screen.

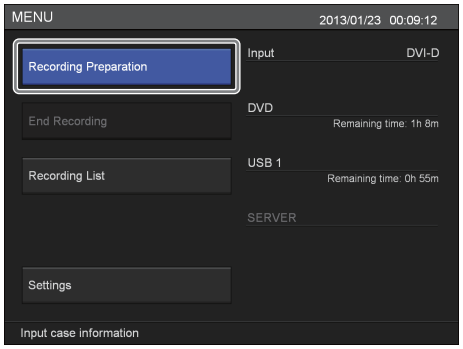
Patient Information and Data Storage Settings

Enter information regarding the exam patient, and configure the storage destination and quality settings for recorded data.

1 Press the MENU button.

The [MENU] screen appears.

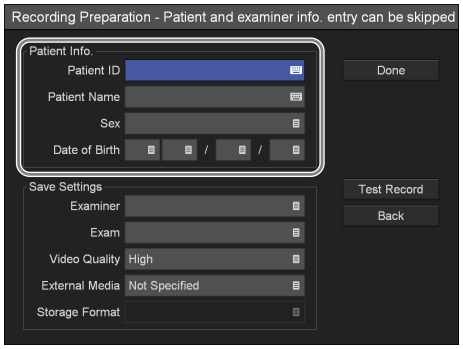
2 Use the ↑ and ↓ buttons to select [Recording Preparation], and press the ENTER button.



The [Recording Preparation] screen appears.

3 Enter patient information.

Select an item using the ↑, ↓, ←, and → buttons, and press the ENTER button to display the setting screen for that item.
[Patient Info] entry can be skipped.



[Patient ID]
Enter an identification number for the patient using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

Tip

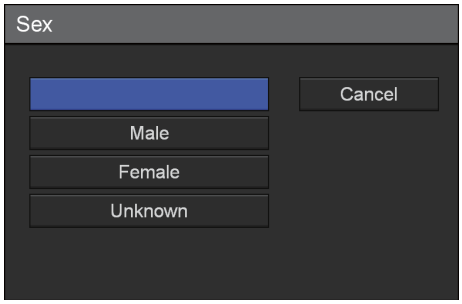
Certain symbols (\ / : ? * " < > | .) cannot be used for the patient ID. In addition, the front panel will not display characters other than ASCII characters 0x20 to 0x7D.

[Patient Name]
Enter up to 20 characters in each field of the patient's name (1 character for the middle name) using the on-screen keyboard.

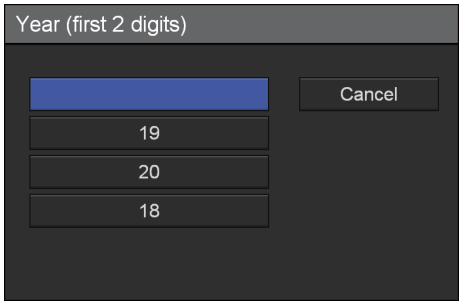
For details on the input fields for the patient name, see "[Patient Name Field]" (page 57).

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Sex]
Select the patient's gender in the setting screen that appears, and press the ENTER button.

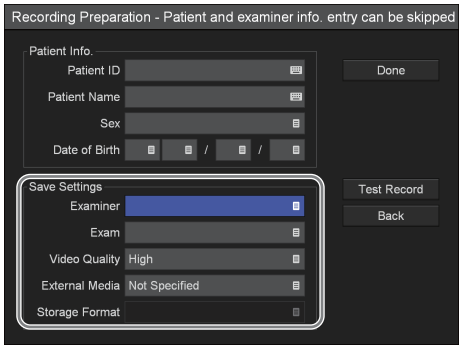


[Date of Birth]
Select the year, month, and day in the setting screens that appear, and press the ENTER button.



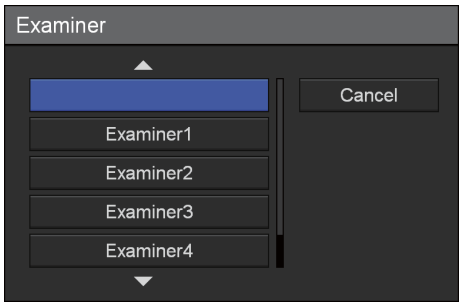
4 Configure storage settings for recorded data.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



[Examiner]

Select the examiner in the setting screen that appears, and press the ENTER button.
This item can be skipped.



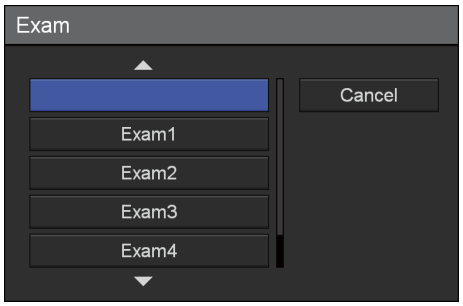
Tip

You can register examiners in the [System Admin Settings] screen – [Edit Examiner List] screen.

For details on this setting, see "Editing the Examiner List" (page 75).

[Exam]

Select the corresponding exam in the setting screen that appears, and press the ENTER button.



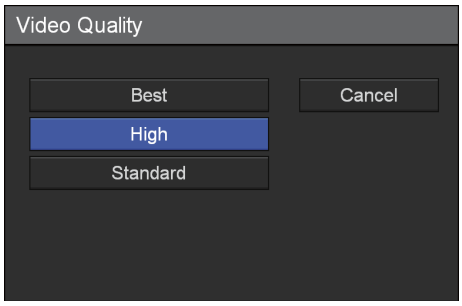
Tip

The exams must be registered beforehand.

For details on this setting, see "Registering Exams" (page 80).

[Video Quality]

Select the video image quality in the setting screen that appears, and press the ENTER button.



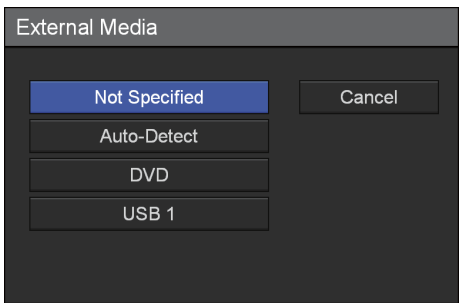
Tip

You can configure a default setting for this item in the [User Settings] screen – [Quality] tab.

For details on this setting, see "Configuring Image Quality Settings" (page 24).

[External Media]

When you want to simultaneously save to external media in addition to saving to the unit's internal hard disk, configure these settings to specify the storage destination for recorded data.
Select the storage destination in the setting screens that appear, and press the ENTER button.
If you do not want to simultaneously record to external media, select [Not Specified].
If you want the unit to detect the inserted media automatically, select [Auto-Detect].

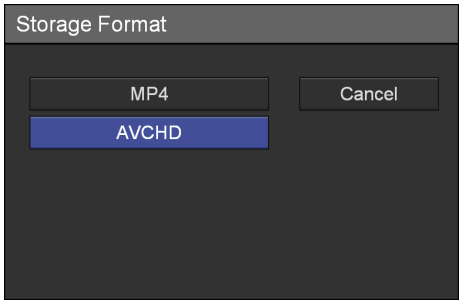


Tips

- If the external media is currently inserted and recognized, the remaining recording times are also displayed.
- Servers will not be detected automatically.
- When [Auto-Detect] is enabled and multiple media are inserted, data will be recorded to the media in the following order of priority: USB1 → DVD.
- You cannot change media types in the middle of recording when [Auto-Detect] is enabled.

[Storage Format]

Select the storage format in the setting screen that appears, and press the ENTER button.



Note

When saving recorded data in AVCHD format to servers, do not specify the same share name (i.e., share folder) on the same server as the storage destination for multiple recorders. Performing multiple saving operations at the same time may result in damage to the recorded data.

Tip

When recording to a DVD on the HVO-550MD, additional recording is only possible when recording identical formats. Additional recording will not be possible if you change the storage format in the middle of recording. For example, if you are saving to a DVD in AVCHD format, you cannot change the format to MP4 and perform additional recording.

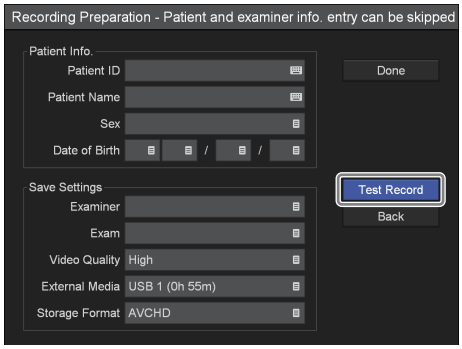
5 To perform a test recording, proceed to *"Test Recording" (page 39)*.

If you are finished configuring, use the ↑, ↓, ←, and → buttons to select [Done], and press the ENTER button.

Test Recording

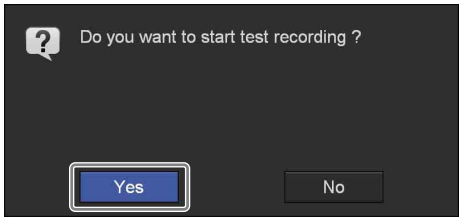
Confirm whether images record properly.
When you perform a test recording, images record for five seconds and then play back automatically.

1 In the [Recording Preparation] screen, use the ↑, ↓, ←, and → buttons to select [Test Record], and press the ENTER button.

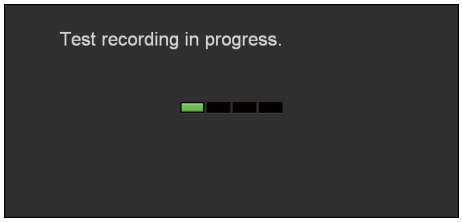


The following message appears.

2 Use the ← and → buttons to select [Yes], and press the ENTER button.

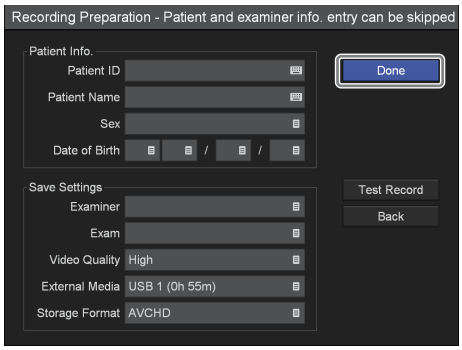


Recording starts, and the following screen appears while test recording is in progress.



After images are recorded for five seconds, playback starts automatically.
When the test recording is finished, the [Recording Preparation] screen appears again.

3 Use the ↑, ↓, ←, and → buttons to select [Done], and press the ENTER button.



The [MENU] screen appears again.

Image Search

You can search for recorded data stored on the unit's internal hard disk.

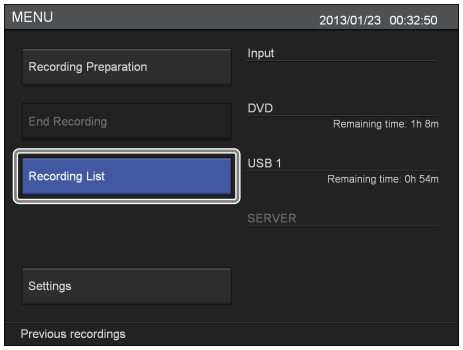
Specifying Search Conditions

Search for recorded data by specifying conditions such as patient ID and recording date.

1 Press the MENU button.

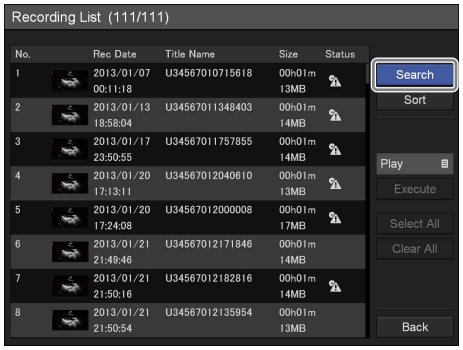
The [MENU] screen appears.

2 Use the ↑ and ↓ buttons to select [Recording List], and press the ENTER button.



The [Recording List] screen appears.

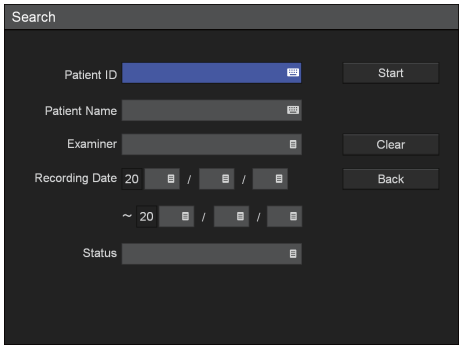
3 Use the ↑, ↓, ←, and → buttons to select [Search], and press the ENTER button.



The [Search] screen appears.

4 Specify the search conditions.

Select an item using the ↑, ↓, ←, and → buttons, and press the ENTER button to display the text entry screen for that item.



[Patient ID]

Enter an identification number for the patient using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

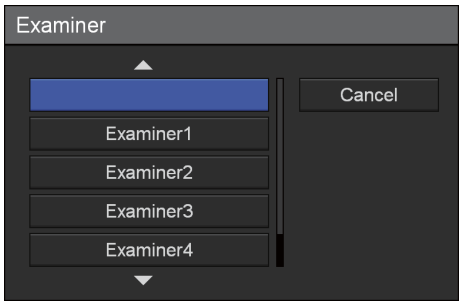
[Patient Name]

Enter the patient's name using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

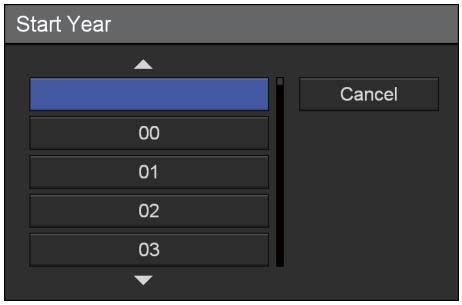
[Examiner]

Select the name of the examiner performing the exam in the setting screen that appears, and press the ENTER button.

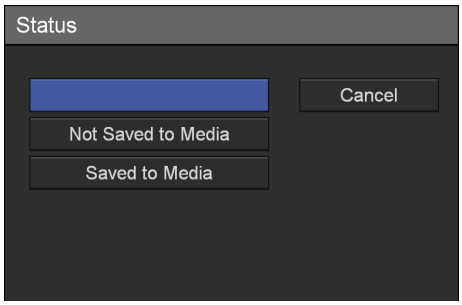


[Recording Date]

Select the year, month, and day the images were recorded in the setting screens that appear, and press the ENTER button.



[Status]
Select whether the recorded data has been saved to external media in the setting screen that appears, and press the ENTER button.

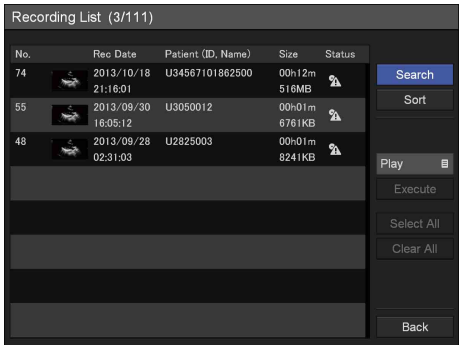


Tip

Select [Clear] and press the ENTER button to clear all specified search conditions.

5 When you finish specifying search conditions, use the ↑, ↓, ←, and → buttons to select [Start], and press the ENTER button.

A search for recorded data matching the specified conditions is performed, and the results are displayed.



Status of recorded data

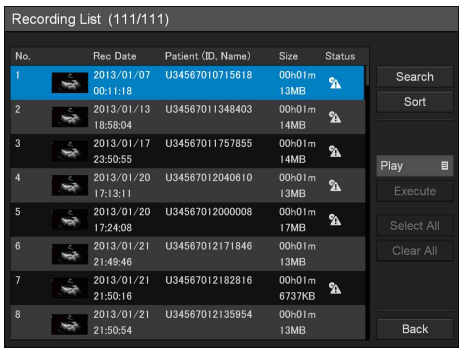
The following icons appear based on the status of the recorded data.

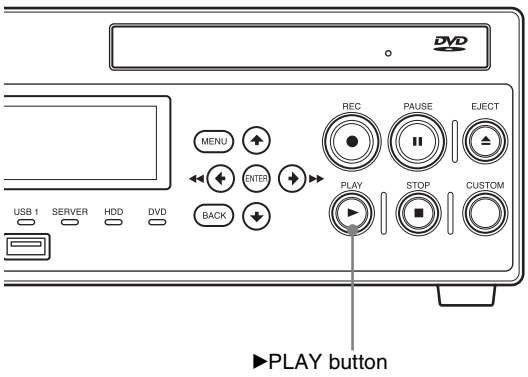
Status	Description	Icon
Not saved to external media	The recorded data has not been saved to external media. The icon disappears when saving is completed.	
Protected	The recorded data is protected and cannot be deleted. The icon disappears when the protection is released.	

Playback from the Search Results List

1 Select [Play] in the operation box.

2 Use the ↑ and ↓ buttons to select the recorded data you want to play back in the [Recording List] screen (search results list), and press the ▶ PLAY button or the ENTER button on the front panel of the unit.

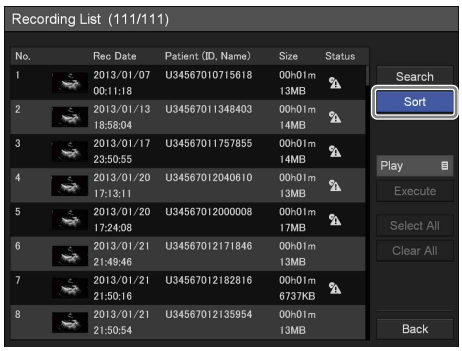




Sorting the Recorded Data List

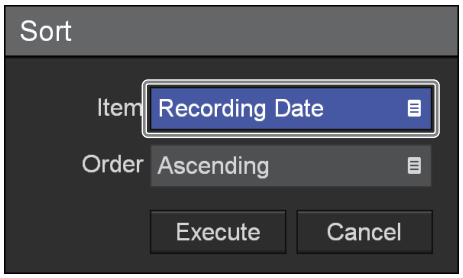
You can sort the recorded data list by recording date, patient ID, patient name, size, or save status.

1 In the [Recording List] screen, use the ↑, ↓, ←, and → buttons to select [Sort], and press the ENTER button.



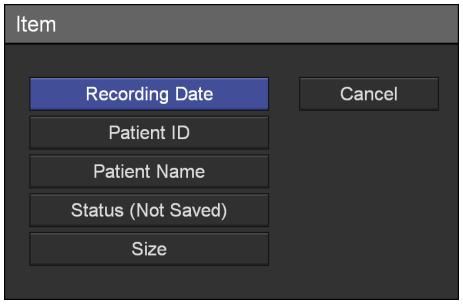
The [Sort] screen appears.

2 Use the ↑ and ↓ buttons to select the [Item] box, and press the ENTER button.



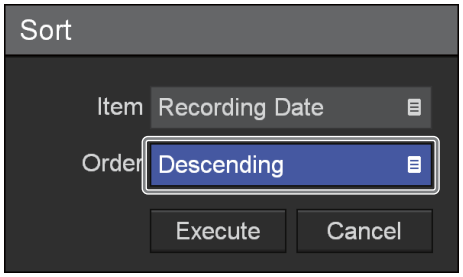
The [Item] screen appears.

