

Industrial PC Platform

NY-series

Industrial Monitor

User's Manual

NYM15W-C100□

NYM12W-C100□

Industrial Monitor



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Introduction

Thank you for purchasing the Industrial Monitor.

This manual contains information that is necessary to use the Industrial Monitor. Please read this manual and make sure you understand the functionality and performance of the Monitor before attempting to use it.

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

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.

Applicable Products

This manual covers the following Industrial Monitor products:

Product	Model
Industrial Monitor, 15.4 inch	NYM15W-C100□
Industrial Monitor, 12.1 inch	NYM12W-C100□



Additional Information

Refer to *1-4 Product Configuration* on page 1 - 5 for configuration details.

CONTENTS

Introduction	1
Intended Audience	1
Applicable Products	1
Manual Information	5
Page Structure	5
Special Information	6
Terms and Conditions Agreement.....	7
Warranty and Limitations of Liability	7
Application Considerations	8
Disclaimers	8
Safety Precautions.....	9
Definition of Precautionary Information.....	9
Symbols	9
Warnings.....	10
Cautions.....	11
Precautions for Safe Use	12
Disassembly, Dropping, Mounting, Installation and Storage.....	12
Wiring.....	12
Power Supply Design and Turning ON/OFF the Power Supply.....	13
Operation	13
Cleaning, Maintenance and Disposal	13
Precautions for Correct Use	14
Storage, Installation and Mounting	14
Wiring.....	14
Actual Operation and Operation	14
Cleaning and Maintenance	15
Regulations and Standards	16
Conformance to EU Directives	16
Related Manuals.....	17
Related Industrial PC Platform Manuals	17
Terminology and Abbreviations	19
Industrial PC Platform	19
Hardware	19
Software.....	19
Revision History.....	20
Sections in this Manual	21

Section 1 Overview

1-1 Intended Use	1 - 2
1-2 Hardware Features.....	1 - 3
1-3 ID Information Label	1 - 4

1-4 Product Configuration	1 - 5
1-5 Industrial PC Platform Overview	1 - 6
1-5-1 Industrial Monitor	1 - 6
1-5-2 Industrial Box PC	1 - 7
1-5-3 Industrial Panel PC	1 - 7

Section 2 Hardware

2-1 Component Names and Functions	2 - 2
2-1-1 Front and Top of the Industrial Monitor	2 - 2
2-1-2 Bottom of the Industrial Monitor	2 - 3
2-2 LED Indicators	2 - 4
2-2-1 Logo LED	2 - 5
2-2-2 Status LED Indicator	2 - 5
2-3 Connectors	2 - 6
2-3-1 Power Connector	2 - 6
2-3-2 DVI-D Connector	2 - 7
2-3-3 USB Type-A Connector	2 - 8
2-3-4 USB Type-B Connector	2 - 8
2-4 Optional Hardware	2 - 9
2-4-1 DVI Cables	2 - 9
2-4-2 USB Type-A to USB Type-B Cables	2 - 10
2-4-3 Power Supply	2 - 10

Section 3 Software

3-1 Windows Operating System	3 - 2
3-1-1 Operating Systems	3 - 2
3-1-2 Windows Touch Functionality	3 - 2
3-1-3 Determine Your Version of the Windows Operating Systems	3 - 3
3-2 Support Software	3 - 4
3-2-1 Available Support Software	3 - 4
3-2-2 Industrial Monitor Utility	3 - 5
3-2-3 Industrial Monitor Brightness Utility	3 - 8
3-2-4 Industrial PC Tray Utility	3 - 10
3-3 Software for Developers	3 - 13
3-3-1 Overview Developer Software	3 - 13
3-3-2 Industrial Monitor API	3 - 14

Section 4 Specifications

4-1 General Specifications	4 - 2
4-1-1 Dimensions and Weight	4 - 2
4-1-2 General Electrical Specifications	4 - 3
4-2 Connector Specifications	4 - 4
4-2-1 Power Connector Specifications	4 - 4
4-2-2 DVI-D Connector Specifications	4 - 5
4-2-3 USB Type-A Connector Specifications	4 - 7
4-2-4 USB Type-B Connector Specifications	4 - 8
4-3 Display Specifications	4 - 9
4-4 Environmental Specifications	4 - 10
4-4-1 Operation Environment Specifications	4 - 10
4-4-2 Temperature and Humidity Specifications	4 - 11
4-4-3 Recycling Specifications	4 - 11

Section 5 Installation

5-1	Unpack	5 - 2
5-1-1	Unpack Procedure.....	5 - 2
5-1-2	Items Supplied.....	5 - 3
5-2	Mount	5 - 4
5-2-1	Installation Method in Control Panels.....	5 - 4
5-2-2	Product Orientation	5 - 5
5-2-3	Temperature	5 - 6
5-2-4	Humidity	5 - 8
5-2-5	Vibration and Shock	5 - 8
5-2-6	Atmosphere	5 - 9
5-2-7	Electrical Environment.....	5 - 9
5-2-8	Prepare the Mounting Surface	5 - 14
5-2-9	Mount the Industrial Monitor.....	5 - 16
5-3	Wire	5 - 17
5-3-1	Ground	5 - 17
5-3-2	Wire the Power Connector	5 - 23
5-4	Connect	5 - 25
5-4-1	Connector Identification.....	5 - 25
5-4-2	Connection Procedure.....	5 - 26
5-5	Initial Power ON	5 - 27
5-5-1	Initial Power ON Procedure.....	5 - 27

Section 6 Operating Procedures

6-1	Touchscreen Operation	6 - 2
6-2	Power ON / Power OFF / Standby	6 - 3
6-3	Support Software and Product Information	6 - 4
6-4	React to Product Messages	6 - 5

Section 7 Maintenance

7-1	Preventive Maintenance	7 - 2
7-1-1	Preventive Maintenance Schedule.....	7 - 2
7-1-2	Clean the Touchscreen Surface	7 - 3
7-1-3	Clean the Monitor	7 - 3
7-1-4	Check the Gasket Seal.....	7 - 4
7-1-5	Keep Software Updated	7 - 4
7-2	Corrective Maintenance	7 - 5
7-2-1	Warning and Error Messages.....	7 - 5
7-2-2	Windows Event Viewer.....	7 - 5
7-2-3	Correct Display Functionality when Nothing is Displayed	7 - 8
7-2-4	Correct Touch Screen Functionality	7 - 9

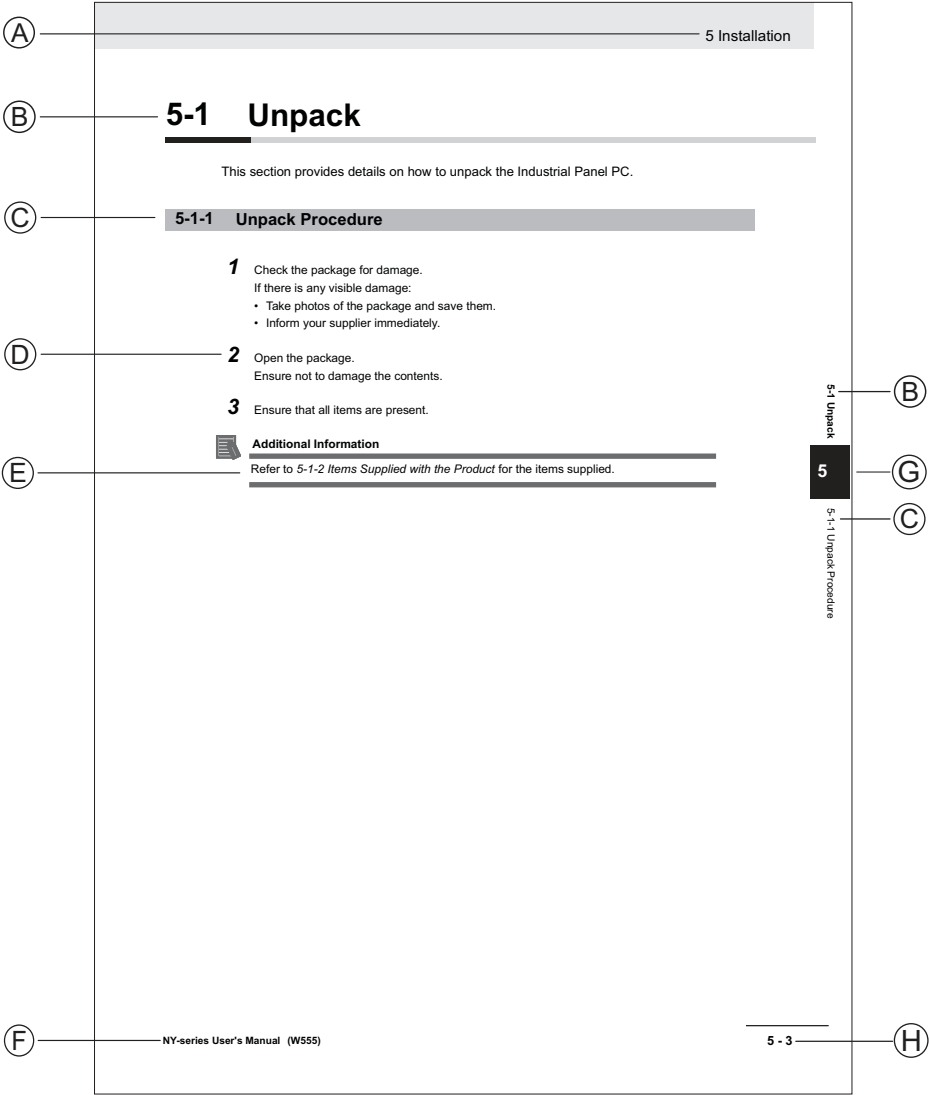
Index

Manual Information

This section provides information about this manual.

Page Structure

The following page structure is used in this manual.



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.

Terms and Conditions Agreement

Warranty and Limitations of Liability

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NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY 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 Industrial Monitor. 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

WARNING

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



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.



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.



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.

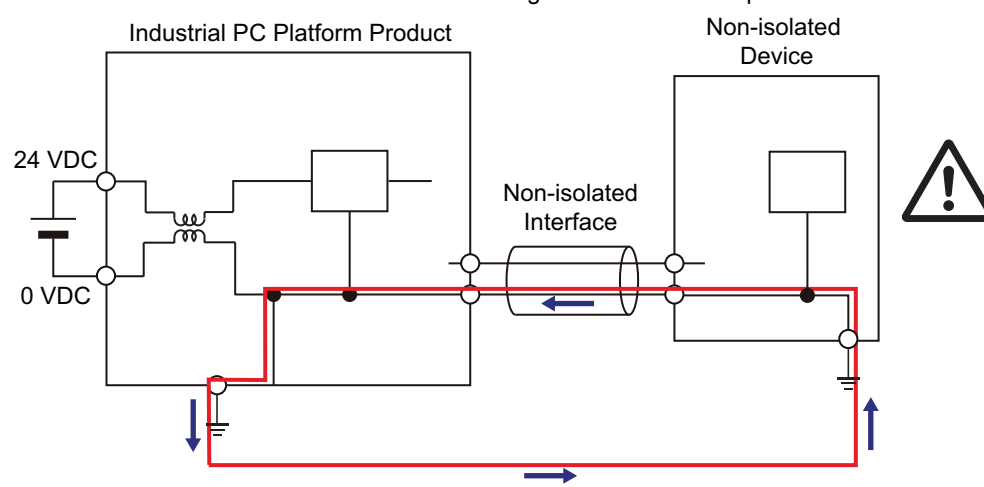


Cautions

⚠ Caution

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.



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.
- 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.
- 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 and cables are completely locked in place to prevent accidental disconnection.
- 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.
- Use a power cable with a conductor cross-section of 0.2 mm² to 2.5 mm². Remove 7 mm of sheath before connecting the wires.
- 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.

- 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.
- Do not perform a dielectric strength test.
- Power ON after the DVI cable is connected between the host PC and the product.
- 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.
 - Connecting cables
 - Connecting or disconnecting the connectors
- Use a DC power supply with a slight voltage fluctuation that will provide a stable output even if the input is momentarily interrupted for 10 ms. Use a DC power supply with reinforced insulation or double insulation. The rated power supply voltage of the product is 24 VDC with an allowable range of 19.2 to 28.8 VDC.
- 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.

Operation

- 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 host PC.
 - Remove a USB device.
- 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.
- 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 on the product. A difference in electrical potential between the computer and the product may cause failure or malfunction.

Cleaning, Maintenance and Disposal

- 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.

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
- 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.
- 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.

Wiring

- Always ensure the rated supply voltage is connected to the product.
- 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.
- Never ground the 24 VDC side of the power supply. This may cause a short circuit.

Actual Operation and Operation

- 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.

Cleaning and Maintenance

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

Regulations and Standards

Conformance to EU Directives

The Industrial Monitor complies with EU Directives. To ensure that the machine or device in which the Industrial Monitor is used complies with EU Directives, the following precautions must be observed:

- The Industrial Monitor must be installed within a control panel.
- The Industrial Monitor 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 Industrial Monitor 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.

Related Manuals

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

Related Industrial PC Platform Manuals

This table contains the related manuals of other Industrial PC Platform products.

Manual name	Cat. No.	Model numbers	Application	Description
Industrial Box PC User's Manual	W553	<ul style="list-style-type: none"> • NYB17-□1□□□ • NYB25-□1□□□ • NYB1C-□1□□□ 	Learning all basic information about the Industrial Box PC. This includes introductory information with features, hardware overview, software overview, specifications, mounting, wiring, connecting, operating and maintaining the Industrial Box PC.	An introduction to the Industrial Box PC is provided along with the following information: <ul style="list-style-type: none"> • Overview • Hardware • Software • Specifications • Installation • Operating Procedures • Maintenance
Industrial Panel PC User's Manual	W555	<ul style="list-style-type: none"> • NYP17-□1□□□-15WC100□ • NYP17-□1□□□-12WC100□ • NYP25-□1□□□-15WC100□ • NYP25-□1□□□-12WC100□ • NYP1C-□1□□□-15WC100□ • NYP1C-□1□□□-12WC100□ 	Learning all basic information about the Industrial Panel PC. This includes introductory information with features, hardware overview, software overview, specifications, mounting, wiring, connecting, operating and maintaining the Industrial Panel PC.	An introduction to the Industrial Panel PC is provided along with the following information: <ul style="list-style-type: none"> • Overview • Hardware • Software • Specifications • Installation • Operating Procedures • Maintenance

This table contains the related manuals of other Industrial PC Platform products with Machine Controller Software.

Manual name	Cat. No.	Model numbers	Application	Description
IPC Machine Controller Industrial Box PC Hardware User's Manual	W556	NY512-□1□□□-1□13□□X	Learning all basic hardware information about the IPC Machine Controller Industrial Box PC. This includes introductory information with features, hardware overview, specifications, mounting, wiring, connecting, operating and maintaining the Box PC.	An introduction to the IPC Machine Controller Box PC is provided along with the following information: <ul style="list-style-type: none"> • Overview • Hardware • Specifications • Installation • Operating Procedures • Maintenance
IPC Machine Controller Industrial Panel PC Hardware User's Manual	W557	<ul style="list-style-type: none"> • NY532-1□00-111□13□□0 • NY532-1□00-112□13□□0 	Learning all basic hardware information about the IPC Machine Controller Industrial Panel PC. This includes introductory information with features, hardware overview, specifications, mounting, wiring, connecting, operating and maintaining the Panel PC.	An introduction to the IPC Machine Controller Panel PC is provided along with the following information: <ul style="list-style-type: none"> • Overview • Hardware • 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
DVI	Digital Visual Interface
DVI-D	A Digital Visual Interface with only Digital signals
USB	Universal Serial Bus

Software

Term / Abbreviation	Description
API	Application Programming Interface
Developer	Any person involved with software development
Merge module	A module providing a standard method by which developers deliver shared Windows Installer components and setup logic to their applications
OS	Operating System
SDK	Software Development Kit
Windows	The Windows Operating System

Revision History

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

Cat. No.

W554-E2-01

Revision code

Revision code	Date	Revised content
01	September 2016	First release

Sections in this Manual

1	Overview	1
2	Hardware	2
3	Software	3
4	Specifications	4
5	Installation	5
6	Operating Procedures	6
7	Maintenance	7

Overview

This section provides general information of the Industrial Monitor.

1-1	Intended Use.....	1 - 2
1-2	Hardware Features	1 - 3
1-3	ID Information Label.....	1 - 4
1-4	Product Configuration	1 - 5
1-5	Industrial PC Platform Overview.....	1 - 6
1-5-1	Industrial Monitor	1 - 6
1-5-2	Industrial Box PC	1 - 7
1-5-3	Industrial Panel PC	1 - 7

1-1 Intended Use

The Industrial Monitor is intended to be used as a display and touch interface for the Industrial PC Platform variants. The Industrial Monitor allows the user to interact through touch interactions on the LCD display.

Users of the Industrial Monitor are able to set the brightness settings of both the LCD backlight and the indicator LEDs. This allows the monitor to be configured for the required installation environment. The Industrial Monitor additionally includes a USB hub to allow USB slave devices to be added at the monitor location. Peripheral components such as a keyboard, mouse, or camera can be attached to the monitor and used to control or be controlled by the operating system of the connected Industrial PC.

1-2 Hardware Features

The Industrial Monitor provides the following hardware features.

- 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.

- Status LED Indicator

The Monitor includes one multi-color LED indicator on the front of the product. The brightness of the LED indicator is adjustable.

- Brightness control

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

- DVI-D visual interface

The video interface for the Monitor is provided with a DVI connector for connection to the host PC.

- USB Type-B port for host PC

The USB Type-B port supports USB2.0 specifications. This port allows the host PC to communicate with multiple internal USB devices within the Monitor as well as external devices connected to the two USB Type-A ports.

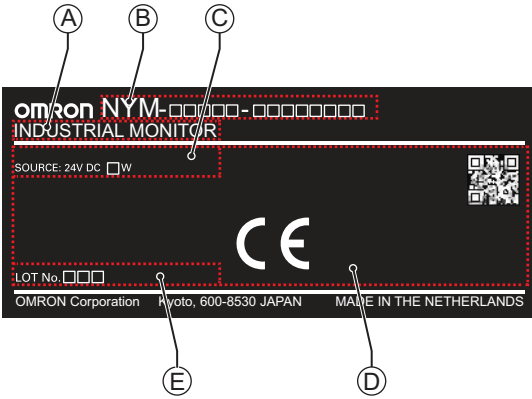
This communication includes the touchscreen functionality.

- USB Type-A ports for slave devices

Two USB Type-A ports are available for connection to external USB devices such as a keyboard, mouse, camera, memory sticks, or other peripheral hardware.

1-3 ID Information Label

The ID information label contains relevant information of your Industrial Monitor.



Item	Name	Description
A	Product name	Industrial Monitor
B	Model *1	Model and configuration details
C	Power rating	Power rating details
D	Standards and QR code	The applicable standards and the QR code for the website
E	LOT No.	Production details The lot number of the Industrial Monitor in the format DDMYY□ DDMY Y with Month number 1 to 9 for January to September, X for October, Y for November, and Z for December.

