WIN-62-5004

HITACHI

HITACHI INDUSTRIAL COMPUTER

HF-W200E

INSTRUCTION MANUAL

Read and retain this manual.

- **Read the safety instructions carefully and ensure that you understand them before beginning operations.**
- **Keep this manual on hand for easy reference.**

USER'S MANUAL

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PREFACE

This manual provides instructions for operating and adjusting the Hitachi industrial computer HF-W200E (hereinafter referred to as “this equipment”) required for daily operation by the operator. It also describes the setup procedures for the operating system (OS) and applies to the pre-installed OS listed below.

- Windows® 11 IoT Enterprise LTSC 2024 (64bit)

In the following pages, the term "Windows® 11" refers to the OS listed above.

Documentation structure

The manuals for this equipment are organized as follows:

- SAFETY INSTRUCTIONS (included with the product)
- INSTRUCTION MANUAL (this manual)
- RAS FEATURES MANUAL (available for download from the contact information on the next page)

Manual Structure

This manual is organized as follows:

Revision History

First Edition, January 2026, WIN-62-5004

Contact information

Information related to this product is provided through the following website.

In addition, use the following website to contact us about this product.

URL: https://www.hitachi-ip.co.jp/products/hfw/products/win/index.html

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IMPORTANT NOTIFICATIONS

If you plan to export this product, ensure compliance with all applicable export control laws and regulations, including the Foreign Exchange and Foreign Trade Act of Japan and the U.S. Export Administration Regulations. Complete all required procedures before shipment.
If you are uncertain about the requirements, please contact our sales representative.

- Reproduction or duplication of this manual, in whole or in part, without prior authorization is strictly prohibited.
- The contents of this manual are subject to change without notice for product improvement.

NOTICE

Depending on the type of failure, important files may be lost when you use this equipment. Files may also be lost due to power outages or operational errors in addition to equipment failures. In such cases, files cannot be recovered. To prevent data loss, save your files regularly and establish a systematic schedule for backing up files.

Harmonic Current Standards

This equipment complies with the JIS C 61000-3-2 harmonic current standard.

VCCI Notice

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a household environment, electronic interference may occur. In such cases, corrective actions might be required.

Note on Storage Capacity Calculations

Memory capacities, memory requirements, file sizes, and storage requirements must be calculated according to formula 2^n. The following examples show the results of such calculations.

1 KB (kilobyte) = 1,024 bytes (2^{10} bytes)
1 MB (megabyte) = 1,048,576 bytes (2^{20} bytes)
1 GB (gigabyte) = 1,073,741,824 bytes (2^{30} bytes)
1 TB (terabyte) = 1,099,511,627,776 bytes (2^{40} bytes)

Disk capacities must be calculated according to the formula 10^n. The following examples show the results of such calculations.

1 KB (kilobyte) = 1,000 bytes (10^3 bytes)
1 MB (megabyte) = 1,000,000 bytes (10^6 bytes)
1 GB (gigabyte) = 1,000,000,000 bytes (10^9 bytes)
1 TB (terabyte) = 1,000,000,000,000 bytes (10^{12} bytes)

Terminology Used in This Manual

The terms used in this manual are defined as follows:

- Install: The act of incorporating software into a computer's storage.
- Setup: The act of configuring the environment so that the software can be used on a computer.
- Virtual machine: A virtual hardware environment provided by Virtual PC or Hyper-V®.

Regarding Replacement of Terms

This manual explains how to operate Windows®. However, the operations "sign in" and "sign out" are called "log on" and "log out" depending on the version of Windows®, so please interpret them accordingly.

SAFETY INSTRUCTIONS

● Information About Safety Warnings

Carefully read and fully understand the safety precautions below before operating this equipment.

- Operate the equipment by following the instructions and procedures described in this manual.
- Pay particular attention to and follow all safety instructions marked on this equipment and in this manual. Failure to do so may result in personal injury or property damage, including this equipment.
- Safety precautions are indicated by the following headings, which combine the safety alert symbol with the headings "DANGER", "WARNING", "CAUTION" and "NOTICE".

	This is a safety alert symbol. This symbol is used to indicate potential hazards that might result in personal injury or death. Follow the instructions in the safety messages that follow this symbol to avoid possible injury or death.
DANGER:	Indicates an imminently hazardous situation that, if not avoided, will result in serious personal injury or death.
WARNING:	Indicates a potentially hazardous situation that, if not avoided, could result in serious personal injury or death.
CAUTION:	Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate personal injury.

NOTICE:	Indicates important information that is not related to personal injury but, if not observed, could result in equipment damage or property damage.

The heading NOTE is used to indicate important information related to the handling or operation of this equipment.

- Do not perform any operations other than those described in this manual. If you encounter any problems with this equipment, contact your system administrator or our sales representative.
- Before operating this equipment, read this manual carefully and ensure that you fully understand all the instructions and warnings.
- Keep this manual in a convenient location for quick reference when needed.
- Although the precautions displayed on this equipment and in this manual have been thoroughly considered, unexpected situations may occur. When operating this equipment, always follow the instructions and operate with care.

⚠ SAFETY INSTRUCTIONS (Continued)

● Common Safety Precautions

Carefully read and fully understand the following safety precautions.

⚠ WARNING

- This equipment is not designed or manufactured for use in systems that require safety measures directly related to human life. If there is any possibility of using this equipment for such applications, please consult our sales representative beforehand.

- If you notice smoke or unusual odor, immediately disconnect the power supply. Remove the power cord from the DC input connector on the front of this equipment, and contact your system administrator or our sales representative. Continuing to use this equipment in a faulty condition may result in fire or electric shock.

- Handle this equipment carefully to avoid impact, shock, or vibration, as these may cause malfunctions. If this equipment is dropped or the enclosure is damaged, disconnect the power cord from the DC input connector on the front panel and contact your system administrator or our sales representative. Using this equipment in this condition may lead to fire or electric shock. Also, avoid applying shock during unpacking or transportation.

- Do not disassemble or modify this equipment. Doing so may cause fire or electric shock due to equipment failure. Furthermore, we cannot accept any responsibility for consequences resulting from unauthorized modifications.

- Do not place any objects on this equipment, AC adapter, or cables. Doing so may cause equipment failure, damage, or cable breakage, which could lead to fire or electric shock.

CAUTION

- Be careful when transporting this equipment, as there is a risk of injury if this equipment falls or tips over.
- When unpacking or carrying this equipment, take care not to pinch or hit your fingers to avoid injury.
- Do not use this equipment for any purpose other than its intended use. Doing so may result in injury or damage to this equipment.
- This equipment may become hot during operation. Do not touch it directly or allow flammable materials to come into contact with it while it is operating or immediately after the power is turned off. There is a risk of fire or burns. Also, install this equipment in a location where users and flammable materials cannot touch it during operation.
  If it is necessary to move or handle this equipment, wait at least 90 minutes after turning off the power before doing so.
- This equipment alone cannot ensure the safety of the system. In the event of a breakdown, malfunction, or program defect, the system must still maintain adequate safety. Design the system with protective measures in place, such as providing external protective and safety circuits to prevent personal injury and serious accidents.
- The emergency stop circuit must be configured externally to this equipment, as a malfunction of this equipment may result in mechanical damage or an accident.
- During online operation (system running), ensure safety beforehand before performing operations such as program changes, forced output, or stopping. Operational errors may result in damage to the machine or an accident.

⚠ SAFETY INSTRUCTIONS (Continued)

NOTICE

- When installing or replacing hardware, wear a grounding wrist strap and take measures against static electricity.

- When tightening or removing screws, use tools that match the size and type of the screw head to avoid damaging the screw.
  When tightening screws, apply force straight into the screw hole without excessive pressure to prevent thread damage.

- Avoid using this equipment in locations with excessive dust or environments containing corrosive gases, as this may cause equipment failure.

- Do not subject this equipment to shock during unpacking or transportation, as this may cause malfunction.

- Ensure adequate clearance around this equipment for cooling. Insufficient space may cause overheating, resulting in failure or reduced lifespan.
  Also, sufficient space is required for installation and operation.

- Before shutting down this equipment (OS shutdown or power-off), confirm that peripheral devices have stopped or will not be affected.

- When connecting controlled devices to this equipment, carefully read the instruction manuals provided with those devices and perform thorough operational verification.

- Please use the basic software specified by our company. Operation with any other basic software is not guaranteed and will not be supported.

- If you perform an emergency shutdown (unplugging the power cord or turning off the breaker without shutting down the OS), the OS or applications may not operate properly and the safety of stored data may be compromised. Do not perform an emergency shutdown unless an abnormality has occurred and it is necessary to shut down the system urgently.

- Please note that if the power supply is interrupted at the source, the system may not be able to recover automatically.

⚠ SAFETY INSTRUCTIONS (Continued)

● Safety Warnings in This Manual

Safety warnings indicated as " ⚠ WARNING"

・ Do not directly touch this equipment while it is running. This equipment becomes hot and may cause burns. If it is necessary to touch this equipment, wait at least 90 minutes after turning off the power. Failure to do so may result in injury.

(Page C-1)

・ Do not disassemble or modify this equipment or the AC adapter. Doing so may result in death or serious injury due to electric shock.

(Page 1-3)

・ Use only the power cord supplied with this equipment.
Using any other cord may result in equipment malfunction, fire, or electric shock.
When operating this equipment at a voltage exceeding AC 125 V, the user must provide a power cord compatible with the input voltage and verify proper operation beforehand.
・ When connecting the power cord plug to an outlet, always use an outlet with a properly grounded terminal (ground pole). In addition, an earth leakage circuit breaker must be installed.
Failure to follow these instructions may result in fire or electric shock.
・ Do not use a two-prong plug without a grounding pole.
Failure to do so may cause electric shock or equipment failure.
・ When preparing a DC power supply independently, always connect the ground wire to the ground terminal of this equipment.
Failure to do so may result in electric shock or equipment failure.

(Page 1-9)

・ Failure to secure sufficient installation clearance for this equipment may cause the internal temperature to rise, resulting in fire or equipment failure. Always ensure adequate installation space (Refer to "1.5.2 Installation").

(Page 2-1)

SAFETY INSTRUCTIONS (Continued)

- If smoke, an unusual smell, or similar symptoms occur, immediately disconnect the power supply to this equipment. Remove the power cord from the DC input connector on the front of this equipment, and contact your system administrator or our sales representative. Continuing to use this equipment in a faulty state may result in a fire or electric shock.

(Page 2-4) (Page 9-1)

- To prevent electric shock or equipment failure, always shut down the OS and disconnect the power cord before performing any work.

(Page 6-2)

- Do not disassemble this equipment or remove the battery except when disposing of this equipment. Doing so may cause rupture, smoke, electric shock, or injury.
- Do not remove any parts while this equipment is operating. Stop this equipment, disconnect the power cord from the DC power connector, and remove all interface cables and peripheral devices before performing any work. Failure to do so may result in fire or electric shock.
- Do not remove the battery with bare hands. Doing so may cause electric shock or injury.

(Page A2-1)

SAFETY INSTRUCTIONS (Continued)

Safety warnings indicated as CAUTION

- When storing this equipment in a high-temperature environment, do not touch it directly with bare hands. This equipment may become hot and could cause burns.

(Page 1-8)

- Secure this equipment to the installation location using screws. Failure to do so may cause this equipment to fall, resulting in injury.

(Page 1-11)

- When using this equipment in a vertical orientation, be sure to fasten this equipment and the vertical mounting bracket (prepared by the user) securely with screws. Failure to do so may cause this equipment to tip over or fall, resulting in injury.

(Page 1-12)

- After installation, carefully check that the mounting work has been completed properly. Improper installation or loose screws may cause this equipment to fall and result in injury.

(Page 1-11) (Page 1-12)

- When using the AC adapter supplied with this equipment, make sure to place the AC adapter body in a stable position. Depending on the installation location, the AC adapter may fall and cause injury.

(Page 1-13)

- If you prepare DC power supplies or power cords for this equipment on your own, do not use them beyond the specified range. Such action may cause a fire or other hazards.

(Page 1-16)

- When installing or removing the CFast card, take care not to injure your fingers on any protruding parts.

(Page 6-3)

SAFETY INSTRUCTIONS (Continued)

Safety warnings indicated as NOTICE

- Depending on the type of failure, important files may be lost when you use this equipment. Files may also be lost due to power outages or operational errors in addition to equipment failures. In such cases, files cannot be recovered. To prevent data loss, save your files regularly and establish a systematic schedule for backing up files.

(Page iii) (Page C-7)

- Before moving this equipment, make sure to shut down the OS and unplug the power cord. Failure to do so may cause damage to components such as the SSD.
- When transporting or shipping this equipment, use the original packaging materials provided at delivery. Using other materials may damage this equipment.
- Do not use packaging materials that are broken or crushed for transportation. Doing so may damage this equipment.
- If the installation surface is uneven or unstable, this equipment may wobble, which may cause damage. To stabilize this equipment, place cushioning materials such as sponge or rubber pads between the equipment and the surface.

(Page C-1) (Page 1-9)

- Do not insert or remove a CFast card while this equipment is powered on. Doing so may cause failure of this equipment or the CFast card. Always shut down the OS and unplug the power cord before replacing a CFast card.
- When using a USB port, check the connector orientation and insert it slowly. Incorrect insertion may damage the USB port.
- Do not connect or disconnect USB devices while the system is running. Doing so may affect applications currently in operation.
- Avoid inserting or accessing optical discs (CDs, DVDs) from external drives such as DVD drives while the system is running. This may increase system load and affect applications in operation.

(Page 1-3)

SAFETY INSTRUCTIONS (Continued)

- Do not route interface cables or other equipment cables (such as those for a PC) near the cables connected to this equipment. Doing so may cause malfunction or failure.
- Do not connect or disconnect interface cables while the power of this equipment and the connected device is turned on. This may cause damage due to shorting of the supply voltage.
  If an interface cable becomes disconnected while this equipment is powered on, shut down the OS and unplug the power cord from the DC power connector. If you unplug the power cord from the DC power connector without shutting down the OS, file contents may be destroyed.
- If there is a cable for external contacts, be sure to connect it to the external contact connector (D-SUB). This cable may carry up to DC 40 V through a relay load. Connecting it to any other connector by mistake may cause failure.

(Page 1-13)

- Performing an emergency shutdown (such as unplugging the power cord without shutting down the OS, unplugging the AC adapter's power cord from the outlet, or turning off the breaker) may cause the OS or applications to malfunction or compromise the safety of stored data. Do not perform this operation except when an abnormal condition occurs and an immediate shutdown is required.
- If the power supply is cut off at the source, the system may not recover automatically. Exercise caution.

(Page 2-4)

- Never insert or remove the CFast card while this equipment is powered on.
  Doing so may cause damage to both this equipment and the CFast card.
- Ensure that the CFast card is securely inserted in this equipment.
  Leaving it partially connected may result in damage to this equipment and the CFast card.

(Page 6-3)

- The recovery DVD contains an image created based on the hardware configuration at the time of purchase. If the hardware configuration differs from the original factory-shipped condition, the OS may not start properly after restoration.
  When using the recovery DVD, remove all external storage devices and perform the restoration using the original hardware configuration (except for the DVD drive used to read the recovery DVD).
  Using the recovery DVD erases all data on the system drive. Back up any necessary data in advance.
  Because this product does not include a built-in DVD drive, prepare an external DVD drive in advance.

(Page 7-1)

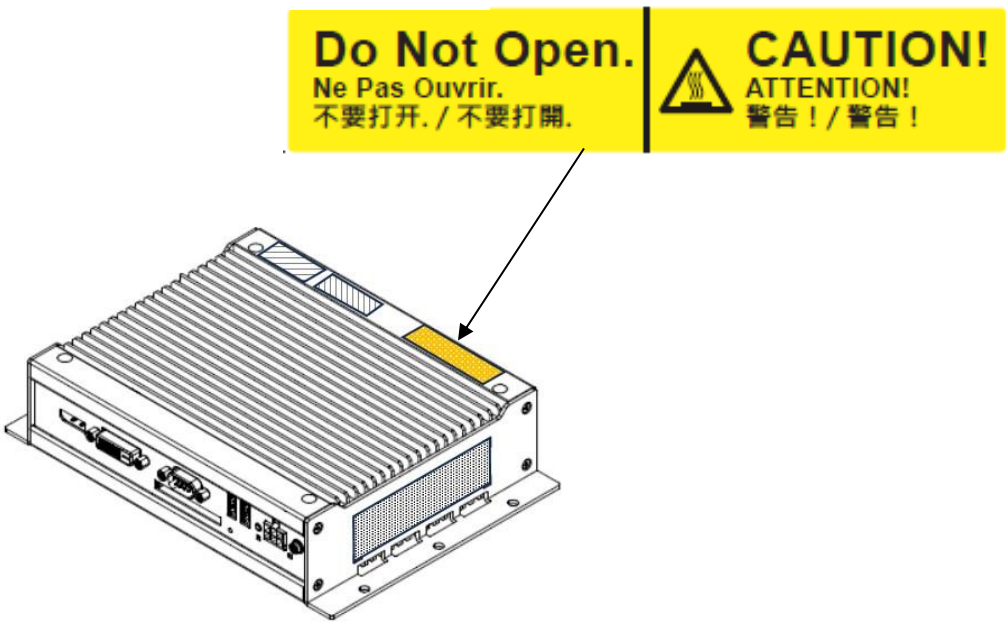
- Do not use components beyond their recommended replacement cycle. Continuing to use them past this period may lead to deterioration and cause failures.

(Page A1-1)

- CAUTION Label

Caution labels are attached to this equipment at the locations shown below.

CAUTION Label



⚠ SAFETY INSTRUCTIONS (Continued)

- ⚠ Disposal of This Equipment

When disposing of equipment, it is mandatory to issue an industrial waste management manifest. For more information, please contact your local industrial waste association.

- Labelling under EU Battery Regulation 2023/1542 (*1)

This symbol is valid in the countries of the European Union. It is specified in Chapter 3, Article 13 and Annex VI of the European Battery Regulation (EU) 2023/1542.
This equipment contains a lithium battery. In the European Union, there is a separate collection system for used batteries and accumulators. Please dispose of batteries and accumulators properly at your local collection or recycling center.

(*1) REGULATION (EU) 2023/1542 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC

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PRECAUTIONS

1. Precautions About This Equipment

⚠ WARNING

- Do not directly touch this equipment while it is running. This equipment becomes hot and may cause burns. If it is necessary to touch this equipment, wait at least 90 minutes after turning off the power. Failure to do so may result in injury.

NOTICE

- Before moving this equipment, make sure to shut down the OS and unplug the power cord. Failure to do so may cause damage to components such as the SSD.
- When transporting or shipping this equipment, use the original packaging materials provided at delivery. Using other materials may damage this equipment.
- Do not use packaging materials that are broken or crushed for transportation. Doing so may damage this equipment.
- If the installation surface is uneven or unstable, this equipment may wobble, which may cause damage. To stabilize this equipment, place cushioning materials such as sponge or rubber pads between the equipment and the surface.

(1) Transporting this Equipment

Required Actions

· When transporting or carrying this equipment, pack it in the dedicated container (the container and packing materials used when this equipment was delivered). If you must move this equipment while it is installed in a housing, protect it to ensure that vibrations and shocks remain within the specified limits.

· Retain the dedicated container (the container and packing materials used when this equipment was delivered). It can be reused later when transporting or carrying this equipment.

(2) Connection Cables

Precautions

· Do not pull on a cable by using excessive force.

· To comply with EMC standards (FCC, CE, and VCCI), use shielded interface cables when connecting to this equipment (such as the display interface cable, keyboard interface cable, and mouse interface cable).

Required Actions

· Route the cables neatly and securely around this equipment so that they do not get caught on hands or feet. If the power cord is disconnected while this equipment is operating, power will be lost and important data may be lost.

(3) Connectors

Precautions

· To connect a connector properly, insert it in the correct orientation and at the correct angle. If a connector is not inserted correctly, the connection may fail or cause a malfunction.

· Verify that no I/O connectors are loose on this equipment.

(4) Power Supply

(a) Power Voltage

Required Actions

· Confirm that the input power voltage for this equipment is within the specified range.

· When using an AC adapter: 100 to 240 VAC

· When not using an AC adapter: 12 to 24 VDC (input voltage for this equipment)

If the input power voltage is outside the specified range, treat it as an abnormal power condition and request an inspection from the person responsible for managing the power supply equipment.

(b) Power Cord

Precautions

· The power cord supplied with the AC adapter is rated for an input voltage of 125 VAC. When using this equipment at voltages above 125 VAC, use a power cord rated for the input voltage being used.

· Install Class D grounding (formerly Class 3) as defined in the Technical Standard for Electrical Facilities in Japan. This ensures normal operation of electronic circuits containing highly integrated LSIs and to protect devices from abnormal voltage caused by lightning strikes or other causes.

· Use a power cord equipped with a two-prong plug and a grounding pin. (Refer to “1.6, Hardware Connection”.)

· When plugging the power cord into an outlet, use one with a properly grounded neutral pole. In addition, install and use an earth leakage circuit breaker.

· If you are using a power cord clamp to prevent accidental disconnection, leave sufficient slack in the power cord near the connector when securing it, to allow disconnection in an emergency. Alternatively, install an emergency circuit breaker at the outlet.

· Do not place objects on the power cord, and do not route signal lines near it.

(c) Turning the Power On and Off

Precautions

- After turning the power off, wait for at least one minute before turning the power on again. If you wait for less than one minute, this equipment might not operate as specified by the BIOS power settings. (Refer to "5.3 BIOS Setup.")
- Do not turn off power to this equipment during communication or while the SSD or CFast card is being accessed.

Required Actions

- When connecting or disconnecting a peripheral, always turn off the power to both this equipment and the peripheral beforehand. Such action may cause equipment failure if performed while the power is on.
- When turning on the power, turn on the peripheral devices first, and then turn on the power to this equipment. When turning off the power, turn off the power to this equipment first, and then turn off the peripheral devices.
- Turn off the power to this equipment when it is not in use. If you do not intend to use this equipment for an extended period, unplug the power cord of the AC adapter from the outlet, or disconnect the power cord directly from the DC power connector of this equipment.
- Carpets or lap blankets may generate static electricity depending on their material, which can adversely affect this equipment. Use carpets or lap blankets made of conductive materials that are less likely to generate static electricity.
- During lightning storms or when power conditions are unstable, momentary power outages or voltage drops may occur, causing the screen to suddenly turn off. In such cases, turn off the power to this equipment once, then turn it on again to restart the system.

(5) Installation Environment

Precautions

- To maintain the functionality of this equipment and ensure long-term reliable operation, proper environment and handling are required. Do not use the equipment in the following locations. Avoid installing this equipment in the following locations, as such action may shorten its service life or cause malfunctions.

- Where it is exposed to direct sunlight, such as near a window
- Where temperature or humidity changes rapidly, such as near an air conditioner
- Near equipment that generates electrical noise, such as motors or generators
- Near equipment that generates strong magnetic fields, such as magnets
- In environments with excessive dust
- In locations subject to vibration
- In environments where corrosive gases are present
- In locations subject to vibration caused by loud sounds, such as near equipment that emits loud buzzers or alarm sounds

- The following precautions apply to the left, right, top, and bottom surfaces of this equipment:
  - Do not place any heat-generating components in direct contact with these surfaces.
  - If this equipment is installed in a fixed position, ensure that it can be easily removed.

- The following precautions apply to the left, right, top, and bottom surfaces of this equipment:
    - Do not place any heat-generating components in direct contact with these surfaces.
    - If this equipment is installed in a fixed position, ensure that it can be easily removed for maintenance.
- It has been reported that zinc whiskers can adversely affect this equipment. Do not use electrogalvanized materials near this equipment or in its installation area.
  (Quoted from Technical Report of JEITA# ITR-1001 "Guideline of Facilities and Equipment for Information Systems")
  Location of whiskers : Whiskers are created by electrogalvanized components such as floor panels, stringers, posts, and aseismatic flat steel.
  Phenomenon : Hair-like zinc crystals (conductive whiskers) may detach from the floor, enter this equipment, and short-circuit a PCB or its pins. The root cause is difficult and time-consuming to determine because symptoms vary depending on the short-circuit location, and the issue is often misidentified as temporary.
  #: JEITA: Japan Electronics and Information Technology Industries Association
- If the ambient temperature approaches 60 °C, design the system so that the CPU load does not exceed 80 %. Excessive internal temperature may cause this equipment to detect an overheat condition and shut down, or lead to performance degradation and equipment failure.

Required Actions

- When installing this equipment inside a housing or desk, consider the rise in ambient temperature around the equipment.
- The system clock and other functions of this equipment operate on battery backup even when the power is turned off. Therefore, if this equipment is stored in an environment outside the guaranteed operating temperature range, you may need to reset the clock and other BIOS settings when using it again. (Refer to “5.3 BIOS Setup.”)

(6) Operating Conditions

Precautions

- Before moving this equipment, disconnect the power cord and wait for at least one minute.
- To prevent condensation, if this equipment is moved from outdoors to indoors, leave it unused for at least four hours before operation.
- This equipment contains precision electronic components. Do not subject it to vibration or impact.
- Do not sit on this equipment or place any objects on it.
- During normal operation, keep the display in standby mode rather than turning off the power switch.
- When starting up, do not operate the keyboard or mouse until the sign-in screen appears.

Required Actions

It is recommended to remove dust from around this equipment (especially the bottom and sides), from grooves, and from the front surface.

(7) Abnormal Sounds

Specifications

· A low-frequency sound may occur when the power is turned on. This is caused by transient low-frequency vibration of components such as choke coils for high-frequency suppression, and it does not affect performance or service life.

(8) Warranty

Specifications

· Damage to data or application software resulting from hardware failure of this equipment is not covered by the warranty.

· Use only the operating system specified by the manufacturer. Operation with other operating systems is not guaranteed.

· This equipment has been evaluated based on the hardware specified by the manufacturer. Therefore, when installing or replacing hardware, use only the hardware specified by the manufacturer. Operation with other hardware is not guaranteed.

· Although this equipment is designed for continuous 24-hour operation, such operation is not guaranteed. Furthermore, operation is not guaranteed against failures caused by component defects or software issues, including Windows® problems such as memory leaks. Please perform sufficient operational verification within your system or equipment beforehand.

2. Networks

Precautions

- Operate this equipment so that Magic Packet™ frames are received when the power indicator on this equipment is lit orange. If a Magic Packet™ frame is received at the timing when the OS shutdown process has completed and the power is actually turning off, the power may remain on, causing the system to restart, or Wake-on-LAN (WOL) may become unavailable (Refer to "2.6.2 Method for Turning On the Power Using LAN").

Specifications

- Depending on the network conditions, Magic Packet™ frames may be lost. Therefore, ensure that the system in use is operated in a way that guarantees the delivery of Magic Packet™ frames (Refer to "2.6.2 Method for Turning On the Power Using LAN").
- Even if a network drive is configured to reconnect at sign-in, reconnection may not always occur. In such cases, sign in again or use the net use command to establish a connection. For details about the net use command, refer to Windows® Help.
- When connecting this equipment to another device or a peripheral device over the network, make sure that the "speed and duplex" settings match on both sides (Refer to "2.7 Setting Up the LAN Interface"). If these settings differ, the network adapter performance may degrade or the network adapter may not operate properly.
- To prevent heat generation caused by potential differences between devices, do not use twisted-pair Ethernet cables other than those specified in Interface Specifications (Refer to "5.5 Interface Specifications").
  For example, do not use Category 5 or STP cables.

3. Display Screens

Specifications

- Before configuring the screen settings, stop all running applications beforehand.
- When changing the connections to switch between single-display and multi-display configurations, turn off the power of this equipment, reconnect the display cables, turn the power back on, and then configure the screen settings.
- If you change the display connection, reconfigure the screen settings accordingly.
- Depending on the application software, the screen may flicker and video playback may not be smooth.
- The DisplayPort multi-stream feature (daisy chain) is not supported.
- If the power of a display connected via DisplayPort is turned off, that display will no longer be detected.

4. Solid State Drives (SSD)

NOTICE
Depending on the type of failure, important files may be lost when you use this equipment. Files may also be lost due to power outages or operational errors in addition to equipment failures. In such cases, files cannot be recovered. To prevent data loss, save your files regularly and establish a systematic schedule for backing up files.

(1) Handling Solid State Drives

Precautions

- SSD performance may degrade under high or low temperature conditions. Therefore, ensure that any performance changes under such conditions do not affect your intended application.
- Do not change (disable) the SSD cache settings, as such action may affect the lifespan of the SSD.

Specifications

- The capacity and performance of an SSD may vary depending on the components used.

(2) Backing up Files

Required Actions

- Always perform regular backups of the data stored on the SSD.

5. USB Devices

Precautions

- Before using a USB device, perform a thorough evaluation. Never use a USB device for a mission-critical purpose.
- Do not connect a USB device during OS startup, as the OS may not start normally.
- If you switch screens during OS startup when using a CPU/USB KVM switch, the OS may not start normally depending on the type of CPU/USB KVM switch. When using a CPU/USB KVM switch, test its operation thoroughly.
- For USB 2.0 and USB 3.0, the cable length must not exceed the length specified in the specifications. Using longer cables may compromise transfer speed. Use a USB 2.0 or USB 3.0 cable that matches the device you are using. Such action may result in reduced transfer speed or communication errors. For information about cable specifications, contact the cable manufacturer. (Refer to "5.5.3 External interface cable length specifications")
- When using a USB device, make sure that the maximum current value is not exceeded. (Refer to “5.1 (6) Maximum Current Specifications.”)

Required Actions

- When using a USB port, check the orientation of the USB connector and insert it slowly to avoid damaging the USB port.
- Inserting, removing, or accessing a USB device may increase the system load. If you need to use a USB device during online operation (system operation), confirm that doing so does not affect the currently running application software before using the device.
- After you clean a USB keyboard, check the connection between this equipment and the keyboard connector. A loose connection may cause the keyboard to be incorrectly recognized or prevent the system from starting normally.

Specifications

- Connection with all USB devices is not guaranteed.
- Some USB devices do not conform to USB specifications. If you turn off the main power while such a device is connected, this equipment may fail to start normally, and the clock settings may become corrupted. When selecting a USB device, test its operation thoroughly.

6. Lithium Batteries

Required Actions

- This equipment uses a lithium battery. When disposing of the battery, comply with local laws and regulations. For disposal outside your country, follow the applicable laws and regulations of the respective country.
- When disposing of this equipment, remove the lithium battery. (Refer to "APPENDIX 2 BATTERY REMOVAL PROCEDURE FOR DISPOSAL")

7. BIOS Settings

Specifications

- If the backup battery is depleted or not connected while power is supplied, the settings will be retained. After turning off the power and restarting the system, the BIOS settings will return to their default values; however, the OS will always start regardless of the “After AC Power ON” setting.
- The clock displayed on the BIOS setup menu screen is for time setting purposes only, not for real-time display. Therefore, the date shown on the screen does not change when the actual date changes. If the date changes, correct it manually. (Refer to "5.3 BIOS Setup")
- When using the BIOS setup menu, the system clock may become delayed. After exiting the setup menu, always check the time. (Refer to "5.3 BIOS Setup")

8. Maintenance Services

Specifications

- Microsoft® Windows®, device drivers, and commercially available application software may not be modifiable as a countermeasure for certain failures. Therefore, workarounds may be provided instead.
- If commercially available hardware is added without our authorization, we cannot guarantee the overall integrity of this equipment.
- Some components used in this equipment (such as LSIs manufactured by Intel Corporation) cannot be disassembled for failure analyses because we do not have the rights to do so.
- The maintenance service for this equipment is limited to repair support only.
  The repair support period is up to 10 years from the date of delivery, and repairs will be performed on a send-back basis. (Refer to " CHAPTER 6 INSPECTION AND MAINTENANCE ")

9. Windows® Settings

(1) Applying Hotfixes and Other Updates

Specifications

· Users are responsible for applying any necessary hotfixes, Windows updates, or the latest service packs. After applying updates, thoroughly verify system operation.

(2) User Account Control (UAC)

Specifications

· If User Account Control (UAC) is enabled in Windows® settings, a User Account Control dialog box may appear when running applications or commands. In such case, click **Yes** or **Continue**.

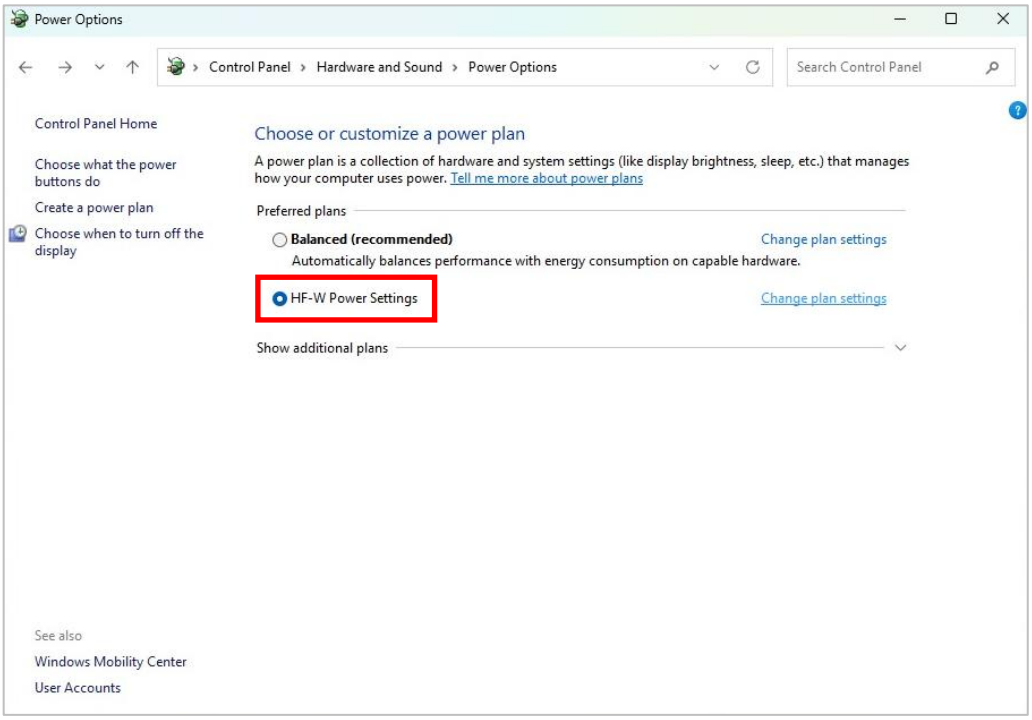
(3) Regarding Power Options Settings

Required Actions

· Do not change the power plan from "**HF-W Power Settings**", which is the factory-shipped condition. Also, do not change the setting for "**Turn off hard disk after**" from "0".
You can check the current power plan and the "**Turn off hard disk after**" setting using the following procedure.

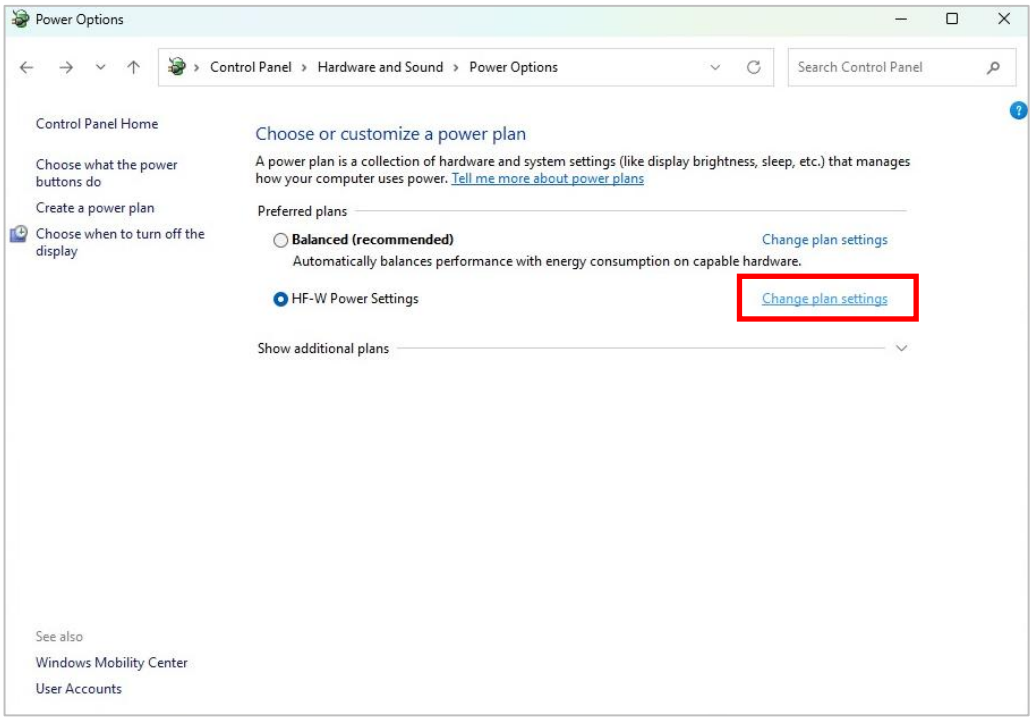
● Procedure to Check the Currently Configured Power Plan

1. Open the **Control Panel** and click **System and Security**.
2. Click **Power Options**.
3. The **Power Options** screen will appear.
Ensure that the **Preferred plans** under **HF-W Power Settings** is selected.

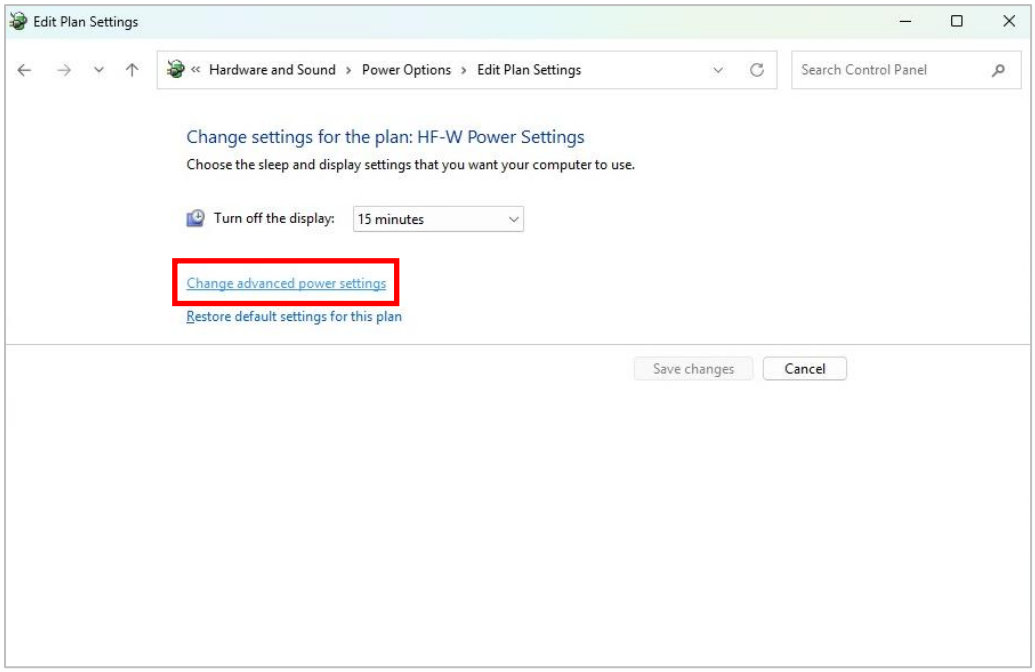


● Procedure to Check the Setting for "**Turn off hard disk after**"

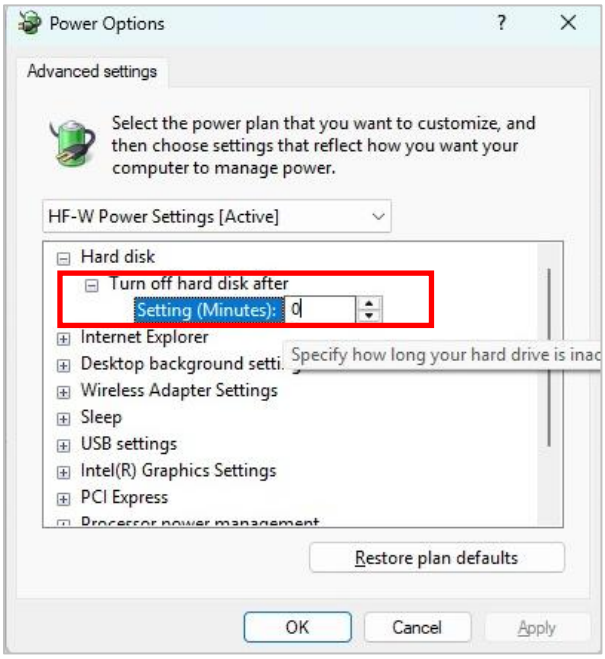
1. Following the "**Procedure to Check the Currently Configured Power Plan**", click **Change plan settings** under **HF-W Power Settings**.