3 Use the ↑ and ↓ buttons to select a category, and press the ENTER button.



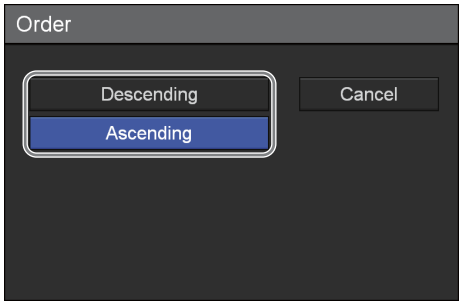
The [Sort] screen appears again.

4 Use the ↑ and ↓ buttons to select the [Order] box, and press the ENTER button.



The [Order] screen appears.

5 Use the ↑ and ↓ buttons to select [Descending] or [Ascending], and press the ENTER button.

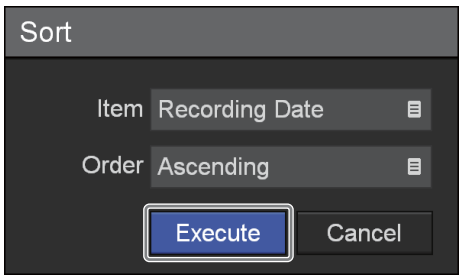


Depending on the selected category, the descending and ascending orders are as follows.

Category	Descending	Ascending
[Recording Date]	Start with newest	Start with oldest
[Patient ID]	Alphabetical order→ numerical order	Reverse numerical order→ reverse alphabetical order
[Patient Name]	Alphabetical order→ numerical order	Reverse numerical order→ reverse alphabetical order
[Status]	Start with data not saved to external media	Start with data saved to external media
[Size]	Start with largest	Start with smallest

The [Sort] screen appears again.

6 Use the ↑, ↓, ←, and → buttons to select [Execute], and press the ENTER button.



The recorded data is sorted according to the specified order.

Processing Recorded Data

You can process recorded data stored on the unit's internal hard disk in the following ways.

- Copying to External Media *(page 43)*
- Editing Patient Information *(page 45)*
- Protecting Recorded Data *(page 46)*
- Deleting Recorded Data *(page 47)*

Copying to External Media

You can copy recorded data stored on the unit's internal hard disk onto a DVD disc, USB memory device, or server.
Recorded data can be copied from the [Recording List] screen.

Tip

Copying data to DVD discs is only possible on the HVO-550MD.

To select data for copying from the [Recording List] screen

This section describes how to select recorded data in the [Recording List] screen for copying onto external media.

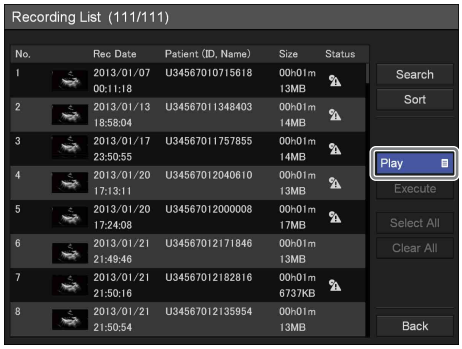
Tips

- If the power supply is disconnected before the writing of the data is complete, the validity of the written data cannot be guaranteed.
- When recording to external media, the media can be switched out up to three times for a single piece of recorded data. When this limit is exceeded, the "Exchange media limit exceeded" message appears on the [Save to] screen.

1 If you are copying to a DVD disc or USB memory device, insert the media into the unit.

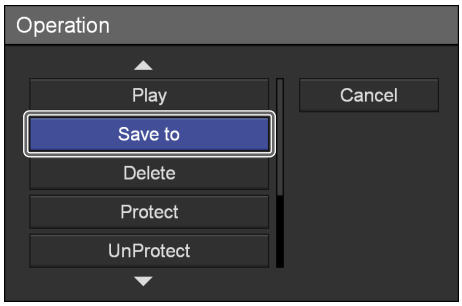
2 Display the [Recording List] screen, use the ↑, ↓, ←, and → buttons to select the operation box, and press the ENTER button.

For details on displaying the [Recording List] Screen, see "Image Search" (page 40).



The following screen appears.

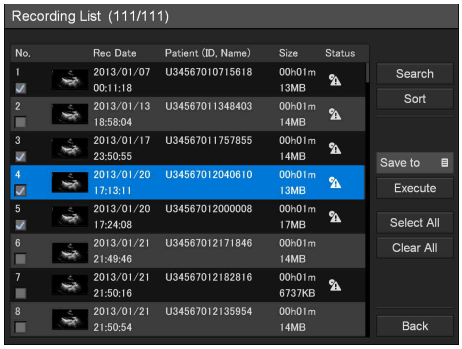
3 Use the ↑ and ↓ buttons to select [Save to], and press the ENTER button.



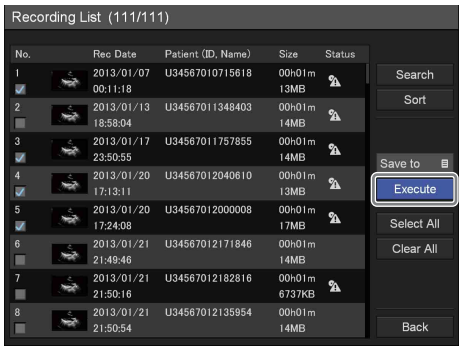
The [Recording List] screen appears again.

4 Select the check boxes for the recorded data you want to copy.

Select recorded data using the ↑ and ↓ buttons, and press the ENTER button to select or clear the check box.



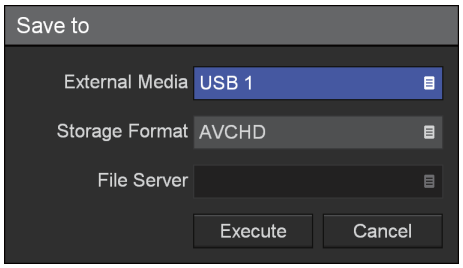
5 Use the ↑, ↓, ←, and → buttons to select [Execute], and press the ENTER button.



The [Save to] screen appears.

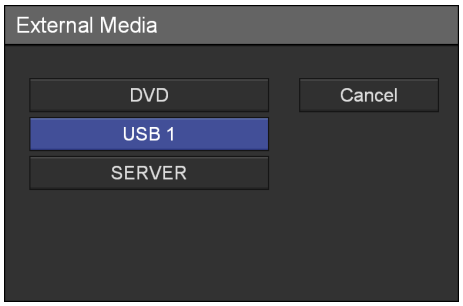
6 Configure save settings for the recorded data.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



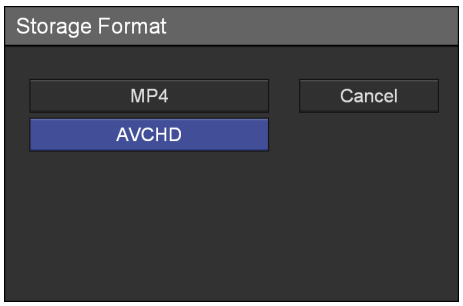
[External Media]

Select the storage destination, and press the ENTER button.



[Storage Format]

Select the storage format to use when copying to external media, and press the ENTER button.



Note

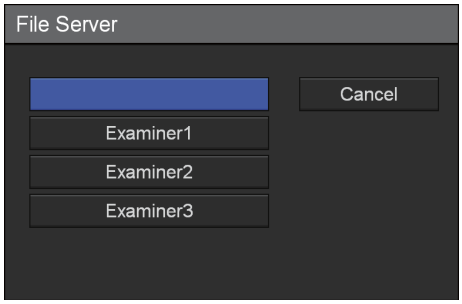
When saving recorded data in AVCHD format to servers, do not specify the same share name (i.e., share folder) on the same server as the storage destination for multiple recorders. Performing multiple saving operations at the same time may result in damage to the recorded data.

Tip

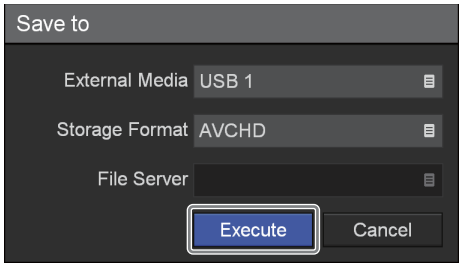
When recording to a DVD on the HVO-550MD, additional recording is only possible when recording identical formats. Additional recording will not be possible if you change the storage format in the middle of recording. For example, if you are saving to a DVD in AVCHD format, you cannot change the format to MP4 and perform additional recording.

[File Server]

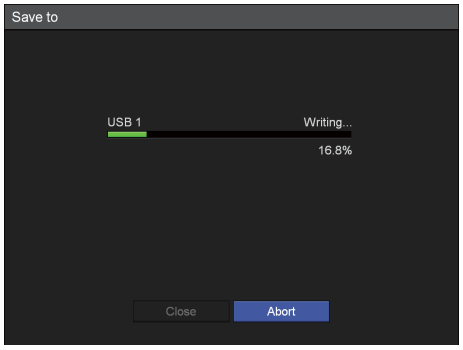
If [SERVER] is selected as the external storage destination, select a file server (the server configured in the system administrator settings or the server configured for each examiner), and press the ENTER button.



7 Use the ↑ and ↓ buttons to select [Execute], and press the ENTER button.



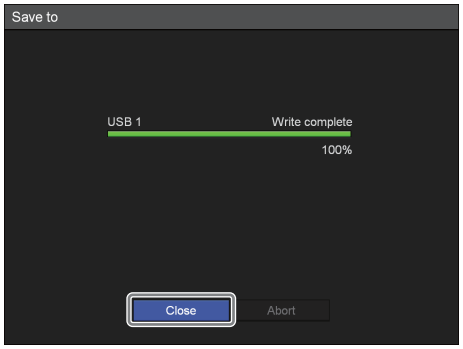
Copying of recorded data starts.



Tip

To cancel copying, select [Abort] and press the ENTER button.

8 Select [Close], and press the ENTER button.



The [Recording List] screen appears again.

AVCHD menus

When AVCHD-format data is copied to external media, a menu for verifying the recorded data on the equipment that will play back the external media files will be created automatically and sent to the external media. A list of the titles that were copied will appear in the menu.

AVCHD file restoration

When [AVCHD Restoration] is set to [Use] in the [System Admin Settings] screen - [Initial User Settings] screen and AVCHD recorded data is damaged or the files are unable to be copied, the files will be restored at the start of a copy procedure. The target files for restoration will be moved to a backup folder, and additional recording will resume. A message notifying you that restoration is in progress appears during restoration. Wait a moment for the restoration process to complete in such cases.

Tip

AVCHD restoration will only be performed when copying to USB media or to a server. In addition, the same file can only be restored up to 20 times.

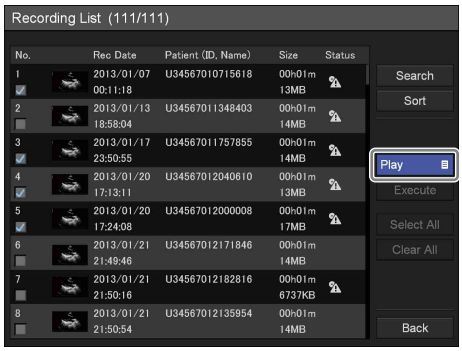
Editing Patient Information

You can edit the ID, name, and other patient information that is attached to recorded data and not yet configured.

Note

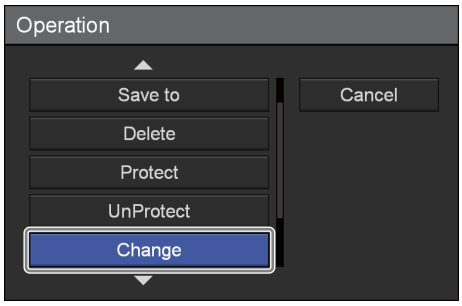
When [Change Patient Info.] is set [No] in the [System Admin Settings] screen - [Function Settings] screen - [General 1] tab, you can only edit patient information that has not yet been entered. Patient information entered by a user cannot be edited.

1 Display the [Recording List] screen, use the ↑, ↓, ←, and → buttons to select the operation box, and press the ENTER button.



The [Operation] screen appears.

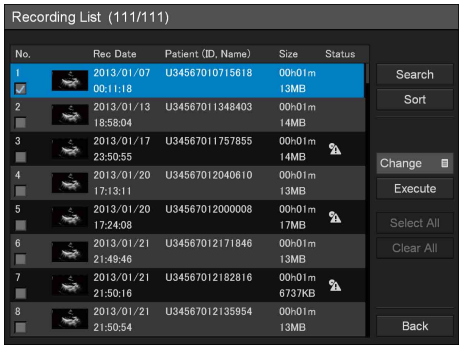
2 Use the ↑ and ↓ buttons to select [Change], and press the ENTER button.



The [Recording List] screen appears again.

3 Select the check box of the recorded data for which you want to edit patient information.

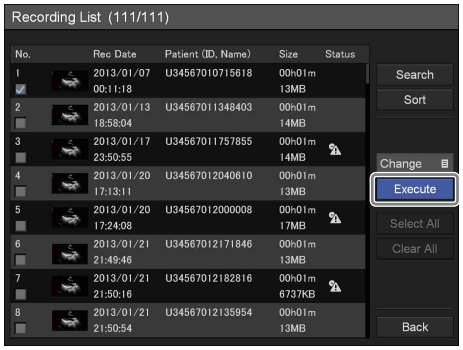
Select recorded data using the ↑ and ↓ buttons, and press the ENTER button to select or clear the check box.



Tip

You can only edit patient information for one recorded data entry at a time. If multiple recorded data entries are selected, patient information editing will be disabled.

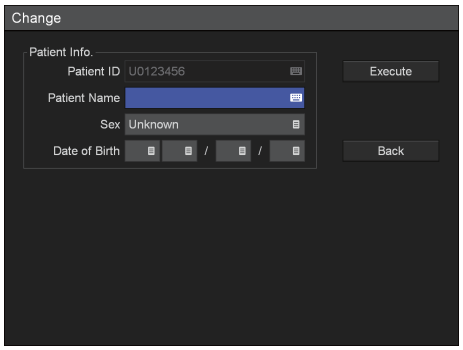
4 Use the ↑, ↓, ←, and → buttons to select [Execute], and press the ENTER button.



The [Change] screen appears.

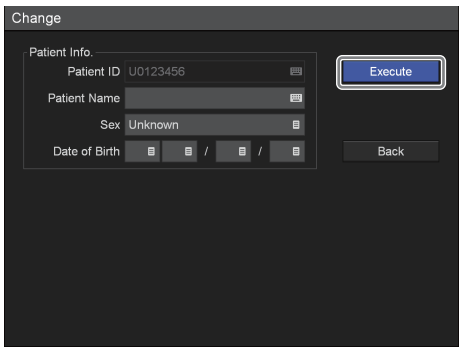
5 Edit each item as necessary.

Select an item using the ↑, ↓, ←, and → buttons, and press the ENTER button to display the setting screen for that item.



For details on each item, see "Patient Information and Data Storage Settings" (page 37).

6 Use the ↑, ↓, ←, and → buttons to select [Execute], and press the ENTER button.



The patient information is changed, and the [Recording List] screen appears again.

Protecting Recorded Data

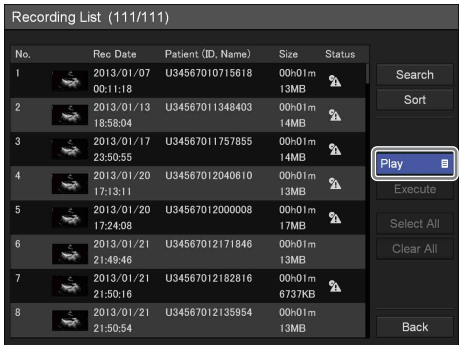
You can protect data to prevent accidental deletion. Recorded data can be protected or protection can be removed from the [Recording List] screen.

To select data for protection from the [Recording List] screen

This section describes how to select recorded data for protection in the [Recording List] screen.

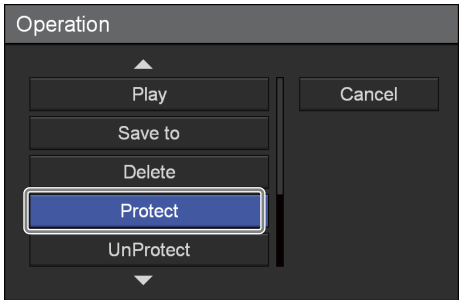
1 Display the [Recording List] screen, use the ↑, ↓, ←, and → buttons to select the operation box, and press the ENTER button.

For details on displaying the [Recording List] Screen, see "Image Search" (page 40).



The following screen appears.

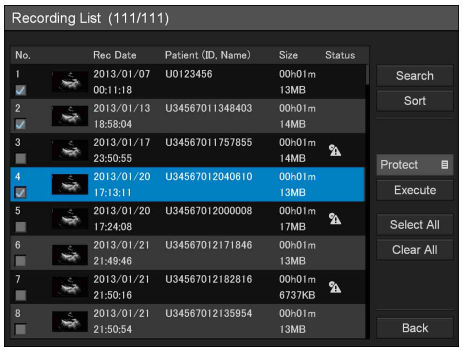
2 Use the ↑ and ↓ buttons to select [Protect], and press the ENTER button.



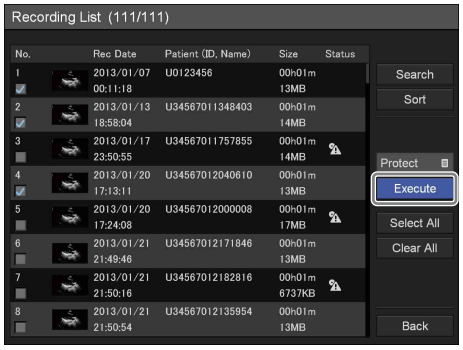
The [Recording List] screen appears again.

3 Select the check boxes for the recorded data you want to protect.

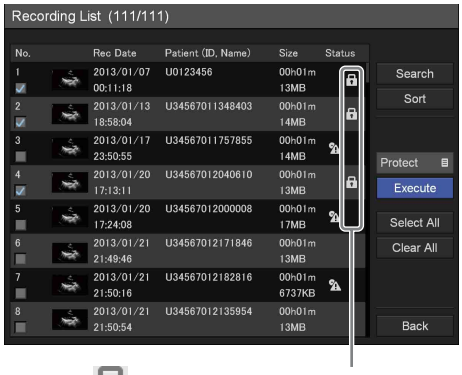
Select recorded data using the ↑ and ↓ buttons, and press the ENTER button to select or clear the check box.



4 Use the ↑, ↓, ←, and → buttons to select [Execute], and press the ENTER button.



The recorded data is protected, and the icon appears.



The icon appears for recorded data that is protected.

To remove protection

Select [UnProtect] in step 2 of the previous procedure, and press the ENTER button. Perform the rest of the procedure as shown.

Deleting Recorded Data

You can delete recorded data stored on the unit's internal hard disk for particular exams.
Recorded data can be deleted from the [Recording List] screen.

Note

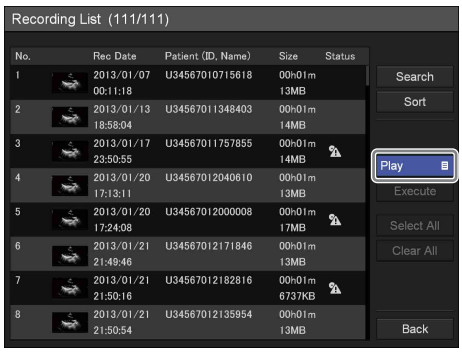
Recorded data that is deleted cannot be restored.

To select data for deletion from the [Recording List] screen

This section describes how to select recorded data for deletion in the [Recording List] screen.

