



Personal Computer Embedded Type Servo System Controller

Motion Control Software SWM-G User's Manual (Installation)

-MR-SWMG16-U
-MR-SWMG32-U
-MR-SWMG64-U
-MR-SWMG128-U



SAFETY PRECAUTIONS

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product only.

In this manual, the safety precautions are classified into two levels: "⚠ WARNING" and "⚠ CAUTION".

 WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
 CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠ CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

WARNING

- Configure safety circuits externally to ensure that the entire system operates safely even when a fault occurs in the personal computer. Failure to do so may result in an accident due to an incorrect output or malfunction.
 - (1) Configure external safety circuits, such as an emergency stop circuit, protection circuit, and protective interlock circuit for forward/reverse operation or upper/lower limit positioning.
 - (2) If an incorrect home position return direction is set, motion control may continue without deceleration. To prevent machine damage caused by this, configure an external interlock circuit.
 - (3) When this product detects an error, the motion slows down and stops or the motion rapidly stops, depending on the stop setting in parameter. Set the parameter to meet the specifications of the positioning control system. In addition, set the home position return parameter and positioning data within the specified setting range.
- For the operating status of each station after a communication failure, refer to manuals for the network used. Incorrect output or malfunction due to a communication failure may result in an accident.
- When modifying control while this product is running, configure an interlock in the program to ensure that the entire system always operates safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change (status control)), read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents. Determine corrective actions to be taken by the system in case of a communication failure.
- Especially, when a remote system is controlled, immediate action cannot be taken if a problem occurs due to a communication failure. To prevent this, configure an interlock in the program, and determine corrective actions to be taken by the system in case of a communication failure.

[Design Precautions]

WARNING

- If a communication cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations. Configure an interlock in the program to ensure that the entire system will always operate safely even if communications fail. Failure to do so may result in an accident due to an incorrect output or malfunction.
 - If safety standards (ex. robot safety rules, etc.) apply to the system using the servo amplifier and servomotor, make sure that the safety standards are satisfied.
 - Construct a safety circuit external to each slave device if the abnormal operation of the slave devices to be connected to this product differs from the safety directive operation in the system.
-

[Design Precautions]

CAUTION

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100 mm or more between them. Failure to do so may result in malfunction due to noise.
 - After the personal computer is powered on or rebooted, the time taken for the system to enter the RUN status varies depending on the system configuration and/or performance of the personal computer. Design circuits so that the entire system will always operate safely, regardless of the time.
-

[Security Precautions]

WARNING

- To maintain the security (confidentiality, integrity, and availability) of the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.
-

[Wiring Precautions]

CAUTION

- Ground the controllers in which this product is installed, servo amplifiers, and servo motors with a ground resistance of 100 ohm or less. Do not use a common grounding with other equipment.
 - Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100 mm or more between them. Failure to do so may result in malfunction due to noise.
 - Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the cables or malfunction due to poor contact.
 - Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the external device.
 - When disconnecting the cable, do not pull the cable by the cable part. Pulling the cable may result in malfunction or damage to the cable.
 - Prevent foreign matter such as dust or wire chips from entering the personal computer. Such foreign matter can cause a fire, failure, or malfunction.
 - For Ethernet cables to be used in the system, select the ones that meet the specifications in the user's manual. If not, normal data transmission is not guaranteed.
-

[Startup and Maintenance Precautions]

WARNING

- Shut off the external power supply (all phases) used in the system before cleaning. Failure to do so may result in electric shock or malfunction.
 - Do not connect or disconnect any communication cable while power is on. Failure to do so may cause malfunction.
-

[Startup and Maintenance Precautions]

CAUTION

- When modifying control while this product is running, configure an interlock in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change (status control)), read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents. Determine corrective actions to be taken by the system in case of a communication failure.
 - Especially, when a remote system is controlled, immediate action cannot be taken if a problem occurs due to a communication failure. To prevent this, configure an interlock in the program, and determine corrective actions to be taken by the system in case of a communication failure.
 - Use any radio communication device such as a cellular phone or PHS (Personal Handyphone System) more than 25 cm away in all directions from the Simple Motion board. Failure to do so may cause malfunction.
 - Maintenance must be performed by qualified maintenance personnel with knowledge.
 - Before testing the operation, set a low speed value for the speed limit parameter so that the operation can be stopped immediately upon occurrence of a hazardous condition.
 - Confirm and adjust the program and each parameter before operation. Unpredictable movements may occur depending on the machine.
 - When using the absolute position system function, on starting up, and when the absolute position motor has been replaced, always perform a home position return.
 - Before starting the operation, confirm the brake function.
 - Do not perform a megger test (insulation resistance measurement) during inspection.
 - After maintenance and inspections are completed, confirm that the position detection of the absolute position detection function is correct.
 - Extreme adjustments and changes may lead to unstable operation, so never make them.
-

[Operating Precautions]

CAUTION

- When modifying control (such as data modification, program change, or operating status change (status control)), read relevant manuals carefully and ensure the safety before operation. Incorrect change or modification may cause system malfunction, damage to the machines, or accidents.
 - Do not go near the machine during test operations. Doing so may lead to injuries.
-

CONDITIONS OF USE FOR THE PRODUCT

- (1) Mitsubishi Motion Control Software ("the PRODUCT") shall be used in conditions;
- i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
 - ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.
- (2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries. MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.
- ("Prohibited Application")
- Prohibited Applications include, but not limited to, the use of the PRODUCT in;
- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
 - Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
 - Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.
- Notwithstanding the above restrictions, Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTS are required. For details, please contact the Mitsubishi representative in your region.
- (3) We will not responsible for any problems on Motion Control Software and systems caused by DoS attacks, unauthorized accesses, computer viruses, and other cyber attacks.

INTRODUCTION

Thank you for purchasing Motion Control Software SWM-G.

This manual describes the required procedures and settings for installing Motion Control Software SWM-G in a personal computer.

Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the product to handle it correctly.

Applicable module

MR-SWMG16-U, MR-SWMG32-U, MR-SWMG64-U, MR-SWMG128-U

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RELEVANT MANUALS

Manual name [manual number]	Description	Available form
Motion Control Software SWM-G User's Manual (Installation) [IB-0300561ENG] (this manual)	Required procedures and settings for installing Motion Control Software SWM-G in a personal computer.	PDF
Motion Control Software SWM-G User's Manual (Startup) [IB-0300562ENG]	Specifications, procedures before operation, and settings of Motion Control Software SWM-G.	PDF
Motion Control Software SWM-G Operating Manual [IB-0300563ENG]	System configuration, parameter settings, and online function operations of Motion Control Software SWM-G.	PDF

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
I/O size	The number of I/O points. It is expressed in bytes.
MR Configurator2	The product name of the servo setup software.
MR-J5-G	An MR-J5-□G□(-RJ) servo amplifier.
MR-J5W-G	An MR-J5W□-□G servo amplifier.
NIC	A network interface card for Ethernet connection.
RTX	An extension function that operates Windows in real time, which is developed by IntervalZero. RTX64 is compatible with 64-bit natively.
RTX64	
SWM-G	A generic product name for Motion Control Software SWM-G.
SWM-G engine	A task on RTX64 that performs management of SWM-G modules, axis management, and API processing.
SWMOS	A generic product name for the engineering tool SWM-G Operating Station.
Device	An object for the communication between a user application and the SWM-G engine or each module.
Personal computer	A generic term for personal computers where Windows® operates.
Platform	A generic term for network connection functions to be loaded to RTX64. CC-Link IE TSN and a simulator are available as modules.
Module	A generic term for modules to be loaded to RTX64. A file with the extension "rtdll".
User unit	A unit of the position defined by the user (such as 1 mm and 1 μs). It is abbreviated as "U". The speed is expressed as "U/s", the acceleration is expressed as "U/s ² ", and the jerk is expressed as "U/s ³ " in user unit.

