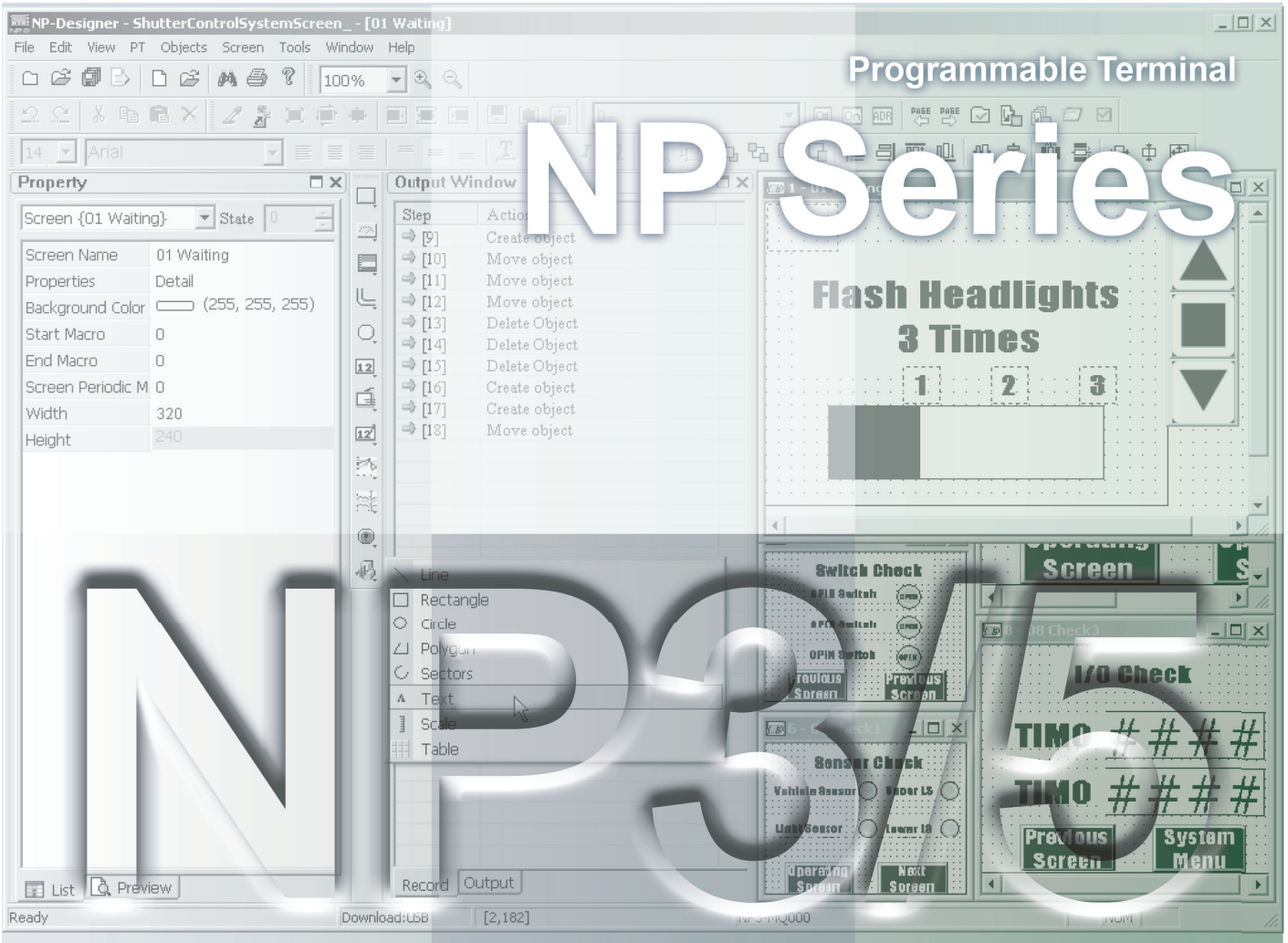
OMRON



NP Series Introduciton Manual

Cat. No. V095-E1-02

Introduction

Thank you for purchasing an NP-series Programmable Terminal.
NP-series PTs are designed to transfer data and information in FA production sites.
Please be sure that you understand the functions and performance of the PT before attempting to use it.
OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.
The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

⚠**Warning** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.

Trademarks

Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
Other brand and product names are trademarks or registered trademarks of their respective owners.

About this Manual

This manual is intended for first-time users of the NP-series Programmable Terminal. The basic use of the series is explained based on NP-series Programmable Terminal.
Examples of circuit configuration, wiring and application programs are strictly for reference only. When you construct an actual system, make sure that you refer to the related manuals about the specifications, performance, and safety of each component.
Screen projects and ladder programs in this manual are strictly for reference only. When designing the actual circuits, take adequate safety measures.

Read and Understand this Manual

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

Warranty and Limitations of Liability

WARRANTY

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

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the product.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

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

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

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

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

PROGRAMMABLE PRODUCTS

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

Disclaimers

CHANGE IN SPECIFICATIONS

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

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

DIMENSIONS AND WEIGHTS

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

PERFORMANCE DATA

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

ERRORS AND OMISSIONS

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

COPYRIGHT AND COPY PERMISSION

Precautions

1 Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of introducing FA systems into production facilities.
- Personnel in charge of designing FA systems.
- Personnel in charge of installing and connecting FA systems.
- Personnel in charge of managing FA systems and facilities.

2 General Precautions

This manual provides information for connecting and setting up an NP-series PT. Be sure to read this manual before attempting to use the PT and keep this manual close at hand for reference during installation and operation.

3 Safety Precautions

⚠**Warning** Tighten the terminal block screws for the AC power supply with 0.5N•m of torque. Loosening the screw possibly cause a fire or malfunction.

Precautions for Safe Use

- When unpacking the NP and its peripheral devices, check for any external damage. Shake the product gently to check for loose/broken parts or any other abnormal sounds.
- Mount the NP onto a panel with a thickness of 1.6 to 2.5mm. Make sure that the panel is clean, not warped, and offers sufficient mounting strength.
- To keep adequate waterproof and dustproof performance, tighten the mounting brackets equally with 0.6 to 0.7N•m of torque. The front sheet on the panel possibly becomes warped if the torque is more than the specified limit or not equal.
- Keep metal waste particles from entering the unit, when you work on the panel.
- Do not connect an AC power supply to the power terminals.
- Use a DC power supply with low voltage fluctuation.
- Ground correctly to prevent malfunctions caused by noise.
- Turn OFF the power to the NP before you connect or disconnect a cable.
- Tighten the connector screws after you connect the cable.
- A maximum tensile load of the connectors is 30N. Do not apply a load more than this value.
- Check system safety before you turn the power ON/OFF.
- Do not press touch switches with a force greater than 30N.
- Before pressing a touch switch, check system safety.
- Do not press touch switches in rapid succession. The NP possibly does not accept every input data. Make sure that each input command is accepted before proceeding to the next command.
- Do not press touch switches when the backlight is not lit or when there is no display.
- Use a twisted pair cable, more than $2mm^2$ in diameter to connect the power.
- Use an OMRON PT-PLC connection cable. Do not use other cables. It possibly causes malfunction.

Precautions for Correct Use

- Do not install in a location that is:
  - Subject to extreme temperature changes.
  - Subject to temperature or humidity outside the specification value range.
  - Subject to high humidity, which may result in condensation.
  - Subject to being splashed by chemical.
  - Subject to being splashed by oil.
  - Subject to corrosive or flammable gases.
  - Subject to excessive shock or vibration.
  - Subject to direct exposure to wind and rain.
  - Subject to strong UV light.
- Take adequate shielding measures if installing in a location that is:
  - Subject to static electricity or other sources of noise.
  - Subject to strong electromagnetic fields.
  - Near a power line.
  - Potentially subject to radioactive exposure.

Conforming Directive

The NP-series PTs conform to the EMC Directive.

1 EMC Directive Conformance

OMRON products are designed as electrical devices for use built into other devices or the overall machine. As individual devices, they comply with the related EMC standards (see note) so that they can more easily be built into other devices or the overall machine. The actual products have been checked for conformity to EMC standards. Whether they conform to the standards in the system used by the customer, however, must be checked by the customer.

EMC-related performance of the OMRON devices will vary depending on the configuration, wiring, and other conditions of the equipment or control panel on which the OMRON devices are installed. The customer must, therefore, perform the final check to confirm that devices and the overall machine conform to EMC standards.

Note Applicable EMC (Electromagnetic Compatibility) standards are as follows:

EMS (Electromagnetic Susceptibility): EN 61131-2
EMI (Electromagnetic Interference): EN 61131-2 (Radiated emission: 10-m regulations)

2 Complying with EC Directives

NP-series PTs comply with EC Directives. Observe the following precautions to ensure that the customer’s device and the overall machine also comply with EC Directives.

1. The PT is designed for installation inside a control panel. The PT must be installed within a control panel.
2. Use reinforced insulation or double insulation for the DC power supply to the PT. Ensure that a stable power output can be provided even if a 10-ms interruption occurs at the input.
3. The PT conforms to the EN 61131-2, but the radiated emission characteristics (10-m regulations) may vary depending on the configuration of the control panel used, other devices connected to the control panel, wiring, and other conditions. You must therefore confirm that the overall machine or equipment complies with EC Directives.

Related Manuals

The following table lists the device and software manuals used for reference.

Device/Software	Manual name	Catalog No.
NP Series	NP Series User's Manual	V096
PLC	SYSMAC CP Series CP1L CPU Unit User's Manual	W462
	SYSMAC CP Series CP1L CPU Unit Programming Manual	W451
	SYSMAC CP Series CP1L CPU Unit Introduction Manual	W461
Programming Devices/Software	SYSMAC CX-Programmer Operation Manual	W446

TABLE OF CONTENTS

SECTION 1

NP Overview

This section gives the NP series models and their part names.

1 NP Overview

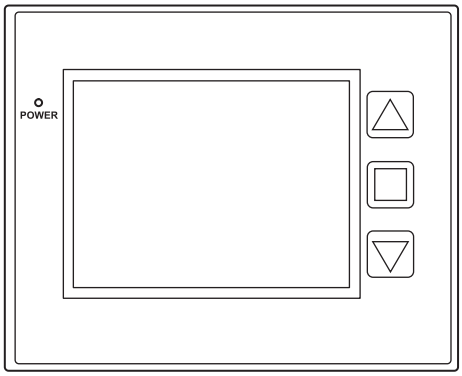
1-1 NP Series Models

NP series models are available with 3 or 6 function switches.

Our NP series display devices (PT: programmable terminal) can show information and do input operations. It enables the user to graphically understand the operation status of the system and devices.
The user can put switches on the display area, and send input data to the host. Therefore the NP helps the operator make a quick check of the system or devices and respond to the errors.

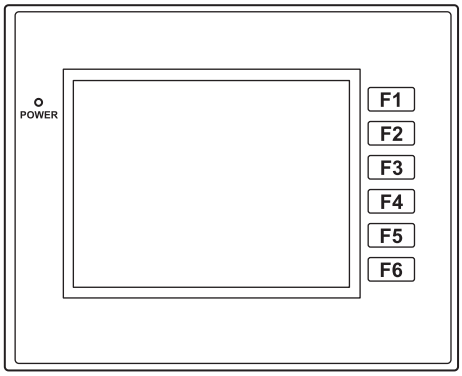
●3-Switch Models

Model	NP3-MQ000B	NP3-MQ000	NP5-MQ000B	NP5-MQ000	NP5-SQ000B	NP5-SQ000
Display device	8-step gray scale STN LCD		8-step gray scale FSTN LCD		256colors STN LCD	
Effective display area (W x H) mm	78.9 x 59.6		121.4 x 92.6			
Number of dots (W x H)	320 x 240					
Frame color	Black	Silver	Black	Silver	Black	Silver



●6-Switch Models

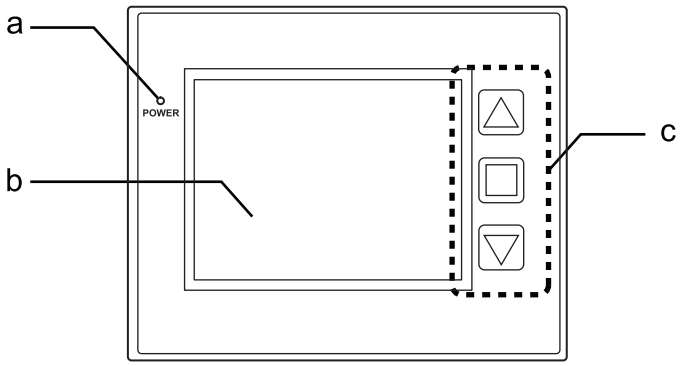
Model	NP3-MQ001B	NP3-MQ001	NP5-MQ001B	NP5-MQ001	NP5-SQ001B	NP5-SQ001
Display device	8-step gray scale STN LCD		8-step gray scale FSTN LCD		256colors STN LCD	
Effective display area (W x H) mm	78.9 x 59.6		121.4 x 92.6			
Number of dots (W x H)	320 x 240					
Frame color	Black	Silver	Black	Silver	Black	Silver



1-2 Part Names and Functions

This section gives the names and functions of the parts on a 3-switch model.

●Front View



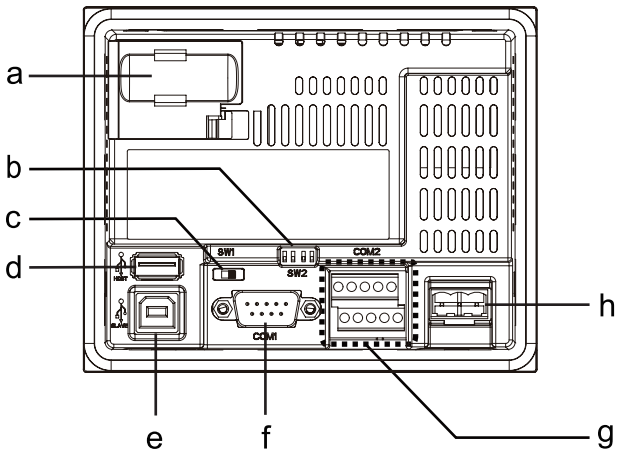
a POWER LED
The POWER LED is lit while power is ON.

b Display area
The display area functions as a touch switch. You can use this area as an input device.

c Function switches
Switches used for input. Each switch can have various functions allocated depending on the screen.

Note
- Do not press touch switches with a force greater than 30N.
- Before pressing a touch switch, check system safety.
- Do not press touch switches when the backlight is not lit or when there is no display.
- Do not press touch switches in rapid succession. The NP possibly does not accept every input data. Make sure that each input command is accepted before proceeding to the next command.

●Rear View



a Battery cover
Open this cover to get access to the battery slot.

b DIP Switches (SW2)
DIP switches for switching between RS-422A and RS-485, and for setting the terminating resistance when connecting COM2 (RS-422A/485) to the host.

c Slide Switch (SW1)
Slide switch is used for booting the system menu. To display the system menu, slide this switch to the ON position (left) and turn on the NP. This switch is usually kept in the OFF position (right).
For details on the system menu, refer to *NP Series User's Manual* (V096).

d USB Connector type A (host)
This connector is used for connecting with a USB flash memory to transfer screen data and system programs created with NP-Designer.

e USB Connector type B (slave)
This connector is used for connecting with a PC via USB cable to transfer screen data and system programs created with NP-Designer.

f Serial Port Connector (COM1)
9-pin connector for RS-232C connection for connecting with the host.

g Serial Port Connector (COM2)
10-pin terminal blocks for RS-422A/485 connections for connecting with the host.

h Power input connector
This connector is used for connecting with 24VDC power.

Note Check system safety before you turn the power ON/OFF.

SECTION 2

Designing Systems

This manual uses an example system of shutter control to tell about the construction of NP systems.
This section gives the example system, and shows an outline of the workflow from design to operation.

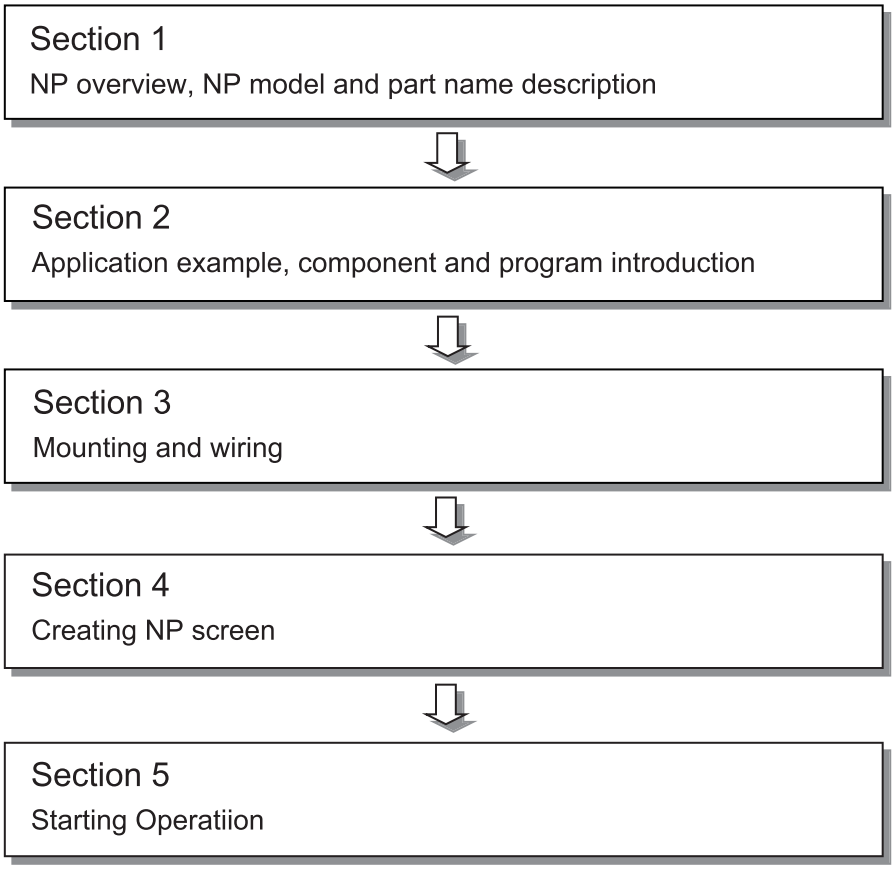
2 Designing Systems

2-1 About this Manual

This section gives the manual content. It also shows the steps to the operation of an NP system.

●Organization of this Manual

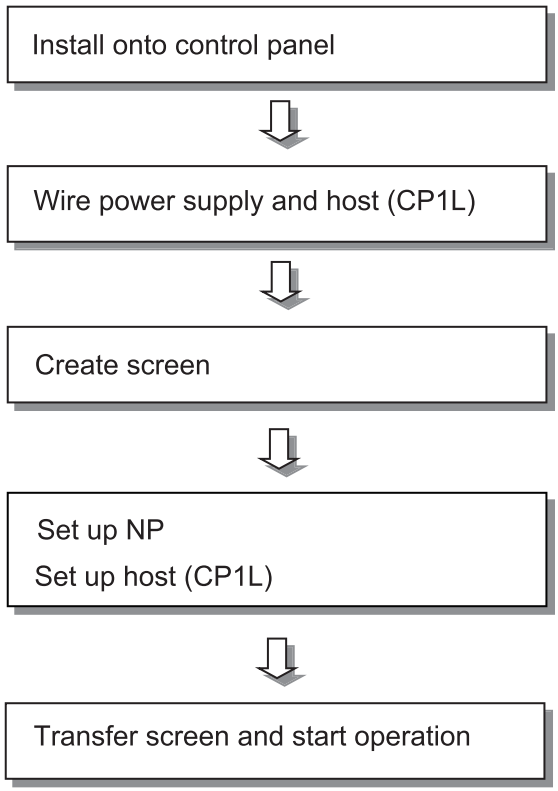
The chart below shows the construction of NP systems in this manual.



Examples of circuit configuration, wiring and application programs are strictly for reference only. When you construct an actual system, make sure that you refer to the related manuals about the specifications, performance, and safety of each component.

●Steps to Operation

The chart below shows the steps to the operation of an NP system.



Refer to *3-1 Installation*.

Refer to *3-2 Wiring Devices*.

Refer to *SECTION 4 Creating Screens*.

Refer to *5-1 Preparation*.

Refer to *5-2 Operating NP*.

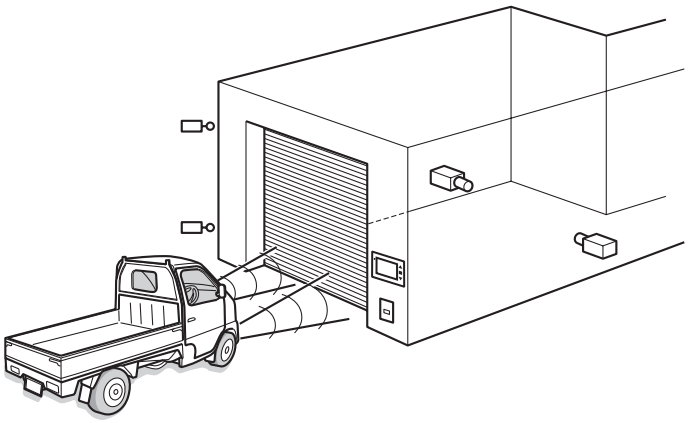
Examples of the construction method in this manual is strictly for reference only. When constructing an actual system, debug the screens and PLC programs to ensure safety.

2-2 Example System

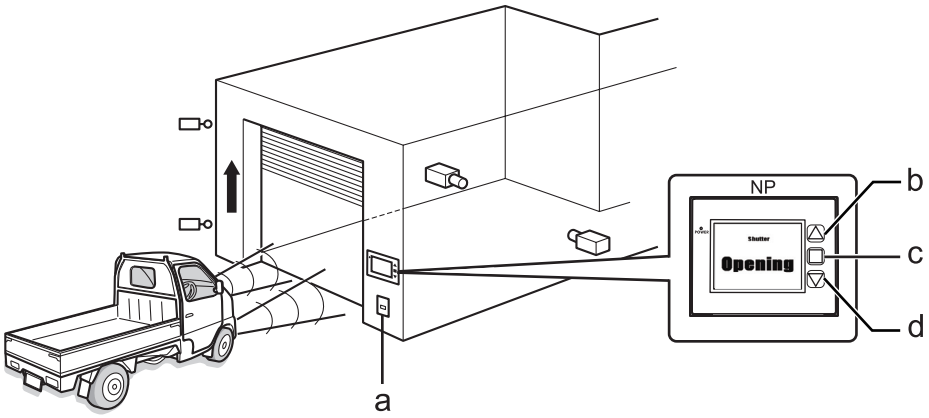
This section gives the example system of shutter control.

