

Industrial PC Platform

NY-series

Industrial PC

Operating Systems and Software Utilities Manual

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Introduction

Thank you for purchasing the Industrial PC.

This manual contains information that is necessary to use the Industrial PC (hereafter also named as IPC). Please read this manual and make sure you understand the functionality and performance of the IPC 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 software programming (a software engineer or the equivalent).

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

Applicable Products

This manual covers following Industrial PC products:

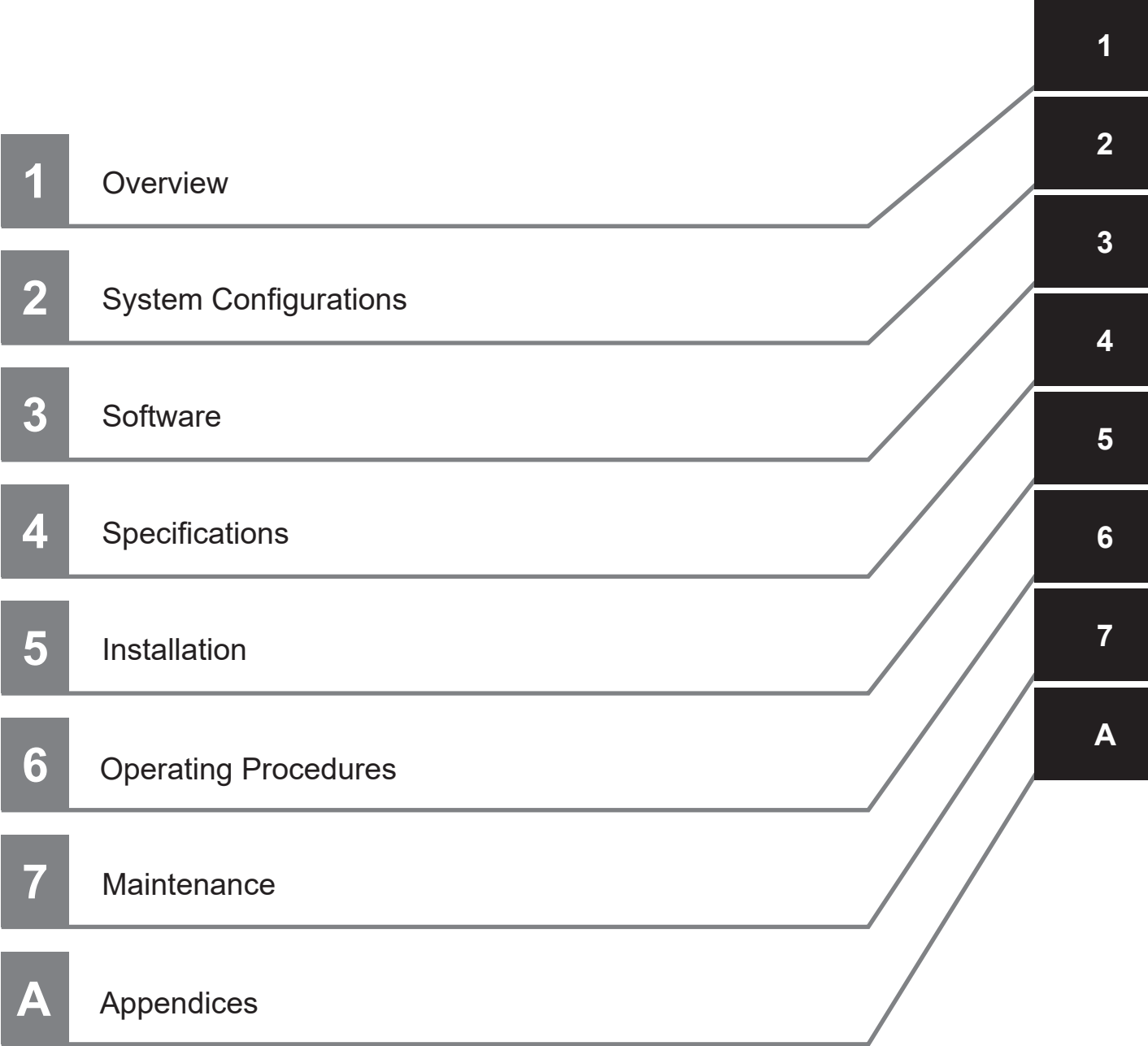
Product	Model
Industrial Box PC	NYB□□
Industrial Panel PC	NYP□□



Additional Information

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

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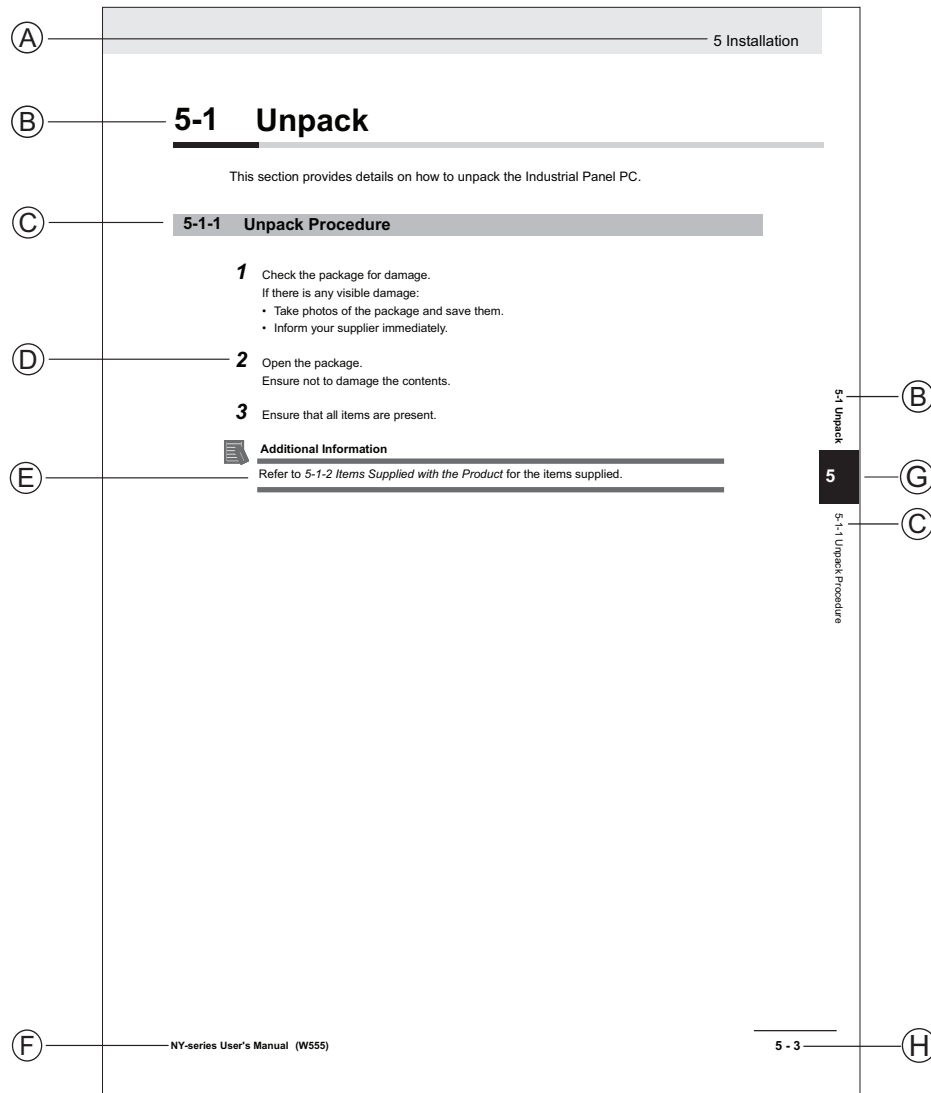
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Manual Information

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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- Omron Companies shall not be responsible for the operation of the user accessible operating system (e.g. Windows, Linux), or any consequence thereof.

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Change in Software Specifications

The software specifications and accessories may be changed at any time based on improvements and other reasons.

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

For NYB□ and NYP□ refer to the following manuals:

- *NY-series Industrial Box PC Hardware User's Manual (Cat. No. W553)*
- *NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W555)*

Precautions for Safe Use

For NYB□ and NYP□ refer to the following manuals:

- *NY-series Industrial Box PC Hardware User's Manual (Cat. No. W553)*
- *NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W555)*

Precautions for Correct Use

For NYB□ and NYP□ refer to the following manuals:

- *NY-series Industrial Box PC Hardware User's Manual (Cat. No. W553)*
- *NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W555)*

Regulations and Standards

Conformance to EU Directives

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

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

Applicable Directive

EMC Directive

Conformance to KC Certification

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

사 용 자 안 내 문

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

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

Conformance to UL and CSA Standards

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

Software Licenses and Copyrights

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

Related Manuals

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

Related Industrial PC Manuals

This table contains the related manuals of Industrial PC products.

Manual name	Cat. No.	Model numbers	Application	Description
NY-series Industrial Box PC Hardware User's Manual (Cat. No. W553)	W553	NYB	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. Mainly hardware information is provided.	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
NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W555)	W555	NYP	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. Mainly hardware information is provided.	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

Industrial Monitor Manual

This table contains the related manual of the Industrial Monitor.

Manual name	Cat. No.	Model numbers	Application	Description
Industrial Monitor User's Manual	W554	<ul style="list-style-type: none"> • NYM12W-C1□□ • NYM15W-C1□□ • NYM19W-C1□□ 	Learning all basic information about the Industrial Monitor. This includes introductory information with features, hardware overview, specifications, mounting, wiring, connecting, operating and maintaining the Industrial Monitor.	An introduction to the Industrial Monitor is provided along with the following information: <ul style="list-style-type: none"> • Overview • Hardware • Software • Specifications • Installation • Operating Procedures • Maintenance

Terminology and Abbreviations

Industrial PC Platform

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

Software

Term / Abbreviation	Description
ACPI	Advanced Configuration and Power Interface protocol for operating systems
API	Application Programming Interface
BIOS	Basic Input Output System. The first software run by a PC when powered on.
Developer	Any person involved with the development of software
DST	Daylight Saving Time
EFW	Enhanced Write Filter
FBWF	File-Based Write Filter
IIoT	Industrial Internet of Things
Linux	An open source Operating System
MBR	Master Boot Record
Merge module	A module providing a standard method by which developers deliver shared Windows installer components and setup logic to their applications
MSDN	Microsoft Developer Network
NUI	Natural User Interface
OS	Operating System
PLC	Programmable Logic Controller
RTOS	Realtime Operating System
SDK	Software Development Kit
TCP/IP	Transmission Control Protocol / Internet Protocol, a core member of the Internet protocol suite
TPM	Trusted Platform Module
VxWorks	A Realtime Operating System designed by Wind River
Windows	An Operating System designed by Microsoft

Hardware

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

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.	W616-E2-02
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↑
Revision code

Revision code	Date	Revised content
02	July 2019	Updated Conformance to KC certification
01	May 2019	<ul style="list-style-type: none"> • First release of this software manual for Industrial PCs • All hardware information for the Box PC is available in NY-series Industrial Box PC Hardware User's Manual (Cat. No. W553) • All hardware information for the Panel PC is available in NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W555).



1

Overview

This section provides general information about the Industrial PC.

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1-1 Intended Use

The Industrial PC is intended to be used in factory automation environments. This Industrial PC can be configured with Windows, Linux or a realtime operating system (RTOS). Software utilities extend the functionality and support the functional integration in custom software. It can be used with third party software to serve as a powerful PC platform.

A user can access the Industrial PC for control, configuration and supervisory operations.

The Industrial PC can easily be integrated in manufacturing innovations like big data, NUI and IIoT.

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

1-2 Software Features

The Industrial PC provides the following software features:

- Operating Systems

The system can be delivered with and without an operating system.

- Software Utilities

A range of software utilities extends the functionality of the Industrial PC.

There are software utilities that provide:

- functional support like brightness adjustments.
- operator support like messages for the operator.
- technical support like status details for diagnosing and resolving problems.

- APIs for developers

Several APIs allow software developers to implement functionality of the Industrial PC in a custom program.

1-3 ID Information Label

The ID information label contains the product configuration and other details on the specific configuration of your Industrial PC.

For NYB□ and NYP□ refer to the following manuals:

- *NY-series Industrial Box PC Hardware User's Manual (Cat. No. W553)*
- *NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W555)*

1-4 Product Configuration

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

Refer to *1-4-1 Product Configuration Box PC* on page 1-5 for Industrial Box PC details.

Refer to *1-4-2 Product Configuration Panel PC* on page 1-7 for Industrial Panel PC details.

1-4-1 Product Configuration Box PC

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

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

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

$$\begin{array}{ccccccc} \text{N} & \text{Y} & \text{B} & \square & \square & - & \square & \square & \square & \square & \square \\ \hline & 1 & & 2 & & & 3 & 4 & 5 & 6 & 7 \end{array}$$

Item	Description	Option / Description
1	Series name	NYB: NY- series Industrial Box PC
2	Processor	1C: Intel® Celeron® 2980U, 4 th generation CPU 1E: Intel® Xeon® E3-1515M v5 6 th generation CPU with active cooling 17: Intel® Core™ i7-4700EQ, 4 th generation CPU with active cooling 2A: Intel® Atom® x5-E3940 2C: Intel® Celeron® 3965U, 7 th generation CPU 25: Intel® Core™ i5-4300U, 4 th generation CPU 35: Intel® Core™ i5-7300U, 7 th generation CPU
3	Main memory	1: 2 GB, non-ECC 2: 4 GB, non-ECC 3: 8 GB, non-ECC 4: 16 GB, non-ECC 5: 32 GB, non-ECC C: 8 GB, ECC D: 16 GB, ECC
4	Expansion slots	0: None 1: 1 PCIe slot
5	Operating system	0: No Operating System 1: Windows Embedded Standard 7 - 32 bit 2: Windows Embedded Standard 7 - 64 bit 3: Windows 10 IoT Enterprise 2016 LTSC - 64 bit 4: Windows 10 IoT Enterprise 2019 LTSC - 64 bit

Item	Description	Option / Description
6	Storage	5: 64 GB, CFast iMLC 6: 128 GB, CFast iMLC 7: 256 GB, CFast iMLC 8: 32 GB, SSD SLC 9: 64 GB, SSD SLC C: 320 GB, HDD D: 500 GB, HDD E: 1 TB, HDD K: 128 GB, SSD iMLC M: 500 GB, SSD iMLC
7	Optional interface	0: None 1: RS-232C 2: DVI-D 6: NY Monitor Link 9: Gb Ethernet

1-4-2 Product Configuration Panel PC

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

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

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

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

Item	Description	Option / Description
1	Series name	NYP: NY- series Industrial Panel PC
2	Processor	1C: Intel® Celeron® 2980U, 4 th generation CPU 17: Intel® Core™ i7-4700EQ, 4 th generation CPU with active cooling 2A: Intel® Atom® x5-E3940 2C: Intel® Celeron® 3965U, 7 th generation CPU 25: Intel® Core™ i5-4300U, 4 th generation CPU 35: Intel® Core™ i5-7300U, 7 th generation CPU
3	Main memory	1: 2 GB, non-ECC 2: 4 GB, non-ECC 3: 8 GB, non-ECC 4: 16 GB, non-ECC 5: 32 GB, non-ECC C: 8 GB, ECC D: 16 GB, ECC
4	Expansion slots	0: None 1: 1 PCIe slot
5	Operating system	0: No Operating System 1: Windows Embedded Standard 7 - 32 bit 2: Windows Embedded Standard 7 - 64 bit 3: Windows 10 IoT Enterprise 2016 LTSC - 64 bit 4: Windows 10 IoT Enterprise 2019 LTSC - 64 bit
6	Storage	5: 64 GB, CFast iMLC 6: 128 GB, CFast iMLC 7: 256 GB, CFast iMLC 8: 32 GB, SSD SLC 9: 64 GB, SSD SLC C: 320 GB, HDD D: 500 GB, HDD E: 1 TB, HDD K: 128 GB, SSD iMLC M: 500 GB, SSD iMLC
7	Optional interface	0: None 1: RS-232C 2: DVI-D 6: NY Monitor Link 9: Gb Ethernet

Item	Description	Option / Description
8	Display size (diagonal)	12: 12.1 inch model, 1280 x 800 pixels, 24 bit full color 15: 15.4 inch model, 1280 x 800 pixels, 24 bit full color 19: 18.5 inch model, 1920 x 1080 pixels, 24 bit full color
9	Display ratio	W: Wide
10	Touchscreen	C: Projected Capacitive Touch type
11	Frame type	1: Panel mounted
12	Material finish	0: Aluminum, painted black 1: Aluminum, Nickel plated
13	Built-in options	0: None 6: NY Monitor Link
14	Logo	0: OMRON 2: Customization

1-5 Overall Setup Procedure

This section gives the overall setup procedure for the Industrial PC.

This manual presents this information in the same order as the following setup procedure.

To setup the Industrial PC:

1 Familiarize yourself with the Industrial PC

- Refer to the sections Overview and Hardware of the Hardware manual.

For NYB□ and NYP□ refer to the following manuals:

- *NY-series Industrial Box PC Hardware User's Manual (Cat. No. W553)*
- *NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W555)*
- Refer to the information in this manual.

Specifically refer to the sections:

- *Section 2 System Configurations* on page 2-1
- *Section 3 Software* on page 3-1
- *Section 4 Specifications* on page 4-1

2 Install the IPC Hardware

Perform the procedures that are required to use the Industrial PC such as installation, and connection with peripheral devices including a UPS.

Refer to the section Installation in the Hardware manual..

3 Setup the IPC

Install and configure the operating system, the software support utilities and the UPS software.