1 OVERVIEW

1.1 Product Configuration

This section describes the product configuration of Motion Control Software SWM-G.

Licensed product

Purchase the following licensed product.

If you purchase the licensed product, the following products are included.

Model	Product name	Quantity
MR-SWMG□-U* ¹	Before Using the Product	1
	License agreement	1
	USB key	1

*¹ □ = Number of axes (16, 32, 64, 128)

Download module (SWM-G installer)

For using SWM-G, download a download module from the Mitsubishi Electric Factory Automation Global Website, and install it.

The download module contains the following products.

Model	Product name
sw1dnn-swmg-m_****.zip* ¹	Before Using the Product
	END-USER SOFTWARE LICENSE AGREEMENT
	Motion Control Software SWM-G User's Manual (Installation) [IB-0300561ENG]
	SWM-G product data (SWM-Ginstaller)

*¹ **** = SWM-G version

1.2 Operating Environment

This section describes the SWM-G operating environment.

Item		Description
Personal computer (body)	Personal computer	Personal computer where Microsoft® Windows® operates
	CPU	Intel® Atom™ (2 GHz, 2 cores) or more recommended*1
	Required memory	4 GB or more recommended
Hard disk free space		At installation: Hard disk free space 5 GB or more
OS		Windows 10 (Home, Pro, Enterprise, Education, IoT Enterprise LTSC*2) 64-bit version*3
Communication interface		Ethernet port*4*5

*1 By using a faster CPU, the number of controllable axes can be increased or the communication cycle can be shortened. Because the dedicated CPU core needs to be assigned to RTX, two or more CPU cores excluding the virtual core of Hyper-Threading are required.

*2 Windows 10 IoT Enterprise LTSC is recommended.

*3 Depending on the installed Windows Update, installing the RTX64 update is required. For details, refer to the following website of IntervalZero, the developer of RTX.
<https://www.intervalzero.com/windows-10-updates-support/>

*4 The following shows the NICs that can be used.

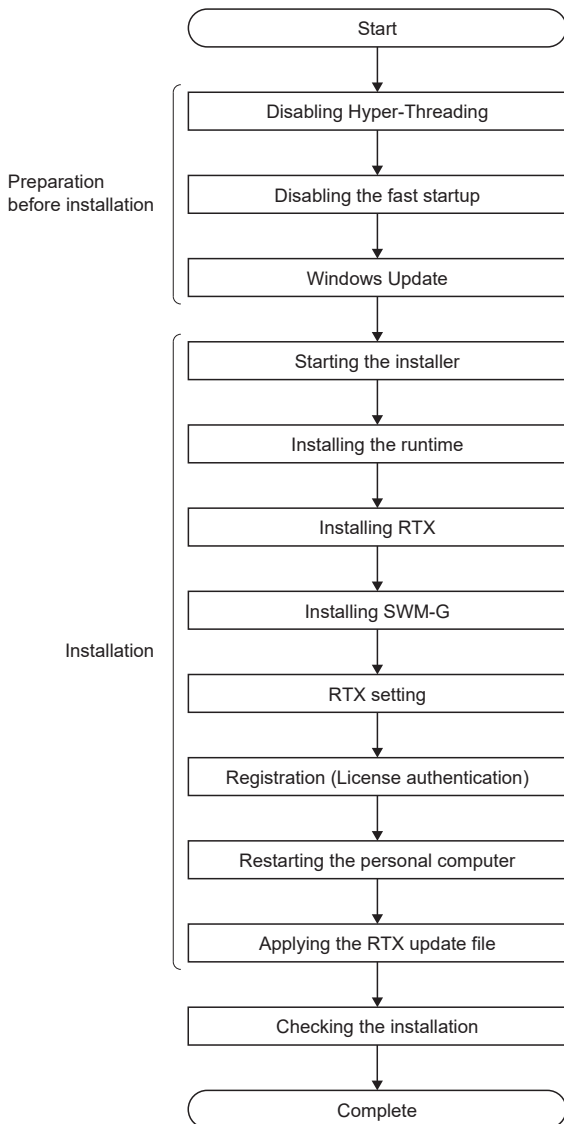
Device name
Intel I210 (Vendor ID: 0x8086, Device ID: 0X1533)
Intel I350 (Vendor ID: 0x8086, Device ID: 0X1521)
Intel I211-AT (Vendor ID: 0x8086, Device ID: 0X1539)

*5 Specifications of the Ethernet cable used

- Category 5e or more, double shielded • STP
- Straight cable

2 SETUP

Follow the procedure below to install SWM-G.



2.1 Preparation Before Installation

Perform the following operations before installing SWM-G.
Disable the Windows functions not supported by RTX.

Disabling Hyper-Threading

Enter the BIOS setting screen at the startup of the personal computer, and disable "CPU Hyper Threading".
Disable "Hyper-Threading" before installing SWM-G.

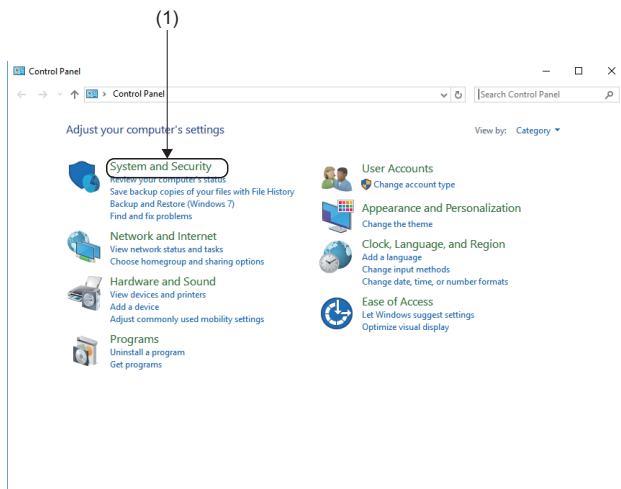


- The setting items for "Hyper-Threading" may differ depending on the personal computer used. For details, refer to the operating manual of the personal computer used.

Disabling the fast startup

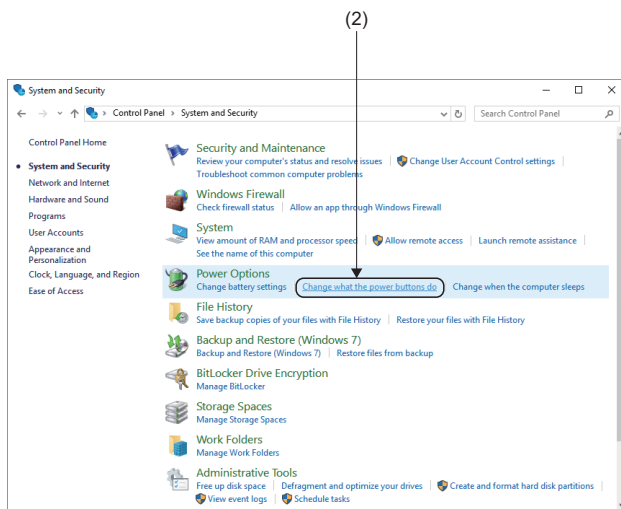
Disable the fast startup in Control Panel.

