



EtherNet/IP Monitor Tool Operation Manual

Introduction

This manual documents the operating procedures of the EtherNet/IP Monitor Tool. It does not contain other information, such as precautions. In actual use, obtain the operation manuals of the relevant CPU Units, EtherNet/IP Units, and Support Software, read the required application information, including all precautions, and adequately check operation before you use the EtherNet/IP Monitor Tool.

Trademarks

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- Windows, Windows XP, Windows Vista, and Windows 7 are registered trademarks of Microsoft Corporation in the USA and other countries.
- Other company names and product names in this document are the trademarks or registered trademarks of their respective companies.

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Read and Understand this Manual

Please read and understand this manual before using the product. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

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

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

Related Manuals

• CPU Units

Man. No.	Model numbers	Manual name
W472	CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□	SYSMAC CJ Series CJ2 CPU Unit Hardware USER'S MANUAL
W473	CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□	SYSMAC CJ Series CJ2 CPU Unit Software USER'S MANUAL
W394	CS1□-CPU□□□□-□□ CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□ CJ1□-CPU□□□□-□ NSJ□□-□□□□□□-□□□	SYSMAC CS Series, SYSMAC CJ Series, and SYSMAC One NSJ Series Programmable Controllers INSTRUCTIONS REFERENCE MANUAL
W474	CS1□-CPU□□□□-□□ CJ2H-CPU6□-EIP CJ2H-CPU6□ CJ2M-CPU□□ CJ1□-CPU□□□□-□ NSJ□□-□□□□□□-□□□	SYSMAC CS Series, SYSMAC CJ Series, and SYSMAC One NSJ Series Programmable Controllers PROGRAMMING MANUAL
W342	CS1G/CS1H/CS1D/CS1W CJ2H/CJ2M CJ1G/CJ1H/CJ1M/CJ1W CP1H/CP1L/CP1E/ NSJ	SYSMAC CS/CJ/CP Series and SYSMAC One NSJ Series Communications Commands REFERENCE MANUAL

• Communications Units

W465	CS1W-EIP21 CJ1W-EIP21 CJ2H-CPU6□-EIP CJ2M-CPU3□	SYSMAC CS and CJ Series EtherNet/IP Units Communications Commands REFERENCE MANUAL
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• Support Software

Man. No.	Model numbers	Manual name
W463	CXONE-AL□□□C-V4	CX-One FA Integrated Tool Package SETUP MANUAL
W446	CXONE-AL□□□D-V4	CX-Programmer Ver. 9.□ OPERATION MANUAL
W447		CX-Programmer Ver. 9.□ OPERATION MANUAL Function Blocks/Structured Text
W469		CX-Programmer Ver. 9.□ Operation Manual SFC Programming
W366		CX-Simulator Ver. 1.9 OPERATION MANUAL
W464		CX-Integrator Ver. 2.□ OPERATION MANUAL
W344		CX-Protocol Ver. 1.9 OPERATION MANUAL
W433		CX-Position Ver. 2.5 OPERATION MANUAL
W436		CX-Motion-NCF Ver. 1.9 OPERATION MANUAL
W448		CX-Motion-MCH OPERATION MANUAL

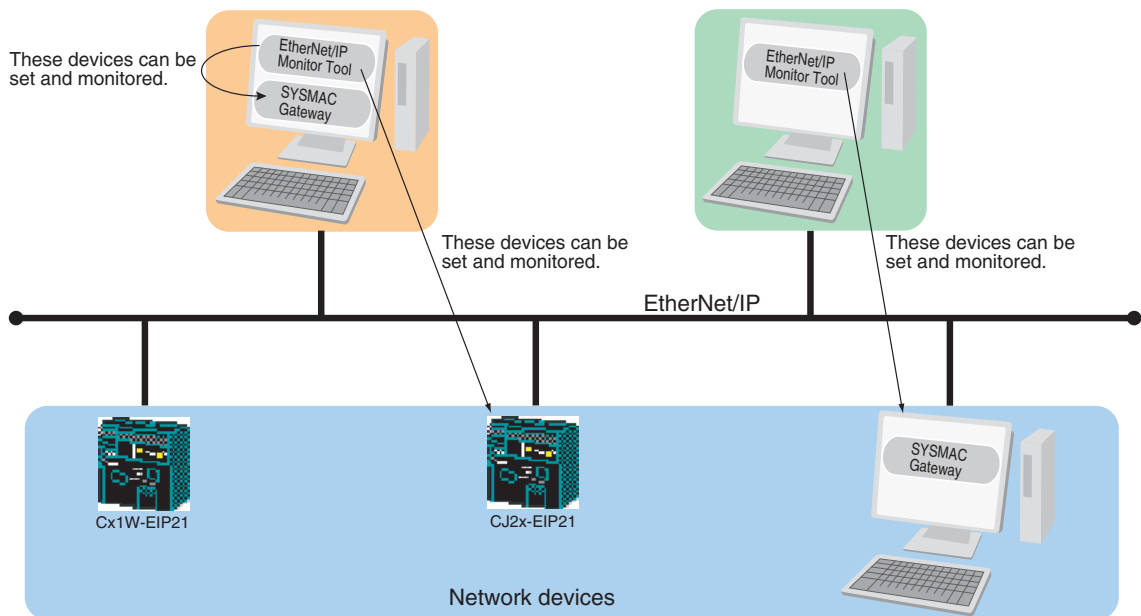
1 The EtherNet/IP Monitor Tool

• The EtherNet/IP Monitor Tool

The EtherNet/IP Monitor Tool is a software application for monitoring the communications status of CS/CJ-series EtherNet/IP Units and SYSMAC Gateway EtherNet/IP and for setting connections for tag data links.

If the configuration device is a SYSMAC Gateway, you can specify local devices on the same computer or remote devices on other computers.

The system configuration supported by the EtherNet/IP Monitor Tool is shown below.



• **EtherNet/IP Monitor Tool Functions**

The functions of the EtherNet/IP Monitor Tool are listed below.

	Function	Details
Monitoring	Network status display	You can display the IP address, CIP port number, and the operating status of the configuration device.
	Connection status display	You can display the tag type (Producer, Consumer, UCMM, or Class 3), the total number of connections, and the communications status of the connections.
	Tag status display	You can display the communications status and data of producer and consumer tags. You can display detailed information, such as the total number of connections, the connection time, and the time not connected.
	Data logging	You can set the trigger conditions and log tag data. Logged data is saved to a file. (This function is supported only for SYSMAC Gateway.)
Setting	Tag and connection settings	You can set producer tags, consumer tags, and message tags. (Message tags are enabled only for SYSMAC Gateway.)

• **Supported Models**

Model	Name	Remarks
CJ2H-CPU□□-EIP	CJ2H built-in EtherNet/IP port	(*1)
CJ1W-EIP21	CJ-series EtherNet/IP Unit	(*1)
CS1W-EIP21	CS-series EtherNet/IP Unit	(*1)
WS02-SGWC1	SYSMAC Gateway	(*2)

(*1) Unit version 2.1 or later is required.

(*2) Software version 1.3 or higher is required.

• **System Requirements**

Item	System requirement
Operating system (Japanese or English)	Microsoft Windows XP (Service Pack 3 or higher, 32-bit edition) Microsoft Windows Vista Microsoft Windows 7
Computer	A personal computer with the processor that is recommended by Microsoft Corporation
Memory	The memory capacity that is recommended by Microsoft Corporation
Hard disk	Approx. 20 MB or more of available hard disk space is required.
Display	XGA (1,024 x 768), High Color, 16-bit or higher
Disk drive	CD-ROM or DVD-ROM drive
Communications port	Ethernet port

- **Installation Procedure**

Execute the EtherNet/IP Monitor Tool setup program and install the software according to the instructions that are displayed. There are setup programs available for both English and Japanese. Select the setup program for the language to use. By default, the EtherNet/IP Monitor Tool is installed in the following directory: C:\Program Files\OMRON\EtherNetIP Monitor Tool. **OMRON EtherNetIP Monitor Tool** is also registered on the Windows Start Menu.