2. The **Edit Plan Settings** screen will appear.
   Click **Change advanced power settings**.

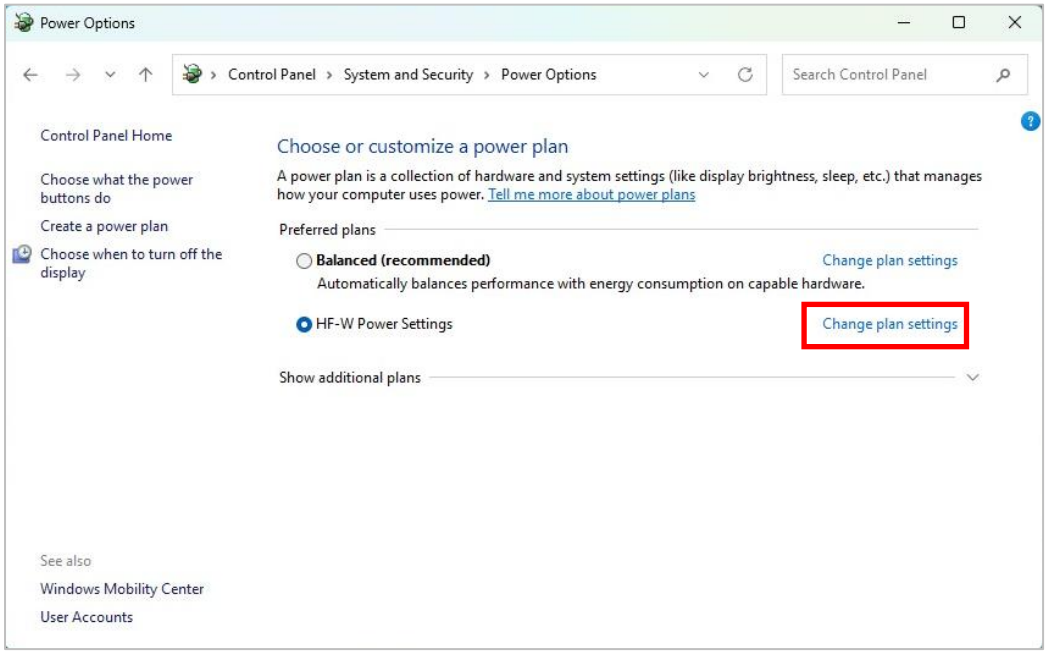


3. The **Power Options** screen with the **Advanced settings** tab will appear.
   Verify that the setting for **Turn off hard disk after** is set to “0”.

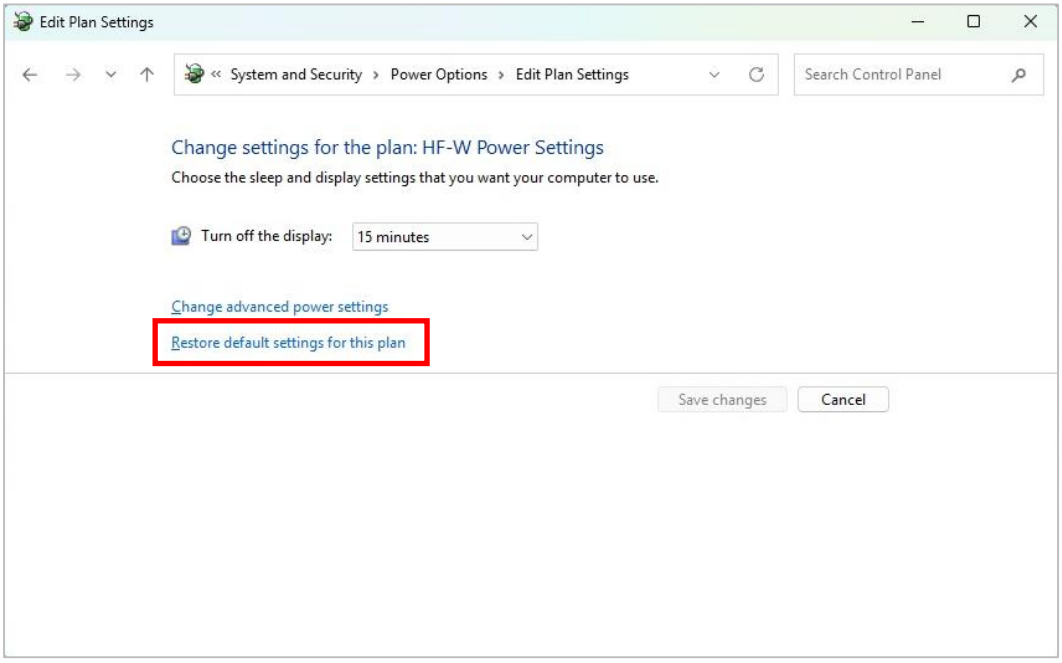


・ If you have changed any of the **Power Options** from the factory-shipped condition, return them to the factory-shipped condition by following the procedure below.

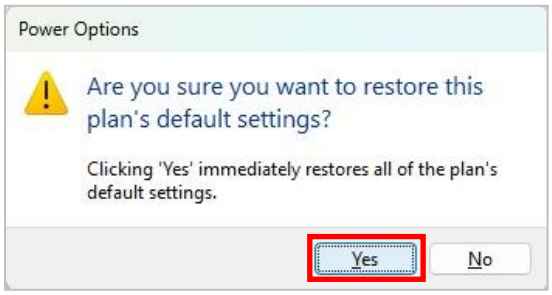
1. Open the **Control Panel** and click **System and Security**.
2. Click **Power Options**.
3. The **Power Options** screen will appear.
   ・ Under **Preferred plans**, find **HF-W Power Settings** and click **Change plan settings**



4. The **Edit Plan Settings** screen will appear.
Click **Restore default settings for this plan**.



5. The following confirmation screen will appear.
Click **Yes**.



10. Detection of Memory Single-Bit Errors

Restrictions

- This equipment is equipped with an ECC (Error-Correcting Code) function. Therefore, even if a single-bit error occurs in memory, it is automatically corrected and does not affect the operation of this equipment. In addition, single-bit error detection is performed during BIOS startup and by the RAS software.
  If multiple single-bit errors occur, a notification will be issued. However, in very rare cases, single-bit errors may not be detected and therefore may not be reported.

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CHAPTER 1 GETTING STARTED

1.1 Scope

This manual is intended for operators of the HITACHI INDUSTRIAL COMPUTER HF-W200E and provides information about the operation and maintenance of various components necessary for routine use.
After unpacking, go check the “delivered items list” to confirm that all items have been delivered and that none are missing or damaged.
If any items are missing or damaged, contact our sales representative.
For details on RAS features, refer to the following manual:

・HITACHI INDUSTRIAL COMPUTER HF-W200E RAS FEATURES MANUAL
（manual number WIN-63-5004）

1.2 Role of an Operator

In order to use this equipment in good working order for a long period of time, please pay attention to the following items.

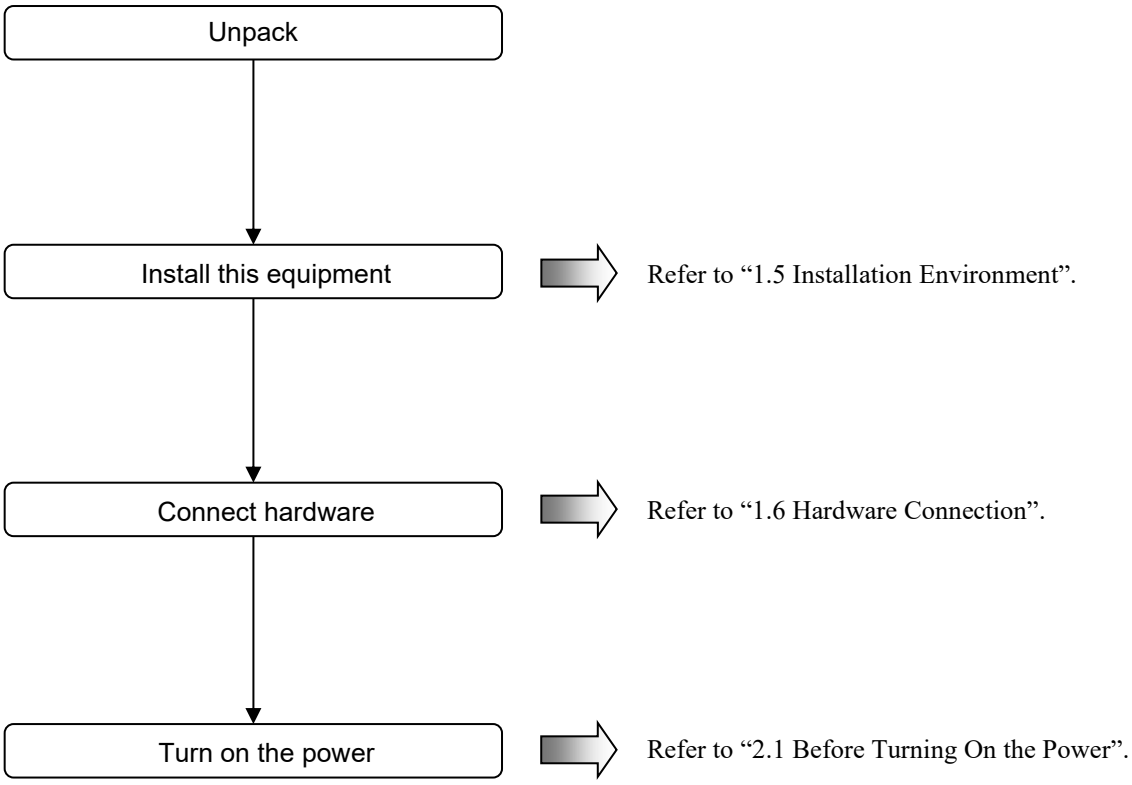
(1) Consideration for the Characteristics of This Equipment
  (a) Refer to “PRECAUTIONS 1. Precautions About This Equipment” and take necessary actions considering the characteristics of the equipment.
  (b) The instructions described in this manual are fundamental to proper handling. Please make sure to follow these instructions.
  (c) For details on handling, cleaning, and other related information, Refer to each chapter.

(2) Maintenance of This Equipment
  During operation, please pay attention to the following items:
  (a) File Backup (Refer to “PRECAUTIONS 4. Solid State Drives (SSD) (2) Backing up Files”).
  (b) Power Cord and Power Disconnection (Refer to “PRECAUTIONS 1. Precautions About This Equipment (4) Power Supply”).

(3) Inspection of This Equipment
  (a) For inspection, (Refer to “6.1 Periodic Inspection”).

1.3 Workflow

The workflow before turning on this equipment is as follows:



1.4 Names and Functions of Each Part

⚠ WARNING

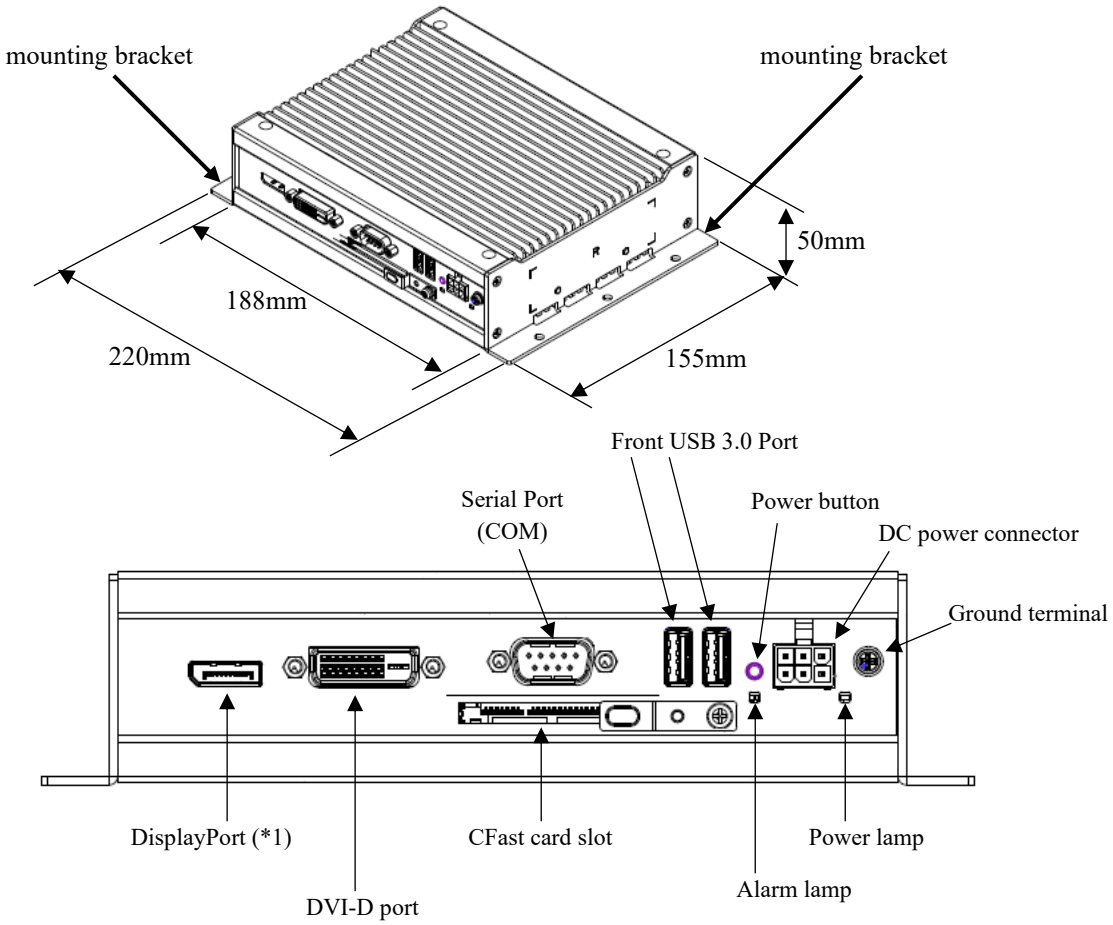
Do not disassemble or modify this equipment or the AC adapter. Doing so may result in death or serious injury due to electric shock.

NOTICE

- Do not insert or remove a CFast card while this equipment is powered on. Doing so may cause failure of the equipment or the CFast card. Always shut down the OS and unplug the power cord before replacing a CFast card.
- When using a USB port, check the connector orientation and insert it slowly. Incorrect insertion may damage the USB port.
- Do not connect or disconnect USB devices while the system is running. Doing so may affect applications currently in operation.
- Avoid inserting or accessing optical discs (CDs, DVDs) from external drives such as DVD drives while the system is running. This may increase system load and affect applications in operation.

● Display and User Input Sections

(1) Front View



(*1) If a display unit connected via DisplayPort is turned off, this equipment cannot detect the display.

Figure 1-1 Names of Each Part (Front View)

(2) Rear View

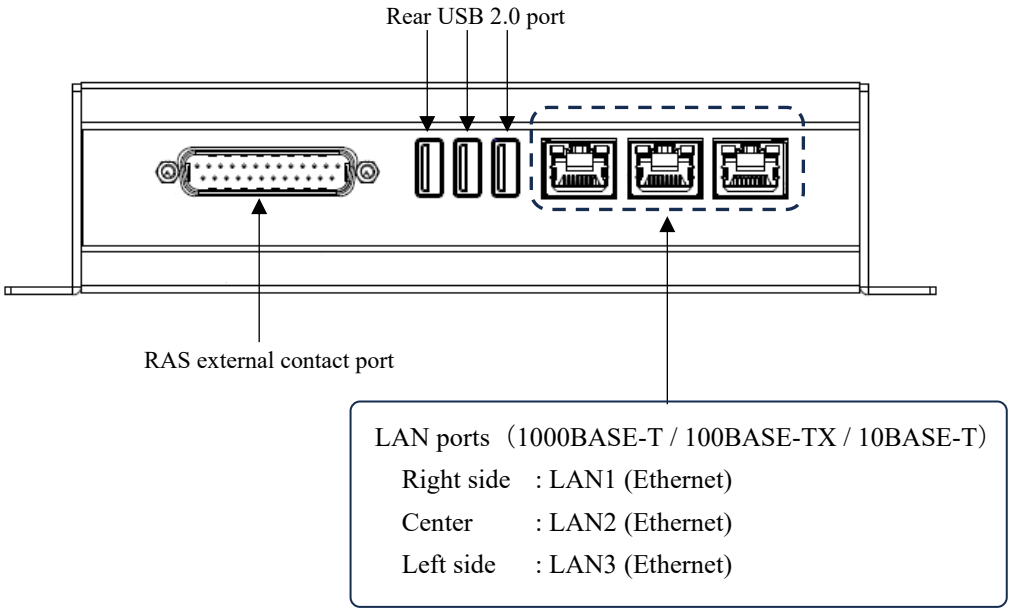
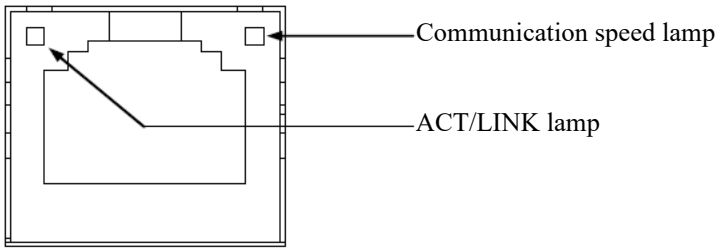


Figure 1-2 Names of Each Part (Rear View)

Table 1-1 Functions of Each Part (1/2)

<table>
<tr><th>Name</th><th>Function</th></tr>
<tr><td>Power button</td><td>When you press this button, the power turns on. When you press the button for four seconds or more during operation, the power turns off and the system enters standby mode (for emergencies only).</td></tr>
<tr><td>Power lamp (☼)</td><td>
<table>
<tr><td>Lamp</td><td>Status</td></tr>
<tr><td>Lit in green</td><td>This equipment is running.</td></tr>
<tr><td>Lit in orange</td><td>This equipment is in standby mode.</td></tr>
<tr><td>Off</td><td>This equipment is in main power OFF state.</td></tr>
</table>
</td></tr>
<tr><td>Alarm lamp (ALARM)</td><td>
<table>
<tr><td>Lamp</td><td>Status</td></tr>
<tr><td>Lit in Red</td><td>This light turns red if the following errors are detected:
- RAS software or hardware anomaly detection.</td></tr>
<tr><td>Off</td><td>Main power OFF or Normal operation</td></tr>
</table>
</td></tr>
<tr><td>DC power connector</td><td>Connect the supplied AC adapter or a user-provided DC power supply. (Refer to "1.6 Hardware Connection")
For the specifications of the AC adapter, refer to "5.1 Equipment Specifications (3) Accessories".</td></tr>
<tr><td>Serial port (COM)
(9 pins: RS-232C / 485 / 422)</td><td>Connect a device such as a modem that uses a serial interface. (Refer to "5.5.1 Connector Specifications")
To change the settings of RS-232C/485/422, refer to "5.2 Serial Port Settings".</td></tr>
<tr><td>RAS external contact port
(25 pins: D-SUB)</td><td>A connector for connecting external contacts.
(Refer to "5.5.1 Connector Specifications")</td></tr>
<tr><td>DVI-D port</td><td>Connect the cable from the digital interface of a display.
(Refer to "5.5.1 Connector Specifications")</td></tr>
<tr><td>DisplayPort</td><td>Connect the cable from the digital interface of a display.
(Refer to "5.5.1 Connector Specifications")</td></tr>
<tr><td>USB port (USB 2.0 / USB 3.0)</td><td>Connect a device that uses a USB interface.
(Refer to "5.5.1 Connector Specifications")</td></tr>
</table>

Table 1-1 Functions of Each Part (2/2)

<table>
<tr><th>Name</th><th>Function</th></tr>
<tr><td>LAN port
（1000BASE-T / 100BASE-TX / 10BASE-T）</td><td>Connect a LAN cable. (Refer to "5.5.1 Connector Specifications")
● Onboard LAN
 

ACT/LINK lamp
<table>
<tr><th>Lamp</th><th>Status</th></tr>
<tr><td>Lit in green</td><td>A link is established.
Both this equipment and the remote device are powered, and the connection over the twisted-pair Ethernet cable is stable.</td></tr>
<tr><td>Blinking in green</td><td>Network data is being transmitted or received.
The blinking interval changes depending on the network traffic.</td></tr>
<tr><td>Off</td><td>No link is established.
- This equipment is not physically connected to the network.
- The switching hub is not powered.
- The connection over the twisted-pair Ethernet cable is not stable.
- There is an error in the driver settings</td></tr>
</table>
Communication speed lamp
<table>
<tr><th>Lamp</th><th>Status</th></tr>
<tr><td>Lit in orange</td><td>Operating at 1000 Mbps.</td></tr>
<tr><td>Lit in green</td><td>Operating at 100 Mbps.</td></tr>
<tr><td>Off</td><td>Operating at 10 Mbps or no link is established.</td></tr>
</table>
</td></tr>
</table>

< NOTE >

For information about precautions related to USB devices, refer to “PRECAUTIONS 5. USB Devices.”

1.5 Installation Environment

1.5.1 Environment

⚠ CAUTION

When storing this equipment in a high-temperature environment, do not touch it directly with bare hands. This equipment may become hot and could cause burns.

When this equipment is used, it must be used in the following environment.

Item	Requirement
Ambient temperature (Operation)	Altitude below 1,000 m: 0 °C to 40 °C Altitude 1,000 m or more and up to 2,000 m: 0 °C to 30 °C When the AC adapter is not used: Altitude up to 2,000 m: 0 °C to 60 °C
Ambient temperature (Storage)	Altitude below 1,000 m: -10 °C to 70 °C Altitude 1,000 m or more and up to 2,000 m: -10°C to 60°C When the AC adapter is not used: Altitude up to 2,000 m: -10°C to 70°C
Temperature gradient	±15 K/h or less
Humidity	20 % to 80 % RH (non-condensing) When the AC adapter is not used: 10 % to 90 % RH (non-condensing)
Dust (*1)	No conductive dust present (0.3 mg/m³, JEITA IT-1004B Class B)
Corrosive gas	No corrosive gas present (JEITA IT-1004B Class A) When the AC adapter is not used: Environment with low levels (0.3 mg/m³, JEITA IT-1004B Class B)
Vibration resistance	10 Hz to 57 Hz (half amplitude: 0.375 mm) 57 Hz to 500 Hz (acceleration: 49 m/s²)
Shock resistance	980 m/s²
Power voltage	100 to 240 VAC ±10 % When the AC adapter is not used: 12 VDC to 24 VDC ±10 %
Power frequency	50 Hz to 60 Hz ±3 Hz
Power supply noise	2.0 kV (EN61000-4-4)
Electrostatic noise contact discharge	4 kV (contact discharge) and 8 kV (air discharge) (EN61000-4-2)
Insulation resistance	500 VDC, 20 MΩ
Dielectric strength	1.5 kVAC, one minute
Transient power fault	20 ms or less
Altitude	Less than 2,000 m

(*1) This equipment shall not be used in environments where conductive dust or similar substances are present in the air.

<NOTE>

For details regarding environmental precautions, refer to “PRECAUTIONS 1. Precautions About the Equipment (5) Installation Environment.”

1.5.2 Installation

⚠ WARNING

- Use only the power cord supplied with this equipment.
  Using any other cord may result in equipment malfunction, fire, or electric shock.
  When operating this equipment at a voltage exceeding AC 125 V, the user must provide a power cord compatible with the input voltage and verify proper operation beforehand.
- When connecting the power cord plug to an outlet, always use an outlet with a properly grounded terminal (ground pole). In addition, an earth leakage circuit breaker must be installed.
  Failure to follow these instructions may result in fire or electric shock.
- Do not use a two-prong plug without a grounding pole.
  Failure to do so may cause electric shock or equipment failure.
- When preparing a DC power supply independently, always connect the ground wire to the ground terminal of this equipment.
  Failure to do so may result in electric shock or equipment failure.

NOTICE

- Before moving this equipment, make sure to shut down the OS and unplug the power cord.
  Failure to do so may cause damage to components such as the SSD.
- When transporting or shipping this equipment, use the original packaging materials provided at delivery. Using other materials may damage this equipment.
- Do not use packaging materials that are broken or crushed for transportation. Doing so may damage this equipment.
- If the installation surface is uneven or unstable, this equipment may wobble, which may cause damage. To stabilize this equipment, place cushioning materials such as sponge or rubber pads between the equipment and the surface.

<NOTE>
For information about precautions concerning the installation requirements, refer to "PRECAUTIONS 1. Precautions About This Equipment (5) Installation Environment".

Table 1-2 Dimensions, operation and service clearance, and installation clearance

Dimensions (mm)			Operation and service clearance (mm)				Installation clearance (mm)			
Height	Width	Depth	Front	Rear	Left	Right	Front	Rear	Left	Right
50	220	155	600	500	200	200	100	100	50	50

- When performing installation work or operating this equipment, provide the clearance shown in Figure 1-4.
- Make sure not to obstruct the airflow, since this equipment adopts natural cooling.
  Especially, leave sufficient clearance in the front (100 mm) and at the rear (100 mm).
  (This includes the space required for front and rear cable connector wiring.)

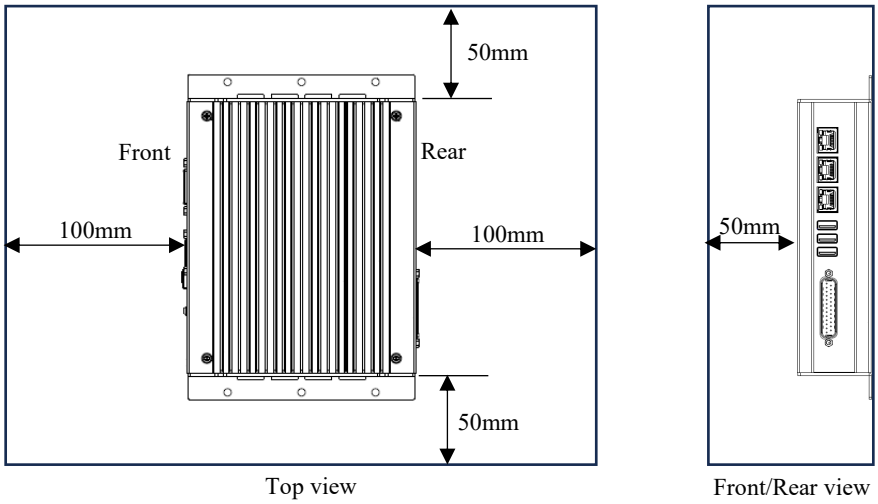


Figure 1-3 Required clearance for installation

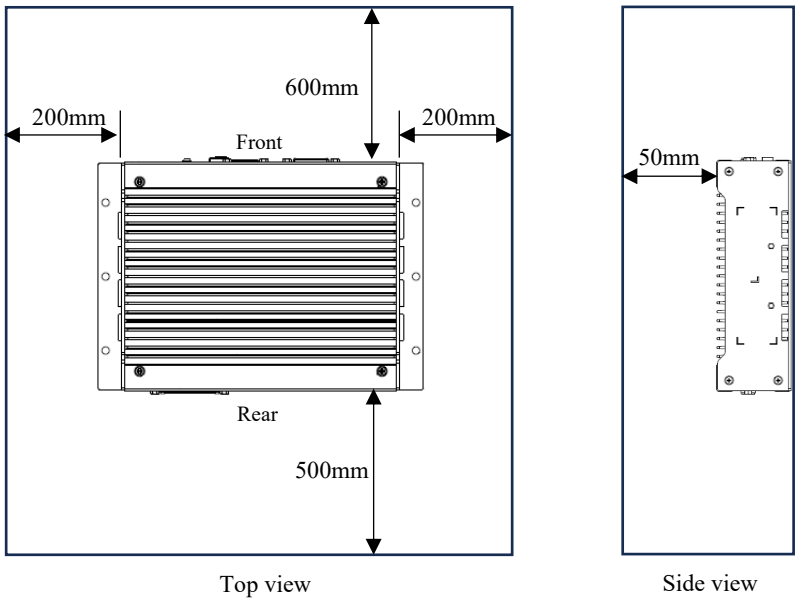


Figure 1-4 Required clearance for operation

(a) Horizontal Installation

⚠ CAUTION

- Secure this equipment to the installation location using screws. Failure to do so may cause this equipment to fall, resulting in injury.
- After installation, carefully check that the mounting work has been completed properly. Improper installation or loose screws may cause this equipment to fall and result in injury.

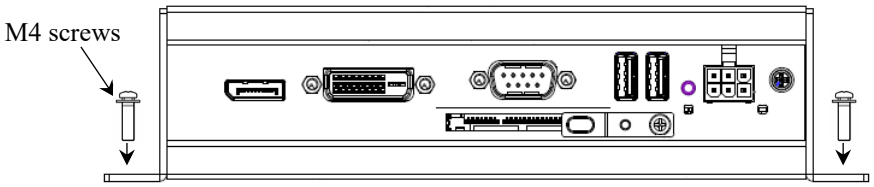


Figure 1-5 Exterior View (Horizontal Installation)

(b) Vertical Installation

⚠ CAUTION

- When using this equipment in a vertical orientation, ensure that this equipment and the vertical mounting bracket (prepared by the user) are securely fastened with screws. Failure to do so may cause this equipment to tip over or fall, resulting in injury.
- After installation, carefully verify that the mounting work has been completed properly. Improper installation or loose screws may cause the equipment to fall and result in injury.

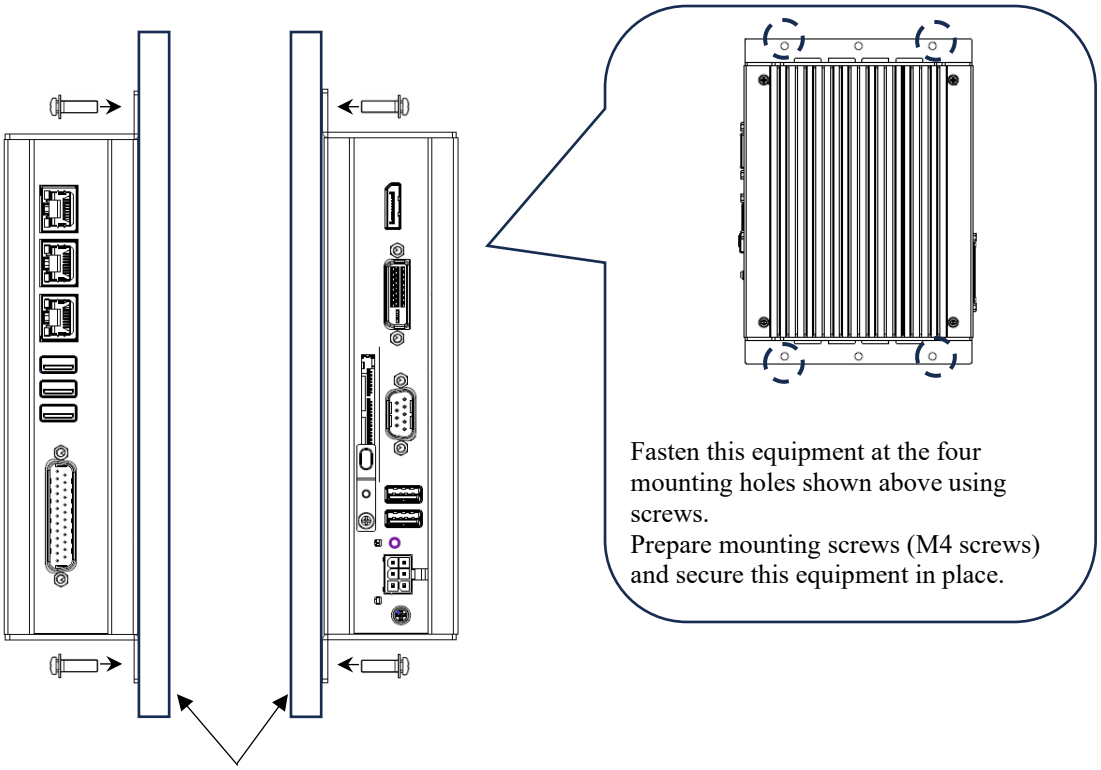
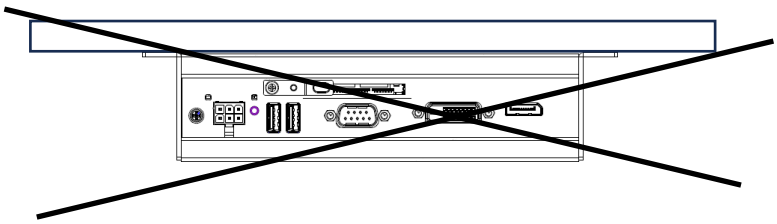


Figure 1-6 Exterior View (Vertical Installation)

<NOTE>

- When installing this equipment, ensure that vibration and shock applied to this equipment remain within the specified values (Refer to "1.5.1 Environment").
- Do not install this equipment upside down (with the bottom facing upward), as this will reduce its cooling performance.



1.6 Hardware Connection

⚠ CAUTION
・ When using the AC adapter supplied with this equipment, make sure to place the AC adapter body in a stable position. Depending on the installation location, the AC adapter may fall and cause injury.

NOTICE
・ Do not route interface cables or other equipment cables (such as those for a PC) near the cables connected to this equipment. Doing so may cause malfunction or failure. ・ Do not connect or disconnect interface cables while the power of this equipment and the connected device is turned on. This may cause damage due to shorting of the supply voltage. If an interface cable becomes disconnected while this equipment is powered on, shut down the OS and unplug the power cord from the DC power connector. If you unplug the power cord from the DC power connector without shutting down the OS, file contents may be destroyed. ・ If there is a cable for external contacts, be sure to connect it to the external contact connector (D-SUB). This cable may carry up to DC 40 V through a relay load. Connecting it to any other connector by mistake may cause failure.

Before making hardware connections, carefully read and fully understand “SAFETY INSTRUCTIONS” in this manual.

Connect the hardware with refer to Figure 1-7.
When using the supplied AC adapter and attached power cord, plug the power cord into an outlet after connecting the display, keyboard, and mouse to this equipment.
If the user prepares a DC power supply and DC power cord instead of using the supplied AC adapter and attached power cord, be sure to connect the ground wire to the ground terminal of this equipment after connecting the display, keyboard, and mouse, and then turn on the DC power supply.

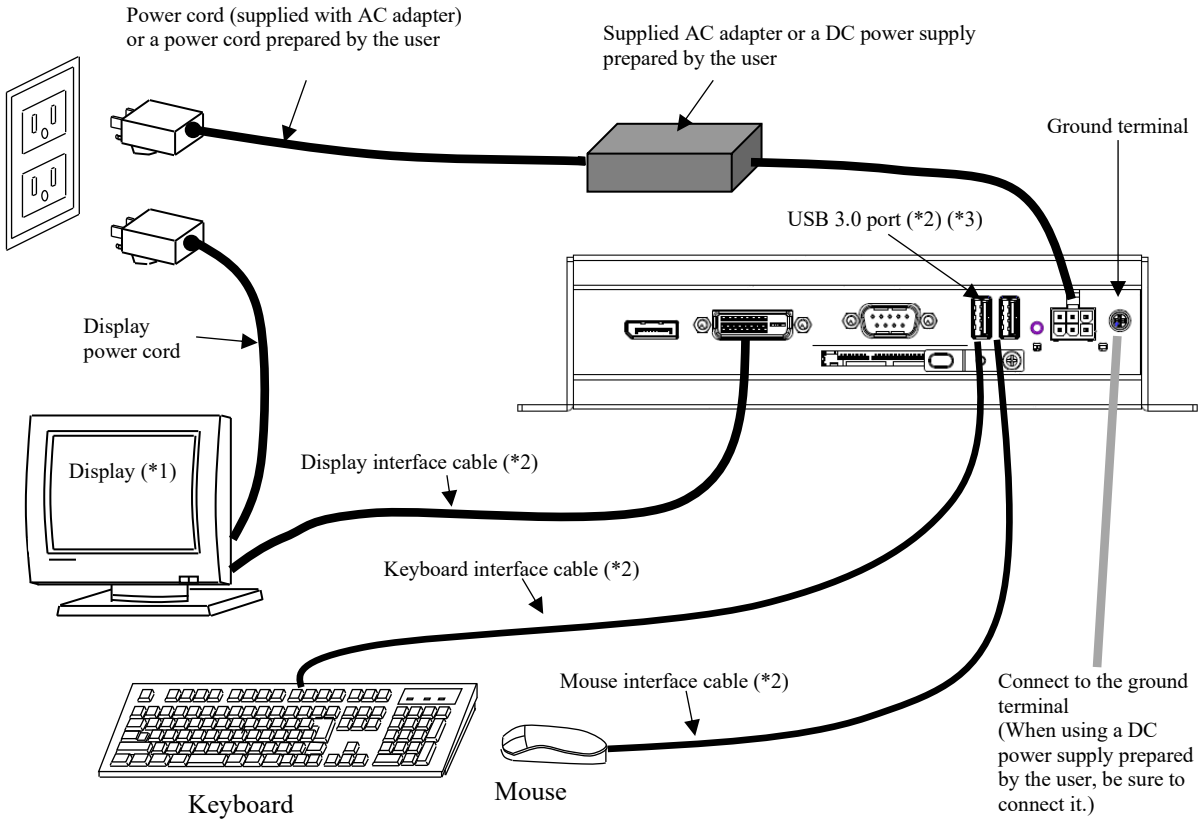


Figure 1-7 Hardware Connection

(*1) For the names of operation parts, operating procedures, and adjustment methods, refer to the instruction manual supplied with the display you are using.

(*2) For the length of each connection cable, refer to “5.5.3 External Interface Cable Length Specifications”. Connect the mouse and keyboard interface cables directly to this equipment. Do not use extension cables, as doing so may cause malfunction.

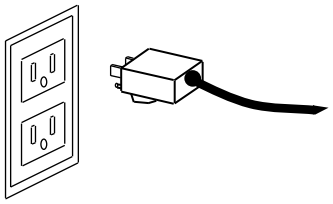
(*3) Pay attention to the orientation of the connectors when connecting USB devices. In addition, since USB ports do not have a locking mechanism by design, the connectors may come loose if the USB cable is accidentally touched. When installing this equipment, secure the USB cables as necessary.

<NOTE>

To comply with EMC standards (VCCI, FCC, CE), use shielded cables for all interface connections to this equipment (including display interface cables, keyboard interface cables, and mouse interface cables).

● Connecting to a Power Outlet (When Using the Supplied AC Adapter)

Firmly insert the plug of the power cord attached to the AC adapter into a grounded outlet.



Make sure to use a power cord with a 2-prong plug and a grounding terminal.

If you must use an outlet without a grounding terminal, use a 3-prong to 2-prong conversion adapter and be sure to connect the green grounding wire from the adapter to the outlet's ground. The conversion adapter must be one that you have verified for proper operation beforehand.

<NOTE>

The power cord supplied with the AC adapter included with this equipment or as an option is rated for 125 VAC.

If you use the AC adapter with a voltage exceeding 125 VAC, prepare a power cord that supports the input voltage you intend to use, and verify its operation thoroughly beforehand.

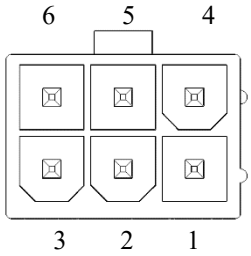
● DC Power Connector Specifications

⚠ CAUTION

If you prepare DC power supplies or power cords for this equipment on your own, do not use them beyond the specified range. Such action may cause a fire or other hazards.

When connecting a DC power supply that you have prepared to the DC power connector, verify its operation thoroughly beforehand based on the specifications below.

