Machine Automation Controller NJ/NX-series

EtherNet/IP™ Connection Guide

OMRON Corporation

Laser Displacement Sensor
(ZP-EIP)

Z501-E1-01

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Table of Contents

1. Related Manuals

To ensure system safety, make sure to always read and follow the information provided in all Safety Precautions and Precautions for Safe Use in the manuals for each device which is used in the system.

Cat. No.	Model	Manual name
W500	NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	NJ Series CPU Unit User's Manual (Hardware)
W501	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	NJ/NX Series CPU Unit User's Manual (Software)
W506	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□	NJ/NX Series CPU Unit Built-in EtherNet/IP™ Port User's Manual
W504	SYSMAC-SE2□□□	Sysmac Studio Version 1 Operation Manual
0969584-7	W4S1-05□	Switching Hub W4S1-series User’s Manual
Z495	ZP-L□□□	Laser Displacement Sensor User's Manual
Z496	ZP-EIP	EtherNet／IP™ Communications Unit User's Manual

2. Terms and Definitions

Term	Explanation and Definition
Node	A controller and a device are connected to an EtherNet/IP network via EtherNet/IP ports. EtherNet/IP recognizes each EtherNet/IP port connected to the network as one node. When a device with two EtherNet/IP ports is connected to the EtherNet/IP network, EtherNet/IP recognizes this device as two nodes. EtherNet/IP achieves the communications between controllers or the communications between a controller and a device by exchanging data between these nodes connected to the network.
Tag	A minimum unit of the data that is exchanged on the EtherNet/IP network is called a tag. The tag is defined as a network variable or as a physical address, and it is assigned to the memory area of each device.
Tag set	In the EtherNet/IP network, a data unit that consists of two or more tags can be exchanged. The data unit consisting of two or more tags for the data exchange is called a tag set. Up to eight tags can be configured per tag set for OMRON controllers.
Tag data link	In EtherNet/IP, the tag and tag set can be exchanged cyclically between nodes without using a user program. This standard feature on EtherNet/IP is called a tag data link.
Connection	A connection is used to exchange data as a unit within which data concurrency is maintained. The connection consists of tags or tag sets. Creating the concurrent tag data link between the specified nodes is called a “connection establishment”. When the connection is established, the tags or tag sets that configure the connection are exchanged between the specified nodes concurrently. There are two ways to specify the connection: one is to specify a tag set name (tag name), and the other is to specify an instance number of Assembly Object. In Sysmac Studio, the connection is set by specifying the instance number.
Connection type	There are two kinds of connection types for the tag data link connection. One is a multi-cast connection, and the other is a unicast (point-to-point) connection. The multi-cast connection sends an output tag set in one packet to more than one node. The unicast connection separately sends one output tag set to each node. Therefore, multi-cast connections can decrease the communications load if one output tag set is sent to more than one node.

Term	Explanation and Definition
Originator and Target	To operate tag data links, one node requests the opening of a communications line called a “connection”. The node that requests to open the connection is called an “originator”, and the node that receives the request is called a “target”. Each communication data is called an “originator variable” and a “target variable”. In Sysmac Studio, the instance number is specified in the target variable.
Tag data link parameter	A tag data link parameter is the setting data to operate tag data links. It includes the data to set tags, tag sets, and connections.
EDS file	A file that describes the number of I/O points for the EtherNet/IP device and the parameters that can be set via EtherNet/IP.
RPI	This is an abbreviation for Requested Packet Interval. RPI indicates the data I/O refresh cycle that is set for each connection between the originator and the target.

3. Precautions

(1) Understand the specifications of devices which are used in the system. Allow some margin for ratings and performance. Provide safety measures, such as installing a safety circuit, in order to ensure safety and minimize the risk of abnormal occurrence.

(2) To ensure system safety, make sure to always read and follow the information provided in all Safety Precautions and Precautions for Safe Use in the manuals for each device which is used in the system.

(3) The user is encouraged to confirm the standards and regulations that the system must conform to.

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(5) The information contained in this document is current as of December 2024.
It is subject to change for improvement without notice.

The following notations are used in this document.

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.
⚠ Caution	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.

Precautions for Correct Use

Precautions on what to do and what not to do to ensure proper operation and performance.

Additional Information

Additional information to read as required.
This information is provided to increase understanding or make operation easier.

Symbol

	The filled circle symbol indicates operations that you must do. The specific operation is shown in the circle and explained in the text. This example shows a general precaution for something that you must do.

4. Overview

This document describes the procedures for connecting ZP-series EtherNet/IP Communication Unit (hereinafter referred to as Communication Unit) to NJ/NX Series Machine Automation Controller (hereinafter referred to as Controller) via EtherNet/IP, both produced by OMRON Corporation (hereinafter referred to as OMRON), and for checking their connections. Refer to *Section 6. EtherNet/IP Settings* and *Section 7. EtherNet/IP Connection Procedure* to understand setting methods and key points to operate EtherNet/IP tag data links.

5. Applicable Devices and Device Configuration

5.1. Applicable Devices

The applicable devices are as follows:

Manufacturer	Name	Model
OMRON	NJ/NX-series CPU Unit	NX701-□□□□ NX502-□□□□ NX102-□□□□ NX1P2-□□□□ NJ501-□□□□ NJ301-□□□□ NJ101-□□□□
OMRON	ZP-series EtherNet/IP Communication Unit	ZP-EIP

Precautions for Correct Use

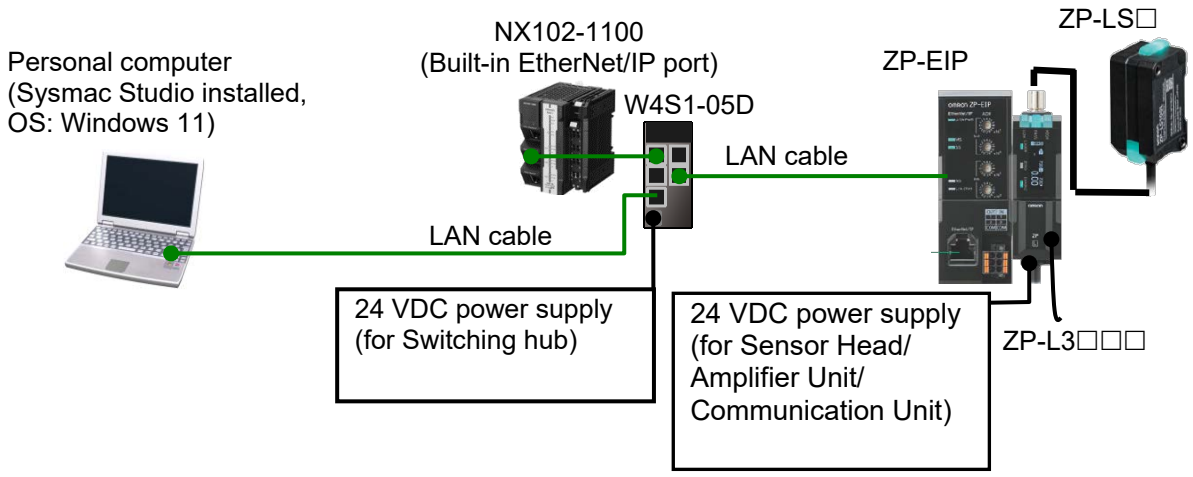
In this document, the devices with models and versions listed in *5.2. Device Configuration* are used as examples of applicable devices to describe the procedures for connecting the devices and checking their connections.
You cannot use devices with versions lower than the versions listed in *5.2.*
To use the above devices with models not listed in *5.2.* or versions higher than those listed in *5.2.*, check the differences in the specifications by referring to the manuals before operating the devices.

Additional Information

This document describes the procedures for establishing the network connections. It does not provide information on operation, installation, wiring method, device functionality, or device operation, which is not related to the connection procedures. Refer to the manuals or contact your OMRON representative.

5.2. Device Configuration

The hardware components to reproduce the connection procedures in this document are as follows:



Manufacturer	Name	Model	Version
OMRON	NX-series CPU Unit (Built-in EtherNet/IP port)	NX102-1100	Ver. 1.48
OMRON	Switching hub	W4S1-05D	Ver. 1.0
-	24 VDC power supply (for Switching hub)	-	
OMRON	Sysmac Studio	SYSMAC-SE2□□□	Ver. 1.54
-	Personal computer (OS: Windows 11)	-	
-	LAN cable (STP (shielded, twisted-pair) cable of Ethernet category 5 or higher)	-	
OMRON	EtherNetIP Communication Unit	ZP-EIP	Ver. 1000
OMRON	Sensor Head	ZP-LS□	
OMRON	Amplifier Unit	ZP-L3□□□	
OMRON	10 to 30 VDC power supply (for Sensor Head/Amplifier Unit/Communication Unit)	S8VK-S□□□□□ S8VK-G□□□□□	

Precautions for Correct Use

Update Sysmac Studio to the version specified in this section or to a higher version.
If you use a version higher than the one specified, the procedures and related screenshots described in *Section 7.* and subsequent sections may not be applicable. In that case, use the equivalent procedures described in this document by referring to the *Sysmac Studio Version 1 Operation Manual* (Cat. No. W504).

Additional Information

For specifications of 24 VDC power supply available for Switching hub, refer to the *Ethernet Switching Hub W4S1-series User's Manual* (Cat. No. 0969584-7).

Additional Information

For specifications of 24 VDC power supply available for Sensor Head/Amplifier Unit/Communication Unit, refer to the *Laser Displacement Sensor ZP series User's Manual* (Cat. No. Z495).

6. EtherNet/IP Settings

This section describes the setting contents of parameters, global variables, tag sets, and tag data link table that are all defined in this document.

6.1. Parameters

The parameters that are set in this document are shown below.

6.1.1. Communication Settings of Personal Computer

The settings are configured using Ethernet communications with Personal Computer for settings. The parameters required for connecting Personal computer for setting and ZP-EIP using Ethernet communications are shown below.

Item	Personal computer for setting	ZP-EIP
IP address	192.168.250.100	192.168.250.1 (Default)
Subnet mask	255.255.255.0	255.255.255.0

6.1.2. EtherNet/IP Communications Settings

The parameters required for connecting Communication Unit via EtherNet/IP are shown below.

Item	Controller	ZP-EIP	Remarks
IP address	192.168.250.2	192.168.250.1 (Default)	Using Sysmac Studio.
Subnet mask	255.255.255.0	255.255.255.0	Using Sysmac Studio.

6.2. Data Types to Use for Tag Data Links

The following data types are used for tag data links to communicate with the counterpart device.

■Defining a data type for signal access (Union)

Data type to access control signals and status signals

Data type name	Data type
EIP_Flg	UNION
F	BOOL[16]
W	WORD

■Defining a data type for command area access (Structure)

Data type to access the command area

Data type name	Data type	Counterpart device data
STRUCT_EIPOUTPUT	STRUCT	-
REQUEST_INPUT00	EIP_Flg	External input 1
REQUEST_INPUT01	EIP_Flg	External input 2
REQUEST_INPUT02	EIP_Flg	External input 3
REQUEST_INPUT03	EIP_Flg	External input 4
RESERVE_OUT00	BOOL[16]	Reserved
RESERVE_OUT01	BOOL[16]	Reserved
CONTROL_INPUT	EIP_Flg	Control input
CMD_DATA	BYTE[10]	Command input

■Defining a data type for response and output area access (Structure)

Data type to access the response and output areas

Data type name	Data type	Counterpart device data
STRUCT_EIPINPUT	STRUCT	-
UNIT_STATUS	EIP_Flg	Communication Unit Status
ERROR_STATUS	EIP_Flg	Sensor Error Status
WARNING_STATUS	EIP_Flg	Sensor Warning Status
RESERVE_OUT00	BOOL[16]	Reserved
RESERVE_OUT01	BOOL[16]	Reserved
ENABLE_STATUS	EIP_Flg	Enable Status
RESERVE_OUT02	BOOL[16]	Reserved
RESERVE_OUT03	BOOL[16]	Reserved
RESERVE_OUT04	BOOL[16]	Reserved
HIGH_STATUS	EIP_Flg	HIGH Status
LOW_STATUS	EIP_Flg	LOW Status
PASS_STATUS	EIP_Flg	PASS Status
RESERVE_OUT05	BOOL[16]	Reserved
RESERVE_OUT06	BOOL[16]	Reserved
SIGNAL_STATUS00	EIP_Flg	Laser OFF
SIGNAL_STATUS01	EIP_Flg	Zero Reset
SIGNAL_STATUS02	EIP_Flg	Timing/Bank A
SIGNAL_STATUS03	EIP_Flg	Reset/Bank B
SIGNAL_STATUS04	EIP_Flg	Sensor Busy Status
RESERVE_OUT07	BOOL[16]	Reserved
RESERVE_OUT08	BOOL[16]	Reserved
RESERVE_OUT09	BOOL[16]	Reserved
RESERVE_OUT10	BOOL[16]	Reserved
RESERVE_OUT11	BOOL[16]	Reserved
OUT_DATA	DINT[20]	Output Data
TIME_DATA	WORD[4]	Time Stamp
CONDITION_MONITOR	DINT[16]	Channel number for operation status monitoring
RESERVE_OUT12	DINT[16]	Reserved (for operation status monitoring)
CMD	BYTE[12]	Command Response

Additional Information

With Sysmac Studio, two methods can be used to specify an array for a data type. After specifying, (1) is converted to (2), and the data type is always displayed as (2).

(1) BOOL[16] / (2) ARRAY[0..15] OF BOOL

In this document, the data type is simplified by displaying BOOL[16].

(The example above means a BOOL data type with sixteen array elements.)

6.3. Global Variables

The Controller treats the data in tag data links as global variables. The content of global variable settings is shown below.

■Output area (Controller to ZP-EIP)

Variable	Data type	Data size
EIP_OUTPUT	STRUCT_EIPOUTPUT	24 bytes

Counterpart device data	Variable name	Base type
External Input Request 1 (Data type: EIP_Flag)	EIP_OUTPUT.REQUEST_INPUT00.F *1	BOOL[16]
	EIP_OUTPUT.REQUEST_INPUT00.W	WORD
External Input Request 2 (Data type: EIP_Flag)	EIP_OUTPUT.REQUEST_INPUT01.F *1	BOOL[16]
	EIP_OUTPUT.REQUEST_INPUT01.W	WORD
External Input Request 3 (Data type: EIP_Flag)	EIP_OUTPUT.REQUEST_INPUT02.F *1	BOOL[16]
	EIP_OUTPUT.REQUEST_INPUT02.W	WORD
External Input Request 4 (Data type: EIP_Flag)	EIP_OUTPUT.REQUEST_INPUT03.F *1	BOOL[16]
	EIP_OUTPUT.REQUEST_INPUT03.W	WORD
Extended area 1	EIP_OUTPUT.RESERVE_OUT00	BOOL[16]
Extended area 2	EIP_OUTPUT.RESERVE_OUT01	BOOL[16]
Control input (Data type: EIP_Flag)	EIP_OUTPUT.CONTROL_INPUT.F *2	BOOL[16]
	EIP_OUTPUT.CONTROL_INPUT.W	WORD
Command input	EIP_OUTPUT.CMD_DATA *3	BYTE[10]

*1: Assignment of External Input Request

Variable: EIP_OUTPUT.REQUEST_INPUT00.F

7	6	5	4	3	2	1	0
CH08	CH07	CH06	CH05	CH04	CH03	CH02	CH01
15	14	13	12	11	10	9	8
CH16	CH15	CH14	CH13	CH12	CH11	CH10	CH09

*2: Assignment of Control input

Variable: EIP_OUTPUT.CONTROL_INPUT.F

7	6	5	4	3	2	1	0
							NWU Error Clear
15	14	13	12	11	10	9	8
Error Clear	Warning Clear						Command Exe

NWUErrorClear : Clear Communication Unit Error
CommandExe : Execute Command
WarningClear : Clear Amplifier Warning
ErrorClear : Clear Amplifier Error

■Input area (ZP-EIP to Controller)

