

HD Video Recorder

Surgical Version

Instructions for Use

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

HVO-500MD/550MD



Indications for Use/Intended Use

The Sony HVO-500MD/550MD HD Video Recorder is intended to record HD video and still images from endoscopic, laparoscopic, and other compatible diagnostic imaging systems and surgical imaging systems. This medical grade video recorder can save recorded images to an internal hard disk drive, a portable USB drive, an optical disk (HVO-550MD only), or a compatible network server. The recorded images can be stored in patient records, used for training or education, or sent to referring physicians. The network recorder is suitable for use in hospital operating rooms, diagnostic imaging centers, surgical centers, clinics, doctors, offices, and similar medical environments.

Notes

- Images recorded with this equipment cannot be used for diagnostic use.
- This equipment is for medical professionals.
- This equipment is intended for use in medical environments, such as clinics, laboratory rooms, and operating rooms.

WARNING

To reduce the risk of fire or electric shock, do not expose this equipment 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.

Symbols on the product



Safety sign

Follow the warnings in the instructions for use for parts of the unit on which this symbol appears.

NOTE Background color: Blue
Symbol: White



Consult the instructions for use

Follow the directions in the instructions for use for parts of the unit on which this symbol appears.



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



This symbol indicates the Importer, and appears next to the Importer's name and registered office address.



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



This symbol indicates the UK Responsible Person, and appears next to the UK Responsible Person's name and address.



This symbol indicates the Swiss authorized representative, and appears next to the Swiss authorized representative's name and address.



This symbol indicates the medical device in the European Community.



This symbol indicates the date of manufacture.



This symbol indicates the serial number.



This symbol indicates the Unique Device Identifier (UDI), and appears next to the bar code representation of the Unique Device Identification.



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



Storage and transport temperature

This symbol indicates the acceptable temperature range for storage and transport environments.

**Storage and transport humidity**

This symbol indicates the acceptable humidity range for storage and transport environments.

**Storage and transport pressure**

This symbol indicates the acceptable atmospheric pressure range for storage and transport environments.

For 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 : 16535 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 customers in the U.S.A.**Caution**

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

Rx
ONLY

For customers in Canada

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

Important safeguards and notices for use in the medical environments

1. All devices connected to the unit must be certified or compliant according to IEC 60601-1, IEC 60950-1, and IEC 60065 standards and other IEC/ISO standards applicable to the devices.
2. Furthermore, the system as a whole must comply with IEC 60601-1 standards. All peripheral devices connected to the signal input/output sections of the unit constitute the medical-use system, and therefore, the user is responsible for ensuring that the system as a whole complies with IEC 60601-1 standards. If in doubt, consult qualified Sony service personnel.
3. Connecting the unit to other devices may increase the leakage current.
4. For all peripheral devices connected to the unit that operate on commercial power supplies and do not comply with IEC 60601-1 standards, incorporate an isolation transformer that complies with IEC 60601-1 standards and connect to the commercial power supply via the transformer.

5. The unit generates, uses, and may radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, it may cause interference on other devices. If the unit causes interference (which can be determined by disconnecting the power cord from the unit), try the following.

- Relocate the unit with respect to the affected devices.
 - Connect the unit and the affected devices to different branch circuits.
- For more information, consult qualified Sony service personnel.
(Applicable standard: IEC 60601-1-2)

Important EMC notices for use in 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 the instructions for use.
- The HVO-500MD/550MD is intended for use in a professional healthcare facility environment.
- Portable and mobile RF communications equipment, such as cellular phones, can affect the HVO-500MD/550MD.

Warning

- Portable RF communications equipment should be used no closer than 30 cm (12 inches) to any part of the HVO-500MD/550MD. Otherwise, degradation of the performance of this equipment could result.
- If the HVO-500MD/550MD will be used adjacent to or stacked with other equipment, normal operation of the HVO-500MD/550MD under such configurations should be verified via observation.
- 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.

Guidance and manufacturer's declaration – electromagnetic emissions		
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.		
Emission test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	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.
RF emissions CISPR 11	Class B	
Harmonic emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Not applicable	

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 an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air	±8 kV contact ±15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, a relative humidity of at least 30% is recommended.
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	
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Not applicable	
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0% U_T (100% dip in U_T) for 0.5/1 cycles ^a 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25/30 cycles ^a (for 0.5 sec) 0% U_T (100% dip in U_T) for 250/300 cycles ^a (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	30 A/m	30 A/m	Power frequency magnetic fields should be at levels 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.			
^a For example, 10/12 means 10 cycles at 50 Hz or 12 cycles at 60 Hz.			

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 an 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 outside ISM bands ^c	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 $d = 1.2 \sqrt{P}$
	6 Vrms 150 kHz to 80 MHz in ISM bands ^c	6 Vrms	
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.7 GHz	3 V/m	IEC 60601-1-2: 2007 $d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz IEC 60601-1-2: 2014 $d = 2.0 \sqrt{P}$ 80 MHz to 2.7 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.
- c The ISM (industrial, scientific and medical) bands between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHz to 27.283 MHz; and 40.66 MHz to 40.70 MHz.

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				
	IEC 60601-1-2 : 2007			IEC 60601-1-2 : 2014	
	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 $d = 2.3 \sqrt{P}$	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 2.7 GHz $d = 2.0 \sqrt{P}$
0.01	0.12	0.12	0.23	0.12	0.20
0.1	0.38	0.38	0.73	0.38	0.63
1	1.2	1.2	2.3	1.2	2.0
10	3.8	3.8	7.3	3.8	6.3
100	12	12	23	12	20

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.

Guidance and manufacturer's declaration – electromagnetic immunity

The HVO-500MD/550MD is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. Portable RF communications equipment should be used no closer than 30 cm (12 inches) to any part of the HVO-500MD/550MD. Otherwise, degradation of the performance of this equipment could result.

Immunity test	Band ^a	Service ^a	Modulation	IEC 60601 test level	Compliance level
Proximity fields from RF wireless communications equipment IEC 61000-4-3	380 – 390 MHz	TETRA 400	Pulse modulation 18 Hz	27 V/m	27 V/m
	430 – 470 MHz	GMRS 460 FRS 460	FM ±5 kHz deviation 1 kHz sine	28 V/m	28 V/m
	704 – 787 MHz	LTE Band 13, 17	Pulse modulation 217 Hz	9 V/m	9 V/m
	800 – 960 MHz	GSM 800/900 TETRA 800 iDEN 820 CDMA 850 LTE Band 5	Pulse modulation 18 Hz	28 V/m	28 V/m
	1,700 – 1,990 MHz	GSM 1800 CDMA 1900 GSM 1900 DECT LTE Band 1, 3, 4, 25 UMTS	Pulse modulation 217 Hz	28 V/m	28 V/m
	2,400 – 2,570 MHz	Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE Band 7	Pulse modulation 217 Hz	28 V/m	28 V/m
	5,100 – 5,800 MHz	WLAN 802.11 a/n	Pulse modulation 217 Hz	9 V/m	9 V/m

NOTE: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

^a For some services, only the uplink frequencies are included.

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 regarding environmental pollution.

HVO-550MD only



This model (HVO-550MD) is classified as a CLASS 1 LASER PRODUCT. (IEC 60825-1: 2007 and IEC 60825-1: 2014)

Caution

HVO-550MD only

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

Caution

HVO-550MD only

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

WARNING

The apparatus shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.

Caution

When installing, ensure the following space around the periphery of the unit, taking ventilation and servicing into consideration.

- Rear side: 10 cm (4 in.) or more
- Left/Right sides: 10 cm (4 in.) or more
- Top side: 10 cm (4 in.) or more



Caution

Do not use the device in a MR (Magnetic Resonance) environment.

It may cause a malfunction, fire, and unwanted movement.



Caution

Connect the DC connector to the equipment, and then connect the AC power cord of the AC adaptor. When disconnecting the DC connector, disconnect the AC power cord of the AC adaptor before disconnecting the DC connector.

Do not touch the patient and the pin of the DC connector at the same time.

The pin of the DC connector applies a voltage of 24 V, which may harm the patient.

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 State of California, USA only

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

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/pro/lang/en/ca/article/resources-warranty> 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 <https://pro.sony/support-services/primessupport/support-professional-solutions-europe-standard-product-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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|---|

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.

Deletion of data when disposing of the unit

Before disposing of the unit, you first must delete patient data and other confidential information that is stored therein.

Failure to delete stored data before disposing of the unit could expose confidential information to third parties. If you have any questions in this regard, contact your Sony dealer.

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.

Depending on the operating environment, unauthorized third parties on the network may be able to access the unit. When connecting the unit to the network, be sure to confirm that the network is protected securely.

On 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.

Use with electrosurgical knives and similar devices

If this unit is used together with an electrosurgical knife, etc., the picture may be disturbed, warped or otherwise abnormal as a result of strong radio waves or voltages from the device. This is not a malfunction.

When you use this unit simultaneously with a device from which strong radio waves or voltages are emitted, confirm the effect of this before using such devices, and install this unit in a way that minimizes the effect of radio wave interference.

Usage Notes

Do not block the vents

When installing, ensure the following space around the periphery of the unit, taking ventilation and servicing into consideration.

- Rear side: 10 cm (4 in.) or more
- Left/Right sides: 10 cm (4 in.) or more
- Top side: 10 cm (4 in.) or more

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

Press the  (on/standby) switch to enter standby mode. 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.

Features

The Sony HVO-500MD/550MD has video input and output terminals, built-in HDD. It is possible to record input video signal in built-in HDD and playback the recording data to outputs terminal.

This system has DVD drive (*HVO-550MD only) and user can move the recording data to DVD-R disc.

Improved efficiency during and after medical procedures

Video and still image recording

Record videos and still images from endoscopic devices and cameras used in the operating room. HD/SD-compatibility allows recording and playback in high definition.

Simultaneous saving to external storage media

Data saving to up to external storage media is completed at roughly the same timing as the end of the surgical procedure or examination.

Printer connectivity

Connect the unit to a printer, and print images for medical reports via simple controls from the [Recording List] screen or a foot switch, for example. You can also configure settings to print images when they are captured.

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 IEC 60601-1 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 operating room directly to computers within the hospital network.



WARNING

Using this unit for medical purposes

The connectors on this unit are not isolated.

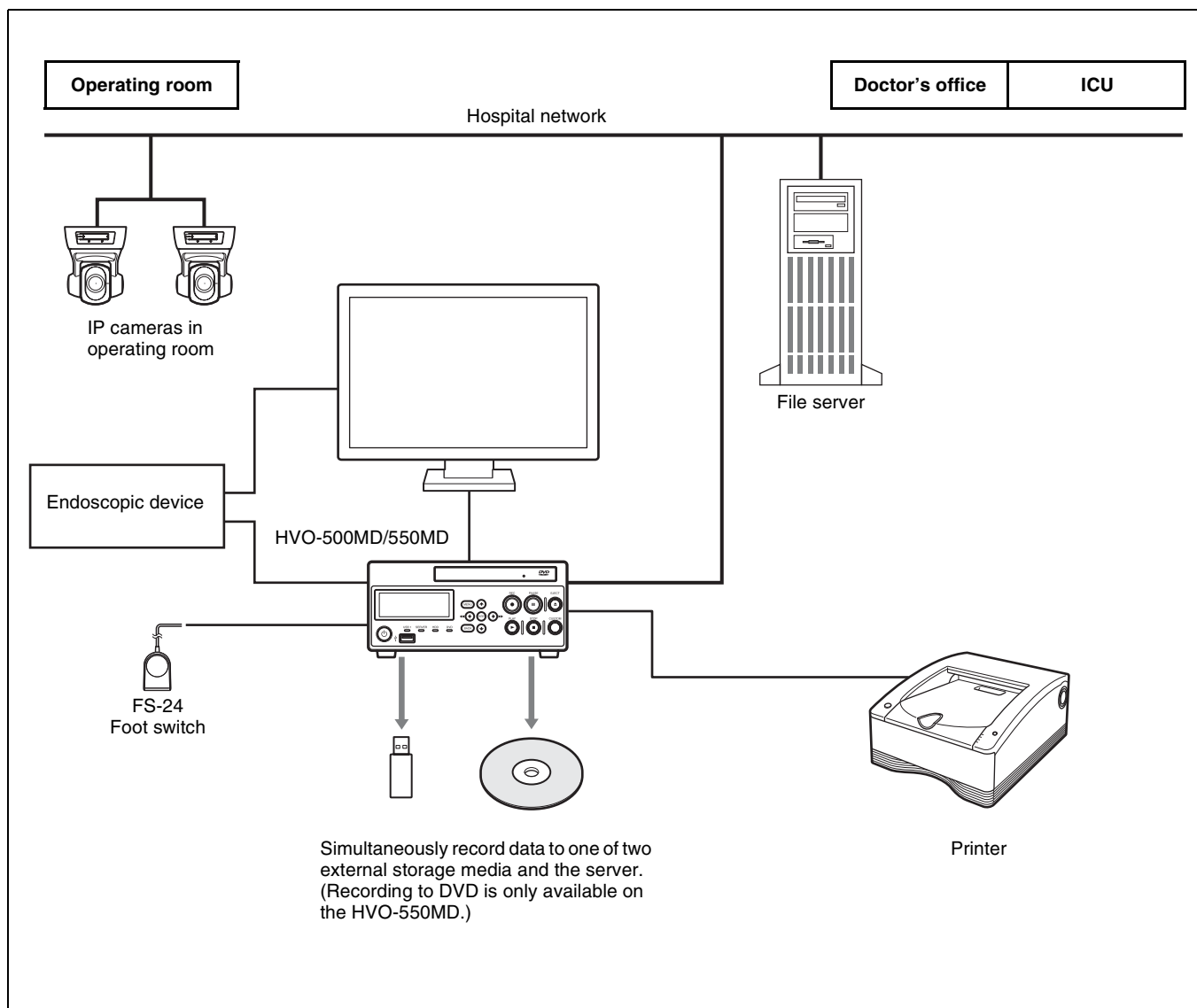
Do not connect any device other than one which conforms to IEC 60601-1 standards.

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 IEC 60601-1 standards.

System Configuration Example



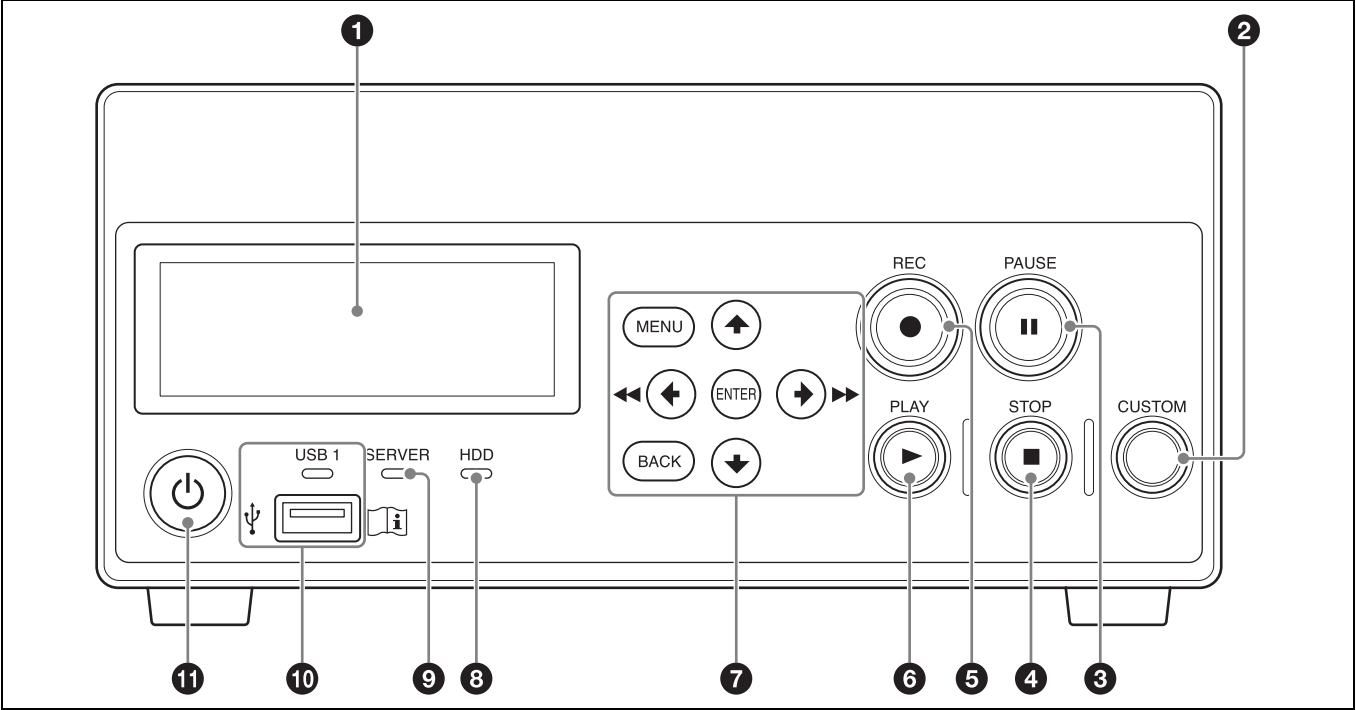
Caution

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.

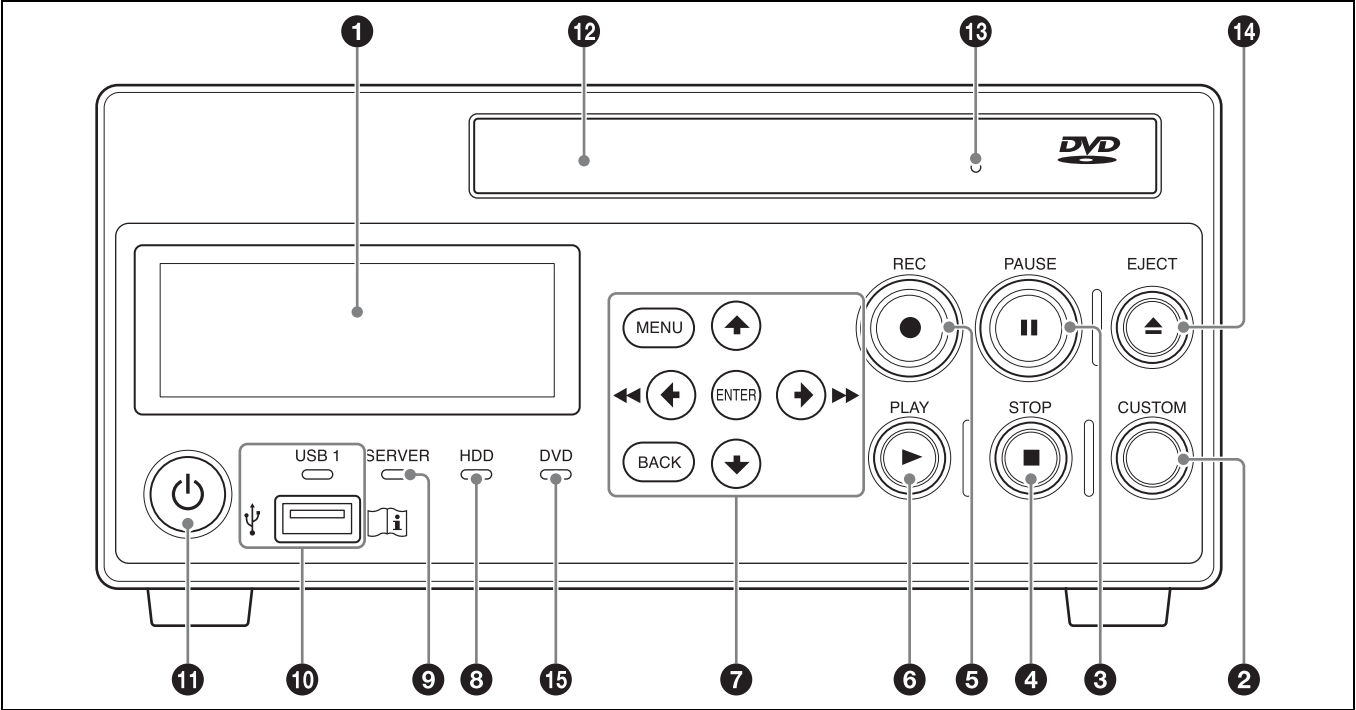
Names and Functions of Parts

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.

1 Front panel display

Displays the current status and messages.

2 CUSTOM button

Execute the function assigned to this button.

For details on assigning functions, see "[CUSTOM Button Control]" under "[General 2] Tab" (page 73).

3 II 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.

4 ■ STOP button

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

5 ● 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 43).

6 ► 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.

7 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.

→ / ▶▶ 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.

8 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.

9 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.

10 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.
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.

Tip

Use USB media formatted in FAT32 or NTFS.

**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 IEC 60601-1 standards.

11 (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.

12 Disc tray (HVO-550MD only)

Insert discs here.

13 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.

14 EJECT button (HVO-550MD only)

Use this to open the disc tray.

15 DVD indicator (HVO-550MD only)

Displays the status of the DVD drive.

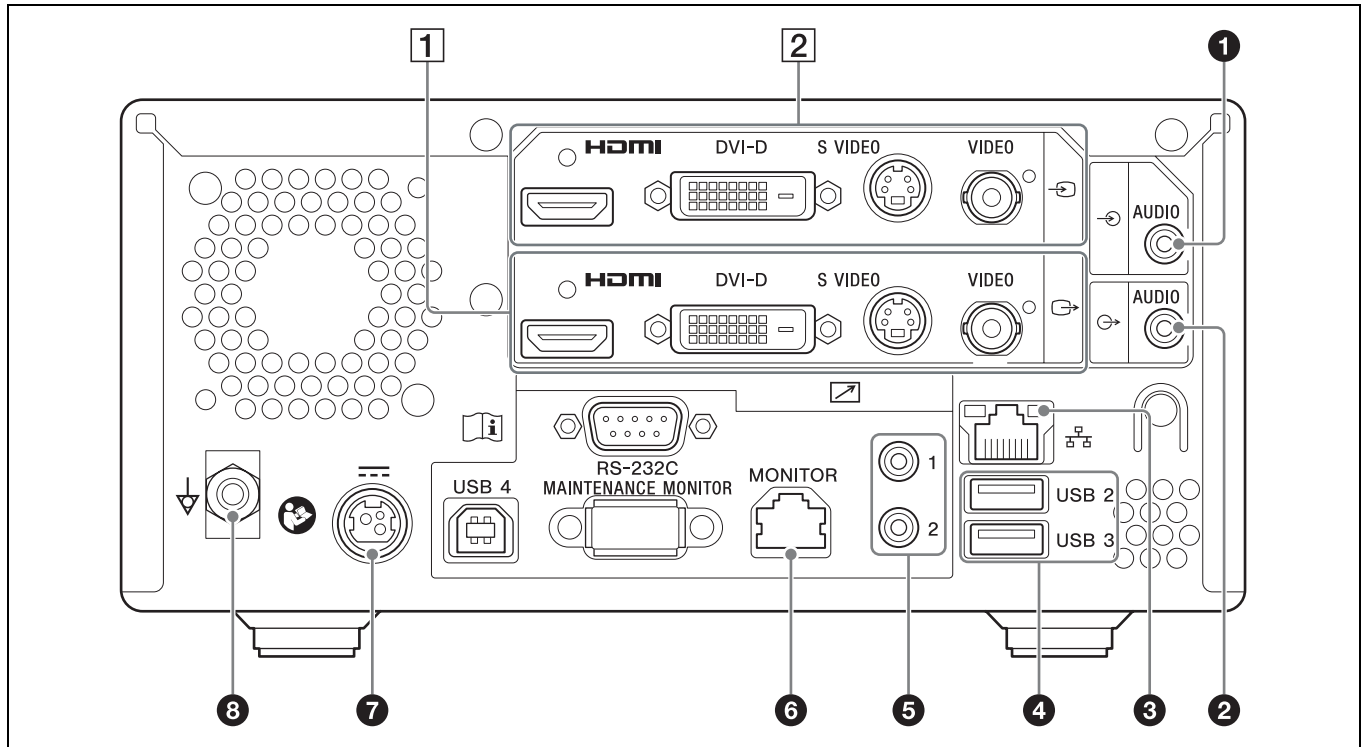
Indicator	Status
Blinking green	Data is being written to the DVD disc.
Lit green	The recording area of the DVD disc is full. Insert a different disc.
Lit orange	An error has occurred.

Note

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

Rear

HVO-500MD/550MD



WARNING

Using this unit for medical purposes

The connectors on this unit are not isolated. Do not connect any device other than one which conforms to IEC 60601-1 standards.

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 IEC 60601-1 standards.



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.

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

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

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

Caution

For safety, do not connect the connector to peripheral device wiring that might have excessive voltage. Follow the instructions for use for this port.

