

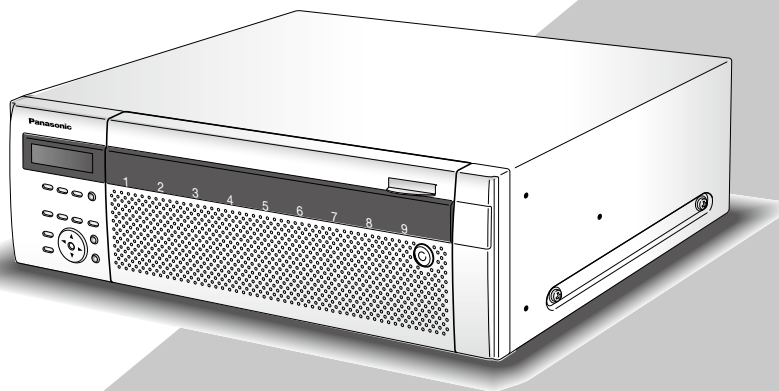
Panasonic

Installation Guide

Network Disk Recorder

Model No. **WJ-ND400K**

WJ-ND400K/G



Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.
The model number is abbreviated in some descriptions in this manual.

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives 2006/95/EC and 2004/108/EC.

Wir erklären in alleiniger Verantwortung, daß das Produkt, auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt. Gemäß den Bestimmungen der Richtlinie 2006/95/EC und 2004/108/EC.

WARNING:

- This apparatus must be earthed.
- Apparatus shall be connected to a main socket outlet with a protective earthing connection.
- The mains plug or an appliance coupler shall remain readily operable.
- To prevent fire or electric shock hazard, do not expose this apparatus to rain or moisture.
- The apparatus should not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, should be placed on the apparatus.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- For PERMANENTLY CONNECTED APPARATUS provided neither with an all-pole MAINS SWITCH nor an all-all pole circuit breaker, the installation shall be carried out in accordance with all applicable installation rules.
- The connections should comply with local electrical code.

CAUTION:

Before attempting to connect or operate this product, please read the label on the bottom.

CAUTION:

An ALL-POLE MAINS SWITCH with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



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



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

Power disconnection. Unit with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. Unplug the power cord to disconnect the main power for all units.

Nous déclarons sous notre propre responsabilité que le produit auquel se réfère la présente déclaration est conforme aux normes spécifiées ou à tout autre document normatif conformément aux dispositions des directives 2006/95/CE et 2004/108/CE.

Nosotros declaramos bajo nuestra única responsabilidad que el producto a que hace referencia esta declaración está conforme con las normas u otros documentos normativos siguiendo las estipulaciones de las directivas 2006/95/CE y 2004/108/CE.

Noi dichiariamo sotto nostra esclusiva responsabilità che il prodotto a cui si riferisce la presente dichiarazione risulta conforme ai seguenti standard o altri documenti normativi conformi alle disposizioni delle direttive 2006/95/CE e 2004/108/CE.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatieve documenten, overeenkomstig de bepalingen van Richtlijnen 2006/95/EC en 2004/108/EC.

Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med standarder eller andre normative dokumenter i følge bestemmelserne i direktivene 2006/95/EC og 2004/108/EC.

Vi deklarerar härmed vårt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med de standarder eller andra normativa dokument som framställs i direktiv nr 2006/95/EC och 2004/108/EC.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 2006/95/EC ja 2004/108/EC säästöksiä.

Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som følger bestemmelsene i direktivene 2006/95/EC og 2004/108/EC.



For U.K.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5 amp fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amp and that it is approved by ASTA or BSI to BS1362.

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

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY. THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.

How to replace the fuse

The location of the differs according to the type of AC mains plug (figures A and B).

Confirm the AC mains plug fitted and follow the instructions below. Illustrations may differ from actual AC mains plug.

Open the fuse cover with a screwdriver and replace the fuse and close or attach the fuse cover.

Figure A

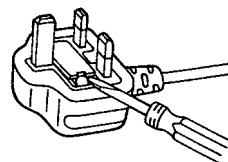
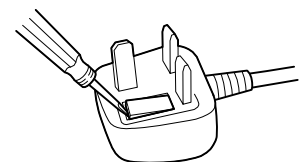


Figure B



For U.S.A.

The model number and serial number of this product may be found on the surface of the unit. You should note the model number and serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. _____

Serial No. _____

For Canada

This Class A digital apparatus complies with Canadian ICES-003.

For U.S.A.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Limitation of liability

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THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE ADDED TO THE INFORMATION HEREIN, AT ANY TIME, FOR THE IMPROVEMENTS OF THIS PUBLICATION AND/OR THE CORRESPONDING PRODUCT (S).

Disclaimer of warranty

IN NO EVENT SHALL Panasonic System Networks Co., Ltd. BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

- (1) ANY DAMAGE AND LOSS, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
- (2) PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
- (3) UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
- (4) INCONVENIENCE OR ANY LOSS ARISING WHEN IMAGES ARE NOT DISPLAYED, DUE TO ANY REASON OR CAUSE INCLUDING ANY FAILURE OR PROBLEM OF THE PRODUCT;

- (5) ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
- (6) ANY CLAIM OR ACTION FOR DAMAGES, BROUGHT BY ANY PERSON OR ORGANIZATION BEING A PHOTOGENIC SUBJECT, DUE TO VIOLATION OF PRIVACY WITH THE RESULT OF THAT SURVEILLANCE-CAMERA'S PICTURE, INCLUDING SAVED DATA, FOR SOME REASON, BECOMES PUBLIC OR IS USED FOR THE PURPOSE OTHER THAN SURVEILLANCE;
- (7) ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, ANY LOSS OR DAMAGE, ARISING OUT OF THE IMPROPER DETECTION OR SLIP-UP IN DETECTION BY VMD (VIDEO MOTION DETECTOR) FUNCTION OF THE PRODUCT.

Important safety instructions

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



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

Contents

Limitation of liability.....	3	● Connection of the control output.....	36
Disclaimer of warranty.....	3	● Connection with the Uninterruptible Power System (UPS).....	36
Important safety instructions.....	4	■ How to use the terminals of the ALARM connector....	37
Preface	6	● Pin configuration	37
About the user manuals	6	● Alarm connection	38
System requirements for a PC	7	■ Time and polarities of the ALARM/CONTROL terminal and the ALARM terminal	39
Trademarks and registered trademarks.....	7	Turn on/off the power of the recorder	40
GPL/LGPL	8	■ Turn on the power of the recorder.....	40
Copyright.....	8	■ Turn off the power of the recorder.....	40
Network security	8	● During recording	40
Precautions	9	● During playback.....	40
Precautions for installation.....	11	Operations using the buttons on the front panel.....	41
Major operating controls and their functions	12	■ Basic operations.....	41
■ Front view.....	12	■ Check the system information	42
■ Inside the front cover.....	14	■ Check the IP address	43
■ Rear view.....	16	■ Set the IP address	44
● Power cord plug brace.....	16	● How to configure the settings for each item.....	44
Outline of functions	17	■ Enable/disable the key lock	44
■ HDD (Hard disk drive).....	17	■ HDD unit.....	45
● Mega-pixel camera compatibility/Large amount of storage.....	17	■ Handle the hard disk drives.....	46
● Replacement of the HDD units	17	● Install the HDD units	47
● HDD management	17	● Install (link) all the HDD units in the extension unit at the same time	48
● HDD fault-tolerance system.....	18	● Remove the HDD units	50
■ Recording/Playback	18	● Remove all the HDD units in the extension unit at the same time	51
● Stable image recording and playback	18	● Determine the operational mode	52
● Schedules	19	■ Data recovery (in the RAID 5/RAID 6 mode).....	54
● How the event action is taken.....	19	● Replacement of a faulty hard disk drive in the RAID mode.....	55
● Major functions	20	■ Reboot.....	56
● Setup menu and its items	20	Troubleshooting.....	57
■ Network	20	Specifications.....	60
● Remote operation	20	Standard accessories.....	61
● Network security function	21	Index.....	62
● SD memory recording	22		
● Maintenance (Software upgrade).....	22		
Operations flow	23		
Install the recorder in a rack.....	24		
■ Installation procedure.....	24		
■ Position in the rack.....	25		
Connections	26		
■ Connection between cameras and PCs.....	26		
● 1-port operation	26		
● 2-port operation	27		
● Connection example for 1-port operation	28		
● Connection example for 2-port operation	30		
● Connecting the extension units	32		
About the connectors.....	33		
■ How to use the terminals of the ALARM/CONTROL connector	33		
● Pin configuration.....	33		
● Connection for emergency recording	34		
● Connection for external recording switching.....	34		
● Connection 1 for the auto adjustment time function	35		
● Connection 2 for the auto adjustment time function	35		

Preface

The network disk recorder (WJ-ND400K, WJ-ND400K/G) is designed for use within a surveillance system, and record images/audio from the connected network cameras on the hard disk drives (HDDs).

Up to 64 cameras can be connected via a network.

The optional HDDs encased in the provided HDD canisters (hereinafter referred as HDD units) can easily be installed/removed in/from this product.

It is possible to perform the settings or operate the recorder using a web browser installed on a PC connected to a network. (It is necessary to configure the network settings of a PC to operate this product using a PC.) Up to 16 PCs (web browsers) can access the recorder concurrently and it is possible to perform the settings and operate the recorder. (The maximum number of PCs that can access the recorder varies depending on the network.)

* No HDD is supplied with this recorder. For purchasing HDD, contact your dealer.

About the user manuals

There are 4 manuals provided for the WJ-ND400K, WJ-ND400K/G as follows.

Installation Guide (this book):	Contains descriptions of how to install/connect this product, and descriptions of how to operate this product with the buttons on the front panel.
Setup Instructions (PDF):	Contains descriptions of how to configure the required settings and how to connect to other devices.
Operating Instructions (PDF):	Contains descriptions of how to operate this product with a PC.
Quick Reference Guide:	Contains descriptions of how to configure the basic settings and how to use the major functions.

Adobe® Reader® is required to read the PDF files (the setup instructions and the operating instructions) on the provided CD-ROM. When Adobe® Reader® is not installed on the PC, download the latest Adobe® Reader® from the Adobe web site and install it.

"WJ-ND400" or "ND400" shown in the instructions and illustrations used in these operating instructions indicate the WJ-ND400K, WJ-ND400K/G.

The screens used in these operating instructions show the case of NTSC model.

Refer to "readme.txt" on the provided CD-ROM for further information about the optional dedicated software, compatible cameras and their versions.

System requirements for a PC

It is recommended to operate this unit using a PC that meets the following system requirements.

OS:	Microsoft® Windows Vista® Business SP1 (32-bit) Microsoft® Windows® XP Professional SP2, SP3* Microsoft® Windows® XP Home Edition SP2, SP3*
OS Language:	English, French, Spanish, German, Italian, Russian, Chinese
CPU:	Pentium® 4 3.0 GHz or faster
Memory:	1 GB or more (512 MB or more is required when using Microsoft® Windows® XP.)
Monitor:	Resolution: 1 024 x 768 pixels or more Color: 24-bit True color or better
Network interface:	10/100/1 000 Mbps Ethernet port x1
Web Browser:	Windows® Internet Explorer® 7.0 Microsoft® Internet Explorer® 6.0 SP2, SP3*
Audio interface:	Sound card (when using the audio function)
Other:	CD-ROM drive: It is necessary to refer to the operating instructions and use the software on the provided CD-ROM. DirectX® 9.0c or later Adobe® Reader® : It is necessary to refer to the operating instructions on the provided CD-ROM.

* Microsoft® Internet Explorer® 6.0 SP2/SP3 is required when using Microsoft® Windows® XP Professional SP2/SP3 or Microsoft® Windows® XP Home Edition SP2/SP3, respectively.

Important:

- When using a PC that does not meet the above requirements, displaying of images may become slow or the web browser may become inoperable.
- Audio may not be heard if a sound card is not installed on a PC. Audio may be interrupted depending on the network environment.
- Microsoft® Windows® XP Professional x64 Edition is not supported.

Note:

- Refer to "Notes on Windows Vista®" (PDF) for further information about system requirements for a PC and precautions when using Microsoft® Windows Vista®.

Trademarks and registered trademarks

- Adobe and Reader are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.
- Microsoft, Windows, Windows Vista, Internet Explorer, ActiveX, DirectX are either a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.
- Intel and Pentium are trademarks or registered trademarks of Intel Corporation and its subsidiaries in the USA and other countries.
- Other names of companies and products contained in these operating instructions may be trademarks or registered trademarks of their respective owners.

GPL/LGPL

- This product contains software licensed under GPL (GNU General Public License), LGPL (GNU Lesser General Public License), etc.
- Customers can duplicate, distribute and modify the source code of the software under license of GPL and/or LGPL.
- Refer to the "readme.txt" file on the provided CD-ROM for further information about the source code of the software contained in this product and copyright notice comprised in the GPL/LGPL software.
- Please note that Panasonic shall not respond to any inquiries regarding the source code.

Copyright

Except for open source software licensed under GPL/LGPL and so on, distributing, copying, disassembling, reverse compiling and reverse engineering of the software provided with this product are all expressly prohibited. In addition, exporting any software provided with this product violating export laws is prohibited.

Network security

As you will use this product connected to a network, your attention is called to the following security risks.

- Leakage or theft of information through this product
- Use of this product for illegal operations by persons with malicious intent
- Interference with or stoppage of this product by persons with malicious intent

It is your responsibility to take precautions such as those described below to protect yourself against the above network security risks.

- Use this product in a network secured by a firewall, etc.
- If this product is connected to a network that includes PCs, make sure that the system is not infected by computer viruses or other malicious entities (using a regularly updated anti-virus program, anti-spyware program, etc.).
- Protect your network against unauthorized access by restricting users to those who log in with an authorized user name and password.
- Apply measures such as user authentication to protect your network against leakage or theft of information, including image data, authentication information (user names and passwords), alarm mail information, FTP server information and DDNS server information.

Precautions

Do not operate this product beyond its specified temperature, humidity, or power source ratings.

Use this product at temperatures between 5 °C to 45 °C {41 °F to 113 °F} and where the humidity is between 5 % to 90 %.

The input power source for the NTSC model is 120 V AC 60 Hz, and for the PAL model is 220 V to 240 V AC 50 Hz/60 Hz. Performance and lifetime of hard disk drives are easily affected by heat (used at high temperature).

It is recommended to use this product at temperatures between 20 °C to 30 °C {68 °F to 86 °F}.

POWER switch

The POWER switch is located at the rear of this product. Even though the POWER switch is set to "OFF", the power supply will not be cut. To cut the power supply, remove the power plug of this product from the AC outlet. When using the power supply control unit, turn off the power of the power supply control unit.

Built-in backup battery

- Before the first use, charge the built-in backup battery (lithium battery) by turning on the power for 48 hours or more. If it is not charged enough, in a case where the power goes down, the internal clock may keep bad time or the operative condition may be different to that before the electric power failure.
- The built-in battery life is approximately 5 years as an indication of replacement. This is just an indication of replacement. We are not providing any guarantee of the built-in battery lifetime. Replacement cost of the built-in battery is not covered by the warranty even if it needs to be done within the warranty period.
- Ask the shop where you purchased this product when replacement of the battery is required.

Hard disk drive (HDD)

- Hard disk drives are vulnerable to vibration. Handle them with care. It is possible to damage them if they are moved while their motors are still running.
- Do not move them just after turning the power off (for around 30 seconds).
- The lifetime of hard disk drives is limited by use. Write errors may occur frequently after around 20 000 hours of operation, and the head and motor deterioration may occur after 30 000 hours of operation. They will reach the end of their lifetime after 30 000 hours of operation if they have been used at the recommended ambient temperature (approx. 25 °C {77 °F}).
- It is recommended to replace them after around 18 000 hours of operation to prevent data loss from disk failures.
- When hard disk drive trouble occurs, replace it immediately. Contact your dealer about servicing.

When replacing the hard disk drives, take notice of the following.

- Protect the hard disk drives from static electricity.
- Do not stack them, or keep them upright.
- Do not use an electric screwdriver to fix them. (Tightening torque: Approx. 0.49 N·m {5 kgf·cm})
- Avoid rapid changes of the temperature/humidity to prevent condensation. (Acceptable change: within 15 °C/h {59 °F/h})
- Recorded images on the hard disk drives may contain personal information. Please be forewarned that we don't recover or dispose of the hard disk drives.
- Please be forewarned that any loss of information, such as images, on the hard disk drives is not guaranteed under any circumstances.

Prevent condensation from forming on the surface of the hard disk drive.

If this happens, do not turn on the power of this product. Instead leave it switched off for around 2 hours.

Wait until the dew evaporates in any of the following cases:

- This product is placed in an extremely humid place.
- This product is placed in a room where a heater has just been turned on.
- This product is moved from an air-conditioned room to a humid or high-temperature room.

When this product has not been used for a certain period, turn on the power (approximately once a week), and perform recording/playback to prevent interferences with functions.

Cleaning

- Turn the power off when cleaning this product. Otherwise it may cause injuries.
- Do not use strong or abrasive detergents when cleaning the body. Use a dry cloth to clean this product when it is dirty.
- When the dirt is hard to remove, use a mild detergent and wipe gently.
- When using a chemical cloth for cleaning, read the caution provided with the chemical cloth product.

Product disposal/transfer

Data saved on the hard disk drive may lead to personal information leakage. When it is necessary to dispose of or give this product to someone, even when for repair, make sure that there is no data on the hard disk drives.

Indication label

Refer to the indication label placed on the surface of this product as to the indications of equipment classification and power source, etc.

Handle this product with care.

Do not strike or shake, as this may damage this product.

Do not strike or give a strong shock to this product.

It may cause damage or allow water to enter this product.

MPEG-4 Visual Patent Portfolio License

This product is licensed under the MPEG-4 Visual Patent Portfolio License for the personal and non-commercial use of a consumer for (i) encoding video in compliance with the MPEG-4 Visual Standard ("MPEG-4 Video") and/or (ii) decoding MPEG-4 Video that was encoded by a consumer engaged in a personal and non-commercial activity and/or was obtained from a video provider licensed by MPEG LA to provide MPEG-4 Video. No license is granted or shall be implied for any other use. Additional information including that relating to promotional, internal and commercial uses and licensing may be obtained from MPEG LA, LLC.

See <http://www.mpegla.com>.

Copyright

Distributing, copying, disassembling, reverse compiling and reverse engineering of the software provided with this product are all expressly prohibited. In addition, exporting any software provided with this product violating export laws is prohibited. We recommend that you make a note of your settings and save them. This will help when you are required to change the system configuration, or when unexpected trouble or failure occurs.

Precautions for installation

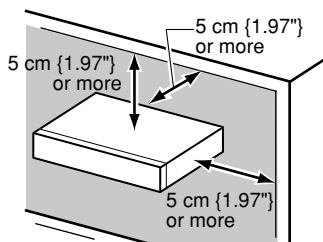
Use this product for indoor use only.

Avoid the following locations for installation.

- Places exposed to direct sunlight
- Places subject to having strong vibration or impact
- Near magnetic field sources such as a television or speakers
- Place where condensation forms easily, where temperature changes greatly, and humid places
- Steamy and oily places such as kitchens
- Places which are not level
- Places subject to dust
- Places where this product and the connected cables can be damaged easily

Place this product horizontally on a level surface.

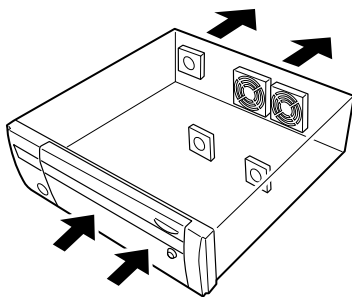
Do not place this product in an upright position. When stacking multiple recorders, clear a space of more than 5 cm {1.97"} from both sides, the top, the bottom and the rear of the recorders.



