

Programmable Terminal NA-series

# Practices Guide Importing External Device Variables Application

NA5-15W
NA5-12W
NA5-9W
NA5-7W <b>DDD</b>

Practices Guide



V417-E1-01

#### Introduction

This guide provides reference information for the use of external devices with the NA. It does not provide safety information.

Be sure to obtain the NA-series Programmable Terminal User's Manuals, read and understand the safety points and other information required for use, and test sufficiently before actually using the equipment.

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Cat. No.	Model	Manual name
W473	CJ2H-CPU6□-EIP	SYSMAC CJ Series CJ2 CPU Unit Software
	CJ2H-CPU6□	User's Manual
	CJ2M-CPU□□-	
W501	NX701-□□□	NJ/NX-series CPU Unit Software
	NJ501-□□□	User's Manual
	NJ301-□□□	
	NJ101-□□□	
W506	NX701-□□□□	NJ/NX-series CPU Unit Built-in EtherNet/IP <sup>™</sup> Port
	NJ501-□□□	User's Manual
	NJ301-□□□	
	NJ101-□□□	
W504	SYSMAC-SE2	Sysmac Studio Version 1 Operation Manual
W502	NX701-□□□	NJ/NX-series Instructions Reference Manual
	NJ501-□□□	
	NJ301-□□□	
	NJ101-□□□	
V118	NA5-15W□□□□	NA-series Programmable Terminal Software
	NA5-12W□□□□	User's Manual
	NA5-9W□□□□	
	NA5-7W□□□□	
V119	NA5-15W	NA-series Programmable Terminal Device Connection
	NA5-12W	User's Manual
	NA5-9W□□□□	
	NA5-7W□□□□	
V120	NA5-15W□□□	NA-series Programmable Terminal Startup Guide
	NA5-12W	
	NA5-9W□□□□	

The following manuals are related to this manual.

# 2 Precautions

- (1) When building an actual system, check the specifications of the component devices of the system, use within the ratings and specified performance, and implement safety measures such as safety circuits to minimize the possibility of an accident.
- (2) For safe use of the system, obtain the manuals of the component devices of the system and check the information in each manual, including safety precautions, precautions for safe use.
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Special information in this document is classified as follows:

### Precautions for Safe Use

Indicates precautions on what to do and what not to do to ensure safe usage of the product.

### Precautions for Correct Use

Indicates precautions on what to do and what not to do to ensure proper operation and performance.

### Additional Information

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# **3** Introduction

The NA series has the ability to combine Sysmac devices and manage them in one project file. In addition, other devices including the Sysmac products and CJ series in other project files can be communicated by importing the variables or addresses. Omron is considering making the NA series manageable with controllers from other companies in the future. Devices in other project files are registered and managed as "External Device".

This guide describes how to import settings from the connected devices to perform communication between the NA and the CJ or NJ/NX series that is set as External Device.

### 3-1 Concept of Variable Import

The Sysmac Studio provides an integrated development environment to Sysmac devices. When the NA and NJ/NX series are managed in one project, the NJ/NX variable information can be shared in the project. (\*1)

Even if a Controller that you want to refer is not in the same project, the variable information still can be shared by being recognized the Controller as External Device and capturing the variable information. (\*2)



The "variable import" is a process that loads the variable information of the External Device into the project in the Sysmac Studio. After importing, data can be read from or written to the External Device by assigning the external device variables to the NA variables in the variable mapping setting.

# 4 External Device Tab Page in Sysmac Studio

The External Devices are registered under "Configurations and Setup" - "Device References" in the Multiview Explorer of the Sysmac Studio.

After devices are registered, the following tab page appears for each device.

The items displayed in the "Device Configuration" and

 Multiview Explorer
 ↓

 HML\_NA5\_0
 ↓

 ♥
 Configurations and Setup

 ♥
 Image: Device References

 ↓
 Image: Image

"Communications Configuration" Columns depend on the type of connected device.

For the details, refer to the relevant section for connecting the devices in this guide.

ExternalDevice0 ×		•			
Device Configuration					
Configuration -	-2	Communications Configuration			
Device Name	ExternalDevice0	IP Address     Route Path			
Device Vendor	Omron	IP Address			
Device Series	CI 🔽	Timeout 2 \$ seconds			
Communication Driver	CIP Ethernet	Encoding us-ascii 🔻			
		Communication Error Indication			
Import Status	ot Imported.				
Import Variables	Update Variables				
amport valiables opulate valiables					
▼ Device Variables					
▼ Device Variables Name	I Data Type I	Comment   AT   I			
▼ Device Variables Name Empty, Click here to a	I Data Type I add Item.	Comment   AT   I			
Device Variables     Name     Empty. Click here to a	I Data Type I add Item.	Comment   AT   I			
Device Variables     Name     Empty. Click here to a	I Data Type I add Item.	Comment   AT   I			
Device Variables     Name     Empty. Click here to a	I Data Type I add Item.	Comment   AT   I			
✓ Device Variables Name Empty. Click here to a	I Data Type I add Item.	Comment   AT   I			
Device Variables     Name     Empty. Click here to a	I Data Type I add Item.	Comment   AT   I			
Device Variables     Name     Empty. Click here to a	I Data Type I	Comment I AT I I			

The "Name", "Data Type", "Comment", and "AT" are shown in the "Device Variables" Column, from left to right.

Each item is explained below.

Name

A name of the variable registered in the connected External Device.

You can set a variable name by importing the variables or adding variables.

If no variable name is registered, the communication fails between the NA and External Device.

Data Type

A variable data type. Since this information is used to determine a data size, you must enter the data type even the address is already assigned to "AT".

Comment

A comment to variable. You do not necessarily have to enter a comment for the control.

• AT

The information to be referred when the variable is assigned to the physical addresses. The memory assigned to "AT" is accessed.

### 4-1 How to Import External Device Variables

There are the following three methods to import the variable information of the External Device with the Sysmac Studio version 1.13.

- 1) Importing and updating variables directly from device
- 2) Direct entry
- 3) Copy and paste



#### Importing and updating variables directly from device

Variables can be imported directly from the External Device by connecting the device to the computer with an Ethernet cable. Since the CIP protocol is used to query the tag variables to the NJ/NX in this method, the variables are imported based on the CIP rules. This method is applied to the OMRON devices that support CIP.

The "Update Variables" function imports only the differences in the changed variable information of the External Device.

#### • Direct entry

The user can directly enter the variable information in the "Device Variables" Column of the Sysmac Studio. Data Type and AT must be entered accurately according to the defined notation rules.

#### Copy and paste

The variable information can be copied from Excel, notepad or other text editor and pasted to the "Device Variables" Column of the Sysmac Studio. This method allows the user to edit a large amount of variables easier than using the direct entry.

#### ① Copying from Excel

Describe one item per cell. The items must be entered in the same order as the "Device Variables" Column of the Sysmac Studio, as shown below.

Name (variable)	Data Type	Comment	Address/Value (AT)
Test1	BOOL	abc	E0_0000.01
Test2	DINT	def	0001

Except the heading lines in the Excel, all of the variable information must be copied and pasted to the "Device Variables" Column of the Sysmac Studio.

#### ② Copying from notepad or other text editor

The variable information can be copied from notepad, word file, or other text editor and pasted to the "Device Variables" Column of the Sysmac Studio. The items can be separated by the [Tab] key on the keyboard. The items must be described in the same order as the "(1) Copying from Excel".



### Additional Information

There is no restriction on the number of variables to import, but there is limit to the number of variables to assign to the NA global variables in the variable mapping; 20,000 mapped variables per External Device and 35,000 variables for the entire project.

### Additional Information

When multiple NA devices are registered in one project, the External Device can be referred from the multiple NA devices.

In this case, the variables must be imported by all of the multiple NA devices in the external device setting.

### Additional Information

When entering a variable name in the "Device Variables" Column of the Sysmac Studio, the prohibited character is in accordance with the prohibited character of the External Device. The prohibited character for mapped variables is the same as for the NA global variables.

### 4-2 The Merge Device Variables Dialog Box of Sysmac Studio

Entering the IP address of the External Device enables the "Update Variables" Button of Import Status.