Click [System and Security] in Control Panel.

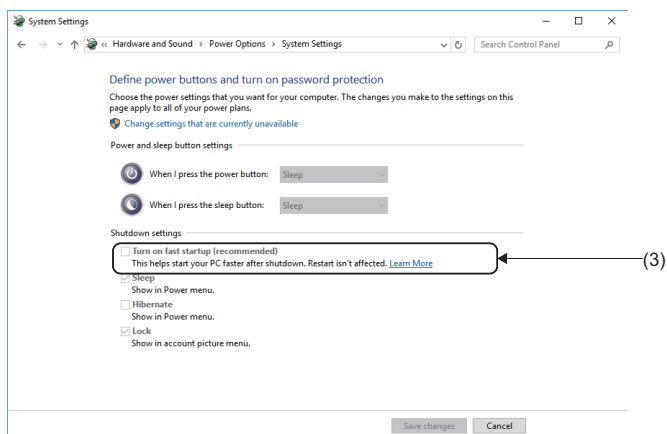


1. Select [System Tools] ⇒ [Control Panel] from the Windows start menu to display the "Control Panel" window.

2. Click [System and Security] (1).



3. The "System and Security" window appears. Click [Change what the power buttons do] (2) in [Power Options].



4. The "System Settings" window appears. Deselect [Turn on fast startup] (3) in [Shutdown settings].

Windows Update (Windows 10)

Check the version compatible with Windows Update from the IntervalZero website below.

Perform Windows Update other than the one not supported by SWM-G. After the update is completed, install SWM-G.

www.intervalzero.com/windows-10-updates-support/

Point

- If an error occurs in RTX after Windows 10 Update is performed, uninstall RTX once and then install it again.
 - RTX may not be compatible with Windows Update depending on its version. Therefore, it is recommended to disable the Windows10 automatic update.
-

2.2 Installation Procedure

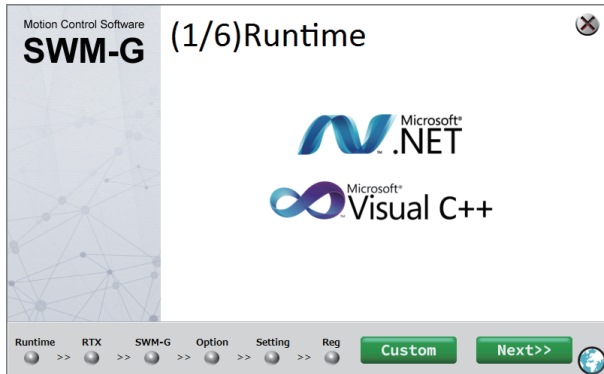
The following describes the procedures for installing SWM-G.

Check before installation

- Log on to the personal computer as an "Administrator" user.
- Before installation, close all the operating applications. If SWM-G is installed while other applications are operating, it may not operate normally.

Starting the installer

Start the installer.



1. Unzip the download module in a place and double-click "SWM-G Installer.exe" in the "sw1dnn-swmg-m_*****1" folder ⇒ "SWM-Ginstaller" folder.

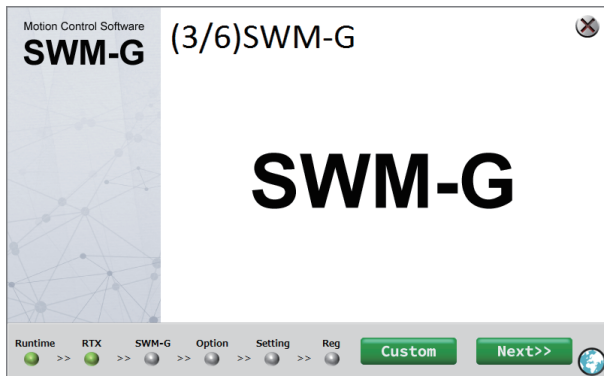
*1: **** = SWM-G version

2. The SWM-G installation window appears.

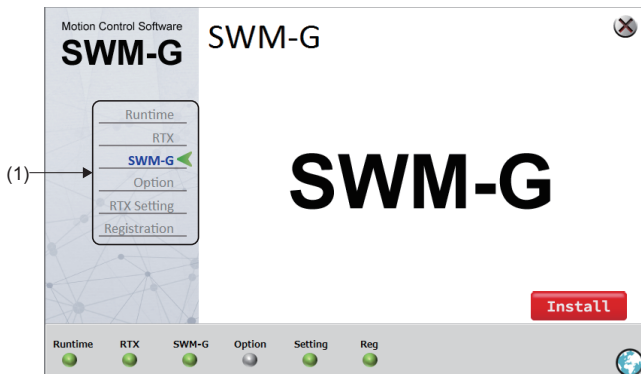
Installation

■When the software is already installed

When the SWM-G-related software has already been installed, the startup screen which is displayed when the installer is started differs depending on the installation status. The software to be installed can be selected on the installer startup window.



1. When the installer is started, the step window of the software that has not been installed appears.
2. To start the installation on the displayed step screen, click the [Next>>] button.
3. To select the item to be installed, click the [Custom] button.

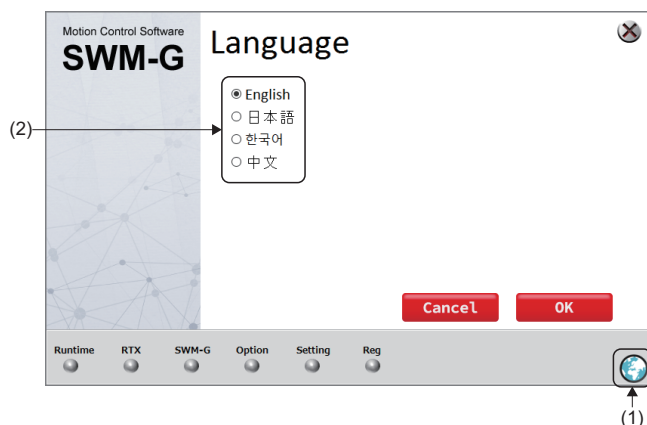



4. The installation item selection window appears. Select the software to be installed in the menu (1) on the left, and click the [Install] button to start installation.

When all the processes before "RTX Setting" have been completed, the installation item selection window appears at the startup of the installer. Click the menu on the left side of the screen to select the item to be installed. Even if the installation is proceeding in order, clicking the [Custom] button switches the window to the installation item selection window.

■Switching the language

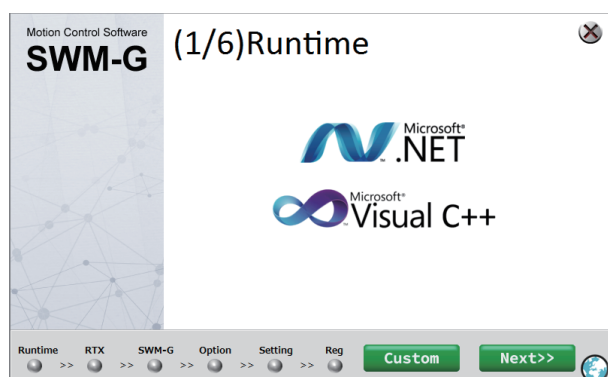
Switch the language to be displayed on the installer display.