・DC power connector specifications (6-pin receptacle)



Fitting view

Pin No.	Signal name	Pin No.	Signal name
1	12 V-24 V	4	GND
2	N/C	5	N/C
3	12 V-24 V	6	GND

・DC power input specifications

Item	Specifications
Rated power	44 W
Rated voltage	12 to 24 VDC (10.8 to 26.4 VDC)
Rated current	12 V up to 3.6 A、24 V up to 1.8 A

・Connection cable specifications (recommended)

Part name	Specifications
Cable	UL1571/UL11352 AWG#18～24
	Flame retardant : VW-1
Housing	39-01-2065 (MOLEX)
Contact	39-00-0038 (MOLEX)

・Power rise time　　max 50 ms (at 24 VDC)

CHAPTER 2 OPERATION

2.1 Before Turning On the Power

⚠ WARNING

Failure to secure sufficient installation clearance for this equipment may cause the internal temperature to rise, resulting in fire or equipment failure. Always ensure adequate installation space (Refer to "1.5.2 Installation").

< NOTE >

When turning on the power, refer to the following:

- "PRECAUTIONS 1. Precautions About the Equipment (2) Connection Cables "
- "PRECAUTIONS 1. Precautions About the Equipment (4) Power Supply "
- "PRECAUTIONS 1. Precautions About the Equipment (5) Installation Environment"

2.2 Starting This Equipment

Follow the procedure below to start this equipment:

【When starting this equipment for the first time】

1. Turn on the display.
2. When using the AC adapter and the attached power cord, connect them to this equipment and then plug the power cord attached the AC adapter into an outlet.
   When not using the AC adapter and the attached power cord, prepare a DC power supply unit and a DC power cord on your own, connect them to this equipment, and then plug the power cord into an outlet.
   When the power cord is plugged into an outlet, the power turns on and the power lamp (☼) lights green.
3. Refer to "3.1 Initial Setup Procedure After First Power-On" and perform the setup of this equipment.
   (This operation is required only once when starting up for the first time after purchase.)

【From the second time onward, when starting this equipment】

The startup operation differs depending on the shutdown procedure. Perform either Step 1 or Step 2 below to start this equipment.

1. When the main power is OFF (power lamp is off), start this equipment by performing the operation described in "When starting this equipment for the first time" Step 2.
2. When in standby mode (power lamp is orange), press the power switch on this equipment (Refer to "1.4 Names and Functions of Each Part") to start this equipment.
3. When either Step 1 or Step 2 is performed, the power turns on and the power lamp (☼) lights green.

After these operations, this equipment automatically proceeds to the sign-in screen.
For power control using LAN, refer to "2.6 Power Control Using LAN".

2.3 Shutting Down This Equipment

When shutting down this equipment, first confirm that no users are using this equipment and that no background programs are running. Then follow the procedure below:

- Stop application programs.
- Shut down the OS.

The specific procedure for stopping an application program differs depending on the software. Refer to the manual of each software.

To shut down the OS, click the **Start** icon located at the bottom of the screen to open the Start menu.
Next, click **Power** in the Start menu, then select **Shut down**.
After the OS has shut down, the power turns off automatically, and the power lamp (☼) lights orange.

If the normal shutdown procedure cannot be executed (for example, due to a system lock or the shutdown request not being accepted), press and hold the power button on this equipment for at least 4 seconds.
The power turns off, and the equipment enters standby mode (the power lamp (☼) lights orange).
If you turn off the power by pressing and holding the power switch for at least 4 seconds, the power cannot be turned on via LAN the next time you start this equipment. Do not use this method except in emergencies (Refer to “2.6 Power Control Using LAN”).
Refer to “8.2 Collecting Memory Dumps” for information on how to collect memory dumps.

2.4 Power Shutdown

1. Confirm that this equipment is shut down (Refer to “2.3 Shutting Down This Equipment”).
2. Unplug the power cord attached to the AC adapter from the outlet, or unplug the power cord directly from the DC power connector of this equipment.

2.5 Emergency Shutdown

⚠ WARNING

If smoke, an unusual smell, or similar symptoms occur, immediately disconnect the power supply to this equipment. Remove the power cord from the DC input connector on the front of this equipment, and contact your system administrator or our sales representative. Continuing to use this equipment in a faulty state may result in a fire or electric shock.

NOTICE

- Performing an emergency shutdown (such as unplugging the power cord without shutting down the OS, unplugging the AC adapter’s power cord from the outlet, or turning off the breaker) may cause the OS or applications to malfunction or compromise the safety of stored data. Do not perform this operation except when an abnormal condition occurs and an immediate shutdown is required.
- If the power supply is cut off at the source, the system may not recover automatically. Exercise caution.

Perform a power shutdown at the power source in the following cases:

- When this equipment is abnormal and an emergency shutdown is required (such as when an unusual smell occurs).
- When the equipment cannot be shut down due to some abnormal condition.
- When repeated power interruptions occur due to overcurrent or abnormal heating, or when only auxiliary power remains on.

Also, in the following cases, unplug the power cord from the DC power connector of this equipment, unplug the power cord attached to the AC adapter from the outlet, or shut off the power at the source:

- When an abnormal temperature causes the equipment to automatically shut down for protection, leaving only auxiliary power on. In this case, after the OS starts, the OS will automatically shut down and then turn off the power (only if RAS software is installed).

2.6 Power Control Using LAN

This equipment supports the WOL (Wake on LAN) function, allowing remote startup via LAN.
This section explains how to enable the WOL function and how to perform remote startup via LAN.

In this equipment, “remote startup” refers to starting this equipment via LAN upon receiving a Magic Packet™ from the standby state (power indicator lit orange) to the normal operating state.
By default, the WOL function is disabled.

< NOTE >

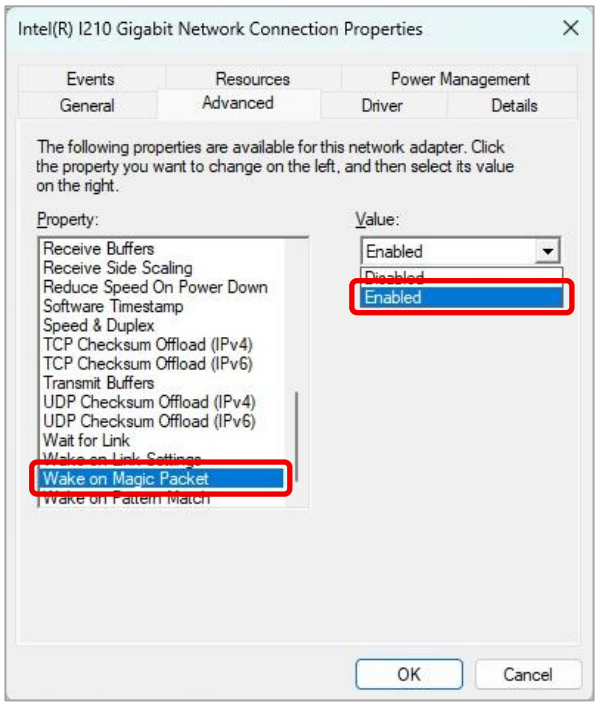
For information about the precautions for the network, refer to “PRECAUTIONS 2. Networks”.

2.6.1 Enabling the WOL (Wake on LAN) Function

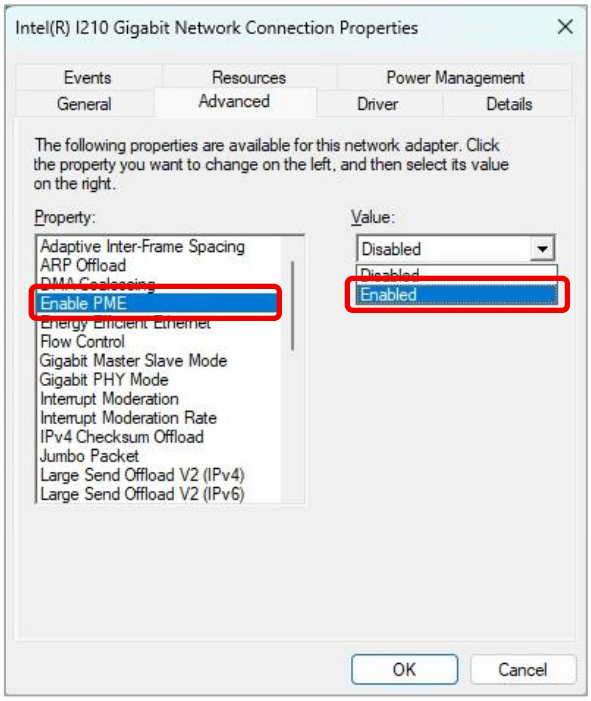
Configure whether to perform WOL when a Magic Packet™ frame is received by following the steps below.
By default, the WOL function is disabled at shipment.

1.Execute steps 1 through 5 in "2.7 Setting Up the LAN Interface (2) Setting up the network transfer speed".
2. Click the **Advanced** tab, then set the following two properties under **Property** to **Enabled**.
   - **Wake on Magic Packet**
   - **Enable PME**
3. Click the **OK** button and then restart the OS.

Wake on Magic Packet



Enable PME



2.6.2 Method for Turning On the Power Using LAN

1. Turn on the equipment and allow it to start up completely. After startup, shut down the OS to turn off the equipment. Do not disconnect the power cord from the DC power connector after turning off the power.
2. Send a Magic Packet™ to the built-in LAN adapter of the equipment. When the adapter receives the Magic Packet™, the equipment turns on and the power lamp (☼) lights green.

If you start the equipment and you want to continue to use WOL at the next startup, go through the shutdown process when you turn off the power.

The built-in LAN adapter in the equipment is compliant with WfM 2.0 (*1) to support the Magic Packet™ technology. Because of this, the power for the equipment can be turned on when a special data packet called a “Magic Packet™ frame” (*2) is received at the built-in LAN adapter.

A program for transmitting a Magic Packet™ frame does not come with the equipment.
Use a commercially available program for to transmit the Magic Packet™ frame.

(*1) Wired for Management (WfM) is a guideline regarding the hardware specifications proposed by Intel Corporation for managing PCs on a network.
(*2) The Magic Packet™ technology has been proposed by Advanced Micro Devices, Inc. and can be starting a PC on a network from a remote device.

< NOTE >

- When you send a Magic Packet™ frame to the equipment, make sure you send it to the built-in LAN adapter in the equipment. (For information about the location of the connector, refer to “1.4 Names and Functions of Each Part”.)
- If you turn off the power by pressing the power button for at least four seconds, you cannot use WOL the next time. When you turn off the power by pressing the power button for at least four seconds, turn on the equipment by pressing the power button and go through the shutdown process to turn off the power.

< Contents of Magic Packet™>

The Magic Packet™ must satisfy the basic conditions of the LAN in use, such as SOURCE ADDRESS, DESTINATION ADDRESS (including the MULTICAST ADDRESS that contains the receiver's MAC address or BROADCAST ADDRESS), and CRC.

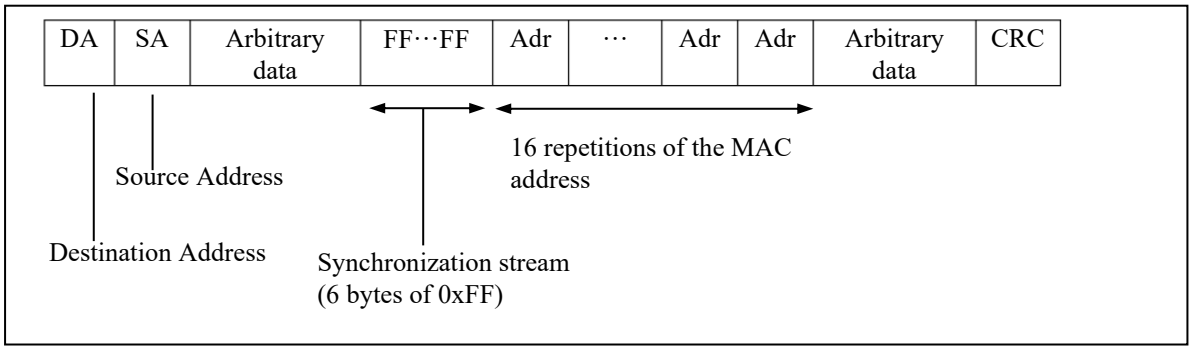
The data of a Magic Packet™ consists of a sequence of 16 repetitions of the node's MAC address.

This sequence can be anywhere in the packet but it must follow a synchronization stream.

The synchronization stream is defined as 6 bytes of 0xFF.

If the MAC address repeated 16 times matches the address of this equipment to be started, this equipment will also accept BROADCAST frames.

A Magic Packet™ is shown in the following figure.



2.7 Setting Up the LAN Interface

This equipment has three built-in 1000BASE-T / 100BASE-TX / 10BASE-T LAN ports. For the location of the LAN port connector (1000BASE-T / 100BASE-TX / 10BASE-T), refer to “1.4 Names and Functions of Each Part”.

< NOTE >

For precautions regarding the network, refer to “PRECAUTIONS 2. Networks”.

(1) Automatic Recognition of Network Transfer Speed or Transfer Mode

The LAN ports support auto-negotiation, which automatically detects the appropriate network transfer speed and mode. Normally, use the auto-negotiation setting for standard operation. When using the WOL function, set it to auto-negotiation.

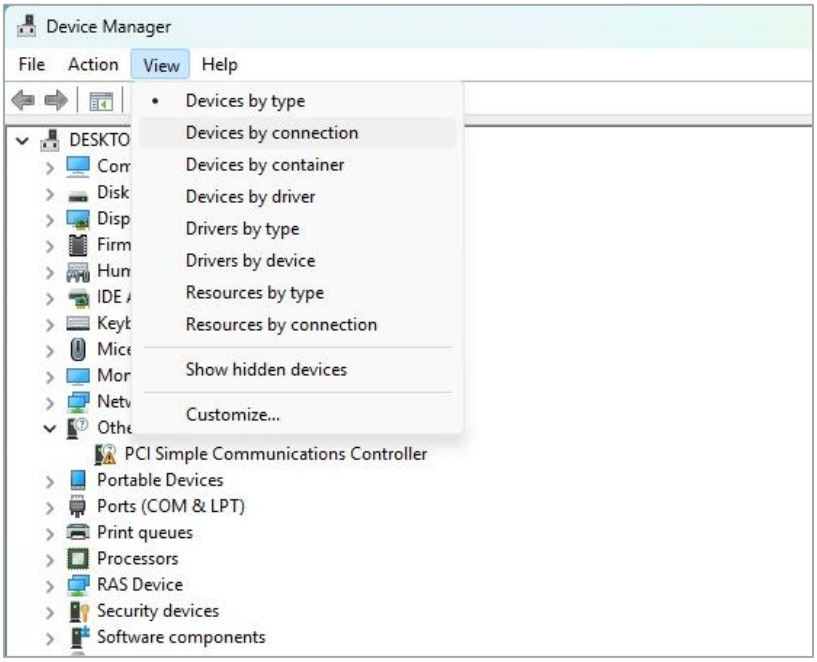
However, depending on the compatibility with the connected hub, the auto-negotiation function may not operate correctly and may adversely affect communication with other devices.

If the auto-negotiation function does not operate correctly, configure the LAN interface as described below.

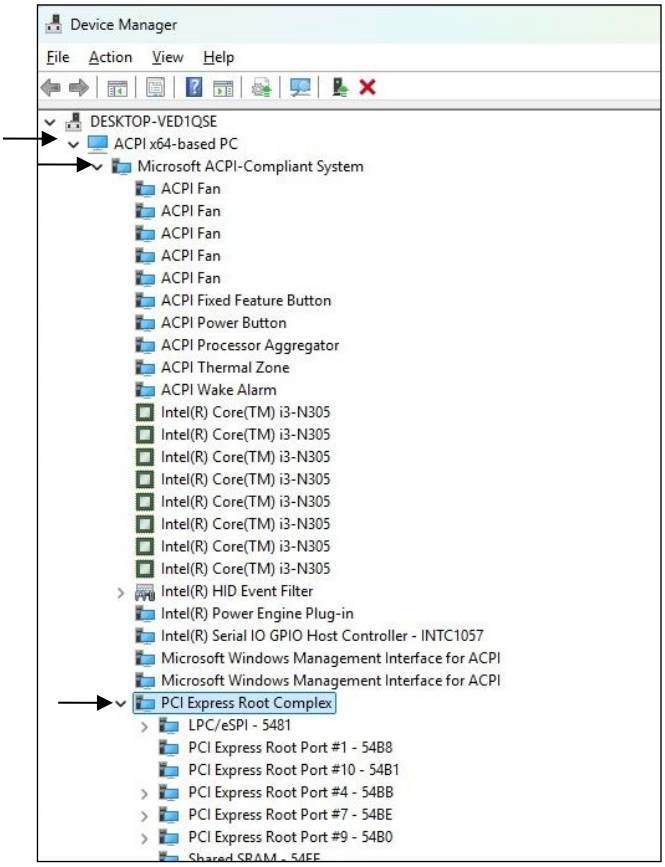
Specification of the hub	Specification of the LAN setting	
	Speed	Duplex
10 Mbps / Half-duplex	10 Mbps	Half Duplex
10 Mbps / Full-duplex	10 Mbps	Full Duplex
100 Mbps / Half-duplex	100 Mbps	Half Duplex
100 Mbps / Full-duplex	100 Mbps	Full Duplex
1000 Mbps	1000 Mbps (1.0 Gbps)	Full Duplex

(2) Setting the Network Transfer Speed

1. Sign in to the computer by using an administrator account.
2. Right-click the **Start** menu, and then click **Device Manager**. The **Device Manager** window appears.
3. Click the **View** menu, and then select **Devices by connection**.



4. Click **ACPI x64-based PC**, **Microsoft ACPI-Compliant System**, and **PCI Express Root Complex**.



5. Refer to the following and double-click the network adapter that you want to configure. The **Network Connection Properties** window appears.

Configuring the LAN1):

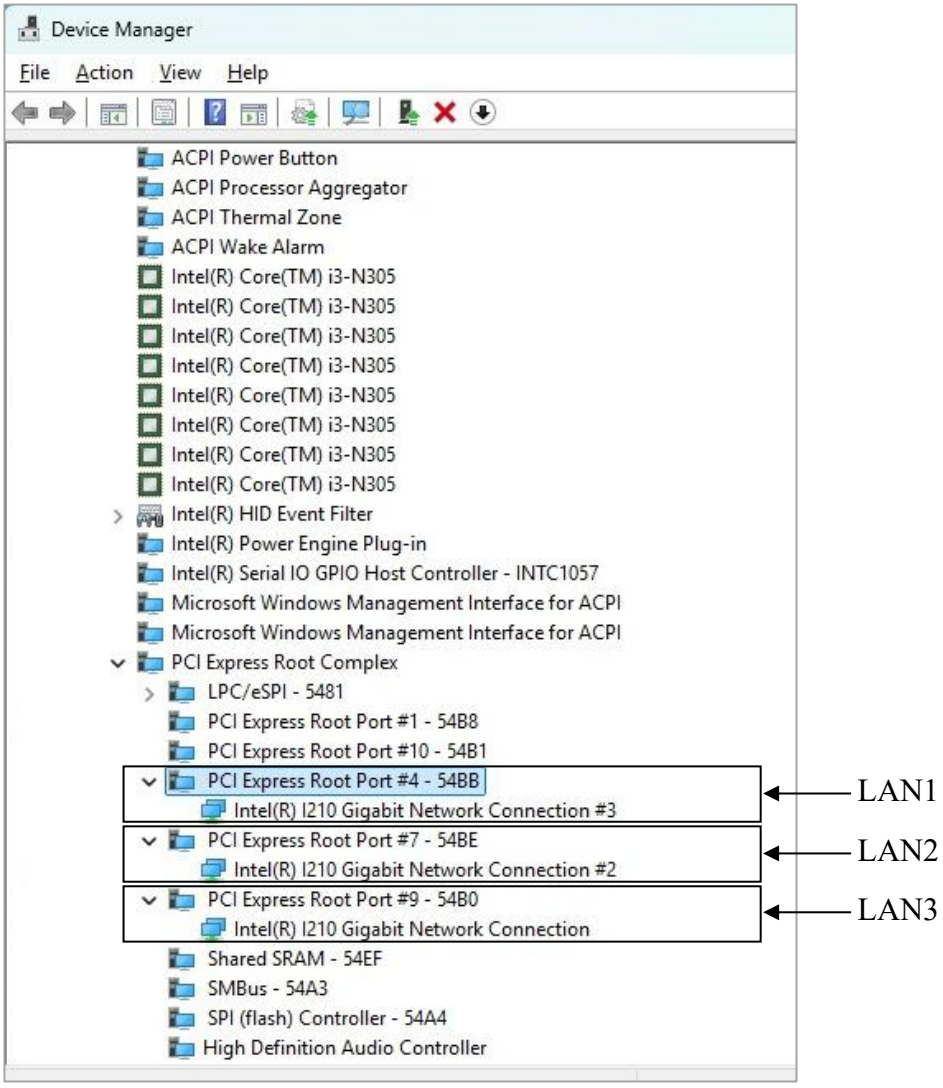
Click **Intel(R) PCI Express Root Port #4 – 54BB**, then double-click the network adapter displayed beneath it (in the example below, Intel(R) I210 Gigabit Network Connection #3).

Configuring the LAN2:

Click **Intel(R) PCI Express Root Port #7 – 54BE**, then double-click the network adapter displayed beneath it (in the example below, Intel(R) I210 Gigabit Network Connection #2).

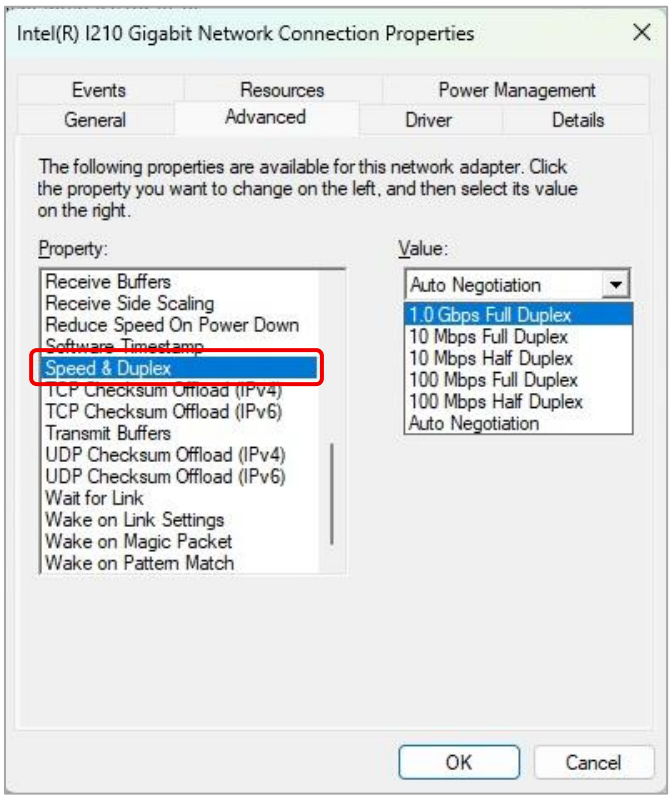
Configuring the LAN3:

Click **Intel(R) PCI Express Root Port #9 – 54B0**, then double-click the network adapter displayed beneath it (in the example below, Intel(R) I210 Gigabit Network Connection).



The above display names differ depending on the OS or the version of the LAN driver you are using.

6. Click the **Advanced** tab, and from the **Property** drop-down menu, select **Speed & Duplex**.



7. From the drop-down menu of **Value**, select the desired transmission speed and duplex mode.
   The drop-down menu may display **2.5 Gbps Full Duplex** as an option, but selecting this will result in **1.0 Gbps Full Duplex**.
   Select the transfer speed and duplex mode under **Speed & Duplex** in the **Property** field:

   - Auto Negotiation : Auto-negotiation setting
   - 10 Mbps Half Duplex : 10 Mbps, half-duplex setting
   - 10 Mbps Full Duplex : 10 Mbps, full-duplex setting
   - 100 Mbps Half Duplex : 100 Mbps, half-duplex setting
   - 100 Mbps Full Duplex : 100 Mbps, full-duplex setting
   - 1.0 Gbps Full Duplex : 1.0 Gbps, full-duplex setting

If you do not need to set the transfer speed or duplex mode, select **Auto Negotiation** at the bottom of the drop-down menu to enable auto-negotiation.

8. Click **OK**.
9. Close the **Device Manager** window.

< NOTE >

- For network-related precautions, refer to " PRECAUTIONS 2. Networks ".

(3) When the 1000 Mbps Link Is Unstable

Depending on the type of connected hub, the link might not be stable at 1000 Mbps.

If you want to use the network at 1000 Mbps, verify the connection with the hub in advance.

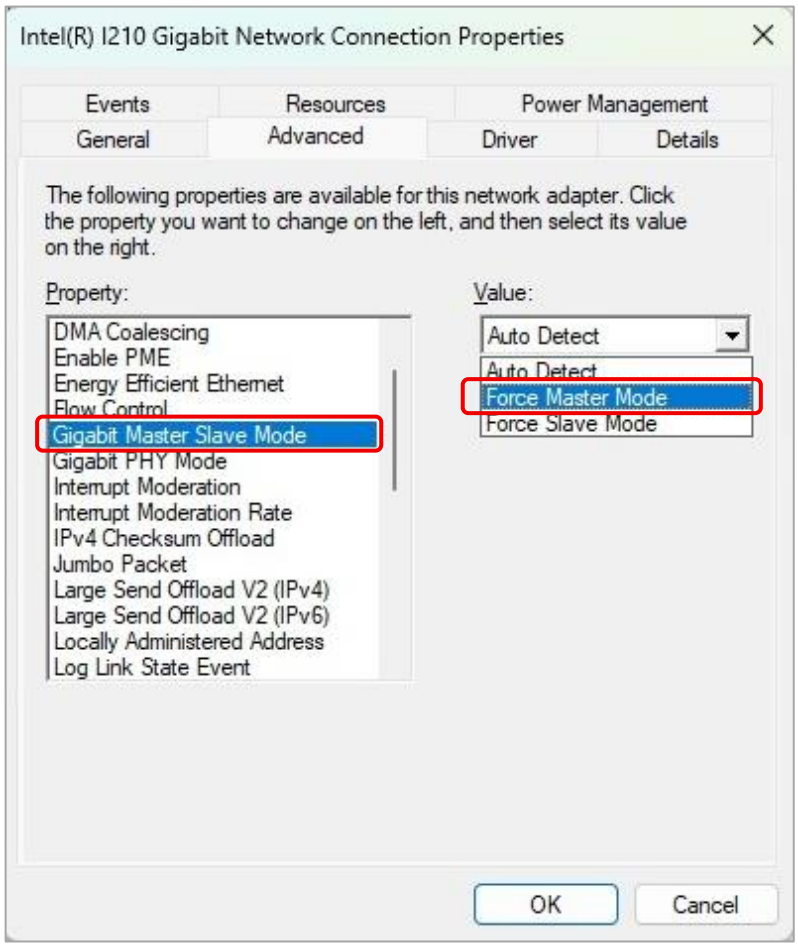
If the link is unstable at 1000 Mbps, you can stabilize it as follows:

- Connect using a cable that is 20 m or longer but less than 100 m (use UTP Category 5e or higher).
- Fix the master-slave mode to Master (effective only when set to 1000 Mbps).

The procedure for fixing the master-slave mode to Master is as follows.

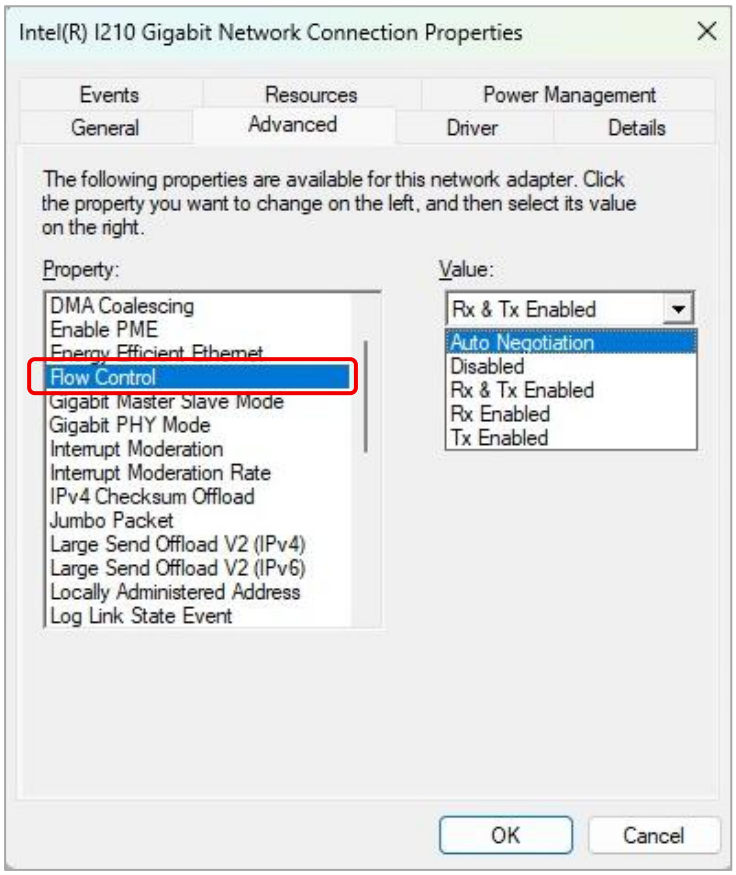
Note that depending on the type of hub, the link may fail. In that case, return the setting to **Auto Detect**.

1. Execute steps 1 through 5 in "(2) Setting the Network Transfer Speed ".
2. Click the **Advanced** tab, and select **Gigabit Master Slave Mode** from the **Property (P):** list.
3. From the **Value (V):** drop-down menu, select **Force Master Mode**.
4. Click **OK**, and then restart the OS.



(4) Flow Control

Configure the adapter's flow control frame generation and response functions, which help manage network traffic. Note that the default flow control settings vary depending on the OS and the type of LAN adapter used. Please configure them according to the network environment in use.

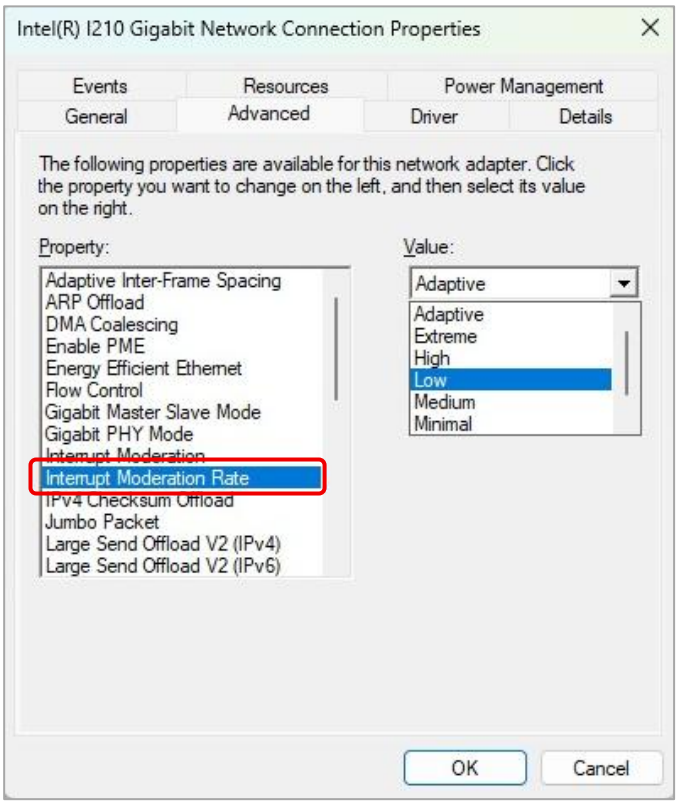


< NOTE >

- If a system failure such as an OS lock occurs and the LAN driver stops functioning, this equipment may become unable to process broadcast frames or other traffic from other devices. As a result, the receive queue may reach its limit.
  In such situations, if **Flow Control** is set to **Rx Enabled** or **Rx & Tx Enabled**, this equipment will continuously transmit flow control frames.
  This may affect the entire connected network. If necessary, set **Flow Control** to **Disabled** on this equipment or on the connected hub.
- If **Flow Control** is set to **Disabled**, and this equipment receives frames that exceed its processing capacity, it may enter an overload state.
  In this state, incoming frames will be discarded until the overload condition is resolved.
  Therefore, ensure proper network design to prevent this equipment from entering an overload state.

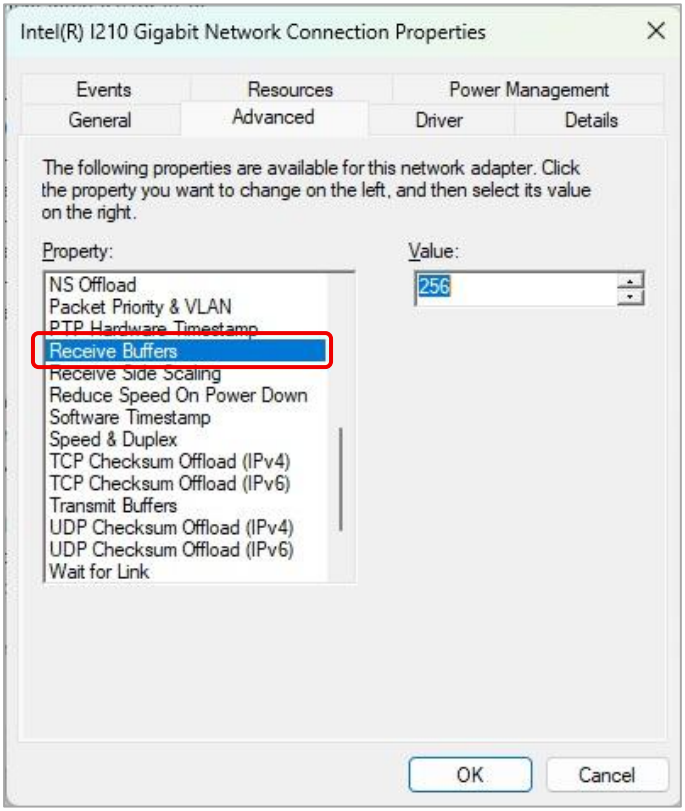
(5) Interrupt Moderation Rate

Configures the rate at which the controller reduces or delays the generation of interrupts.



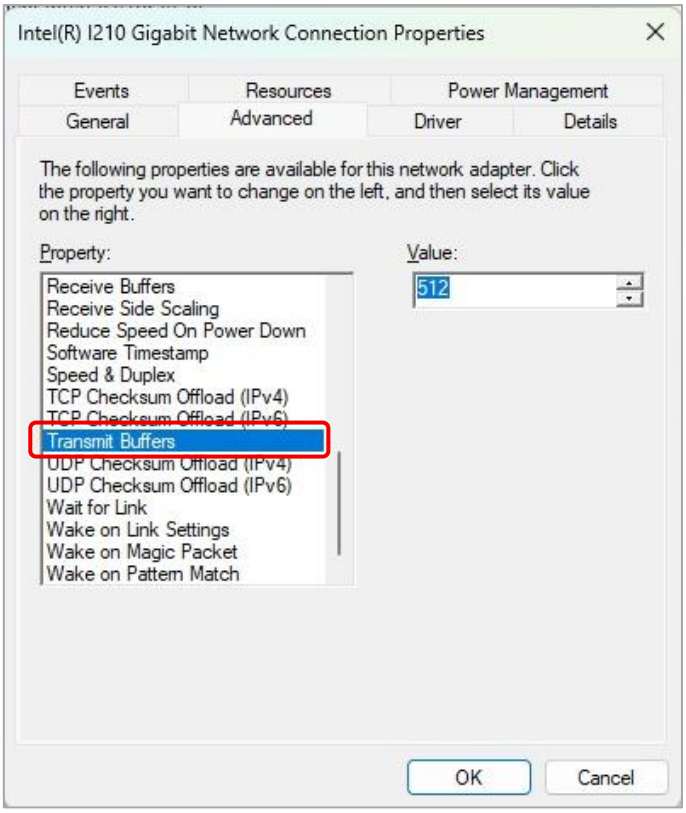
(6) Receive Buffers

Configures the number of receive buffers that the adapter uses when copying data to memory.



(7) Transmit Buffers

Configures the number of transmit buffers that the adapter uses when copying data to memory.



(8) Notes About Cases Where a Link-Down Is Recorded in the Log During OS Startup

While Windows® is starting, the following warnings may appear in the event log. These warnings are recorded during the LAN driver initialization process at Windows® startup and do not affect system operation.

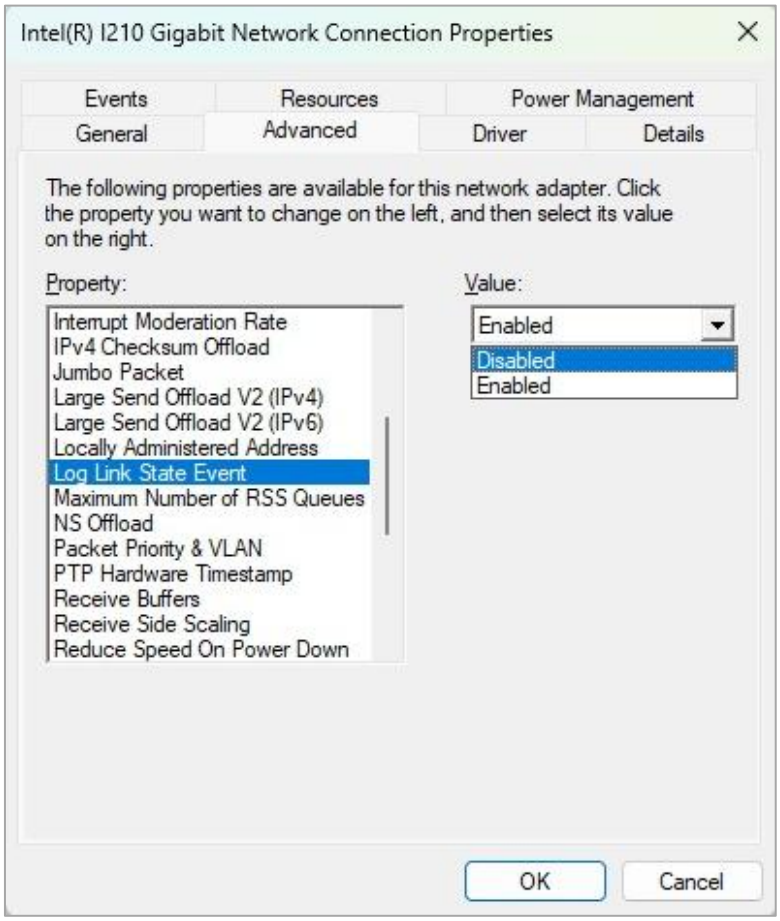
Event ID	Source	Type	Category	Description
27	e1rexpress	Warning	None	Intel(R) I210 Gigabit Network Connection Network link is disconnected. (*1)

(*1) The displayed content differs depending on the OS.

You can prevent these warnings from being displayed in the event log by changing the LAN adapter settings using the following procedure.

Note that if you apply this setting, logs of LAN connection and disconnection during system operation will also not be recorded, which may make troubleshooting difficult in the event of a failure.

1. Execute steps 1 through 5 in "(2) Setting the Network Transfer Speed ".
2. Click the **Advanced** tab, then select **Log Link State Event** under **Property**.
3. From the **Value** drop-down list, select **Disabled**.



2.8 Setting Up the Screen

For the screen settings, you can configure the color depth (the number of colors that the screen can display at the same time), the resolution (the number of pixels that make up the screen), the refresh rate (the number of times the screen is refreshed per second), and the single-display and multiple-display settings.