Variable	Data type	Data size
EIP_INPUT	STRUCT_EIPINPUT	276 bytes

Counterpart device data	Variable name	Base type
Communication Unit Status	EIP_INPUT.UNIT_STATUS.F *1	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.UNIT_STATUS.W	WORD
Sensor Error Status	EIP_INPUT.ERROR_STATUS.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.ERROR_STATUS.W	WORD
Sensor Warning Status	EIP_INPUT.WARNING_STATUS.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.WARNING_STATUS.W	WORD
Reserved	EIP_INPUT.RESERVE_OUT00	BOOL[16]
Reserved	EIP_INPUT.RESERVE_OUT01	BOOL[16]
Sensor Enable	EIPInput.CommandCodeEcho	DWORD
(Data type: EIP_Flag)	EIPInput.ResponseCode	UDINT
Reserved	EIP_INPUT.RESERVE_OUT02	BOOL[16]
Reserved	EIP_INPUT.RESERVE_OUT03	BOOL[16]
Reserved	EIP_INPUT.RESERVE_OUT04	BOOL[16]
Sensor Output 1 (HIGH)	EIP_INPUT.HIGH_STATUS.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.HIGH_STATUS.W	WORD
Sensor Output 2 (LOW)	EIP_INPUT.LOW_STATUS.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.LOW_STATUS.W	WORD
Sensor Output 3 (PASS)	EIP_INPUT.PASS_STATUS.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.PASS_STATUS.W	WORD
Reserved	EIP_INPUT.RESERVE_OUT05	BOOL[16]
Reserved	EIP_INPUT.RESERVE_OUT06	BOOL[16]
External Input Status 1	EIP_INPUT.SIGNAL_STATUS00.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.SIGNAL_STATUS00.W	WORD
External Input Status 2	EIP_INPUT.SIGNAL_STATUS01.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.SIGNAL_STATUS01.W	WORD
External Input Status 3	EIP_INPUT.SIGNAL_STATUS02.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.SIGNAL_STATUS02.W	WORD
External Input Status 4	EIP_INPUT.SIGNAL_STATUS03.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.SIGNAL_STATUS03.W	WORD
Sensor Busy Status	EIP_INPUT.SIGNAL_STATUS04.F *2	BOOL[16]
(Data type: EIP_Flag)	EIP_INPUT.SIGNAL_STATUS04.W	WORD
Reserved	EIP_INPUT.RESERVE_OUT07	BOOL[16]
Reserved	EIP_INPUT.RESERVE_OUT08	BOOL[16]
Reserved	EIP_INPUT.RESERVE_OUT09	BOOL[16]
Reserved	EIP_INPUT.RESERVE_OUT10	BOOL[16]
Reserved	EIP_INPUT.RESERVE_OUT11	BOOL[16]
Measurement Value	EIP_INPUT.OUT_DATA	DINT[20]
Time Stamp	EIP_INPUT.TIME_DATA	WORD[4]

Measured Real Value CH Data (RV value)	EIP_INPUT.CONDITION_MONITOR	DINT[16]
Reserved	EIP_INPUT.RESERVE_OUT12	DINT[16]
Command	EIP_INPUT.CMD *3	BYTE[12]

*1: Assignment of Communication Unit Status

Variable: EIP_INPUT.UNIT_STATUS.F

7	6	5	4	3	2	1	0
Input Ready Status			Communication Unit External Input IN1	Communication Unit External Input IN2			Communication Unit Error Status
15	14	13	12	11	10	9	8
Overall Error Status	Overall Warning Status		Communication Unit External Output OUT1	Communication Unit External Output OUT2			

*2: Assignment of Sensor Status (Error/Warning), External Input Status, Sensor Output Status (ENABLE/BUSY/HIGH/LOW/PASS)

Variable: EIP_INPUT.ERROR_STATUS.F

7	6	5	4	3	2	1	0
CH08	CH07	CH06	CH05	CH04	CH03	CH02	CH01
15	14	13	12	11	10	9	8
CH16	CH15	CH14	CH13	CH12	CH11	CH10	CH09

*3: Assignment of Command

Variable: EIP_INPUT. CMD

7	6	5	4	3	2	1	0
15	14	13	12	11	10	9	8
							Command Flag
23	22	21	20	19	18	17	16
Response Command							
24 to 71							
Response Data							
72 to 95							
Reserved							

Additional Information

For details on command and response codes, refer to *4 Specifications of I/O Data* of the *ZP-series EtherNet/IP Communication Unit User's Manual* (Cat. No. Z496).

6.4. Tag Sets

The content of tag set settings to operate tag data links is shown below.
The data in the tag sets are assigned with the following OUT No. and IN No.

■Output area (Controller to ZP-EIP)

Originator variable (tag set name)		Data size (byte)
Output_132		24
OUT No.	Global variable name (tag name)	Data size (byte)
1	EIP_OUTPUT	24

■Input area (ZP-EIP to Controller)

Originator variable (tag set name)		Data size (byte)
Input_110		276
IN No.	Global variable name (tag name)	Data size (byte)
1	EIP_INPUT	276

6.5. Tag Data Link Table

The content of tag data link table settings (connection settings) is shown below.
The values marked with red squares are taken from the values defined in the EDS file for ZP-EIP.

Connection Name	Connection I/O Type	RPI (ms)	Timeout Value
default_001	Consume Data From/Produce Data To	1.0	RPI x 512

Connection I/O Type	Input / Output	Target Variable (ZP-EIP set value: instance number)	Size (Byte)	Originator Variable (Tag set name)	Size (Byte)	Connection Type
Full	Input	110	276	Input_110	56	Multi-cast connection
	Output	132	24	Output_132	24	Point to Point connection

Precautions for Correct Use

The RPI and the timeout value are set to 1 ms and RPI x 512 respectively in this document.
When you set connections, change them according to your usage environment.

7. EtherNet/IP Connection Procedure

This section describes the procedures for connecting ZP-series Communication Unit (ZP-EIP) on the EtherNet/IP network. The explanations of procedures for setting up ZP-EIP given in this document are based on the factory default settings. For the initialization, refer to *Section 8. Initialization Method*.

7.1. Work Flow

Take the following steps to operate tag data links by connecting ZP-EIP via EtherNet/IP.

7.2. ZP-EIP Setup	Set up ZP-EIP.
▼	
7.2.1. Hardware Settings	Set the hardware switches on ZP-EIP and connect the cable.
▼	
7.2.2. Parameter Settings	Set the parameters for ZP-EIP.
▽	
7.3. Controller Setup	Set up Controller.
▼	
7.3.1. IP Address Settings	Set the IP address of Controller.
▼	
7.3.2. Target Device Registration	Register the target device.
▼	
7.3.3. Setting the Global Variables	Set the global variables to use for tag data links.
▼	
7.3.4. Tag Registration	Register the tags and the tag sets.
▼	
7.3.5. Setting the Connections	Set the target variables and the originator variables, and then set the connections.
▼	
7.3.6. Transferring the Project Data	Connect online and transfer the connection settings and the project data to Controller.
▽	
7.4. EtherNet/IP Communication Status Check	Confirm that the EtherNet/IP tag data links operate normally.
▼	
7.4.1. Checking the Connection Status	Check the connection status of the EtherNet/IP network.
▼	
7.4.2. Checking the Sent and Received Data	Check that the correct data are sent and received.

7.2. ZP-EIP Setup

Set up ZP-EIP.

7.2.1. Hardware Settings

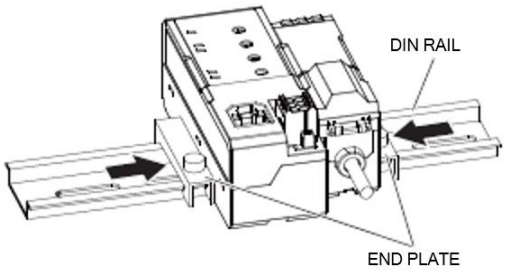
Set the hardware switches on ZP-EIP and connect the cable.

Precautions for Correct Use

Make sure that the power supply is OFF when you set up.

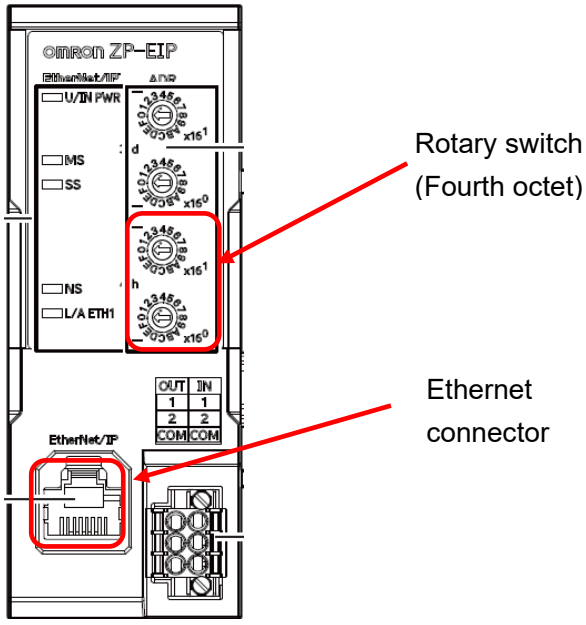
1 Connect Amplifier Unit and ZP-EIP. Make sure that the Amplifier Unit is powered OFF.

*If it is ON, the settings described in the following steps and subsequent procedures may not be applicable.

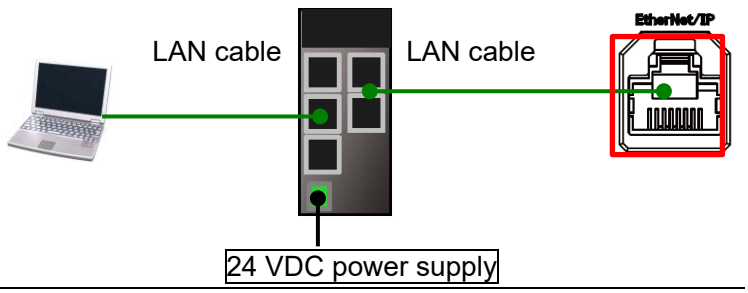


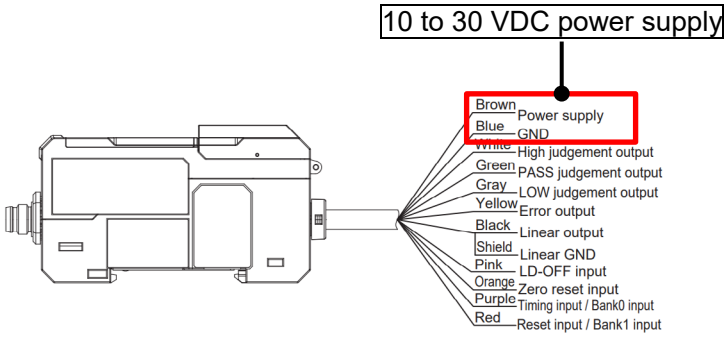
2 Check the positions of hardware switches and connector on ZP-EIP by referring to the figure on the right.

*Check that the fourth octet of the rotary switch is set to 00.



3 Connect Switching hub to Personal computer and to Ethernet connector on ZP-EIP with LAN cables.
Connect 24 VDC power supply (for Switching hub) to Switching hub.



4	Connect 10 to 30 VDC power supply to the input/output cable power supply line of the amplifier. *For details on specifications of power supply, refer to the *Laser Displacement Sensor ZP series User's Manual* (Cat. No. Z495).	

7.2.2. Parameter Settings

Set the parameters for ZP-EIP.

The parameters are set using Sysmac Studio.

Install Sysmac Studio on Personal computer beforehand.

Since Personal computer and ZP-EIP are connected with LAN cables, set the IP address of Personal computer to *192.168.250.100*.

Precautions for Correct Use

The Parameters for ZP-EIP are checked using Ethernet communications with Personal computer.

Note that there may be some changes required for the Personal computer settings depending on the state of Personal computer.

1	Turn ON ZP Amplifier Unit and Switching hub.	-

2 Set the IP address of your Personal computer to *192.168.250.100*.

*The IP address can be changed in the following way.

(1) Start Personal computer and log in using an administrator account. From the Windows Start menu, select ***Control Panel – Network and Sharing Center***, and click **Change Adapter Settings**. Double-click **Local Area Connection**.
*The procedure steps may be different depending on the environment settings of Personal computer.

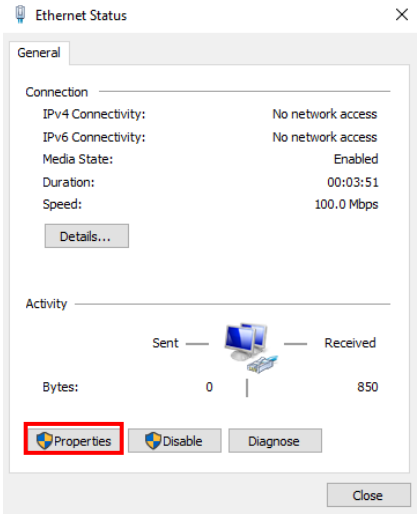
(2) The Local Area Connection Status Dialog Box is displayed. Click **Properties**.

(3) The Local Area Connection Properties Dialog Box is displayed. Select *Internet Protocol Version 4 (TCP/IPv4)*, and click **Properties**.
*The display differs depending on the configuration of Personal computer.

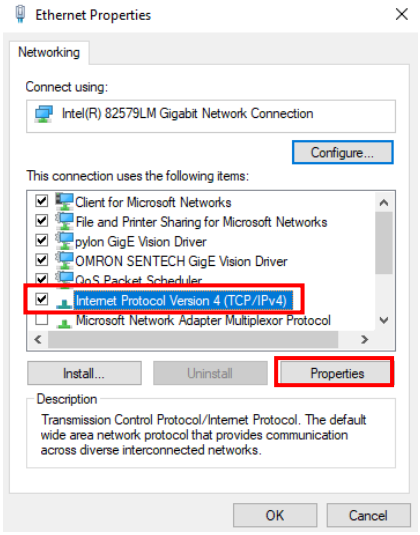
(4) The Internet Protocol Version 4 (TCP/IPv4) Properties Dialog Box is displayed. Select *Use the following IP address*, and set the IP address to *192.168.250.100* and the subnet mask to *255.255.255.0*. Click **OK**.

(5) Click **Close** or **OK** to close all the displayed dialog boxes.

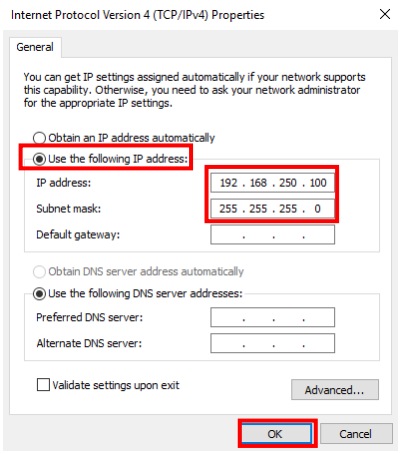
Dialog box in (2)



Dialog box in (3)



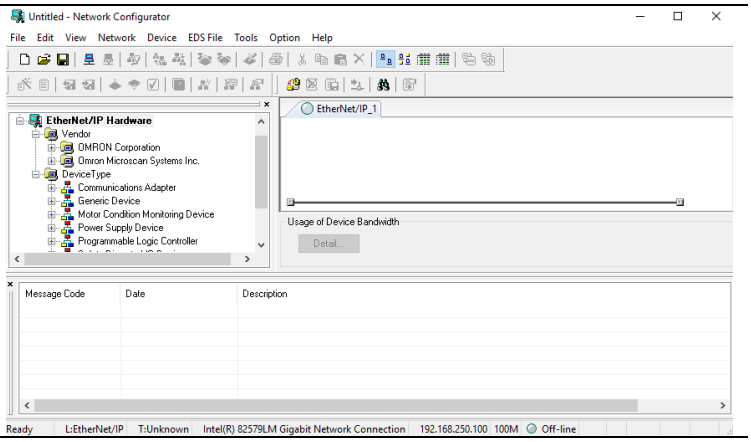
Dialog box in (4)



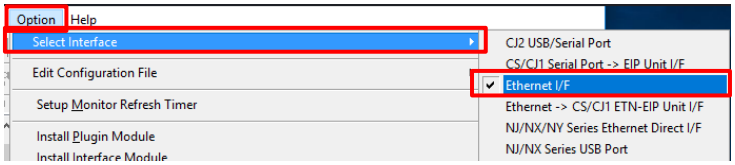
3 Start Network Configurator.