Heat dissipation

Refer to the following to prevent fire and malfunction of the unit.

- Do not block the front and rear for smooth ventilation. Keep the unit 5 cm {1.97"} or more away from the both sides and the upper side.
- Keep clean the ventilation openings of the unit to prevent overheating.
- A lifetime of the cooling fan is limited by use.



Avoid placing this product near noise sources

If this product is placed near noise sources such as fluorescent lamps, noises may be produced.

In this case, rewire avoiding the noise sources, or move this product to a place far from the source.

Avoid placing receptacles that contain liquids such as water near this product.

If liquid spills onto this product, it may cause fire or an electric shock.

Grounding

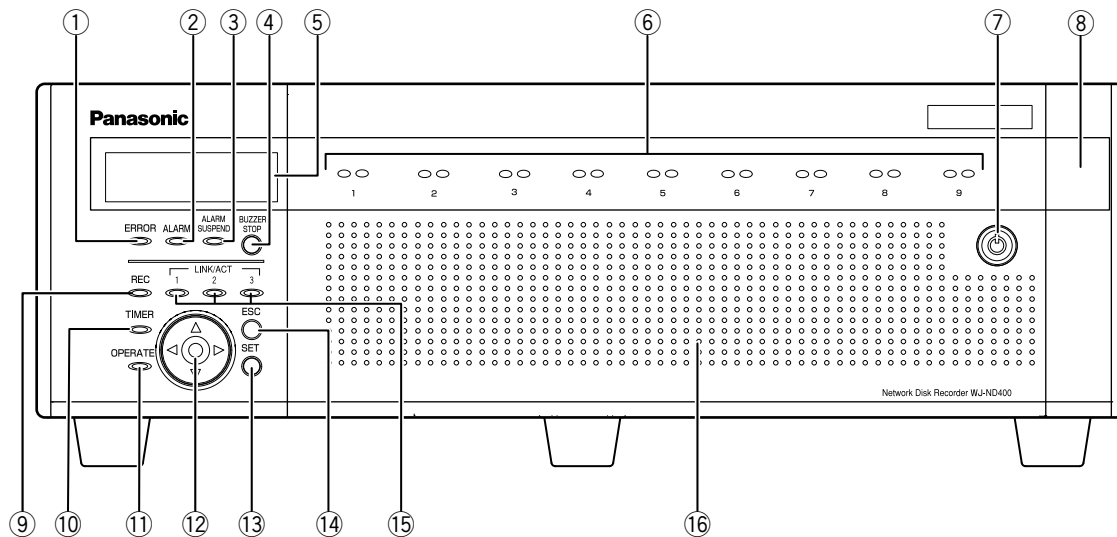
Confirm that the wire is connected from the SIGNAL GND terminal to earth ground.

A grounding connection must be made before connecting the power plug of this product to the main power supply.

When disconnecting the grounding wire, make sure that the power plug of this product is disconnected from the main power supply.

Major operating controls and their functions

■ Front view



① Error indicator (ERROR)

Blinks red when an error occurs that may cause the system to go down.

Blinks orange when an error occurs that will not keep the recorder from running. (e.g. thermal error, cooling fan malfunction, etc.)

② Alarm indicator (ALARM)

Blinks when an alarm occurs, and lights when the alarm output stops.

The blinking or lighting indicator will go off when the alarm is reset.

Refer to the operating instructions (PDF) for further information about alarms.

③ Alarm suspension indicator (ALARM SUSPEND)

Lights when the alarm suspension mode is selected.

Refer to the operating instructions (PDF) for further information about alarm suspension.

④ [BUZZER STOP] button

Press this button to stop the buzzer that started sounding at an alarm/error occurrence.

Refer to the operating instructions (PDF) for further information about errors and alarms.

⑤ LCD

Indicates the status of the recorder (error status, etc.) or the name of the functions available using the buttons on the front panel of the recorder.

⑥ HDD access indicators (HDD1 - HDD9)

Indicate the statuses of the hard disk drives.

HDD access indicator (right side)

Indicates the status (access/failure) of the respective hard disk drive.

When an HDD failure (error) occurs during operation in the RAID 5/RAID 6 mode, the indicator will light/blink red.

Off: Indicates that the respective hard disk drive is not being accessed.

Lights green: Indicates that the respective hard disk drive is being accessed.

Lights red: Indicates that the respective hard disk drive is faulty (which can be recovered by replacing the hard disk drive).

In the RAID 5 mode, it indicates that the hard disk drive is the first faulty drive.

In the RAID 6 mode, it indicates that the hard disk drives are the first and second faulty drives.

Blinks red: Indicates that the respective hard disk drive is faulty (which cannot be recovered even by replacing the hard disk drive).

In the RAID 5 mode, it indicates that the hard disk drive is the second faulty drive.

In the RAID 6 mode, it indicates that the hard disk drive is the third faulty drive.

Lights red and orange alternately: Indicates that the hard disk drive is currently being recovered in the RAID 5/RAID 6 mode.

(It may appear that the indicator lights orange when recovery is being processed at high speed.)

Note:

- Basically, each indicator will indicate the status of the respective hard disk drive (HDD1 - HDD9).
-

Important:

When the indicator lights red in the RAID 5/RAID 6 mode, replace the respective hard disk drive immediately. Contact your dealer about servicing.

- In the RAID 5 mode:
When 2 or more HDD access indicators light/blink red, it may be impossible to recover data on the respective hard disk drives.
 - In the RAID 6 mode:
When 3 or more HDD access indicators light/blink red, it may be impossible to recover data on the respective hard disk drives.
-

HDD status indicator (left side)

Indicates the operational status of the respective hard disk drive.

Lights green: Indicates that the power of the respective hard disk drive (formatted) is on.

Blinks green: Indicates that the respective hard disk drive is for playback use only.
(Recording is unavailable using the respective hard disk drive.)

Blinks orange: Indicates that the respective hard disk drive is currently being formatted or during the recognition process.

Lights red: Indicates that formatting of the respective hard disk drive has failed.

Off: Indicates that the power of the respective hard disk drive is off, or that the hard disk drive is not connected/recognized.

⑦ Key hole

Use the provided key to open/close the front cover. Keep the key in a safe place.

Lock the front cover: Insert, push and turn the key to the left.

Unlock the front cover: Insert, push and turn the key to the right.

⑧ Maintenance port (For maintenance purpose only)

Use this port to connect directly to a PC and perform maintenance operations. Do not use for normal operation.

Note:

- When connecting to a PC directly, use the straight LAN cable.
-

⑨ Recording indicator (REC)

Lights when recording is being performed, and goes off when recording is finished.

⑩ Timer indicator (TIMER)

Lights orange when the schedule recording is set, and blinks orange while the schedule recording is being performed.

⑪ Operation indicator (OPERATE)

Lights green when the power is turned on, and goes off when the power is turned off.

⑫ Arrow buttons (up, down, left and right)

Use these buttons to move the cursor or to enter values on the LCD.

⑬ [SET] button

Use this button to determine the edited setting item on the LCD.

⑭ [ESC] button

Use this button to display the previously displayed item on the LCD.

**⑮ [LINK/ACT] indicators
[LINK/ACT1] indicator**

Lights green when the communication between a camera and the recorder is established.

Blinks green when receiving data from a camera.

[LINK/ACT2] indicator

Lights green when the communication between a PC and the recorder is established.

Blinks green when receiving data from a PC.

When PCs and cameras are connected only to the client PC port (1-port operation), this indicator will light/blink.

[LINK/ACT3] indicator

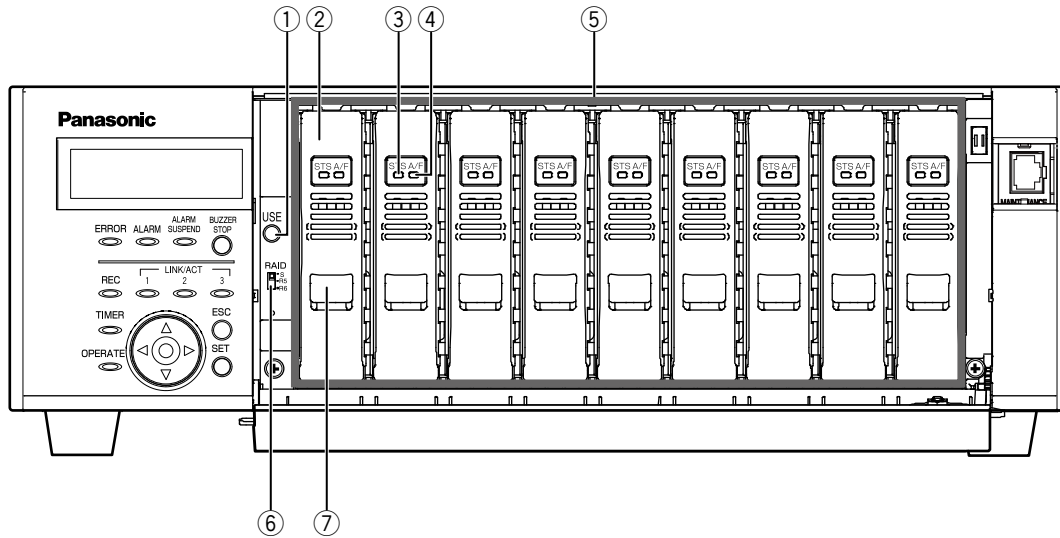
This indicator is a spare for expansion.

⑯ Front cover

Open the front cover when adding/replacing the HDD units, or when changing the operational mode (Single/RAID 5/RAID 6).

Keep this cover closed and locked during normal operation.

■ Inside the front cover



① [USE] button

Use this button when adding/replacing the HDD units, or when changing the operational mode.

Installing/removing an HDD unit: Hold down the button for 2 seconds or more until the buzzer sounds. When the buzzer sounds, the recorder is ready for installation/remove of the HDD units using the buttons and the LCD on the front panel.

Changing the operational mode: Select the operational mode by determining the [RAID] switch position, and then turn on the power of the recorder by pressing the [POWER] switch while holding down the [USE] button until the buzzer sounds. The recorder will start up in the selected operational mode.

② HDD units

Only the hard disk drive encased in the dedicated hard disk drive canister (HDD units) can be installed in the recorder.

It is possible to add/replace the HDD unit by operating the buttons and the LCD on the front panel. Refer to page 46 for further information. Contact your dealer about purchasing/replacing hard disk drives.

③ HDD status indicator (STS)

Indicates the operational status of the respective hard disk drive.

Lights green: Indicates that the power of the respective hard disk drive (formatted) is on.

Lights green: Indicates that the respective hard disk drive is for playback use only.
(Recording is unavailable using the respective hard disk drive.)

Lights orange: Indicates that the respective hard disk drive is currently being formatted.

Lights red: Indicates that formatting of the respective hard disk drive has failed.

Off: Indicates that the power of the respective hard disk drive is off, or that the hard disk drive is not connected/recognized.

④ HDD access/failure indicator (A/F)

Indicates the status (access/failure) of the respective hard disk drive.

When an HDD failure (error) occurs during operation in the RAID 5/RAID 6 mode, the indicator will light/blink red.

Blinks green: Indicates that the respective hard disk drive is being accessed.

Off: Indicates that the respective hard disk drive is not being accessed.

Lights red: Indicates that the respective hard disk drive is faulty (which can be recovered by replacing the hard disk drive)

In the RAID 5 mode, it indicates that the hard disk drive is the first faulty drive.

In the RAID 6 mode, it indicates that the hard disk drives are the first and second faulty drive.

Blinks red: Indicates that the respective hard disk drive is faulty (which cannot be recovered even by replacing the hard disk drive)

In the RAID 5 mode, it indicates that the hard disk drive is the second faulty drive.

In the RAID 6 mode, it indicates that the hard disk drive is the third faulty drive.

Lights red and orange alternately: Indicates that the respective hard disk drive is currently being recovered in the RAID 5/RAID 6 mode.

(It may appear that the indicator lights orange when recovery is being processed at high speed.)

⑤ HDD slots

Up to 9 HDD units can be installed.

Note:

- Requirements to use in the RAID 5/RAID 6 mode
To use in the RAID 5 mode: The RAID 5 mode is operable only when 3 or more HDD units are installed in the recorder.
To use in the RAID 6 mode: The RAID 6 mode is operable only when 4 or more HDD units are installed in the recorder.
-

⑥ [RAID] switch

Use this switch to determine the operational mode (Single/RAID 5/RAID 6).

Select the operational mode by determining the [RAID] switch position, and then turn on the power of the recorder by pressing the [POWER] switch while holding down the [USE] button until the buzzer sounds. The recorder will start up in the selected operational mode.

S: Single mode (Default)

R5: RAID 5 mode

R6: RAID 6 mode

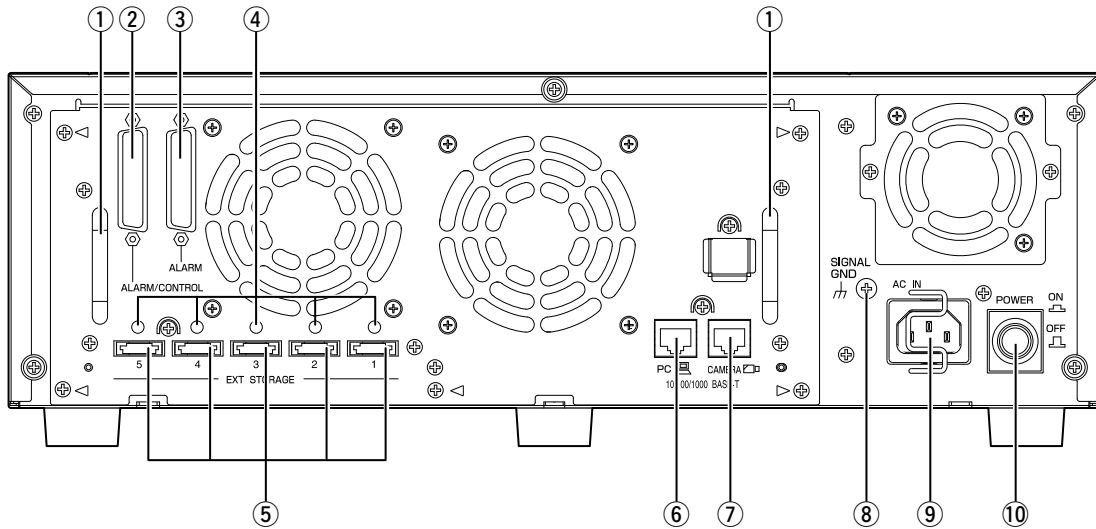
Important:

- Do not change the operational mode after starting the system operation. If the operational mode is changed after starting the system operation, accessing the recorded data may fail.
-

⑦ Removal knob

Use this knob to remove the HDD unit.

■ Rear view



① Handle for maintenance

Pull this handle after removing the 5 screws (indicated by the triangles) to open the rear panel for maintenance such as replacement of the fan, etc.

② Alarm/Control connector (ALARM/CONTROL, D-sub 25-pin, female)

Connect a control switch with this D-sub 25-pin connector to control the recorder using an external device, or to control an alarm device such as a buzzer or a lamp.

③ Alarm connector (ALARM, D-sub 25-pin, female)

Connect an external device such as a sensor or a door switch with this D-sub 25-pin connector.

④ Cable clamp fixing holes

Attach the cable clamp provided with the extension unit WJ-HDE400 to be used to fix the cables. Refer to the operating instructions of the extension unit WJ-HDE400 for further information.

⑤ External storage connector (EXT STORAGE)

Use this connector to connect to the extension unit (WJ-HDE400).

⑥ Client PC port

Use this port to connect the recorder to a network compatible with 10BASE-T, 100BASE-TX or 1000BASE-T to connect with a PC via a network.

⑦ Camera port

Use this port to connect the recorder to a network compatible with 10BASE-T, 100BASE-TX or 1000BASE-T to connect with a camera via a network.

⑧ Signal ground terminal (SIGNAL GND)

Connect this terminal with the SIGNAL GND terminals of the devices in the system for signal ground. When operating the recorder and the devices in the system without signal ground, oscillation or noise may be produced.

⑨ Power cord inlet (AC IN)

Connect the provided power cord to this inlet.

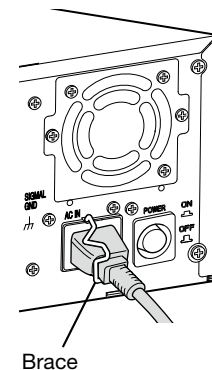
⑩ [POWER] switch

Turns the power of the recorder on and off.

● Power cord plug brace

Brace the power cord plug.

1 Fix the power cord plug firmly with the power cord plug brace.



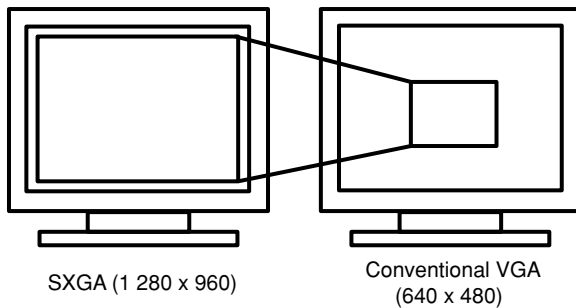
Outline of functions

■ HDD (Hard disk drive)

● Mega-pixel camera compatibility/ Large amount of storage

It is possible to record high-definition images (in SXGA size: 1 280 x 960) such as the image size captured by mega-pixel cameras (equivalent to 4 times the pixels of a JPEG image in VGA size (640 x 480)). This makes it possible to record a wide angle view and to display zoomed images with minimal blurring.

Display on 21 inch type monitor



Up to 9 hard disk drives can be installed in the recorder to record high-definition images for long period of time. In addition, up to 5 extension units can be connected to the recorder.

● Replacement of the HDD units

It is easy to insert/remove the HDD units to/from the HDD slots in the recorder.

("HDD unit" indicates a hard disk drive encased in the provided HDD canister.)

When 2 or more HDD units are already installed, it is possible to replace the HDD units without stopping the current recording.

Replacement of the HDD units and maintenance can easily be done by following the guidance displayed on the LCD.

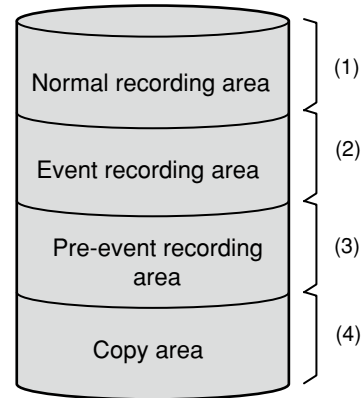
The HDDs encased in the provided HDD canisters (hereinafter referred as HDD units) can easily be installed/ removed in/from this product.

Contact your dealer about purchasing/replacing the hard disk drives (HDD units).

● HDD management

The hard disk drives in the recorder are managed by virtually dividing into 4 recording areas. (Refer to the setup instructions (PDF).)

Only one of the 4 recording areas can be assigned to a single hard disk drive.



Remaining capacities of each recording area can be checked on the setup menu.

Recorded data to be stored in each area is as follows.