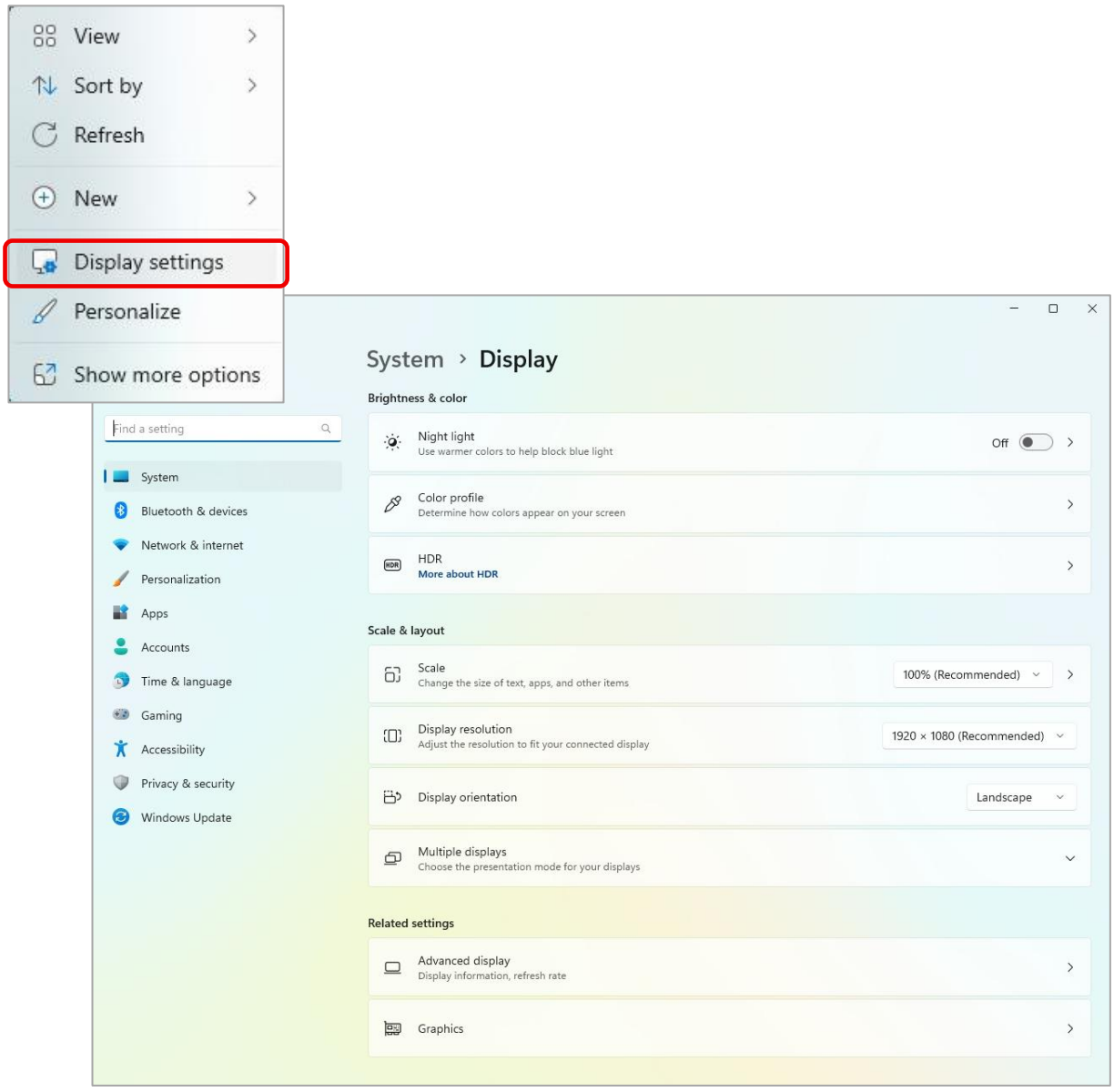
< NOTE >

・ For information about the precautions that apply to the screen, refer to "PRECAUTIONS 3. Display Screens".

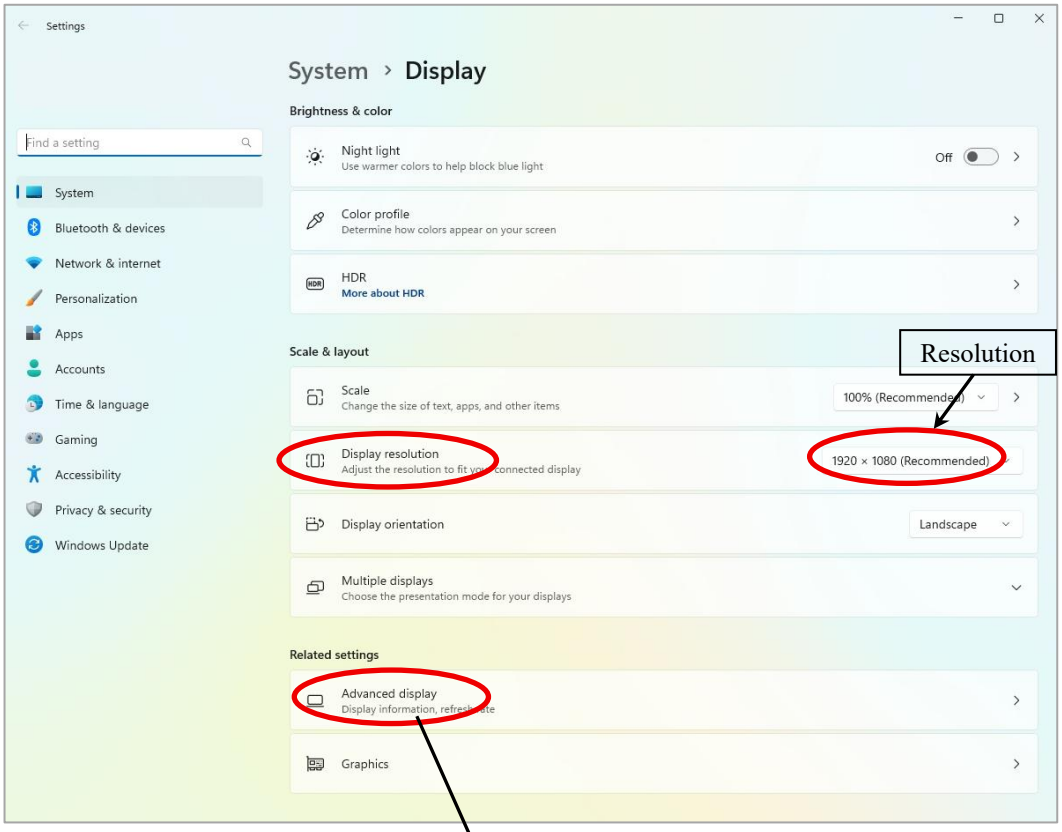
2.8.1 Configuring Screen Settings for a Single Display

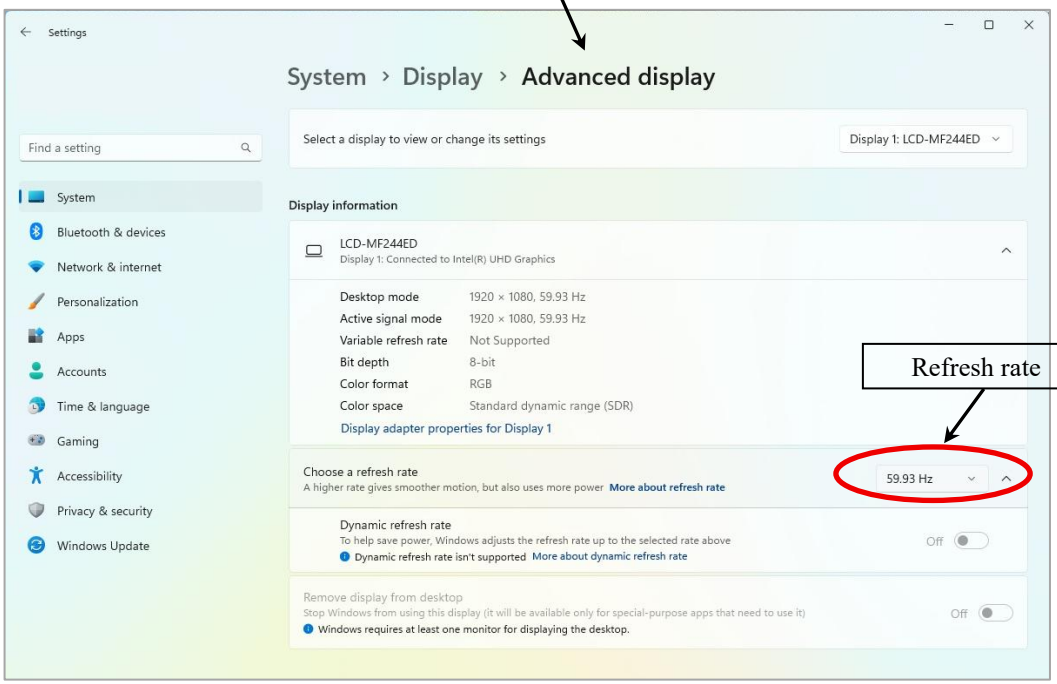
When a single display is connected, execute the following procedure to configure the screen settings:

1. Right-click on the desktop, and then click **Display settings** from the context menu that appears.



2. Configure each item in the Display settings screen.

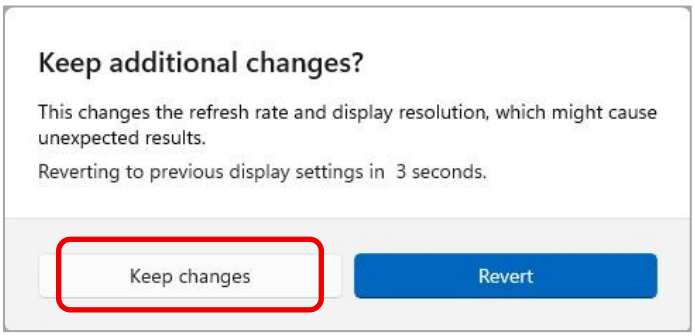




< NOTE >

- Do not change the rotation and scaling settings.
- When configuring the resolution and refresh rate, you must choose from the options described in "(5) Supported Resolutions" under "5.1 Equipment Specifications".

3. If you change the resolution or refresh rate, the following confirmation screen appears. Click **Keep changes**.



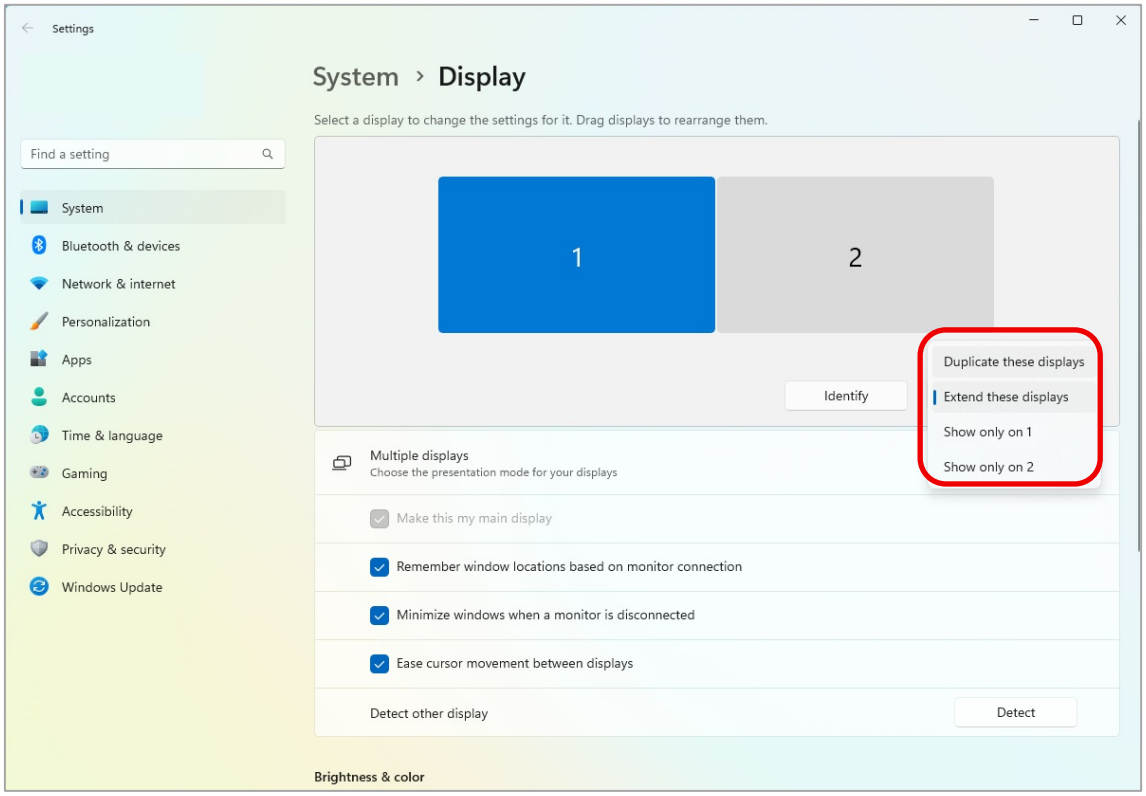
< NOTE >

- The available resolutions include values larger than those supported by the connected display.
- If you set a resolution larger than the maximum resolution supported by the display, the display will black out.
- After installing the driver, the resolution will be set to the maximum resolution supported by the connected display. When changing the resolution, select a resolution smaller than the maximum resolution.

2.8.2 Configuring Screen Settings for Multiple Displays

When multiple displays are connected, multi-display output can be enabled to show content simultaneously. Configure the multi-display settings using the following procedure:

1. Right-click on the desktop, and then click **Display settings** from the menu that appears.
2. Click **Multiple Displays**, and then configure the multi-display settings.



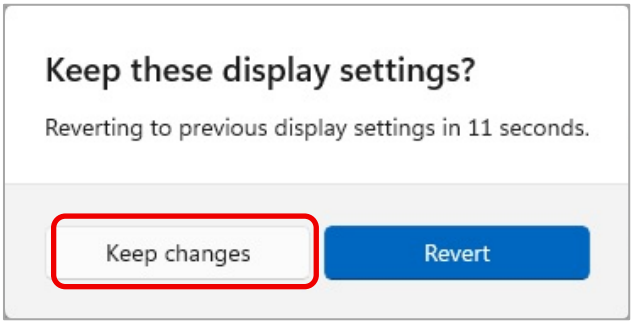
< NOTE >

The DisplayPort multi-streaming feature (daisy-chaining) is not supported.

Types of settings under **Multiple displays**. (Some settings may not appear depending on the number of connected displays.)

Setting item	Description
・Extend desktop to this display ・Extend the display	The desktop will be extended across all connected displays, including additional displays other than the main display.
・Duplicate the display ・Duplicate the desktop on displays 1 and 2	The same content as the main display will be shown on the additional display(s).
・Show only on display 1	Nothing will be displayed on display 2.
・Show only on display 2	Display 2 will become the main display, and nothing will be shown on display 1.

3. When the confirmation screen for the setting items appears, click **Keep changes**. This setting enables multi-display output.



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CHAPTER 3 SETUP

3.1 Initial Setup Procedure After First Power-On

3.1.1 Setting up Windows® 11

This section provides set up instructions for the preinstalled Windows® 11.

- Configure the basic Windows® 11 settings.
- RAS features are automatically set up.
- The setup procedure takes about 20 minutes.

- Preparing for setup

  The following items are required during the setup procedure. Prepare or confirm them before starting the setup.
  In addition, perform the setup procedure described in this section by using the hardware configuration as shipped.

License certificate	Verify that the license certificate is attached to the body of the computer.
Username	The username for the administrator account of the computer. It can be changed later in Control Panel.
Password	The user password. It can be changed later in Control Panel.

- Windows® 11 setup procedure

  Follow the steps below to set up Windows® 11:

  1. Turn on this equipment. Windows® starts and prepares setup.
     - These processes may take several minutes. Please wait.
     - After restarting, the setup continues.

  <NOTE >

  Restarting is performed automatically. Do not turn off the power of this equipment during setup.

  2. The window for selecting the language to use appears.
     - Select the language to use and click **Continue**.
  3. The window for selecting the country or region in appears.
     - Select the country or region and click **Yes**.

  <NOTE >

  The initial time zone setting for this equipment is “Osaka, Tokyo, Sapporo.”
  If you select a country other than Japan in step 3 or change the time zone after setup is complete, the system time of this equipment will be adjusted by the time difference from “Osaka, Tokyo, Sapporo.”

4. The window for confirming the keyboard layout appears.
   - Confirm the displayed keyboard layout and click **Yes**.
5. The window for adding a second keyboard layout appears.
   - To add, click **Add layout**, select the keyboard layout to use, and click **Next**.
   - To skip, click **Skip**.
6. The window for connecting to a network appears.
   - Click **I don't have Internet**.
   - After restarting, the setup continues.
7. The window **Please review the license agreement** appears.
   - Review the displayed content and click **Accept**.
8. The window **Who's going to use this device** appears.
   - Enter the user name in **Name** and click **Next**.
9. The window **Create a password** appears.
   - Enter the password in **Password** and click **Next**.
   - When the screen **Confirm your password** appears, enter the password in **Confirm password** and click **Next**.

<NOTE >

On the window **Create an account for this PC**, even if Japanese is selected as the language to use, Windows® uses the default English keyboard layout.
Therefore, Japanese input is not available when using a Japanese keyboard, and symbols or special characters may differ from the printed keys on the Japanese keyboard.
If you want to use Japanese characters, symbols, or special characters for the username, password, or password hint, temporarily set them using alphanumeric characters, complete the setup, and then reconfigure them after setup is finished.

10. The window **Choose privacy settings for your device** appears.
    - Select **Yes** or **No** for each setting as needed, and click **Accept**.
11. After setup is complete, the system automatically signs in.

The setup then continues. The messages **Windows® System Assessment Tool** and **Please wait. The system will restart automatically.** appear in sequence. Wait until the process finishes.
The system restarts. These processes may take several minutes.

<NOTE >

The desktop background image is randomly selected from several patterns.

This completes the Windows® 11 setup. After this, follow the steps in "3.2 Configuring Basic Settings After OS Setup" to configure the basic OS settings.

3.2 Configuring Basic Settings After OS Setup

3.2.1 Basic Settings for Windows® 11

This section provides setup instructions for the preinstalled Windows® 11.
Execute this procedure as required after setting up the OS as described in "3.1 Initial Setup Procedure After First Power-On".

3.2.1.1 Overview of the basic settings procedure

LAN interface settings → Refer to "2.7 Setting Up the LAN Interface".

Video display settings → Refer to "2.8 Setting Up the Screen".

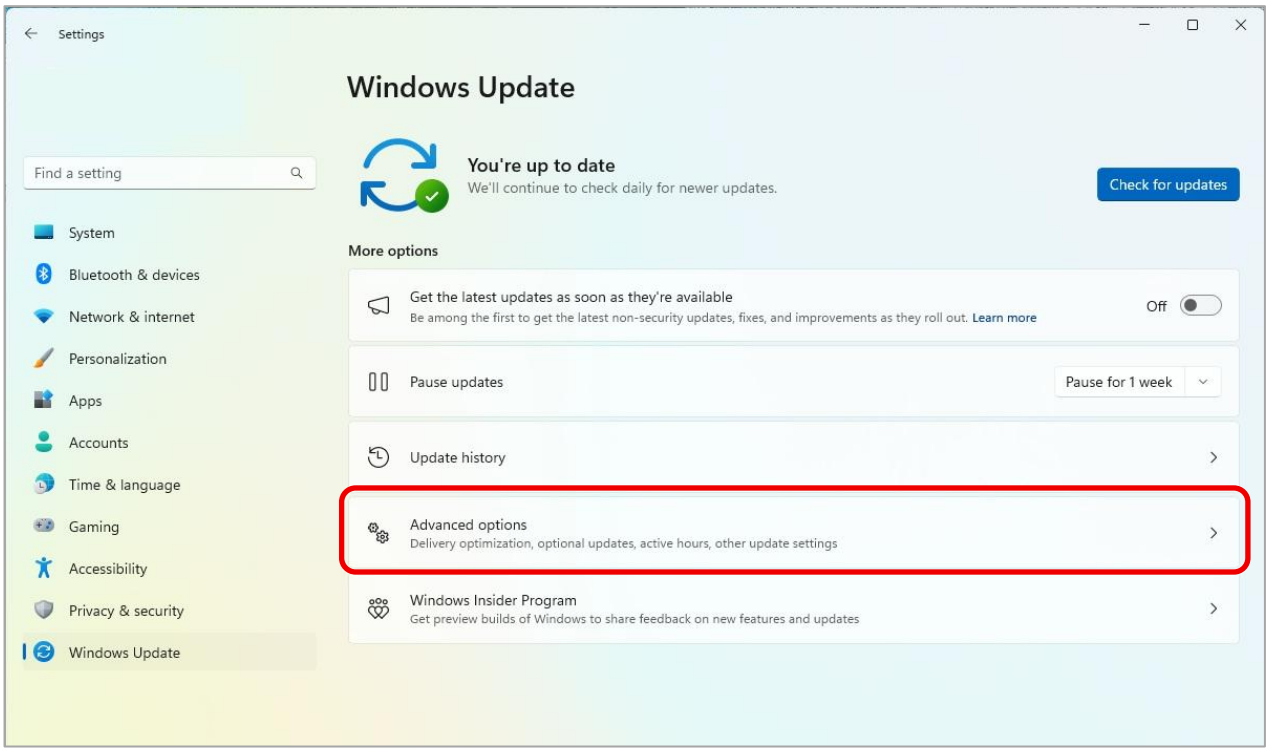
Automatic update settings → Refer to "3.2.1.2 Setting Up Automatic Updates".
- This procedure takes about 5 minutes.

3.2.1.2 Setting Up Automatic Updates

Windows® 11 is configured to automatically apply updates delivered by Windows Update. System and application updates are checked regularly and are automatically downloaded and installed.

To configure automatic updates, perform the following steps:

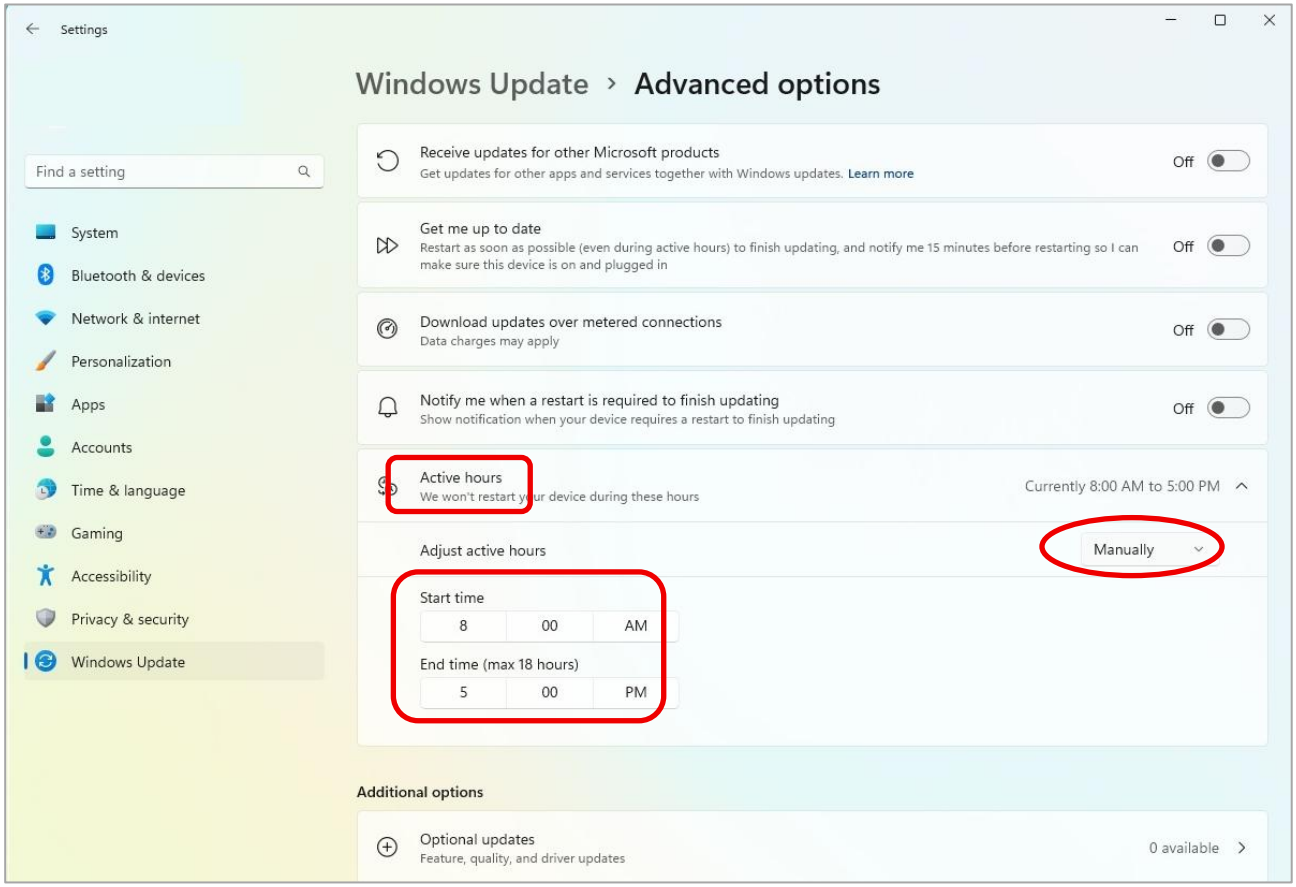
1. Click **Start**, and then click **Settings** from the displayed menu.
2. Click **Windows Update**.
3. Click **Advanced options** to display the Advanced options screen.



The Advanced options for automatic updates in Windows® 11 include the following item:

(1) Changing active hours

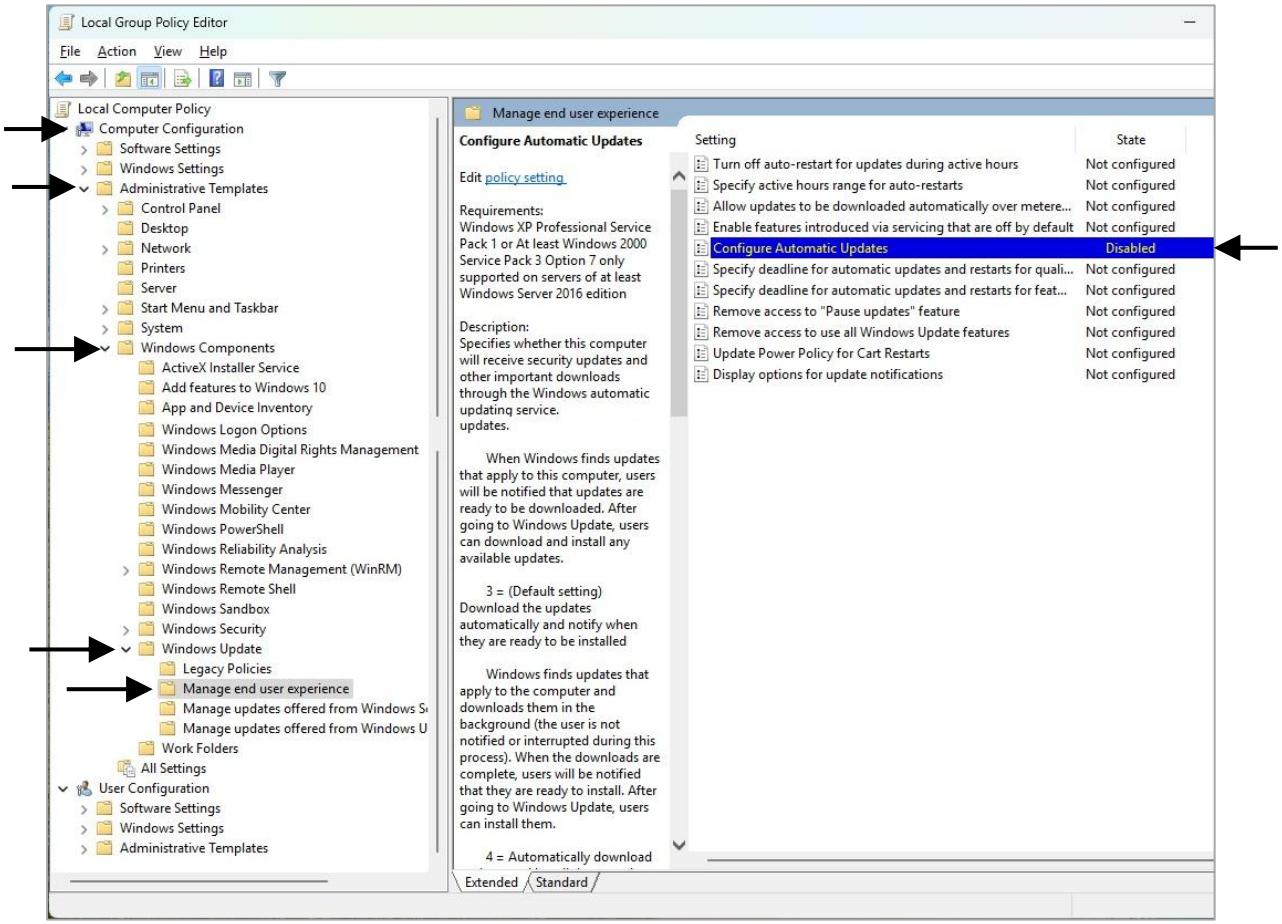
Downloads and installation will be performed automatically, but the system will not restart during active hours. A restart is scheduled outside of active hours. Configure this setting according to your usage environment.



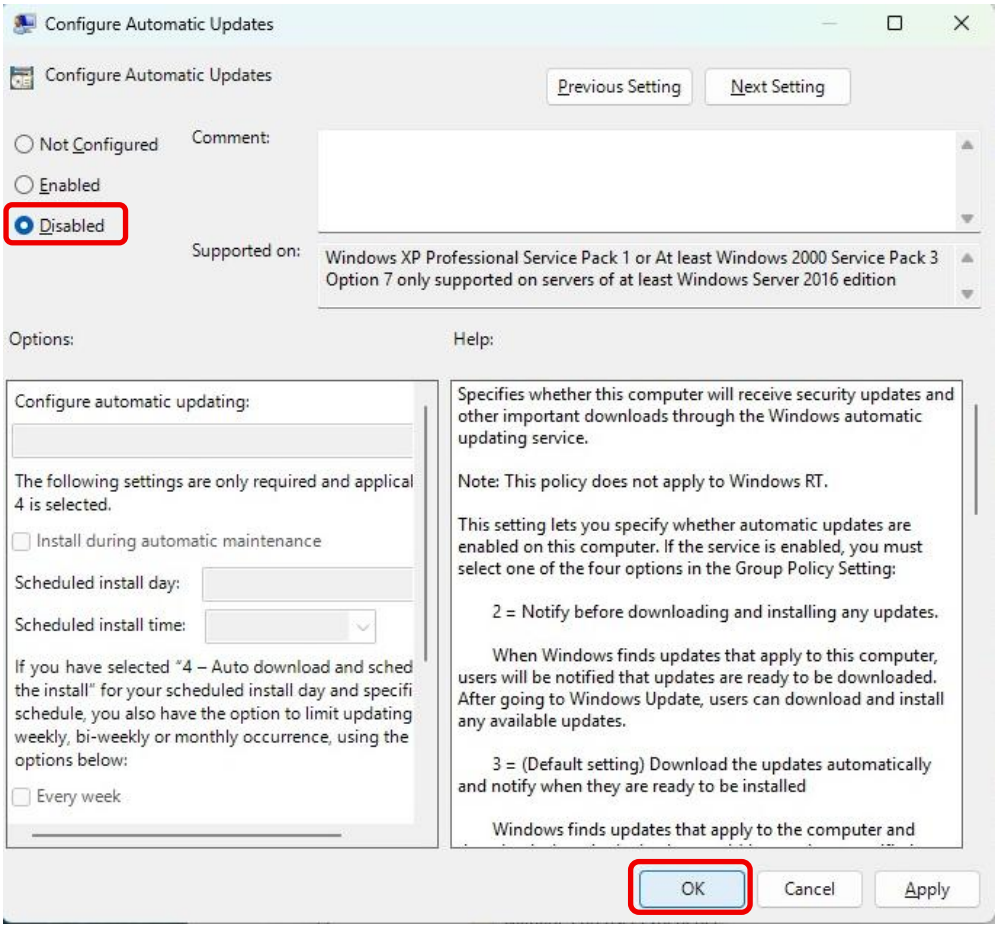
<Configuring Windows Update for Manual Updates>

If you do not want updates to be automatically download and install updates, you can configure Windows Update for manual updates by using the Local Group Policy Editor (gpedit.msc). Perform the following steps to configure Windows Update for manual updates.

1. Sign in to the computer with an administrator account.
2. Right-click **Start**, and then click **Run**.
3. In the **Run** dialog box, enter **gpedit.msc** to start the **Local Group Policy Editor**.
4. In the **Local Group Policy Editor**, open the following path:
   Computer Configuration → Administrative Templates → Windows Components → Windows Update → Manage end user experience → Configure Automatic Updates.



5. In the **Configure Automatic Updates** window, select **Disabled**, and then click **OK**.



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CHAPTER 4 PRECAUTIONS WHILE THE OS IS RUNNING

4.1 Event Log Entries During Setup

This equipment may record the following event logs during OS setup, but they do not affect system operation.

Table 4-1 Error and warning event logs (during setup)

Source	Event ID	Type
Search-ProfileNotify	2	Error
SecurityCenter	16	Error
volmgr	46, 49	Error
Service Control Manager	7000, 7009, 7022, 7023, 7024, 7038, 7043	Error
Bits-Client	16392	Error
SideBySide	33	Error
DistributedCOM	10005	Error
HAL	21	Error
Search	1008	Warning
e1rexpress	27	Warning
Kernel-PnP	219	Warning
User Profiles Service	1534	Warning
Winlogon	6005, 6006	Warning
AppModel-State	23, 24	Warning

Event ID: 7009, 7023

These events may also be recorded outside OS setup; however, there is no issue as long as they are not logged intermittently.

Event ID: 33

This event may be recorded during the installation process of RAS software in OS setup, but it does not affect system operation. This event log may also be recorded when reinstalling the RAS software.

Event ID: 6005, 6006

There is no issue as long as both events are recorded.

4.2 Event Log Entries While OS is Running

This equipment may record the following event logs while OS is running; however, this does not affect system operation.

Table 4-2 Error and Warning Event Log (while OS is running)

Source	Event ID	Type
DistributedCOM	10010	Error
Search	3104	Error
iANSMiniport	11, 16	Error
CertificateServicesClient-CertEnroll	86	Error
Security-SPP	16398	Error
TPM-WMI	1796	Error
Security-SPP	1014, 8198, 8200	Warning
DistributedCOM	10016	Warning
Wininit	15	Warning
e1rexpress	27	Warning
Time-Service	134	Warning
Search	3036	Warning
Windows Remote Management	10149	Warning
Service Control Manager	7023	Warning
AppModel-State	23, 24	Warning
TPM-WMI	1800	Warning

4.3 Functions Scheduled by Default

In Windows®, various functions are scheduled by default and executed periodically in the background. Among these functions, drive optimization (defragmentation) may impose a significant load on the system when executed and could affect the operation of business applications as well as the lifespan of SSDs.

(1) Drive Optimization

On this equipment, the drive optimization schedule is disabled by default. To optimize drives, use one of the following methods:

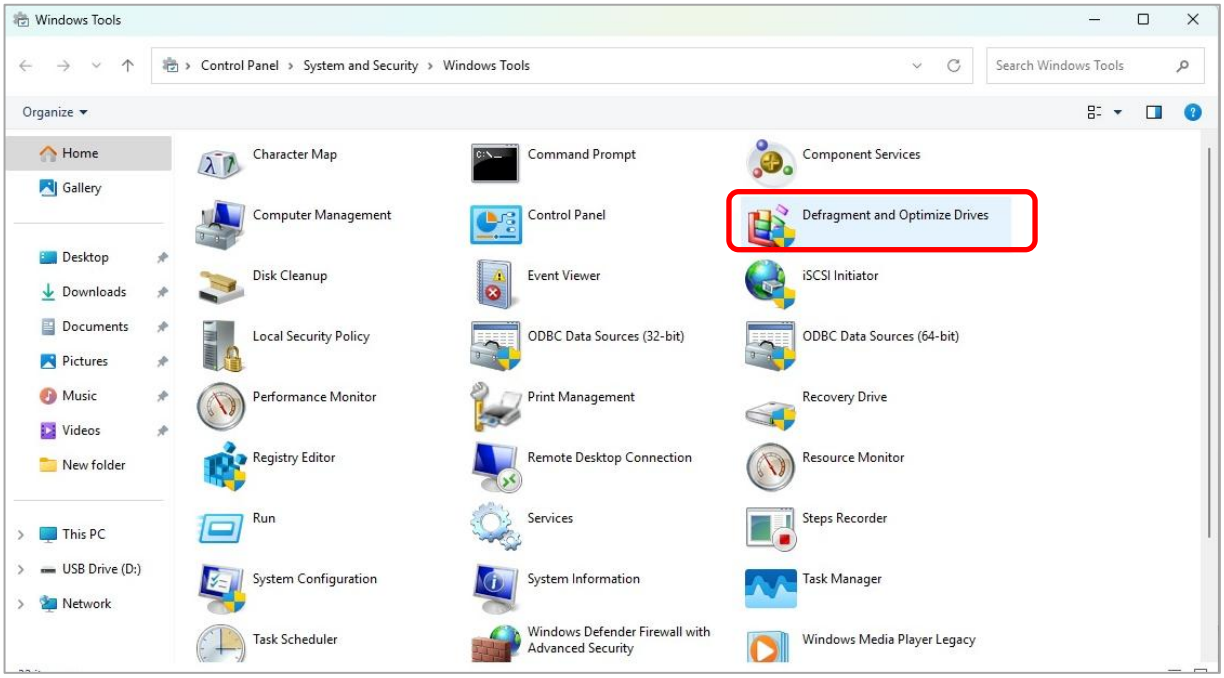
(a) Enable the drive optimization schedule

(b) Execute drive optimization manually

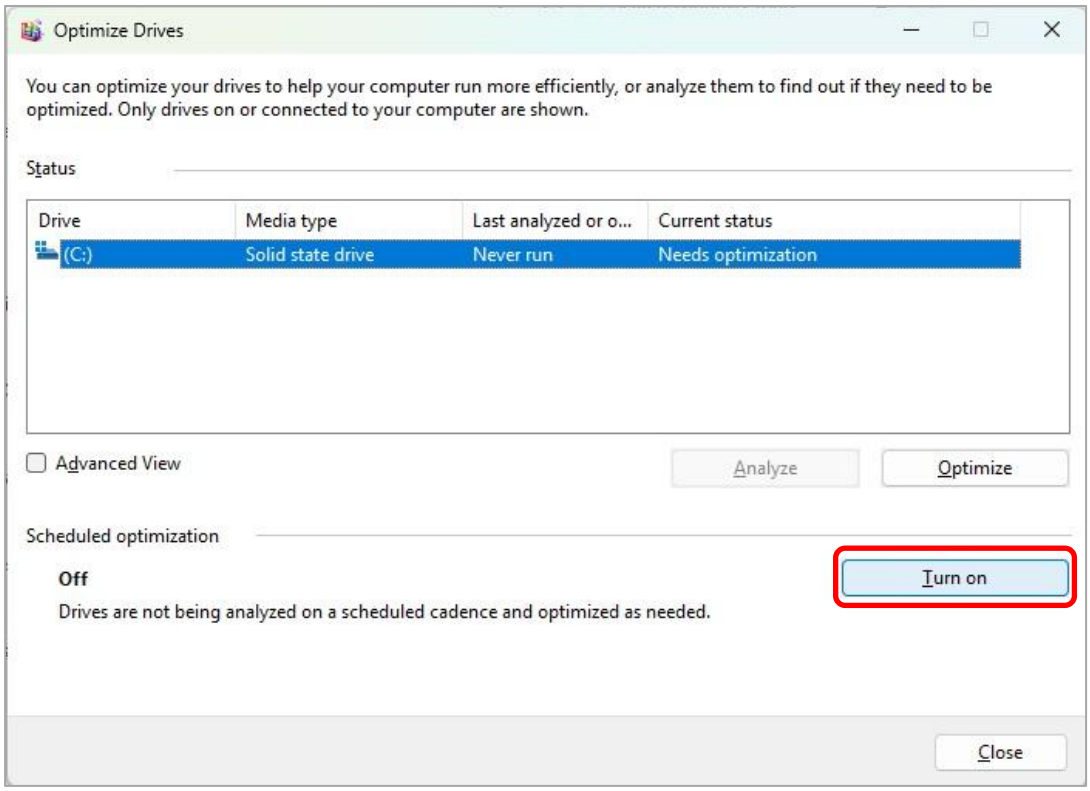
The following sections describe each procedure.