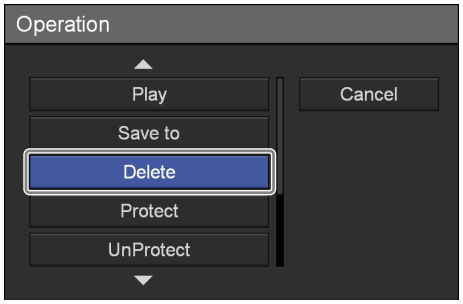
1 Display the [Recording List] screen, use the ↑, ↓, ←, and → buttons to select the operation box, and press the ENTER button.

For details on displaying the [Recording List] Screen, see "Image Search" (page 40).



The following screen appears.

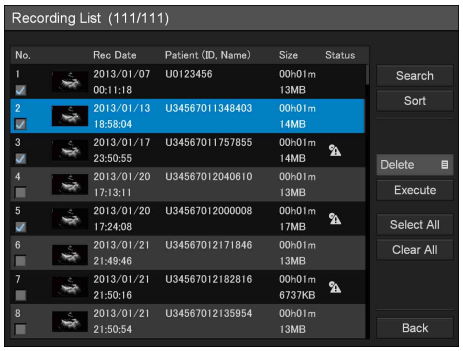
2 Use the ↑ and ↓ buttons to select [Delete], and press the ENTER button.



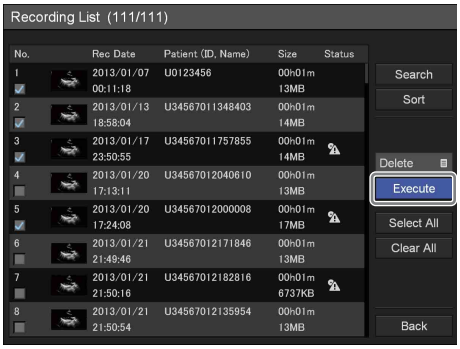
The [Recording List] screen appears again.

3 Select the check boxes for the recorded data you want to delete.

Select recorded data using the ↑ and ↓ buttons, and press the ENTER button to select or clear the check box.

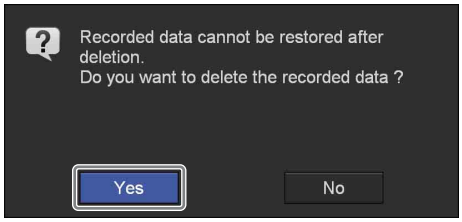


4 Use the ↑, ↓, ←, and → buttons to select [Execute], and press the ENTER button.



A confirmation message appears.

5 Use the ← and → buttons to select [Yes], and press the ENTER button.



When deletion of the recorded data is complete, a notification message will appear.
To return to the [Recording List] screen, press the ENTER button.

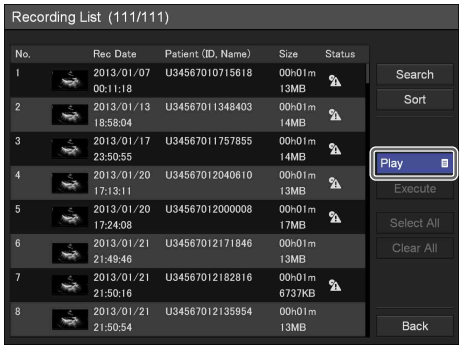
Finalizing Discs (HVO-550MD only)

You can manually finalize DVD discs that were not finalized previously at any time. Finalizing can be performed from the [Recording List] screen.

This section describes how perform finalization from the [Recording List] screen.

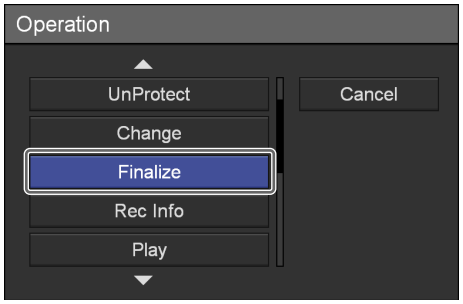
1 Display the [Recording List] screen, use the ↑, ↓, ←, and → buttons to select the operation box, and press the ENTER button.

For details on displaying the [Recording List] screen, see “Image Search” (page 40).



The following screen appears.

2 Use the ↑ and ↓ buttons to select [Finalize], and press the ENTER button.

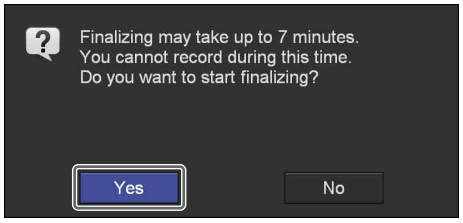


The [Recording List] screen appears again.

3 Use the ↑, ↓, ←, and → buttons to select [Execute], and press the ENTER button.

A confirmation message appears.

4 Use the ← and → buttons to select [Yes], and press the ENTER button.



Finalizing starts.
When finalizing is complete, a notification message will appear.

5 Press the ENTER button.

The [Recording List] screen appears again.

Tip

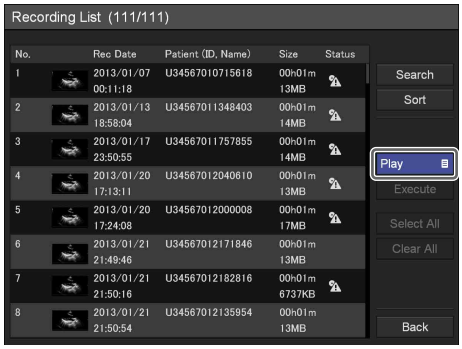
Finalization cannot be aborted once it is in progress. Additional recording is also not possible on a finalized disc.

Viewing Information on Recorded Data

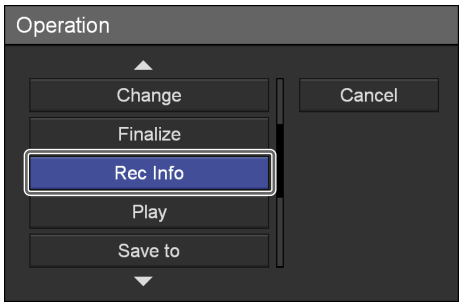
You can view information on recorded data stored on the unit's internal hard disk.

1 Display the [Recording List] screen, use the ↑, ↓, ←, and → buttons to select the operation box, and press the ENTER button.

For details on displaying the [Recording List] screen, see "Image Search" (page 40).

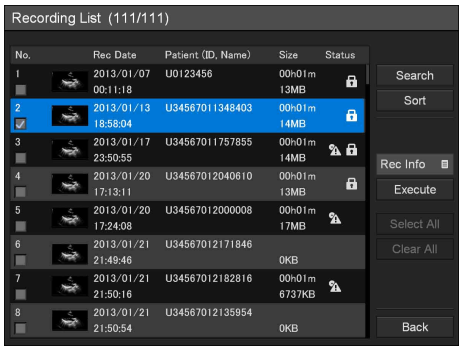


2 Use the ↑ and ↓ buttons to select [Rec Info], and press the ENTER button.

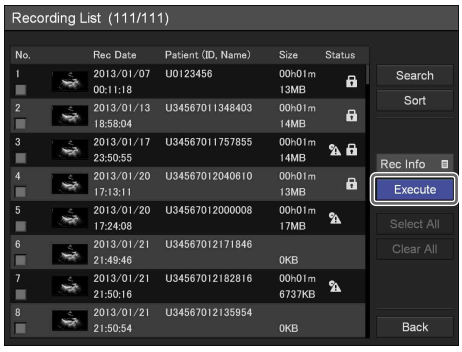


3 Select the check box of the recorded data for which you want to view information.

Select recorded data using the ↑ and ↓ buttons, and press the ENTER button to select or clear the check box.

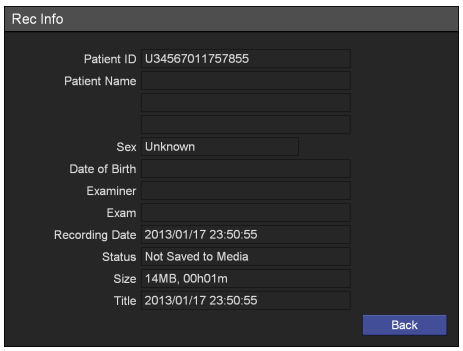


4 Use the ↑, ↓, ←, and → buttons to select [Execute], and press the ENTER button.



Tip

You can only view information for one recorded data entry at a time. If multiple recorded data entries are selected, information viewing will be disabled.



System Administrator Settings

Chapter 5

Overview

You can set the initial configurations for various settings in the [System Admin Settings] screen.
Configurations in the [System Admin Settings] screen must be performed by the system administrator.

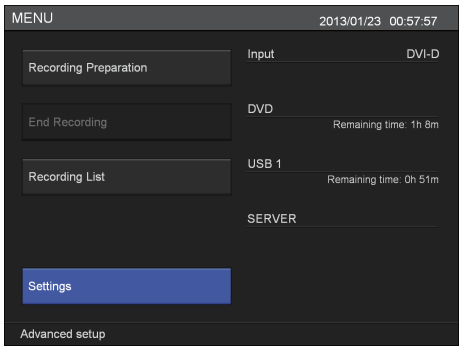
- Language Settings *(page 52)*
  Configure the display language and date display format.
- Date and Time Settings *(page 53)*
  Configure the current date and time.
- Function Settings *(page 56)*
  Configure initial settings related to recording.
- Device Settings *(page 62)*
  Configure initial settings for external devices.
- Password Settings *(page 67)*
  Register or edit the password for the system administrator settings.
- Network Settings *(page 69)*
  Configure initial settings related to the network, and server.
- Initial User Settings *(page 72)*
  Configure initial setting values related to recording quality and storage media.
- Editing the Examiner List *(page 75)*
  Register and edit information regarding the examiners performing the exams.
- Editing the Exam List *(page 78)*
  Register or edit entries for exams.
- Auto Delete Settings *(page 82)*
  Configure settings related to the auto delete function.

Displaying the [System Admin Settings] Screen

1 Press the MENU button.

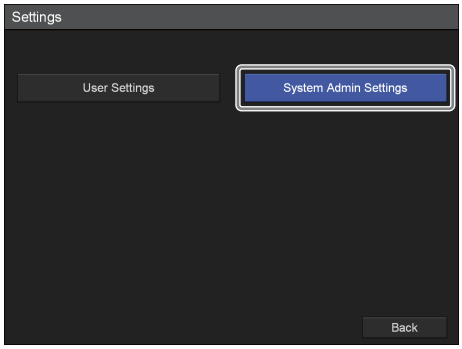
The [MENU] screen appears.

2 Use the ↑ and ↓ buttons to select [Settings], and press the ENTER button.



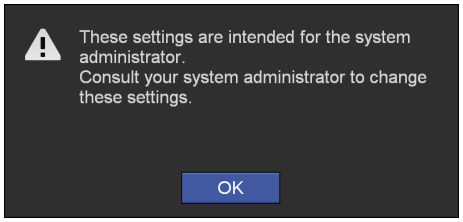
The [Settings] screen appears.

3 Use the ← and → buttons to select [System Admin Settings], and press the ENTER button.



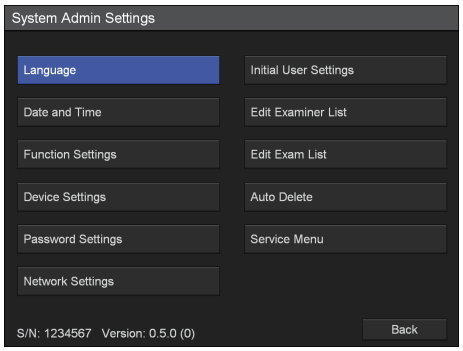
A confirmation message appears.

4 Press the ENTER button.



The [System Admin Settings] screen appears.

5 Use the ↑, ↓, ←, and → buttons to select the settings you want to configure, and press the ENTER button.



The setting screen for the selected item appears.
The serial number of the unit and the current software version appear at the bottom left.

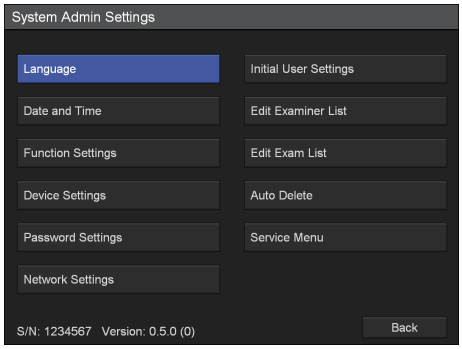
About the [Service Menu]

The [Service Menu] is a function reserved for service personnel.
It cannot be used by general users.

Language Settings

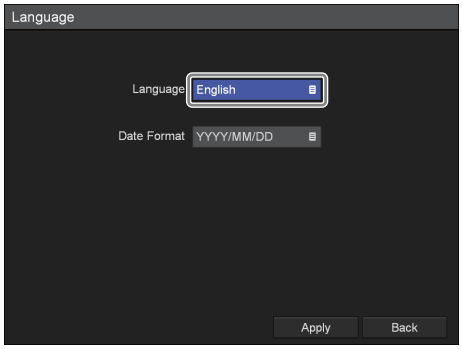
Configure the display language and date display format.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Language], and press the ENTER button.



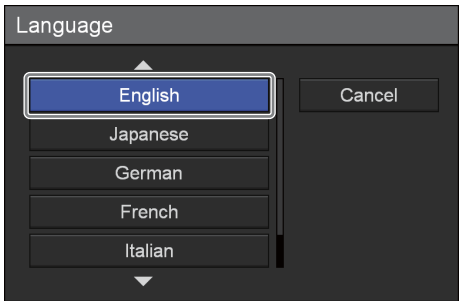
The [Language] screen appears.

2 Use the ↑ and ↓ buttons to select the [Language] box, and press the ENTER button.



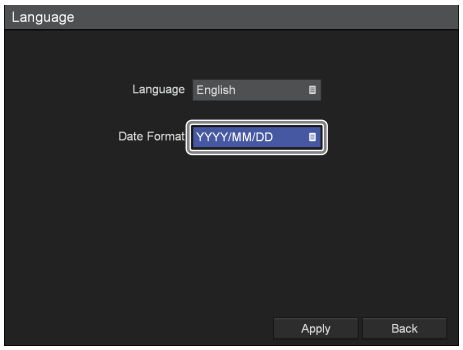
The [Language] screen appears.

3 Use the ↑ and ↓ buttons to select the display language, and press the ENTER button.



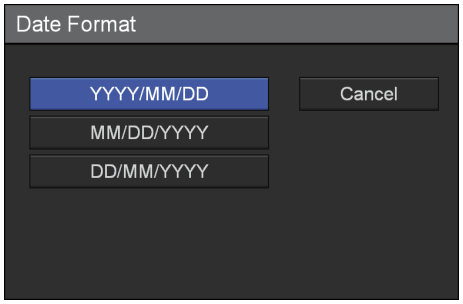
The [Language] screen appears again.

4 Use the ↑ and ↓ buttons to select the [Date Format] box, and press the ENTER button.



The [Date Format] screen appears.

5 Use the ↑ and ↓ buttons to select the date display format, and press the ENTER button.



[YYYY/MM/DD]
Display dates in year/month/day format.

[MM/DD/YYYY]
Display dates in month/day/year format.

[DD/MM/YYYY]
Display dates in day/month/year format.

The [Language] screen appears again.

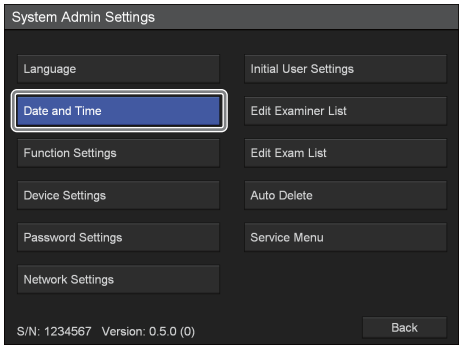
6 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

Date and Time Settings

Configure the current date and time.

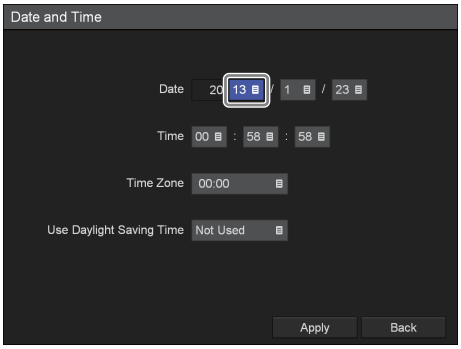
1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Date and Time], and press the ENTER button.



The [Date and Time] screen appears.

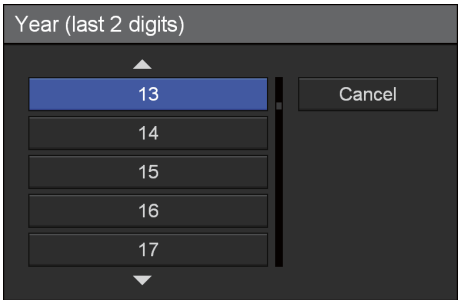
2 Configure the date.

① Use the ↑, ↓, ←, and → buttons to select the year box (last two digits), and press the ENTER button.



The [Year (last 2 digits)] screen appears.

② Use the ↑ and ↓ buttons to select the last two digits of the year, and press the ENTER button.



③ Configure the month and day in the same way.

3 Configure the time in the same way.

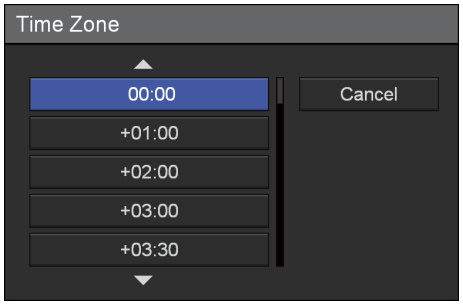
4 Configure the time zone and daylight saving time settings.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.

[Time Zone]

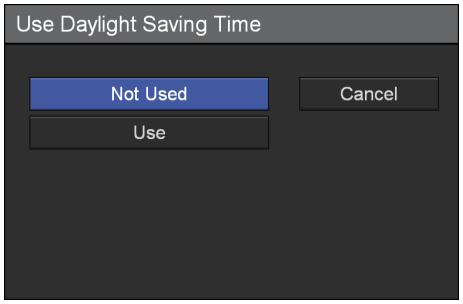
Select a time zone in the setting screen that appears, and press the ENTER button.

Only the difference from GMT (Greenwich Mean Time) is displayed for each time zone setting. For details on time zones, see "List of time zones" (page 54).



[Use Daylight Saving Time]

Select whether to enable DST (daylight saving time) in the setting screen that appears, and press the ENTER button.



