

Programmable Terminal NA-series

# Replace Guide From NA5 to NA5-V1

NA5-15□101□-V1

NA5-12□101□-V1

NA5-9□001□-V1

NA5-7□001□-V1




Replace  
Guide

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## ■ Introduction

This document provides information useful to replace NA5 Programmable Terminal with its successor model NA5-V1 but does not contain safety precautions.

Please prepare user's manuals for NA-series Programmable Terminal and read and understand safety precautions and necessary information before using the product.

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# 1 Related Manuals

The following manuals are related. Use these manuals for reference.

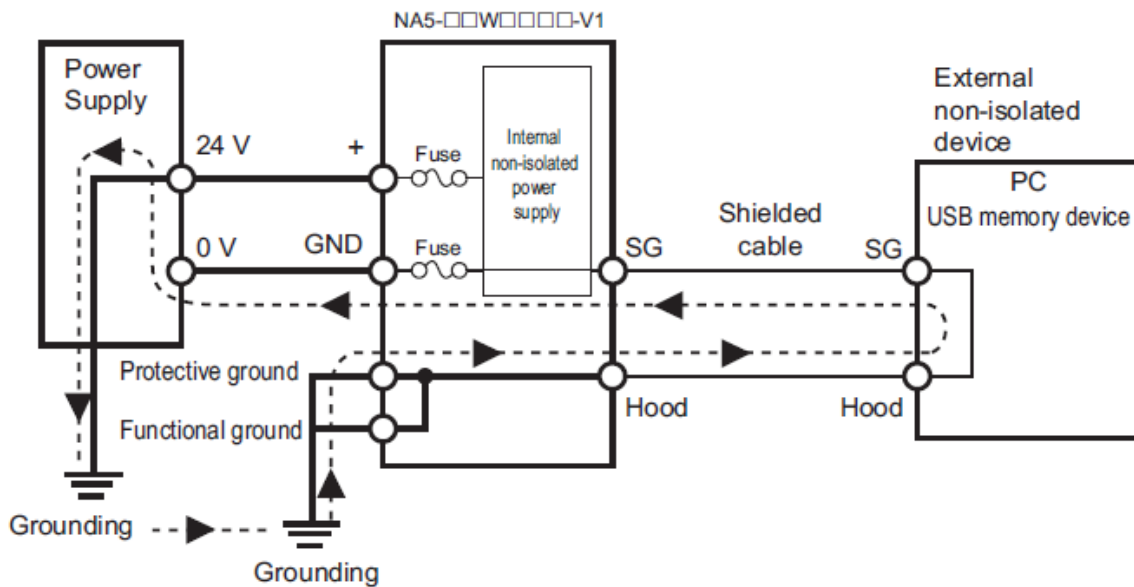
Cat. No.	Models	Manual name
V117	NA5-15□101□ NA5-12□101□ NA5-9□001□ NA5-7□001□	NA-series Programmable Terminal Hardware User's Manual
V118	NA5-15□101□(-V1) NA5-12□101□(-V1) NA5-9□001□(-V1) NA5-7□001□(-V1)	NA-series Programmable Terminal Software User's Manual
V119	NA5-15□101□(-V1) NA5-12□101□(-V1) NA5-9□001□(-V1) NA5-7□001□(-V1)	NA-series Programmable Terminal Device Connection User's Manual
V120	NA5-15□101□ NA5-12□101□ NA5-9□001□ NA5-7□001□	NA-series Programmable Terminal Startup Guide
V125	NA5-15W101□-V1 NA5-12W101□-V1 NA5-9W001□-V1 NA5-7W001□-V1	NA-series Programmable Terminal Hardware(-V1) User's Manual

# 2 Precautions

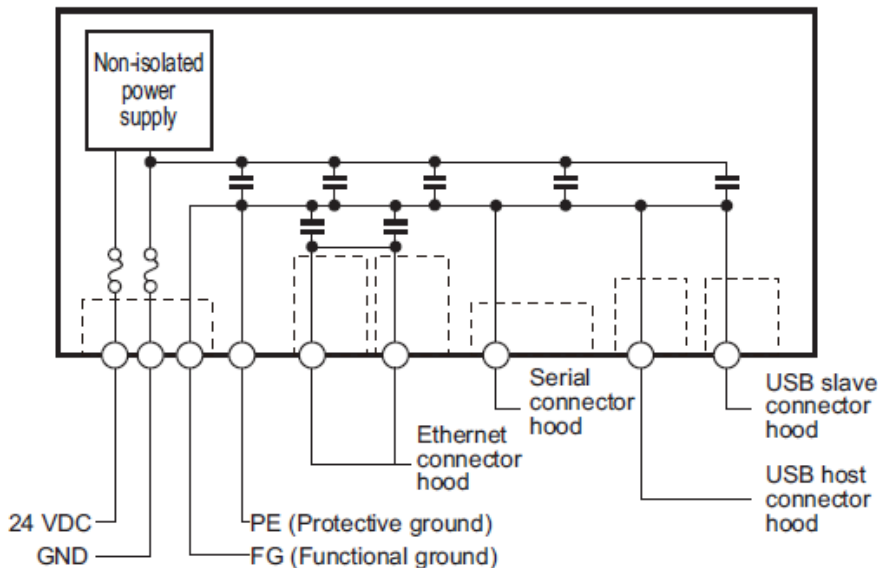
## 2-1 Wiring

Observe the following precautions when wiring the NA5-□□W□□□□-V1.  
The internal power supply in the NA5-□□W□□□□-V1 is a non-isolated DC power supply. Never ground the 24-V side. If the 24 V power supply to the NA is grounded positively, a short circuit will occur as shown below and may result in damage to the device.

### 24 V Grounding Power Supply



### NA5-□□W□□□□-V1 grounding diagram



### Additional Information

The internal power supply of the NA5-□□W□□□□ Product uses an isolated DC power supply, and therefore is not susceptible to the effects of grounding of the 24V side.



## 2-2 Grounding

The NA5-V1 has a protective ground terminal.

When using the NA5-□□W□□□□-V1, to help prevent electrical shock, ground to 100  $\Omega$  or less by using dedicated ground wires (with cross-section area of 2 mm<sup>2</sup> or larger) and tighten the terminal screw on the protective ground terminal to a torque of 1.0 to 1.2 N·m.

# 3 Applicable models and specifications

## 3-1 Applicable models

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### Discontinued Products

Programmable Terminal

NA5-15W101S

NA5-15W101B

NA5-12W101S

NA5-12W101B

NA5-9W001S

NA5-9W001B

NA5-7W001S

NA5-7W001B



### Recommended Replacements

Programmable Terminal

NA5-15W101S-V1

NA5-15W101B-V1

NA5-12W101S-V1

NA5-12W101B-V1

NA5-9W001S-V1

NA5-9W001B-V1

NA5-7W001S-V1

NA5-7W001B-V1

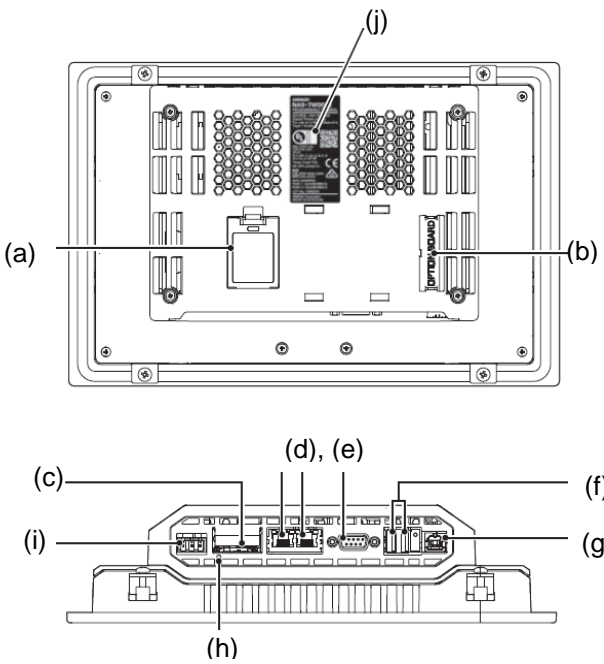
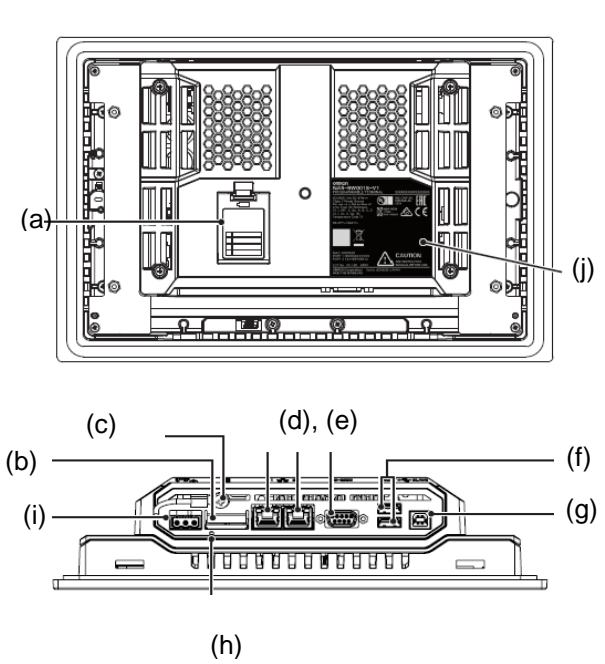
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## 3-2 Specifications

### ■ Body Color

Product models to be discontinued NA5-□W□□□□	Recommended replacement models NA5-□W□□□□-V1
Black: NA5-□W□□□B Silver: NA5-□W□□□S	Black: NA5-□W□□□B-V1 Silver: NA5-□W□□□S-V1

### ■ Terminals/ Wire connection

Product models to be discontinued NA5-□W□□□□	Recommended replacement models NA5-□W□□□□-V1
 <p>(a) Battery cover            (b) Expansion unit connector cover*1            (c) SD memory card slot            (d) Ethernet port            (e) Serial port*1            (f) USB port(host)            (g) USB port(slave)            (h) Reset switch            (i) 24VDC            (j) Identification label</p>	 <p>(a) Battery cover            (b) SD memory card slot            (c) Protective grounding terminal            (d) Ethernet port            (e) Serial port*1            (f) USB port(host)            (g) USB port(slave)            (h) Reset switch            (i) 24VDC            (j) Identification label</p>

