

NV-series PT Simple Operation Handbook

- A case of connection to a CP1E PLC -

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The NV3W-V1 is added.

Preparation

Designing Screens

Connecting with
CP1E PLC

Advanced Usage

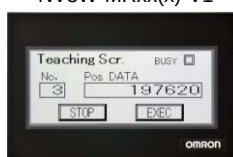
Required Devices

These are the devices required to connect an NV-series PT to a CP1E PLC.

PT: NV Series

Compact Horizontal Models: NV3W-V1 (3.8 inch)

Three color LED backlight of white, pink and red
NV3W-MRxx(x)-V1



- RS-232C type (5 VDC) -

NV3W-MR20L-V1

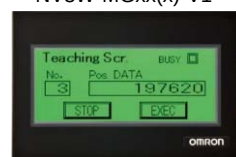
- RS-232C type (24 VDC) -

NV3W-MR20-V1

- RS-422A type (24 VDC) -

NV3W-MR40-V1

Three color LED backlight of green, orange and red
NV3W-MGxx(x)-V1



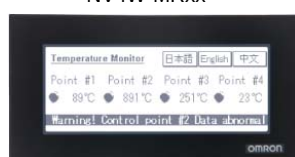
NV3W-MG20L-V1

NV3W-MG20-V1

NV3W-MG40-V1

Compact Horizontal Models: NV4W (4.6 inch)

Three color LED backlight of white, pink and red
NV4W-MRxx



- RS-232C type (24 VDC) -

NV4W-MR21

- RS-422A type (24 VDC) -

NV4W-MR41

Three color LED backlight of green, orange and red
NV4W-MGxx



NV4W-MG21

NV4W-MG41

QVGA Models: NV3Q (3.6 inch)

Three color LED backlight of white, pink and red
NV3Q-MRxx



- RS-232C type (24 VDC) -

NV3Q-MR21

- RS-422A type (24 VDC) -

NV3Q-MR41

STN color
(Display colors: 4096 colors)
NV3Q-SWxx



NV3Q-SW21

NV3Q-SW41

PT-to-PLC Connecting Cable



- RS-232C type (5 VDC) -

XW2Z-200T-4 (2 m with 5-V Line)

- RS-232C type (24 VDC) -

XW2Z-200T-3 (2 m without 5-V Line)

XW2Z-500T-3 (5 m without 5-V Line)

- RS-422A type (24 VDC) -

Prepare one by referring to the Manual.

PLC: CP1E Series

Package PLCs with Exceptional Cost: CP1E

Application Models

CP1E-NxxS1-type (built-in 3 ports), CP1E-NxxS-type (built-in 2 ports)

Note: E-type CP1E CPU Units (Basic Models) can not be used with an NV-series PT, since they do not have a RS-232C port.

< Renewal type >



◆ Power supply for Programmable Terminals

- Use a 24-VDC power supply unit for an NV3W-V1 (24-VDC type), NV4W or NV3Q.
- A power supply unit is not necessary for an NV3W-V1 RS-232C type (5-VDC type), since the 5-V power is supplied from the PLC via the cable (XW2Z-200T-4).



FA Integrated Tool Package

- ◆ Select from two packages:
- **CX-One Ver.4.x (4.03 or higher)**
The CX-One is a package that integrates the Support Software for OMRON PLCs and components.
- **CX-One Lite Ver.4.x (4.03 or higher)**
The CX-One Lite is a subset of the complete CX-One package that provides only the Support Software required for micro PLC applications.



Screen designing software for NV

Included in both packages of **CX-One Lite Ver.4** and **CX-One Ver.4**.

* It cannot be purchased individually.

- **NV-Designer Ver.1.1 or higher**



Note: The NV-Designer Ver.2.0 or higher is required to use the NV3W-V1.

Programming software for PLC

- ◆ Select from two types of software:

Included in a package of CX-One Lite Ver.4.

- **Micro PLC Edition CX-Programmer Ver.9.**

Included in a package of CX-One Ver.4.

- **CX-Programmer Ver.9**

NV-PC connection cable

- ◆ Use a commercially available USB cable (Mini-B) to connect the NV3W-V1 or NV4W to a PC.
- Use a commercially available USB cable (Type B) to connect the NV3Q to a PC.

Connecting an NV3W-V1

- Use a commercially available USB cable (Mini-B).



Connecting an NV3Q

- Use a commercially available USB cable (Type B).



Connecting an NV4W

- Use a commercially available USB cable (Mini-B).



CP1E PLC-PC connection cable

- Use a commercially available USB cable.



PC



* Supporting Windows 7 (32-bit version)!

Wiring and Connection

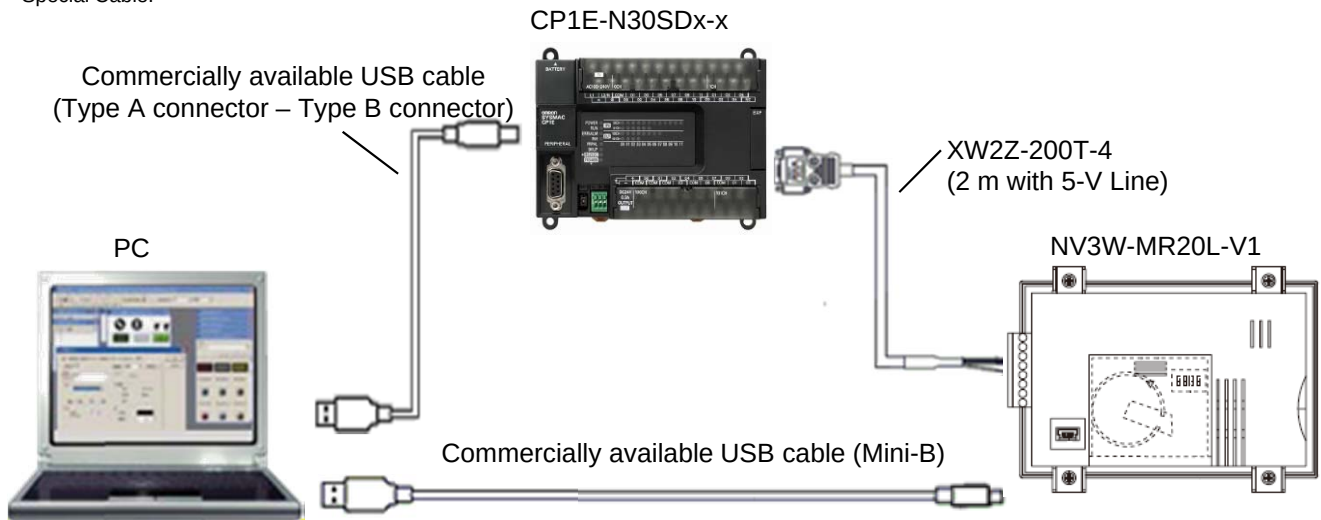
Connect the devices.

* This section explains the procedure to connect an NV3W-V1 (5-VDC type) PT to a CP1E PLC.

Connecting example

Connecting an NV3W-V1 (5-VDC type) PT to the USB port on a PC

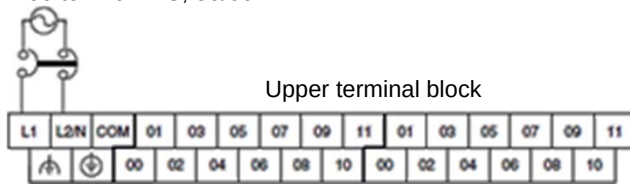
* The NV3W-V1 (5-VDC type) does not need a power supply unit. The 5-V power is supplied from the PLC through the XW2Z-200T-4 Special Cable.



Wiring for the CP1E AC power supply

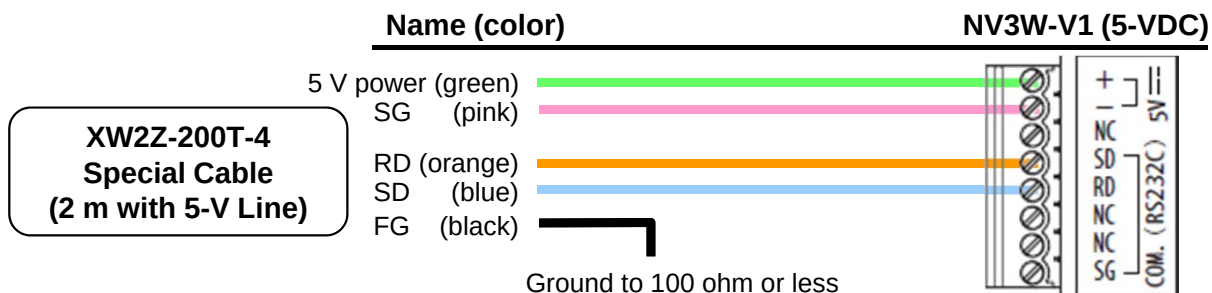
Wire for the CP1E AC power supply.

100 to 240 VAC, 50/60 Hz



Connecting the NV and CP1E

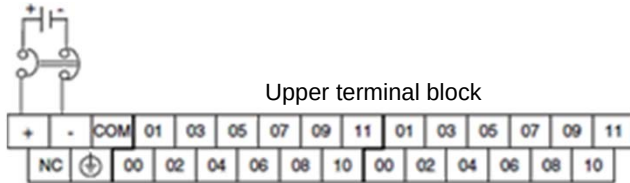
Connect the NV and the CP1E with the XW2Z-200T-4 Special Cable.



◆ When the CP1E uses a 24-VDC power supply

Wire the 24-VDC power supply as shown below.

24-VDC power supply



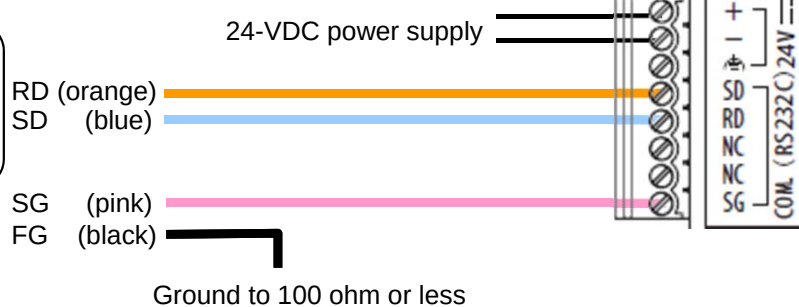
◆ When the NV3W-V1 (24-VDC type), the NV4W, or the NV3Q is connected with a RS-232C cable

Wire the NV and the PLC as follows. The power is supplied from the external supply unit to the PT.

- **XW2Z-200T-3**
(2 m, without 5-V Line)
- **XW2Z-500T-3**
(5 m, without 5-V Line)

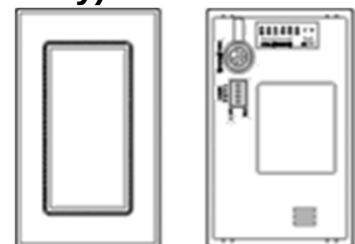
Name (color)

NV3W-V1 (24-VDC)/NV4W/NV3Q



◆ Using a Vertically Mounted PT (NV3W-V1 and NV4W only)

The NV3W-V1 and NV4W PTs can be mounted vertically. Mount the PT with the serial communications/power supply connector on top.

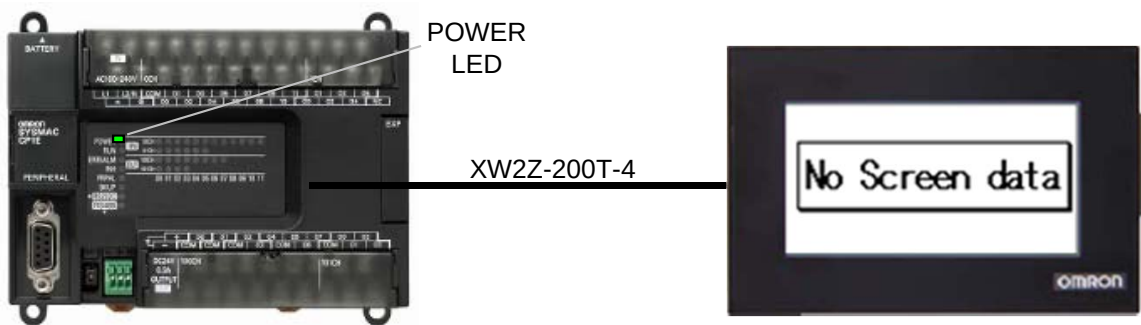


Turning on the Power

Turn on the power to the CP1E. The power is also supplied to the NV through the RE-232C serial port on the CP1E.

Turning on the power to the CP1E

Turn on the power to the CP1E. The **POWER LED** indicator on the front of the CP1E lights in green. The NV screen shows a message as follows:



Note: The message “No Screen data” is shown when the NV has no screen data.
As the NV contains no data at factory shipping, This message is shown accordingly.

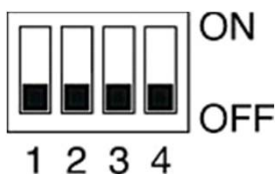
◆ NV startup mode

If you turn ON the power to the NV after you change the DIP switch pins on the NV back face to any setting other than default setting, the NV starts up in a special operation mode. You can use the functions to prohibit accessing the System Menu and to clear the F-ROM.

* Do not use the NV in any settings other than shown below.

