

# SHARP®

Version 2.0  
Produced in Jan. 2003

LCD Control Terminal

Model name  
Screen edit software **ZM-71SE**

## Instruction Manual (Operation version)



Thank you for purchasing the screen edit software ZM-71SE for Control Terminal ZM-300/42/43/52/72/82 series. This manual leads you to understand the outline and the functions and to master it effectly, by making each example of each chapter. Read this manual thoroughly to completely familiarize yourself with the operation according to the examples.

Therefore, about the operation of ZM-71SE, see “ZM-71SE Instruction Manual (operation version)”.

### About software version

This manual is describes the version 2.0.0.0 of ZM-71SE.

### Notes

- In this manual, the module name of Control Terminal is expressed as follows.

Expression in this manual (Series name)		Model name of LCD control terminal
ZM-300	ZM-350	ZM-352D
	ZM-360	ZM-362S, ZM-362SA
	ZM-370	ZM-371T, ZM-371TA, ZM-371S, ZM-371SA
		ZM-372T, ZM-372TA, ZM-372S, ZM-372SA
	ZM-380	ZM-381S, ZM-381SA
ZM-382S, ZM-382SA		
ZM-42	ZM-42D, ZM-42L	
ZM-43	ZM-43T, ZM-43D, ZM-43L	
ZM-52	ZM-52D, ZM-52HD	
ZM-62	ZM-62E	
ZM-72	ZM-72T/TC/TV/TVC, ZM-72TS/TSC/TSV/TSVC	
	ZM-72D/DC	
ZM-82	ZM-82T/TC/TV/TVC, ZM-82DC	
ZM-70	ZM-70D, ZM-70TZM-41D, ZM-41L	
ZM-41	ZM-41D, ZM-41L	
ZM-30	ZM-30E, ZM-30L, ZM-61E, ZM-61T, ZM-40D, ZM-40L	

### Notes

- This module is made in accordance with Japanese domestic specifications. Its guarantee clauses are described in a separate guarantee card (packed together with the module). When this module is used outside Japan, these guarantee clauses are not applicable. In addition, the guarantee should be understood as a guarantee of the delivered product as a single unit and every other damages or losses due to damage or malfunction of the product will not be included in this guarantee.
- Should you have any questions and inquiries, please feel free to contact our dealers.
- The whole or partial photocopy of this booklet is prohibited.
- We are not held responsible for any damages created as the result of using this software, nor damages claimed by the third party as the result of using this software.

## ◆ About the composition of this Manual

This manual consists of the following chapters for your thorough understanding of the ZM-71SE editor.

Chapter 1	Basic Operation	This chapter explains the basic operation procedure, structure and menu items of the editor.
Chapter 2	Screen Composition	This chapter explains the structure of "screen," its holding capacity, limitations and methods of placing parts on the screen.
Chapter 3	Drawing Tools	This chapter explains the drawing commands and how to use these commands.
Chapter 4	Registration Item	This chapter explains the editing procedure of registration items.
Chapter 5	Transfer	This chapter explains the data transfer procedure from the editor.
Chapter 6	Print	This chapter explains the printing procedure from the editor.
Chapter 7	Useful Techniques	This chapter explains useful techniques in editor operation, such as [Tool] menu or file management function.
Chapter 8	Applications for ZM-71SE Editor	This chapter explains applications attached to the editor, such as Simulator.
Chapter 9	Wizard	This chapter explains screen creation using the wizard function.
Appendix 1	Fonts	The setting and editing procedures of font available with the ZM series are explained.
Appendix 2	3D Parts	The placement and editing procedure as well as notes for 3D parts are explained.
Appendix 3	Part Editing	The part structure and editing procedure are explained.



---

# Contents

---

## Outline

### Chapter 1 Basic Operation

Starting and Quitting.....	1-1
Starting.....	1-1
Opening a File.....	1-2
Opening a New File.....	1-2
Opening an Existing File.....	1-4
Quitting.....	1-5
Basic Operation of the Editor.....	1-6
Names of Components.....	1-6
Title Bar.....	1-6
Menu bar.....	1-7
Icon Bar.....	1-7
Division Number.....	1-7
Tool Bar.....	1-8
Parts Tool Bar.....	1-8
Edit Tool Bar.....	1-8
Draw Tool Bar.....	1-9
Moving and Transforming the Tool Bar.....	1-9
Hiding the Tool Bar.....	1-10
Status Bar.....	1-10
Hiding the Status Bar.....	1-10
Menu Bar.....	1-11
[File] Menu.....	1-11
[Edit] Menu.....	1-12
[Display] Menu.....	1-14
[Draw] Menu.....	1-15
[Part] Menu.....	1-15
[Item] Menu.....	1-15
[System Setting] Menu.....	1-16
[Tool] Menu.....	1-16
[Window] Menu.....	1-16
[Help] Menu.....	1-16
Dialog.....	1-17
Setting and Operating Technique in Dialogs.....	1-17
Setting up Memory Addresses.....	1-18

---

Edit Window.....	1-22
Window Structure.....	1-22
Calling up the Window.....	1-22
[Preview]/[Next] Icons.....	1-22
[Jump] in the [Display] Menu.....	1-22
Double-clicking on the [Screen List] Window.....	1-23
Dragging on the [Screen List] Window.....	1-24
Calling from the [Item] Menu.....	1-25
Operations on the [Screen List] Window.....	1-25
Item List.....	1-27
Calling up the Item List.....	1-27
Utilizing the Item List.....	1-28
Changing the Display Format.....	1-29
Closing the Item List.....	1-30
Useful Operations.....	1-30
Copy & Paste.....	1-30
Zooming In/Out.....	1-31
Right-clicking Menu.....	1-32
When No Items are Selected:.....	1-32
When an Item is Selected:.....	1-33
When a Normal Overlap is Placed:.....	1-34
When a Table Data Display Part is Selected:.....	1-34
Useful Editing Commands.....	1-35
Multi Copy.....	1-35
Copy to the Selected Screen.....	1-37
Rotate Graphic.....	1-38
Operation Procedure.....	1-38
Flip.....	1-39
Operation Procedure.....	1-39
Align.....	1-39
Switch/Lamp Centering.....	1-39
Flush Right/Left/Top/Bottom.....	1-40
Vertical Align.....	1-40
Horizontal Align.....	1-40
Align Setting.....	1-40
Select Environment.....	1-41
[Point Search] Icon.....	1-41
Screen Data File Property.....	1-42
[File Information] Tab Window.....	1-42
[Memory Use] Tab Window.....	1-43
[Environment] Tab Window.....	1-43

---

## Chapter 2 Screens

Screen Composition .....	2-1
Screen Outline .....	2-1
What Is a Division? .....	2-2
Combination of Parts .....	2-3
When Using Screen Library: .....	2-4
Division Number Check .....	2-4
Screen Structure .....	2-5
Screen Resolution .....	2-5
Lines and Columns .....	2-6
Screen Capacity .....	2-6
Operation Environment Setting .....	2-7
Background Color Setting .....	2-7
Other Screen Setting Items .....	2-7
[P1] Tab Window .....	2-7
[P2] Tab Window .....	2-8
[Superimpose Setting] Tab Window (For the ZM-300 series only) .....	2-8
[Animation] Tab Window (For the ZM-300 series only) .....	2-8
[Wallpaper Setting] Tab Window (For the ZM-300 series only) .....	2-9
Display Environment Setting .....	2-10
[Display Environment] Dialog .....	2-10
[Detail] Tab Window .....	2-10
[Menu Dsp.] Tab Window .....	2-12
[Grid] Tab Window .....	2-13
[Others] Tab Window .....	2-16
Part Types and Placement .....	2-17
Part Types .....	2-17
Notes on Parts Placement .....	2-18
Setting Memory .....	2-20
Parts File .....	2-21
Kinds of Parts Files .....	2-21
3D Parts .....	2-22
Parts File (Ex.: Switch) .....	2-22
Parts Placement (Ex.: Switch) .....	2-25
Parts Change (Ex.: Lamp) .....	2-26
Parts Enlargement/Reduction .....	2-27
Parts Selection .....	2-27
Parts Movement .....	2-28
Parts Placement from Tool Bars .....	2-28
Setting Procedure (Ex.: Relay) .....	2-28
[Detail] Icon .....	2-29
Tool Bar for Each Part .....	2-32
Redisplay of Tool Bar .....	2-33

---

Parts Placement and Setting .....	2-34
Overlap .....	2-34
Normal Overlap .....	2-34
Editing in Overlap .....	2-35
Call-/Multi-Overlap .....	2-37
Video Display .....	2-38
Switch and Lamp .....	2-39
Data Display .....	2-40
Numerical Data and Character Displays .....	2-40
Message Display .....	2-40
Table Data Display Part .....	2-41
Property Change for One Data Cell .....	2-42
Property Change for Multiple Data Cells .....	2-43
Change of Cell Height and Cell Width .....	2-44
Right-Click Menu .....	2-44
Relay, Relay-Sub, and Message Modes .....	2-46
Entry Mode and Data Block Area .....	2-47
Bar Graph, Pie Graph, Panel Meter, and Closed Area Graph .....	2-48
Statistic Graph .....	2-49
Trend Graph .....	2-50
Graphic Mode and Graphic Relay Mode .....	2-50
Sampling .....	2-51
Time Display .....	2-52
Calendar Display .....	2-52
Memo Pad .....	2-54
Macro and Interval Timer .....	2-54
Memory Card .....	2-55
Animation .....	2-55
Video .....	2-56
JPEG Display .....	2-56
Sound .....	2-56
Color Types and Settings .....	2-57
Color Types .....	2-57
32,000-color Type .....	2-58
Notes on Color Creation .....	2-60
128-color Type .....	2-61
Monochrome Type .....	2-62
Blinking Setting .....	2-63
Blinking Setting Procedure .....	2-63
Blinking Time Setting .....	2-63



---

## Chapter 3 Drawing Tools

Tools .....	3-1
Basic Operations .....	3-2
[Screen Drawing] Dialog.....	3-2
Erasing the Dialog .....	3-2
Moving the Dialog.....	3-3
Selecting Colors .....	3-3
Selecting Tiles .....	3-3
Selecting Line Styles .....	3-4
Limitations on Line Styles .....	3-4
Drawing Methods .....	3-5
Line.....	3-5
Single Line .....	3-5
Continuous Line.....	3-6
Box .....	3-7
Rectangle.....	3-7
Chamfered Box .....	3-8
Parallelogram.....	3-9
Polygon.....	3-10
Circle .....	3-12
Circle.....	3-12
Arc and Sector .....	3-13
Drawing from the Center.....	3-13
Drawing from the Line End Position.....	3-14
Ellipse .....	3-15
Elliptical Arc and Elliptical Sector.....	3-15
Drawing from the Diagonal Line .....	3-16
Drawing from the Center.....	3-17
Text.....	3-18
Text Field .....	3-18
Number of Characters Available .....	3-18
Text Entry .....	3-18
Selecting Colors.....	3-19
Text Properties .....	3-19
Placing Text .....	3-22
Pattern.....	3-23
Placing Patterns.....	3-23
Placing Multiple Patterns Continuously .....	3-24
Paint .....	3-26
Graphic Call.....	3-27
Placing Graphics.....	3-27
Dot.....	3-29

---

Bar Graph Scale .....	3-29
Drawing Method .....	3-30
Pie Graph Scale.....	3-31
Drawing Method.....	3-32
Drawing from the Center.....	3-32
Drawing from the Line End Position .....	3-33
Trend Graph Scale.....	3-33
Drawing Method.....	3-34
Multi-text .....	3-35
Text Field.....	3-35
Number of Characters Available .....	3-35
Text Entry .....	3-35
Selecting Colors .....	3-36
Text Properties.....	3-36
Placing Multi-text.....	3-36
Screen LIB .....	3-37
Placing Screen Library Element.....	3-37

## Chapter 4 Registration Items

Outline of Registration Items .....	4-1
Contents of Registration Items.....	4-2
Screen.....	4-3
Calling a Screen.....	4-3
Screen Editing.....	4-3
Graphic Library .....	4-4
Graphic Library Structure.....	4-4
Calling the Graphic Library .....	4-4
Graphic Library Editing.....	4-5
Offset Position Setting.....	4-5
Outline of Offset Position .....	4-5
Changing an Offset Position .....	4-6
Parameter Setting .....	4-6
Outline of Parameter.....	4-6
Parameter Setting Procedure .....	4-7
[Parameter Setting] Dialog.....	4-8
Parameter Setting Items .....	4-12
Data Display.....	4-14
Outline of Data Display in Graphic Library.....	4-14
Data Display Setting Procedure.....	4-15
[Data (Main)] Tab Window.....	4-16
Parameter Setting for Data Display .....	4-16
[Data (Char. Prop.)] Tab Window .....	4-17

---

Graphic Library Environment Setting .....	4-17
Base Screen Display .....	4-17
Background Color Setting .....	4-19
Multi-overlap .....	4-20
Multi-overlap Structure .....	4-20
Calling a Multi-overlap .....	4-20
Multi-overlap Editing .....	4-21
Placing an Overlap .....	4-21
Editing in Overlap .....	4-22
Other Settings .....	4-23
Base Screen Display .....	4-23
Macro Setting .....	4-24
Macro Setting Commands .....	4-24
Macro Editing and Deleting .....	4-24
Data Block .....	4-25
Data Block Structure .....	4-25
Calling a Data Block .....	4-25
Data Block Editing .....	4-26
Parts .....	4-26
Drawing Tools .....	4-26
Offset Position Setting .....	4-26
Data Block Environment Setting .....	4-27
Base Screen Display .....	4-27
Background Color Setting .....	4-27
Message .....	4-28
Message Structure .....	4-28
Calling a Message .....	4-30
Message Edit Window .....	4-30
Message Editing .....	4-31
Copying and Pasting Messages .....	4-31
Deleting Messages .....	4-33
Message Search and Replacement .....	4-34
Search .....	4-34
Replacement .....	4-34
Message Display Environment Setting .....	4-35
Pattern .....	4-37
Pattern Structure .....	4-37
Calling a Pattern .....	4-37

---

Pattern Editing .....	4-38
[Pencil] Icon.....	4-38
Pencil Command Usage.....	4-38
[Eraser] Icon.....	4-39
Eraser Command Usage.....	4-39
[Line] Icon.....	4-40
Line Command Usage.....	4-40
[Box] Icon .....	4-41
Box Command Usage.....	4-41
[Circle] Icon.....	4-42
Circle Command Usage.....	4-43
[Text] Icon.....	4-43
Text Command Usage.....	4-44
[Paint] Icon .....	4-45
Paint Command Usage.....	4-45
[Square Select Area] Icon.....	4-46
[Square Select Area] Usage .....	4-46
Transforming Patterns .....	4-47
Bitmap Import and Storage.....	4-49
Importing a Bitmap File.....	4-49
Dialog for Bitmap Import.....	4-50
Storing in a Bitmap File.....	4-52
Pattern Environment Setting.....	4-53
[Display Environment] .....	4-53
[Background Color].....	4-53
Placing a Pattern.....	4-54
Size of a Placed Pattern.....	4-54
Macro Block .....	4-55
Macro Block Structure.....	4-55
Calling a Macro Block.....	4-55
Macro Block Editing.....	4-56
Useful Functions.....	4-59
Copying Lines .....	4-59
Deleting Lines .....	4-60
Page Block.....	4-61
Page Block Structure.....	4-61
Calling a Page Block.....	4-61
Page Block Editing.....	4-62
Copying and Pasting or Deleting Page Blocks.....	4-63
One-Time Setting of Multiple Blocks.....	4-64
Direct Block.....	4-65
Direct Block Structure.....	4-65
Calling a Direct Block.....	4-66

---

Direct Block Editing .....	4-66
Copying and Pasting or Deleting Direct Blocks .....	4-68
Screen Block.....	4-69
Screen Block Structure.....	4-69
Calling a Screen Block .....	4-69
Screen Block Editing .....	4-70
[Screen Block Edit] Window Setting .....	4-71
Tile.....	4-72
Tile Structure .....	4-72
Calling a Tile.....	4-72
Tile Editing.....	4-73
Data Sheet.....	4-75
Data Sheet Structure.....	4-75
Calling a Data Sheet.....	4-76
Data Sheet Editing.....	4-76
Drawing Tools for Data Sheet.....	4-78
[Line] Icon .....	4-78
[Box] Icon .....	4-78
[Text] Icon .....	4-78
[Data Display] Icon .....	4-78
Data Sheet Environment Setting .....	4-79
Display Environment.....	4-79
Memory Display .....	4-79
Screen Library .....	4-80
Screen Library Structure.....	4-80
Calling a Screen Library .....	4-80
Screen Library Editing .....	4-81
Notes on Editing .....	4-81
Ex.: Placing a Calendar Part in Screen Library .....	4-81
Screen Parts Management Through Screen Library .....	4-82
Offset Position Setting .....	4-83
Placing a Screen Library .....	4-84
Notes on Placing a Screen Library .....	4-84
Multi-languages .....	4-84
Animation (For the ZM-300 series except for ZM-352D).....	4-85
Animation Function Structure.....	4-85
Calling the Animation Function.....	4-85
Animation Editing.....	4-86
Frame Editing .....	4-88
Frame Structure .....	4-88
Frame Editing .....	4-88

---

## Chapter 5 Transfer

Before Using the ZM Series.....	5-1
Preliminary Steps.....	5-1
Screen Data Check.....	5-2
Setting for Communications with PLC.....	5-2
PLC Type Setting.....	5-2
Communication Parameter Setting.....	5-2
Other Settings.....	5-2
ZM Series Setting.....	5-2
Font Setting.....	5-2
Modular Jack.....	5-2
Printer Setting.....	5-2
Screen Data Transfer.....	5-3
Preliminaries.....	5-3
For a New ZM Series (Just after being unpacked).....	5-3
For a ZM Series (Being put to use).....	5-4
Data Transfer Methods.....	5-5
Data Transfer via ZM-80C.....	5-5
Arrangements.....	5-5
Data Transfer on Ethernet.....	5-6
Arrangements.....	5-6
Data Transfer to CF Card (For ZM-300 only).....	5-7
Arrangements.....	5-7
Data Transfer to Memory Card (ZM-1REC).....	5-8
Arrangements.....	5-8
Data Transfer via Modem.....	5-9
[Transfer] Dialog.....	5-10
Screen Data Transfer via ZM-80C.....	5-12
Connecting Method.....	5-12
New ZM Series (Just after being unpacked).....	5-12
ZM-80C Series (Being put to use).....	5-12
Screen Data Transfer to ZM Series.....	5-13
Screen Data Transfer from ZM Series.....	5-13
Screen Data Comparison between Computer and ZM Series.....	5-14
Screen Data Transfer on Ethernet.....	5-14
Screen Data Transfer via CF Card (For the ZM-300 Series Only).....	5-15
Connecting Method.....	5-15
Connection between CF Card and Computer.....	5-15
Connection between CF Card and ZM-300.....	5-15
Screen Data Transfer between CF Card and Computer.....	5-16
Screen Data Transfer to CF Card.....	5-16
Screen Data Transfer from CF Card.....	5-16
Screen Data Transfer between CF Card and ZM series.....	5-16

---

Screen Data Transfer via Memory Card (ZM-1REC) .....	5-17
Connecting Method.....	5-17
Connection between Memory Card (ZM-1REC) and Computer .....	5-17
Connection between Memory Card and ZM Series .....	5-17
Screen Data Transfer between Memory Card (ZM-1REC) and Computer .....	5-19
Screen Data Transfer to Memory Card (ZM-1REC).....	5-19
Screen Data Transfer from Memory Card (ZM-1REC) .....	5-19
Screen Data Comparison between Memory Card (ZM-1REC) and Computer ..	5-20
Screen Data Transfer between Memory Card (ZM-1REC) and ZM Series .....	5-20
With a ZM-300.....	5-20
With a ZM-42 to 82.....	5-20
Transfer of Other Data.....	5-21
I/F Driver (Extension: "*.tpb") .....	5-21
Transferring Procedure .....	5-21
Program (Extension: "*.prg").....	5-25
Transferring Procedure .....	5-25
Font Data (Extension "*.ftd").....	5-26
Temp./PLC2.....	5-27
Ex. Font .....	5-27
SRAM Data .....	5-27
Station No. Table .....	5-27
Ladder Comm. Prg. ....	5-28
Modbus Comm. Prg.....	5-28
System Updating .....	5-28
Online Editing .....	5-30
Preliminaries .....	5-30
With ZM-80C .....	5-30
On Ethernet.....	5-30
Online Editing Procedure.....	5-31
Escaping from Online Editing .....	5-32
Screen Data Transfer via Modem.....	5-32
Preliminaries and Procedure .....	5-32
Arrangements.....	5-32
Data Transfer Procedure.....	5-32
AT Command Setting .....	5-33
ZM Series Setting .....	5-36
Description of Connections.....	5-37
Connection between ZM Series and Modem .....	5-37
Connection between Modem and Telephone Line.....	5-38
Connection between Modem and Computer.....	5-38
Screen Data Transfer .....	5-38
Transfer Error Messages Displayed on ZM-71SE .....	5-39
After Screen Data Transfer.....	5-40
Connection .....	5-40

---

Screen Check .....	5-40
When the [Main Menu] (Local Main) Screen is Displayed:.....	5-40
If an Error Occurs:.....	5-41

## Chapter 6 Print

Preliminaries .....	6-1
Available Printers.....	6-1
Preliminary Steps.....	6-1
[Option Setting] Dialog.....	6-2
Options Under [Page Setting].....	6-3
[Print Setup] Dialog.....	6-3
Print Procedure .....	6-4
[Print Setting] Dialog.....	6-4
[Option Setting] Button.....	6-6
[Print] Button.....	6-6
Printing the Currently Opened Window.....	6-7
When the [Memory Address Use] List Is Opened .....	6-7
Printing Examples.....	6-8
Screen Output.....	6-8
List Output.....	6-8
Table Print.....	6-9
System Setting.....	6-9
Memory Use List.....	6-10
When [Use Cross-reference] is Checked:.....	6-10
Ex.: Messages .....	6-10
Ex: Graphic Library .....	6-11
When [Animation] is Checked: .....	6-11

## Chapter 7 Useful Techniques

Tools .....	7-1
[Tool] Menu List.....	7-1
Function 1: Error Check.....	7-2
Operation Procedure.....	7-2
Reading the Error Check List .....	7-2
Checking Method for Details.....	7-3
Right-click Menu .....	7-3
Function 2: Memory Use.....	7-4
Operation Procedure.....	7-4
Opening/Closing the List of Memory Use .....	7-4
Bringing Up the Detailed List of Edit Items .....	7-4
Function 3: Memory Address Use.....	7-5
Operation Procedure.....	7-5



---

Function 4: Change Memory .....	7-7
Change All Memory .....	7-7
Operation Procedure .....	7-7
[Change Item Select] Dialog .....	7-8
Changing Memory of Selected Items Only .....	7-9
Operation Procedure .....	7-9
Option Setting .....	7-9
Function 5: Copy Image to Pattern.....	7-10
Operation Procedure .....	7-10
Function 6: Copy Image to Clip Board .....	7-12
Operation Procedure .....	7-12
Import of Screen Image into Word Processing Software .....	7-13
Function 7: Paste Bitmap .....	7-14
Operation Procedure .....	7-14
Bitmap Preview Dialog .....	7-15
Function 8: DXF File Convert .....	7-17
Operation Procedure .....	7-17
[Detail Setting] Options .....	7-18
Function 9: Convert to Rich Text Format.....	7-19
Operation Procedure .....	7-20
Function 10: Add Video Menu .....	7-21
Function 11: Custom Part.....	7-21
Operation Procedure .....	7-21
Registration in Custom Parts File.....	7-21
Pasting a Custom Part to the Screen.....	7-22
Function 12: Tray.....	7-23
Operation Procedure .....	7-23
Registration/Deletion in/from Trays.....	7-23
Pasting Part in Tray to Screen .....	7-24
Tray Display Change.....	7-24
Function 13: Tag Table.....	7-26
File Management .....	7-27
File Management Outline .....	7-27
File Management Functions .....	7-27
Files for File Management .....	7-28
Screen Data File Management .....	7-28
Part File Management .....	7-29
File Management: Screen Data File .....	7-29
Copying Screens between Windows .....	7-30
Change to a Different Item .....	7-32
Copying Items by Designating Item Numbers .....	7-33
Change to a Different Item .....	7-33
Other Setting Items .....	7-33
[File] Menu for File Management .....	7-34

---

File Management: Part File.....	7-35
[File] Menu for Parts File Management.....	7-38
File Management: File Copy.....	7-39
File Management: File Deletion.....	7-40
File Management: File Division and Combination.....	7-41
File Divide.....	7-41
File Combine.....	7-42
File Management: File Comparison.....	7-43
File Comparing.....	7-43
About Menu Items.....	7-44
[Save to TEXT File] ([File] Menu).....	7-44
[Display Condition Setting] ([Display] menu).....	7-44

## Chapter 8 Applications for ZM-71SE Editor

Simulator.....	8-1
Outline.....	8-1
Composition.....	8-1
Operation Procedure.....	8-1
Possible Simulation.....	8-1
Operation Procedure.....	8-2
Creating SIM File(s) Automatically.....	8-2
Creating a New SIM File.....	8-3
Preliminaries.....	8-4
Transferring Screen Data and the I/F Driver.....	8-4
Connecting a Personal Computer with the ZM Series.....	8-5
Starting up and Closing.....	8-6
Starting Up the Simulator from ZM-71SE.....	8-6
Starting Up the Simulator from Windows Menu.....	8-6
Closing a Simulator File.....	8-7
Starting and Stopping Communication.....	8-7
Starting Communication with the ZM Series.....	8-7
Stopping Communication with the ZM Series.....	8-8
Setting Items Necessary for Communication.....	8-9
About SIM Files.....	8-12
Timing of Creating or Updating SIM File Automatically.....	8-12
Names of Automatically Created SIM Files.....	8-12
Sheet Configuration.....	8-13
Changing the Display on a Sheet.....	8-14
Creating a New SIM File.....	8-15
Saving a Newly Created SIM File.....	8-15
Adding or Inserting Memory in the Sheet.....	8-16

---

Testing .....	8-17
Testing Bit Memory .....	8-18
Testing Word Memory .....	8-19
Testing Overlap .....	8-20
Useful Operations.....	8-21
Creating a New SIM File Using a Shortcut Key .....	8-21
Incrementing or Decrementing Memory Values .....	8-23
Setting Method .....	8-23
Use Method .....	8-24
Testing Sampling Mode with a CSV File .....	8-25
Conditions for a Test .....	8-25
Notes on Creating a CSV File .....	8-25
CSV File Setting Example .....	8-26
Read Procedure .....	8-27
Menu and Icons .....	8-28
File Menu .....	8-28
Edit Menu .....	8-28
Communication Menu .....	8-29
View Menu .....	8-29
Screen Number and Comment Display .....	8-29
Right-click Menu .....	8-30
Help Menu .....	8-30
Error List.....	8-31
ZM-MDD Transfer Utility .....	8-32
Outline .....	8-32
Composition.....	8-32
Operation Procedure .....	8-33
ZM-MDD Transfer Utility.....	8-33
Starting .....	8-33
Closing.....	8-34
[ZM-MDD Transfer Utility] Dialog.....	8-34

## Chapter 9 Wizard

Outline .....	9-1
Opening the [Wizard] Dialog.....	9-1
Wizard Usage Examples .....	9-2
Radio Button Creation .....	9-2
Setting Procedure .....	9-3
Error Display.....	9-6
Setting Procedure.....	9-6
Trend Graph Display .....	9-11
Setting Procedure.....	9-12
Deleting Placed Parts.....	9-16

---

## Appendix 1 Fonts

Types of Fonts .....	APP1-1
Font Setting.....	APP1-2
Available Fonts .....	APP1-3
English/Western Europe Fonts.....	APP1-3
Chinese and Chinese (Simplified).....	APP1-3
Korean.....	APP1-3
HK Gothic and HK Times.....	APP1-4
Outline.....	APP1-4
Points of English/Western Europe HK Gothic/HK Times .....	APP1-6
Display Function Specifications.....	APP1-6
Setting Procedure.....	APP1-7
Font Type Setting.....	APP1-8
Font Setting for Individual Functions.....	APP1-9
Manual Font Setting.....	APP1-11
Automatic Font Setting .....	APP1-11
Manual Font Setting.....	APP1-11
Data Transfer to the ZM Series.....	APP1-13
Notes on Font Data to be Transferred .....	APP1-14
Error for the ZM series .....	APP1-14

## Appendix2 3D Parts

3D Parts .....	APP2-1
With ZM-300 Series .....	APP2-1
Notes on Usage.....	APP2-1
Parts File.....	APP2-1
Memory Capacity.....	APP2-1
Limitation on Parts Placement.....	APP2-2
Setting Procedure.....	APP2-3
Switch and Lamp .....	APP2-3
Flash Function.....	APP2-8
Setting Procedure .....	APP2-8
Switch/Lamp (ZM-42 to 82 Compatible) .....	APP2-10
Numerical Data Display, Character Display, Message Display, Bar Graph, Pie Graph, Panel Meter, Statistic Graph, Closed Area Graph, and Calendar Parts.....	APP2-13
With the Model ZM-352D.....	APP2-15
Notes on Usage.....	APP2-15
Parts File.....	APP2-15
Memory Capacity.....	APP2-16
Color Pallet .....	APP2-16
Limitation on Parts Placement.....	APP2-17
Setting Procedure.....	APP2-18

---

With ZM-42 to 82 Series .....	APP2-21
Notes on Usage .....	APP2-21
Applicable ZM-42 to 82 Series .....	APP2-21
Memory Capacity .....	APP2-21
Parts File .....	APP2-22
Customizing .....	APP2-23
Types of Parts .....	APP2-23
Setting Procedure .....	APP2-23
Notes on Usage .....	APP2-25

## Appendix 3 Part Editing

Outline .....	APP3-1
Components of Parts .....	APP3-2
Modifying Parts (In Screen Data Files) .....	APP3-3
Parts Modifying Procedure .....	APP3-3
Creation and Storage of Part Files .....	APP3-4
Creating Part Files .....	APP3-4
Saving and Closing Part Files .....	APP3-6
Editing Procedures for Each Part .....	APP3-7
Editing Overlap Parts .....	APP3-7
Editing Procedure .....	APP3-7
Editing Switch/Lamp Parts .....	APP3-9
Notches .....	APP3-9
Editing Procedure (Ex.: 2-notch switch part) .....	APP3-9
Editing Data Display Parts .....	APP3-14
Editing Procedure (Ex.: Numerical data display part) .....	APP3-14
Editing a Keypad .....	APP3-15
Editing Procedure .....	APP3-16
Editing Graph Parts .....	APP3-17
Bar Graph Editing Procedure .....	APP3-17
Pie Graph Editing Procedure .....	APP3-19
Panel Meter Editing Procedure .....	APP3-22
Statistic Graph (Bar) Editing Procedure .....	APP3-23
Statistic Graph (Pie) Editing Procedure .....	APP3-24
Trend Graph (Trend Sampling) Editing Procedure .....	APP3-24
Closed Area Graph Editing Procedure .....	APP3-26
Editing Display Area Parts for Data Sampling .....	APP3-29
Editing Procedure .....	APP3-30
Editing Calendar Parts .....	APP3-31
Composition of Calendar Parts .....	APP3-31
Editing Procedure .....	APP3-32

---

Editing Display Area Parts .....	APP3-33
Editing Procedure.....	APP3-33
Printing the Part (Part File) .....	APP3-34
Printing Procedure .....	APP3-34
[Option Setting] Dialog .....	APP3-34
Printing .....	APP3-35
Part File Management.....	APP3-36
Part File Managing Procedure .....	APP3-36
Part Editing Menu .....	APP3-38
In a Part Edit Window .....	APP3-38
[File] Menu.....	APP3-38
[Edit] Menu.....	APP3-38
[Display] Menu.....	APP3-39
[Edit Part] Menu.....	APP3-39
[Item] Menu.....	APP3-40
[Tool] Menu.....	APP3-41
[Window] Menu.....	APP3-41
In a [Modify Part] Window.....	APP3-42
[File] Menu.....	APP3-42
[Edit] Menu.....	APP3-42
[Display] Menu.....	APP3-43
[Draw] Menu.....	APP3-43
[Window] Menu.....	APP3-43

# Chapter 1 Basic Operation

Starting and Quitting .....	1-1
Starting .....	1-1
Opening a File .....	1-2
Quitting .....	1-5
Basic Operation of the Editor .....	1-6
Names of Components .....	1-6
Menu Bar .....	1-11
Dialog .....	1-17
Edit Window .....	1-22
Item List .....	1-27
Useful Operations .....	1-30
Useful Editing Commands .....	1-35
Screen Data File Property .....	1-42





# Starting and Quitting

This section describes how to start and quit the ZM-71SE editor. For the ZM-71SE installation procedure, see “Installation” attached to the ZM-71SE editor.

## Starting

Start your computer and check that Windows runs correctly.

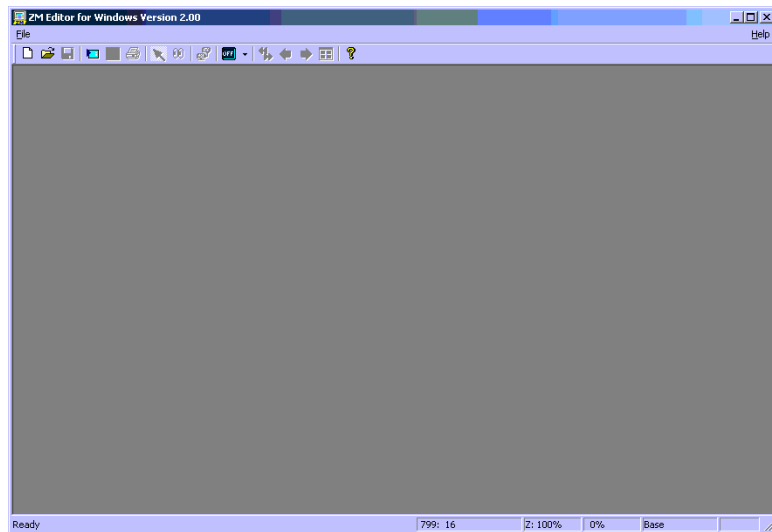
1. Click the [Start] button of Windows, and click [Programs], [Zm-71se] then [ZM-71S].



It is possible to start from the ZM-71SE shortcut icon.



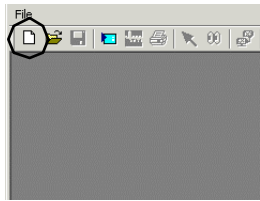
2. The ZM-71SE initial screen is displayed.



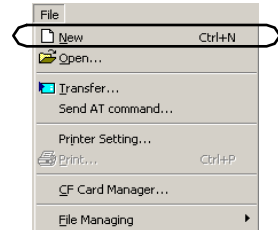
## Opening a File

### Opening a New File

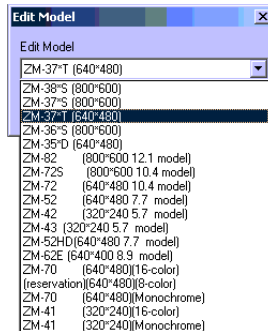
1. Click the [New] icon in the tool bar or select [New] from the [File] menu.



or

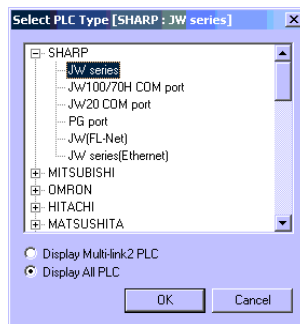


2. The [Edit Model] dialog is displayed. Select the model name and click [OK].



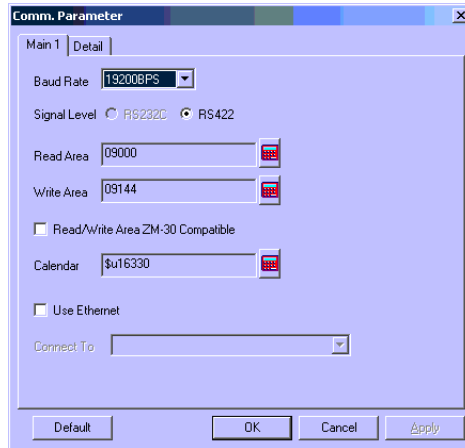
For the edit models, see “Chapter 1 System Setting” in the ZM-7 1SE Instruction Manual (Function).

3. The [Select PLC Type] dialog is displayed. Select the PLC model and click [OK].



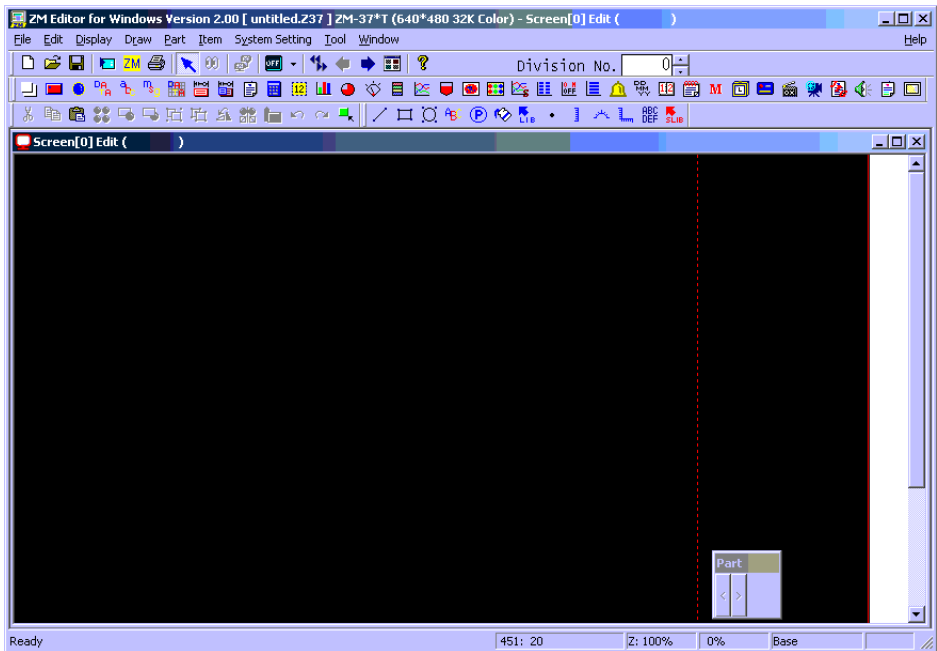
For compatible PLC models, see each ZM User's Manual.

4. When a PLC other than [Mitsubishi: A series link] is selected in step 3, the [Comm. Parameter] dialog is displayed.



For the setting items in the [Comm. Parameter] dialog, see “Chapter 1 System Setting” in the ZM-71SE Instruction Manual (Function).

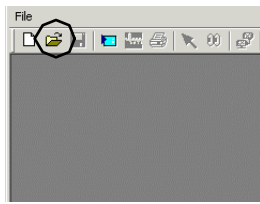
Click [OK]. The [Screen [0] Edit] window is displayed.



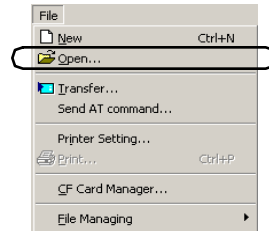
For more information on the menu items, see page 1-7.

## Opening an Existing File

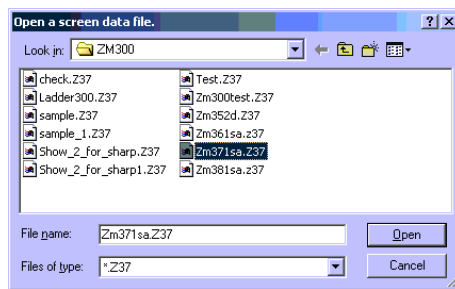
1. Click the [Open] icon in the tool bar or select [Open] from the [File] menu.



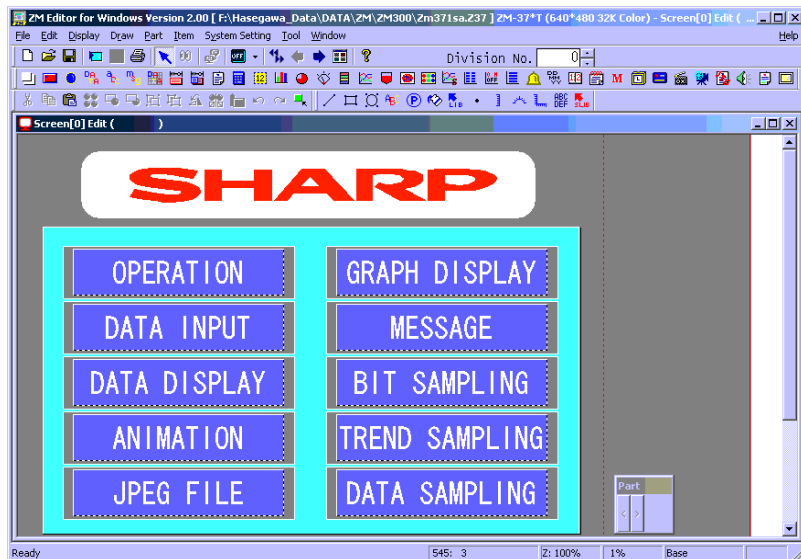
or



2. The [Open a Screen Data File] dialog is displayed. Select the desired screen data file and click the [Open] button.



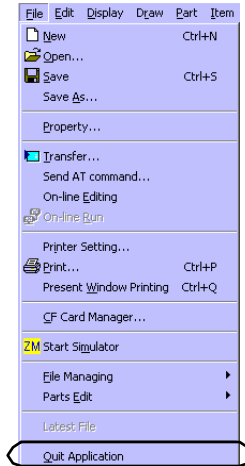
3. The selected screen data file is opened.



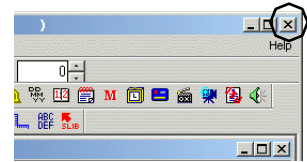
For more information on the menu items, see page 1-7.

# Quitting

1. Click [Quit Application] in the [File] menu or the [Close] button.

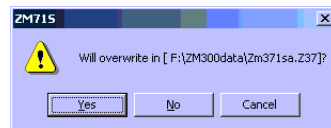


or



2. The screen is closed.

If the file has not been saved after changes, the following dialog appears and asks whether or not to save the data. Click either [Yes] or [No] to quit the editor.

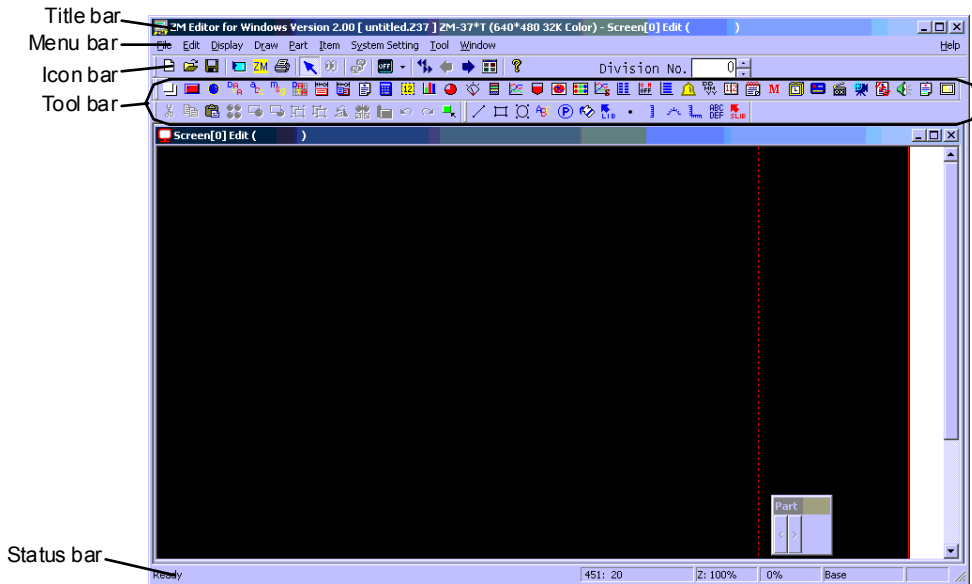


# Basic Operation of the Editor

This section explains names and operations of bars and menus that are displayed when a screen data file is opened on the ZM-71SE editor.

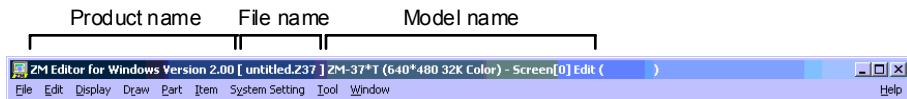
## Names of Components

The following bars are displayed when the screen edit window is opened.



### Title Bar

The title bar contains the following information.



To minimize the indication on the title bar, click [Property] in the [File] menu and put a check mark (☑) to  Shorten the Title Display on the [Environment] tab window. The title bar shows the minimum information as shown below.



## Menu bar

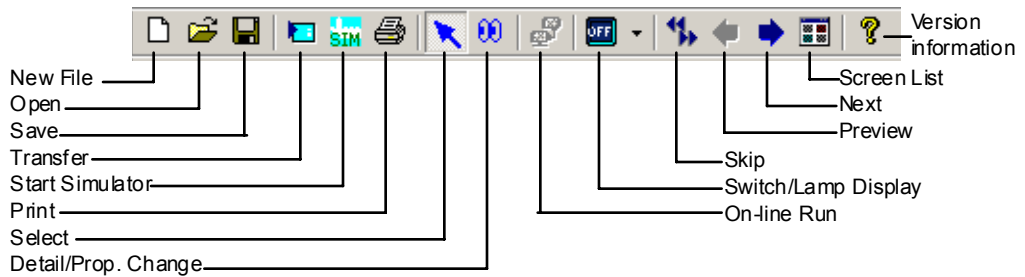
Clicking each menu brings up a drop-down menu. Operations and edit items available with the ZM-71SE editor are indicated.



For more information on the menu items, see page 1-11.

## Icon Bar

The icon bar contains the following icons.



## Division Number

The current division number is indicated. This number should be used for identifying the division when placing parts or items.



For more information on the division number, see "Chapter 2 Screens."

## Tool Bar

The tool bar contains icons that are equivalent to some menu items in the menu bar. There are three tool bars.

### Parts Tool Bar



Each icon has the function shown below. For more information on use and setting items, see the relevant chapter in the ZM-71SE Instruction Manual (Function).

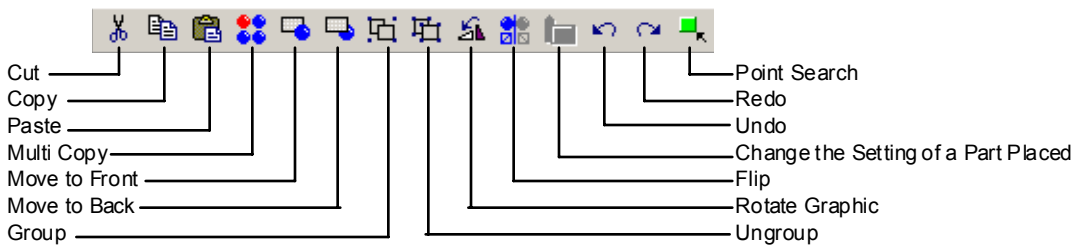


- |                      |                       |                                      |
|----------------------|-----------------------|--------------------------------------|
| 1 Overlap            | 13 Bar Graph          | 25 Alarm Display                     |
| 2 Switch             | 14 Pie Graph          | 26 Time Display                      |
| 3 Lamp               | 15 Panel Meter        | 27 Calendar Display                  |
| 4 Num. Data Display  | 16 Stat. Graph        | 28 Memo Pad                          |
| 5 Char. Display      | 17 Trend Graph        | 29 Macro Mode                        |
| 6 Message Display    | 18 Closed Area Graph  | 30 Interval Timer                    |
| 7 Table Data Display | 19 Graphic Mode       | 31 Memory Card Mode                  |
| 8 Relay Mode         | 20 Graphic Relay Mode | 32 Animation (ZM-300 series only)    |
| 9 Relay Sub Mode     | 21 Trend Sampling     | 33 Video (ZM-300 series only)        |
| 10 Message Mode      | 22 Data Sampling      | 34 JPEG Display (ZM-300 series only) |
| 11 Entry Mode        | 23 Bit Sampling       | 35 Sound (ZM-300 series only)        |
| 12 Data Block Area   | 24 Relay Sampling     |                                      |

### Edit Tool Bar



Each icon has the function shown below. For more information, see "[Edit] Menu" (page 1-12).

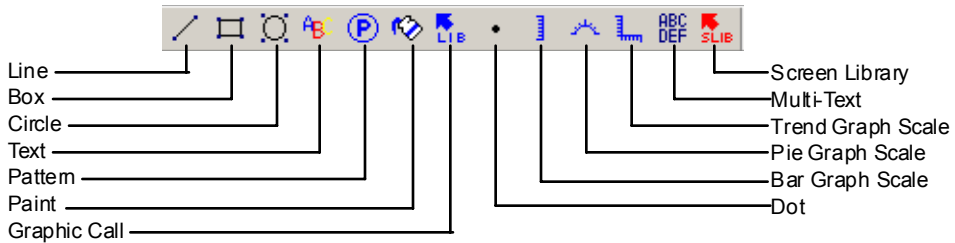




## Draw Tool Bar

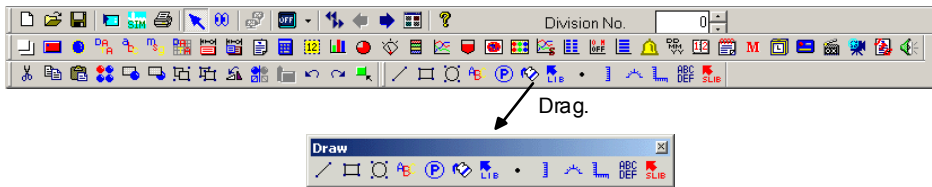


Each icon has the function shown below. For more information, see "Chapter 3 Drawing Tools."

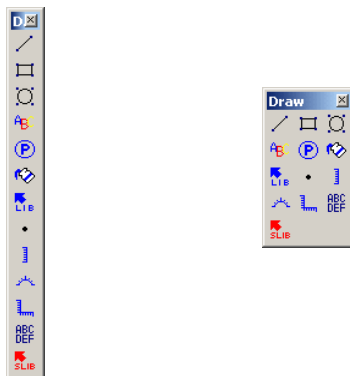


## Moving and Transforming the Tool Bar

The tool bar can be moved to a desired position or be altered to a different shape. To move the tool bar, click any position (except icons) on a bar and drag. Release the mouse button in the desired position. The tool bar is moved to the position.

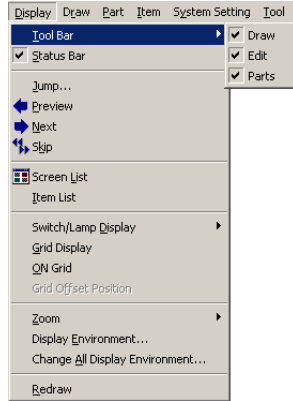


To alter the shape, move the tool bar out on the screen and drag the tool bar edge.



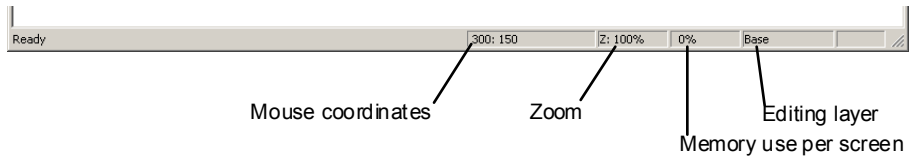
## Hiding the Tool Bar

Tool bars are shown as default. To hide the tool bar, uncheck the tool bar name in the [Tool Bar] sub-menu of the [Display] menu. To show again, check the tool bar name.



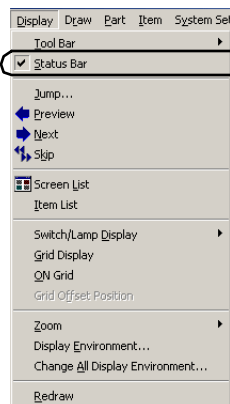
## Status Bar

The status bar contains the following information.



## Hiding the Status Bar

The status bar is shown as default. To hide the status bar, uncheck [Status Bar] in the [Tool Bar] sub-menu of the [Display] menu. To show again, check the tool bar name.



---

## Menu Bar

---

### [File] Menu

#### [New]

Opens a new file, and brings up the screen for editing.

#### [Open]

Opens an existing file for screen editing. A screen data file for the ZM-30/61 series can be opened and converted into a file for the ZM-300/ZM-42 to 82 series.

#### [Save]

Saves the current file. (If it is a new file, you must give a name to the file.)

#### [Save As]

Saves the current file under a new or different name.

#### [Property]

Allows you to check the information on the current file. For more information on the menu items, see page 1-42.

#### [Transfer]

Transfers data between the computer ↔ ZM or a memory card.

For more information, see “Chapter 5 Transfer.”

#### [Send AT Command]

Used for transferring a screen data file using a modem. For more information, see “Chapter 5 Transfer.”

#### [On-line Editing]

Used for on-line editing.

#### [On-line Run]

This command becomes active in on-line editing. When it is clicked, only the screen data that has not been transferred yet is transferred to ZM.

#### [Printer Setting]

Used for printing a screen. Editing of margins, headers or footers, etc. is available. For more information, see “Chapter 6 Print.”

#### [Print]

Prints out the created screen data file from the computer. For more information, see “Chapter 6 Print.”

#### [Present Window Printing]

Prints out the window currently opened. Set necessary data by clicking [Printer Setting] in advance.

#### [CF Card Manager]

Becomes active for the ZM series (ZM-300 series and ZM-52HD (handy type)) that is compatible with CF cards. For more information, see “Chapter 23 CF Card” in the ZM-71SE Instruction Manual (Function).

[Start Simulator]

Starts the ZM-71SE simulation software "Simulator." For more information, see "Chapter 8 Applications for ZM-71SE Editor."

[File Managing]

Used for copying screens, graphics, etc. between different screen data files. For more information, see "Chapter 7 Useful Techniques."

[Parts Edit]

Used for setting, modifying, or registering parts. For more information, see "Appendix 3 Part Editing."

## **[Edit] Menu**

[Undo]

Cancels actions that you performed. (Up to 7 times)

[Redo]

Becomes active when [Undo] is performed. Reverts the state before undoing. (Up to 7 times)

[Undo Wizard]

Cancels wizard operation that you performed.

[Cut]

Cuts the selected item and moves it to the clipboard.

[Copy]

Copies the selected item to the clipboard.

[Paste]

Pastes the item in the clipboard to the screen.

[Copy to Selected Screen]

Pastes the copied item to multiple screens. For more information, see page 1-37.

[Undo Paste to Selected Screen]

Cancels the [Copy to Selected Screen] operation that you performed.

[Delete]

Deletes the selected item. Select a part or a graphic (or parts or graphics) to be deleted, and click this menu.

[Multi Copy]

Pastes the selected item multiple times. For more information, see page 1-35.

[Move to Front]

Moves the selected item to the front. When two or more parts or graphics are overlapping, select the item that you would like to move to the front, and click this menu.

[Move to Back]

Moves a part or graphic to the back when two or more parts or graphics are overlapping.

**[Group]**

Groups the selected items. Select multiple items at the same time, and click this menu.

**[Ungroup]**

Ungroups the selected group. Select the grouped item, and click this menu.

**[Rotate Graphic]**

For more information, see "Rotate Graphic" (page 1-38).

**[Flip]**

For more information, see "Flip" (page 1-39).

**[Align]**

For more information, see "Align" (page 1-39).

**[Table Data Display Editing]**

Brings up the menu for table data display editing while a cell/cells in a table data display part is/are selected. For more information, see "Chapter 2 Screens."

**[Modify Part]**

Brings up the [Modify Part] window. Select a part placed on the screen, and click this menu. Modify the part as desired. For more information, see "Appendix 3 Part Editing."

**[Detail Setting]**

Used for property modification. Select an item placed on the screen, and click this menu. The [Prop. Change] dialog is displayed.

**[Select Environment]**

For more information, see "Select Environment" (page 1-41).

**[Division No. Setting]**

Changes the division number indicated in the upper right corner.

**[Screen Setting]**

Used for specifying the screen background color, etc. For more information, see "Chapter 2 Screens."

**[Edit OPEN Macro] [Edit CLOSE Macro] [Edit CYCLE Macro]**

Used for setting the macro for the currently open screen. For more information, see "Chapter 2 Screens."

**[Local Function Switch Setting]**

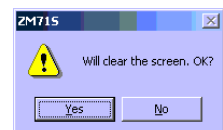
Used for setting function switches for each screen. For more information, see "Chapter 1 System Setting" in the ZM-71SE Instruction Manual (Function).

**[Select All]**

Selects all items placed on the screen.

**[Delete All]**

Deletes all items from the screen. Clicking this menu brings up the dialog shown on the right. When [Yes] is clicked, all the items are deleted from the screen.



## [Display] Menu

### [Tool Bar]

Shows or hide the tool bars. Clicking this menu brings up the [Tool Bar] dialog. When the box is unchecked, the corresponding tool bar disappears from the screen. Check the box to show the tool bar.

### [Status Bar]

This menu is checked as default. The status bar is shown at the bottom of the editor screen. Uncheck the menu when the status bar is not necessary.

### [Jump]

Used for screen calling.

### [Preview]

Brings up the previous screen.

### [Next]

Moves to the next screen.

### [Skip]

Skips screens that are not registered when scrolling screens.

### [Screen List]

Brings up currently editing screens or graphics in the graphic library in a list form. For more information, see page 1-23.

### [Item List]

Brings up the switches, lamps and graphic items placed on the screen in a list form. For more information, see page 1-27.

### [Switch/Lamp Display]

Allows you to choose the status of a switch or lamp on the screen. The [OFF]/[ON]/[P3] to [P8] options can be selected when this menu is clicked. Clicking each option changes the switch/lamp display.

### [Grid Display]

Shows grids when this menu is checked. Unchecking this menu clears grids from the screen.

### [ON Grid]

Selects the “on-grid” screen environment when this menu is checked. Unchecking this menu cancels the “on-grid” screen environment.

### [Grid Offset Position]

Becomes valid when [Free] is chosen for [Grid Type] in the [Grid] tab window. Click this menu and then click the desired position on the screen. The grid offset position is determined.

### [Zoom]

Brings up the sub-menu containing [400%], [200%], [100%] and [75%]. Choose the desired option to change the zoom.

### [Display Environment]

For more information, see “Chapter 2 Screens.”

**[Change All Display Environment]**

Changes the display environment for screens at one time. The set environment becomes valid for all the screens.

**[Redraw]**

Refreshes the screen display.

**[Draw] Menu**

For more information, see “Chapter 3 Drawing Tools.”

**[Part] Menu**

For more information on the menu items, see respective chapters.

**[Item] Menu**

For more information on editing of each item, see “Chapter 4 Registration Items.”

**[Screen]**

Allows you to perform screen editing.

**[Graphic Library]**

Allows you to perform graphic library editing.

**[Multi-Overlap]**

Allows you to perform multi-overlap editing.

**[Data Block]**

Allows you to perform data block editing.

**[Message]**

Allows you to perform message editing.

**[Pattern]**

Allows you to perform pattern editing.

**[Macro Block]**

Allows you to perform macro block editing.

**[Page Block]**

Allows you to perform page block editing.

**[Direct Block]**

Allows you to perform direct block editing.

**[Screen Block]**

Allows you to perform screen block editing.

**[Tile]**

Allows you to perform tile editing.

**[Data Sheet]**

Allows you to perform data sheet editing.

[Screen Library]

Allows you to perform screen library editing.

[Multi-Languages]

Used for the language selection function.

[Animation]

Used for the animation function.

## **[System Setting] Menu**

The menu contains commands required for system setting. For more information, see “Chapter 1 System Setting” in the ZM-71SE Instruction Manual (Function).

## **[Tool] Menu**

This menu contains useful commands for screen creation. For more information, see “Chapter 7 Useful Techniques.”

## **[Window] Menu**

[Cascade]

Aligns and overlaps multiple windows.

[Tile]

Aligns multiple windows like tiles.

[Arrange Icons]

Aligns the minimized windows.

Window titles

When multiple windows are opened, their titles are indicated in the [Window] menu. Clicking the title of a window brings it to the top.

## **[Help] Menu**

[Topic Search]

Brings up the [Help] window. The usage of the [Help] menu is the same as that in Windows.

[Version Information]

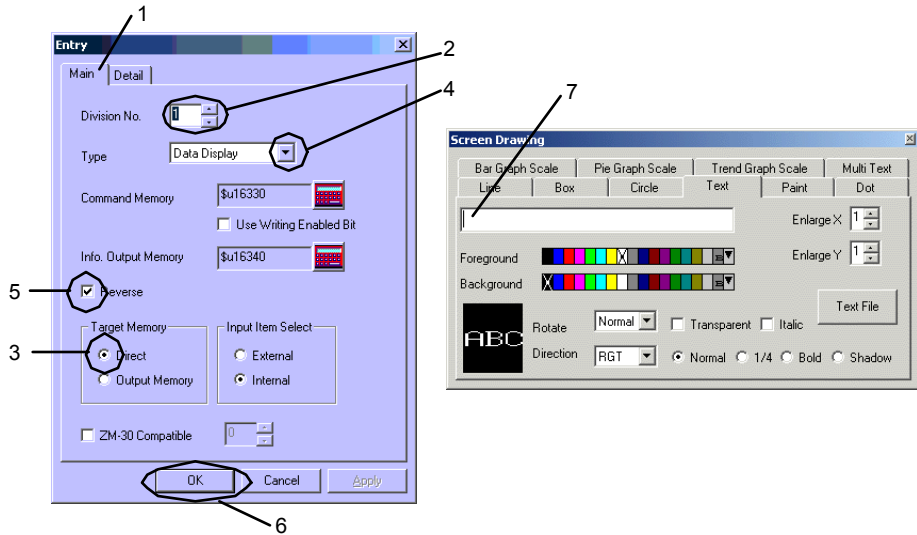
Indicates the editor version information.



## Dialog

1

### Setting and Operating Technique in Dialogs



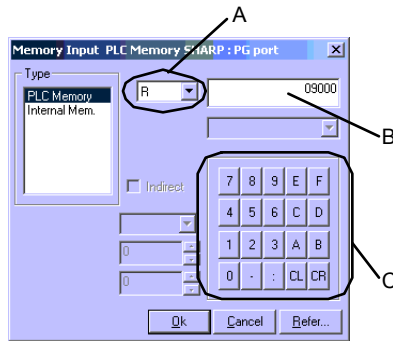
1. **Change-over tab**  
Click on a tab with the mouse. The corresponding tab window of the dialog is displayed.
  2. **Numerical data field**  
When setting or modifying numerical data, click the upward/downward arrow buttons. Some data fields allow direct numeral entry through the keyboard.
  3. **Option button**  
Select one option by clicking. When the button changes to , the option is selected.
  4. **Arrow to show the drop-down list**  
Clicking this arrow shows the drop-down list. Select the desired option.
  5. **Check box**  
Click on the check box for the desired option. The check box changes from  to  (checked). When a box is checked, it means that it is selected or "yes."
  6. **Command button**  
Command buttons include [OK], [Yes], [No], [Cancel], etc. Clicking a button triggers the specified action.
  7. **Text field**  
When the cursor is shown in a text field, characters can be entered.
- The dialog can be moved by pointing to the title section and dragging.

## Setting up Memory Addresses

When specifying a memory address in a dialog, click the calculator button on the right of the entry field. The [Memory Input] dialog is displayed. The contents in the dialog vary depending on the PLC model and the selected type. Common setting items are explained.



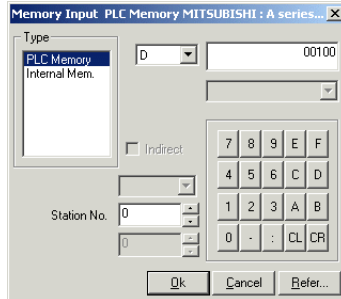
1. When [PLC Memory] is selected:  
Select this option when using the PLC memory.



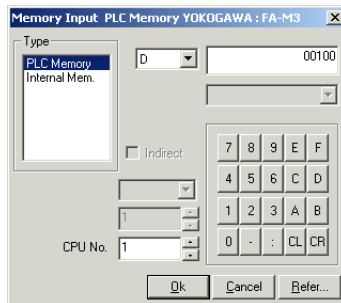
- A Device selection field  
This field becomes active when [PLC Memory], [Internal Mem.], [I/O Memory], [Temp. Mem.], [PLC2 Memory] or [Common Memory]. Clicking this box brings up the drop-down list. Select the desired device by clicking.
- B Entry field  
Specify a memory address. Use the keypad in the dialog or the keyboard of the computer.
- C Keypad  
The keypad allows direct entry to the above field in the allowable range for each memory type.