\*1 For future expansion

■ Mounting dimensions

Discontinued Products NA5-□W□□□□	Recommended Replacements NA5-□W□□□□-V1
<b>NA5-15W□□□□</b> <b>Panel cutout</b> 392+1/0(W), 268+1/0(H) Panel thickness: 1.6 to 6.0mm	<b>NA5-15W□□□□-V1</b> <b>Panel cutout</b> 392+1/0(W), 268+1/0(H) Panel thickness: 1.6 to 6.0mm
<b>NA5-12W□□□□</b> <b>Panel cutout</b> 310+1/0(W), 221+1/0(H) Panel thickness: 1.6 to 6.0mm	<b>NA5-12W□□□□-V1</b> <b>Panel cutout</b> 310+1/0(W), 221+1/0(H) Panel thickness: 1.6 to 6.0mm
<b>NA5-9W□□□□</b> <b>Panel cutout</b> 261+1/0(W), 166+1/0(H) Panel thickness: 1.6 to 6.0mm	<b>NA5-9W□□□□-V1</b> <b>Panel cutout</b> 261+1/0(W), 166+1/0(H) Panel thickness: 1.6 to 6.0mm
<b>NA5-7W□□□□</b> <b>Panel cutout</b> 197+1/0(W), 141+1/0(H) Panel thickness: 1.6 to 6.0mm	<b>NA5-7W□□□□-V1</b> <b>Panel cutout</b> 197+1/0(W), 141+1/0(H) Panel thickness: 1.6 to 6.0mm

■ Dimensions

Discontinued Products NA5-□W□□□□	Recommended Replacements NA5-□W□□□□-V1
<b>NA5-15W□□□□</b> 420×291×69 (mm)	<b>NA5-15W□□□□-V1</b> 420×291×69 (mm)
<b>NA5-12W□□□□</b> 340×244×69 (mm)	<b>NA5-12W□□□□-V1</b> 340×244×69 (mm)
<b>NA5-9W□□□□</b> 290×190×69 (mm)	<b>NA5-9W□□□□-V1</b> 290×190×69 (mm)
<b>NA5-7W□□□□</b> 236×165×69 (mm)	<b>NA5-7W□□□□-V1</b> 236×165×69 (mm)

■ Characteristics

Item	Discontinued Products NA5-□W□□□□				Recommended Replacements NA5-□W□□□□-V1			
	NA5 -15	NA5 -12	NA5 -9	NA5 -7	NA5 -15	NA5 -12	NA5 -9	NA5 -7
<b>Power consumption</b>	47W max.	45W max.	40W max.	35 W max.	29W max.	25W max.	23W max.	19W max.
<b>Display device</b>	TFT LCD				TFT LCD			
<b>Resolution</b>	1280×800 (WXGA)		800×480 (WVGA)		1280×800 (WXGA)		800×480 (WVGA)	
<b>Color</b>	16,770,000 colors				16,770,000 colors			
<b>Support software</b>	Sysmac Studio Version 1.10 or higher				Sysmac Studio Version 1.40 or higher			
<b>External Interfaces</b>	Ethernet ports (2 ports), USB host ports (2 ports), USB slave port, Serial port (for future expansion), SD memory card slot				Ethernet ports (2 ports), USB host ports (2 ports), USB slave port, Serial port (for future expansion), SD memory card slot			
<b>External storage device</b>	SD Memory Card, USB Memory Device				SD Memory Card, USB Memory Device			
<b>Backlight life</b>	50,000 hours min.				50,000 hours min.			
<b>Ambient operating temperature</b>	0 to 50°C				0 to 50°C			
<b>Communications method</b>	Ethernet, CIP Ethernet, FINS Ethernet				Ethernet, CIP Ethernet, FINS Ethernet			
<b>Runtime version</b>	1.00 or higher				1.08 or higher			

# 4 Workflow

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## 4-1 Workflow

The replacement procedure with NA5-V1 is as follows. Operations in   are explained from the next page.

### 4-2 Preparation

4-2-1 Check for positive grounding of the existing equipment

4-2-2 Uploading the project from the existing NA5

4-2-3 Converting the project for NA5-V1

### 4 -3 Removing the currently installed NA5

4-3-1 Turning OFF the power to the currently installed NA5

4-3-2 Removing all cables

4-3-3 Removing the storage devices

4-3-4 Removing the currently installed NA5 from the operation panel

### 4-4 Installing NA5-V1

4-4-1 Installing the NA5-V1 to the operation panel

4-4-2 Ground wiring

4-4-3 Wiring the cables

4-4-4 Installing the storage devices

### 4-5 Start-up

4-5-1 Turning ON the power to the NA5-V1

4-5-2 Downloading the project to the NA5-V1

4-5-3 Checking the settings and communications

4-5-4 Starting operation

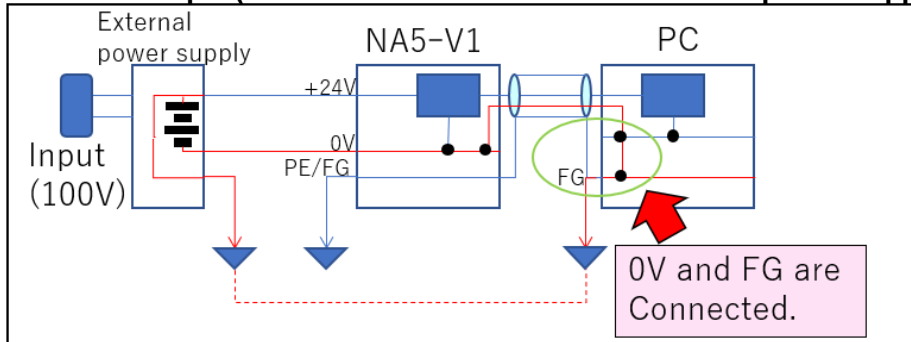
## 4-2 Preparation

### 4-2-1 Check for positive grounding of the existing equipment

#### 1) Checking for positive grounding on the wiring diagram

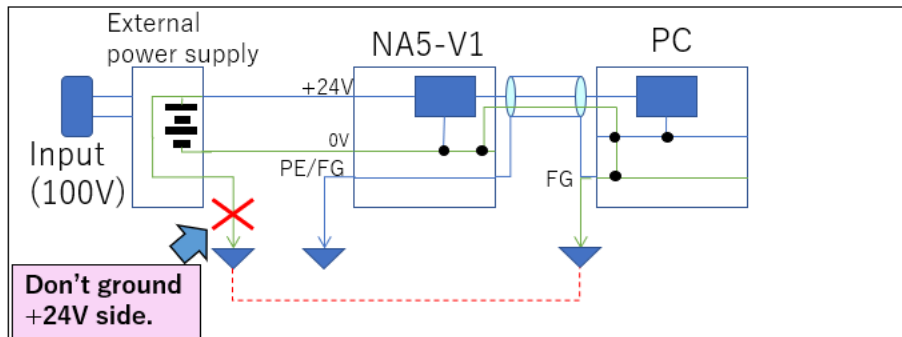
Check that no shortcut circuit is produced between 24V-side of the NA5 and the ground side (No positive grounding). If a short-circuit is made when NA5-V1 is installed instead of NA5, the device may be damaged due to a short-circuit as shown in the following **failure example**, because the internal power supply of NA5-V1 is non-insulated DC power supply.

#### Failure example (A shortcircuit between +24V and 0V of power supply)

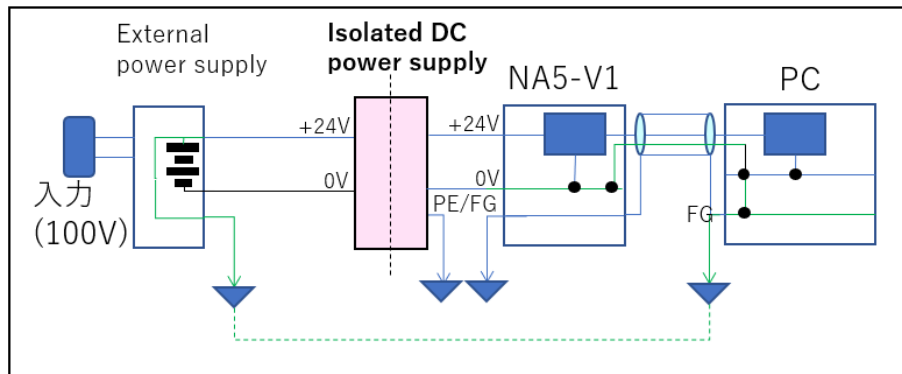


\*If a shortcircuit is made between the 24V-side of the NA5-V1 and the ground terminal (Positive grounding), change the wiring (measure 1), or isolate the external power supply and NA5-V1(measure 2).

#### Measure 1 (No positive grounding)



#### Measure 2 (Isolate the external power supply and NA5-V1)



#### 2) Check for positive grounding in the operation panel

Check wirings to confirm that the 24V-side and the ground side are not short-circuited by using a tester or other equipment.

## 4-2-2 Uploading the project from the existing NA5

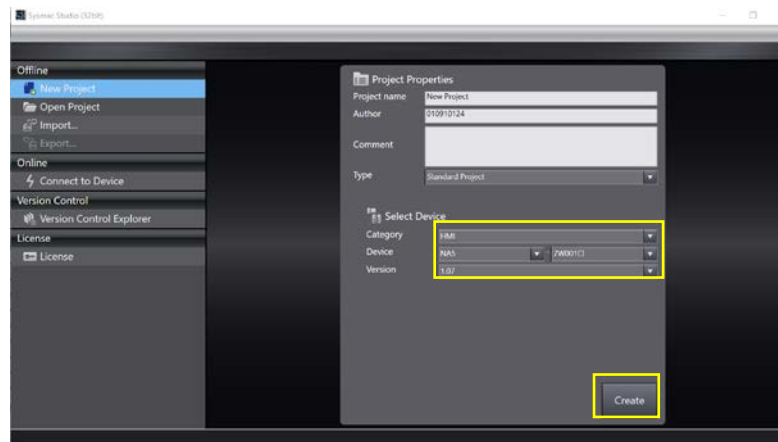
1. Start the Sysmac Studio.  
\*Sysmac Studio Ver.1.40 or higher must be installed in the computer.