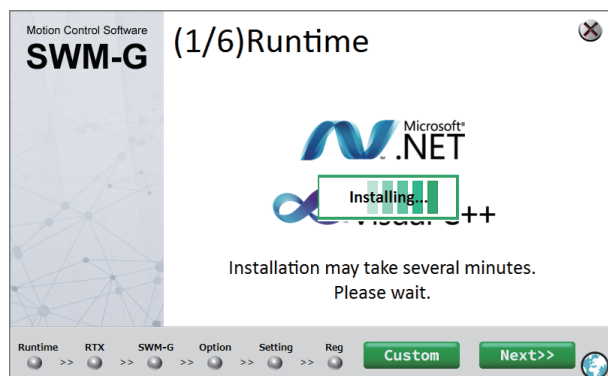
1. Click  (1) on the right side of the window to display the "Language" window.
2. Select the language to be used (2), and click the [OK] button to switch the language.

Installing the runtime

Install the runtime.



1. The "(1/6)Runtime" window appears. Click the [Next>>] button.



2. Installation of the runtime starts.
When the installation is completed, proceed to the next step (2/6).

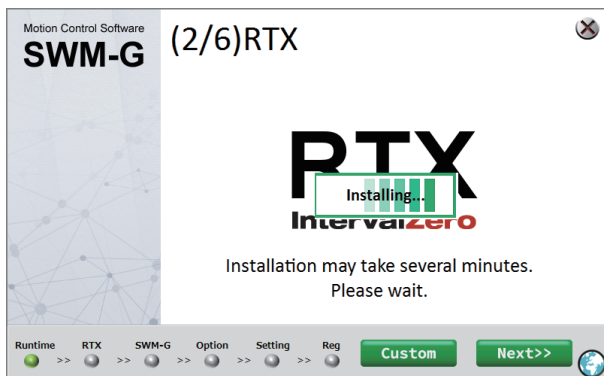
Installing RTX

Install RTX.



1. The "(2/6)RTX" window appears. Click the [Next>>] button.

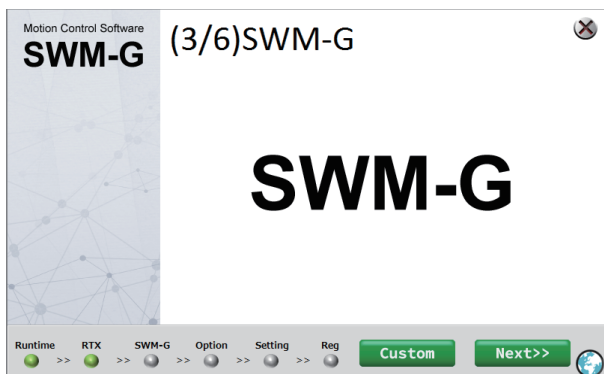
2



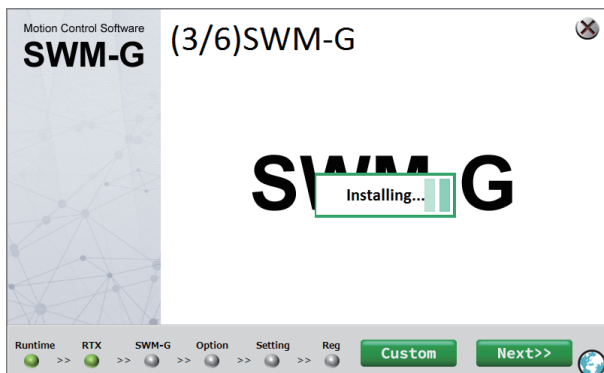
2. Installation of RTX starts.
When the installation is completed, proceed to the next step (3/6).

Installing SWM-G

Install SWM-G.



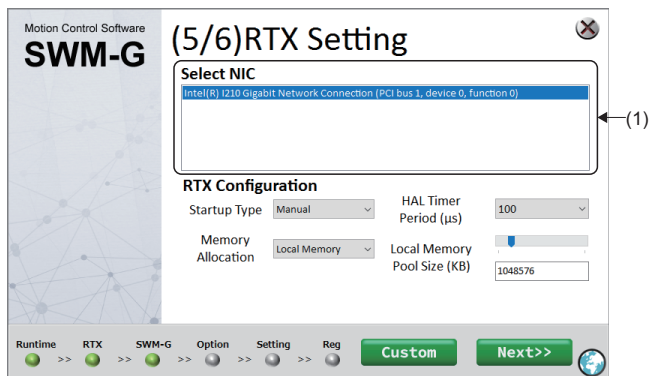
1. The "(3/6)SWM-G" window appears. Click the [Next>>] button.



2. Installation of SWM-G starts.
When the installation is completed, proceed to the next step (5/6).

RTX setting

Update the parameter settings of RTX, NIC driver, and "RtxTcplp.ini" file.



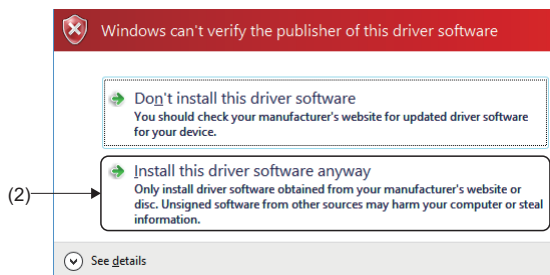
1. The "(5/6)RTX Setting" window appears. Select the NIC driver to be updated in [Select NIC] (1), and click the [NEXT>>] button.
2. When the setting is completed, proceed to the next step (6/6).



When the driver signature enforcement is enabled, the following warning message may appear. Click [Install this driver software anyway] (2).

For how to disable the driver signature enforcement, refer to the following.

☞ Page 26 How to Disable "Driver Signature Enforcement" in Windows

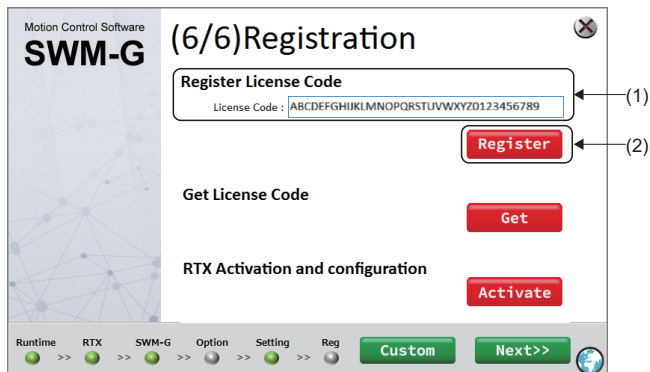


Registration

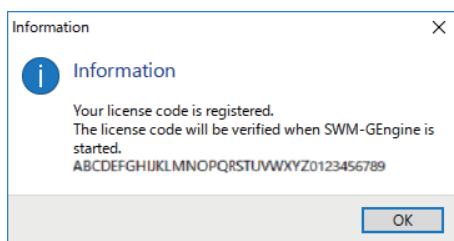
Register the license.