■Operation

The example system opens and closes a garage shutter according to inputs from the NP and sensors.

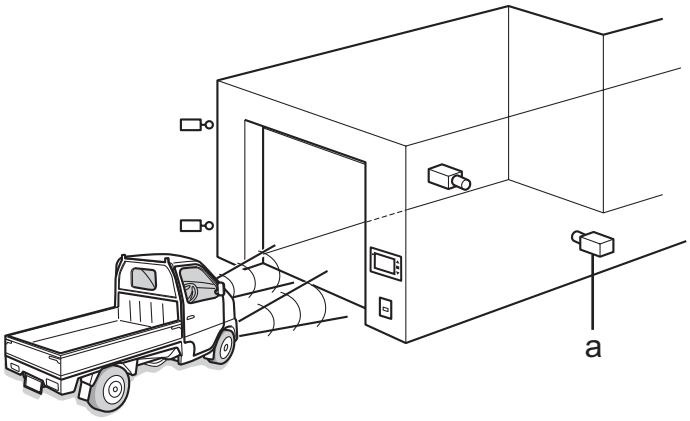


- When the sensor detects 3 headlight flashes within 10 seconds, the shutter opens.



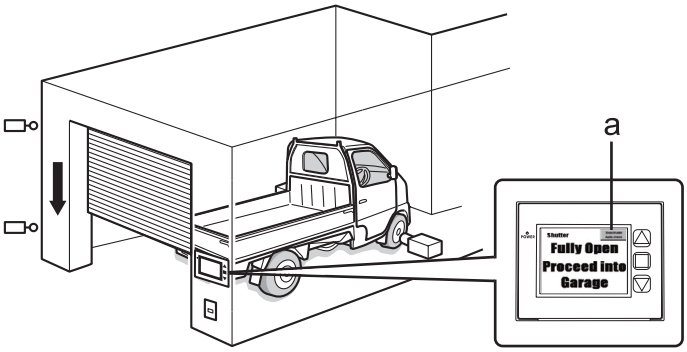
a Light sensor
b OPEN switch
c STOP switch
d CLOSE switch

- The NP will indicate the status of the shutter.
- The switches on the NP can also open, close and stop the shutter.



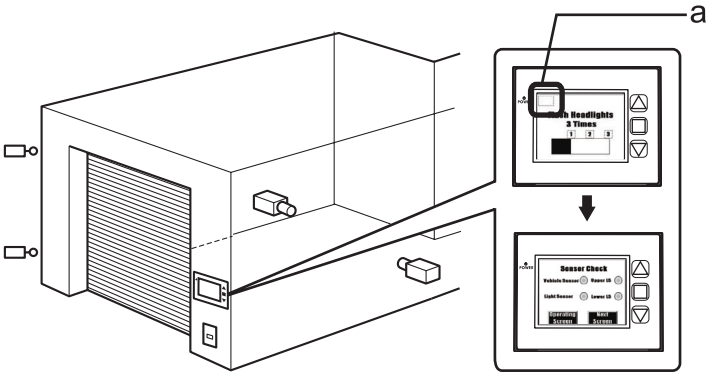
a Vehicle sensor

- When the shutter is fully open, it will not close until a user pushes the CLOSE switch or until the vehicle sensor turns ON.



a [Deactivate Auto-close] button

- When the sensor senses that the vehicle is fully in the garage, the shutter closes.
- If a user pushes the [Deactivate Auto-close] button, the shutter will not close, even when the vehicle sensor turns ON.
- To pull the vehicle out of the garage, use the switches on the NP to operate the shutter.



a Maintenance button

- When a user pushes the maintenance button, the NP shows the maintenance screen to check the input devices.

■System Components

The following components are used for the shutter control system:

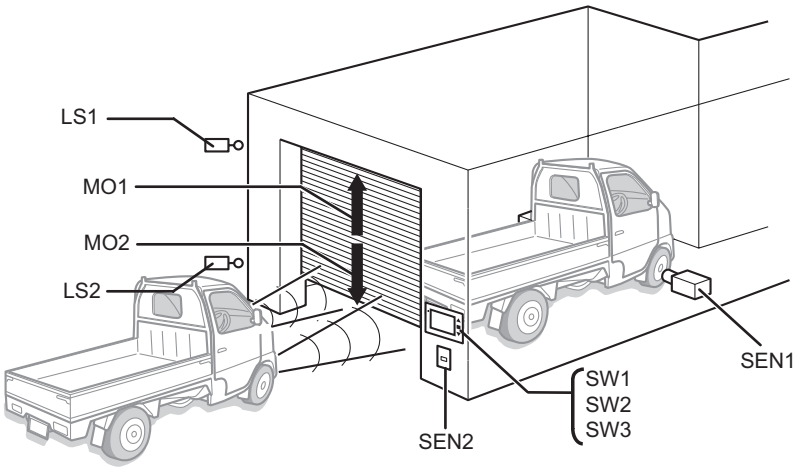
Display Device
- NP3-MQ000 (3-inch, 3-switch type)
- XW2Z-200T (PT-PLC connection cable)

PLC
- CP1L-L14D□-□ (14-point I/O type)
- CP1W-CIF01 (RS-232C option board)

Equipment and Software for Programming
- PC
- USB cable (type A connector (male) - type B connector (female))
- NP-Designer (NP screen programming tool)
- CX-Programmer (PLC programming tool)

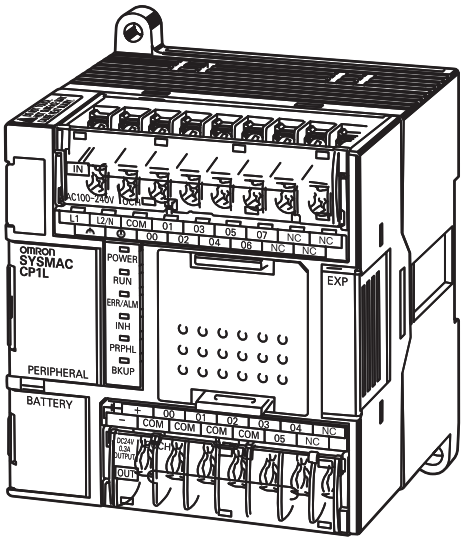
Inputs
- OPEN switch : SW1 (allocated on the NP Function Switch)
- STOP switch : SW2 (allocated on the NP Function Switch)
- CLOSE switch : SW3 (allocated on the NP Function Switch)
- Vehicle sensor : SEN1
- Light sensor : SEN2
- Limit switch, turned ON when shutter is fully open : LS1
- Limit switch, turned ON when shutter is fully closed : LS2

Outputs
- Contact for activating shutter escalation motor : MO1
- Contact for activating shutter de-escalation motor : MO2



●CP1L

CP1L is a high-performance, yet affordable package-type PLC, ideal for small-sized manufacturing machines and control systems.
CP1L-L14D□-□ is shown below.

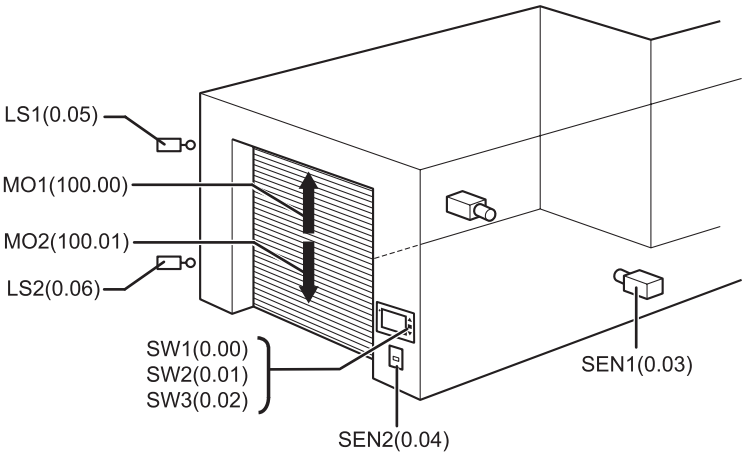


For details on CP1L, refer to *SYSMAC CP Series CP1L CPU Unit User's Manual* (W462).

■I/O Allocation for PLC

I/O relays on the PLC are allocated as shown below.

Device	Contact	Address
OPEN switch	SW1	0.00
STOP switch	SW2	0.01
CLOSE switch	SW3	0.02
Vehicle sensor	SEN1	0.03
Light sensor	SEN2	0.04
Upper LS	LS1	0.05
Lower LS	LS2	0.06
Escalation motor	MO1	100.00
De-escalation motor	MO2	100.01

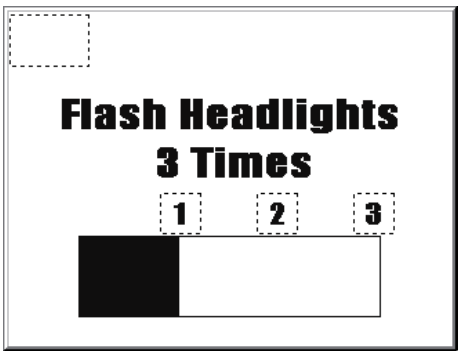


■NP Screens

The example system uses the NP screens below.

01 Waiting

This screen shows while the garage shutter is fully closed. It shows the number of detected headlight flashes with the Level Meter chart. A transparent button is in the upper-left corner to switch to the maintenance screen.



02 Opening

This screen shows while the escalation motor is active.

03 Closing

This screen shows while the de-escalation motor is active.

04 Stopped

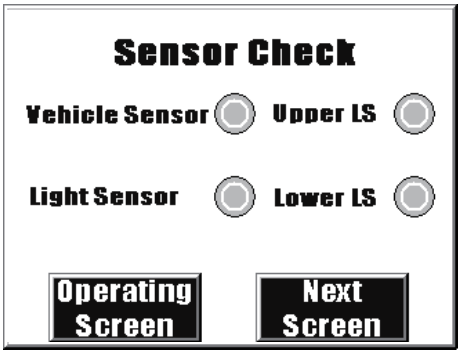
This screen shows when the STOP switch is pushed.

05 Fully Open

This screen shows while the garage shutter is fully open. The [Deactivate Auto-close] button is created to keep the shutter open.

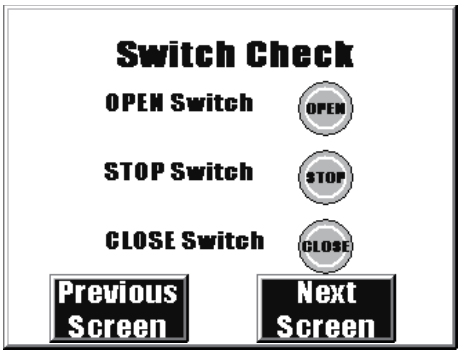
06 Check1

This screen is for maintenance use. It shows the input status for each sensor. This screen shows when a user pushes the maintenance button on the [01 Waiting] screen.



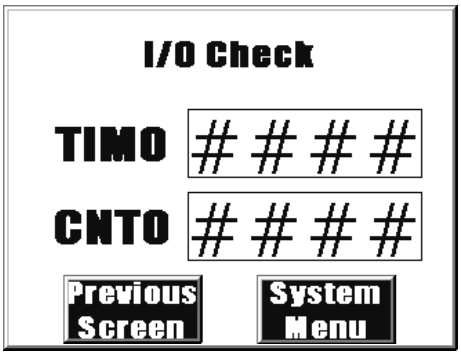
07 Check2

This screen is for maintenance use. It shows the input status for the function switches.

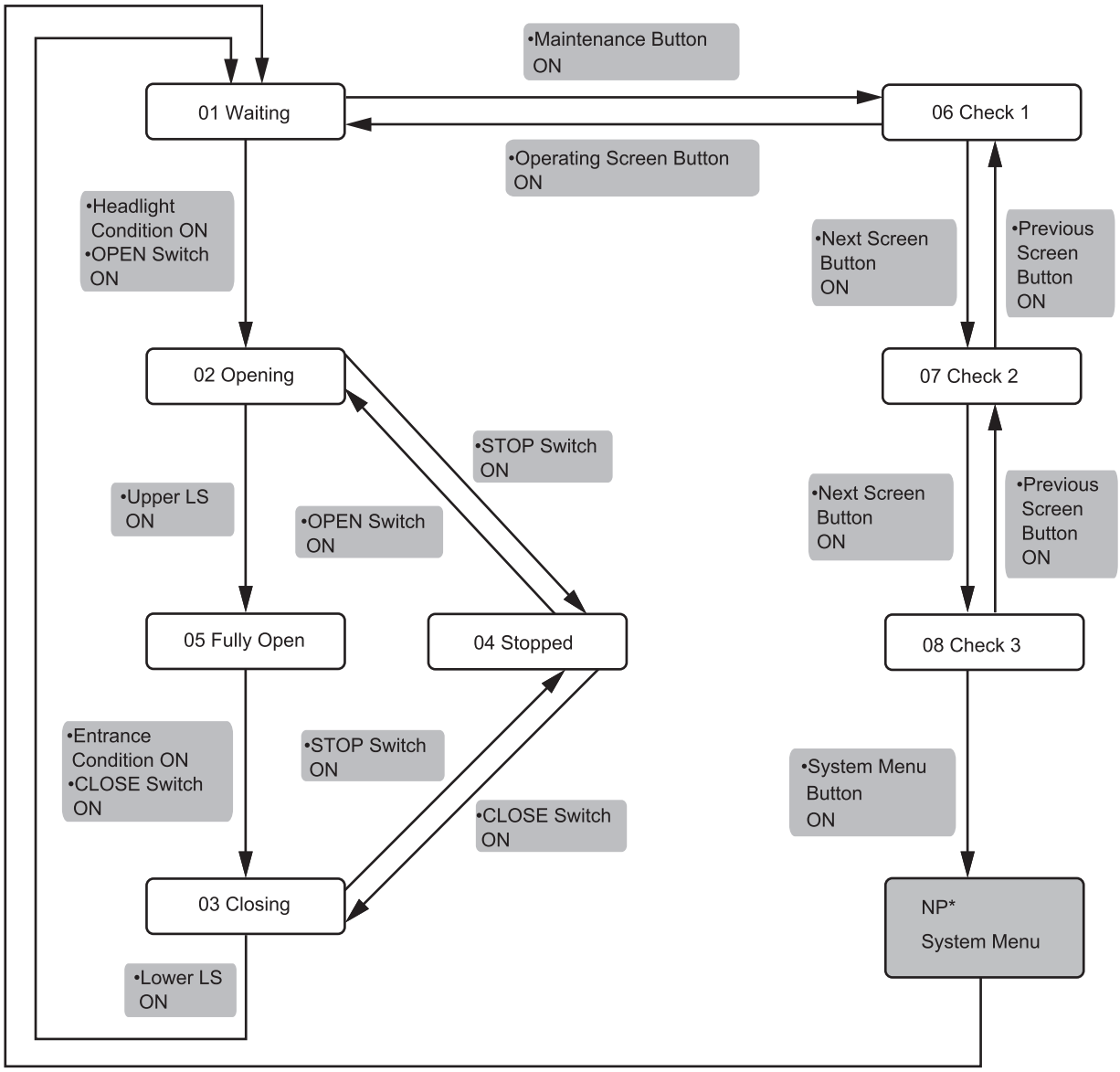


08 Check3

This screen is for maintenance use. It shows the present values for the timer and counter, which are used to count the headlight flashes. The [System Menu] button is also created to display the NP system menu.
For details on the system menu, refer to *NP Series User's Manual* (V096) .



A screen change flowchart is shown below.

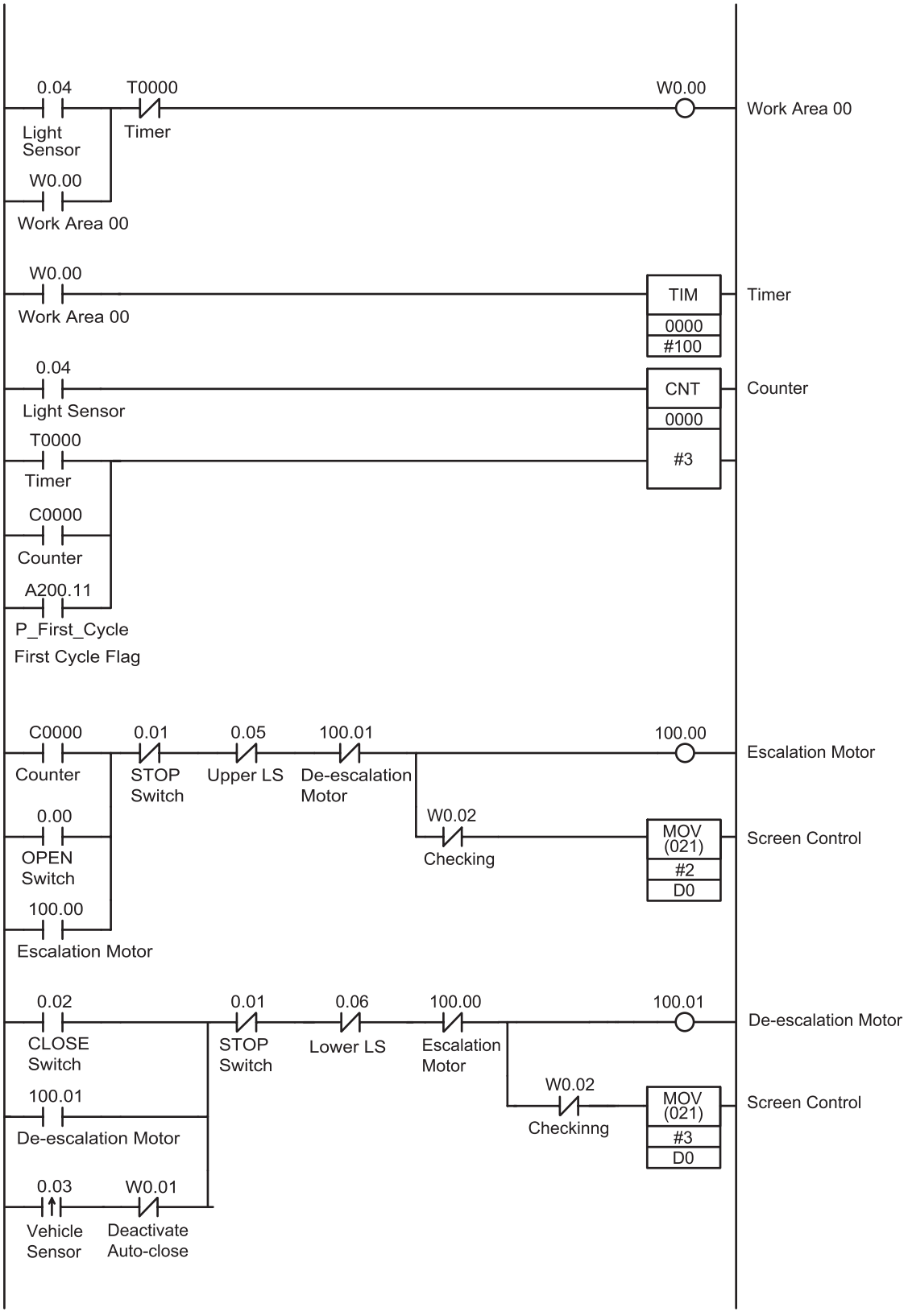


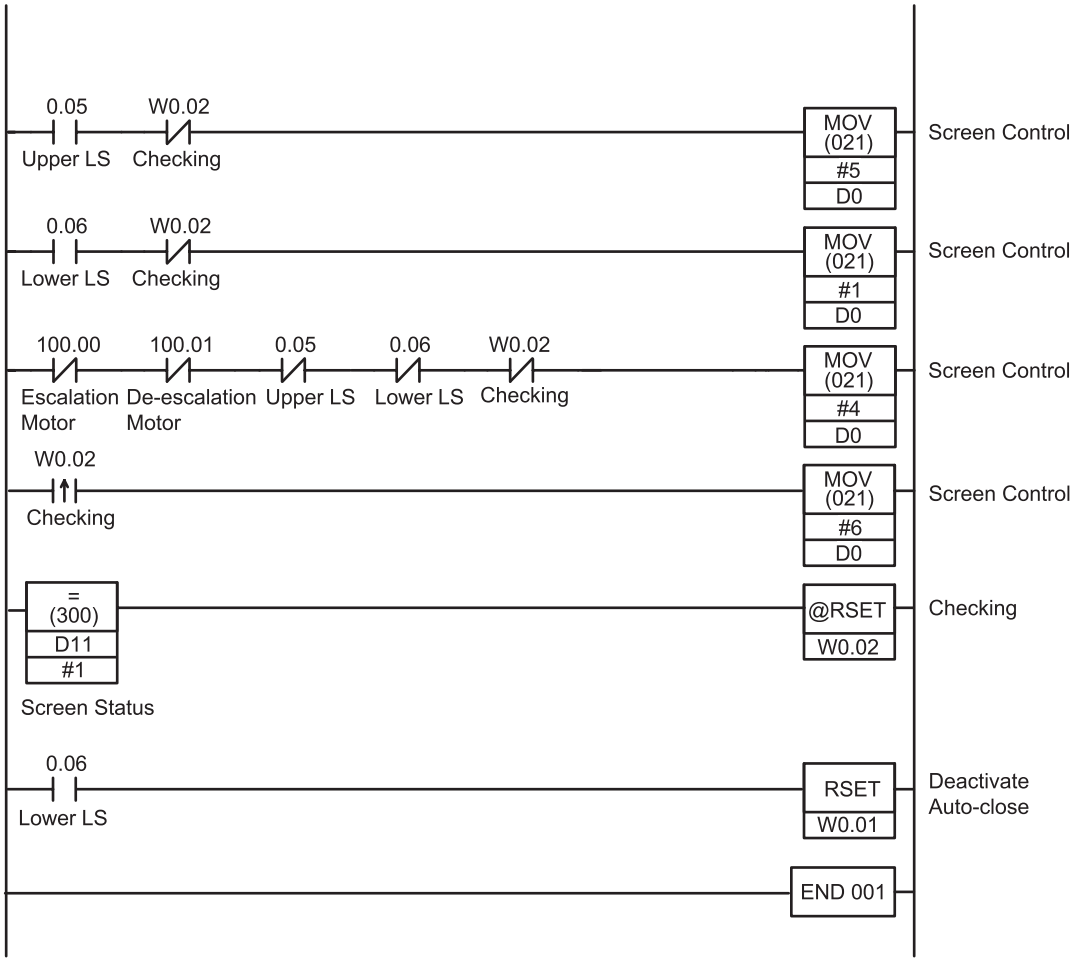
* For details on the system menu, refer to *NP Series User's Manual* (V096).