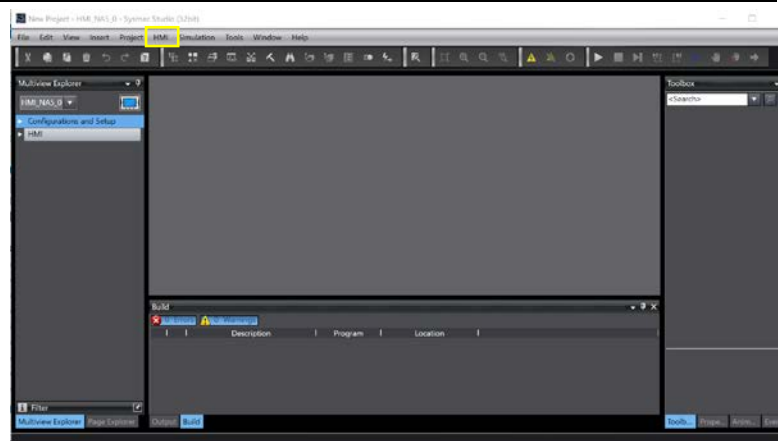
2. When the Sysmac Studio starts, select **New Project**.  
\* If you relink to the PLC, use an existing PLC project to create a new HMI project.



3. In the right dialog box, select HMI for **Category**, NA5 model type for **Device**, and runtime version for **Version**.

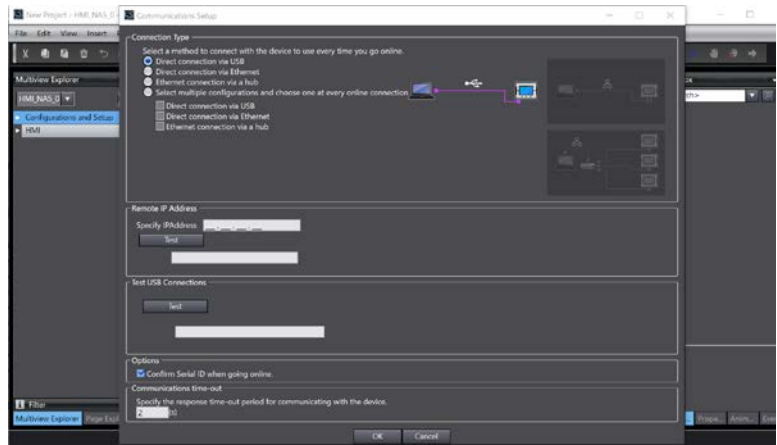


4. Select **Communications Setup** from the **HMI** Menu.





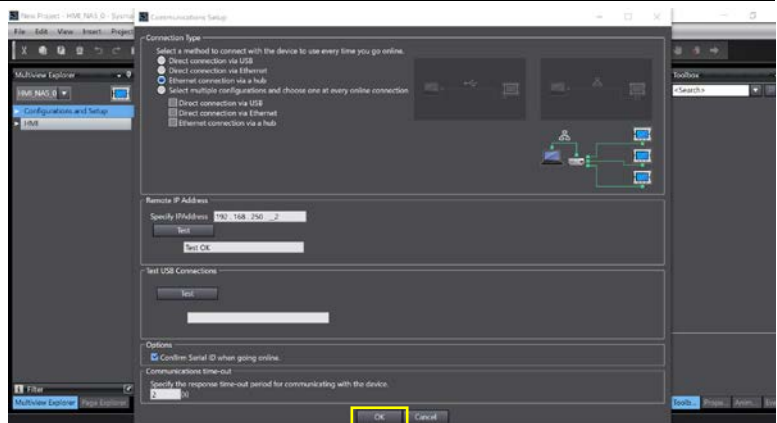
5. The Communications Setup Dialog Box is displayed.



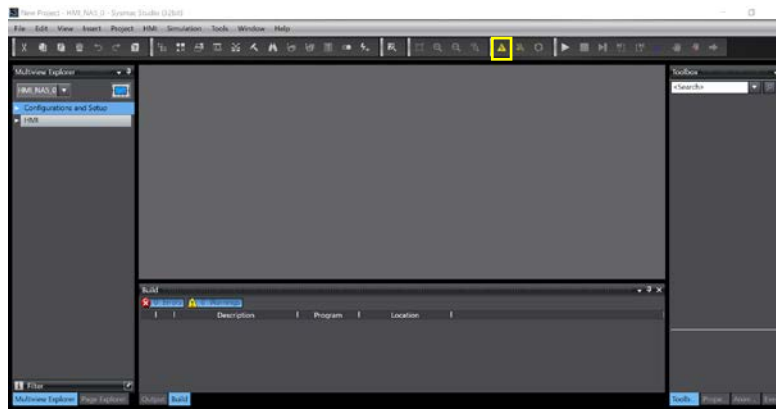
6. Select the connection method for the connection configuration in the Connection Type Field.

\*For an Ethernet connection via a hub, enter the IP address of the HMI to which you need to connect in the Remote IP Address Area.

Press the **Test** Button. If “Test OK” is displayed, online connection is possible.

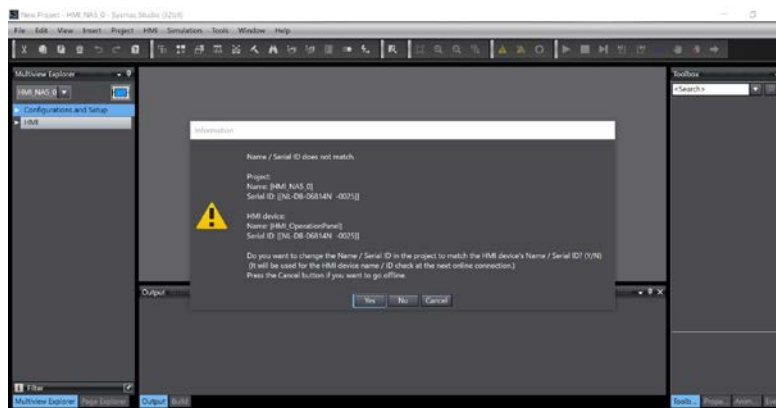


7. Click the **Online** Button in the toolbar. Or, select **Online** from the **HMI Menu**.



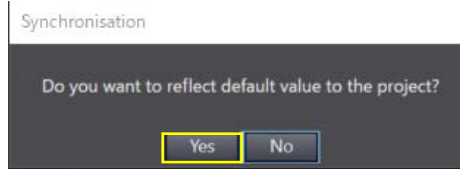
8. <Additional Information> The message **Name / Serial ID does not match** is displayed on the dialog. Click the **Yes** Button.

\*The message **Operating System Version Mismatched** is displayed when the version selected in Step 3 is not correct. Check the version of the device and change the settings.



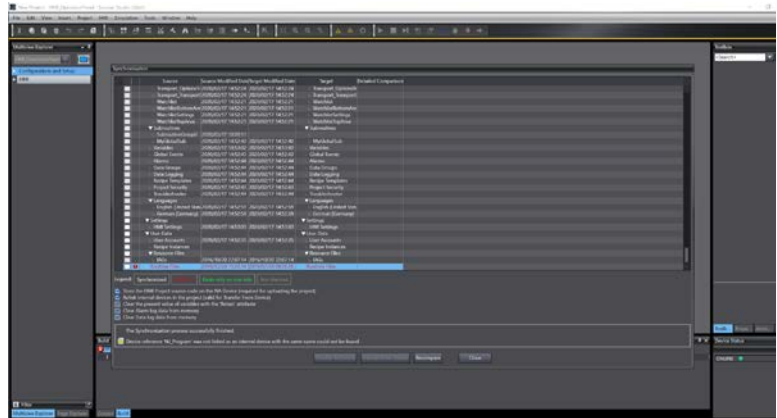


14. The message **Do you want to reflect default value to the project?** is displayed on the dialog. Click the **Yes** Button.

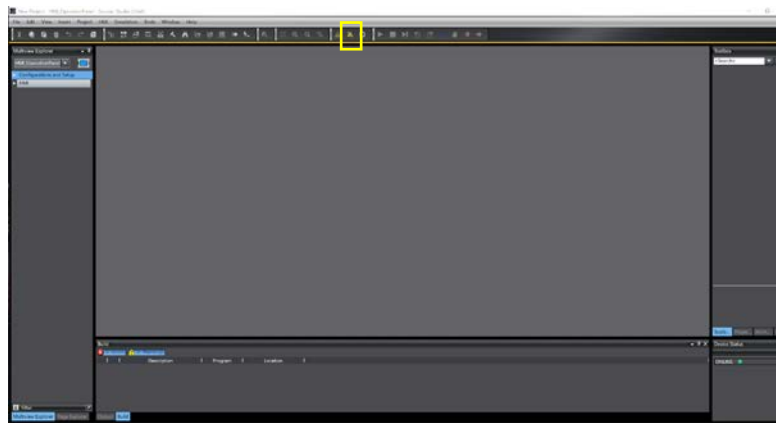


15. When synchronization completes, click the **Close** Button.

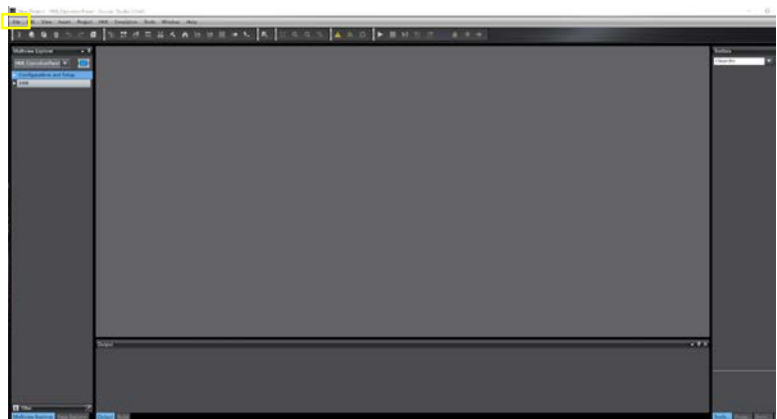
\*Go to No.16, if you are exporting the NA5 project.  
If you do not need to export the project, go to *4-2-3 Converting the project for NA5-V1*. Export operation is performed to save the NA5 project.



