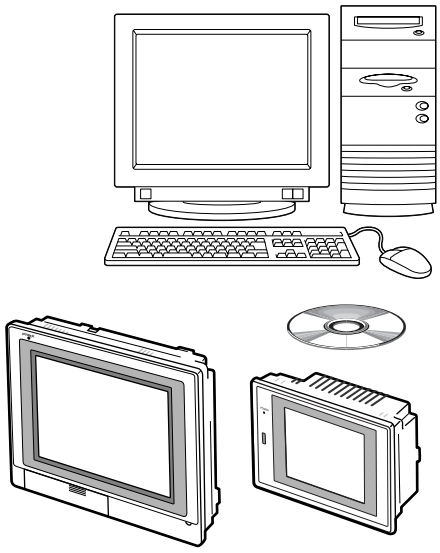
No. CP-SP-1088E

SMART TERMINAL EST-Z Series

User's Manual

Application Preparation



Thank you for purchasing the AP Editor for Smart Terminal EST-Z Series.
This manual describes the smart objects used when using AP Editor to prepare application data for the EST-Z Series.
This manual should be read by those who use AP Editor to prepare EST-Z Series screens and those in charge of producing applications that determine operation.

Yamatake Corporation

RESTRICTIONS ON USE

When using this product in applications that require particular safety or when using this product in important facilities, pay attention to the safety of the overall system and equipment. For example, install fail-safe mechanisms, carry out redundancy checks and periodic inspections, and adopt other appropriate safety measures as required.

REQUEST

Ensure that this User's Manual is handed over to the user before the product is used.

Copying or duplicating this User's Manual in part or in whole is forbidden. The information and specifications in this User's Manual are subject to change without notice.

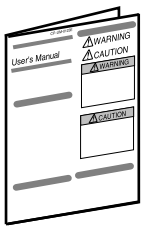
Considerable effort has been made to ensure that this User's Manual is free from inaccuracies and omissions.
If you should find any inaccuracies or omissions, please contact Yamatake Corporation.

In no event is Yamatake Corporation liable to anyone for any indirect, special or consequential damages as a result of using this product.

The Role of This Manual

Outline of EST-Z Series Manuals

The below 9 manuals are provided to cover a range of EST-Z Series-related topics. Use the manual that best fits your application. In the event such a manual is not available, contact us or your local EST-Z Series dealer.

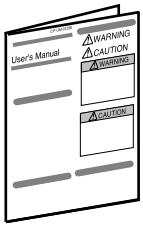


Smart Terminal EST240Z User's Manual Manual No.CP-UM-5145E

This manual is packaged with the EST240Z body.

This manual should be read by those who produce units that use the Smart Terminal.

This manual contains safety precautions when using the Smart Terminal, installation methods, and descriptions for wiring the power supply and signal lines.

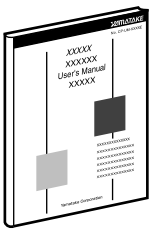


Smart Terminal EST555Z User's Manual Manual No.CP-UM-5229E

This manual is packaged with the EST555Z body.

This manual should be read by those who produce units that use the Smart Terminal.

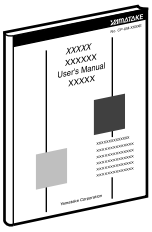
This manual contains safety precautions when using the Smart Terminal, installation methods, and descriptions for wiring the power supply and signal lines.



Smart Terminal EST240Z User's Manual Installation Manual No. CP-SP-1065E

This manual should be read by those who use the EST240Z to design units and those in charge of maintenance.

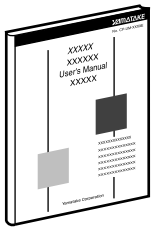
This manual describes safety cautions when using the Smart Terminal, how to install for incorporating into units, wiring methods, maintenance and inspection, troubleshooting, and hardware specifications.



Smart Terminal EST555Z User's Manual Installation Manual No. CP-SP-1103E

This manual should be read by those who use the EST555Z to design units and those in charge of maintenance.

This manual describes safety cautions when using the Smart Terminal, how to install for incorporating into units, wiring methods, maintenance and inspection, troubleshooting, and hardware specifications.

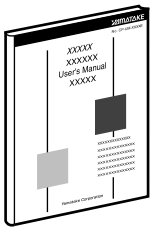


Smart Terminal EST-Z Series User's Manual
Application Preparation **Manual No. CP-SP-1088E**

This manual.

This manual should be read by those who design screens that are displayed on the EST-Z Series and operations.

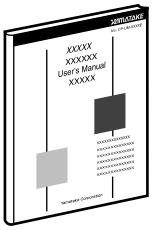
This manual describes the environment of the personal computer on which AP Editor can be used, installation methods, startup, system settings, file operations, printing, how to paste smart objects, and other AP Editor operations.



Smart Terminal EST-Z Series User's Manual
Smart Object Library **Manual No. CP-SP-1089E**

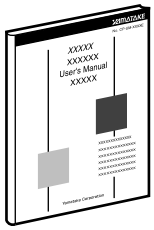
Graphic elements that have functions for displaying on the EST-Z Series are called “smart objects.”

This manual describes the concept of smart objects and the functions of each smart object.



Smart Terminal EST-Z Series User's Manual
Communications Connection **Manual No. CP-SP-1090E**

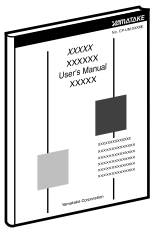
This manual should be read by those who combine the EST-Z Series with PLCs made by other manufacturers and dedicated board computers to build systems. This manual describes how to connect to PLCs, address maps that correspond to PLCs, how to paste smart objects, drawing, and other operations and settings required for making applications using PLCs.



Smart Terminal EST240Z User's Manual
DMC10 Package **Manual No. CP-SP-1091E**

This package is used when constructing systems by connecting the EST240Z to Yamatake’s Distributed Multi-channel Controller DMC10.

This manual describes the specifications of the software package, how to use the package, how to install the software, and how to operate the software.



Smart Terminal EST555Z User's Manual
DMC10 Package **Manual No. CP-SP-1124E**

This package is used when constructing systems by connecting the EST555Z to Yamatake’s Distributed Multi-channel Controller DMC10.

This manual describes the specifications of the software package, how to use the package, how to install the software, and how to operate the software.

Organization of This User's Manual

This manual is organized as follows:

Chapter 1. AP EDITOR FEATURES

This chapter describes the features of AP Editor functions and the system configuration required for creating EST application data.

Chapter 2. AP EDITOR INSTALLATION

This chapter describes the operating environment for AP Editor, and how to install and uninstall AP Editor.

Chapter 3. BASIC AP EDITOR OPERATIONS

This chapter describes how to start up and exit AP Editor, basic screens, and the basic operations when creating applications on AP Editor.

Chapter 4. CREATING APPLICATION DATA

This chapter describes how to make application data using the sample data provided.

Chapter 5. TRANSFERRING APPLICATION DATA

This chapter describes how to transfer application data you have created on AP Editor to EST, and how to transfer application data from EST.

Chapter 6. EDITING APPLICATION DATA

This chapter describes in detail each of the items in editing of application data.

Chapter 7. PRINTING APPLICATION DATA

This chapter describes how to output application data to printers for printing and how to output application data to file.

Chapter 8. USING THE DEDICATED PACKAGE

This chapter describes an outline of the dedicated package and how to use the dedicated package.

Chapter 9. ERROR MESSAGES & REMEDIED ACTIONS

This chapter describes the content of error messages and how to remedy errors.

Appendices

Appendices describe how to confirm and update the IPL version, how to operate keyboards, the structure of application data and AP Editor file, and lists of related smart objects.

Contents

Chapter 5. TRANSFERRING APPLICATION DATA

Chapter 6. EDITING APPLICATION DATA

Appendices

Conventions Used in This Manual

The following conventions are used in this manual.

Handling Precautions

: Handling Precautions indicate items that the user should pay attention to when handling the **EST-Z Series.**

Note

: Notes indicate useful information that the user might benefit by knowing.

(1), (2), (3) : Circled numbers indicate steps in a sequence or indicate corresponding parts in an explanation.

[Edit], [OK] : Indicates a button or message displayed on the PC's screen.

[Shift] key, [↑] key : Indicates a key on the PC's keyboard.

[Shift] key + [f•5] key : Indicates that the [f•5] key is pressed with the [Shift] key held down.

Chapter 1. AP EDITOR FEATURES

1 - 1 System Configuration and Outline

This chapter describes the features and basic outline of the AP Editor and the required system configuration.

■ About AP Editor

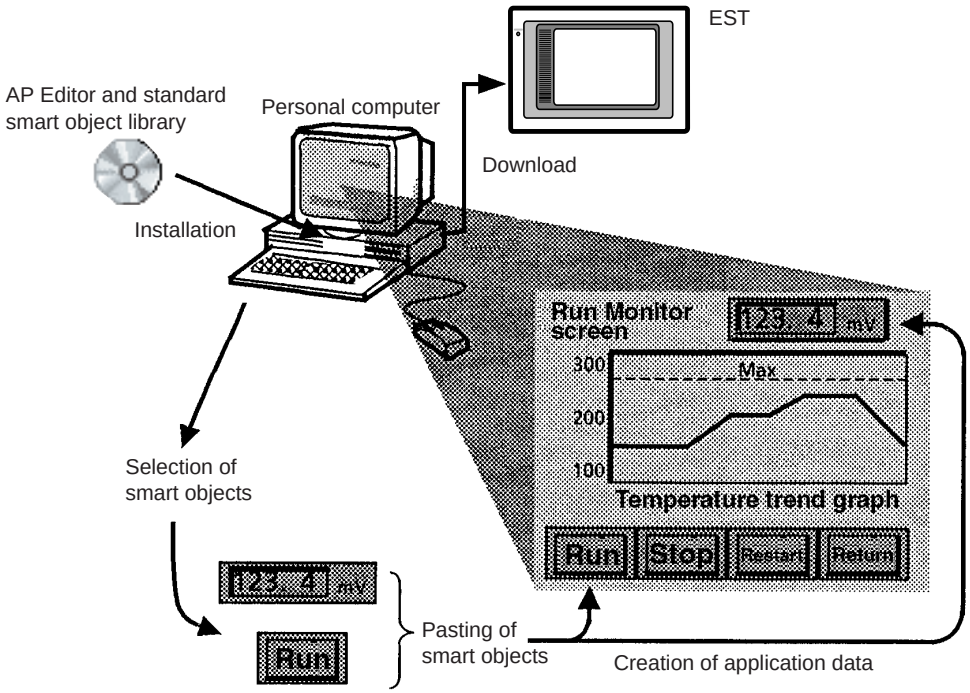
AP Editor runs on Microsoft ® Windows ® and is used to create applications for the EST-Z Series (here in after, simply called "EST") that.
"Application data" is the screen data, prepased to match your particular requirements, that runs on the EST.
Application data can be created by simple mouse operation on a PC.

■ AP Editor Features

- Windows-compliant editing operation
  Various functions can be used simply by selecting the function with the mouse from pull-down menus or icons.
  Shapes can also be drawn on screens by selecting the basic shape (e.g. straight line, rectangle, circle) with the mouse, then transforming it to create the desired shape.
- Wide variety of smart objects
  Basic smart objects are pre-registered as smart objects. All you need to do is to select a smart object such as a lamp or switch, set its functions and then position the smart object.
- Intuitively simple modification of settings
  When modifying, for example, operation configuration properties are displayed by double-clicking the smart object with the mouse. Then, all you have to do is to change the required items.
- Reading of image data
  Photographs, logos and image data can be read in and pasted onto screens.
  Bitmap and JPEG image file formats are supported.
- A dedicated package can also be included and used with the application data.
  Or the dedicated package can also be downloaded stand-alone.

■ Environment for Creating Application Data with AP Editor

The figure below shows the system configuration for creating application data.



1 - 2 Model Numbers

The model No. of EST software is as follows:

Model No.	Description
ESTX240SWWJC000	AP editor for Windows 95, 98, Me CD
ESTX220D1AE3001	Only for EST240Zs Package for DMC10, floppy disk
ESTX220D5AE3001	Only for EST555Zs Package for DMC10, floppy disk

Chapter 2. AP EDITOR INSTALLATION

2 - 1 Preparation

The AP Editor must be installed on the hard disk.
Before you install AP Editor, make sure that the PC you are using satisfies the following operating environment.

PC	PC/AT compatible machine
CPU	Pentium 166MHz or faster
OS	Windows 95/98/Me *1
Display	SVGA (800 x 600) or higher resolution
Memory	32Mbytes or more
Hard disk drive	At least 100Mbytes of free space
CD-ROM drive	Required
Mouse	Required

*1 : Windows Me is applied to the AP Editor version 3.0.00 or later.

A printer is also required if the printing out of application data is necessary.

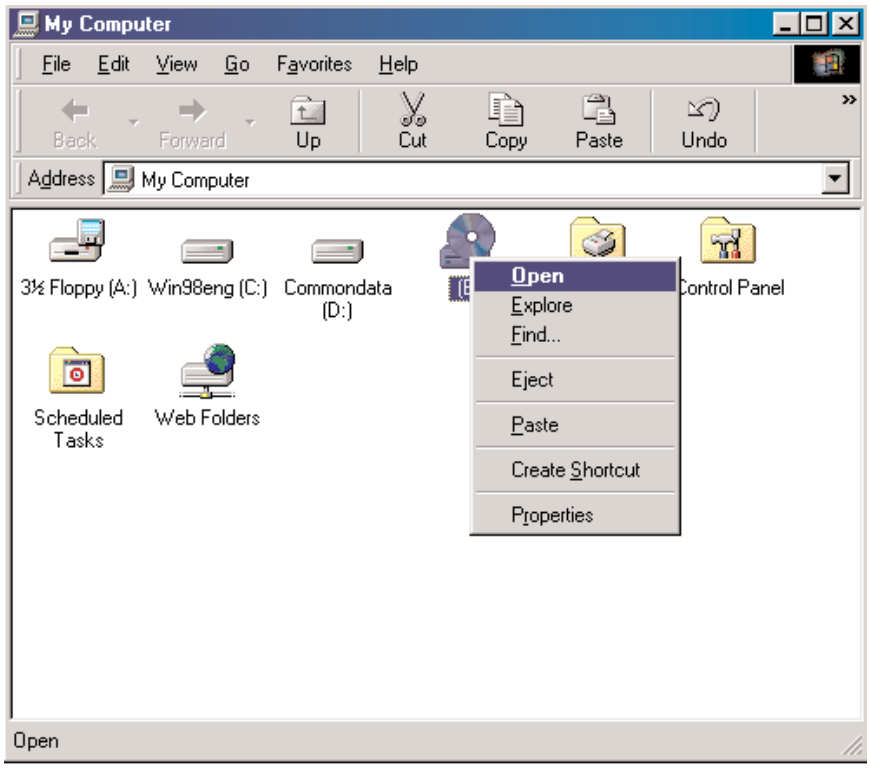
Handling Precautions

The AP Editor version 3.1.00 or later can be used for the EST555Z.

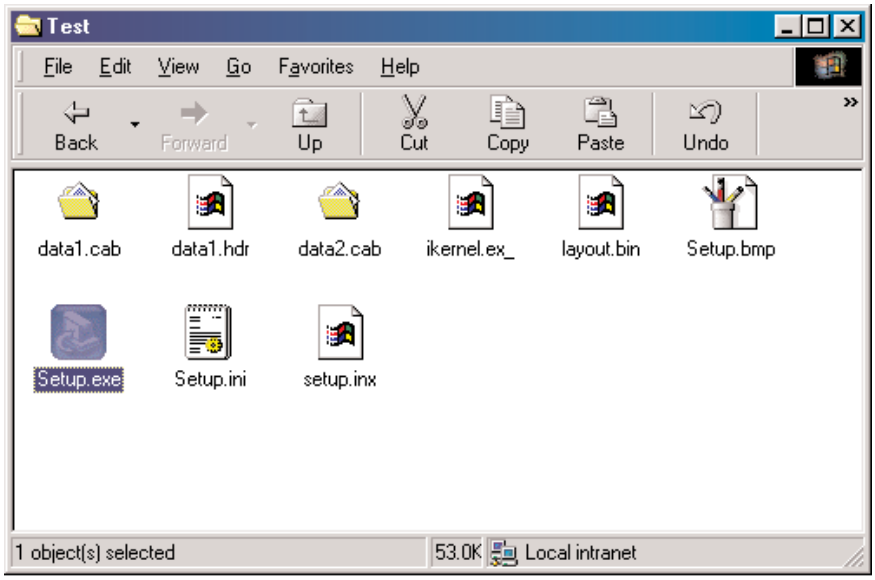
2 - 2 AP Editor Installation

This section describes how to install the AP Editor on your PC.
Before you install AP Editor, make sure that the PC you are using satisfies the required operating environment.

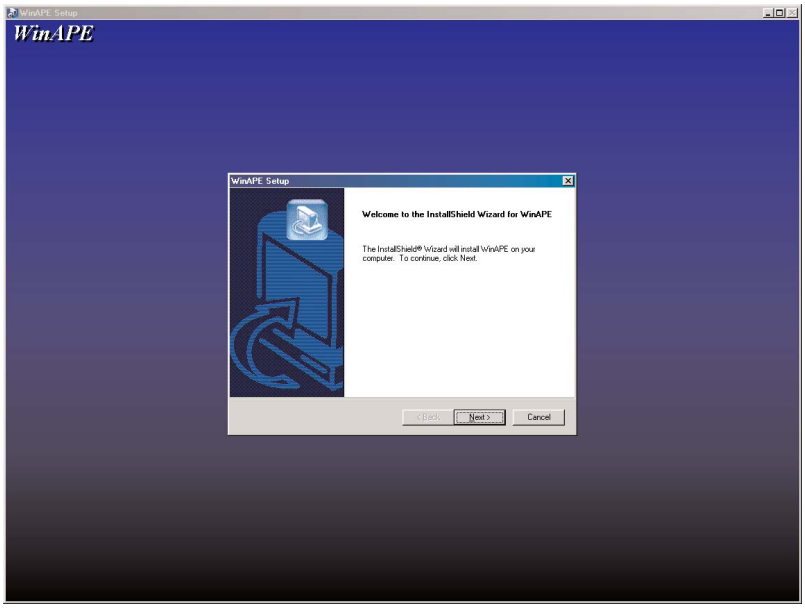
1. Insert the AP Editor CD-ROM into the CD-ROM drive, and double-click [My Computer] to open.
2. Move the mouse cursor to the icon for the CD-ROM drive, click with the right mouse button, and select [Open] from the pull-down menu.



3. The contents of the CD-ROM are displayed. Double-click Setup.exe on the CD-ROM.



4. The setup screen is displayed.



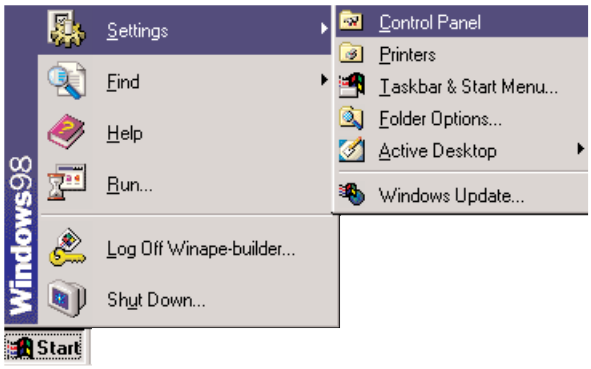
During the installation process, the screen for entering the serial No. is displayed. The serial No. is printed on the label affixed to the CD-ROM case. Enter the serial number, your name and your company's name. AP Editor cannot be installed unless you enter all of these items.

5. To continue the setup from here on, follow the on-screen instructions.

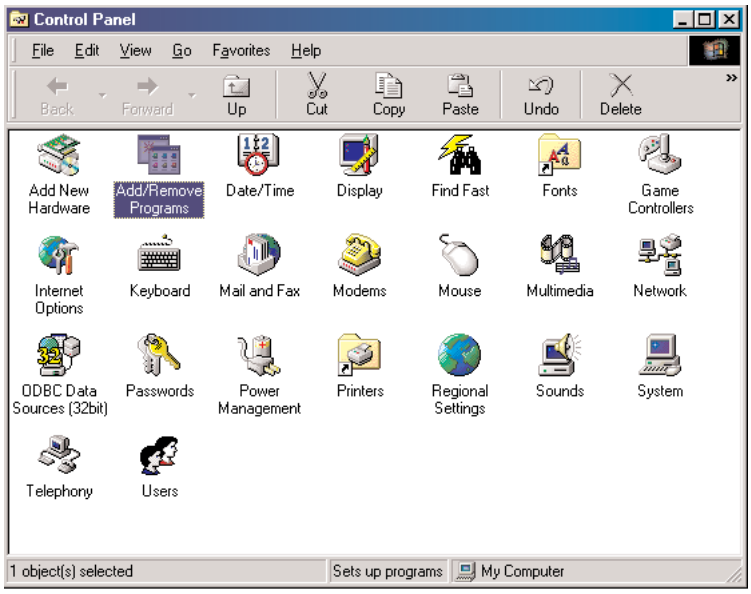
2 - 3 Uninstalling AP Editor

This section describes how to uninstall the AP Editor from a PC.

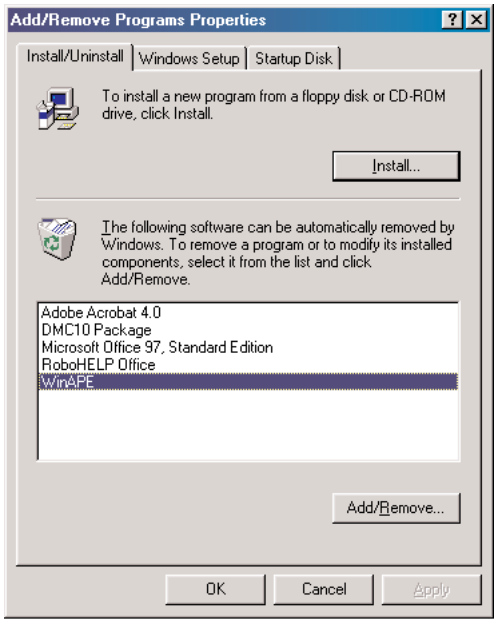
1. Select [Settings]→[Control Panel] from the [Start] menu.



2. The Control Panel is displayed. Double-click [Add/Remove Programs].



3. The Properties window is displayed. Select [WinAPE], and click [Add/Remove...].



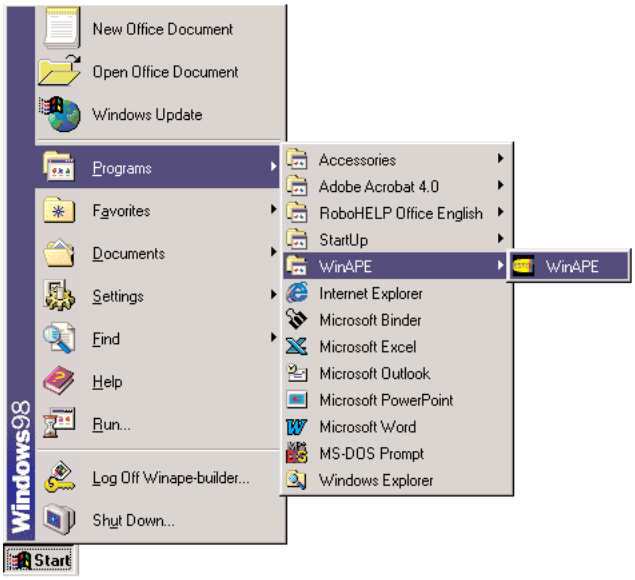
Chapter 3. BASIC AP EDITOR OPERATIONS

3 - 1 Starting Up and Exiting AP Editor

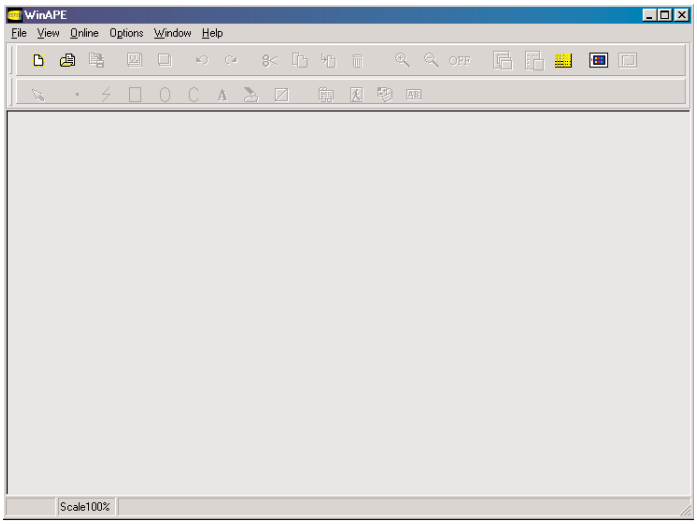
This section describes how to start up the AP Editor.

■ How to Start Up AP Editor

To start up the AP Editor, select WinAPE from the [Start] menu→ [Programs] in Windows and click.



The following screen is displayed when AP Editor is started up:



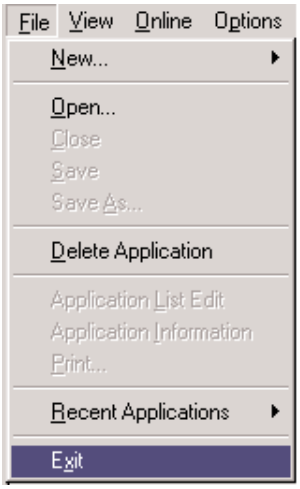
Note

Up to two AP Editors can be started up at the same time. This is useful for copying and pasting data between applications.
Pay attention to the following points when two AP Editors are started up simultaneously:

- Do not use the same communications port for both AP Editors simultaneously.
- Do not output to the printer simultaneously.
- A large amount of memory is used when two AP Editors are started up simultaneously. So, quit other applications before starting up the two AP Editors.

■ How to Exit AP Editor

To exit AP Editor, select [File]→[Exit].



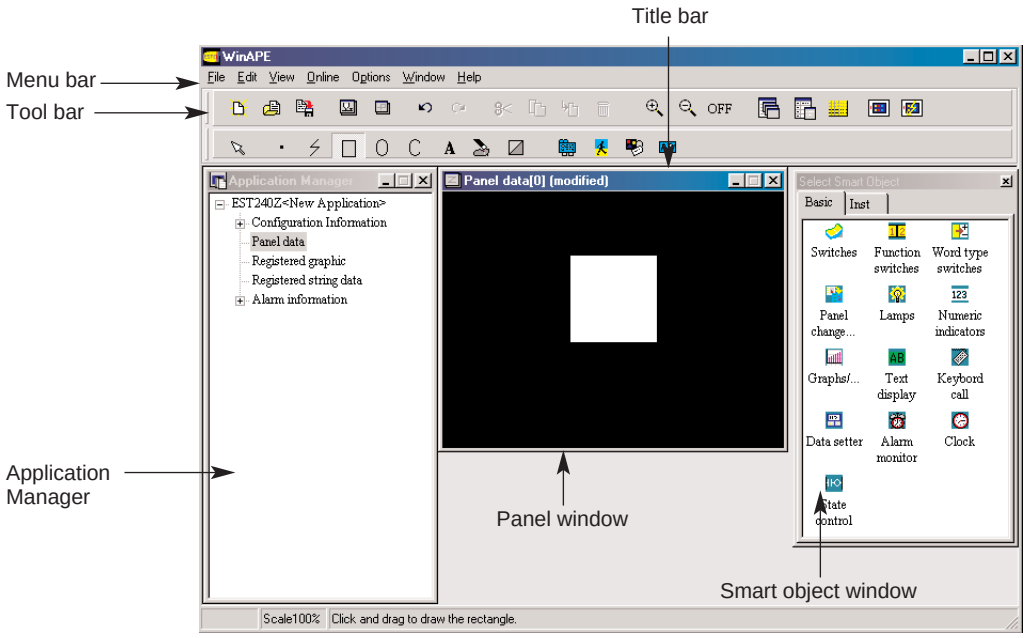
3 - 2 About the Main Screen

This section describes the basic screen configuration of AP Editor and AP Editor menus.

■ Main Screen

The basic screen or “main screen” of AP Editor is shown below.
Applications are created in this main screen shown below.
A menu bar is located at the top of the screen, and clicking an item on the menu bar displays a pull-down menu for that item. A tool bar containing various icons is located under the menu bar. You can perform various operations by clicking these icons.
Basic operation such as selecting menus or moving smart objects, etc. conforms to basic Windows operation conventions.
For details, we recommend reading the Windows User’s Manual.
The following shows an example of an AP Editor screen display.

Example of an AP Editor screen



Title bar
This item displays the title of the window.

Menu bar
This item displays the operation menu items.

Tool bar
This item displays the operation icons.

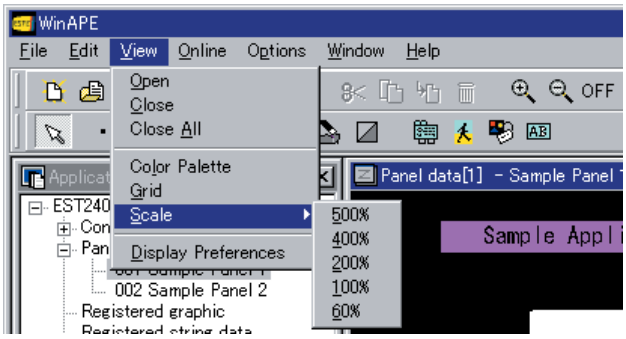
Application Manager
The Application Manager is used to call up panels, and displays panels, registered graphics and other smart objects of the application data in a free view layout. With the Application Manager, you can also copy two or more of these smart objects and perform other editing operations.

Panel window
This item is for creating application screens.

Smart object window
This item displays the available smart objects.

■ Menu Bar

Clicking an item on the menu bar displays a pull-down menu.
Items that have sub-menus are indicated by a triangle mark to the right of the item.



Menu items that are displayed in gray are currently unavailable functions. (e.g. items such as “Close Application” when application data is not displayed)

The following describes the items in the menu bar:

File
: This item is for performing file operations such as creating a new application data file, or opening and saving application data.

Edit
: This item holds mainly editing functions for designing panels, such as, creating new panels, drawing shapes, and copy/duplication of existing smart objects or shapes.

View
: This item holds functions related to screen display, such as, scaling (enlarge/reduce) panel displays and displaying the color palette.

Online
: This item is for downloading the created applications to the EST, or uploading data from the EST to the personal computer. It is also used to configure the communications port, display communications status and start the EST's operation.

Options
: This item is for making environmental settings such as the default folder for storing the application when AP Editor is started up for or the target model ESTs for the application data is to be created.

Window
: This item is for tidying up multiple windows, for example, Application Manager and panel windows. You can also switch minimized windows, or windows hidden in the background, to the front.

Help
: This item displays key word search, help index, PLC device ranges and version information.
The key word search and index are used for displaying descriptions for smart objects.

■ Tool Bar

Frequently used functions are displayed on the tool bar in the form of icons. You can use these functions by simply clicking on the desired icon on the tool bar without having to open the pull-down menu.

The tool bar has two rows, an upper and a lower row. Functions mainly relating to file operations and editing are located on the upper row. Functions relating to the design of panels, such as drawing and placing of smart objects are located on the lower row.
The following describes the functions of the icons on the tool bar.

New Application

This icon is for creaing a new application data.

Open Application

This icon is for reading and displaying existing application data.

Save

This icon is for saving (overwrite) application data under the existing file name.

New Panel Data

This icon displays a window for creating a new panel.

New Registered Graphic

This icon displays a window for creating a new registered graphic.

Undo

This icon cancels the last drawing or editing operation, and reverting to the previous state.

Redo

This icon is for canceling the result of an undo and redoing the operation.

Cut

This icon is for cutting and storing the selected graphic element to the clipboard buffer in memory.
Only the most recently cut graphic element is stored to the buffer.

Copy

This icon is for copying and storing the selected graphic element to the clipboard buffer in memory.
Only the most recently copied graphic element is stored to the buffer.

Paste

This icon is for pasting the graphic element stored in the clipboard buffer.

Delete

This icon is for deleting the selected graphic element(s).

Zoom Up

This icon is for enlarging the panel window display.

Zoom Down

This icon is for reducing the panel window display.

Change ON/OFF State View

This icon is for switching the ON/OFF state display of smart objects for example, switches, lamps,etc.

Application List Edit

This icon is for batch-editing devices and strings currently used in all panels of the application.

Element List Edit

This icon is for listing the graphic elements on the panel.

Display Preferences

This icon is for making the various display-related settings such as grid display interval on the panel window or comments.

Download All

This icon is for downloading all data in the application to the EST unit.

Download Modified Data

This icon is for downloading only changes made in the application.

Select

When this icon is selected, graphic elements currently drawn on the panel window can be selected.

Point

This icon is for drawing points.

Line

This icon is for drawing straight lines.
Segment lines and polygons can also be drawn by continous drawing.

Box

This icon is for drawing rectangles.

Circle/Oval

This icon is for drawing circles and ellipses.

Circle/Oval arc

This icon is for drawing circle arcs and ellipse arcs.

Text

 This icon is for entering text.

Paint

 This icon is for painting graphic elements with the specified color.

Background Color

 This icon is for setting the background color of panels.

Smart Objects

 This icon is for displaying the smart object window.
The required smart objects can be selected and placed from this window.

Image File Paste

 This icon is for displaying the image file selection dialog box.
The required image file can be selected and pasted from this dialog box.

Registered Graphics Paste

 This icon is for displaying the registered graphic list window.
The required registered graphics can be selected and placed from this window.

Registered String Data Paste

 This icon is for displaying the registered string list window.
The required registered strings can be selected and placed from this window.

3 - 3 Basic Operations

This section describes how to operate windows and basic procedures for drawing shapes.

■ Basic Window Operations

● Resizing windows

Windows can be resized so that they can be viewed more easily when multiple panels are displayed on the AP Editor screen.

Windows can be resized by one of two methods, by clicking buttons or dragging with the mouse.

- Button operations

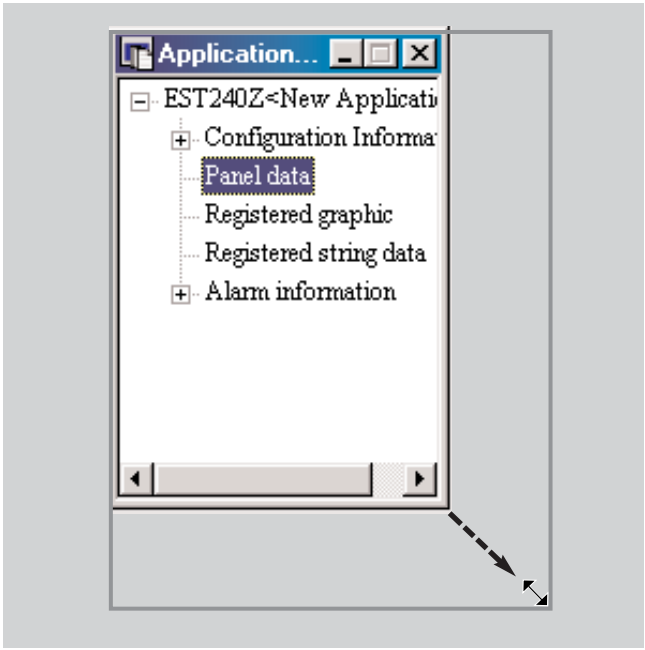
  Click the resizing buttons at the top right of the window.

   This button minimizes the window to the bottom of the main screen.

   This button restores the minimized window to its original size.

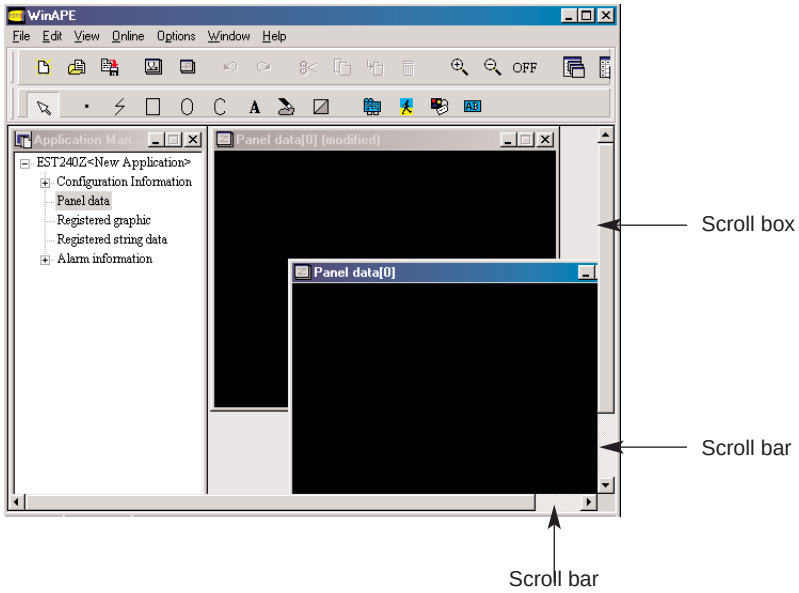
- Mouse operations

  If you move the mouse pointer to the window frame, the pointer changes shape. Drag the pointer to resize the window.



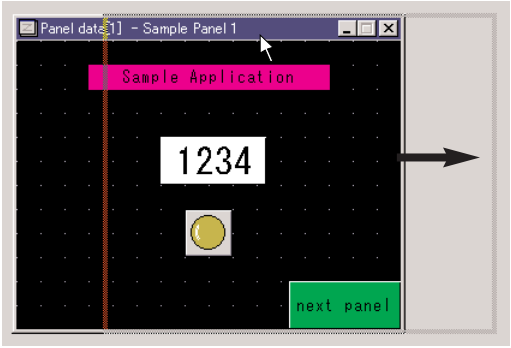
● Scrolling screens

Windows can be scrolled when panel windows, for example, protrude outside the window and are hidden from view. There are two ways of scrolling windows, by dragging the scoll box in the scroll bar, or by clicking the arrows at either end of the scroll bar.



● Moving windows

To move an entire window, drag the title bar.

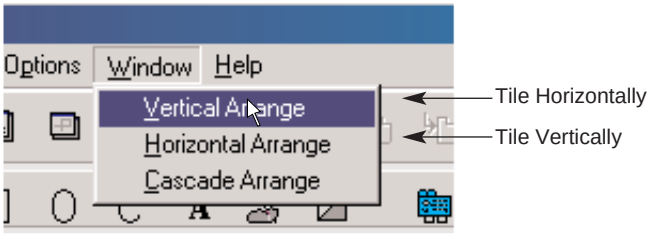


● Closing windows

To close a window, click the close button ✕ at the top right.

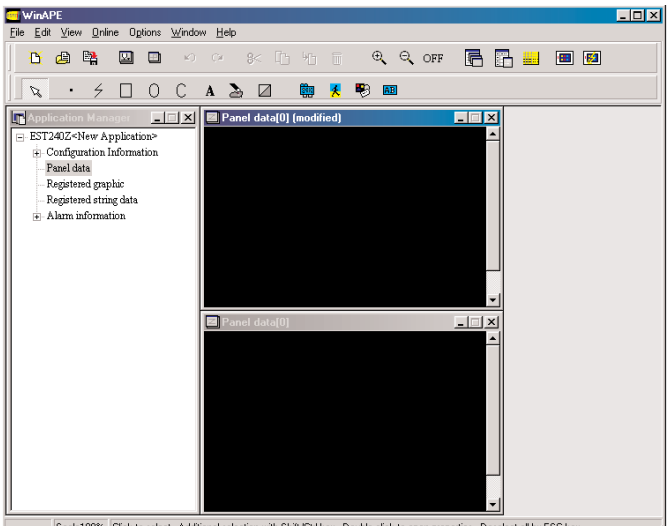
● Tidying up two or more windows

To tidy up multiple displayed windows, select [Window] on the menu bar.

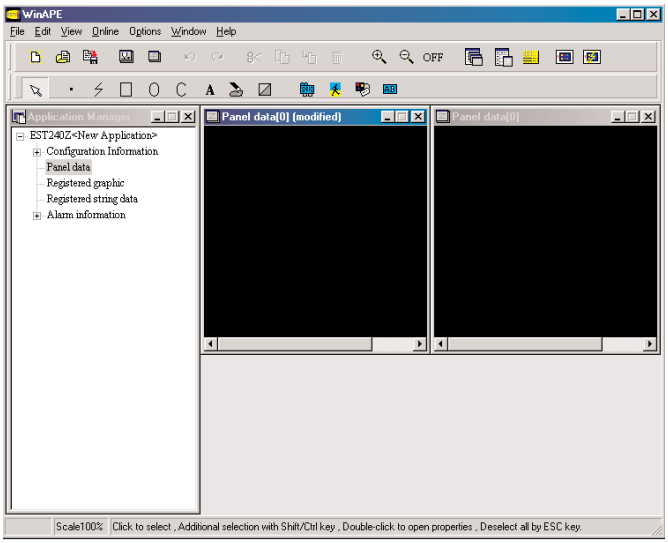


Selecting an item from the pull-down menu aligns the windows according to the selected item as shown below.