■Ladder Program

An example ladder program for the PLC shows below.

For details on creating ladder programs, refer to *SYSMAC CP Series CP1L INTRODUCTION Manual* (W461*)* and *SYSMAC CX-Programmer Operation Manual* (W446).




0.05
Upper LS
W0.02
Checking
MOV (021)
#5
D0
Screen Control
0.06
Lower LS
W0.02
Checking
MOV (021)
#1
D0
Screen Control
100.00
Escalation Motor
100.01
De-escalation Motor
0.05
Upper LS
0.06
Lower LS
W0.02
Checking
MOV (021)
#4
D0
Screen Control
W0.02
Checking
MOV (021)
#6
D0
Screen Control
= (300)
D11
#1
Screen Status
@RSET
W0.02
Checking
0.06
Lower LS
RSET
W0.01
Deactivate Auto-close
END 001

SECTION 3

Mounting and Wiring

This section tells about NP installation, as well as the wiring for NP and CP1L.

3 Mounting and Wiring

3-1 Installation

This section tells about the installation environment for the NP, and gives how to mount NP onto a control panel.

■Installation Environment

Note When mounting the NP onto a control panel, take note of the following points. Do not install in a location that is:

- Subject to extreme temperature changes.
- Subject to temperature or humidity outside the specification value range.
- Subject to high humidity, which may result in condensation.
- Subject to being splashed by chemical.
- Subject to being splashed by oil.
- Subject to corrosive or flammable gases.
- Subject to excessive shock or vibration.
- Subject to direct exposure to wind and rain.
- Subject to strong UV light.

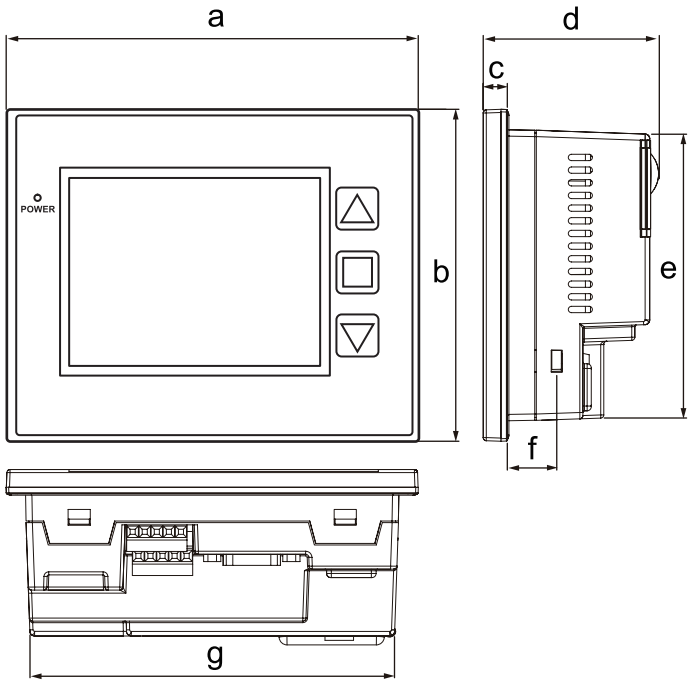
Take adequate shielding measures if installing in a location that is:

- Subject to static electricity or other sources of noise.
- Subject to strong electromagnetic fields.
- Near a power line.
- Potentially subject to radioactive exposure.

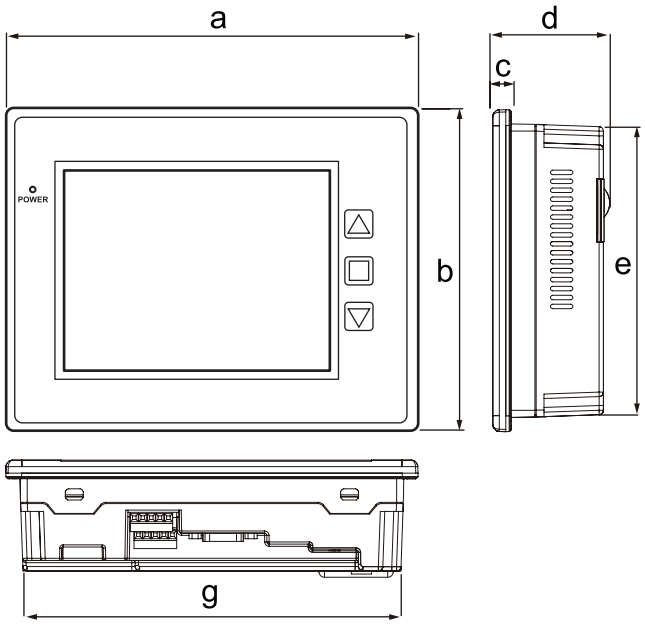
Note When unpacking the NP and its peripheral devices, check for any external damage. Shake the product gently to check for loose/broken parts or any other abnormal sounds.

■Dimensions

●NP3 series



●NP5 series



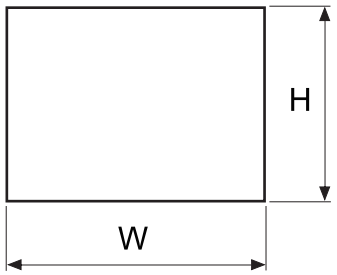
Model	a	b	c	d	e	f	g
NP3 series	130.1	104.8	7.6	55.4	89.6	15.6	115.1
NP5 series	184.1	144.1	8.3	52.3	128.8	-	168.8

(mm)

■Mounting PT onto Control Panels

This section gives how to mount the NP onto a control panel.

1. **Prepare the panel mounting brackets (included) and a Phillips-head screw driver.**
2. **Make a hole for the NP. See the dimensions below.**

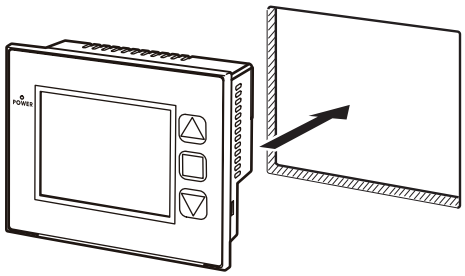


Model	W	H
NP3 series	118.5^{+1}_{-0}	92.5^{+1}_{-0}
NP5 series	172.4^{+1}_{-0}	132.4^{+1}_{-0}

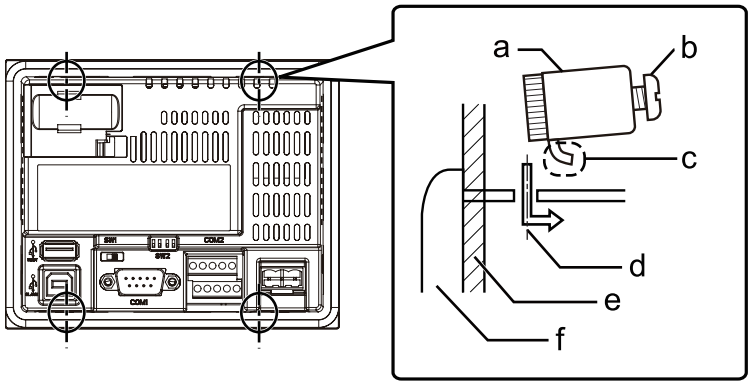
(mm)

Note
- Keep metal waste particles from entering the unit, when you work on the panel.
- Mount the NP onto a panel with a thickness of 1.6 to 2.5mm.
- Make sure that the panel is clean, not warped, and offers sufficient mounting strength.

3. **Mount the NP from the front of the control panel.**

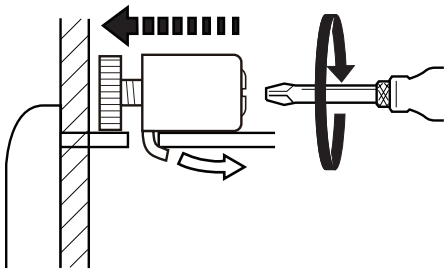


4. **Insert the legs of the panel mounting brackets into the square holes of the NP.**



a Panel mounting bracket
b Mounting screw
c Bracket leg
d Square hole in NP
e Panel
f NP

5. **Pull the mounting bracket carefully to prevent its leg from falling out of the square hole. Tighten the mounting screw until it touches the control panel.**
Attach a panel mounting bracket to all 4 locations, and tighten their mounting screws equally.



Note To keep adequate waterproof and dustproof performance, tighten the mounting brackets equally with 0.6 to 0.7N•m of torque. The front sheet on the panel possibly becomes warped if the torque is more than the specified limit or not equal.

3-2 Wiring Devices

This section tells about NP and CP1L wiring.

■Power

1. **Connect a 24VDC power supply to the power input terminals.**

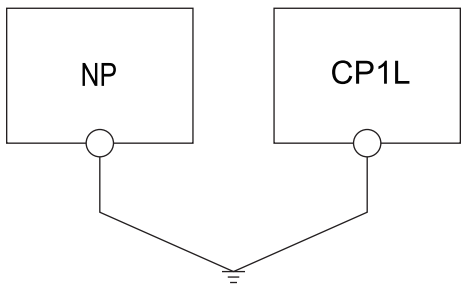
Note
- Use a twisted pair cable, more than 2mm^2 in diameter to connect the power.
- Do not connect an AC power supply to the power terminals.
- Use a DC power supply with low voltage fluctuation.

■Ground

Do not ground if:
- The NP and host are far from each other, and a single point ground is not possible.
- The NP is mounted on the same panel as noise sources such as motors and inverters.

When there is a ground potential difference between the NP and host (PLC), connect them with a grounding wire.

1. **Connect to a single point ground from the functional ground terminal [⏚] on the NP.**



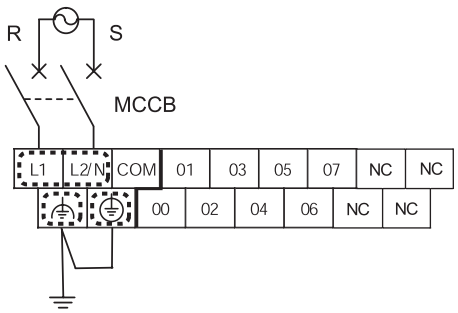
Note Ground correctly to prevent malfunctions caused by noise.

■Wiring CP1L

This section gives a wiring example for CP1L.
For details on CP1L, refer to *SYSMAC CP Series CP1L CPU Unit User's Manual* (W462).

●Connecting Power and Ground

1. **Connect power and ground wires to the terminal block.**

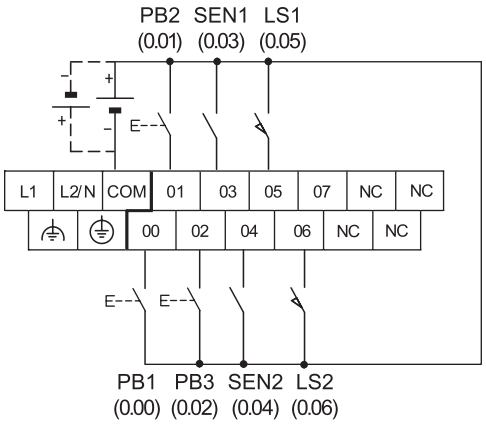


⚠Warning Tighten the terminal block screws for the AC power supply with 0.5N•m of torque. Loosening the screw possibly causes a fire or malfunction.

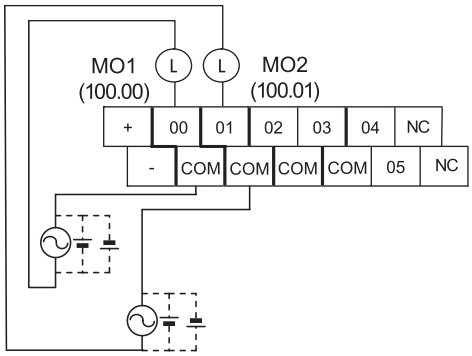
●Connecting I/O Devices

1. **Connect I/O devices to the terminal block.**

Inputs



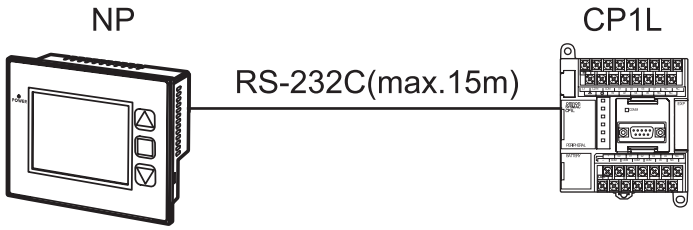
Outputs



■Connecting NP and CP1L

Establish a 1-to-1 connection between the host (PLC) and NP.

1. **Connect CP1L and NP with a PT-PLC connection cable (XW2Z-200T).**



Note
- Use an OMRON PT-PLC connection cable. Do not use other cables. It possibly causes malfunction.
- Tighten the connector screws after you connect the cable.
- A maximum tensile load of the connectors is 30N. Do not apply a load more than this value.
- Turn OFF the power to the NP before you connect or disconnect a cable.

SECTION 4

Creating Screens

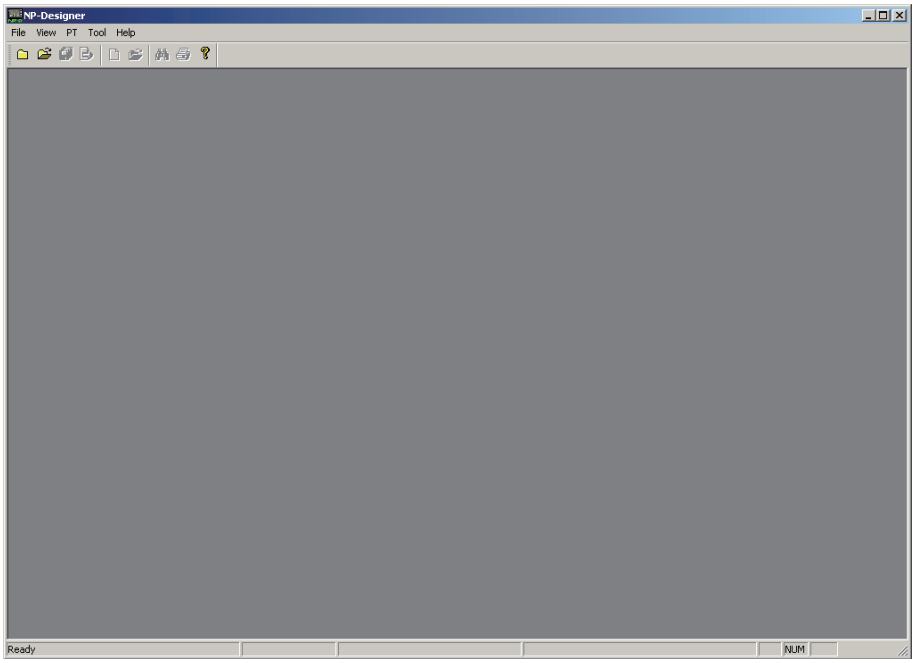
This section tells how to create screens of the NP. The software tool "NP-Designer" is used to create the screens.

4 Creating Screens

4-1 Starting NP-Designer

This section tells how to start NP-Designer.
NP-Designer is a programming tool (software) to create the screens of the NP.

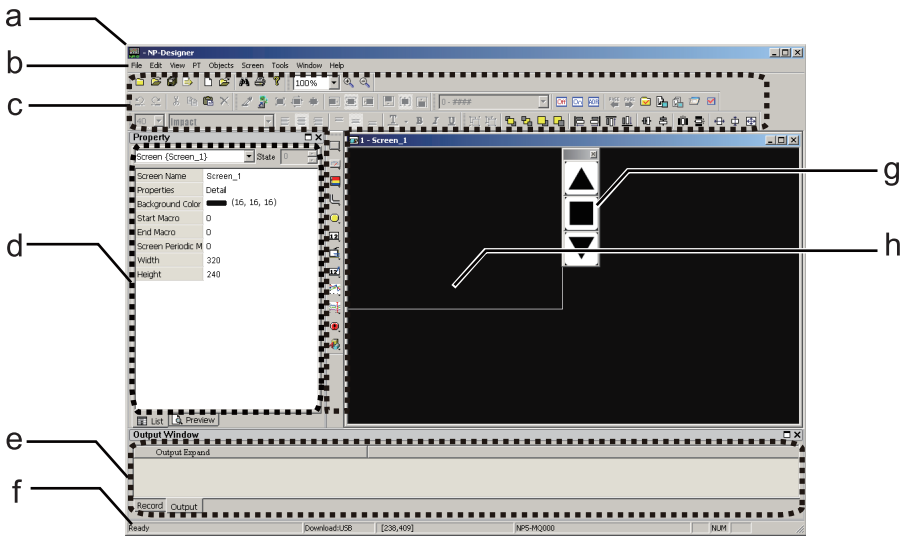
1. **On the desktop, select [Start] - [All Programs] - [OMRON] - [NP-Designer] - [NP-Designer].**
   NP-Designer will start.
   When the NP-Designer startup is completed, you will see the Main Window.



Note For details on NP-Designer, such as its operating environment, installation, and operation, refer to *NP Series User's Manual* (V096).

4-2 NP-Designer Main Window

This section gives the function of the parts in the NP-Designer main window.



a Title bar
Title bar shows the application name, project name, and screen number.

b Menu bar
Menu bar sorts the functions of NP-Designer into related groups. The pull-down menus show groups and functions.

c Toolbar
Toolbar shows frequently used functions as icons. Put the mouse cursor over an icon to see its function name.

d Property
Property window shows the properties for the object selected on the screen. The [Preview] tab shows a preview of the screen editing.

e Output window
Output Window shows various information, such as message output during operation or error check.

f Status bar
Status bar shows various information, such as editing status.

g Function switches
These icons show the NP function switches. Click each switch for its properties.

h Workspace
Workspace shows work area to create the NP Screens. The border lines show the display area of the NP.

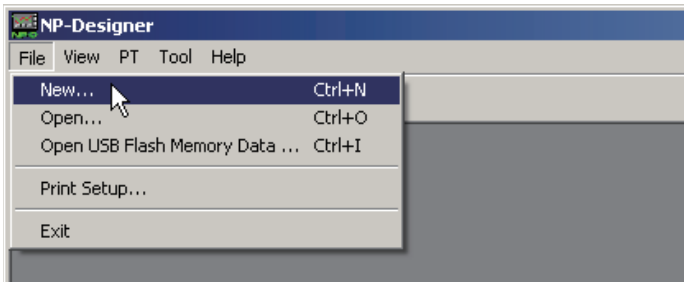
4-3 Creating Projects

This section gives the settings for NP operation and efficient creation of objects.
"Project" is the name of the data that NP-Designer creates.

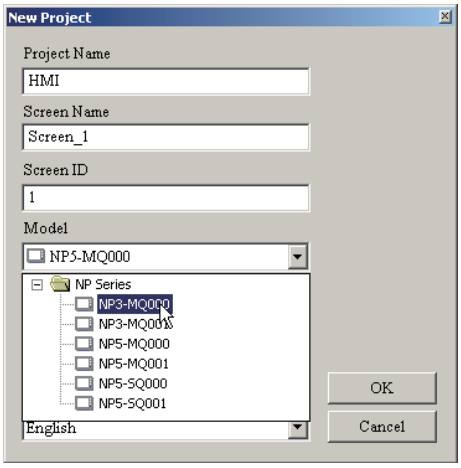
■Creating New Projects

When you use NP-Designer for the first time, start with the project settings.

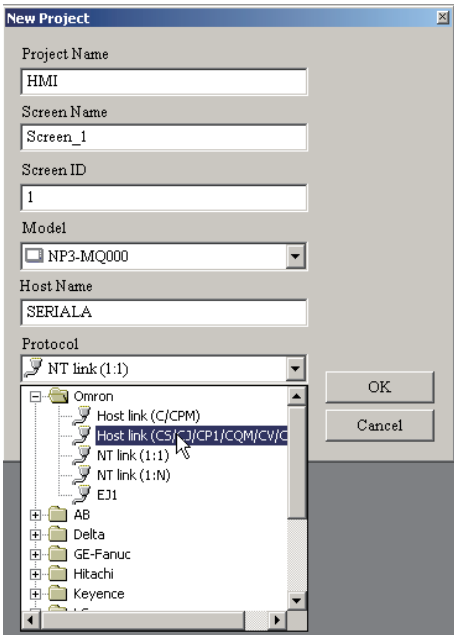
1. **Select [File] - [New] from the main menu.**
   You will see the [New Project] dialog box.