*If a dialog box for confirming access rights is displayed at start, select the option to initiate the startup.

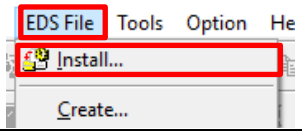
4 A new project is displayed.



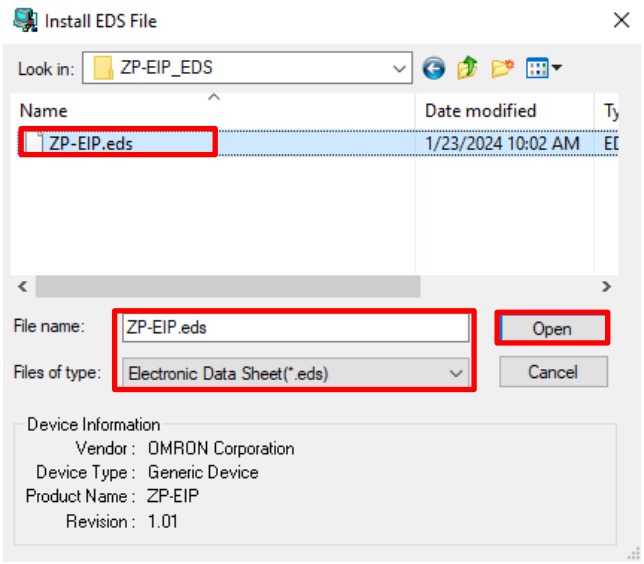
5 Select **Ethernet I/F** from Select Interface of Option.



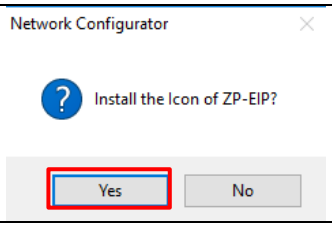
6 Select **Install** of EDS File.



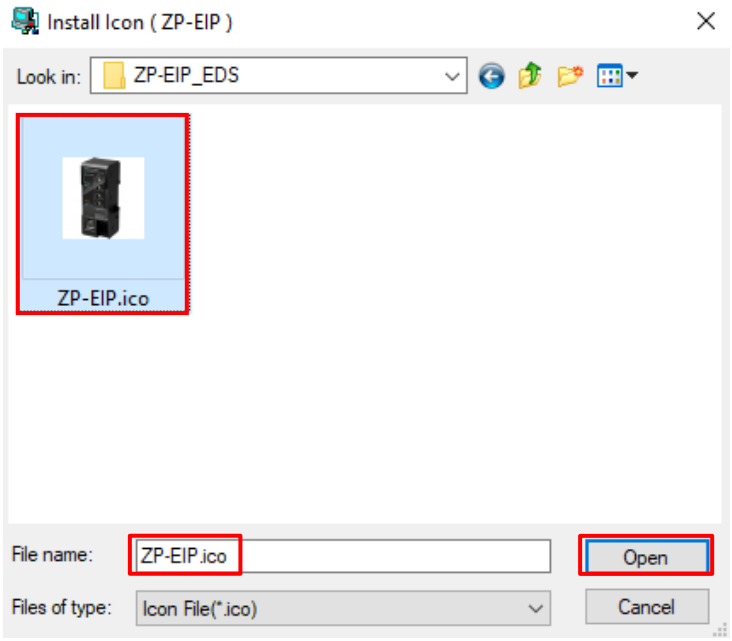
7 Install the EDS file downloaded from HP.



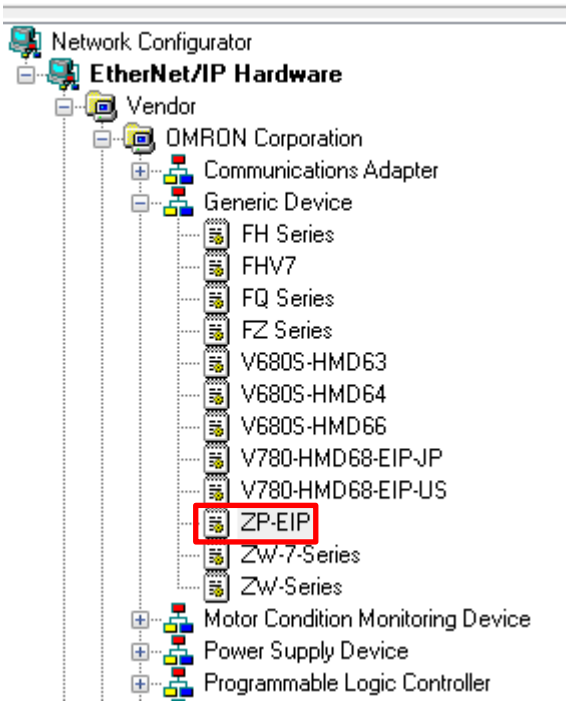
8 The dialog box on the right is displayed. Click **Yes**.



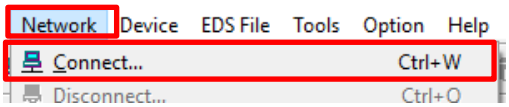
9 Select the **ZP-EIP** icon and click **Open**.



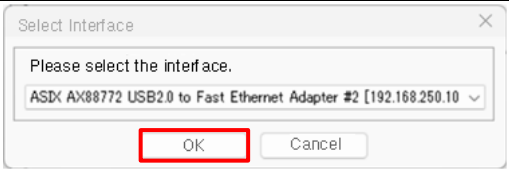
10 Check that ZP-EIP is installed in the tree on the left.



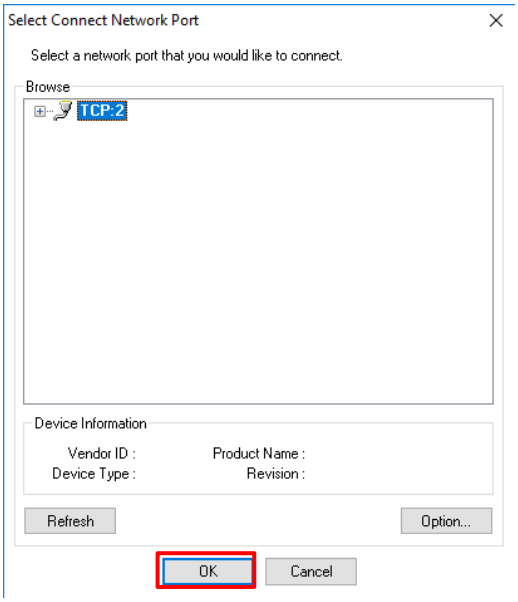
11 Select **Connect** of Network



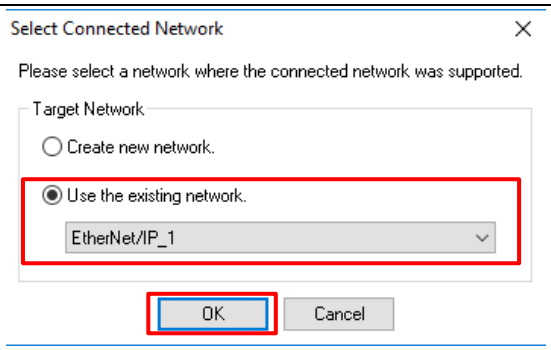
12 The Select Interface Dialog Box is displayed. Select the interface to use and click **OK**.



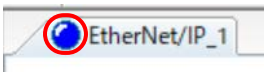
13 The Select Connect Network Port Dialog Box is displayed. Click **OK**.



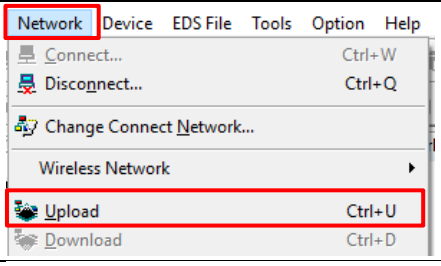
14 The Select Connected Network Dialog Box is displayed. Click **OK** as it is.



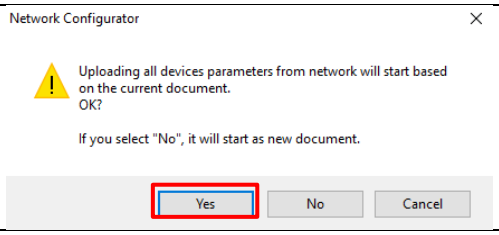
15 If the online connection is established successfully, the indicated area will turn blue.



16 Select **Upload** of Network.

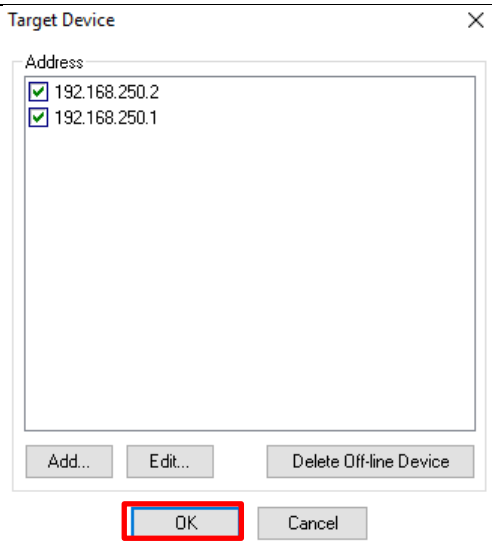


17 The dialog box on the right is displayed. Click **Yes**.

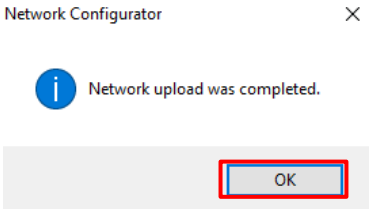


18 The Target Device Dialog Box is displayed. Click **OK**.

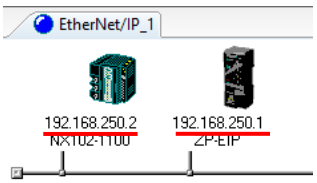
*Addresses to be displayed vary depending on the operating environment.
Operate **Add** or **Edit** to display the address you want to connect to in the list.



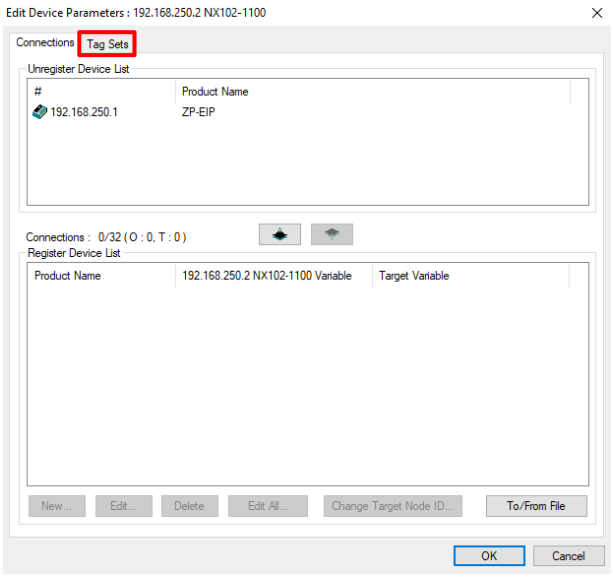
19 Device parameter reading is executed, and when completed, the dialog box shown on the right is displayed. Click **OK**.



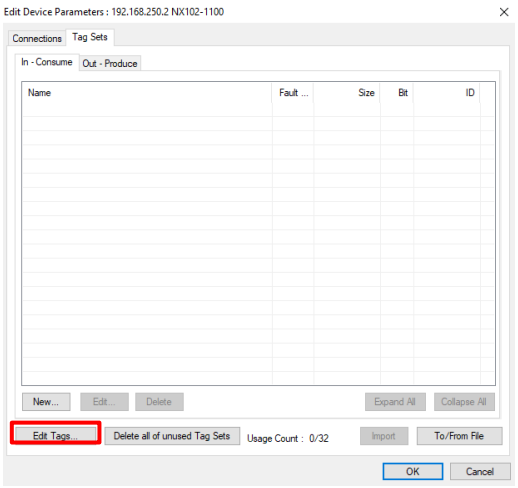
20 On the network window after the upload, check that the IP addresses have been updated as follows:
IP address of ZP-EIP:
192.168.250.1
IP address of PLC:
192.168.250.2



21 Select the **Tag Sets** Tab Page in the Edit Device Parameters Dialog Box.



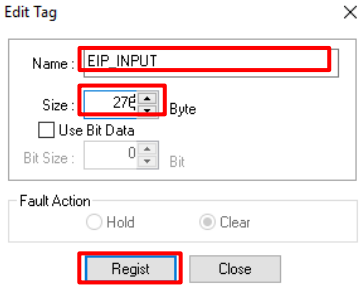
22 Click **Edit Tags**.



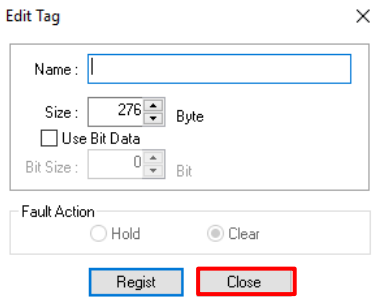
23 The Edit Tags Dialog Box is displayed. Select the **In – Consume** Tab Page and click **New**.

24 The Edit Tag Dialog Box is displayed. Enter the parameters as follows:
Name: EIP_INPUT
Size: 276 (Byte)

After entering them, click **Regist**.



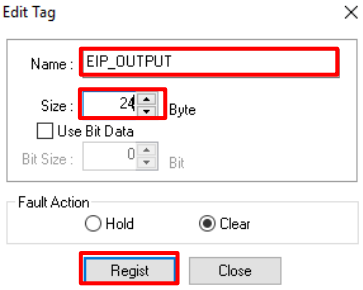
25 The Edit Tag Dialog Box is displayed. Click **Close**.



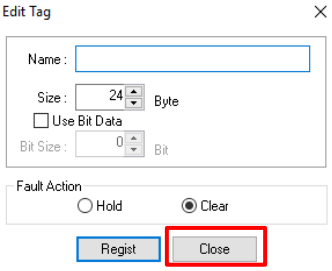
26 Select the **Out – Produce** Tab Page and click **New**.

27 The Edit Tag Dialog Box is displayed. Enter the parameters as follows:
Name: EIP_OUTPUT
Size: 24 (Byte)

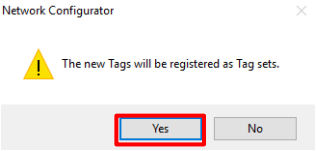
After entering them, click **Regist**.



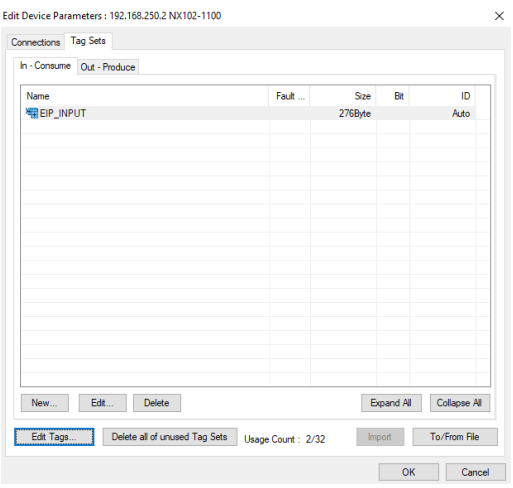
28 The Edit Tag Dialog Box is displayed. Click **Close**.



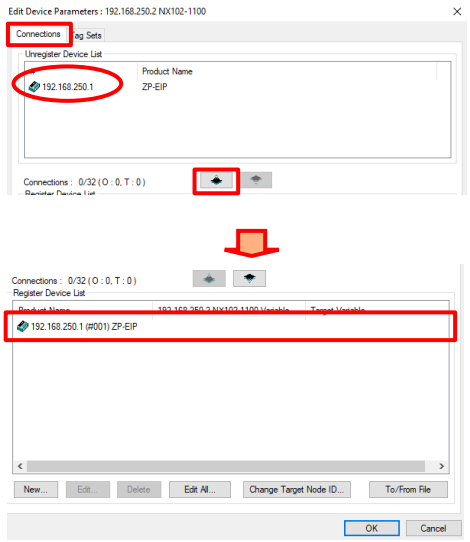
29 The dialog box on the right is displayed. Click **Yes**.