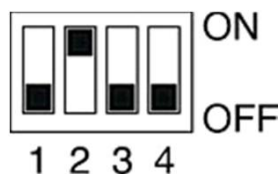
Normal operation (default)

Turn OFF all pins.



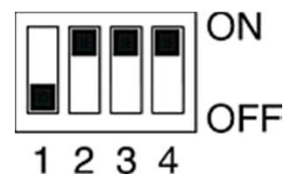
Prohibiting moving to System Menu

Turn ON pin 2.



F-ROM clear

Turn ON pins 2, 3, and 4.



Note 1: The data saved in the F-ROM includes screen data and NV configuration data.

Note 2: Other than the DIP switch setting, you can clear the F-ROM from the System Menu.

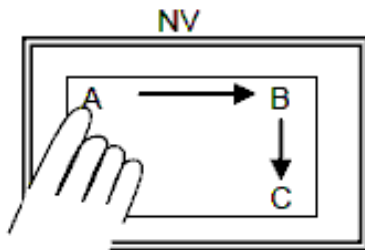
Displaying the NV System Menu

The System Menu is the special screen that is used to configure the NV. Some settings such as touch switch adjustment can only be done on the System Menu.

Accessing the System Menu

Follow the steps below to access the System Menu.

1. Touch the touch panel on the PT as shown below.
(This is common for the entire NV Series.)



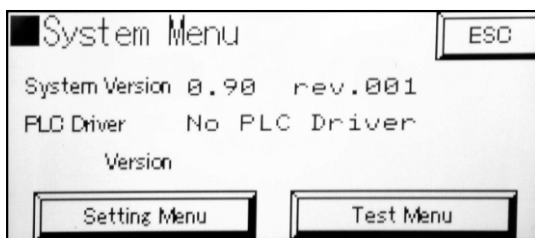
- 1) Touch the upper left corner (A) for at least 2 seconds.
- 2) Then immediately touch the upper right corner (B) and lower right corner (C) in order.

Touch A for at least 2 seconds, then press B and C in order.

Note: Touch the points A, B, and C, one at a time in order. Do not press these points at the same time.

2. The startup screen of the System Menu will be displayed.

The default language for the System Menu is English, if there is no screen data in the PT. The System Menu depends on the PT model. The default System Menu for the NV3W-V1 is used here.



The startup screen of the System Menu will be displayed.

The next screen will be displayed if you touch the **Setting Menu** or **Test Menu** Key.

To return to normal operating status, touch the **ESC** Key.

Note: The system version is the version of the system ROM in the PT.

◆ Changing the System Menu language

The language is switchable between English and Japanese on the NV System Menu. Select **Setting Menu - Language**.

Setting the CP1E Serial Port

To have the NV and the CP1E communications, the both serial ports must have the same setting. Use the PLC programming tool CX-Programmer to set the communications on the CP1E.

NV-CP1E communications setting example

Both the NV and the CP1E support the high speed communication of 115,200 bps. Connect them in this baud rate.

Set the RS-232C serial ports on both of the NV and the CP1E as follows:

- Mode: Host Link
- Baud rate: 115,200 bps
- Data length: 7
- Stop bit: 1
- Parity bit: Even

◆ Be sure to change the stop bit on the PLC from the default 2 to 1

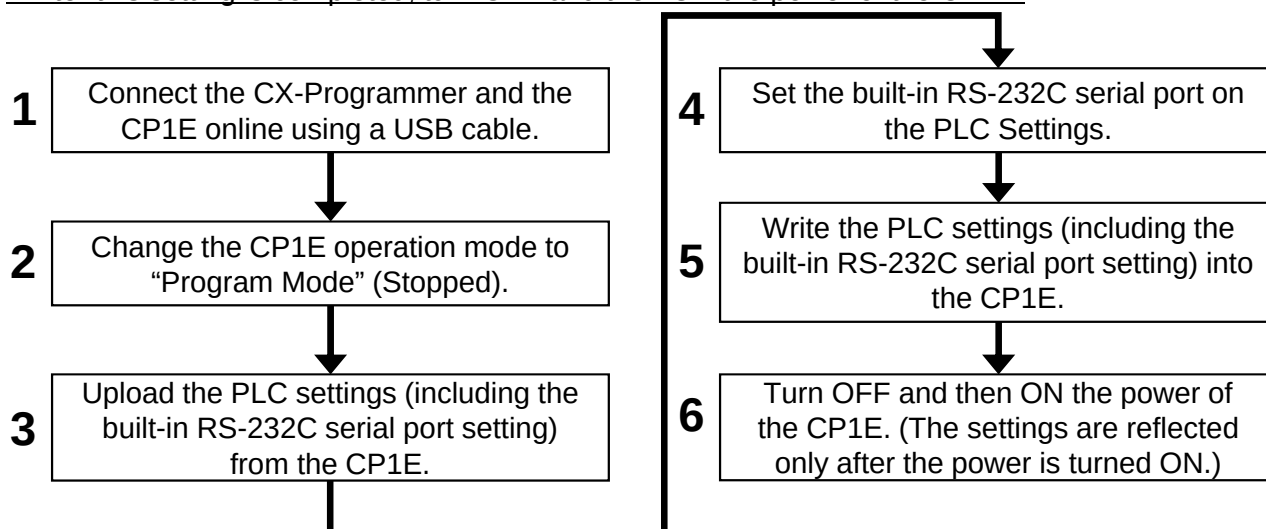
The stop bit for the NV serial communications is fixed to 1. Therefore, the stop bit of the PLC serial port must be changed from the default 2 to 1.

Note: Communications may be enabled, even when the stop bit on the PLC is 2 while the bit on the NV is 1. However, be sure to set the both to 1.

Communications setting for the RS-232C serial port built in the CP1E

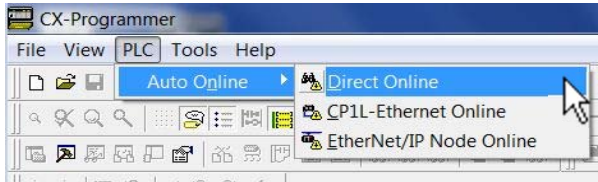
Use the PLC programming tool CX-Programmer. Follow the steps below to set the RS-232C serial port built in the CP1E.

* After this setting is completed, turn OFF and then ON the power of the CP1E.

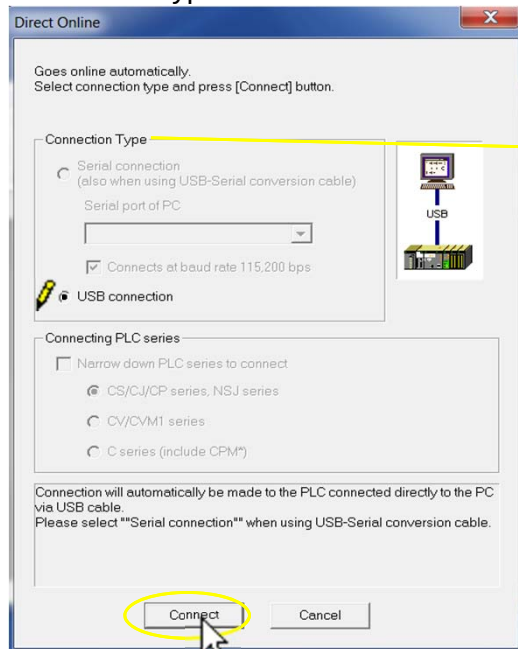


Online connection of the CX-Programmer and CP1E

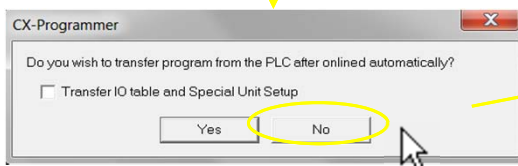
1. Select **Program – OMRON – CX-One – CX-Programmer – CX-Programmer** from the Windows Start Menu to start the CX-Programmer.
2. Select **PLC – Auto Online – Direct Online** from the menu bar.



3. In the **Direct Online** Dialog Box, select **USB connection** for the PC – PLC (CP1E) connection type. Click the **Connect** Button.

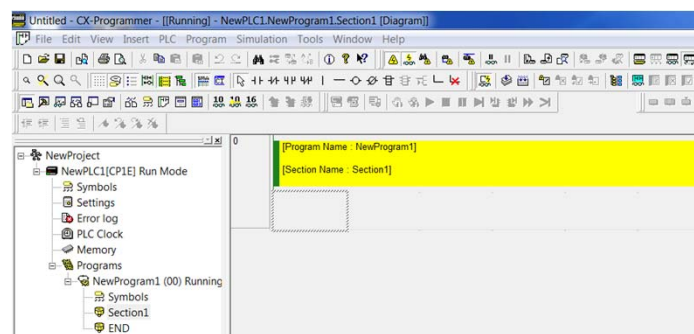


Connection Type:
Select either
Serial connection or
USB connection.



1) Click the **No** Button.
* Click the **Yes** Button to upload
the program to the PC.

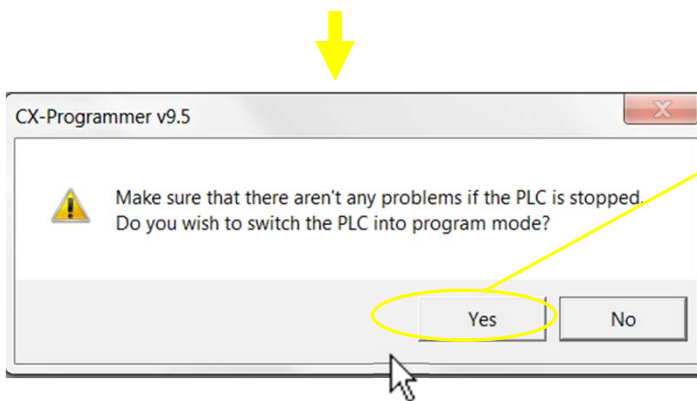
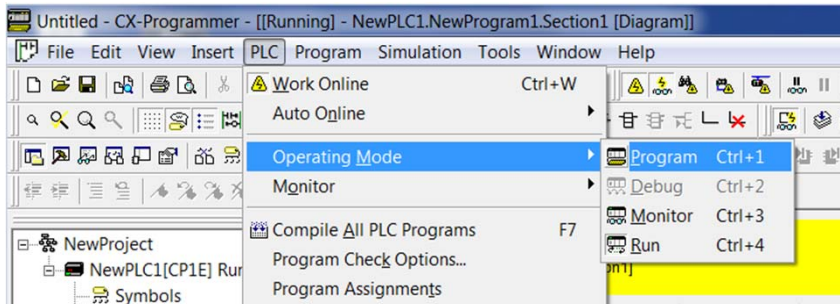
4. When the PC is connected with the CP1E, a new project will start.



Preparation

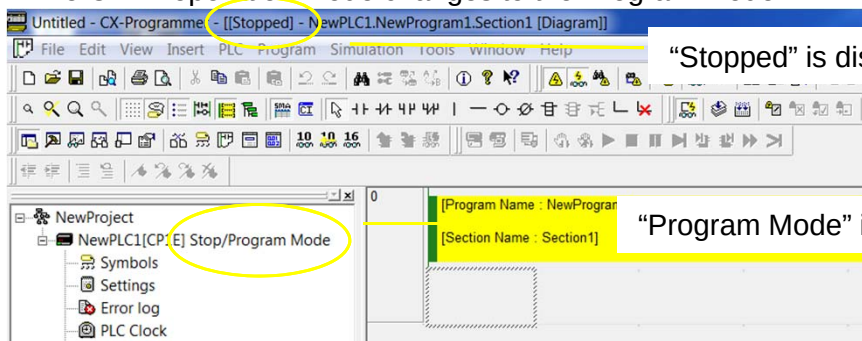
Changing the CP1E operation mode into Program

1. Select **PLC – Operation Mode – Program** from the menu bar.



- 1) Confirm that stopping the ladder program do not cause any problem. Click the **Yes** Button.

2. The CP1E operation mode changes to the Program Mode.

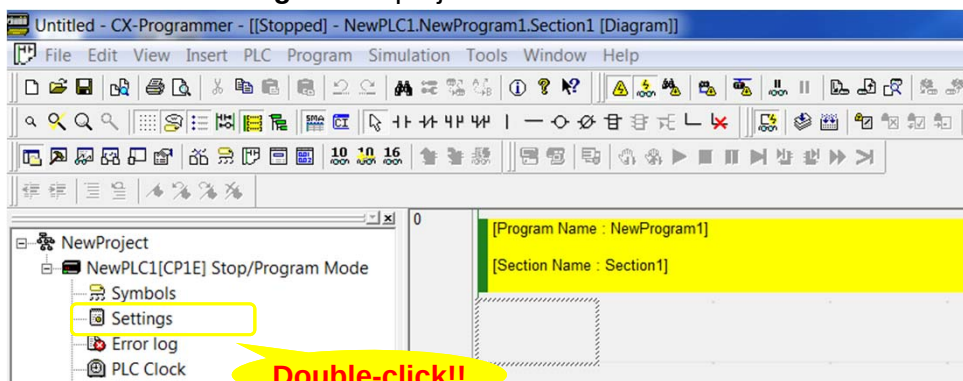


"Stopped" is displayed.

