Industrial PC Platform

NY-series

IPC Machine Controller

Industrial Panel PC

Hardware User's Manual

NY532-1□00
NY532-5400

Industrial Panel PC

OMRON

sysmac
always in control

Introduction

Thank you for purchasing the IPC Machine Controller Panel PC.

This manual contains information that is necessary to use the Panel PC. Please read this manual and make sure you understand the functionality and performance of the Panel PC before attempting to use it in a control system.

Keep this manual in a safe place where it will be available for reference during operation.

Part of the specifications and restrictions for the IPC Machine Controller Panel PC are available in other manuals.

Refer to *Relevant Manuals* on page 2 and *Related Manuals* on page 36.

Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of introducing Factory Automation systems.
- Personnel in charge of designing Factory Automation systems.
- Personnel in charge of installing and maintaining Factory Automation systems.
- Personnel in charge of managing Factory Automation systems and facilities.

For programming, this manual is intended for personnel who understand the programming language specifications in international standard IEC 61131-3.

Applicable Products

This manual covers following Industrial Panel PC with Machine Automation Control Software configurations:

NY532-1□00
NY532-5400

> **Additional Information**
>
> Refer to *1-4 Product Configuration* on page 1-7 for configuration details.

Relevant Manuals

The following sections provide the relevant manuals for the IPC Machine Controller Panel PC.
Read all of the manuals that are relevant to your system configuration and application before you use the Panel PC.

Overview Relevant Manuals

Purpose of use	Manual										
	Basic Information										
	NY-series IPC Machine Controller Industrial Panel PC Hardware User's Manual	NY-series IPC Machine Controller Industrial Box PC Hardware User's Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual	NY-series Instructions Reference Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Motion Control User's Manual	NY-series Motion Control Instructions Reference Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherCAT Port User's Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherNet/IP Port User's Manual	NJ/NY-series NC Integrated Controller User's Manual	NY-series Troubleshooting Manual
Introduction to NY-series Panel PC	●										
Introduction to NY-series Box PC		●									
Setting devices and hardware											
Using motion control	●	●				●					
Using EtherCAT								●			
Using EtherNet/IP									●		
Making setup											
Making initial settings			●								
Preparing to use Controllers											
Software settings											
Using motion control				●		●					
Using EtherCAT				●				●			
Using EtherNet/IP				●					●		
Using numerical control										●	

Purpose of use	Manual										
	Basic Information			NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual	NY-series Instructions Reference Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Motion Control User's Manual	NY-series Motion Control Instructions Reference Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherCAT Port User's Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherNet/IP Port User's Manual	NJ/NY-series NC Integrated Controller User's Manual	NY-series Troubleshooting Manul
	NY-series IPC Machine Controller Industrial Panel PC Hardware User's Manual	NY-series IPC Machine Controller Industrial Box PC Hardware User's Manual	NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual								
Writing the user program											
Using motion control						●	●				
Using EtherCAT				●	●			●			
Using EtherNet/IP									●		
Using numerical control										●	
Programming error processing											●
Testing operation and debugging			●								
Using motion control				●		●					
Using EtherCAT								●			
Using EtherNet/IP									●		
Using numerical control										●	
Learning about error management and corrections *1	▲	▲		▲		▲		▲	▲		●
Maintenance											
Using motion control	●	●				●					
Using EtherCAT								●			
Using EtherNet/IP									●		

*1. Refer to the *NY-series Troubleshooting Manual (Cat. No. W564)* for the error management concepts and an overview of the error items. Refer to the manuals that are indicated with triangles for details on errors for the corresponding Units.

Sections in this Manual

1   Introduction to the Industrial Panel PC

2   System Configurations

3   Hardware Overview

4   Specifications

5   Installation

6   Operating Procedures

7   Maintenance

A   Appendices

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CONTENTS

Section 1 Introduction to the Panel PC

Section 2 System Configurations

Section 3 Hardware Overview

Section 4   Specifications

Section 5   Installation

Section 6   Operating Procedures

Section 7   Maintenance

Appendices

Index

Manual Information

This section provides information about this manual.

Page Structure

The following page structure is used in this manual.

(A) 5 Installation

(B) **5-1 Unpack**

This section provides details on how to unpack the Industrial Panel PC.

(C) **5-1-1 Unpack Procedure**

1 Check the package for damage.
If there is any visible damage:
• Take photos of the package and save them.
• Inform your supplier immediately.

(D) *2* Open the package.
Ensure not to damage the contents.

3 Ensure that all items are present.

Additional Information

(E) Refer to *5-1-2 Items Supplied with the Product* for the items supplied.

(B) 5-1 Unpack

(G) 5

(C) 5-1-1 Unpack Procedure

(F) NY-series User's Manual (W555)

(H) 5 - 3

Note: This illustration is provided as a sample. It will not literally appear in this manual.

Item	Explanation	Item	Explanation
A	Level 1 heading	E	Special Information
B	Level 2 heading	F	Manual name
C	Level 3 heading	G	Page tab with the number of the main section
D	Step in a procedure	H	Page number

Special Information

Special information in this manual is classified as follows:

Precautions for Safe Use

Precautions on what to do and what not to do to ensure safe usage of the product.

Precautions for Correct Use

Precautions on what to do and what not to do to ensure proper operation and performance.

Additional Information

Additional information to read as required.
This information is provided to increase understanding or make operation easier.

Version Information

Information on differences in specifications and functionality between different versions.

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Warranty, Limitations of Liability

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NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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Change in Specifications

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Safety Precautions

Definition of Precautionary Information

The following notation is used in this manual to provide precautions required to ensure safe usage of the IPC Machine Controller Panel PC. The safety precautions that are provided are extremely important to safety.
Always read and heed the information provided in all safety precautions.
The following notation is used.

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

Symbols

🚫	The circle and slash symbol indicates operations that you must not do. The specific operation is shown in the circle and explained in text. This example indicates prohibiting disassembly.
⚠	The triangle symbol indicates precautions (including warnings). The specific operation is shown in the triangle and explained in text. This example indicates a precaution for electric shock.
⚠	The triangle symbol indicates precautions (including warnings). The specific operation is shown in the triangle and explained in text. This example indicates a general precaution.
●	The filled circle symbol indicates operations that you must do. The specific operation is shown in the circle and explained in text. This example shows a general precaution for something that you must do.

Warnings

<div align="center">

⚠ WARNING

</div>

Disassembly and Dropping

Do not attempt to disassemble, repair, or modify the product in any way. Doing so may result in malfunction or fire.	🚫

Installation

Always connect to a ground of 100 Ω or less when installing the product.	❗
Ensure that installation and post-installation checks of the product are performed by personnel in charge who possess a thorough understanding of the machinery to be installed.	❗

Fail-safe Measures

Provide safety measures in external circuits to ensure safety in the system if an abnormality occurs due to malfunction of the product or due to other external factors affecting operation. Not doing so may result in serious accidents due to incorrect operation.	❗
Emergency stop circuits, interlock circuit, limit circuits, and similar safety measures must be provided in external control circuits.	❗
The product will turn OFF all outputs from Output Units in the following cases. The slaves will operate according to the settings in the slaves. • If an error occurs in the power supply • If a CPU watchdog timer error or CPU reset occurs • If a major fault level Controller error occurs • While the product is on standby until RUN mode is entered after the power is turned ON • If a system initialization error occurs External safety measures must be provided to ensure safe operation of the system in such cases.	❗
If external power supplies for slaves or other devices are overloaded or short-circuited, the voltage will drop, outputs will turn OFF, and the system may be unable to read inputs. Provide external safety measures in controls with monitoring of external power supply voltage as required so that the system operates safely in such a case.	❗
Unintended behavior may occur when an error occurs in internal memory of the product. As a countermeasure for such problems, external safety measures must be provided to ensure safe operation of the system.	❗

Provide measures in the communications system and user program to ensure safety in the overall system even if errors or malfunctions occur in data link communications or remote I/O communications.	❗
If there is interference in remote I/O communications or if a major fault level error occurs, output status will depend on the products that are used. Confirm the operation that will occur when there is interference in communications or a major fault level error, and implement safety measures. Adjust all of the settings in the slaves and Units.	❗
The use of an uninterruptible power supply (UPS) allows normal operation to continue even if a momentary power failure occurs, possibly resulting in the reception of an erroneous signal from an external device affected by the momentary power failure. Take external fail-safe measures. Where necessary, monitor the power supply voltage on the system for external devices and use it as an interlock condition.	❗
Do not use the input functions of the touchscreen in applications that involve human life, in applications that may result in serious injury, or for emergency stop switches.	🚫

Downloading

Always confirm safety at the destination before you transfer a user program, configuration data, setup data, or device variables from the Sysmac Studio. The devices or machines may perform unexpected operation regardless of the operating mode of the product.	❗

Actual Operation

Check the user program, data, and parameter settings for proper execution before you use them for actual operation.	❗
Security setting adjustments should only be performed by the engineer in charge that possesses a thorough understanding of the security settings. Selecting non-recommended security settings can put your system at risk.	❗
Changing BIOS information is only allowed for the engineer in charge that possesses a thorough understanding of the BIOS settings because it can change the behavior of the product.	❗
Water or other liquid present on the touchscreen surface may create false touch behavior and unexpected operation. Wipe away the liquid on the touchscreen before operation.	❗

Security Measures

Anti-virus protection
Install the latest commercial-quality antivirus software on the computer connected to the control system and maintain to keep the software up-to-date.

Security measures to prevent unauthorized access
Take the following measures to prevent unauthorized access to our products.
- Install physical controls so that only authorized personnel can access control systems and equipment.
- Reduce connections to control systems and equipment via networks to prevent access from untrusted devices.
- Install firewalls to shut down unused communications ports and limit communications hosts and isolate control systems and equipment from the IT network.
- Use a virtual private network (VPN) for remote access to control systems and equipment.
- Adopt multifactor authentication to devices with remote access to control systems and equipment.
- Set strong passwords and change them frequently.
- Scan virus to ensure safety of USB drives or other external storages before connecting them to control systems and equipment.

Data input and output protection
Validate backups and ranges to cope with unintentional modification of input/output data to control systems and equipment.
- Checking the scope of data
- Checking validity of backups and preparing data for restore in case of falsification and abnormalities
- Safety design, such as emergency shutdown and fail-soft operation in case of data tampering and abnormalities

Data recovery
Backup data and keep the data up-to-date periodically to prepare for data loss.

When using an intranet environment through a global address, connecting to a SCADA or an unauthorized terminal such as an HMI or to an unauthorized server may result in network security issues such as spoofing and tampering. You must take sufficient measures such as restricting access to the terminal, using a terminal equipped with a secure function, and locking the installation area by yourself.

When constructing an intranet, communication failure may occur due to cable disconnection or the influence of unauthorized network equipment. Take adequate measures, such as restricting physical access to network devices, by means such as locking the installation area.

When using a device equipped with the SD Memory Card function, there is a security risk that a third party may acquire, alter, or replace the files and data in the removable media by removing the removable media or unmounting the removable media. Please take sufficient measures, such as restricting physical access to the Controller or taking appropriate management measures for removable media, by means of locking the installation area, entrance management, etc., by yourself.

Cautions

⚠ CAUTION

Installation

When installing or removing a PCIe card, avoid touching the sharp edges of the sheet metal frame tab. Injury may result.

⚠

Wiring

The product has an internal non-isolated DC power supply. Circuit ground (0 VDC) and frame ground are connected together. When connecting a non-isolated device or a non-isolated interface to the product, take appropriate actions to avoid communication failures or damage to the mentioned ports.

⚠
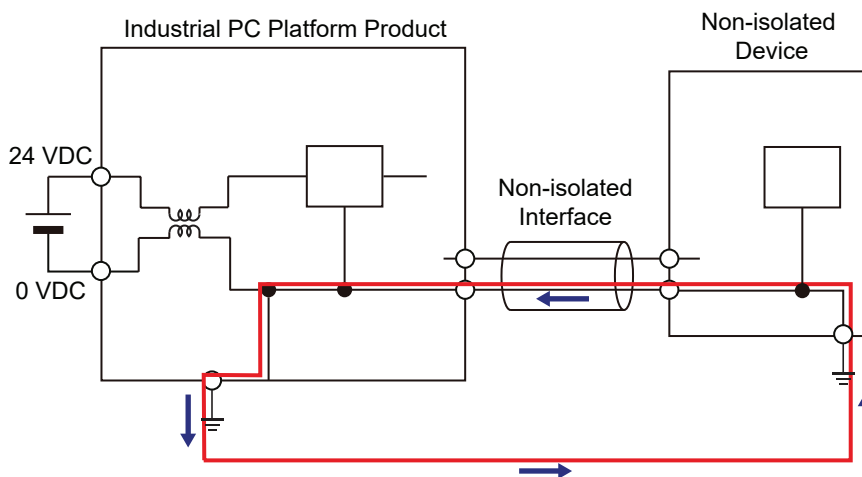
Never ground the 24 VDC side of the power supply. This may cause a short circuit.

⚠

Online Editing

Execute online editing only after confirming that no adverse effects will be caused by deviations in the timing of I/O. If you perform online editing, the task execution time may exceed the task period, I/O may not be refreshed with external devices, input signals may not be read, and output timing may change.

⚠

Actual Operation

When using a system with multiple touchscreens, multiple users can perform simultaneous operations. Make sure that this can not result in unintended actions.

⚠

Precautions for Safe Use

Disassembly, Dropping, Mounting, Installation and Storage

- Do not drop the product or subject it to abnormal vibration or shock. Doing so may result in product malfunction or burning.
- When unpacking, check carefully for any external scratches or other damages. Also, shake the product gently and check for any abnormal sound.
- Always use the devices specified in the relevant manual.
- The product must be installed in a control panel.
- Always install equipment that is included in the product specifications. Not doing so may result in failure or malfunction.
- Install the product in the correct orientation and temperature according to the specifications in the manual to prevent overheating. Not doing so may result in malfunction.
- When connecting peripheral devices to the product, ensure sufficient countermeasures against noise and static electricity during installation of the peripheral devices.
- Always use the CFast Card slot cover to fully insert the CFast Card. Attempting to fully insert the CFast Card using your finger can result in injury of your finger due to sharp edges around the CFast Card bay.
- The mounting panel must be between 1.6 and 6.0 mm thick. Tighten the Mounting Brackets evenly to a torque of 0.6 Nm to maintain water and dust resistance. If the tightening torque exceeds the specified value, or the tightening is not even, deformation of the front panel may occur. Additionally, make sure the panel is not dirty or warped and that it is strong enough to hold the product.
- Do not let metal particles enter the product when preparing the panel. Do not allow wire clippings, shavings, or other foreign material to enter any product. Otherwise, the product burning, failure, or malfunction may occur. Cover the product or take other suitable countermeasures, especially during wiring work.

Wiring

- Follow the instructions in the manual to correctly perform connector wiring and insertion. Double-check all wiring and connector insertion before turning ON the power supply.
- Always ensure connectors, cables, PCIe Cards and Storage devices are completely locked in place to prevent accidental disconnection.
- Before you connect a computer to the product, disconnect the power supply plug of the computer from the AC outlet. Also, if the computer has an FG terminal, make the connections so that the FG terminal has the same electrical potential as the product. A difference in electrical potential between the computer and the product may cause failure or malfunction.
- Do not bend or pull the cables beyond normal limit. Do not place heavy objects on top of the cables or other wiring lines. Doing so may break the cables.
- Always use power supply wires with sufficient wire diameters to prevent voltage drop and burning. Make sure that the current capacity of the wire is sufficient. Otherwise, excessive heat may be generated. When cross-wiring terminals, the total current for all the terminals will flow in the wire. When wiring cross-overs, make sure that the current capacity of each of the wires is not exceeded.
- Be sure that all mounting bracket screws and cable connector screws are tightened to the torque specified in the relevant manuals. The loose screws may result in fire or malfunction.

- Use crimp terminals for wiring.
- Observe the following precautions to prevent broken wires.
  - When you remove the sheath, be careful not to damage the conductor.
  - Connect the conductor without twisting the wires.
  - Do not weld the conductors. Doing so may cause the wires to break with vibration.
- For an NY Monitor Link connection, always follow the cable type and connection method specifications in the manual. Otherwise, communications may be faulty.
- Emergency stop circuits, interlock circuit, limit circuits, and similar safety measures must be provided in external control circuits.

Power Supply Design and Turning ON/OFF the Power Supply

- Always use a power supply that provides power within the rated range in the manual.
- Do not perform a dielectric strength test.
- Always use the recommended uninterruptable power supply (UPS) to prevent data loss and other system file integrity issues caused by unexpected power interruption. Back up the system files in the planned way to prevent data loss and other system file integrity issues caused by incorrect operation.
- Use an Omron S8BA UPS with the correct revision number to prevent improper system shutdown.
- It takes up to approximately 10 to 20 s to enter RUN mode after the power is turned ON. The outputs during this time behave according to the slave or Output Unit specifications. Implement fail-safe circuits so that external devices do not operate incorrectly.
- Power ON after connecting the product and an external monitor.
- Always check the power supply and power connections before applying power. Incorrect power connections can damage the product or cause burning.
- Always turn OFF the power supply to system before you attempt any of the following.
  - Inserting or removing PCIe Cards
  - Connecting cables
  - Connecting or disconnecting the connectors
  - Wiring the system
  - Replacing or removing the storage device
  - Replacing the Battery
  - Replacing the Fan Unit
- Do not turn ON the power supply to the product when a part of a human body or a conductive object is touching the surface of the touchscreen. Doing so will cause the touchscreen functionality to be disabled. Remove the conductive object and cycle the power supply to restore the touchscreen functionality.

Actual Operation

- Choose a OS password that is not obvious to prevent unauthorized access.
- Remember the OS user name and password. The product is inaccessible without it.
- Before operating the system , please make sure the appropriate software is installed and configured. Doing so may prevent unexpected operation.
- Install all updates and ensure the browser stays up-to-date.
- Install all updates and ensure the firewall stays up-to-date.
- Install all updates and ensure virus definitions stay up-to-date.

- Make sure that your OS environment is protected against malicious software and viruses.
- Do not remove the fan cover while the power is ON. Contact with a rotating fan may result in injury.
- Virtual memory settings can affect the performance of the system. Disable the paging file after installation of applications or updates.
- Correctly perform wiring and setting, and ensure that the shutdown by the UPS can be executed.

Operation

- Confirm that no adverse effect will occur in the system before you attempt any of following.
  - Changing the operating mode of the product (including changing the setting of the Startup Mode)
  - Changing the user program or settings
  - Changing set values or present values
  - Forced refreshing
- Do not carry out the following operations when accessing a USB device or an SD Memory Card.
  - Turn OFF the power supply of the product.
  - Press the Power Button of the product.
  - Remove a USB device or SD memory card.
- If two different function modules are used together, such as when you see PCIe connected board and EtherCAT slaves, take suitable measures in the user program and external controls to ensure that safety is maintained in the controlled system if one of the function modules stops. The relevant outputs will behave according to the slave or Output Unit specifications if a partial fault level error occurs in one of the function modules.
- Do not attempt to remove or touch the fan unit while the product is powered ON or immediately after the power supply is turned OFF. If you attempt to replace the fan unit then, there is a risk of personal injury due to hot or rotating parts.
- Do not touch any product housing when power is being supplied or immediately after the power supply is turned OFF. Doing so may result in burn injury.
- Confirm the safety of the system before using the touch panel.
- Signals from the touchscreen may not be entered if the touchscreen is pressed consecutively at high speed. Only move on to the next operation after confirming that the product has detected the previous input of the touchscreen.
- Do not accidentally press the touchscreen when the backlight is not lit or when the display does not appear. Confirm the safety of the system before pressing the touchscreen.
- Do not use hard or pointed objects to operate or scrub the touchscreen, otherwise the surface of the touchscreen may be damaged.
- In systems with multiple screens in extended view, an interruption in the video signal of one screen will cause all windows on that screen to be moved to the primary screen. Make sure that this situation is properly handled.
- Always confirm safety at the connected equipment before you perform the following operations when the device output hold configuration is set to enable. The equipment may operate unexpectedly because the last status for outputs is retained.
  - Changing the operating mode of the product
  - When downloaded

Task Design

- If the following variables are specified for a condition expression when the execution condition is a condition expression for a variable, event tasks may not be executed when conditions are met or event tasks may be executed when conditions are not met:
  - Structure members whose data size is 16 bits or more, except for system-defined variables for motion control.
  - Array elements whose data size is 16 bits or more.

  For information on event task execution conditions, refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)*.

General Communications

- Unexpected operation may result if inappropriate data link tables are set. Even if appropriate data link tables have been set, confirm that the controlled system will not be adversely affected before you transfer the data link tables. The data links start automatically after the data link tables are transferred.
- Separate the machine network segment from the office network to avoid communication failures.

EtherNet/IP Communications

- Make sure that the communications distance, number of nodes connected, and method of connection for EtherNet/IP are within specifications. Do not connect EtherNet/IP communications to EtherCAT or other networks. An overload may cause the network to fail or malfunction.
- All related EtherNet/IP nodes are reset when you transfer settings for the built-in EtherNet/IP port (including IP addresses and tag data links settings). The settings can only be enabled after the reset. Confirm that the system will not be adversely affected by resetting nodes before you transfer the settings.
- If EtherNet/IP tag data links (cyclic communications) are used with a repeating hub, the communications load on the network will increase. This will increase collisions and may prevent stable communications. Do not use repeating hubs on networks where tag data links are used. Use an Ethernet switch instead.

EtherCAT Communications

- Malfunctions or unexpected operation may occur for some combinations of EtherCAT revisions of the master and slaves. If you disable the revision check in the network settings, use the Sysmac Studio to check the slave revision settings in the master and the actual slave revisions, and then make sure that functionality is compatible in the slave manuals or other references. You can check the actual slave revisions from the Sysmac Studio or on slave nameplates.
- If the Fail-soft Operation parameter is set to stop operation, process data communications will stop for all slaves when an EtherCAT communications error is detected in a slave. At that time, the Servo Drive will operate according to the Servo Drive specifications. Make sure that the Fail-soft Operation parameter setting results in safe operation when a device error occurs.
- If noise occurs or an EtherCAT slave is disconnected from the network, any current communications frames may be lost. If frames are lost, slave I/O data is not communicated, and unintended operation may occur. The slave outputs will behave according to the slave specifications. Refer to the

manual for the slave. If a noise countermeasure or slave replacement is required, perform the following processing.

- Program the Input Data Invalid system-defined variable as an interlock condition in the user program.
- Set the PDO communications timeout detection count setting in the EtherCAT master to at least 2. Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherCAT Port User's Manual (Cat. No. W562)* for details.
- EtherCAT communications are not always established immediately after the power supply is turned ON. Use the system-defined variables in the user program to confirm that communications are established before attempting control operations.
- When an EtherCAT slave is disconnected or disabled, communications will stop and control of the outputs will be lost not only for the disconnected slave, but for all slaves connected after it. Confirm that the system will not be adversely affected before you disconnect or disable a slave.
- You cannot use standard Ethernet hubs or repeater hubs with EtherCAT communications. If you use one of these, a major fault level error or other error may occur.
- Always use the specified EtherCAT slave cables. If you use any other cable, the EtherCAT master or the EtherCAT slaves may detect an error and one of the following may occur.
  - Continuous refreshing of process data communications will not be possible.
  - Continuous refreshing of process data communications will not end during the set cycle.

Motion Control

- The motor is stopped if communications are interrupted between the Sysmac Studio and the product during an MC Test Run. Connect the communications cable between the computer and product securely and confirm that the system will not be adversely affected before you perform an MC Test Run.
- The positive drive prohibit input (POT), negative drive prohibit input (NOT), and home proximity input (DEC) of the Servo Drive are used by the MC Function Module as the positive limit input, negative limit input, and home proximity input. Make sure that the signal widths for all of these input signals are longer than the control period of the MC Function Module. If the input signal widths are shorter than the control period, the MC Function Module may not be able to detect the input signals, resulting in incorrect operation.
- Always execute the Save Cam Table instruction if you change any of the cam data from the user program in the CPU Unit or from the Sysmac Studio. If the cam data is not saved, the previous condition will be restored when the power is turned ON again, possibly causing unexpected machine operation.
- Confirm the axis number carefully before you perform an MC Test Run.
- Use the NX_AryDOutTimeStamp (Write Digital Output Array with Specified Time Stamp) instruction only after you confirm that InOperation from the MC_DigitalCamSwitch (Enable Digital Cam Switch) instruction is TRUE.
- Always use the axis at a constant velocity for the MC_DigitalCamSwitch (Enable Digital Cam Switch) instruction.
  If you set the Count Mode to Rotary Mode, the following operation will occur if you use *OnCompensation* or *OffCompensation* and the axis velocity changes abruptly.
  - If the value of *OnCompensation* or *OffCompensation* is equivalent to the time for half a rotation or more, *InOperation* will be FALSE.

- If the value of *OnCompensation* results in exceeding *LastOnPosition*, the output timing will be unstable.
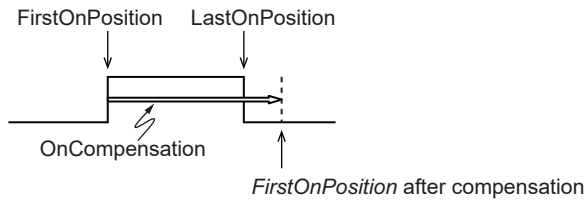
- If the value of *OffCompensation* results in exceeding *FirstOnPosition*, the output timing will be unstable.
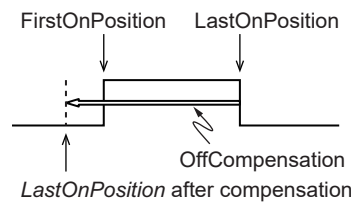
Backup

- We recommend that you back up the present values of variables while the retained variables are not refreshed. If you back up while the values of retained variables are refreshed, the data may not be saved correctly.
  For information on Backup Functions and a backup for present values of variables, refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)*.

Restoring Data

- The absolute encoder home offsets are backed up with a non-volatile memory in the product as absolute encoder information. If any of the following conditions is met, clear the absolute encoder home offsets from the list of data items to restore, and then restore the data. Then, define the absolute encoder home again. If you do not define home, unintended operation of the controlled system may occur.
  - The Servomotor or Servo Drive was changed since the data was backed up.
  - The absolute encoder was set up after the data was backed up.
  - The absolute data for the absolute encoder was lost.
- You can partially or cannot at all back up, restore, or compare data of the settings depending on slaves and Units. Also, you cannot back up, restore, or compare data for disabled slaves or Units. After you restore data, sufficiently confirm that operation is correct before you start actual operation.

Battery and Fan Replacement

Applicable for products with a cooling layer that has a removable cover.

- Dispose of any Battery that has been dropped on the floor or otherwise subjected to excessive shock. Batteries that have been subjected to shock may leak if they are used.
- UL standards require that only an experienced engineer replace the Battery. Make sure that an experienced engineer is in charge of Battery replacement.

- The Battery may leak, rupture, heat, or ignite. Never short-circuit, charge, disassemble, heat, or in-cinerate the Battery or subject it to strong shock.
- If the storage period exceeds 6 months, check the performance of the fan unit before production starts.

Product Replacement

- Make sure that the required data, including the user program, configurations, settings and variables is transferred to a product that was replaced and to externally connected devices before restarting operation.
  Be sure to include the tag data link settings and routing tables, which are stored in the product.

Cleaning, Maintenance and Disposal

- Do not use corrosive substances to clean the product. Doing so may result in the failure or malfunction.
- Periodically check the installation conditions in applications where the product is subject to contact with oil or water.
- As the rubber gasket will deteriorate, shrink, or harden depending on the operating environment, periodical inspection is necessary.
- Dispose of the product and batteries according to local ordinances as they apply.

廢電池請回收

- Dispose in accordance with applicable regulations.

- The following information must be displayed for all products that contain primary lithium batteries with a perchlorate content of 6 ppb or higher when shipped to or transported through the State of California, USA.

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

- The product contains a lithium battery with a perchlorate content of 6ppb or higher. When exporting an end product containing the product to or shipping through California, USA, label all packing and shipping containers appropriately.

VESA Mount Bracket

The VESA Mount Bracket is optional hardware to mount an OMRON Industrial Monitor or Industrial Panel PC.

- Always use an arm construction with sufficient strength to support the Industrial Monitor or Panel PC and the additional forces from making adjustments. Not doing so may lead to system damage or injury.
- Carefully follow the instructions in the manual when mounting or dismounting a unit from the VESA mount bracket, to avoid system damage or injury.
- Check the reliability of the mechanical construction of arm and VESA mount bracket on a regular basis. Doing so will prevent unexpected breakdown of the construction, which might lead to system damage or injury.

Precautions for Correct Use

Storage, Installation and Mounting

- Do not operate or store the product in the following locations. Operation may stop or malfunctions may occur.
  - Locations subject to direct sunlight
  - Locations subject to temperatures or humidity outside the range specified in the specifications
  - Locations subject to condensation as the result of severe changes in temperature
  - Locations subject to corrosive or flammable gases
  - Locations subject to dust (especially iron dust) or salts
  - Locations subject to exposure to water, oil or chemicals
  - Locations subject to shock or vibration
  - Locations outdoors subject to direct wind and rain
  - Locations subject to strong ultraviolet light
- Always install the product with sufficient surrounding space to allow for adequate heat dissipation and cooling effect.
- Take appropriate and sufficient countermeasures when installing the product in the following locations
  - Locations subject to strong, high-frequency noise
  - Locations subject to static electricity or other forms of noise
  - Locations subject to strong electromagnetic fields
  - Locations subject to possible exposure to radioactivity
  - Locations close to power lines
- Always touch a grounded piece of metal to discharge static electricity from your body before starting an installation or maintenance procedure.
- Insert USB devices and PCIe devices correctly to avoid the burning, failure or malfunction.
- Execute a backup of the product before PCIe addition or replacement. Be sure that the PCIe device works correctly before you use them for actual operation. PCIe devices and their related software may cause an OS boot failure or crash.
- The backlight has a finite life and if that is exceeded, the product may fail or malfunction. Check the brightness periodically and if necessary, replace the product.
- Ensure the selected operating system supports ACPI to enable operating system shutdown using the power button.
- Download the enhanced Video Driver from the OMRON Download Center and install it on the Industrial PC.

Wiring

- Always ensure the rated supply voltage is connected to the product.
- Do not allow wire clippings, shavings, or other foreign material to enter the product. Otherwise, burning, failure, or malfunction may occur. Cover the product or take other suitable countermeasures, especially during wiring work.
- Do not use cables exceeding the maximum specified length. Doing so may cause malfunction.
- Do not connect an AC power supply to the DC power connector.

Actual Operation and Operation

- After an OS update or a peripheral device driver update for the product is executed, the product behavior might be different. Confirm that operation is correct before you start actual operation.
- Ensure the fan is operational to provide adequate cooling while the power is turned ON.
- Storage devices, SD Memory Cards, power buttons, fan units and batteries have finite lives and if those are exceeded, the product may fail or malfunction.
- Always monitor the fan status. If a fan is used beyond its service life, the *Low Revolution Speed* warning message is displayed and the product overheating may occur.
- Always monitor the battery warning message. When a battery has low voltage, the system time will be lost.
- Do not reset or power OFF the product while the password is being changed. If you fail to save the password there is a possibility that the project will not work.
- Always confirm safety at the connected equipment before you reset Controller errors with an event level of partial fault or higher from the EtherCAT master Function Module. When the Error is reset, all slaves that were in any state other than Operational state due to a Controller error with an event level of partial fault or higher (in which output are disabled) will go to Operational state and the outputs will be enabled. Before you reset all errors or restart a slave, confirm that no Controller errors with an event level of partial fault have occurred for the EtherCAT Master Function Module.
- The functions that are supported depend on the unit version of the product. The version of Sysmac Studio that supports the functions that were added for an upgrade is also required to use those functions. Refer to Version Information for NY-series Controllers for the relationship between the unit versions of the controller and the Sysmac Studio versions, and for the functions that are supported by each unit version.
- The touchscreen supports 5 simultaneous touches. When the number of touches is exceeded, not all touch points will be detected.
- The capacitive touchscreen reacts to contact on its surface. Accidental touching the surface of the touchscreen may cause unintended behavior.
- You can operate the touchscreen even when you wear some gloves. Confirm that you can correctly operate the touchscreen while wearing gloves prior to actual operation.
- If the product experiences a sudden loss of power or disconnecting the cable while saving a setting or transfer of data is underway, the changes may not be stored and unexpected behavior may occur.
- Ensure that available software checks are performed by personnel in charge who possess a thorough understanding of the software.
- Always create a Rescue Disk using the Rescue Disk Utility and restore to recover the storage device configuration if necessary.
- Confirm the device output hold configuration before you change the operating mode of the product or execute the download.
- Diagnostic information is not available when the Industrial PC Support Utility is not installed.

Error Processing

- In applications that use the results of instructions that read the error status, consider the effect on the system when errors are detected and program error processing accordingly. For example, even the detection of a minor error, such as Battery replacement during operation, can affect the system depending on how the user program is written.
- If you change the event level of a Controller error, the output status when the error occurs may also change. Confirm safety before you change an event level.

Debugging

- If you use data tracing to sample following variables, correct data may not be sampled:
  - Structure members whose data size is 16 bits or more, except for system-defined variables for motion control.
  - Array elements whose data size is 16 bits or more.

  For information on data tracing, refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)*.

Restoring Data

- When you edit the restore command file, do not change anything in the file except for the "yes" and "no" specifications for the selectable data groups. If you change anything else in the file, the Controller may perform unexpected operation when you restore the data.

Task Settings

- If a Task Period Exceeded error occurs, shorten the programs to fit in the task period or increase the setting of the task period.

Motion Control

- Before you start an MC Test Run, make sure that the operation parameters are set correctly.
- Do not download motion control settings during an MC Test Run.

EtherCAT Communications

- Set the Servo Drives to stop operation if an error occurs in EtherCAT communications between the Controller and a Servo Drive.
- If you need to disconnect the cable from an EtherCAT slave during operation, first disconnect the software connection to the EtherCAT slave or disable the EtherCAT slave and all of the EtherCAT slaves that are connected after it.
- Make sure that all of the slaves to be restored are participating in the network before you reset a Network Configuration Verification Error, Process Data Communications Error, or Link OFF Error in the EtherCAT Master Function Module. If any slave is not participating when any of these errors is reset, the EtherCAT Master Function Module may access slave with a different node address than the specified node address or the error may not be reset correctly.
- Make sure that the communications distance, number of devices connected, and method of connection for EtherCAT are within specifications. Do not connect EtherCAT communications to EtherNet/IP, a standard in-house LAN, or other networks. An overload may cause the network to fail or malfunction.
- After you transfer the user program, the product is restarted and communications with the EtherCAT slaves are cut off. During that period, the slave outputs behave according to the slave specifications. The time that communications are cut off depends on the EtherCAT network configuration. Before you transfer the user program, confirm that the system will not be adversely affected.

Battery Replacement

Applicable for products with a cooling layer that has a removable cover.

- Turn ON the power after replacing the battery for a product that has been unused for an extended period of time. Leaving the product unused without turning ON the power even once after the battery is replaced may result in a shorter battery life.
- Make sure to use a battery of the correct type, install the battery properly.
- Apply power for at least five minutes before changing the battery. Mount a new battery within five minutes after turning OFF the power supply. If power is not supplied for at least five minutes, the clock data may be lost. Check the clock data after changing the battery.

SD Memory Cards

- Insert an SD Memory Card completely and ensure it is in place.

Cleaning and Maintenance

- Do not use corrosive substances to clean the product.
- Turn OFF the product or disable the touchscreen for cleaning with water.

VESA Mount Bracket

The VESA Mount Bracket is optional hardware to mount an OMRON Industrial Monitor or Industrial Panel PC.

- Make sure to select the correct VESA mount bracket model for your Industrial Monitor or Panel PC. Using an incorrect bracket model will result in an unreliable mechanical construction which might lead to system damage or injury.
- Do not cover the openings of the VESA mount bracket. The purpose of the openings is to provide proper cooling of your Industrial Monitor or Panel PC. Closing them could aversely affect unit performance and life.
- Always fix cables to the VESA mount bracket with cable ties to prevent unexpected disconnection.
- Please be aware that shocks or vibrations of the arm construction may interfere with accurate touchscreen operations.
- Do not suspend other objects to the arm and bracket construction. Doing so may cause the construction to fail, leading to system damage or injury.

Regulations and Standards

Conformance to EU Directives

The IPC Machine Controller Panel PC complies with EU Directives. To ensure that the machine or device in which the Panel PC is used complies with EU Directives, the following precautions must be observed:

* The Panel PC must be installed within a control panel.
* The Panel PC that complies with EU Directives also conforms to the Common Emission Standard. Radiated emission characteristics (10-m regulations) may vary depending on the configuration of the control panel used, other devices connected to the control panel, wiring, and other conditions. You must therefore confirm that the overall machine or equipment in which the Panel PC is used complies with EU Directives.
* This is a Class A product (for industrial environments). In a residential environment, it may cause radio interference. If radio interference occurs, the user may be required to take appropriate measures.

Applicable Directive

EMC Directive

EMC Directive

OMRON devices that comply with EU Directives also conform to the related EMC standards so that they can be more easily built into other devices or the overall machine. The actual products have been checked for conformity to EMC standards.
Applicable EMC (Electromagnetic Compatibility) standards are as follows:

* EMS (Electromagnetic Susceptibility): EN 61131-2
* EMI (Electromagnetic Interference): EN 61131-2 (Radiated emission: 10-m regulations)

Whether the products conform to the standards in the system used by the customer, however, must be checked by the customer. EMC-related performance of the OMRON devices that comply with EU Directives will vary depending on the configuration, wiring, and other conditions of the equipment or control panel on which the OMRON devices are installed. The customer must, therefore, perform the final check to confirm that devices and the overall machine conform to EMC standards.

Conformance to KC Certification

When you use this product in South Korea, observe the following precautions.

사 용 자 안 내 문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

This product meets the electromagnetic compatibility requirements for business use. There is a risk of radio interference when this product is used in home.

Conformance to UL and CSA Standards

Some Industrial PC Platform products comply with UL and CSA standards. If you use a product that complies with UL or CSA standards and must apply those standards to your machinery or devices, refer to this manual. This manual provides the application conditions for complying with the standards. If the product is used in a manner not specified in the Instruction Sheet or in the product manuals then the protection provided by the equipment may be impaired.

Software Licenses and Copyrights

This product incorporates certain third party software. The license and copyright information associated with this software is available at http://www.fa.omron.co.jp/nj_info_e/.

Versions

Hardware revisions and unit versions are used to manage the hardware and software in NY-series products. The hardware revision or unit version is updated each time there is a change in hardware or software specifications. Even when two products have the same model number, they will have functional or performance differences if they have different hardware revisions or unit versions.

Check Unit Versions

You can check unit versions on the ID Information Label or with the Sysmac Studio.

Check Unit Versions on ID Information Label

The unit version is given on the ID information label on the product.

Additional Information

- Refer to *3-1-2 Base Layer* on page 3-5 for the label location.
- Refer to *1-3 ID Information Label* on page 1-6 for label details.

Check Unit Versions with the Sysmac Studio

You can use the Sysmac Studio to check unit versions.

Additional Information

Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)* for the Sysmac Studio procedures to determine versions.

Check Hardware Revision

You can check the hardware revision with the Industrial PC Support Utility or with the Sysmac Studio. The hardware revision is not displayed on the ID Information Label.

Check Hardware Revision with the Industrial PC Support Utility

You can check the hardware revision version with the Industrial PC Support Utility.

Additional Information

Refer to *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* for Industrial PC Support Utility details.

Check Hardware Revision with the Sysmac Studio

You can use the Sysmac Studio to check hardware revisions.

> **Additional Information**
>
> Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)* for the Sysmac Studio procedures to determine hardware revisions.

Related Manuals

The following manuals are related. Use these manuals for reference.

Related IPC Machine Controller Manuals

This table contains all related manuals, including this manual.

Manual name	Cat. No.	Model numbers	Application	Description
NY-series IPC Machine Controller Industrial Panel PC Hardware User's Manual	W557	NY532-□□□□	Learning the basic specifications of the NY-series Industrial Panel PCs, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided.	An introduction to the entire NY-series system is provided along with the following information on the Industrial Panel PC. • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection
NY-series IPC Machine Controller Industrial Box PC Hardware User's Manual	W556	NY512-□□□□	Learning the basic specifications of the NY-series Industrial Box PCs, including introductory information, designing, installation, and maintenance. Mainly hardware information is provided.	An introduction to the entire NY-series system is provided along with the following information on the Industrial Box PC. • Features and system configuration • Introduction • Part names and functions • General specifications • Installation and wiring • Maintenance and inspection

Manual name	Cat. No.	Model numbers	Application	Description
NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual	W568	NY532-□□□□ NY512-□□□□	Learning the initial settings of the NY-series Industrial PCs and preparations to use Controllers.	The following information is provided on an introduction to the entire NY-series system. • Two OS systems • Initial settings • Industrial PC Support Utility • NYCompolet • Industrial PC API • Backup and recovery
NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual	W558	NY532-□□□□ NY512-□□□□	Learning how to program and set up the Controller functions of an NY-series Industrial PC.	The following information is provided on the Controller function of an NY-series Controller. • Controller operation • Controller features • Controller settings • Programming based on IEC 61131-3 language specifications
NY-series Instructions Reference Manual	W560	NY532-□□□□ NY512-□□□□	Learning detailed specifications on the basic instructions of an NY-series Industrial PC.	The instructions in the instruction set (IEC 61131-3 specifications) are described.
NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Motion Control User's Manual	W559	NY532-□□□□ NY512-□□□□	Learning about motion control settings and programming concepts of an NY-series Industrial PC.	The settings and operation of the Controller and programming concepts for motion control are described.
NY-series Motion Control Instructions Reference Manual	W561	NY532-□□□□ NY512-□□□□	Learning about the specifications of the motion control instructions of an NY-series Industrial PC.	The motion control instructions are described.
NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherCAT® Port User's Manual	W562	NY532-□□□□ NY512-□□□□	Using the built-in EtherCAT port in an NY-series Industrial PC.	Information on the built-in EtherCAT port is provided. This manual provides an introduction and provides information on the configuration, features, and setup.
NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherNet/IP™ Port User's Manual	W563	NY532-□□□□ NY512-□□□□	Using the built-in EtherNet/IP port in an NY-series Industrial PC.	Information on the built-in EtherNet/IP port is provided. Information is provided on the basic setup, tag data links, and other features.

Manual name	Cat. No.	Model numbers	Application	Description
NJ/NY-series NC Integrated Controller User's Manual	O030	NJ501-53□□ NY532-54□□	Performing numerical control with NJ/NY-series Controllers.	Describes the functionality to perform the numerical control. Use this manual together with the NJ/NY-series G code Instructions Reference Manual (Cat. No. O031) when programming.
NJ/NY-series G code Instructions Reference Manual	O031	NJ501-53□□ NY532-54□□	Learning about the specifications of the G code/M code instructions.	The G code/M code instructions are described. Use this manual together with the NJ/NY-series NC Integrated Controller User's Manual (Cat. No. O030) when programming.
NY-series Troubleshooting Manual	W564	NY532-□□□□ NY512-□□□□	Learning about the errors that may be detected in an NY-series Industrial PC.	Concepts on managing errors that may be detected in an NY-series Controller and information on individual errors are described.
Sysmac Studio Version 1 Operation Manual	W504	SYSMAC-SE2 □□□	Learning about the operating procedures and functions of the Sysmac Studio.	Describes the operating procedures of the Sysmac Studio.
CNC Operator Operation Manual	O032	SYSMAC-RTNC0□□ □D	Learning an introduction of the CNC Operator and how to use it.	An introduction of the CNC Operator, installation procedures, basic operations, connection operations, and operating procedures for main functions are described.

Related Products Manuals

This section provides on overview of the manuals of related products.

UPS S8BA

Manual name	Cat. No.	Model numbers	Application	Description
UPS S8BA User's Manual	U702	S8BA	Learning the information that is necessary to use the Uninterruptible Power Supply (UPS) Unit.	An introduction to the UPS is provided along with the following information: • Overview • Preparation • Installation and Connection • Check and Start Operation • Maintenance and Inspection • Shutdown Processing • I/O Signal Functions • Troubleshooting

Industrial Monitor Manual

This table contains the related manual of the Industrial Monitor.

Manual name	Cat. No.	Model-ID	Application	Description
Industrial Monitor User's Manual	W554	NYM12W-C1□□□ NYM15W-C1□□□ NYM19W-C1□□□	Learning all basic information about the Industrial Monitor. This includes introductory information with features, hardware overview, specifications, mounting, wiring, connecting, operating and maintaining the Industrial Monitor.	An introduction to the Industrial Monitor is provided along with the following information: • Overview • Hardware • Software • Specifications • Installation • Operating Procedures • Maintenance

Terminology and Abbreviations

Industrial PC Platform

Term / Abbreviation	Description
Industrial PC Platform	An integrated range of OMRON products designed for use in any industrial application that will benefit from advanced PC technology
Industrial Monitor	An industrial monitor with a touchscreen as the user interface designed to work in industrial environments
Industrial Panel PC	An industrial PC with an integrated touchscreen monitor designed to work in industrial environments
Industrial Box PC	A box-shaped industrial PC including an OS designed to work in industrial environments
IPC	Industrial PC
Sysmac	OMRON's brand name of the product family for the industrial automation equipment

Hardware

Term / Abbreviation	Description
3D TLC	3D Triple-Level Cell flash memory
BMC	Board Management Controller
CFast	An SSD CFast storage device
CPU	A Central Processing Unit is the hardware within a computer that executes the instructions of a computer program
DVI	Digital Visual Interface
DVI-D	A Digital Visual Interface with only Digital signals
DVI-I	A Digital Visual Interface with Analog and Digital signals
Ethernet	A network communication protocol used in TCP/IP network
HDD	A Hard Disk Drive storage device
HMI	A Human Machine Interface that facilitates machine operation and control
MLC	Multi-Level Cell type of SSD storage device
NYML	NY Monitor Link interface with video signals and USB signals
PCIe	The PCI Express is a high-speed computer bus standard called Peripheral Component Interconnect Express
PoE	Power over Ethernet
pSLC	Pseudo Single Level Cell type of SSD storage device
SATA	The Serial AT Attachment is a serial bus interface primarily used with mass storage devices such as hard disk drives
SLC	Single-Level Cell type of SSD storage device
SO-DIMM	Small Outline Dual Inline Memory Module
SSD	A Solid State Drive storage device
USB	Universal Serial Bus

Software

Term / Abbreviation	Description
API	Application Programming Interface
BIOS	Basic Input Output System. The first software run by a PC when powered on.
Developer	Any person involved with the development of software
DST	Daylight Saving Time
EtherCAT	A real time Ethernet protocol standard
EtherNet/IP	An industrial Ethernet protocol standard
EWF	Enhanced Write Filter
FBWF	File-Based Write Filter
IEC 61131-3	Industrial standard for programming languages for PLCs and the Machine controller
IIoT	Industrial Internet of Things
Machine Controller Software	Software acting as a machine controller providing an IEC 61131-3 runtime, a motion control engine and potentially a robotics engine
MSDN	Microsoft Developer Network
Merge module	A module providing a standard method by which developers deliver shared Windows installer components and setup logic to their applications
NUI	Natural User Interface
OS	Operating System
PLC	Programmable Logic Controller
SDK	Software Development Kit
Sysmac Studio	An OMRON computer software application for setting, programming, debugging and troubleshooting NY series controllers. It also provides operations for motion control and a simulator.
TCP/IP	Transmission Control Protocol / Internet Protocol, a core member of the Internet protocol suite
TPM	Trusted Platform Module
Windows	An Operating System designed by Microsoft

Revision History

On the front and back covers of the manual a manual revision code appears as a suffix to the catalog number.