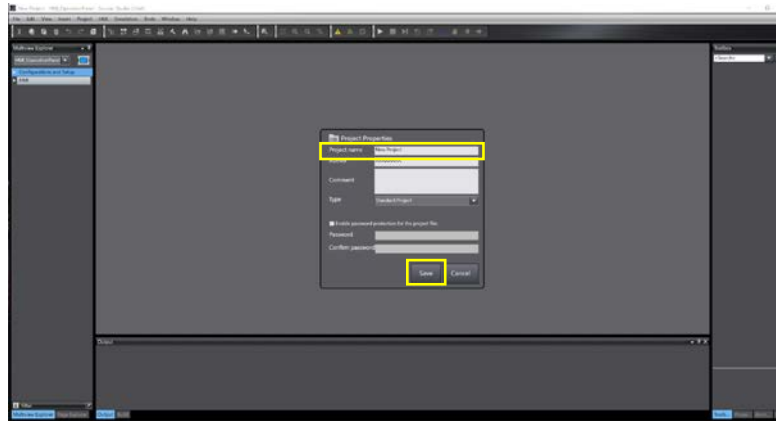
16. Click the **Offline** Button in the toolbar. Or, select **Offline** from the **HMI** Menu.



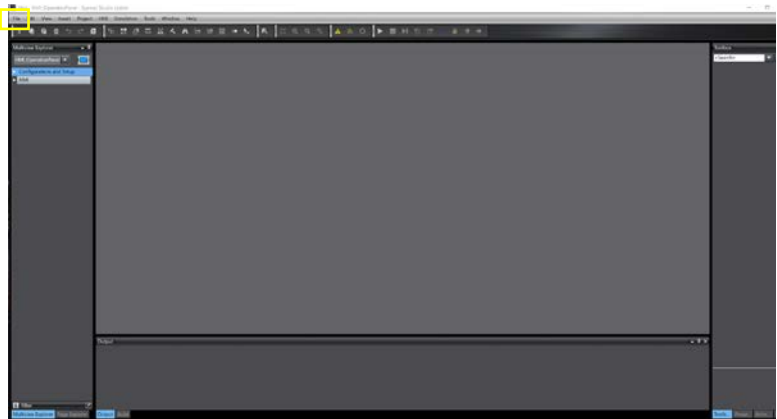
17. Select **Save As** from the **File** Menu.



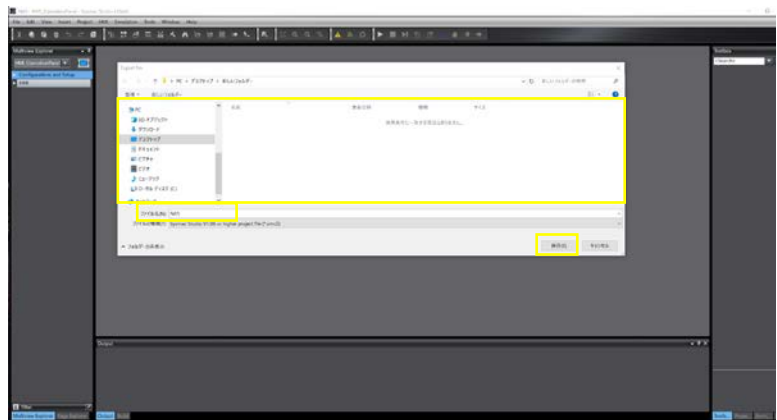
18. Input the project name, and then click the **Save** Button.



19. Select **Export** from the **File** Menu.



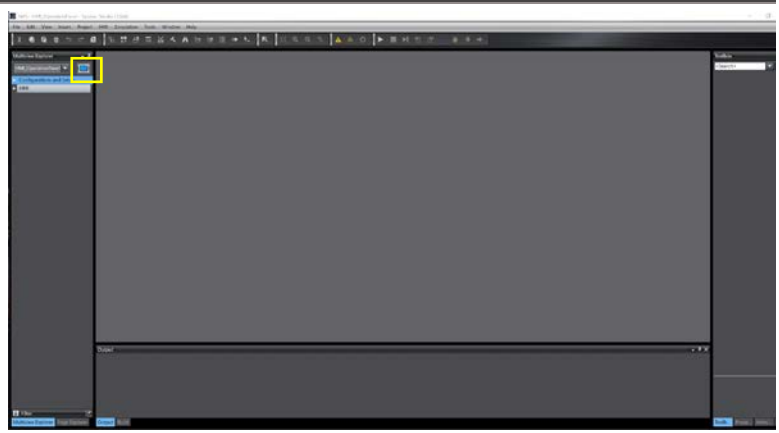
20. Specify export destination, input the file name, and then click the **Save** Button. The file is saved in the specified folder.



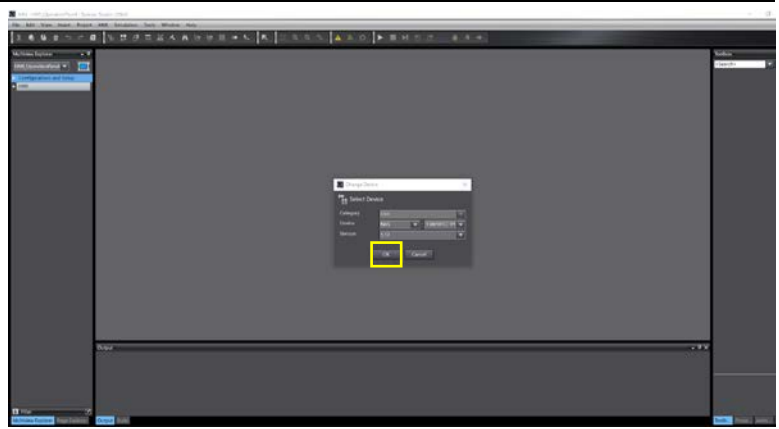
Go to 4-2-3 *Converting the project for NA5-V1.*

## 4-2-3 Converting the project for NA5-V1

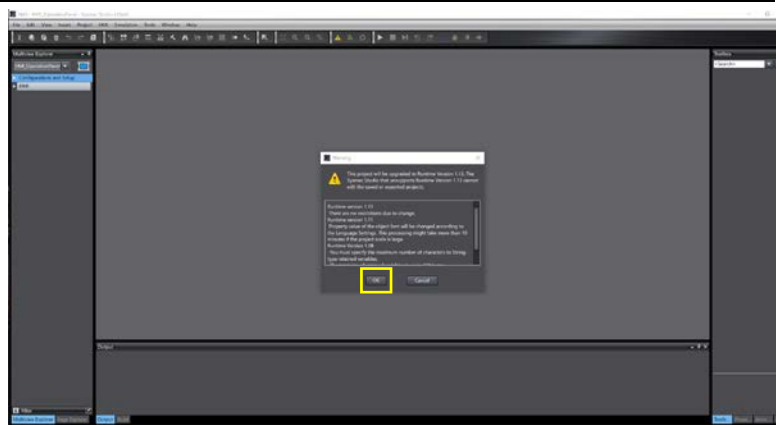
1. While the Sysmac Studio is in offline state and the uploaded project is opened, right-click the NA5 Icon and select **Change Device** from the menu.



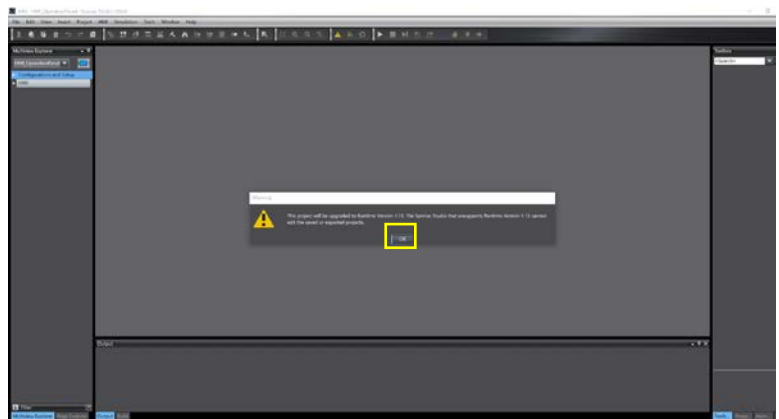
2. Select NA5-V1 device model and version, and then click the **OK** Button.  
\*The project data cannot be converted to lower device versions.



3. The warning message is displayed. Click the **OK** Button.  
\*This message is displayed when the device version is updated.