*1 Refer to 1-4 Product Configuration on page 1 - 5 for model details.



Additional Information

Refer to 2-1-1 Front and Top of the Industrial Monitor on page 2 - 2 for the ID information label location.

1-4 Product Configuration

This section provides an overview of the product configurations available for the Industrial Monitor. The product configuration is visible in the model-type that is mentioned on the ID information label of the Monitor.

The structure of the model-type is: NYM□□□-□□□□□.

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

N Y M □ □ □ - □ □ □ □ □
 1 2 3 4 5 6 7 8

Item	Description	Option
1	Series name	NY: NY- series Industrial Monitor
2	Display size (diagonal)	12: 12.1 inches 15: 15.4 inches
3	Display ratio	W: Wide
4	Touchscreen	C: Projected Capacitive Touch type
5	Frame type	1: Aluminum frame, black
6	Design	0: Standard
7	Build-in options	0: None
8	Logo	0: OMRON 2: Customization

1-5 Industrial PC Platform Overview

The Industrial PC Platform is an integrated range of products designed for use in a variety of industrial applications that will benefit from advanced PC technology. The range is scalable, robust and reliable, and is suitable for use with both standard PC/Windows software and proprietary programs for machine control and automation.

In line with OMRON's established quality standards, each element in the Industrial PC Platform, ranging from the standalone Industrial Box PC to the touchscreen Industrial Monitor, is engineered with long-life components and built to the most advanced design standards.

The following sections introduce Industrial PC Platform products.

1-5-1 Industrial Monitor

The Industrial Monitor is of key importance at the interface between operator and system. The Industrial Monitor is efficient, effective and highly visible with an attractive design.

Using smart algorithms, the touch controller determines the exact location of each touch for precise control as well as detecting abnormal or illegal actions to protect misuse or false touches.



1-5-2 Industrial Box PC

The Industrial Box PC is designed to meet the specific needs of the industrial environment. Design simplification and future-proof architecture minimize the risk of failure. In addition, new PC features can be seamlessly incorporated, without the need for wholesale redesign.

The Industrial Box PC can simultaneously use the standard Windows operating system and programs, alongside other third-party software.



1-5-3 Industrial Panel PC

The Industrial Panel PC intelligently combines the functionality of the Industrial Box PC and Industrial Monitor. No cables are used between the two components, which ensures optimal signal distribution and reliable operation in industrial environments.



Hardware

This section provides an overview of the hardware of the Industrial Monitor.

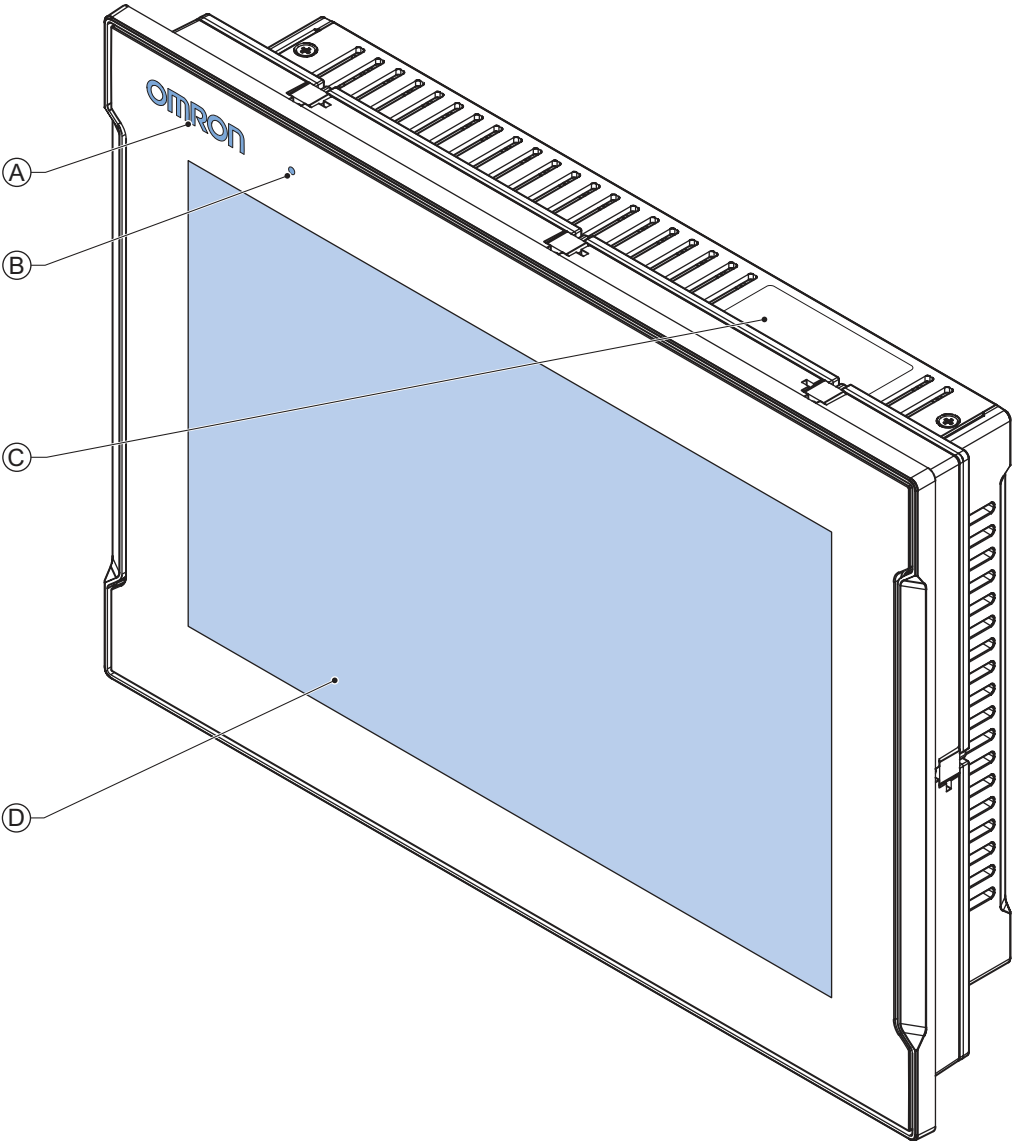
2-1 Component Names and Functions	2 - 2
2-1-1 Front and Top of the Industrial Monitor	2 - 2
2-1-2 Bottom of the Industrial Monitor	2 - 3
2-2 LED Indicators	2 - 4
2-2-1 Logo LED	2 - 5
2-2-2 Status LED Indicator	2 - 5
2-3 Connectors	2 - 6
2-3-1 Power Connector	2 - 6
2-3-2 DVI-D Connector.....	2 - 7
2-3-3 USB Type-A Connector.....	2 - 8
2-3-4 USB Type-B Connector.....	2 - 8
2-4 Optional Hardware	2 - 9
2-4-1 DVI Cables.....	2 - 9
2-4-2 USB Type-A to USB Type-B Cables	2 - 10
2-4-3 Power Supply.....	2 - 10

2-1 Component Names and Functions

This section shows views of the Industrial Monitor with information about all items.

2-1-1 Front and Top of the Industrial Monitor

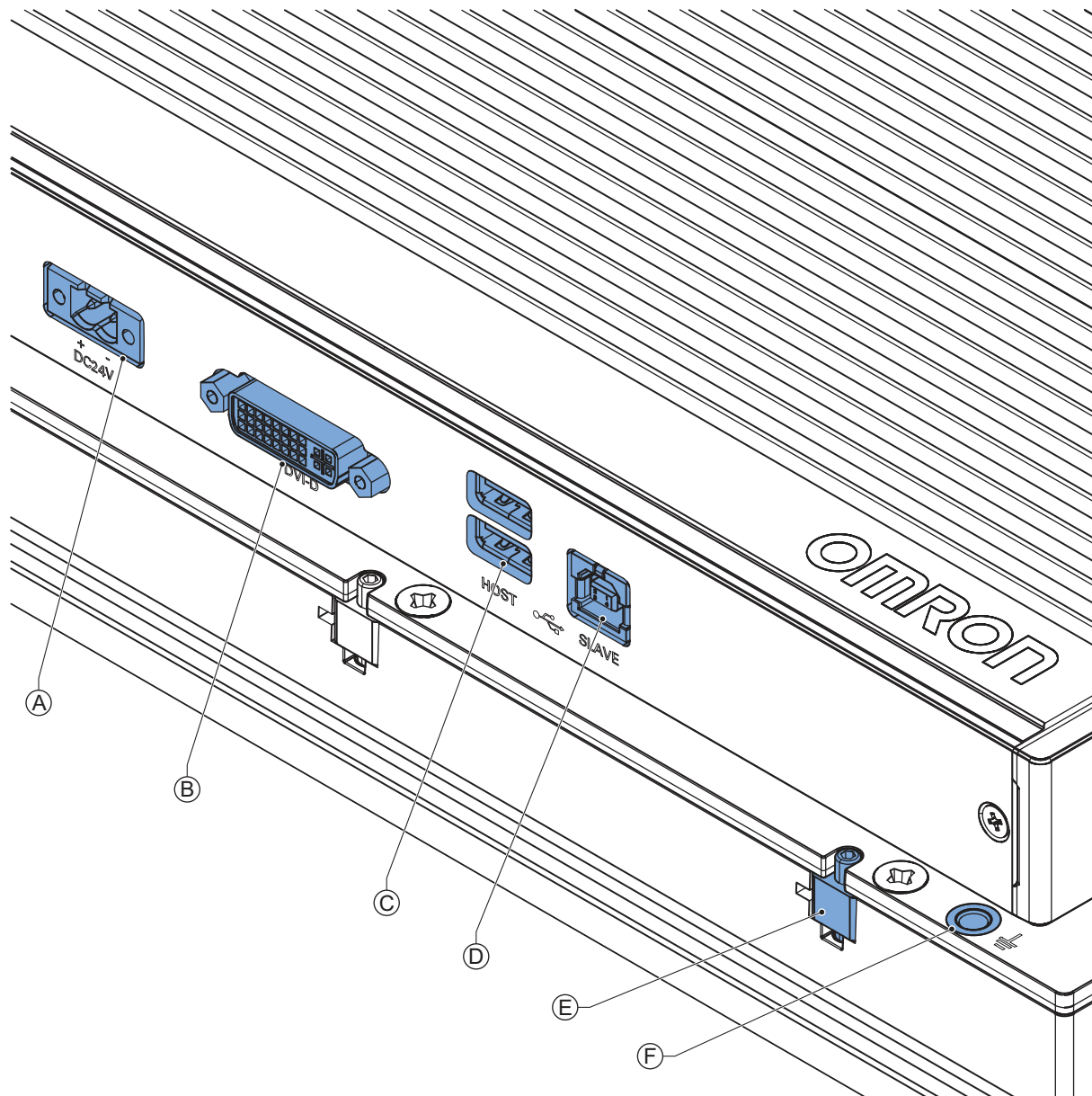
This section shows the component names and functions for the front and top of the Industrial Monitor.



Item	Name	Description
A	Logo	Backlit logo with adjustable brightness
B	Status LED Indicator	Multi-colored LED to indicate power and connection status with adjustable brightness
C	ID Information Label	Label containing Model ID., LOT No. and other product specific information. Refer to 1-3 <i>ID Information Label</i> on page 1 - 4 for label details.
D	Touchscreen	Multi-touch LCD display

2-1-2 Bottom of the Industrial Monitor

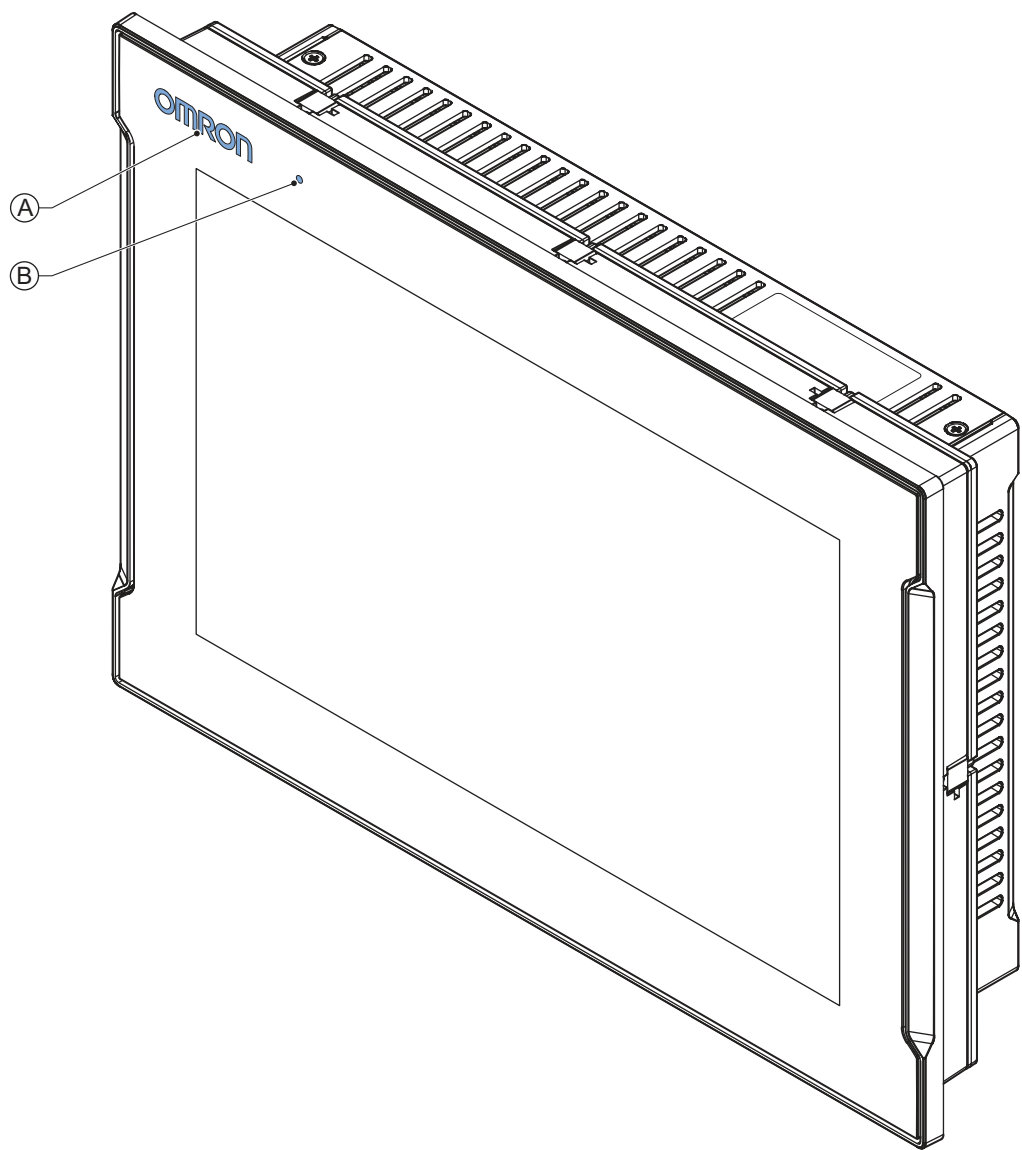
All items on the bottom of the Industrial Monitor are identified here.



Item	Name	Description
A	Power Supply Connector	24 VDC power supply input connector
B	DVI-D Connector	DVI-D dual link connector for host video connection
C	USB Type-A Connectors	2 USB connectors for external device connection
D	USB Type-B Connector	USB connector for connection with the host PC
E	Mounting Brackets	8 retractable mounting brackets to secure the Industrial Monitor on a mounting surface
F	Functional Ground Terminal	Terminal connection for functional grounding of the Industrial Monitor

2-2 LED Indicators

The Industrial Monitor has two LED indicators on the front of the product.



Item	LED	Description
A	Logo LED	LED to backlight the logo
B	Status Indicator LED	Indicates the operating condition of the Industrial Monitor.

2-2-1 Logo LED

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



Additional Information

The Logo LED brightness is adjustable.




Refer to Industrial Monitor Utility for brightness details.

The Industrial Monitor Utility information is available:

- For products *NYM*□ in the section *Software* in this manual.
- For products *NYP*□ in the section *Software* in this manual.
- For products *NY5*□ in the *NY-series Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)*

2-2-2 Status LED Indicator

The Status LED indicator provides information about the operating condition of the Industrial Monitor.

Color	Status	Meaning
None		Not lit The Status LED is not lit in following situations: <ul style="list-style-type: none"> • The 24 VDC power is not supplied. • Normal operation
Green		Blinking The Status LED is blinking in following situations: <ul style="list-style-type: none"> • The host PC is in standby mode. • The host PC power is not supplied. • The DVI cable is not connected.
Red		Lit The Status LED is lit with maximum brightness in following situations: <ul style="list-style-type: none"> • Power supply defective • Monitor internal hardware error



Additional Information

The Status LED indicator's brightness is adjustable.

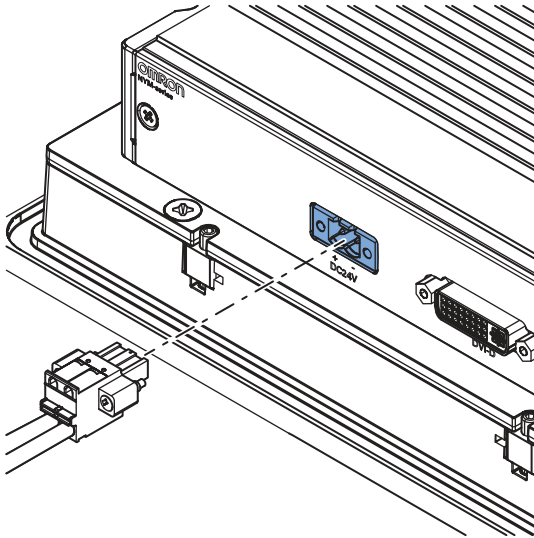
Refer to *Industrial Monitor Brightness Utility* on page 3 - 8 for brightness details.

2-3 Connectors

This section gives an overview of the available connectors for the Industrial Monitor.

2-3-1 Power Connector

The power connector on the Monitor is used to supply 24 VDC power to the Monitor. The power connector is supplied with the Monitor.

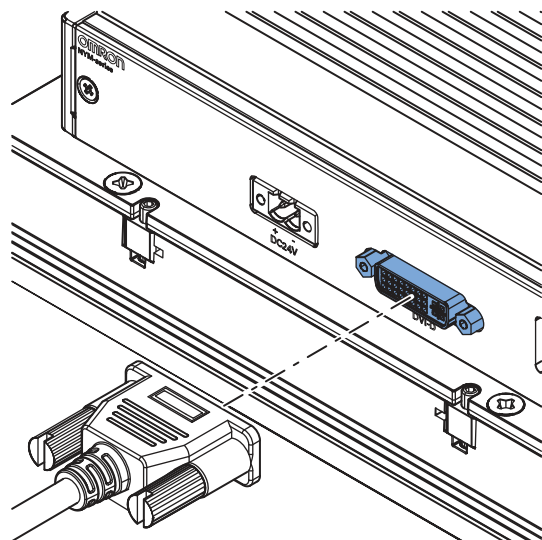


Additional Information

- Refer to 4-2-1 *Power Connector Specifications* on page 4 - 4 for specifications.
- Refer to 5-3-2 *Wire the Power Connector* on page 5 - 23 for wiring details.
- Refer to 5-4 *Connect* on page 5 - 25 for connection details.