Cat. No. | W557-E2-10
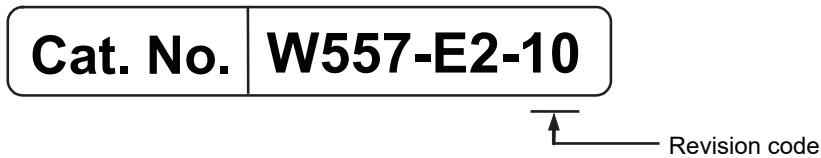
Revision code

Revision code	Date	Revised content
10	August 2022	Revisions for adding safety precautions regarding security.
09	December 2021	• Added VESA mount information • Added image retention information • Minor modifications
08	March 2021	• Added layer information • Added configuration without expansion layer • Added HDD and SDD and CFast storage devices and device details • Added Intel® Core™ i5-7440EQ CPU and related BIOS settings • Added Windows 10 IoT Enterprise 2019 LTSC - 64 bit • Updated Power Consumption Specifications • Minor modifications
07	May 2019	• Added several storage devices • Updated Conformance to KC certification • Minor modifications
06	April 2018	• Updated to Controller version 1.18 • Updated BIOS settings to version AQ27R111
05	October 2017	Made changes accompanying release of NY532-5400.
04	June 2017	• Added Storage Device Considerations • Added 2 preventive maintenance actions • Added NY Monitor Link option • Modified UPS configuration procedure • Minor modifications
03	April 2017	• Made changes accompanying release of unit version 1.14 of the Controllers • Improved UPS Connect procedure • Minor modifications
02	December 2016	• UL implementation • KC Standard implementation • Minor modifications
01	September 2016	First release

1

Introduction to the Panel PC

This section provides an introduction to the NY-series IPC Machine Controller Panel PC.

1-1 Intended Use

The IPC Machine Controller Panel PC is an industrial-grade PC intended for use within factory automation environments. This Panel PC simultaneously uses the standard Windows operating system and programs alongside OMRON's Sysmac Machine Controller Software to serve as a powerful PC based machine control platform.

The Panel PC can be easily integrated in manufacturing innovations like big data, NUI and IIoT without compromising on the proven reliability and robustness of a PLC.

The IPC Machine Controller Panel PC has a compact design that offers flexibility, expandability and easy maintenance for applications in factory automation environments.

A user can access the Industrial Panel PC for control, configuration and supervisory operations using the integrated touchscreen display.

1-2   Features

This section provides an overview of the features of the IPC Machine Controller Panel PC.

- Concurrent Operation of Windows and Real-time OS
  The Panel PC is provided with two operating systems: Windows and a real-time OS. It can concurrently perform both machine control functions by using the Controller Function on the real-time OS and application processing on Windows.
  With one IPC Machine Controller Panel PC, you can control the equipment with the Controller, get the equipment data from the Windows application, and communicate with other factory automation systems.
- Ensuring Operating System Independency
  Windows and the real-time Operating System run independently. The Controller continues controlling even if Windows makes an unexpected stop.
- Machine Controller Software
  The Sysmac NY-series IPC Machine Controller Panel PC are next-generation machine automation controllers that provide the functionality and high-speed performance that are required for machine control. They provide the safety, reliability, and maintainability that are required of industrial controllers. The IPC Machine Controller Panel PC provide the functionality of previous OMRON machine controllers, and they also provide the functionality that is required for motion control. Synchronized control of I/O devices on high-speed EtherCAT can be applied to safety devices, vision systems, motion equipment, discrete I/O, and more. OMRON offers the new Sysmac Series of control devices designed with unified communications specifications and user interface specifications. The IPC Machine Controller Panel PC are part of the Sysmac Series. You can use them together with EtherCAT slaves, other Sysmac products, and the Sysmac Studio Automation Software to achieve optimum functionality and ease of operation. With a system that is created from Sysmac products, you can connect components and commission the system through unified concepts and usability.

1-2-1   Machine Controller Software Features

The Machine Controller Software of the Panel PC provides the following features:
- Data Exchange between Windows and Controller
  The Windows and the Controller on the real-time OS can exchange data while each makes an independent operation. Through the shared folder on the Windows, you can get data from and write data into the Controller. Also, you can shut down or restart the Windows from the Controller.
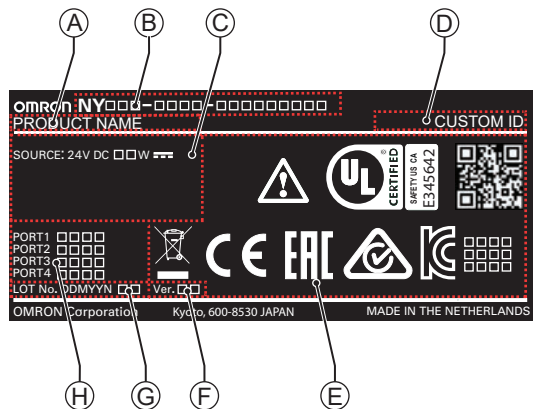
1-2-2   Hardware Features

Depending on the product configuration the Industrial Panel PC with Machine Automation Control Software provides the following hardware features:

- Flexible mounting orientation
  The Panel PC is designed to support landscape and portrait mounting orientations.
- Powerful CPU
  Powerful CPU options provides high performance for various applications.
- Parallel Execution of Tasks with a Multi-core Processor
  With a multi-core processor, the IPC Machine Controller Panel PC can execute the task, the tag data link service, and system services in parallel. This enables high-speed control of even large-scale devices.
- Easy access to storage devices and the PCI Express Card
  Adding or changing storage devices (HDD, SSD) and the PCI Express Card is fast and simple.
- LED indicators
  The LED indicators provide a clear indication of the operational status of the Panel PC.
- DVI visual interface
  The video interface for the Panel PC is provided with a DVI connector for connection to an additional monitor.
  An extra (optional) DVI interface is available for connection to a second additional monitor.
- NY Monitor Link interface
  The interface combines video signals and USB signals for a connection to an OMRON Industrial Monitor using a single NY Monitor Link cable up to 100 meter.
- 3 Ethernet ports 1Gb/s
  Three ports support EtherCAT, EtherNet/IP, and Ethernet (for Windows) for interfacing with multiple network types.
- EtherCAT Control Network Support
  The IPC Machine Controller Panel PC provides an EtherCAT master port for EtherCAT communications.
  EtherCAT is an advanced industrial network system that achieves faster, more-efficient communications. It is based on Ethernet. Each node achieves a short fixed communications cycle time by transmitting Ethernet frames at high speed.
  The standard-feature EtherCAT control network allows you to connect all of the devices required for machine control (e.g., I/O systems, Servo Drives, Inverters, and machine vision) to the same network.
- Support for EtherCAT Slave Terminals
  You can use EtherCAT Slave Terminals to save space. You can also flexibly build systems with the wide variety of NX Units.
- Achieving a Safety Subsystem on EtherCAT
  You can use NX-series Safety Control Units to integrate safety controls in a sequence and motion control system as a subsystem on EtherCAT.
- Built-in I/O
  Built-in I/O for UPS status and Panel PC shutdown control are provided.
- 4 USB ports
  2 USB2.0 ports and 2 USB3.0 ports are provided for connection to external USB devices such as keyboards, memory sticks, or other peripheral hardware.
- Built-in SD Memory Card slot
  An SD Memory Card slot is provided for removable memory.

- Built-in CFast Card slot

  An optional CFast Card slot is provided as a removable storage device.
- LCD touchscreen

  The LCD touchscreen provides high functionality for your PC interface.

  The high resolution and a high brightness provide clarity and high visibility.
- Multi-touch functionality

  Up to 5 simultaneous touches are supported for complex functions.
- Backlit Logo

  The standard product logo is OMRON. Check your sales representative for the possibilities to customize the product logo. The product logo is provided with a controllable backlight to increase visibility.
- Brightness control

  Use the Monitor Utilities to control the Panel PC's LCD brightness.

1-3 ID Information Label

The ID information label contains relevant information about the IPC Machine Controller Panel PC. The following example will be different from your product label.

Item	Name	Description
A	Product name	IPC Machine Controller
B	Model [*1]	Model and configuration details
C	Power rating	Power rating details and optional UL related information
D	Custom ID (Optional)	A custom ID [NYC□□□-□□□□□□□□] Only for Industrial Monitors and Industrial Panel PCs with a custom logo [*1].
E	Standards and QR code	The applicable standards and a QR code for OMRON internal use
F	Unit Ver.	Unit version of the Machine Controller Software
G	LOT number and serial number	Production details, consisting of: • The lot number of the IPC Machine Controller Panel PC in the format DDMYY □. DDMYY with Month number 1 to 9 for January to September, X for October, Y for November, and Z for December. □: For use by OMRON • Serial number (4 digits)
H	MAC ADDRESS [*2]	• PORT 1: the MAC address of Ethernet port 1 • PORT 2: the MAC address of Ethernet port 2 • PORT 3: the MAC address of Ethernet port 3

*1. Refer to *1-4 Product Configuration* on page 1-7 for model details.
*2. Refer to *4-2-4 Ethernet Connector Specifications* on page 4-20 for Ethernet specifications.

> **Additional Information**
>
> Refer to *3-1-2 Base Layer* on page 3-5 for the ID Information label location.

1-4 Product Configuration

This section provides an overview of the product configurations available for the IPC Machine Controller Panel PC.

The product configuration is visible in the model-ID that is mentioned on the ID information label of the product.

The structure of the model-ID is: NY□□□-□□□□-□□□□□□□□□.

Each item in the model-ID has a specific meaning.

N Y □□□ - □□□□ - □□□□□□□□□
  1 2 3 4   5 6 7 8   9 10 11 12 13 14 15 16 17

Item	Description	Option / Description
1	Series name	NY: NY-series
2	Controller specifications	5: "5" series: Large scale, high speed and high precision control application for up to 64 axes.
3	Model type	1: Industrial Box PC 3: Industrial Panel PC
4	Sequential number	2 or more
5	Function module	1: Standard 5: NC Integrated Controller
6	Number of axes for motion control	3: 16 axes 4: 32 axes 5: 64 axes
7	Additional Function Software Module	0: ---
8	Reserved	0: ---
9	Expansion slots	0: None 1: 1 PCIe slot
10	Frame type	1: Aluminum frame, black, Projected Capacitive Touch type 2: Aluminum frame, Nickel plated, Projected Capacitive Touch type X: No display (Industrial Box PC)
11	Display size	1: 12.1 inch model 2: 15.4 inch model 3: 18.5 inch model X: No display (Industrial Box PC)
12	Operating system	1: Windows Embedded Standard 7 - 32 bit 2: Windows Embedded Standard 7 - 64 bit 4: Windows 10 IoT Enterprise 2019 LTSC - 64 bit
13	Processor	1: Intel® Core™ i7-4700EQ Processor 4th generation CPU with active cooling 4: Intel® Core™ i5-7440EQ Processor 7th generation CPU with active cooling
14	Main memory	3: 8 GB Non-ECC 5: 32 GB Non-ECC

Item	Description	Option / Description
15	Storage	6: 128 GB CFast MLC 7: 256 GB CFast MLC 8: 32 GB, SSD SLC 9: 64 GB, SSD SLC C: 320 GB, HDD K: 128 GB, SSD MLC P: 1 TB, SSD 3D TLC
16	Optional interface	0: None 1: RS-232C 2: DVI-D 6: NY Monitor Link
17	Logo	0: OMRON 2: Customization X: No display (Industrial Box PC)

1-5 Overall Operating Procedure

This section gives the overall operating procedure of the IPC Machine Controller Panel PC.

Step 1. Design the Factory Automation Software

Design the overall system configuration, machine control programs and Windows applications interacting with the Machine Controller Software.

| Description	Reference
Step 1-1 Design the machine control programs	*NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)*
Step 1-2 Specify variables and data to be exchanged between the Machine Controller Software and Windows applications	• *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)* • *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)*
Step 1-3 Design the Windows applications interacting with the Machine Controller Software	*NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)*

Step 2. Setup the Machine Controller Software

Create the system configurations that you designed in step 1-1 and 1-2 and assign the variables. Create the tasks and programs, and debug them, e.g., with simulations.

Description	Reference
Step 2-1 Slave and Unit Configurations	• *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)* • *Sysmac Studio Version 1 Operation Manual (Cat. No. W504)*
Step 2-2 Controller Setup	
Step 2-3 Programming	
Step 2-4 Offline Debugging	

Step 3. Setup the Windows Applications

Create the Windows applications that you designed in step 1-2 and 1-3 using the NY-Compolet API and the Industrial PC System API.	*NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)*

Step 4. Install the Panel PC

Mount the Panel PC and implement it in the automation environment.

Description	Reference
Step 4-1 Install options	*5-2 Install Options* on page 5-4
Step 4-2 Mount	*5-3 Mount* on page 5-14
Step 4-3 Wire	*5-4 Wire* on page 5-30
Step 4-4 Connect	*5-5 Connect* on page 5-43

Step 5. Configure the Software

Configure Windows, install applications and download the machine control project.

Description	Reference
Step 5-1 First time startup and configure Windows	• *5-6 Initial Power ON* on page 5-49 • *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)*
Step 5-2 Configure shared folders	*NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)*
Step 5-3 Install Windows applications	
Step 5-4 Download the machine control project	• *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)* • *Sysmac Studio Version 1 Operation Manual (Cat. No. W504)*

Step 6. Check and then Start Actual Operation

Configure Windows, install applications and download the machine control project.

Description	Reference
Step 6-1 Check the machine control operation	*NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)*
Step 6-2 Check the operation of the Windows applications	*NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)*
Step 6-3 Create a system backup	
Step 6-4 Start actual operation	*NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Software User's Manual (Cat. No. W558)*

2

System Configurations

This section provides an overview of the system configurations for the IPC Machine Controller Panel PC.

2-1   Basic Configurations

The IPC Machine Controller Panel PC supports the following system configurations.
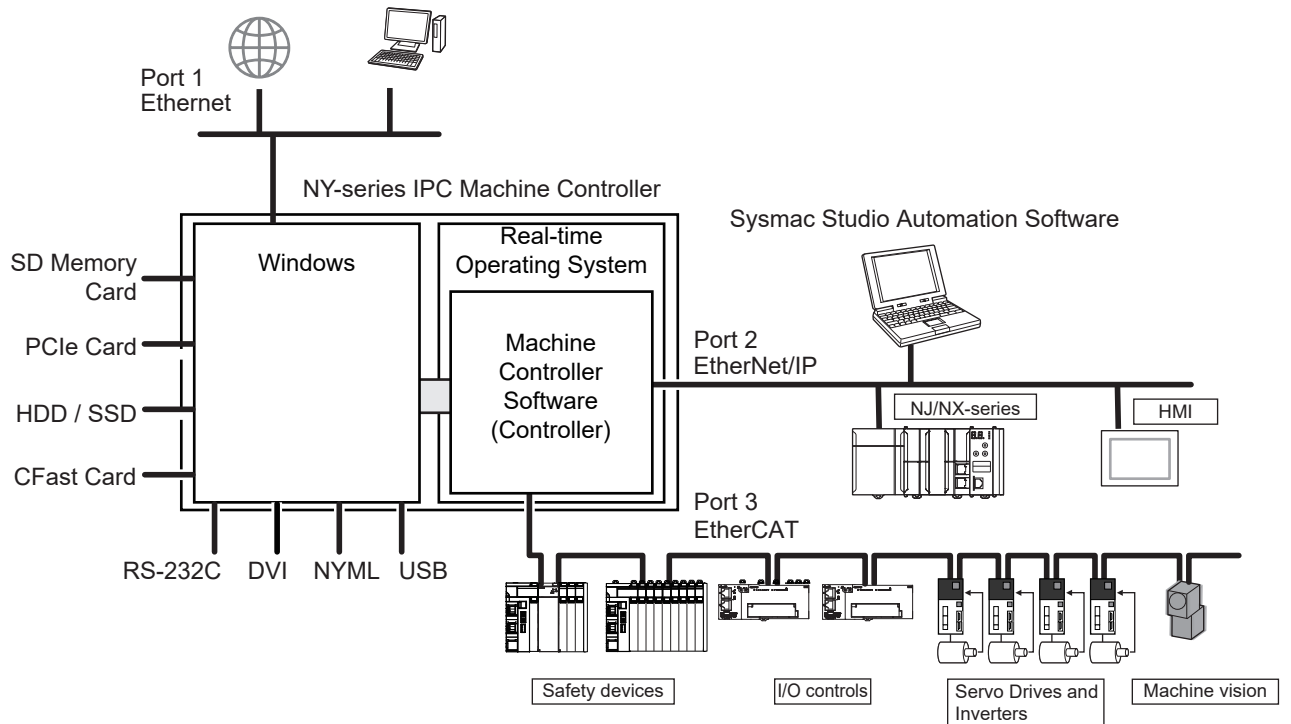
The Windows operating system has all interfaces an Industrial PC requires:
- 1 Ethernet port to connect with regular Ethernet networks and to be able to connect with databases, MES- and ERP systems and other IIoT applications
- 4 USB ports to connect peripheral device
- 1 or 2 DVI ports to connect one or two monitors
- 1 optional RS-232 port to connect (legacy) peripheral devices and factory automation devices
- 1 optional NYML port to connect an Omron Industrial Monitor using a single cable
- 2 bays for HDD and/or SSD storage devices
- 1 SD Memory Card slot for removable storage
- 1 CFast Card slot for removable storage
- 1 PCIe Card Slot to add support for other (industrial) networks or peripheral ports

The Machine Controller Software has 2 Ethernet ports assigned.
- 1 EtherCAT port for (real-time) communication with EtherCAT Slaves, like I/O controls, servo drives and safety devices.
- 1 EtherNet/IP port for machine-to-machine (M2M) communication, communication to other Controllers and HMI's. The EtherNet/IP port is also used to connect with the Panel PC with the Sysmac Studio to configure, program and monitor the Machine Controller Software and connected EtherCAT Slaves.

> **Additional Information**
>
> - The SD Memory Card and the USB ports are not available for the Machine Controller Software.
> - Refer to *2-2 EtherCAT Network Configuration* on page 2-4 for EtherCAT details.
> - Refer to *2-3 EtherNet/IP Network Configuration* on page 2-6 for EtherNet/IP details.

2-2   EtherCAT Network Configuration

The EtherCAT network configuration consists of an IPC Machine Controller Panel PC and the Ether-CAT Slaves. You use the built-in EtherCAT master port on the Panel PC to connect EtherCAT Slaves.
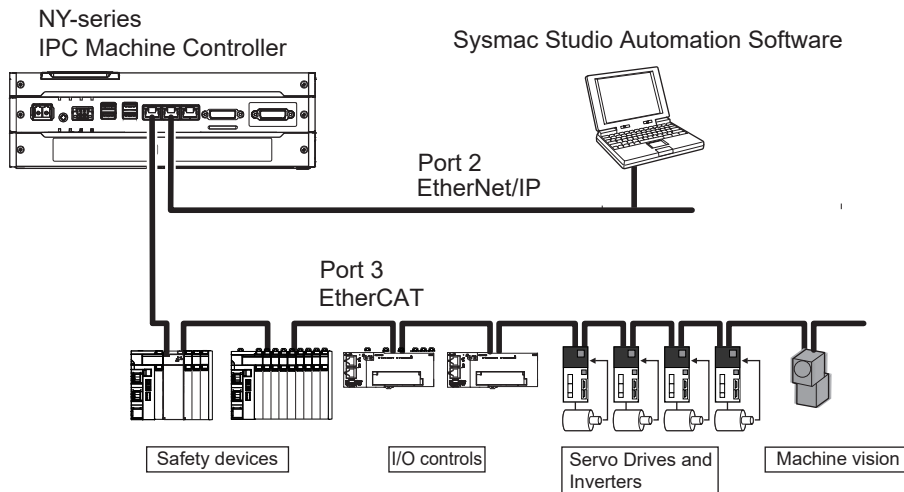
NY-series
IPC Machine Controller

Sysmac Studio Automation Software

Port 2
EtherNet/IP

Port 3
EtherCAT

Safety devices   I/O controls   Servo Drives and Inverters   Machine vision

---

> **Additional Information**
>
> Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherCAT Port User's Manual (Cat. No. W562)* for EtherCAT network configuration details.

2-2-1   Related EtherCAT Hardware

IPC Machine Controller Panel PC

The Machine Controller Software located on the Panel PC is the central controller for machine automation. It executes tasks, refreshes I/O for other Units and is the EtherCAT master for all connected EtherCAT slaves.
Ethernet port 3 on the Panel PC is the built-in EtherCAT port.

Additional Information

- Refer to *Relevant Manuals* on page 2 for EtherCAT related manuals.
- Refer to *EtherCAT Connector Specifications* on page 4-23 for port specifications.

EtherCAT Slaves

A device that exchanges data with the EtherCAT master built into Machine Controller Software through the EtherCAT network. The device provides non-synced EtherCAT Slaves and synced EtherCAT Slaves.

Additional Information

Refer to the specific EtherCAT Slave manuals for details.

EtherCAT Cables

Use the recommended EtherCAT cables to connect the Panel PC to the EtherCAT system.

Additional Information

Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherCAT Port User's Manual (Cat. No. W562)* for details.

2-3 EtherNet/IP Network Configuration

The EtherNet/IP network configuration consists of an IPC Machine Controller Panel PC and the Ether-Net/IP Devices. You use the built-in EtherNet/IP port on the Panel PC to connect EtherNet/IP Devices.
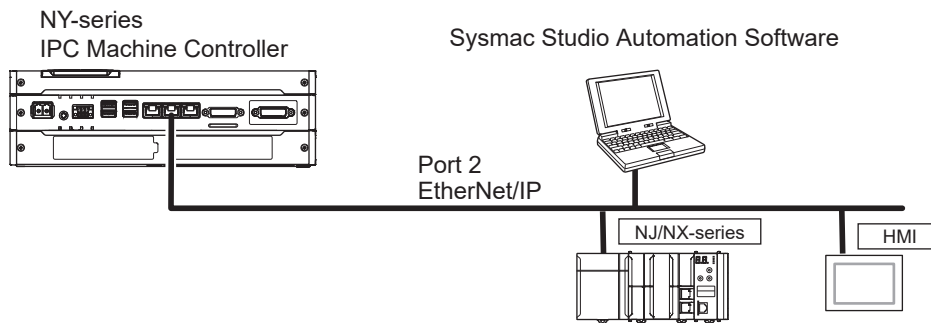
> **Additional Information**
>
> Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherNet/IP Port User's Manual (Cat. No. W563)* for EtherNet/IP network configuration details.

2-3-1 Related EtherNet/IP Hardware

IPC Machine Controller Panel PC

The Machine Controller Software located on the Panel PC is the central controller for machine automation.
Ethernet port 2 on the Panel PC is the built-in EtherNet/IP port.

> **Additional Information**
>
> - Refer to *Relevant Manuals* on page 2 for EtherNet/IP related manuals.
> - Refer to *EtherNet/IP Connector Specifications* on page 4-22 for port specifications.

EtherNet/IP Devices

A device that exchanges data with the Machine Controller Software through the EtherNet/IP network.

> **Additional Information**
>
> Refer to the specific EtherNet/IP Device manuals for details.

EtherNet/IP Cables

Use the recommended EtherNet/IP cables to connect the Panel PC to the EtherNet/IP system.

> **Additional Information**
>
> Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherNet/IP Port User's Manual (Cat. No. W563)* for details.

2-4　Connection with the Sysmac Studio

This section describes the configurations to connect the Sysmac Studio to an Industrial PC with Machine Automation Control Software.

2-4-1　Configurations That Allow Online Connections

You can connect online from the Sysmac Studio to the built-in EtherNet/IP port of the NY-series Panel PC.

Connect with EtherNet/IP
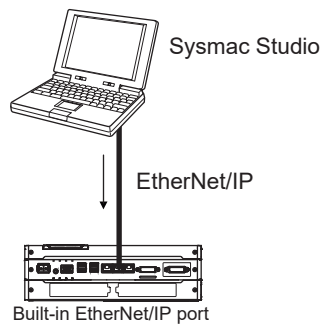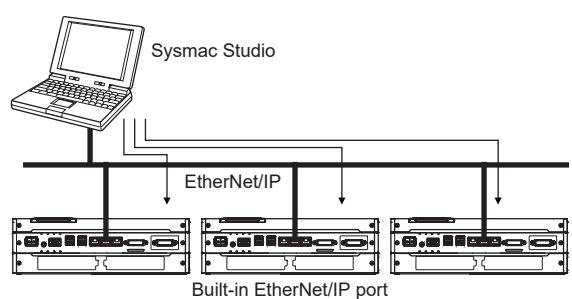
- A direct connection is made from the computer that runs Sysmac Studio. You do not need to specify the IP address or connection device.
- You can make the connection either with or without an Ethernet switch.
- You can use either a cross cable or a straight cable.

- Specify the IP address of the remote node from the Sysmac Studio.
- You can use either a cross cable or a straight cable.

Connect to EtherNet/IP through USB

You can connect to the NY-series built-in EtherNet/IP port through a USB port of an NJ/NX-series Controller.
Connect a computer and the NJ/NX-series CPU Unit with a USB 2.0 certified cable. Do not use a USB hub to connect them.
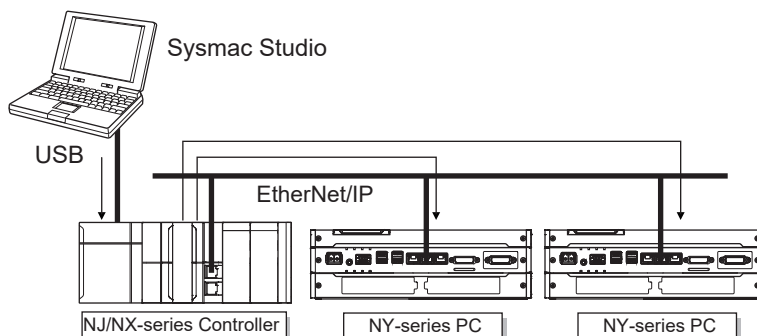
> ✎ **Additional Information**
>
> It is not possible to use a USB port of the Panel PC to connect the Sysmac Studio with the Machine Controller Software.

2-4-2 Configurations That Do Not Allow Online Connections

This section gives information on configurations that do not provide a connection to the Sysmac Studio.

Routing through CS/CJ-series EtherNet/IP Units/Ports

You cannot connect to an NY-series Panel PC by routing through a CS/CJ-series Ethernet/IP Unit or port (CS1W-EIP2, CJ1W-EIP21, CJ2 CPU Unit built-in EtherNet/IP port, or CJ2M CPU Unit built-in EtherNet/IP port).
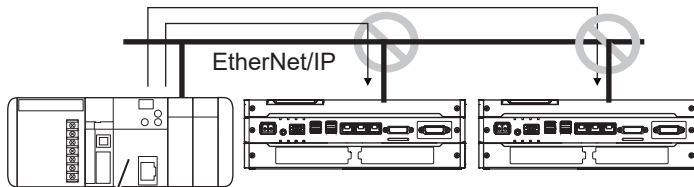
CJ2 CPU Unit built-in EtherNet/IP port or EtherNet/IP Units

3

Hardware Overview

This section provides an overview of the hardware of the IPC Machine Controller Panel PC.

3-1   Layers and Components

This section shows the layers of the Industrial Panel PC.
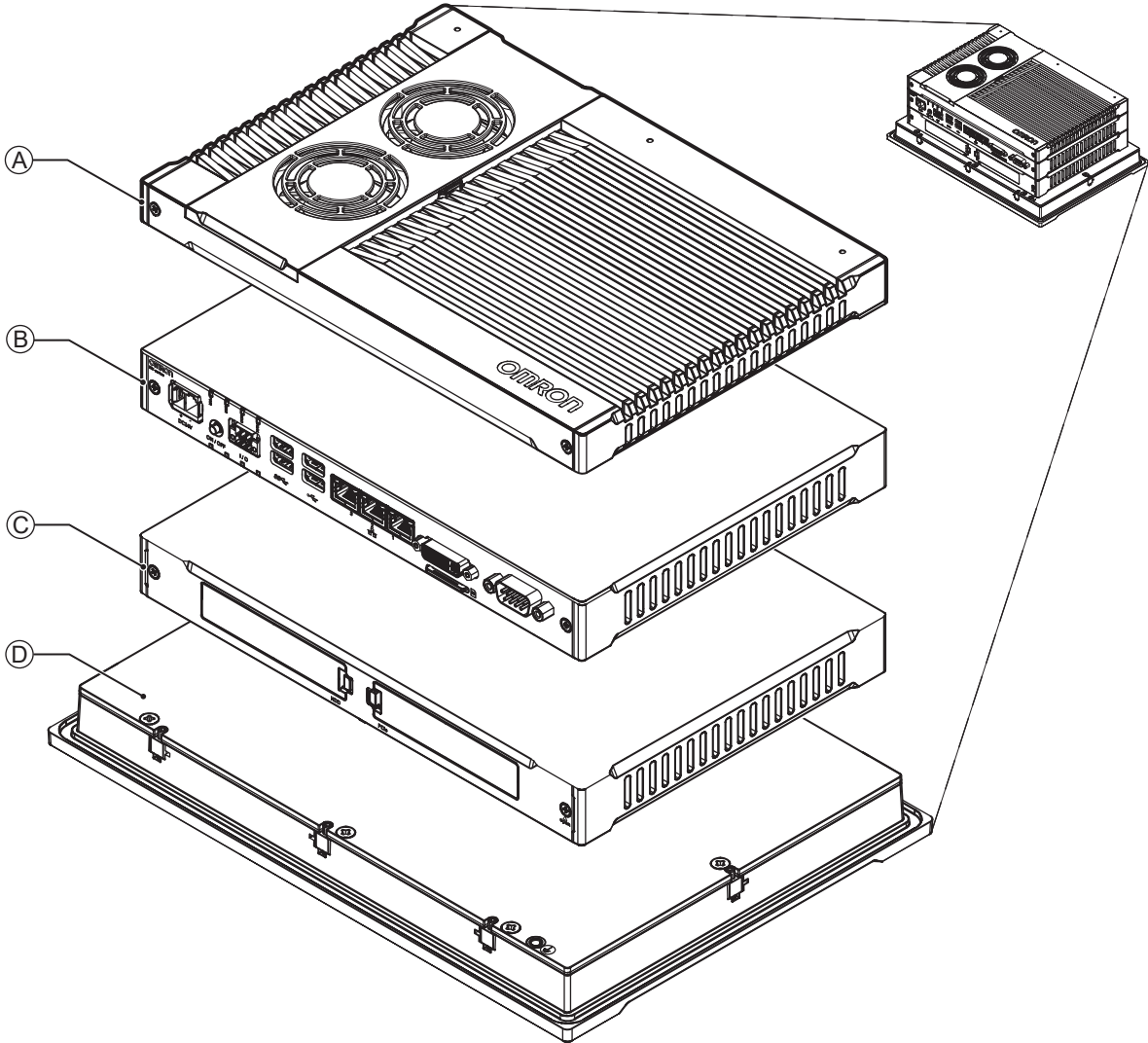
Item	Name	Description
A	Cooling layer	Layer to cool the base layer Depending on the product configuration fans can be present and the thickness can vary.
B	Base layer	The layer with the CPU and the main interfaces The connector layout and the installed option board depend on the product configuration.
C	Expansion layer	Depending on the product configuration this optional layer can add additional storage devices or a PCIe Card.
D	Display layer	Multi-touch LCD display to interact with the user.

3-1-1   Cooling Layer

This section gives details on the cooling layer.

The cooling layer will dissipate excessive heat from the Panel PC.

Thickness and design details of the cooling layer can vary, depending on the product configuration.

Cooling layer with removable cover and active cooling
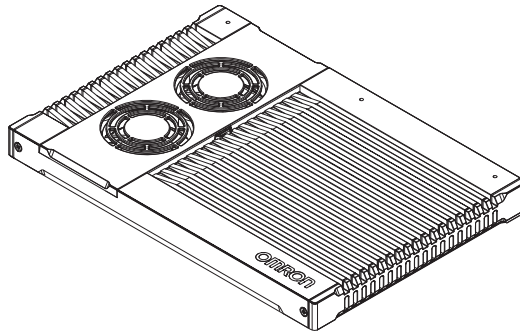
The cover provides access to:

- The battery
- The battery replacement date
- The fans, only for Panel PCs that have active cooling

3-1-2   Base Layer

This section shows the component names and functions for the base layer.

The base layer houses most of the functionality of the Panel PC.

Frontside   Backside

The connector layout and the available components can differ depending on the product configuration. Refer to *1-4 Product Configuration* on page 1-7 for configuration details.

Item	Name	Description
A	Power connector	Lockable power connector
B	Power button	Pushbutton to manually power ON/OFF the Panel PC
C	LED indicators	Visual indicators for the operating state of the Panel PC
D	I/O connector	2 inputs (Power ON/OFF Input and UPS Mode Input) and 1 output (Power Status Output)
E	USB 3.0 connectors	2 USB 3.0 interface connectors
F	USB 2.0 connectors	2 USB 2.0 interface connectors
G	10BASE-T / 100BASE-TX / 1000BASE-T Ethernet connectors	3 RJ45 Gb Ethernet interface connectors
H	DVI connector	Digital Visual Interface connector
I	SD Memory Card slot	SD Memory Card slot
J	Option port	Interface connection options for peripheral devices or an additional monitor. Possible option ports are: • RS-232C connector • DVI-D connector • NYML connector
K	CFast Card slot	Optional CFast Card slot

Item	Name	Description
L	ID information label	Label containing model-ID, LOT No. and other product specific information. Refer to *1-3 ID Information Label* on page 1-6 for label details.
M	License label	The product key for the operating system. The product key is inside the cover of the cooling layer for lotnumbers before 22Z17.

Port Assignment Details

This section gives details on the ports of the Base Layer for products with a Machine Controller.

The base layer has ports for Windows and ports for the Machine Controller Software.
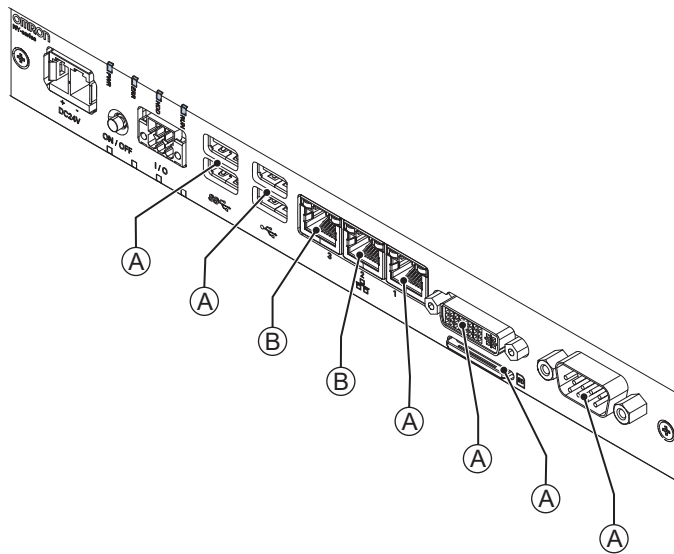
The connector layout and the available components can differ depending on the product configuration. Refer to *1-4 Product Configuration* on page 1-7 for configuration details.

Item	Name	Description
A	Windows Operating System	Ports for the Windows Operating System. These ports do not give access to the Machine Controller Software.
B	Machine Controller Software	Ethernet ports for the Machine Controller Software. These ports do not give access to the Windows Operating System.

> **Additional Information**
>
> The ports for Windows include the SD Memory Card slot and the USB connectors. These are not accessible for the Machine Controller Software.

3-1-3 Expansion Layer (Optional)

This section shows the component names and functions for the expansion layer.

The expansion layer adds additional functionality to the base layer.

The Expansion Layer is available for models:

- NY5□□-□□□□-1

Refer to *1-4 Product Configuration* on page 1-7 for model details.

Frontside   Backside
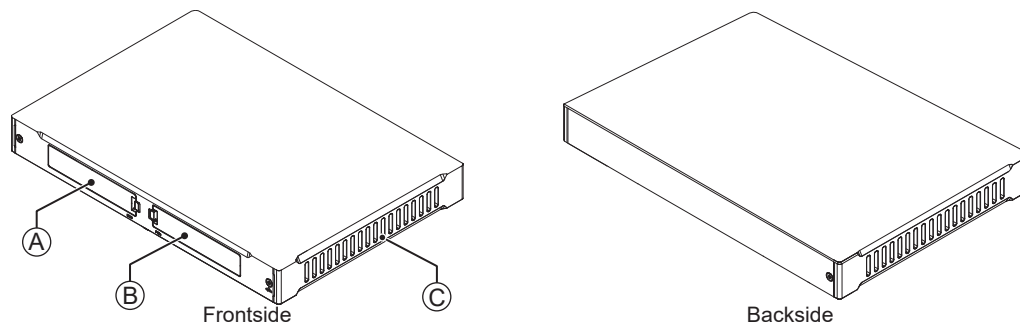
Item	Name	Description
A	Drive bays *1	Two 2.5 inch drive bays for HDD/SSD storage devices: • Drive bay A is the bay at the side of the base layer. • Drive bay B is the bay at the opposite side of the base layer.
B	PCIe bay	PCI Express mounting slot
C	PCIe drawer	Mounting location for the PCIe Card

*1. Depending on the model one or two drives are supported.
Refer to *4-1-7 Storage Device Specifications* on page 4-8 for the number of supported drives and for bay details.

Bay Assignment Details

This section provides details of the storage device bays in the expansion layer.

The bays are marked with a letter Ⓐ and protected from polution with a cover Ⓑ.
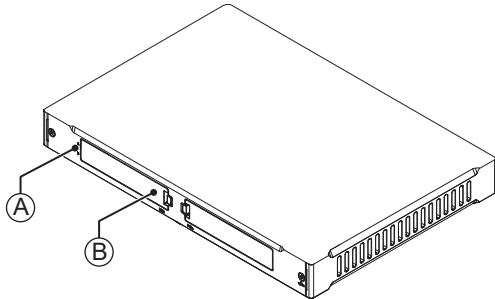
Model	Bay A	Bay B
NY5☐☐-1☐☐☐-1 NY5☐☐-5☐☐☐-1	Pre-installed drive for the operating system and main storage.	Optional[*1] drive for extended storage. This optional drive is visible in Windows.

*1.   Depending on the model the number of drives supported and the function of the supported drives can vary.
Refer to *1-4 Product Configuration* on page 1-7 for model details.
Refer to *4-1-5 CPU Specifications* on page 4-6 for the number of supported drives.

3-1-4   Display Layer

This section shows the component names and functions for the display layer.
The main function of the display layer is to show content and interact with the user.
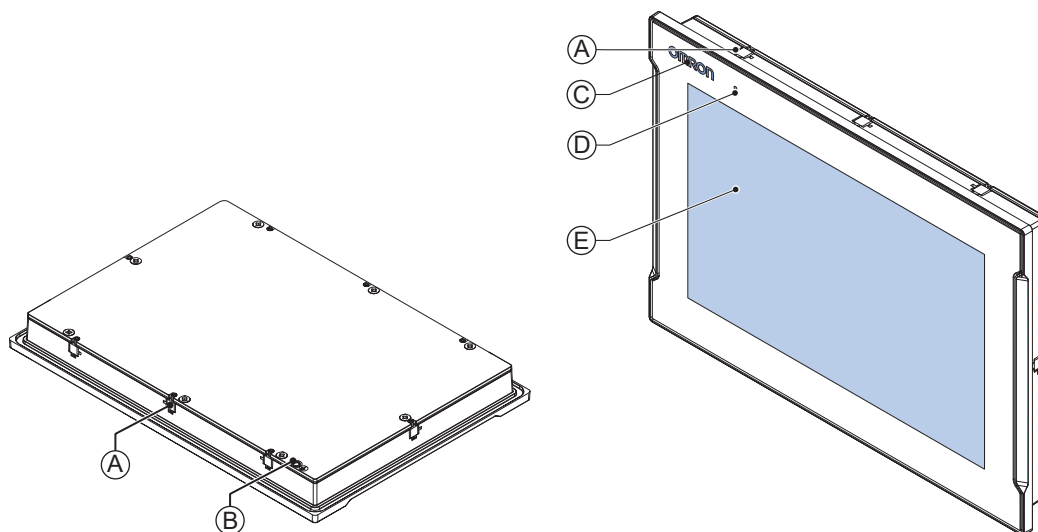
Item	Name	Description
A	Mounting brackets	Retractable mounting brackets to secure the display layer on a mounting surface
B	Ground terminal	Provides a ground terminal for the Panel PC
C	Logo LED	Backlit logo with adjustable brightness
D	Status LED indicator	LED to indicate power and connection status with adjustable brightness
E	Touchscreen LCD	Multi-touch LCD display

3-2   LED Indicators

The Industrial Panel PC has LED indicators located at the base layer and at the display layer. These LED indicators provide the current operating status of the IPC Machine Controller Panel PC.

3-2-1   LED Indicators Display Layer

The display layer has a logo LED and a Status LED indicator.
The Status LED indicator provides the same information as the Power and Error LEDs on the base layer.
The following LEDs are available on the display layer of the IPC Machine Controller Panel PC.
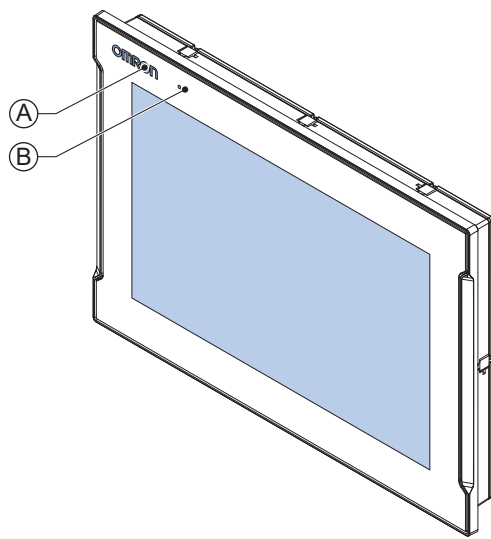
Item	LED	Description
A	Logo LED	LED to backlight the logo
B	Status LED Indicator	Indicates the status of the Panel PC

Logo LED

The Logo LED brightness can be changed with the Industrial Monitor Utility.

Additional Information

The Logo LED brightness is adjustable with the Industrial Monitor Utility.
Refer to NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568) for Industrial Monitor Utility details.

Status LED Indicator

The Status LED indicator provides information about the operating condition of the Panel PC. The Status LED brightness can be changed with the Industrial Monitor Utility.

Color	Status		Meaning
None	☐	Not lit	One of the following situations: • The 24 VDC power is not supplied. • Normal operation • Turned OFF by the Industrial Monitor Utility.
Green	🟩	Blinking	Power is currently supplied and the IPC Machine Controller Panel PC is in stand-by mode.
Red	🟥	Blinking	One of the following situations: • Fan Error, only for Panel PCs that have active cooling • Battery low
Red	🟥	Lit	At maximum brightness in following situations: • Power supply undervoltage error • Power supply overvoltage error • Power supply defective • Monitor internal hardware error At controllable brightness in following situations: • Thermal shutdown • Watchdog Error

Additional Information

• Refer to Industrial Monitor Utility information for brightness adjustment details.
• For Panel PCs without Machine Controller Software the status of this LED can also be defined by the Industrial Monitor API.
• The Industrial Monitor Utility information and the Monitor API information are available:
  • For products NY5☐ in the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)*

3-2-2 LED Indicators Base Layer

The base layer has four LED indicators that show the operating status of the Panel PC. Models with an Expansion layer have a second row with four LED indicators that have the same function.
The following LED indicators are available:
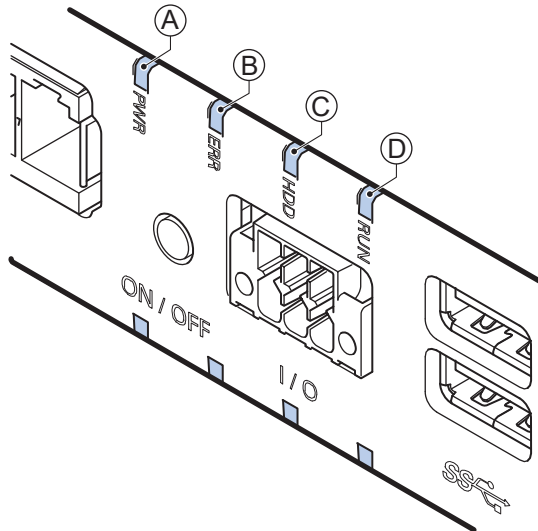
Item	LED Indicator	Name	Description
A	PWR	Power	Indicates the operating mode of the Panel PC.
B	ERR	Error	Indicates the presence and type of an error.
C	HDD	Hard Disk Drive	Indicates HDD/SSD/CFast activity.
D	RUN	Run	Indicates the Machine Controller Software status.

PWR LED Indicator

The Power LED (PWR) indicates the operating mode of the Panel PC.

Color	Status		Meaning
Green		Not lit	There is no power supplied or the Panel PC is OFF.
		Blinking	Power is currently supplied and the Panel PC is in stand-by mode.
		Lit	Power is currently supplied and the Panel PC is turned ON.

ERR LED Indicator

The Error LED (ERR) indicates the presence and type of an error within your IPC Machine Controller Panel PC.

Color		Status	Meaning
Red	☐	Not lit	• The 24 VDC power is not supplied • No error is present
	◪	Blinking	• Fan Error • Battery low
	■	Lit	• Thermal shutdown • Watchdog Error • Power Supply Undervoltage Error • Power Supply Overvoltage Error • Power supply defective • Machine Controller Error

Additional Information

Refer to the *NY-series Troubleshooting Manual (Cat. No. W564)* for error details.

HDD LED Indicator

The Hard Disk Drive LED (HDD) indicates activity of the storage device.

Color		Status	Meaning
Yellow	◪	Flickering	The storage device is active.

RUN LED Indicator

The RUN LED indicates the status of the Machine Controller Software.