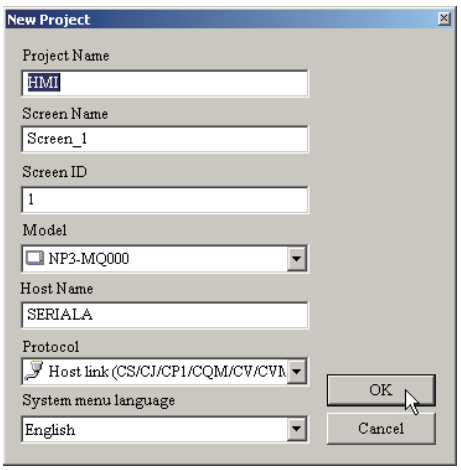
2. **Select [NP3-MQ000] from the [Model] drop-down list.**



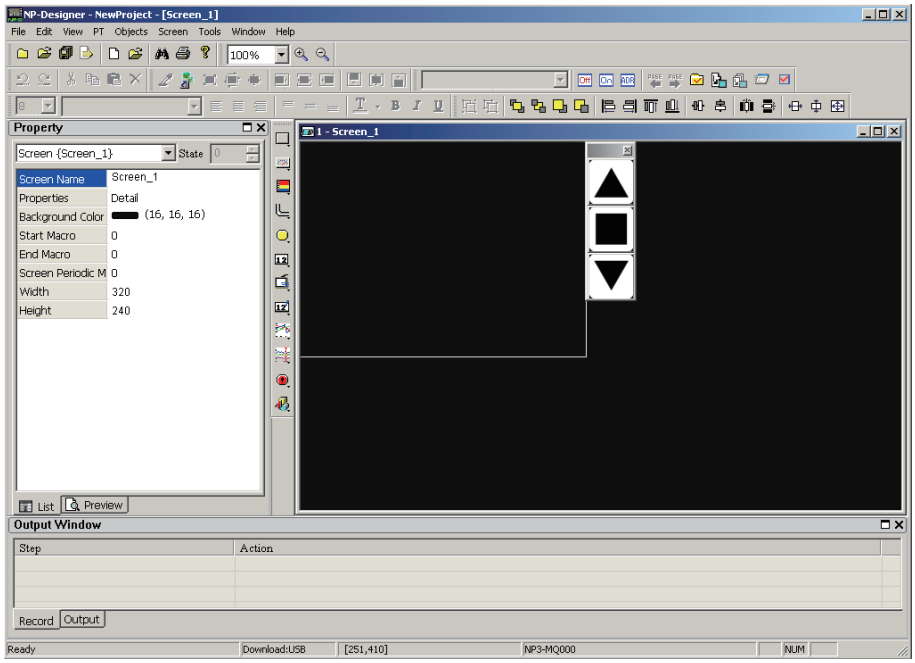
3. **Select [Host link (CS/CJ/CP1/CQM/CV/CVM)] from the [Protocol] drop-down list.**



4. **Click [OK].**



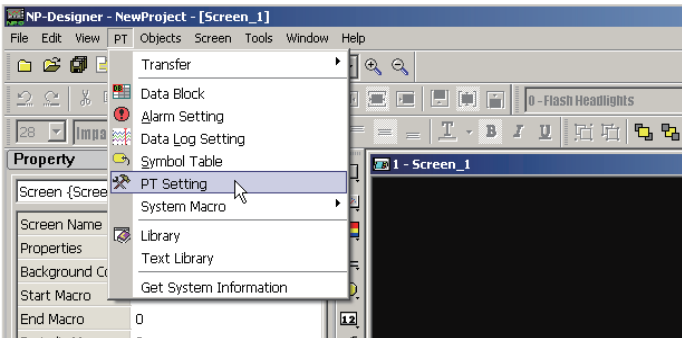
The [New Project] dialog box will close. Then you will see the main window for the new project.



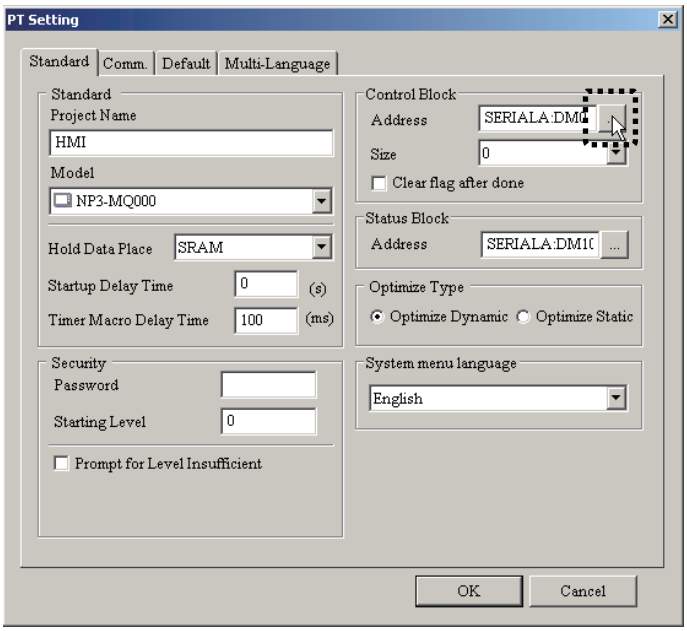
■NP Operation Settings

Use DM0000 on CP1L to set screen changes.

1. **Select [PT] - [PT Setting] from the main menu.**
You will see the [Standard] tab for the [PT Setting] dialog box.



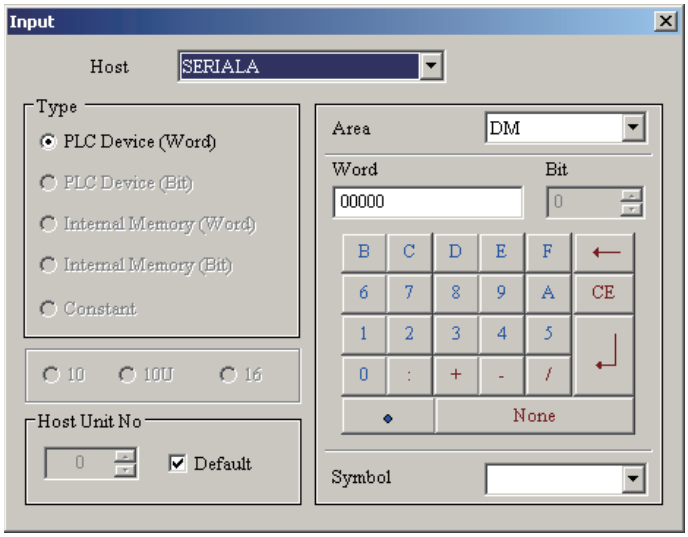
2. **Click [...] for [Address] under [Control Block].**
You will see the [Input] dialog box.



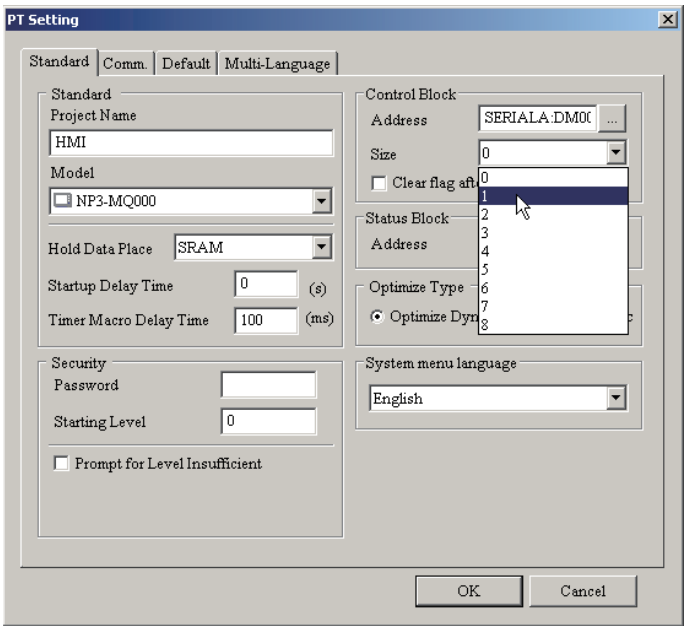
3. **Check the values for [Area] and [Word]. Push the [Enter] key.**
The [Input] dialog box will close.

Item	Setting
Area	DM*
Word	00000*

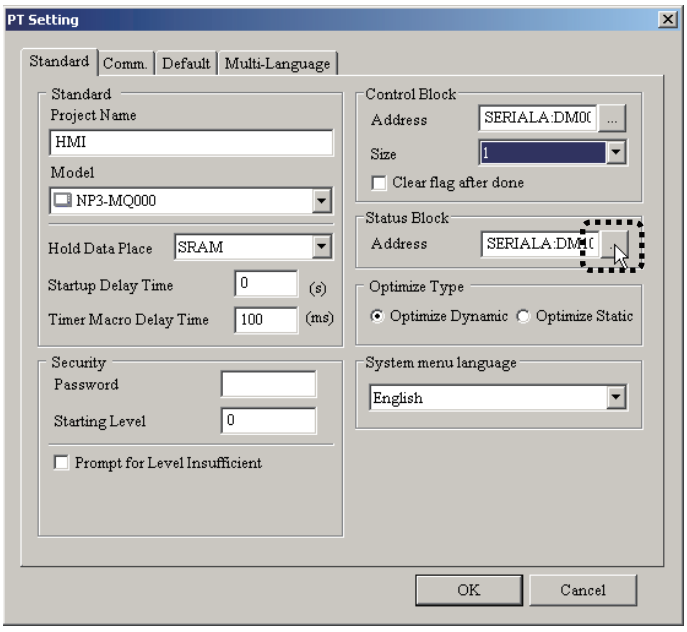
* This example uses the default value [DM00000].



4. **Select [1] from the [Size] drop-down list under [Control Block].**



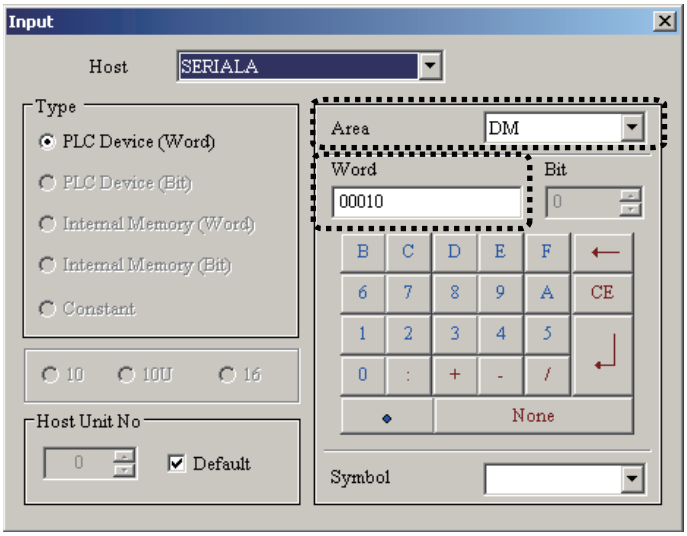
5. **Click [...] for [Address] under [Status Block].**
You will see the [Input] dialog box.



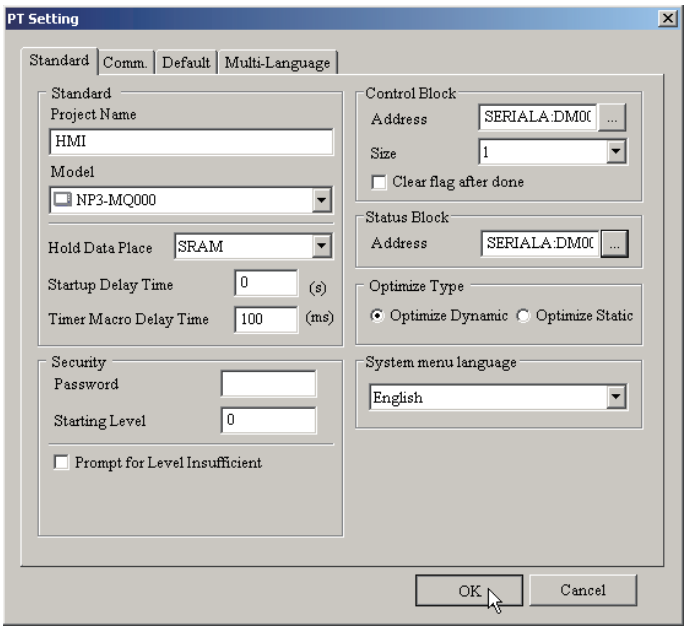
6. **Check the values for [Area] and [Word]. Push the [Enter] key.**
The [Input] dialog box will close.

Item	Setting
Area	DM*
Word	00010*

* This example uses the default value [DM00010].



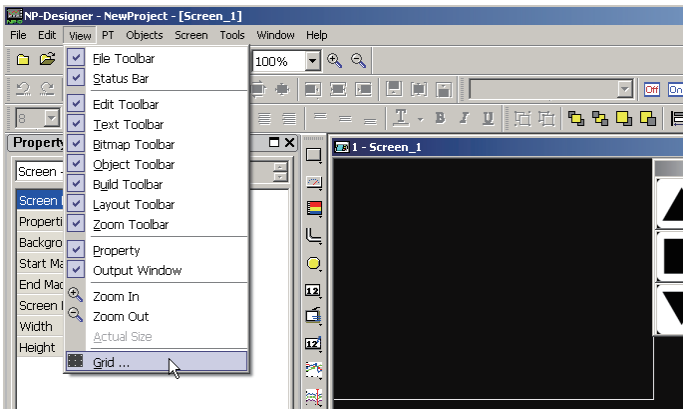
7. **Click [OK].**
The [PT Setting] dialog box will close.



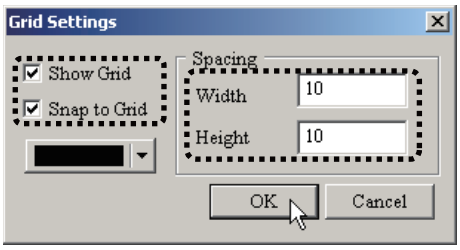
■Grid Settings

Grid settings can put and align objects with ease and accuracy.

1. **Select [View] - [Grid] from the main menu.**
   You will see the [Grid Settings] dialog box.



2. **Mark the checkboxes for [Show Grid] and [Snap to Grid].**
   Show Grid: Display a grid on the screen.
   Snap to Grid: Aligns objects to the grid. When an object is moved, it will "snap" onto a grid line.
3. **Input "10" for [Width] and [Height] under [Spacing].**
   Grids show with dotted lines. You can set spacing freely.
4. **Click [OK].**
   You will see the [Grid Settings] dialog box.

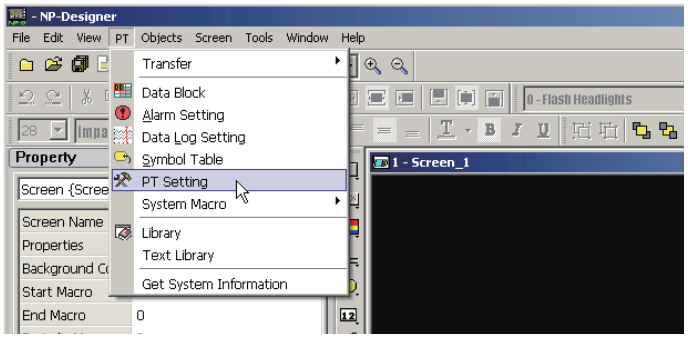


Note You can set the color of the grid lines in the [Grid Settings] dialog box. Select different colors for the grid lines and background. It is hard to see the grid lines when you select the same color as the background color.
In the next section *Default Settings for Screens*, you will select white color to the background. Thus, select black color to the grid lines.

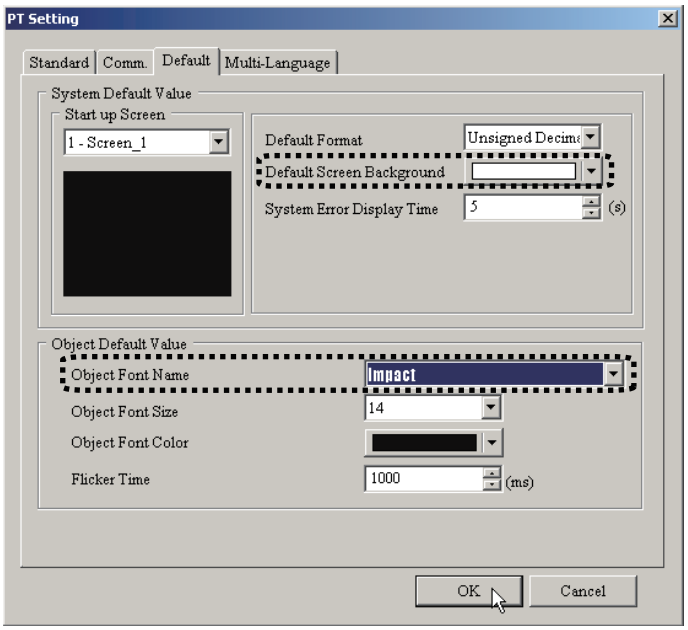
■Default Settings for Screens

Set the screen background color and font in advance.
These settings will be used as the default settings for all objects. Note that these settings will not affect screens already created.

1. **Select [PT] - [PT Setting] from the main menu.**
   You will see the [Standard] tab of the [PT Setting] dialog box.



2. **Click the [Default] tab.**
3. **Select [(White)RGB(255,255,255)] from the [Default Screen Background] drop-down list under [System Default Value].**
4. **Select [Impact] from the [Object Font Name] drop-down list under [Object Default Value].**
5. **Click [OK].**
   The [PT Setting] dialog box will close.



4-4 Creating Screens

This section tells how to create screens of the NP.

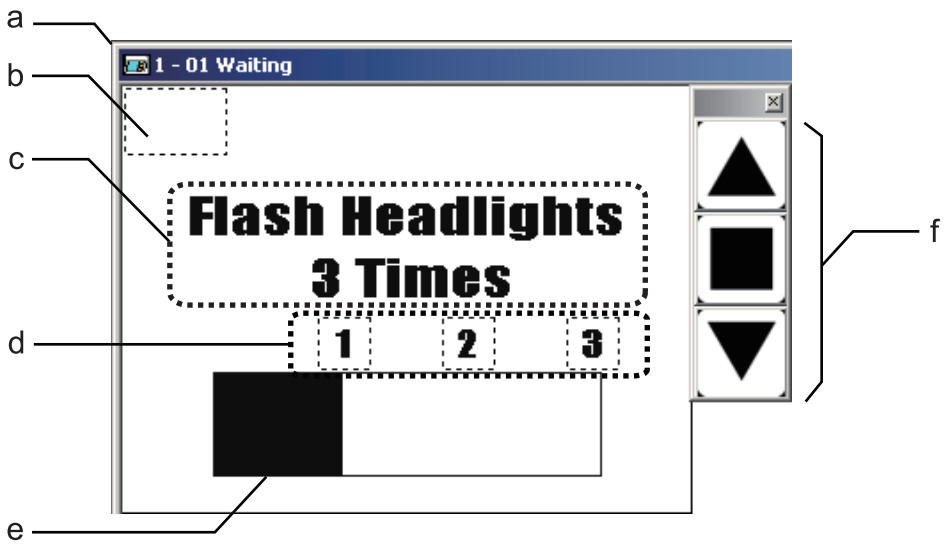
■[01 Waiting]

[01 Waiting] is the first screen that the shutter control system shows. The system shows this screen, when the lower LS is ON.

Set the following functions:

- A level meter (bar graph) for graphically showing the number of detected headlight flashes.
- A transparent button for the maintenance screen. The button will be turned ON if you touch it for 3 seconds.
- Each Function switch operates [Open], [Stop], or [Close] shutter action.

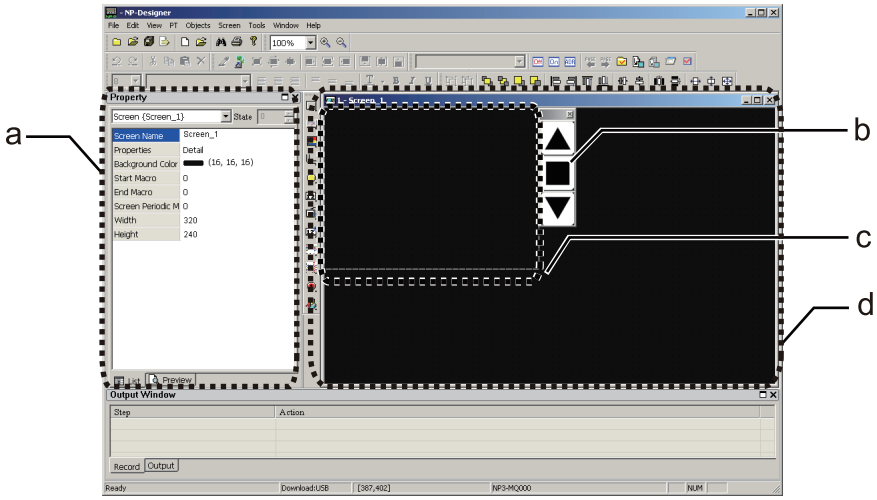
The completed screen shows below.



a Screen
b Transparent Button (Set)
c Fixed Object (Text)
d Fixed Object (Text)
e Level Meter (Level Meter)
f Function Switches

●Screen

Start this procedure after the setup of the screen. Refer to the *NP Operation Settings* section.



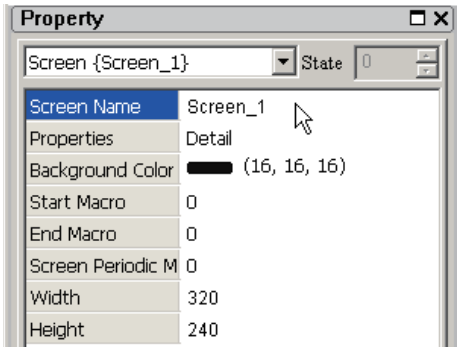
a In the property area, the [List] tab is selected, and the properties for Screen shows.

b Function switches show.

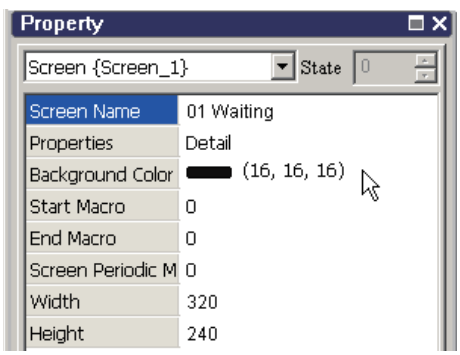
c The border lines represent the screen display area. You cannot put the objects outside of the border lines.

d [1-Screen_1] will show as the title of the workspace.

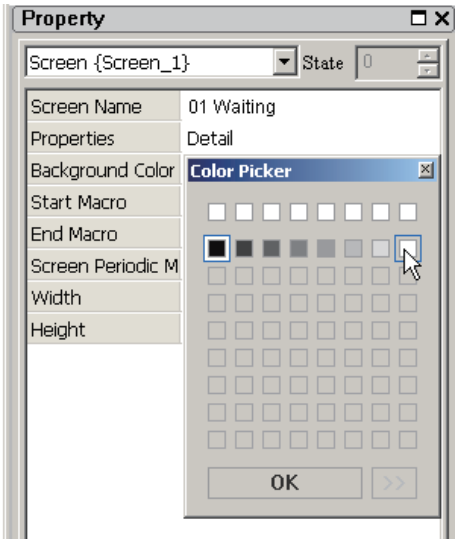
1. **Click the [Screen Name] input field. Change the value to "01 Waiting".**
The title of the workspace will be [1-01 Waiting].



2. **Click the [Background Color] input field.**
You will see [...].



3. **Click [...]. Select [(White)RGB(255,255,255)].**
[Background Color] will be (White)RGB(255,255,255).



You configured these settings in this section.

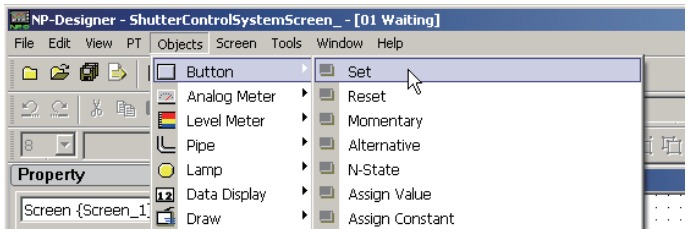
Item	Setting
Screen Name	01 Waiting
Background Color	(White)RGB(255,255,255)

Next, create a button.