The following dialog box appears when the "Update Variables " Button is pressed.

– – Device Configuration –			Communication	ns Configuration —	
Device Name ExternalDevice0		IP Address Route Path			
Device Vendor Omron 🔻		IP Address	192.168.250	3	
Device Series CJ 🔻		Timeout	2	\$ seconds	
Communication Driver CIP Ethernet 🔻		Encoding	us-ascii	<b>V</b>	
		Communication Error Indication			
Import Status No	ot Imported. 🔻				
Import Variables	Indate Variables				
	poste renoutes				

The same items are displayed on the screen regardless of devices.

You can use the same procedure regardless of devices.

Merge Device Variables		
		፲ @ Q 🤍 🕇 🖡 🗗
Target Device Variable	Source Device Variable	
Name  Data Type Comment AT	Name  Data Type Comment AT	
0 DINT1 DINT	0 DINT1 DINT	
1 DINT2 DINT	1 DINT2 UDINT	
2 DINT3 DINT	2 DINT3 UINT	
	3 DINTE DINT	
	4 DINI7 DINI	
5 DINTS DINT	5 DINTS DINT	
	Copy Selected Rig	int to Left 🚓 Copy All Right to Left 👘 Undo Selected 🚑 Undo All
Legend: Differenti Left side only Rig	ht side only Copied	Apply Close

On the screen, the variable in the External Device is compared with the value in the "Device Variables" Column of the Sysmac Studio, and the differences can be applied to the "Device Variables" Column from the External Device. But a reverse operation is impossible (i.e., unable to change the variable information in the Sysmac Studio and apply the differences to the External Device).

The following items are displayed on the screen.

• Target Device Variable

A list of the variables registered in the "Device Variables" Column of the Sysmac Studio. Next to each number, the comparison result of the variables between the target external device and the source external device is displayed in a color that is shown in the legend.

• Source Device Variable

A list of the variables stored in the External Device.

Next to each number, the comparison result of the variables between the target external device and the source external device is displayed in a color that is shown in the legend.

Legend

The results of the comparison are displayed in the following colours.

 $\cdot\,\text{Red}$ : The name in the target and source devices are the same, but the data types are different.

 $\cdot$  Green: The variable exists in only the target device (Sysmac Studio). This disappears after the difference is copied and applied.

 $\cdot$  Blue: The variable exists in only the source device (External Device). The difference in variables can be copied to the Sysmac Studio.

• Yellow: The copied variables. In this status, the variables have not been copied to the "Device Variables" Column of the Sysmac Studio. Therefore, the copied variables are not applied to the "Device Variables" Column even after the "Merge Device Variable" Dialog Box is closed. You need to click the "Apply" Button to apply the results of copying to the "Device Variables" Column.

#### • "Copy Selected Right to Left" Button

This button merges the selected lines of variables from the source device (External Device) to the target device (Sysmac Studio).

Even this button is simply clicked, the results of copying is not applied to the "Device Variables" Column. To apply the results of copying, you need to click the "Apply" Button.

• "Copy All Right to Left" Button

This button merges all of the differences between the two devices from the source device (External Device) to the target device (Sysmac Studio). Even this button is simply clicked, the results of copying is not applied to the "Device Variables" Column. To apply the results of copying, you need to click the "Apply" Button.

#### • "Undo Selected" Button

This button undoes the selected copy operation. You can undo the copy operations only before clicking the "Apply" Button.

#### "Undo All" Button

This button undoes all of the copy operations before clicking the "Apply" Button.

#### • "Apply" Button

This button finalizes the copied variables and applies the result to the "Device Variables" Column. After the result is applied, the colors of "legend" disappear and the variables in the "Target Device Variable" and "Source Device Variable" Fields become the same.

### 4-3 Supported Devices and Applicable Variable Import Methods

There are the following three methods to import variable information of the External Device. Applicable methods and restrictions depend on the type of External Device.

Method	Importing and updating variables directly from	Direct entry (note 2)	Copy and paste( note 2)			
Device type	device (note 1)					
NJ/NX	Supported	Supported	Supported			
CJ-CIP	Supported	Supported	Supported			
CJ-FINS	Not supported	Supported (note 3)	Supported (note 3)			

#### The import methods for each External Device are as follows.

#### Note 1)

The following table shows whether "Importing and updating variables directly from device" is supported by each variable.

	System-defined	User-defined variables				
• variable	variables	Not published	Publish Only	Input	Output	
Device type						
NJ/NX	Supported	Not supported	Supported	Supported	Supported	
CJ-CIP	Not supported (note 4)	Not supported	Supported	Supported	Supported	

#### Note 2)

A building error occurs if a data type that you entered is not within the "IntelliSense" scope. For this reason, you cannot neither define structures nor enter the external device variables in the "Data Type" Field.

#### Note 3)

For the CJ-FINS, AT (address) must be entered.

For information on how to enter AT (address), refer to the "Address/Value" Field of the CX-Programmer variable table.

### Note 4)

CJ system-defined variables don't have the "Publish" setting. Also, the user can not add this setting to the variables. For this reason, the CJ system-defined variables cannot be imported by any variable import method.

### Additional Information

When importing the NJ/NX variables, the user-defined variables and the system-defined variables are imported together.

The CJ-CIP system-defined variables cannot be imported since this variable cannot be set as network variable.

### 4-4 Import Information of External Device Variable Table

To import the external device variable and the physical address information and use them in the NA, you must define the data type regardless of the import method.

The following table shows whether the "Device Variables" Column of the Sysmac Studio must be entered.

Device type	Name (variable)	Data Type	Comment	Address/Value (AT)
NJ/NX	Required	Required	Optional	Not required
CJ-CIP	Required	Required	Optional	Not required
CJ-FINS	Required	Required	Optional	Required

## Additional Information

A variable name for the CJ-FINS must be entered. If the CJ project file is designed only with physical address, you must define the variable to the physical address to be imported to the NA.

### 4-5 Data Type

The NA uses the Visual Basic data type. The data name and type are different from IE61131 that is used in the CJ or NJ/NX series.

The "Device Variables" Column of the Sysmac Studio must be entered in the IE61131 data type, as same as the CJ or NJ/NX.

When using the "importing and updating variables directly from device "method, the IE61131 data type set by the External Device is automatically loaded during the import. When using the "direct entry" or "copy and paste" method, the user must manually enter in the IE61131 data type. The Visual Basic data type can be assigned in the "variable mapping" setting.

When importing variables with the NJ, NX, or CJ-CIP, you don't need to be aware of the data length. When importing the variable assigned to the physical addresses with the CJ-FINS, if the data type is declared with the Sysmac Studio, the data is loaded for the data type length, starting from the beginning of the physical address given to AT.

### Additional Information

The range of physical addresses to be referred depends on the data type. Example) For a LREAL data set to DM0000, the addresses from DM0000 to DM0003 are used since the LREAL variable is 4-word (eight bytes).

Image of assigned address

### Additional Information

If two variables of different data types are set to the same address, they are normally operated respectively. In this case, the two variables are shared. If any change is made to the one, the other changes accordingly.

Example) When address is 11, DINT variable is 11, WORD variable is B.

If the variable is an array, consecutive addresses are assigned starting from the entered address. The interval of the assigned address depends on the data type of the array variable.

Example) For a DINT variable when the variable name is "Test", number of array is "3", and set address is "E0\_0000".

In this case, the address of array number 0 is "E0\_0000", number 1 is "E0\_0002", and number 2 is "E0\_0004".





For a BOOL variable, one array is in units of one bit. When the number of array is "3" and the address is set to "E0\_0000", the address of array number 0 is "E0\_0000.00", number 1 is "E0\_0000.01", and number 2 is "E0\_0000.02".

### 4-6 Notation for AT (Physical Addresses)

This section describes the notation for AT that is required to import variables to the CJ-FINS External Devices using the "direct entry" or "copy and paste" method.

To enter AT (address), refer to the "Address/Value" Field of the CX-Programmer variable table.

- For the CIO area "CIO 0001", enter only the numerical parts in the address. If above two digits are all 0, you can omit 0 to enter. For "0001", enter "1".
- For "E0\_0001", enter "E0\_0001" as it is. If above two digits are all 0, you can omit 0 to enter. For "E0\_0001", enter "E0\_1".
- For a BOOL variable, enter a value in a range of 00 and 15 to two decimal places of the address.