Color	Status		Meaning
Green	☐	Not lit	Machine Controller Software is not active. Operation is stopped in PROGRAM mode when a Machine Controller Software reset is in progress, or when any of the following errors occurs. • Controller error in the major fault level • CPU error (WDT error)
	◪	Blinking	Machine Controller Software is initializing.
	■	Lit	Machine Controller Software active and in RUN mode.

Additional Information

Refer to the *NY-series Troubleshooting Manual (Cat. No. W564)* for error details.

3-3   Power Button

The power button is located at the base layer.

The power button is used to manually switch the Panel PC ON and OFF.
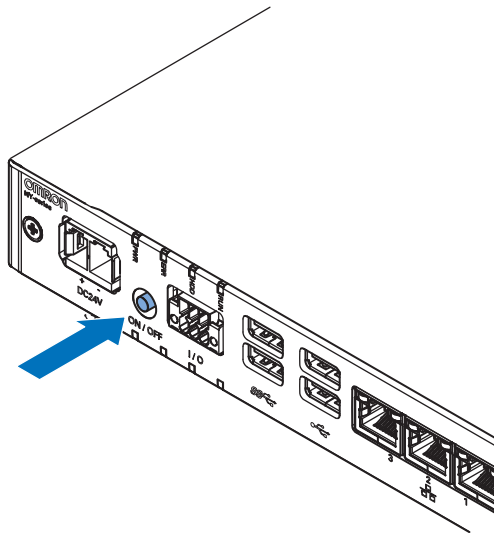
> 📒 **Additional Information**
>
> • Refer to *6-2 Power ON* on page 6-3 for ON details.
> • Refer to *6-3 Power OFF* on page 6-5 for OFF details.

3-4 Connectors

This section gives an overview of the connectors located at the base layer of the IPC Machine Controller Panel PC.

3-4-1 Power Connector

The power connector on the Panel PC is used to supply 24 VDC power to the Panel PC.
The power connector is supplied with the Panel PC.
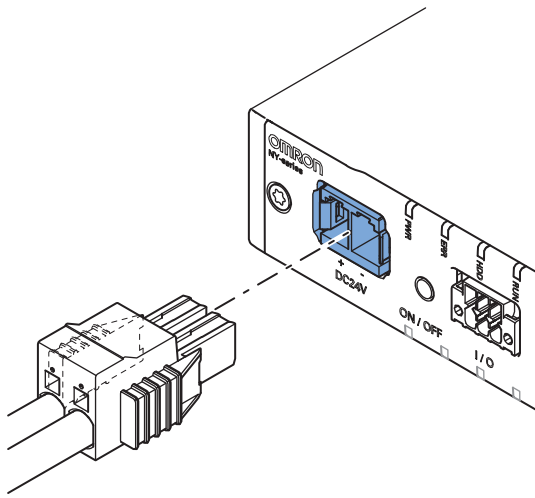
> **Additional Information**
>
> • Refer to *4-2-1 Power Connector Specifications* on page 4-14 for specifications.
> • Refer to *5-4-3 Wire the Power Connector* on page 5-37 for wiring details.
> • Refer to *5-5 Connect* on page 5-43 for connection details.

3-4-2 I/O Connector

The I/O connector on the IPC Machine Controller Panel PC provides discrete signals with the following functions.

• Input signal to the Panel PC when a connected UPS switches to battery power.
• Input signal to the Panel PC to perform a shutdown or power ON when the signal turns ON.
• Output signal from the Panel PC to indicate the power status of the Panel PC.

The I/O connector is supplied with the Panel PC.
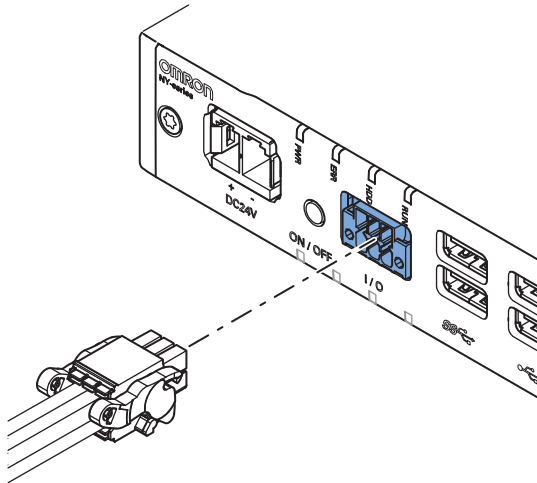
> **Additional Information**
>
> - Refer to *4-2-2 I/O Connector Specifications* on page 4-15 for specifications.
> - Refer to *5-4-4 Wire the I/O Connector* on page 5-40 for wiring details.
> - Refer to *5-5 Connect* on page 5-43 for connection details.

3-4-3 USB Connectors

Two USB connectors support USB 2.0 and two USB connectors support USB 3.0 specifications. All USB interfaces are protected against overcurrent and support Wake-on-USB.
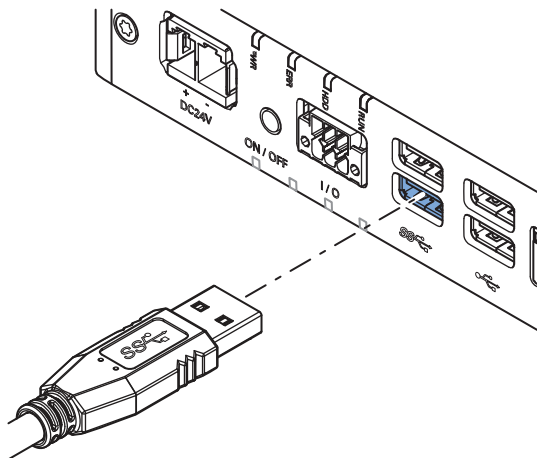
> **Additional Information**
>
> - Refer to *4-2-3 USB Connector Specifications* on page 4-19 for specifications.
> - Refer to *5-5 Connect* on page 5-43 for connection details.

3-4-4   Ethernet Connectors

The Ethernet connectors provide 3 individual Ethernet ports on the IPC Machine Controller Panel PC. Each port offers 10BASE-T/100BASE-TX/1000BASE-T Ethernet speeds.
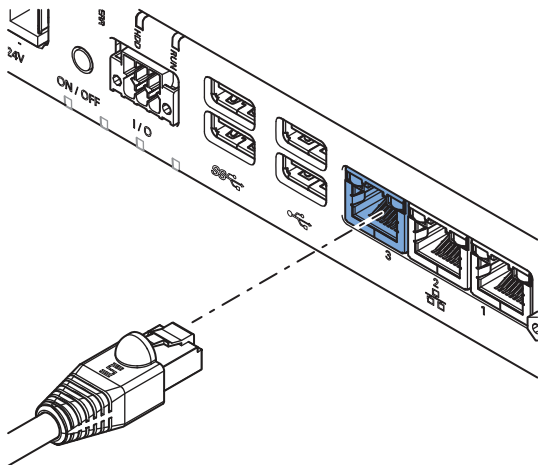
> **Additional Information**
>
> • Refer to *4-2-4 Ethernet Connector Specifications* on page 4-20 for specifications.
> • Refer to *5-5 Connect* on page 5-43 for connection details.

3-4-5   DVI Connector

The DVI interfaces supported on this connector are dependent on the configuration of the IPC Machine Controller Panel PC.
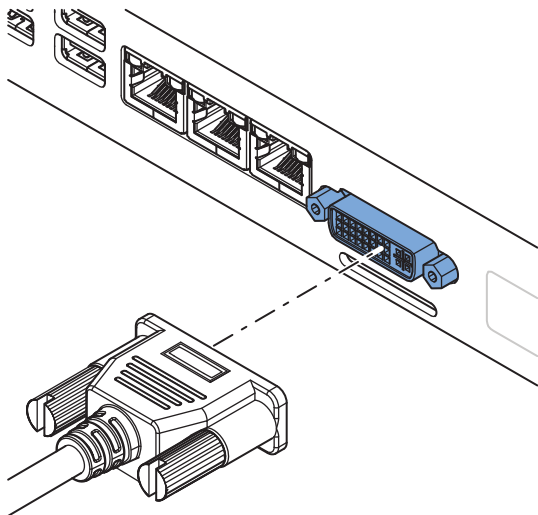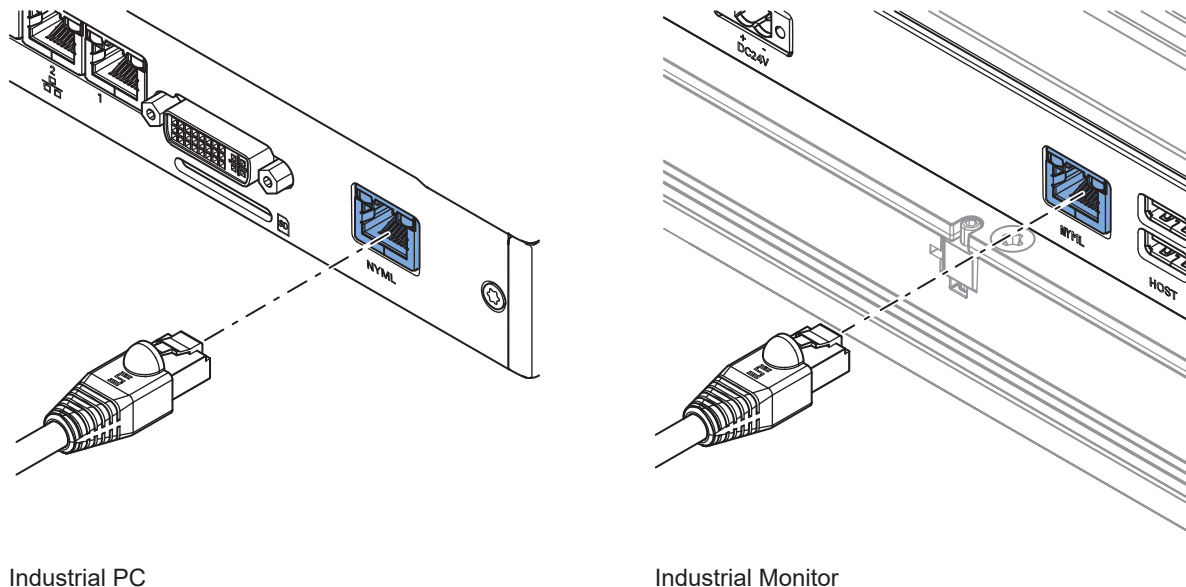

> **Additional Information**
>
> • Refer to *1-4 Product Configuration* on page 1-7 for configuration details.
> • Refer to *4-2-5 DVI Connector Specifications* on page 4-24 for specifications.
> • Refer to *5-5 Connect* on page 5-43 for connection details.

3-4-6 RS-232C Connector (Optional)

Depending on the product configuration an optional RS-232C connector is available.
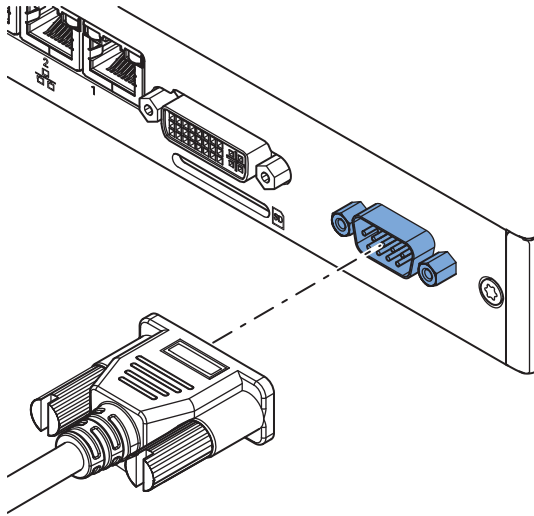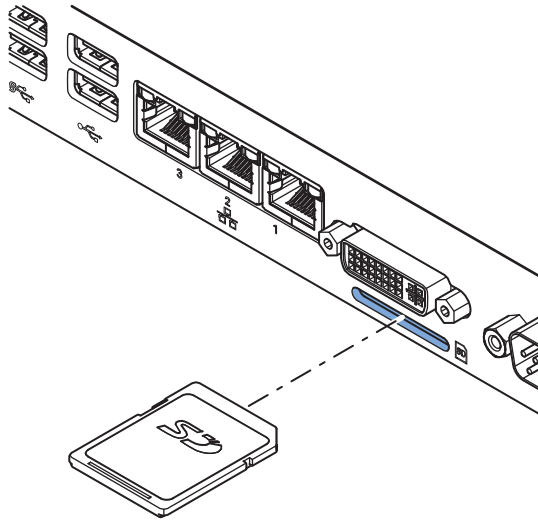

> **Additional Information**
>
> - Refer to *1-4 Product Configuration* on page 1-7 for configuration details.
> - Refer to *4-2-7 RS-232C Connector Specifications* on page 4-26 for specifications.
> - Refer to *5-5 Connect* on page 5-43 for connection details.

3-4-7 DVI-D Connector (Optional)

Depending on the product configuration an optional DVI-D connector is available. This interface only supports digital video signals.
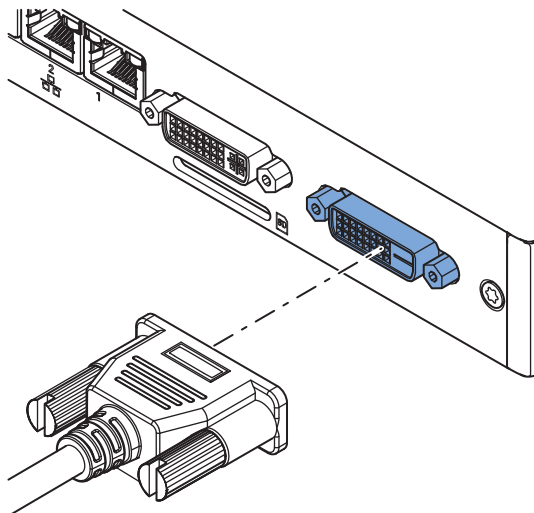
> **Additional Information**
>
> - Refer to *1-4 Product Configuration* on page 1-7 for configuration details.
> - Refer to *4-2-6 DVI-D Connector Specifications* on page 4-25 for specifications.
> - Refer to *5-5 Connect* on page 5-43 for connection details.

3-4-8   NY Monitor Link Connector (Optional)

Depending on the product configuration an optional NY Monitor Link connector is available.

The NY Monitor Link interface connector connects an OMRON Industrial PC to the OMRON Industrial Monitor.

Industrial PC   Industrial Monitor

> **Additional Information**
>
> • Refer to *1-4 Product Configuration* on page 1-7 for configuration details.
> • Refer to *4-2-8 NY Monitor Link Connector Specifications* on page 4-26 for specifications.
> • Refer to *5-5 Connect* on page 5-43 for connection details.

3-5   SD Memory Card Slot

The SD Memory Card slot is located at the base layer.

The SD Memory Card slot on the IPC Machine Controller Panel PC accepts SD Memory Cards with the following specifications.

- SDHC type (SD 2.0 specification)
- Up to 32 GB capacity

> **Additional Information**
>
> Refer to *3-10-2 SD Memory Cards* on page 3-27 for SD Memory Card details.

3-6 CFast Card Slot (Optional)

Depending on the product configuration an optional CFast Card slot is located at the rear side of the base layer.
The CFast Card slot accepts CFast Cards that comply with the CFast 2.0 specification.
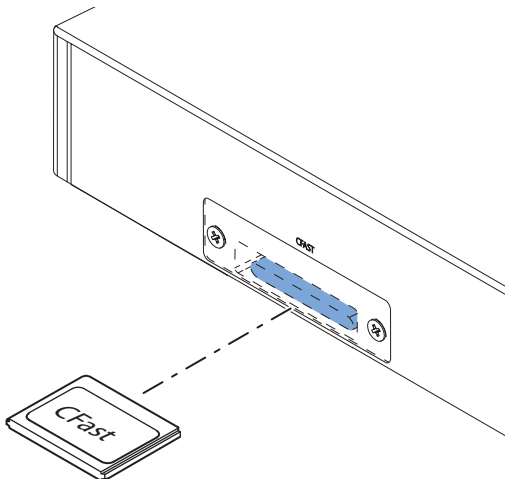
> **Additional Information**
>
> Refer to *3-10-4 CFast Cards* on page 3-27 for details.

3-7   Drive Bays

The drive bays are located in the expansion layer.

The drive bays in the IPC Machine Controller Panel PC accept 2.5 inch Hard Disk Drives (HDD) or Solid State Drives (SSD). Depending on the model one or two drives are supported.
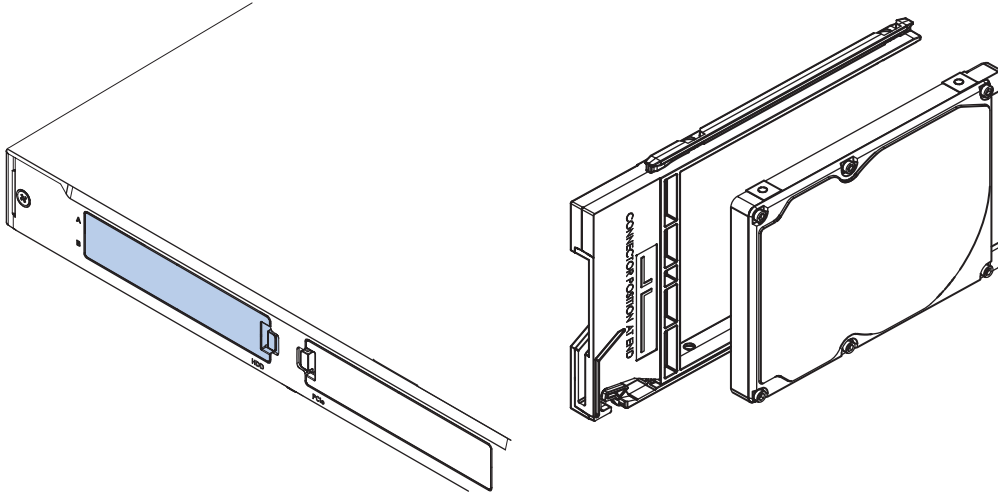
> **Additional Information**
>
> • Refer to *4-1-5 CPU Specifications* on page 4-6 for the number of supported drives.
> • Refer to *4-1-7 Storage Device Specifications* on page 4-8 for storage device specifications.
> • Refer to *5-2-1 Install a Drive* on page 5-4 for install information.
> • Refer to *7-2-4 Replace a Drive* on page 7-11 for maintenance information.

3-8 PCIe Card Slot

The PCI Express (PCIe) Card slot is located in the expansion layer.

The PCI Express (PCIe) Card slot of the IPC Machine Controller Panel PC can accept various PCIe Cards for specific hardware needs.

The PCIe Card connectors are available behind the cover Ⓐ and the PCIe Card is mounted in the PCIe drawer Ⓑ.
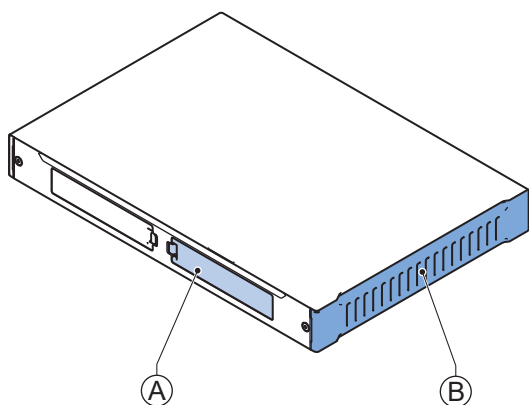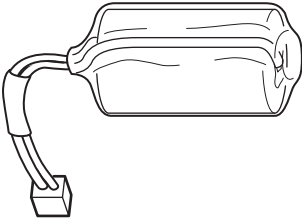
> **Additional Information**
>
> - Refer to *4-1-8 PCIe Card Specifications* on page 4-11 for specifications.
> - Refer to *5-2-2 Install the PCIe Card* on page 5-8 for install information.
> - Refer to *7-2-5 Replace the PCIe Card* on page 7-16 for maintenance information.

3-9 Spare Parts

The following spare parts for the IPC Machine Controller Panel PC are available.

3-9-1 Battery

One battery is located inside the Panel PC. The battery supplies power to the real-time clock.

Model	Appearance	Specifications
CJ1W-BAT01		Service life: 5 years at 25°C
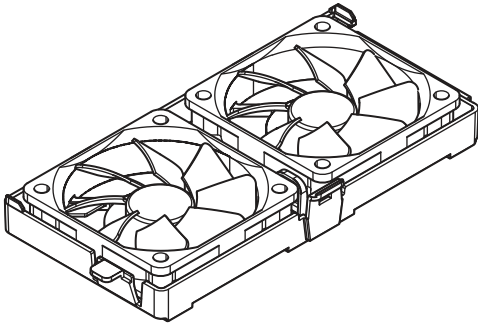
Additional Information

Refer to *7-2-3 Replace the Battery* on page 7-9 for the replacement procedure.

3-9-2 Fan Unit

The Fan Unit is available for the Panel PC that has active cooling.

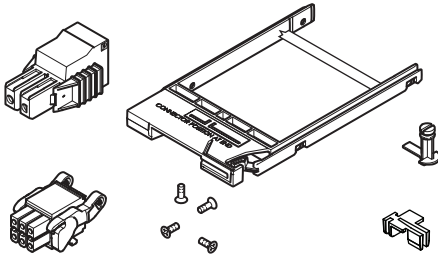| Model	Appearance	Specifications
NY000-AF00		• Service life: 70,000 hours of continuous operation at 40°C with 15% to 65% relative humidity • Shelf life: 6 months This is the storage limitation with no power supplied. We highly recommend performance testing if the Fan Unit has been stored over 6 months.

Additional Information

Refer to *7-2-2 Replace the Fan Unit* on page 7-7 for the replacement procedure.
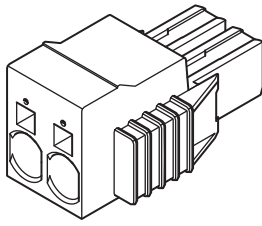
3-9-3 Accessory Kit

The accessory kit for the Panel PC.

Model	Appearance	Specifications
NY000-AK00		Accessory Kit containing all accessories supplied with the Panel PC. • Power connector • I/O connector • Drive bracket for drive installation [1] • 4 mounting screws for drive installation [1] • PCIe Card support for PCIe Card installation [1] • PCIe Card clip for PCIe Card installation [1]

*1. The Accessory Kit can contain accessories that are not applicable to your model.
Refer to *1-4 Product Configuration* on page 1-7 for details.

3-9-4 Connectors

Details for the recommended connectors are provided below.
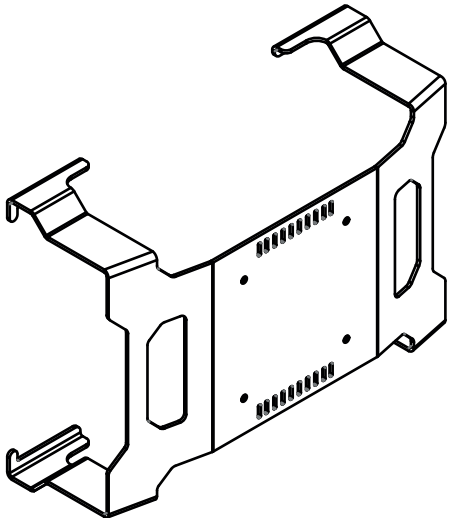OMRON is not responsible for the operation or performance of any other connector.

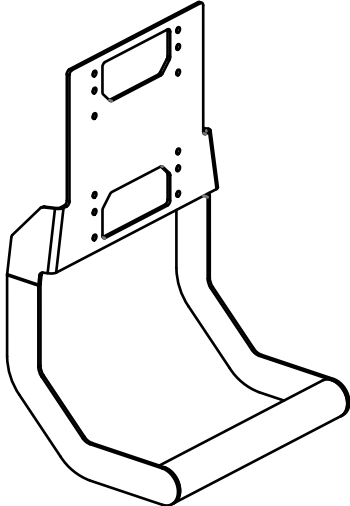| Model	Appearance	Specifications
NY000-AK01		Power Connectors for Omron Industrial PCs. 10 pieces.

3-10 Optional Hardware

The following optional hardware is available for the IPC Machine Controller Panel PC.

3-10-1 VESA Mount Brackets

VESA Mount brackets and the optional VESA Mount handle are available for different IPC models.
The model-ID is available on the ID information label.

Model	Appearance	Specifications
VESA Mount Bracket		• Material: stainless steel, 2.5 mm • Finish: Black industrial powder coating

The bracket shape can differ depending on the bracket ID.

Model	Appearance	Specifications

VESA Mount Handle		• Material: stainless steel
		• Finish: Black industrial powder coating
		• Handle width outside dimension: 205 mm
		• Handle width inside dimension: 200 mm
		• Handle diameter 30 mm
		• Hole pitch from middle hole:
		  14 mm up
		  21 mm down

> 📓 **Additional Information**
>
> Refer to *4-1-9 VESA Mount Brackets and Handle Specifications* on page 4-12 for details.

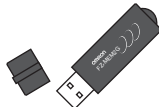## 3-10-2 SD Memory Cards

SD Memory Card details are provided below.

OMRON is not responsible for the operation, performance or write life of any other brand of SD Memory Card.

Model	Appearance	Card type	Capacity	Format
HMC-SD291		SD Card	2 GB	FAT16
HMC-SD491		SDHC Card	4 GB	FAT32
HMC-SD1A1		SDHC Card	16 GB	FAT32

3-10-3 USB Flash Drives

USB Flash Drive details are provided below.

OMRON is not responsible for the operation, performance, or write life of any other brand of USB Flash Drives.

Model	Appearance	Capacity
FZ-MEM2G		2 GB
FZ-MEM8G		8 GB

3-10-4 CFast Cards

CFast Card details are provided below.

OMRON is not responsible for the operation, performance, or write life of any other CFast Card.

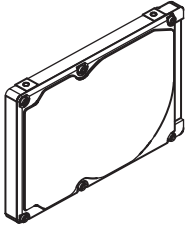| Model	Appearance	Storage type	Capacity	Details
NY000-AT01		CFast Card	128 GB	Innodisk DECFA-A28M41BW1DC
NY000-AT02			256 GB	Innodisk DECFA-B56M41BW1DC

Additional Information

Refer to *CFast Card Specifications* on page 4-10 for CFast Card specifications.

3-10-5 HDD and SSD Storage Devices

HDD and SSD storage devices can only be installed in models with an Expansion Layer.
Refer to *1-4 Product Configuration* on page 1-7 for model details.

HDD and SSD storage device details are provided below.
OMRON is not responsible for the operation, performance, or write life of any other storage device.

Model	Appearance	Storage type	Capacity	Details
NY000-AH00		HDD	320 GB	Toshiba MQ01ABF032
NY000-AS00 *1		SSD SLC	32 GB	Apacer APS25AB7032G-AT
NY000-AS01 *1			64 GB	Apacer APS25AB7064G-AT
NY000-AS03 *2			64 GB	Hagiwara HFD25S-064GD(A23AE)-HC
NY000-AS04		SSD MLC	128 GB	Innodisk DES25-A28M41BC1DC
NY000-AS07		3D TLC	1 TB	Innodisk DES25-01TDK1EC1QF

*1. Default for Panel PC model NY5□2-□□□□-1□□□1
*2. Default for Panel PC model NY5□2-□□□□-1□□□4

> **Additional Information**
>
> Refer to *4-1-7 Storage Device Specifications* on page 4-8 for storage device specifications.

Storage Device Considerations

For a storage device that is not an OMRON NY000-A□□□ consider the following:

- OMRON is not responsible for the operation, performance or write life of any storage device other than those supplied by OMRON.
- Test and measure the environmental performance of the intended storage device before actual operation, using the SMART monitoring feature of the selected storage device.
- Ensure the temperature and vibrations of the storage device are within the operating temperature specifications and vibration specifications during actual operation.
- Using a storage device with maximum power consumption exceeding 2W is not advised. Ensure that the SMART monitor features of the storage device are used to detect overheating.

> **Additional Information**
>
> - Refer to *4-1-7 Storage Device Specifications* on page 4-8 for storage device specifications.
> - Refer to *4-4-1 Operation Environment Specifications* on page 4-30 for environment specifications, specifically temperature and vibration specifications.
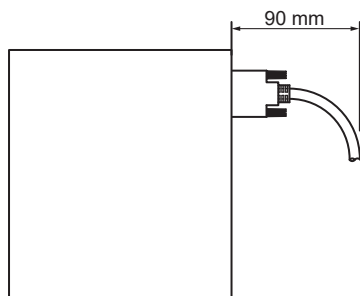
3-10-6 DVI Cables

DVI cable details are provided below.

OMRON is not responsible for the operation or performance of any other brand of DVI cable.

Model	Appearance	Cable length	Specifications
NY000-AC00 2M		2 m	• Supports DVI-D
NY000-AC00 5M		5 m	• Minimum bend radius: 36 mm

DVI Cable Clearance

The DVI cable requires a minimum clearance of 90 mm from the connector entry to prevent excessive strain on the connector and cable assembly.


3-10-7 USB Type-A to USB Type-B Cables

USB Type-A to USB Type-B cable details are provided below.

OMRON is not responsible for the operation or performance of any other brand of USB Type-A to USB Type-B cable.

Model	Appearance	Cable length	Specifications
FH-VUAB 2M		2 m	• USB 2.0
FH-VUAB 5M		5 m	• Minimum bend radius: 25 mm

USB Type-A to USB Type-B Cable Clearance

The USB Type-A to USB Type-B cable requires a minimum clearance of 60 mm from the connector entry to prevent excessive strain on the connector and cable assembly.
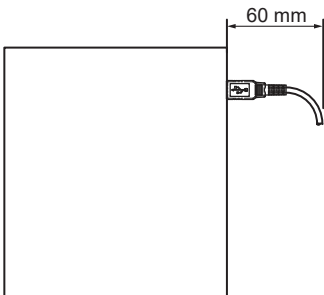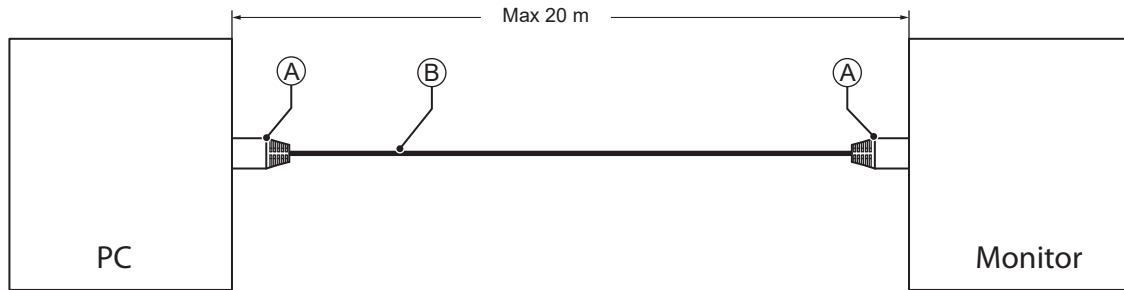
3-10-8 NY Monitor Link Cables

Depending on the installation situation specific cables are recommended for an NY Monitor Link (NYML).

Refer to:

NYML Recommendations up to 20 m

Connectors Ⓐ and cables Ⓑ with different lengths can be used.

The following table lists the recommended cables and connectors for the NY Monitor Link cable applications up to 20 m.

Item	Length	Specifications	
		ID	Details
Patch Cable with straight connectors Manufacturer: Weidmuller Color: Blue	1.5 m	IE-C6FP8LB0015M40M40-B	Industrial Ethernet cable: RJ45 IP 20, RJ45 IP 20, Cat.6A /Class EA (ISO/IEC 11801 2010), LSZH, UL, Molded Connector. Qualified for 10Gb/s, S/FTP
	3 m	IE-C6FP8LB0030M40M40-B	
	5 m	IE-C6FP8LB0050M40M40-B	
	10 m	IE-C6FP8LB0100M40M40-B	
	15 m	IE-C6FP8LB0150M40M40-B	
	20 m	IE-C6FP8LB0200M40M40-B	

● NY Monitor Link Cable Clearance

Ensure to prevent excessive strain on the connector and cable assembly.

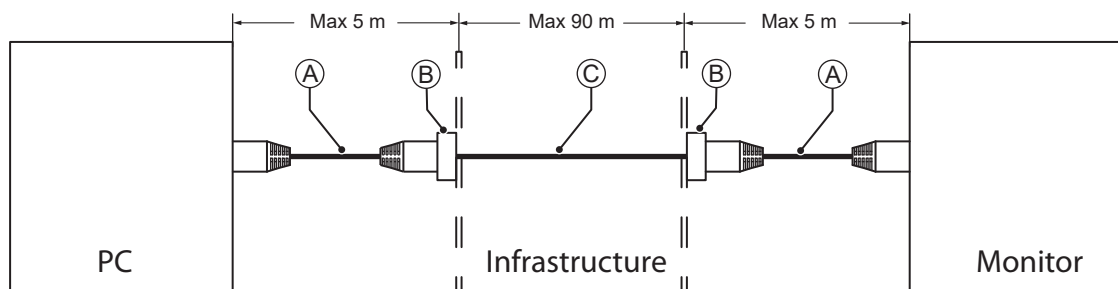The minimum clearance from the connector entry consists of the sum of:
- Connector length
- Maximum bending radius of the cable in a fixed position

NYML Recommendations up to 100 m

Patch Cables Ⓐ with different lengths can be used.

Use a DIN rail socket Ⓑ when connecting patch cables to infrastructures.

Use installation cable Ⓒ inside infrastructures.

The following table lists the recommended cables and materials for the NY Monitor Link cable applications up to 100 m.

Item	Length	Specifications	
		ID	Details
Ⓐ Patch Cable with straight connectors Manufacturer: Weidmuller	1.5 m	IE-C6FP8LB0015M40M40-B	Industrial Ethernet cable: RJ45 IP 20, RJ45 IP 20, Cat.6A /Class EA (ISO/IEC 11801 2010), LSZH, UL, Molded Connector. Qualified for 10Gb/s, S/FTP
	3 m	IE-C6FP8LB0030M40M40-B	
	5 m	IE-C6FP8LB0050M40M40-B	
Ⓑ D- DIN rail socket Manufacturer: Weidmuller		IE-XM-RJ45/IDC	Mounting rail outlet, RJ45 module design according to IEC 60603-7-51, for wires with diameters up to 1.6 mm UL
Ⓒ Installation Cable Manufacturer: Lapp		ETHERLINE ® PN Cat.6A FLEX	Industrial Ethernet cable ETHERLINE PN Cat.6A FLEX Cat.6A for flexible use, 4 pairs, PVC or FRNC outer sheath UL 4x2xAWG23/7 Qualified for 10Gb/s

● **NY Monitor Link Cable Clearance**

Ensure to prevent excessive strain on the connector and cable assembly.

The minimum clearance from the connector entry consists of the sum of:

• Connector length

• Maximum bending radius of the cable in a fixed position

NYML Recommendations for Custom Cables

The following table lists the recommended cables and connectors for custom NY Monitor Link cables.

Item		Intra cabinet or light industrial environment	Inter cabinet	Inter cabinet and harsh industrial environment
Maximum length		25 m	100 m	100 m
Manufacturer		Lapp	Lapp	Lapp
Cable type		2170196	2170614	2170466
Category type		Cat 6A	Cat 7	Cat 6A
Cable sheath		Halogen free	Halogen free	Halogen free
Conductor pairs/size/type		4 x 2 x AWG23/1	4 x 2 x AWG23/1	4 x 2 x AWG22/1
Overall shielding		Aluminum foil	Copper braid	Copper braid
Pair shielding		Aluminum foil	Aluminum foil	Aluminum foil
Maximum outer diameter		7.6 mm	7.7 mm	9.0 mm
Maximum bending radius of cable in a fixed position		31 mm	31 mm	90 mm
Maximum temperature for a cable in a fixed position		60°C	60°C	80°C
RJ45 connectors	Manufacturer	Stewart Connector	Stewart Connector	Lapp
	Partnumber	SS39200-027 or SS39200-030	SS39200-027 or SS39200-030	21700600 (T568A) or 21700601 (T568B)
	Connector length	30 mm	30 mm	50 mm

> **Additional Information**
>
> When making cables, connect the shield to the connectors at both ends.

● NY Monitor Link Cable Clearance

Ensure to prevent excessive strain on the connector and cable assembly.
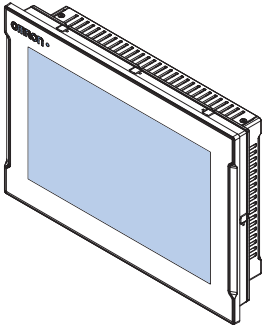
The minimum clearance consists of the sum of:

- Connector length
- Maximum bending radius of cable in a fixed position

3-10-9   Industrial Monitor

Details for the recommended monitor are provided below.

OMRON is not responsible for the operation or performance of any other monitor.

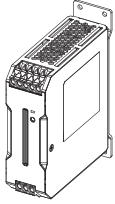| Model	Appearance	Specifications
NYM12W-C1□□□ NYM15W-C1□□□ NYM19W-C1□□□		• LCD touchscreen • Multi-touch functionality • Supply voltage: 24 VDC • Up to 1,280 x 800 pixels at 60 Hz (12", 15") or 1,920 x 1,080 pixels at 60 Hz (19") • 2 USB Type-A Connectors • Programmable brightness control

Additional Information

Refer to the OMRON website for specifications and manuals.

3-10-10   Power Supply

Details for the recommended power supply are provided below.

OMRON is not responsible for the operation or performance of any other power supply.

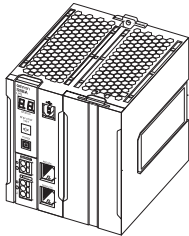| Model	Appearance	Specifications
S8VK-G□□□24 S8VK-X□□□24A-EIP S8VK-S□□□24 S8VK-WA□□□24		Output voltage: 24 VDC

Additional Information

• Refer to *4-1-3 Power Consumption Specifications* on page 4-5 for power consumption details.
• Refer to the OMRON website for specifications and manuals.
   Note that the power consumption details of the Panel PC determine the minimum power rating of your power supply.

3-10-11 UPS

Details for the recommended UPS are provided below.

OMRON is not responsible for the operation or performance of any other UPS.

Model	Appearance	Specifications
S8BA with revision number 04 or higher. [1]		Output voltage during backup operation: 24 VDC±5%

[1]. The revision number of the UPS can be retrieved from the serial number label on the product and the product packaging.
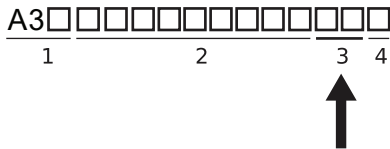
Item	Description
1	Product code
2	Product period and sequential number
3	Revision number
4	RoHS status

Precautions for Safe Use

Use an Omron S8BA UPS with the correct revision number to prevent improper system shutdown.

Additional Information

- Refer to *3-10-10 Power Supply* on page 3-33 for power supply details.
- Refer to *4-1-3 Power Consumption Specifications* on page 4-5 for power consumption details.
- Refer to the OMRON website for S8BA specifications or to the *UPS S8BA User's Manual (Cat. No. U702)* for the UPS manual.
  Note that the power consumption details determine the output current/capacity of your UPS.

3-10-12 UPS Communication Cable

Communication cable details are provided below.

OMRON is not responsible for the operation or performance of any other brand of communication cable.

Model	Appearance	Cable length	Specifications
S8BW-C02		2 m	Signals for • Signal output (BL, TR, BU, WB) • Remote ON/OFF input • UPS Stop Signal input (BS)

4

Specifications

This section provides specifications of the IPC Machine Controller Panel PC.
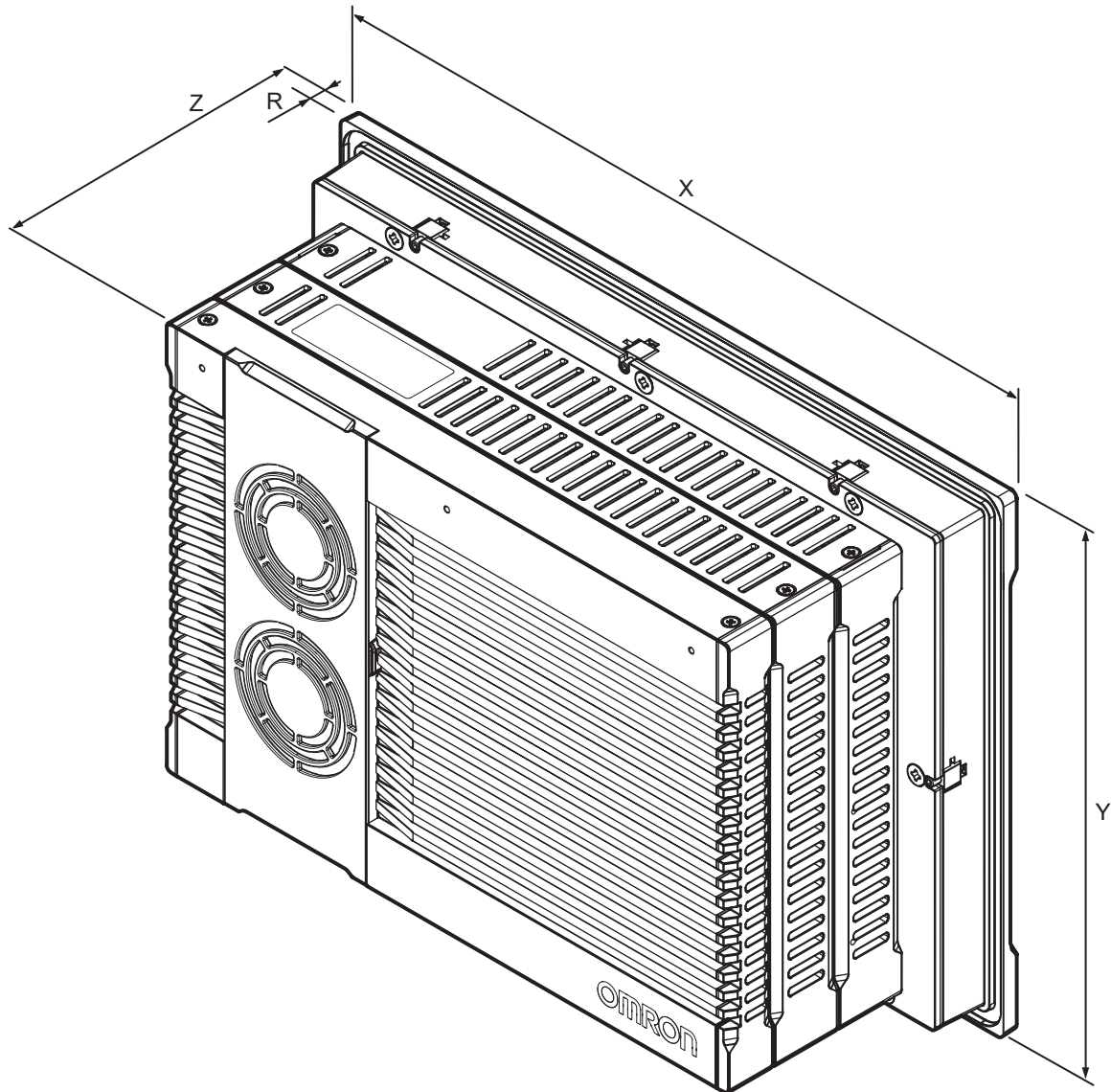
4-1 General Specifications

This section provides general specifications of the IPC Machine Controller Panel PC.

4-1-1 Dimensions and Weight

The dimensions and weights can differ depending on the configuration.

The following tables provide specification details per configuration.

12" Display

The following table provides specification details on dimensions and weights for the Industrial Panel PC with 12" display.
Refer to the image in *4-1-1 Dimensions and Weight* on page 4-2 for X, Y, Z and R details.

Model		Specifications				
Model-ID [1] [2]	Model Details	Width X	Height Y	Depth Z	Weight	Rim thickness R
• NY53□-□□□□-1□1	Base layer + Expansion layer + Cooling layer with removeable cover.	332 mm	234 mm	121 mm	6.1 kg	8.0 mm
• NY53□-□□□□-0□1	Base layer + Cooling layer with removeable cover.			87 mm	5.1 kg	

[1]. Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.
[2]. Refer to *1-3 ID Information Label* on page 1-6 for label details.
    Refer to *3-1-2 Base Layer* on page 3-5 for label location details.

15" Display

The following table provides specification details on dimensions and weights for the Industrial Panel PC with 15" display.
Refer to the image in *4-1-1 Dimensions and Weight* on page 4-2 for X, Y, Z and R details.

Model		Specifications				
Model-ID [1] [2]	Model Details	Width X	Height Y	Depth Z	Weight	Rim thickness R
• NY53□-□□□□-1□2	Base layer + Expansion layer + Cooling layer with removeable cover.	401 mm	277 mm	121 mm	7.2 kg	8.0 mm
• NY53□-□□□□-0□2	Base layer + Cooling layer with removeable cover.			87 mm	6.0 kg	

[1]. Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.
[2]. Refer to *1-3 ID Information Label* on page 1-6 for label details.
    Refer to *3-1-2 Base Layer* on page 3-5 for label location details.

19" Display

The following table provides specification details on dimensions and weights for the Industrial Panel PC with 19" display.
Refer to the image in *4-1-1 Dimensions and Weight* on page 4-2 for X, Y, Z and R details.

Model		Specifications				
Model-ID [1] [2]	Model Details	Width X	Height Y	Depth Z	Weight	Rim thickness R
• NY53□-□□□□-0□3	Base layer + Cooling layer with removeable cover.	482 mm	304 mm	87 mm	7.0 kg	8.0 mm

[1]. Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.
[2]. Refer to *1-3 ID Information Label* on page 1-6 for label details.
    Refer to *3-1-2 Base Layer* on page 3-5 for label location details.

4-1-2   General Electrical Specifications

The following table provides the general electrical specifications.

Item	Specifications
Rated power supply voltage	24 VDC
Allowable power supply voltage range	20.4 to 28.8 VDC
Power supply standard	SELV
Grounding method	Ground to less than 100 Ω
Inrush current	At 24 VDC: 12 A / 6 ms max. for cold start at room temperature
Overvoltage category	JIS B3502 and IEC 61131-2: Category II
EMC immunity level	IEC 61131-2: Zone B
RTC accuracy	At ambient temperature of 55°C: −3.5 to +0.5 min error per month At ambient temperature of 25°C: −1.5 to +1.5 min error per month At ambient temperature of 0°C: −3 to +1 min error per month
Power button life	100,000 operations
Fan life	Only for models with active cooling: 8 years of continuous operation at 40°C. Refer to *1-4 Product Configuration* on page 1-7 for details.
Battery life	Refer to Battery for details.

4-1-3   Power Consumption Specifications

The total power consumption for the Panel PC is the sum of the power consumption of all installed components.

The following table provides an overview of the components and their power consumption.