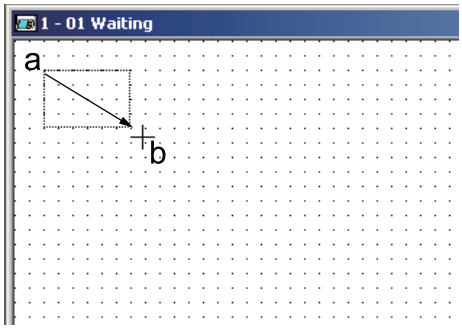
●Button (Set)

The button is used to switch to the maintenance screen ([06 Check1] screen). To push the button will set [W0.02] to ON, and the ladder program in CP1L will cause a screen change on the [06 Check1] screen. To prevent operational error of the button, make it transparent and to be pushed for 3 seconds.

1. **Select [Objects] - [Button] - [Set] from the main menu. Move the mouse cursor to the workspace.**
The cursor will change shape to [+].

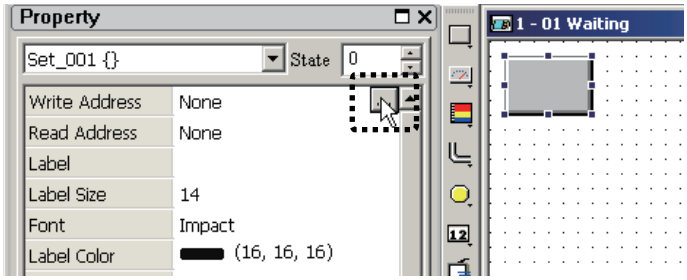


2. **Move the cursor from a to b.**
A button frame will show.

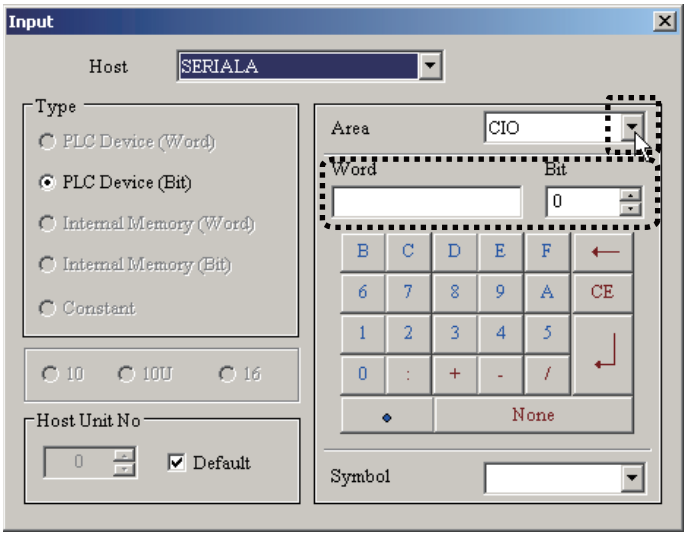


Set the properties for the button.

3. **Click ... for [Write Address].**
You will see the [Input] dialog box.



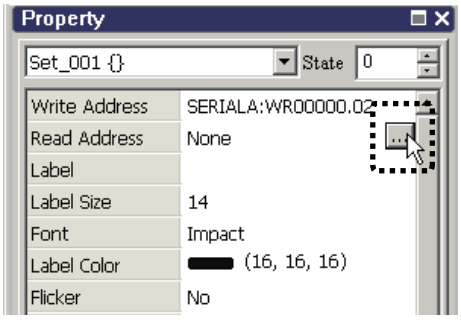
4. **Select [WR] from the [Area] drop-down list. Enter "0" for [Word], "2" for [Bit]. Push the [Enter] key.**
The [Input] dialog box will close. [Write Address] will be [SERIALA:WR00000.02].



Note In NP-Designer, [W0.02] is set as SERIALA[WR0.02]. You will see it as [SERIALA:WR00000.02] under property.

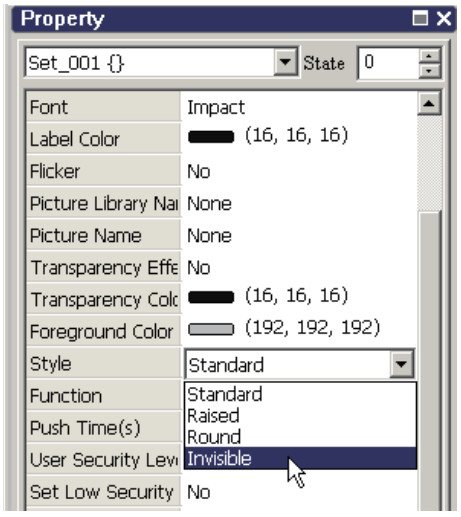
5. **Click the [Read Address] input field.**
You will see ....

6. **Click [...].**
You will see the [Input] dialog box.

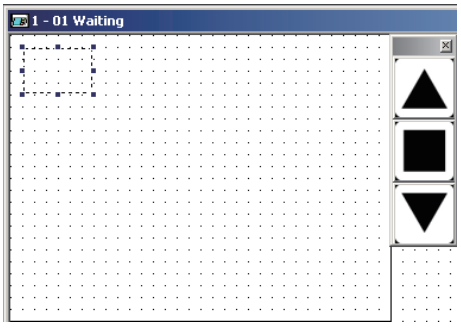


7. **Select [WR] from the [Area] drop-down list. Enter "0" for [Word], "2" for [Bit]. Push the [Enter] key.**
The [Input] dialog box will close. [Read Address] will be [SERIALA:WR00000.02].

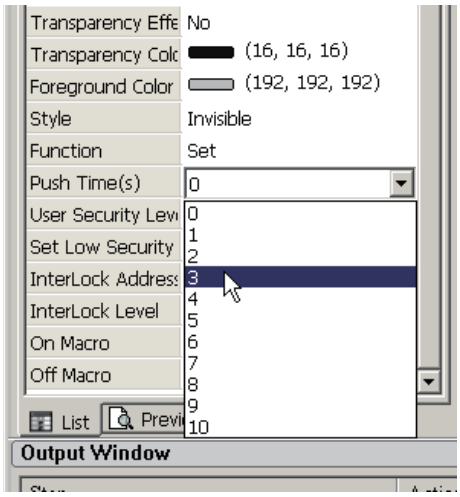
8. **Click the [Style] input field. Select [Invisible] from the drop-down list.**



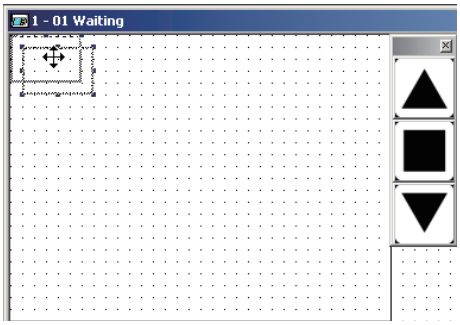
The button frame will show with dotted lines.



9. **Click the [Push Time(s)] input field. Select [3] from the drop-down list.**
The push time will be 3 seconds.



10. **Hold the mouse button and move the mouse to adjust the position of the object.**
Move the handle on the object frame to adjust frame size.



You configured these settings in this section.

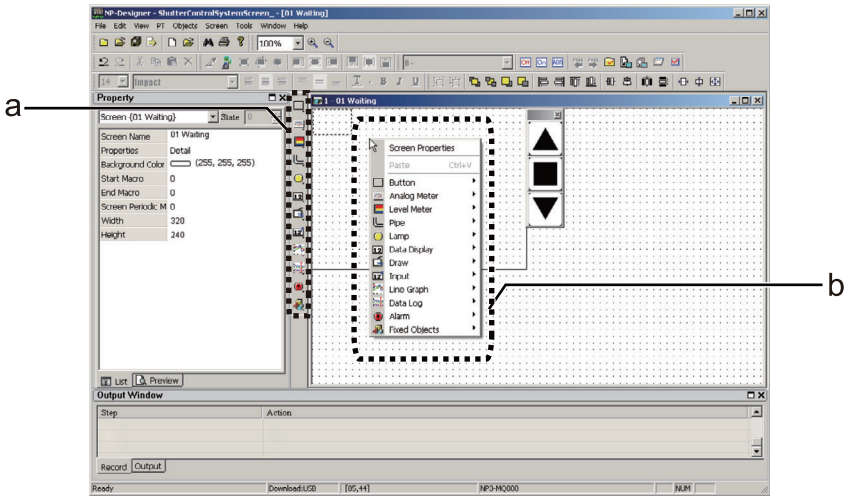
Item	Setting
Write Address	SERIALA:WR0.02
Read Address	SERIALA:WR0.02
Style	Invisible
Push Time (s)	3

Next, create the text.

Note Along with this procedure, there are 2 other procedures to create an object.

a To select from the toolbar.

b To right-click the workspace and select from the pop-up menu.



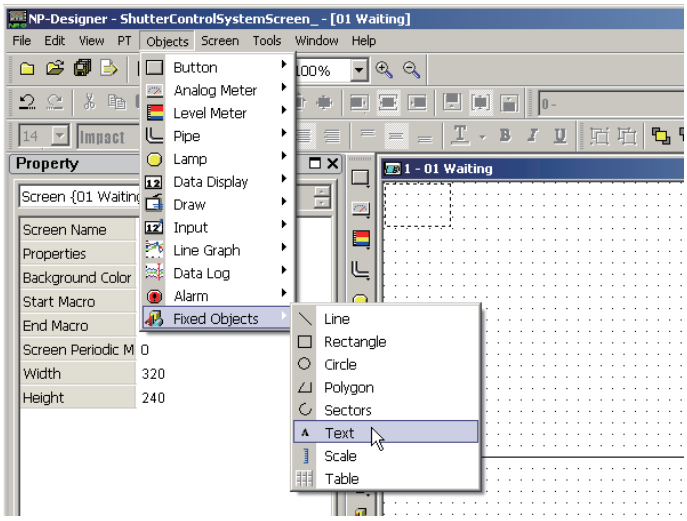
●Fixed Object (Text)

The text object is a label that is always displayed onscreen.

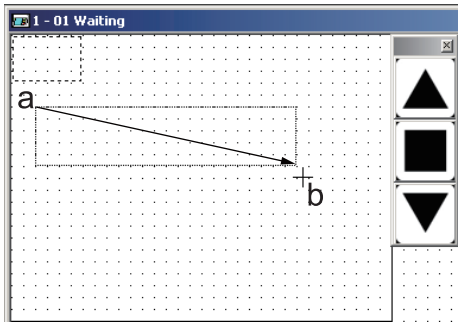
You can adjust the font size and layout.

1. **Select [Objects] - [Fixed Objects] - [Text] from the main menu. Move the mouse cursor to the workspace.**

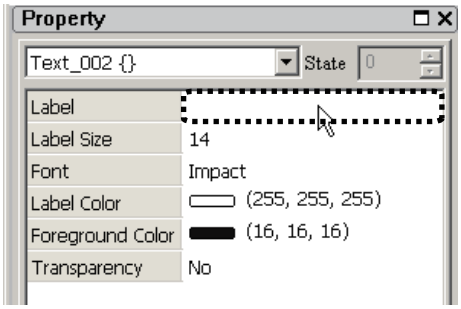
   The cursor will change shape to [+].



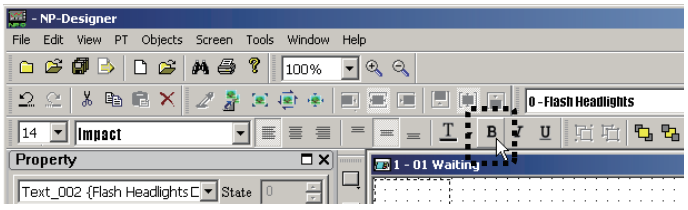
2. **Move the cursor from a to b.**
You will see a text box.



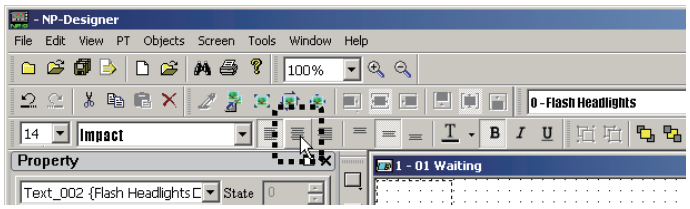
3. **Click the [Label] input field. Enter "Flash Headlights". Enter a line brake, then Enter "3 Times".**
You will see the text within the frame.



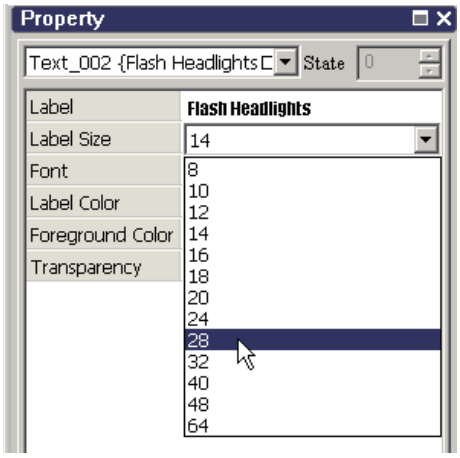
4. **Select [Bold] from the toolbar.**
You will see the text in boldface.



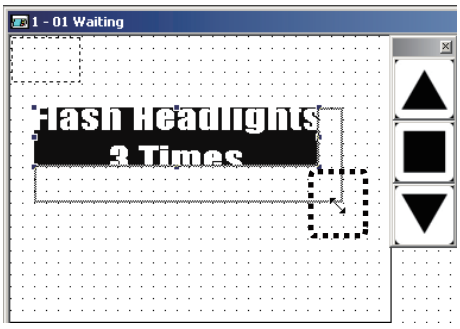
5. **Select [Center] from the toolbar.**
You will see the text aligns in the center.



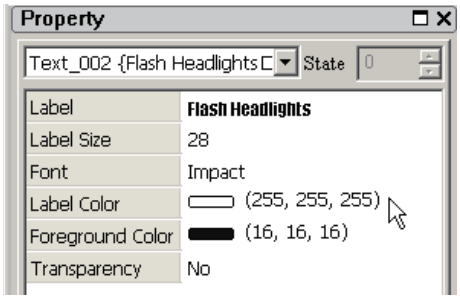
6. **Click the [Label Size] input field. Select [28] from the drop-down list.**
The font size will be 28.



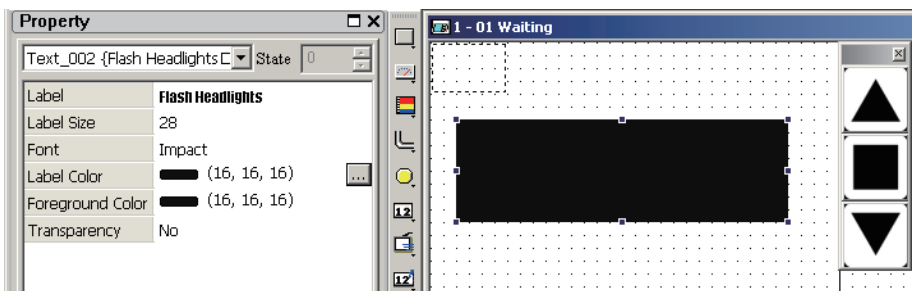
7. **Move the handle on the frame to adjust frame size.**



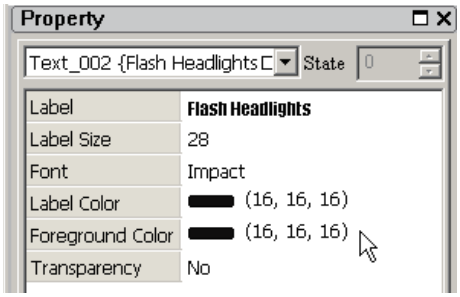
8. **Click the [Label Color] input field.**
You will see ... .



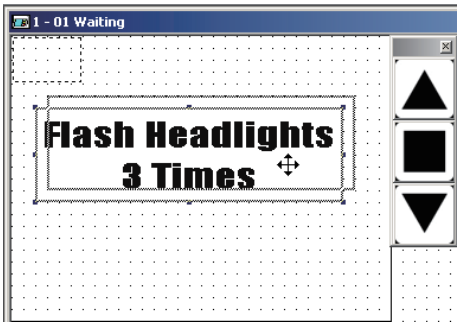
9. **Click ... . Select [(Black)RGB(16,16,16)].**
The label color will be (Black)RGB(16,16,16).
This is the same color that is used for [Foreground Color], so the text becomes unreadable.



10. **Set the [Foreground Color] to [(White)RGB(255,255,255)].**
[Foreground Color] will be (White)RGB(255,255,255).



11. **Move the text object to adjust its position.**



You configured these settings in this section.

Item	Setting
Label	Flash Headlights [line break] 3 Times*
Label Size	28
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

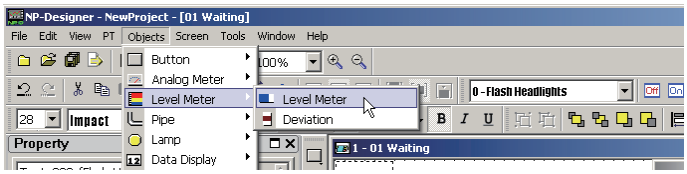
* Select [Bold] and [Center] from the toolbar.

Next, create the level meter.

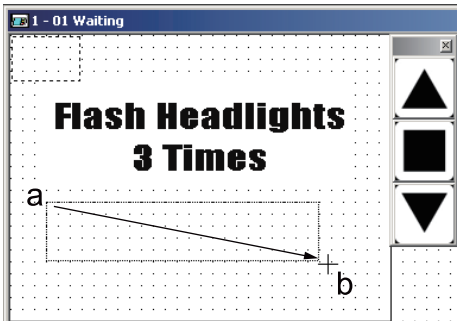
●Level Meter (Level Meter)

The level meter is a bar graph to show the number of headlight flashes that the sensor senses.
The number of flashes refers to the present value of the ladder program's counter.
Set the maximum value for the level meter to "3" to count up to 3 flashes.
Put text labels [1], [2], and [3] above the level meter as scales to show the number of flashes.

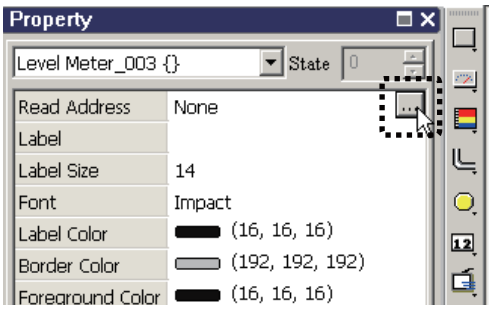
1. **Select [Objects] - [Level Meter] - [Level Meter] from the main menu. Move the mouse cursor to the workspace.**
The cursor will change shape to [+].



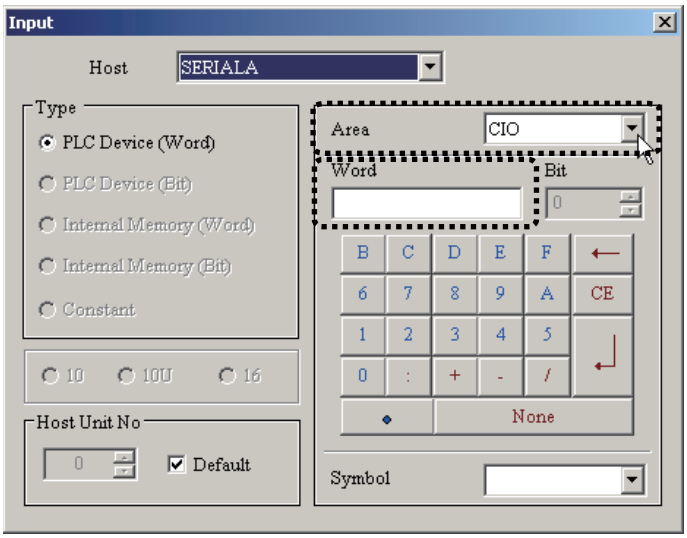
2. **Move the cursor from a to b.**
You will see a level meter object.



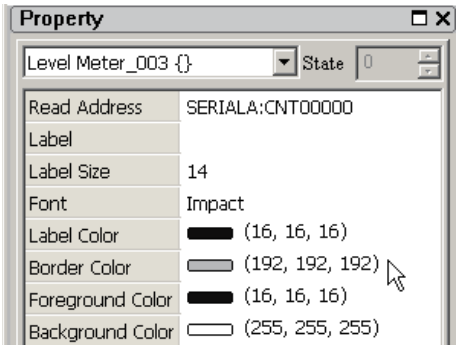
3. **Click [...] for [Read Address].**
You will see the [Input] dialog box.



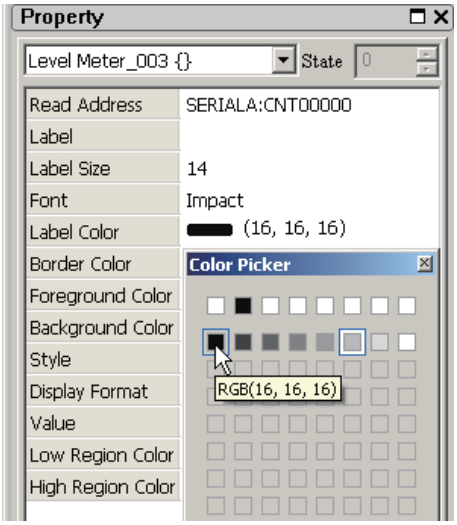
4. **Select [CNT] from the [Area] drop-down list. Enter "0" for [Word]. Push the [Enter] key.**
The [Input] dialog box will close. [Read Address] will be [SERIALA:CNT00000].



5. **Click the [Border Color] input field.**
You will see ... .

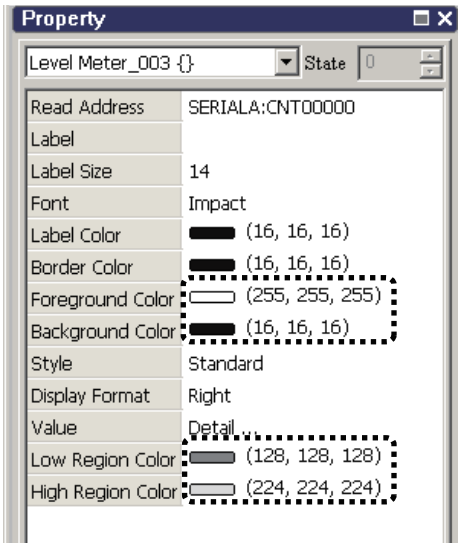


6. **Click ... . Select [(Black)RGB(16,16,16)].**
The border color will be (Black)RGB(16,16,16).