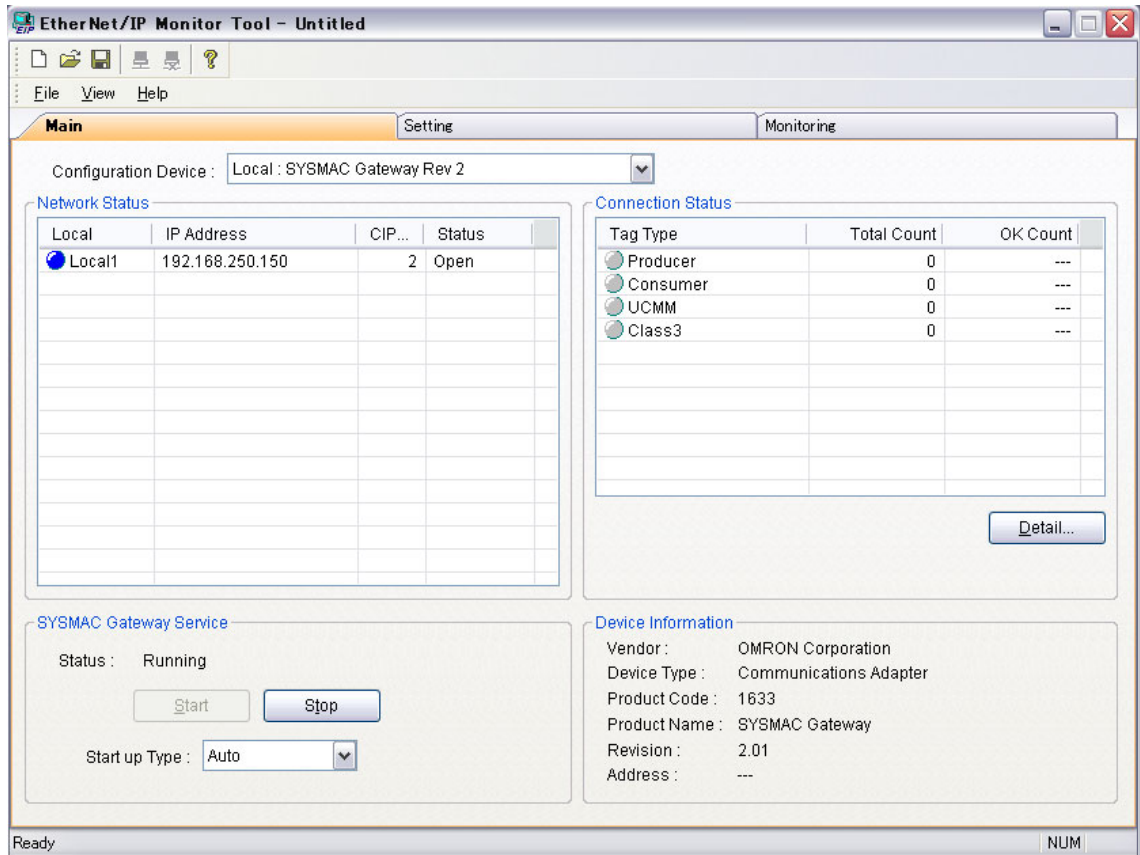
- **Uninstallation Procedure**

Select and delete the EtherNet/IP Monitor Tool from **Add or Remove Programs** or **Programs and Features** in the Control Panel.

2 Function Specifications

2.1 Main Window

The Main Window of the EtherNet/IP Monitor Tool is shown below.



The Main Window is made up of the three following main tab pages.

Tab label	Description
Main	This tab page displays tables of the active status and connection status of the devices (NICs) that are set on the Setting Tab Page. It is also used to start and stop communications services for devices that are local SYSMAC Gateways.
Setting	This tab page is used to register EtherNet/IP connections and produce/consume tags.
Monitoring	This tab page is used to monitor the connection status of produce and consume tags.







2.2 Menu Commands

You can execute the following functions with the menu commands.

Menu command	Function
File – New	Creates a project.
File – Open	Opens an existing project.
File – Save	Saves the project.
File – Save As	Saves the project under a specified name. You can select to save either an EtherNet/IP Monitor Tool project file or a device configuration file (*.dvh) for use with the Network Configurator.
File – Connect	Connects to the configuration device if it is a remote device.
File – Disconnect	Disconnects from the configuration device.
File – Exit	Exits the EtherNet/IP Monitor Tool.
View – Toolbar	Shows or hides the toolbar.
View – Status bar	Shows or hides the status bar.
Help – Version Information	Displays the EtherNet/IP Monitor Tool's version information.

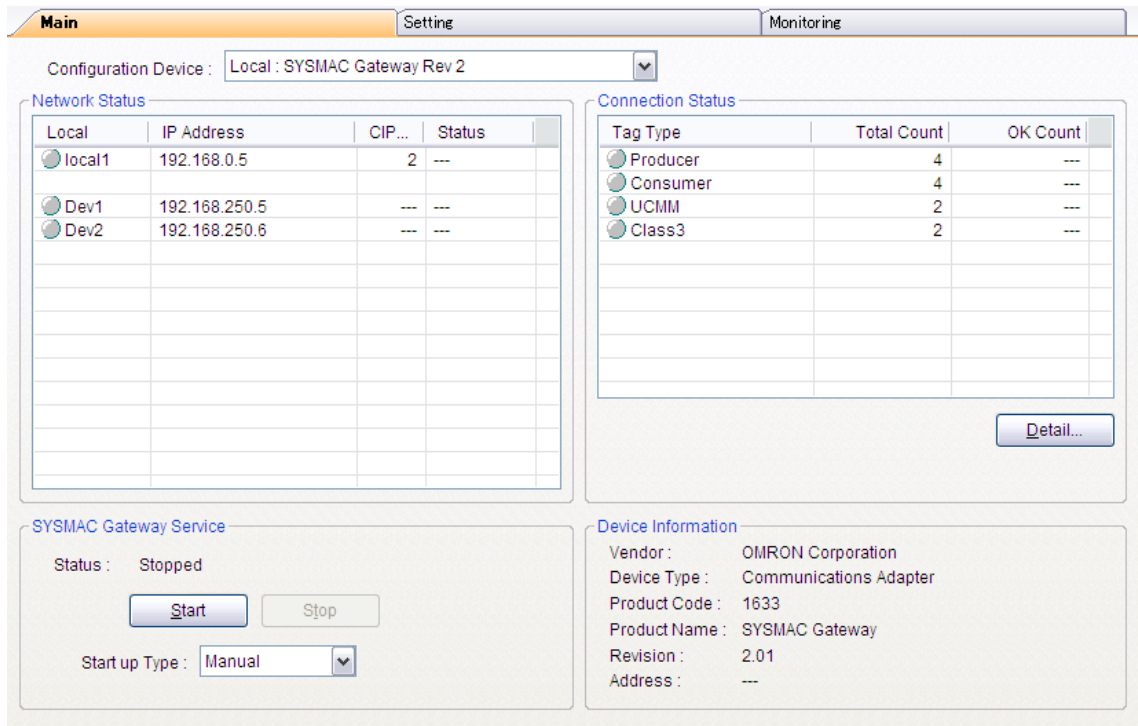
2.3 Toolbar

You can execute the following functions from the toolbar.

Toolbar icon	Function
	Creates a project.
	Opens an existing project.
	Saves the project.
	Connects to the configuration device if it is a remote device.
	Disconnects from the configuration device.
	Displays the EtherNet/IP Monitor Tool's version information.

2.4 Main Tab Page

The Main Tab Page is shown below.



The following operations can be performed from the Main Tab Page.

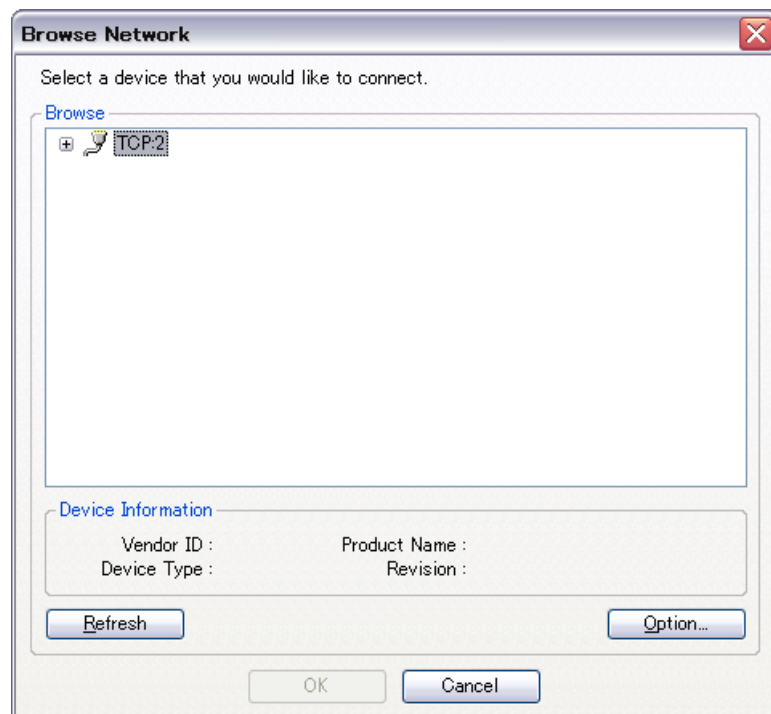
Item	Function
Configuration Device	Select the configuration device to set and monitor. You can select any of the devices that are given in the supported model list. For SYSMAC Gateway, you can select either local or remote devices.
Network Status	This area is used to monitor and display the status of devices that are registered on the Setting Tab Page.
Connection Status	This area is used to monitor and display the status of tags that are registered on the Setting Tab Page.
SYSMAC Gateway Service	This area is used to start and stop the communications services if the configuration device is a local SYSMAC Gateway device.
Device Information	This area displays information on the configuration device.