Item	Power consumption		
	12.1 inch models [*1]	15.4 inch models [*1]	18.5 inch models [*1]
NY53□-□□□□-0	86 W	86 W	108 W
NY53□-□□□□-1	99 W	99 W	- - -

*1.   Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.

Installed drives

Drives	Power consumption
Bay A	Refer to *4-1-7 Storage Device Specifications* on page 4-8 for Omron drive details. For other drives refer to the applicable specifications for maximum power consumption details.
Bay B	
CFast Card Slot	

Connected expansions

Expansions	Power consumption
USB	Refer to the power consumption specifications of your connected USB devices. Refer to *4-2-3 USB Connector Specifications* on page 4-19 for maximum power consumption details.
PCIe	Refer to the power consumption specifications of the installed PCIe Card. Refer to *4-1-8 PCIe Card Specifications* on page 4-11 for maximum power consumption details.

Calculation for the total power consumption:

IPC Machine Controller Panel PC with my specific CPU   …..…….. W
Depending on the configuration:
• Drive in bay A   …..…….. W
• Drive in bay B   …..…….. W
• Drive in CFast slot   …..…….. W
• Expansion USB   …..…….. W
• Expansion PCIe   …..…….. W +
                                                                                      _____

Total power consumption   …..…….. W

> **Additional Information**
>
> Ensure to use a power supply with sufficient capacity.
> Refer to *4-1-4 Power Supply Specifications* on page 4-6 for details.

4-1-4 Power Supply Specifications

The minimum power supply requirements depend on the maximum power consumption of the Panel PC. Refer to *4-1-3 Power Consumption Specifications* on page 4-5 for details.

With a UPS installed the minimum power requirements are:

Model	Minimum power requirements	
	Power supply *1	UPS *2
NY512	240 W	120 W
NY532	240 W	240 W

*1. Refer to *3-10-10 Power Supply* on page 3-33 for power supply products.
*2. Refer to *3-10-11 UPS* on page 3-34 for UPS products.

4-1-5 CPU Specifications

This section gives the specifications of the CPUs that are available for the IPC Machine Controller Panel PC.
Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.

NY5☐2 Intel® Core™ i7-4700EQ CPU Specifications

CPU specifications for an Intel® Core™ i7-4700EQ CPU.

Item	Specifications
Cores / Threads	4 *1 / 8
CPU base frequency	2.4 GHz
Cache	6 MB
Cooling details	Requires active cooling (fan)
Graphics controller	Intel ® HD Graphics 4600. Up to two independent screens.
DDR type	DDR3L-1600, non-ECC

*1. Only two cores are available for Windows.

NY5☐2 Intel® Core™ i5-7440EQ CPU Specifications

CPU specifications for an Intel® Core™ i5-7440EQ CPU.

Item	Specifications
Cores / Threads	4 *1/ 4
CPU base frequency	2.9 GHz
Cache	6 MB
Cooling details	Requires active cooling (fan)
Graphics controller	Intel ® HD Graphics 630
DDR type	DDR4-2400, Non-ECC

*1. Only two cores are available for Windows.

4-1-6 Memory Specifications

This section provides the memory specifications of the IPC Machine Controller Panel PC.

DDR3L Non-ECC

The following table provides specification details of the DDR3L memory.

Item		Model Specifications *1
		8 GB
Memory configuration		2 x 4 GB
Memory type		DDR3L Non-ECC
Total Memory size / Memory size available for Windows		8 GB / 6.5 GB for Windows 64 bit
		8 GB / 3.3 GB for Windows 32 bit
Package memory format		SO-DIMM
Serial Presence Detect (SPD)	Speed grade *2	1600 MT/s
	CAS Latency	CL11

*1. The applicable type of memory is determined by the CPU type.
    Refer to *4-1-5 CPU Specifications* on page 4-6 for CPU details.
    Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.
*2. The actual speed depends on the CPU type.

DDR4 Non-ECC

The following table provides specification details of the DDR4 memory.

Item		Model Specifications *1	
		8 GB	32 GB
Memory configuration		2 x 4 GB	2 x 16 GB
Memory type		DDR4 Non-ECC	
Total Memory size / Memory size available for Windows		8 GB / 6.3 GB for Windows	32 GB / 28.7 GB for Windows
Package memory format		SO-DIMM	
Serial Presence Detect (SPD)	Speed grade *2	2400 MT/s	
	CAS Latency	CL17	

*1. The applicable type of memory is determined by the CPU type.
    Refer to *4-1-5 CPU Specifications* on page 4-6 for CPU details.
    Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.
*2. The actual speed depends on the CPU type.

4-1-7 Storage Device Specifications

This section provides the specifications of the storage devices.

Hard Disk Drive Specifications

Specifications for the Hard Disk Drive (HDD) are provided in the table below.

Item	Model Specifications
	320 GB [1]
Model [2]	NY000-AH00
Power consumption	2 W max.
S.M.A.R.T. support	Yes
Rotation speed	5,400 r/min
Interface	Serial ATA 3.0
Operating temperature	5 to 55°C [3]
Operating humidity (with no condensation)	• 8 to 90% RH • 29°C wet-bulb temperature max.
Storage temperature	-40 to 65°C
Storage humidity (with no condensation)	• 8 to 90% RH • 40°C wet-bulb temperature max.
Endurance	Approximately 5 years or 20,000 powered-ON hours (whichever comes first) under the following conditions: • 25°C at 101.3 kPa • Less than 333 powered-ON hours/month[4] • Less than 20% operation while powered-ON[5] • Less than 1.30×10^6 seeks/month

*1. Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.
*2. Refer to *3-10-5 HDD and SSD Storage Devices* on page 3-28 for brand details.
*3. Refer to *4-4-1 Operation Environment Specifications* on page 4-30 for the temperature specifications of the complete Panel PC
*4. Powered-ON hours include sleep and standby modes.
*5. Operation includes seeking, writing, and reading functions.

Solid State Drive Specifications

Specifications for the Solid State Drive (SSD) are provided in the table below.

Item	Model Specifications [1]				
	32 GB	64 GB		128 GB	1 TB
Model [2]	NY000-AS00	NY000-AS01	NY000-AS03	NY000-AS04	NY000-AS07
Type	SLC			MLC	3D TLC
Max. power consumption	1.4 W	1.4 W	2.5 W	0.8 W	2.2 W
S.M.A.R.T. support	Yes				
Interface	Serial ATA 3.1				
Max. sequential read speed	160 MB/s	160 MB/s	500 MB/s	530 MB/s	550 MB/s
Max. sequential write speed	145 MB/s	150 MB/s	370 MB/s	190 MB/s	340 MB/s
Operating temperature	0 to 70°C [3]				
Max. operating humidity (with no condensation)	10 to 95% RH	10 to 95% RH	10 to 85% RH	10 to 95% RH	10 to 95% RH
Storage temperature	-40 to 100°C	-40 to 100°C	-45 to 90°C	-55 to 95°C	-55 to 95°C
Max. storage humidity (with no condensation)	10 to 95% RH				
Endurance	749 TBW	1497 TBW	1900 TBW	208 TBW	1000 TBW

*1.   Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.

*2.   Refer to *3-10-5 HDD and SSD Storage Devices* on page 3-28 for brand details.

*3.   Refer to *4-4-1 Operation Environment Specifications* on page 4-30 for the temperature specifications of the complete Panel PC.

CFast Card Specifications

Specifications for the CFast Drive are provided in the table below.

Item	Model Specifications	
	128 GB [1]	**256 GB [1]**
Model [2]	NY000-AT01	NY000-AT02
Type	MLC	
Max. power consumption	0.9 W	
Max. sequential read speed	530 MB/s	
Max. sequential write speed	190 MB/s	210 MB/s
Operating temperature	-40 to 85°C [3]	
Max. operating humidity (with no condensation)	10 to 95% RH	
Storage temperature	-55 to 95°C	
Max. storage humidity (with no condensation)	10 to 95% RH	
Endurance	208 TBW	417 TBW

*1. Refer to *1-4 Product Configuration* on page 1-7 for product configuration details.

*2. Refer to *3-10-4 CFast Cards* on page 3-27 for brand details.

*3. Refer to *4-4-1 Operation Environment Specifications* on page 4-30 for the temperature specifications of the complete Panel PC.

4-1-8   PCIe Card Specifications

The PCI Express (PCIe) Card slot of the IPC Machine Controller Panel PC accepts various cards for specific hardware needs.

Ensure that, according to the PCIe hardware specifications, the indent Ⓐ is present in the PCIe Card.
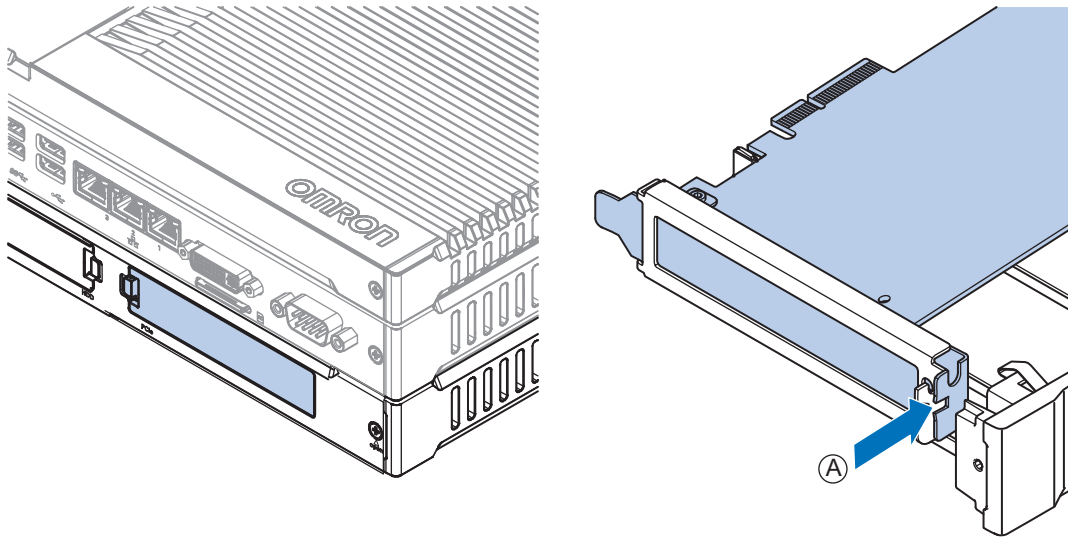
The PCIe Card specifications depend on the CPU and thus on the product configuration.

Model	Specifications
NY5	Refer to *PCIe Card Slot Specifications for NY5□□-□□□□-1* on page 4-11 for details.

PCIe Card Slot Specifications for NY5□□-□□□□-1
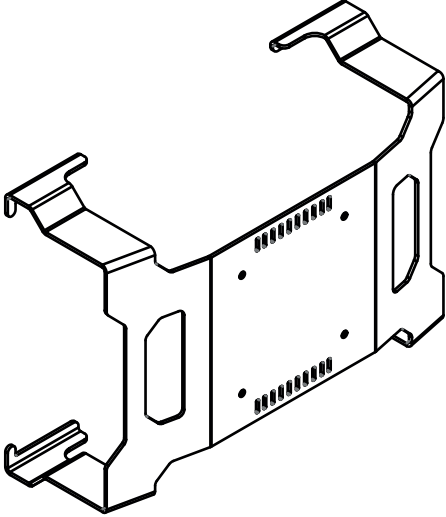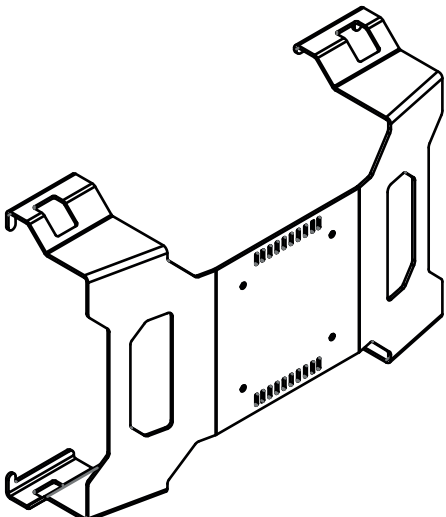
PCIe Card slot details for the IPC Machine Controller Panel PC.
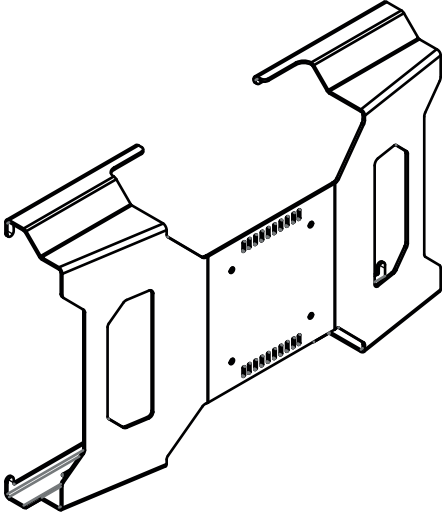
Item	Specifications
Configuration	X4 (4 lanes) up to Gen 3
Card height	Standard height cards, 4.20 inches (106.7 mm)
Card length	Half-length cards, 6.6 inches (167.65 mm)
Power consumption	15 W max.
Maximum current	3 A at 3.3 VDC, 1.25 A with 12 VDC
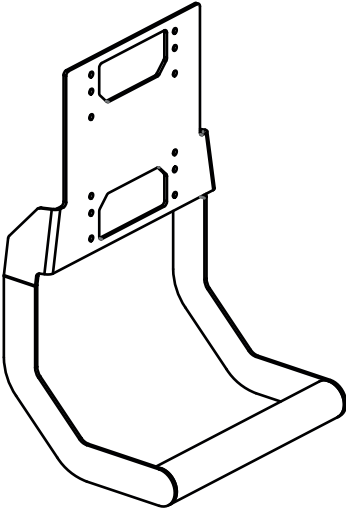
4-1-9 VESA Mount Brackets and Handle Specifications

The metal VESA mounting brackets mount your Panel PC.

All VESA Mount Brackets and the optional VESA Mount Handle have VESA Standard FDMI MIS-D with hole pattern 100 * 100 mm.

Models 12.1 inch	VESA Mount ID and appearance	Specifications
NY53☐-1☐00-0☐1☐4	NY000-AB09	• Material: stainless steel, 2.5 mm • Finish: Black industrial powder coating • Width: 328 mm • Height: 237 mm • Depth: 118 mm • Weight: 2.8 kg

Models 15.4 inch	VESA Mount ID and appearance	Specifications
NY53☐-1☐00-0☐2☐4	NY000-AB10	• Material: stainless steel, 2.5 mm • Finish: Black industrial powder coating • Width: 397 mm • Height: 280 mm • Depth: 118 mm • Weight: 3.3 kg

Models 18.5 inch	VESA Mount ID and appearance	Specifications
NY53□-1□00-0□3□4	NY000-AB11	• Material: stainless steel, 2.5 mm • Finish: Black industrial powder coating • Width: 478 mm • Height: 306 mm • Depth: 98 mm • Weight: 4.0 kg

Model	VESA Mount handle ID and appearance	Specifications
Optional VESA Handle for all models with a VESA bracket: • All NY-series Panel PCs with a VESA bracket • All NY-series Monitors with a VESA bracket	NY000-AB12 Optional VESA Handle	• Material: stainless steel • Finish: Black industrial powder coating • Width: 205 mm • Height: 318 mm • Depth: 164 mm • Weight: 2.4 kg • Handle diameter: 30 mm • Hole pitch from middle hole: 14 mm up 21 mm down

📝 **Additional Information**

Refer to *5-3-9 VESA Mount Procedure* on page 5-27 for VESA mount details.

4-2 Connector Specifications

This section provides the Connector Specifications of the IPC Machine Controller Panel PC.

4-2-1 Power Connector Specifications

The power supply connector is locked when inserted to prevent unintentional disconnection.
The connector can only be inserted the correct way.
The connector is a Phoenix Contact type SPC5/2-STCL-7.62 BK (1711708).
The Panel PC provides protection against reverse polarity.
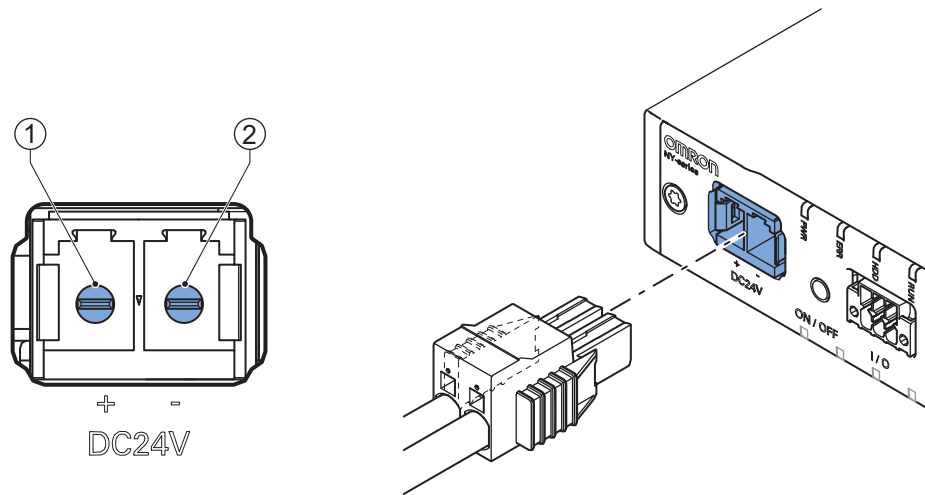
The pin layout represents the power connector on the Panel PC.

Pin	Description
1	24 VDC
2	0 VDC

Item	Specifications
Conductor isolation rating	90°C
Termination rating	90°C

> **Additional Information**
>
> • Refer to *5-4-3 Wire the Power Connector* on page 5-37 for wiring details.
> • Refer to *5-4-2 Ground* on page 5-30 for grounding details.

Locking and Removing the Power Connector

The power connector automatically locks into place when the black part of the connector is held and pushed in.
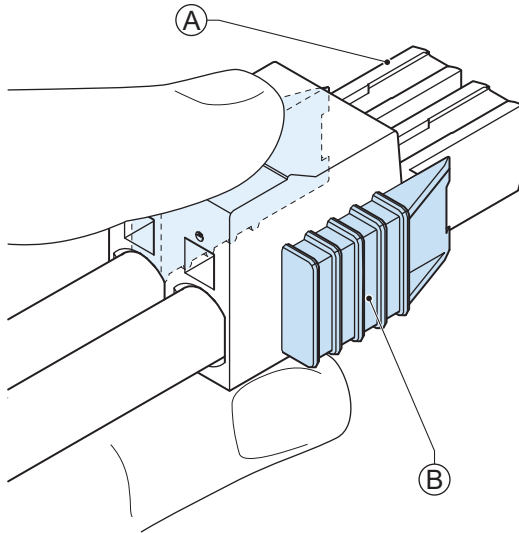
Pushing both orange sliders Ⓑ towards the end of the connector Ⓐ will release the lock when removing the connector.

4-2-2 I/O Connector Specifications

Details of the I/O connector are provided below.
The I/O connector is locked when inserted to prevent unintentional disconnection.
The connector can only be inserted in the correct way.
The Lock-and-Release Latch connector is a Phoenix Contact type DFMC 1,5/ 3-ST-3,5-LR BK (1711658).
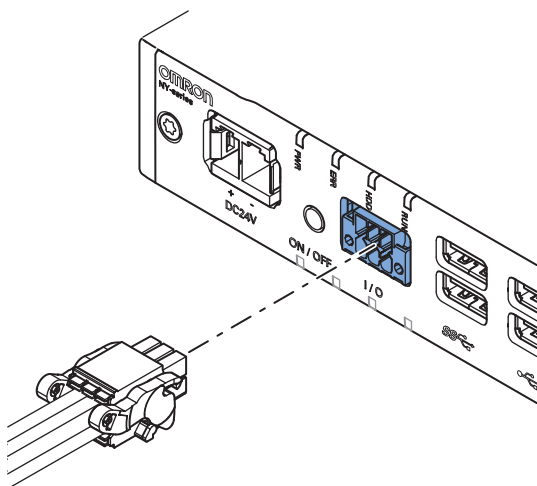
Item	Specifications
Conductor isolation rating	90°C
Termination rating	90°C

I/O Connector Pin Details

The pin details of the I/O connector.
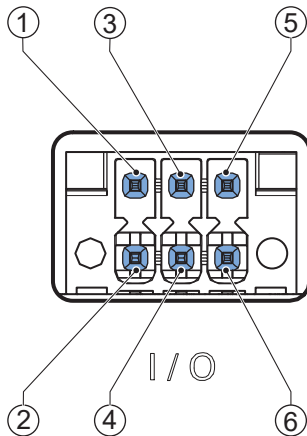
The pin layout represents the I/O connector on the Panel PC.

The I/O signals connected must be powered from a power supply which conforms to the SELV standards.

Pin details of the I/O Connector:

Pin	Description	Type	Electrical Specifications	Details
1 2	Power Status Output *1	Contact output	• SPST-NO contact configuration • 24 VDC at 2A switching capacity (resistive load) • Operation lifetime 150,000 cycles at 2A max. • Connect to SELV	• Open: The Power Status Output is OFF when the Panel PC is OFF or has been disconnected from the power supply. • Closed: The Power Status Output is ON when the Panel PC has shutdown successfully and is connected to the power supply and has not been disconnected from that power supply since power OFF. Refer to *I/O Connector Power Status Output Details* on page 4-17 for details.
3 4	Power ON/OFF Input *2	Isolated transistor input (sinking or sourcing)	• ON: 8.8 VDC min./5 mA min. • OFF: 1.1 VDC max./0.5 mA max. • Connect to SELV	If the signal changes from inactive to active, the Panel PC will perform one of the following operations. • When powered ON, the Panel PC will shut down and power OFF. • When powered OFF, the Panel PC will power ON.
5 6	UPS Mode Input			This input is provided to allow monitoring the state of an external UPS unit that provides a compatible power state output signal.

*1.   Refer to *I/O Connector Power Status Output Details* on page 4-17 for Power Status Output details.

*2.   Refer to *6-2 Power ON* on page 6-3 and *6-3 Power OFF* on page 6-5 for Power ON/OFF Input details.

📑 **Additional Information**

Refer to *5-4-4 Wire the I/O Connector* on page 5-40 for I/O connector wiring details.

I/O Connector Power Status Output Details

This section provides details of the Power Status Output relay.

The Power Status Output is a relay between pin 1 and 2 of the I/O Connector.

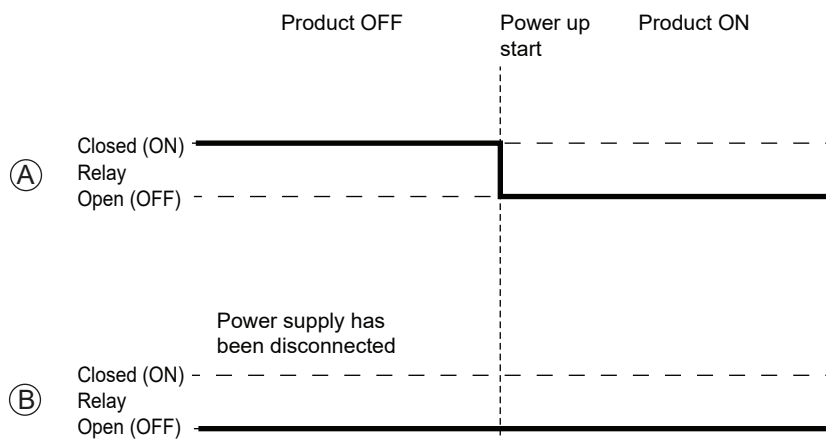### ● Power ON Power Status Output Operation

This section provides power ON details of the Power Status Output operation.

The Power Status Output turns ON to indicate that the system has been shut down and the power supply to the Panel PC can be turned OFF.

If power is not turned OFF, the Power Status output will turn OFF when the Panel PC is turned ON.

The Power Status Output is ON Ⓐ when the Panel PC has been used and has not been disconnected from the power supply.

The Power Status Output is OFF Ⓑ when the Panel PC has been disconnected from the power supply.

> **Additional Information**
>
> Refer to *5-4-4 Wire the I/O Connector* on page 5-40 for I/O connector wiring details.

● Power OFF Power Status Output Operation

This section provides power OFF details of the Power Status Output operation.

The Power Status Output turns ON to indicate that the system has been shut down and the power supply to the Panel PC can be turned OFF.

If power is not turned OFF, the Power Status output will stay ON Ⓐ. It will turn OFF when the Panel PC is turned ON.

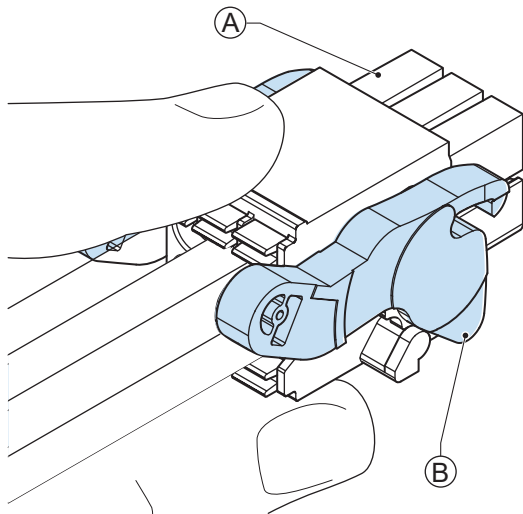If power is turned OFF, the Power Status Output will turn OFF Ⓑ.
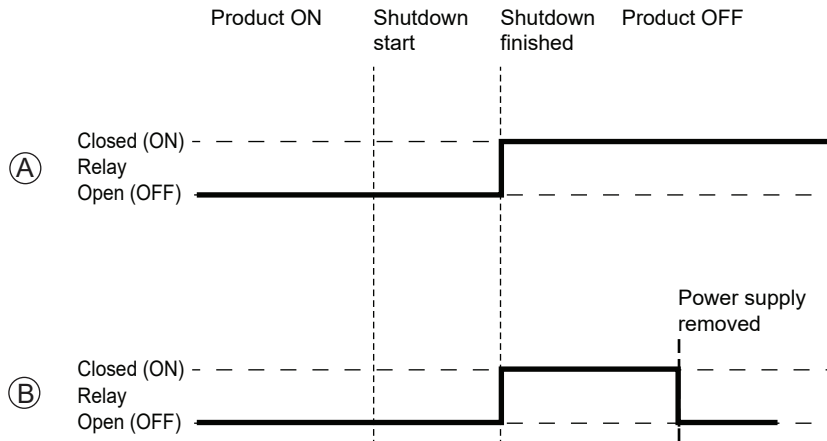
Additional Information

Refer to *5-4-4 Wire the I/O Connector* on page 5-40 for I/O connector wiring details.

Lock and Remove the I/O Connector

The I/O connector locks into place when the black part of the connector is held and pushed in.

Tilting both levers Ⓑ will release the I/O connector Ⓐ from the Panel PC.

4-2-3 USB Connector Specifications

The IPC Machine Controller Panel PC includes four USB connectors. Two connectors provide version 2.0 performance and two connectors provide version 3.0 performance. Details of the USB interface connectors are provided below.
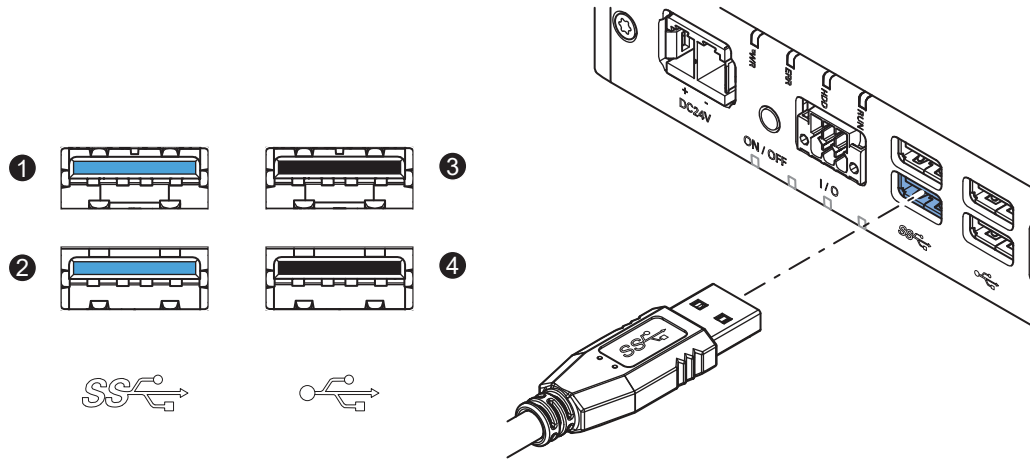
The connector layout represents the USB connectors on the Panel PC.

Interface Connector	Details per Connector
1	• USB 3.0
2	• 900 mA maximum current at 5 VDC equals 4.5 W maximum power consumption [1]
	• 3 m maximum cable length
	• Blue color
3	• USB 2.0
4	• 500 mA maximum current at 5 VDC equals 2.5 W maximum power consumption [1]
	• 5 m maximum cable length
	• Black color

[1] The total power consumption for the USB Connectors is 14 W max. (2 x 4.5 + 2 x 2.5)

Additional Information

• Refer to *5-4-2 Ground* on page 5-30 for grounding details.
• Note that the read/write speed of the connected USB device determines the actual data transfer speed. Use a fast USB device to reduce data transfer durations.

4-2-4   Ethernet Connector Specifications

Details of the RJ45 Ethernet connectors are provided below.

There are three Ethernet ports, each with a specific function.

Following ports are available:

- Ethernet (general)

  This port is available for the Windows Operating System.

- EtherNet/IP

  This port is available for the Machine Controller Software.

  Refer to *EtherNet/IP Connector Specifications* on page 4-22 for more details.

- EtherCAT

  This port is available for the Machine Controller Software.

  Refer to *EtherCAT Connector Specifications* on page 4-23 for more details.

The Ethernet connector locks automatically to prevent unintentional disconnection.
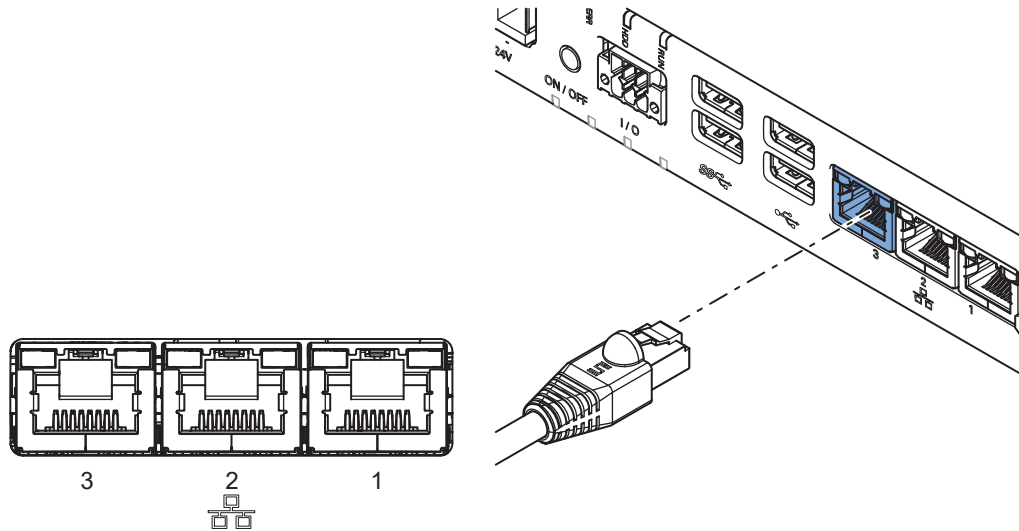
The view represents the Ethernet connector on the Panel PC.

The Ethernet connectors are designated in the following manner.

- Connector number 1: Ethernet
- Connector number 2: EtherNet/IP
- Connector number 3: EtherCAT

Ethernet Connector LED Indicators

Each connector has LED indicators for speed, link and activity.
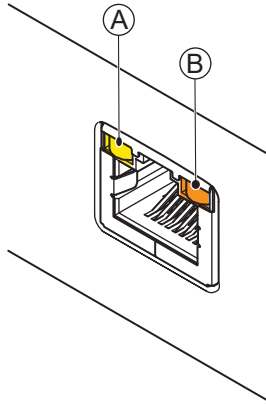
Item	Indica-tor	Color	Status		Description
A	Link/Act	Yellow		Not lit	No link
				Lit	Link
				Flashing	Link and activity
B	Speed	Not lit		Not lit	10 Mbps or no link
		Green		Lit	100 Mbps link
		Orange		Lit	1 Gbps link

Ethernet Connector Specifications

This Ethernet connector is available in Windows and acts as regular Ethernet port.

Item	Specifications
Ethernet connector number	1
Physical layer	10BASE-T, 100BASE-TX or 1000BASE-T
Frame length	1,514 bytes max.
Media access method	CSMA/CD
Modulation	Baseband
Topology	Star

Item	Specifications
Transmission media	STP (shielded, twisted pair) cable of Ethernet category 5,5e or higher
Maximum transmission distance between Ethernet switch and node	100 m
Maximum number of cascade connections	There are no restrictions if an Ethernet switch is used

EtherNet/IP Connector Specifications

The EtherNet/IP connector is assigned to the Machine Controller Software. This port can be used for communication between the IPC Machine Controller Panel PC and Ethernet/IP units.

Item			Specifications
Ethernet connector number			2
Physical layer			10BASE-T, 100BASE-TX or 1000BASE-T
Frame length			1,514 bytes max.
Media access method			CSMA/CD
Modulation			Baseband
Topology			Star
Baud rate			1 Gbps (1000BASE-T)
Transmission media			STP (shielded, twisted pair) cable of Ethernet category 5,5e or higher
Maximum transmission distance between Ethernet switch and node			100m
Maximum number of cascade connections			There are no restrictions if an Ethernet switch is used.
CIP Service: Tag data links (cyclic communications)	Maximum number of connections		128
	Packet interval		1 to 10,000 ms in 1.0-ms increments Can be set for each connection.
	Permissible communications band		20,000 pps (including heartbeat)
	Maximum number of tag sets		128
	Tag types		Network variables
	Number of tags per connections (i.e., per tag set)		8 (7 tags if Controller status is included in the tag set)
	Maximum number of tags		256
	Maximum link data size per node (total size for all tags)		184,832 bytes
	Maximum data size per connection		1,444 bytes
	Maximum number of registrable tag sets		128 (1 connection = 1 tag set)
	Maximum tag set size		1,444 bytes (Two bytes are used if Controller status is included in the tag set)
	Multi-cast packet filter		Supported
CIP message service: Explicit messages	Class 3 (number of connections		64 total (clients plus server)
	UCMM (non-connection type)	Maximum number of clients that can communicate at one time	32
		Maximum number of servers that can communicate at one time	32
Number of TCP sockets			30

EtherCAT Connector Specifications

The EtherCAT connector is assigned to the Machine Controller Software.

This port can be used for communication between the Machine Controller Software and EtherCAT Slaves. This port acts as an EtherCAT master.

Specifications for Units with Machine Controller Software.

Item	Specifications
Ethernet connector number	3
Communications standard	IEC 61158 Type 12
EtherCAT master specifications	Class B (Feature Pack Motion Control compliant)
Physical layer	100BASE-TX
Modulation	Baseband
Baud rate	100 Mbps (100BASE-TX)
Duplex mode	Auto
Topology	Line, daisy, chain and branching
Transmission media	Twisted pair cable of category 5 or higher (double-shielded straight cable with aluminum tape and braiding)
Maximum transmission distance between nodes	100 m
Maximum number of slaves	192
Range of node addresses that can be set	1 to 512
Maximum process data size	Input: 5,736 bytes, Output 5,736 bytes, the maximum number of process data frames is 4
Maximum process data size per slave	Input 1,434 bytes, Output 1,434 bytes
Communications cycle	500 µs to 8 ms in 250 µs-increments
Sync jitter	1 µs max.

4-2-5   DVI Connector Specifications

DVI is the standard video interface for the Panel PC.
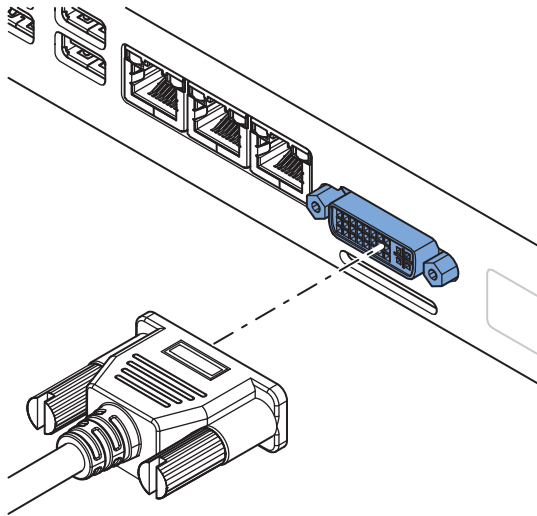
> **Additional Information**
>
> • Refer to *4-1-5 CPU Specifications* on page 4-6 for graphics controller details.
> • Refer to *5-4-2 Ground* on page 5-30 for grounding details.
> • Refer to *A-3 DVI Connector Pin Details* on page A-21 for pin details.

The DVI Card specifications depend on the CPU and thus on the product configuration.

Item	Specifications
Video interface NY5□2	Digital or Analog
Resolution	Up to 1920 x 1200 pixels at 60 Hz
Type	Dual link
Maximum DVI cable length	Dependent upon connected monitor type and resolution

4-2-6   DVI-D Connector Specifications

The optional video interface on the Panel PC uses a DVI dual link connector.
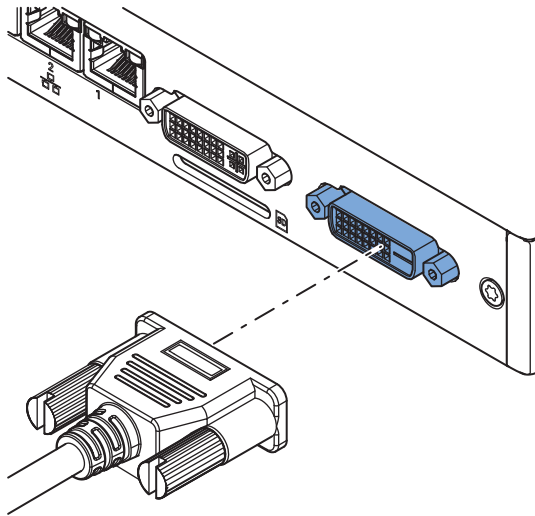
Item	Specification
Video interface	Digital only
Resolution	Up to 1920 x 1200 pixels at 60 Hz
Type	Dual link
Maximum DVI cable length	Dependent upon connected monitor type and resolution

> **Additional Information**
>
> • Refer to *4-1-5 CPU Specifications* on page 4-6 for graphics controller details.
> • Refer to *5-4-2 Ground* on page 5-30 for grounding details.
> • Refer to *A-3-2 DVI-D Connector Pin Details* on page A-22 for pin details.

4-2-7 RS-232C Connector Specifications

The optional RS-232C interface on the Panel PC uses a standard SUBD9 connector.

The RS-232C interface is not isolated from the internal Panel PC's components.
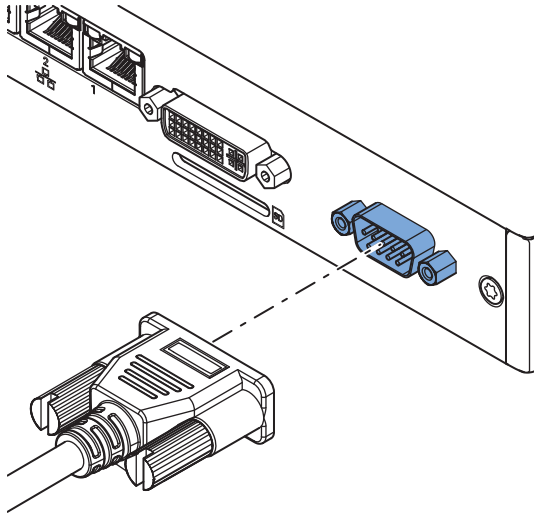
📝 **Additional Information**

- Refer to *5-4-2 Ground* on page 5-30 for grounding details.
- Refer to *A-4 RS-232C Connector Pin Details* on page A-24 for pin details.

4-2-8 NY Monitor Link Connector Specifications

The optional NY Monitor Link connector connects an OMRON Industrial Monitor with an OMRON Industrial PC that has an NY monitor link connector.

The NY Monitor Link communication is a combination of video and USB information.

Item	Specifications
Connector type	RJ45
Transmission media	Twisted pair cable of category 6A or higher (double-shielded straight cable with copper braiding and aluminum foil)
Maximum cable length between Industrial PC and Industrial Monitor	100 m
Topology	Line (direct) connection only [1]
Video resolution	1,280 x 800 pixels at 60 Hz (12", 15") 1,920 x 1,080 pixels at 60 Hz (19")
Data throughput rate	280 Mbps max.

[1]. Use a direct connection between the OMRON Industrial PC and the OMRON Industrial Monitor.
Do not use:
- Ethernet switches
- Ethernet hubs
- Daisy chain connections

The NY Monitor Link connector locks automatically to prevent unintentional disconnection.
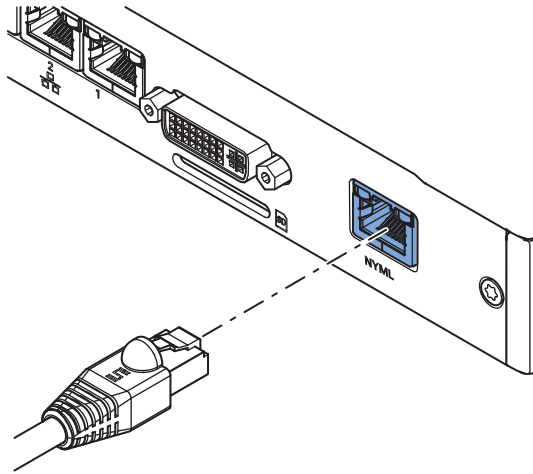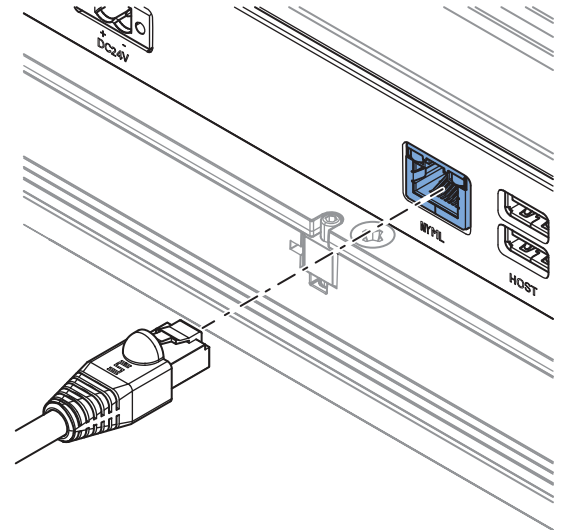
Industrial PC   Industrial Monitor

NY Monitor Link Connector LED Indicators

The connector has LED indicators Connected Ⓐ and Video Ⓑ.
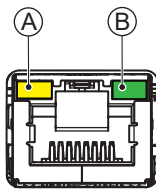
NYML

Item	Indica-tor	Color	Status		Description
A	Con-nected	Yellow		Not lit	Not connected
				Lit	Connected USB communication active
B	Video	Green		Not lit	No video signal
				Blinking	Video signal present
				Lit	Encrypted video signal present Video output is not supported for encrypted video.

4-3 Display Specifications

This section provides the display specifications of the Industrial Panel PC.

> ## ⚠ WARNING
>
> Do not use the input functions of the touchscreen in applications that involve human life, in applications that may result in serious injury, or for emergency stop switches. 🚫

Precautions for Correct Use

The touchscreen supports 5 simultaneous touches. When the number of touches is exceeded, not all touch points will be detected.

Item		Model Specifications		
		12.1 inch [*1]	15.4 inch [*1]	18.5 inch [*1]
Display panel [*2]	Display device	TFT LCD		
	Screen size	12.1 inch	15.4 inch	18.5 inch
	Surface treatment	Anti glare treatment		
	Surface hardness	Mohs scale 5-6		
	Resolution (horizontal × vertical)	1,280 × 800 pixels at 60 Hz		1,920 × 1,080 pixels at 60 Hz
	Colors	16,770,000 colors (24 bit full color)		
	Effective display area	261 × 163 mm (horizontal × vertical)	331 × 207 mm (horizontal × vertical)	409 × 230 mm (horizontal × vertical)
	View angles	Left: 60°, Right: 60°, Top: 60°, Bottom: 60°		Left: 89°, Right: 89°, Top: 89°, Bottom: 89°
	EMC	Correct touchscreen operation is possible within allowable EMC immunity conditions[*3]		
Touch	Technology	Projected capacitive		
	Touch resolution	Touch accuracy 1.5% (4-5mm)		
	Life	50,000,000 operations minimum		
	Multitouch	Up to 5 simultaneous touches		
	Features	Water detection[*4], hand palm rejection[*5], gloves [*6]		
Backlight	Life	50,000 hours minimum. [*7]		
	Brightness adjustment [*8]	200 levels		

*1. Refer to *1-4 Product Configuration* on page 1-7 for details.

*2. There may be some defective pixels in the display. This is not a fault as long as the number of defective light and dark pixels fall within the following standard range: light and dark pixels 10 or less. There must not be 3 adjacent light/dark pixels.

*3. Refer to *4-1-2 General Electrical Specifications* on page 4-4 for EMC immunity level specifications.

*4. If water is detected the touch functionality will not be available.

*5.   If a palm is detected that specific area is ignored.

*6.   The touchscreen can be operated when wearing gloves. Confirm you can operate the touchscreen with gloves before actual operation.

*7.   This is the estimated time before brightness is reduced by half at room temperature.
       The life expectancy is drastically shortened if used at high temperatures.

*8.   If the brightness is set to very low, it causes flickering or the screen will be too dark to use.

All LCD displays will display image retention effects when used in less optimal conditions.
Refer to *7-1-5 Minimize LCD Image Retention* on page 7-4 for details.

4-3 Display Specifications

4

4-4 Environmental Specifications

This section provides environmental specifications of the IPC Machine Controller Panel PC.

4-4-1 Operation Environment Specifications

The following table provides general environmental specifications for the Industrial Panel PC.