**[Station No.]**

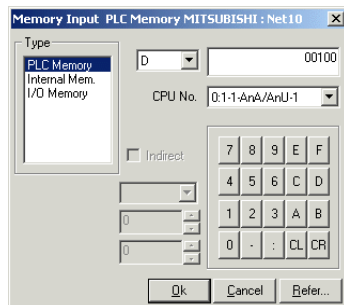
This option becomes active when [1 : n] is chosen for [Connection] in the [Detail] tab window of the [Comm. Parameter] dialog. For Ethernet communications, set the network table number here.

**[CPU No.]**

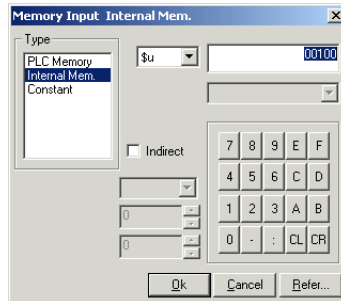
This field becomes active when [YOKOGAWA: FA-M3], etc. is selected.

**[CPU No.]**

This field becomes active when [Mitsubishi: Net10] or [OMRON: SYSMAC CS1 DNA], etc. is selected. It is possible to see the data on the network table.



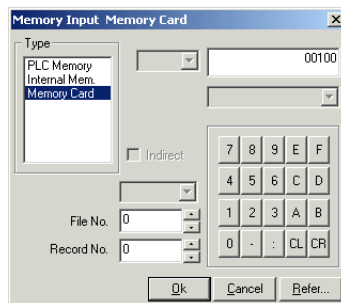
2. When [Internal Mem.] is selected:  
 Select this option when using the internal memory of LCD control terminal.  
 For more information, see “Appendix 1 Internal Memory” in the ZM-71SE  
 Instruction Manual (Function).



Indirect]

This option is available with memory setting when macro commands are used. For more information, see “Chapter 13 Macro” in the ZM-71SE Instruction Manual (Function).

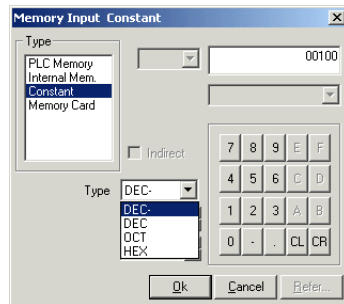
3. When [Memory Card] is selected:  
 Select this option when using the memory card as the memory. For more information, see “Chapter 25 Memory Card Mode” in the ZM-71SE  
 Instruction Manual (Function).



[File No.]/[Record No.]

Set these numbers when [Memory Card] is selected. For more information on the memory card, see “Chapter 25 Memory Card Mode” in the ZM-71SE Instruction Manual (Function).

4. When [Constant] is selected:  
Select this option when specifying a constant instead of a memory address.  
Depending on the item, this option may not be selected.

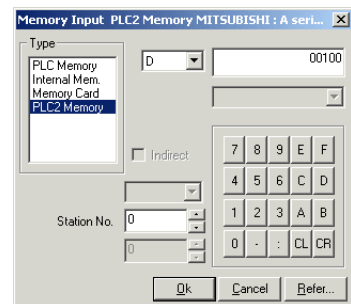
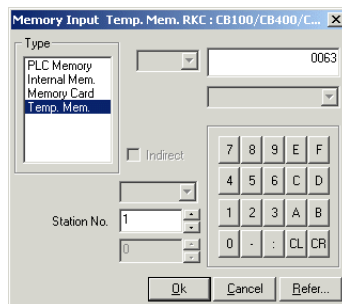


#### [DEC-/DEC/OCT/HEX/FLOAT]

These options become active when [Constant] is chosen.

- DEC- = decimal, with sign
- DEC = decimal, without sign
- OCT = octal
- HEX = hexadecimal
- FLOAT = floating point (when real numbers are used)

5. [I/O Memory]  
Select this option when using I/O communications, such as Ethernet. For more information, see the ZM-80NU/80NU2 User's Manual.
6. [Temp. Mem.]/[PLC2 Memory]  
Select this option when using the temperature control network or PLC2Way function. For more information, see each ZM User's Manual.



- [Refer] button

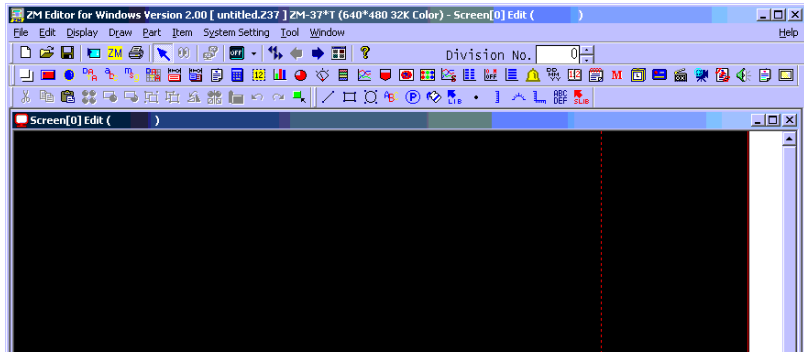
When comments for memory addresses are listed in a file, it is possible to set the memory address while referring to the contents of the file. The list file must have the file extension "\*.lst." When setting the temperature control network or PLC2Way function, the list file is automatically read.

## Edit Window

When the editor is started and a file is opened, the [Screen Edit] window is displayed. This section explains operations on the edit window.

### Window Structure

The [Screen Edit] window is taken as an example for explanation.



### Calling up the Window

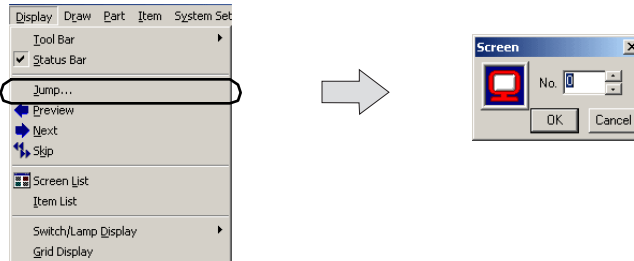
#### [Preview]/[Next] Icons



Clicking the [Preview] or [Next] icon in the icon bar brings up the previous or next window.

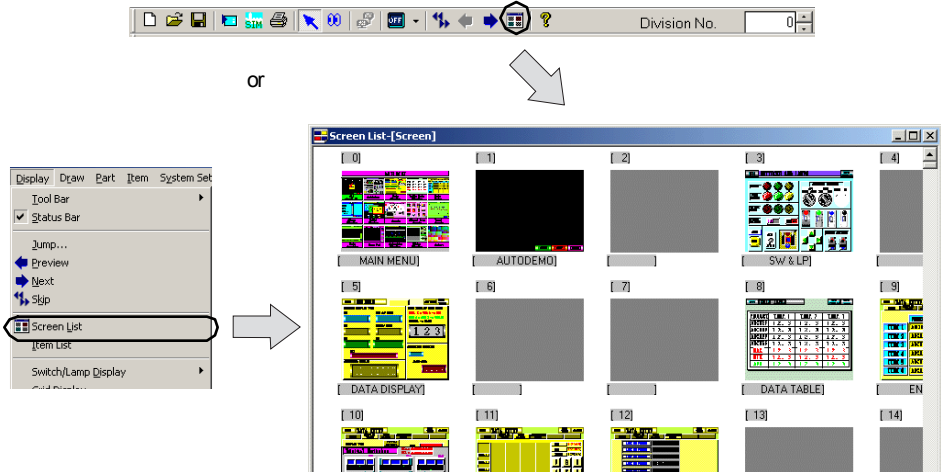
#### [Jump] in the [Display] Menu

Click the [Display] menu and select [Jump]. The dialog for specifying a screen number is displayed. Enter the desired screen number and press [OK]. The [Screen Edit] window of the specified screen number is displayed.



## Double-clicking on the [Screen List] Window

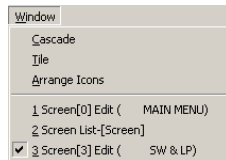
Click the [Screen List] icon in the icon bar. (Or, click [Screen List] from the [Display] menu.) The [Screen List] window is displayed.



Bring up the screen to be displayed on the list, and double-click on the screen. The [Screen Edit] window of the selected screen is displayed.

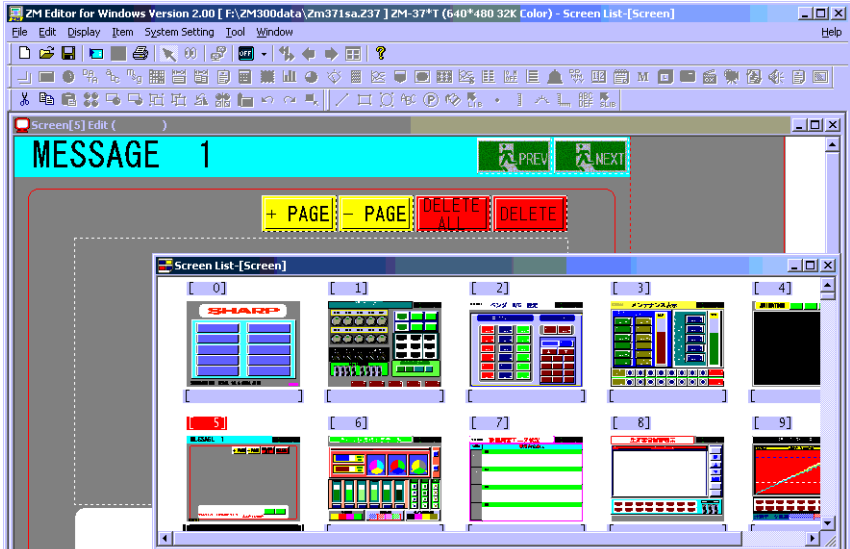


Note that the previous [Screen Edit] window and the [Screen List] window remain open. To check the edit windows currently opened on the editor, click the [Window] menu. Clicking the edit window name moves the window to the front.



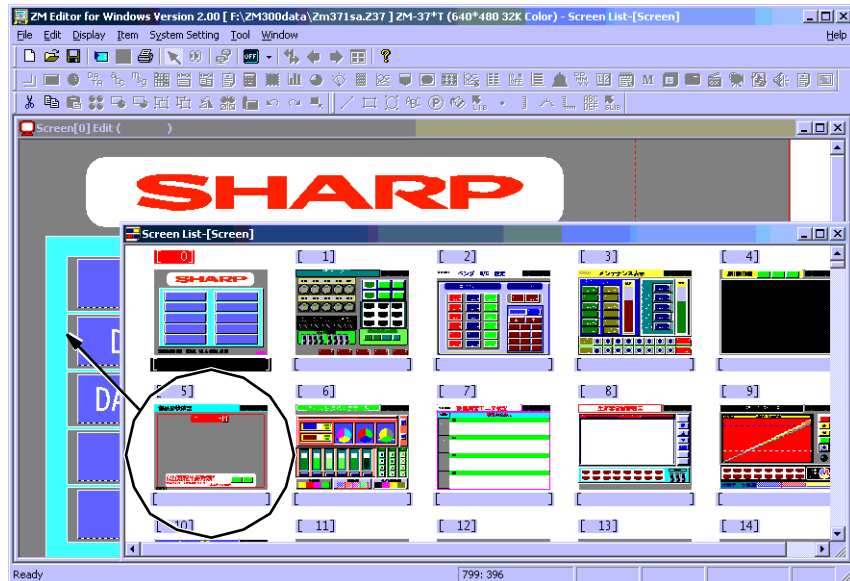
## Dragging on the [Screen List] Window

Align the previous [Screen Edit] window and the [Screen List] window in tiles or cascades.



Select the screen to be called on the [Screen List] window, and drag the screen to the previous [Screen Edit] window. Releasing the mouse brings up the [Screen Edit] window of the dragged screen.

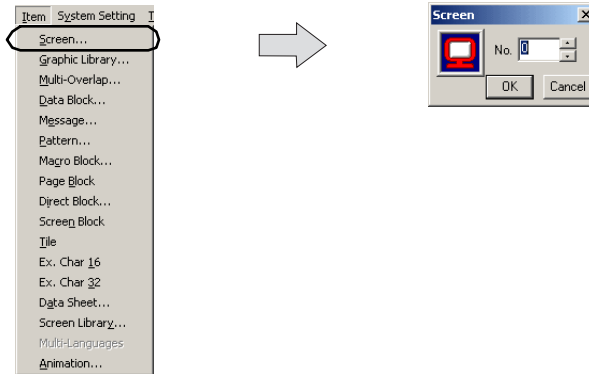
Drag.





## Calling from the [Item] Menu

Screens can be called from the [Item] menu. Select [Screen] from the [Item] menu. The [Screen] dialog is displayed. Specify the desired number and click [OK]. The [Screen Edit] window of the specified screen number is displayed.



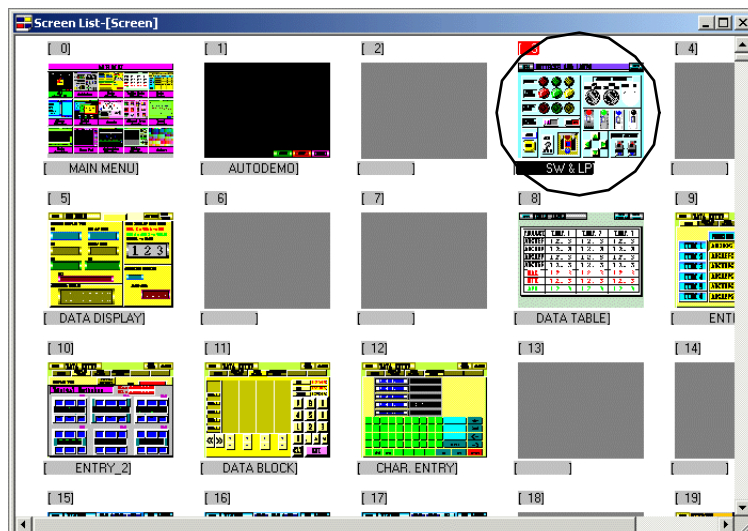
Note that the previous [Screen Edit] window remains open. To check the edit windows currently opened on the editor, click the [Window] menu. Clicking the edit window name moves the window to the front.



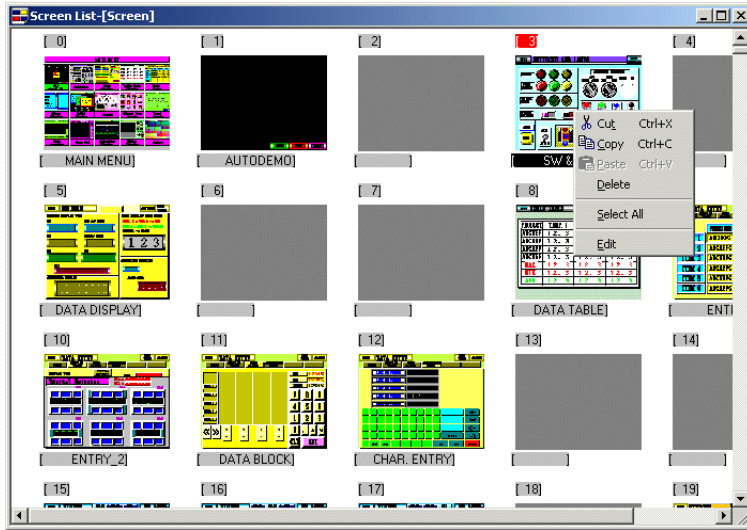
The multiple [Screen Edit] windows or [Multi-overlap Edit] windows can be displayed on the editor.

## Operations on the [Screen List] Window

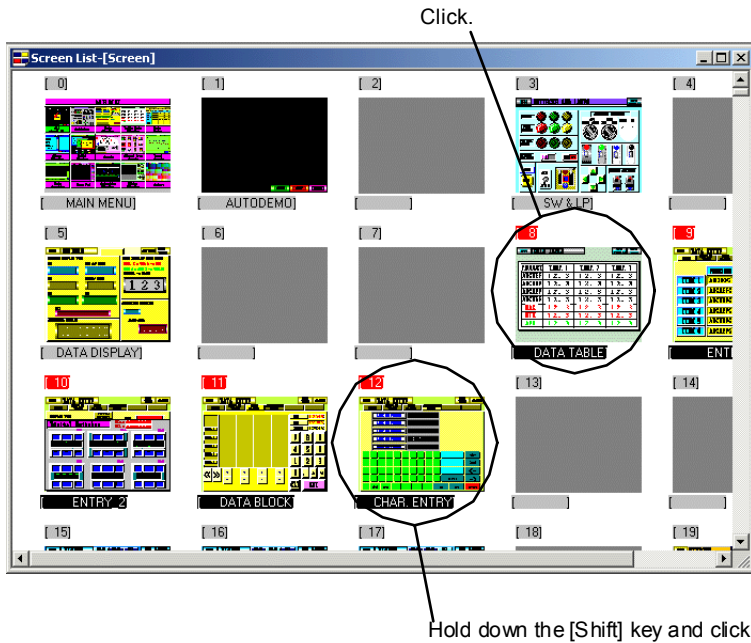
Screens can be moved, copied or deleted easily on the [Screen List] window. Clicking the desired screen on the [Screen List] window highlights the screen number.



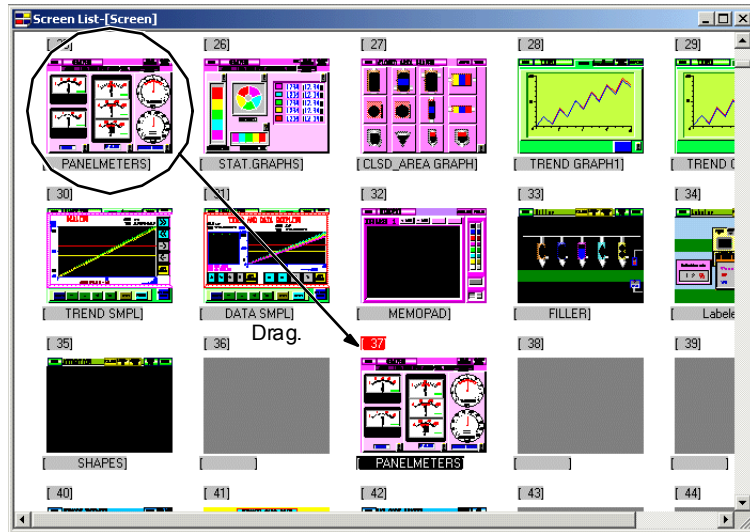
Right-clicking brings up the drop-down menu including [Copy], [Paste], [Delete], etc. Selecting a command performs the selection action.



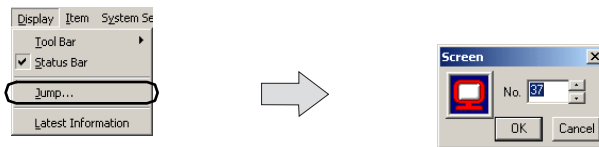
To select multiple screens, click the top screen, hold down the [SHIFT] key and click the last screen. The selected screen numbers are highlighted.



It is possible to copy the desired screen by dragging it to an empty screen position.



When the desired screen is not included on the [Screen List] window, show the vertical scroll bar, or click [Jump] from the [Display] menu and specify the desired screen number.

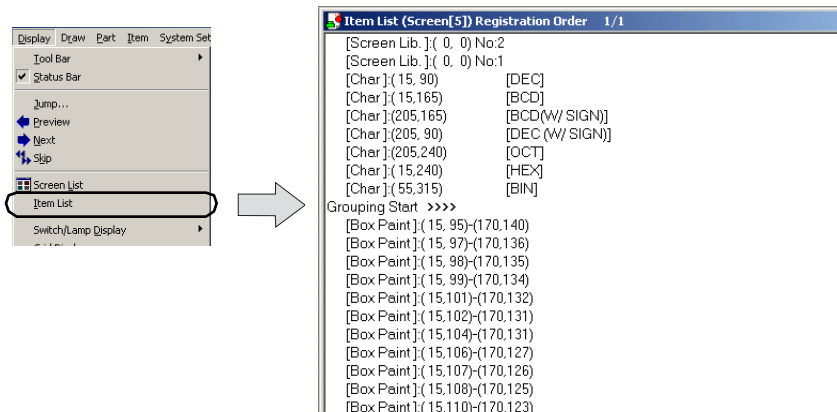


## Item List

Items on the edit window can be checked on the item list.

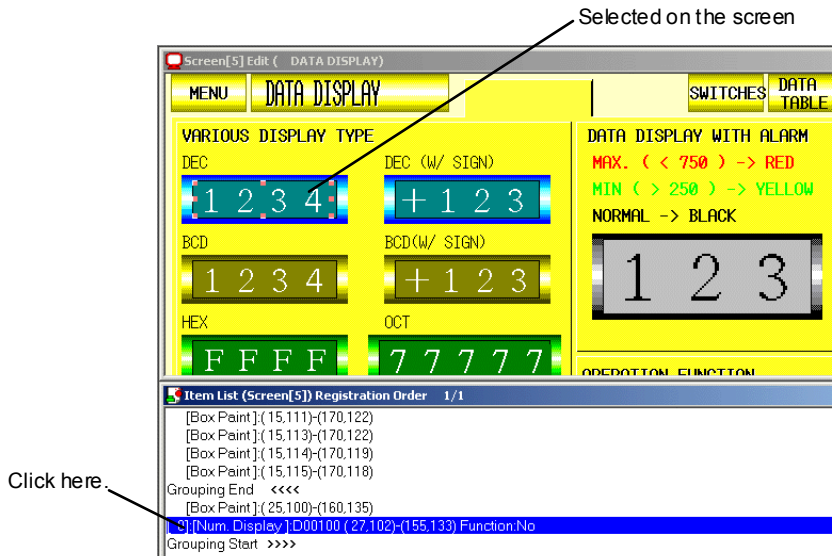
### Calling up the Item List

Select [Item] list from the [Tool] menu. The [Item List] window is displayed.



## Utilizing the Item List

Tile the item list and the edit window. When the desired item is clicked on the item list, handles are shown around the item indicating that the item is selected.

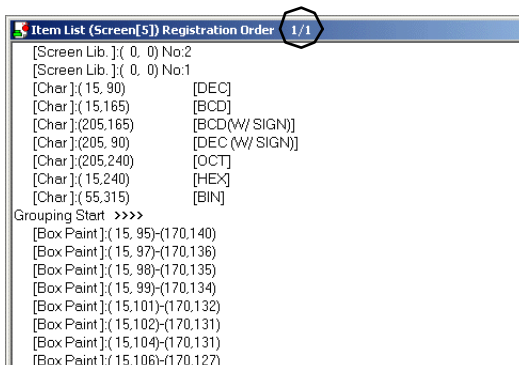


If an item cannot be found visually on the screen when you would like to change the setting, use this method. This is useful in selecting a hard-to-find item.



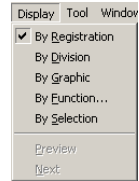
A maximum of 512 items can be displayed on one window. When an item is selected, the total number of the items placed on the screen and the line number of the selected item are displayed on the status bar.

When the number exceeds 512, click [Next] in the [Display] menu or the right-click menu. The hidden items come into view. The current page number is indicated on the title bar of the window.



## Changing the Display Format

1. Click the [Display] menu. The menu as shown on the right is displayed.
2. The following display formats are available.



### [By Registration]

The items are displayed in the order in which items are placed.

### [By Division]

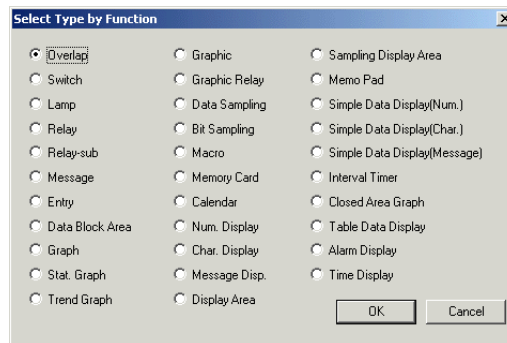
The items are displayed in ascending order of division numbers.

### [By Graphic]

Only graphic items are displayed.

### [By Function]

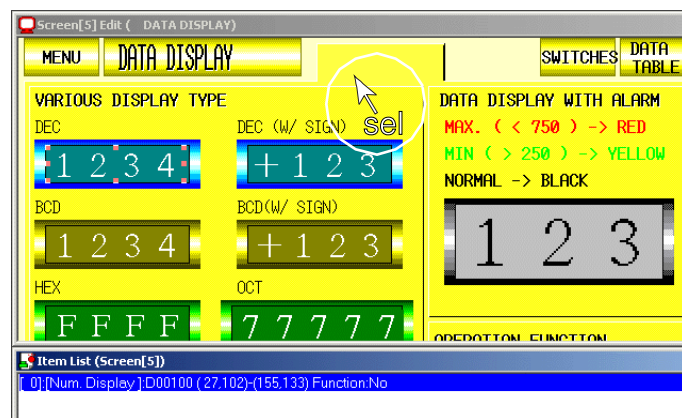
The following dialog is displayed.



Only the items of the selected function are displayed.

### [By Selection]

The items selected by enclosing with the mouse are displayed. Check the menu and keep the [Item List] window open. Then, enclose the desired item(s) with the mouse for selection. (The mouse cursor on the screen changes to a mark with "sel" as shown below.) Click the [Item List] window to make the window active. Only the selected items are displayed.



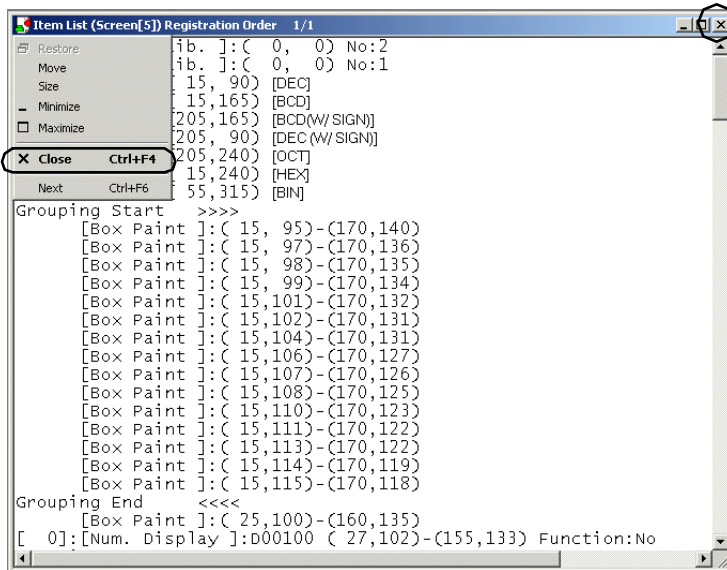
**Hint**

[By Selection] can also be selected from the right-click menu.

3. Click the desired display format.

**Closing the Item List**

Click the extreme left icon in the menu bar, and click [Close]. It is also possible to close the window by clicking the [x] button at the top right corner of the window.



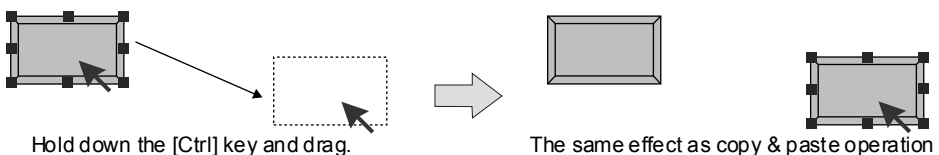
**Useful Operations**

Useful operations in placing or editing parts and graphics are explained.

**Copy & Paste**

Copy & paste operation can be performed by using [Copy] and [Paste] in the [Edit] menu or the [Copy] and [Paste] icons in the icon bar. Also, the following operations can perform copy & paste operation.

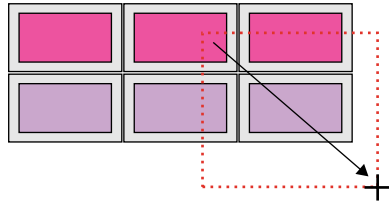
1. Click the original item to be copied.
2. Hold down the [Ctrl] key on the keyboard and drag the item to the desired position.



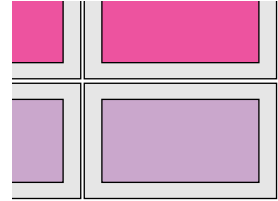
3. The copied item is placed.

## Zooming In/Out

The edit window is displayed at 100% zoom as default. The display size can be changed by selecting [Zoom] from the [Display] menu. Hold down the [Ctrl] key on the keyboard and right-drag the mouse on the screen. A red dotted-line box is displayed. When the mouse is released, the area in the red dotted-line box is zoomed in.



Hold down the [Ctrl] key and right-drag.  
(A red dotted-line box is displayed.)



Releasing the mouse zooms in the enclosed area. (The zoom % varies depending on the enclosed area size.)

Pressing the [Home] key on the keyboard resets the zoom to 100%.



In addition:

[Ctrl] key + [Page Up] → Zoom Out

[Ctrl] key + [Page Down] → Zoom In

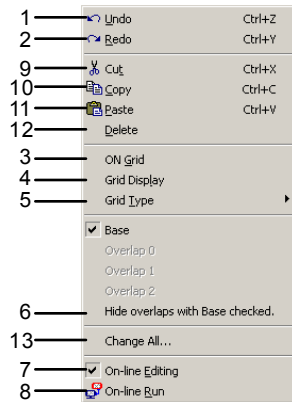
The above shortcut keys can also be used for zooming.

## Right-clicking Menu

Right-clicking a mouse brings up a menu that contains some commands. The commands included in the menu vary depending on the screen condition.

### When No Items are Selected:

Right-clicking a mouse brings up the following menu.



1. [Undo]
2. [Redo]  
Same as [Undo]/[Redo] in the [Edit] menu
3. [ON Grid]  
When this command is clicked once, a check mark is added to the command. The screen becomes the “on-grid” status. Clicking the command again clears the check mark. The “on-grid” status is canceled.
4. [Grid Display]  
When this command is clicked once, it is checked. Grids are displayed on the screen. Clicking the command again clears the check mark and the grids.
5. [Grid Type]  
Select the grid type from [1-Byte], [Switch], [Mode] and [Free].
6. [Hide overlaps with Base checked]  
When this command is clicked once, it is checked. When a normal overlap is placed on a screen, it can be hidden by changing the editing layer from [Overlap] to [Base]. When [Overlap] is checked again, the overlap is shown. Clicking the [Hide overlaps with Base checked] again clears the check mark and shows the overlap.
7. [On-line Editing]  
This command is valid when LCD control terminal is connected to a personal computer using a screen data transfer cable. When this command is clicked once, a check mark is added to the command and on-line editing becomes possible. [On-line Run] becomes active. Clicking the command again clears the check mark. On-line editing is canceled. For more information on on-line editing, see “Chapter 5 Transfer.”



## 8. [On-line Run]

This command becomes valid in on-line editing. When it is clicked, only the screen data that has not been transferred yet is transferred to ZM.

**When an Item is Selected:**

## 9. [Cut]

Same as [Cut] in the [Edit] menu

## 10. [Copy]

Same as [Copy] in the [Edit] menu When it is clicked, [Paste] becomes active.

## 11. [Paste]

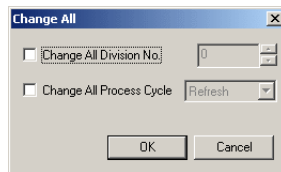
Same as [Paste] in the [Edit] menu

## 12. [Delete]

Same as [Delete] in the [Edit] menu

## 13. [Change All]

This command is used to change division numbers or processing cycles of the parts placed on the screen at one time. Select the desired part, and click this command. The [Change All] dialog is displayed.

**[Change All Division No.]**

When this item is checked, the division number can be specified. Specify the division number to be changed for the selected part.

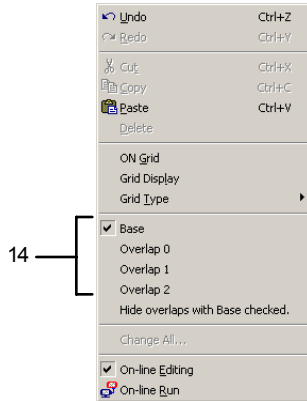
**[Change All Process Cycle]**

When this item is checked, the processing cycle can be selected. Select the desired processing cycle. Clicking [OK] changes the processing cycle of the selected part at one time.

**When a Normal Overlap is Placed:**

14. [Base] [Overlap 0] [Overlap 1] [Overlap 2] (for changing over the editing layer)

When dicked, it is checked and selected. The selected one becomes the editing layer.



**When a Table Data Display Part is Selected:**

This menu appears when a cell/cells in a table data display part is/are selected by right-clicking or right-dragging.

15. [Align Width]

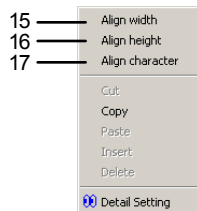
All cells are adjusted to the width of the top left cell in the selected cells.

16. [Align Height]

All cells are adjusted to the height of the top left cell in the selected cells.

17. [Align Character]

The cells in a table are adjusted so that the largest data item fits into a cell.



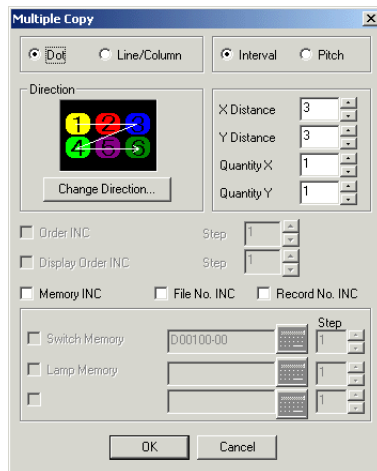
## Useful Editing Commands

This section explains useful editing commands included in the [Edit] menu of the menu bar or the tool bar.

### Multi Copy

A part or a graphic (parts or graphics) can be copied multiple times at one time.

Select a part or a graphic (or parts or graphics), and click this menu. The [Multiple Copy] dialog is displayed.



The following setting items are included.

#### [Dot]/[Line/Column]

Choose either option for placing copied parts on the screen, by dots or by lines/columns. For more information on the line and column, see “Chapter 2 Screens” (page 2-6).

#### [Direction]

When the check box of [Memory INC] or [Order INC] is turned on (☑), it determines the direction of placing copied parts. When changing the direction, click [Change Direction]. The [Select Direction] dialog is displayed. Choose the desired direction and click [OK]. The selected direction becomes valid.

#### [Interval]/[Pitch]

Choose either option for placing copied parts on the screen, by pitch or at intervals. For more information, see the next page.

#### [X Distance]/[Y Distance]

Specify distances along the X and Y directions for placing copied parts. The unit for these values is [Dots] or [Line/Column] that is selected.

[Quantity X]/[Quantity Y]

Specify the number of required copies. The copy source must be included in this number.

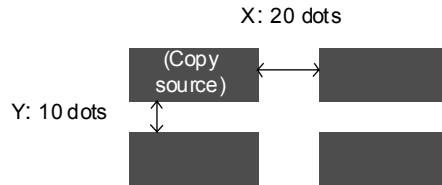
Ex.:

When a solid box is multiple-copied:

[Interval] X Distance: 20 Y Distance: 10

Quantity X: 2 Quantity Y: 2

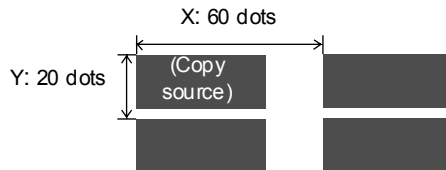
Copies are placed as shown below.



[Pitch] X Distance: 60 Y Distance: 20

Quantity X: 2 Quantity Y: 2

Copies are placed as shown below.



[Order INC]

This setting is effective when using a “data display” part as the copy source. To increment the selection order number of each copied part, check this option (☑).

- [Step] Specify the increment when increasing the selection order number of each copied part.

[Display Order INC]

This setting is effective when using a switch/lamp (function: mode) part as the copy source. To increment the display order number of each copied part, check this option (☑).

- [Step] Specify the increment when increasing the display order number of each copied part.

**[Memory INC]**

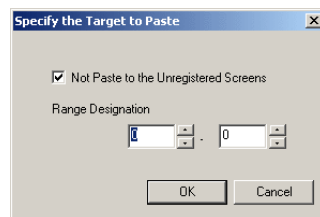
This setting is effective when using a switch/lamp or data part as the copy source. Specify the top memory address for the copy source. Memory addresses are allocated for the number of copies. [Memory] and [Step] become active.

- [Memory]  
Specify the top memory address of the copy source.
- [Step]  
Specify the increment (in words or bits) when increasing the memory address consecutively. When “1” is entered, the allocated addresses are incremented by one word or bit. When “2” is entered, the allocated addresses are incremented by two words or bits.

**Copy to the Selected Screen**

The item selected on the edit window or on the [Item List] window can be pasted on multiple screens at one time. Follow the steps described below.

1. Click or drag the desired item on the screen. (Or, click the item on the [Item List] window.)
2. Select [Copy to Selected Screen] from the [Edit] menu. The following dialog is displayed.

 **Not Paste to the Unregistered Screens**

When the selected item should not be pasted on unregistered screens, check this box. To paste the selected item on unregistered screens, remove the check mark.

**[Range Designation]**

Set the range of screens where the selected items should be pasted.

3. Click [OK]. Paste operation is performed. When paste operation on the last screen number specified for [Range Designation] has been completed, this last screen is opened.



If paste operation is performed on a layer (such as an overlap) where the number of items per screen is limited and the number reaches the limit, the error message “Do you cancel paste action to selected screen?” is displayed.



To cancel [Copy to Selected Screen] that you performed, click [Undo Paste to Selected Screen] in the [Edit] menu.

## Rotate Graphic

The following graphic items can be rotated.

Applicable graphic items:

Line, continuous line, box, parallelogram, polygon, circle, arc, sector, ellipse, elliptical arc, paint (including frame), scale

### Operation Procedure

Select the desired graphic item. When handles are shown, click [Rotate Graphic] (or icon). The following [Rotate] dialog is displayed. At the top left corner of the graphic item, a [CENT] mark is indicated.



[Angle] (90°/180°/270°)

Select the desired angle for rotation. The center of rotation is the position marked with [CENT].

[Rotate]

Clicking this button rotates the selected graphic item.

[Quit]

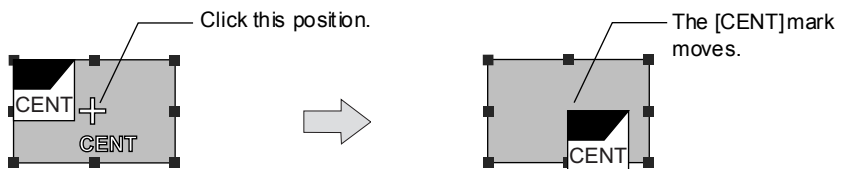
Clicking this button brings up the [Rotate] dialog.



When rotating a graphic item, the message, "Item is out of working area." is displayed if it cannot be held in the screen space after rotation. In such a case, move the rotation center, or change the rotation angle.

[Center]

When the [Rotate] icon is clicked, the rotation center is automatically located at the top left corner. When changing the rotation center, click the [Center] button. The following mouse is displayed on the screen. Click the mouse on the desired position. The [CENT] mark moves to the dicked position.



Multiple graphic items can be selected and rotated at one time.

## Flip

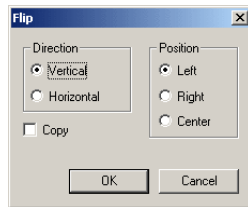
The following graphic items can be flipped on the specified axis.

Applicable graphic items:

Line, continuous line, box, parallelogram, polygon, circle, arc, sector, ellipse, elliptical arc, paint (including frame), scale

### Operation Procedure

Select the desired graphic item. When handles are shown, click [Flip] (or icon). The following [Flip] dialog is displayed.



[Direction] (Vertical/Horizontal)

Select the axis to flip the graphic item.

[Position] (Left/Right/Up/Down/Center)

Select the position to place the graphic item with respect to the selected [Direction].

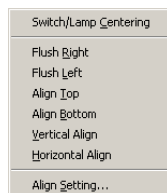
Copy

When the check box is turned on () , the graphic item is copied at the flipped position while the original one remains in place. When this is not checked, the graphic item is flipped.

Clicking [OK] performs flip operation.

## Align

Items can be aligned on the screen. Clicking this menu brings up the following sub-menu.



### Switch/Lamp Centering

This command is valid when there are characters on the switch or lamp. Select the desired switch (lamp), and click this command. The characters are center-aligned.



Also, characters on the switch (or lamp) can be center-aligned by clicking the [Centering] button on the [Character] tab window of the [Switch] dialog.



This command is valid only when characters are entered in the [Switch (Lamp)] dialog. If characters are placed as graphics, use [Align Setting] for centering.

---

### Flush Right/Left/Top/Bottom

---

Select the desired items at the same time, and click the command. The items are aligned as commanded.

---

### Vertical Align

---

Select the desired items at the same time, and click this command. The selected items are vertically aligned.

---

### Horizontal Align

---

Select the desired items at the same time, and click this command. The selected items are horizontally aligned.

---

### Align Setting

---

Clicking this menu brings up the [Align Setting] dialog.

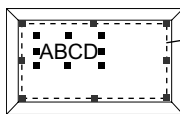
[Pitch] (Equal/Free)

This selection determines the pitch for alignment. When [Free] is selected, specify the distance.

[Selected Area]

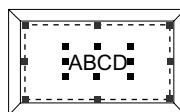
When this option is checked () , the items in the area enclosed by the mouse are all aligned.

For example, when characters are placed on a switch as graphics; Check [Selected Area] and enclose the character graphics in an area (\*) smaller than the switch area. A dotted box is displayed.



Enclose an area along the switch frame to select characters. (\* Do not select the switch.)

Click [Vertical Align] or [Horizontal Align] in the [Align] sub-menu. The character graphics on the switch are center-aligned in the switch area.



Characters are vertically aligned to this area.  
([Horizontal Align] also works in the same manner.)

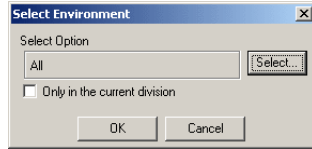


When the switch itself is enclosed together with characters, it is also aligned. When you want to align characters only, do not select the switch.



## Select Environment

This command is used for editing screens or multi-overlaps. Items to be selected can be limited. Clicking [Select Environment] brings up the following dialog.



### [Select Option]

[All] is chosen as default. Clicking the [Select] button brings up the [Select Option] dialog. Choose a desired option. It is displayed in the [Select Option] field in the [Select Environment] dialog.

### [Only in the Current Division]

A division number can be specified for selecting parts. When this option is checked, the selection is valid for parts having the same division number as the current division.

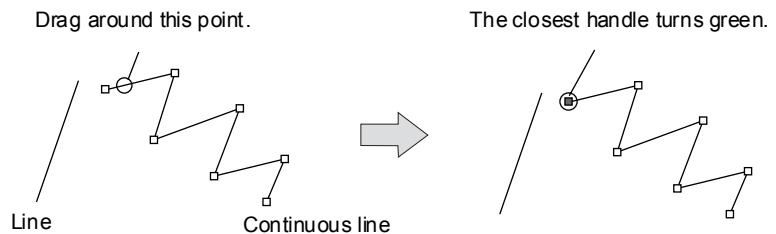
## [Point Search] Icon

A graphic item can be snapped to a different graphic item with ease during drawing or screen editing. This icon is useful in creating screens containing complicated graphics.

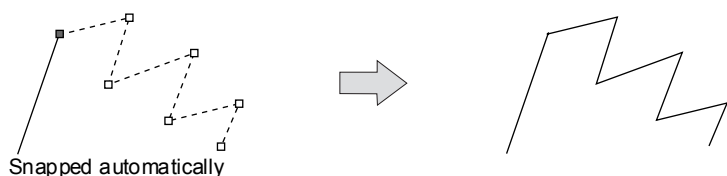
Ex.:

Connecting a continuous line to a straight line on a screen

1. Click the [Point Search] icon (depressed).
2. Click a part of the continuous line closest to the straight line, and drag. The handle closest to the straight line turns green.



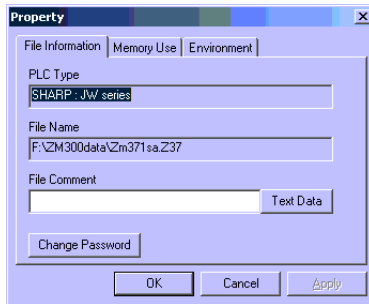
3. While dragging the continuous line to the straight line, the green handle is snapped to the straight line automatically.



## Screen Data File Property

---

Clicking [Property] in the [File] menu brings up the following dialog.



### [File Information] Tab Window

#### [PLC Type]

The PLC model set for the screen data file is displayed.

#### [File Name]

The screen data file name is displayed.

#### [File Comment]

The comment for the current screen data file can be entered. A maximum of 16 1-byte characters (eight 2-byte characters) can be entered. The comment entered here is transferred to ZM as well when screen data is transferred.

#### [Change Password]

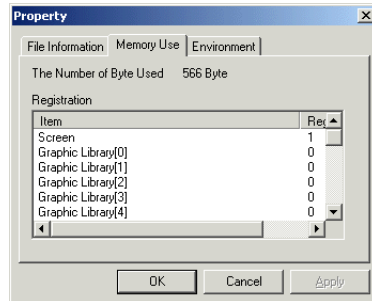
Use this button when setting a password for the screen data file or when changing the existing password. A maximum of six alphanumeric characters can be set. The password should be entered when opening the screen data file or downloading the transferred data on ZM. A password ensures security against unauthorized access.



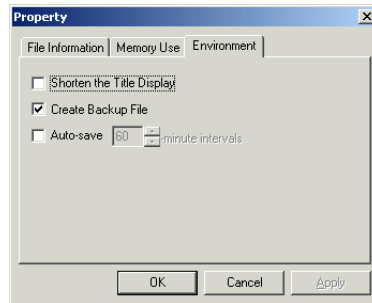
**Manage the password on your own. Note that Sharp Manufacturing Systems is not liable for any damages resulting from unknown password.**

## [Memory Use] Tab Window

Some information that is displayed by selecting [Memory Use] from the [Tool] menu is displayed in this tab window.



## [Environment] Tab Window



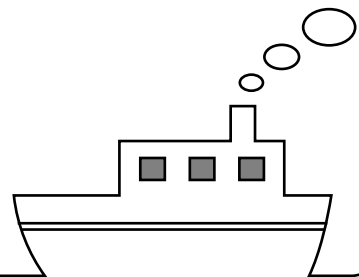
- Shorten the Title Display  
Check this box when you prefer short window titles that are displayed on top of the editor. For more information on the title indication, see page 1-6.
- Create Backup File  
A backup file (with extension “\*.bak”) is always created when saving a screen data file. If not necessary, remove the check mark.
- Auto-save  
Check this box to save the screen data automatically. When the box is checked, the time period for auto-saving can be set. Set the desired time interval for auto-saving in minutes. (Setting range: 10 to 60 minutes) For a new file, a name should be given when the file is auto-saved for the first time.



Auto-save operation is not performed when the macro edit window (example: switch ON macro editing, screen OPEN macro editing, etc.) is open. Please take note of this.

# MEMO

Please use this page freely.

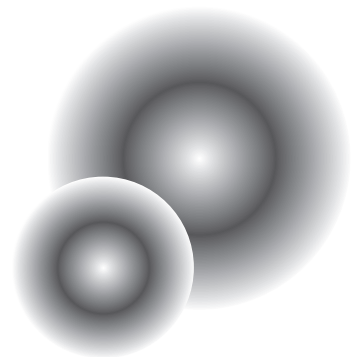


# Chapter 2 Screens

Screen Composition.....	2-1
Screen Outline .....	2-1
Screen Structure.....	2-5
Operation Environment Setting.....	2-7
Background Color Setting .....	2-7
Display Environment Setting.....	2-10
Part Types and Placement.....	2-17
Part Types .....	2-17
Notes on Parts Placement .....	2-18
Parts File.....	2-21
Parts Placement from Tool Bars .....	2-28
Parts Placement and Setting .....	2-34
Overlap .....	2-34
Switch and Lamp .....	2-39
Data Display .....	2-40
Relay, Relay-Sub, and Message Modes .....	2-46
Entry Mode and Data Block Area .....	2-47
Bar Graph, Pie Graph, Panel Meter, and Closed Area Graph .....	2-48
Statistic Graph .....	2-49
Trend Graph .....	2-50
Graphic Mode and Graphic Relay Mode .....	2-50
Sampling.....	2-51
Time Display.....	2-52
Calendar Display .....	2-52
Memo Pad .....	2-54
Macro and Interval Timer.....	2-54
Memory Card.....	2-55
Animation.....	2-55
Video.....	2-56
JPEG Display.....	2-56
Sound .....	2-56

(To be continued)

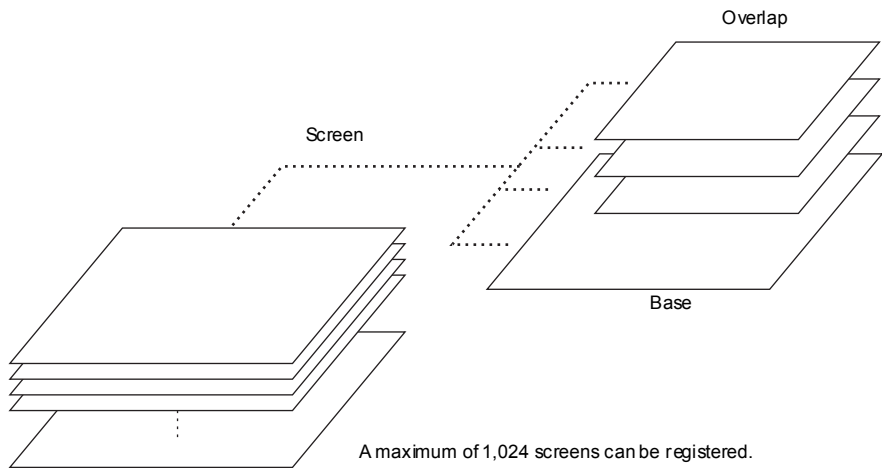
Color Types and Settings.....	2-57
Color Types .....	2-57
32,000-color Type.....	2-58
128-color Type.....	2-61
Monochrome Type.....	2-62
Blinking Setting .....	2-63



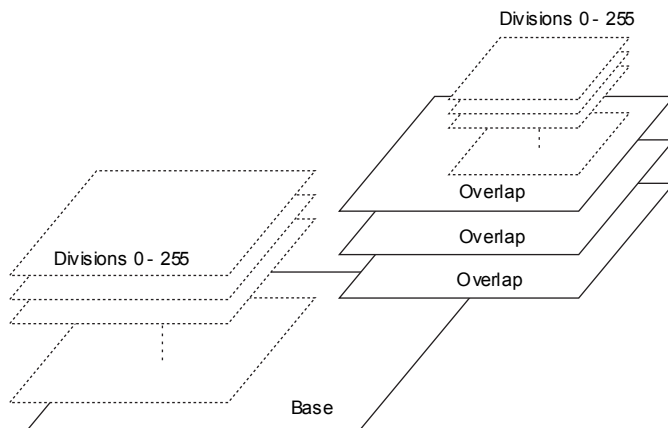
# Screen Composition

Each display of the LCD control terminal is called a screen. A maximum of 1,024 screens can be registered in a screen data file. This chapter explains screen composition and elements containing parts and graphics to be displayed on screens.

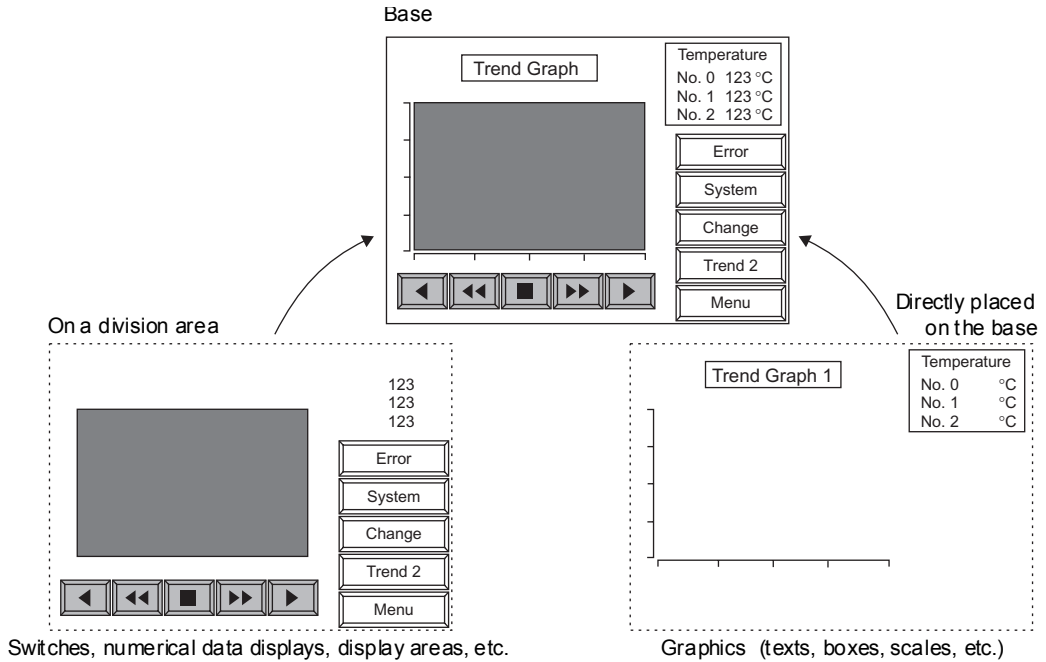
## Screen Outline



One screen is composed of a base screen with a maximum of three overlaps. Each of the base screen and the overlaps (layers) is composed of 256 divisions. These 256 divisions are overlaid on a layer like invisible sheets.



Divisions will contain parts (page 2-17 for details). These parts are given numbers identical to their respective division numbers. Graphics will be directly placed on the base and overlaps. These graphics are not given division numbers.



### What Is a Division?

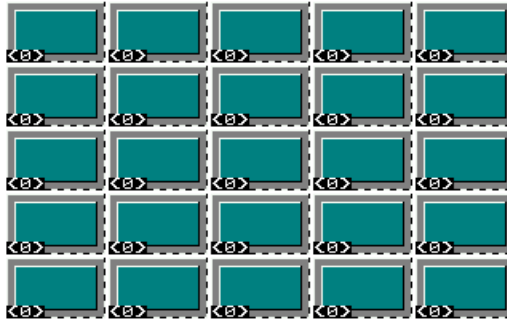
- A division is an invisible area. It is assigned to every part that functions on the screen. Whether one division can contain multiple parts or only one part depends on the types of parts. (For more information on the limit on the number of parts, see page 2-18.)
- When placing parts on a division, the division number is shown on the icon bar.





- The ZM-71SE automatically performs division number allocation while judging the maximum permissible number of parts per division for each part to be placed. You do not need to worry about allocation of division numbers generally.

A part that executes its function singly, such as a switch, lamp, numerical data display, or bar graph, has no limit on the number of parts per division (page 2-18). It is not necessary to worry about division numbers for placing these types of parts.



Multiple switch parts can be placed on one division.

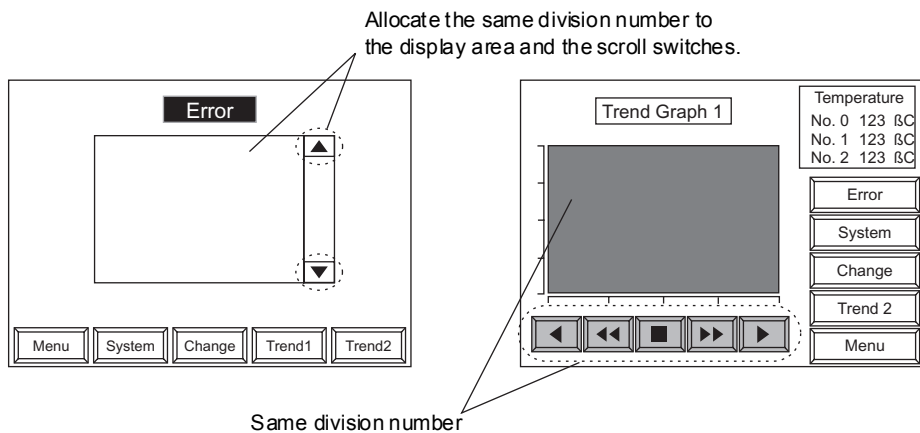
Only one piece can be placed on one division, depending on the type of part as described below.

### Combination of Parts

Different parts may be combined to execute one function. Such parts must share the same division number.

- Error message display (relay mode)
- Numerical data input on the ZM (entry mode)

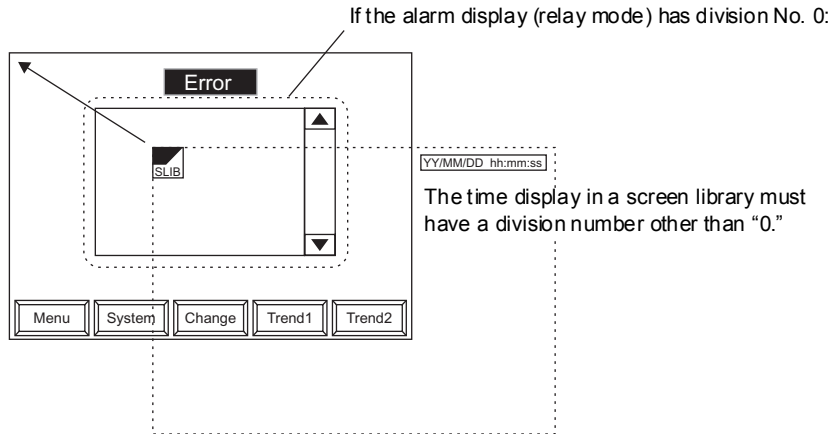
If the parts are given different division numbers, they may not work correctly. Correct their division numbers.



### When Using Screen Library:

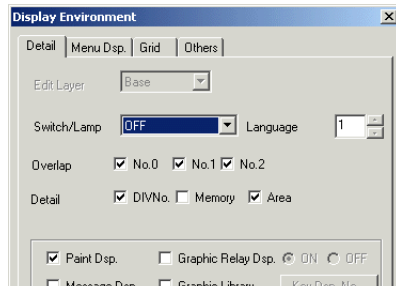
With the use of an editing area called screen library, the same part can be placed repeatedly on multiple screens. Before using the function, check that the division number registered in a screen library is different from the division numbers of parts already placed on screens. In the case of parts limited in number, using the same division number may prevent these parts from working normally.

For more information on screen library, see “Chapter 4 Registration Items.”



### Division Number Check

To check the division number of a part placed on the screen, follow the steps below. Select [Display Environment] from the [Display] menu. In the [Detail] tab window, check  DIV No.] for [Detail].



Or, select [Item List] from the [Display] menu to open the item list. All division numbers used on the screen are listed.

For more information on [Display Environment] setting, see page 2-10. For more information on the item list, see “Chapter 1 Basic Operation.”

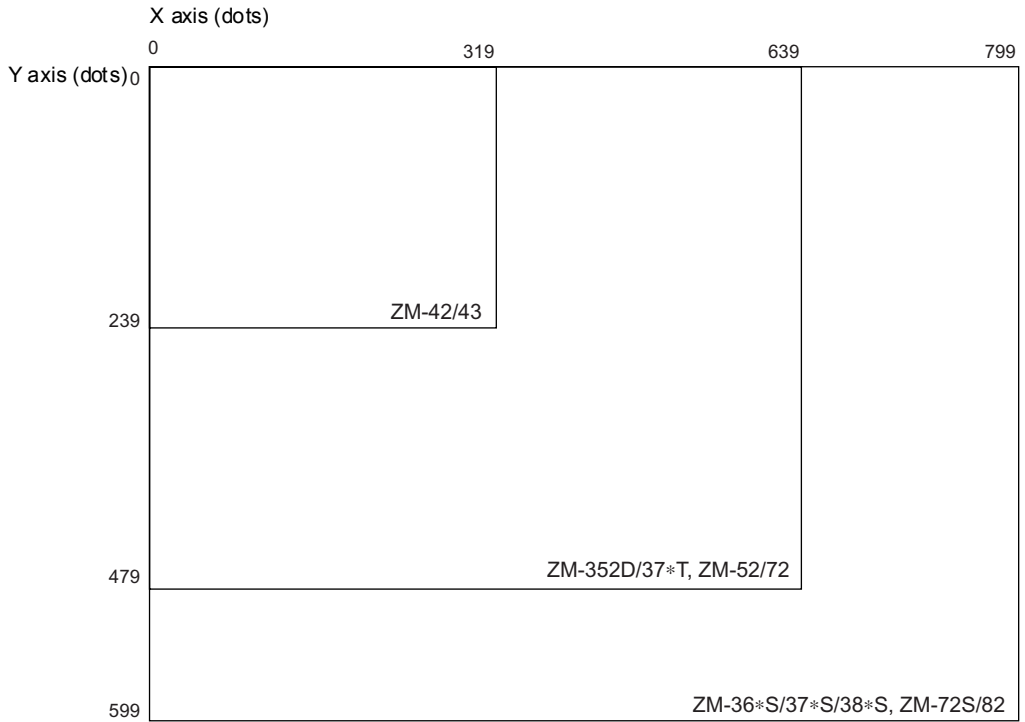
---

## Screen Structure

---

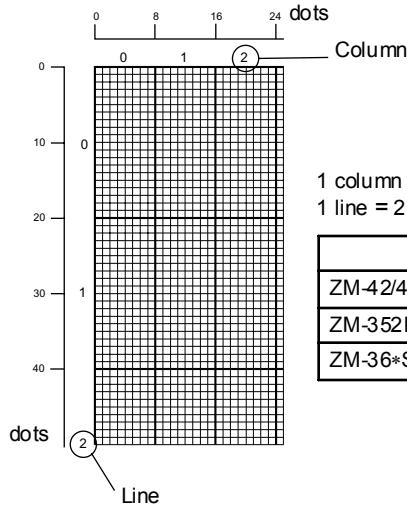
### Screen Resolution

Screen resolution varies with models of LCD control terminal. There are three kinds as shown below.



## Lines and Columns

Lines and columns are used as units to designate coordinates of overlaps or sizes of character displays.



1 column = 8 dots  
1 line = 20 dots

Model	Column	Line
ZM-42/43	40	12
ZM-352D/37*T, ZM-52/72	80	24
ZM-36*S/37*S/38*S, ZM-72S/82	100	30

## Screen Capacity

Available memory on a screen is limited to 256 KB for the ZM-300 series, and to 128 KB for the ZM-42 to 82 series. One screen data file is capable of storing 1,024 screens. The memory capacity of one screen data file differs, depending on the model of LCD control terminal as well as the font type in use.



For more information on the memory capacity of one screen data file, see “Appendix 1 Fonts.”

Make sure to check the use environment and available memory when registering screens.



If a screen data file stores a screen exceeding the maximum permissible memory, the screen may not work normally after the file is transferred to the LCD control terminal. Make sure to create every screen within the capacity.



If a screen data file exceeds the maximum permissible memory, an attempt to transfer the file causes an alarm message “The size is too large to communicate” and results in transmission failure.

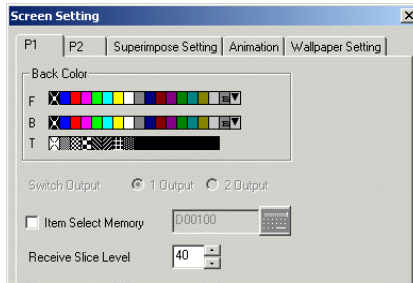
# Operation Environment Setting

This chapter explains the environment setting procedure for screen editing.

## Background Color Setting

Follow the procedure below to set a screen background color.

Select [Screen Setting] from the [Edit] menu. The [Screen Setting] dialog is displayed.



Options [F] (foreground color), [B] (background color), and [T] (tile) under [Back Color] are provided to set the screen background.

For more information on the color setting procedure, see page 2-57.

### Other Screen Setting Items

The [Screen Setting] dialog has the following items as well.

#### [P1] Tab Window

##### [Switch Output]

This option is active only when the LCD control terminal switch type is the matrix type. For more information, see “Chapter 3 Switch” in the ZM-71SE Instruction Manual (Function).

##### [ Item Select Memory]

This option is active when numerical data display or character display parts with [Display Function: Entry Target] setting are placed in the entry mode on the base screen. For more information, see “Chapter 7 Entry Mode” in the ZM-71SE Instruction Manual (Function).

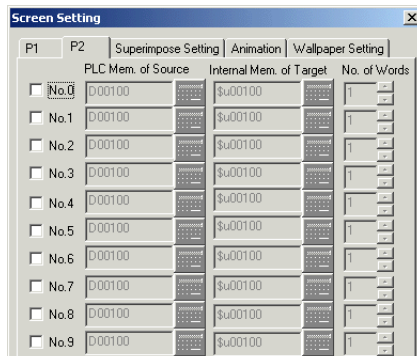
**[Receive Slice Level]**

Specify the word count of PLC data that the LCD control terminal reads one time. Depending on the PLC that is used, the maximum number of words that can be read one time varies. If your setting exceeds that limit, the value reverts to the maximum that can be read one time for that PLC. The default is 40 words. As for the speed of data display, it is recommended that the receive slice level be lowered for a PLC with a fast scan time, and raised for a PLC with a slow scan time.