"Program Mode" is displayed.zzzzz

Transferring, setting and writing the PLC settings

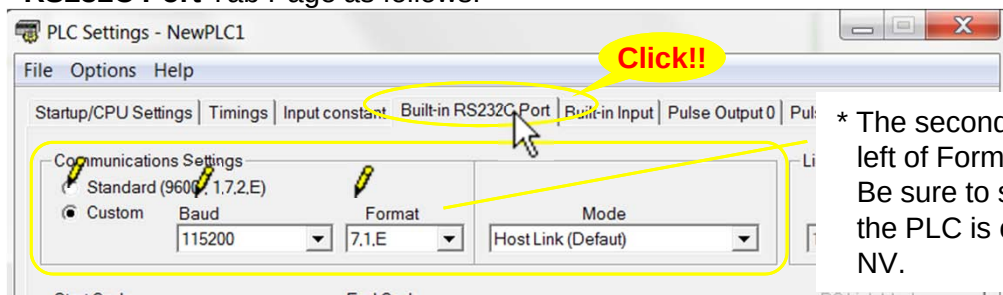
1. Double-click **Settings** in the project tree.



- The **PLC Settings** Dialog Box appears .
Select **Options – Transfer from PLC** from the menu bar.

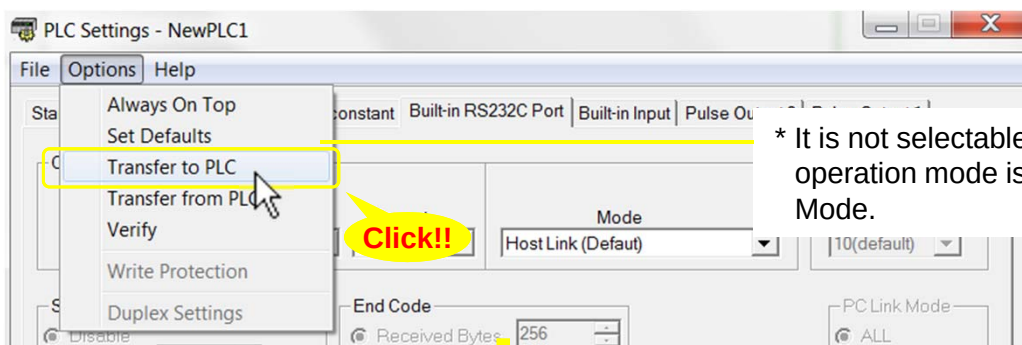


- The PLC settings for the CP1E are uploaded to the PC. Make the setting on the **Built-in RS232C Port** Tab Page as follows.

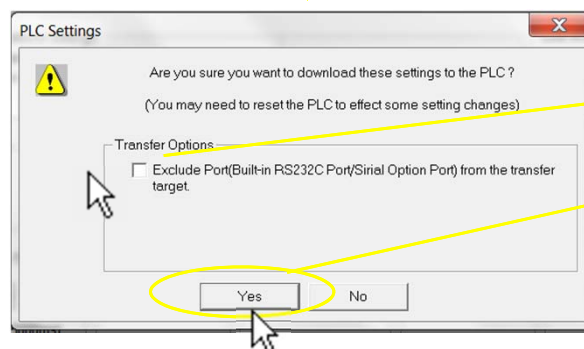


* The second value from the left of Format is the stop bit. Be sure to set it to "1" when the PLC is connected to an NV.

- Select **Options – Transfer to PLC** from the menu bar.



* It is not selectable, when the PLC operation mode is not in Program Mode.



1) Do not select.

2) Click the **Yes** Button.

Turning OFF and then ON the power of the CP1E

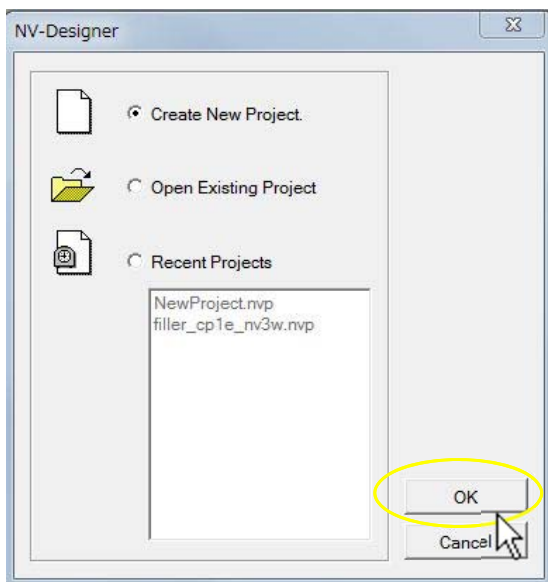
- Turn OFF and then ON the power of the CP1E. The RS-232C serial port setting becomes effective when the power is turned ON. This completes the CP1E communications setting.

Creating New Screen Data

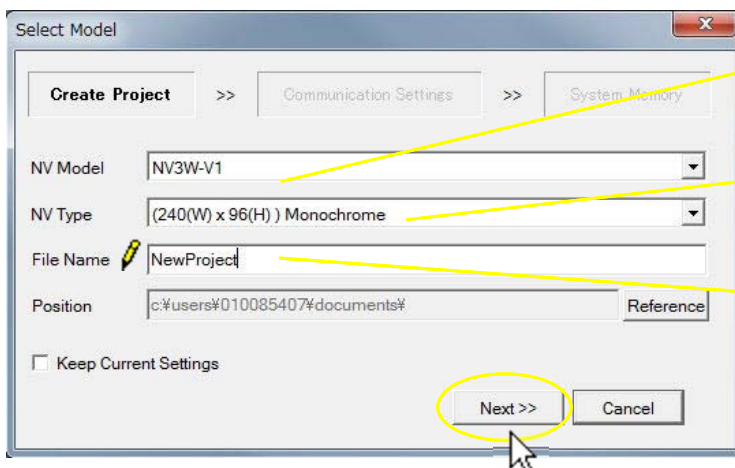
The NV communications setting is set by transferring the screen data to the NV. Create screen data by using the screen designing software NV-Designer.

Starting the NV-Designer and creating a new project

1. Select **Program – OMRON – CX-One – NV-Designer - NV-Designer** from the Windows Start Menu,.
2. When the NV-Designer is started, the **NV-Designer** Dialog Box will be displayed. Select **Create New Project**. Click the **OK** Button.



3. On the **Select Model** Dialog Box, select the NV model and the NV type and enter the project name. Click the **Next** Button.

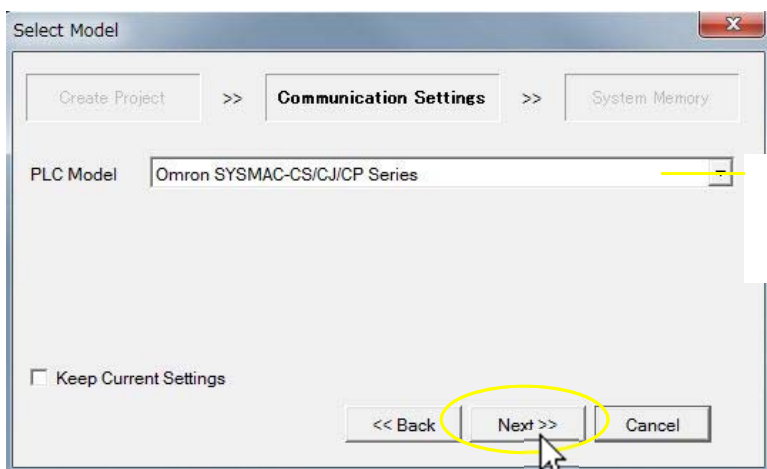


NV Model:
Select the PT model.

NV Type:
Select one from monochrome, color and vertical.

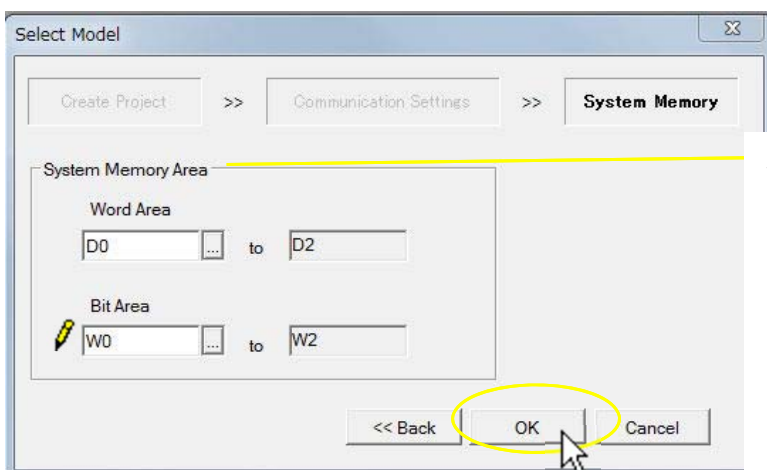
File Name:
Enter a project file name. In the left example, a file "New Project.nvp" and a folder "New Project" are created.

4. Select the PLC model to connect. Click the **Next** Button.



PLC Model:
Select the PLC model to connect.

5. In the **System Memory Area** Field, set the Word Area and the Bit Area. Click the **OK** Button.



System Memory Area:
Specify the areas for controlling the NV in the PLC internal memory.

Note: The default word for the Bit Area is CIO 0. As CIO 0 is allocated to the CP1E input word, be sure to change to a word in the Work Area.

Note: The words allocated to the system memory can be changed from the menu bar. Select **PT – NV Configuration**.

◆ System memory

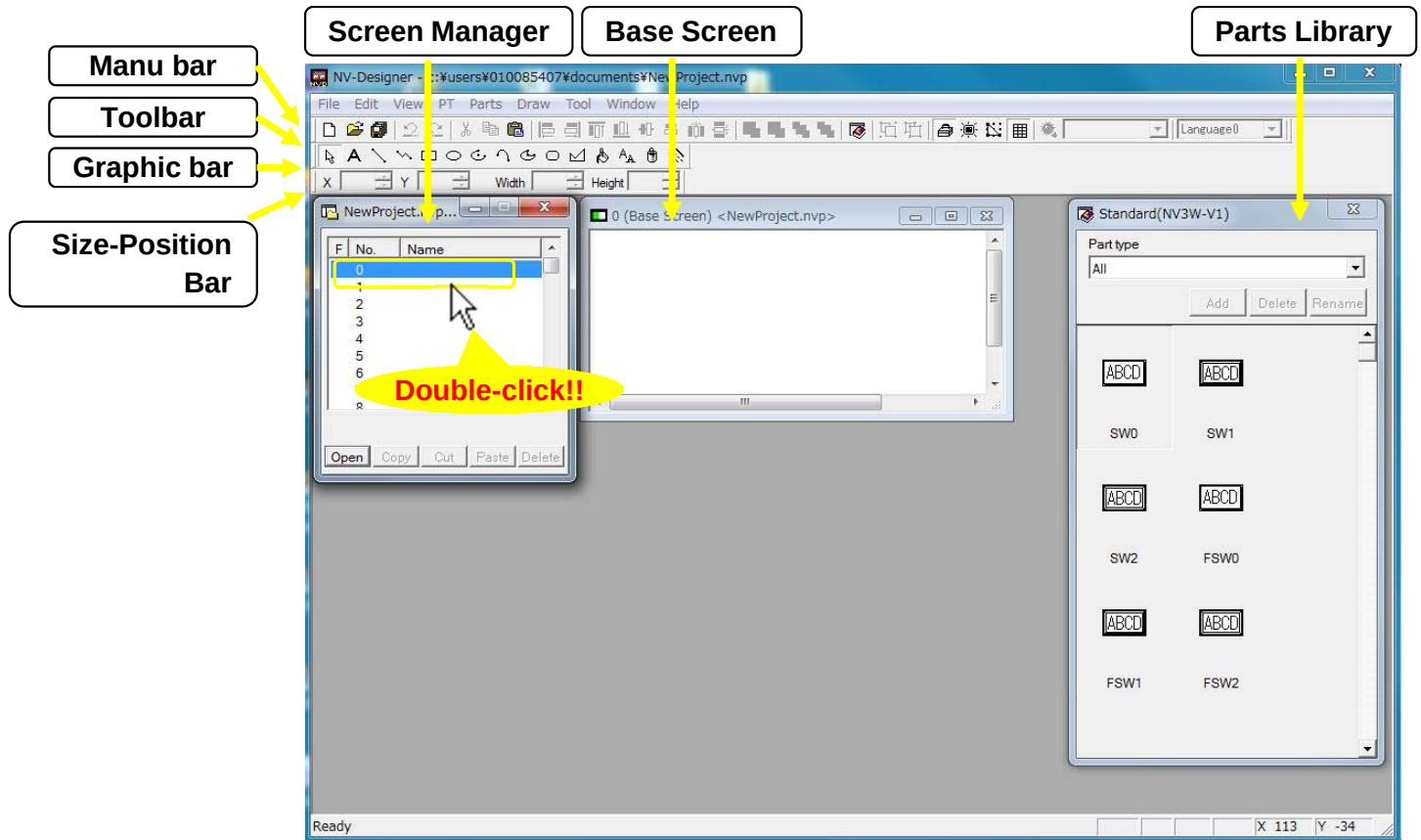
The system memory is used for the PLC to control the basic operations such as switching screens. The specified words in the PLC memory are allocated for communications, which are performed constantly.

◆ Number of words allocated for the system memory

Three consecutive words are allocated for the Word Area to read and write data in word units such as Screen No., and three consecutive words are allocated for the Bit Area to read and write data in bit units such as Backlight Light/Blink. In total six words are allocated.