License authentication of SWM-G

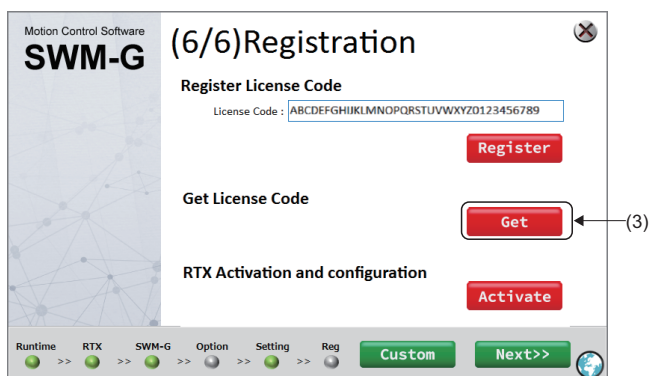
Enter the license code described in the license agreement, authenticate the license of SWM-G, and save the registration file where the information required for support is recorded.



1. The "(6/6)Registration" window appears. Enter the license code in [License Code] (1) under [Register License Code], and click the [Register] button (2).



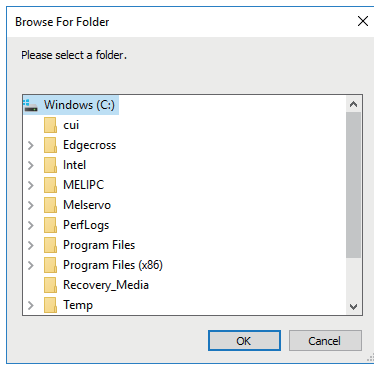
2. When the license has been registered, a registration completion message appears. Click [OK].



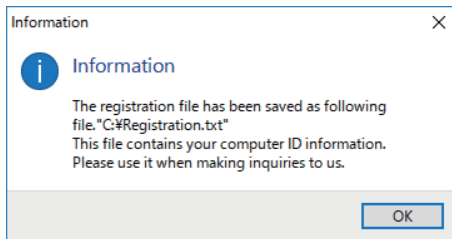
3. The "(6/6)Registration" window appears. Insert the USB key to the USB port in the personal computer, and click the [Get] button (3).



4. The "Registration Info" window appears. When the USB key is authenticated, the information of the USB key is displayed. Click the [Save] button (4).



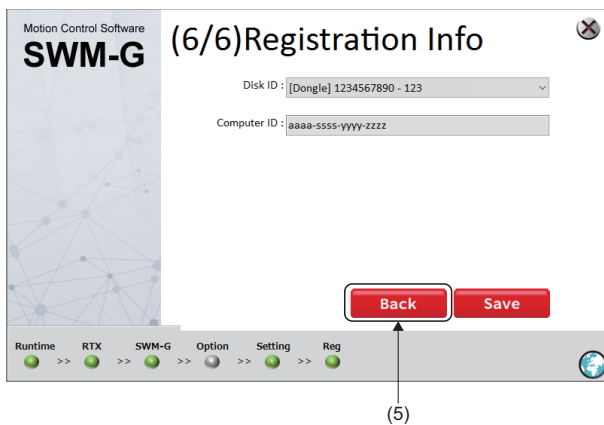
5. The "Browse For Folder" window appears. Select the saving destination of the registration file, and click the [OK] button.



6. When the registration file is saved, a saving completion message appears. Click [OK].

*: The registration file is saved in the saving destination with the following file name.

- Registration.txt



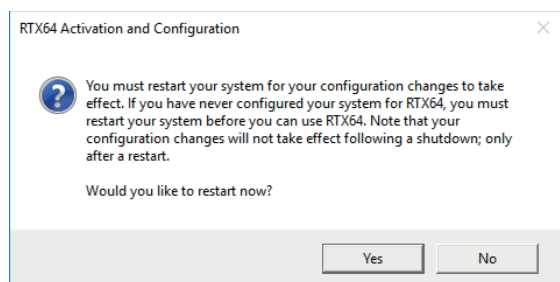
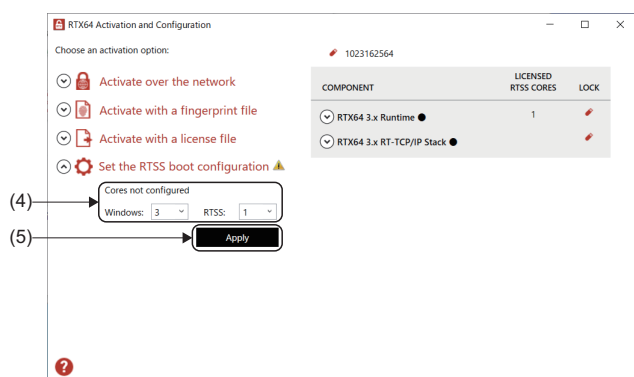
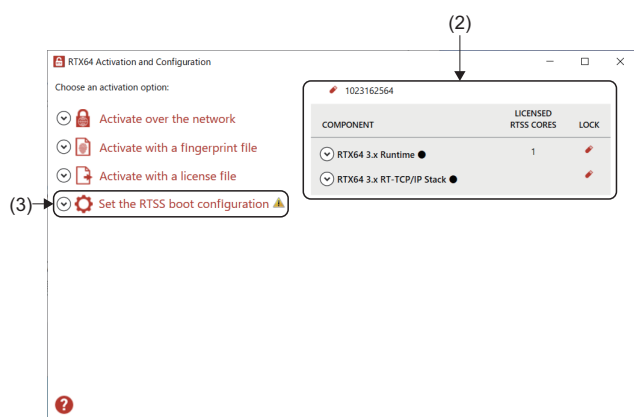
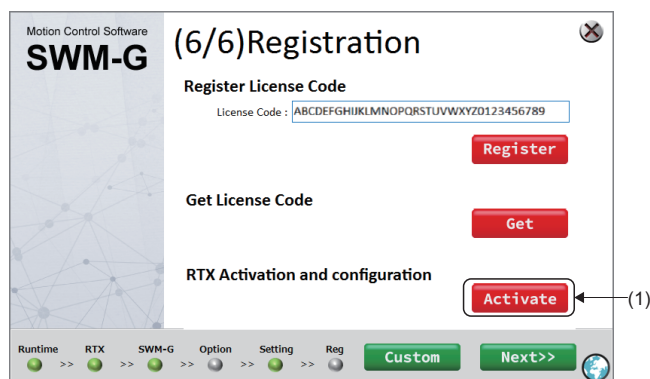
7. The window returns to the "Registration Info" window. Click the [Back] button (5).

CAUTION

The saved registration file (Registration.txt) contains the information required for support. Keep it in a safe place by the customer.

License authentication of RTX and core assignment

Authenticate the license of RTX with the USB key.



1. Insert the USB key to the USB port in the personal computer, and click the [Activate] button (1).

2. The "Activation and Configuration" window appears. When the USB key inserted to the personal computer is authenticated, the information of the USB key (2) is displayed.

3. Click [Set the RTSS boot configuration] (3).

4. The setting item (4) of [Set the RTSS boot configuration] is displayed. Check the number of CPU cores of the personal computer used, and set "1" in [RTSS], and assign remaining cores to Windows.