2.4.1 Setting the Configuration Device

The *Configuration Device* Box is used to select the device to set and monitor with the EtherNet/IP Monitor Tool. You can select any of the devices that are given in the supported model list. For SYSMAC Gateway, you can select either local or remote devices. The default is the device that was previously selected. If a device was not previously selected, the default is *Local: SYSMAC Gateway*. If the SYSMAC Gateway is not installed on the computer that is being used for operation, *Local: SYSMAC Gateway* is not displayed.

The device information is displayed in the *Device Information* Area for the selected device.

If *Remove Device* is selected as the configuration device, the **Connect** Button in the toolbar is enabled. The connection is made to the configuration device from the following dialog box.



If the selected device does not match the setting in the *Configuration Device* Box, the following error message is displayed and the connection is not made: *The Specified device type is not same as the current configuration device type.*




If the **Disconnect** Button is clicked, monitoring is stopped and the device is disconnected.

2.4.2 Network Status Area

The following information is displayed in the Network Status Area.

Item	Details
Local	This column displays the local and remote port names that are set on the Setting Tab Page. If the configuration device is set to <i>Remote Devices</i> , the local port names are not displayed. Only the remote port names are displayed.
IP Address	This column displays the port names that are assigned to the address names.
CIP Port	The CIP port numbers of the port names are displayed only if the configuration device is set to <i>Local: SYSMAC Gateway</i> .
Status	This column displays whether the active status of the device is OK. The open/closed status of the ports are displayed if the configuration device is set to <i>Local: SYSMAC Gateway</i> . The status can also be identified using the icon that is displayed beside the port name.

The icon and status displays change with the device status as shown in the following table.

Icon	Status display	Status
	---	<ul style="list-style-type: none"> Local Port Local: SYSMAC Gateway: Servicing is stopped. Remote Port There is no corresponding status.
	OK	<ul style="list-style-type: none"> Local Port Local: SYSMAC Gateway: The port is open. Remote Port There is a device at the IP address.
	NG	<ul style="list-style-type: none"> Local Port Local: SYSMAC Gateway: The port is closed. Remote Port There is no device at the IP address.





To confirm whether a device is at the IP address, PING is used to send and receive an ICMP packet. ICMP packets are consecutively sent to all IP addresses. The ICMP packet response monitoring time is 500 ms, and the cycle for checking for devices at the IP addresses is 5,000 ms.

2.4.3 Connection Status Area

The following information is displayed in the Connection Status Area.

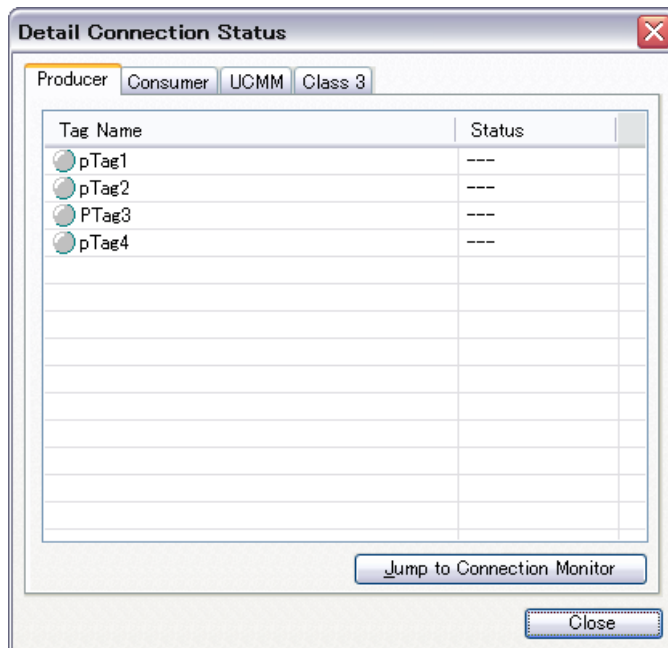
Item	Details
Tag Type	The following are displayed as tag types. <ul style="list-style-type: none"> • Producer: Connection-type class-1 produce tags • Consumer: Connection-type class-1 consume tags • UCMM: Connection-type UCMM message tags • Class 3: Connection-type class-3 message tags
Total Count	This column displays the total number of types that are registered on the Setting Tab Page.
OK Count	This column displays the total number of tags for which communications ended normally.

The icons that are displayed next to the tag type will change according to the connection status as described in the following table.

Icon	Status
	The total count is 0 or the device is offline.
	The registered tag exists and all connections are normal.
	The registered tag exists, but at least one of the connections is not established.
	The registered tag exists and there are no connections.

UCMM/class 3 is supported only for *Local: SYSMAC Gateway*. The cycle for checking the status of the tags is 500 ms.




If the **Details** Button is clicked, the following dialog box is displayed to show the status of the tags.



The Detail Connection Status Dialog Box displays the following information on property tab pages for each tab type.

Item	Details
Tag Name	This column displays the tag names.
Status	This column displays the tag connection status. Normal: OK Error (not connected): NG

The icons that are displayed next to the tag name will change according to the connection status as described in the following table.

Icon	Status
	Offline
	Operation is normal.
	The connection is not established or an error occurred.

The **Jump to Connection Monitor** Button is clicked to close the dialog box and jump to the Monitoring-Connection Tab Page.

2.4.4 SYSMAC Gateway Service

If the configuration device is set to *Local: SYSMAC Gateway*, you can manage the SYSMAC Gateway Service. In other cases, the **Start** Button, the **Stop** Button, and other features are disabled.

2.4.5 Device Information Area

The Device Information Area displays the device information for the device that is currently being set or monitored.

2.5 Setting Tab Page

The Setting Tab Page is shown below.

The screenshot shows the 'Setting' tab page with the following sections:

- Local Network Port:** A table with columns: NIC Name, CIP..., IP Address. It contains one entry: Local1, 2, 192.168.250.1... Below the table are buttons: New..., Edit..., Delete.
- Remote Network Port:** A table with columns: NODE Name, Local NIC, Port..., IP Address. It is currently empty. Below the table are buttons: New..., Edit..., Delete.
- Logging Configuration:**
 - Communication Log:** Output Folder: [text box], Enable Log Output, Delete Int.: 1Day 1Week 1Month Custom, Set...
 - Data Log:** Output Folder: C:\Documents and Settings\Administrator\ [text box], Enable Data Log, Edit Data Logging Parameters...
- Bottom Row:** Clear Connect/Disconnect Counter, Upload, Download, Verify, Reset.

The following operations can be performed from the Setting Tab Page.

Tab label	Function
Basic	This tab page is for port settings and logging configuration of local and remote networks.
Producer	This tab page is used to set produce tags.
Consumer	This tab page is used to set consume tags.
Message	This tab page is used to set message tags.
User Define	This tab page is used to set user definitions for displaying tag data.

2.5.1 Basic Tab Page

The following operations can be performed from the Basic Tab Page.

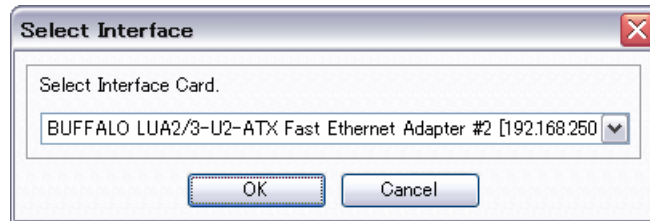
Item	Function
Local Network Port	This area is used for local network port settings. The following settings are made according to configuration device that is set on the Main Tab Page. <ul style="list-style-type: none"> • Local SYSMAC Gateway SYSMAC Gateway ports • Remote Devices Network ports on the local computer that are used to access configuration devices
Remote Network Port	This area is used to set configuration device ports.
Logging Configuration	This area is used to set the folder for storing log data and to set the data log.
Upload	This button is used to upload parameters from a device.
Download	This button is used to download parameters to a device.
Verify	This button is used to verify parameters with the device.
Reset	This button resets the device. Resetting is possible only if the configuration device is set to <i>SYSMAC Gateway</i> .
Clear Connect/Disconnect Counter	This button is used to clear the connection/disconnection counter for the configuration device tags.

2.5.1.1 Setting Local Network Ports

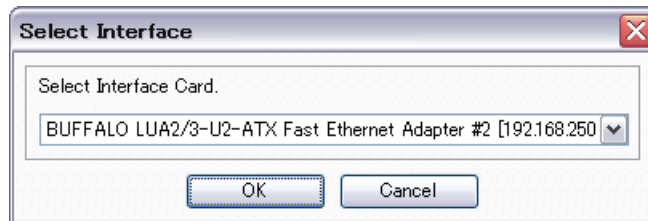
If the configuration device is set to *Local: SYSMAC Gateway* on the Main Tab Page, the following dialog box is displayed to set a port when the **New** Button is clicked.