For more information on the processing speed, etc., see “Appendix 2 Process Cycle” in the ZM-71SE Instruction Manual (Function).

**[P2] Tab Window**



This tab window is not valid when universal serial is selected as the PLC type.

**[PLC Mem. of Source] [Internal Mem. of Target]**

When you mainly use PLC memory for the macro and also directly use PLC memory for macro commands, a read to PLC memory occurs and as a result, the display speed is slowed. To avoid this, copy memory necessary for each cycle to the internal memory and execute macro commands in the internal memory. Through this process, speed down can be decreased. Using these options, specify the copy source and the copy target for each screen.

**[Superimpose Setting] Tab Window (For the ZM-300 series only)**

This tab window is provided for the use of the superimpose function on overlaps. For more information, see “Chapter 2 Overlap” in the ZM-71SE Instruction Manual (Function).

**[Animation] Tab Window (For the ZM-300 series only)**

This tab window is provided for the use of the animation function. For more information, see “Chapter 17 Animation” in the ZM-71SE Instruction Manual (Function).

## **[Wallpaper Setting] Tab Window (For the ZM-300 series only)**

It is possible to use a bitmap file or a JPEG file as screen wallpaper.

### Use Wallpaper]

Check this option when setting wallpaper. The following options become active.

#### [File Type]

Select either [Pattern] or [JPEG].

- When [Pattern] is selected:

[Pattern No.] (0 - 1023)

When using a bitmap file as wallpaper, import a bitmap file as a pattern (patterns). This option is provided for specifying a pattern (patterns). By specifying the same number for both start and end numbers, one pattern is used as wallpaper. When importing a bitmap file that has been registered as multiple patterns, two or more patterns can be specified.

- When [JPEG] is selected:

[File name]

Select a JPEG file name (within eight one-byte alphanumeric) to be used as wallpaper.



JPEG files are made available by storing them in the [ZM-71S\JPEG] folder and written to a CF card.



For how to write JPEG files to a CF card or other information on JPEG files, see "Chapter 19, JPEG Display" in the ZM-71SE Instruction Manual (Function).

#### [Specify Position]

##### Enlarge]

This option is active for patterns. A selected file can be enlarged under equal magnification, and placed with respect to the upper left corner of the screen.

##### [Display Center]

Select this option when placing the selected file at the center of the screen.

##### [Tile]

Select this option when tiling multiple pieces of the selected file with respect to the upper left corner of the screen.

##### [Display Corner]

Select this option when placing the selected file at a corner of the screen.

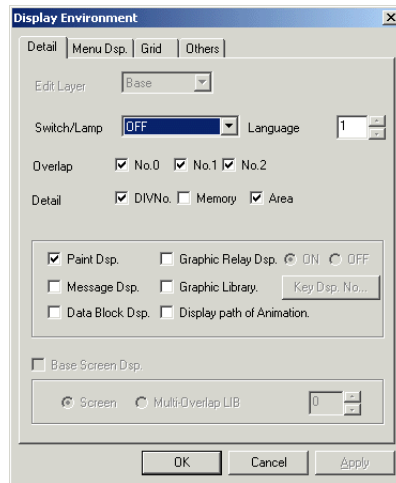
[Top Left], [Top Right], [Bottom Left], [Bottom Right]

## Display Environment Setting

Grids or area lines can be displayed as a screen editing guide.

### [Display Environment] Dialog

Select [Display Environment] or [Change All Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed.



Select [Display Environment] when making display environment settings for one certain screen. Select [Change All Display Environment] when making display environment settings for all screens in a screen data file.

### [Detail] Tab Window

#### [Edit Layer]

This option is active for a screen with overlaps (normal). Select [Base] or [Overlap 0 - 2] for the layer you are going to edit. For more information on overlaps, see "Chapter 2 Overlap" in the ZM-71SE Instruction Manual (Function).

#### [Switch/Lamp]

Select from [ON], [OFF], and [P3] - [P8] for the status of the switches or lamps displayed on the screen. The current status is indicated on the icon bar as well as the status bar. For more information on switches and lamps, see "Chapter 3 Switch" in the ZM-71SE Instruction Manual (Function).

#### [Language]

Use this option to select the language used on the screen. For more information, see "Chapter 29 Language Selection" in the ZM-71SE Instruction Manual (Function).



**[Overlap]**

This option is active when normal overlaps are placed on the screen. Select whether or not to display the overlaps. Check the box (☑) of the desired overlap number. Uncheck the box when it is not displayed. For more information on overlaps, see “Chapter 2 Overlap” in the ZM-71SE Instruction Manual (Function).

**[Detail]**

By checking the desired option, its detailed information is displayed.

[DIV No.] Displays the division numbers of parts.

[Memory] Displays the memory addresses assigned to parts.

[Area] Displays the area of each part by dotted lines.



[DIV No.]



[Memory]



[Area]

 **[Paint Dsp.]**

When there is a graphic drawn with the [Paint] icon on the draw tool bar, it is displayed as painted. When this option is unchecked, only “x” appears to indicate the paint start point. For more information on paint, see “Chapter 3 Drawing Tools.”

 **[Graphic Relay Dsp.]**

This option is active only when the graphic relay mode is set. The ON/OFF status in the graphic relay mode can be checked. For more information on the graphic relay mode, see “Chapter 9 Graphic Display” in the ZM-71SE Instruction Manual (Function).

 **[Message Dsp.]**

This option is active when the relay mode or message mode is set. Messages specified in these modes can be displayed in the display area (or on switches/lamps) on the screen. For more information on the relay and message modes, see “Chapter 6 Message Display” in the ZM-71SE Instruction Manual (Function).

 **[Graphic Library]**

This option is active when the entry mode or graphic mode is set. For the entry mode, graphics registered in graphic library can be displayed on the character entry keys provided that [Use Graphic] is checked. For the graphic mode, graphics can be displayed provided that [Internal] is chosen for [Command]. See “Chapter 7 Entry Mode” for more information on the entry mode, and to “Chapter 9 Graphic Display” for the graphic mode in the ZM-71SE Instruction Manual (Function).

 **[Data Block Dsp.]**

This option is active when the data block area is set on the screen. The initial block number is indicated on the screen provided that [Internal] is chosen for [Command]. For more information on the data block area, see “Chapter 7 Entry Mode” in the ZM-71SE Instruction Manual (Function).

[Display Path of Animation]

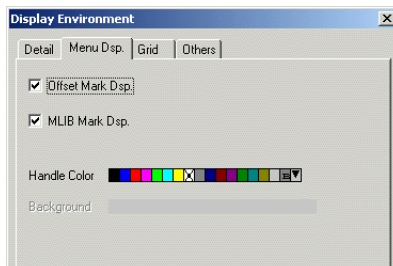
This option is active when animation setting is made. When the path of animated graphics should be depicted, check this box. For more information on animation, see “Chapter 17 Animation” in the ZM-71SE Instruction Manual (Function).

[Base Screen Dsp.]

This option is active during editing of graphic library, multi-overlap, or data block. When a screen or multi-overlap should be displayed in editing, check this box.

**[Menu Dsp.] Tab Window**

---



[Offset Mark Dsp.]

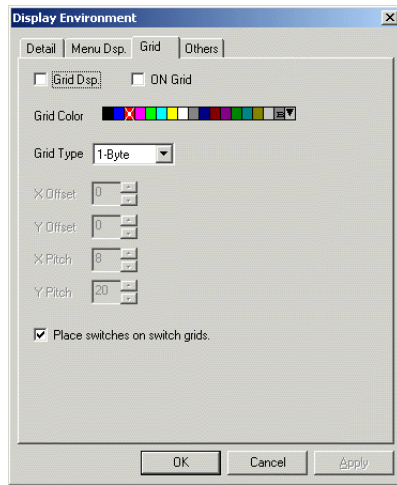
This option is active during editing of graphic library or data block. Choose whether or not to show the offset mark on the screen.

[MLIB Mark Dsp.]

This option is active when setting a call-overlap or multi-overlap. Choose whether or not to show the MLIB mark on the screen to position the overlap.

[Handle Color]

Choose the color of handles shown around clicked items.

**[Grid] Tab Window** **Grid Dsp.]**

When this option is checked, grids are displayed.

 **ON Grid]**

When this option is checked, “on-grid” editing is enabled. (This “on-grid” editing is not valid for items on overlaps.)

**[Grid Color]**

Select the desired grid color. (as well as the color of the dotted lines that denote the available screen area of ZM.)

**[Grid Type]**

A grid type can be selected from the following four.

**[1-Byte]:**

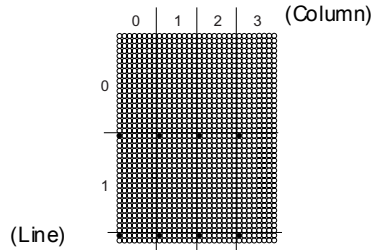
The grids are based on the unit:  $8 \times 20$  (the unit of one-byte character:  $8 \times 16$  dots plus four Y-axis dots). The reference point is placed at coordinates (0, -3). The maximum number of one-byte characters, which can be displayed on the one-byte character grids, depends on the ZM model. Refer to the following table when placing messages or texts on the screen.

**[Switch]:**

When matrix switch (ZM-72/82) is used, the switch operating area is determined based on the switch grids. The grids are based on the unit:  $16 \times 20$  dots (the unit of switch:  $14 \times 18$  dots plus spaces:  $2 \times 2$  dots). The reference point is placed at the coordinates (1, 1).

[Mode]:

The mode grids are equivalent to the one-byte character grids, but their reference points differ. The mode grids are based on the unit:  $8 \times 20$  dots. The reference point is placed at (0, 0). Lines and columns are used to indicate item positions (as the figure on the left). When specifying overlap positions, etc. by external signals, indicate their column and line numbers.



[Free]:

Your desired grids can be set by specifying the following options:  
 [X Offset] [Y Offset] [X Pitch] [Y Pitch]

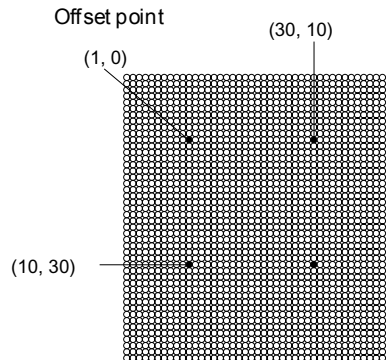
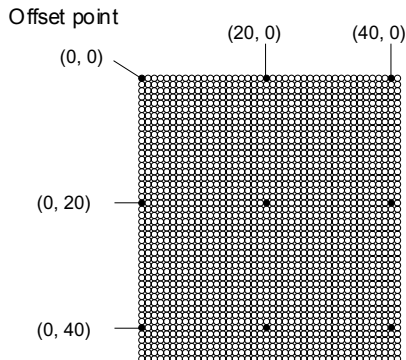


Relationship between Offset and Pitch

Grids are placed from the offset point at intervals specified by X and Y pitches.

Ex. 1:  
 X Offset: 0  
 Y Offset: 0  
 X Pitch: 20  
 Y Pitch: 20

Ex. 2:  
 X Offset 10  
 Y Offset 10  
 X Pitch: 20  
 Y Pitch: 20



**[] Place Switches on Switch Grids]**

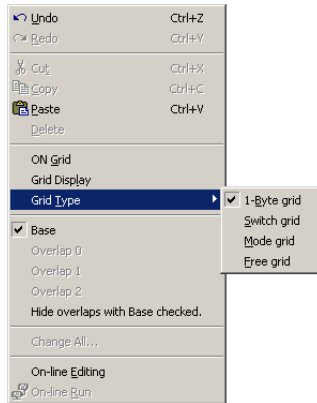
When this option is checked, switches are placed based on the switch grids, irrespective of the set grid type.



When the [Point Search] icon is used during switch placing, the function of the icon takes priority over the switch grid setting.

**About the right-click menu**

The [ON Grid], [Grid Dsp.], and [Grid Type] options in the [Grid] tab window are also included in the right-click menu. Right-clicking the mouse on the screen shows the following menu.



When [ON Grid] and [Grid Display] are checked (or unchecked), these commands are active (or inactive). For [Grid Type], select the desired type from the displayed menu on the right. When [ON Grid] or [Grid Display] is selected, the grid type selected from this menu becomes valid.

Make other grid settings such as color or offset in the [Display Environment] dialog.

## [Others] Tab Window

### [Zoom] (75%/100%/200%/400%)

The screen display can be zoomed out or zoomed in.

### Monochrome 8-gradation Display]

When this option is checked, the colors on the screen change into the monochrome 8-gradation colors.



This function is available only when 16-/24-/32-bit full color is selected for Windows screen setting, and invalid when 256-color is selected.

### Interlock Text in the Switch]

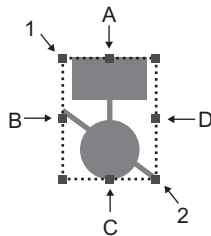
When a switch, lamp, or calendar part is enlarged/reduced while this option is checked, the text on the switch or the lamp or “YY MMDD hh mm ss SUN” of the calendar part is also enlarged/reduced. When this option is unchecked, the text or the “YY MM DD hh mm ss SUN” is not changed in size

### Limit of Edit Model Area]

When this option is checked, items can be moved within the available screen area of ZM. When it is unchecked, items can be moved beyond the area.

### Enlarge Items including Circles in the Opposite Angle]

When this option is checked, the selected item can be enlarged/reduced only in the diagonal directions. Dragging handle A or B results in dragging handle 1. Likewise, dragging handle C or D results in dragging handle 2. When enlarging/reducing a graphic consisting of circles and lines (boxes), the graphic shape is not changed with this option.



### Not Display Overlaps when Base is Selected]

The function of this option is the same as [Hide Overlaps with Base Checked] included in the right-click menu. For more information, see “Chapter 1 Basic Operation.”

### [Windows 2000/NT4.0 Paint Processing]

When Windows 2000 or Windows NT4.0 is used, painting may not be performed normally. Check this option in such a case.

# Part Types and Placement

This section explains the functions and types of available parts as well as notes on their placement on the screen.

## Part Types

There are the following types of parts.

\* **The display area and keypad parts are not included in this table. These parts are available with “MP” parts, and do not function independently.**

Type	Name	Remarks
SP	Overlap	Call- or multi-overlap or video: type I
SP	Switch	
SP	Lamp	
SP	Numerical data display	
SP	Character display	
SP	Message display	
SP	Table data display	
MP	Relay	
MP	Relay-sub	
MP	Message	
MP	Entry	
MP	Data block	
SP	Bar graph	
SP	Pie graph	
SP	Panel meter	
SP	Statistic bar graph	
SP	Statistic pie graph	
SP	Trend graph	
SP	Closed area graph	
MP	Graphic	
MP	Graphic relay	
MP	Trend sampling	
MP	Data sampling	
MP	Bit sampling	
MP	Relay sampling	
MP	Alarm display	
I	Time display	
SP	Calendar display	
MP	Memo pad	
I	Macro	
I	Interval timer	
MP	Memory card	

Type	Name	Remarks
MP	Animation	Not available with ZM-42 to 82 and ZM-352D
MP	Video display	Available with ZM-300 only
MP	JPEG display	Available with ZM-300 only
I	Sound	Available with ZM-300 only
I	Screen library *	

SP: Single part (functioning singly selected from a parts file)

MP: Combined parts (functioning in combination with other parts)

I: Item (functioning as per dialog setting)

\* Screen library is not a part. It is used to place a screen library element including registered parts, etc. on screens. Before placing a screen library element, check its registered items. For more information on the screen library, see “Chapter 4 Registration Items.”

## Notes on Parts Placement

When placing parts on the screen, check available memory per screen (ZM-300: 256 KB; ZM-42 to 82: 128 KB) and the limited number of parts that can be registered on one division, one layer (base, overlap 0 - 2), and one screen (four layers). The limitation and the maximum number of the parts are listed below.



For more information on divisions, see page 2-2.

Parts	Limit per division	Limit per layer	Limit per screen		
			ZM-300 series	ZM-52/72/82/52HD	ZM-42/43/62E
Overlap	–	–	3		
Switch	None	None	768		192
Lamp	None	None	768		192
Numerical data display	None	None	Setting memory		
Character display	None	None	Setting memory		
Message display	None	None	Setting memory		
Table data display	1	256	Setting memory		
Relay	1	256	Setting memory		
Relay-sub	1	256	Setting memory		
Message	1	256	Setting memory		
Entry	1	1	4		
Data block	1	4	4		
Bar graph	None	None	Setting memory		
Pie graph	None	None	Setting memory		
Panel meter	None	None	Setting memory		
Statistic bar graph	1	256	Setting memory		
Statistic pie graph	1	256	Setting memory		
Trend graph	1	256	Setting memory		
Closed area graph	None	None	Setting memory		
Graphic	1	256	Setting memory		



Parts	Limit per division	Limit per layer	Limit per screen		
			ZM-300 series	ZM-52/72/82/52HD	ZM-42/43/62E
Graphic relay	1	256	Setting memory		
Trend sampling	1	256	Setting memory		
Data sampling	1	256	Setting memory		
Bit sampling	1	256	Setting memory		
Relay sampling	1	256	Setting memory		
Alarm display	1	256	Setting memory		
Time display	None	None	Setting memory		
Calendar display	1	256	Setting memory		
Memo pad	1	1	1 (* Not available with ZM-72/82 matrix type)		
Macro	1	256	Setting memory		
Interval timer	1	256	Setting memory		
Memory card	1	1	4 (*1)		
Animation (*3)	1	256	Setting memory	-	
Video display (*3)	1	4	4	-	
JPEG display (*3)	1	256	Setting memory	-	
Sound (*3)	1	256	Setting memory	-	
Screen library	None	None	(*2)		

- \*1 A maximum of four memory card modes can be set on one screen (four layers) though there is a limitation. For instance, two layers of one screen cannot contain one list display each. But it is possible that one layer contains one list display, and a different layer of the same screen contains one format screen.
- \*2 When placing a screen library on the screen, the parts registered in the screen library are subject to the same limit items in the chart above. When placing a screen library that has a mode registered in it, it is necessary to select division numbers that have no mode registered.
- \*3 These functions may not be available even with the ZM-300 series, depending on the models. For more information on available models, see the ZM-71SE Instruction Manual (Function).

## Setting Memory

“Setting memory” in the previous chart means the number of memory locations, which is read on one screen. This does not mean the number of words used on a screen. Screen resolution varies with models of LCD control terminal.

Model	No. of memory locations per screen
ZM-300 series	1024
ZM-82	1024
ZM-72	1024
ZM-52/52HD	1024
ZM-42/43/62E	256

The read area under [System Setting] is counted as one memory location. (The write area is not the target to count.) Therefore, to determine the maximum number of memory locations for a part, subtract one from the number indicated in the above table. The way of counting for setting memory is unique, but these values should be enough to create screens.

Examples:

- One memory location is counted even when 10 words are used in the relay mode.
- Switch output memory is not counted as setting memory. For lamp memory, however, one is counted for each lamp memory location used.
- Each data display is counted as one memory location. If maximum and minimum values are set, one memory location each is counted.

## Parts File

Parts such as switches, lamps, or data displays (“SP” parts mentioned on page 2-17) are registered in parts files. Desired parts will be selected from these parts files and placed on the screen. A placed part can be replaced as desired.

### Kinds of Parts Files

Three different extensions are provided to parts files.

- [\*.Z3P] ZM-300 series parts file
- [\*.Z7P] ZM-42/43/52/62/72/82 series parts file
- [\*.ZMP] ZM-41/70 series parts file

The following parts files are provided from Sharp Corporation.

Parts file name	Type	Remarks	
ZM-300	Std.z3p	32,000-color	
	Parts_j.z3p	32,000-color	
	3DStd.z3p	32,000-color	
	3Dnow_p2.z3p	32,000-color	
	3Dnow_p3.z3p	32,000-color	
	3Dnow_p4.z3p	32,000-color	
	3Dnow_p5.z3p	32,000-color	
	3Dnow_p6.z3p	32,000-color	
	3Dnow_p7.z3p	32,000-color	
	3Dnow_p8.z3p	32,000-color	
	3Dfront.z3p	32,000-color	3D parts for ZM-300
	3Dside.z3p	32,000-color	3D parts for ZM-42/43/52/62/72/82
	Std_128.z3p	128-color	For ZM-352D
	Parts_j_128.z3p	128-color	
3Dfront_128.z3p	128-color		
3Dside_128.z3p	128-color		
ZM-42/43/52/62/72/82	Std.z7p	128-color	
	Parts_j.z7p	128-color	
	3Dfront.z7p	128-color	
	3Dside.z7p	128-color	
	Parts_mono.z7p	128-color	
ZM-41/70	Std.zmp	16-color	
	Parts_j.zmp	16-color	

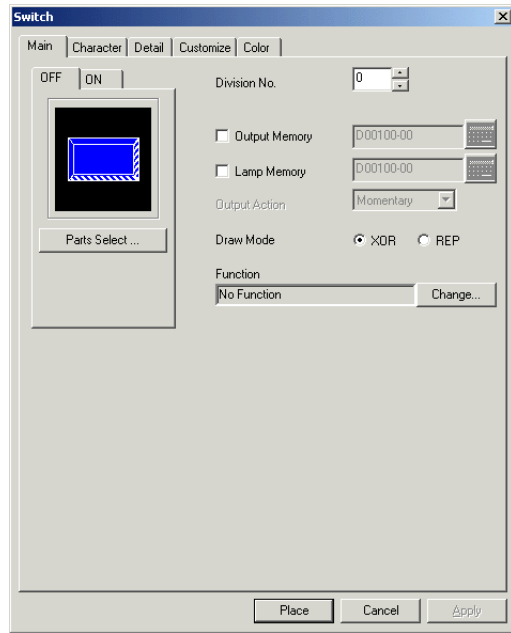
### 3D Parts

The ZM-300 series and the ZM-42 to 82 series are provided with parts using 3D graphics. Extra care should be taken in handling these 3D parts. For the description of setting and placing the parts, see “Appendix2 3D Parts.”

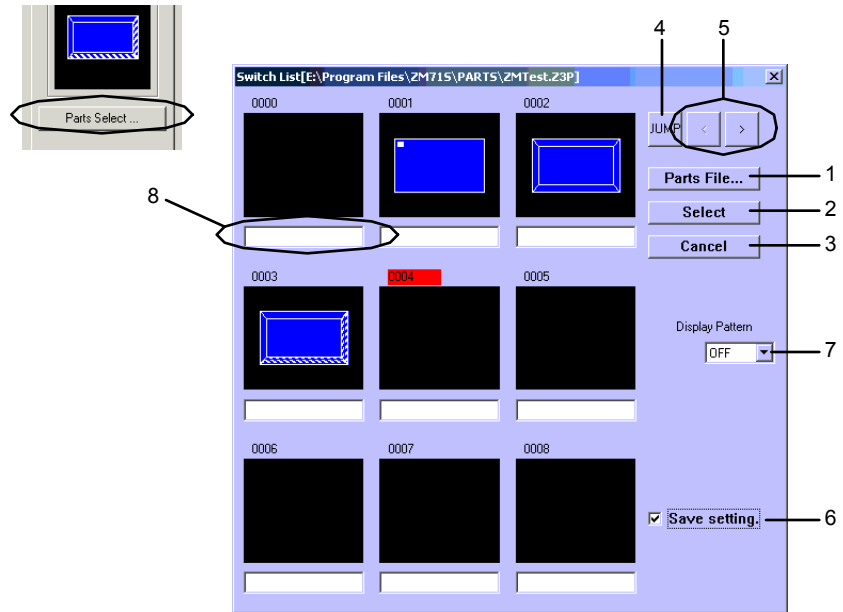
This section explains how to set parts other than 3D parts.

### Parts File (Ex.: Switch)

Clicking the [Switch] icon brings up the [Switch] dialog.

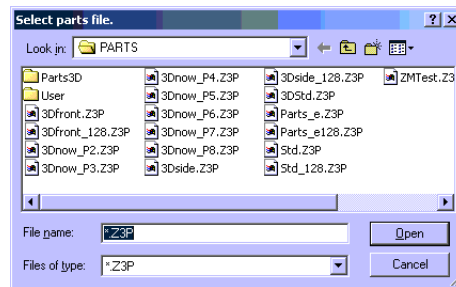


Click the [Parts Select] button. The [Switch List] window is displayed.



#### 1. [Parts File]

Use this button to call up a different parts file. The [Std.z3p] file is chosen as default. Click the [Parts File] button. The [Select Parts File] dialog is displayed. Choose the desired file and click [Open].



The file is opened.



For opening a 3D parts list or placing 3D parts, see "Appendix2 3D Parts."

#### 2. [Select]

By clicking a part in the [Switch List], its number is highlighted in red. Click the [Select] button. The part is shown in the [Switch] dialog.

#### 3. [Cancel]

Clicking the [Cancel] button closes the parts file and brings up the [Switch] dialog.

#### 4. [JUMP]

Clicking this button brings up the dialog to specify a part number. Specify the desired part number and click [OK]. The part is selected.

5. [] []  
Click either button to scroll up/down the [Switch List] window.
6. [ Save Setting]  
When this box is checked, part change is possible while the dialog data is saved. Thus, dialog settings such as memory address or display type do not revert to the default. When this box is unchecked, the dialog data reverts to the default.

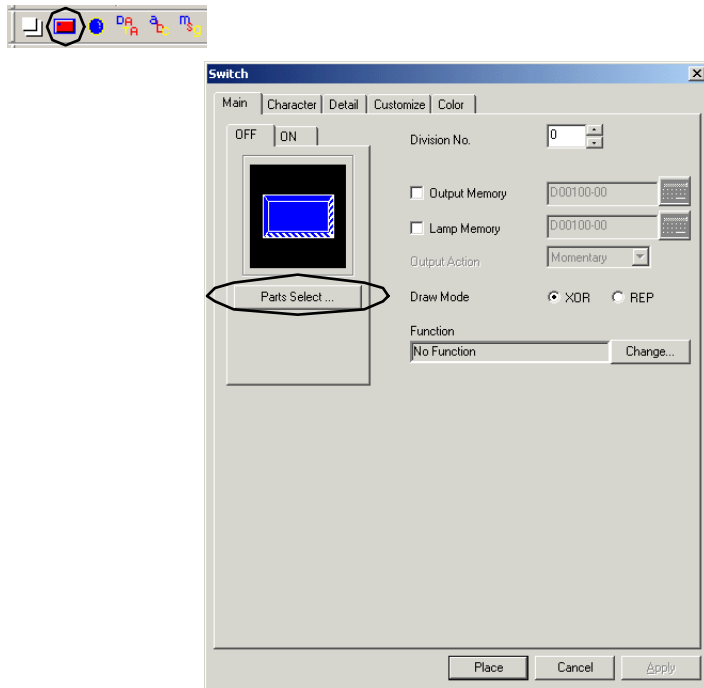


If a switch or lamp part is changed from 2-notch (OFF/ON) type to 3-notch (OFF/ON/P3 to P8), make sure to uncheck [ Save Setting] before selecting the 3-notch type.

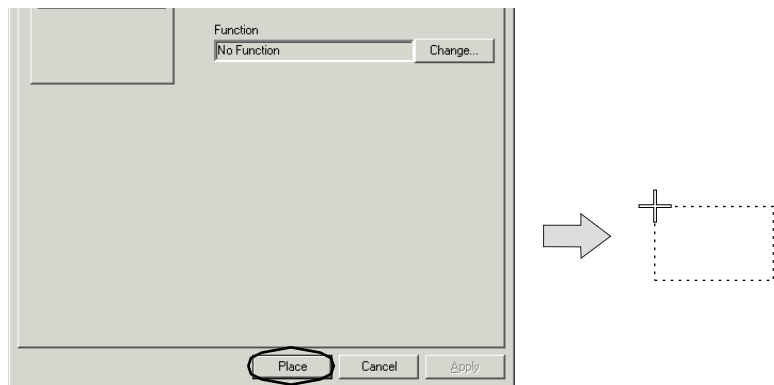
7. [Display Pattern]  
This setting is active only when a switch or lamp part is selected. The displays of the OFF, ON, and P3 to P8 patterns can be shown.
8. Comment field  
This field indicates the comment on the part. Comment can be entered only during part editing. Open the [Switch List] window during part editing, and click this field. It becomes active for comment entry.

## Parts Placement (Ex.: Switch)

1. Click the [Switch] icon. The [Switch] dialog is displayed.



2. When selecting a different part, click [Parts Select] and select the desired switch part.
3. Click the [Place] button in the [Switch] dialog. A dotted box and a mover tool (cross cursor) appear in the screen edit window.



4. Click the mouse in the desired position. The switch is displayed.

## Parts Change (Ex.: Lamp)

Follow the procedure below to replace a placed part with another.

1. Double-click a part to be replaced. (Or, click the part and the [Detail/Prop. Change] icon.)



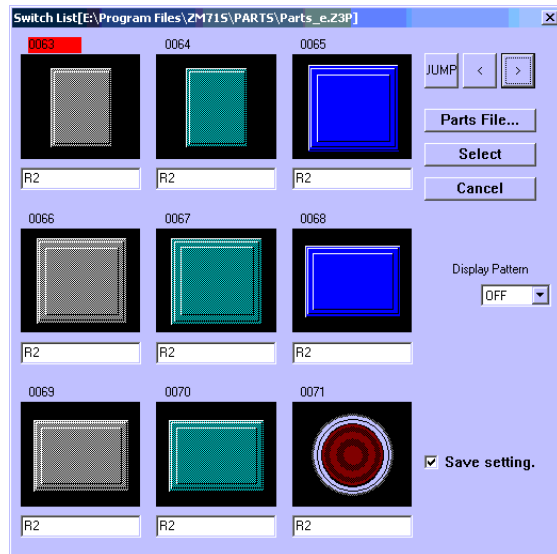
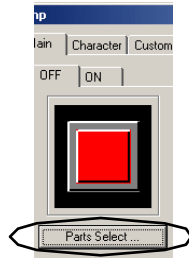
Double-click a part.

Or



Click a part and the [Detail/Prop. Change] icon.

2. Click the [Parts Select] button. The [Lamp List] window is displayed.



3. When opening a different parts file, click the [Parts File] button and select the desired parts file.
4. Select the desired part and click the [Select] button.



When  Save Setting is checked, part change is possible while the current lamp data (memory address, draw mode, etc.) is saved. When this box is unchecked, the data reverts to the default.

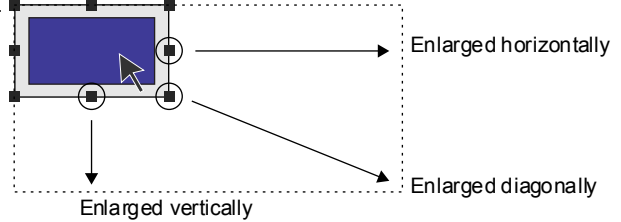
5. The [Lamp] dialog is displayed. Click [OK]. The lamp has been replaced with the selected one.



## Parts Enlargement/Reduction

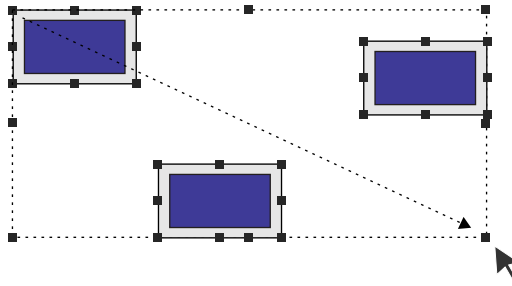
When a part is clicked, handles are shown all around, denoting that the part is selected. By dragging handles, the part can be enlarged or reduced.

Clicking shows handles.

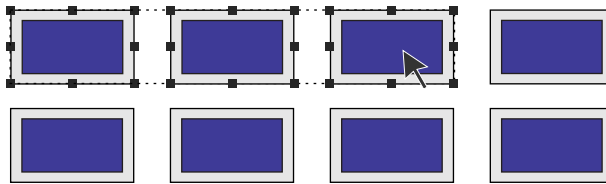


## Parts Selection

- When selecting multiple parts, drag the mouse enclosing all the desired parts from the top left to the bottom right.

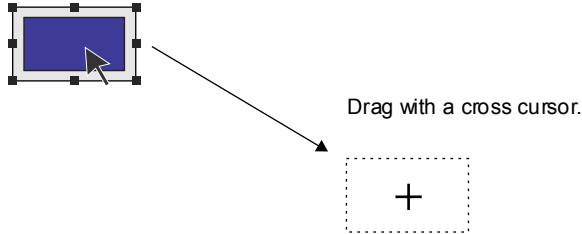


- When selecting multiple parts individually, hold down the Shift key and click the desired parts.



## Parts Movement

- While handles are shown around a selected part, drag the part (avoid dragging the handles). A cross cursor appears and functions as a tool to move the part.



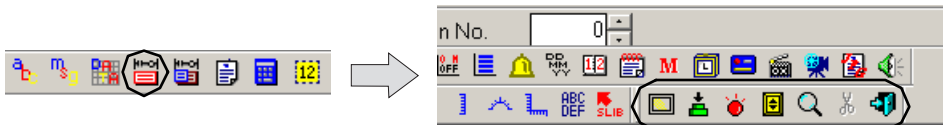
While a cross cursor is displayed, pressing an arrow key ([→][←][↓][↑]) on the keyboard moves a part or graphic dot by dot.

## Parts Placement from Tool Bars

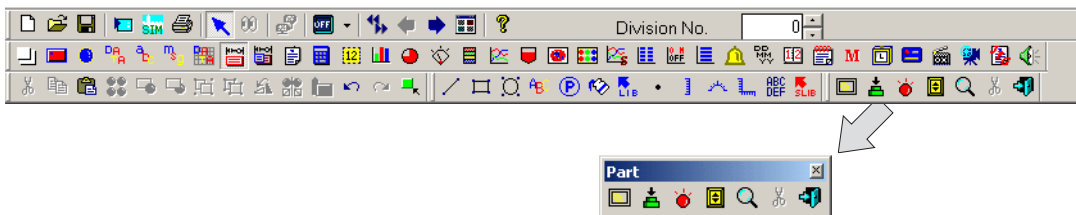
When an icon for the entry, relay, or sampling mode is clicked, its own tool bar is displayed. It is possible to make settings including the [Detail] dialog for the corresponding part from the displayed tool bar. This section explains the procedure for placing and setting parts from tool bars.

### Setting Procedure (Ex.: Relay)

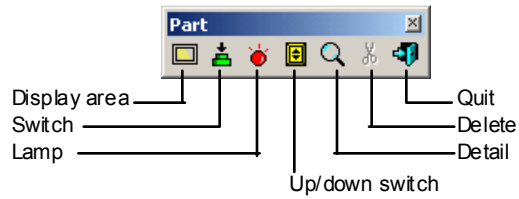
Click the [Relay Mode] icon on the tool bar. The relay mode tool bar is displayed at the upper right.



If the tool bar is hidden from view, drag it so that it comes into view entirely.



The relay mode tool bar consists of the following icons.



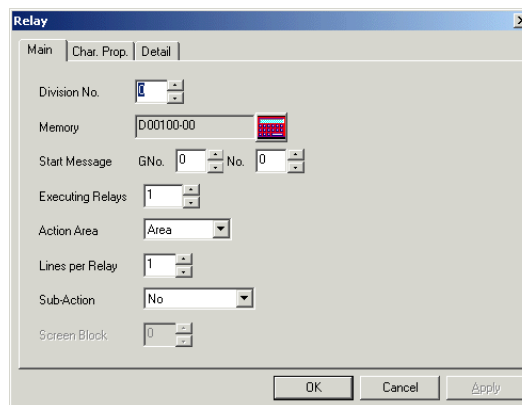
### [Detail] Icon

In the case of a tool bar containing a [Detail] icon, its setting must be made to make the part operable. Start setting from the [Detail] icon.

1. Click the [Detail] icon on the relay mode tool bar.



2. The [Relay] dialog is displayed. When the dialog setting is concluded, click [OK].



The [Relay Mode] icon is registered in the [Part] auxiliary tool box in the lower left corner of the screen.



For more information on the tool box, refer to the following.

- About the [Part] auxiliary tool box – Modification

When the [Relay] dialog (from the [Detail] icon) setting is concluded and you click [OK], the [Relay Mode] icon is registered in the [Part] auxiliary tool box in the lower left corner of the screen. The icon in the box indicates the division number specified in the dialog. When checking or modifying the data of the dialog, click the icon in the [Part] auxiliary tool box. Its tool bar or dialog is displayed.

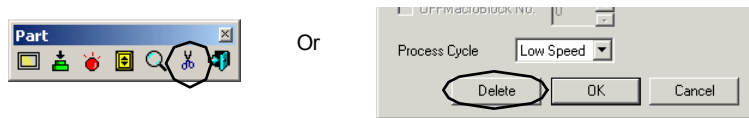


- Deletion

1) Click the icon to be deleted from the [Part] auxiliary tool box.



2) When its tool bar is displayed, click the [Delete] icon. When its dialog is displayed, click the [Delete] button.

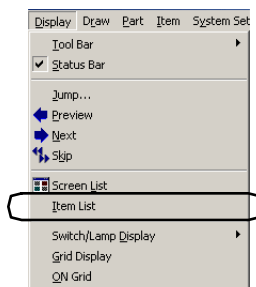


3) The confirmation message appears. Click [Yes] when deleting the icon. The icon is deleted from the [Part] auxiliary tool box.

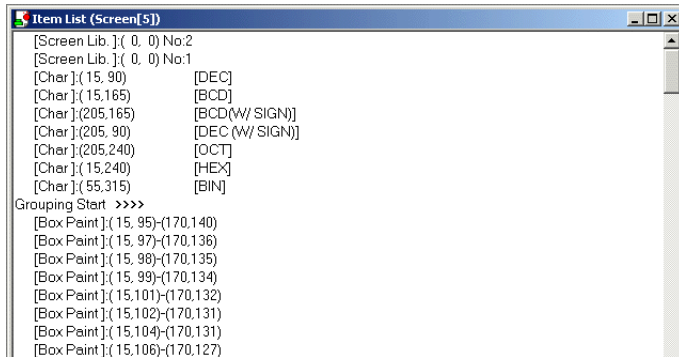
- Copy

When copying the function registered in the [Part] auxiliary tool box, bring up the item list.

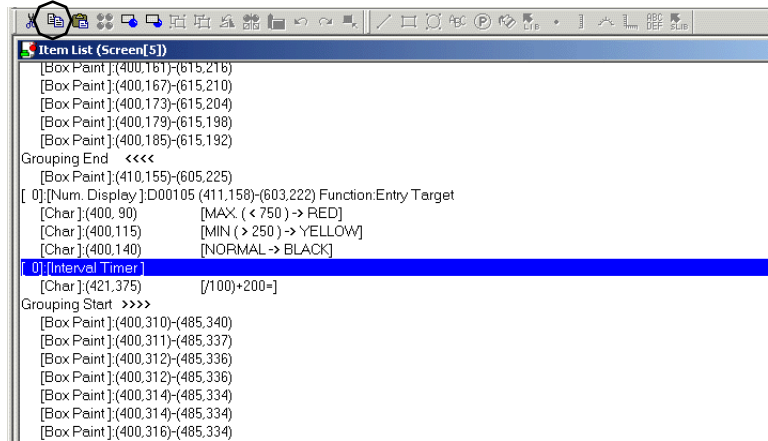
1) Select [Item List] from the [Display] menu.



- 2) The [Item List] window is displayed. Items containing no mouse coordinates correspond to icons in the [Part] auxiliary tool box.



- 3) Click the item to be copied. It is highlighted.
- 4) Select [Copy] from the [Edit] menu or click the [Copy] icon.

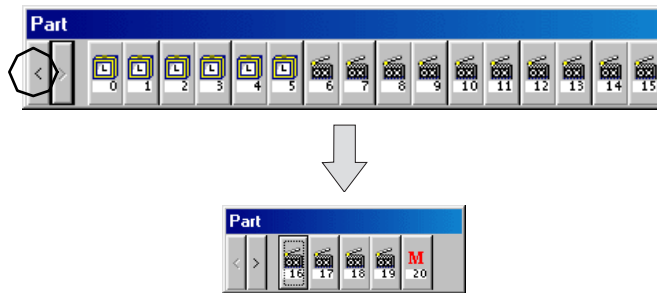


- 5) Pasting can be executed on either [Item List] or screen. Select [Paste] from the [Edit] menu or click the [Paste] icon. The copy icon appears in the [Part] auxiliary tool box.



Deletion of icons from the tool box is also executable on the [Item List] window.

- Arrow buttons in the [Part] auxiliary tool box  
 When more than 16 icons are stored in a [Part] auxiliary tool box, extra icons are hidden from view. Bring up the hidden icons using the arrow buttons.



### Tool Bar for Each Part

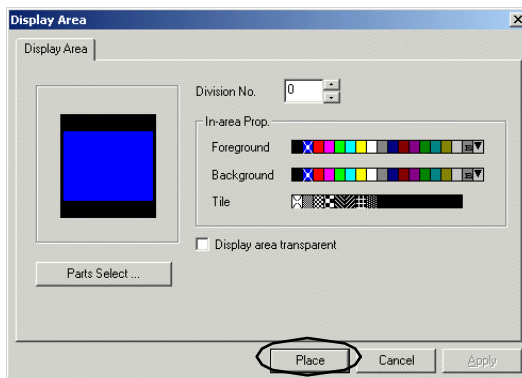
---

The relay mode tool bar contains icons in addition to [Detail]. Clicking an icon brings up the dialog for the relay mode part.



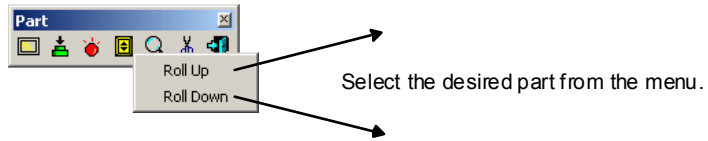
Click the [Display Area] icon (for example).

When the part already selected is OK, click the [Place] button. When selecting a different part, bring up the parts list using the [Parts Select] button and select the desired part.



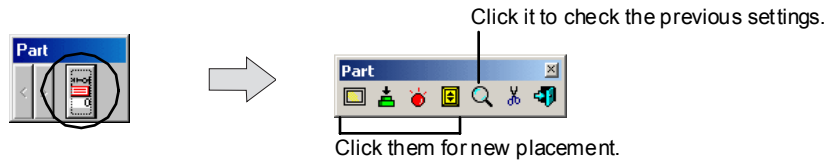
It is recommended that  [Save Setting] be checked when selecting a part. When a part is selected with this box unchecked, the relay mode settings revert to the default.

There is an icon, like the [Up/down switch] icon, that brings up a pull-down menu when it is clicked. Select the desired option from the menu. The corresponding dialog is displayed. Place a part from the dialog.



### Redisplay of Tool Bar

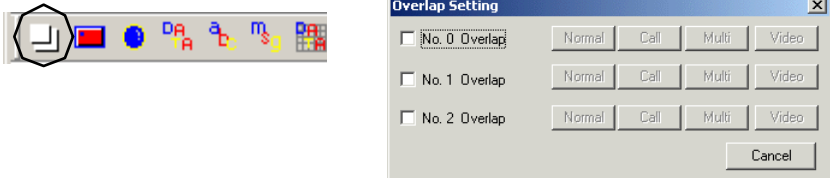
Click a registered icon in the [Part] auxiliary tool box. When the [Detail] icon is clicked, the [Relay] dialog containing the previously set data appears. The remaining icons are the same as those used for placement.



# Parts Placement and Setting

## Overlap

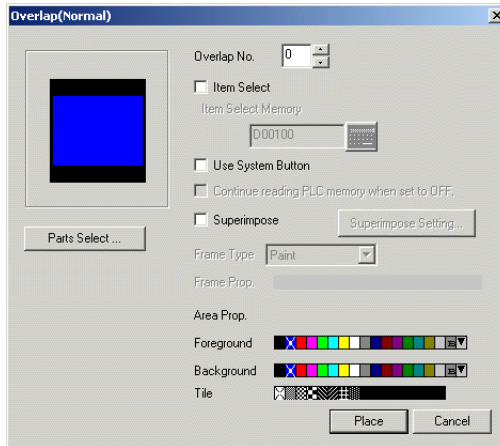
Click the [Overlap] icon. The [Overlap Setting] dialog is displayed.



Check a box as desired. The associated buttons become active.

### Normal Overlap

This section explains placing a normal overlap. It is possible to create an overlap to be displayed on one specific screen. Click the [Normal] button. The [Overlap (Normal)] dialog is displayed.



For the description of setting the dialog, see "Chapter 2 Overlap" in the ZM-71 SE Instruction Manual (Function).

Clicking the [Parts Select] button brings up the [Overlap List] window. Select the desired part and click [Select]. The previous [Overlap (Normal)] dialog is displayed. When placing the selected part on the screen, click the [Place] button.

### Overlap coordinates

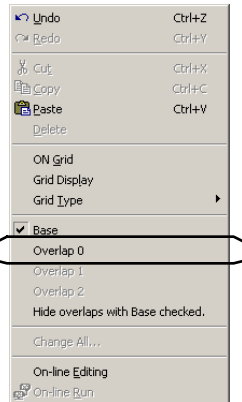
X, Y (0, 0) is the reference point. X and Y coordinates are at intervals of 4 dots and 1 dot respectively.



## Editing in Overlap

When placing items such as switch parts or graphics, change over the editing layer from the base to an overlap.

1. Right-click the mouse. The menu is displayed. Select [Overlap 0 (or 1 or 2)]. The editing layer is now changed from the base to an overlap. Icons for drawing and parts (except for overlap) become active.



2. Place desired parts or graphics on the overlap.

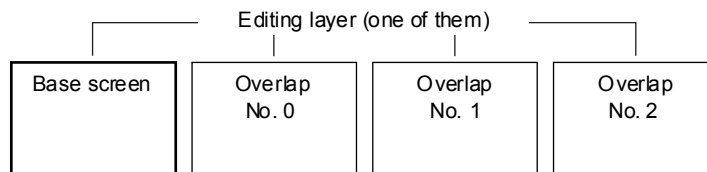


When an overlap is selected as the editing layer, the overlap cannot be moved or enlarged/reduced. To allow these operations, select [Base] from the right-click menu.



### Editing Layer

When creating a screen, the target to be edited is one of four layers consisting of the base screen, overlap No. 0, overlap No. 1, and overlap No. 2. When starting, one layer is chosen for editing. The editing layer denotes the one that is currently chosen.

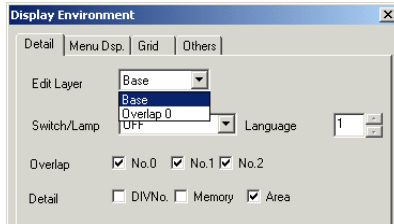




### Changeover of Editing Layer

Follow either method:

1. Right-click the mouse. Change the editing layer from the pull-down menu.
2. Select [Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed. In the [Detail] tab window, change the setting for [Edit Layer]. Choose the desired overlap number to select the layer.



Editing layer change must be executed while a normal overlap is placed on the screen.

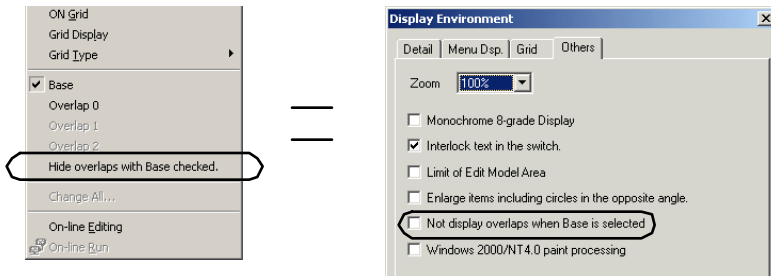


When an overlap is selected as the editing layer, the modes placed on the selected overlap are indicated in the [Part] auxiliary tool box in the lower left corner of the screen. When the editing layer is moved to the base screen, the modes on the base screen are indicated in the auxiliary tool box.



### Display/Non-display by Right-click Menu

It is possible to decide display or non-display of normal overlap on the base screen from the right-click menu. Select [Hide Overlaps with Base Checked] from the right-click menu. When the editing layer has been changed from [Overlap] to [Base], the overlap disappears. When the editing layer has been changed from [Base] to [Overlap] again, the overlap appears on the screen. (The same setting is available in the [Others] tab window to be displayed by selecting [Display Environment] from the [Display] menu.)



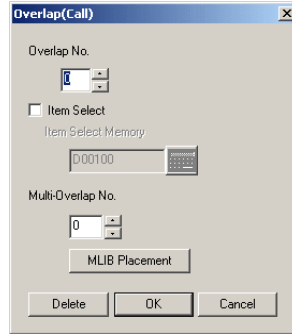
## Call-/Multi-Overlap

For a call- or multi-overlap, make settings for calling the overlap on the screen. Register both call- and multi-overlaps in multi-overlap editing.



For the overlap registering procedure, see “Chapter 4 Registration Items.”

Clicking the [Call] button brings up the [Overlap (Call)] dialog. Clicking the [Multi] button brings up the [Overlap (Multi)] dialog.

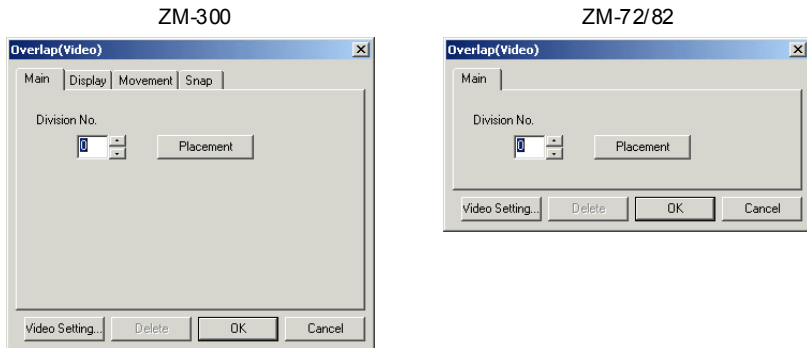


For the description of setting the dialogs, see “Chapter 2 Overlap” in the ZM-71SE Instruction Manual (Function).

By clicking [OK], the [Overlap] icon is registered in the [Part] auxiliary tool box in the lower left corner of the screen. To recheck the dialog data, click this icon.

## Video Display

Clicking the [Video] button brings up the [Overlap (Video)] dialog.



**Note:**

The ZM-300 is provided with the [Video] function to show video images. For more information, see “Chapter 18 Video Display” in the ZM-71SE Instruction Manual (Function).

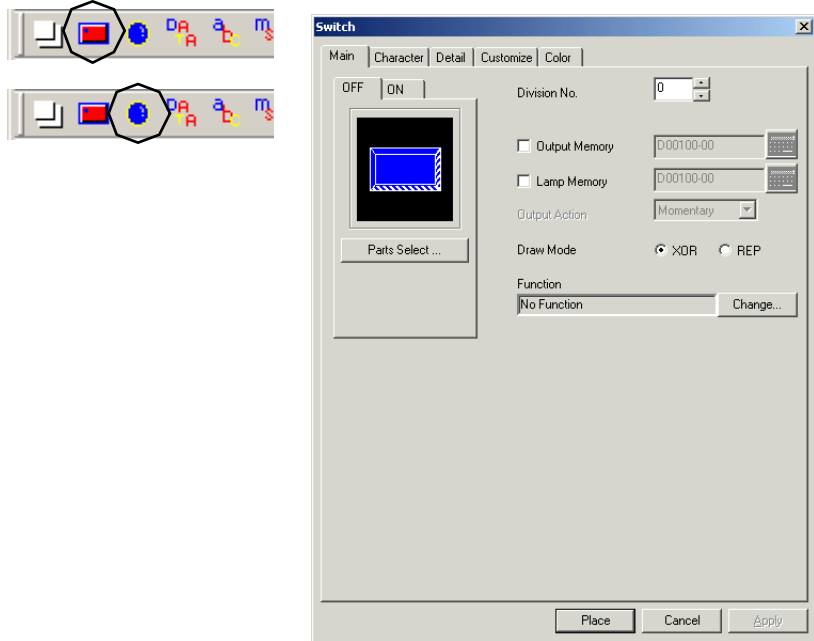


For the description of setting the dialog, see “Chapter 2 Overlap” in the ZM-71 SE Instruction Manual (Function).

By clicking [OK], the [Overlap] icon is registered in the [Part] auxiliary tool box in the lower left corner of the screen. To recheck the dialog data, click this icon.

## Switch and Lamp

Switches and lamps can be placed in the same manner. When placing switch parts, click the [Switch] icon. When placing lamp parts, click the [Lamp] icon. For more information on placing these parts, see page 2-25.



For the description of setting the dialogs, see “Chapter 3 Switch” or “Chapter 4 Lamp” in the ZM-71SE Instruction Manual (Function).

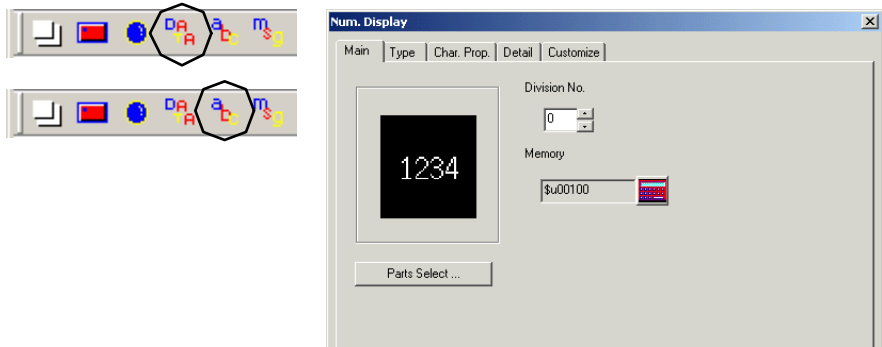
## Data Display

### Numerical Data and Character Displays

When placing numerical data display parts, click the [Num. Data Display] icon.

When placing character display parts, click the [Char. Display] icon.

The [Num. Display] or [Char. Display] dialog is displayed.



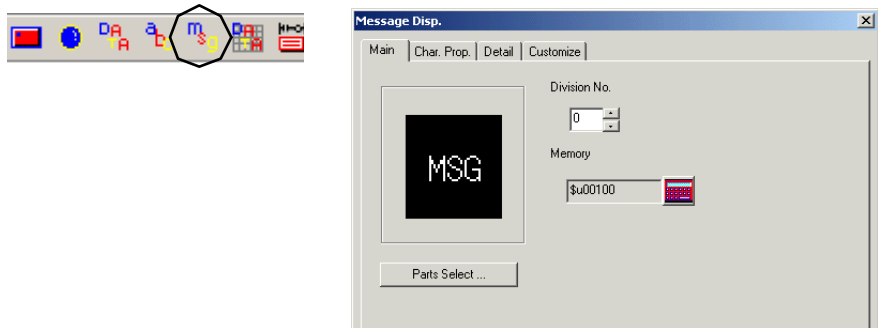
For the description of setting the dialogs, see “Chapter 5 Data Display” in the ZM-71SE Instruction Manual (Function).

Clicking the [Parts Select] button in either dialog brings up the [Num. Display List] or [Char. Display List] window. Select a part and click the [Select] button. The previous dialog is displayed.

When placing the selected part on the screen, click the [Place] button.

### Message Display

Click the [Message Display] icon. The [Message Disp.] dialog is displayed.



For the description of setting the dialogs, see “Chapter 5 Data Display” in the ZM-71SE Instruction Manual (Function).

Clicking the [Parts Select] button brings up the [Message Disp. List] window. Select a part and click the [Select] button. The previous dialog is displayed.



**Message display parts are used to display variable messages. The parts are displayed as “MSG” on the editor screen.**

When placing the selected part on the screen, click the [Place] button.



#### Message Display Parts

When placing a graphic such as a frame behind a message display part, the use of [Modify Part] (from the [Edit] menu) or the [Change the Setting of a Part Placed] icon is recommended. The background should be sized so that it can display the longest message.

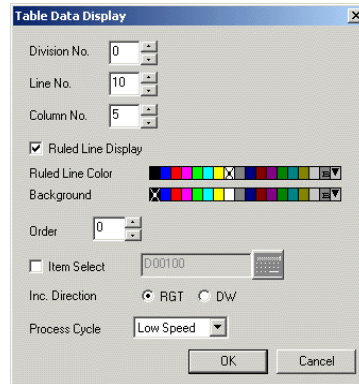


For registering a part background, see “Appendix 3 Part Editing.”

## Table Data Display Part

Table data display parts are not included in parts files. They are placed by setting the corresponding dialog.

Click the [Table Data Display] icon on the tool bar. The [Table Data Display] dialog is displayed.



For the description of setting the dialogs, see “Chapter 5 Data Display” in the ZM-71 SE Instruction Manual (Function).

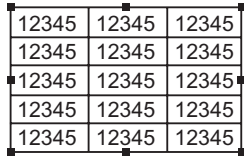
Clicking [OK] brings up a dotted box and a mover tool (cross cursor). Click it in the desired position. The table data display part is placed.



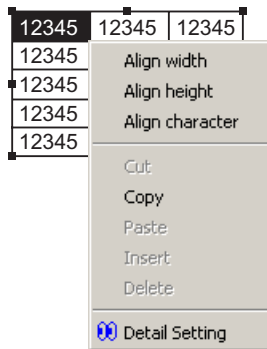
To bring up the [Table Data Display] dialog again, double-click the placed part or click the [Detail/Prop. Change] icon.

## Property Change for One Data Cell

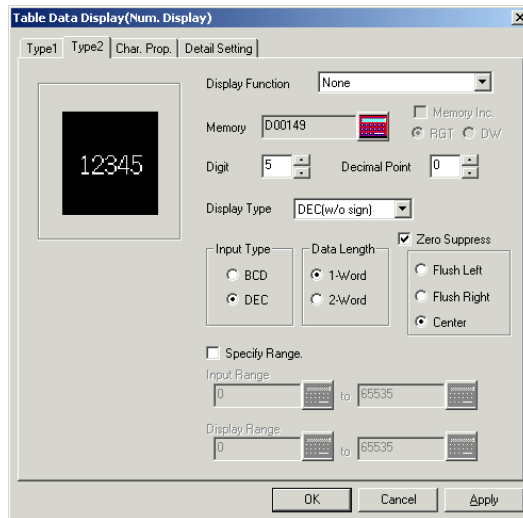
1. Click the table data display part. Handles are shown all around.



2. Right-click the mouse on a cell for property change. The cell is highlighted and the right-click menu is displayed at the same time.



3. Click [Detail Setting]. The [Table Data Display (Num. Display)] dialog is displayed.



4. Set the options in the dialog. Select a necessary data display type from numerical display, character display, message display, or text in drawing.



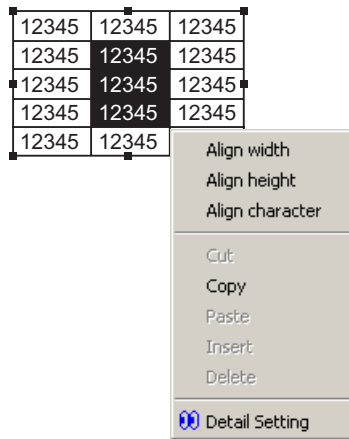
## Property Change for Multiple Data Cells

1. Click the table data display part. Handles are shown all around.

### Memo

It is also possible to bring up the [Table Data Display (xxxx)] dialog by double-clicking while the specified cells are highlighted.

2. Select two or more desired cells by right-dragging. The cells are highlighted. The right-click menu is displayed at the same time.



3. Select [Detail Setting] from the menu. The [Table Data Display (Num. Display)] dialog is displayed. When data cells of different types are selected, the [Table Data Display (xxxx)] dialog for the top left cell is displayed.


### Memo

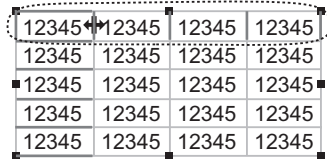
“(xxxx)” in [Table Data Display (xxxx)] indicates the type of the display part: “Num. Display,” “Char. Display,” “Message Disp.,” or “Text in Drawing.”




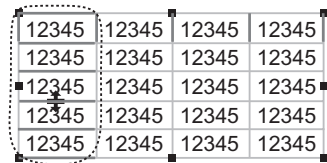
When the [Table Data Display (xxxx)] dialog has been set and [OK] is clicked, the setting is reflected through the remaining selected cells. (When [ Memory Inc.] is not checked, the previous memory address setting is maintained.)

### Change of Cell Height and Cell Width

- When changing the width of the cell, specify a demarcation line in the top line as shown below. The cursor changes into . Drag it until the cell is adjusted to the desired width.

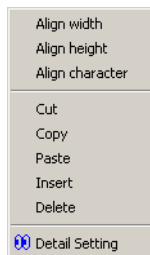


- When changing the height of the cell, specify a demarcation line in the first column as shown below. The cursor changes into . Drag it until the cell is adjusted to the desired height.



### Right-Click Menu

When cells are selected by right-clicking or right-dragging, a pop-up menu is displayed. The same menu without [Detail Setting] is displayed when [Table Data Display Editing] is selected from the [Edit] menu. (For the description of [Make Browser File] (selected from [Table Data Display Editing] in the [Edit] menu), see “Chapter 28 Web Server” in the ZM-71SE Instruction Manual (Function).)



- [Align Width]

All cells are adjusted to the width of the top left cell in the selected cells.

This width is applied to all cells.

12345	12345	12345
12345	12345	12345
12345	12345	12345
12345	12345	12345
12345	12345	12345

- [Align Height]

All cells are adjusted to the height of the top left cell in the selected cells.

This height is applied to all cells.

12345	12345	12345
12345	12345	12345
12345	12345	12345
12345	12345	12345
12345	12345	12345

- [Align Character]

Cell sizes in a table can be so adjusted that the largest data item fits into a cell. It is not necessary to specify the cell in the following manner. Specify the table data display part (handles are shown), select [Table Data Display Editing] from the [Edit] menu, and execute [Align Character].

No.	12345	12345
1	12345	12345
2	123	12345
3	12345	12345
4	12345	12345

- [Cut]

This command is used for editing lines or columns. The function is the same as that of [Cut] in the [Edit] menu.

- [Copy]

The function of this command is the same as that of [Copy] in the [Edit] menu. [Paste] becomes active after copy.

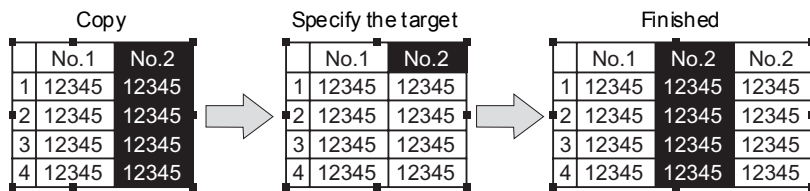
- [Paste]

The function of this command is the same as that of [Paste] in the [Edit] menu. When multiple columns or lines are pasted, the cell designated as the target is placed at the top of the pasted data. A data area larger than the table cannot be pasted.

- [Insert]  
This command is used for editing lines or columns. When lines are copied or cut (selected lines are highlighted), they are inserted above the designated target. When columns are copied or cut, they are inserted on the left of the designated target.
- [Delete]  
This command is used for editing lines or columns. The function is the same as that of [Delete] in the [Edit] menu.
- [Detail Setting]  
The dialog for table data display property change is displayed.

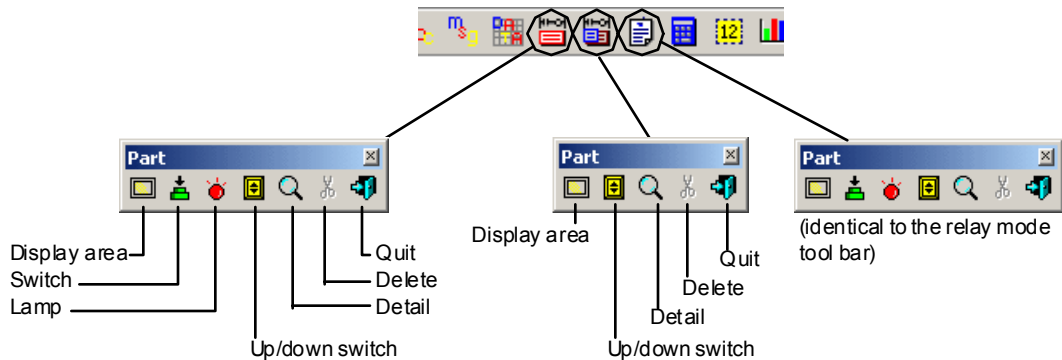


The [Cut], [Insert], and [Delete] commands are used for editing lines or columns.  
Ex.: Insert



## Relay, Relay-Sub, and Message Modes

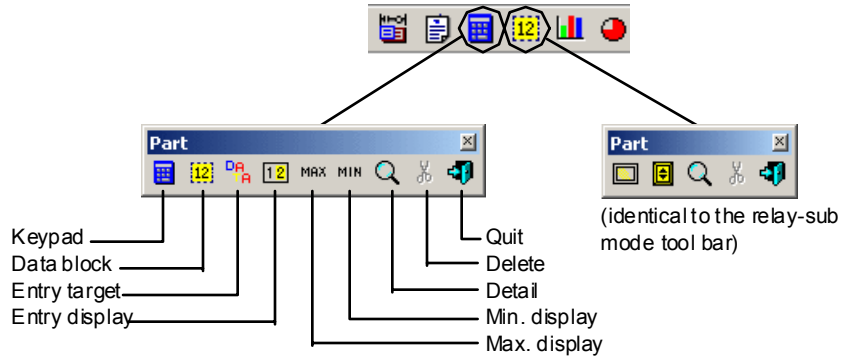
Clicking the [Relay Mode], [Relay-sub Mode], or [Message Mode] icon brings up the following corresponding tool bar.