Item	Remark	Reference
Operating system settings	Follow the procedure for 'First time startup'	The applicable Hardware Manual, see step 1.
UPS settings	Make the required UPS settings	The applicable UPS Manual
Industrial Monitor settings	Adjust the brightness and contrast of the monitor	3-4 <i>Industrial Monitor Utility</i> on page 3-11

4 Operate the IPC

Use the operating procedures to operate the Industrial PC.

Refer to the sections Operating Procedures in this manual and in the Hardware manual.

The setup of the Industrial PC is finished.

The section 'Maintenance' contains preventive and corrective maintenance information.

Refer to the section Maintenance in this manual and in the Hardware manual.



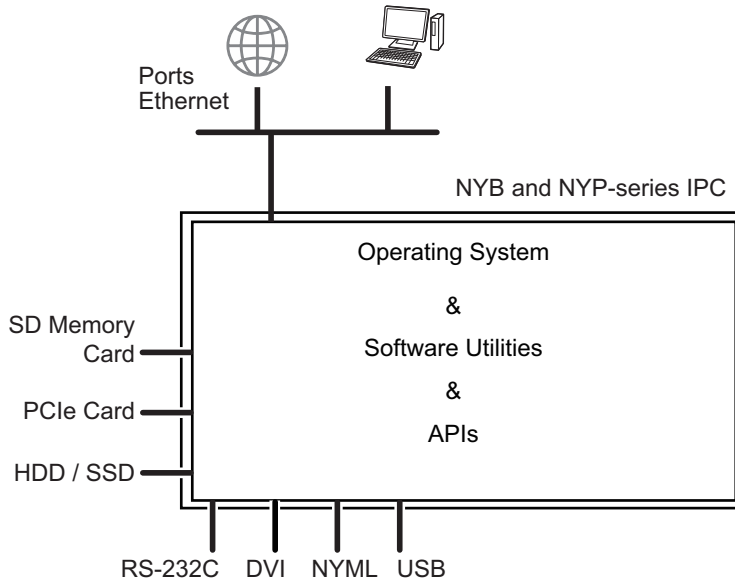
System Configurations

This section provides an overview of the system configurations for the Industrial PC.

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2-1 Configuration for NYB and NYP

The Industrial PC supports the following software configurations.



The operating system is the foundation for your software environment. The operating system manages the IPC hardware and supplies an interface for the users.

Refer to *3-1 Windows Operating System* on page 3-3 for details.

Support software is a collection of software utilities to support and extend the functionality of your Industrial PC.

Refer to *3-2 Overview IPC Support Software for Windows* on page 3-4 for details.

APIs are available for software developers that want to implement PC functionality in custom software applications.

Refer to *3-9 Software for Developers* on page 3-32 for details.

3

Software

This section provides software information for the Industrial PC.

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3-1 Windows Operating System

This section provides an overview of Windows Operating System information.

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

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

Windows 7

Windows 7 is only compatible with 4th generation CPUs.

Refer to *1-4-2 Product Configuration Panel PC* on page 1-7 for CPU details.

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.

Windows 10

To determine your version of the Windows Operating System:

- 1** Select the **Search** 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 Overview IPC Support Software for Windows

This section gives an overview of the software utilities available for all Industrial PC Platform products with a Windows operating system.

Product	Software utility
Industrial Monitor	Industrial Monitor Utility Industrial Monitor Brightness Utility *1 Industrial PC Tray Utility *1*2*3
Industrial Box PC	Industrial PC Support Utility Industrial PC Tray Utility *1*2*3 Rescue Disk Creator
Industrial Panel PC	Industrial Monitor Utility Industrial Monitor Brightness Utility *1 Industrial PC Support Utility Industrial PC Tray Utility *1*2*3 Rescue Disk Creator

*1. Included in the Industrial Monitor Utility installer

*2. Included in the Industrial PC Support Utility installer

*3. Together with the Industrial PC Tray Utility also Microsoft .NET Framework 4.6 is installed.

Select and download the required utilities from [the OMRON website](#).



Additional Information

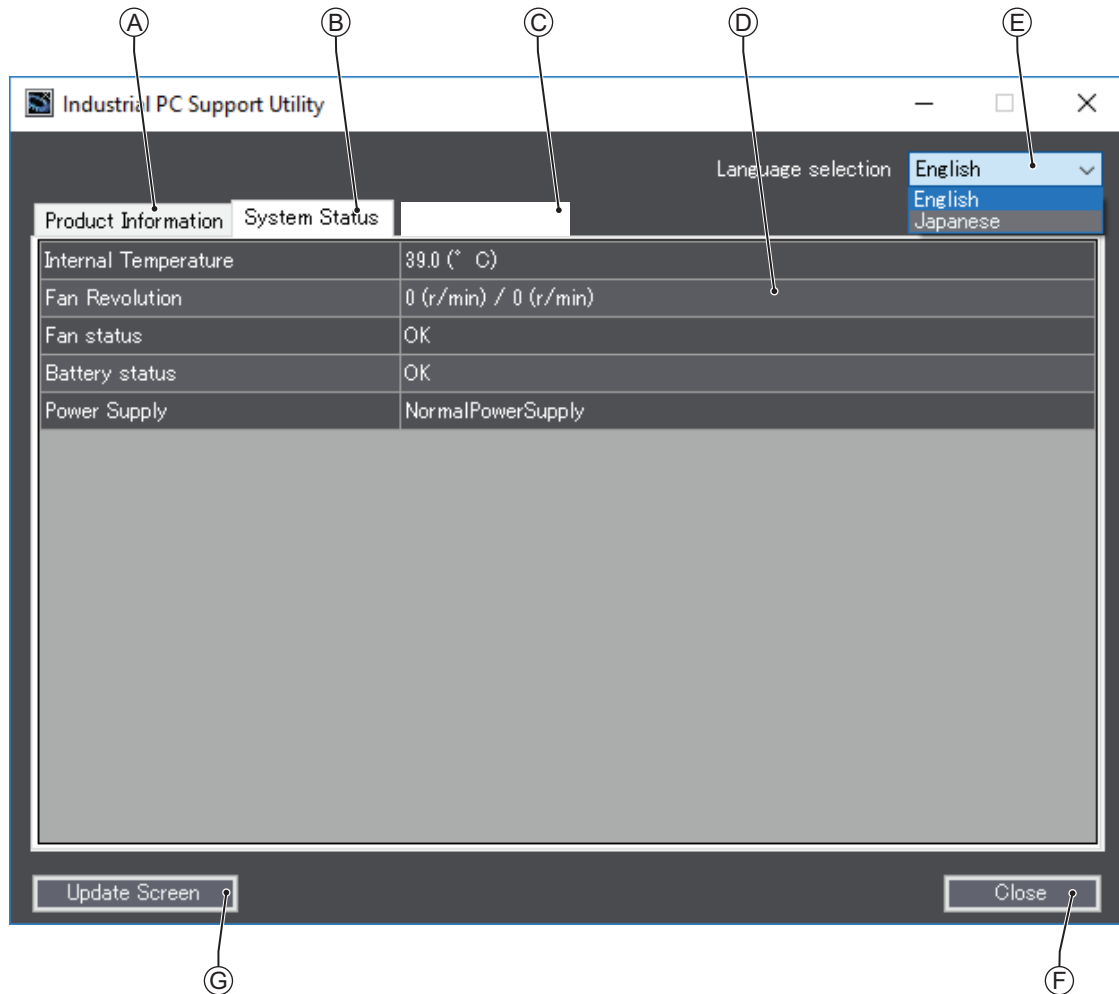
An internet connection is required to install support software.

3-3 Industrial PC Support Utility

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

3-3-1 Industrial PC Support Utility Overview

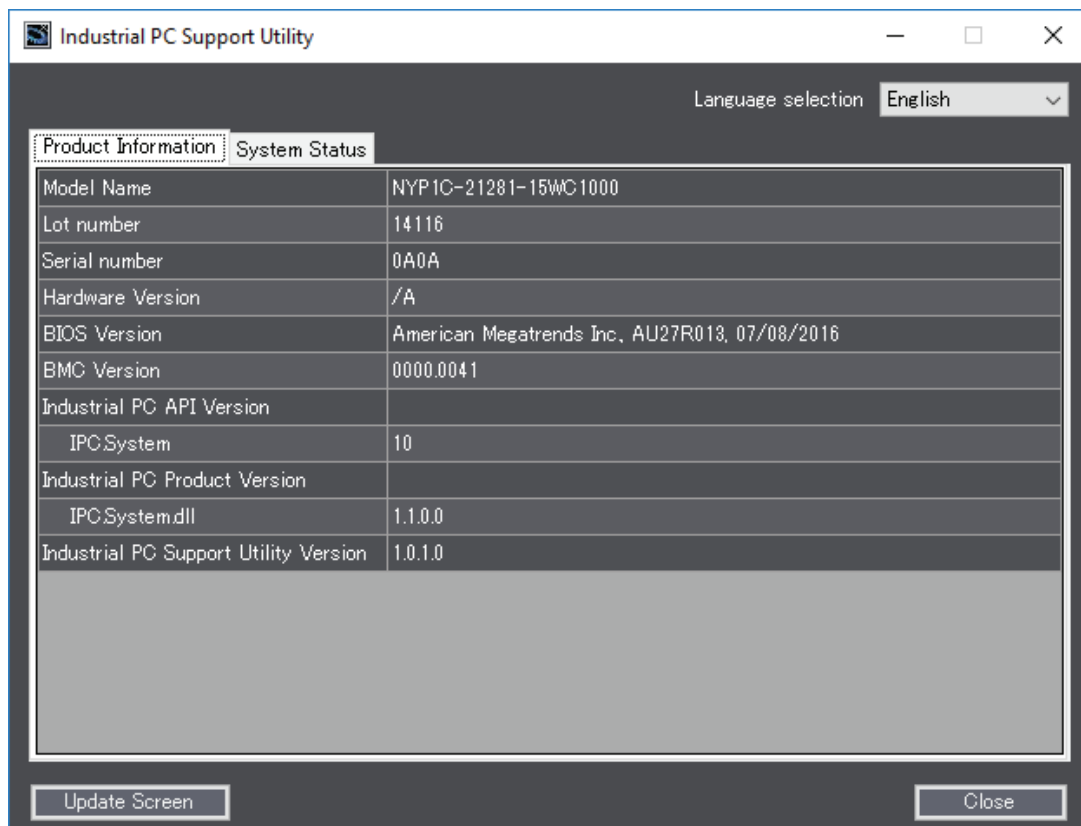
The Industrial PC Support Utility is a software utility to assist in diagnosing and resolving problems of the Industrial PC.



Item	Description	Details
A	Production Data Tab	Select to display Production Data details in the Tab details area (D). Refer to 3-3-2 <i>Product Information Tab</i> on page 3-7 for details.
B	System Status Tab	Select to display System Status details in the Tab details area (D). Refer to 3-3-3 <i>System Status Tab</i> on page 3-8 for details.
C	Machine Controller Tabs	A series of tabs that is only available for an Industrial PC with Machine Automation Control Software. Refer to 3-3-4 <i>Machine Controller Tabs</i> on page 3-9 for details.
D	Tab details	Details of the selected Tab page.
E	Language Selector	Select to display and choose the UI language of the Industrial PC Support Utility.
F	Close Button	Close the Industrial PC Support Utility.
G	Update Screen Button	Use this button to retrieve updated values from the Industrial PC.

3-3-2 Product Information Tab

The Production Data tab displays generic Industrial PC information. These are e.g. Model name, Lot number, Serial number, Hardware version, BIOS version, BMC version, and software versions (Industrial PC Support Utility and Industrial PC System API).



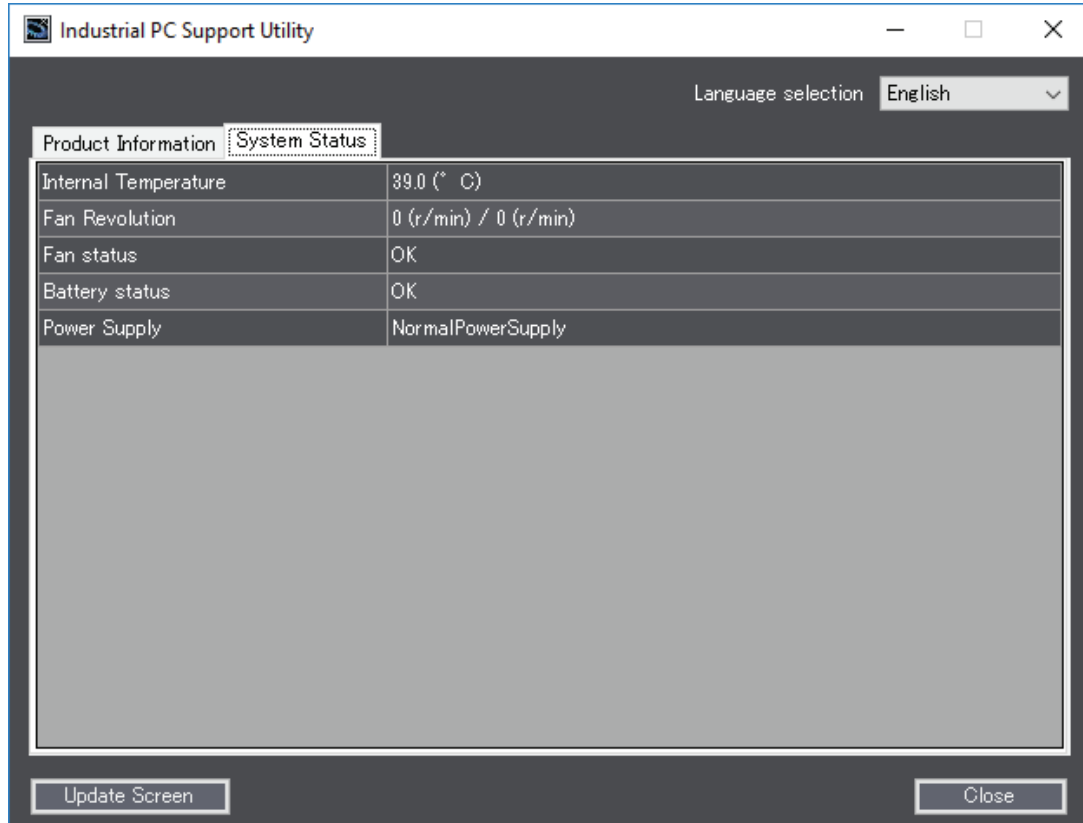
- Model Name is the configuration code of this model.
Refer to *1-4-2 Product Configuration Panel PC* on page 1-7 for details.
- BMC Version is the firmware version of the Board Management Controller.

Values are not updated automatically. Select the **Update Screen** Button to display the latest values.

3-3-3 System Status Tab

The System Status tab displays actual states and diagnostic information like internal temperature, fan revolution, battery and power supply status.

A status that requires attention is indicated with a red bar.



Item	Description
Internal Temperature	The average CPU temperature.
Fan Revolution *1	The actual rotation speed for each fan in revolutions per minute (r/min). <ul style="list-style-type: none"> • First number = rotation speed of fan located closest to Power button. • Second number = rotation speed of fan located closest to battery.
Fan Status *2	The target speed for the fans is dynamically set based on the CPU temperature. The target speed is compared with the actual fan speed. <ul style="list-style-type: none"> • OK indicates both fans are running on the target speed. • Low revolution speed indicates one or both fans do not reach the target speed. Clean the fans and replace the Fan Unit if the problem persists.
Battery Status	The battery status. <ul style="list-style-type: none"> • OK indicates the battery is full. • Low indicates the battery voltage is low. Replace the battery.
Power Supply	The power supply status is determined by the UPS and reported to the IPC via the I/O connector. <ul style="list-style-type: none"> • NormalPowerSupply indicates the IPC is powered by the 24V power supply. • UPS Power Supply indicates that there is no power from the 24V power supply and the IPC runs on battery power from the UPS.

*1. The Fan Revolution will always show 0 (r/min) / 0 (r/min) for fanless models
Refer to 1-4-2 Product Configuration Panel PC on page 1-7 for fan details.

*2. The Fan Status will always show OK for fanless models

Values are not updated automatically. Select the **Update Screen** Button to display the latest values.

3-3-4 Machine Controller Tabs

The Industrial PC with Machine Automation Control Software has additional tabs available.

Examples are:

- Controller Status, to display operation mode and current errors.
- Controller Operation, to change operating mode or backup / restore the controller.
- Network Setting, to display and change network settings
- Virtual SD Memory Card Settings, to change the Virtual SD Memory Card Settings. .

These Machine Controller tabs are only relevant for an Industrial PC with Machine Automation Control Software. Refer to *NY-series IPC Machine Controller Industrial Panel PC / Industrial Box PC Setup User's Manual (Cat. No. W568)* for details.

3-3-5 Compatibility

This software utility can be used on an IPC with Windows 7 or higher.

3-3-6 Installation

The Industrial PC Support Utility is pre-installed on the Industrial PC if it comes with a Windows operating system installed.

Download the Industrial PC Support Utility from [the OMRON website](#) if reinstallation is required.

3-3-7 Startup

The Industrial PC Support Utility can be started from:

- Windows Start Menu
Select **OMRON** and then **Industrial PC Support Utility**.
- Industrial PC Tray Utility
- Windows desktop shortcut



3-3-8 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

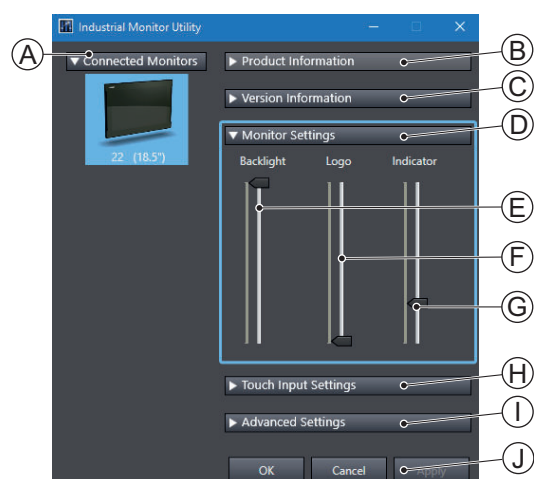
Refer to 7-2-4 *Windows Event Viewer* on page 7-29 for the logged messages.