2-3-2 DVI-D Connector

The Digital Visual Interface (DVI-D) connector connects a digital video source to the Industrial Monitor.

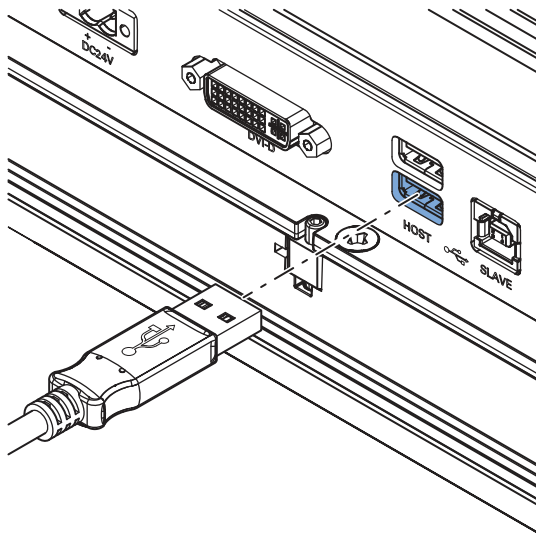


Additional Information

- Refer to 4-2-2 *DVI-D Connector Specifications* on page 4 - 5 for specifications.
- Refer to 5-4 *Connect* on page 5 - 25 for connection details.

2-3-3 USB Type-A Connector

The Universal Serial Bus (USB) Type-A connectors provide a connection point on the Industrial Monitor for USB slave devices.

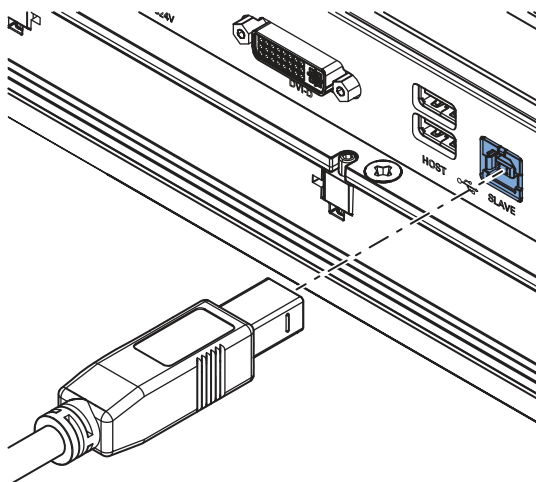


Additional Information

- Refer to 4-2-3 *USB Type-A Connector Specifications* on page 4 - 7 for specifications.
- Refer to 5-4 *Connect* on page 5 - 25 for connection details.

2-3-4 USB Type-B Connector

The Universal Serial Bus (USB) Type-B connector connects to the host PC. The host PC uses this interface to access the internal touchscreen functions as well as external devices plugged into the USB Type-A connectors.



Additional Information


- Refer to 4-2-4 *USB Type-B Connector Specifications* on page 4 - 8 for specifications.
- Refer to 5-4 *Connect* on page 5 - 25 for connection details.

2-4 Optional Hardware

The following optional hardware is available for the Industrial Monitor.

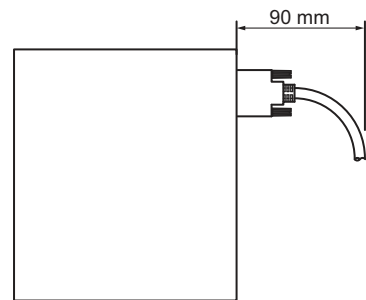
2-4-1 DVI Cables

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	<ul style="list-style-type: none">• Supports DVI-D• Minimum bend radius: 36 mm
NY000-AC00 5M		5 m	

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.



2-4-2 USB Type-A to USB Type-B Cables

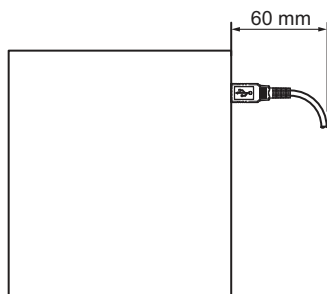
USB Type-A to USB Type-B cable details are provided below.

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	<ul style="list-style-type: none"> • USB 2.0 • Minimum bend radius: 25 mm
FH-VUAB 5M		5 m	

USB Type-A to USB Type-B Cable Clearance

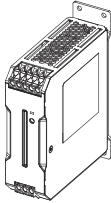
The USB Type-A to USB Type-B cable requires a minimum clearance of 60 mm from the connector entry to prevent excessive strain on the connector and cable assembly.



2-4-3 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		Output voltage: 24 VDC



Additional Information

- Refer to 4-1-2 *General Electrical Specifications* on page 4 - 3 for power consumption details.
- Refer to [the OMRON website](#) for specifications and manuals of the S8VK-G.
Note that the power consumption details of the Monitor determine the minimum power rating of your power supply.

3

Software

This section provides software information for the Industrial Monitor.

3-1 Windows Operating System.....	3 - 2
3-1-1 Operating Systems	3 - 2
3-1-2 Windows Touch Functionality.....	3 - 2
3-1-3 Determine Your Version of the Windows Operating Systems	3 - 3
3-2 Support Software	3 - 4
3-2-1 Available Support Software.....	3 - 4
3-2-2 Industrial Monitor Utility.....	3 - 5
3-2-3 Industrial Monitor Brightness Utility.....	3 - 8
3-2-4 Industrial PC Tray Utility	3 - 10
3-3 Software for Developers	3 - 13
3-3-1 Overview Developer Software	3 - 13
3-3-2 Industrial Monitor API.....	3 - 14

3-1 Windows Operating System

This section provides an overview of Windows Operating System information.

3-1-1 Operating Systems

The Monitor does not have an operating system.

To use the Monitor a host PC with an operating system is required. This section provides information about the parts of the operating system that influence the performance, behavior or software of your Monitor.

3-1-2 Windows Touch Functionality

This section provides an overview of the touch functionality of your Industrial Monitor.

Requirements

To use touch functionality

- The Operating System has to support tablet PC features
Windows Embedded Standard 7 supports tablet PC features.
- Touch functionality drivers have to be installed



Additional Information

Refer to *3-1-3 Determine Your Version of the Windows Operating Systems* on page 3 - 3 for your Windows version.

Calibration

The touch functionality is calibrated for the default screen resolution.

Calibrate the display when setting a different resolution results in displaying your content on only a part of the display.



Additional Information

- Refer to *4-3 Display Specifications* on page 4 - 9 for the default resolution.
 - Refer to *Calibrate Touchscreen* on page 7 - 10 for calibration details.
-

3-1-3 Determine Your Version of the Windows Operating Systems

This section provides methods to find version details of your Windows Operating System.

Windows Embedded Standard 7

To determine your version of the Windows Operating System:

- 1** Select the **Start** Button.
- 2** Enter *System Information* in the search box.
- 3** Select **System Information** in the pop-up that appears.
An overview of your System Information will appear, including the Windows Operating System details.

3-2 Support Software

This section provides an overview of the support software available for your Industrial Monitor.

3-2-1 Available Support Software

This section gives an overview of the software utilities available for all Industrial PC Platform products.

Product	Software utility
Industrial Monitor	Industrial Monitor Utility Industrial Monitor Brightness Utility Industrial PC Tray Utility
Industrial Box PC	Industrial PC Support Utility Industrial PC Tray Utility
Industrial Panel PC	Industrial Monitor Utility Industrial Monitor Brightness Utility Industrial PC Support Utility Industrial PC Tray Utility

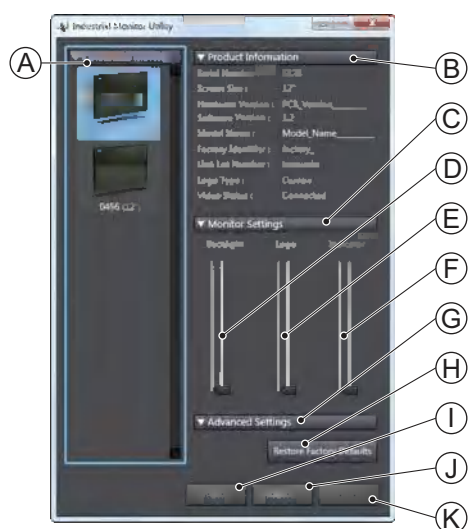
Select and download the utilities required from the OMRON download website.

3-2-2 Industrial Monitor Utility

This section provides an overview of the Industrial Monitor Utility.

Industrial Monitor Utility Overview

The Industrial Monitor Utility provides a user interface to control settings and display details of connected Industrial Monitors.



Item	Description	Details
A	Connected Monitors	Shows a list of the connected Industrial Monitors.* ¹ Select one Industrial Monitor in the list to display the Monitor Details. When selected the LED Indicators of the selected monitor will flash during 3 seconds.
B	Product Information	Provides the following details of the selected Industrial Monitor. <ul style="list-style-type: none"> • Serial Number • Screen Size • Hardware Version • Software Version • Model Name • Factory Identifier • Unit Lot Number • Logo Type • Video Status
C	Monitor Settings	Provides several setting adjustments to control the operation of the selected Industrial Monitor.
D	Backlight Brightness Adjustment * ²	Use the slider to control the brightness of the selected Industrial Monitor.
E	Logo Brightness Adjustment	Use the slider to control the brightness of the Logo LED. Refer to 2-2-1 <i>Logo LED</i> on page 2 - 5 for details about the Logo LED.
F	Status Brightness Adjustment	Use the slider to control the brightness of the Status LED Indicator on the monitor. Refer to 2-2-2 <i>Status LED Indicator</i> on page 2 - 5 for details about the operation of the Status LED Indicator.
G	Advanced Settings	Provides advanced setting adjustments to control the operation of the selected Industrial Monitor.
H	Restore Factory Defaults	Restores the factory default settings of the selected Industrial Monitor.
I	OK button	Applies the changes and closes the window

Item	Description	Details
J	Cancel button	Exits the utility
K	Apply button	Applies the changes
*1	The Industrial Monitor Utility scans the connected USB devices and shows a list of connected monitors. If an Industrial Monitor is not connected with the USB cable, it will not be found.	
*2	With a very low backlight brightness setting (15%-0%) the displayed information might not be visible in an environment with high ambient light conditions. This prevents brightness adjustments with the Industrial Monitor Utility.	



Additional Information

To adjust the backlight brightness when the brightness setting is set too low:

- Bring the Monitor in a low ambient light environment
- Lighten the display with a bright flashlight

Installation

The Industrial Monitor Utility is pre-installed on the Industrial Box PC and the Industrial Panel PC. Download the Industrial Monitor Utility from the OMRON download website for re-installation or for installation on another Industrial PC.

The Industrial Monitor Utility is installed onto Windows, and can be accessed via the Windows start menu and the Industrial PC Tray Utility. Installing the Industrial Monitor Utility will also install the Industrial PC Tray Utility.



Additional Information

Refer to 3-2-4 *Industrial PC Tray Utility* on page 3 - 10 for Industrial PC Tray Utility details.

Compatibility

The Industrial Monitor Utility can be used on any PC that is connected to an OMRON Industrial Monitor.

The Industrial Monitor Utility can be used with Windows Embedded Standard 7.



Additional Information

The Industrial Monitor Utility does not support 3rd party monitors.

Startup

The Industrial Monitor Utility can be started from:

- Windows Start Menu.
Select **Omron** and then **Industrial Monitor Utility**.
- Industrial PC Tray Utility

Configuration

The Industrial Monitor Utility can be configured with following options:

Configuration item	Description
Language	Follows the Windows language configuration when that language is supported for the Industrial Monitor Utility. The default language English (EN-US) will be used if the language configured in Windows is not supported.
Monitor identification	<p>If enabled, the Status LED indicator on the selected Industrial Monitor will flash for 3 seconds.</p> <p>To enable:</p> <ol style="list-style-type: none"> (1) Open the Windows registry key HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Omron\IPC\MonitorConfiguration (2) Set the registry value Indicate to value True.

Messages

The Industrial Monitor Utility can use the Industrial PC Tray Utility to display following messages:

Message type	Message	Description
Info	Connected	<p>A new monitor connected</p> <ul style="list-style-type: none"> • USB cable connected • Monitor powered ON
Warning	Not Connected	<p>Monitor disconnected</p> <ul style="list-style-type: none"> • USB cable disconnected • Monitor powered OFF
Warning	Video Disconnected	DVI cable disconnected
Warning	No Signal	DVI cable connected but no signal detected

Logging

There is logging in the Windows event log of the following utilities:

- Industrial Monitor Utility
In the Windows Event Viewer filter for event source *IndMonService*.
- Industrial Monitor Brightness Utility
In the Windows Event Viewer filter for event source *IndMonService*.
- Industrial PC Support Utility
In the Windows Event Viewer filter for event source *IPCSERVICEHost* or *OMRON Industrial PC Support Utility*.



Additional Information

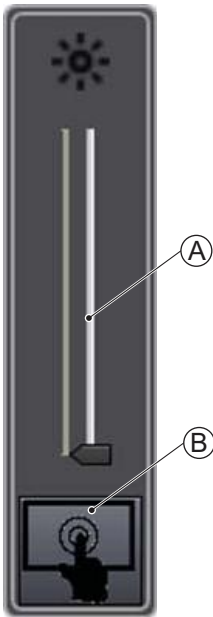
Refer to 7-2-2 *Windows Event Viewer* on page 7 - 5 for the logged messages.

3-2-3 Industrial Monitor Brightness Utility

This section provides an overview of the Industrial Monitor Brightness Utility.

Industrial Monitor Brightness Utility

The Industrial Monitor Brightness Utility is a software utility that allows you to control the brightness of the screen backlight of all connected Industrial Monitors.



Item	Description	Details
A	Backlight brightness slider	Use the slider to control the display brightness of all connected Industrial Monitors.
B	Industrial Monitor Utility	Button to start the Industrial Monitor Utility.

With a very low backlight brightness setting (15%-0%) the displayed information might not be visible in an environment with high ambient light conditions. This prevents brightness adjustments with the Industrial Monitor Brightness Utility.



Additional Information

To adjust the backlight brightness when the brightness setting is set too low:

- Bring the Monitor in a low ambient light environment
- Lighten the display with a bright flashlight

Compatibility

The Industrial Monitor Brightness Utility can be used on any PC that is connected to an OMRON Industrial Monitor.

The Industrial Monitor Brightness Utility can be used with Windows Embedded Standard 7.



Additional Information

The Industrial Monitor Brightness Utility does not support 3rd party monitors.

Installation

The Industrial Monitor Brightness Utility is pre-installed on the Industrial Box PC and the Industrial Panel PC.

Installation of the Industrial Monitor Brightness Utility is part of the installation of the Industrial Monitor Utility.

Download the Industrial Monitor Utility from the OMRON download website for re-installation or for installation on another PC with Windows 7.

The Industrial Monitor Brightness Utility is installed onto Windows, and can be accessed via the Windows start menu and the Industrial PC Tray Utility. Installing the Industrial Monitor Utility will also install the Industrial PC Tray Utility.



Additional Information

Refer to 3-2-4 *Industrial PC Tray Utility* on page 3 - 10 for Industrial PC Tray Utility details.

Startup

Start the Industrial Monitor Brightness Utility from the Industrial PC Tray Utility or from the Windows Start Menu (select **Omron** and then **Industrial Monitor Brightness Utility**).



Additional Information

Refer to 3-2-4 *Industrial PC Tray Utility* on page 3 - 10 for Industrial PC Tray Utility details.

Configuration

Configuration is not required. This Industrial Monitor Brightness Utility will detect and support all connected Industrial Monitors.

Logging

There is logging in the Windows event log of the following utilities:

- Industrial Monitor Utility
In the Windows Event Viewer filter for event source *IndMonService*.
- Industrial Monitor Brightness Utility
In the Windows Event Viewer filter for event source *IndMonService*.
- Industrial PC Support Utility
In the Windows Event Viewer filter for event source *IPCSERVICEHost* or *OMRON Industrial PC Support Utility*.



Additional Information

Refer to 7-2-2 *Windows Event Viewer* on page 7 - 5 for the logged messages.

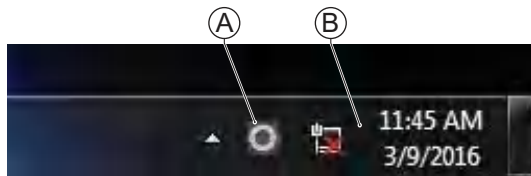
3-2-4 Industrial PC Tray Utility

This section provides an overview of the Industrial PC Tray Utility.

Industrial PC Tray Utility Overview

The Industrial PC Tray Utility is a software utility that provides information about the current state of the Industrial PC, its related devices, and associated software.

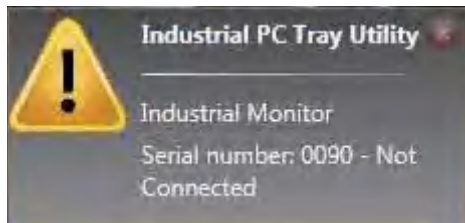
When running, the Industrial PC Tray Utility is always present as a status icon ^(A) in the system tray area ^(B) of Windows.



Features

The Industrial PC Tray Utility provides the following features:

- Display the overall state of all installed OMRON utilities in the icon in the system tray area.
- Display a menu that can start all installed utilities and show the state of each installed utility.
- Display notification messages in popup windows that inform the user about the state of applications or hardware. The Industrial PC Tray Utility displays the messages provided by installed OMRON utilities. Refer to the OMRON utilities information for the messages that can be displayed.



Menu

Select the Industrial PC Tray Utility icon ^(F) to display the menu.

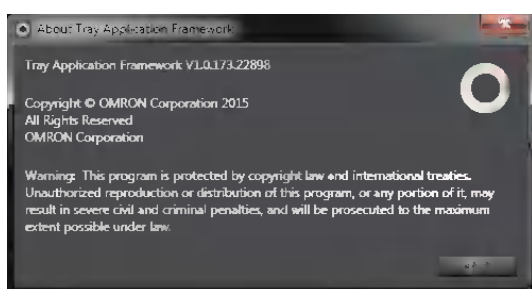


- The application displays the available utilities.
 - Select an entry to launch the associated utility, if applicable.
 - The icons of menu items in the Industrial PC Tray Utility menu will have a warning or error symbol when applicable.

- The Industrial PC Support Utility ^(A) is available in the menu when installed.
- The Industrial Monitor Utility ^(B) is available in the menu when installed.
- The Industrial Monitor Brightness Utility ^(C) is available in the menu when installed.
- The application area can be configured to show and launch both OMRON and third party utilities.
- The **About** entry ^(D) shows details of the Industrial PC Tray Utility.
Refer to *About the Industrial PC Tray Utility* on page 3 - 11 for details.
- The **Exit** entry ^(E) closes the utility.