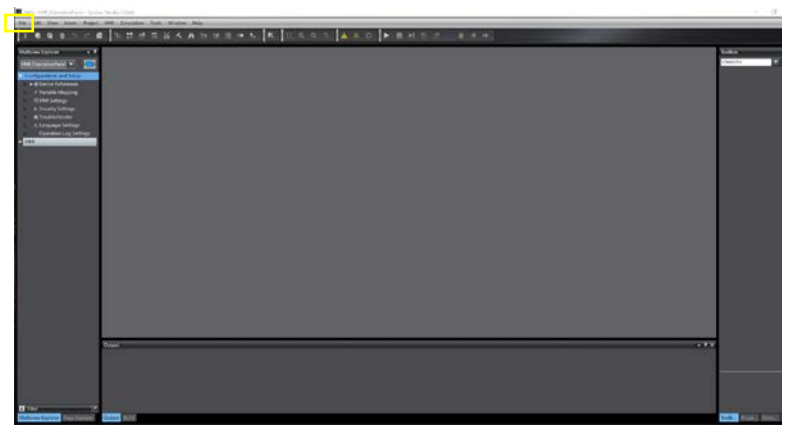


4. The warning message is displayed. Click the **OK** Button.  
\*This message is displayed when the device version is updated.  
\*Go to No.5, if you are exporting the NA5-V1 project. Go to 4-3 *Removing the currently installed NA5* if you do not have to export the project.  
Export operation is performed

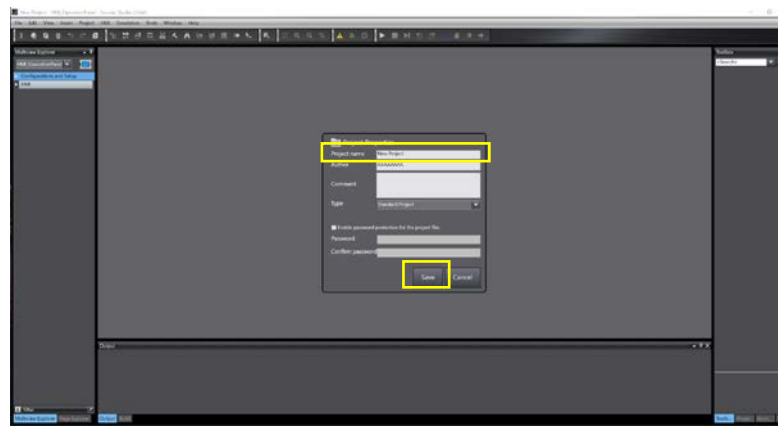


to save the NA5-V1 project.

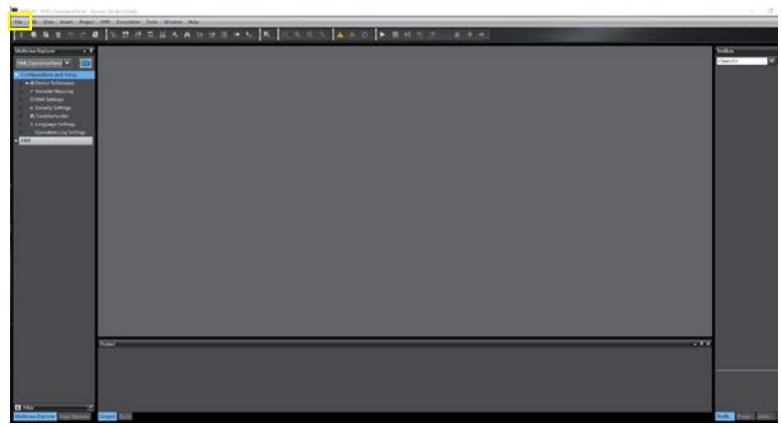
5. Select **Save As** from the **File** Menu.



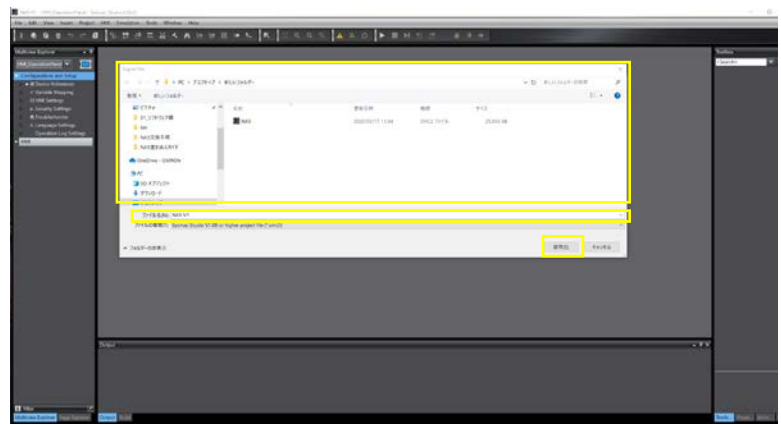
6. Input the project name, and then click the **Save** Button.



7. Select **Export** from the **File** Menu.



8. Specify export destination, input the file name, and then click the **Save** Button. The project file is saved in the specified folder.



9. Go to 4-3 *Removing the currently installed NA5.*

## 4-3 Removing the currently installed NA5

### 4-3-1 Turning OFF the power to the currently installed NA5

---

Turn OFF the 24V DC power supply to the NA5.

### 4-3-2 Removing all cables

---

Remove all the cables connected to the NA5.

### 4-3-3 Removing the storage devices (if used)

---

Remove the USB memory and SD memory card.

### 4-3-4 Removing the currently installed NA5 from the operation panel

---

Remove the currently installed NA5 from the operation panel.

## 4-4 Installing NA5-V1

### 4-4-1 Installing the NA5-V1 to the operation panel

Mount the NA5-V1 to the operation panel using panel mounting brackets and a screwdriver.

### 4-4-2 Ground wiring

#### 1) Protective ground

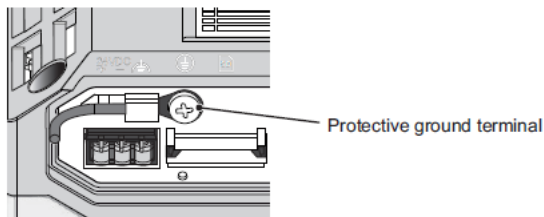
Protective grounding is done to ensure safety. It is intended to prevent electrical shock by holding the electrical potential at the grounding potential that is generated by factors such as leakage, induction, or failure. Be sure to ground to 100  $\Omega$  or less without mistake.

- Applicable Wire

Conductor cross-section
2.00 mm <sup>2</sup> min.

- Screw Tightening Torque

1.0 to 1.2 N·m



#### 2) Functional grounding

Functional grounding is done to protect device and system functions, including prevention of noise from external sources, or prevention of noise from devices or equipment that could have harmful effects on other devices or equipment. Sufficiently check the circumstances before grounding.

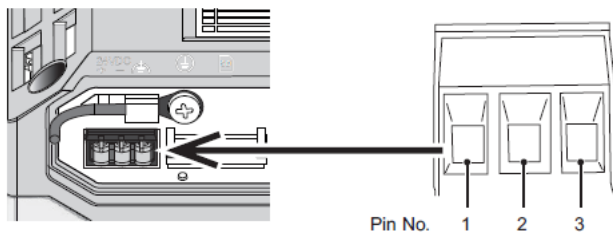
- Applicable Wire

Size	Conductor cross-section
AWG #12 to 22	0.35 to 3.31 mm <sup>2</sup>

- Screw Tightening Torque

0.5 to 0.6 N·m

- Power Supply Connector

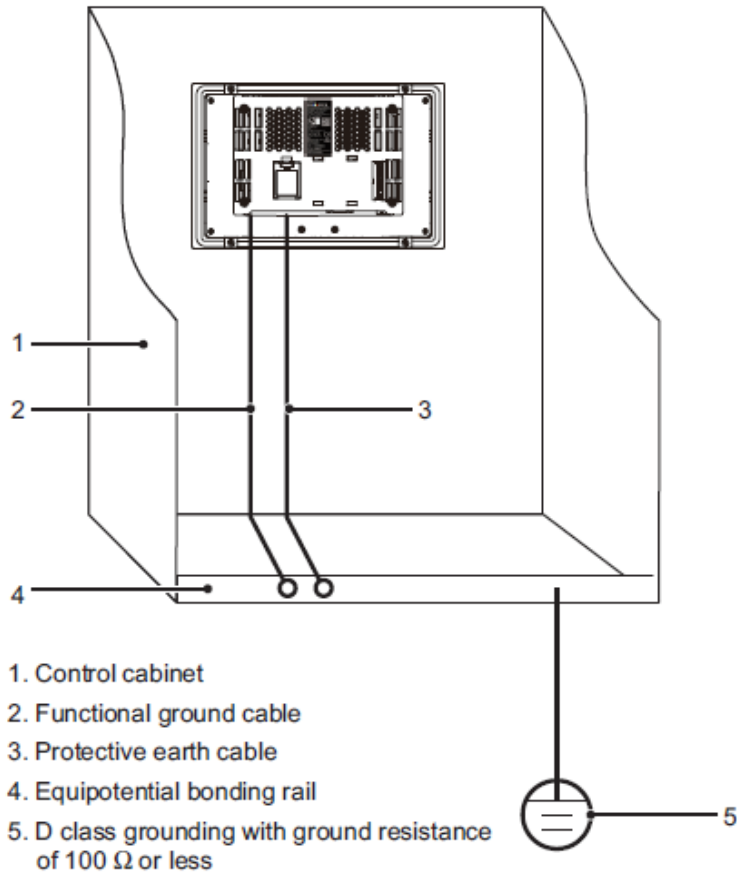


Pin No.	Signal name	Name
1	+24 V	+24-V input
2	0 V	0 V
3	FG	Functional ground



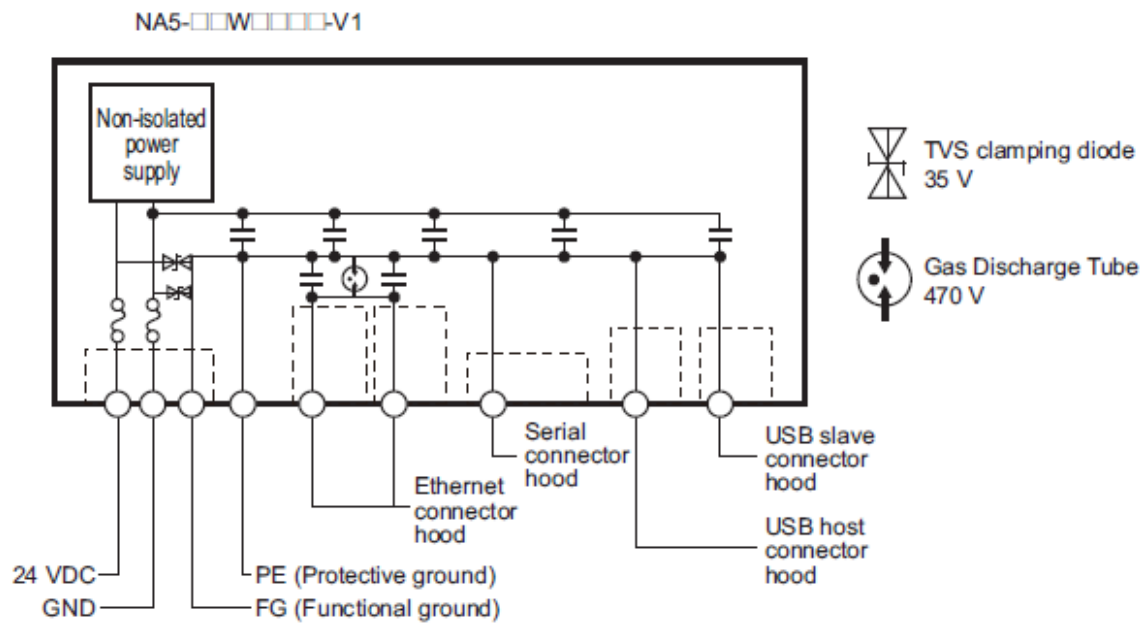
### 3) Ground wiring

Perform ground wiring as shown in the figure below.