3-4 Industrial Monitor Utility

This section provides an overview of the Industrial Monitor Utility.

3-4-1 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 details of the selected Industrial Monitor. Refer to <i>Product Information</i> on page 3-12 for details.
C	Version Information	Provides version details of Industrial Monitor Utility software and firmware details of the connected monitor. Refer to <i>Version Information</i> on page 3-12 for details.
D	Monitor Settings	Provides several setting adjustments to control the operation of the selected Industrial Monitor.
E	Backlight Brightness Adjustment *2	Use the slider to control the brightness of the selected Industrial Monitor.
F	Logo Brightness Adjustment	Use the slider to control the brightness of the Logo LED.
G	Status Brightness Adjustment	Use the slider to control the brightness of the Status LED Indicator on the monitor.
H	Touch Input Settings	Provides details about the touch settings. Refer to <i>Touch Input Settings</i> on page 3-13 for details.
I	Advanced Settings	Provides access to defaults and relevant Windows settings. Refer to <i>Advanced Settings</i> on page 3-14 for details.
J	Standard windows buttons	<ul style="list-style-type: none"> • OK button. Applies changes and closes the window • Cancel button. Exits the utility • 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 IPC in a low ambient light environment
- Lighten the display with a bright flashlight

Product Information

The Product Information part supplies details of the selected connected monitor.

▼ Product Information	
Serial Number :	22
Screen Size :	18.5"
Model Name :	NYM19W-C1062
Factory Identifier :	OMN
Unit Lot Number :	04817R
Logo Type :	Custom
Video Status :	Ok
Touch Input :	Ok

Version Information

The Version Information part supplies version details of the software and of the selected monitor.

Software details:

- The version of the Industrial Monitor Utility
- The version of the Industrial Monitor API

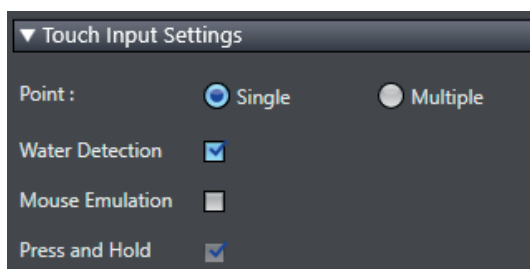
Monitor details:

- The Hardware version of the monitor
- The version of the Firmware Software installed on the monitor
- The version of the Touch Firmware installed on the monitor

▼ Version Information	
Industrial Monitor Utility :	1.2.9.0
Industrial Monitor API :	1.3.7.0
Hardware Version :	/A
Software Version :	0.15
Touch Firmware :	PM1410.D04.1.0.2 Boot : 5.9 PM1410S.D04.1.0.2 Boot : 5.9

Touch Input Settings

The Touch Input Settings display the actual settings.



- **Point**
Set to Single the monitor accepts only one touch point.
Set to Multiple allows more touch points simultaneously.
- **Water Detection**
When enabled then a message will appear to inform the user when water is detected.
When disabled then no message will appear when water is detected.
- **Mouse Emulation**
When mouse emulation is enabled the Point setting is disabled and Press and Hold is enabled.
When mouse emulation is disabled the Point setting is enabled and the Press and Hold is disabled.



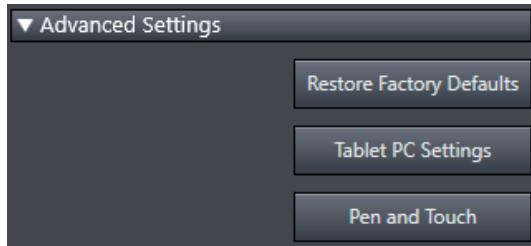
Additional Information

Do not activate mouse emulation when using multiple industrial monitors in combination with extended mode.

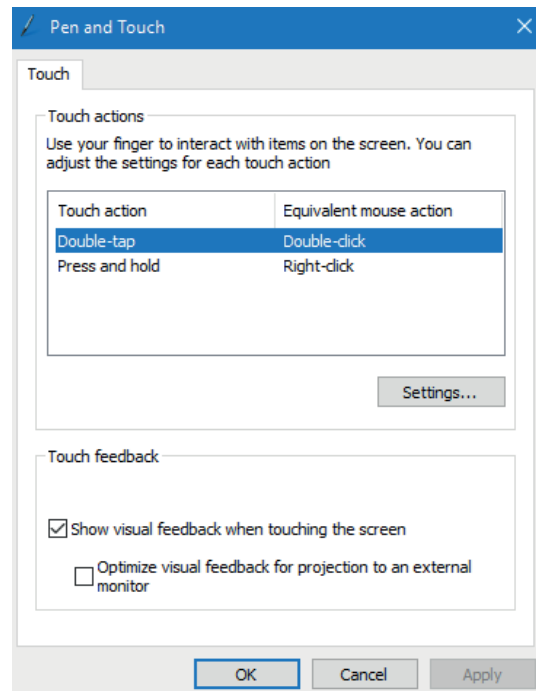
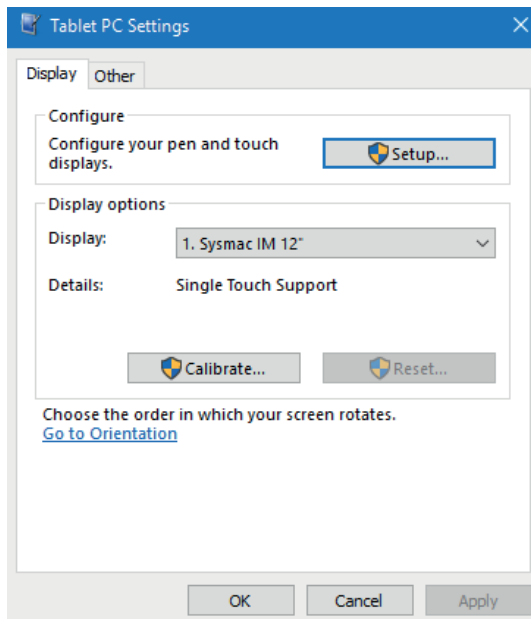
- **Press and Hold**
When enabled then a right-click mouse action occurs when holding a touch.
When disabled then holding the touch does not trigger the right-click mouse action.

Advanced Settings

Advanced settings gives access to the factory settings and shortcuts to relevant Windows settings.



- Restore Factory Defaults button
Resets all settings of the Industrial Monitor to the factory defaults.
- Tablet PC Settings
Opens the 'Tablet PC Settings'-dialog of Windows.
- Pen and Touch
Opens the 'Pen and Touch'-dialog of Windows.



3-4-2 Compatibility

This monitor utility can be used on any PC that is connected to an OMRON Industrial Monitor.

This monitor utility can be used with:

- Windows 10
- Windows 7



Additional Information

This monitor utility does not support 3rd party monitors.

3-4-3 Installation

The Industrial Monitor Utility is pre-installed on the Industrial PC if it comes with a Windows operating system installed.

Download the Industrial Monitor Utility from [the OMRON website](#) for reinstallation 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 3-7 *Industrial PC Tray Utility* on page 3-25 for Industrial PC Tray Utility details.

3-4-4 Startup

The Industrial Monitor Utility can be started from:

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

3-4-5 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	If enabled, the Status LED indicator on the selected Industrial Monitor will flash for 3 seconds. To enable: <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.

3-4-6 Messages

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

Message type	Message	Description
Info	Connected	A new monitor connected <ul style="list-style-type: none"> • USB cable connected • Monitor powered ON
Warning	Not Connected	Monitor disconnected <ul style="list-style-type: none"> • USB cable disconnected • Monitor powered OFF
Warning	Video Disconnected	DVI cable disconnected or NY Monitor Link cable disconnected
Warning	Serial number: x Water detected on a monitor Touch may be rejected	Water is detected on monitor x
Warning	No Signal	DVI cable connected but no signal detected

3-4-7 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

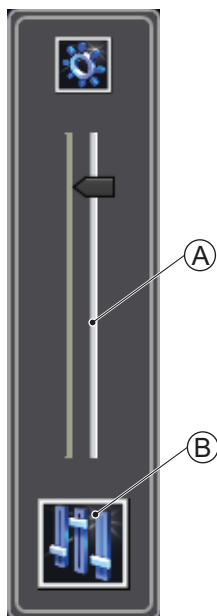
Refer to 7-2-4 *Windows Event Viewer* on page 7-29 for the logged messages.

3-5 Industrial Monitor Brightness Utility

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

3-5-1 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 IPC in a low ambient light environment
- Lighten the display with a bright flashlight

3-5-2 Compatibility

This monitor utility can be used on any PC that is connected to an OMRON Industrial Monitor.

This monitor utility can be used with:

- Windows 10
- Windows 7

**Additional Information**

This monitor utility does not support 3rd party monitors.

3-5-3 Installation

The Industrial Monitor Brightness Utility is pre-installed on the Industrial PC if it comes with a Windows operating system installed.

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 website](#) for reinstallation or for installation on another PC with a compatible operating system.

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 *3-7 Industrial PC Tray Utility* on page 3-25 for Industrial PC Tray Utility details.

3-5-4 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 *3-7 Industrial PC Tray Utility* on page 3-25 for Industrial PC Tray Utility details.

3-5-5 Configuration

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

3-5-6 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 *7-2-4 Windows Event Viewer* on page 7-29 for the logged messages.

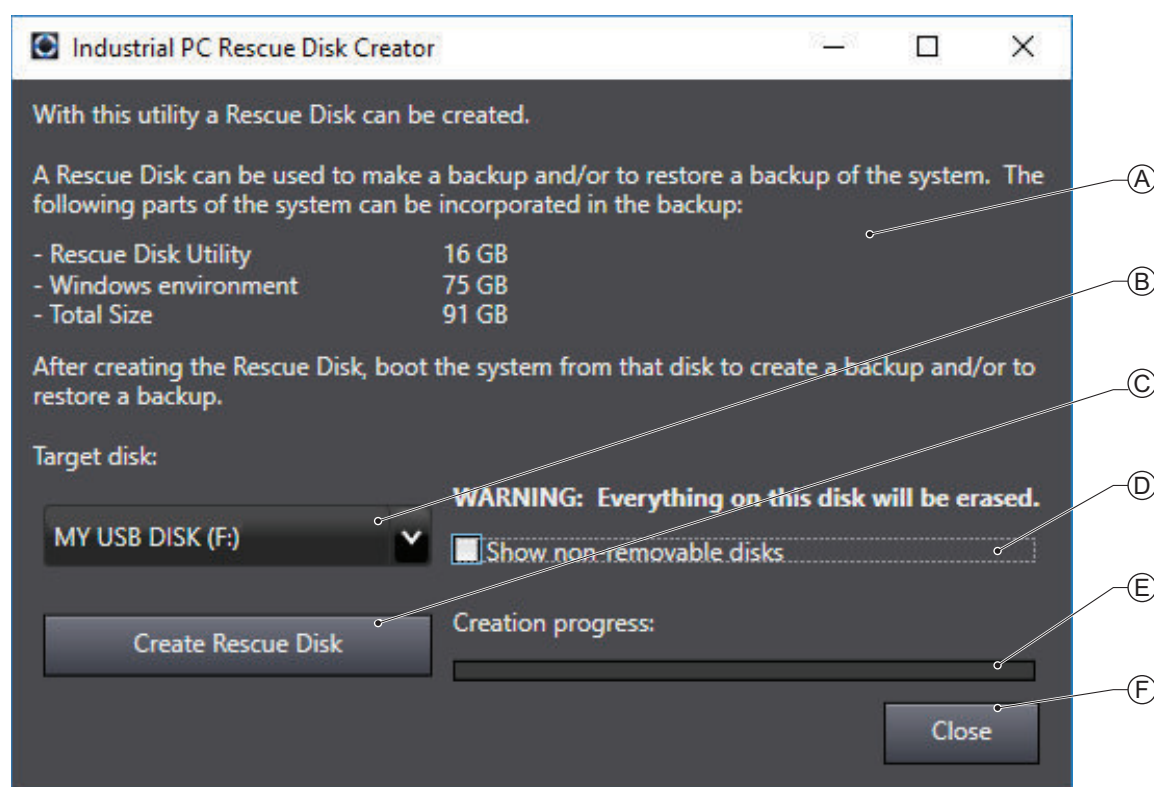
3-6 Rescue Disk Creator

This section provides an overview of the Rescue Disk Creator.

3-6-1 Rescue Disk Creator Overview

The Rescue Disk Creator creates a Rescue Disk.

A Rescue Disk is a disk with the Rescue Disk Utility; this is the software that performs the system backup and system restore procedures.



Item	Description	Details
A	Explanation area	Information about the utility and the backup. In the right bottom corner messages are displayed when applicable.
B	Target disk selection	Selection of the disk that will become the Rescue Disk.
C	Create Rescue Disk Button	Start the Rescue Disk creation.
D	Show non-removable disks	Check the box to display not only the removable storage devices but also the non-removable (internal) storage devices and USB Flash Drives and other USB storage devices.
E	Creation progress bar	Display the progress of the Rescue Disk creation.
F	Close Button	Close the Rescue Disk Creator.



Additional Information

- Refer to *Create a System Backup with the Rescue Disk* on page 7-5 for system backup details.
- Refer to *Restore a System Backup with the Rescue Disk* on page 7-21 for system restore details.

3-6-2 Compatibility

This software utility can be used on the IPC but also on any other PC with one of the following operating systems:

- Windows 10
- Windows 7

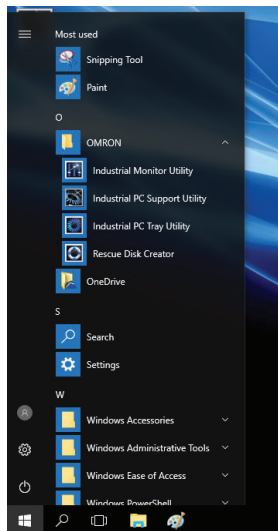
3-6-3 Installation

The Rescue Disk Creator is preinstalled on the Industrial PC if it comes with a Windows operating system installed.

Use the following procedure to reinstall the Rescue Disk Creator:

- 1** Use Windows Explorer to examine the local disk C.
- 2** Open the Rescue Disk folder (This PC\Local Disk(C:)\Program Files (x86)\OMRON\Industrial PC\Rescue Disk) and activate the installer file **setup.exe**.
A progress bar will visualize the extraction process and then a language selection window opens.
- 3** Select your language and then select **OK**.
The installer window opens.
- 4** Follow the installer steps to complete the Rescue Disk Creator installation.

The Rescue Disk Creator is installed and available in the OMRON folder in the Windows Start Menu.



3-6-4 Startup

To manually start the Rescue Disk Creator:

- 1 Locate the Rescue Disk Creator using the Windows **Start** menu or the Windows search box.
- 2 Use the option **Run as administrator** to start the Rescue Disk Creator.



Additional Information

The procedure to use **Run as administrator** is:

- For Windows 10 using the **Start** menu:
Rightclick the **Rescue Disk Creator**, select **More** and then **Run as administrator**.
- For Windows 10 using **Search**:
Rightclick the **Rescue Disk Creator** in the search results and select **Run as administrator**.
- For Windows 7 using the **Start** menu or **Search**:
Rightclick the **Rescue Disk Creator** and select **Run as administrator**.

- 3 Follow the on-screen instructions to complete the rescue disk.
Use a USB storage device with a capacity of at least the Windows partition size + 16 GB. The recommended minimum read/write speed is 190 MB/s.

A Rescue Disk is created by the Rescue Disk Creator.

3-6-5 Messages

The Rescue Disk Creator creates a rescue disk in two steps:

1. Format the target disk
2. Copy the rescue disk image to the target disk

Messages can inform the user of an error when applicable.

Refer to *Messages Creating the Rescue Disk* on page 3-22 for details.

Use the rescue disk to create a backup or restore your disk.

Messages can inform the user of a backup or restore error when applicable.

Refer to *Messages Using the Rescue Disk* on page 3-23 for details.

Messages Creating the Rescue Disk

The Rescue Disk Creator can display the following messages:

Message type	Message	Description
Error	<p>Creation progress: Failed to format the disk.</p> <p>Reason:</p> <ul style="list-style-type: none"> • Access denied • Call canceled • Call cancellation request too late • Cluster size is beyond 32 bits • Cluster size is too large • Cluster size is too small • Incompatible media in drive • Invalid volume label • Input/Output (I/O) error • No media in drive • Unable to quick format • Unknown error • Unsupported file system • Volume lock failed • Volume is not mounted • Volume is too large • Volume is too small • Volume write protected 	<p>The mentioned reason prevented formatting of the connected storage device.</p> <p>Ensure the connected storage device:</p> <ul style="list-style-type: none"> • Is not write protected or read-only • Has a cluster size too small or more than the maximum 32 bits • Has a valid volume label • Has sufficient storage capacity to store the rescue disk utility and a full system backup
Error	<p>Creation progress: Failed to copy image to rescue disk.</p> <p>Reason:</p> <ul style="list-style-type: none"> • Unable to revoke access to the disk • Unable to revoke access to the drive • Disk write failed • Unable to dismount the drive • Invalid drive • Unable to obtain exclusive access to the drive • The disk could not be accessed • The drive could not be accessed • Unable to revoke exclusive access to the drive 	<p>The mentioned reason prevented copying the image to the connected storage device.</p> <p>Ensure the connected storage device:</p> <ul style="list-style-type: none"> • Is not used by other programs • Is not write protected or read-only

To solve an error:

1. Check that the correct target disk was selected.
2. Check that the target disk has sufficient storage capacity to store the rescue disk utility and a full system backup
3. If the storage device is removable, check that it is inserted properly and is of the correct type.
4. Check whether the storage device is write protected. SD Memory Cards often have a small mechanical write protection switch on them.
5. Check that the user has the necessary access rights for the target disk.
6. Check that the Rescue Disk Creator is running "As Administrator".