### 4-7 How to Input Data Type of Array Variables

Array variables can be set by all the input methods.

The input methods for each device type are as follows.

NJ/NX	Importing and updating variables directly from device	"Array[start point of arrayend point of array] of data type" is automatically entered in the "Data Type" Field.
	Direct entry	Enter "Array[start point of arrayend point of array] of data type" in the "Data Type"
	Copy and paste	Field.
		Example) number of array for DINT variable is 10 : "Array [09] of DINT".
CJ-CIP	Importing and updating variables directly from device	"Data type [number of array]" is automatically entered in the "Data Type" Field.
	Direct entry	Enter "Data type [number of array]" in the "Data Type" Field.
	Copy and paste	Example) For DINT variable when number of array is 10 : DINT[9]
CJ-FINS	Direct entry	Enter "Data type [number of array]" in the "Data Type" Field.
	Copy and paste	Example) For DINT variable when number of array is 10 : DINT[9]

### 4-8 Import Availability for Data Type Variables

### Whether the import is available for each device is as follows.

NJ/NX	Importing and updating variables directly from device	Available. However, variables of the union and enumeration types cannot be imported.
	Direct entry	Not available because an error occurs if a data type that you entered is not within the "IntelliSense" scope.
	Copy and paste	Not available because an error occurs if a data type that you entered is not within the "IntelliSense" scope.
CJ-CIP	Importing and updating variables directly from device	Available. However, the system-defined variables cannot be imported.
	Direct entry	Not available because an error occurs if a data type that you entered is not within the "IntelliSense" scope.
	Copy and paste	Not available because an error occurs if a data type that you entered is not within the "IntelliSense" scope.
CJ-FINS	Direct entry	Not available because an error occurs if a data type that you entered is not within the "IntelliSense" scope.
	Copy and paste	Not available because an error occurs if a data type that you entered is not within the "IntelliSense" scope.

# 5 When NJ/NX is Connected

This section explains how to import the variables when the NJ/NX is set as External Device. Refer to the next section for how to import NJ/NX variables.

#### Additional Information

As an example, the following screen uses "NJ" device to explain the procedure. When you use NX, replace the description of "NJ" with "NX" in the following procedure, as the same procedure as "NJ" is used for "NX" to import variables.

### 5-1 Window to Set NJ/NX as External Device

This section explains the window that sets the NJ/NX External Device. The following window appears by right-clicking "Device References" -> "Add" -> "ExternalDevice", and select "NJ" or "NX" for the "Device Series" Field.



- ① IP Address: Enter the address of the connected NJ/NX. Example)"192.168.250.1"
- ② Device Series: Select the types of the connected External Device from "CJ", "NJ", or "NX".
- ③ Import Status: The import result and date are shown after importing the variable.
- ④ Import Variables/ Update Variables: When the External Device is connected with an Ethernet cable, click the "Import Variables" or "Update Variables" Button to import or update the variables.
- (5) Device Variables: Variables that are imported from the External Device are shown.

### 5-2 Importing Variables when External Device is NJ/NX

There are the following three methods to import variables when the "NJ" or "NX" is set as External Device.

- Importing and updating variables directly from device
- Direct entry
- Copy and paste from Excel or other files

Refer to the next page for each variable import method.

### 5-3 Importing and Updating Variables Directly from Device

This method directly imports the variable information from the NJ/NX by connecting the NJ/NX to the PC that imports the variables with an Ethernet cable.

As the CIP protocol is used in this method, only the exposed variables in publish setting (set to "Publish Only", "Input", or "Output") of system-defined and user-defined can be imported among the NJ/NX global variables.

### Additional Information

If all of the global variables to import is set to "Do not publish" in the NJ/NX, only the NJ/NX system-defined variables will be imported.

All of the variables are imported by pressing the "Import Variables" Button.

Individual variable cannot be selected whether to import or not.

You can import only the difference in the variable information by pressing the "Update Variables" Button.

Perform the following procedure to import and update variables directly from the NJ/NX. **Importing variables from the NJ/NX Unit** 



_	Open New Project and click "Device	
Δ		
-	References" -> "Add" ->	New Project - HMI_NAS_0 - Sysmac Studio
	"ExternalDevice" to	File Edit View Insert Project HMI Simulation Tools Help
	add "External Davias 0"	X ● @ 煎 つ ぐ @   Έ 瑟 큰 區 🤨 A ほ
	auu ExternalDeviceu.	
		Multiview Explorer • 1 A Page X
		HMLNAS_O V III III III III III III III III III
		Configurations and Setup
		Add External Device
		L M Internal Device
		T HMI Settings
		€, Security Settings
		A Language Settings
		V FINIL
	Select "N I" or "NX" for the "Dovico	
F		
5	Series" Field and enter the IP	ExternalDevice0 x
	address of the device	▼ Device Configuration
		Device Configuration     Device Configuration     Communications Configuration
		Device Name
		Device Name External Device
		Device Vendor Omron Timeout 2 seconds
		Device Series NJ 🔍 🖾 Communication Error Indication
		Communication Driver Ethermet
		LUCIE
		Import Status Not Imported.
		Import Variables Update Variables
	Click the "Import Variables" Button	
6	Click the import valiables button.	
0		(mport Status Import successful on 2015/07/29 13:51:51
	The user-defined variables are	Import Variables Update Variables
	imported under the system defined	
	imported under the system-defined	Vervice Variables
	variables of the NJ/NX.	MC_COMCOMMON_RFF
		_MC_ComErrSta WORD
		MC Entria WORD
		MC_SNP ArrayDLS31 of 5 MC_CRP Ends. Acred 0.111 of W
		PIC_Encise WORD
		PowerOnCount UDINT
		_PowerOnHour UDINT
		UnitVersion Array[0.1] of USINT
		rojckemajouut ouu
-		

## Additional Information

Variables are imported based on CIP protocol rules, so the global variables set to "Do not publish" in "Network Publish" cannot be imported.

## Additional Information

Structure variables can be imported in the same way as for regular variables. Data variables of unions and enumerations that are not supported by the NA cannot be imported. After the variable is imported, you can import only the differences in the variables that were changed or added by the External Device by clicking the "Update Variables" Button next to the "Import Variables" Button. You do not necessarily have to click the "Import Variables" Button before "Update Variables" Button.

Perform the following procedure to import the differences in the NJ/NX variables by clicking the "Update Variables" Button.



Note1 ) The variables stored in the External Device are displayed at the right side of the pop-up page. At the left side, the "Device Variables" Column of the connected External Device is displayed.



### 5-4 Direct Entry

In this method, you can directly enter variables in the "Device Variables" Column of the Sysmac Studio. Regardless of the publish setting in the global variable table of the NJ/NX variables can be registered.

### Additional Information

A tag comparison error occurs after transferring the variable information to the NA if the variable information that you entered is different from the information in the NJ/NX. The following items are checked during the tag comparison.

- ·Variable name, structures name, structure member name
- ·Variable data type, structure data type, structure member data type
- $\cdot$  Number of array for variables, number of array for structures, number of array for structure member



Additional Information

When entering array variables, enter "Array[start point of array..end point of array] of variable name" in the "Data Type" Field.

### 5-5 Copy and Paste

In addition to the direct entry, you can copy the variable information from Excel or text files and paste it to the "Device Variables" Column of the Sysmac Studio. To copy and paste the information to the "Device Variables" Column, the variable information must be placed in the specified order in the file.