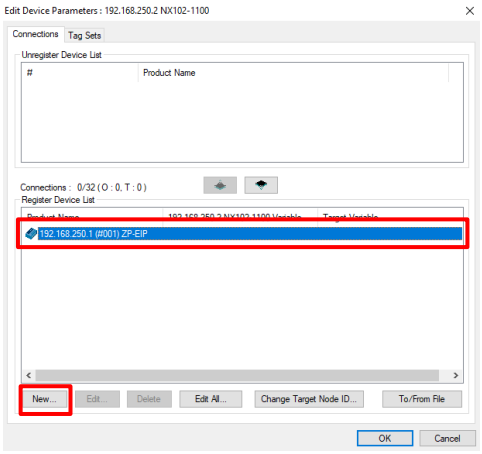
30 The Edit Device Parameters Dialog Box is displayed.



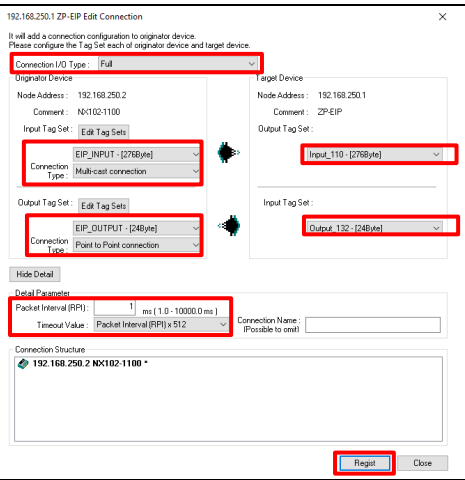
31 Select the **Connections** Tab Page in the Edit Device Parameters Dialog Box and register the target device from Unregister Device List to Register Device List.



32 With the device selected in Register Device List, click **New**.

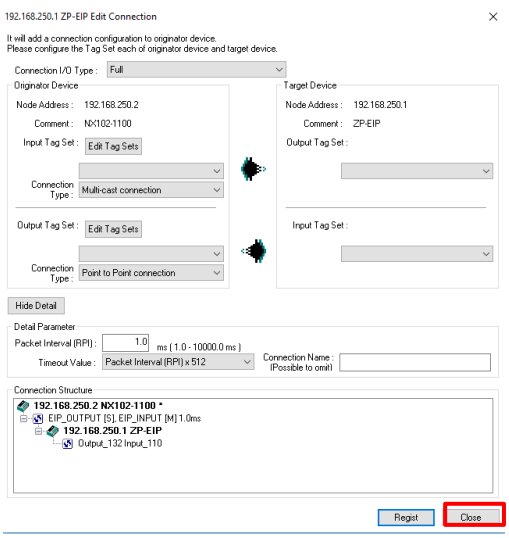


33 The Edit Connection Dialog Box is displayed. Set the values shown in the table below and click **Regist**.

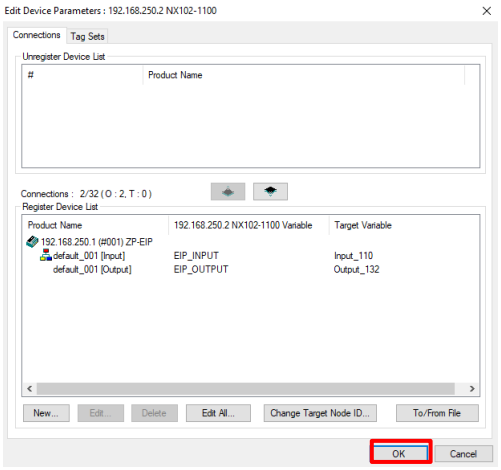


Connection I/O Type		Full
Originator Device	Input Tag Set	EIP_INPUT-[276Byte]
	Connection Type	Multi-cast connection
	Output Tag Set	EIP_OUTPUT-[24Byte]
	Connection Type	Point to Point connection
Target Device	Output Tag Set	INPUT_110-[276Byte]
	Input Tag Set	OUTPUT_132-[24Byte]
Detail Parameter	Packet Interval (RPI)	1 ms
	Timeout Value	Packet Interval (RPI) x 512

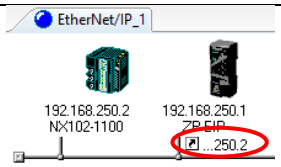
34 The Edit Connection Dialog Box is displayed. However, click **Close** without entering anything.



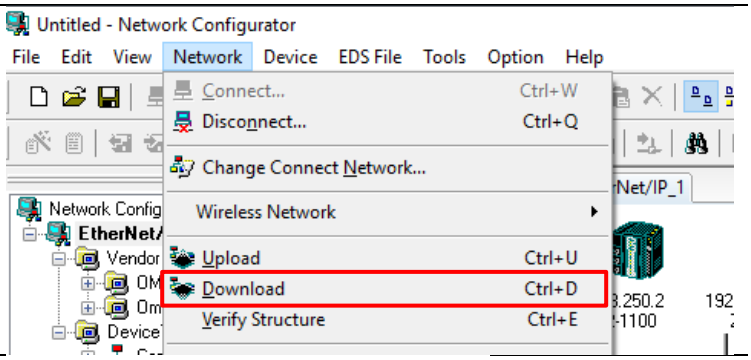
35 You will return to the Edit Device Parameters Dialog Box. Click **OK**.



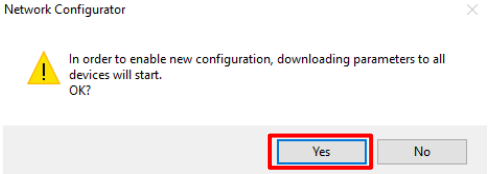
36 Once the connection assignment is finished and the data link parameters are completed, the registered node address will be displayed on the device icon in the network window.

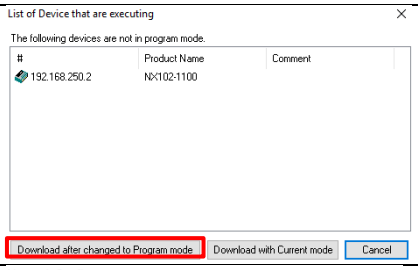
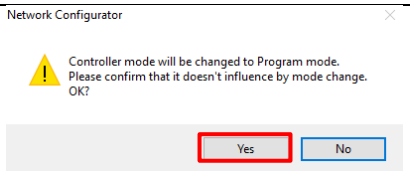
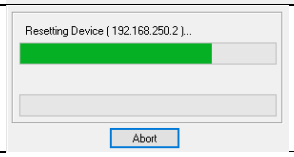
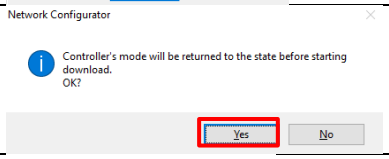
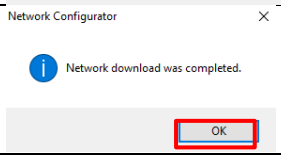


36 Select **Download** of Network.



38 The dialog box shown on the right is displayed. Click **Yes**.



39	If the dialog box shown on the right is displayed, click **Download after changed to Program mode**.	
40	The dialog box shown on the right is displayed. Click **Yes**.	
41	The tag data link parameters will be downloaded from Network Configurator to PLC.	
42	The dialog box shown on the right is displayed. Click **Yes**.	
43	The dialog box shown on the right is displayed. Click **OK**.	

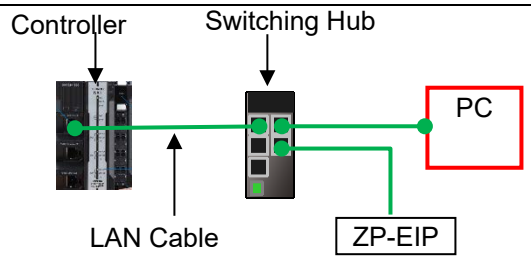
7.3. Controller Setup

Set up Controller.

7.3.1. IP Address Settings

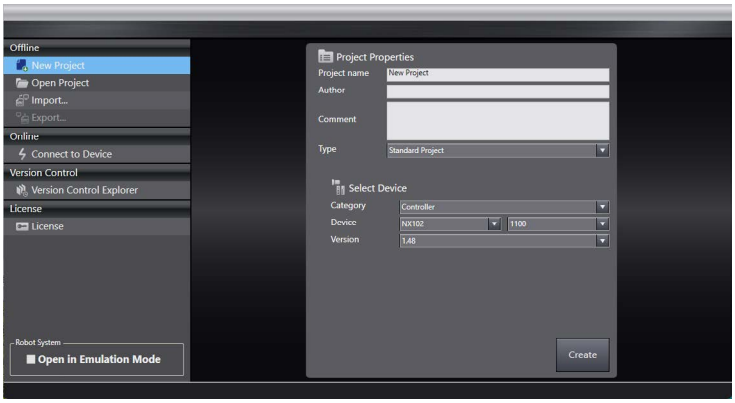
Set the IP address of Controller.

1 Connect a LAN cable to the built-in EtherNet/IP port (PORT1) on Controller. As shown in *5.2. Device Configuration*, connect Personal computer and Switching hub to Controller.



2 The Project Properties Dialog Box is displayed in Sysmac Studio. Select ***Controller*** from the pull-down list of Category in the Select Device Area.

*In this document, New Project is used as the project name.

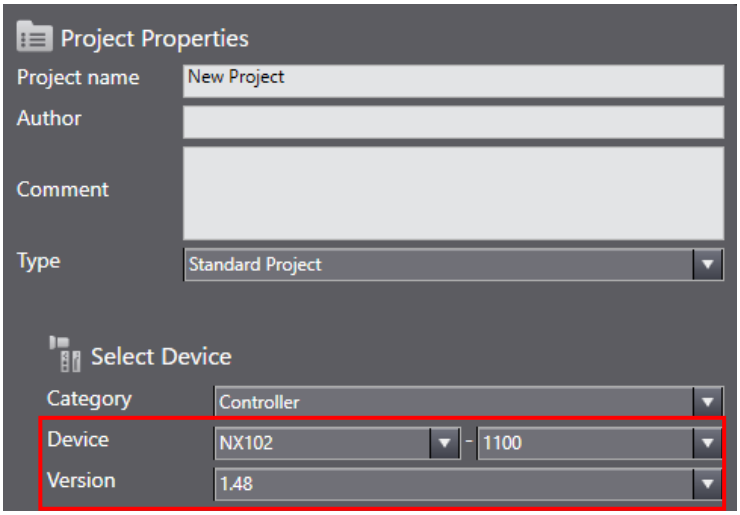


3 Select the device to use from the pull-down list of Device.

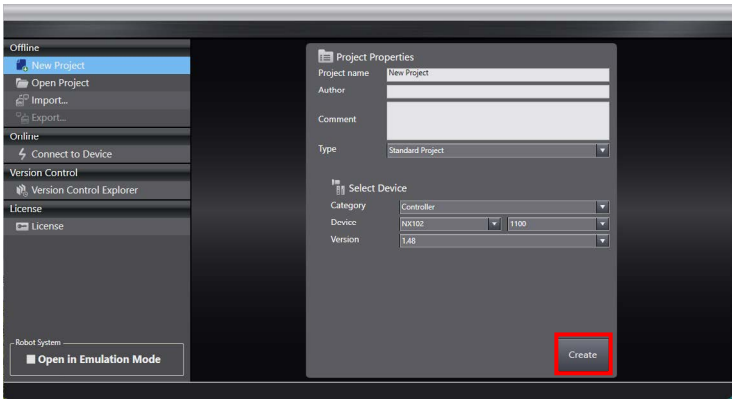
*NX102-1100 is selected as an example of device in this document.

Select an applicable version from the pull-down list of Version.

*Although 1.48 is selected as an example in this document, select the version you actually use.



4 Click **Create**.



5 The New Project is displayed.

The following panes are displayed in this window.

Left: Multiview Explorer

Top right: Toolbox

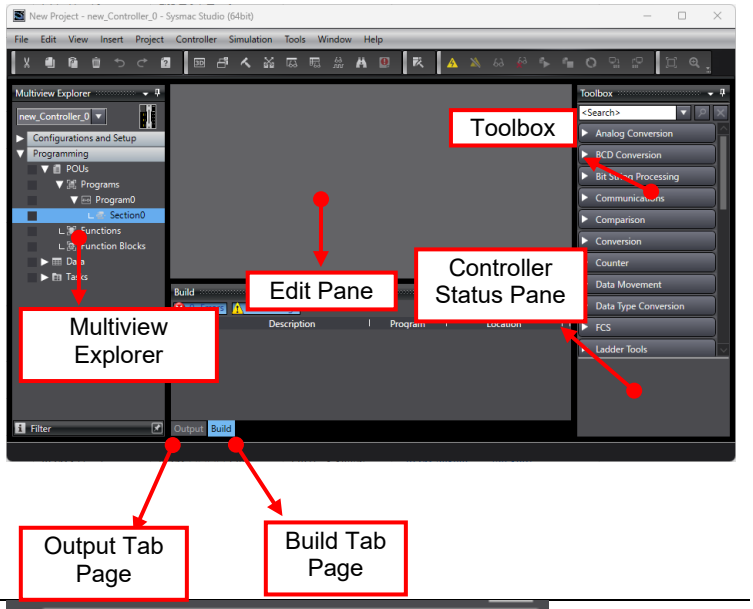
Bottom right: Controller Status Pane

Middle top: Edit Pane

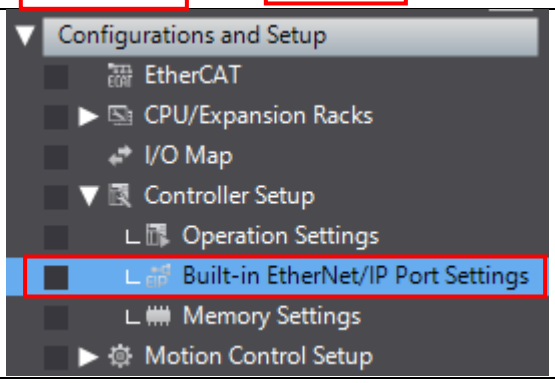
The following tabs are displayed in the bottom middle of this window.

Output Tab Page

Build Tab Page



6 Double-click **Built-in EtherNet/IP Port Settings** under **Configurations and Setup – Controller Setup** in the Multiview Explorer.

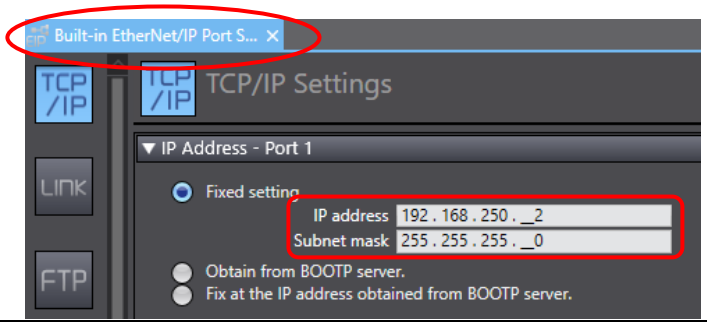


7 The Built-in EtherNet/IP Port Settings Tab Page is displayed in the Edit Pane.

Check that the following settings are made in the *IP Address* Field.