(a) Enable the Drive Optimization Schedule

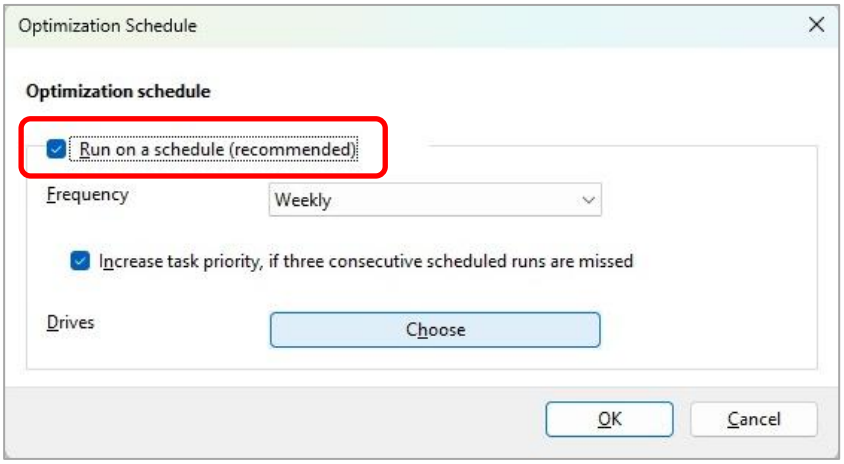
1. Sign in as a computer administrator and open the **Control Panel**.
2. Click **System and Security**, then select **Windows Tools**.
3. Under **Administrative Tools**, click **Defragment and Optimize Drives**.



4. In the **Optimize Drives** window, click **Turn on** under **Scheduled optimization**.



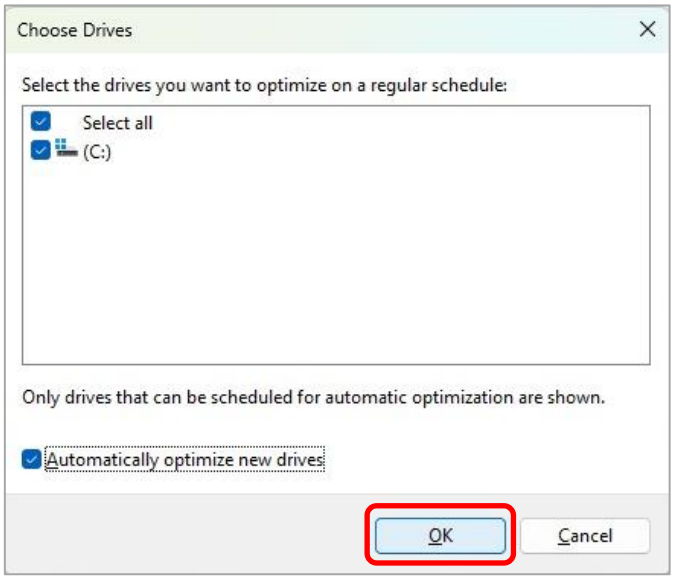
5. In the **Optimization schedule** window, ensure that the **Run on a schedule (recommended)** check box is selected.



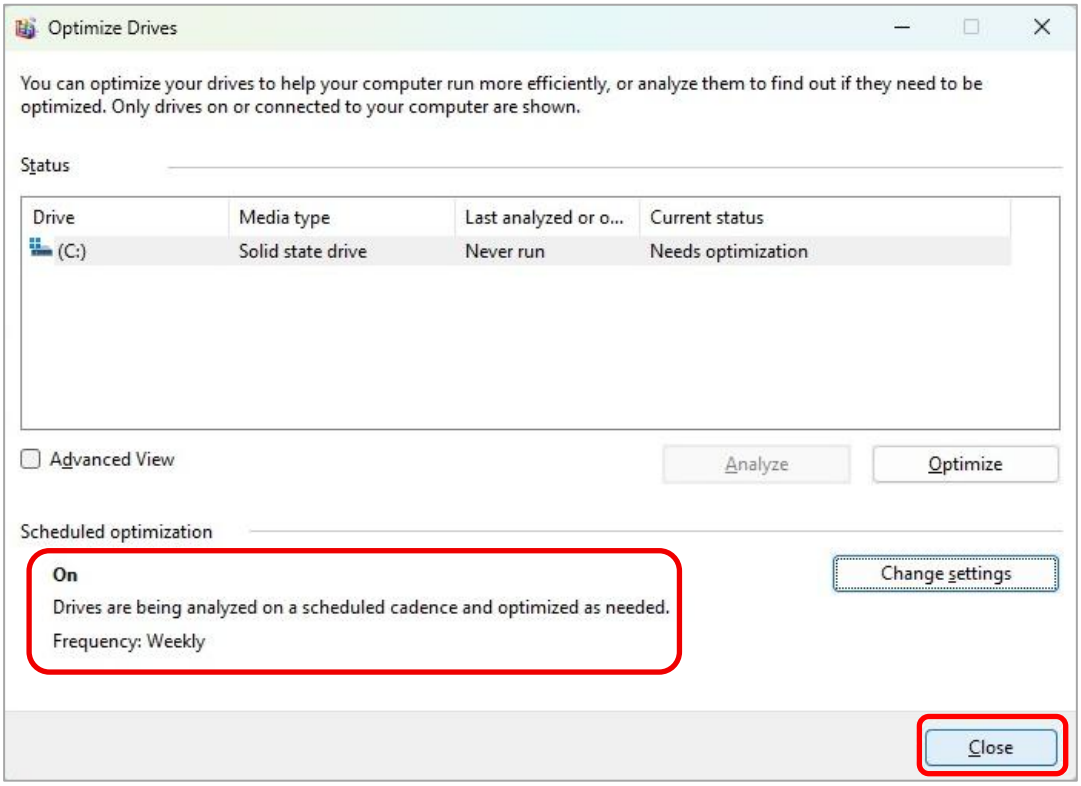
6. Set the optimization frequency as needed. The default is **Weekly**

7. Click **Choose** to select the drives to optimize.

8. In the **Choose Drives** window, select the drives to optimize, and then click **OK**.

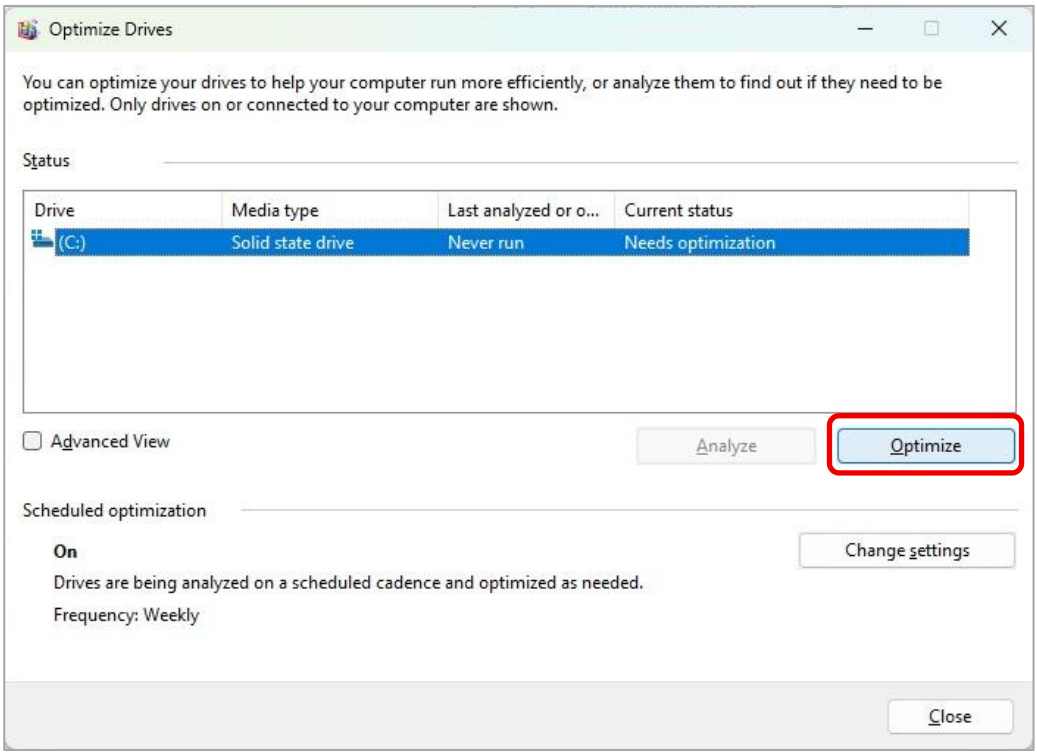


9. Return to the **Optimization schedule** window, and then click **OK**.
10. In the **Optimize Drives** window, ensure that the configured schedule is displayed in **Scheduled optimization**, and click **Close** to finish..

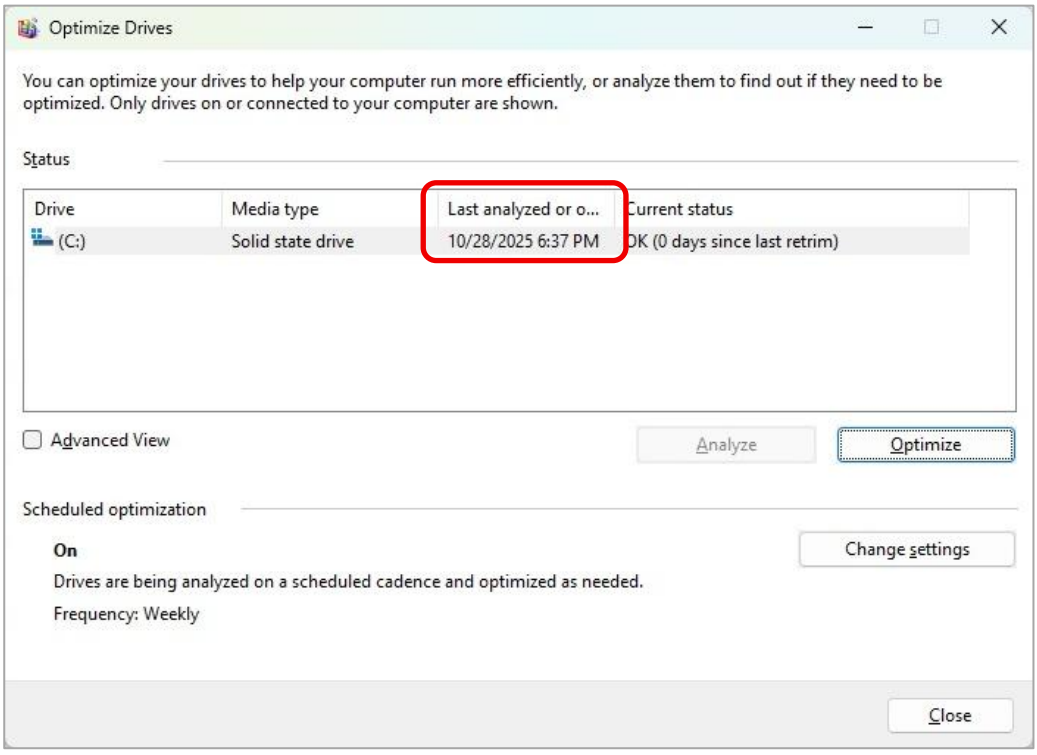


(b) Optimizing Drives Manually

1. Perform steps 1 through 3 in (a) Enable the Drive Optimization Schedule.
2. In the **Optimize Drives** window, under **Status**, select the drive you want to optimize and click **Optimize**.



- When optimization is complete, the date and time of the last analysis or optimization appear under **Last analyzed or optimized**.



3. Click **Close** to finish.

4.4 Security Enhancement Functionality

By default, Windows® 11 enables Windows Defender, a function that provides anti-spyware functionality.
Windows Defender includes antivirus functionality, which may impact application performance.

4.5 Network Settings at Shipment

SNP (Scalable Networking Pack) is disabled.
SNP is intended to reduce processor load by delegating TCP-related processing to the network adapter.
SNP consists of the following three features:

- TCP Chimney Offload
- Receive Side Scaling (RSS)
- Network Direct Memory Access (NetDMA)

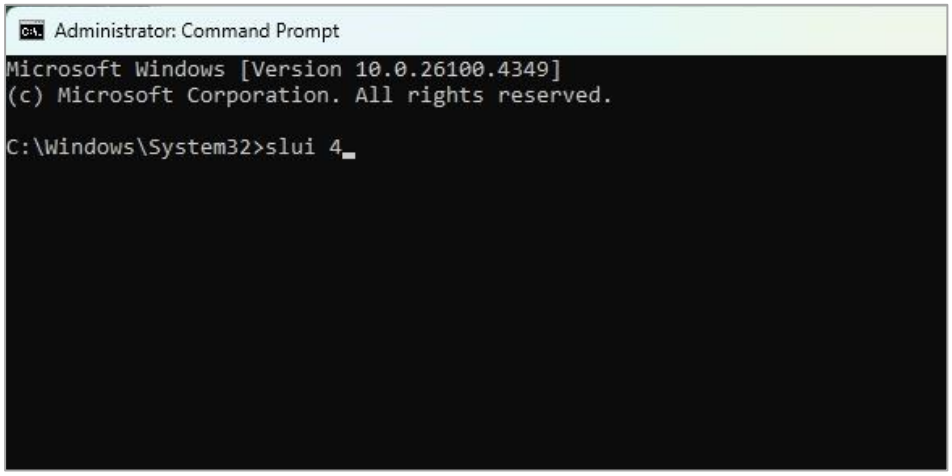
If SNP remains enabled in Windows®, network processing might become unstable, or network performance might degrade during specific network operations. For these reasons, SNP is disabled in this equipment.
Windows® 11 disables TCP Chimney Offload and Network Direct Memory Access (NetDMA) by default, so only Receive Side Scaling (RSS) is set to disabled.

4.6 License Activation

For Windows® 11, license activation is performed automatically when connected to the Internet.
If this equipment is not connected to the Internet, you can continue using it without issues even if license activation is incomplete.

If you wish to activate the license via offline telephone activation, follow these steps:

1. Open **Command Prompt** as an administrator and run the following command:
   C:\windows\system32>slui 4



   When the **License Activation** window appears, click **Activate by phone**.

2. When the **Select your country or region** window appears, choose your country or region, and then click **Next**.
3. When the **Call and provide your installation ID** window appears, call the displayed phone number and verify the confirmation ID.
   After verification, click **Enter confirmation ID**.
4. When the **Enter your confirmation ID** window appears, enter the confirmation ID and then click **Activate Windows**.
5. When the **The process is complete** window appears, click **Close**.

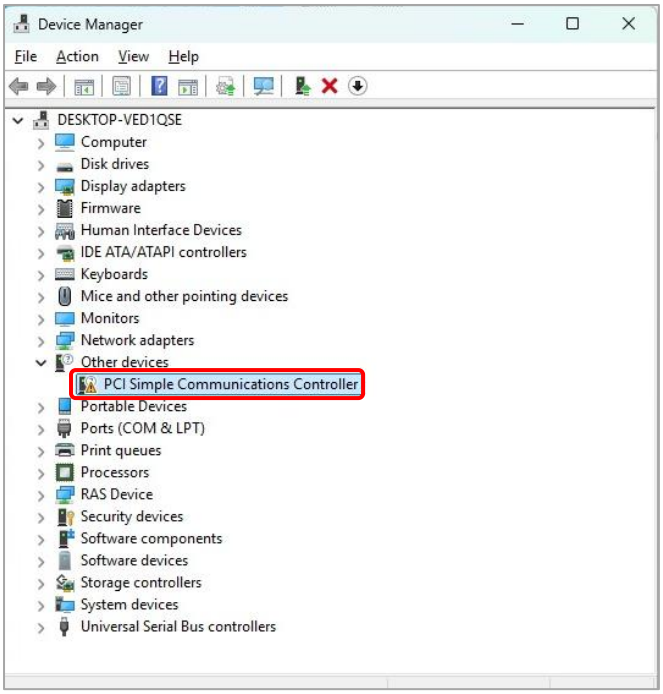
Windows is now activated.

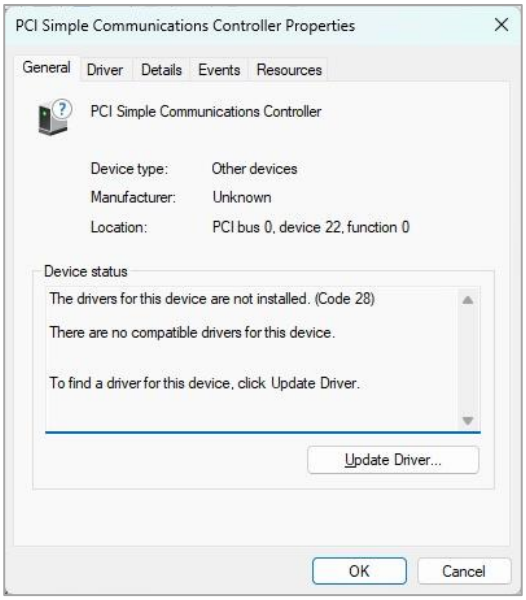
4.7 Mouse Operation Not Available on the Sign-in Screen

In Windows® 11, if a memory dump confirmation message appears when a user with a set password is signing in, the window might be displayed only in the background and the mouse might become unresponsive.
In such cases, the sign-in window can be displayed by using the keyboard. Press the **Enter** key to resolve the issue.

4.8 Device Manager Display

The PCI Simple Communications Controller of this device (located at PCI Bus 0, Device 22, Function 0) corresponds to the Intel® Management Engine (Intel® ME).
Since this equipment does not utilize the functions of Intel® ME, the driver has not been installed.
As a result, it may appear with a warning icon (exclamation mark) indicating that the driver is not installed.
However, because this function is not used, it does not affect the operation of the system.





4.9 Applying Update Packages

In Windows® 11, attempting to apply an update package by double-clicking, it may result in an error.
If an error occurs, apply the update using the DISM command from a Command Prompt with administrator privileges:

DISM /online /Add-Package /PackagePath: "Path to the update package"

4.10 Network File Transfer Speed Degradation

In Windows® 11 environments, when transferring a large number of small files over the network using a single-threaded copy tool, transfer speed may decrease.
If this issue is observed, refer to the workaround described at the following URL to determine whether the issue can be resolved:

<Reduced SMB File Transfer Speed>
URL : https://learn.microsoft.com/en-us/troubleshoot/windows-server/networking/slow-smb-file-transfer

CHAPTER 5 SPECIFICATIONS

5.1 Equipment Specifications

(1) Common Specifications

Item		Specifications
Model (pre-installed OS)		Refer to "(2) Model Specifications"
Processor		Intel® Core™ i3-N305 (1.8 GHz, 8 cores / 8 threads)
Main memory		DDR4 SO-DIMM 16 GB × 1
Display resolution / colors		Refer to "(5) Supported Resolutions."
Built-in file device	M.2 SSD	SATA 256 GB (3D TLC NAND)
	CFast	CFast Slot × 1 (*1)
I/O interface	Display	Digital (DVI-D 24-pin) × 1 Digital (DisplayPort 20-pin) × 1 (*2)
	Serial	RS-232C / 485 / 422 (D-SUB 9-pin) × 1
	USB (*3)	USB 3.0 × 2 channels (front) USB 2.0 × 3 channels (rear)
	LAN	1000BASE-T / 100BASE-TX / 10BASE-T auto-switching × 3 (RJ45、Wake on LAN™ supported)
	Audio	None (DisplayPort Audio is available)
	External contacts	Output × 3, Input × 2 (D-SUB 25-pin) Refer to "5.5.2 External Contact Specifications"
RAS features		Hardware status monitoring (temperature failure, SMART, memory error, log files, and others), OS lock monitoring, watchdog monitoring, alarm notification when failures are detected (pop-up notifications, remote notifications, and others), memory dump collection, maintenance operation commands, simulation function, NMI cause determination, voltage reading, power-off output, general-purpose DI/DO, alarm LED, remote power ON (*4)
External Dimensions (Width × Depth × Height)		188 mm (W) × 155 mm (D) × 50 mm (H)
Weight		2.0 kg or less
Leakage current		0.25 mA or less
Consumption current		0.4 A (100 VAC) / 0.2 A (240 VAC) 3.6 A (12 VDC), 1.8 A (24 VDC) (When not using the AC adapter)
Power	Voltage	100 to 240 VAC ±10% 12 to 24VDC ±10% (When not using the AC adapter)
	Frequency	50/60 Hz ±3 Hz
EMI		VCCI class A、FCC class A、EN55011 class A
Safety Standards		UL / CSA / CE / UKCA / KC / CCC / BSMI

(*1) CFast media is provided by the customer.

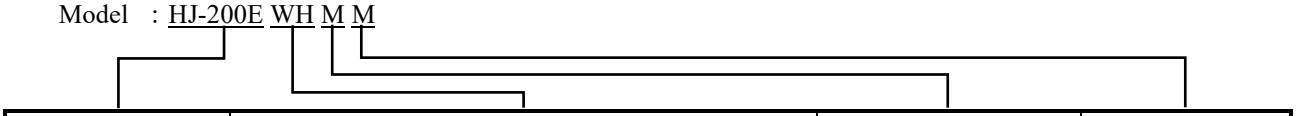
(*2) For details about the output resolution when using a DisplayPort-DVI conversion connector, refer to the specifications of the DisplayPort-DVI conversion connector.

(*3) Operation of all USB devices is not guaranteed.

(*4) Remote Power ON availability depends on the SPEC No of this equipment. Refer to “5.5.2 External Contact Specifications”.

(2) Model Specifications

Model : HJ-200E WH M M



Series Model	Pre-installed OS	Language Support	Storage
HJ-200E (HF-W200E)	WH (Windows®11 IoT Enterprise LTSC 2024 (64bit)	M (Japanese / English)	M (M.2 SATA SSD)

(3) Accessories

Item	Specifications
AC adapter	Input: 100 to 240 VAC ±10% Output: 24 VDC Includes power cord (Rated 125 VAC)
CFast retaining bracket	Bracket × 1 piece, screw × 1 piece
Connector Covers	COM (9-pin), D-SUB (25-pin), DisplayPort, DVI-D: 1 piece each USB: 5 pieces LAN: 3 pieces
Manual	SAFETY INSTRUCTIONS (Manual number WIN-B-5004)

(4) Option

Item	Specifications
AC adapter	Input: 100 to 240 VAC ±10% Output: 24 VDC Includes power cord (Rated 125 VAC)

(5) Supported Resolutions

Resolution (Pixel)	Refresh Rate (Hz) (*1)		Remarks
	DVI-D	DisplayPort	
800 × 600	60	60	(SVGA)
1024 × 768	60	60	(XGA)
1280 × 1024	60	60	(SXGA)
1600 × 1200	60	60	(UXGA)
1920 × 1080	60	60	(FHD)
1920 × 1200	60	60	(WUXGA)
2560 × 1440	-	60	(WQHD)
2560 × 1600	-	60	(WQXGA)
3840 × 2160	-	60	(4K)

(*1) The listed refresh rates are settings confirmed by our company as displayable. However, supported resolutions and refresh rates vary depending on the display. Some settings may not be available depending on the display used.

(6) Maximum Current Specification

The following table shows the total maximum current consumption for the USB ports, the DVI-D port, and the DisplayPort.

DC Output	Total Maximum Current
3.3 V	0.5 A (DisplayPort × 1)
5 V	3.8 A (USB 3.0 × 2, USB 2.0 × 3, DVI-D × 1)

The following table shows the maximum current for each USB port, the DVI-D port, and the DisplayPort.
Ensure that the inrush current when connecting a device does not exceed the specified maximum value. If exceeded, the overcurrent protection circuit may operate, and the connected device may become disabled.

Item	Voltage	Maximum Current
USB 2.0	5 V	0.5 A / port
USB 3.0	5 V	0.9 A / port
DVI-D	5 V	0.5 A / port
DisplayPort	3.3 V	0.5 A / port

5.2 Serial Port Settings

The serial port is set to RS-232C at the time of shipment.

You can select RS-232C, RS-422, or RS-485 using the following procedure.

1. Start the setup menu. Refer to "5.3 BIOS Setup (1) Starting the Setup Menu".
2. Open **Advanced** from the upper-level menu, move the cursor to **Serial Mode**, and press the **Enter**.
3. Select the mode you wish to use from **RS232**, **RS422**, and **RS485**.
4. Open **Save & Exit** from the upper-level menu, move the cursor to **Save Changes and Reset**, and press **Enter**. The message **Save configuration and reset?** appears.
5. Select **Yes** and press **Enter**.
6. Turn off the power and restart this equipment.

Regardless of whether RS-232C, RS-422, or RS-485 is selected, the BIOS automatically assigns the following settings:

Name Displayed in BIOS	I/O address	IRQ assignment	Name Displayed in OS
Serial port 1	3F8h	IRQ 4	COM1

< NOTE >

Do not change the above assignments, as doing so may cause this equipment to malfunction.

5.3 BIOS Setup

The BIOS stores system configuration information in the SPI-ROM.
When the system configuration is changed, it may be necessary to adjust the BIOS settings.
Before changing BIOS settings, refer to "PRECAUTIONS 7. BIOS Settings".

< NOTE >

The BIOS is appropriately configured for the system configuration at the time of shipment.

Changing the BIOS settings may cause unstable operation or prevent the system from starting normally.

Exercise caution when changing BIOS settings.

(1) Starting the Setup Menu

To configure the BIOS, start the setup menu.

When you press the power button (Refer to “1.4 Names and Functions of Each Part”), the system initialization message appears.

Press **F2** to start the setup menu.

(2) Operating the Setup Menu

The menu is mainly operated using the following keys:

Key name	Description
Esc	Used to exit the setup or return from a lower menu to a higher menu.
← or →	Used to select a menu or a menu group displayed at the top of the screen.
↑ or ↓	Used to select items or individual entries within a menu group.
＋or－	Used to select a value for the setting. Pressing these keys cycles through the available values for the selected item.
Space	Used to select a value. When only two values are available, this key toggles the setting.
Tab	When configuring the date/time, used to move between fields (for example, month → day or hour → minute).
Enter	Used to move from a higher-level menu to a lower-level menu or to complete the setup (saving data to the SPI-ROM).

(3) Setup Menu Structure

The setup menu is divided into the following items:

Main :Displayed when the menu starts. You can configure basic system settings such as the date and time.

Advanced :You can configure detailed system settings such as interrupt ports and I/O address settings.

Chipset :You can configure ECC support settings and LAN enable/disable settings.

Boot :You can configure the priority order of OS boot devices.

Save & Exit :You can save configuration changes to the SPI-ROM, restore settings to the factory-shipped condition, and perform other exit-related operations.

(4) Details of the Setup Menu

The following tables show the details of the items you can set up in each menu.

(1/3)

Top menu	Setting item		Default value	Note
Main	System Date		—	Be sure to set this during initial setup.
	System Time		—	
Advanced	Beep on Boot		Disabled	Sets whether to turn on the beep sound when starting up. Option: Disabled, Enabled
	Serial Mode		RS232	You can change the serial port settings (Refer to "5.2 Serial Port Settings"). Option: RS232, RS485, RS422
	ECC Error show		Disabled	Enabled: If an ECC error is detected, an error message will be displayed and the BIOS will halt. Disabled: Ignore any detected ECC errors and continue booting. Option: Disabled, Enabled
	CPU Configuration	Active Efficient-cores	All	Set the number of E-cores to enable in each processor package. Option: All, 1
		EIST	Enabled	Enable/Disable EIST Support. Option: Enabled, Disabled
	SATA Configuration	SATA Mode	AHCI	Do not change the settings shown on the left.
		Port0	Enabled	Enable/Disable the drive. (M.2 SSD) Option: Enabled, Disabled
		Port1	Enabled	Enable/Disable the drive. (CFast card) Option: Enabled, Disabled
	USB Configuration	Front USB Port	Enabled	Enable/Disable the front USB port. Option: Enabled, Disabled
	Power Configuration	After AC Power On	Power On	Set the power mode. Option: Auto, Power On, Power Off Power Off: Soft power off when powered on (Stay Off mode). Power On: The OS will start automatically when the power is turned on. (Continued in the next section)

(2/3)

Top menu	Setting item			Default value	Note
Advanced	Power Configuration (continued)	After AC Power On		Power On	Set the power mode. Option: Auto, Power On, Power Off Auto: -If the OS was running the last time the power was turned off, it will start up the same as Power On. -If the OS was not running the last time the power was turned off, it will enter soft power off mode, the same as Power Off. -If the backup battery has run out or the battery is not connected when the power is off, the setting will behave the same as Power Off. -If the backup battery has run out or the battery has been replaced, the setting will return to the default value (Power On).
	Trusted Computing	Vendor		INTC	Displays the TPM module vendor information.
		TPM Support		Enabled	Enable/Disable BIOS support for security device. Option: Enabled, Disabled
	IT8784 Super IO Configuration	Serial Port 1 Configuration	Serial Port	Enabled	Enable/Disable the serial port. Option: Enabled, Disabled
			Change Setting	Auto	Do not change this setting.
Chipset	In-Band ECC			Enabled	Enable/Disable In-Band ECC. Option: Enabled, Disabled
	LAN Configuration	LAN1		Enabled	Enable/Disable each LAN port. Option: Enabled, Disabled
		LAN2		Enabled	
		LAN3		Enabled	

(3/3)

Top menu	Setting item	Default value	Note
Boot	Boot NumLock State	ON	Do not change this setting.
	Boot Option # 1	USB Floppy	Set the boot device priority for starting the OS. Do not change this setting.
	Boot Option # 2	USB CD/DVD	
	Boot Option # 3	Hard Disk1	
	Boot Option # 4	Hard Disk	
	Boot Option # 5	USB KEY	
	Boot Option # 6	USB Hard Disk	
	Boot Option # 7	UEFI AP	
	UEFI Drive 1 BBS Priorities	Windows Boot Manager (P1: TS256GMTS970P)	Displayed because the boot device is installed. The displayed items may change depending on the installed device.
	UEFI Application Boot Priorities	UEFI: Built in EFI Shell	
Save & Exit	Save Changes and Reset	-	Save the settings and restart this equipment.
	Discard Changes and Reset	-	Restart this equipment without saving the changes.
	Restore Defaults	-	Restore/Load the default values of the setup options.

(5) Restoring Default Settings

To restore all items in the setup menu to their default settings, execute the following steps:

1. Start the setup menu (Refer to "(1) Starting the Setup Menu").
2. Open the **Save & Exit** top menu, move the cursor to **Restore Defaults**, and press **Enter**.
   The message **Load Optimized Defaults?** is displayed.
3. Select **Yes** and press **Enter**.
4. Open the **Save & Exit** top menu again, move the cursor to **Save Changes and Reset**, and press **Enter**.
   The message **Save configuration and reset?** is displayed.
5. Select **Yes** and press **Enter**.

The process is complete.

5.4 Hardware System Clock

This equipment is equipped with a hardware system clock that uses an RTC (Real-Time Clock) IC.
The clock includes a built-in calendar and continues to operate using a backup battery even when the system power is off.

Table 5-1 Hardware System Clock Specifications

Item	Specifications
Time function	Hour, minute, second (24-hour format)
Date function	Year, month, day
Accuracy	±3 minutes per month (*)
Battery backup	Lithium battery

(*) Approximate value at an ambient temperature of 25 °C.

The system regularly updates the internal clock by using a periodic timer. The internal clock is adjusted by reading the time and date from the hardware clock when, for example, the system starts.

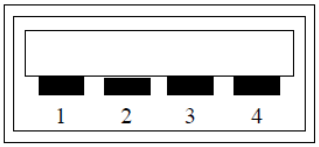
5.5 Interface Specifications

5.5.1 Connector Specifications

The following shows the specifications of the interfaces from this equipment to external devices.
For information about the location of the ports, refer to “Display and User Input Sections” in “1.4 Names and Functions of Each Part”.

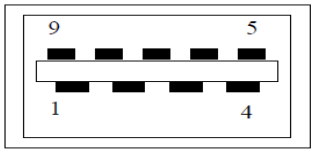
(1) Motherboard (Standard)

・ USB 2.0 port (rear)



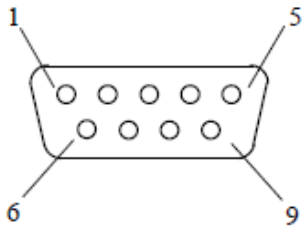
Pin no.	Signal name
1	+5V
2	DATA-
3	DATA+
4	GND

・ USB 3.0 port（front）



Pin no.	Signal name
1	+5V
2	DATA-
3	DATA+
4	GND
5	SSRX-
6	SSRX+
7	GND
8	SSTX-
9	SSTX+

・ Serial port (male connector, inch screws) (COM1)



The pin assignments for each interface when RS-232C, RS-422, or RS-485 is selected are shown below.

(1) RS-232C

Pin no.	Signal name	Pin no.	Signal name
1	DCD	6	DSR
2	RxD	7	RTS
3	TxD	8	CTS
4	DTR	9	RI
5	GND		

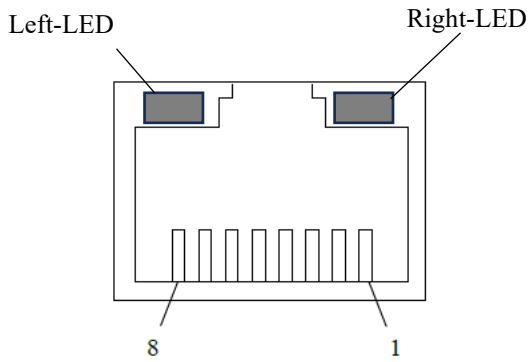
(2) RS-422 Full Duplex

Pin no.	Signal name	Pin no.	Signal name
1	Tx-	6	RTS-
2	Tx+	7	RTS+
3	Rx+	8	CTS+
4	Rx-	9	CTS-
5	GND		

(3) RS-485 Half Duplex

Pin no.	Signal name	Pin no.	Signal name
1	Data-	6	NC
2	Data+	7	NC
3	NC	8	NC
4	NC	9	NC
5	GND		

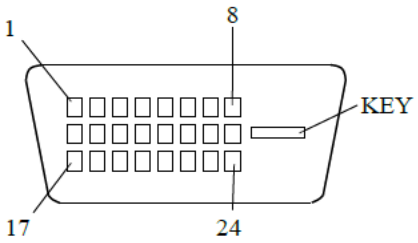
・ LAN (RJ-45 modular jack, 8-pin)



Pin no.	Signal name
1	TRD0+
2	TRD0-
3	TRD1+
4	TRD2+
5	TRD2-
6	TRD1-
7	TRD3+
8	TRD3-

Cable specification: UTP cable (unshielded twisted pair cable), Category 5e or 6

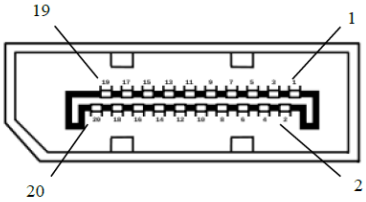
・ Video port（DVI-D, 24-pin, inch screw）



Pin no.	Signal name	Pin no.	Signal name	Pin no.	Signal name
1	TX2M	9	TX1M	17	TX0M
2	TX2P	10	TX1P	18	TX0P
3	SGND	11	SGND	19	SGND
4	NC(TX4M)	12	NC	20	NC
5	NC(TX4P)	13	NC	21	NC
6	DDCCLK2	14	P5DFP	22	SGND
7	DDCDAT2	15	PGND	23	TXCP
8	NC	16	NC	24	TXCM

Note: This video port supports single-link connections only.

・ Video port (DisplayPort, 20-pin)

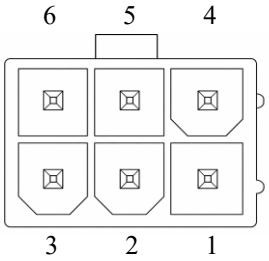


Pin no.	Signal name	Pin no.	Signal name
1	MainLane0+	11	GND
2	GND	12	MainLane3-
3	MainLane0-	13	GND
4	MainLane1+	14	GND
5	GND	15	Aux+
6	MainLane1-	16	GND
7	MainLane2+	17	Aux-
8	GND	18	HotplugDetect
9	MainLane2-	19	GND
10	MainLane3+	20	+3.3V

Note 1: When using a DisplayPort-DVI conversion connector for three-screen output, select an active type DisplayPort-DVI conversion connector and perform a preliminary evaluation before use.

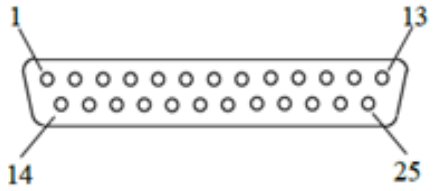
Note 2: When using a DisplayPort-DVI conversion connector, check the output resolution according to the specifications of the DisplayPort-DVI conversion connector.

・ DC power connector (6-pin receptacle)



Pin no.	Signal name	Pin no.	Signal name
1	12V-24V	4	GND
2	N/C	5	N/C
3	12V-24V	6	GND

・ External contact I/F (D-SUB, 25-pin, male connector, inch screw)



Pin no.	Signal name	Pin no.	Signal name
1	NC	14	NC
2	GENDO0_1	15	GENDO0_2
3	NC	16	NC
4	GENDO1_1	17	GENDO1_2
5	PSDOWN_1	18	PSDOWN_2
6	NI_GENDI2_1/NI_RMTPWRON_1	19	GND
7	NI_GENDI1_1	20	GENDI1_2
8	NC	21	GENDI2_2/RMTPWRON_2
9	NC	22	GND
10	NC	23	NC
11	NC	24	NC
12	GENDI1_1	25	NC
13	GENDI2_1/RMTPWRON_1		

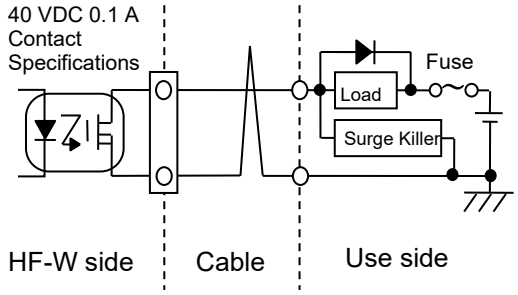
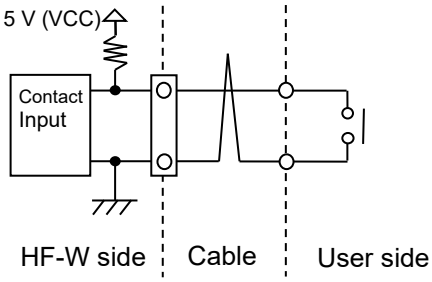
5.5.2 External Contact Specifications

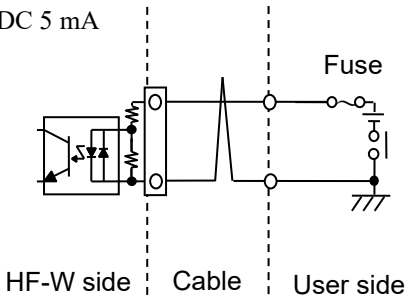
This equipment is equipped with standard external contact I/F.

(1) External Contact I/F Signal List

Signal line		Description
Output	PSDOWN	Activated when the OS is shut down (standby or main power OFF) or when power is not supplied to this equipment.
	GENDO0 GENDO1	General-purpose contact output signals. The user can assign a function to each contact (GENDO0 and GENDO1).
Input	GENDI1	General-purpose input signal. The user can assign a function to GENDI1.
	GENDI2 (RMTPWRON)	General-purpose input signal. The user can assign a function to GENDI2. In addition, it can be used as a control input for the remote power-on feature while in standby mode.

(2) External Contact I/F Port Specifications

<table>
<tr><th rowspan="2">Item</th><th colspan="3">Output (A contact) (*1)</th><th colspan="2">Input</th></tr>
<tr><th>PSDOWN</th><th>GENDO0</th><th>GENDO1</th><th>GENDI1</th><th>GENDI2 /
RMTPWRON (*2) (*3)</th></tr>
<tr><td>Specifications</td><td colspan="3">Contact type: PhotoMOS relay contact
Load voltage: Max. 40 VDC
Load current: Max. 0.1 A / point (steady state)
Max. 0.6 A / point (inrush)
Dielectric strength: 250 VAC, 1 minute</td><td colspan="2">Contact type: Non-voltage transistor contact
Contact current: 1 mA / point</td></tr>
<tr><td>Connection diagram</td><td colspan="3"> 
</td><td colspan="2">The input supports two types of connections: non-isolated and isolated.
Do not use both types simultaneously.
- Non-Isolated
 

- Isolated
24 VDC 5 mA
 
</td></tr>
</table>

PS DOWN : Power supply down
GENDO* : General-purpose output
GENDI* : General-purpose input
RMTPWRON : Remote power-on
When this contact is closed while in standby mode (power lamp orange), the OS can be started.
Availability depends on the SPEC No.
FR : Disabled
FR01 : Enabled
Although this function can technically be changed, for safety reasons, changes by the user are prohibited.
If you need to change this setting, please contact your place of purchase or our sales representative.