Item	Specifications		
	12.1 inch [1]	15.4 inch [1]	18.5 inch [1]
Ambient operating temperature	0 to 55°C [2]		
Ambient storage temperature	-20 to 70°C [2]		
Ambient operating humidity	10% to 90% (with no condensation) [2]		
Ambient storage humidity	10% to 90% (with no condensation) [2]		
Operating atmosphere	No corrosive gases		
Altitude	2,000 m max.		
Noise resistance (during operation)	Conforms to IEC 61000-4-4, 2kV (power lines)		
Vibration resistance (during operation)	The vibration resistance depends on the storage device(s): • For a Panel PC with only SSD storage devices: 5 to 8.4Hz with 3.5 mm single amplitude and 8.4 to 150 Hz with 9.8 m/s² for 10 times each in X, Y and Z directions. Conforms to IEC 60068-2-6. • For a Panel PC with one or more HDD storage devices the Panel PC must be installed in a vibration free environment. [3]		
Shock resistance (during operation)	Conforms to IEC 60068-2-27. 147 m/s², 3 times each in X, Y and Z directions		
Material finish	Applicable for model-ID NY□□□-□□□□-□2□□□□□□□ [1] Nickel plated conforms to ASTM B733-15, SC2		
Degree of protection	Front of Monitor: IP65 or the equivalent [4]		
Pollution degree	JIS B3502 and IEC 61131-2: 2 or less		

*1. Refer to Product Configuration for details.

*2. Refer to *4-4-2 Temperature and Humidity Specifications* on page 4-31 for ambient operating temperature and humidity details per CPU type.

*3. A Panel PC with one or more HDD storage devices should not be used in applications subject to vibration. Examples of applications subject to vibration:
- AGV (Automated Guided Vehicles)
- Rail vehicle
- Stacker crane
- Elevator
- Tableting machine
- Connector pin assembling machine
- Bending machine

Ensure your Panel PC with HDD does not vibrate. When in doubt use a Panel PC with SSD storage devices.

*4. The Panel PC may not operate properly in locations subjected to oil splashes for extended periods of time.

4-4-2 Temperature and Humidity Specifications

The allowed ambient operating temperature and ambient humidity depend on the model, mounting orientation, and storage device type.

The following sections provide temperature and humidity details and temperature specifications per model.

▌ Temperature and Humidity Graphs

The maximum ambient operating temperature and ambient humidity are specified per storage device type.

The following graphs provide ambient temperature and humidity details per storage device type and the conditions for storage.

- Operate the Panel PC with a HDD within the ambient temperature and humidity ranges as shown in the following graph.
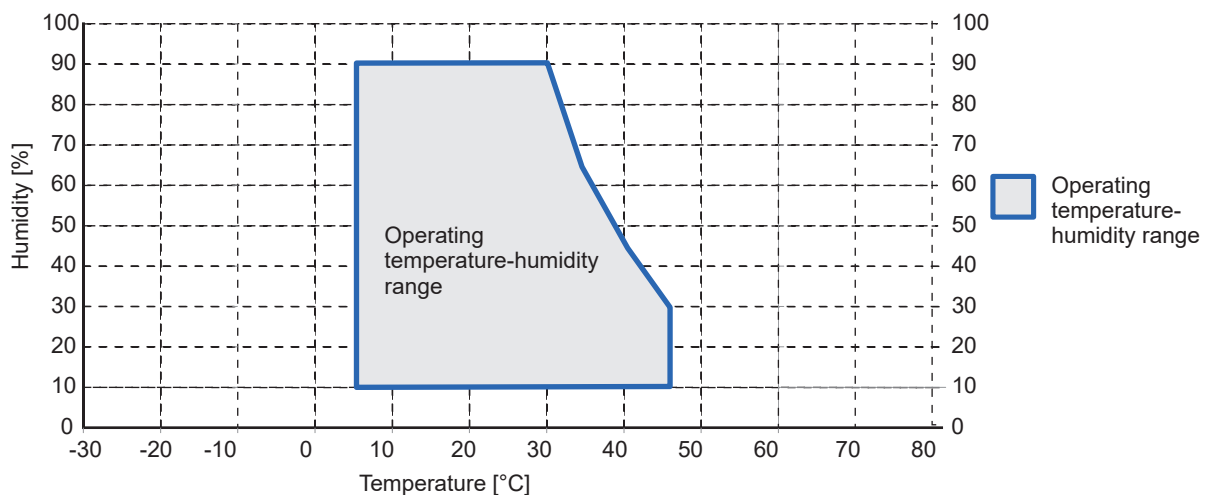
🗒 Additional Information

Refer to the ambient temperature specifications per CPU type for CPU-specific limitations.

- Operate the Panel PC with a SSD or CFast within the ambient temperature and humidity ranges as shown in the following graph.
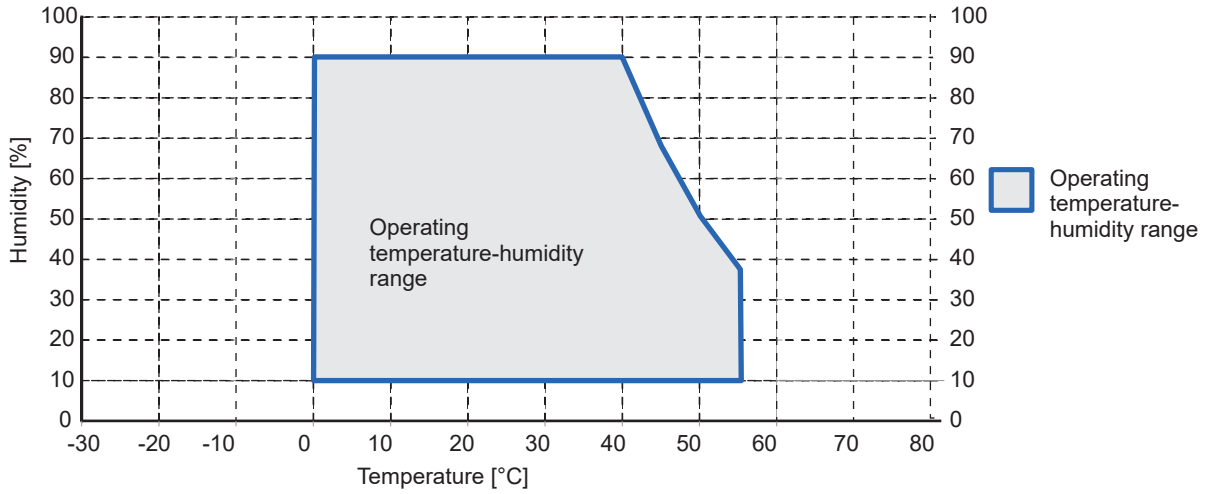
Additional Information

Refer to the ambient temperature specifications per CPU type for CPU-specific limitations.

- Store the Panel PC within the ambient temperature and humidity ranges as shown in the following graph.

NY-series Industrial Panel PC Machine Controller Hardware User's Manual (W557)
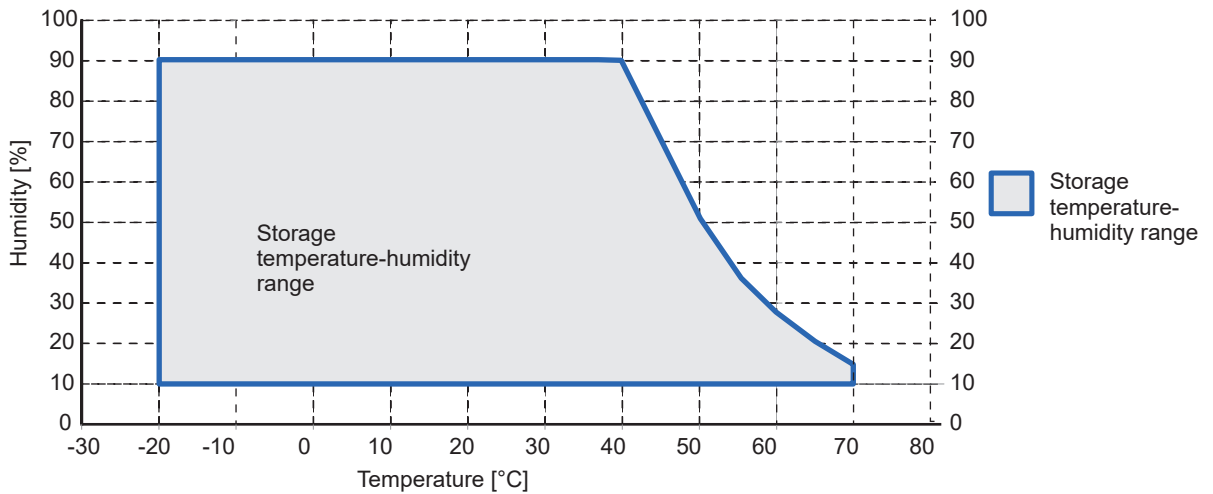
NY53☐-☐☐☐☐-1☐☐☐1 Temperature Specifications

Ambient operating temperature specifications for model NY53☐-☐☐☐☐-1☐☐☐1.

This Panel PC has an Intel® Core™ i7-4700EQ CPU.

Product Orientation	Mounting Angle	Configuration *1	
		1 or 2 x SSD	1 x HDD 320 GB
Landscape and Portrait	0° to 45°	0 to 50°C	5 to 35°C
Landscape	45° to 90°	0 to 55°C	5 to 35°C
	90° to 135°	0 to 55°C	5 to 40°C
Portrait	45° to 90°	0 to 55°C	5 to 40°C
	90° to 135°	0 to 55°C	5 to 40°C

*1.   Refer to *1-4 Product Configuration* on page 1-7 for model details.

NY53☐-☐☐☐☐-1☐☐☐4 Temperature Specifications

Ambient operating temperature specifications for model NY53☐-☐☐☐☐-1☐☐☐4.

This Panel PC has an Intel® Core™ i5-7440EQ CPU.

Product Orientation	Mounting Angle	Configuration *1	
		1 or 2 x SSD	1 x HDD 320 GB
Landscape and Portrait	0° to 45°	0 to 50°C	5 to 35°C
Landscape	45° to 90°	0 to 55°C	5 to 35°C
	90° to 135°	0 to 55°C	5 to 40°C
Portrait	45° to 90°	0 to 55°C	5 to 40°C
	90° to 135°	0 to 55°C	5 to 40°C

*1.   Refer to *1-4 Product Configuration* on page 1-7 for model details.

NY53☐-☐☐☐☐-0☐☐☐4 Temperature Specifications

Ambient operating temperature specifications for model NY53☐-☐☐☐☐-0☐☐☐4.

This Panel PC has an Intel® Core™ i5-7440EQ CPU.

Product Orientation	Mounting Angle	Configuration [*1]	
		SSD	
Landscape and Portrait	0° to 135°	0 to 55°C	

*1.   Refer to *1-4 Product Configuration* on page 1-7 for model details.
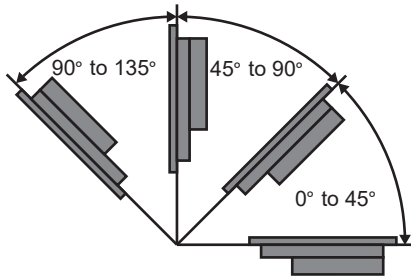
4-4-3   Recycling Specifications

The following table provides recycling information for the IPC Machine Controller Panel PC.

Part	Recycle specifications
Battery	Chemical waste
PCIe Card and other electrical components	Electrical waste

Precautions for Safe Use

廢電池請回收   Dispose of the product and batteries according to local ordinances as they apply.

Dispose in accordance with applicable regulations.

5

Installation

This section provides all installation details for the IPC Machine Controller Panel PC.

5-1   Unpack

This section provides details on how to unpack the IPC Machine Controller Panel PC.

5-1-1   Unpack Procedure

1 Check the package for damage.
If there is any visible damage:
- Take photos of the package and save them.
- Inform your supplier immediately.

2 Open the package.
Ensure not to damage the contents.

3 Ensure that all items are present.

Additional Information

Refer to *5-1-2 Items Supplied* on page 5-3 for the items supplied.

5-1-2   Items Supplied

This section describes the items supplied with your Industrial Panel PC.

• Industrial Panel PC
• Documentation:
    • Safety Precautions sheets (English and Japanese)
    • General Compliance Information and Instructions for EU
    • Standards and Certifications sheet
• Bag with:
    • Power connector
    • I/O connector
• Models with an Expansion Layer will have inside the bag also:
    • Drive bracket for drive installation
    • 4 Mounting screws for drive installation
    • PCIe Card support for PCIe Card installation

Model NY532-□□□□-1.
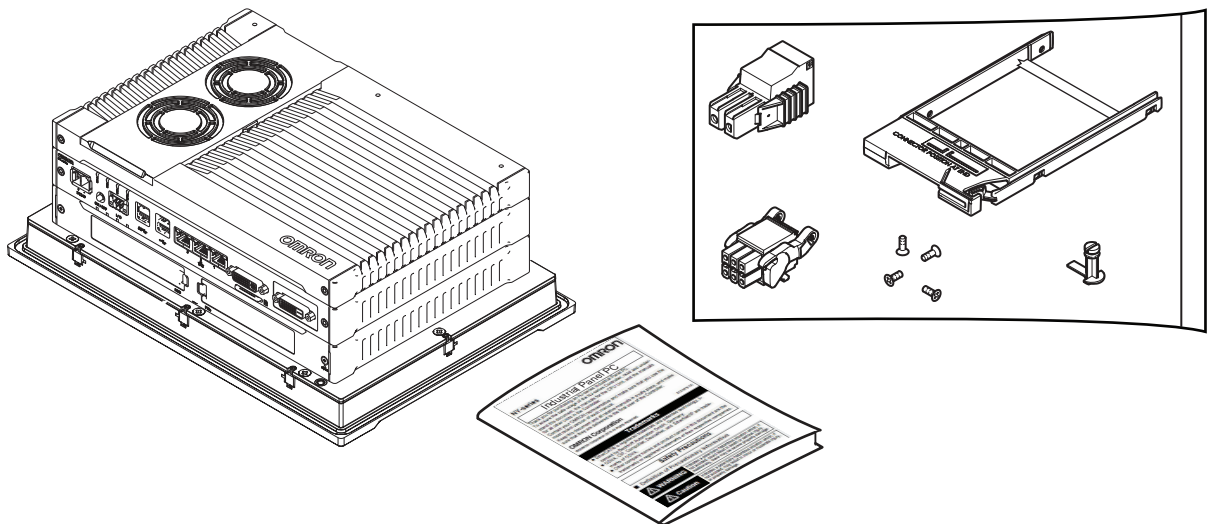
Model NY532-□□□□-0.
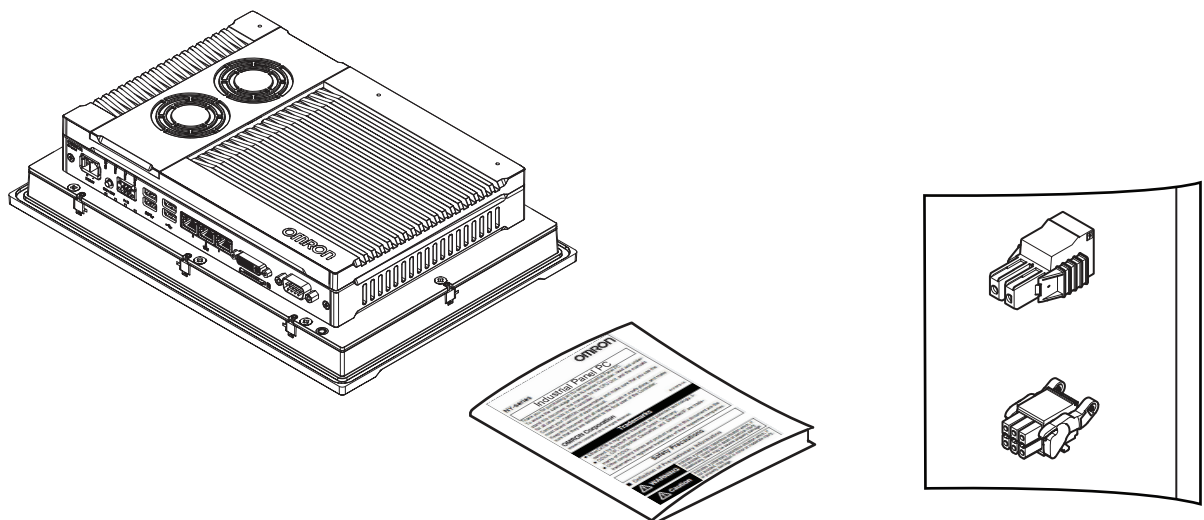
5-2 Install Options

This section describes the installable options for the IPC Machine Controller Panel PC.

5-2-1 Install a Drive

A drive is a storage device for the IPC Machine Controller Panel PC.

> **Additional Information**
>
> - Depending on the product configuration 0, 1 or 2 drives can be pre-installed.
>   Refer to *1-4 Product Configuration* on page 1-7 for details.
> - Depending on the CPU type one or two drives are supported.
>   Refer to *4-1-5 CPU Specifications* on page 4-6 for the number of supported drives.
> - Refer to *3-10-5 HDD and SSD Storage Devices* on page 3-28 for the recommended drive
>   models.
> - Refer to *4-1-7 Storage Device Specifications* on page 4-8 for drive specifications.

Prepare the following items:
- The drive
  A drive is not supplied with the Panel PC.
- The drive bracket with mounting screws
  These are supplied with the Panel PC.

To install a drive:

1 Ensure the Panel PC is OFF.
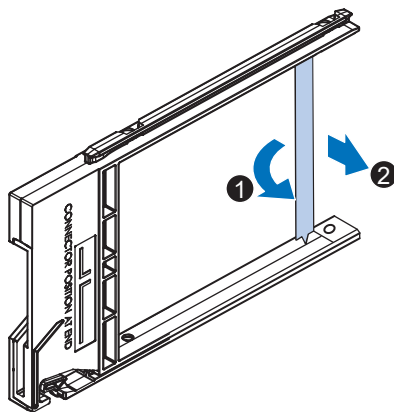
2 Remove the drive cover.
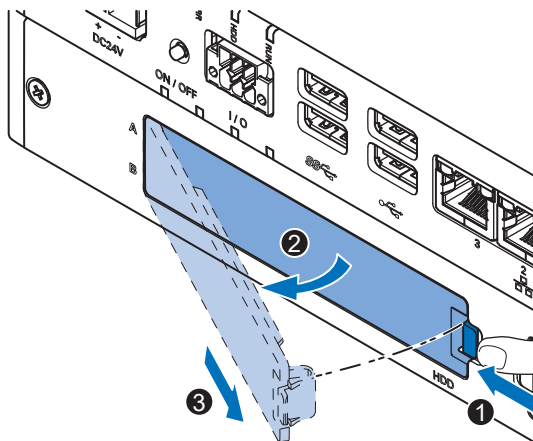
1) Push the lock lever ❶.
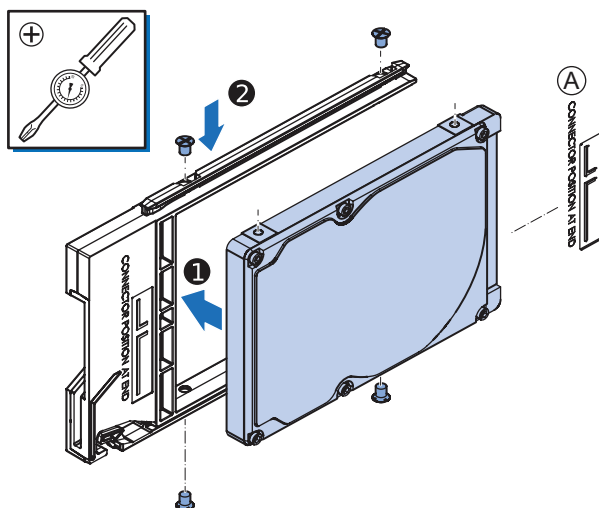
2) Tilt the drive cover ❷.

3) Remove the drive cover ❸.

3 Pull the metal shielding cover out of the Panel PC.
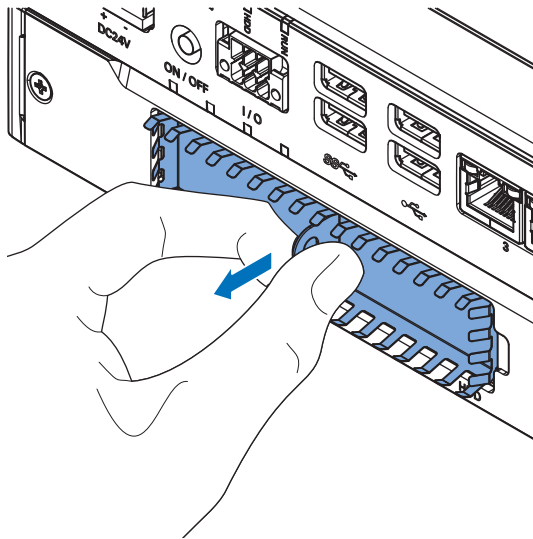
4 Rotate ❶ and then remove ❷ the break out part from the drive bracket.

**5** Align the connectors of the drive as shown Ⓐ on the bracket. Then insert the replacement drive❶ in the bracket and insert the 4 mounting screws ❷. Tighten these screws with a torque of 0.35 N·m.
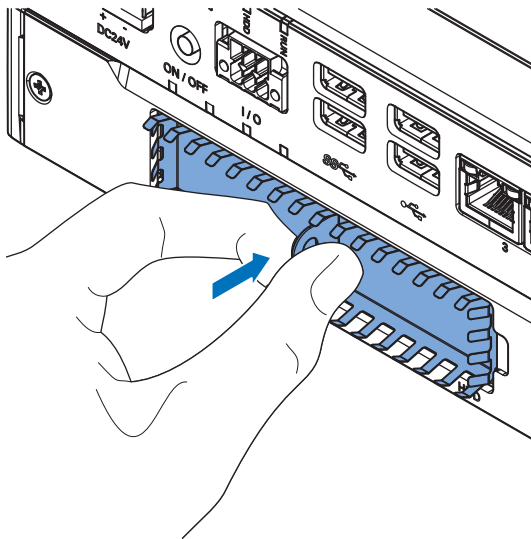
6 Insert the bracket with the drive in the correct bay.

Refer to *3-1-3 Expansion Layer (Optional)* on page 3-7 for bay details.

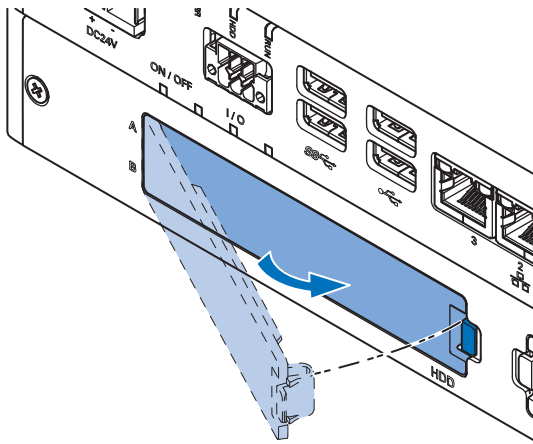Ensure the bracket is completely in the Panel PC with an extra push.
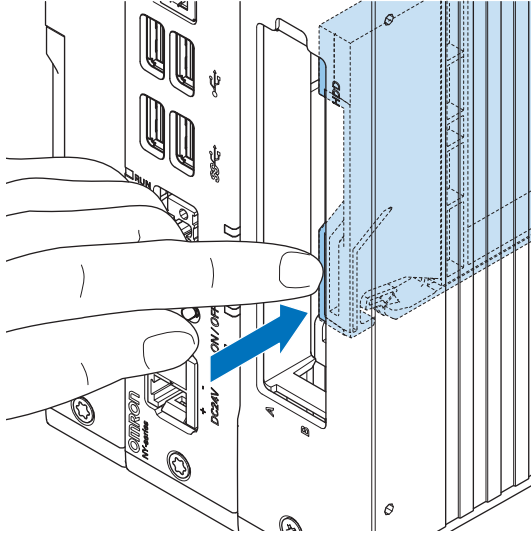
The drive bracket will lock into place when it is fully inserted.

7 Insert the metal shielding cover.

8 Mount the drive cover.

The lock lever will click when closed correctly.

9 Finalize the drive installation when the Panel PC installation is completed.

- For a drive that requires an operating system:

    1) Install an operating system

    2) Power OFF and then Power ON

    3) Ensure the drive is functional and confirm normal operation.
       If required set the drive as boot disk in the BIOS settings.
       Refer to *A-1 BIOS* on page A-2 for boot priority settings.

- For storage drives:

    1) Ensure the drive is functional and confirm normal operation.

    2) For a Panel PC with a Windows operating system:
       If the storage drive should be visible in Windows but it is not visible then that drive needs to be allocated.
       Refer to *3-1-3 Expansion Layer (Optional)* on page 3-7 for details on the visibility per storage drive.

The drive is installed and functional.

5-2-2   Install the PCIe Card

Prepare the following items:

• The PCIe Card.

   A PCIe Card is not supplied with the Panel PC.

📝 **Additional Information**

   • Depending on the product configuration a PCIe card can be pre-installed.
      Refer to *1-4 Product Configuration* on page 1-7 for details.
   • Refer to *4-1-8 PCIe Card Specifications* on page 4-11 for PCIe specifications.

• The PCIe Card mounting material: Card Support.

   This item is supplied with the Panel PC.

To install the PCIe Card:

1   Ensure the Panel PC is OFF.

2   Remove the two crosshead screws ❶ indicated with "open" and then pull up ❷ the PCIe
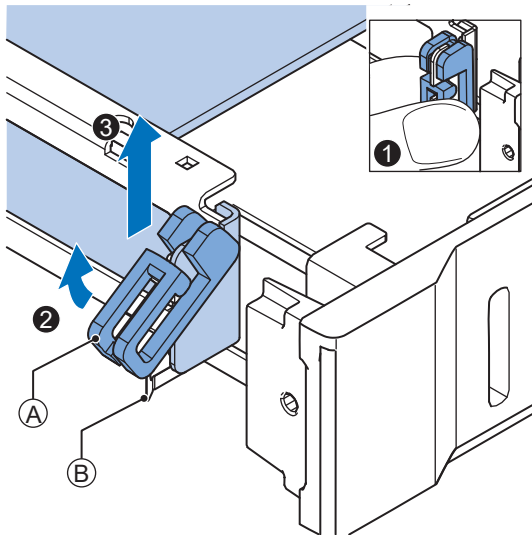   Drawer.
      The indent at the side of the drawer will help you to pull the drawer from the Panel PC.
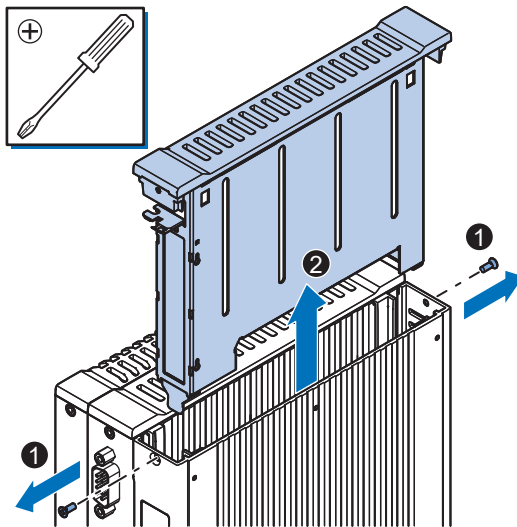
3 Remove the Card Clip from the PCIe Drawer.

There are two types of Card Clips available. Use the steps applicable to your type.
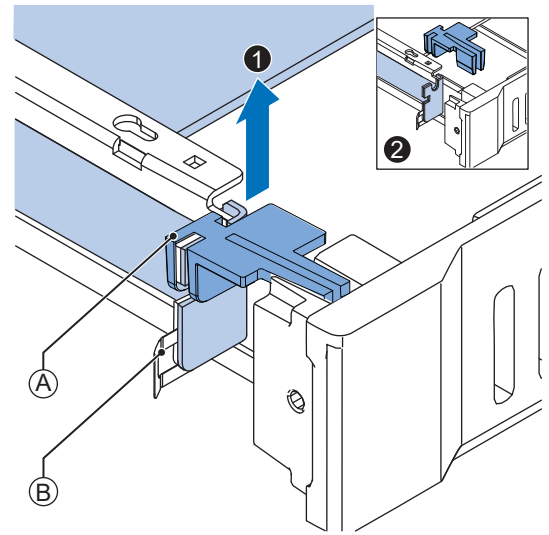

⚠ **CAUTION**

When installing or removing a PCIe card, avoid touching the sharp edges of the sheet metal frame tab. Injury may result.

Ⓐ Card Clip

Ⓑ Sheet metal frame tab

Grip the Card Clip Ⓐ on the sides ❶. Pull the middle of the Card Clip to unlock it ❷ and remove it ❸ from the PCIe Drawer.
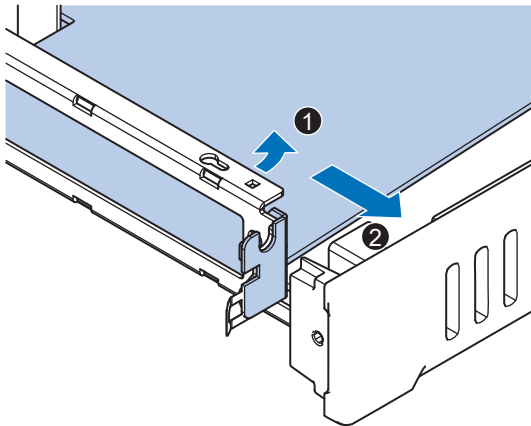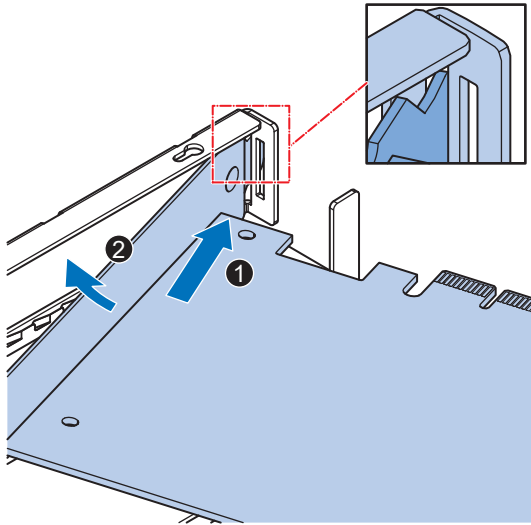
Ⓐ Card Clip

Ⓑ Sheet metal frame tab

Grip the Card Clip Ⓐ on the sides. Lift the Card Clip ❶ and remove it ❷ from the PCIe Drawer.

4 Remove the slot cover from the PCIe Drawer.

The thin sheet metal frame should stay in the PCIe Drawer.

The slot cover is now removed.

5 Place the PCIe Card in the PCIe Drawer.

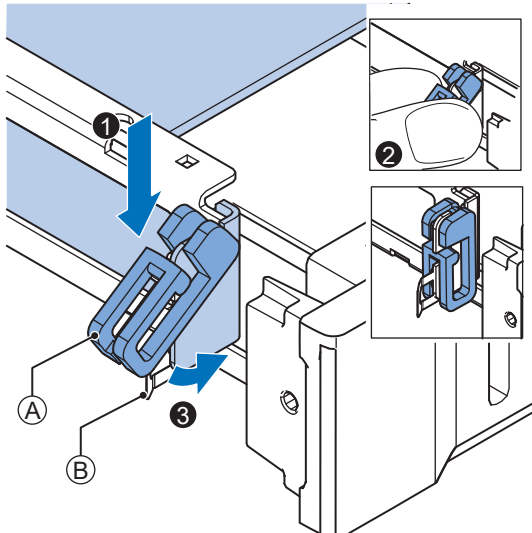Ensure to insert the PCIe Card in the correct opening.

Ensure the thin sheet metal frame is positioned between the PCIe Card and the PCIe Drawer to ensure a good conductive contact.

6 Place the Card Clip Ⓐ in the PCIe Card and PCIe Drawer.

There are two types of Card Clips available. Use the steps applicable to your type.
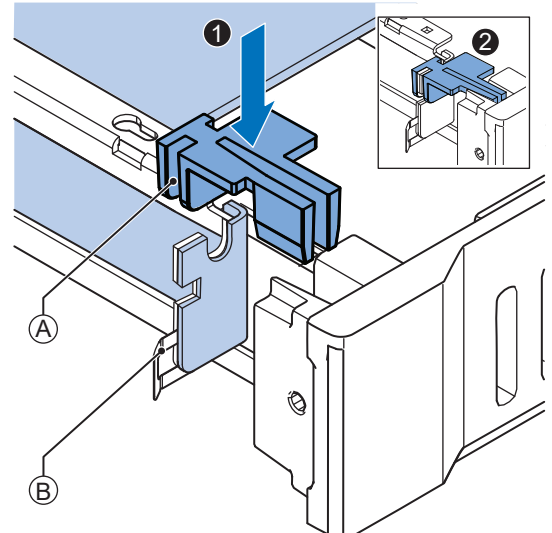
> ### ⚠ CAUTION
>
> When installing or removing a PCIe card, avoid touching the sharp edges of the sheet metal frame tab. Injury may result.

Ⓐ Card Clip

Ⓑ Sheet metal frame tab

Place the Card Clip Ⓐ in the PCIe Card and PCIe Drawer ❶, grip the Card Clip on the sides ❷ and then rotate the Clip ❸ to lock it in place.

Ⓐ Card Clip
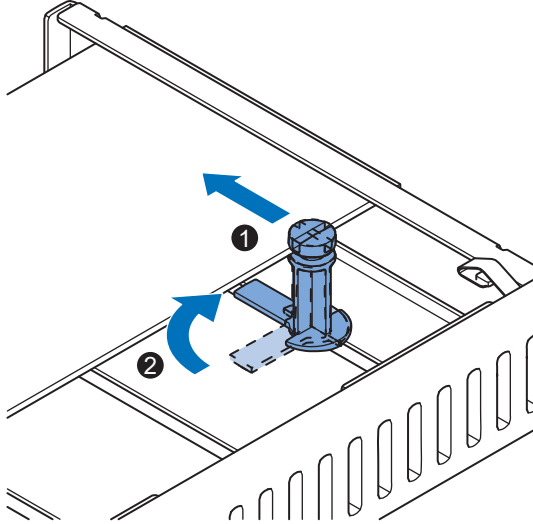
Ⓑ Sheet metal frame tab

Place the Card Clip Ⓐ in the PCIe Card and PCIe Drawer and push it down ❶ to lock it in place ❷ .

7 Slide the Card Support ❶ so that it supports the side of the PCIe Card.

The card should be in small groove so there is support below and above the card.

Rotate the Card Support ❷ to lock it in place.

8 Insert the PCIe Drawer in the Panel PC and then insert the two crosshead screws that hold the PCIe Drawer in place.
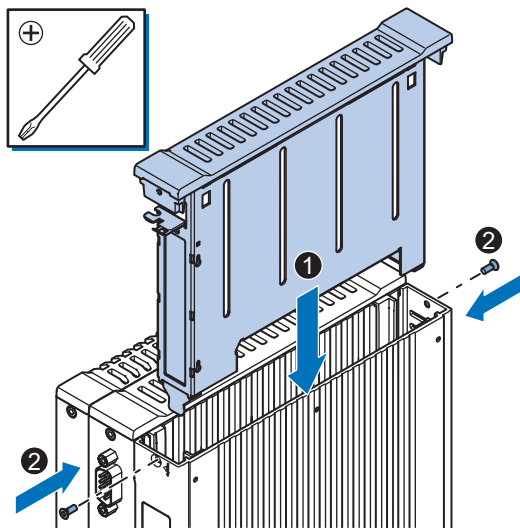
9 Remove the PCIe cover if the PCIe Card has external connectors.
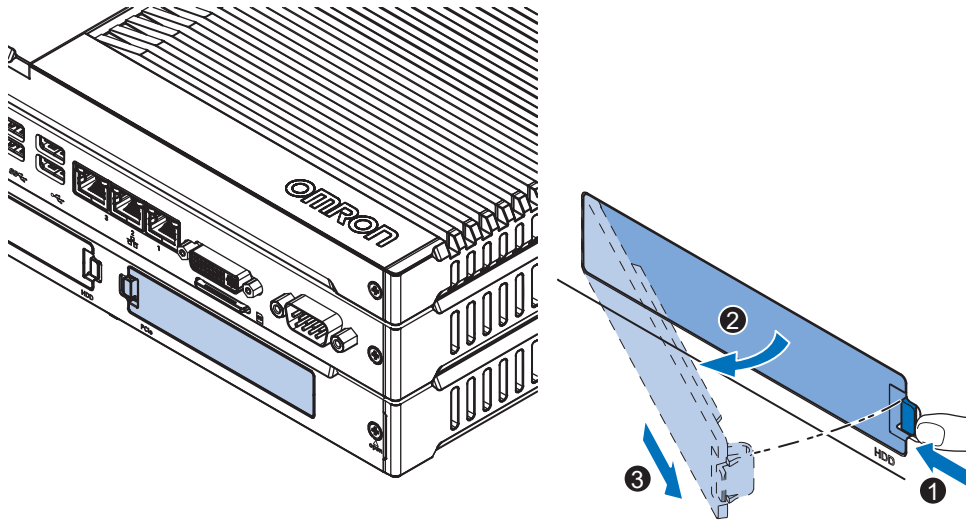
1) Push the lock lever ❶.

2) Tilt the PCIe cover ❷.

3) Remove the PCIe cover ❸.

The PCIe Card is installed.

5-3 Mount

This section describes how to mount the IPC Machine Controller Panel PC in either a landscape or portrait orientation in a control panel.

⚠ WARNING

Ensure that installation and post-installation checks of the product are performed by personnel in charge who possess a thorough understanding of the machinery to be installed.

❗

5-3-1 Installation Method in Control Panels

The Panel PC must be mounted to the outside surface of a control panel.

Consider product orientation, cooling distance, noise resistance, ducts and product replacement when determining the space between the Panel PC and other devices.

Precautions for Safe Use

Install the product in the correct orientation and temperature according to the specifications in the manual to prevent overheating. Not doing so may result in malfunction.

Precautions for Correct Use

Do not operate or store the product in the following locations. Operation may stop or malfunctions may occur.
- Locations subject to direct sunlight
- Locations subject to temperatures or humidity outside the range specified in the specifications
- Locations subject to condensation as the result of severe changes in temperature
- Locations subject to corrosive or flammable gases
- Locations subject to dust (especially iron dust) or salts
- Locations subject to exposure to water, oil or chemicals
- Locations subject to shock or vibration
- Locations outdoors subject to direct wind and rain
- Locations subject to strong ultraviolet light

Additional Information

- Ensure you have installed the options before you mount the product.
  Refer to *5-2 Install Options* on page 5-4 for option details.
- Refer to *5-3-2 Product Orientation* on page 5-15 for orientation details.
- Refer to *5-3-3 Temperature* on page 5-16 for temperature details.
- Refer to *5-3-4 Humidity* on page 5-18 for humidity details.
- Refer to *5-4 Wire* on page 5-30 for wiring details.

5-3-2   Product Orientation

The IPC Machine Controller Panel PC can be mounted in a landscape Ⓐ or portrait Ⓑ orientation.
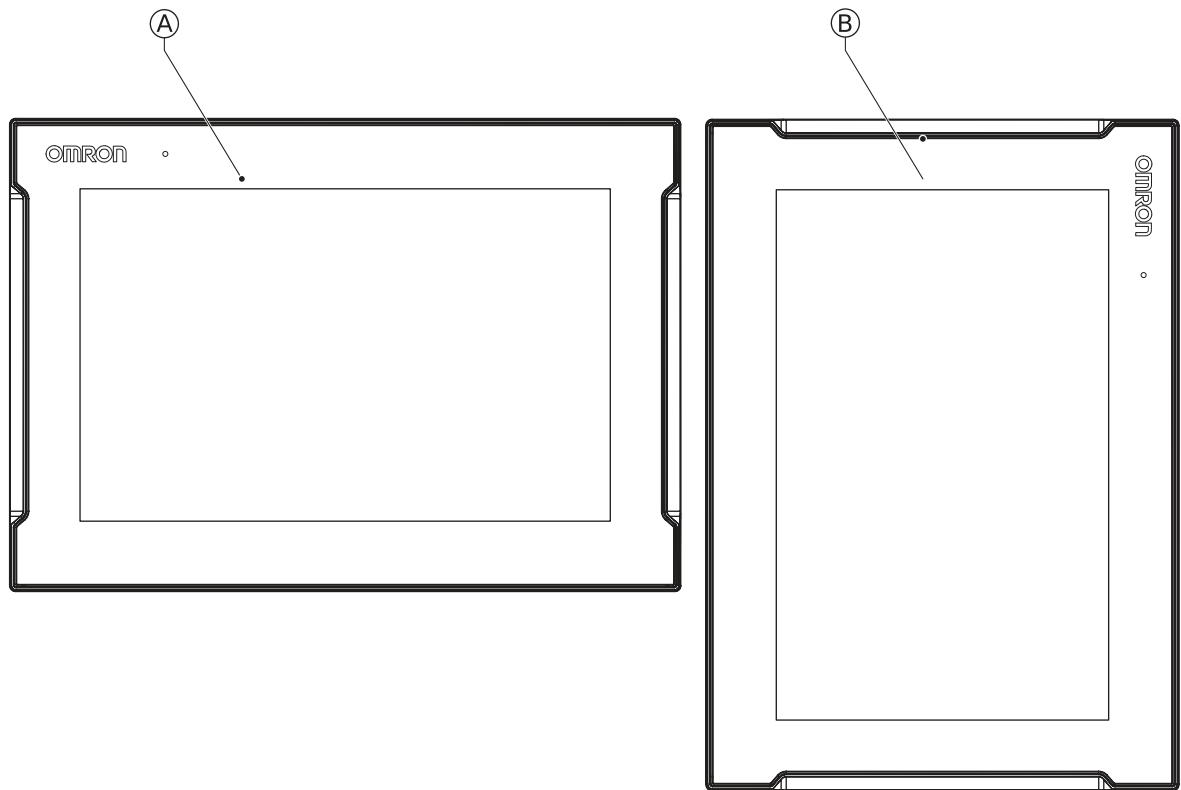
Do not install the IPC Machine Controller Panel PC in any of the following orientations.
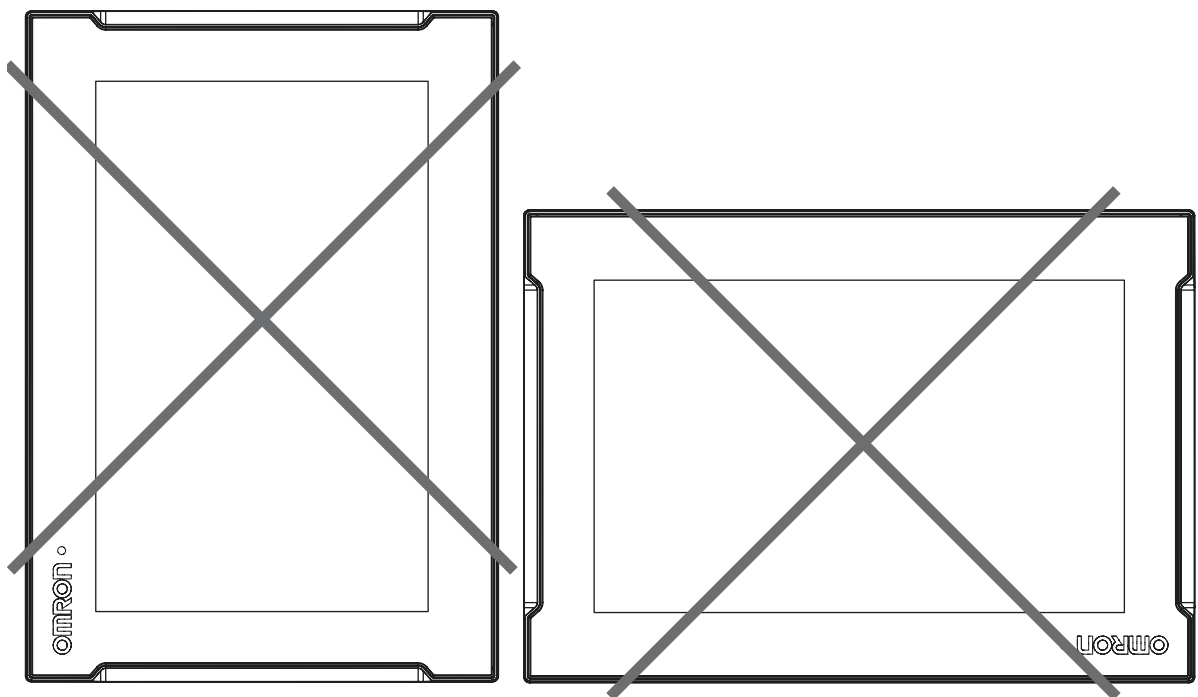
5-3-3   Temperature

The temperature inside a control panel may be at least 10 to 15°C higher than outside the panel. Implement the following measures against overheating at the installation site and in the control panel, and allow a sufficient margin for the temperature.
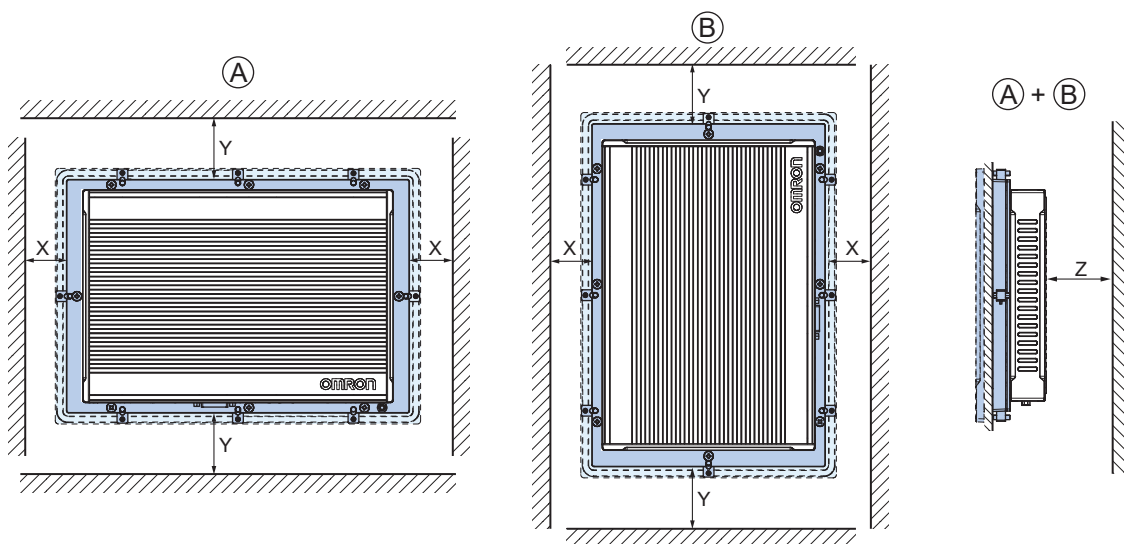
Distance for Cooling

Adequate airflow around the Industrial Panel PC is required.