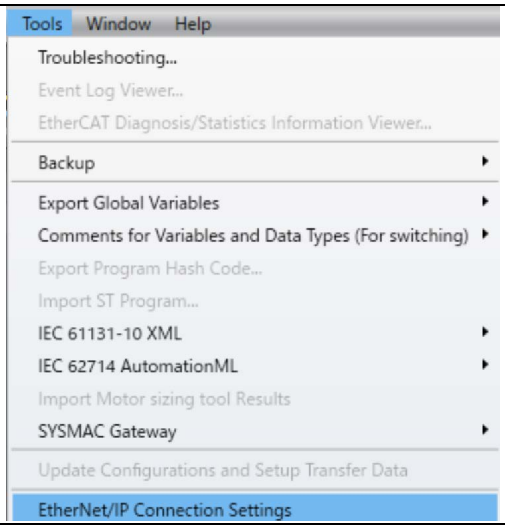
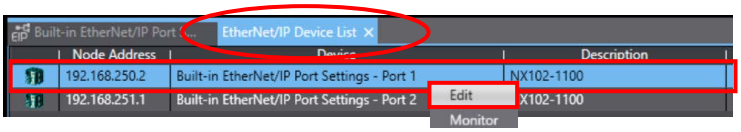
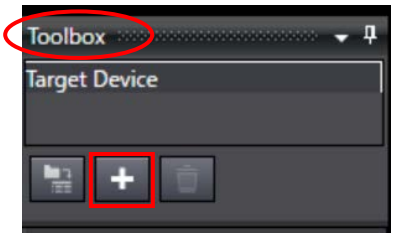
IP address: 192.168.250.2

Subnet mask: 255.255.255.0

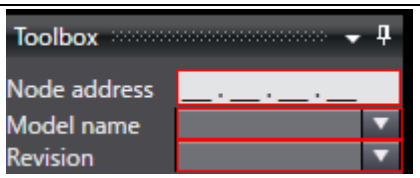


7.3.2. Target Device Registration

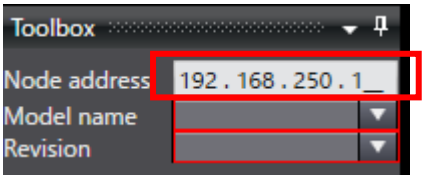
Register the target device.

1	Select ***EtherNet/IP Connection Settings*** from the Tools Menu.	
2	The EtherNet/IP Device List Tab Page is displayed in the Edit Pane. Right-click and select ***Edit*** from the menu while Built-in EtherNet/IP Port Settings is selected.	
3	The Built-in EtherNet/IP Port Settings Connection Settings Tab Page is displayed in the Edit Pane.	
4	Click the **+** Button in the Toolbox.	

5 Data fields of the target device registration are displayed.



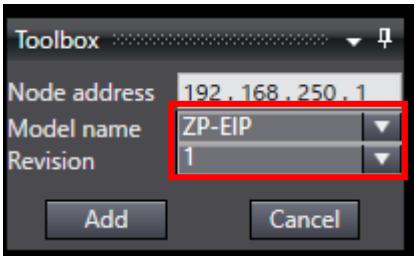
Enter *192.168.250.1* in the *Node address* Field.



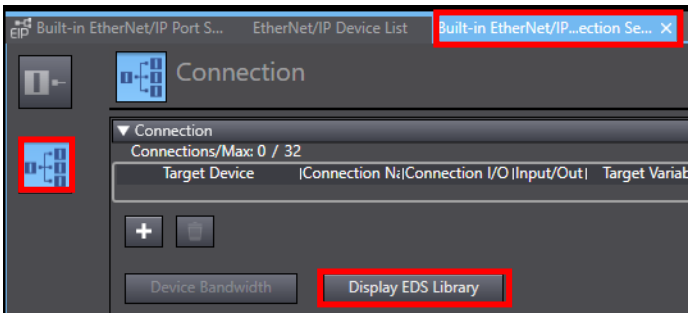
Select the following values from the pull-down lists of Model name and Revision.

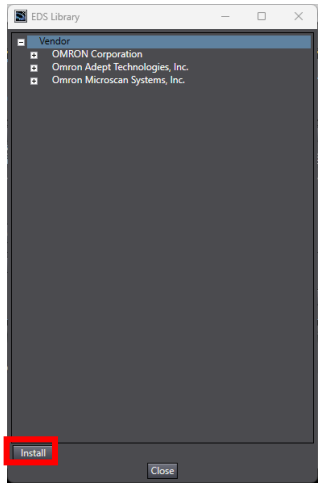
Model name: ***ZP-EIP***

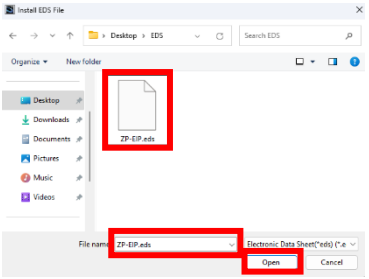
Revision: ***1***

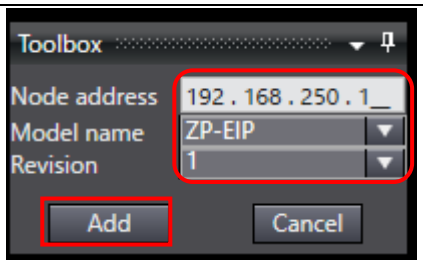
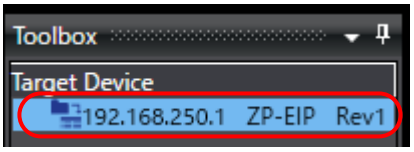


If the above model name is not found in the Model name menu, click **Display EDS Library** in Connection, and install the EDS file.





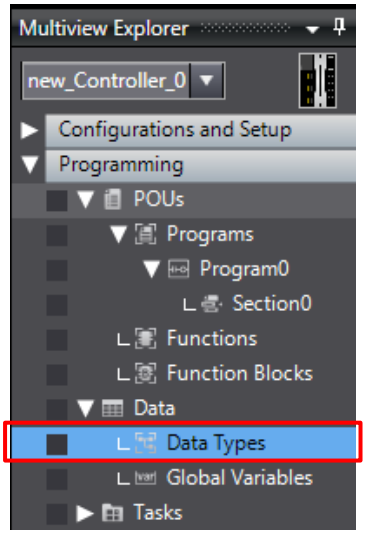


6	Check the settings and click **Add**.	
7	192.168.250.1 is registered in Target Device of the Toolbox.	

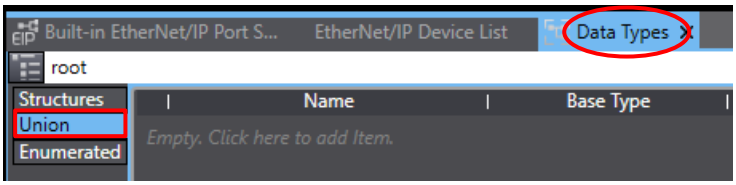
7.3.3. Setting the Global Variables

Set the global variables to use for tag data links.

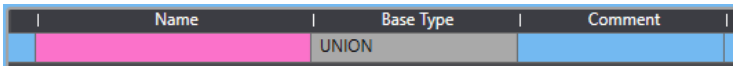
1 Double-click **Data Types** under **Programming – Data** in the Multiview Explorer.



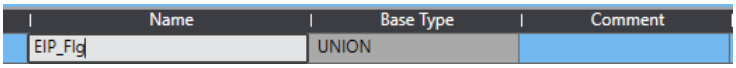
2 Click the **Union** Side Tab.



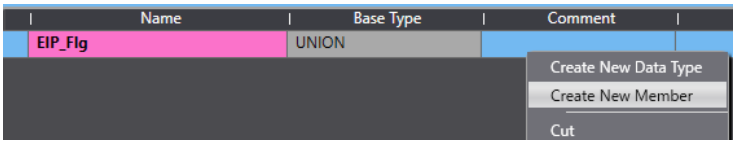
Click on a space in the *Name* Column to enter a new data type.



Enter *EIP_Flg* in the *Name* Column.



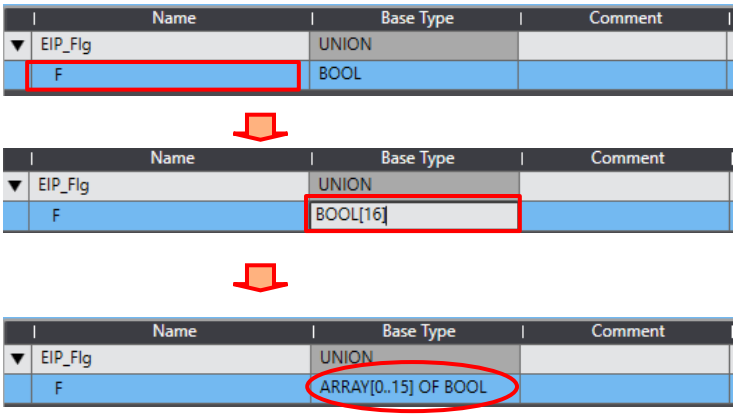
3 After entering, right-click and select ***Create New Member*** from the menu.



4 Enter the following data in the newly added row.

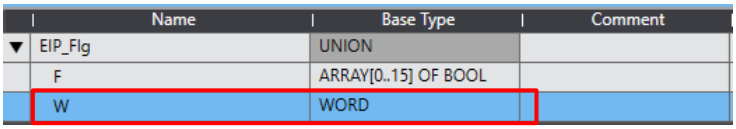
- Name: *F*
  Base type: *BOOL[16]*

*After entering, the base type changes to ARRAY[0..15] OF BOOL as shown on the right.



5 In the same way as steps 3 and 4, enter the following data in the newly added row.

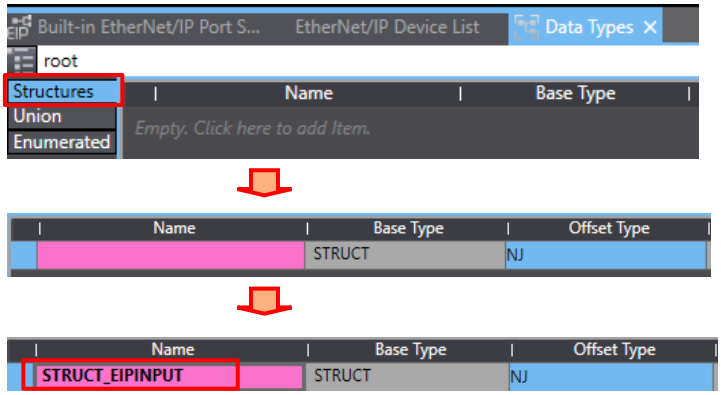
- Name: *W*
  Base type: *WORD*



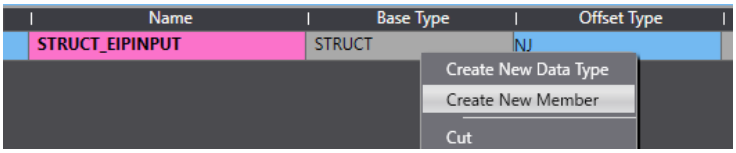
6 Click the **Structures** Side Tab.

Click on a space in the *Name* Column to enter a new data type.

Enter *STRUCT_EIPINPUT* in the *Name* Column.

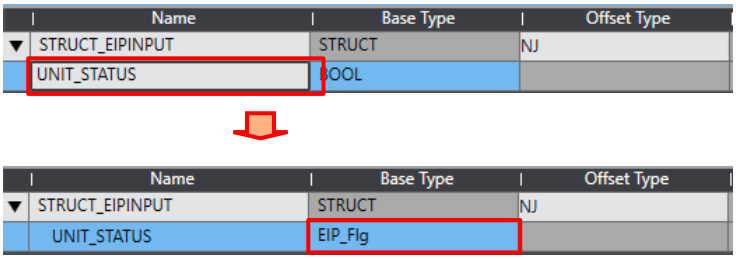


7 After entering, right-click and select ***Create New Member*** from the menu.



8 Enter *UNIT_STATUS* in the *Name* Column.

Enter *EIP_Flg* in the *Base Type* Column.

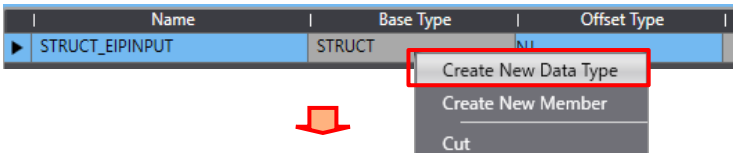


9 In the same way as steps 7 and 8, enter the name and base type shown on the right in the newly added member rows.

*Enter each member following the order described in *6.2*.

Name	Base Type
STRUCT_EIPINPUT	STRUCT
UNIT_STATUS	EIP_Flg
ERROR_STATUS	EIP_Flg
WARNING_STATUS	EIP_Flg
RESERVE_OUT00	ARRAY[0..15] OF BOOL
RESERVE_OUT01	ARRAY[0..15] OF BOOL
ENABLE_STATUS	EIP_Flg
RESERVE_OUT02	ARRAY[0..15] OF BOOL
RESERVE_OUT03	ARRAY[0..15] OF BOOL
RESERVE_OUT04	ARRAY[0..15] OF BOOL
HIGH_STATUS	EIP_Flg
LOW_STATUS	EIP_Flg
PASS_STATUS	EIP_Flg
RESERVE_OUT05	ARRAY[0..15] OF BOOL
RESERVE_OUT06	ARRAY[0..15] OF BOOL
SIGNAL_STATUS00	EIP_Flg
SIGNAL_STATUS01	EIP_Flg
SIGNAL_STATUS02	EIP_Flg
SIGNAL_STATUS03	EIP_Flg
SIGNAL_STATUS04	EIP_Flg
RESERVE_OUT07	ARRAY[0..15] OF BOOL
RESERVE_OUT08	ARRAY[0..15] OF BOOL
RESERVE_OUT09	ARRAY[0..15] OF BOOL
RESERVE_OUT10	ARRAY[0..15] OF BOOL
RESERVE_OUT11	ARRAY[0..15] OF BOOL
OUT_DATA	ARRAY[0..19] OF DINT
TIME_DATA	ARRAY[0..3] OF WORD
CONDITION_MONITOR	ARRAY[0..15] OF DINT
RESERVE_OUT012	ARRAY[0..15] OF DINT
CMD	ARRAY[0..11] OF BYTE

10 After entering, right-click and select ***Create New Data Type*** from the menu.



Enter *STRUCT_EIPOUTPUT* in the *Name* Column.

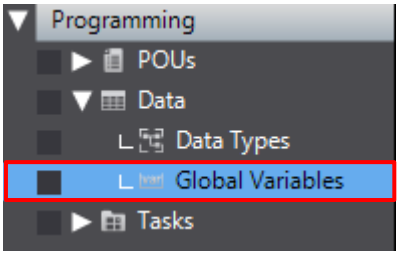
Name	Base Type	Offset Type
STRUCT_EIPINPUT	STRUCT	NJ
STRUCT_EIPOUTPUT	STRUCT	NJ

11 In the same way as steps 7 and 8, enter the name and base type shown on the right in the newly added member rows.

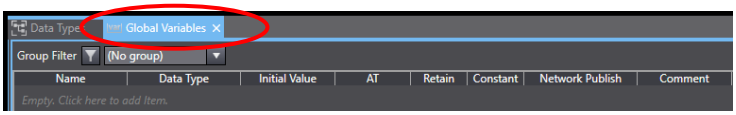
*Enter each member following the order described in *6.2*.

Name	Base Type
STRUCT_EIPINPUT	STRUCT
STRUCT_EIPOUTPUT	STRUCT
REQUEST_INPUT00	EIP_Flg
REQUEST_INPUT01	EIP_Flg
REQUEST_INPUT02	EIP_Flg
REQUEST_INPUT03	EIP_Flg
RESERVE_OUT00	ARRAY[0..15] OF BOOL
RESERVE_OUT01	ARRAY[0..15] OF BOOL
CONTROL_INPUT	EIP_Flg
CMD_DATA	ARRAY[0..9] OF BYTE

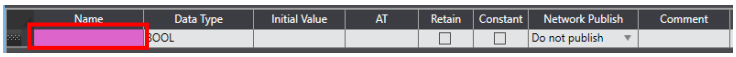
12 Double-click **Global Variables** under **Programming – Data** in the Multiview Explorer.



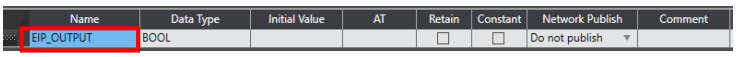
13 The Global Variables Tab Page is displayed in the Edit Pane.



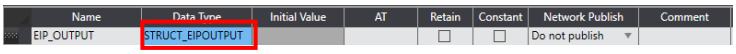
Click on a space in the *Name* Column to enter a new variable.



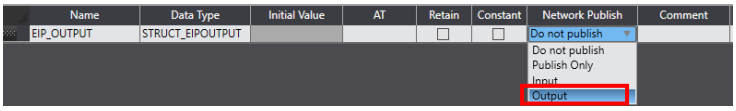
Enter *EIP_OUTPUT* in the *Name* Column.