For the setting procedure using the tool bar to be displayed by clicking an icon, see page 2-28. For the description of setting the dialogs, see "Chapter 6 Message Display" in the ZM-71SE Instruction Manual (Function).

## Entry Mode and Data Block Area

Clicking the [Entry Mode] or [Data Block Area] icon brings up the following corresponding tool bar.



For the setting procedure using the tool bar to be displayed by clicking an icon, see page 2-28. For the description of setting the dialogs, see "Chapter 7 Entry Mode" in the ZM-7 1SE Instruction Manual (Function).

---

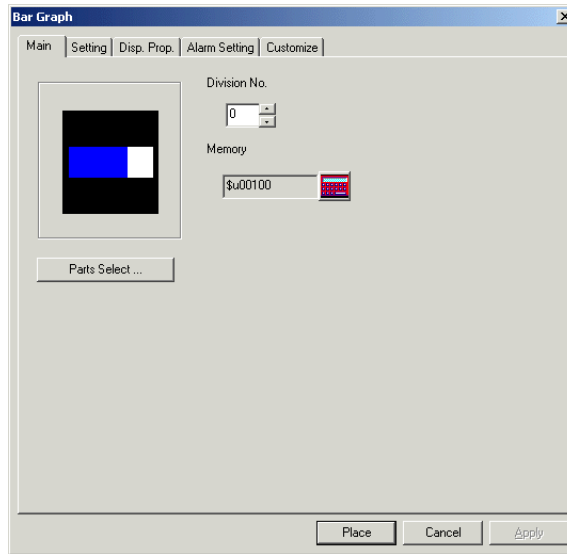
## Bar Graph, Pie Graph, Panel Meter, and Closed Area Graph

---

Click the desired graph icon.



The graph dialog is displayed.



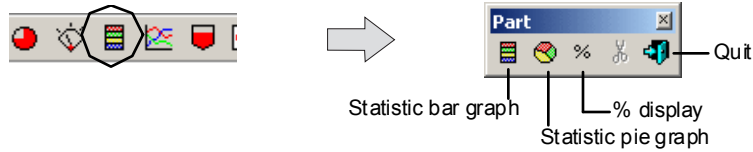
For the description of setting the dialogs, see “Chapter 8 Graph Display” in the ZM-71SE Instruction Manual (Function).

Clicking the [Parts Select] button brings up the parts list. Select the desired part and click [Select]. The previous dialog is displayed.

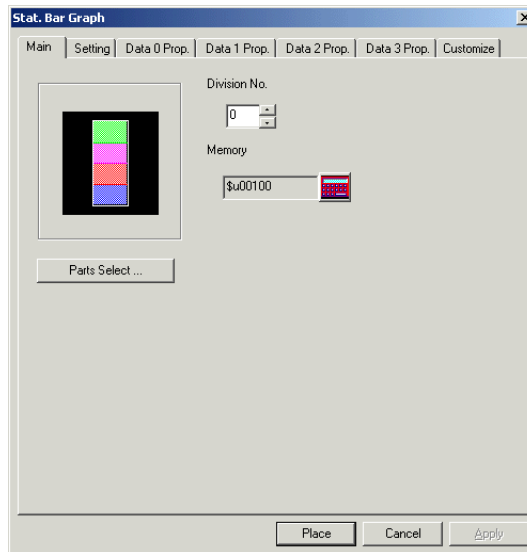
When placing the selected part on the screen, click the [Place] button.

## Statistic Graph

Clicking the [Stat. Graph] icon brings up the following tool bar.



Click either [Stat. Bar Graph] or [Stat. Pie Graph] icon. The corresponding dialog is displayed.



Clicking the [% Display] icon brings up a numerical data display part dialog. To establish a link between numerical data display part and statistic graph, specify the same division number for them.



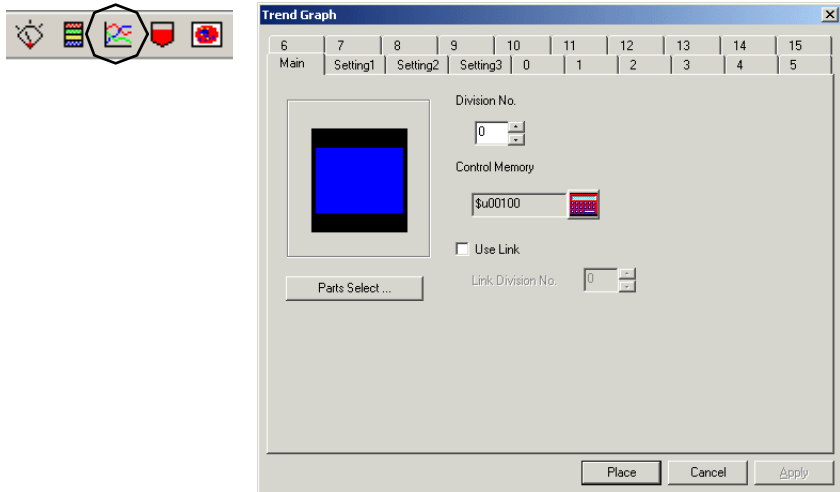
For the description of setting the dialogs, see “Chapter 8 Graph Display” in the ZM-71SE Instruction Manual (Function).

Clicking the [Parts Select] button brings up the parts list. Select the desired part and click [Select]. The previous dialog is displayed.

When placing the selected part on the screen, click the [Place] button.

## Trend Graph

Clicking the [Trend Graph] icon brings up the [Trend Graph] dialog.



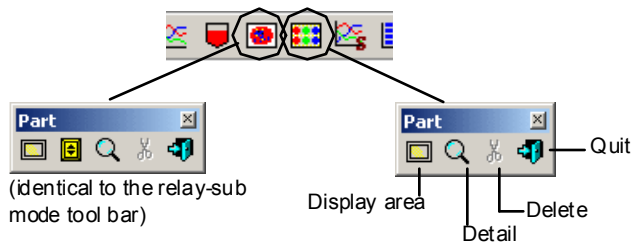
For the description of setting the dialogs, see “Chapter 8 Graph Display” in the ZM-71SE Instruction Manual (Function).

Clicking the [Parts Select] button brings up the parts list. Select the desired part and click [Select]. The previous dialog is displayed.

When placing the selected part on the screen, click the [Place] button.

## Graphic Mode and Graphic Relay Mode

Clicking the [Graphic Mode] or [Graphic Relay Mode] icon brings up the corresponding tool bar.

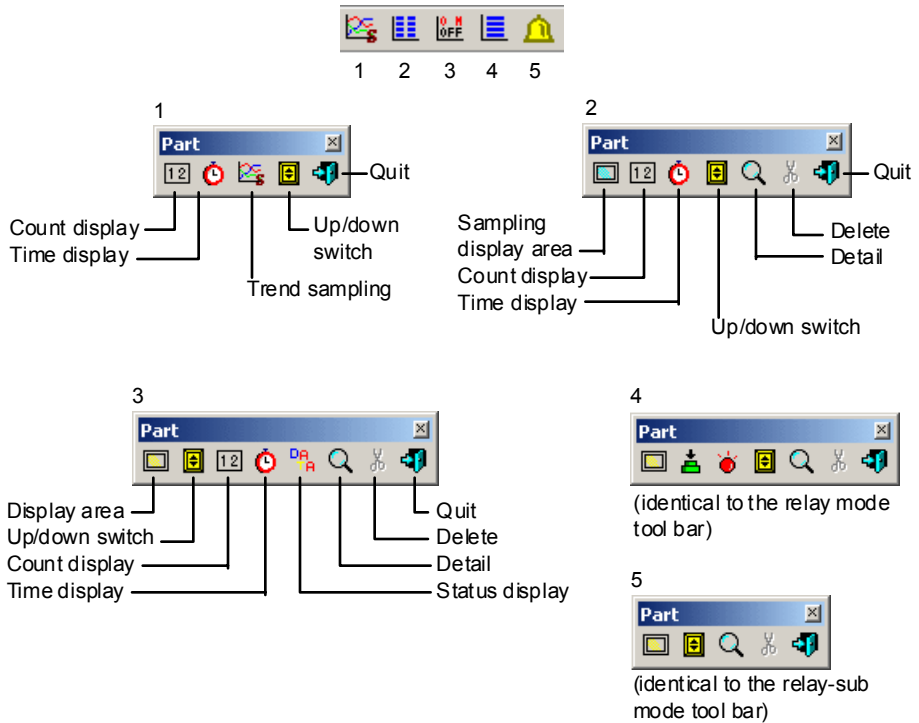


For the setting procedure using the tool bar to be displayed by clicking an icon, see page 2-28. For the description of setting the dialogs, see “Chapter 9 Graphic Display” in the ZM-71SE Instruction Manual (Function).



## Sampling

Clicking a sampling icon brings up its tool bar as the following.



Clicking the [Trend Sampling] icon allows a trend sampling part placement. To establish a link between a trend sampling part and other parts (like switch or data display parts) available with the part, give the same division number to them.

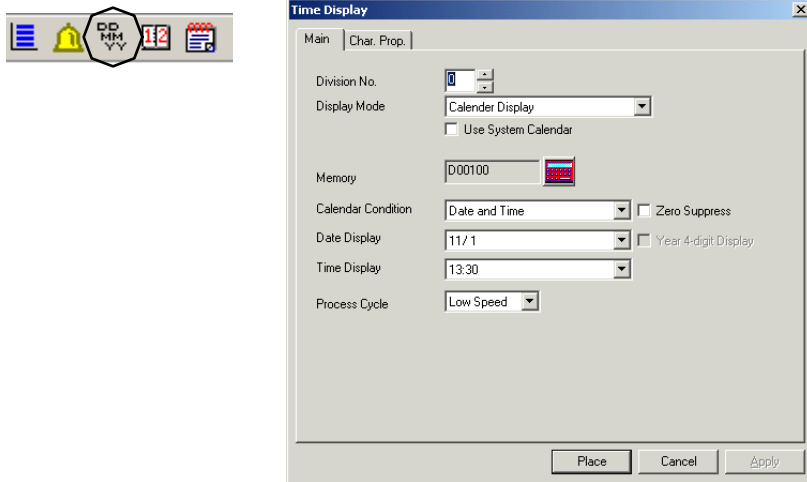
For the sampling icons other than trend sampling, their tool bars contain [Detail] icons respectively.



For the setting procedure using the tool bar to be displayed by clicking an icon, see page 2-28. For the description of setting the dialogs, see "Chapter 10 Sampling" in the ZM-71SE Instruction Manual (Function).

## Time Display

Clicking the [Time Display] icon brings up the [Time Display] dialog.

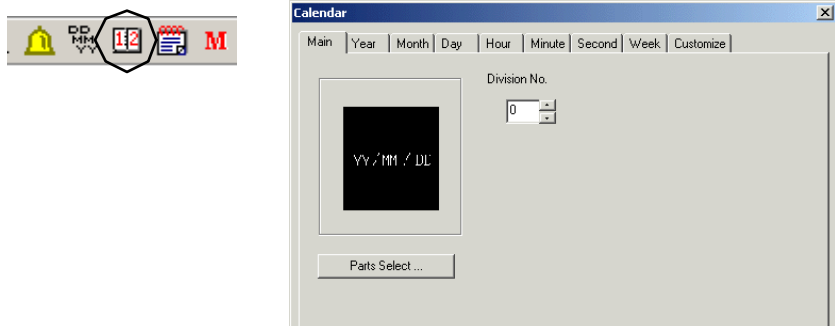


For the description of setting the dialog, see “Chapter 11 Time Display/Calendar” in the ZM-71SE Instruction Manual (Function).

When placing the selected part on the screen, click the [Place] button.

## Calendar Display

Clicking the [Calendar Display] icon brings up the [Calendar] dialog.



For the description of setting the dialog, see “Chapter 11 Time Display/Calendar” in the ZM-71SE Instruction Manual (Function).

Clicking the [Parts Select] button brings up the parts list. Select the desired part and click [Select]. The previous dialog is displayed.

When placing the selected part on the screen, click the [Place] button.



### Note on selecting parts

Calendar parts consist of parts like “hour, minute, and second,” “year, month, and day,” and also parts with punctuation marks like “:” and “-.” If you check [ Save Setting] in the calendar parts list window and then proceed to select parts, there are instances of the selected parts being placed on the screen in a disrupted condition. To avoid disrupting the shape of the parts that are placed on the screen, it is recommended that you do not check [ Save Setting] in the calendar parts list window.



### How to Alter a Calendar Part:

To delete one portion of a calendar part “YY MM DD hh mm ss SUN,” refer to the example below.

Ex.: To delete day of the week

1. Go to the [Week] tab window in the [Calendar] dialog and uncheck [Display].  
 Display →  Display

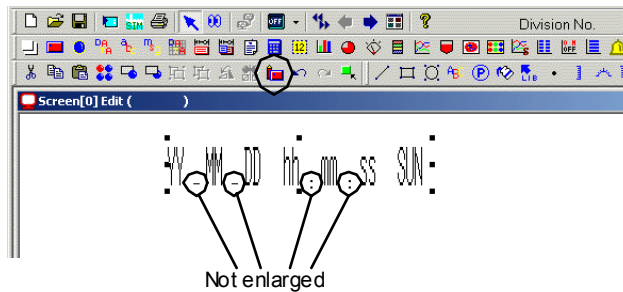
Note that if you select “SUN” (day-of-the-week display) (handles are displayed) and select [Delete] from the [Edit] menu, the calendar part is deleted.

2. Even if you delete the day-of-the-week display, its area and punctuation marks will remain intact. Use the [Change the Setting of a Part Placed] icon to standardize the areas or delete punctuation like “( ).”



### How to Enlarge a Calendar Part:

Click a calendar part and drag the handles. “YY MM DD hh mm ss SUN” are enlarged, but the punctuation marks (“:” and “/” for example) are not. To enlarge punctuation marks, use the [Change the Setting of a Part Placed] icon.



## Memo Pad

Clicking the [Memo Pad] icon brings up the following tool bar.



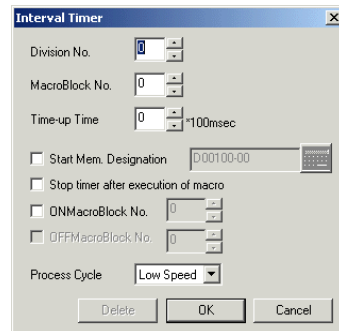
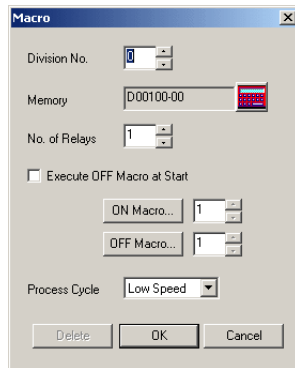
(identical to the relay-sub mode tool bar)

For the setting procedure using the tool bar to be displayed by clicking an icon, see page 2-28. For the description of setting the dialogs, see “Chapter 12 Memo Pad” in the ZM-71SE Instruction Manual (Function).

## Macro and Interval Timer



Clicking the [Macro Mode] icon brings up the [Macro] dialog. Clicking the [Interval Timer] icon brings up the [Interval Timer] dialog.



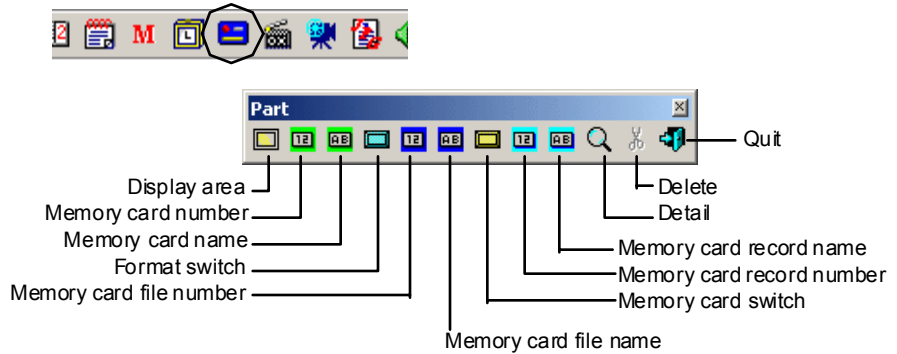
For the description of setting the dialogs, see “Chapter 13 Macro” in the ZM-71SE Instruction Manual (Function).

When the dialog setting is concluded, the dialog icon is shown in the [Part] auxiliary tool box in the lower left corner of the screen. (To bring up the dialog again, click the icon.)



## Memory Card

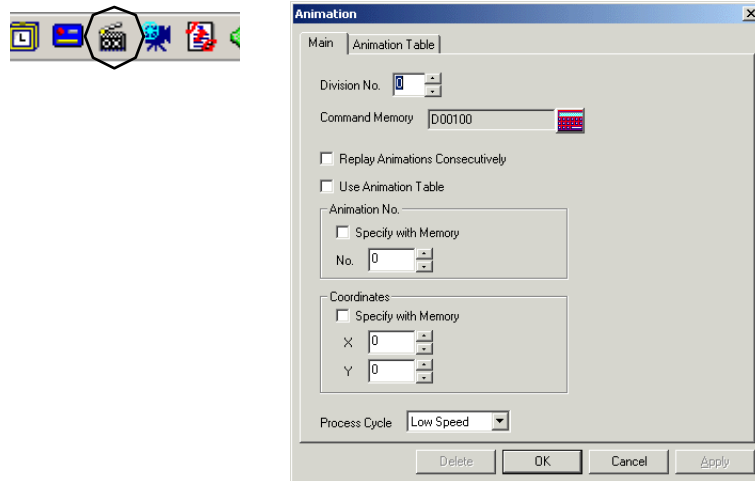
Clicking the [Memory Card Mode] icon brings up the following tool bar.



For the setting procedure using the tool bar to be displayed by clicking an icon, see page 2-28. For the description of setting the dialogs, see “Chapter 25 Memory Card Mode” in the ZM-71SE Instruction Manual (Function).

## Animation

Clicking the [Animation] icon brings up the [Animation] dialog.



For the description of setting the dialog, see “Chapter 17 Animation” in the ZM-71SE Instruction Manual (Function).

When the dialog setting is concluded, the dialog icon is shown in the [Part] auxiliary tool box in the lower left corner of the screen. (To bring up the dialog again, click the icon.)



---

## Video

---

Clicking the [Video] icon brings up the following tool bar.



For the setting procedure using the tool bar to be displayed by clicking an icon, see page 2-28. For the description of setting the dialogs, see “Chapter 18 Video Display” in the ZM-71SE Instruction Manual (Function).

---

## JPEG Display

---

Clicking the [JPEG Display] icon brings up the following tool bar.



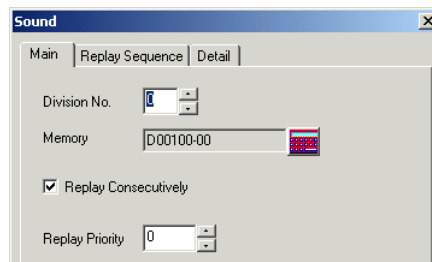
For the setting procedure using the tool bar to be displayed by clicking an icon, see page 2-28. For the description of setting the dialogs, see “Chapter 19 JPEG Display” in the ZM-71SE Instruction Manual (Function).

---

## Sound

---

Clicking the [Sound] icon brings up the [Sound] dialog.



For the description of setting the dialogs, see “Chapter 20 Sound Replay” in the ZM-71SE Instruction Manual (Function).

When the dialog setting is concluded, the dialog icon is shown in the [Part] auxiliary tool box in the lower left corner of the screen. (To bring up the dialog again, click the icon.)



## Color Types and Settings

This section explains the color types available with the LCD control terminal models and their setting procedure.

### Color Types

Available color types differ, depending on the models of ZM series.

Model	32,000-color	128-color	16-color	Monochrome	(Blinking)
ZM-381SA/382SA	○	–	–	–	16 colors only
ZM-381S/382S	○	–	–	–	16 colors only
ZM-371SA/372SA	○	–	–	–	16 colors only
ZM-371S/372S	○	–	–	–	16 colors only
ZM-371TA/372TA	○	–	–	–	16 colors only
ZM-371T/372T	○	–	–	–	16 colors only
ZM-362SA	○	–	–	–	16 colors only
ZM-362S	○	–	–	–	16 colors only
ZM-352D	×	○	–	–	16 colors only
ZM-82T/82TC/82TV/82TVC	×	○	–	–	16 colors only
ZM-42TS/72TSC/72TSV/72TSVC	×	○	–	–	16 colors only
ZM-72T/72TC/72TV/72TVC	×	○	–	–	16 colors only
ZM-72D	×	○	–	–	16 colors only
ZM-52D	×	○	–	–	16 colors only
ZM-42D	×	×	○	–	16 colors
ZM-42L	×	×	×	8-gradation	8 colors
ZM-43T	×	×	○	–	16 colors
ZM-43D	×	×	○	–	16 colors
ZM-43L	×	×	×	8-gradation	8 colors
ZM-42HD	×	○	–	–	16 colors only
ZM-62E	×	×	×	2 colors	2 colors

○: Available

×: Unavailable

–: Not applicable

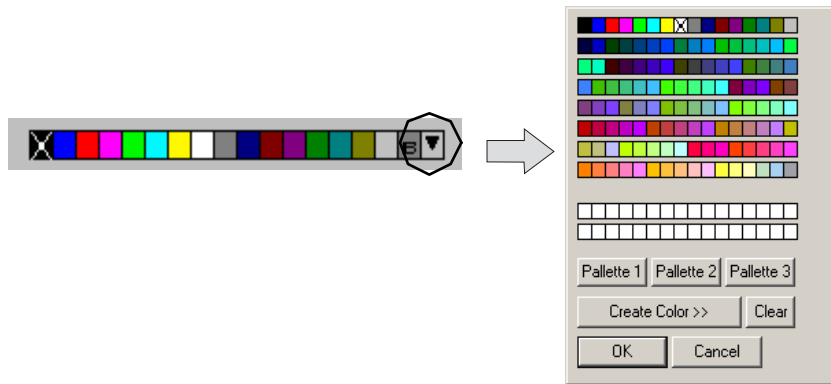
Color setting procedure varies with the color types. Refer to the following pages for more information.

## 32,000-color Type

The color pallet shows the basic 16 colors as default.



When selecting a color other than the sixteen, click the far-right button [▼] on the pallet. The following dialog is displayed.



[Palette 1]

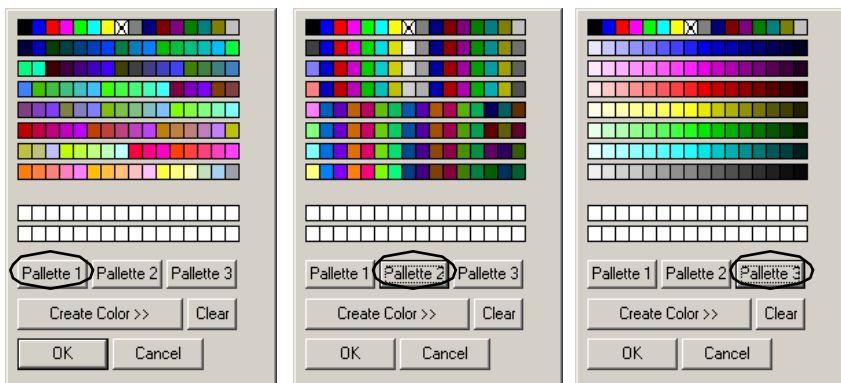
Shows the 128-color pallet for the ZM-52 to 82 series.

[Palette 2]

Shows the 3D parts color pallet for the ZM-42 to 82 series.

[Palette 3]

Shows the default color pallet (128-color type only) for the ZM-300 series.



Palet 1

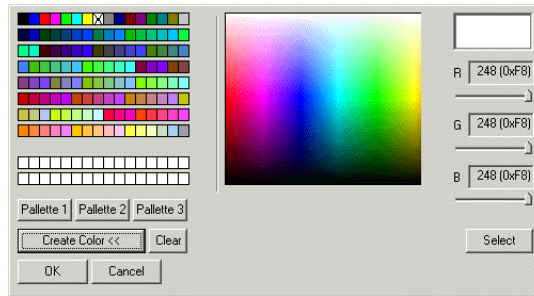
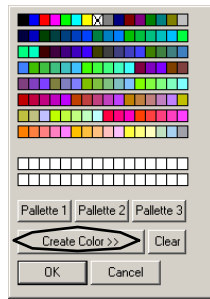
Palet 2

Palet 3



**[Create Color]**

Clicking this button brings up the following dialog.

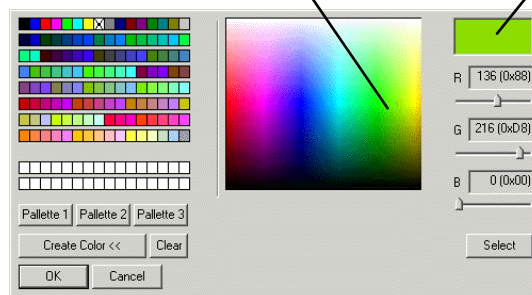


In this dialog, a maximum of 32 colors in addition to the provided three palettes can be registered as desired with the steps below.

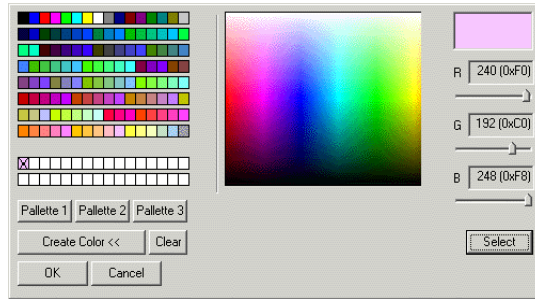
1. In the dialog displayed by the [Create Color] button, click anywhere within the provided color area. The color of the clicked point appears in the top right box. Repeat clicking or move the scroll bars until the color in the box becomes your desired color.

Click around this point.

The color of the clicked point appears.



- When your desired color is shown, click the [Select] button. The color appears in the top left position.

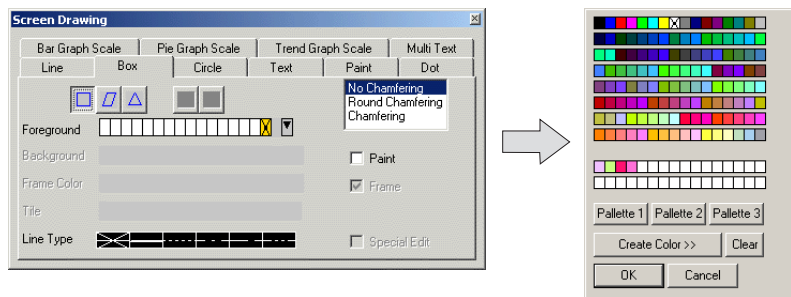


To go back to the previous color pallet, click [OK].

When registering a different color next, select its registration position in the pallet by clicking in advance. If no position is selected, the top left position is overwritten by the next color registration.

### Notes on Color Creation

- Registered colors as desired (up to 32 colors) are stored in the screen data file when the file is saved. Each time the file is opened, the registered colors for the file are displayed.
- In the case of data copy by means of the file management function (Chapter 7 Useful Techniques) between screen data files containing different registered colors, the registered colors in the copy source file is not displayed on the color pallet in the target file, but is displayed outside the pallet.



Colors in the copy source file that are not registered in the copy target file are displayed in the [Prop. Change] dialog in the target file.

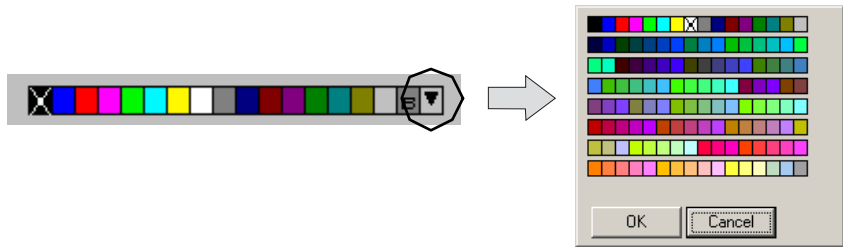
Not registered in the pallet

## 128-color Type

The color pallet shows the basic 16 colors as default.



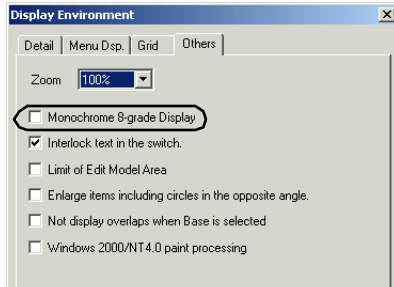
When selecting a color other than the sixteen, click the far-right button [▼] on the pallet. The following dialog is displayed.



Click the desired color and click [OK]. The line including the clicked color is displayed. The color is marked with [x].

## Monochrome Type

Monochrome display is not available as default. Select [Display Environment] or [Change All Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed. Open the [Others] tab window.



Check the box of  Monochrome 8-grade Display and click [OK]. Now monochrome display is valid.

ZM-42/43



ZM-62E



### Colors Displayed on the Editor Software and the ZM

In the monochrome type, there may be slight differences between colors shown in 8- or 2-gradation colors on the editor software and colors displayed on the ZM. Displayed colors will also vary, depending on the option: [Norm.] (default) or [Reversed Image] selected for [Display] in the [Backlight] tab window in the [Unit Setting] dialog selected from the [System Setting] menu. Refer to the following table for details.

Model	Display place	[System Setting] → [Unit Setting] → [Backlight] tab window	
		[Display: Norm.]	[Display: Reversed Image]
ZM-42L	Editor		
	LCD control terminal		
ZM-43L	Editor		
	LCD control terminal		
ZM-62E	Editor		
	LCD control terminal		

## Blinking Setting

Colors available for blinking are limited. For the color display, the basic 16 colors can be used for blinking. For the monochrome display, blinking is available in 8-gradation or 2-gradation colors.

### Blinking Setting Procedure

1. Bring up the color pallet. The [B] button is placed at the far right of the basic 16-color or monochrome pallet.



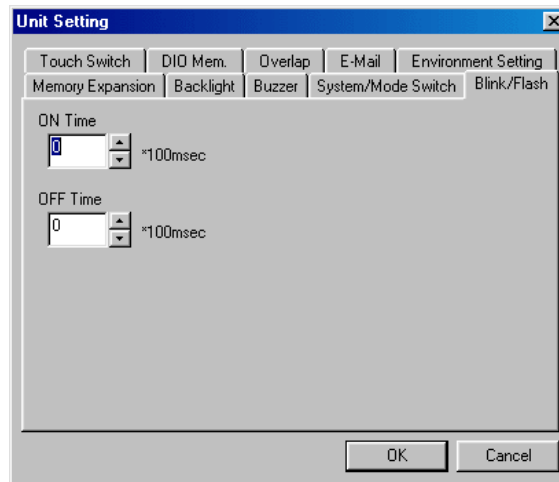
2. Click the [B] button. It is marked with [x]. Blinking display is now enabled.



### Blinking Time Setting

It is possible to change the blinking interval. Set the items as described below.

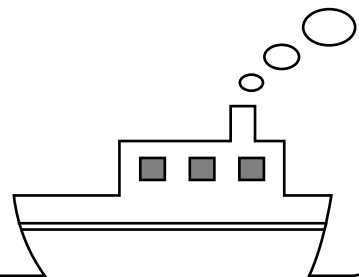
1. Select [Unit Setting] from the [System Setting] menu. The [Unit Setting] dialog is displayed.
2. Open the [Blink/Flash] tab window. Set [OFF Time] and [ON Time].



The specified blinking time is valid as a common setting in the screen data file. It is not allowed to specify different times as individual blinking settings.

# MEMO

Please use this page freely.



# Chapter 3 Drawing Tools

Tools.....	3-1
Basic Operations.....	3-2
[Screen Drawing] Dialog .....	3-2
Selecting Colors.....	3-3
Selecting Tiles .....	3-3
Selecting Line Styles .....	3-4
Drawing Methods.....	3-5
Line .....	3-5
Box .....	3-7
Circle.....	3-12
Text.....	3-18
Pattern .....	3-23
Paint.....	3-26
Graphic Call .....	3-27
Dot .....	3-29
Bar Graph Scale .....	3-29
Pie Graph Scale.....	3-31
Trend Graph Scale .....	3-33
Multi-text .....	3-35
Screen LIB .....	3-37


















# Tools

The tools with the following functions are provided:



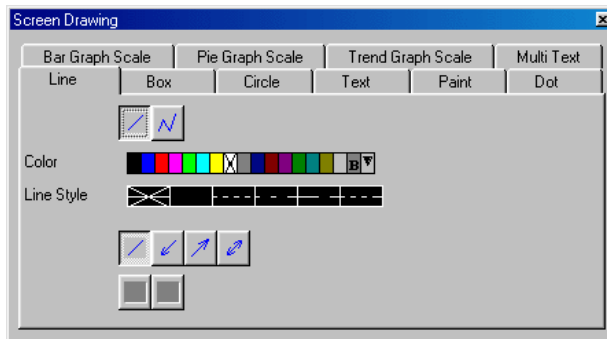
Icon	Item	Contents	Ref.
	Line	Draws straight lines, continuous lines and arrows.	Page 3-5
	Box	Draws boxes, parallelograms and polygons.	Page 3-7
	Circle	Draws circles, arcs, sectors, ellipses, elliptical arcs and elliptical sectors.	Page 3-12
	Text	Produces text.	Page 3-18
	Pattern	Places patterns.	Page 3-23
	Paint	Paints the enclosed area.	Page 3-26
	Graphic call	Places graphics registered in the graphic library.	Page 3-27
	Dot	Draws dots.	Page 3-29
	Bar graph scale	Draws bar graph scales.	Page 3-29
	Pie graph scale	Draws pie graph scales.	Page 3-31
	Trend graph scale	Draws trend graph scales.	Page 3-33
	Multi-text	Produces text in multiple lines.	Page 3-35
	Screen LIB	Places a screen LIB mark.	Page 3-37

# Basic Operations

Clicking a drawing tool icon brings up the dialog for drawing. In this section, basic operations on the [Screen Drawing] dialog are explained.

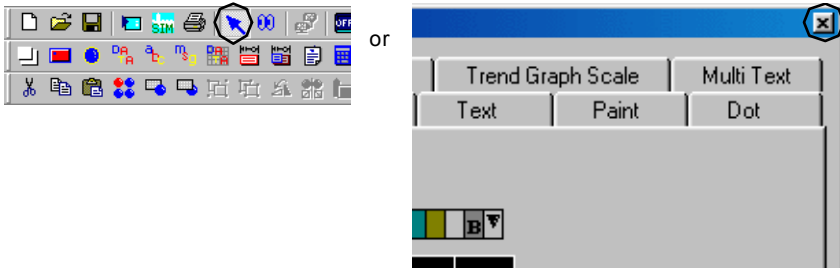
## [Screen Drawing] Dialog

For example, when you click the [Line] icon, the following [Screen Drawing] dialog is displayed.



## Erasing the Dialog

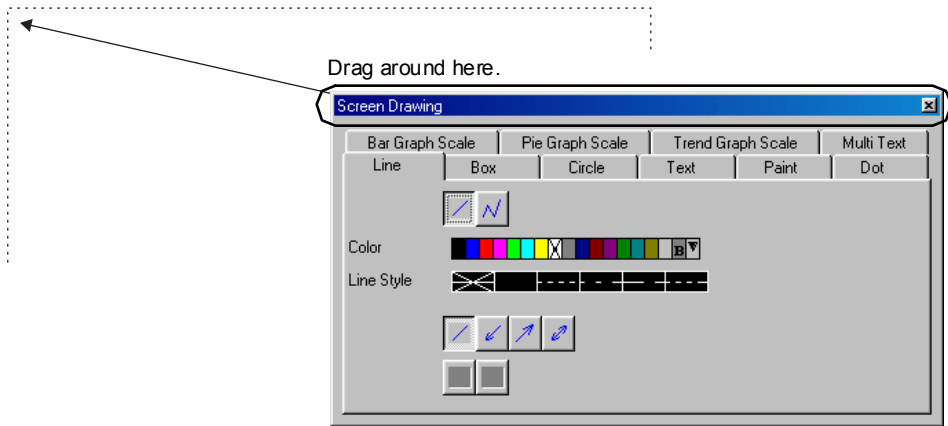
The “draw” mode is in effect while the dialog is on the screen. The mouse turns a cross-shaped cursor. To cancel the draw mode, erase the [Screen Drawing] dialog. To erase the [Screen Drawing] dialog, click the [Select] icon in the icon bar or click the [Close] button on the [Screen Drawing] dialog.



If you drag the cursor over the dialog during drawing, the dialog is temporarily erased and is displayed on completion of mouse dragging.

## Moving the Dialog

Dragging the title of the [Screen Drawing] dialog moves the dialog to the desired position.



## Selecting Colors

The procedure of color selection is the same as that used for parts. For more information, see "Chapter 2 Screens."

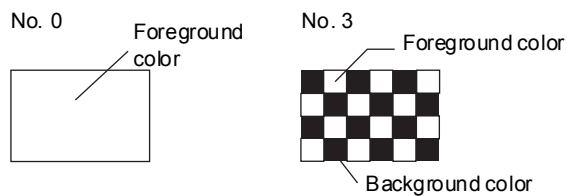
## Selecting Tiles



Tiles can be selected when painting boxes or circles.

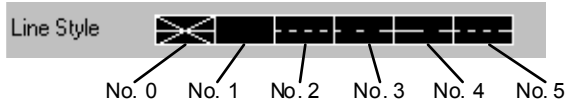
A maximum of 16 tiles can be used. Eight tiles are registered as default. You can register additional eight tiles as required. For the procedure of registering user-defined tiles, see "Chapter 4 Registration Items."




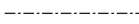
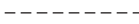
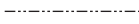
When tile No. 0 is selected, the area is painted in the color set for [Foreground]. When a tile other than No. 0 is selected, the area is painted in the colors set for [Foreground] and [Background].



## Selecting Line Styles

Line styles can be selected for lines, boxes and circles. There are six line styles available.



No. 0	Solid line	
No. 1	Thick line	
No. 2	Dotted line	
No. 3	Chain line	
No. 4	Dashed line	
No. 5	Two-dot chain line	

### Limitations on Line Styles

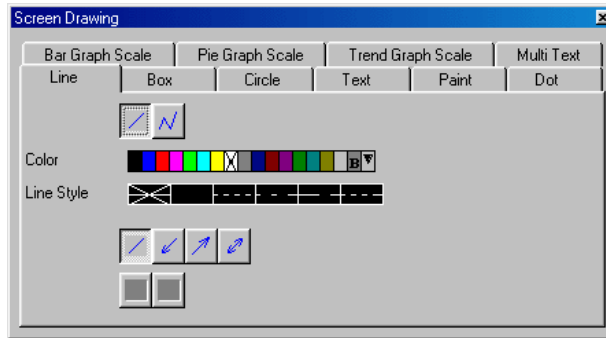
- Line No. 1 (thick line) cannot be used for the following items.  
Continuous lines, chamfered boxes, parallelograms, polygons, circles (of all kinds)
- Chamfered boxes can only be drawn with solid lines.

# Drawing Methods

Drawing methods of items are explained.

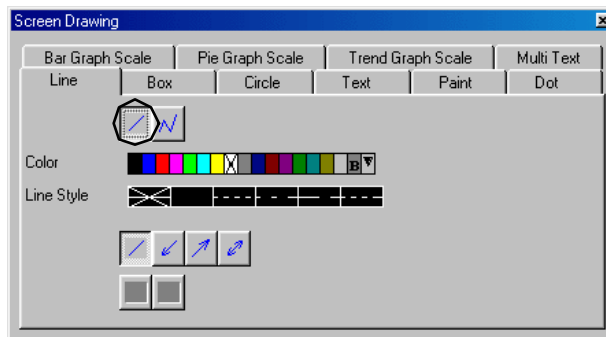
## Line

Clicking the [Line] icon brings up the [Screen Drawing] dialog shown below.

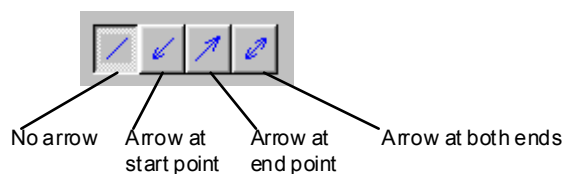


### Single Line

1. Click the [Single Line] icon in the [Screen Drawing] dialog. Select the desired options for [Color] and [Line Style] as well as the arrow type.



Straight lines can be equipped with arrowheads. Available arrow types are shown below.



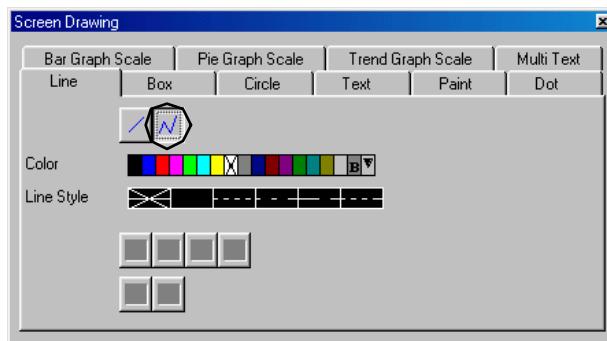
2. Drag the mouse from the start point to the end point. A line is drawn.



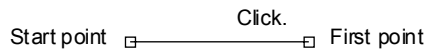
When you drag the mouse while holding down the SHIFT key, it is possible to draw a horizontal (or vertical) line.

## Continuous Line

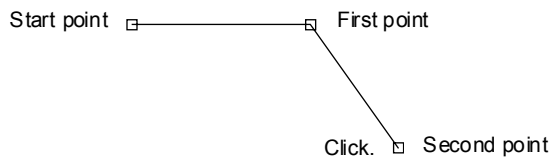
1. Click the [Continuous Line] icon in the [Screen Drawing] dialog. Select the desired options for [Color] and [Line Style].



2. Click at the start point. Then click at the first point. The first line is drawn.

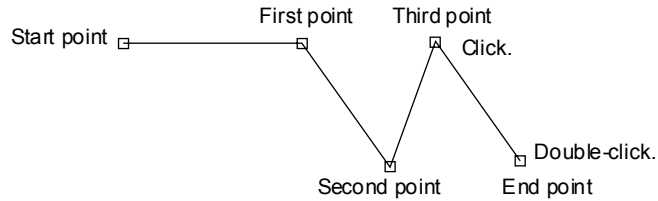


3. In the same manner, move the mouse to the desired point and click.



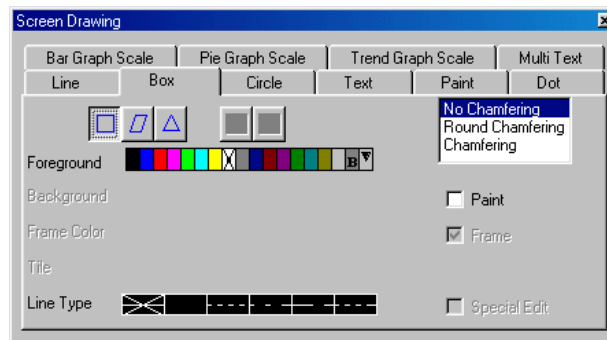
To erase the line you have drawn, click the right mouse button.

- At the end point, double-click the mouse button. The continuous line is terminated.



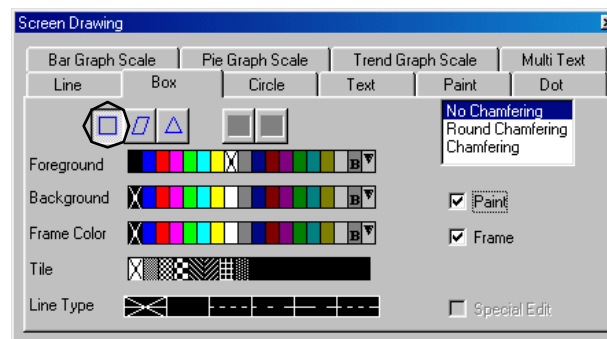
## Box

Clicking the [Box] icon brings up the [Screen Drawing] dialog shown below.



## Rectangle

- Click the [Rectangle] icon in the [Screen Drawing] dialog. Select the desired options for [Paint], [Foreground], [Background], [Tile] and [Line Type].



When  [Paint] is checked,  [Frame] becomes active. It is possible to select whether or not to draw the frame of the painted box. When this option is checked, [Frame Color] can be selected.

[Paint]



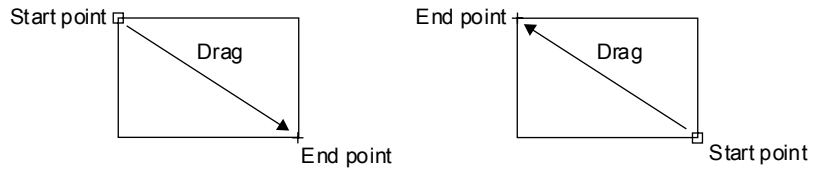
[Paint]  
 [Frame]



[Paint]  
 [Frame]



2. A rectangle is drawn when dragging from the start point to the end point.

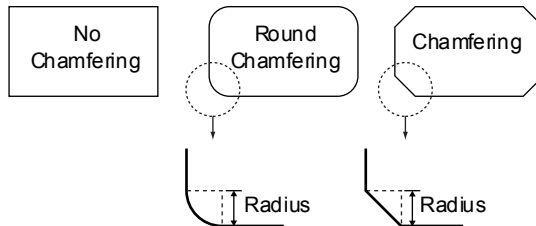


A rectangle can be drawn from any corner.

### Chamfered Box

---

Only for rectangles, “chamfered box” can be selected. [Round Chamfering] or [Chamfering] can be selected and [Radius] (in dots) should be specified.



Select either [Round Chamfering] or [Chamfering] before drawing the rectangle.



When a chamfered box is selected, line type selection is not possible. All the lines are drawn in solid lines. When [Chamfering] is selected, [ Frame] becomes active. However, when [Round Chamfering] is selected, it is automatically framed and the frame setting is not possible.

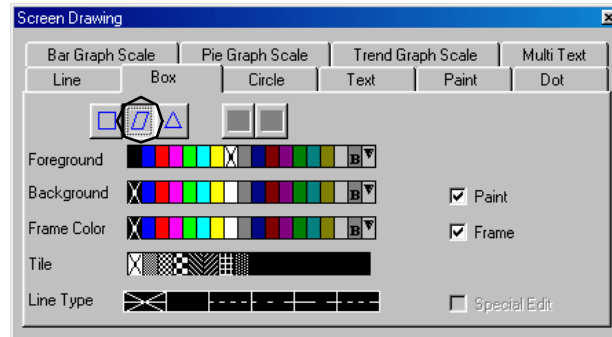


When [ Paint] is checked for a round-chamfered box, XOR cannot be used. (For example, if a round-chamfered box with [ Paint] is brought up in graphic-relay mode, the paint is not displayed on the screen.) For more information on XOR effects, see “Chapter 9 Graphic Display” in the ZM-71SE Instruction Manual (Function).



## Parallelogram

- Click the [Parallelogram] icon in the [Screen Drawing] dialog. Select the desired options for [ Paint], [Foreground], [Background], [Tile] and [Line Type].



When [ Paint] is checked, [ Frame] becomes active. It is possible to select whether or not to draw the frame of the painted box. When this option is checked, [Frame Color] can be selected.

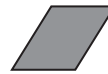
[ Paint]




[ Paint]  
[ Frame]



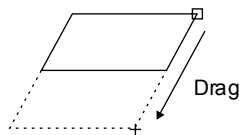
[ Paint]  
[ Frame]



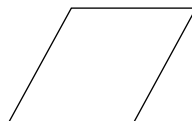
- Drag the mouse from the start point to the end point of the upper side.

Start point  Drag → End point

- Drag from the end point of the upper side to the corresponding point of the lower side.

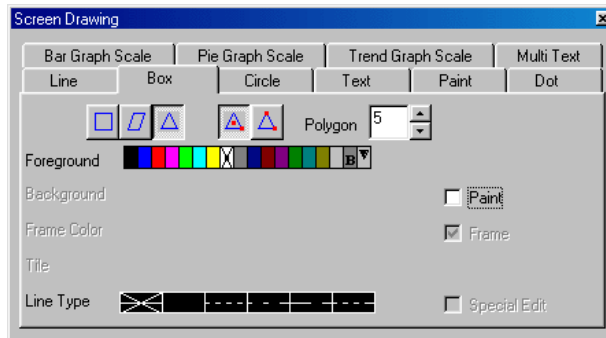


- Clicking draws the parallelogram.





## Polygon

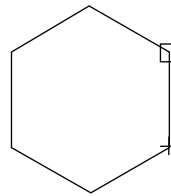
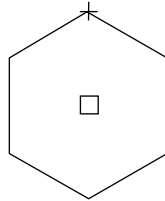
1. Click the [Polygon] icon in the [Screen Drawing] dialog. The following dialog is displayed.





Select the draw type.

 Drag from the center to a corner.

 Drag from the start point to the end point of one side.



: Start point  
: End point

Select the desired options for [Polygon], [ Paint], [ Frame], [Foreground], [Background], [Frame Color], [Title] and [Line Type].

2. Drag from the start point to the end point. The specified polygon is drawn.

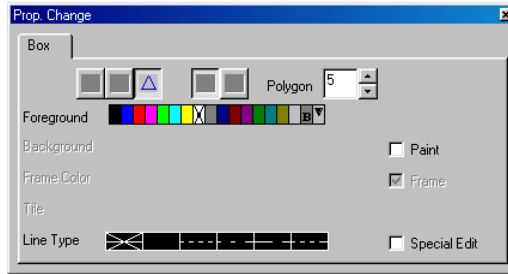


Special Edit]

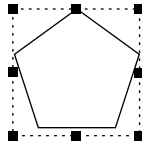
This option cannot be selected as default. When a polygon has been placed, double-click it, or click it and then click the [Detail/Prop. Change] icon. The [Prop. Change] dialog is displayed.  Special Edit] becomes active then.

When  Special Edit] is unchecked (ex. regular pentagon)

The [Prop. Change] dialog is set as the following:



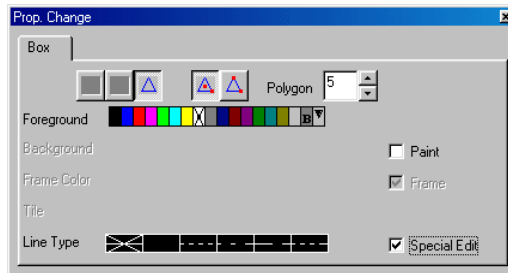
By clicking the pentagon, handles are shown around it.



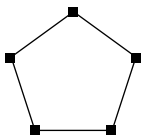
Only enlarging or reducing is executable for the polygons.

When  Special Edit] is checked (ex. regular pentagon)

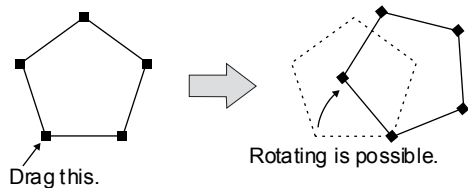
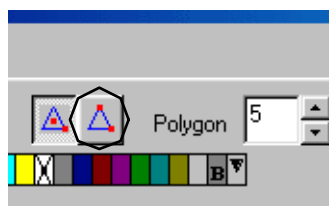
The [Prop. Change] dialog is set as the following:



By clicking the pentagon, handles are shown at its corners.

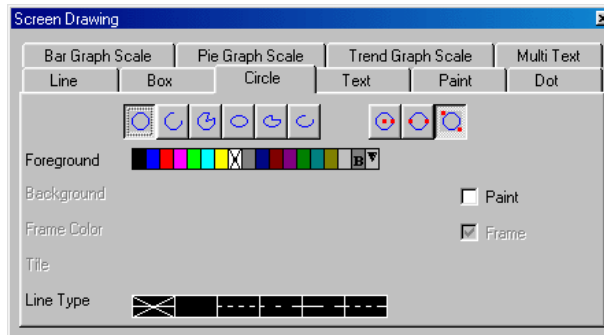


When the drawing method icon on the right is clicked, dragging one handle allows the pentagon to rotate. At this time, the corner on the right of the dragged handle becomes the base for rotation.



## Circle

Clicking the [Circle] icon brings up the [Screen Drawing] dialog shown below.

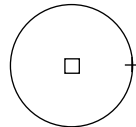


### Circle

1. Click the [Circle] icon in the [Screen Drawing] dialog. Select the draw type.



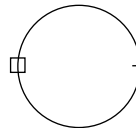
Drag from the center for the radius.



□ : Start point  
+ : End point



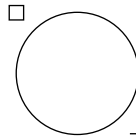
Drag from one side to the other for the diameter.



□ : Start point  
+ : End point



Drag from the start point to the end point of the box where an inscribed circle is drawn.



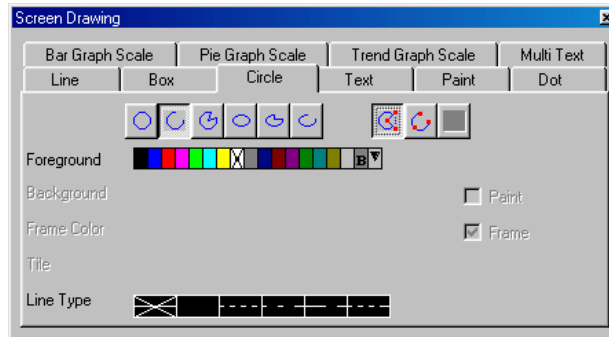
□ : Start point  
+ : End point

Select the desired options for [Paint], [Frame], [Foreground], [Background], [Frame Color], [Title] and [Line Type].

2. Drag from the start point to the end point. A circle is drawn.

## Arc and Sector

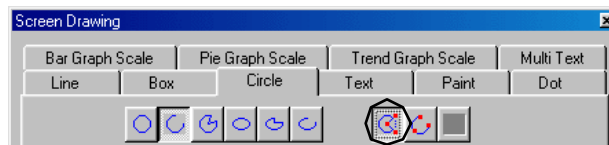
Click the [Arc] or [Sector] icon in the [Screen Drawing] dialog. The following dialog is displayed.



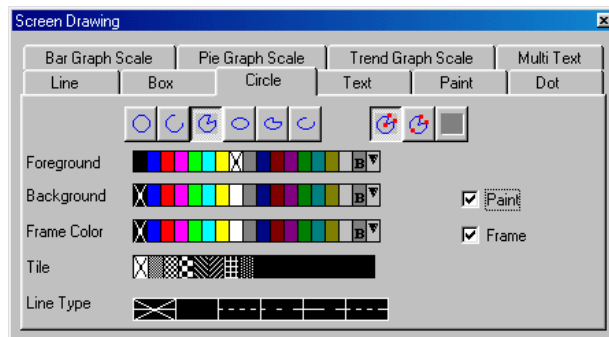
Select the draw type.

### Drawing from the Center

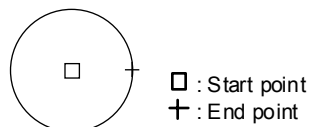
1. Select the left icon for the draw type.



2. Select the desired options for [Foreground] and [Line Type]. For sectors, select the desired options for  Paint,  Frame, [Background], [Frame Color] and [Tile].

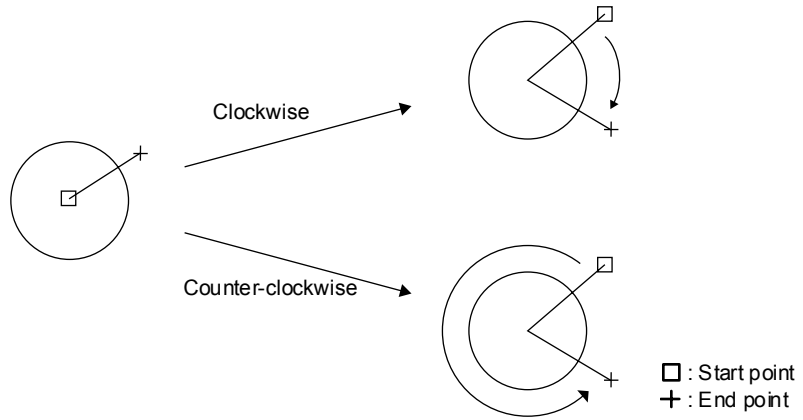


3. Drag from the center to the desired radius.

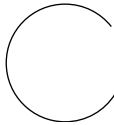


4. When you stop dragging, a line is displayed. Click the mouse at the start point of the arc or sector.

5. Move the cursor along the arc to the end point of the arc. The section drawn counter-clockwise remains as an arc.

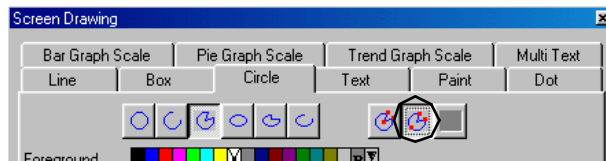


6. Clicking the mouse draws the arc or sector.



### Drawing from the Line End Position

1. Select the right icon for the draw type.

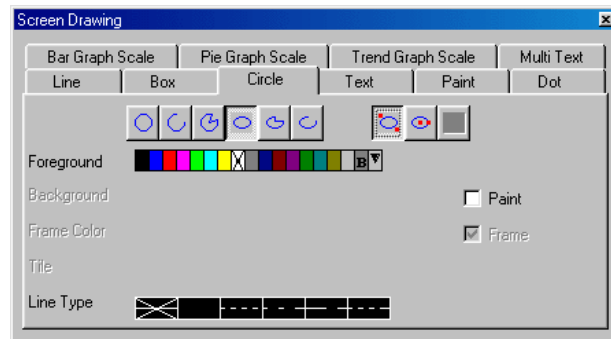


2. Select the desired options for [Foreground] and [Line Type]. For sectors, select the desired options for [Paint], [Frame], [Background], [Frame Color] and [Tile].
3. Drag the mouse from the start point to the end point.
4. When the mouse is released, the arc or sector is displayed.
5. Clicking the mouse to the desired position draws the arc or sector.



## Ellipse

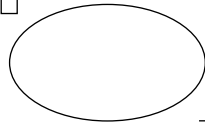
1. Click the [Ellipse] icon in the [Screen Drawing] dialog. The following dialog is displayed.



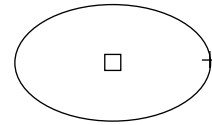
Select the draw type.



Drag from the start point to the end point of the box where an inscribed ellipse is drawn.



Drag from the center for the major radius.



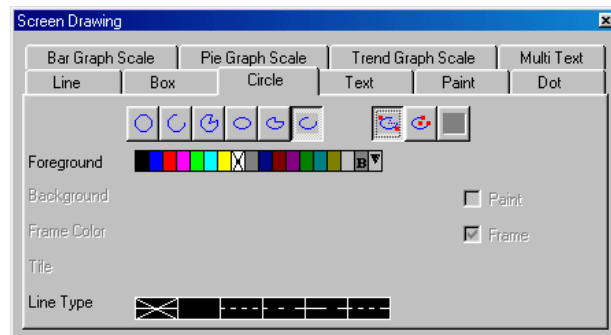
□ : Start point  
+ : End point

Select the desired options for [ Paint], [ Frame], [Foreground], [Background], [Frame Color], [Title] and [Line Type].

2. Drag from the start point to the end point. An ellipse is drawn.

## Elliptical Arc and Elliptical Sector

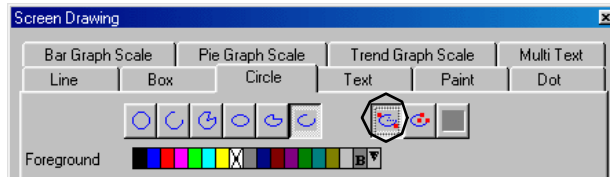
Click the [Elliptical Arc] or [Elliptical Sector] icon in the [Screen Drawing] dialog. The following dialog is displayed.



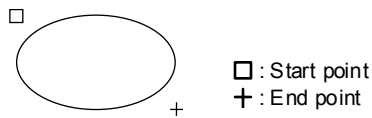
Select the draw type.

## Drawing from the Diagonal Line

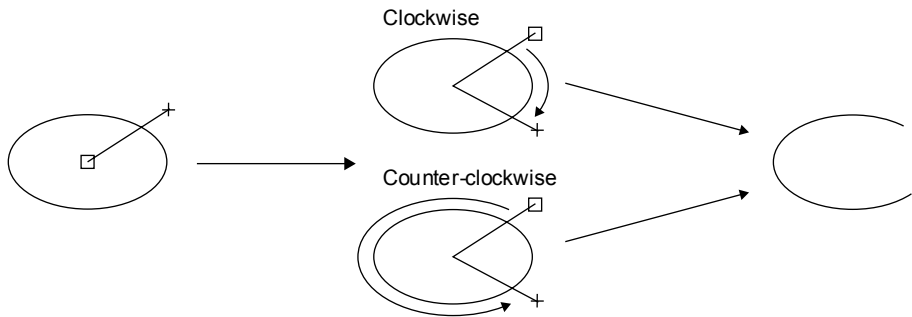
1. Select the left icon for the draw type.



2. Select the desired options for [Foreground] and [Line Type].
3. Drag from the start point until the desired circle or ellipse is drawn.



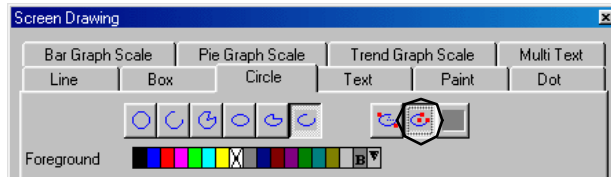
4. When you stop dragging, a line is displayed. Click the mouse at the start point of the elliptical arc or sector.
5. Move the cursor clockwise (portion to be erased) or counter-clockwise (portion to be drawn) along the elliptical arc or sector, and click on the end point.
6. Clicking the mouse draws the elliptical arc or sector.



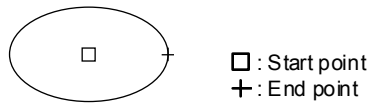


## Drawing from the Center

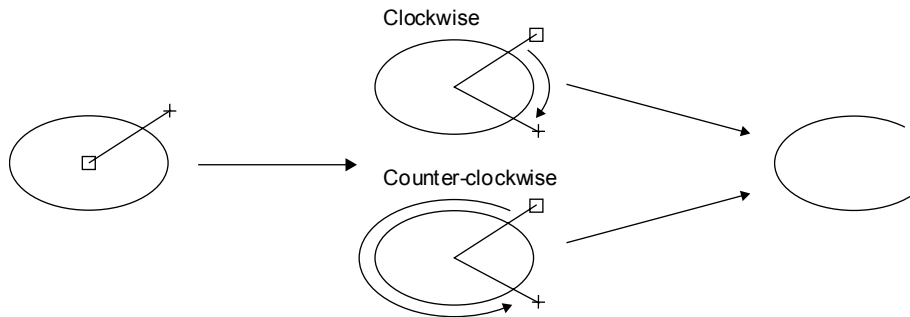
1. Select the right icon for the draw type.



2. Select the desired options for [Foreground] and [Line Type].
3. Drag from the center to the desired radius.

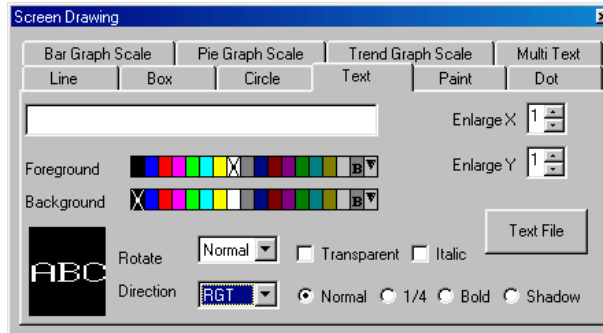


4. When you stop dragging, a line is displayed. Click the mouse at the start point of the elliptical arc or sector.
5. Move the cursor clockwise (portion to be erased) or counter-clockwise (portion to be drawn) along the elliptical arc or sector, and click on the end point.
6. Clicking the mouse draws the elliptical arc or sector.



## Text

Clicking the [Text] icon brings up the [Screen Drawing] dialog shown below.



### Text Field

Text can be entered when the cursor is flashing in the text field. If the cursor is not flashing in the text field, click the mouse on the text field.