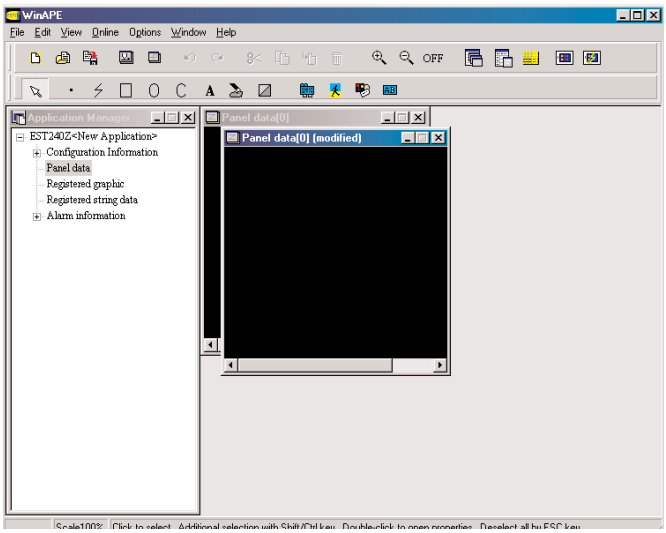
- Arrange windows vertically



- Arrange windows horizontally

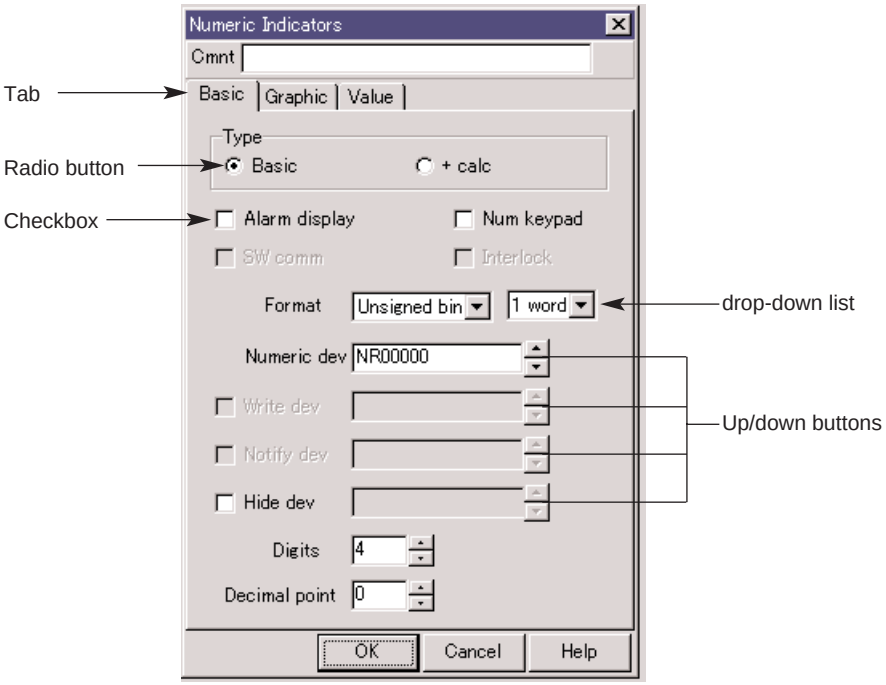


- Arrange windows cascade



● Configuration with dialog boxes

Dialog boxes are displayed when configurating parameters or options for smart objects, etc.
A dialog box generally comprises of the following items:



- Tabs

  Click these tabs to switch setting items.

- Radio buttons

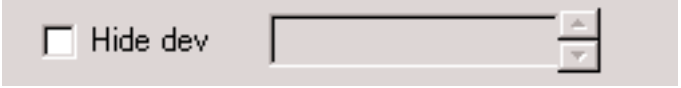
  Radio buttons are for switching the selection of options. The clicked item is selected, and a black dot is displayed in the center of the button.

- Checkboxes

  Checkboxes are for selecting options. When a checkbox is marked, a check mark is displayed in the checkbox to indicate that the checkbox selection is active (checkbox ON).
  A marked checkbox indicates that the option is currently selected.
  Clicking the checkbox again clears the check mark to indicate that the checkbox selection is inactive (checkbox OFF).

  Checkbox ON

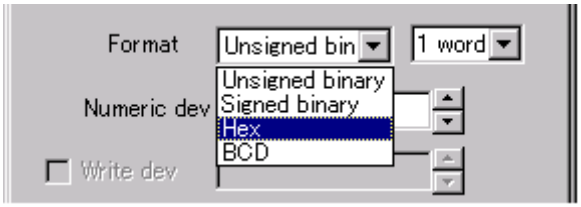
  Checkbox OFF



- Drop-down list

  When a selection menu is clicked, the various choices are displayed in the form of a drop-down list.

  Click the desired item. Items can also be selected with the [↑] and [↓] keys.



- Up/down buttons

  Clicking these buttons increments or decrements numeric values.

  Clicking the [▲] button increments numeric values, while clicking the [▼] button decrements numeric values.

  Numeric values can also be entered directly via the keyboard.

■ How to Draw Shapes

Various shape drawing functions are used when making panel screens in the application data.

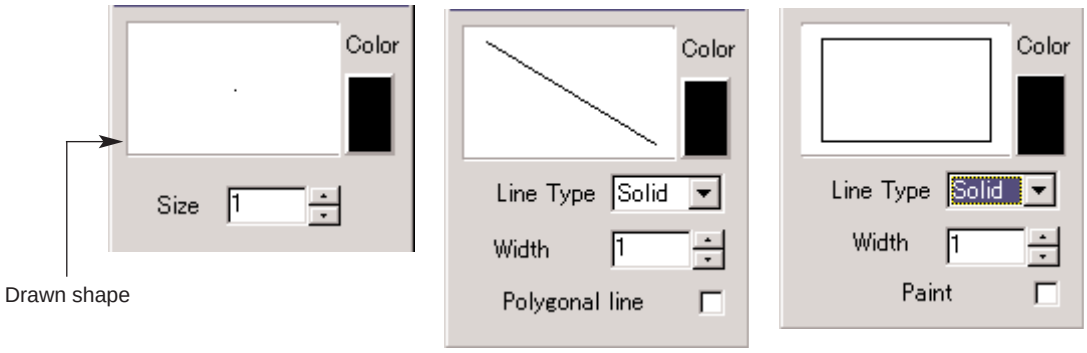
The following describes how to draw shapes:

● Drawing

Shapes for panel screens are drawn directly on panels with the mouse by selecting the desired basic shape from the tool bar.

If you select the shape tool bar, an attribute window such as those shown below is displayed according to the shape that you selected.

- Shape attribute window

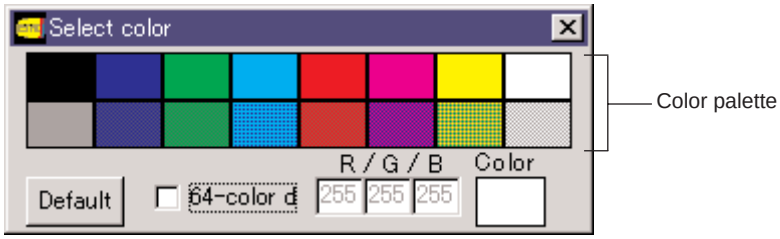


Drawn shape

An image of the shape to be drawn is displayed.

Color

This item is for selecting the drawing color.
When this item is selected, the color selection window is displayed.
If you click the color to use for drawing from the color palette, that color is selected as the drawing color.



Line type

This item is for selecting the type of line to be drawn.
Four line types are available: solid line, dotted line, dashed line and chain line.

Handling Precautions

The display of dotted lines, dashed lines and chain lines differs slightly from that on the EST.

Size

This sets the size of dots. Size can be set within the range 1 to 8.

Width

This sets the thickness of lines. Thickness can be set within the range 1 to 15.

Poligonal line

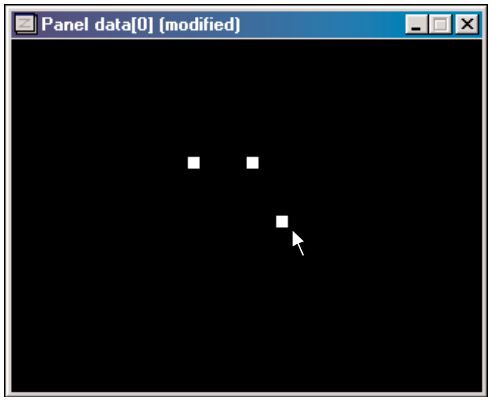
If this checkbox is marked, broken segmented lines and polygons can be drawn. (Polygons drawn with straight lines cannot be filled.)

Paint

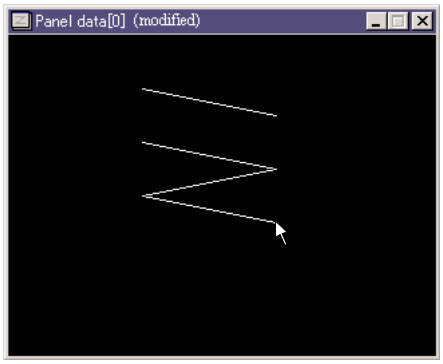
If this checkbox is marked, the shape drawn will be filled with the specified color.

- Dot

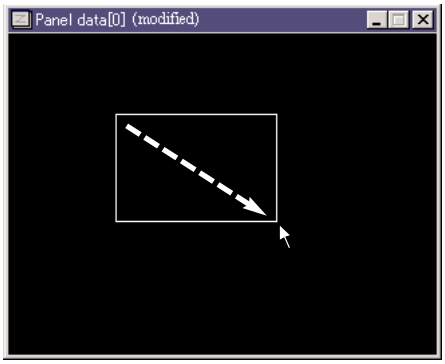
Click the position where the dot is to be drawn.



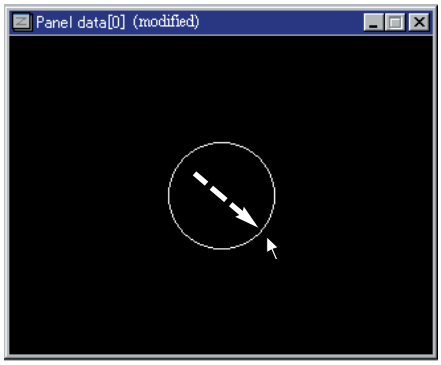
- Line
  Click the start point of the straight line and drag to its end point.
  If the [Poligonal line] option is selected, you can continue drawing straight lines.
  End drawing either by double-clicking on the last point or by pressing the [ENTER] key.



- Box
  Rectangles are drawn in the direction that you dragged from the clicked point.



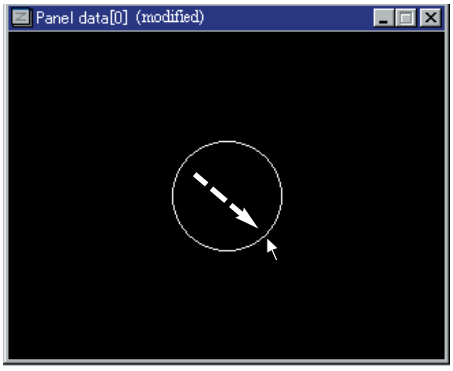
- Circle/Oval
  Circles or Ovales are drawn in the direction that you dragged from the clicked point.
  Circles and Ovales are drawn in such a way that they fit inside a square formed by the opposite corners of the drag start and end points.



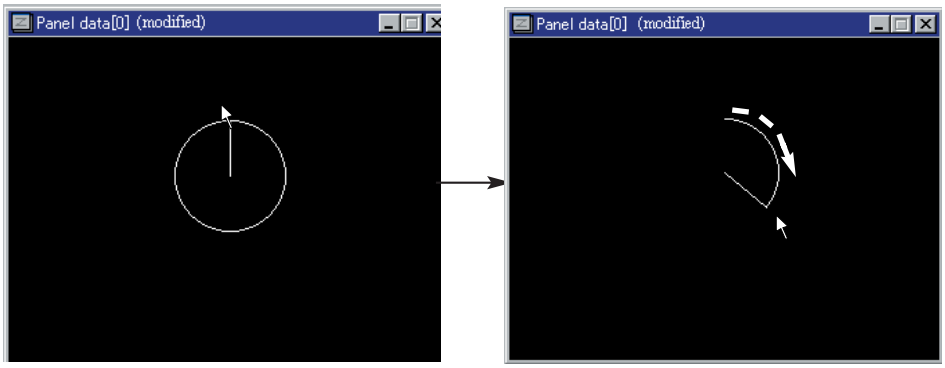
- Circle/Oval arc

  Circles or ovales are first drawn in the direction that you dragged from the clicked point.

  Circles and ovales are drawn in such a way that they fit inside a square formed by the opposite corners of the drag start and end points.



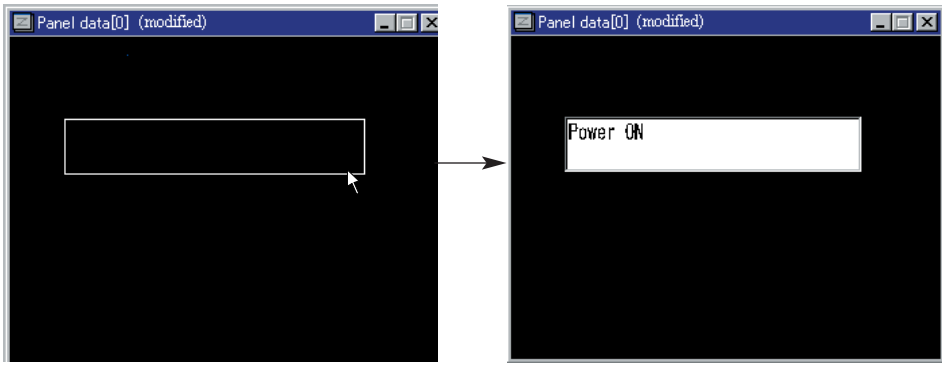
  A straight line indicating the arc start point is displayed from the center of the circle. Click the start point of the arc and then the end point.



- Text

  Drag the area for entering the text with the mouse.

  Enter the text in the area, and click outside the area to apply the entry.

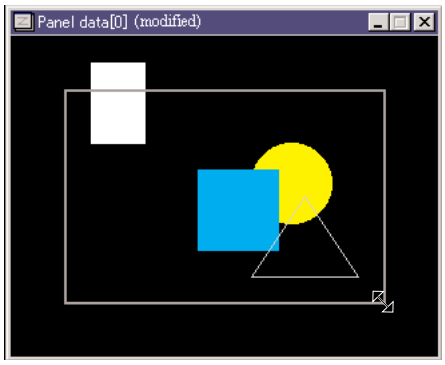


Handling Precautions

The shape of fonts used to display text differs slightly from that in the EST.

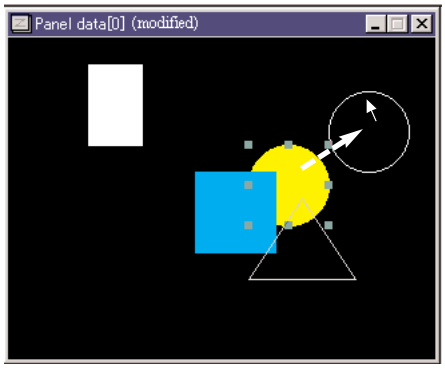
● Selection

Shapes can be selected by using the selection item on the tool bar and clicking on the item to be selected.
Multiple items can also be selected at once by dragging such that all of the shapes are enclosed by the dragged area.
Selected shapes can be scaled, moved, copied, deleted, and edited in various ways.
Shapes that are not completely enclosed within the dragged area are not selected.



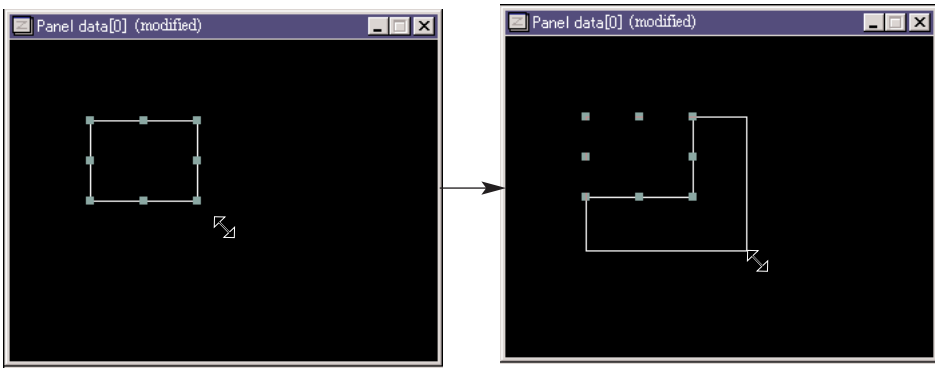
● Move

You can move shapes by clicking and dragging them.
You can move multiple shapes simultaneously by dragging if they have been selected .



● Scale

When a shape is selected, square handles are displayed on the periphery of the shape as shown below. If you move the mouse cursor to these square dots, the mouse cursor changes shape. You can scale shapes by dragging the handles in this state.



■ Combined Key/Mouse Operations

Handling Precautions

Using [ALT], [SHIFT] and [CTRL] keys in combination may compete with the shortcut keys of Windows.

Mouse and key operations can be combined as follows when editing screens:

[ALT] + click of left mouse button [ALT] + drag	Toggles the snap-to-grid function between enabled and disabled. (By joint use with keys, the grid can be ignored when the grid is enabled, and the grid can be enabled when it is disabled.)
[SHIFT] + click of left mouse button [SHIFT] + drag	Drawing limited to horizontal, vertical and 45° direction
[CTRL] + click of left mouse button	Repeated duplication or pastes the content of the clipboard buffer.
[CTRL] + [C]	Copies the selected range.
[CTRL] + [V]	Pastes the copied or cut range.
[CTRL] + [X]	Cuts the selected range.

Note

For details on other shortcut key combinations, see the pop-up menu that is displayed by pressing the right mouse button.

■ Using Keys to Operate the Cross-hair Cursor

The cross-hair cursor can be operated by using the cursor keys when editing screens.

Key	Description
[↑]	Moves the cross-hair cursor up one dot per grid.
[↓]	Moves the cross-hair cursor down one dot per grid.
[→]	Moves the cross-hair cursor to the right one dot per grid.
[←]	Moves the cross-hair cursor to the left one dot per grid.

For details, see “A-2 List of Key Operations Used in Editing” (page App.-4).

Chapter 4. CREATING APPLICATION DATA

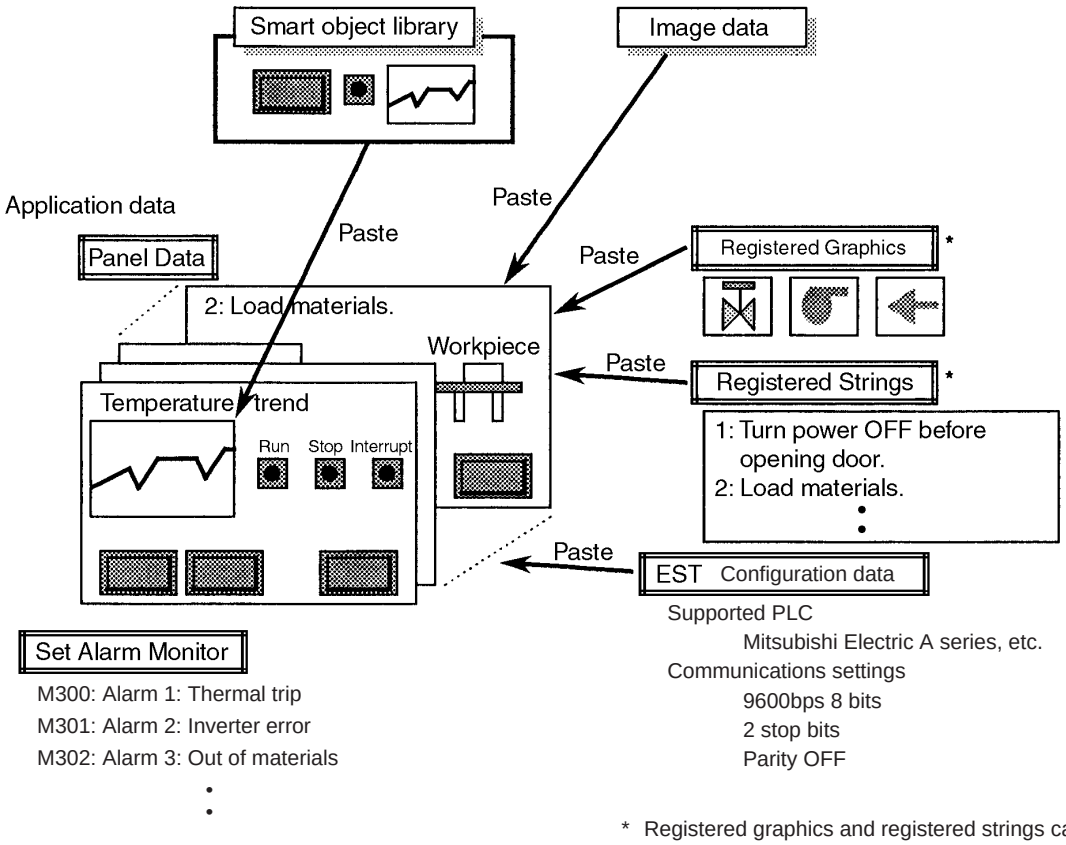
4 - 1 Procedure for Creating Application Data

This section describes a basic example of how application data is configured, and the flow from preparation of the application data through to its transfer to the EST.

■ Structure of Application Data

The following describes the contents of the application data:
Application data is created on a PC using the “AP Editor” software for editing application data.
Application data is a collection of data items that are transferred (or “downloaded”) to the EST, and comprised of several types of data.
Application data is comprised of the following data and information:

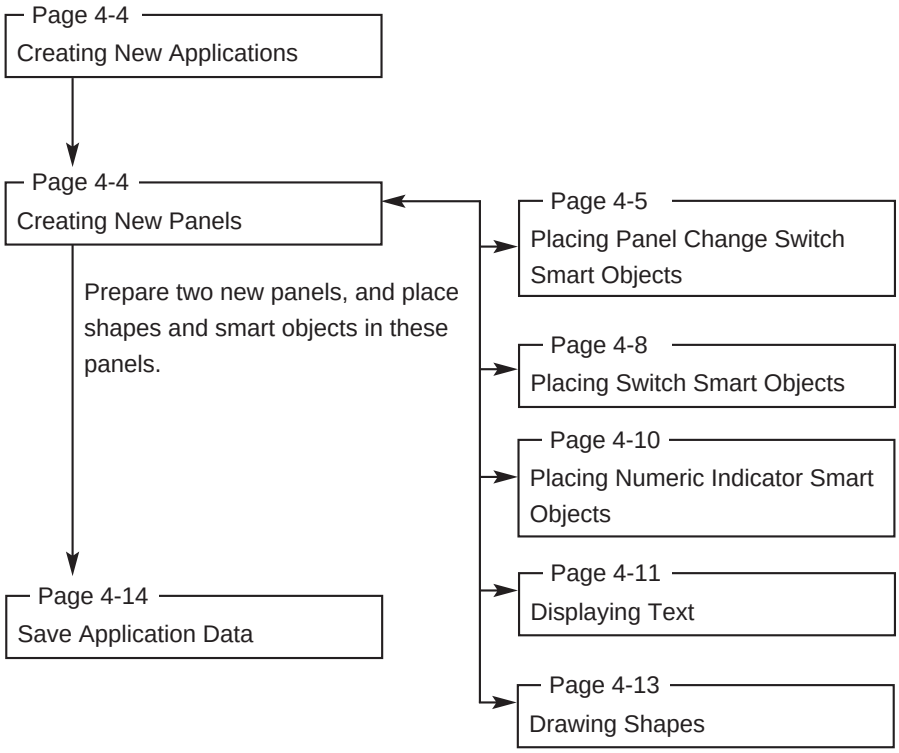
(1) Panel data
(2) Registered graphics
(3) Registered strings
(4) Alarm monitoring configuration
(5) EST configuration information



* Registered graphics and registered strings can not only be pasted to panels as static shape elements when designing panels, but they can also be used as display shapes and display strings (dynamic elements) on smart objects to indicate operation.

■ Procedure for Creating Sample Applications

The following shows the procedure for creating sample applications:



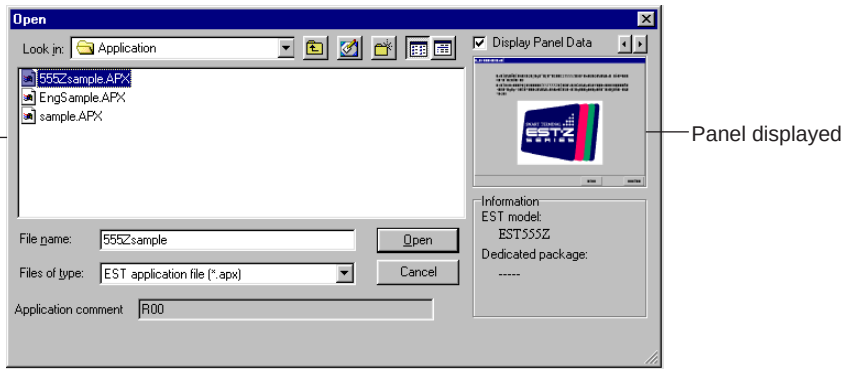
For details on the procedure for creating actual data, see "■ Procedure for Creating Application Data" (page 6-1).

4 - 2 Simple Sample Application Data

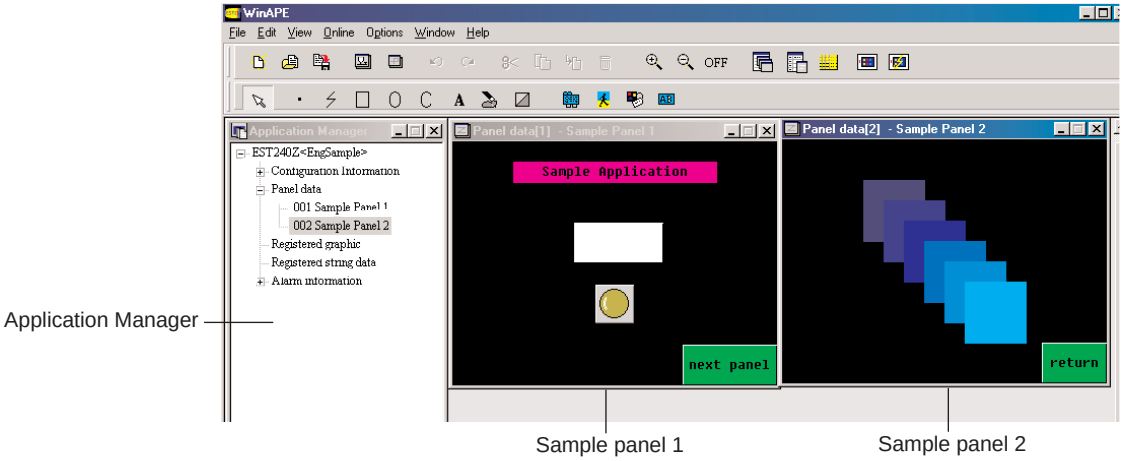
Try making some simple application data with the AP Editor, taking the sample data provided as an example.

■ About Sample Data

To open a sample application, select [File]→[Open] from AP Editor.
The following window will be displayed:
Select the drive on which the sample application is installed, and select [EngSample] from the folder list.
The sample application is installed in "\WinAPE\Application".



Select [EngSample.APX] and click [Open].



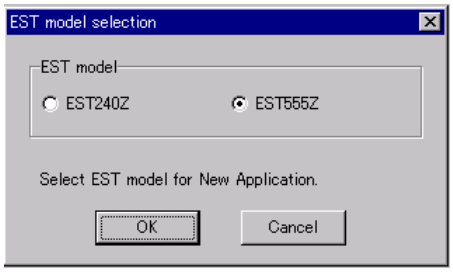
The sample data is read and displayed in the Application Manager.
If you click the "+" mark to the left of the panel, existing panel data will be displayed.
Double-click each of Sample Panel 1 and Sample Panel 2. The respective panel windows are displayed.
Text, a numeric smart object, a switch smart object and a panel change switch smart object are used in sample panel 1.

Rectangles and a panel change switch smart object are used in sample panel 2.
Though the sample panels do not function within the AP Editor, the screens are designed to be switched by [next panel] on sample panel 1 and [return] on sample panel 2 at the bottom right of the panel.
Also, the color of the switch on sample panel 1 is designed to change in its ON and OFF states, and the values of the numeric indicator can be changed by keyboard entry.
Try making the same data as this sample.

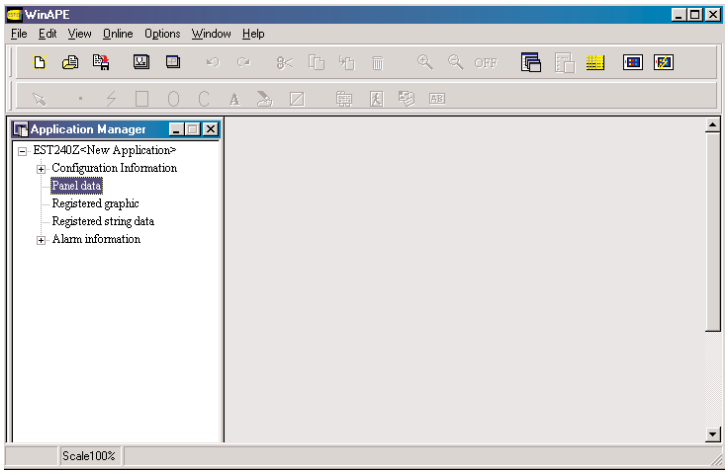
■ Creating New Applications

First, create new application data.

1. Select the new application icon  on the tool bar.
   EST model selection window will be displayed.



2. Select the currently used EST and click [OK].
   The Application Manager will be displayed as follows:

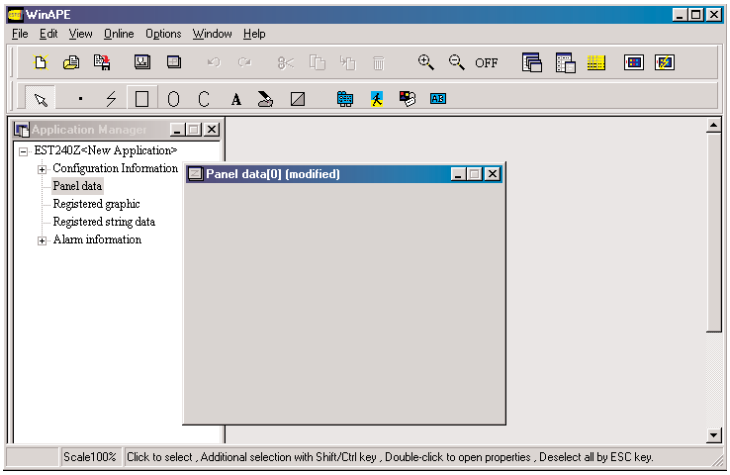


For details, see "■Options" (page6-70).

■ Creating New Panels

First, create a new panel.

1. Select the new panel data icon  on the tool bar.
   A new panel window will be displayed.

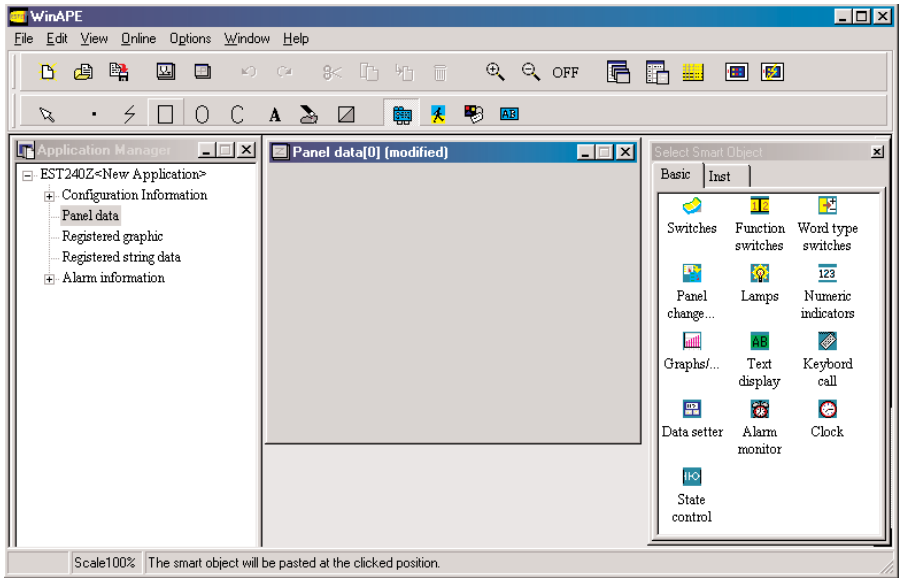


Place the required shapes and smart objects on the panel.

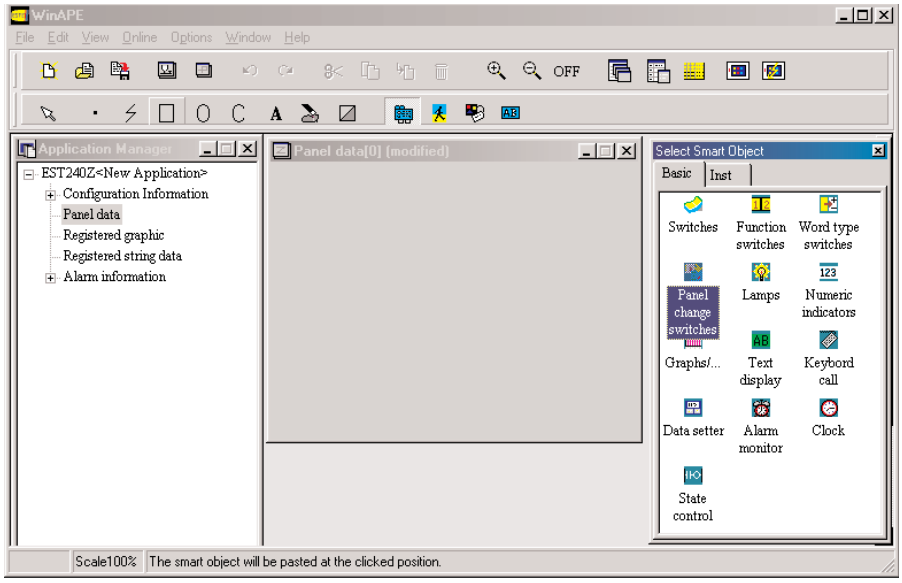
■ Placing Panel Change Switch Smart Objects

Set the button for switching and displaying two panels.
Use panel change switch smart objects to change displays.

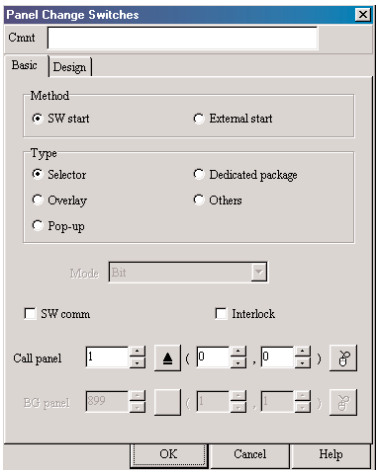
1. Click the smart object icon on the tool bar.
   The Select Smart Object window will be displayed.



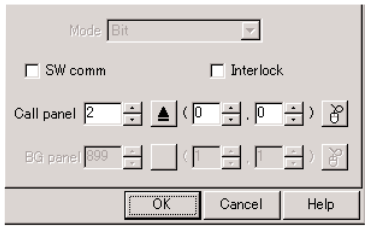
2. Select the panel change switch.
   Place the panel change switch at the bottom right of the panel.
   Select [Panel change switches] from the smart object selection window, and either double-click or drag [Panel change switches] to the panel window.



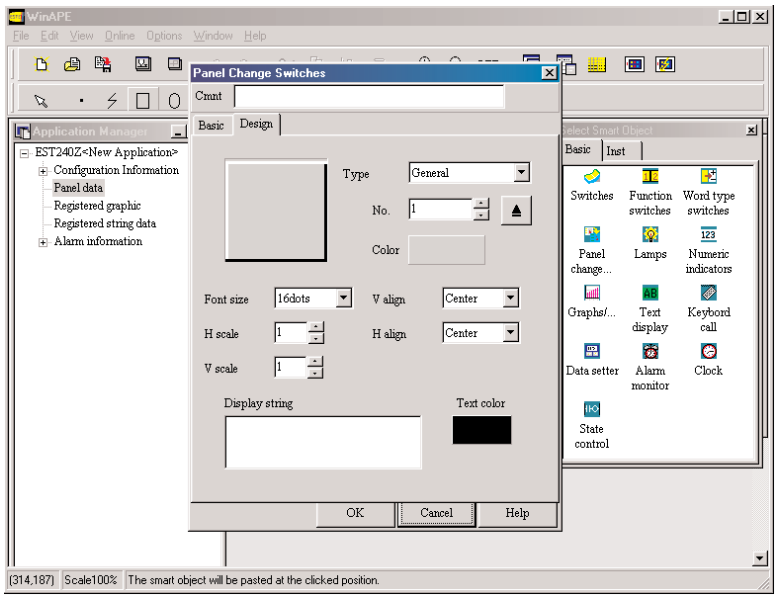
The configuration dialog box will be displayed as follows:



3. Set the call panel number.
   Call up panel No.2 using this smart object.
   Change the [Call panel] field in the configuration dialog to “2”.



4. Set the button color.
   Click the [Design] tab in the setting dialog box.
   Click inside the [Color] frame. The color selection window will be displayed.

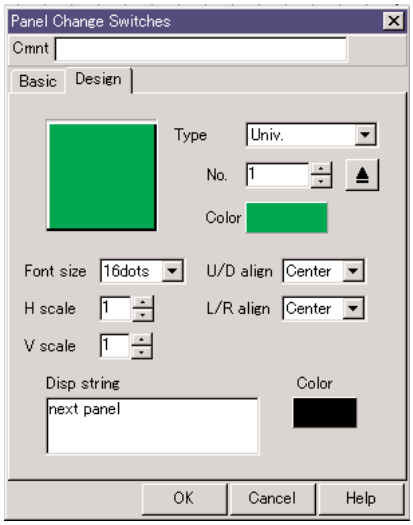


Select the color green from the color palette.
After selecting green, click [OK] in the color selection window.

Handling Precautions

After selecting the color, be sure to click [OK] in the color selection window to apply the selected color.

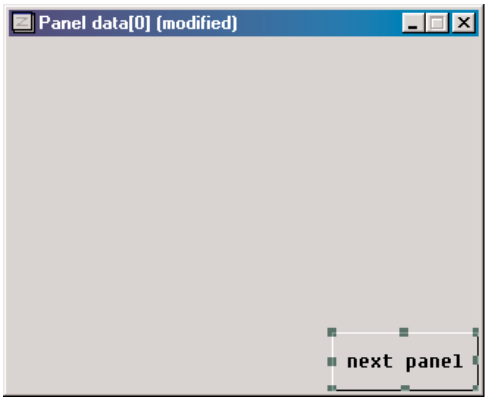
5. Enter text to the button.
   Enter text so that the button's function can be easily understood.
   Click the [Disp string] field, and enter [next panel] on the keyboard.



   When you have finished making changes, click [OK].

6. Place the panel change selector at the bottom right of the panel.
   The smart object is placed at the clicked location.

7. Adjust the size of the button.
   Select the button. The ■ frame will be displayed around the button.
   Drag the ■ handles with the mouse to adjust the size of the button so that the text is easier to view.