7. Check that no other applications are using the target disk.
8. Retry the operation with the same target disk.
9. Retry the operation with a different target disk.
10. Restart the IPC and then retry the operation.
11. If the issue persists, contact your OMRON representative.

Messages Using the Rescue Disk

Using the Rescue Disk the rescue disk utility can display the following error messages:

Error ID	Message
10	Backup creation of *1partition failed. Please try again or contact an Omron service representative if the problem persists
11	Restore action of *1partition failed. Please try again or contact an Omron service representative if the problem persists
12	Cannot allocate the partition for storing backup data. There may be a problem with the target USB device. Create the Rescue Disk utility on another USB device and try again
13	Cannot create a partition for storing backup data. There may be a problem with the target USB device. Create the Rescue Disk utility on another USB device and try again
14	The partition for storing backup data cannot be identified. There may be a problem with the target USB device. Create the Rescue Disk utility on another USB device and try again
15	The partition for storing backup data cannot be prepared for use. There may be a problem with the target USB device. Create the Rescue Disk utility on another USB device and try again
16	Unable to identify an Omron Industrial PC. Power cycle the system using the power connector, then try again
17	Unable to identify an Omron Industrial PC. Power cycle the system using the power connector, then try again
18	Backup creation of *1partition failed. Please try again or contact an Omron service representative if the problem persists
19	Restore action of *1partition failed. Please try again or contact an Omron service representative if the problem persists
20	Cannot mount the partition for storing backup data. There may be a problem with the target USB device. Create the Rescue Disk utility on another USB device and try again
21	Failed creating *1partition verification files. Please try again or contact an Omron service representative if the problem persists
22	Failed to verify *1partition backup files. Please try again or contact an Omron service representative if the problem persists
23	Cannot create a backup. An Omron NY-series Industrial PC has not been detected. Please contact an Omron service representative
24	Cannot restore the backup. An Omron NY-series Industrial PC has not been detected. Please contact an Omron service representative
25	Cannot find a destination device. Please ensure that there is an SSD or HDD inserted in the IPC
26	Cannot find the Rescue Disk medium. Please ensure the Rescue Disk USB device is connected to the Industrial PC, then restart the system and try again
27	Cannot mount Windows partition. Please ensure that you have a functional Windows system before creating a backup
28	Cannot restore. The backup of the Boot partition is corrupted

Error ID	Message
29	Cannot deploy OSB due to an invalid Boot partition. Please perform a restore operation of the complete MBR and Boot partition and try again
30	OSB deployment was unsuccessful. Please restart the Rescue Disk utility and try again
31	Multiple Rescue Disk media detected. Ensure there is only a single Rescue Disk USB device connected to the Industrial PC, then reboot the system and try again
32	Cannot create backup records data due to missing OSB data
33	Cannot create backup records due to missing NX data
34	Cannot create backup records due to a missing Boot partition
35	Cannot find a source device. Please ensure that there is an SSD or HDD inserted in the IPC
36	Multiple disk with windows partitions detected. Please ensure there is only one SSD or HDD inserted in the IPC to restore the backup
37	Multiple source devices detected. Please ensure there is only one SSD or HDD inserted in the IPC
38	Unable to create a partition in the AI database disk
39	AI database disk creation (partitioning and formatting) failed
40	Unable to identify a suitable disk to format as AI database disk. Please ensure there is one SSD or HDD that has no Windows OS
41	Multiple disks detected suitable to format as AI database disk. Please ensure there is only one SSD or HDD that has no Windows OS
42	Unable to identify any Windows disk. Please ensure that a Windows disk is inserted in the IPC
43	Multiple Windows disks detected. Please ensure that there is only one Windows disk inserted in the IPC

*1. The partition name will be indicated. Examples are 'Boot partition' or 'Master Boot Record' .

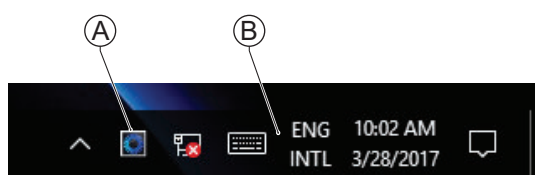
3-7 Industrial PC Tray Utility

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

3-7-1 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.

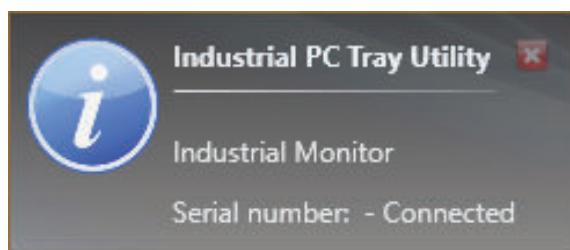


Windows 10

3-7-2 Features

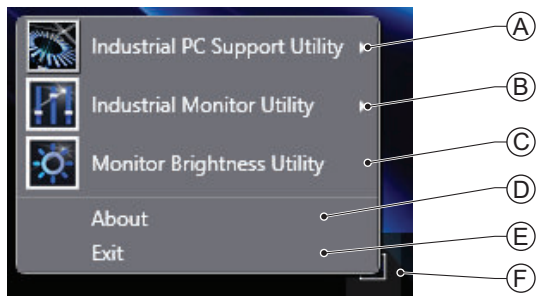
The Industrial PC Tray Utility provides the following features:

- 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.



3-7-3 Menu

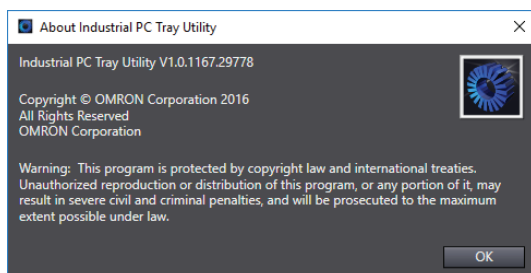
Select the Industrial PC Tray Utility icon (F) to display the menu.



- 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 3-7-4 *About the Industrial PC Tray Utility* on page 3-26 for details.
- The **Exit** entry (E) closes the utility.




3-7-4 About the Industrial PC Tray Utility

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



3-7-5 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.

3-7-6 Compatibility

This software utility can be used on the IPC but also on any other PC with one of the following operating systems:

- Windows 10
- Windows 7

3-7-7 Installation

The Industrial PC Tray Utility is pre-installed on the Industrial PC if it comes with a Windows operating system installed.

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.

3-7-8 Startup

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

To manually start the Industrial PC Tray Utility:

- 1** Locate the Industrial PC Tray Utility using the Windows **Start** menu or the Windows search box.
- 2** Use the option **Run as administrator** to activate the Industrial PC Tray Utility.



Additional Information

The procedure to use **Run as administrator** is:

- For Windows 10 using the **Start** menu:
Rightclick the Industrial PC Tray Utility, select **More** and then **Run as administrator**.
 - For Windows 10 using **Search**:
Rightclick the Industrial PC Tray Utility in the search results and select **Run as administrator**.
 - For Windows 7 using the **Start** menu or **Search**:
Rightclick the Industrial PC Tray Utility and select **Run as administrator**.
-

The Industrial PC Tray Utility started.

3-8 Power Attendant Lite Utility

This section provides an overview of the Power Attendant Lite Utility (PAL).

3-8-1 Power Attendant Lite Utility Overview

The Power Attendant Lite Utility is a software utility that constantly monitors the status of the UPS that is connected to the IPC.





When the Power Attendant Lite Utility discovers a power interruption it will send a signal to the IPC to shut down.

Refer to the *UPS Power Attendant Lite for Windows User's Manual* for details.

3-8-2 Features

The Power Attendant Lite Utility provides the following features:

- Signal the IPC to shut down when a power interruption is detected.
- Configure the shutdown conditions when a power interruption is detected.
- Display the state of the connected UPS using the icon in the system tray area.

Icon	Description
	Normal operation
	Power Attendant Lite service stopped
	UPS is supplying power from the internal battery
	Communication error

3-8-3 Compatibility

This software utility can be used on the IPC but also on any other PC with one of the following operating systems:

- Windows 10
- Windows 7

3-8-4 Installation

The Power Attendant Lite Utility is not pre-installed on a IPC.
The Power Attendant Lite Utility installer is included in the installers directory (D:\OMRON-NY\Installers). Download the installer from [the OMRON website](#) if required.

To install the Power Attendant Lite Utility:

- 1** Ensure the revision number of the UPS is correct.
Refer to the Hardware Manual for details.
- 2** Ensure the UPS is connected to the IPC with a USB cable.
- 3** Open the Power Attendant Lite Utility installer folder and activate the installer file **setup.exe**.
- 4** Follow the installer steps to complete the installation.

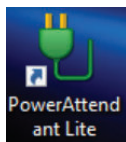
The Power Attendant Lite Utility is installed.

3-8-5 Configuration

Configure the Power Attendant Lite Utility before using the IPC with a UPS connected using USB.

To configure the Power Attendant Lite Utility:

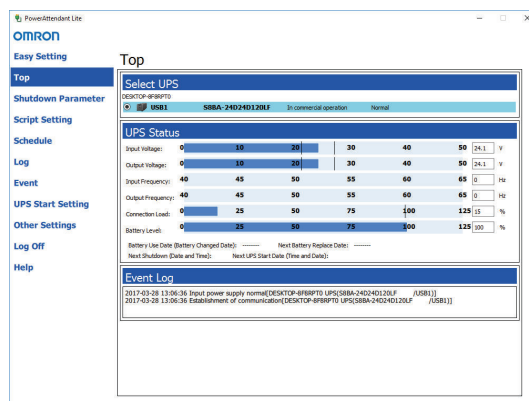
- 1** Activate the icon of the Power Attendant Lite Utility to start the software.



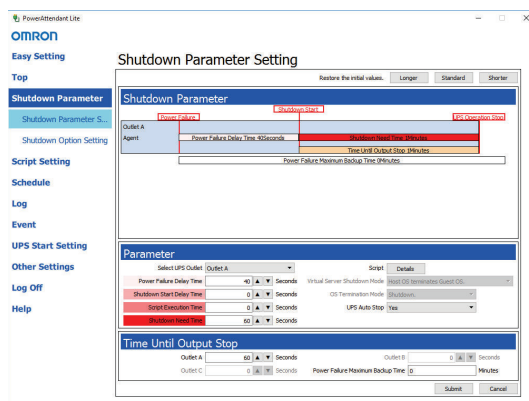
A UPS selection window will be displayed.

- 2** Select the connected UPS.
A Login window will be displayed.

- 3** Login with ID **Admin** and password **omron**.
The Top window with UPS status information will be displayed.



- 4** Configure the parameters for your specific situation.



Refer to *UPS Power Attendant Lite for Windows User's Manual* for details.

- 5 Select **Detailed Setting / Other Settings / Communication Setting / UPS Communication Port** to display the parameter **COM search to UPS detection**.
- 6 Set the parameter to **Do not search for COM ports** to prevent interference for the COM ports.
- 7 Select **Submit** to save the setting.
- 8 Select the close button in the right top corner to exit the Power Attendant Lite Utility software.
- 9 Select the restart behavior of the IPC with the BIOS Boot Menu parameter **Power Loss Control**.
Set this parameter to **Turn On** to restart automatically after a power down from the Power Attendant Lite Utility.
- 10 Test the UPS shutdown behavior.
 - 1) Start the IPC
 - 2) Start applications
 - 3) Create a power interruption
 - 4) Monitor the shutdown sequence and confirm a correct shutdown
When the shutdown sequence is not correct change parameters in the Power Attendant Lite Utility software and test the UPS shutdown behavior again.

The Power Attendant Lite Utility is configured.

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

3-9 Software for Developers

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

3-9-1 Overview IPC Developer Software for Windows

This section gives an overview of the software available for developers for all Industrial PC Platform products with a Windows operating system.

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 SDK software from [the OMRON website](#).

3-9-2 Industrial PC System API

This section describes some of the Industrial PC System API functions.

The Industrial PC System API allows programmers to create programs that can retrieve information or set an indicator status of the product.

The API makes use of the included OMRON IPC System Service to manage the hardware.

Features

The Industrial PC System API can:

- Retrieve product information from the Industrial PC
- Retrieve system flags
- Retrieve maintenance information
- Configure and program the Watchdog^{*1}
- Set the status of the Run LED Indicator and the ERR LED Indicator^{*1}

^{*1} Only for Industrial PCs with a Windows operating system.

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

Installation

The Industrial PC System API is part of the Industrial PC System SDK download.

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

Install the Industrial PC System SDK to use the Industrial PC System API on development PCs.

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

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

3-9-3 Industrial Monitor API

This section describes some of the Industrial Monitor API functions.

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.

The API makes use of the included OMRON Industrial Monitor Service to manage the hardware.

Features

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

- Retrieve product information from the Industrial Monitor or Industrial Panel PC display
- Retrieve product status information
- Set the brightness of the Status LED indicator
- Set the brightness of the backlight
- Set the brightness of the Logo LED
- Set the touch points of the monitor
- Store settings
- Restore to factory defaults

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

Installation

The Industrial Monitor API is part of the Industrial Monitor 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.

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

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



Specifications

This section provides specifications of the Industrial PC.

4-1	Software Specifications	4-2
4-1-1	Available Windows Operating Systems	4-2
4-1-2	Supported Languages	4-3

4-1 Software Specifications

This section provides the Software Specifications of the Industrial PC.

4-1-1 Available Windows Operating Systems

The CPU type determines what Windows Operating Systems are available.

The CPU type is part of the model-ID.

Refer to *1-4-2 Product Configuration Panel PC* on page 1-7 for model-ID details.

Model	Windows Operating System	Edition	Remark
<ul style="list-style-type: none"> • NY□2A 	Windows 10	Windows 10 IoT Enterprise 2019 LTSC - 64 bit	The Long-term Servicing Channel of Windows is primarily for specialized devices. The LTSC of Windows excludes most of the bundled applications, including Microsoft Edge. Note: In the software the name LTSB might still be displayed.
<ul style="list-style-type: none"> • NY□35 • NY□2C • NY□1E 	Windows 10	Windows 10 IoT Enterprise 2016 LTSB - 64 bit	The Long-term Service Branch of Windows is primarily for specialized devices. The LTSB of Windows excludes most of the bundled applications, including Microsoft Edge.
<ul style="list-style-type: none"> • NY□25 • NY□1C • NY□17 	Windows 7	<ul style="list-style-type: none"> • Windows Embedded Standard 7 SP1 - 32 bit • Windows Embedded Standard 7 SP1 - 64 bit 	An Internet Browser, Firewall and Anti-virus software are not pre-installed.
	Windows 10	Windows 10 IoT Enterprise 2016 LTSB - 64 bit	The Long-term Service Branch of Windows is primarily for specialized devices. The LTSB of Windows excludes most of the bundled applications, including Microsoft Edge.

4-1-2 Supported Languages

Languages default supported by the operating system are:

Language	Windows 10	Windows 7
EN	✓	✓
CN Simplified (zh-cn)	✓	✓
CN Traditional (zh-tw)	✓	✓
DE	✓	✓
ES	✓	✓
FR	✓	✓
IT	✓	✓
JA	✓	✓
KO	✓	



Additional Information

Refer to the Microsoft support information for details on available language packs.

5

Installation

This section provides all installation details for the Industrial PC.

5-1	Install Software	5-2
5-1-1	Internet Browser	5-2
5-1-2	Firewall	5-3
5-1-3	Anti-virus Software.....	5-3
5-1-4	Drivers and Custom Software.....	5-4
5-1-5	Activate Windows	5-4
5-1-6	Customize Windows	5-4
5-2	Install Support Software	5-5
5-2-1	Overview IPC Support Software for Installation.....	5-5
5-3	Create Backup and Repair Media	5-6

5-1 Install Software

This section describes how to install the software for the Industrial PC.

5-1-1 Internet Browser

Depending on the operating system an Internet Browser is preinstalled.

- For Windows 10 the standard Internet Browser is installed.
- For Windows 7 an executable file for browser installation is provided in the user data partition of the drive. For Windows 7 use the procedure below to perform the browser installation.



Additional Information

- Check the IT policy of your company for available software and for details on the software environment the Industrial PC will operate in.
 - Install all updates and ensure the browser stays up-to-date.
-

To install the available Internet Browser in a Windows 7 operating system:

- 1** Use Windows Explorer to examine the contents of the user data partition mapped as drive letter D:.
- 2** Open the Installer folder (D:\OMRON-NY\Installers) and locate the Internet Explorer installer files.
- 3** Select the installer suitable for your system (32/64 bits) and language (English/Japanese).
- 4** Ensure there is a connection to the Internet.
- 5** Launch the installer to begin the installation process.
- 6** Follow the installer steps to complete the browser installation.
- 7** Download and install the latest updates via Windows Update.

The Internet Browser is installed in Windows 7.

5-1-2 Firewall

An industrial network should be separated from an office network.

Depending on the operating system a Firewall is preinstalled.

- For Windows 10 the standard firewall software is installed and enabled.
- For Windows 7 the Firewall software is not installed.



Precautions for Safe Use

- Separate the machine network segment from the office network to avoid communication failures.
 - Install all updates and ensure the firewall stays up-to-date.
-



Additional Information

Check the IT policy of your company for available software and for details on the software environment the Industrial PC will operate in.

5-1-3 Anti-virus Software

The Windows operating system is vulnerable for viruses. Anti-virus software should be installed on the Windows operating system.

Depending on the operating system Anti-virus software is preinstalled.

- For Windows 10 the standard Anti-virus software is installed and enabled.
- For Windows 7 Anti-virus software is not installed.