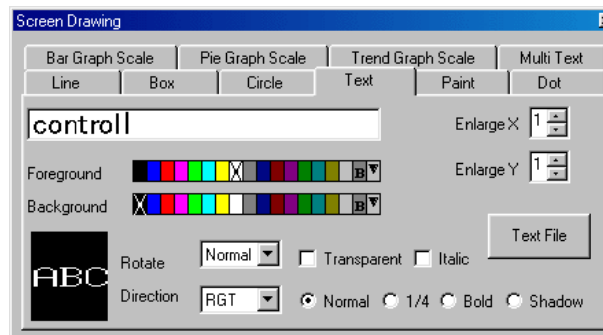
### Number of Characters Available

The maximum permissible number of characters per line depends on the number of displayed dots.

No. of displayed dots	Max. number of characters (1-byte)
800 × 600	100
640 × 480	80
320 × 240	40

### Text Entry

Check that the cursor is flashing in the text field, and enter characters using the keyboard.



If you would like to enter two-byte characters, switch IME of your computer and operate as appropriate.

## Selecting Colors

Foreground and background colors can be set. For the color setting procedure, see “Chapter 2 Screens.”

## Text Properties

[Enlarge X] [Enlarge Y]

This option is valid when the screen data contains fonts except the Gothic, English/Western Europe (HK Gothic), or English/Western Europe (HK Times) font data. The setting range for [Enlarge] is “1” to “8.” The character size at each value for [Enlarge] is shown below.

Value for [Enlarge]	1	2	3	4	5	6	7	8
1-byte (W × H dots)	8 × 16	16 × 32	24 × 48	32 × 64	40 × 80	48 × 96	56 × 112	64 × 128
2-byte (W × H dots)	16 × 16	32 × 32	48 × 48	64 × 64	80 × 80	96 × 96	112 × 112	128 × 128



For the Gothic, English/Western Europe (HK Gothic) and English/Western Europe (HK Times) font types, this option changes to [Point]. For more information, see “Appendix 1 Fonts.”

[Rotate]

Depending on the selected option, the text can be rotated as shown below.

Rotate	Text
Normal	ABCD
Left 90	⊿ ⊠ ⊡ ⊢
180	DCBA
R90	⊣ ⊤ ⊥ ⊦

[Direction]

Depending on the selected option, the text can be directed as shown below.

Direction	RGT	DW	LFT	UP
Text	ABCD	A B C D	DCBA	D C B A

Transparent]

Depending on whether  Transparent] or  Transparent] is selected, the foreground and background colors are displayed differently.

Transparent]

Foreground color

ABCD

Background color

Transparent]

Foreground color only

ABCD

Italic]

When  Italic] is checked, the text is italicized.

Italic]

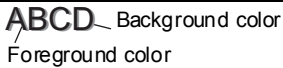
ABCD

Italic]

*ABCD*

[Normal] [1/4] [Bold] [Shadow]

The text is displayed as shown below.

Normal	ABCD
1/4	<i>ABCD</i>
Bold	<b>ABCD</b>
Shadow	 <p>Background color Foreground color</p>

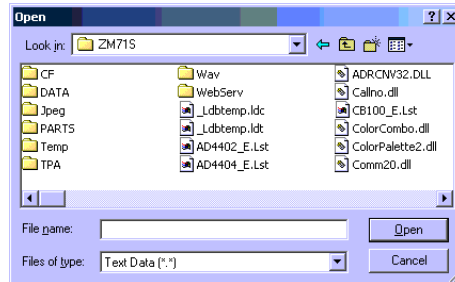
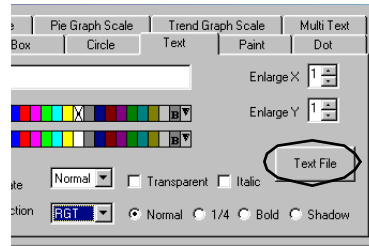


[1/4] is valid only for 1-byte characters. [Bold] is valid only when "1" is set for [Enlarge X].

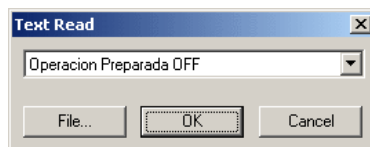
**[Text File]**

It is possible to import data in a text file. Follow the procedure below.

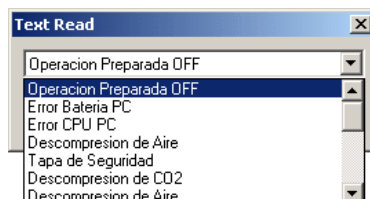
1. Click the [Text File] button in the [Text] tab window. The [Open] dialog is displayed.



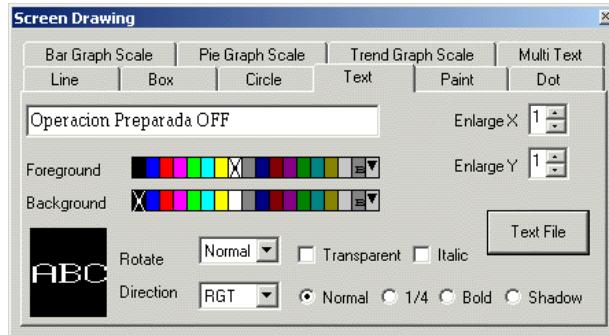
2. Choose the desired text file and click [Open]. The [Text Read] dialog is displayed. Here you can confirm the text in the text file.



3. If the text that is displayed is not necessary, click on the pull-down menu. The following lines of text can be reviewed this way so that you can search for the necessary text.



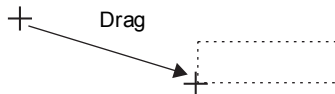
- Once you have selected the text to import, click [OK]. Text is imported into the text field in the [Text] tab window.



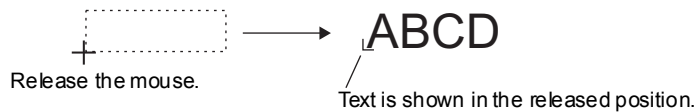
Only one line of text can be imported. A paragraph delimited with a return (a line break) in the text file is regarded as one text on the editor.

### Placing Text

- Enter the desired text in the text field and set text properties, enlargement, etc.
- Dragging the mouse on the screen draws a dotted frame of the same size as the text to be placed.



- Release the mouse being dragged in the desired position. The text is shown in the position.



Clicking or dragging the mouse again places the same text on the screen. To cancel text placement, close the [Screen Drawing] dialog or click the [Select] icon.

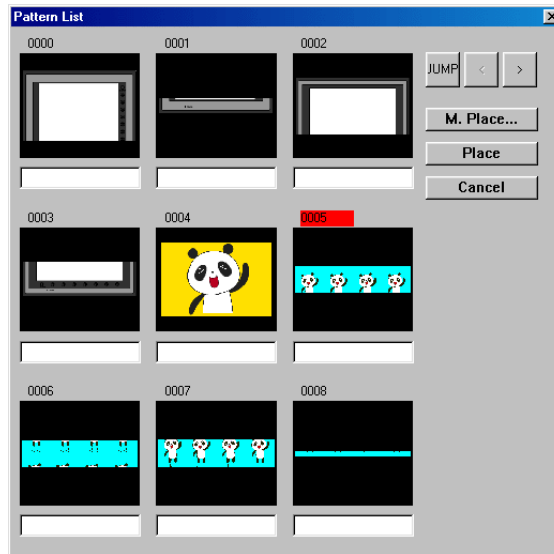
## Pattern

This command is used when placing a pattern registered in the pattern edit area on the screen.



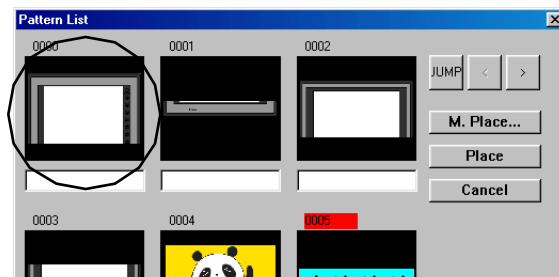
For pattern registration and pattern edit area, see “Chapter 4 Registration Items.”

Clicking the [Pattern] icon brings up the following pattern list window.



### Placing Patterns

1. In the [Pattern List] window, click the desired pattern.



To call the pattern, click the [JUMP] button.

2. Click [Place]. A dotted line box as large as a pattern is displayed with the cursor.



3. Click the mouse in the desired position. The pattern is placed.

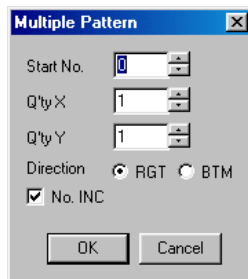


Clicking the mouse again places the same pattern on the screen. To cancel pattern placement, click the [Select] icon.

## Placing Multiple Patterns Continuously

This is useful when placing split-registered patterns in alignment.

1. In the [Pattern List] window, click the [M. Place] button. The [Multiple Pattern] dialog shown below is displayed. The following options are included in the dialog.



[Start No.]

Specify the top pattern number to be placed.

[Q'ty X/Y]

Specify the quantity of patterns along the X axis and the Y axis.

[Direction RGT/BTM]

Choose either direction of aligning patterns in multi-placement.

[No. INC]

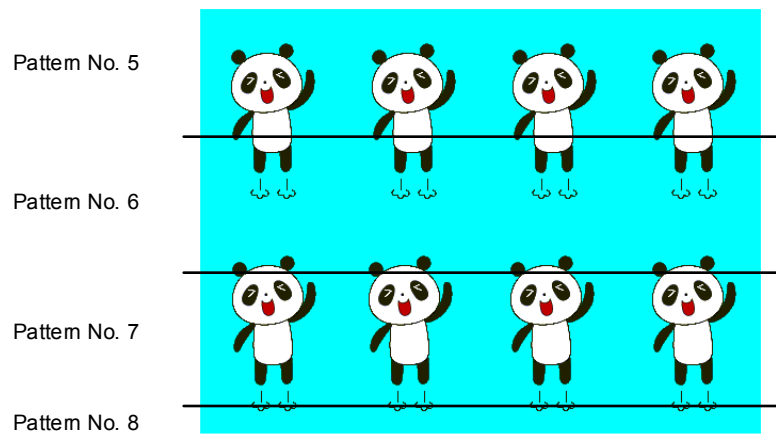
Check this box ([ No. INC]) when placing patterns increasing the number by one. When this is not checked ([ No. INC]), the same patterns are copied for multi-placement.



- Click [OK]. A dotted line box as large as the pattern is displayed with the cursor.



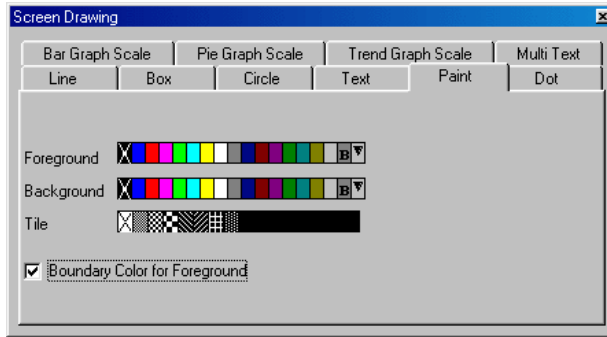
- Click the mouse in the desired position. Multiple patterns are placed in alignment.



Clicking the mouse again places the same pattern on the screen. To cancel pattern placement, click the [Select] icon.

# Paint

An enclosed area can be painted. Clicking the [Paint] icon brings up the [Screen Drawing] dialog shown below.

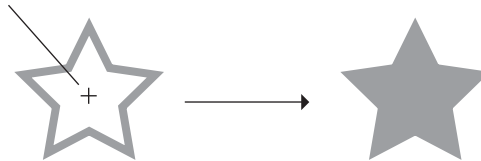


Boundary Color for Foreground]

Select the boundary color to be used when painting.

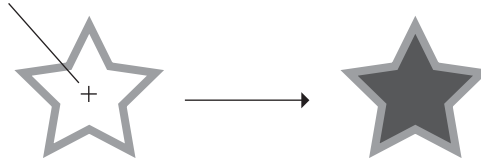
When [ Boundary Color for Foreground] is checked, the enclosed area is painted in the same color as the one selected for [Foreground].

Painting is possible in the same color as the boundary color.



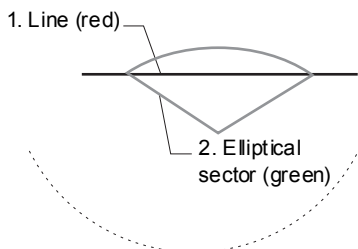
When [ Boundary Color for Foreground] is not checked, the enclosed area can be painted in a color different from the one selected for [Foreground].

Painting is possible even if the foreground color is different from the boundary color.



Ex.: If you draw an elliptical sector on the line and paint the enclosed area, it is painted as shown below.

Paint the graphic drawn as below.

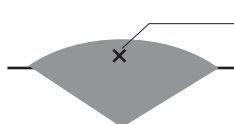


In the [Paint] tab window:

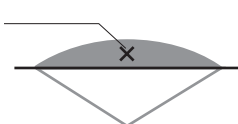
Boundary Color for Foreground] [Foreground: Green]

In the [Paint] tab window:

Boundary Color for Foreground] [Foreground: Green]



(Paint color (green) runs through red area, and stops at the green area.)



(Paint color (green) stops at the red (or green) area.)



To cancel the paint or to check the painted area, select [Display Environment] from the [Display] menu, and remove the check mark from [☑ Paint Dsp.].

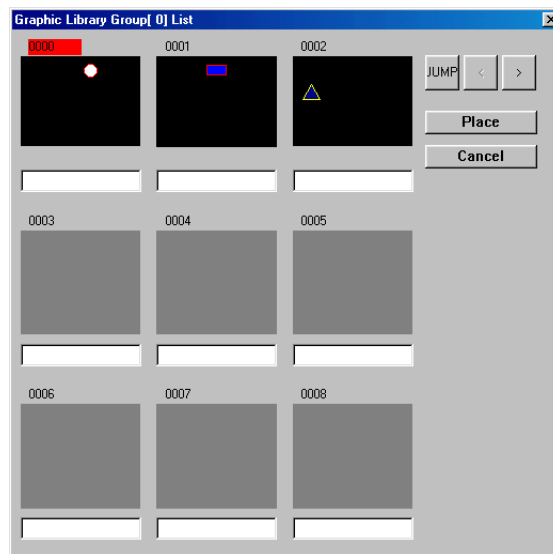
## Graphic Call

This command is used when placing a graphic registered in the graphic library on the screen.



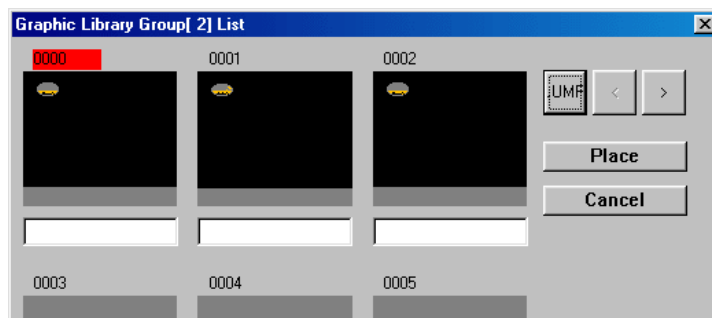
For graphic registration and graphic library, see “Chapter 4 Registration Items.”

Clicking the [Graphic Call] icon brings up the [Graphic Library List] window.



## Placing Graphics

1. In the [Graphic Library List] window, click the desired graphic.



To call the graphic, click the [JUMP] button.

2. Click [Place]. A dotted line box is displayed with the cursor.



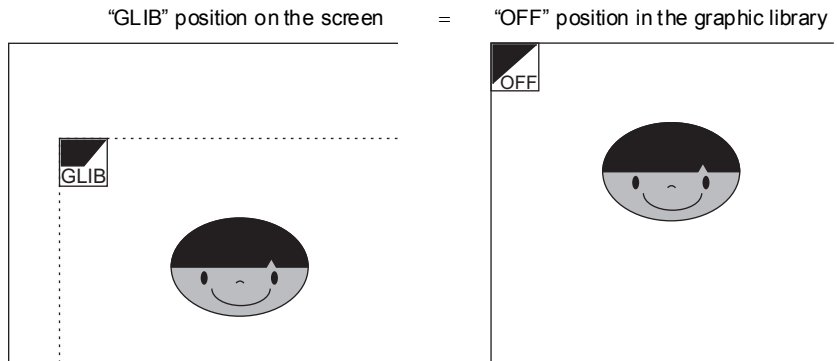
3. Click the mouse in the desired position. The graphic is placed with the [GLIB] mark at the clicked position.



Immediately after placement, the [LIB] mark is attached to the cursor. Clicking the mouse again places the same graphic on the screen as long as the [LIB] mark is displayed. To cancel graphic placement, click the [Select] icon. The [LIB] mark disappears.



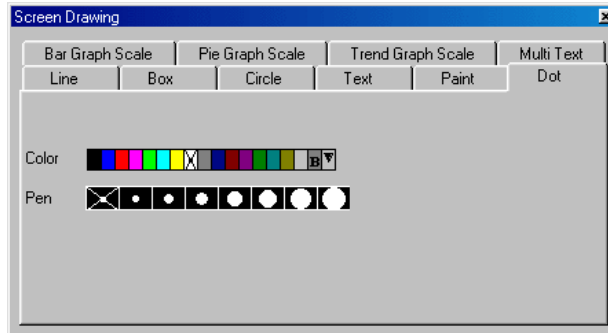
The reference position of placing a graphic is the “offset” position on the graphic library. For more information on the “offset,” see “Chapter 4 Registration Items.”



To call a graphic that is called with the graphic call command using another graphic call command (nesting), a maximum of eight nests is possible.

## Dot

Clicking the [Dot] icon brings up the [Screen Drawing] dialog shown below.



[Color]

For color selection, see "Chapter 2 Screens."

[Pen]

Select the dot size.

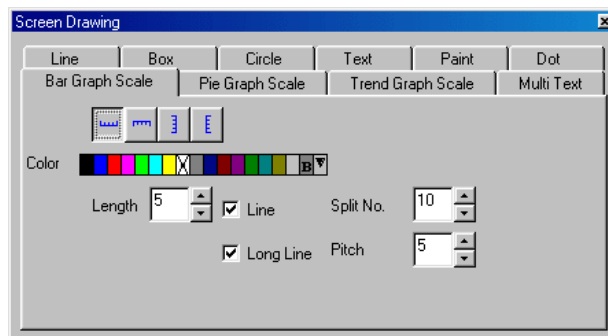
Clicking the mouse on the screen draws a dot of the selected size in the selected color.



Clicking the mouse again draws the same dot on the screen. To cancel dot drawing, close the [Screen Drawing] dialog or click the [Select] icon.

## Bar Graph Scale

Clicking the [Bar Graph Scale] icon brings up the [Screen Drawing] dialog shown below.



[Length] (1 - 16)

Set the length of short gradation marks. Enter the numerical value in the data field, or set the desired value using the Up/Down button.

Line]

When this box is checked () , the scale is drawn with lines. When this box is not checked () , the scale is drawn without lines.

[Split No.] (1 - 255)

Set the number of divisions of the scale. Enter the numerical value in the data field, or set the desired value using the Up/Down button.

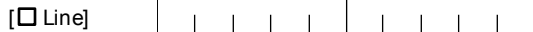
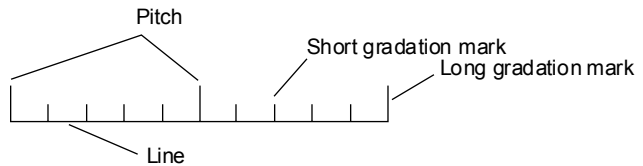
Long Line]

When this box is checked () , long gradation marks are attached to the scale at the specified pitch. When this box is not checked () , long gradation marks are not attached.

[Pitch] (1 - 16)

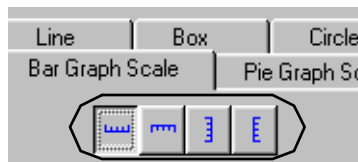
This option is active when [ Long Line] is checked. Set the pitch for long gradation marks. Enter the numerical value in the data field, or set the desired value using the Up/Down button.

Shape No. 0



### Drawing Method

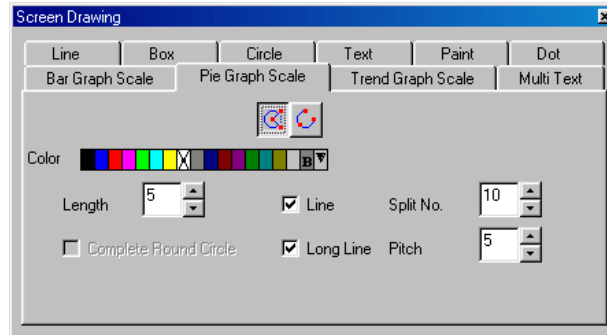
1. Select the desired style from the [Shape] icons.



2. Make the required setting on the dialog beforehand.
3. Drag the mouse from the start point to the end point. The bar graph scale is drawn.

## Pie Graph Scale

Clicking the [Pie Graph Scale] icon brings up the [Screen Drawing] dialog shown below.



### [Length] (1 - 16)

Set the length of short gradation marks. Enter the numerical value in the data field, or set the desired value using the Up/Down button.

### Complete Round Circle]

This option is not active as default. This option becomes active once a pie graph scale has been drawn. Double-click the pie graph scale or click the pie graph scale and click the [Prop. Change] icon. When  Complete Round Circle] becomes active, check the box.

### Line]

When this box is checked () , the scale is drawn with lines. When this box is not checked (), the scale is drawn without lines.

### [Split No.] (1 - 255)

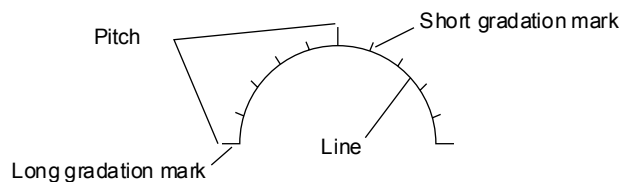
Set the number of divisions of the scale. Enter the numerical value in the data field, or set the desired value using the Up/Down button.

### Long Line]

When this box is checked () , long gradation marks are attached to the scale at the specified pitch. When this box is not checked (), long gradation marks are not attached.

### [Pitch] (1 - 16)

This option becomes active when  Long Line] is checked. Set the pitch for long gradation marks. Enter the numerical value in the data field, or set the desired value using the Up/Down button.

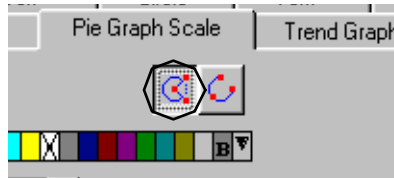


## Drawing Method

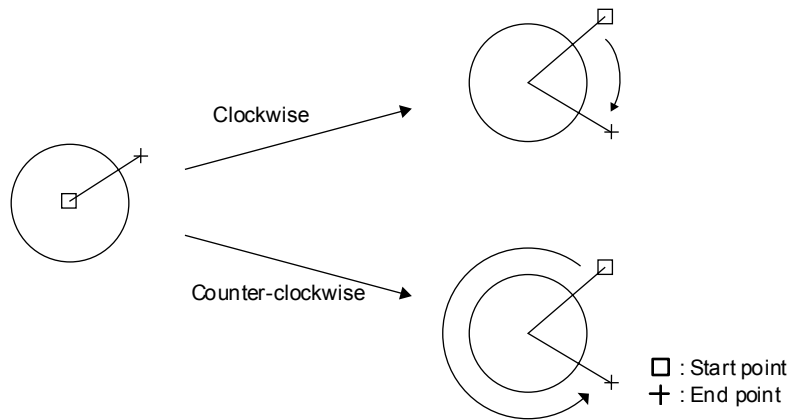
Depending on the selected draw type, the drawing method varies.

### Drawing from the Center

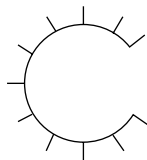
1. Select the left icon for the draw type.



2. Make the required setting on the dialog beforehand.
3. Drag from the center to the desired radius.
4. When you stop dragging, a line is displayed. Click the mouse at the start point of the arc.
5. Move the cursor clockwise (portion to be erased) or counter-clockwise (portion to be drawn) along the arc, and click on the end point.



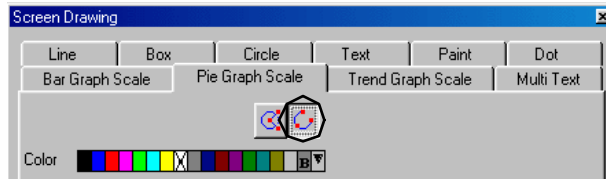
6. Clicking the mouse draws the pie graph scale.



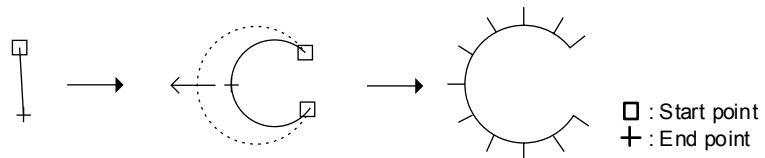


## Drawing from the Line End Position

1. Select the right icon for the draw type.

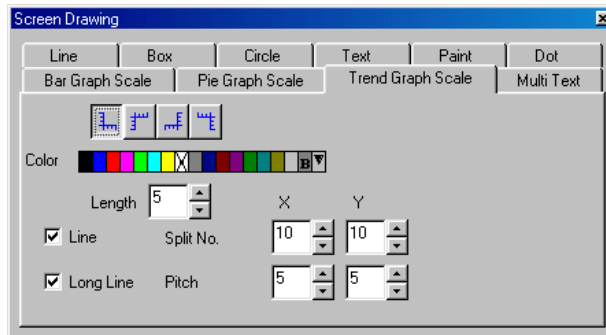


2. Make the required setting on the dialog beforehand.
3. Drag the mouse from the start point to the end point.
4. When the mouse is released, the arc is displayed.
5. Clicking the mouse to the desired position draws the arc.



## Trend Graph Scale

Clicking the [Trend Graph Scale] icon brings up the [Screen Drawing] dialog shown below.



[Length] (1 - 16)

Set the length of short gradation marks. Enter the numerical value in the data field, or set the desired value using the Up/Down button. This setting is used for both X and Y axes.

[ Line]

When this box is checked () , the scale is drawn with lines. When this box is not checked () , the scale is drawn without lines.

[Split No.] (1 - 255)

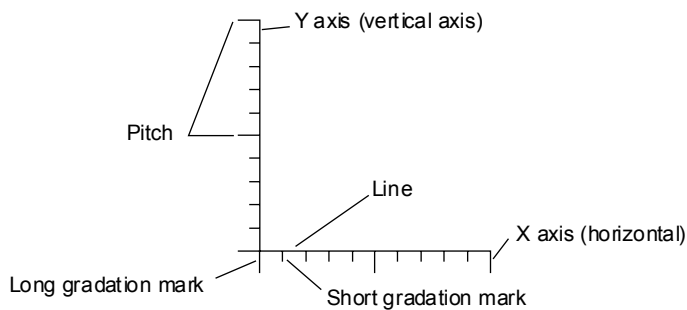
Set the number of divisions of the scale. Enter the numerical value in the data field, or set the desired value using the Up/Down button. Separate settings for the X and Y axes are required.

Long Line

When this box is checked () , long gradation marks are attached to the scale at the specified pitch. When this box is not checked () , long gradation marks are not attached.

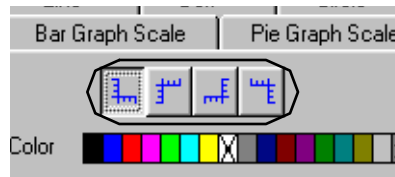
[Pitch] (1 - 16)

[This option becomes active when  Long Line] is checked. Set the pitch for long gradation marks. Enter the numerical value in the data field, or set the desired value using the Up/Down button. Separate settings for the X and Y axes are required.

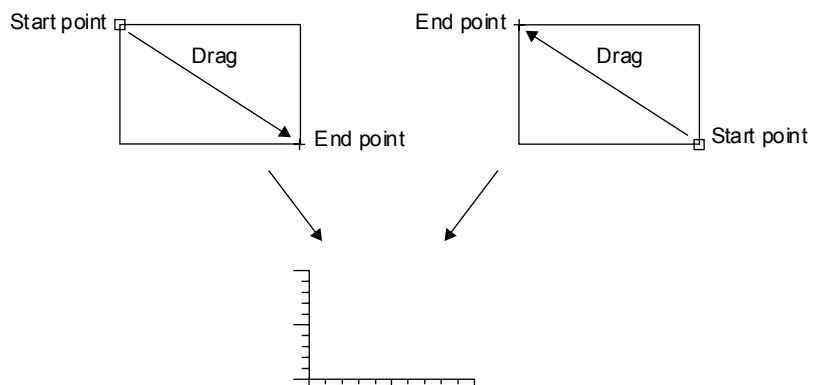


## Drawing Method

1. Select the desired style from the [Shape] icons.

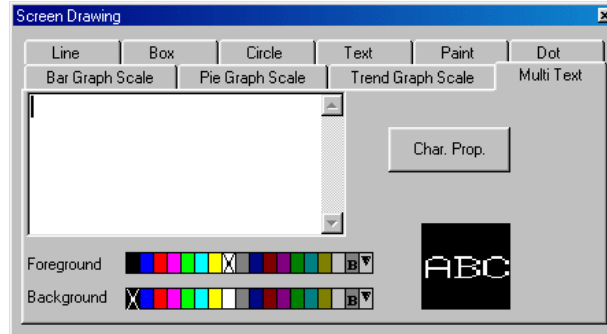


2. Make the required setting on the dialog beforehand.
3. Drag the mouse from the start point to the end point in the same way as drawing a rectangle. The trend graph scale is drawn.



## Multi-text

This command is used when placing multiple lines of text at one time. Clicking the [Multi-Text] icon brings up the [Screen Drawing] dialog shown below.



### Text Field

Text can be entered when the cursor is flashing in the text field. If the cursor is not flashing in the text field, click the mouse on the text field.

### Number of Characters Available

The maximum permissible number of characters per line depends on the number of displayed dots.

No. of displayed dots	Maximum (1-byte)	
	Characters	Lines
800 × 600	100	30
640 × 480	80	24
320 × 240	40	12



The above figures are based on the line spacing of “4.”

### Text Entry

Check that the cursor is flashing in the text field, and enter characters using the keyboard.



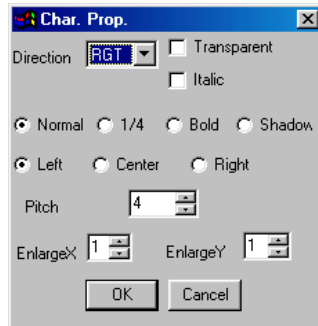
To enter multiple lines, press the return key on the keyboard and insert a hard return.

## Selecting Colors

Foreground and background colors can be set. For the color setting procedure, see “Chapter 2 Screens.”

## Text Properties

Click the [Char. Prop.] button. The [Char. Prop.] dialog is displayed.



For other setting items not described below, see page 3-19.

[Left]/ [Center]/ [Right]

Select text alignment.

[Pitch] (0 - 32)

Specify the desired line spacing. The maximum available number varies depending on this setting.

## Placing Multi-text

Multi-text can be placed in the same manner as ordinary text. For more information, see page 3-22.

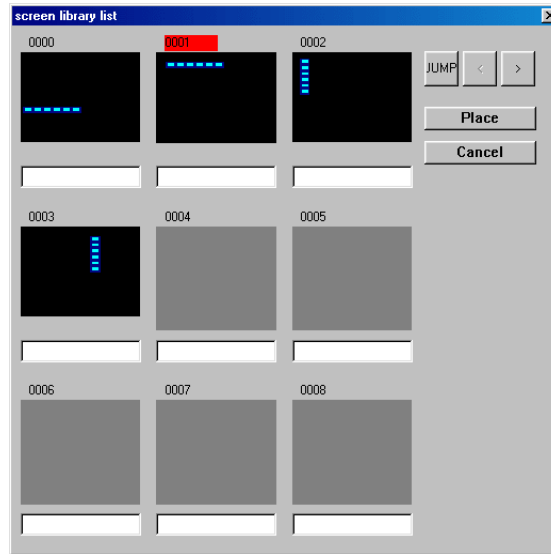
## Screen LIB

This command is used when placing a screen registered in the screen library.



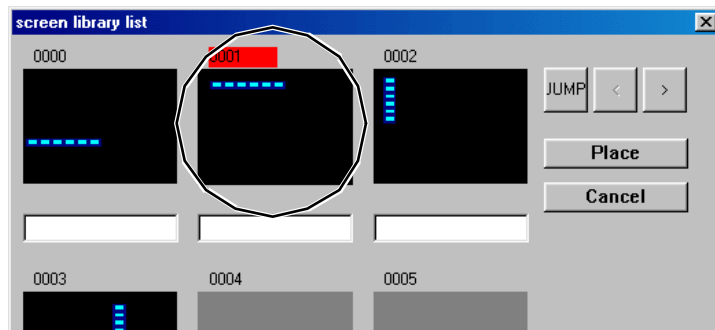
For more information on screen library, see “Chapter 4 Registration Items.”

Clicking the [Screen LIB] icon brings up the dialog shown below.



### Placing Screen Library Element

1. In the [Screen Library List] window, click the desired screen.



To call the screen, click the [JUMP] button.

2. Click [Place]. A dotted line box is displayed with the cursor.



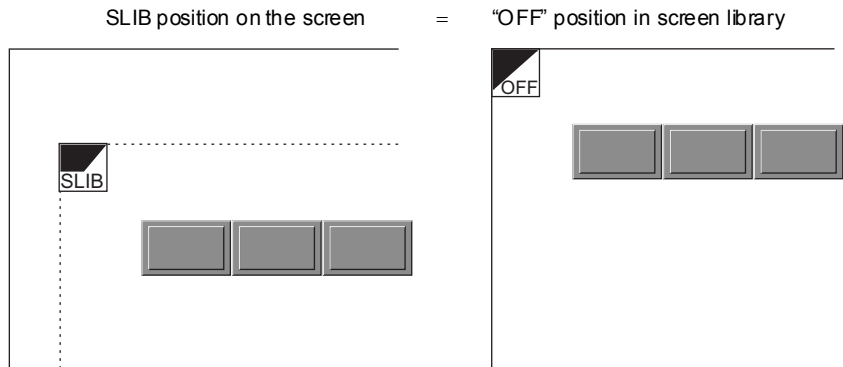
3. Click the mouse in the desired position. The screen is placed with the [SLIB] mark at the clicked position.



Immediately after placement, the [LIB] mark is attached to the cursor. Clicking the mouse again places the same screen as long as the [LIB] mark is displayed. To cancel screen placement, click the [Select] icon. The [LIB] mark disappears.



The reference position of placing a screen is the “offset” position on the screen library. For more information on the “offset,” see “Chapter 4 Registration Items.”

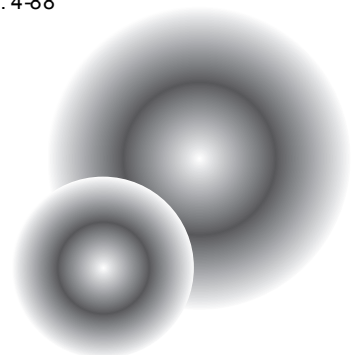


# Chapter 4 Registration Items

Outline of Registration Items.....	4-1
Contents of Registration Items.....	4-2
Screen.....	4-3
Calling a Screen.....	4-3
Screen Editing.....	4-3
Graphic Library.....	4-4
Graphic Library Structure.....	4-4
Calling the Graphic Library.....	4-4
Graphic Library Editing.....	4-5
Graphic Library Environment Setting.....	4-17
Multi-overlap.....	4-20
Multi-overlap Structure.....	4-20
Calling a Multi-overlap.....	4-20
Multi-overlap Editing.....	4-21
Other Settings.....	4-23
Data Block.....	4-25
Data Block Structure.....	4-25
Calling a Data Block.....	4-25
Data Block Editing.....	4-26
Data Block Environment Setting.....	4-27
Message.....	4-28
Message Structure.....	4-28
Calling a Message.....	4-30
Message Editing.....	4-31
Message Display Environment Setting.....	4-35
Pattern.....	4-37
Pattern Structure.....	4-37
Calling a Pattern.....	4-37
Pattern Editing.....	4-38
Transforming Patterns.....	4-47
Bitmap Import and Storage.....	4-49
Pattern Environment Setting.....	4-53
Placing a Pattern.....	4-54

(To be continued)

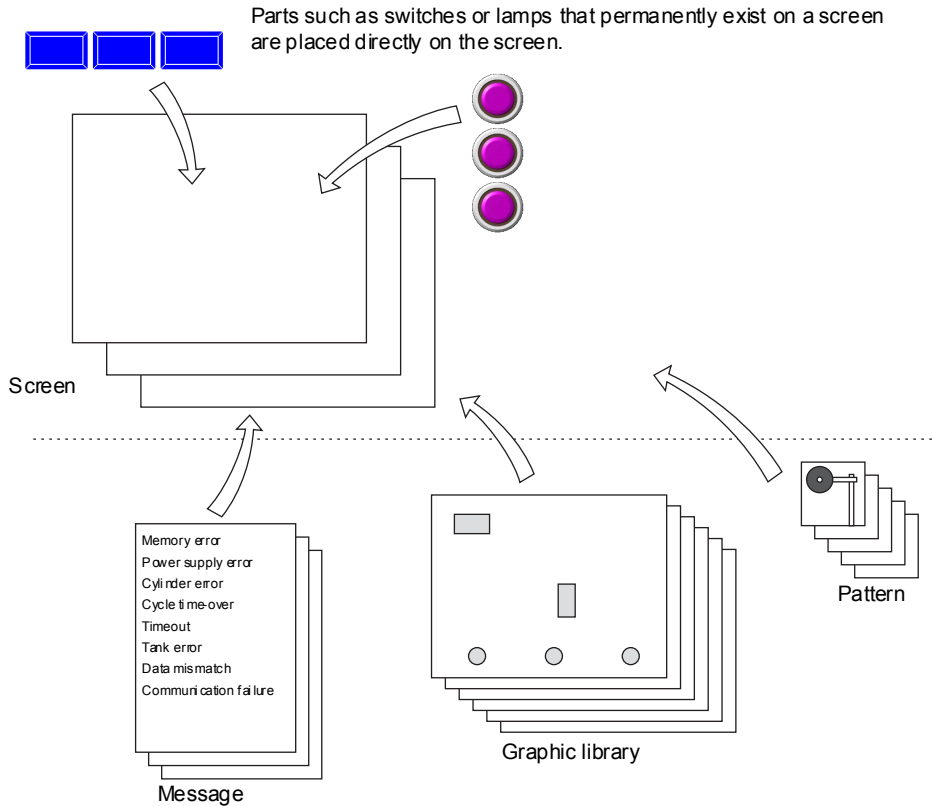
Macro Block .....	4-55
Macro Block Structure .....	4-55
Calling a Macro Block .....	4-55
Macro Block Editing .....	4-56
Page Block .....	4-61
Page Block Structure .....	4-61
Calling a Page Block .....	4-61
Page Block Editing .....	4-62
Direct Block .....	4-65
Direct Block Structure .....	4-65
Calling a Direct Block .....	4-66
Direct Block Editing .....	4-66
Screen Block .....	4-69
Screen Block Structure .....	4-69
Calling a Screen Block .....	4-69
Screen Block Editing .....	4-70
Tile .....	4-72
Tile Structure .....	4-72
Calling a Tile .....	4-72
Tile Editing .....	4-73
Data Sheet .....	4-75
Data Sheet Structure .....	4-75
Calling a Data Sheet .....	4-76
Data Sheet Editing .....	4-76
Data Sheet Environment Setting .....	4-79
Screen Library .....	4-80
Screen Library Structure .....	4-80
Calling a Screen Library .....	4-80
Screen Library Editing .....	4-81
Placing a Screen Library .....	4-84
Multi-languages .....	4-84
Animation	
(For the ZM-300 series except for ZM-352C) .....	4-85
Animation Function Structure .....	4-85
Calling the Animation Function .....	4-85
Animation Editing .....	4-86
Frame Editing .....	4-88





# Outline of Registration Items

ZM series screen data files consist of areas called screens. Parts and graphics can be placed on screens. Meanwhile, data items or graphics, the contents of which will vary according to circumstances, cannot be placed on screens. Thus, these items are registered in different areas.



Items that will vary according to the circumstances are registered in different areas.

These areas are called registration items. When editing these items, start from selection from the [Item] menu.

## Contents of Registration Items

The following table indicates the contents of the registration items and their uses.

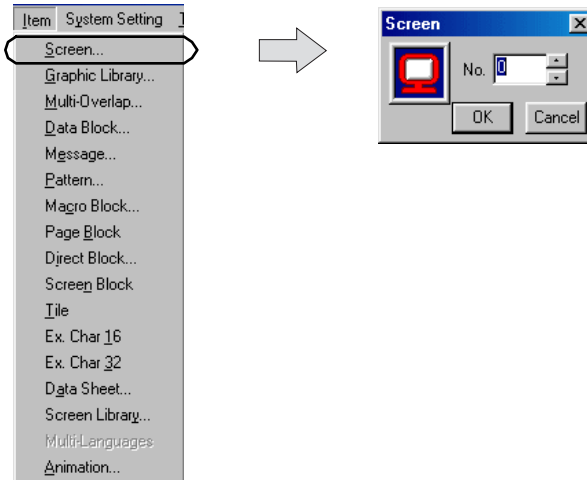
Registration Item	Uses	Ref.
Screen	–	Page 4-3
Graphic library	Used for graphic call (drawing tool), graphic mode, graphic relay mode (parts), etc.	Page 4-4
Multi-overlap	Used for multi-overlaps (parts)	Page 4-20
Data block	Used for data block areas (parts)	Page 4-25
Message	Used for relay mode, message mode, bit sampling, alarm displays (parts)	Page 4-28
Pattern	Used for patterns (drawing tool)	Page 4-37
Macro block	Used by CALL commands in macro programs or macro mode (parts)	Page 4-55
Page block	Used for relay-sub mode or message mode (parts)	Page 4-61
Direct block	Used for relay-sub mode or message mode (parts)	Page 4-65
Screen block	Used for relay mode (parts)	Page 4-69
Tile	Used for drawing	Page 4-72
Data sheet	Used for data sheets	Page 4-75
Screen library	Used for screens and overlaps	Page 4-80
Multi-language	Used for changing the language used on the screen	Page 4-84
Animation	Used for animation (only for the ZM-300 series except for ZM-352D)	Page 4-85

# Screen

A screen is an editing window to be opened at start-up of the editor software.

## Calling a Screen

To go to a different screen from the current screen or while a different registration item window is opened, select [Screen] from the [Item] menu.



The [Screen] dialog is displayed. Specify the screen number to be opened and click [OK].

## Screen Editing



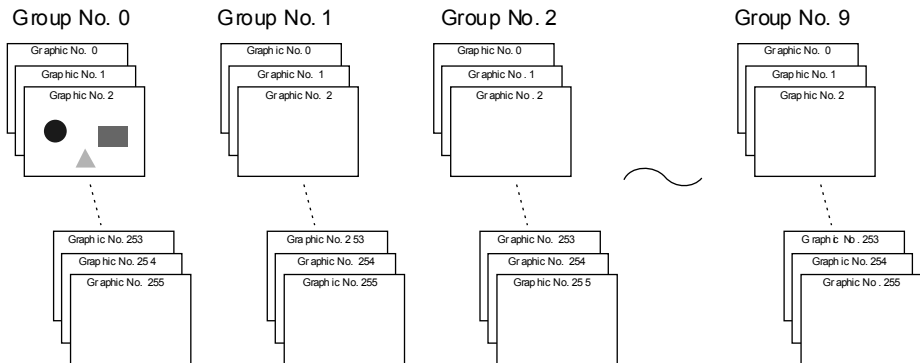
Refer to each individual chapter in this manual for editing a screen. For limitations on screen editing such as a limited number of parts, see “Chapter 2 Screens.”

# Graphic Library

Graphics or numerical data displays that will be displayed by bit setting (ON) are registered in the graphic library.

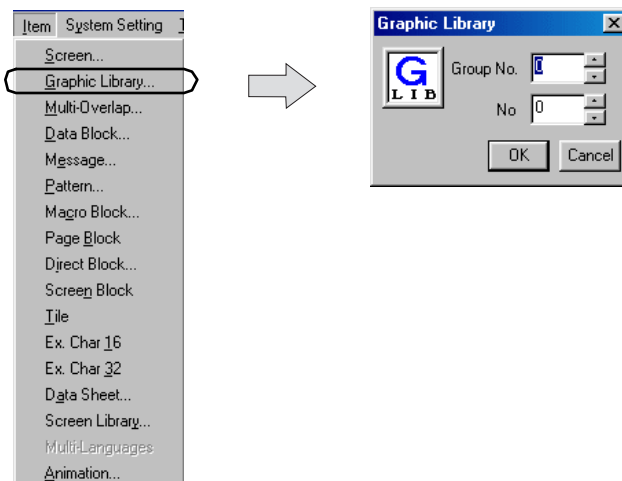
## Graphic Library Structure

A graphic library screen and a screen are the same in size. A total of 2,560 graphic library screens are divided into 10 groups for registration. Therefore, one graphic library group is capable of storing 256 screens.



## Calling the Graphic Library

1. Select [Graphic Library] from the [Item] menu. The [Graphic Library] dialog is displayed.
2. Specify the graphic library group number to be opened and the desired graphic number.
3. Click [OK].



## Graphic Library Editing



Only graphics can be registered in the graphic library (parts cannot be registered).

Use this drawing tool bar for graphic library.



Except for the points below, the editing procedure using the drawing tool bar is the same as the procedure for screens.



For more information, see “Chapter 3 Drawing Tools.”

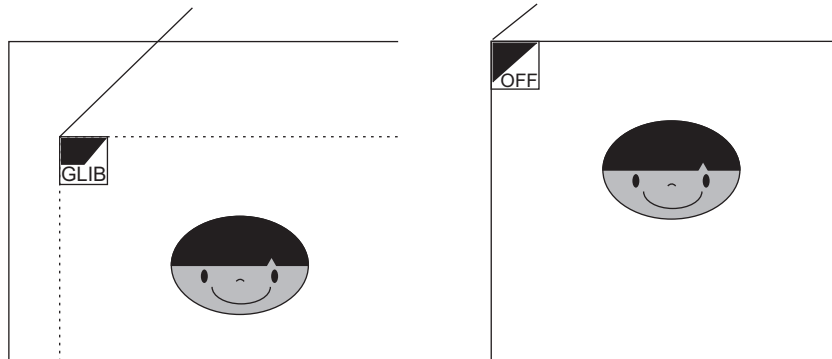
### Offset Position Setting

#### Outline of Offset Position

Every graphic library screen in the graphic library has a reference position called an offset. When a registered graphic is called to the screen, it is placed based on the offset position. The offset position in the graphic library is equivalent to the graphic call (GLIB) position in drawing as well as the top left corner in a display area.

Ex.:

Placement by [Graphic Call] on the drawing tool bar = Offset position in the graphic library



An offset position in the graphic library is shown with an “OFF” mark.

## Changing an Offset Position

---

Every graphic library screen in the graphic library has an offset position at coordinates X, Y (0, 0) as default. To change the position, follow the procedure below.

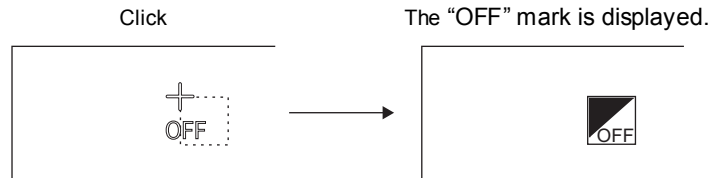
1. Click the [Offset] icon on the drawing tool bar.



2. A cross cursor marked with "OFF" appears.



3. Click the mouse in the desired position. The offset mark is displayed at that location.



Changing the offset position prior to registering a graphic is not valid. Set an offset position after registering a graphic.

## Parameter Setting

### Outline of Parameter

---

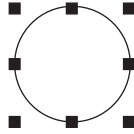
Graphics registered in the graphic library may be moved or transformed on the screen. If data displays (to be explained later) are registered, they also may be moved, transformed, or changed in displayed value. These graphics or data displays require memory, and consequently require parameter setting for memory allocation.



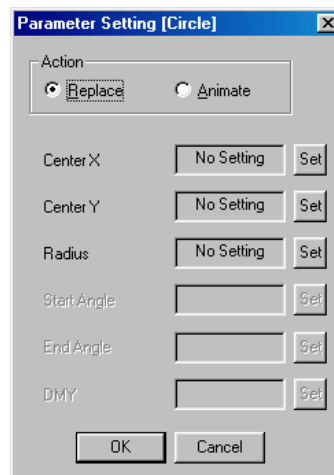
Setting parameters only in the graphic library is not sufficient for moving, transforming, or changing graphics. Make sure to set parameters for each part on the screen.

## Parameter Setting Procedure

1. Click on a graphic in the graphic library to select it.



2. Click the [Parameter] icon on the drawing tool bar. The [Parameter Setting] dialog is displayed.



For the description of setting the dialog, refer to the following.

3. When the dialog setting is concluded, click [OK].



The options in the [Parameter Setting] dialog vary with the selected graphic. For more information, see page 4-12.

### [Parameter Setting] Dialog

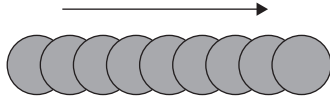
---

**[Action]**

When moving, transforming, or changing graphics, the new one is placed over the previous one, or the previous one is cleared before the new one is placed on the screen. Select either manner.

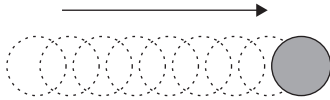
**[Replace]**

The new graphic is placed over the previous one. Therefore, the previous one remains on the screen.

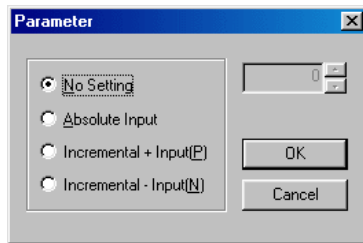


**[Animate]**

Only the new graphic is placed on the screen.



When you go to a setting item and click its [Set] button, the [Parameter] dialog is displayed.



**[No Setting]**

No memory is allocated.



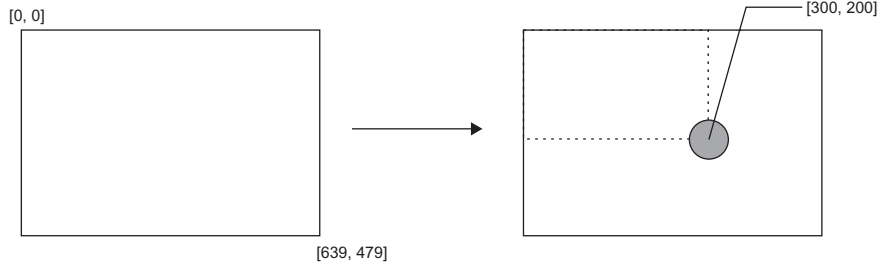
**[Absolute Input]**

When changing a graphic, specify the value for change in absolute coordinates.

- Specifying coordinates:

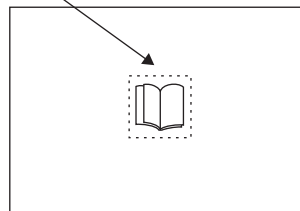
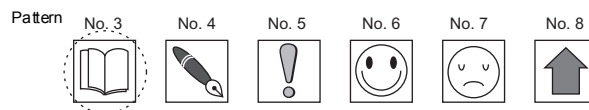
With respect to coordinates (0, 0) at the top left corner of the screen and (639, 479) at the bottom right corner (or (319, 239) or (799, 599)), specify the coordinates for moving a graphic in memory.

When (300, 200) is specified under [Absolute Input], the graphic is moved to the position below.



- Specifying a number: (Valid for patterns and graphic call)

Specify a registered pattern number or a graphic number in the graphic library directly.

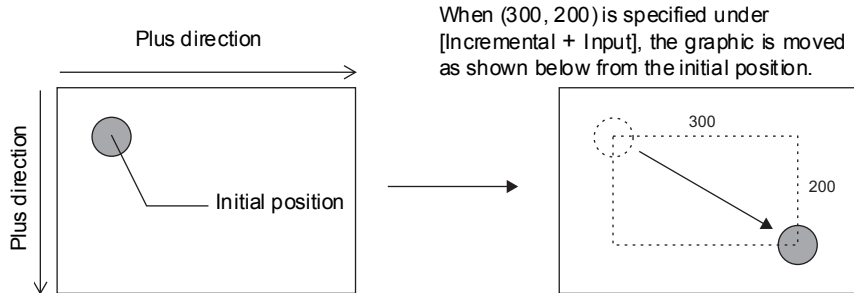


When "3" is specified under [Absolute Input], pattern No. 3 is displayed.

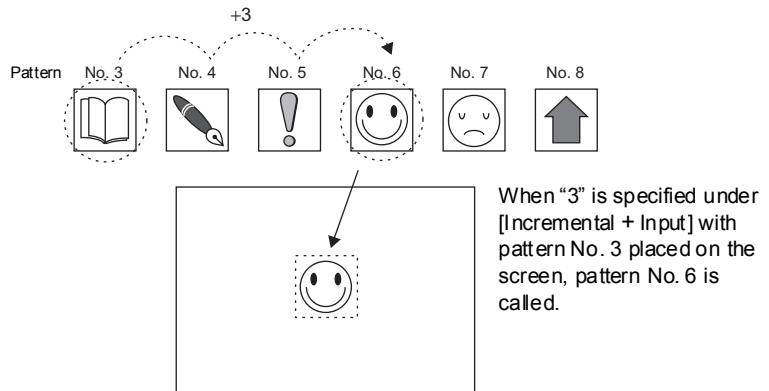
**[Incremental + Input]**

When changing a graphic, specify incremental coordinates in the plus direction.

- Specifying coordinates:  
Based on a graphic position regarded as (0, 0), specifying a positive coordinate value in memory moves it in the plus direction and specifying a negative coordinate value moves it in the minus direction.



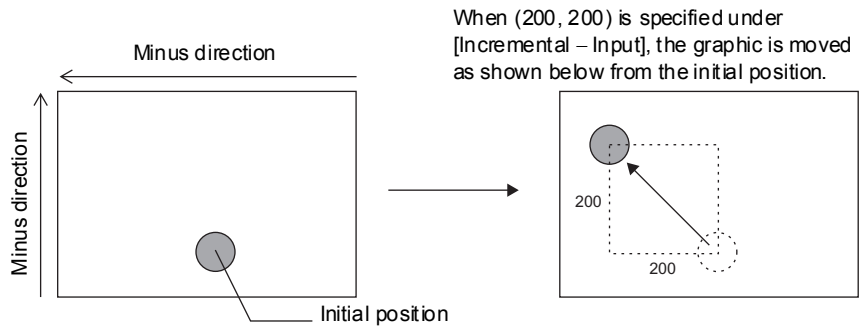
- Specifying a number: (Valid for patterns and graphic call)  
Based on a placed pattern or graphic number regarded as "0," specifying a positive value in memory calls a pattern or a graphic of a greater number, and specifying a negative value calls a pattern or a graphic of a smaller number.



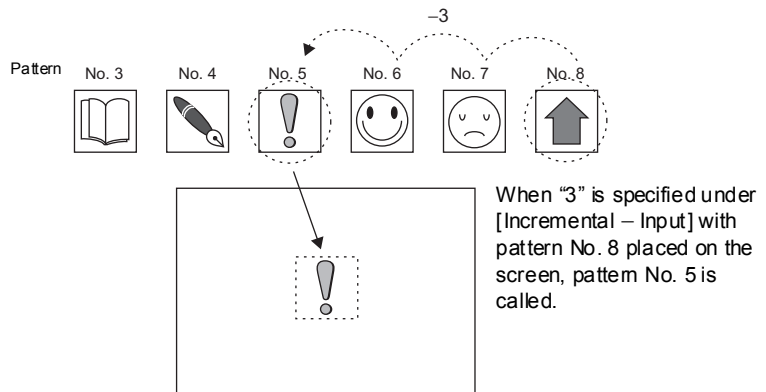
[Incremental – Input]

When changing a graphic, specify incremental coordinates in the minus direction.

- Specifying coordinates: Based on a placed graphic position regarded as (0, 0), specifying a positive coordinate value in memory moves it in the minus direction and specifying a negative coordinate value moves it in the plus direction.

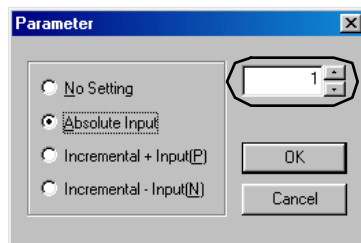


- Specifying a number: (Valid for patterns and graphic call) Based on a placed pattern or graphic number regarded as “0,” specifying a positive value calls a pattern or a graphic of a smaller number, and specifying a negative value calls a pattern or a graphic of a greater number.



[No.]

Enter a number in this parameter field when [Absolute Input], [Incremental + Input], or [Incremental – Input] is selected. This number designates the order of the allocated memory address.



### Parameter Setting Items

The following table indicates parameter items valid for each graphic.

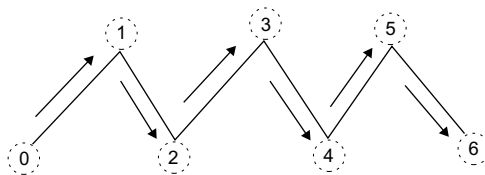
Graphic	Parameters	Ref.
Line	Start point, end point	
Continuous line	Point 0 (- n) coordinates	1
Box	Start point, end point	
Parallelogram	Start point, PX2, PY2, PX3, PY3	2
Polygon	Center coordinates, radius, start angle, number of angles	
Circle	Center coordinates, radius	
Arc/sector	Center coordinates, radius, start angle, end angle	
Ellipse, elliptical arc, elliptical sector	Center coordinates, X radius, Y radius	
Text	Start point (coordinates of the first character: bottom left)	
Pattern	Start point (top left coordinates), pattern number	3
Paint	Start point	4*1
Graphic call	Start point, library number	
Dot	Start point	
Data display	Start point (bottom left coordinates of the first numeral)	*2

\*1 Paint is not depicted normally when [Action: Animate] is selected in the [Parameter Setting] dialog.

\*2 For information on data display parameters, see page 4-16.

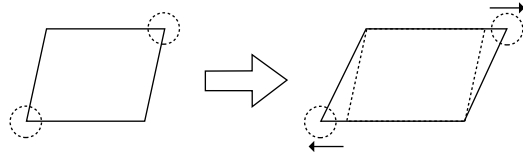
1. Continuous line (points 0 - n coordinates)

When continuous lines are drawn like this, parameters can be set for seven points.

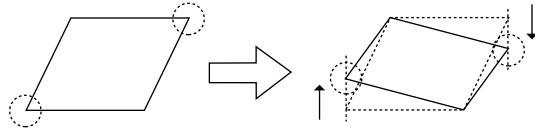


2. Parallelogram

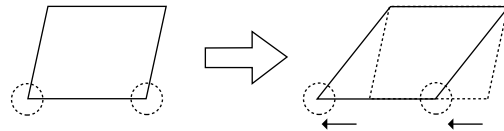
- PX2



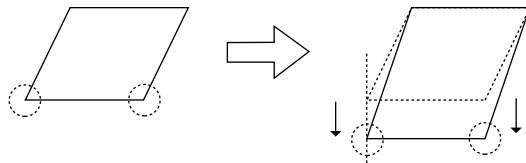
- PY2



- PX3



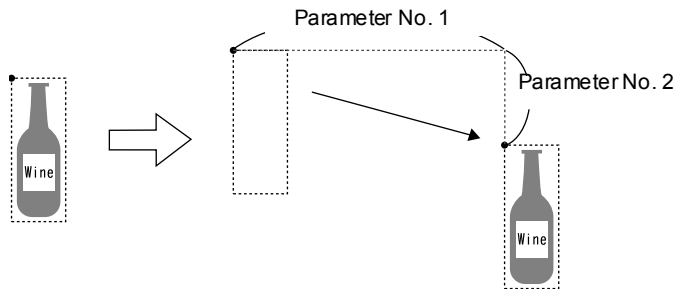
- PY3



3. Pattern

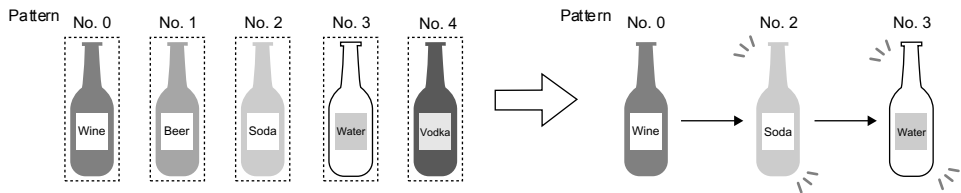
- Start point

The top left corner of the pattern becomes the start point.



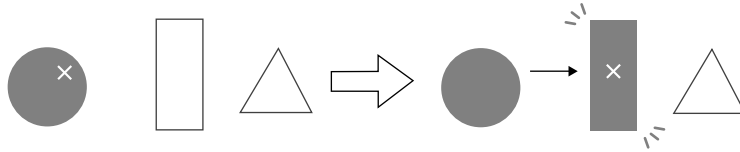
- (Pattern) No.

When a parameter for pattern number has been set, commanding the pattern number brings up the corresponding graphic.



4. Paint (start point)

The start point coordinates can be changed by a command from memory specified with a parameter. In this case, only REP is available; therefore, the previous paint (ex.: circle) remains.



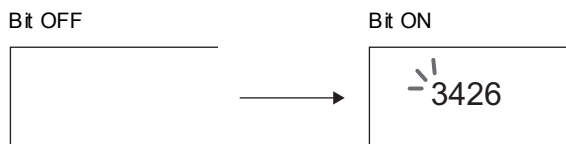
## Data Display

### Outline of Data Display in Graphic Library

---

In the graphic library, it is possible to use a function similar to data display parts as used on the screen. The usage is as follows:

- Showing/deleting a data display through bit setting (ON)/resetting (OFF)

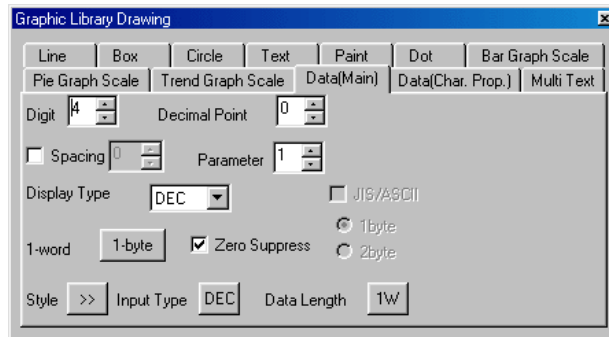


- Moving a data display on the screen



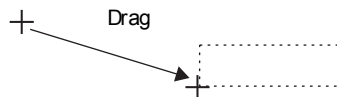
## Data Display Setting Procedure

1. Go to the drawing tool bar and click the [Data Display] icon. The [Graphic Library Drawing] dialog is displayed.

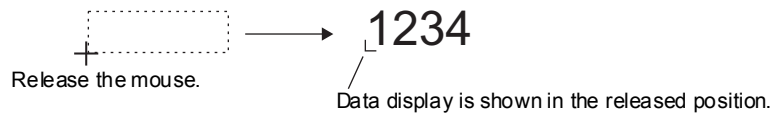


For the description of the [Data (Main)] tab window, see the following page. For the [Data (Char. Prop)] tab window, see page 4-16.

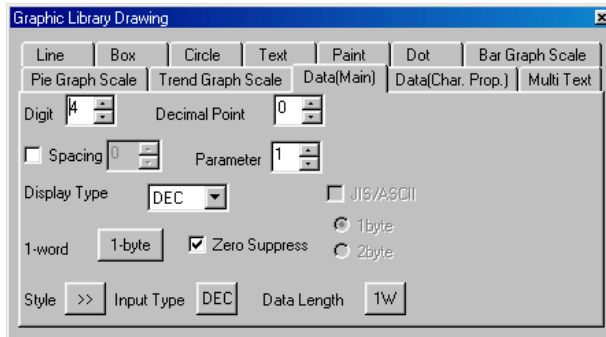
2. When the dialog setting is concluded, drag the mouse on the screen. A dotted line box as large as the data display is displayed with a cross cursor.



3. Release the mouse being dragged in the desired position. The data display is shown in the position.



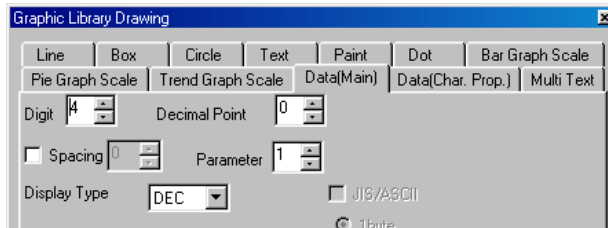
## [Data (Main)] Tab Window



## Parameter Setting for Data Display

Two kinds of parameters are provided for data display.

- For value change  
Specify a value for [Parameter]. This number designates the order of memory address allocated for value change on the data display.