Item	Details
Port Name	This box is used to specify the port name. A maximum of 32 bytes of characters can be set.
CIP Port No.	This box is used to specify the CIP port number. A value of 2 to 5 must be entered as the port number. However, if the SYSMAC Gateway is not multiport or if the number of supported ports is different, the port number is determined by the SYSMAC Gateway specifications. Port numbers that have already been set cannot be specified.
IP Address	This box is used to specify the IP address of the port. IP addresses that have already been set cannot be specified.

If the Browse Button is clicked, the following dialog box is displayed to obtain the IP address from a list of interfaces on the computer. If there is only one interface, the dialog box is not shown and the relevant IP address is obtained.



If the configuration device is set to *Remote Device* on the Main Tab Page, the following dialog box is displayed to select the interface to use to connect to the device when the **New** Button is clicked.



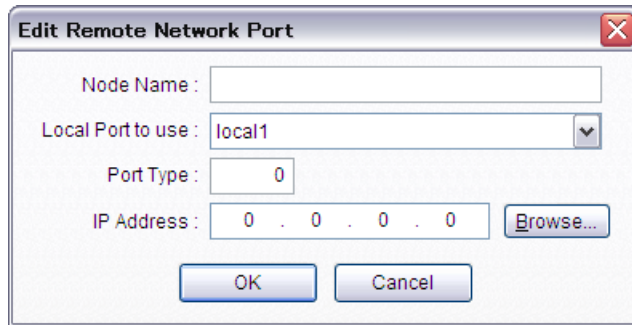
If there is only one interface, the dialog box is not shown and the relevant IP address is obtained.

To edit settings for existing ports, the **Edit** Button is clicked after selecting the setting to edit, or the setting is double-clicked. The same dialog box as for creating a new port is displayed and can be edited. The settings cannot be changed if the configuration device is set to *Remote Devices* on the Main Tab Page.

To delete an existing port, the **Delete** Button is clicked after selecting the settings. The settings are deleted when the **Yes** Button is clicked after the delete confirmation dialog box is displayed. The settings cannot be changed if the configuration device is set to *Remote Devices* on the Main Tab Page.

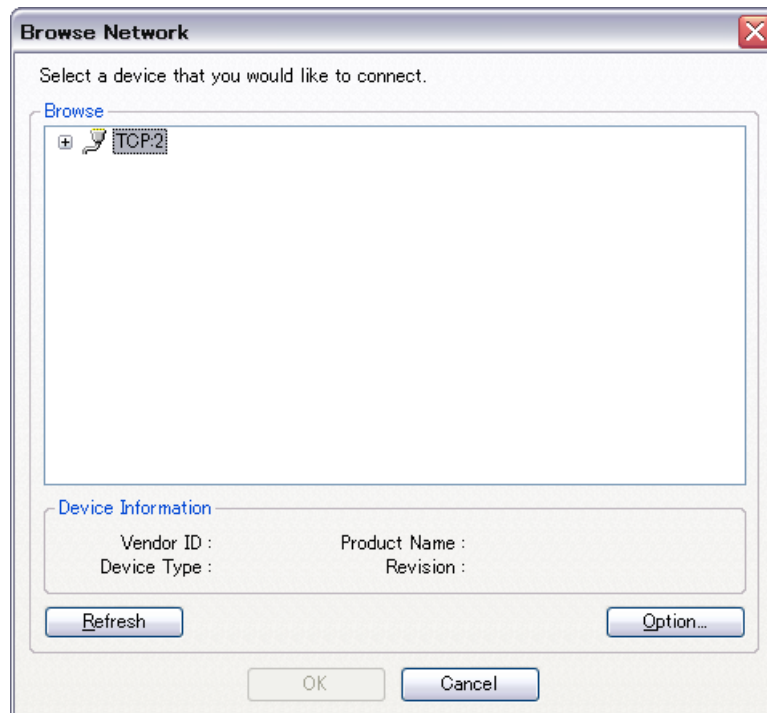
2.5.1.2 Setting Remote Network Ports

The **New** Button is clicked to display the following dialog box to set a port. These settings cannot be made if there are no local ports enabled in the local port settings.



Item	Details
Node Name	This box is used to specify the configuration device name. A maximum of 32 bytes of characters can be set.
Local Port to use	This box is used to specify the local port to use to communicate with the configuration device. A list of ports set in Edit Local Network Port Dialog Box is displayed in the selection list.
Port Type	This box is used to specify the type of end point port. The following types can be set. 0: Default 1: RA compatible
IP Address	This box is used to specify the IP address of the configuration device. IP addresses that have already been set cannot be specified.

If the Browse Button is clicked, the following dialog box is displayed to browse the configuration devices and obtain the IP address. The local port settings must be completed in advance when executing this operation.



To edit settings for existing ports, the **Edit** Button is clicked after selecting the setting to edit, or the setting is double-clicked. The same dialog box as for creating a new port is displayed and can be edited.

To delete an existing port, the **Delete** Button is clicked after selecting the settings. The settings are deleted when the **Yes** Button is clicked after the delete confirmation dialog box is displayed.

2.5.1.3 Logging Configuration Area

The following items are set in Logging Configuration Area. These settings are disabled if the configuration device is set to *Remote Devices*.

Item	Details
Communication Log, Output Folder	This box is used to specify the folder where the communications log is stored. A new file is output every day and every hour. Example: The output file for 23:15 on August 12, 2011 is <i>SgwComLog_2011_08_12-23.txt</i> .
Enable Log Output	This check box is used to enable outputting a communications log. The default is the previous setting. If there is no previous setting, the default is to disable outputting the log.
Delete Int.	The Set Button is used to specify the interval between deletions of communications log files. Data is all maintained only for the specified maximum number of days, including that day. All other data is deleted.
Data Log, Output Folder	This box is used to specify the folder where the data log is stored.
Enable Data Log	This check box is used to enable data log output. The default is the previous setting. If there is no previous setting, the default is to disable outputting the log.
Edit Data Logging Parameters	This button is used to edit data logging parameters.

The Browse Buttons that are next to the input boxes are clicked to select an existing folder as the log output folder.

The following items are output as a communications log.

Item	Details
Forward Open/Close	Class-1 forward open/close information is output.
Service Start/Stop	Information on starting and stopping the SYSMAC Gateway service is output.
Download Start/Stop	Information on starting and stopping downloads of configuration data is output.
Explicit Message	Information on the explicit messages that were sent and received with the explicit message server is output.
Error	Error information, such as connection timeouts for explicit messages, is output.

The **Edit Data Logging Parameters** Button is clicked to display the following dialog box and set the logging parameters.

Up to ten logging tags can be registered. The logging buffer size is 1 to 256 Kbytes. The logging cycle is 1,000 to 60,000 ms.

- Trigger Areas

Item	Details
Tag Name	This box is used to specify the name of the tag that is used as a trigger.
Offset	This box is used to specify the tag data byte offset for starting to trigger logging.
Type	This box is used to specify the data type to use from the offset position for triggering logging. BYTE, WORD, or DWORD (default) can be specified.
Mask	This box is used to specify a hexadecimal value as the mask for data to use to trigger logging.
Match	This box is used to specify a hexadecimal value as the match value for data to use to trigger logging.

- Trigger Condition Area

Item	Details
Trigger 1 OK	Logging is performed if the value of the data of the specified size from the starting offset position for the tag set in the Trigger 1 Area is the same as the match value when the mask is applied.
Trigger 1 NG	Logging is performed if the value of the data of the specified size from the starting offset position for the tag set in the Trigger 1 Area is not the same as the match value when the mask is applied.
Trigger 2 OK	Logging is performed if the value of the data of the specified size from the starting offset position for the tag set in the Trigger 2 Area is the same as the match value when the mask is applied.
Trigger 2 NG	Logging is performed if the value of the data of the specified size from the starting offset position for the tag set in the Trigger 2 Area is not the same as the match value when the mask is applied.
Multi	Logging is performed for ANDs or ORs of the above conditions.

2.5.1.4 Upload

This button is used to upload parameters from the connected device. If the configuration device is not set to *Local: SYSMAC Gateway*, the uploaded data includes only the parameters that can be set with the Network Configurator.

2.5.1.5 Download

This button downloads the current parameters to the connected device. If the configuration device is not set to *Local: SYSMAC Gateway*, the downloaded data includes only the parameters that can be set with the Network Configurator.

2.5.1.6 Verify

This button is used to verify parameters with the connected device. If the configuration device is not set to *Local: SYSMAC Gateway*, the verified data is performed only for the parameters that can be set with the Network Configurator.

2.5.1.7 Reset

This button resets the connected device.
Resetting is possible only if the configuration device is set to *SYSMAC Gateway*.

2.5.1.8 Clear Connect/Disconnect Counter

This button is used to clear the connection/disconnection counter for all of the tags of the connected device.

