

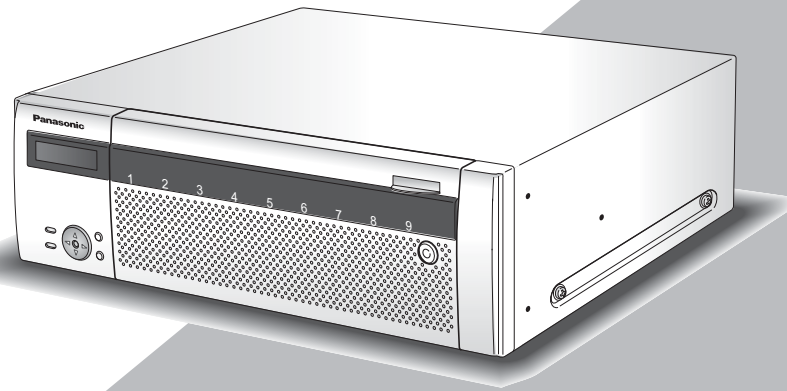
# Panasonic

## Installation Guide

### Extension Unit

Model No. **WJ-HDE400**

**WJ-HDE400/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**  
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 yksinomisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 2006/95/EC ja 2004/108/EC säädöksiä.

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

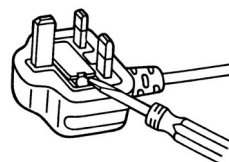
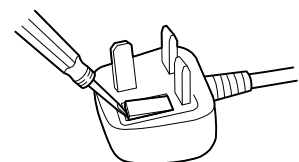


Figure B



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

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THE THIRD PARTY'S RIGHT.

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 i-PRO Sensing Solutions 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
Disclaimer of warranty .....	3
Important safety instructions.....	4
Preface.....	6
Features .....	6
HDD fault-tolerance system .....	6
Easy replacement of HDDs .....	6
About the user manuals.....	6
Precautions .....	7
Precautions for installation .....	8
Major operating controls and their functions .....	9
■ Front view.....	9
■ Inside the front cover.....	11
■ Rear view .....	12
● Power cord plug brace.....	12
● Cable clamp .....	13
Operations flow .....	14
Install the extension unit in a rack .....	15
■ Installation procedure .....	15
■ Position in the rack .....	16
Connections .....	17
Turn on/off the power of the extension unit .....	18
■ Turn on the power of the extension unit .....	18
■ Turn off the power of the extension unit .....	18
Operations using the buttons on the front panel .....	19
■ Operational mode display (standby display) .....	19
● When the operational mode is "S (Single)" .....	19
● When the operational mode is "RAID5" or "RAID6" .....	19
■ Reset the settings to the default .....	20
■ HDD Unit.....	21
■ Handle the hard disk drives .....	23
● Install the HDD units.....	24
● Install (link) all the HDD units in the extension unit at the same time.....	25
● Remove the HDD units .....	26
● Remove all the HDD units in the extension unit at the same time.....	28
● Determine the operational mode .....	29
■ Data recovery (in the RAID 5/RAID 6 mode).....	30
● Replacement of a faulty hard disk drive in the RAID mode.....	31
Troubleshooting .....	32
Specifications .....	35
Standard accessories .....	35

# Preface

The WJ-HDE400 is the extension unit for the recorder (such as Network Disk Recorder WJ-ND400K), which is sold separately. The number of extension units that are connectable varies depending on the models\* of the recorders to be used. Refer to the manuals provided with the recorder.

Up to 9 hard disk drives (encased in the provided HDD canister, hereinafter referred as "HDD unit") can be installed in this extension unit, and operation in the RAID (Redundant Arrays of Inexpensive Disks) mode is available.

\* The recorders described in this installation guide are the models that are compatible as of September, 2009.

# Features

## 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 became 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.

- 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.

## Easy replacement of HDDs

It is easy to insert/remove the HDD units to/from the HDD slots in the extension unit. When 2 or more HDD units are already installed, it is possible to replace the HDD units without stopping the current recording. When using a network disk recorder, malfunctions can be decreased and replacement/maintenance of the HDD units can easily be done by following the guidance displayed on the LCD.

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

The HDD units can be easily installed/removed in/from the HDD slots inside the front cover.

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

# About the user manuals

This installation guide contains descriptions of how to install/connect this product, and descriptions of how to remove the HDD unit with the buttons and the LCD on the front panel, assuming that you are using a network disk recorder.

Refer also to the manuals provided with the recorder.

"WJ-HDE400" or "HDE400" shown in the instructions and illustrations used in these operating instructions indicate the WJ-HDE400, WJ-HDE400/G.

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

# 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}.

\* The provided power cords are dedicated to the use with this product.

## **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.

## **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.

## **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.

# Precautions for installation

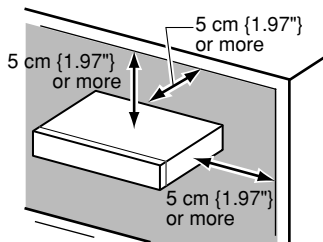
**Use this product for indoor use only.**

**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.**

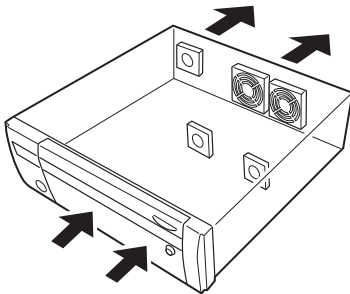
Do not place this product in an upright position. When stacking multiple extension units, clear a space of more than 5 cm {1.97"} from both sides, the top, the bottom and the rear of the extension unit.



**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.

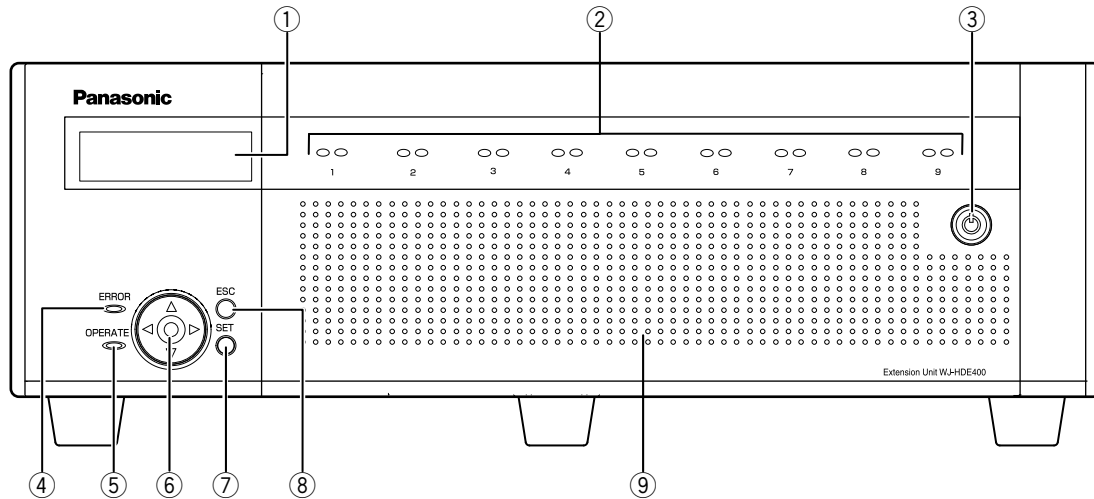
A grounding connection must be made before connecting the power plug of this product to the main power supply.