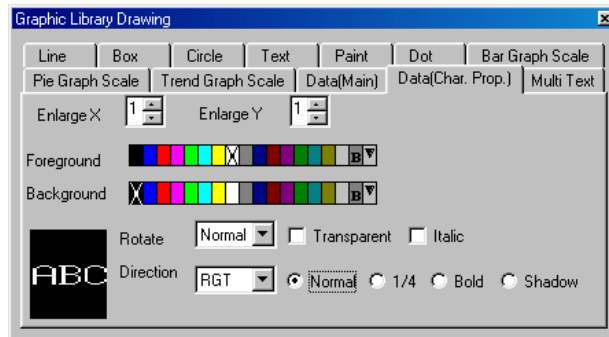
- For movement  
Click a data display placed in the graphic library. Click the [Parameter] icon on the drawing tool bar. The [Parameter Setting] dialog is displayed. Make necessary settings in the dialog.





## [Data (Char. Prop.)] Tab Window

The contents of the window are the same as for the data display on screens.



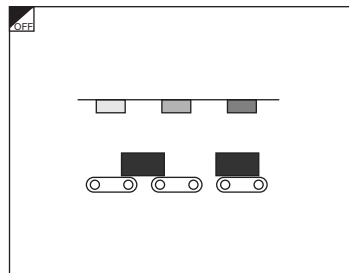
## Graphic Library Environment Setting

Environment setting for the graphic library is also started from [Display Environment] in the [Display] menu, as performed for screen editing. Therefore, this section explains the settings that are different from those in screen editing.

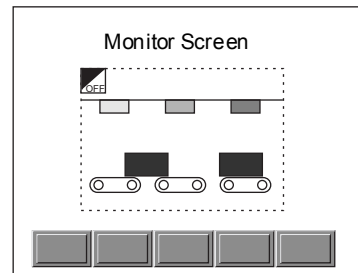
### Base Screen Display

While editing a graphic in the graphic library, a screen or multi-overlap can be placed behind the graphic to check the actual image.

Only a graphic

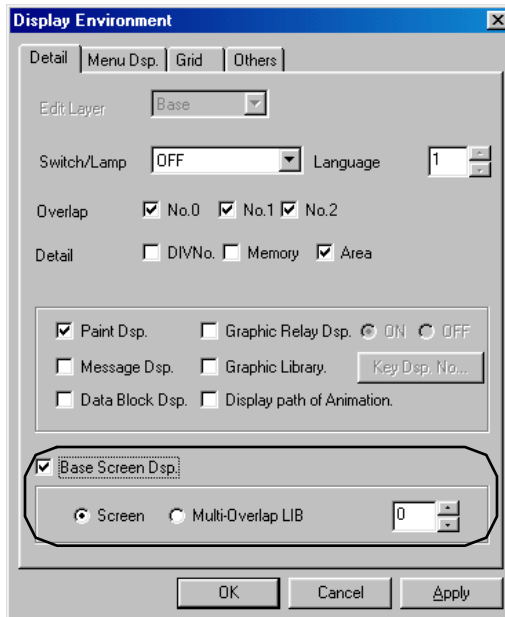
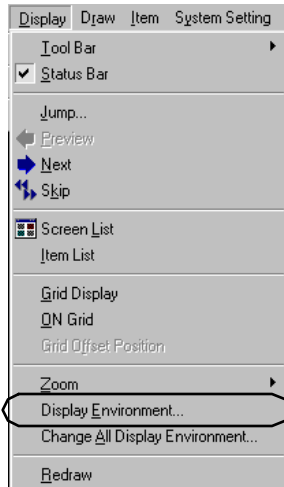


Graphic displayed on a base



An offset position can be changed with ease.

1. Select [Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed.
2. Check  Base Screen Dsp.. Selection from [Screen] and [Multi-Overlap LIB] is made possible.
3. Select either one and specify the desired number.
4. Click [OK]. The selected screen is placed behind the graphic.



If no screen is displayed, select [Redraw] from the [Display] menu or press the Home key on the keyboard.

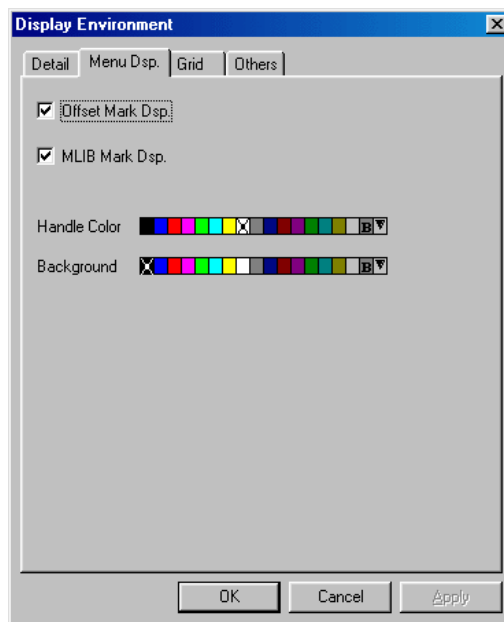
## Background Color Setting

It is possible to change the background color in the graphic library.



When the graphic library is called, its background setting is ignored and thus only the registered graphic is recognized as a target.

1. Select [Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed.
2. Open the [Menu Dsp.] tab window.
3. Select the desired background color and click [OK]. The graphic is shown on the background colored as specified.

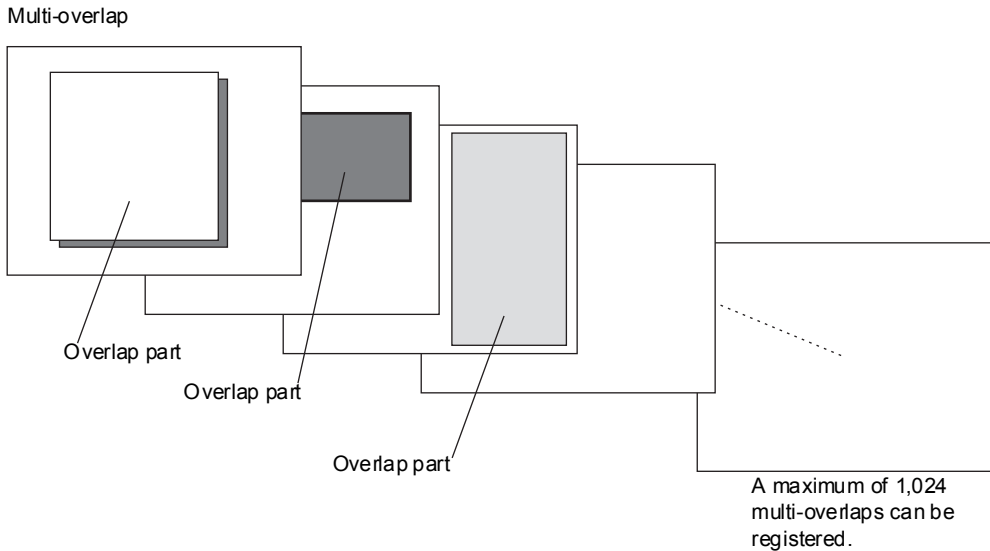


# Multi-overlap

Overlaps are registered in multi-overlaps.

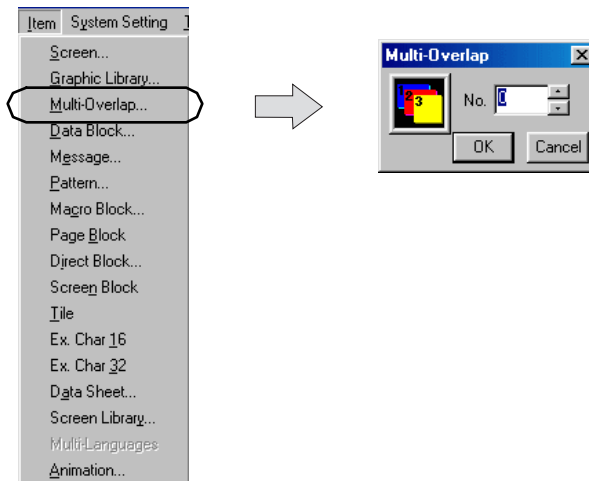
## Multi-overlap Structure

A maximum of 1,024 multi-overlaps can be registered. One multi-overlap is registered per editing window.



## Calling a Multi-overlap

1. Select [Multi-Overlap] from the [Item] menu. The [Multi-Overlap] dialog is displayed.
2. Specify the multi-overlap number to be opened and click [OK].



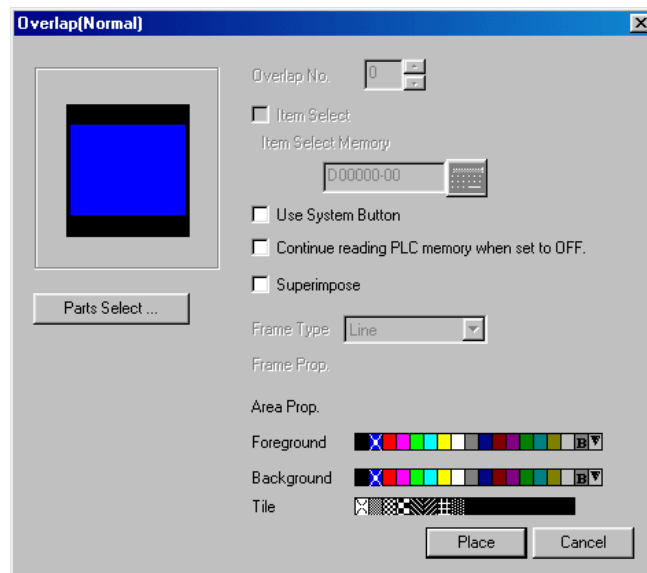
## Multi-overlap Editing

### Placing an Overlap

1. Click the [Overlap] icon on the tool bar.



2. The [Overlap (Normal)] dialog is displayed.



For the description of setting the dialog, see "Chapter 2 Overlap" in the ZM-71SE Instruction Manual (Function).

When the dialog setting is concluded, click [Place].

3. A dotted line box as large as an overlap is displayed with a cross cursor.



4. Click the mouse in the desired position. The overlap is placed. If necessary, change the position or the size.

## Editing in Overlap

When placing items such as switch parts or graphics, change over the editing layer from the base to an overlap. The procedure is the same as that in screen editing.

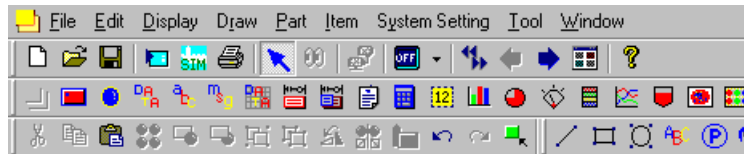
1. Place an overlap part in multi-overlap editing. Check that icons for drawing and parts (except for [Overlap]) are inactive.



2. Right-click the mouse. The menu is displayed. Select [Overlap 0].



The editing layer is now changed from the base to an overlap. Icons for drawing and parts (except for [Overlap]) become active.



3. Place desired parts or graphics on the overlap.



When an overlap is selected as the editing layer, the overlap cannot be moved or enlarged/reduced. To allow these operations, select [Base] from the right-click menu.

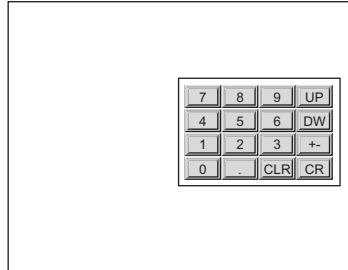
## Other Settings

Make the following settings as desired for multi-overlap.

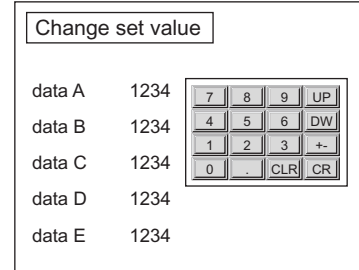
### Base Screen Display

During multi-overlap editing, a screen can be placed behind the overlap to check the actual image.

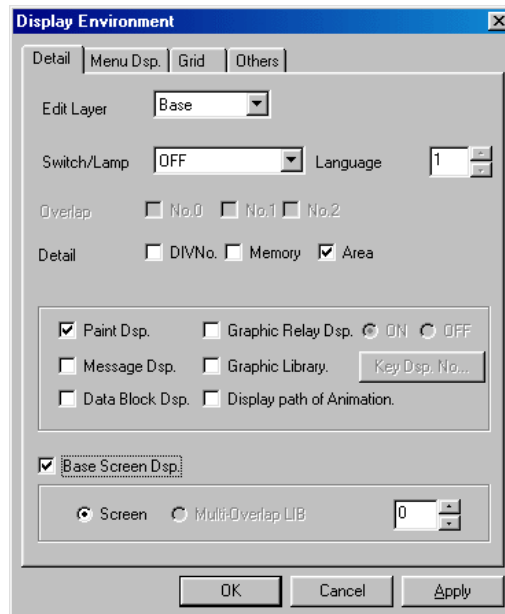
Only a multi-overlap



Multi-overlap displayed on a screen



1. Select [Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed.
2. Check [ Base Screen Dsp.]. [Screen] becomes active.
3. Click [Screen] and specify the desired number.
4. Click [OK]. The selected screen is placed behind the overlap.



If no screen is displayed, select [Redraw] from the [Display] menu or press the Home key on the keyboard.

## Macro Setting

Overlap parts registered in multi-overlap editing can be used with [OPEN Macro] or [CLOSE Macro]. These macros can be executed when the registered overlap part is displayed (OPEN macro) on or erased (CLOSE macro) from the screen.



Macro is a function to execute computation processing for user programs using the ZM series commands. For information on macro commands, see “Chapter 13 Macro” in the ZM-71SE Instruction Manual (Function).



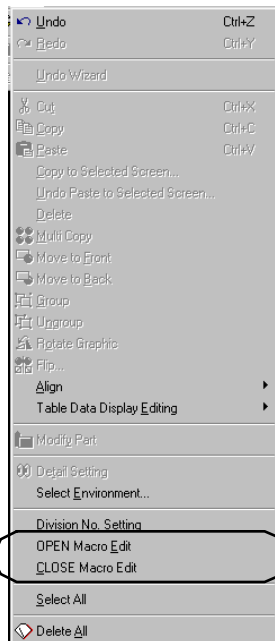
If a registered multi-overlap is set as a call-overlap on the screen, these macro settings become invalid. Set the overlap as a multi-overlap on the screen when enabling the macro settings.



If you delete a multi-overlap that is with an OPEN or CLOSE macro setting, be sure to delete the macro as well. Failure to delete the macro will cause an error during screen data transfer to the ZM.

## Macro Setting Commands

Select [OPEN Macro Edit] or [CLOSE Macro Edit] from the [Edit] menu. The corresponding macro editing window is displayed.



## Macro Editing and Deleting



The description is provided on page 4-55.



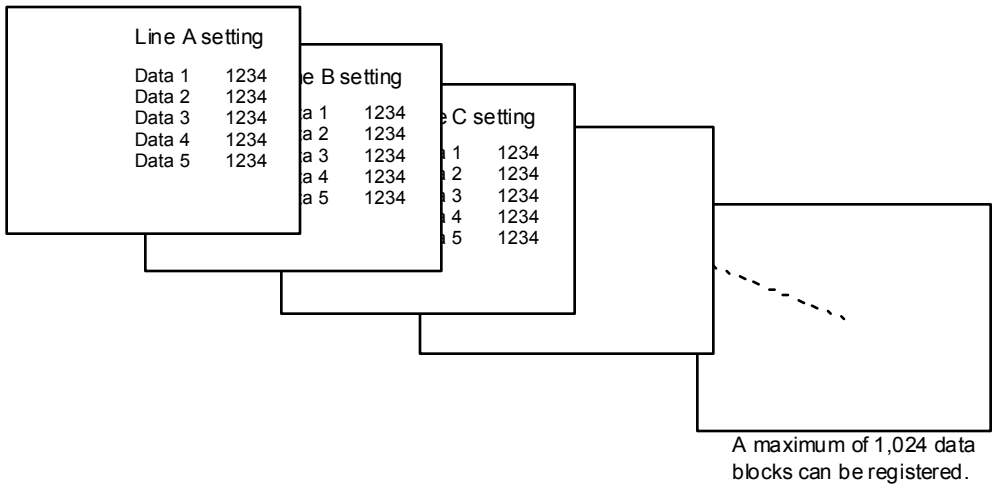
## Data Block

Data blocks (parts) are provided as areas where data displays such as numerical data or character display parts or graphics are registered.

### Data Block Structure

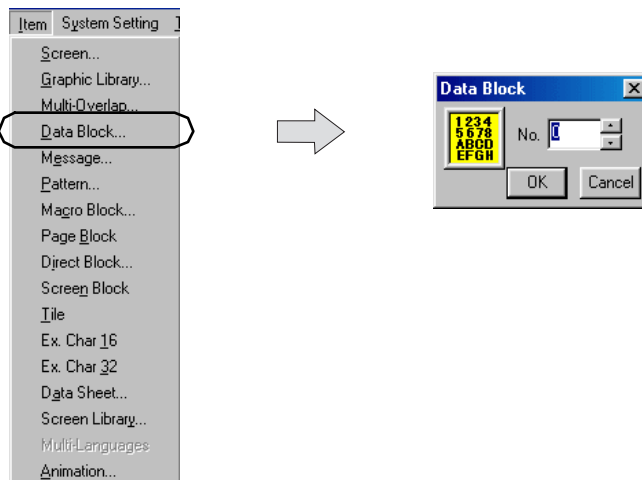
A maximum of 1,024 data blocks can be registered.

Data block



### Calling a Data Block

Select [Data Block] from the [Item] menu. The [Data Block] dialog is displayed. Specify the data block number to be opened and click [OK].



## Data Block Editing

### Parts

Numerical data display, character display and table data display parts can be placed in the same manner that they are placed on the screen.



For more information, see “Chapter 2 Screen Composition” in the ZM-71SE Instruction Manual (Function).

### Drawing Tools

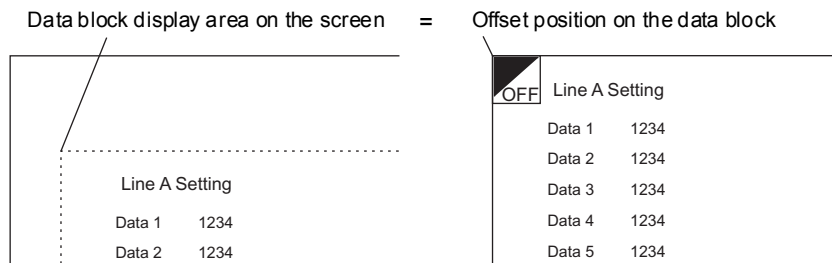
Except for the following, the drawing tools can be used in the same manner as used on the screen.



For more information, see “Chapter 3 Drawing Tools.”

### Offset Position Setting

Every data block has a reference position called an offset. A registered data block is always placed on the screen with respect to the offset position.



An offset position on the data block is shown with an “OFF” mark.

Every data block has an offset position at coordinates X, Y (0, 0) as default. To change the position, follow the procedure below.

1. Click the [Offset] icon on the drawing tool bar.



2. A cross cursor marked with “OFF” appears.



3. Click the mouse in the desired position. The offset mark is displayed at that location.



Changing the offset position prior to registering a data block is not valid. Set an offset position after registering a data block.

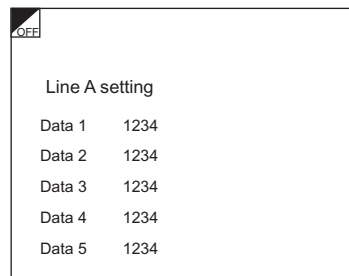
## Data Block Environment Setting

Environment setting for data block is also started from [Display Environment] in the [Display] menu, as performed for screen editing. Therefore, this section explains the display environment settings that are different from those in screen editing.

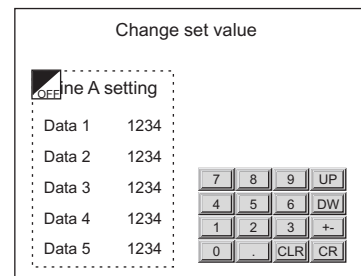
### Base Screen Display

While editing a data block, a screen or multi-overlap can be placed behind the data block to check the actual image.

Only a data block



Data block displayed on a base



An offset position can be changed with ease.

1. Select [Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed.
2. Check [ Base Screen Dsp.]. Selection from [Screen] and [Multi-Overlap LIB] is made possible.
3. Select either one and specify the desired number.
4. Click [OK]. The selected screen is placed behind the data block.

### Background Color Setting

It is possible to change the background color of a data block.



When a data block is called, its background setting is ignored and thus only the registered data is recognized as a target.

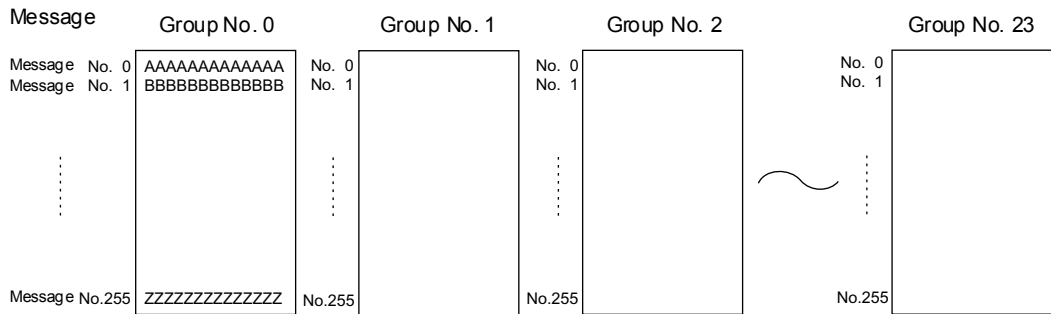
1. Select [Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed.
2. Open the [Menu Dsp.] tab window.
3. Select the desired background color and click [OK]. The data block is shown on the background colored as specified.

# Message

It is possible to register user's desired texts in the message editing area. Texts for the relay mode, message mode, bit sampling, alarm display (parts) that will vary according to the circumstances are registered in this area and can be displayed by the message display function.

## Message Structure

The message editing area is divided into 24 groups, each of which can contain 256 message lines. Therefore, you can register a maximum of 6,144 lines.



The maximum permissible number of characters per line depends on the number of displayed dots specified for the ZM.

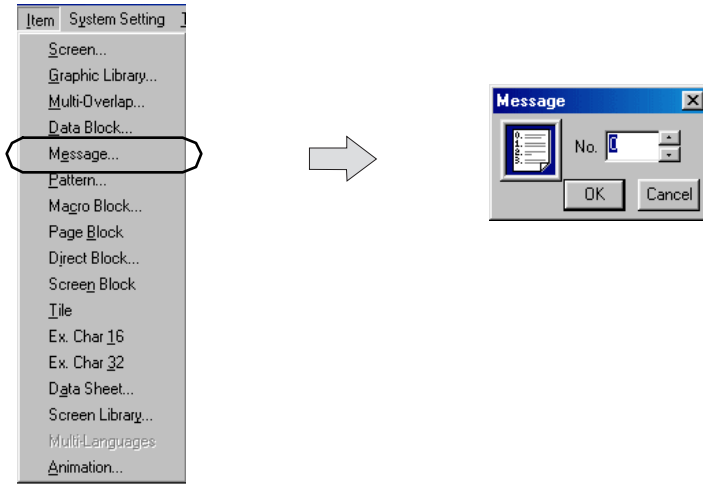
No. of displayed dots	Max. number of characters (1-byte)
800 × 600	100
640 × 480	80
320 × 240	40

Each message is given a group address (message group number and line number) as well as an absolute address (line number only).

Ordinary addresses (groups)		Absolute addresses	
Group No.	Message No.	Group No.	Message No.
0	0000 to 0255	(None)	0000 to 0255
1	0000 to 0255		0256 to 0511
2	0000 to 0255		0512 to 0767
3	0000 to 0255		0768 to 1023
4	0000 to 0255		1024 to 1279
5	0000 to 0255		1280 to 1535
6	0000 to 0255		1536 to 1791
7	0000 to 0255		1792 to 2047
8	0000 to 0255		2048 to 2303
9	0000 to 0255		2304 to 2559
10	0000 to 0255		2560 to 2815
11	0000 to 0255		2816 to 3071
12	0000 to 0255		3072 to 3327
13	0000 to 0255		3328 to 3583
14	0000 to 0255		3584 to 3839
15	0000 to 0255		3840 to 4095
16	0000 to 0255		4096 to 4351
17	0000 to 0255		4352 to 4607
18	0000 to 0255		4608 to 4863
19	0000 to 0255		4864 to 5119
20	0000 to 0255		5120 to 5375
21	0000 to 0255		5376 to 5631
22	0000 to 0255		5632 to 5887
23	0000 to 0255		5888 to 6143

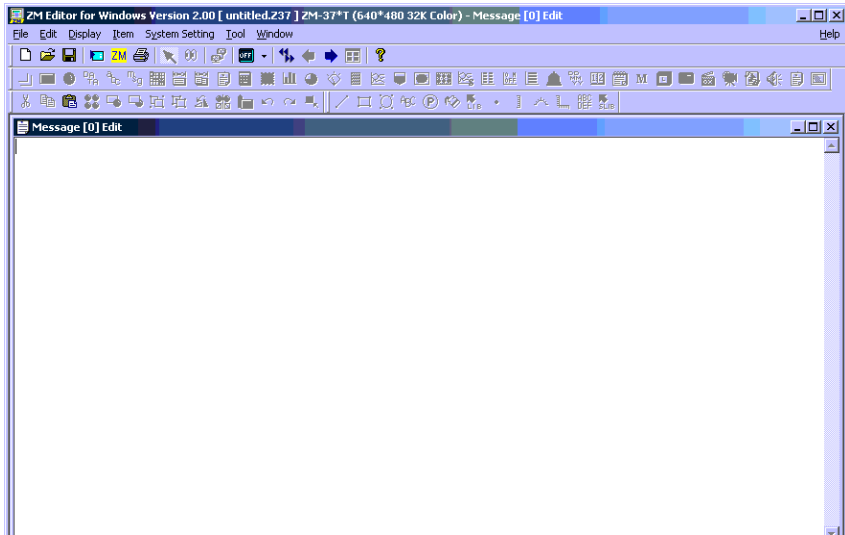
## Calling a Message

Select [Message] from the [Item] menu. The [Message] dialog is displayed. Specify the message group number to be opened and click [OK].



## Message Edit Window

The following window is displayed.



---

## Message Editing

---

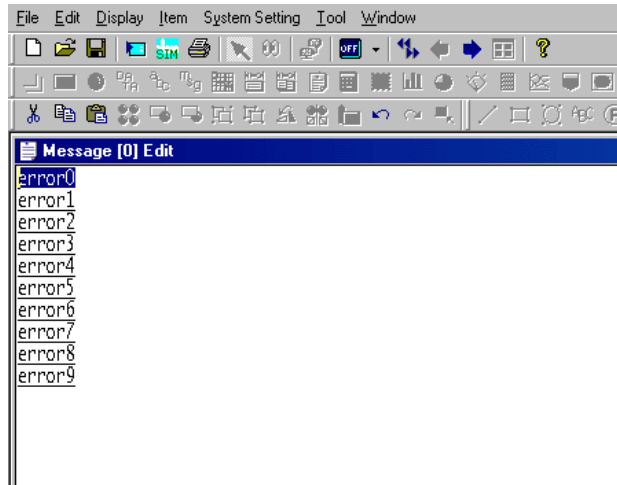
Messages are entered in the same way as characters in graphics.



To shift to the next group, click the [Next] icon on the icon bar.

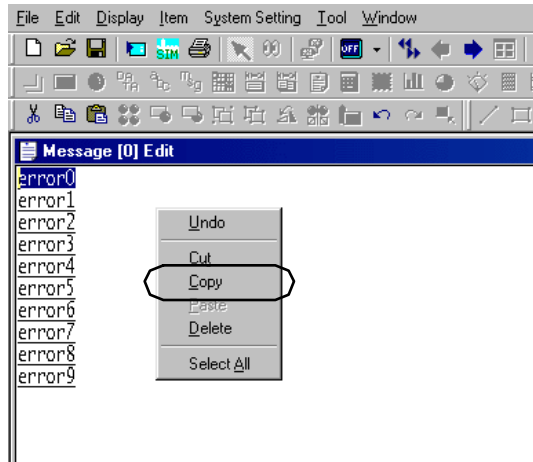
### Copying and Pasting Messages

1. Specify messages as the copy source by dragging the mouse. The messages are highlighted.

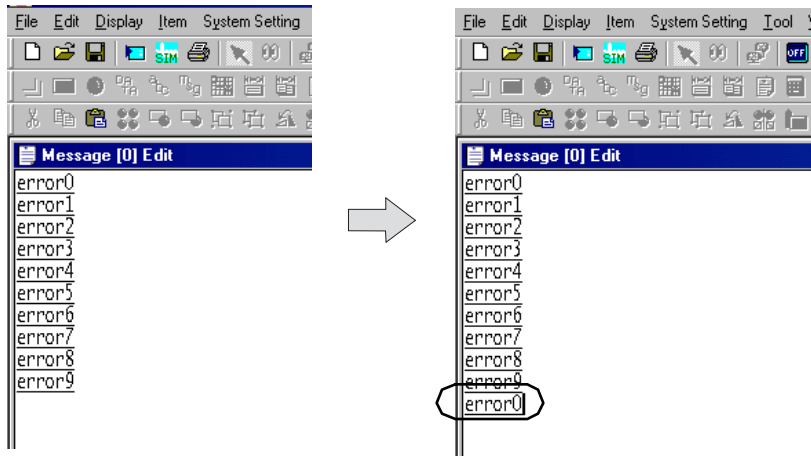


To select all messages in the group, select [Select All] from the right-click menu.

2. Select [Copy] from the [Edit] menu or the right-click menu, or click the [Copy] icon on the edit tool bar. The messages are copied to the Windows clipboard.



3. Move the cursor to the copy target position. Select [Paste] from the [Edit] menu or the right-click menu, or click the [Paste] icon on the edit tool bar. The specified messages are copied to the position.

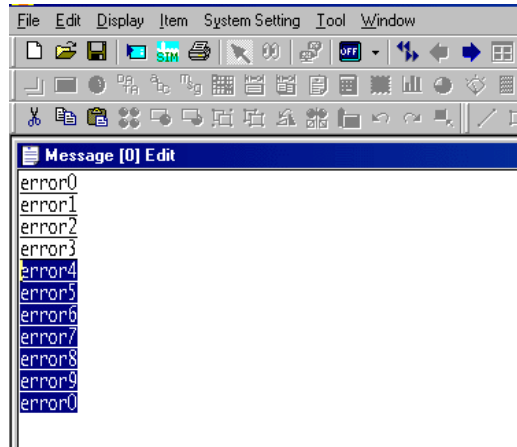


The [Paste] command inserts messages into the specified position so that the following lines move down accordingly.

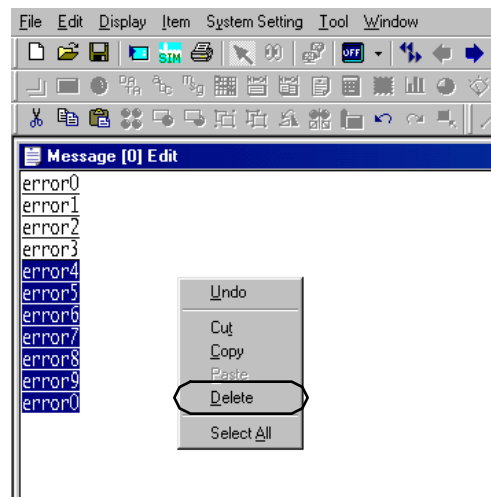


## Deleting Messages

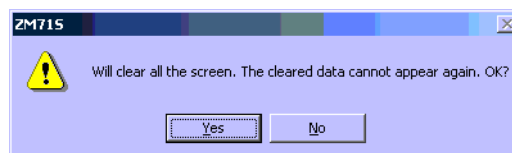
1. Specify messages to be deleted by dragging the mouse. The messages are highlighted.



2. Select [Delete] from the [Edit] menu or the right-click menu. The specified messages are deleted.



When deleting all messages from the group, select [Delete All] from the [Edit] menu. The confirmation message as shown on the right appears.



To delete all messages, click [Yes].

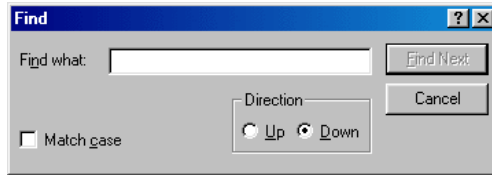
## Message Search and Replacement

Searching for or replacing messages is possible.

### Search

---

1. In the [Message Edit] window, check the position of the mouse cursor.
2. Select [Find] from the [Edit] menu. The [Find] dialog is displayed.

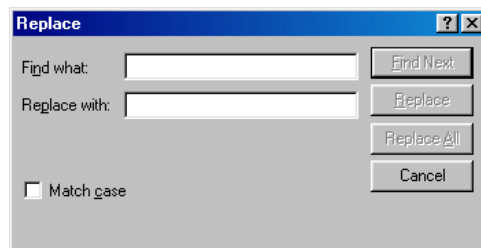


3. Enter the string to be searched for into the [Find what] field.
4. Select an option from [Direction]. Select [Up] when searching the window upward from the cursor position. Select [Down] when searching the window downward from the cursor position.
5. Check [ Match case] to make a distinction between upper-case and lower-case letters during searching messages.
6. Clicking [Find Next] starts searching the window in the selected direction.

### Replacement

---

1. In the [Message Edit] window, check the position of the mouse cursor.
2. Select [Replace] from the [Edit] menu. The [Replace] dialog is displayed.



3. Enter the desired strings respectively into the [Find what] and [Replace with] fields. Check [ Match case] to make a distinction between upper-case and lower-case letters during searching messages.

4. Clicking [Find Next] starts searching the window downward from the cursor position. When [Replace] is clicked, the string for [Find what], if found during searching downward from the cursor position, is replaced with the string for [Replace with], and search continues. When [Replace All] is clicked, all the strings for [Find what], if found during searching downward from the cursor position, are replaced with the string for [Replace with].



When searching the [Message Edit] window entirely, move the cursor to the top in advance.

## Message Display Environment Setting

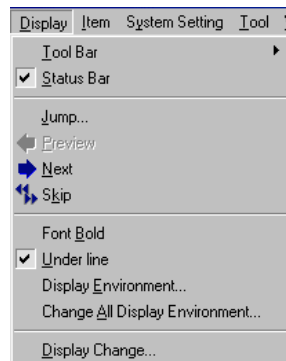
The [Display] menu contains commands for messages.

### [Font Bold]

When this command is selected, message characters are displayed in the bold style similar to the [Bold] option available on screens.

### [Under line]

This command is checked as default. Only the registered messages are underlined. For registered messages containing spaces etc., this command can be used when counting the number of characters in the messages.



### [Display Environment]

Selecting this command bring up the [Display Environment] dialog. This setting is valid only when the language selection function is in use.



For more information on the function, see “Chapter 29 Language Selection” in the ZM-71SE Instruction Manual (Function).

[Display Change]

This command is valid only when alarm display in the sampling function is in use. Selecting this command switches the display as the following:

No.	RelayNo.	Memorize	Sound	WAV File No.	Sound Priority	E-Mail	Message
000		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error0
001		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error1
002		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error2
003		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error3
004		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error4
005		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error5
006		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error6
007		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error7
008		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error8
009		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error9
010		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	error0
011		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	
012		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	
013		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	
014		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	
015		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	
016		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	0	<input type="checkbox"/>	

The commands below are added to the [Display] menu.

[No.]

When this command is selected, line numbers are displayed.

[Relay No.]

When this command is selected, the allocation of memory used for alarm display is displayed.

[Memorize]

Checked lines are stored in alarm message history records. Unchecked lines are not stored in history records.

[WAV]

When this command is selected, the column that indicates settings with/without sound output is displayed.

[WAV File No.]

When this command is selected, WAV file numbers are displayed.

[Sound Priority]

When this command is selected, the order of precedence is displayed.

[E-Mail]

When this command is selected, the column that indicates settings with/without e-mail is displayed.



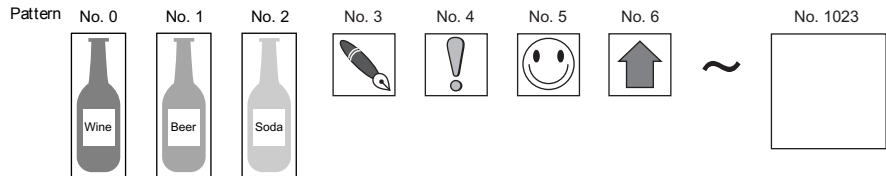
Refer to ZM-71SE Instruction Manual (Function) for more information on the following: For alarm display, see “Chapter 10 Sampling.” For sound output, see “Chapter 20 Sound.” For e-mail, see “Chapter 27 E-Mail.”

# Pattern

Patterns are the areas where bitmap files are imported and graphics are drawn in dots and then registered.

## Pattern Structure

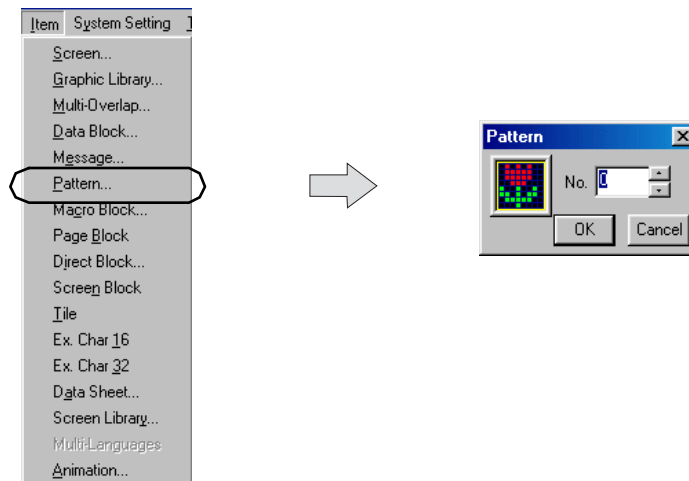
A maximum of 1,024 patterns can be registered.



The maximum capacity per pattern is 128 KB. The maximum permissible number of dots are the same as the number specified for the edit model: 800 × 600 dots, 640 × 480 dots, or 320 × 240 dots.

## Calling a Pattern

Select [Pattern] from the [Item] menu. The [Pattern] dialog is displayed. Specify the pattern number to be opened and click [OK].



## Pattern Editing

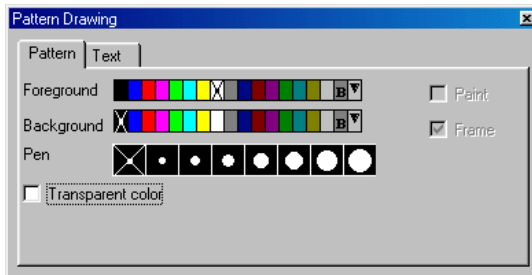
---

The following tool bar is provided for pattern drawing.



### [Pencil] Icon

Clicking this icon brings up the [Pattern Drawing] dialog.



#### [Foreground]

Select a color to be displayed by clicking or dragging.

#### [Background]

Select a color to be displayed by right-clicking or right-dragging.

#### [Pen]

Select a dot size for the pencil command.

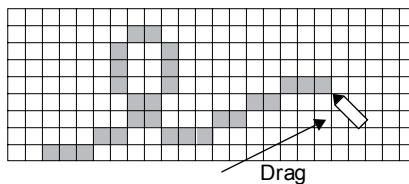
#### Transparent Color

Check this box when transparent color setting is necessary. For more information on transparent color setting, see "Chapter 9 Graphic Display" in the ZM-71SE Instruction Manual (Function).

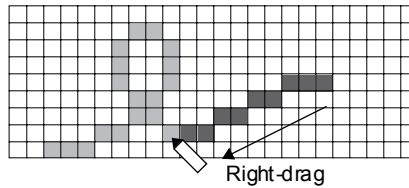
### Pencil Command Usage

---

1. Select a foreground color, background color, and dot size ([Pen]).
2. In the [Pattern Edit] window, draw a graphic by clicking or dragging the mouse. It is drawn with the specified-size pen in the color for [Foreground].

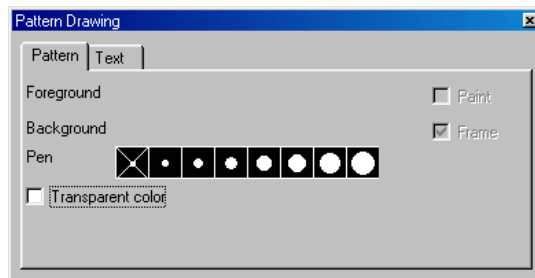


- To draw in the color for [Background], right-click or right-drag the mouse.



## [Eraser] Icon

Clicking this icon brings up the [Pattern Drawing] dialog.



### [Pen]

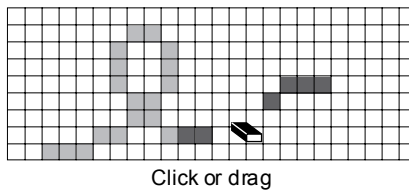
Select a dot size for the eraser command.

### Transparent Color

Check this box when transparent color setting is necessary. For more information on transparent color setting, see "Chapter 9 Graphic Display" in the ZM-71SE Instruction Manual (Function).

## Eraser Command Usage

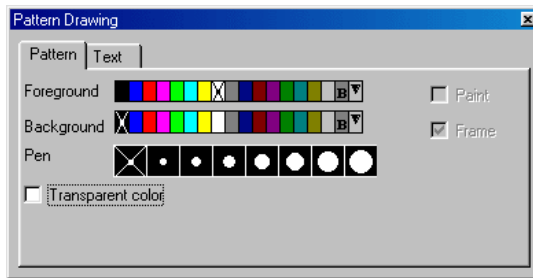
- Select a dot size ([Pen]).
- In the [Pattern Edit] window, click or drag the mouse over the graphic. The eraser in the size for [Pen] erases the graphic.



Operation by the eraser command is the same as drawing in dots using black color.

## [Line] Icon

Clicking this icon brings up the [Pattern Drawing] dialog.



[Foreground]

Select a color to be displayed by clicking or dragging.

[Background]

Select a color to be displayed by right-clicking or right-dragging.

[Pen]

Select a dot size for the line command.

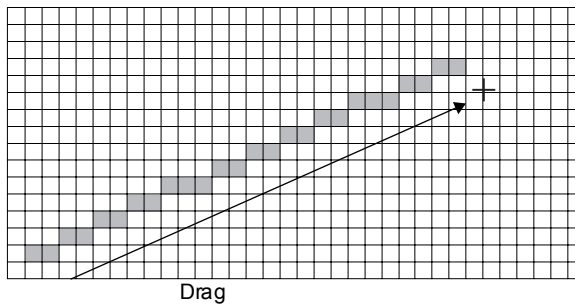
Transparent Color

Check this box when transparent color setting is necessary. For more information on transparent color setting, see "Chapter 9 Graphic Display" in the ZM-71SE Instruction Manual (Function).

## Line Command Usage

---

1. Select a foreground color, background color, and dot size ([Pen]).
2. In the [Pattern Edit] window, drag the mouse. A line is drawn with the specified-size pen in the color for [Foreground].

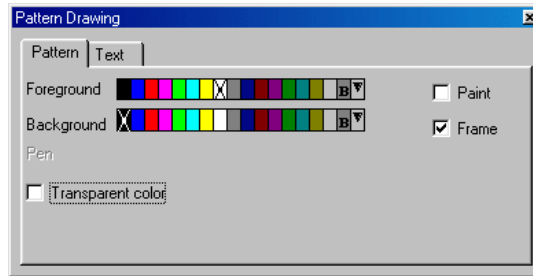


3. To draw in the color for [Background], right-drag the mouse.



## [Box] Icon

Clicking this icon brings up the [Pattern Drawing] dialog.



### [Foreground]

Select a color to be displayed by dragging.

### [Background]

Select a color to be displayed by right-dragging or by dragging with the  [Paint] option checked (see the next).

### [Paint]

Check this when painting boxes. With a check mark, drawn boxes are painted in the color for [Background].

### [Frame]

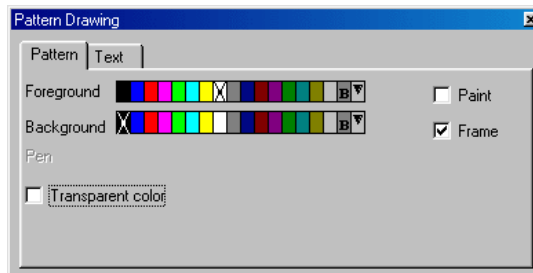
This is active with  [Paint] checked. With a check mark, the painted box is enclosed in a frame. The frame is in the color for [Foreground].

### [Transparent Color]

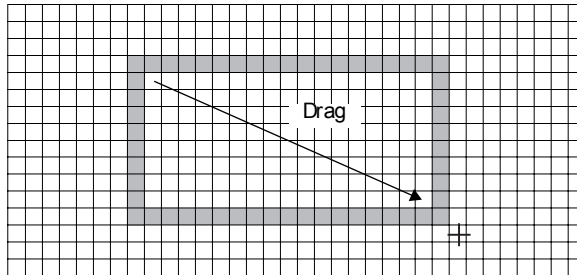
Check this box when transparent color setting is necessary. For more information on transparent color setting, see "Chapter 9 Graphic Display" in the ZM-71SE Instruction Manual (Function).

## Box Command Usage

1. Select a foreground color, background color, and check or uncheck  [Paint] and  [Frame].

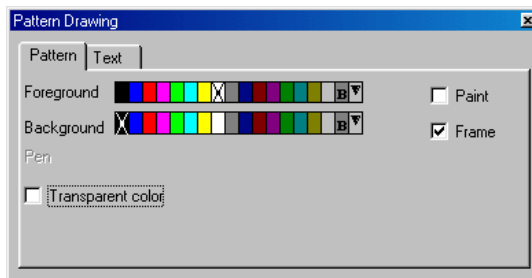


2. In the [Pattern Edit] window, drag the mouse. A box is drawn according to the settings.



### [Circle] Icon

Clicking this icon brings up the [Pattern Drawing] dialog.



#### [Foreground]

Select a color to be displayed by dragging.

#### [Background]

Select a color to be displayed by right-dragging or by dragging with the [ Paint] option checked (see the next).

#### [ Paint]

Check this when painting circles. With a check mark, drawn circles are painted in the color for [Background].

#### [ Frame]

This is active with [ Paint] checked. With a check mark, the painted circle is enclosed in a frame. The frame is in the color for [Foreground].

#### [ Transparent Color]

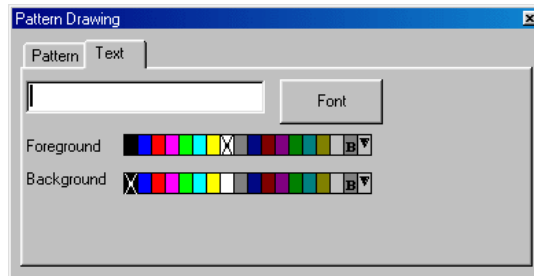
Check this box when transparent color setting is necessary. For more information on transparent color setting, see "Chapter 9 Graphic Display" in the ZM-71SE Instruction Manual (Function).

## Circle Command Usage

1. Select a foreground color, background color, and check or uncheck [ Paint] and [ Frame].
2. In the [Pattern Edit] window, drag the mouse. A circle is drawn with respect to the drag start point as the center.

## [Text] Icon

A font available for use under Windows can be imported as a bitmap. Clicking this icon brings up the [Pattern Drawing] dialog.



### [Foreground]

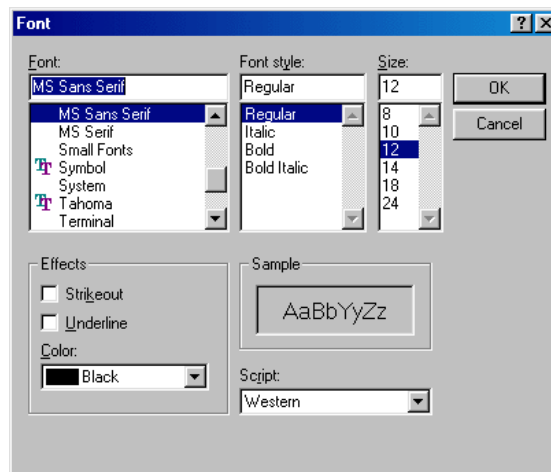
Select a character color.

### [Background]

Select a character background color.

### [Font]

Clicking this brings up the [Font] dialog.

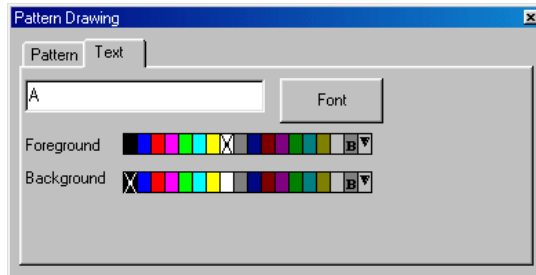


Select the desired options for [Font], [Font Style], and [Size]. To go back to the previous dialog, click [OK].

### Text Command Usage

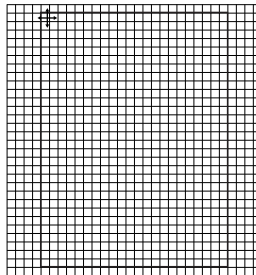
---

1. Select a foreground color and a background color, and make [Font] settings.
2. In the [Pattern Drawing] window, click the text field. Check that the cursor is blinking inside.
3. Key in a text as desired.

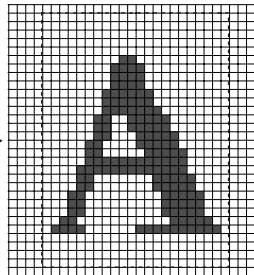


4. In the [Pattern Edit] window, drag the mouse. A box as large as the text is displayed. Release the mouse being dragged to place the text.

Dragging the mouse displays a box.



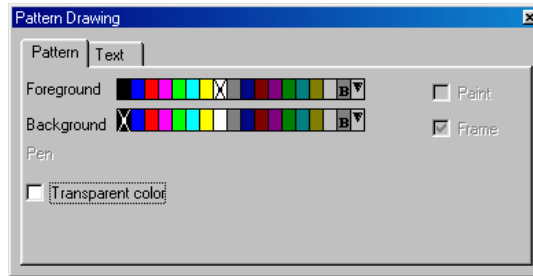
Releasing the mouse places the text.



It is not possible to change the placed text. When correcting the text, delete it or cancel it by the [Undo] icon.

## [Paint] Icon

Clicking this icon brings up the [Pattern Drawing] dialog.



### [Foreground]

Select a color to be displayed by clicking.

### [Background]

Select a color to be displayed by right-clicking.

### Transparent Color

Check this box when transparent color setting is necessary. For more information on transparent color setting, see “Chapter 9 Graphic Display” in the ZM-71SE Instruction Manual (Function).

## Paint Command Usage

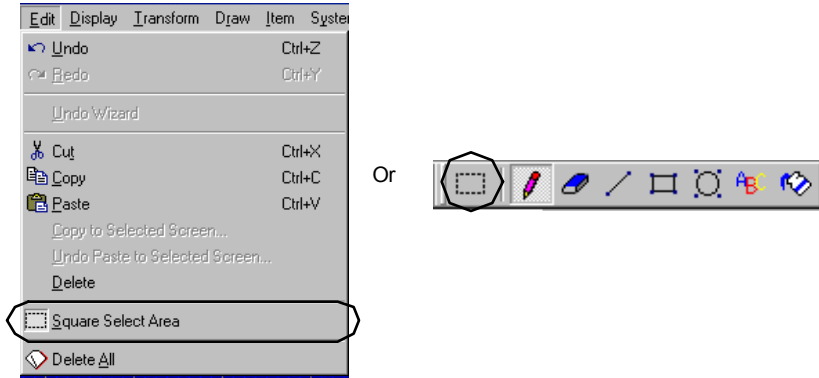
1. Select a foreground color and a background color.
2. In the [Pattern Edit] window, click the mouse. The enclosed area is painted in the color for [Foreground].

## [Square Select Area] Icon

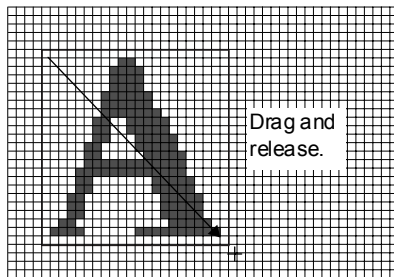
This icon is used when specifying a pattern area. Dragging the mouse over a pattern encloses it. The enclosed area becomes a target for copy or deletion.

## [Square Select Area] Usage

1. Select [Square Select Area] from the [Edit] menu or click the [Square Select Area] icon.

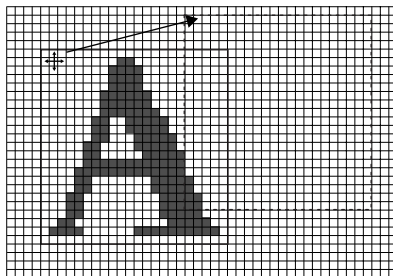


2. In the [Pattern Edit] window, drag the mouse from the start point to the end point as drawing a box.

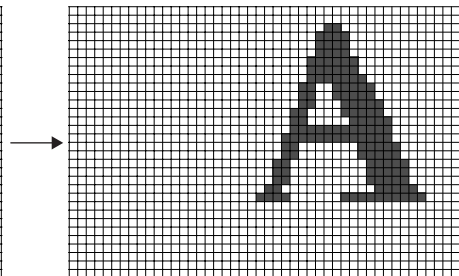


3. A box is displayed. Execute a necessary function such as copy or deletion. To move the box, drag it.

Drag the displayed box.

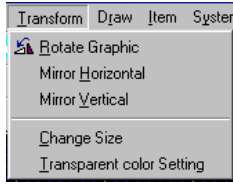


Release the mouse to finish the movement.



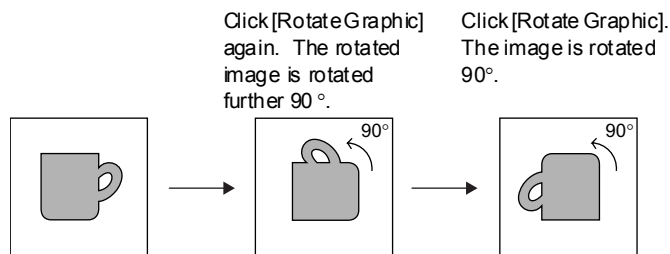
## Transforming Patterns

This section explains the commands in the [Transform] menu.



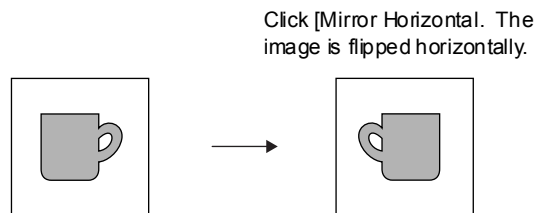
### [Rotate Graphic]

Clicking this command rotates the registered pattern 90°.



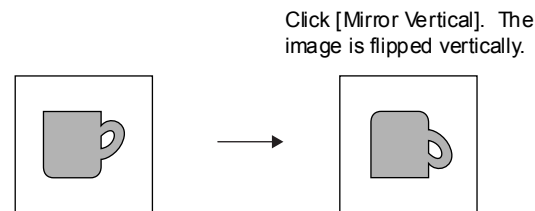
### [Mirror Horizontal]

Clicking this command flips the registered pattern horizontally.



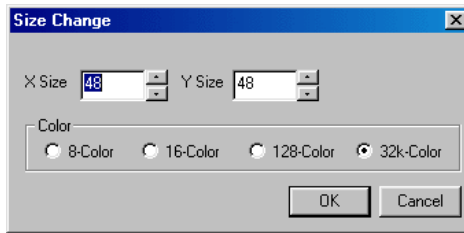
### [Mirror Vertical]

Clicking this command flips the registered pattern vertically.



[Change Size]

Use this command when changing the size. Clicking this command brings up the [Size Change] dialog.



The available setting ranges are as follows:

Width (X): 1 - 800                      Height (Y): 1 - 600

Color: 8-color/16-color/128-color/32K-color



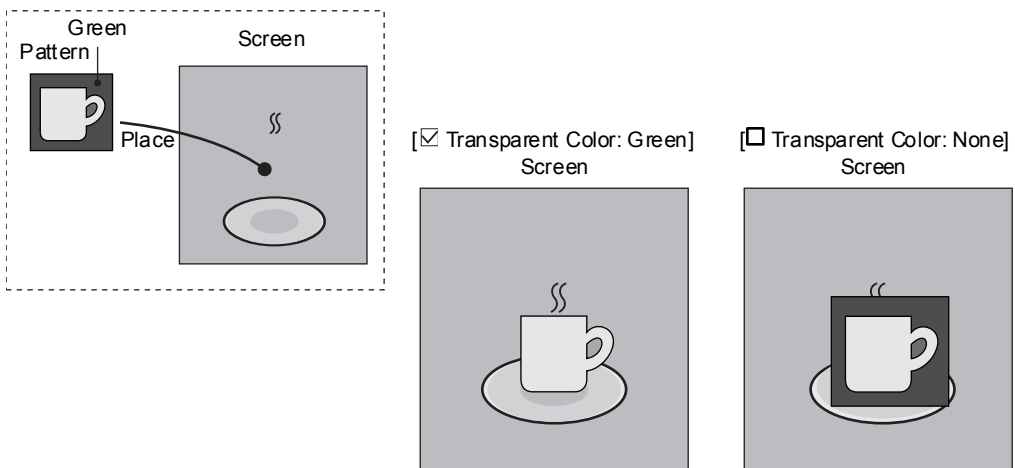
If a size change is made during pattern editing or when a pattern has been completed, the created pattern data is deleted.

[Transparent Color Setting]

When a pattern is animated in the graphic relay mode and the screen background is set to any color other than black, the pattern is displayed in the XORed color. With this transparent setting, however, the actual pattern color can be displayed. (Set the color that you do not want to display as transparent when the pattern is placed on the screen.) Only one color can be set as transparent for each pattern. When setting a color as transparent, the transparent color is reflected even when placement is not animated. Take care to draw the pattern so that it falls within the 4,088-dot size limit (pattern size = X size × Y size).

Ex.:

When a pattern is created and placed on the screen, it differs in the following ways depending on whether or not a color is set as transparent.



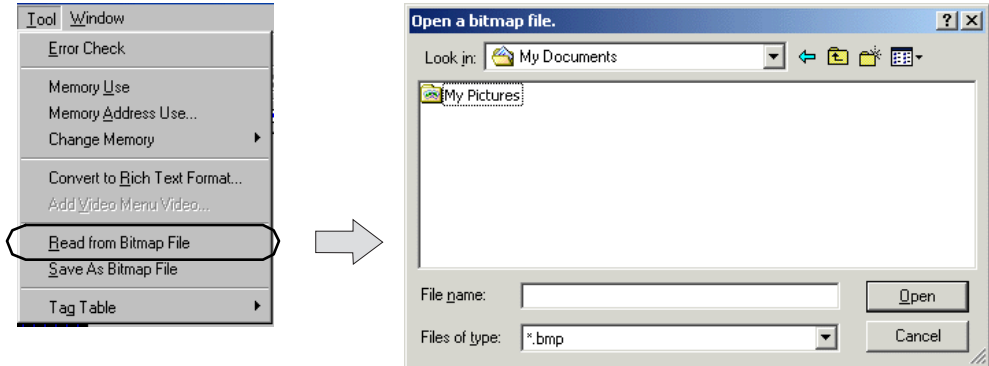


## Bitmap Import and Storage

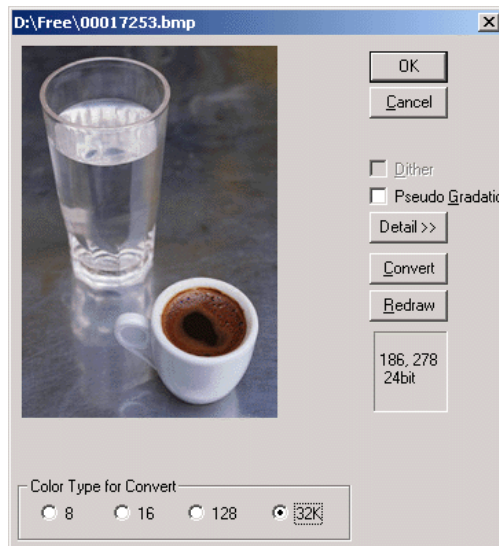
It is possible to import a bitmap file into pattern editing and to store a pattern as a bitmap file.

### Importing a Bitmap File

1. Select [Read from Bitmap File] from the [Tool] menu. The [Open a Bitmap File] dialog is displayed.

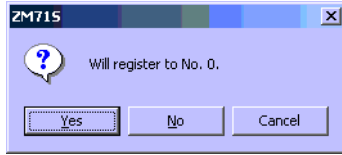


2. Select the desired file and click [Open]. The following dialog is displayed.

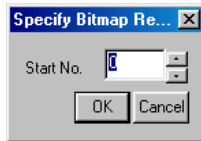


Click [OK].

3. The following confirmation message is displayed. Clicking [Yes] imports the bitmap file.



4. Clicking [No] brings up the [Specify Bitmap Read No.] dialog. Enter the top pattern number to be imported and click [OK]. The bitmap data is imported.

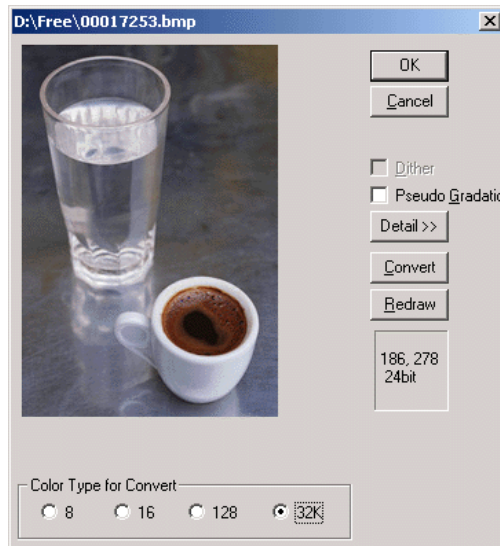


### Dialog for Bitmap Import

---

Dither]

When this option is checked, dithering can be performed to make the colors of the bitmap closer to the original. The option is invalid when [32K] is selected for [Color Type for Convert].

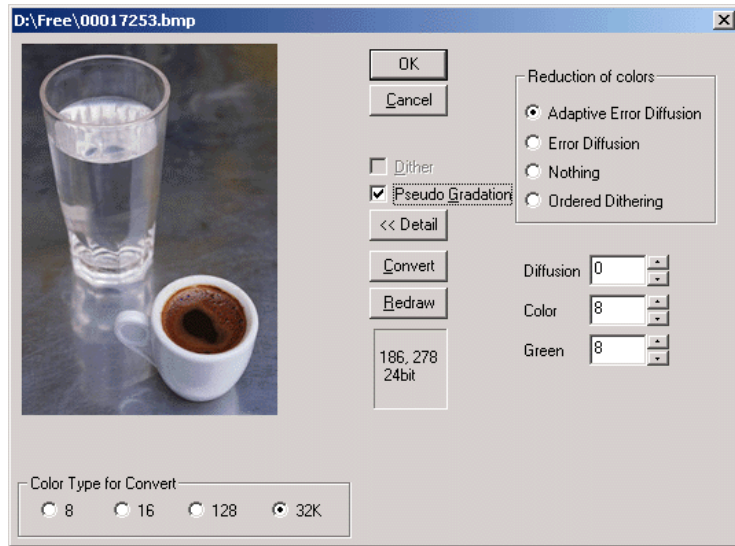


Pseudo Gradation]

Depiction in pseudo gradation is performed. With the use of 3-D parts on the ZM-42 to 82 series, however, this option and [Dither] cannot be selected. Pseudo gradation is to be set automatically.

## [Detail]

This option brings up the detailed menu for [Pseudo Gradation] as the following:



## [Adaptive Error Diffusion]

Error diffusion adapted to each individual part of the image can be performed. This function places emphasis on smoothness of image more than the following [Error Diffusion] does.

## [Error Diffusion]

If a color of the source image is not included in the color pallet, two bits in similar colors are placed alternately so as to reproduce the color.

## [Nothing]

A pallet similar to the source image color is selected.

## [Ordered Dithering]

Error diffusion pattern is made closer to regular pattern.

## [Diffusion] (0 - 3, standard: 1)

Specify a level of diffusion.

## [Color] (0 - 15, standard: 8)

Assign priority to brightness or color for depicting. When a specified number gets smaller, brightness takes priority over color.

## [Green] (0 - 15, standard: 8)

Assign priority to blue-green-based color or red-yellow-based color for depicting. When a specified number gets smaller, green-based color takes priority over other colors.

## [Convert]

Clicking this option (depressed) brings up the preview of the placed image.

**[Redraw]**

When any setting [Dither] or [Pseudo Gradation] has been changed, click [Convert] (depressed) and [Redraw]. The image according to the change is previewed.