Item	Function
Tag Name	This box is used to set the tag names. The characters that can be input and the number of bytes of characters that can be input depend on the configuration device.
Size	This box is used to specify the tag size. The supported size settings depend on the configuration device.
RPI Range	These options are used to enable or disable the RPI ranges. If the <i>Disable</i> Option is selected, values cannot be entered into the cells in the <i>Max RPI</i> , <i>Min RPI</i> , and <i>Default RPI</i> Columns.
Max RPI	This box is used to specify the maximum RPI. The supported RPI ranges depend on the configuration device.
Min RPI	This box is used to specify the minimum RPI. The supported RPI ranges depend on the configuration device.
Default RPI	This box is used to specify the default RPI. The supported RPI ranges depend on the configuration device.
User Define	This box is used to specify the user-defined tag data displays.

To edit settings for existing ports, the **Edit** Button is clicked after selecting the setting to edit, or the setting is double-clicked. The same dialog box as for creating a new port is displayed and can be edited.

To delete an existing port, the **Delete** Button is clicked after selecting the settings. The settings are deleted when the **Yes** Button is clicked after the delete confirmation dialog box is displayed.

Item	Function
Tag Name	This box is used to set the tag names. The characters that can be input and the number of bytes of characters that can be input depend on the configuration device.
Size	This box is used to specify the tag size. The supported size settings depend on the configuration device.
Connection Type	This box is used to specify the connection type (multicast or point to point).
RPI	This box is used to specify the RPI. The supported RPI ranges depend on the configuration device.
Timeout	This box is used to specify the timeout multiplier.
Remote Node	This box is used to specify the remote node to which the connection is established.
Remote Tag Name	This box is used to specify the produce tag of the remote node to which the connection is established.
User Define	This box is used to specify the user-defined tag data displays.

To edit settings for existing ports, the **Edit** Button is clicked after selecting the setting to edit, or the setting is double-clicked. The same dialog box as for creating a new port is displayed and can be edited.

To delete an existing port, the **Delete** Button is clicked after selecting the settings. The settings are deleted when the **Yes** Button is clicked after the delete confirmation dialog box is displayed.

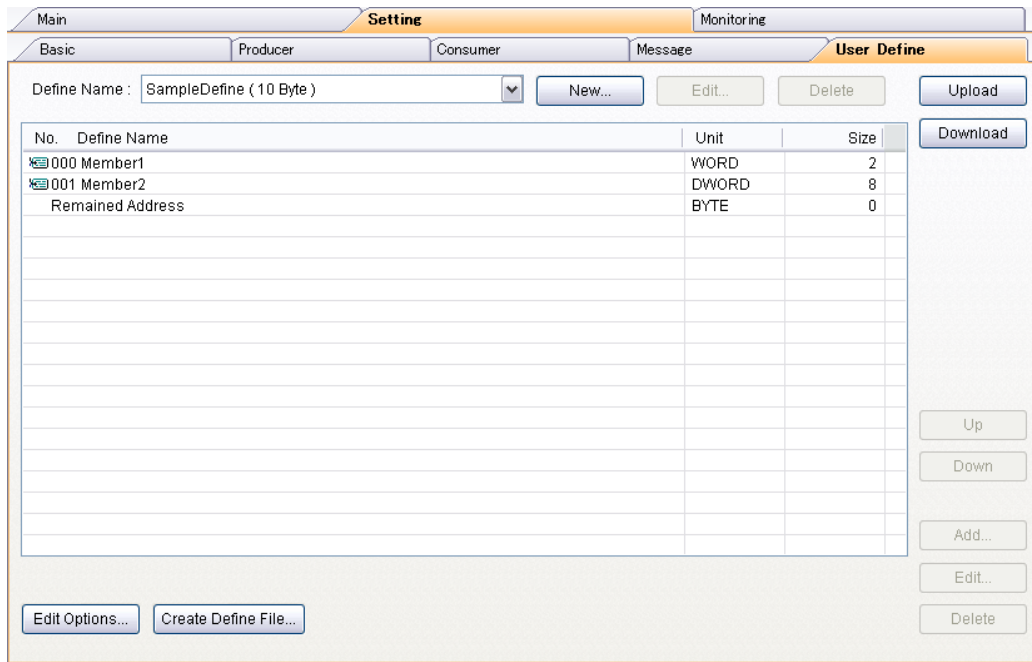
Item	Function
Tag Name	This box is used to set the tag names. The characters that can be input and the number of bytes of characters that can be input depend on the configuration device.
Size	This box is used to specify the tag size. The supported size settings depend on the configuration device.
Connect Type	Use this box to specify the connection type (UCMM or class 3).
Remote Node	This box is used to specify the remote node to which the connection is established.
Remote Tag Name	This box is used to specify the produce tag of the remote node to which the connection is established.
User Define	This box is used to specify the user-defined tag data displays.

To edit settings for existing ports, the **Edit** Button is clicked after selecting the setting to edit, or the setting is double-clicked. The same dialog box as for creating a new port is displayed and can be edited.

To delete an existing port, the **Delete** Button is clicked after selecting the settings. The settings are deleted when the **Yes** Button is clicked after the delete confirmation dialog box is displayed.

2.5.5 User Define Tab Page

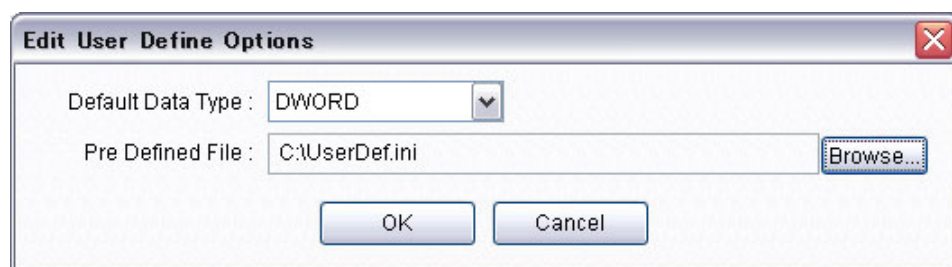
The User Define Tab Page is used to set definitions for displaying tag data. The tab page is shown below.



Select a user-defined name list to display the user-defined information.

2.5.5.1 Setting User Define Options

The **Edit Options** Button is clicked to edit the options when creating user definitions. The following dialog box is displayed.



Item	Function
Default Data Type	This box is used to specify the default data type when specifying the size of the user definition. WORD or DWORD (default) can be specified.
Pre Defined File	This box is used to specify a file containing predefined user definitions. The Browse Button is clicked to specify a file. The user definitions in the specified file are displayed in the user definition list by default.

The format of the predefined file is given below.

Section	Keyword	Details
UserDef	Count	Specifies the number of user definitions.
UserDef#		Specifies the contents of the user definitions. Set “#” to a value between 1 and the value that you set for <i>UserDef</i> .
	Name	Specifies the user definition name.
	Size	Specifies the user definition size in bytes.
	MemberCount	Specifies the number of members.
	Member#	Specifies the member information. Set “#” to a value between 1 and the value that you set for <i>MemberCount</i> in <i>UserDef#</i> .

The following format is used for the above member information. Fields are delineated by commas.

Field No.	Field name	Details
1	Name	Specifies the member name.
2	Type	Specifies the data type of the member. You can set any of the following text strings. BIT BYTE WORD DWORD STRUCT
3	Unit	Number of data elements
4	ChildDefineName	If you set the data type to STRUCT, specify the name of the user definition to use. For other data types, omit this field.

Example:

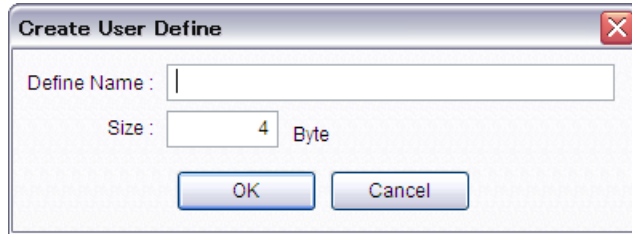
```
[UserDef]
Count=2
```

```
[UserDef1]
Name=SampleDefine
Size=10
MemberCount=2
Member1=Data1, WORD, 1
Member2=Data2, DWORD, 2
```

```
[UserDef2]
Name=SampleDefine2
Size=12
MemberCount=2
Member1=Data1, WORD, 1
Member2=Data2, STRUCT, 1, SampleDefine
```

2.5.5.2 Creating and Deleting User Definitions

To create a new user definition, click the **New** Button next to the user definition name. The Create User Define Dialog Box is shown below.



The following settings are made in the Create User Define Dialog Box.

Item	Function
Define Name	This box is used to specify the definition name. A maximum of 48 characters can be entered.
Size	This box is used to specify the overall size of the user definition in bytes. The size can be set to between 1 and 1,444 bytes. However, the value must be a multiple of the default data type that is specified in operation settings.

The **OK** Button is clicked to add the definition name to the user definition name list and register the following member. This member is always displayed as the last user definition member. It cannot be edited or deleted.