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 LCD

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

### ② 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.

**Blinks 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 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 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.

③ **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.

④ **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 this extension unit from running. (e.g. thermal error, cooling fan malfunction, etc.)

⑤ **Operation indicator (OPERATE)**

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

⑥ **Arrow buttons (up, down, left and right)**

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

⑦ **[SET] button**

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

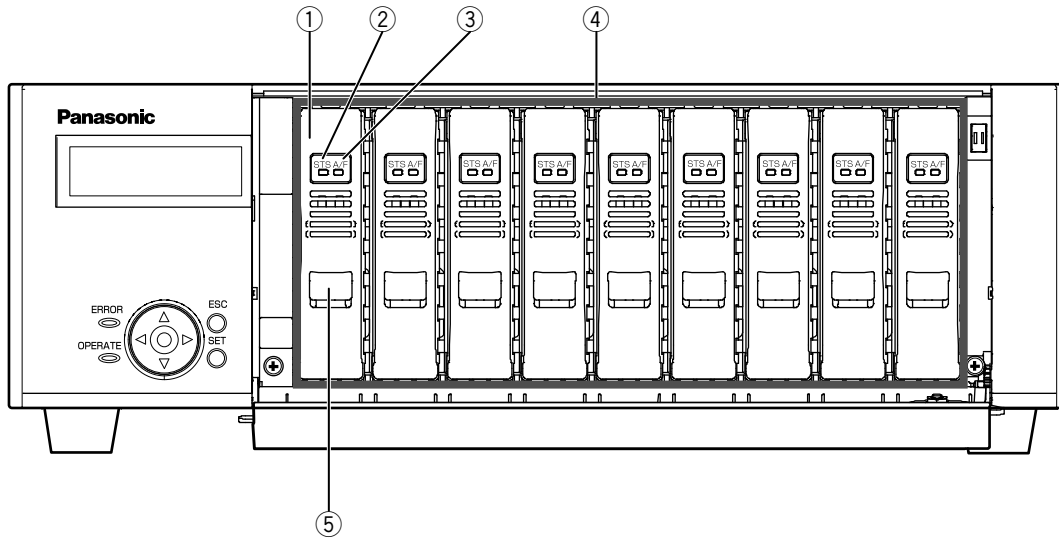
⑧ **[ESC] button**

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

⑨ **Front cover**

Open the front cover when adding/replacing the HDD units. Keep this cover closed and locked during normal operation.

## ■ Inside the front cover



### ① HDD units

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

When using a network disk recorder, it is possible to add/replace the HDD unit by operating the buttons on the front panel of the recorder. Refer to page 24 for further information. Contact your dealer about purchasing/replacing the hard disk drives.

### ② 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.

**Blinks 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.

### ③ 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 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.)

### ④ HDD slots

Up to 9 HDD units can be installed.

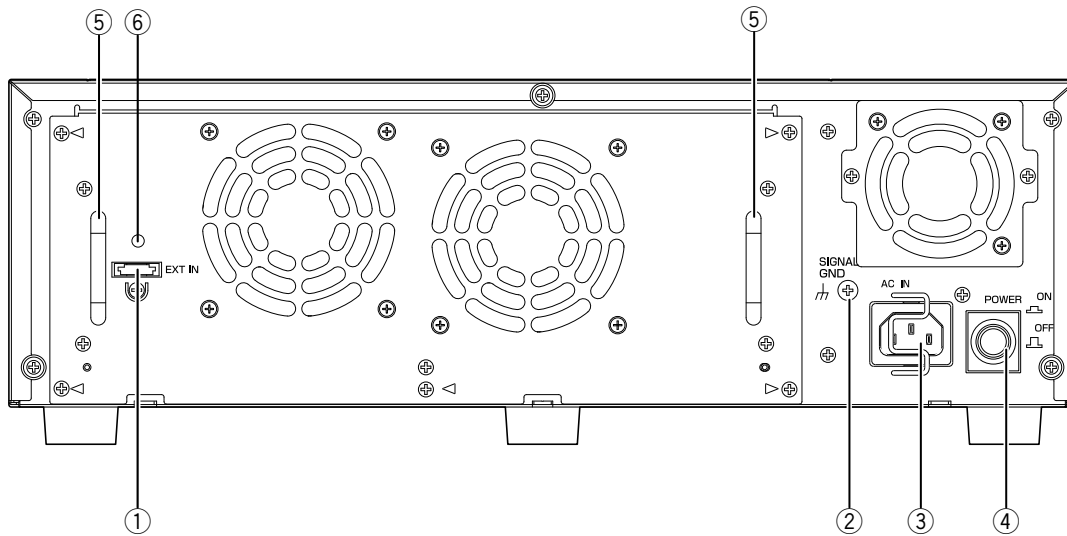
#### Note:

- 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.
  - To use in the RAID 6 mode:** The RAID 6 mode is operable only when 4 or more HDD units are installed.

### ⑤ Removal knob

Use this knob to remove the HDD unit.

## ■ Rear view



### ① External input connector (EXT IN)

Use this connector to connect to the recorder using the provided connection cable.

### ② 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 extension unit and the devices in the system without signal ground, oscillation or noise may be produced.

### ③ Power cord inlet (AC IN)

Connect the provided power cord to this inlet.

### ④ [POWER] switch

Turns the power of the extension unit on and off.

### ⑤ 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.

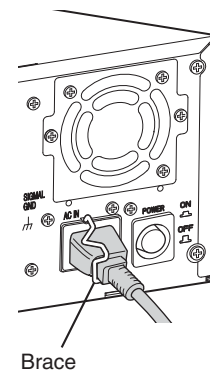
### ⑥ Cable clamp fixing hole

Attach the provided cable clamp to fix the connection cable. (Page 13)

## ● Power cord plug brace

Brace the power cord plug.

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

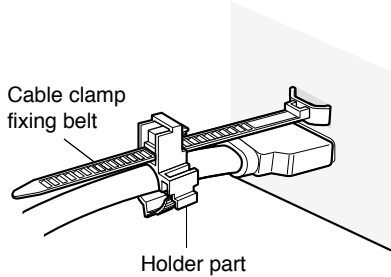


## ● Cable clamp

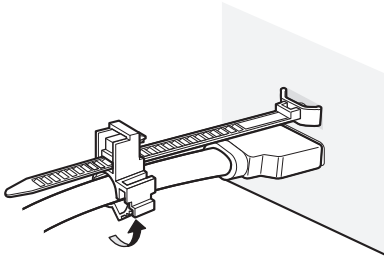
Fix the connection cable using the provided cable clamp as follows.

### 1 Attach the cable clamp fixing belt to the fixing hole on the rear, and pass the cable through the holder part of the cable clamp.

Pull the cable clamp fixing belt to confirm that the fixing belt is attached firmly.

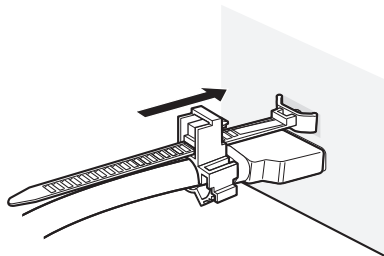


### 2 Close the clamp.



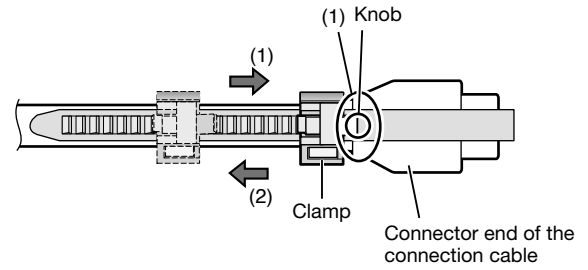
### 3 Slide the cable clamp toward the connector end of the connection cable, and then hold the connector end of the connection cable.