① Normal recording area

- Image/audio data recorded by manual recording
- Image/audio data recorded by the schedule recording
- SD memory data

② Event recording area

- Image/audio data recorded by the event recording
- Image/audio data recorded by the emergency recording

③ Pre-event recording area

- Image/audio data recorded by the pre-event recording

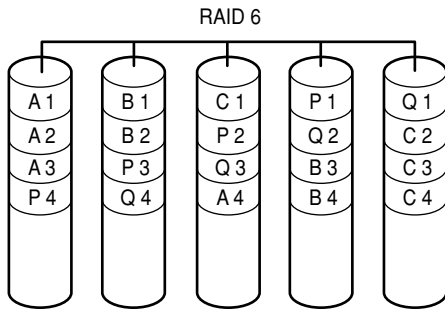
④ Copy area

- Copied data

Note:

- When an unformatted hard disk drive is installed in the recorder, it will automatically be formatted as the normal recording area.
 - Either the normal recording area or the event recording area shall be created.
Recording/playback is unavailable even if only the pre-event recording area or the copy area is created.
 - When there is no normal recording area, images/audio recorded by manual recording and the schedule recording will be stored in the event recording area. When there is no event recording area, images/audio recorded by the event recording and the emergency recording will be stored in the normal recording area.
-

● HDD fault-tolerance system



The RAID function is available as the HDD fault-tolerance system.

In addition to the RAID 5 mode that recovers data when a single hard disk drive becomes faulty, there is RAID 6 mode that can recover data even if 2 hard disk drives become faulty. Operation in the RAID mode is one of the solutions as the HDD fault-tolerance system that prevents data loss when handling a large amount of data on a large amount of storage.

Note:

- To use in the RAID 5 or the RAID 6 mode, it is necessary to install 3 or more hard disk drives and 4 or more hard disk drives respectively.
- Logical disk capacity when using in the RAID 5 mode
Logical disk capacity = Capacity of the smallest among the hard disk drives in the recorder x (number of the hard disk drives in the recorder - 1)
- Logical disk capacity when using in the RAID 6 mode
Logical disk capacity = Capacity of the smallest among the hard disk drives in the recorder x (number of the hard disk drives in the recorder - 2)
- Depending on the model of the hard disk drive, the available capacity may be a few percent smaller.

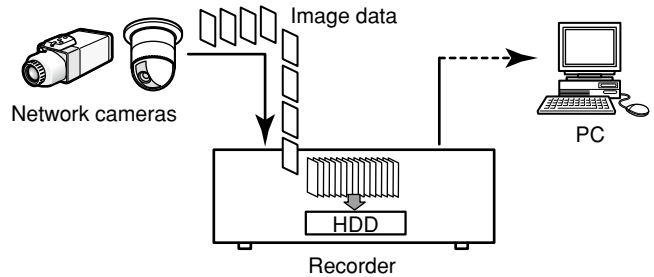
■ Recording/Playback

● Stable image recording and playback

High throughput is achieved by equipping the camera port and the client PC port individually. It brings stable image reception using up to 64 cameras and up to 16 client PCs (depending on the network environment).

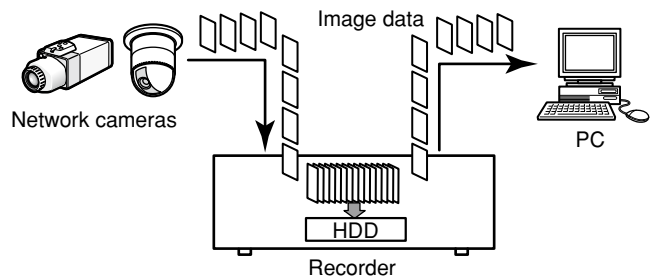
Recording

Images from up to 64 cameras can be recorded on hard disk drives in a single recorder. Recording images in JPEG, M-JPEG and MPEG-4 format are available.



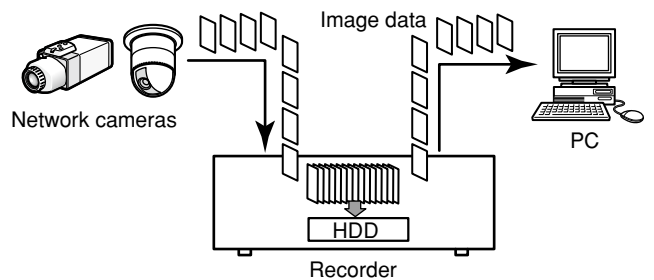
Playback

Images recorded on hard disk drives in a single recorder can be transmitted to up to 16 PCs, and they can be played on the PCs.



Live image transmission

Live images from up to 64 cameras can be transmitted to up to 16 PCs via a single recorder.



● Schedules

It is possible to create a timetable by dividing a day into up to 6 time zones and to create schedules by assigning programs to the created time zones. Up to 8 programs can be created, and the settings relating to the recording for each program such as the recording rate and the recording duration of the event recording can be configured.

● How the event action is taken

About events

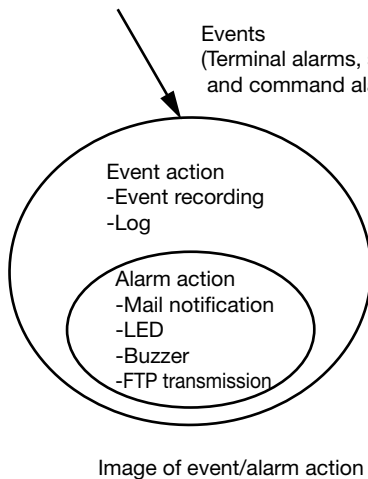
In the recorder, an "event" is defined as a phenomenon which triggers a specific action (event action) in the recorder. The recorder regards the reception of a terminal alarm, a command alarm, and a site alarm as an "event". For example, when the recorder receives a site alarm issued by a camera, the recorder regards it as an event occurrence.

About the event action

When an event occurs, the recorder will take a specified event action.

The following actions will be taken as the event actions according to the settings.

- Record images/audio
- Record logs
- Notify of an event occurrence (by mail, LED, buzzer, image transmission to a FTP server, etc.)



The recorder will take an event action when the following events occur.

Terminal alarm: When a signal from an external alarm device such as a door sensor is supplied to the alarm input terminal (ALARM connector or ALARM/CONTROL connector at the rear of the recorder), it will be regarded as a terminal alarm.

Command alarm: When receiving a command from a PC via a network, it will be regarded as a command alarm.

Site alarm: When receiving a Panasonic alarm protocol from a network camera, it will be regarded as a site alarm.

The following are the event actions and their descriptions.

- Start recording
Recording will start according to the settings configured on the setup menu such as the recording rate, the recording duration, etc. Images recorded before an event occurrence can be associated with images recorded by the corresponding event recording so that images recorded at the event occurrence can be played as if the recording started before the event occurrence. (Pre-event recording)
- Display the event notification window
A pop-up window that notifies of an event occurrence will be displayed.
- Blink the alarm indicator
The alarm indicator on the front panel will start blinking.
- Sound the buzzer
The buzzer will start sounding for the duration set in advance.
- Move the registered camera to the preset position
The camera registered in advance will move to the preset position according to the settings.
- Send a mail that notifies of an event occurrence
A mail that notifies of the event occurrence with the time and date of the event occurrence will be sent. (Alarm mail)
It is possible to attach an image to the alarm mail. (Alarm image)
Up to 4 destination addresses for the alarm mail can be registered.
- Output signals from the ALARM/CONTROL connector at the rear of the recorder. (Alarm output)
When an event occurs, a signal will be output from the ALARM/CONTROL connector at the rear of the recorder to sound an external alarm buzzer, etc.
- Save a log
A log that contains the event type and the time and date of the event occurrence will be saved. (Event log)
- Send recorded images to an FTP server at an event occurrence
When an event occurs, recorded images will continue transmitting to an FTP server automatically for the set duration from the time when the event occurred.
- Notify a PC of an event or an error occurrence using the Panasonic alarm protocol
When an event or an error occurs, information about the event/ error will automatically be notified to the registered PC according to the "Panasonic alarm protocol" setting. To receive a notification and display the contents of it, it is necessary to install the optional dedicated software. Refer to the "readme.txt" on the provided CD-ROM about the dedicated software.

● Major functions

Live image display

Function	Description
1-screen	Live images (with audio) from a camera will be displayed on a 1-screen. When displaying on a 1-screen, it is possible to operate the camera via the recorder. (Refer to the operating instructions (PDF).)
4-screen	Live images from multiple cameras will be displayed on a 4-screen.
Sequential display	Live images from multiple cameras will sequentially be displayed according to the settings.

Recording

Recording mode	Priority*	Description
Emergency recording	1	Recording triggered by use of an external switch when an emergency occurs.
Post-event recording	2	Recording of images for the set period of time just after an event occurrence that is to be automatically performed.
Manual recording	3	Recording manually started and stopped.
Schedule recording	4	Recording to be automatically performed according to the schedules set in advance.
Pre-event recording	5	Recording of images for the set period of time just before an event occurrence that is to be automatically performed.

* Priority: When two or more recordings with different recording modes started simultaneously, only recording with the highest priority will start.

● Setup menu and its items

Refer to the setup instructions (PDF) for further information about the setup menu and its items.

■ Network

● Remote operation

It is possible to operate the recorder and the cameras connected to the recorder using a PC on a network.

Operable functions

When displaying live images using a camera with the panning/tilting function.

Function	Description
Pan/tilt	Adjust the horizontal/vertical position of the camera.
Zoom	Zoom in/out the live image.
Focus	Adjust the focal point.
Brightness	Adjust the lens iris (brightness).
Preset position operation	Move the camera to the preset position (that is determined on the camera's setup menu and registered in the recorder).
Auto	Activate the designated auto function of the camera.

● Network security function

The 2 network security function are provided to the recorder.

Access restriction by the user authentication and the host authentication

When "On" is selected for the user authentication and the host authentication, users will be restricted to access the recorder.

Access restriction by changing the HTTP port number

By changing the HTTP port number, it is possible to prevent illegal access such as a port scanning, etc.

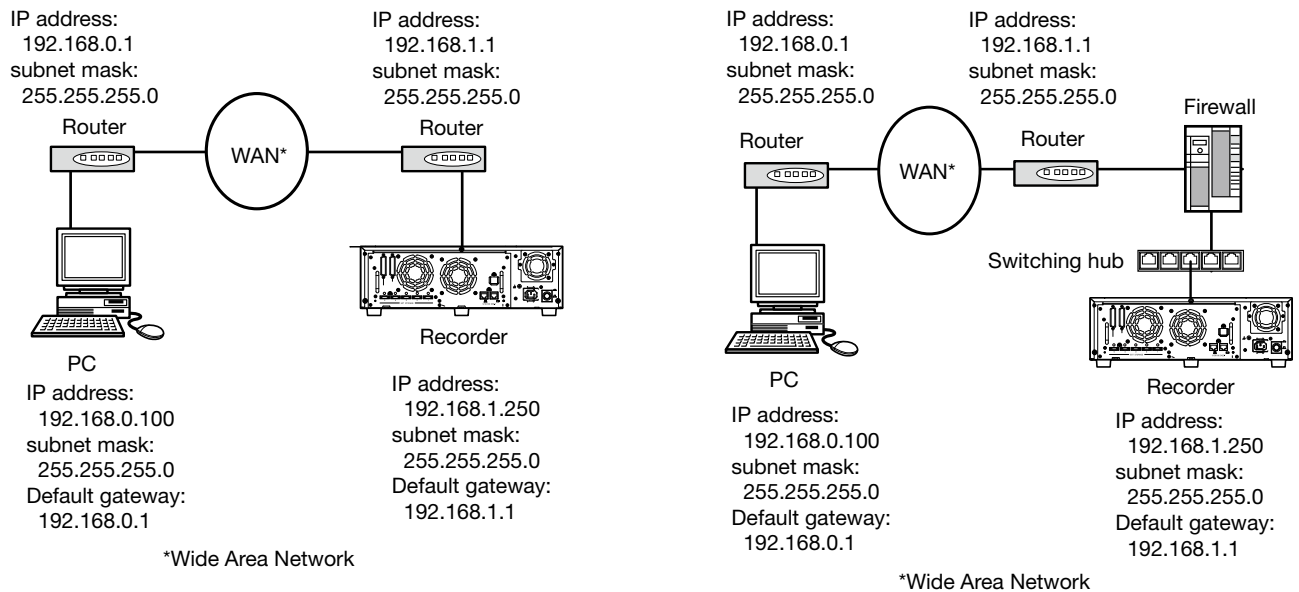
- To enhance the network security

Divide the subnet into several subnets using a router, and dualize the authentication using the authentication functions of the router and the recorder. If connecting the recorder to a network that is not secure, enhance the security by installing a VPN between the recorder and a host PC, or other security measurement.

Important:

- The network settings of the recorder will be different depending on the settings of the LAN or the Internet service provider to which the recorder is to be connected. Ask your network administrator for the network security.
-

Connection example



By using a firewall, it is possible to use packet filtering and protocol filtering to enhance the network security.

● SD memory recording

The SD memory recording is the function featured in some Panasonic's cameras that records images on the SD memory card on the camera if communication with the camera failed in the period set for the schedule recording of the recorder.

Recording rate setting

The SD memory recording is available only when the camera has this function and "M-JPEG" is selected for compression type of the "Model/Compression" setting on the setup menu of the recorder.

The recording rate of the SD memory recording can be set for each camera channel. The start time of the SD memory recording varies depending on the set recording rate. (Refer to the setup instructions (PDF).)

Obtain image recorded on the SD memory card

It is possible to obtain images recorded on the SD memory card of the camera and save them on the hard disk drive of the recorder.

It is also possible to check if images are currently being obtained or not in the "Status display".

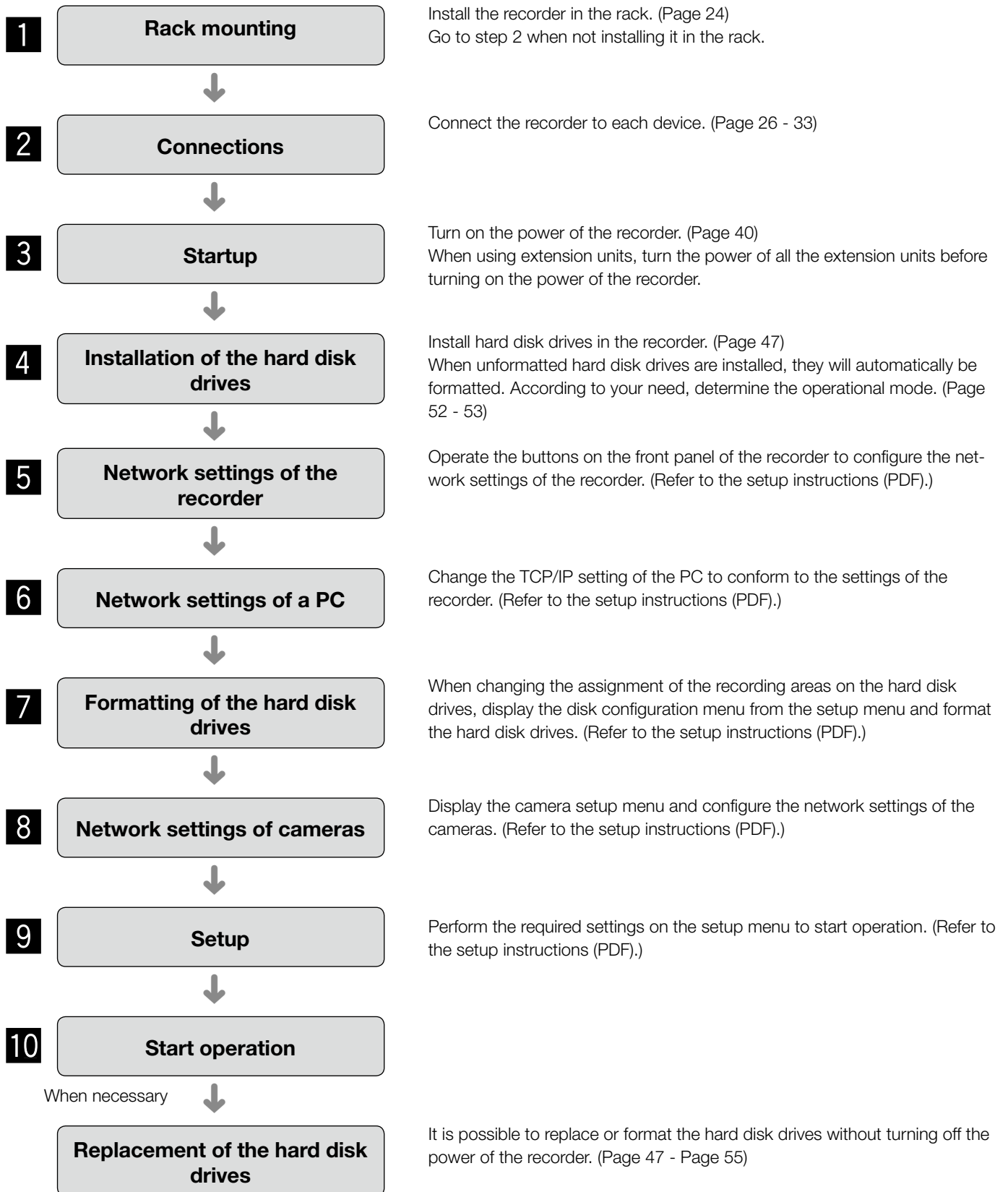
Images recorded on the SD memory card will automatically be obtained at a quarter past the hour (0:15, 1:15 ... 23:15).

● Maintenance (Software upgrade)

It is possible to upgrade the software of the recorder using the web browser. Contact your dealer about the software upgrade.

Operations flow

The operation flow of the recorder is as follows.



Install the recorder in a rack

Install the recorder in an EIA standard 19-inch rack (Depth: 550 mm or more).

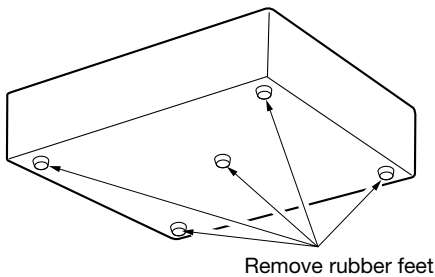
Note:

- Use four M5 x 12 screws (locally procured) to install the recorder in a rack.

Installation procedure

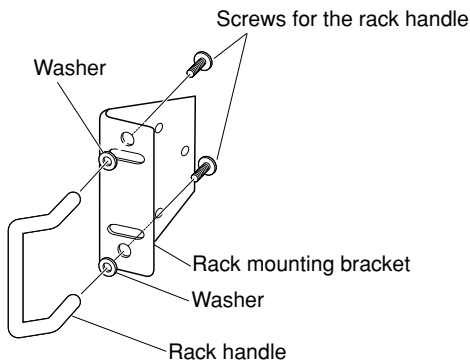
1 Remove the five rubber feet from the bottom of the recorder using a flathead screwdriver.

Use a screwdriver to remove the screws holding the rubber feet.



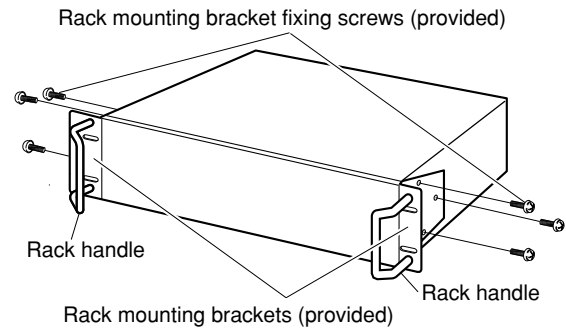
2 Attach the rack handles to the rack mount brackets.

Fix them using the screws (x4) and the washers (x4) for the rack handle.