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

Tip

Supported USB devices

- 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 IEC 60601-1 standards.

5 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 83).

6 REMOTE MONITOR connector (RJ-45)

Use this to perform monitor controls.

For details on monitor controls, see “[Contact Switch] Tab” (page 83).

7 DC IN connector

Connect the DC power cable of the supplied AC adapter here.



Caution

Connect the DC connector to the equipment, and then connect the AC power cord of the AC adaptor.

When disconnecting the DC connector, disconnect the AC power cord of the AC adaptor before disconnecting the DC connector.

Do not touch the patient and the pin of the DC connector at the same time.

The pin of the DC connector applies a voltage of 24 V, which may harm the patient.

HVO-500MD only



Warning on power supply devices

For the DC power supply, be sure to use the AC adapter that is supplied or one that is recommended, or a device that complies with the IEC 60601-1 standard and is protected by double insulation or reinforced insulation.

Be sure to use a DC power supply cable that is within 3 m (9 ft. 10 in.) in length.

Be sure to use a power supply device capable of supplying a voltage of 12 V to 24 V and a current of 3.2 A (at 12 V) to 1.6 A (at 24 V) or more.

However, the device should not be capable of supplying 240 VA for 60 seconds or more (20 A or less at 12 V, 10 A or less at 24 V).

Use of power supply devices other than the above may result in fire or electric shock.

Class I devices should only be connected to a power outlet that is properly earthed to avoid the risk of electric shock.

For information on how to shut off the main power supply, refer to the instructions for use supplied with the power supply device.

If the information is not available for whatever reason, obey the following.

- To shut off the main power, disconnect the power plug from the outlet.
- When installing the unit, incorporate a readily accessible shutoff device in the fixed wiring, or connect the power plug to a power outlet near the unit that can be easily accessed during use.
- Do not install the ME unit in a position that will make unplugging the power plug difficult.
- If a malfunction occurs, cut power via the shutoff device, or disconnect the power plug from the outlet.

HVO-550MD only



Warning on power supply devices

For the DC power supply, be sure to use the AC adapter that is supplied or one that is recommended, or a device that complies with the IEC 60601-1 standard and is protected by double insulation or reinforced insulation.

Be sure to use a DC power supply cable that is within 3 m (9 ft. 10 in.) in length.

Be sure to use a power supply device capable of supplying a voltage of 12 V to 24 V and a current of 3.5 A (at 12 V) to 1.8 A (at 24 V) or more.

However, the device should not be capable of supplying 240 VA for 60 seconds or more (20 A or less at 12 V, 10 A or less at 24 V).

Use of power supply devices other than the above may result in fire or electric shock.

Class I devices should only be connected to a power outlet that is properly earthed to avoid the risk of electric shock.

For information on how to shut off the main power supply, refer to the instructions for use supplied with the power supply device.

If the information is not available for whatever reason, obey the following.

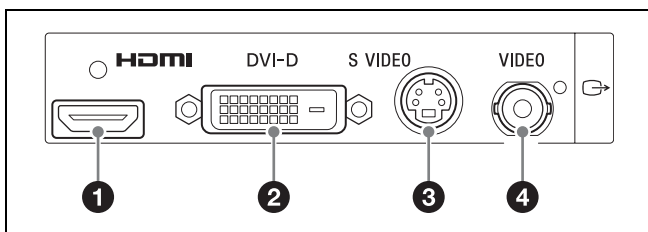
- To shut off the main power, disconnect the power plug from the outlet.
- When installing the unit, incorporate a readily accessible shutoff device in the fixed wiring, or connect the power plug to a power outlet near the unit that can be easily accessed during use.
- Do not install the ME unit in a position that will make unplugging the power plug difficult.
- If a malfunction occurs, cut power via the shutoff device, or disconnect the power plug from the outlet.

The length of the DC power supply cable should be less than 3 m (9 ft. 10 in.).

Operation in compliance with the EMC standard is not guaranteed when using cables longer than 3 m (9 ft. 10 in.).

- ⑧ ⚡ **Equipotential grounding terminal**
Use this for equipotential grounding connections.

1 Video output block



- ① ➡ **HDMI output connector (Type A)**
Outputs HDMI signals.

Note

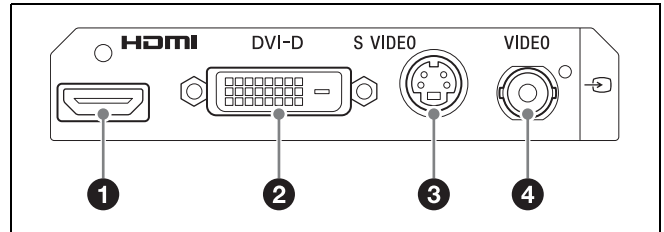
We recommend using a Sony HDMI cable (not supplied).

- ② ➡ **DVI-D output connector (19-pin DVI)**
Outputs DVI-D signals.

- ③ ➡ **S VIDEO output connector (4-pin mini DIN)**
Outputs analog S-Video signals.

- ④ ➡ **VIDEO output connector (BNC type)**
Outputs analog composite video signals.

2 Video input block



- ① ➡ **HDMI input connector (Type A)**
Inputs HDMI signals.

Note

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

- ② ➡ **DVI-D input connector (19-pin DVI)**
Inputs DVI-D signals.

- ③ ➡ **S VIDEO input connector (4-pin mini DIN)**
Inputs analog S-Video signals.

- ④ ➡ **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.

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

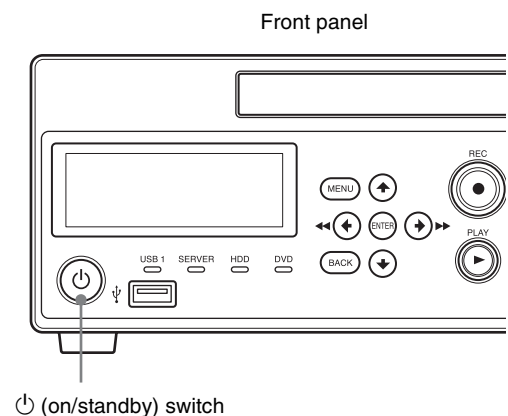
The default setting when you start the unit for the first time is DVI-D. If you do not have a monitor that supports DVI-D input, hold the ENTER button for at least 5 seconds to switch the input signal setting while confirming selections in the front panel display.

- 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.



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 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 67).

Configuring Recording Settings (User Settings)

Select image inputs and configure image quality settings in the [User Settings] screen.

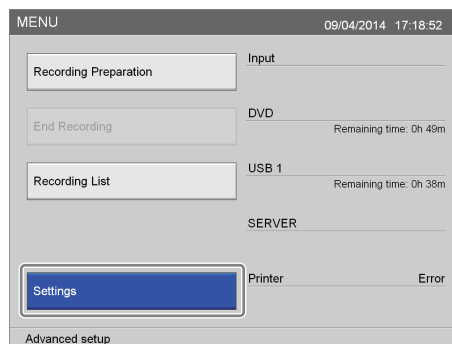
You can navigate menus using the navigation buttons on the front panel of the unit.

Tip

After the unit is turned off, any settings configured in the [User Settings] screen will revert to the settings configured under [System Admin Settings].

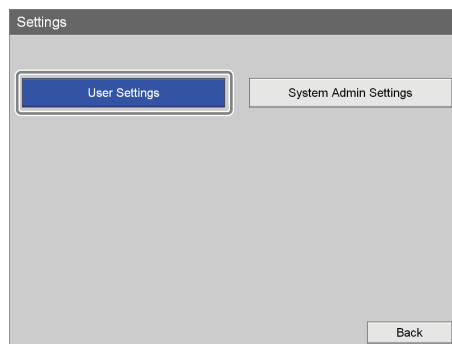
Displaying the [User Settings] Screen

- 1 Press the MENU button.
The [MENU] screen appears.
- 2 Use the **▲** and **▼** buttons to select [Settings], and press the ENTER button.



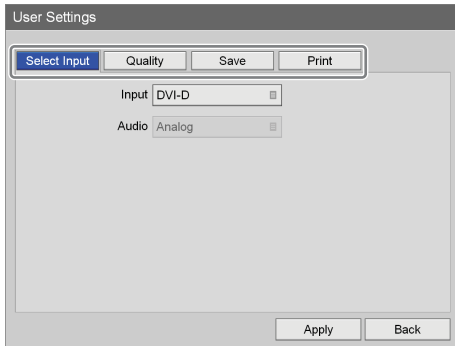
The [Settings] screen appears.

- 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.



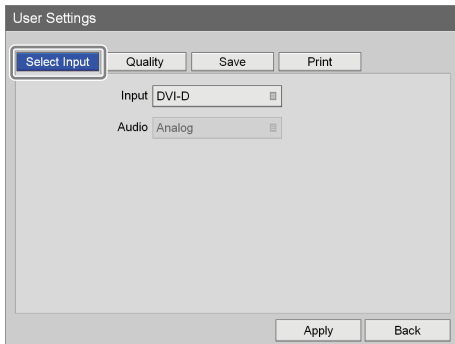
- 5 Configure the settings in each tab as necessary.
- 6 When you finish configuration, use the ▲, ▼, ◀, and ▶ buttons to select [Apply], and press the ENTER button.

The [Settings] screen appears again.

Configuring Input Signal Settings

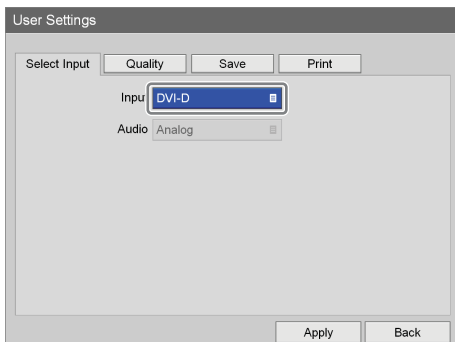
Select the video and audio input signals.

- 1 Use the ◀ and ▶ buttons to select the [Select Input] tab.



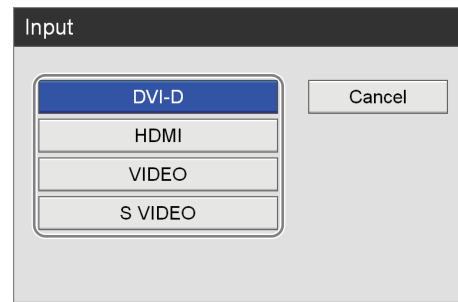
- 2 Configure each setting.

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.

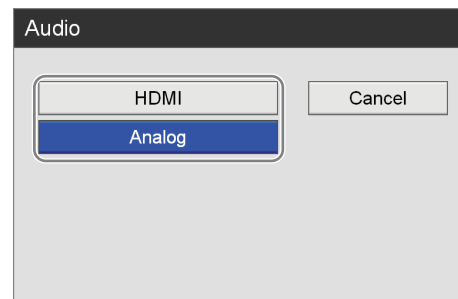


For details on the resolutions that are supported for each input signal type, contact your local Sony representative.

[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].



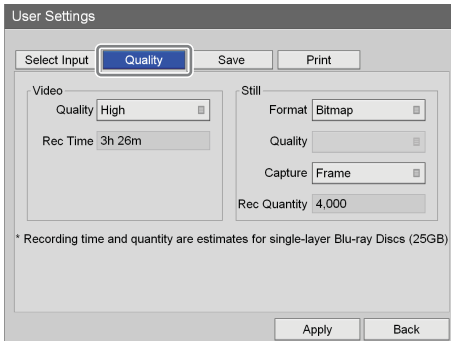
- 3 To configure image quality settings, proceed to “Configuring Image Quality Settings” (page 28).

If you are finished configuring, use the ▲, ▼, ◀, and ▶ buttons to select [Apply], and press the ENTER button.

Configuring Image Quality Settings

Configure image quality settings for videos.

- 1 Use the ◀ and ▶ buttons to select the [Quality] tab.



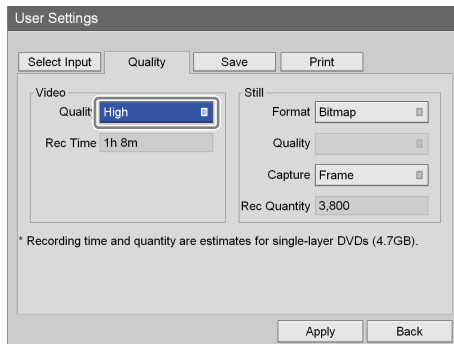
Tip

[Rec Time] and [Rec Quantity] display the following information.

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

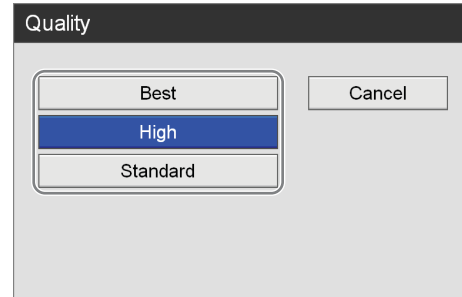
- 2 Configure the video settings.

- 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.



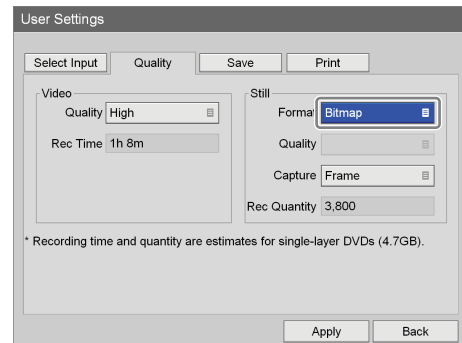
The [Quality] screen closes, and the [Quality] tab appears again.

Tip

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

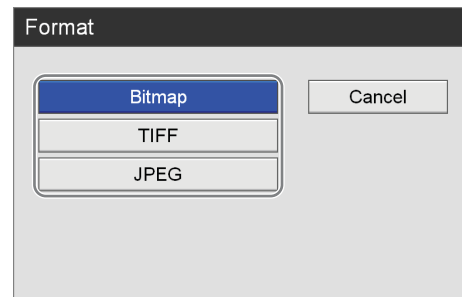
- 3 Configure the still image settings.

- ① Use the ▶ button to select the [Format] box, and press the ENTER button.



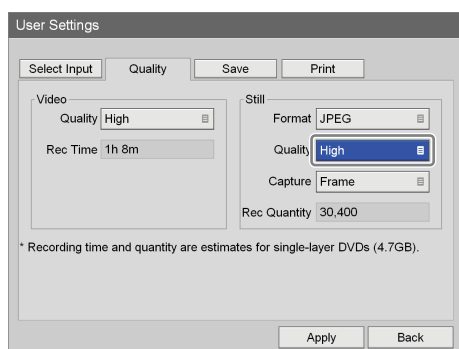
The [Format] screen appears.

- ② Use the ▲ and ▼ buttons to select a format for the still image files, and press the ENTER button.



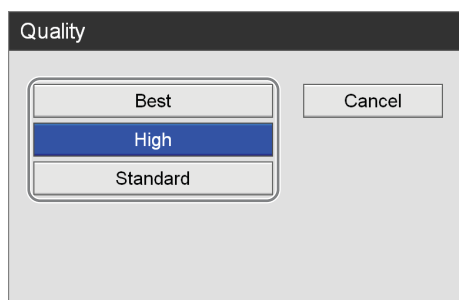
The [Format] screen closes, and the [Quality] tab appears again.

- ③ If you selected [JPEG] in step ②, use the **↓** button to select the [Quality] box, and press the ENTER button.



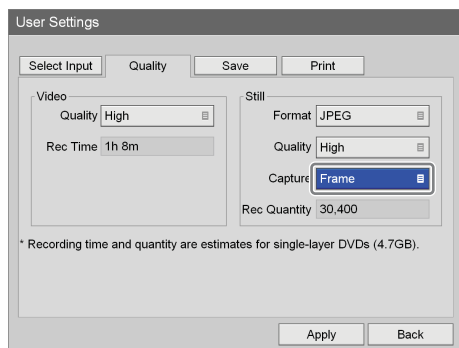
The [Quality] screen appears.

- ④ Use the **↑** and **↓** buttons to select the image quality, and press the ENTER button.



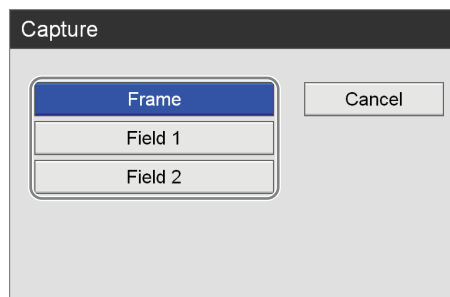
The [Quality] screen closes, and the [Quality] tab appears again.

- ⑤ Use the **↓** button to select the [Capture] box, and press the ENTER button.



The [Capture] screen appears.

- ⑥ Use the **↑** and **↓** buttons to select the frame or field capture mode, and press the ENTER button.



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

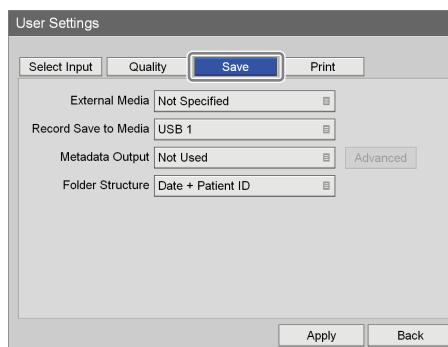
- 4** To configure save settings, proceed to “*Configuring Save Settings*” (page 29).

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.

The 'User Settings' screen has a title bar and four buttons: 'Select Input', 'Quality', 'Save', and 'Print'. Below these are four rows of settings, each with a dropdown menu and a small square icon to its right:

- External Media: Not Specified
- Record Save to Media: USB 1
- Metadata Output: Not Used
- Folder Structure: Date + Patient ID

To the right of the 'Metadata Output' dropdown is an 'Advanced' button. At the bottom of the screen are 'Apply' and 'Back' buttons.

[External Media]

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

The 'External Media' screen has a title bar and a 'Cancel' button. It displays five buttons for selection:

- Not Specified
- Auto-Detect
- DVD (highlighted in blue)
- USB 1
- SERVER

[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.

The 'Record Save to Media' screen has a title bar and a 'Cancel' button. It displays three buttons for selection:

- DVD
- USB 1 (highlighted in blue)
- SERVER

[Metadata Output]

Select whether to include metadata when copying recorded data to external media in the setting screen that appears, and press the ENTER button. The default setting is [Not Used].

Tip

Metadata is saved to the uppermost directory of the recorded data folder.

[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].

The 'Folder Structure' screen has a title bar and a 'Cancel' button. It displays two buttons for selection:

- Date + Patient ID (highlighted in blue)
- Patient ID

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.

- 3 If you set [Metadata Output] to [Use], use the ◀ and ▶ buttons to select [Advanced], and press the ENTER button.

The [Advanced] settings screen appears.

- 4 Specify the type of metadata to output.

The 'Advanced' screen has a title bar and 'Apply' and 'Back' buttons at the bottom. It contains several settings, each with a dropdown menu and a small square icon to its right:

- Recording Date: Output
- Patient Info.: Output
- Doctor: Output
- Case: Output
- Facility Name: Output
- Metadata Format: TXT
- Encryption: Not Used
- Key: (empty text field)

[Recording Date]

Select whether to output the recording date and time as metadata.

[Patient Info.]

Select whether to output patient information (patient ID, patient name, gender, date of birth) as metadata.

[Doctor]

Select whether to output the name of the doctor as metadata.

[Case]

Select whether to output the procedure information as metadata.

[Facility Name]

Select whether to output the name of the facility as metadata.

[Metadata Format]

Select [XML] or [TXT]. The default setting is [TXT].

[Encryption]

Displays whether metadata outputs are encrypted (based on the setting in the [System Admin Settings]).

[Key]

Displays the key as asterisks (*) if [Encryption] is set to [Use] in the [System Admin Settings].

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

The [User Settings] screen appears again.

Configuring Print Settings

Configure print settings for still images.

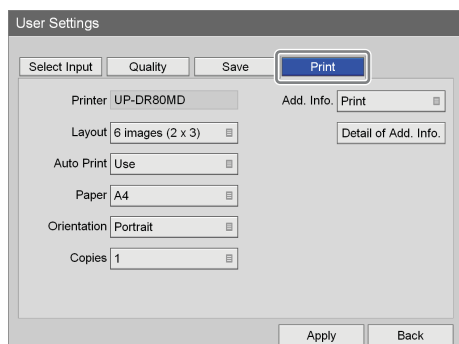
The HVO-500MD/550MD supports connection and use of the Sony UP-DR80MD printer.

Tip

You can select the printer for use from the [System Admin Settings] screen – [Device Settings] screen – [Device] tab.

For details on this setting, see “[Device] Tab” (page 80).

- 1 Use the **←** and **→** buttons to select the [Print] tab.



The name of the printer selected for use appears in the [Printer] box.

- 2 Configure each setting.

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

[Layout]

Select the number of still images to print on each sheet. You can select from 1 image (1 × 1), 2 images (1 × 2), 4 images (2 × 2), 6 images (2 × 3), 8 images (2 × 4), 9 images (3 × 3), 12 images (3 × 4), 15 images (3 × 5), or 18 images (3 × 6).

The default setting is [6 images (2 × 3)].

[Auto Print]

When you capture a still image while this is set to [Use] and you are using USB printer, the still image is automatically printed.

[Paper]

Specify the printer's paper size.

[Orientation]

Specify the orientation for printing.

The default setting is [Portrait].

[Copies]

Specify the number of copies to print.

The default setting is [1].

[Add. Info.]

Select whether to print the following additional information (recording date, patient information, etc.). You can also individually select whether to print each additional information item in the [Detail of Add. Info.] screen.

The default setting is [Not Printed] for all settings except [Rec Timestamp].

Tip

To print watermarks or logos, you must import the watermarks files and logo files onto the unit beforehand.

The items that can be configured in the [Detail of Add. Info.] screen are as follows.

[Logo]

Select whether to print logos.

[Recording Date]

Select whether to print the date on which the image was recorded.

[Patient Info.]

Select whether to print patient information.

[Doctor]

Select whether to print the name of the doctor.

[Case]

Select whether to print the name of the procedure.

[Facility Name]

Select whether to print the name of the facility.

[Rec Timestamp]

Select whether to print the time at which the image was recorded.

[Watermark]

Select whether to print watermarks.

Tips

- To print watermarks, you must import a watermark file that is created in the proper format beforehand. You can import the watermark file from the [System Admin Settings] screen - [Device Settings] screen - [Device] tab.
- To print logos, you must import a logo file that is created in the proper format beforehand. You can import the logo file from the [System Admin Settings] screen - [Device Settings] screen - [Device] tab.

For details on importing, see “[Import Watermark]” (page 82) and “[Import Logo]” (page 82).

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

The [User Settings] screen appears again.

Preparing to Use USB Media

To save recorded data to a USB-compatible external hard drive or USB memory device, prepare USB media that is supported by this unit.

Supported USB media

USB-compatible external HDD

Capacity: 2 TB or less

File system: FAT32, NTFS

USB memory device

Capacity: 32 GB or less

File system: FAT32, NTFS

When you connect USB media that is supported by this unit to a USB port, the remaining space is displayed on the [MENU] screen.

USB media that can be formatted with this unit

Even USB media that is not supported by this unit can be used by formatting it with the unit in the following cases.

USB-compatible external HDD

Capacity is 2 TB or less and is recognized as a device.

USB memory device

Capacity is 32 GB or less and is recognized as a device.

Tip

In the case of a USB memory device, the partition must be created in MBR format.

To format USB media

An external HDD is formatted in NTFS format and a USB memory device is formatted in FAT32 format.

Notes

- This function does not guarantee that all USB media can be used.
- When formatting is executed, all data stored on the USB media is deleted.
- USB media that is supported by this unit cannot be formatted.

- 1** Connect the USB media to USB 1 port in the standby state (state in which the [MENU] screen is not displayed).

The messages “TO FORMAT USB1 MEDIA,” and “PRESS UP BUTTON FOR 5 SEC” that prompt you to execute formatting are displayed alternately on the front panel display.

Tip

If the [MENU] screen is displayed, the message to prompt you to execute formatting will not be displayed on the front panel display when you connect USB media.

- 2** Press and hold the **▲** button for at least 5 seconds.

“PRESS ENTER TO FORMAT” and “REMOVE USB1 MEDIA TO CANCEL” are displayed alternately.

Tip

If you cancel formatting, remove the USB media.

- 3** Press the ENTER button.

Formatting starts. In the case of an external HDD, formatting may take about 1 minute.

If formatting is successful, “FORMATTING SUCCESSFUL” and “REMOVE USB1 MEDIA” are displayed alternately.

- 4** Remove the USB media.

Note

If you do not remove the USB media after formatting, it will not be recognized.