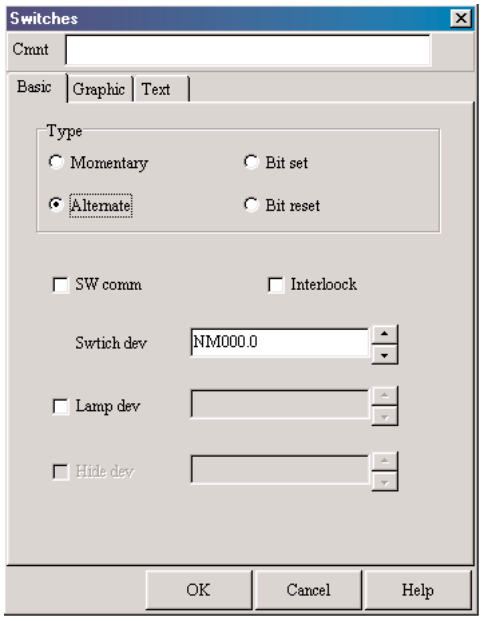


■ Placing Switch Smart Objects

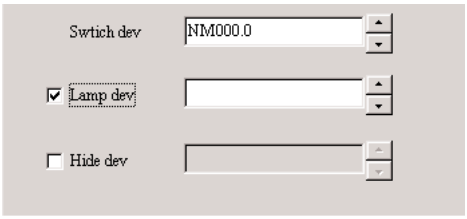
Place a switch smart object.

1. Double-click or drag [Switches] to panel 1 from the smart objects window.
   The setting dialog box will be displayed.

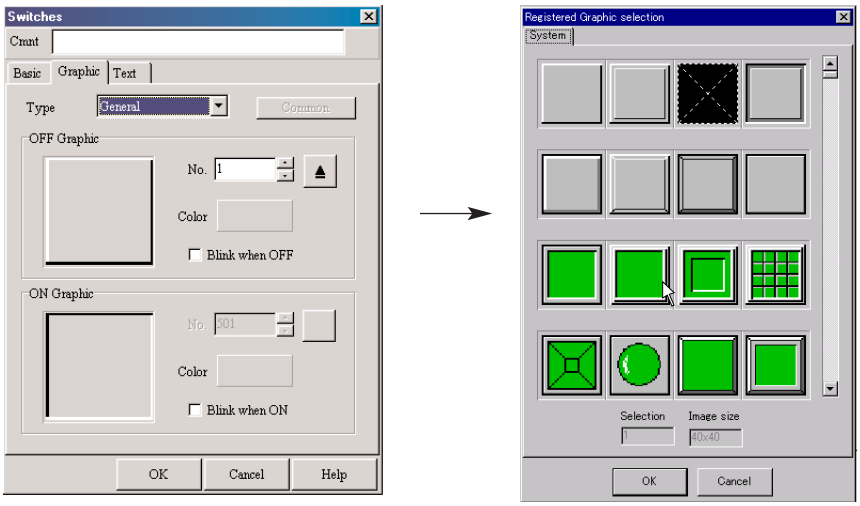
2. First, set the switch action.
   Set the switch action so that the switch bit is reset when the switch is touched.
   Click the [Alternate] radio button in the Type field.



3. Place the switch so that it lights when ON.
   To turn the switch ON and OFF, set the switch as a lamp device. Click the [Lamp dev] checkbox in the setting dialog box to mark the checkbox. Enter "NM000.0" to the device.

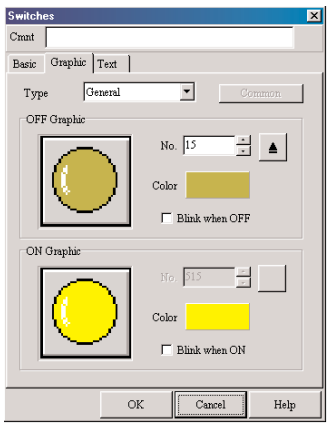


4. Change the graphic.
   Click the [Graphic] tab on the setting dialog box.
   Click [▲] at Graphic at OFF. The pre-registered graphic will be displayed.



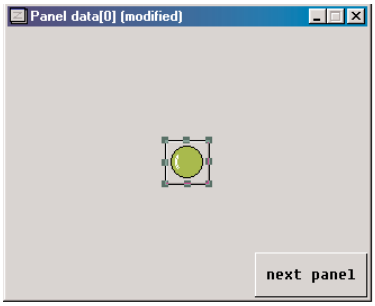
   Other graphics can be displayed by using the scroll bar on the right.
   Here, select the same graphic as the sample application, and either click [OK] or double-click to select the graphic.

5. Set the colors for when the smart object is ON and OFF.
   Click [Color], and set a bright yellow for the smart object when it is ON and a dark yellow for the smart object when it is OFF from the color palette.



   When you have finished making the settings, click [OK] at the bottom of the dialog box to complete the settings.

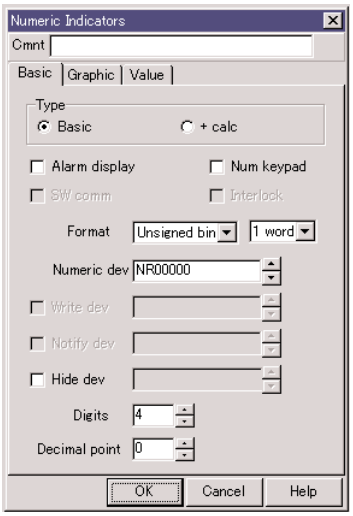
6. Place the smart object slightly below the center of the panel center.



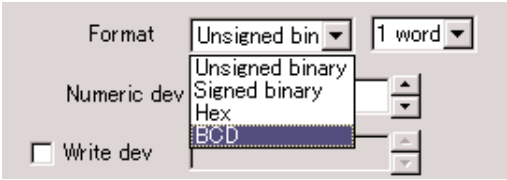
■ Placing Numeric Indicator Smart Objects

1. Place a numeric smart object.
   Double-click or drag [Numeric indicators] to panel 1 from the smart objects window.

2. Let's set the numeric indicator so that numeric entry is possible from the keyboard.
   Click the [Num keypad] checkbox to mark the checkbox.

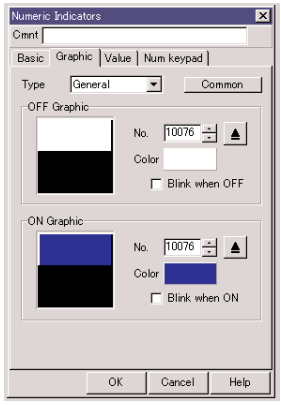


   Select [BCD] from the [Format] selection menu.



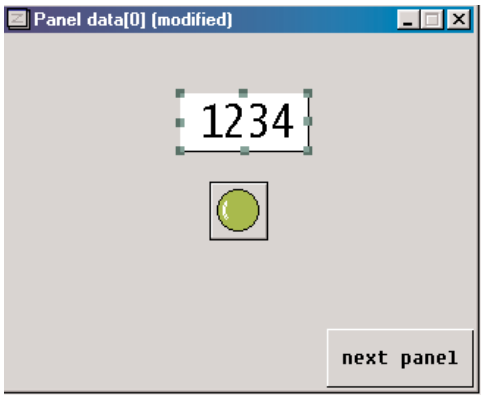
   Here, the smart object is set so that decimal numeric values can be entered from the numeric keypad of the numeric device.
   For details on settings of numeric device and other smart objects, refer to the Smart Terminal EST-Z Series Smart Object Library Manual No. CP-SP-1089E.

3. Set the color of the numeric indicator when the numeric keypad is in use with ON and OFF.
   Switch to the Graphic tab, and set the color when numeric keypad is active, ON to light blue and the color when numeric keypad is not active, OFF to white.



   When you have finished setting the colors, click [OK] at the bottom of the dialog box.

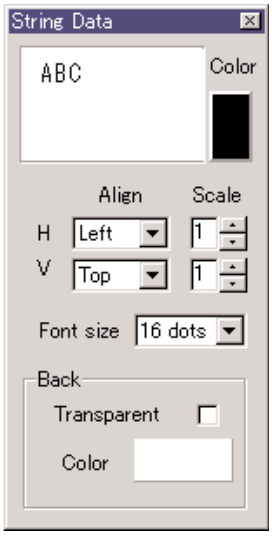
4. Place the numeric indicator smart object in the center of the screen.
   When the smart object is positioned, click the numeric indicator smart object again to place it.
   A frame appears around the smart object. Drag the ■ handles to adjust the size of the smart object.



■ Displaying Text

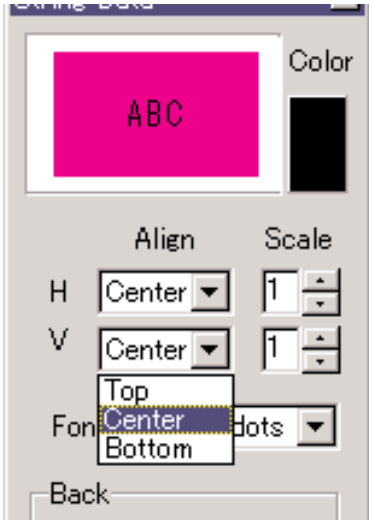
Text, such as the title and functionality of panels can be displayed.

1. Click the text **A** icon on the tool bar.
   The attributes dialog box will be displayed.

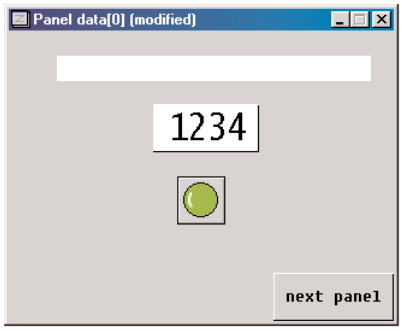


2. Set the background color.
   Click the [Color] field in the dialog box, select the color purple in the color selection window, and click [OK].

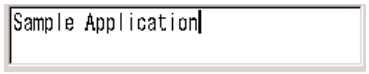
3. Set the text display alignment.
   Set the display alignment so that the text in the display frame is centered.
   Select [Center] from the selection menu for both [H] and [V] in the [Align] field in the dialog box.



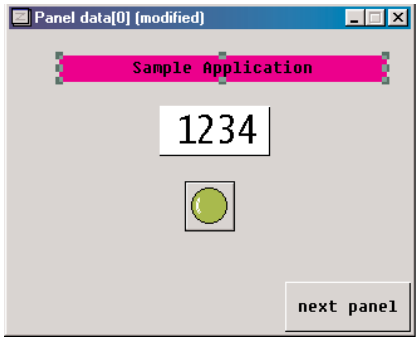
4. Determine the position to display the text.
   Click the display start position, and drag to set the text frame.
   A rectangular entry area will be displayed as shown in the figure.



5. Directly enter the text from the keyboard.
   In this example, enter “Sample application”.



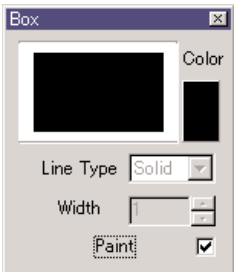
   When you have finished entering the text, click any point outside the entry area on the panel.



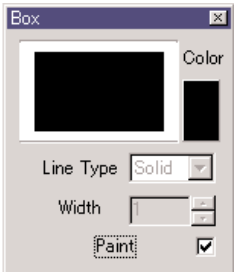
■ Drawing Shapes

Create another new panel, and draw a shape in panel 2.

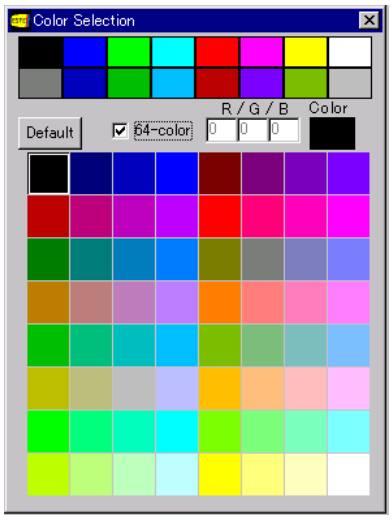
1. Place the [return] button in the other panel.
   In the same way as the [next panel] that you made for panel 1, place the [return] button in the other panel.
   Set the call panel number for the [return] button to “1”.
2. Select the rectangle icon from the tool bar.
   The attributes window will be displayed.
3. Align the filled rectangle.
   Click the [Paint] checkbox in the attributes window to mark the checkbox.



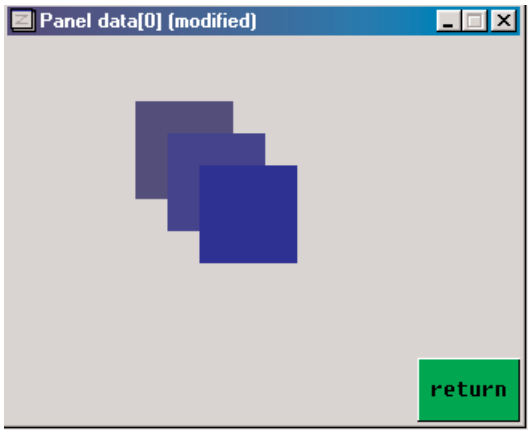
4. Set the fill color.
   Click the [Color] field in the attributes window to display the color selection window.



5. Click the [64-color display] checkbox in the color selection window.
   The 64-color palette will be displayed as follows:



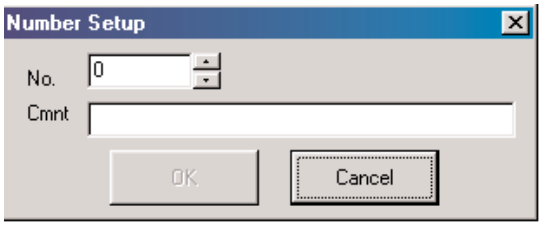
6. Select the desired color, and draw a square on the panel.
   When you have finished drawing one square, continue to select another color from the palette, and draw another square.



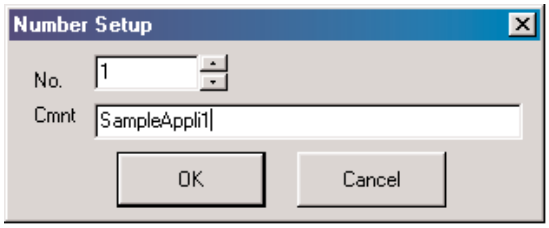
■ Saving Application Data

Save the application data you have prepared.
Select [Edit]→[Specify No. and save edit data].

1. The Number Setup window is displayed.



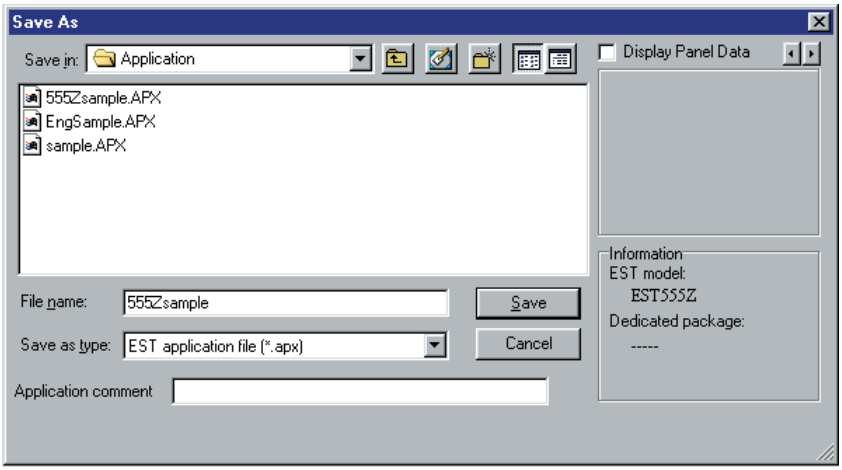
2. Set the number “1” to panel 1 and number “2” to panel 2.



   You can enter any comment for the panel in the Cmnt field. The comment you enter is displayed on Application Manager.

3. Click [OK].

4. Save the application data.
   Select [File]→[Save As] or [Save] from the menu bar.
   The following save window will be displayed:



   Enter the file name in the File name entry field at the bottom of the screen. The file extension is automatically added.
   After you have entered the file name, click [Save]. This will save the application data.

Handling Precautions

- If you save the application data with name [SAMPLE] or [ENGSAMPLE], the application data will be deleted when it is uninstalled.
- The sample application data is read-only. When saving the sample application data, save it under a different name.
- If text that cannot be displayed on the EST is used for the file name, the application name will not be displayed properly in the EST system menu. For details on text that can be displayed on EST, see “A-2 Displayable Kanji Character & Non-Kanji Character Codes” (page App.-4).

Chapter 5. TRANSFERRING APPLICATION DATA

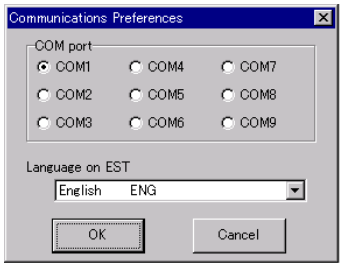
5 - 1 Downloading Application Data to EST (PC to EST)

This section describes how to download the sample application data to the EST.

■ Communication Configuration

Before you download application data, you must first configure the communication of the PC.
Once these settings have been performed, they are saved. So, they need not be set each time that application data is downloaded, provided the settings need not be changed.

1. Select [Online]→ [Comm Setup] from the menu bar on AP Editor.
   The following Communications Setup window will be displayed:



● Com port setup

Mark the radio button of the [COM port] on which the EST is currently connected to the PC, and click [OK].

Note

When using IrDA (infrared communications) for communicating with EST, see “5-3 Using IrDA (infrared communications)” (page 5-5).

● The language for EST

The language which you can use on EST is English only.

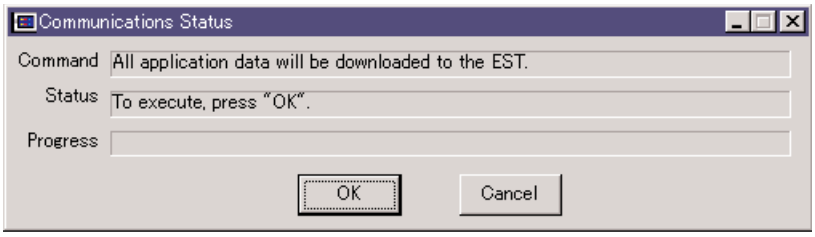
Handling Precautions

- When you download all , if the EST has another language (ex. Japanese), the EST language will be changed to English.
- If [Enable infrared communication] is set in the infrared monitor setting of the currently used personal computer, the downloading or uploading of the IPL, F/W or application may cause a communication trouble resulting in communication error by a model of personal computer.
  In this case, change the setting to [Disable infrared communication] in the infrared monitor setting of personal computer.
  See "■ Configuration of the Infrared Monitor" (page 5-6) for the details of infrared monitor setting.

■ Downloading Application Data

By downloading the application data, the application data currently displayed in Application Manager is transferred to EST.
If no application data is open within the AP Editor, the window for selecting the application data will be displayed. Select the application data to be read by the AP Editor.

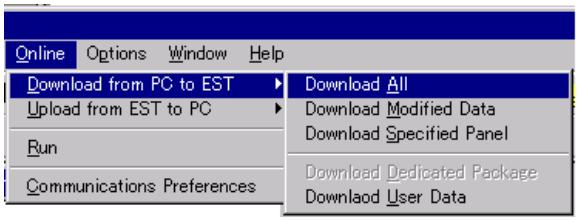
1. Select [Online]→[Download]→[Download All] from the menu bar on AP Editor.
   The Communications Status window will be displayed.



2. Click [OK] to start the download.

■ About the Download Menu

The download menu contains the following items:



- Download All
  This item is for batch-downloading all of the application's data such as panel data, smart object data and registered graphic data to the EST.
- Download Modified Data
  This item is for downloading only the differences (parts that have been modified) between the application data currently loaded on the EST.
  This item is for downloading only differences when you have modified several panels in the past but are not sure of which panel. By this method, the download time is shorter than the time required when downloading all of the data.
- Download Specfied panel
  This item is for downloading only the selected panel data. This item is handy when you are sure of which panels have been modified.

Handling Precautions

- When downloading modified/specified panels, the remaining size of the application data sometimes no longer matches that on the EST. Perform a “Download All” while making the application, if you need to check the exact removing free memory.
- Data cannot be downloaded via channels CH3 and CH4 of the EST.

5 - 2 Uploading Application Data from EST (EST to PC)

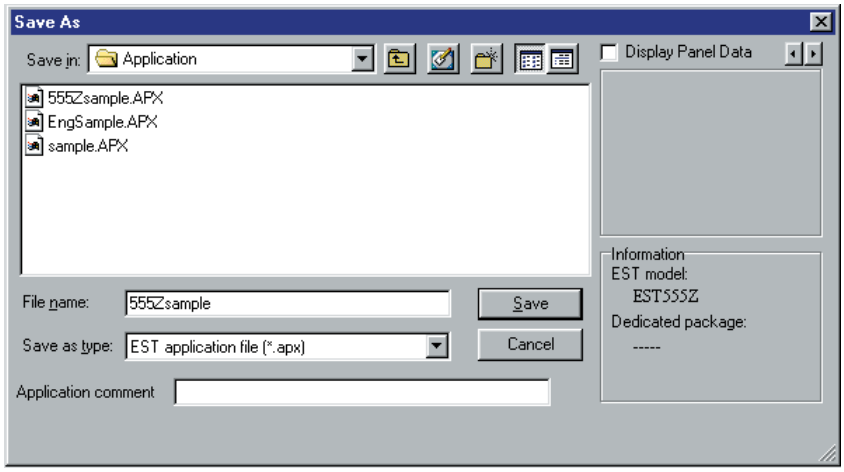
This section describes how to upload data downloaded from the EST to the PC.
Further corrections can be made to the application data using the PC and then downloaded again to the EST.

Handling Precautions

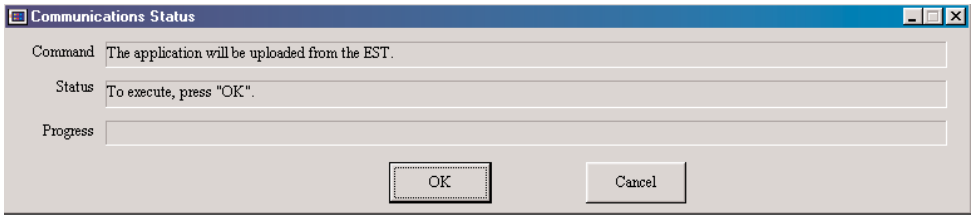
Data cannot be uploaded from channels CH3 and CH4 of the EST.

■ Uploading Application Data

1. Select [Online]→[Upload All] from the menu bar in AP Editor.
   The Specify Upload Destination Application Name window will be displayed.



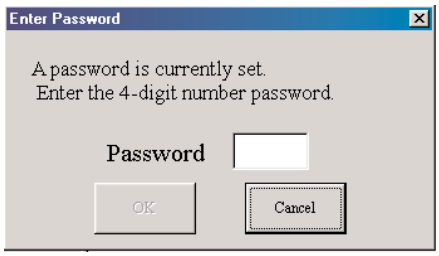
2. Enter the application name, and click [Save].
   The Communications Status window will be displayed.



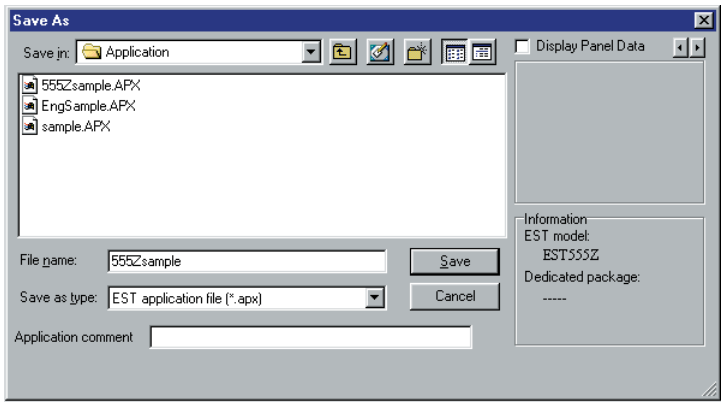
3. Click [OK] to start the upload.

■ Uploading Data with Passwords

1. Select [Online]→[Upload All] from the menu bar in AP Editor.
   If you upload the data after it has been downloaded with Password set to “ON” in the Application Information, the password confirmation window will be displayed.



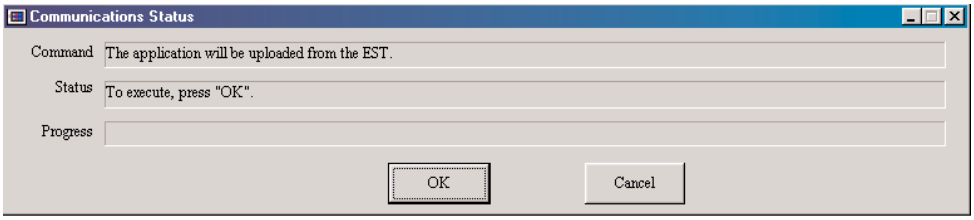
2. Enter the 4-digit password, and click [OK].
   The Specify Upload Destination Application Name window will be displayed.



Handling Precautions

For details, see “■ Application Information” (page6-8).

3. Enter the application name, and click [Save].
   The Communications Status window will be displayed.
4. Click [OK] to start the upload.



5 - 3 Using IrDA (infrared communications)

"IrDA" is a standard for data communications units that use infrared for implementing communications.
By using IrDA, data can be exchanged without requiring the connection of communications cables.

Note

IrDA has been established by the Infrared Data Association for infrared communications. Officially, the standard is called the "IrDA Standard." However, the standard itself is generally referred to as "IrDA."

■ Operating Environment Required for Operating IrDA

The table below shows the required operating environment when using IrDA.

Personal computer	OS Windows 98
	Equipped with communication port
EST	IPL version R0015 or later
AP Editor	Ver. 2.0 or later

For details on confirming the IPL and how to update the IPL, see "A-1 About the IPL" (page App.-1).

Handling Precautions

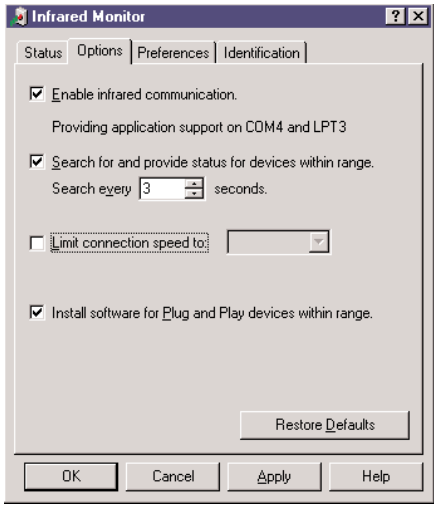
- Position the EST and IrDA so that they are facing each other.
- Prevent reflected light or other external light disturbances from directly entering IrDA.
- Keep the distance between the EST and IrDA to within 40cm to 1m.
- When two or more ESTs are located within the same communications area, the EST that IrDA is to connect to cannot be specified.
- Before performing communications again after communications has ended in error (e.g. download) , wait at least 30s.
- The EST's system program cannot be updated by IrDA communications. The program can be updated only by communications over the RS-232C interface.
- The IrDA (infrared communications) cannot be used in Windows95 and Windows Me.

Configure as follows before using IrDA:

■ Configuration of the Infrared Monitor

1. Select [Start]➞ [Settings]➞ [Control Panel] on the personal computer.
   Double-click [Infrared] if available.

2. Select [Options] tab.
   Open the window.



3. Mark the [Enable infrared communication] checkbox.
   Match the settings with the COM port setting of [Online]➞ [Comm Setup] in AP Editor.

4. When you have finished configuring, click [OK].
   This enables communications. The infrared monitor icon will be displayed on the task bar.

Infrared monitor icon

Handling Precautions

If [Infrared] is not displayed on [Control Panel], probable causes are that an infra-red monitor device is not installed on the personal computer, or that the [Infrared] cannot be used on the particular model of personal computer you are using.

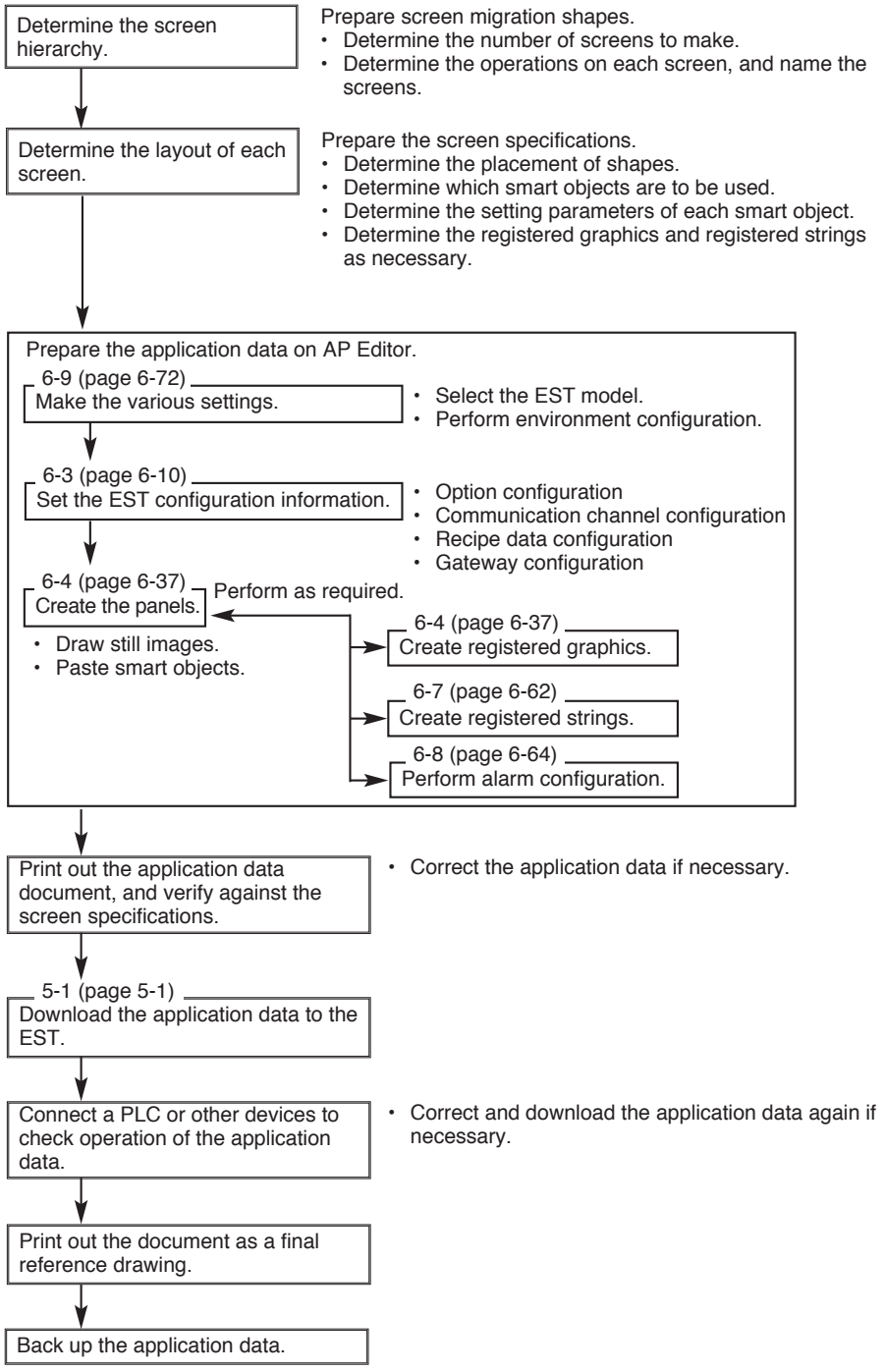
To install the infra-red monitor device, double-click [Control Panel]→[Add New Hardware], and then follow the on-screen messages.

Chapter 6. EDITING APPLICATION DATA

6 - 1 Outline of Application Data

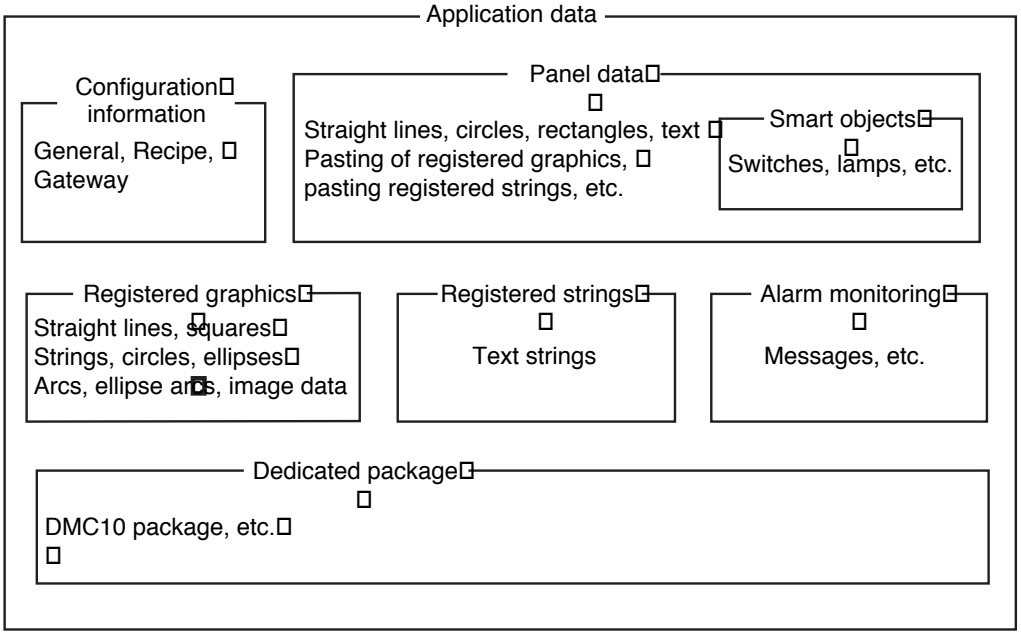
■ Procedure for Creating Application Data

Follow the procedure below to create application data.



■ Data Description

Applications comprise of the following data:



● Configuration information

This information includes the communications settings for devices corrected to the EST, gateway and recipe configuration.

- General
  This is for general configuration of the EST.
- Recipe data settings
  This is for configuration of writing recipe data to multiple devices (temperature controllers, PLCs) connected to EST.
- Gateway
  This is for configuration of the gateway function for automatically executing data exchange between the multiple devices connected to EST.

● Panel data

Panel data is the basic screen data for EST applications and is for performing program execution. Depending on the smart objects used, data will be displayed and it is possible to navigate to other screens.

● Registered graphics

Frequently displayed graphics created by the user are registered in advance.

● Registered strings

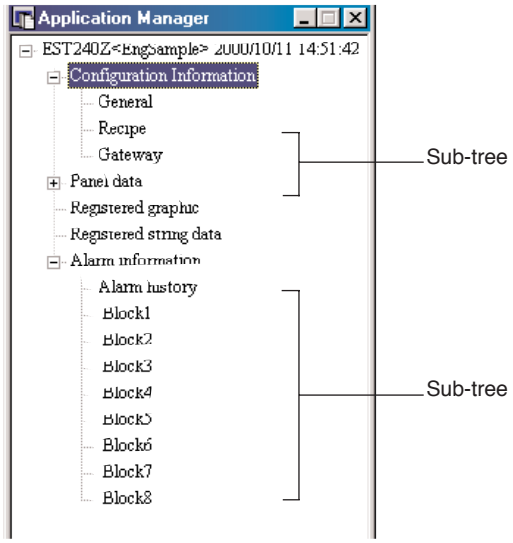
Preset strings such as nameplates and operation guidance can be displayed on the EST.

● Alarm monitoring

Bit devices such as alarm contacts on the PLC connected by the host link are periodically monitored to monitor the numbers of alarms that are ON (indicating that an alarm has occurred on the bit).

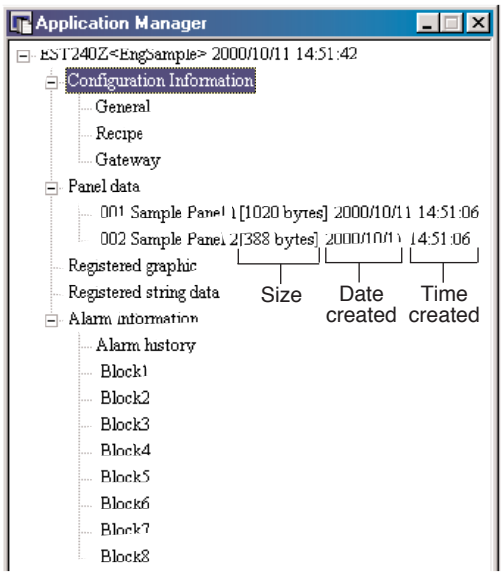
6 - 2 About the Application Manager

The Application Manager is displayed by opening application data.
The Application Manager displays and batch-manages the various data (panel data, configuration information, etc.) contained in applications in the form of a menu tree.



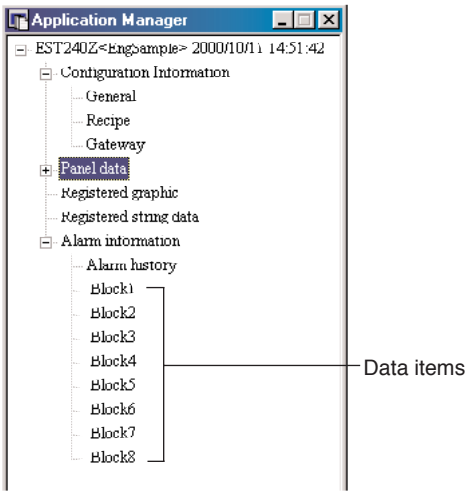
The data for panels, registered graphics and registered string items do not exist when an application is newly created.
The [+] mark in the menu tree indicates that there is data for that item one level down in the hierarchy in a sub-tree. Clicking the [+] mark displays the sub-tree. Items for which a sub-tree is displayed are preceded by the [–] mark. Clicking the [–] mark closes the sub-tree.

Display when panel sub-tree is opened



An asterisk mark "✻" preceding the data name indicates that changes or corrections have been made to the data, but have not been saved yet.
Information (size, date and time created) that is displayed in Application Manager is not displayed when [View]→ [Display Preferences]→ [Others]→ [Detailed Application Manager display] is set to OFF.

Display when the panel sub-tree is closed



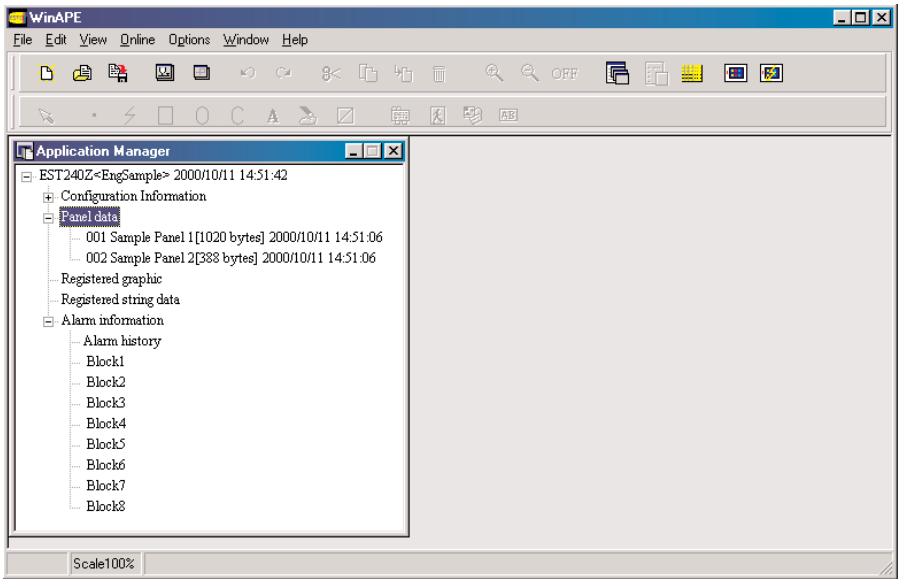
Double-clicking a data item opens the window for that item or its configuration dialog box.
Data items in this tree can be selected and copied or deleted.

In the Application Manager, copy operations are performed based on existing data (panel data, registered graphics and registered strings), then the configuration of these data can be modified for further use.

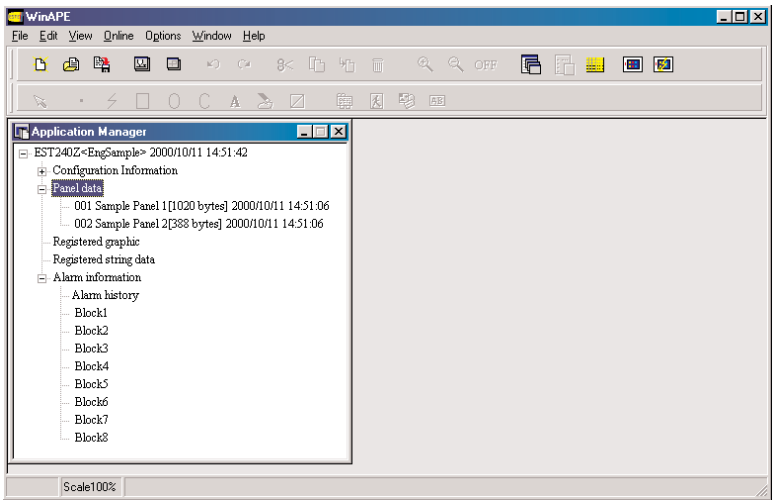
■ Copy

The following describes how to copy panel data in the Application Manager: Registered graphics and registered strings can also be copied in the same way.