(*1) A-contact operation:

PSDOWN: Normal operation = contact closed, failure occurrence = contact open, power off = contact open

GENDO* : Contact status is determined by the user program.

When power is off or no program instruction = contact open

(*2) RMTPWRON and GENDI2 share the same contact.

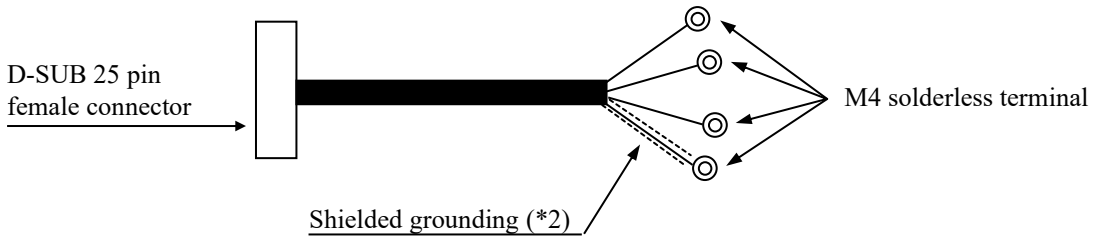
(*3) When using the remote power-on feature, ensure that no noise is added to the external contact.

If the contact remains closed for 15 ms or longer in soft power-off mode due to noise or other factors, the system may power on unintentionally.

After the OS or BIOS starts, the remote power-on feature becomes invalid and functions as a GENDI2 input.

(3) Recommended Cable Specifications

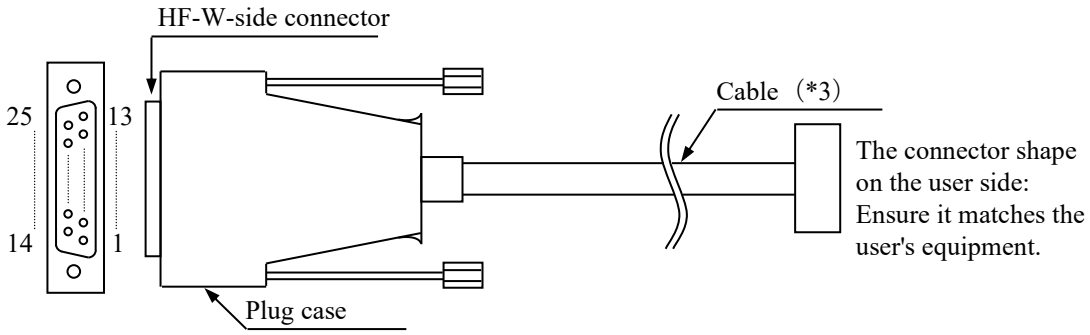
1. Prepare the following cable for connections. (*1)



(*1) The maximum cable length is 30 m.

(*2) To connect a cable shield, install a dedicated shield grounding bar near the location for shield wire connections.

2. Specifications for user-fabricated cables are as follows:



External contact cable / Connector appearance

(*3) Ensure the cable shield ground is securely connected to the conductor of the plug case (frame ground). Do not connect the shield ground to any GND pins on the RAS external contact port (D-SUB), as all GND pins are signal ground. Doing so may cause malfunction.

・ HF-W Side Connector Specifications (Recommended)

Connector Type: D-SUB 25-pin female connector (2 rows)

Part Name	Model	Manufacturer
Plug Case	HDB-CTH1(4-40)(10)	HIROSE ELECTRIC CO., LTD.
Female Connector	HDBB-25S	HIROSE ELECTRIC CO., LTD.

・ Cable Specifications (Recommended)

Item	Specifications	Notes
Maximum Cable Length	30 m	
Cable Electrical Shield	Required	Connected to frame ground
Recommended Cable	UL2464SB 13P × 24AWG	Proterial Ltd.

5.5.3 External Interface Cable Length Specifications

The recommended maximum cable length for each interface of this equipment is as follows:

No.	Connector Name	Maximum Cable Length	Notes
1	DVI-D Port	3 m	
2	DisplayPort	3 m	
3	LAN Port	100 m	UTP Category 5e or higher
4	RAS External Contact Port	30 m	Refer to “5.5.2 (3)” for cable specifications.
5	Serial Port (COM)	15 m	Use shielded cable.
6	Front USB 3.0 (2 ports)	2 m	Use shielded cable compliant with USB 3.0 or USB 2.0 depending on the connected device. Using extension cables may cause malfunction.
7	Rear USB 2.0 (3 ports)	3 m	Use shielded cable compliant with USB 2.0. Using extension cables may cause malfunction.

Some devices may not operate properly depending on the connected device. Ensure operation before use.
Stable operation cannot be guaranteed when combined with extension cables or switchers; verify operation in advance.

CHAPTER 6 INSPECTION AND MAINTENANCE

6.1 Periodic Inspection

This equipment does not support maintenance contracts or periodic inspections provided by maintenance companies.
However, it is recommended to periodically replace limited-life components.
Ensure that the replacement of limited-life components is included in your system operation plan.

For details on limited-life components, refer to “APPENDIX 1 HANDLING OF LIMITED-LIFE COMPONENTS”.

6.2 Maintenance Service

The maintenance services provided for this equipment are as shown in the table below.
For repair requests or other related inquiries, please contact your point of purchase or our sales representative.

Table 6-1 Maintenance Service Target and Details

Target	Maintenance Period	Support Details
Main Unit (this equipment)	Up to 10 years after delivery	Send-back repair by our company
AC Adapter	According to the maintenance period of the main unit	Send-back repair by our company
Microsoft® Windows® (Embedded Contract Edition)	According to the support period provided by the manufacturer	Inquiry support by our company
Hitachi RAS Software	According to the maintenance period of the main unit	Inquiry support by our company

6.3 Installing and Removing Components

6.3.1 Types and Installation Positions of Components

The figure below shows the types and installation positions of the components in this equipment.
Note that only the CFast card is described in this equipment.

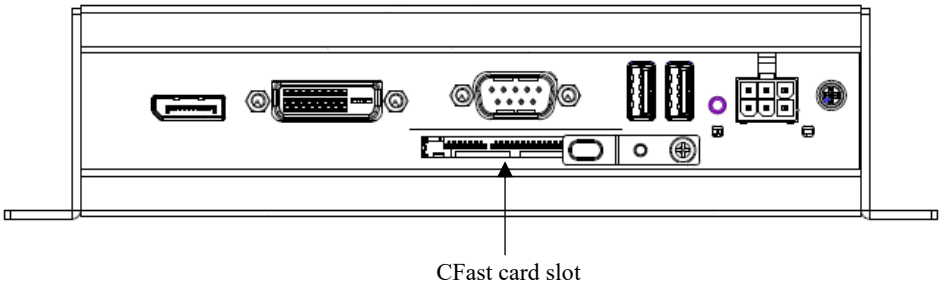


Figure 6-1 Types and Installation Positions of Components

6.3.2 Before Installing or Removing Components

Before installing or removing components, ensure that you strictly observe the following precautions.

⚠ WARNING

To prevent electric shock or equipment failure, always shut down the OS and disconnect the power cord before performing any work.

- Ensure that you have sufficient workspace for maintenance work, and perform the work on a flat surface (refer to “1.5.2 Installation”).
- Wear cotton gloves when installing or removing components.
- When tightening or removing screws, use a Phillips screwdriver (JIS Standard No. 1) and take care not to damage the screw heads.
- When tightening screws, tighten them straight into the tapped holes without applying excessive force to prevent thread damage.

In addition to the above, observe the precautions provided for each specific task.

6.3.3 Installing and Removing the CFast Card

⚠ CAUTION

When installing or removing the CFast card, take care not to injure your fingers on any protruding parts.

NOTICE

- Never insert or remove the CFast card while this equipment is powered on.
  Doing so may cause damage to both this equipment and the CFast card.
- Ensure that the CFast card is securely inserted in this equipment.
  Leaving it partially connected may result in damage to this equipment and the CFast card.

(1) Before Installing or Removing the CFast Card

Before starting the work, refer to "6.3.2 Before Installing or Removing Components".

< NOTE >

- Do not touch the terminal area of the CFast card. Doing so may cause a failure of the CFast card.
- Do not insert the CFast card in the wrong orientation. Also, do not apply excessive force when inserting the CFast card, as this may damage the connector.

(2) Installing the CFast Card

1. Place a CFast card in the installation position with the top side facing up, and gently push it in.
2. After installing the CFast card, attach the supplied CFast retainer bracket using the fixing screw (M3 screw).

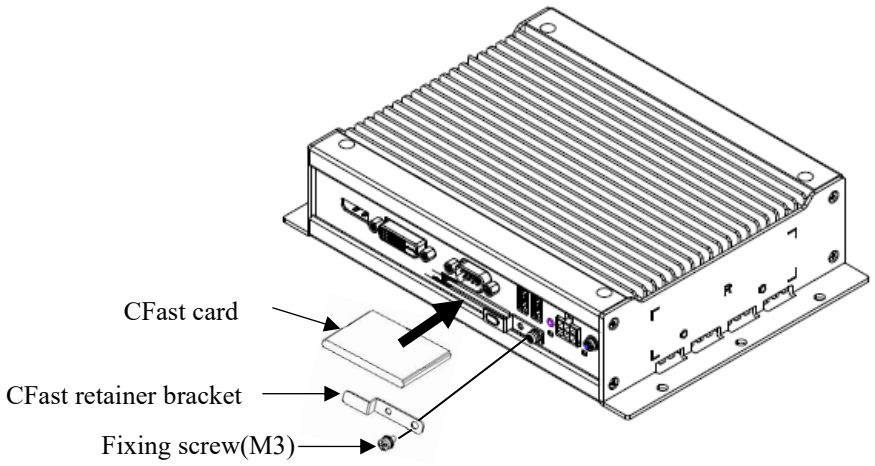


Figure 6-2 Installing the CFast Card

(3) Removing the CFast Card

Remove the CFast card by following the reverse procedure of "(2) Installing the CFast Card".

< NOTE >

When pulling out the CFast card, ensure that no excessive force is applied to the connector, and slowly remove the card to avoid any impact on the CFast card.

CHAPTER 7 RESTORING THE FACTORY-SHIPPED CONDITION USING A RECOVERY DVD

NOTICE
The recovery DVD contains an image created based on the hardware configuration at the time of purchase. If the hardware configuration differs from the original factory-shipped condition, the OS may not start properly after restoration. When using the recovery DVD, remove all external storage devices and perform the restoration using the original hardware configuration (except for the DVD drive used to read the recovery DVD). Using the recovery DVD erases all data on the system drive. Back up any necessary data in advance. Because this equipment does not include a built-in DVD drive, prepare an external DVD drive in advance.

This chapter describes the following procedure:

・ Restore the system drive to the factory-shipped condition by discarding the existing system.

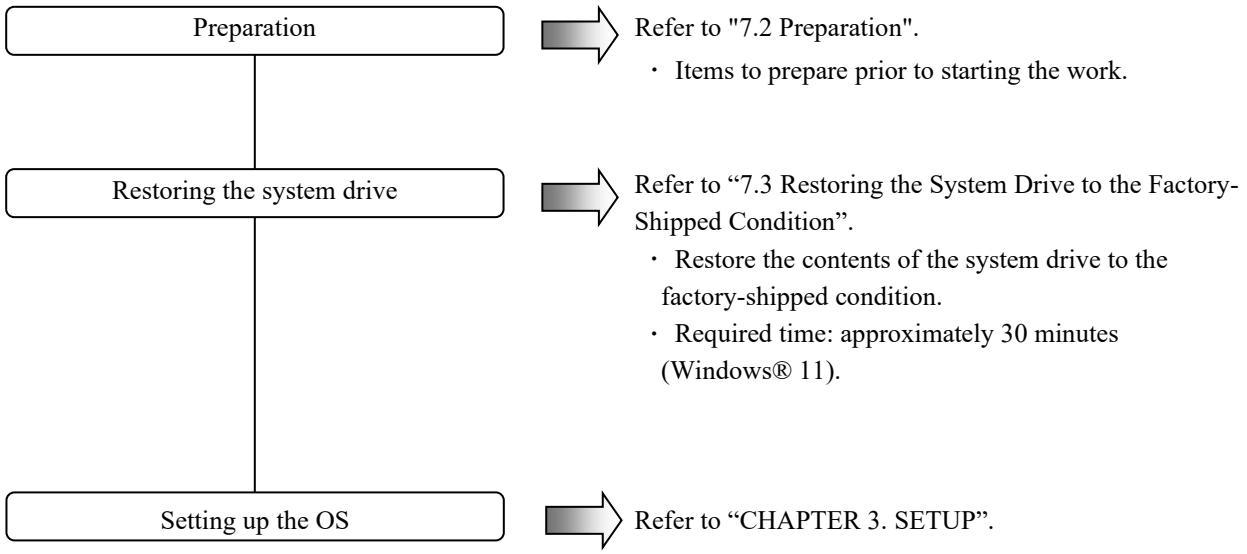
< NOTE >

Prepare a USB-connected external optical disc drive (a drive that can read DVD media, hereafter referred to as a DVD drive).

7.1 Overview of the Recovery Procedure

This section provides an overview of the procedure to restoring the system drive to the factory-shipped condition. After restoring the system drive using a recovery DVD, follow the procedure described in “CHAPTER 3. SETUP” to configure the OS.

The following shows a simplified flow of the procedure.



7.2 Preparation

1. Prepare the following items prior to starting the procedure:

Recovery DVDs for HF-W	HITACHI HJ-200E-**** Product Recovery DVD (Replace the underlined characters with the model number of this equipment.)
External DVD drive	Prepare a DVD drive that has been verified by the customer to operate properly.

2. Connect the USB-connected DVD drive to this equipment.

7.3 Restoring the System Drive to the Factory-Shipped Condition

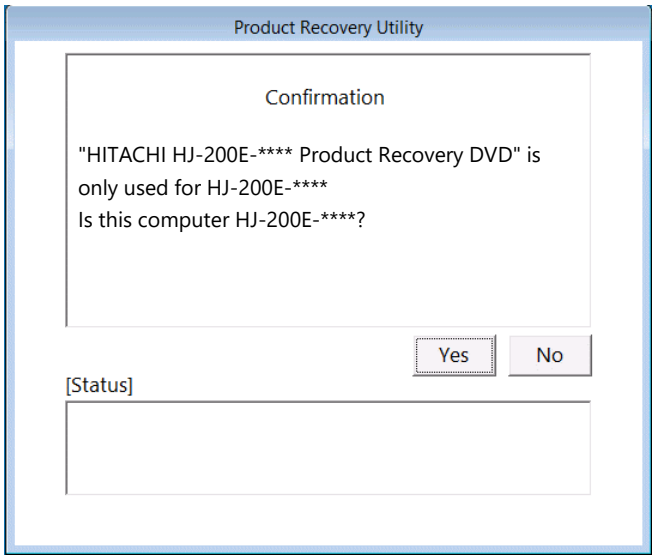
7.3.1 Procedure for Restoring to the Factory-Shipped Condition

Follow the steps below to restore the system drive of this equipment to the factory-shipped condition using the recovery DVD.

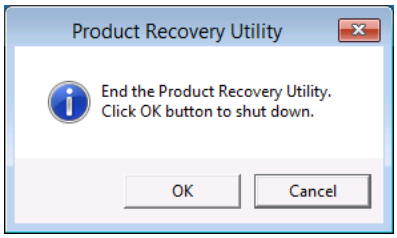
1. Insert the recovery DVD “HITACHI HJ-200E-**** Product Recovery DVD” into the DVD drive.
   If multiple discs are included, insert the first disc.
   < NOTE >
   Replace the underlined characters with the model number of this equipment.

2. Turn on this equipment.
   When booting from the recovery DVD, a confirmation message for the model number appears.
   < NOTE >
   If this equipment fails to boot from the recovery DVD, turn off this equipment and then turn it on again.

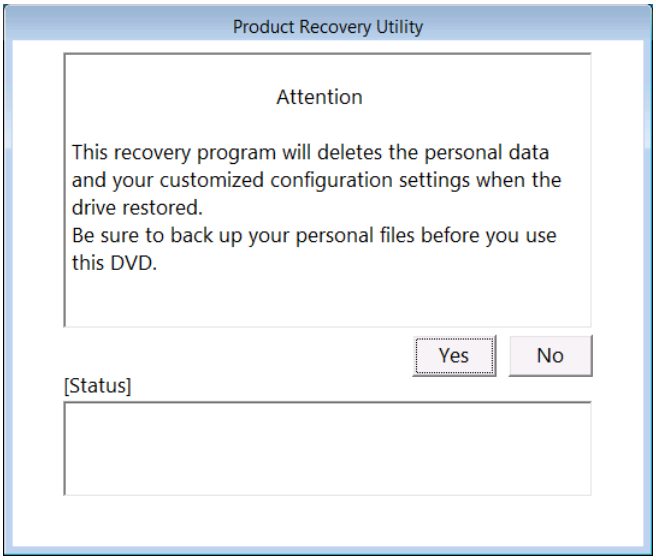
   ・ If the model number of this equipment matches the model number displayed in the confirmation message, click **Yes**.
   If the model number differs, click **No**.



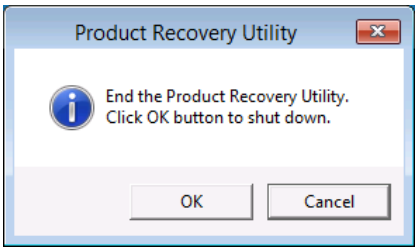
   ・ When you click **No**, a message dialog box is displayed. Click **OK**.
   The recovery DVD is automatically ejected, and this equipment shuts down.
   To return to the previous message, click **Cancel**.



3. An attention message related to the drive restore appears.
   - If you agree with the displayed contents, click **Yes**.
   - If you do not agree, click **No**.

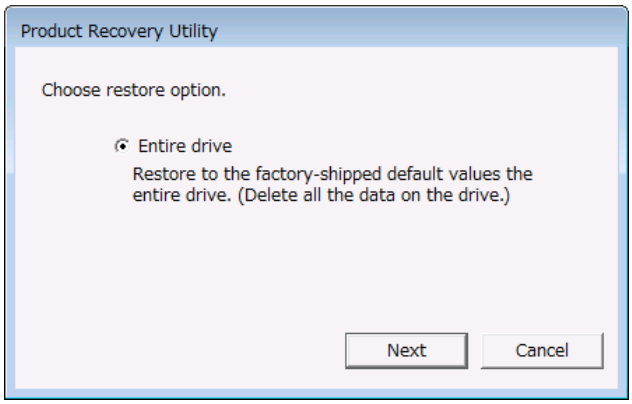


   - When you click **No**, a message dialog box is displayed. Click **OK**.
     The recovery DVD is automatically ejected, and this equipment shuts down.
     To return to the previous message, click **Cancel**.

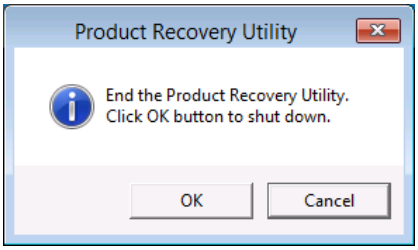


4. The window for selecting the drive restore option is displayed.
   For this equipment, only **Entire drive** is selectable.

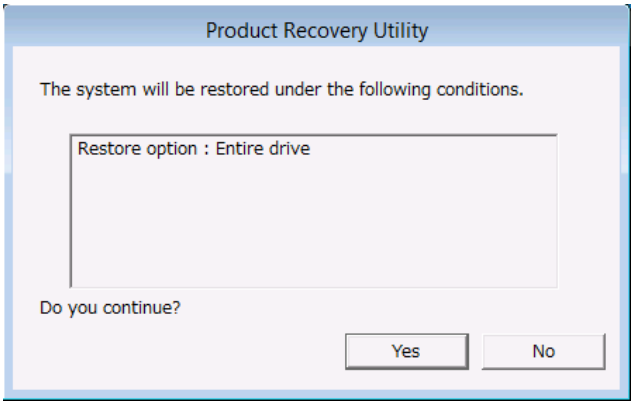
   - To restore the drive to the factory-shipped condition, click **Next**.
     To cancel the restore, click **Cancel**.



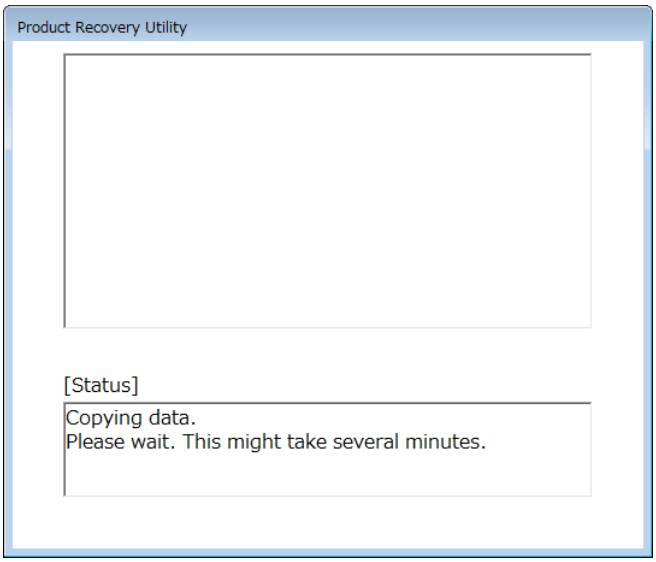
   - When you click **Cancel**, a message dialog box is displayed. Click **OK**.
     The recovery DVD is automatically ejected, and this equipment shuts down.
     To return to the previous window, click **Cancel**.



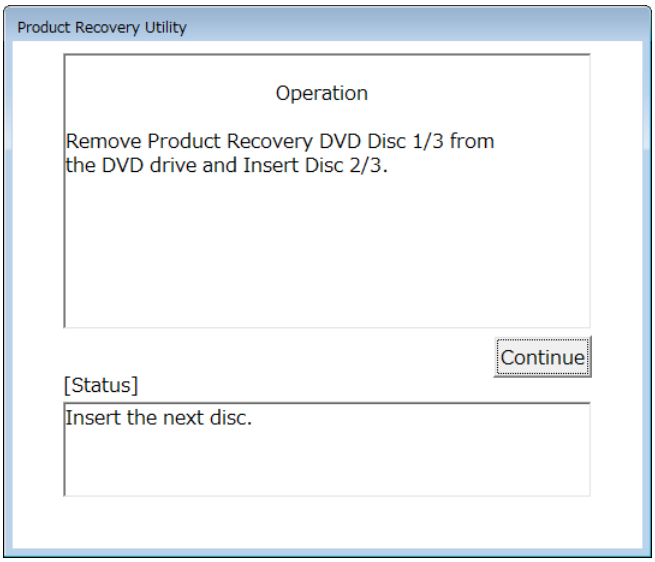
5. The confirmation window for the drive restore option is displayed.
   - To continue the restoration, click **Yes**.
     To cancel the restoration, click **No**.
     When you click **No**, you will return to the previous window.



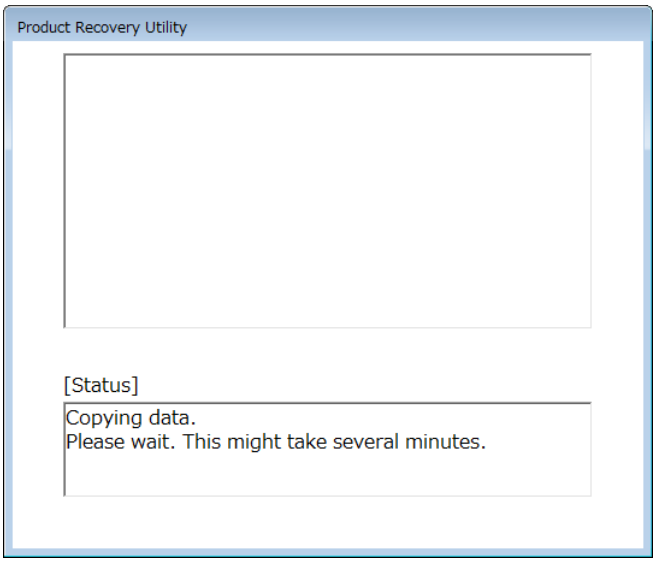
6. The message “Copying data. Please wait. This might take several minutes.” is displayed in the **Status** field, and the restoration preparation (copying data) starts.



7. If multiple recovery DVDs are required, a message “Insert the next disc.” is displayed in the **Status** field, and the recovery DVD is automatically ejected. Insert the next recovery DVD into the DVD drive and click **Continue**. The following screen shows an example where the recovery DVD set consists of three discs.

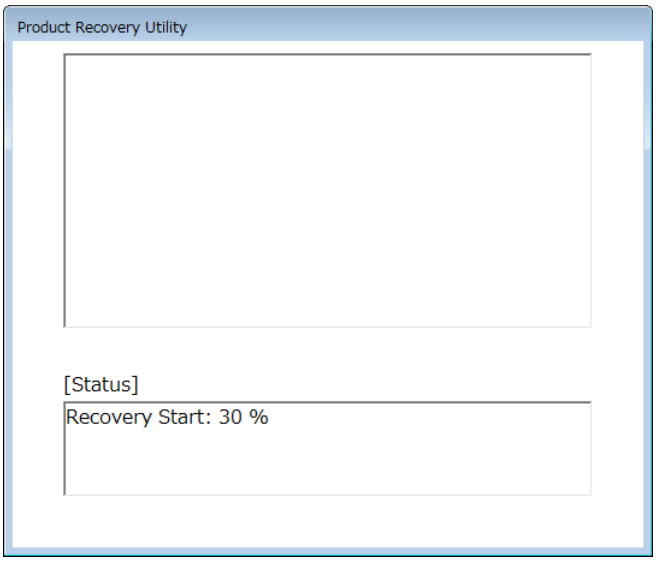


8. The message “Copying data. Please wait. This might take several minutes.” is displayed in the **Status** field again, and copying resumes.

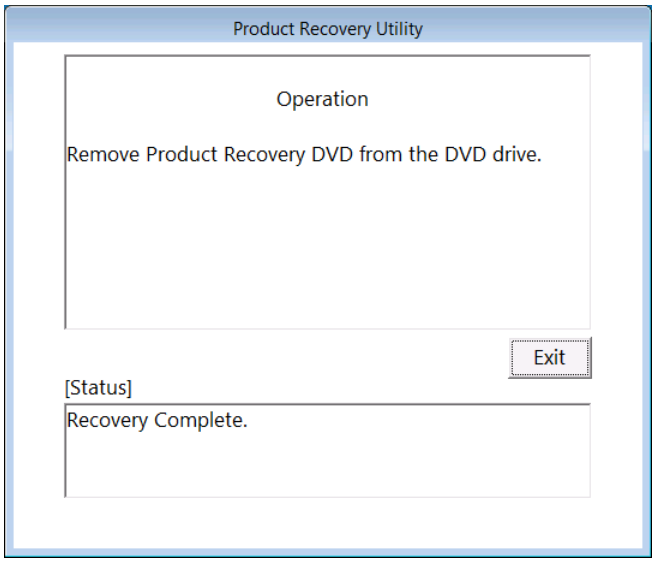


9. Repeat steps 7 and 8 for each recovery DVD in the set

10. When the restoration preparation (copying data) is complete, the **Status** field displays “Recovery Start: xx %”, and the restoration starts.
    Since the recovery DVD is automatically ejected, remove it from the DVD drive.



11. When the restoration is complete, the **Status** field displays “Recovery Complete.”
    Click **Exit**, and shut down this equipment.



This completes the procedure for restoring the system drive of this equipment to the factory-shipped condition.
If you wish to use this equipment after recovery, refer to "CHAPTER 3. SETUP" and configure the OS.

7.3.2 Errors and Corrective Actions During Recovery Operation

When an error occurs during the recovery process, record the displayed error message and error code, and take corrective action according to the table below.
If this equipment does not operate normally even after performing the corrective action, or if error message No. 8 appears, contact our sales representative.

Table 7-1 Error Messages During Recovery Operation

No.	Error message	Corrective Action
1	Retry time out. Please refer to the INSTRUCTION MANUAL.	- Check the integrity of the system drive (e.g., perform read/write tests).
2	Image file is not found. Please refer to the INSTRUCTION MANUAL.	- Retry the recovery operation. - Check the integrity of the recovery DVD (e.g., perform read tests). - Check the integrity of the DVD drive (e.g., perform read tests).
3	Drive failed or not connected. Please refer to the INSTRUCTION MANUAL.	- Ensure that the system drive is properly connected. - Check the integrity of the system drive (e.g., perform read/write tests).
4	Failed to access the drive. Please refer to the INSTRUCTION MANUAL.	
5	Failed to assign drive letter. Please refer to the INSTRUCTION MANUAL.	- Ensure that no unnecessary devices are connected. If any are connected, disconnect them.
6	Failed to read from Product Recovery DVD. Please refer to the INSTRUCTION MANUAL.	- Ensure that the DVD drive is properly connected. - Check the integrity of the recovery DVD (e.g., perform read tests). - Check the integrity of the DVD drive (e.g., perform read tests).
7	Recovery failed. Please refer to the INSTRUCTION MANUAL.	- Retry the recovery operation.
8	Recovery invalid. Please refer to the INSTRUCTION MANUAL.	- Contact our sales representatives.
9	Drive capacity is not enough. Please refer to the INSTRUCTION MANUAL.	- Check the capacity of the system drive.

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CHAPTER 8 MAINTENANCE OPERATIONS

This chapter explains maintenance operations using the RAS (Reliability, Availability, Serviceability) features of this equipment.

8.1 Overview

This equipment is equipped with RAS features designed to ensure high reliability.
The following provides an overview of the RAS features implemented in this equipment.

Table 8-1 Overview of RAS Features

Category		Item
Monitoring		Hardware status monitoring
		OS deadlock monitoring
		Watchdog timer monitoring
GUI features settings		RAS Setup window
Status checks	GUI display	Hardware status window
	Notifications	Event notifications
		Pop-up notifications
		Remote notifications
		Status acquisition via library functions
Control	Shutdown/startup suppression	Automatic shutdown
		Shutdown via library functions
		Control of general-purpose external contacts
Library functions		RAS library
Maintenance/ failure analysis	Memory dumps	Memory dump collection
		STOP error code cause notification
		Log information collection window
		Maintenance operation support commands
		Internal chassis temperature trend log
Simulation		Hardware status simulation

Monitoring:

(1) Hardware status monitoring

This feature monitors the hardware status of this equipment, including the drive status and the internal chassis temperature.

(2) OS deadlock monitoring

This equipment uses a watchdog timer to monitor the operating status of the OS.

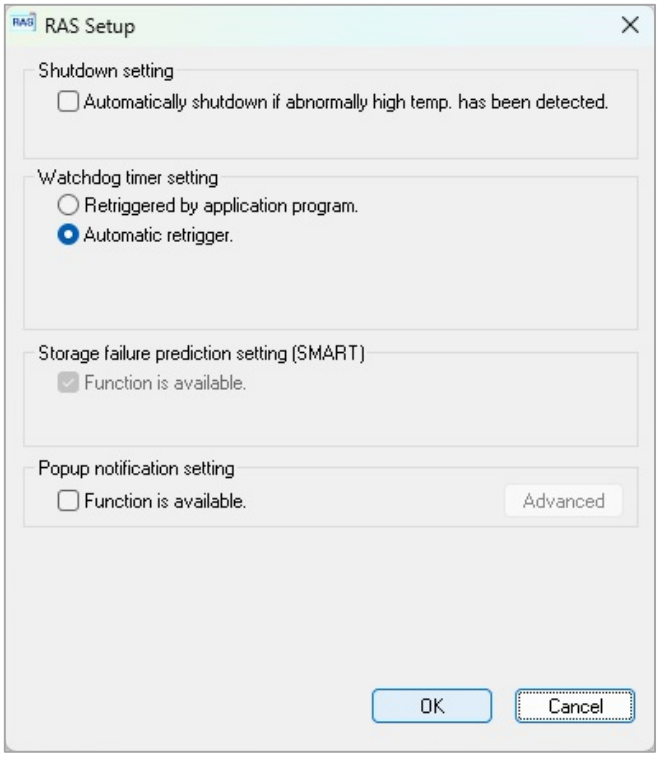
(3) Watchdog timer monitoring

This feature monitors whether the user program is running properly by using an internal watchdog timer.
It also provides library functions for implementing the watchdog timer in applications.

GUI features settings:

(4) RAS Setup window

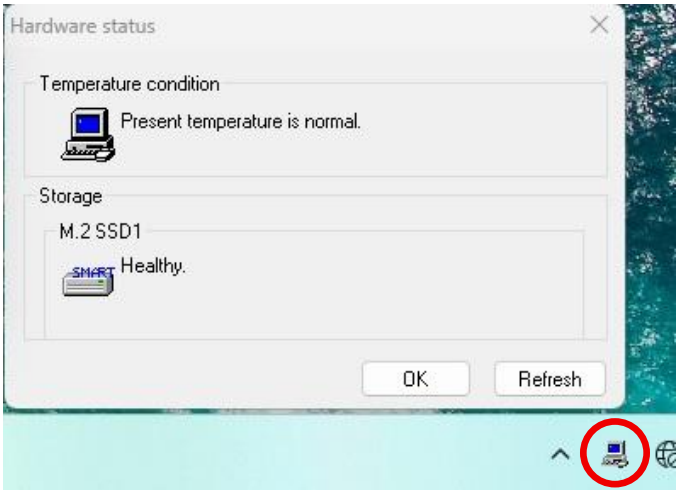
This window provides a graphical user interface for configuring RAS feature settings, including conditions for automatic shutdown and watchdog timer settings.



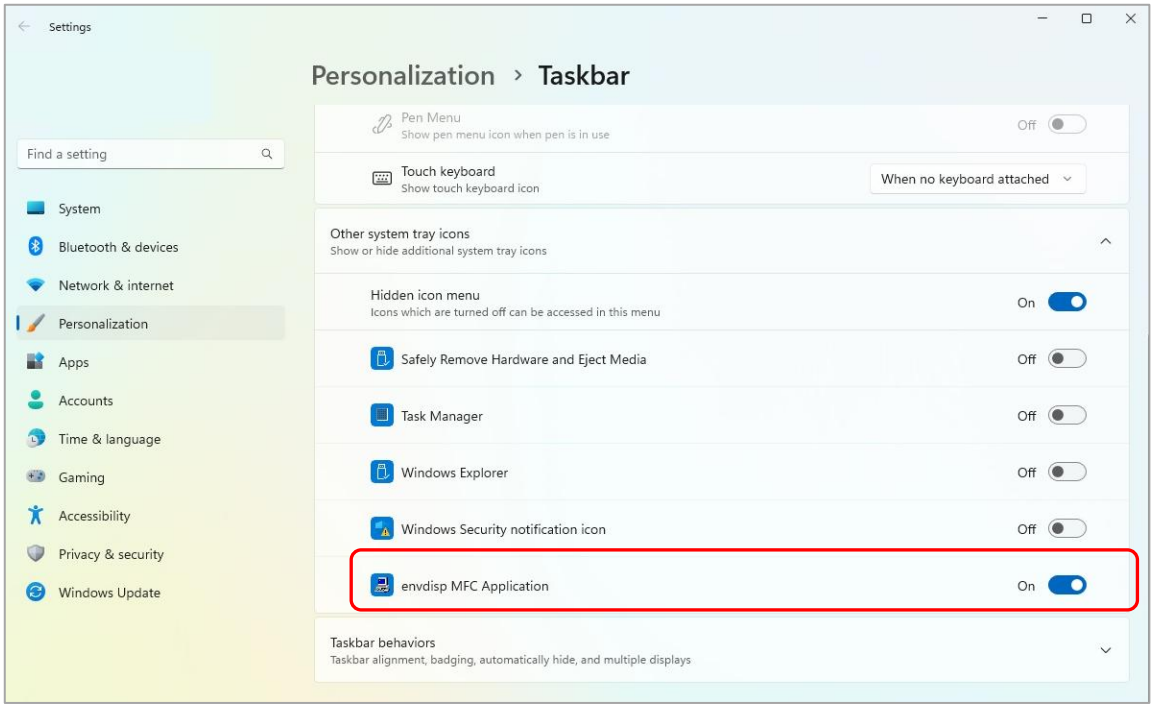
Status checks:

(5) Hardware status window

This window displays the hardware status of this equipment through a graphical interface.
An icon in the taskbar notification area continuously indicates the current hardware status.



This icon is not displayed with the factory-shipped condition. To show the icon, click the arrow next to the notification area. If you want this icon to always reside in the taskbar notification area, right-click the taskbar, click **Taskbar settings** from the displayed menu, then click **Other system tray icons** on the displayed window, and turn on the icon for **envdisp MFC Application**.



(6) Event notifications

This feature allows user applications to monitor the hardware status of this equipment by checking event object states.

(7) Pop-up notifications

This feature displays pop-up messages to notify users of hardware failures in this equipment.

(8) Remote notifications

This feature enables a remote device to check the hardware status of this equipment and sends a notification whenever the hardware status changes.

(9) Status acquisition by using library functions

This feature allows user applications to obtain the hardware status of the equipment by using the RAS library.

Control:

(10) Automatic shutdown

This feature automatically shuts down this equipment when an abnormal temperature inside the chassis is detected. You can configure whether to perform automatic shutdown by using (4) RAS Setup window under GUI features settings

(11) Shutdown via library functions

You can shut down this equipment from a user application by using the RAS library.

(12) Control of general-purpose external contacts

This feature enables users to control general-purpose external contacts through the RAS library.
Two input contacts and two output contacts are available. These contacts can be used to input signals from external devices to this equipment or output signals from this equipment to external devices.

Library functions

(13) RAS library interface

This interface provides library functions for recording log information. These are in addition to the library functions provided by item (9) under Status checks and items (11) and (12) under Control.

Maintenance / Failure analysis

(14) Memory dump collection

If a failure occurs, such as an unexpected shutdown of this equipment, the contents of the system memory are recorded in a file (memory dump file) when the watchdog timer times out or when keyboard input (pressing the **Scroll Lock** key twice while holding the **Right Ctrl** key) is performed. The cause of the failure can be investigated by analyzing the contents of this memory dump.

(15) Log information collection window

In this window, you can use a graphical user interface to collect log data and memory dump files for this equipment.

(16) STOP Error Code Cause Notification

Detects blue screens caused by STOP error code 0x80 and records the cause in the event log.

(17) Maintenance Operation Commands

These commands can be used to save failure information, such as memory dump files and event log files, to external media.

(18) Internal chassis temperature trend log

This feature periodically measures the internal chassis temperature of this equipment and records the data in a file.

Simulation:

(19) Hardware status simulation

This feature simulates the hardware status of this equipment. It can be used to test user applications or verify the RAS software notification interface without an actual hardware failure.

This manual explains the features described in (14) Memory dump collection and (17) Maintenance Operation Commands under Maintenance / Failure analysis. For details about other features, refer to “HF-W200E RAS FEATURES MANUAL (WIN-63-5004)”.

8.2 Collecting Memory Dumps

When one of the causes in Table 8-2 occurs, this equipment records the contents of the system memory in a file (memory dump file). A blue screen then appears. By analyzing the contents of the memory dump file, you can investigate the cause of the failure.

Table 8-2 Causes for Collecting Memory Dumps

Cause	Description
Memory dump collection by keyboard operation	Memory dumps are collected by keyboard operation (pressing the **Scroll Lock** key twice while holding the **Right Ctrl** key) (*1).
Watchdog timer timeout	Memory dumps are collected when a watchdog timer timeout occurs.
Hardware failure	When a serious hardware failure (such as an uncorrectable memory error) occurs in this equipment, a memory dump is collected.
Windows® STOP Error	When a fatal error occurs in the Microsoft® Windows® kernel, a memory dump is collected.

(*1) Depending on the conditions, such as when Windows® stops responding at a high interrupt request level (IRQL), memory dumps may not be collected.

< NOTE >

This equipment enables the Windows® function that collects memory dumps by keyboard operation: pressing the **Scroll Lock** key twice while holding the **Right Ctrl** key. Therefore, do not perform this operation for any purpose other than collecting memory dumps.

To select the memory dump file type, open **System** in **Control Panel**. You can select from the following five types. For more reliable failure analysis, it is recommended to set this equipment to “Complete Memory Dump”. The factory-shipped condition is “Complete Memory Dump”.