■ "(	Copy & paste" procedure									
4	Input the variables that you want to									
	copy to the Sysmac Studio in the		JB2	•	fx fx					
	Excel sheet		A	В	C	D	E	F		
		1								
	The order is	2		Manua	Data Tura	Onmont	AT			
		4		test	BOOL	Comment	AI			
	Name-> Data Type-> Comment-> AT,	5		test1	BOOL					
	from left to right.	6		test2	BOOL					
	You do not need to input "Comment"	8		test4	BOOL					
	and "AT"	9		test5	BOOL					
		10		test6	BOOL					
		11		test8	BOOL					
		13		test9	BOOL					
		14		test10	BOOL					
		15								
	Convithe veriables in the Event about	10								
2	Copy the variables in the Excel sheet.				6					
~			382			۰ ٦	-			
		1	A	В	C	D	E	F		
	Make sure that the data in	2								
	"Comment" and "AT" is also copied	3		Name	Data Type	Comment	AT			
	even they are blank.	4		test test1	BOOL					
	*The heading lines on top are given	6		test2	BOOL					
	only for explanation, so exclude the	7		test3	BOOL					
	boodings when you eapy the	8		test4	BOOL					
	neadings when you copy the	10		testő	BOOL					
	variables information.	11		test7	BOOL					
		12		test8	BOOL					
		13		test9	BOOL					
		15		100110	DOOL					
		16								
2	In the "Device Variables" Column,									
3	right-click and select "Paste" or	External	Device0 x							
	"Ctrl+V" to paste the variables	Device C	onfiguration	ı	Comm	unication: Config	uration			
		Device Nar	ne	ExternalCevice0	IP Add	ress 192	. 1685 . 100			
		Device Ven	dor es	Omron	Timeou	nt 2	🗧 se	conds		
		Communic	ation Driver	Ethernet		Information Error	Indication			
		Import Statu	5 U	pdate succesful on '	2015/07/29 18:23:07	r 🔹				
		Import Va	ariables	Update Variables						
		T Device V	ariables							
		1014	Name	i Dala Type	Commen	t i AT				
		test1 test2		BOOL						
		testJ		BOOL						
		test4 test5		BOOL						
		testő		BOOL						
		test8		BOOL						
		test9 test10		BOOL						
		and the second second				_				

# 6 When CJ-CIP is Connected

This section explains how to import the variables when the CJ2 is set as External Device. Refer to the next page for the procedures to import the CJ-CIP variables.

### 6-1 Window to Set CJ-CIP as External Device

This section explains the window that sets the CJ-CIP External Device. The following window appears by right-clicking "Device References" -> "Add" -> "ExternalDevice", and selecting CJ for the "Device Series" Field, and CIP Ethernet for the "Communication Driver" Field.

<u> </u>
seconds
on
j

- IP Address: The "IP Address" Filed is displayed for the connected device if the "IP Address" Check Box is selected. Example)"192.168.250.1"
   \*Refer to the following "Additional Information" for information on the "Route path" Check Box.
- 2 Device Series: Select the types of the connected External Device from "CJ", "NJ", or "NX".
- ③ Communication Driver: Either "CIP-Ethernet" or "FINS-Ethernet" can be chosen for the CJ. "CIP-Ethernet" is selected here.
- ④ Import Status: The import result and date are shown after importing the variable.
- (5) Import Variables/ Update Variables: When the External Device is connected with an Ethernet cable, click the "Import Variables" or "Update Variables" Button to import or update the variables.
- 6 Device Variables: Variables that are imported from the External Device are shown.

### Additional Information

When the "Route path" Check Box is selected in the "Communications Configuration" Column, the "IP Address" Field changes to the "Route Path" Field.

The "Route Path" Field is used when connecting the External Device via router. The entry format is "Port No.%address". Example) 1%192.168.250.30



### 6-2 Importing Variables when External Device is CJ-CIP

There are the following three methods to import variables when the CJ-CIP is set as External Device.

- Importing and updating variables directly from device
- Direct entry
- Copy and paste from Excel or other files

Refer to the next page for each variable import method.

### 6-3 Importing and Updating Variables Directly from Device

This method directly imports the variable information from the CJ by connecting the CJ to the PC that imports the variables with an Ethernet cable.

As the CIP protocol is used in this method, the variable import is available within the CIP function scope that is supported by the CJ.

Additional Information

Unlike the NJ/NX, the CJ cannot import its system-defined variables. Only the variables whose network address is set and the address is allocated by the CX-Programmer can be imported to the Sysmac Studio.

All of the variables are imported by pressing the "Import Variables" Button.

Individual variable cannot be selected whether to import or not.

You can import only the difference in the variable information by pressing the "Update Variables" Button.

Perform the following procedure to import and update variables directly from the CJ.



3	Connect the CJ with an Ethernet cable and click the "Import Variables" Button.	▼ Device Configurat Device Configurat Device Name Device Vendor Device Series Communication Driv Import Status	ition on <u>ExternalDer</u> Omron CJ rer <u>CIP Ethernet</u>	vice0	Communi IP Add IP Address Timeout Encoding Commu	cations Configuration Irress Route Path 192.168.2505 2 us-ascii unication Error Indication	
		Import Vanibles  ▼ Device Variables  Name Empty. Click here	Update Variabl	es Type i G	Comment	I AT I	
4	Make sure that the CJ variables are automatically entered in the "Device Variables" Column, which means the operation ends successfully.	Device Configuration     Device Configuration     Device Name     Device Vendor     Device Series     Communication Driver     Import Status     Up     Import Status     Device Vendolate	EsternalDeviceO Omron CJ CIP Ethernet date successful on 201 Jpdate Variables	Communic P Address Timeout Encoding Commu E Commu Stor/30 166031	ations Configuress  Route 192 2 Usi-as nicotion Error com File	ration Path 168 : 250 :2 ; seconds ai v Indication	
		Name	Data Type	1 Comment	I AT I		
		testi	DINT				
		test10	DINT				
		test100	DINT				
		test11	DINT				
		test13	DINT	1			
		test14	DINT				
		test15	DINT				
		test16	DINT				
		test17	DINT				
		test18	DINT				
		test19	DINT				
		test2	DINT				

After the variable is imported, you can import only the differences in the variables that were changed or added by the External Device by clicking the "Update Variables" Button next to the "Import Variables" Button. You do not necessarily have to click the "Import Variables" Button before "Update Variables" Button.

Perform the following procedure to import the differences in the CJ variables by clicking the "Update Variables" Button.



Note1 ) The variables stored in the External Device are displayed at the right side of the pop-up page.

• At the left side, the "Device Variables" Column of the connected External Device

is displayed.