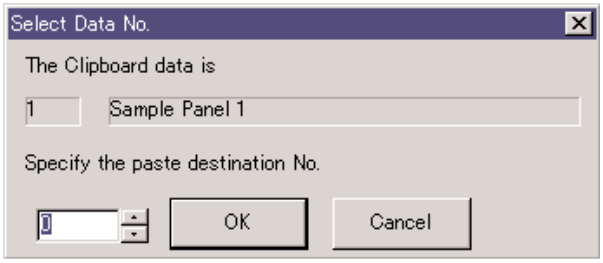
1. Select existing panel data, and select [Edit]→[Copy] from the menu bar.
   Multiple panels can also be selected.
   You can also select [Copy] from the pop-up menu displayed when you click the right mouse button with the panel data selected.



2. Select [Panel data], and select [Edit]→[Paste]  from the menu bar.
   You can also select [Panel data] and [Paste] from the pop-up menu displayed when you click the right mouse button.



3. The window for specifying the destination data number will be displayed.



4. Use the up/down buttons to specify the number of the paste destination and click [OK].
   At this stage, the following operation confirmation window will be displayed if you specify a number for which data already exists:

[Reenter]
This item is for returning to the window for specifying the data number.

[Overwrite]
This item is for overwriting the data of the specified number.

[Skip]
This item is for canceling pasting of the current panel and pasting the next selected panel.

[Cancel]
This item is for canceling the paste operation.

■ Cut

Only panel data, registered graphics and registered strings can be cut from Application Data. After data has been cut it can be pasted in the same way as that in copy operations.
Select the data to cut, and select [Edit]→ [Cut] from the menu bar.
You can also select the data, and select [Cut] from the pop-up menu displayed when you click the right mouse button.

■ Delete

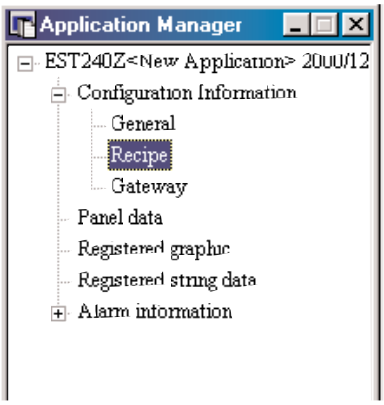
Select the unwanted data, and select [Edit]→ [Delete] from the menu bar.
You can also select the data, and [Delete] from the pop-up menu displayed when you click the right mouse button.

Handling Precautions

- Panels on which trend and recipe smart objects are pasted cannot be copied or pasted at the panel revel.
- When copying/cutting application data and pasting the data to other application data, the copy/cut source data must already be saved to file. Otherwise, some (system registered graphics, system registered strings, system panels, PLC devices) of the required data will not be copied.

■ Copying/Pasting Configuration Information

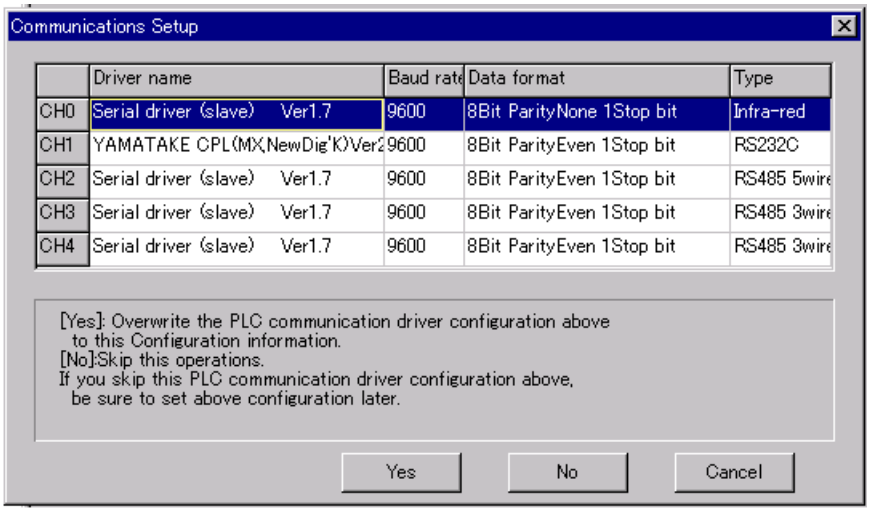
This item describes how to copy and paste general, recipe and gateway configuration in Application Manager.



1. Select the general, recipe or gateway configuration in the Configuration Information tree, and select [Edit]→ [Copy] from the menu bar.
   You can also select [Copy] from the pop-up menu displayed when you click the right mouse button with the selection made as described above.
2. Open the other application, and select the item copied in step 1. in the Configuration Information tree, and select [Edit]→ [Paste] from the menu bar.
   You can also select [Paste] from the pop-up menu displayed when you click the right mouse button with the same selection as copy made.

3. When recipe and gateway configuration are selected

   When these items are copied, the configuration information of the PLC communications driver used in the recipe or gateway configuration is copied at the same time. The following window will be displayed if the configuration information differs from the communications settings in the application from which data is being pasted:



   This example indicates that the PLC drivers on channels 1, 2 and 3 are used at the copy source, and that either the driver communications settings for channels 1, 2 and 3 differ, or are not set on the paste side.

   When [Yes] is selected, the displayed communications settings for channels 1,2 and 3 will be updated with the pasted information.

Handling Precautions

When [No] is selected, the data is pasted without the communications settings updated.

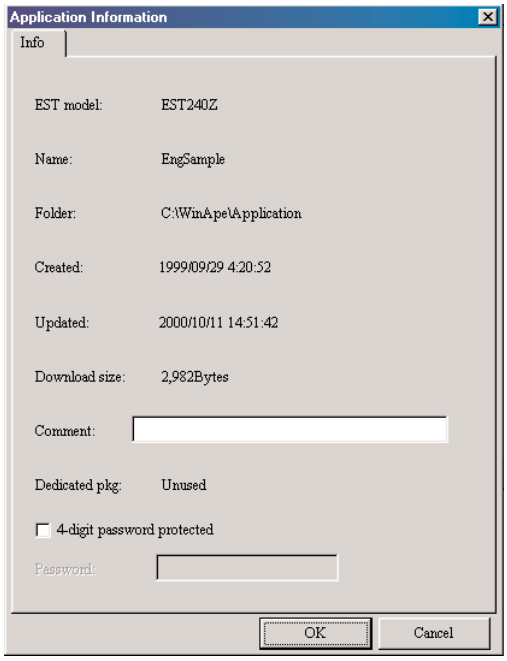
Be sure to either set the communications driver according to the displayed channel settings, or change all devices to correspond to the driver whose settings were changed.

Note

Copied data sent to the Clipboard is not text data, and cannot be used in other applications.

■ Application Information

The Application Information window is opened by double-clicking the application name field in Application Manager.
This window can also be selected by [File]→ [Application Information] on the menu bar.



● Info

- EST model
  This item displays the model name of the EST for which the application was created.
- Name
  This item displays the name of the application.
- Folder
  This item displays the path of the folder where the application is located.
- Created
  This item displays the date and time that the application was created.
- Updated
  This item displays the date and time that the application was last modified.
- Download size
  This item displays the size of the application to be downloaded to EST.
- Comment
  This field is for entering comments for the application.
  Enter comments using up to 31 ASCII characters.
- Dedicated pkg
  The package name is displayed when a dedicated package is set in the configuration information.

- 4-digit password protected

  When an application is downloaded, the application can be configured with a password to restrict uploading.

  Mark this checkbox when the application is to be downloaded with a password set.

Handling Precautions

When you have set a password and downloaded the application, the application data cannot be uploaded unless you enter the password [that was set here] when uploading that application data from EST.

- Password

  This item is for entering the password when the 4-digit password protected checkbox is checked.

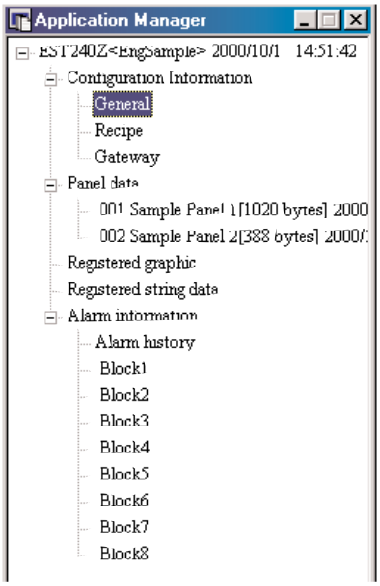
  Enter a 4-digit password in this field.

6 - 3 Configuration Information

The various parameters for the EST operating environment and external interface settings for serial communications, etc, are set in the configuration information. Configuration information comprises of : General , Recipe and Gateway.

■ Basic Settings

Configure the PLC communications channels of the EST.
Open the [Configuration Information] sub-tree in the Application Manager, and double-click [General].



The EST configuration dialog box is displayed.
The tab at the top of the dialog box switches between each of the detailed dialog boxes for [Operation], [Communications] and [Package/Option].

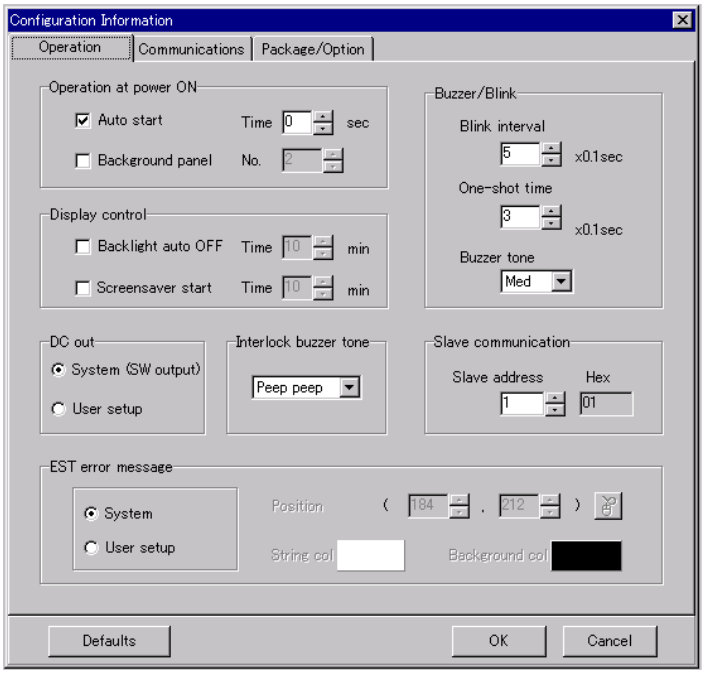
After you have finished configuration, click [OK]. This completes the configuration.
If you click [Cancel] after you have finished configuration, a message window asking whether you want to discard the settings will be displayed.
Clicking [OK] in the message window discards the settings and closes the dialog box.
Clicking [Cancel] in the message window closes the message window.
Clicking [Defaults] restores the operation settings to their defaults. The following describes the details of each setting screen:

! Handling Precautions

Set the PLC communications driver when performing host communications with a PLC or other device.

● Operation

This sheet is for setting EST operation settings.



- Operation at power ON

  [Auto start]

  This item is for automatically starting operation of EST when the power is turned ON and EST is started up. Set the auto start time within the range 0 to 60s. Do not mark this checkbox if you require the EST to start up to the EST system screen when the power is turned ON.

  [Background panel]

  This item is for setting the number of the background panel when EST is started up. Set the number within the range 2 to 899. Do not mark this checkbox when background panels are not set.

- Display control

  [Backlight auto OFF]

  This item is for setting the time that the backlight will be automatically turned OFF after a touch switch on the EST screen has not been touched for a fixed period of time. Set the time within the range 1 to 60min.
  Do not mark this checkbox if the backlight auto OFF function is not required.

  [Screensaver start]

  This item is for setting the time that the screensaver will be started up after a touch switch on the EST screen has not been touched for a fixed period of time. Set the time within 1 to 60min. The screensaver function is for preventing image burn-in on the EST screen through excessive use.
  Do not mark this checkbox when the screensaver function is not required.

- Buzzer / blink

  [Blink interval]

  This item is for setting the blink interval for the display and buzzer. Set the blink interval within the range 0.3 to 10.0s. The display or buzzer will be repeatedly cycled ON and OFF with the interval set here.

  [One-shot time]

  This item is for setting the one-shot time for the displays and buzzer. Set the one-shot time within the range 0.3 to 10.0s. The display or buzzer will be held ON for the time set here and then turned OFF.

  [Buzzer tone]

  This item is for selecting the tone of the buzzer, for example, when a touch switch is operated.

- DC out

  You can select from the following two DC output methods provided as standard on EST.

  [System (SW output)]

  DC output turns ON when there is data in the switch communications buffer.

  [User setup]

  The user can use DC output as the output contact for a switch smart object in the panel data.

  In this case, DC output turns ON when SY00.1 in the output contact area is ON (1).

- Interlock buzzer tone

  This item is used to output a buzzer tone to notify the user that the smart object touched cannot be operated since the interlock function configured to that smart object is active.

  You can select from OFF (buzzer tone not output) and three tones. With this setting, the output pattern is sounded at the specified tone. When the buzzer tone is set to OFF, the buzzer does not sound when the interlock is active. Setting the buzzer tone to High outputs a high-pitched buzzer tone.

- Slave communication

  [Slave address]

  This item is for setting the device address (node number on the communications line) in slave communications mode.

  Set the device address within the range 1 to 126.

- EST error message

  This item is for setting the position of a message, string color and background color to be displayed by EST at downloading or occurrence of communication error.

  This function is available in the EST555Z.

  [System]

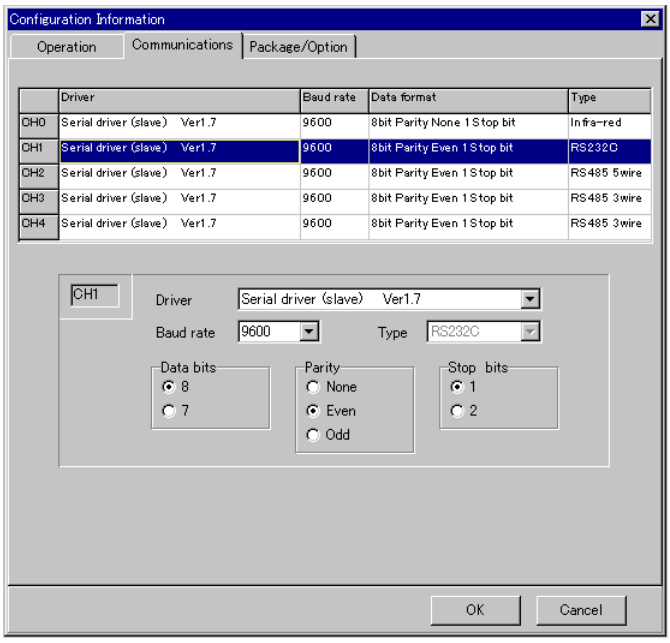
  Position of a message, string color and background color are EST's defaultes.
  Display position: Center of screen
  String color: White
  Background color: Black

  [User setup]

  This item is for setting the position of a message (X:0 to 629, Y:0 to 319), string color,and background color displayed on EST.

● Communications

The following items are available for the configuration of communications with the connected slaves CH0 to CH4:



- Driver
  This item is for setting the communications driver for the device to be connected to the EST.

- Baud rate
  This item is for setting the baud rate for communications.

Handling Precautions

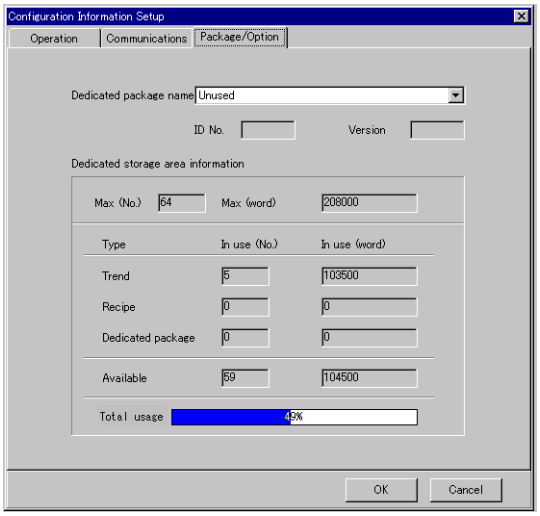
4800bps can be set to CH0 on AP Editor. However, in actual communications, this baud rate becomes 9600bps.

- Data format
  This item is for setting the number of data bits pariity bit, and stop bit.

- Type
  This item displays the type of connection. The type of connection is fixed to each channel as follows: infra-red communications (IrDA) for CH0, RS-232C interface for CH1, RS-485 (5-lead) for CH2 and RS-485 (3-lead) for CH3 and CH4.

● Package/Option

This sheet is for specifying the name of the dedicated package when a dedicated package is used. It also displays the number of trend smart objects and recipe smart objects used.



- Dedicated package name
  This item is for specifying the name of the dedicated package when a dedicated package is used.
  A “dedicated package” is an EST application that can be downloaded to the EST for immediate use when the EST is used in combination with a pre-determined device.
  The “DMC10 dedicated package” is available for combined use of an EST with DMC10.
  For details, see “Chapter 8. USING A DEDICATED PACKAGE.”
- Dedicated storage area information
  This item displays the dedicated storage areas used in the trend/recipe/dedicated package.
- Max (No.)
  This item displays the maximum number of dedicated storage areas.
- Max (word)
  This item displays the maximum size of dedicated storage areas by the number of words.
- Type
  Dedicated storage areas are used for trend/recipe/dedicated package.
- In use (No.)
  This item displays the number of dedicated storage areas used in trend/recipe/dedicated package.
- In use (word)
  This item displays the size of dedicated storage areas used in trend/recipe/dedicated package by the number of words.
- Available
  This item displays the unused areas out of dedicated storage areas by the number of areas/area size (words).
- Total usage
  This item displays the ratio of dedicated storage areas used, by percent.

■ Recipe Functions

This item describes recipe functions and how to use recipes.

Handling Precautions

AP Editor Ver1.1.00, or later, is required to use recipe functions.

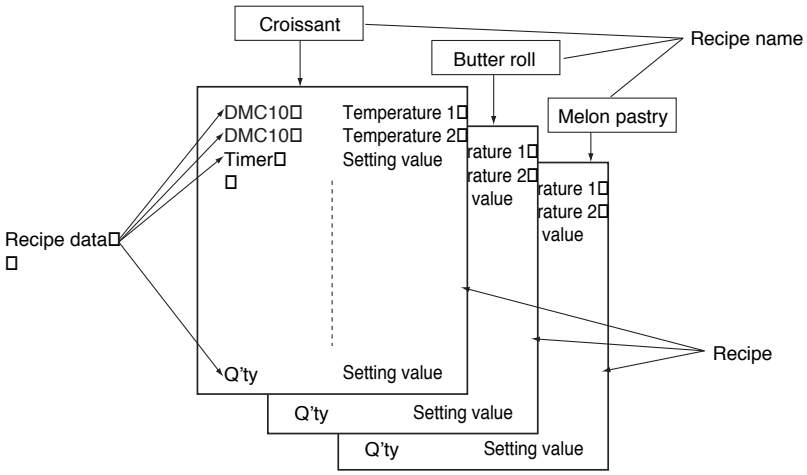
● What is a “recipe”

A “recipe,” as its name implies, means a list of instructions to prepare something. With the EST, a data structure for managing control data such as the SP values for a Yamatake temperature controller, or PLC settings, is called a “recipe.”
The data comprising the recipe function is divided into five categories: recipe, recipe data, recipe name, parameter and data name/comment.

[Recipe]
This is a group of recipe data such as SP values for a temperature controller, for example.

[Recipe data]
This is the control data such as the SP values for a temperature controller.

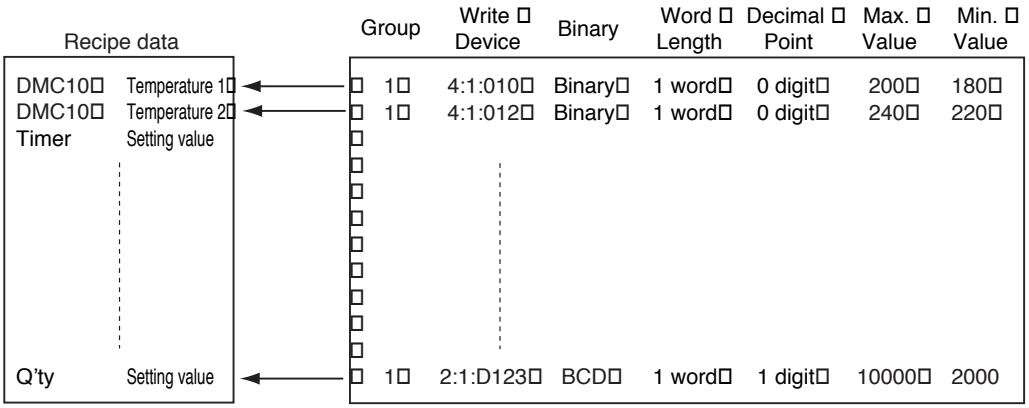
[Recipe name]
This is the name that the recipe is appended with.
Let’s take a bread production line as an example. The baking temperature and time vary according to the type and quantity of bread.
The transition between recipe data items is identified by assigning the recipe data for baking croissants a recipe name and by assigning the recipe data for baking butter rolls a recipe name.
Recipes facilitate the data management of multiple recipe data and corresponding recipe names.
Parameters and data names/comments in the figure below are supplementary data for the recipe data used on EST.



[Parameters]
Parameters are data for aiding recipe data operation settings and operation displays. Specify the group (Gr), write destination devices for individual recipe data, data type (signed binary/unsigned binary/BCD data), data length (1 word/2 word), decimal point position, upper limit value, and lower limit value to these parameters.
Individual recipe data has group settings.

A “group” is a function that is used when the timing at which the recipe data is written to an external device differs within the same recipe. Up to four groups can be set. Also, the write execution device of the data can be specified to each group when recipe data is to be written by device control on the PLC.
Set group 1 when using recipe smart objects by manual writing.
Groups 2, 3 and 4 can also be used when using recipe smart objects with automatic writing.

[Data names/comments]
Data names/comment are names (labels) that are appended to individual data items in the recipe data. Data names/comments are used for displaying the name and comment instead of displaying the device address of the data. Use of names and comments simplifies operation when displaying operation settings and monitoring data on the EST. Up to 32 characters can be used as the data name and up to 64 characters as the data comment. Mainly data names are used on the EST owing to screen size limitations of the EST.



● **Memory size of recipe data**

The total size of recipe data is 5000 words. However, the minimum and maximum sizes of recipe data are 25 and 200 words, respectively, for each recipe.
Hence, up to 25 recipes can be made when using recipe data of 200 words per recipe, or recipe data of 25 words per recipe can be assigned if making 200 recipes.

Recipe data is calculated as follows:
Total size of recipe data (5000 words) ≥ number of recipes x number of recipe data words used in a single recipe

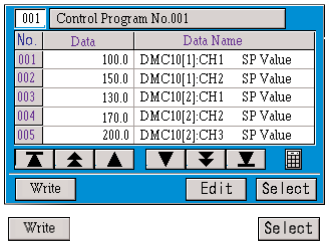
The number of recipe data items per recipe when the data length is set to 2 words becomes less than when the data length is set to 1 word.
For example, if the number of recipes is set to 25 with all data having a data length of 2 words, the number of recipe data items that can be used per recipe becomes 100 (200words).

● About recipe smart objects

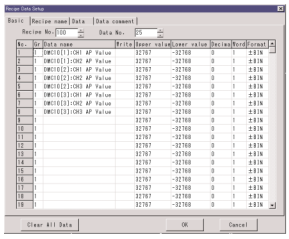
Recipe smart objects are mainly used for setting the operation of recipes. Recipe smart objects have settings such as the trigger device for writing recipes and device to specify the recipe No.
There are two ways of writing recipes: “manual write” and “auto write.”

Manual write:	This method is used when the operator switches recipe data (product type data) by operating the touch panel.
Auto write:	This method is used when switching of recipe data (product type data) is performed automatically by the control of an external PLC, not the operator.

- Manual write
  Data is written when the [Write] button for the recipe smart object is touched.
  The figure below illustrates operation of a smart object when [Manual write] is selected.
  When writing the recipe data with a manual write smart object, call-up the recipe selection panel using [Select], then load the data of the recipe No. to be written to the smart object. (step 1)
  Next, select [Write] to write the data to the PLC, etc. (step 2).

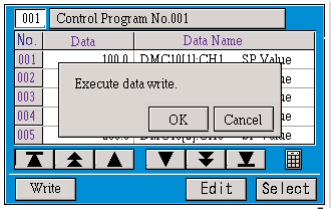


- Recipe data setting
  The recipe data to be displayed by the smart object is set under the [Recipe] section of the [configuration Information] of the AP Editor.

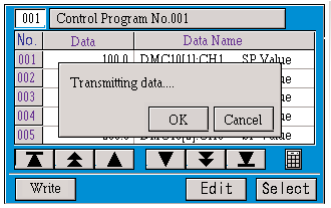


- Recipe data write (step 2)
  The data of the recipe No. currently displayed by the smart object is written to PLC device., etc.

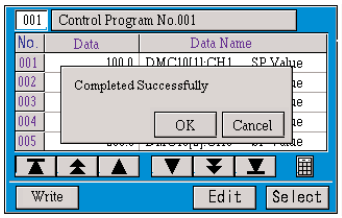
[Confirmation of write]



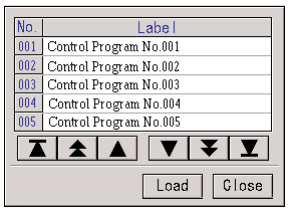
[Transmitting]



[Confirmation of write result]



- Recipe selection panel (step 1)
  Select the recipe to be displayed by the smart object and read that data into the smart object.



Note

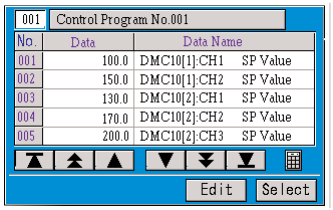
With manual write smart objects, the recipe No. curently displayed on the smart object is the one that written.
For details of recipe smart objects, refer to Smart Terminal EST-Z Series Smart Object Library Manual No.CP-SP-1089E.

- Auto write

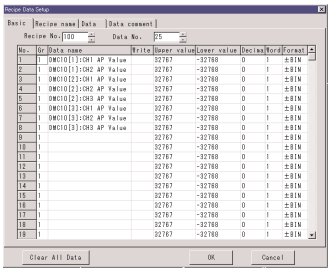
  Data is written when a PLC or other external bit device turns ON.
  The figure below illustrates operation of a smart object when [Auto write] is selected.

  With auto write smart objects, the PLC or other external device is used to specity the writing of the recipe data. The following devices can be instructed:
  - Recipe No. specification device (word)
  - Write execution device (bit)
  - Successful completion notification device (bit)
  - Error notification device (bit)

  Writing of recipe data is executed by controlling these devices on the PLC, etc.



Recipe data setting
The recipe data to be displayed by the smart object is set under the [Recipe] section of the [configuration Information] of the AP Editor.



[Recipe No. specification device]

Set the word device for specifying the number of the recipe to write. When the write execution device bit is set (bit state changed to 1), the data of the recipe No. currently set to this word device is written.

[Write execution device]

Set the bit device for controlling the timing when the writing of recipe data will be performed.
When this bit device is set (bit state changed to 1), writing of recipe data commences. The EST resets this bit device (bit state changed to 0) when the writing of recipe data has been completed.
Up to four write execution devices can be set. Recipe data can be written at different times by assigning recipe data to each of these four groups.

[Successful completion notification device]

Set the bit device for notifying that the writing of recipe data was completed successfully. The bit device is set (bit state changed to 1) when communications have been completed successfully.
As the EST does not reset the bit device (bit state changed to 0), reset the state of the bit device with the external device.

[Error notification device]

Set the bit device for notifying that the writing of recipe data resulted in an error. The bit device is set (bit state changed to 1) when communications results in an error.
As the EST does not reset the bit device (bit state changed to 0), reset the state of the bit device with the external device.

Note

- The [auto write] recipe data write instruction by can be executed regardless of the current display state of the panel containing the recipe smart object.
- Recipe data settings are not downloaded if a panel which contains a recipe smart object does not exist within the application.
- For a detailed description of recipe smart objects, refer to Smart Terminal EST-Z Series Smart Object Library Manual No.CP-SP-1089E.

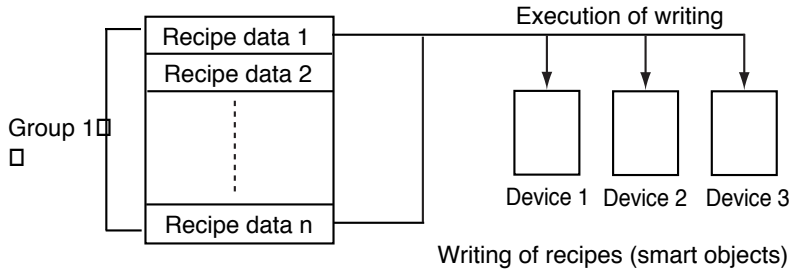
● How to write recipes

There are two ways of writing recipes, “manual write” and “auto write.”

- Manual write

  Writing of recipe data is executed using the [Write] switch assigned to the smart object.

  With writing of manual write smart objects, only the recipe data set to group 1 of the recipe No. currently displayed on the smart object is written.



Writing of recipes (smart objects)

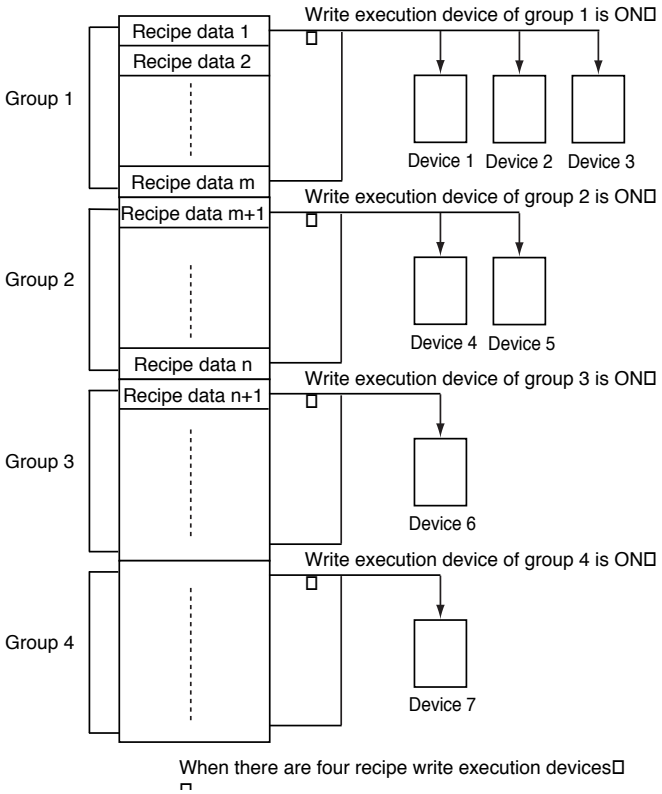
Note

Recipe data currently set to groups 2 through 4 cannot be written, with “manual write”.

- Auto write

  Writing of recipe data is executed by operating a device on a PLC or other external device.

  In the case of auto write, a single recipe can be divided into a maximum of four groups. Configure the write execution device for each group of the auto write smart object, and write the recipe data to each group at the respective write timings.

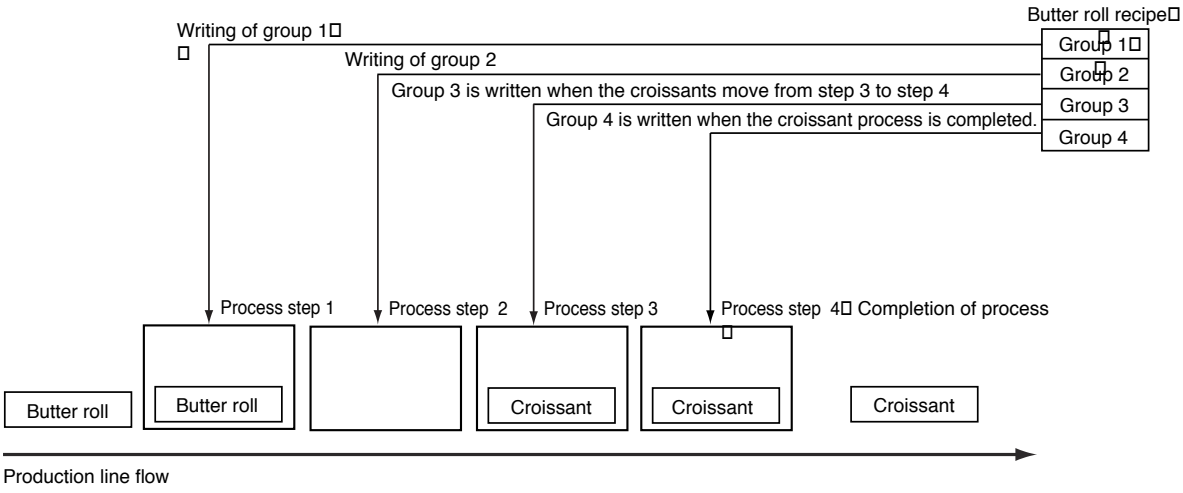


When there are four recipe write execution devices

Note

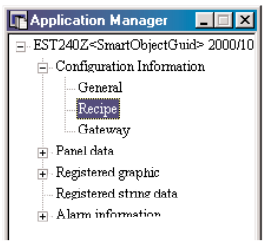
Auto write is used to change the recipe data write timing within the same recipe via by a device. Writing of recipe data during change of product type can be executed for each control step (process) by assigning recipe data group settings to each control step (process).

Example) When switching the product type from croissant to butter roll



■ Recipe Data Configuration

Set the parameters required for the operation of the recipe function.
Display the sub-tree for [Configuration Information] in Application Manager, and double-click [Recipe].
The Recipe Data Setup dialog box will be displayed.



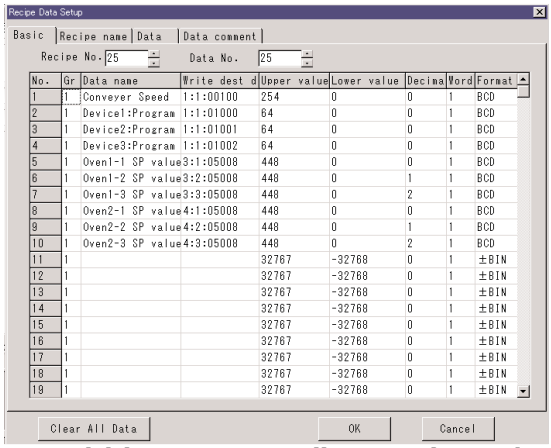
Recipes are for batch-changing temperature controller, or PLC, setting data accompanying a change in the product type to be produced.
The recipe function operates in accordance with data set in the recipe data configuration. For details on recipe functions, see "■ Recipe Functions" (page 6-15).

! Handling Precautions

- AP Editor Ver1.1.00 or later is required to use recipe functions.
- One dedicated storage area is required for the recipe function.

● Basic Configuration

This tab is for configuring the number of recipes, number of recipe data items and data parameters.
Specify group (Gr), write destination device, data name (32 characters), data format, number of words, decimal point position, and upper and lower limit values.
Cut, copy, paste and delete operations are performed on single lines.



No.	Gr	Data name	Write dest d	Upper value	Lower value	Decima	Word	Format
1	1	Conveyer Speed	1:1:00100	254	0	0	1	BCD
2	1	Device1:Program	1:1:01000	64	0	0	1	BCD
3	1	Device2:Program	1:1:01001	64	0	0	1	BCD
4	1	Device3:Program	1:1:01002	64	0	0	1	BCD
5	1	Oven1-1 SP value	3:1:05008	448	0	0	1	BCD
6	1	Oven1-2 SP value	3:2:05008	448	0	1	1	BCD
7	1	Oven1-3 SP value	3:3:05008	448	0	2	1	BCD
8	1	Oven2-1 SP value	4:1:05008	448	0	0	1	BCD
9	1	Oven2-2 SP value	4:2:05008	448	0	1	1	BCD
10	1	Oven2-3 SP value	4:3:05008	448	0	2	1	BCD
11	1			32767	-32768	0	1	±BIN
12	1			32767	-32768	0	1	±BIN
13	1			32767	-32768	0	1	±BIN
14	1			32767	-32768	0	1	±BIN
15	1			32767	-32768	0	1	±BIN
16	1			32767	-32768	0	1	±BIN
17	1			32767	-32768	0	1	±BIN
18	1			32767	-32768	0	1	±BIN
19	1			32767	-32768	0	1	±BIN

Cut and delete operations will return values to their defaults and clear devices.
If you move the mouse to between the columns on the top row of the parameter settings list, the mouse cursor changes to a ◂|▸.
You can adjust the width of columns by dragging the ◂|▸ to the left and right.

- Recipe No.
  This item is for specifying the number of recipes to be made. Set within the range 25 to 200.
- Data No.
  This item is for specifying the number of recipe data items to be made. Set within the range 25 to 200.

! Handling Precautions

For details on the relationship between the number of recipes and number of recipe data items, see "● Memory size of recipe data" (page 6-16).

• Gr
A “group” is a function that is used when the timing at which the recipe data is written to an external device differs within the same recipe. Up to four groups can be set. In addition the write execution device of the data can be specified for each group when the recipe data is to be written by PLC device control.

Note
Set only group 1 when using recipe smart objects with manual writing. Set groups 2, 3 and 4 when using recipe smart objects with automatic writing. For details, see “● How to write recipes” (page 6-19).

• Data name
This item is for editing the name of recipe data. Max. 32 characters.

Note
For details on displayable characters, refer to Smart Terminal EST-Z Series Smart Object Library Manual No.CP-SP-1089E.

• Write dest device
This item is for setting the device to write the recipe data to. Set word devices as the write destination devices.

Handling Precautions
The recipe data of recipe data items to which a write destination device has not been set are ignored, and only recipe data to which a write destination device has been set are active.

• Upper/lower values
These items are for specifying the recipe data setting range. The default upper limit value is 32767, and the default lower limit value is –32768. The decimal point is not entered to the upper and lower limit values.

1 Word	Signed Binary –32768 to +32767	Unsigned Binary 0 to 65535	BCD 0 to 9999
2 Words	Signed Binary –2147483647 to +2147483647	Unsigned Binary 0 to 4294967295	BCD 0 to 99999999

• Decimal point
This item is for setting the position of the decimal point. The default is 0.
The specification of the decimal point position is only for display on the EST.
The decimal point is not entered to data that is actually written.

1 Word	Signed/Unsigned Binary 0 to 4	BCD 0 to 3
2 Words	Signed/Unsigned Binary 0 to 9	BCD 0 to 7

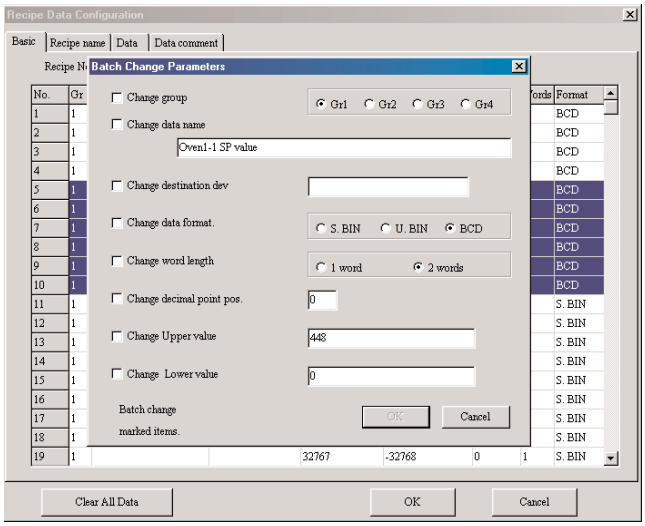
• Word
This item is for specifying the word length of the recipe data. Specify either 1 word (default) or 2 words.
• Format
This item is for selecting the format of the recipe data. You can select from signed binary (default), unsigned binary or BCD. Signed binary is displayed as S. BIN, and unsigned binary is displayed as U. BIN.

Handling Precautions

If the areas for the write destination device of the recipe and gateway configuration overlap, then operation can not be assureed.

- Batch change parameters

  This function batch-changes all parameter items within a specified range. Clicking the right mouse button opens the pop-up menu. Select [Batch change parameters]. The Batch Change Parameters dialog box will be displayed.