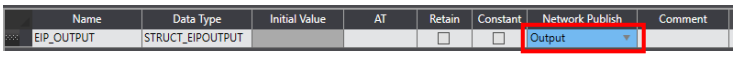


Enter *STRUCT_EIPOUTPUT* in the *Data Type* Column.

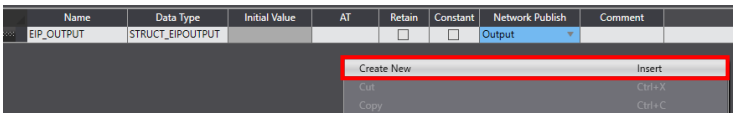


Select ***Output*** from the pull-down list of Network Publish.



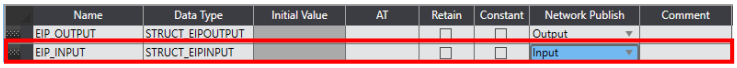


14 After entering, right-click and select ***Create New*** from the menu.

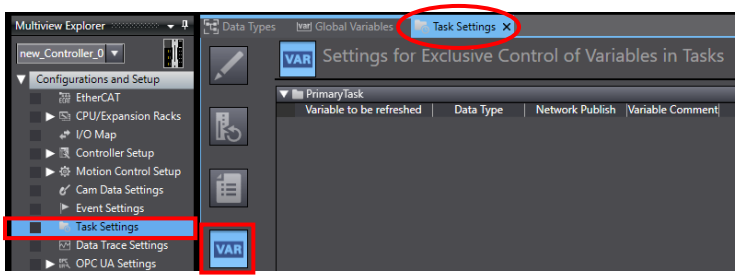


15 In the same way as step 13, enter the following data in the newly added row.

- Name: *EIP_INPUT*
  Data type: *STRUCT_EIPINPUT*
  Network Publish: ***Input***

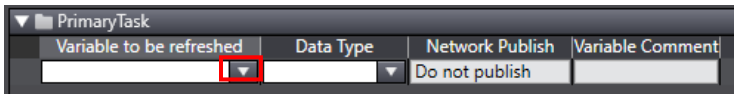


16 Double-click **Task Settings** under **Configurations and Setup** in the Multiview Explorer. The Task Settings Tab Page is displayed in the Edit Pane. Click **VAR**.

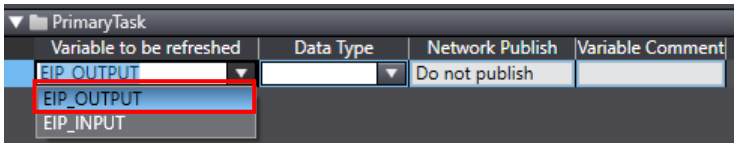


17 Click the **+** Button.

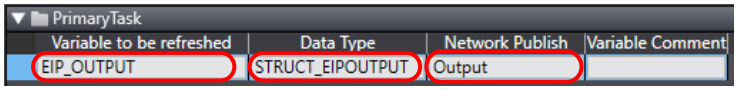
A row for new entry is added. Click the **Down Arrow** Button of the entry cell in the *Variable to be refreshed* Column (the left side of the figure).



The variables set in the previous steps are displayed. Select *EIP_OUTPUT*.

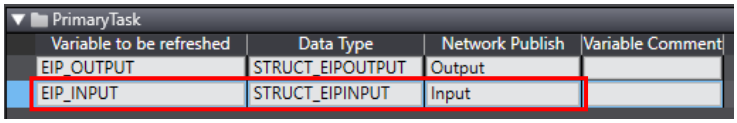


EIPOutput is added.



*Since the data types are displayed automatically, you do not need to set them.

18 In the same way as step 17, add all the variables set in the previous steps to the *Variable to be refreshed* Column (the left side of the figure).

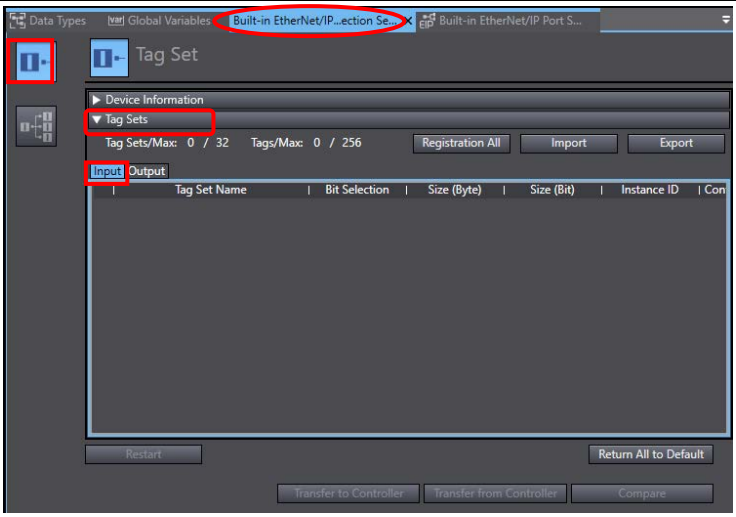


*Since the data types are displayed automatically, you do not need to set them.

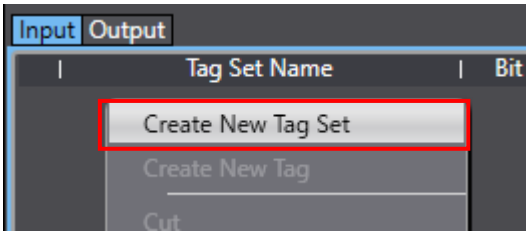
7.3.4. Tag Registration

Register the tags and the tag sets.

1 Click the **Tag Sets** Button on the Built-in EtherNet/IP Port Settings Connection Settings Tab Page.
Select the **Input** Tab in Tag Sets.

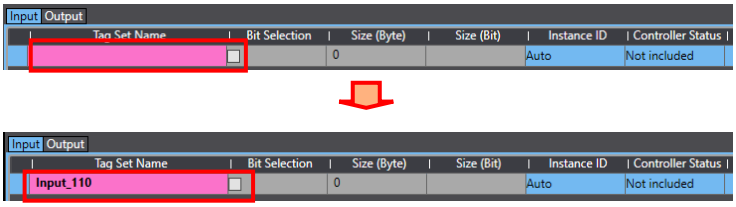


2 Right-click any open space on the Input Tab Page and select ***Create New Tag Set*** from the menu.



3 A new tag name can be entered. Select the newly added entry cell.

Enter *Input_110*.

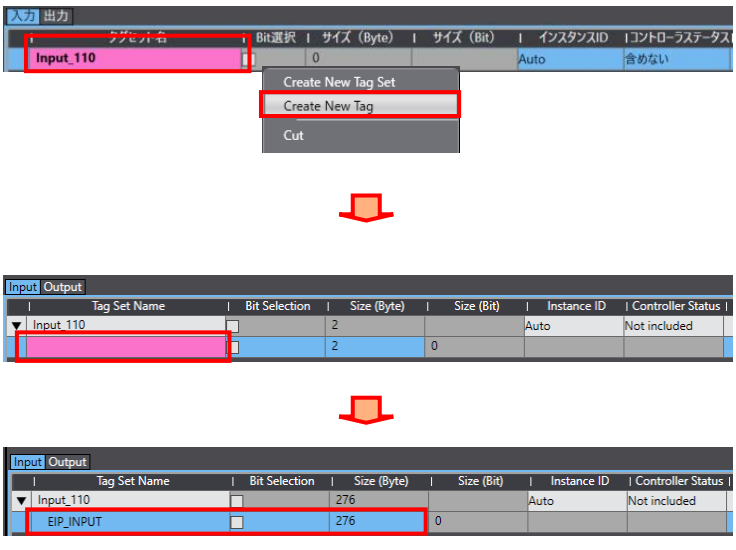


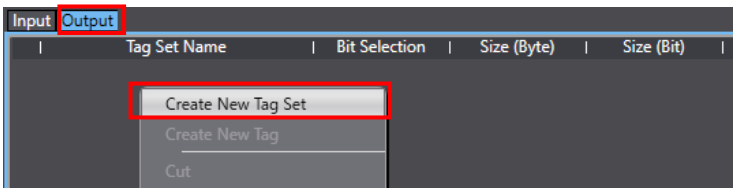
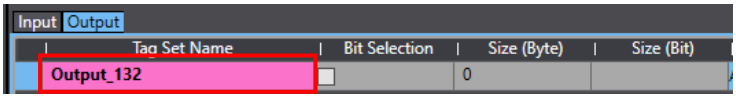
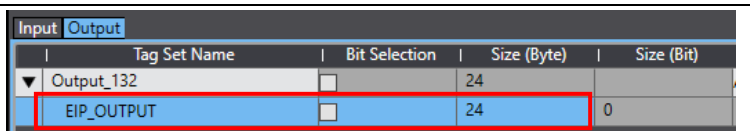
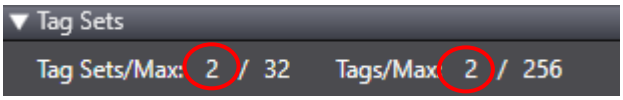
4 Right-click and select ***Create New Tag*** from the menu while Input_110 is selected.

A new tag name can be entered under Input_110. Select the newly added entry cell.

Set the global variable of IN No.1 as a tag, which is listed in *6.4. Tag Sets*.

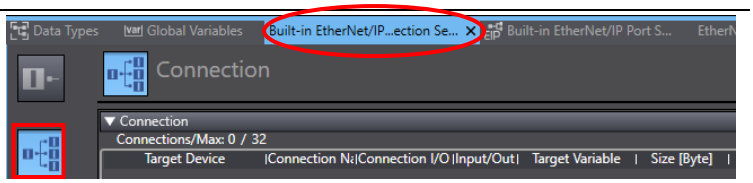
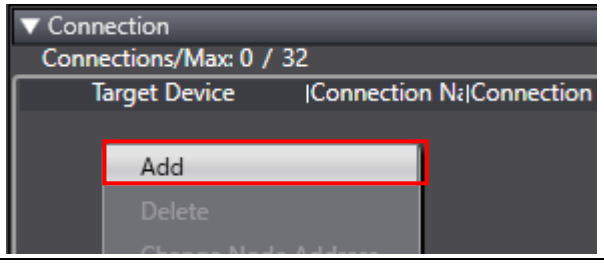
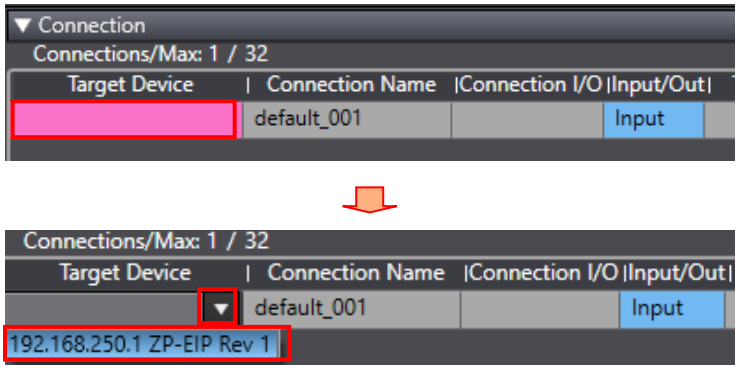
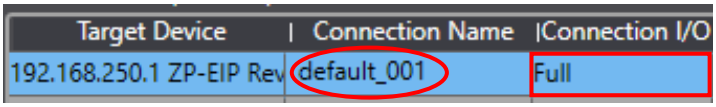
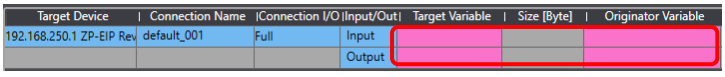
*When the first character of the set variable name is typed, an appropriate name beginning with the character appears.



5	Select **Output** Tab. Right-click any open space on the Output Tab Page and select ***Create New Tag Set*** from the menu.	
6	A new name can be entered in the Tag Set Name Column. In the same way as step 3, enter Output_132.	
7	In the same way as step 4, set the global variable of OUT No. 1 as a tag, which is listed in *6.4. Tag Sets*.	
8	Check that Tag Sets shows 2 and that the number of Tags shows the same as the number of the global variables you set.	

7.3.5. Setting the Connections

Set the target variables (that receive the open request) and the originator variables (that request for opening), and then set the connections (tag data link table).

1	Click the **Connection** Button on the Built-in EtherNet/IP Port Settings Connection Settings Tab Page.	
2	Right-click any open space in Connection and select ***Add*** from the menu.	
3	A new connection can be entered. Select the newly added entry cell. Select 192.168.250.1 from the pull-down list of Target Device.	
4	The default_001 connection is created. Check that Full is selected in the *Connection I/O Type* Column.	
5	The target variable and the originator variable can be set.	

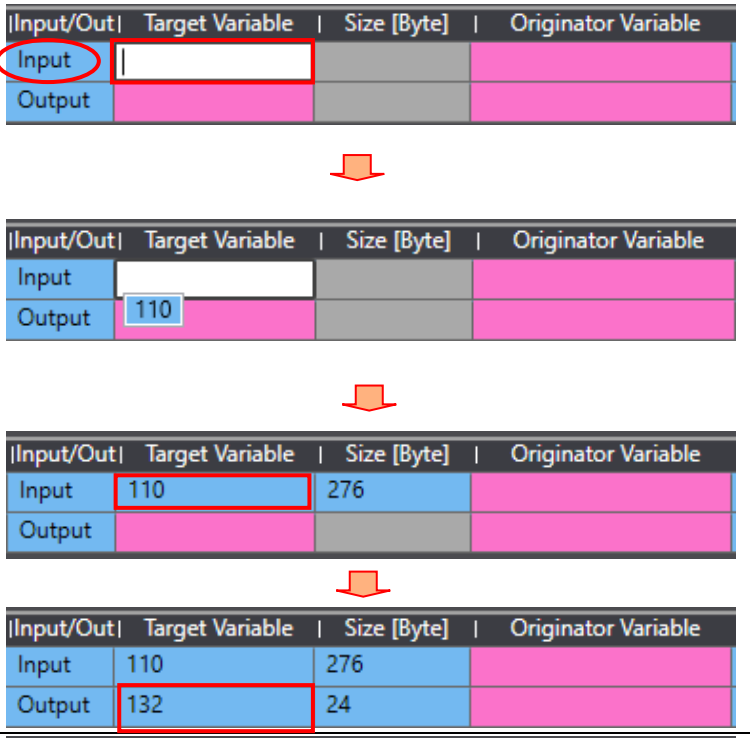
6 Click the entry cell for Input in the *Target Variable* Column.

When you press **Ctrl + Space** on the keyboard, an appropriate instance number appears.

*The instance number also appears even when the first character of the instance number “1” is entered.

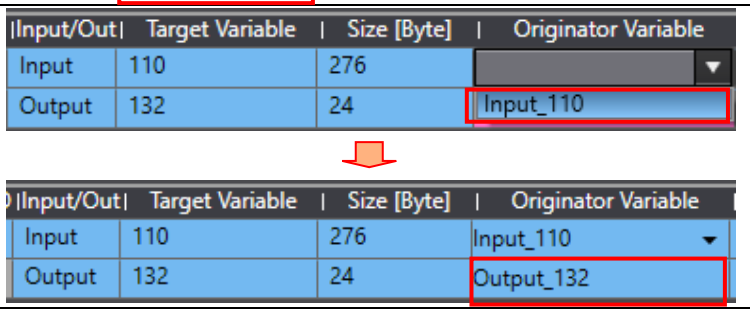
Select the instance number.

Likewise, set the target variable for Output.



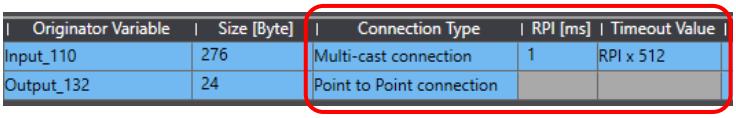
7 Click the entry cell for Input in the *Originator Variable* Column. The pull-down list is displayed. Select the tag set name to use.

Likewise, set the originator variable for Output.

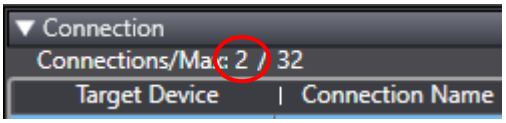


8 Set the connection type, RPI [ms], and timeout value as required.

RPI: 1 ms
Timeout Value: RP1 x 512



9 Check that Connections shows 2.



7.3.6. Transferring the Project Data

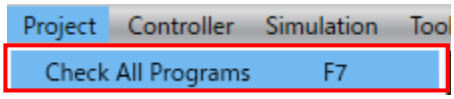
Connect online and transfer the connection settings and the project data to Controller.

