

SYSMAC Gateway Runtime Installation Guide

1. Introduction

Thank you for purchasing SYSMAC Gateway Runtime.

This guide gives a description of SYSMAC Gateway Runtime installation.
Read this guide thoroughly to understand the instruction before using the product.

1.1. Components

This package includes the following components. Please confirm that all the components are included in the package. (This installation document is not included.)

- Product Guide
- Setup Disk
- Software License Agreement
- User Registration Card (Japanese)
- User Registration Card (English)
- Mailing Label

1.2. Conditions of Use

Read the Conditions of Use (separate document) thoroughly to confirm agreement before using the product.

You also need to agree the following Conditions of use.

- You must execute adequate test for your application to the start of operations
- When you change the values of PLC/PC's memories and variables you must confirm that the change may not affect to the unexpected result.
- If the properties and settings are not correct or not enough then the application or equipment may not work correctly. You have to execute enough system testing for your system.
- Product is neither intended nor warranted for use in equipment or systems that require extraordinarily high levels of quality and/or reliability and/or a malfunction or failure of which may cause loss of human life, bodily injury, serious property damage or serious public impact ("Unintended Use"). Unintended Use includes, without limitation, equipment used in nuclear facilities, equipment used in the aerospace industry, medical equipment, equipment used for automobiles, trains, ships and other transportation, traffic signaling equipment, equipment used to control combustions or explosions, safety devices, elevators and escalators, devices related to electric power, and equipment used in finance-related fields. Do not use Product for Unintended Use unless specifically permitted in this document.

2. Overview

2.1. Overview of Functions

SYSMAC Gateway Runtime is the communication middleware product which provides the FA network environments on personal computers. SYSMAC Gateway Runtime includes FinsGateway Middleware which supports OMRON communication protocol FINS as in the past and SYSMAC Gateway Middleware which supports EtherNet/IP™ building industrial multivendor network environment.

SYSMAC Gateway Middleware supports Tag Datalink (cyclic communication) function by EtherNet/IP™.

In the past, to support Datalink function, we need to have the special network card, like Controller Link. With SYSMAC Gateway and EtherNet/IP™, you can use the Datalink function on the de-facto standard, Ethernet. PLC memory data is reflected on the shared memory, called Event Memory, on the computer, which is same function as Controller Link provide. You can use this data just like the shared memory data from your application.

The way to access value of Event Memory is compatible with FinsGateway as in the past.

Furthermore, by using CX-Compolet, it is possible to do tag name based programming without regard for address.

FinsGateway Middleware provides FA network environment to communicate transparently without regard for many networks which OMRON provides. With FinsGateway, you can use FINS message communication function and shared memory function, called Event Memory, to share the data with PLC and other devices.

2.2. Precautions

- This installer is for installing SYSMAC Gateway runtime environment only. With this environment you can run SYSMAC Gateway based application. To develop SYSMAC Gateway application, you need to have CX-Compolet or SYSMAC Gateway SDK additionally.
- When you configure tag datalink, you need to use Network Configurator. Version V3.57 or higher of Network Configurator is required.
- Network Configurator can be installed even after installation of SYSMAC Gateway Runtime. When you need Network Configurator, execute the following program to install it.
 - Folder
CD-ROOT: \NetworkConfigurator
 - File Name:
NetworkConfigurator_for_EIP_v*.**_Us.exe ("*.**" is the version.)
- In Windows Vista or later, if SYSMAC Gateway USB connection is opened, the other application cannot share the USB connection. If SYSMAC Gateway has opened a USB port, other applications (such as CX-Programmer and Network Configurator) will fail to open the port. Also if some other application has opened the USB port, then SYSMAC Gateway cannot open the port.

- In Windows Vista or later, a windows service named “FgwGlobalFactory” should not be stopped. In case of using names, such as tag names and memory names, you cannot stop “NameSpaceServer” service. Don’t stop these services because the functions will not work properly if they are stopped.
- In the case of 64-bit operating system, SYSMAC Gateway / FinsGateway will run as 32-bit process. They cannot run as 64-bit process.
- SYSMAC Gateway Runtime requires .Net Framework 3.5 SP1 for program execution. If .Net Framework 3.5 SP1 is not installed, please install it using the following procedure.
 - Windows7 or later
 - ✧ Refer to 5.1.3 Installing .NET Framework 3.5 SP1.
 - Windows Vista or earlier
 - ✧ Execute the \Microsoft Redist\DotnetFramework 3.5.1\dotnetfx35.exe stored in the installation media.
- When using SYSMAC Gateway, log into the computer as a user with administrator rights.
- The User Account Control (UAC) Dialog Box may be displayed. Click the Yes Button to execute the program. If the display (notification) is disabled, the function may fail without the notification due to lack of rights. Confirm that you have the administrator rights.
- Depending on the firewall or antivirus software settings, the communications may not be allowed. Confirm the settings in 5.1.2. Firewall Settings.
- SYSMAC Gateway is an application running on a computer. If you often have unexpected data link establishment failures or timeouts, re-confirm the following.
 - Computer performance, CPU load, network load, and other applications
 - ✧ Check that the CPU load or network load is not extremely heavy or whether another application is not running in parallel.
 - Network card (NIC) type or driver parameter settings
 - ✧ Check whether or not the phenomenon occurs even with another network card (NIC) or whether there is any change if the driver parameters of the network card (NIC) are changed.

3. Precautions for Version Upgrading from Old Version

3.1. Tag Datalink Setting

Network Configurator is used for tag datalink settings.

The EDS files of SYSMAC Gateway are divided into Rev1 to Rev3 from V1.6.

- Rev1 : SYSMAC Gateway V1.0 to V1.2
- Rev2 : SYSMAC Gateway V1.3 or to V1.5
- Rev3 : SYSMAC Gateway V1.6 or higher
- Major added items in Rev2

| Item | Description |
|--|---|
| Support of multiple LAN cards | When more than one LAN card exists (up to 4 cards), the appropriate LAN card is automatically selected for the destination address. The network port ID for LAN cards is 2 to 5. |
| Application trigger (AperiodicTrigger) | The packets can be sent by a trigger from the application. This function is called "application trigger" (AperiodicTrigger). |
| Datalink status acquisition | You can make datalink settings and get the status of CIP communications service using Datalink Compolet. |

- Major added items in Rev3

| Item | Description |
|--|---|
| Increase of the connections and tag sets | The numbers of the connections and tag sets were increased from 256 to 384. |

3.1.1. Precautions

- If any of the following files is used, a message like below will be displayed when device parameters are downloaded:

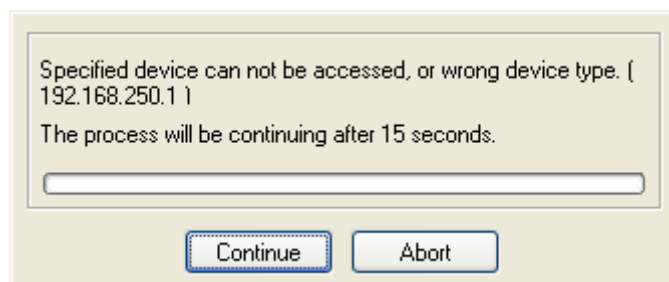
➤ File

Files created by Network Configurator lower than V3.5

Files created by Network Configurator V3.5 or higher, but using SYSMAC Gateway Rev1

Files created by Network Configurator V3.5 or higher, but using SYSMAC Gateway Rev2

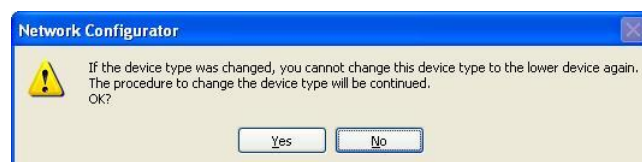
➤ Message



When Rev1 or Rev2 is set, use Network Configurator V3.57 or higher and change it to Rev3 using the following procedure.

Be sure to save the current status before the change for backup because you cannot return it to Rev1 or Rev2 after changing it to Rev3.

1. Select SYSMAC Gateway on the network window.
2. Select **Change Device** from the Device Menu. When a confirmation message is displayed, click the **Yes** Button.



3. Confirm that SYSMAC Gateway Rev3 is selected and click the **OK** Button.

3.2. Supported CPU Units

The following table shows the SYSMAC Gateway version that can be used for each series of CPU Unit.

| Series | CX-Compolet version |
|---------|---------------------|
| NX701 * | Ver. 1.70 or higher |
| NJ101 | Ver. 1.70 or higher |
| NJ301 | Ver. 1.40 or higher |
| NJ501 | Ver. 1.31 or higher |
| CJ2 | Ver. 1.00 or higher |

*Supported NX controller version is 1.10.04 or later.

4. Operating Environment

The following conditions must be met to use SYSMAC Gateway Runtime.