- Complete memory dump : Records the entire contents of system memory. The boot volume (*2) must have enough free space to hold a paging file equal to the size of the physical memory plus 1 MB.
- Kernel memory dump : Records kernel memory. The boot volume (*2) must have a paging file at least as large as the kernel memory size.
- Minimum memory dump : Records the minimum information necessary to identify the reason for equipment shutdown. The boot volume (*2) must have enough free space to hold a paging file of more than 2 MB.
- Automatic memory dump: Records kernel memory, similar to kernel memory dump. The difference with a kernel memory dump is that the initial size of the page file can be smaller than the physical memory size.
- Active memory dump: Filters the memory allocated to Hyper-V virtual machines and records only the memory used by the Hyper-V host. The resulting memory dump file can be smaller than a complete memory dump.

(*2) The boot volume refers to the volume that contains Windows® and its support files.

To collect a complete memory dump file, a memory dump file sized according to the installed memory capacity is required. In addition, the memory dump and virtual memory (page file) settings must match the recommended settings for this equipment (*3).

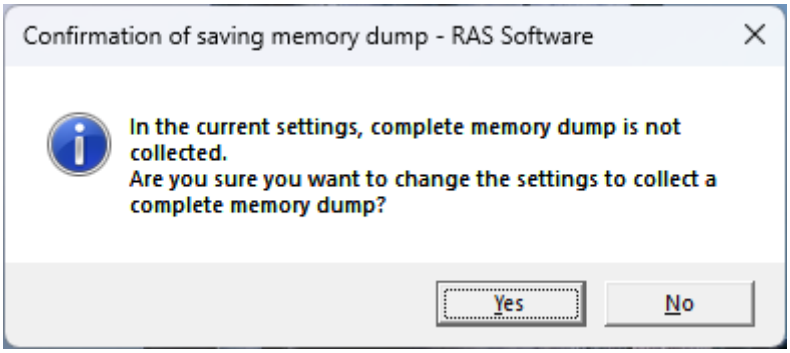
(*3) This refers to the following settings in **System Properties** in **Control Panel**. These settings are preconfigured in this equipment at the factory-shipped condition:
- The memory dump type in **Startup and Recovery** is set to **Complete memory dump**.
- **Overwrite any existing file** in **Startup and Recovery** is enabled.
- The **Initial size** and **Maximum size** of virtual memory in **Performance** are set to the installed memory size plus 300 MB.

When a cause for collecting memory dumps occurs, a screen called the blue screen appears, and then the memory dump collection process starts.

< NOTE >
- The time required for the memory dump collection process varies depending on the type of dump file collected, the configuration of the installed drives, and the installed memory capacity. For the recommended setting of Complete memory dump, the process takes longer, so please be aware.
- In some cases, after the blue screen appears, the progress indicator for the memory dump collection process may not be displayed and the process may stop. This occurs because the memory dump collection process failed due to factors such as file system or storage failures. In this case, record the information displayed on the screen, turn off the power, then turn it on again to restart the equipment.

8.2.1 Memory dump confirmation messages

This equipment displays the following message and records an event in the event log in some cases. This occurs if the capacity of the physical memory exceeds the capacity of the memory dump file or the virtual memory due to, for example, newly added physical memory. It also occurs when a complete memory dump cannot be collected because the memory dump settings have changed.

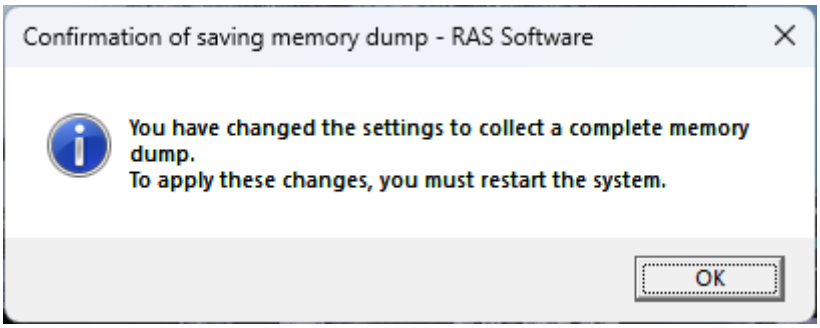


If you want to operate the system with the memory dump settings recommended for this equipment, click **Yes** to close the message box. The system will then automatically change the memory dump and virtual memory settings and secure an area for saving memory dump files as required.

<NOTE>

- When the preceding message box is displayed, an information log entry with event ID 26 is recorded in the event log.
- If you do not want to use the system with the memory dump settings recommended for this equipment, click **No** to close the message box. After this, the message box will no longer be displayed.

If the following message prompting you to restart the system is displayed, click **OK** to close the message box, and then restart the system.



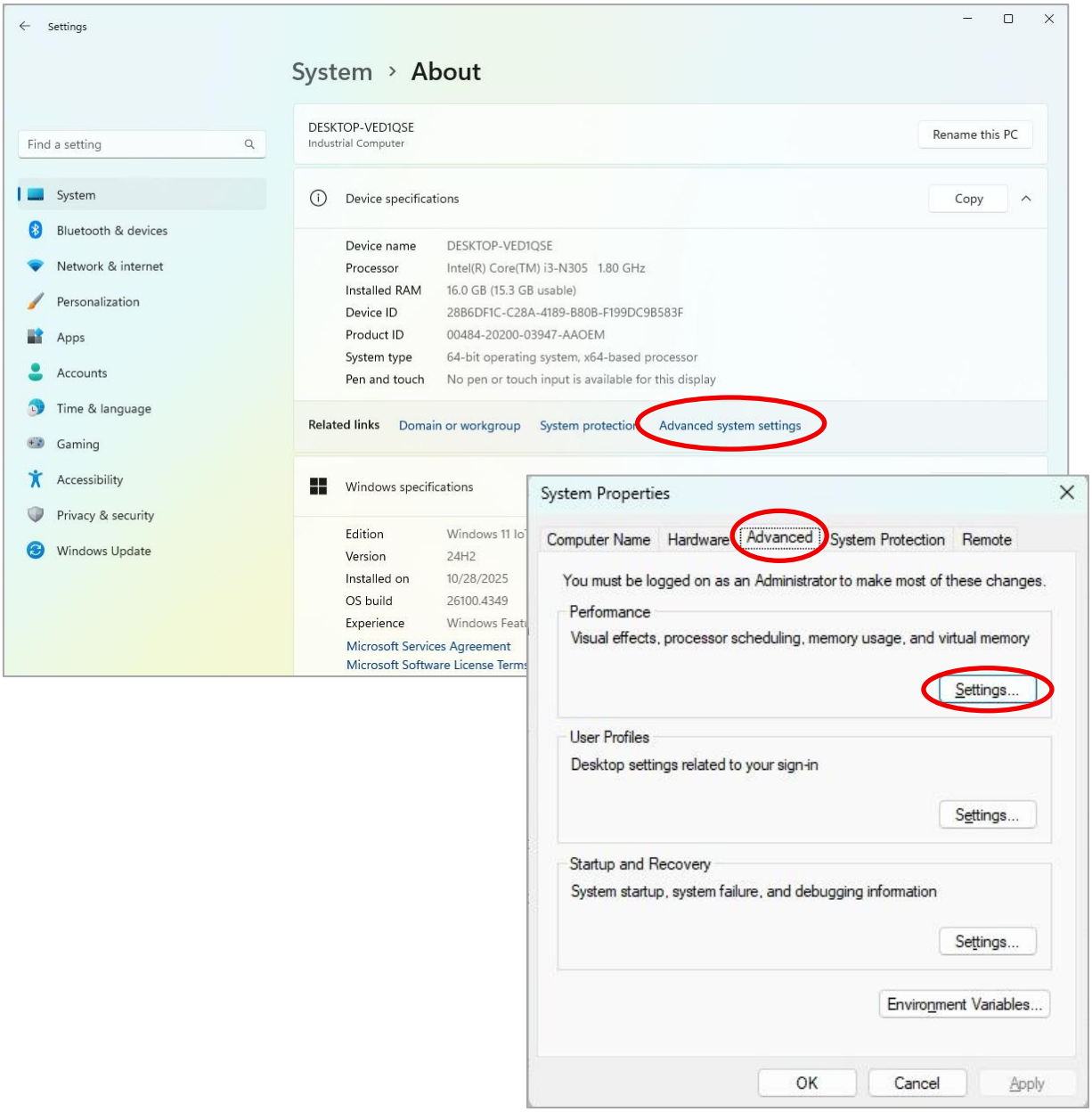
8.2.2 Configuring the settings related to memory dumps

This section describes how to configure the settings related to a memory dump.
Use the following procedure when you want to change the memory dump settings to the settings recommended for this equipment. If you are already operating the system with the memory dump settings recommended for this equipment (for example, immediately after factory shipment), you do not have to perform this procedure.
Additionally, if you clicked **Yes** in the dialog box described in “8.2.1 Memory dump confirmation messages”, you do not have to perform this procedure.

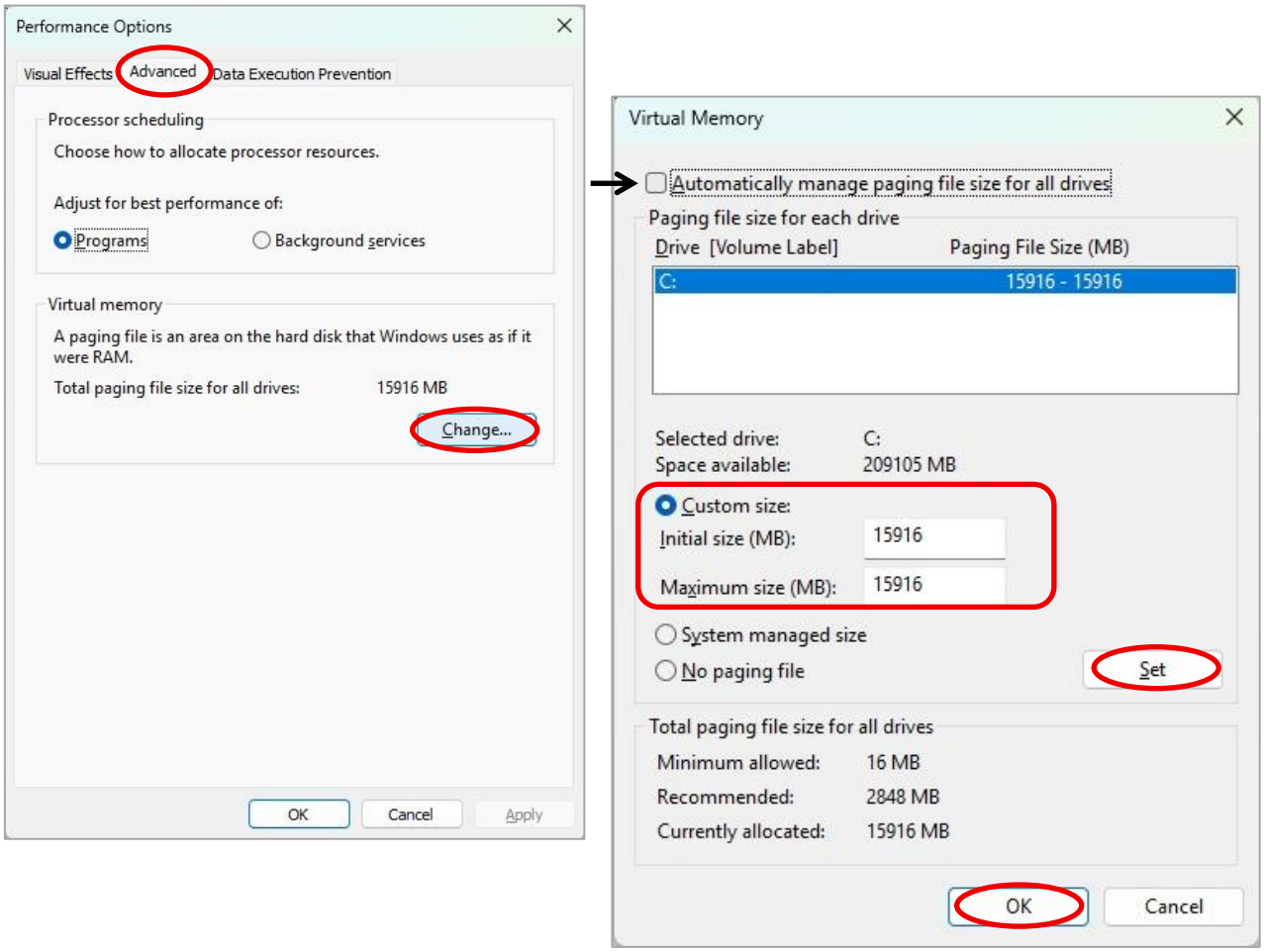
<NOTE>
Before starting the procedures in this section, you must sign in to the local computer as an administrator (a member of the Administrators group).

(1) Configuring virtual memory

1. Open **Control Panel**, and click **System and Security → System**.
2. Click **Advanced system settings**.
3. In the **System Properties** window, select the **Advanced** tab, and click **Settings (S)...** under **Performance**.



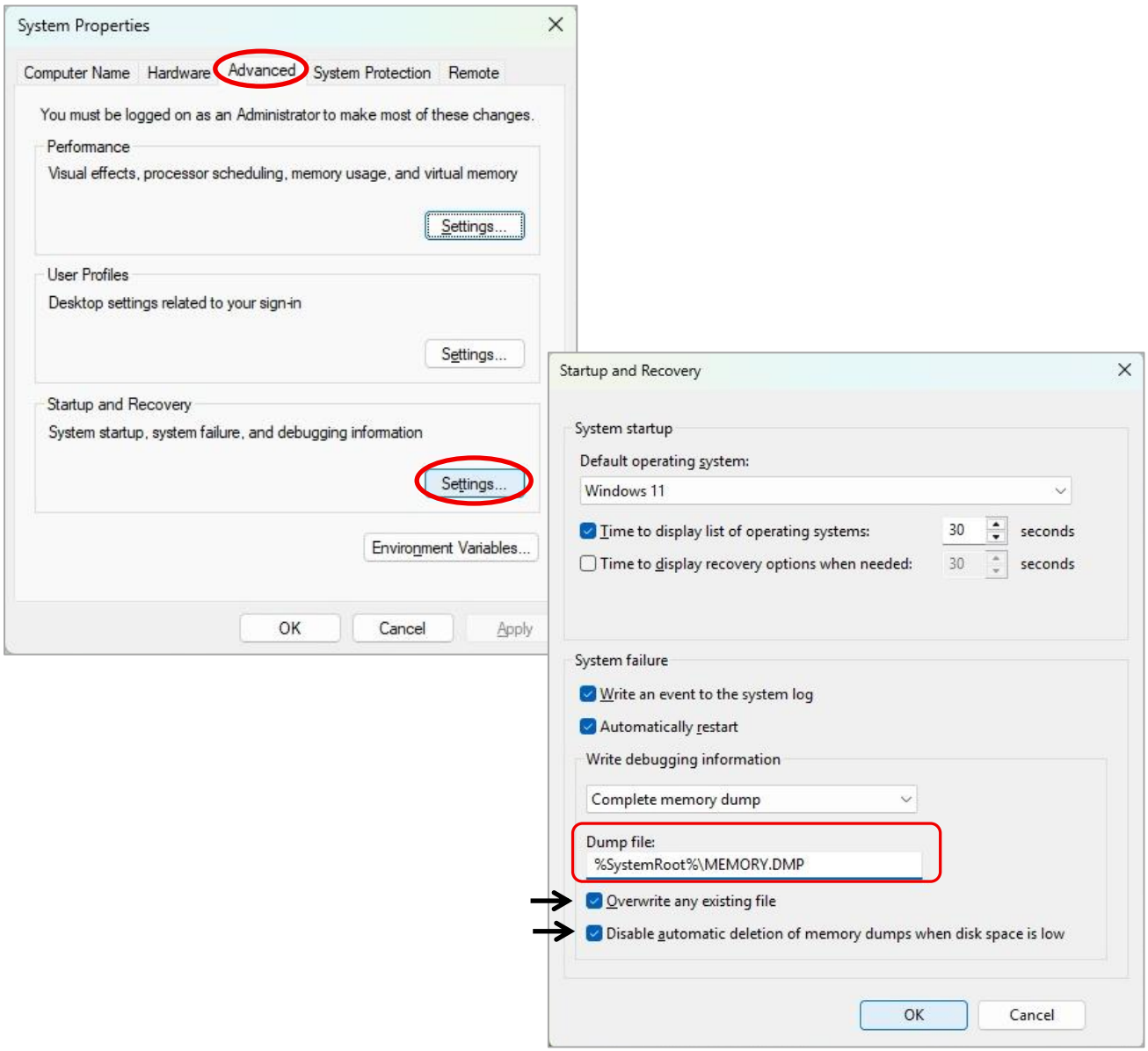
4. Click the **Advanced** tab in the **Performance Options** window.
5. In the **Virtual Memory** group, click **Change(C)…**.
6. Clear the check box for **Automatically manage paging file size for all drives (A)**.
7. In the **Drive** list, select the drive that contains the paging file to be modified. Here, click **C:** (system drive).



8. Select **Custom size:**, enter “15916” in MB for both **Initial size (MB):** and **Maximum size (MB):**, and click **Set**.
9. Click **OK**.

(2) Specifying a memory dump file

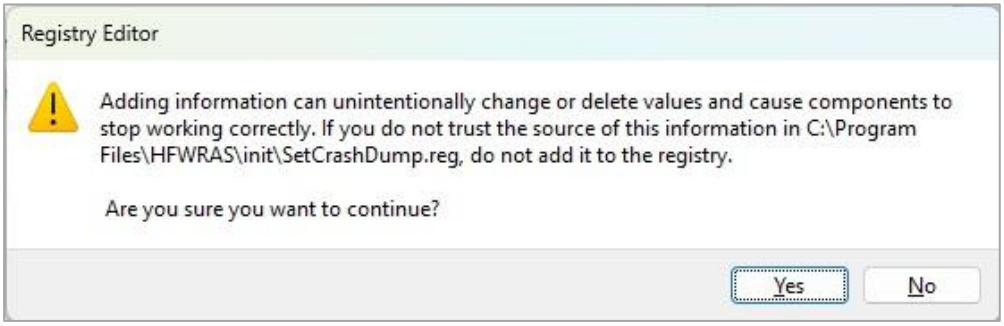
1. Open **Control Panel**, and click **System and Security → System**.
2. Click **Advanced system settings**.
3. In the **Startup and Recovery** group, click **Settings (T)...**.
4. Under **Startup and Recovery**, click **Settings**.
5. In the **Startup and Recovery** window, under the **System failure** group, in the **Write debugging information** group, enter the memory dump file name in the **Dump file** field.
   By default, **%SystemRoot%¥MEMORY.DMP** is specified in this field.
   If no changes are required, you do not need to enter anything.
6. Ensure that the check boxes for **Overwrite any existing file (O)** and **Disable automatic deletion of memory dump when disk space is low (A)** are selected.
7. Click **OK**.



(3) Setting method when collecting Complete memory dump

To enable the collection of the recommended complete memory dump on this equipment, perform the following steps:

1. Double-click the **SetCrashDump.reg** file located under **C:¥Program Files¥HFWRAS¥init**.
2. When the message appears, click **Yes**.



3. When the message indicating that the addition was successful appears, click **OK**.
4. The settings will be applied after restarting the OS.

(4) Reserve the area for saving a memory dump

Reserve the area to be used for saving a memory dump by using the **createdmp** command.

For details, refer to “8.3 Maintenance Operation Commands”.

8.3 Maintenance Operation Commands

This section explains how to use the maintenance operation commands. These commands are used when a failure occurs on this equipment or during preventive maintenance.
Run all commands from the command prompt.

Table 8-3 shows a list of maintenance operation commands.

Table 8-3 Maintenance Operation Commands

Command name	Feature
logsave	Used to collect data for preventive maintenance or post-failure analysis when performing preventive maintenance tasks or when a failure occurs.
mdump	Used to copy a memory dump file to removable media when a memory dump is collected due to a STOP error or similar issue.
createdmp	Used to secure storage space for a memory dump file when a message indicating insufficient memory dump capacity is displayed.
getrasinfo	Used to check the status of the equipment, such as internal temperature.

The Manufacturer provides a paid services to analyze the data collected by these maintenance operation commands, such as memory dump files and data for failure analysis.

8.3.1 Log information collection command (logsave)

<Name>

logsave - Collecting log information

<Syntax>

logsave [-e file name][Directory]

< Functionality >

The logsave command saves the data used for preventive maintenance and post-failure analysis.
The data is compressed and recorded as a single file (File name: logsave.zip).
The following options are available for this command. If no options are specified, a logsave directory is created directly under the system drive (usually C:\) and the data is saved in that directory.

-e file-name: Data previously saved by the logsave command will be decompressed. For the file name, specify the absolute path of the file that you want to decompress. If you do not use this option, the logsave command will save the data.

directory: When you are not using the -e option, specify the directory in which you want to store the saved data. If this option is not used, the logsave directory is created directly under the system drive (usually C:\), and data is saved in that directory.
When you are using the -e option, specify the directory where you want to store the decompressed data. If you do not use this option, the data is decompressed in the current directory.

Table 8-4 shows the information collected by the logsave command.

Table 8-4 Information Saved by logsave Command

Item	Description
Windows® event log file	Backup of the event log file
RAS software log data	RAS software operation log
RAS software user settings information	User-defined files for pop-up notifications
Windows® version information	Version information for Windows® system files and driver files
Minimum memory dump	Files in the minimum dump directory
System information	System information including hardware resources and the software environment
Output of the RAS information display command	Equipment status such as internal temperature and RAS software configuration
Output of the ipconfig command	Network setting information
Windows® setup log	Log files generated during Windows® setup

<Diagnosis>

When this command terminates with an error, the following error message is displayed.

If the directory for storing saved data does not exist, an error message output by the Windows® xcopy command is displayed.

Table 8-5 Error Messages of logsave Command

Error message	Meaning
You do not have the privilege to run this command. Please run this command again on "Administrator: Command Prompt".	You do not have administrator privileges. Sign in to the computer as an administrator, and then run the command again. If User Account Control (UAC) is enabled, open the command prompt with administrator privileges, and then run the command.

<NOTE>

- When you run the logsave command, sign in to the computer as an administrator (a member of the Administrators group). You cannot run multiple instances of the logsave command simultaneously.
- Open the command prompt with administrator privileges to run the command.
- Log information can also be collected by selecting a program from the Start menu. For details, refer to “HF-W200E RAS FEATURES MANUAL(WIN-63-5004)”.
- Double-click the saved logsave.zip file, and verify that you can view the contents of the ZIP file. If you cannot view the contents, the ZIP file might be corrupted. In that case, run the command again.

8.3.2 Memory dump file copy command (mdump)

<Name>

mdump - Copying a memory dump file

<Syntax>

mdump [-n | -e file name] <Copy (Decompress) destination path name>

< Functionality >

The mdump command compresses and copies the memory dump file collected by Microsoft® Windows® when the equipment stops unexpectedly to removable media.

The target includes the dump file specified in **Control Panel** → **System and Security** → **System** → **Advanced system settings** → **Startup and Recovery** options, as well as all files in the minimum dump directory.

These files are compressed and stored as MEMORY.zip.

You can also use the -e option to decompress the compressed file into individual files.

The following options are available for this command:

-n:	Copies the target file without compression.
-e file name:	The mdump command decompresses the compressed file into individual files. Be sure to specify the name of the source file to decompress.
Copy destination path name:	When the -e option is not specified, specify the drive name for the copy destination. To copy to a subdirectory, specify the full path including the directory name. When the -e option is specified, specify the directory where the decompressed file will be stored.

- The memory dump file is copied to the destination specified by this command for copying (decompression).
- If a file with the same name already exists at the destination, it will be overwritten.
- When you run the mdump command by typing "mdump /?" or "mdump -?" at the command prompt, or when there is an error in the specified parameters, a help message showing how to use the command will be displayed.

<Diagnosis>

When this command terminates with an error, the following error message is displayed.

Table 8-6 Error Messages of mdump Command

Error message	Meaning
You do not have the privilege to run this command. Please run this command again on "Administrator: Command Prompt".	You do not have administrator privileges. Sign in to the computer as an administrator, and then run the command again. If User Account Control (UAC) is enabled, open a command prompt with administrator privileges, and then run the command.

<NOTE>

- When you run the mdump command, sign in to the computer as an administrator (a member of the Administrators group). You cannot run multiple instances of the mdump command simultaneously.
- Open a command prompt with administrator privileges to run the command.
- If there is not enough free space at the destination, a Compressed Folder Error will occur when executing the mdump command. Therefore, before running the command, ensure that there is free space equivalent to the installed memory capacity.
- Do not run the mdump command immediately after the OS starts following a blue screen. If you do, a Compressed Folder Error occur. For details, refer to “HF-W200E RAS FEATURES MANUAL(WIN-63-5004)”.
- Double-click the saved MEMORY.zip file, and then verify that you can view the contents of the ZIP file. If you cannot view the contents, the ZIP file might be corrupted, so try running the command again.

8.3.3 Storage space allocation command for saving a memory dump (createdmp)

<Name>

createdmp - Reserves storage space for saving a memory dump file

<Syntax>

createdmp

<Functionality>

The createdmp command creates an empty memory dump file in advance and reserves storage space for saving a memory dump. This prevents failures in collecting memory dumps due to insufficient storage capacity.

The createdmp command reserves storage space only if the following conditions are met. If these conditions are not met, the command terminates with an error. Ensure that the memory dump settings are correct, and then run the command again. For details on configuring memory dump settings, refer to “8.2.2 Configuring the settings related to memory dumps”.

- The Complete memory dump setting is enabled.
- The memory dump file name is entered correctly.
- The memory dump file can be overwritten.
- After allocating space for the memory dump file, at least 10% of the partition’s storage capacity remains free.

The size of the allocated storage space will be the installed memory size plus 10 MB

<NOTE>

- When you run the createdmp command, sign in to the computer as an administrator (a member of the Administrators group). You cannot run multiple instances of the createdmp command simultaneously.
- If User Account Control (UAC) is enabled, open a command prompt with administrator privileges to run the command.

<Diagnosis>

When this command terminates with an error, the following error message is displayed.

Table 8-7 Error Messages of createdmp Command

Error message	Meaning
Error: In the current settings, memory dump file won't be saved.	Memory dump will not be collected with the current settings. Change the memory dump setting to Complete Memory Dump.
Error: Free disk space is too low.	The free storage space is insufficient. Increase the available storage space, and then run the command again.
Error: Systemcall failed. (%s, %x) %s: Name of the Windows API function where the error occurred %x: Error code from the Windows API	An internal error occurred.
You do not have the privilege to run this command. Please run this command again on "Administrator: Command Prompt".	You do not have administrator privileges. Sign in to the computer as an administrator, and then run the command again. If User Account Control (UAC) is enabled, open a command prompt with administrator privileges, and then run the command.

8.3.4 RAS information display command (getrasinfo)

<Name>

getrasinfo - Displays this equipment status, including the status of the internal chassis temperature, and the RAS software configuration information.

<Syntax>

getrasinfo [/status | /setting] [/e file-name]

<Functionality>

The getrasinfo command displays the current status of this equipment, including the internal chassis temperature, and the RAS software configuration information at the command prompt. This command can also store the output in a specified file in text format.

The following options are available for this command. If neither the /status nor the /setting option is specified, the command displays both the equipment status and the RAS software configuration information.

/status: Displays the current status of this equipment, including the internal chassis temperature.

/setting: Displays the RAS software configuration information.

/e file-name: Stores the output in the specified file in text format without displaying it at the command prompt.

Table 8-8 shows the information displayed by the getrasinfo command.

Table 8-8 Information Displayed by getrasinfo Command

Item	Description
Equipment Status	- Temperature condition - Storage condition - Memory condition
RAS Software setting	- Automatic shutdown settings - Watchdog timer settings - Storage failure prediction (SMART) setting - Pop-up settings

<Displayed output>

The following shows an example of the output when the getrasinfo command is executed without specifying any options.

```
<<getrasinfo result>>
Date: 2025/07/30 17:28:30
Model Name: HF-W200E

[Hardware Status]
  [Temperature condition]
    Internal temperature status:     Normal
    Internal temperature1 value:     28 deg C
    Internal temperature2 value:     28 deg C

  [Storage condition]
    M.2 SSD1
      Status:                        Healthy
      Used Endurance:                0 %

  [Memory condition]
    DIMM1 status:                    Normal

[RAS Setting]
  [Automatic shutdown setting]
    Temperature:                     OFF

  [Watchdog timer setting]
    Retrigger type:                  Automatic

  [Storage failure prediction setting]
    Function is available:           Enable

  [Popup setting]
    Function is available:           Disable
    [Advanced]
      Temperature:                   Disable
      SMART:                         Disable
      Memory:                        Disable
```

Header section

Hardware Status section
(Equipment Status)

RAS Setting section
(RAS Software setting)

<Explanation of the displayed output>

Header section:

This section displays the date and time when the getrasinfo command was executed, as well as the model name. The following shows an example of the header section output.

```
<<getrasinfo result>>
Date: YYYY/MM/DD hh:mm:ss
Model Name: HF-W200E
```

YYYY: Year, MM: Month, DD: Day, hh: hour (24-hour clock), mm: minute, ss: second

[Hardware Status] section:

This section displays the status of this equipment. The Hardware Status section contains the following subsections:

・ [Temperature condition] section:

This section displays the status of various temperatures. The following table shows the display items and their meanings:

Output item	Description	
xx Temperature status: **yy**	xx	Shows the type of temperature. Internal: Inside the chassis
	yy	Shows the status. Normal: The temperature is normal. Error: The temperature is not normal.
xx Temperature1 value: **zz** **xx** Temperature2 value: **zz**	xx	Shows the type of temperature. Internal: Inside the chassis
	zz	Shows the temperature value.

・ [Storage condition] section:

This section displays the storage status. The display items and their meanings are shown below.

Output item		Description	
M.2 SATA SSD **xx**		xx	Indicates the number of internal storage.
	Status：**yy**	yy	Shows the status of the drive. Healthy: Normal Smart Detected: SMART is detected. Unknown: Unknown status
	Used Endurance：**zz**%	zz	Indicates the percentage of the storage write count against the upper limit.

・ [Memory condition] section:

This section displays the status of the main memory. The following table shows the list of items in this subsection and their respective descriptions.

Output item	Description	
xx status: **yy**	xx	Shows the memory slot name. DIMM1 : DIMM1
	yy	Shows the status of the memory. Normal: The memory is normal. Error: Error corrections occur frequently. Not Mounted: No memory modules are installed.

[RAS Setting] section:

This section displays the settings of the RAS software. The RAS Setting section has the following sections.

・ [Automatic shutdown setting] section

This section shows the automatic shutdown setting. The following table describes the items displayed in this section and their meanings.

Output item	Description	
Temperature: **yy**	yy	Shows whether the system is automatically shut down when the temperature is abnormal. ON: Automatically shuts down. OFF: Does not automatically shut down.

・ [Watchdog timer setting] section

This section displays the watchdog timer setting. The following table describes the items displayed in this section and their meanings.

Output item	Description	
Retrigger type: **xx**	xx	Shows the retrigger type. Automatic: Automatically retriggered. Application: Retriggered by an application.

・ [Storage failure prediction setting] section

This section displays the Self-Monitoring, Analysis and Reporting Technology (SMART) setting. The following table describes the item displayed in this section.

Output item	Description	
Function is available: **xx**	xx	Shows whether the Self-Monitoring, Analysis and Reporting Technology (SMART) is enabled or disabled. Enable: Enabled In the case of the HF-W200E, this setting is fixed to “Enable”.

・ [Popup setting] section:

This section displays the pop-up notification setting. The following table shows the list of items in this subsection and their respective descriptions.

Output item		Description	
Function is available: **xx**		xx	Shows whether the pop-up notification function is enabled or disabled. Enable: Enabled Disable: Disabled
[Advanced]		-	Shows the advanced settings.
	Temperature: **zz**	zz	Shows whether a pop-up is displayed when the temperature is abnormal. Enable: Displayed Disable: Not displayed
	SMART: **aa**	aa	Shows whether a pop-up is displayed when SMART is detected. Enable: Displayed Disable: Not displayed
	Memory: **dd**	dd	Shows whether a pop-up is displayed when frequent memory error correction is detected. Enable: Displayed Disable: Not displayed

<Diagnosis>

When this command completes successfully, the getrasinfo command returns exit code “0”.

When this command terminates with an err, the getrasinfo command returns exit code “0”. When this command terminates with an error, one of the following error messages is displayed and exit code “1” is returned.

Table 8-9 Error Messages of getrasinfo Command

Error message	Meaning
Usage: getrasinfo [/status | /setting] [/e File]	The specified options are incorrect. Specify the correct options.
An error occurred in %s. errorcode=%x %s: Function name or internal function name of error Windows API %x: Error code of Windows API or internal function	An internal error has occurred. Run the command again.
You do not have the privilege to run this command. Please run this command again on "Administrator: Command Prompt".	You do not have administrator privileges. Sign in to the computer as an administrator, and then run the command again. If User Account Control (UAC) is enabled, open a command prompt with administrator privileges, and then run the command.

< NOTE >

- When you run the getrasinfo command, sign in to the computer as an administrator (a member of the Administrators group). You cannot run multiple instances of the getrasinfo command simultaneously.
- Start the command prompt with administrator privileges and run the command.
- When the /e option is used, if a file with the same name already exists at the output destination, it will be overwritten.
- If the command fails to retrieve some information, only the section name may be displayed or part of the information may appear as “---”. In this case, run the command again.

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CHAPTER 9 TROUBLESHOOTING

This chapter explains the possible causes of common problems and the actions to resolve them.
Select the applicable symptom from “9.1 List of Problems”, then follow the instructions in the referenced section (“9.2 Causes and Countermeasures” through “9.5 Checking the System Load by Using Performance Monitor”).
If following the instruction in “9.2 Causes and Countermeasures” does not resolve the symptom, contact your system administrator or our sales representative.

> **⚠ WARNING**
>
> If smoke, an unusual smell, or similar symptoms occur, immediately disconnect the power supply to this equipment. Remove the power cord from the DC input connector on the front of this equipment, and contact your system administrator or our sales representative. Continuing to use this equipment in a faulty state may result in a fire or electric shock.

9.1 List of Problems

This section lists problems that may occur on this equipment. Refer to the applicable item below and perform cause investigation and corrective actions.

9.1.1 Problems Before OS Startup

This section describes problems that may occur before the desktop screen appears (before OS startup).
For the names of the indicator lamps on this equipment, refer to “1.4 Names and Functions of Each Part”.

(1) This equipment does not start

After plugging the power cord into the outlet, check the operation in the order of 1 to 5. If any applicable item is found, refer to the corresponding page (refer to the first applicable item):

1. This equipment does not start even when pressing the power button (Refer to "Page 9-3")
2. Nothing appears on the screen (Refer to "Page 9-3")
3. An error message appears on the screen and the system stops (Refer to "Page 9-4")
4. The system stops at the Windows® logo (Refer to "Page 9-4")
5. A blue screen is displayed and the system stops (Refer to "Page 9-4")

(2) A beep sound is heard (Refer to "Page 9-5")
(3) The BIOS setup menu cannot be opened (Refer to "Page 9-5")
(4) Remote power-on via RAS external contact cannot be performed (Refer to "Page 9-5")
(5) WOL cannot be used (Refer to "Page 9-5")

9.1.2 Problems After OS Startup

This section describes problems that may occur after the Windows® logo is displayed and the desktop screen appears (after OS startup).

9.2 Causes and Countermeasures

9.2.1 Problems Before OS Startup

(1) This equipment does not start

1. This equipment does not start even when pressing the power button

<Possible cause>

Power is not supplied to the equipment or failure of equipment may be suspected.

<Action>

1. Refer to "2.2 Starting This Equipment" and check whether this equipment starts.
2. Ensure that the circuit breaker on the power distribution panel is turned ON.
3. If this equipment does not start even after performing steps 1 and 2, a failure of this equipment may be suspected.
   Contact your system administrator or our sales representative.

2. Nothing appears on the screen

<Possible cause>

A failure of the display may be suspected.

<Action>

1. Ensure that the power cord of the display is connected to an outlet.
2. Ensure that the power button of the display is turned ON.
3. Ensure that the display is connected to this equipment via the display interface cable. (Check that the cable is not loosely connected.)
4. Review the display settings. For details on display settings, refer to the manual supplied with the display.
5. Check whether the screen appears when using another display or cable, and confirm that there is no failure in the display or cable.
6. If the screen does not appear even after changing the display or cable, a motherboard failure may be suspected.
   Contact your system administrator or our sales representative.

3. An error message appears on the screen and the system stops

<Possible cause>

Battery depletion or OS corruption may be suspected.

<Action>

If the following error messages appear, perform the corresponding actions:

・ " RTC Error, Load default values "

If this message appears every time you start this equipment, the battery is depleted. Contact your system administrator or our sales representative.

・ " UEFI Interactive Shell "

A failure of the M.2 SSD or OS may be suspected. Check the following:

i) Ensure that no USB CD, USB FD, or USB boot device is connected to this equipment.
If any USB CD, USB FD, or USB boot device is connected, remove it.

ii) If you have a recovery DVD, use the recovery DVD to restore this equipment to the factory-shipped condition.

4. The system stops at the Windows® logo

<Possible cause>

A hardware failure or OS corruption may be suspected.

<Action>

1. Disconnect the power cord from the outlet and remove all USB devices except the keyboard and mouse. Then reconnect the power cord to the outlet and start this equipment.
2. If the issue is not resolved after performing step 1, OS corruption may be suspected. If you have a recovery DVD, use the recovery DVD to restore this equipment to the factory-shipped condition and recover using the backup data.

< NOTE >

・Do not connect a USB device during the OS startup , as this may prevent the OS from starting normally.

・Depending on the KVM switch, switching the screen during OS startup may prevent the OS from starting normally. If you use a KVM switch, perform sufficient operational verification.

5. A blue screen is displayed and the system stops

<Possible cause>

Input of a remote shutdown signal may be suspected.

<Action>

1. Refer to “9.3 STOP Error Codes” and take the appropriate action.

(2) A beep sound is heard

<Possible cause>

Detection of a hardware failure may be suspected.

<Action>

1. Contact your system administrator or our sales representative.

(3) The BIOS setup menu cannot be opened

<Possible cause>

Keyboard input may be suspected as not being accepted.

<Action>

1. Disconnect the keyboard cord and reconnect it securely.
2. Connect the keyboard cord to another port.

(4) Remote power-on via RAS external contact cannot be performed

<Possible cause>

It may be operating as specified, or a failure may be suspected.

<Action>

1. Check the product label on this equipment and ensure that the SPEC No is FR01.
   If the SPEC No is FR01, go to step 2. If it is any other value, the operation is as specified.
2. A failure may be suspected. Contact your system administrator or our sales representative.

(5) WOL cannot be used

<Possible cause>

The WOL feature is disabled.

<Action>

1. Refer to “2.6.1 Enabling the WOL (Wake on LAN) Function” and enable the WOL feature.
2. Insert the LAN cable and check whether the LED on the LAN port lights up. For the role of the LAN port LED, refer to “1.4 Names and Roles of Each Part”.
3. If the LAN port connection cannot be confirmed in step 2, replace the LAN cable.
4. If the symptom is not resolved in step 3, this equipment may be suspected of failure. Contact your system administrator or our sales representative.

9.2.2 Problems After OS Startup

(1) The alarm lamp is lit

<Possible cause>

A hardware failure notification by the RAS software may be suspected.

<Action>

1. If the alarm lamp is lit in red, the RAS software is notifying a hardware failure.
   ⇒ Temperature failure. Perform the following:
   i) Check whether sufficient installation space is secured for this equipment (refer to "1.5.2 Installation").
      ⇒ If not secured, ensure sufficient installation space.
   ii) Check whether the installation environment (ambient temperature) meets "1.5.1 Environment".
      ⇒ Remove obstacles or adjust the temperature using air conditioning so that the ambient temperature meets "1.5.1 Environment".

(2) This equipment operates slowly

<Possible cause>

Insufficient memory capacity or insufficient M.2 SSD capacity may be suspected.

<Action>

1. Terminate unnecessary applications to increase available memory.
   ⇒ To check CPU and memory usage status, refer to "9.5 Checking System Load by Using Performance Monitor".
2. Delete unnecessary files to increase available M.2 SSD capacity.

(3) This equipment does not respond

<Possible cause>

A hardware or software failure may be suspected.