WARNING

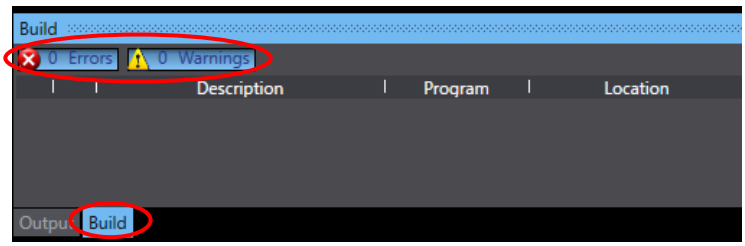
When you transfer a user program, configuration data, setup data, device variables, or values in memory used for CJ/NX/NJ-series Units from Sysmac Studio, the devices or machines may perform unexpected operation regardless of the operating mode of CPU Unit.
Always confirm safety at the destination node before you transfer the project data.

1 Turn ON Controller, Switching hub, and ZP-EIP.

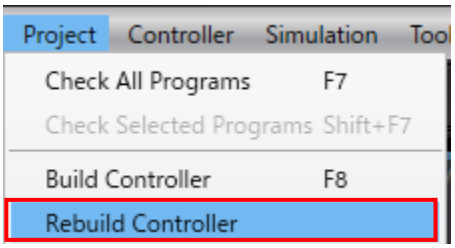
2 Select ***Check All Programs*** from the Project Menu.



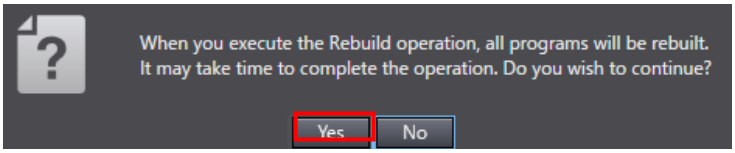
3 The Build Tab Page is displayed.
Check that “0 Errors” and “0 Warnings” are displayed.



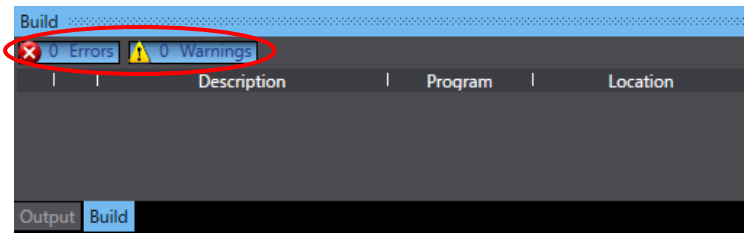
4 Select ***Rebuild Controller*** from the Project Menu.



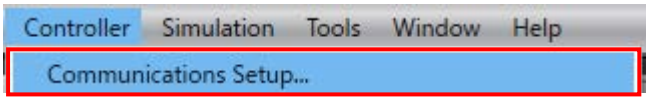
5 A confirmation dialog box is displayed. Check the contents and click **Yes**.



6 Check that “0 Errors” and “0 Warnings” are displayed on the Build Tab Page.

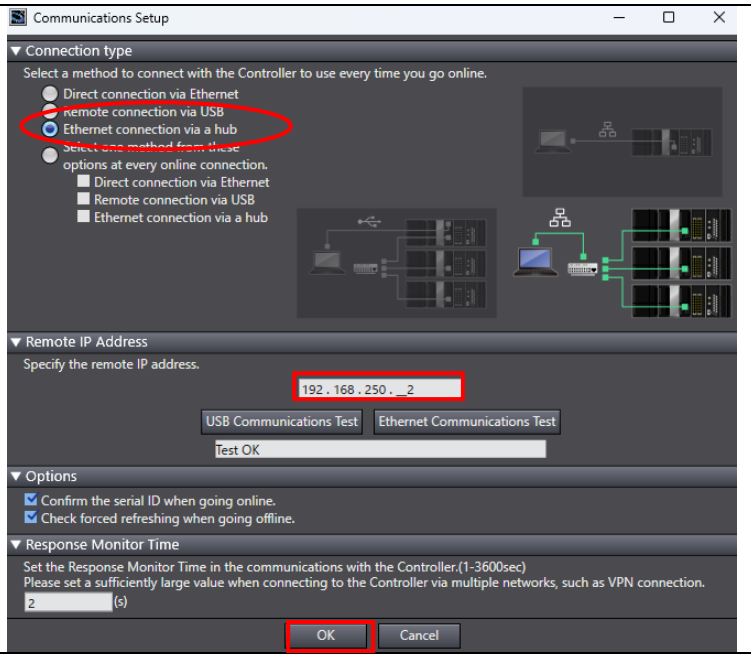


7 Select ***Communications Setup*** from the Controller Menu.



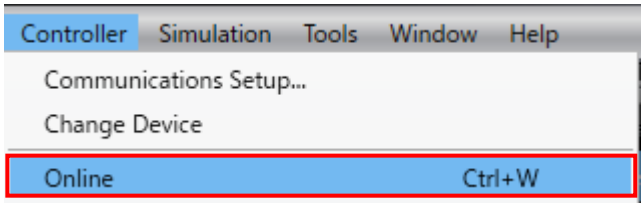
8 The Communications Setup Dialog Box is displayed. Check that the *Ethernet connection via a hub* Option is selected in Connection type, and that the IP address of the target PLC is input.

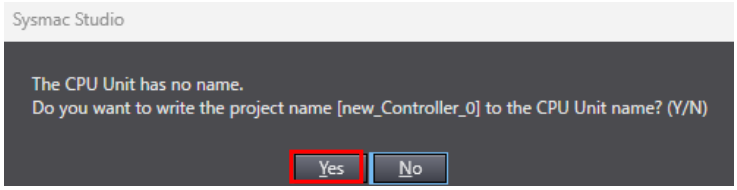
Click **OK**.



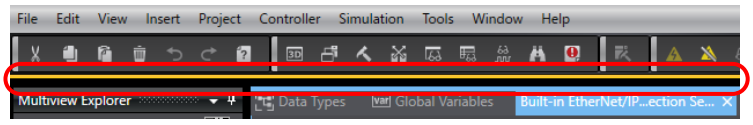
9 Select ***Online*** from the Controller Menu.
A confirmation dialog box is displayed. Check the contents and click **Yes**.

*The displayed dialog depends on the status of Controller. Check the contents and click on an appropriate button to proceed with the processing.





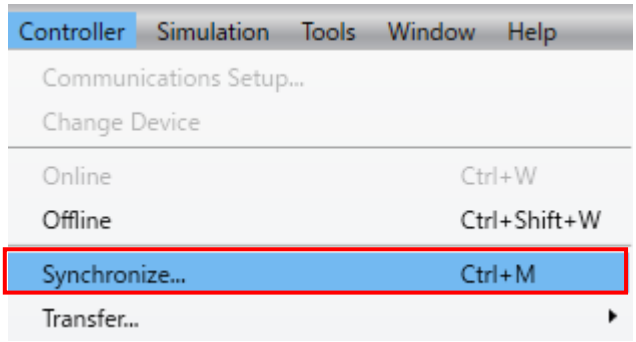
10 When an online connection is established, a yellow bar is displayed under the toolbar.



Additional Information

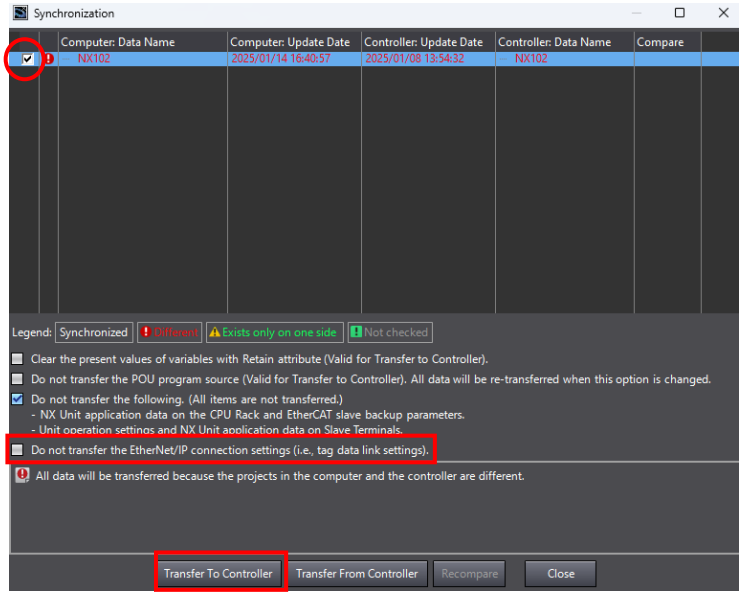
For details on the online connections to Controller, refer to *Section 6. Online Connections to a Controller* of the *Sysmac Studio Version 1 Operation Manual* (Cat. No. W504).

11 Select ***Synchronize*** from the Controller Menu.

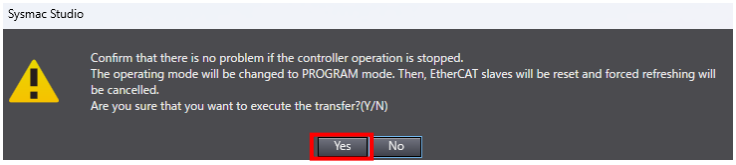


12 The Synchronization Dialog Box is displayed.
Check that the data to transfer (NX102 in the right dialog box) is selected.
Uncheck *Do not transfer the EtherNet/IP connection settings (i.e., tag data link settings)*.
Click **Transfer To Controller**.

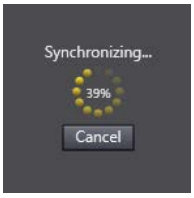
*After executing Transfer To Controller, the Sysmac Studio data is transferred to Controller, and the data is compared.



13 A confirmation dialog box is displayed. Confirm that there is no problem, and click **Yes**.

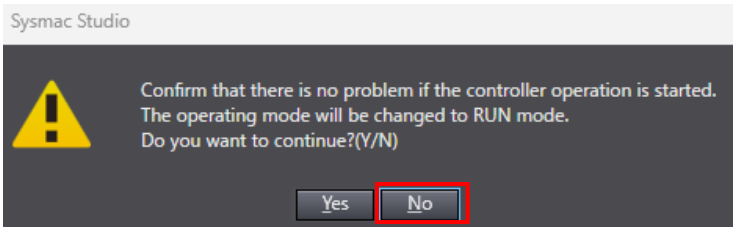


A screen stating "Synchronizing" is displayed.



A confirmation dialog box is displayed. Confirm that there is no problem, and click **No**.

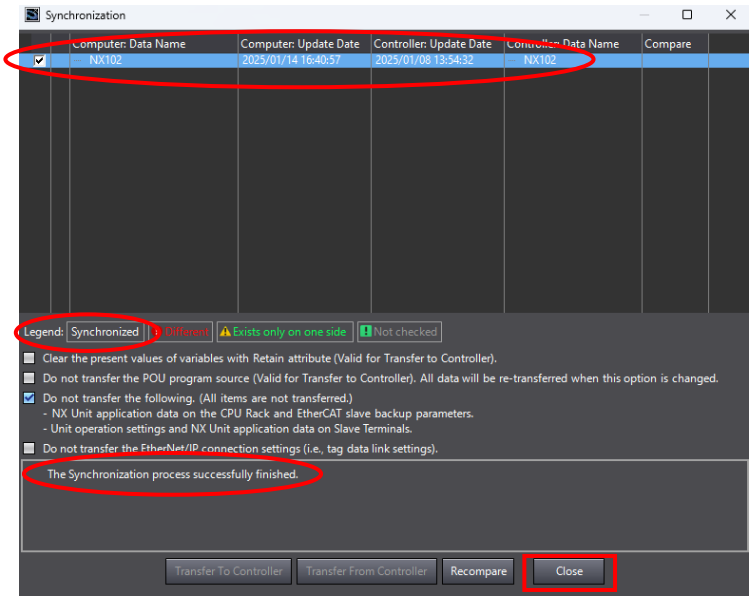
*Do not return to RUN mode.



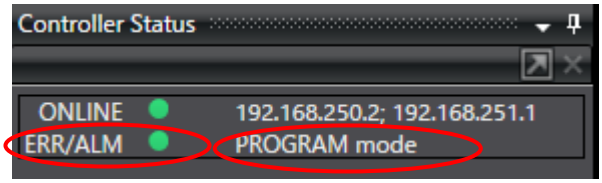
14 Check that the synchronized data is displayed with the color specified by “Synchronized” and that a message is displayed stating “The synchronization process successfully finished”. Confirm that there is no problem, and click **Close**.

*A message stating “The synchronization process successfully finished” is displayed if the Sysmac Studio project data coincides with the Controller data.

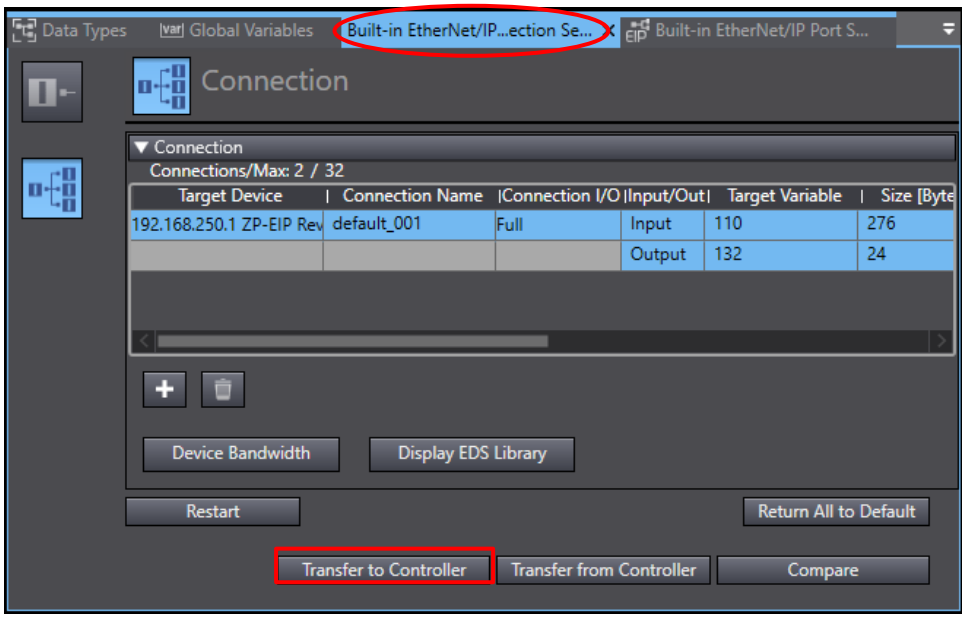
*If the synchronization fails, check the wiring and repeat from step 1.



15 Check that ERR/ALM indicator in the Controller Status Pane changes to green color and that PROGRAM mode is displayed.



Precautions for Correct Use



If you change the connection settings (tag data link table) after performing the synchronization, the changed connection settings (tag data link table) are not transferred even when performing the synchronization again.

When you transfer the changed connection settings, click **Transfer to Controller** on the Built-in EtherNet/IP Port Settings Connection Settings Tab Page.

7.4. EtherNet/IP Communication Status Check

Confirm that the EtherNet/IP tag data links operate normally.

7.4.1. Checking the Connection Status

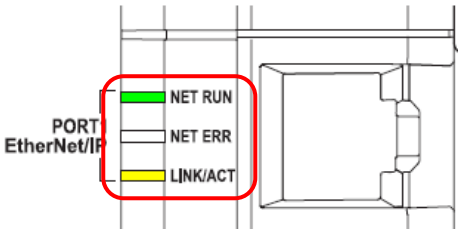
Check the connection status of the EtherNet/IP network.

1 Check with LED indicators on Controller that the tag data links operate normally.

The LED indicators in normal status are as follows:

NET RUN: Green lit
NET ERR: Not lit
LINK/ACT (L/A): Yellow flashing
(Flashing while packets are being sent and received.)