5 When you finish configuration, use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

List of time zones

Time zone		DST
GMT-12:00	International Date Line West	
GMT-11:00	Midway Island	
GMT-10:00	Hawaii	
GMT-09:00	Alaska	○
GMT-08:00	Tijuana, Baja California	○
GMT-08:00	Pacific Time (US and Canada)	○
GMT-07:00	Arizona	
GMT-07:00	Chihuahua, La Paz, Mazatlan - Old	○
GMT-07:00	Chihuahua, La Paz, Mazatlan - New	○
GMT-07:00	Mountain Time (US and Canada)	○
GMT-06:00	Guadalajara, Mexico City, Monterrey - Old	○
GMT-06:00	Guadalajara, Mexico City, Monterrey - New	○
GMT-06:00	Saskatchewan	
GMT-06:00	Central America	
GMT-06:00	Central Time (US and Canada)	○
GMT-05:00	Indiana (East)	
GMT-05:00	Bogota, Lima, Quito, Rio Branco	
GMT-05:00	Eastern Time (US and Canada)	○
GMT-04:30	Caracas	
GMT-04:00	Santiago	○
GMT-04:00	Manaos	○
GMT-04:00	La Paz	
GMT-04:00	Atlantic Time (Canada)	○
GMT-03:30	Newfoundland and Labrador	○
GMT-03:00	Greenland	○
GMT-03:00	Georgetown	
GMT-03:00	Buenos Aires	○
GMT-03:00	Brasilia	○
GMT-03:00	Montevideo	○
GMT-02:00	Mid-Atlantic	○
GMT-01:00	Azores	○
GMT-01:00	Cape Verde Islands	
GMT	Casablanca	
GMT	Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London	○
GMT	Monrovia, Reykjavik	
GMT+01:00	Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna	○
GMT+01:00	Sarajevo, Skopje, Warsaw, Zagreb	○
GMT+01:00	Brussels, Copenhagen, Madrid, Paris	○
GMT+01:00	Belgrade, Bratislava, Budapest, Ljubljana, Prague	○
GMT+01:00	West Central Africa	

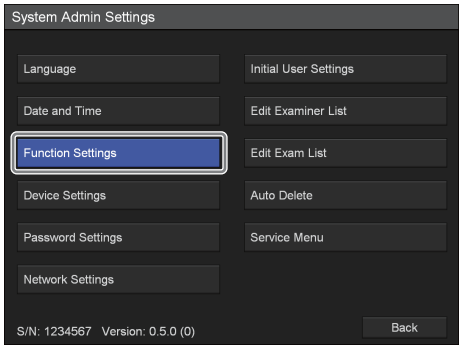
Time zone		DST
GMT+02:00	Athens, Bucharest, Istanbul	○
GMT+02:00	Amman	○
GMT+02:00	Windhoek	○
GMT+02:00	Jerusalem	○
GMT+02:00	Cairo	○
GMT+02:00	Harare, Pretoria	
GMT+02:00	Beirut	○
GMT+02:00	Helsinki, Kiev, Riga, Skopje, Sofia, Tallinn, Vilnius	○
GMT+02:00	Minsk	○
GMT+03:00	Kuwait, Riyadh	
GMT+03:00	Tblisi	
GMT+03:00	Nairobi	
GMT+03:00	Baghdad	
GMT+03:00	Moscow, St. Petersburg, Volgograd	○
GMT+03:30	Tehran	○
GMT+04:00	Abu Dhabi, Muscat	
GMT+04:00	Yerevan	○
GMT+04:00	Caucasus Standard Time	
GMT+04:00	Baku	○
GMT+04:00	Port Louis	○
GMT+04:30	Kabul	
GMT+05:00	Islamabad, Karachi	○
GMT+05:00	Yekaterinburg	
GMT+05:00	Tashkent	
GMT+05:30	Sri Jayawardenepura	
GMT+05:30	Chennai, Kolkata, Mumbai, New Delhi	
GMT+05:45	Kathmandu	
GMT+06:00	Astana, Dhaka	
GMT+06:00	Almaty, Novosibirsk	○
GMT+06:30	Yangon (Rangoon)	
GMT+07:00	Krasnoyarsk	○
GMT+07:00	Bangkok, Hanoi, Jakarta	
GMT+08:00	Irkutsk, Ulaanbaatar	○
GMT+08:00	Kuala Lumpur, Singapore	
GMT+08:00	Perth	○
GMT+08:00	Taipei	
GMT+08:00	Beijing, Chongqing, Hong Kong SAR, Urumqi	
GMT+09:00	Seoul	
GMT+09:00	Yakutsk	○
GMT+09:00	Osaka, Sapporo, Tokyo	
GMT+09:30	Adelaide	○
GMT+09:30	Darwin	
GMT+10:00	Vladivostok	○

Time zone		DST
GMT+10:00	Canberra, Melbourne, Sydney	○
GMT+10:00	Guam, Port Moresby	
GMT+10:00	Brisbane	
GMT+10:00	Hobart	○
GMT+11:00	Magadan, Solomon Islands, New Caledonia	
GMT+12:00	Auckland, Wellington	○
GMT+12:00	Fiji Islands, Kamchatka, Marshall Islands	
GMT+13:00	Nuku'alofa, Samoa	

Function Settings

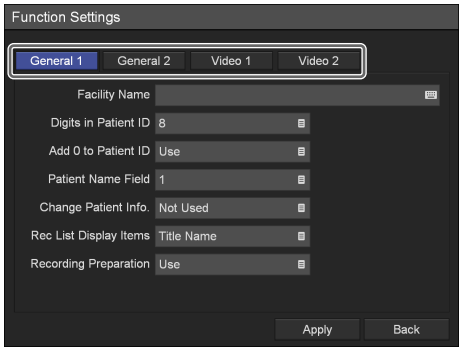
Configure initial settings related to recording and external devices.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Function Settings], and press the ENTER button.



The [Function Settings] screen appears.

2 Use the ← and → buttons to select a tab, and configure settings as necessary.



For details on each tab, see the following.

"[General 1] Tab" (page 56)

"[General 2] Tab" (page 57)

"[Video 1] Tab" (page 60)

"[Video 2] Tab" (page 61)

3 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

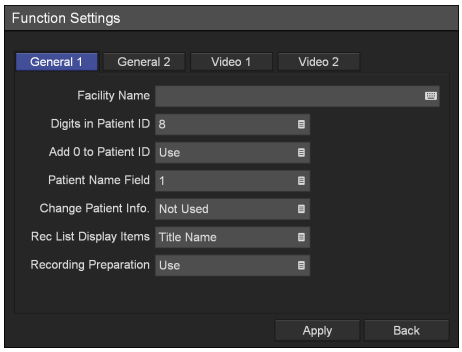
[General 1] Tab

Configure initial system settings.

1 Use the ← and → buttons to select the [General 1] tab.

2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



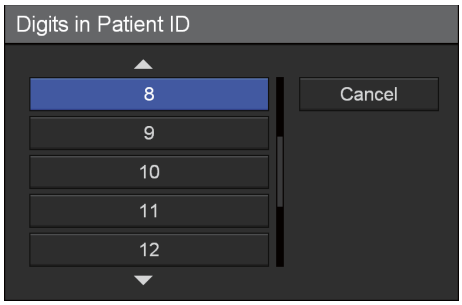
[Facility Name]

Enter the facility name (up to 32 characters) using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

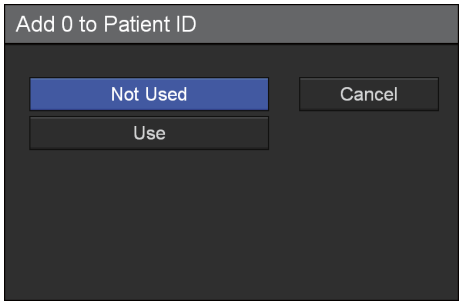
[Digits in Patient ID]

Select the number of digits to use for patient ID numbers in the setting screen that appears, and press the ENTER button.
The default setting is [8]. Between 4 to 16 digits can be used.



[Add 0 to Patient ID]

Select whether to add zeros to patient IDs with lengths shorter than the specified number of digits in the setting screen that appears, and press the ENTER button.
The default setting is [Use].



[Patient Name Field]

Select the number of display fields for the patient name in the setting screen that appears, and press the ENTER button.
If you select [2] or [3], the patient name field will be separated into first, middle, and last names.
The default setting is [1].

[Change Patient Info.]

Select whether to allow changes to patient information at any time in the setting screen that appears, and press the ENTER button.
The default setting is [Not Used].

[Rec List Display Items]

Select whether the [Rec List Display Items] screen displays titles or patient information in the setting screen that appears, and press the ENTER button.
The default setting is [Title Name]. If you select patient information, patient IDs and patient names will be displayed.

[Recording Preparation]

Select whether to use the [Recording Preparation] screen in the setting screen that appears, and press the ENTER button.
The default setting is [Use].
If you select [Not Used], [Recording Preparation] will be grayed out and disabled in the [MENU] screen.

3 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

If you are finished configuring [Function Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

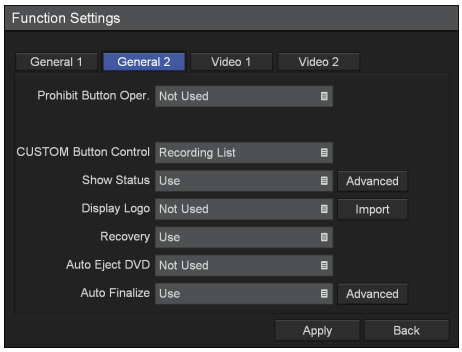
[General 2] Tab

Configure initial system settings.

1 Use the ← and → buttons to select the [General 2] tab.

2 Configure each setting.

Select an item using the ↑and ↓ buttons, and press the ENTER button to display the setting screen for that item.

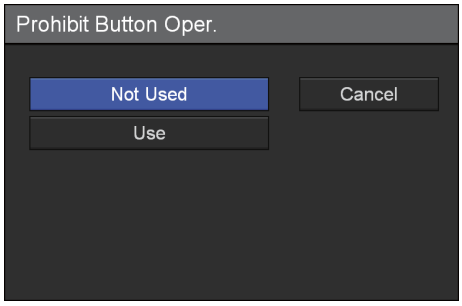


[Prohibit Button Operation]

Select whether to prohibit operation of the unit via the buttons on the front panel in the setting screen that appears, and press the ENTER button.
The default setting is [Not Used].

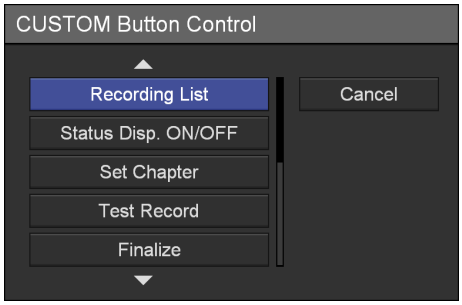
Tip

The prohibit button operation function does not apply to the MENU, ↑, ↓, ←, →, BACK, and ENTER buttons and the ⏻ (on/standby) switch.



[CUSTOM Button Control]

Select the function to assign to the CUSTOM button on the front panel in the setting screen that appears, and press the ENTER button.
The default setting is [Recording List].



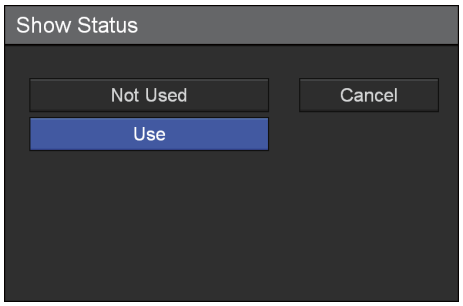
The functions that can be assigned are as follows.

Assignable function	Description
Not Used	A function is not assigned.
Freeze ON	Pause the video at any position during playback.

Assignable function	Description
Input Signal Select	Switch the input signal. The input signal switches as follows with each press: HDMI → DVI-D → VIDEO → S VIDEO.
Recording Preparation	Display the [Recording Preparation] screen.
Recording List	Display the [Recording List] screen.
Status Display ON/ OFF	Show or hide the status display.
Set Chapter	Set a chapter.
Test Record	Perform a test recording.
Finalize (HVO-550MD only)	Perform finalizing.

[Show Status]

Select whether to display various status information.

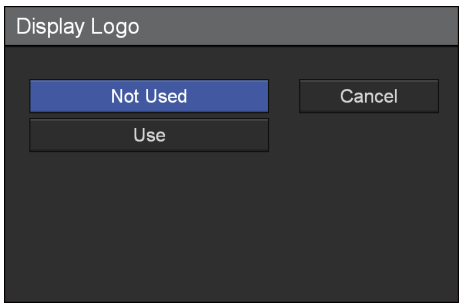


[Advanced] button appears when you select [Use].

For details on this setting, see "To configure advanced status display settings" (page 59).

[Display Logo]

Select whether to display a logo in the [MENU] screen in the setting screen that appears, and press the ENTER button.
The default setting is [Not Used].

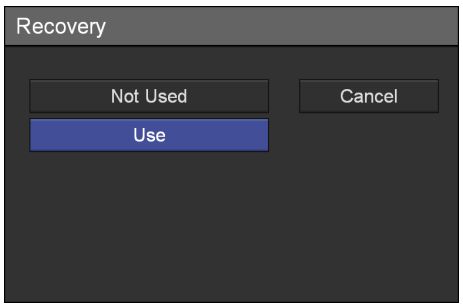


If you want to select [Use], be sure to import the logo.

For details on importing, see "To import a logo" (page 59).

[Recovery]

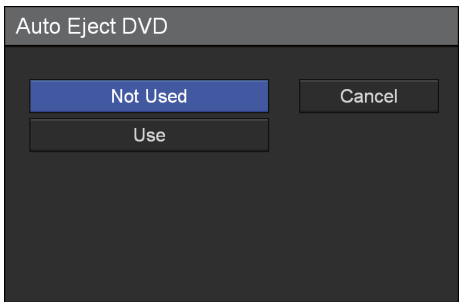
Select whether to return to the action that was being performed when a recovery operation was executed in the setting screen that appears, and press the ENTER button.
The default setting is [Use].



Recovery of recorded data is the only action performed when [Not Used] is selected.

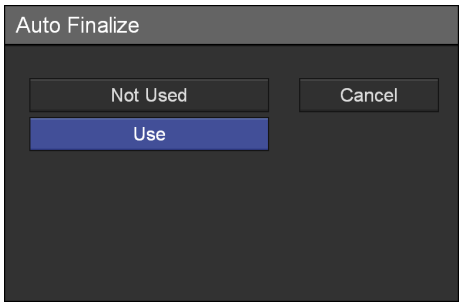
[Auto Eject DVD] (HVO-550MD only)

Select whether to automatically eject DVD discs when they are full in the setting screen that appears, and press the ENTER button.
The default setting is [Not Used].



[Auto Finalize] (HVO-550MD only)

Select whether to automatically finalize a DVD disc in the setting screen that appears, and press the ENTER button.



[Advanced] appears when [Use] is selected.

For details on this setting, see "To configure advanced finalization settings (HVO-550MD only)" (page 60).

3 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

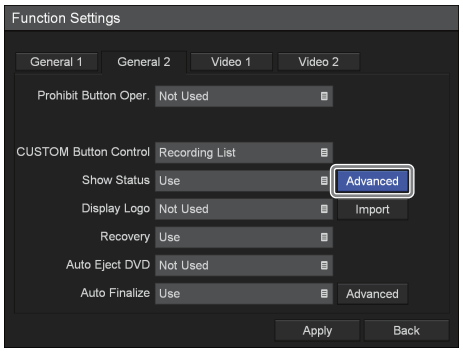
If you are finished configuring [Function Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

To configure advanced status display settings

Individually select whether to display each status.

1 Use the ← and → buttons to select [Advanced], and press the ENTER button.

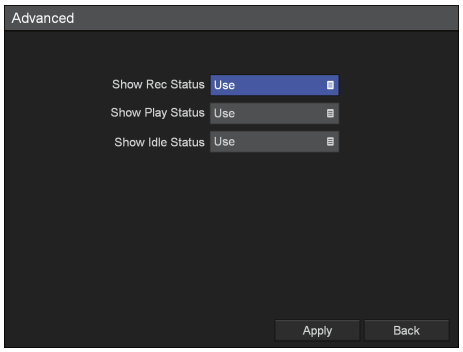
[Advanced] appears when [Show Status] is set to [Use].



The [Advanced] settings screen appears.

2 Configure each setting.

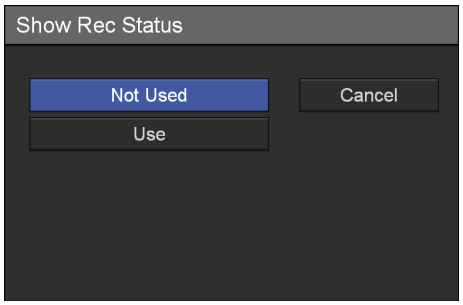
Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



[Show Rec Status]

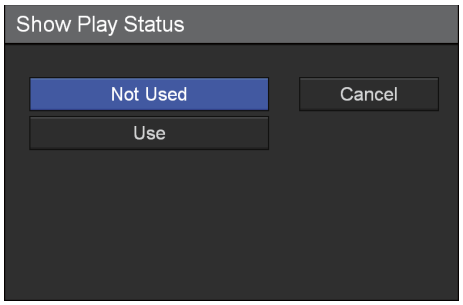
Select whether to display recording status information in the setting screen that appears, and press the ENTER button.
If you select [Use], the recording status, the status of data transfer to media, and other status information will appear on the recording screens that are output. Data is being written if the media status is green, and an error has occurred if it is orange.

The default setting is [Not Used].



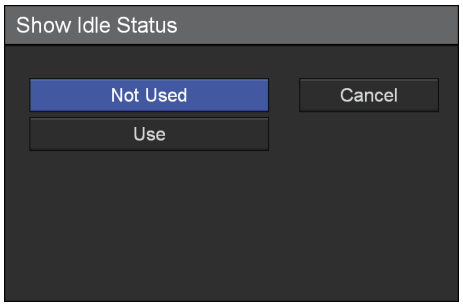
[Show Play Status]

Select whether to display playback status information in the setting screen that appears, and press the ENTER button.
If you select [Use], patient information and other data will appear on the playback images of video outputs.
The default setting is [Not Used].



[Show Idle Status]

Select whether to display idle status information in the setting screen that appears, and press the ENTER button.
If you select [Use], patient information, pre-rec operation status, and other operation status information will appear during idle conditions (i.e., when recording or playback is stopped).
The default setting is [Not Used].



Tip

If [Show Rec Status] or [Show Idle Status] is set to [Use] while [I/O Timing] is set to [Pass-Through], the status information will not be displayed.

To import a logo

Import the logo file you want to display.

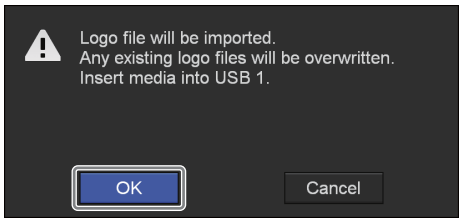
For details on preparing a logo file, see "To prepare a logo file" (page 60).

1 Copy the logo file onto a USB memory device, and insert the device into a USB 1 port on the unit.

2 Use the ← and → buttons to select [Import], and press the ENTER button.

The following message appears.

3 Select [OK], and press the ENTER button.



When import of the logo file is complete, a notification message will appear.

To prepare a logo file

To display a logo, prepare a logo file that can be imported to the unit and copy it onto a USB memory device beforehand.

1 Prepare the logo file.

The logo file must meet the following conditions.
File format: 24-bit bitmap
File name: MenuLogo.bmp
Size: 43 (height) × 400 (width) pixel
Background: RGB (102, 102, 102) gray

2 Copy the logo file onto a USB memory device.

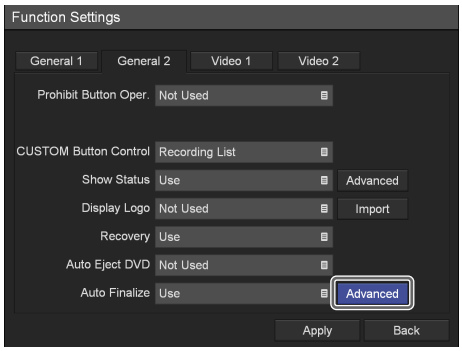
Create a folder with the following name in the uppermost directory of the USB memory device, and copy the logo file.
Folder name: DisplayLogo

To configure advanced finalization settings (HVO-550MD only)

Configure these settings to perform finalization automatically.