Operating Environment

| | Microsoft Windows XP SP3 (32bit) | Microsoft Windows Server 2003 (32-bit) | Microsoft Windows Vista (32-bit) | Microsoft Windows7 (32-bit/64-bit) | Windows Server 2008 (32-bit/64-bit) or Windows Server 2008 R2 (64-bit) | Microsoft Windows 8, 8.1 (32-bit/64-bit) | Windows Server 2012(64bit) or Windows Server 2012 R2(64bit) |
|-----------------------|--|--|----------------------------------|--|--|--|---|
| computer | DOS/V (IBM AT compatible) computer with an Intel x86 processor | | | Personal computer with an Intel 32-bit (x86) or 64-bit (x64) processor | | | |
| CPU Main memory | The system requirements recommended by Microsoft Corporation are applied. | | | | | | |
| Hard disk | 400 MB minimum of available space | | | | | | |
| .NET Framework | .NET Framework 3.5 SP1 (3.5.1) * .NET Framework with the above version or higher is required. * If .NET Framework 3.5.1 is not installed, please install it manually. Refer to Section 5.1.3 Installing .NET Framework 3.5 SP1 for installation procedure. | | | | | | |

Hardware, Limitations

(1) Use of FinsGateway

| Network | Hardware Requirements |
|-----------------------|---|
| SysmacLink (PCI) | Requires an OMRON SYSMAC LINK Support Board (e.g. 3G8F7-SLK21) Up to four SYSMAC LINK Support Boards can be installed in one computer Only supported in Windows Vista 32bit OS. |
| Controller Link (PCI) | Requires an OMRON Controller Link Support Board (e.g. 3G8F7-CLK23). Up to four Controller Link Support Boards can be installed in one computer. Only supported in Vista /Windows7 32bit OS. |
| Ethernet | Requires an Ethernet board that can be used on the operating system supported by SYSMAC Gateway. TCP/IP must be installed. TCP/IP is included in Microsoft Windows. |
| SerialUnit-COMx | Requires a PC 95-compliant COM port that can be used on the operating system supported by SYSMAC Gateway. The above COM port must be available for exclusive use by SYSMAC Gateway. Other applications not using SYSMAC Gateway cannot use the COM port simultaneously. |
| USB | Only one port can be used simultaneously. USB port must be available for exclusive use by FinsGateway. It is not available for SYSMAC Gateway or other application. |

(2) Use of SYSMAC Gateway

| Network | Hardware Requirements |
|----------------|--|
| Ethernet | Requires an Ethernet board that can be used on the operating system supported by SYSMAC Gateway. TCP/IP must be installed. TCP/IP is included in Microsoft Windows. Direct Ethernet connection with NJ/NX-series Controllers is not supported. |
| USB | Only one port can be used simultaneously. USB port must be available for exclusive use by SYSMAC Gateway. It is not available for FinsGateway or other application. USB connection with NJ/NX-series Controllers is not supported. |

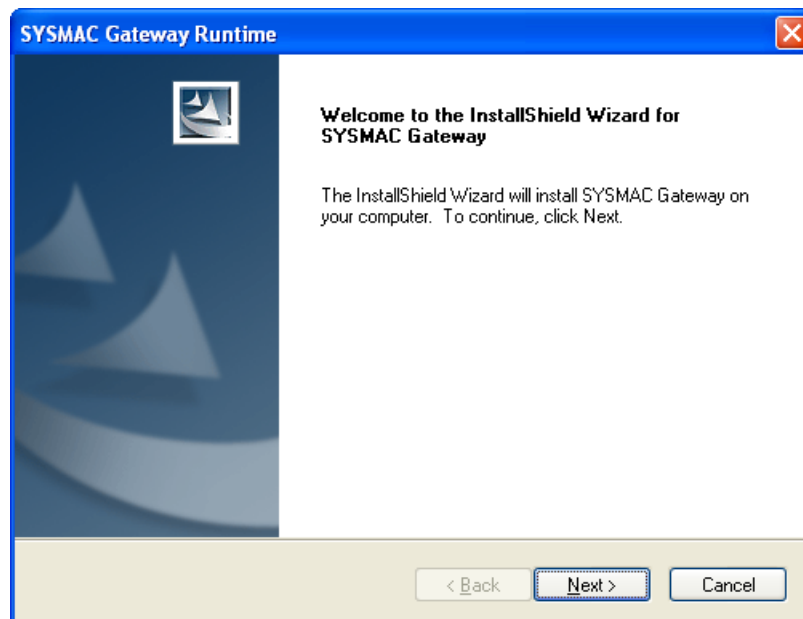
5. Setup

5.1. Installation

5.1.1. How to Install SYSMAC Gateway Runtime

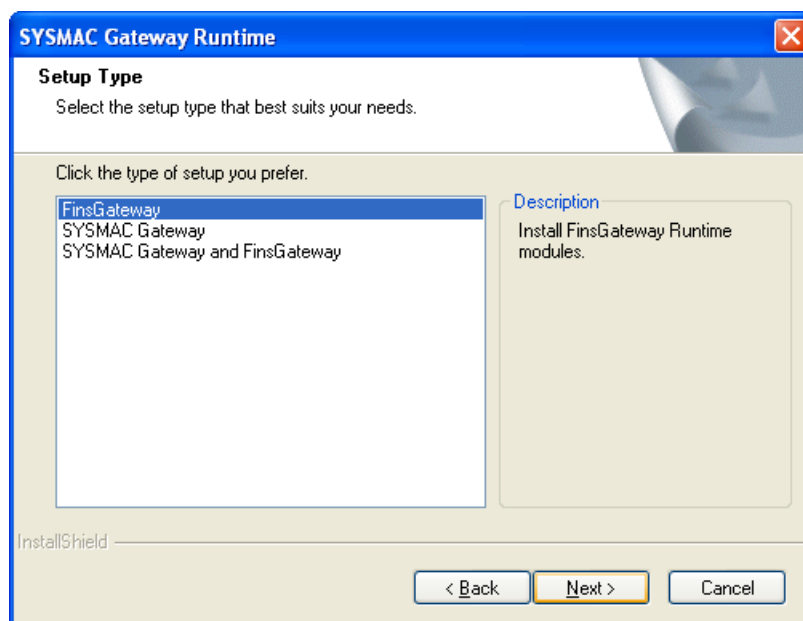
Install the SYSMAC Gateway Runtime according to the following procedures.

1. Apply power to the computer, and log in as an Admin user.
2. Insert the setup disk of SYSMAC Gateway Runtime into the drive. The setup program will be started.

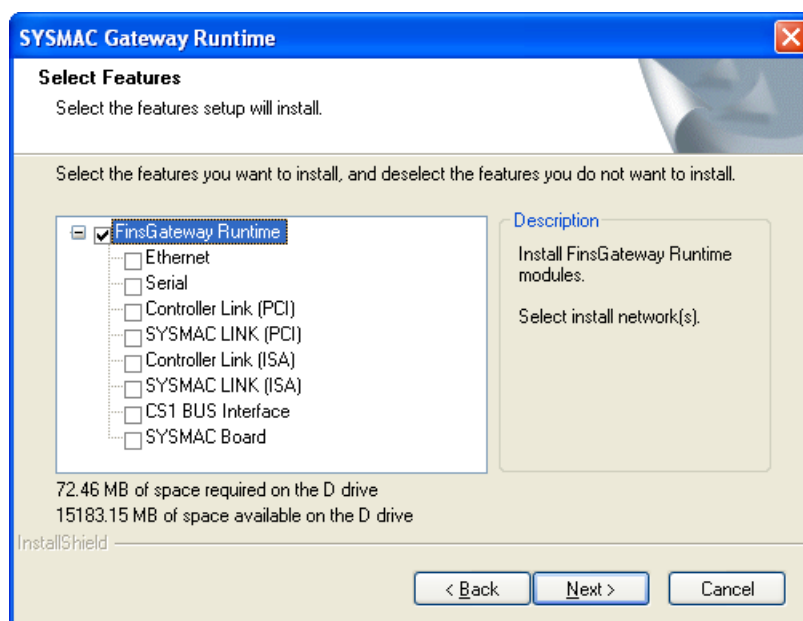


3. Click the **Next** Button. A dialog box to enter user information will be displayed.
4. Enter the user name, company name, and serial number. Then, the **Next** Button will become selectable.
5. Click the **Next** Button. Select the middleware to install. To install the FinsGateway, go to Step 6. To install the SYSMAC Gateway, go to Step 7. To install both SYSMAC Gateway and FinsGateway, go to Step 8.

6. When installing the FinsGateway
 - 6.1. Select *FinsGateway* for the setup type.

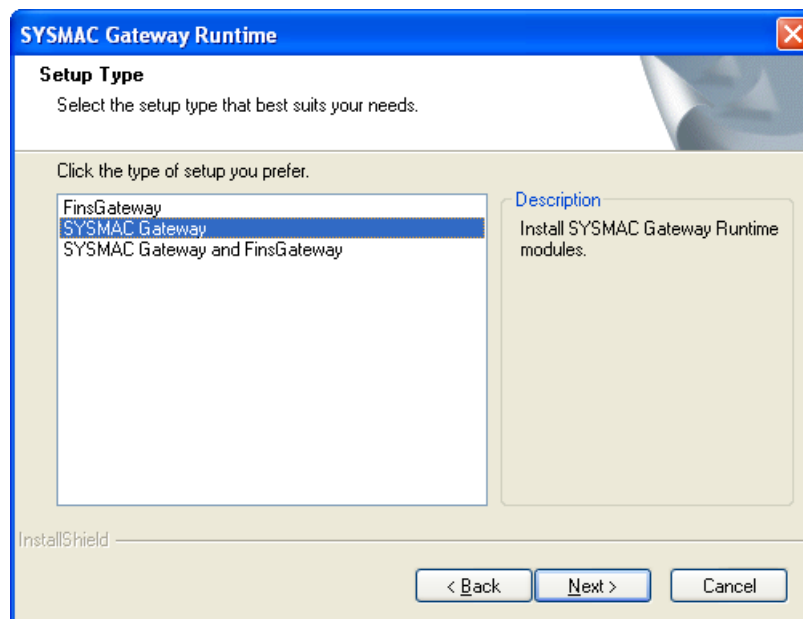


- 6.2. Click the **Next** Button. A dialog box to select networks will be displayed. (The following is a dialog box to install the FinsGateway in a 32-bit operating system. For 64-bit operating systems, only *Ethernet* and *Serial* will be displayed.)