<Action>

1. The screen may appear locked due to an application stop. If this equipment responds when pressing **Alt+Tab** or **Ctrl+Alt+Delete**, try the following procedure.
   i) Press **Alt + Tab** to switch applications and identify the stopped application.
   ii) Once the problematic application is identified, terminate it using Task Manager.
   Task Manager can be started by pressing **Ctrl + Alt + Delete**, displaying the **Windows Security** screen, and clicking the **Task Manager** button.
   iii) Restart this equipment.
2. If this equipment cannot be restarted after performing step 1, refer to Forced Shutdown Method and turn off the power. After turning off the power, disconnect all USB devices except the keyboard and mouse, and then start this equipment.

< Forced shutdown method >

If shutdown cannot be performed using the above method, press and hold the power button for 4 seconds or longer. The power will turn off, and the equipment will enter standby mode.

(4) This equipment automatically enters standby mode or restarts

a) Warning or error message is recorded in the event log.

<Possible cause>

A hardware or software failure may be suspected.

<Action>

1. Check the message details in the **System** or **Application** category of the event log and take appropriate action (refer to “9.4 Event Log”).
2. If the message originates from a purchased product, contact your place of purchase.

b) Neither a)

<Possible cause>

A loose cable connection or unstable power supply may be suspected.

<Action>

1. Ensure that the power cord is securely connected to the DC power connector and the AC adapter power connector.
2. If the symptom persists after step 1, the power supply may be unstable. Check whether the supply voltage is appropriate.

(5) The screen flickers or remains blank

<Possible cause>

A display failure may be suspected.

<Action>

1. Ensure that the display power cord plug is connected to the outlet.
2. Ensure that this equipment and the display are securely connected via the display interface cable (check for poor cable contact).
3. Replace the display interface cable (check for cable disconnection).
4. Review the display settings. For display adjustment, refer to the manual attached to the display.
5. If using a DisplayPort MST (Multi Stream Transport)-compatible display, perform the following (refer to the manual attached to the display for configuration details):
   i) If you can switch between DisplayPort 1.1 and DisplayPort 1.2, select DisplayPort 1.2.
   ii) If you can change the MST setting, set it to “Primary”.

< NOTE >

When MST is enabled, the “DisplayPort topology” item will appear when you right-click on the desktop screen.

(6) A disconnected display appears in the screen resolution settings

<Possible cause>

Due to OS specifications, a display that is not connected may be shown.

<Action>

1. Right-click on the desktop screen and click **Display settings** from the menu.
2. In the screen resolution settings, select the display that is not connected.
3. In **Multiple displays**, select **Remove this display**.
   If the above setting change is not applied, click **Apply** to remove the display that is not connected.
4. If there are multiple displays that are not connected, repeat steps 2 and 3.

(7) The screen may flash or black out and then reappear

<Possible cause>

When the system load is high and the graphics driver takes time to respond, Windows® may be suspected of performing a process to restore graphics functionality to normal.

<Action>

1. If a balloon message saying “Display driver stopped responding and has recovered” appears when the phenomenon occurs, or if a warning log with event ID 4101 is recorded in the event log, reduce the system load and operate under a load that does not cause such messages or logs.

(8) A blue screen is displayed or has been displayed

<Possible cause>

An OS or hardware failure may be suspected.

<Action>

1. If the blue screen is displayed, record the STOP error code (such as 0x00000080) or the identifier name (such as NMI_HARDWARE_FAILURE).
2. If the STOP error code cannot be confirmed, refer to the **System** category in the event log and check the STOP error code.
3. Refer to “9.3 STOP Error Codes” to identify the cause of memory dump collection.
4. If paid memory dump analysis is required, save the log after restarting (refer to “8.3 Maintenance Operation Commands”) and contact our sales representative.

(9) Unable to connect to the network

<Possible cause>

LAN settings, network device (such as hub) settings, or a loose cable connection may be suspected.

<Action>

1. Refer to “2.7 Setting Up the LAN Interface” and review the network settings.
2. Disconnect the LAN cable and reconnect it securely.
3. Check that the LAN cable is connected to the correct port.
4. Replace the LAN cable with another one.
5. When using a network device:
   i) Ensure that the network device is powered on.
   ii) After turning on the network device, turn on this equipment.
   iii) Replace the network device with another one and check operation.
6. If the symptom is not resolved after steps 1 to 5, contact your system administrator or our sales representative.

(10) Network connection frequently drops or communication speed is slow

<Possible cause>

LAN settings, network device (such as hub) settings, or a loose cable connection may be suspected.

<Action>

1. Refer to “2.7 Setting Up the LAN Interface” and review the network settings.
2. Disconnect the LAN cable and reconnect it securely.
3. Check that the LAN cable is connected to the correct port.
4. Replace the LAN cable with another one.
5. When using a network device:
   i) After turning on the network device, turn on this equipment.
   ii) Replace the network device with another one and check operation.
6. If the symptom is not resolved after steps 1 to 5, contact your system administrator or our sales representative.

(11) Keyboard input is not accepted

<Possible cause>

An application stop, a loose cable connection, or a keyboard failure may be suspected.

<Action>

1. Keyboard input may temporarily not be accepted due to an application stop.
   If this equipment responds when pressing **Alt + Tab** or **Ctrl + Alt + Delete**, perform the following:
   i) Press **Alt + Tab** to switch applications and identify the stopped application.
   ii) Once the problematic application is identified, terminate it using Task Manager. Task Manager can be started by pressing **Ctrl + Alt + Delete** and selecting **Task Manager**.
   iii) Restart this equipment.
2. Disconnect the keyboard interface cable and reconnect it securely.
3. Connect the keyboard interface cable to another port.
4. Replace the keyboard with another one and check operation.
5. Restart this equipment.

(12) Mouse operation is not accepted, or the cursor and buttons do not function properly

<Possible cause>

Malfunction due to dust or dirt on the mouse, a loose cable connection, or a mouse failure may be suspected.

<Action>

1. For an optical mouse:
   i) Check whether dust or dirt is on the optical sensor area, and clean it if necessary.
   ii) Do not use the mouse on glass, mirrors, or glossy surfaces (use a mouse pad for optical mice).
2. If using a mouse other than the optional product, refer to the manual attached to the mouse.
3. Disconnect the mouse interface cable and reconnect it securely.
4. Replace the mouse with another one and check operation.
5. If using a KVM switch, refer to the manual attached to the switch. Changing settings such as the emulation function may improve the situation.
6. If data is being received on the serial port while starting the OS, use the serial port after OS startup and check whether operation improves.

(13) USB devices (other than keyboard and mouse) are not recognized or do not operate

<Possible cause>

A loose cable connection or the device driver for the USB device may not be installed.

<Action>

1. Disconnect the USB device cable and reconnect it securely.
2. Replace the USB device cable with another one.
3. If using a USB device that requires a device driver, install the driver according to the manual attached to the USB device and restart.
4. If using a USB device that requires external power supply, ensure that the power cord plug is connected to the outlet.
5. If using a bus-powered USB device, check that the device's current consumption does not exceed the maximum current specification of the USB port on this equipment (refer to "5.1 (6) Maximum Current Specifications"). If the USB device supports external power supply, connect it to an external power source.
6. If the symptom persists after steps ① to ⑤, the USB device may be suspected of failure. Refer to the manual attached to the USB device and take appropriate action.
7. If the USB device is not faulty and has a proven connection history, the USB port on this equipment may be suspected of failure. Contact your system administrator or our sales representative.

(14) The serial port does not function properly

<Possible cause>

A loose cable connection or a failure of the connected device may be suspected.

<Action>

1. Disconnect the cable and reconnect it securely.
2. Check whether the connected device is not faulty.
3. If data is being received on the serial port while starting the OS, use the serial port after OS startup and check whether operation improves.

(15) The RAS external contact port does not function properly

<Possible cause>

A loose cable connection or an interface failure with the connected device may be suspected.

<Action>

1. Disconnect the cable and reconnect it securely.
2. Refer to “5.5.2 External Contact Specifications” and check the external contact specifications.
3. If this equipment may be suspected of failure, contact your system administrator or our sales representative.

(16) Unable to shut down

<Possible cause>

The OS may be suspected of being locked.

<Action>

1. While pressing the **right Ctrl** key, press the **Scroll Lock** key twice to obtain a memory dump. After obtaining the memory dump, this equipment will restart.
   If paid memory dump analysis is required, save the log after restarting (refer to “8.3 Maintenance Operation Commands”) and contact our sales representative.
2. If this equipment cannot be restarted after performing step 1, refer to “Forced Shutdown Method” and turn off the power.
3. If the symptom is not resolved after step 1, with the power turned off, disconnect all USB devices except the keyboard and mouse, and then start this equipment.

< Forced shutdown method >

If shutdown cannot be performed using the above method, press and hold the power button for 4 seconds or longer. The power will turn off, and the equipment will enter standby mode.

(17) The time on this equipment is incorrect

<Possible cause>

Because this equipment is used without an Internet connection, the Secure Time feature may be suspected of failing to obtain the correct time.

<Action>

Disable the Secure Time feature using the following steps:

1. Right-click the **Start** button and click **Run** from the displayed menu.
2. In the **Run** dialog box, enter **regedit** and click **OK**.
3. In the displayed window, open **HKEY_LOCAL_MACHINE → SYSTEM → CurrentControlSet → Services → W32Time → Config**.
4. Right-click **UtilizeSslTimeData** under **Config** and click **Modify**.
5. Change the value in **Value data** to **0** and click **OK**.
6. After manually adjusting the time, restart this equipment.

< NOTE >

If the OS time is set ahead of the current time, correcting the BIOS time may not reflect in the OS time. In such cases, correct the OS time.

(18) A failure message is displayed

<Possible cause>

The message may be suspected as being displayed due to failure detection.

<Action>

a) If an alphanumeric string is displayed on the blue screen

1. Refer to “9.3 STOP Error Codes” and take appropriate action.

b) If an error or warning is displayed in the event log

1. Refer to “9.4 Event Log” and take appropriate action.

9.3 STOP Error Codes

The STOP error code is information summarizing the cause of the error.
These values are embedded in the memory dump file when a blue screen occurs.

Table 9-1 shows the causes of the messages displayed on the blue screen. If an identifier name corresponds to the STOP error code, that name will be displayed. There are multiple causes for the STOP error code 0x00000080, but detailed information can be found in the event log (event ID: 800, source: HFWRAS_SYS).

Table 9-1 STOP Error Codes

No.	Code	Cause	Action
1	0x00000080 (NMI_HARDWARE _FAILURE)	―	The cause is recorded in the event log. Refer to "Table 9-2 Action List for STOP Code 0x80" and take the appropriate Action. If the event log does not contain the record, contact your system administrator or our sales representative.
2	Other than the above	Windows® STOP Error	For Windows® STOP errors, refer to Microsoft Support Knowledge Base. If memory dump analysis (paid service) is required, contact our sales representative.

Table 9-2 Action List for STOP Code 0x80

Events recorded in the event log (Event ID: 800, Source: HFWRAS_SYS)	Cause	Action
An uncorrectable error occurred in DIMM1. The detail code is 0x9218.	Uncorrectable memory error occurred	A failure in the main memory may be suspected. Contact your system administrator or our sales representative.
The WDT timed out. The detail code is 0x9222.	Watchdog timer timeout occurred	Ensure that the OS or user application is operating correctly. The OS or user application may be suspected of malfunction. Contact your system administrator or our sales representative.

9.4 Event Log

When an important event occurs, such as a change in environmental information or a remote shutdown request, this equipment collects logs using the Windows® event log function.

The procedure for referring to the event log is as follows:

1. Right-click **Start**, and click **Event Viewer**.
2. The **Event Viewer** screen appears. Select **Windows Logs**, then select **System** or **Application** to view each log.

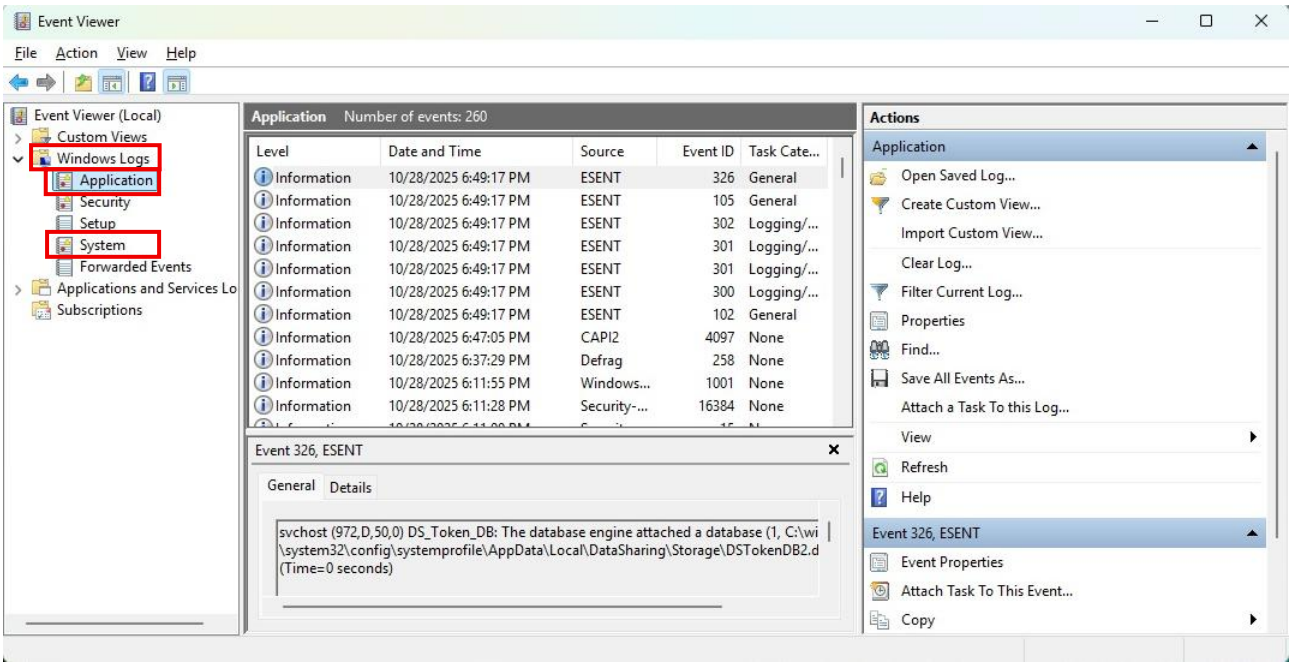


Table 9-3 shows a list of event logs specific to this equipment. No. 1 to No. 7 and No. 10 are collected in the system log, while No. 8 and No. 9 are collected in the application log.

Table 9-3 List of Equipment-Specific Event Logs

No.	Event ID	Source	Type	Description	Action
1	259	HFWRAS_SYS	Warning	The temperature exceeded the prescribed value.	Refer to “9.2.2 (1) Temperature failure” and take the appropriate Action.
2	263	HFWRAS_SYS	Information	The temperature returned to the prescribed value.	No action required.
3	265	HFWRAS_SYS	Warning	The storage (%1) of M.2 SSD1 may be suspected of hardware failure in the near future.	Back up the data and have this equipment repaired.
4	268	HFWRAS_SYS	Error	Shutdown occurred because the temperature reached a critical level.	Refer to “9.2.2 (1) Temperature failure” and take the appropriate Action.
5	524	HFWRAS_SYS	Information	Memory dump is not collected under the current settings. %1	Refer to “8.2.1” and take the appropriate Action, or refer to “8.2.2” to manually change the settings.
6	525	HFWRAS_SYS	Information	Frequent error corrections occurred on DIMM1.	DIMM1 may be suspected of failure. Contact your system administrator or our sales representative.
7	539	HFWRAS_SYS	Error	“%1” monitor terminated.	Hardware monitoring by RAS software stopped. If the error persists after restarting this equipment, contact your system administrator or our sales representative.
8	769	HFWRAS_APP	Error	An error occurred in function %1. Error code = %2.	An error occurred during RAS software operation. If the error persists after restarting this equipment, contact your system administrator or our sales representative.
9	771	HFWRAS_APP	Error	Invalid value is set for registry key “%1”; default value %2 will be applied.	If the error persists after restarting this equipment, contact your system administrator or our sales representative.
10	800	HFWRAS_SYS	Information	%1 Detailed code = %2.	A STOP error occurred. Check the details and refer to “9.3 STOP Error Codes” and take the appropriate Action.

No.3 %1 denotes the manufacturer and the model name of the drive.

No.5 %1 stores the cause of the record in message format. One of the following messages is recorded.

%1
Write debugging information is not set to **Complete memory dump**.
Overwrite any existing file is disabled.
The size of the paging file is insufficient.
No memory dump file exists or the size of the memory dump file is insufficient.

No.7 %1 records one of the following values:

TEMP, MEM, TEMPLOG, WDT, SMART, RASLOG, SMARTLOG, INTERNAL - LOGD

No.8 %1 indicates the name of the function that ended with an error; %2 indicates the error code.

No.9 %1 indicates the registry key with an invalid value; %2 indicates the default value.

No.10 %1 and %2 record one of the following combinations:

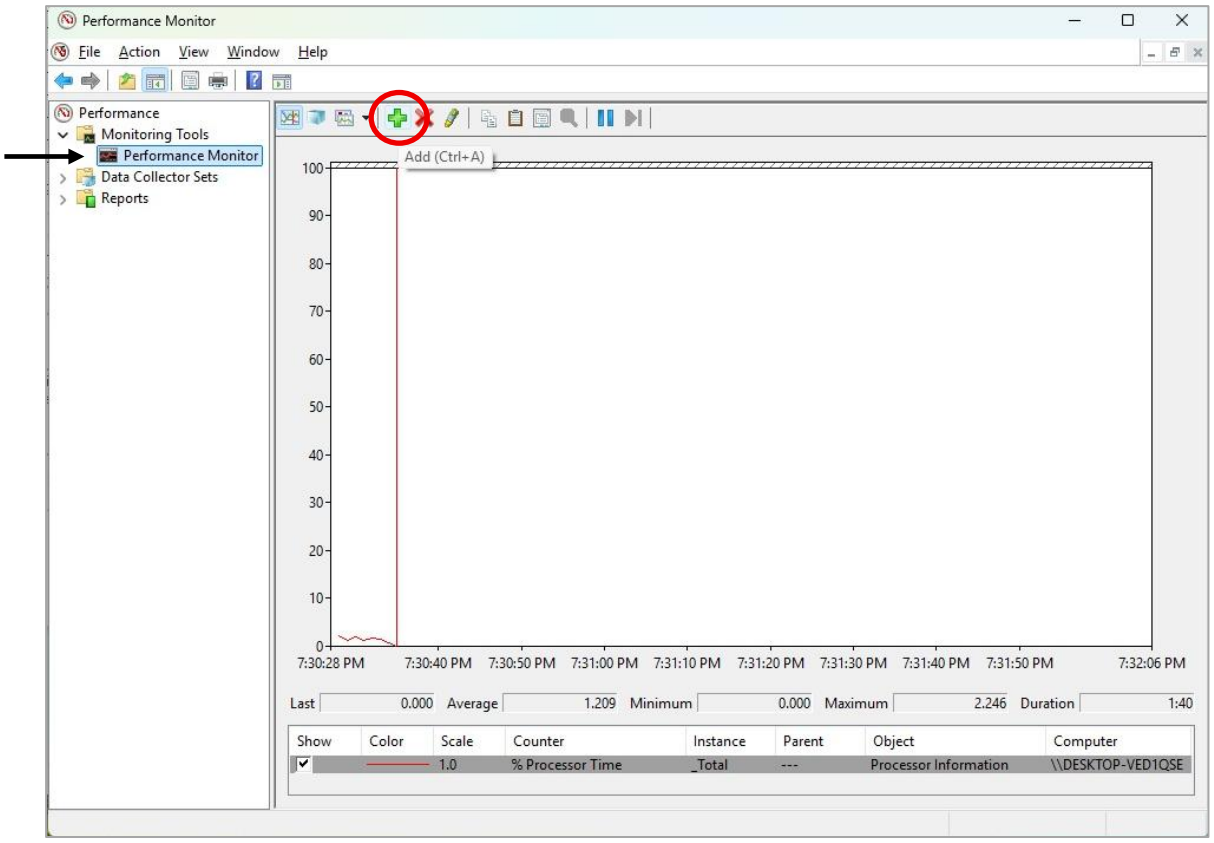
%1	%2
An uncorrectable error occurred on DIMM 1.	0x9218
WDT timed out.	0x9222

9.5 Checking the System Load by Using Performance Monitor

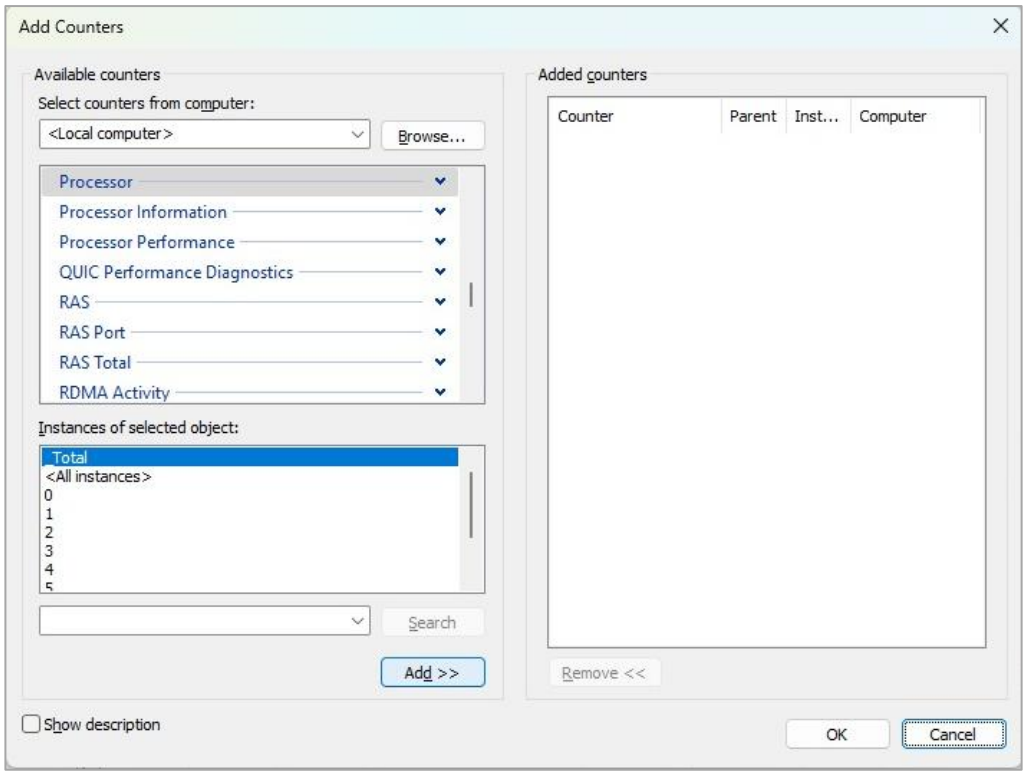
Windows® includes a Performance Monitor tool that allows you to monitor CPU and memory usage. Use this tool as a reference for analyzing system load.

To access Performance Monitor:

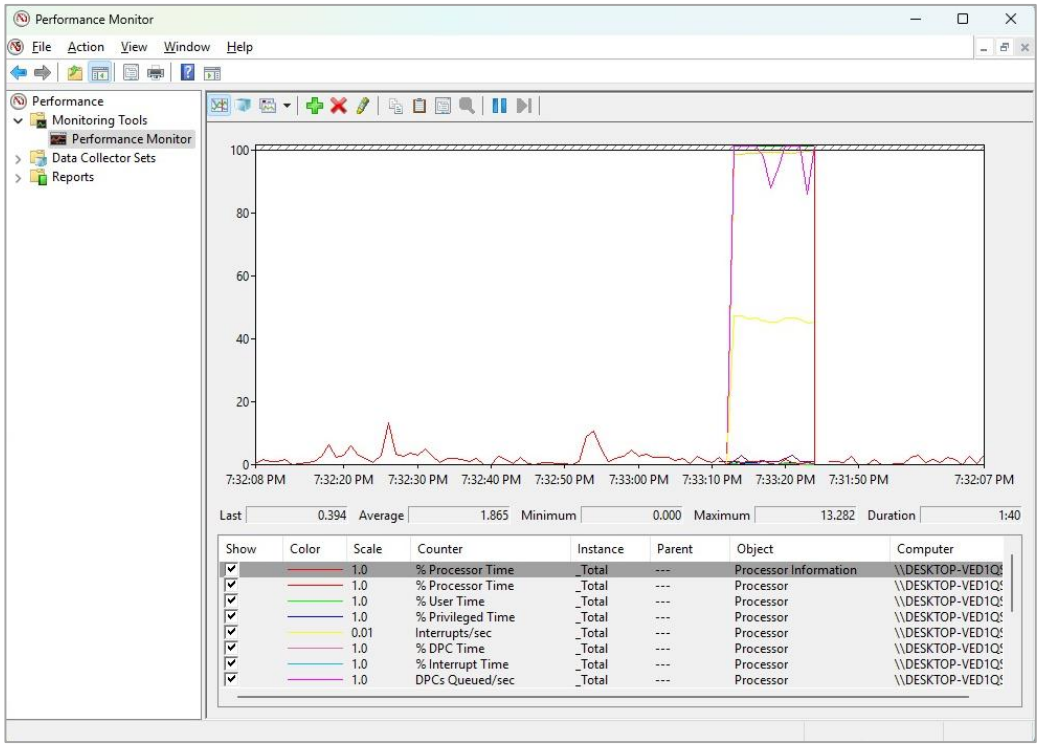
1. Open the **Control Panel** and click **Windows Tools**.
2. Double-click **Performance Monitor**.
3. The **Performance Monitor** window opens. Click **Performance Monitor** and then click the ✚ button.



4. The **Add Counters** window opens. Select items you want to monitor, such as Processor, Memory, PhysicalDisk, and Network Interface, click **Add >>** and **OK**.



5. The performance of the selected items is displayed in the **Performance Monitor** window.



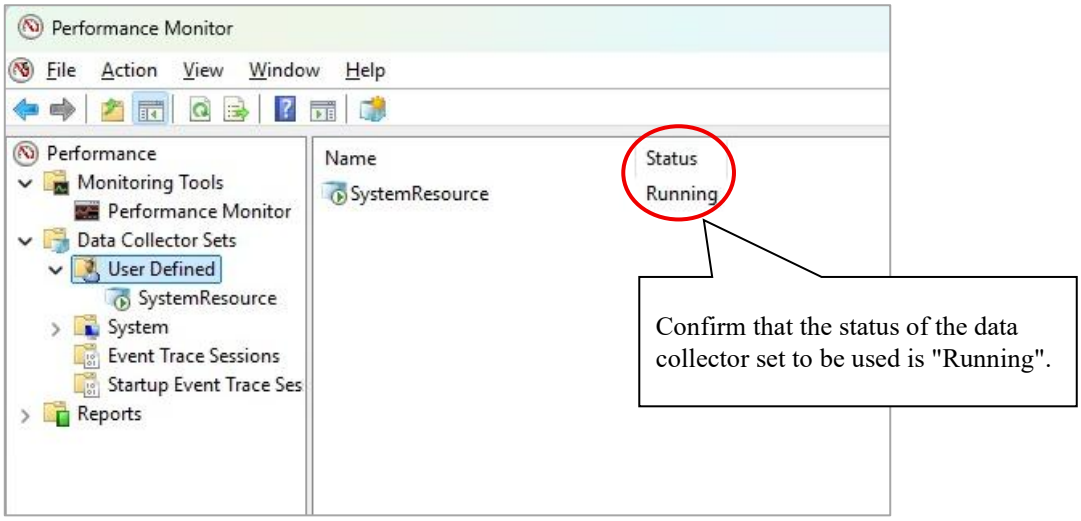
The following table lists performance counters most closely related to the performance of this equipment.

Table 9-4 Performance Counters Related to System Performance

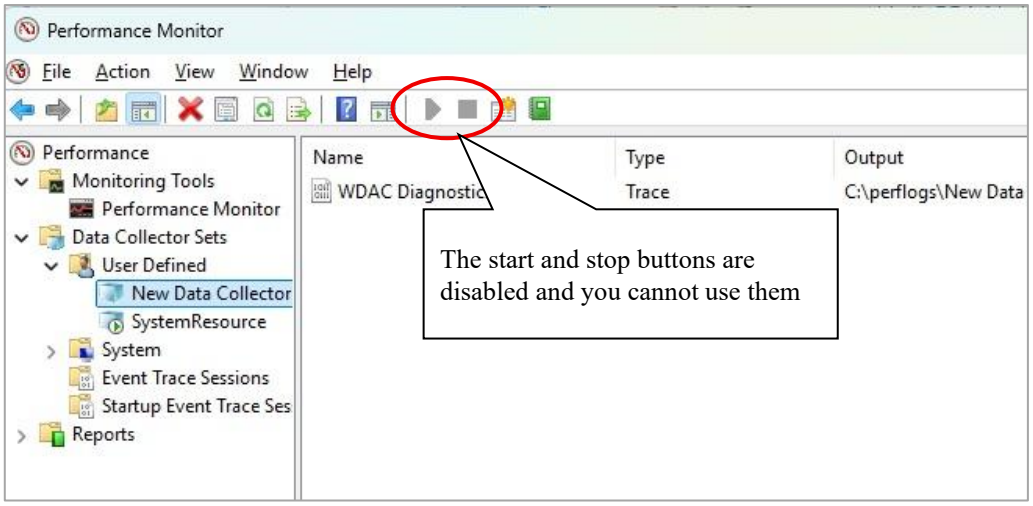
No.	Performance object	Counter	Description
1	Processor	%Processor Time	Indicates CPU usage. If this value remains high continuously, the CPU may be a bottleneck.
2	Memory	Pages/sec	Indicates the number of pages per second read from or written to storage to resolve page faults. A high value may indicate insufficient memory. A value close to 0 is considered appropriate.
3		Available Bytes	Indicates the size of the physical memory available for processes. A decreasing trend may indicate a memory leak.
4		Pool Nonpaged Bytes	Indicates the size of memory that remains in physical memory without being paged out to storage. An increasing trend may indicate a memory leak.
5	PhysicalDisk	%Disk Time	Indicates the percentage of time the storage device is busy reading or writing. If this value remains high continuously, storage performance may be a bottleneck.
6	Network Interface	Bytes Total/sec	Indicates the number of bytes per second sent and received by the network adapter. If this value remains high compared to No. 7, the network may be a bottleneck.
7		Current Bandwidth	Indicates the network bandwidth.

<NOTE>

Performance counter collection may not start correctly when the system is under heavy load. After starting data collection, ensure that the status of the data collector set you are using is Running.



When the system is under heavy load or when you frequently start and stop data collection, you may not be able to perform start or stop operations. In this case, exit Performance Monitor, wait for a while, and then restart Performance Monitor to start collecting data again.



If performance counter collection still cannot be started after restarting Performance Monitor, restart the OS.

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APPENDIX 1 HANDLING OF LIMITED-LIFE COMPONENTS

NOTICE
Do not use components beyond their recommended replacement cycle. Continuing to use them past this period may lead to deterioration and cause failures.

Components deteriorate over time. Replace the following components at regular intervals.

Limited-life component	Recommended replacement cycle	Remarks
AC adapter	2 years	When operated at 115 VAC / 25 ℃ for 24 hours.

< NOTE >

・ The recommended replacement cycle is specified under the condition that the average ambient temperature during equipment operation is 25 °C or lower.
If the average ambient temperature exceeds 25 °C, the replacement cycle may become shorter.
In addition, the recommended replacement cycle is only a guideline based on the usage conditions assumed by our company.
Depending on the surrounding operating conditions and usage conditions, the replacement cycle may become shorter. Please perform regular inspections and replace components earlier as needed.

The following components have limitations when used for extended periods.

Part Name	Limitations	Service Life
M.2 SATA SSD	TBW (*1)	Based on the expected service life. (*2)

(*1) TBW stands for Total Bytes Written.
For TS256GMT970P (Transcend), the TBW is 500 TB.

(*2) Calculate the expected service life (in years) from the TBW using the formula below and replace the part before reaching the expected service life.
Expected Service Life (years) = TBW × 1000 [GB] ÷ (Daily Write Volume [GB] × 365 days)
Perform regular backups as part of your daily operations to ensure quick recovery in case of file corruption.

< NOTE >

・ Do not change (disable) the SSD cache settings, as this may affect SSD lifespan.
・ Repairing or replacing the SSD alone is not possible.
In the event of an SSD failure, the entire equipment will be replaced with a substitute unit through send-back repair.

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APPENDIX 2 BATTERY REMOVAL PROCEDURE FOR DISPOSAL

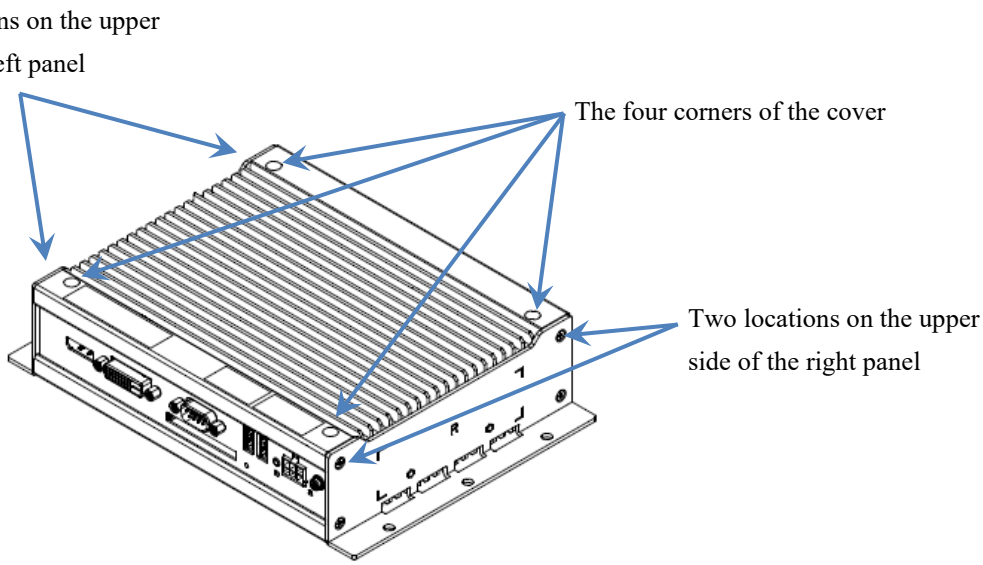
⚠ WARNING

- Do not disassemble this equipment or remove the battery except when disposing of the equipment. Doing so may cause rupture, smoke, electric shock, or injury.
- Do not remove any parts while the equipment is operating. Stop the equipment, disconnect the power cord from the DC power connector, and remove all interface cables and peripheral devices before performing any work. Failure to do so may result in fire or electric shock.
- Do not remove the battery with bare hands. Doing so may cause electric shock or injury.

This equipment contains a lithium-ion battery. When disposing of this equipment, please follow the laws and regulations of each country or region.
Please remove the battery using the following procedure.

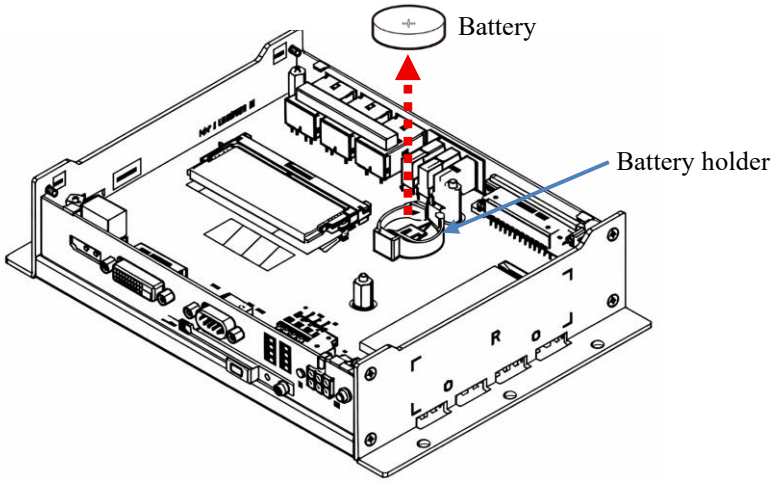
1. Removing the cover

Remove each screw shown in the figure below, and then lift off the cover upward.



2. Removing the battery

Remove the battery from the battery holder on the motherboard as shown in the figure below.



3. Electrode Insulation

Insulate the electrode terminals of the removed battery by applying cellophane tape or vinyl tape.

4. Sorting and Disposal

Please separate and dispose of them according to the applicable laws and regulations in your country or region.

Address for parts return:	Sender information **(entered by customer)**
HF-W Returns and Repairs Center, c/o LOGISTEED East Japan, Ltd., Hitachi Industrial Products, Ltd., 2-1, Ōmikachō 5-chōme, Hitachi-shi, Ibaraki-ken, 319-1293, Japan Tel.: +81-294-52-7496	Company: Office: Responsible department: Contact person: Email: Address: Tel.: (Extension:)

Contact information regarding parts return

Any inquiries regarding parts returns will be received by the main office and then forwarded to the appropriate divisions thereafter.

Main office contact point: Hitachi Industrial Computer Support Center Tel.: +81-45-762-3023 E-Mail: hfw.support.af@hitachi-systems.com

Hitachi Industrial Computer HF-W Series - Repair Request Form and Statement of Received Goods

Returned product (entered by customer) ☐ Entire system (Enter a check mark in the box.)

- System model:
- System manufacturing no.:

Description of problem (entered by customer)

Details (Indicate the problem specifically.) (Attach additional documentation as necessary.)

Please help us by filling out this information as completely as possible. Enter check marks in the appropriate boxes.

■ Date of occurrence (YYYY-MM-DD hh:mm): ■ Can the problem be reproduced? ☐ Yes ☐ No ☐ Unknown

■ Frequency of occurrence: ☐ Only once ☐ _____ times (every ☐ hour / ☐ day / ☐ week / ☐ month) ☐ Occasionally ☐ Always ☐ Other: _____

■ State upon occurrence: ☐ When turning power on ☐ Before the BIOS screen appears ☐ During BIOS startup ☐ During OS setup ☐ During OS startup ☐ After OS startup ☐ When OS is being stopped ☐ When a customer-added device is installed (Model and vendor:) ☐ When a specific application is running (Name and vendor:) ☐ Other: _____

■ LED indicators: ■ ALARM lamp state: ☐ On ☐ Off

■ Description of the problem (actions to take when the problem occurs, operating procedures, etc.), details of requests, etc.

(Please attach photographs, screenshots, or other materials that depict the problem when it occurs to provide information that will allow the problem to be objectively identified. The inclusion of such materials can help speed up investigation into the problem. Fill out this section not only for repair requests, but also for requests to verify operation.)

■ Customer information

(Use this space to provide information about customer additions or changes (for example, additional devices, externally connected devices, or BIOS setting changes) that could aid investigation into the problem.)

Notes regarding repairs (entered by customer)

Repair estimate required? (☐ Yes / ☐ No) Repair start time (☐ Immediately / ☐ After estimate)

Recovery required? (☐ Yes / ☐ No)
Note: This service is available at a fee if outside the free repair period.

Note the following:

1) Attach this sheet to the equipment to be repaired and return it to the address indicated above.
   In addition, please notify the shop from which you purchased the product that the repair return has been arranged.
2) After we provide a repair estimate, please indicate within one month whether we may proceed with the repair.
   If no repair is required or we do not receive your instruction, the equipment will be returned to you without repair.
   In such cases, a separate investigation fee will be charged.
3) Repairs are accepted only within the repairable period for each equipment.
   However, repairs may still be possible even after the repairable period has expired.
   Investigation fees will be charged even if repair is not possible.
   Please return the equipment to the repair center only if you agree to this condition.
4) As investigation and repair may result in loss of data stored on the SSD, ensure that you back up all data before returning the equipment.
5) If any confidential items related to information security, such as programs, data, and recordable media, are not required for an investigation or repair, delete any such items before returning the parts.
6) Repairs for parts that have failed take the form of replacement parts only.
   Note that, in some cases, parts might be replaced with ones that are functionally compatible with the original, as a result of discontinuation or modification of the original parts, or other reason.
7) We are unable to provide disassembly photos because the repair will be handled by replacing the entire unit.
8) We cannot repair or analyze failures in any hardware sourced from another company.
9) During the free repair period, defective parts (main units) cannot be returned.
10) Technical materials, including those related to exports or the environment, are only provided during the repair period.

Address to which to return parts (enter only if different from the sender)

Address:

Company name:

Contact person:

Tel.: (Extension:)

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