Designing Screens

6. The Main Window of the NV-Designer will be displayed.
Double-click "0" in the Screen Manager. Base screen 0 and the Parts Library will open.



Note: The Size-Position Bar is a new function added to the NV-Designer Ver.2.0.

Screen Manager

Screens can be copied, pasted, cut, and deleted using the Screen Manager. Multiple projects can be started simultaneously and editing can be performed between the Screen Managers.

Base Screen

Character strings and parts are positioned on the screen to create a base screen.

Parts Library

A parts library contains parts, such as switches, lamps, data displays, and keyboards. Your own parts library can be created by registering customized parts to reuse them.

Setting the NV Communications

Set the NV - CP1E communications as the screen data.

NV-CP1E communications setting example

The CP1E communications was set as follows. Set the same for the NV communications.

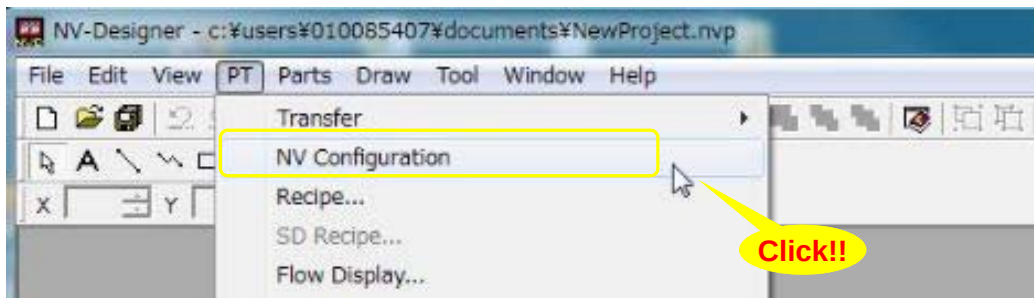
- Mode: Host Link
- Baud rate: 115,200 bps
- Data length: 7
- Stop bit: 1
- Parity bit: Even

◆ The stop bit for the NV serial communications is fixed to 1.

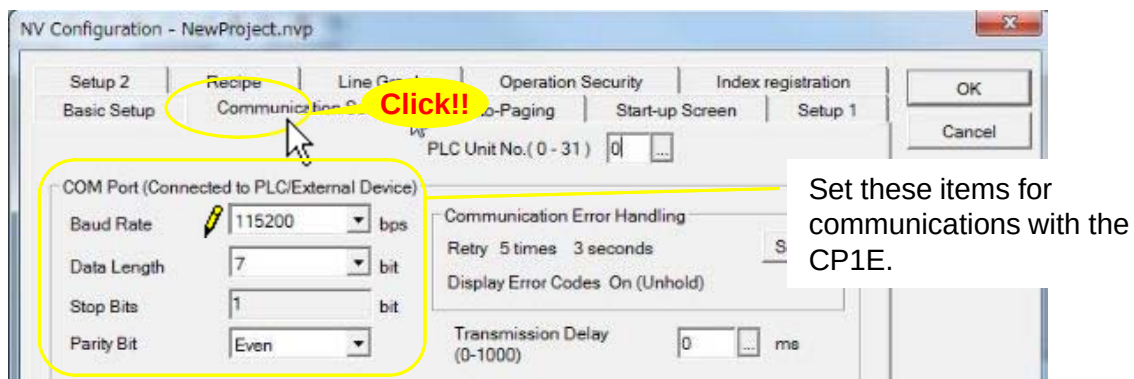
Therefore, the stop bit of the PLC serial port must be changed from the default 2 to 1.

Setting the NV communications

1. Select **PT – NV Configuration** from the menu bar.



2. Select the **Communication Parameters** Tab. Set the communications with the CP1E. Click the **OK** Button to close the dialog box. This completes the NV communication setting.

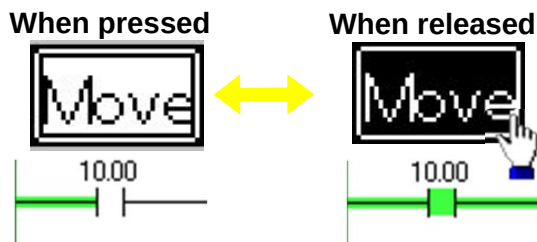


Creating Switch Parts

This and the following few pages describe the procedure to create parts on the screen, and confirming the NV-CP1E operations. Firstly, create a switch part that turns ON and OFF the specified bit in the PLC.

Example of creating a switch part

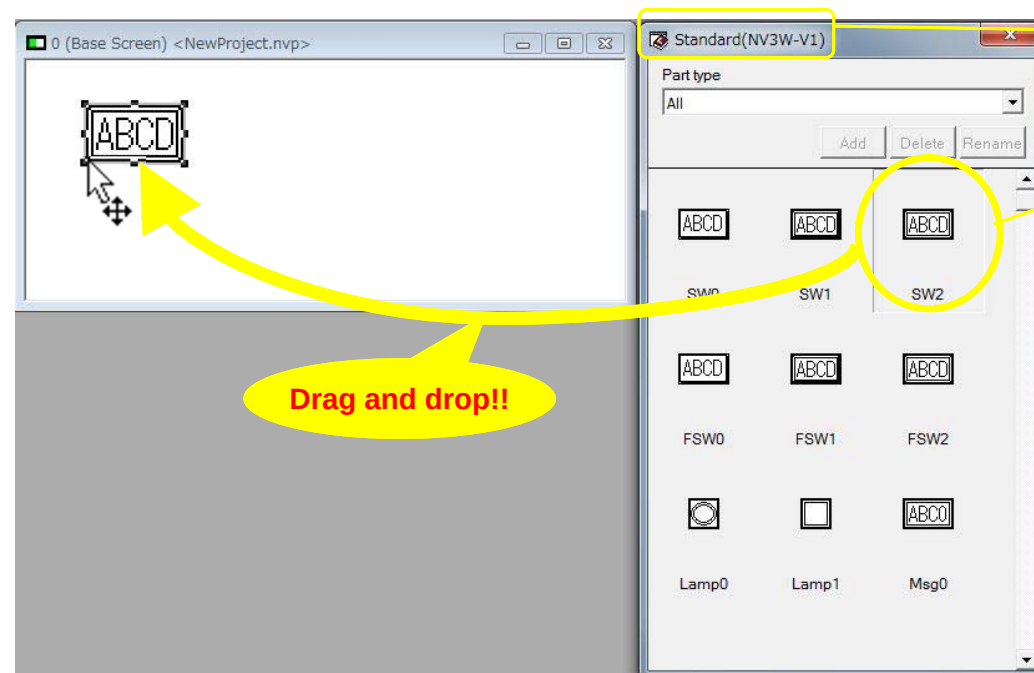
CIO 10.00 in the PLC is turned ON when the switch is pressed and turned OFF when it is released. (Momentary operation)



Normally the OFF label is displayed. While the switch is pressed, the ON label is displayed.

Creating a switch part

Drag a switch part from the library and drop it at any desired space on the base screen.

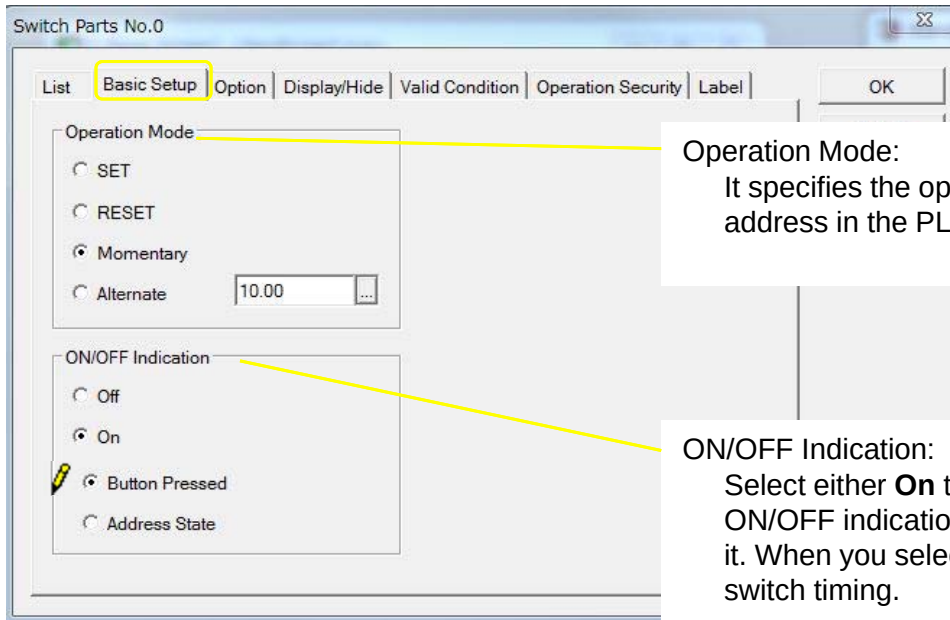


1) Use the Parts Library
Standard (NV3W-V1).

2) Use the part SW2.

Setting the function for the switch part

Double-click the switch part. Select the **Basic Setup** Tab. Set the **Operation Mode** and **ON/OFF Indication** Fields.



Operation Mode:

It specifies the operation and the bit address in the PLC.

ON/OFF Indication:

Select either **On** to switch the ON/OFF indication or **Off** not to switch it. When you select **On**, set also the switch timing.

Creating the switch labels

1. Select the **Label** tab.

ON/OFF:

Set the label each when the switch is ON and OFF.

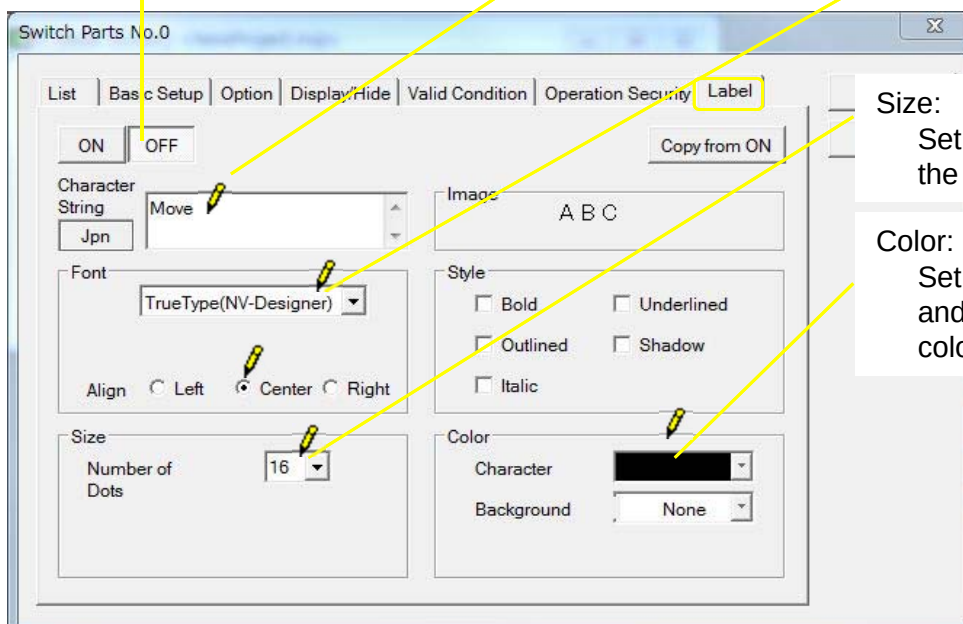
* Click the **OFF** Button.

Character String:

Enter a character string to show.

Font:

Set the font type and the position to show the character string.



Size:

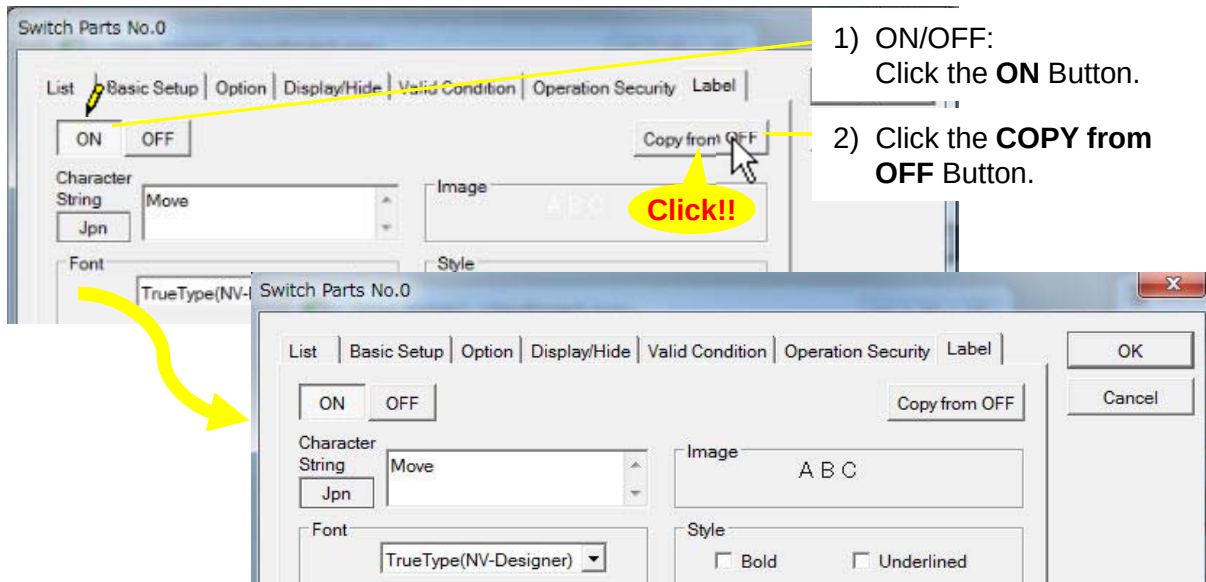
Set the front size of the character string.