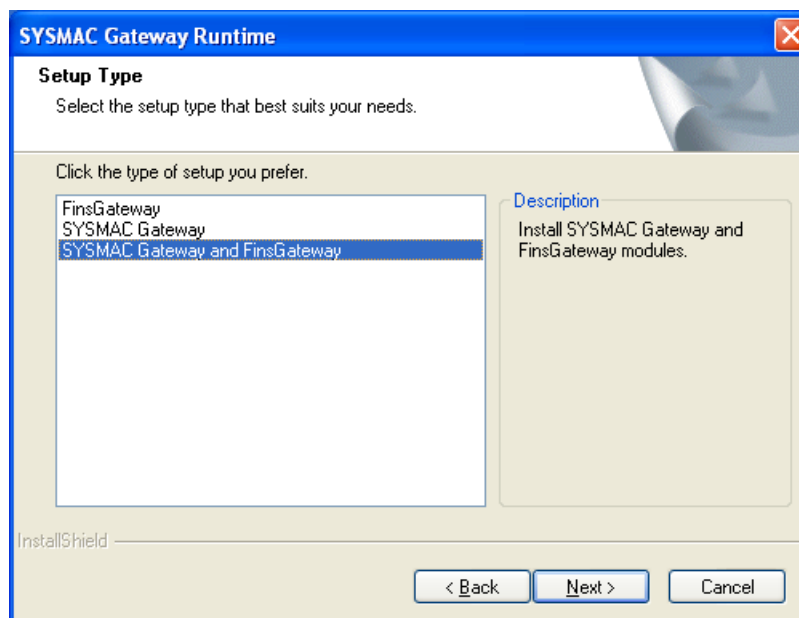
- 6.3. Select networks that you want to install.
- 6.4. Click the **Next** Button. Refer to the procedures in Step 9.

7. When installing the SYSMAC Gateway
 - 7.1. Select *SYSMAC Gateway* for the setup type.

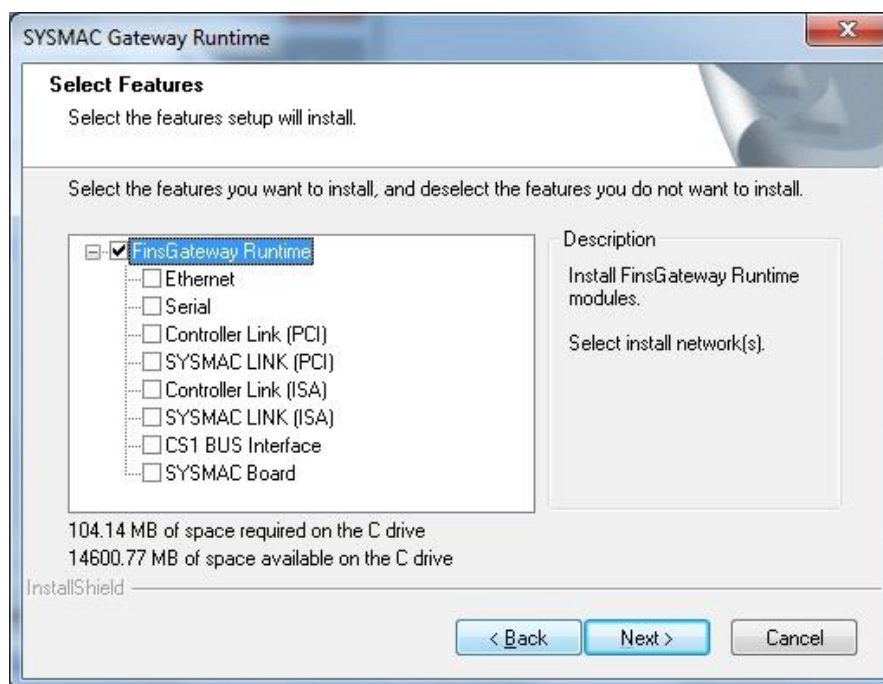


- 7.2. Click the **Next** Button. Refer to the procedures in Step 9.

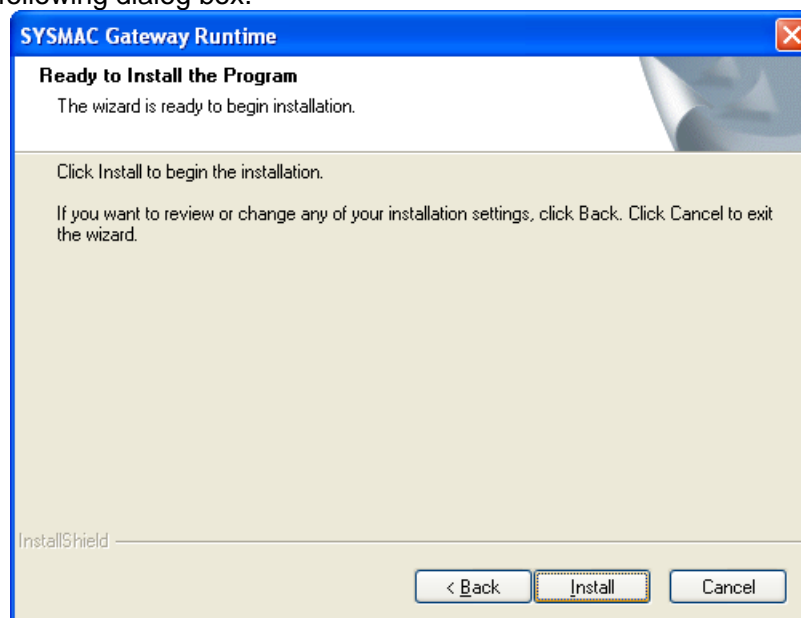
8. When installing both SYSMAC Gateway and FinsGateway
 - 8.1. Select *Sysmac Gateway and FinsGateway* for the setup type.



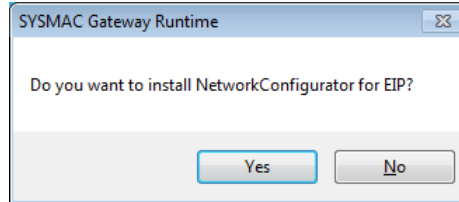
- 8.2. Set the installation options for FinsGateway. Select the networks that you want to install. (The following is a dialog box to install the FinsGateway in a 32-bit operating system. For 64-bit operating systems, only *Ethernet* and *Serial* will be displayed.)



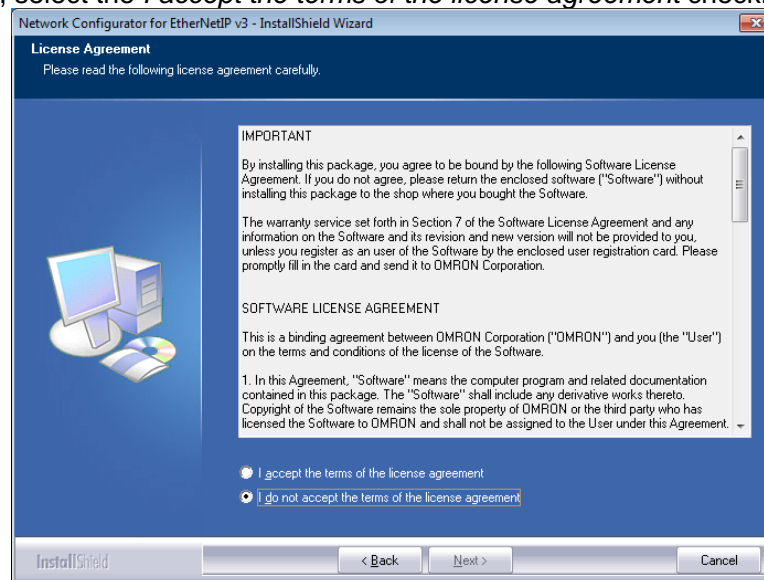
- 8.3. Click the **Next** Button. Refer to the procedures in Step 9.
9. You are ready to install SYSMAC Runtime Gateway. Click the **Install** Button in the following dialog box.



10. When the installation of SYSMACGateway is completed, a dialog box to confirm that you want to install Network Configurator will be displayed. Click the **Yes** Button to install Network Configurator. When you do not install Network Configurator, click the **No** Button and go to Step 15.



11. Click the **Next** Button. The following license agreement dialog box will be displayed. Please read the license agreement carefully. When you accept all terms, select the *I accept the terms of the license agreement* checkbox.