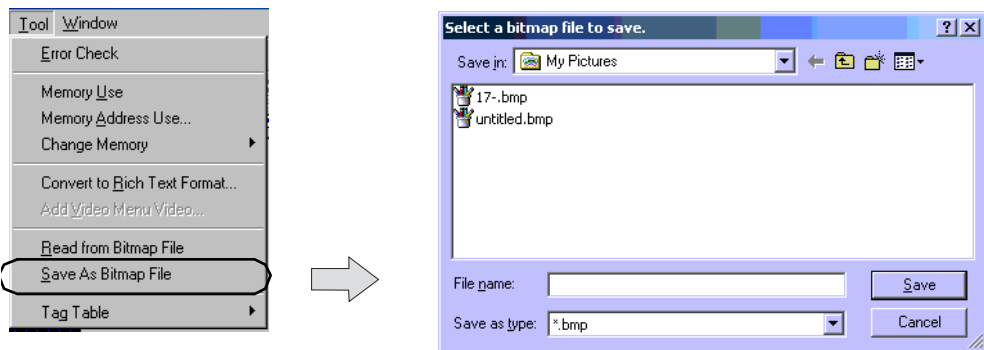
In the case of the ZM-42 to 82 series:

When the [ Use 3D Parts] (in the [Environment Setting] tab window opened in the [Unit Setting] dialog selected from the [System Setting] menu) setting is changed, the pallet is also changed and the colors of the placed bitmap vary accordingly. To bring the bitmap to the initial condition, repeat pasting operation of the bitmap.

## Storing in a Bitmap File

The pattern currently being opened can be stored in a bitmap file (extension: ".bmp").

1. Select [Save As Bitmap File] from the [Tool] menu. The following dialog is displayed.



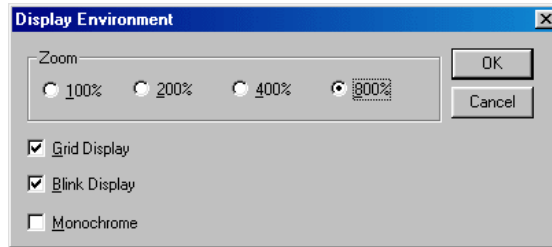
2. Give a name to the file and click [Open]. The pattern is now stored as a bitmap.

## Pattern Environment Setting

The [Display] menu includes the following commands.

### [Display Environment]

The following dialog is displayed.



[Zoom] (100%/200%/400%/800%)

Select a zoom in % for display. Default is 800%.

[Grid Display]

Select whether or not to display grids in the background.

[Blink Display]

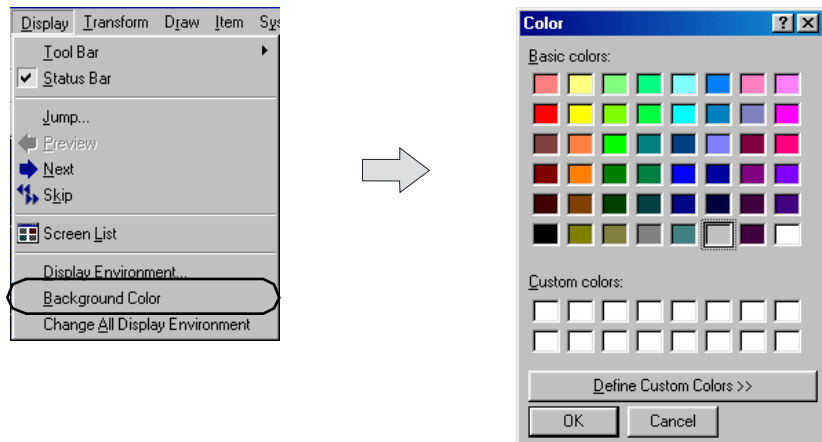
It is possible to distinguish the color set to flash on the pattern. When unchecked, the color set to flash is indistinguishable from the normal color.

[Monochrome]

With ZM-42/43 monochrome type or ZM-62E, checking this option depicts patterns in 8- or 2-gradation colors. Therefore, patterns are made closer to images depicted on the ZM.

### [Background Color]

When editing a pattern, it is possible to view the actual screen background color. When you click this command, the [Color] dialog is displayed. Select the desired color and click [OK]. The pattern edit window background color changes.



## Placing a Pattern

---

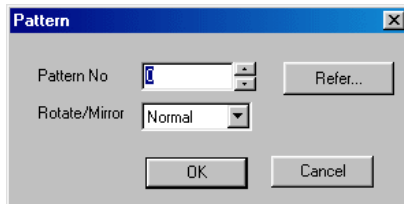
Registered patterns can be placed on screens or in the graphic library using the [Pattern] icon on the drawing tool bar.



For more information, see “Chapter 3 Drawing Tools.”



After a pattern placement, the [Pattern No.] can be changed and [Rotate/Mirror] operations can be performed. Double-click the placed pattern (within 4,088-dot size), or select it with handles and click [Detail/Prop. Change] icon. The [Pattern] dialog is displayed.



### Size of a Placed Pattern

- If a pattern size is 128 KB or less, the maximum permissible size setting is 800 dots horizontal and 600 dots vertical. However, if [Rotate/Mirror] operation is performed on a pattern placed on the screen or in the graphic library, the size is limited to 4,088 dots or less (pattern size = X size × Y size).
- When animation is performed with patterns in the graphic mode or the graphic relay mode, patterns that are 4,088 dots or less in size tend to be depicted more smoothly.
- Once a pattern is placed, it cannot be reduced but can be enlarged. If a pattern is 4,088 dots or less in size, its size can be multiplied by integers. Note that if a pattern that does not exceed 4,088 dots is enlarged on the screen or in the graphic library, it may exceed 4,088 dots, and thus be subject to the limitations described above in the case of [Rotate/Mirror] operation or animation.

---

# Macro Block

---

Macro programs are registered in macro blocks. Macro blocks are executed by CALL commands in the macro mode or in other macro programs.

---

## Macro Block Structure

---

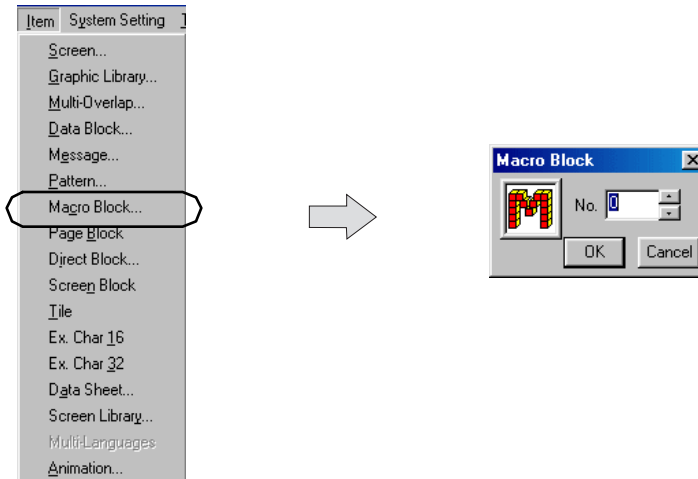
A maximum of 1,024 macro blocks can be registered. A maximum of 1,024 lines can be set for one macro block.

---

## Calling a Macro Block

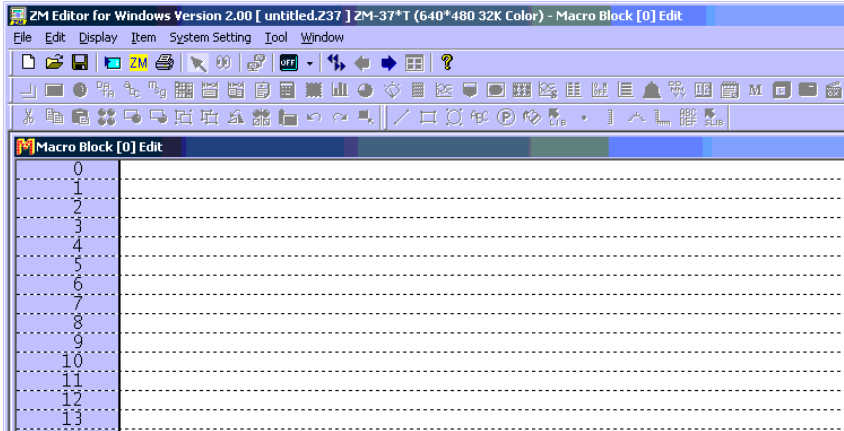
---

Select [Macro Block] from the [Item] menu. The [Macro Block] dialog is displayed. Specify the macro block number to be opened and click [OK].



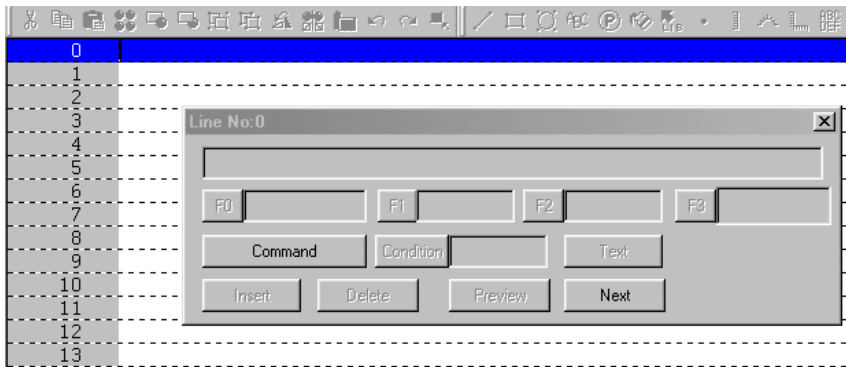
## Macro Block Editing

Opening a macro block brings up the following window.

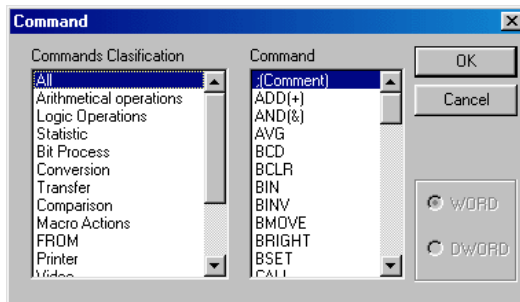


Follow the procedure below.

1. Click a white line in the window. The [Line No.] dialog is displayed.



2. Click the [Command] button. The [Command] dialog is displayed.

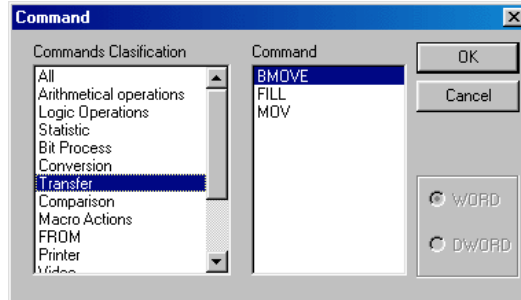






### [Command] Dialog

[Commands Classification] on the left in the dialog lists the macro command groups and [Command] on the right lists the commands. Clicking [All] under [Commands Classification] brings up all commands under [Command]. Clicking a group name under [Commands Classification] brings up the associated commands under [Command].



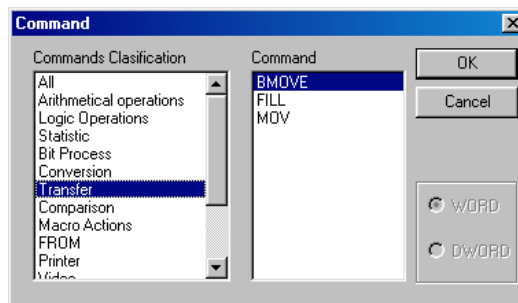
[Command] lists commands in alphabetical order.



For more information on the command groups and the commands, see “Chapter 13 Macro” in the ZM-71SE Instruction Manual (Function).

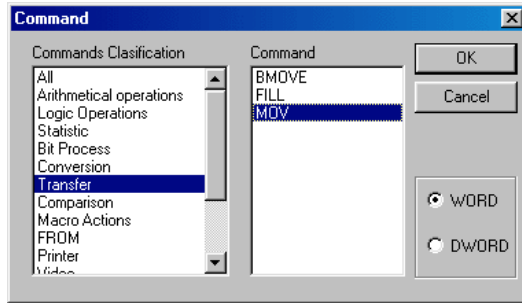
Ex.: Selecting the [MOV] command

- 1) Click [Transfer] under [Commands Classification]. The associated commands are listed under [Command].

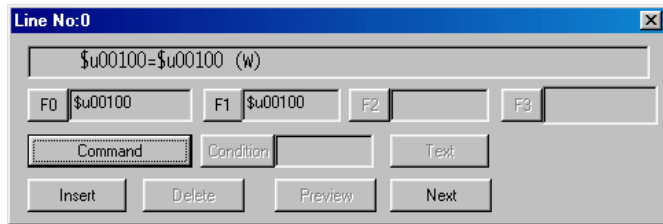


- 2) Click [MOV] under [Command].

- 3) Select the desired number of words from [WORD] (1 word) or [DWORD] (2 words).

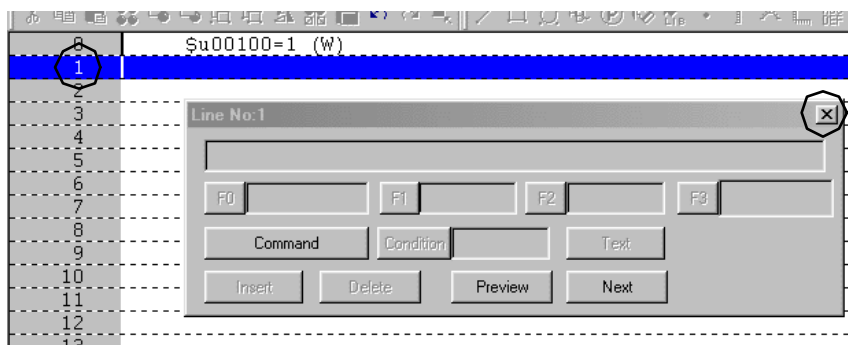


- 4) Click [OK]. The [Line No.] dialog is displayed again.



3. Set [F0], [F1], and [F2] as necessary for the selected command.
4. Clicking [Next] brings up the [Line No.] dialog for the next line. Clicking [Preview] brings up the [Line No.] dialog for the previous line. Clicking [Insert] inserts the data setting into the position before the selected line. The corresponding dialog is also displayed.
5. Clicking [Delete] deletes the selected line.

To close the [Line No.] dialog, click the top right [x] button of the dialog or the line number.

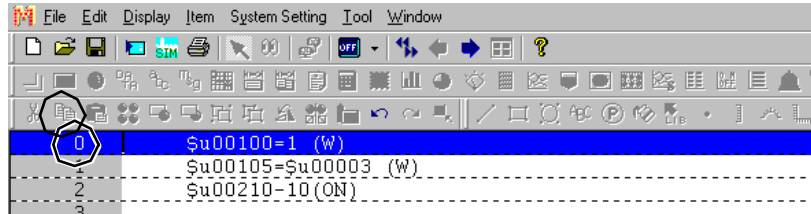


To bring up the [Line No.] dialog again, click a white line.

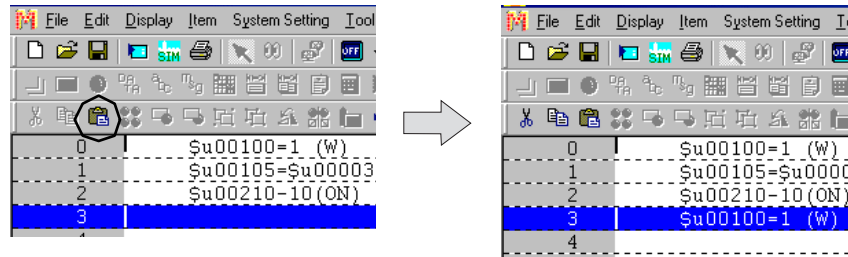
## Useful Functions

### Copying Lines

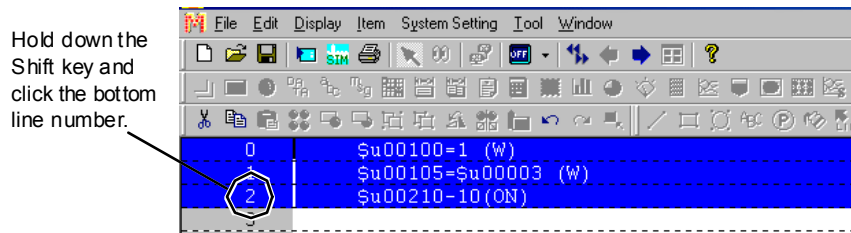
Click a line number as the copy source. The [Copy] icon becomes active. Click the icon.



Click a line number as the copy target. Click the [Paste] icon. The source data is copied to the target line.



When copying multiple lines at one time, click the top number of the lines, hold down the Shift key, and click the bottom number of the lines.

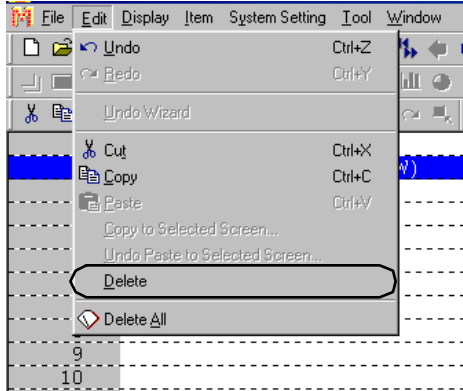


Multiple lines from the specified top to the specified bottom are selected. Click the [Copy] icon. Click the top number of the copy target lines. Click the [Paste] icon. The copied lines are displayed from the specified top line.

## Deleting Lines

---

Click a line number to be deleted and select [Delete] from the [Edit] menu. The selected line is deleted.



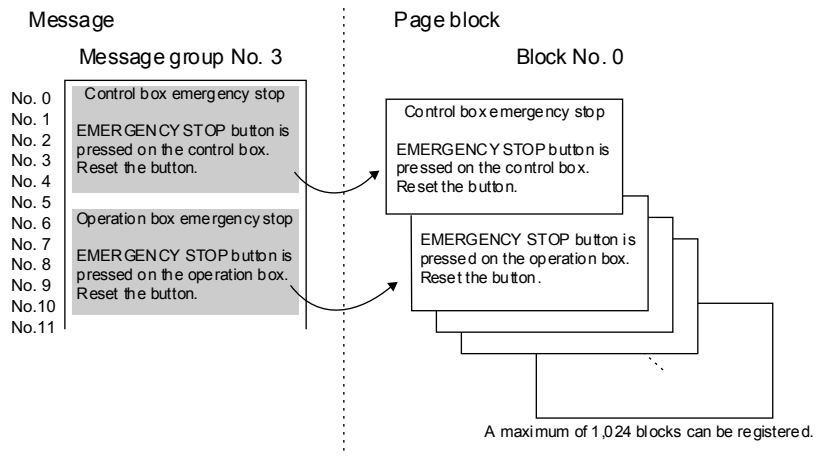
When deleting multiple lines at one time, click the top number of the lines, hold down the Shift key, and click the bottom number of the lines. Selecting [Delete] from the [Edit] menu deletes the lines from the specified top to the specified bottom.

# Page Block

Registered messages can be divided into groups and registered in page blocks. Page blocks are used in the relay-sub mode (parts) or the message mode (parts).

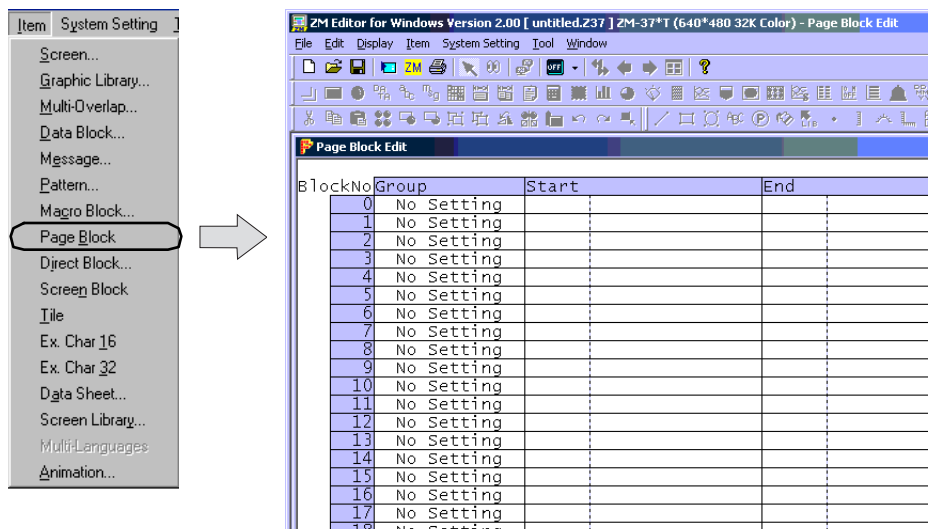
## Page Block Structure

A maximum of 1,024 page blocks can be registered. One page block can contain 256 lines.



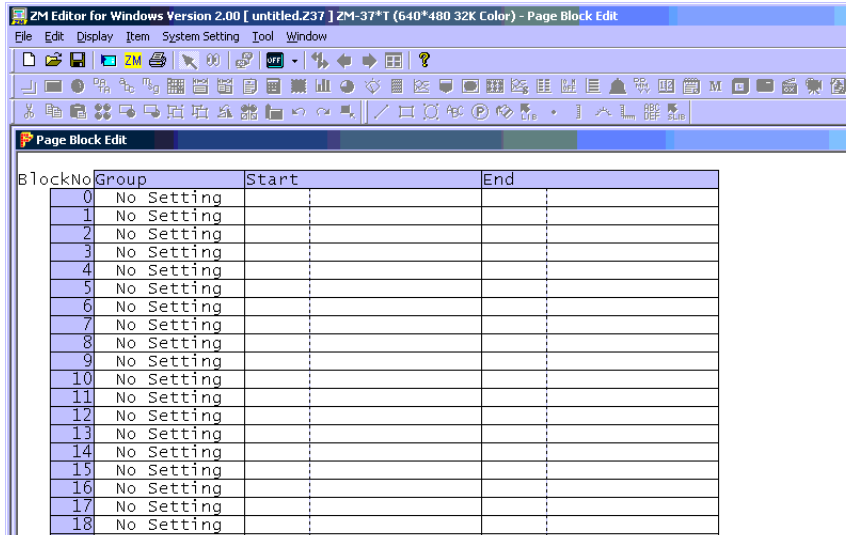
## Calling a Page Block

Select [Page Block] from the [Item] menu. The [Page Block Edit] window is displayed.



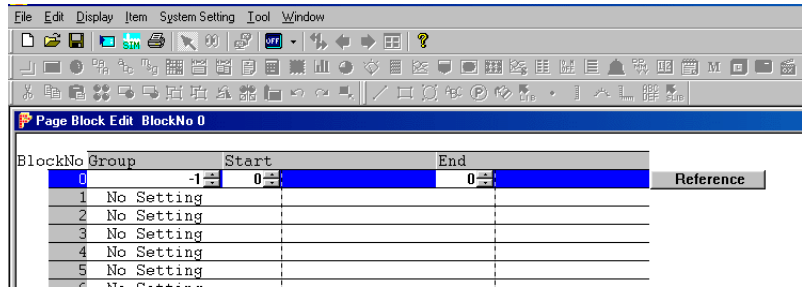
## Page Block Editing

The [Page Block Edit] window consists of one window as shown below.



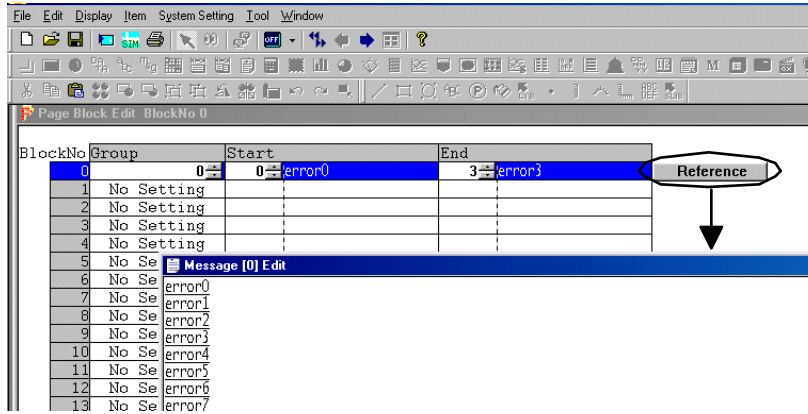
Follow the procedure below.

1. Click the block No. 0 cell under [Group]. (“No Setting” is shown in the cell as default.)
2. The dialog now shows as the following.



Specify a group number for [Group] and message line numbers respectively for [Start] and [End]. Enter numbers using the arrow buttons or through the keyboard.

- To check the contents of the messages, click the [Reference] button. The corresponding [Message Edit] window is displayed.

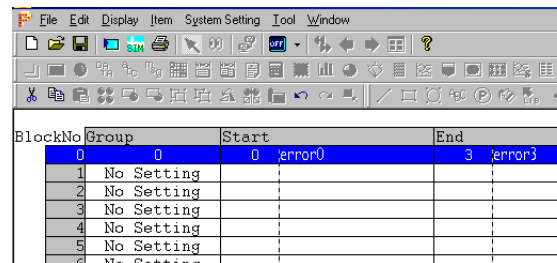
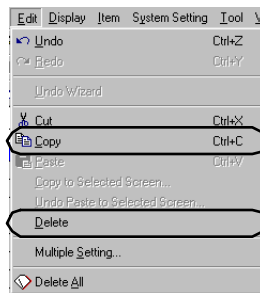


- Perform the same steps for editing block No. 1 and after.

## Copying and Pasting or Deleting Page Blocks

Follow the procedure below to copy and paste or delete page blocks.

- Click the block number to be copied or deleted.
- The clicked line is highlighted entirely. Select [Copy] or [Delete] from the [Edit] menu.



These commands can also be selected from the right-click menu.

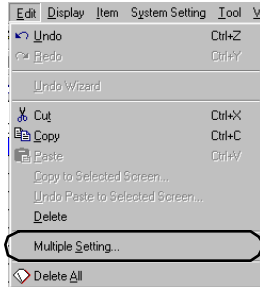


To select multiple block numbers at one time, hold down the Shift key and click top and bottom block numbers.

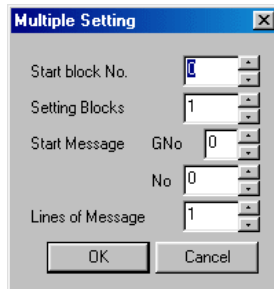
## One-Time Setting of Multiple Blocks

If consecutive lines are registered in several page blocks by the same number of lines, use [Multiple Setting].

1. Select [Multiple Setting] from the [Edit] menu or the right-click menu.



2. The [Multiple Setting] dialog is displayed.



[Start block No.]

Specify a top number of the multiple page blocks for one-time setting.

[Setting Blocks]

Specify the total number of page blocks for one-time setting.

[Start Message]

Specify the first message group number and the first line number in the top page block.

[Lines of Message]

Specify the number of lines in one block.

3. When the dialog setting is concluded, click [OK]. Multiple page blocks are set as per the above dialog setting.

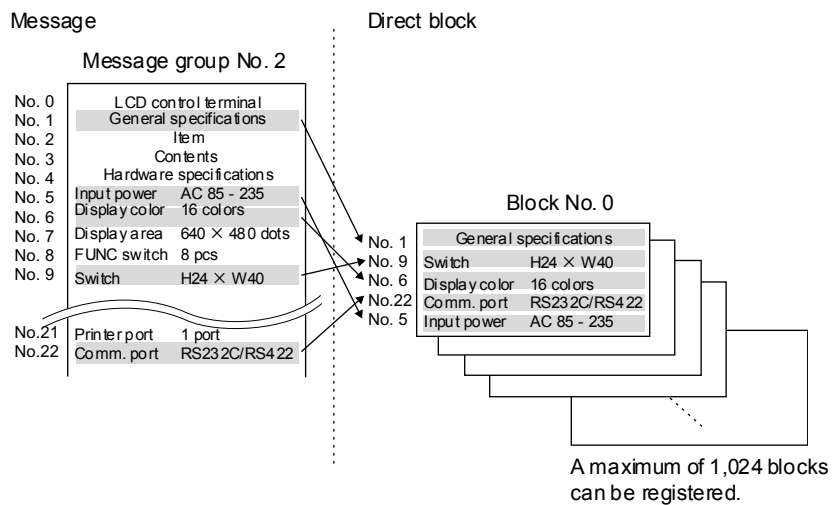


# Direct Block

Lines selected as desired from the previously registered messages in different groups can be re-registered in direct blocks. Direct blocks are different from page blocks in the point that direct blocks ignore the order of messages. Direct blocks are used in the relay-sub mode (parts) or the message mode (parts).

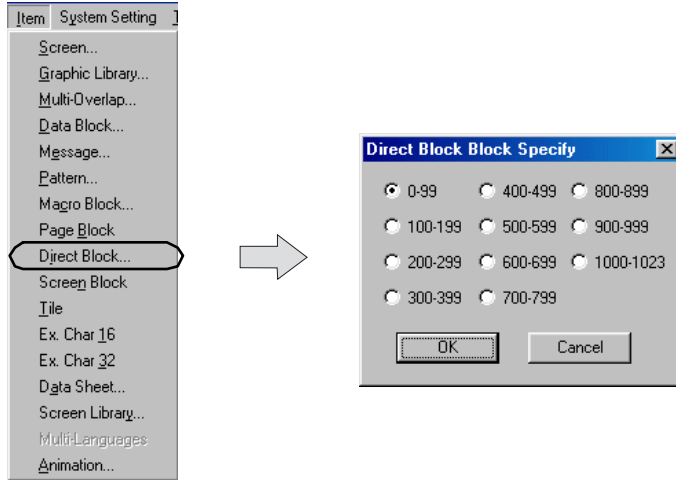
## Direct Block Structure

A maximum of 1,024 direct blocks can be registered. One direct block can contain 256 lines.



## Calling a Direct Block

Select [Direct Block] from the [Item] menu. The [Direct Block Block Specify] dialog is displayed.

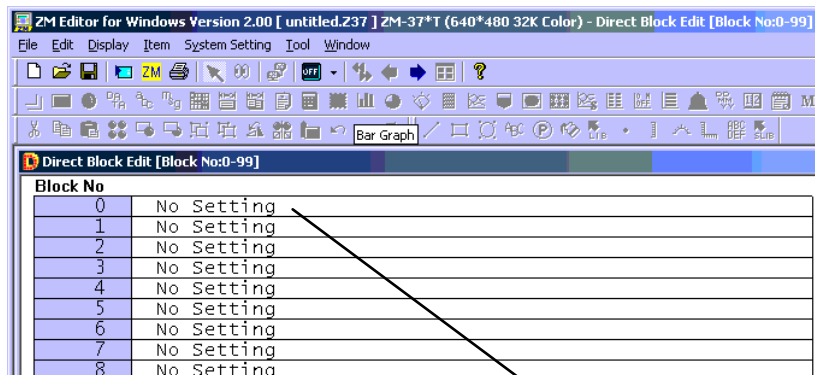


Check the desired block number range and click [OK]. The [Direct Block Edit] window is displayed.

## Direct Block Editing

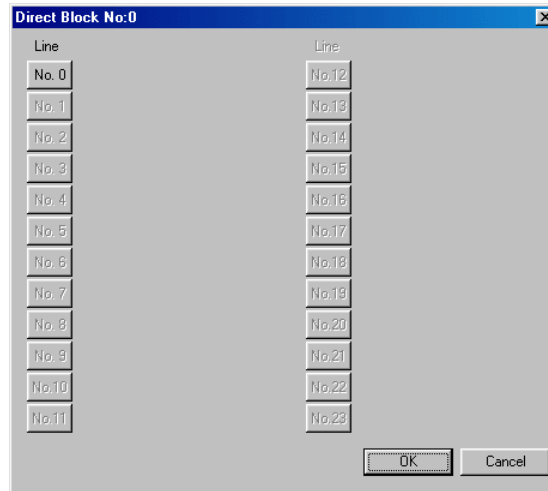
Follow the procedure below.

1. Click the block No. 0 line indicating “No Setting.”

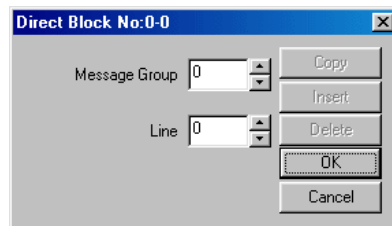


Click around this point.

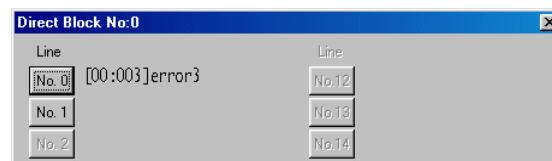
- The [Direct Block] setting dialog is displayed.



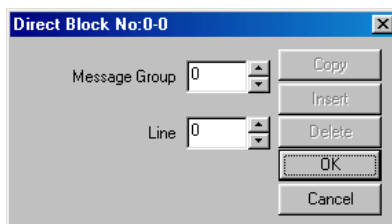
- Click the [No. 0] button under [Line]. The following dialog is displayed.



- Specify numbers for [Message Group] and [Line] (= line number). Click [OK].
- The next [No. 1] button becomes active. Perform the same procedure using the button.



Clicking a set number button makes the [Copy], [Insert], and [Delete] buttons active. Use them as necessary.



- When the dialog setting is concluded, click [OK]. The previous window is displayed. Perform the same procedure for the next block number.

Block No				
0	0	0:	3	error3
	1	0:	0	error0
	2	0:	6	error6
1	No Setting			
2	No Setting			
3	No Setting			
4	No Setting			
5	No Setting			
6	No Setting			

### Copying and Pasting or Deleting Direct Blocks

Follow the procedure below to copy and paste or delete page blocks.

- Click the block number to be copied or deleted.
- The clicked line is highlighted entirely. Select [Copy] or [Delete] from the [Edit] menu.

Block				
				error3
				error0
				error6
				error3
	1	0:	0	error0
	2	0:	6	error6
2	No Setting			
3	No Setting			
4	No Setting			
5	No Setting			



These commands can also be selected from the right-click menu.



To select multiple block numbers at one time, hold down the Shift key and click top and bottom block numbers.

# Screen Block

When [Screen Call] (in the [Relay dialog]) is chosen in the relay mode (parts), screen blocks must be specified.



For more information on the screen call function, see “Chapter 6 Message Display” in the ZM-71SE Instruction Manual (Function).

## Screen Block Structure

A maximum of 1,024 screen blocks can be registered.

## Calling a Screen Block

Select [Screen Block] from the [Item] menu. The [Screen Block Edit] window is displayed.



Screen No.	Block	Division No.	Block No./Library
0	No Setting		
1	No Setting		
2	No Setting		
3	No Setting		
4	No Setting		
5	No Setting		
6	No Setting		
7	No Setting		
8	No Setting		
9	No Setting		
10	No Setting		
11	No Setting		
12	No Setting		
13	No Setting		
14	No Setting		
15	No Setting		

## Screen Block Editing

Follow the procedure below.

1. Click the block No. 0 cell under [Block]. The line is highlighted as shown below.

Screen No.	Block	Division No.	Block No./Library No.
0	No Setting		
1	No Setting		
2	No Setting		
3	No Setting		
4	No Setting		
5	No Setting		
6	No Setting		

2. Select an option from the pull-down menu under [Block].

Screen No.	Block	Division No.	Block No./Library No.
0	No Setting		
1	No Setting		
2	No Setting		
3	No Setting		
4	No Setting		
5	No Setting		
6	No Setting		
7	No Setting		
8	No Setting		

3. The other columns become active. Set them using the arrow buttons or entering alphanumeric through the keyboard.

Screen No.	Block	Division No.	Block No./Library No.
0	Page Block	0	Block No 0
1	No Setting		
2	No Setting		
3	No Setting		
4	No Setting		
5	No Setting		
6	No Setting		
7	No Setting		
8	No Setting		



Checking  Same Screen shows “Same Screen” in the cell under [Screen No.].

4. Perform the same procedure for block No. 1 and after.

## [Screen Block Edit] Window Setting

Set each option in the window, referring to the description below.

### [Screen No.]

Specify the screen number to be used as a screen block.

### [Block]

Select the part type included in the screen that is specified for [Screen No.].

- Page Block/Direct Block  
These blocks are available when the message mode is selected. Select either one in accordance with the block used in the message mode on the specified screen.
- Graphic LIB  
When the graphic mode is used on the specified screen, choose this option.
- Data Block  
When [Block] is chosen for [Type] in the [Entry] dialog (for the entry mode) or a data block area is set on the specified screen, choose this option.
- No Designation  
When no part (= mode) as the above is used on the specified screen, choose this option.

### [Division No.]

This option is necessary when something other than [No Designation] is selected for [Block]. Specify the same division number as the one where the mode selected by [Block] is registered.

### [Block No./Library No.]

This option is necessary when something other than [No Designation] is selected for [Block]. Specify the block or library number of the contents that are applied to the sub-display of the original relay message.

### Same Screen]

Click  this option when the original relay mode screen and the screen to be called as a screen block are the same.

In the case that relay messages are linked to different data blocks respectively, it is convenient that only the data block numbers are switched on the same screen according to the currently active message. For this operation, in the [Screen Block Edit] window, change only the numbers for [Block No.] related to the same screen. Register several screen blocks of the same screen number with [Same Screen] checked . With these settings, a screen call is set where different blocks are displayed depending on the activated relay (bit activation).



Set the previously described [Screen No.] to be the same as the relay mode screen number.

With this, screen block settings are finished.

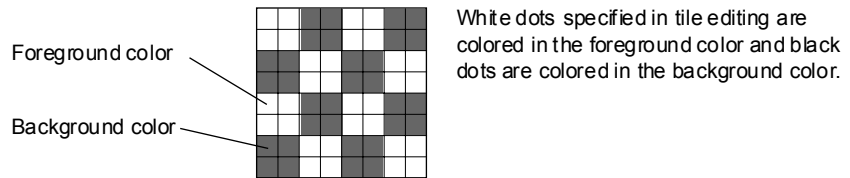
# Tile

For painting a graphic such as a box or circle, a paint pattern can be selected from eight default types and eight patterns that you register yourself.

## Tile Structure

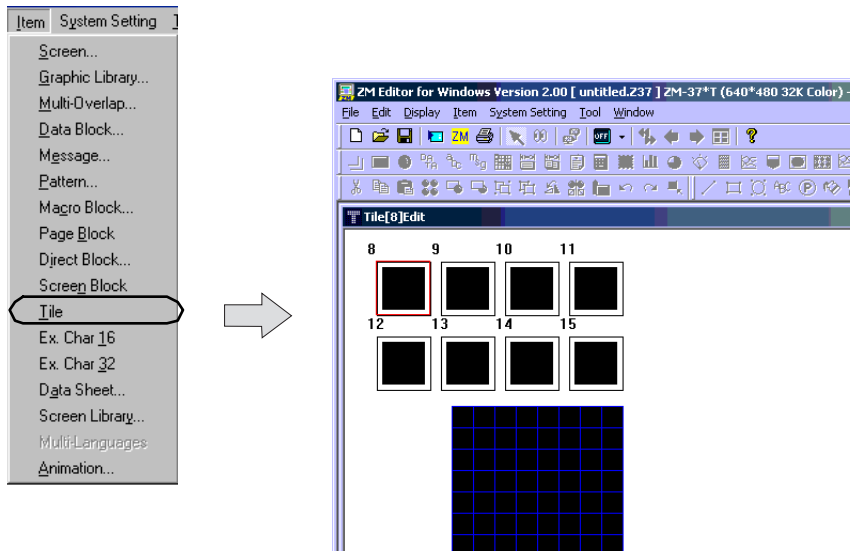
A maximum of 8 tiles can be registered. The size of one tile is 8 × 8 dots.

White dots specified on a tile are regarded as areas in the foreground color and black dots are regarded as areas in the background color.



## Calling a Tile

Select [Tile] from the [Item] menu. The [Tile Edit] window is displayed.

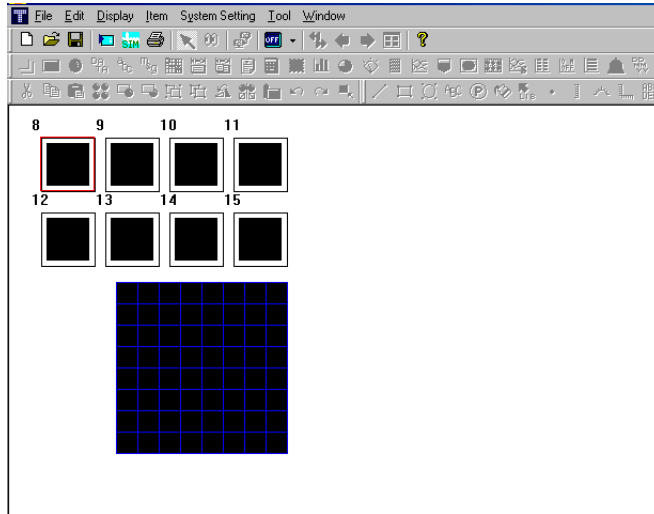




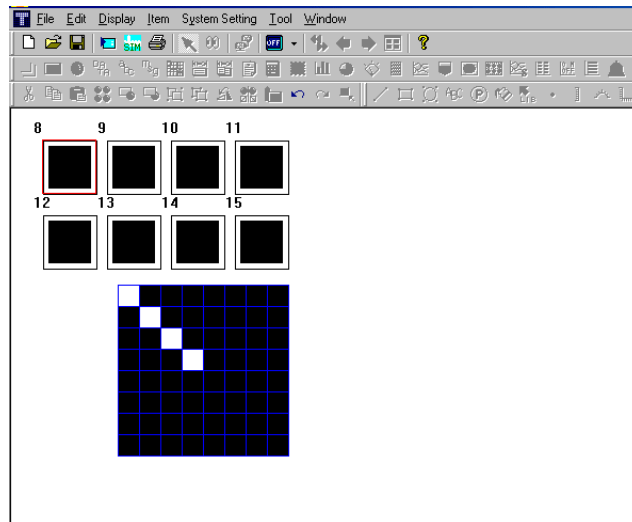
## Tile Editing

Follow the procedure below.

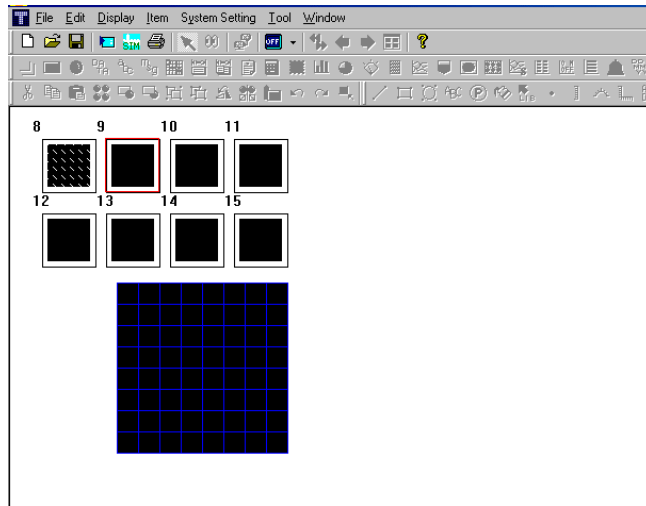
1. Select a tile number to be registered by clicking.



2. Create a tile in the tile editing area. Draw white dots by clicking or dragging. Draw black dots by right-clicking or right-dragging.



3. When the tile is complete, click the next tile number. The previous tile number shows the registered image.

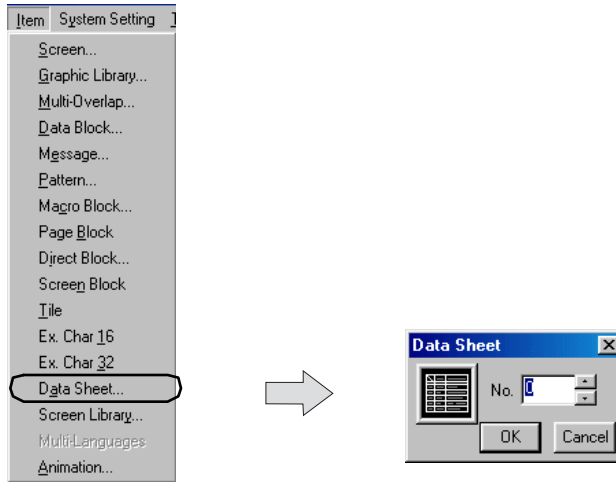


4. Perform the same procedure for the remaining tile numbers.



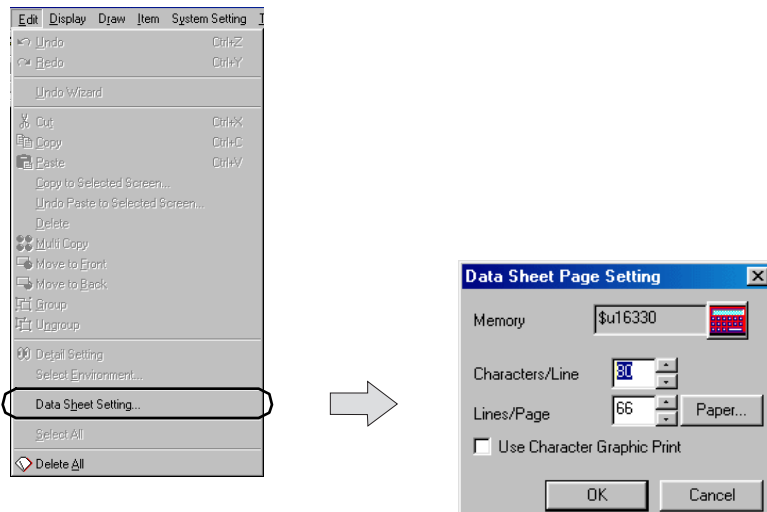
## Calling a Data Sheet

Select [Data Sheet] from the [Item] menu. The [Data Sheet] dialog is displayed. Specify the data sheet number to be opened and click [OK].



## Data Sheet Editing

It is necessary to set the size of a data sheet, the number of characters, etc. in the [Data Sheet Page Setting] dialog. Select [Data Sheet Setting] from the [Edit] menu. The [Data Sheet Page Setting] dialog is displayed.



Set each option in the dialog, referring to the description below.

[Memory]

This option determines the first page of printing. The details of memory are as follows:

Address	Contents	Action
n	Beginning print page	→ ZM
n+1	Number of pages to be printed	→ ZM

For more information on usage, see “Chapter 14 Data Sheet” in the ZM-71SE Instruction Manual (Function).

[Characters/Line] (16 - 152)

Specify the number of characters per line of data sheet.

[Lines/Page] (2 - 152)

Specify the number of lines per page of data sheet.

[Paper]

Clicking this button brings up the sheet size selection dialog. Select the sheet size and the sheet orientation.

Use Character Graphic Print]

When this option is checked, charts can be printed out clearly. The specified number of lines also changes. How this relates to the printout paper is shown below.

Paper size	Characters	Lines	No. of lines when character graphic is used
A4 portrait	80	66	108
A4 landscape	114	40	64
15-inch landscape	136	64	64



Printed out images differ as shown below.

Use Character Graphic Print]

No. 0 data

No. 1 data

No. 2 data

No. 3 data

Use Character Graphic Print]

No. 0 data

No. 1 data

No. 2 data

No. 3 data

## Drawing Tools for Data Sheet

### [Line] Icon

---

Straight lines can be drawn by dragging.



It is possible to draw lines only horizontally or vertically. Continuous lines as well as diagonal lines are not available.

### [Box] Icon

---

Only boxes without painting can be drawn.

### [Text] Icon

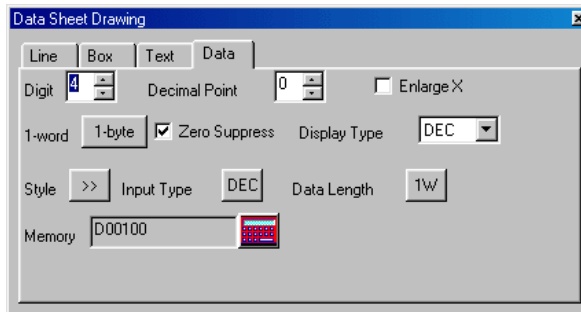
---

Enter a text as desired into the text field and drag the mouse over the edit window. The text can be placed. Character enlargement is limited to X: 1 × Y: 1. Only when [ Enlarge X] is checked, however, the X size is doubled.

### [Data Display] Icon

---

Clicking this icon brings up the following dialog.



Character enlargement is limited to X: 1 × Y: 1. Only when [ Enlarge X] is checked, however, the X size is doubled.



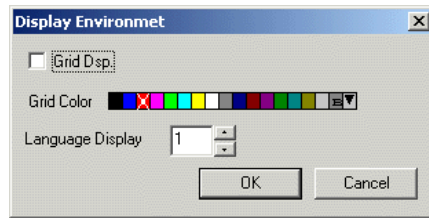
### Calendar Display

A calendar display can be set on a data sheet using a numerical data display. The calendar data is stored in system memory addresses \$s160 to 166. By placing the calendar data with numerical data display on a data sheet, the calendar is also printed out at the time of data sheet printing.

## Data Sheet Environment Setting

### Display Environment

On data sheets, graphics, texts, and data display parts can be placed based on the fixed grids. Texts and data displays are placed along grid dots. Lines and boxes are placed on spaces between grid dots. A grid color and whether or not to show grids can be selected in the [Display Environment] dialog.



[Grid Dsp.]

Check this option to display grids.

[Grid Color]

Select a color of the displayed grids.

[Language Display]

This option is active only when the language selection function is in use.



For more information, see “Chapter 29 Language Selection” in the ZM-71SE Instruction Manual (Function).

### Memory Display

Use this command when checking the memory addresses allocated to the placed numerical data or character displays. Select [Memory Display] from the [Display] menu. The memory addresses are displayed.

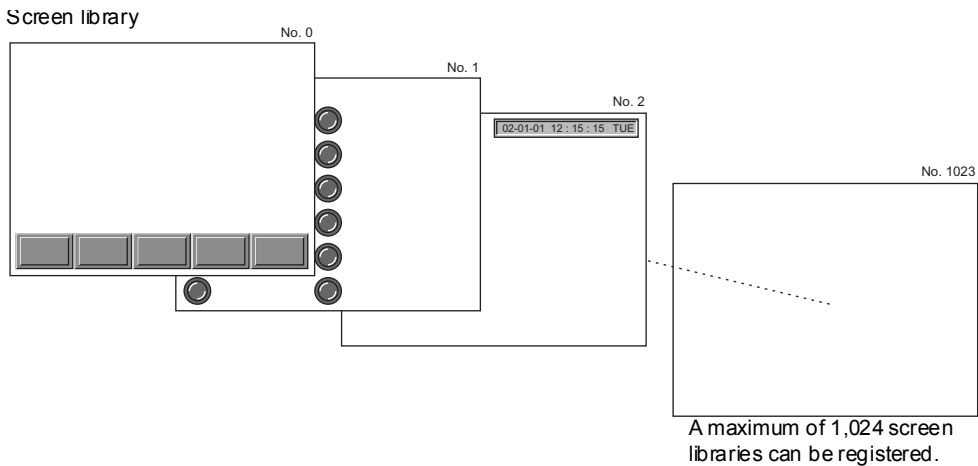


# Screen Library

Parts of switches, lamps, entry mode, etc. that are used in common to multiple screens can be registered in screen libraries. Once screen libraries have been registered, screens will be created with ease just by placing the libraries.

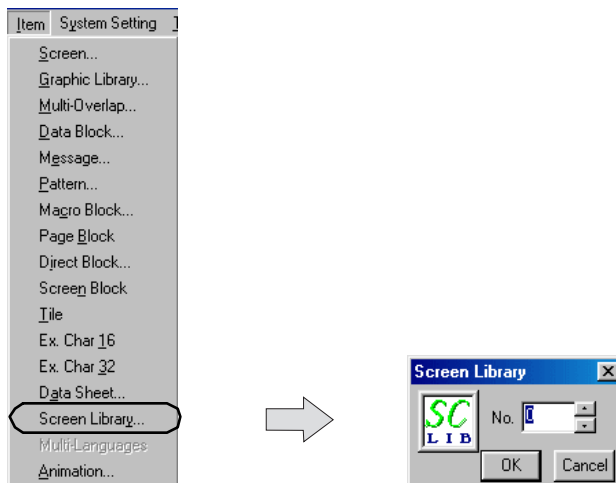
## Screen Library Structure

A maximum of 1,024 screen libraries can be registered. The maximum permissible memory for one screen library is 128 KB.



## Calling a Screen Library

Select [Screen Library] from the [Item] menu. The [Screen Library] dialog is displayed. Specify the screen library number to be opened and click [OK].





## Screen Library Editing

Most parts valid on screens are valid in screen libraries as well. Parts and graphics can be placed in the same manner as on screens.

### Notes on Editing

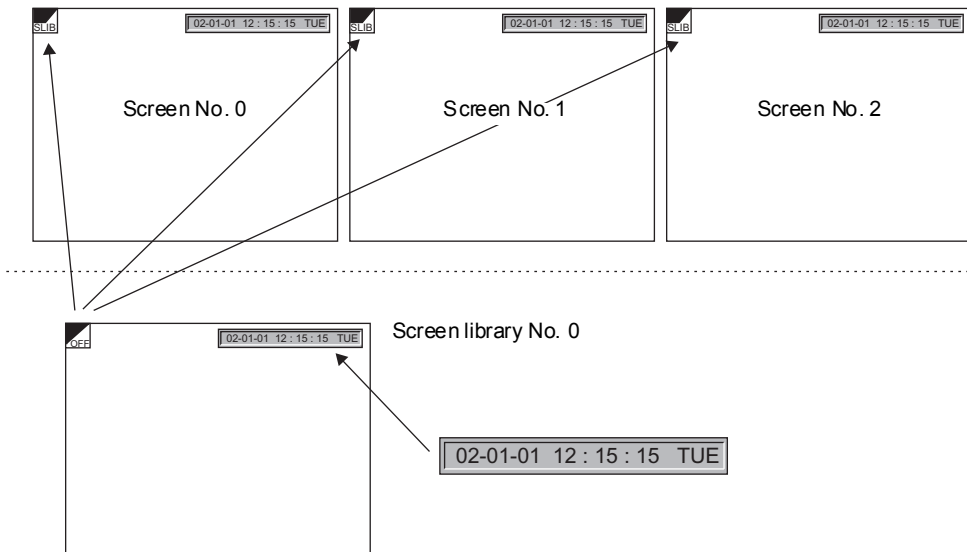
- The functions below are not valid for screen libraries though they are valid for screens.
  - Overlap
  - OPEN macro
  - CLOSE macro
  - CYCLE macro
  - Local function switch setting
  - Screen library
- Place parts in screen library while imagining them placed on the screen. Both parts in screen library and on the screen are subject to the limitation on screen parts placement. When placing a screen library on the screen, check that parts to be placed do not exceed the limited number.



For more information on the limitation on screen parts placement, see "Chapter 2 Screens."

### Ex.: Placing a Calendar Part in Screen Library

In the example below, a calendar part is registered in screen library No. 0 and the screen library is placed on three screens.



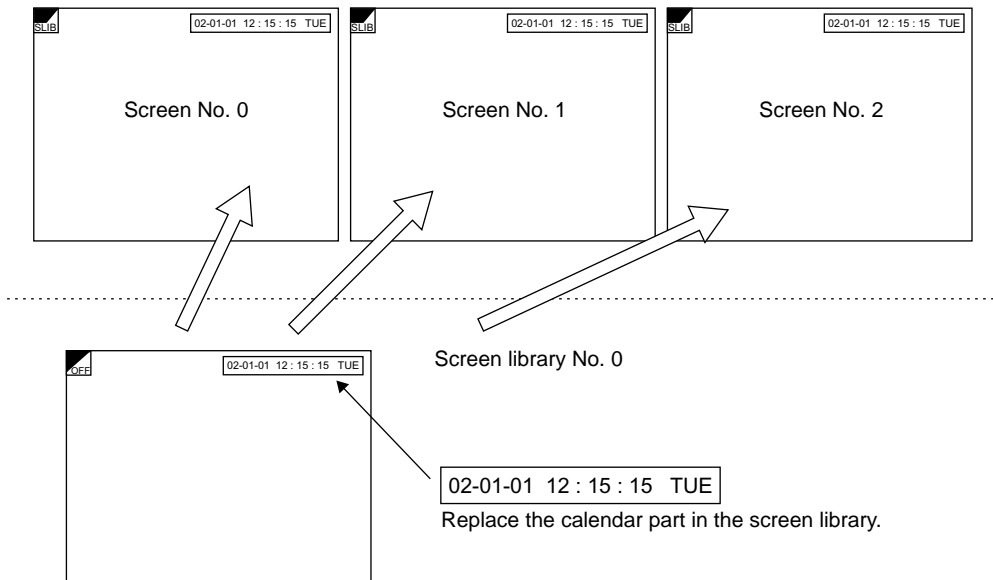
- Memory used by a Sharp Manufacturing Systems standard calendar part is about 300 bytes. When the calendar parts are placed on three screens directly, 900 bytes are used.  
 $300 \times 3 = 900$  bytes
- When a 300-byte calendar part is registered in a screen library and the part is placed on a screen, 315 bytes and 7 bytes are used respectively.  
 $315 + 7 + 7 + 7 = 336$  bytes
- By using screen library, 564 bytes ( $900 - 336 = 564$ ) are saved.



Use of screen library saves memory.

### Screen Parts Management Through Screen Library

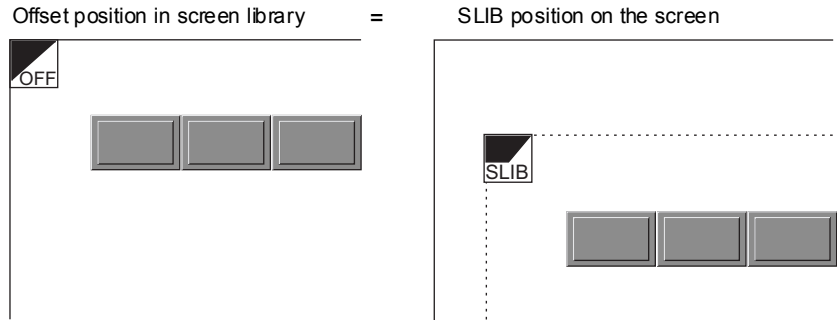
Should a part registered in a screen library be replaced after it has been placed on screens, replace it in the screen library only. The parts on the screens are also replaced simultaneously. When the calendar part in screen library No. 0 has been replaced, the parts on screen Nos. 0 to 2 are also replaced.



Screen library is available for management of parts on screens.

## Offset Position Setting

Every screen library has a reference position called an offset. When a registered screen library is called to the screen, it is placed based on the offset position.



Screen library shows the offset position with an “OFF” mark. Every screen library has an offset position at coordinates X, Y (0, 0) as default. To change the position, follow the procedure below.

1. Click the [Offset] icon on the drawing tool bar.



2. A cross cursor marked with “OFF” appears.
3. Click the mouse in the desired position. The offset mark is displayed at that location.



Changing the offset position prior to registering a screen library is not valid. Set an offset position after registering a screen library.

## Placing a Screen Library

---

Registered screen libraries can be placed on screens using the [Screen LIB] icon on the drawing tool bar.



For more information, see “Chapter 3 Drawing Tools.”

### Notes on Placing a Screen Library

- Depending on the part type, only one piece can be registered on one division. When placing a screen library containing such a part on screens, make sure that the same division number is not used for multiple parts. Take care of division numbers of parts at the time of registering parts in screen library.
- To avoid a problem like the one described above, division Nos. 100 and higher should be allocated to screen libraries because such numbers may not be used generally. (Also take care not to use one division number repeatedly in different screen libraries.)
- There are cases in which only one part (entry mode, memory card) can be used on one layer, or only one part (memo pad) can be used on one screen. Take the above note into consideration when placing a screen library containing such a part on the base screen or overlaps.

## Multi-languages

---

This area is provided for the use of the language selection function.



For more information, see “Chapter 29 Language Selection” in the ZM-71SE Instruction Manual (Function).

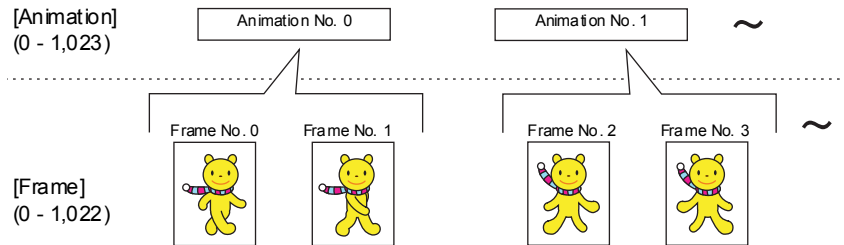
# Animation

## (For the ZM-300 series except for ZM-352D)

This area is provided for the use of the animation function. Graphics for animation are registered.

### Animation Function Structure

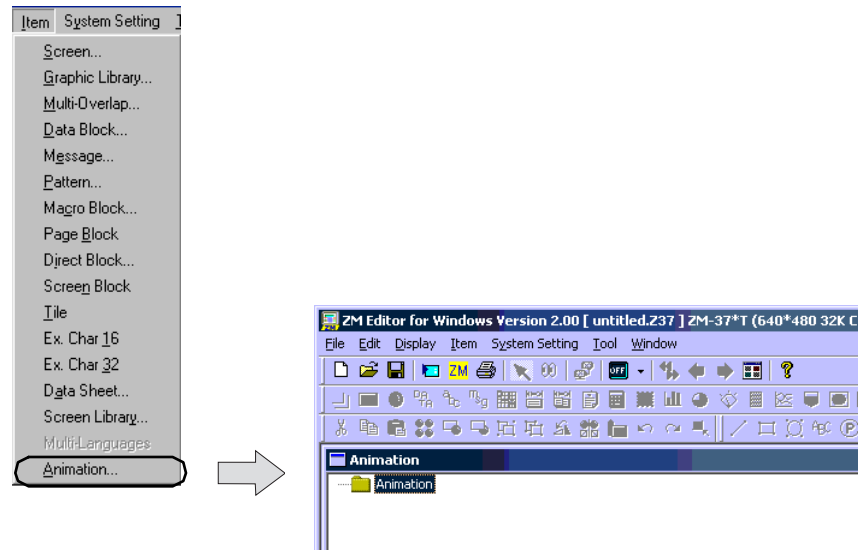
There are [Animation] and [Frame] sections in the animation function. Graphics are registered in [Frame] sections and graphics to be used are selected in [Animation] sections.



A maximum of 1,024 animation settings from No. 0 to No. 1,023 can be registered. A maximum of 1,023 frames from No. 0 to No. 1022, which are defined in [Animation], can be registered.

### Calling the Animation Function

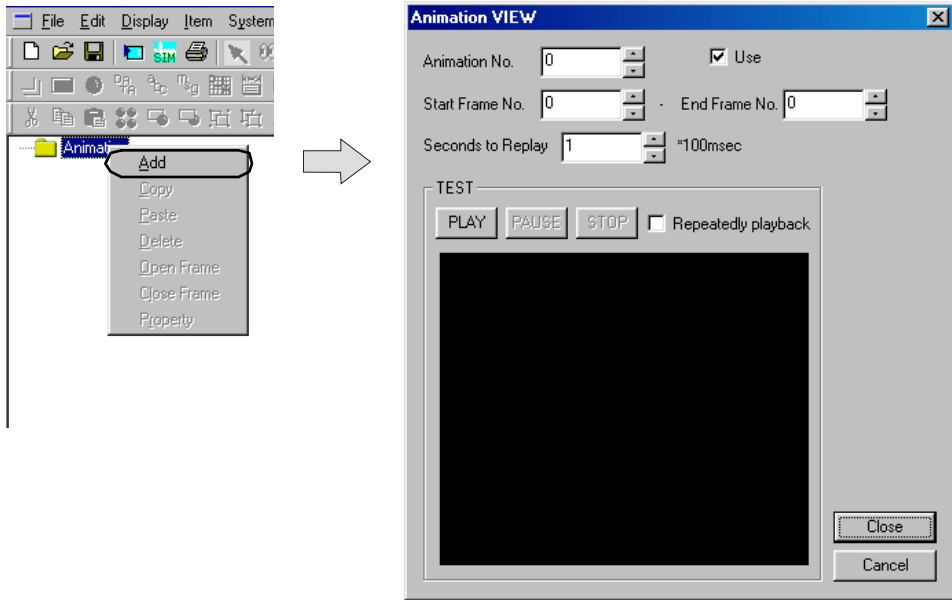
Select [Animation] from the [Item] menu. The [Animation] window is displayed. By making necessary settings in the window, [Animation] folders and their respective [Frame] folders are displayed.



## Animation Editing

In the [Animation] dialog, the number of frames and an animation speed are set, and the actual animated image can be checked. Follow the procedure below.

1. Right-click [Animation] and click [Add].
2. The [Animation VIEW] dialog is displayed. Start setting from animation No. 0.