Additional Information

Check the IT policy of your company for available software and for details on the software environment the Industrial PC will operate in.



Precautions for Safe Use

- Make sure that your operating system environment is protected against malicious software and viruses.
 - Install all updates and ensure virus definitions stay up-to-date.
-

5-1-4 Drivers and Custom Software

Use the following procedure to install drivers and custom software on your Industrial PC.

- For an Industrial PC without Operating System download the drivers from [the OMRON website](#).
- For an Industrial PC with a Windows operating system the drivers for most OMRON devices and common third party devices are already available on the product. They will be installed automatically after the initial Windows configuration or upon connection of a device to the IPC. Download the drivers from [the OMRON website](#) if reinstallation is required.

- 1** Install drivers that are required for the application.
- 2** Install third-party software that is required for the application.
Follow the installation instructions as supplied with the driver or software.



Precautions for Safe Use

Before operating the system, please make sure the appropriate software is installed and configured. Doing so may prevent unexpected operation.

5-1-5 Activate Windows

To activate Windows an internet connection is required.

If an internet connection is not available during the installation process then the Windows license will only be active after an internet connection has been established.

Activation is not required, a non-activated version of Windows is fully functional.

Refer to the Hardware Manual for the location of the Windows product key.

5-1-6 Customize Windows

Windows provides customization tools.

Using these tools is only allowed for experienced software engineers.



Additional Information

- For Windows 10:
 - Refer to *A-1-3 Unified Write Filter* on page A-5 for UWF details.
 - Refer to *A-1-4 Trusted Platform Module* on page A-6 for TPM details.
 - For Windows 7:
 - Refer to for EWF details.
 - Refer to for FBWF details.
 - Refer to *A-1-4 Trusted Platform Module* on page A-6 for TPM details.
-

5-2 Install Support Software

This section describes how to install the support software for the Industrial PC.

5-2-1 Overview IPC Support Software for Installation

This section gives an overview of the IPC support software available for your Industrial PC.

Software Utilities

The applicable software utilities are already installed on your Industrial PC when a storage device is available. Refer to the details in the table to find installation details.

The software utilities can be downloaded from [the OMRON website](#).



Additional Information

An internet connection is required to install support software.

Product	Details
Industrial PC Support Utility	Refer to <i>3-3-6 Installation</i> on page 3-9 for details.
Industrial PC Tray Utility	Refer to <i>3-7-7 Installation</i> on page 3-27 for details. The Industrial PC Tray Utility includes Microsoft .NET Framework 4.6.
Microsoft .NET Framework 4.6	Comes with the Industrial PC Tray Utility.
Rescue Disk Creator	Refer to <i>3-6-3 Installation</i> on page 3-20 for details.
Industrial Monitor Utility	Refer to <i>3-4-3 Installation</i> on page 3-15 for details.
Industrial Monitor Brightness Utility	Refer to <i>3-5-3 Installation</i> on page 3-18 for details.

Software for developers

Product	Details
Industrial PC System API	Refer to <i>Installation</i> on page 3-33 for details.
Industrial Monitor API	Refer to <i>Installation</i> on page 3-34 for details.
Congatec CGOS API	No details available. The functionality is available in the Industrial PC System API.

5-3 Create Backup and Repair Media

Create the storage media to recover, restore or repair the operating system and other important files. There are several methods available, each with their own advantages and limitations.



Additional Information

Note that you can select more than one methods to create your recover, restore or repair media.

- 1** Refer to *Overview of Recover, Restore and Repair Methods* on page 7-3 and choose the best procedure for your situation.
- 2** Perform the procedures to create the desired storage media.



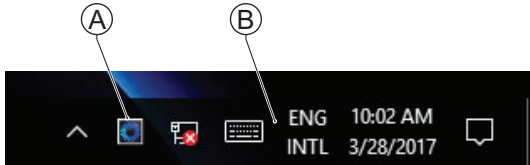
Operating Procedures

This section provides the operating procedures for the Industrial PC.

6-1	React to Product Messages	6-2
6-2	React to Windows Messages	6-3

6-1 React to Product Messages

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



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 *7-2-1 Warning and Error Messages* on page 7-19 for all details on the message.
Perform the actions presented for the message until the Warning or Error is resolved.

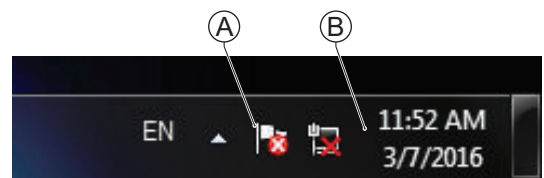
The product messages for the Industrial PC are resolved.

6-2 React to Windows Messages

Windows uses the Windows Action Center icon (A) in the system tray area (B) of Windows to present Warnings and Errors.



Windows 10



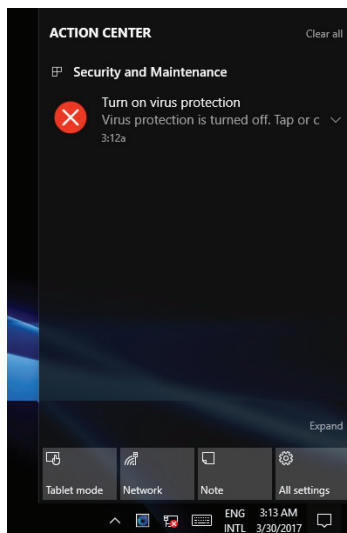
Windows 7

Check the Windows Action Center icon for a Warning or Error symbol.

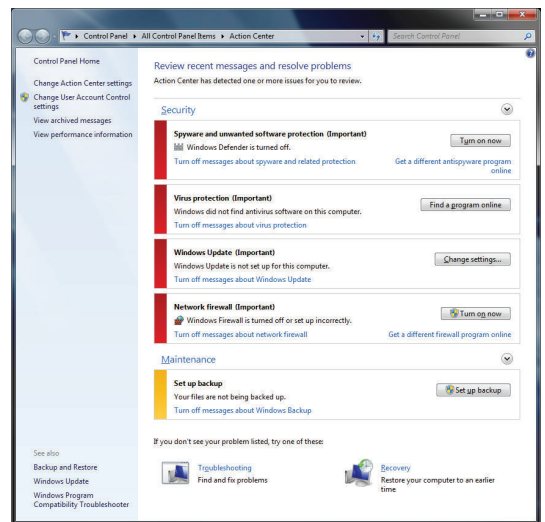
A Warning or Error symbol displayed on the Windows Action Center icon indicates a Windows message.

To react to a Windows message:

- 1 Open the Windows Action Center.
 - For Windows 10: Click the Windows Action Center icon.
 - For Windows 7: Rightclick the Windows Action Center icon and select **Open Action Center** from the pop-up window.
- A pop-up window will appear.



Windows 10



Windows 7

- 2 Read the message available in the window.
 - 3 Perform the actions until each Warning or Error is resolved.
- The Windows messages for the Industrial PC are resolved.



Maintenance

This section provides an overview of the software maintenance tasks for the Industrial PC.

The hardware maintenance tasks are available in the hardware manuals.

For NYB□ and NYP□ refer to the following manuals:

- *NY-series Industrial Box PC Hardware User's Manual (Cat. No. W553)*
- *NY-series Industrial Panel PC Hardware User's Manual (Cat. No. W555)*

7-1	Preventive Maintenance	7-2
7-1-1	Preventive Maintenance Schedule	7-2
7-1-2	Keep Software Updated	7-2
7-1-3	Create Backup and Repair Data	7-3
7-1-4	Check the Storage Device Status	7-15
7-1-5	Check the Backup and Repair Media	7-17
7-2	Corrective Maintenance	7-19
7-2-1	Warning and Error Messages	7-19
7-2-2	Restore and Repair Data	7-20
7-2-3	Allocate a Drive in Windows	7-28
7-2-4	Windows Event Viewer	7-29
7-2-5	Windows Low on Memory	7-31
7-2-6	Windows Blue Screens	7-32
7-2-7	Correct Display Functionality when Nothing is Displayed	7-32
7-2-8	Correct Touchscreen Functionality	7-33

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 PC status	Refer to <i>7-2-1 Warning and Error Messages</i> on page 7-19 for all available messages.
Weekly	Reference
Ensure you have the latest software updates	Refer to <i>7-1-2 Keep Software Updated</i> on page 7-2 for update details.
When changing applications or configurations	Reference
Create a backup of the Industrial PC	Refer to <i>7-1-3 Create Backup and Repair Data</i> on page 7-3 for backup details.
Periodically but at least every 6 months	Reference
Check the status of storage devices.	Refer to <i>7-1-4 Check the Storage Device Status</i> on page 7-15 for details.
Check the backup and repair media.	Refer to <i>7-1-5 Check the Backup and Repair Media</i> on page 7-17 for details.

7-1-2 Keep Software Updated

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

This is specifically important for:

- Anti-virus software
- Firewall software
- Internet browser
- Windows security patches
- OMRON software



Precautions for Correct Use

After an OS update or a peripheral device driver update for the product is executed, the product behavior might be different. Confirm that operation is correct before you start actual operation.



Additional Information

- Refer to for Browser details.
- Refer to *5-1-2 Firewall* on page 5-3 for Firewall details.
- Refer to *5-1-3 Anti-virus Software* on page 5-3 for Anti-virus details.

7-1-3 Create Backup and Repair Data

Ensure the operating system, software and data can always be restored when required.

There are different software tools to create a backup and repair data.

Refer to *Overview of Recover, Restore and Repair Methods* on page 7-3 for an overview of the possibilities and their goals and requirements.



Precautions for Correct Use

Create backups according to the preventive maintenance schedule to prevent data loss and system integrity issues.

Refer to *7-1-1 Preventive Maintenance Schedule* on page 7-2 for intervals.

Select the Backup and Repair procedure or procedures that are most suitable for your situation.

Overview of Recover, Restore and Repair Methods

Depending on the goal and depending on the available backup and repair data an applicable backup and recover, restore or repair action can be selected.

An overview of the different methods to restore and repair Windows and custom files:

Tool	Goal	Preparation in advance	Restore details	Refer to
Omron Rescue Disk	Restore the <ul style="list-style-type: none"> Windows partition Boot partition MBR = GPT 	Create a Rescue Disk	<ul style="list-style-type: none"> A partial recovery or recovery of user data is not possible The IPC recovers to the state of the previously created Rescue Disk image Uses a USB storage device 	<p>Prepare: <i>Create a New Rescue Disk with the Rescue Disk Creator</i> on page 7-6</p> <p>Create: <i>Create a System Backup with the Rescue Disk</i> on page 7-5</p> <p>Check: <i>Check the Backup Information on the Rescue Disk</i> on page 7-17</p> <p>Restore: <i>Restore a System Backup with the Rescue Disk</i> on page 7-21</p>
Windows System Repair disk	Restore Windows 7 to a previous state	Create a Windows System Repair disk	<ul style="list-style-type: none"> A partial recovery or recovery of user data is not possible Windows recovers to the state of the previously created Repair disk image Uses a DVD The IPC can boot with this disk 	<p>Create: Create a Windows 7 System Repair Disk</p> <p>Check: Check the System Repair Disk (Windows)</p> <p>Restore: Repair Windows 7 with the System Repair Disk</p>

Tool	Goal	Preparation in advance	Restore details	Refer to
Windows Recovery disk	Restore Windows 10 to a previous state	Create a Windows Recovery disk	<ul style="list-style-type: none"> • A partial recovery or recovery of user data is not possible • Windows recovers to the state of the previously created Recovery image • Uses a USB storage device • The IPC can boot with this USB 	<p>Create: <i>Create a Windows 10 Recovery Drive</i> on page 7-10</p> <p>Restore: <i>Recover Windows 10 with the Recovery Drive</i> on page 7-27</p>
Windows Backup and Restore	Restore a user's selection of folders	Create a Windows Backup	<ul style="list-style-type: none"> • The data is restored to the state of the previously created backup • Recovery of specific folders is possible. Backups can be created automatically at pre-defined intervals • No recovery of the Windows operating system • Uses any type of storage device 	<p>Create: <i>Create a Custom Backup with Windows Backup</i> on page 7-12</p> <p>Check: <i>Check the Custom Backup Storage Device (Windows)</i> on page 7-17</p> <p>Restore: <i>Restore a Custom Backup with Windows</i> on page 7-23</p>



Additional Information

Contact your OMRON representative when the IPC needs to be restored and you do not have any restore or recover possibility.

Create a System Backup with the Rescue Disk

A Rescue Disk is a disk with the Rescue Disk Utility; this is the software that performs the system backup and system restore procedures of the IPC.

A system backup contains the Windows partition, the boot partition and the MBR.

A system backup can not include the User Data partition.



Precautions for Correct Use

The backup data of the Rescue Disk can be used to recover the data of the IPC that created that backup. It can also restore data to another IPC if the product configuration is identical to the IPC that created the backup.



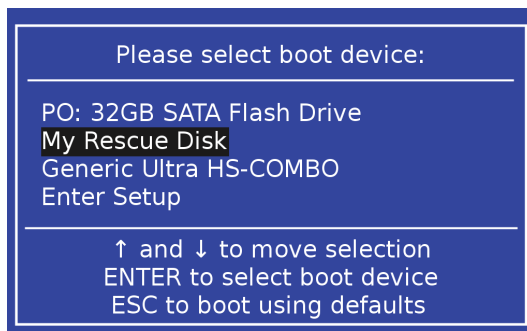
Additional Information

To create a system backup a Rescue Disk should be available.

- Refer to *Create a New Rescue Disk with the Rescue Disk Creator* on page 7-6 for Rescue Disk creation.
- Refer to *Messages Using the Rescue Disk* on page 3-23 for Rescue Disk error messages.

To create a system backup:

- 1** Ensure the IPC is powered OFF.
- 2** Ensure a keyboard is connected to the IPC.
- 3** Connect the Rescue Disk to a USB connector of the IPC.
- 4** Power ON the IPC while pressing the **F11** key twice per second. The option to select your boot device will appear.



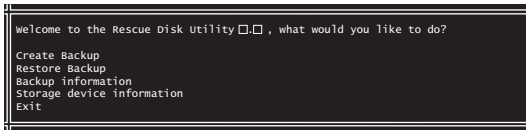
Your Rescue Disk will be displayed in this boot menu with the manufacturer data of your USB device.

If your boot device is not visible in this list:

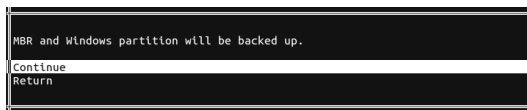
- 1) Disconnect the USB connector of the Rescue Disk.
- 2) Re-insert the USB connector of the Rescue Disk.
- 3) Select **Ctrl**, **Alt** and **Delete** to reboot the IPC.
- 4) Press the **F11** key twice per second.

The option to select your boot device will appear with your boot device in the list.

- 5** Use the arrow keys to select the Rescue Disk and then select **Enter**.
The menu window opens.
The mentioned number can be different from the number displayed on your screen.

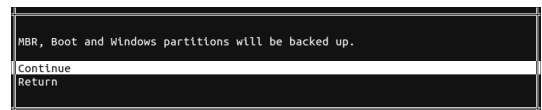


- 6** Select **Create Backup**.
The backup confirmation window opens.



Windows 7

OR



Windows 10

- 7** Select **Continue** to start the system backup process.
Wait until the message **Backup finished** appears.
- 8** The message **Would you like to enter an optional comment for the created backup?** gives the option to add an extra remark to the created backup.
Select **No** to exit without an optional comment.
Select **Yes** to add the optional comment. Add the comment and press [Enter] to finalize the backup creation.
- 9** Select **OK** to return to the main menu.
- 10** Select **Exit** to close the Rescue Disk Utility.
The IPC will power OFF.
- 11** Remove the Rescue Disk and store it in a safe place.
A system backup is created on the Rescue Disk.



Precautions for Correct Use

Create backups according to the preventive maintenance schedule to prevent data loss and system integrity issues.
Refer to *7-1-1 Preventive Maintenance Schedule* on page 7-2 for intervals.



Additional Information

Refer to *Restore a System Backup with the Rescue Disk* on page 7-21 for system restore details.

● Create a New Rescue Disk with the Rescue Disk Creator

A Rescue Disk is a disk with the Rescue Disk Utility that enables users to create a system backup and to do a system restore.

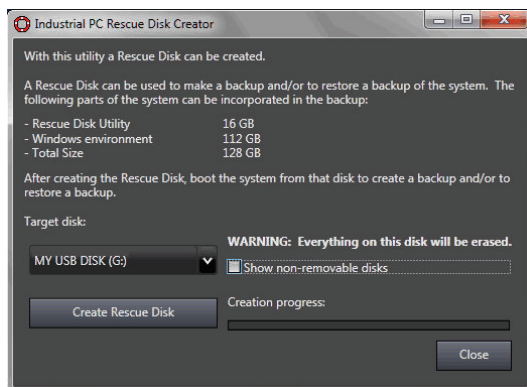
A system backup contains the Windows partition, the boot partition and the MBR.

Prepare:

- The Rescue Disk Creator
Refer to *3-6-3 Installation* on page 3-20 for installation details.
Refer to *Messages Creating the Rescue Disk* on page 3-22 for message details.
- A USB storage device that has sufficient capacity to backup the content of the IPC. The capacity should be at least the Windows partition size + 16 GB. The recommended minimum read/write speed is 190 MB/s.
Note that all content on this USB storage device will be erased during the Rescue Disk creation.

Use the following procedure to create a new Rescue Disk:

- 1** Connect a USB storage device that has sufficient capacity to backup the content of the IPC.
- 2** Select the Windows **Start** Button.
- 3** In the search field, input *Rescue*.
- 4** Right-click **Rescue Disk Creator** and then select **Run as administrator**.
The Rescue Disk Creator Utility window opens.