### 4) NA5-V1 internal grounding connection diagram

Refer to the diagram below and wire the ground terminals giving enough consideration.



### **4-4-3 Wiring the cables**

---

Connect all the cables for the NA5.

### **4-4-4 Installing the storage devices (if necessary)**

---

Install the USB memory and SD memory card.

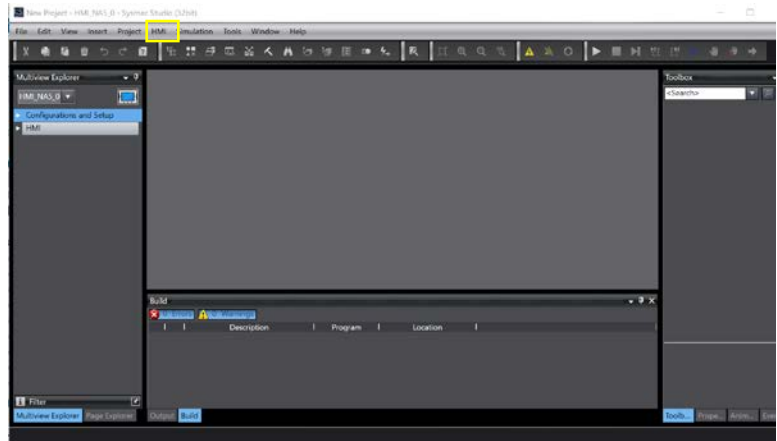
## 4-5 Start-up

### 4-5-1 Turning ON the power to the NA5-V1

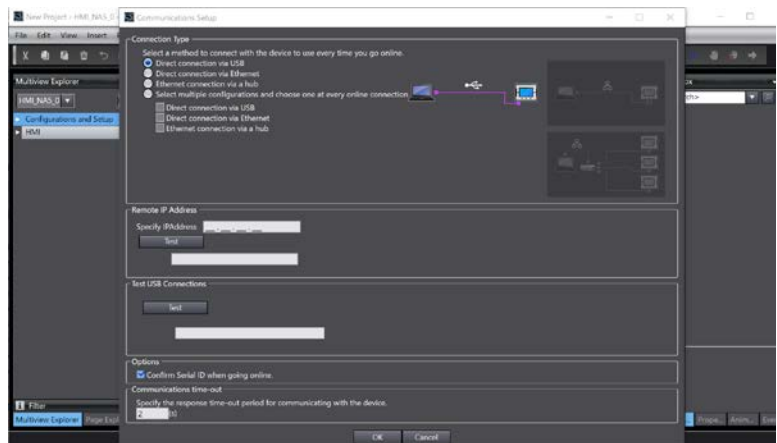
Turn ON the 24V DC power supply to the NA5-1.

### 4-5-2 Downloading the project to the NA5-V1

1. Select **Communications Setup** from the HMI Menu, while the project converted for the NA5-V1 is opened.

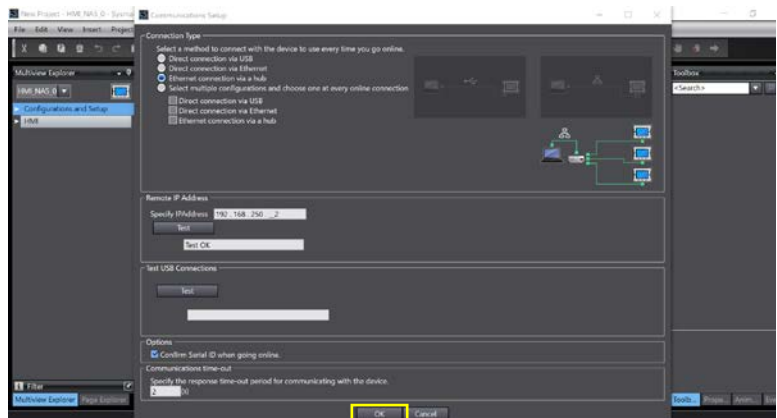


2. The Communications Setup Dialog Box is displayed.



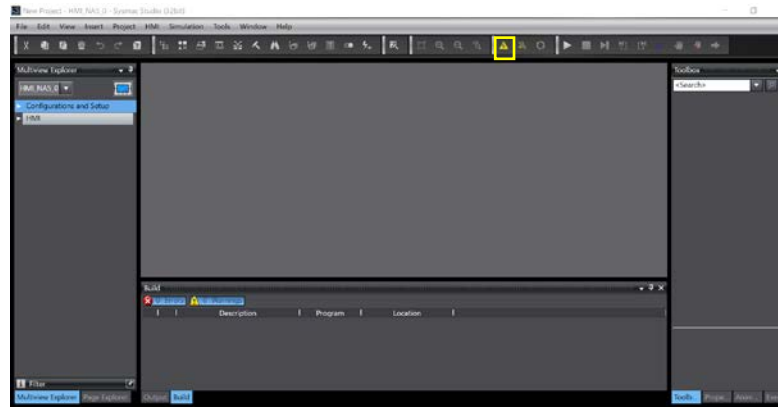
3. Select the connection method for the connection configuration in the Connection Type Field, and then click the **OK** Button.

\*For an Ethernet connection via a hub, enter the IP address of the HMI to which you need to connect in the Remote IP AddressArea.  
(Default;192.168.250.2)  
Press the **Test** Button.  
If Test OK is displayed, online connection is possible.

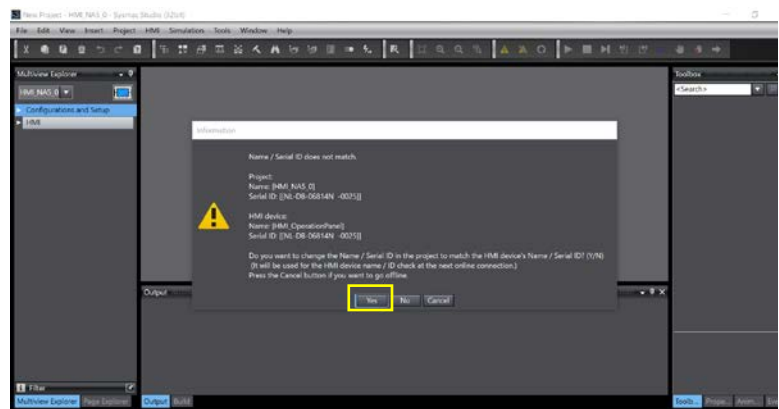


4. Click the **Online** Button in the toolbar. Or, select **Online** from the **HMI Menu**.

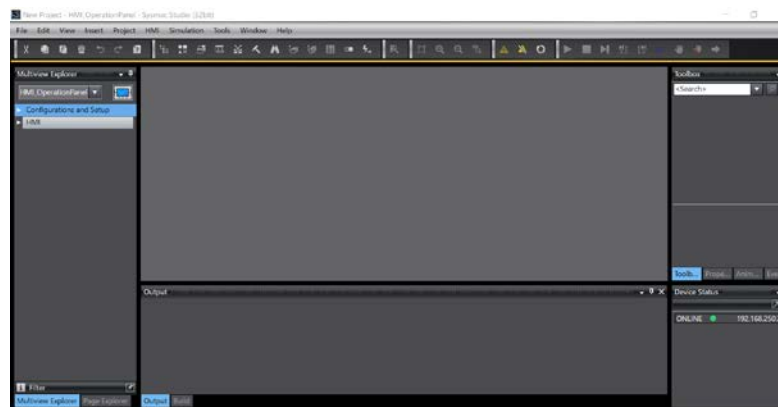
\*If supported versions of the transfer source (Runtime) and destination (OS) do not match, update the destination version according to the instructions on the dialog box.



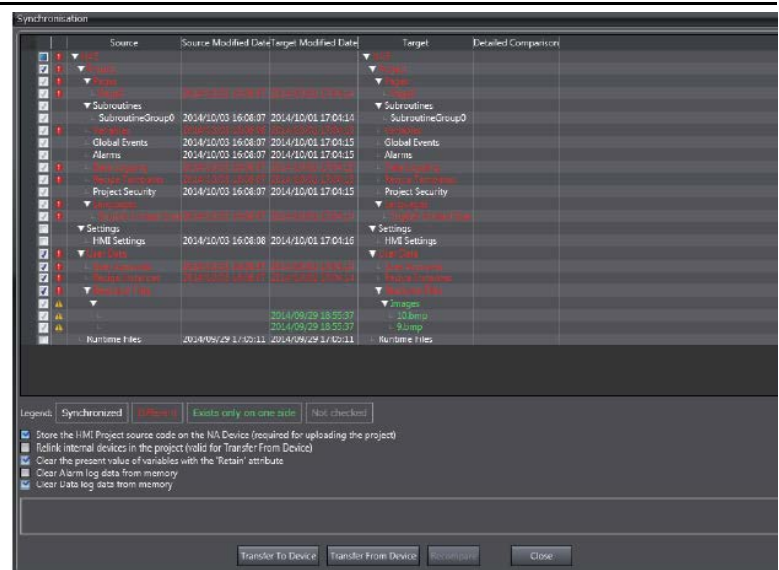
5. <Additional Information> The message **Name / Serial ID does not match** is displayed on the dialog. Click the **Yes** Button.