Example: NJ-series CPU Unit

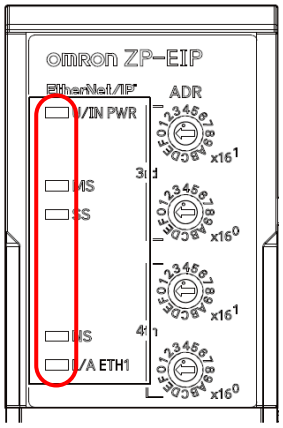


*The indicator names and functions are the same for NX Series as well.

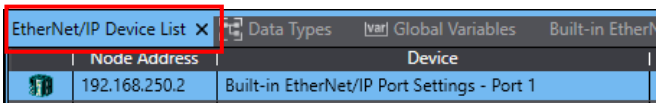
2 Check the LED indicators on ZP-EIP.

The LED indicators in normal status are as follows:

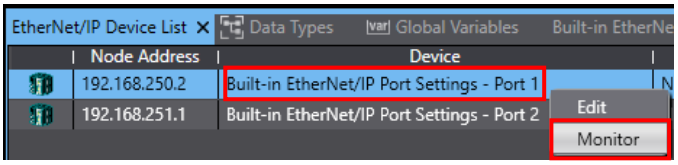
U/IN PWN: Green lit
MS: Green lit
SS: Green lit
NS: Green lit
L/A ETH1: Green lit / Green flashing
(Flashing while packets are being sent and received.)



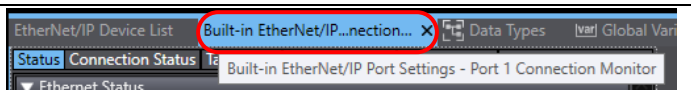
3 Select the **EtherNet/IP Device List** Tab.

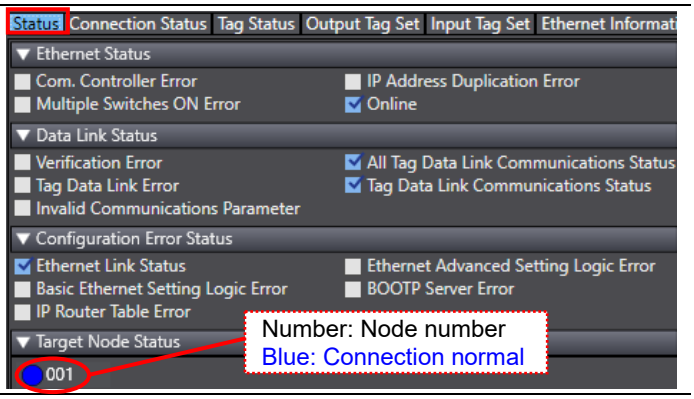
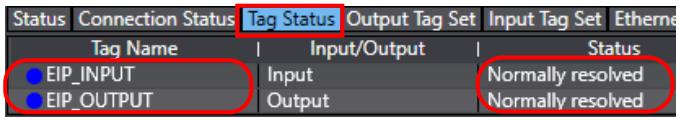


4 Right-click and select ***Monitor*** from the menu while Built-in EtherNet/IP Port Settings - Port 1 is selected.



5 The Built-in EtherNet/IP Port Settings Connection Monitor Tab Page is displayed.



6	Select the **Status** Tab. When the same check boxes are selected as shown on the right, the tag data links are normally in operation.	
7	Select the **Connection Status** Tab. Check that a blue circle is displayed next to the applicable connection listed in the *Connection Name* Column. Check that the Status is 00:0000.	
8	Select the **Tag Status** Tab. Check that all the tags in the *Tag Name* Column are displayed and that blue circles are displayed next to them. Check that the status of all tags is normally resolved.	

7.4.2. Checking the Sent and Received Data

Check that the correct data are sent and received.

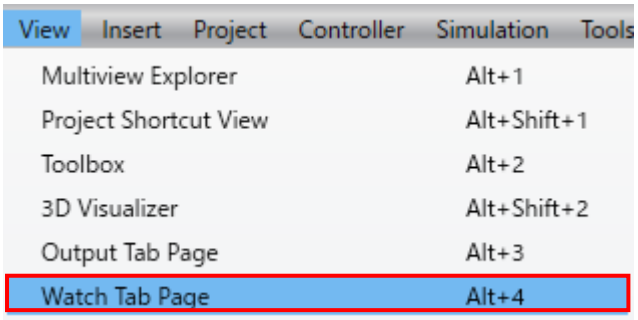
In this section, the measurement cycle Auto setting command is executed on the device variables in the output area to ZP-EIP, and the response data stored in the device variables in the input area from ZP-EIP is checked.

Caution

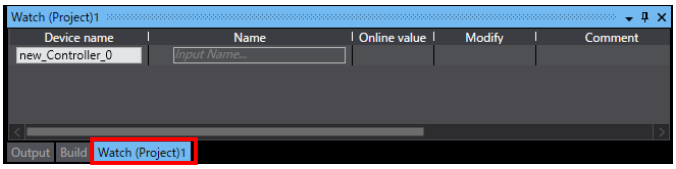
If you change the variable values on a Watch Tab Page when Sysmac Studio is online with CPU Unit, the devices connected to the output unit may operate regardless of the operating mode of CPU Unit.

Always ensure safety before you change the variable values on a Watch Tab Page when Sysmac Studio is online with CPU Unit.

1 Select ***Watch Tab Page*** from the View Menu.

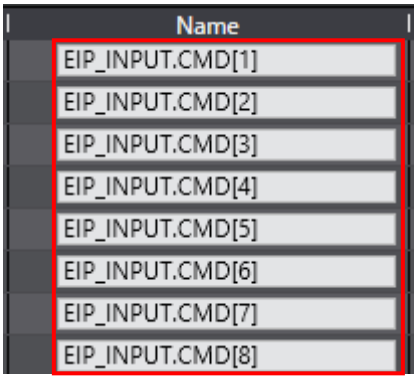


2 Select the **Watch (Project)1** Tab.

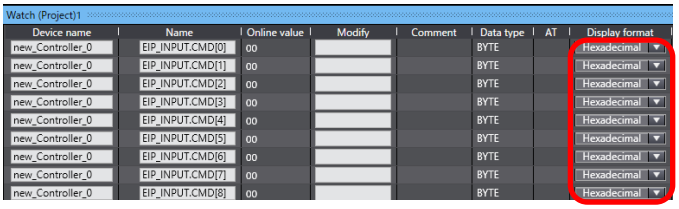


3 Enter the following INPUT variable names for monitoring. To enter a new name, click *Input Name*.

EIP_INPUT.CMD[0]
EIP_INPUT.CMD[1]
EIP_INPUT.CMD[2]
EIP_INPUT.CMD[3]
EIP_INPUT.CMD[4]
EIP_INPUT.CMD[5]
EIP_INPUT.CMD[6]
EIP_INPUT.CMD[7]
EIP_INPUT.CMD[8]

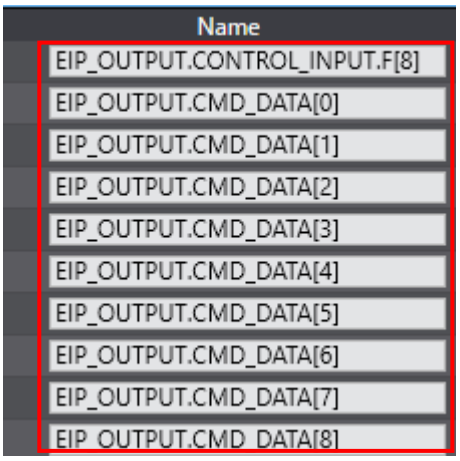


4 Check that the display formats of the variables you set are *Hexadecimal*.

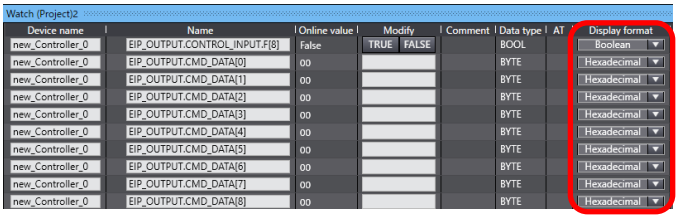


5 Enter the following OUTPUT variable names for monitoring. To enter a new name, click *Input Name*.

EIP_OUTPUT.CONTROL_INPUT.F[8]
EIP_OUTPUT.CMD_DATA[0]
EIP_OUTPUT.CMD_DATA[1]
EIP_OUTPUT.CMD_DATA[2]
EIP_OUTPUT.CMD_DATA[3]
EIP_OUTPUT.CMD_DATA[4]
EIP_OUTPUT.CMD_DATA[5]
EIP_OUTPUT.CMD_DATA[6]
EIP_OUTPUT.CMD_DATA[7]
EIP_OUTPUT.CMD_DATA[8]



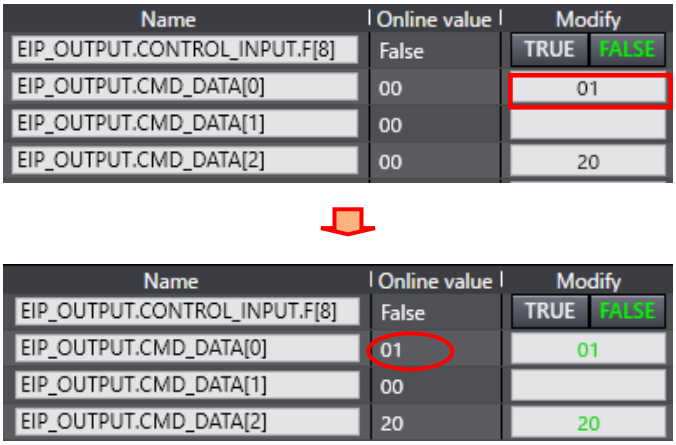
6 Check that the display formats of the variables you set are as shown in the figure.



7 Enter 01 for *EIP_OUTPUT.CMD_DATA[0]* in the *Modify* Column.

01 is displayed for *EIP_OUTPUT.CMD_DATA[0]* in the *Online value* Column.

*The command code 01 (destination: ZP-EIP CH1) is set.



8 In the same way as the above step, set *20* for *EIP_OUTPUT.CMD_DATA[2]* in the *Online value* Column.

*The command 20 (measurement cycle Auto execution) is set.

Name	Online value	Modify
EIP_OUTPUT.CONTROL_INPUT.F[8]	False	TRUE FALSE
EIP_OUTPUT.CMD_DATA[0]	00	01
EIP_OUTPUT.CMD_DATA[1]	00	
EIP_OUTPUT.CMD_DATA[2]	00	20

Name	Online value	Modify
EIP_OUTPUT.CONTROL_INPUT.F[8]	False	TRUE FALSE
EIP_OUTPUT.CMD_DATA[0]	01	01
EIP_OUTPUT.CMD_DATA[1]	00	
EIP_OUTPUT.CMD_DATA[2]	20	20

9 Check that the online value of *EIP_OUTPUT.CONTROL_INPUT.F[8]* is False. Click **TRUE** for *EIP_OUTPUT.CONTROL_INPUT.F[8]* in the *Modify* Column.

Name	Online value	Modify
EIP_OUTPUT.CONTROL_INPUT.F[8]	True	TRUE FALSE
EIP_OUTPUT.CMD_DATA[0]	01	01
EIP_OUTPUT.CMD_DATA[1]	00	
EIP_OUTPUT.CMD_DATA[2]	20	20

True is displayed for *EIP_OUTPUT.CONTROL_INPUT.F[8]* in the *Online value* Column, and the command is executed.
When the command execution is complete, the response is returned to *EIP_INPUT.CMD* in the *Online value* Column.

Name	Online value
EIP_INPUT.CMD[0]	00
EIP_INPUT.CMD[1]	01
EIP_INPUT.CMD[2]	20
EIP_INPUT.CMD[3]	00
EIP_INPUT.CMD[4]	03
EIP_INPUT.CMD[5]	00
EIP_INPUT.CMD[6]	00
EIP_INPUT.CMD[7]	00
EIP_INPUT.CMD[8]	00

10 When the process ends, the online values of the response variables are shown below.

EIP_INPUT.CMD[1]: 01
(Command flag)
EIP_INPUT.CMD[2]: 20
(Execution command code)
EIP_INPUT.CMD[3]: 00
(Command execution result
(00: OK, F1: Command error,
F2: Status error,
F3: Communications error,
F4: Authentication error) is reflected.)
EIP_INPUT.CMD[4]: 03
(03: Measurement cycle 1 ms)

Name	Online value
EIP_INPUT.CMD[0]	00
EIP_INPUT.CMD[1]	01
EIP_INPUT.CMD[2]	20
EIP_INPUT.CMD[3]	00
EIP_INPUT.CMD[4]	03
EIP_INPUT.CMD[5]	00
EIP_INPUT.CMD[6]	00
EIP_INPUT.CMD[7]	00
EIP_INPUT.CMD[8]	00

For details on commands, refer to *4-3 Tag Data Link Commands* of the *ZP-series EtherNet/IP Communication Unit User's Manual* (Cat. No. Z496).

8. Initialization Method

The setting procedures in this document are based on the factory default settings.
Some settings may not be applicable unless you use the devices with the factory default settings.

8.1. Initializing Controller

To initialize the Controller settings, it is necessary to initialize CPU Unit.
Change the operating mode of Controller to PROGRAM mode and select ***Clear All Memory*** from the Controller Menu in Sysmac Studio. The Clear All Memory Dialog Box is displayed.
Check the contents and click **OK**.

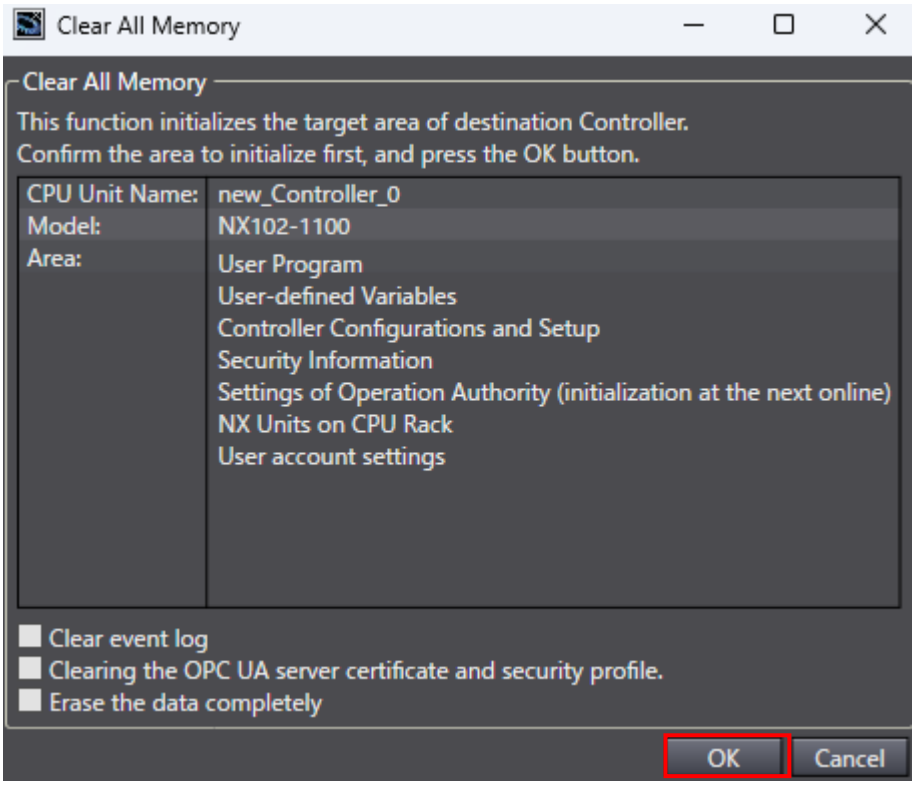


Fig. 1 example: Clear All Memory Dialog Box of NX102

8.2. Initializing Amplifier and ZP-EIP

For information on how to initialize ZP-EIP, refer to *5-4-2 List of Commands* in *Section 5 Additional Communication Unit Functions* of the *ZP-series EtherNet/IP Communication Unit User's Manual* (Cat. No. Z496).

9. Revision History

Revision code	Date	Description of revision
01	February 2025	First edition

Note: Do not use this document to operate the Unit.

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