Make sure that the connection cable is connected firmly.



### Note:

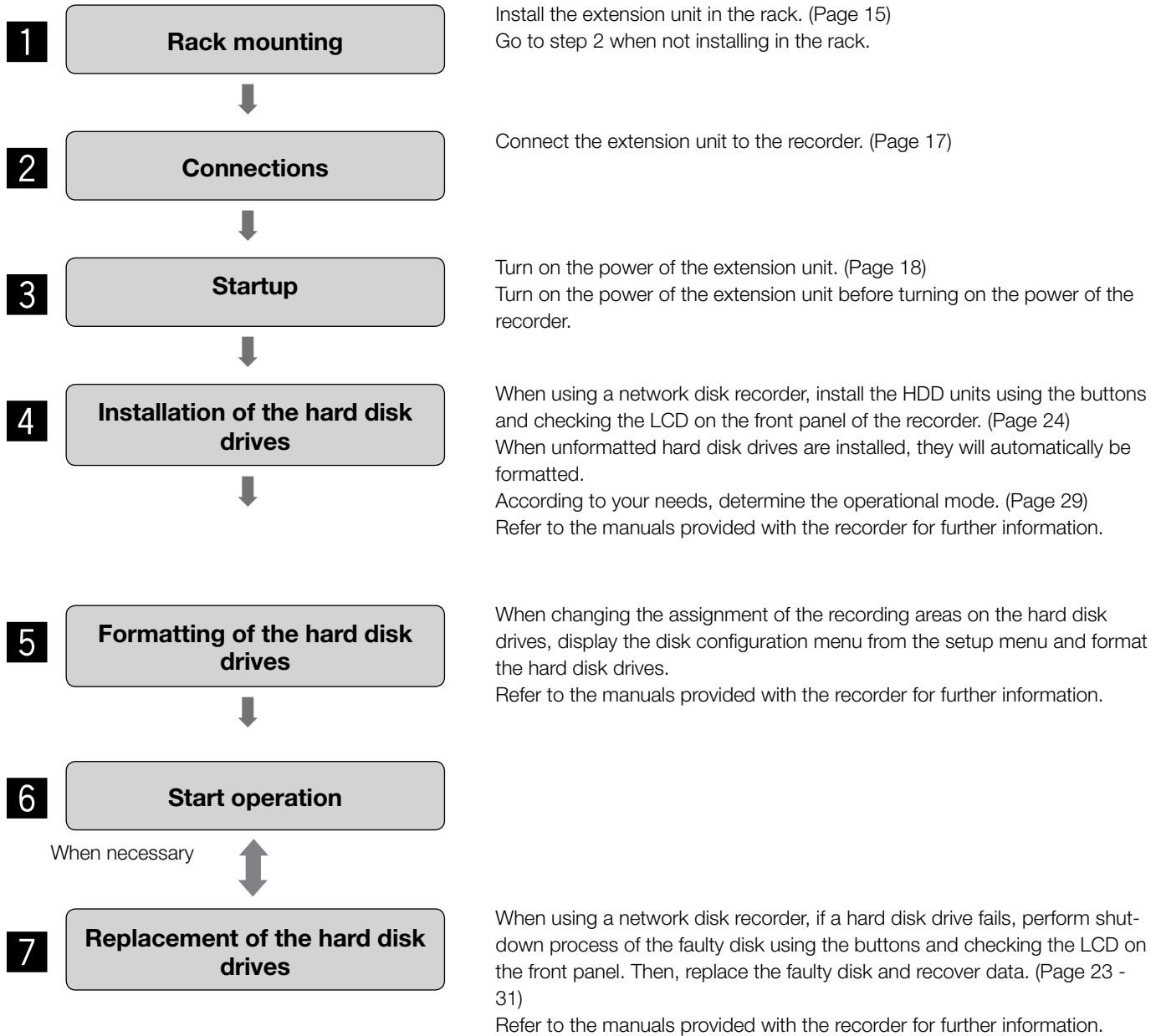
- Overhead view



- (1) Hold the connector end of the connection cable by tightening the clamp. It may be difficult to hold the connector end when the cable clamp is not slid all the way to the connector end side.
- (2) To slide the cable clamp in the direction of arrow indication (2), slide it while keeping the knob pulled down.

# Operations flow

The operation flow of the extension unit is as follows.



# Install the extension unit in a rack

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

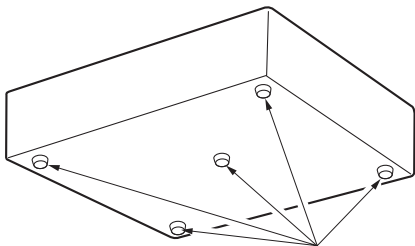
## Note:

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

## Installation procedure

### 1 Remove the five rubber feet from the bottom of the extension unit using a flathead screwdriver.

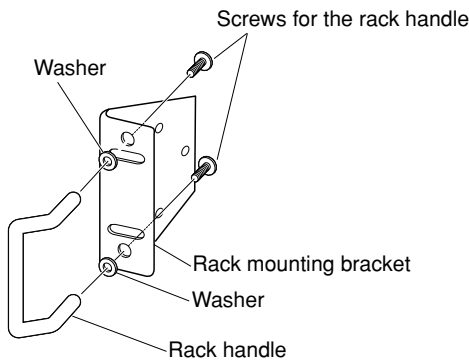
Use a screwdriver to remove the screws holding the rubber feet.



Remove rubber feet

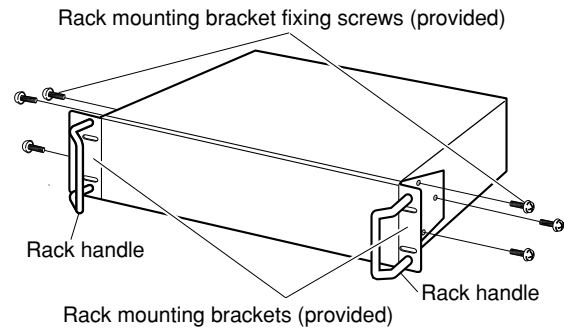
### 2 Attach the rack handles to the rack mount brackets.

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



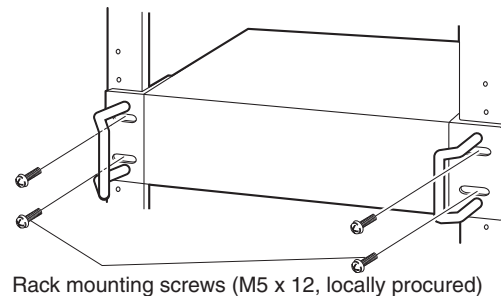
### 3 Place the provided rack mounting brackets on both sides of the extension unit and fix them with the rack mounting bracket fixing screw (x6).

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



### 4 Install the extension unit in the rack by using four rack mounting screws.

Secure using the rack mounting screws.