About the Industrial PC Tray Utility

The About window shows the version of the Industrial PC Tray Utility and copyright information.



Status Indicators on Icons

The following table provides the indicator details of the Industrial PC Tray Utility.

Overlay type	Icon	Description
None		No OMRON utility has issued warning or error notifications.
Warning sign		At least one OMRON utility has issued a warning notification.
Error sign		At least one OMRON utility has issued an error notification.

Installation

The Industrial PC Tray Utility is pre-installed on an Industrial Box PC and an Industrial Panel PC. The Industrial PC Tray Utility is included in the installers of the Industrial PC Support Utility and Industrial Monitor Utility. Install the Industrial PC Support Utility or Industrial Monitor Utility to install the Industrial PC Tray Utility.

Compatibility

The Industrial PC Tray Utility can be used on PCs with Windows 7.

Startup

By default the Industrial PC Tray Utility is configured to start automatically at Windows startup.

To manually (re)start the Industrial PC Tray Utility, open the software from the Windows start menu, select **OMRON**, and then **Omron Tray Application Framework**.

3-3 Software for Developers

This section provides information on the software that is available for developers.

3-3-1 Overview Developer Software

This section gives an overview of the software available for developers for all Industrial PC Platform products.

Product	Developer software
Industrial Monitor	Industrial Monitor SDK Industrial Monitor API
Industrial Box PC	Industrial PC System SDK Industrial PC System API
Industrial Panel PC	Industrial Monitor SDK Industrial Monitor API Industrial PC System SDK Industrial PC System API

Select and download the software required from the OMRON download website.

3-3-2 Industrial Monitor API

This section describes the Industrial Monitor API.

The Industrial Monitor API allows programmers to create applications that can control the hardware features and retrieve information from connected Industrial Monitors.

The main function of the Industrial Monitor API is to enable the brightness of the backlight and the LEDs of the monitor to be increased or decreased according to the working environment.

Features

For all connected Industrial Monitors, the Industrial Monitor API can:

- Retrieve product information
- Retrieve product status information
- Set brightness of the Status LED indicator
- Set brightness of the backlight
- Set brightness of the Logo LED
- Store settings
- Restore to factory defaults

The API makes use of the included Industrial Monitor Service to manage all Industrial Monitors connected via USB.

Installation

The Industrial Monitor API is part of the SDK download.

The Industrial Monitor API is pre-installed on the Industrial Panel PC and Industrial Box PC.

Install the Industrial Monitor SDK to use the Industrial Monitor API on development PCs.

Use the Merge Module to include the Industrial Monitor API in the installer for custom applications.

To use the Industrial Monitor API the API needs to be referenced in your development project.

Specifications

This section provides specifications of the Industrial Monitor.

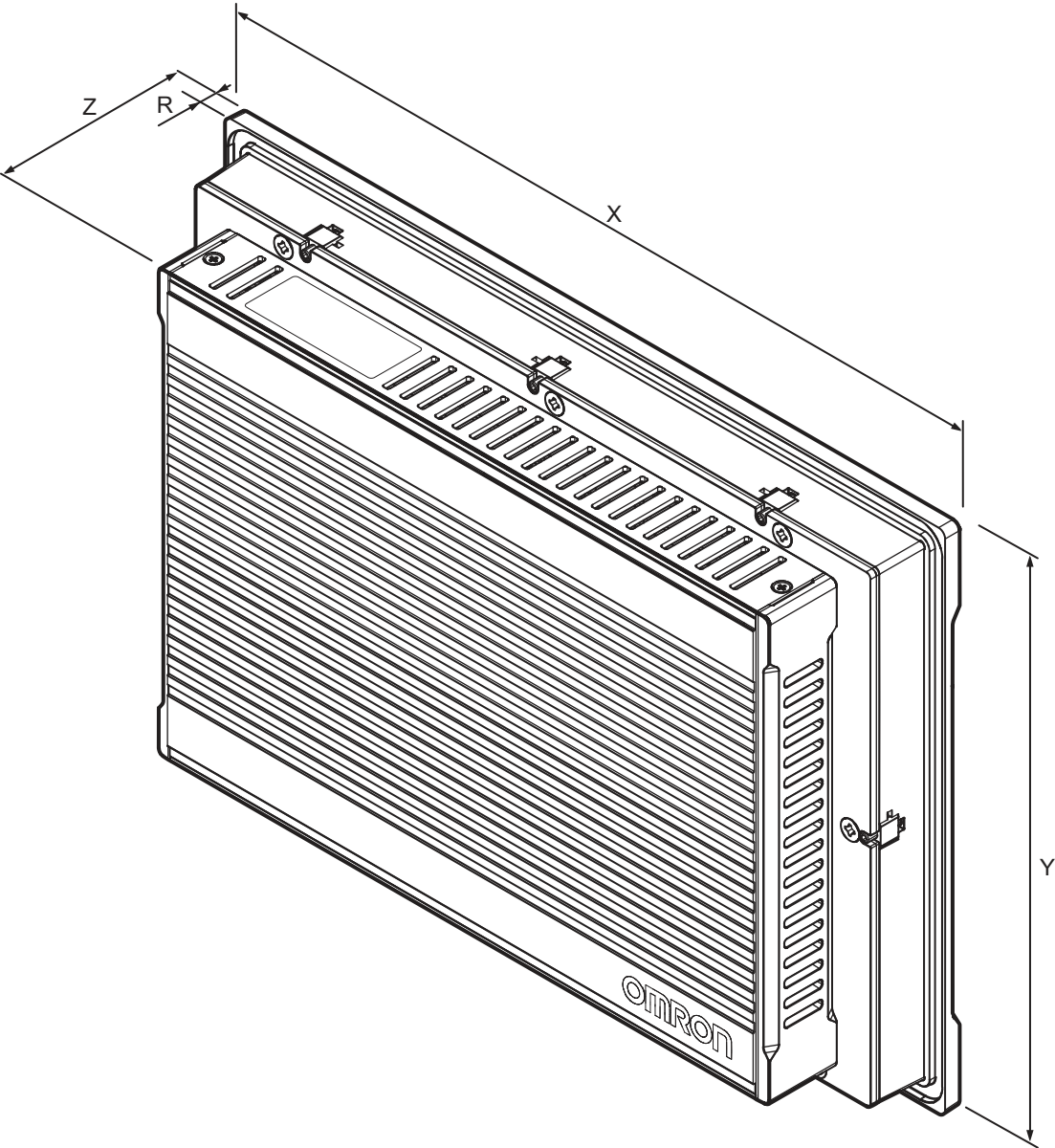
4-1 General Specifications	4 - 2
4-1-1 Dimensions and Weight	4 - 2
4-1-2 General Electrical Specifications	4 - 3
4-2 Connector Specifications	4 - 4
4-2-1 Power Connector Specifications	4 - 4
4-2-2 DVI-D Connector Specifications	4 - 5
4-2-3 USB Type-A Connector Specifications	4 - 7
4-2-4 USB Type-B Connector Specifications	4 - 8
4-3 Display Specifications	4 - 9
4-4 Environmental Specifications	4 - 10
4-4-1 Operation Environment Specifications	4 - 10
4-4-2 Temperature and Humidity Specifications	4 - 11
4-4-3 Recycling Specifications	4 - 11

4-1 General Specifications

This section provides general specifications of the Industrial Monitor.

4-1-1 Dimensions and Weight

The following table provides specification details on dimensions and weights.



Item	Specifications	
	12.1 Inch ^{*1}	15.4 Inch ^{*1}
Dimensions	Width X = 332 mm Height Y = 234 mm Depth Z = 66 mm	Width X = 401 mm Height Y = 277 mm Depth Z = 66 mm
Monitor thickness on top of panel	Rim thickness R = 8.0 mm	
Weight	3.3 kg	4.3 kg

^{*1} Refer to 1-4 Product Configuration on page 1 - 5 for details.

4-1-2 General Electrical Specifications

The following table provides the general electrical specifications.

Item	Specifications	
	12.1 Inch ^{*1}	15.4 Inch ^{*1}
Rated power supply voltage	24 VDC	
Allowable power supply voltage range	19.2 to 28.8 VDC	
Grounding method	Ground to less than 100 Ω	
Power consumption	25 W max.	
Inrush current	At 24 VDC: 5 A / 10ms max.	
Overvoltage category	JIS B3502 and IEC 61131-2: Category II	
EMC immunity level	IEC 61132-2: Zone B	

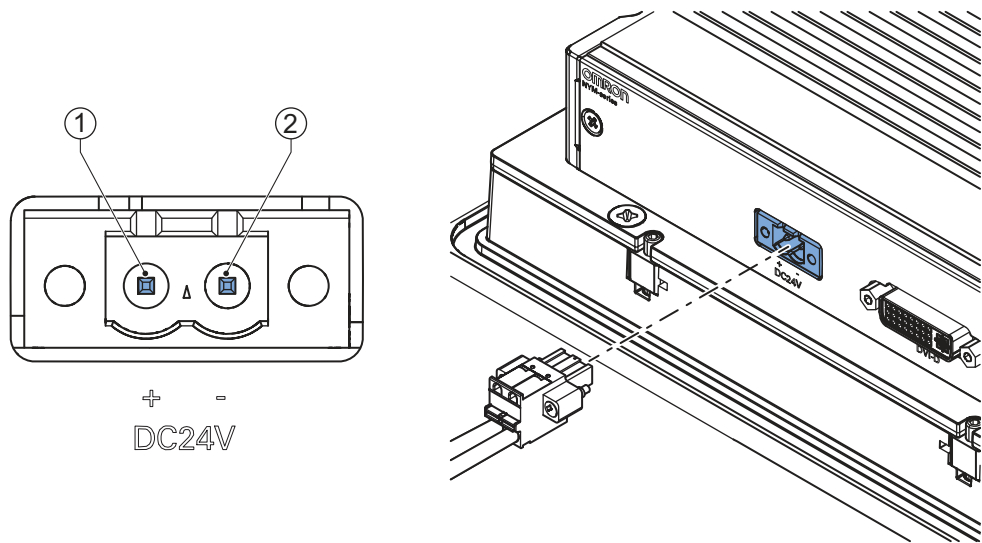
^{*1} Refer to 1-4 *Product Configuration* on page 1 - 5 for details.

4-2 Connector Specifications

This section provides the Connector Specifications of the Industrial Monitor.

4-2-1 Power Connector Specifications

The power connector is used to supply 24 VDC power to the Industrial Monitor.
The connector can only be inserted the correct way.
The connector is a Phoenix Contact type FKCT 2,5/ 2-STF-5,08 BK (1711707).



The pin layout represents the power connector on the Industrial Monitor.

Pin	Description
1	24 VDC
2	0 VDC



Additional Information

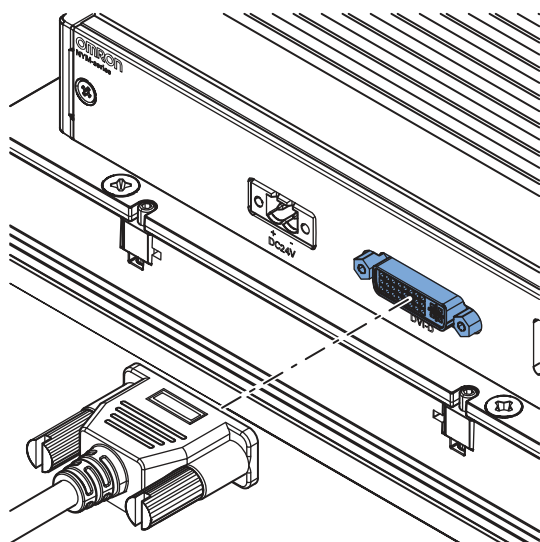
- Refer to 5-3-2 *Wire the Power Connector* on page 5 - 23 for wiring details.
- Refer to 5-3-1 *Ground* on page 5 - 17 for grounding details.
- Refer to 5-4 *Connect* on page 5 - 25 for connection details.

4-2-2 DVI-D Connector Specifications

The DVI-D connector is a single-link connection type for connection with the host PC. The connector follows the DVI-D dual-link assembly design.

The connector includes support for the Display Data Channel (DDC) and can transmit the Industrial Monitor's supported display modes to the host PC through this channel.

The Industrial Monitor can detect if the DVI cable is not connected or that the host PC is not powered or the DVI port on the host PC is disabled.



Item	Specifications
Video interface	Digital only
Resolution	1,280 x 800 pixels at 60 Hz
Maximum DVI cable length	15 m

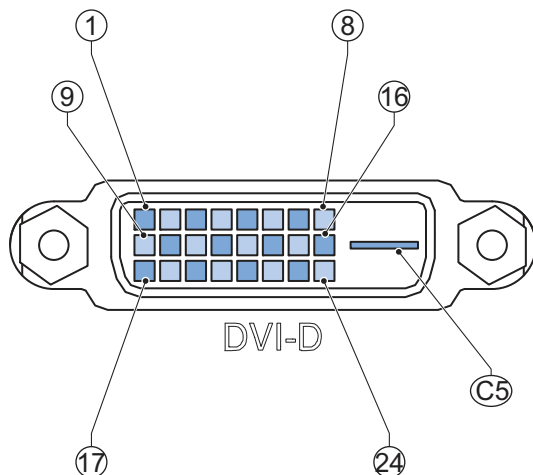


Additional Information

- Refer to 5-3-1 *Ground* on page 5 - 17 for grounding details.
- Refer to 5-4 *Connect* on page 5 - 25 for connect details.

DVI-D Connector Pin Details

Pin details of the DVI-D connector.



The pin layout represents the DVI connector on the Industrial Monitor.

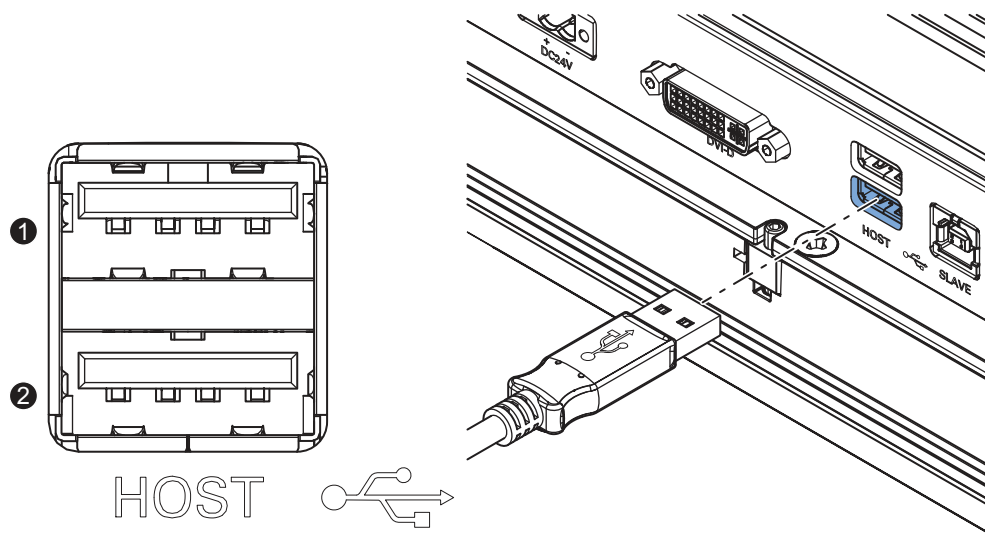
Pin numbers increase from left to right for every row.

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
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	---

4-2-3 USB Type-A Connector Specifications

The USB Type-A connectors are used for connection with slave USB devices like USB Memory Device, keyboard or mouse. This functionality is only available when the USB Type-B connector is connected to an Industrial PC.

Details of the USB Type-A interface connectors are provided below.



Interface Connector	Details
1	<ul style="list-style-type: none"> • USB 2.0 • 500 mA maximum current • 5 m maximum cable length
2	

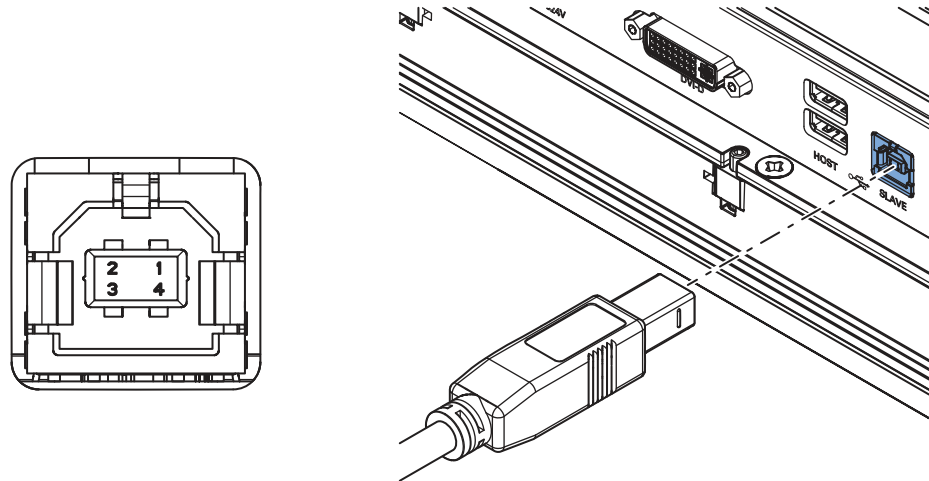


Additional Information

- Refer to 5-3-1 *Ground* on page 5 - 17 for grounding details.
- Refer to 5-4 *Connect* on page 5 - 25 for connection details.

4-2-4 USB Type-B Connector Specifications

The USB Type-B connector is used for connection with the host PC to allow communication to internal and external USB devices. The host PC uses this interface to access the internal touchscreen functions as well as other external devices plugged into the USB Type-A connectors. Details on the USB Type-B interface connector are provided below.



Item	Details
USB Type-B connector	<ul style="list-style-type: none">• USB 2.0• 5 m maximum cable length



Additional Information

- Refer to 5-3-1 *Ground* on page 5 - 17 for grounding details.
- Refer to 5-4 *Connect* on page 5 - 25 for connection details.

4-3 Display Specifications

This section provides the display specifications of the Industrial Monitor.

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}
Display panel ^{*2}	Display device	TFT LCD	
	Screen size	12.1 inches	15.4 inches
	Surface treatment	Anti glare treatment	
	Surface hardness	Mohs scale 5-6	
	Resolution	1,280 × 800 pixels at 60 Hz (horizontal × vertical)	
	Colors	16,770,000 colors	
	Effective display area	261 × 163 mm (horizontal × vertical)	331 × 207 mm (horizontal × vertical)
	View angles	Left: 60°, Right: 60°, Top: 60°, Bottom: 60°	
	Life	50,000,000 operations minimum	
	EMC	Correct touchscreen operation is possible within allowable EMC immunity conditions ^{*3}	
Touch	Technology	Projected capacitive	
	Touch resolution	Touch accuracy 1.5% (4-5mm)	
	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 - 5 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 - 3 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 neglected.

^{*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 dark, it causes flickering or the screen will be too dark to use.