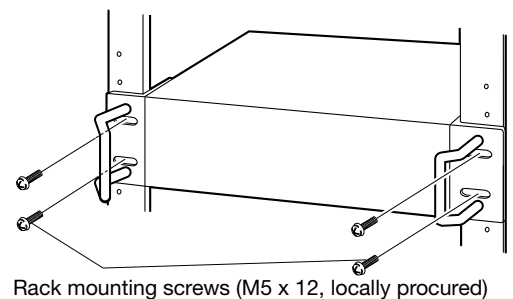
3 Place the provided rack mounting brackets on both sides of the recorder and fix them with the rack mounting bracket fixing screw (x6).

Secure them using the rack mounting bracket fixing screw (x6).



4 Install the recorder in the rack by using four rack mounting screws.

Secure using the rack mounting screws.

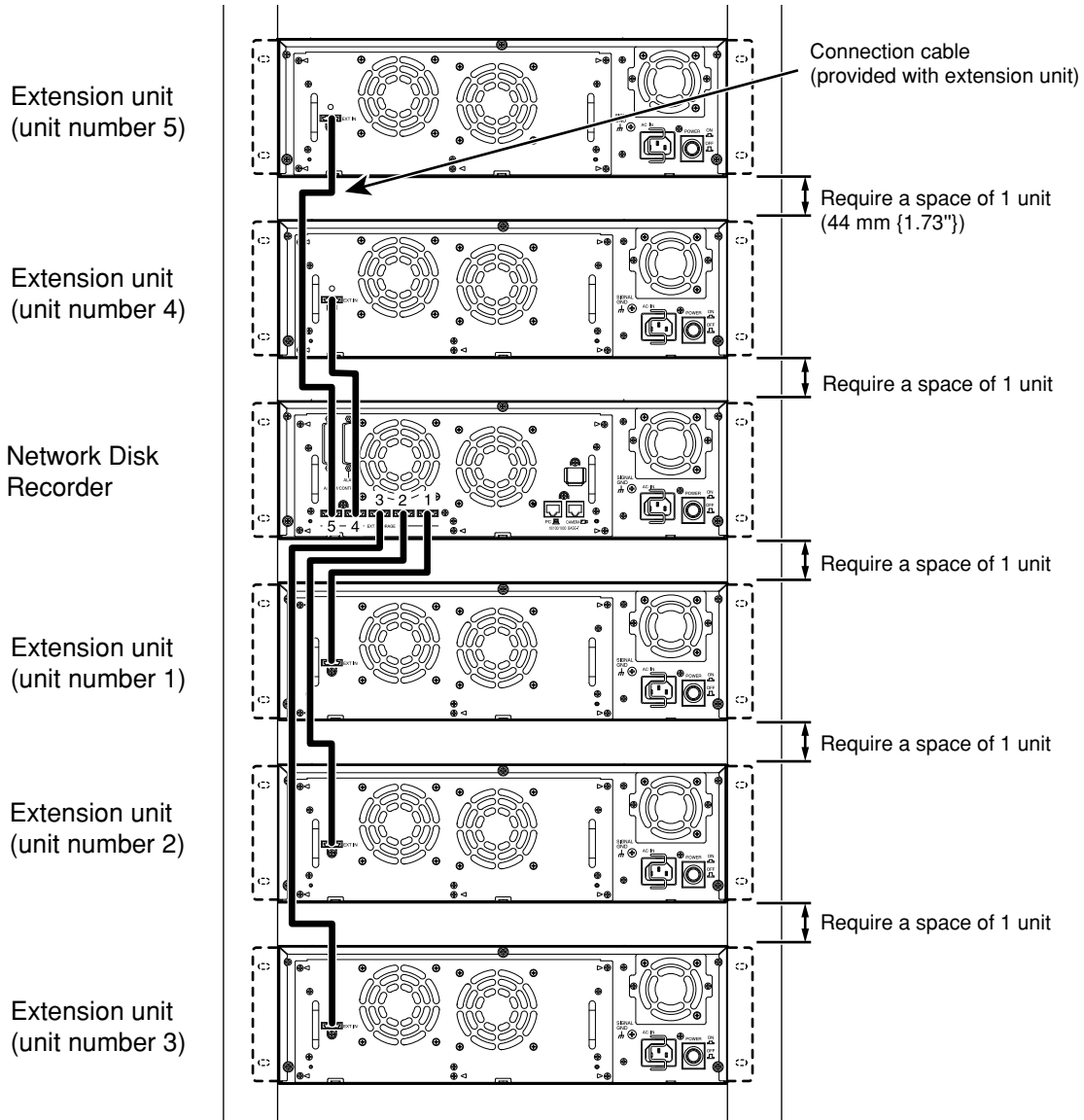


Important:

- When installing the recorder in the rack, make a space of 1U (44 mm {1.73"}) above and below the recorder for ventilation.
- Keep the temperature in the rack below +45 °C {113 °F}.
- It is recommended to install cooling fans or equivalents to keep the temperature in the rack below +30 °C {86 °F}.
- Do not block the ventilation openings or slots to prevent the recorder from overheating.

■ Position in the rack

When connecting extension units (WJ-HDE400) to the recorder, install the recorder in the center of the rack.
 Connect the recorder and the extension unit using the connection cable (1 m {39.4"}) provided with the extension unit. (Page 32)



Note:

- Install the recorder in the center of the rack. When the recorder is installed at the top or the bottom of the rack, it may have difficulties in connecting the extension units since the cable length is not long enough.
- When installing the recorder in the rack, leave a space of 1U (44 mm {1.73"}) above and below the recorder for ventilation.
- Fix the connection cable firmly using the cable clamp provided with the extension unit.
 When the cable is not connected firmly or when it is disconnected, the system may become unstable or recording may fail.
- Do not leave the connected cables unnecessarily long and loose. If the wiring route is unnecessarily detoured or the distance between devices is too far, it may cause malfunction. Do not wind the cable in a coil.
- Refer to the setup instructions (PDF) for information on how to check the unit numbers of the connected extension units.

Connections

The following are descriptions of how to connect the recorder, PCs, cameras and extension units. Required devices and cables vary depending on how to connect them. Before starting the connections, check the required devices and cables for your environment.

■ Connection between cameras and PCs

When connecting the recorder and PCs through a hub, use a LAN cable (straight) to connect between the recorder and a hub. Cameras should also be connected through a hub using LAN cables (straight). 1-port operation and 2-port operation are available for the connection of the PCs and the cameras.

Important:

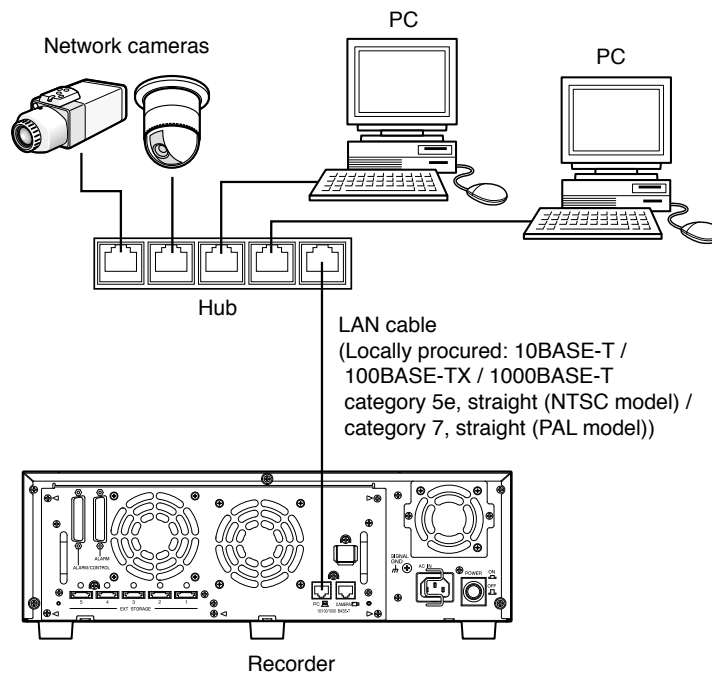
- Be sure to use a hub to connect the recorder and a PC with a straight LAN cable.
- Do not connect directly between the recorder and a PC with a cross LAN cable. Otherwise, some PCs may have trouble in communicating securely, displaying images, or playing recorded images.

Connection	Description	Port to be used
1-port operation	Suitable when direct access between PCs and cameras can be established, not via the recorder, such when PCs and cameras are on the same network	Client PC port
2-port operation	Suitable when direct access between PCs and cameras cannot be established such when PCs and cameras are not on the same network	Camera port Client PC port

● 1-port operation

Direct connection using a hub

Connect cameras and PCs using the client PC port at the rear of the recorder.

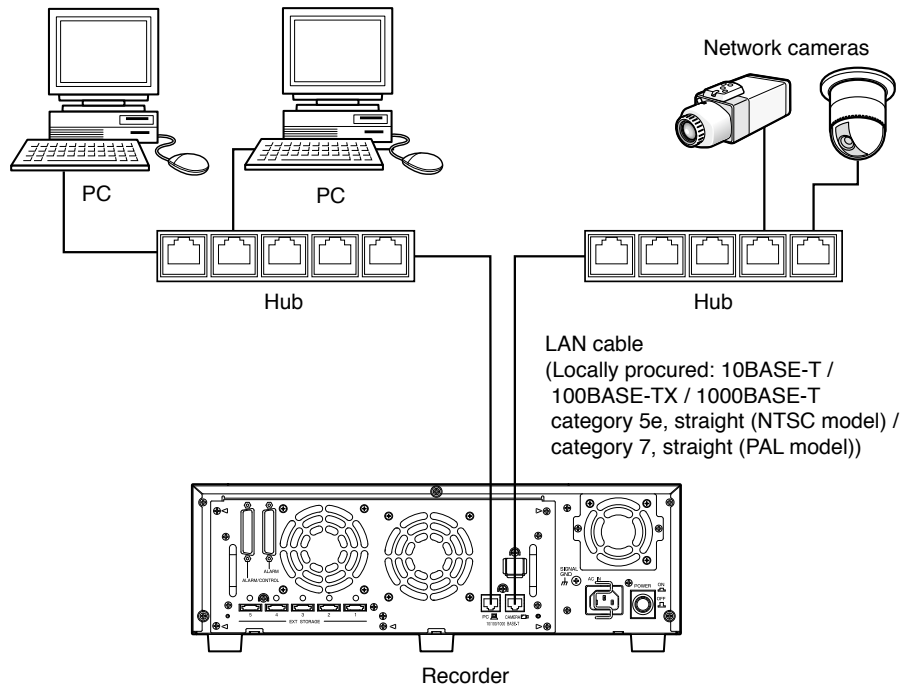


Images from the cameras transmitted to the client PC port will be transmitted to PCs from the same client PC port.

● 2-port operation

Direct connection using a hub

Connect cameras and PCs using the camera port and the client PC port at the rear of the recorder.



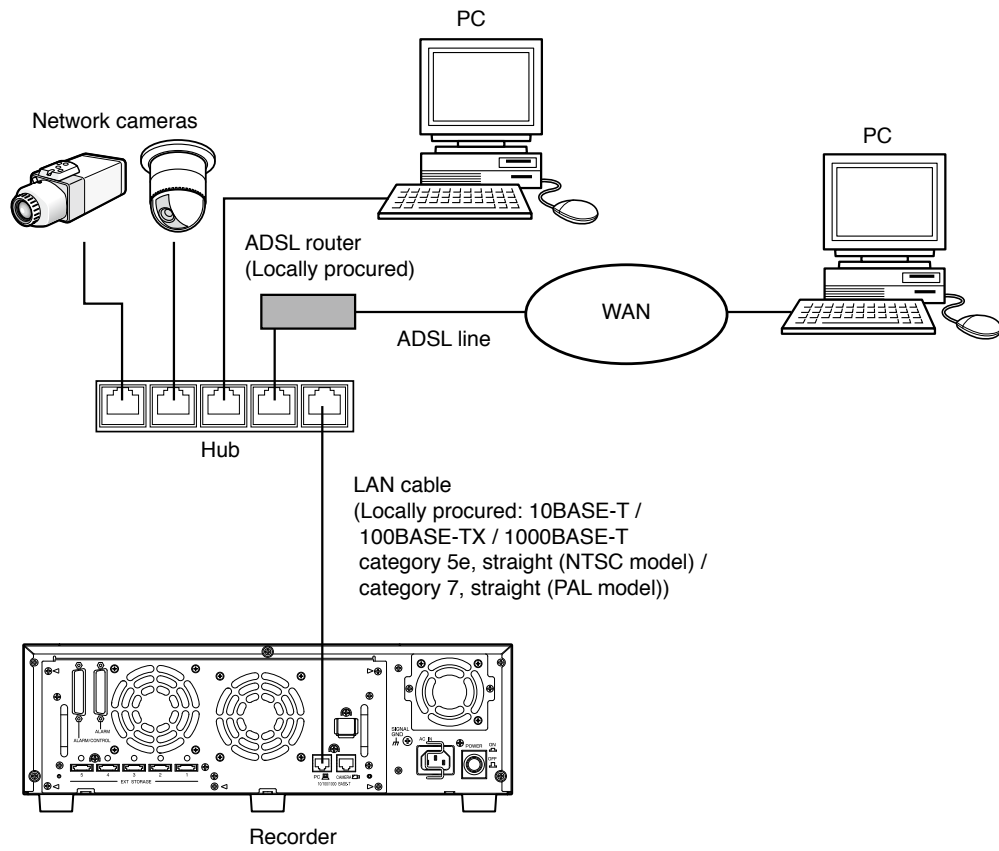
Images from the cameras transmitted to the camera port will be transmitted to the PCs from the client PC port.

Important:

- Connect the cable from the hub to which the cameras are connected to the camera port, and connect the cable from the hub to which the PCs are connected to the client PC port.
An incorrect connection may lower the transmission efficiency.
-

● Connection example for 1-port operation

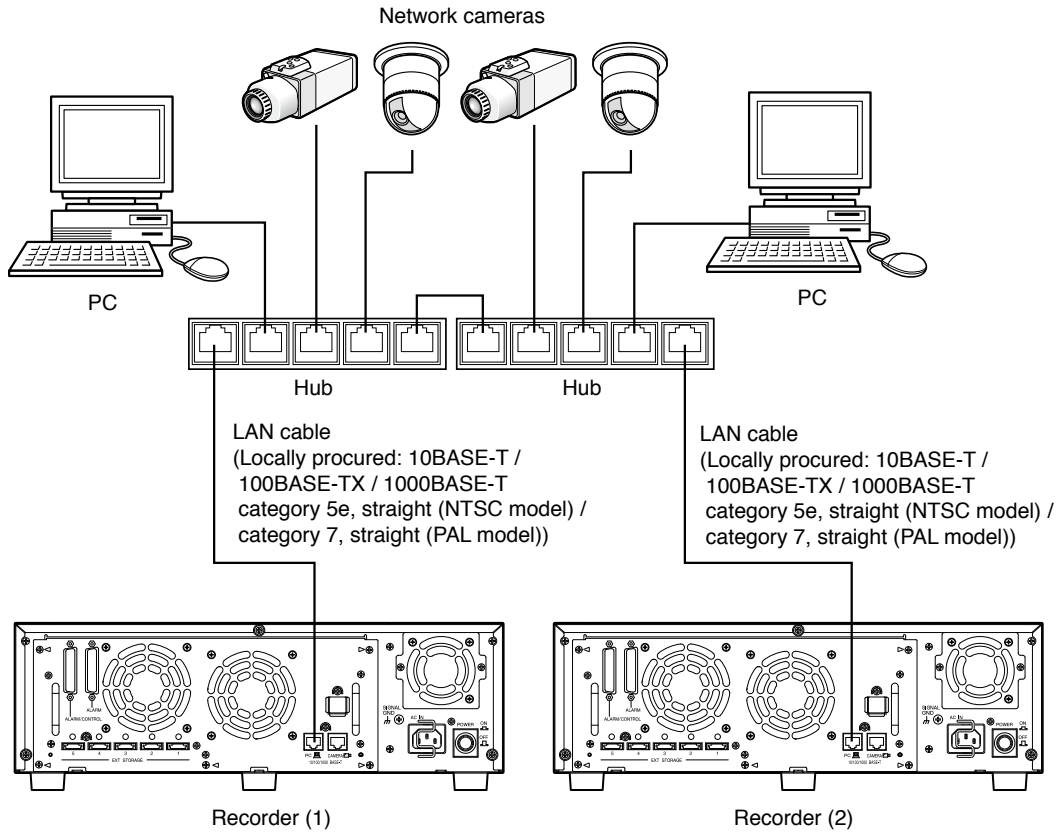
Connecting a PC using an ADSL line



Note:

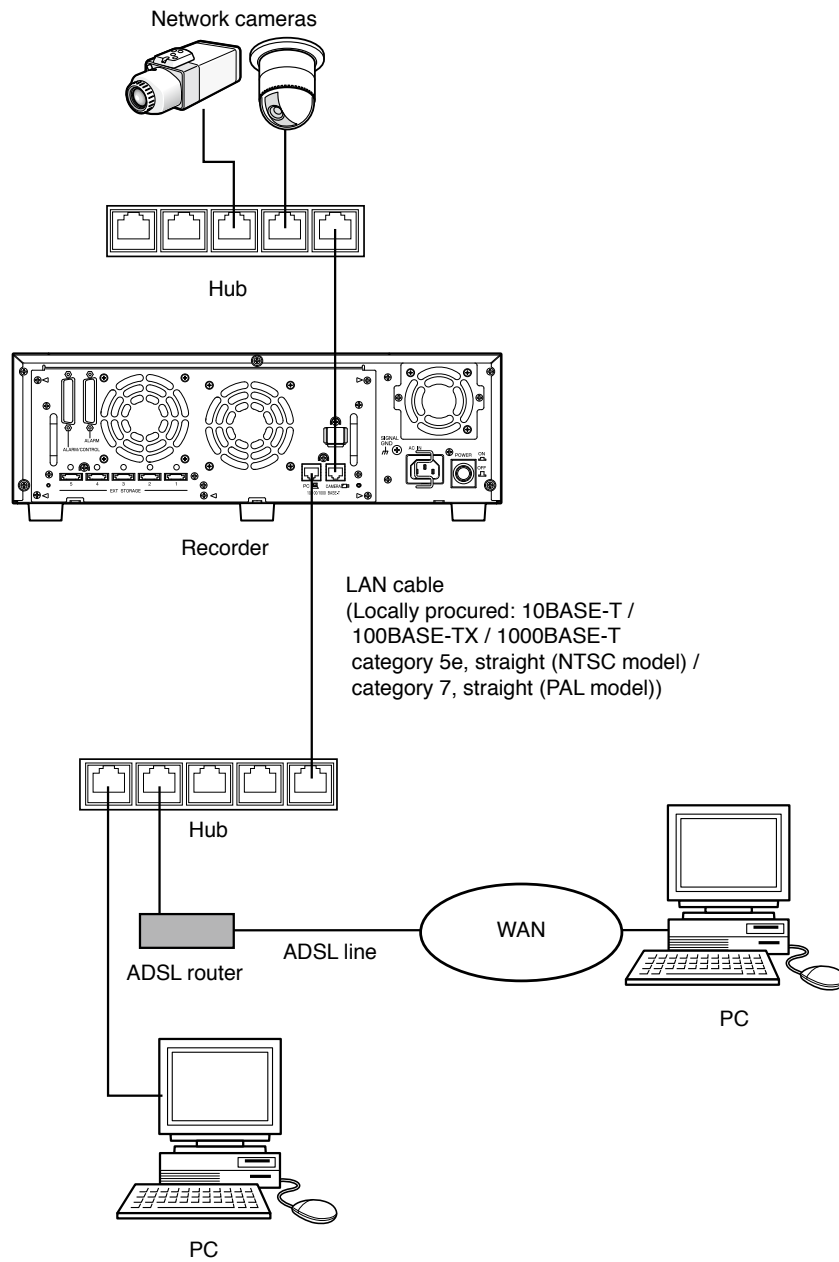
- When using a router, MPEG-4 images sometimes may not be displayed. Refer to the network administrator for information on how to configure the settings of the router.
-