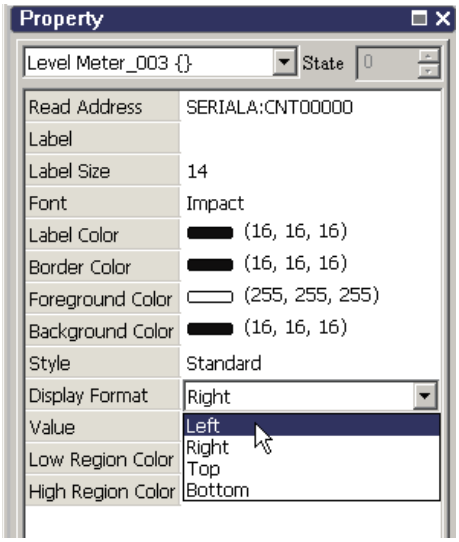


7. **Set the other color properties.**

Item	Setting
Foreground Color	(White)RGB(255,255,255)
Background Color	(Black)RGB(16,16,16)
Low Region Color	(Dark grey)RGB(128,128,128)
High Region Color	(Light grey)RGB(224,224,224)

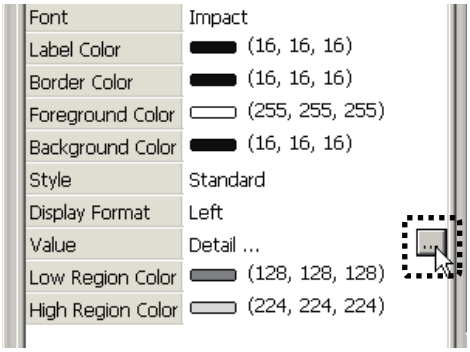


8. **Click the [Display Format] input field. Select [Left] from the drop-down list.**
The left end of the level meter will be the zero point (origin) for the bar graph.

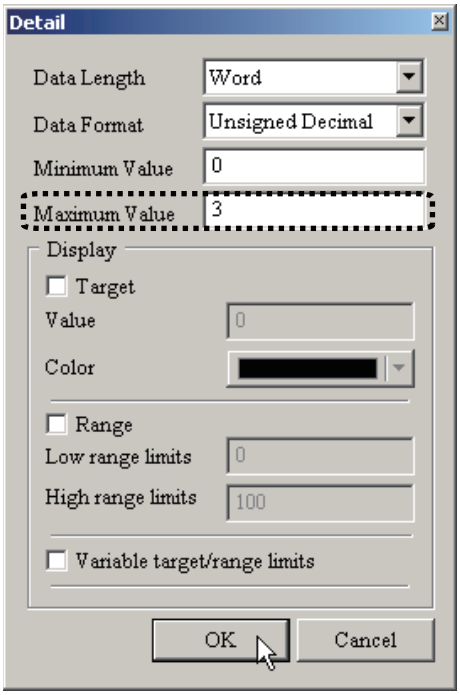


9. **Click the [Value] input field.**
You will see ... .

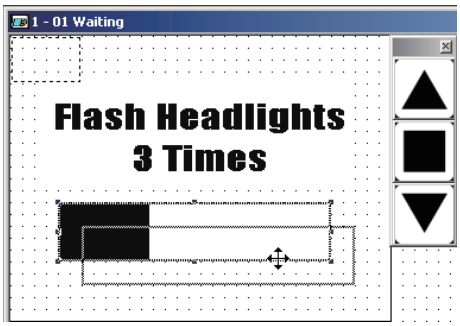
10. **Click [...].**
You will see the [Detail] dialog box.



11. **Enter "3" for [Maximum Value]. Click [OK].**
The maximum value on the bar graph will be "3".



12. **Adjust the position and size of the level meter.**

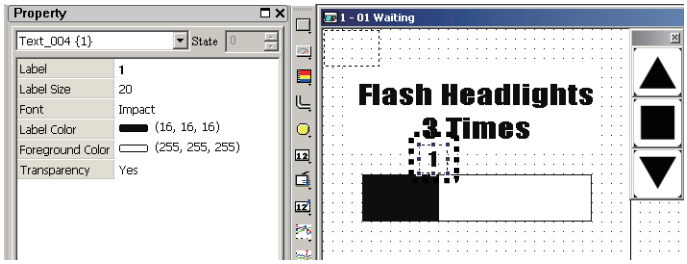


13. **Select [Objects] - [Fixed Objects] - [Text] from the main menu. Create a text box above the level meter.**

14. **Set text properties.**
You will see text label [1].

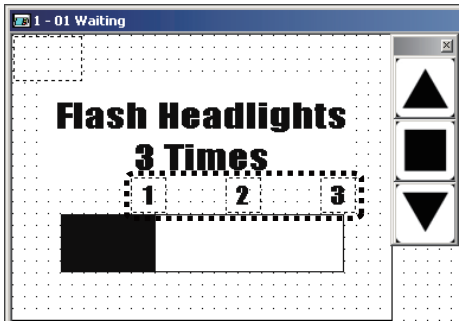
Item	Setting
Label	1*
Label Size	20
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)
Transparency	Yes

* Select [Bold] and [Center] from the toolbar.



15. **Repeat steps 13 and 14 to create text labels [2] and [3].**

16. **Move the objects to adjust their layout.**



Note The copy function will be easy and useful to create more than two objects of almost the same properties.
Right-click an object, and select [Copy] from the pop-up menu. Next, right-click the workspace, and select [Paste] from the pop-up menu. The object will be copied. Change the properties for the copied object, and adjust its position.

You configured these settings in this section.

Level Meter (Level Meter)

Item	Setting
Read Address	SERIALA:CNT00000
Border Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)
Background Color	(Black)RGB(16,16,16)
Display Format	Left
Value	[Detail] dialog box (Maximum Value: 3)
Low Region Color	(Dark grey)RGB(128,128,128)
High Region Color	(Light grey)RGB(224,224,224)

Fixed Object (Text)

Item	Setting
Label	1 (2, 3)*
Label Size	20
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)
Transparency	Yes

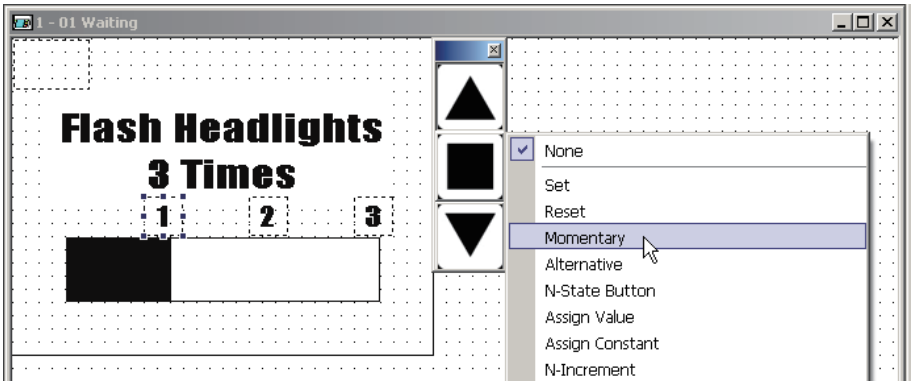
* Select [Bold] and [Center] from the toolbar.

Next, configure the function switches.

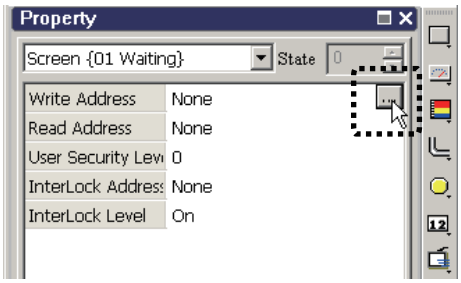
●Function Switches

The function switches open, close, and stop the shutter.
Since they are hardware switches on the front panel, set their properties only.
The function switches can have different function for each screen. Therefore you must set the function for each screen, even if they are the same function. Repeat this procedure to create all other screens in later chapters of this manual.

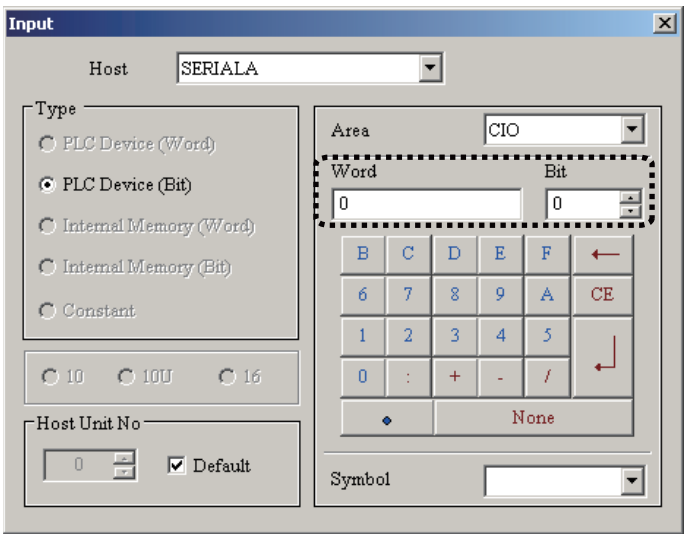
1. **Click ▲. Select [Momentary].**
   You will see the properties.



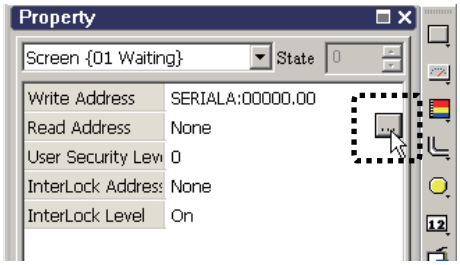
2. **Click [...] for [Write Address].**
   You will see the [Input] dialog box.



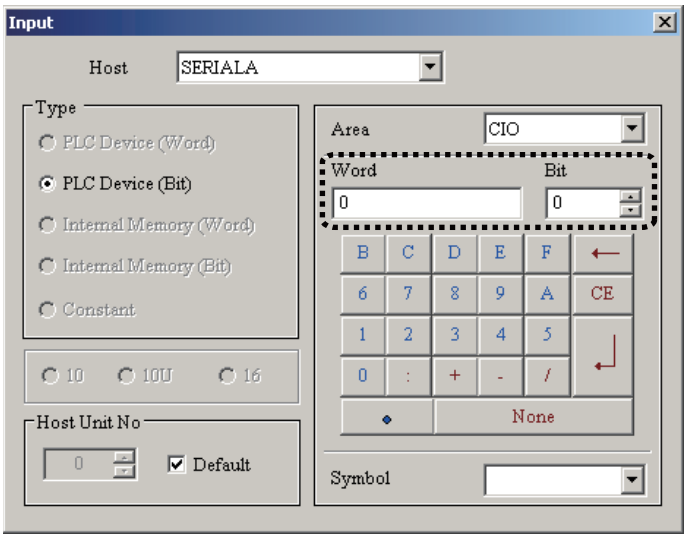
3. **Enter "0" for [Word], "0" for [Bit]. Push the [Enter] key.**
   The [Input] dialog box will close. [Write Address] will be [SERIALA:00000.00].



4. **Click the [Read Address] input field.**
   You will see [...].
5. **Click [...].**
   You will see the [Input] dialog box.



6. **Enter "0" for [Word], "0" for [Bit]. Push the [Enter] key.**
The [Input] dialog box will close. [Read Address] will be [SERIALA:WR00000.00].



7. **Repeat steps 1 to 6 to configure ■ and ▼.**
See below for the details.
You configured these settings in this section.

▲

Item (Function)	Setting
Function	Momentary
Write Address	SERIALA:0.00
Read Address	SERIALA:0.00

■

Item (Function)	Setting
Function	Momentary
Write Address	SERIALA:0.01
Read Address	SERIALA:0.01

▼

Item (Function)	Setting
Function	Momentary
Write Address	SERIALA:0.02
Read Address	SERIALA:0.02

The [01 Waiting] screen is now complete. Next, create the [02 Opening] screen.

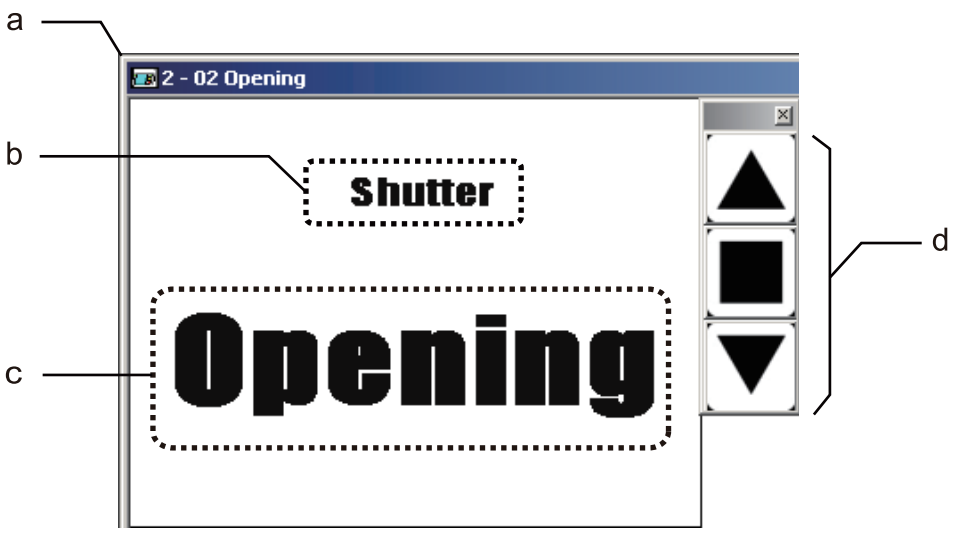
Note You can export screens to bitmap images.
To export an image, select [Screen] - [Export Image] from the main menu.

■[02 Opening]

The [02 Opening] screen will show when the shutter escalation motor is active.
Set these functions:

- The screen shows shutter status
- Each Function switch operates [Open], [Stop], or [Close] shutter action.

The completed screen shows as below.

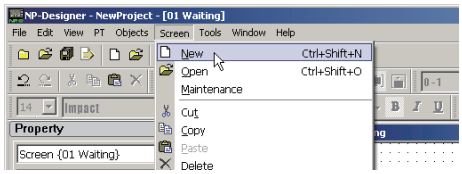


a Screen
b Fixed Object (Text)
c Fixed Object (Text)
d Function Switches

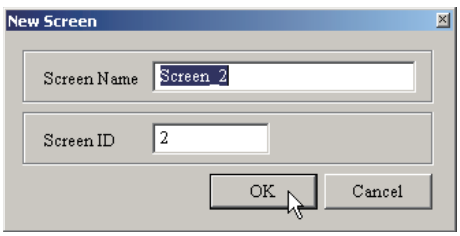
●Screen

Start this procedure after the completion of the [01 Waiting] screen.

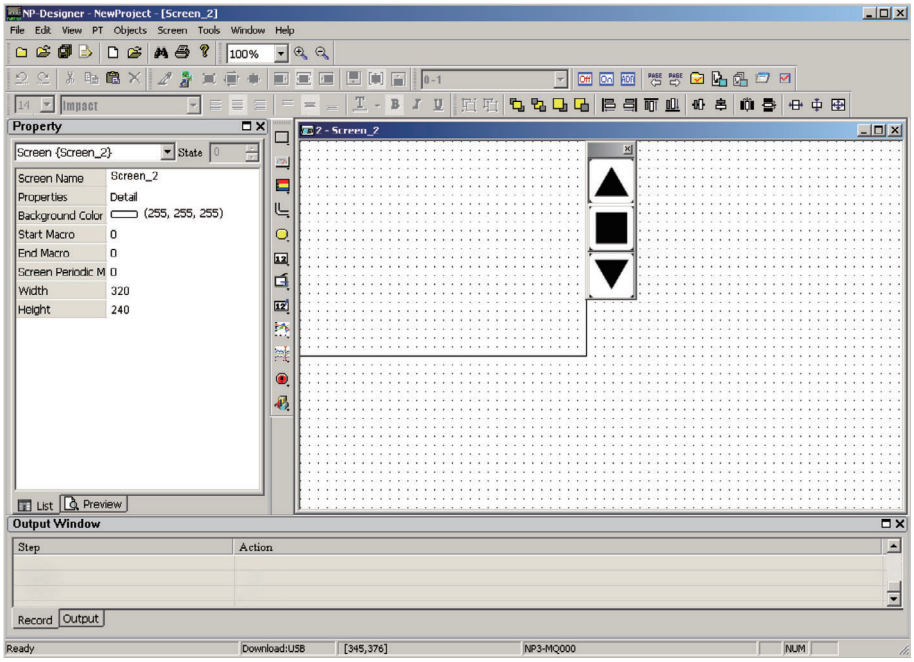
1. **Select [Screen] - [New] from the main menu.**
You will see the [New Screen] dialog box.



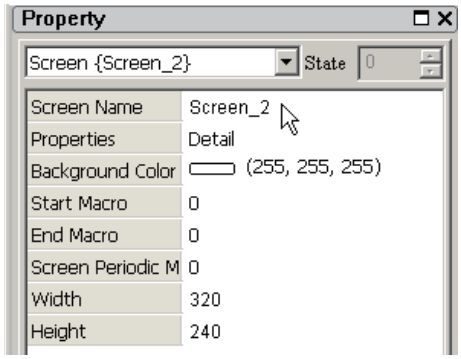
2. **Click [OK].**



A new screen will show in the workspace. You will see [2-Screen_2] as the title of the workspace.



3. **Click the [Screen Name] input field. Change the value to "02 Opening".**
The title of the workspace will be [2-02 Opening].



●Fixed Object (Text)

Create the "Shutter" and "Opening" text objects.
For details, refer to *[01 Waiting]*.

Use these settings.

Shutter

Item	Setting
Label	Shutter*
Label Size	20
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold], [Center], and [Aligns bottom] from the toolbar.

Opening

Item	Setting
Label	Opening*
Label Size	64
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold], [Center], and [Aligns text top] from the toolbar.

●Function Switches

Set the function switches.
For details, refer to *[01 Waiting]*. Setting details are the same.

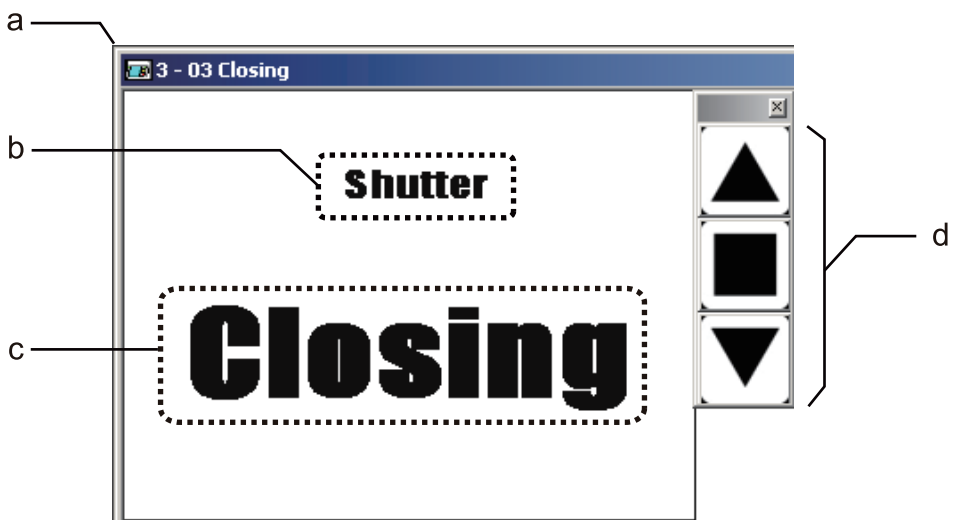
The [02 Opening] screen is now complete.

■[03 Closing]

The system shows the [03 Closing] screen when the shutter de-escalation motor is active.
Set these functions:

- The screen shows shutter status
- Each Function switch operates [Open], [Stop], or [Close] shutter action.

The completed screen shows below.

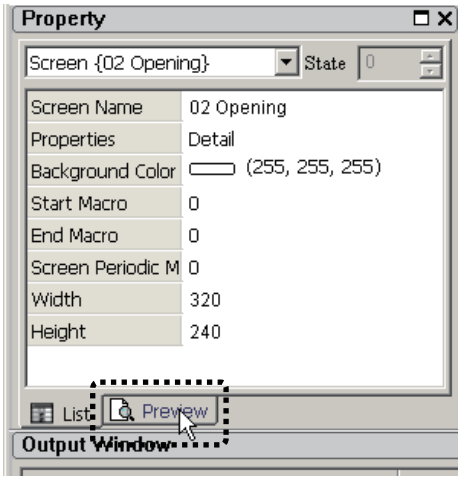


a Screen
b Fixed Object (Text)
c Fixed Object (Text)
d Function Switches

●Screen Copy

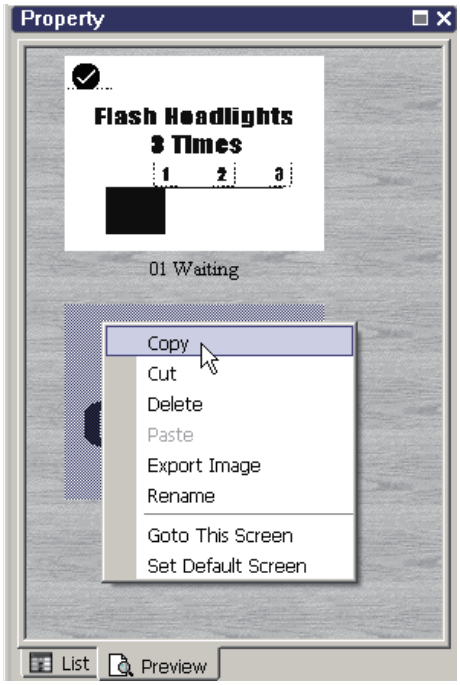
Start this procedure after the completion of the [02 Opening] screen.
You can create the [03 Closing] screen with the same procedure as for the [02 Opening] screen. This example tells you how to create the [03 Closing] screen with the copy of the [02 Opening] screen.

1. **Click the [Preview] property tab.**
   You will see thumbnails for the existing screens.