## Important:

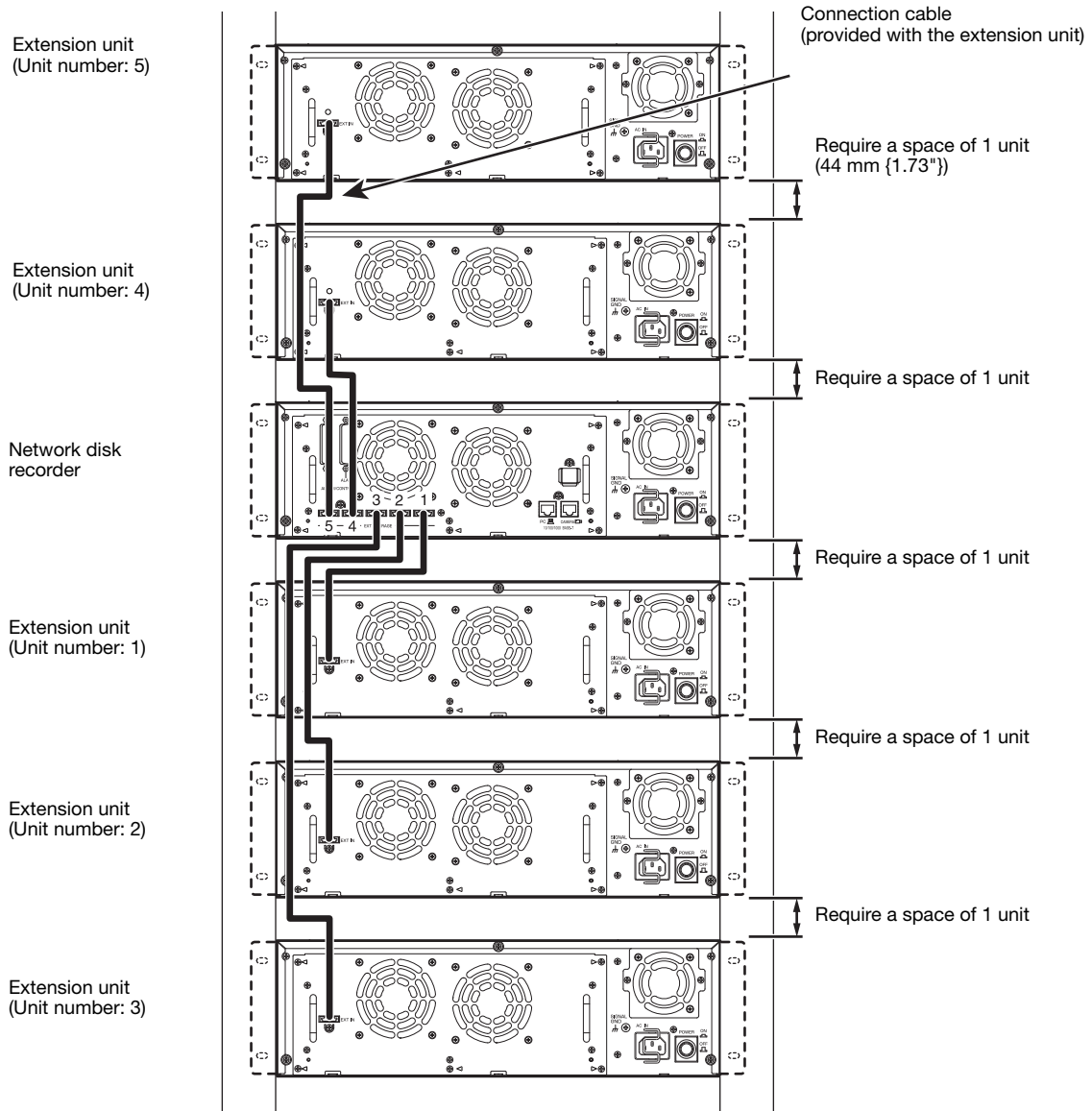
- When installing the extension unit in the rack, make a space of 1U (44 mm {1.73"}) above and below the extension unit for ventilation.
- Keep the temperature in the rack below +45 °C {113 °F}.
- It is recommended to install cooling fans or equivalents to keep the temperature in the rack below +30 °C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

## ■ Position in the rack

When connecting multiple extension units to a recorder, make sure you consider the length of the provided connection cable (1 m {39.4"}).

It is recommended to install the recorder in the center of the rack.

The following is an example of a connection with Network Disk Recorder WJ-ND400K.



### Note:

- When installing the extension unit in the rack, leave a space of 1U (44 mm {1.73"}) above and below the extension unit for ventilation.
- Fix the connection cable firmly using the cable clamp.  
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.
- The unit numbers are only for the above connection example. Refer to the manuals provided with the recorder for how to check the unit numbers of the connected extension units.