4-4 Environmental Specifications

This section provides environmental specifications of the Industrial Monitor.

4-4-1 Operation Environment Specifications

The following table provides general environmental specifications for the Industrial Monitor.

Item	Specifications	
	12.1 Inch ^{*1}	15.4 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)	Conforms to IEC 60068-2-6. 5 to 8.4 Hz with 3.5 mm single amplitude and 8.4 to 150 Hz with 9.8 m/s ² for 10 times each in X, Y and Z directions	
Shock resistance (during operation)	Conforms to IEC 60028-2-27. 147 m/s ² , 3 times each in X, Y and Z directions	
Degree of protection	Front of product: IP65 ^{*3}	
Pollution degree	2 or less: Conforms to JIS B3502 and IEC 61131-2	

^{*1} Refer to *1-4 Product Configuration* on page 1 - 5 for details.

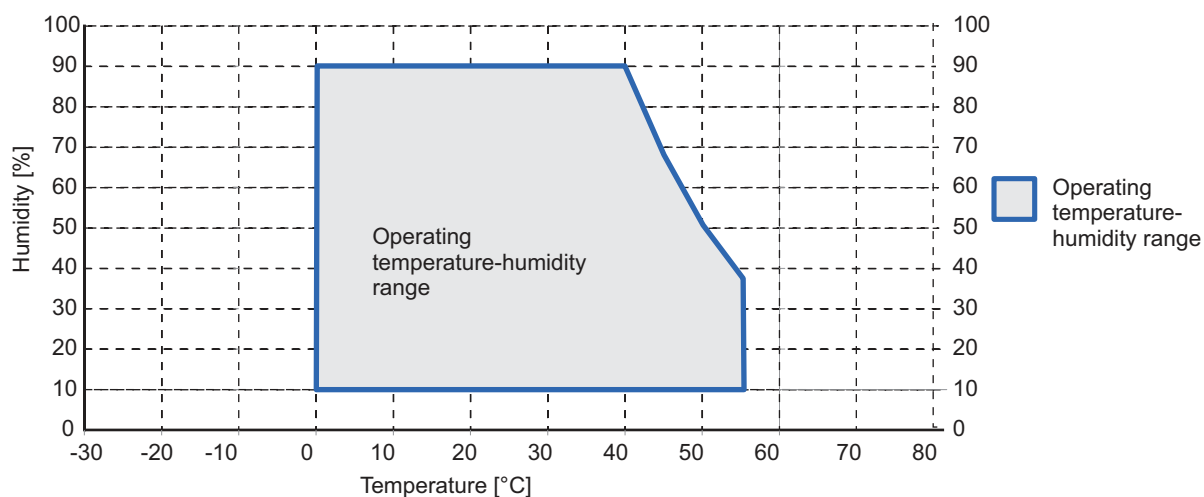
^{*2} Refer to *4-4-2 Temperature and Humidity Specifications* on page 4 - 11 for ambient operating temperature and humidity details.

^{*3} The Industrial Monitor may not operate properly in locations subjected to oil splashes for extended periods of time.

4-4-2 Temperature and Humidity Specifications

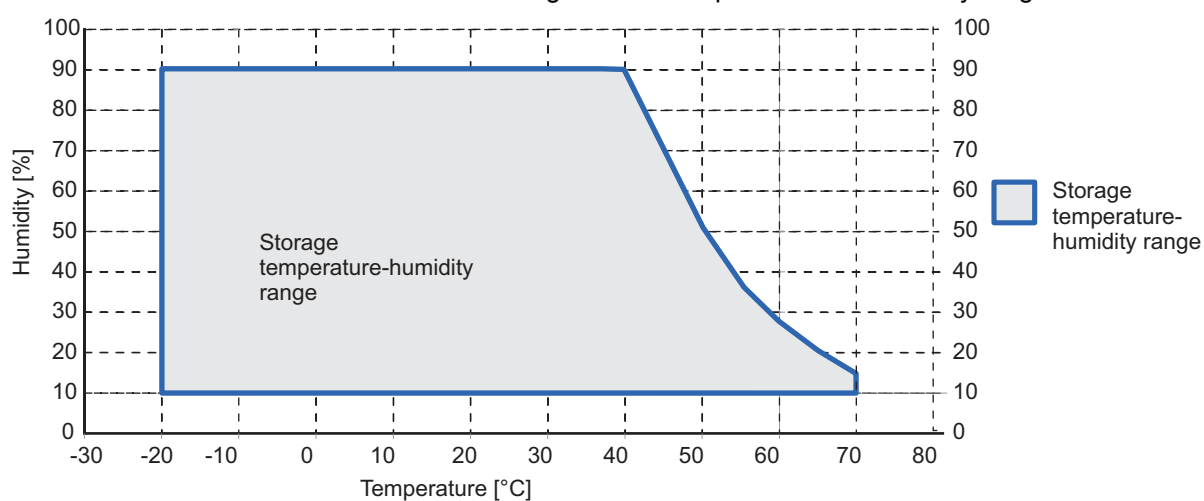
The allowed ambient temperature and humidity conditions during operation and storage of the Industrial Monitor are specified in the following graphs.

- Operate the Industrial Monitor within the following ambient temperature and humidity ranges.



The ambient operating temperature specifications do not depend on the mounting angle, orientation or display size.

- Store the Industrial Monitor within the following ambient temperature and humidity ranges.



4-4-3 Recycling Specifications

The following table provides recycling information for the Industrial Monitor.

Part	Recycle Specifications
Boards and other electrical components	Electrical waste

5

Installation

This section provides all installation details for the Industrial Monitor.

5-1	Unpack	5 - 2
5-1-1	Unpack Procedure	5 - 2
5-1-2	Items Supplied	5 - 3
5-2	Mount.....	5 - 4
5-2-1	Installation Method in Control Panels	5 - 4
5-2-2	Product Orientation	5 - 5
5-2-3	Temperature.....	5 - 6
5-2-4	Humidity	5 - 8
5-2-5	Vibration and Shock.....	5 - 8
5-2-6	Atmosphere.....	5 - 9
5-2-7	Electrical Environment	5 - 9
5-2-8	Prepare the Mounting Surface	5 - 14
5-2-9	Mount the Industrial Monitor	5 - 16
5-3	Wire.....	5 - 17
5-3-1	Ground	5 - 17
5-3-2	Wire the Power Connector	5 - 23
5-4	Connect.....	5 - 25
5-4-1	Connector Identification	5 - 25
5-4-2	Connection Procedure	5 - 26
5-5	Initial Power ON.....	5 - 27
5-5-1	Initial Power ON Procedure	5 - 27

5-1 Unpack

This section provides details on how to unpack the Industrial Monitor.

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.



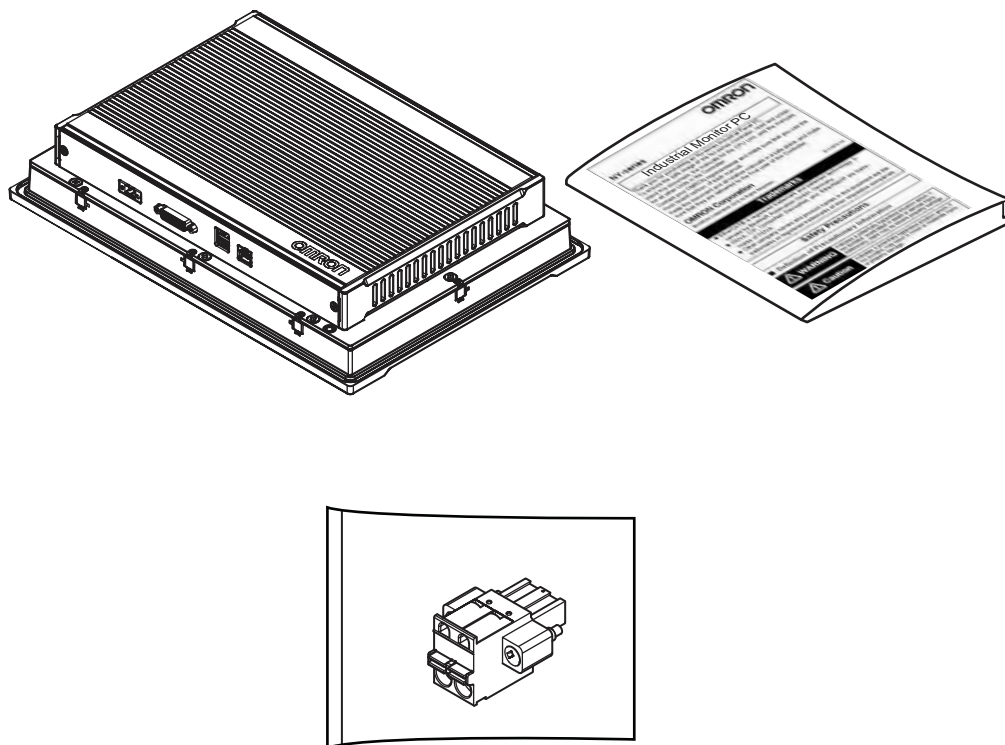
Additional Information

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 Monitor.

- Industrial Monitor
- Instruction sheet
- Bag with power connector



5-2 Mount

This section describes how to mount the Industrial Monitor 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.



5-2-1 Installation Method in Control Panels

The Monitor 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 Monitor and other devices.



Precautions for Safe Use

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



Precautions for Correct Use

Do not operate or store the Monitor 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 oil or chemicals
- Locations subject to shock or vibration
- Locations outdoors subject to direct wind and rain
- Locations subject to strong ultraviolet light

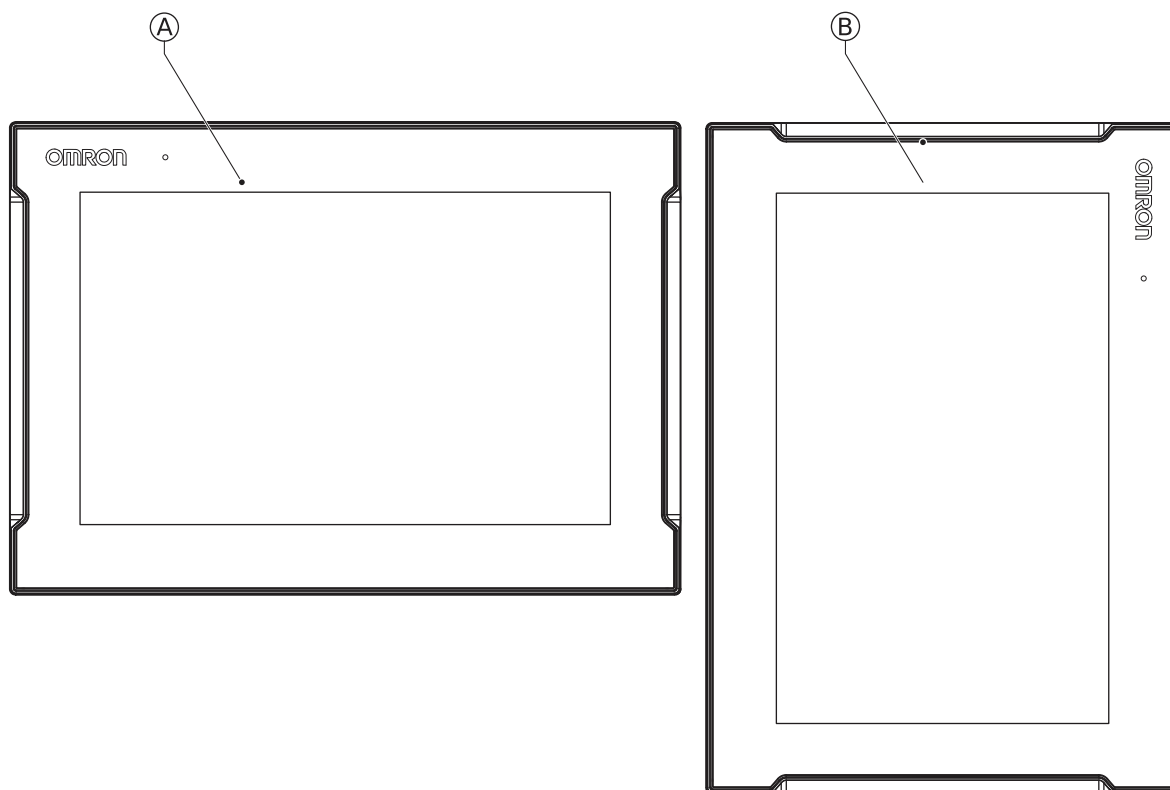


Additional Information

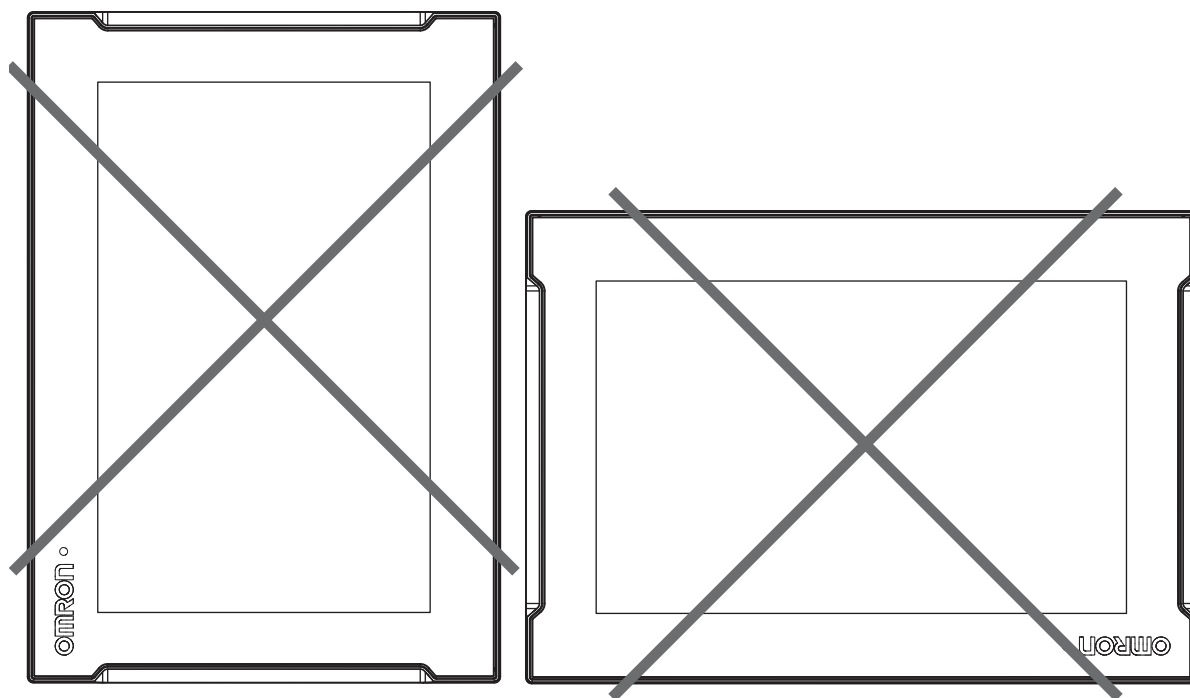
- Refer to 5-2-2 *Product Orientation* on page 5 - 5 for orientation details.
- Refer to 5-2-3 *Temperature* on page 5 - 6 for temperature details.
- Refer to 5-2-4 *Humidity* on page 5 - 8 for humidity details.
- Refer to 5-3 *Wire* on page 5 - 17 for wiring details.

5-2-2 Product Orientation

The Industrial Monitor can be mounted in a landscape ^(A) or portrait ^(B) orientation.



Do not install the Industrial Monitor in any of the following orientations.



5-2-3 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

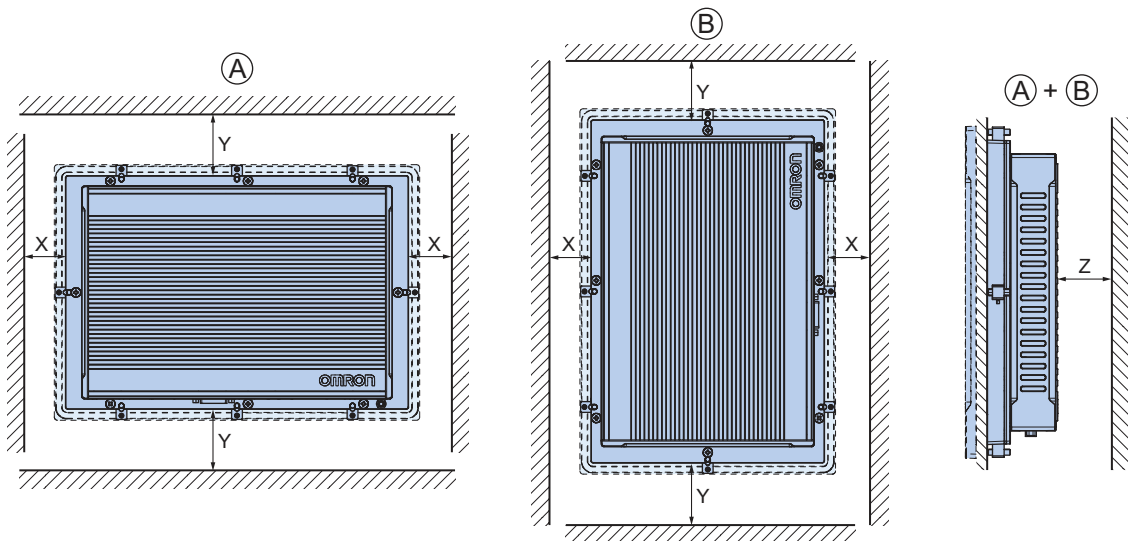
Adequate airflow around the Industrial Monitor is required.



Additional Information

- The ambient temperature must be within the operating range.
Refer to 4-4 *Environmental Specifications* on page 4 - 10 for temperature specifications.
- Allow space to accommodate for the bending radius of the cables.
Refer to 2-4-1 *DVI Cables* on page 2 - 9 for DVI cable bending requirements
and to 2-4-2 *USB Type-A to USB Type-B Cables* on page 2 - 10 for USB cable bending requirements.

Provide enough space for good air flow and ensure the following minimum distances are observed around the sides of the Industrial Monitor for landscape (A) and portrait (B) orientations.



Item	Minimum Distance ^{*1}
X	50 mm
Y	100 mm
Z	50 mm

^{*1} Measure the minimum distances X and Y at the air openings in the sides of the Industrial Monitor.

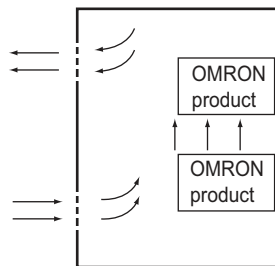
High Temperatures

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.

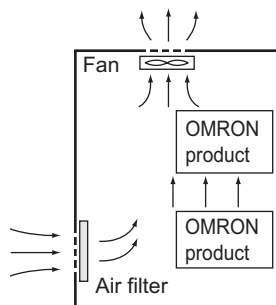
- Do not install the Monitor at the top of the panel, where hot air tends to stagnate.
- To provide ventilation space above and below the Monitor, leave sufficient distance from other devices, wiring ducts, etc.
- Do not mount the Monitor in the wrong direction (e.g., vertically or upside down). Doing so may cause abnormal heating in the Monitor.
- Do not install the Monitor directly above any heat-generating equipment, such as heaters or transformers.
- Do not install the Monitor in a location exposed to direct sunlight.