> **Additional Information**
>
> - The ambient temperature must be within the operating range.
>   Refer to *4-4-1 Operation Environment Specifications* on page 4-30 for temperature specifications.
> - Allow space to accommodate for the bending radius of the cables.
>   Refer to:
>   - *3-10-6 DVI Cables* on page 3-29
>   - *3-10-7 USB Type-A to USB Type-B Cables* on page 3-29
>   - *3-10-8 NY Monitor Link Cables* on page 3-30
>   - individual cable specifications
>   for cable bending requirements and connector clearance.

Provide enough space for good air flow and ensure the following minimum distances are observed around the sides of the IPC Machine Controller Panel PC for landscape Ⓐ and portrait Ⓑ orientations.

| Item	Minimum distance
X	50 mm
Y	100 mm
Z	50 mm

High Temperatures

Use the following cooling methods as required, taking into account the ambient temperature and the amount of heating inside the panel.

● Natural Cooling

Natural cooling relies on natural ventilation through slits in the panel, rather than using cooling devices such as fans or coolers. When using this method, observe the following points.
- Do not install the Panel PC at the top of the panel, where hot air tends to stagnate.
- To provide ventilation space above and below the Panel PC, leave sufficient distance from other devices, wiring ducts, etc.
- Do not mount the Panel PC in the wrong direction (e.g., vertically or upside down). Doing so may cause abnormal heating in the Panel PC.
- Do not install the Panel PC directly above any heat-generating equipment, such as heaters or transformers.
- Do not install the Panel PC in a location exposed to direct sunlight.
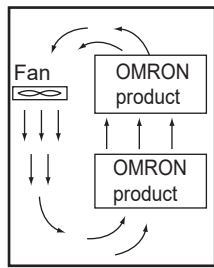
Natural Cooling
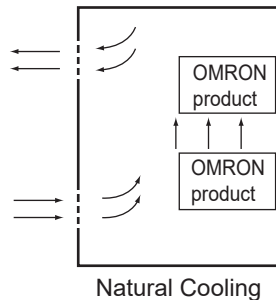
● Forced Ventilation

Forced ventilation with a fan in the top of the control cabinet.

Forced Ventilation Method
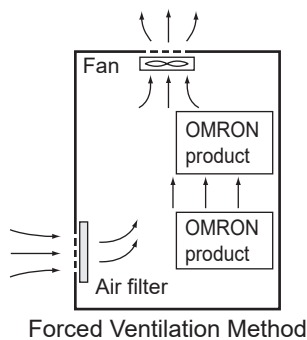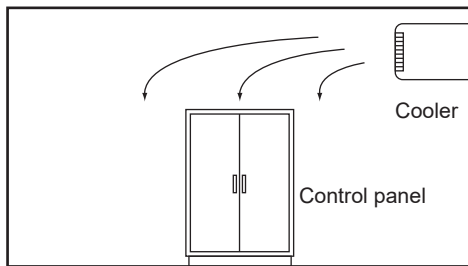
● Forced Air Circulation

Forced circulation with a fan inside the closed control cabinet.

Forced Air Circulation

● **Room Cooling**

Cool the entire room where the control panel is located.

Room Cooling

Low Temperatures

The Panel PC may not start normally if the temperature is below 0°C when the power is turned ON.
Maintain an air temperature of at least 5°C inside the panel, by implementing measures such as instal-
ling a low-capacity space heater in the panel.
Alternatively, leave the Panel PC power ON to keep the Panel PC warm.

5-3-4 Humidity

Rapid temperature changes can cause condensation to occur, resulting in malfunctioning due to short-
circuiting.
When there is a possibility of this occurring, take measures against condensation, such as leaving the
Panel PC power ON at night or installing a heater in the control panel to keep it warmer.
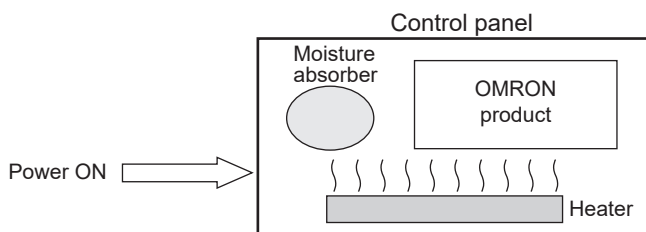
Examples of Measures against Condensation

5-3-5 Vibration and Shock

The Panel PC is tested for conformity with the sine wave vibration test method (IEC 60068-2-6) and
the shock test method (IEC 60068-2-27) of the Environmental Testing for Electrotechnical Products. It

is designed so that malfunctioning will not occur within the specifications for vibration and shock. If, however, the Panel PC is to be used in a location in which it will be directly subjected to regular vibration or shock, then implement the following countermeasures:

• Separate the Panel PC control panel from the source of the vibration or shock. Or secure the Panel PC and the control panel with rubber padding to prevent vibration.

• Make the building or the floor vibration-resistant.

• Prevent shocks when other devices in the panel, such as electromagnetic contactors, operate. Secure either the source of the shock or the Panel PC with rubber padding.

5-3-6 Atmosphere

Using the Panel PC in any of the following locations can cause defective contact with connectors and corrosion of components. Implement countermeasures such as purging the air as required.

• In locations exposed to dust, dirt, salt, metal powder, soot, or organic solvents, use a panel with an airtight structure. Be careful of temperature increases inside the panel.

• In locations exposed to corrosive gas, purge the air inside the panel to clear the gas and then pressurize the inside of the panel to prevent gas from entering from outside.

• In locations where flammable gas is present, either use an explosion-protected construction or do not use the Panel PC.

5-3-7 Electrical Environment

When installing or wiring devices, make sure that there will be no danger to people and that noise will not interfere with electrical signals.

Installation Location

Install the Panel PC as far away as possible from high-voltage (600 V or higher) and power devices to ensure safe operation and maintenance.

Example of Recommended Equipment Arrangement
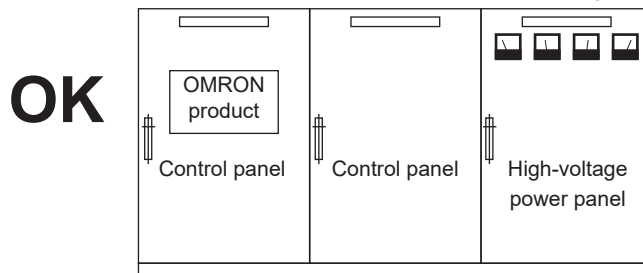
Example of Poor Equipment Arrangement

Examples of Equipment Arrangement in Panel with High-voltage Devices

Hardware Arrangement

The coils and contacts in electromagnetic contacts and relays in an external circuit are sources of noise. Do not install them close to the Panel PC. Locate them at least 100 mm away from the Panel PC.
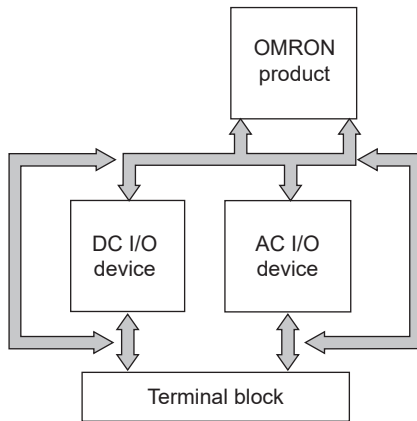
Example of Arrangement in Panel

Wire Layout for the Power Supply

Observe the following points when wiring the power supply system.
• Separate the Panel PC power supply from the I/O device power supply and install a noise filter near the Panel PC power supply feed section.
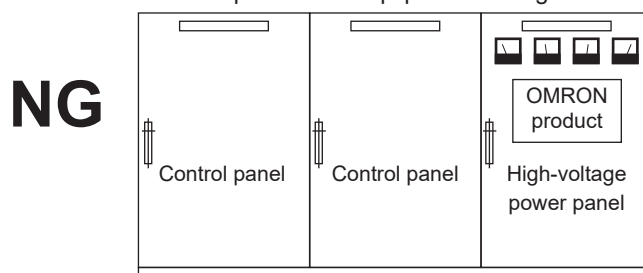• Use an isolating transformer to significantly reduce noise between the Panel PC and the ground. Install the isolating transformer between the Panel PC power supply and the noise filter, and do not ground the secondary coil of the transformer.
• Keep the wiring between the transformer and the Panel PC as short as possible, twist the wires well, and keep the wiring separate from high-voltage and power lines.
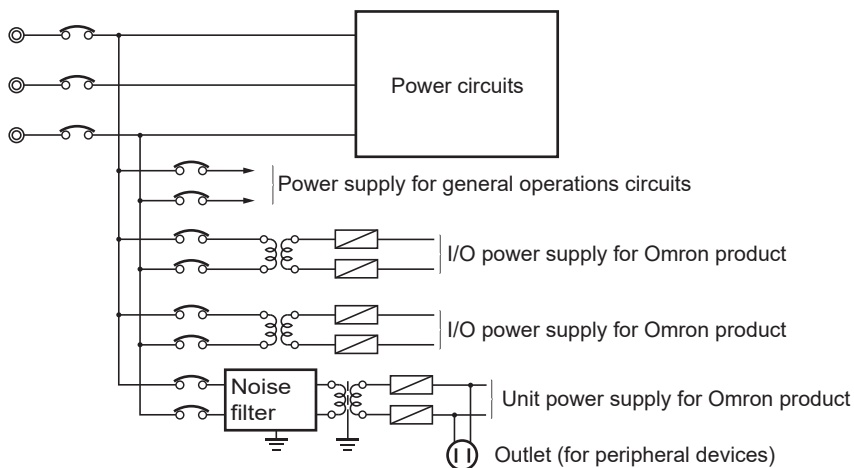
Power Supply System Diagram

Wire External I/O Signal Lines

Observe the following points when wiring the external I/O signal lines.

- To absorb reverse electromotive force when an inductive load is connected to an output signal, connect a surge suppressor near the inductive load in an AC circuit, or connect a diode near the inductive load in a DC circuit.

Connect a diode in a DC circuit.

Input Signal Noise Countermeasures

Connect a surge suppressor in an AC circuit.

Connect a diode in a DC circuit.

Output Signal Noise Countermeasures

- Never bundle output signal lines with high-voltage or power lines, and do not route them in close proximity or parallel to such lines.
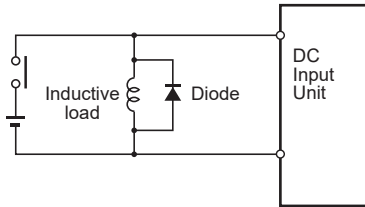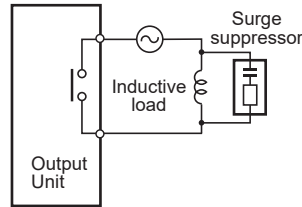 If output signal lines must be routed in close proximity to such lines, place them in separate ducts or conduits. Be sure to ground the ducts or conduits.

Suspended ducts   Floor ducts   Conduits
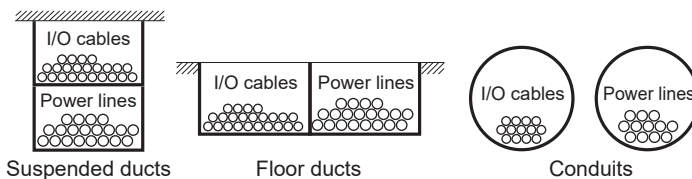
I/O Cable Arrangement

- If the signal lines and power lines cannot be routed in separate ducts, use shielded cable. Connect the shield to the ground terminal at the Panel PC, and leave it unconnected at the input device.
- Wire the lines so that common impedance does not occur. Such wiring will increase the number of wires, so use common return circuits. Use thick wires with sufficient allowance for the return circuits, and bundle them with lines of the same signal level.
- For long I/O lines, wire the input and output signal lines separately.
- Use twisted-pair wires for pilot lamps (and particularly lamps with filaments).
- Use countermeasures, such as CR surge absorbers and diodes, for input device and output load device noise sources, as required.

External Wiring

Wiring, and noise countermeasures in particular, are based on experience, and it is necessary to closely manage wiring based on experience and information in the manuals.

● **Wiring Routes**

Each of the following combinations includes different signal types, properties, or levels. They will cause the signal-to-noise ratio to drop due to factors such as electrical induction. As a general rule when wiring, either use separate cables or separate wiring routes for these items. Future maintenance operations and changes to the system will also be made easier by carefully organizing the wiring from the start.

• Power lines and signal lines
• Input signals and output signals
• Analog signals and digital signals
• High-level signals and low-level signals
• Communications lines and power lines
• DC signals and AC signals
• High-frequency devices (such as Inverters) and signal lines (communications)

● **(Routing of) Wiring**

Observe the following points when wiring power supply and signal cables.

• When routing signal cables with differing characteristics through the same duct, always keep them separated.
• As much as possible, avoid routing multiple power supply lines through the same duct. If it cannot be avoided, then construct a partition between them in the duct and ground the partition.
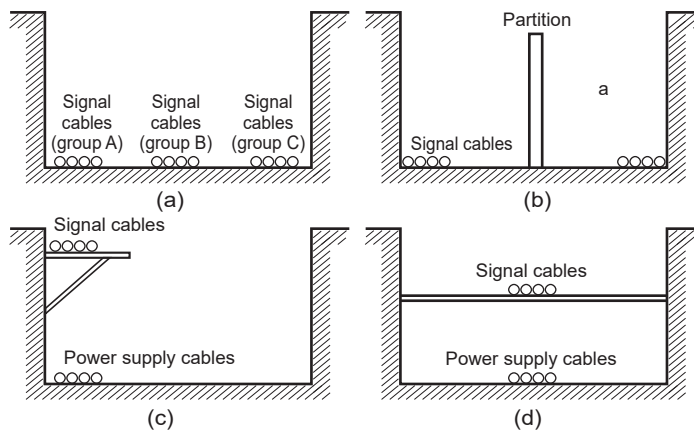
Partitioning Methods for Signal and Power Supply Cables

• To avoid overheating the conduits when using conduits for wiring, do not place wires for a single circuit in separate conduits.
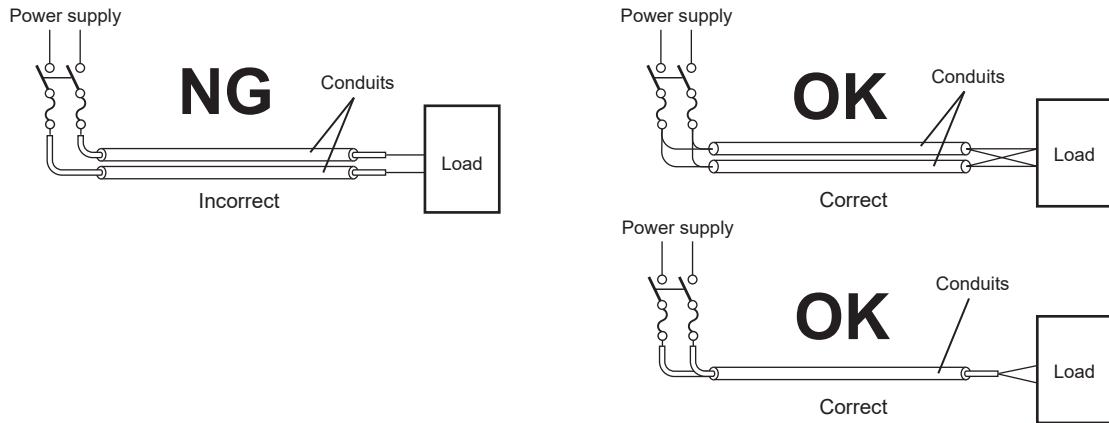
Parallel Wiring (Single Phase)

- Power cables and signal cables adversely affect each other. Do not wire them in parallel.
- Noise induction may occur if the Panel PC is installed in a panel that includes high-voltage devices. Wire and install them as far apart as possible.
- Either install the Panel PC a minimum of 200 mm away from high-voltage lines or power lines, or place the high-voltage lines or power lines in metal tubing and completely ground the metal tubing to 100 Ω or less.
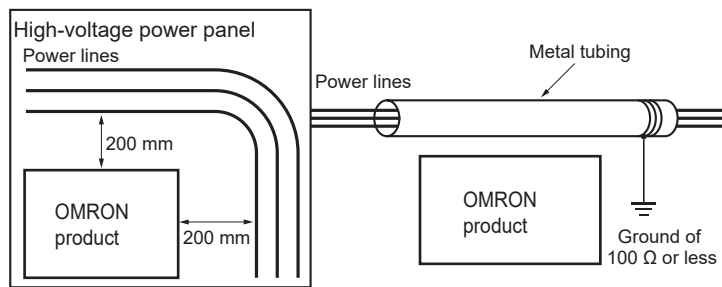
Example: Separating an OMRON product from Power Lines

● Wiring Ducts

Whenever possible, route the cables and wires through wiring ducts.

Install the wiring ducts so that it is easy to route the wires from the Panel PC directly into the duct.

> **Additional Information**
>
> Refer to *Distance for Cooling* on page 5-16 for the minimum required distances.

It is convenient to use wiring ducts that have the same depth as the Panel PC.

5-3-8   Panel Mount Procedure

Ensure the panel cut out is ready before beginning the mounting procedure.
Refer to *Prepare the Mounting Surface* on page 5-25 for details.

Tools required: Torque screw driver with hexagon 2 mm bit.

The IPC Machine Controller Panel PC is equipped with 8 (12", 15") or 9 (19") retractable mounting brackets on the back of the Panel PC.
These brackets are used to fasten and secure the Panel PC to the mounting surface.
Use the following procedure to mount the Panel PC to the mounting surface:

1   Ensure all retractable mounting brackets Ⓐ are in the retracted position ❶. If required press the mounting brackets in the retracted position and hand tighten the allen bolt ❷.
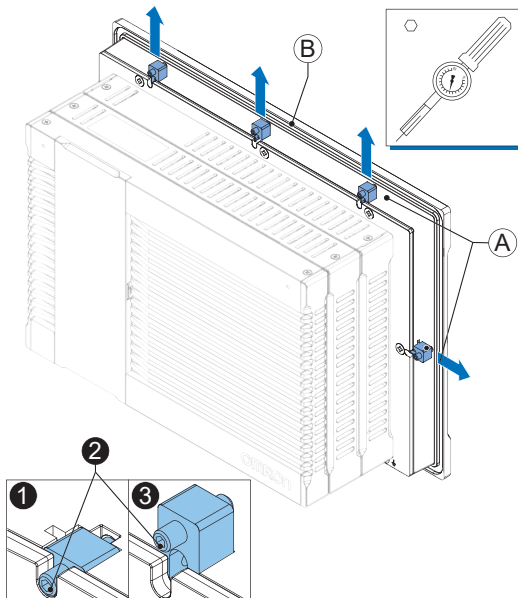
2   Insert the Panel PC into the mounting surface cut out so the bezel Ⓑ touches the mounting surface.

3   Loosen the allen bolts ❷ of the mounting brackets.

The mounting brackets are spring loaded and will extend ❸ when loose.

4   Ensure all mounting brackets extend to overlap the mounting surface.

5   Tighten all mounting brackets to a torque of 0.6 N·m to maintain water and dust resistance.

Precautions for Safe Use

The mounting panel must be between 1.6 and 6.0 mm thick. Tighten the Mounting Brackets evenly to a torque of 0.6 N·m to maintain water and dust resistance. If the tightening torque exceeds the specified value, or the tightening is not even, deformation of the front panel may occur. Additionally, make sure the panel is not dirty or warped and that it is strong enough to hold the product.

Prepare the Mounting Surface

The IPC Machine Controller Panel PC can be mounted in a landscape or portrait orientation.
The mounting hardware is integrated into the back of the Panel PC.

Item	Model Specifications		
	12.1 inch [1]	15.4 inch [1]	18.5 inch [1]
Panel cutout dimensions	Width X1 = $314^{-0 +1}$ mm Height Y1 = $216^{-0 +1}$ mm	Width X1 = $383^{-0 +1}$ mm Height Y1 = $259^{-0 +1}$ mm	Width X1 = $463^{-0 +1}$ mm Height Y1 = $285^{-0 +1}$ mm
Panel thickness range [2]	Panel thickness range Z1 = 1.6 to 6.0 mm		
Dimensions	Refer to *4-1-1 Dimensions and Weight* on page 4-2 for X, Y, Z and R dimensions.		

[1]. Refer to *1-4 Product Configuration* on page 1-7 for model details.

[2]. The minimum panel thickness depends on the panel material.
For the most common materials the minimum panel thickness is mentioned in the following steps.

1 Ensure the mounting surface conforms to following requirements.

Standards conformance	Material	Mounting panel requirements
IP65	Steel	Thickness 1.6 to 6.0 mm
	Aluminum	Thickness 2.5 to 6.0 mm

2 Create an opening in the mounting surface.

The table before step 1 gives an overview of the cut out dimensions for the Panel PC.
Prepare a rectangular cut out with the dimensions X1 and Y1.

3 Ensure the mounting surface is clean and not warped.

5-3-9   VESA Mount Procedure

Use the following procedure to mount your Panel PC using the VESA Mount bracket.

> **Precautions for Safe Use**
>
> - Always use an arm construction with sufficient strength to support the Panel PC and the additional forces from making adjustments. Not doing so may lead to system damage or injury.
> - Carefully follow the instructions in the manual when mounting or dismounting a unit from the VESA mount bracket, to avoid system damage or injury.
> - Check the reliability of the mechanical construction of arm and VESA mount bracket on a regular basis. Doing so will prevent unexpected breakdown of the construction, which might lead to system damage or injury.

> **Additional Information**
>
> - Refer to *5-4-2 Ground* on page 5-30 for grounding details.
> - Refer to *3-10-1 VESA Mount Brackets* on page 3-26 for the bracket model.

To mount the Panel PC with a VESA bracket:

1 Unpack the product.

Remove the fasteners from the VESA bracket.

Discard the plastic spacer bus, this component is not needed for the VESA mounting.

2 Position the VESA bracket and the optional VESA handle at the desired location with the 4 M4x16 hexagon socket head screws and washers supplied with the VESA bracket.

Position the optional VESA handle between the VESA bracket and the external mounting when applicable. The VESA handle is intended for landscape use.

Use the 4 holes

- at location Ⓐ for 18.5 inch models
- at location Ⓑ for 15.4 inch models
- at location Ⓒ for 12.1 inch models
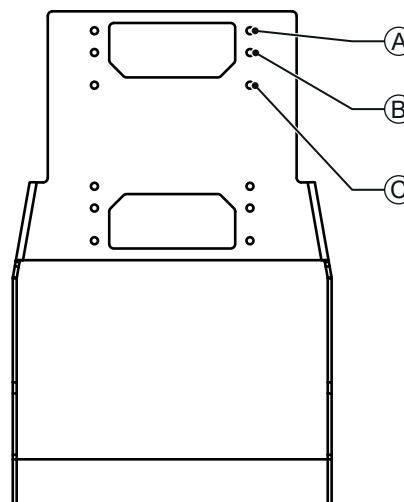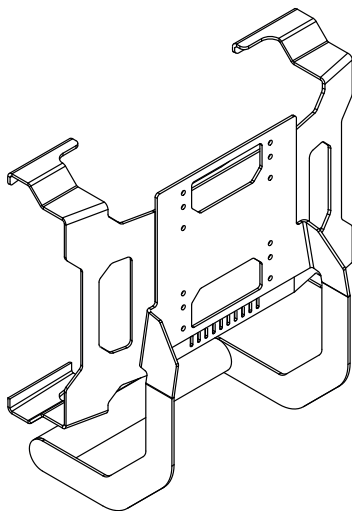
3 Tighten the 4 screws with a torque between 2.5 and 3.0 N m with a hexagon tool.
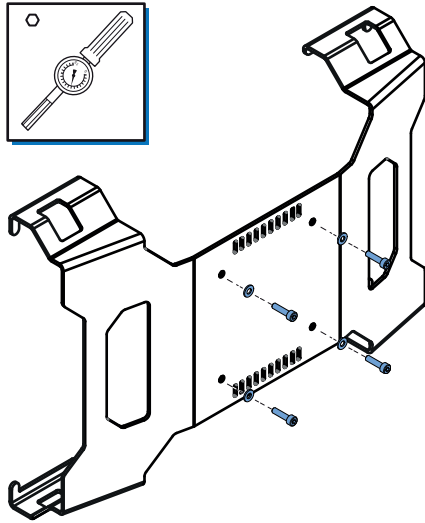
The bracket shape can differ depending on the bracket ID.

4 Mount the ground connection.
Refer to *Ground Connection Details* on page 5-36 for details.
The VESA bracket does not require separate grounding.

5 Loosen the allen bolts ❷ of 4 mounting brackets.

Loosen the bolts of the two mounting brackets on top and bottom that are closest to the cor-

ners. The mounting brackets are spring loaded and will extend ❸ when loose.
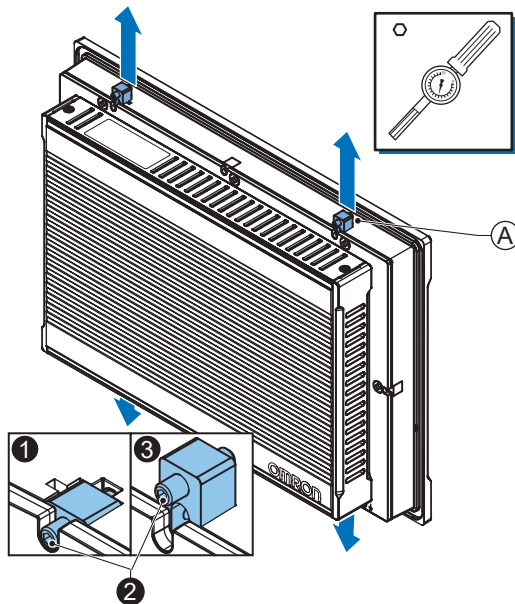
6 Insert the Panel PC into the VESA bracket.

Position the Panel PC to rest in both bottom arms of the VESA bracket with both extended mounting brackets inside the VESA bracket.

Rotate the top of the Panel PC towards the top arms of the VESA bracket. Push down both mounting brackets to get them inside the VESA bracket, they will extend automatically when the Panel PC is correctly positioned.
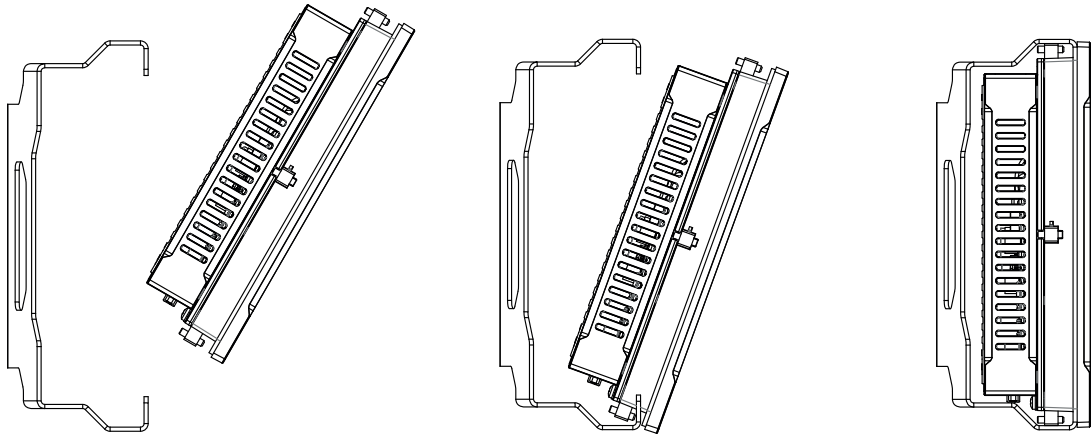
The bracket and the Panel PC can differ depending on the product configuration.

7 Tighten all four mounting brackets with a torque of 0.6 N·m and ensure the frontside of each allen bolt overlaps the surface at the inside of the VESA bracket.

8 Connect the connectors and wiring.

Fix the cables Ⓑ against the bracket Ⓒ using cable ties Ⓐ and the 10 fixation slots on the bottom of the bracket.
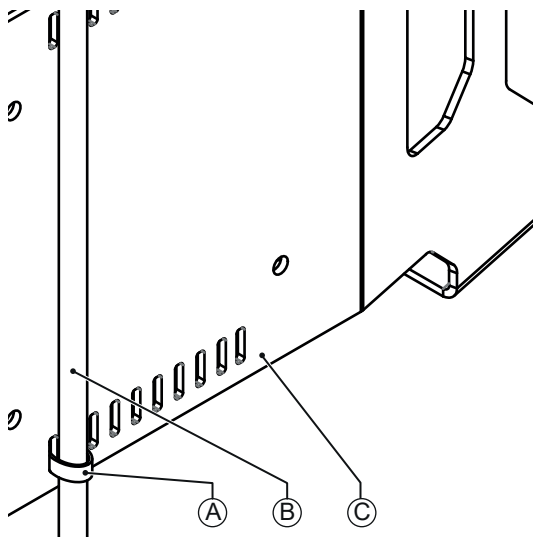
The Panel PC is mounted.

5-4 Wire

This section describes how to wire the IPC Machine Controller Panel PC.

5-4-1 Wiring Warnings and Cautions

This section describes the Warnings and Cautions when wiring the IPC Machine Controller Panel PC.

> ### ⚠ WARNING
>
> If external power supplies for slaves or other devices are overloaded or short-circuited, the voltage will drop, outputs will turn OFF, and the system may be unable to read inputs. Provide external safety measures in controls with monitoring of external power supply voltage as required so that the system operates safely in such a case.

> ### ⚠ WARNING
>
> Provide safety measures in external circuits to ensure safety in the system if an abnormality occurs due to malfunction of the product or due to other external factors affecting operation. Not doing so may result in serious accidents due to incorrect operation.

> ### ⚠ WARNING
>
> Emergency stop circuits, interlock circuit, limit circuits, and similar safety measures must be provided in external control circuits.

> ### ⚠ WARNING
>
> Provide measures in the communications system and user program to ensure safety in the overall system even if errors or malfunctions occur in data link communications or remote I/O communications.

> ### ⚠ WARNING
>
> Unintended behavior may occur when an error occurs in internal memory of the product. As a countermeasure for such problems, external safety measures must be provided to ensure safe operation of the system.

Precautions for Safe Use

Do not allow wire clippings, shavings, or other foreign material to enter the Panel PC. Otherwise, Panel PC burning, failure, or malfunction may occur. Cover the Panel PC or take other suitable countermeasures, especially during wiring work.

5-4-2 Ground

This section describes how to ground the IPC Machine Controller Panel PC.

⚠ WARNING

Always connect to a ground of 100 Ω or less when installing the product.   **!**

⚠ CAUTION

The product has an internal non-isolated DC power supply. Circuit ground (0 VDC) and frame ground are connected together. When connecting a non-isolated device or a non-isolated interface to the product, take appropriate actions to avoid communication failures or damage to the mentioned ports.
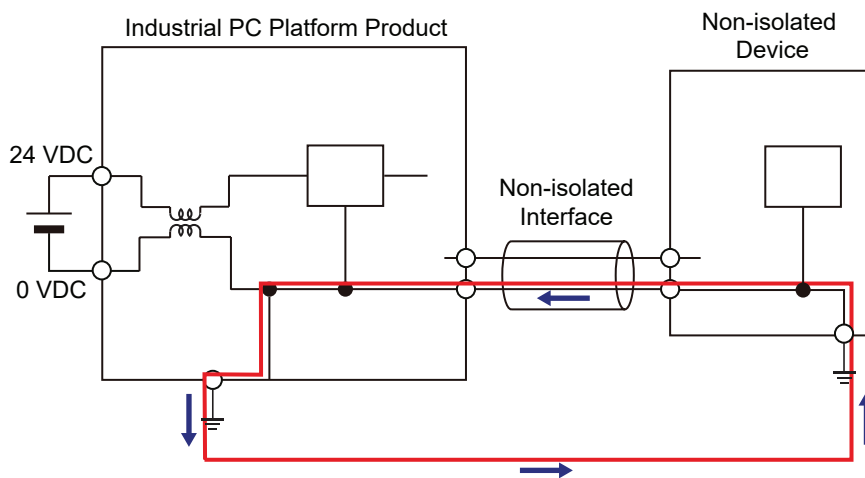
⚠ CAUTION

Never ground the 24 VDC side of the power supply. This may cause a short circuit.   ⚠

The shielding of the communication connectors are directly bonded to the case and to the ground of the Panel PC.

The shield of a communication cable should be terminated to ground at both ends of the cable with a low impedance connection. A large surface area surrounding the entire cable shield ensures a low impedance connection, avoid the use of pigtails.

Potential differences between the two connected communicating devices might cause an equipotential current to flow through the shielding connected at both ends.

To avoid equipotential currents on the cable shields, an additional equipotential bonding conductor must be installed.

Refer to IEC 61918 for guidelines regarding conductor sizing and length to prevent a voltage offset between two communicating devices exceeding 1 V.

Make sure to run the bonding conductor in close proximity to the communication cable.

The Panel PC has a protection ground connection because the metal part of the Panel PC outside of the enclosure must be part of the protection grounding of that enclosure (for example a cabinet).

There are no power supply voltages used in the Panel PC which require protection grounding.

Considerations for Earthing Methods

Local potential fluctuations due to lightning or noise occurred by power devices will cause potential fluctuations between ground terminals of devices. This potential fluctuation may result in device malfunction or damage. To prevent this, it is necessary to suppress the occurrence of a difference in electrical potential between ground terminals of devices. You need to consider the earthing methods to achieve this objective.

The recommended earthing methods for each usage condition are given in the following table.

Specification of communications cables	Earthing methods		
	Equipotential bonding system	Star earthing	Daisy chain
The cable shield connected to the connector hood at both ends of the communications cable	Recommended	Not recommended	Not recommended

> **Additional Information**
>
> • In a country or region where the earthing method is regulated, you must comply with the regulations. Refer to the applicable local and national ordinances of the place where you install the system, or other international laws and regulations.
> • Ethernet switches are used with the EtherNet/IP. For information on the environmental resistance of the Ethernet switch to use, the grounding between Ethernet switches, or the specifications of cables, ask the Ethernet switch manufacturer.

Each of these earthing methods is given below.

Equipotential Bonding System

Equipotential bonding is an earthing method in which steel frames and building structures, metal ducts and pipes, and metal structures in floors are connected together and make connections to the earth trunk line to achieve a uniform potential everywhere across the entire building. We recommend this earthing method.

The following figure shows an example of an equipotential bonding system.

Connect the main earthing terminal and building structures together with equipotential bonding conductors and embed the mesh ground line in each floor.

Connect the ground line of each control panel to the equipotential bonding system.
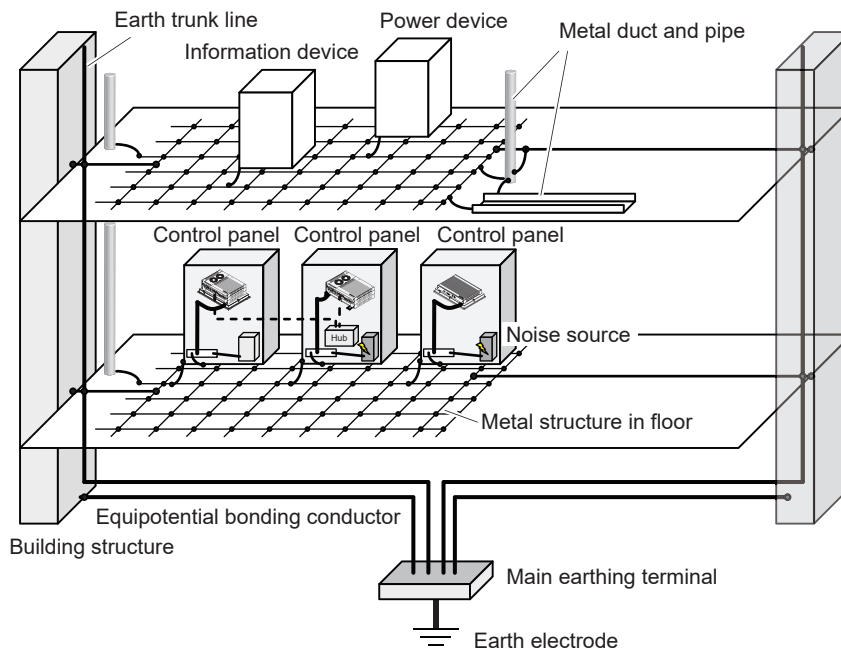
Star Earthing

If the earthing method used for the building is not equipotential bonding or the earthing system is un-known, choose (a) from among the earthing methods given below.

a. Connecting devices and noise sources to separate earth electrodes

This is an earthing method to separately ground an earth electrode of the device that is connected with a communications cable or other devices and an earth electrode of a high-power device that could be a noise source, such as a motor or inverter.

Each earth electrode must be ground to 100 Ω or less.

Connect the ground lines of the device that is connected with a communications cable and other devices as a bundle to a single earth electrode. Be sure that the earth electrode is separated by a minimum of 10 m from any other earth electrode of a device that could be a noise source.
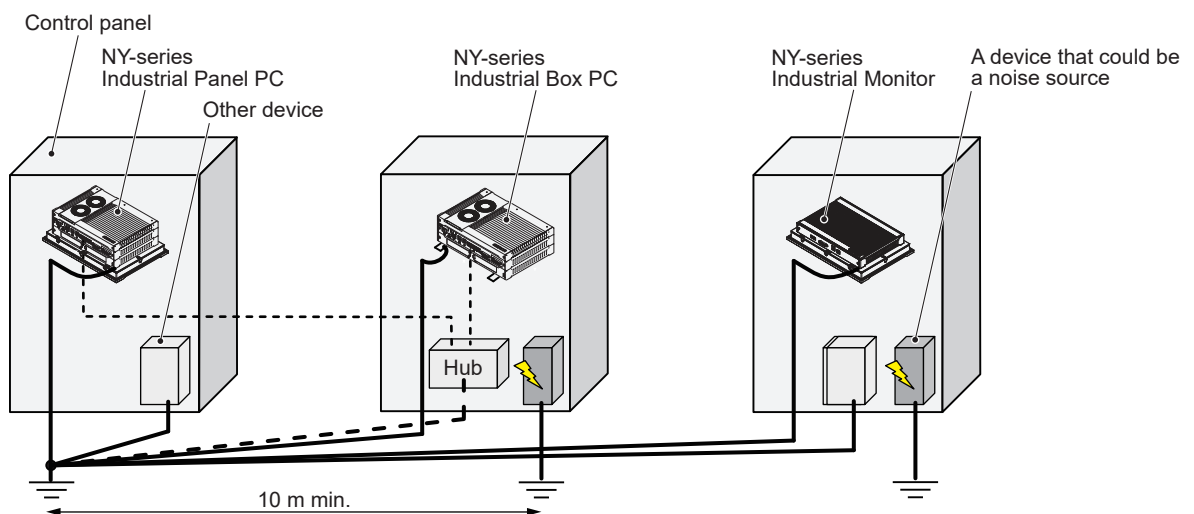
b. Connecting devices and noise sources to a common earth electrode

This is an earthing method to connect the device that is connected with a communications cable, other devices, and a device that could be a noise source, to a common earth electrode.

This earthing method is not recommended because the device that could be a noise source may interfere electromagnetically with other devices.
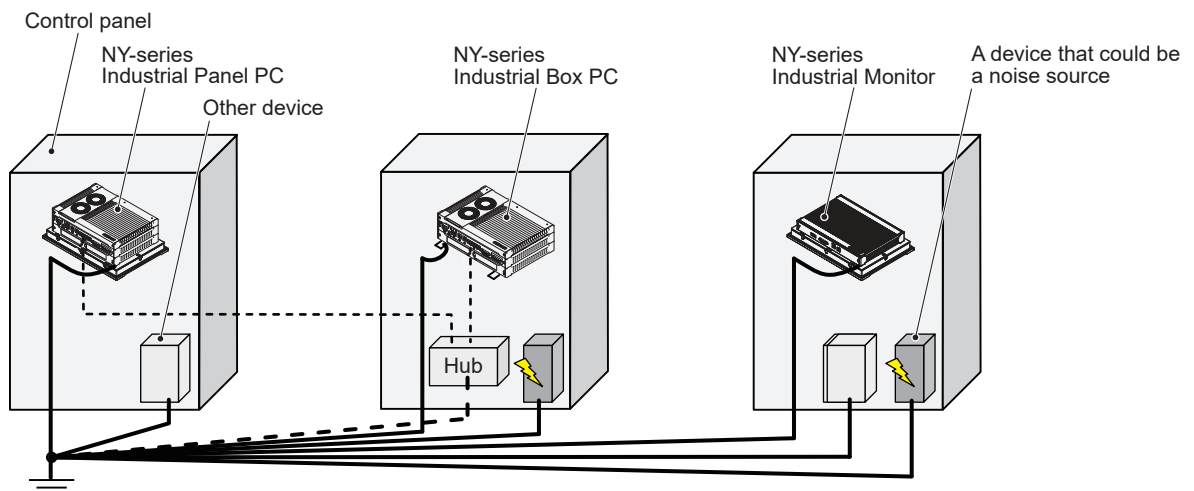
Daisy Chain

This is an earthing method to connect the device that is connected with a communications cable, other devices, and a device that could be a noise source using a daisy-chain topology to a common earth electrode.

This earthing method is not recommended because the device that could be a noise source may interfere electromagnetically with other devices.
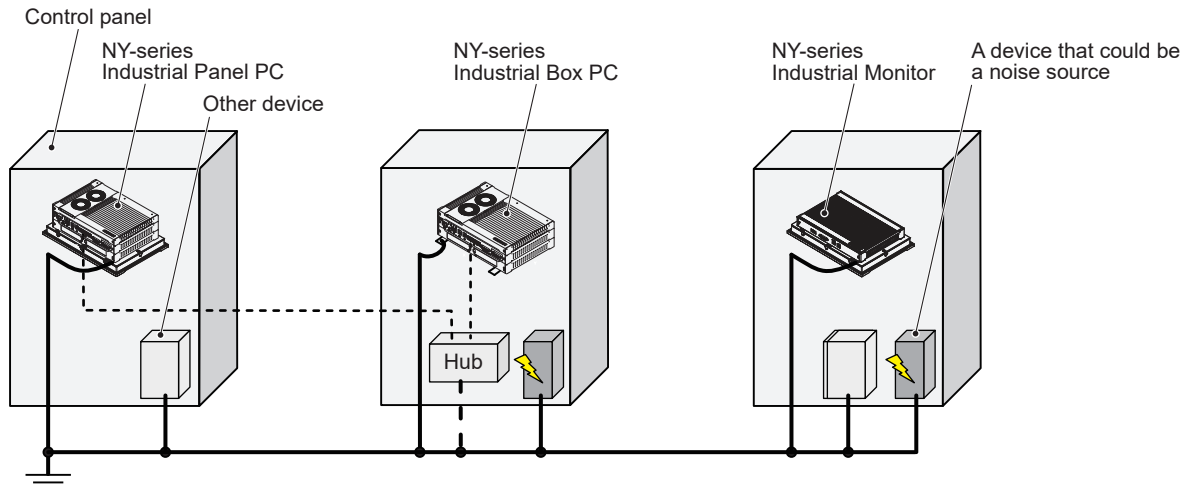
Ground Connection Details

This section provides details about the ground connection.

Use the ground terminal on the backside of the monitor to ground your Panel PC.

The washers and screw Ⓐ are pre-mounted at the Panel PC.
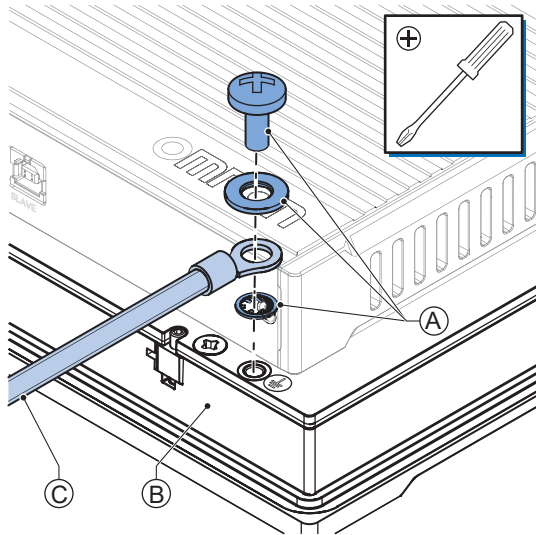
Remove the pre-mounted washers and screw Ⓐ and then mount the ground connection wire Ⓒ to

the Panel PC Ⓑ using the washers and screw Ⓐ.

Tighten the screw with a torque of 1.2 N·m max.

● Crimp terminals

Use crimp terminals with dimensions X = M4 and Y = 8 mm max.

5-4-3 Wire the Power Connector

This section describes how to wire the power connector.

Precautions for Safe Use

- Do not perform a dielectric strength test.
- Always use the recommended uninterruptible power supply (UPS) to prevent data loss and other system file integrity issues caused by unexpected power interruption. Back up the system files in the planned way to prevent data loss and other system file integrity issues caused by incorrect operation.

Additional Information

- The selected conductor size must match with the used maximum power supply capacity or an overcurrent protection device must be used.
- The used wires and the overcurrent protection device must meet the applicable national standards.
  Standards are:
  - NEC (National Electric Code)
  - CEC (Canadian Electrical Code)
  - international applicable standards
- Refer to *4-1-2 General Electrical Specifications* on page 4-4 for electrical specifications.
- Refer to *4-1-3 Power Consumption Specifications* on page 4-5 for power consumption specifications.
- Refer to *3-10-11 UPS* on page 3-34 for UPS information.

Power Connector Wiring Materials

Use the power supply connector that was supplied to connect the power supply to the IPC Machine Controller Panel PC.

- Select power supply conductors with consideration to the voltage drop and heat generation for the cable length at the installation environment.
- Always use twisted wires to minimize the occurrence of electrical disturbance.
- Recommended power supply conductor sizes are provided in the table.

Wire type	Conductor cross-section
Solid conductor	0.5 to 10 mm^2
Flexible conductor	0.5 to 6 mm^2
Flexible conductor, with ferrule and no plastic sleeve	0.5 to 6 mm^2
Flexible conductor, with ferrule and plastic sleeve	0.5 to 4 mm^2
Minimum AWG according to UL/cUL	20
Maximum AWG according to UL/cUL	8

- Power Supply Connector
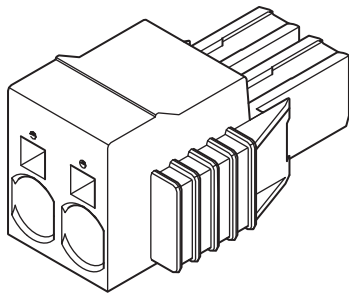
DC Power Supply

The OMRON S8VK-series power supply is recommended for use with the IPC Machine Controller Panel PC.

> **Additional Information**
>
> - Refer to *3-10-10 Power Supply* on page 3-33 for more information.
> - Refer to *4-1-3 Power Consumption Specifications* on page 4-5 for power consumption details.

Power Connector Wiring Procedure

Use the following procedure to wire the power connector.