Connecting recorders

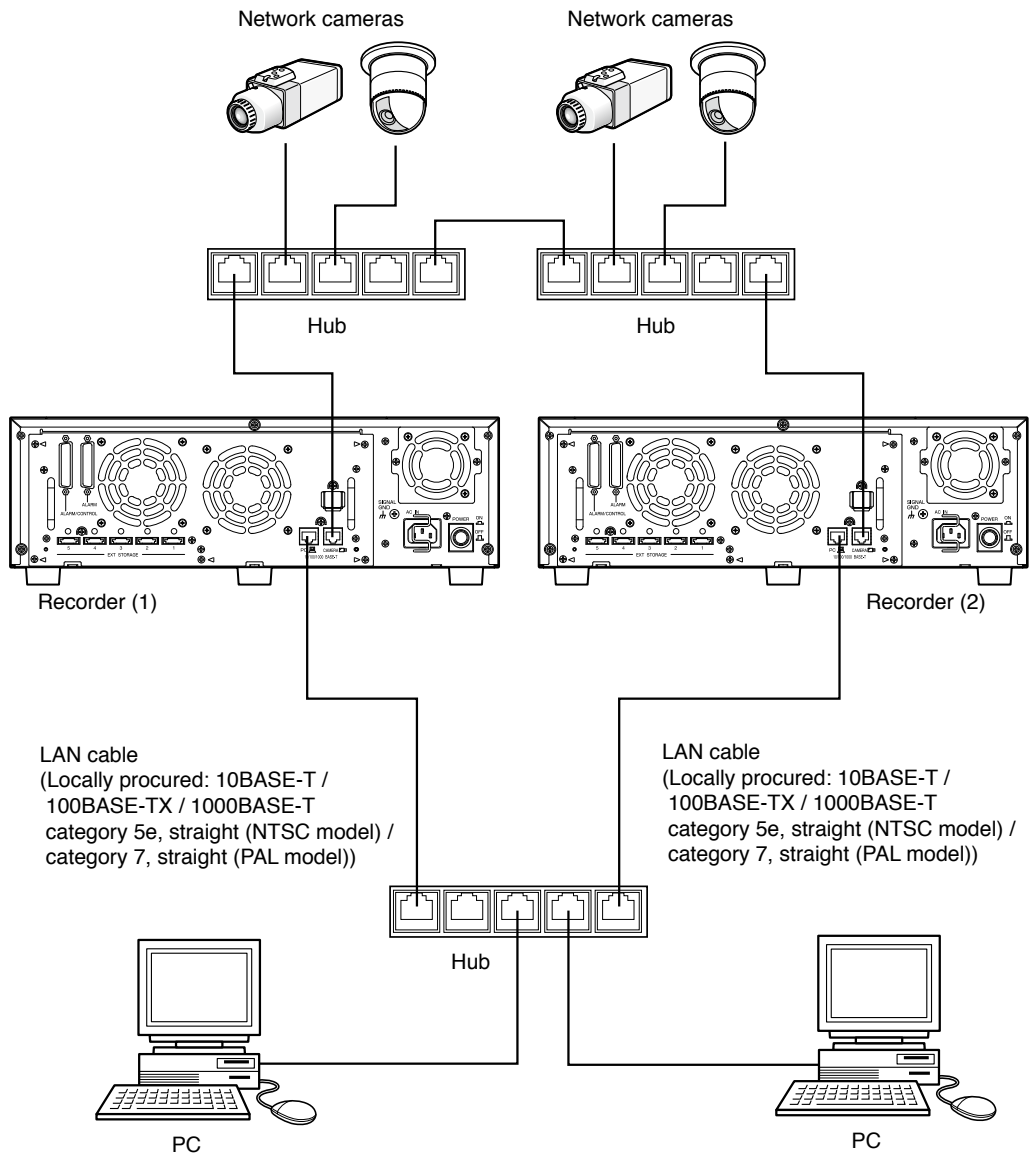


● Connection example for 2-port operation

Connecting a PC using an ADSL line

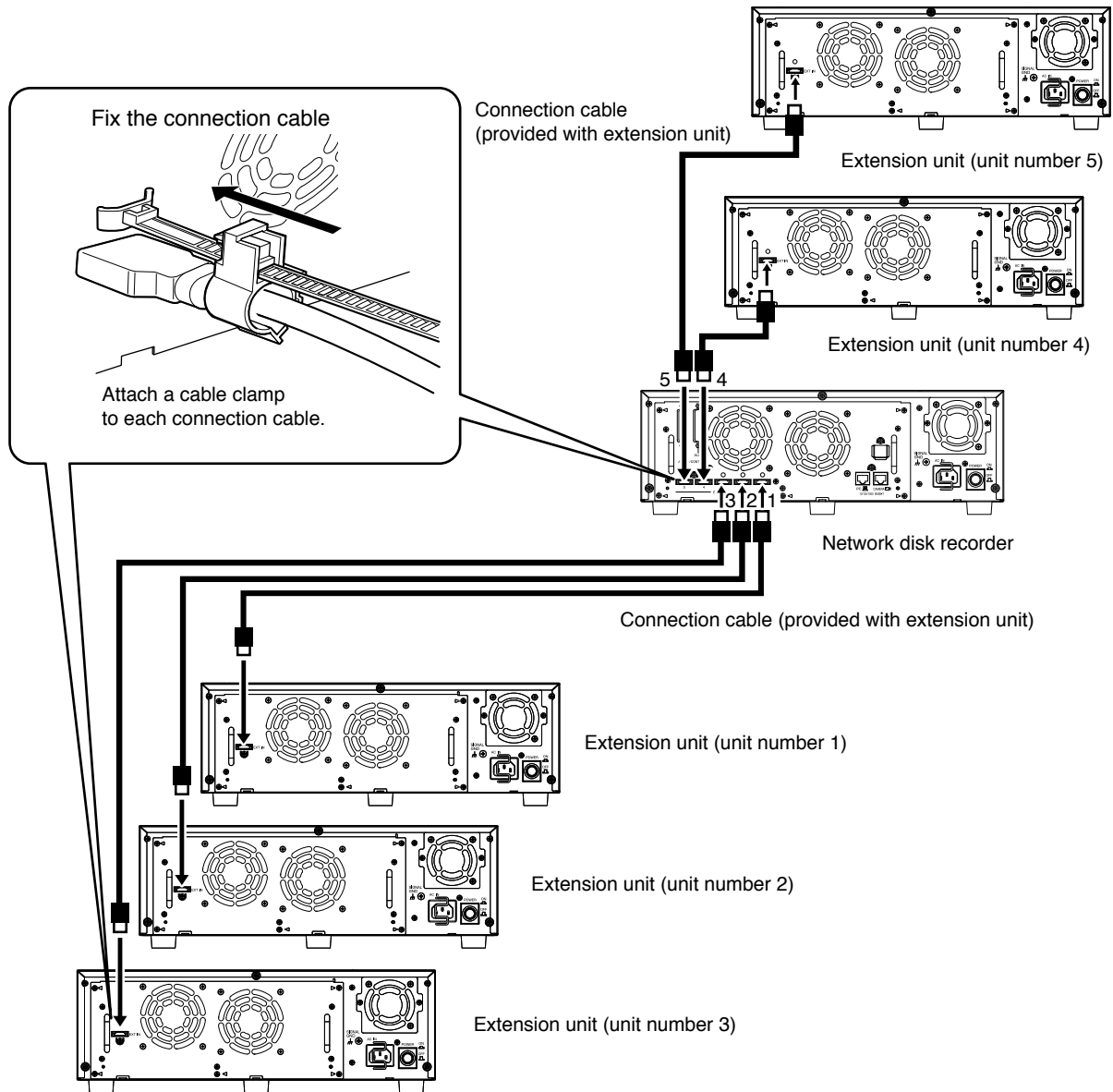


Connecting recorders



● Connecting the extension units

Up to 5 extension units can be connected to a single recorder. Use the dedicated connection cable (provided with the extension unit) to connect between the external storage (EXT STORAGE) connector at the rear of the recorder and an extension unit. When connecting multiple extension units (WJ-HDE400) or when adding extension units, connect as follows. Refer also to the operating instructions of the extension unit.



Important:

- Use only the connection cable provided with the extension unit when connecting the recorder and the extension unit.
- Fix the connection cable with the cable clamp provided with the extension unit to prevent disconnection or an unstable connection that may cause recording failures or an unstable system.
- Do not wind the cable in a coil.

About the connectors

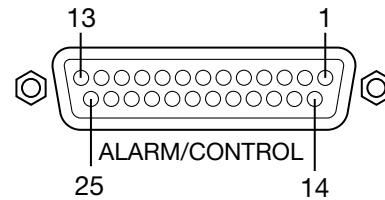
■ How to use the terminals of the ALARM/CONTROL connector

These terminals are used for emergency recording, auto time adjustment, taking measures against power outages, and when installing a buzzer, a lamp, or similar alarm device.

The connector to be used should be compatible with the pin configuration.

● Pin configuration

The pin array is different from other network disk recorders. Make sure that the connection is correct by referring to the following.



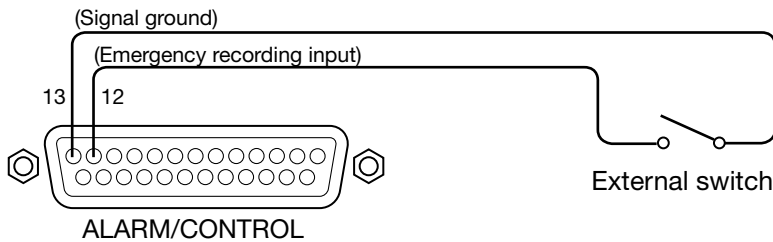
Pin No.	Signal	Operation	Remarks
1	Alarm input 8	Event action will be performed according to the settings.	Non-voltage make contact, +5 V pull-up 150 kΩ
2	Alarm input 9		
3	Alarm input 10		
4	Alarm input 11		
5	Alarm input 12		
6	Alarm input 13		
7	Alarm input 14		
8	Alarm input 15		
9	Alarm input 16		
10	Network error output	Signal output upon detection of a disconnected Ethernet link. Signal output upon DHCP IP address expiration.	Open collector output/24 V DC max., 100 mA
11	Alarm reset input	Canceling the alarm display	Non-voltage make contact, +5 V pull-up 150 kΩ
12	Emergency recording input	Starting emergency recording signal input	
13	Signal ground		
14	Signal ground		
15	Available disk space warning output	Signal output for available (remaining) disk space warning of the normal recording area/event recording area/copy area	Open collector output/24 V DC max., 100 mA
16	HDD error output	Signal output upon detection of an HDD error	
17	Camera error output	Signal output upon detection of a camera error	
18	Error output	Signal output upon detection of a recorder error	
19	Outage processing end output	Signal output upon completion of outage processing	High (+5 V to +12 V, 6.3 mA max.)

Pin No.	Signal	Operation	Remarks
20	Time adjustment I/O	The time of this recorder is adjusted to the preset time according to the signal input. This signal output is then generated for the setting time of this recorder. The time of all other recorders is adjusted to the setting time of this recorder.	52 k Ω , +5 V pull-up, Output current: 100 mA/ Non-voltage make contact input
21	Alarm output	Alarm signal will be supplied at an event occurrence	Open collector output/24 V DC max., 100 mA
22	Alarm suspension input	The state of the alarm suspension is assigned according to the signal input.	Non-voltage make contact, +5 V pull-up 150 k Ω
23	Outage detection input	Start of outage processing according to the signal input.	
24	External recording mode switching input	Changeover to the external recording mode	
25	+5 V output	+5 V output	200 mA max.

● Connection for emergency recording

When the external switch is turned on, emergency recording will start.

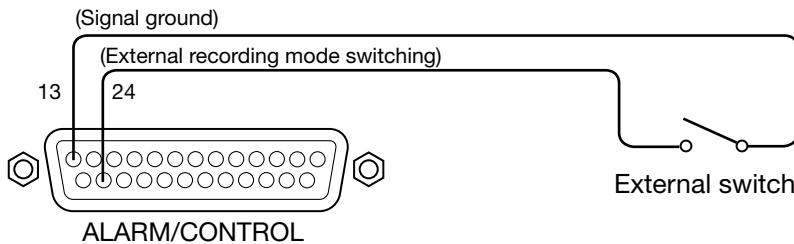
Recording time and recording rate for emergency recording differ according to the settings of "Emergency rec." on the setup menu. (Refer to the setup instructions (PDF).)



● Connection for external recording switching

When the external switch is turned on, the recording program will be switched.

The recording program can be set by selecting "Ext." for "Time table" of "Schedule" on the setup menu. (Refer to the setup instructions (PDF) for further information.)

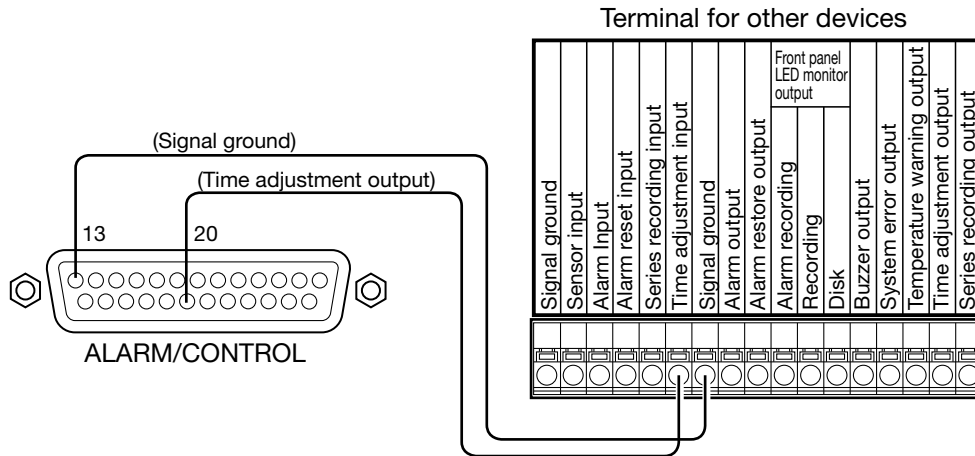


● Connection 1 for the auto adjustment time function

When "Auto adjustment time" of "Time & date" under "Basic" on the setup menu is set to "Master"

"Time adjust output" becomes available and the clock of this recorder will be applied to other devices.

The time adjust output signal will be supplied from pin no.20 to other recorders at the time set for "Activation time" of "Time & date" under "Basic" on the setup menu.



● Connection 2 for the auto adjustment time function

When "Auto adjustment time" of "Time & date" under "Basic" on the setup menu is set to "Slave"

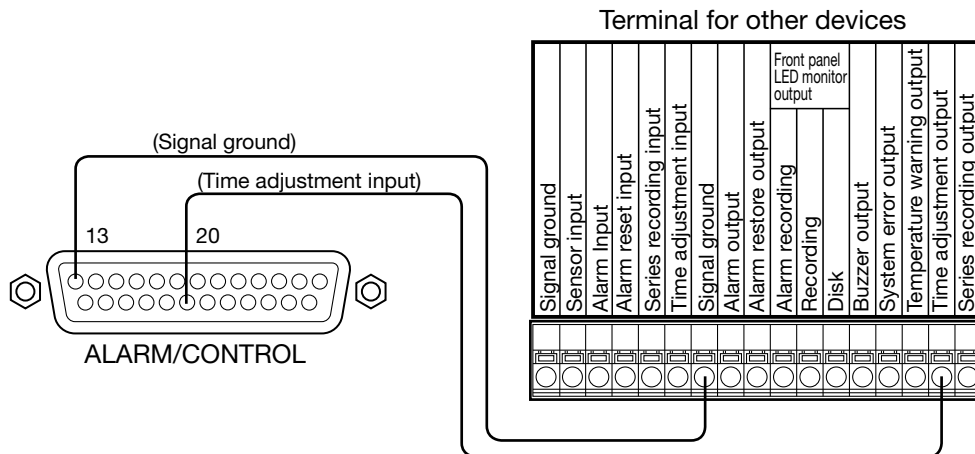
"Time adjust input" becomes available and the clock of this recorder will be applied to other devices.

When a signal output from other device is supplied to the time adjust I/O terminals (pin no.20) 15 minutes before/after the time set for "Activation time", the clock of the recorder will be set to the time set for "Activation time".

Example:

When "15:00" is set for "Activation time"

- Signal is supplied at 2:50:00 (hour:minute:second) pm → Set at 3:00:00 pm
- Signal input supplied at 3:14:45 pm → Set at 3:00:00 pm
- Signal is supplied at 3:20:00 pm → Time will not be adjusted.



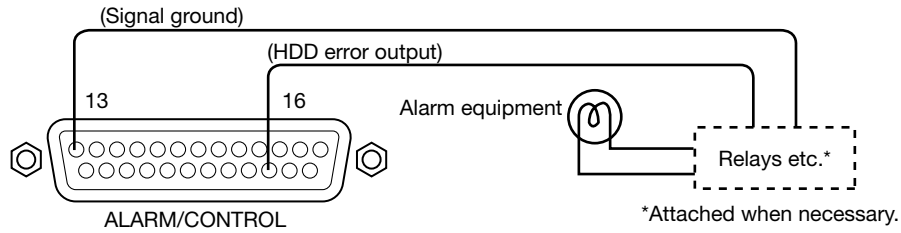
Important:

- When "Slave" is selected, the clock will not be adjusted during event recording or emergency recording.

● Connection of the control output

When an alarm device such as a buzzer or a lamp is connected, the signal output from pin nos.15 - 18 can be used to notify the status by sounding a buzzer or lighting a lamp.

The following example is of a connection with the HDD error output (pin no.16).



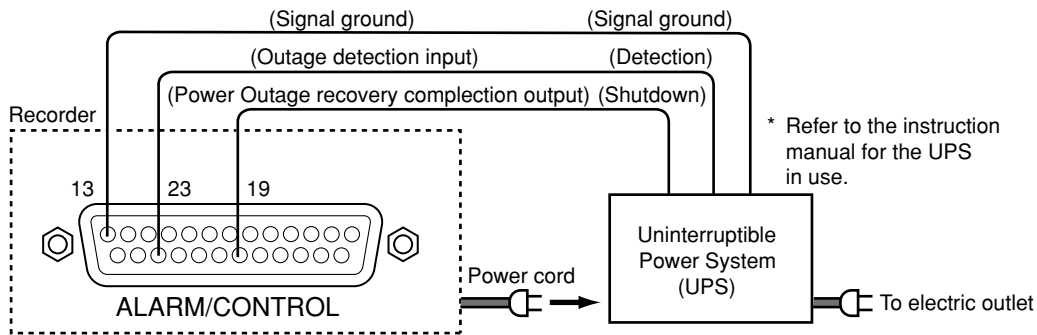
● Connection with the Uninterruptible Power System (UPS)

This is an example of a connection with the uninterruptible power system (UPS) to be installed to protect from a power outage.

When a signal is supplied to the outage detection input terminals from the uninterruptible power system (UPS), internal processing (stops recording safely) will start to shut off the power supply for the recorder.

After completing the internal processing, a signal will be supplied from the outage processing end output terminal to the uninterruptible power system (UPS).

Then, the power supply to the recorder can be suspended.