- 5** Reconnect the USB media and check that the remaining space is displayed on the [MENU] screen.

Using the On-Screen Keyboard (Text Entry)

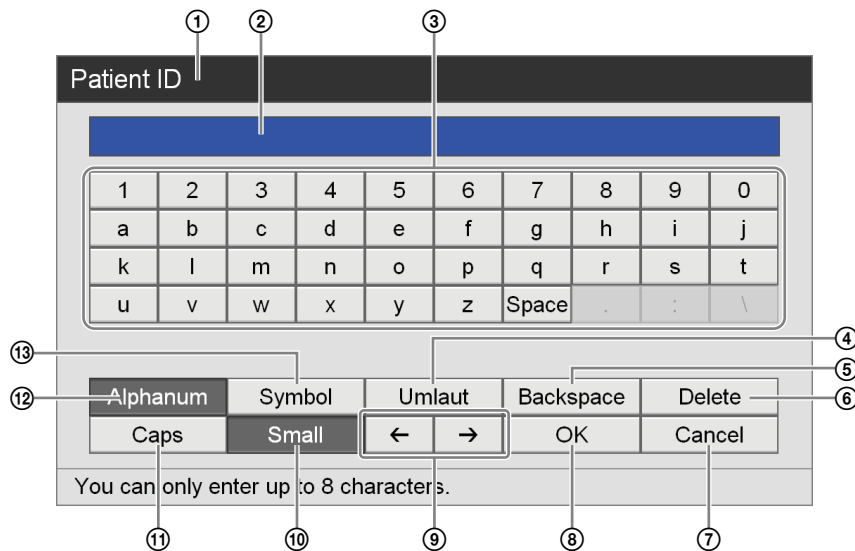
When text entry is necessary, an on-screen keyboard appears.

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.

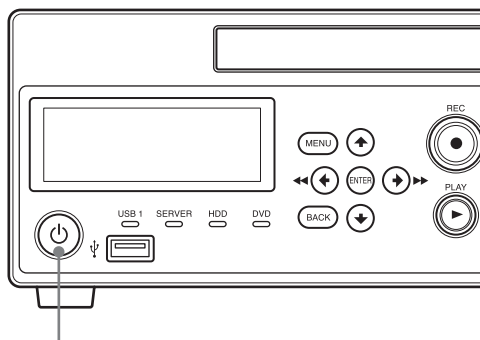


- Do not use solvents such as benzene, thinner, commercially available record cleaners, or anti-static spray. Using these products may damage discs.

Inserting and Removing Discs

To insert a disc

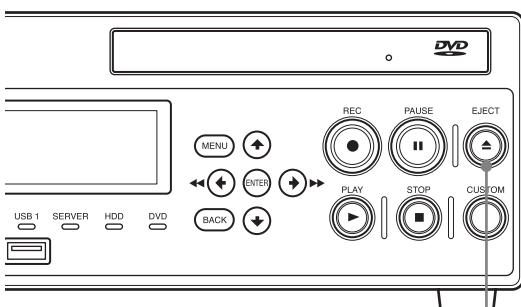
- 1 Press the  (on/standby) switch to exit standby mode.



 (on/standby) switch

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

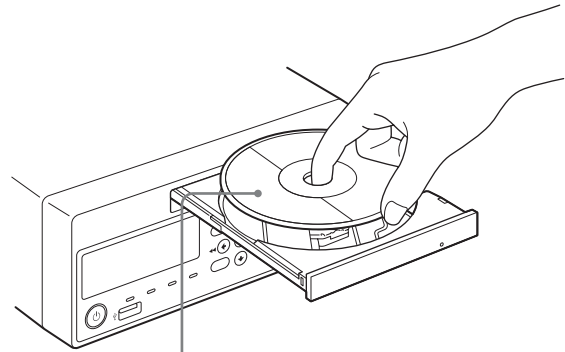
- 2 Press the  EJECT button.



 EJECT button

The disc tray opens.

- 3 Insert the disc.



Data side facing down

- 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.

Tip

The disc tray cannot be opened while recording is in progress or paused when simultaneously saving to a DVD.

Function Keys

When using the HVO-500MD/550MD, you can assign certain functions (recording, playback, etc.) to the function keys (F1 to F12) at the top of a keyboard and perform these functions.

We recommend assigning frequently used functions based on your working environment.

Tip

Contact your local Sony representative to change the function assignments. They cannot be changed by general users.

Using Function Keys

To enable use of the function keys, set [Keyboard Mode] to [Hard Keyboard] in the [System Admin Settings] screen - [Device Settings] screen.

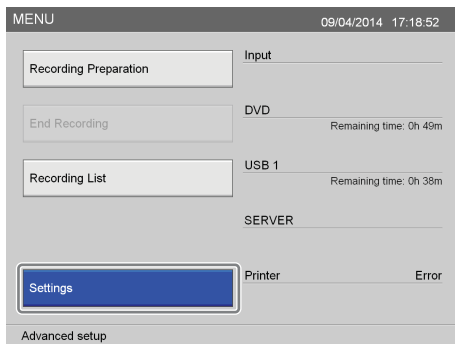
Tip

The function keys are enabled only when the hard keyboard mode is enabled.

1 Press the MENU button.

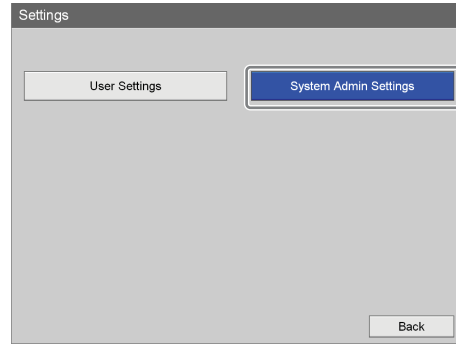
The [MENU] screen appears.

2 Use the $\uparrow$ and $\downarrow$ buttons to select [Settings], and press the ENTER button.



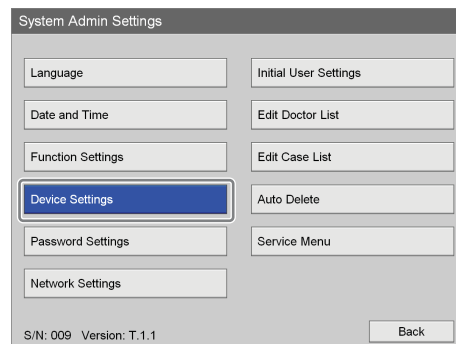
The [Settings] screen appears.

3 Use the $\leftarrow$ and $\rightarrow$ buttons to select [System Admin Settings], and press the ENTER button.



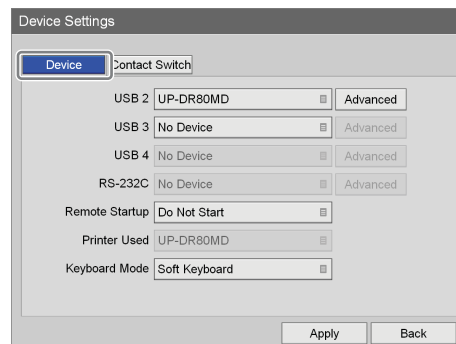
The [System Admin Settings] screen appears.

4 Use the $\uparrow$, $\downarrow$, $\leftarrow$, and $\rightarrow$ buttons to select [Device Settings], and press the ENTER button.

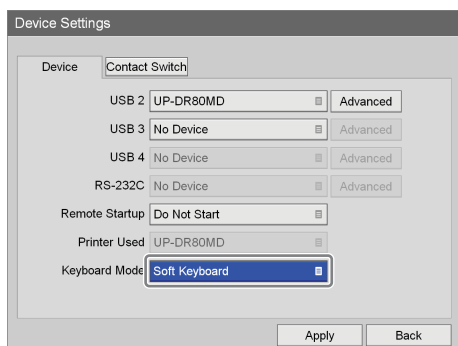


The [Device Settings] screen appears.

5 Use the $\leftarrow$ and $\rightarrow$ buttons to select the [Device] tab.

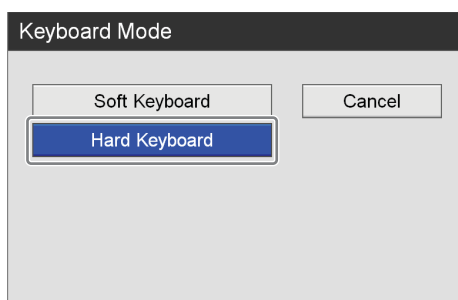


- 6 Use the **↓** button to select the [Keyboard Mode] box, and press the ENTER button.



The [Keyboard Mode] screen appears.

- 7 Use the **↑** and **↓** buttons to select [Hard Keyboard], and press the ENTER button.



The [Keyboard Mode] screen closes, and the [Device] tab appears again.

Factory Assigned Functions

The following functions are assigned to the function keys under factory default conditions.

Function key	Function
F1	Playback
F2	Fast forward
F3	Rewind
F4	Stop
F5	Pause
F6	Record
F7	Capture
F8	Input signal switch
F9	Show list
F10	Add to list
F11	Test record
F12	Set chapter

- Playback: Play back recorded data.
- Fast forward: Perform fast forward playback.
- Rewind: Perform rewind playback.

- Stop: Stop recording or playback.
- Pause: Pause recording or playback.
- Record: Record video.
- Capture: Capture still images.
- Input signal switch: Switch between DVI-D, HDMI, VIDEO, and S VIDEO for the input signal with each press.
- Show list: Display the patient list.
- Add to list: Add patients to the patient list.
- Test record: Perform a test recording.
- Set chapter: Insert a chapter separator without saving a still image of the recording.

Other Assignable Functions

Aside from the factory assigned functions, the following functions can also be assigned to the function keys.

- Audio record ON: Record audio.
- Audio record OFF: Stop audio recording.
- Input signal select (DVI-D): Switch the input signal to DVI-D.
- Input signal select (HDMI): Switch the input signal to HDMI.
- Input signal select (S VIDEO): Switch the input signal to S VIDEO.
- [MENU] display: Display the [MENU] screen.
- Next chapter: Jump forward to the next chapter.
- Previous chapter: Jump back to the previous chapter.
- Next GOP: Jump forward to the next GOP.
- Previous GOP: Jump back to the previous GOP.
- Eject: Eject the inserted disc.
- [Recording Preparation] display: Display the [Recording Preparation] screen.
- [Recording List] display: Display the [Recording List] screen.
- Status display ON: Display the unit's operation status (i.e., recording, play, pause).
- Status display OFF: Hide the unit's operation status (i.e., recording, play, pause).

Basic Recorder Operations

Chapter

3

Operation Flow

This chapter describes how to record and play back videos and capture still images while viewing the display on the front panel of the unit and using only 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 Capture Still Images	Capture still images from live image transmissions.
↓	
Step 4 Stop Recording	Stop recording operations.

For details on operations while viewing the [MENU] screen, see “Chapter 4 Recording and Playback” (page 43).

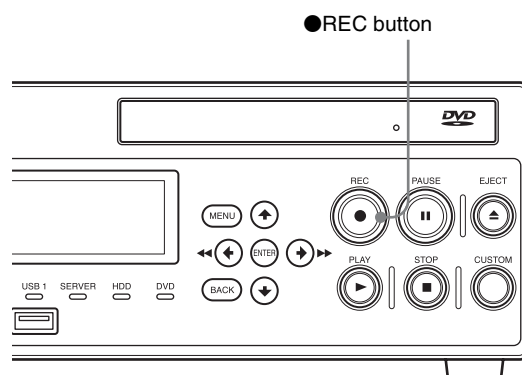
Tip

To capture still images manually, the capture function must be assigned to the CUSTOM button. (The default setting for the CUSTOM button is [Capture].)

For details on assigning functions, see “[CUSTOM Button Control]” under “[General 2] Tab” (page 73).

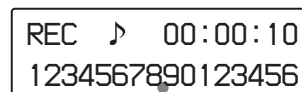
Step 1 Record

- 1 Press the ● REC button.



Recording starts.

“REC” appears while recording is in progress.

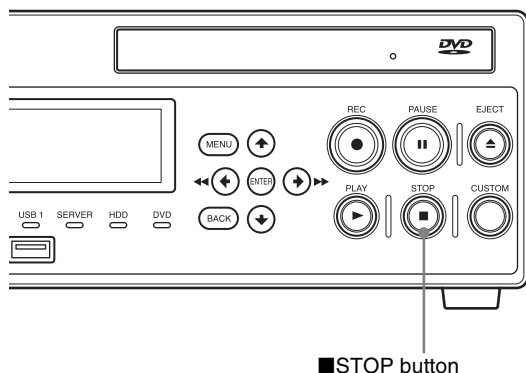


Patient ID

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.

END
1234567890123456

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.

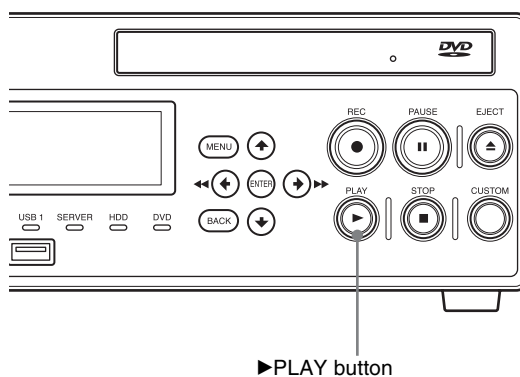
What is quick playback?

“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.

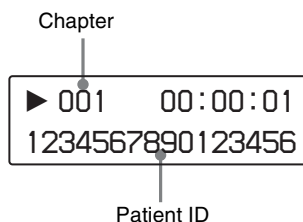
Tip

If the most recent data recorded is a still image, playback will not occur.

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, playback will stop.
- 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 Capture Still Images

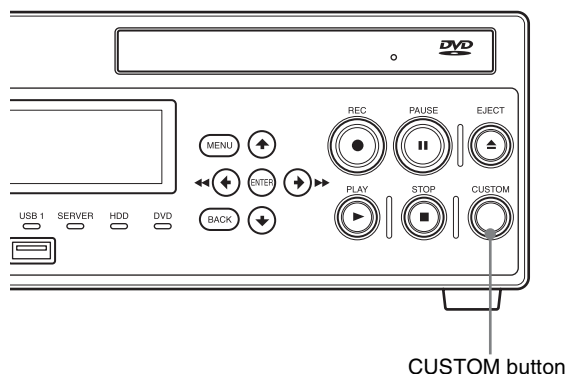
Capture still images from live image transmissions.

Tip

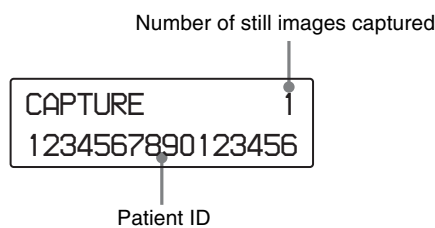
To capture still images manually, the capture function must be assigned to the CUSTOM button. (The default setting for the CUSTOM button is [Capture].)

For details on assigning functions, see “[CUSTOM Button Control]” under “[General 2] Tab” (page 73).

Press the CUSTOM button.



The following appears during image capture.



The still image data is saved.

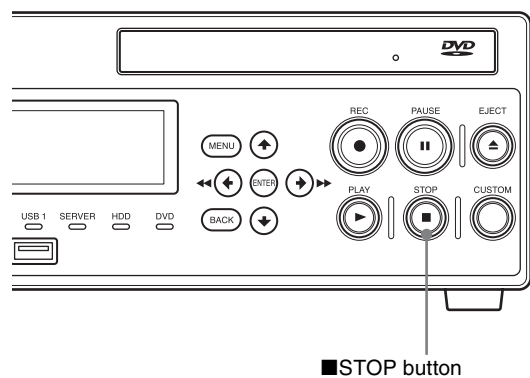
Recorded data entries are created when still images are captured.

Be sure to proceed to Step 4 to stop recording operations.

For details on capturing still images, see “Capturing Still Images” (page 45).

Step 4 Stop Recording

Press the ■ 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 48).

Tip

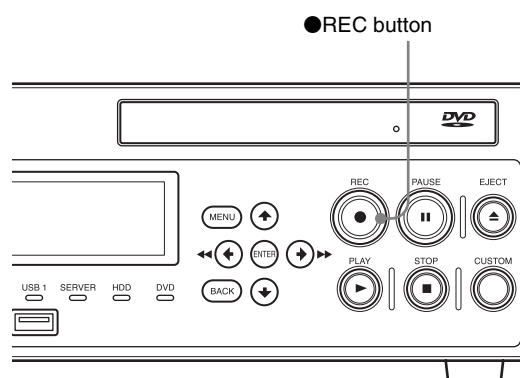
For details on how to record via contact switch, contact your local Sony representative.

Note on the auto delete function for recorded data

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.

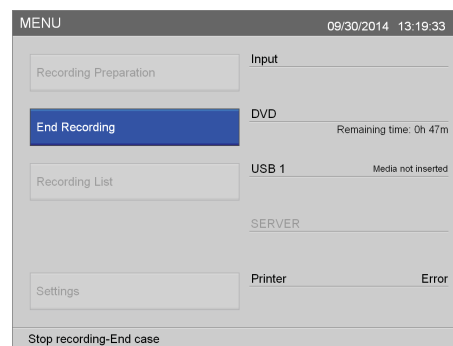
Manual Recording

- 1 Press the ● REC button.



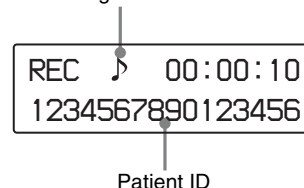
Recording starts.

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



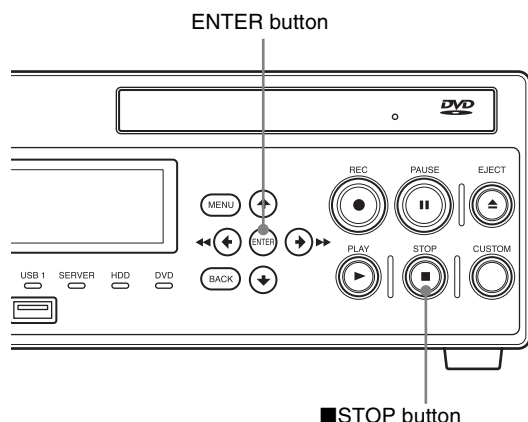
In addition, “REC” appears on the front panel display while recording is in progress.

This appears when audio is also being recorded.



- 2** To stop recording, press the **■ STOP** button.

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



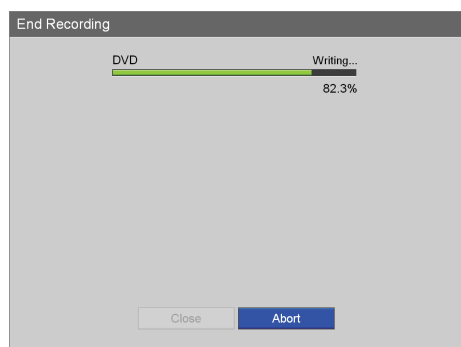
- 3** If the [MENU] screen is displayed, a confirmation message appears. Use the **◀** and **▶** buttons to select [Yes], and press the ENTER button.



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/

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.

Capturing Still Images

You can capture a particular shot during a live transmission, and store it as a still image file. Still images can be captured manually or via contact switch. This section describes how to capture still images manually.

Tips

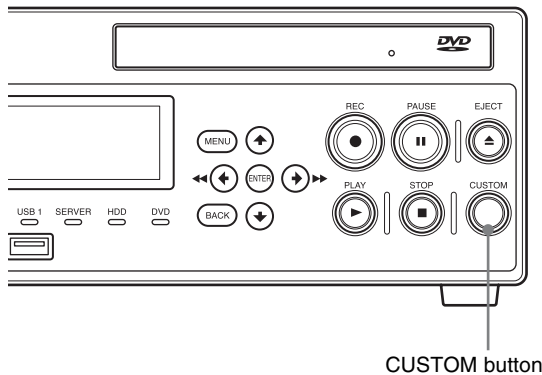
- To capture still images manually, the capture function must be assigned to the CUSTOM button. (The default setting for the CUSTOM button is [Capture].)
- For details on contact switch controls, contact your local Sony representative.

For details on assigning functions, see “[CUSTOM Button Control]” under “[General 2] Tab” (page 73).

Manual Still Image Capture

To capture a still image, press the CUSTOM button at the moment you want to capture the still image.

A chapter separator is also created at the position in which the still image was captured.



Tip

You can configure format setting for still images files in the [User Settings] screen – [Quality] tab.

For details on this setting, see “Configuring Image Quality Settings” (page 28).

Still image data directory

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

Still image directory

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

or

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

Tip

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.

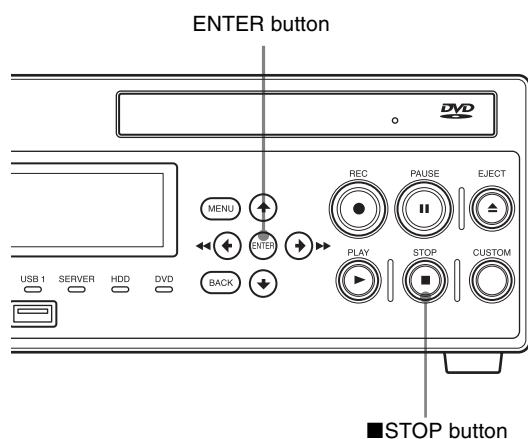
Stopping Recording Operations

Recorded data is not only created when recording operations are performed, but also when still images are captured. Perform the following to stop recording operations, even if only still image capturing was performed.

Manual Recording Stop

- 1 Press the ■ STOP button.

If the [MENU] screen is displayed, you can also press the ENTER button to stop recording.



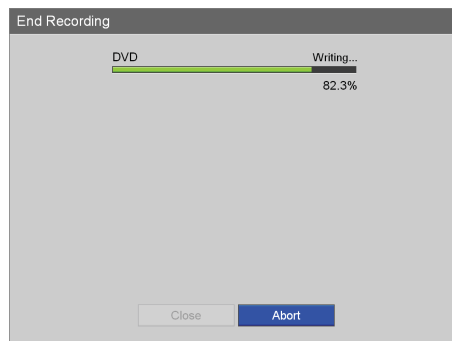
- 2 If the [MENU] screen is displayed, a confirmation message appears. Use the ◀ and ▶ buttons to select [Yes], and press the ENTER button.



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.



- 3 When the data transfer is complete, use the ◀ and ▶ buttons to select [Close], and press the ENTER button.



The [MENU] screen appears again.

Stopping Recording to External Media and Automatic Printing

Perform the following to stop recording operations to external media and automatic printing operations 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.

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/

Tip

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.

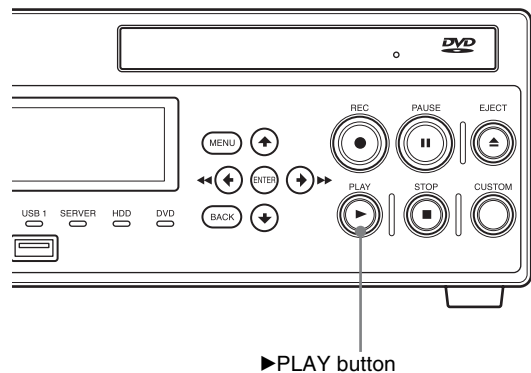
Playback

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 54).

Playing Back the Most Recent Data (Quick Playback)

When you press the ► PLAY button, 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, playback will stop.

- 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.

Recording Preparation

Before starting to record, enter information regarding the patient of the surgical procedure or examination, configure the storage destination and quality settings for recorded data, and then perform a test recording.

You can also register information for multiple patients in advance, and simply recall the corresponding patient information on the day of the procedure or examination. You can prepare for recording and test record in the [Recording Preparation] screen.

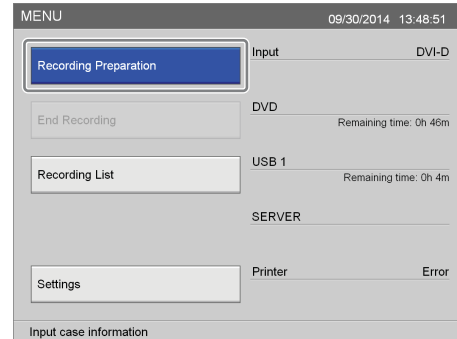
Patient Information and Data Storage Settings

Enter information regarding the patient of the surgical procedure or examination, 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 34).

Tip

Certain symbols (\ / : ? * " < > | .) cannot be used for the patient ID. In addition, the front panel display 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 73).

For details on using the on-screen keyboard, see “Using the On-Screen Keyboard” (page 34).

[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.

[Doctor]

Select the name of the doctor performing the surgical procedure or examination in the setting screen that appears, and press the ENTER button.

This item can be skipped.