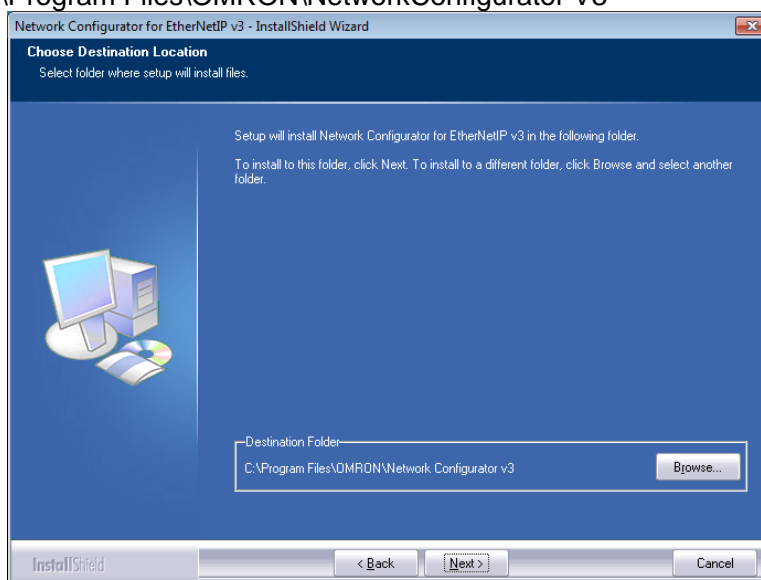


12. Click the **Next** Button. A dialog box to select the installation folder will be displayed.

- When Network Configurator has not been installed:
Specify the destination folder and click the **Next** Button.

Default destination folder:

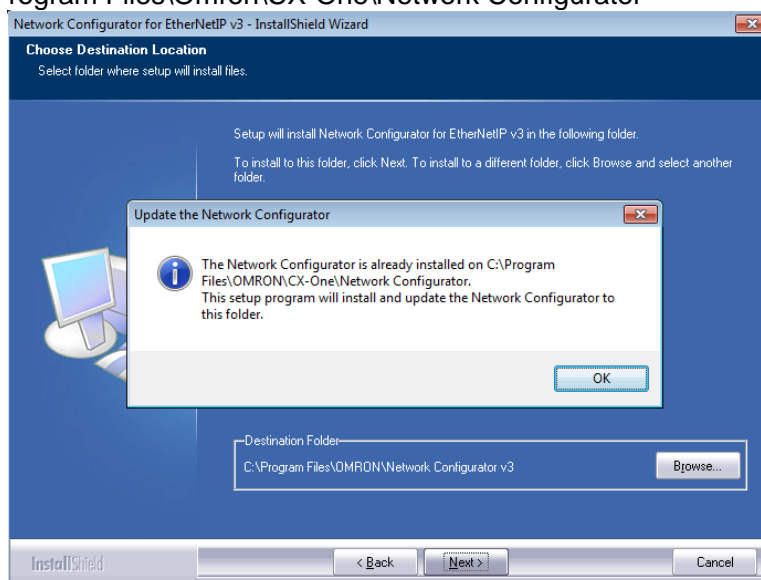
C:\Program Files\OMRON\NetworkConfigurator V3



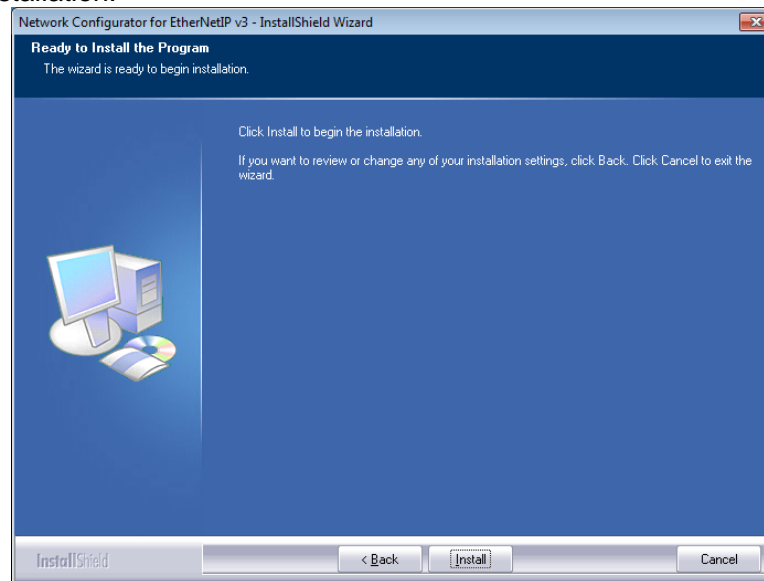
- When Network Configurator is already installed by CX-One:
When the **Next** Button is clicked, a confirmation dialog box will be displayed.
Click the **OK** Button.

Default destination folder:

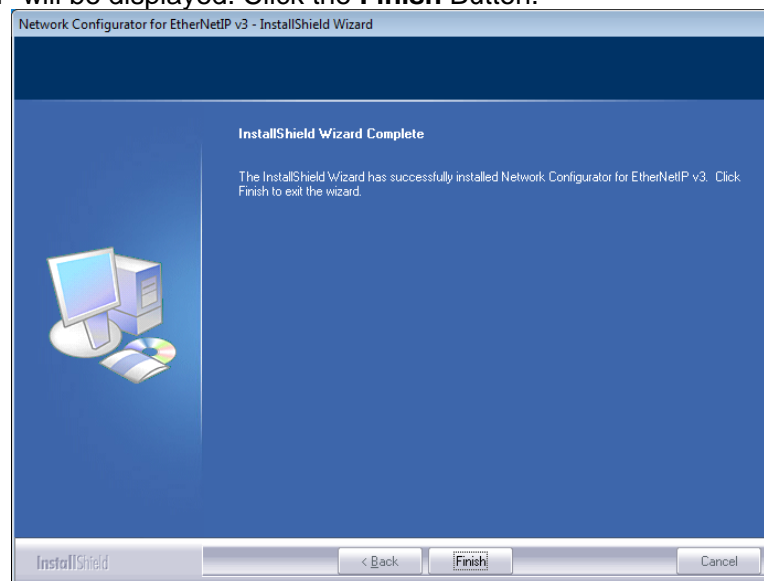
C:\Program Files\Omron\CX-One\Network Configurator



13. A dialog box to confirm that you want to begin the installation of NetworkConfigurator for EIP will be displayed. Click the **Install** Button to begin the installation.



14. A dialog box for informing the installation completion of Network Configurator for EIP will be displayed. Click the **Finish** Button.



15. Restart the computer. You need to keep the installation CD in the CD drive until the computer finish restarting.

5.1.2. Firewall setting

The data links may not be correctly performed because of the Windows Firewall settings. Register the following file as program exceptions in the Windows Firewall settings.