Important:

- Be sure to use an UPS that provides a sine wave output.
Do not use an UPS that provides a square wave. It may damage the recorder.

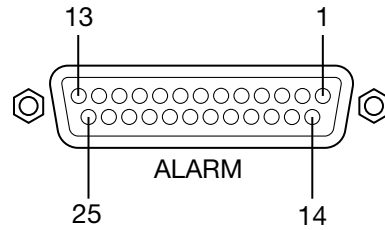
■ How to use the terminals of the ALARM connector

These terminals are used to connect the alarm devices, such as sensors, door switches, etc.
The connector to be used should be compatible with the pin configuration.

● Pin configuration

The pin array is different from other network disk recorders. Make sure that the connection is correct referring to the following.

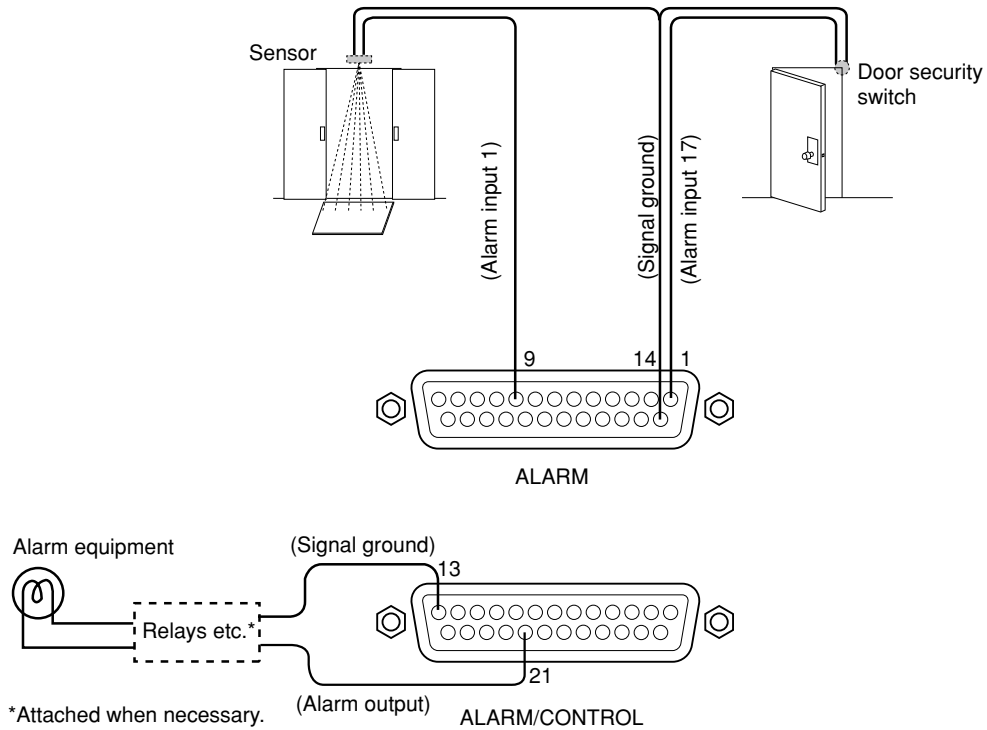
The pin configurations of these terminals are as shown below.



Pin No.	Signal	Operation	Remarks
1	Alarm input 17	Event action will be performed according to the settings.	Non-voltage make contact, +5 V pull-up 150 kΩ
2	Alarm input 18		
3	Alarm input 19		
4	Alarm input 20		
5	Alarm input 21		
6	Alarm input 22		
7	Alarm input 23		
8	Alarm input 24		
9	Alarm input 1		
10	Alarm input 2		
11	Alarm input 3		
12	Alarm input 4		
13	Signal ground		
14	Signal ground		
15	Alarm input 25	Event action will be performed according to the settings.	Non-voltage make contact, +5 V pull-up 150 kΩ
16	Alarm input 26		
17	Alarm input 27		
18	Alarm input 28		
19	Alarm input 29		
20	Alarm input 30		
21	Alarm input 31		
22	Alarm input 32		
23	Alarm input 5		
24	Alarm input 6		
25	Alarm input 7		

● Alarm connection

When a signal is supplied to the alarm input terminals 1 - 32 (pin nos. 1 - 12, 15 - 25 of the ALARM connector, pin nos. 1 - 9 of the ALARM/CONTROL connector), recording and displaying of images from the cameras will be performed according to the settings. When an alarm device such as a buzzer, a lamp, etc., is installed outside, connect them to the alarm output terminals (pin no. 21 of the ALARM/CONTROL connector).



■ Time and polarities of the ALARM/CONTROL terminal and the ALARM terminal

Terminal	Active Time	Remarks
Alarm input	100 ms or more	L active
Alarm output	The set time on the Setup menu	L active
Network error output	Until the network error is cleared, or until the ERR button on the operation window is clicked.	L active
Alarm reset input	100 ms or more	L active
Emergency recording input	100 ms or more	L active
Available disk capacity warning output	Duration set for "Error output duration"* starting from the time of the error occurrence.	L active
HDD error output	Duration set for "Error output duration"* starting from the time of the error occurrence.	L active
Camera error output	Duration set for "Error output duration"* starting from the time of the error occurrence, or until the camera is reset (from the time of the error occurrence).	L active
Error output	Duration set for "Error output duration"* starting from the time of the error occurrence.	L active
Time adjustment I/O	Input: 100 ms or more Output: 1 s	Input/Output: L active
Alarm suspension input	100 ms or more	L active, judged by level
External recording mode changeover	100 ms or more	L active
Outage detection input	5 s or more	L active
Outage processing end output	10 s or more	H active

* "Error output duration" can be set on the "Basic" page of the setup menu. (Refer to the setup instructions (PDF).)

Note:

- During "L active (Low active)", the logic will be implemented when the voltage level of signal is low.
- During "H active (High active)", the logic will be implemented when the voltage level of signal is high.

Turn on/off the power of the recorder

■ Turn on the power of the recorder

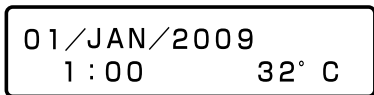
Turn on the power of the recorder.

1 Insert the power plug into an outlet.

120 V AC 60 Hz, for the NTSC model
220 V to 240 V AC 50 Hz/60 Hz, for the PAL model
Use the power source that is suited to your model.

2 Press the **POWER** switch at the rear of the recorder to turn on the power.

- The [OPERATE] indicator will light and the system check (checking the system and hard disk drives) will start.
- The "WJ-ND400" indication will be displayed on the LCD at startup, and the "Initializing" indication will be displayed during startup.
The "Initializing" indicator will turn to "Don't turn off" after a short time.
- When the system check is complete, the time and date display (standby display) will be displayed on the LCD. (Page 41)



Important:

- Do not turn off the power during the power on process.
- When using the extension units (WJ-HDE400), turn on the power of the recorder after turning on the power of all the extension units.

■ Turn off the power of the recorder

To shutdown the recorder, do the following.

Important:

- Remove the plug from the outlet if not operating the recorder not in use long.
- When the recorder has not been used for a certain period, turn on the power of the recorder (approximately once a week) and perform recording/playback to prevent interferences with functions.

● During recording

1 Select "Off" for "Recording" under "Basic" on the setup menu to stop all recordings. (Refer to the setup instructions (PDF).)

2 Turn off the power of the recorder after confirming that all the HDD access indicators are off.

The [OPERATE] indicator will go off.

Note:

- After turning on the power of the recorder again, do not forget to set the "Recording" setting under "Basic" to "On".

● During playback

1 Click the [STOP] button on the [HDD] tab on the operation window. (Refer to the operating instructions (PDF).)

2 Turn off the power of the recorder after confirming that all the HDD access indicators are off.

The [OPERATE] indicator will go off.

Operations using the buttons on the front panel

■ Basic operations

The following are the available functions using the buttons on the front panel and the LCD.
The display on the LCD will shift by pressing the arrow button (up or down).

01/JAN/2009
1:00 32° C

(Temperature will be displayed in Fahrenheit for NTSC model, e.g. "90 °F")

↓ ↑
System Info [SET]

↓ ↑
IP Address Check [SET]

↓ ↑
IP Address Setup [SET]

↓ ↑
Keylock Mode [SET]

↓ ↑
HDD Operation [SET]

↓ ↑
Manual Reboot [SET]

Time and date display (Standby display)

The current time & date and the internal temperature (reference value) will be displayed.

Refer to the setup instructions (PDF) for further information.

System information display

Information about the system of the recorder will be displayed. Software version, hardware version, MAC address and serial number can be checked. Refer to page 42 for further information.

IP address check display

The network settings can be checked.

Press the [SET] button on the front panel while displaying this display. It is possible to check the network settings such as the IP address or the subnet mask.

Refer to page 43 for further information.

IP address setup display

The network settings can be configured.

Press the [SET] button on the front panel while displaying this display. It is possible to configure the network settings such as the IP address or the subnet mask.

Refer to page 44 for further information.

Key lock mode display

It is possible to lock the buttons on the front panel to make them unusable.

Refer to page 44 for further information.

HDD operation change display

The hard disk drives can be added/removed by following the displayed guidance.

Refer to page 47 for further information.

This display will appear only when the [USE] button is pressed.

Manual reboot display

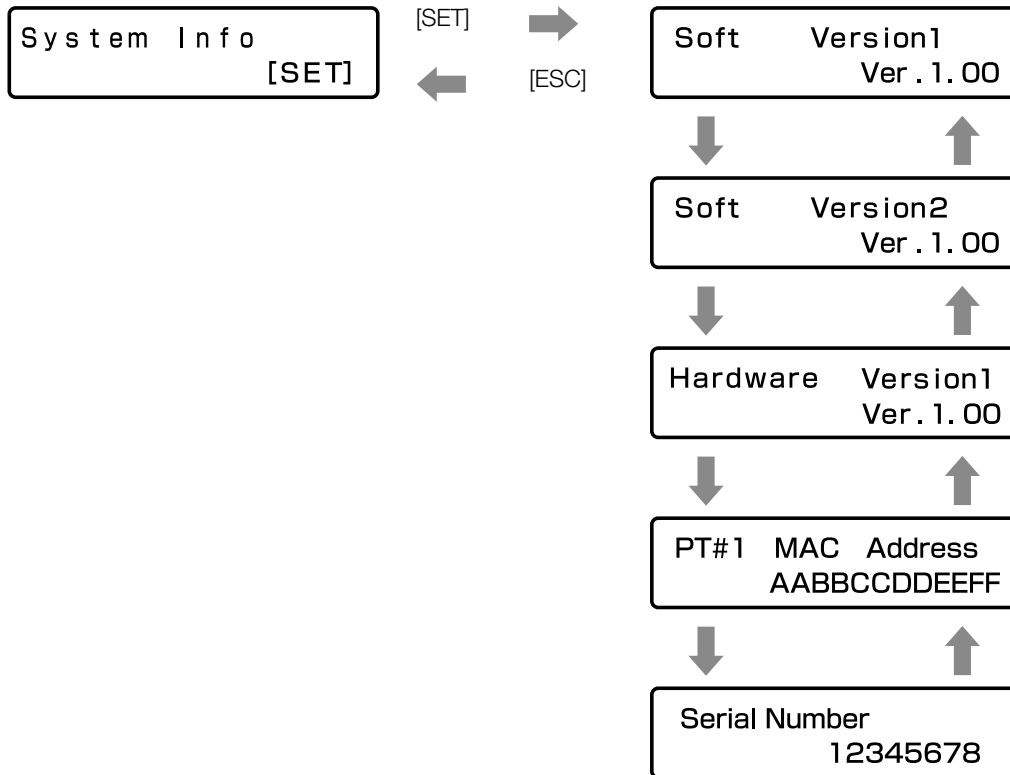
It is possible to reboot the recorder.

Refer to page 56 for further information.

■ Check the system information

It is possible to check information relating to the system (software version, hardware version, MAC address, serial number). Shift the display and configure each setting as described below.

The display on the LCD can be shifted using the arrow button (up or down). It is possible to shift to the display of the client PC port (PT#2) or the maintenance port (PT#3) by pressing the arrow button (left or right) while the "PT#1 MAC address" indication is being displayed.



■ Check the IP address

It is possible to check the DHCP status, IP address, subnet mask, gateway* and HTTP port* for each port. Each port will be displayed as follows.

Camera port: PT#1, Client PC port: PT#2, Maintenance port: PT#3

The display of each port can be shifted using the arrow button (left or right).

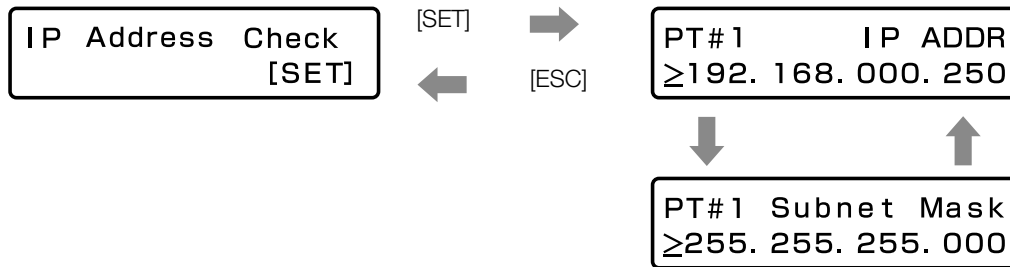
* The settings of "Gateway" and "HTTP port" can be checked with the display of the client PC port (PT#2).

The default network settings of the recorder are as follows.

Item	Camera port	Client PC port	Maintenance port
DHCP	-	OFF	-
IP address	192.168.0.250	192.168.1.250	192.168.2.250
Subnet mask	255.255.255.0	255.255.255.0	255.255.255.0
Default gateway	-	192.168.1.1	-
HTTP port	-	80	-

Shift the display and configure each setting as described below.

The display on the LCD will shift by pressing the arrow button (up or down).



■ Set the IP address

The available setting items are the same as described in the "Check the IP address" section on the page 43.

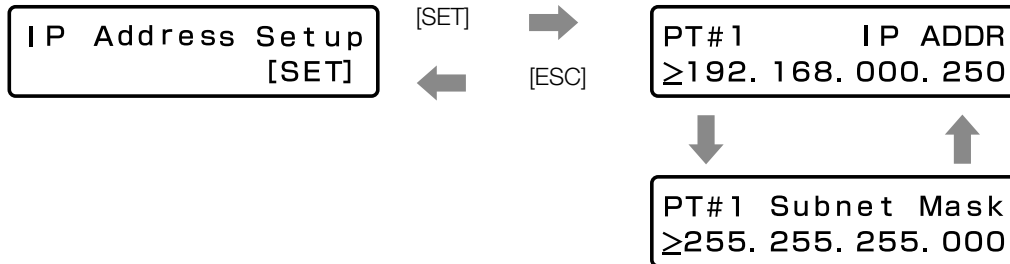
Shift the display and configure each setting as described below. To change the port number (PT#), press the arrow button (up or down) while the underscore mark (_) is displayed below the ">" indication.

Each port will be displayed as follows: PT#1 for camera port, PT#2 for client PC port, and PT#3 for maintenance port.

To change the port number (PT#), press the arrow button (left or right).

The settings of "Gateway" and "HTTP port" can be configured when the "PT#2" indication (client PC port) is being displayed.

The display on the LCD will shift by pressing the arrow button (up or down).



Important:

- The network settings for each port (IP address, etc.) should be configured with a different subnet. Otherwise, network communication may fail.
-

● How to configure the settings for each item

1 The underscore mark will move below the number by pressing the [SET] button while the underscore mark is displayed below the ">" indication.

- When pressing the arrows button (left or right) while the underscore mark is displayed below the ">" indication, the display will be shifted to the display of the client PC port (PT#2) or of the maintenance port (PT#3)

3 To determine the edited setting, move the underscore mark below the ">" indication by pressing the [ESC] button.

2 Move the underscore mark using the arrow button (left or right), and then enter values using the arrows button (up or down).

■ Enable/disable the key lock

It is possible to lock the buttons on the front panel to make them unusable. When the [SET] button is pressed while displaying the key lock display, the message of "Keylock Enabled" will be displayed and the buttons on the front panel will be locked. The time and date display (standby display) will be displayed soon after the buttons are locked.



To disable the key lock, enter the password (default: 12345) on the password entry display. The password can be changed on the setup menu.

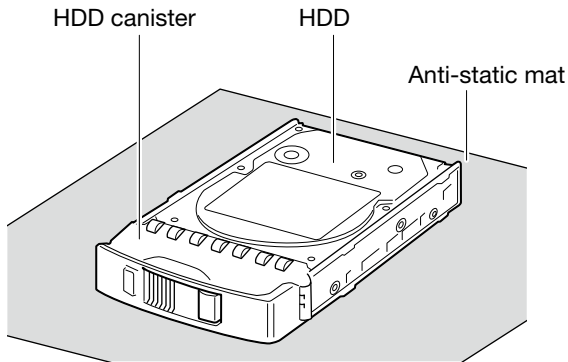
Refer to the setup instructions (PDF) for further information.

■ HDD unit

To install a hard disk drive in the recorder, it is necessary to assemble an HDD unit (encase the hard disk drive in the HDD canister).

The HDD unit is designed to easily install/remove the hard disk drive in/from the recorder.

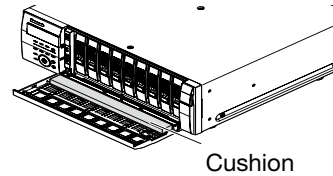
Contact your dealer about purchasing, installing, and replacing the hard disk drives.



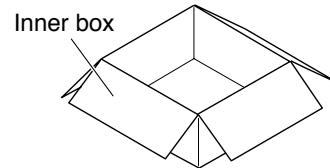
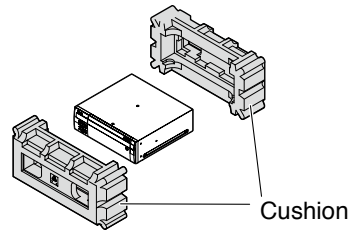
Important:

- Hard disk drives are precision devices. Before installing the hard disk drives, read the "Hard disk drive" section of "Precautions (page 9)" together with the following.
 - Before touching a hard disk drive, release static electricity from your body using an anti-static grounding strap, etc.
Even after releasing static electricity, hold the side of the hard disk drive when carrying it. To prevent damage to the hard disk drive from static electricity, do not touch the circuit board and the connectors of the hard disk drive.
 - Use an anti-static mat and an anti-static grounding strap when installing/replacing the hard disk drives.
 - When installing hard disk drives, use a low-torque powered screwdriver or a torque screwdriver to tighten screws with the specified torque.
 - The hard disk drive and the HDD canisters should be packaged in exclusive cushioning. The hard disk drive and the HDD canisters may be damaged by a fall or vibration. When transporting the extension unit, put these cushions from the extension unit and pack them again in the following method.

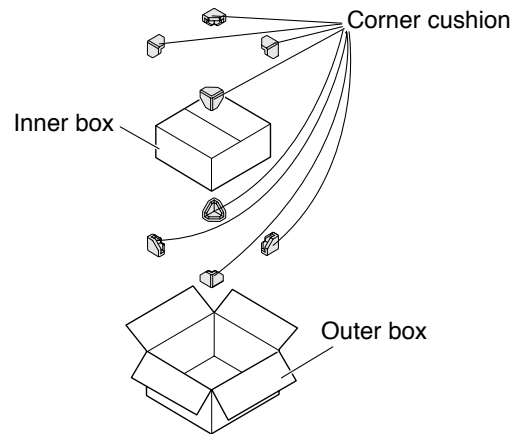
- (1) Put the cushion between the front cover and HDD canister.