Natural Cooling

● Forced Ventilation

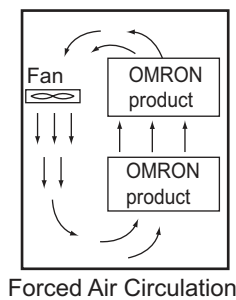
Forced ventilation with a fan in the top of the control cabinet.



Forced Ventilation Method

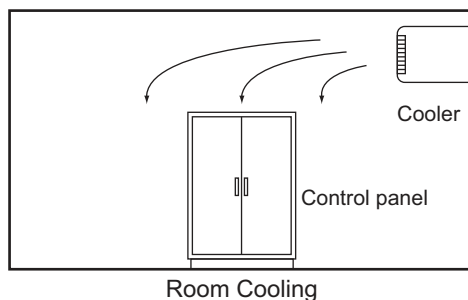
● Forced Air Circulation

Forced circulation with a fan inside the closed control cabinet.



● Room Cooling

Cool the entire room where the control panel is located.



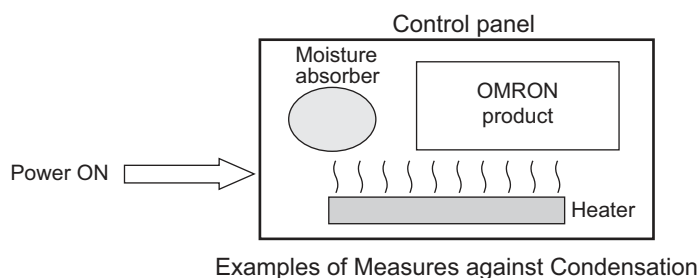
Low Temperatures

The Monitor 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 installing a low-capacity space heater in the panel. Alternatively, leave the Monitor power ON to keep the Monitor warm.

5-2-4 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 Monitor power ON at night or installing a heater in the control panel to keep it warmer.



5-2-5 Vibration and Shock

The Monitor 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 Monitor 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 Monitor control panel from the source of the vibration or shock. Or secure the Monitor 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 Monitor with rubber padding.

5-2-6 Atmosphere

Using the Monitor 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 Monitor.

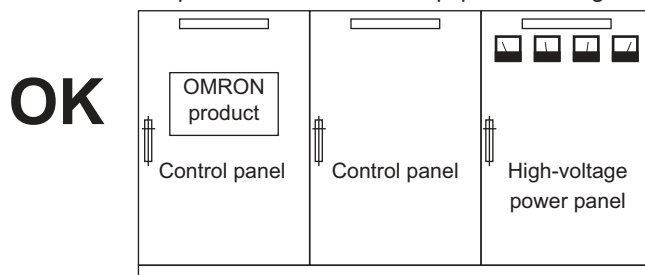
5-2-7 Electrical Environment

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

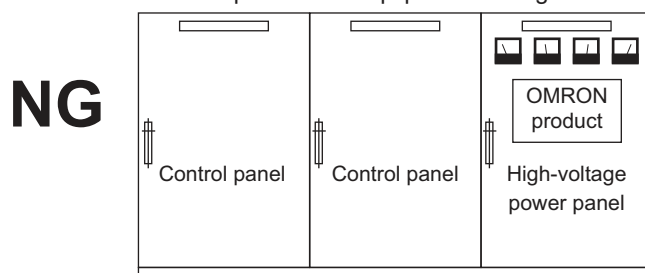
Installation Location

Install the Monitor 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



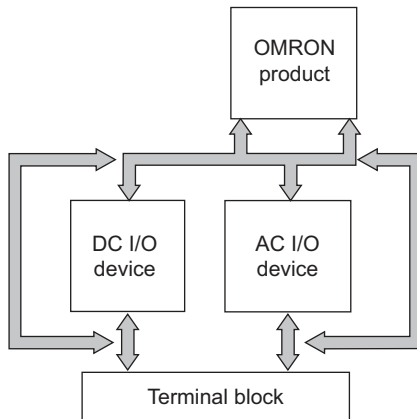
Example of Poor Equipment Arrangement



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 Monitor. Locate them at least 100 mm away from the Monitor.

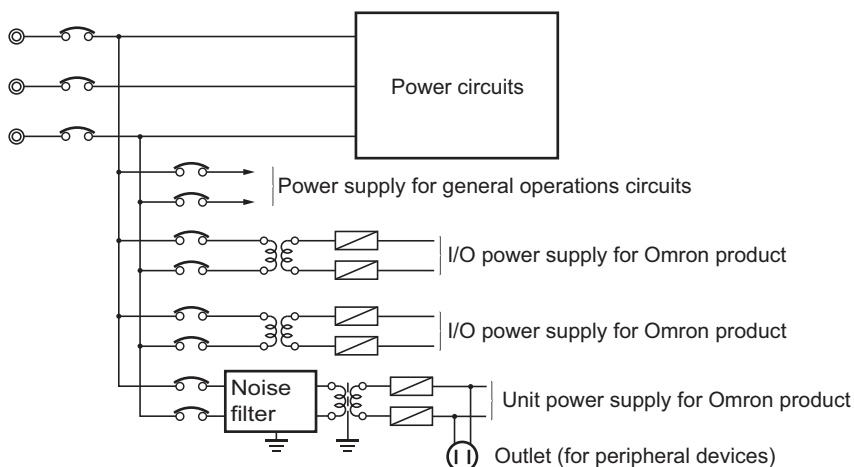


Example of Arrangement in Panel

Wire Layout for the Power Supply

Observe the following points when wiring the power supply system.

- Separate the Monitor power supply from the I/O device power supply and install a noise filter near the Monitor power supply feed section.
- Use an isolating transformer to significantly reduce noise between the Monitor and the ground. Install the isolating transformer between the Monitor power supply and the noise filter, and do not ground the secondary coil of the transformer.
- Keep the wiring between the transformer and the Monitor as short as possible, twist the wires well, and keep the wiring separate from high-voltage and power lines.



Power Supply System Diagram

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

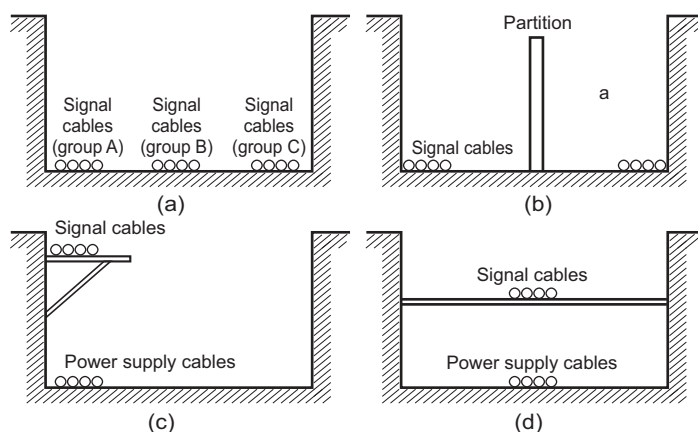
Each of the following combinations includes different signal types, properties, or levels. They will cause the signal-to-noise ratio to drop due to factors such as electrical induction. As a general rule when wiring, either use separate cables or separate wiring routes for these items. Future maintenance 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

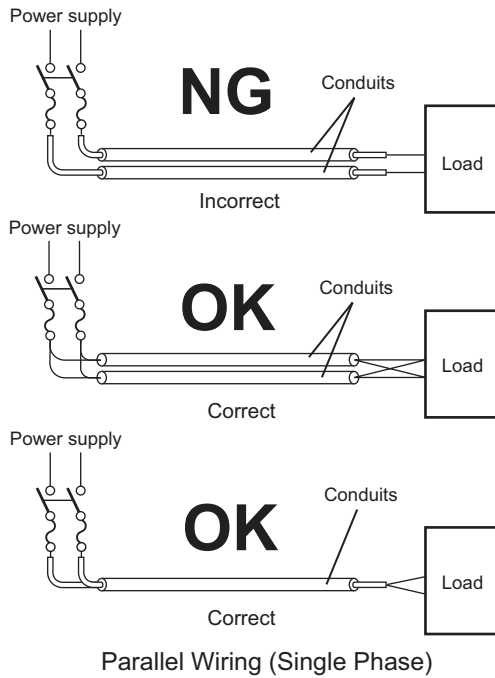
Observe the following points when wiring power supply and signal cables.

- 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.

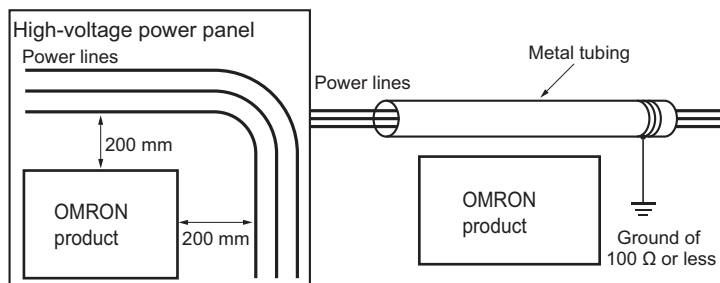


Partitioning Methods for Signal and Power Supply Cables

- To avoid overheating the conduits when using conduits for wiring, do not place wires for a single circuit in separate conduits.



- Power cables and signal cables adversely affect each other. Do not wire them in parallel.
- Noise induction may occur if the Monitor is installed in a panel that includes high-voltage devices. Wire and install them as far apart as possible.
- Either install the Monitor 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 Industrial Monitor directly into the duct.



Additional Information

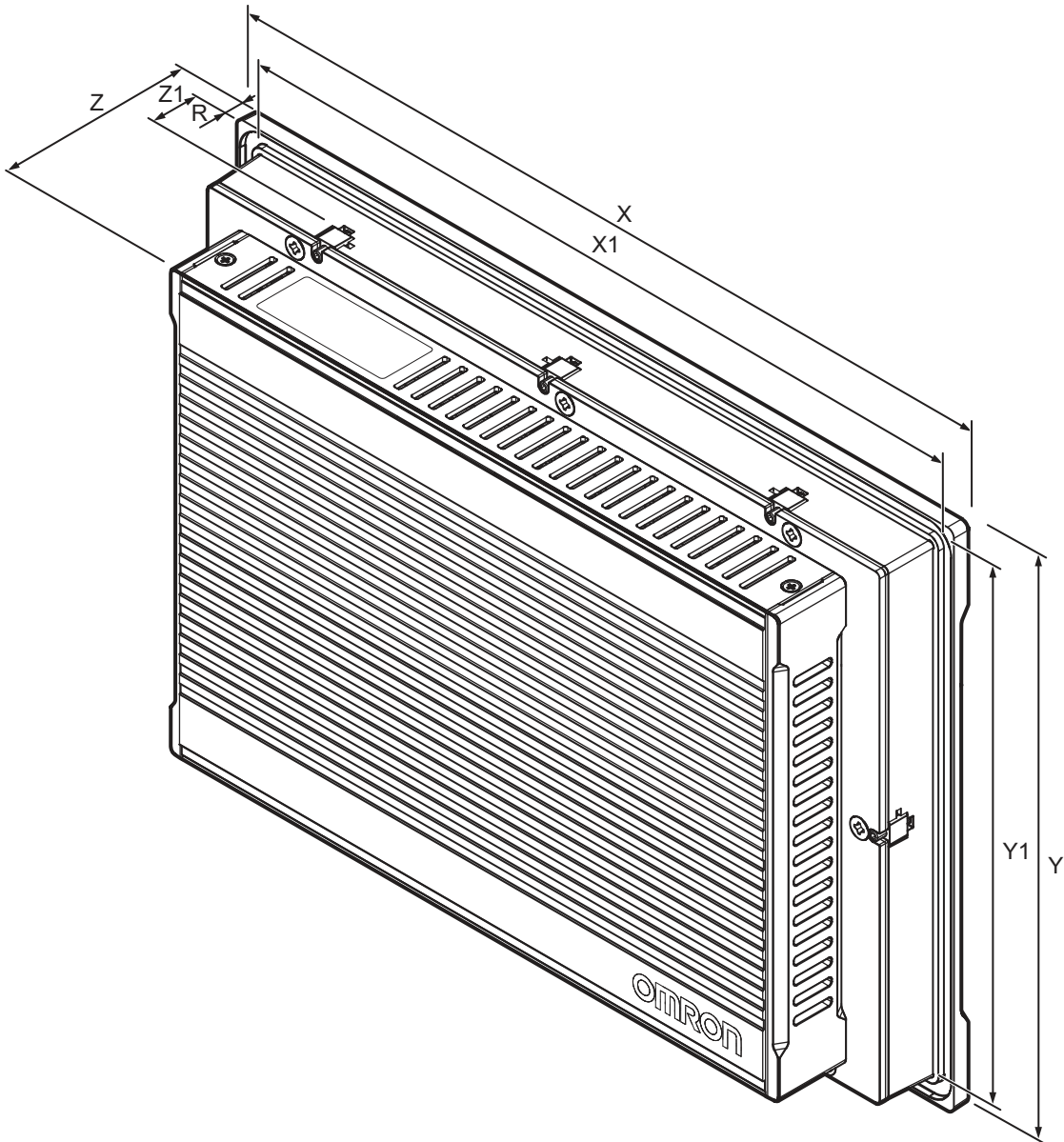
Refer to *Distance for Cooling* on page 5 - 6 for the minimum required distances.

It is convenient to use wiring ducts that have the same depth as the Industrial Monitor.



5-2-8 Prepare the Mounting Surface

The Industrial Monitor can be mounted in a landscape or portrait orientation.
The mounting hardware is integrated into the back of the Monitor.



Item	Model Specifications	
	12.1 Inch models ^{*1}	15.4 Inch models ^{*1}
Panel cutout dimensions	Cutout Width X1 = $314^{-0} +1$ mm Cutout Height Y1 = $216^{-0} +1$ mm	Cutout Width X1 = $383^{-0} +1$ mm Cutout Height Y1 = $259^{-0} +1$ mm
Panel thickness range ^{*2}	Panel thickness range Z1 = 1.6 to 6.0 mm	Panel thickness range Z1 = 1.6 to 6.0 mm
Dimensions	Refer to 4-1-1 <i>Dimensions and Weight</i> on page 4 - 2 for X, Y, Z and R dimensions.	

^{*1} Refer to 1-4 *Product Configuration* on page 1 - 5 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 Monitor.
Prepare a rectangular cut out with the dimensions X1 and Y1.

- 3** Ensure the mounting surface is clean and not warped.

5-2-9 Mount the Industrial Monitor

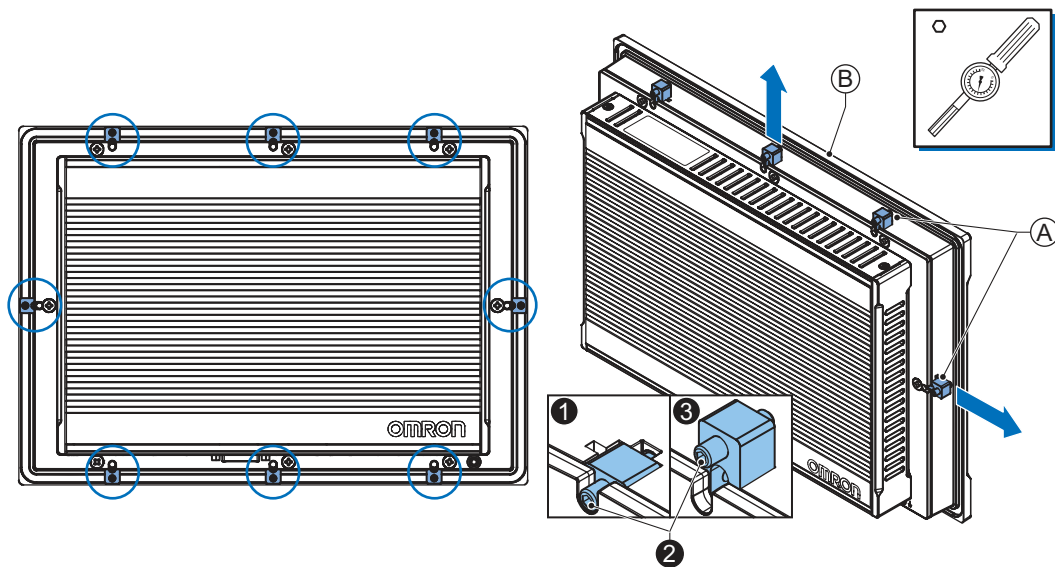
Ensure the panel cut out is ready before beginning the mounting procedure.

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

The Industrial Monitor is equipped with 8 retractable mounting brackets on the back of the Monitor. These brackets are used to fasten and secure the Monitor to the mounting surface.

Use the following procedure to mount the Monitor to the mounting surface:

- 1 Ensure all 8 retractable mounting brackets (A) are in the retracted position ①. If required press the mounting brackets in the retracted position and hand tighten the allen bolt ②.



- 2 Insert the Monitor into the mounting surface cut out so the bezel (B) touches the mounting surface.
- 3 Loosen the allen bolts ② of the mounting brackets.
The mounting brackets are spring loaded and will extend ③ 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.

5-3 Wire

This section describes how to wire the Industrial Monitor.

5-3-1 Ground

This section describes how to ground the Industrial Monitor.

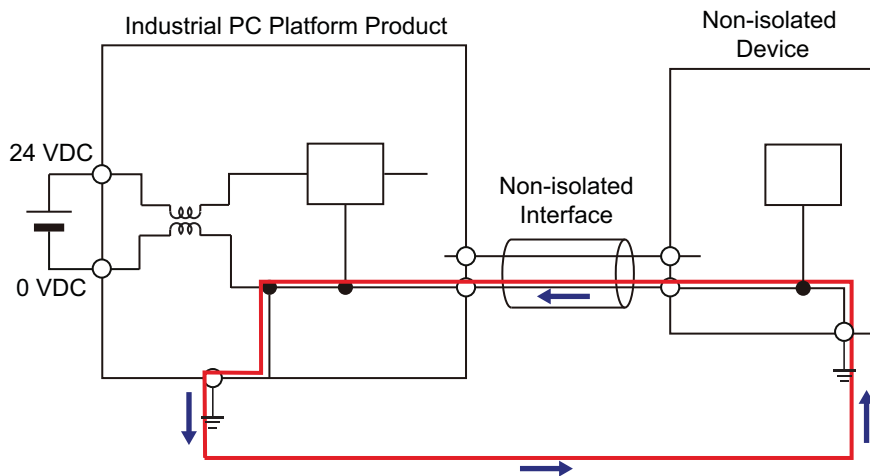
WARNING

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.



Precautions for Correct Use

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

The shielding of the DVI and USB connectors are directly bonded to the case and the functional ground of the Monitor. 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 pigtailed. 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.

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.