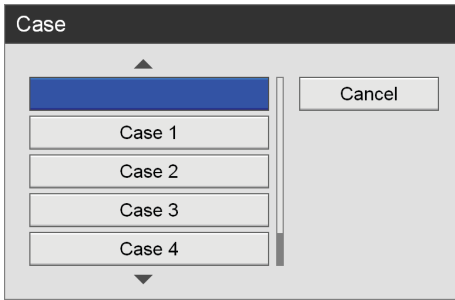
Tip

You can register doctors in the [System Admin Settings] screen – [Edit Doctor List] screen.

For details on this setting, see “Editing the Doctor List” (page 94).

[Case]

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



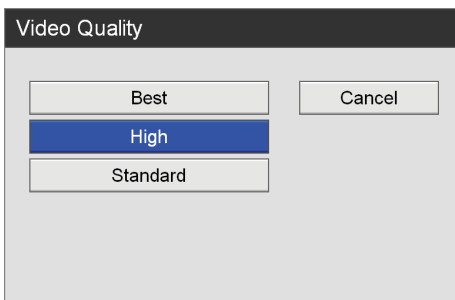
Tip

The procedures must be registered beforehand.

For details on this setting, see “Registering Cases” (page 99).

[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 28).

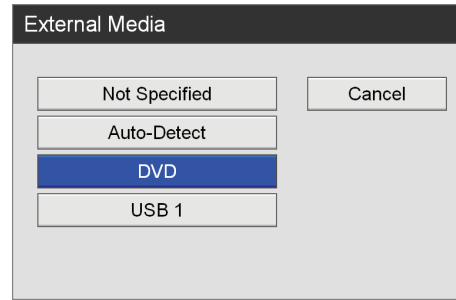
[External Media]

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

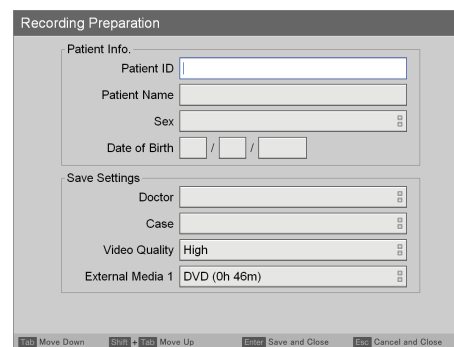
- If the external media is currently inserted and recognized, the remaining recording times are also displayed.
- Servers will not be detected automatically.
- When [Auto-Detect] is enabled and multiple media are inserted, data will be recorded to the media in the following order of priority: USB1 →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

5 To perform a test recording, proceed to “Test Recording” (page 53).

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

Using a Hard Keyboard for Patient Information and Data Storage Settings

When [Keyboard Mode] is set to [Hard Keyboard] in the [System Admin Settings] screen - [Device Settings] screen, you can configure patient information and data storage settings using only the connected keyboard.



When hard keyboard mode is enabled, the following keys function as follows.

Key	Function
Tab	Move to the next input field.
Shift+Tab	Move to the previous input field.
↑ ↓ (arrows)	Select items.

Key	Function
← → (arrows)	Move within entered text.
Enter	Apply the setting, and close the [Recording Preparation] screen.
Esc	Cancel the setting, and close the [Recording Preparation] screen.

Registering Multiple Patients in Advance

You can register information for multiple patients of procedures and examinations in advance. By doing so, you can simply select the patient from the registered patient list on the day of the procedure or examination and save time on preparation.

Registering Patients

Register patients for procedures and examinations to the patient list.

- 1 Configure patient information and save settings for the recorded data.

For details on patient information and save settings for recorded data, see “Patient Information and Data Storage Settings” (page 48).

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

The patient is added to the patient list.

- 3 Repeat steps 1 and 2 to add any additional patients.

Tip

You can register up to 100 patients to the patient list. When you exceed 100, existing patients will be overwritten automatically starting with the oldest.

Recalling Patients

Recall patients that have been registered in advance.

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

The [Patient List] screen appears.

- 2 Use the ↑ and ↓ buttons to select the patient to recall, and press the ENTER button.

Date	Patient ID	Patient Name	Sex
☒	123454	Patient 6	
☐	123450	Patient 5	
☐	123459	Patient 4	
☐	123458	Patient 3	
☐	123457	Patient 2	
☐	123456	Patient 1	

The check box of the patient is selected.

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

The [Recording Preparation] screen appears again. The patient information that was registered in advance will be reflected in the [Recording Preparation] screen.

Editing Registered Patient Settings

Edit patient information and save settings for recorded data that were registered in advance.

- 1 In the [Recording Preparation] screen, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Call List], and press the ENTER button.

The [Patient List] screen appears.

- 2 Use the **▲** and **▼** buttons to select the patient for which you want to edit settings, and press the ENTER button.

Date	Patient ID	Patient Name	Sex
☒	123454	Patient 6	
☐	123450	Patient 5	
☐	123459	Patient 4	
☐	123458	Patient 3	
☐	123457	Patient 2	
☐	123456	Patient 1	

The check box of the patient is selected.

- 3 Use the **▲**, **▼**, **◀**, and **▶** buttons to select [Change], and press the ENTER button.

The [Change Patient List] screen appears.

- 4 When you finish editing settings, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button.

The [Patient List] screen appears again.

Deleting Registered Patients from the List

Delete patients that were registered in advance from the list.

- 1 In the [Recording Preparation] screen, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Call List], and press the ENTER button.

The [Patient List] screen appears.

- 2 Use the **▲** and **▼** buttons to select the patient to delete, and press the ENTER button.

The check box of the patient is selected.

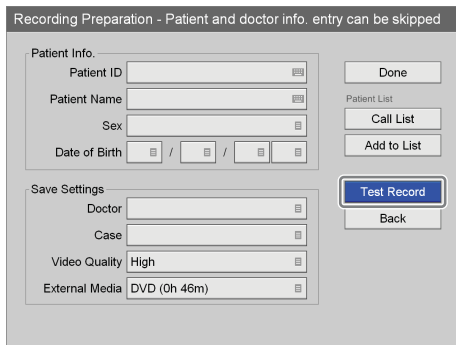
- 3 Use the **▲**, **▼**, **◀**, and **▶** buttons to select [Delete], and press the ENTER button.

The patient entry is deleted.

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.



Recording Preparation - Patient and doctor info. entry can be skipped

Patient Info.

Patient ID

Patient Name

Sex

Date of Birth / /

Save Settings

Doctor

Case

Video Quality High

External Media DVD (0h 46m)

Done

Call List

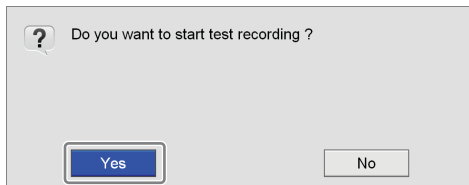
Add to List

Test Record

Back

The following message appears.

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

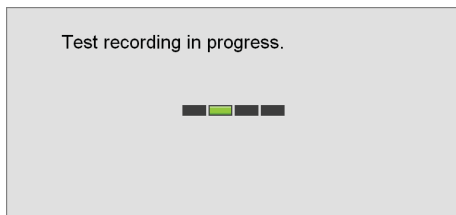


? Do you want to start test recording ?

Yes

No

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

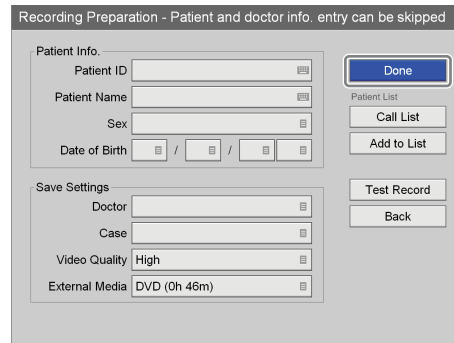


Test recording in progress.

■ ■ ■ ■ ■

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.



Recording Preparation - Patient and doctor info. entry can be skipped

Patient Info.

Patient ID

Patient Name

Sex

Date of Birth / /

Save Settings

Doctor

Case

Video Quality High

External Media DVD (0h 46m)

Done

Call List

Add to List

Test Record

Back

The [MENU] screen appears again.

Image Search

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

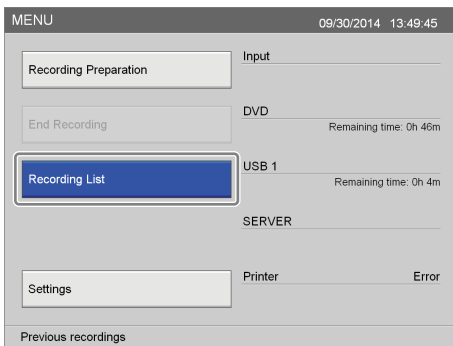
Specifying Search Conditions

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.

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	🔒
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	🔒
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	🔒
09/29/2014 16:45:51	U2200051	6184KB	🔒
09/29/2014 14:42:29	U1992125	00:00:11 12MB	🔒
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Image List
Execute
Select All
Clear All
Back

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.

The Search screen contains several input fields: Patient ID (with a keyboard icon), Patient Name, Doctor, Recording Date (formatted as MM/DD/YY), a range selector (~ MM/DD/YY), and Status. Action buttons include Start, Clear, Back, and a Start button at the bottom right.

[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 34).

[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 34).

[Doctor]

Select the name of the doctor performing the surgical procedure or examination in the setting screen that appears, and press the ENTER button.

The Doctor screen shows a list of doctors: Doctor 1, Doctor 2, Doctor 3, and Doctor 4. A 'Cancel' button is located at the top right.

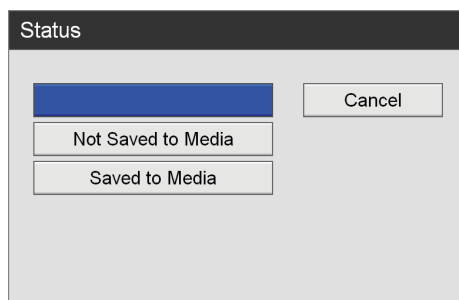
[Recording Date]

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

The Start Year screen shows a list of years: 00, 01, 02, and 03. A 'Cancel' button is located at the top right.

[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.

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

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.	

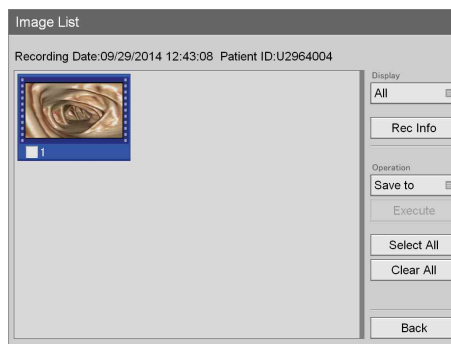
Viewing Thumbnails of Recorded Data

You can view thumbnail images of recorded data in an image list.

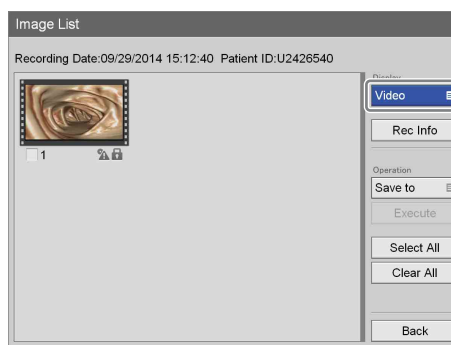
- 1 Select [Image List] for the operation box in the [Recording List] screen.
- 2 In the [Recording List] screen, use the **↑** and **↓** buttons to select the recorded data, and press the ENTER button.

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

The [Image List] screen appears, and thumbnail images of the recorded data are displayed.

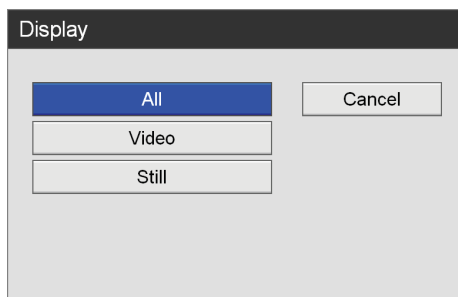


- 3 To switch between video and still image thumbnail display, use the **↑**, **↓**, **←**, and **→** buttons to select the [Display] box, and press the ENTER button.



The [Display] screen appears.

- 4 Use the **▲** and **▼** buttons to select [Video], [Still], or [All], and press the ENTER button.



The display changes.



Tips

- If [Video] is selected, the thumbnails are displayed by title or by chapter, depending on the [Image List Display] setting in the [System Admin Settings] screen – [Function Settings] screen – [General 2] tab.
- You can also select recorded data for printing or copying to external media in the thumbnail display screen.

For details on these settings, see “Processing Recorded Data” (page 58).

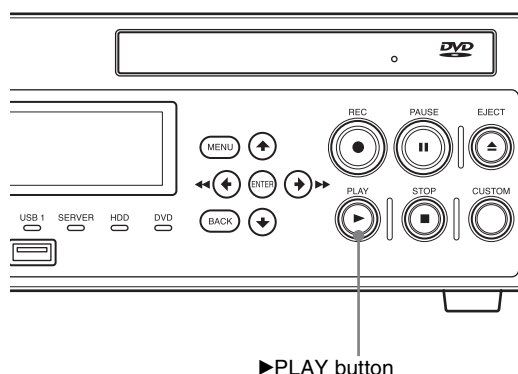
Playback from the Search Results List

- 1 Select [Image List] for the operation box in the [Recording List] screen.
- 2 To play back an entire recorded data entry, 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.

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Image List
Execute
Select All
Clear All
Back



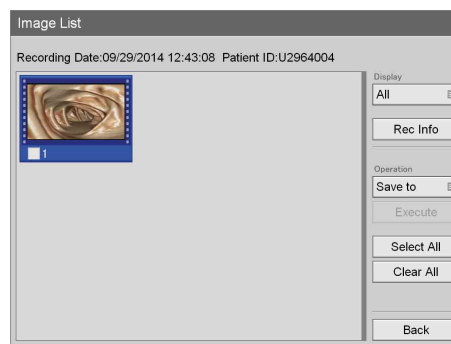
- 3 To play back by chapter, select the recorded data you want to play back, and press the ENTER button.

The [Image List] screen appears, and thumbnail images of the recorded data are displayed.

Note

To display recorded data by chapter, set [Image List Display] to [Chapter] in the [System Admin Settings] screen – [Function Settings] screen.

- 4 Use the **▲**, **▼**, **◀**, and **▶** buttons to select the recorded data image you want to play back.



- 5 Press the **▶** PLAY button.

The recorded data that is highlighted plays back.

Note

Only the highlighted recorded data is played back.

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.

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Image List
Execute
Select All
Clear All
Back

The [Sort] screen appears.

- 2 Use the **▲** and **▼** buttons to select the [Item] box, and press the ENTER button.

Sort

Item Recording Date

Order Descending

Execute Cancel

The [Item] screen appears.

- 3 Use the **▲** and **▼** buttons to select a category, and press the ENTER button.

Item

Recording Date Cancel

Patient ID

Patient Name

Status (Not Saved)

Size

The [Sort] screen appears again.

- 4 Use the **▲** and **▼** buttons to select the [Order] box, and press the ENTER button.

Sort

Item Recording Date

Order Descending

Execute Cancel

The [Order] screen appears.

- 5 Use the **▲** and **▼** buttons to select [Descending] or [Ascending], and press the ENTER button.

Order

Descending Cancel

Ascending

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.

Sort

Item Recording Date

Order Ascending

Execute Cancel

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.

- Printing (page 58)
- Copying to External Media (page 59)
- Editing Patient Information (page 63)
- Protecting Recorded Data (page 64)
- Deleting Recorded Data (page 65)
- Viewing Information on Recorded Data (page 66)

Printing

You can select still images for printing from the [Recording List] screen.

Tip

For details on configuring the number of images to print on each sheet and other print settings, see “Configuring Print Settings” (page 31).

- 1 Select [Image List] for the operation box in the [Recording List] screen.
- 2 In the [Recording List] screen, use the  and  buttons to select the recorded data, and press the ENTER button.

For details on displaying the [Recording List] Screen, see “Image Search” (page 54).

Recording List (25/25)				
Rec. Date	Patient (ID, Name)	Size	Status	
09/29/2014 12:43:08	U2964004	00:00:11 12MB		Search Sort Image List  Execute Select All Clear All Back
09/29/2014 12:42:23	U2905221	00:00:09 9674KB		
09/29/2014 12:39:50	U2912550	00:00:10 10MB		
09/29/2014 12:39:33	U2925021	00:00:05 5649KB		
09/29/2014 15:12:40	U2426540	00:00:32 105MB		
09/29/2014 16:45:51	U2200051	00:00:11 6184KB		
09/29/2014 14:42:29	U1992125	00:00:11 12MB		
09/29/2014 14:36:45	U1981236	00:00:20 21MB		

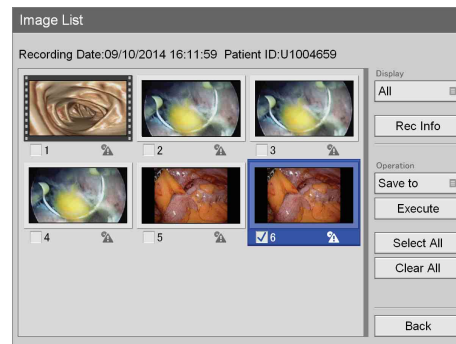
The [Image List] screen appears.

- 3 If thumbnail images of video data are displayed, switch to still image display.

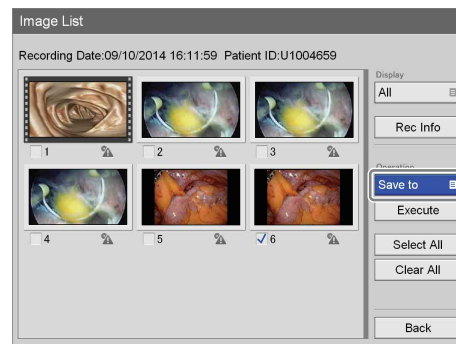
For details on switching the display, see “Viewing Thumbnails of Recorded Data” (page 55).

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

Select a thumbnail using the , , , and  buttons, and press the ENTER button to select or clear the check box.

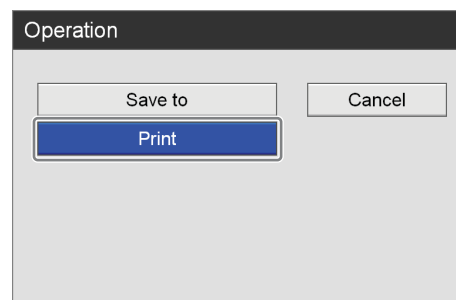


- 5 Use the , , , and  buttons to select the [Operation] box, and press the ENTER button.



The [Operation] screen appears.

- 6 Use the  and  buttons to select [Print], and press the ENTER button.



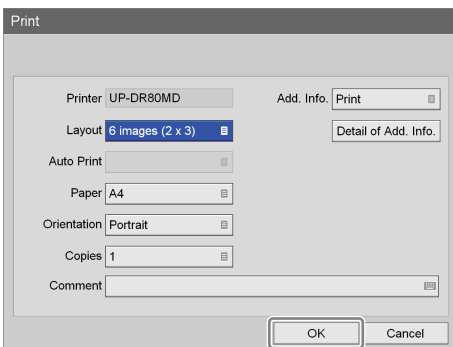
The [Image List] screen appears again.

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



The [Print] screen appears.

- 8 Change the settings as necessary.



- 9 If you want to enter a comment, use the **↑** and **↓** buttons to select the [Comment] box, and press the ENTER button.

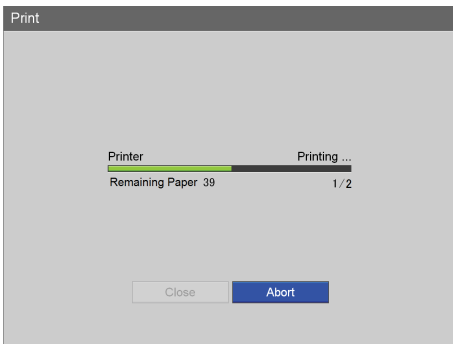
The on-screen keyboard appears.

- 10 Use the on-screen keyboard to enter a comment, select [OK], and press the ENTER button.

For details on using the on-screen keyboard, see “Using the On-Screen Keyboard” (page 34).

Printing starts.

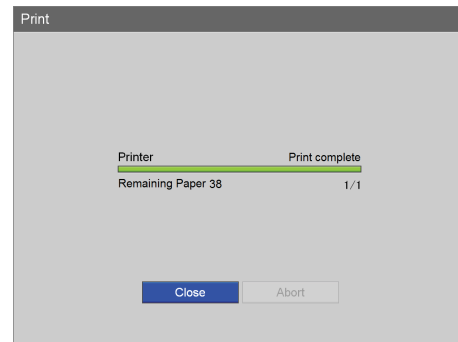
The remaining amount of paper is also displayed.



Tip

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

- 11 When printing is complete, press the ENTER button while [Close] is selected.



The [Image List] screen appears again.

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 or [Image List] (thumbnail display) 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. You can select whether to copy videos, still images, or both with this procedure.

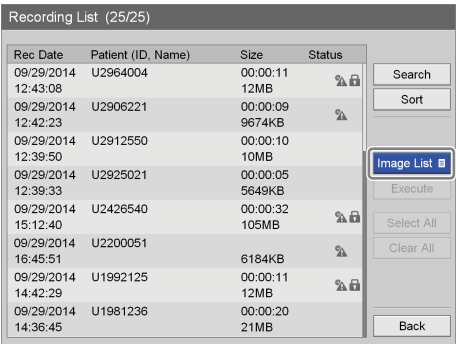
Tips

- 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.

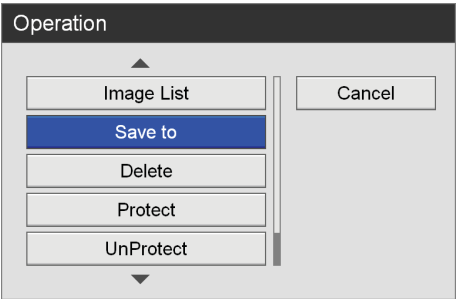
- 2 Display the [Recording List] screen, use the **▲**, **▼**, **◀**, and **▶** buttons to select the operation box, and press the ENTER button.

For details on displaying the [Recording List] Screen, see “Image Search” (page 54).



The following screen appears.

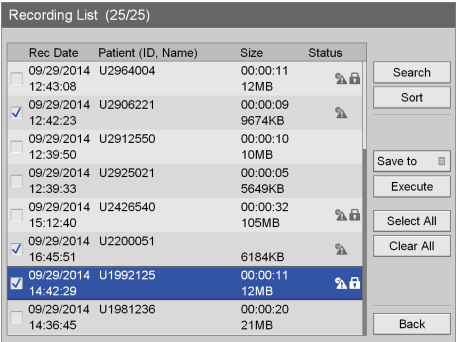
- 3 Use the **▲** and **▼** buttons to select [Save to], and press the ENTER button.



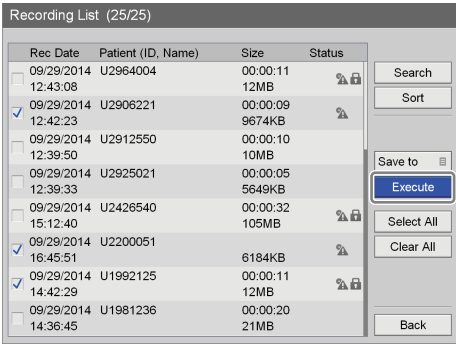
The [Recording List] screen appears again.

- 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.



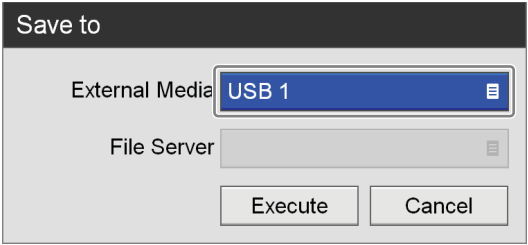
- 5 Use the **▲**, **▼**, **◀**, and **▶** buttons to select [Execute], and press the ENTER button.



The [Save to] screen appears.

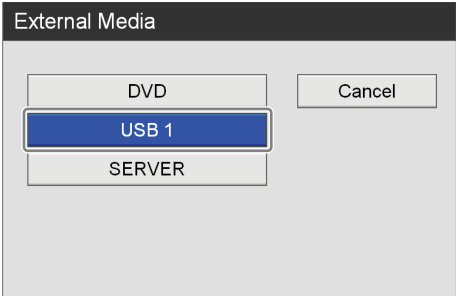
- 6 Configure save settings for the recorded data.

Select an item using the **▲** and **▼** buttons, and press the ENTER button to display the setting screen for that item.