6. The Sysmac Studio goes online and the color of the bar under the toolbar changes to yellow. Then, click the **Synchronization** icon. Or, select **Synchronization – NA Device** from the **HMI Menu**.



7. The project on the Sysmac Studio is compared with the project in the HMI and the Synchronization Window is displayed.



---

8. Click the **Transfer to Device** Button. The data is downloaded, and the HMI restarts.

---

### **4-5-3 Checking the settings and communications**

---

Run the project on the actual system and check that correct values are written to the connected device, the pages change correctly, and values set at the connected device are updated.

### **4-5-4 Starting operation**

---

Start actual operation.

# 5 Appendix-1 Transferring project data by using a media device

Even if Sysmac Studio is not available, project files can be transferred by using a media device.

4-2-2 Uploading the project from the existing NA5 -> Go to 5-1-1

4-5-2 Downloading the project to the NA5-V1 -> Go to 5-1-2

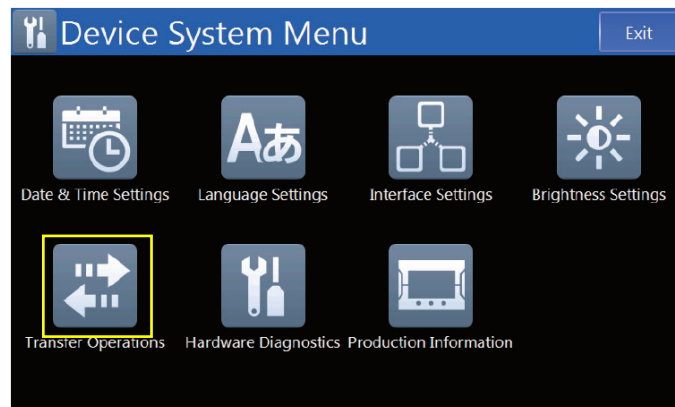
These functions are described in the following sections.

## 5-1-1 Uploading by using a storage media

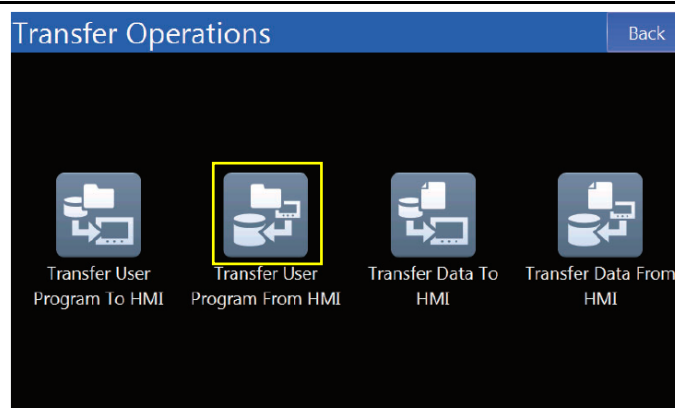
1. Insert the SD Memory Card or USB memory device to use for the upload into the computer.

2. Display the Device System Menu by touching the corner of the display.  
The default positions to touch are the top left and bottom right corners; though you can change the position as you like.

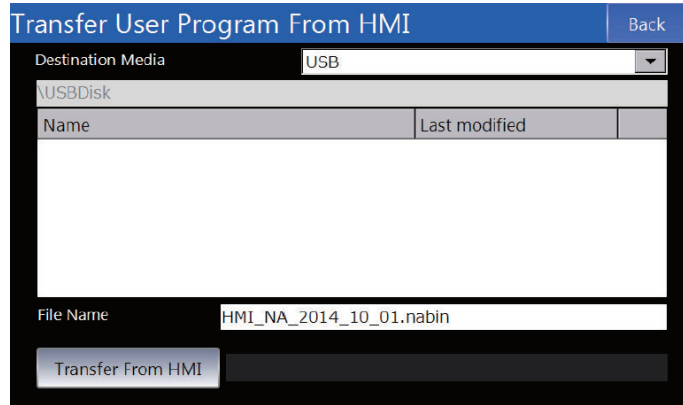
3. Touch the **Transfer Operations** button.



4. Touch the **Transfer User Program From HMI** Button.



- Specify the destination media and file name and touch the **Transfer from HMI** Button. The project is uploaded to the specified media.



- Remove the media from the NA5.

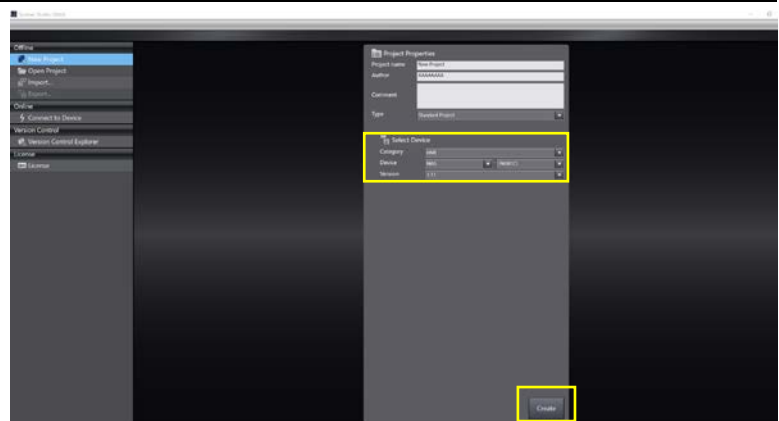
- Insert the media device to which the project was uploaded to the computer and start the Sysmac Studio.  
\*Sysmac Studio Ver.1.40 or higher must be installed in the computer.



- When the Sysmac Studio starts, select **New Project**.  
\* If you relink to the PLC, use an existing PLC project to create a new HMI project.



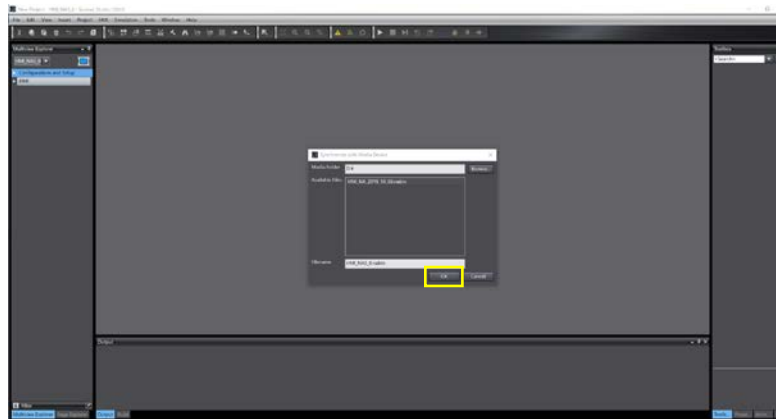
- In the right dialog box, select HMI for **Category**, NA5 model type for **Device**, and runtime version for **Version**.



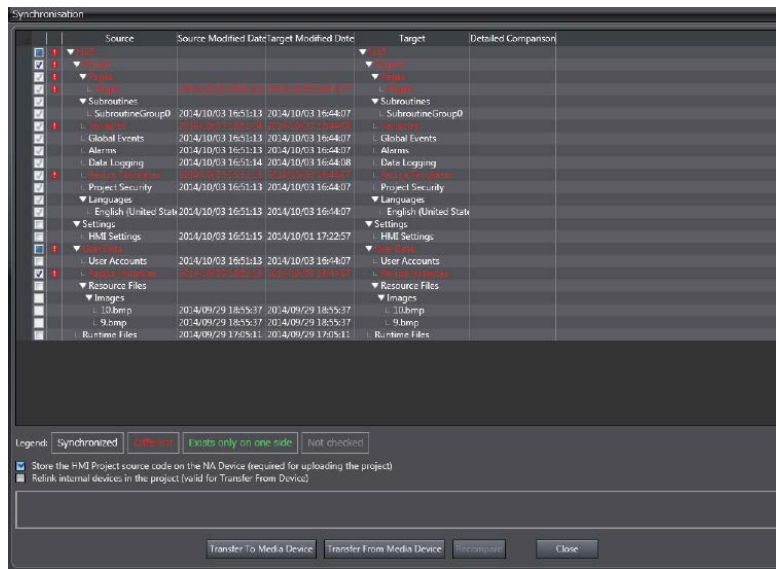
10. Select **Synchronization – Media Device** from the HMI Menu.



11. Specify the name on the media specified for the upload and click the **OK** Button.

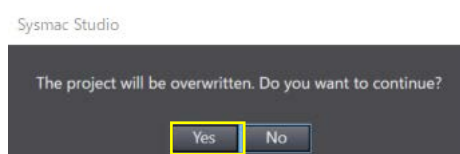


12. Select the items to upload.  
 \* If you want to send all files, deselect only the Runtime files.  
 \* Deselect the item below before uploading, otherwise uploading will fail.  
 - Runtime files



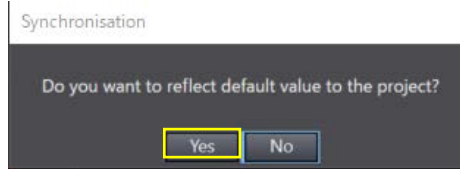
13. Click the **Transfer From Media Device** Button.

14. The message **The project will be overwritten. Do you want to continue?** is displayed. Click the **Yes** Button.

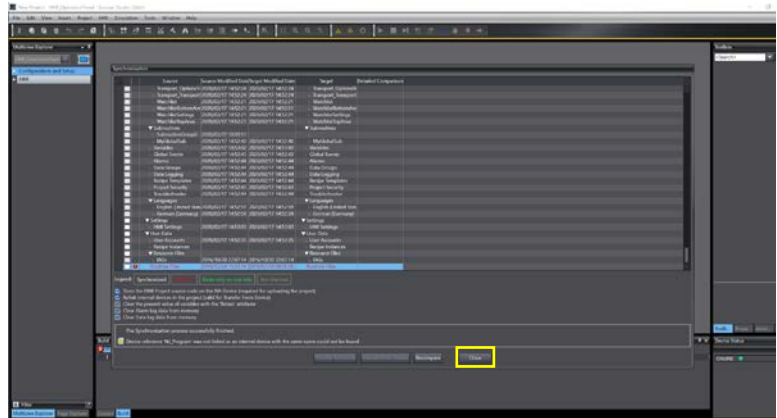




15. The message **Do you want to reflect default value to the project?** is displayed on the dialog. Click the **Yes** Button.