-	After the variables are copied at the	
2		
J	left side, click the Apply Button to	Merge Device Variables
	apply the regulte	H & & & + + F
	apply the results.	Tarriet Device Variable Source Device Variable
		Name  Data Type/Comment    Name  Data Type/Comment
	After the regulte are applied alight	0 CZ2 VAL DINT 0 CZ2 VAL DINT 1 CZ2 VAL0 DINT 1 CZ2 VAL0 DINT
	After the results are applied, click	2 C/2_Val11 DINT 2 C/2_Val11 DINT
	the "Close" Button to close the non-	3 CI2_VAI12 DINT 3 CI2_VAI12 DINT 4 CI2_VAI13 DINT 4 CI2_VAI13 DINT
		5 CI2 Vall4 DINT 5 CI2 Vall4 DINT
	up page.	6 CI2,VAII5 DINT 6 CI2,VAII5 DINT 2 CI2,VAII5 DINT 7 CI2,VAII5 DINT
		8 CIZ VALIO DINT B CIZ VALIO DINT
		9 C/2 Val38 DINT 9 C/2 Val38 DINT
		10 CL2 Valis DNT 10 CL2 Valis DNT 11 CL2 Val DNT 11 CL2 Valis DNT
		12 CI2_Val20 DINT 12 CI2_Val20 DINT
		15 C/2_Val23 DINT
		16 CI2 Val24 DINT
		18 C12_VN26 DINT
		19 CZZ VAIZZ DINT
		210 C22_W329 DINT
		22 C22,Val3 DINT 23 C22,Val3 DINT
		+- Copy Selected Right to Left +* Copy All Right to Left
		Comments of Commen
		Legend: Although Left side only Right under undy Copied Cose
		Data Types are successfully updated.
	The conied variable is added in the	
Λ	The copied variable is added in the	
4	"Device Variables" Column.	ExternalDevice0 x
4	"Device Variables" Column.	Extensiblevece X     Vexec Configuration
4	"Device Variables" Column.	Device Configuration     Overse Configuration     Device Configuration     Device Configuration     Device Configuration     Device Configuration
4	"Device Variables" Column.	Device Configuration      Device Configuration      Device Configuration      Device Name      Device Nam      Device Name      Device Name      Device Nam      Device Nam
4	"Device Variables" Column.	Communications Configuration     Device Name     Device N
4	"Device Variables" Column.	External Uniced ×     ×       ✓ Divice Configuration     -       Divice Configuration     ●       Divice Vendor     Ommon       Divice Series     G       Communications     Filement       Divice Series     G       Transmit Gaucentor     Image: Series
4	"Device Variables" Column.	Device Configuration     Image: Configuration       Device Configuration     Image: Configuration       Device Configuration     Image: Configuration       Device Series     Image: Configuration       Device Series     Image: Configuration       Communication Driver     Image: Configuration
4	"Device Variables" Column.	Device Configuration     Communications Configuration       Device Name     External/device0       Device Name     Communications Configuration       Device Series     Image: Series       Communication Driver     Image: Series
4	"Device Variables" Column.	Communication       Communications Configuration         Device Configuration       Device Configuration         Device Vendor       Ommon         Device Service       C         Communication Driver       C         Device Service       C         Device Service       C         Device Service       C         Device Service       C         Communication Driver       C         Device Service       C         Device Service       C         Communication Driver       C         Device Service       C         Communication Driver       C         Device Service       Communication Error Indication         Device Marketion       Teledate successful on 2015/07/30 174804K
4	"Device Variables" Column.	Verkeit Confliguration      Device Confliguration      Device Vendor      Device Series      Communication Driver      Call Ethernet      Prodete Series      Communication Driver      Call Ethernet      Product Series      Communication Driver      Device Series      Communication Driver      Device Series      Communication Driver      Device Series      Device Seri
4	"Device Variables" Column.	Vervice Configuration      Device Configuration      Device Name      Device Variables      Vervice Configuration      Device Variables      Vervice Configuration      Device Variables      Vervice Configuration      Device Variables      Vervice Configuration      Device Variables      Vervice Variable      Ve
4	"Device Variables" Column.	Communications       Communications         Device Configuration       Device Configuration         Device Series       Communications         Communication Driver       Communications         Packet Series       Communications         Communication Driver       Communications         Packet Series       Communications         Packet Series       Communications         Communication Driver       Communications         Packet Series       Options Variables         Verside Variables       Communications         Name       Data Type         Communication       AT
4	"Device Variables" Column.	External bolicity ≥          • Divice Configuration       Divice Configuration       Divice Vendor <u>Onemanification       Onemanification       Onemanification       Onemanification       Pi Address       • Route Path       Pi Address       • Pi A</u>
4	"Device Variables" Column.	Communication (Second (Secon
4	"Device Variables" Column.	Venucio Configuration       Device Configuration       Device Configuration       Device Service       Communication Driver       Off Element       Venucio Configuration       Device Service       Communication Driver       Off Element       Venucio Configuration       Device Service       Communication Driver       Off Element       Venucio Configuration       Device Vendor       Ommonication Driver       Off Element       Vendor Venución       Update successful on 2015/07/30 174904       Vendor Venucióne       Vendor Venucióne       Device Vendor       Communication Driver       Update Vanables       Vendor Venucióne       Doita Type       Communication Entror Indication       Communication Entror Indication       Vendor Venucióne       Vendor Venucióne       Ota Type       Communication Entror Indication       Cita Type       Communication Entror Indication
4	"Device Variables" Column.	Workie Configuration     Communications Configuration       Device Vendor     Omera       Device Vendor     Omera       Communication Driver     Communications       Communication Driver     Communications       Device Series     Communications       Communication Driver     Communications       Import Statur     Update successful on 2015/02/30 32/49/04 ▼       Import Vacables     Update Vacables       ▼ Device Variables     Comment       C12, Valid     D0/T       C32, Valid     C0/T
4	"Device Variables" Column.	Vervice Configuration       Device Configuration       Device Configuration       Device Vervice       Device Vervice    <
4	"Device Variables" Column.	Venuel Configuration       Device Configuration       Device Configuration       Device Servis       Communication Drive       Off Eldement       Proport Statu       Update successful or 2015/07/30 174908t       Vender Configuration       Device Vanable:       Update Status       Vender Configuration       Device Vendor       Optime Configuration       Proport Statu       Update Status       Update Vanable:       Vender Configuration       C2, Valiable:       C32, Valiable:       C42, Valiable:       C43, Valiable:       C43, Valiable:
4	"Device Variables" Column.	Communication         Communication           Device Configuration         IP Address         Route Path           Device Series         Circle         IP Address         IP Address           Communication Driver         Circle         IP Address         IP address         IP address           Communication Driver         Circle         IP Address         IP address         IP address         IP address           Communication Driver         Circle         IP address         IP address         IP address         IP address           Communication Driver         Circle         IP address
4	"Device Variables" Column.	Vervice Configuration           Device Configuration           Device Configuration           Device Vervice           Device Vervice Vervice           D
4	"Device Variables" Column.	Newse         Communications         Communications<

### 6-4 Direct Entry

In this method, you can directly enter a variable name in the "Device Variables" Column of the Sysmac Studio. Between the NA and CJ is communicated with variable names, so you don't need to enter in the "AT" Field for the CJ-CIP.

### Additional Information

When communicating with the CJ-CIP, a tag comparison error occurs after transferring the variable information to the NA if the variable information that you entered is different from the information in the CJ Unit.

The following items are checked during the tag comparison.

- ·Variable name, structure name, structure member name
- ·Variable data type, structure data type, structure member data type
- •Number of array for variables, number of array for structures, number of array for structure member



### Additional Information

For array variables, enter "data type [number of array]" in the "Data Type" Field. Example) For DINT variable when number of array is 10: DINT[9]

### 6-5 Copy and Paste

In addition to the direct entry, you can copy the variable information from Excel or text files and paste it to the "Device Variables" Column of the Sysmac Studio. To copy and paste the information to the "Device Variables" Column, the variable information must be placed in the specified order in the file.

The variable information cannot be copied directly from the CX-Programmer and pasted to the "Device Variables" Column of the Sysmac Studio. However, the information of the CX-Programmer can be copied from Excel or text files and pasted.

Perform the following procedure to copy the information of the CX-Programmer from Excel and paste it to the "Device Variables" Column.

■ "(	Copy & paste" procedure								
<u>■ "(</u> 1	Copy & paste" procedure Open the variable table of the CX- Programmer, select the variables, right-click-> select "Copy" or press the [Ctrl+C] keys to copy the variables.	P. EM7           P. EM7           P. EM8           P. Cycle, Time, Value           DINTO           DINTO	WORD WORD WORD WORD WORD WORD WORD WORD	Hold CS / Total           A468           A468           A477           A477           A472           A472           A472           A473           A451           A266           E0 , 0           E0 , 2           E0 , 2           E0 , 1           E0 , 1	Publication     Publication	Work Work Work Work Work Work Work Work	Edition in EMT Area Pare EMS Area Pare EMS Area Pare EMS Area Pare EMC Area Pare MR Area Pare MR Area Pare MR Area Pare Maximum Cyc	Edt  Diport Network Vgriabl Import Network Vgriabl  My Validate Symbols  Vgriable  Signal Icons  Ut time Cut	
2	Paste the copied data in the Excel sheet. The address information "Address/Value" is pasted together even it is not required in this "CJ-CIP" method. *The heading lines on top are given only for explanation. The headings are not entered even if they are copied and pasted.	A 1 2 3 4 5 6 7 8 9 10 11 12 13 14	B Name DINTO DINTO DINT2 DINT3 DINT4 DINT5 DINT5 DINT6 DINT7 DINT9 DINT9	C Data Type DINT DINT DINT DINT DINT DINT DINT DINT	D Address/Valu E0.0 E0.2 E0.4 E0.6 E0.8 E0.10 E0.12 E0.12 E0.14 E0.16 E0.18 E0.20	E Comment	F Net.Varia TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRUE		H
3	Change the order of the pasted data as follows: "Name-> Data Type-> Comment-> Address/Value" You can leave "Comment" and "Address/Value" blank but "Name" and "Data Type" must be entered, otherwise an error occurs after they are pasted.	A 1 2 3 4 5 6 7 8 9 10 11 12 13	Na DI DI DI DI DI DI DI DI DI DI DI DI DI	B ame I NTO I NT1 I NT2 I NT3 I NT3 I NT5 I NT5 I NT6 I NT6 I NT7 I NT8 I NT9 I NT9 I	C Data Type DINT DINT DINT DINT DINT DINT DINT DINT	D	Addres E0_0 E0_2 E0_4 E0_6 E0_8 E0_10 E0_12 E0_14 E0_16 E0_18 E0_20	E ss/Value	