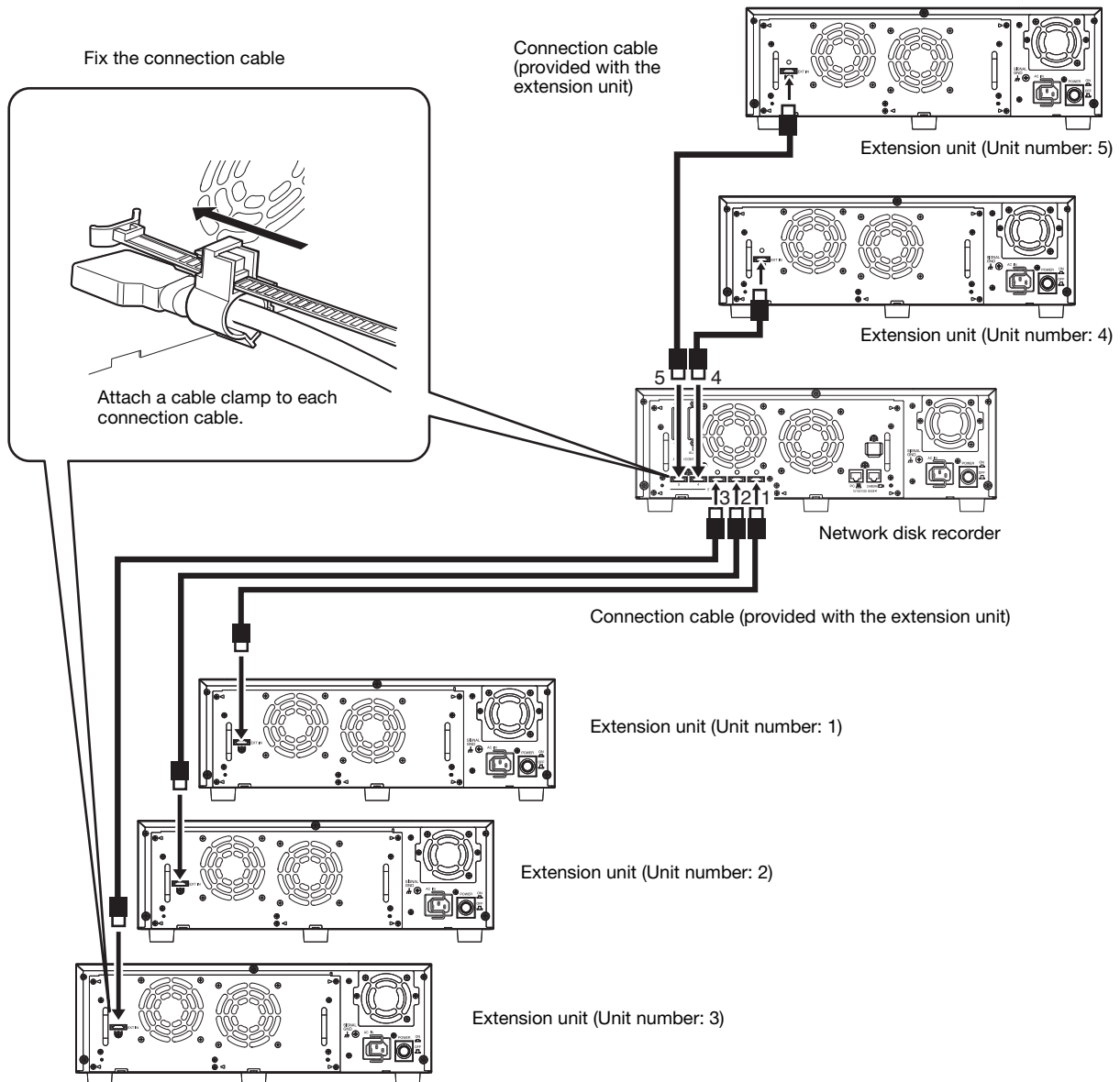
# Connections

Up to 5 extension units can be connected to a single network disk recorder. The number of extension units that are connectable varies depending on the models of the recorders to be used. Refer to the manuals provided with the recorder.

Connect the extension unit and the recorder using the provided connection cable (1 m {39.4"}).

When connecting an extension unit for the first time, observe the following important notice. Refer also to the manuals provided with the recorder for further information.

The following is an example of a connection with Network Disk Recorder WJ-ND400K.



## Important:

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

# Turn on/off the power of the extension unit

## ■ Turn on the power of the extension unit

Turn on the power of the extension unit before turning 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 on the rear of the extension unit 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-HDE400" indication will be displayed on the LCD at startup.
- When the system check is complete, operational mode display will be displayed on the LCD. (Page 19)



## ■ Turn off the power of the extension unit

Turn off the power of the extension unit after turning off the power of the recorder. Refer also to the manuals provided with the recorder.

### 1 Stop recording on the recorder.

- Stop all recordings on the network disk recorder.
- Stop all playbacks.

### 2 Turn off the power of the recorder by pressing the **POWER** switch at the rear of the network disk recorder.

Turn off the power of the network disk recorder after confirming that all the HDD access indicators are off. The OPERATE indicator on the network disk recorder will go off.

### 3 Turn off the power of the extension unit by pressing the **POWER** switch at the rear.

Turn off the power of the extension unit after confirming that all the HDD access indicators are off. The OPERATE indicator on the extension unit will go off.

---

#### **Important:**

- Do not turn off the power in the process of recovery. It may result in recovery failure.
  - Remove the plug from the outlet if not operating the extension unit for a length of time.
  - When the extension unit 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.
-

# Operations using the buttons on the front panel

## ■ Operational mode display (standby display)

The current operational mode and the internal temperature will be displayed on the LCD.

Refer to the manuals provided with the recorder for information on how to display the disk configuration menu from the setup menu and format the hard disk drives, etc.

### ● When the operational mode is "SINGLE"



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

### ● When the operational mode is "RAID5" or "RAID6"

#### Standby display



#### At a hard disk drive failure

- In the RAID 5 mode  
The "1DOWN" or "2DOWN" indication (corresponding to the failure) will be displayed and will start blinking.  
The respective HDD access indicator(s) will also light or blink red. (Page 30)



#### Important:

- 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).  
When a hard disk drive becomes faulty (1DOWN), replace it immediately.  
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  
One of the "1DOWN", "2DOWN" and "3DOWN" indications (corresponding to the failure) will be displayed and will start blinking.  
The respective HDD access indicator(s) will also light or blink red. (Page 30)



#### Important:

- 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 a hard disk drive failure (1DOWN, 2DOWN) occurs, replace the faulty disk(s) immediately and recover data.  
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.

#### During data recovery

- In the RAID 5 mode  
The following indication will be displayed.  
During preparation of data recovery



During process of data recovery (writing data)



When the data recovery starts, the respective HDD access indicator will light orange and red alternately. (Page 31)

- In the RAID 6 mode  
The same indication will be displayed as above even in the RAID 6 mode during data recovery.

## ■ Reset the settings to the default

To reset the settings of the extension unit to the default, do the following.

---

### Important:

- When the settings are reset to the default, it may become impossible to access data on the hard disk drives since the disk configuration settings are invalidated. Start resetting the settings after confirming that all data on the hard disk drives can be deleted.
  - Contact your dealer before resetting the settings.
- 

- 1 Turn on the power of the extension unit by pressing the [POWER] switch while holding down the [SET] button until the "INIT.SETUP" indication is displayed.**

INIT . SETUP  
[SET]

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

INITIALIZE  
ACCEPT <NO/\_YES>

- 3 Reset of the settings will start.**

INITIALIZE  
Please wait

- 4 When the reset of the settings is complete, the following indication will be displayed.**

INITIALIZE  
DONE !

When the reset fails, the "FAILURE" indication will be displayed. In this case, start resetting the settings from step 1 again.

INITIALIZE  
FAILURE

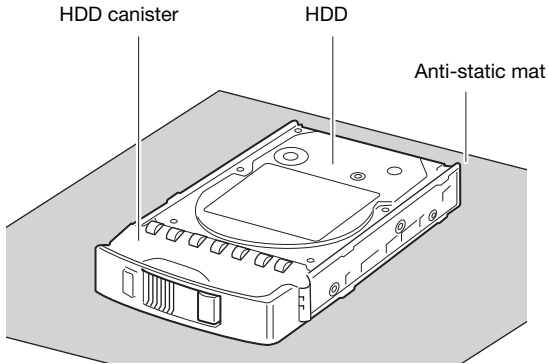
- 5 Turn on the power of the extension unit again, and then install (link) all the HDD units in the extension unit by following the instructions in the "Install (link) all the HDD units in the extension unit at the same time (page 25)" section.**

## ■ HDD Unit

To install a hard disk drive in the extension unit, 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 extension unit.

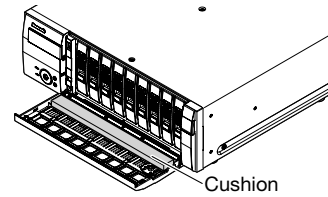
Contact your dealer about purchasing, installing, and replacing the hard disk drives.



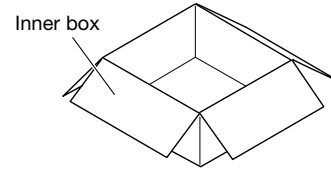
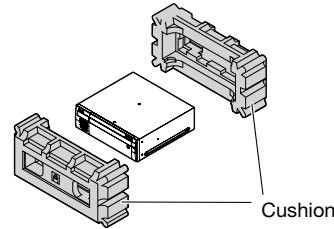
### Important:

- Hard disk drives are precision devices. Before installing the hard disk drives, read the "Hard disk drive" section of "Precautions (page 7)" 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.

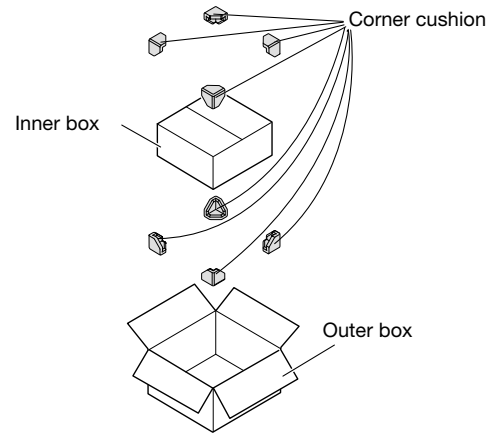
- (1) Put the cushion between the front cover and HDD canister.