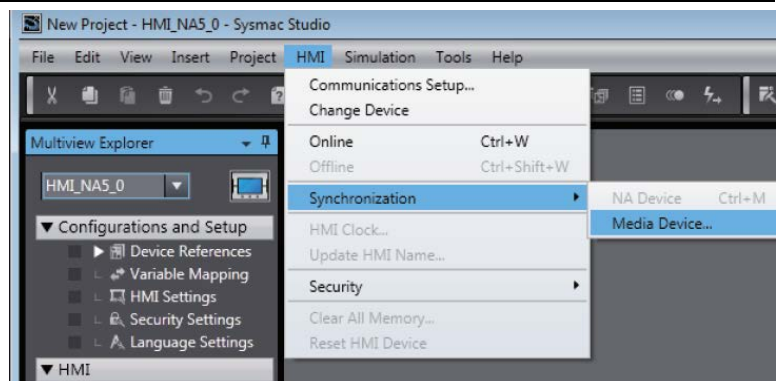
16. When synchronization completes, click the **Close** Button.  
Go to 4-2-3 *Converting the project for NA5-V1*



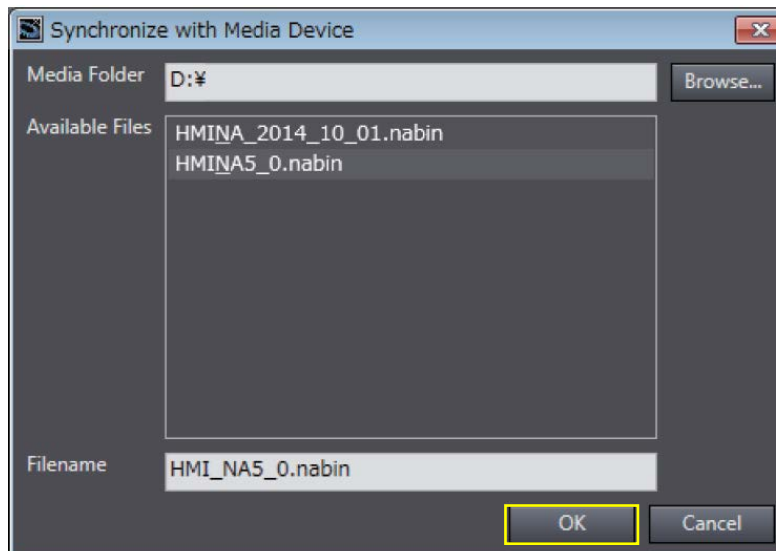
## 5-1-2 Downloading by using a storage media

1. Insert an SD Memory Card or USB memory device to use for the download into the computer.

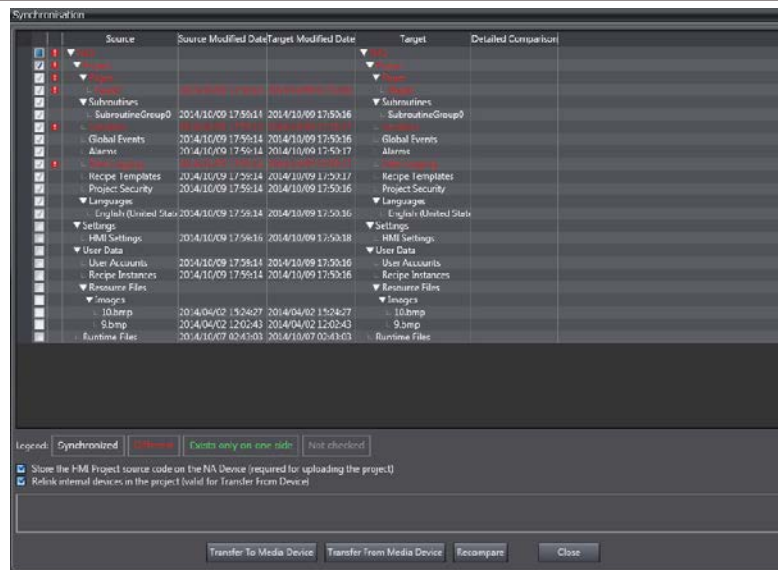
2. Select **Synchronization – Media Device** from the **HMI** Menu.



3. Select the file to download and click the **OK** button.

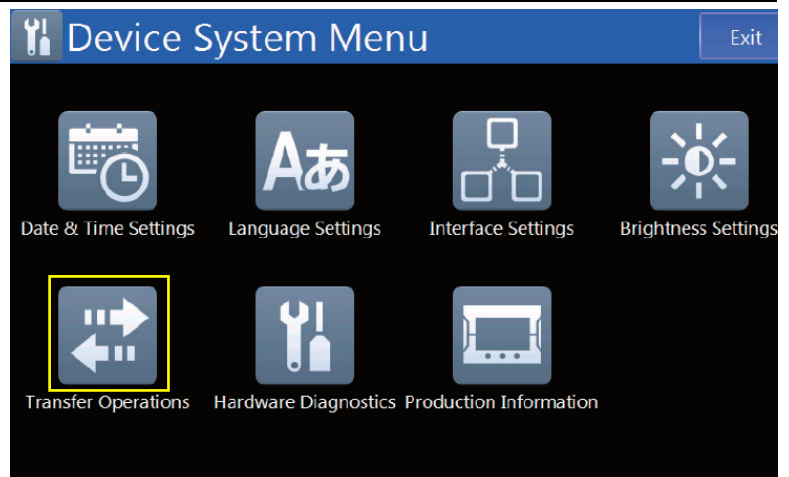


- The project on the Sysmac Studio is compared with the project in the storage media and the Synchronization Window is displayed.

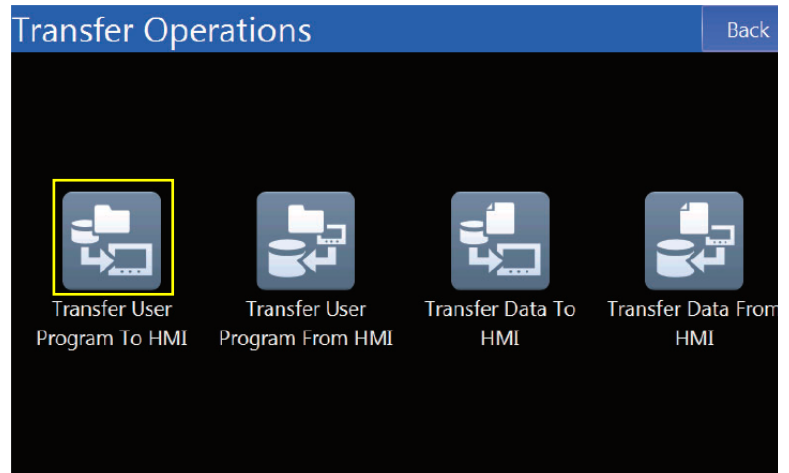


- Click the **Transfer To Media Device** button to transfer the project to the storage media.

- Insert the storage media into the HMI, display the Device System Menu, and touch the **Transfer Operations** Button.

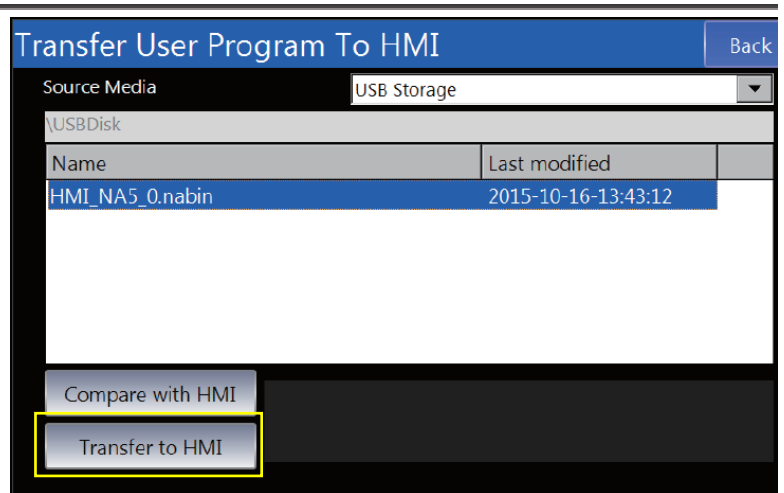


- Touch the **Transfer User Program to HMI** Button.



8. Select the project to transfer and touch the **Transfer to HMI** Button. The selected project is downloaded to the HMI.

Move to 4-5-3 *Checking the settings and communications.*



# Revision History

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Revision History	Date	Revised content
A	March 2020	Original production

**OMRON AUTOMATION AMERICAS HEADQUARTERS** • Chicago, IL USA • 847.843.7900 • 800.556.6766 • automation.omron.com

**OMRON CANADA, INC. • HEAD OFFICE**

Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • automation.omron.com

**OMRON ELECTRONICS DE MEXICO • HEAD OFFICE**

Ciudad de México • 52.55.5901.4300 • 01.800.386.6766 • mela@omron.com

**OMRON ELECTRONICS DE MEXICO • SALES OFFICE**

San Pedro Garza García, N.L. • 81.12.53.7392 • 01.800.386.6766 • mela@omron.com

**OMRON ELECTRONICS DE MEXICO • SALES OFFICE**

Eugenio Garza Sada, León, Gto • 01.800.386.6766 • mela@omron.com

**OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE**

São Paulo, SP, Brasil • 55 11 5171-8920 • automation.omron.com

**OMRON ARGENTINA • SALES OFFICE**

Buenos Aires, Argentina • +54.11.4521.8630 • +54.11.4523.8483  
mela@omron.com

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+54.11.4521.8630 • +54.11.4523.8483 • mela@omron.com

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