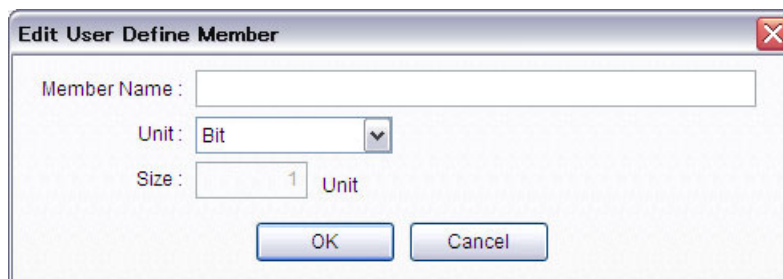
Member Name	Remained Address
Unit	BYTE
Size	Overall user definition size – Registered member size (BYTE)

A user definition is deleted if the user definition is selected in the user definition name list and the **Delete** Button is clicked. The **OK** Button is clicked to delete the user definition after confirmation. Predefined user definitions cannot be deleted.

Click the **Create Define File** Button to save a user definition that you have created in a file.

2.5.5.3 Creating, Editing, and Deleting User Definition Members

The **Add** Button at the right side of the tab page is clicked to add a user definition member. The Edit User Define Member Dialog Box is shown below.



The following settings are made in the Create User Define Dialog Box.

Item	Function
Member Name	This box is used to specify the user definition member name. A maximum of 48 characters can be entered.
Unit	This box is used to specify the data type to use for the member. The data types that can be specified are given below. <ul style="list-style-type: none"> • Bit • BYTE • WORD • DWORD
Size	This box is used to specify the data size to use for the member in increments of the size of the data type. This can be set to any value at which the total size for all members does not exceed the total size of the user definition.

The **OK** Button is clicked to add the member to the user definition information. Members are added as according to the position of the cursor when the **Add** Button is clicked. When a member is added, edited, or deleted, the size of the remaining addresses (*Remained Address*) is automatically updated as the last member. If the size is not a multiple of the default data type that is set in user definition options, a warning message is displayed at the bottom of the User Define Tab Page.

Cursor selection	Position of addition
Member is not selected.	The member is added as the last member.
Member is selected.	The member is added after the selected member.

A user definition member is selected and then the **Edit** Button at the right side of the tab page is clicked to edit the selected member. A similar dialog box as that for adding a member is displayed. The **OK** Button is clicked after editing the member to update the user definition information. The *Remained Address* member, which is the last member, cannot be edited.

A user definition member is selected and then the **Delete** Button at the right side of the tab page is clicked to delete the selected member. The **OK** Button is clicked to delete the member after confirmation. The *Remained Address* member, which is the last member, cannot be deleted.

To change the position where a member is displayed, the member is selected and the **Up** Button or the **Down** Button at the right side of the tab page is clicked. The *Remained Address* member, which is the last member, cannot be moved.

2.5.5.4 Uploading and Downloading User Definitions

The **Upload** Button is clicked to upload as a user definition a user structure that is defined in the SYSMAC Gateway. The **Download** Button is clicked to download a user definition as a SYSMAC Gateway user structure. Uploading and downloading are possible only if the configuration device is set to *Local: SYSMAC Gateway*.

Data is assigned as given below when uploading or downloading.

- Upload

SYSMAC Gateway	Tool
Struct Name	The user definition name.
Struct Member Name	The user definition member name.
Member Data Type	BOOL → Bit 1-channel data → WORD 2-channel data → DWORD 4-channel data → 2 DWORD elements Other → An error occurs and the structure is not uploaded.

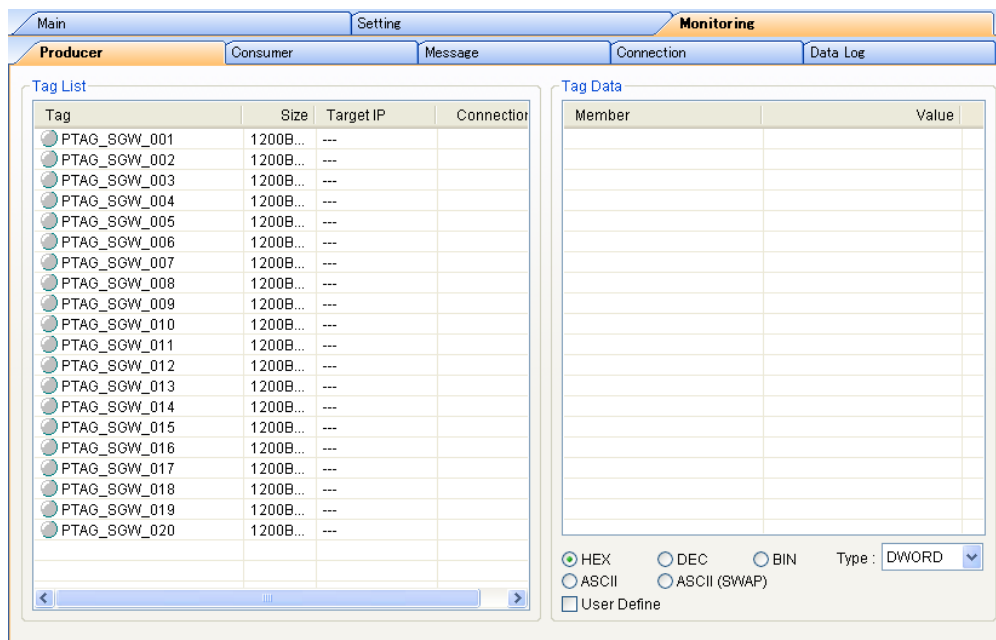
- Download

Tool	SYSMAC Gateway
User Define Name	The name of the structure.
User Define Member Name	The name of the structure member.
Member Data Type	Bit → BOOL WORD → WORD DWORD → DWORD

If the number of members or the number of nesting levels exceeds the number that is supported by the SYSMAC Gateway, the download is not performed.

2.6 Monitoring Tab Page

The Monitoring Tab Page is shown below.



The following operations can be performed from the Monitoring Tab Page.










Tab label	Function
Producer	This tab page is used to monitor produce tags.
Consumer	This tab page is used to monitor consume tags.
Message	This tab page is used to monitor message tags.
Connection	This tab page is used to monitor connection information on produce tags and consume tags.
Data Log	This tab page is used to control data logging and to display data logs.

If devices or device versions that are not supported are connected, “---” will be displayed for the monitored data.

2.6.1 Producer Tab Page

2.6.1.1 Monitoring Tag Status

The Producer Tab Page is used to monitor the following data for all produce tags.

Tab label	Function						
Status	<p>The following icons are displayed next to the tag name to indicate the connection status.</p> <table border="1"><tbody><tr><td></td><td>Offline</td></tr><tr><td></td><td>Operation is normal.</td></tr><tr><td></td><td>The connection is not established or an error occurred.</td></tr></tbody></table>		Offline		Operation is normal.		The connection is not established or an error occurred.
	Offline						
	Operation is normal.						
	The connection is not established or an error occurred.						
Size	This column displays the tag size.						
Target IP	This column displays the IP address of the target. The multicast addresses are displayed for a multicast connection.						
Connection ID	This column displays the connection ID.						

The cycle for checking the status of the tags is 500 ms.

2.6.1.2 Monitoring Tag Data

The data of the tag that is selected with the cursor in the Tag List Area is monitored. The monitoring cycle for tag data is the same as the cycle for checking the status of the tags, i.e., 500 ms.

You can select one of the following display formats for the tag data. If the display format is HEX, DEC, or BIN, the display type can be selected from BYTE, WORD, or DWORD (default).

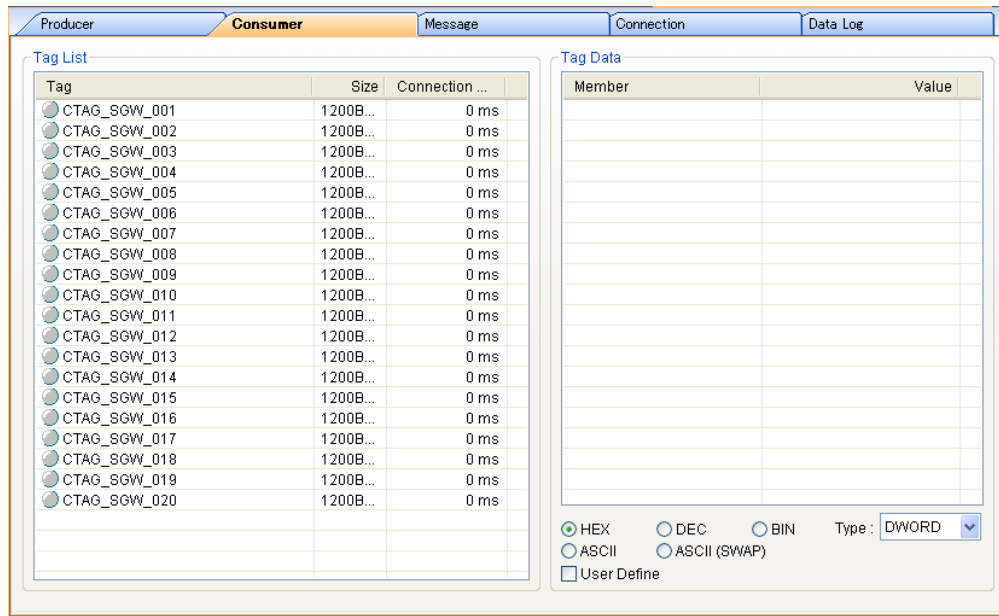
Display format	Description
HEX	This option displays the tag data in hexadecimal in units of the specified data type. Examples for data of 0x12345678 Display type: BYTE 78 56 34 12 Display type: WORD 5678 1234 Display type: DWORD 12345678
DEC	This option displays the tag data in decimal in units of the specified data type. Examples for data of 0x12345678 Display type: BYTE 120 86 52 18 Display type: WORD 22136 4660 Display type: DWORD 305419896
BIN	This option displays the tag data in binary in units of the specified data type. Examples for data of 0x01020304 Display type: BYTE 00000100 00000011 00000010 00000001 Display type: WORD 0000001100000100 0000000100000010 Display type: DWORD 00000001000000100000001100000100
ASCII	This option displays tag data by byte in ASCII. Example for data of 0x31323334 4321
ASCII (SWAP)	This option swaps the bytes in tag data to display the data by WORD in ASCII. Example for data of 0x31323334 3412