- (2) Put the cushions between the extension unit and inner box.



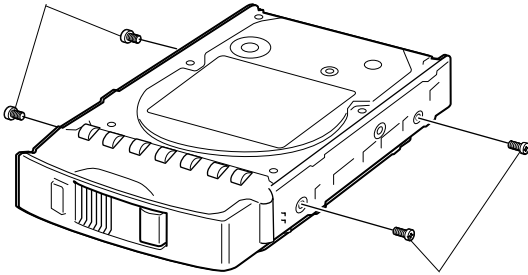
- (3) Put the corner cushions between the inner box and outer box.



1 Fix both sides of the hard disk drive with the dedicated HDD canister using the 4 provided screws for HDD canister installation.

Tightening torque for the screws: 0.49 N·m (5 kgf·cm) (use a low-torque powered screwdriver or a torque screwdriver)

HDD fixing screws for the HDD canister

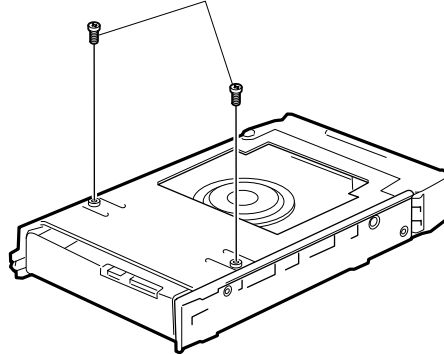


HDD fixing screws for the HDD canister

2 Fix the bottom of the hard disk drive with the HDD canister using the 2 provided screws for HDD canister installation.

Tightening torque for the screws: 0.49 N·m (5 kgf·cm) (use a low-torque powered screwdriver or a torque screwdriver)

HDD fixing screws for the HDD canister



■ Handle the hard disk drives

The following are descriptions of how to install/remove the hard disk drives, to determine the operational mode, and to replace a faulty hard disk drive when operating in the RAID mode.

The hard disk drives can be easily installed in or removed from the HDD slots inside the front cover.

Contact your dealer about purchasing, installing, and replacing the hard disk drives.

Important:

- Hard disk drives are precise devices. Note the following when handling them.
 - They are vulnerable to vibration. Handle them with care.
 - Before touching a hard disk drive, release static electricity from your body using an anti-static grounding strap, etc. Even after releasing static electricity, hold the side of the hard disk drive when carrying it.
 - To prevent damage to the hard disk drive from static electricity, do not touch the circuit board and the connectors of the hard disk drive.
- Contact your dealer for further information about hard disk drives compatible with this recorder. Operation using a hard disk drive that is not recommended is not guaranteed under any circumstances.
- When using multiple hard disk drives, use the same model. If different models are used together even when the capacities of them are the same, the available capacity may be a few percent smaller.
- Insert the HDD units one by one in order starting from HDD1. (The leftmost slot of the HDD slots is HDD1 and the rightmost one is HDD9.)
- Once the operation has started in the RAID 5 or RAID 6 mode, do not change the positions of the HDD units. If they are changed, it may become impossible to read recorded data.

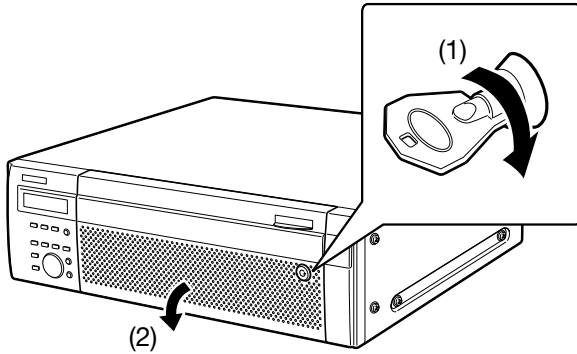
Item	Reference	Page	
Installation (insertion)	Individual HDD units	Install the HDD units	47
	All the HDD units in the extension unit*	Install (link) all the HDD units in the extension unit at the same time	48
Removal	Individual HDD units	Remove the HDD units	50
	All the HDD units in the extension unit*	Remove all the HDD units in the extension unit at the same time	51
Operational mode setting	All of the HDD units	Determination of the operational mode	52
Replacement/recovery	In the single mode	Install the HDD units Remove the HDD units	47, 50
	In the RAID 5/RAID 6 mode Data recovery	Data recovery (in the RAID 5/RAID 6 mode)	54

* Only when there is at least a extension unit in the system.

● Install the HDD units

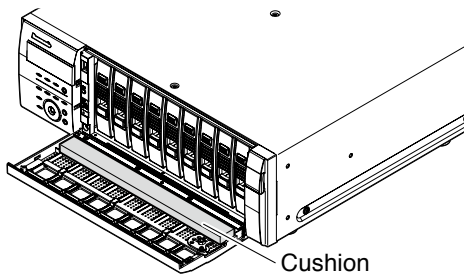
It is possible to install the HDD units without stopping the operation.

- 1 After inserting the provided key into the key hole on the front cover, push and turn it to the right to open the front cover.**



Note:

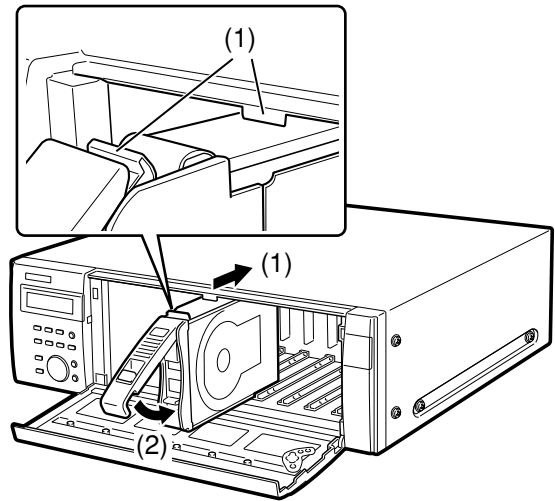
- The cushion between the front panel and HDD canister is used for protection at transportation. Remove this cushion before use. When transporting the recorder, provide the cushion between the front panel and HDD canister.



- 2 Insert the HDD units into the HDD slots in order starting from HDD1.**

Lift the lever on the HDD unit while holding down the removal knob, and then insert the HDD unit all the way into the HDD slot.

- (1) Pinch the tab on the HDD slot with the hook on the HDD unit securely.
- (2) Press the lever down and push it until the removal knob clicks.



- 3 Recognition process of the hard disk drive will start automatically.**

- The HDD status indicator will blink orange during the recognition process. When the recognition process is complete, the HDD status indicator will light or blink green.
- When the inserted hard disk drive is unformatted, formatting will start automatically. When formatting is complete, the HDD status indicator will light green.
- When the inserted hard disk drive is formatted, it will be recognized as the hard disk drive for playback use only. In this case, the HDD status indicator will blink green. To use it for recording, follow the instructions from step 4.

Note:

- The HDD status indicator sometimes may light green before blinking orange when a hard disk drive is inserted.

- 4 Hold down the [USE] button for 2 seconds or more.** The buzzer will sound.

- 5 Press the arrow button (up or down) repeatedly until the "HDD Operation" indication is displayed.**

HDD Operation
[SET]

6 Press the [SET] button.

7 Press the arrow button (up or down) repeatedly until the "Link HDD" indication is displayed.

```
Link HDD
ACCEPT  <NO/YES>
```

8 Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

9 Select the device in which the HDD unit is installed (recorder: MAIN, extension unit #: EXT#) using the arrow button (up or down), and then press the [SET] button.

```
Link HDD
UNIT>MAIN  [SET]
```

10 Select the HDD slot number to which the HDD unit is to be inserted using the arrow button (up or down), and then press the [SET] button.

```
Link HDD
MAIN-1_    [SET]
```

11 Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

```
Link MAIN-1
ACCEPT  <NO/YES>
```

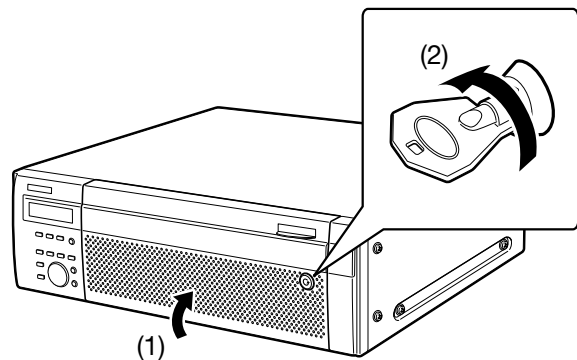
The installed HDD unit will be recognized as the HDD units for recording use.

```
Link MAIN-1
DONE    [SET]
```

When the [SET] button is pressed, the display on the LCD will return to the time and date display (standby display).

12 Close the front cover and lock it by pushing and turning the key to the left.

Keep the key in a safe place.



13 Check the disk information.

The following can be checked on the "Disk information" page on the setup menu. Refer to the setup instructions (PDF) for further information.

- Total capacity of the hard disk drive
- Available (remaining) capacity of the hard disk drive
- Hour meter
- Operational mode of the hard disk drive
- Time and date range of the images recorded on the hard disk drive

Note:

- It is impossible to add a hard disk drive when running the system in the RAID 5 or RAID 6 mode. Even if an HDD unit is installed (linked) in an empty HDD slot, it will not be added to the RAID array.

● Install (link) all the HDD units in the extension unit at the same time

It is possible to make all the HDD units in the extension unit available (make them linked) at the same time. Refer also to the operating instructions of the extension unit.

1 Install the HDD units in the extension unit.

Install the HDD units by following steps 1 and 2 of the "Install the HDD units" (page 47).

When installing 2 or more HDD units, repeat steps 1 and 2.

Note:

- When installing 2 or more HDD units, do not install the units at one time. Only after the recognition process of a single HDD unit is complete, install the next HDD unit by following steps 1 and 2. When another HDD unit is installed in the process of the recognition, the newly installed HDD unit will not be recognized.

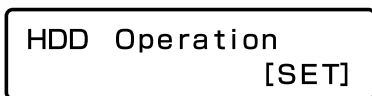
2 Recognition process of the hard disk drive will start automatically.

- The HDD status indicator will blink orange during the recognition process.
When the recognition process is complete, the HDD status indicator will light or blink green.
- When the inserted hard disk drive is unformatted, formatting will start automatically.
When formatting is complete, the HDD status indicator will light green.
- When the inserted hard disk drive is formatted, it will be recognized as the hard disk drive for playback use only. In this case, the HDD status indicator will blink green. To use it for recording, follow the instructions from step 3.

The following operations are to be performed on the network disk recorder after the recognition process is complete.

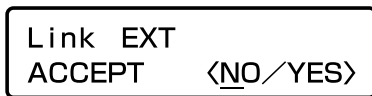
3 Hold down the [USE] button for 2 seconds or more.
The buzzer will sound.

4 Press the arrow button (up or down) repeatedly until the "HDD Operation" indication is displayed.



5 Press the [SET] button.

6 Press the arrow button (up or down) repeatedly until the "Link EXT" indication is displayed.

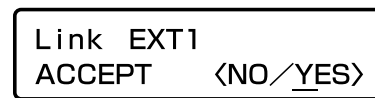


7 Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

8 Select the HDD slot number to which the HDD unit is to be inserted using the arrow button (up or down), and then press the [SET] button.



9 Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

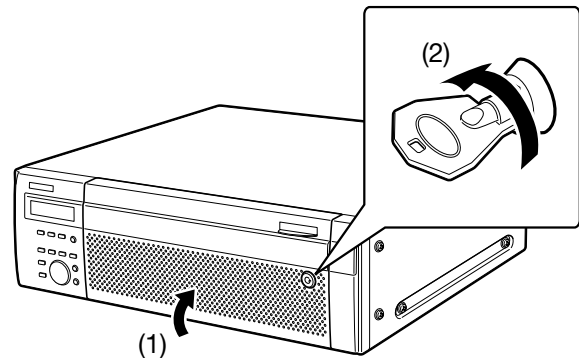


All the installed HDD units will be recognized as the HDD units for recording use.



When the [SET] button is pressed, the display on the LCD will return to the time and date display (standby display).

10 Close the front cover and lock it by pushing and turning the key to the left.



11 Check the disk information.

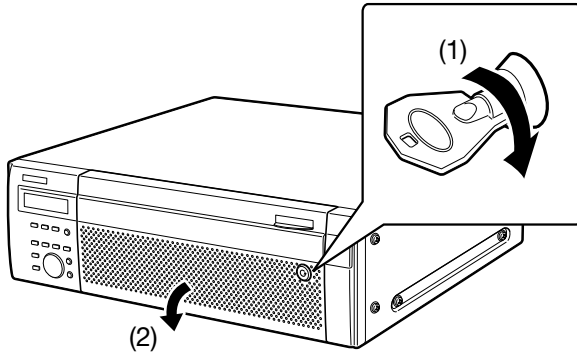
The following can be checked on the "Disk information" page on the setup menu. Refer to the setup instructions (PDF) for further information.

- Total capacity of the hard disk drive
- Available capacity of the hard disk drive
- Hour meter
- Operational mode of the hard disk drive
- Time and date range of the images recorded on the hard disk drive

● Remove the HDD units

It is possible to remove the HDD unit without stopping the operation.

- 1 After inserting the provided key into the key hole on the front cover, push and turn it to the right to open the front cover.



- 2 Hold down the [USE] button for 2 seconds or more. The buzzer will sound.

- 3 Press the arrow button (up or down) repeatedly until the "HDD Operation" indication is displayed.

HDD Operation
[SET]

- 4 Press the [SET] button.

- 5 Press the arrow button (up or down) repeatedly until the "Remove HDD" indication is displayed.

Remove HDD
ACCEPT <NO/YES>

- 6 Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

- 7 Select the device from which the HDD unit is to be removed (recorder: MAIN, extension unit #: EXT#) using the arrow button (up or down), and then press the [SET] button.

Remove HDD
UNIT>MAIN [SET]

- 8 Select the HDD unit to be removed using the arrow button (up or down), and then press the [SET] button.

Remove HDD
MAIN-1 [SET]

- 9 Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

Remove MAIN-1
ACCEPT <NO/YES>

The HDD status indicator will blink orange during the shutdown process of the selected HDD unit.

When the shutdown process is complete, the HDD status indicator will go off.

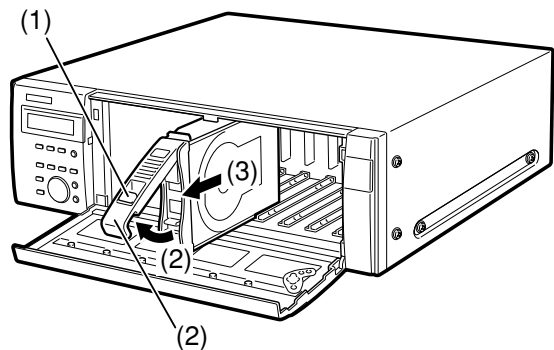
- When the shutdown process of the HDD unit on which recording is being performed starts, recording will continue on another HDD unit. Images may sometimes not be recorded for several seconds when switching the HDD unit for recording. If there is only a single HDD unit in the recorder, recording will stop.

Remove MAIN-1
Ready [SET]

When the [SET] button is pressed, the display on the LCD will return to the time and date display (standby display).

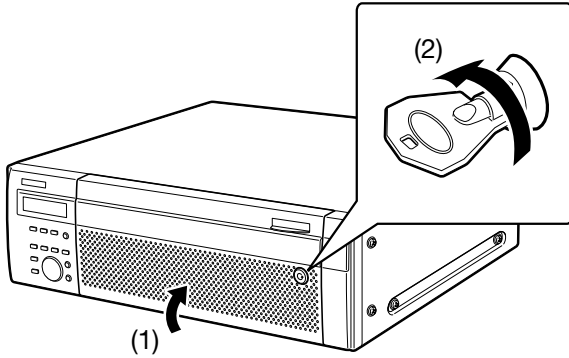
- 10 Remove the HDD unit.

- (1) Hold down the removal knob on the HDD unit.
- (2) Pull the lever up.
- (3) Pull the HDD unit out from the HDD slot.
Pull the HDD unit out carefully so as not to drop it and handle it gently so as not to give it a shock or vibration.



11 Close the front cover and lock it by pushing and turning the key to the left.

Keep the key in a safe place.



12 Check the disk information.

The following can be checked on the "Disk information" page on the setup menu. Refer to the setup instructions (PDF) for further information.

- Total capacity of the hard disk drive
- Available capacity of the hard disk drive
- Hour meter
- Operational mode of the hard disk drive
- Time and date range of the images recorded on the hard disk drive

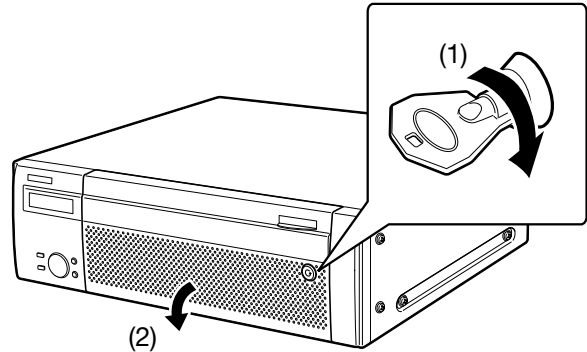
Note:

- It is impossible to remove the HDD unit using the buttons and the LCD on the front panel when running in the RAID 5 or RAID 6 mode.
- Refer to page 55 for information on how to replace a faulty hard disk drive.

● Remove all the HDD units in the extension unit at the same time

It is possible to remove all the HDD units in the extension unit. Refer also to the operating instructions of the extension unit.

1 After inserting the provided key into the key hole on the front cover, push and turn it to the right to open the front cover.



The following operations are to be performed on the network disk recorder after the recognition process is complete.

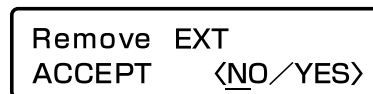
2 Hold down the [USE] button for 2 seconds or more.
The buzzer will sound.

3 Press the arrow button (up or down) repeatedly until the "HDD Operation" indication is displayed.



4 Press the [SET] button.

5 Press the arrow button (up or down) repeatedly until the "Remove EXT" indication is displayed.



6 Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

7 Select the extension unit (EXT#) to be removed using the arrow button (up or down), and then press the [SET] button.



- 8** Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

Remove EXT1
ACCEPT <NO/YES>

The shutdown process of the extension unit will start and all the HDD status indicators will start blinking orange. When the shutdown process is complete, all the HDD status indicators will go off.

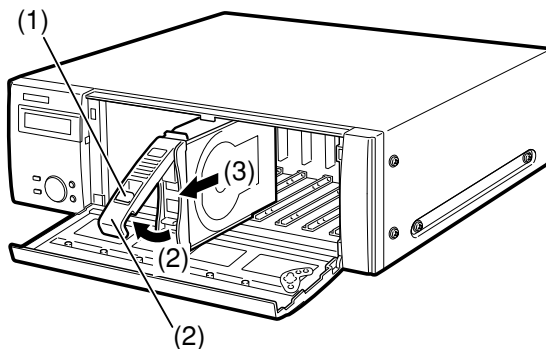
- When the shutdown process of the extension unit on which recording is being performed starts, recording will continue on an HDD unit on another device. Images may sometimes not be recorded for several seconds when switching the HDD unit for recording. If there is no device with an HDD unit for recording, recording will stop.