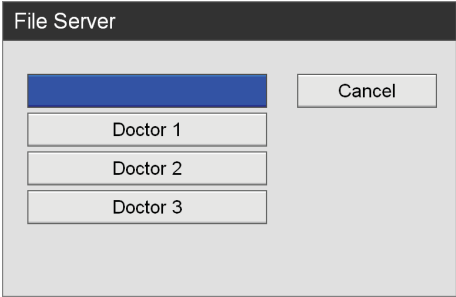
[External Media]

Select the storage destination, and press the ENTER button.

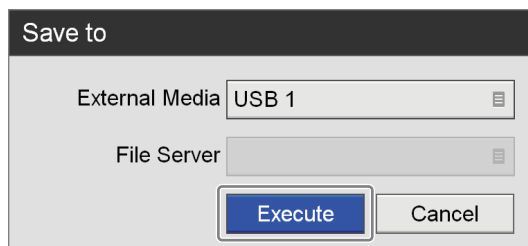


[File Server]

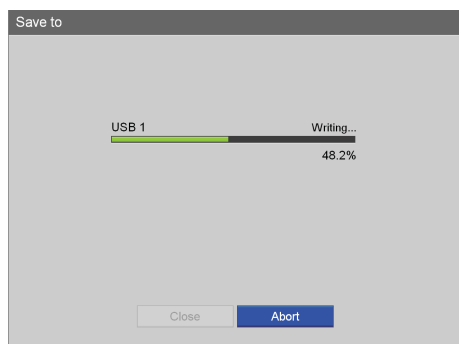
If [SERVER] is selected as the external storage destination, select a file server (the server configured for each doctor), and press the ENTER button.



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



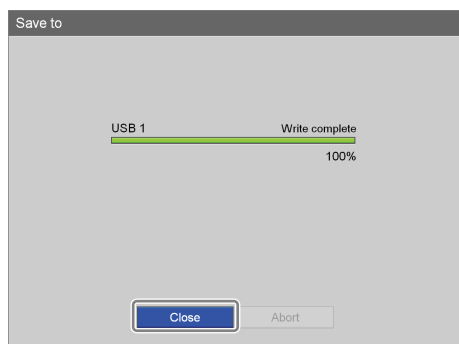
Copying of recorded data starts.



Tip

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

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



The [Recording List] screen appears again.

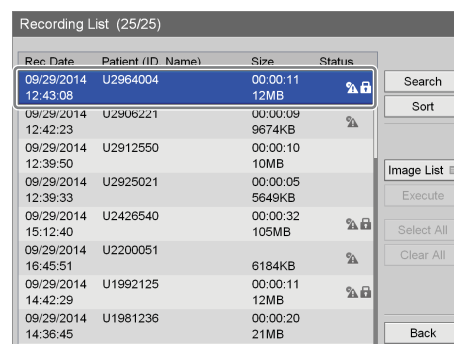
To select data for copying from the [Image List] (thumbnail display) screen

This section describes how to select thumbnail images of recorded data in the [Image List] screen for copying onto external media. You can select whether to copy videos or still images with this procedure.

- If you are copying to a DVD disc or USB memory device, insert the media into the unit.
- Select [Image List] for the operation box in the [Recording List] screen.

- In the [Recording List] screen, use the **↑** and **↓** buttons to select the recorded data, and press the ENTER button.

For details on displaying the [Recording List] Screen, see “Image Search” (page 54).



The [Image List] screen appears.

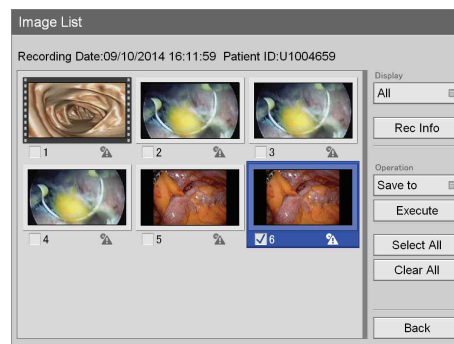
- Switch to the thumbnail display for videos when you want to copy video data, and switch to the thumbnail display for still images when you want to copy still image data.

For details on switching the display, see “Viewing Thumbnails of Recorded Data” (page 55).

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

Select a thumbnail using the **↑**, **↓**, **←**, and **→** buttons, and press the ENTER button to select or clear the check box.

Example: Still image display screen

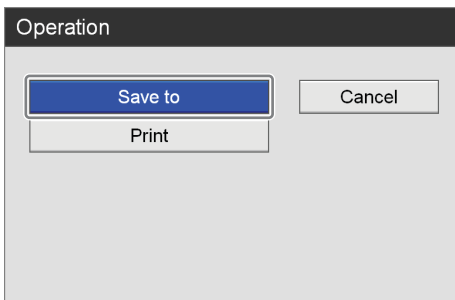


- 6 Use the **▲**, **▼**, **◀**, and **▶** buttons to select the [Operation] box, and press the ENTER button.



The [Operation] screen appears.

- 7 Use the **▲** and **▼** buttons to select [Save to], and press the ENTER button.



The [Image List] screen appears again.

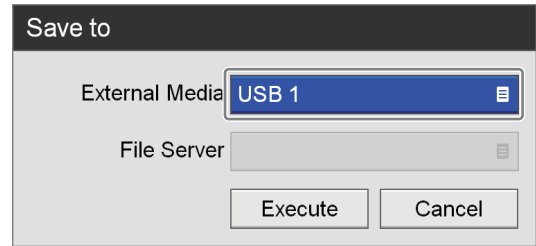
- 8 Use the **▲** and **▼** buttons to select [Execute], and press the ENTER button.



The [Save to] screen appears.

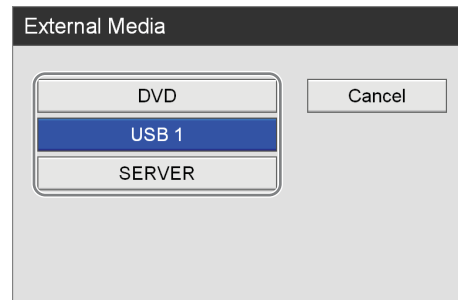
- 9 Configure save settings for the recorded data.

Select an item using the **▲** and **▼** buttons, and press the ENTER button to display the setting screen for that item.



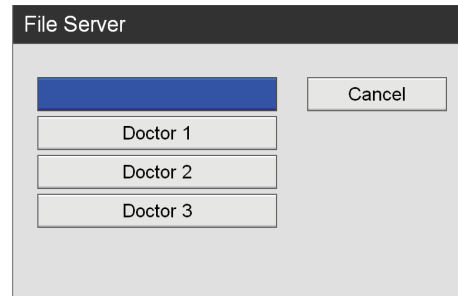
[External Media]

Select the storage destination, and press the ENTER button.

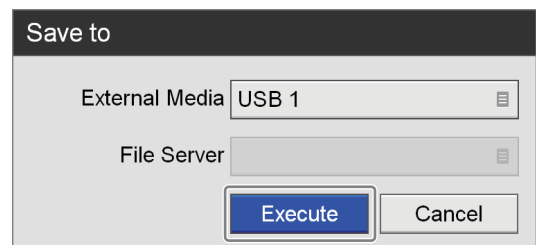


[File Server]

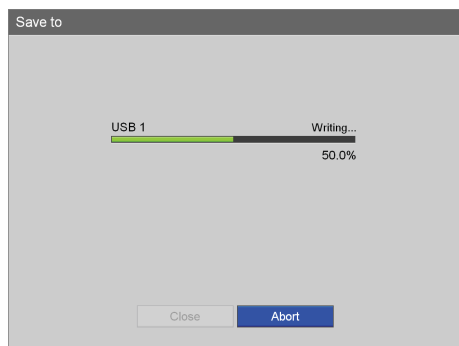
If [SERVER] is selected as the external storage destination, select a file server (the server configured for each doctor), and press the ENTER button.



- 10 Use the **▲** and **▼** buttons to select [Execute], and press the ENTER button.



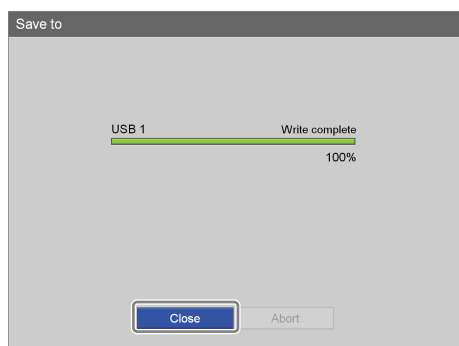
Copying of recorded data starts.



Tip

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

- 11 Use the $\downarrow$ button to select [Close], and press the ENTER button.



The [Image List] screen appears again.

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 [Not Used] 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 $\uparrow$, $\downarrow$, $\leftarrow$, and $\rightarrow$ buttons to select the operation box, and press the ENTER button.

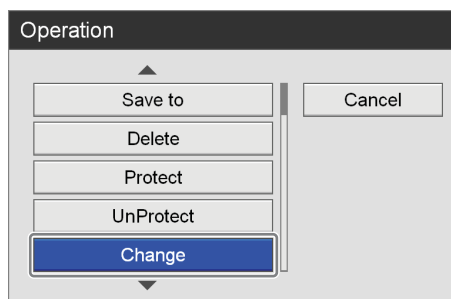
Recording List (25/25)

Rec. Date	Patient (ID, Name)	Size	Status	
09/29/2014 12:43:08	U2964004	00:00:11 12MB	$\uparrow$ $\downarrow$	☐
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	$\uparrow$ $\downarrow$	☒
09/29/2014 12:39:50	U2912550	00:00:10 10MB	$\uparrow$ $\downarrow$	☐
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	$\uparrow$ $\downarrow$	☐
09/29/2014 15:12:40	U2426540	00:00:32 105MB	$\uparrow$ $\downarrow$	☐
09/29/2014 16:45:51	U2200051	6184KB	$\uparrow$ $\downarrow$	☐
09/29/2014 14:42:29	U1992125	00:00:11 12MB	$\uparrow$ $\downarrow$	☐
09/29/2014 14:36:45	U1981236	00:00:20 21MB	$\uparrow$ $\downarrow$	☐

Search
Sort
Image List $\square$
Execute
Select All
Clear All
Back

The [Operation] screen appears.

- 2 Use the $\uparrow$ and $\downarrow$ 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 $\uparrow$ and $\downarrow$ buttons, and press the ENTER button to select or clear the check box.

Recording List (25/25)

Rec. Date	Patient (ID, Name)	Size	Status	
09/29/2014 12:43:08	U2964004	00:00:11 12MB	$\uparrow$ $\downarrow$	☐
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	$\uparrow$ $\downarrow$	☒
09/29/2014 12:39:50	U2912550	00:00:10 10MB	$\uparrow$ $\downarrow$	☐
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	$\uparrow$ $\downarrow$	☐
09/29/2014 15:12:40	U2426540	00:00:32 105MB	$\uparrow$ $\downarrow$	☐
09/29/2014 16:45:51	U2200051	6184KB	$\uparrow$ $\downarrow$	☐
09/29/2014 14:42:29	U1992125	00:00:11 12MB	$\uparrow$ $\downarrow$	☐
09/29/2014 14:36:45	U1981236	00:00:20 21MB	$\uparrow$ $\downarrow$	☐

Search
Sort
Change $\square$
Execute
Select All
Clear All
Back

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 $\uparrow$, $\downarrow$, $\leftarrow$, and $\rightarrow$ buttons to select [Execute], and press the ENTER button.

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

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 48).

6 Use the , , , and buttons to select [Execute], and press the ENTER button.

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

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. Both videos and still images will be protected with this procedure.

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 54).

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.

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.

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Protect
Execute
Select All
Clear All
Back

- 4 Use the , , , and buttons to select [Execute], and press the ENTER button.

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Protect
Execute
Select All
Clear All
Back

The recorded data is protected, and the icon appears.

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Protect
Execute
Select All
Clear All
Back

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 surgical procedures or examinations.

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 54).

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Image List
Execute
Select All
Clear All
Back

The following screen appears.

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

Operation

Image List

Save to

Delete

Protect

UnProtect

Cancel

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.

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Delete
Execute
Select All
Clear All
Back

- 4 Use the , , , and buttons to select [Execute], and press the ENTER button.

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Delete
Execute
Select All
Clear All
Back

A confirmation message appears.

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

? Recorded data cannot be restored after deletion.
Do you want to delete the recorded data ?

Yes No

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

For details on displaying the [Recording List] Screen, see “Image Search” (page 54).

Recording List (25/25)

Rec Date	Patient (ID, Name)	Size	Status
09/29/2014 12:43:08	U2964004	00:00:11 12MB	
09/29/2014 12:42:23	U2906221	00:00:09 9674KB	
09/29/2014 12:39:50	U2912550	00:00:10 10MB	
09/29/2014 12:39:33	U2925021	00:00:05 5649KB	
09/29/2014 15:12:40	U2426540	00:00:32 105MB	
09/29/2014 16:45:51	U2200051	6184KB	
09/29/2014 14:42:29	U1992125	00:00:11 12MB	
09/29/2014 14:36:45	U1981236	00:00:20 21MB	

Search
Sort
Image List
Execute
Select All
Clear All
Back

The [Image List] screen appears.

- 3 Use the , , , and buttons to select [Rec Info], and press the ENTER button.

Image List

Recording Date: 09/29/2014 12:43:08 Patient ID: U2964004



1

Display
All
Rec Info
Operation
Save to
Execute
Select All
Clear All
Back

The information on recorded data is displayed.

Rec Info

Patient ID U2964004

Patient Name

Sex Unknown

Date of Birth

Doctor

Case

Recording Date 09/29/2014 12:43:08

Status Not Saved to Media

Size 12MB, 00:00:11

Back

Viewing Information on Recorded Data

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

- 1 Select [Image List] for the operation box in the [Recording List] screen.
- 2 In the [Recording List] screen, use the and buttons to select the recorded data, and press the ENTER button.

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.

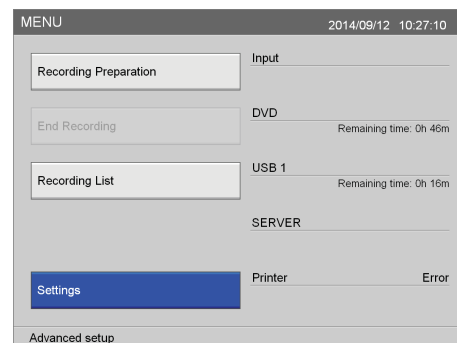
- Language Settings (*page 68*)
Configure the display language and date display format.
- Date and Time Settings (*page 69*)
Configure the current date and time.
- Function Settings (*page 72*)
Configure initial settings related to recording.
- Device Settings (*page 80*)
Configure initial settings for external devices.
- Password Settings (*page 86*)
Register or edit the password for the system administrator settings.
- Network Settings (*page 87*)
Configure initial settings related to the network, and server.
- Initial User Settings (*page 91*)
Configure initial setting values related to recording quality and storage media.
- Editing the Doctor List (*page 94*)
Register and edit information regarding the doctors performing the surgical procedures and examinations.
- Editing the Case List (*page 98*)
Register or edit entries for surgical procedures and examinations.
- Auto Delete Settings (*page 101*)
Configure settings related to the auto delete function.

Displaying the [System Admin Settings] Screen

- 1 Press the MENU button.

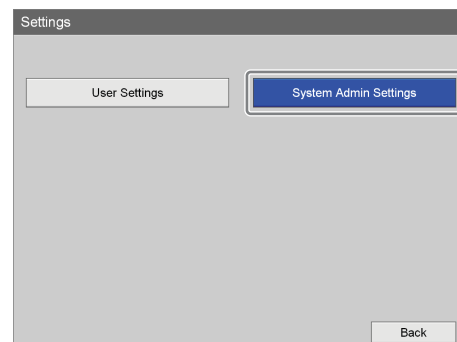
The [MENU] screen appears.

- 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.

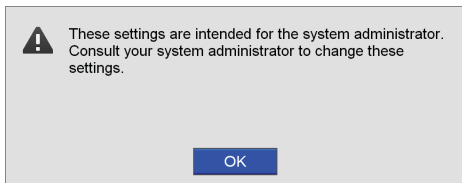


Tip

If password protection is enabled, a password entry screen will appear.

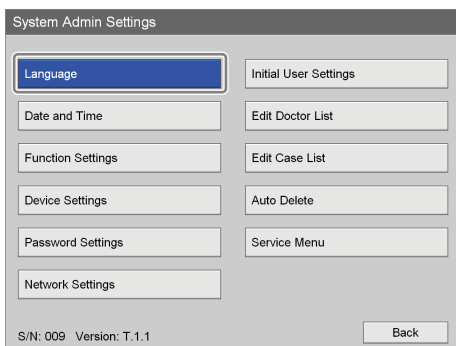
A confirmation message appears.

- 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.

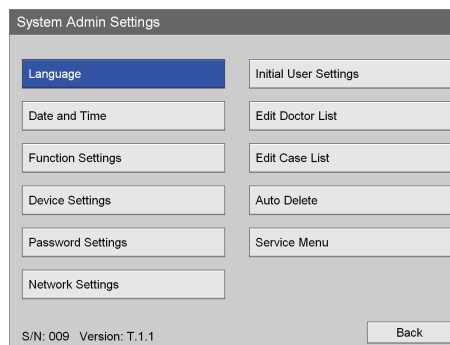
About the [Service Menu]

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

Language Settings

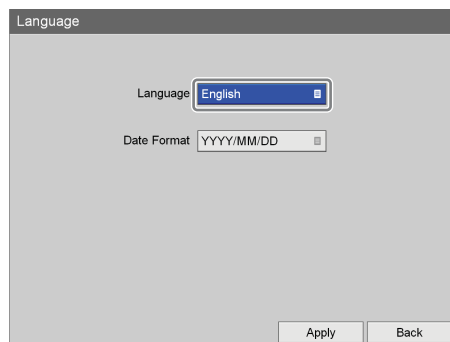
Configure the display language and date display format.

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



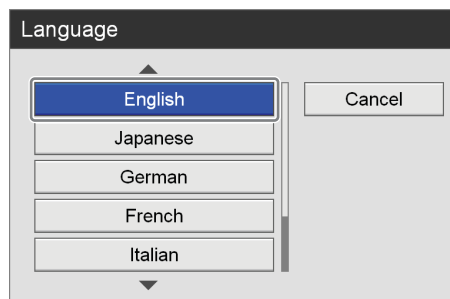
The [Language] screen appears.

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



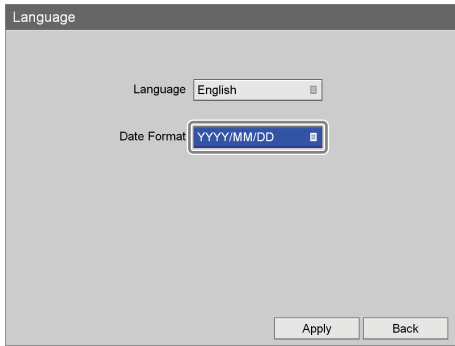
The [Language] screen appears.

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



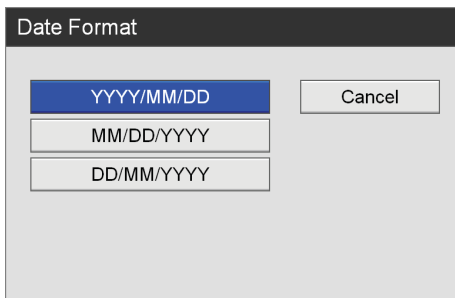
The [Language] screen appears again.

- 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.

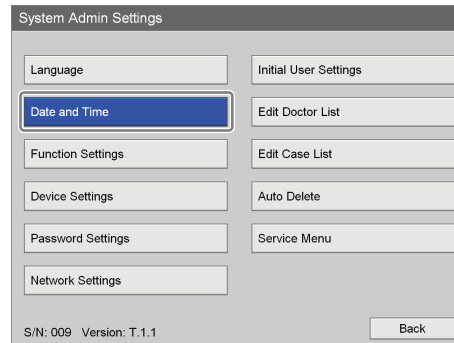
- 6 When you finish configuration, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button.

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

Date and Time Settings

Configure the current date and time.

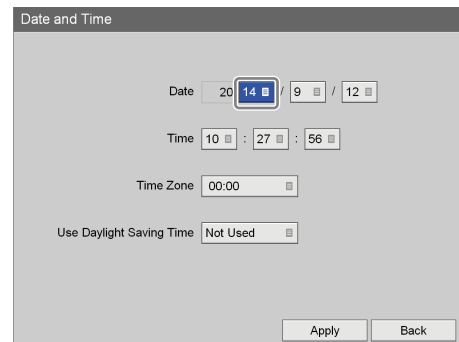
- 1 In the [System Admin Settings] screen, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Date and Time], and press the ENTER button.



The [Date and Time] screen appears.

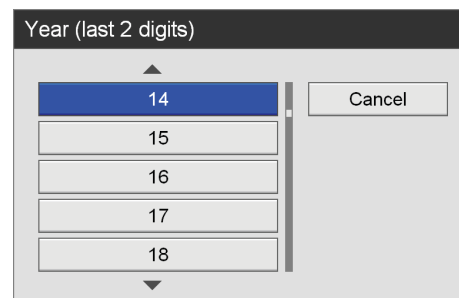
- 2 Configure the date.

- 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.

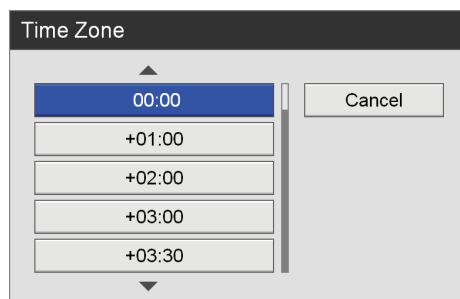
4 Configure the time zone and daylight saving time settings.

Select an item using the **▲** and **▼** buttons, and press the ENTER button to display the setting screen for that item.

[Time Zone]

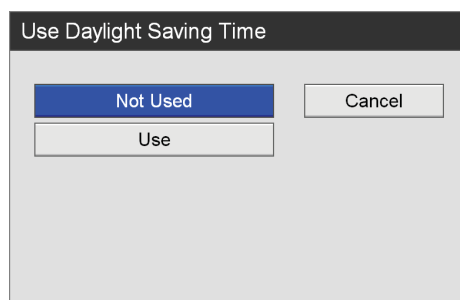
Select a time zone in the setting screen that appears, and press the ENTER button.

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 70).



[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

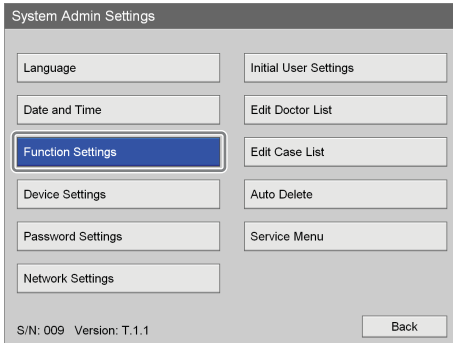
Time zone		DST
GMT+02:00	Athens, Bucharest, Istanbul	○
GMT+02:00	Amman	○
GMT+02:00	Windhoek	○
GMT+02:00	Jerusalem	○
GMT+02:00	Cairo	○
GMT+02:00	Harare, Pretoria	
GMT+02:00	Beirut	○
GMT+02:00	Helsinki, Kiev, Riga, Skopje, Sofia, Tallinn, Vilnius	○
GMT+02:00	Minsk	○
GMT+03:00	Kuwait, Riyadh	
GMT+03:00	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

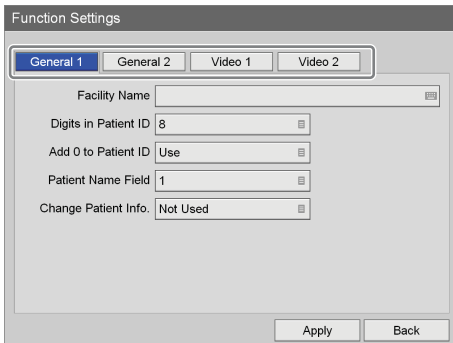
Configure initial settings related to recording and external devices.

- 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 72)

“[General 2] Tab” (page 73)

“[Video 1] Tab” (page 77)

“[Video 2] Tab” (page 79)

- 3 When you finish configuration, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button.

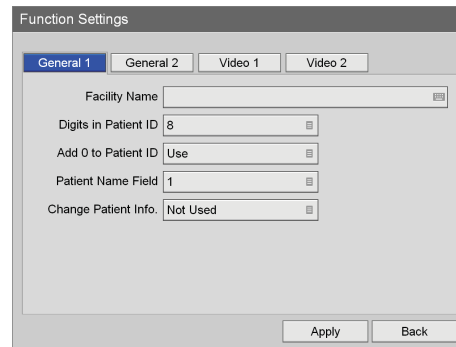
The configurations are saved, and the [System Admin Settings] screen appears again.