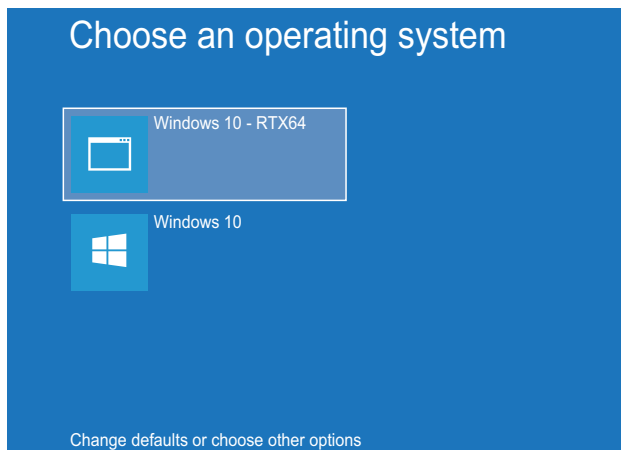
*1: The window on the left shows a setting example when the number of CPU cores is "4".

5. When the setting is completed, click the [Apply] button (5).

6. A restart confirmation message appears. Click the [Yes] button to restart the personal computer.

Restarting the personal computer

After authenticating the license, select the operating system which is used after the restart of the personal computer.

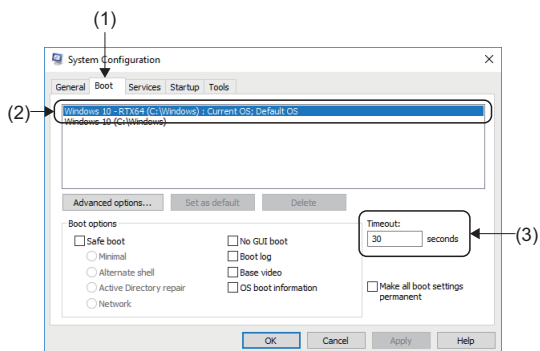


1. When the personal computer is restarted, the "Choose an operating system" window appears. Click [Windows 10 - RTX64].

*1: To use SWM-G, always select [Windows 10 - RTX64].

How to adjust the "Choose an operating system" window

Setting the time to display the "Choose an operating system" window can adjust the display time at the startup.



1. Select [Windows Administrative Tools] ⇒ [System Configuration] from the Windows start menu to display the "System Configuration" window. Select the [Boot] tab (1) in the "System Configuration" window.
2. Select "Windows 10 - RTX64 (C:\WINDOWS)" (2) and enter the time to timeout to be set in [Timeout] (3).
3. Click the [Apply] button to set the time to timeout.

Applying the RTX update file

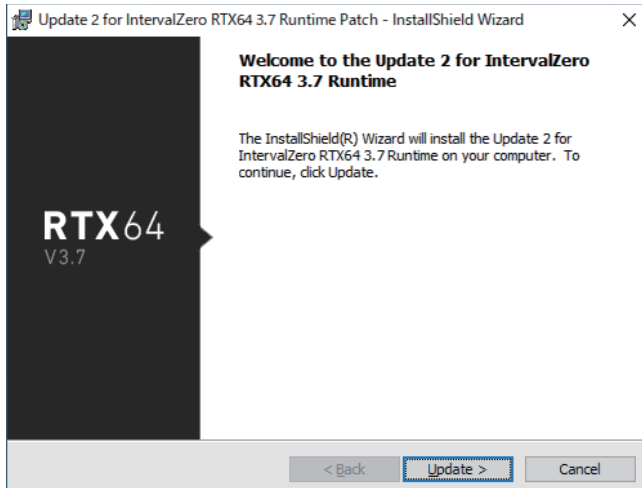
Apply the RTX update module to perform update.

2

Point

If the setup file of "Update_□_for_RTX64_###_Runtime_Setup.exe" exists in the "RTX" folder, perform the update.

If the file does not exist in the "RTX" folder, the update is not required.



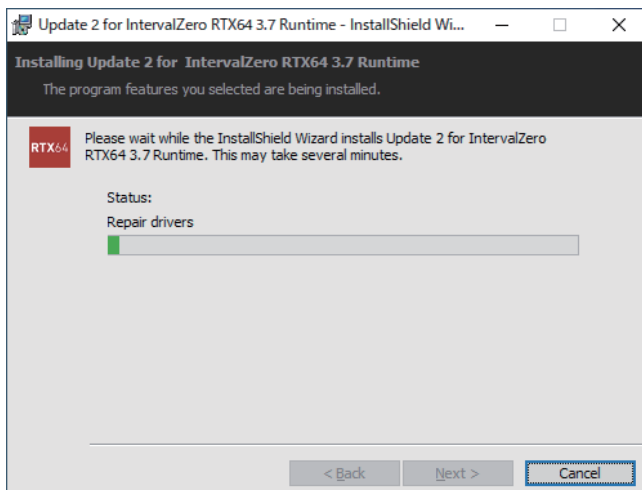
1. Select the "sw1dnn-swmg-m_****^{*1}" folder ⇒ "SWM-Ginstaller" folder ⇒ "RTX" folder of the download module, and double-click "Update_□_for_RTX64_###_Runtime_Setup.exe"^{*2}^{*3}.

^{*1}: **** = SWM-G version

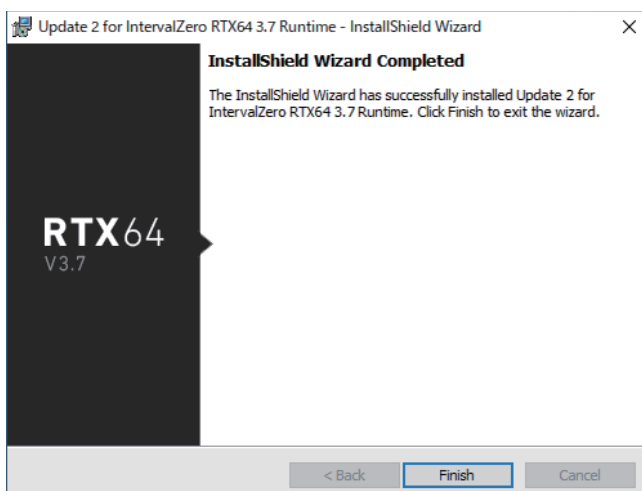
^{*2}: □ = RTX update module version

^{*3}: ### = RTX version

2. The RTX installation window appears. Click the [Update] button.



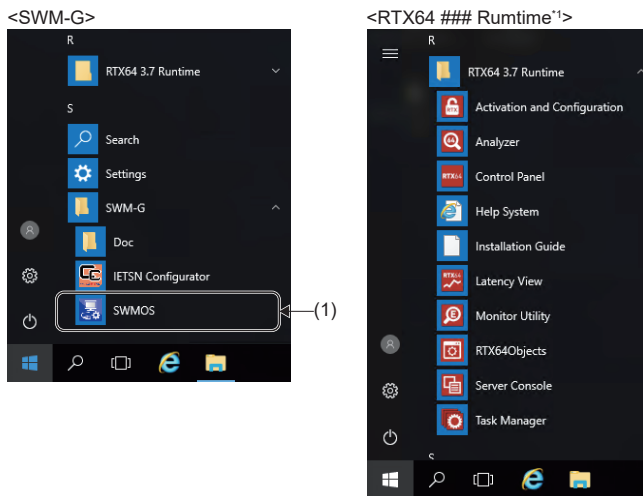
3. The RTX update starts.



4. When the update is completed, the "InstallShield Wizard Completed" window appears.
5. Click the [Finish] button to end the update.