Color:

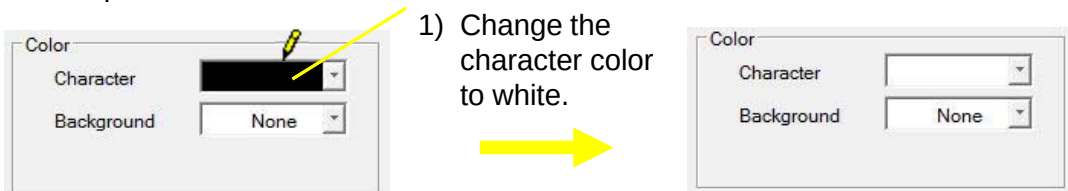
Set the character color and the background color.

Designing Screens

- Click the **ON** Button. Click the **COPY from OFF** Button. Then the setting for **OFF** is copied to **ON**. The two have the same setting.



- Change the character color for ON to white. After setting, click the **OK** Button to close the setting dialog box. This completes creating a switch part.

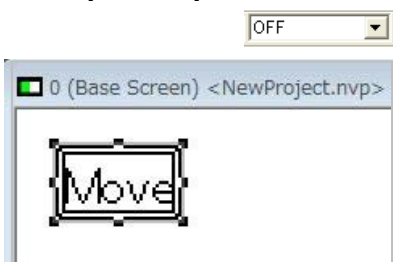


Confirming the part ON/OFF state by preview

Select the part. Change the status between OFF and ON by the **Parts State** Button on the toolbar and check the displays.



OFF (Normal)



ON (When pressed)



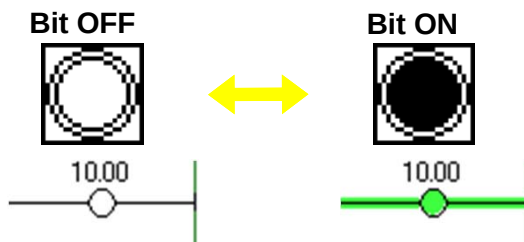
- Select a part. (You can select multiple parts.)
- Switch the ON/OFF state by the **Parts State** Button.

Creating Lamp Parts

A lamp part changes the display color when the specified bit in the PLC turns ON and OFF.

Example of creating a lamp part

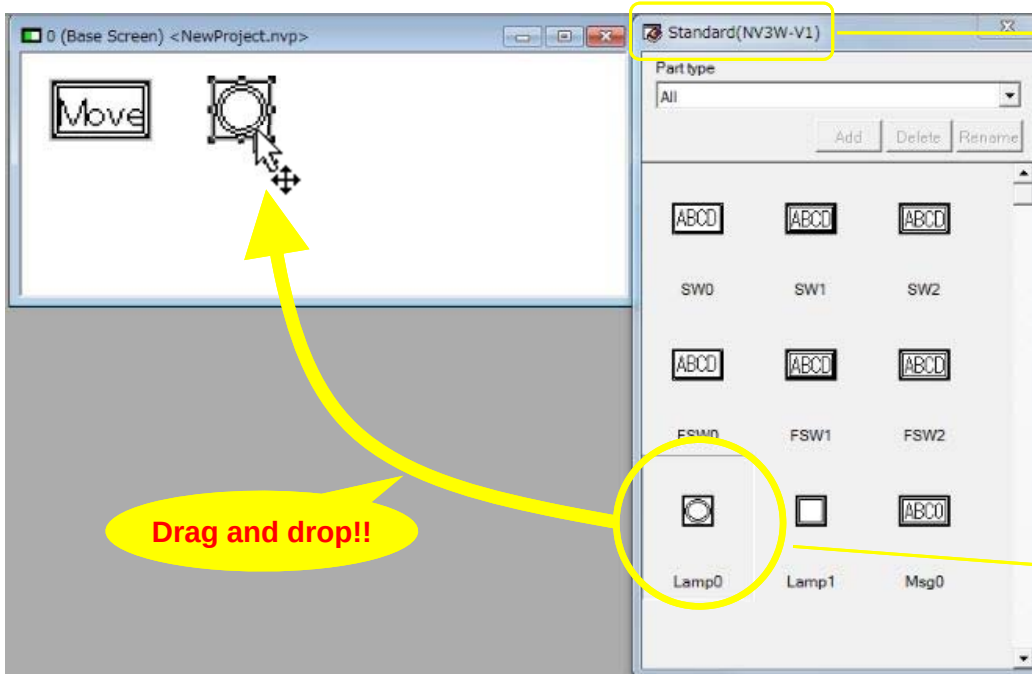
The lamp changes color depending on the ON/OFF state of CIO 10.00 in the PLC.



The lamp is white when CIO10.00 is OFF. It turns black when CIO10.00 is turned ON.

Creating a lamp part

Drag a lamp part from the library and drop it at any desired space on the base screen.

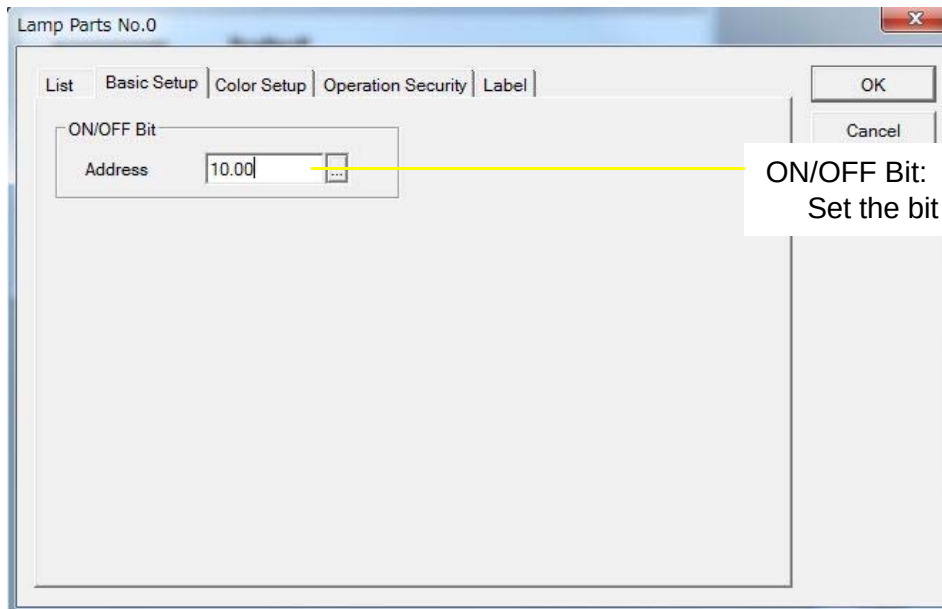


1) Use the Parts Library
Standard (NV3W-V1).

2) Use the part **Lamp0**.

Setting the function for the lamp part

Double-click the lamp part. Select the **Basic Setup** Tab. Set the **ON/OFF Bit** Field. Click the **OK** Button to close the dialog box. This completes creation of the lamp part.



ON/OFF Bit:
Set the bit address of the PLC.

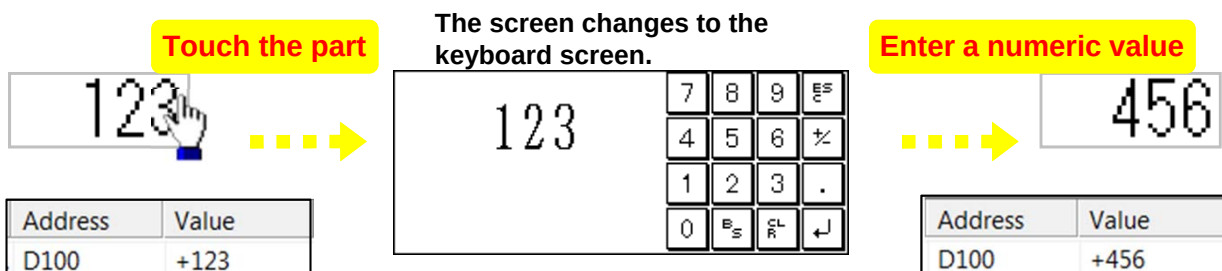
Creating Data Parts

Create data parts which display the contents of addresses in the PLC on the PT screen. Data parts can be used for indication only (no entries allowed) or for changing the values from the keyboard screen as well.

Example of creating a data part

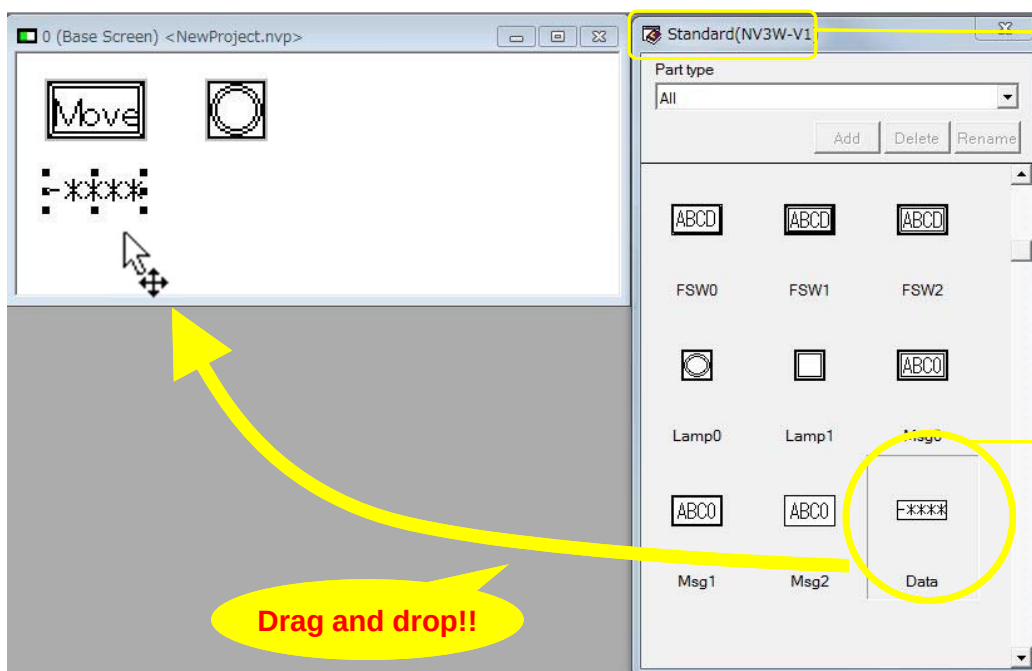
This data part indicates the value of D100 in the PLC in a decimal number.

The keyboard screen appears by touching the part. Enter a value on the keyboard and change the value for D100.



Creating a data part

Drag a data part from the library and drop it at any desired space on the base screen.

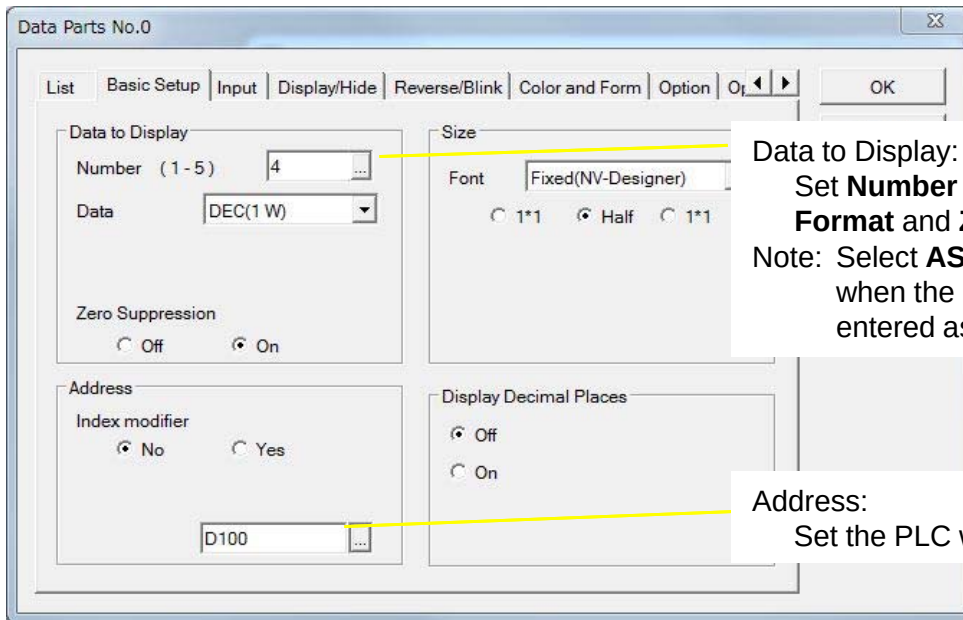


- 1) Use the Parts Library
Standard (NV3W-V1).

- 2) Use the part **Data**.