➤ Folder

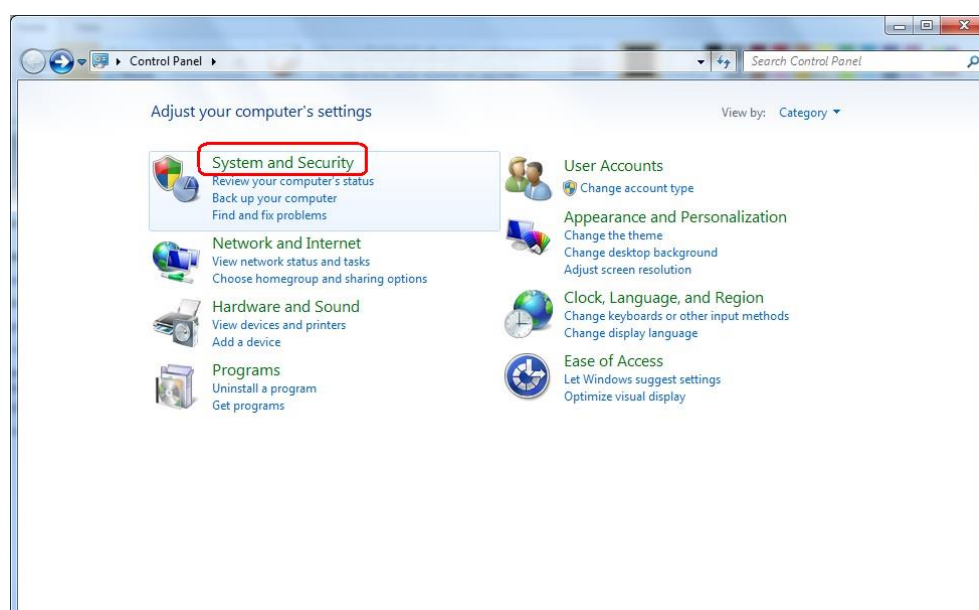
%ProgramFiles%\OMRON\SYSMAC Gateway\bin

➤ File Name

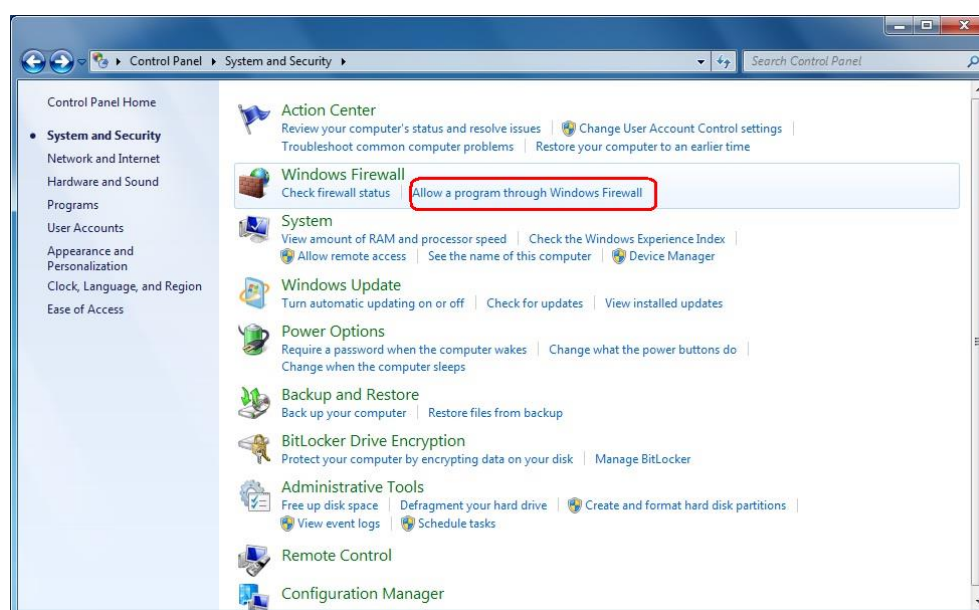
CIPCore.exe

- In the case of Windows 7

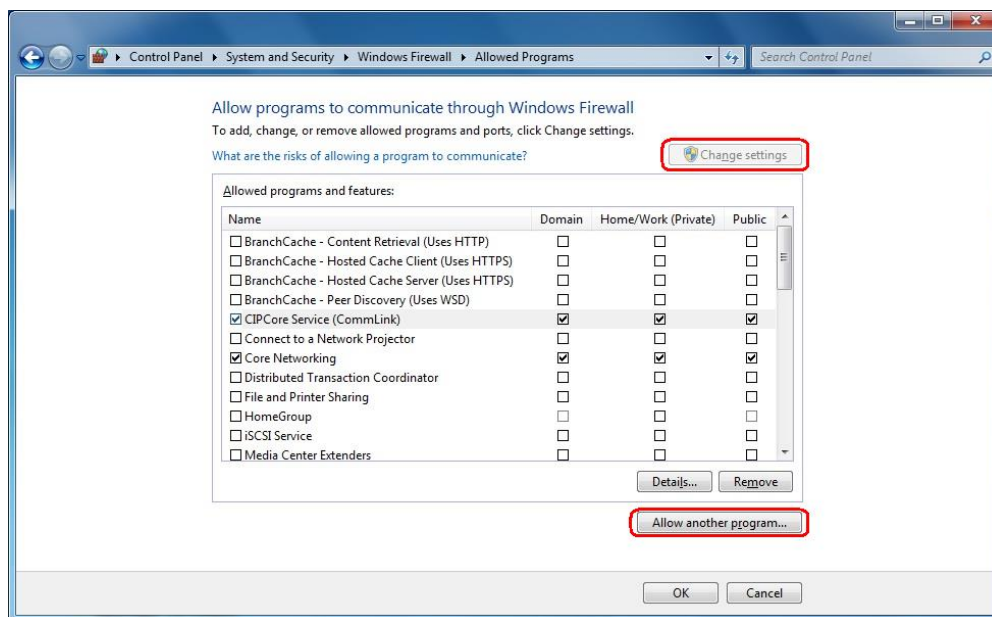
1) Select **System and Security** under the Control Panel.



2) Click **Allow a program through Windows Firewall** in the Windows Firewall settings.



3) Click the **Change settings** Button, and then click the **Allow another program...** Button.



4) Click the **Browse...** Button in the Add a Program Dialog Box. Then, select CIPCore.exe in the applicable folder and click the **Add** Button.

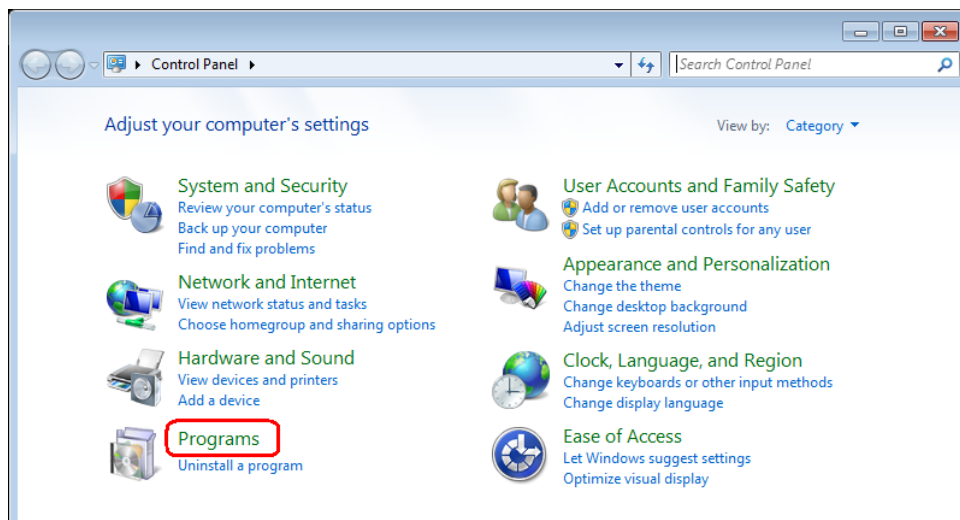
5.1.3.Installing .NET Framework 3.5 SP1

- SYSMAC Gateway Runtime requires .Net Framework 3.5 SP1 for program execution. If .Net Framework 3.5 SP1 is not installed, please install it manually.

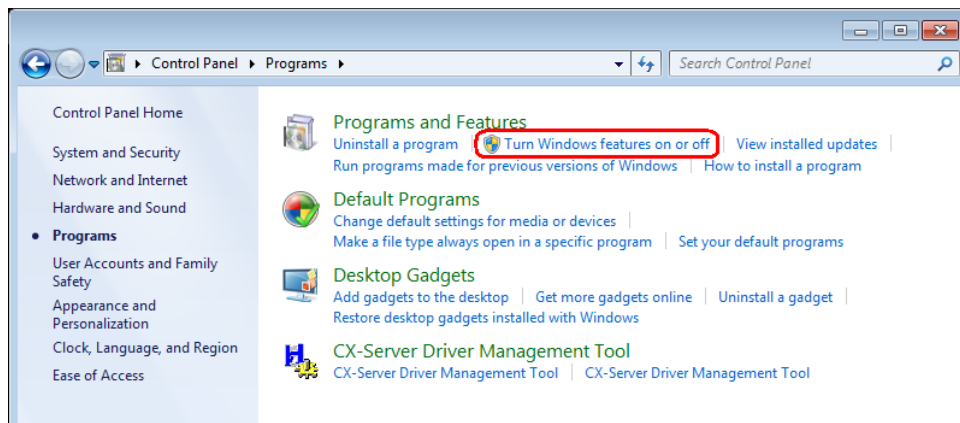
- For the following OS:

Microsoft Windows 7
Microsoft Windows Server 2008 R2
Microsoft Windows 8, 8.1
Microsoft Windows Server 2012 R2

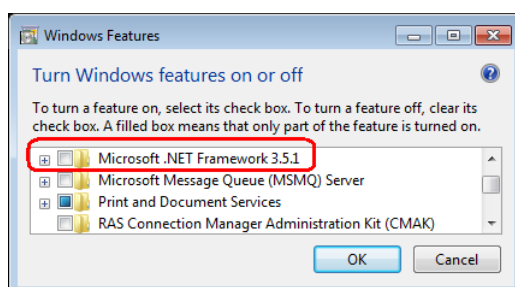
- 1) Select **Programs** from the Control Panel.



- 2) Select **Turn Windows features on or off**.



- 3) Select the **Microsoft .NET Framework 3.5.1** checkbox and click the **OK** Button.



For the following OS:
 Microsoft Windows XP
 Microsoft Windows Vista
 Microsoft Windows Server 2003

Execute the Microsoft Redist\DotnetFramework 3.5.1\dotnetfx35.exe stored in the installation media.

5.2. Upgrading installation

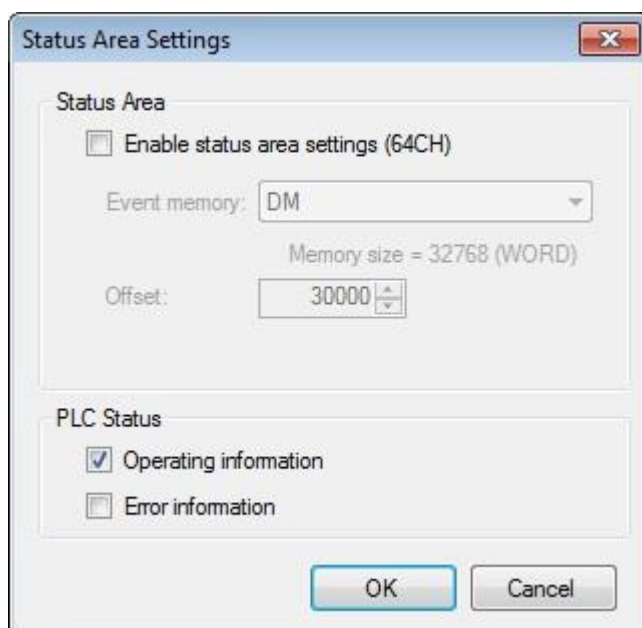
If you are using old version of FinsGateway, SYSMAC Gateway, SYSMAC Compolet, CX-Compolet, and/or Network Configurator installed, then use the following procedures.