[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]

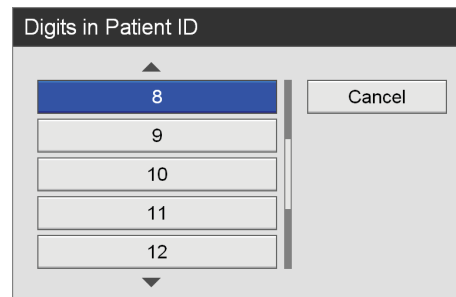
Enter the facility name (up to 32 characters) using the on-screen keyboard.

For details on using the on-screen keyboard, see “Using the On-Screen Keyboard” (page 34).

[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.

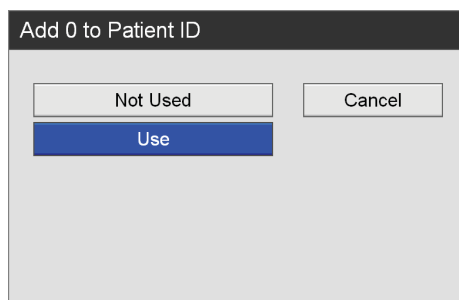
The default setting is [8]. Between 4 to 16 digits can be used.



[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].

- 3** To configure settings in other tabs, use the **▲**, **▼**, **◀**, and **▶** buttons to select a tab.

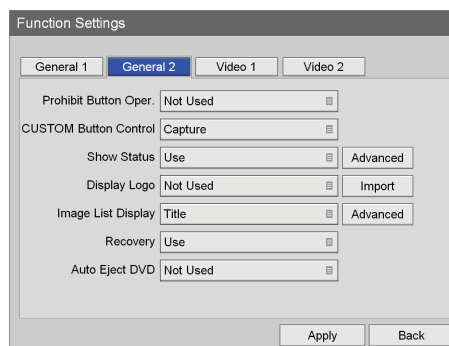
If you are finished configuring [Function Settings], use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button to save the configurations.

[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.



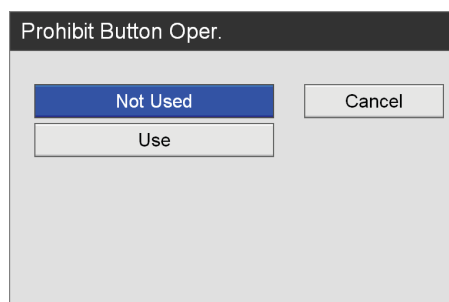
[Prohibit Button Oper.]

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

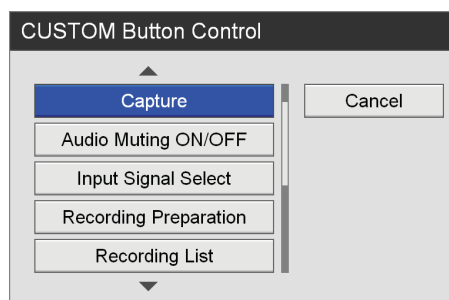
The prohibit button operation function does not apply to the MENU, **▲**, **▼**, **◀**, **▶**, BACK, and ENTER buttons and the **⏻** (on/standby) switch.



[CUSTOM Button Control]

Select the function to assign to the CUSTOM button in the setting screen that appears, and press the ENTER button.

The default setting is [Capture].



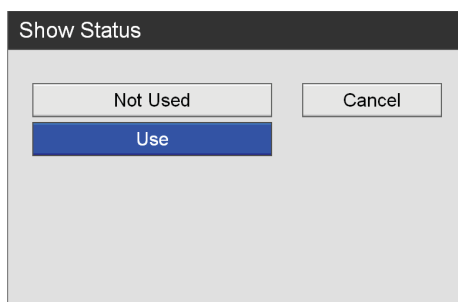
The functions that can be assigned are as follows.

Assignable function	Description
Not Used	A function is not assigned.
Capture	Capture still images.
Audio Muting ON/OFF	Enable or disable audio muting.

Assignable function	Description
Input Signal Select	Switch the input signal. The input signal switches as follows with each press: DVI-D → HDMI → 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.
Show Patient List	Display the patient list.
Add to Patient List	Add patients to the patient list.
Set Chapter	Set a chapter.
Test Record	Perform a test recording.

[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 75).

[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.

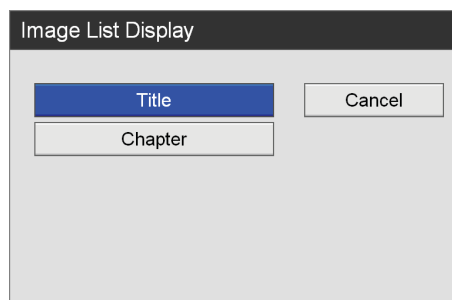
For details on importing, see “To import a logo” (page 76).

[Image List Display]

Select whether thumbnail images of videos in the [Image List] screen are displayed by title or chapter in

the setting screen that appears, and press the ENTER button.

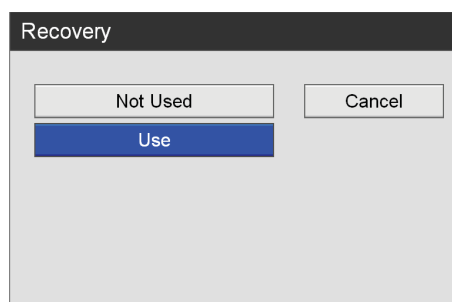
The default setting is [Title].



[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].

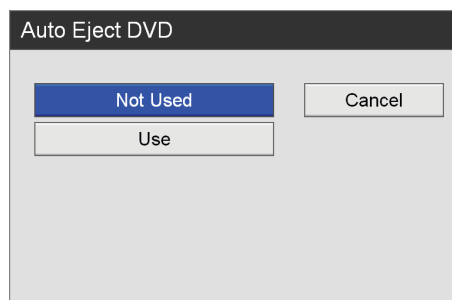


Recovery of recorded data is the only action performed when [Not Used] is selected.

[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].



- 3** To configure settings in other tabs, use the **▲**, **▼**, **◀**, and **▶** buttons to select a tab.

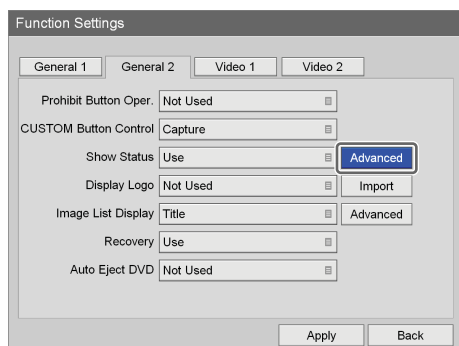
If you are finished configuring [Function Settings], use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button to save the configurations.

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.

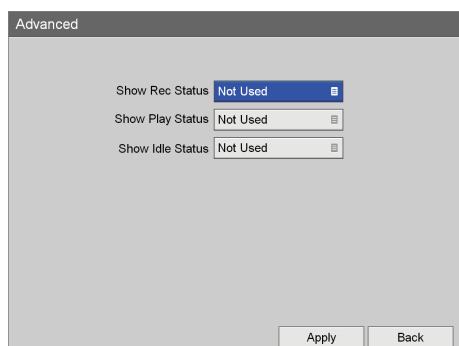
[Advanced] appears when [Show Status] is set to [Use].



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.

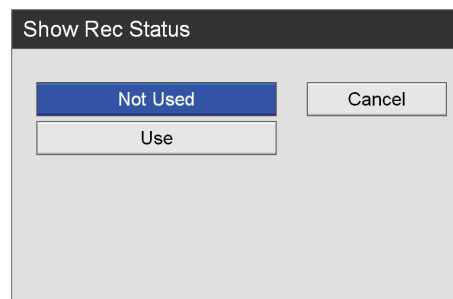


[Show Rec Status]

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.

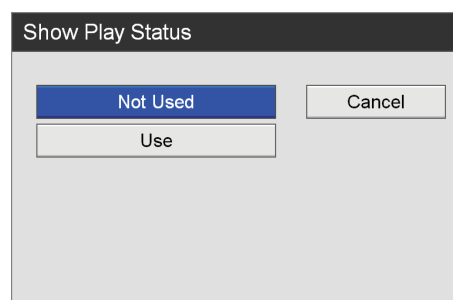
The default setting is [Not Used].



[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].

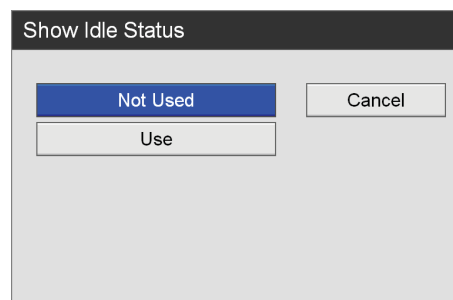


[Show Idle Status]

Select whether to display idle status information in the setting screen that appears, and press the ENTER button.

If you select [Use], printing and other status information will appear during idle conditions (i.e., when recording or playback is stopped). Green indicates printing in progress, and orange indicates errors.

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. In addition, status information will not be updated during the auto live function.

To import a logo

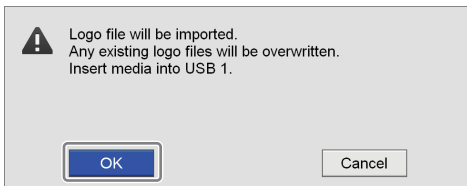
Import the logo file you want to display.

For details on preparing a logo file, see “To prepare a logo file” (page 76).

- 1 Copy the logo file onto a USB memory device, and insert the device into a USB 1 port on the front panel of 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.

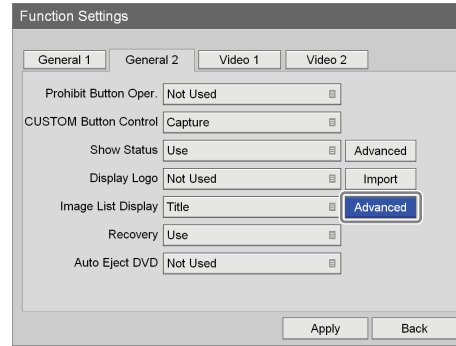
Create a folder with the following name in the uppermost directory of the USB memory device, and copy the logo file.

Folder name: DisplayLogo

To configure advanced image list settings

Specify the selection state of recorded data when you perform copy or print operations in the [Image List] screen.

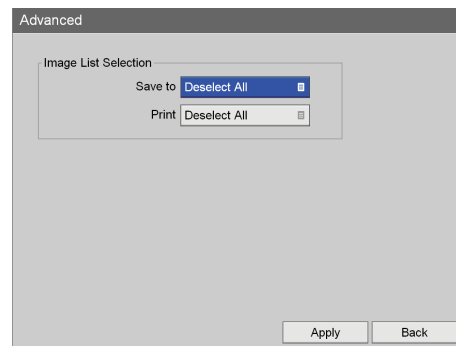
- 1 Use the ◀ and ▶ buttons to select [Advanced], and press the ENTER button.



The [Advanced] settings screen appears.

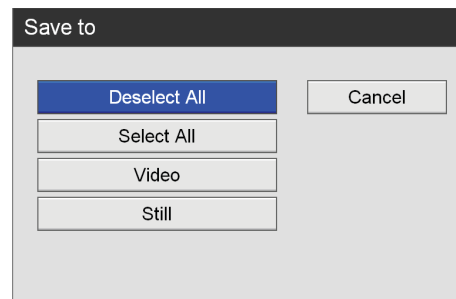
- 2 Configure each setting.

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



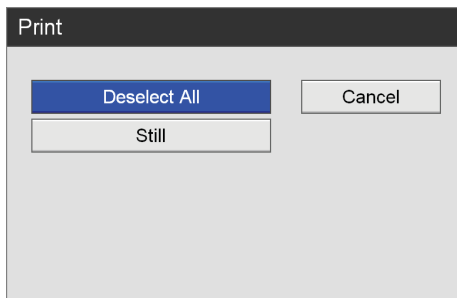
[Save to]

Select the selection state of recorded data when you specify [Save to] for the [Operation] box. The default setting is [Deselect All].



[Print]

Select the selection state of recorded data when you specify [Print] for the [Operation] box. The default setting is [Deselect All].

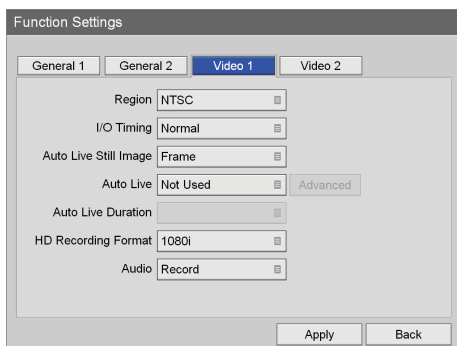


[Video 1] Tab

Configure recording settings.

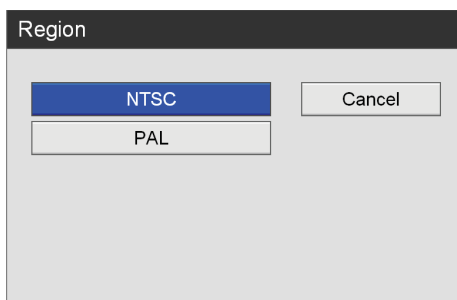
- 1 Use the ◀ and ▶ buttons to select the [Video 1] tab.
- 2 Configure each setting.

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



[Region]

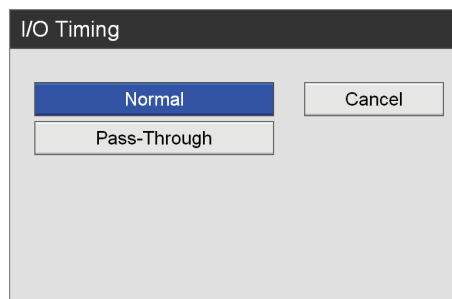
Select [NTSC] or [PAL] in the setting screen that appears, and press the ENTER button.
The default setting is [NTSC].



[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.

The default setting is [Normal].



[Auto Live Still Image]

Select the type of image to display when a video is paused in the setting screen that appears, and press the ENTER button.

The default setting is [Frame].



[Auto Live]

Select whether to use the auto live function in the setting screen that appears, and press the ENTER button.

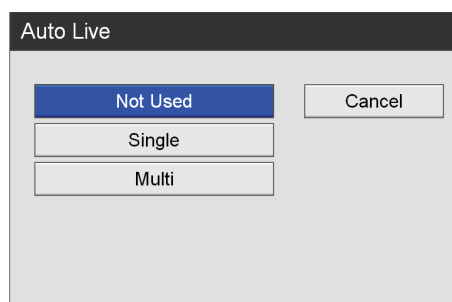
When the auto live function is enabled and you capture a still image, the captured image is displayed for the duration specified with the [Auto Live Duration] setting.

When using the auto live function, you can also select whether to display a single captured image or multiple images.

In multi auto live, three or four captured images are displayed depending on the display position setting. [Advanced] appears when [Multi] is selected.

The default setting is [Not Used].

For details on this setting, see "To configure multi auto live settings" (page 78).



Tip

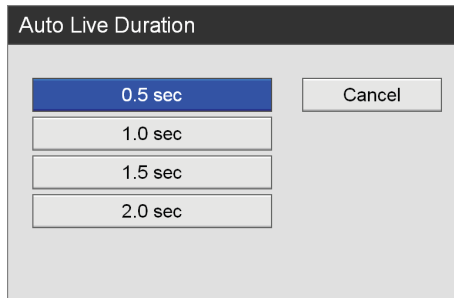
If [Auto Live] is set to [Single] or [Multi] while [I/O Timing] is set to [Pass-Through], the auto live function will not function.

[Auto Live Duration]

This setting can be configured when [Auto Live] is set to [Single] or [Multi].

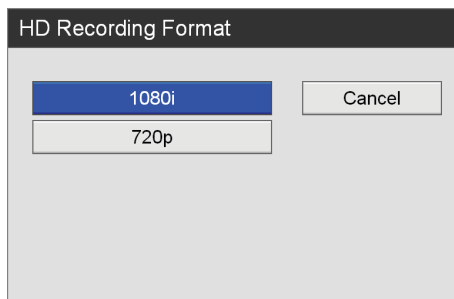
Select the duration for which still images are displayed after capture in the setting screen that appears, and press the ENTER button.

The default setting is [0.5 sec].

**[HD Recording Format]**

Select the HD format to use during recording in the setting screen that appears, and press the ENTER button.

The default setting is [1080i].

**[Audio]**

Select whether to record audio in the setting screen that appears, and press the ENTER button.

The default setting is [Record].



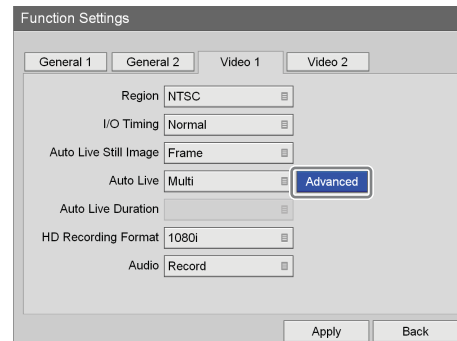
- 3** To configure settings in other tabs, use the **↑**, **↓**, **←**, and **→** buttons to select a tab.

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 multi auto live settings

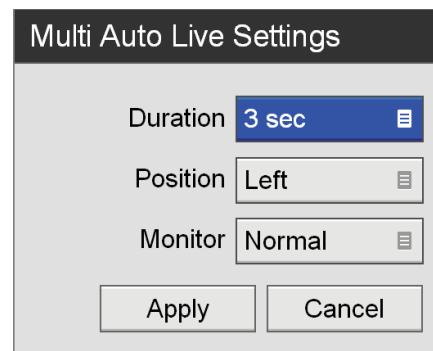
Configure duration and position settings for the captured images that are displayed when using the multi auto live function.

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



- 2** Configure each setting.

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

**[Duration]**

Select the duration for which captured still images are displayed.

The default setting is [3 sec].

[Position]

Select the position in which captured still images are displayed.

The default setting is [Left].

The four most recent still images are displayed when [Top] or [Bottom] is selected, and the three most recent still images are displayed when [Left] or [Right] is selected.

[Monitor]

Select the monitor mode.

The default setting is [Normal].

Tip

If the connected monitor is in full mode, the left and right edges of the still images displayed for the auto live function may be cropped. In such cases, set [Monitor] to [Normal].

- 3 When you finish configuration, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button.

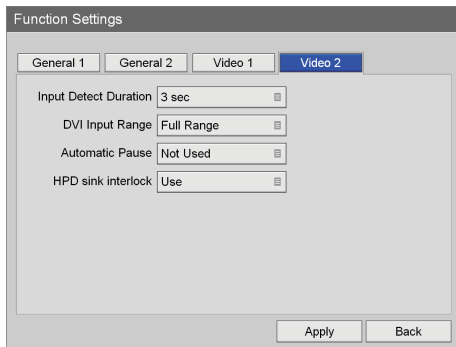
The [Video 1] tab appears again.

[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].

[Automatic Pause]

Select whether to automatically pause recording when there is no input signal.
The default setting is [Not Used].

If you select [Use], recording will pause if there is no input signal for 10 minutes.

[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.

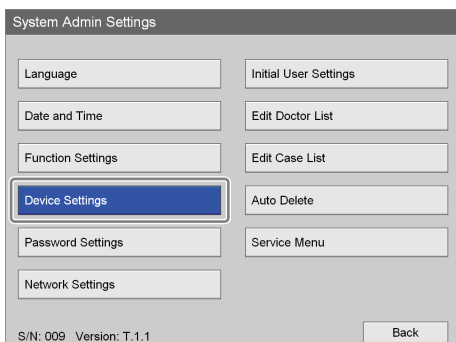
- 3 To configure settings in other tabs, use the **▲**, **▼**, **◀**, and **▶** buttons to select a tab.

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

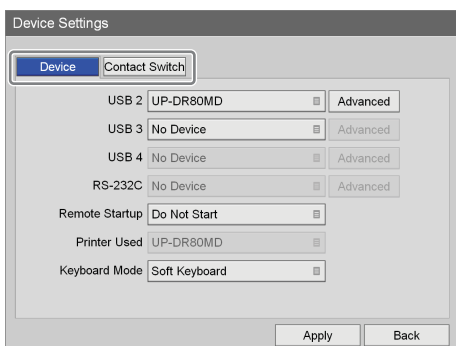
Configure settings for external devices.

- 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 80)

“[Contact Switch] Tab” (page 83)

- 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

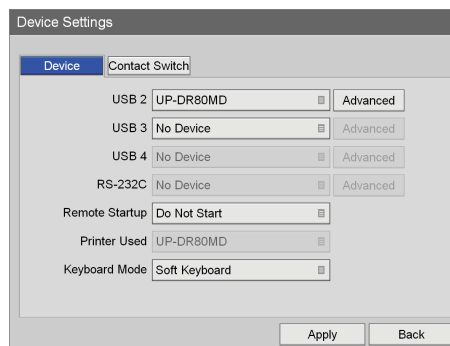
Configure settings for peripheral devices connected to the unit.

For details on devices that can be connected to the HVO-500MD/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.

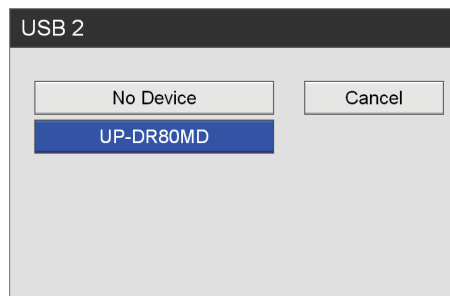


[USB 2], [USB 3]

Select the devices connected to USB 2 and 3 ports on the rear panel of the unit in the setting screens that appear, and press the ENTER button.

The available settings include devices that are compatible with the unit.

The default setting is [No Device].



If you select a printer, be sure to configure the [Printer Settings].

For details on this setting, see “To configure printer settings” (page 81).

Tip

The unit can recognize the Sony UP-DR80MD printer automatically. To have the unit recognize UP-DR80MD printers automatically, set the peripheral device setting for the USB connector to which the

printer will be connected to [No Device]. Be aware that the printer will not be recognized automatically while recording or playback is in progress or while the [Device Settings] screen is displayed.

[USB 4]

[No Device] appears for this setting on the HVO-500MD/550MD, and the setting cannot be changed.

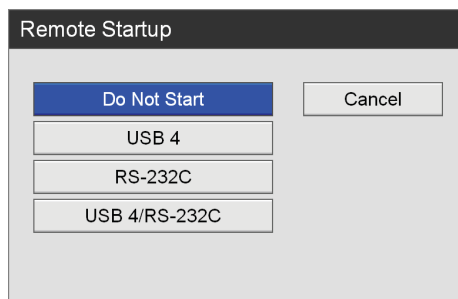
[RS-232C]

[No Device] appears for this setting on the HVO-500MD/550MD, and the setting cannot be changed.

[Remote Startup]

Select whether to link the power on/off operations of remote systems via USB port 4 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.

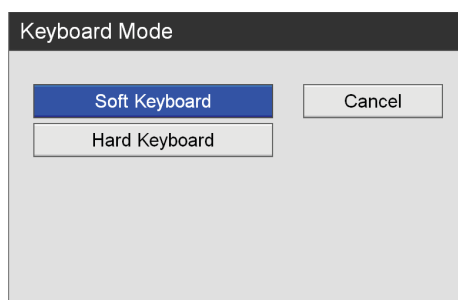
[Printer Used]

When a printer is specified in the above [USB 2] or [USB 3] setting, the printer's name appears here.

[Keyboard Mode]

Select whether to use the soft keyboard (i.e., on-screen keyboard) or a hard keyboard in the setting screen that appears, and press the ENTER button.

The default setting is [Soft Keyboard].



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

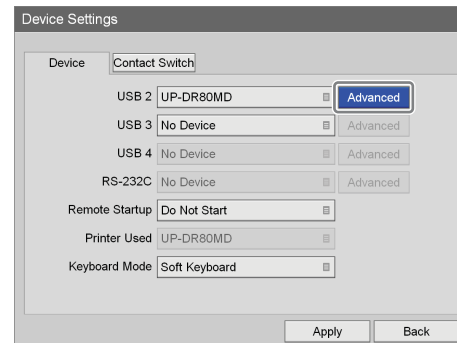
If you are finished configuring [Device Settings], use the ↑, ↓, ←, and → buttons to select [Apply], and press the ENTER button to save the configurations.

To configure printer settings

When a UP-DR80MD is selected, configure the color balance, brightness, and other settings.