4	Copy the variable in the Excel sheet.	A	B	C	D	E	F	
4		1						
•	O and the form as home in shadin a	2	Name	Data Tvpe	Comment	Address/Value		
	Copy the four columns including	3	DINTO	DINT		EQ Q		
	"Name", "Data Type", "Comment",	4	DINITI	DINT		E0.2		
	and "Address/Value"	-	DINTO	DINT		50.4		
	and Address/value.	5	DINT2	DINI		EU_4		
		6	DINT3	DINT		E0_6		
	Be sure to copy the four columns	7	DINT4	DINT		E0_8		
	even if "Comment" is blank	8	DINT5	DINT		E0_10		
	even il Comment is blank.	9	DINT6	DINT		E0 12		
		10	DINT7	DINT		F0 14		
	*Exclude the heading lines on top	11	DINTO	DINIT		50.16		
	such as "Nome" "Date Type" ate		DINTS	DINI		E0_10		
	such as manne, Data Type etc.,	12	DINT9	DINI		E0_18		
	when you copy the variables	13	DINT10	DINT		E0 20		
	information	14						
	In the "Device Veriebles" Column	V Device Configuration						
_								
h		Device Configuration	][	Communications Configu	ration ———			
5	right-click and select "Paste" or press	Device Configuration     Device Name     Device Vendor     Device Vendor	mattevoro	IP Address      Route F     IPAddress     IPAddress	ration Path 168 - 250 - 3			
5	right-click and select "Paste" or press	Device Configuration Device Name Device Vendor Om Device Series C		Communications Configu C IP Address C Route F IP Address 192 Timeout 2	ration faith 168 - 2503 \$ second			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the	Device Configuration Device Name Device Vendor Device Series CU Communication Driver OF	msilevord on •	Communications Configu O IP Address	ration Path 168 - 2503 \$ second \$			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Configuration Device Name Device Vendor Device Series Communication Driver Operation	en al Vervoord con • Ethernet •	Communications Configu O IP Address  Paddress P	ration Vath 168 - 2503 second indication			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Configuration Device Vendor Device Vendor Device Series Configuration Device Se	Ethernet	Communications Configu © IP Address  © Route f IP Address  1927 Tineout  2 Ercoding  access E Communication Error 1 MREAE	afton hath 168 • 250 •3 second a v			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Configuration Device Vendor Oni Device Vendor Oni Device Series C Communication Driver Office Import Status Updater Import Variables Updater	Intel Deviced see	Communications Configu © IP Address © Noute 1 IP Address S192 - Timeout 2 Ercoding series E Communication Error 1 MEI3E ▼	ation heth 168 - 2503 \$ second a v			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Configuration     Device Vendor	enal Devoted sen	Communications Configure () IP Address © Route 1 IP Address 1922; Tineout 2 Ercoding Weilder © Communication Error 1 MeBBE ▼	ation tath 168 • 250 •3 test v indication	•		
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Configuration     Device Vandor     Device Vandor     Device Vandor     Device Series     Import Status     Manager     Manage	enancestation 2015/07/81 excessful on 2015/07/81 eVariables Data Type i C	Communications Configure () IP Address @ Route 1 IP Address 1922. Teneout 2 Ecoding Sector Error 1 Reliait V Reliait ()	ation tath 168 • 250 •3 to second a ndication			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Confligueton — Device Vendor Device Vendor Device Vendor Device Vendor Device Confliguence Confliguen	Chenet V Chenet V Variables Variables NT	Communications Configure () IP Address @ Route 1 IP Address IP22. Treeout 2 Encoding Sector Error 1 Refailed V Refailed V	ation hath 168 - 2503 : : : : : : : : : : : :			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Confliguestion — Device Vandar — Device Vandar — Bill Device Vandar — Bill Communication Driver — Gill Import Status — Bipdiat > Device Vandales — Bipdiat Name — 1 DINTO — DI DINT2 — DI DINT2 — DI DINT2 — DI	The Second Contract of Contrac	Communications Confligue 0 IP Address Paule F IPAdres 192 ; Treasure E Communication Error 1 BBB3E V Comment Al BBB3E V	aton 94h 169 - 250 - <u>3</u> 2 karon 4 miliation	•]		
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Confligation — Device Vandar ■ Device Vandar ■ Device Vandar ■ Communication Driver GB Amport Vanables ■ Paport Vanables ■ Paner = CoxT1 = C CoxT3 = C CoXT3 = C	Installation of Control of Contro	Communications Conflying () Pr Adyrus () Rode () Phates () Size Continue () Rode () E Communication Error 1 Reliate () Reliate () R	ration hub 169 - 250 - <u>1</u> vecom i vecom ndication			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Confliguence     Device Vendor     D	matcheotot sn v therest v ther	Communications Confly 0 P Address ■ Isolat 192. Transat 2 Eccolog Billions Error Mellale ■ Communication Error Mellale	afton Wath 169 - 2503 The cond ndication			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Decice Confligation	IndiCisionCol sin	Communications Configurations Configurations Configurations (Configurations) (Configuration	afton Wath 168 - 2203 tecom Indication			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Confligation	Instituted States State	Communications Configure Pi-Aderma ■ Indet + Pi-Aderma ■ Indet + Pi-Aderma ■ Indet + Pi-Aderma ■ Indet + E Communication Crear 1 Related ■ E 0,0 E	aton 198 - 2003 e torono andication			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Device Confligation	Instituted of Constraints of Constra	Communications Confly DP Address ■ Indet # PAddress ■ Indet PAddress ■ Indet PAddress ■ Indet E Communication Error 1 Reading ■ Reading	ation			
5	right-click and select "Paste" or press the [Ctrl+V] key to paste the variables.	Period Confligation     Device Vendor     Device Vendor     Device Vendor     Device Vendor     Device Vendor     Communication Driver     Perior Vendols      Vendor     Vendor     Vendor     OKV1	matibuences sn view thereast view thereast view thereast ther	Communications Confly 0 P Address ■ loade 1 PAddress ■ loade 1 PAddress ■ loade 1 E continue 1 E Communication Error M R838[ **	ation			

# 7 When CJ-FINS is Connected

This section explains how to import the variables when the CJ2 is set as External Device. Refer to the next page for the procedures to import the CJ-FINS variables.

### 7-1 Window to Set CJ- FINS as External Device

This section explains the window that sets the CJ-FINS External Device. The following window appears by right-clicking "Device References" -> "Add" -> "ExternalDevice", and selecting CJ for the "Device Series" Field, and FINS Ethernet for the "Communication Driver" Field.

	▼ Device Configuration					
	- Device Configuration -			Communication	s Configuration –	
	Device Name	ExternalDevice0		Network Address	1	÷ (1)
	Device Vendor	Omron	-	Node Address	1	- O
3	Device Series	C	-	Frame Length	2000	🗘 bytes
<b>(4)</b>	Communication Driver	FINS Ethernet		Timeout	2	seconds
0				Encoding	us-ascii	
				Communicati	on Error Indicatio	DN
	Import Status Ne Import Variables	ot Imported. 🔻				
	▼ Device Variables					
ഭ	Name	I Data Type	I	Comment	AT I	
9	Empty. Click here to a					

- ① Network Address: Enter the network address of the External Device. Use the "CX-Net network configuration tool" to set a network address.
- ② Node Address: Enter the node address of the External Device. Enter the 4<sup>th</sup> series of numeric values of the IP address. Example) For "192.168.250.10", node address is "10".
- ③ Device Series: Select the types of the connected External Device from "CJ", "NJ", or "NX".
- ④ Communication Driver: Either "CIP-Ethernet" or "FINS-Ethernet" can be chosen for the CJ. "FINS-Ethernet" is selected here.
- ⑤ Device Variables: Variables that are imported from the External Device are shown. When "FINS-Ethernet" is selected, you must enter the physical address in the "AT" Field. Refer to the next page for the address range.