Setting the function for the data part

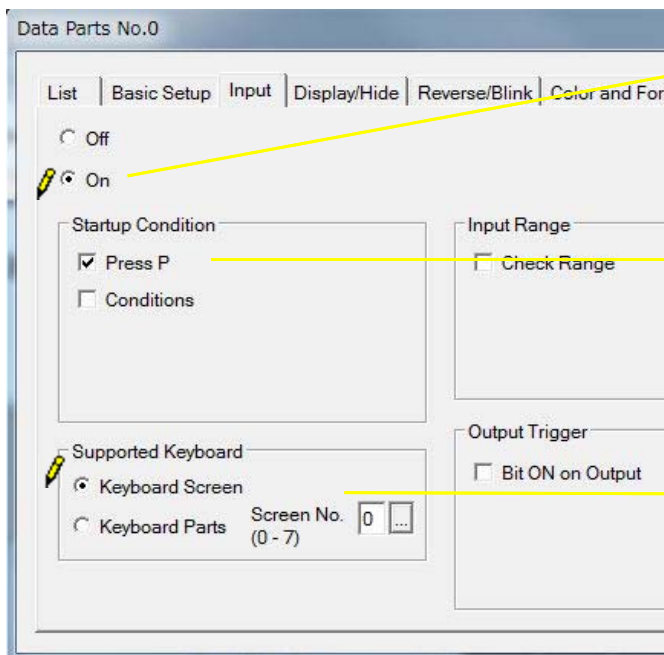
Double-click the data part. Select the **Basic Setup** Tab. Make a necessary setting as shown below. Note: This example uses the default setting.



Setting to enable or disable input and other setting items

Click the **Input** Tab. Select **On**. Make the input settings.

Click the **OK** Button to lose the setting dialog box. This completes the data part setting.

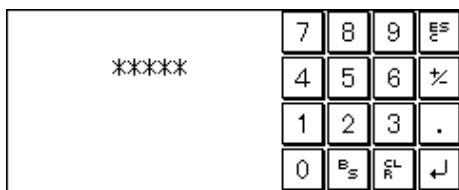


Creating Keyboard Screens

Create a keyboard screen to enter values for the data part.

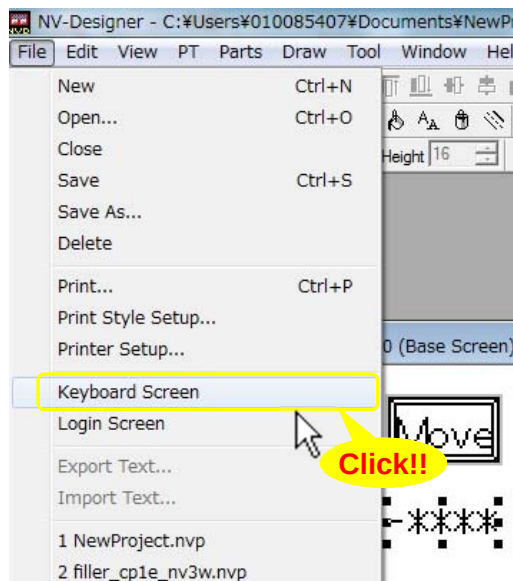
Example of creating a keyboard screen

On this keyboard screen, you can enter decimal numbers and signs. Also you can confirm the values entered from the keyboard before they are set.

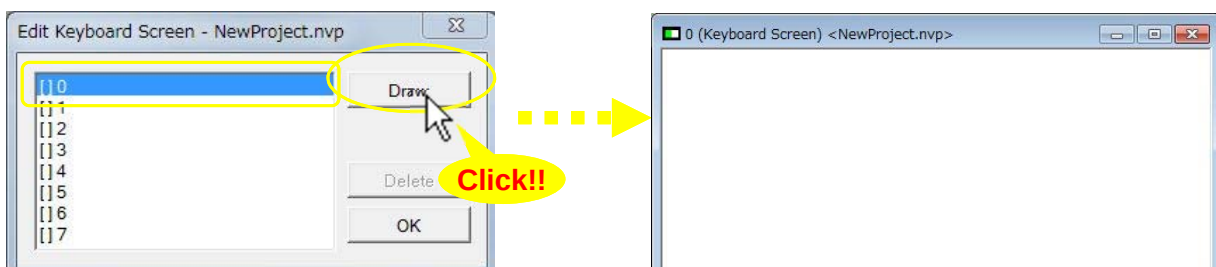


Creating a keyboard screen

1. Select **File – Keyboard Screen** from the menu bar.



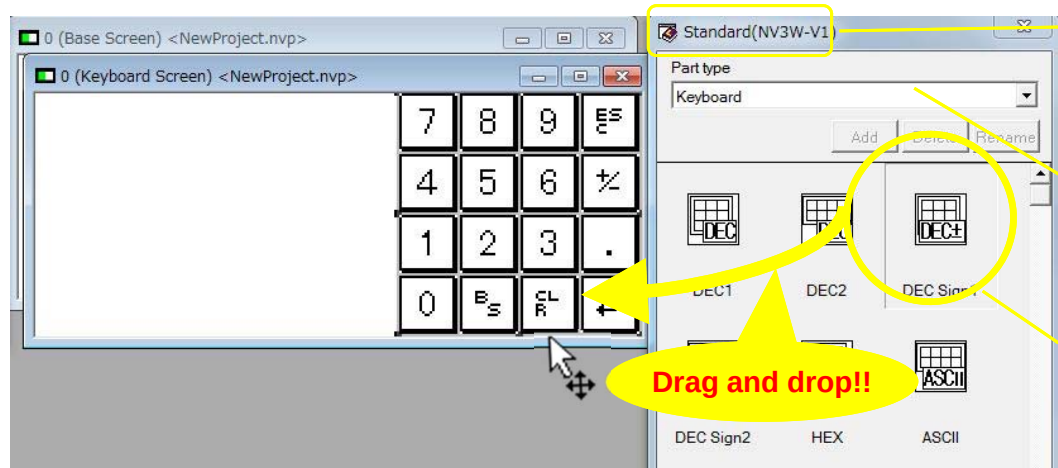
2. The **Edit Keyboard Screen** Dialog Box will be displayed. Click [] 0, and then click the **Draw** Button to open the keyboard screen No. 0.



Designing Screens

Creating a keyboard part

Drag a keyboard part from the library and drop it at any desired space on the keyboard screen.



1) Use the Parts Library **Standard (NV3W-V1)**.

2) Click the **Parts Group Selection** Button, and then select **Keyboard**.
* Parts are displayed by type.

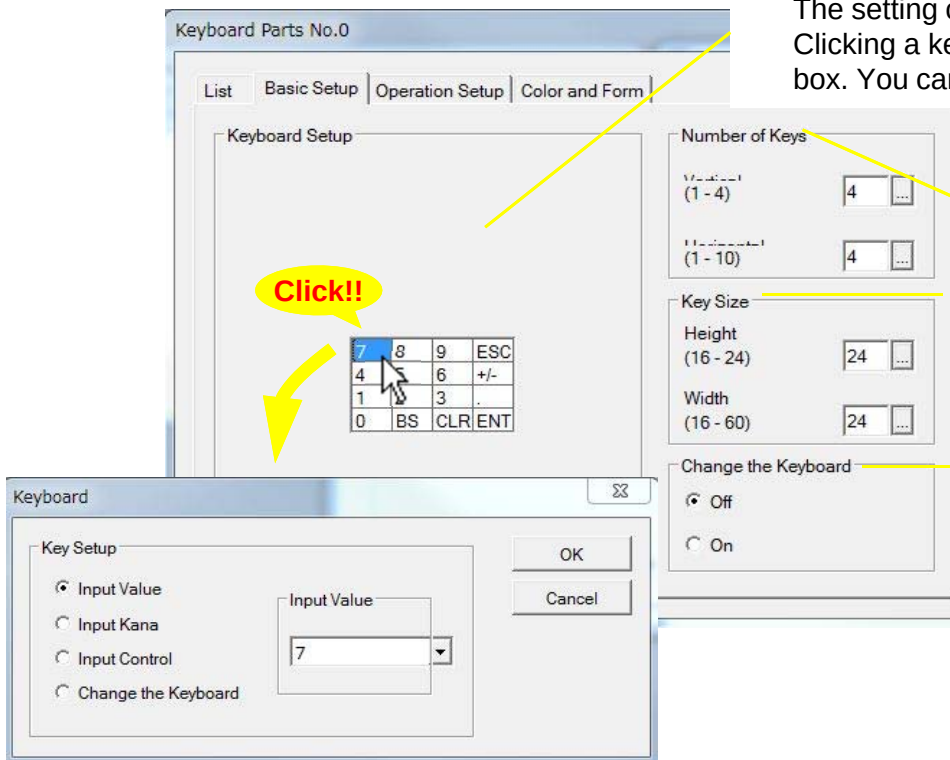
3) Use the part **DEC Sign1**.

Setting the function for the keyboard part

Double-click the keyboard part. Select the **Basic Setup** Tab. Make a necessary setting as shown below. Note: This example uses the default setting. Click the **OK** Button to close the dialog box.

Image:

The setting can be checked here. Clicking a key will show the key setting dialog box. You can change the setting for each key.



Click!!

Number of Keys:
Set the vertical (column) and horizontal (row) number of keys.

Key Size:
Specify the size (height/width) of keys.

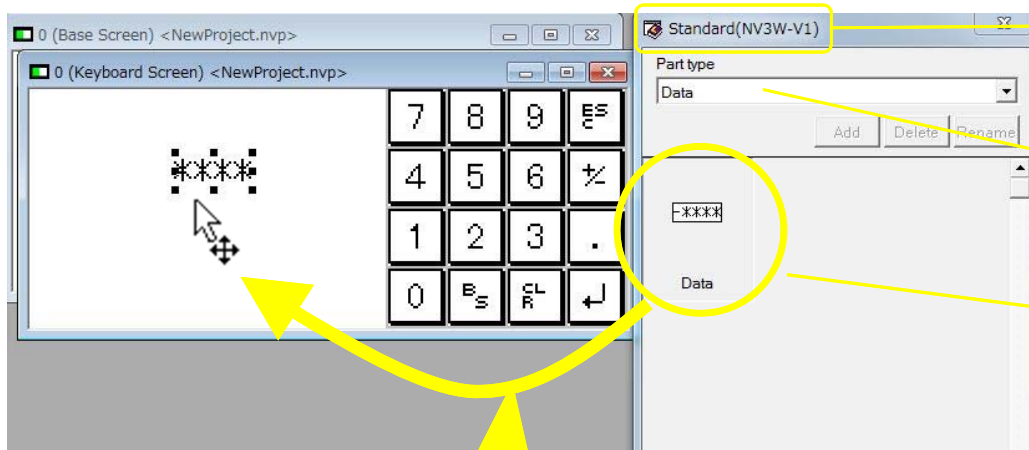
Change the Keyboard:
Keyboard keys can be selected among upper case, lower case, and alphanumerical + symbols. When **On** is selected, specify the keyboard number between 1 and 8.

Input Value:
Input Value: 7

Creating a data part

Place a data part to show the value entered from the screen.

Drag a data part from the library and drop it at any desired space on the keyboard screen.



1) Use the Parts Library **Standard (NV3W-V1)**.

2) Click the **Parts Group Selection** Button, and then select **Data**.

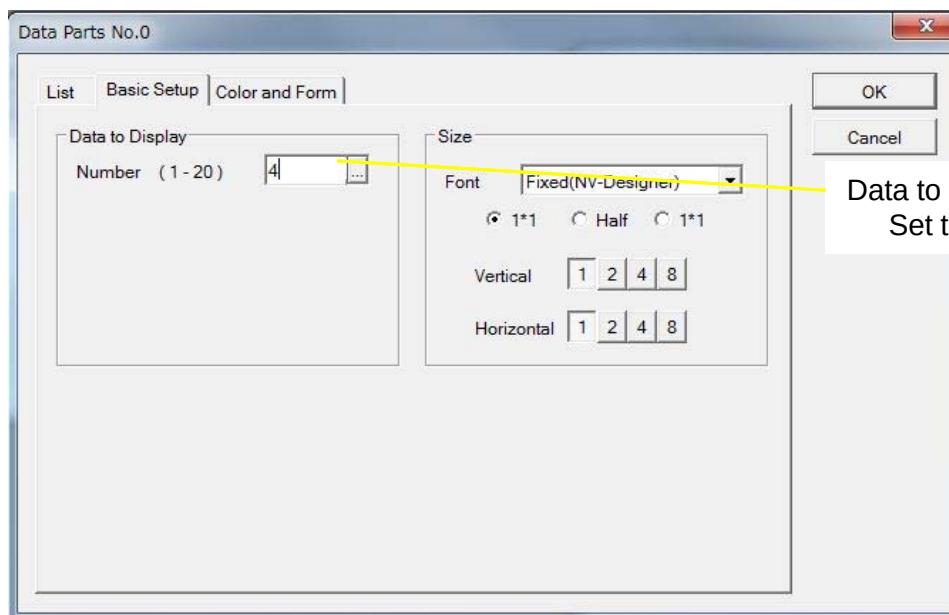
3) Use the part **Data**.

Drag and drop!!

Setting the function for the data part

Make a necessary setting as shown below. Note: This example uses the default setting.

Click the **OK** Button to close the dialog box. This completes creating a keyboard screen.



Data to Display:
Set the number of digits.

Creating Character Strings

This section explains the procedures to show texts or character strings on a screen. It also describes how to change the character attributes such as font, size and color. This way, the character string will stand out.