1 Ensure the power connector is not connected to the Panel PC.

2 Remove the sheath from the power supply wires.

7 mm

Precautions for Safe Use

Observe the following precautions to prevent broken wires.
- When you remove the sheath, be careful not to damage the conductor.
- Connect the conductor without twisting the wires.
- Do not weld the conductors. Doing so may cause the wires to break with vibration.

3 Insert a 2.5 mm flat-blade screwdriver in the small opening above the cable opening ❶ to un-

lock the cable entry and then push the wire all the way to the back of the cable opening ❷.
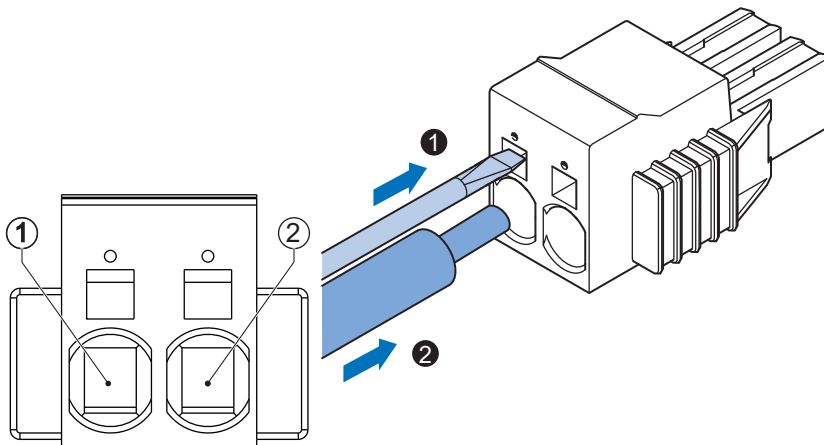
Pin	Description
1	24 VDC
2	0 VDC

4 Remove the screwdriver.

Do not apply stress to the cable after you have connected the wires.

5-4-4   Wire the I/O Connector

This section describes how to wire the I/O connector.

I/O Connector Wiring Materials

Use the supplied I/O connector to connect the inputs and outputs to the IPC Machine Controller Panel PC.

Recommended I/O conductor sizes for the connector are provided in the table.

Wire type	Conductor cross-section
Solid conductor	0.2 to 1.5 mm^2
Flexible conductor	
Flexible conductor, with ferrule and no plastic sleeve	0.25 to 1.5 mm^2
Flexible conductor, with ferrule and plastic sleeve	0.25 to 0.75 mm^2
Minimum AWG according to UL/cUL	24
Maximum AWG according to UL/cUL	16

I/O Connections

This section describes I/O connection details.
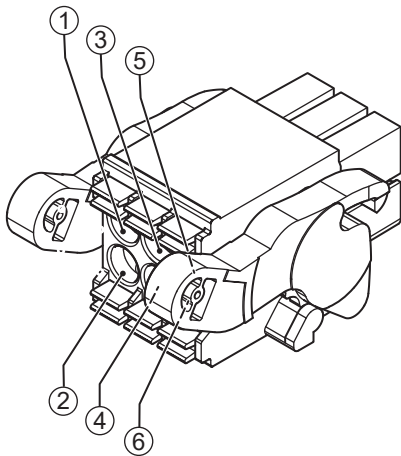
Pin	Description	Internal Circuit Details
1	Power Status Output	The Power Status Output has an internal relay. Wire this according to the input device connected to the Power Status Output.
2		

Pin	Description	Internal Circuit Details
3	Power ON Input	The Power ON Input and the UPS Mode Input are bi-directional and isolated. Each input can be wired as sinking (NPN) or sourcing (PNP). Wire these according to the output device connected to the inputs.
4		
5	UPS Mode Input	
6		

> **Additional Information**
>
> • Refer to *4-2-2 I/O Connector Specifications* on page 4-15 for I/O connector specifications.
> • Refer to *I/O Connector Power Status Output Details* on page 4-17 for power status output details.
> • Refer to *3-10-11 UPS* on page 3-34 for UPS information.

I/O Connector Wiring Procedure

Use the following procedure to wire the I/O connector.

1   Ensure the I/O connector is not connected to the Panel PC.

**2**   Remove the sheath from the wires.

7 mm

Precautions for Safe Use

Observe the following precautions to prevent broken wires.
- When you remove the sheath, be careful not to damage the conductor.
- Connect the conductor without twisting the wires.
- Do not weld the conductors. Doing so may cause the wires to break with vibration.

3   Remove the I/O connector from the Panel PC.

4   Insert a screwdriver in the small groove above the cable entry ❶ to unlock the cable entry and

then push the wire all the way to the back of the cable opening ❷.
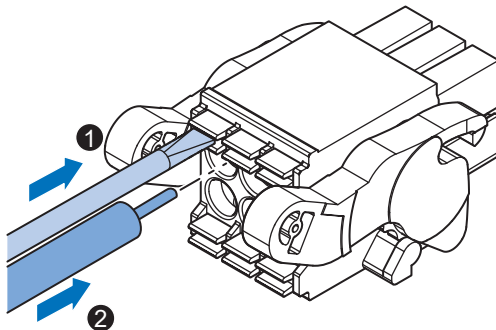
5   Remove the screwdriver.

Do not apply stress to the cable after you have connected the wires.

5-5 Connect

This section describes how to connect the IPC Machine Controller Panel PC.

5-5-1 Connector Identification

An overview of the connectors is available in the overview of Layers.

Refer to *3-1-2 Base Layer* on page 3-5 for connector details.

5-5-2 Connection Procedure

Use the following procedure to connect the IPC Machine Controller Panel PC.
Ensure the Panel PC is securely fastened to the mounting surface.
Ensure the mounted Panel PC can be connected to power and peripheral devices. Remove dust covers where applicable and store them in a safe place.

> **Additional Information**
>
> • Refer to *5-3 Mount* on page 5-14 for mounting details.
> • Refer to *3-10 Optional Hardware* on page 3-26 for the cables advised by Omron.
>   Refer to individual cable specifications for cable bending requirements and connector clearance.

Use the following procedure to connect the Panel PC:

1 Ensure the ground terminal is connected.
Refer to *5-4-2 Ground* on page 5-30 for grounding details.

2 Connect the power connector Ⓐ.

Hold the black part to enable the auto-locking mechanism.
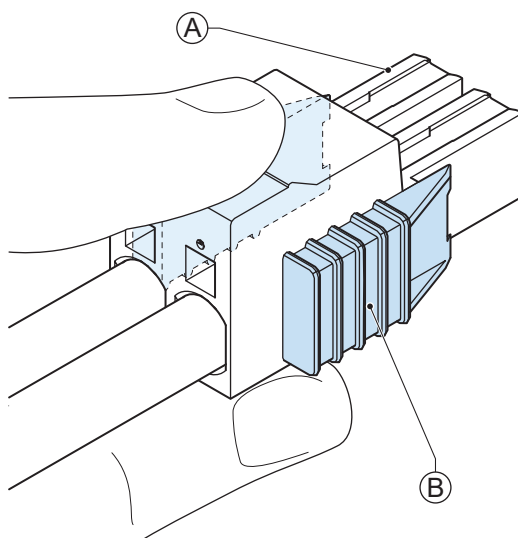
Do not push the orange sliders Ⓑ in the direction of the Panel PC because this will unlock the connector.

3 Connect the I/O connector.

Hold the black part Ⓐ when inserting the connector, this enables the auto-locking mechanism.
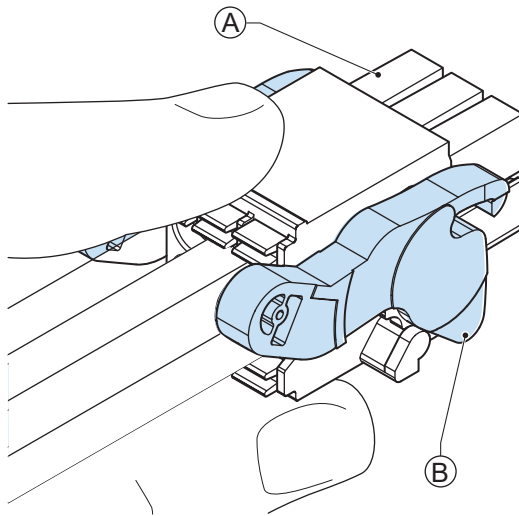
Do not tilt the orange levers Ⓑ because this will unlock the connector.

4 Connect an external monitor such as the Industrial Monitor.
Connect the monitor to the DVI connector and tighten the fastening screws or use the optional NYML connector.
For an Industrial Panel PC and for several other IPC configurations this is optional.

5 Connect all remaining connectors and tighten the fastening screws when applicable.

6 Connect the USB ports to peripheral devices .

7 Connect the Panel PC to the Ethernet interface connector(s).

The Panel PC is connected.

5-5-3 Ethernet Connection Procedure

Use the following procedure to connect the Ethernet connectors of the IPC Machine Controller Panel PC.

1 Remove the dust caps from the Ethernet ports to be connected.

2 Connect Ethernet Port 1 of the Panel PC to a normal Ethernet network.

3 Connect Ethernet port 2 of the Panel PC to the Ethernet/IP network.

4 Connect Ethernet port 3 of the Panel PC to the EtherCAT network.

> **Additional Information**
>
> • Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherNet/IP Port User's Manual (Cat. No. W563)* for Ethernet/IP port details.
> • Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Built-in EtherCAT Port User's Manual (Cat. No. W562)* for EtherCAT port details.

The Ethernet connectors are connected.

5-5-4   Connect UPS

The OMRON S8BA UPS protects the Panel PC from power failures, voltage variations and instantaneous voltage drops. Short power interruptions will be backed up by the UPS and the Panel PC will continue normal operation. The UPS signals the Panel PC when a power failure occurs and then the Panel PC will shutdown normally without data loss. The Panel PC can automatically start up again when the power is restored.

> ### ⚠ **WARNING**
>
> The use of an uninterruptible power supply (UPS) allows normal operation to continue even if a momentary power failure occurs, possibly resulting in the reception of an erroneous signal from an external device affected by the momentary power failure. Take external fail-safe measures. Where necessary, monitor the power supply voltage on the system for external devices and use it as an interlock condition.

Precautions for Safe Use

- Always use an uninterruptable power supply (UPS) to prevent data loss and other system file integrity issues caused by unexpected power interruption.
- Use an Omron S8BA UPS with the correct revision number to prevent improper system shutdown.
- Correctly perform wiring and setting, and ensure that the shutdown by the UPS can be executed.

Additional Information

- The minimum power requirements of the UPS are dependent on the power consumption.
  Refer to *4-1-3 Power Consumption Specifications* on page 4-5 for power consumption details.
- Refer to the OMRON website for S8BA specifications and for the *UPS S8BA User's Manual (Cat. No. U702)*.
  Note that the power consumption details determine the output current/capacity of your UPS.

Connect UPS Using the I/O Connector

The I/O connector of the IPC Machine Controller Panel PC
- receives the power status of the UPS with the UPS Mode Input.
- indicates the power status of the Panel PC to the UPS with the Power Status Output when the Panel PC has a Windows operating system. For other operating systems this output is not functional.

The Panel PC will shut down properly in case of a power supply interruption.

Precautions for Safe Use

- Always use the recommended uninterruptible power supply (UPS) to prevent data loss and other system file integrity issues caused by unexpected power interruption.
- Use an Omron S8BA UPS with the correct revision number to prevent improper system shut-down.
- Correctly perform wiring and setting, and ensure that the shutdown by the UPS can be executed.

Follow the steps below to connect the S8BA UPS to the I/O connector of the Panel PC and to configure it correctly.

Refer to *5-4-4 Wire the I/O Connector* on page 5-40 for I/O Connector details.

1 Ensure the revision number of the UPS is correct.
Refer to *3-10-11 UPS* on page 3-34 for more information.

2 Connect and install the S8BA UPS.
Refer to the *UPS S8BA User's Manual (Cat. No. U702)* for details.
Connect the Contact port of the S8BA UPS to the I/O port of the Panel PC with the connection cable S8BW-C02.
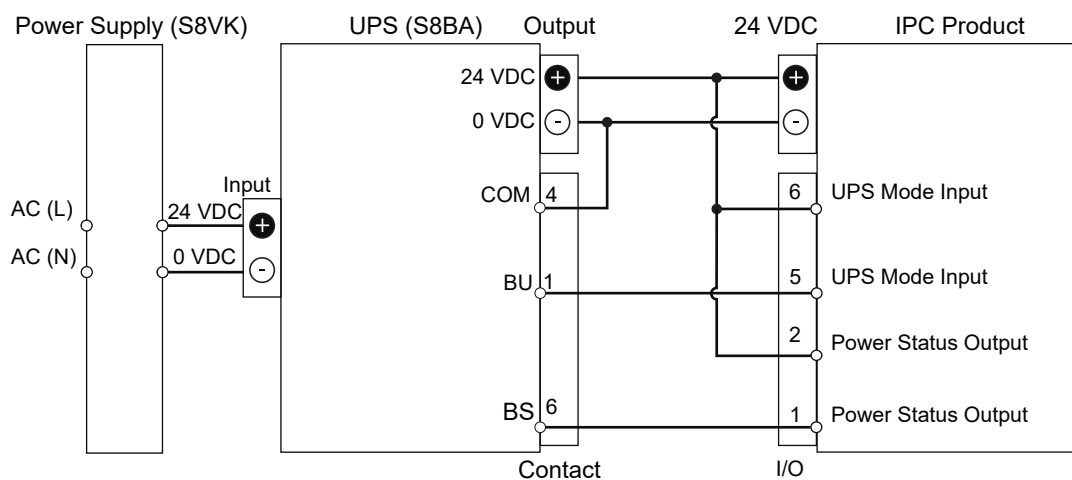
3 Power ON the Panel PC.

> **Additional Information**
>
> First execute the Initial Power ON Procedure and Initial Settings procedure before continuing with the next step when the Panel PC is powered ON for the first time.
> - Refer to *5-6 Initial Power ON* on page 5-49 for Initial Power ON details.
> - Refer to *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* for Initial Settings details.

4 Configure the UPS.

1) Connect the USB cable supplied with the UPS to the USB connector of the UPS and to the USB connector of the Panel PC.

2) Configure the UPS using the UPS Settings Utility.
   Refer to *UPS Setting Utility Instruction Manual for S8BA/BU-2RWL* for details.

3) Remove the USB cable between the UPS and the Panel PC.

5 Configure the Panel PC to auto-start after power loss within the BIOS settings.
- Refer to *A-1-1 BIOS Overview* on page A-2 for details on BIOS changes.
- Refer to *BIOS - Boot* on page A-10 for power loss BIOS details.

6 Simulate a power interruption and confirm a correct shutdown of the Panel PC.
- Start the Panel PC
- Start applications
- Create a power interruption
- Monitor the shutdown sequence and confirm a correct shutdown sequence

The UPS is connected and configured.

The Panel PC will shut down properly in case of a power supply interruption and restart automatically when the power is restored.

> **Additional Information**
>
> - The default **Input sensitivity setting** is **Standard voltage sensitivity** and this is correct.
>   Do not set this parameter to **Low voltage sensitivity**. Doing so can cause a system malfunction when switching to battery mode.
> - Do not use the Simple Shutdown Software because it can not Power OFF the IPC Machine Controller.

5-6   Initial Power ON

This section describes how to Power ON the IPC Machine Controller Panel PC for the first time.

⚠ WARNING

Ensure that installation and post-installation checks of the product are performed by personnel in charge who possess a thorough understanding of the machinery to be installed.

5-6-1   Initial Power ON Procedure

Use the following procedure to power ON the IPC Machine Controller Panel PC for the first time.

1 Ensure the following conditions are present before applying power for the first time:
- The Panel PC is securely fastened to the mounting surface.
- The Panel PC is connected to ground.
- All connectors are securely fastened.

2 Ensure that an optional connected monitor(s) is powered ON.

3 Connect an optional keyboard and/or mouse.

> **Additional Information**
>
> - If using an OMRON Industrial Monitor, this may not be required because it has touch functionality.
> - Do not connect additional storage devices before the installation of the operating system completed. Adding storage devices like a USB flash drive, an SD memory card or a PCIe card might influence the default drive letter sequence.

4 Ensure the power supply is ON.

> **Precautions for Safe Use**
>
> Always check the power supply and power connections before applying power. Incorrect power connections can damage the product or cause burning.

5 Press the power button and release within 1 second.
The Panel PC starts and the PWR LED will go ON.

6 Verify the ERR LED is OFF.
The Panel PC is ON and the Operating System starts.

> **Additional Information**
>
> Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* for details on how to continue the setup.

6

Operating Procedures

This section provides the operating procedures for the IPC Machine Controller Panel PC.

6

6-1   Touchscreen Operation

⚠ WARNING

Water or other liquid present on the touchscreen surface may create false touch behavior and unexpected operation. Wipe away liquid on the touchscreen before operation.	❗

⚠ CAUTION

When using a system with multiple touchscreens, multiple users can perform simultaneous operations. Make sure that this can not result in unintended actions.	❗

Precautions for Correct Use

The touchscreen supports 5 simultaneous touches. When the number of touches is exceeded, not all touch points will be detected.

The touchscreen supports following operations.
- The touchscreen supports projected capacitive technology for the touch operation. Only light pressure is required to activate the touch function.
- Up to 5 simultaneous touches can be detected.
- Multiple simultaneous touch points can be supported in software for advanced touch functions such as zoom, rotation and multiple user interaction.
- The touchscreen can ignore hand-palm touches while still accepting additional correct touches.
- The touchscreen can be operated when wearing gloves. Check correct usage of the gloves before using them.
- When water is detected on the touchscreen, the touch functions will be blocked to prevent erroneous touches.

Additional Information

Refer to *7-1-2 Clean the Touchscreen Surface* on page 7-3 for cleaning details.

6-2   Power ON

This section provides Power ON details.

> 🗹 **Precautions for Correct Use**
>
> Do not turn ON the power supply to the product when a part of a human body or a conductive object is touching the surface of the touchscreen. Doing so will cause the touchscreen functionality to be disabled. Remove the conductive object and cycle the power supply to restore the touchscreen functionality.

6-2-1   Power ON Using the Power Button

Start condition: Power is supplied to the Panel PC and the Panel PC is OFF.

1 Press the power button and release within 1 second.
Refer to *3-3 Power Button* on page 3-14 for the power button location.
The Panel PC starts and the PWR LED will turn ON.

2 Wait until the PWR LED is ON and verify that the ERR LED is OFF.
The Panel PC is ON and the Operating System, if installed, starts.

6-2-2   Power ON Using the Power ON/OFF Input

Start condition: Power is supplied to the Panel PC and the Panel PC is OFF.

1 Supply an input signal to pins 3 and 4 of the I/O connector.
The input signal must remain ON for a minimum of 60 ms and a maximum of 750 ms to be correctly detected by the Panel PC.
The Panel PC starts and the PWR LED will turn ON.

2 Wait until the PWR LED is ON and verify that the ERR LED is OFF.
The Panel PC is ON and the Operating System, if installed, starts.

> 📝 **Additional Information**
>
> • Refer to *4-2-2 I/O Connector Specifications* on page 4-15 for connector specifications.
> • Refer to *5-4-4 Wire the I/O Connector* on page 5-40 for wiring details.

6-2-3　Power ON Using Safe Mode

Start condition: The IPC Machine Controller Panel PC is OFF.

> **Additional Information**
>
> Use this procedure to start the Panel PC without starting the Machine Controller Software.

1 Remove the power supply connector.

2 Press and hold the power button on the Panel PC.

3 Connect the power supply connector while pressing the power button.
After 10 seconds the Panel PC starts in Safe Mode and the PWR LED will turn ON.

4 Wait until the PWR LED is ON and verify that the ERR LED is OFF.

The Panel PC is ON with the Windows Operating System in normal mode and the Machine Controller Software not active.

6-2-4　Auto Power ON

The Panel PC can be configured to start up when power is supplied to the power connector.
The **Power Loss Control** BIOS setting controls this behavior.
Set the Power Loss Control setting to **Turn ON** to activate the Auto Power ON function.

> **Additional Information**
>
> Refer to *A-1 BIOS* on page A-2 for BIOS details.

6-3 Power OFF

This section provides Power OFF details.

Before following power OFF procedures below, check that the IPC Machine Controller Panel PC is ON by examining the LED indicators on the Panel PC.

6-3-1 Power OFF Using the Power Button

1 Ensure all programs are closed.

If required close all active programs.

2 Press and release the power button on the Panel PC within 1 second.

Refer to *3-3 Power Button* on page 3-14 for the power button location information.

The Panel PC will power OFF.

3 Wait until the PWR LED is OFF.

The Panel PC is powered OFF.

> **Additional Information**
>
> The Panel PC will be restarted by the UPS when powered off using the power button, when the UPS is connected using the I/O Connector. Use the power button of the UPS or remove the input power from the UPS for a normal shutdown of the system.

6-3-2 Power OFF Using the Power ON/OFF Input

1 Ensure all programs are closed.

If required, close all active programs.

2 Supply a 24 VDC signal to the Power ON/OFF Input (pins 3 and 4) of the I/O connector.

The input signal must remain ON for a minimum of 60 ms and a maximum of 750 ms to be correctly detected by the Panel PC.

The Panel PC will power OFF.

3 Wait until the PWR LED is OFF.

The Panel PC is powered OFF.

> **Additional Information**
>
> • Refer to *4-2-2 I/O Connector Specifications* on page 4-15 for connector specifications.
> • Refer to *5-4-4 Wire the I/O Connector* on page 5-40 for wiring details.

6-3-3   Forced Power OFF Using the Power Button

Precautions for Safe Use

Press the power button for several seconds to force the product shutdown. Always back up files in the planned way to prevent data loss or system file corruption.

1   Ensure all programs are closed.

If required, close all active programs to prevent losing unsaved data.

2   Press and hold the power button on the Panel PC for 5 to 10 seconds.

Refer to *3-3 Power Button* on page 3-14 for power button location information.

The Panel PC will power OFF.

Any optional operating system settings related to power OFF will be disregarded.

3   Wait until the PWR LED is OFF.

The Panel PC is powered OFF.

Confirm normal operation and check all product settings because unsaved data was lost.

7

Maintenance

This section provides an overview of all maintenance tasks for the IPC Machine Controller Panel PC.

7-1　Preventive Maintenance

Preventive Maintenance covers all actions that prevent downtime.

7-1-1　Preventive Maintenance Schedule

Prevent unscheduled downtime with the following preventive maintenance schedule.

Daily	Reference
Check Panel PC status	Refer to *3-2 LED Indicators* on page 3-10 for LED details.
Monitor storage devices that do not comply to the Omron specifications	Refer to *Storage Device Considerations* on page 3-28 for details.
Clean the display	Refer to *7-1-2 Clean the Touchscreen Surface* on page 7-3 for display cleaning details.

Weekly	Reference
Clean the Panel PC	Refer to *7-1-3 Clean the Panel PC* on page 7-4 for cleaning details.
Ensure you have the latest software updates	Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* for update details.

When changing applications or configurations	Reference
Create a backup of the Panel PC	Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* for backup details.

Periodically but at least every 6 months	Reference
Check the ambient environment: • Temperature and humidity within specifications • Noise sources not close to the Panel PC	Refer to *4-4 Environmental Specifications* on page 4-30 for environmental specifications.
Check installation: Panel PC mounted secure	Refer to *5-3 Mount* on page 5-14 for mounting details.
Check wiring and connections: • Cable connectors fully inserted and locked • No damaged wiring or connectors	• Refer to *5-4 Wire* on page 5-30 for wiring details. • Refer to *5-5 Connect* on page 5-43 for connection details.
Check the gasket behind the monitor rim	Refer to *7-1-4 Check the Gasket Seal* on page 7-4 for gasket details.
Check the display: • Brightness is sufficient • No touch offset	Refer to *4-3 Display Specifications* on page 4-28 for display specifications.

Periodically but at least every 6 months	Reference
For a cooling layer with removable cover: • Check the battery replacement date on the label at the inside of the Cover. • Replace the battery before the replacement date.	• Refer to *7-2-1 Remove the Cover* on page 7-6 to check the label. • Refer to *7-2-3 Replace the Battery* on page 7-9 to replace the battery.
Check the backup and repair media.	Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* for Rescue Disk details.

When the Panel PC is not powered for 6 months	Reference
For a cooling layer with removable cover and active cooling: • Confirm both fans rotate immediately after Power ON. • Replace the Fan Unit when the fans do not rotate smoothly.	Refer to *7-2-2 Replace the Fan Unit* on page 7-7 to replace the Fan Unit.

7-1-2 Clean the Touchscreen Surface

Clean the touchscreen surface of the Panel PC when necessary to keep it in the best operating condition.

• Ensure the Panel PC is OFF before cleaning.
• Wipe the Panel PC daily with a dry, soft cloth. If the touchscreen is very dirty and you try to clean it with a dry cloth, you may scratch the surface. Use a damp cloth first to remove the dirt.
• When a spot cannot be removed with a dry cloth, dampen the cloth with a neutral cleanser, wring out the cloth and wipe the touchscreen surface.
• Remove all residue from gum, vinyl or tape when cleaning.

Precautions for Correct Use

Turn OFF the product or disable the touchscreen for cleaning.

Additional Information

Allowed cleaning materials for the touchscreen surface:
• Isopropyl alcohol
• Detergents between pH 5 and pH 8
  Rinse with demineralized water after cleaning
• Demineralized water

7-1-3 Clean the Panel PC

Clean the Panel PC periodically in order to keep it in the best operating condition.
Wipe the Panel PC with a dry, soft cloth.
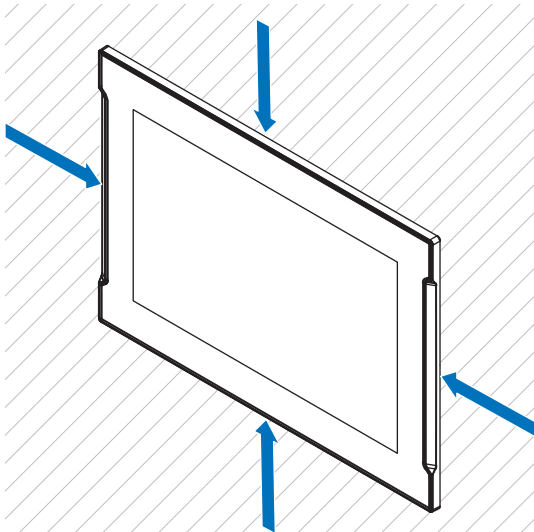
Precautions for Safe Use

Do not use corrosive substances to clean the product.
Doing so may result in the failure or malfunction.

7-1-4 Check the Gasket Seal

The gasket prevents liquid from penetrating the mounting surface.
A damaged gasket can lead to Panel PC or other hardware failures.

Check the gasket on all 4 sides of the Panel PC.
The gasket should be visible as a thin black line that has no dents or damage.

Precautions for Safe Use

As the rubber gasket will deteriorate, shrink, or harden depending on the operating environment, periodical inspection is necessary.

7-1-5 Minimize LCD Image Retention

All LCD displays will display image retention effects when used in less optimal conditions.

To minimize the effects of image retention:
• Prevent static text and static images with high contrast
• Switch OFF the display when not in use
• Use a screen saver

7-2 Corrective Maintenance

Corrective maintenance covers all actions to correct problems that cause downtime.

> ## ⚠ WARNING
>
> Do not attempt to disassemble, repair, or modify the product in any way. Doing so may result in malfunction or fire.

Additional Information

Refer to the *NY-series Troubleshooting Manual (Cat. No. W564)* for troubleshooting details.

7-2-1   Remove the Cover

Applicable for products with a cooling layer that has a removable Cover.

The Cover of the cooling layer provides access to the following items.
• Battery
• Fan Unit (applies to products with active cooling)
The inside of the Cover contains a label with the battery replacement date.
No tools are required to open the Cover.
Use the following procedure to remove the Cover of the Panel PC.

1   Power OFF your Panel PC if it has active cooling.

Precautions for Safe Use

Do not remove the fan cover while the power is ON. Contact with the rotating fan may result in injury.

2   Remove the Cover.
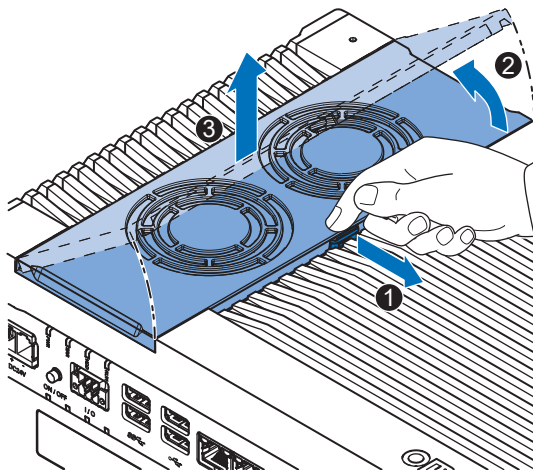
1) Pull the lever ❶ to unlock the Cover.

2) Lift the side ❷ to tilt the Cover.

3) Remove ❸ the complete Cover.

The Cover is removed.
To mount the Cover, position the side of the Cover in the Panel PC and push the cover in place.
The lever will lock in place.

7-2-2   Replace the Fan Unit

The fans are mounted in the Fan Unit.

Use the following procedure to replace the Fan Unit.

> **Precautions for Safe Use**
>
> If the storage period of the replacement fan exceeds 6 months, check the performance of the Fan Unit directly after replacement.

> **Additional Information**
>
> Refer to *3-9-2 Fan Unit* on page 3-24 for the model.
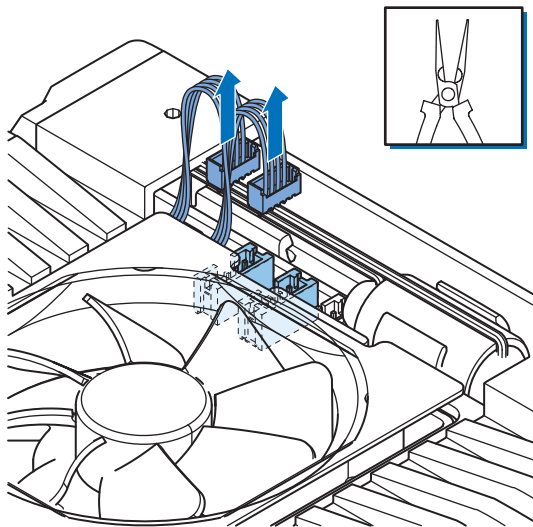
1   Power OFF the Panel PC.

2   Remove the Cover of the Panel PC.

> **Additional Information**
>
> Refer to *7-2-1 Remove the Cover* on page 7-6 for the cover removal procedure.

3   Disconnect the Fan Connectors from the board.

4 Replace the complete Fan Unit.
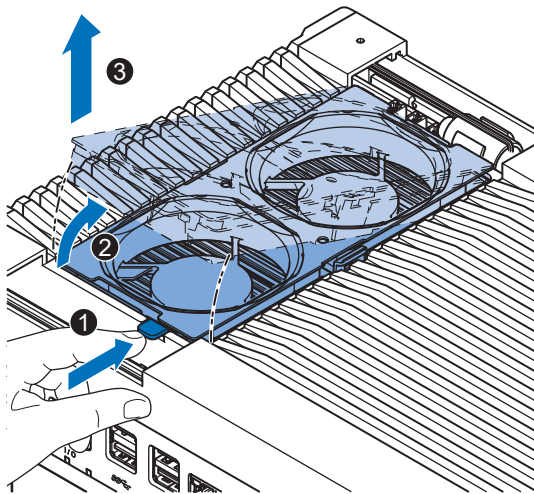
1) Push the lever ❶ to unlock the Fan Unit.

2) Lift the lever to tilt ❷ the Fan Unit.

3) Remove ❸ the complete Fan Unit.

5 Insert the new Fan Unit in the Panel PC.

Ensure the end of the Fan Unit Ⓐ is positioned under the fan guide Ⓑ.

6 Connect the Fan Connectors to the board.

7 Mount the Cover.

8 Power ON the system.
Confirm both fans rotate immediately after Power ON.

The fans are replaced and the alarm is automatically reset.

7-2-3 Replace the Battery

Applicable for products with a cooling layer that has a removable cover.

Precautions for Safe Use

- The Battery may leak, rupture, heat, or ignite. Never short-circuit, charge, disassemble, heat, or incinerate the Battery or subject it to strong shock.
- Dispose of any Battery that has been dropped on the floor or otherwise subjected to excessive shock. Batteries that have been subjected to shock may leak if they are used.
- UL standards require that only an experienced engineer replace the Battery. Make sure that an experienced engineer is in charge of Battery replacement.

Precautions for Correct Use

- Always touch a grounded piece of metal to discharge static electricity from your body before starting an installation or maintenance procedure.
- Make sure to use a battery of the correct type and install the battery properly.
- Apply power for at least five minutes before changing the battery. Mount a new battery within five minutes after turning OFF the power supply. If power is not supplied for at least five minutes, the clock data may be lost. Check the clock data after changing the battery.
- Turn ON the power after replacing the battery for a product that has been unused for an extended period of time. Leaving the product unused without turning ON the power even once after the battery is replaced may result in a shorter battery life.

Additional Information

- Refer to *3-9-1 Battery* on page 3-24 for the battery model.

Use the following procedure to replace the battery:

1 Power OFF the Panel PC.

2 Remove the cover.

### Additional Information

Refer to *7-2-1 Remove the Cover* on page 7-6 for the cover removal procedure.

3 Lift the battery ❶ from the compartment.

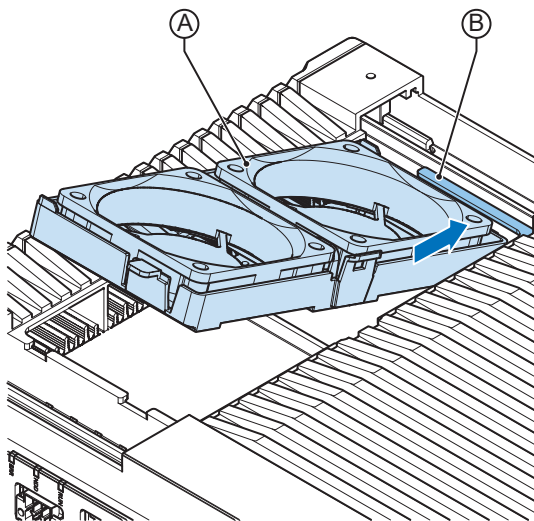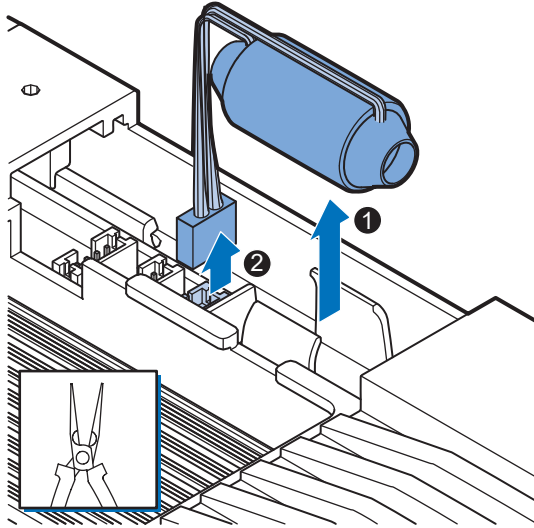**4** Disconnect the battery from the battery connector ❷.

5 Connect the new battery to the battery connector.

6 Place the new battery in the Panel PC.
Ensure the wires are at the side of the battery and not on top of the battery. If the wires are on top of the battery this might make closing and opening the cover more difficult.

7 Write the next date of replacement on the label at the inside of the cover.

Additional Information

Refer to *3-9-1 Battery* on page 3-24 for lifetime of the battery.

8 Mount the cover.

9 Remove the power connector for at least 3 seconds to reset the battery warning.

10 Power ON the Panel PC.

11 Check the Date and Time in the operating system.
Correct the Date and Time if this is required.

The battery is replaced and the alarm is reset.

7-2-4　Replace a Drive

Use the following procedure to replace a drive.

Prepare the new drive.

> **Additional Information**
>
> - Refer to *1-4 Product Configuration* on page 1-7 for the installed drive model.
> - Refer to *3-10-5 HDD and SSD Storage Devices* on page 3-28 for the available drive models.
> - Refer to *4-1-7 Storage Device Specifications* on page 4-8 for drive specifications.

To replace a drive:

1 Power OFF the Panel PC.

2 Remove the drive cover.
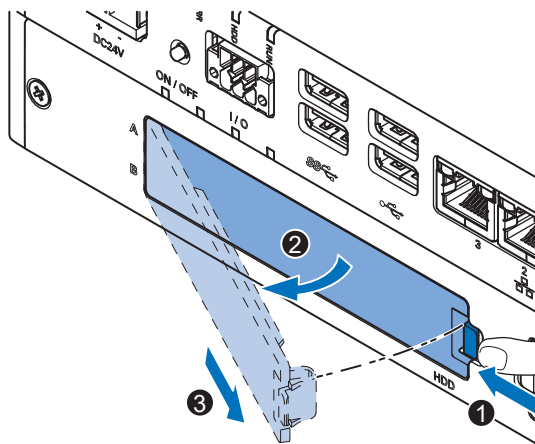
  1) Push the lock lever ❶ .

  2) Tilt the cover ❷ .

  3) Remove the drive cover ❸ .

> **Additional Information**
>
> - Refer to *3-7 Drive Bays* on page 3-22 for the location of the drive cover.
> - The Panel PC has 2 drive bays, marked with "A" and "B" at the left side of the drive cover. Take note of the bay position for the drive that is being removed and do not place a drive in the incorrect bay.

3 Pull the metal shielding cover out of the Panel PC.
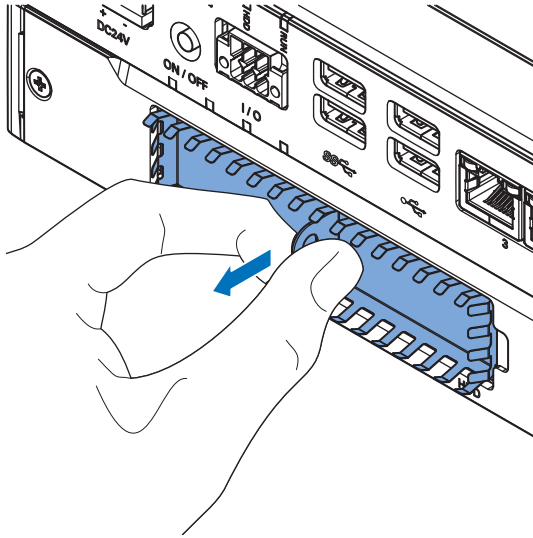
4 Insert the drive cover in the drive bracket bay ❶ and move it down ❷ so that it locks in the drive bracket.
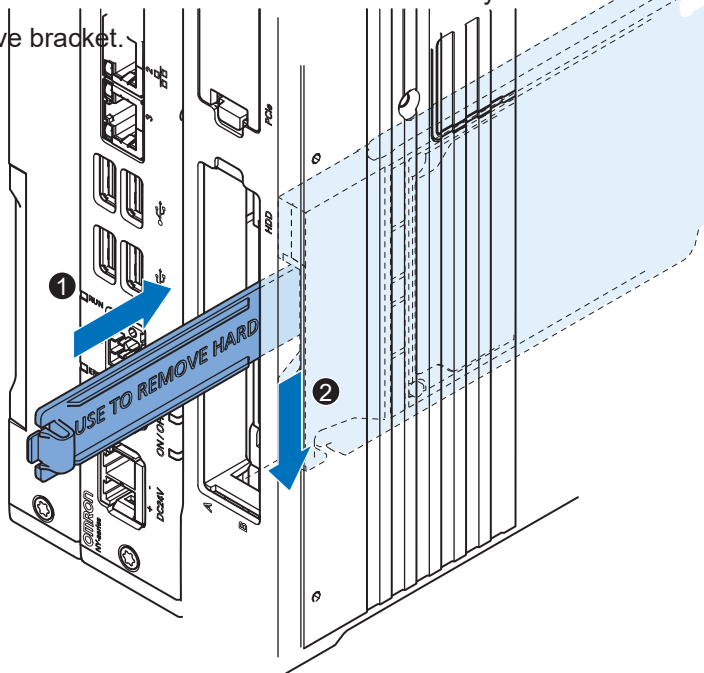
5 Remove the drive bracket from the Panel PC using the drive cover.
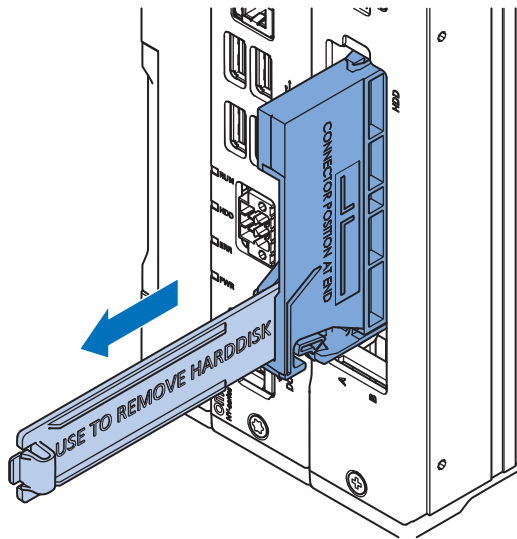
6 Remove the 4 mounting screws ❶ and then remove the drive ❷ from the drive bracket.
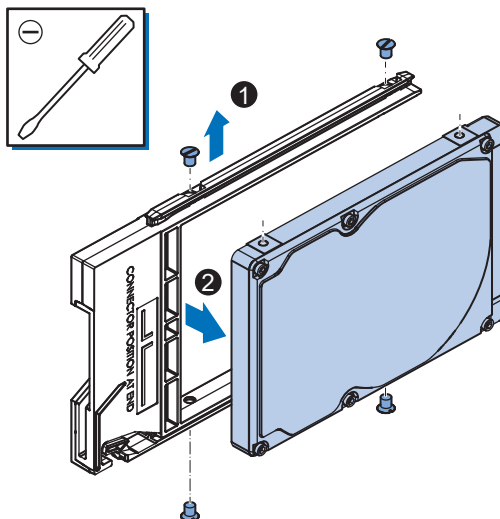
7 Align the connectors of the replacement drive as shown Ⓐ on the bracket. Then insert the replacement drive ❶ in the bracket and insert the 4 mounting screws ❷. Tighten these screws with a torque of 0.35 N·m.
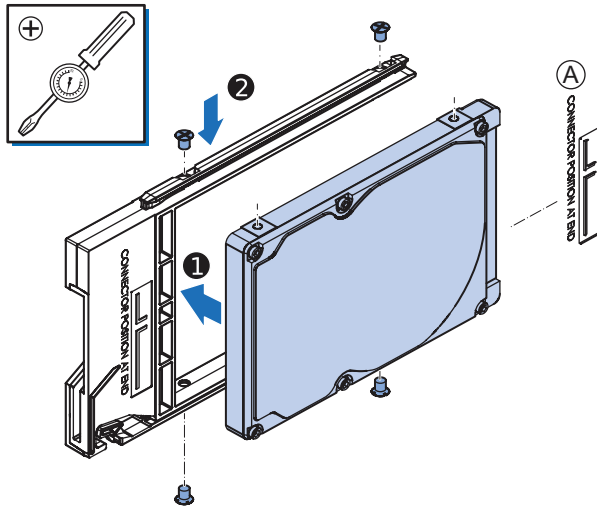
8 Insert the bracket with the replacement drive into the correct bay of the Panel PC. Ensure the bracket is completely in the Panel PC with an extra push.
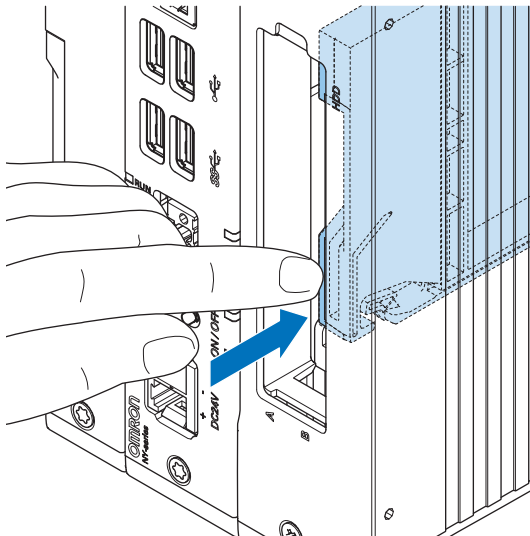
The drive bracket will lock into place when it is fully inserted.

9 Insert the metal shielding cover.
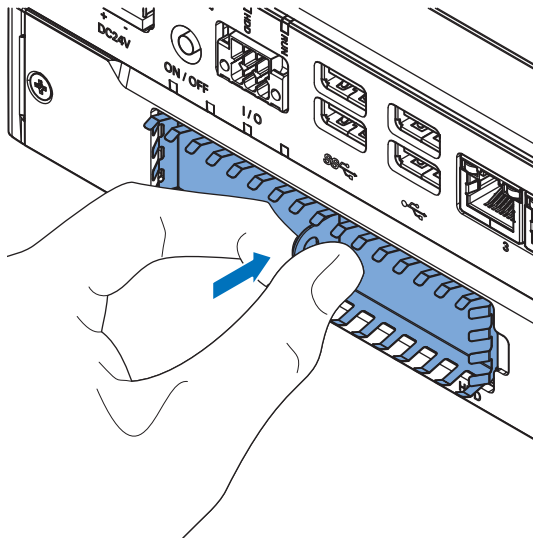
10 Mount the drive cover.

The lock lever will click when closed correctly.
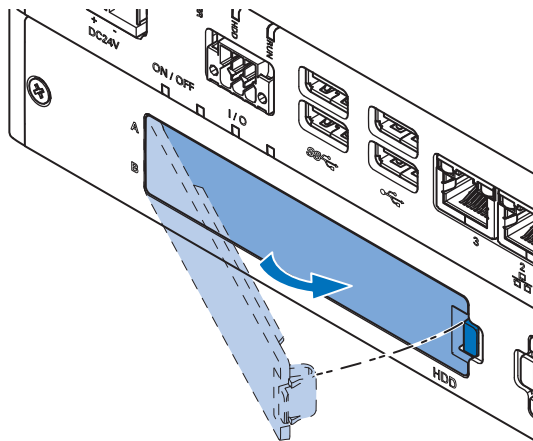
11 Restore the drive data.

- For an Industrial PC with a Windows operating system refer to the restore procedure in the section *Corrective Maintenance* to restore data.
- Refer to the *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* to restore data from a backup.

The drive is replaced.

7-2-5   Replace the PCIe Card

Use the following procedure to replace the PCIe Card.

Prepare:
• The PCIe Card

> 📝 **Additional Information**
>
> Refer to *4-1-8 PCIe Card Specifications* on page 4-11 for PCIe specifications.