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

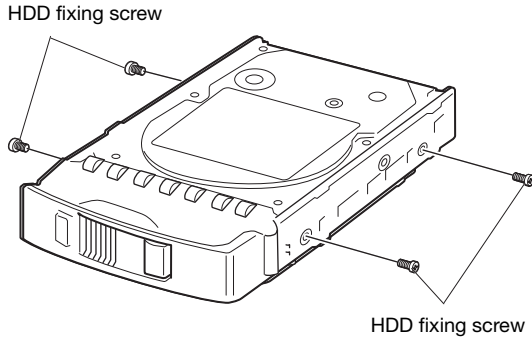


- (3) Put the corner cushions between the inner box and outer box.



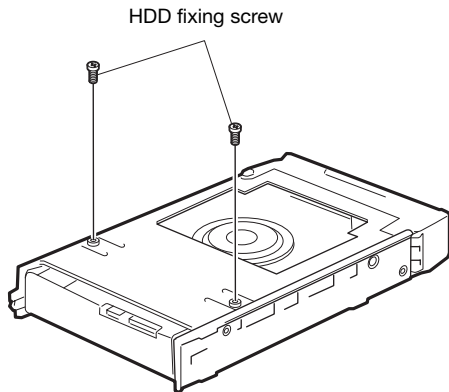
**1 Fix both sides of the hard disk drive with the dedicated HDD canister using the 4 provided screws for HDD canister installation.**

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



**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)



## ■ Handle the hard disk drives

The HDD units can be easily installed/removed in/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 extension unit. 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.
- 

---

	<b>Item</b>	<b>Contents</b>	<b>Ref. page</b>
Installation (insertion)	Individual HDD units	Install the HDD units	24
	All the HDD units in the extension unit	Install (link) all the HDD units in the extension unit at the same time	25
Removal	Individual HDD units	Remove the HDD units	26
	All the HDD units in the extension unit	Remove all the HDD units in the extension unit at the same time	28
Operational mode setting	All of the HDD units	Determine the operational mode	29
Replacement/recovery	In the single mode	Install the HDD units Remove the HDD units	24, 26
	In the RAID 5/RAID 6 mode Data recovery	Data recovery (in the RAID 5/RAID 6 mode)	30

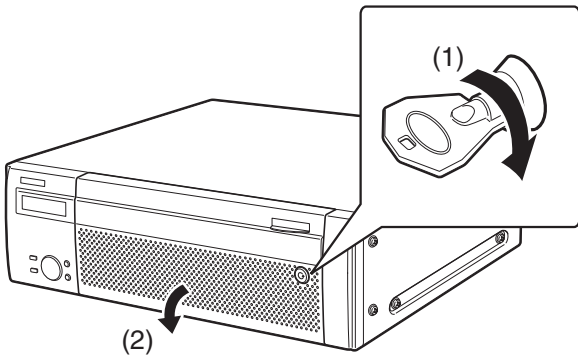
---

## ● Install the HDD units

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

Refer also to the manuals provided with the recorder.

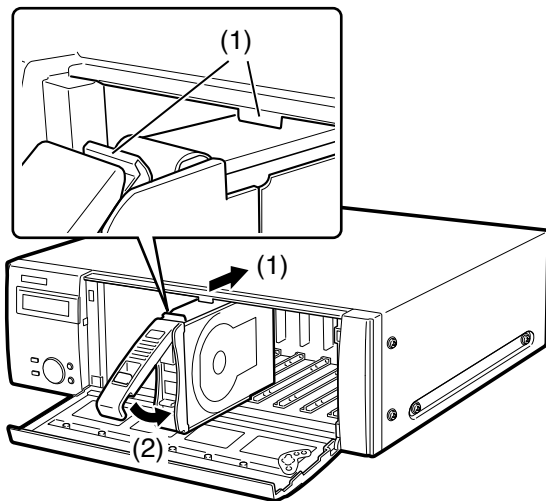
- 1 After inserting the provided key into the key hole on the front cover, push and turn it to the right to open the front cover.



- 2 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.
- 

The following operations are to be performed on the network disk recorder.\*

- 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 (x): EXTx) using the arrow button (up or down), and then press the [SET] button.

```
Link HDD
UNIT>EXT1  [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
EXT1-1  [SET]
```



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

```
Link EXT1-1
ACCEPT  <NO/YES>
```

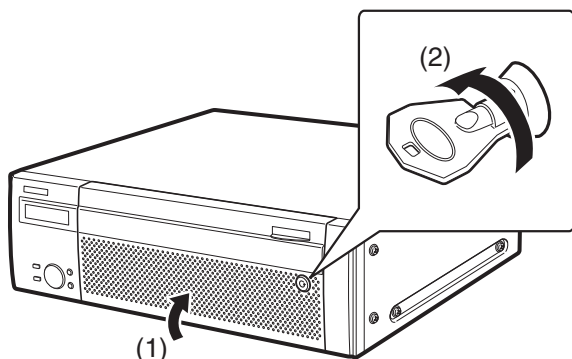
The installed HDD unit will be recognized as the HDD units for recording use.

```
Link EXT1-1
DONE      [SET]
```

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

- 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 of the recorder. Refer to the manuals provided with the recorder 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.
- It is possible to install (link) all the HDD units in the extension unit even when the operational mode is "RAID5" or "RAID6".

\* When using a recorder (not a network disk recorder), refer to the manuals provided with the recorder for how to operate.

**● 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 manuals provided with the recorder.

- 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 24)" section.

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.

- 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.

```
HDD Operation
[SET]
```

- 5** Press the [SET] button.

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

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

- 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.

```
Link EXT
UNIT>EXT1  [SET]
```

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

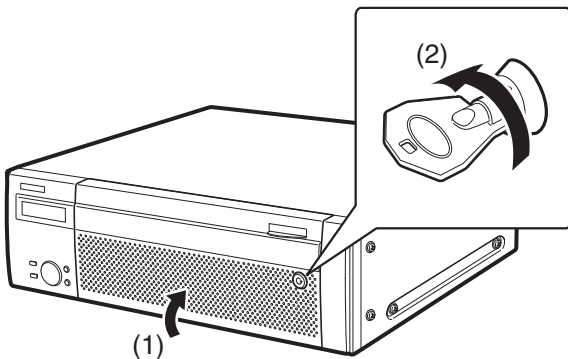
```
Link EXT1
ACCEPT  <NO/YES>
```

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

```
Link EXT1
DONE    [SET]
```

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

- 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 of the recorder. Refer to the manuals provided with the recorder 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.

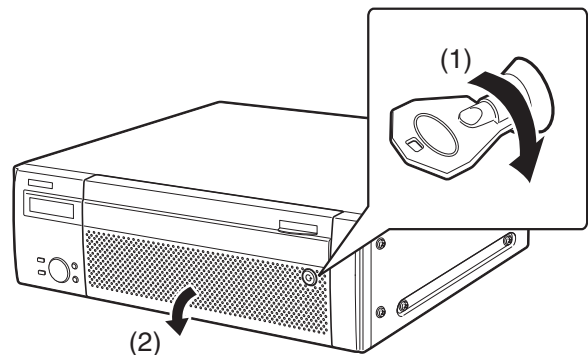
\* When using a recorder (not a network disk recorder), refer to the manuals provided with the recorder for how to operate.