To use user definitions for the tag data display format, select the User Define Check Box. Data is displayed in the user-defined format that is specified for each tag. The display format for each configuration member is shown below.

Configuration member data type	Display format
Bit	The data is displayed as TRUE or FALSE.
Not bit	The tag data is displayed with the display format that is shown above for each unit that is defined in the user definitions.










2.6.2 Consumer Tab Page

The Consumer Tab Page is used to set monitor tags. The tab page is shown below.



2.6.2.1 Monitoring Tag Status

The Consumer Tab Page is used to monitor the following data for all consume tags.

Tab label	Function						
Status	<p>The following icons are displayed next to the tag name to indicate the connection status.</p> <table border="1"> <tr> <td></td> <td>Offline</td> </tr> <tr> <td></td> <td>Operation is normal.</td> </tr> <tr> <td></td> <td>The connection is not established or an error occurred.</td> </tr> </table>		Offline		Operation is normal.		The connection is not established or an error occurred.
	Offline						
	Operation is normal.						
	The connection is not established or an error occurred.						
Size	This column displays the tag size.						
Connection Time	This column displays the total connection time.						

The cycle for checking the status of the tags is 500 ms.

2.6.2.2 Monitoring Tag Data

The data of the tag that is selected with the cursor in the Tag List Area is monitored. The monitoring cycle for tag data is the same as the cycle for checking the status of the tags, i.e., 500 ms.

You can select one of the following display formats for the tag data. If the display format is HEX, DEC, or BIN, the display type can be selected from BYTE, WORD, or DWORD (default).

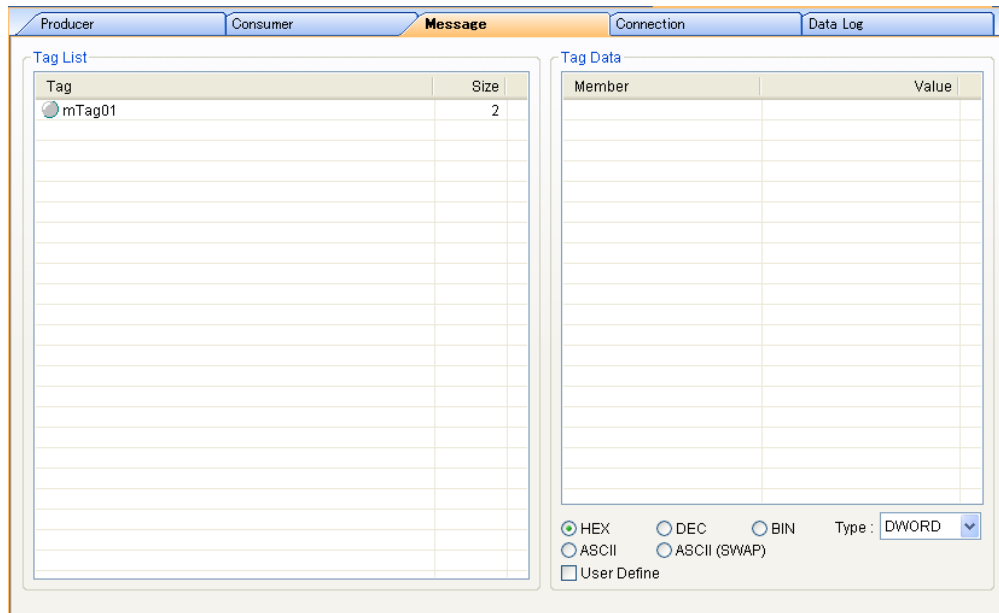
Display format	Description
HEX	This option displays the tag data in hexadecimal in units of the specified data type. Examples for data of 0x12345678 Display type: BYTE 78 56 34 12 Display type: WORD 5678 1234 Display type: DWORD 12345678
DEC	This option displays the tag data in decimal in units of the specified data type. Examples for data of 0x12345678 Display type: BYTE 120 86 52 18 Display type: WORD 22136 4660 Display type: DWORD 305419896
BIN	This option displays the tag data in binary in units of the specified data type. Examples for data of 0x01020304 Display type: BYTE 00000100 00000011 00000010 00000001 Display type: WORD 0000001100000100 0000000100000010 Display type: DWORD 00000001000000100000001100000100
ASCII	This option displays tag data by byte in ASCII. Example for data of 0x31323334 4321
ASCII (SWAP)	This option swaps the bytes in tag data to display the data by WORD in ASCII. Example for data of 0x31323334 3412

To use user definitions for the tag data display format, select the User Define Check Box. Data is displayed in the user-defined format that is specified for each tag. The display format for each configuration member is shown below.

Configuration member data type	Display format
Bit	The data is displayed as TRUE or FALSE
Not bit	The tag data is displayed with the display format that is shown above for each unit that is defined in the user definitions.

2.6.3 Message Tab Page

The Message Tab Page is used to monitor message tags. The tab page is shown below.



2.6.3.1 Monitoring Tag Status

The Message Tab Page is used to monitor the following data for all message tags.

Tab label	Function						
Status	<p>The following icons are displayed next to the tag name to indicate the connection status.</p> <table border="1"> <tr> <td></td> <td>Offline</td> </tr> <tr> <td></td> <td>Operation is normal.</td> </tr> <tr> <td></td> <td>The connection is not established or an error occurred.</td> </tr> </table>		Offline		Operation is normal.		The connection is not established or an error occurred.
	Offline						
	Operation is normal.						
	The connection is not established or an error occurred.						
Size	This column displays the tag size.						

The cycle for checking the status of the tags is 500 ms.

2.6.3.2 Monitoring Tag Data

The data of the tag that is selected with the cursor in the Tag List Area is monitored. The monitoring cycle for tag data is the same as the cycle for checking the status of the tags, i.e., 500 ms.

You can select one of the following display formats for the tag data. If the display format is HEX, DEC, or BIN, the display type can be selected from BYTE, WORD, or DWORD (default).

Display format	Description
HEX	This option displays the tag data in hexadecimal in units of the specified data type. Examples for data of 0x12345678 Display type: BYTE 78 56 34 12 Display type: WORD 5678 1234 Display type: DWORD 12345678
DEC	This option displays the tag data in decimal in units of the specified data type. Examples for data of 0x12345678 Display type: BYTE 120 86 52 18 Display type: WORD 22136 4660 Display type: DWORD 305419896
BIN	This option displays the tag data in binary in units of the specified data type. Examples for data of 0x01020304 Display type: BYTE 00000100 00000011 00000010 00000001 Display type: WORD 0000001100000100 0000000100000010 Display type: DWORD 00000001000000100000001100000100
ASCII	This option displays tag data by byte in ASCII. Example for data of 0x31323334 4321
ASCII (SWAP)	This option swaps the bytes in tag data to display the data by WORD in ASCII. Example for data of 0x31323334 3412

To use user definitions for the tag data display format, select the User Define Check Box. Data is displayed in the user-defined format that is specified for each tag. The display format for each configuration member is shown below.

Configuration member data type	Display format
Bit	The data is displayed as TRUE or FALSE
Not bit	The tag data is displayed with the display format that is shown above for each unit that is defined in the user definitions.

2.6.4 Connection Tab Page










The Connection Tab Page is used to monitor the connection status of consume tags and produce tags. The tab page is shown below. It is used to monitor only connections that are specified as being connection-type class-1 connections.