5.2.1. CIP based SYSMAC Gateway case

1. Back up existing setting

- Store the datalink settings as backup-date from Network Configurator.
- If you use **Datalink Status Area setting** you need to remember the setting.

You can confirm the settings by executing the Status Area Settings from the Control Panel of SYSMAC Gateway Console.



- If you add your own memory you can backup from FinsGateway console.
 See **5.2.2 FINS based SYSMAC Gateway case / Backup existing settings.**

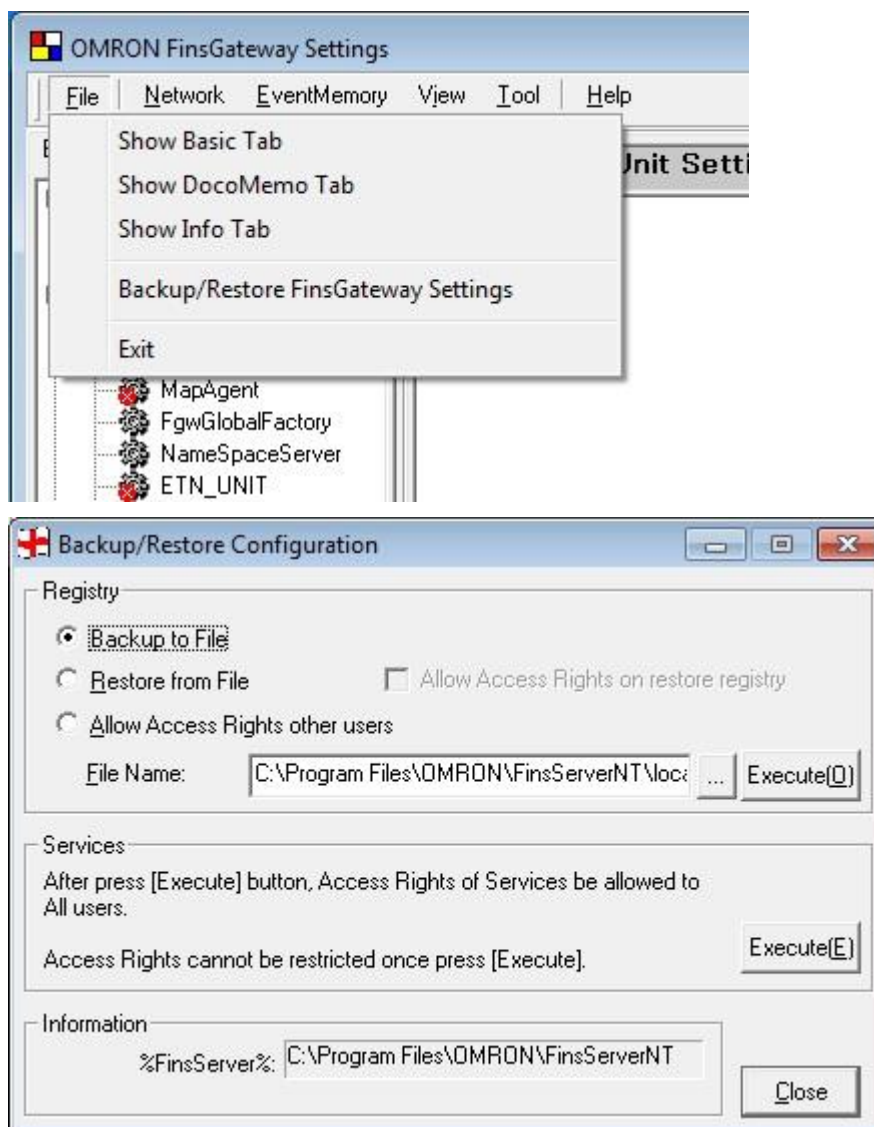
2. Uninstall the older version of the following programs in the same manner as uninstallation.
 - SYSMAC Gateway
 - Network Configurator for EtherNet/IP (only when installed)
3. Install this software in the same manner as new installation.
4. Restore settings
 - Setup network port from SYSMAC Gateway console.
 - Restart SYSMAC Gateway service from the console.
 - Download datalink settings from Network Configurator.

- If you use **Datalink Status Area setting** you need to set the parameter again.
 - If you add your own memory you can restore from FinsGateway console.
- See **5.2.2 FINS based SYSMAC Gateway case / Backup settings**.

5.2.2.FINS based SYSMAC Gateway case

1. Back up existing settings

- You can backup settings in the registry by using **Backup/Restore FinsGateway Settings** in the **File** menu of **FinsGateway Setting** utility.



2. Uninstall the older version of the following programs in the same manner as uninstallation.
 - FinsGateway
 - SYSMAC Gateway
 - Network Configurator for EtherNet/IP (only when installed)
3. Install this software in the same manner as new installation.
4. Restore settings
 - You can restore settings by using **Backup/Restore Settings** in the **File** menu.

5.3. Repairing installation configurations

If you overwrite the new version on the existing version, the files will be overwritten by the latest ones while different versions of software will be installed at the same time. Then if you uninstall the old one, some common files/program short cuts may be deleted. You can repair the configuration. The following is the procedures for repairing the installation configuration of SYSMAC Gateway.

1. Apply power to the computer, and log in as an Admin user.
2. Stop all programs and services related to the SYSMAC Gateway.
3. Execute **Programs and Feature** from Windows control panel.
4. Select **SYSMAC Gateway** and click the **Change** Button.
5. In the maintenance dialog box, select **Repair** and click the **Next** Button. Then, follow the instructions.

If you failed to repair the configuration, please uninstall the existing software and re-install it.

5.4. Changing configurations

To change the installation configuration of SYSMAC Gateway, use the following procedures.

1. Apply power to the computer, and log in as an Admin user.
2. Stop all programs and services related to the SYSMAC Gateway.
3. Execute **Programs and Feature** from Windows control panel.
4. Select **SYSMAC Gateway** and click the **Change** Button.
5. In the maintenance dialog box, select **Change** and click the **Next** Button. Then, follow the instructions.

5.5. Uninstalling SYSMAC Gateway

Use the following steps to uninstall SYSMAC Gateway.

1. Apply power to the computer, and log in as an Admin user.
2. Stop all programs and services that use the SYSMAC Gateway Runtime.
3. Execute **Programs and Feature** from Windows control panel.(in Windows Vista/Windows7, it is called **Programs and Function**.)
4. Select **SYSMAC Gateway** and click the **Uninstall** Button to start un-installation.
5. Restart the computer if required.

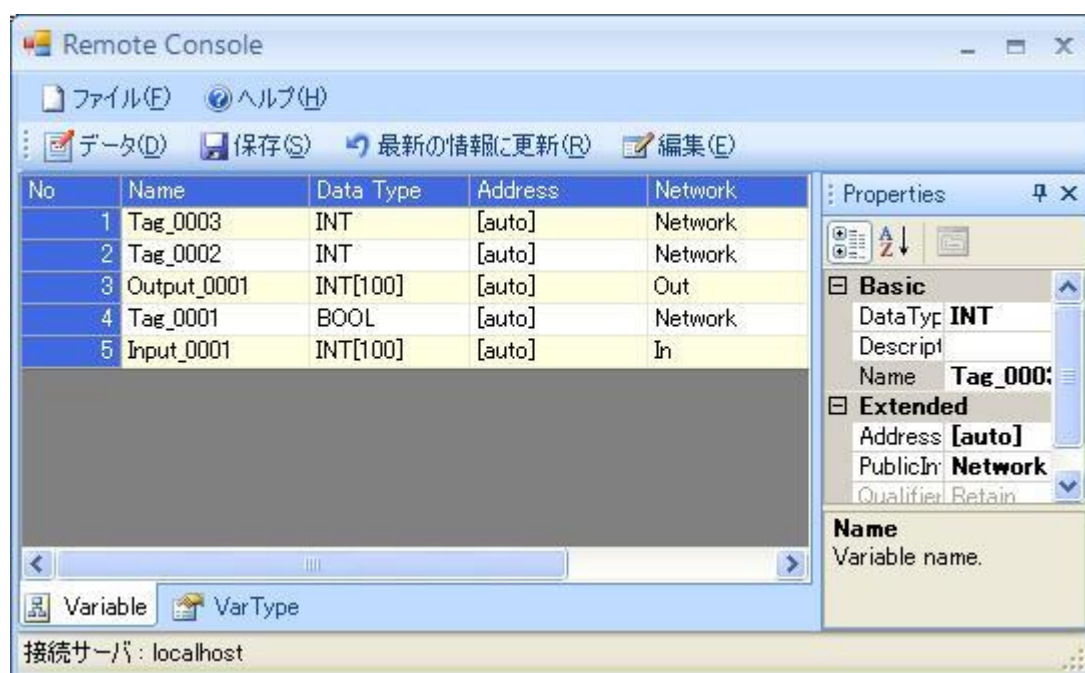
To remove Network Configurator, select the **Network Configurator for EtherNet/IP v3** and click the **Uninstall** Button.

6. Remote Console

6.1. What is Remote Console

SYSMAC Gateway Remote Console (hereinafter referred to as Remote Console) is a software package that enables you to edit SYSMAC Gateway tags remotely from a computer that does not have SYSMAC Gateway installed.