### 7-2 Address Range

When using the FINS for the communication, you must enter the applicable variable address. The upper limit and the applicable area range of the address depend on the device model. For the details, refer to the relevant manual of the device used.

Area	Description	Pango	Word a	access	Bit a	Example	
Alea	Description	Kange	Read-in	Write	Read-in	Write	of AT
CIO	CIO area	00000 to 06143	Available	Available	Available	Available	0000
HR	Holding area	00000 to 00511	Available	Available	Available	Available	H0000
AR	Auxiliary area	00000 to 01471 10000 to 11535	Available	Partially not available *1	Available	Partially not available*1	A0000
Т	Timer process value	00000 to 04095	Available	Available	Not available	Not available	T0000
С	Counter process value	00000 to 04095	Available	Available	Not available	Not available	C0000
DM	Data memory	00000 to 32767	Available	Available	Available	Available	D0000
EM0 to EM18	EM area	00000 to 32767	Available	Available	Available	Available	E0_0000 E1_0000
WR	Work area	00000 to 00511	Available	Available	Available	Available	W0000
TU	Timer completion flag	00000 to 04095	Not available	Not available	Available	Not available	TU0000
CU	Completion flag	00000 to 04095	Not available	Not available	Available	Not available	CU0000

The address range is as follow:

\*1:Some addresses cannot be written.

### 7-3 Importing the CJ-FINS Variables

The CJ-FINS cannot import the variables from the CJ.

There are the following two methods to import variables when the CJ-FINS is set as External Device.

- Direct entry
- Copy and paste from Excel or other files

When using the "Copy and paste from Excel or other files" method, you can get the source information from the following two windows of the CX-Programmer.

- ① Variable table: To copy the physical address with a comment.
- ② Usage overview with comments: To copy the physical address accessed with the ladder programming.

Refer to the next page for each variable import method.

### Additional Information

For the CJ-FINS, the variable names or data types are not necessary to be the same as the variables in the CJ, but the accurate address must be entered in AT.

### Additional Information

As the FINS protocol is used for the communication, variables that require the definition of data type such as structure variable are not supported.

### 7-4 Direct Entry

In this method, you can directly enter a variable name in the "Device Variables" Column of the Sysmac Studio.

Between the NA and CJ is communicated with the physical address, you don't need to enter in the "AT" Field.

You don't necessarily have to use the CX-Programmer to set variables.

#### "Direct entry" procedure Click "Device References" -> "Add" 1 -> "ExternalDevice" to New Project - HMI\_NA5\_0 - Sysmac Studio add "ExternalDevice0". File Edit View Insert Project HMI Simulation Tools ê. 2 Ä HMI NA5 0 H LT HMI S Select CJ for the "Device Series" 2 Field and FINS Ethernet for the "Communication Driver" Field. Enter the "Network Address" and 3 "Node Address" Fields. Enter the variable information in the Name Data Type Address / Value 4 "Device Variables" Column. 🔒 test2 DINT[100] E0\_1 👝 Test3 BOOL F0.01 👝 Test\_DINT DINT E0 0 When using the variables set in the CX-Programmer, entre the "AT" Field by referring to "Address/Value" corresponding to the variable. The variable name can be different from the name described in the CX-Programmer. For the variable that is not set in the CX-Programmer, refer to the table in 7-2 "Address Range" when entering the "AT" Field.



### Additional Information

For a BOOL variable, enter a value in a range of 00 and 15 to two decimal places of the address.

If the value of decimal places is not set to the address of the BOOL variable, a tag comparison error occurs when the NA starts.

Example) 0000.00

### 7-5 Copy and Paste

In addition to the direct entry, you can copy the variable information of the External Device to Excel or text files and paste it to the "Device Variables" Column of the Sysmac Studio.

The variable information cannot be copied directly from the CX-Programmer and pasted to the "Device Variables" Column of the Sysmac Studio. However, the information of the CX-Programmer can be copied from Excel or text files and pasted.

To copy and paste the information to the "Device Variables" Column, the variable information must be placed in the specified order in the file.

You can copy AT information from the "Variable table" or "Usage overview with comments" in the CX-Programmer. Use any one of the two methods as appropriate.

Variable table	Displays and obtains a list of the variables for all of the memory areas and the
	physical address with comments. The address without comment cannot be added to
	the list even the address is used in the program.
Usage overview with	Displays all of the address used with ladder in the project for each memory area
comments	regardless with/without a comment. You need to copy the physical address for each
	memory area.

#### "Copy & paste" procedure using "variable table"

This section explains how to copy the variable name and data type in the "Variable table" of the CX-Programmer, and paste it to the "Device Variables" Column of the Sysmac Studio.

### Additional Information

If a comment is given to the address used in the CJ program, it is automatically added to the variable table as a variable without a name. If no comment is given, the variable is not added to the variable table.

If you want to refer to the NA communication address with this method, give a comment to the physical address.

### Additional Information

A building error occurs when pasting the variable to the Sysmac Studio, if a variable name is blank. To avoid the error, a variable name must be added in the Excel sheet.

### Additional Information

Only the "BOOL" or "CHANNEL" data type can be used for a variable (physical address) without a name. For this reason, if you want to change the data type as desired, copy the data type from the CX-Programmer to a file before changing the data type.

1	Open the variable table of the CX- Programmer, select the variables, right-click-> select "Copy" or press the [Ctrl+C] keys to copy the variables.	Name           P. C_CIO           P. C_Yold Time E           P. DM           Val1           Val2           Val2           P. EM0           P.EM1           P.EM4           P.EM4	Dave Section 2015 Part of the section 2015 Par	ta Type ORD ORD OOL OOL OOL OOL OOL OOL OOL OOL OOL OO		Address / Value A450 A401.08 A460 0.01 0.10 0.10 0.10 0.10 0.215 E0_10.00 E0_200 E0_300 E0_100 A461 A462 A463 A464 A465	Net. Veriable Publication Publication Publication	Rack Location	Usage Con Work CIO Work Cyc Work DW Info Com Son Insert Sy Import N Validate Sonal Longe To Sonal Longe To Sona	nment Area Parameter le Time Error Fla Area Parameter ment ymbol letwork Vgriable. Symbols ons ons	r 	
		- P_EMS - P_EM6	We	ORD ORD		A466 A467			Copy			
		- P_EM7 - P_EM8	We	ORD ORD		A468 A469			Delete			
2	Paste the copied data in the Excel sheet.	B3	В	• (0)	С	∬x Val1 D	E	F	G	Н	Ι	
		2 3 4 5 6 7 8 9 10 11 12 12	Val1 Val2 Val7	BC BC BC BC BC C DIN CH	)OL )OL )OL )OL )OL )OL NT	0.01 0.1 2.1 20_10.00 E0_200 IEL E0_300 IEL E0_100	Test1 Test2 Test3 Test4 Test5 Test6 Test6 Test7 Test8 Test9	TRUE TRUE	0 0 0 0 0 0 0 0			
2	Change the order of the pasted data	Gf	3		<b>-</b>	fx f						
3	Add variable names to "Name" if they are blank.	G           A           1           2           3           4           5           6           7           8           9           10           11           12           13           Gr           10           11           12           3           4           5           6           7           8           9           9	N N N N N N N N N N N N N N N N N N N	B ame al1 al2 al7 B ame al1 al2 al3 al4 al5 al6 al7		C C Data Type BOOL BOOL BOOL BOOL DINT CHANNEL CHANNEL CHANNEL CHANNEL CHANNEL BOOL BOOL BOOL BOOL BOOL BOOL BOOL DINT	D Comment Test1 Test2 Test3 Test4 Test5 Test6 Test6 Test7 Test8 Test8 Comment Test9 Comment Test1 Test2 Test3 Test4 Test5 Test5 Test5 Test6 Test7	E Address/\ E0_10.00 E0_200 E0_300 E0_100 E0_100 E0_10.00 E0_10.00 E0_200	/alue 0.01 0.1 2.1 2.15 /alue 0.01 0.1 1.1 2.15	F		
		11 12	V	alo al9		CHANNEL	Test9	E0_300 E0_100				
	Change the date types as desired in	13			-	(m					-	
5	the Excel sheet.	A	-	В	·	0	D	E		F		
	If you don't need to make any change, skip this step.	1 2 3 4 5 6 7 8 9 10 11 12		ame al1 al2 al3 al4 al5 al6 al7 al8 al9		Data Type BOOL BOOL BOOL BOOL BOOL DINT UINT ULINT	Comment Test1 Test2 Test3 Test4 Test5 Test6 Test7 Test8 Test9	Address/ E0_10.00 E0_200 E0_300 E0_100	Value 0.01 0.1 1.1 2.1 2.15			
		13										