The screenshot displays the Connection Tab Page of the Ethernet/IP Monitor Tool. The interface features five tabs: Producer, Consumer, Message, Connection (selected), and Data Log. The main area is divided into two panes: 'Producer List' on the left and 'Consumer List' on the right. The 'Producer List' pane shows two entries: 'PTAG_SGW_001' (selected) and 'PTAG_SGW_002'. 'PTAG_SGW_001' details include: Size: 1200Byte, Connection Time: 316143 ms, Disconnection Time: 0 ms, Connection Count: 1, Connected Consumer: 1, and a 'Related Consumer List' containing 'RemoteDev1' with IP Address: 192.168.250.3, Connected Time: 316147 ms, Disconnected Time: 0 ms, Destination IP Address: 239.192.1.169, and various RPI, Timeout, and API values. 'PTAG_SGW_002' details include: Size: 1200Byte, Connection Time: 316265 ms. The 'Consumer List' pane shows two entries: 'CTAG_SGW_001' (selected) and 'CTAG_SGW_002'. 'CTAG_SGW_001' details include: Size: 1200Byte, Connection Time: 316359 ms, Disconnection Time: 0 ms, Destination IP Address: 192.168.250.3, and a 'Related Producer List' containing 'PTAG_SGW_001' with Remote IP Address: 192.168.250.3, and various RPI, Timeout, and API values. 'CTAG_SGW_002' details include: Size: 1200Byte, Connection Time: 316365 ms, Disconnection Time: 0 ms, Destination IP Address: 192.168.250.3, and a 'Related Producer List' containing 'PTAG_SGW_002'.

The cycle for checking the status of the connections is 500 ms.










2.6.4.1 Producer List

The Producer List Area is used to monitor the following items for each tag. Inactive tags are not monitored.

Item	Details						
Tag Name	<p>The name of the produce tag is displayed.</p> <p>The following icons are displayed next to the tag name to indicate the connection status.</p> <table border="1"> <tr> <td></td> <td>Offline</td> </tr> <tr> <td></td> <td>Operation is normal.</td> </tr> <tr> <td></td> <td>The connection is not established or an error occurred.</td> </tr> </table>		Offline		Operation is normal.		The connection is not established or an error occurred.
	Offline						
	Operation is normal.						
	The connection is not established or an error occurred.						
Size	This column displays the tag size. The size is displayed in bytes.						
Connection Time	The total connected time for the tag is displayed. The time is displayed in milliseconds.						
Disconnection Time	The total disconnected time for the tag is displayed. The time is displayed in milliseconds.						
Connection Count	This column displays the connection count.						
Connected Consumer	The number of consumers connected to the tag is displayed.						
Related Consumer List	The following information on connected consumers is displayed.						
Consumer Name	The name of the consumer is displayed. The name is displayed if the device at the IP address is registered on the Setting Tab Page. The name is displayed as <i>Device xx</i> (where xx is the device number) if it is not registered.						
IP Address	The IP address of the consumer is displayed.						
Connection Time	The total connected time for the consumer is displayed. The time is displayed in milliseconds.						
Disconnection Time	The total disconnected time for the consumer is displayed. The time is displayed in milliseconds.						
Destination IP Address	The destination IP address is displayed. The destination multicast addresses are displayed if it is a multicast connection.						
O->T RPI	The O->T RPI is displayed. The time is displayed in milliseconds.						
T->O RPI	The T->O RPI is displayed. The time is displayed in milliseconds.						
O->T Timeout	The O->T timeout time is displayed. The time is displayed in milliseconds.						
T->O Timeout	The T->O timeout time is displayed. The time is displayed in milliseconds.						
O->T API	The O->T API is displayed. The time is displayed in milliseconds.						
T->O API	The T->O API is displayed. The time is displayed in milliseconds.						
O->T Connection ID	The O->T connection ID is displayed as a hexadecimal value.						
T->O Connection ID	The T->O connection ID is displayed as a hexadecimal value.						

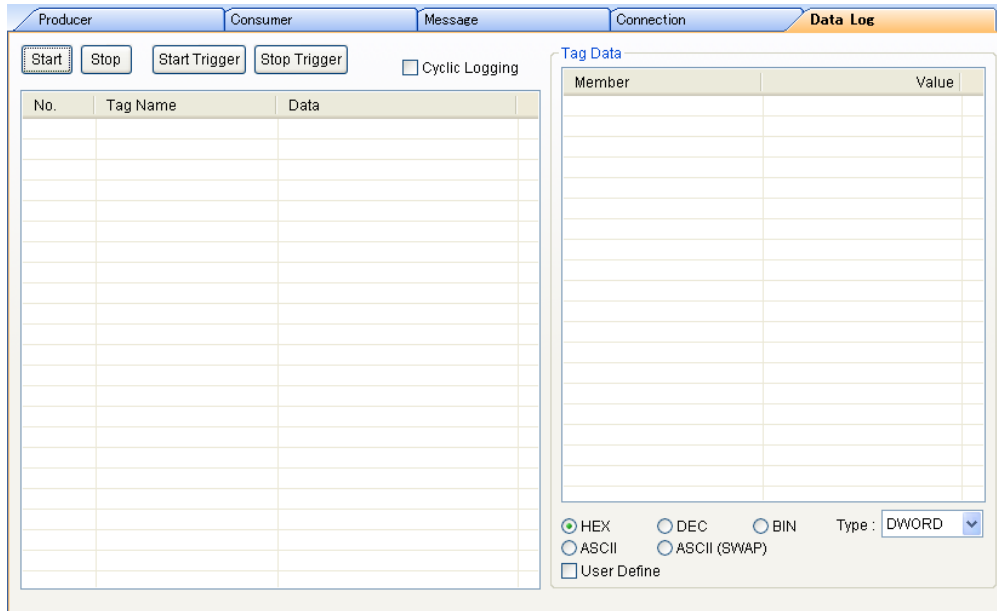
2.6.4.2 Consumer List

The Consumer List Area is used to monitor the following items for each tag. Inactive tags are not monitored.

Item	Details						
Tag Name	<p>The name of the consume tag is displayed.</p> <p>The following icons are displayed next to the tag name to indicate the connection status.</p> <table border="1"> <tr> <td></td> <td>Offline</td> </tr> <tr> <td></td> <td>Operation is normal.</td> </tr> <tr> <td></td> <td>The connection is not established or an error occurred.</td> </tr> </table>		Offline		Operation is normal.		The connection is not established or an error occurred.
	Offline						
	Operation is normal.						
	The connection is not established or an error occurred.						
Size	This column displays the tag size. The size is displayed in bytes.						
Connection Time	The total connected time for the tag is displayed. The time is displayed in milliseconds.						
Disconnection Time	The total disconnected time for the tag is displayed. The time is displayed in milliseconds.						
Destination IP Address	The destination IP address is displayed. The destination addresses are displayed if it is a multicast connection.						
Related Producer List	The following information on related producers is displayed (basically 1).						
Produce Tag Name	The related producer tag name is displayed.						
Remote IP Address	The IP Address of the related producer is displayed.						
O->T RPI	The O->T RPI is displayed. The time is displayed in milliseconds.						
T->O RPI	The T->O RPI is displayed. The time is displayed in milliseconds.						
O->T Timeout	The O->T timeout time is displayed. The time is displayed in milliseconds.						
T->O Timeout	The T->O timeout time is displayed. The time is displayed in milliseconds.						
O->T API	The O->T API is displayed. The time is displayed in milliseconds.						
T->O API	The T->O API is displayed. The time is displayed in milliseconds.						
O->T Connection ID	The O->T connection ID is displayed as a hexadecimal value.						
T->O Connection ID	The T->O connection ID is displayed as a hexadecimal value.						

2.6.5 Data Log Tab

The Data Log Tab Page is used to perform logging for the tags that are specified as trigger conditions in the data logging settings. The tab page is shown below.



Logging is performed for operation of the following buttons on the Data Log Tab Page. The maximum size of the data that is logged is the buffer size that is specified in the data logging settings.

Item	Function
Start	The Start Button is clicked to start logging the specified tag. The Stop Button is clicked to stop logging the specified tag. If the <i>Cyclic</i> Check Box is selected, tag data is obtained on the specified cycle.
Stop	This button stops logging and displays the logging data in a list.
Start Trigger	This button monitors whether the trigger condition is met when the button is clicked, and starts logging the specified tag after the trigger condition is met. Logging stops when the logging buffer is full. This button cannot be used if the <i>Cyclic</i> Check Box is selected.
Stop Trigger	Logging of the specified tag starts when this button is clicked and logging stops when the specified trigger condition is met. This button cannot be used if the <i>Cyclic</i> Check Box is selected.
Cyclic	This check box is used to perform logging of the specified tags at the logging cycle that was specified in the data logging settings. Logging using a trigger condition cannot be performed if the <i>Cyclic Logging</i> Check Box is selected.

The following information is shown in the logging results.

Item	Function
No.	The logging data number is displayed starting at 1.
Tag Name	This column displays the tag names.
Data	This column displays the tag data in a hexadecimal byte string.

Detailed tag data can be displayed in a similar manner by selecting the tag on the Producer Tab Page or the Consumer Tab Page.

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