- 5** Select the connected USB storage device at **Target disk:**.
Refer to *3-6-5 Messages* on page 3-21 for message details if required.
The button **Create Rescue Disk** will be enabled as soon as a USB storage device is detected and accepted.
- 6** Select the **Create Rescue Disk** button to start the creation process.
Wait until the progress bar shows the Rescue Disk creation finished.
Refer to *3-6-5 Messages* on page 3-21 for message details if required.
- 7** Select **Close** to close the Rescue Disk Creator.
The Rescue Disk is **available but it is still empty**, there is no system backup on the Rescue Disk.
Next step is to create a system backup with this Rescue Disk.



Additional Information

- Refer to *Create a System Backup with the Rescue Disk* on page 7-5 for system backup details.
- Refer to *Restore a System Backup with the Rescue Disk* on page 7-21 for system restore details.

Create a Windows 7 System Repair Disk

A Windows System Repair Disk can repair Windows if a serious error occurs.



Additional Information

To create a Windows System Repair Disk, a separate Windows PC with a DVD writer is required that has the same Windows edition and System type as the Industrial PC. The Windows System Repair Disk can not be created with the Industrial PC.

Prepare:

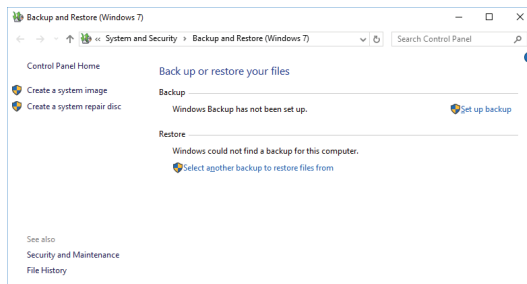
- A PC with a DVD writer that has the same Windows edition and System type as your IPC.
 - An example of the Windows edition is "Windows 7" with "Service Pack 1".
 - An example of the System type is "64-bit Operating System".
- An empty DVD

Use the Windows Backup and Restore mechanisms on the PC with a DVD writer to create a system repair disk.

To create a Windows System Repair Disk:

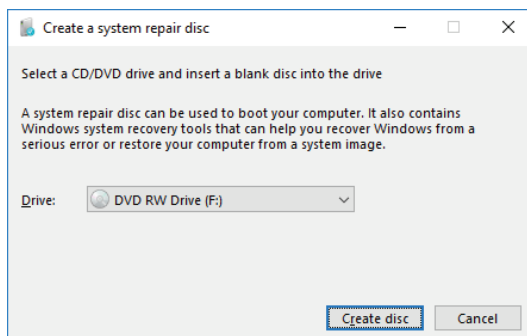
- 1** Start the PC that has a DVD writer and login.
- 2** Select the Windows **Start** Button.
- 3** In the search field, input *Backup*.
- 4** Select **Backup and Restore**.

The Backup and Restore window opens.



- 5** Select **Create a system repair disk**.

The Create a system repair disk window opens.



- 6** Select the applicable drive letter of the DVD writer and then select **Create disk**.
- 7** Wait until the disk is created and then remove it and store it in a safe place.

**Additional Information**

Refer to <http://windows.microsoft.com/> for Backup and Restore details.

Create a Windows 10 Recovery Drive

A Windows recovery drive can repair Windows if a serious error occurs.

Prepare:

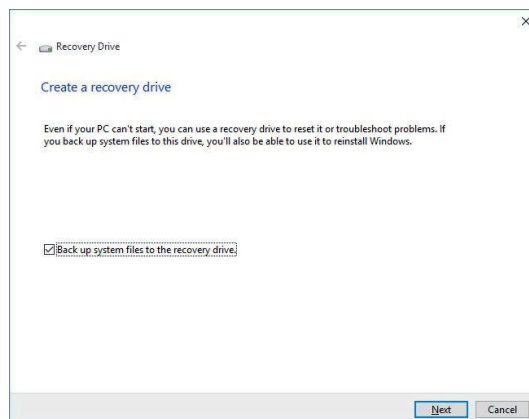
- A USB storage device that has sufficient capacity to backup the content of the IPC. The capacity should be at least the Windows partition size + 16 GB. The recommended minimum read/write speed is 190 MB/s.

Note that all content on this USB storage device will be erased.

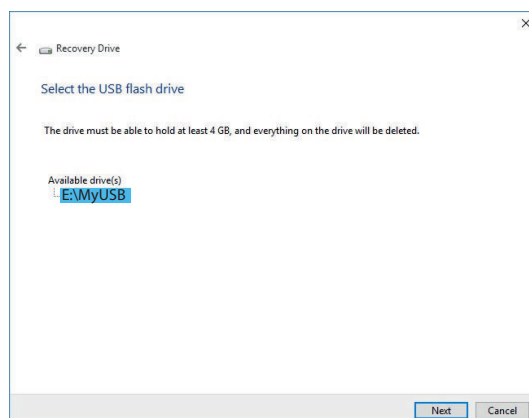
Use the following procedure to create a Windows recovery drive:

- 1** Insert the USB storage device in a USB 3.0 connector.
- 2** Select the Windows **Start** Button.
- 3** In the search field, input *recovery drive*.
- 4** Select **Create a recovery drive**.

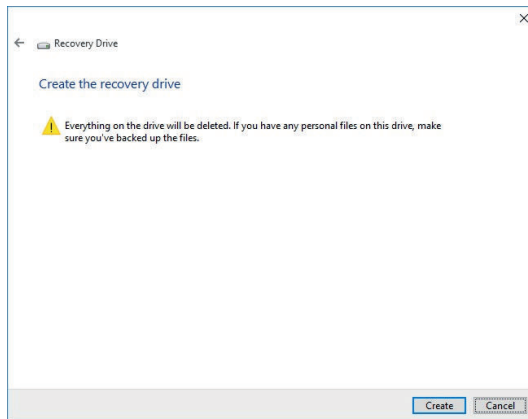
The recovery drive window opens.



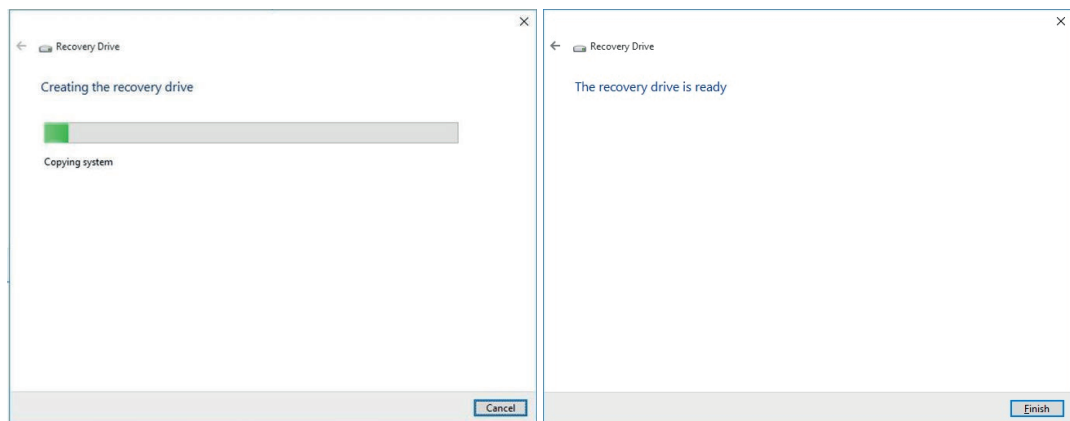
- 5** Check the checkbox **Back up system files to the recovery drive** and then select **Next**. The drive selection window opens.



- 6** Select the applicable drive letter and then select **Next**. The Create window will appear.



- 7 Read the warning and if your personal files are safe then select **Create**.
- 8 Wait until the progress bar is finished and the message **The recovery drive is ready** appears.



- 9 Remove the USB storage device and store it in a safe place.

The Windows recovery drive is ready.



Additional Information

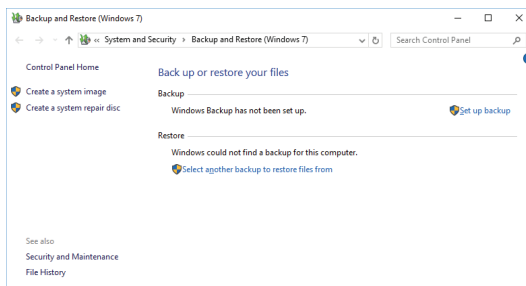
Refer to <http://windows.microsoft.com/> for recovery drive details.

Create a Custom Backup with Windows Backup

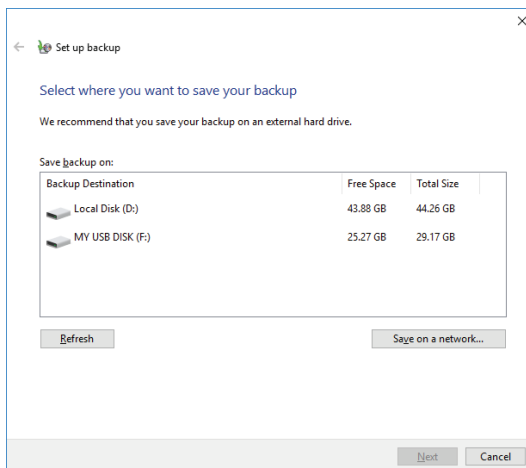
Use the following procedure to create a custom backup of the Industrial PC with the Windows Backup and Restore mechanism.

To manually or automatically create a customized backup:

- 1 Select the Windows **Start** Button.
- 2 In search field, input *Backup*.
- 3 Select **Backup and Restore**.
The Backup and Restore window opens.



- 4 Select **Set up backup**.
The Set up backup window opens.



- 5 Select the backup destination.
A network location can be added with **Save on a network**.



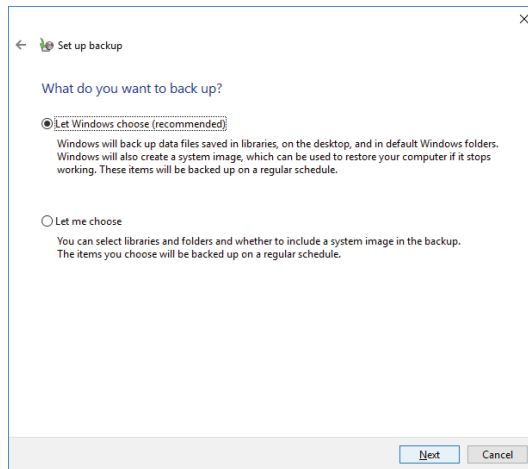
Additional Information

Preferred locations for an automatic backup are:

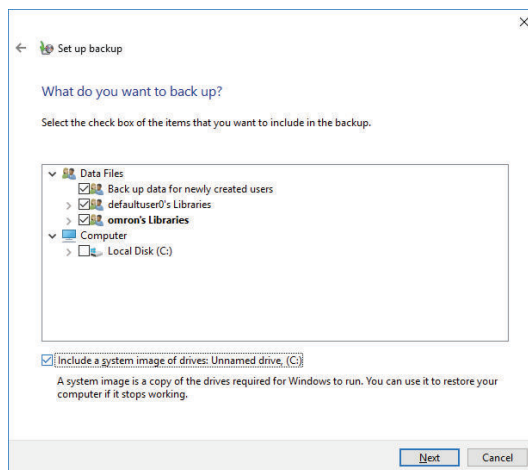
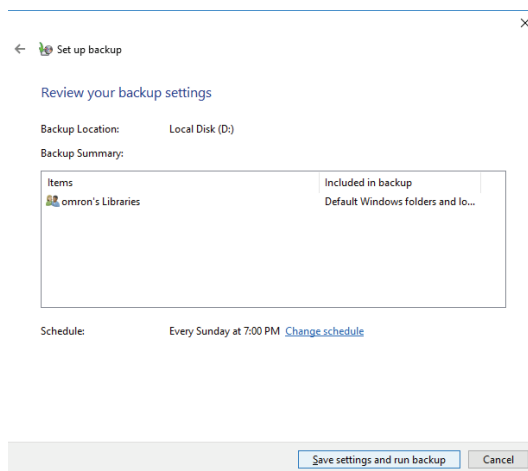
- A network drive
- The local drive in drive bay B, when installed.

6 Select **Next**.

The following window will appear:

**7** Select **Let me choose** and then select **Next**.

The following window will appear:

**8** Select all directories you want to include in the backup.**9** Select **Next**.

10 Select **Configure schedule** or **Change schedule** and change the backup schedule.

Ensure:

- The interval is short enough to minimize data loss when a restore is required
 - The Industrial PC is powered ON during the backup periods
 - The time the backup is scheduled does not interfere with normal operation
- or uncheck **Run backup on a schedule** if an automatic backup is not possible.

11 Select **OK**.

12 Select **Save settings and run backup** to create the first backup.



Precautions for Correct Use

Create backups according to the preventive maintenance schedule to prevent data loss and system integrity issues.

Refer to *7-1-1 Preventive Maintenance Schedule* on page 7-2 for intervals.



Additional Information

- Check your backup to ensure it contains all data required for a restore.
 - Refer to <http://windows.microsoft.com/> for Backup and Restore details.
 - Refer to *Restore a Custom Backup with Windows* on page 7-23 for the Restore Procedure.
-

7-1-4 Check the Storage Device Status

The Rescue Disk is a disk with the Rescue Disk Utility; this software can display the status of all Omron-approved storage devices.



Version Information

The device status information is only available for products with an Atom CPU. The Rescue Disk Utility should be version 0001.0000 or higher. Refer to *1-4 Product Configuration* on page 1-5 for details.



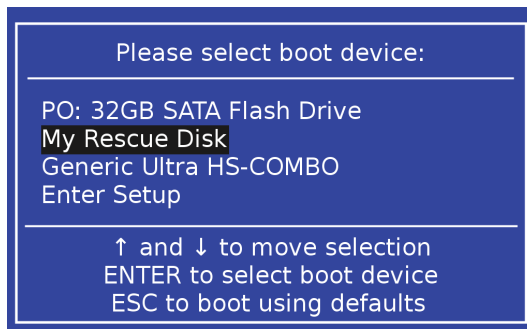
Additional Information

To check the status of a storage device a Rescue Disk should be available.

- Refer to *Create a New Rescue Disk with the Rescue Disk Creator* on page 7-6 for Rescue Disk creation.
- Refer to *Messages Using the Rescue Disk* on page 3-23 for Rescue Disk error messages.

To check the status of a storage device:

- 1 Ensure the IPC is powered OFF.
- 2 Ensure a keyboard is connected to the IPC.
- 3 Connect the Rescue Disk to a USB connector of the IPC.
- 4 Power ON the IPC while pressing the **F11** key twice per second. The option to select your boot device will appear.



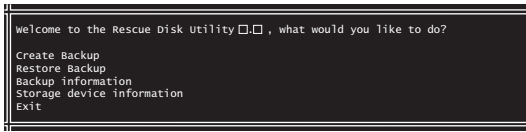
Your Rescue Disk will be displayed in this boot menu with the manufacturer data of your USB device.

If your boot device is not visible in this list:

- 1) Disconnect the Rescue Disk from the USB connector of the IPC.
- 2) Re-connect the Rescue Disk to the IPC.
- 3) Select **Ctrl**, **Alt** and **Delete** to reboot the IPC.
- 4) Press the **F11** key twice per second.

The option to select your boot device will appear with your boot device in the list.

- 5** Use the arrow keys to select the Rescue Disk and then select **Enter**.
The Rescue Disk window opens.



Where [] displays the version of the Rescue Disk.

- 6** Select **Storage device information**.
The storage devices information window opens.



- 7** Check the storage device state and take action when required.

Storage device state	Description	Action
unknown	Storage device state could not be determined	Contact your OMRON representative for further support
operational	Storage device state is in operational mode and functioning normally	Storage device functioning normally, no action required
pre-maintenance	Storage device state is in pre-maintenance mode and functioning normally	Storage device replacement should be scheduled
maintenance	Storage device state is in maintenance mode and functioning normally	Storage device replacement is required
critical	Storage device state is in critical mode and normal operation cannot be guaranteed	Storage device should be replaced immediately as normal operation cannot be guaranteed

- 8** Select **OK** to return to the main menu.
- 9** Select **Exit** to close the Rescue Disk Utility.
- 10** Remove the Rescue Disk and store it in a safe place.

The storage device status is known.

7-1-5 Check the Backup and Repair Media

Use the following procedure to check the backup or repair media.

Check the Backup Information on the Rescue Disk

Use the following procedure to check the rescue disk for the system backup.

- 1 Use the rescue disk to boot the IPC.
Refer to *Restore a System Backup with the Rescue Disk* on page 7-21 for details.
Follow the first few steps of the procedure until following screen appears:

```

Welcome to the Rescue Disk Utility 0000.0xxx, what would you like to do?
Create Backup
Restore Backup
Backup information
Exit
  
```

- 2 Select **Backup Information** and then **Enter**.
Following screen will appear:

```

Backup created on Fri Dec 1 12:34:56
Model name      : NV512-1300
Serial number   : 0123
Lot number      : 01234N
Content         : MBR, Boot, windows and Machine control partitions
Unit version    : v1.16.00
OSB version     : 0000.0016
Comment by user : demo for manual - your content will be different

Current System:
Model name      : NV
Serial number   : 0123
Lot number      : 01234N
Unit version    : v1.16.00
OSB version     : 0000.0016

OK
  
```

- 3 Check the content. If there is no content then there is no usable backup on this Rescue Disk.
- 4 Select **Exit**.

The rescue disk information is checked.

Check the Custom Backup Storage Device (Windows)

Use the following procedure to check the custom backup storage device.

- 1 Insert the storage device with the backup in the Industrial PC that created the backup.
- 2 Follow the first few steps of the restore procedure to display the 'Restore files' screen.
Refer to *Restore a Custom Backup with Windows* on page 7-23 for details.
- 3 Browse the storage device and ensure at least one backup is displayed.
- 4 Select **Cancel** to cancel the restore procedure.