It is possible to install Network Configurator and Remote Console in a computer, read all of the SYSMAC Gateway tags (network variables) on the network, and import them to Network Configurator.



6.2. Installing Remote Console

Use the following procedures to install SYSMAC Gateway Remote Console.

1. Apply power to the computer, and log in as an Admin user.
2. Insert the SYSMAC Gateway Runtime media.
3. SYSMAC Gateway Runtime installer starts running. Cancel the installer.
4. Execute **SgwRemoteConsoleSetup.exe** on the root folder of the installation media.
5. The installation of SYSMAC Gateway Remote Console will be started. Follow the Wizard instruction to complete the installation.

Note: Remote Console does not require the license key. You can install it to any PCs.

6.3. Launching Remote Console

From the Windows Start menu, select **All Programs - OMRON - SYSMAC Gateway - SYSMAC Gateway Remote Console**.

Refer to the Remote Console help for the detailed usage.

6.4. Uninstalling Remote Console

Use the following procedures to uninstall SYSMAC Gateway Remote Console.

1. Apply power to the computer, and log in as an Admin user.
2. Execute **Programs and Feature** from Windows control panel.
3. Select ***SYSMAC Gateway RemoteConsole*** and click the **Uninstall** Button to start uninstallation.

7. Installation/Operation Precautions

7.1. Adding the Plug and Play USB driver

USB driver will be required when you connect to a PLC, like CJ2, CP or NSJ series, through USB. Use the following procedures to install the USB driver. The USB connection with NJ/NX-series Controllers is not supported.

● USB limitation.

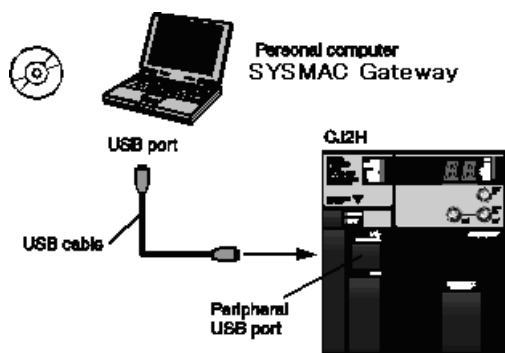
There are the following limitations for using USB connection.

- Only one device can be connected from a computer. We cannot connect to multiple PLCs from multiple USB ports in a computer.
- You should not plug off the USB cable when the port has been opened. When you plug off the USB cable, be sure to close the USB port of SYSMAC Gateway before disconnecting the cable.

If you plug off the USB cable while online, the online status may not be recovered only by reinserting the cable. Close the port first. Then, insert the USB cable and open the port again.

- During the USB port opened, Windows cannot become hibernation mode or stand by mode.

■ CJ-series CJ2 CPU Units



The peripheral USB port (conforming to USB 1.1, B connector) is a dedicated port for connecting programming device such as CX-One (including CX-Programmer) and SYSMAC Gateway application.

● Items Required for USB Connection

| | |
|---------------------|---|
| Operating system | Vista/Windows7/Windows8, 8.1 |
| Support Application | SYSMAC Gateway or FinsGateway based application |
| USB driver | Included with SYSMAC Gateway product. |
| USB cable | USB 2.0 cable (A connector-B connector), 5 m max. |

● Installing the USB Driver

You need to install the USB driver for first connecting a computer to a PLC.

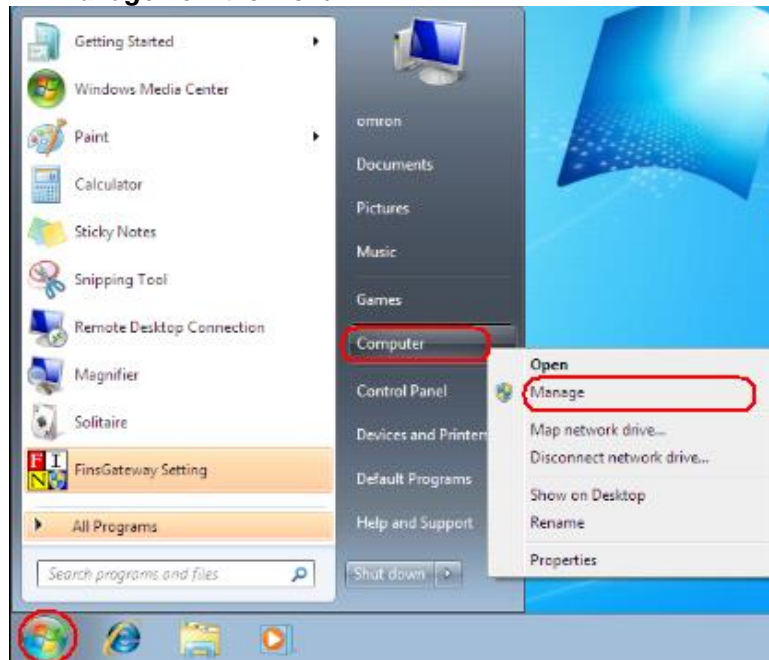
The procedure for connecting a computer to the CJ2 CPU Unit peripheral USB port is described below.

● Windows Vista / Windows 7 / Windows 8.1

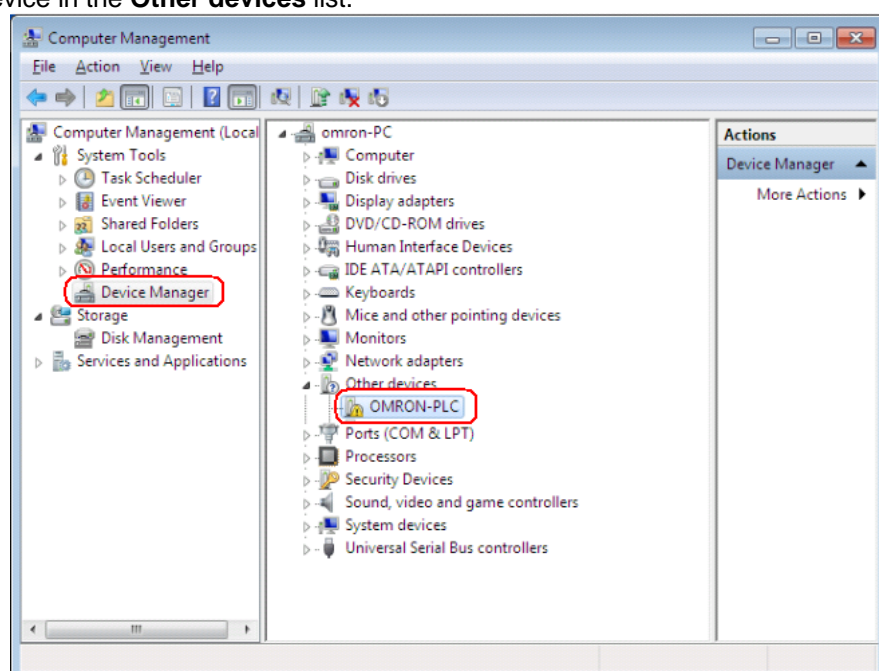
This section describes the installation procedures for Windows 7. The USB driver is common to Windows Vista, Windows 7 and Windows 8.1.

Turn ON the power supply to the CJ2 CPU Unit, and connect USB cable between the USB port of the computer and the peripheral (USB) port of the CJ2 CPU Unit.

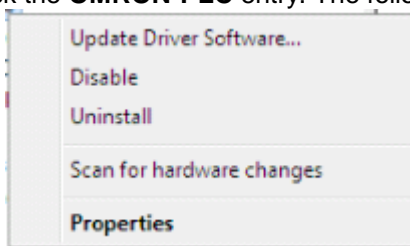
1. Click the **Windows Start** Button. Right-click the **Computer**. Then, select **Manage** from the menu.



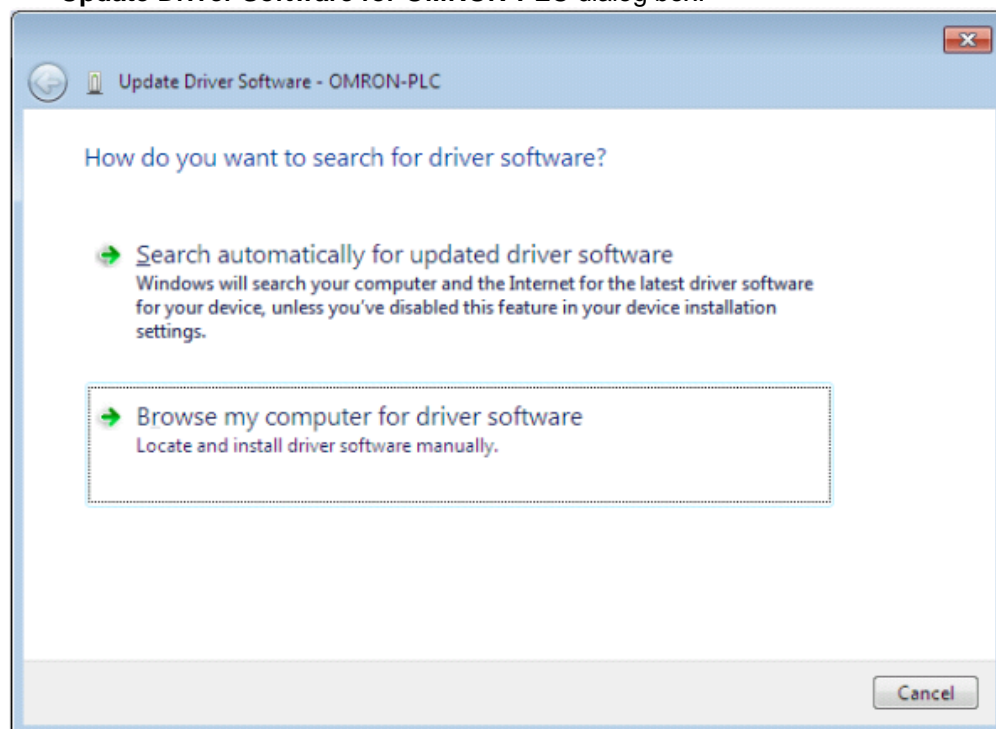
2. The following Computer Management Window will be displayed. Select **Device Manager** in the left tree view. Then you can see the **OMRON-PLC** device in the **Other devices** list.