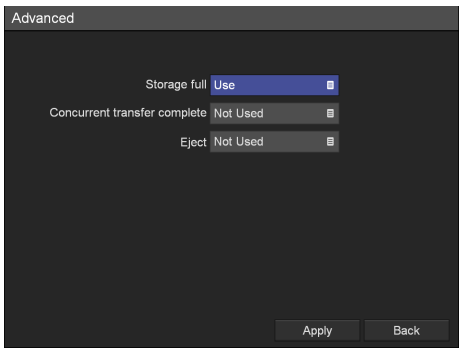
1 Use the ← and → buttons to select [Advanced], and press the ENTER button.

[Advanced] appears when [Auto Finalize] is set to [Use].



2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



[Storage full]
Select whether to automatically finalize a DVD disc when its storage capacity is full in the setting screen that appears, and press the ENTER button.
The default setting is [Use].

[Concurrent transfer complete]
Select whether to automatically finalize a DVD disc when concurrent storage to the disc is complete in the setting screen that appears, and press the ENTER button.
The default setting is [Not Used].

[Eject]
Select whether to automatically finalize a DVD disc when you eject it in the setting screen that appears, and press the ENTER button.
The default setting is [Not Used].

Tip

Finalizing can take up to 7 minutes to complete.

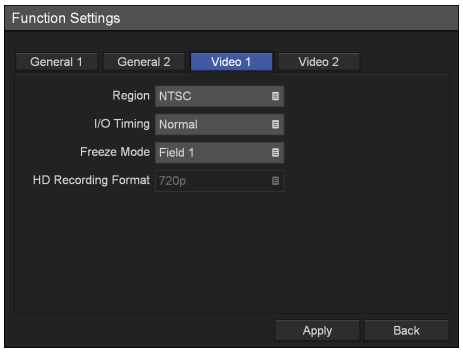
[Video 1] Tab

Configure recording settings.

1 Use the ← and → buttons to select the [Video 1] tab.

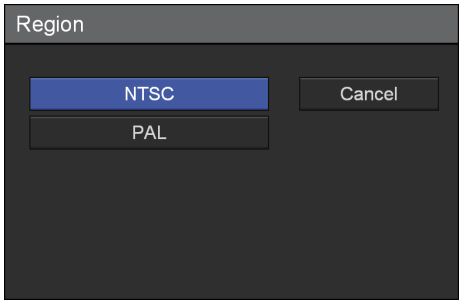
2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



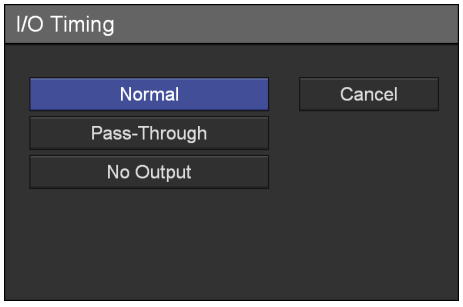
[Region]

Select [NTSC] or [PAL] in the setting screen that appears, and press the ENTER button.
The default setting is [NTSC].



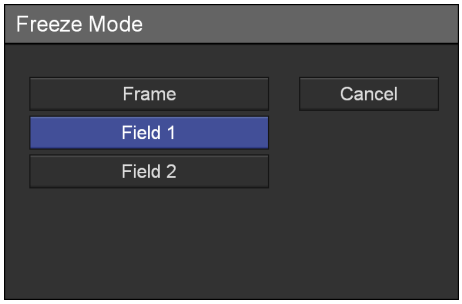
[I/O Timing]

Select the input and output timing in the setting screen that appears, and press the ENTER button.
Select [Normal] as signal processing is usually performed under normal circumstances. There will be a slight delay in signal outputs when [Normal] is selected. Select [Pass-Through] for simultaneous input and output timing without signal processing.
To disable signal outputs, select [No Output].
The default setting is [Normal].



[Freeze Mode]

Select the first image that appears when you use the freeze ON function in the setting screen that appears, and press the ENTER button.
The default setting is [Frame].



[HD Recording Format]

Displays the HD format used during recording.
The setting is fixed at [720p].

3 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

If you are finished configuring [Function Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

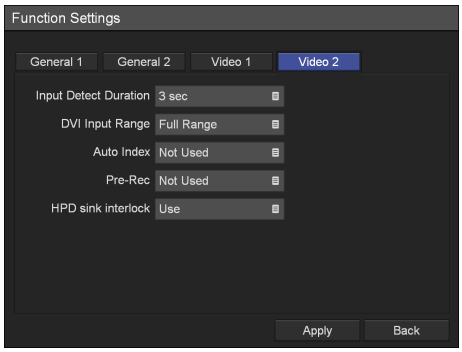
[Video 2] Tab

Configure recording settings.

1 Use the ← and → buttons to select the [Video 2] tab.

2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



[Input Detect Duration]

Select from 0 to 3 seconds for the duration for which input signals are detected.
The default setting is [3 sec].

Tip

Image distortion may occur if a duration of 2 seconds or less is selected.

[DVI Input Range]

Select between limited and full range for the range mode during DVI input.

The tonal range for [Limited Range] is 16 to 235, and the tonal range for [Full Range] is 0 to 255.
The default setting is [Full Range].

[Auto Index]
Select whether to automatically insert index marks when recording.
The default setting is [Not Used].
Index marks are inserted every 5 minutes when [Use] is selected.

[Pre-Rec]
Select whether to perform pre-rec.
The default setting is [Not Used].

[HPD sink interlock]
Select whether to link the HPD (hot plug detect) sink of the device connected to the HDMI IN connector to the source device.
The default setting is [Use].

Note

If the sink device is disconnected or turned off while recording is in progress, the recording may be interrupted accordingly.

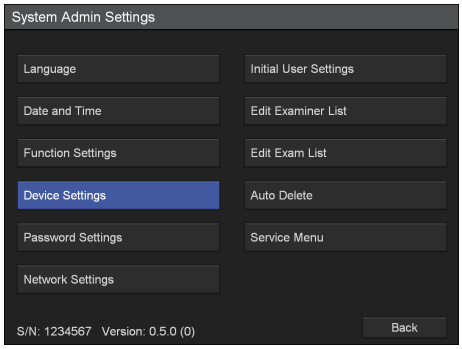
3 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

If you are finished configuring [Function Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

Device Settings

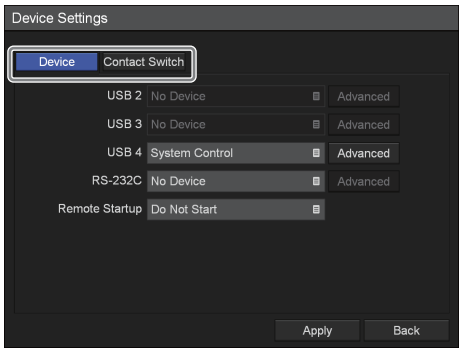
Configure settings for external devices.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Device Settings], and press the ENTER button.



The [Device Settings] screen appears.

2 Use the ← and → buttons to select a tab, and configure settings as necessary.



For details on each tab, see the following.

"[Device] Tab" (page 63)

"[Contact Switch] Tab" (page 64)

3 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

[Device] Tab

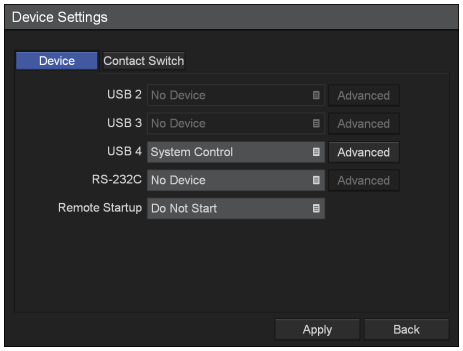
Configure settings for peripheral devices connected to the unit.

For details on devices that can be connected to the HVO-500MD or HVO-550MD, contact your local Sony representative.

1 Use the ← and → buttons to select the [Device] tab.

2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.

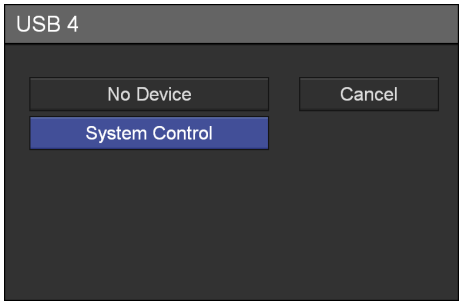


[USB 2], [USB 3]
[No Device] is displayed, as there are no devices that require configuration.

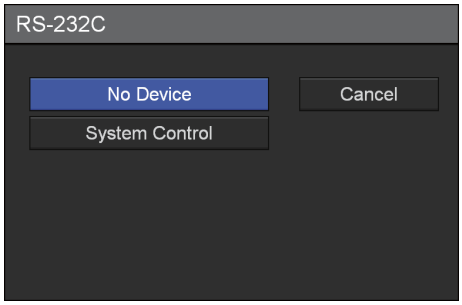
Tip

Hard keyboards can be used by simply connecting them. Configuration is not required.

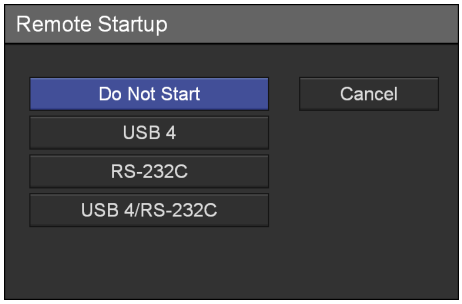
[USB 4]
Select whether to connect a device to USB 4 port at the rear of the unit in the setting screen that appears, and press the ENTER button.
The default setting is [No Device].
[Advanced] appears when [System Control] is selected.



[RS-232C]
Select whether to connect a device to the RS-232C connector at the rear of the unit in the setting screen that appears, and press the ENTER button.
The default setting is [No Device].
[Advanced] appears when [System Control] is selected.



[Remote Startup]
Select whether to link the power on/off operations of remote systems via USB 4 port and the RS-232C connector in the setting screen that appears, and press the ENTER button.
The default setting is [Do Not Start].



When [USB 4] or [RS-232C] is selected, the remote system's on/off operation will be linked to that of the unit via the selected connector.

3 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

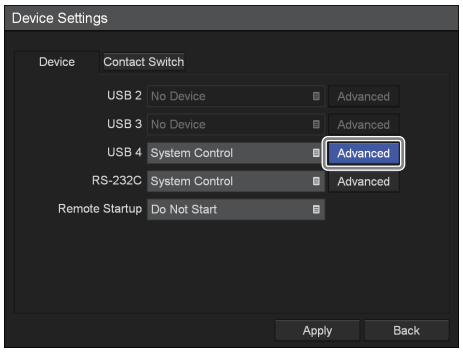
If you are finished configuring [Device Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

To configure system control settings

When [System Control] is selected, configure the transmission speed and the STOP command protocol operation.

1 Use the ← and → buttons to select [Advanced], and press the ENTER button.

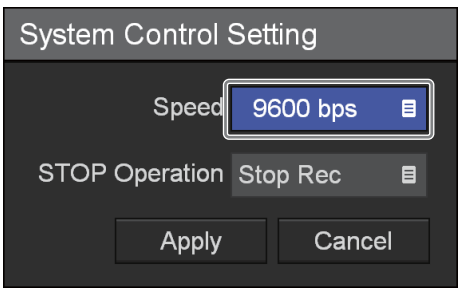
[Advanced] appears when [System Control] is selected.



The [System Control Setting] screen appears.

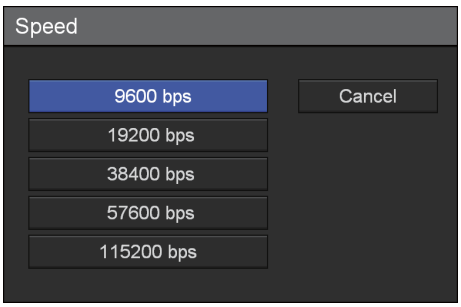
2 Select the transmission speed.

① Use the ↑ and ↓ buttons to select the [Speed] box, and press the ENTER button.



The [Speed] screen appears.

② Select a transmission speed, and press the ENTER button.
The default setting is [9600 bps].



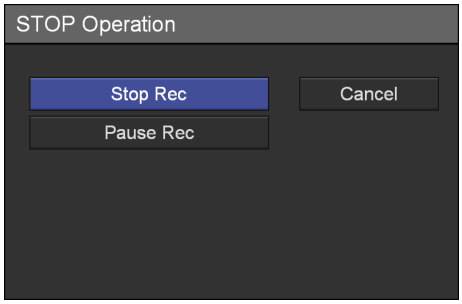
Tip

The transmission speed can only be configured for RS-232C system control. The transmission speed for USB 4 is fixed at 115200 bps.

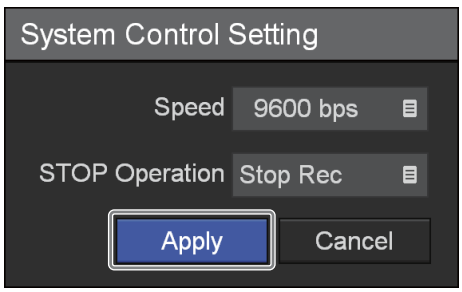
3 Configure the STOP command operation.

① Use the ↑ and ↓ buttons to select the [STOP Operation] box, and press the ENTER button.
The [STOP Operation] screen appears.

② Select an operation, and press the ENTER button.
The default setting is [Stop Rec].



4 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.



The configurations are saved, and the [Device] tab appears again.

[Contact Switch] Tab

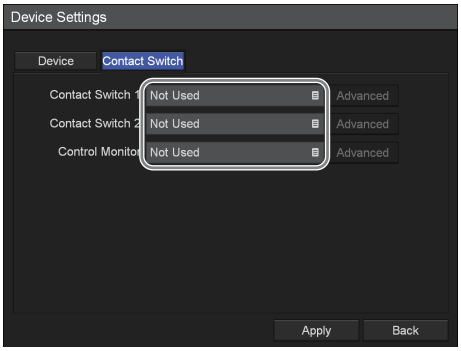
Configure these settings when you want to control the unit via contact switch devices connected to the contact switch connectors on the rear panel of the unit, or when you want to use the tally lamp control and video input switching functions for the monitor.

1 Use the ← and → buttons to select the [Contact Switch] tab.

2 Configure the [Contact Switch 1] and [Contact Switch 2] settings.

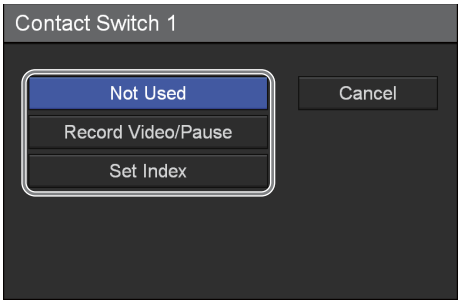
Specify the function that the contact switch device will control for each contact switch setting.
The procedure for configuring the [Contact Switch 1] and [Contact Switch 2] settings is the same.
The default setting is [Not Used].

① Use the ↑ and ↓ buttons to select the box for the contact switch setting you want to configure, and press the ENTER button.



The setting screen for the selected contact switch appears.

② Use the ↑ and ↓ buttons to select the function to control, and press the ENTER button.



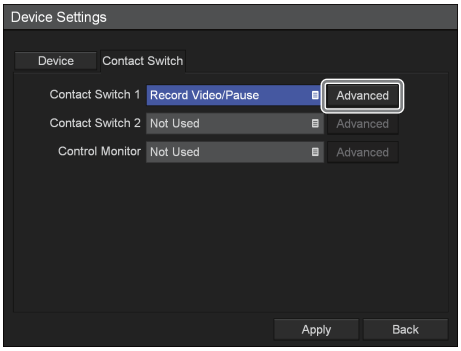
[Not Used]
Disable use of the contact switch device.

[Record Video/Pause]
Control pause and resume functions while recording videos.

[Set Index]
Insert an index mark during recording.

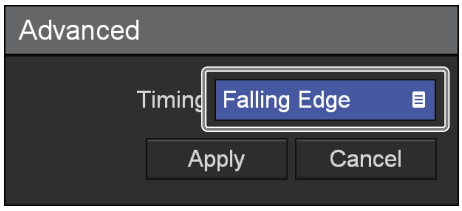
The [Contact Switch] tab appears again.

③ Use the ← and → buttons to select [Advanced], and press the ENTER button.



The [Advanced] screen appears.

④ Use the ↑ and ↓ buttons to select the [Timing] box, and press the ENTER button.

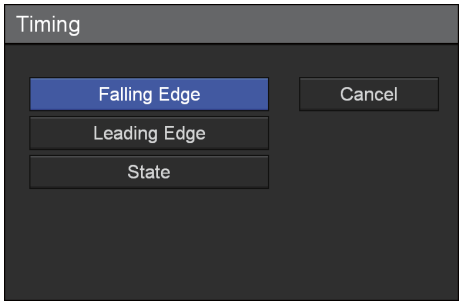


The [Timing] screen appears.

⑤ Use the ↑ and ↓ buttons to select the control timing, and press the ENTER button.
The default setting is [Falling Edge].

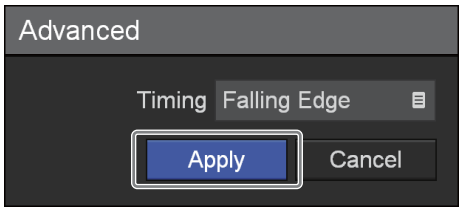
Tip

The pause control of the [Record Video/Pause] function will not operate immediately after recording starts. Wait about 5 seconds before performing the control.



The [Advanced] screen appears again.

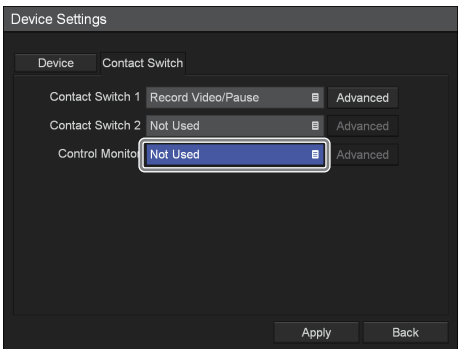
⑥ Use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.



The [Contact Switch] tab appears again.

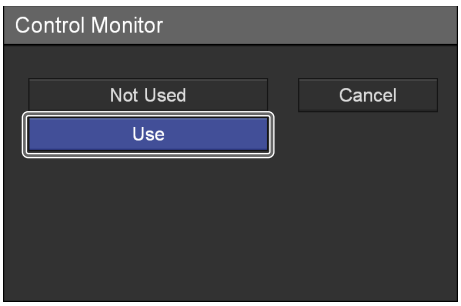
3 If you want to use the tally lamp control and video input switching functions for the monitor, configure the [Control Monitor] setting.
The default setting is [Not Used].

① Use the ↑ and ↓ buttons to select the [Control Monitor] box, and press the ENTER button.