2. **Click the [02 Opening] screen.**
   The screen is selected.

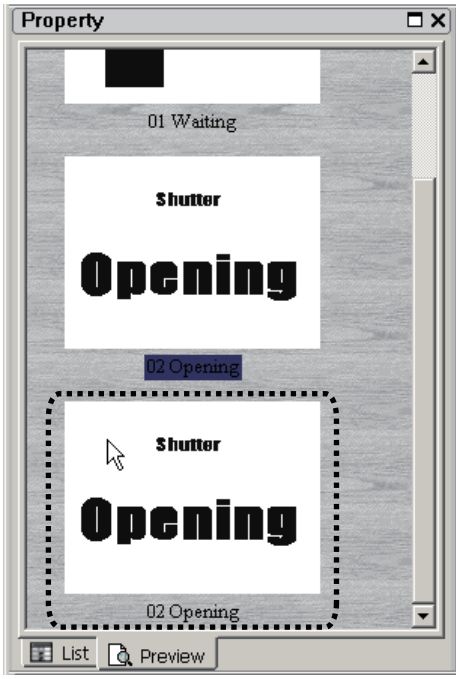
3. **Right-click and select [Copy] from the pop-up menu.**



4. **Right-click again, and select [Paste] from the pop-up menu.**
The [02 Opening] screen will be copied.

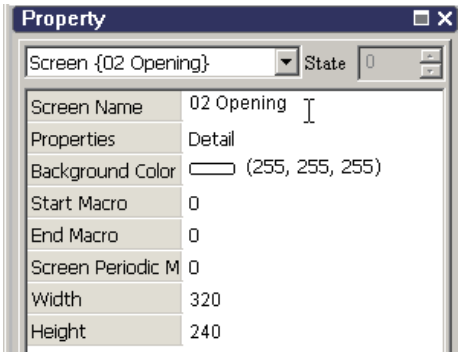
Note On the [Preview] property tab, you see a check mark on the [01 Waiting] screen. This mark shows that the screen is the default screen.

5. **Double-click the copied [02 Opening] screen.**
You will see the [3-02 Opening] screen in the workspace.

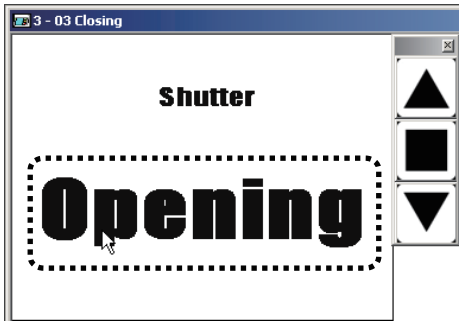


6. **Click the [List] property tab.**
You will see the properties for the [3-02 Opening] screen.

7. **Change the value of [Screen Name] to "03 Closing".**
The title of the workspace will be [3-03 Closing].



8. **Click the [Opening] text object. Change the value of the [Label] properties to "Closing".**



●Function Switches

Set the function switches.
For details, refer to *[01 Waiting]*. Setting details are the same.

The [03 Closing] screen is now complete.

■[04 Stopped]

The system shows the [04 Stopped] screen when the operation fills all these conditions:

- Escalation and de-escalation motors are inactive.
- Upper LS and lower LS are OFF.
- Maintenance button is OFF.

Set these functions:

- Cause the entire screen to flash, so that it will call attention to itself.
- Each Function switch operates [Open], [Stop], or [Close] shutter action.

The completed screen shows below.

a Screen
b Lamp (N-state)
c Function Switches

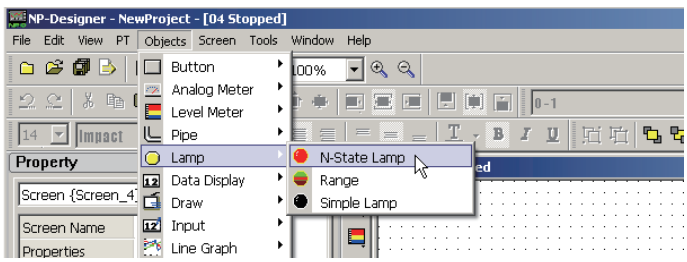
●Screen

1. **Select [Screen] - [New] from the main menu.**
   You will see the [New Screen] dialog box.
2. **Click [OK].**
   You will see a new screen in the workspace. [4-Screen_4] will be the title of the workspace.
3. **Click the [Screen Name] input field. Change the value to "04 Stopped".**
   The title of the workspace will be [4-04 Stopped].

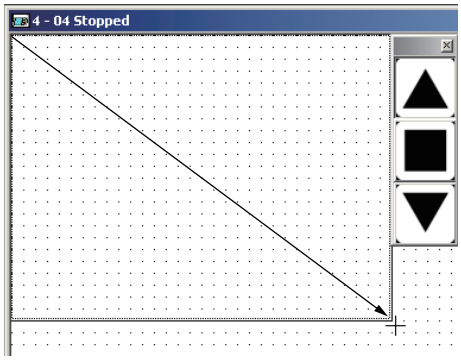
●Lamp (N-State)

Use the lamp to make the display flash.

1. **Select [Objects] - [Lamp] - [N-State Lamp] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].



2. **Move the cursor from the upper-left corner of the workspace to the opposite corner.**
You will see a lamp of the same size as the display.



3. **Set lamp properties.**

Item	Setting
Read Address	SERIALA:00000.06
Label	Shutter [line break] Stopped*
Label Size	48
Flicker	Yes
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] from the toolbar.

4. **Click** On **.**
You will see the lamp of the ON status.

5. **Set lamp properties.**

Item	Setting
Label	Shutter [line break] Stopped*
Label Size	48
Flicker	Yes
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] from the toolbar.

Note Objects like lamps operate differently when the address is ON or OFF. You must set their properties to both the ON and OFF statuses. By default, the screen is the OFF status. Click On to set the properties to ON.

●Function Switches

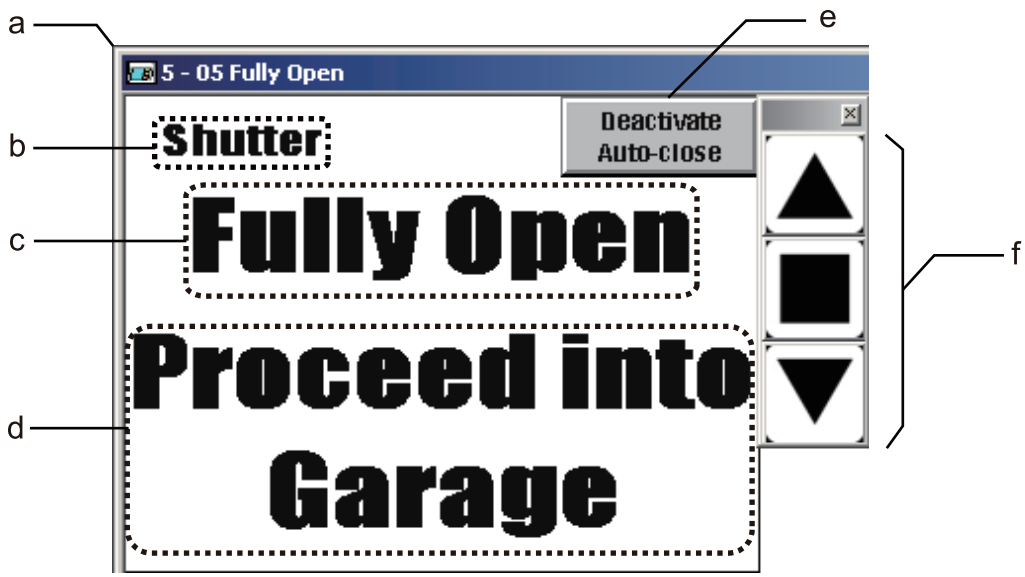
Set the function switches.
For details, refer to *[01 Waiting]*. Setting details are the same.
The [04 Stopped] screen is now complete.

■[05 Fully Open]

The system shows the [05 Fully Open] screen when the upper LS is ON.
Set these functions:

- Cut off input from the vehicle sensor, for the shutter not to close automatically.
- Each Function switch operates [Open], [Stop], or [Close] shutter action.

The completed screen shows below.



a Screen
b Fixed Object (Text)
c Fixed Object (Text)
d Fixed Object (Text)
e Button (Alternative)
f Function Switches

●Screen

1. **Select [Screen] - [New] from the main menu.**
   You will see the [New Screen] dialog box.
2. **Click [OK].**
   You will see a new screen in the workspace. [5-Screen_5] will be the title of the workspace.
3. **Click the [Screen Name] input field. Change the value to "05 Fully Open".**
   The title of the workspace will be [5-05 Fully Open].

●Fixed Object (Text)

Create the "Shutter", "Fully Open", and "Proceed into Garage" text objects.
For details, refer to *[01 Waiting]*.

Use these settings.

Shutter

Item	Setting
Label	Shutter*
Label Size	20
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Aligns bottom] from the toolbar.

Fully Open

Item	Setting
Label	Fully Open*
Label Size	64
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Center] from the toolbar.

Proceed into Garage

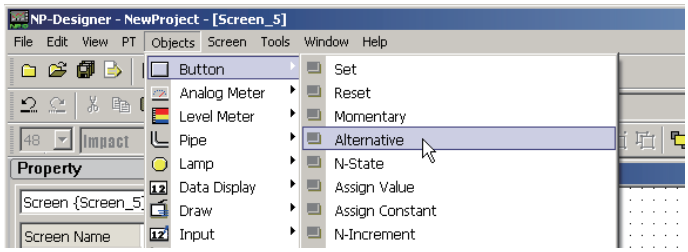
Item	Setting
Label	Proceed into [line break] Garage*
Label Size	48
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Center] from the toolbar.

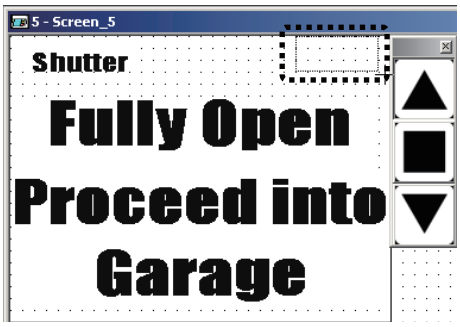
●Button (Alternative)

This button cuts off input from the vehicle sensor.
When a user pushes the button, the system will turn ON the address [W0.01] and the input from the vehicle sensor [0.03] will stop. In this state, a user must close the shutter by the function switch. When the shutter closes and the lower LS turns ON, [W0.01] will turn OFF.

1. **Select [Objects] - [Button] - [Alternative] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].



2. **Move the cursor.**
   A button frame will show.



3. **Set button properties.**

Item	Setting
Write Address	SERIALA:WR0.01
Read Address	SERIALA:WR0.01
Label	Deactivate [line break] Auto-close
Label Size	12

●Function Switches

Set the function switches.
For details, refer to *[01 Waiting]*. Setting details are the same.

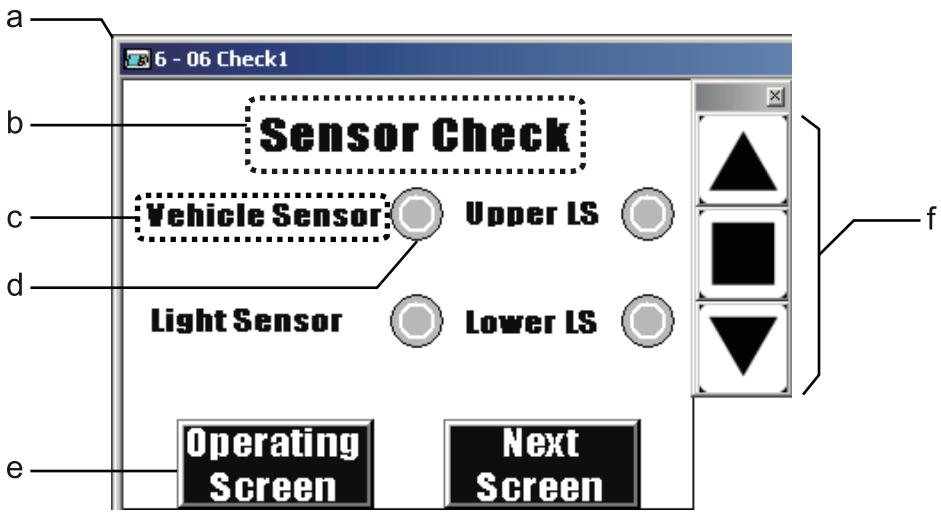
The [05 Fully Open] screen is now complete.

■[06 Check1]

The system shows the [06 Check1] screen when a user pushes the maintenance button on the [01 Waiting] screen.
Set these functions:

- The system lights the related lamp objects when the vehicle sensor, light sensor, upper LS, or lower LS turns ON.
- Buttons are used to switch to the [01 Waiting] and [07 Check2] screens.
- Each Function switch operates [Open], [Stop], or [Close] shutter action.

The completed screen shows below.



a Screen
b Fixed Object (Text)
c Fixed Object (Text)
d Lamp (N-state)
e Button (Change Screen)
f Function Switches

●Screen

1. **Select [Screen] - [New] from the main menu.**
   You will see the [New Screen] dialog box.
2. **Click [OK].**
   You will see a new screen in the workspace. [6-Screen_6] will be the title of the workspace.
3. **Click the [Screen Name] input field. Change the value to "06 Check1".**
   The title of the workspace will be [6-06 Check1].

●Fixed Object (Text)

Create the "Sensor Check" and "Vehicle Sensor" text objects.
For details, refer to *[01 Waiting]*.

Use these settings.

Sensor Check

Item	Setting
Label	Sensor Check*
Label Size	24
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Center] from the toolbar.

Vehicle Sensor

Item	Setting
Label	Vehicle Sensor*
Label Size	16
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Center] from the toolbar.

●Lamp (N-State)

1. **Select [Objects] - [Lamp] - [N-State Lamp] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].
2. **Move the cursor.**
   A lamp frame will show.
3. **Set lamp properties.**

Item	Setting
Read Address	SERIALA:0.03
Style	Round

4. **Click**  **.**
   You will see the lamp of the ON status.
5. **Set lamp properties.**

Item	Setting
Foreground Color	(Black)RGB(16,16,16)

●Button (Change Screen)

This button is used to switch to the [01 Waiting] screen.

1. **Select [Objects] - [Button] - [Change Screen] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].

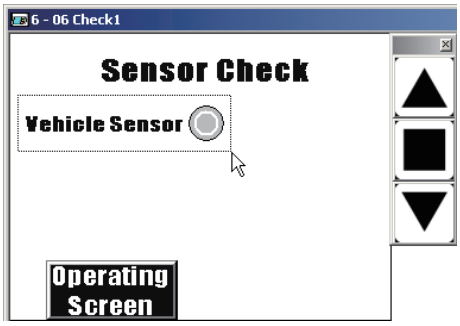
2. **Move the cursor.**
   A button frame will show.
3. **Set button properties.**

Item	Setting
Label	Operating [line break] Screen
Label Size	20
Label Color	(White)RGB(255,255,255)
Foreground Color	(Black)RGB(16,16,16)
Change Screen	1-01 Waiting

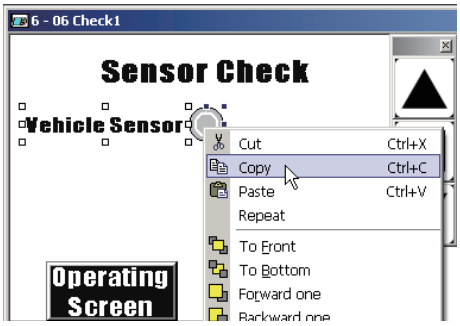
●Other Objects

Create remaining objects by copy function.

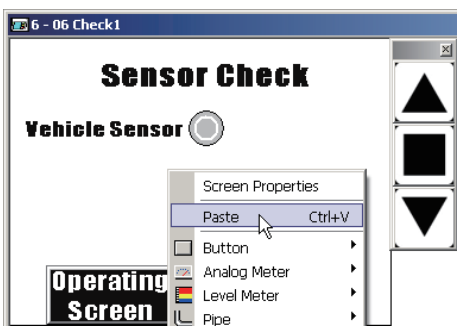
1. **Select the text object and the lamp object.**



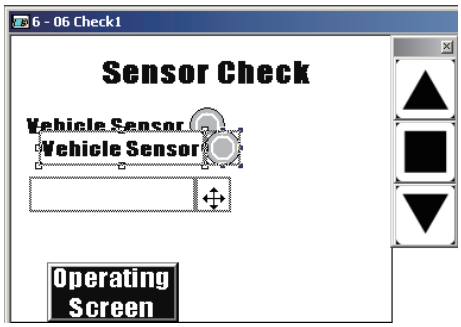
2. **Right-click the objects, and select [Copy] from the pop-up menu.**



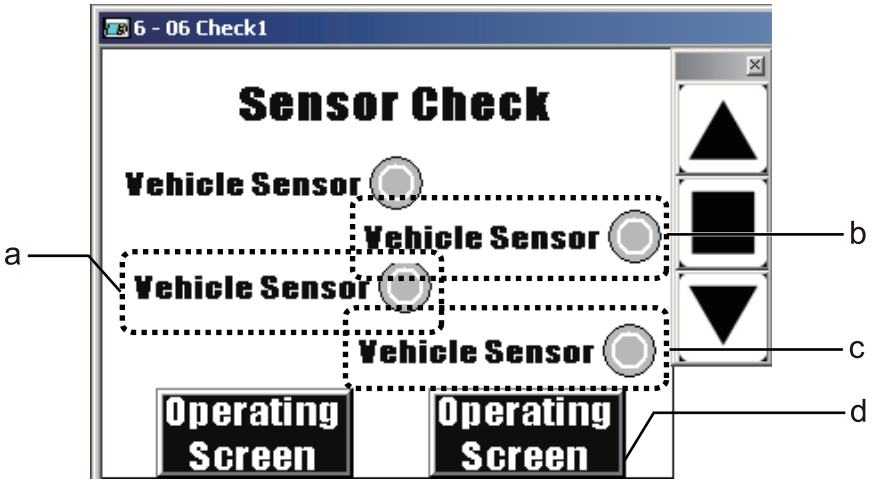
3. **Right-click again, and select [Paste] from the pop-up menu.**
   You will get the copy of the selected objects.



4. **Move the copied objects to adjust their position.**



5. **Repeat steps 2 to 4 to create the remaining objects.**
6. **Change the properties of the copied objects.**



Change the properties as below.

a

Object	Item	Setting
Fixed Object (Text)	Label	Light Sensor
Lamp (N-state)	Read Address	SERIALA:00000.04

b

Object	Item	Setting
Fixed Object (Text)	Label	Upper LS
Lamp (N-state)	Read Address	SERIALA:00000.05

c

Object	Item	Setting
Fixed Object (Text)	Label	Lower LS
Lamp (N-state)	Read Address	SERIALA:00000.06

d

Object	Item	Setting
Button (Change Screen)	Label	Next [line break] Screen
	Change Screen	7-07 Check2*

* Set this property after creating the [07 Check2] and [08 Check3] screens.

●Function Switches

Set the function switches.
For details, refer to *[01 Waiting]*. Setting details are the same.

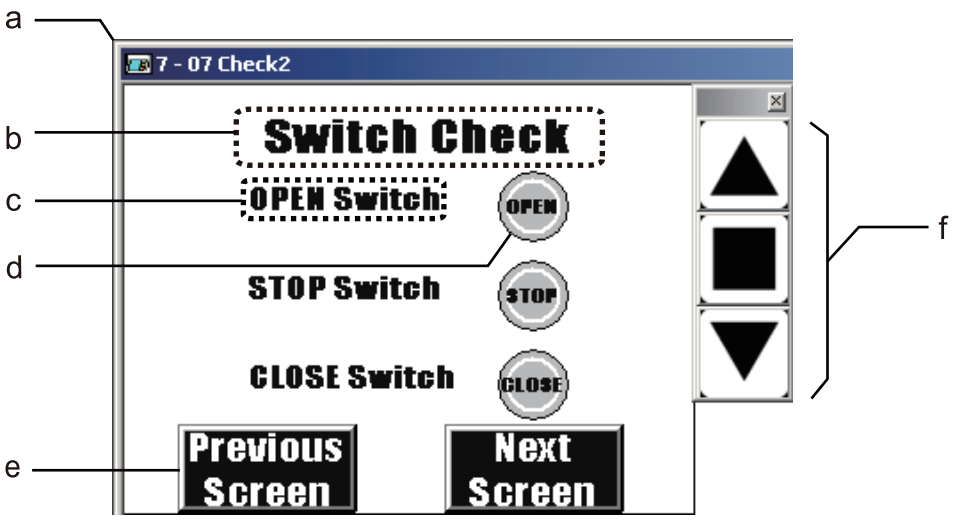
The [06 Check1] screen is now complete.

■[07 Check2]

The system shows the [07 Check2] screen when a user pushes the screen switching button on the [06 Check1] or on the [08 Check3] screen.
Set these functions:

- For check operation, the system lights the related lamp objects, when the [OPEN], [STOP], or [CLOSE] function switch turns ON.
- Buttons are used to switch to the [06 Check1] and [07 Check2] screens.
- Each Function switch operates [Open], [Stop], or [Close] shutter action.

The completed screen shows below.



a Screen
b Fixed Object (Text)
c Fixed Object (Text)
d Lamp (N-state)
e Button (Change Screen)
f Function Switches

●Screen

1. **Select [Screen] - [New] from the main menu.**
   You will see the [New Screen] dialog box.
2. **Click [OK].**
   You will see a new screen in the workspace. [7-Screen_7] will be the title of the workspace.
3. **Click the [Screen Name] input field. Change the value to "07 Check2".**
   The title of the workspace will be [7-07 Check2].

●Fixed Object (Text)

Create the "Switch Check" and "OPEN Switch" text objects.
For details, refer to *[01 Waiting]*.

Use these settings.

Switch Check

Item	Setting
Label	Switch Check*
Label Size	24
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Center] from the toolbar.

OPEN Switch

Item	Setting
Label	OPEN Switch*
Label Size	16
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Center] from the toolbar.

●Lamp (N-State)

1. **Select [Objects] - [Lamp] - [N-State Lamp] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].
2. **Move the cursor.**
   A lamp frame will show.
3. **Set lamp properties.**

Item	Setting
Read Address	Internal Memory:$0.00
Label	OPEN*
Label Size	10
Style	Round

* Select [Bold] from the toolbar.