Example of creating a character string

In this example, the character string “Value” is outlined.

target amount

Creating a character string

1. Click the **Character String** Button on the graphic bar



2. Click the position on the base screen where you want to input a character string.



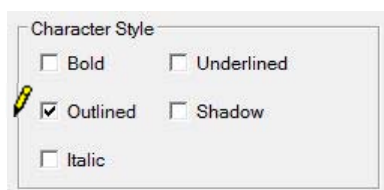
3. Enter a character string.



4. Click the **Character Type** Button on the graphic bar.



5. The **Character Attributes** Dialog Box will be displayed. Select the **Outlined** Check Box. Click the **OK** Button to close the setting dialog box. This completes creating a character string.



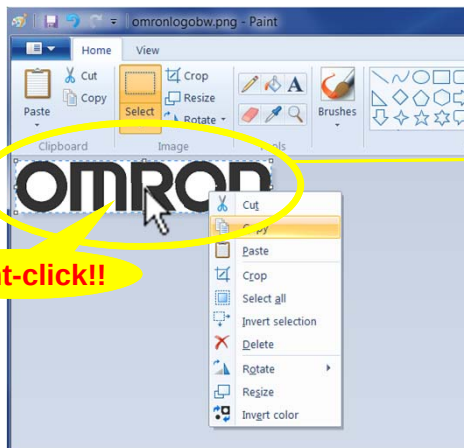
◆ To show a picture image such as bitmap on the NV screen

The NV-series PTs can display picture images such as bitmap images.
You can paste images from the Windows clipboard to the NV screens.

1. On the workspace of graphic software such as MS Paint, open an image file to show on the NV.



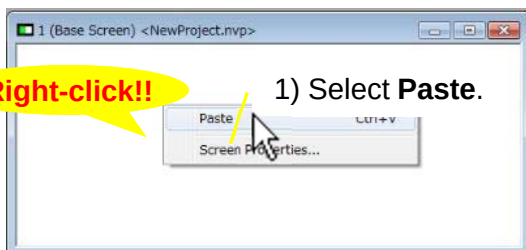
2. Select the range of the image to show on the NV and copy it.



<MS Paint>

- 1) Select the range.
(Press **Ctrl + A** to select all)
- 2) Right-click the image, and select **Copy** from the context menu. Alternatively, press **Ctrl + C** to copy the image to the clipboard.

3. On the NV-Designer, open the screen to paste the image. Right-click on the screen and select **Paste** from the context menu. Alternatively, press **Ctrl + V** to paste the image.



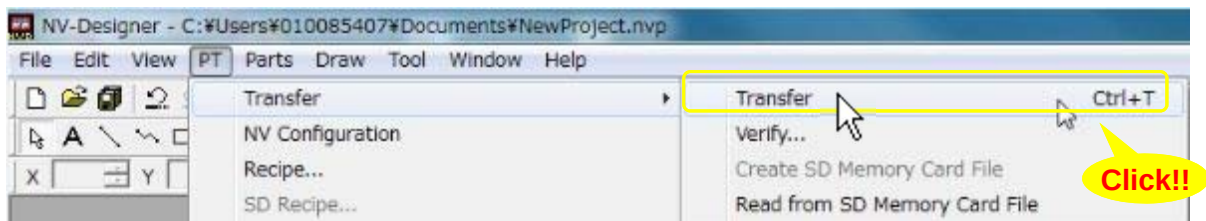
Note: Images that are larger than the screen (NV3W-V1: 240 x 96 (W x H), NV4W: 320 x 120 (W x H), NV3Q: 320 x 240 (W x H)) cannot be pasted. Scale down the image to any size smaller than the screen before you paste it.

Transferring Screen Data

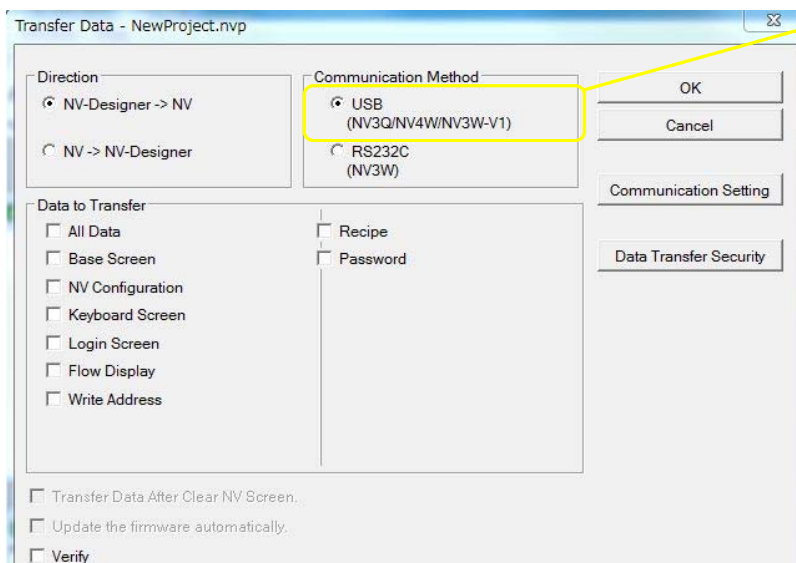
Transfer the created screen data to the NV.

Setting the transfer method

1. Select **PT – Transfer – Transfer** from the menu bar.



2. Select **USB** in the **Communication Method** Field. Click the **OK** Button to close the **Transfer Data** Dialog Box.



- 1) Communication Method:
Select **USB**.

◆ When using an NV3W

Select **RS232C** in the **Communication Method** Field.

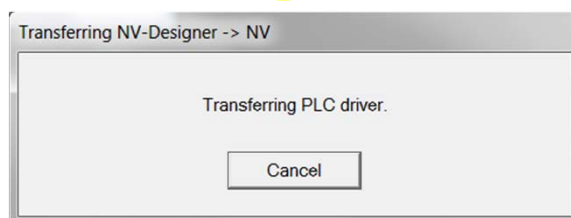
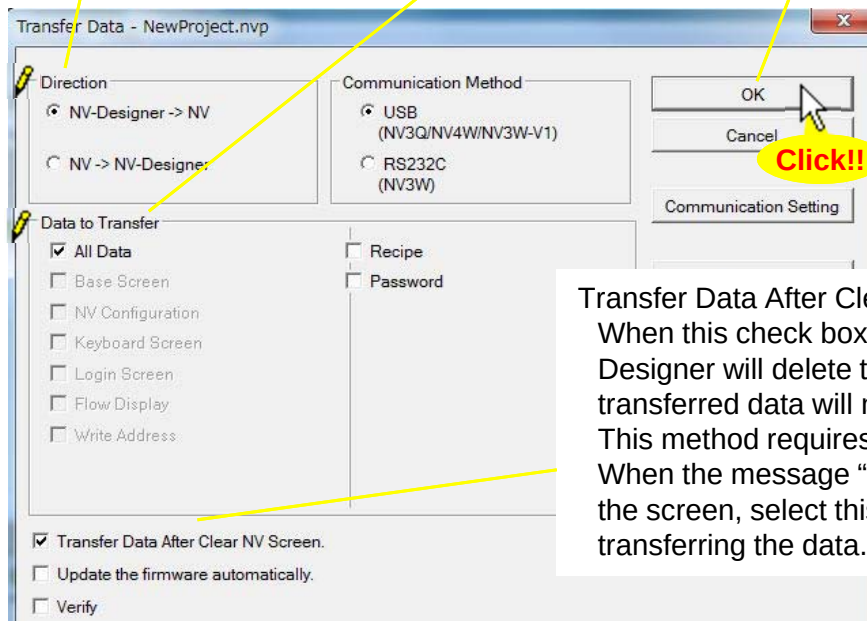
Transferring the screen data

1. Set the transfer direction and data to transfer. Then transfer the data to the NV

1) Direction:
Select **NV-Designer -> NV**.

2) Data to Transfer:
Select the **All Data** Check Box.

3) Click the **OK** Button to start transferring.
The **Transfer Data** Dialog Box closes.



2. When the transfer is completed, the screen is shown on the NV.



◆ Use the shortcut Ctrl + T

Transfer is a frequently used operation. Use the shortcut for your convenience.

Monitoring or changing the PLC parameters from the CX-Programmer

After connecting the NV and CP1E, confirm NV screen operations. This step is explained in the next few pages. This subsection explains the Watch Window to monitor and change the contents of PLC addresses from the CX-Programmer.

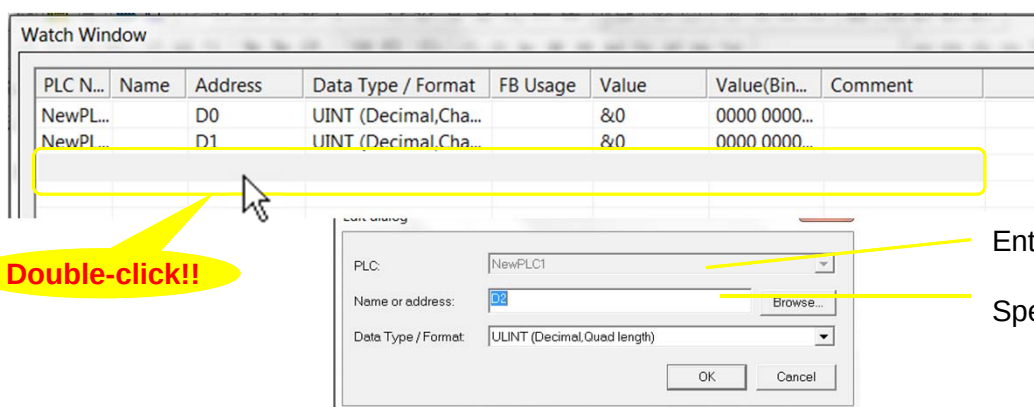
< Opening the Watch Window >

Select **View – Window – Watch** from the menu bar,

< Monitoring the parameter values >

Double-click on the **Watch** Window. Enter an address to monitor.

When the PLC is connected online, the present value will be displayed.

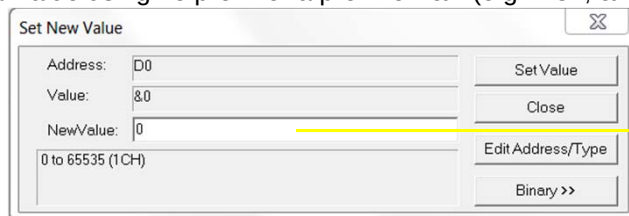


< Changing values of addresses >

When the PLC is connected online, double-click on the line of the address in the Watch Window to change the value.

Enter a hexadecimal value using a prefix of "#". (e.g. #1A)

Enter a decimal value using no prefix or a prefix of "&". (e.g. 1234, &1234)



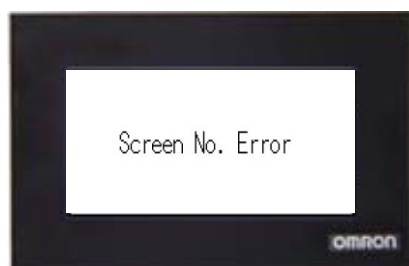
* The values cannot be changed when the PLC is in Run mode.

Change the PLC mode to Monitor (program is running) or Program (program is not executed) before changing values.

◆ “Screen No. Error” is displayed on the screen

The system memory has an area that is used to switch the NV screen from the PLC. If the same screen No. stored in the area does not exist in the screen data, the error message “Screen No. Error” is displayed on the screen.

As for the screen data created in this handbook, the area is allocated to D0 in the PLC. Write “0” for the base screen 0 to D0 in the CX-Programmer.



Write “0” to D0.

アドレス	値
D0	&0

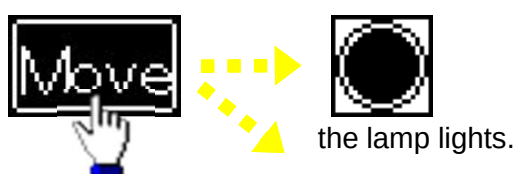


Checking Operation

Check operation of the parts on an actual NV.

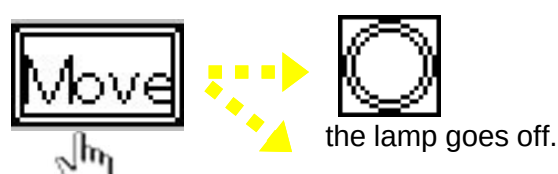
Checking operation of the switch and lamp

1. While you press the RUN switch,



Address	Value
10.00	1

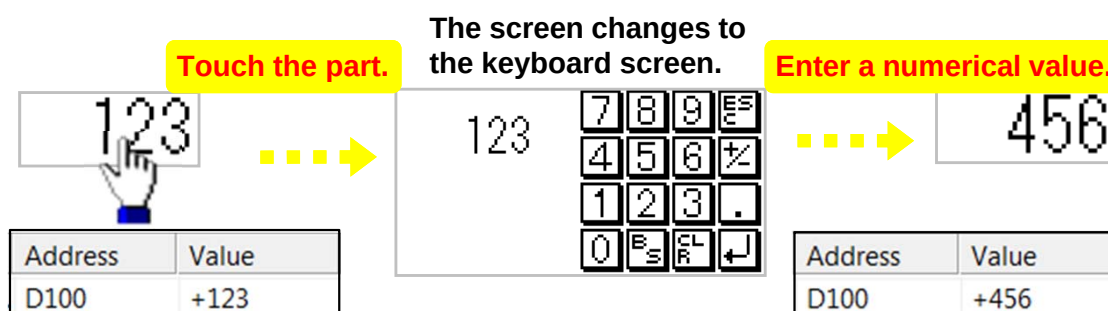
2. When you release your finger from the RUN switch,



Address	Value
10.00	0

Checking operation of the data part and keyboard

When you touch the data part, the keyboard screen appears. You can enter a value.