The storage device with the custom backup is approved.

Check the System Repair Disk (Windows)

Use the following procedure to check the system repair disk to repair Windows.

- 1** Follow the first few steps of the repair procedure to display the recovery software screen to select your keyboard language.
Refer to *Repair Windows 7 with the System Repair Disk* on page 7-26 for details.

- 2** Exit the recovery software.

The backup medium for the system repair disk is approved.

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

Warning and Error messages are provided by the Industrial PC when there is a potential problem that may cause downtime. This section provides details about these messages.

Warning messages inform you about a situation that will lead to downtime of the Industrial PC.

Error messages inform you about what caused the downtime of the Industrial PC.

The following message channels are available.

LED Indicators

The ERR LED indicator provides information on warnings and errors.

Industrial PC Support Utility

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

The Industrial PC Support Utility indicates:

- Internal temperature above setting
 - Check the status of the Fan Unit and check the ambient conditions.
- Low revolution speed of the Fan Unit
 - Check for excessive dust on the fans and in the Fan Unit.
 - If required replace the Fan Unit.
- Low battery status
 - Replace the battery.

Windows Action Center

The Windows Action Center provides information on Windows related warnings and errors.

The Windows Action Center indicates security and maintenance issues.

Some examples:

- Virus protection (Important)
Windows did not find anti-virus software on this computer.
- Windows Update (Important)
windows Update is not set up for this computer.
- Set up backup
Your files are not being backed up.



Additional Information

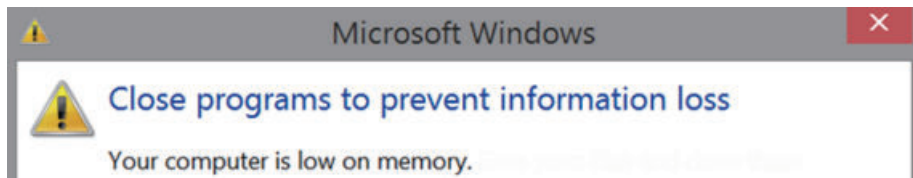
Refer to *6-2 React to Windows Messages* on page 6-3 for details.

Windows Pop Up Window

Windows Pop Up windows provide information on Windows issues.

An example of a Windows Pop Up

- Close programs to prevent information loss.



To solve this change the paging file size.

7-2-2 Restore and Repair Data

Depending on the goal and depending on the available backup and repair data an applicable restore or repair action can be selected.

Use the *Overview of Recover, Restore and Repair Methods* on page 7-3 to determine the method that is applicable to your situation.

Refer to the mentioned procedure to perform the restore or repair procedure.

Restore a System Backup with the Rescue Disk

A Rescue Disk is a disk with the Rescue Disk Utility; this is the software that performs the backup and restore procedures.

Use the Rescue Disk to restore the system backup. This will restore the Windows partition, the boot partition and the MBR to the moment the Rescue Disk backup was created.



Precautions for Correct Use

The backup data of the Rescue Disk can be used to recover the data of the IPC that created that backup. It can also restore data to another IPC if the product configuration is identical to the IPC that created the backup.



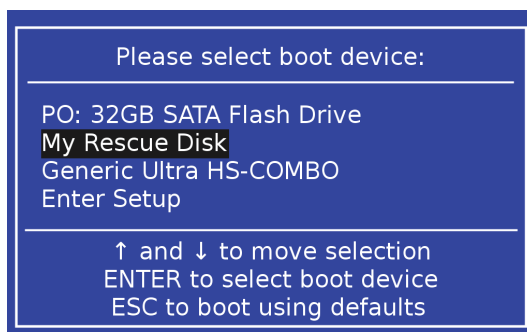
Additional Information

To restore a system backup, a Rescue Disk with a system backup should be available.

- Refer to *Create a New Rescue Disk with the Rescue Disk Creator* on page 7-6 for Rescue Disk creation details.
- Refer to *Create a System Backup with the Rescue Disk* on page 7-5 for system backup details.
- Refer to *Messages Using the Rescue Disk* on page 3-23 for Rescue Disk error messages.

To restore a system backup:

- 1** Ensure the IPC is powered OFF.
- 2** Ensure a keyboard is connected to the IPC.
- 3** Connect the Rescue Disk to a USB connector of the IPC.
- 4** Power ON the IPC while pressing the **F11** key twice per second. The option to select your boot device will appear.



Your Rescue Disk will be displayed in this boot menu with the manufacturer data of your USB device.

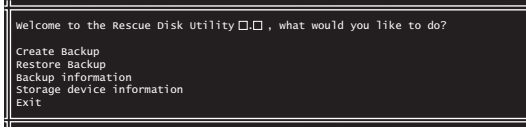
If your boot device is not visible in this list:

- 1) Disconnect the USB connector of the Rescue Disk.
- 2) Re-insert the USB connector of the Rescue Disk.
- 3) Select **Ctrl, Alt** and **Delete** to reboot the IPC.
- 4) Press the **F11** key twice per second.

The option to select your boot device will appear with your boot device in the list.

- 5** Use the arrow keys to select the Rescue Disk and then select **Enter**.

The menu window opens.



The mentioned number can be different from the number displayed on your screen.

- 6** Select **Restore Backup**.

The restore selection window opens.



Windows 7

Or



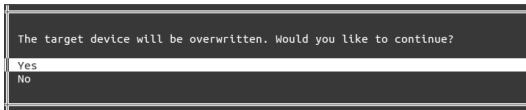
Windows 10

- 7** Select:

- **Windows Partition** for Windows 7
- **MBR, Boot and Windows Partitions** for Windows 10

to restore the system.

The overwrite confirmation window opens.



- 8** Select **Yes** to start the system restore process.

Wait until the message **Restore finished** appears.

- 9** Select **OK** to return to the main menu.

- 10** Select **Exit** to close the Rescue Disk Utility.

The IPC will power OFF.

- 11** Remove the Rescue Disk and store it in a safe place.

The system backup of the IPC is restored.



Additional Information

- Refer to *3-6 Rescue Disk Creator* on page 3-19 for Rescue Disk Creator details.
- Refer to *Create a New Rescue Disk with the Rescue Disk Creator* on page 7-6 for Rescue Disk creation details.
- Refer to *Create a System Backup with the Rescue Disk* on page 7-5 for system backup details.

Restore a Custom Backup with Windows

Use the following procedure to restore a custom backup of user files with Windows Backup and Restore.



Additional Information

- Refer to *Create a Custom Backup with Windows Backup* on page 7-12 for Custom Backup details.
- With Windows Backup and Restore it is not possible to restore the complete boot disk or the operating system. Use the Windows Repair Disk to repair the Windows operating system. Refer to <http://windows.microsoft.com/> for Backup and Restore details. Refer to *Create a Windows 7 System Repair Disk* for Repair Disk details.
- Use the Windows System Repair Disk to repair the Windows operating system when Windows can not be started. Refer to *Repair Windows 7 with the System Repair Disk* for repair details.

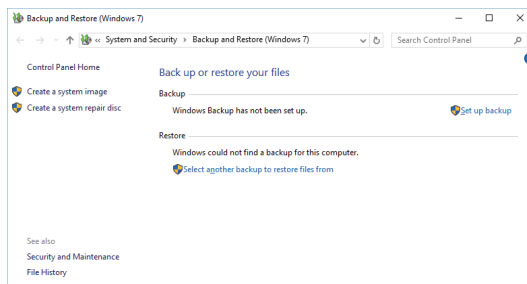
Ensure:

- The Industrial PC is ON
- You are logged in
- A backup is created earlier and it is available

To restore a backup:

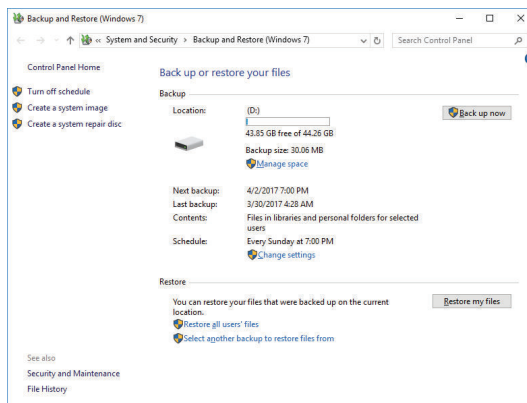
- 1** Select the Windows **Start** Button.
- 2** In the search field, input *Backup*.
- 3** Select **Backup and Restore**.

The Backup and Restore window opens.

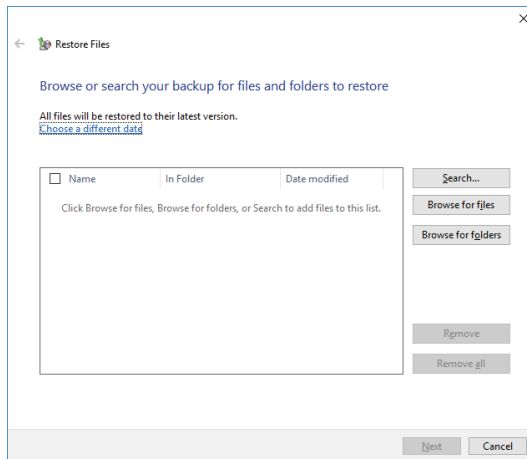


4 Select **Restore my files**.

The restore files window opens.



5 Use the buttons **Search** and **Browse for files** or **Browse for folders** to find the created backup.



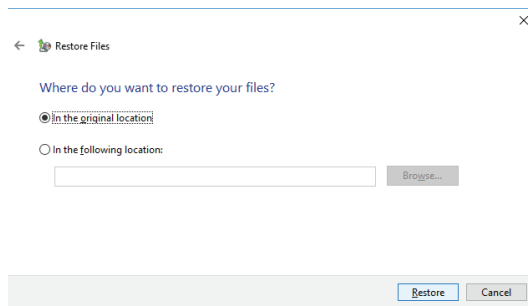
6 Add the files and folders to be restored and then select **Next**.



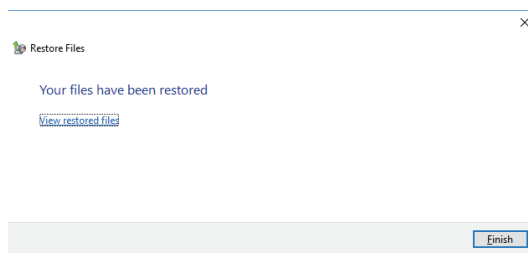
Additional Information

With this Windows Restore procedure it is not possible to restore files that are in use. This means system files and files of the logged in user can not be restored with this procedure. Refer to Repair Windows 7 with the System Repair Disk for Windows Repair details.

- 7** Select **In the original location** and then select **Next**.
The progress window will appear.



- 8** Wait until the message **Your files have been restored** appears and then select **Finish**.



The files are restored.

Repair Windows 7 with the System Repair Disk

Use the following procedure to repair the Windows operating system with a System Repair Disk.

Ensure:

- The Industrial PC is powered OFF.
- A System Repair Disk is created earlier and it is available.

To perform a system repair:

- 1** Connect a USB keyboard, a USB mouse and a USB external DVD drive to the Industrial PC.
- 2** Power ON the Industrial PC and immediately press the **F11** key repeatedly.
- 3** Insert the System Repair Disk in the DVD drive.
- 4** Select **DVD Drive** as boot device and press **Enter**.
The message *Windows is loading files ...* and a progress bar appear.
- 5** Press any key to start and wait until the recovery software started.
- 6** Select your keyboard language and then select **Next**.
The System Recovery Options window appears.
- 7** Select **Restore your computer using a system image that you created earlier** and select **Next**.
- 8** Select **Use latest available system image** and then select **Next**.
The Re-Image Your Computer window appears.
- 9** Do not change the setting to restore C: , select **Next**.
- 10** Review the settings and select **Finish**.
- 11** Wait until the repair process is finished, this can take several hours.
- 12** Restart the Industrial PC.

Windows is repaired.



Additional Information

- Refer to <http://windows.microsoft.com/> for System repair details.
 - Refer to *Create a Windows 7 System Repair Disk* on page 7-8 for System Repair disk creation.
 - Refer to *5-3 Create Backup and Repair Media* on page 5-6 for Backup creation.
-

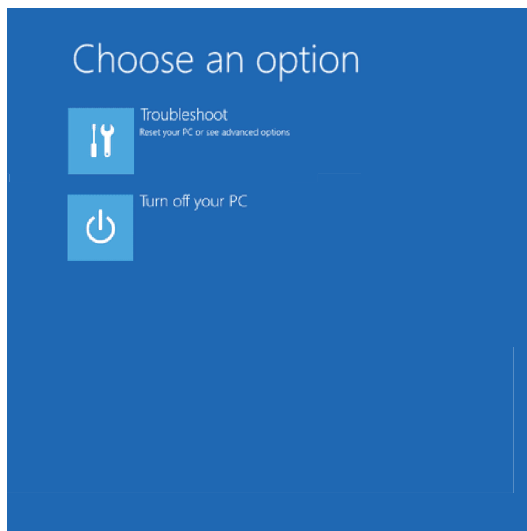
Recover Windows 10 with the Recovery Drive

Use the following procedure to recover Windows 10 to a previous state using a Recovery Drive.

Ensure a Windows Recovery Drive is created earlier and it is available:

To recover Windows 10:

- 1** Connect the USB storage device to the IPC.
- 2** Power ON the IPC and press **F11** repeatedly to display the Boot Selection Popup menu.
- 3** Select your boot device and then select **Enter**.
The IPC will reboot.
- 4** When requested choose your keyboard layout.
The window *Choose an option* will appear.



- 5** Select **Troubleshoot**
The window *Troubleshoot* will appear.
- 6** Select **Recover from a drive**.



Additional Information

Windows will be restored to the state the recovery disk was created!

Follow the instruction and wait while Windows 10 reinstalls.

Windows 10 is restored.

7-2-3 Allocate a Drive in Windows

An added drive must be allocated before it becomes visible in Windows.

To allocate a drive in Windows:

- 1** Ensure the IPC is ON.
- 2** Select the Windows **Start** Button.
- 3** In the search field, input *partition*.
- 4** Select **Create and format hard disk partitions**.
The Disk Management window opens. The new disk is displayed with a storage space **Unallocated**.
- 5** Right click on the unallocated space and select **New Simple Volume**.
The New Simple Volume Wizard opens.
- 6** Follow the steps in the New Simple Volume Wizard.

The drive is installed and ready for use in Windows under the configured drive letter.



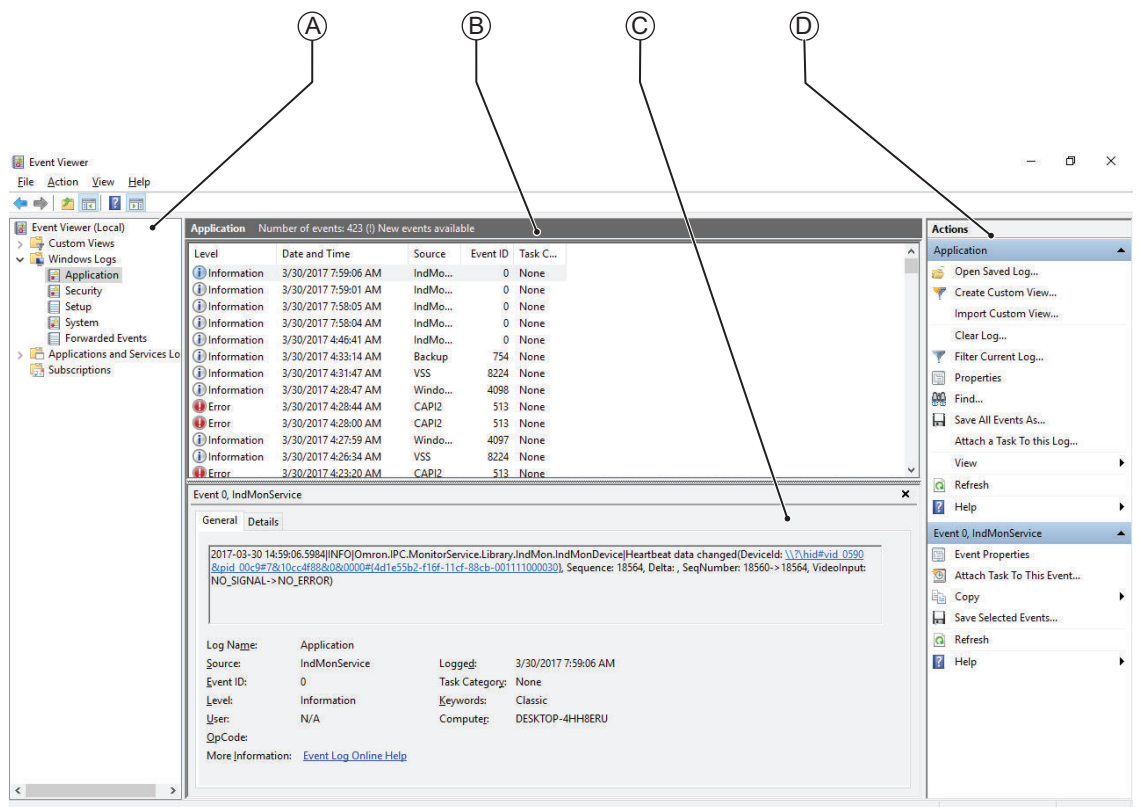
Additional Information

Do not format, resize or change settings for partition C:. Windows is installed on drive partition C: and any change to this partition can cause Windows to stop working.

7-2-4 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 *7-2-4 Windows Event Viewer* on page 7-29 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.