4. **Click**  **.**
   You will see the lamp of the ON status.
5. **Set lamp properties.**

Item	Setting
Label	OPEN*
Label Size	10
Label Color	(White)RGB(255,255,255)
Foreground Color	(Black)RGB(16,16,16)

* Select [Bold] from the toolbar.

●Button (Change Screen)

This button is used to switch to the [06 Check1] screen.

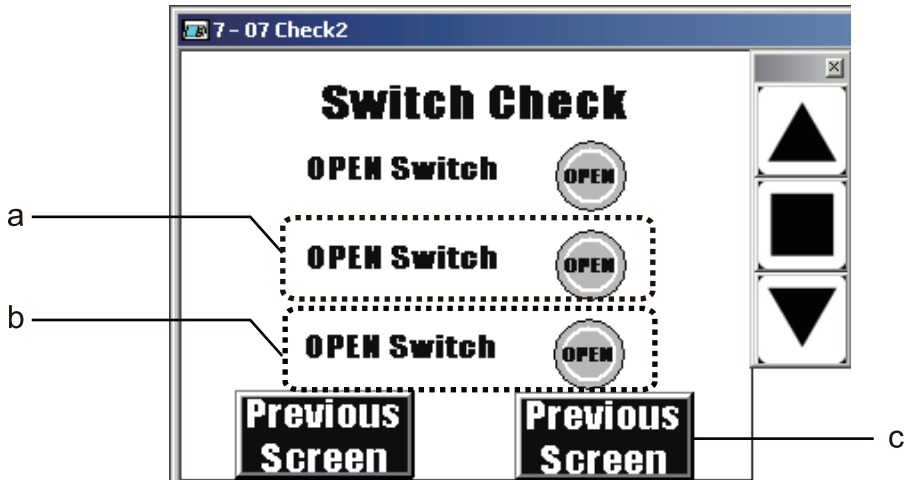
1. **Select [Objects] - [Button] - [Change Screen] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].
2. **Move the cursor.**
   A button frame will show.
3. **Set button properties.**

Item	Setting
Label	Previous [line break] Screen*
Label Size	20
Label Color	(White)RGB(255,255,255)
Foreground Color	(Black)RGB(16,16,16)
Change Screen	6-06 Check1

* Select [Bold] from the toolbar.

●Other Objects

Create remaining objects by copy function.
For details, refer to *[06 Check1]*.



Change the properties as below.

a

Object	Item	Setting
Fixed Object (Text)	Label	STOP Switch
Lamp (N-state)	Read Address	Internal Memory:$0.01
	Label	STOP
	Label	STOP*

* Setting for the ON status.

b

Object	Item	Setting
Fixed Object (Text)	Label	CLOSE Switch
Lamp (N-state)	Read Address	Internal Memory:$0.02
	Label	CLOSE
	Label	CLOSE*

* Setting for the ON status.

c

Object	Item	Setting
Button (Change Screen)	Label	Next [line break] Screen
	Change Screen	8-08 Check3*

* Set this property after creating the [08 Check3] screen.

●Function Switches

Set the function switches.
For details, refer to *[01 Waiting]*.

See below for the details.

▲

Item (Function)	Setting
Function	Momentary
Write Address	Internal Memory:$0.00
Read Address	Internal Memory:$0.00

■

Item (Function)	Setting
Function	Momentary
Write Address	Internal Memory:$0.00
Read Address	Internal Memory:$0.00

▼

Item (Function)	Setting
Function	Momentary
Write Address	Internal Memory:$0.00
Read Address	Internal Memory:$0.00

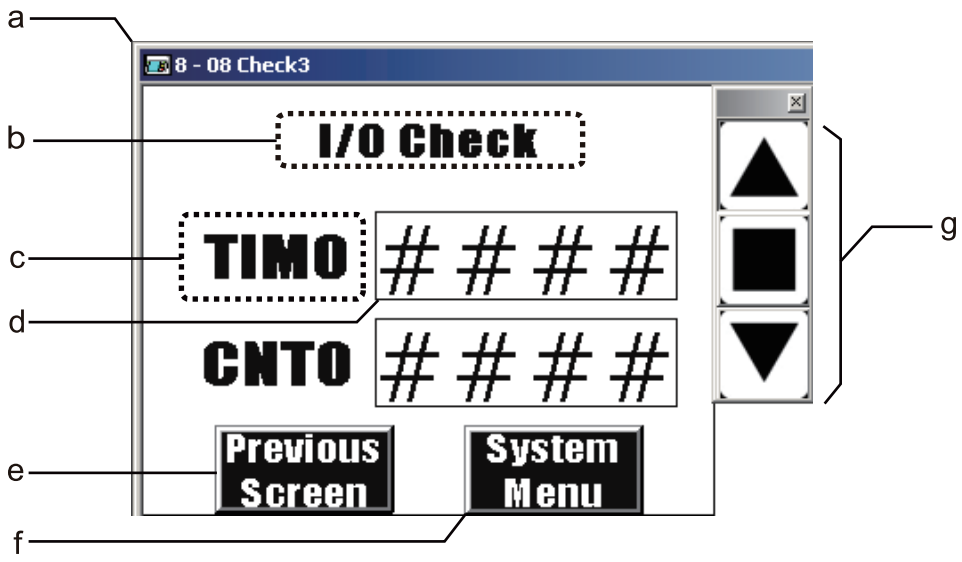
The [07 Check2] screen is now complete.

■[08 Check3]

The system shows the [08 Check3] screen, when a user pushes the screen switching button on the [07 Check2] screen.
Set these functions:

- The screen displays the present [TIM0000] and [CNT0000] values that the ladder program uses.
- Buttons are used to switch to the [07 Check2] screen and the system menu.
- Each Function switch operates [Open], [Stop], or [Close] shutter action.

The completed screen shows below.



a Screen
b Fixed Object (Text)
c Fixed Object (Text)
d Input (Numeric Input)
e Button (Change Screen)
f Button (System Menu)
g Function Switches

●Screen

1. **Select [Screen] - [New] from the main menu.**
   You will see the [New Screen] dialog box.
2. **Click [OK].**
   You will see a new screen in the workspace. [8-Screen_8] will be the title of the workspace.
3. **Click the [Screen Name] input field. Change the value to "08 Check3".**
   The title of the workspace will be [8-08 Check3].

●Fixed Object (Text)

Create the "I/O Check" and "TIM0" text objects.
For details, refer to *[01 Waiting]*.

Use these settings.

I/O Check

Item	Setting
Label	I/O Check*
Label Size	24
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Center] from the toolbar.

TIM0

Item	Setting
Label	TIM0*
Label Size	32
Label Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)

* Select [Bold] and [Center] from the toolbar.

●Input (Numeric Input)

1. **Select [Objects] - [Input] - [Numeric Input] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].
2. **Move the cursor.**
   An input frame will show.
3. **Set the numeric input properties.**

Item	Setting
Write Address	SERIALA:TIM00000
Read Address	SERIALA:TIM00000
Label Size	40
Border Color	(Black)RGB(16,16,16)
Foreground Color	(White)RGB(255,255,255)
Style	Standard
Leading Zero	Yes
Detail	[Input Value] dialog box (Data Format: BCD)

●Button (Change Screen)

This button is used to switch to the [07 Check2] screen.

1. **Select [Objects] - [Button] - [Change Screen] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].
2. **Move the cursor.**
   A button frame will show.
3. **Set button properties.**

Item	Setting
Label	Previous [line break] Screen
Label Size	20
Label Color	(White)RGB(255,255,255)
Foreground Color	(Black)RGB(16,16,16)
Change Screen	7-07 Check2

●Button (System Menu)

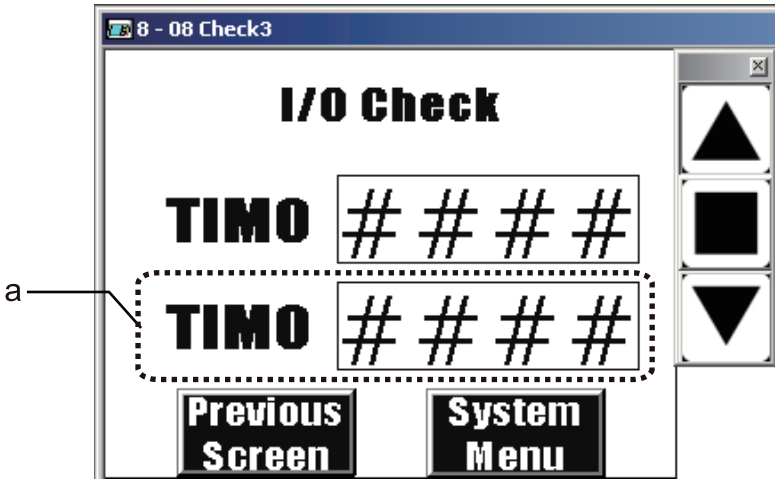
This button is used to switch to the system menu.

1. **Select [Objects] - [Button] - [System Menu] from the main menu. Move the mouse cursor to the workspace.**
   The cursor will change shape to [+].
2. **Move the cursor.**
   A button frame will show.
3. **Set button properties.**

Item	Setting
Label	System [line break] Menu
Label Size	20
Label Color	(White)RGB(255,255,255)
Foreground Color	(Black)RGB(16,16,16)

●Other Objects

Create remaining objects by copy function.
For details, refer to *[06 Check1]*.



Change the properties as below.

a

Object	Item	Setting
Fixed Object (Text)	Label	CNT0
Input (Numeric Input)	Write Address	SERIALA:CNT00000
	Read Address	SERIALA:CNT00000

●Function Switches

Set the function switches.
For details, refer to *[01 Waiting]*. Setting details are the same.

The [08 Check3] screen is now complete.

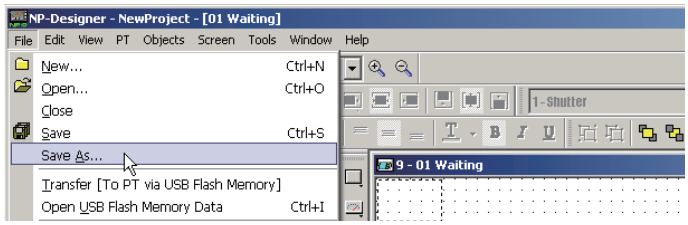
All screens used for the shutter control system are now complete.

4-5 Saving and Loading Projects

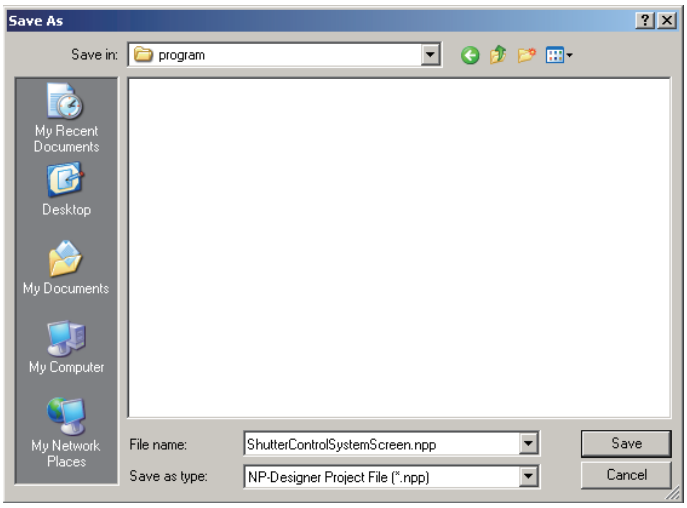
This section tells how to save and open the data that you create. This section also gives the project simulation and the PLC programming console function.

●Saving Projects

1. **Select [File] - [Save As] from the main menu.**
   You will see the [Save As] dialog box.

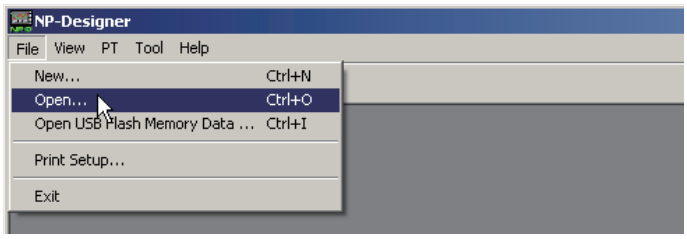


2. **Specify the [Save in] location, and enter a file name. Click [Save].**
   You will save the NP-Designer project file.

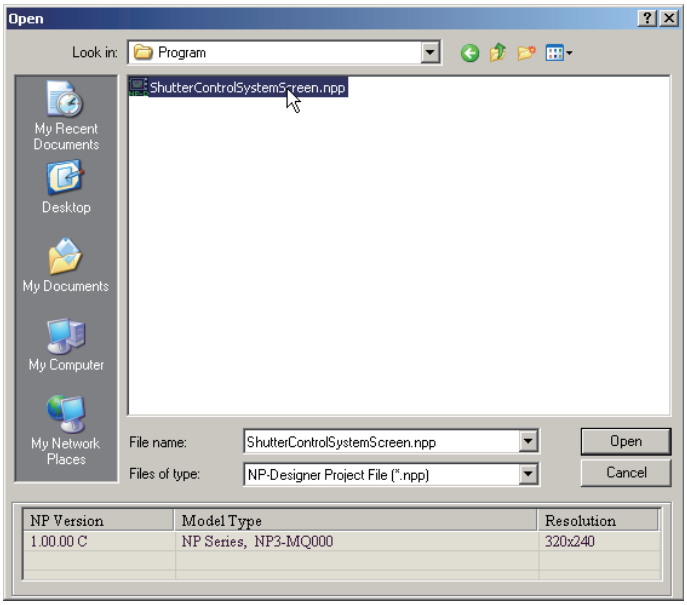


●Opening Projects

1. **Select [File] - [Open] from the main menu.**
   You will see the [Open file] dialog box.



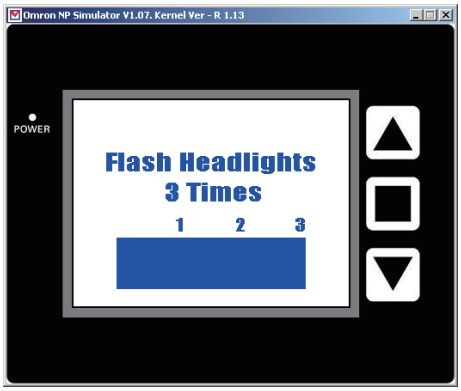
2. **Specify the [Look in] location, and select a file name. Click [Open].**
The NP-Designer project file will open.



●Simulation Function

You can make an operation test of the screens by the simulation function. It is not necessary to connect NP to CP1L.

1. **Select [Tools] - [Test] from the main menu.**
Simulation will start.



For details, refer to *NP Series User's Manual* (V096).

●Programming Console Function

From the NP screen, you can monitor and change CP1L operation.
Select the programming console function from the NP system menu.
For details, refer to *Programming Consoles Operation Manual* (W341).

SECTION 5

Operation

This section tells how to transfer the screen data to NP and start operation.

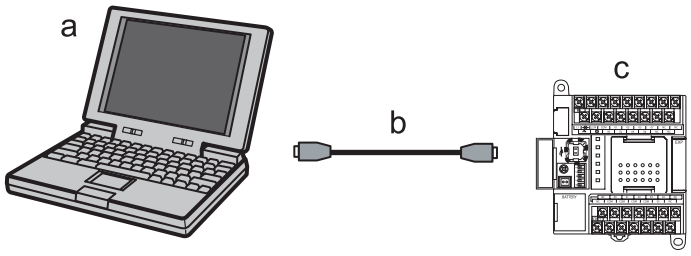
5 Operation

5-1 Preparation

This section tells how to start operation on the host side (CP1L), then prepare to transfer the screen data to NP.

■ Connecting CP1L and PC

Connect CP1L to a PC with a USB cable.



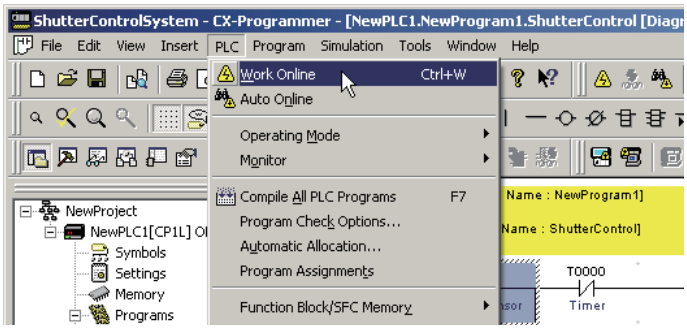
a PC
b USB cable
c CP1L

Note When you connect CP1L to a PC for the first time, you must install the USB driver on the PC. For details, refer to *SYSMAC CP Series CP1L CPU Unit User's Manual* (W462).

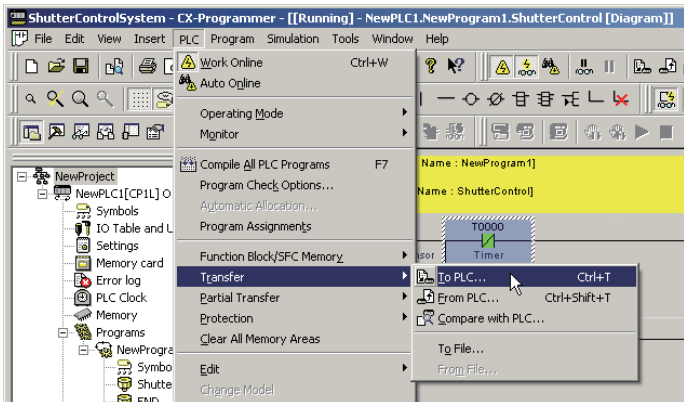
■ Operating CP1L

Transfer the program onto CP1L, and start CP1L operation.
Use CX-Programmer to create CP1L programs.

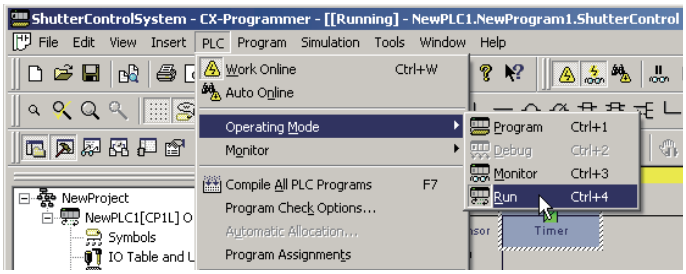
1. **Start CX-Programmer, and open the program.**
2. **In CX-Programmer, select [PLC] - [Work Online] from the main menu.**



3. **Select [PLC] - [Transfer] - [To PLC] from the main menu.**



4. **Follow the onscreen instructions to transfer the data.**
5. **Select [PLC] - [Operating Mode] - [Run] from the main menu.**
   CP1L operation will start.

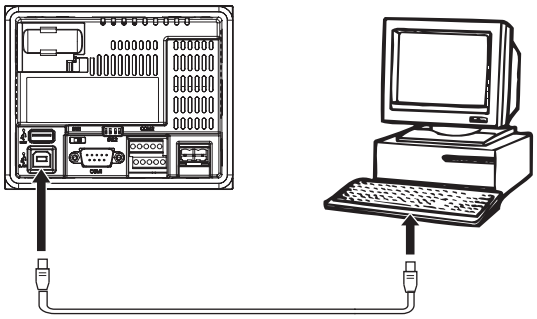


Note CX-Programmer is a programming tool (software) to create ladder programs for CP1L.
It can also set up and operate CP1L. You can debug programs, and monitor addresses and values. Through networks, you can also do remote programs and monitor.
For details, refer to *SYSMAC CX-Programmer Operation Manual* (W446).

■Connecting the NP and PC

Connect the NP and a PC by a USB cable to transfer the project data that NP-Designer creates.

Note
- Use a standard USB cable.
- Use a USB cable with a length of less than 5m.

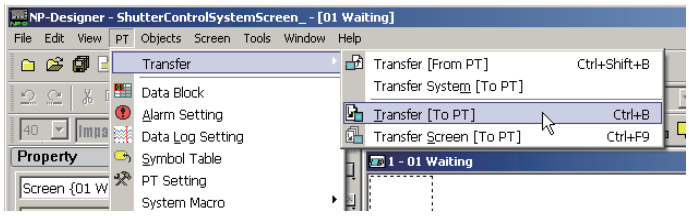


Note When you connect NP to a PC for the first time, you must install the USB driver on the PC. The USB driver is automatically installed when NP-Designer is started for the first time on the PC. For details, refer to *NP Series User's Manual* (V096).

5-2 Operating NP

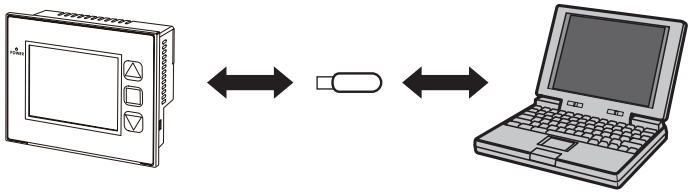
This section tells how to transfer the NP-Designer project data to the NP.

1. **Connect the NP and a PC.**
2. **Start NP-Designer, and open the project data.**
3. **Select [PT] - [Transfer] -[Transfer [To PT]] from the main menu.**
   When the data transfer is complete, NP operation will start.



●Data Transfer by USB flash Memory

You can transfer the NP-Designer project data to the NP by a USB flash memory. This enables you to transfer the data without a connection cable.



To use a USB flash memory, do the below:

- Do the data transfer from the NP system menu.
- Do a format of the USB flash memory as FAT32 before use.

For details, refer to *NP Series User's Manual* (V096).

Index

OMRON Corporation
Industrial Automation Company
Control Devices Division H.Q.
HMI Devices Department
Shiokoji Horikawa, Shimogyo-ku,
Kyoto, 600-8530 Japan
Tel: (81) 75-344-7145/Fax: (81) 75-344-7149

2-2-1 Nishikusatsu, Kusatsu-shi,
Shiga, 525-0035 Japan
Tel: (81) 77-565-5225/Fax: (81) 77-565-5567

Regional Headquarters
OMRON EUROPE B.V.
Wegalaan 67-69-2132 JD Hoofddorp
The Netherlands
Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ELECTRONICS LLC
One Commerce Drive Schaumburg,
IL 60173-5302 U.S.A.
Tel: (1) 847-843-7900/Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
No. 438A Alexandra Road # 05-05/08 (Lobby 2),
Alexandra Technopark, Singapore 119967
Tel: (65) 6835-3011/Fax: (65) 6835-2711

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

OMRON Industrial Automation Global: **www.ia.omron.com**

Authorized Distributor:

Printed in Japan
Cat. No. V095-E1-02 0708