Remove EXT1
Ready [SET]

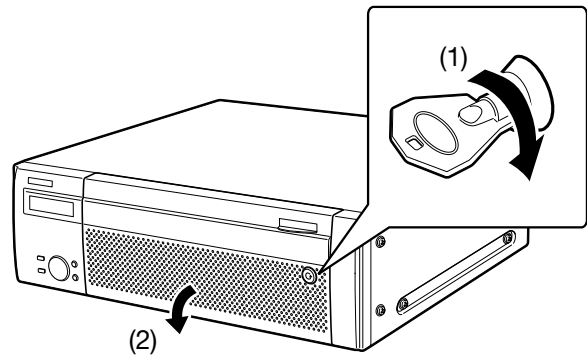
When the [SET] button is pressed, the display on the LCD will return to the time and date menu.

- 9** Remove all the HDD units from the extension unit after confirming that all the HDD access indicators are off.

- Hold down the removal knob on the HDD unit.
- Pull the lever up.
- Pull the HDD unit out from the HDD slot.
Pull the HDD unit out carefully so as not to drop it and handle it gently so as not to give it a shock or vibration.



- 10** Close the front cover and lock it by pushing and turning the key to the left. Keep the key in a safe place.



- 11** Check the disk information.

The following can be checked on the "Disk information" page on the setup menu. Refer to the setup instructions (PDF) for further information.

- Total capacity of the hard disk drive
- Available capacity of the hard disk drive
- Hour meter
- Operational mode of the hard disk drive
- Time and date range of the images recorded on the hard disk drive.

Note:

- It is impossible to remove all the HDD units in the extension unit using the buttons and the LCD on the front panel when running in the RAID 5 or RAID 6 mode. Refer to page 55 for information on how to replace a faulty hard disk drive.

● Determine the operational mode

The default operational mode is "Single".

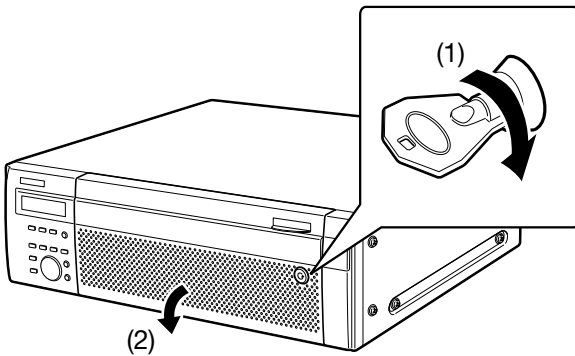
To run the system in the single mode, the following procedures are not necessary.

- 1** Turn off the power of the recorder.

Turn off the power of the recorder by following the instructions in the "Turn off the power of the recorder" (page 40).

- 2** Turn on the power of the recorder after turning on the power of all the connected extension units.

- 3** After inserting the provided key into the key hole on the front cover, push and turn it to the right to open the front cover.



- 4** Determine the operational mode using the [RAID] switch.

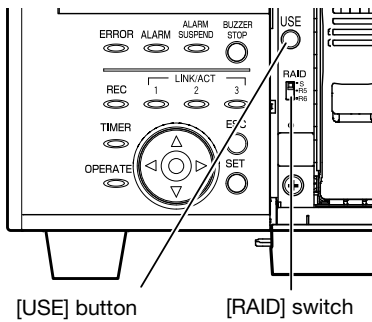
S: Single mode (Default)
R5: RAID 5 mode
R6: RAID 6 mode

- 5** Turn on the power of the recorder by pressing the [POWER] switch while holding down the [USE] button until the buzzer starts sounding.

The recorder will start up in the selected operational mode.

Important:

- Do not change the operational mode after starting the system operation. If the operational mode is changed after starting the system operation, reading of the recorded data may fail.
-



■ Data recovery (in the RAID 5/RAID 6 mode)

If a hard disk drive failure occurs in the RAID 5 or RAID 6 mode, the error display will appear as shown in the following table.

In the RAID 5 mode, it is possible to read data on the other hard disk drives and recover data even when a single hard disk drive becomes faulty (1DOWN).

In the RAID 6 mode, it is possible to read data on the other hard disk drives and recover data even when 2 hard disk drives become faulty (2DOWN).

When the hard disk drive becomes faulty (DOWN), replace it immediately.

Refer also to the operating instructions of the extension unit.

Contact your dealer about purchasing/replacing the hard disk drives.

Important:

- In the RAID 5 mode:
If 2 or more hard disk drives become faulty (2DOWN) or when another hard disk drive becomes faulty during the data recovery, it is impossible to recover data.
- In the RAID 6 mode:
If 3 or more hard disk drives become faulty (3DOWN) or when another hard disk drive becomes faulty during the data recovery, it is impossible to recover data.

Source	Display/indication during hard disk drive error	Display/indication during data recovery
Recorder/Extension unit		
On LCD	<ul style="list-style-type: none"> • RAID 1DOWN: A single hard disk drive is faulty. • RAID 2DOWN: 2 hard disk drives are faulty. • RAID 3DOWN (only in the RAID 6 mode): 3 hard disk drives are faulty. 	During preparation of data recovery: [RCV START WAIT] During process of data recovery (writing data): [RECOVERING XX%] (Indicates only on extension unit)
HDD access indicator	Lights red: The respective hard disk drive is faulty (which can be recovered by replacing the hard disk drive) <ul style="list-style-type: none"> • In the RAID 5 mode, it indicates that the respective hard disk drive is the first faulty drive. • In the RAID 6 mode, it indicates that the respective hard disk drives are the first and second faulty drive. Blinks red: The respective hard disk drive is faulty (which cannot be recovered even by replacing the hard disk drive). <ul style="list-style-type: none"> • In the RAID 5 mode, it indicates that the respective hard disk drive is the second faulty drive. • In the RAID 6 mode, it indicates that the respective hard disk drive is the third faulty drive. 	Lights red and orange alternately: The respective hard disk drive in the RAID 5/RAID 6 mode is being recovered.
Recorder		
Error Log Refer to the operating instructions (PDF) for further information.	<ul style="list-style-type: none"> • RAID 1DOWN Recorder: MAIN RAIDm 1 DOWN Extension unit: EXTu RAIDm 1 DOWN • RAID 2DOWN Recorder: MAIN RAIDm 2 DOWN Extension unit: EXTu RAIDm 2 DOWN • RAID 3DOWN Recorder: MAIN RAID6 3 DOWN Extension unit: EXTu RAID6 3 DOWN m: Operational mode u: Unit number	RAID recovery failure: <ul style="list-style-type: none"> • Recorder: MAIN RAIDm RECOVERY FAILURE • Extension unit: EXTu RAIDm RECOVERY FAILURE m: Operational mode u: Unit number

● Replacement of a faulty hard disk drive in the RAID mode

In the RAID 5 mode, it is possible to read data on the other hard disk drives and recover data even when a single hard disk drive becomes faulty (1DOWN).

In the RAID 6 mode, it is possible to read data on the other hard disk drives and recover data even when 2 hard disk drives become faulty (2DOWN).

Note:

- Replace the faulty disk immediately and recover data when a single hard disk drive becomes faulty (1DOWN) even in the RAID 6 mode.

Important:

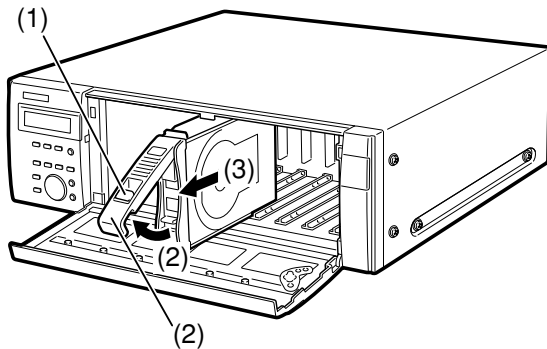
- Do not turn off the power in the process of recovery. It may result in recovery failure.

MAIN ERR
RAID5 1DOWN

MAIN ERR
RAID6 1DOWN

1 Replace the hard disk drive whose HDD access indicator is lighting or blinking red.

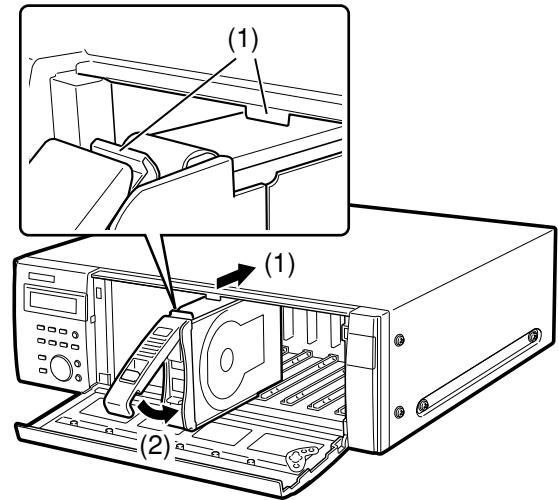
- (1) Hold down the removal knob on the HDD unit.
- (2) Pull the lever up.
- (3) Pull the HDD unit out from the HDD slot.
Pull the HDD unit out carefully so as not to drop it and handle it gently so as not to give it a shock or vibration.



2 Insert a new HDD unit into the HDD slot respective to the HDD access indicator.

Lift the lever on the HDD unit while holding down the removal knob, and then insert the HDD unit all the way into the HDD slot.

- (1) Pinch the tab on the HDD slot with the hook on the HDD unit securely.
- (2) Press the lever down and push it until the removal knob clicks.



3 The recognition process of the hard disk drive will start automatically, and then the data recovery will start.

When the data recovery starts, the respective HDD access indicator will light orange and red alternately.

4 When the data recovery is complete, the HDD access indicator will go off or light green.

When 2 hard disk drives are faulty (2DOWN) in the RAID 6 mode, the data recovery of the second faulty drive will start after the recovery of the first one is complete.

■ Reboot

When pressing the [SET] button while the "Manual Reboot" indication is being displayed, the "ACCEPT" indication will be displayed. Select "YES", and then press the [SET] button. The recorder will be rebooted.



Troubleshooting

Check the following before requesting repair. Contact a dealer if a problem cannot be solved even after checking and trying the solution or if a problem is not described below, or when having a problem with installations.

Problem	Check item/Remedy	Ref. page
Power is not turned on.	▶ Check if the power plug is properly connected to the AC outlet.	-
	▶ Check if the power cord is properly inserted into the power cord inlet of the recorder.	16
Alarm operations are not activated.	▶ Check if alarm input signals are properly input to the ALARM or ALARM/CONTROL at the rear panel.	33, 37
	▶ Check the settings of the ALARM connector.	39
The error indicator blinks orange. The unit stops because of the thermal error.	▶ The fan is out of order. Contact your dealer.	-
	▶ Are the fans at the rear or the ventilation slots on the front and both sides of the recorder blocked? Make sure that if the fans at the rear, the ventilation slots on the front, or both sides of the recorder are not blocked.	11
	▶ Temperature inside the unit is too high/low. Use the recorder at appropriate ambient temperatures.	9
	▶ When the error indicator blinks orange, the temperature inside the recorder may be too high. Check whether dust is collected around the fans or not.	-
The extension unit is not recognized. (When an extension unit is connected)	▶ Make sure that the connection cable provided with the extension unit is being used.	32
	▶ Make sure that the connection cable is not loose.	32
	▶ Was the power of the extension unit turned on before turning on the power of the recorder? Reboot the system and turn on the power of the extension unit first.	40
	▶ When using a circuit breaker or equivalent device to turn on/off the power of the whole system at one time, make sure that all devices are connected to the same power source.	-
	▶ When using an UPS (uninterruptible power system), connect all devices to the same UPS.	-

Problem	Check item/Remedy	Ref. page
<p>The hard disk drive is not recognized. The HDD status indicator does not light.</p>	<p>▶ Make sure that the HDD unit is inserted all the way into the HDD slot.</p>	47
	<p>▶ Was another HDD unit inserted to the HDD slot before completing the recognition process of the other HDD unit? Remove the unrecognized HDD unit and insert it after the current recognition process is complete.</p>	48
	<p>▶ The hard disk drive is faulty.</p>	-
<p>The HDD unit is not recognized even though the HDD status indicator is lit.</p>	<p>▶ Install (link) the HDD unit again.</p>	47
<p>The HDD access indicator lights/blinks red.</p>	<p>▶ Make sure that the HDD units are installed in order from HDD1 to HDD9. Surely install the HDD units in order starting with HDD1.</p>	47
	<p>▶ The respective hard disk drive is faulty in the RAID 5 or RAID 6 mode. The HDD access indicator respective to the hard disk drive that failed first will light red and the indicators respective to the other failed hard disk drive will blink red.</p>	55
<p>Cannot recover data after replacing the HDD units in the RAID 5/RAID 6 mode.</p>	<p>▶ Make sure that the HDD unit is inserted all the way into the HDD slot.</p>	55
	<p>▶ The hard disk drive on which there is data to be recovered is faulty.</p>	-
	<p>▶ Check if the capacity of the new hard disk drive is smaller than the original one's. If different models are used together even when the capacities of them are the same, the available capacity may be a few percent smaller. When using multiple hard disk drives, use the same model. Transferring data to a hard disk drive whose capacity is larger than the original one's is also an option.</p>	46
<p>The HDD status indicator lights orange and red alternately even when no recording or playback is being performed.</p>	<p>▶ Make sure that recovery of data in the RAID 5/RAID 6 mode is not being processed.</p>	54

Problem	Check item/Remedy	Ref. page
The power cord insulation is damaged.	<p>The power cord, plug and connectors are worn out. This may result in electric shock or a fire. Remove the power plug from the AC outlet immediately, and refer to qualified service personnel.</p>	-
The power cord, plug and connectors get hot during use.		
The power cord gets hot when bent or stretched.		
The "MAIN ERR INITIAL" indication is displayed on the LCD.	Set the HDD operation mode.	52
The "EXTu ERR INITIAL ERR" indication is displayed on the LCD. (u: Unit number)	Connect the extension unit again after resetting its settings to the default.	Refer to the operating instructions of the extension unit.

Specifications

• General

Power source:	NTSC model: 120 V AC, 60 Hz PAL model: 220 V to 240 V AC, 50 Hz/60 Hz
Power consumption:	170 W
Ambient operating temperature:	5 °C to 45 °C {41 °F to 113 °F}
Ambient operating humidity:	5 % to 90 % (non condensing)
Maximum operating altitude:	2 000 m {6 562 feet} above sea level
Dimensions:	430 mm (W) x 132 mm (H) x 400 mm (D) {16.93 inches (W) x 5.20 inches (H) x 15.95 inches (D)} (excluding rubber feet and projections)
Mass:	When no HDD is installed: 14.5 kg {32.0 lbs} When 9 HDDs are installed: 21 kg {46.3 lbs}

• Hard disk drive (Contact your dealer about purchasing hard disk drives.)

Hard disk drive:	3.5 type hard disk drive x (Up to 9 hard disk drives can be installed.) RAID 5 (Available only when 3 or more hard disk drives are installed.) RAID 6 (Available only when 4 or more hard disk drives are installed.)
------------------	---

• Input/Output

External storage:	High-speed serial interface, 1.5 Gbps (theoretical value), x5
Alarm/Control connector:	Alarm input 8-16 ch*1, Network error output*2, Alarm reset input*1, Emergency recording input*1, Available disk space warning output*2, HDD error output*2, Camera error output*2, Error output*2, Outage processing end output*3, Time adjustment input/output*4, Alarm output*2, Alarm suspension input*1, Outage detection input*1, External recording mode changeover*1, +5 V output*5 (D-sub 25-pin)
Alarm connector:	Alarm input 1-7*1, Alarm input 17-32*1 (D-sub 25-pin)
Client PC port:	10BASE-T/100BASE-TX/1000BASE-T (RJ-45)
Camera port:	10BASE-T/100BASE-TX/1000BASE-T (RJ-45)
Maintenance port:	10BASE-T (RJ-45)

*1 Non-voltage make contact, +5 V pull-up 150 k Ω

*2 Open collector output, 24 V DC max., 100 mA

*3 High (+5 V to +12 V, 6.3 mA max.)

*4 52 k Ω , +5 V pull-up, Output current: 100 mA/Non-voltage make contact input

*5 200 mA max.

Standard accessories

CD-ROM*1	1 pc.
Installation Guide	1 pc.
Quick Reference Guide	1 pc.
Warranty (for U.S. field only)	1 pc.

The following are for installation:

Power cord

For the NTSC model	1 pc.
For the PAL model	2 pcs.
Key	2 pcs.
Label*2	1 pc.
Rack mounting bracket	2 pcs.
Rack mounting bracket fixing screw	6 pcs.
Rack handle	2 pcs.
Screws for the rack handle	4 pcs.
Washer	4 pcs.
HDD canister	9 pcs.
HDD fixing screw	54 pcs.

*1 The CD-ROM contains the operating instructions (PDFs).

*2 This label is the same one found on the surface of this product. Keep it in view when installing this product in the rack.

Index

1 port operation	26
1000BASE-T	26
100BASE-T	26
10BASE-T	26
2 port operation	27

A

Access restriction	21
Active time	39
ADSL	28, 30
Alarm connection	38
Alarm connector	37, 39
Alarm input	39
Alarm mail	19
Alarm output	33
Alarm suspension input	34, 39
Alarm/Control connector	33, 39

C

Camera port	16, 27
Change HTTP port number	21
Client PC port	19, 26
Command alarm	19
Control output	35
Control terminals	39

D

Data recovery	54
DHCP	43
D-sub	16

E

EIA standard	24
Emergency rec.	34
Encrypted data	18
ESC	13
Event action	19
Event log	20
Event recording area	17
Extension unit	32
External recording	34
External recording switching	34

F

FTP server	20
------------------	----

G

Gateway	43, 44
GNU	10
GPL	10

H

Hard disk unit	17
HDD	17, 46, 54
HDD error output	33, 35, 39
HDD fault-tolerance	18
HDD replacement	17, 46, 55
HDD unit	15, 17, 45
High-definition images	17
Host	21
Host authentication	21
HTTP port	21, 43, 44
HUB	26

I

IP address	43, 44
------------------	--------

J

JPEG	17, 19
------------	--------

K

Key lock	44
----------------	----

L

LAN	26
LGPL	10
LINK/ACT	13
LINK/ACT1	13
LINK/ACT2	13
Live image display	20
Live image transmission	19

M

Maintenance	22
Maintenance port	43
Manual reboot	56
Master	34
Mega-pixel camera	17
MPEG-4	19

N

Network error output	33, 39
Network security	21

O

On 1-screen	20
On 4-screen	20

P

Pan & tilt	21
Pin assignments	37
Pin configuration	33
Post-event recording	20
Power outage detection	36
Pre-event recording	20
Preset position operation	21

R
RAID 5 54
RAID 6 54
Reboot 56
Recording rate setting 22
Remote operation 21

S
Schedule recording 20
Schedules 19
SD Memory Recording 22
Security measurement 21
Sequential display 20
SIGNAL GND terminal 16
Site alarms 19
Slave 35
Subnet mask 21, 43
SXGA 17

T
Terminal alarm 19
Time and date display 41

U
Uninterruptible Power Supply 36
Unit 48, 51
UPS 36
Use authentication 21

V
VGA 17
VPN 21

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



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.

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

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

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

For business users in the European Union

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



[Information on Disposal in other Countries outside the European Union]

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

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



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

For U.S.A.

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

For U.S. and Canada:

Panasonic System Communications Company of North America, Unit of Panasonic Corporation of North America

www.panasonic.com/business/
For customer support, call 1.800.528.6747
Two Riverfront Plaza, Newark, NJ 07102-5490

Panasonic Canada Inc.

5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 Canada
(905)624-5010
www.panasonic.ca

For Europe and other countries:

Panasonic Corporation
<http://panasonic.net>

Importer's name and address to follow EU rules:

Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg, Germany