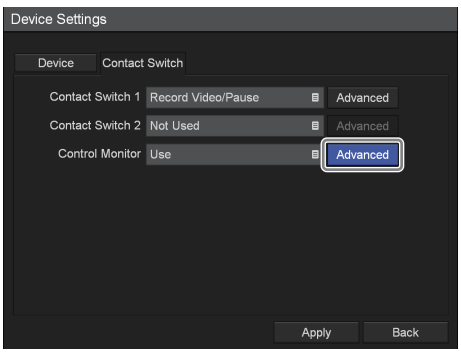
The [Control Monitor] screen appears.

② Use the ↑ and ↓ buttons to select [Use], and press the ENTER button.



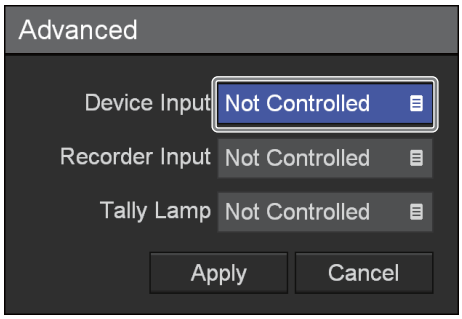
The [Contact Switch] tab appears again.

③ Use the ← and → buttons to select [Advanced], and press the ENTER button.



The [Advanced] screen appears.

④ Use the ↑ and ↓ buttons to select the setting you want to configure, and press the ENTER button. The default setting is [Not Controlled].



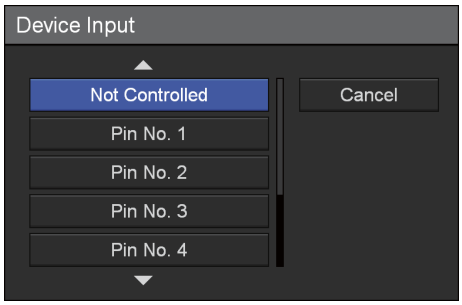
[Device Input]
Configure this to output images from devices such as ultrasonography equipment onto the monitor.

[Recorder Input]
Configure this to output images from this unit onto the monitor.

[Tally Lamp]
Configure this to indicate the recording status via the tally lamp on the monitor.

The pin assignment screen appears.

⑤ Use the ↑ and ↓ buttons to select a pin number, and press the ENTER button.
From the eight pins on the monitor connector, assign one pin each for camera signal inputs (image inputs from devices such as ultrasonography equipment), recorder signal inputs (image inputs from this unit), and the recording status tally lamp (tally lamp on/off).

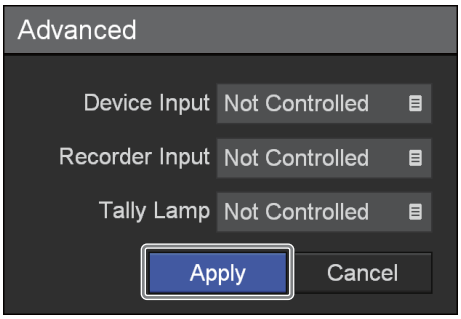


Tips

- Pin number 5 is reserved for GND and cannot be selected.
- The same pin number cannot be configured for contact switches 1 and 2.
- Pin assignment settings will vary depending on the monitor. Refer to the operating instructions for your monitor.

The [Advanced] screen appears again.

⑥ When you finish configuration, use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.



The [Contact Switch] tab appears again.

4 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

If you are finished configuring [Function Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

Password Settings

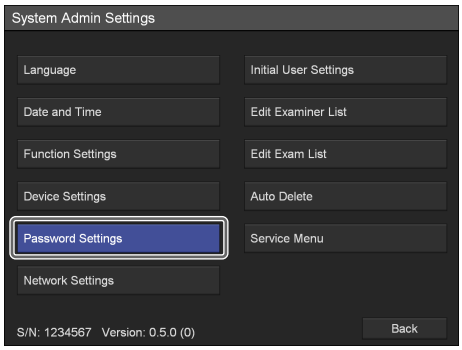
Configure password settings to prevent unauthorized changes to the [System Admin Settings].
When password protection is enabled, a password entry screen appears when [System Admin Settings] is selected in the [Settings] screen.

Note

Be sure to write down the password in case you forget it. The [System Admin Settings] cannot be accessed without the password. Guard the password securely to maintain security.

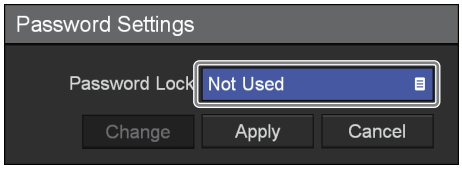
To enable password protection

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Password Settings], and press the ENTER button.



The [Password Settings] screen appears.

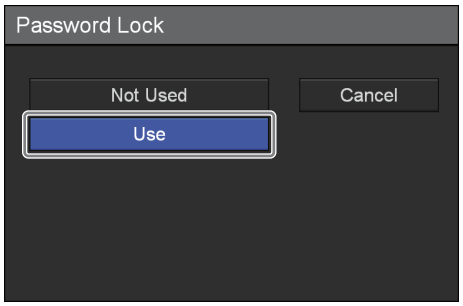
2 Use the ↑ and ↓ buttons to select [Password Lock], and press the ENTER button.



The [Password Lock] screen appears.

3 Use the ↑ and ↓ buttons to select [Use], and press the ENTER button.

The default setting is [Not Used].



4 Use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.

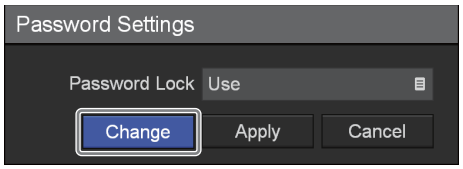
The configuration is saved.

Tip

The password is not configured under default conditions. When configuring the password for the first time, configure the new password in the [Change Password] screen without entering an old password.

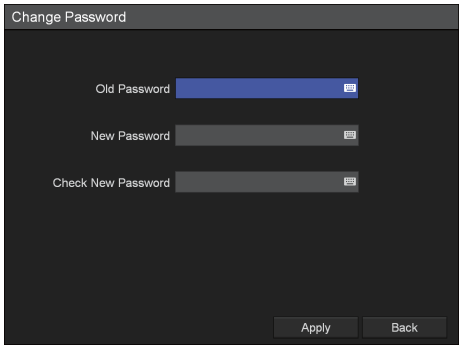
To change the password

1 In the [Password Settings] screen, use the ↑, ↓, ←, and → buttons to select [Change], and press the ENTER button.



The [Change Password] screen appears.

2 Configure each setting.



[Old Password]

Enter the old password using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

Tip

The password is not configured under default conditions. When configuring the password for the first time, configure the new password in the [Change Password] screen without entering an old password.

[New Password]

Enter up to 255 characters for the new password using the on-screen keyboard.
Any character that can be entered on the on-screen keyboard can be used in the password.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Check New Password]

Reenter the new password using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

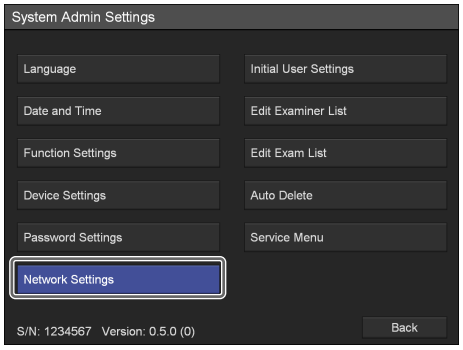
3 Use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.

The new password is saved.

Network Settings

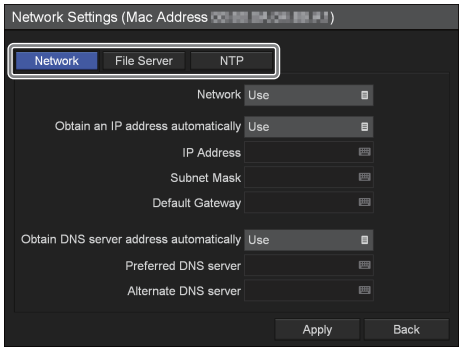
Configure initial settings for the network. When [Network] is set to [Use], the MAC address will appear at the top of the screen.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Network Settings], and press the ENTER button.



The [Network Settings] screen appears.

2 Use the ← and → buttons to select a tab, and configure settings as necessary.



For details on each tab, see the following.

"[Network] Tab" (page 69)

"[File Server] Tab" (page 70)

"[NTP] Tab" (page 71)

3 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

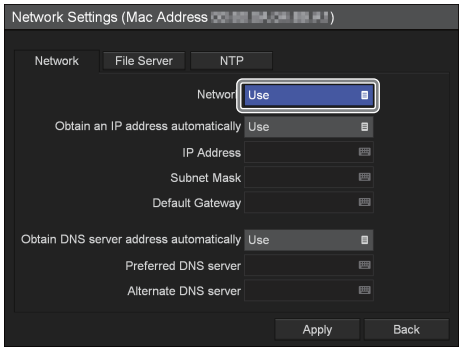
The configurations are saved, and the [System Admin Settings] screen appears again.

[Network] Tab

Configure these settings when using a network.

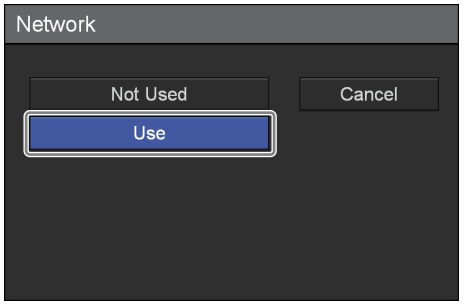
1 Use the ← and → buttons to select the [Network] tab.

2 Use the ↑ and ↓ buttons to select the [Network] box, and press the ENTER button.



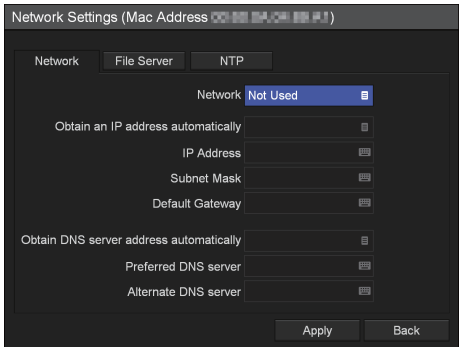
The [Network] screen appears.

3 Use the ↑ and ↓ buttons to select [Use], and press the ENTER button.



4 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.

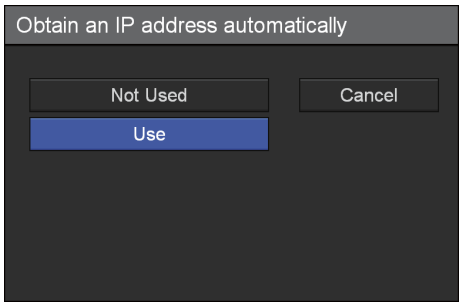


[Obtain an IP address automatically]

In the [Obtain an IP address automatically] screen that appears, select [Use] to use the DHCP to obtain an IP address automatically, or select [Not Used] to assign a static IP address manually, and then press the ENTER button.

If you select [Use], the IP address, subnet mask, and default gateway will be displayed as read-only.

If you select [Not Used], be sure to configure the [IP Address], [Subnet Mask], [Default Gateway], [Preferred DNS Server], and [Alternate DNS Server] settings.



[IP Address]

Enter the IP address using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Subnet Mask]

Enter the subnet mask using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Default Gateway]

Enter the IP address for the default gateway using the on-screen keyboard.

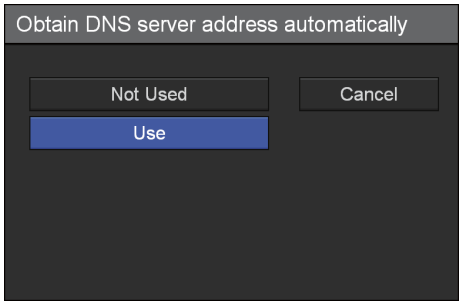
If you are only using a local network and not connecting to other networks, do not configure this setting.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Obtain DNS server address automatically]

In the [Obtain DNS server address automatically] screen that appears, select [Use] to obtain the IP address for the DNS server automatically, or select [Not Used] to specify the IP address manually, and then press the ENTER button.

If you select [Not Used], be sure to configure the [Preferred DNS Server] and [Alternate DNS Server] settings.



[Preferred DNS Server]

Enter the IP address for the preferred DNS server using the on-screen keyboard.

If you do not have nor need a preferred DNS server, do not configure this setting.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Alternate DNS Server]

Enter the IP address for the alternate DNS server using the on-screen keyboard.

If you do not have nor need an alternate DNS server, do not configure this setting.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

5 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

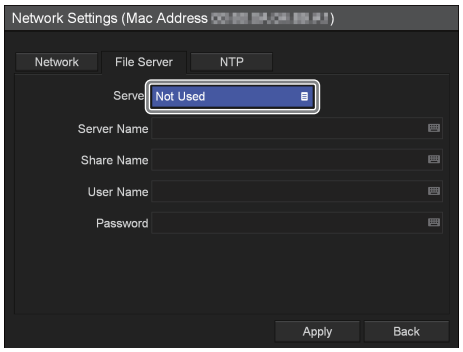
If you are finished configuring [Network Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

[File Server] Tab

Configure these settings when specifying a server as the storage location for recorded data.

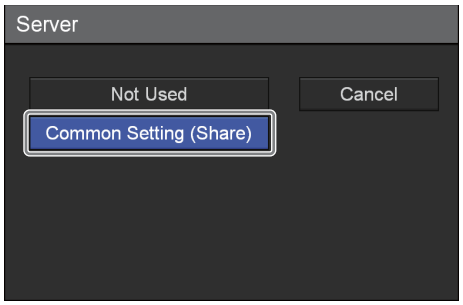
1 Use the ← and → buttons to select the [File Server] tab.

2 Use the ↑ and ↓ buttons to select the [Server] box, and press the ENTER button.



The [Server] screen appears.

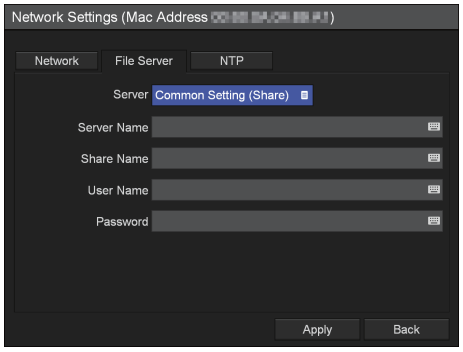
3 Use the ↑ and ↓ buttons to select [Common Setting (Share)], and press the ENTER button.



Settings items for common setting (share) server appear.

4 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



[Server Name]
Enter the server name using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Share Name]
Enter the share name using the on-screen keyboard.

Use only alphanumeric characters and symbols (excluding " = / \ [ ] : | < > + ; , ? *).

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

Note

When saving recorded data in AVCHD format to servers, do not specify the same share name (i.e., share folder) on the same server as the storage destination for multiple recorders. Performing multiple saving operations at the same time may result in damage to the recorded data.

[User Name]
Enter a user name using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Password]
Enter the password using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

5 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

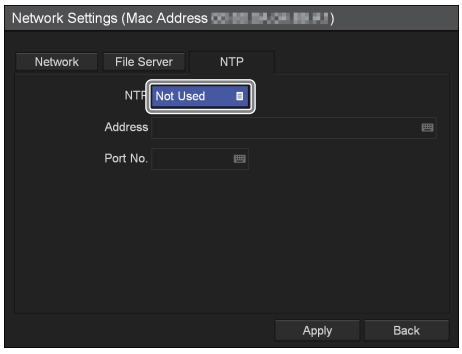
If you are finished configuring [Network Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

[NTP] Tab

Configure these settings to obtain the current time from the NTP server.

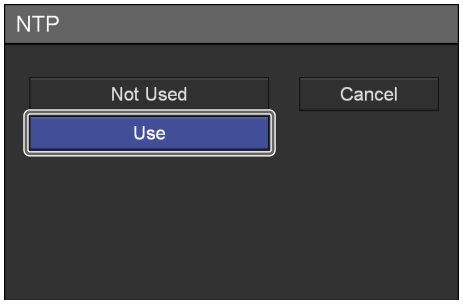
1 Use the ← and → buttons to select the [NTP] tab.

2 Use the ↑ and ↓ buttons to select the [NTP] box, and press the ENTER button.



The [NTP] screen appears.

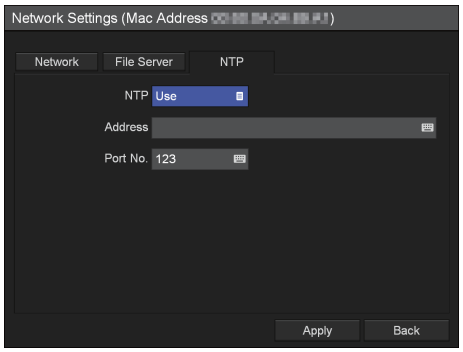
3 Use the ↑ and ↓ buttons to select [Use], and press the ENTER button.



Settings items for the NTP server appear.

4 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



[Address]
Enter the address for the NTP server using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Port No.]
Enter the port number using the on-screen keyboard. The default setting is [123].

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

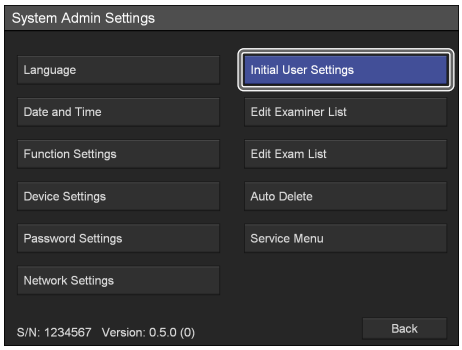
5 To configure settings in other tabs, use the ↑, ↓, ←, and → buttons to select a tab.

If you are finished configuring [Network Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

Initial User Settings

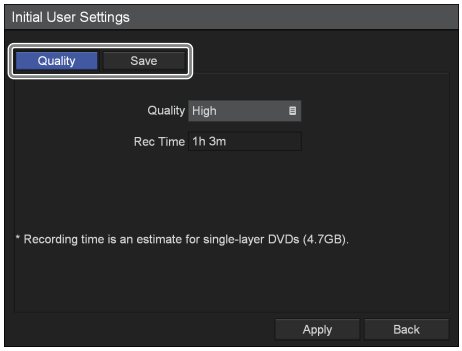
Configure initial setting values related to recording quality and storage media.
The settings configured here will be used as the initial default settings when recording.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Initial User Settings], and press the ENTER button.



The [Initial User Settings] screen appears.

2 Use the ← and → buttons to select a tab, and configure settings as necessary.



For details on each tab, see the following.

"[Quality] Tab" (page 73)

"[Save] Tab" (page 73)

3 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

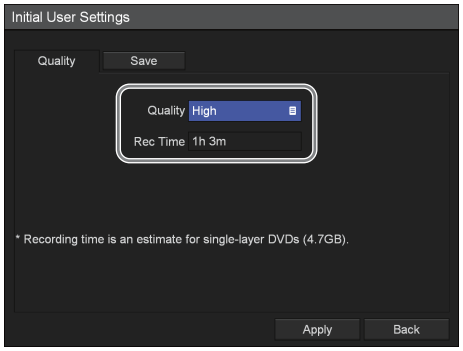
[Quality] Tab

Configure quality settings for videos.
The settings configured here will be used as the initial values for the [Quality] tab in the [User Settings] screen.