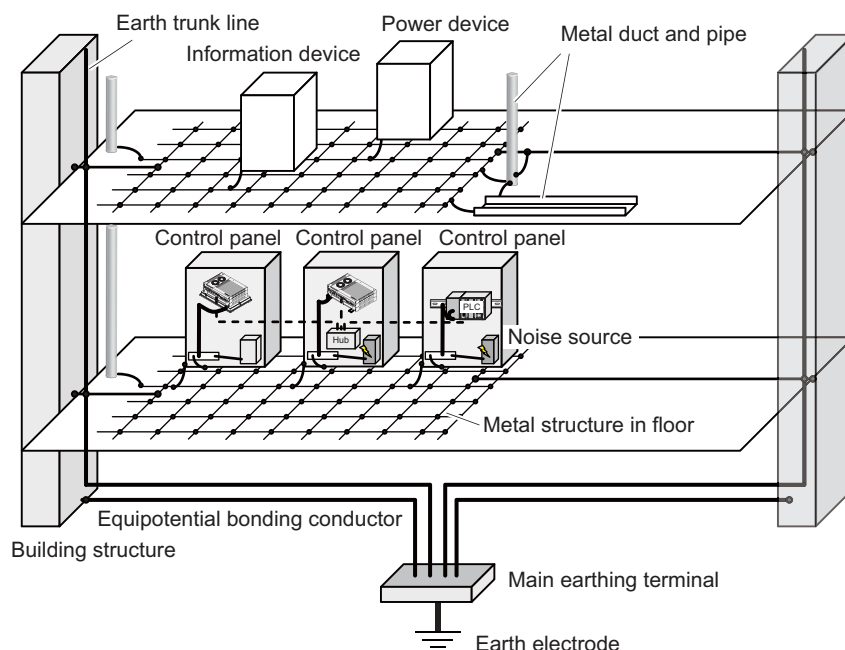
Equipotential Bonding System

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

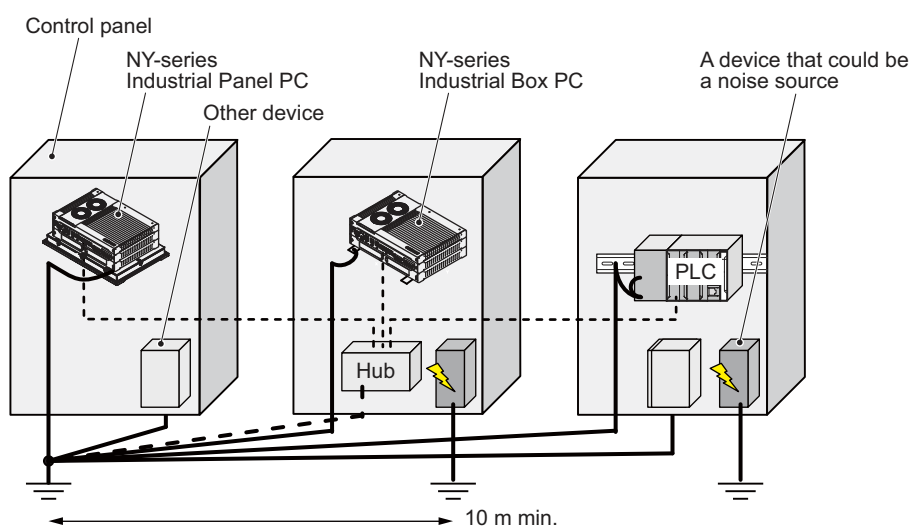
If the earthing method used for the building is not equipotential bonding or the earthing system is unknown, choose (a) from among the earthing methods given below.

(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.

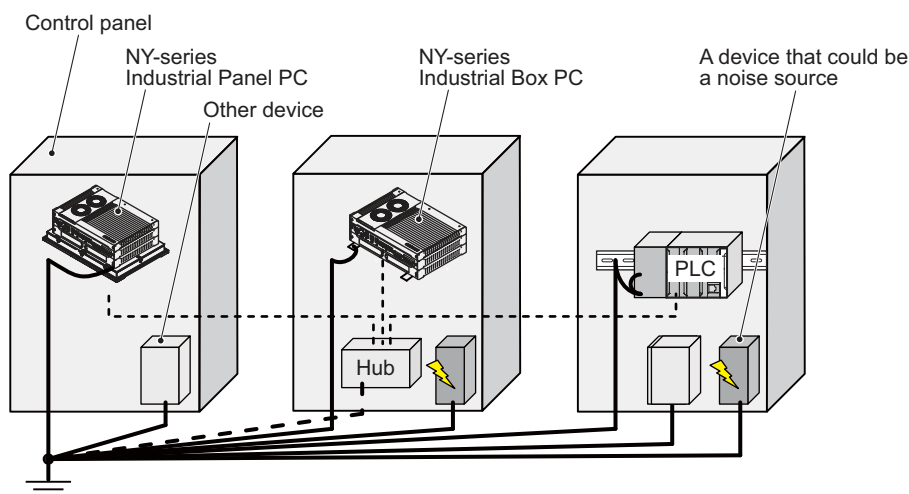
Connect the ground lines of the device that is connected with a communications cable and other devices as a bundle to a single earth electrode. Be sure that the earth electrode is separated by a minimum of 10 m from any other earth electrode of a device that could be a noise source.



(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.

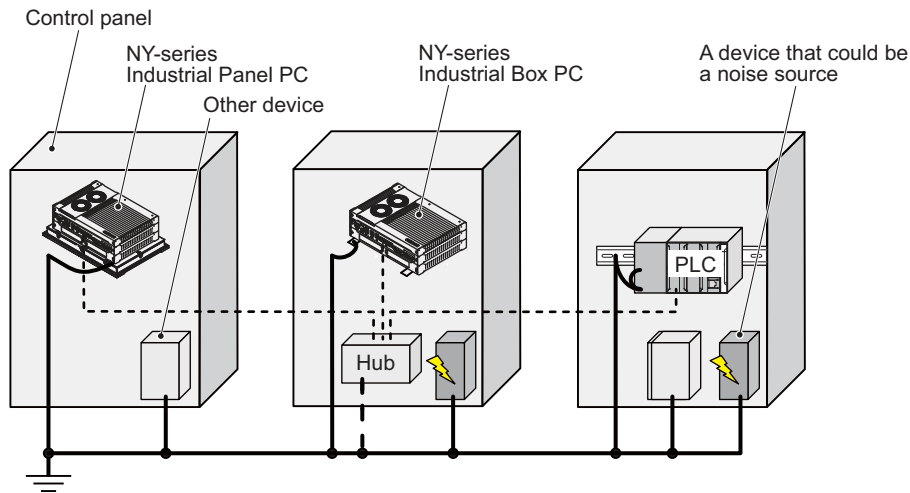
This earthing method is not recommended because the device that could be a noise source may interfere electromagnetically with other devices.



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.

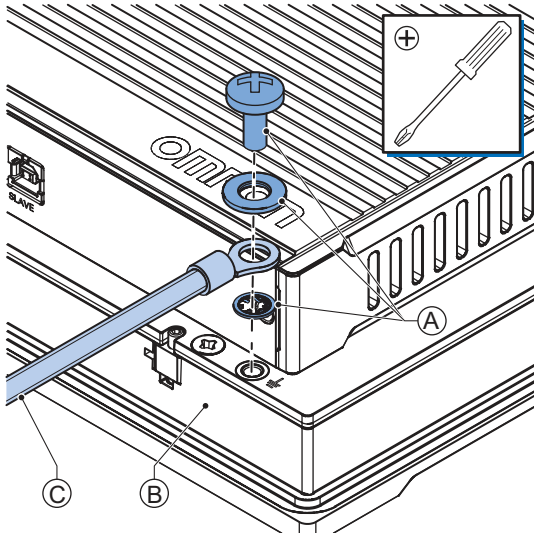


Ground Connection Details

This section provides details about the ground connection.

Use the functional ground terminal on the backside of the monitor to ground your Industrial Monitor.

The washers and screw (A) are pre-mounted at the Industrial Monitor.

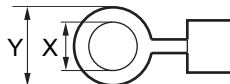


Remove the pre-mounted washers and screw (A) and then mount the ground connection wire (C) to the Monitor (B) using the washers and screw (A).

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

● Crimp terminals

Use crimp terminals with dimensions $X = M4$ and $Y = 8 \text{ mm max.}$



5-3-2 Wire the Power Connector

This section describes how to wire the power connector.



Precautions for Safe Use

- Do not perform a dielectric strength test.
- 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.

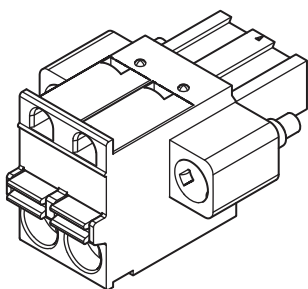
Power Connector Wiring Materials

Use the power supply connector that was supplied to connect the power supply to the Industrial Monitor.

- 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 for the connector are provided in the table.

Wire type	Conductor cross-section
Solid conductor	0.5 to 2.5 mm ²
Flexible conductor	
Flexible conductor, with ferrule and no plastic sleeve	
Flexible conductor, with ferrule and plastic sleeve	

- Power Supply Connector



DC Power Supply

The OMRON S8VK-series power supply is recommended for use with the Industrial Monitor.



Additional Information

- Refer to 2-4-3 *Power Supply* on page 2 - 10 for more information.
- Refer to 4-1-2 *General Electrical Specifications* on page 4 - 3 for power consumption details.

Power Connector Wiring Procedure

Use the following procedure to wire the power connector.

1

Remove the sheath from the power supply wires.



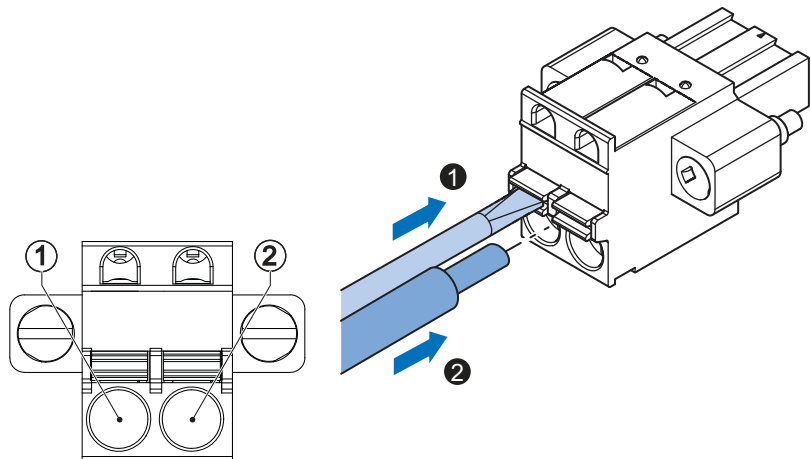
Precautions for Safe Use

Observe the following to 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.

2

Insert a screwdriver in the small orange groove above the cable opening **1**. Push the screwdriver **1** to unlock the cable entry and then push the wire all the way to the back of the cable opening **2**.



Pin	Description
1	24 VDC
2	0 VDC

3

Remove the screwdriver.

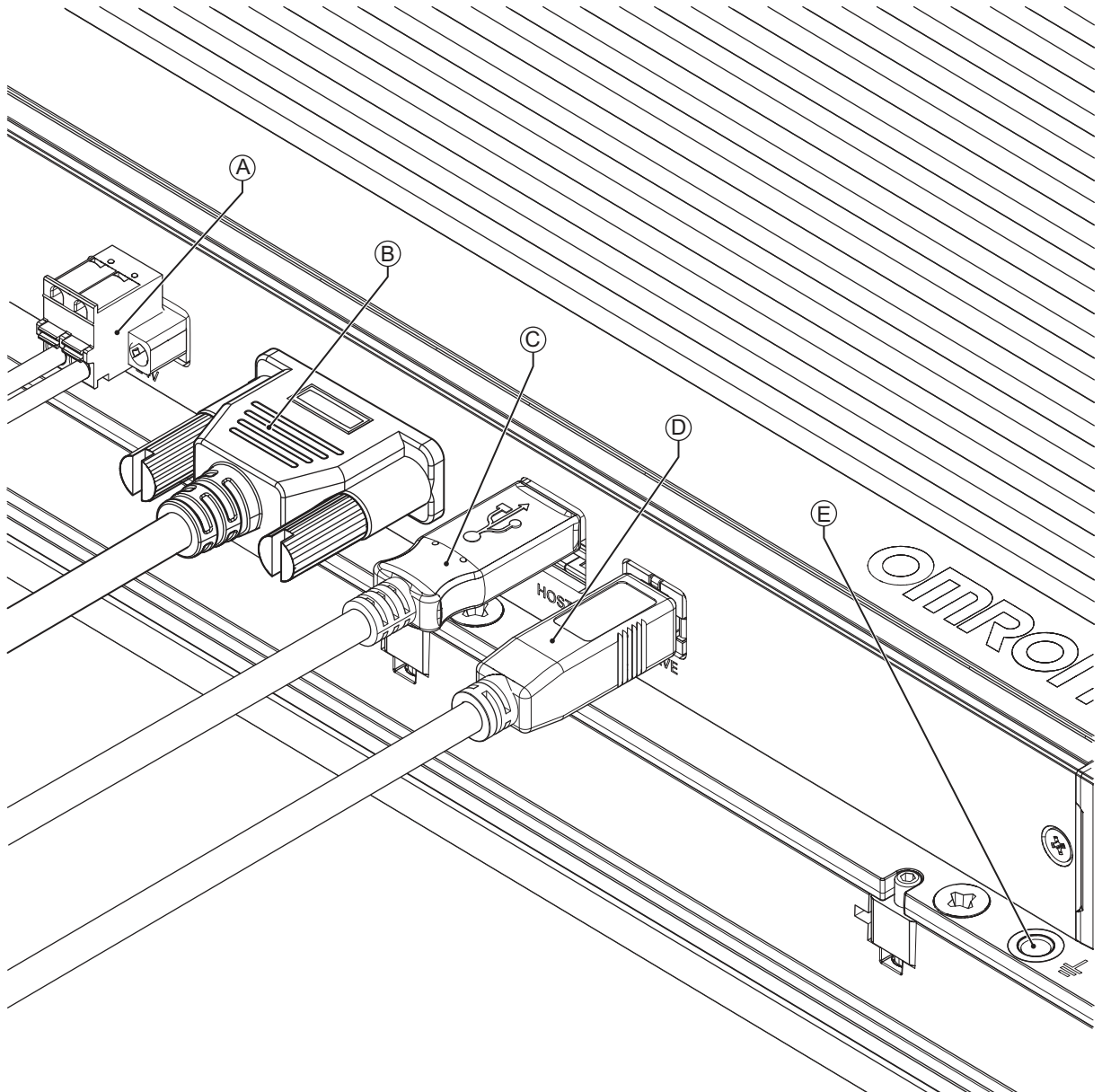
Do not apply stress to the cable after you have connected the wires.

5-4 Connect

This section describes how to connect the Industrial Monitor.

5-4-1 Connector Identification

The Industrial Monitor connections are shown below.



Item	Name	Description
A	Power Supply Connector	Power connector with screw fixing
B	DVI-D Connector	Digital Visual Interface connector
C	USB Type-A Connectors	USB Type-A connectors
D	USB Type-B Connector	USB Type-B connector
E	Functional Ground Terminal	The functional ground terminal

5-4-2 Connection Procedure

Use the following procedure to connect the Industrial Monitor.

Ensure the Monitor is securely fastened to the mounting surface.

Ensure the mounted Industrial Monitor can be connected to power and peripheral devices. Remove dust covers where applicable and store them in a safe place.



Additional Information

- Refer to 5-2 *Mount* on page 5 - 4 for mounting details.
 - Refer to 2-4-1 *DVI Cables* on page 2 - 9 for the DVI cable bending radius.
 - Refer to 2-4-2 *USB Type-A to USB Type-B Cables* on page 2 - 10 for the USB cable bending radius.
 - Refer to individual cable specifications for acceptable bending radius and connector clearance.
-

Use the following procedure to connect the Industrial Monitor:

- 1** Ensure the functional ground terminal ⑤ is connected.
Refer to 5-3-1 *Ground* on page 5 - 17 for ground connection details.
- 2** Connect the power connector ① and tighten the screws with a torque of 0.3 N·m max. using a screwdriver.
- 3** Connect the DVI-D connector ② to a host PC and tighten the fastening screws.
- 4** Connect the USB Type-B port ④ to a host PC.
- 5** Connect the optional slave devices to the USB Type-A ports ③ as needed.
Do not remove the dust cap unless a connection to a peripheral device is required.



Precautions for Safe Use

Power ON after the DVI cable is connected between the host PC and the product.

The Industrial Monitor is connected.

5-5 Initial Power ON

This section describes how to Power ON the Industrial Monitor 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.



5-5-1 Initial Power ON Procedure

Use the following procedure to power ON the Industrial Monitor for the first time.

- 1** Ensure the following conditions are present before applying power for the first time:
 - The Industrial Monitor is securely fastened to the mounting surface.
 - The Industrial Monitor is connected to ground.
 - All connectors are securely fastened.
- 2** Supply power to the Industrial Monitor.
The Status LED will blink green while the host PC has no power.



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.

- 3** Supply power to the host PC.
Windows drivers will automatically install upon detection of the Industrial Monitor.
The Logo LED will become lit.
The monitor will display content from the host PC.
- 4** Verify that the host PC is responding to finger touches on the touchscreen of the Industrial Monitor.
- 5** Install the Industrial Monitor Utility and Industrial Monitor Brightness Utility if necessary.
- 6** Open the Industrial Monitor Utility and adjust the backlight, Logo LED, and Status LED brightness to desired levels and then save the settings.

The Industrial Monitor is ON and ready for operation.



Additional Information

The Industrial Monitor Utility and Industrial Monitor Brightness Utility are pre-installed on the Industrial Box PC and Industrial Panel PC products.
Refer to *3-2-2 Industrial Monitor Utility* on page 3 - 5 and refer to *Industrial Monitor Brightness Utility* on page 3 - 8 for details about downloading, installation and use of these utilities for other host PCs.

6

Operating Procedures

This section provides the operating procedures for the Industrial Monitor.

6-1	Touchscreen Operation	6 - 2
6-2	Power ON / Power OFF / Standby	6 - 3
6-3	Support Software and Product Information.....	6 - 4
6-4	React to Product Messages	6 - 5

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.



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 / Power OFF / Standby







There is no power button on the Industrial Monitor.
The Monitor will detect the power supply and the DVI-signal and then the status of the Monitor will change accordingly.



Precautions for Safe 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.

Signals, status and operation are provided in the table below.

Item	Product Status	LED status	
		Logo LED	Status LED
No Power	OFF		
Power with no DVI signal	Standby		
Power and DVI signal	ON		

6-3 Support Software and Product Information

OMRON support software is available for the Industrial Monitor to provide product information.