• The PCIe Card mounting materials: Card Clip and Card Support
  These are supplied with the IPC Machine Controller Panel PC.
To replace the PCIe Card:

1   Power OFF the system.

2   Unmount the Panel PC.

3   Remove the two crosshead screws ❶ indicated with "open" and then pull up ❷ the PCIe Drawer.
The indent at the side of the drawer will help you to pull the drawer from the Panel PC.
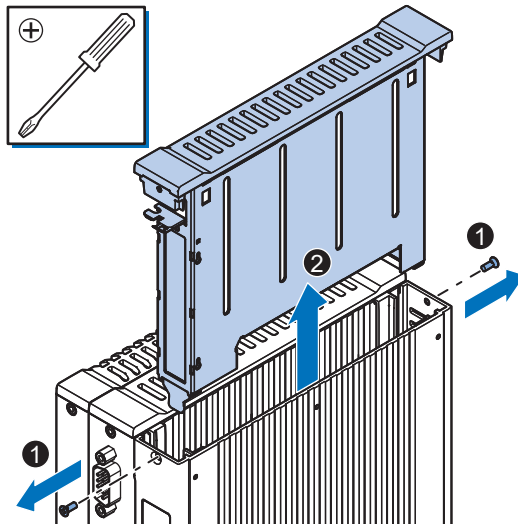
4 Push the notch ❶ at the bottom of the Card Support up and rotate ❷ the Card Support.

Slide the Card Support ❸ away from the card to create space and to remove it.
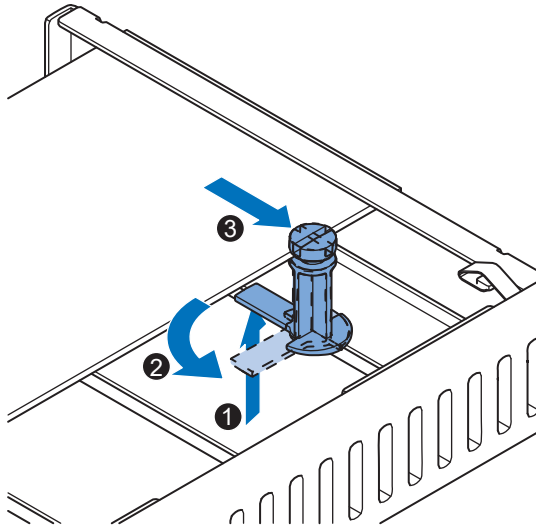
5 Remove the Card Clip from the PCIe Drawer.
There are two types of Card Clips available. Use the steps applicable to your type.

⚠ **CAUTION**

When installing or removing a PCIe card, avoid touching the sharp edges
of the sheet metal frame tab. Injury may result.
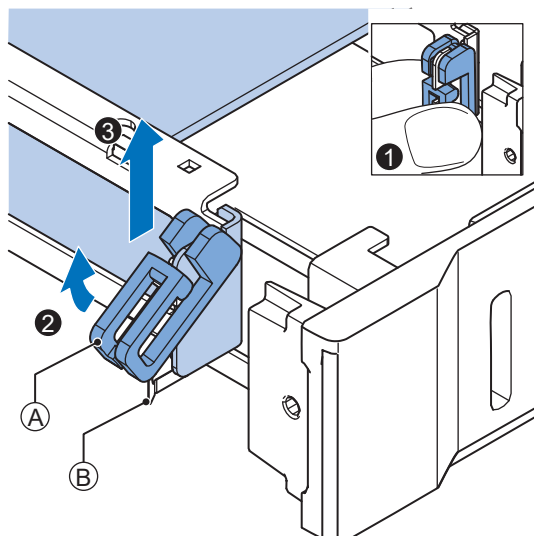
Ⓐ Card Clip

Ⓑ Sheet metal frame tab

Grip the Card Clip Ⓐ on the sides ❶. Pull
the middle of the Card Clip to unlock it ❷ and
remove it ❸ from the PCIe Drawer.

Ⓐ Card Clip

Ⓑ Sheet metal frame tab

Grip the Card Clip Ⓐ on the sides. Lift the
Card Clip ❶ and remove it ❷ from the PCIe
Drawer.

6 Remove the PCIe Card from the PCIe Drawer.
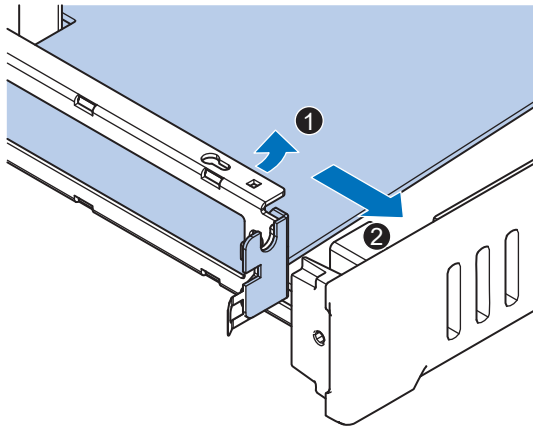
The PCIe Card is now removed.

7 Place the replacement PCIe Card in the PCIe Drawer.
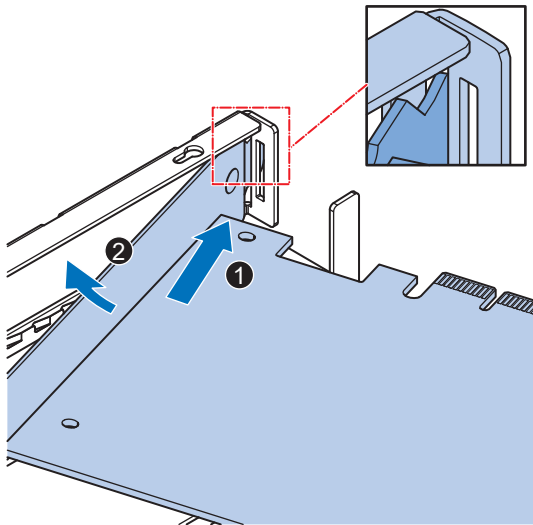
Ensure the PCIe Card is inserted into the correct opening.

8 Place the Card Clip Ⓐ in the PCIe Card and PCIe Drawer.

There are two types of Card Clips available. Use the steps applicable to your type.

> ## ⚠ CAUTION
>
> When installing or removing a PCIe card, avoid touching the sharp edges of the sheet metal frame tab. Injury may result.

Ⓐ Card Clip

Ⓑ Sheet metal frame tab

Place the Card Clip Ⓐ in the PCIe Card and PCIe Drawer ❶ , grip the Card Clip on the sides ❷ and then rotate the Clip ❸ to lock it in place.

Ⓐ Card Clip

Ⓑ Sheet metal frame tab

Place the Card Clip Ⓐ in the PCIe Card and PCIe Drawer and push it down ❶ to lock it in place ❷ .

7-2 Corrective Maintenance

7

7-2-5 Replace the PCIe Card

9 Slide the Card Support ❶ so that it supports the side of the PCIe Card.

Rotate the Card Support ❷ to lock it in place.
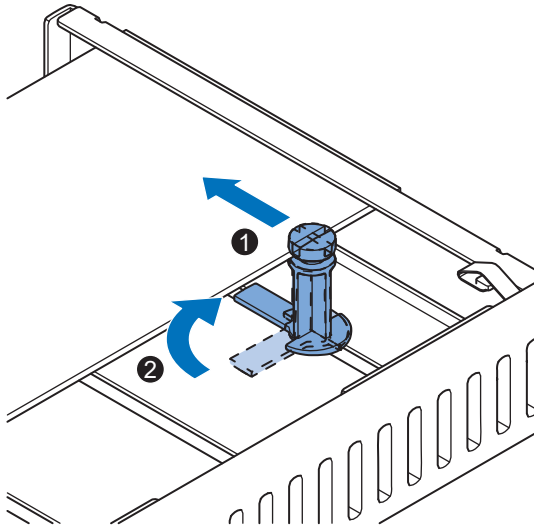
Ensure the Card Support contacts the PCIe Card with the small groove so that there is support below and above the PCIe Card.

10 Insert the PCIe Drawer in the Panel PC and then insert the two crosshead screws that hold the PCIe Drawer in place.
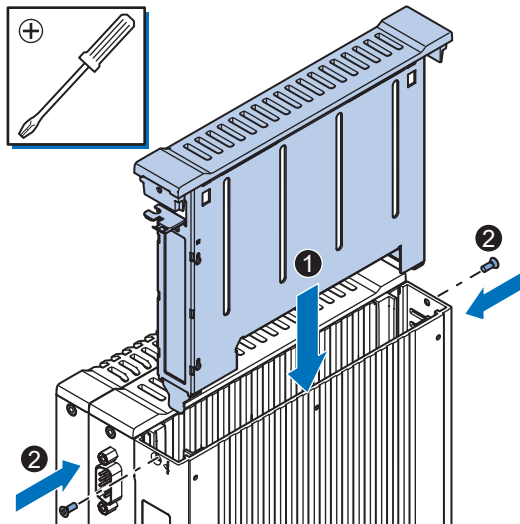
11 Remount the Panel PC.

12 Confirm normal operation.

The PCIe Card is replaced.

7-2-6   Replace the CFast Card

Use the following procedure to replace the CFast Card.

Prepare the new CFast Card.

> **Additional Information**
>
> - Refer to *1-4 Product Configuration* on page 1-7 for the installed CFast Card model.
> - Refer to *3-10-4 CFast Cards* on page 3-27 for the available CFast Card models.
> - Refer to *CFast Card Specifications* on page 4-10 for specification details.

To replace the CFast Card:

1   Power OFF the Panel PC.

2   Remove the CFast Card slot cover.
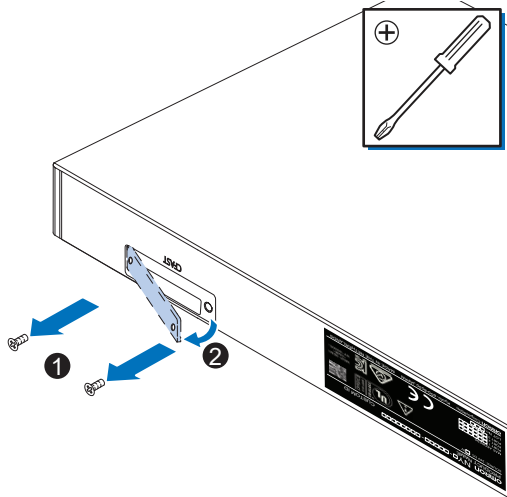
1) Remove the two screws ❶ .

2) Remove the cover ❷ .

3   Pull the plastic Pull Tab Ⓐ to remove the CFast Card Ⓑ from the Panel PC.
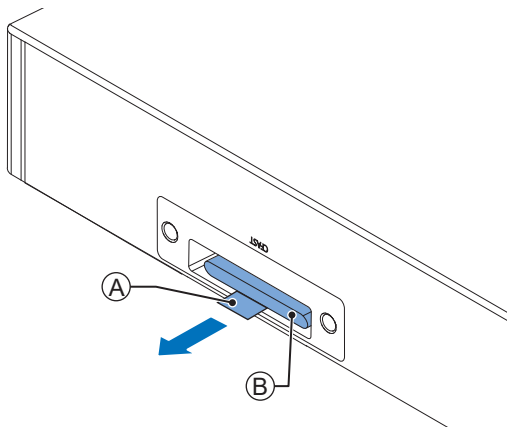
4   Insert the replacement CFast Card Ⓐ into the slot of the Panel PC.

Ensure the CFast Card Ⓐ is completely in the Panel PC with an extra push using the CFast Card slot cover.
If the CFast Card can not go in completely then the CFast Card orientation is incorrect. Remove the CFast Card, turn it upside down and reinsert it. Ensure the CFast Card Ⓐ is completely in the Panel PC with an extra push using the CFast Card slot cover.
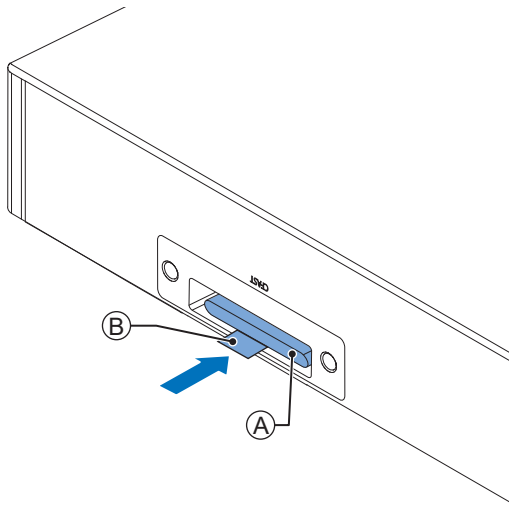
Fold the plastic Pull Tab Ⓑ up so it stays inside the slot area.

5   Mount the CFast Card slot cover.

Place the slot cover ❶ and then mount the screws ❷.
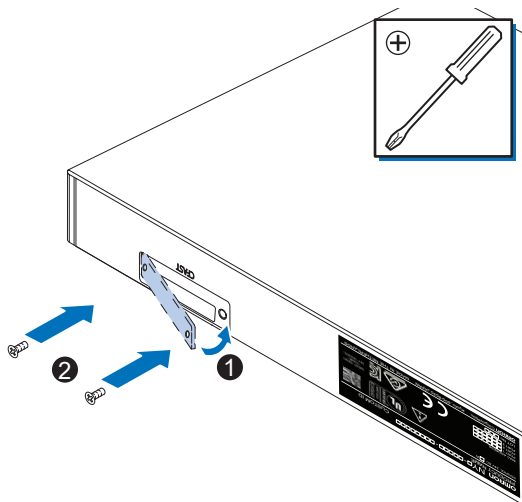
6   Restore the drive data from a backup.
Refer to *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* for details.

The CFast Card is replaced.

7-2-7 Correct Display Functionality when Nothing is Displayed

When it seems the display is not functional, check the ERR LED.

- If the ERR LED is OFF
  - Check if the power supply is present.
  - Check if the brightness setting is not too low.
- If the ERR LED is blinking check if the Panel PC is not in standby mode.
- If the ERR LED is ON
  - Check if the power supply voltage is inside specifications.
  - Check if the ambient temperature is inside specifications.
  - Check if the Fan Unit has no warning messages.
    Refer to the ERR LED for message details.
  - Check if a watchdog error occurred.
    The watchdog is disabled by default and can only be enabled by software using the Industrial PC System API.

7-2-8   Correct Touchscreen Functionality

The touchscreen functionality can have several unwanted situations.

1. With one display:
   - No touch response
     Refer to *Correct Touchscreen Functionality with No Touch Response* on page 7-24 for details.
   - The touch response is at a different position than the actual touch
     Refer to *Calibrate Touchscreen* on page 7-25 for details.

2. With more than one display:
   When other monitors are connected it is possible the touch actions on the touchscreen monitor show a response on another monitor.
   Refer to *Correct Touchscreen Functionality with Multiple Monitors* on page 7-26 for details.

Correct Touchscreen Functionality with No Touch Response

When the touchscreen functionality is not functional, check:
- Water present on the display surface.
  Wipe the display surface with a dry lint free cloth.
- When using gloves, ensure to use gloves that had no problems when the touch functionality was functional.

Calibrate Touchscreen

When the resolution of the touchscreen monitor is changed the touch functionality might not scale accordingly. The result is that touching the touchscreen monitor will display the touch at incorrect locations.

Use the following procedure to calibrate the touchscreen functionality of your IPC Machine Controller Panel PC.

1 Select the Windows **Start** Button.

2 In the search field, input *Tablet*.

3 Select **Tablet PC Settings**.
The Tablet PC Settings window opens.
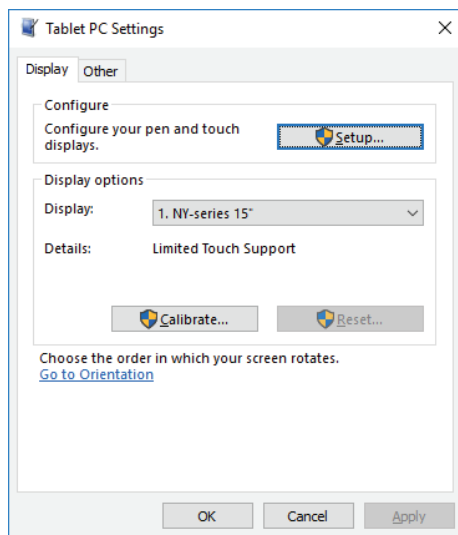
4 Select the **Calibrate** Button.
A window with lines and a touch indicator will appear.

5 Touch the indicator on all locations where it appears.
When finished a window appears with the question *Do you want to save the calibration data?*

6 Select the **Yes** Button.

7 Check the touchscreen functionality.

The touchscreen functionality is calibrated.

If the Touchscreen can not be corrected then restore the factory settings.
Select the **Reset** button in the **Tablet PC Settings** window to restore the factory settings.

Correct Touchscreen Functionality with Multiple Monitors

When more than one monitor is connected then Windows can not determine which monitor has the touch functionality. The result is that touching the touchscreen monitor can result in actions on a different connected monitor.

Use the following procedure to correct the touchscreen functionality on monitors of your IPC Machine Controller Panel PC.

1 Select the Windows **Start** Button.

2 In the search field, input *Tablet*.

3 Select **Tablet PC Settings**.
The Tablet PC Settings window opens.
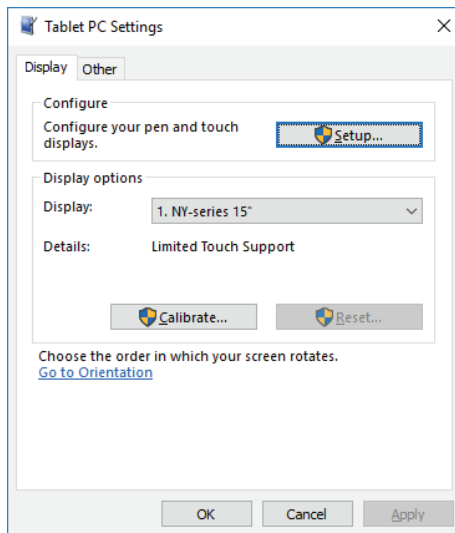
4 Select the **Setup** Button.
An empty screen appears with only the message *Touch this screen to identify it as the touchscreen. If this is not the Table PC screen, press Enter to move to the next screen. To close the tool, press Esc.*

5 Select **Enter** to move the message to the connected monitor with touch functionality.

6 Touch the screen to indicate it is the correct monitor with touch functionality.
The message appears *Press Enter to proceed to the next step to complete your configuration.*

7 Select the **Enter** key.

8 Check the touchscreen functionality.
Calibrate the touch functionality if the touch indicator does not appear at the location that you touch.
Refer to *Calibrate Touchscreen* on page 7-25 for calibration details.

The touchscreen functionality is available on the correct monitor.

A

Appendices

A

A-1 BIOS

This section provides the BIOS information of the IPC Machine Controller Panel PC.

⚠ WARNING

Changing BIOS information is only allowed for the engineer in charge that possesses a thorough understanding of the BIOS settings because it can change the behavior of the product.

A-1-1 BIOS Overview

The BIOS contains settings that influence the behavior of the IPC Machine Controller Panel PC.
BIOS setting are specific for your CPU type.
Refer to *1-4 Product Configuration* on page 1-7 for CPU details.

The touchscreen functionality is not functional when working in BIOS.
Ensure a USB keyboard is connected.

BIOS Setup Program

Press the **DEL**key repeatedly directly after Power ON to access the BIOS Setup Program.

📝 **Additional Information**

For 4th, 6th and 7th generation CPUs also the **F2** key can be used.
For Atom CPUs also the **Esc** key can be used.

Boot Selection Popup Menu

Press the **F11** key repeatedly directly after Power ON to display the Boot Selection Popup menu.
The popup menu allows selection of the boot device and the option to enter the BIOS setup program.

BIOS Structure

The BIOS contains a menu bar, a left frame and a right frame.
The left frame displays all the options that can be configured in the selected menu.
The left frame uses following colors:
• Blue = Configurable options
• Greyed-out = Not configurable
• Inverse white = Selected
The right frame displays the key legend. Above the key legend is an area reserved for text messages.
These text messages explain the options and the possible impacts when you change the selected option in the left frame.

Use the →← keys to navigate between pages.

The menu bar gives access to following pages:
- **Main**
- **Advanced**
- **Chipset**
- **Security**
- **Boot**
- **Save & Exit**

BIOS Navigation and Function Keys

The right part of the BIOS screens is divided in two parts.

Top part.
Provides additional information on selected screens or parameters.
Bottom part.
Provides information on Keys.

- → ← : Select Screen

    Changed between different BIOS pages.

- ↑ ↓ : Select Item

    Changed between different parameters.

- **Enter: Select**

    Selects the parameter that has the focus and displays a submenu or the possibility to change the parameter.

- **+ / - : Change Option**

    Change settings. A numerical value will be increased or decreased. A boolean value will toggle.

- **F1: General Help**

    Displays help information.

- **F2: Previous Values**

    Changes all parameters to the values they had when entering the BIOS.

- **F9: Optimized Defaults**

    Changes all settings to the default values.

- **F10: Save & Exit**

    Saves all changes and exits the BIOS.

- **ESC: Exit**

    Go one level up. For parameters this is the previous level. For the main pages this exits the BIOS.

BIOS Password & Write Protection

A BIOS password protects the BIOS setup program from unauthorized access. This ensures that users cannot change the system configuration without authorization. With an assigned BIOS password, the BIOS prompts the user for a password on a setup entry. If the password entered is wrong, the BIOS setup program will not launch.
The BIOS uses encryption for the password.
The BIOS password is case sensitive with a minimum of 3 characters and a maximum of 20 characters. Once a BIOS password has been assigned, the BIOS activates the grayed out **BIOS Update and Write Protection** option. If this option is set to **enabled**, only authorized users (users with the correct password) can update the BIOS. With the BIOS password protection and the BIOS update and write protection, the system configuration is completely secured. If the BIOS is password protected, you cannot change the configuration of an end application without the correct password.

A-1-2 BIOS for 4th generation CPUs

The BIOS settings for 4th generation CPUs.

Refer to the CPU information in *1-4 Product Configuration* on page 1-7 for generation details.

The BIOS is divided in the pages Main, Advanced, Chipset, Boot, Security and Save & Exit.

BIOS - Main

The main setup screen gives platform information about the BIOS, Board Information, Firmware Revision, MAC Addresses and information about the number of Boots and the Running Time.

Changeable BIOS Main parameters and their factory default values:

- **System Date**

  Use the **Enter** key to the next Date field.

- **System Time**

  Use the **Enter** key to the next Time field.

BIOS - Advanced

This section provides advanced BIOS information.

Changeable BIOS Advanced parameters and their factory default values:

Item			Default / Remark
Machine Control			Enabled
Graphics	Primary Graphics Device		Auto
	Internal Graphics Device		Auto
	IGD Pre-Allocated Graphics Memory		32M
	IGD Total Graphics Memory		256M
	Max. GPU Frequency [2]		Default
	Primary IGD Boot Display Device		Auto
	Active LFP Configuration		• eDP / for Industrial Panel PC • No Local Flat Panel / for Industrial Box PC
	Digital Display Interface 1		HDMI/DVI
	Digital Display Interface 2		HDMI/DVI
Hardware Health Monitoring	Start Temperature		50 C
	Temperature Range		30 C
	Minimum Fan Speed		30% / Fixed
	Maximum Fan Speed		100%
	Fan Always On At Minimum Speed		Disabled
PCI & PCI Express	PIRQ Routing & IRQ Reservation	PIRQA,B,C,D,E,F,G,H	Auto
	PCI Express Settings	Relaxed Ordering	Disabled
		Extended Tag	Disabled
		No Snoop	Enabled
		Maximum Payload	Auto
		Maximum Read Request	Auto
		ASPM	Disabled
		Extended Synch	Disabled
		Link Training Retry	5
		Link Training Timeout (us)	100
		Restore PCIe Registers	Disabled

Item			Default / Remark
PCI & PCI Express	PCI Express Gen 2 Settings	Completion Timeout	Default
		ARI Forwarding	Disabled
		AtomicOp Requester Enable	Disabled
		AtomicOp Egress Blocking	Disabled
		IDO Request Enable	Disabled
		IDO Completion Enable	Disabled
		LTR Mechanism Enable	Disabled
		End-End TLP Prefix Blocking	Disabled
		Target Link Speed	Auto
		Clock Power Management	Disabled
		Compliance SOS	Disabled
		Hardware Autonomous Width	Enabled
		Hardware Autonomous Speed	Enabled
	PCI Express Gen3 Settings (for Port 0 and 1)	Run-time C7 Allowed	Disabled
		Detect Non-compliant Device	Disabled
		Program PCIe ASPM after OpROM	Disabled
		PEG Sampler Calibrate	Disabled
		Swing Control	Full
		Peg Gen3 Equalization	Enabled
		- Gen3 EQ Phase 2	Enabled
		- PEG Gen3 Root Port Preset Value for each Lane. Lane 0...15	8
		- PEG Gen3 Endpoint Preset Value for each Lane. Lane 0...15	7
		- PEG Gen3 Endpoint Hint Value for each Lane. Lane 0...15	2
		- Gen3 Eq Preset Search	Enabled
		– Always Re-search Gen3 Eq Preset	Disabled
		– Preset Search Dwell Time	1000
		– Error Target	1
		PEG RxCEM Loopback Mode	Disabled
		PCIe Gen3 RxCTLEp Setting. PCIe Gen3 RxCTLEp 0...7	8

A-1 BIOS

A

A-1-2 BIOS for 4th generation CPUs

Item			Default / Remark
PCI & PCI Express	GbE Channel 0	PCI Express Port 0	Enabled
		ASPM	Disabled
	GbE Channel 1	PCI Express Port 1	Enabled
		ASPM	Disabled
	PCI Express Port 0, 1 (x4 Gen3)	PEG1 Speed	Auto
		PEG1 ASPM	Disabled
		PEG1 De-emphasis Control	-3.5 dB
	PCI Express Port 2, 3, 4, 5 (x1 Gen2)	PCI Express Port x	Enabled
		ASPM	Disabled
		Hot Plug	Disabled
		PCIe Speed	Auto
		Detect Non-compliant Device	Disabled
ACPI	ACPI Sleep State		S3 (Suspend to RAM) Suspend Disabled [*2]
	Lock Legacy Resources		Disabled
	S3 Video Repost		Disabled
	Native PCI Express Support		Enabled
	- Native ASPM		Disabled
	ACPI Debug		Disabled
	ACPI 5.0 CPPC Support		Disabled
RTC Wake	Make System At Fixed Time		Disabled
Trusted Computing	Trusted Computing information		Display of Trusted Computing parameters
CPU	CPU information		Display of CPU parameters
SATA	SATA information		Display of SATA parameters
Memory Configuration	Memory Configuration information		Display of Memory Configuration parameters
	Memory Remap [*2]		Enabled
Intel (R) Rapid Start Technology	Intel Rapid Start information		Display of Intel Rapid Start parameters

Item			Default / Remark
USB	XHCI Mode		Enabled
	Overcurrent Protection		Disabled
	USB Ports Per-Port Disable Control	USB Ports Per-Port Disable Control	Enabled
		- USB Port 0...6	Enabled
		- USB 3.0 Port 0...1	Enabled
	Legacy USB Support		Enabled
	External USB Controllers Support		Enabled
	XHCI Hand-off		Enabled
	EHCI Hand-off		Disabled
	USB Mass Storage Driver Support		Enabled
	USB Transfer Timeout		20 sec
	Device Reset Timeout		20 sec
	Device Power-up Delay Selection		Auto
	Generic Ultra HS-COMBO		Auto
SMART Settings	Smart Self Test [1]		Disabled
UEFI Network Stack	UEFI Network Stack		Disabled
NVMe Configuration	NVMe Configuration information		Display of NVMe Configuration parameters
Intel® Ethernet Connection I218-LM - Unique MAC Address	NIC Configuration	Link Speed	Auto Negotiated
		Wake On LAN	Enabled
	Blink LEDs		0
	Link Status[2]		Disconnected

*1. Smart Self Test monitors the status of the HDD/SSD.
　　 Enable only when Smart Monitoring software is used.
*2. In Main BIOS version A□27R111 and onward.

BIOS - Chipset

Provides Chipset settings.

Changeable BIOS Chipset parameters and their factory default values:

Item		Default / Remark
Platform Controller Hub (PCH)	Isolate SMBus Segments	During POST
	PCH Thermal Device [1]	Disabled
Processor (Integrated Components	Audio Device (B0:D3:F0)	Enabled

*1. In Main BIOS version A□27R111 and onward.

BIOS - Boot

Provides Boot information and configuration settings.

Changeable BIOS Boot parameters and their factory default values:

Item		Default / Remark
Quiet Boot		Disabled
Setup Prompt Timeout		1
Bootup NumLock State		On
Battery Support		Auto (Battery Manager)
Power Loss Control [*1]		Remain Off
CSM & Option ROM Control	Launch CSM	Enabled
	Boot Option Filter	UEFI and Legacy
	PXE Option ROM Launch Policy	UEFI ROM Only
	Storage Option ROM Launch Policy	Legacy ROM Only
	Video Option ROM Launch Policy	Legacy ROM Only
	Other Option ROM Launch Policy	UEFI ROM Only
	Gate A20 Active	Upon Request
	Option ROM Messages	Force BIOS
Enter Setup If No Boot Device		No
Enable Popup Boot Menu		Yes
Type Based Boot Priority	1st Boot Device	SATA 2 Drive
	2nd Boot Device	Disabled
		SATA 3 Drive [*2]
	3rd Boot Device	Disabled
	4th Boot Device	Disabled
	5th Boot Device	Disabled
	6th Boot Device	Disabled
	7th Boot Device	Disabled
	8th Boot Device	Disabled
UEFI Fast Boot		Disabled

*1. Power Loss Control settings are :
   Remain OFF: The Panel PC will stay OFF when power is supplied to the power connector
   Turn ON: The Panel PC will automatically start up when power is supplied to the power connector.
   Last State: The Panel PC will start up or remain OFF when power is supplied based on the Panel PC state
   at the moment power was removed from the power connector.
*2. In Main BIOS version A□27R111 and onward.

BIOS - Security

Provides security information like BIOS Password and HDD information.

⚠ WARNING
Security setting adjustments should only be performed by the engineer in charge that possesses a thorough understanding of the security settings. Selecting non-recommended security settings can put your system at risk.

Changeable BIOS Security parameters and their factory default values:

Item			Default / Remark
BIOS Password			Empty
BIOS Lock			Enabled
HDD Security Configuration	Diskname		Display disk parameters
Secure Boot Menu	Secure Boot		Disabled
	Secure Boot Mode		Custom
	Key Management	Default Key Provision	Disabled
		Platform Key (PK)	NOT INSTALLED
		Key Exchange Key (KEK)	NOT INSTALLED
		Authorized Signatures	NOT INSTALLED
		Forbidden Signatures	NOT INSTALLED
		Authorized TimeStamps	NOT INSTALLED

BIOS - Save & Exit

Provides the possibility to leave the BIOS with or without saving changes.

Save & Exit Parameters:

- **Save Changes and Exit**

  Changed settings are saved and the Operating System starts with the changed settings.
- **Discard Changes and Exit**

  Changed settings are not saved and the Operating System starts with the unchanged settings.
- **Save Changes and Reset**

  Changed settings are saved and the Panel PC restarts using the changed settings.
- **Discard Changes and Reset**

  Changed settings are not saved and the Panel PC restarts with the unchanged settings.
- **Save Changes**

  Changed settings are saved and the BIOS setup stays open.
- **Discard Changes**

  Changed settings are reverted to their last saved values and the BIOS setup stays open.
- **Restore Defaults**

  Revert all BIOS settings to factory default.

A-1-3 BIOS for 7th generation CPUs

The BIOS settings for 7th generation CPUs.

Refer to the CPU information in *1-4 Product Configuration* on page 1-7 for generation details.

The BIOS is divided in the pages Main, Advanced, Chipset, Security, Boot and Save&Exit.

BIOS - Main

The main setup screen gives platform information about the BIOS, Board Information, Firmware Revision, MAC Addresses and information about the number of Boots and the Running Time. Platform Information gives CPU and platform details.

Changeable BIOS Main parameters and their factory default values:

- **System Date**

  Use the **Enter** key to the next Date field.

- **System Time**

  Use the **Enter** key to the next Time field.

BIOS - Advanced

This section provides Advanced BIOS information for 7th generation CPUs.

Changeable BIOS Advanced parameters and their factory default values:

Item			Default / Remark
CPU	SW Guard Extensions (SGX)		Disabled
	Hardware Prefetcher		Enabled
	Adjacent Cache Line Prefetch		Enabled
	Intel (VMX) Virtualization Technology		Enabled
	Active Processor Cores		All
	BIST		Disabled
	AES		Enabled
	MachineCheck		Disabled
	MonitorMWait		Disabled
Power & Performance	CPU - Power Management Control	Boot performance mode	Max Non-Turbo Performance
		Intel ® SpeedStep ™	Disabled
		Race To Halt (RTH)	Disabled
		Intel ® Speed Shift Technology	Disabled
		Timed MWAIT	Disabled
	GT - Power Management Control	Maximum GT Frequency	350 Mhz
Graphics	Digital display Interface 1		Auto Selection
	Digital display Interface 2		Auto Selection
	VGA Port		Enabled
Hardware Health Monitoring	Fan Control Temperature		CPU Temperature
	Lower Temperature Threshold		50 C
	Upper Temperature Threshold		80 C
	Minimum Fan Speed		Fan Off
	Lower Temperature Fan Speed		30 %
	Upper Temperature Fan Speed		100 %
	Maximum Fan Speed		100 %
RTC Wake Settings	RTC Wake Mode		Disabled
ACPI	Enable ACPI Auto Configuration		Disabled
	Hibernation Support		Disabled
	ACPI Sleep State		Suspend Disabled
	Lock Legacy Resources		Disabled
	S3 Video Repost		Disabled
	Automatic Critical Trip Point		Enabled
AMI Graphic Output Protocol Policy	Output Select		eDP for a Panel PC DVI1 for a Box PC
	BIST Enable *1		Disabled

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A-1-3 BIOS for 7th generation CPUs

Item		Default / Remark
PCI Configuration	PCI Latency Timer	32 PCI Bus Clocks
	PCI-X Latency Timer	64 PCI Bus Clocks
	VGA Palette Snoop	Disabled
	PERR# Generation	Enabled
	SERR# Generation	Disabled
	Above 4G Decoding	Disabled
USB	Overcurrent Protection	Disabled
	Legacy USB Support	Enabled
	xHCI Hand-off	Enabled
	USB Mass Storage Driver Support	Enabled
	USB Transfer Timeout	20 sec
	Device Reset Timeout	20 sec
	Device Power-up Delay Selection	Auto
	Generic Ultra HS-COMBO	Auto

*1.   Only for a Panel PC. Not applicable for a Box PC.

BIOS - Chipset

This section provides Chipset information for 7th generation CPUs.

Changeable BIOS Chipset parameters and their factory default values:

Item				Default / Remark
Processor (Integrated Components)	Memory Configuration	Max TOLUD		Dynamic
		Memory Remap		Enabled
	Graphics Configuration	Primary Display		Auto
		Select PCIE Card		Auto
		Internal Graphics Device		Auto
		GTT Size		8MB
		Aperture Size		256MB
		IGD Pre-Allocated Graphics Memory		32M
		IGD Total Graphics Memory		256M
		GOP Config Driver		Enabled
	VT-d			Enabled
	Above 4GB MMI BIOS assignment			Disabled
Platform Controller Hub (PCH)	Isolate SMBus Segments			During POST
	PCI Express Configuration	PCI Express Port 0, 1, 2 and 3	PCI Express Port	Enabled
			ASPM	Disabled
			Hot Plug	Disabled
			PCIe Speed	Auto
		PCI Express Port 0, 1, 2 and 3 / Extra options	Detect Non-Compliance Device	Disabled
			Prefetchable Memory	10
			Reserved Memory Alignment	1
			Prefetchable Memory Alignment	1
	PCI Express Configuration	Ethernet Port 3 and 2	PCI Express Port	Enabled
			ASPM	Disabled

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A-1-3 BIOS for 7th generation CPUs

Item				Default / Remark
Platform Controller Hub (PCH)	PCI Express Configuration	PCI Express Port 6 and 7	PCI Express Port	Enabled
			ASPM	Disabled
			Hot Plug	Disabled
			PCIe Speed	Auto
		PCI Express Port 6 and 7 / Extra options	Detect Non-Compliance Device	Disabled
			Prefetchable Memory	10
			Reserved Memory Alignment	1
			Prefetchable Memory Alignment	1
	SATA and RST Configuration	SATA Controller(s)		Enabled
		SATA Mode Selection		AHCI
		Software Feature Mask Configuration	HDD Unlock	Enabled
			LED Locate	Enabled
		SATA Controller Speed		Default
		SATA Port (0)		Enabled
		SATA Port (1)		Enabled
		SATA Port (2)		Enabled
		SATA Device Type		Hard Disk Drive
		SATA Port (3)		Enabled
		SATA Device Type		Hard Disk Drive
	USB Configuration	USB Port Disable Override		Disabled
	PCH LAN Controller			Enabled
	LAN Wake From DeepSx			Enabled
	Wake on LAN Enable			Enabled
	Serial IRQ Mode			Continuous
	Enhance Port 80h LPC Decoding			Disabled
	PCIe Spread Spectrum Clocking			Auto

BIOS - Security

Provides security information like BIOS Password and HDD information.

⚠ WARNING

Security setting adjustments should only be performed by the engineer in charge that possesses a thorough understanding of the security settings. Selecting non-recommended security settings can put your system at risk.

Changeable BIOS Security parameters and their factory default values:

Item		Default / Remark
BIOS Password		Empty
BIOS Lock		Enabled
HDD Security Configuration	Diskname	Display disk parameters *1
Secure Boot Menu	Secure Boot	Enabled

*1. Only when a storage device is installed. The default password for a storage device is empty.
*2. For:
  • Intel® Core™ i7-7820EQ CPU Secure Boot Customization = Standard
  • other CPU types with a BIOS version up to B□□□□008 CPU Secure Boot Customization = Custom
  • other CPU types with a BIOS version B□□□□115 and higher CPU Secure Boot Customization = Standard
*3. Only applicable for:
  • Intel® Celeron® 3965U with a BIOS version up to BU□□□008
  • Intel® Core™ i5-7300U with a BIOS version up to BV□□□008

BIOS - Boot

Provides Boot information and configuration settings.

Changeable BIOS Boot parameters and their factory default values:

Item	Default / Remark
Quiet Boot	Disabled
Setup Prompt Timeout	1
Bootup NumLock State	On
Power Loss Control *1	Remain Off
Enter Setup If No Boot Device	No
Enable Popup Boot Menu	Yes
Boot Priority Selection	UEFI Standard
UEFI Fast Boot	Disabled
UEFI Screenshot Capability	Disabled
New Boot Option Policy	Place Last

*1. Power Loss Control settings are :
Remain OFF: The IPC Machine Controller Panel PC will stay OFF when power is supplied to the power connector
Turn ON: The IPC Machine Controller Panel PC will automatically start up when power is supplied to the power connector.

Last State: The IPC Machine Controller Panel PC will start up or remain OFF when power is supplied based on the IPC Machine Controller Panel PC state at the moment power was removed from the power connector.

BIOS - Save & Exit

Provides the possibility to leave the BIOS with or without saving changes and to create or restore a set of User Defaults.

Save & Exit Parameters:

- **Save Changes and Exit**

  Changed settings are saved and the Operating System starts with the changed settings.

- **Discard Changes and Exit**

  Changed settings are not saved and the Operating System starts with the unchanged settings.

- **Save Changes and Reset**

  Changed settings are saved and the Panel PC restarts using the changed settings.

- **Discard Changes and Reset**

  Changed settings are not saved and the Panel PC restarts with the unchanged settings.

- **Save Changes**

  Changed settings are saved and the BIOS setup stays open.

- **Discard Changes**

  Changed settings are reverted to their last saved values and the BIOS setup stays open.

- **Restore Defaults**

  Revert all BIOS settings to factory default.

- **Save as User Defaults**

  Saves the BIOS values as a User Defaults set.

- **Restore User Defaults**

  Restores the User Defaults set to the BIOS.

A-2 Allocate a Drive in Windows

An added drive must be allocated before it becomes visible in Windows.
To allocate a drive in Windows:

1 Ensure the Panel PC is ON.

2 Select the Windows **Start** Button.

3 In the search field, input *partition*.

4 Select **Create and format hard disk partitions**.
The Disk Management window opens. The new disk is displayed with a storage space **Unallocated**.

5 Right-click on the unallocated space and select **New Simple Volume**.
The New Simple Volume Wizard opens.

6 Follow the steps in the New Simple Volume Wizard.
The drive is installed and ready for use in Windows under the configured drive letter.

> **Additional Information**
>
> Do not format, resize or change settings for partition C:. Windows is installed on drive partition C: and any change to this partition can cause Windows to stop working.

A-3   DVI Connector Pin Details

This section provides the pin details for the DVI-I connector and for the optional DVI-D connector.

A-3-1   DVI-I Connector Pin Details

Pin details of the DVI-I connector.
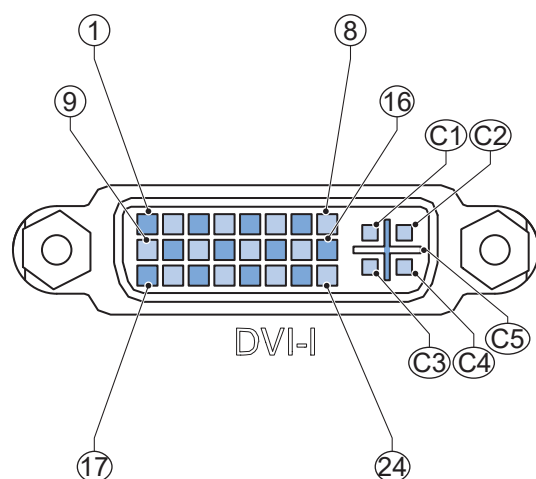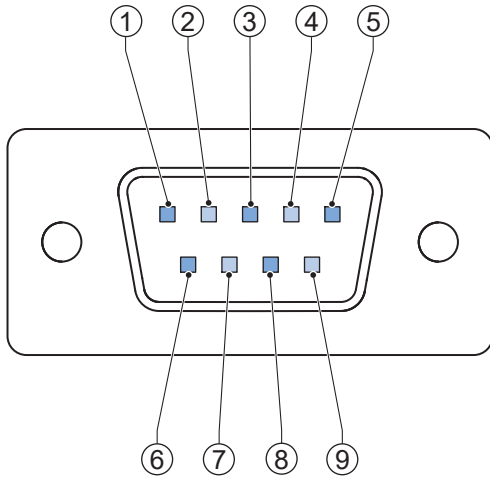

The pin layout represents the DVI-I connector on the IPC Machine Controller Panel PC.
Pin numbers increase from left to right for every row.

Pin	Signal Name	Function
1	TMDS data 2−	Digital red− (link 1)
2	TMDS data 2+	Digital red+ (link 1)
3	0 VDC	TMDS data 2/4 shield
4	Not connected	---
5	Not connected	---
6	DDC clock	DDC clock
7	DDC data	DDC data
8	Analog vertical sync	Analog vertical sync [1]
9	TMDS data 1−	Digital green− (link 1)
10	TMDS data 1+	Digital green+ (link 1)
11	0 VDC	TMDS data 1/3 shield
12	Not connected	---
13	Not connected	---
14	+5 V	Power for monitor DDC interface
15	0 V	Return for pin 14 and analog sync
16	HPD	Hot Plug Detect
17	TMDS data 0−	Digital blue− (link 1) and digital sync
18	TMDS data 0+	Digital blue+ (link 1) and digital sync
19	0 VDC	TMDS data 0/5 shield
20	Not connected	---
21	Not connected	---
22	0 VDC	TMDS clock shield

Pin	Signal Name	Function
23	TMDS clock+	Digital clock+
24	TMDS clock−	Digital clock−
C1	Analog red	Analog red [1]
C2	Analog green	Analog green [1]
C3	Analog blue	Analog blue [1]
C4	Analog horizontal sync	Analog horizontal sync [1]
C5	0 VDC	0 VDC [1]

*1.   Only for models NY□17, NY□1E, NY□27 and NY5.

Refer to *1-4 Product Configuration* on page 1-7 for details.

A-3-2   DVI-D Connector Pin Details

Pin details of the DVI-D connector.

DVI-D
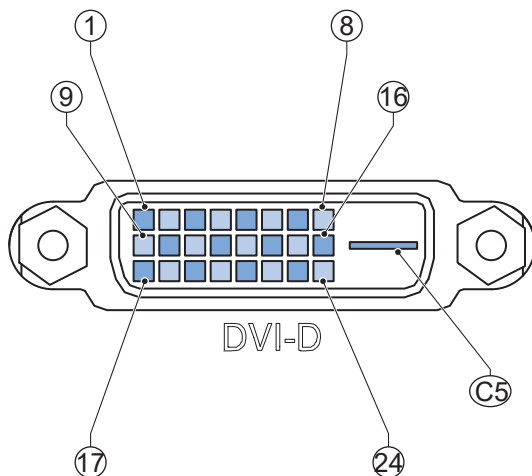
The pin layout represents the DVI connector on the IPC Machine Controller Panel PC.
Pin numbers increase from left to right for every row.

Pin	Signal Name	Function
1	TMDS data 2−	Digital red− (link 1)
2	TMDS data 2+	Digital red+ (link 1)
3	0 VDC	TMDS data 2/4 shield
4	Not connected	---
5	Not connected	---
6	DDC clock	DDC clock
7	DDC data	DDC data
8	Not connected	---
9	TMDS data 1−	Digital green− (link 1)
10	TMDS data 1+	Digital green+ (link 1)
11	0 VDC	TMDS data 1/3 shield
12	Not connected	---
13	Not connected	---
14	+5 V	Power for monitor DDC interface

Pin	Signal Name	Function
15	0 V	Return for pin 14
16	HPD	Hot plug detect
17	TMDS data 0−	Digital blue− (link 1) and digital sync
18	TMDS data 0+	Digital blue+ (link 1) and digital sync
19	0 VDC	TMDS data 0/5 shield
20	Not connected	---
21	Not connected	---
22	0 VDC	TMDS clock shield
23	TMDS clock+	Digital clock+
24	TMDS clock−	Digital clock−
C5	Not connected	---

A-4 RS-232C Connector Pin Details

The pin layout represents the RS-232C connector on the Panel PC.

Pin	Signal Name
1	CD
2	RXD
3	TXD
4	DTR
5	0 VDC *1
6	DSR
7	RTS
8	CTS
9	RI

*1. The 0 VDC pin is internally connected to the ground connection.

Additional Information

Refer to *5-4-2 Ground* on page 5-30 for grounding details.

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I

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