1 Use the ← and → buttons to select the [Quality] tab.

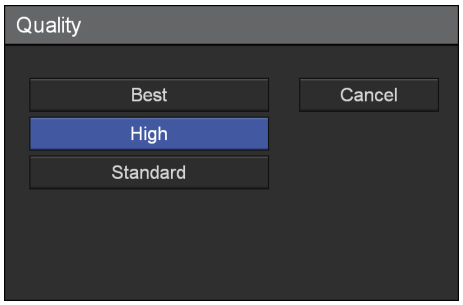
2 Configure the quality setting for videos.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



[Quality]

Select the video image quality in the setting screen that appears, and press the ENTER button.



Tip

[Rec Time] displays the following information.

- For the HVO-500MD: Estimated recording time available for USB media (500 GB).
- For the HVO-550MD: Estimated recording time available for single-layer DVD-R1 discs (4.7 GB).

3 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

The [System Admin Settings] screen appears again.

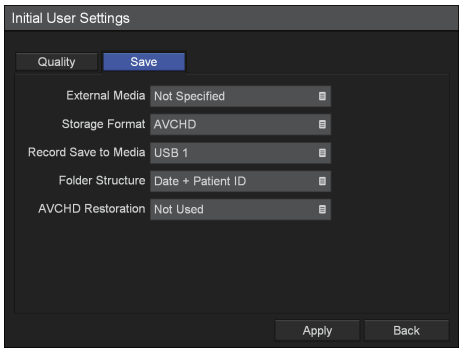
[Save] Tab

Configure settings related to external media used to store recorded data.

1 Use the ← and → buttons to select the [Save] tab.

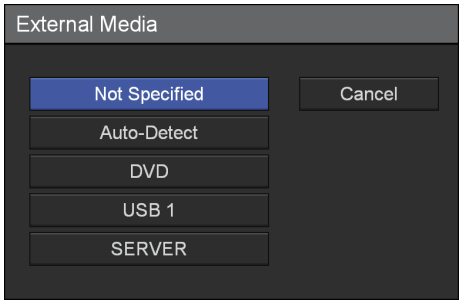
2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



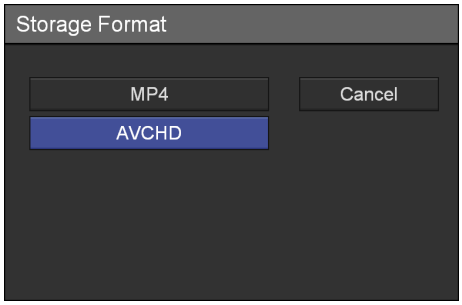
[External Media]

Select the external concurrent storage destinations in the setting screens that appear, and press the ENTER button.
The default setting is [Not Specified].



[Storage Format]

Select the storage format in the setting screen that appears, and press the ENTER button.

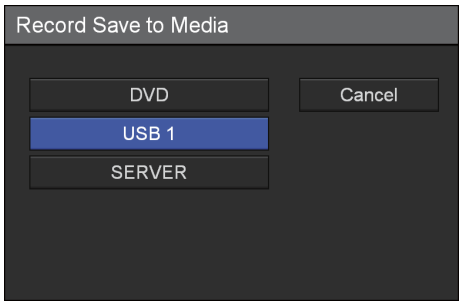


Note

When saving recorded data in AVCHD format to servers, do not specify the same share name (i.e., share folder) on the same server as the storage destination for multiple recorders. Performing multiple saving operations at the same time may result in damage to the recorded data.

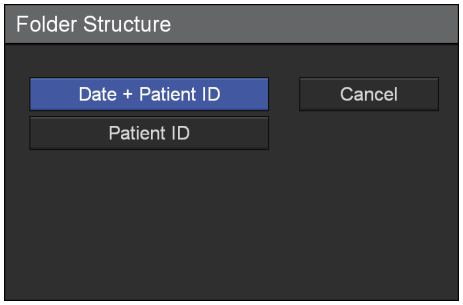
[Record Copy Media]

Select the external storage media to which to copy the recording list in the setting screen that appears, and press the ENTER button.
The default setting is [USB 1].



[Folder Structure]

Select the directory structure that will be used when writing to external media in the setting screen that appears, and press the ENTER button.
The default setting is [Date + Patient ID].

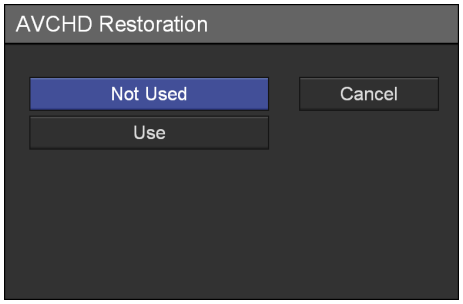


Tip

When recorded data with the same patient ID is created, a new recording date folder is created under the patient ID folder, and the recorded data is saved to the new folder.

[AVCHD Restoration]

Select whether to perform restoration when AVCHD files are damaged in the setting screen that appears, and press the ENTER button.
The default setting is [Use].



3 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button.

The [MENU] screen appears again.

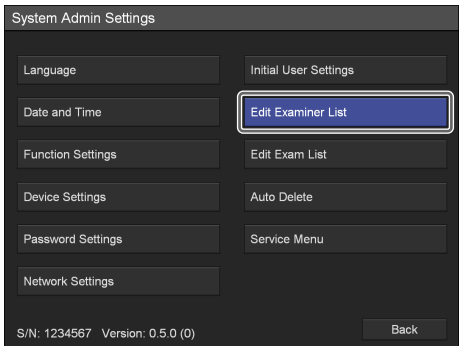
Editing the Examiner List

Register and edit information regarding examiners.
The examiner information registered here will be used in the examiner lists and default settings that appear in other screens. You can register up to 100 examiners.

Registering Examiner Information

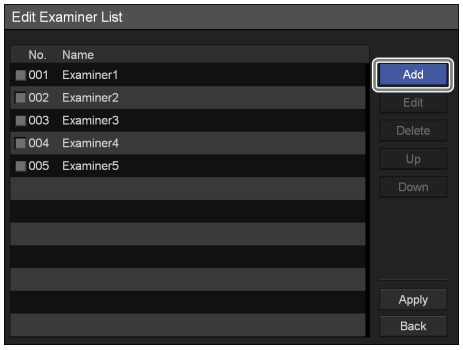
Register the name of the examiner, and configure the initial settings for each examiner.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Edit Examiner List], and press the ENTER button.



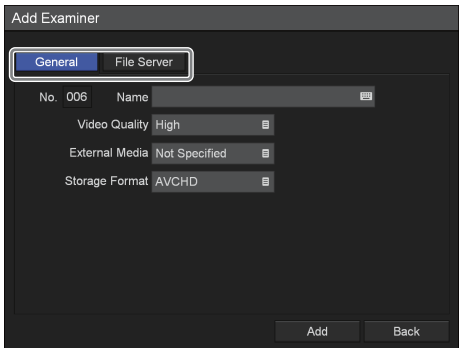
The [Edit Examiner List] screen appears.

2 Use the ← and → buttons to select [Add], and press the ENTER button.



The [Add Examiner] screen appears.

3 Use the ← and → buttons to select a tab, and configure settings as necessary.



For details on each tab, see the following.

"[General] Tab" (page 75)

"[File Server] Tab" (page 76)

4 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Add], and press the ENTER button.

5 Use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.

The examiner information is added.

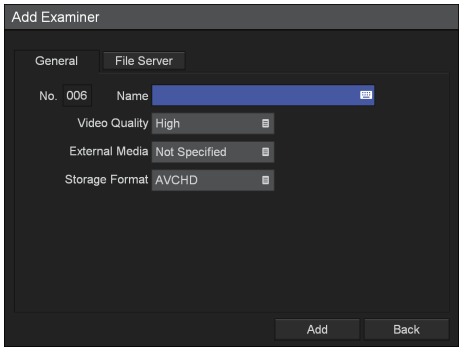
[General] Tab

Configure general settings such as the examiner name and storage destination.

1 Use the ← and → buttons to select the [General] tab.

2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item. The [No.] setting is assigned automatically and cannot be changed.

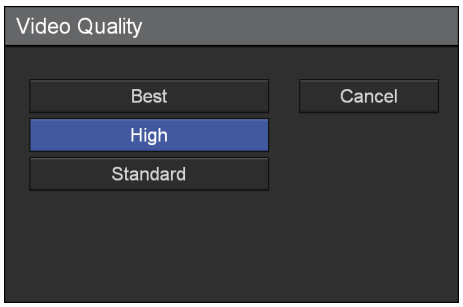


[Name]
Enter the name of the examiner (up to 20 characters) using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

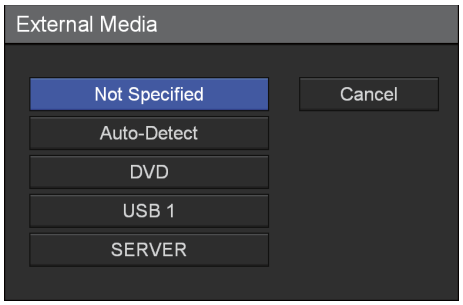
[Video Quality]

Select the video image quality in the setting screen that appears, and press the ENTER button.
The default setting is the setting configured in the [System Admin Settings] screen - [Initial User Settings] screen.



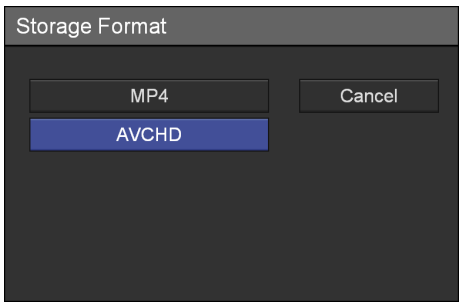
[External Media]

Select the external storage destinations in the setting screens that appear, and press the ENTER button.



[Storage Format]

Select the storage format in the setting screen that appears, and press the ENTER button.



Note

When saving recorded data in AVCHD format to servers, do not specify the same share name (i.e., share folder) on the same server as the storage destination for multiple recorders. Performing multiple saving operations at the same time may result in damage to the recorded data.

3 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Add], and press the ENTER button.

The [Edit Examiner List] screen appears again.

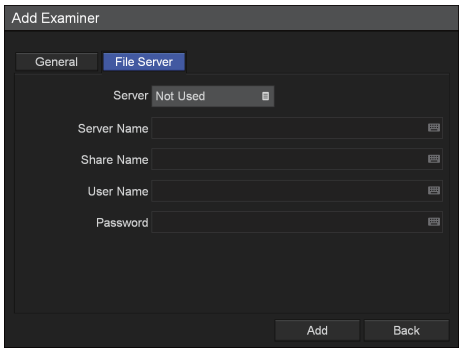
[File Server] Tab

Configure server settings.

1 Use the ← and → buttons to select the [File Server] tab.

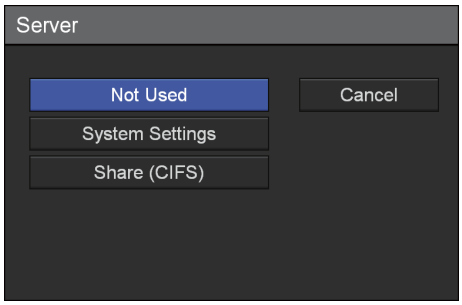
2 Configure each setting.

Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.

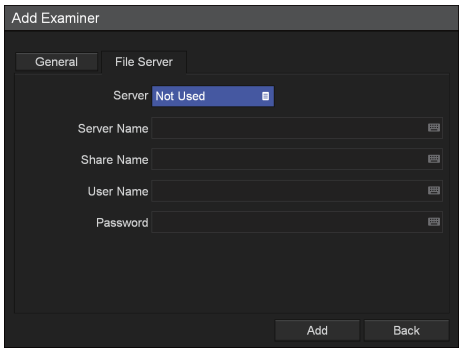


[Server]

Configure these settings when specifying a server as the storage location for recorded data.
Select the file server type in the setting screen that appears, and press the ENTER button.



If you select [Share (CIFS)], setting items for the server appear. Configure the following settings.



[Server Name]

Enter the server name using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Share Name]
Enter the share name using the on-screen keyboard. Use only alphanumeric characters and symbols (excluding " = / \ [ ] : | < > + ; , ? *).

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

Note

When saving recorded data in AVCHD format to servers, do not specify the same share name (i.e., share folder) on the same server as the storage destination for multiple recorders. Performing multiple saving operations at the same time may result in damage to the recorded data.

[User Name]
Enter a user name using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

[Password]
Enter the password using the on-screen keyboard.

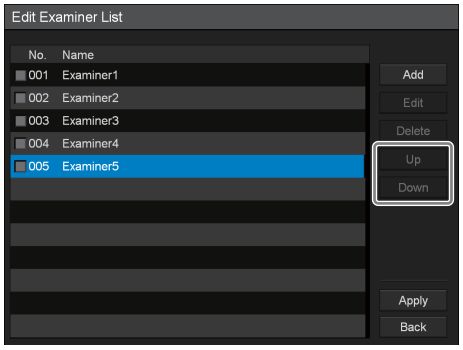
For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

3 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Add], and press the ENTER button.

The [Edit Examiner List] screen appears again.

Sorting the Examiner List

1 Use the ↑, ↓, ←, and → buttons to select an examiner entry to reposition, select [Up] or [Down], and then press the ENTER button.



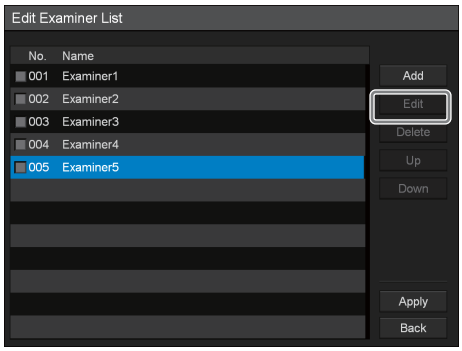
The examiner entry moves up or down one position at a time.

2 Use the ↓ button to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

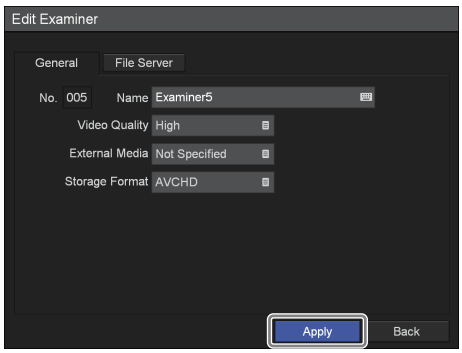
Editing Examiner Information

1 Use the ↑, ↓, ← and → buttons to select an examiner entry to edit, select [Edit], and then press the ENTER button.



The [Edit Examiner] screen appears.

2 After editing the settings, select [Apply] and press the ENTER button.



The configurations are saved.

For details on each setting, see the following.

"[General] Tab" (page 75)

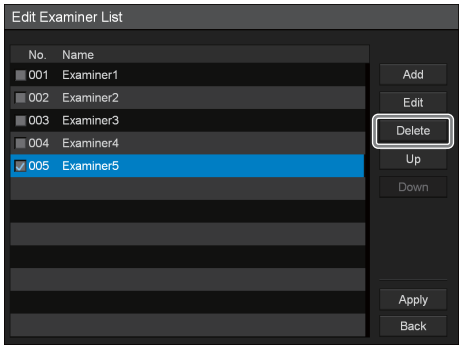
"[File Server] Tab" (page 76)

Note

If you change the examiner name, you will not be able to use the previous examiner name to search for recorded data attributed to that name.

Deleting Examiner Entries

1 Use the ↑ and ↓ buttons to select an examiner entry to delete, select [Delete], and then press the ENTER button.



A confirmation message appears.

2 Use the ← and → buttons to select [Yes], and press the ENTER button.

The examiner entry is deleted.

3 Use the ↓ button to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

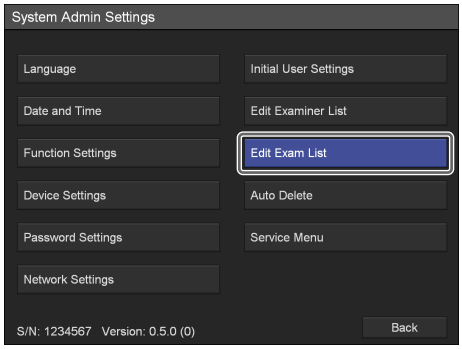
Editing the Exam List

Register and edit exam categories. The exam information registered here will be used in the exam lists that appear in other screens.

Registering Categories

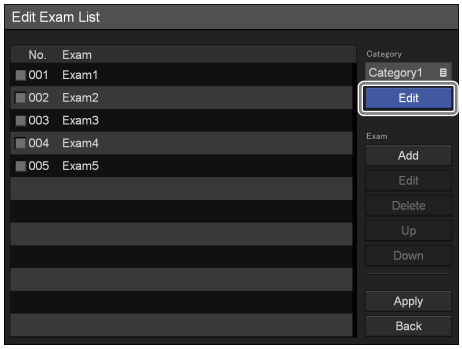
Register categories for exams.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Edit Exam List], and press the ENTER button.



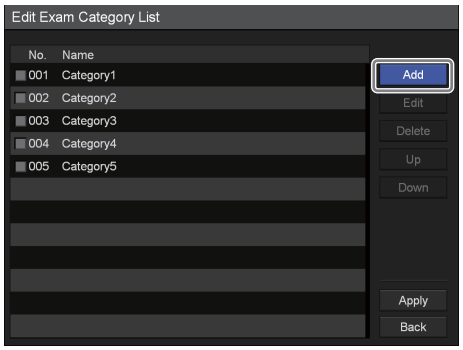
The [Edit Exam List] screen appears.

2 Use the ← and → buttons to select [Edit], and press the ENTER button.



The [Edit Exam Category List] screen appears.

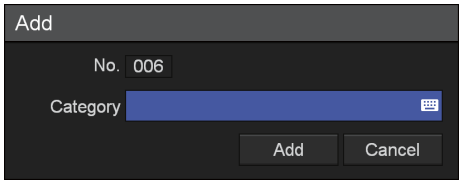
3 Use the ← and → buttons to select [Add], and press the ENTER button.



The [Add] screen appears.

4 Configure a category name.

A sequential number is assigned to [No.] automatically and cannot be changed.



[Category]
Enter up to 20 characters for the category name using the on-screen keyboard.

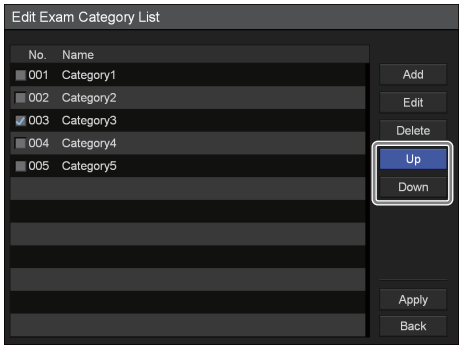
For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

5 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Add], and press the ENTER button.

The category is added.

Sorting the Category List

1 Use the ↑ and ↓ buttons to select a category to reposition, select [Up] or [Down], and then press the ENTER button.



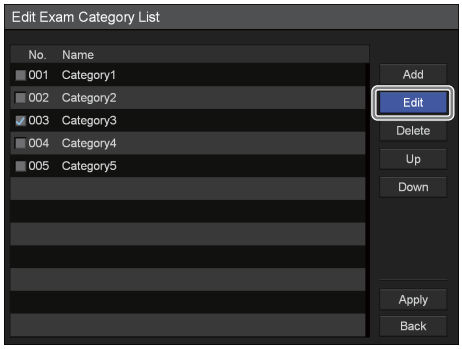
The category moves up or down one position at a time.

2 Use the ↓ button to select [Apply], and press the ENTER button.

The configurations are saved, and the [Edit Exam List] screen appears again.