Additional Information

- Refer to *Industrial Monitor Brightness Utility* on page 3 - 8 for Brightness Slider details.
 - Refer to *3-2-2 Industrial Monitor Utility* on page 3 - 5 for Industrial Monitor Utility details.
 - Refer to *3-3-2 Industrial Monitor API* on page 3 - 14 for Industrial Monitor API details.
-

The connected Industrial Box PC can use the Industrial PC Tray Utility to display the status of the PC but also of the Industrial Monitor.



Additional Information

- Refer to *3-2-4 Industrial PC Tray Utility* on page 3 - 10 for Industrial PC Tray Utility details.
 - Refer to *6-4 React to Product Messages* on page 6 - 5 for status details.
-

6-4 React to Product Messages

The Industrial Monitor uses the Industrial PC Tray Utility icon (A) in the system tray area (B) of Windows to present Warnings and Errors.



Additional Information

Refer to 3-2-4 *Industrial PC Tray Utility* on page 3 - 10 for Industrial PC Tray Utility details.

Check the Industrial PC Tray Utility icon for a Warning or Error symbol.

A Warning or Error symbol displayed on the Industrial PC Tray Utility icon indicates a product message.

To react to a product message:

- 1** Select the Industrial PC Tray Utility icon.
A pop-up window will appear.
- 2** Read the message available in the pop-up.
- 3** Refer to 7-1-1 *Preventive Maintenance Schedule* on page 7 - 2 for all details on the message.
Perform the actions presented for the message until the Warning or Error is resolved.

The product messages for the Industrial Monitor are resolved.

7

Maintenance

This section provides an overview of all maintenance tasks for the Industrial Monitor.

7-1 Preventive Maintenance	7 - 2
7-1-1 Preventive Maintenance Schedule	7 - 2
7-1-2 Clean the Touchscreen Surface	7 - 3
7-1-3 Clean the Monitor.....	7 - 3
7-1-4 Check the Gasket Seal	7 - 4
7-1-5 Keep Software Updated.....	7 - 4
7-2 Corrective Maintenance.....	7 - 5
7-2-1 Warning and Error Messages	7 - 5
7-2-2 Windows Event Viewer	7 - 5
7-2-3 Correct Display Functionality when Nothing is Displayed.....	7 - 8
7-2-4 Correct Touch Screen Functionality	7 - 9

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 Industrial Monitor status	Refer to <i>2-2 LED Indicators</i> on page 2 - 4 for Industrial Monitor status.
Clean the display	Refer to <i>7-1-2 Clean the Touchscreen Surface</i> on page 7 - 3 for display cleaning details.
Weekly	Reference
Clean the Industrial Monitor	Refer to <i>7-1-3 Clean the Monitor</i> on page 7 - 3 for Industrial Monitor cleaning details.
Ensure you have the latest software updates	Refer to <i>7-1-5 Keep Software Updated</i> on page 7 - 4 for update details.
Periodically but at least every 6 months	Reference
Check the gasket behind the monitor rim	Refer to <i>7-1-4 Check the Gasket Seal</i> on page 7 - 4 for gasket details.
Check the ambient environment: <ul style="list-style-type: none"> • Temperature and humidity within specifications • Noise sources not close to the Industrial Monitor 	Refer to <i>4-4 Environmental Specifications</i> on page 4 - 10 for environmental specifications.
Check installation: Industrial Monitor mounted securely	Refer to <i>5-2 Mount</i> on page 5 - 4 for installation details.
Check wiring and connections: <ul style="list-style-type: none"> • Cable connectors fully inserted and locked • No damaged wiring or connectors 	Refer to <i>5-3 Wire</i> on page 5 - 17 for wiring details. Refer to <i>5-4 Connect</i> on page 5 - 25 for connection details.
Check the display: <ul style="list-style-type: none"> • Brightness is sufficient • No touch offset 	Refer to <i>4-3 Display Specifications</i> on page 4 - 9 for display specifications. Refer to <i>3-2-2 Industrial Monitor Utility</i> on page 3 - 5 for brightness details. Refer to <i>Calibrate Touchscreen</i> on page 7 - 10 for calibration details.

7-1-2 Clean the Touchscreen Surface

Clean the touchscreen surface of the Industrial Monitor when necessary to keep it in the best operating condition.

- Ensure the Industrial Monitor is OFF before cleaning.
- Wipe the Industrial Monitor 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 (an approximately 2% solution), wring out the cloth, and wipe the Industrial Monitor.
- Remove all residue from gum, vinyl or tape when cleaning.



Precautions for Correct Use

Turn OFF the product or disable the touchscreen for cleaning.

7-1-3 Clean the Monitor

Clean the Monitor periodically in order to keep it in the best operating condition.
Wipe the Monitor 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.

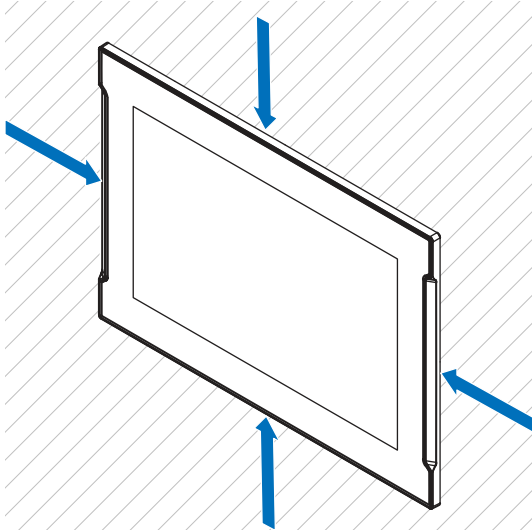
7-1-4 Check the Gasket Seal

The gasket prevents liquid from penetrating the mounting surface.

A damaged gasket can lead to Monitor or other hardware failure.

Check the gasket on all 4 sides of the Monitor.

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 Keep Software Updated

Always keep the software of the host PC at the latest released version to ensure stable operation.

It is specifically important for:

- The Windows operating system.
- The OMRON utilities for the monitor.



Additional Information

- Refer to *3-1 Windows Operating System* on page 3 - 2 for Windows details.
- Refer to *3-2 Support Software* on page 3 - 4 for details on the OMRON utilities.

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.



Contact your local OMRON representative if the corrective maintenance actions did not solve the problem.

7-2-1 Warning and Error Messages

There are no WARNING or ERROR messages for the Industrial Monitor, there are only status messages *Connected* and *Disconnected*.

The Industrial Monitor Utility on the host PC can display these status messages in the Industrial PC Tray Utility.

The following message channels are available.

LED Indicators

The Status LED indicator provides information on warnings and errors.



Additional Information

Refer to 2-2-2 *Status LED Indicator* on page 2 - 5 for Status details.

Industrial PC Tray Utility

The Industrial PC Tray Utility provides information on warnings and errors.

The Industrial PC Tray Utility can provide:

- Status information of a connected Industrial Monitor.
- Information from a custom application that uses the Industrial Monitor API.



Additional Information

- Refer to 3-2-4 *Industrial PC Tray Utility* on page 3 - 10 for Industrial PC Tray Utility details.
- Refer to 3-3-2 *Industrial Monitor API* on page 3 - 14 for Industrial Monitor API details.

7-2-2 Windows Event Viewer

The Windows Event Viewer displays logged events.

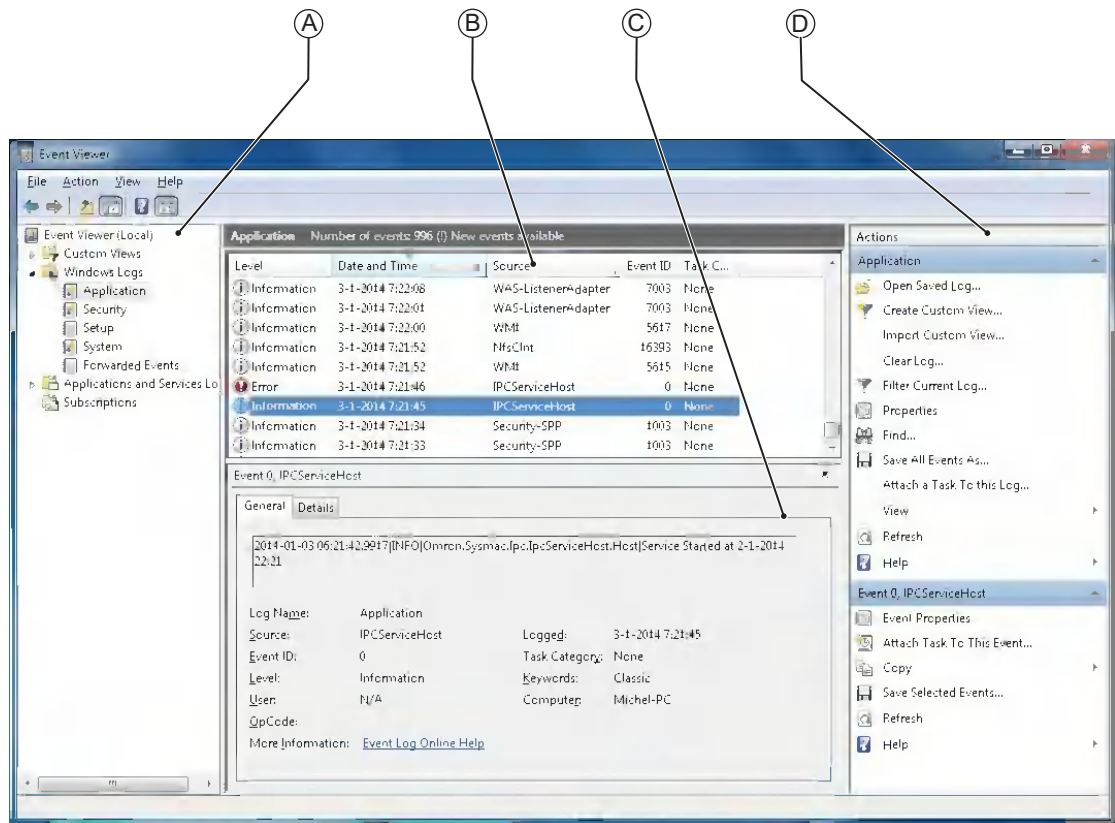
These logged events can support you in corrective maintenance.

1 Select the Windows **Start** Button.

2 In the search field, input *Event*.

3 Select **View event logs**.

The Event Viewer opens.



Item	
A	Selection tree
B	Event list
C	Event details
D	Action list

4 In the Selection tree expand **Windows Logs** and select **Application**.

The Event list will display the Events.

5 Select the heading **Source** to sort the event messages per application.

6 Scroll to the event you want to investigate.

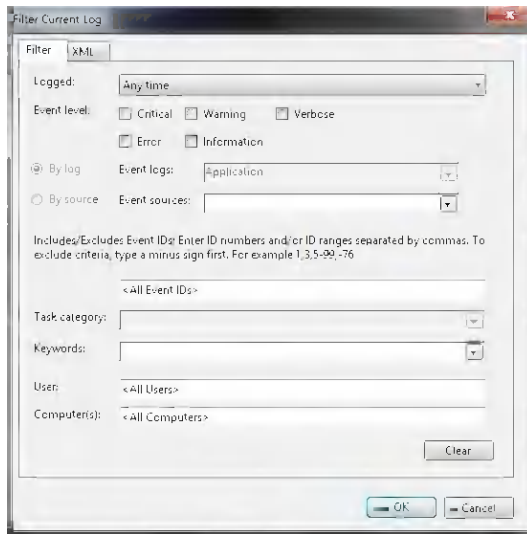
Refer to the section 'Logging' of a specific utility for more details.

7 Select the event to display details in the Event details window or to take action in the Action overview window.

Filter Events and Event Details

This procedure explains how to filter events in the Windows event log.
To filter the events:

- 1** Open the Windows Event Viewer.
Refer to *7-2-2 Windows Event Viewer* on page 7 - 5 for details.
- 2** In the *Actions list* select *Filter Current Log*.
The Filter Current Log page opens.



- 3** Input the desired filters and select **OK**.
- 4** The filtered events will appear in Event list of the Event Viewer.
Select an event in the Event list to display Event details in the Event details part of the Event Viewer.

The filtered events are available including the details per event.

7-2-3 Correct Display Functionality when Nothing is Displayed

When it seems the display is not functional, check the Status LED.

- If the Status LED is OFF
 - Check if the power supply is present.
Refer to *4-1-2 General Electrical Specifications* on page 4 - 3 for power supply specifications.
 - Check if the brightness setting is not too low.
Refer to *3-2-2 Industrial Monitor Utility* on page 3 - 5 for brightness details.
- If the Status LED is blinking
 - Check if the host PC is ON and not in standby mode.
 - Check if the DVI cable is connected.
- If the Status LED is ON
 - Check if the power supply voltage is inside specifications.
Refer to *4-1-2 General Electrical Specifications* on page 4 - 3 for power supply specifications.
 - Check if the ambient temperature is inside specifications.
Refer to *4-4 Environmental Specifications* on page 4 - 10 for temperature specifications.

7-2-4 Correct Touch Screen Functionality

The touch screen functionality can have several unwanted situations.

(1) With one display:

- No touch response

Refer to *No Touch Functionality* on page 7 - 9 for details.

- The touch response is at a different position than the actual touch

Refer to *Calibrate Touchscreen* on page 7 - 10 for details.

(2) With more than one display:

When other monitors are connected it is possible the touch actions on the touch screen monitor show a response on another monitor.

Refer to *Correct Touch Screen Functionality with Multiple Monitors* on page 7 - 11 for details.

No Touch Functionality

When the touch functionality is not functional, check:

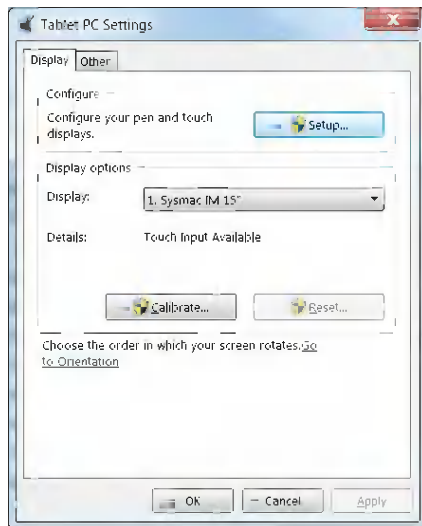
- USB Type-B cable connected to an Industrial PC.
This cable transfers the touch functionality signals between host PC and Monitor.
- Water present on the display surface.
Wipe the display surface with a dry lint free cloth.
- When using gloves, ensure to use gloves that are functional with this touchscreen.

Calibrate Touchscreen

When the resolution of the touch screen monitor is changed the touch functionality might not scale accordingly. The result is that touching the touch screen monitor will display the touch at incorrect locations.

Use the following procedure to calibrate the touch screen functionality of your Industrial Monitor.

- 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 touch screen functionality.

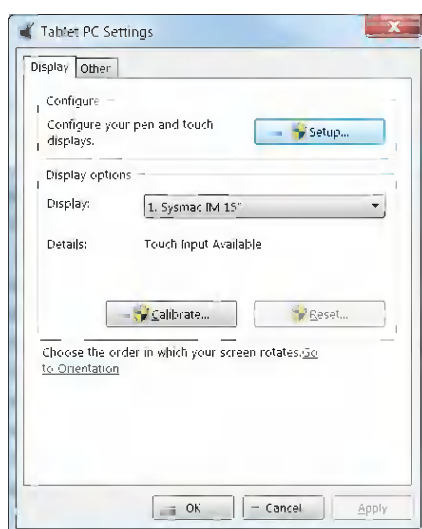
The touch screen functionality is calibrated.

Correct Touch Screen Functionality with Multiple Monitors

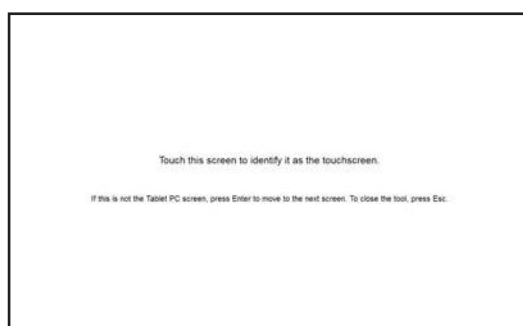
When more than one monitor is connected then Windows can not determine which monitor has the touch functionality. The result is that touching the touch screen monitor can result in actions on a different connected monitor.

Use the following procedure to correct the touch screen functionality on monitors of your Industrial Monitor.

- 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 Tablet 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.*

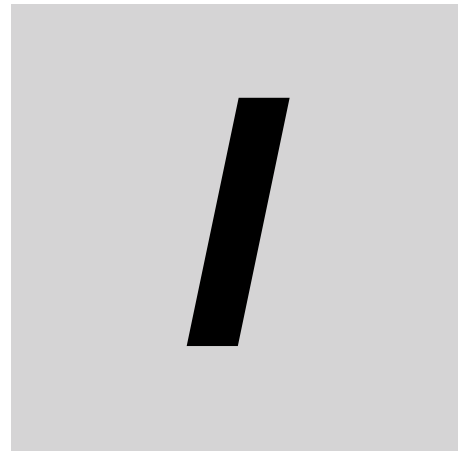
7 Select the **Enter** key.

8 Check the touch screen 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 - 10 for calibration details.

The touch screen functionality is available on the correct monitor.



Index

Index

C		
Cables		
DVI cables.....	2 - 9	
USB Type-A - USB Type-B cable.....	2 - 10	
Configuration		
Product.....	1 - 5	
Connect.....	5 - 25	
Cooling distance.....	5 - 6	
Corrective maintenance.....	7 - 5	
D		
Dimensions.....	4 - 2	
Ducts.....	5 - 13	
DVI-D connector.....	2 - 7	
Specifications.....	4 - 5	
E		
Electrical		
Specifications.....	4 - 3	
Event viewer		
Filter events.....	7 - 7	
H		
Humidity.....	4 - 11	
I		
Industrial Monitor Brightness Utility.....	3 - 8	
Industrial Monitor Utility.....	3 - 5	
Industrial PC Tray Utility.....	3 - 10	
Initial Power ON		
First time.....	5 - 27	
L		
Logging		
Event viewer.....	7 - 5	
Messages.....	3 - 7,3 - 9	
Logo LED.....	2 - 5	
M		
Messages.....	7 - 5	
Product.....	6 - 5	
Mount.....	5 - 4,5 - 16	
P		
Power connector.....	2 - 6	
Specifications.....	4 - 4	
Wiring.....	5 - 23,5 - 24	
Power OFF.....	6 - 3	
Power ON.....	6 - 3	
First time.....	5 - 27	
Power supply.....	2 - 10	
Preventive maintenance.....	7 - 2	
S		
Scope of delivery.....	5 - 3	
Standby.....	6 - 3	
Status.....	6 - 4	
Status LED.....	2 - 5	
Symbols.....	9	
T		
Temperature.....	4 - 11	
Touchscreen		
Calibrate.....	7 - 10	
Operations.....	6 - 2	
Touch screen.....	7 - 11	
U		
Unpack.....	5 - 2	
USB connectors		
USB Type-A specifications.....	4 - 7	
USB Type-B specifications.....	4 - 8	
W		
Weights.....	4 - 2	
Wire.....	5 - 17	

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