## ● Remove the HDD units

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

Refer also to the manuals provided with the recorder.

- 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.\*

- 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 (network disk recorder: MAIN, extension unit x: EXTx) using the arrow button (up or down), and then press the [SET] button.

```
Remove HDD
UNIT>EXT1 [SET]
```

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

```
Remove HDD
EXT1-1 [SET]
```

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

```
Remove EXT-1
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, the HDD status indicator will go off.

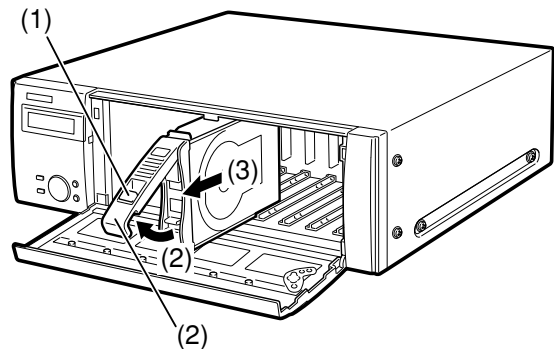
- When the shutdown process of the HDD unit on which recording is being performed starts, recording will continue on another HDD unit. Images may sometimes not be recorded for several seconds when switching the HDD unit for recording. If there is only a single HDD unit, recording will stop.