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

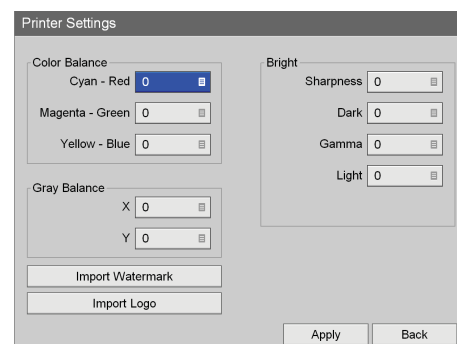
[Advanced] appears when a printer is selected.



The [Printer Settings] screen appears.

- 2 Configure each setting.

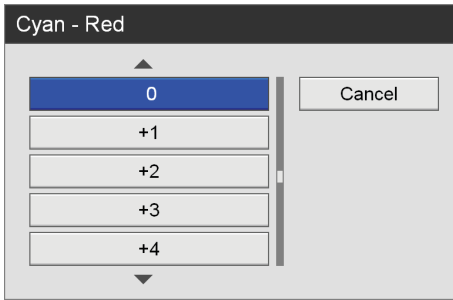
Select an item using the ↑ and ↓ buttons, and press the ENTER button to display the setting screen for that item.



[Color Balance]

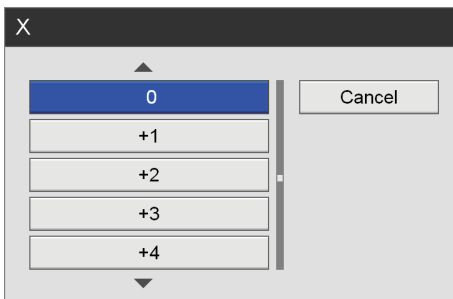
Adjust the color balance for cyan, magenta, and yellow and red, green, and blue.

Select a correction value in the setting screens that appear, and press the ENTER button.



[Gray Balance]

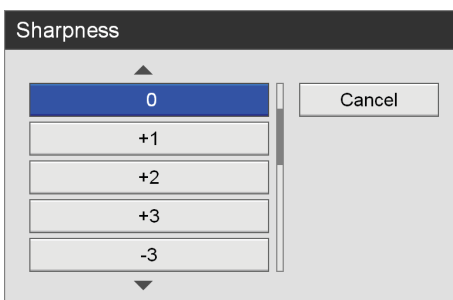
Adjust the balance for achromatic colors. Select a correction value in the setting screens that appear, and press the ENTER button.



[Bright]

Configure the [Sharpness], [Dark], [Gamma], and [Light] settings to adjust the brightness of printed images.

Select a correction value in the setting screens that appear, and press the ENTER button.



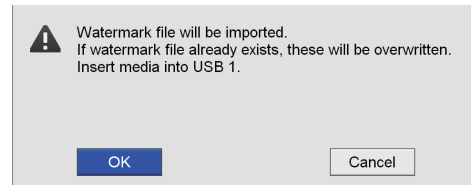
[Import Watermark]

Import a watermark file.

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

For details on preparing a watermark file, see “To prepare a watermark file” (page 82).

When you select [Import Watermark] and press the ENTER button, the following message appears. Select [OK] and press the ENTER button.



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

[Import Logo]

Import a logo file.

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

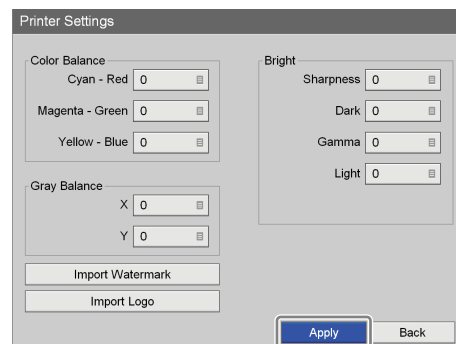
For details on preparing a logo file, see “To prepare a logo file” (page 83).

When you select [Import Logo] and press the ENTER button, the following message appears. Select [OK] and press the ENTER button.



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

- 3 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.

To prepare a watermark file

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

- 1 Prepare the watermark file.

The watermark file must meet the following conditions.

- **For A4 size paper**

File format: 24-bit bitmap

File name: watermark_A4.bmp

Size: 2392 × 3400 pixel

Color:

Background: RGB (255, 255, 255) white

Watermark: RGB (0, 0, 0) black

- **For letter size paper**

File format: 24-bit bitmap

File name: watermark_85x11.bmp

Size: 2464 × 3192 pixel

Color:

Background: RGB (255, 255, 255) white

Watermark: RGB (0, 0, 0) black

2 Copy the watermark onto a USB memory device.

Create a folder with the following name in the uppermost directory of the USB memory device, and copy the watermark file.

Folder name: Watermark

To prepare a logo file

To print logos, prepare a logo file on 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: printlogo_UP-DR80MD.bmp

Size: 94 (height) × 900 (width) pixel

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: PrintLogo

[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.

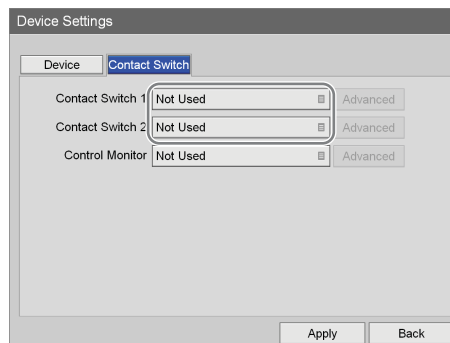
1 Use the ◀ and ▶ buttons to select the [Contact Switch] tab.

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.

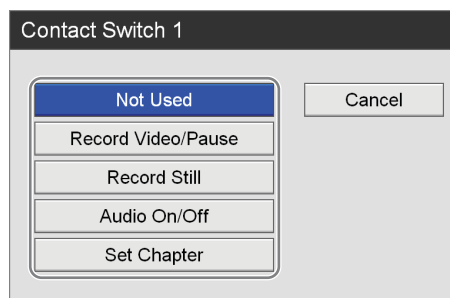
The procedure for configuring the [Contact Switch 1] and [Contact Switch 2] settings is the same. The default setting is [Not Used].

- 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.

[Record Still]

Capture still images.

[Audio On/Off]

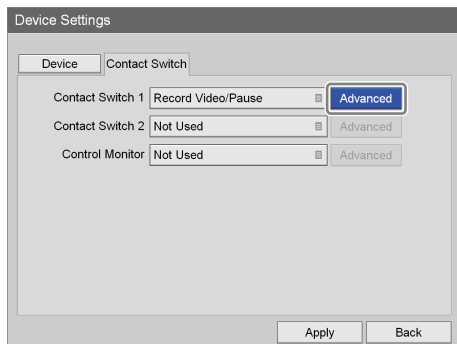
Enable or disable audio output.

[Set Chapter]

Insert a chapter separator without saving a still image of the recording.

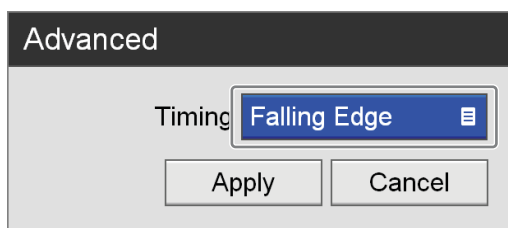
The [Contact Switch] tab appears again.

- 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.

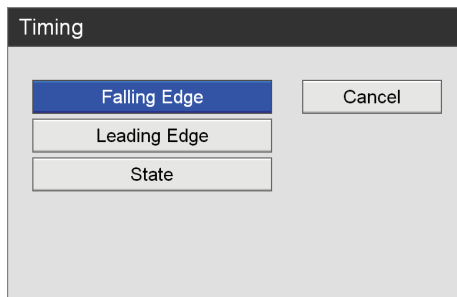


The [Timing] screen appears.

- ⑤ Use the ▲ and ▼ buttons to select the control timing, and press the ENTER button. The default setting is [Falling Edge]. If [Record Still] is selected as the function to be controlled, the [State] setting cannot be selected here.

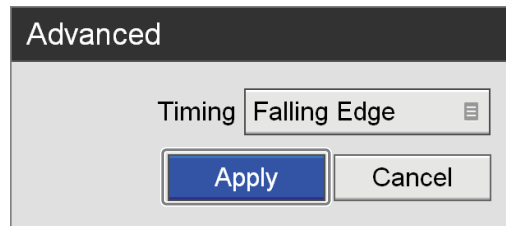
Tip

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.

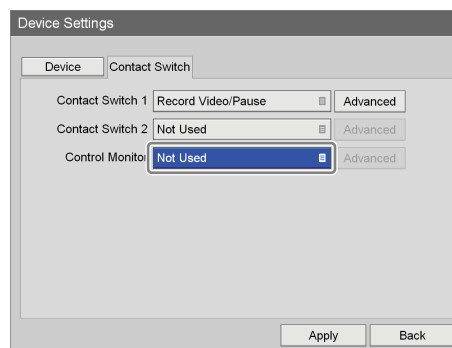
- ⑥ Use the ▲ and ▼ buttons to select [Apply], and press the ENTER button.



The [Contact Switch] tab appears again.

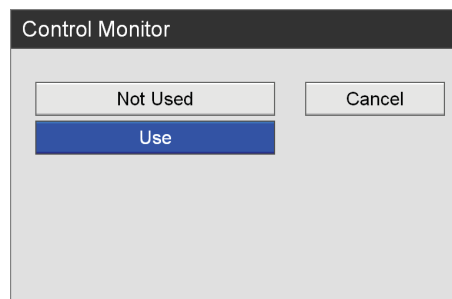
- 3** If you want to use the tally lamp control and video input switching functions for the monitor, configure the [Control Monitor] setting. The default setting is [Not Used].

- ① Use the ▲ and ▼ buttons to select the [Control Monitor] box, and press the ENTER button.



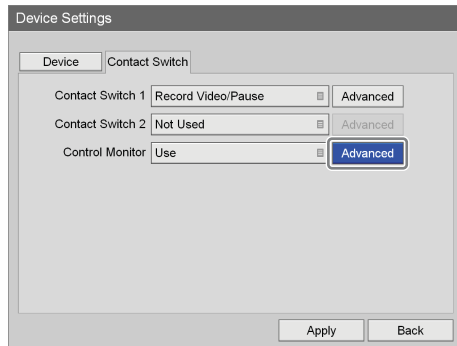
The [Control Monitor] screen appears.

- ② Use the ▲ and ▼ buttons to select [Use], and press the ENTER button.



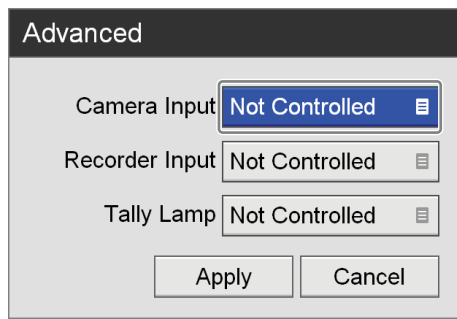
The [Contact Switch] tab appears again.

- 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].



[Camera Input]

Configure this to output images from an endoscopic device onto the monitor.

[Recorder Input]

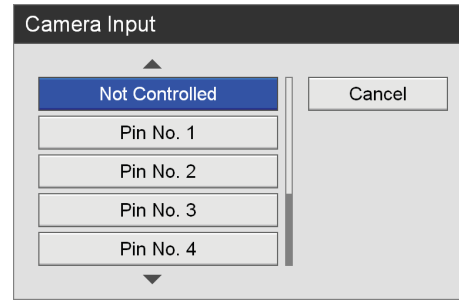
Configure this to output images from this unit onto the monitor.

[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 (endoscopic image inputs), recorder signal inputs (image inputs from this unit), and the recording status tally lamp (tally lamp on/off) control.

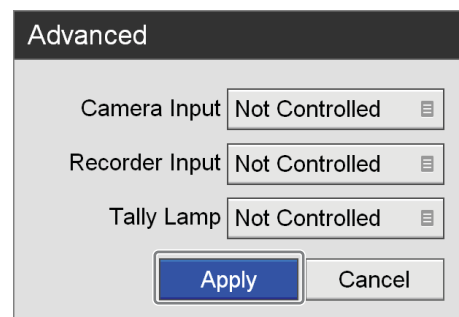


Tips

- 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 [Device Settings], use the ▲, ▼, ◀, and ▶ buttons to select [Apply], and press the ENTER button to save the configurations.

Password Settings

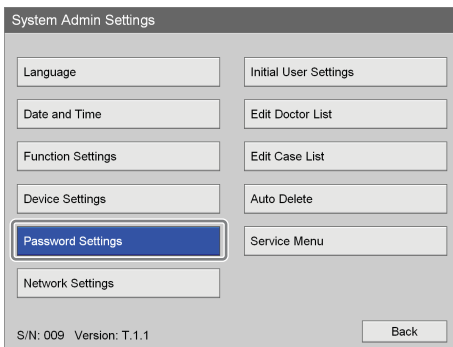
Configure password settings to prevent unauthorized changes to the [System Admin Settings]. When password protection is enabled, a password entry screen appears when [System Admin Settings] is selected in the [Settings] screen.

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.

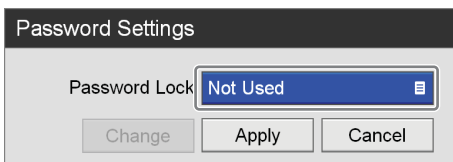
To enable password protection

- 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.

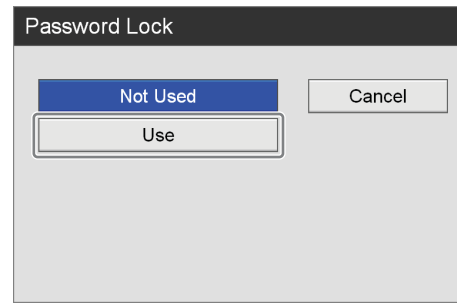
- 2 Use the **↑** and **↓** buttons to select [Password Lock], and press the ENTER button.



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.

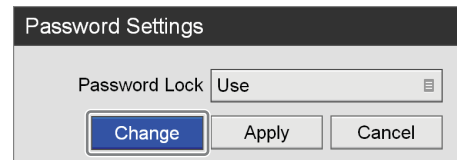
The configuration is saved.

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.

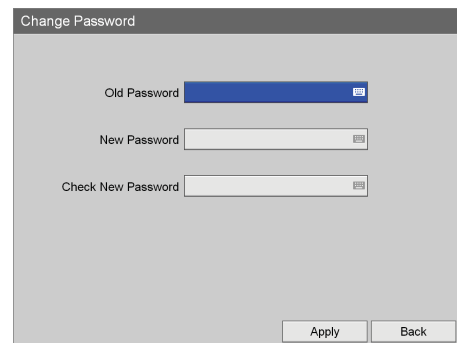
To change the password

- 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 34).

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 34).

[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 34).

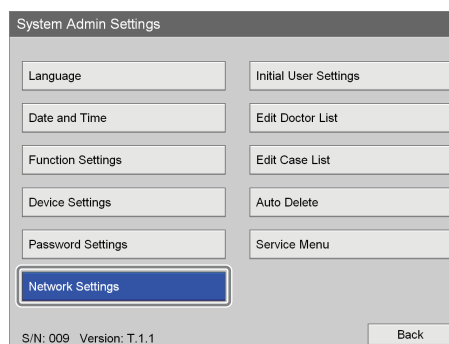
- 3 Use the **▲** and **▼** buttons to select [Apply], and press the ENTER button.

The new password is saved.

Network Settings

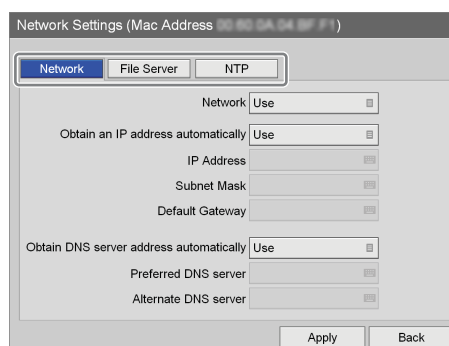
Configure initial settings related to the network and server.

- 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 87)

“[File Server] Tab” (page 89)

“[NTP] Tab” (page 89)

- 3 When you finish configuration, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button.

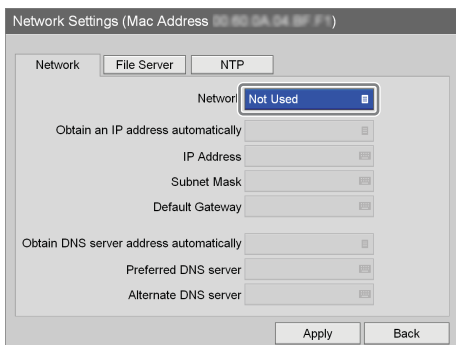
The configurations are saved, and the [System Admin Settings] screen appears again.

[Network] Tab

Configure these settings when using a network.

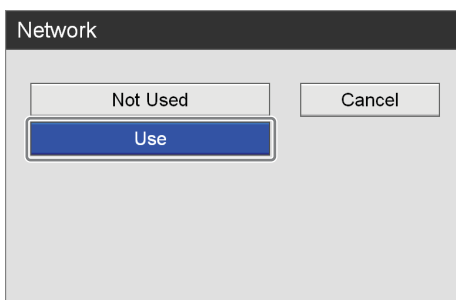
- 1 Use the **◀** and **▶** buttons to select the [Network] tab.

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



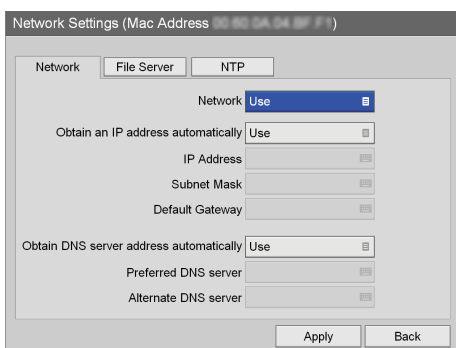
The [Network] screen appears.

- 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.



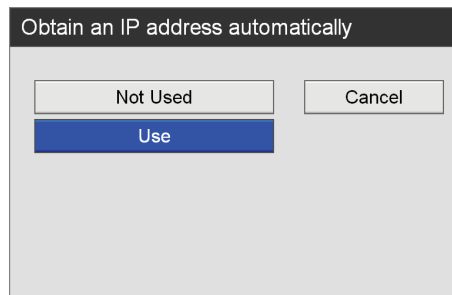
[Obtain an IP address automatically]

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 34).

[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 34).

[Default Gateway]

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

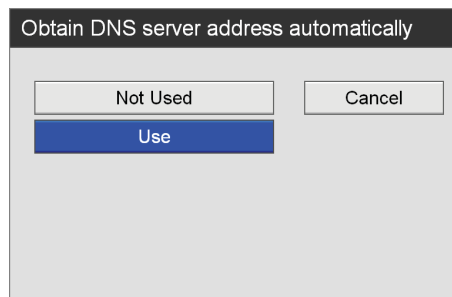
If you are only using a local network and not connecting to other networks, do not configure this setting.

For details on using the on-screen keyboard, see “Using the On-Screen Keyboard” (page 34).

[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 34).

[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 34).

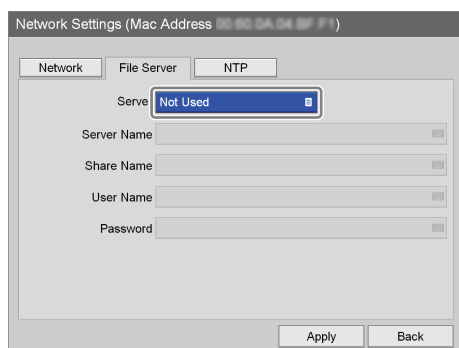
- 5 To configure settings in other tabs, use the **↑**, **↓**, **←**, and **→** buttons to select a tab.

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

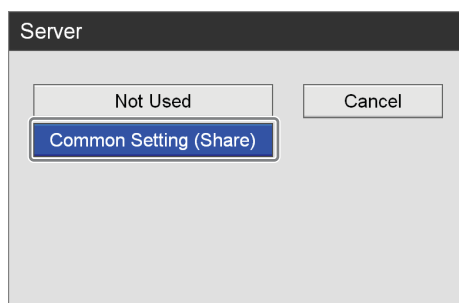
Configure these settings when specifying a server as the storage location for recorded data.

- 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.

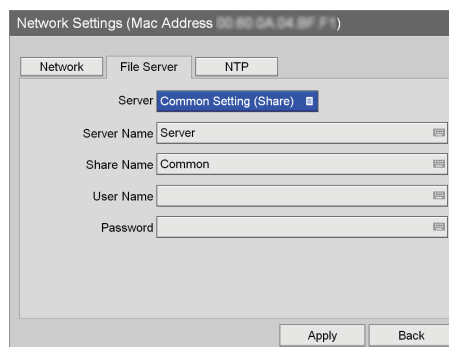
- 3 Use the **↑** and **↓** buttons to select [Common Setting (Share)], and press the ENTER button.



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 34).

[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 34).

[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 34).

[Password]

Enter the password using the on-screen keyboard.

For details on using the on-screen keyboard, see “Using the On-Screen Keyboard” (page 34).

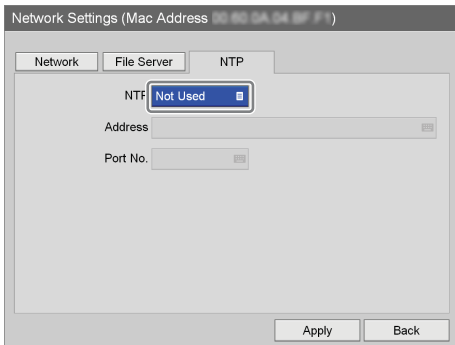
- 5 To configure settings in other tabs, use the **↑**, **↓**, **←**, and **→** buttons to select a tab.

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

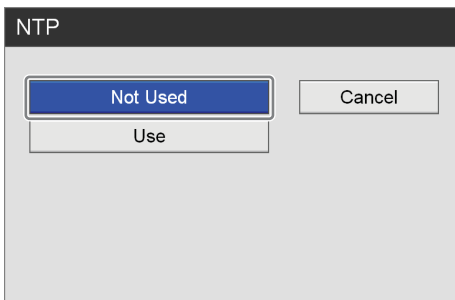
Configure these settings to obtain the current time from the NTP server.

- 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.

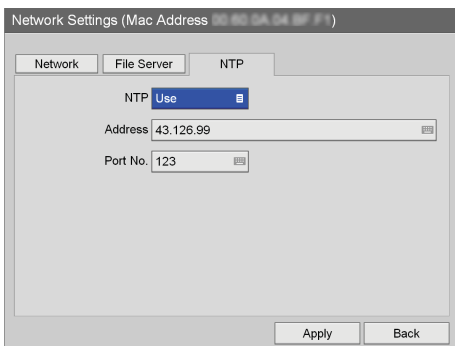
- 3 Use the **▲** and **▼** buttons to select [Use], and press the ENTER button.



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 34).

[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 34).

- 5 To configure settings in other tabs, use the **▲**, **▼**, **◀**, and **▶** buttons to select a tab.

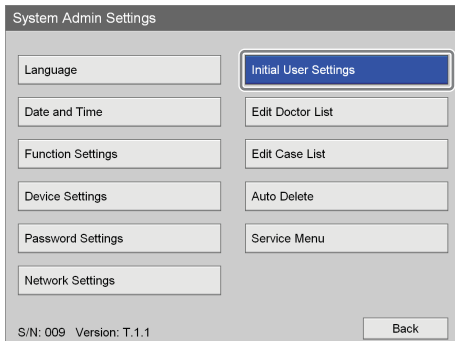
If you are finished configuring [Network Settings], use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button to save the configurations.

Initial User Settings

Configure initial setting values related to recording quality and storage media.

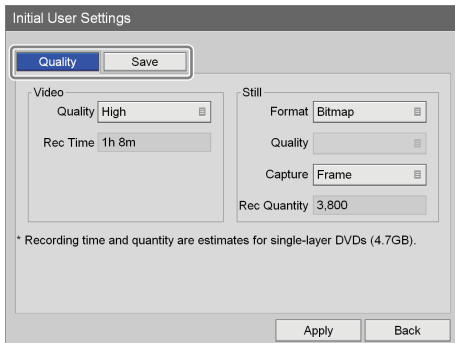
The settings configured here will be used as the initial default settings when recording.

- 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 91)

"[Save] Tab" (page 92)

- 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

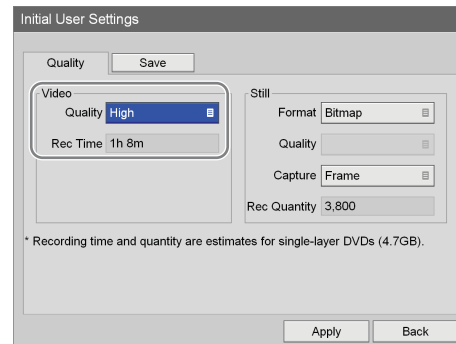
Configure quality settings for videos.