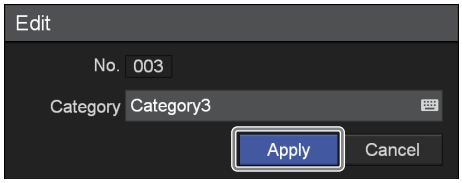
Editing Category Names

1 Use the ↑, ↓, ←, and → buttons to select a category to rename, select [Edit], and then press the ENTER button.



The [Edit] screen appears.

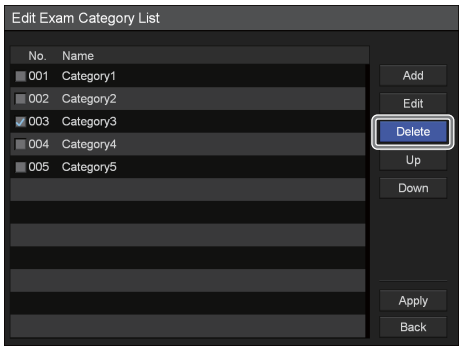
2 Rename the category, select [Apply], and then press the ENTER button.



The configuration is saved.

Deleting Categories

1 Use the ↑ and ↓ buttons to select a category to delete, select [Delete], and then press the ENTER button.



A confirmation message appears.

2 Use the ← and → buttons to select [Yes], and press the ENTER button.

The category is deleted.

3 Use the ↓ button to select [Apply], and press the ENTER button.

The configurations are saved, and the [Edit Exam List] screen appears again.

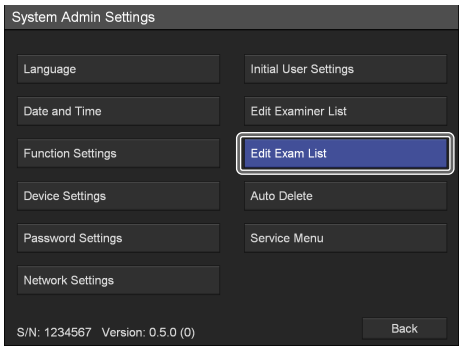
Note

If you delete a category, all exams registered to that category will also be deleted.

Registering Exams

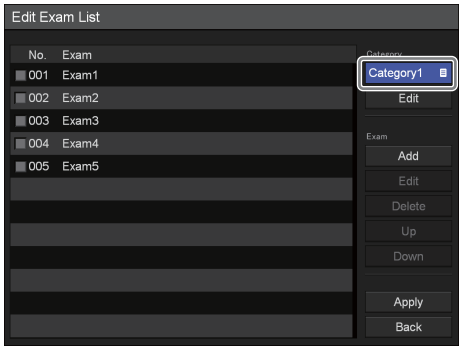
Register exams.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Edit Exam List], and press the ENTER button.



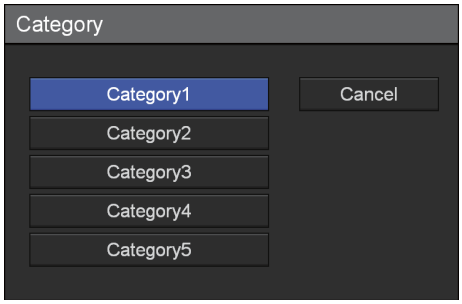
The [Edit Exam List] screen appears.

2 Use the ← and → buttons to select the [Category] box, and press the ENTER button.

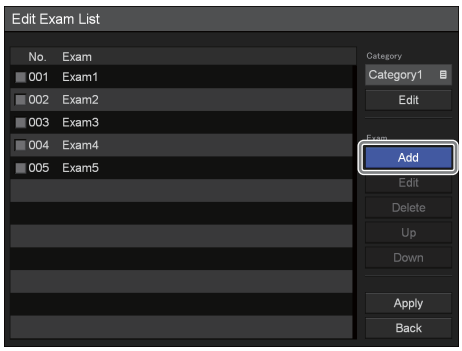


The [Category] screen appears.

3 Select the appropriate category, and press the ENTER button.



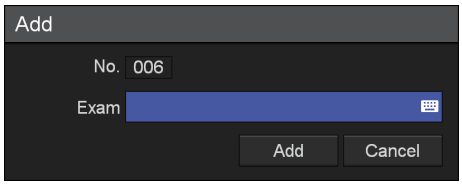
4 Use the ↑, ↓, ←, and → buttons to select [Add], and press the ENTER button.



The [Add] screen appears.

5 Configure the exam name.

A sequential number is assigned to [No.] automatically and cannot be changed.



[Exam]
Enter up to 20 characters for the exam name using the on-screen keyboard.

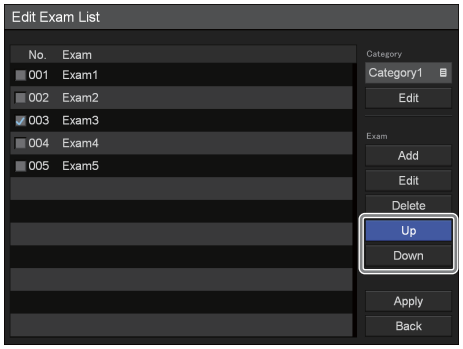
For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

6 When you finish configuration, use the ↑, ↓, ←, and → buttons to select [Add], and press the ENTER button.

The exam is added.

Sorting the Exam List

1 Use the ↑ and ↓ buttons to select an exam to reposition, select [Up] or [Down], and then press the ENTER button.



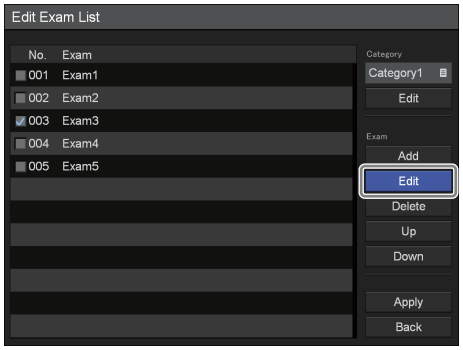
The exam moves up or down one position at a time.

2 Use the ↓ button to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

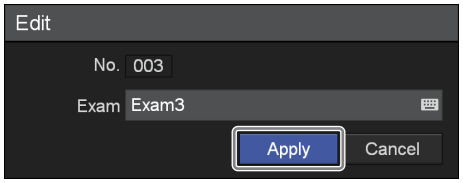
Editing Exam Names

1 Use the ↑ and ↓ buttons to select an exam to rename, select [Edit], and then press the ENTER button.



The [Edit] screen appears.

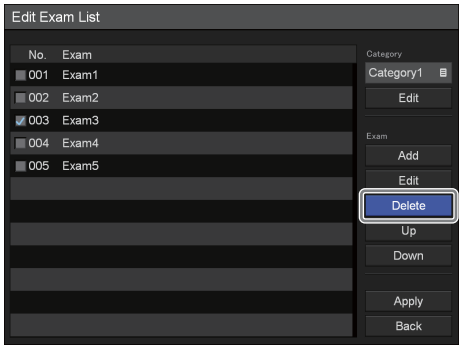
2 Rename the exam, select [Apply], and then press the ENTER button.



The configuration is saved.

Deleting Exams

1 In the [Edit Exam List] screen, use the ↑ and ↓ buttons to select an exam to delete, select [Delete], and then press the ENTER button.



The exam is deleted.

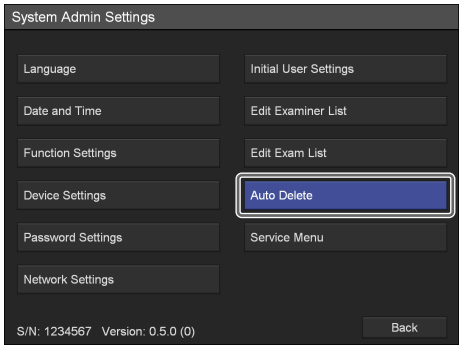
2 Use the ↓ button to select [Apply], and press the ENTER button.

The configurations are saved, and the [System Admin Settings] screen appears again.

Auto Delete Settings

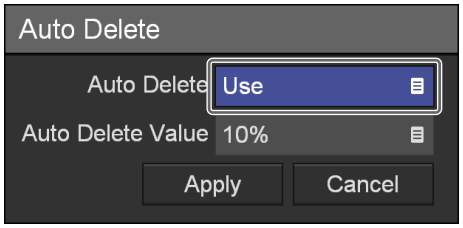
Enable or disable the auto delete function, and configure the threshold value that will be used for the function.

1 In the [System Admin Settings] screen, use the ↑, ↓, ←, and → buttons to select [Auto Delete], and press the ENTER button.



The [Auto Delete] screen appears.

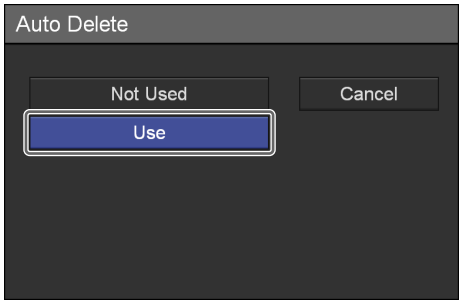
2 Use the ↑ and ↓ buttons to select [Auto Delete], and press the ENTER button.



The [Auto Delete] screen appears.

3 Use the ↑ and ↓ buttons to select whether to use the auto delete function, and press the ENTER button.

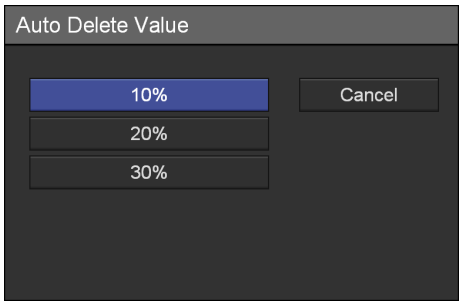
The default setting is [Use].



4 Configure the auto delete threshold value.

① Use the ↑ and ↓ buttons to select [Auto Delete Value], and press the ENTER button.
The [Auto Delete Value] screen appears.

② Use the ↑ and ↓ buttons to select the auto delete threshold value, and press the ENTER button.
The default setting is [10%].



5 Use the ↑ and ↓ buttons to select [Apply], and press the ENTER button.

The configuration is saved.

Chapter 6 Miscellaneous

Error Messages

Front panel display		Description	Solution
First line	Second line		
INITIALIZE ERR.	0000	Startup error	Restart the unit. If the error persists, contact your local Sony representative. If the power supply is inadvertently shut off while the unit is in operation or if you turn off the unit improperly, the internal HDD may be damaged and the same error may occur at the next startup. The unit may start up normally after about 15 minutes in some cases, but the internal HDD is still in a damaged state. We recommend replacing the internal HDD in such cases. Contact your local Sony representative.
SYSTEM ERR.	0001	Application communication error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0100 to 0199	System fan/temperature error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0200 to 0299	Internal HDD error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0300 to 0399	Database error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0400 to 0499	Recovery failure	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0500 to 0599	File data error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0600 to 0699	Capture board error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0700 to 0799	Optical drive error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0800 to 0899	Audio device error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	0900 to 0999	Front panel error	Restart the unit. If the error persists, contact your local Sony representative.
SYSTEM ERR.	1000 to 1999	Application error	Restart the unit. If the error persists, contact your local Sony representative.
MAX REC DATA	Patient ID	Limit for recorded data reached	The limit for the number of recorded data entries has been reached. Delete any unnecessary recorded data.

Front panel display		Description	Solution
First line	Second line		
MAX CHAPTER	Patient ID	Limit for chapters reached	The limit for the number of chapters has been reached. Stop the recording operation.
NO REC DATA		No recorded data	Recorded data for quick playback does not exist.
HDD LACK		Insufficient space on internal HDD	The remaining space on the internal hard disk is low. Delete any unnecessary recorded data.
HDD FULL		Internal HDD full	There is no remaining space on the internal hard disk. Delete any unnecessary recorded data.
KEY INHIBIT		Front panel display buttons disabled	Button operations on the front panel display are disabled.
WARN. FAN		System/CPU fan warning	A fan rotation malfunction has occurred. Contact your local Sony representative.
WARN. TEMP.		System/CPU temperature warning	An internal temperature error has occurred. Check your operating environment.
WARN. HDD		Internal HDD warning or error	An internal HDD error has occurred. Contact your local Sony representative.
ERR.BATTERY		Battery dead	The battery is dead. Contact your local Sony representative.

Troubleshooting

Be sure to check the following if a problem occurs. If the problem persists, contact your local Sony representative.

Symptom	Cause and solution
The unit does not turn on when the ⏻ (on/standby) switch is pressed.	• The power cord is not connected. →Make sure that the cord is connected to the power outlet and that the AC adapter and DC power cord are properly connected.
The buttons on the unit do not function. Recording, playback, and other operations do not function properly.	• Static electricity can have adverse effects on the functioning of the unit. →Turn off the ⏻ (on/standby) switch on front panel, disconnect the AC adapter and DC power cord, and then wait a moment before reconnecting the AC adapter and DC power cord and turning on the unit.
The disc tray does not open when the ⏏ EJECT button is pressed.	The disc tray may take a few seconds to open after you record or edit data on the disc. This is because the unit is adding certain required information onto the disc. It is not a malfunction.
The unit turns on, but images do not appear or are distorted.	• The connection cables are disconnected from the input and output connectors on the rear panel of the unit. →Make sure that the cables are connected properly *(page 17)*. • The input and output connections on the rear panel of the unit are incorrect. →Make sure that the cables are connected properly *(page 17)*. • The connection cables are damaged. →Check the cables.
There is no audio, or the audio is noisy.	• The connection cables are disconnected from the input and output connectors on the rear panel of the unit. →Make sure that the cables are connected properly *(page 17)*. • The input and output connections on the rear panel of the unit are incorrect. →Make sure that the cables are connected properly *(page 17)*. • The connection cables are damaged. →Check the cables. • The unit is in fast playback or fast reverse playback mode. →Press the ► PLAY button *(page 16)*.
The unit cannot record data.	• You are using write-protected media. →Use media on which data can be recorded. • The remaining storage capacity on the media is insufficient. →Replace the media. • You are using an unsupported DVD disc. →Use a DVD disc that is compatible with the unit *(page 27)*.
The image freezes and audio is cut for brief (about one second) moments during playback.	This unit stops playback between titles, and resumes playback after about one second. This is not a malfunction.
Data on the disc is damaged.	Contact your local Sony representative.

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libjpeg

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LibTIFF

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zlib

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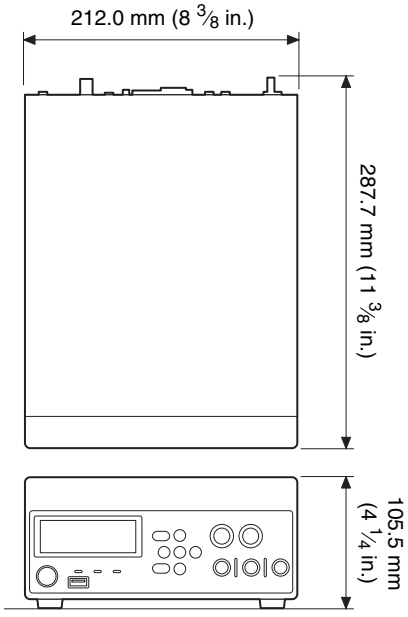
Mark Adler madler@alumni.caltech.edu

Specifications

HVO-500MD/HVO-550MD

General

Power requirement
+12 V to +24 V DC (supply from AC-80MD AC adaptor)
Input current HVO-500MD: 3.2 A to 1.6 A
HVO-550MD: 3.5 A to 1.8 A
Operating temperature
5 °C to 40 °C (41 °F to 104 °F)
Operating humidity
20% to 80% (Maximum wet-bulb temperature: 30 °C (86 °F)) (no condensation)
Operating pressure
700 hPa to 1,060 hPa
Storage and transport temperature
–20 °C to +60 °C (–4 °F to +140 °F)
Storage and transport humidity
20% to 90% (Maximum wet-bulb temperature: 30 °C (86 °F)) (no condensation)
Storage and transport pressure
700 hPa to 1,060 hPa
Mass HVO-500MD: Approx. 2.9 kg (6 lb. 6.3 oz.)
HVO-550MD: Approx. 3.2 kg (7 lb. 0.88 oz.)
Dimensions 212.0 × 287.7 × 105.5 mm (8 $^{3}/_{8}$ × 11 $^{3}/_{8}$ × 4 $^{1}/_{4}$ in.) (w × d × h, including protrusions)



Recording devices

Internal hard disk drive
500 GB
DVD drive (1) (HVO-550MD only)
Supported media: DVD-R (single layer)

Input connectors

HDMI (Type A) (1)
DVI-D (DVI 19-pin) (1)
TMDS (single link)
S VIDEO (Mini DIN 4-pin type) (1)
Y: 1.0 Vp-p (75 Ω) Sync negative
C (BURST): 0.286 Vp-p (75 Ω) (NTSC)
C (BURST): 0.3 Vp-p (75 Ω) (PAL)
VIDEO (BNC type) (1)
Composite
1.0 Vp-p (75 Ω)
Sync negative
AUDIO (Stereo mini jack) (1)
1.4 Vrms (full bit), input impedance 10 kΩ or higher, unbalanced
DC IN (DIN 3-pin)
AC adapter

Output connectors

HDMI (Type A) (1)
DVI-D (DVI 19-pin) (1)
TMDS (single link)
S VIDEO (Mini DIN 4-pin type) (1)
Y: 1.0 Vp-p (75 Ω) Sync negative
C (BURST): 0.286 Vp-p (75 Ω) (NTSC)
C (BURST): 0.3 Vp-p (75 Ω) (PAL)
VIDEO (BNC type) (1)
Composite
1.0 Vp-p (75 Ω)
Sync negative
AUDIO (Stereo mini jack) (1)
1.4 Vrms (full bit), load impedance 10 kΩ, unbalanced

Other Interfaces

USB (Type A) (3)
USB 2.0
USB (Type B) (1)
USB 2.0
Network (RJ-45) (1)
1000 Base-T/100 Base-TX
REMOTE RS-232C (D-sub 9-pin) (1)
REMOTE contact switch (stereo mini jack) (2)
REMOTE MONITOR (RJ-45) (1)
DC IN (3-pin) (1)
Equipotential connector

Accessories supplied

Before Using This Unit (1)
CD-ROM (Instructions for Use) (1)
Warranty booklet (1)

AC-80MD AC adapter (1)
AC-80MD Instructions for Use (1)
Service Contact List (1)

Optional accessories

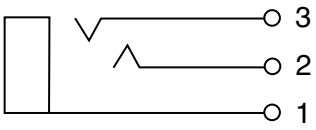
FS-24 Foot Switch

Caution

The FS-24 has an Ingress Protection rating of IPx3. Therefore, do not operate it environments exposed to splashing liquids (e.g., surgical operating rooms). For safety, use a device with a rating of IPx6 or higher when operating in such environments.

REMOTE contact switch connectors

Connector specifications (stereo mini jack)



1 GND
2 TRIGER SIGNAL (TTL)
If the status changes for at least 100 msec, the action configured in the REMOTE contact switch settings will start.
3 BUSY STATUS (TTL)
HIGH level will be initiated according to the REMOTE contact switch settings.

Design and specifications are subject to change without notice.

Medical Specifications

Protection against harmful ingress of water:
Ordinary
Degree of safety in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide:
Not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide
Mode of operation:
Continuous

Notes

- Always make a test recording, and verify that it was recorded successfully.
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