	Copy the variables that you edited in		S37	•	· (=	*		
6	the Excel sheet.		A	В	С	D	E	F
		1						
	Copy the four columns including	2		Name	Data Type	Comment	Address/Value	
		3		Val1	BOOL	Test1	0.01	
	Name, Data Type, Comment,	4		Val2	BOOL	Test2	0.1	
	and "Address/Value.	5		Val3	BOOL	Test3	1.1	
		6		Val4	BOOL	Test4	2.1	
	Po ouro to convithe four columna	7		Val5	BOOL	Test5	2.15	
	Be sure to copy the four columns	8		Val6	BOOL	Test6	E0_10.00	
	even if there are any blank columns.	9		Val7	DINT	Test7	E0_200	
		10		Val8	UINT	Test8	E0_300	
		11		Val9	ULINT	Test9	E0 100	
		12						
		13						
/	right-click and select "Paste" or click the [Ctrl+V] key to paste the variables.	Device     Device     Device     Device     Device     Commu Import Si Import	e Configuration Configuration Name Vendor Series unication Driver tatus tatus tatus tatus	n External Devid Omron CJ FINS Ethernet Iot Imported.	CO Net Net Fran Tim Enc C C	mmunications Cor work Address 1 de Address 1 me Length 2 eout 2 oding u Communication Er	figuration	
		C Devic	Name	I Data Ty	ne L Comm	nent i AT		
		Val1		BOOL	Test1	0.01		
		Val2		BOOL	Test2	0.1		
		Val3		BOOL	Test3	11		
		Vals		BOOL	Test5	2.1		
		Val6		BOOL	Testő	E0_10.00		
		Vai7		DINT	Test7	E0_200		
		Val8		UINT	Test8	E0_300		
		Val9		ULINT	Test9	E0_100		

### Additional Information

For a BOOL variable, enter a value in a range of 00 and 15 to two decimal places of the address.

If the value of decimal places is not set to the address of the BOOL variable, a tag comparison error occurs when the NA starts.

Example) 0000.00

#### "Copy & paste" procedure" using "usage overview with comments"

This section explains how to copy the address in the "Usage overview with comments" of the CX-Programmer, add the variable information, and paste it to the "Device Variables" Column of the Sysmac Studio.

### Additional Information

The "Usage overview with comments" displays the used variables regardless with or without a comment. A report can be created only for each address area.

### Additional Information

A building error occurs when pasting the variable to the Sysmac Studio if a variable name is blank. To avoid the error, a variable name must be added in the Excel sheet.

### Additional Information

The "BOOL" or "CHANNEL" data type only can be used for a variable (physical address) without a name. For this reason, if you want to change the data type as desired, copy the data type from the CX-Programmer to a file before changing the data type.

1	Select "View" -> "Cross-Reference Report" in the CX-Programmer to display the cross-reference report.	Pile Edit View Insert PLC Program Simulation Tools Wind         Image: Symbols         Image: Symoble         Image: Symoble
2	Select "Usage overview with comments" from the "Report type" pull-down list.	Report type:       Detailed usage       ▼         Detailed usage       Usage overview         Usage overview       Usage overview         Usage overview including unused       Usage with comments including unused         Usage with comments (SSS format)       Duplicate usage over programs
3	Select the address area to display from the "Memory area" pull-down list, and click the "Generate" Button to display the "Usage overview with Comments".	Report type:       Jsage overview with comments <ul> <li>Memory area:</li> <li>ES</li> <li>EF</li> <li>ES</li> <li>ES</li></ul>
4	Select the variable to copy from the displayed list, and right-click and select "Copy" or click the [Ctrl+C] key to copy the variables.	Report type:     Usage overview with comments     Memory area:     ID     Generate       Free UM:     410054 Steps       Total UM:     410654 Steps       Address     Channel     Usage       0.01     .     Valt       0.01     .     Valt       0.10     .     Valt       0.10     .     Valt       1.10     .     Valt       2.10     .     Vork       2.10     .     Vork       2.15     .     .       100     .     Vork       200     .     Work

Г	Paste the copied data in the Excel		B3	• (	<i>f</i> <sub>*</sub> 0.01				
5	sheet.	1 A	A B	C	DE	F	G	н	I
		3		1.01 1 W	/ork	1.	fal1	Test1	
		5		1.1 1 1	/ork .	1	012	Test3	
		7 8		2.1 1 W	/ork .	1		Test4	
		10	- 2	1.15 1 W	/ork .	1		Test5	
		12		100 IV	fork fork				
		14 15		200 1 4					
	Delete the blanks and change the	16	F11		(= <b>f</b> ;	r			
6	order of the pasted data as follows:		A	В	С	D	E	F	
	"Name-> Data Type-> Comment->	2		Name	Dete Turre	Comment	Addrages /Value		
	Address/value.	3		Val1	Data Type	Test1	0.01		
		4		Val2		Test2	0.1		
		6				Test4	2.1		
		7				Test5	2.15		
		9					200		
	Add variable names to "Name" if	10	M25		(=	E.			
7	they are blank.		A	В	с. С	D	E	F	_
		1				-			
		2		Name Val1	Data Type	Comment Test1	Address/Value 0.01		
		4		Val2		Test2	0.1		
		5		Val3 Val4		Test3 Test4	1.1		
		7		Val5		Test5	2.15		
		8		Val6 Val7			200		
		10		Vuir			200		
	Enter the data types in the Excel	11	G16		. (=	fsc			
8	sheet.		A	В	С	D	E	F	
		1		Nama	Doto Turr	Commont			
	I o set a BOOL variable, enter a	3		Val1	BOOL	Test1	O.01		
	two decimal places in	4		Val2	BOOL	Test2	0.1		
	"Address/Value".	6		Val4	BOOL	Test4	2.1		
		7		Val5 Val6	BOOL	Test5	2.15	5	
		9		Val0 Val7	LINT		200	)	
	Conv the variables that you edited in	10	GL	3	- (=	£			
9	the Excel sheet.		A	В	•				F
	O and the four each many including	1						-	
	"Name" "Data type" "Comment"	2		Name	Data	Type Com	ment Address/	/Value	
	and "Address/Value.	4		Vall2	B00	L Test	2	0.01	
		5		Val3	BOO	L Test	3	1.1	
	Be sure to copy the four columns	6		Val4	BOO	L Test	4	2.1	
	even if there are blank columns.	- /		Valo	UINT	L lest	5	100	
		9		Val7	LINT			200	
	In the "Device Variables" Column	10 ExternalD	levice0 x					-	
10	right-click and select "Paste" or click	Device Co     Device Cor	nfiguration	)	- Communications Co	nfiguration			
	the [Ctrl+V] key to paste the	Device Nam Device Vend	ie <u>Ditt</u> for Omr	rnalDevice0	Network Address Node Address				
	variables.	Device Serie Communical	tion Driver TINS	Ethernet	Frame Length Timeout	2000 🗘 🛱 s	ytes econds		
					Communication E	rror Indication			
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		V Device Va	ariables Jame I	Dita Type I d	Comment I AT				
		Val1 Val2	80	OL Test	2 0.0				
		Val3 Val4 Val5	80	IOL Test	13				
		Val6 Val7	U0	NT IT	109				

## Additional Information

For a BOOL variable, enter a value in a range of 00 and 15 to two decimal places of the address.

If the value of decimal places is not set to the address of the BOOL variable, a tag comparison error occurs when the NA starts.

Example) 0000.00

## **Revision History**

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

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