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.

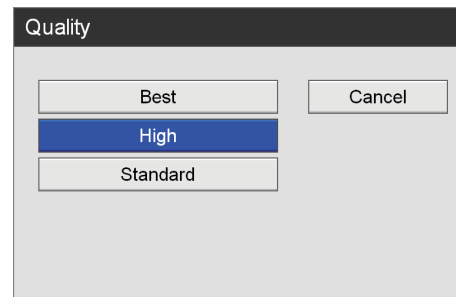
- 2 Configure the quality setting for videos.

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.



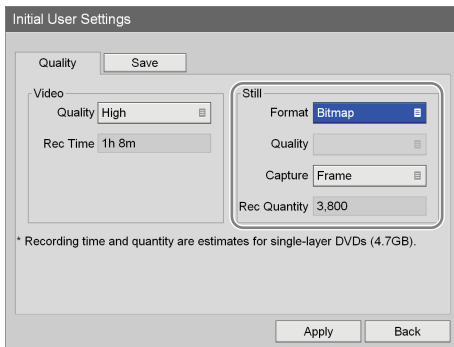
Tip

[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).

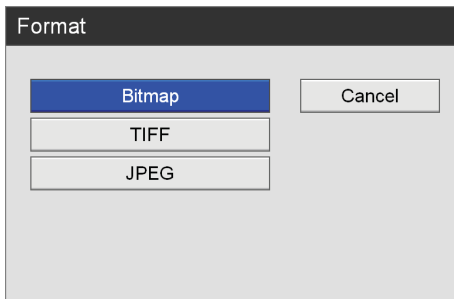
3 Configure the quality settings for still images.

Select an item using the **▲** and **▼** buttons, and press the ENTER button to display the setting screen for that item.



[Format]

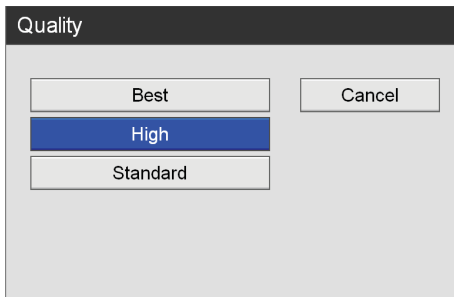
Select a format for still image files in the setting screen that appears, and press the ENTER button.



[Quality]

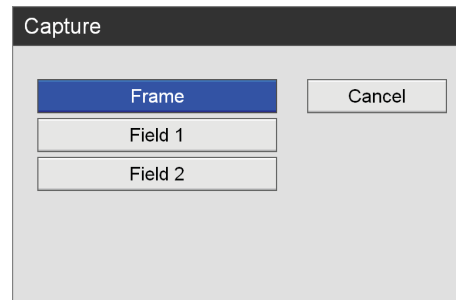
This setting can be configured when [Format] is set to [JPEG].

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



[Capture]

Select whether to use the frame capture or field capture mode in the setting screen that appears, and press the ENTER button.



Tip

[Rec Quantity] displays the following information.

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

4 When you finish configuration, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button.

The [System Admin Settings] screen appears again.

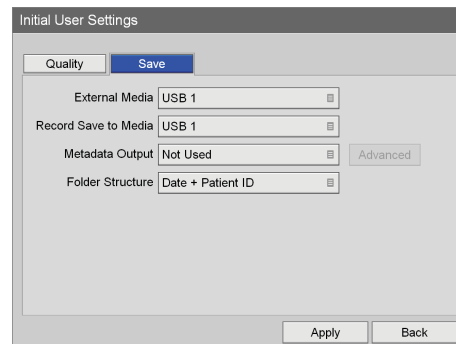
[Save] Tab

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.

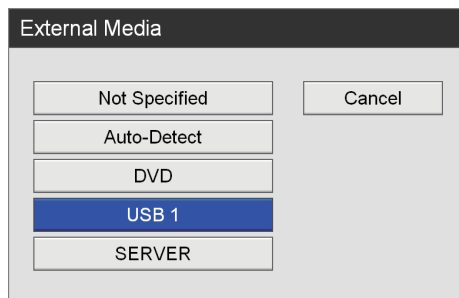
Select an item using the **▲** and **▼** buttons, and press the ENTER button to display the setting screen for that item.



[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].

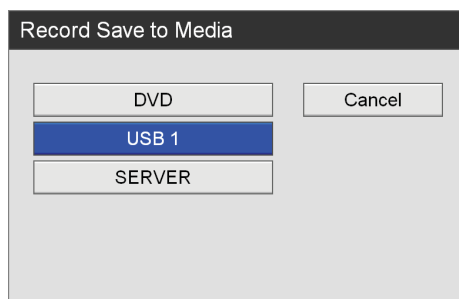


The 'External Media' screen displays a list of storage options: 'Not Specified', 'Auto-Detect', 'DVD', 'USB 1', and 'SERVER'. The 'USB 1' option is highlighted with a blue background. A 'Cancel' button is located to the right of the list.

[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.

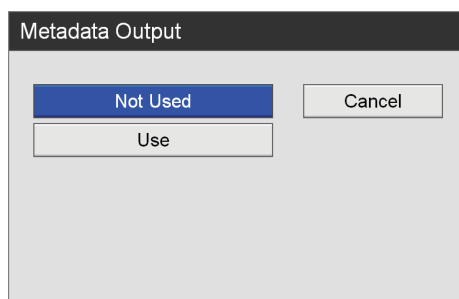
The default setting is [USB 1].



The 'Record Save to Media' screen displays a list of storage options: 'DVD', 'USB 1', and 'SERVER'. The 'USB 1' option is highlighted with a blue background. A 'Cancel' button is located to the right of the list.

[Metadata Output]

Specify whether to output metadata.



The 'Metadata Output' screen displays two options: 'Not Used' and 'Use'. The 'Not Used' option is highlighted with a blue background. A 'Cancel' button is located to the right of the list.

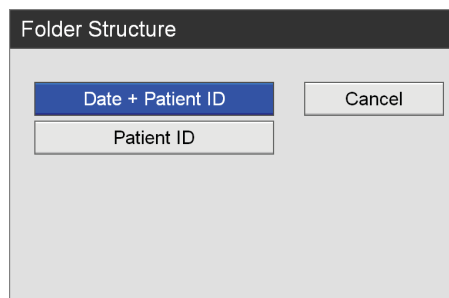
[Advanced] appears when you select [Use].

For details on this setting, see “To configure metadata output settings” (page 93).

[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].



The 'Folder Structure' screen displays two options: 'Date + Patient ID' and 'Patient ID'. The 'Date + Patient ID' option is highlighted with a blue background. A 'Cancel' button is located to the right of the list.

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.

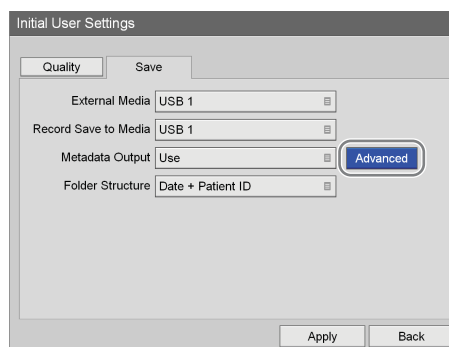
- 3 When you finish configuration, use the **↑**, **↓**, **←**, and **→** buttons to select [Apply], and press the ENTER button.

The [MENU] screen appears again.

To configure metadata output settings

When metadata output is enabled, specify the information to output and the format of the metadata.

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

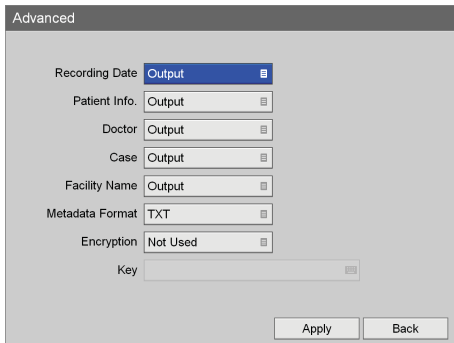


The 'Initial User Settings' screen has two tabs: 'Quality' and 'Save'. The 'Save' tab is active. It contains four settings: 'External Media' (USB 1), 'Record Save to Media' (USB 1), 'Metadata Output' (Use), and 'Folder Structure' (Date + Patient ID). Each setting has a dropdown arrow to its right. An 'Advanced' button is located to the right of the 'Metadata Output' setting. At the bottom, there are 'Apply' and 'Back' buttons.

The [Advanced] 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.



[Recording Date]

Select whether to output the recording date and time as metadata.

The default setting is [Output].

[Patient Info.]

Select whether to output patient information (patient ID, patient name, gender, date of birth) as metadata.

The default setting is [Output].

[Doctor]

Select whether to output the name of the doctor as metadata.

The default setting is [Output].

[Case]

Select whether to output the name of the procedure as metadata.

The default setting is [Output].

[Facility Name]

Select whether to output the name of the facility as metadata.

The default setting is [Output].

[Metadata Format]

Select [XML] or [TXT].

The default setting is [TXT].

[Encryption]

Select whether to encrypt the metadata that is output.

The default setting is [Not Used].

[Key]

Configure this when [Encryption] is set to [Use]. The key is configured using 32 hexadecimal digits (0 to 9, a to f).

3 When you finish configuration, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], and press the ENTER button.

The [Save] tab appears again.

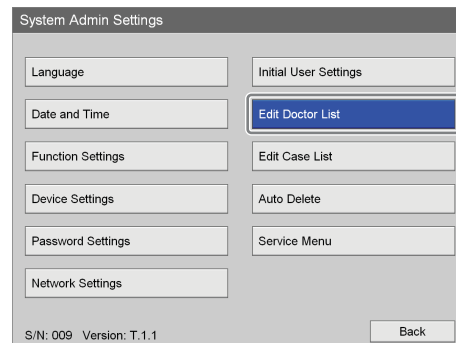
Editing the Doctor List

Register and edit information regarding the doctors performing the surgical procedures and examinations. The doctor information registered here will be used as the initial settings that appear in the other setting screens. You can register up to 100 doctors.

Registering Doctor Information

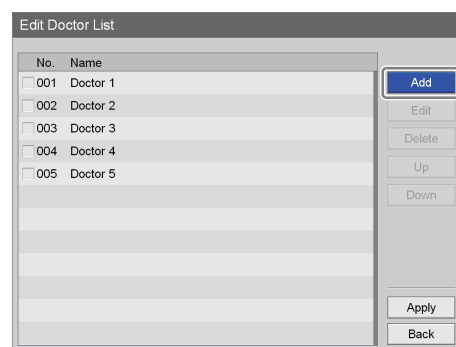
Register the name of the doctor, and configure the initial settings for each doctor.

- 1 In the [System Admin Settings] screen, use the **▲**, **▼**, **◀**, and **▶** buttons to select [Edit Doctor List], and press the ENTER button.



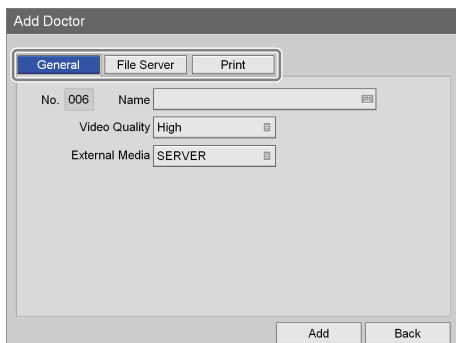
The [Edit Doctor List] screen appears.

- 2 Use the **◀** and **▶** buttons to select [Add], and press the ENTER button.



The [Add Doctor] 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 95)

“[File Server] Tab” (page 95)

“[Print] Tab” (page 96)

- 4 When you finish configuration, use the ▲, ▼, ◀, and ▶ buttons to select [Add], and press the ENTER button.

The doctor information is added.

[General] Tab

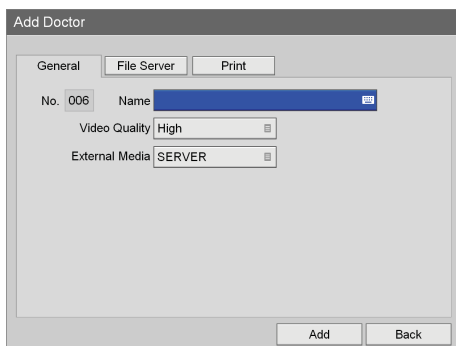
Configure general settings such as the doctor name and storage destination.

- 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 doctor (up to 20 characters) using the on-screen keyboard.

For details on using the on-screen keyboard, see “Using the On-Screen Keyboard” (page 34).

[Video Quality]

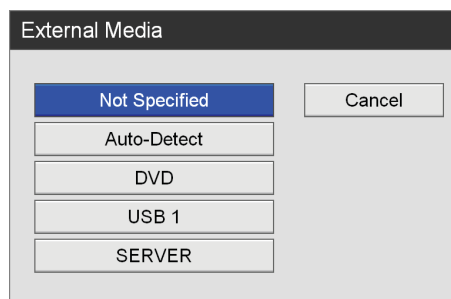
Select the video image quality in the setting screen that appears, and press the ENTER button.

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.



- 3 When you finish configuration, use the ▲, ▼, ◀, and ▶ buttons to select [Add], and press the ENTER button.

The [Edit Doctor 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 34).

[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 34).

[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 34).

[Password]

Enter the password using the on-screen keyboard.

For details on using the on-screen keyboard, see “Using the On-Screen Keyboard” (page 34).

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

The [Edit Doctor List] screen appears again.

[Print] Tab

Configure print settings.

- 1 Use the **←** and **→** buttons to select the [Print] 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.

[Printer]

Displays the name of the connected printer.

[Layout]

Select the number of still images to print on a single sheet.

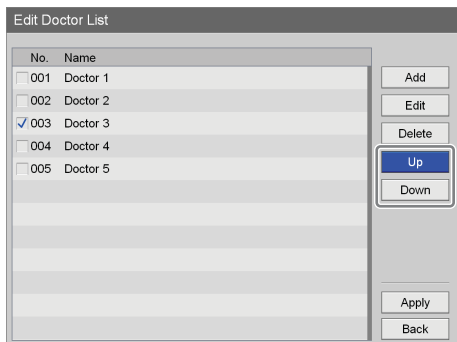
You can select to use the system setting or select from 1 × 1 (1 image), 1 × 2 (2 images), 2 × 2 (4 images), 2 × 3 (6 images), 2 × 4 (8 images), 3 × 3 (9 images), 3 × 4 (12 images), 3 × 5 (15 images), or 3 × 6 (18 images).

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

The [Edit Doctor List] screen appears again.

Sorting the Doctor List

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



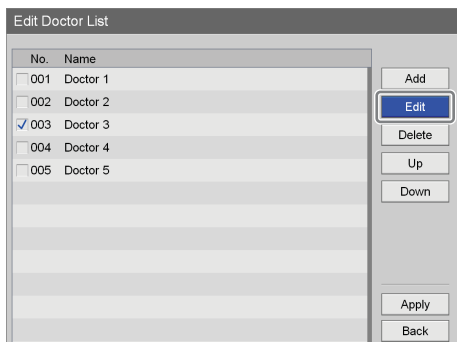
The doctor entry moves up or down one position at a time.

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

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

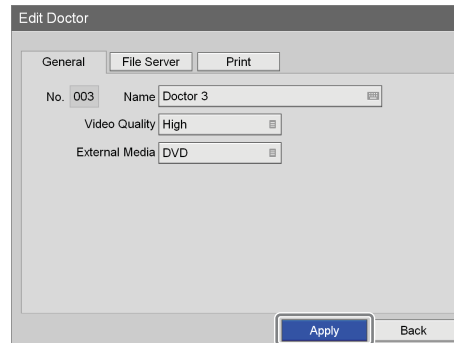
Editing Doctor Information

- 1 Use the **↑**, **↓**, **←** and **→** buttons to select a doctor entry to edit, select [Edit], and then press the ENTER button.



The [Edit Doctor] 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 95)

“[File Server] Tab” (page 95)

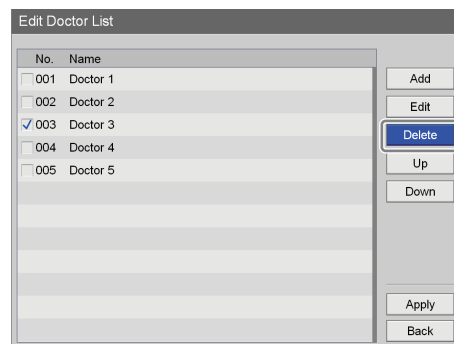
“[Print] Tab” (page 96)

Note

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

Deleting Doctor Entries

- 1 Use the **↑** and **↓** buttons to select a doctor 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 doctor 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 Case List

Register or edit categories and entries for surgical cases and examinations.

The case information that is registered here will be used in the case 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 Case List], and press the ENTER button.

The [Edit Case List] screen appears.

- 2 Use the **◀** and **▶** buttons to select [Edit], and press the ENTER button.

The [Edit 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, select [Add], and press the ENTER button.

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 34).

- 5 Use the **▲**, **▼**, **◀**, and **▶** buttons to select [Apply], 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 Case 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.

- 3 Use the **↓** button to select [Apply], and 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 Case List] screen appears again.

Note

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

Registering Cases

Register cases.

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

The [Edit Case 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 $\uparrow$, $\downarrow$, $\leftarrow$, and $\rightarrow$ buttons to select [Add], and press the ENTER button.

The [Add] screen appears.

- 5 Configure a case name, select [Add], and press the ENTER button.

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

[Case]

Enter up to 20 characters for the case name using the on-screen keyboard.

For details on using the on-screen keyboard, see “Using the On-Screen Keyboard” (page 34).

- 6 Use the $\uparrow$, $\downarrow$, $\leftarrow$, and $\rightarrow$ buttons to select [Apply], and press the ENTER button.

The case is added.

Sorting the Case List

- 1 Use the $\uparrow$ and $\downarrow$ buttons to select a case to reposition, select [Up] or [Down], and then press the ENTER button.

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

- 2 Use the $\downarrow$ button to select [Apply], and press the ENTER button.

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

Editing Case Names

- 1 Use the $\uparrow$ and $\downarrow$ buttons to select a case to rename, select [Edit], and then press the ENTER button.

The [Edit] screen appears.

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

The image shows a screen titled "Edit". It has two input fields: "No." with the value "001" and "Case" with the value "Case 3". Below these fields are two buttons: "Apply" (highlighted in blue) and "Cancel".

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

The configuration is saved.

Deleting Cases

- 1 In the [Edit Case List] screen, use the **↑** and **↓** buttons to select a case to delete, select [Delete], and then press the ENTER button.

The image shows a screen titled "Edit Case List". It features a table with columns "No." and "Case". The table contains five rows: "001 Case 1", "002 Case 2", "003 Case 3" (which is selected with a checkmark), "004 Case 4", and "005 Case 5". To the right of the table are buttons for "Edit", "Add", "Delete" (highlighted in blue), "Up", "Down", "Apply", and "Back".

A confirmation message appears.

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

The case 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.

Auto Delete Settings

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 image shows a screen titled "System Admin Settings". It has a grid of buttons: "Language", "Initial User Settings", "Date and Time", "Edit Doctor List", "Function Settings", "Edit Case List", "Device Settings", "Auto Delete" (highlighted in blue), "Password Settings", "Service Menu", and "Network Settings". At the bottom, it shows "S/N: 009 Version: T.1.1" and a "Back" button.

The [Auto Delete Setting] screen appears.

- 2 Configure the auto delete threshold value.

- ① Select [Auto Delete Value], and press the ENTER button.

The image shows a screen titled "Auto Delete Setting". It has a label "Auto Delete Value" followed by a text box containing "10%". Below the text box are two buttons: "Apply" and "Cancel".

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%].

The image shows a screen titled "Auto Delete Value". It has a list of three options: "10%", "20%", and "30%". The "10%" option is highlighted in blue. To the right of the list is a "Cancel" button.

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

The configuration is saved.

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	Patient ID	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 buttons disabled	Button operations on the front panel 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.
WARN.HDD.2		Corrupted files warning	Corrupted files exist on the internal HDD. Perform recovery on the internal HDD. For details on how to perform HDD recovery, see <i>“Troubleshooting” (page 104)</i> . If the error persists, contact your local Sony representative.
HDD	RECOVERING ...	HDD recovery in progress	Internal HDD recovery is in progress. Wait until recovery is complete.
FORMATTING	FAILED	Formatting of the USB media failed.	The USB media cannot be used with this unit. Use USB media supported by the unit. (page 32)

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, 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 22). - The input and output connections on the rear panel of the unit are incorrect. →Make sure that the cables are connected properly (page 22). - 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 22). - The input and output connections on the rear panel of the unit are incorrect. →Make sure that the cables are connected properly (page 22). - The connection cables are damaged. →Check the cables. - The unit is in fast playback or fast reverse playback mode. →Press the  PLAY button (page 20).

Symptom	Cause and solution
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 35). - You are using USB media that is not supported by this unit. →Use USB media supported by the unit. (page 32)
“UNSUPPORTED MEDIA” is displayed on the [MENU] screen.	- The format of the connected USB media is not supported by the unit. →Follow the instructions on the front panel display to format the USB media. (page 32)
USB media is not recognized.	- You are using USB media that is not supported by this unit. →Use USB media supported by the unit. (page 32) - If you press and hold the  button for at least 5 seconds, you can try formatting the USB memory. If formatting is successful, “FORMATTING SUCCESSFUL” and “REMOVE USB1 MEDIA” are displayed alternately on the front panel display. If formatting failed, the USB media cannot be used with this unit.
Formatting of the USB media failed.	- The USB media cannot be used with this unit. →Use USB media supported by the unit. (page 32)
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.

Symptom	Cause and solution
"WARN.HDD.2" appears on the front panel display.	- Corrupted files exist on the internal HDD. → Press and hold the BACK button for at least 5 seconds to perform recovery on the internal HDD. → If the warning is displayed even after performing HDD recovery, the internal HDD is damaged. Contact your local Sony representative. Notes - Do not turn off the unit while internal HDD recovery is in progress. - When you execute internal HDD recovery, the recovery process will start after the unit automatically restarts. - Internal HDD recovery can take up to 1 hour. If recovery does not complete within 1 hour, the unit will automatically shut down.

Important Notice Regarding the Software

Licenses

For details on the licenses, refer to "Software License Information" on the CD-ROM.

EULA (TREND MICRO)

The software of Trend Micro Incorporated (Trend Micro Safe Lock) is used in the software supplied with the device. Refer to the following webpage for the terms and conditions of the license agreement of this software.

https://www.trendmicro.com/en_us/about/legal.html#t4

For the after-sales service for Trend Micro Safe Lock, contact your local Sony representative.

Specifications

General

Power requirement

+12 V to +24 V DC (supply from AC adaptor)

Input current HVO-500MD: 3.2 A to 1.6 A
HVO-550MD: 3.5 A to 1.8 A

Operating conditions

Temperature 5 °C to 40 °C (41 °F to 104 °F)

Humidity 20% to 80% (Maximum wet-bulb temperature: 30 °C (86 °F))
(no condensation allowed)

Pressure 700 hPa to 1,060 hPa

Storage and transport conditions

Temperature -20 °C to +60 °C (-4 °F to +140 °F)

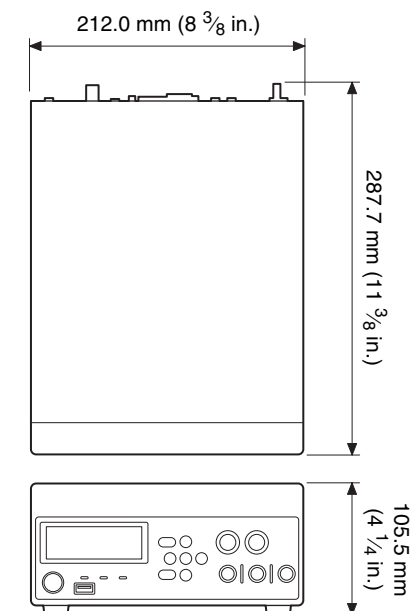
Humidity 20% to 90% (Maximum wet-bulb temperature: 30 °C (86 °F))
(no condensation allowed)

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 adapter (1)

AC adapter Instructions for Use (1)

Service Contact List (1)

Information for Customers in Europe (1)

Optional accessories

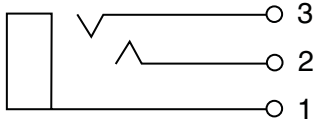
FS-24 Foot Switch

Caution

The FS-24 has an Ingress Protection rating of IPX3. Therefore, do not operate it in 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 TRIGGER 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.

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

Design and specifications are subject to change without notice.

Notes

- Always make a test recording, and verify that it was recorded successfully.
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- Always verify that the unit is operating properly before use.
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