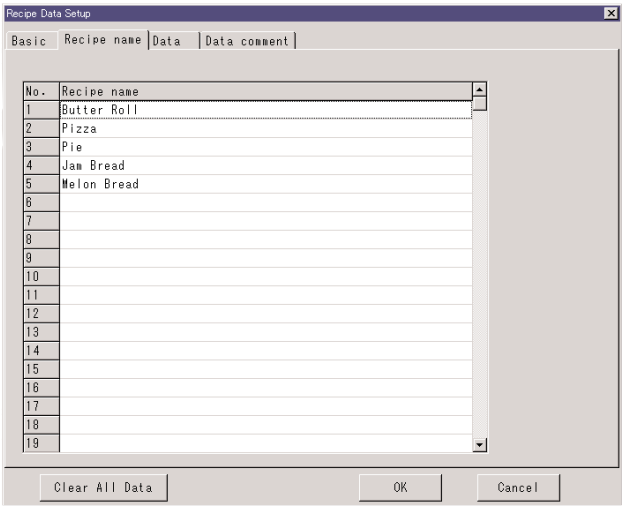


  Enter or select the data to be changed, and mark the checkbox on the left of the item. Parameters in the range specified by items whose checkbox is marked are changed.

  Items whose checkbox is not marked are not changed.

● Recipe name configuration

This tab is for configuring the recipe name of recipes.



Up to 50 characters can be used for recipe names.

Handling Precautions

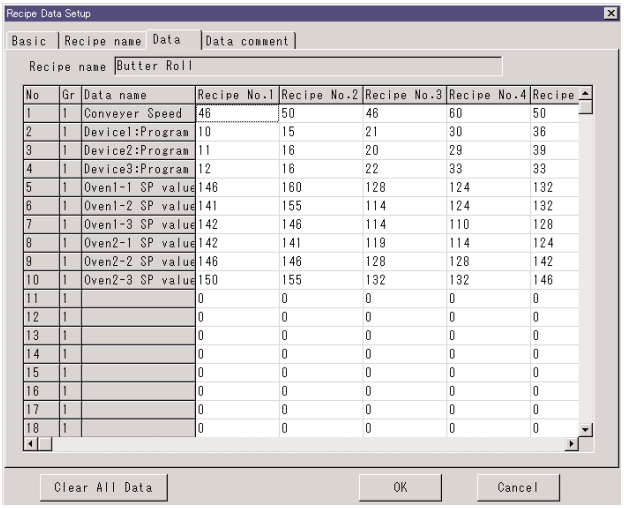
Recipes will not function unless a recipe name has been set. When some of the recipe numbers are not used, leave the unused recipe names blank.

Note

- For details on displayable characters, refer to Smart Terminal EST-Z Series Smart Object Library Manual No.CP-SP-1089E.
- Recipe names can also be entered and corrected on the EST.

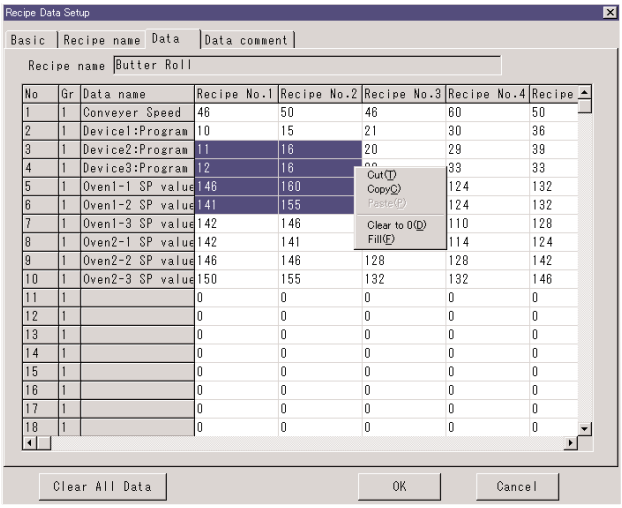
● Data configuration

This tab is for configuring the recipe data corresponding to the recipes.



No	Gr	Data name	Recipe No.1	Recipe No.2	Recipe No.3	Recipe No.4	Recipe
1	1	Conveyer Speed	46	50	46	60	50
2	1	Device1:Program	10	15	21	30	36
3	1	Device2:Program	11	16	20	29	39
4	1	Device3:Program	12	16	22	33	33
5	1	Oven1-1 SP value	146	160	128	124	132
6	1	Oven1-2 SP value	141	155	114	124	132
7	1	Oven1-3 SP value	142	146	114	110	128
8	1	Oven2-1 SP value	142	141	119	114	124
9	1	Oven2-2 SP value	146	146	128	128	142
10	1	Oven2-3 SP value	150	155	132	132	146
11	1		0	0	0	0	0
12	1		0	0	0	0	0
13	1		0	0	0	0	0
14	1		0	0	0	0	0
15	1		0	0	0	0	0
16	1		0	0	0	0	0
17	1		0	0	0	0	0
18	1		0	0	0	0	0

- Recipe name
  This item is for displaying the recipe name of the recipe number corresponding to the column on which the cursor is located. The recipe name is only displayed and can not be changed here.
- Data name
  This item is for displaying the data name entered in the basic configuration. This name is only displayed and can not be changed here.
- Data entry
  Each column is recipe data corresponding to a single recipe, and each line number corresponds to the data to be written to the write destination device entered in the basic tab of the parameter settings.
  When entering data, values are rounded so that they fall within the lower/upper limit range set in the basic cofiguration. The decimal point is not entered in the data that is input.
  Clicking the right mouse button displays the pop-up menu, from which cut, copy, paste, clear to 0 and fill can be selected.



No	Gr	Data name	Recipe No.1	Recipe No.2	Recipe No.3	Recipe No.4	Recipe
1	1	Conveyer Speed	46	50	46	60	50
2	1	Device1:Program	10	15	21	30	36
3	1	Device2:Program	11	16	20	29	39
4	1	Device3:Program	12	16	22	33	33
5	1	Oven1-1 SP value	146	160	128	124	132
6	1	Oven1-2 SP value	141	155	114	124	132
7	1	Oven1-3 SP value	142	146	114	110	128
8	1	Oven2-1 SP value	142	141	119	114	124
9	1	Oven2-2 SP value	146	146	128	128	142
10	1	Oven2-3 SP value	150	155	132	132	146
11	1		0	0	0	0	0
12	1		0	0	0	0	0
13	1		0	0	0	0	0
14	1		0	0	0	0	0
15	1		0	0	0	0	0
16	1		0	0	0	0	0
17	1		0	0	0	0	0
18	1		0	0	0	0	0

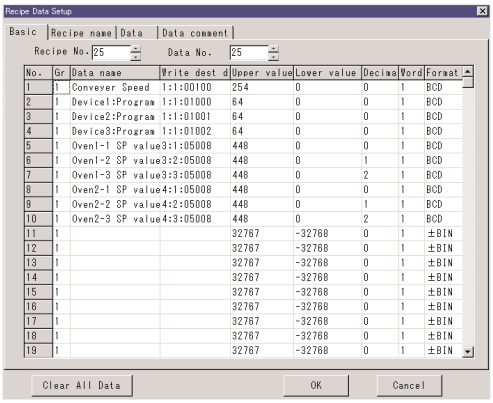
Clear to 0 clears the specified range to “0” (zero).
Fill sets the specified range to the same value.

Handling Precautions

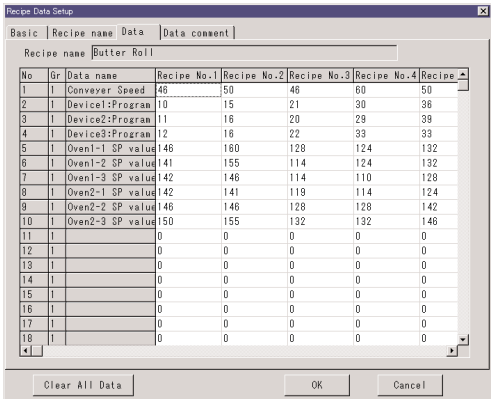
The values set in the data settings are written by the EST to the write destination address. Specification of the decimal point position is for display only on EST, the decimal point is not entered to the data that is actually written.

The following shows how the data set in the basic settings and in the data settings are displayed on EST.

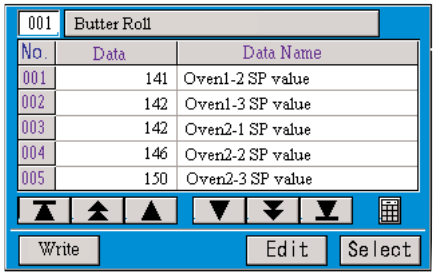
Basic configuration



Data configuration



EST

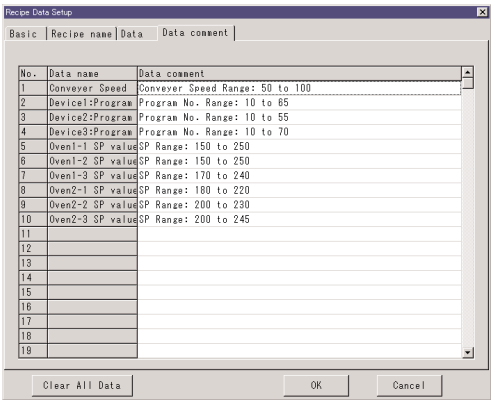


Note

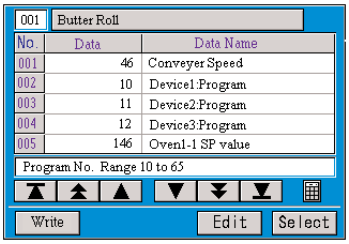
- The column width can be changed in the data configuration tab by the same method as for basic configuration tab. For details, see “● Basic configuration” (page 6-21).
- If the lower limit value or upper limit value is changed in the basic configuration tab after data has been set, the limit values may fall outside of this range. If an entered value exceeds the upper limit value, it is displayed in red. If it falls below the lower limit value, it is displayed in yellow. Enter the data again so that it falls within the lower/upper limit value range.
  [OK] cannot be clicked until data is no longer displayed in red or yellow.
- Data configuration can also be entered and corrected on the EST.

● Data comment configuration

This tab is for configuring a comment to recipe data.



When comments are set, they are displayed on the smart objects as follows:



- Data name
  This item is for displaying the data name entered in the basic sconfiguration tab. The width of the data name is the width of the data name in the basic configuration tab. To change the display width, change it in the basic configuration tab.
- Data comment
  Comments can be set to recipe data. No. is the recipe data number. Up to 64 characters can be entered for recipe data comments.

Note

For details on displayable characters, refer to Smart Terminal EST-Z Series Smart Object Library Manual No.CP-SP-1089E.

● Clear All Data

To clear all recipe data configuration, click [Clear All Data].

Note

If pasted recipe data smart objects are deleted or recipe data settings have been configured by mistake, the message [Smart recipe object is not used in panel data. The recipe data configration will not be downloaded.] will be displayed when that application data is downloaded.
If that happens, clear this setting data, return by clicking [OK] and save the application data.
Then the message will not be displayed again.

■ Gateway Functions

This item describes the gateway function and its use.

Handling Precautions

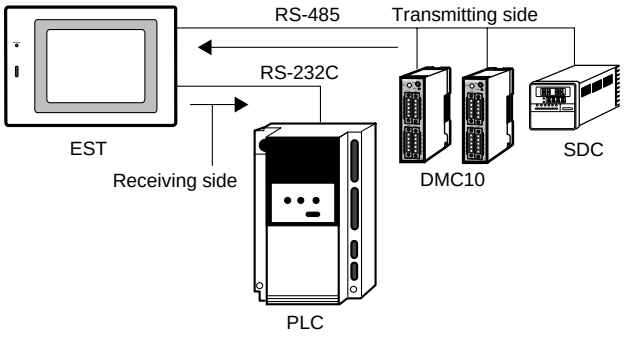
AP Editor Ver1.1.00 or later is required to use gateway functions.

The EST gateway functions enable data exchange to be performed and setup easily between a Yamatake temperature controller and a PLC connected to an EST. The following describes an example where the Yamatake DMC10 temperature controller and a PLC are connected to an EST:

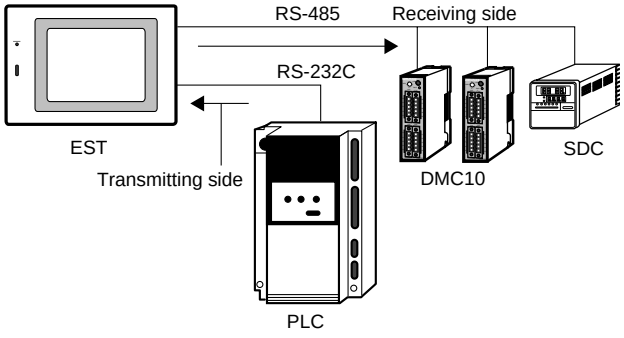
Gateway functions are independent of panel data operations on the EST, and are performed in background. For this reason, the only configuration required for gateway operations are the communications and gateway configuration in the configuration information. Operations such as pasting of smart objects and editing of panel data need not be performed.

Data exchange using the gateway functions is divided into the following two types:
(1) Data such as DMC10 PV values and event information are read periodically into the PLC.
(2) Setting value data on the PLC such as SP values for the DMC10 are written to the DMC10.

The difference between (1) and (2) is not only the data write direction; (1) and (2) also differ in the following respect: Though (1) is executed cyclically for monitoring, writing with (2) is performed only when the need to write occurs. The gateway functions allow these operations to be easily achieved.
Interlock device to interlock the gateway startup can be configured on the EST555Z.



Data such as DMC10 PV values and event information is read cyclically to the PLC.



Setting value data from the PLC, such as SP values for the DMC10, is written to the DMC10.

● Configuring the communications driver

To perform communications, the communications channel on EST and the communications driver used on that channel must be configured. Communications configuration is performed in the [General] section of the [Configuration Information].
When the PLC is to be used on the RS-485 interface, set the PLC communications driver to channel 2.
Select the CPL (MX, New DIGITRONIK) driver for the channel that is connected to DMC10.

● Basic cofiguration items

There are six basic items to be set for performing this operation.
Interlock can be additionally configured on the EST555Z.
For configuring method, see"● Interlock Configuration" (page 6-35).

- Src mode
  [Cont]
  When the send device is specified for sending a specified number of data items, the specified number of continuous data items are sent starting from the device that has been set as the source device.
  [Discrete]
  This item is used when the source devices are not continuous devices. In this case, enter the source devices for the required number of data items. Devices having different communications addresses are allowed as source devices. Generally, it can be said that it takes less time to complete communications if [Cont] is set when communicating the same number of data items.
- Src dev
  Configure the source devices on the send side. When [Cont] is used, input the start source device, and when [Discrete] is used, input all devices to be used for sending. Input the source devices in word units. When using bit devices, input the word boundary.
- Dest mode
  This setting has the same [Cont] and [Discrete] settings as Src mode.
- Dest dev
  Configure the destination devices for the receive side. When [Cont] is used, input the start destination device, and when [Discrete] is used, input all devices to be used for receiving.
  Input the destination devices in word increments. When using bit devices, inpput the word boundary.
- Word
  This item is the number of data items to be sent and received. Communications is performed in word (16 bits) increments.
  Set the number of data items within the range 1 to 99 words.
- Method
  Three startup methods are available.
  [Cyclic]
  Set within the range 1 to 999s in 1-second increments. The data of the send devices is written to the receive devices at the cycle time interval that you set here.
  [Trigger ON]
  The data of the send devices is written to the receive devices when the state of the specified bit (contact) device turns ON.
  When writing is complete, the EST turns the state of the bit device OFF.

[Trigger OFF]
The data of the send devices is written to the receive devices when the state of the specified bit (contact) device turns OFF.
When writing is complete, the EST turns the state of the bit device ON.

Note

EST supports multiple gateway functions. The above configuration items are taken to be a single gateway block. Up to 40 gateway blocks can be configured for the gateway. To prevent erroneous configuration, it is recommend to group gateway settings together as a single block for the same model of device, and setting the devices on different channels as different blocks.

Handling Precautions

If the time interval is set to a too short value when data is transferred periodically at a fixed period, overall operation such as the EST screen refresh rate may slow down or communications may no longer be possible. If this happens, set the time interval to a larger value.

● **Reading data such as DMC10 PV values and event information to the PLC**

- Src mode
  Configure the type of source device on the DMC10. When 1 word data is set, [Cont] may be set, however, normally set [Discrete], since DMC10 address are not continuous.
- Src dev
  Configure the data device on the DMC10 to be sent to the PLC.
- Dest mode
  Configure the type of destination device on the PLC. Data transmission efficiency increases when [Cont] is set.
- Dest dev
  Configure the device on the PLC to which data arriving from the DMC10 is to be written.
- Method
  In this case, monitoring is performed continuously, so the time is set to a fixed cycle time. The time changes according to the number of devices that are currently connected. When many devices are connected, use a larger value for the time interval compared with when only a few devices are connected.

● **Writing configuration data on the PLC such as SP values for the DMC10 to the DMC10**

- Src mode
  Configure the type of device to be sent to the DMC10 from the PLC. When sending the same number of data items, communications ends earlier if [Cont] is set instead of [Discrete].
- Src dev
  Configure the data device to be sent from the PLC to the DMC10.
- Dest mode
  Configure the type of destination device on the DMC10. When 1 word data is set, [Cont] may be set, however, normally set [Discrete], since DMC10 address are not continuous.
- Dest dev
  Configure the device on the DMC10 to which data arriving from the PLC is to be written.

- Method
  In this case, configuration data such as SP values are written, so set the external trigger ON (or OFF).
- Trigger device
  Configure the bit device to be used as the trigger.

● Extended

In addition to the basic configuration items, extended configuration is also available for the gateway function.
Normally, the defaults of the PLC communications driver are used. However, these values can be changed. Extended settings include Output mode, Output device, Retries, and Time-out.

- Output mode
  As a result of executing communications, communications completion output and communications error output can be output to the specified device. The communications result output mode has three modes:
  [Output OFF]
  This is selected as the default.
  [Output ON]
  This mode sets the communications result output device (state turned to 1). Note, however, that though the bit device at the output destination is set (state turned to 1), it is not reset (state turned to 0).
  [Initialize]
  In this mode, the communications result output device described below is reset (state turned to 0) before communications is started.

- Output device
  This item can not be configured when the communications result output mode is set to “Do not use communications result output.”Configure a bit device to the following devices:
  [Completion output dev]
  This is the device to output to when the communications have been completed.
  The target output is set (state turned to 1) even if the communications ends with an error.
  [Error output dev]
  This is the device to output to when communications end with an error.
  The target output is set (state turned to 1) when communications end with an error.

- Retries
  You can select any of the following:
  [Use defaults]
  Use the default of the PLC communications driver.
  This is selected as the default (3 retries).
  [No retries]
  [Specify number of retries]
  You can set the number of retries within the range 1 to 15.

- Time-out

  You can select either of the following:

  [Use defaults]

  Normally, the default is 3.0s, thought this varies according to the PLC communications driver. This is selected as the default.

  [Specify time]

  You can set within the range 0.1 to 99.9s.

● Interlock configuration

This is used when configuring the interlock for the gateway data transmission and receiving.

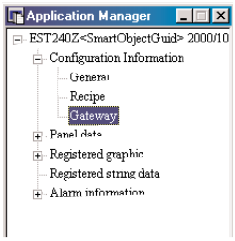
Interlock device can be configured on the EST555Z to interlock the gate way startup.

If interlock device is configured, startup judgement can be made as a gateway startup condition by AND of interlock device and bit inverse. Therefore, even if gateway data satisfying startup condition exists after interlock bit device is turned ON (1), this data cannot be started up.

When interlock device is OFF(0), the gateway data satisfying the startup condition can be transmitted and received.

The gateway data which satisfies startup condition after interlock device is turned ON (1) can be started up if the data satisfies the startup condition when the interlock device is turned OFF (0).

■ Gateway Configuration



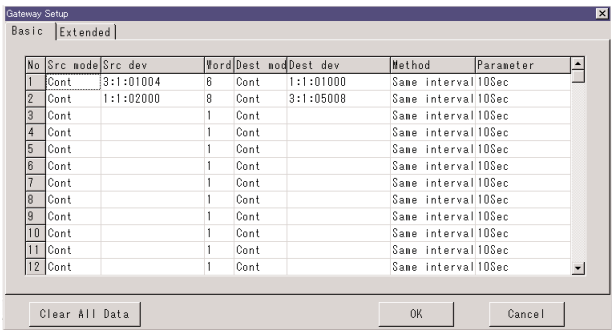
Display the [Configuration Information] sub-tree in Application Manager, and double-click [Gateway]. The gateway configuration dialog box will be displayed.

With the gateway functions, data for a temperature controller or PLC, etc, connected on different EST channels can be transferred without the need for a communications program. When the gateway functions are used, data such as the DMC10's PV or event information can be read to the PLC or alternatively the SP or other configuration values can be written to the DMC10 from the PLC.

For details, see "■ Gateway Functions" (page 6-27).

● Basic configuration

This tab is for configuring Src/Dest mode, Src/Dest device, number of words, Method, and Parameter. Cut, copy, paste and delete operations are possible on these settings. Cut and delete operations will return values to their defaults and clear devices.



- Src/Dest mode
  Configure the device settings of the sending side, device settings of the receiving side, and their number of words. When “discrete” is specified for the send and receive type, you can specify multiple non-continuous devices. Note, however, that it takes longer to execute communications compared with when “continuous” is specified.
- Src dev/Dest dev
  Configure the device of the data sending side and the device of the data receiving side. Set the device in word increments. When bit devices are used, set at the word boundary.
- Word
  Configure the number of data items to send and receive. You can set up to 99 data items.
- Method
  You can select the external startup trigger device (bit device), how the trigger device is started up (startup at ON, startup at OFF), or periodic startup at fixed intervals.
- Parameter
  When a fixed interval is selected for the startup method, set the fixed period time here. Specify within the range 1 to 999s in 1-second increments.

● **Clear All Data**

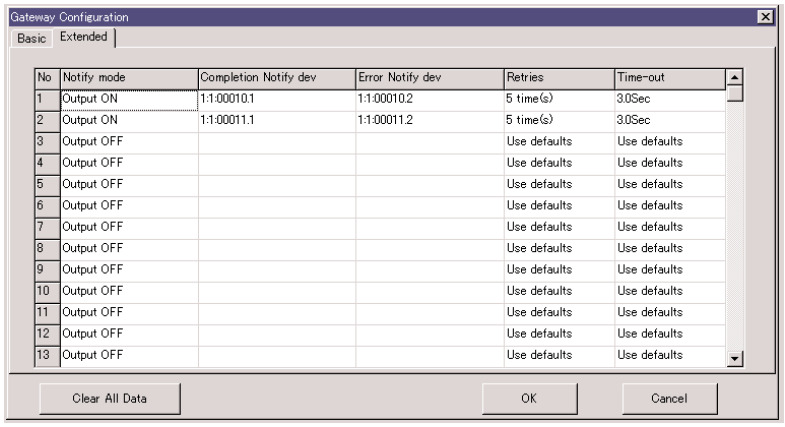
Click [Clear All Data] to clear all settings.

Handling Precautions

- Operation of recipe data and gateway data is not assured if the areas for the write destination device in the recipe data configuration and the destination device in the gateway configuration overlap.
- Cutting, pasting of copy and deleting are applied to all tabs in the lines within the specified areas. For example, if No.4 is deleted, all the No.4 data of basic configuration and Extended (interlock) are deleted.

● Extended

This sheet is for setting the Retries, Time-out and Output mode.



No	Notify mode	Completion Notify dev	Error Notify dev	Retries	Time-out
1	Output ON	1:1:00010.1	1:1:00010.2	5 time(s)	3.0Sec
2	Output ON	1:1:00011.1	1:1:00011.2	5 time(s)	3.0Sec
3	Output OFF			Use defaults	Use defaults
4	Output OFF			Use defaults	Use defaults
5	Output OFF			Use defaults	Use defaults
6	Output OFF			Use defaults	Use defaults
7	Output OFF			Use defaults	Use defaults
8	Output OFF			Use defaults	Use defaults
9	Output OFF			Use defaults	Use defaults
10	Output OFF			Use defaults	Use defaults
11	Output OFF			Use defaults	Use defaults
12	Output OFF			Use defaults	Use defaults
13	Output OFF			Use defaults	Use defaults

- Notify mode

  This is an option for outputting the communications results.
  You can select from three options [Output ON], [Output OFF] and [Initialize].

  When [Output ON] and [Initialize] are selected, specify the communications completion notify device and the error notify device.

  The [Initialize] function will clear the output result device before starting communications.

- Completion notify dev

  This is the device to output to when communications are completed. The target output is set (state turned to 1) even if the communications end with an error.

- Error notify dev

  This is the device to output to when communications end with an error.
  The target output is set (state turned to 1) when communications end with an error.

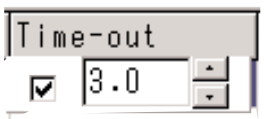
- Retries

  Select from default, no retries or from within the range 1 to 15.
  When the default is used, the default value (standard: 3 retries) of the communications driver is enabled.

- Time-out

  Set the time-out within the range 0.1 to 99.9s or the default.
  When the default is used, the default value (standard: 3s) of the communications driver is enabled.

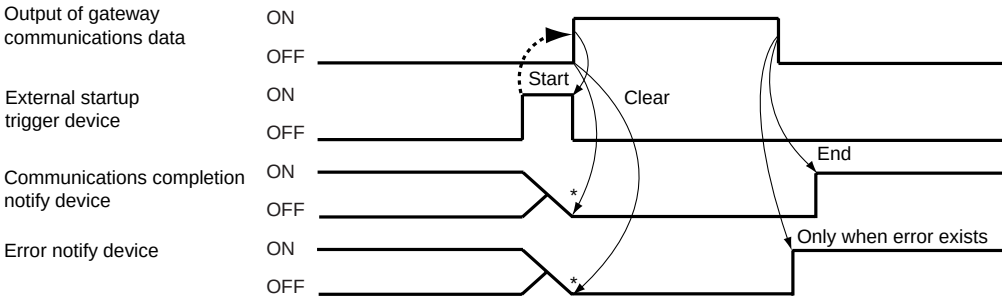
  When time-out is clicked, a checkbox will be displayed. Marking the checkbox sets the time-out to three seconds. Specify the desired time-out using up/down buttons.



● **Output timing of communications completion notify device and error notify device**

The figures below show the timing of gateway communications startup, communications completion notify device and error notify device when the communications notify mode is set to "Output ON" or "Initialized."
There are two ways of starting up gateway communications, either by an external startup trigger device (ON/OFF) or by fixed period startup. The following examples are for startup by external startup trigger device ON:

(1) When the Notify mode is set to "Initialized"

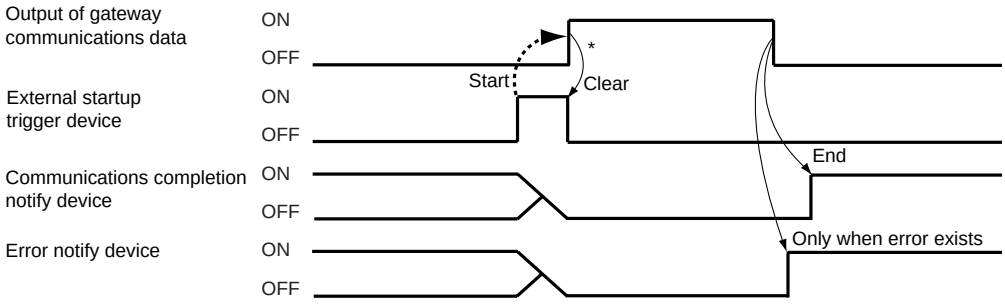


When interlock is OFF(0).

* EST resets (turns state to 0) the external startup trigger device, communications completion notify device and error notify device when gateway communications is started up.

(2) When the Notify mode is set to "Output ON"

Program so that gateway communications is started up after the communications completion notify device and error notify device are cleared by the user.
Clearing of the communications completion notify device and error notify device is the same as for example (1) except that it is performed by the user.

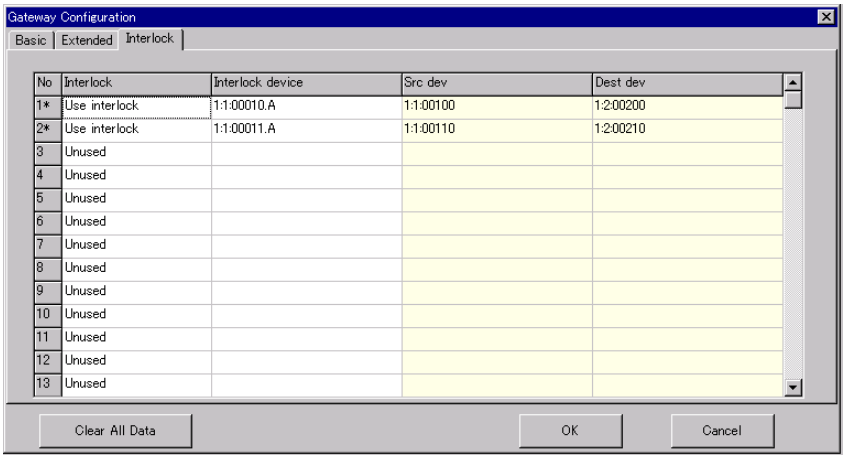


When interlock is OFF(0).

* EST resets (turns state to 0) the external startup trigger device

● Interlock configuration

Interlock device can be set on the EST555Z to interlock the gateway startup. Mainly, this startup method is used when using the gateway " at a certain intervals" or when stopping for a certain period.
This tab is displayed only when creating the EST555Z applications.



- Interlock
  [Use interlock] : Used when interlock device is set.
  [Unused] : Is default. If changed to "Unused", the interlock is cleared.

- Interlock device
  The device used for interlock device is a bit device.

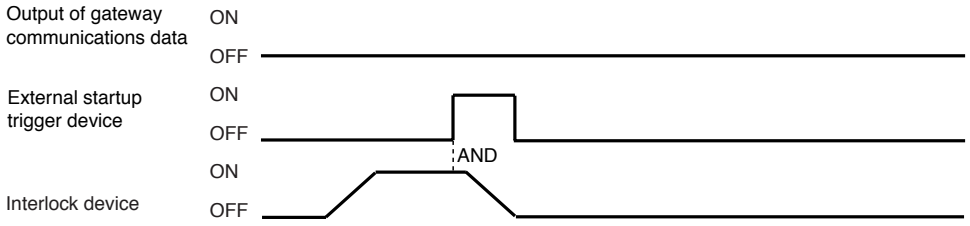
- Src dev, Dest dev
  This item displays the data sending side device and the data receiving side device set by basic configuration. Any change cannot be made.

⚠ Handling Precautions

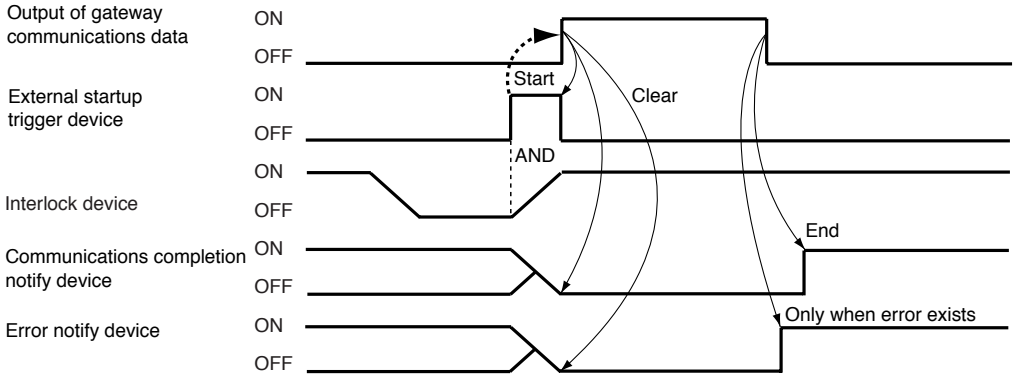
If the gateway data of the EST555Z using an interlock device is pasted on the EST240Z, all the interlock devices are deleted because interlock device is not yet supported.

● Timing on interlock, communications completion notify device and error notify device

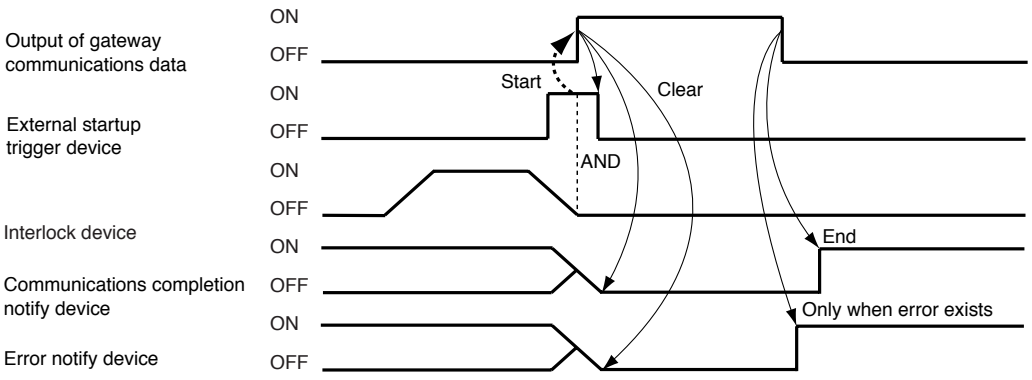
The timing on interlock, communications completion notify device and error notify device is as shown below.



When interlock is ON(1)



When interlock is OFF(0).



When an external startup trigger is generated while interlocking.

6 - 4 Description of “Panel Data” and “Registered Graphic”

The panel data in application data comprises the following graphic elements (strings, straight lines, rectangles, circles, smart objects, etc.):

■ Panel Conditions

● Size

Panels can be made at any size in 1-dot increments. The same is said of Registered graphic.

EST model	Data size (Max.)
EST240Z	320 x 240
EST555Z	640 x 480

● Number

Max. 899
The user can make any number of panels within the range 1 to 899.
Panels of No.900 or later are called system panels, are called system panels, they are special pre-provided panels having functions such as numeric keypads, etc. (System panels cannot be rewritten.)

● Max. number that can be started up

8 (including background panel)

● Number of switches

160 switches can be used on EST screens. For convenience, the number of switches is restricted to 160 per panel by the AP Editor.

■ How to Display Panels

● Display position

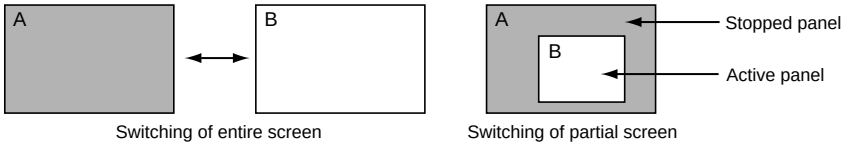
Panels can be displayed at any position.

● Panel number at startup

Panel No.1 is displayed when AP Editor is started up.

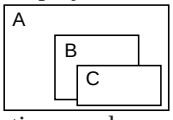
● Panel change display

The active panel is stopped, and a new panel is started up.
Panel change displays are used for switching between major functions.
Either entire screens can be changed, or only partial screens can be changed.
With panel change displays, only one of the panels is active (in this example, panel B), and the other is stopped (in this example, panel A).



● Overlay display

New panels are displayed overlaying other active panels.
Overlay display is used when multiple states need to be monitored simultaneously.
With overlay displays, all of the displayed panels A, B and C are active.



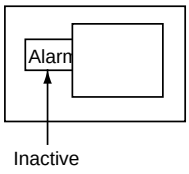
Up to eight active panels can be displayed simultaneously. This allows monitoring of multiple running states simultaneously, or the simuitaneous operation of one process while monitoring alarm states, or another process at the save time.

● **Pop-up display**

All currently active panels can be stopped, all information saved and new panels opened.

Handling Precautions

- The panel under the overlapping area does not function. For example, when alarm representative lamps or switches are displayed overlapped, they will not function. For this reason, do not display panels such that they overlap these types of objects.



- The display of the panel data you have designed sometimes differs. Slightly between the AP Editor and the EST. This difference is because EST has a function for updating data. Panel data is displayed in the order in which it was pasted on AP Editor, since priority is given to ease of operation during editing.

■ What is a “Background Panel?”

Up to eight panels can be displayed overlapping. The background panel an active panel that is at the bottom at all times.
Any panel from panel No.2 through to panel No.899 can be specified as the background panel.

● **What are background panels for?**

If you design a panel containing switches, panels and other various display smart objects that are common to each of the panels as the background panel, you need not paste these smart objects on each of the panels.
The following smart object comes in useful if contained in the panel that is used as the background panel:

- Panel change switch (external trigger)
  This switch enables changing of panels from the PLC.

● **How background panels are used**

Configure whether or not to use the background panel when the EST is started up with the application data configuration information.
When the background panel is to be used, set its panel No. at the same time.
You can also use smart objects with background panel selector to activate or deactivate background panels, or change panel Nos.
Regular panel change switch smart objects can not operate on the background panel. Be sure to use smart objects with a background panel selector.

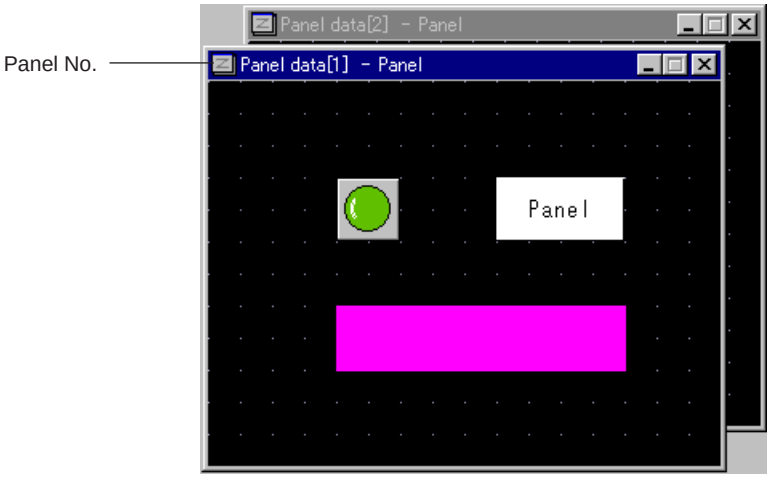
Note

For details, refer to the Smart Terminal EST-Z Series Smart Object Library Manual No.CP-SP-1089E.

■ What is a “Registered Graphic?”

A registered graphic is a graphic that can be repeatedly displayed, and has been prepared and registered in advance by the user.
There are two ways of using registered graphics.

- Use as a graphic element for a panel
  When there are graphics that are repeatedly used, make and register the graphic as a registered graphic. This is useful when you frequently use the same graphics in multiple panels. You can create registered shapes with registered graphic editing, then display them by pasting them to panels when editing panel data.
- Use as a shape for a smart object
  Graphics such as lamps and switches that are used for smart objects are available in the smart object library. However, user defined graphics can be displayed as smart objects by creating and registering them as registered graphics.
  Registered graphics can be created in the sizes 1x1 to the maximum size of graphic.



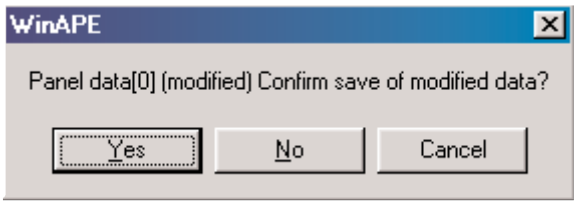
■ Panel Data Edit Window

This window is for editing panel data.
You can create up to 899 panels (panel No.1 to No.899).

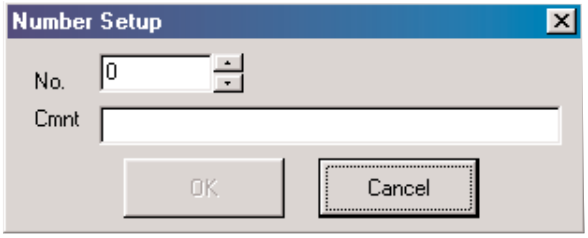
Multiple panel data edit windows can be opened simultaneously.
Note, however, that only one window is active for editing at any time. When multiple windows are opened, you can edit panel data while viewing the edit window of other panels, or copy data to other edit windows from a certain edit window.
Set the size of the panel when creating a new panel in the panel data tab of [Options]→ [Environment]→ [Defaults].

- Panel No.
  This displays the No. and name of the panel currently being edited.
  When creating a new panel, the panel No. is “0”.
  When a panel has been edited, (modified) is displayed to the side of the panel No.
  When creating a new panel, the No. can be set by closing and saving the panel.