Checking the installation

After SWM-G is installed, it is registered in the start menu.

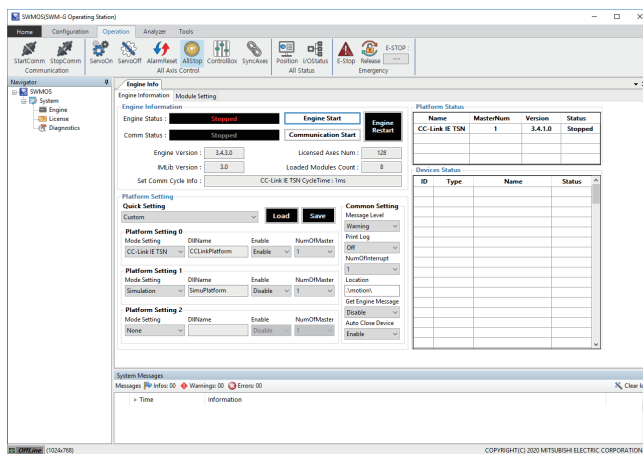


1. Check that "SWM-G" and "RTX64 ### Runtime"^{*1} have been registered in the Windows start menu.

*1: ### = RTX version

2. Select [SWM-G] ⇒ [SWMOS] (1) from the Windows start menu to start SWMOS.

■ "SWMOS" window



3. When SWMOS is started, the "Getting started" window and "RtxServer" window appear at the same time as the "SWMOS" window.

■ "SWMOS" window

Configure the settings in SWMOS.

■ "Getting started" window

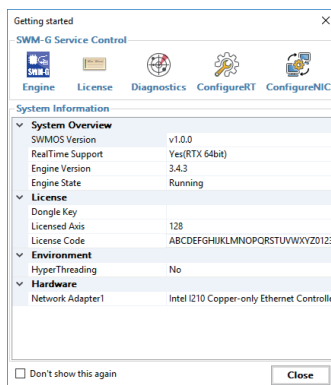
The system version and license information are displayed.

*: If you select "Don't show this again" and click the [Close] button to close the window, the "Getting started" window will not be displayed at the next startup.

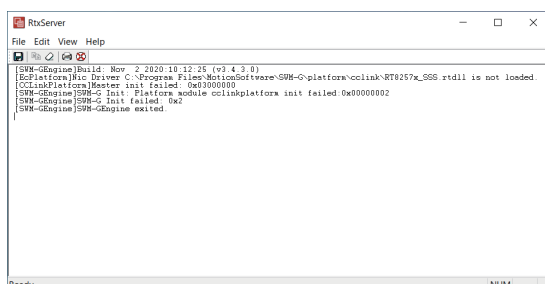
■ "RtxServer" window

The SWMOS status is displayed.

■ "Getting started" window

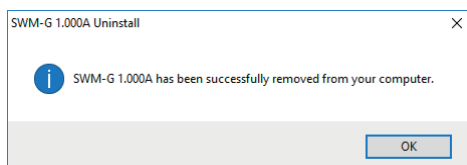
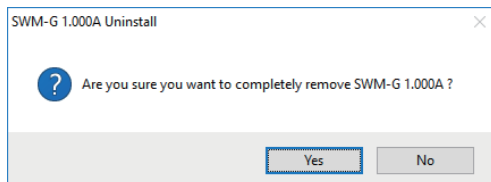
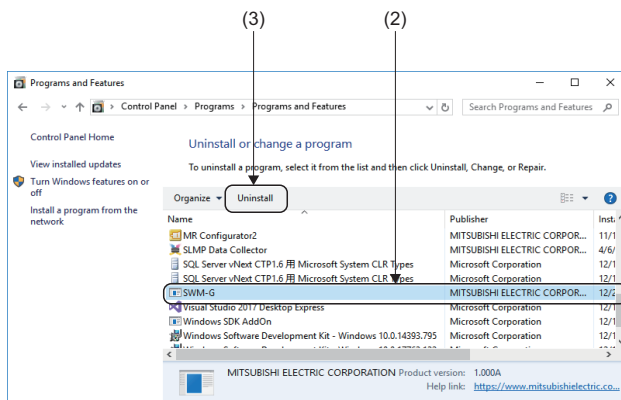
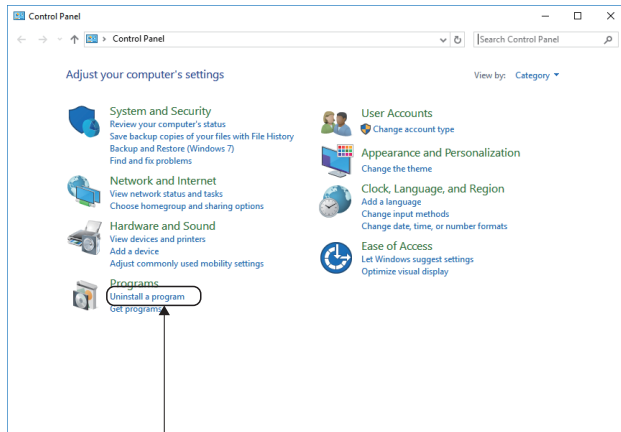


■ "RtxServer" window



2.3 Uninstallation Procedure

Uninstall SWM-G.



1. Select [System Tools] ⇒ [Control Panel] from the Windows start menu to display the "Control Panel" window.
2. Click [Uninstall a program](1) in [Programs].

3. The "Programs and Features" window appears. Select "SWM-G" (2) in the list of "Uninstall or change a program", and click [Uninstall] (3).

*1: For uninstalling RTX, select "IntervalZero RTX64 ###Runtime" *2.

*2: ### = RTX version

4. An uninstallation confirmation message appears. Click the [Yes] button to start the uninstallation.

5. When the uninstallation is completed, a completion message appears. Click the [OK] button to end the uninstallation.

3 TROUBLESHOOTING

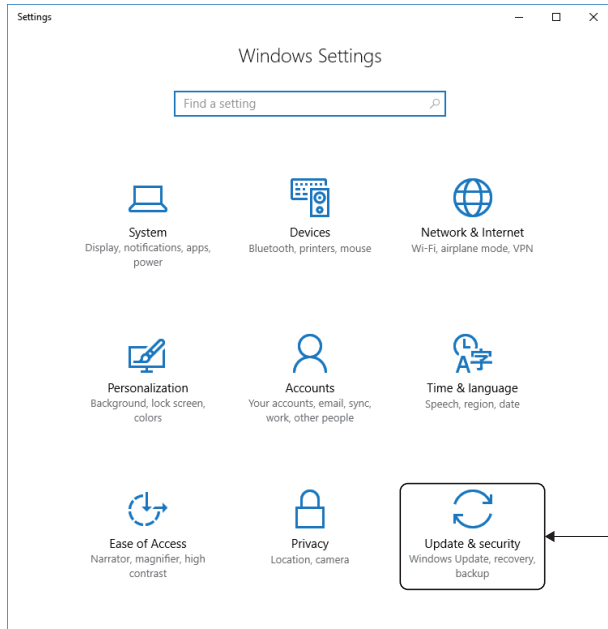
This section describes errors that may occur during installation and actions to be taken.