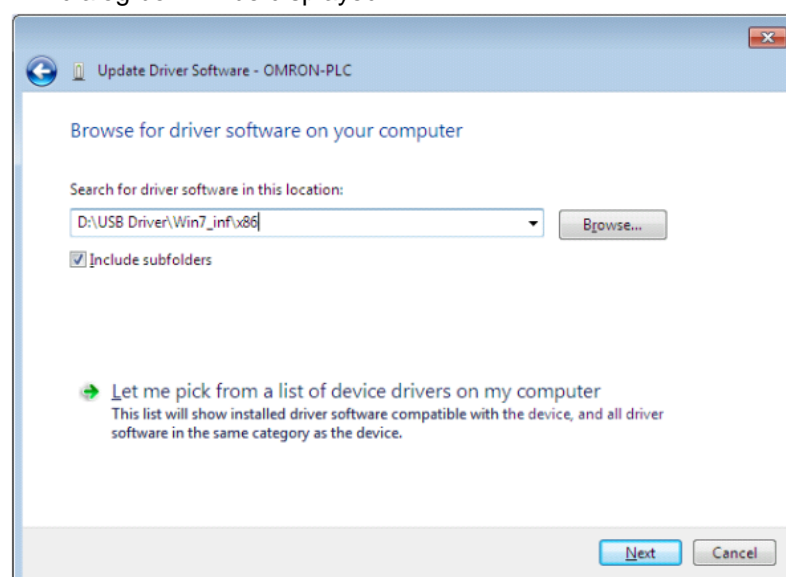
- Right-click the **OMRON-PLC** entry. The following menu will be displayed.



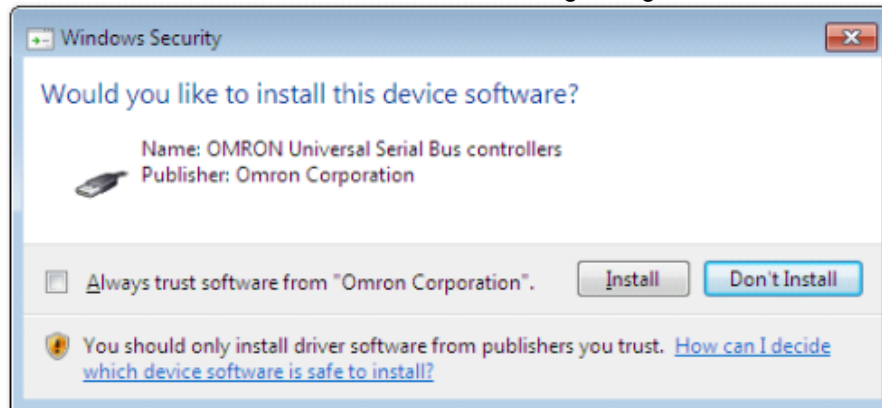
- Select **Update Driver Software** from the menu. This will show the following **Update Driver Software for OMRON-PLC** dialog box.



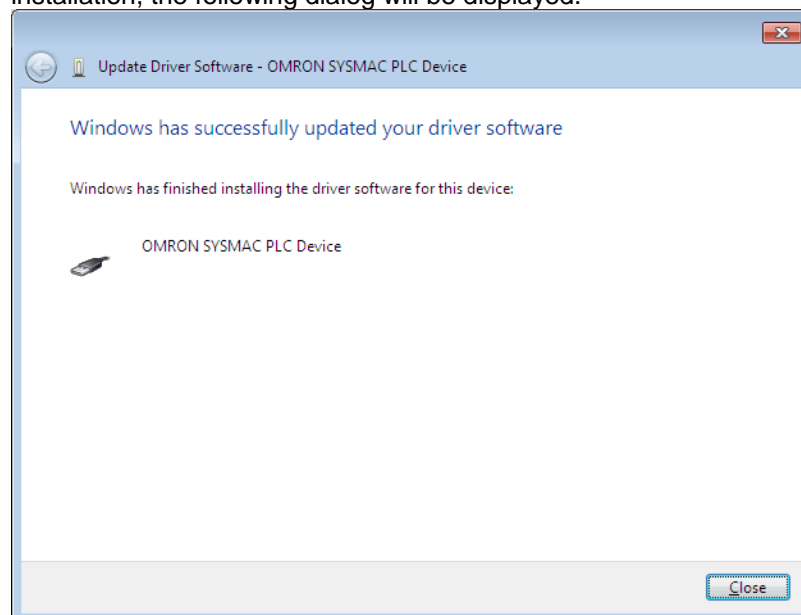
- Select the *Browse my computer for driver software* Option. The following dialog box will be displayed.



6. Click the **Browse** Button, specify the folder where the following driver is stored:
32-bit version: /USB Driver/Win7_inf/x86
64-bit version: /USB Driver/Win7_inf/amd64
7. Click the **Next** Button to show the following dialog.

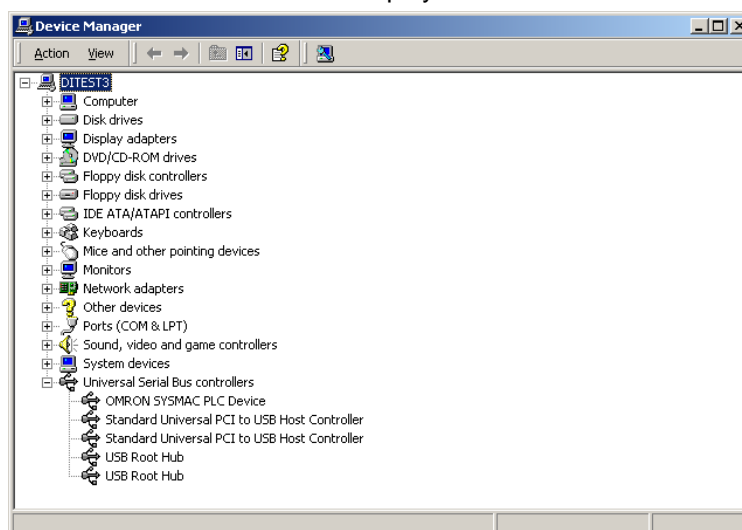


8. Click the **Install** Button to start driver installation. After finishing the installation, the following dialog will be displayed.



● Checking after Installation

1. Display the Device Manager at the computer.
2. Click *USB (Universal Serial Bus) Controller*, and confirm that *OMRON SYSMAC PLC Device* is displayed.

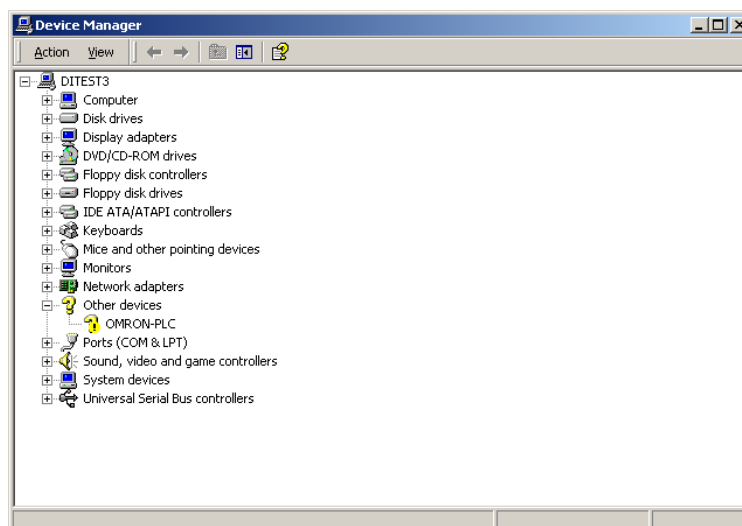


● Re-installing the USB Driver

If the USB driver installation fails for some reason or is cancelled in progress, the USB driver must be reinstalled.

● Checking USB Driver Status

1. Display the Device Manager on the computer.
2. If *USB Device* is displayed for *Other devices*, it means that the USB driver installation has failed.



● Reinstalling the USB Driver

1. Right-click **USB Device** and select **Delete** from the menu to delete the driver.
2. Reconnect the USB cable. The USB Driver Installation Window will be displayed.
3. Reinstall the USB driver.

7.2. Adding the Plug and Play Support Board driver

To use the PCI Controller Link Support Board or another Network Support Board that is Plug & Play, the device driver for the Board must be installed in addition to the SYSMAC Gateway setup. For details, refer to the manual included with the Board.

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