When you close a panel after editing it, the following dialog will be displayed:
To save the panel, click [Yes].



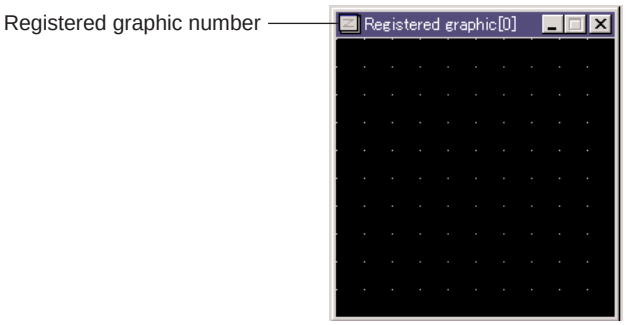
If you click [Yes], the following dialog will be displayed:
Set the panel No. here, and enter a comment if required.



To change the panel No. that has been set, you can cut and paste the panel data with the Application Manager.
For details, see "6-2 About the Application Manager" (page 6-3).
When a panel has been edited, (modified) is displayed to the side of the panel No.

■ Registered Graphic Edit Window

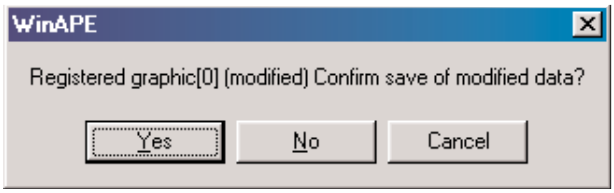
This window is for editing registered graphic data.
You can create up to 999 panels (panel No.1 to No.999).
Multiple registered graphic edit windows can be opened simultaneously.
Note, however, that only one window is active for editing at any time. When multiple windows are opened, you can edit registered graphic while viewing the registered graphic edit window of other panels, or copy data to other edit windows from a certain edit window.
To make a registered graphic, select [Edit]→ [New Data]→ [Reg. Graphic] .



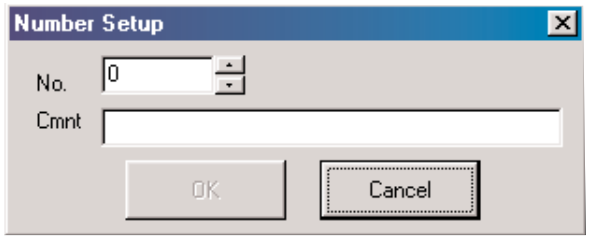
Set the size of the registered graphic when creating a new graphic in the registered graphic data tab of [Options]→ [Environment]→ [Defaults].

- Registered graphic number
  This displays the No. and name of the registered graphic currently being edited.
  When creating a new registered graphic, the registered graphic No. is “0”.
  When a registered graphic has been edited, (modified) is displayed to the side of the panel No..
  When creating new registered graphic, the No. can be set by closing and saving the registered graphic edit window.

When you close a registered graphic after editing it, the following dialog will be displayed:
To save the registered graphic, click [Yes].



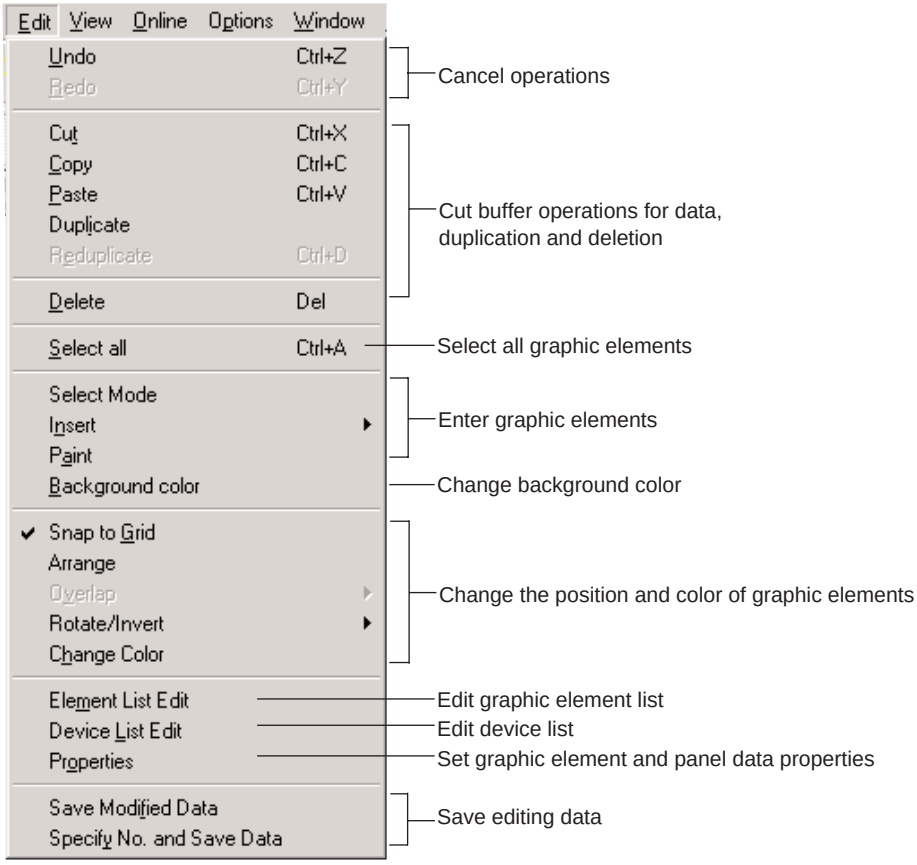
If you click [Yes], the following dialog will be displayed:
Set the registered graphic No. here, and enter a comment if required.



To change the registered graphic No. that has been set, you can cut and paste the registered graphic with the Application Manager.
For details, see “6-2 About the Application Manager” (page 6-3).
When a registered graphic has been edited, (modified) is displayed to the side of the registered graphic No.

6 - 5 About Panel Data/Registered Graphic Editing Functions

Edit functions are displayed in the following pull-down menu by selecting [Edit] from the menu bar:



■ Cancelling Operations

● Undo

Undo cancels the previously selected and executed edit operation, and reverts to the previous state.
Undo can also be executed repeatedly. (max. 100 steps)

● Redo

Redo cancels the previously executed undo operation and redoes the edit operation before that.
Redo can be performed for the number of previously executed undo steps.

Handling Precautions

- If more than 99 graphic elements are changed at a time, this state cannot revert to the previous state.
- "Undo" and "Redo" operations cannot be performed for 9 trend/recipe smart objects.

■ Data Cut Buffer Operations, Duplicating and Deleting

● Cut

Deletes the selected data, and copies the data to the Clipboard. Cut data can be pasted to other edit windows using [Paste].

● Copy

Copies the selected data to the Clipboard with the selected data in its previous state. Copied data can be pasted to other edit windows using [Paste].

● **Paste**

Pastes data cut with [Cut] or copied with [Copy] to the selected edit window.

● **Duplicate**

Duplicates the selected data on the same edit window.
When you click the paste position with the left mouse button after selecting the data to duplicate, the selected data is duplicated at that position.

● **Reduplicate**

Repeats duplication of duplicated data by the same amount of movement in Duplicate.

● **Delete**

Deletes the selected data.

■ Selecting All Graphic Elements

● **Select all**

Batch-selects all shapes or smart objects in the selected edit window.

■ Enter Graphic Elements

● **Selection mode**

Shapes or smart objects can be selected by selecting [Select mode] during the drawing of shapes.

● **Insert**

Inserts shapes or smart objects in the edit window.
A sub-menu is displayed when [Ins] is selected. Select the shape or smart object to insert.

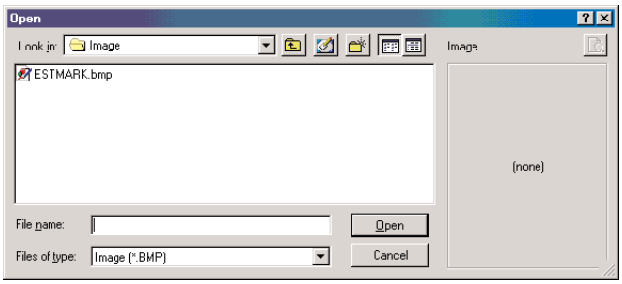
- Drawing shapes and strings
  To draw a shape or string in panel data, select the panel window in which to draw the shape or string, and click the graphic element icon on the tool bar.

  To select the shape or string to place on the panel, either click the icon on the tool bar, or click the left mouse button to select from the menu.

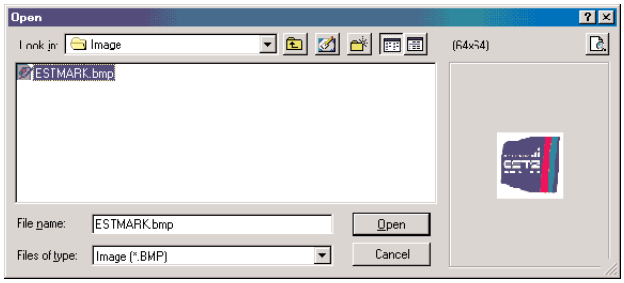
  For details on how to draw shapes or strings, see ■ How to Draw Shapes (page 3-12).

- Pasting image files
  Image data (BMP or JPEG) can be pasted.
  To paste image data, select the panel window, and select [Edit]→ [Insert]→ [Image File] from the menu bar.

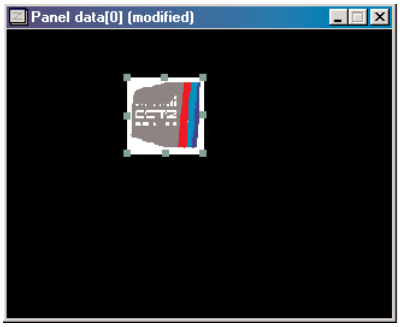
A window such as follows will be displayed:



When you select the image file to be pasted, the image will be displayed on the right side of the window.



Check the image. If this image is OK, click [Open].
Paste the image at the desired position in the panel window using the mouse.



Note

Black-and-white, 16-color, 256-color, and 24-bit color BMP format files can be pasted.
Image files are limited in size to images smaller than the panel in which they are to be pasted.
When pasting 256-color or 24-bit color image files, select the image data to be created to either 16 colors or 256 colors.
Setting 16 colors takes up half as much memory as that used by 256 colors.

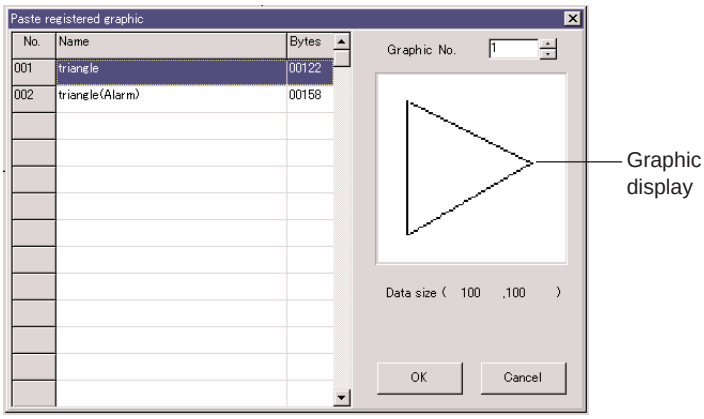
Handling Precautions

- Black-and-white data created using a color other than black or white is sometimes displayed in white, or its display is not as intended.
- Some JPEG format files cannot be displayed.
- The display refreshing speed sometimes is reduced when JPEG format files are pasted (by about five seconds for the entire screen).

- For the data size of BMP file format, the maximum 98304 bytes can be pasted. The size of BMP file can be calculated by the following formula:
  (256 color BMP byte size) = (height pixels) x (width pixels)
  (16 color BMP byte size) = (height pixels) x (width pixels) / 2
  Concrete file sizes are 640 × 307 pixels (16 colors), 640 × 153 pixels (256 colors), 409 × 480 pixels (16 colors) and 320 × 307 pixels (256 colors) etc..
- For the data size of JPEG file format, the maximum 98304 bytes can be pasted. The number of bytes for JPEG file format is different according to the compression method or compression rate. The size of JPEG file format can be confirmed by opening the related file with internet explorer and then checking the property of image.

- Pasting registered graphics

  To paste a registered graphic to a panel, select the panel window in which to place the registered graphic, and select [Edit]→[Insert]→[Reg. Graphic] from the menu bar.
  A registered graphic paste window such as follows will be displayed.



[Graphic No.]
This item displays the No. of the currently selected registered graphic.

[Graphic display]
This item displays the contents of the currently selected registered graphic.

[Name]
This item displays the comment that was entered when the registered graphic was made.

[Bytes]
This item displays the size in bytes (data size) of the registered graphic.

[Graphic Size]
This item displays the image size of the selected registered graphic.

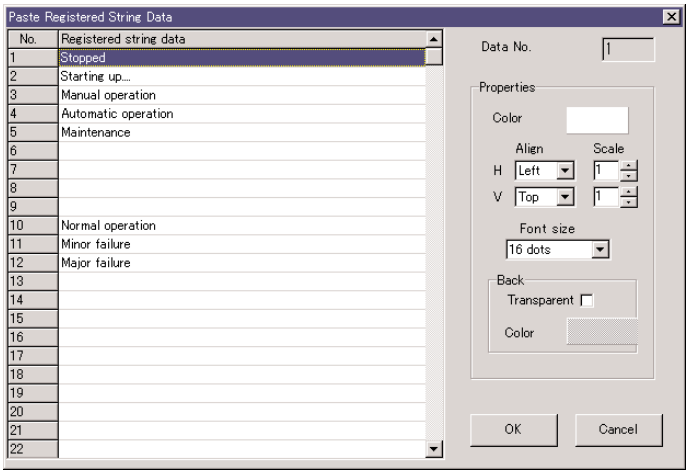
Select the registered graphic to paste, and click [OK].
Next, click the location to paste the registered graphic in the panel window.

If you select [Cancel], the paste registered graphic window will be closed without the registered graphic being pasted.

- Pasting registered strings

  To paste a registered string to a panel select the panel window in which to place the registered string, and select [Edit]→ [Insert]→ [Reg. String Data] from the menu bar.

  A registered string paste window such as follows will be displayed:



[Color]

This item is for setting the color of the string to be pasted.

Clicking this item displays the color palette for selecting the desired color.

[Align]

This item is for setting at which position in the frame to display the string.

You can select from top, bottom or center for aligning text in the vertical direction.

You can select from left, right or center for aligning text in the horizontal direction.

Select the registered string to paste, and click [OK].

Next, click the location to paste the registered string in the panel window.

[Scale]

This item is for setting the scale of the text to be displayed.

You can set the scale to independent settings in the horizontal and vertical directions, and up to 8X in each direction.

[Font size]

This item is for setting the size of the text.

Two size settings are available: 8 dots and 16 dots.

When 8 dots is selected, the text becomes a font comprising eight dots in both the horizontal and vertical directions.

When 16 dots is selected, the text becomes a font comprising sixteen dots in both the horizontal and vertical directions.

[Transparent]

When this checkbox is marked, the background color of the string inside the string frame is set to transparent.

[Color]

This item is for setting the text background color inside the string frame. Clicking this item displays the color palette for selecting the desired color.

If you select [Cancel], the paste registered string window will be closed without the registered string being pasted.

- Pasting smart objects

To paste a smart object, select the panel window, and click the  smart object.

The Select Smart Object window will be displayed.

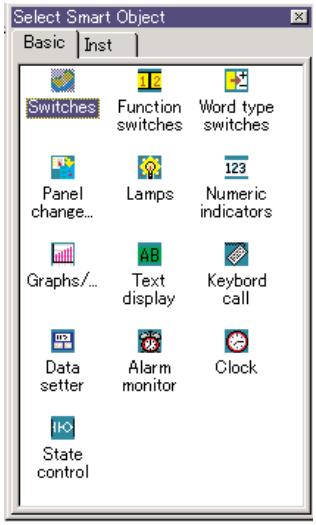
Select the smart object you need by double-clicking it.

The smart object setting dialog box will be displayed.

For details on the setting dialog box, refer to the Smart Terminal EST-Z Series Smart Object Library Manual No.CP-SP-1089E.

Example of pasting switch smart objects

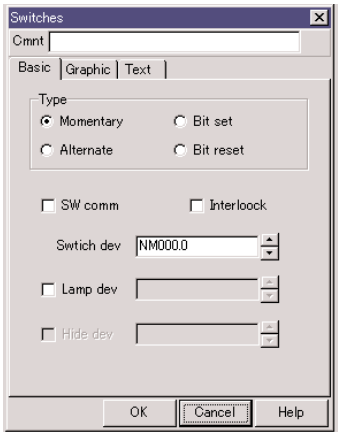
Double-click the switch smart object in the Select Smart Object window.



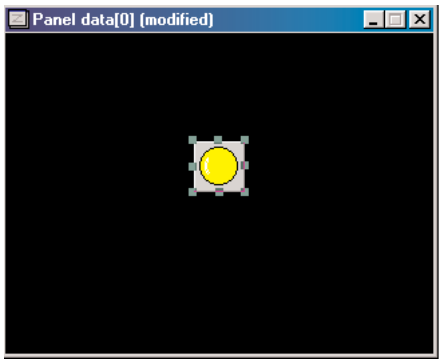
Note

You can view help for smart objects by clicking the Help button in the window for each smart object. To view Help for a smart object, select the pasted smart object, and press the [f•1] key.

The setting dialog box will be displayed.

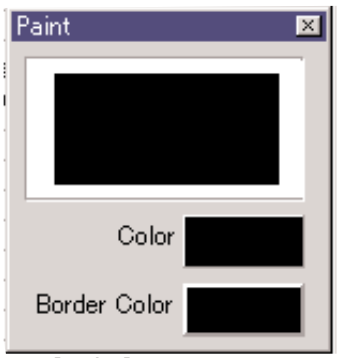


After setting the smart object, click [OK] to paste the smart object to the panel window.



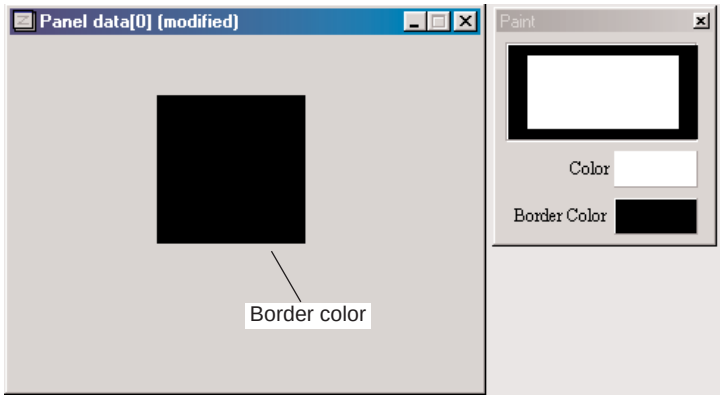
- **Paint**

Fill the area inside the specified border color with the specified color.



[Color]
This item is for setting the fill color.
Clicking this item displays the color palette.
Selecting the desired color to be used for the fill displays that color.

[Border Color]
Clicking this item displays the color palette.



Note, however, that if you select a graphic element that is specified as the border color and execute [Change color], that graphic element is also filled.

After you have set [Color] and [Border Color], click inside the area to be filled with the left mouse button. This fills the area.

■ Changing the Background Color

● Background color

This item is for setting the color of the panel window's background.
When this item is selected, the Set background color window will be displayed.

- Transparent
  Clicking this button sets the background color of the panel to transparent (displayed black on AP Editor).

- Color
  If you click the desired color from the color palette, that color is displayed. After you have selected the color, either click [OK] or double-click the desired color. The background color of the panel changes to the selected color.

  Background color settings can not be undone by [Undo] .

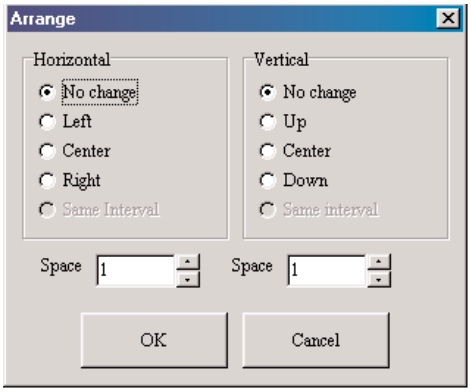
■ Changing the Position and Color of Graphic Elements

● Snap to grid

Select whether or not shapes or smart objects are to be snapped to the grid when they are moved or scaled.
Snap to grid is enabled when the [Snap to Grid] check is marked.

● Arrange

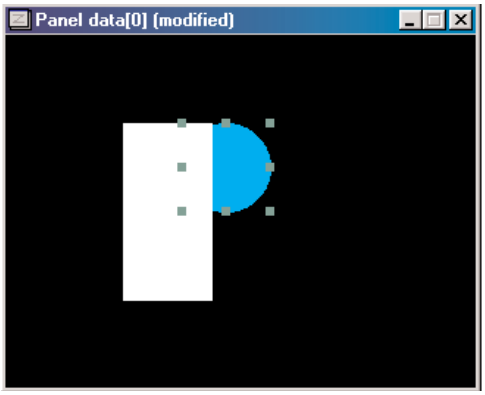
Shapes or smart objects selected on the edit window can be arranged.
When the shape or smart object to arrange is selected, and [Arrange] is selected, the following dialog box will be displayed.



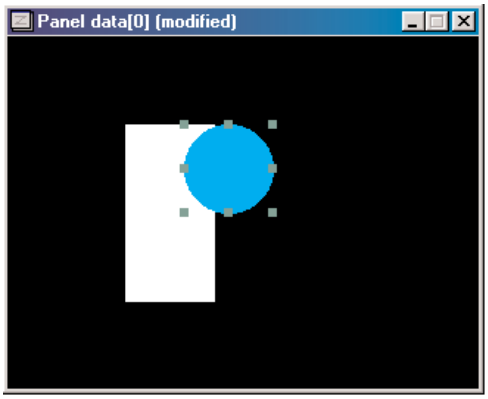
● Overlap

The overlap order of overlapping shapes or smart objects can be changed.
The sub-menu is displayed by selecting one of the overlapping shapes or smart objects, and then selecting [Overlap].
The meaning of items in the sub-menu is as follows:

[Top]: Brings the selected graphic element to the front.
[To Front]: Brings the selected graphic element one element forward.
[To Back]: Sends the selected graphic element one element back.
[Bottom]: Sends the selected graphic element to the back.



In the above example, let's bring the circle at the back to the front.
First, select the circle at the back.
Next, click the right mouse button to display the pop-up menu, and select [Overlap]→[Top].



Handling Precautions

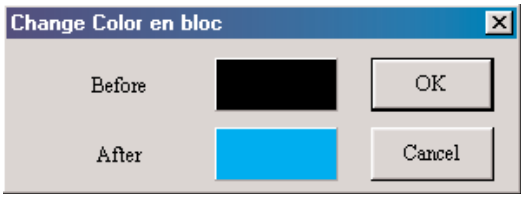
Judgment of overlapping of straight lines, circles, arcs, ellipses and ellipse arcs is performed by a circumscribing rectangular area.

● Rotate/Invert

Currently selected shapes or smart objects can be rotated or inverted.
The sub-menu is displayed by selecting [Rotate/Invert]. Select the rotation direction or inversion direction in this sub-menu.
You can select from 90°, 180° or 270° as the rotation direction and from vertical inversion or horizontal inversion as the inversion direction. Smart objects, image files, strings, pasted registered graphics or pasted registered strings can not be rotated or inverted.

● Change color

You can change the color of selected shapes.
Select [Change color] displays the following Change Color en bloc window:

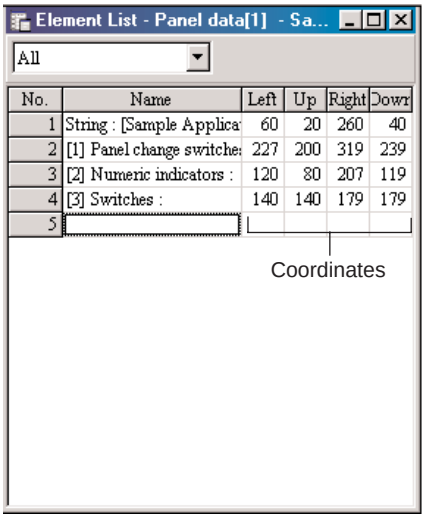


Clicking the Before field displays the color palette.
Select the color to change (color of current shape) from the color palette, and click [OK] on the palette.
In the same way, click the After field, and select the desired color from the color palette.
When you have decided on the before and after colors, click [OK] in the Change Color en bloc window.

■ Edit Graphic Element List

● Editing the list of graphic elements

When the edit window for a panel or registered graphic is opened, the graphic element list window for the corresponding edit window can be displayed for editing of graphic elements. The graphic element list window displays a list of graphic elements currently placed in the panel window or registered graphic window.
All of the edit commands that are available in the panel/registered graphic edit window can be used on the graphic elements selected in the graphic element list window.
Note, however, that for [Paste] only, pastes are performed before the current position since the paste position cannot be specified by the mouse.



- Coordinates

  Each line in the table showing the coordinate position of the graphic element corresponds to a single element. Coordinates are displayed top down in order from the last inserted graphic element.
  In the example, the 6th row indicates from the leftmost side [No.], [Name], [Left], [Up], [Right] and [Down].
  The left, up, right and down coordinates are displayed for each graphic element. Note, however, that the actual meaning of these coordinates differs according to the graphic element. The meaning of coordinates is as follows for each of the graphic elements.

  Points, fills . . . . . [Left] and [Up] are used for expressing the coordinates.

  Lines . . . . . [Left] and [Up] are used for expressing the start coordinate, and [Right] and [Down] are used for expressing the end coordinate.

  Continuous lines . . . . . [Left] and [Up] are used for expressing the start coordinate, and [Right] and [Down] are used for expressing the start coordinate (end coordinate of the 1st line) of the 2nd line.

  Circles/ellipses, circle/ellipse arcs . . . [Left] and [Up] are used for expressing the center coordinate, and [Right] and [Down] are used for expressing the radius.

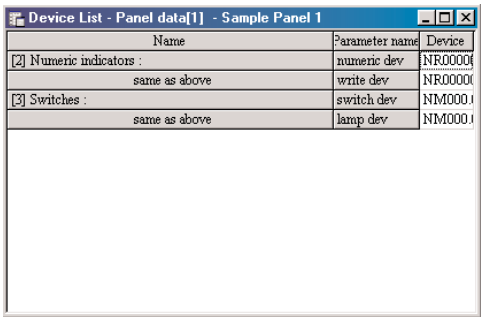
  Other (rectangles, smart objects) . . . . [Left] and [Up] are used for expressing the top left coordinate, and [Right] and [Down] are used for expressing the bottom right coordinate.

  For this reason, the start point of graphic elements such as straight lines is expressed by [Left] and [Up] in the coordinate position table even if the start point is to the right of the end point.

■ Edit Device List

● Editing the list of devices

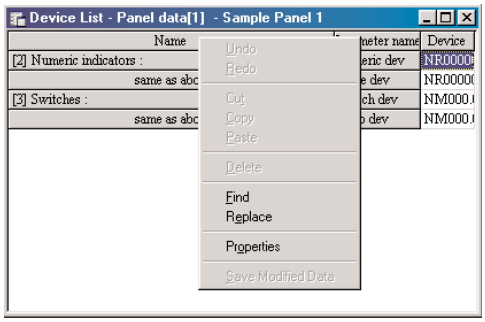
When a panel is opened, the devices assigned to smart objects pasted to that panel can be displayed as a list for editing.



Note

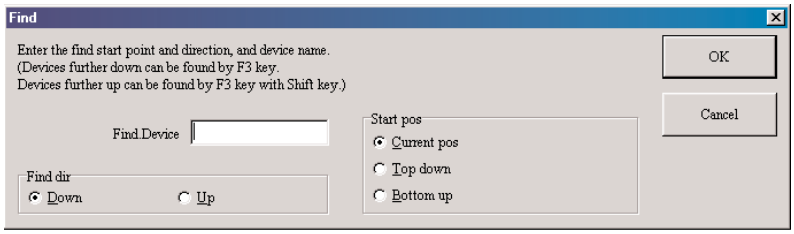
Smart object parameters to which devices are not assigned are not displayed.

- Name
  This item displays the name of the smart object.
  Double-clicking the name of the smart object opens the properties of the target smart object so that they can be edited.
- Parameter name
  This item displays the name of the smart object parameter.
  Double-clicking the parameter name opens the properties of the target smart object so that they can be edited.
- Device
  This item displays the device currently set to the parameter.
  Devices can be edited. First, click the device to be edited.
  Clicking on the device list with the right mouse button displays the pop-up menu.

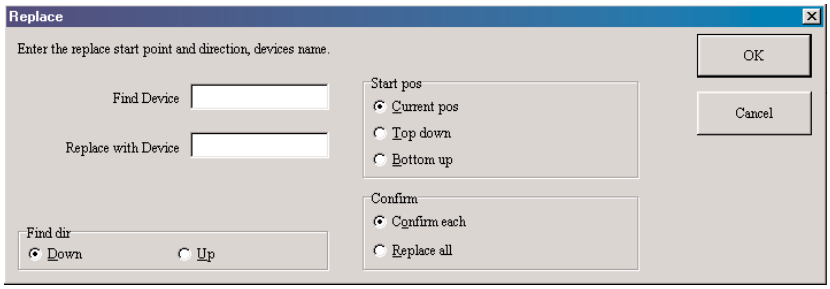


- Undo
  Undo cancels the previously selected and executed edit operation, and reverts to the previous state.
  Undo can also be executed repeatedly. (max. 100 steps)
- Redo
  Redo cancels the previously executed undo operation and redoes the edit operation before that.
  Redo can be performed for the number of previously executed undo steps.

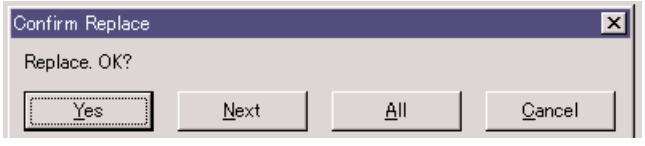
- Cut
  Deletes the selected data, and copies the data to the Clipboard. Cut data can be pasted to other devices by [Paste].
- Copy
  Copies the selected data to the Clipboard with the selected data in its previous state. Copied data can be pasted to other devices by [Paste].
- Paste
  Pastes data cut by [Cut] or copied by [Copy] to the selected device.
- Delete
  Deletes the selected data.
- Find
  Clicking Find displays a window for entering the device to find, find start point and find direction.



  Clicking [OK] searches for the device according to start point and find direction settings. To continue searching, press the [f•3] key.
- Replace
  Clicking Replace displays a window for entering the device to replace, device value after replacement, replace start position, replace direction and confirmation of the replace.



  If you click [OK], all devices are replaced without any confirmation inquiry being displayed on screen if you selected “Replace All”. If you selected “Confirm Replace”, the following Confirm Replace window will be displayed.

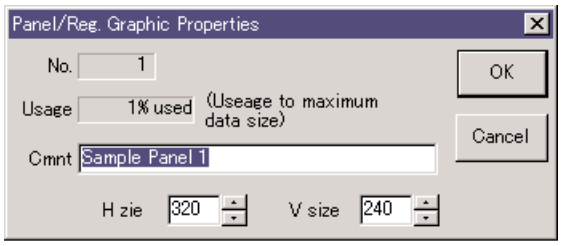


  Clicking [Yes] replaces the device and starts the search for the next device.
  Clicking [Next] does not replace the device and starts the search for the next device.
  Clicking [All] replaces all devices.
  Clicking [Cancel] quits the replace operation.

■ Configuring the Properties of Graphic Elements and Panel Data

● Properties

This item is for opening the configuration window and dialog box.
Select the shape or smart object whose settings are to be changed, and select [Properties]. The configuration window or dialog box corresponding to that graphic element is displayed.
If you select [Properties] with no graphic element selected, the Panel/Registered Graphic Properties setting window will be displayed.



The Panel/Reg. Graphic Properties configuration window is used for confirming the size of the data currently used by the panel data, changing the comment entered to the panel, and changing the size of the window.
The maximum window size is, see "■ Panel Conditions" (page 6-37).

EST model	Data size (Max.)
EST240Z	320 x 240
EST555Z	640 x 480

■ Save Edit Data

Data can be saved by selecting this. This item enables the data currently being edited and saves it to memory.
The No. setup dialog box is displayed if the data currently being edited is a new panel or registered graphic.
Data can also be saved in the pop-up menu displayed by clicking the right mouse button during editing.

■ Specify No. and Save Edit Data

Selecting this item displays the No. setup dialog box so that you can specify the No. to save the data.
The window currently being edited becomes the No. to which the data was saved.
Data can also be saved in the pop-up menu displayed by clicking the right mouse button during editing.

Handling Precautions

Nos. cannot be specified for saving editing data when a trend/recipe smart object has been pasted to a panel.

■ Changing Graphic Elements

The following operations are possible by the combination of mouse and [CTRL], [ALT] and [SHIFT] keys on the keyboard in the graphic element select mode:

[CTRL] key + drag . . . . . Duplicates the original graphic element at the position you move the mouse to.

[SHIFT] key + move . . . . . Restricts movement of graphic elements to left/right, up/down or 45°.

[SHIFT] key + scale . . . . . Scales graphic elements at fixed aspect ratio.

[ALT] key + drag . . . . . Toggles snap to grid between enabled and disabled.

[CTRL] key + cursor key . . . . Scales graphic elements.

Cursor key . . . . . Moves graphic elements.

For details on mouse and cursor key operations, see "■ Combined Key/Mouse Operations" (page 3-17) and "A-2 List of Key Operations Used in Editing" (page App.-4).

■ Editing Functions for Registered Graphics

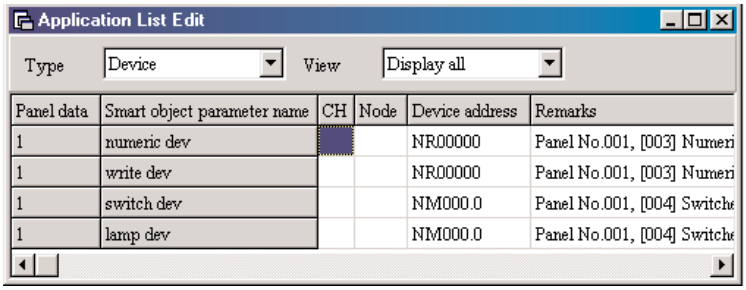
Smart objects, registered graphics and registered strings can not be pasted into a registered graphic edit window.
Drawing of shapes/strings, setting of the background color, paint, and pasting of image files can be performed in the same way as in the panel edit window.
For details on individual edit functions, see "6-4 Description of "Panel Data" and "Registered Graphic" (page 6-37).

6 - 6 Edit Application List

"Edit Application List" refers to the window for editing en bloc the devices and strings currently used throughout all panels of the application.
This window is used to confirm, or edit, existing applications.

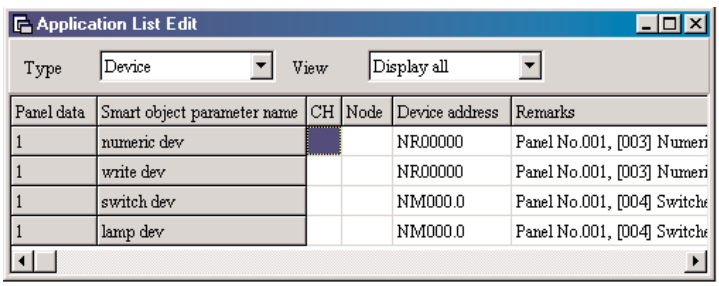
■ Editing the Application List

Select [File]→[Application List Edit] on the menu bar with the application opened.
The following Edit Application List window will displayed:



- Type
  This item is for selecting the target to be edited (Device or String).
  Device: EST internal devices are targeted for editing by the device address currently used on the smart object.
  String: Strings entered by the user are targeted for editing by the string or smart object drawn on the panel.
- View
  This item is for setting items to be displayed in the list. Items include Display all, Channels 1 to 4, and Internal device (in the case of strings, Display all, Smart objects and Strings).
- Panel
  This item displays the panel No. to which the graphic elements are currently pasted. This item cannot be edited.
- Smart object parameter name
  This item displays the name of the smart object parameters. This item is not displayed if the graphic element is not a smart object. This item cannot be edited.
- Remarks
  This item displays the panel No., No. of graphic element in the panel, graphic element name, smart object parameter name, and smart object comment.
  This item cannot be edited.

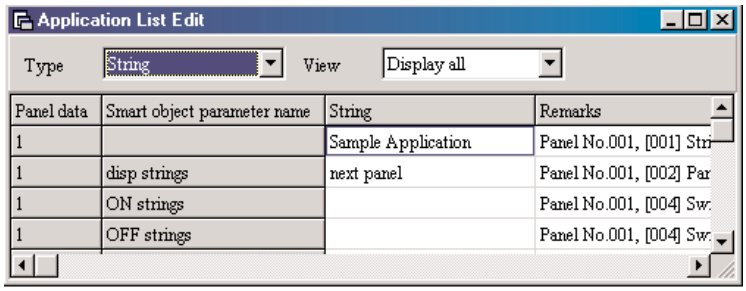
● When Type is set to device



- CH
  This item displays the EST communications channel.

- Node
  This item displays the node address (including the sub-address) for the target EST.
- Device address
  This item displays the device address (including internal devices on EST) of the target EST.

● **When Type is set to string**



- Strings
  This item displays strings drawn in the panel and strings for the smart object.

Handling Precautions

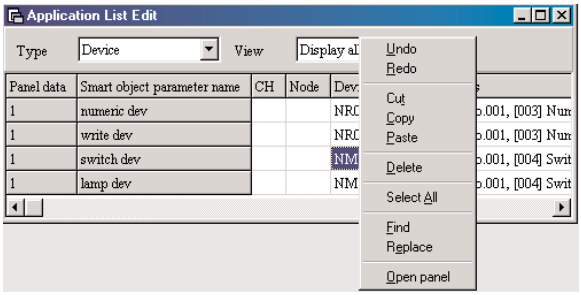
- The data set in the Edit Application List is registered to each panel.
- When performing operation in Edit Application List, make sure that all panels have already been registered.

Note

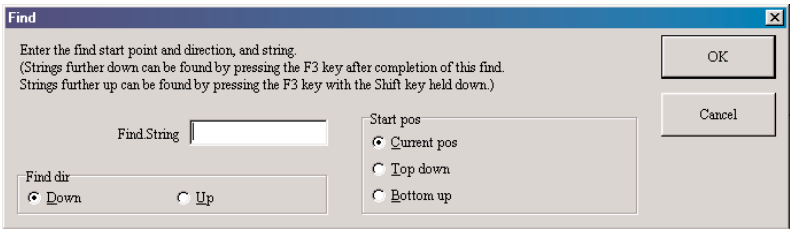
- If the data is in error when an entry is applied, the background of the line in question will be displayed in red.
- When PLC device [1:1:0000] is entered to one of cells [CH], [Node] or [Device address], the data “1” “1” “0000” will be set to each of the respective cells.
- Channel, EST address, device address and string data can be changed.
  Select the cell to be changed, and enter the new setting with the keyboard. When you do this, the previously set string will be overwritten with the text that you entered on the keyboard.
  To apply the changes, press the [ENTER] or [TAB] key. To cancel the changs, press the [ESC] key.
  Keyboard entries can also be initiated by either double-clicking the cell or pressing the [ENTER] key. At this time, the cursor will be located at the end of the currently set string.

■ Editing Functions

Clicking on the application list with the right mouse button on the Edit Application List displays the pop-up menu.



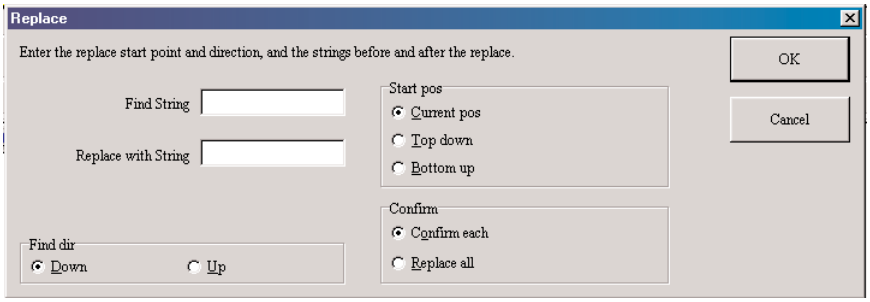
- Undo
  Undo cancels the previously executed edit operation, and reverts to the previous state. (max. 100 steps)
  Undo is not possible when a type or display has been changed, when a change has been made in another edit window, or when a sort has been performed in the Edit Application List window.
- Redo
  Redo cancels the previously executed undo operation and redoes the edit operation before that.
  Redo is not possible when a type or display has been changed, when a change has been made in another edit window, or when a sort has been performed in the Edit Application List window.
- Cut
  Deletes the selected data, and copies the data to the Clipboard as a string. Cut data can be pasted to other cells with [Paste].
- Copy
  Copies the selected data to the Clipboard as a string with the selected data in its previous state. Copied data can be pasted to other cells with [Paste].
- Paste
  Pastes data previously cut by [Cut] or copied by [Copy] to the currently selected cell.
- Select All
  Selects all cells.
- Find
  Clicking [Find] displays a window for entering the string to find, find start point and find direction.