Description	Cause	Action
Installation fails.	The free space in the hard disk is insufficient.	Increase the free space in the hard disk, and then retry the installation.
The installer stops halfway, or the installer suddenly ends during the installation.		
The USB key authentication fails.	The Windows license authentication has not been completed.	Authenticate the Windows license, and then retry the authentication with the USB key.
	The USB key has not been inserted to the personal computer.	Check if the USB key is inserted to the personal computer. If the USB key is already inserted, remove the USB key from the personal computer and then insert it again.
The SWM-G license authentication fails.	The license code is incorrect.	Check the license and input the license code again.

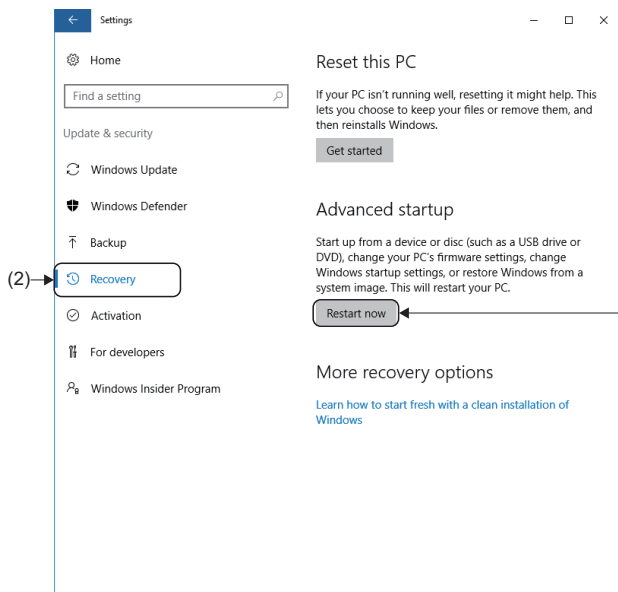
APPENDIX

Appendix 1 How to Disable "Driver Signature Enforcement" in Windows

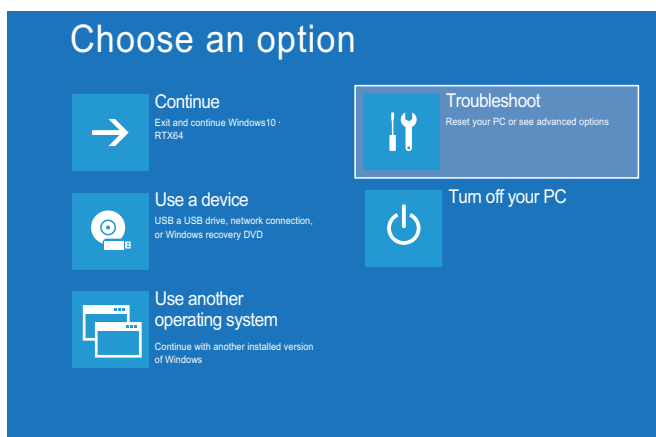
When the driver signature enforcement is enabled, follow the procedure below to change the Windows settings.



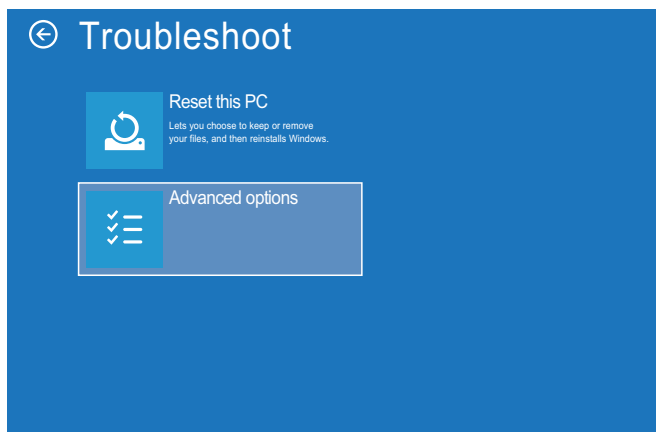
1. Click [Settings] from the Windows start menu. The "Windows Settings" window appears.
2. Click "Update & security" (1).



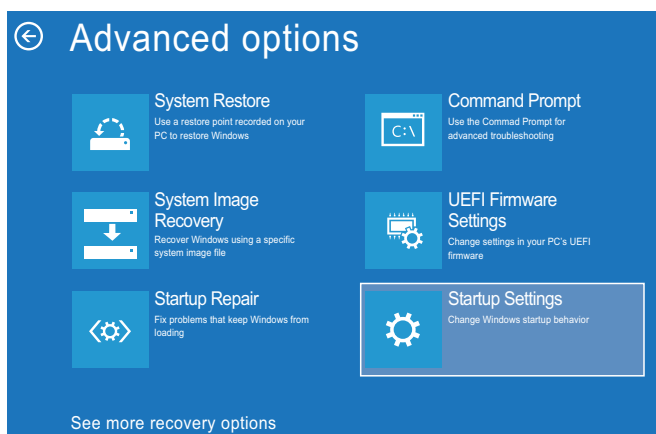
3. Click "Recovery" (2) from the menu on the left to display the recovery setting items.
4. Click the [Restart now] button (3) in "Advanced startup" to restart the personal computer.



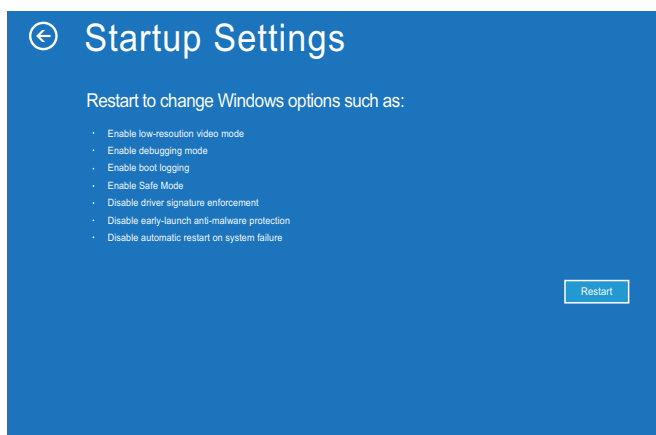
5. After the restart, the "Choose an option" window appears. Click "Troubleshoot".



6. The "Troubleshoot" window appears. Click [Advanced options].



7. The "Advanced options" window appears. Click [Startup Settings].



8. The "Startup Settings" window appears. Click the [Restart] button to restart the personal computer.

A

Startup Settings

Press a number to choose from the options below:

Use number keys or functions keys F1-F9.

- 1) Enable debugging
- 2) Enable boot logging
- 3) Enable low-resolution video
- 4) Enable Safe Mode
- 5) Enable Safe Mode with Networking
- 6) Enable Safe Mode with Command Prompt
- 7) Disable driver signature enforcement
- 8) Disable early launch anti-malware protection
- 9) Disable automatic restart after failure

Press F10 for more options

Press Enter to return to your operating system

9. The "Startup Settings" window appears. Press **7**.

10. When the setting is completed, Windows starts.

MEMO

A

REVISIONS

*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Description
February 2021	IB(NA)-0300561ENG-A	First edition
October 2021	IB(NA)-0300561ENG-B	■Added or modified parts Section 1.2, 2.2
June 2022	IB(NA)-0300561ENG-C	■Added or modified parts Section 1.2, 2.2

Japanese manual number: IB-0300558-C

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[Gratis Warranty Term]

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[Gratis Warranty Range]

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