◆ When using a CP1E PLC without a battery

If the power supply is interrupted for longer than the I/O memory backup time, values that the NV writes to the DM Area of the CP1E are not backed up.
The contents in the DM Area data can be backed up to the backup memory by turning ON a bit in the Auxiliary Area.

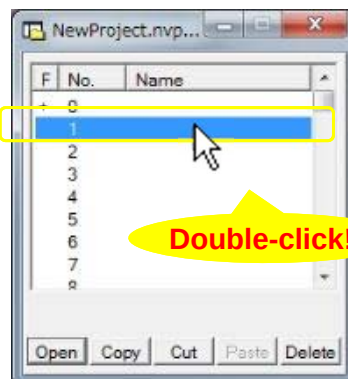
Switching Screens from CP1E

Switch the NV screen from the CP1E PLC by using its system memory.

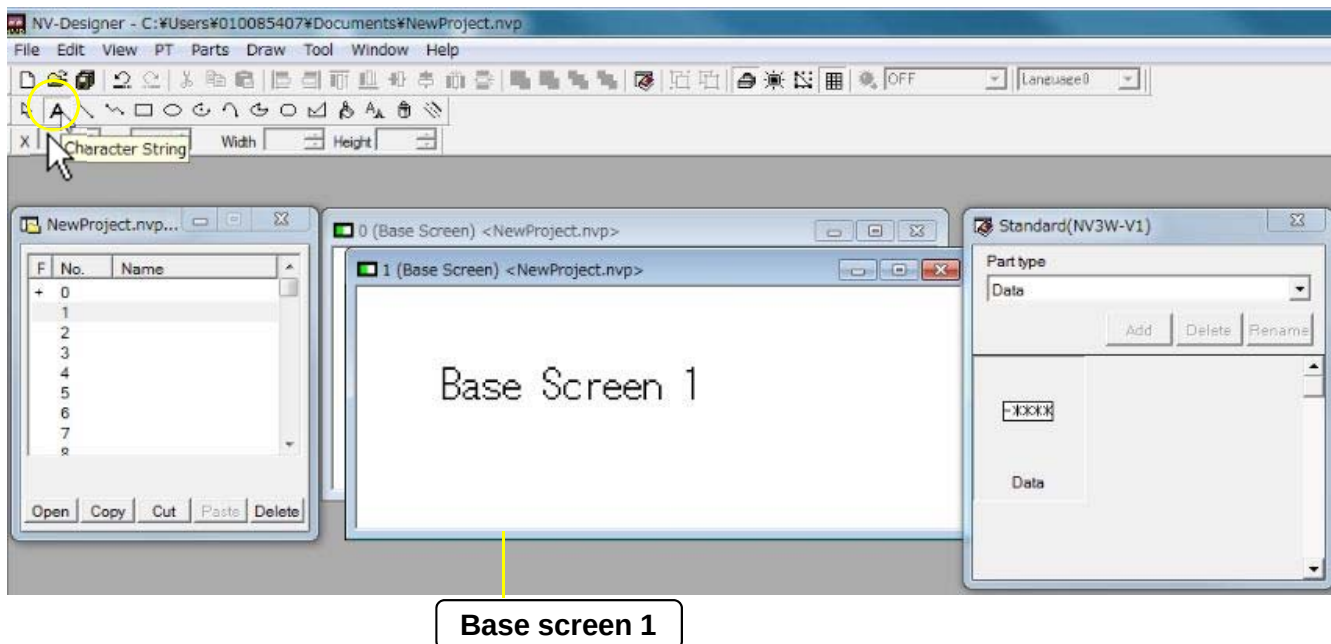
Creating a new screen in an existing project

Add a base screen to an existing project. The screen is used to confirm the screen switching operation.

1. Start the NV-Designer, and open a project.
Double-click "1" in the Screen Manager. Base screen 1 will open.

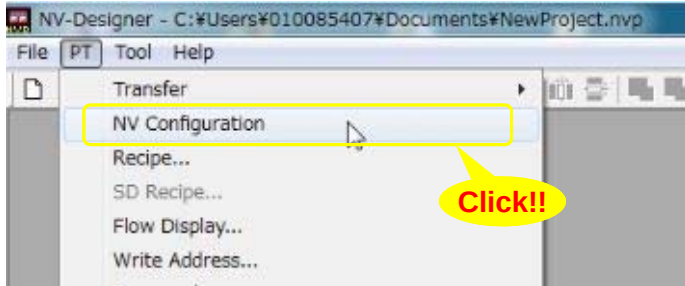


2. Create a character string, and enter "Base scr. 1". Place it at the center of the screen.
Transfer the screen data to the NV.

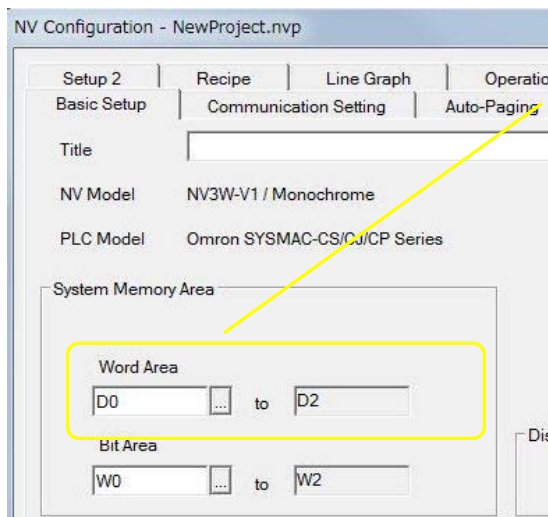


Setting and confirming the system memory

1. Select **PT – NV Configuration** from the menu bar.



2. Click the **Basic Setup** Tab. In the **System Memory Area** Field, you can set or confirm the allocated address.



Word area memory map (First address = N)

N: Screen number from PLC (PLC→NV)

N+1: Do not use.

N+2: Current screen number (NV→PLC)

Word Area:

- Screen number from PLC

This word contains the number in binary of the screen specified by the PLC for the NV to display.

- Current screen number

This word contains the number in binary of the screen currently displayed by the NV.

Note: Cannot be specified in BCD.

Switching the screen from the CP1E PLC

On the CX-Programmer, overwrite the D0 value to switch the screens.

1. Write "&0" to D0 to display Screen 0.

Address	Value
D0	&0

2. Write "&1" to D0 to display Screen 1.

Address	Value
D0	&1



When the screen has been switched, "&0" is notified to D2.

Address	Value
D2	&0

When the screen has been switched, "&1" is notified to D2.

Address	Value
D2	&1

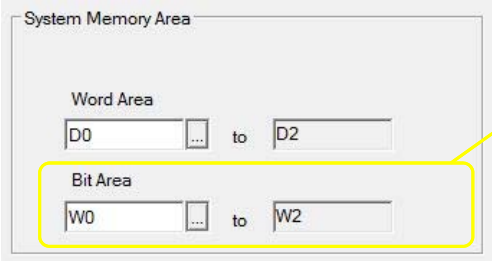
Changing Backlight Colors from CP1E

Change the backlight color from the CP1E system memory.

* The NV3Q-SWxx (color) can be set backlight ON and OFF only.

Setting and confirming the system memory

The backlight is controlled in the Bit Area of the system memory.
Check the address allocated to the Bit Area in the **System Memory Area** Field on the **Basic Setup** Tab Page of the **NV Configuration** Dialog Box.



Bit Area (First address = N)
* Backlight-related info only
N Bit10 } Backlight color. See the table below.
N Bit11 }
N Bit12: Backlight lit (OFF)/flashing (ON)
N Bit13: Backlight Control Enable Bit
(OFF): Disables Bit10-12 settings
(ON): Enables Bit 10-12 settings

* Backlight color specifications

State of N Bit10 and Bit11	Bit10=OFF Bit11=OFF	Bit10=ON Bit11=OFF	Bit10=OFF Bit11=ON	Bit10=ON Bit11=ON
	Off	Green	Red	Orange
NV3W-MGxx(x)-V1 (Monochrome)	Off	Green	Red	Orange
NV4W-MGxx (Monochrome)	Off	Green	Red	Orange
NV3W-MRxx(x)-V1 (Monochrome)	Off	White	Red	Pink
NV4W-MRxx (Monochrome)	Off	White	Red	Pink
NV3Q-MRxx (Monochrome)	Off	White	Red	Pink
NV3Q-SWxx (Color)	Off	On	On	On

Changing the backlight color from the CP1E

Change the values of W0.10 to W0.13 on the CX-Programmer to change the backlight status.
Set the bits for the backlight color and backlight light/blink, and then turn ON the Backlight Control Enable Bit. (This is the example of NV3W-MGxxx-V1.)



Green, Light
W0.10: ON
W0.11: OFF
W0.12: OFF
W0.13: ON



Red, Blink
W0.10: OFF
W0.11: ON
W0.12: ON
W0.13: ON

◆ When the Backlight Control Enable Bit is OFF

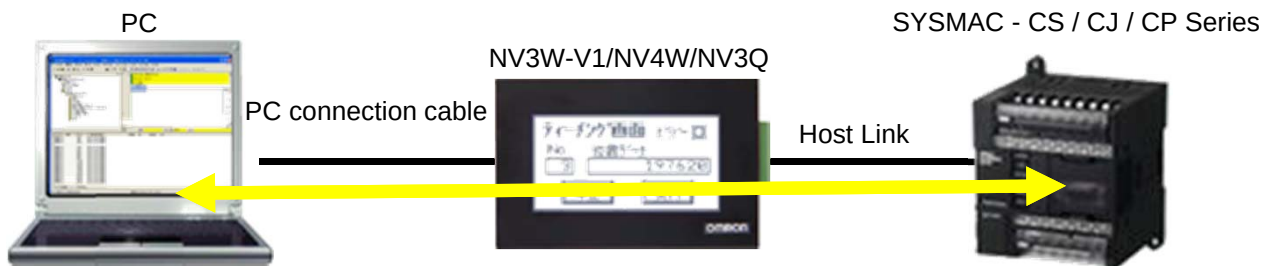
The backlight will light in the color set in the screen properties (**PT – Screen Property** from the menu bar). The backlight setting can be confirmed on the title bar of each base screen.
(e.g. : Red, Blink)

Connecting PC and PLC via NV

Connect the PC and the PLC via the NV to transfer the ladder programs from the PC (CX-Programmer) to the PLC and to monitor the PLC from the PC.

Configuration example

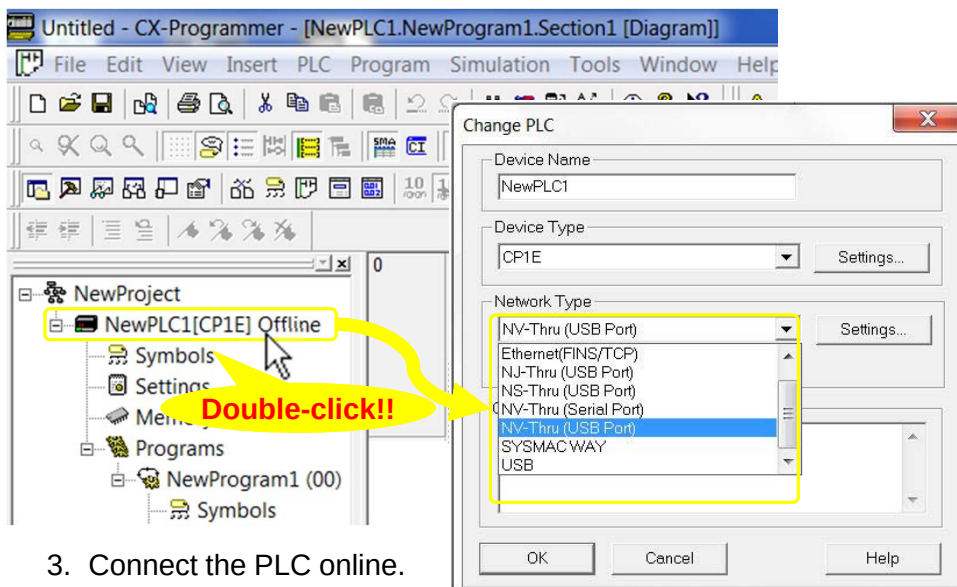
In this configuration, you can transfer the ladder programs and monitor the PLC from the CX-Programmer through the NV.



Setting

*The NV requires no setting.

1. On the CX-Programmer, open a project of a CS, CJ or CP-series PLC. Double-click the PLC in the project tree. The **Change PLC** Dialog Box will appear.
2. Set **Network Type** to **NV-Thru (USB Port)**. Click the **OK** Button.



3. Connect the PLC online.

- The CX-Programmer and the NV-Designer use the same USB port. Therefore, only one of them is online-connected with the NV at a time.
- You can also connect the PLC through the NV with the CX-Programmer by selecting **Auto Online - Direct Connection** from the **PLC** menu.

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

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Cat. No. V411-E1-02

0715 (0110)