Clicking [OK] searches for the string according to start point and find direction settings. To continue searching, press the [f•3] key.

- Replace

  Clicking [Replace] displays a window for entering the string to replace, string after replacement, replace start position, replace direction and confirmation of the replace.



  If you selected “Replace All” and you click [OK], all strings are replaced without any confirmation inquiry being displayed. If you selected “Confirm Replace”, the following Confirm Replace window will be displayed:

  Clicking [Yes] replaces the string and starts the search for the next device.
  Clicking [Next] does not replace the string, but starts the search for the next string.
  Clicking [All] replaces all strings.
  Clicking [Cancel] quits the replace operation.

- Open panel

  Clicking Open panel opens the panel corresponding to the currently selected cell. If the panel is already open, that panel becomes active.

Note

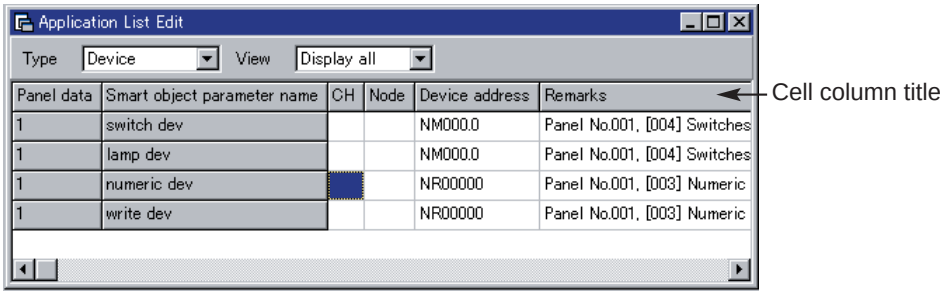
- If the data is judged to be in error as a result of having performed an edit operation, the background of that column will be displayed in red.
- If you execute a paste to a single cell when the string of PLC device [1:1:0000] is in the Clipboard, only the data corresponding to the currently selected cell is set.

  Example: “0000” will be set to [device address] if “1:1:0000” is pasted to that cell. “1” will be set to [Node] if “1:1:0000” is pasted to that cell.
- If you execute a paste to selected multiple columns (selected [CH], [Node], [Device address]), all devices will be set.

  Example: If [4:1:1004] is pasted, “4”, “1” and “0000” are pasted to each of [CH], [Node] and [Device address] respectively.
- The panel can also be opened by clicking the fixed cell (panel/smart object parameter column) on the left.

■ Sort Function

The sort function can be applied to each of the display items.
Clicking the cell column title at the top sorts the strings in columns.
Clicking the cell a second time reverses the sort order.

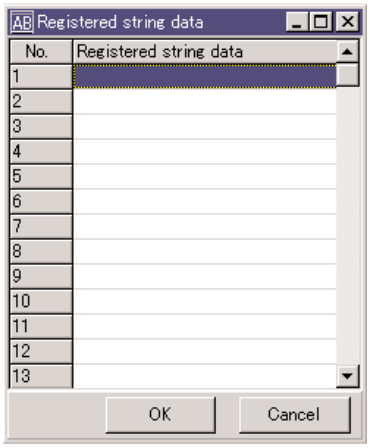


6 - 7 Editing Registered Strings

"Registered strings" are strings that can be displayed by specifying their No. in the application data.
Registered strings are handy when displaying strings of a fixed content such as the same message in multiple panels. Registered strings can be displayed by creating the desired string in advance using edit registered string, then pasting the registered string having the specified No. to the panel using edit panel data.

■ Registered String Edit Window

Up to 1999 strings can be created as registered strings, and assigned a No. within the range No.1 to No.1999.
The maximum number of characters that can be included in a single registered string is 2000.
Registered strings can be created up to approx. 10,000 characters in total.
To register a registered string, double-click [Registered string data] in the Application Manager.
The following Registered string data window will be displayed:



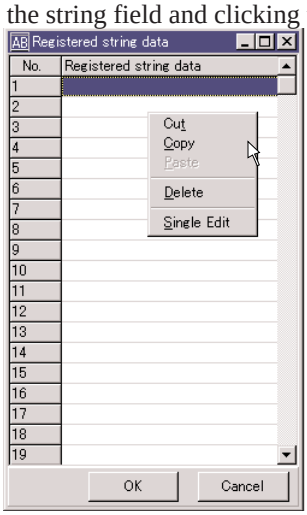
Click the field of the number you wish to register the string to, and enter the string.
After entering the string, click [OK].

Note

To enter a carriage return, enter [¥] [r].

■ Editing Functions for Registered Strings

Cut, copy, paste and delete edit operations can be performed on registered strings.
The edit menu can be displayed with [Edit] from the menu bar with the string selected.
The edit menu can also be displayed with the pop-up menu displayed by selecting the string field and clicking the right mouse button.



- Cut
  Deletes the selected string, and copies the string to the Clipboard.

- Copy
  Copies the selected string to the Clipboard with the selected string in its previous state.

- Paste
  Pastes the cut or copied string.

- Delete
  Deletes the selected data.

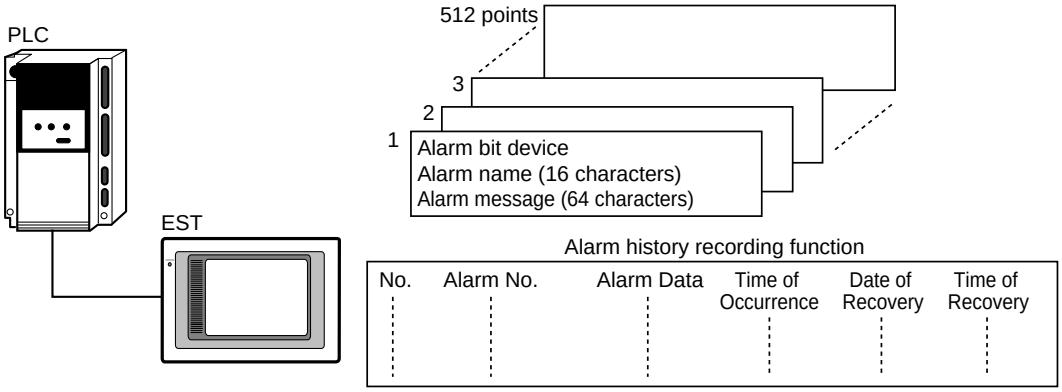
- Single Edit
  Displays the selected registered string in the single edit window. Up to 2000 characters can be entered for each registered string. If only part of the registered string can be displayed, the entire registered string can be displayed by selecting the single edit window for that registered string and using the scroll bar in the window to view the rest of the registered string.

6 - 8 Editing Alarm Monitoring

Alarm monitoring is a feature for regulary monitoring bit devices corresponding to alarm contacts and Alarm Number of the PLC connected by the host link. This item describes the settings for this alarm monitoring function. For details, refer to Smart Terminal EST240Z Smart Object Library Manual No.CP-SP-1089E, “Alarms.”

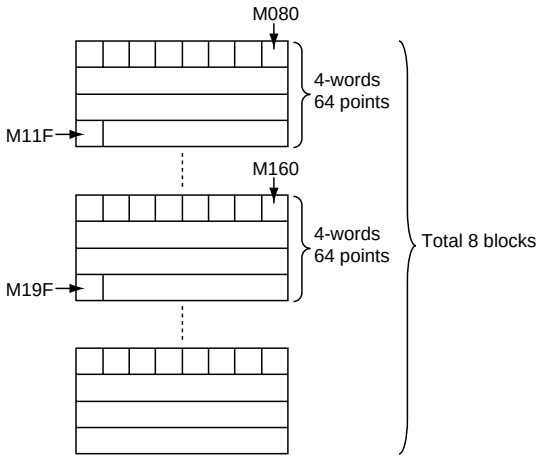
■ Alarm Monitoring Information

Alarms can be easily monitored with the EST just by pasting smart objects, if alarm monitoring information has been set in advance.
Any alarm device, alarm name, alarm message on a PLC connected by the host link can be registered to an alarm No. within the range No.1 to No.512.
When alarm monitoring is started, the registered alarm bit is monitored at all times while the EST is running.
When alarms occur, the currently occurring alarms are stored in numeric order, and are stored within special devices of the EST.
The EST also has a function for recording the time of occurrence, time of recovery and other alarm history information.
The various objects that use this alarm monitoring function are contained in the standard smart object library.



● Number of monitorable points

1 to 512 points
Four continuous words (64 points) are taken to be one block, and up to eight blocks can be monitored.



● Monitorable alarms

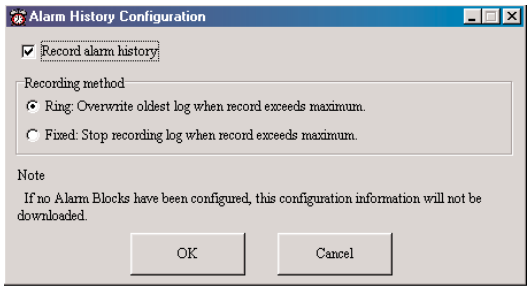
Alarms that are occurring (in numberic order)
Alarm history (time of occurrence, time of recovery)

● Monitoring time

At all times whilst EST is running

■ Alarm History Configuration

Set whether or not to record history information for alarm monitoring.
Click [Alarm history] in the Application Manager.
The Alarm History Setup dialog box will be displayed.



- Record alarm history
  When this checkbox is marked, the alarm histories registered to the alarm block settings are recorded.
  Up to 400 histories can be recorded.

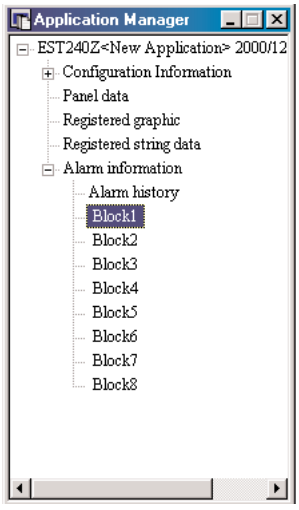
- Recording method
  This item is for selecting the method for recording the alarm history.
  Ring . . . . . When the maximum number of histories is exceeded, recording will continue, with the data of the oldest history being overwritten with the data of subsequently occurring history information.

  Fixed . . . . . When the maximum number of history items is exceeded, subsequent history information will not be recorded.

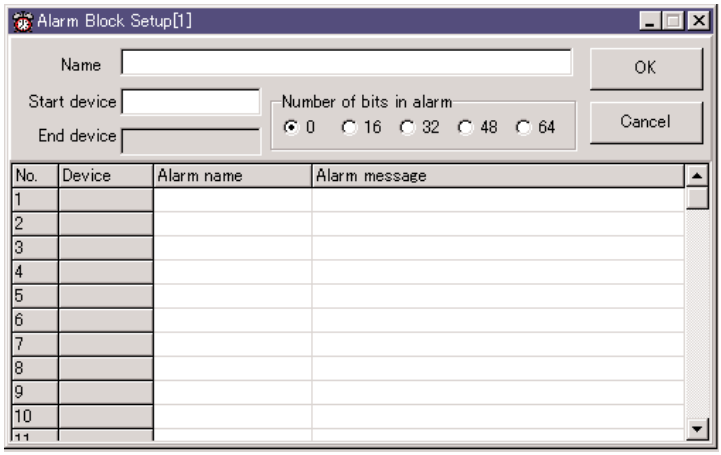
When you have finished configuring the Alarm History, click [OK].
Clicking [Cancel] closes the dialog box without the settings being applied.

■ Alarm Block Configuration

Continuous alarm contact areas where alarms are to be monitored can be registered, max. blocks.
The PLC device address or the internal address (NM000.0 to NM255.F) on the EST can be specified as the alarm contact.
Up to 64 points (4 words) of alarm contacts can be monitored per block.
To set the alarm block, click [Alarm information] in the Application Manager, display the block one level down in the menu hierarchy, and double-click the block to be configured.



The following Alarm Block Setup dialog box will be displayed:



- Name
  This item is for entering the block name.
  The block name entered here is displayed as the block name in the Application Manager.
- Start device
  This item is for entering the PLC device address of the alarm contact or the internal address (NM000.0 to NM255.F) of the EST.
- End device
  This item displays the address of the last device according to the number of alarm bits to be monitored.
- Number of bits in alarm
  This item is for selecting the number of bits (contacts) of the alarm to be monitored.
  Selecting “0” disables alarm monitoring for this block.
- No.
  This is the No. of the bit.
- Device
  This is the address of the device.
- Alarm name
  This item is for entering the name of the alarm. Up to 16 characters can be entered.
- Alarm message
  This item is for entering the alarm message. Up to 64 characters can be entered.
  The alarm name and alarm message set here are reflected in aggregate lamps, summary indicators, history indicators, and number of occurrences.
  For details on smart objects, refer to Smart Terminal EST-Z Series Smart Object Library Manual No.CP-SP-1089E.

Note

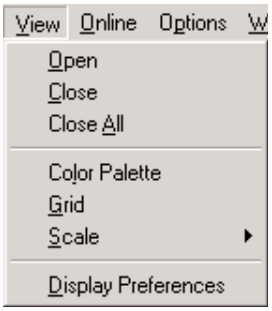
To enter a carriage return , enter [¥] [r].
When you have finished configuration, click [OK].
Clicking [Cancel] closes the dialog box without the settings being applied.

6 - 9 Others

Display setters and options are available as other functions.
Mainly, screen display-related settings can be made on display setters, and AP Editor environmental settings can be made on options.

■ Display

The following pull-down menu is displayed by selected [Disp(D)] from the menu bar:

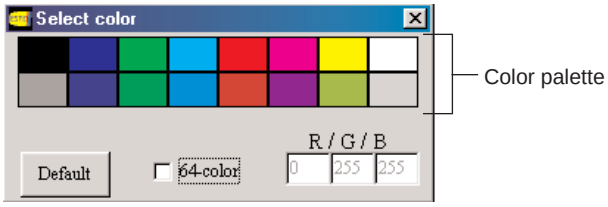


- Open
  Opens panels or registered graphics.
- Close
  Closes the edit window.
- Close All
  Closes all edit windows.
- Color palette
  Displays the color palette.
- Grid
  Switches the grid display ON/OFF.
- Scale
  Scales the edit window.
- Display Preferences
  Configures how smart objects or grids are displayed.

■ About Display

[View] on the menu bar has the following functions:

- Open
  Selecting [Open] with a panel No. or registered string No. selected in the Application Manager opens the window for the panel No. or registered string No.
- Close
  Selecting [Close] with an opened window selected closes that window.
- Close All
  Selecting [Close All] when multiple windows are displayed closes all windows.
- Color palette
  Displays the Select Color window.



Color palette

This window is for selecting the color to be used for drawing.
To select a color, click the color by clicking the left mouse button.

To swap the colors on the color palette.
(1) Click the right mouse button. The color in the palette at the clicked position is swapped with the selected color.
(2) Colors from the 64-color palette can be selected and swapped for the default 16 colors.
(Hint) Color palette settings are saved for each application data.

Default

This returns the colors in the color palette to their defaults.

64-color display

The 64-color palette is displayed when this checkbox is marked.
The colors of the 64-color palette cannot be changed.

R/G/B

Displays the RGB values of the color selected from the color palette.
Each of the RGB (Red, Green, Blue) values are displayed within the range 0 to 255 corresponding to the selected color.

Color

Displays the currently selected color.

- Grid

  Switches the grid display in the edit window ON/OFF.
  The grid display is turned ON if [Grid] in the menu is prefixed by a check mark.
  To change the grid spacing, refer to [Display Preferences].

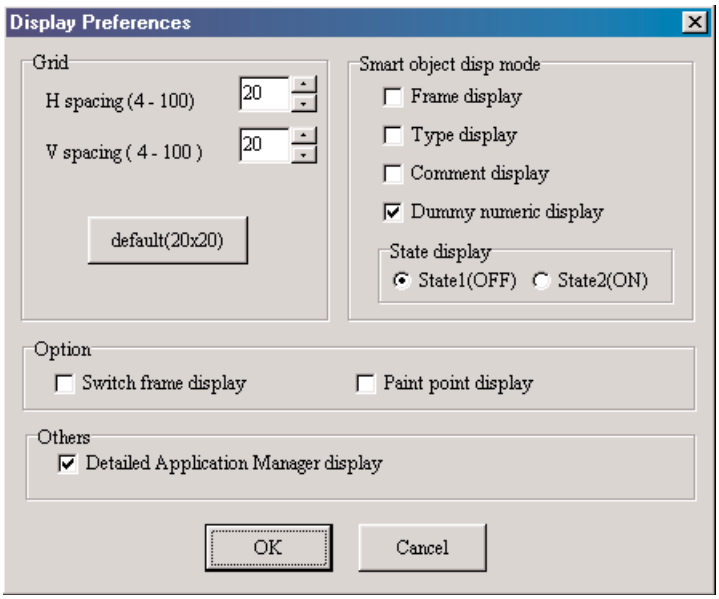
- Scale

  Scales the edit window.
  A sub-menu will be displayed when this item is selected so that you can select the desired size.
  Size options are 60%, 100%, 200%, 400% and 500%. When 60% is selected, the message "Display may not be rendered correctly if the display scale is less than 100%." for the first time only, but the data is scaled to 60%.

- Display Preferences

  This screen is for setting the edit window display preferences and other display settings.

  Clicking [Set disp] displays the following dialog box:



Grid

This item is for setting the grid spacing.

The grid spacing can be set independently in the horizontal and vertical directions within the range 4 to 100 dots.

Set the grid spacing using the up/down buttons. Numerical values can also be set directly from the keyboard.

Clicking [default(20x20)] returns the settings in the horizontal and vertical directions to the default 20 x 20 dot setting.

Smart object disp mode

This item is for setting the display on smart objects placed in panel windows.

Information for which a checkbox is marked will be displayed on smart objects placed in panel windows.

State display

This item is for specifying whether to display smart objects such as lamps, that have ON/OFF states, in their ON state, or their OFF state.

Option

This item is for specifying whether or not to display the switch frame, and whether or not to display the paint point.

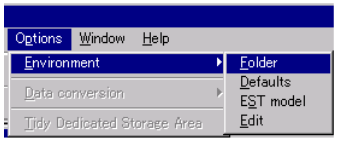
Others

[Detailed Application Manager display]

When this checkbox is marked, the data size, creation date and comment are displayed following the panel No. and registered graphic No. in the Application Manager.

■ Options

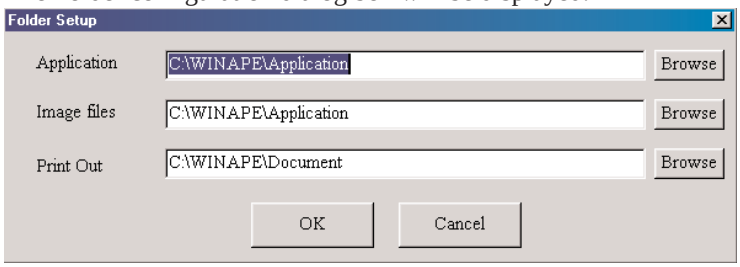
Clicking [Options]➝ [Environment] from the menu bar displays the option menu.



- Folder
  Sets the AP Editor work folder.
- Defaults
  This item is for setting the panel data and the registered graphic data of the currently editing EST model.
- EST model
  This item is for setting the EST model of the application to be creased when creating a new application. The defaults etc. of the model selection radio button at the time are configured.
- Edit
  Sets the key used for text entry.

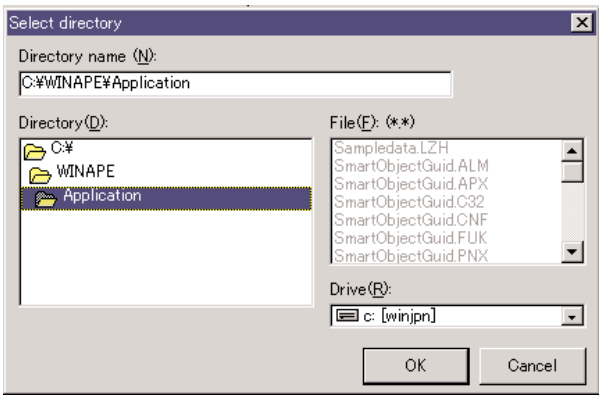
● Folder

Specify the folder to which the data file is to be stored when AP Editor is used.
The folder set here is enabled when AP Editor is next started up.
Basically, reading/writing of application data, reading of bitmap data, and setting of the print output destination are performed on the folder set here.
Select [Option]➝ [Environment]➝ [Folder] from the menu bar.
The Folder configuration dialog box will be displayed.



Enter the application data, bitmap data and storage folder and the print output destination.
Clicking [Browse] displays the following folder selection dialog box:

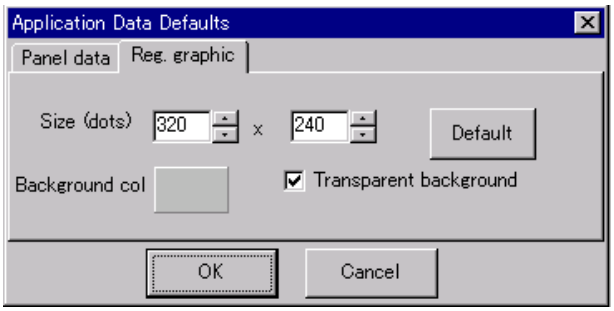
Drives and folders can also be selected and set from this dialog box.



● Defaults

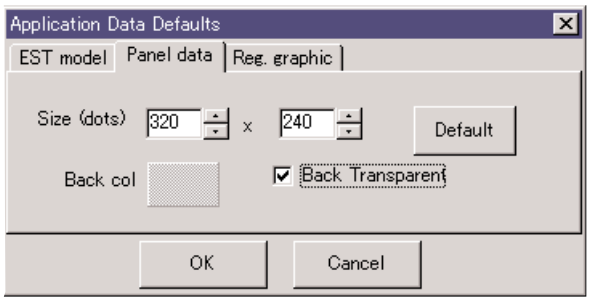
Set the default EST model and the initial the size of edit window.
Select [Option]→ [Environment]→ [Defaults] from the menu bar.
The Application Data Defaults dialog box is displayed.
You can select the EST model, panel data and registered graphic defaults using the tabs in this dialog box.

- EST model



This sheet is for setting the EST model when creating new applications.
The EST model set here is selected as the default when a new application is made from the tool bar.

- Panel data



This sheet is for setting the size of the panel data and background color when creating new panel data.
To set the size of the panel data, click the up/down buttons. You can also set the size of the panel data directly from the keyboard.
For details on the background color, see "■ Changing the Background Color" (page 6-49).
Clicking [Default] returns the settings to their defaults.

- Reg. graphic

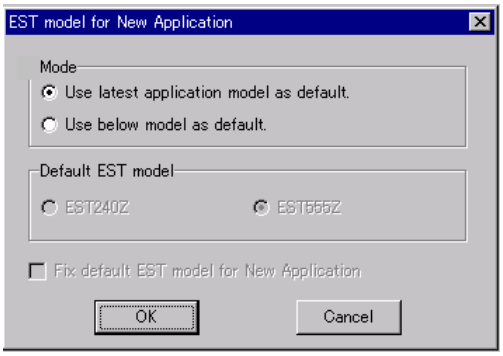
This sheet is for setting the size of the registered graphic and background color when creating new registered graphics.
To set the size of the registered graphic, click the up/down buttons. You can also set the size of the registered graphic directly from the keyboard.
For details on the background color, see "■ Changing the Background Color" (page 6-49).
Clicking [Default] returns the settings to their defaults.

● EST model

This item is for configuring the EST model defaults of the application to be newly created.
New application can be created by selecting the model with [File]➙ [New] from menu bar or by clicking the icon  .

The setting to be made here is the function related with the operation after clicking theicon.

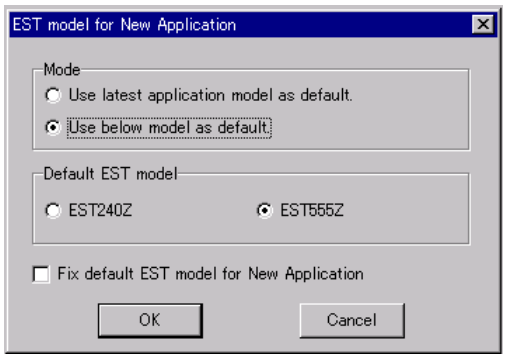
Select [Options]➙ [Environment]➙ [EST model] from the menu bar.
When creating a new application, the EST model configuration dialogue is displayed. Setting items are available for model selection, default model and check box.



- Model

  Following two items are available:
  - •Use the finally opened application data model as a default model.
  - •Use the below model as a default model.

  If the mode selection is for [Use latest application model as default], no other selection is available.
  If the mode selection is for [Use below model as default], both default model and check box can be selected.

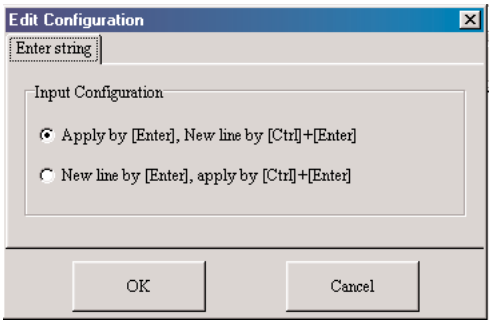


- Default EST model

  This item is for specifying the EST model default in model selection window when creating a new application.
  If the check box [Fix default EST model for New Application] is marked, new application can be created in this "Default EST model" without opening the model selection window.
  If used when the model to be created is only one, new editing can be made without opening a model selection window.

● Editing

Select how to enter a carriage return and apply and entry when entering strings in panel windows.
Select [Option] → [Environment] → [Edit] from the menu bar.
The Edit configuration dialog box will be displayed.



- Apply by [ENTER], and new line by [CTRL] + [ENTER]
  Enter a new line with [CTRL] + [ENTER], and apply the entered string with [ENTER].

  When entering “Emergency stop” as two lines:

- New line by [ENTER], and apply by [CTRL] + [ENTER]
  Enter a new line with [ENTER], and apply the entered string with [CTRL] + [ENTER].

- **Tidying up the dedicated storage area**

Select [Options]→[Tidy Dedicated Storage Area] from the menu bar.

Dedicated storage areas are available for the configuration information of trends, recipes and dedcated packages.
The following message is sometimes displayed when a trend smart object with two or more trend buffers per channel is pasted to an application in which multiple trends, daily/monthly reports, or recipes already exist:

"The dedicated storage area must be tidied up. Save to file, close all windows other than the Application Manager, and execute Tidy Dedicated Storage Area in the Option menu."

When this message is displayed, the trend configuration information that should be set as a single block in the dedicated storage area is spread over multiple special storage areas. Each of the trend configuration information can be stored to be a single block by executing "Tidy Dedicated Storage Area" in the options menu Before you execute "Tidy Dedicated Storage Area", save the application to file, and close all windows other than the Application Manager.

Chapter 7. PRINTING APPLICATION DATA

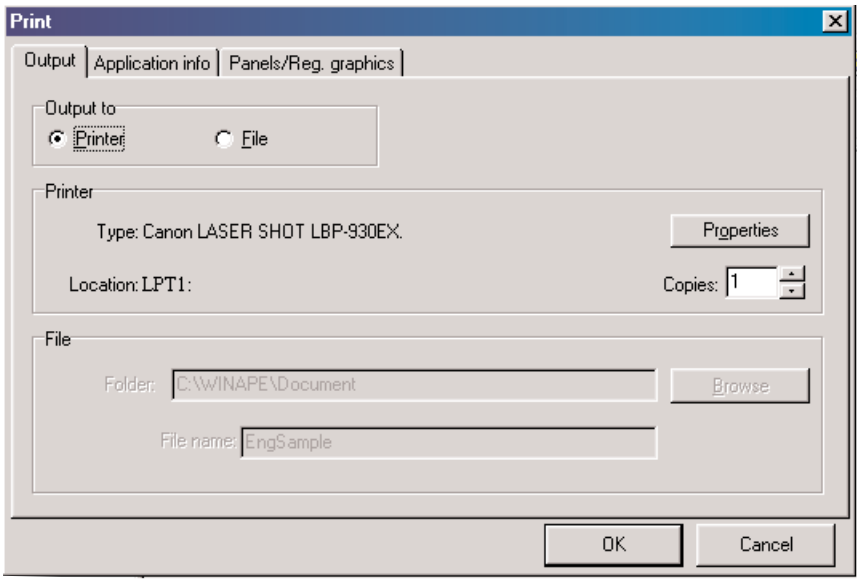
7 - 1 Printing Options

Application data can be output from the AP Editor. Printer output or file output can be selected. To select output, select [File]→[Print] from the menu bar. This displays the Print dialog box.
You can switch between output options, application information and panel/registered graphic settings with the tabs in the Print dialog box.
After selecting the required options, click [OK]. This outputs the application data to the printer or file.
If you click [Cancel], the application data is not output and the Print dialog box closes.

■ Output Options

● When printer output is selected

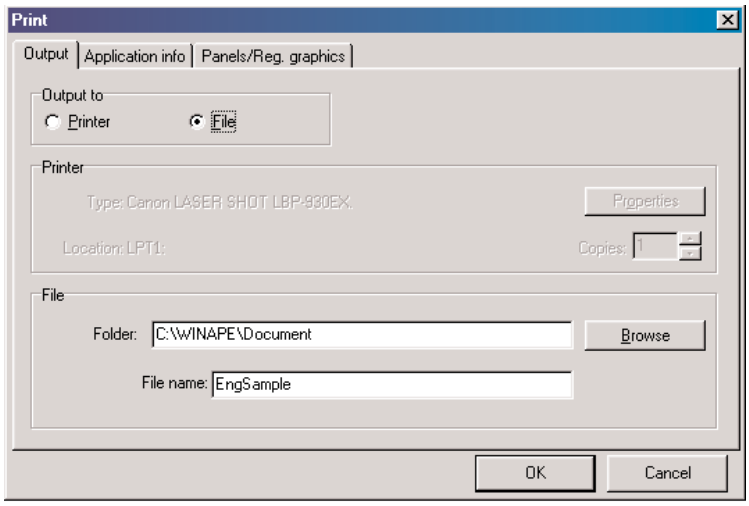
Select the options for when application data is output to a printer.



- [Output to]
  This item is for specifying a printer or file as the output destination.
- [Printer]
  This item displays information about the currently selected printer.
  To switch the printer type, select the paper, or make other printer settings, click [Properties].
- For details of settings at [Properties], refer to the Instruction Manual provided with the printer you are using.
- [Copies]
  This item is for setting the number of copies to output from the printer.

● When file output is selected

Make the settings for when application data is to be output to a file.



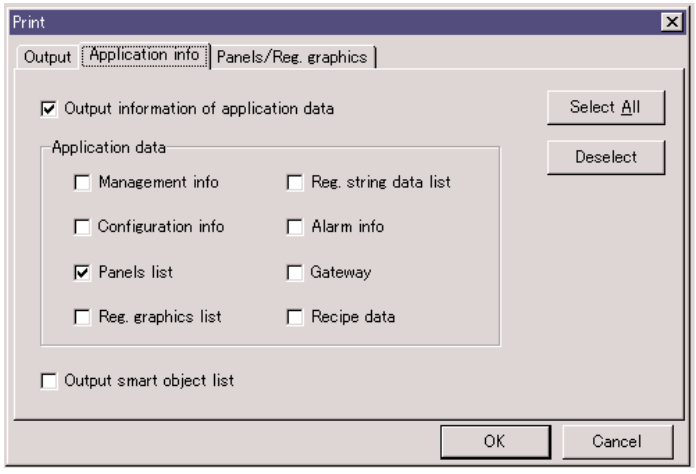
- [Folder]
  This item is for entering the folder of the file output destination.
  Document data is output to a text file, and image data is output to a BMP, EMF or WMF format file.
- Clicking [Browse] displays the folder selection window.
  You can also specify the folder by selecting the desired folder from this window.
- [File name]
  The application folder name is displayed (default), but can also be changed.

Note

For details on output files, see "● Output of print files" (page App.-7).

■ Application Information

Specify the content to be output.



- Output information of application data
  To output information of the application data by text, mark this checkbox.

- Application data

  Select which application data is to be output.
  Mark the checkbox of the items to be output.
  The following files are output:

Output data	Output file name
Management information Configuration information Panel data list Registered graphics list Registered string data list Alarm information list Gateway list Recipe data list	(application file name)_CNF.TXT

- Output smart object list

  To output a list of smart objects, mark the checkbox.

Note

Carriage return codes used during entry of text in alarm monitoring of panels and registered graphics are printed as "¥r".

Handling Precautions

Smart object information is printed as it is. So, the printed content may differ from the settings in the smart object dialog box.

- Select All

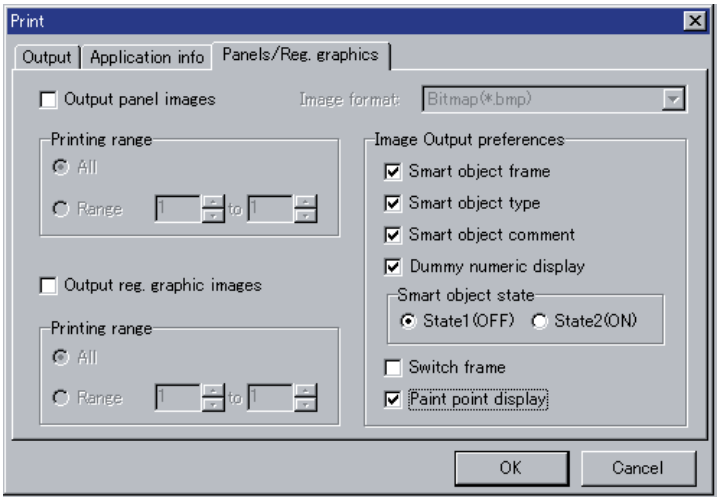
  Clicking this button selects all items.

- Deselect

  Clicking this button cancels all currently selected items.

■ Panels/Registered Graphics

Specify the panel and registered graphic images to be output.



- Output panel images
  To output panel image, mark this checkbox.

- Printing range
  [All]
  This item is for outputting all panel images.
  [Range]
  This item is for specifying the range of panel numbers to output.

- Output reg. graphic images
  To output registered graphic image, mark this checkbox.

- Printing range
  [All]
  This item is for outputting all registered graphic images.
  [Range]
  This item is for specifying the range of registered graphic numbers to output.

- Image format
  This item is for specifying the file format when outputting application data to file. Application data can be output to file in BMP, EMF or WMF format.

- Panel Image setup
  [Smart object frame]
  This item is for specifying whether or not to output the image data attached with the smart object's frame.
  [Smart object type]
  This item is for specifying whether or not to display the type of smart object.
  [Smart object comment]
  This item is for specifying whether or not to display the smart object's comment.
  [Dummy numeric display]
  This item is for specifying whether or not to output the image data with dummy numeric values indicated for numeric indicators.

- Smart object state
  When outputting images of smart objects, you can select display of [State 1(OFF)] or [State 2(ON)].
  Click the radio button of the state you want to output.

- Switch frame
  This item is for specifying whether or not to output the image data with the switch frame displayed.

- Paint point display
  This item is for setting whether the painted point is displayed or not.

7 - 2 Sample Printout

The following shows a sample of printout:

Sample printout of a sample application

```
[Management Information]

Application name      :EngSample
Comment               :
Created date          : 1999/09/29 4:20:52
Last updated date     : 2000/10/11 14:51:42
Target EST model      :EST240Z

Gateway data total    :0

Use of dedicated storage area
  Smart trend objects :0
  Recipe              :No
  Dedicated package   :No

[Configuration Information]

  Communications setting:
    CH , COM port    , communications type (PLC type)  , bps  , data format
    CH0  Infra-red     Serial driver (slave)    Ver1.7   9600   8Bit ParityNone 1Stop bit
    CH1  RS232C        Serial driver (slave)    Ver1.7   9600   8Bit ParityEven 1Stop bit
    CH2  RS485 5wire   Serial driver (slave)    Ver1.7   9600   8Bit ParityEven 1Stop bit
    CH3  RS485 3wire   Serial driver (slave)    Ver1.7   9600   8Bit ParityEven 1Stop bit
    CH4  RS485 3wire   Serial driver (slave)    Ver1.7   9600   8Bit ParityEven 1Stop bit

EST screen protection
  Backlight auto OFF  :Unused
  Wake up screen saver:Unused

Settings at power ON  :
  Start auto run      :0 Sec
  Background panel    :Unused

Display/sound setting
  Blink interval      :0.5 Sec
  One-shot interval   :0.3 Sec
  Sound tone          :Medium
  Sound at interlock  :Peep peep

Slave device address  :1
DC output setting     :System (switch output)

[Panel data List]

  No.1:Sample Panel 1
  No.2:Sample Panel 2

[Registered Graphics List]

  Nothing registered

[Registered Strings List]

  Nothing registered

[Alarm information List]

  All blocks not used
```

Chapter 8. USING A DEDICATED PACKAGE

8 - 1 Using a Dedicated Package

A “dedicated package” provides the user with functions equivalent to those of a user application but without the need for the user to create an application.
A dedicated package need only be downloaded in the same way that an existing application would be, and can be used immediately.
A dedicated package can be used as a standalone application or downloaded in combination with other user application data.

The dedicated package consists of the following data:
- Panel data
- Registered graphics
- Registered strings
- EST configuration and management information tables
- User data
  (User data is data that can be set or changed by the user on screen within the dedicated package.)

A DMC10 package is available as a dedicated package.
For details, refer to the Instruction Manual for the respective package.

■ Using Only the Dedicated Package

To use only the dedicated package, you must download the package data to the EST in the same way as when you download the regular user application data from AP Editor.

Before downloading the application data, quit all open applications.

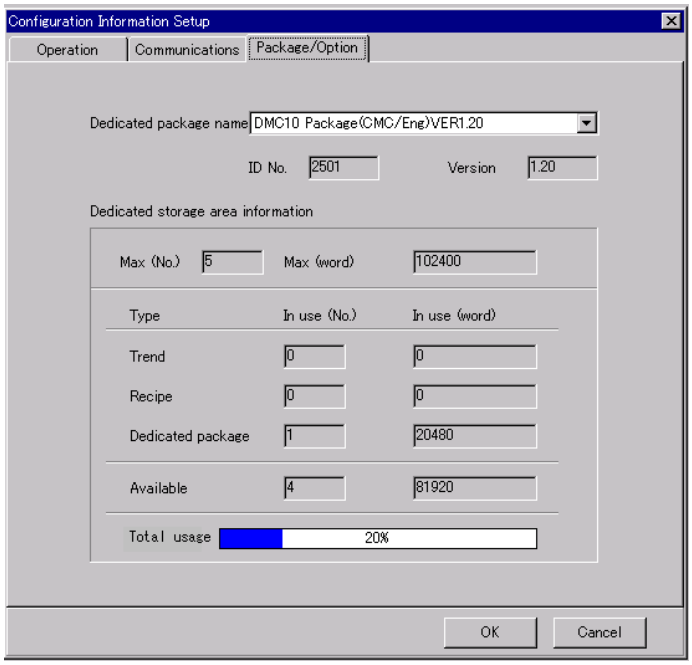
Next, select [Online]→[Download Dedicated Package] from the menu bar.

The dialog box for selecting the dedicated package opens. Select the dedicated package to be downloaded, and click [OK].

For details on communications settings, see “■ Communication Configuration” (page 5-1).

■ Using the Dedicated Package with the User Application

To use the dedicated package together with the user application, specify the dedicated package at Dedicated package name in the [Package/Option] tab displayed by [Configuration Information]➙[General].



After you have set the dedicated package, follow the regular download procedure. For details on how to download, see “5-1 Downloading Application Data to EST (PC to EST)” (page 5-1).
The user application is downloaded followed by the dedicated package.

Note, however, when downloading modified data only, the dedicated package will not be downloaded if the dedicated package is already downloaded and the version of the package is the same.