```
Remove EXT-1
Ready [SET]
```

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

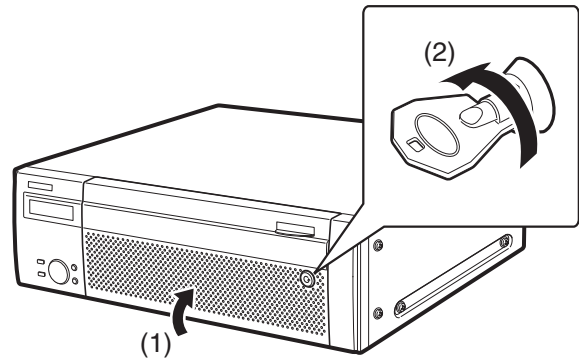
**10** Remove the HDD units from the extension unit.

- (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 of the recorder. Refer to the manuals provided with the recorder 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 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 31 for information on how to replace a faulty hard disk drive.

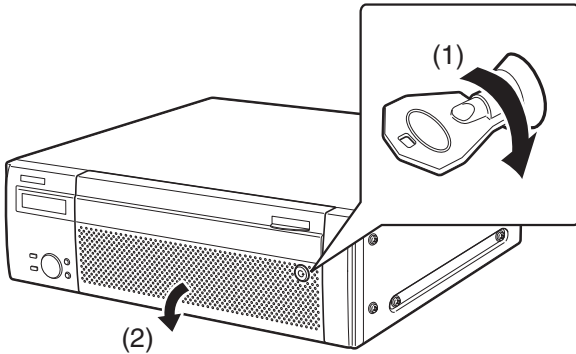
\* When using a recorder (not a network disk recorder), refer to the manuals provided with the recorder for how to operate.

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

It is possible to remove (link off) all the HDD units in the extension unit.

Refer also to the manuals provided with the recorder.

- 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.\*

- 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.

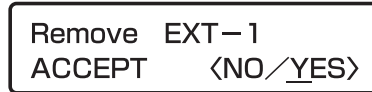


- 6 Move the underscore mark below "YES" using the arrow button (left or right), and then press the [SET] button.

- 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.



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.

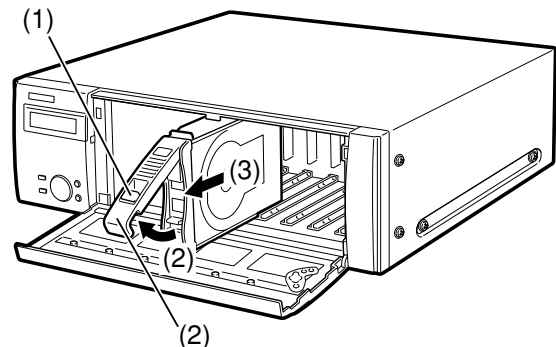
- When the shutdown process of the extension unit on which recording is being performed starts, recording will continue on an HDD unit on another device. Images may sometimes not be recorded for several seconds when switching the HDD unit for recording. If there is no device with an HDD unit for recording,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



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

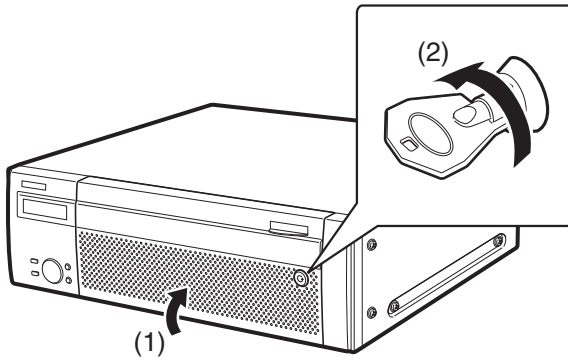
- 9 Remove all the HDD units from the extension unit after confirming that all the HDD access indicators are off.

- (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.



**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 of the recorder. Refer to the manuals provided with the recorder 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 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 31 for information on how to replace a faulty hard disk drive.

\* When using a recorder (not a network disk recorder), refer to the manuals provided with the recorder for how to operate.

**● Determine the operational mode**

The default operational mode is "Single". To run the system in the single mode, the following procedures are not necessary.

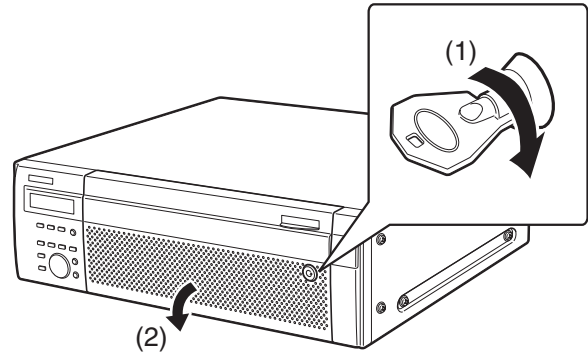
**1 Turn off the power of the extension unit and the recorder.**

Turn off the power of the power of the extension unit by following the instructions in the "Turn off the power of the extension unit (page 18)" section.

**2 Turn on the power of the extension unit.**

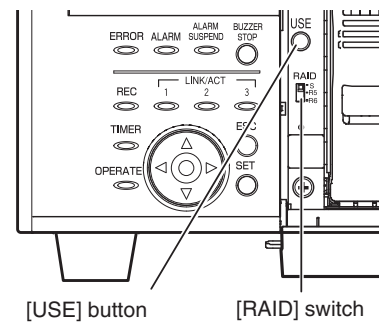
The following operations are to be performed on the network disk recorder.\*

**3 After inserting the key provided with the network disk recorder into the key hole on the front cover of the network disk recorder, 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, accessing the recorded data may fail.

\* When using a recorder (not a network disk recorder), refer to the manuals provided with the recorder for how to operate.

## ■ 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.

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
<b>Extension unit</b>		
On LCD	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: Indicates that the respective hard disk drive is faulty (which can be recovered by replacing the hard disk drive). <ul style="list-style-type: none"> <li>• In the RAID 5 mode, it indicates that the hard disk drive is the first faulty drive.</li> <li>• In the RAID 6 mode, it indicates that the hard disk drives are the first and second faulty drives.</li> </ul> Blinks red: Indicates that the respective hard disk drive is faulty (which cannot be recovered even by replacing the hard disk drive). <ul style="list-style-type: none"> <li>• In the RAID 5 mode, it indicates that the hard disk drive is the second faulty drive.</li> <li>• In the RAID 6 mode, it indicates that the hard disk drive is the third faulty drive.</li> </ul>	Lights red and orange alternately: Indicates that the hard disk drive is currently being recovered in the RAID 5/RAID 6 mode.
<b>Recorder</b>		
Error log Refer to the manuals provided with the recorder for further information.	<ul style="list-style-type: none"> <li>• RAID 1DOWN Recorder: MAIN RAIDm 1 DOWN Extension unit: EXTu RAIDm 1 DOWN</li> <li>• RAID 2DOWN Recorder: MAIN RAIDm 2 DOWN Extension unit: EXTu RAIDm 2 DOWN</li> <li>• RAID 3DOWN Recorder: MAIN RAID6 3 DOWN Extension unit: EXTu RAID6 3 DOWN</li> </ul> m: Operational mode u: Unit number	RAID recovery failure: <ul style="list-style-type: none"> <li>• Recorder: MAIN RAIDm RECOVERY FAILURE</li> <li>• Extension unit: EXTu RAIDm RECOVERY FAILURE</li> </ul> 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).

### Important:

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

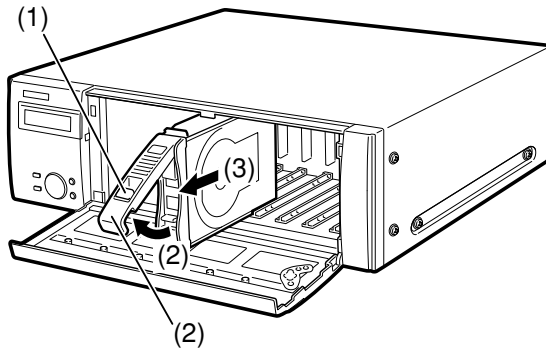
### Note:

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

RAID5 1DOWN	32° C
RAID6 2DOWN	32° C

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

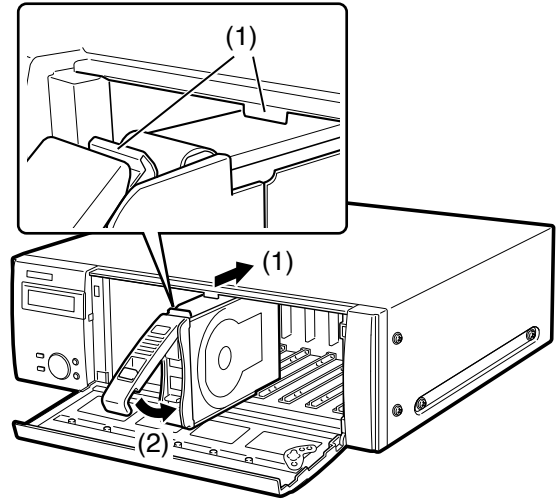
- Hold down the removal knob on the HDD unit.
- Pull the lever up.
- Pull the HDD unit out from the HDD slot.  
Pull the HDD unit out carefully so as not to drop it and handle it gently so as not to give it a shock or vibration.



### 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.

- Pinch the tab on the HDD slot with the hook on the HDD unit securely.
- 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.

Data recovery will start soon after the "RCV START WAIT" indication is displayed.

RAID5	32° C
RCV START WAIT	

The following indication will be displayed during data recovery (writing).

RAID5	32° C
RECOVERING	**%

### 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.

# 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 extension unit.	12
The error indicator blinks orange. The unit stops because of the thermal error.	▶ The fan is out of order. Refer to the dealer.	–
	▶ Are the fans at the rear or the ventilation slots on the front and both sides of the extension unit blocked? Make sure that the fans at the rear, the ventilation slots on the front, or both sides of the recorder are not blocked.	8
	▶ Temperature inside the extension unit is too high/low. Use the extension unit at appropriate ambient temperatures.	7
	▶ When the error indicator blinks orange, the temperature inside the extension unit may be too high. Check whether dust is collected around the fans or not.	–
The extension unit is not recognized.	▶ Make sure that the connection cable provided with the extension unit is being used.	16
	▶ Make sure that the connection cable is not loose.	16
	▶ 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.	18
	▶ 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>	24
	<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>	25
	<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 by operating the recorder.</p>	24
<p>The error indicator blinks red.</p>	<p>▶ A system error occurred. Contact your dealer.</p>	-
<p>The HDD indicator lights/ blinks red.</p>	<p>▶ Make sure that the HDD units are installed in order from HDD1 to HDD9. Insert the HDD units one by one in order starting from HDD1.</p>	24
	<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>	30
<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>	31
	<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>	23

Problem	Check item/Remedy	Ref. page
<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>	<p>30</p>
<p>The power cord insulation is damaged.</p>	<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>	<p>–</p>
<p>The power cord, plug and connectors get hot during use.</p>		
<p>The power cord gets hot when bent or stretched.</p>		
<p>The "EXTu ERR INITIAL ERR" indication is displayed on the LCD of the network disk recorder. (u: Unit number)</p>	<p>Connect the extension unit again after resetting its settings to the default.</p>	<p>21</p>

# Specifications

## • General

Power source:	NTSC model: 120 V AC, 60 Hz PAL model: 220 V AC to 240 V AC, 50 Hz/60 Hz
Power consumption:	130 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 kg {30.9 lbs} When 9 HDDs are installed: 20.5 kg {45.2 lbs}

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

Hard disk drive:	3.5 type hard disk drive (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 input connector (EXT IN):	High-speed serial interface, 1.5 Gbps (theoretical value), x1
------------------------------------	---

# Standard accessories

Installation Guide (this book) .....	1 pc.
Warranty (for U.S. field only) .....	1 pc.

The followings are for installation:

Power cord	
For the NTSC model .....	1 pc.
For the PAL model .....	2 pcs.
Connection cable (1 m {39.4"}) .....	1 pc.
Cable clamp .....	2 pcs.
Key .....	2 pcs.
Label* .....	1 pc.
Rack mounting bracket .....	2 pcs.
Rack mounting bracket fixing screw .....	6 pcs.
Rack handle .....	2 pcs.
Screw for the rack handle .....	4 pcs.
Washer .....	4 pcs.
HDD canister .....	9 pcs.
HDD fixing screw .....	54 pcs.

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

### Information on Disposal for Users of Waste Electrical & Electronic Equipment (private households)



This symbol on the products and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.

For proper treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your local retailer upon the purchase of an equivalent new product.

Disposing of this product correctly 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. Please contact your local authority for further details of

your nearest designated collection point.

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

This symbol is only valid in the European Union.

If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

#### For U.S. and Canada:

##### Panasonic i-PRO Sensing Solutions Corporation of America

800 Gessner Rd, Suite 700 Houston, TX 77024  
<https://www.security.us.panasonic.com/>

##### Panasonic Canada Inc.

5770 Ambler Drive, Mississauga, Ontario, L4W 2T3 Canada  
1-877-495-0580  
<https://www.panasonic.com/ca/>

#### For Europe and other countries:

##### Panasonic Corporation

<http://www.panasonic.com>

Panasonic i-PRO Sensing Solutions Co., Ltd.  
Fukuoka, Japan

Authorised Representative in EU:

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