7-2-5 Windows Low on Memory

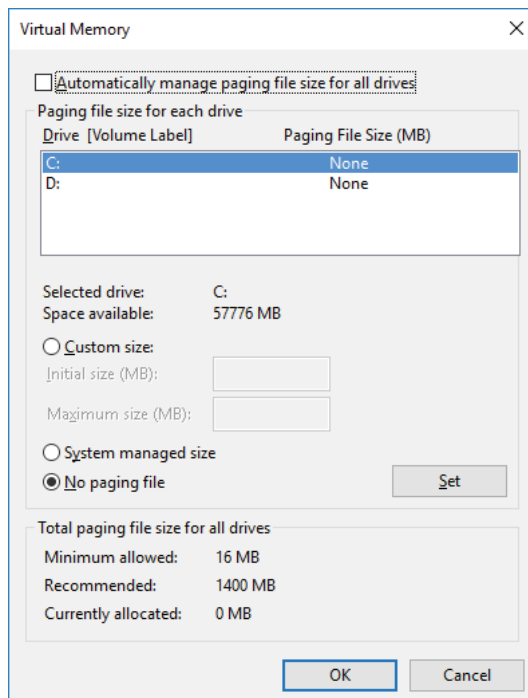
The Windows memory can become low when adding applications and/or updates.

When the memory is low a new window with the message *Close programs to prevent information loss* will appear.

Increase the paging file size to solve this problem.

To increase the page file size:

- 1** Select the Windows **Start** Button.
- 2** In the search field, input *advanced system settings*.
- 3** Select **View advanced system settings**.
The Advanced tab page in the Windows System properties will appear.
- 4** In the group **Performance**, select the **Settings...** Button.
The Performance options window will appear.
- 5** Select the **Advanced** tab page.
- 6** In the group **Virtual memory**, select the **Change...** Button.
- 7** Select the checkbox **Automatically manage paging file size for all drives**.



- 8** Select the **OK** Button to save this setting.



Precautions for Safe Use

Virtual memory settings can affect the performance of the system. Disable the paging file after installation of applications or updates.

7-2-6 Windows Blue Screens

A blue screen will appear if Windows crashes.

Possible solutions for repetitive blue screens:

- 1** Install the latest updates of Windows.
- 2** Install the latest device drivers.
- 3** If changes to the system were made: Undo recent hardware changes, undo recent driver updates and then roll back system to latest working state.



Additional Information

- Windows 10: Refer to <https://support.microsoft.com/nl-nl/help/14238/windows-10-trouble-shoot-blue-screen-errors> for details.
- Windows 7: Refer to <http://windows.microsoft.com/en-us/windows7/resolving-stop-blue-screen-errors-in-windows-7> for details.
- For troubleshooting an external boot device might be handy. Refer to *Overview of Recover, Restore and Repair Methods* on page 7-3 for possible boot devices.

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

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

- If the ERR LED is OFF
 - Check if the power supply is present.
 - Check if the brightness setting is not too low.
Refer to Industrial Monitor Utility for brightness details.
Refer to NY-series Operating Systems and Software Utilities Manual (Cat. No. W616) for Industrial Monitor Utility details.
- If the ERR LED is blinking check if the IPC is not in standby mode.
- If the ERR LED is ON
 - Check if the power supply voltage is inside specifications.
 - Check if the ambient temperature is inside specifications.
 - Check if the Fan Unit has no warning messages.
Refer to the ERR Led for message details.
 - Check if a watchdog error occurred.
The watchdog is disabled by default and can only be enabled by software using the Industrial PC System API.
The API information is available:
Refer to NY-series Operating Systems and Software Utilities Manual (Cat. No. W616) for details.

7-2-8 Correct Touchscreen Functionality

The touchscreen functionality can have several unwanted situations.

1. With one display:

- No touch response

Refer to *Correct Touchscreen Functionality with No Touch Response* on page 7-33 for details.

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

Refer to *Calibrate Touchscreen* on page 7-34 for details.

2. With more than one display:

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

Refer to *Correct Touchscreen Functionality with Multiple Monitors* on page 7-35 for details.

Correct Touchscreen Functionality with No Touch Response

When the touchscreen functionality is not functional, check:

- Water present on the display surface.

Wipe the display surface with a dry lint free cloth.

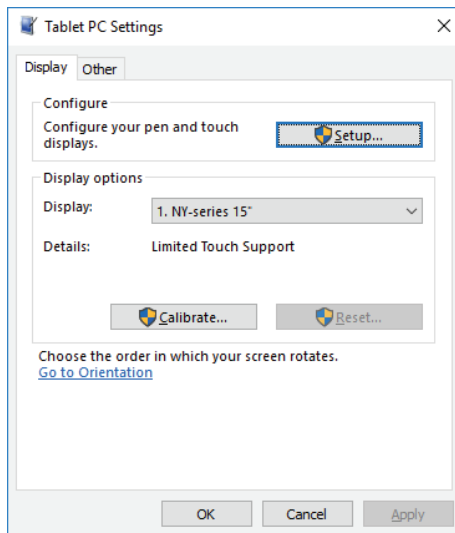
- When using gloves, ensure to use gloves that had no problems when the touch functionality was functional.

Calibrate Touchscreen

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

Use the following procedure to calibrate the touchscreen functionality of your Industrial PC.

- 1** Select the Windows **Start** Button.
- 2** In the search field, input *Tablet*.
- 3** Select **Tablet PC Settings**.
The Tablet PC Settings window opens.



- 4** Select the **Calibrate** Button.
A window with lines and a touch indicator will appear.
- 5** Touch the indicator on all locations where it appears.
When finished a window appears with the question *Do you want to save the calibration data?*
- 6** Select the **Yes** Button.
- 7** Check the touchscreen functionality.

The touchscreen functionality is calibrated.

Correct Touchscreen Functionality with a PenMount Message

When a touchscreen monitor receives incorrect signals the message *PenMount Device touch disabled at abnormal state. Please remove palm or water.* appears.



Touching the display has no effect.

The **OK** Button will remove the pop-up so the display can be used with a mouse and a keyboard.

Use the following procedure to enable the touchscreen functionality of your Industrial PC.

- 1** Ensure nothing touches the display.
- 2** Dry the surface with a soft cloth.
- 3** Check the touchscreen functionality.

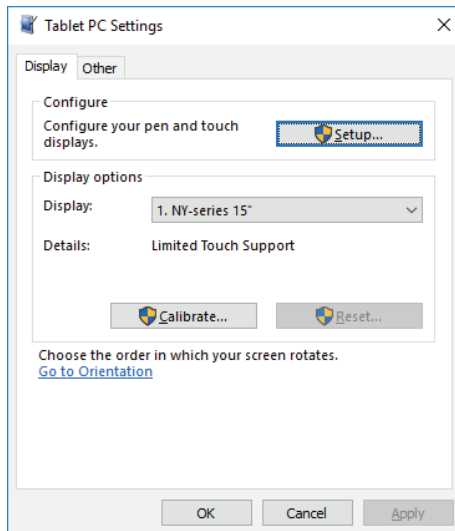
The touchscreen functionality is enabled.

Correct Touchscreen Functionality with Multiple Monitors

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

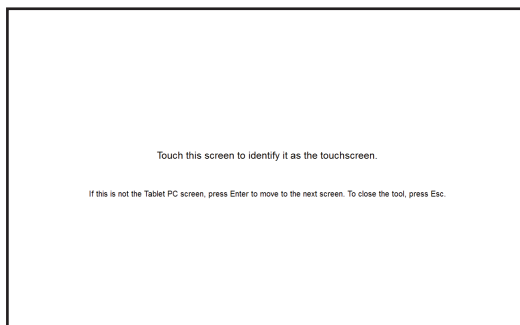
Use the following procedure to correct the touchscreen functionality on monitors of your Industrial PC.

- 1** Select the Windows **Start** Button.
- 2** In the search field, input *Tablet*.
- 3** Select **Tablet PC Settings**.
The Tablet PC Settings window opens.



4 Select the **Setup** Button.

An empty screen appears with only the message *Touch this screen to identify it as the touchscreen. If this is not the Table PC screen, press Enter to move to the next screen. To close the tool, press Esc.*



5 Select **Enter** to move the message to the connected monitor with touch functionality.

6 Touch the screen to indicate it is the correct monitor with touch functionality.

The message appears *Press Enter to proceed to the next step to complete your configuration.*

7 Select the **Enter** key.

8 Check the touchscreen functionality.

Calibrate the touch functionality if the touch indicator does not appear at the location that you touch.

Refer to *Calibrate Touchscreen* on page 7-34 for calibration details.

The touchscreen functionality is available on the correct monitor.



Appendices

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A-1 Customize Windows

This section provides an overview of the tools to customize Windows.

A-1-1 Enhanced Write Filter

The Enhanced Write Filter (EWF) is applicable to IPCs with a Windows 7 operating system. The Enhanced Write Filter (EWF) intercepts disk changes and stores them into a memory overlay in RAM memory instead of applying them to the original volume.



Additional Information

- File-Based Write Filter (FBWF) provides a similar function, but operates at the file level, while EWF operates at the sector level.
- Refer to [the Microsoft Developer Network \(MSDN\)](#) for detailed information.

Application

EWF and FBWF provide the following benefits:

- Write-protect one or more partitions on a system.
- Make it possible to revert changes and revert to the original disk content.
- Enable booting from read-only media.

By redirecting all write requests to RAM, EWF and FBWF enable the run-time image to maintain the appearance of a writable run-time image.

- Improve the file system performance when using relatively slow storage.
- Minimize write actions to the disk.

For example, minimize write access to flash memory. Write cycles on flash memory are limited for technical reasons.

Usage

EWF is included in the Windows Embedded Standard 7 image and disabled by default. The configuration of this component can be defined with the command line tool `EWFMGR.EXE`.

To run to EWF Manager, open the Command Prompt with Administrator rights.

Command	Function	Remarks
<code>ewfmgr</code>	Shows an overview with current status.	---
<code>ewfmgr c: -enable</code>	Enables the write filter for the drive C:.	The protection is not effective until the system is restarted.
<code>ewfmgr c: -commit</code>	Writes all the changes in the memory overlay to the physical disk during the next restart.	Committing the overlay can affect the speed of the boot process.
<code>ewfmgr c: -commitanddisable</code>	Writes all the changes in the memory overlay to the physical disk during the next restart, and disables the disk protection.	Committing the overlay can affect the speed of the boot process. The protection is not disabled until the system is restarted.

Command	Function	Remarks
ewfmgr c: -commitanddisable -live	Writes all the changes in the memory overlay to the physical disk immediately, and disables the disk protection.	Protection is also disabled immediately. No restart is required.
ewfmgr c: -disable	Disables the disk protection.	The protection is not disabled until the system is restarted.
ewfmgr /h	Displays a helpscreen that explains all commands and options available.	A complete reference can also be found at the Microsoft Developer Network (MSDN) .

Considerations

- EWF and FBWF cannot be used simultaneously.
- To prevent data loss in the event of a power failure, the use of a UPS is recommended.
- When the EWF function is enabled and a large amount of data is written, the system memory space will be reduced and operation may become unstable. To prevent this problem, it is recommended that a large amount of data be written to a different location.
- Automatic Adjustment of daylight saving time (DST) is incompatible with the Enhanced Write Filter (EWF).



Additional Information

Refer to [the Microsoft Developer Network \(MSDN\)](#) for DST details.

A-1-2 File-Based Write Filter

The File-Based Write Filter (FBWF) is applicable to IPCs with a Windows 7 operating system.

The File-Based Write Filter (FBWF) intercepts file changes and stores them into a memory overlay in RAM memory instead of applying them to the original volume.

When FBWF is enabled, all files and folders of a partition are protected unless they are included in an exception list.



Additional Information

- Enhanced Write Filter (EWF) provides a similar function, but operates at the sector level, while FBWF operates at the file level. FBWF is more flexible in its configuration than EWF and allows immediate writing without rebooting.
- Refer to [the Microsoft Developer Network \(MSDN\)](#) for detailed information.

Application

EWF and FBWF provide the following benefits:

- Write-protect one or more partitions on a system.
- Make it possible to revert changes and revert to the original disk content.
- Enable booting from read-only media.

By redirecting all write requests to RAM, EWF and FBWF enable the run-time image to maintain the appearance of a writable run-time image.

- Improve the file system performance when using relatively slow storage.

- Minimize write actions to the disk.
For example, minimize write access to flash memory. Write cycles on flash memory are limited for technical reasons.

Usage

FBWF is included in the Windows Embedded Standard 7 image and disabled by default. The configuration of this component can be defined with the command line tool `FBWFMGR.EXE`.

To run to FBWF Manager, open the Command Prompt with Administrator rights.

Command	Function	Remarks
<code>fbwfmgr</code>	Shows an overview with current status.	---
<code>fbwfmgr /displayconfig</code>	Shows current configuration.	---
<code>fbwfmgr /enable</code>	Enables the write filter.	The protection is not effective until the system is restarted.
<code>fbwfmgr /addvolume c:</code>	Adds a volume to the protected volume list.	That volume will be protected after the next restart.
<code>fbwfmgr /commit c: \Test.txt</code>	Writes the changes to the protected file/folder.	---
<code>fbwfmgr /addexclusion C: \Test.txt</code>	Adds a write-through path to the exclusion list (file/folder).	The exclusion is active after the next restart.
<code>fbwfmgr /removeexclusion C: \Test.txt</code>	Removes the write-through path from the exclusion list (file/folder).	The exclusion is removed after the next restart.
<code>fbwfmgr /h</code>	Displays a helpscreen that explains all commands and options available.	A complete reference can also be found at the Microsoft Developer Network (MSDN) .



Additional Information

When specifying a file name, notice the space between drive name (c:) and file path (\Test.txt).

Considerations

- EWF and FBWF cannot be used simultaneously.
- FBWF can only protect formatted volumes. Do not move files between protected and unprotected volumes.
- When the FBWF function is enabled and a large amount of data is written, the system memory space will be reduced and operation may become unstable. To prevent this problem, it is recommended that a large amount of data be written to a different location.
- FBWF supports only NTFS and FAT32 file systems.
- Automatic Adjustment of daylight saving time (DST) is incompatible with the File-Based Write Filter (FBWF).



Additional Information

Refer to [the Microsoft Developer Network \(MSDN\)](#) for DST details.

A-1-3 Unified Write Filter

The Unified Write Filter (UWF) is applicable to IPCs with a Windows 10 operating system. The UWF intercepts disk changes and stores them into a memory overlay in RAM memory instead of applying them to the original volume.



Additional Information

- Refer to *Advantages of the Unified Write Filter* on page A-5 for details.
- Refer to *Considerations for the Unified Write Filter* on page A-5 for details.
- Refer to [the Microsoft Developer Network \(MSDN\)](#) for details.

Advantages of the Unified Write Filter

Advantages of the Unified Write Filter.

The Unified Write Filter (UWF) provides the following benefits:

- Write-protect one or more partitions on a system.
- Make it possible to revert changes and revert to the original disk content.
- Enable booting from read-only media.

By redirecting all write requests to RAM the run-time image maintains the appearance of a writable run-time image.

- Improve the file system performance when using relatively slow storage.
- Minimize write actions to the disk.

For example, minimize write access to flash memory. Write cycles on flash memory are limited for technical reasons.

Considerations for the Unified Write Filter

Considerations for the Unified Write Filter (UWF).

When using the Unified Write Filter (UWF) all disk changes are stored into a memory overlay in RAM memory instead of applying them to the original volume. This also applies to the installation of software or changing parameters. For software changes, like Windows updates or system parameter changes, it is required to disable the UWF, install the software and then enable the UWF again.

Using the UWF also consider following issues:

- To prevent data loss in the event of a power failure, the use of a UPS is recommended.
- When the UWF function is enabled and a large amount of data is written, the system memory space will be reduced and operation may become unstable. To prevent this problem, it is recommended that a large amount of data be written to a different location.
- Automatic Adjustment of daylight saving time (DST) is incompatible with the UWF enabled.

Configuration of the Unified Write Filter

The Unified Write Filter (UWF) is included in the Windows 10 image.

The UWF is default disabled for an Industrial PC.

The configuration of this component can be defined with the command line tool `uwfmgr.EXE`.

To run to UWF Manager, open the Command Prompt with Administrator rights.

Command	Function	Remarks
<code>uwfmgr.exe get-config</code>	Shows an overview with current status	Use this command to check the status after another command is executed
<code>uwfmgr.exe filter</code>	Configures basic UWF settings	- - -
<code>uwfmgr.exe enable</code>	Enables the unified write filter	This change is not effective until the system is restarted
<code>uwfmgr.exe disable</code>	Disables the unified write filter	This change is not effective until the system is restarted
<code>uwfmgr.exe volume protect C:</code>	Enables the unified write filter for the C: drive	- - -
<code>uwfmgr.exe file commit C:\temp\test1.txt</code>	Issues a commit for a new file with the name C:\temp\test1.txt	Committing the overlay can affect the speed of the boot process
<code>uwfmgr.exe help</code>	Displays a helpscreen that explains all commands and options available	A complete reference can also be found at the Microsoft Developer Network (MSDN)

A-1-4 Trusted Platform Module

The Trusted Platform Module (TPM) integrates encryption keys into the Industrial PC in order to secure hardware and software. The TPM enables the following security functions:

- Ensure the integrity of the platform: The TPM can be used in the BIOS and other software to protect against unauthorized manipulation.
- Disk encryption: The TPM can be used with "BitLocker" drive encryption.
- Password protection and other uses of encryption: The TPM provides encryption key management.



Additional Information

Refer to [the Microsoft Developer Network \(MSDN\)](#) for best practice information.

Usage

To enable the TPM, see the relevant section in the BIOS Settings.

To use the TPM with "BitLocker" drive encryption, please follow the instructions in the operating system.

Considerations

Risk of data loss: If you lose the password for the drive encryption, you will not be able to restore the data. You will then lose access to the encrypted drive. Please store the password carefully and make sure it is protected against unauthorized access.



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