⚠ Handling Precautions

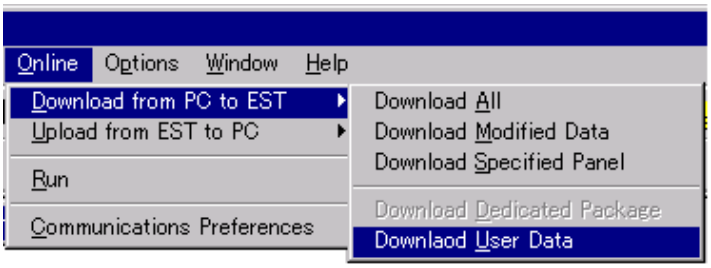
- Changes cannot be made to special packages.
- The settings of communications channels currently used by the dedicated package in configuration information cannot be changed. A message is displayed if you try to change settings.
- If you download the DMC10 package again to an EST-Z Series to which the DMC10 package is already downloaded, the environmental settings of the package will be initialized, and the previous settings will be lost. The settings that are initialized are all of the below setting items described in,
  EST240Z DMC10 Package User’s Manual CP-SP-1091E
  EST555Z DMC10 Package User’s Manual CP-SP-1124E

  - Device automatic assignments
  - Name information
  - Screen configuration
  - CMC buffering configuration (CMC link version only)
  - Alarm definitions

  Data currently saved to the DMC10 is not affected.

■ Downloading the User Data of the Dedicated Package

Download user configured data such as screen cofiguration and name cofiguration to the dedicated package currently loaded in the EST.
Use data items that were uploaded from EST in advance as the user data to be downloaded.



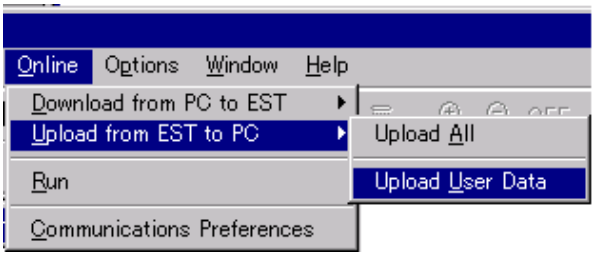
1. Select [Online]→ [Download]→ [Download User Data] from the menu bar.
   The dialog box for selecting the user data file opens.
2. Select the user data file to download, and click [OK].
   When a file is selected, the dialog box for selecting the user data opens.
3. Select the user data to be downloaded, and click [OK].

Handling Precautions

The user data of the dedicated package cannot be downloaded when the dedicated package has not been installed.

■ Uploading the User Data of the Dedicated Package

Upload user configured data such as screen configuration and name information from the dedicated package currently loaded in the EST.



1. Select [Online]→ [Upload]→ [Upload User Data] from the menu bar.
   The dialog box for selecting the user data opens.
2. Enter the user data and name of the file to upload, and click [OK].

Handling Precautions

- The user data of the dedicated package cannot be uploaded when the dedicated package has not been installed.
- Edit uploaded data only on EST. Do not edit the data on other devices. The dedicated package will not function properly when uploaded data edited on other devices is downloaded.

Chapter 9. ERROR MESSAGES & REMEDIED ACTIONS

Message is listed in alphabetical order.

[A]

Message	Meaning and Remedied action
A ddress can not be decrement.	This is displayed if an attempt is made to change the value by decrementing when an address that can not be decremented below the current value is set, or when an invalid address is set.
A ddress can not be increment.	This is displayed if an attempt is made to change the value by incrementing when an address that can not be incremented above the current value is set, or when an invalid address is set.
A maximum of 24 panels/registered graphics can be opened at once. Please close any unnecessary items.	To open a different edit window, close one of the currently open edit windows.
A user application is already exists in the EST. The user application will be deleted and the dedicated package will be downloaded in its place. Continue?	An attempt has been made to download a stand alone dedicated package. However, a user application already exists in the EST. Execute the download if it is OK to delete the user application and download the dedicated package in its place.
A value outside of the valid range was input. The value will be modified to fit within the range.	The input value was automatically modified to a valid value since it exceded the valid range. If necessary, reset the value to a correct value.
An illegal relationship between the maximum and the minimum.	Set the maximum size to a value larger than the minimum size.

[C]

Message	Meaning and Remedied action
Can not display all of the string text in the frame. To display all, either expand frame, reduce the number of characters, or reduce the text scale.	The entire entered string cannot be displayed fully at the specified scale since the string frame is too small. To display the entire string, expand the frame, reduce the text scale or reduce the number of characters.
Can not display double-byte (Kanji) characters with 8-dot font. Change font size, or remove Kanji characters to ensure correct display.	Though double-byte(Kanji) characters can be entered, they cannot be displayed correctly on EST if the specified font size is 8-dot font. Either change Kanji characters to single-byte characters, or select the 16-dot font size.
Can not duplicate. The element protrudes from the screen.	The graphic element to be pasted cannot be duplicated as it is too large. Increase the size of the panel at the duplication destination.
Can not open EST applications of unsupported EST models.	An attempt was made to open an application of an EST model different to those supported by the AP Editor.
Can not paste. This JPEG format is not supported.	The format of the JPEG file you are about to paste is not supported on the EST. Change the JPEG format with a different image editor.
Can not rotate. Because the group contains an element (smart object, registered graphic, registered string data, etc.) that can not be rotated.	Only points, straight lines, rectangles, circles/ellipses, arcs/ellipse arcs, strings and fills can be rotated. Smart objects, registered graphics and registered strings cannot be rotated. Deselect these for rotation.
Can not rotate. The element protrudes from the edit area.	The graphic element cannot be rotated as it will protrude from the edit window if it is rotated. Change the graphic element to be rotated.
Can not use Inter-lock device for Gateway data with this model. The Inter-lock device has been deleted.	This is displayed when the EST555Z gateway data is pasted on the EST240Z. In the pasted gateway data, a data using an interlock device exists. Interlock device can be used only in the EST555Z, and cannot be used in the EST240Z. In this case, past the data after deleting interlock device.

Message	Meaning and Remedied action
Communication error occurred.	A possible cause is line-noise caused by equipment that generates strong noise, such as an inverter. Try executing again.
Could not execute, as there is edited data that has not been saved. Save to file and close all windows other than the Application Manager before executing.	Tidy Dedicated Storage Area in the Options menu cannot be executed unless the application has been saved to file. Save the entire application to file, and close all windows other than the Application Manager before executing.
Could not connect to the EST. Please check the cable connections and communications port.	Please check: •The connecting cable for loose connections •That the cable is of the recommended type and wired correctly That the EST is powered ON. Then try again.
Could not copy to the Clipboard. There may not be enough free memory or incorrect communication driver setting.	Although PLC device is used for the data on clipboard, the PLC device corresponding to the application to which pasting is performed has not been configured Make communication configuration of the corresponding channel. Or, there may not be enough free memory due to some causes. After closing other applications, repeat the same operation.
Could not open the application data.	A probable cause is that the specified application is already open. Copy the specified application to a different directory, and try opening the copied application.
Could not open the COM port. The COM port may already be in use by another application.	A probable cause is that the COM port is already being used by another application. Quit all other applications, and try again.

[D]

Message	Meaning and Remedied action
Data that has an illegal value will not be reflected in the panel data. Confirn quit of editing?	Though an attempt was made to quit editing of the application list, some data was in error. That data will not be registered to the panel. To ignore the error data and quit, click [OK]. To continue editing the list, click [Cancel].
Dedicated Package version in unit differs. Environment configuraion, etc will be reinitialised, proceed to overwrite?	The version of the Dedicated package in the EST is different to that of the AP Editor. If download is continued Environment configuration and user settings of the package in the EST will be reinitialized. Cancel and upload user data if required.Otherwise OK to continue and overwrite.
Delete can not be undone. Confirm delete?	Delete can not be undone once it has been executed. To proceed with delete, click [OK]. To cancel the delete, click [Cancel].
Display may not be rendered correctly if the display scale is less than 100%.	If the display scale is 100%, or less, part of the display may appear clipped. Data, however, is not affected.

[E]

Message	Meaning and Remedied action
Elements that protrude from the specified size will be deleted. If you continue, undo will not be possible. Continue ?	The graphic element in the Clipboard is too large, and cannot be pasted to the desired panel. If you click [OK], the graphic element that protrudes will be deleted, and only the graphic elements that fit in the panel will be pasted. To cancel, click [Cancel].
Enter a valid numerical value.	The entered string is not a numeric value. Please check the entered value.
Error <Unsupported EST. Upgrade the EST to the latest version.>	Update the IPL or system program of the EST.

[F]

Message	Meaning and Remedied action
Failed to allocate memory. There may not be enough free memory available.	A probable cause is insufficient memory. Quit AP Editor, reboot Windows, and try starting up only the AP Editor.
Failed to create new application data.	Quit AP Editor, reboot Windows and start up AP Editor.
Failed to create the dialog box. There may not be enough free memory or Windows resources.	A probable cause is insufficient memory. Quit AP Editor, reboot Windows, and try starting up only the AP Editor.
Failed to get the data from the Clipboard. There may not be enough free memory or incorrect communication driver setting.	Although PLC device is available in the data to be copied,communication configuration may be cancelled before making copy. Check the communication configuration. Or, there may not be enough free memory due to some causes. After closing other applications, repeat the same operation.
Failed to read PLC device. After checking the communications configuration, reopen the Application list editing window.	Failed to initialize the Application list edit window as the communications driver has not been set correctly. If display is not correct, correctly set the communications driver, and then re-open the Application list edit window.
Failed to tidy-up dedicated storage area	A probable cause is that rewriting of dedicated storage areas failed. Quit and start up AP Editor again.

[I]

Message	Meaning and Remedied action
In the case of bit devices, set to the word boundary.	The bit position of the bit device to be specified as the start device must be “0”. Set the bit position to “0”.
Incorrect device name	The start device name is not valid on target devices that are specified in the communications settings of the basic settings. Either correct the device name, or set the correct driver in the communications settings.
Incorrect size specified.	Set the correct size.
Invalid end device name	A probable cause is that the start device name is invalid, or the end device exceeds the valid device range as there are too many bits for the specified alarm. Either change the start device, or reduce the number of bits for the alarm.

[N]

Message	Meaning and Remedied action
NM is the only valid EST device area.	Only NM devices can be used as the start device. Correct the device name.
Not enough free area in dedicated storage area. Reduce the number of trends/recipes used in dedicated storage area, Then try again.	The dedicated package can not be used since dedicated storage areas are at maximum use. To use the dedicated package, reduce the number of dedicated storage areas used by trends/recipes, and then try again.
Not enough free area in the dedicated storage area. So the dedicated package could not be registered.	Either reduce or prevent use of one of the trend/recipe/dedicated packages to secure dedicated storage area.

[O]

Message	Meaning and Remedied action
Only 1 smart recipe object can be used per application.	Only one recipe smart object can be pasted to an application as recipe smart objects are paired with recipe data settings. If you are pasting new recipe smart objects, delete the already pasted recipe smart object before pasting the new recipe smart object.
Only devices can be set for variable strings.	A probable cause is that a numerical value was entered even though only device names can be entered. Check the device name, and enter the device name correctly.

[P]

Message	Meaning and Remedied action
Panel data, the maximum data size will be exceeded. Can not add any more elements.	The maximum data size of a single panel has been exceeded. No more graphic elements can be added. Reduce the number of graphic elements.
Panel data, the maximum data size will be exceeded. Can not change.	The size of the panel data has exceeded the maximum value. Reduce the number of graphic elements pasted to the panel.
Panels which contain JPEG data take some time to display.	If you are worried about the refresh rate, either reduce the size of JPEG screens, or use bitmaps instead of JPEG data.
PLC drivers not installed. Re-installation is required.	Re-install the PLC drivers.

[R]

Message	Meaning and Remedied action
Registered graphic for a number of states have not been specified.	The registered graphic for the set number of states must be set as continuous registered graphics.

[S]

Message	Meaning and Remedied action
Saving of this application data canceled.	The save was canceled. To save, execute the save again.
Selected application “xxx” is currently opened in the AP Editor. Can not delete while open.	Before deleting the application, close the currently open application.
Set No. (>0).	Set a number greater than “0”
Smart objects can only be pasted to panel data.	Smart objects can not be pasted to registered graphics.
Smart recipe object is not used in panel data. The recipe data configuration will not be downloaded.	Recipe configuration data has been specified for the application being downloaded. However, the recipe configuration data will not be downloaded, as the recipe smart object has not been used in the application. The download may be continued if recipe functions are not required. Otherwise, if the recipe function is required, include a recipe smart object in the application.
	If recipe functions are not required, then delete the recipe configuration data so that this message is no longes displayed.
Strings which contain ’:’ can not be replaced.	When performing a replace with the type in Application list edit window set to “Device”, do not set “:” following the replace string.

[T]

Message	Meaning and Remedied action
Text is too large to display. Either expand frame, reduce string length, or reduce text scale.	Not even a single character can be displayed at the specified scale as the set string frame is too small. Expand the frame or reduce the text scale.
The active window is not a panel. Drawing of background will be omitted.	The background cannot be drawn, since the window that is currently active is not a panel. Please select a panel.
The Clipboard data is incorrect.	The Clipboard contains unusable data.
The colors before and after the change are the same.	Review the set color.
The configuration information has been changed but will not be saved. Continue?	This is displayed when one of the operations, communications, or package/option configurations has been changed, and the [Cancel] button was pressed.
The currently specified system panel does not exist. Please specify a different panel.	A non-existent system panel was set. Change the setting to a system panel that exists.
The decimal point position must be a value smaller than the number of display digits.	Set the decimal point position to a value smaller than the number of display digits.
The dedicated storage area must be tidied up before the download. Perform “Save All” before executing Tidy Dedicated Storage Area in the Options menu.	The settings of the dedicated storage area for the application that you are trying to download will not function properly on the EST. Before downloading the application, execute Tidy Dedicated Storage Area in the Options menu.
The dedicated storage area must be tidied up. Save to file, close all windows other than the Application Manager, and execute Tidy Dedicated Storage Area in the Option menu.	After this message has been displayed when pasting trend smart objects, applications will not run properly on the EST even if they are saved to file and downloaded. Save the application to file, close all windows except Application Manager, and execute Tidy Dedicated Storage Area in the Options menu.
The dedicated storage area used by the dedicated package is already in use by another application items, Tidy dedicated storage area to maximize free area?	Other items (trends/recipes) are set to the dedicated storage area to which the dedicated package is set. Clicking [OK] tidies up the dedicated storage area to create free space in the area to be used by the dedicated package. Clicking [Cancel] does not set the dedicated package.
The end alarm device address has exceeded the valid range. Either reduce the number of alarm specification bits, or change the start address.	A probable cause is that the start device name is invalid, or the end device exceeds the valid device range as there are too many bits for the specified alarm. Either change the start device, or reduce the number of bits for the alarm.
The entered numerical value is either larger than the maximum value or less than the minimum value.	Change the entered numerical value to one within the valid range.
This EST model is not supported. Please check the EST model.	The connected EST model is not supported. Check the EST model and wiring.
The EST unit contains an old IPL/BIOS version, the System Program can not be updated. The IPL/BIOS needs to be updated. For more information, please see IPL_ Update.html, or refer to the Appendix of the Application Data Creation manual. Current IPL [Rxx.xx.xx] <=> Required IPL [Rxx.xx.xx]	Refer to Appendix, ■ How to Update the IPL Version, or IPL_ Update.html. If you select [No] in the “EST contains old version of system program. Update system to new version? ” window before the message on the left is displayed, only the application data will be downloaded. Note, however, that some functions may not be available. For details on unavailable functions, read “readme.txt” in the “¥WinAPE” folder.

Message	Meaning and Remedied action
The EST unit contains an IPL/BIOS version older than the minimum recommended. The IPL/BIOS should be updated. To update the IPL/BIOS cancel this download and update the IPL/BIOS before downloading again. For more information, please see IPL_ Update.html, or refer to the Appendix of the Application Data Creation manual. [OK] Update the System, then download the User Application Data [Cancel] Cancel the download	The version of the EST IPL/BIOS installed in AP editor is older than the version of EST unit. Clicking the [OK] updates the system program of the EST and then downloads the application data. (IPL/BIOS is not updated.) Pushing the [Cancel] stops the downloading. After that, update the IPL/BIOS of the EST. For more information on updating the IPL/BIOS of the EST, see the APPENDICIES "■ How to update the IPL/BIOS (Page App.-1)" or "IPL_ Update.html".
The EST unit contains an old version of the System Program. Proceed with an update of the System? [Yes] Update the System, then download the User Application Data [No] Download the User Application Data, but do not update the System [Cancel] Cancel the download Current System[R.xx.xx.xx] ==> New System[Rxx.xx.xx]	The version of the EST system program (firmware file) currently installed to AP Editor is newer than the EST version. To update the system program as well as the application, select “Yes”. If you select “No”, the EST system program will not be updated, and only the application data will be downloaded.
The EST unit contains an newer version of the System Program. Continue with the download of User Application Data? Current System [Rxx.xx.xx] <=> Old System [Rxx.xx.xx]	The version of the EST system program (firmware file) currently installed to AP Editor is older than the EST version. Select “Yes” to just download the application data. Old system programs cannot be downloaded to EST.
The EST unit contains an old version of the System Program. It is recommended that you perform a full download [except via IrDA(CH0)] and update the System Program.	The version of the EST system program (firmware file) currently installed to AP Editor is newer than the EST version. The system program can be updated to the latest version by downloading the entire application on a channel other than IrDA(CH0). For details on version upgrades, contact your Yamatake agent.
An illegal relationship between the maximum and the minimum.	Set the maximum size to a value larger than the minimum size.
The image is too large. Can not paste.	Either change the size of the panel to which the image size is pasted in properties, or reduce the size of the image file and then perform the edit again.
The maximum number of trend/recipe items in the dedicated storage area has been reached. No more pastes are possible.	There is no free space in the dedicated storage area that is used by trends/recipes/dedicated package. If you are adding new trend/recipe smart objects, you must create free space in the dedicated storage area. To create free space, either reduce the trend buffer of already pasted trend smart objects, or delete either trend smart objects or recipe smart objects. Also, when the dedicated package is used, free space can be created in dedicated storage area by removing the dedicated package from the dedicated storage area setting.
The No. before and after the change is the same.	Set a different value to Nos. before and after a change.
The number of created devices exceeds the number of configured device items. “Yes” to delete the excessive devices. “No” to change the number of device items to the number created.	This is displayed when the number of created devices exceeds the number of configured device items when data items have been reduced. “No” returns to the number of data items before the change.

Message	Meaning and Remedied action
The recipe data has not been configured. Paste the smart object, register the panel data , then configure the recipe data in the recipe data sections of the configuration information.	The recipe data for each group (Gr1 in case of manual writing) for the recipe smart object dialog box has not been set. Register the panel data, and then configure the recipe data in the recipe data section of the configuration information.
The Recipe data in the EST unit is different to that of the Application Data [Yes]Overwrite the Recipe data in the EST unit [No]Use the Recipe Data in the EST and continue download [Cancel]Cancel the download	The recipe data in the EST unit differs from that in the AP Editor. Select [Yes] to overwrite the recipe data in the EST during the download. Or, select [No] to download data other than the recipe data. [Cancel] will cancel the download, without writing any data to the EST.
The registered graphic is too large to paste.	Change the size of registered graphics in the properties.
The registered graphic to be set is larger than (XX x YY), and may not be displayed correctly. Continue?	If there is a problem in actual EST operation, change the size of the registered graphic to (xx,yy) or less.
The registration number range is 1 to 1999.	Registered strings within the range No.1 to No.1999 are valid. Check the setting value.
The size of the smart object after the property change will exceed the panel data size. The property change will be canceled.	Changes to settings will be disabled as the smart object could not be pasted to the panel as it was too big after it its settings were changed. Either review the smart object settings, or change the panel size.
The smart object library does not have the smart object required for editing. That smart object has been replaced with a dotted square. If you are going to install the required smart object that was not in the library and perform the edit again, then DO NOT save this panel.	A probable cause is that the smart object library for the AP Editor currently in use is short of objects such as special smart objects, or there are not enough smart objects in the smart object library. Install the required smart object library. DO NOT save the panel before installing the smart object library if you wish to retain the object.
The smart objects are too large.Can not paste.	Change the panel size to a size in which smart objects can be pasted, with properties.
The specified user graphic does not exist, can not set.	User shapes cannot be set as they have not been registered. Either register and set the user shapes, or change the setting.
The text size is larger than the screen size. Can not paste.	Not even one character can be displayed at the maximum string frame that fits in a panel or registered string screen size as the size of the text is too large. Expand the size of the panel or registered string, or reduce the text scale.
The type of EST unit does not match the application. Please check the EST model.	The type of the EST unit does not match the model information of application to be downloaded. Check the EST unit or the model information of application.
The window size is too small.	The screen size is smaller than the string frame to be pasted. Review the string.
There are some characters present that cannot be displayed on EST. These characters will be deleted.	The string contains characters that cannot be displayed on EST. These characters will automatically be deleted from the string. If this is a problem, enter strings that can be displayed on the EST. For details on characters that can be displayed on EST, see the appropriate Appendix.
There are some panels/registered graphics for which a number has not been set. (No. is 0). The data can not be saved. Allocate a number by closing those items individually.	New panels or registered graphic edit windows (windows whose No. is 0) can not be saved. Until they have been assigned a number. Save all modified data indindvally and then save the application to file.
There are some panels/registered graphics for which a number has not been set. (No. is 0). The windows will forcibly be closed, and data lost.	The windows being edited will be is automatically closed without being saved even if the window is a new panel or registered graphic edit windows (windows whose No. is 0)

Message	Meaning and Remedied action
There is edited data that has not been saved. Application Manager will be closed without saving this data. Continue?	The data of the currently open application has been changed. To close without saving the changes, click [OK]. To not close, click [Cancel] and then save the edited data.
There is not enough free area in dedicated storage area to register the dedicated package. Reduce the number of trends/recipes used in dedicated storage area. Then try again.	Reduce the number of dedicated storage areas used for either of trends/recipes.
This application data is being used by another resource. Can not be used.	Close the application at another resource.
This application is currently being edited. Confirm overwrite and save?	An attempt was made to save to an application that is currently being edited. To overwrite, click [OK]. If you do not want to overwrite, click [Cancel].
Too many characters in the comment	Limit the number of characters in comments to 32 characters.

[U]

Message	Meaning and Remedied action
Unregistered data, changed during editing, was not copied to the Clipboard.	If the data to be copied contains items that are currently being changed the data being changed will not be copied. To copy the data, save the data currently being changed, and copy the data as changed data.

[W]

Message	Meaning and Remedied action
Warning < The "ESTFW" folder does not contain the firmware file for this EST.>	The required Firmware files for this model EST were not found. Install the most recent version of AP Editor for support of newer EST models. Or simply reinstall the current version if the FW files were deleted by mistake.

[X]

Message	Meaning and Remedied action
x:¥ could not be accessed. Drive not ready.	Specify the correct drive.
xxx address incorrect.	The address entry in the xxx item is in error. A probable cause is that the address name is incorrect, or that the communications driver in the basic settings is not set correctly in the case of the address name. Review the address and settings.
xxx address undefined.	The address is not set to the xxx item. Enter the address.
xxx already exists. Confirm overwrite?	The specified application file (indicated by xxx) already exists. To overwrite the application that already exists, click [OK]. If you do not want to overwrite, either click [Cancel] to cancel, or enter a different file name.
xxx confirm save of modified data?	A change has been made in the xxx edit window. “Yes” saves the modified data. “No” does not save the data. “Cancel” cancels the edit window close operation.
xxx is write protected. Confirm overwrite?	Write protection attributes are set to the specified application file (indicated by xxx). To ignore write protection and overwrite, click [OK]. If you do not want to overwrite, click [Cancel].

APPENDICES

A - 1 About IPL

IPL (IPL/BIOS): This program contains the basic functionality of the EST.
It is similar to the BIOS of a Personal Computer.

■ How to determine the IPL version

Confirm the IPL version in the following method:

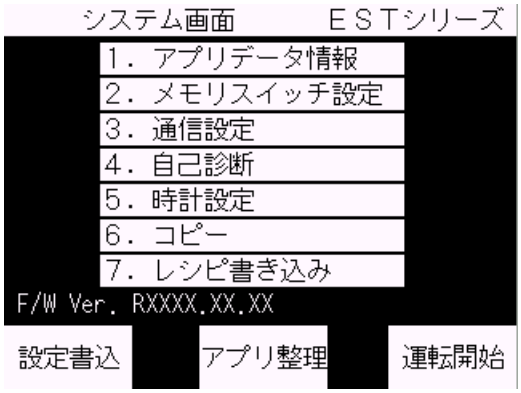
1. Press the top of the EST screen until the System menu appears (approx. 5 seconds).
   The System menu will be different by model or version. See the item of System menu.

2. Make sure update the IPL after reading "■ How to update the IPL/BIOS" (page App.-2) below.

● System menu

- EST240Z
  The System menu is different for IPL versions prior to R0015.

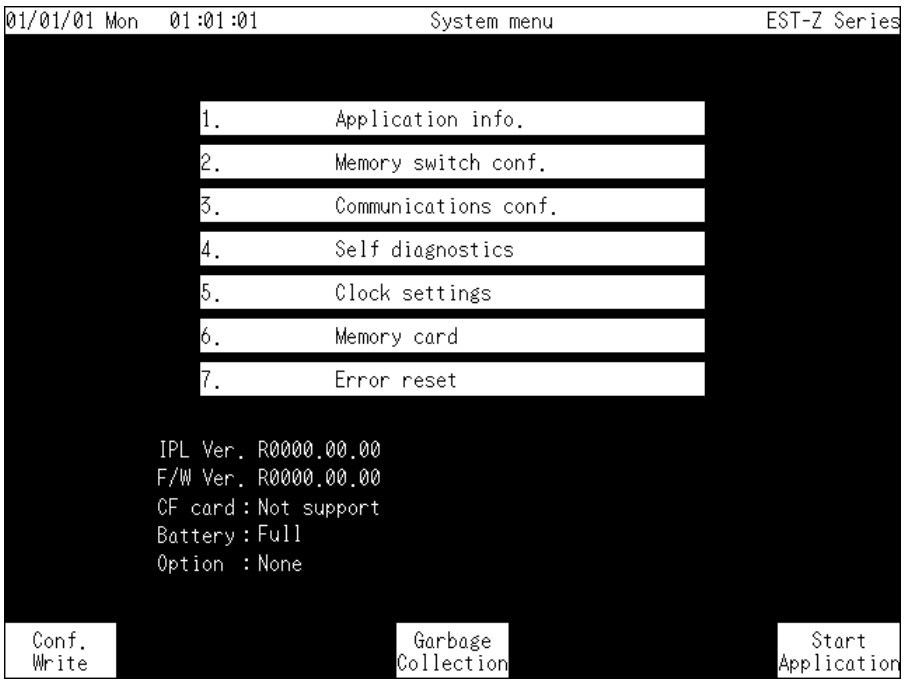
System menu prior to IPL version R0015



System menu from IPL version R0015 onwards (F/W after Ver. R0021.04.01)

- EST555Z

■ How to update the IPL/BIOS



Handling Precautions

IMPORTANT NOTICE

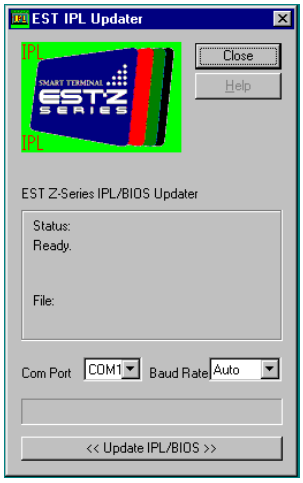
The IPL Update operation requires care.
All User Application, Data and Firmware will be lost during the update. Please ensure that you have uploaded your User Application and Data before performing the update.
DO NOT turn off power to the EST, or disconnect the communications cable during the update.
Otherwise there is a chance that the EST will no longer be able to function.
In this case, please consult your local EST distributor.

Upload the application in advance before updating the IPL or system program.
When a dedicated package is used, also upload the user data. If IPL or system program is updated, the application of the EST is deleted.

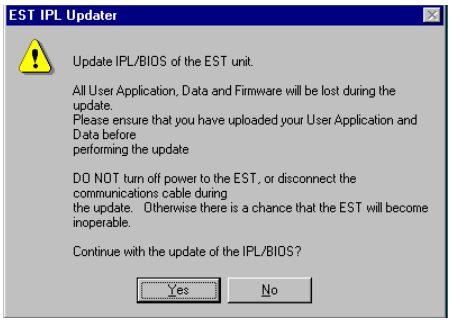
- **Procedure for IPL update**

If you are running the AP editor, quit the AP editor before continuing.

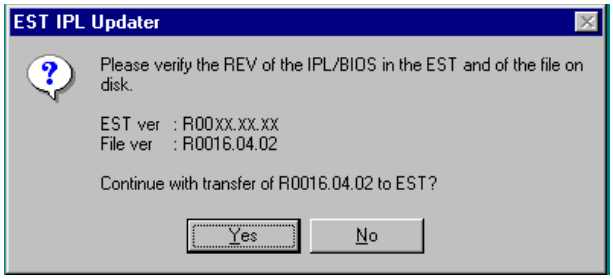
1. Connect a serial communication cable between the EST and Personal Computer.
2. Run the "EST IPL Updater.EXE", located in the folder to which you installed the AP editor.
   ▶ The following window will be displayed:
3. Ensure that the IPL Updater and personal computer's [Com port] are same.



4. Click <<Update IPL/BIOS >>
   ▶ The following warning message will be displayed:
5. Click [Yes] to proceed.



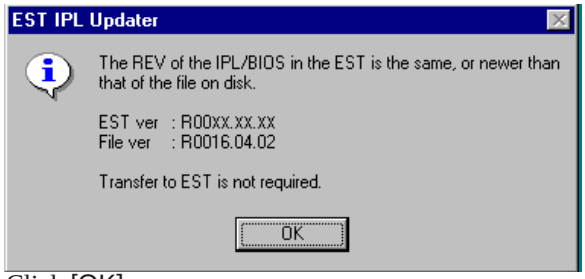
- The following IPL version confirmation message will be displayed:



6. Click [Yes] to proceed with the IPL Update.
   - This will start the transfer of the IPL data to the EST.
   - After the transfer is complete, the following message will be displayed:

Note

If the IPL version of the EST is same or newer, there is no need to update the IPL. Simply close the IPL Updater window.



7. Click [OK].
   - The following window will be displayed:

8. Click [OK].
   - The IPL/BIOS Update operation has been completed.
   - Now [close] the IPL Updater window.
9. Then power off the EST, and power on again to run the new IPL/BIOS.
10. Finally, download the F/W (System program) and your application to EST using the AP editor.

A - 2 List of Key Operations Used in Editing

■ Key Operations When Entering Graphic Elements

Graphic Elements		[SHIFT]	[CTRL]
Point		Disabled	Disabled
Straight line		Limited to straight line in 45° unit direction	Disabled
Polygon		Limited to straight line in 45° unit direction	Disabled
Rectangle		Limited to square	The position when the left mouse button is pressed becomes the center of the rectangle.
Circle/Ellipse		Limited to circle	The position when the left mouse button is pressed becomes the center of the circle/ellipse.
Arc/ellipse arc	When applying circle/ellipse	Limited to circle	The position when the left mouse button is pressed becomes the center of the circle/ellipse.
	When applying the start and end points of arc/ellipse arc	Start/end points limited to 45° unit	When pressed, the (ellipse) arc in the clockwise direction is specified from the start point to the end point. (If not pressed, the (ellipse) arc is specified in the counterclockwise direction.)
String		String frame limited to square	The position when the left mouse button is pressed specifies the center of the string.
Paint		Disabled	Disabled
Smart object, registered graphic, registered string, bitmap		Disabled	Disabled

■ Key Operations When Selecting Graphic Elements

Graphic Elements	Description
[CTRL] + drag	Multiple graphic elements can be selected by dragging with the mouse to select the area. The previous selected area is canceled just by dragging. If you press the [CTRL] key before starting to drag, selection of already selected graphic elements in the selected area is canceled, and non-selected elements become selected. (Operation of the [SHIFT] key during dragging is disabled.)
[CTRL] + click left mouse button	Scaling by dragging the selected graphic elements Currently selected graphic elements can be scaled by dragging the handles of the selected graphic elements by the mouse. The scaling ratios in the horizontal and vertical directions of the selected graphic elements becomes independent by pressing the [SHIFT] key.
When moving selected element + [SHIFT]	Moving by dragging the selected graphic elements Currently selected graphic elements can be moved by dragging the selection target outside of the area where the handles of the selected graphic elements are displayed. The move direction of the selected graphic elements is restricted to the horizontal and vertical directions by pressing the [SHIFT] key.
When scaling selected element + [SHIFT]	Moving by dragging the selected graphic elements Currently selected graphic elements can be moved by dragging the selection target outside of the area where the handles of the selected graphic elements are displayed. The move direction of the selected graphic elements is restricted to the horizontal and vertical directions by pressing the [SHIFT] key.

A - 3 Cursor Operation

The following table summarizes operations when one or more graphic elements are selected in the Select mode:

Graphic Elements		Description
[→][←][↑][↓] keys	[CTRL]	Graphic elements are scaled when the [CTRL] key is pressed, and moved when the [CTRL] key is not pressed. Note, however, that graphic elements can be scaled only when one element is selected.
	[SHIFT]	When the [SHIFT] key is pressed, the scale and move unit becomes 4 dots (4 grids when the snap to grid checkbox is marked). When the [SHIFT] key is not pressed, the scale and move unit becomes 1 dot (1 grid when the snap to grid checkbox is marked). Note, however, that during movement with the snap to grid function enabled, the top left coordinate of the selected graphic element moves to a position on the grid closest to the position to which the cursor moved by four grids.
[ALT]		When the [ALT] key is pressed, the setting becomes opposite to that before the snap to grid checkbox is marked. In other words, the snap to grid function becomes disabled if the [ALT] key is pressed when the snap to grid checkbox is marked. Alternately, the snap to grid function is enabled if the [ALT] key is pressed when the snap to grid checkbox is not marked.
[→][←][↑][↓] keys		In the Draw or Selection modes, the mouse cursor moves one dot per grid in the top, bottom, left or right directions when only the cursor [→][←][↑][↓] keys are used.

A - 4 Files Created by AP Editor

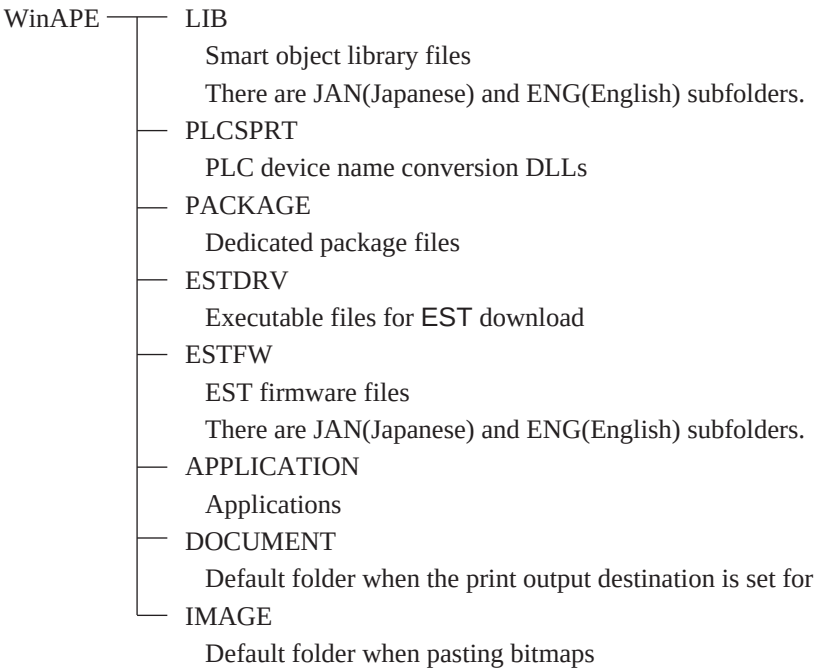
■ Application Data Representative Files and Data File Groups

AP Editor comprises the following files:

File Name	Extension	Remarks
Application configuration file	APX	Configuration information data such as EST trend/recipe/gateway
Configuration information file	CNF	Configuration data such as EST communications settings
Panel data file	PNX	Panel data created by the user
User registered graphic file	FUK	Registered graphic created by the user
System registered graphic file	SFK	Registered graphic data created automatically when smart objects are pasted
User registered string file	STR	Registered string created by the user
System registered string file	SSR	String data created automatically when smart objects are pasted
Alarm configuration file	ALM	Configuration information data for alarm monitoring
Smart object conversion file	SYB	Automatic assignment data created automatically when smart objects are pasted
32-dot font file	C32	Font data created automatically when 32-dot font strings are used
Label/device file	SYX	Label/device management data created automatically when smart objects are created.

■ Folder Structure and Auxiliary Data File Groups

The AP Editor is installed to the default root folder “WinAPE” and comprises the following sub folders under the WinAPE folder:
The WinAPE root folder contains WinAPE execution files, and other files such as DLLs and PARTX.DTB required for executing AP Editor.



● Output of print files

The following table summarizes the file names corresponding to the application data when a file is output:
TXT stands for text files, and BMP stands for bitmap files.

Data to be Output	Extension	Output File Name
Management information	TXT	(application name)_ CNF.TXT
Configuration information		
Panel list		
Registered graphic list		
User registered string list		
System registered string list		
Alarm information list		
Gateway list		
Recipe list		
Smart object list	TXT	(application name)_ PNL.TXT
Panel images	BMP	(application name)_ PNL(number).BMP
Registered graphic images	BMP	(application name)_ IMG(number).BMP

A - 5 Smart Object Tables

■ Basic Smart Objects

Smart object type	Smart object name
Switches	Switch
Function switches	Radio switch Inching Clock adjustment Alarm silence
Word type switches	Word data write Constant write Data calculation
Lamps	Bit type 2-state lamp Bit type 3-state lamp Bit type multi-value state lamp Word type 2-state lamp Word type 3-state lamp Word type multi-value state lamp
Panel change switches	Panel change switch, panel selector Panel change switch, panel overlay Panel change switch, open pop-up Panel change switch, special package selector Panel change switch, multi-panel selector [others] Panel change switch, multi-panel overlay [others] Panel change switch, background panel selector [others] Panel change switch, background panel close [others] Panel change switch, panel selector (background change menu) [others] Panel change switch, panel selector (background close) [others] Panel change switch, panel close [others] Panel change switch, panel replace [others] Panel change switch, panel to front [others] External, panel selector External, panel overlay External, open pop-up External, special package selector External, multi-panel selector [others] External, multi-panel overlay [others] External, background panel selector [others] External, background panel close [others] External, panel selector (background change menu) [others] External, panel selector (background close) [others] External, panel close [others]
Numeric indicators	Basic With calculation
Text display	Registered string data Variable string data Message cal
Graphs/meters	Bar graph Meter Slide meter Pie-chart Line graph
Data setter	Password numeric keypad UP/DOWN setter Bit pattern setter
Keyboard call	Numeric keypad Keyboard

Smart object type	Smart object name
Alarm monitor	Aggregation display [alarm lamp] Representative lamp [alarm lamp] Alarm buzzer Monitor start/stop Summary display [alarm information display] Summary display [alarm information display] (message display) Summary display [alarm information display] (all display) History display [alarm information display] History display [alarm information display] (name display) History display [alarm information display] (message display) Number of occurrence display [alarm information display] Number of occurrence display [alarm information display] (Message display) Number of occurrence display [alarm information display] (all display) Alarm information clear
Clock	Digital clock Analog clock Digital calendar External clock adjustment
State control	External backlight control External backlight ON External buzzer control External buzzer OFF Battery alarm notification Data write when opening the panel

■ Instrumentation Smart Objects

Smart object type	Smart object name
PID controller	SDC10 SDC20/21 SDC30/31 SDC40A (standard/remote SP type) CB508 DMC10 (2 channel model) DMC10 (4 channel model)
Recipe	Manual write Manual write (comment display) Manual write (all display) Auto write Auto write (comment display) Auto write (all display)
Trend	Trend (EST240Z) Variable trend (EST240Z) Trend (EST555Z) Variable trend (EST555Z)
Graphic movement	Rail movement Free movement
PLC monitor	MELSEC A C-Link (Word device) MELSEC A C-Link (Bit device) MELSEC A CPU (Word device) MELSEC A CPU (Bit device) MELSEC FX CPU (Word device) MELSEC FX CPU (Bit device) MELSEC Q C-Link (Word device) MELSEC Q C-Link (Bit device)

Revision History

Printed Date	Manual Number	Edition	Revised pages	Description
01-02	**CP-SP-1088E**	**1st Edition**		
01-03		**2nd Edition**	6-7	Fonts changed. Screen changed.
01-10		**3rd Edition**		All are revised for correspondence in EST555Z.

Specifications are subject to change without notice.

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