[Animation No.] (0 - 1,023)

An animation number currently being edited is displayed. To go to a different animation number for editing, click the arrow buttons or key in the desired number directly.

[ Use]

A check mark for this option denotes that the animation number has been set. To cancel the setting, uncheck the box.

[Start Frame No.] and [End Frame No.] (0 - 1,022)

Specify the number (range) of frames to be used for this animation.

[Seconds to Replay] (×100 msec)

Specify a speed to change the frames (specified for [Start Frame No.] and [End Frame No.]) during animation.

[TEST]

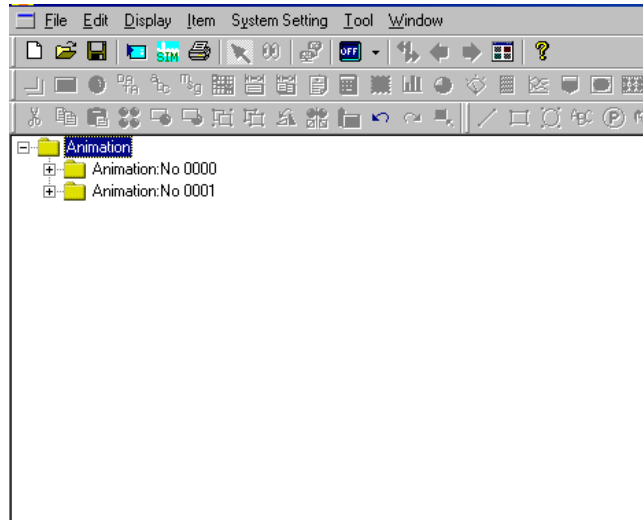
After frames are selected, their animation can be checked.



For more information, see "Chapter 17 Animation" in the ZM-71SE Instruction Manual (Function).

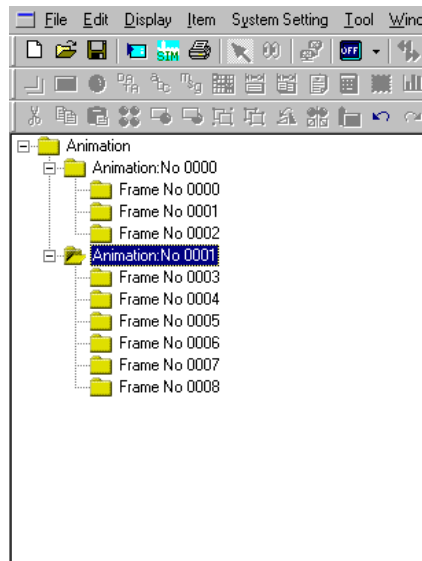
3. When the dialog setting is concluded, click the [Close] button. The [Animation] window is displayed again.

4. Double-click on the [Animation] folder. The [Animation] sub-folders as set in step 2 are displayed.



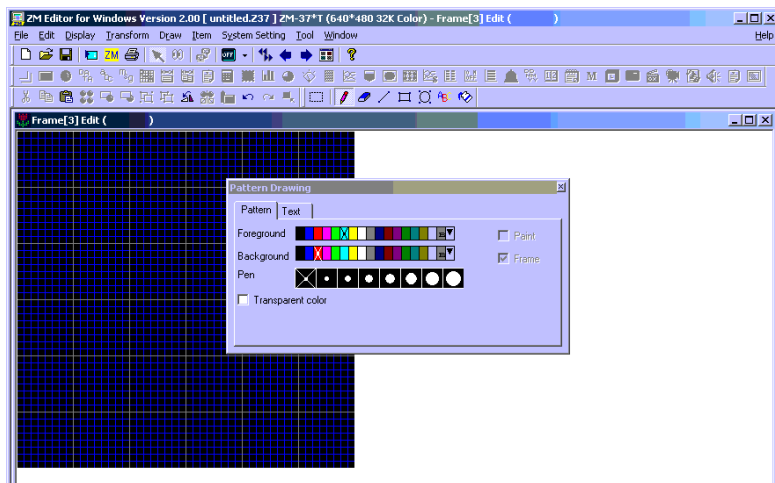
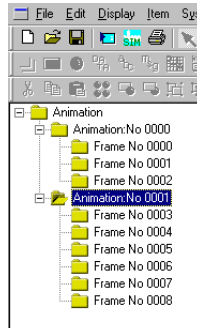
To go back to the [Animation VIEW] dialog, right-click the desired folder [Animation No. xxxx] and click [Property].

5. Double-clicking a displayed folder [Animation No. xxxx] brings up as many [Frame] folders as the number set in step 2.



## Frame Editing

In the [Animation] window, double-click the desired [Frame No. xxxx] under an [Animation No. xxxx] folder. The [Frame Edit] window is displayed.



### Frame Structure

A maximum of 1,023 frames from No. 0 to No. 1,022 can be registered. The maximum capacity per frame is 128 kB. The maximum permissible number of dots is the same as the number specified for the edit model: 800 × 600 dots or 640 × 480 dots.

### Frame Editing

Frames can be edited in the same manner as for patterns.



Refer to the description of pattern editing (page 4-37).



# Chapter 5 Transfer

Before Using the ZM Series.....	5-1
Preliminary Steps .....	5-1
Screen Data Check.....	5-2
Screen Data Transfer.....	5-3
Preliminaries .....	5-3
Data Transfer Methods .....	5-5
[Transfer] Dialog .....	5-10
Screen Data Transfer via ZM-80C.....	5-12
Screen Data Transfer on Ethernet.....	5-14
Screen Data Transfer via CF Card (For the ZM-300 Series Only) .....	5-15
Screen Data Transfer via Memory Card (ZM-1REC).....	5-17
Transfer of Other Data.....	5-21
System Updating .....	5-28
Online Editing .....	5-30
Screen Data Transfer via Modem.....	5-32
After Screen Data Transfer.....	5-40
Connection.....	5-40
Screen Check .....	5-40

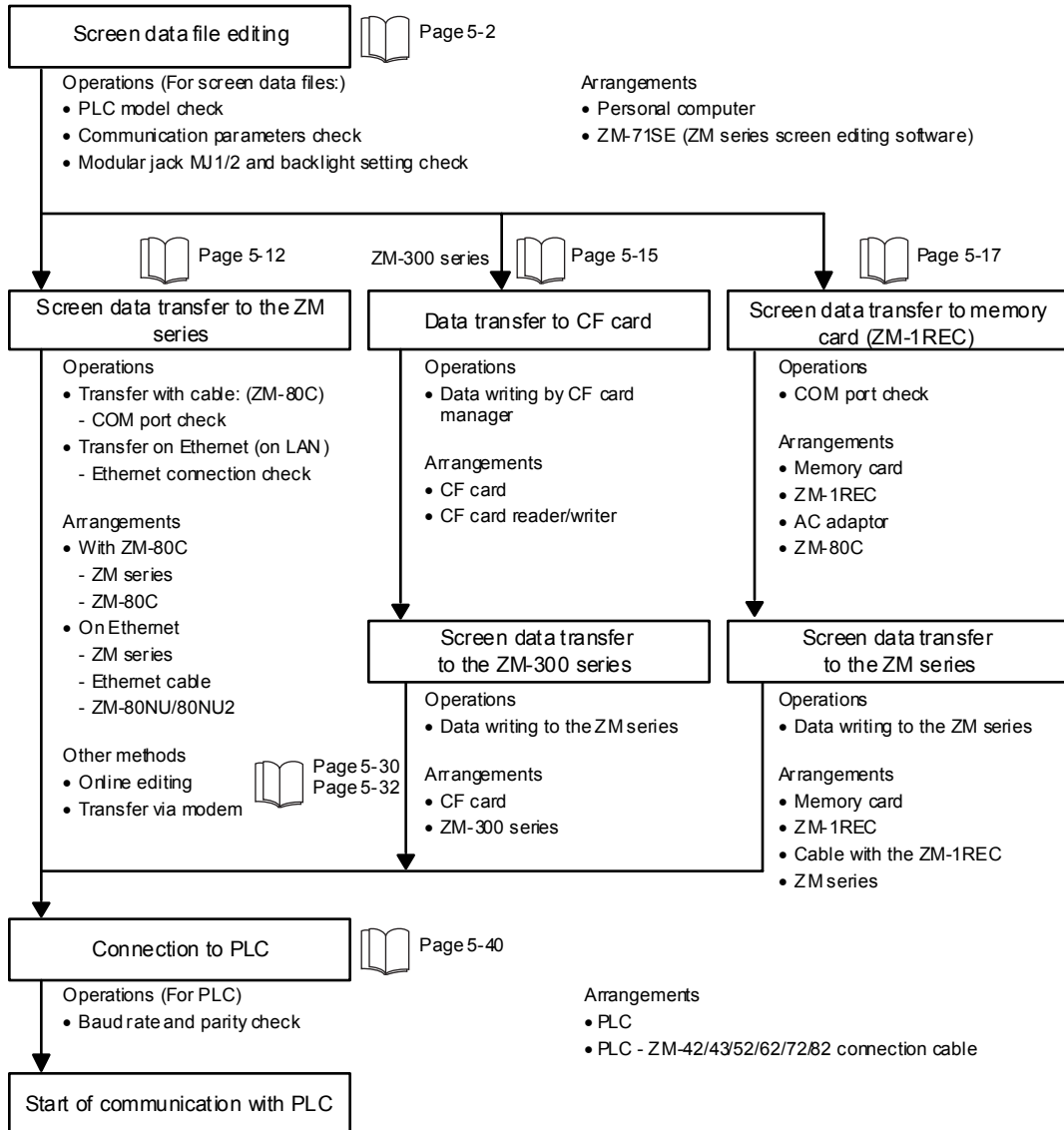


# Before Using the ZM Series

Before attempting to use the ZM series, preliminaries including creation of screen data and its transfer to the ZM series, cable arrangement for connection with the PLC, and connection data setting are required. Refer to the following for details.

## Preliminary Steps

The steps below are required before the use of the ZM series.



## Screen Data Check

---

Data required for communication with PLC are set in the screen data file and the data is reflected in communications after its transfer to the ZM series. Go to [System Setting] to make the settings.

### Setting for Communications with PLC

#### PLC Type Setting

---

Select the type of the PLC to be connected. Following the selection, the [Comm. Parameter] dialog is displayed.

#### Communication Parameter Setting

---

[Read Area] and [Write Area]

These options are necessary for the ZM series to display the specified screen or confirm the currently displayed screen. Each area is provided with 3 words as default. Check that the memory addresses for these areas are not already in use.



For more information on the three words each given to the read area and the write area, see "Chapter 1 System Setting" in the ZM-71SE Instruction Manual (Function).

[Baud Rate], [Signal Level], [Parity], [Stop Bit], etc.

Set these options in accordance with the corresponding PLC data.



For more information on the communication parameters, see the ZM-300 User's Manual.

### Other Settings

Before data transfer to the ZM series, check the following settings as well.



For more information, see "Chapter 1 System Setting" in the ZM-71SE Instruction Manual (Function).

#### ZM Series Setting

---

Make settings for memory expansion, backlight, touch switch type, etc.

#### Font Setting

---

Set the font type to be displayed on the ZM series.

#### Modular Jack

---

Make settings for the use of the modular jack (MJ1/MJ2).

#### Printer Setting

---

Make settings for the printer (its model, etc.) connected to the ZM series.

# Screen Data Transfer

There are some differences in preliminaries before screen data transfer as well as in procedure for data transfer from the screen editor software, depending on the transfer method.

## Preliminaries

### For a New ZM Series (Just after being unpacked)

When a new ZM series unit is first turned on after being unpacked, the following screen is displayed.

ZM-300



ZM-42 to 82



A new ZM series unit stores the data below.

- A. ZM series system program (ref. page 5-25)
- B. Font data: Japanese 32 (ref. page 5-26)
- C. I/F driver: universal serial (ref. page 5-21)

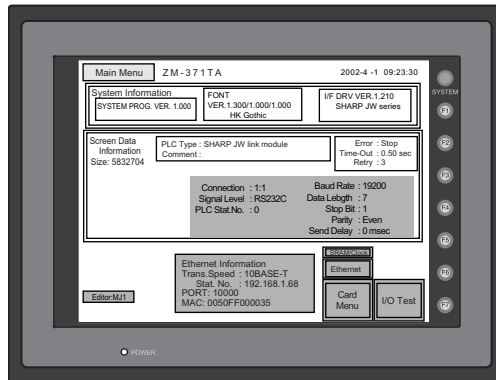


**At the time of screen data transfer from the editor software (computer) to the ZM series:** If the editor software has a ZM series system program containing functions that are not supported by the ZM series, the computer transfers the system program as well to the ZM series. Otherwise, the program is not updated. If the screen data contains any font data other than Japanese 32, the computer transfers the font data as well to the ZM series. If any option other than universal serial is set for the I/F driver in the screen data, the computer transfers the I/F driver file as well to the ZM series.

## For a ZM Series (Being put to use)

When screen data has been transferred to a ZM series unit that has already been put to use (not just after being unpacked), it is brought to either status at power-on.

- Communicating with the PLC (RUN mode)
- Showing the [Main Menu] (local main) screen stored in the ZM series (STOP mode: communication stopped)



Screen data transfer is allowed in either status. However, it may be necessary to bring up the [Main Menu] (local main) screen (STOP mode) to make data transfer possible. For more information, see page 5-12.



At the time of screen data transfer from the editor software (computer) to the ZM series: If the editor software has a ZM series system program containing functions that are not supported by the ZM series, the computer transfers the system program as well to the ZM series. Otherwise, the program is not updated. If the screen data contains any font data other than Japanese 32, the computer transfers the font data as well to the ZM series. If the set PLC model is different from the previously set model, the computer transfers the I/F driver file as well to the ZM series.

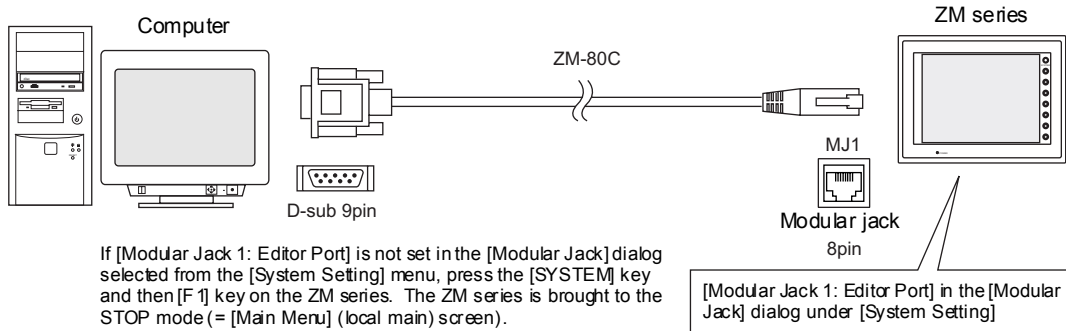
## Data Transfer Methods

### Data Transfer via ZM-80C

Screen data is transferred from a computer to a ZM series unit while a RS-232C cable “ZM-80C” is connected between the modular jack MJ1 on the ZM series and the computer.

### Arrangements

- LCD control terminal ZM series
- Cable ZM-80C (3 m)  
Available from Sharp Corporation



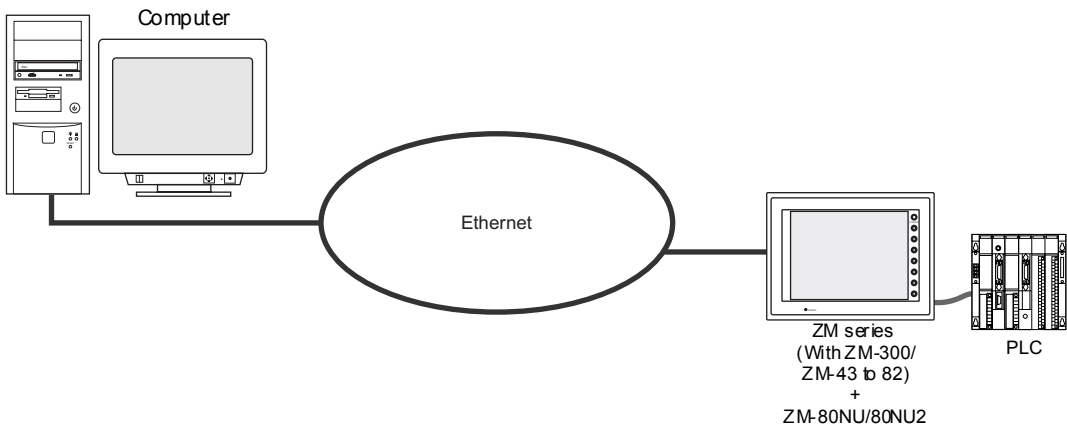
## Data Transfer on Ethernet

Screen data is transferred on Ethernet while a computer and a ZM series unit are connected via LAN cable.

### Arrangements

---

- LCD control terminal ZM series
- Ethernet cable  
With a cross cable, data transfer is possible between a computer and a ZM-300 (High function display) (1:1) even if they are not on a network.
- Ethernet communication interface unit ZM-80NU/80NU2  
This optional unit is necessary for Ethernet communications with ZM-300 or ZM-43 to 82. (Since ZM-300 (High function display) is equipped with a built-in LAN port, the optional unit is not necessary.)



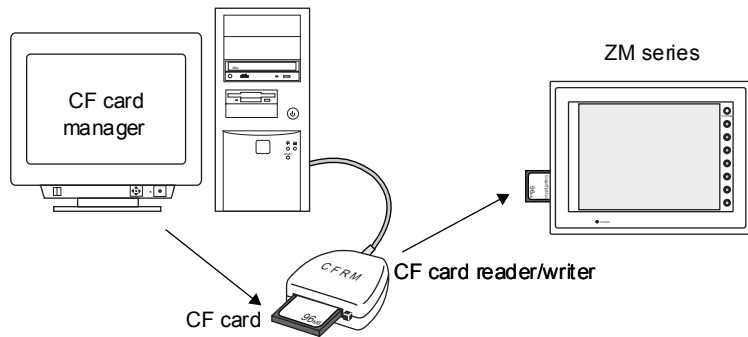


## Data Transfer to CF Card (For ZM-300 (High function display) only)

A CF card to which screen data has been transferred from the ZM-71SE software (computer) is inserted into a ZM-300 and the data is transferred from the card to the ZM-300.

### Arrangements

- CF card  
For recommended CF cards, see the ZM-300 User's Manual or "Chapter 23 CF Card" in the ZM-71SE Instruction Manual (Function).
- CF card reader/writer



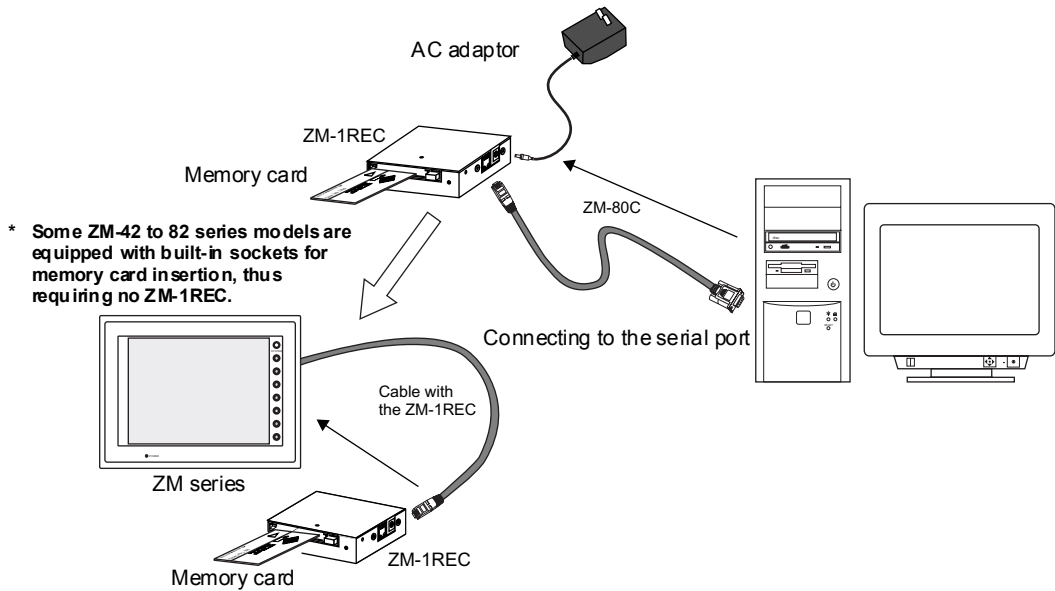
## Data Transfer to Memory Card (ZM-1REC)

A memory card (SRAM/FROM) to which screen data has been transferred from the ZM-71SE software (computer) is connected to a ZM-300 and the data is transferred from the card to the ZM-300.

### Arrangements

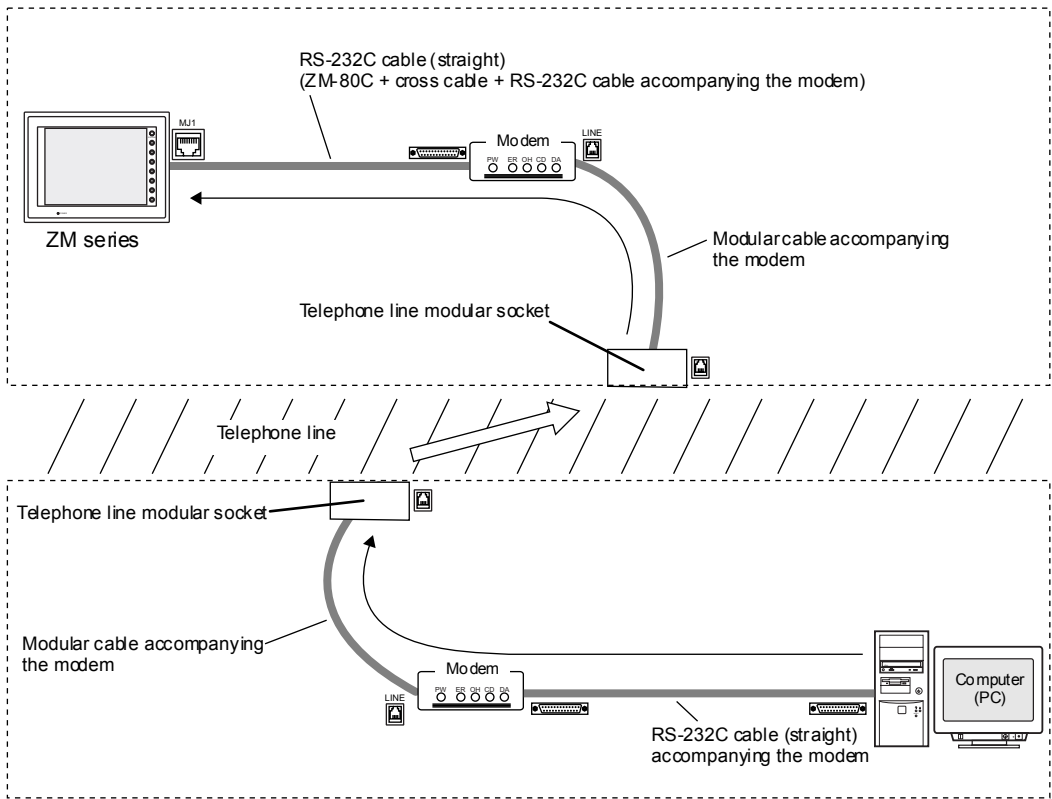
---

- Memory card (SRAM/FROM)  
Use a memory card on the market.
- ZM-1REC (plus accompanying ZM-1REC cable as well as AC adaptor)



## Data Transfer via Modem

For more information, see page 5-32.

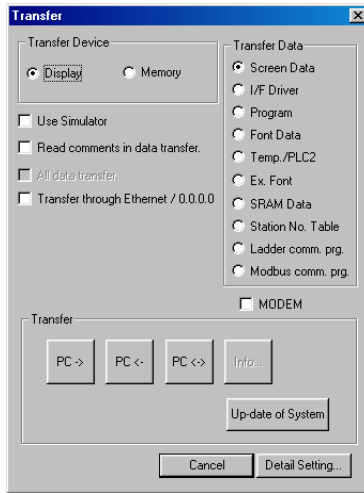


## [Transfer] Dialog



Setting the [Transfer] dialog is required for data transfer, except for transfer to a CF card. When using a CF card, CF card manager setting is required.

Select [Transfer] from the [File] menu or click the [Transfer] icon on the icon bar. The [Transfer] dialog is displayed.



Options		Contents
Transfer Device	Display	Select this option when the target/source for transfer is a ZM series unit.
	Memory	Select this option when the target/source for transfer is a memory card.
Transfer Data	Screen Data	Screen data is transferred. If the PLC model setting or font data is different between the screen data and the data stored in the ZM series, the I/F driver file or the font data is also transferred with the screen data.
	I/F Driver	The I/F driver file is transferred. During screen data transfer to a new ZM series unit, the I/F driver file is also transferred automatically. Therefore, this option is not necessary. When the ZM series already contains the I/F driver file and it should be updated, select this option.
	Program	Select this option when updating the ZM series system program (SYSTEM PROG.).
	Font Data	Select this option when updating the font data (12-point size only in the case of Gothic, English/Western Europe (HK Gothic), and English/Western Europe (HK Times)) and the [Main Menu] (local main) screen in the ZM series.
	Temp./PLC2	This option is valid only when the temperature control network or PLC2 Way function is used. Select the option when updating the protocol file for either of them.
	Ex. Font	This option is valid for the Gothic, English/Western Europe (HK Gothic) and English/Western Europe (HK Times) font types. Font data specified by manual font setting (except for 12-point size) is transferred. (Font data specified by automatic font setting is transferred with screen data.)

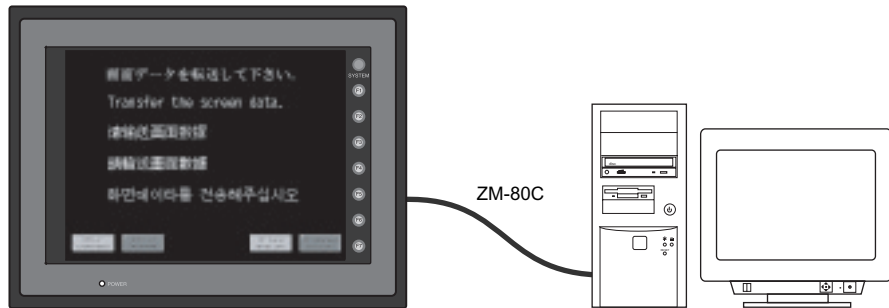
Options		Contents
Transfer Data	SRAM Data	This option is valid when an SRAM cassette or a built-in SRAM is in use. With the option setting, the data is backed up at the time of SRAM battery change and then is returned to SRAM. For more information on SRAM, see "Chapter 24 SRAM" in the ZM-71SE Instruction Manual (Function).
	Station No. Table	This option is valid when a temperature controller model F-MPC04P (FUJI) is used on the temperature control network and also the station table is used.
	Ladder Comm. Prg.	It is possible to write ladder sequence for PLC (Mitsubishi Q02/Q02H/Q06H) via a ZM series unit. Select this option for the purpose. For more information, see the ZM-300 User's Manual.
	Modbus Comm. Prg.	This option is valid when Modbus slave communication is in use. Select the option when updating the Modbus slave program file.
<input type="checkbox"/> Use Simulator		Check this option when performing debugging using the ZM-71SE simulator. The I/F driver file "UNIPLC20.tpb" for simulator is transferred accordingly.
<input type="checkbox"/> Read Comments in Data Transfer		This option is provided for screen data transfer from a ZM series unit to a computer after the data is transferred from the computer to the ZM series without the included comments. When the previous screen data with comments stored in the computer is overwritten by the data from the ZM series while the option is checked, the comments are not deleted. If the option is not checked, the comments are deleted from the previous data.  * <b>To transfer screen data with comments, open the [Environment Setting] tab window in the [Unit Setting] dialog selected from the [System Setting] menu and check <input type="checkbox"/> Transfer Comment.</b>
<input type="checkbox"/> All Data Transfer		This option is valid when [Memory] is chosen for [Transfer Device]. When the option is checked, screen data, I/F driver file, ZM series system program, and font data are transferred during communication with a memory card.
<input type="checkbox"/> Transfer Through Ethernet		Check this option for communications with a ZM series unit on Ethernet while a cable ZM-80C is not used.
MODEM (See page 5-32.)		Check this option for communications with a ZM series unit via a modem while a cable ZM-80C is not used.
Transfer		[PC ->] From computer to transfer device [PC <-] From transfer device to computer [PC <->] Data comparison between computer and transfer device [Info] This is valid only when [Memory] is chosen for [Transfer Device]. Memory card data check is allowed.
Up-date of System		The ZM series system program, font data (except for the [Main Menu] (local main) screen), and I/F driver file are updated at one time.
Detail Setting		[Serial Port] (COM1 - COM8) Select a computer port. [Baud Rate] (9600, 19200, 38400, 57600, 115200 bps) Select a data transfer rate between the computer and the transfer device. (This option does not apply to transfer between a PLC and a ZM series unit.)  * <b>The baud rate at 115,200 bps may be disabled for some computers. Choose [57600 bps] or less for such a computer.</b> When <input checked="" type="checkbox"/> Transfer through Ethernet is checked: The IP address setting dialog is opened. Set the IP address for the ZM series as the transfer target. For more information, see the ZM-300 User's Manual.

## Screen Data Transfer via ZM-80C

### Connecting Method

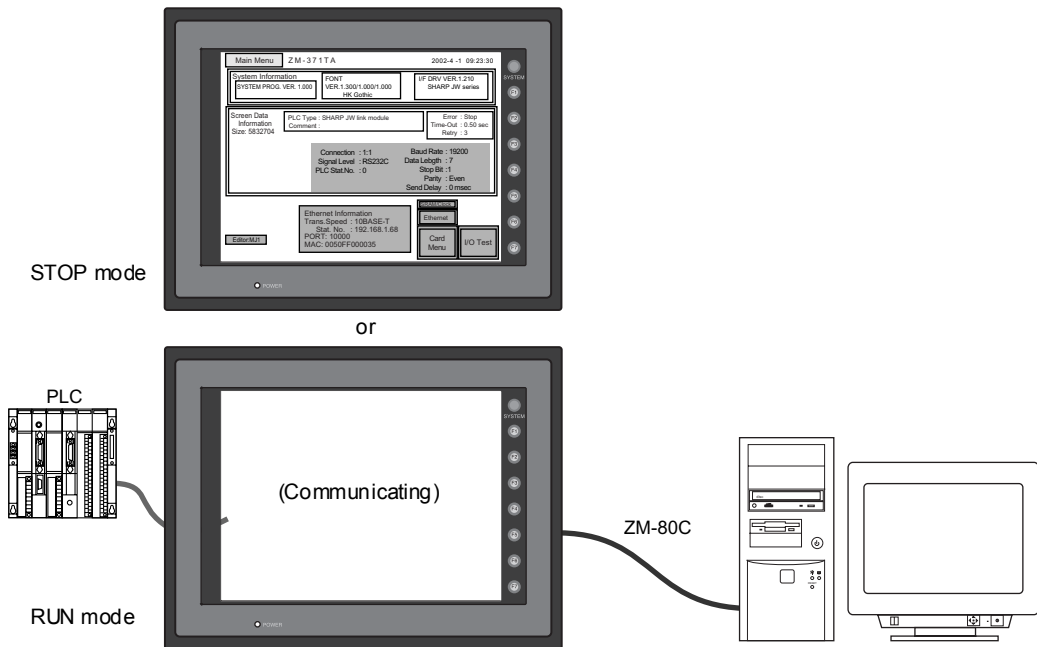
Connect a ZM series unit and a computer as illustrated below.

#### New ZM Series (Just after being unpacked)



Make sure to connect the cable to the modular jack MJ1 on the ZM series.

#### ZM-80C Series (Being put to use)



Make sure to connect the cable to the modular jack MJ1 on the ZM series.

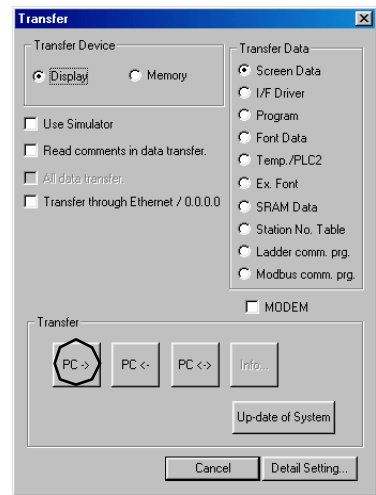


When [Modular Jack 1: Editor Port] is specified in the [Modular Jack] dialog selected from the [System Setting] menu in the screen data file, data transfer between the computer and the ZM series is executable while the PLC and the ZM series are in either RUN or STOP mode.

When any setting other than [Modular Jack 1: Editor Port] is made, press the SYSTEM key and then the F1 key on the ZM series to bring it to the STOP mode (= [Main Menu] (local main) screen), and start data transfer.

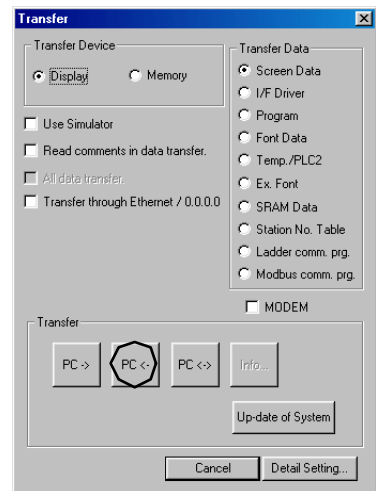
## Screen Data Transfer to ZM Series

1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Select [Display] for [Transfer Device] and [Screen Data] for [Transfer Data].
3. Click the [Detail Setting] button. The [Communication Detail] dialog is displayed. Select a computer serial port to be used and a baud rate between the computer and the ZM series. Click [OK].
4. Click the [PC ->] button. Screen data transfer starts.



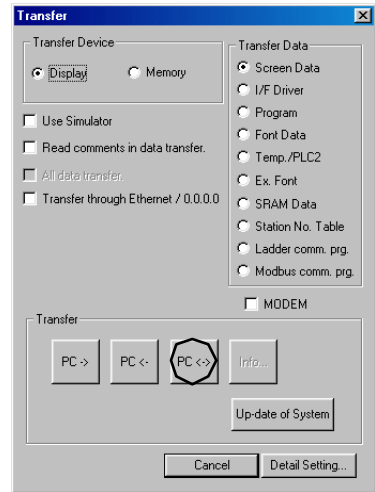
## Screen Data Transfer from ZM Series

1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Select [Display] for [Transfer Device] and [Screen Data] for [Transfer Data].
3. Click the [Detail Setting] button. Select a computer serial port to be used and a baud rate between the computer and the ZM series. Click [OK].
4. Click the [PC <-] button. Screen data transfer starts.

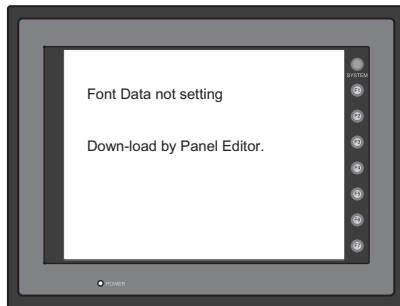


## Screen Data Comparison between Computer and ZM Series

1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Select [Display] for [Transfer Device] and [Screen Data] for [Transfer Data].
3. Click the [Detail Setting] button. Select a computer serial port to be used and a baud rate between the computer and the ZM series. Click [OK].
4. Click the [PC <->] button. Screen data comparison starts between the ZM series and the computer.



If screen data transfer is aborted, the message below appears on the screen, and the screen data as well the font data is deleted. Keep this in mind if aborting data transfer.



## Screen Data Transfer on Ethernet



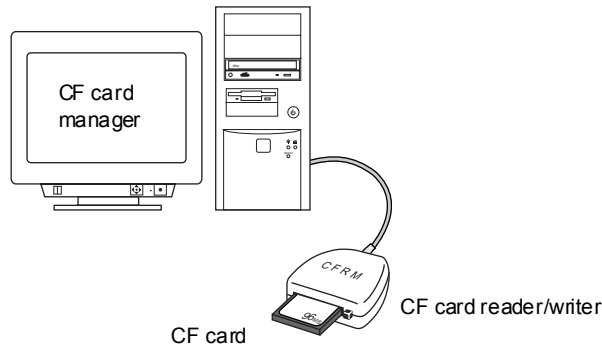
For the description of screen data transfer on Ethernet, see the ZM-300 User's Manual ("1. Ethernet" in "Chapter 4 Network Communication").



## Screen Data Transfer via CF Card (For the ZM-300 Series Only)

### Connecting Method

#### Connection between CF Card and Computer

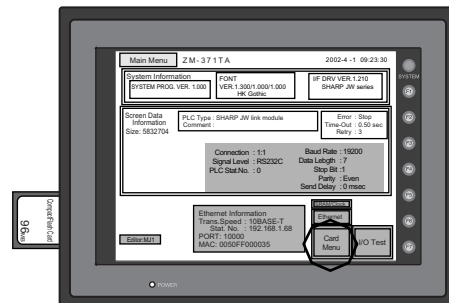


#### Connection between CF Card and ZM-300

- With a new ZM-300 (just after being unpacked)



- With a ZM-300 other than the above



## Screen Data Transfer between CF Card and Computer

### Screen Data Transfer to CF Card

---

1. Insert a CF card into the CF card reader/writer.
2. Start up the ZM-71SE software. Select [CF Card Manager] from the [File] menu.
3. Specify the drive in which the CF card is now inserted. Click [OK]. The CF card manager starts.
4. Select [Write to CF Card] from the [File] menu. The [Write to CF Card] dialog is displayed.
5. Click the [Refer] button for [File to be Converted]. Select a file (extension: "\*.Z3") to be written to the CF card.
6. Click [OK]. The screen data file is stored as [Dsp0000.bin] (BIN file) in the access folder [Dsp] in the CF card. At the same time, files with certain extensions are written to CF card folders in accordance with the screen data file settings.



For how to store screen data for automatic uploading or other functions of CF card, see "Chapter 23, CF Card" in the ZM-71SE Instruction Manual (Function).

### Screen Data Transfer from CF Card

---

1. Insert a CF card into the CF card reader/writer.
2. Start up the ZM-71SE software. Select [CF Card Manager] from the [File] menu.
3. Specify the drive in which the CF card is now inserted. Click [OK]. The CF card manager starts.
4. Check that the access folder [Dsp] in the CF card stores the screen data file [Dsp0000.bin] (BIN file). Select the file.
5. Select [Put BIN File Back] from the [File] or right-click menu.
6. The [Select a screen data to save] dialog is displayed. Select the desired file name and click [Save].
7. The converted file is stored in the specified place.

## Screen Data Transfer between CF Card and LCD Control Terminal ZM series

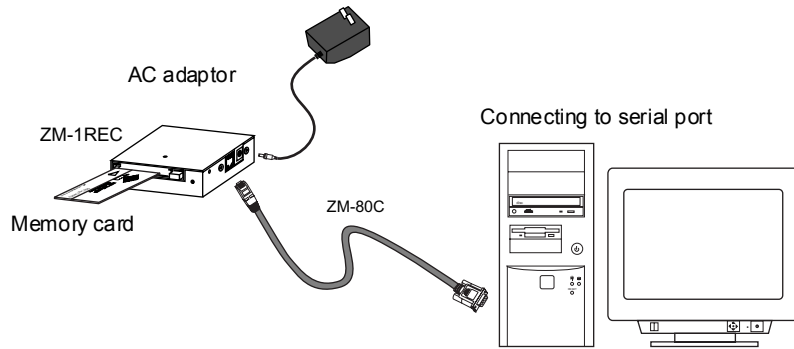


For the description of screen data transfer between a CF card and a ZM-300, see "Chapter 2 ZM-300 Operations" in the ZM-300 User's Manual.

## Screen Data Transfer via Memory Card (ZM-1REC)

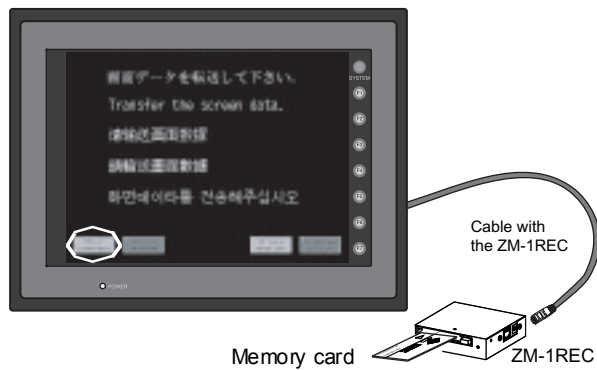
### Connecting Method

#### Connection between Memory Card (ZM-1REC) and Computer

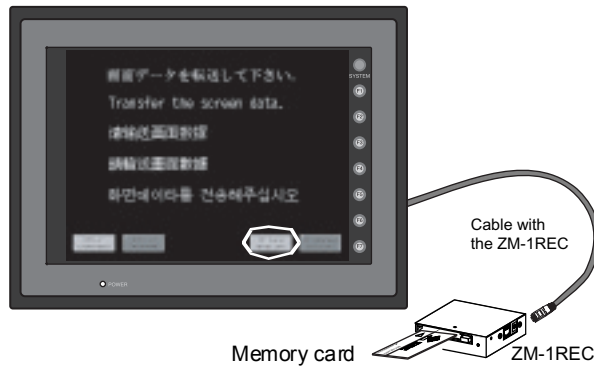


#### Connection between Memory Card and LCD Control Terminal ZM Series

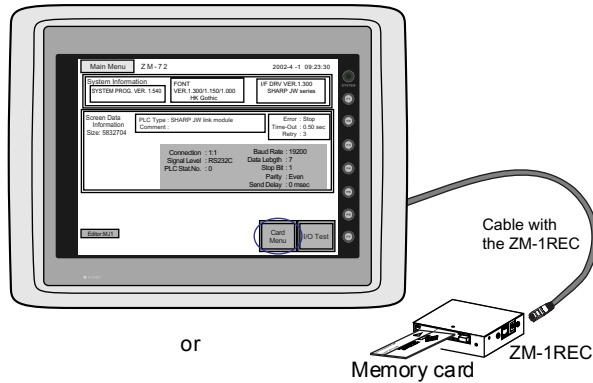
- ZM-300 series
  - With a new ZM-300 (just after being unpacked)



- With a ZM-300 other than the above

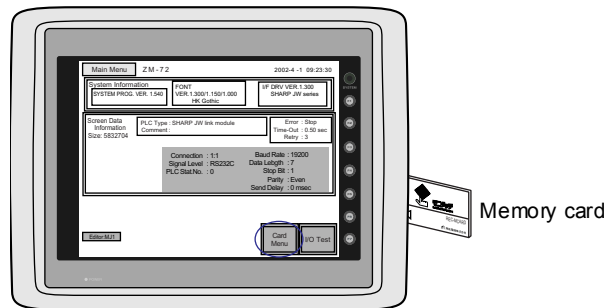


• ZM-42 to 82 series



or

(with a built-in socket)

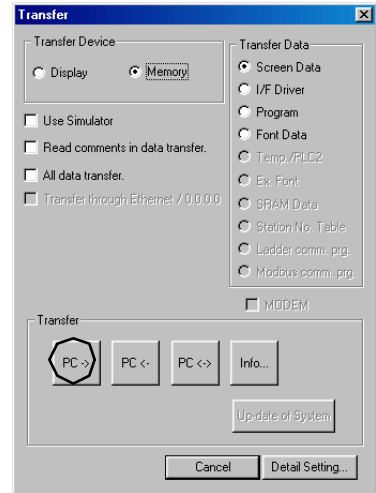


A memory card is not available to transfer screen data to a new ZM-42 to 82. Transfer the data from a computer directly.

## Screen Data Transfer between Memory Card (ZM-1REC) and Computer

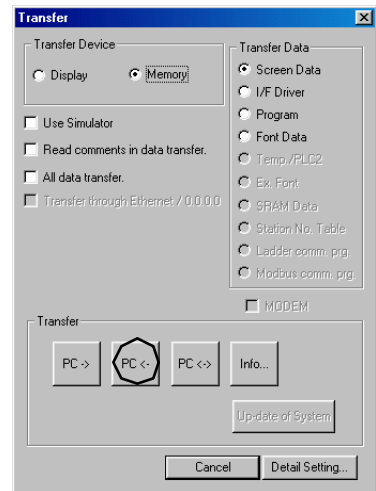
### Screen Data Transfer to Memory Card (ZM-1REC)

1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Select [Memory] for [Transfer Device] and [Screen Data] for [Transfer Data].
3. Click the [Detail Setting] button. The [Communication Detail] dialog is displayed. Select a computer serial port to be used and a baud rate between the computer and the memory card (ZM-1REC). Click [OK].
4. Click the [PC ->] button. Screen data transfer starts.



### Screen Data Transfer from Memory Card (ZM-1REC)

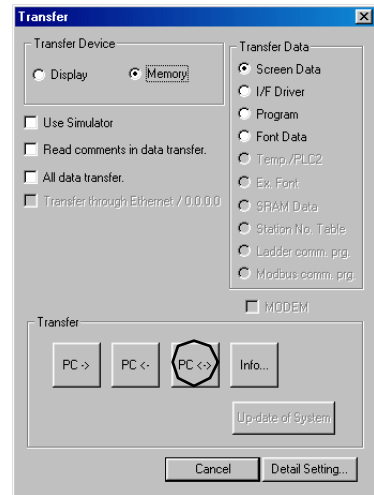
1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Select [Memory] for [Transfer Device] and [Screen Data] for [Transfer Data].
3. Click the [Detail Setting] button. Select a computer serial port to be used and a baud rate between the computer and the memory card (ZM-1REC). Click [OK].
4. Click the [PC <-] button. Screen data transfer starts.



## Screen Data Comparison between Memory Card (ZM-1REC) and Computer

---

1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Select [Memory card] for [Transfer Device] and [Screen Data] for [Transfer Data].
3. Click the [Detail Setting] button. Select a computer serial port to be used and a baud rate between the computer and the memory card (ZM-1REC). Click [OK].
4. Click the [PC <->] button. Screen data comparison starts between the memory card (ZM-1REC) and the computer.



## Screen Data Transfer between Memory Card (ZM-1REC) and LCD Control Terminal ZM Series

### With a ZM-300

---



For the description of screen data transfer between a memory card (ZM-1REC) and a ZM-300, see “Chapter 2 ZM-300 Operations” in the ZM-300 User’s Manual.

### With a ZM-42 to 82

---



For the description of screen data transfer between a memory card (ZM-1REC) and a ZM-42 to 82, see the ZM-42 to 82 User’s Manual (“16. Operation of ZM-42 to 82 Main Menu” in “1 Hardware Specifications”).

## Transfer of Other Data

This section explains options for [Transfer Data] other than [Screen Data].

### I/F Driver (Extension: “\*.tpb”)

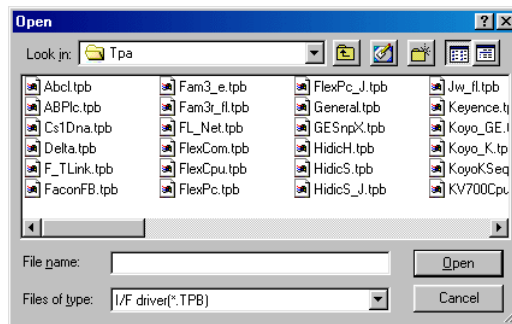
Only when the screen data is transferred to the ZM series first, the I/F driver file is also transferred. Afterwards, I/F driver file transfer will be executed automatically if the PLC model in the screen data is changed.



When the editor software (ZM-71SE) has been updated, choose [I/F Driver] for transfer to the ZM series.

### Transferring Procedure

1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Select [I/F Driver] for [Transfer Data].
3. Click the [PC ->] button. The [Open] dialog is displayed. Select the I/F driver file corresponding to the PLC model.



The list below shows PLC models and their corresponding I/F drive files.

	PLC model	File
MITSUBISHI	A series link	MeIAnA.tpb
	A series CPU	MeIACpu.tpb
	A series (OPCN1)	MeIAnA_J.tpb
	A series (CC-LINK)	MeI_CC.tpb
	QnA series link	MeIQnA.tpb
	QnA series CPU	MeIQCpu.tpb
	QnA series (CC-LINK)	MeI_CC.tpb
	QnA series (Ethernet)	MeIQnA_E.tpb
	QnH (Q) series link	MeIQnA.tpb
	QnH (A) series CPU	MeIQHCpA.tpb
	QnH (Q) series CPU	MeIQHCpQ.tpb

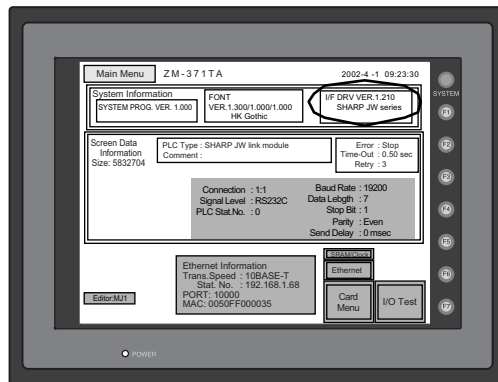
PLC model		File
MITSUBISHI	QnH (Q) series (CC-Link)	MeI_CC.tpb
	QnH (Q) series (Ethernet)	MeIQnA_E.tpb
	FX series CPU	MeIFx.tpb
	FX2N series CPU	
	FX1S series CPU	
	FX series link (A protocol)	MeIFx_A.tpb
	Net10	MeINet10.tpb
	A link + Net10	MeIAmA.tpb
SHARP	JW series	Sharp.tpb
	JW100/70H COM port	
	JW20 COM port	
	JW (FL-Net)	JW_FL.tpb
OMRON	SYSMAC C	Sysmac.tpb
	SYSMAC C (OPCN1)	Sysmac_J.tpb
	SYSMAC CV	SysmacFs.tpb
	SYSMAC CS1	
	SYSMAC CS1 DNA	Cs1Dna.tpb
HITACHI	HIDIC-H	HidicH.tpb
	HIDIC-S10/2 $\alpha$	HidicS.tpb
	HIDIC-S10/ABS	
	HIDIC-S10 (OPCN1)	HidicS_J.tpb
MATSUSHITA	MEWNET	Mewnet.tpb
YOKOGAWA	FA500	Yokogawa.tpb
	FA-M3	
	FA-M3R	
	FA-M3/FA-M3R (Ethernet)	FAM3_E.tpb
	FA-M3R (FL-Net)	FAM3R_FL.tpb
YASKAWA	Memobus	Membus.tpb
	CP9200SH/MP900	
TOYOPUC		Toyopuc.tpb
FUJI	MICREX-F series	MicrexF.tpb
	MICREX-F series, ZM-41/70 compatible	
	MICREX-F T link	F_TLink.tpb
	MICREX-F T link, ZM-41/70 compatible	
	FLEX-PC series	FlexPc.tpb
	FLEX-PC CPU	FlexCpu.tpb
	FLEX-PC COM (T)	FlexCom.tpb
	FLEX-PC (T)	FlexPc.tpb
	FLEX-PC CPU (T)	FlexCpu.tpb
FLEX-PC (OPCN1)	FlexPc_J.tpb	



PLC model		File
KOYO	SU/SG	Koyo_GE.tpb
	SR-T	
	SR-T (K protocol)	Koyo_K.tpb
	SU/SG (K-Sequence)	KoyoKSeq.tpb
A.B	PLC-5	ABPlc.tpb
	SLC500	
	Micro Logix 1000	
	Control Logix	ABCL.tpb
GE Fanuc	90 series	Koyo_GE.tpb
	90 series (SNP-X)	GESnpX.tpb
TOSHIBA	T series	Toshiba.tpb
TOSHIBA MACHINE	TC200	ToshibaC.tpb
SIEMENS	S5	SimS.tpb
	S5 PG port	SimS5PG.tpb
	S5, ZM-41/70 compatible	SimS.tpb
	S7	
	S7-200 PPI	SimS7PPI.tpb
	S7-300MPI (HMI ADP)	SimMPI.tpb
	S7-300MPI (PC ADP)	
	S7 PROFIBUS-DP	SimS7_DP.tpb
	TI500/505	SimTI.tpb
	TI500/505 (ZM-41/70 compatible)	
SHINKO	SELMART	Selmart.tpb
SAMSUNG	SPC series	Samsung.tpb
	N_plus	
	SECKET	Mewnet.tpb
KEYENCE	KZ series link	Sysmac.tpb
	KZ-A500 CPU	MeIACpu.tpb
	KZ/KV series CPU	Keyence.tpb
	KZ24/300 CPU	kzcpu.tpb
	KV10/24 CPU	kvcpu.tpb
	KV-700 CPU	KV700Cpu.tpb
LG	MASTER-K 10/60/200	LGK10.tpb
	MASTER-K 500/1000	LGK500.tpb
	MASTER-KxxxS	LGSCpu.tpb
	MASTER-KxxxS CNET	LGNet.tpb
	GLOFA CNET	
FANUC	Power Mate	PowMate.tpb
FATEK AUTOMATION	FACON FB series	FaconFB.tpb
IDEC	MICRO3	Micro3.tpb

PLC model		File
MODICON	Modbus RTU	Modbus.tpb
YAMATAKE	MX series	Yamatake.tpb
	DMC50	YM_DMC50.tpb
TAIAN	TP02	Taian.tpb
SAIA	PCD	SaiaPcd.tpb
MOELLER	PS4	Moeller.tpb
Telemecanique	TSX Micro	Telway.tpb
Automation direct	DL305	Koyo_GE.tpb
	DL305 (K-Sequence)	KoyoKSeq.tpb
VIGOR	M series	VIGOR.tpb
DELTA	DVP series	DELTA.tpb
Universal serial		General.tpb
Universal FL-Net		FL_Net.tpb
Simulator		UniP1c20.tpb

- Click [Open]. Data transfer starts. On completion of transfer, bring the ZM series to the STOP mode ([Main Menu] (local main) screen). Check the I/F driver model and the version on the screen.



## Program (Extension: “\*.prg”)

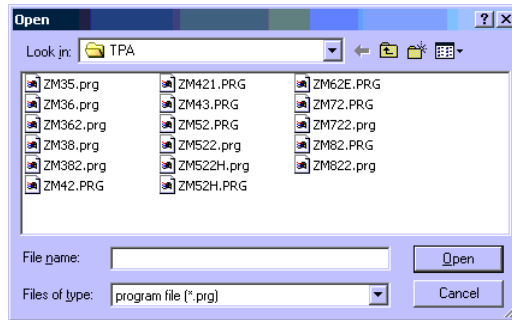
The ZM series system program is not transferred automatically with the screen data.



When the editor software (ZM-71SE) has been updated, transfer the ZM series system program to the ZM series.

### Transferring Procedure

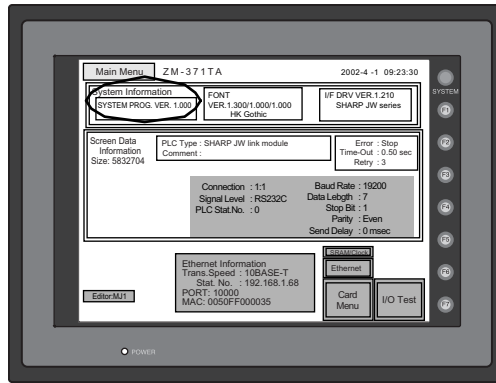
1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Select [Program] for [Transfer Data].
3. Click the [PC ->] button. The [Open] dialog is displayed. Select the system program file corresponding to the model of the ZM series.



The list below shows the ZM series models and their corresponding system files.

Model	File	Model	File
ZM-381SA/382SA	Zm38.prg	ZM-82T/82TC/82TV/82TVC	Zm82.prg
ZM-381S/382S	Zm382.prg (128-color mode)	ZM-72TS/72TSC/72TSV/72TSVC	
ZM-371SA/372SA		ZM-72T/72TC/72TV/72TVC	Zm72.prg
ZM-371S/372S		ZM-72D	
ZM-371TA/372TA		ZM-52D	Zm52.prg
ZM-371T/372T		ZM-42D	Zm42.prg (Zm421.prg)
ZM-362SA	Zm36.prg	ZM-42L	
ZM-362S	Zm362.prg (128-color mode)	ZM-43T	Zm43.prg
ZM-352D	Zm35.prg	ZM-43D	
		ZM-43L	
		ZM-52HD	Zm52h.prg
		ZM-62E	Zm62e.prg

- Click [Open]. Data transfer starts. On completion of transfer, bring the ZM series to the STOP mode ([Main Menu] (local main) screen). Check the system program version on the screen.



Never turn off the ZM series during system program transfer.

### Font Data (Extension “\*.ftd”)

Only when the screen data to be transferred contains font data that is different from the font data in the ZM series, the font data (including the [Main Menu] (local main) screen data file) is also transferred automatically. Afterwards, font data transfer will be executed automatically if any changes are made to the font data in the screen data.

The list below shows the font types and their corresponding font data files.

Font	File
Japanese	Fnt_jpn.ftd
Japanese 32	Fnt_jpn2.ftd
English/Western Europe	Fnt_eng.ftd
Chinese	Fnt_twn.ftd
Chinese (simplified)	Fnt_chn.ftd
Korean	Fnt_kor.ftd



12-point font data is automatically transferred for the fonts of Gothic, English/Western Europe (HK Gothic), and English/Western Europe (HK Times). It is not necessary to select these files.

## Temp./PLC2

Only when the screen data to be transferred contains the temperature control network/PLC2Way settings that are different from the settings in the ZM series, the temperature control network/PLC2 program is also transferred. Afterwards, the temperature control network/PLC2 program transfer will be executed automatically if any changes are made to the program in the screen data.

When the editor software (ZM-71SE) has been updated, choose [Temp./PLC2] for transfer to the ZM series.

## Ex. Font

This option is valid when the screen data contains the Gothic, English/Western Europe (HK Gothic), or English/Western Europe (HK Times) font data. The Gothic font data is divided into these three kinds: 12-point data, automatic font setting data, and manual font setting data. The automatic font setting data is handled as screen data. The 12-point data is transferred as font data. The manual font setting data is included in the expansion font data. When any changes are made to the manual font settings in the screen data, select this option and transfer the data.



However, when [Memory] is selected for [Transfer Device], the expansion font data (= manual font setting data) is also transferred as the screen data together with the automatic font setting data.

## SRAM Data

This option is valid when the ZM series uses an SRAM cassette or built-in SRAM. With this option setting, data is backed up at the time of SRAM cassette battery change. For more information, see the ZM-300 User's Manual.

## Station No. Table

When the temperature control network as well as a temperature controller model FUJI: MPC04P is used, the station number table becomes available. With the station number table in use, this [Station No. Table] option becomes valid. When the screen data is transferred to the ZM series first, the station number table is also transferred automatically. It is not transferred automatically afterwards. When any changes are made to the table, transfer the table data to the ZM series.

### Ladder Comm. Prg.

This option is valid when [Modular Jack 1 (or 2): Ladder Tool] is selected for [QnH CPU Port] as PLC model setting. When the screen data is transferred to the ZM series first, the ladder communication program is also transferred automatically. It is not transferred automatically afterwards. When the editor software ZM-71SE has been updated, choose [Ladder Comm. Prg.] for transfer to the ZM series.

### Modbus Comm. Prg.

This option is valid when Modbus slave communication is in use. When the screen data to be transferred contains Modbus slave communication settings that are different from the settings in the ZM series, the Modbus communication program is transferred. Afterwards, the program transfer will be executed automatically if any changes are made to the Modbus slave communication settings in the screen data. When the editor software ZM-71SE has been updated, choose [Modbus Comm. Prg.] for transfer to the ZM series.

## System Updating

---

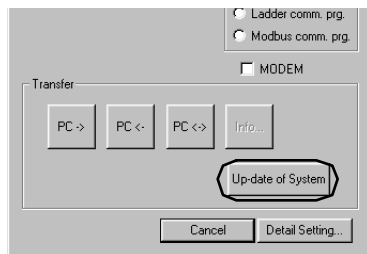
The [Up-date of System] button is provided for updating the entire ZM series system. It is recommended that system updating be executed when the editor software ZM-71SE has been updated.

The files below are updated by the [Up-date of System] button.

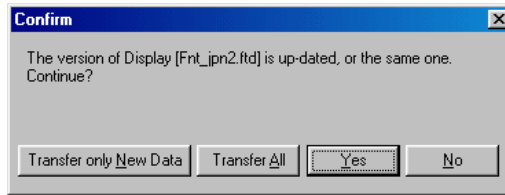
- I/F driver file
- ZM series system program
- Font data

Follow the procedure below.

1. Click the [Transfer] icon or select [Transfer] from the [File] menu.
2. The [Transfer] dialog is displayed. Click the [Up-date of System] button.



- The following confirmation message appears.



[Transfer only New Data]

Only the data files in the ZM series that are older than the counterparts in the transfer data are updated. Note that no confirmation message appears in advance.

[Transfer All]

All data files specified for updating are transferred. Therefore, transfer will be executed even if the transfer data is older than the data in the ZM series. Note that no confirmation message appears in advance.

[Yes]/[No]

When the transfer data is older than or the same as the data in the ZM series, the confirmation message is displayed by clicking either button. To continue transfer, click [Yes]. To discontinue, click [No].

- On completion of data transfer, the ZM series is brought to the previous state.



Never turn off the ZM series during system updating.

## Online Editing

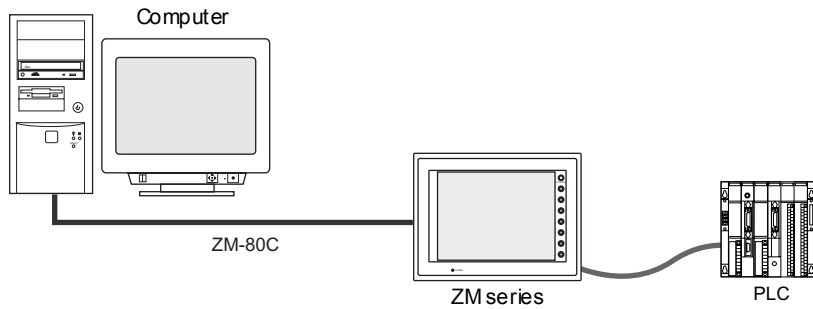
Online editing means editing screen data on the computer while the ZM series is communicating with the PLC and transferring only added or altered data to the ZM series. Since the data to be transferred is limited as mentioned above, transfer time will be shortened.

### Preliminaries

#### With ZM-80C



For the contents of arrangements, see page 5-5.

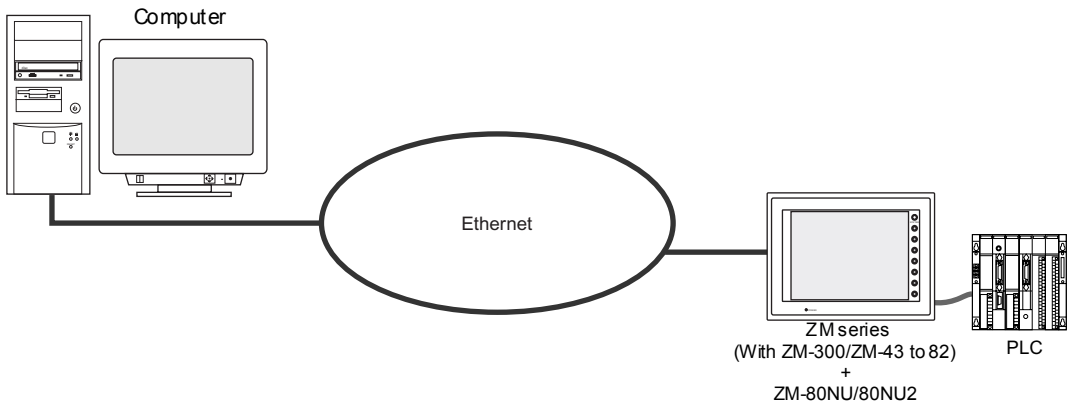


Select [Editor Port] for [Modular Jack 1] in the [Modular Jack] dialog selected from the [System Setting] menu.

#### On Ethernet



For the contents of arrangements, see page 5-5.



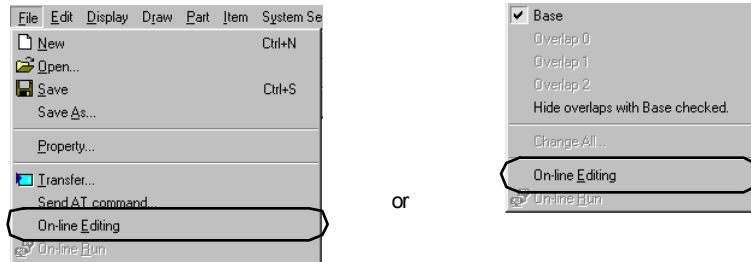


## Online Editing Procedure

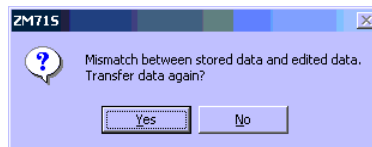


Online editing is performed during screen editing. Open the desired screen data file.

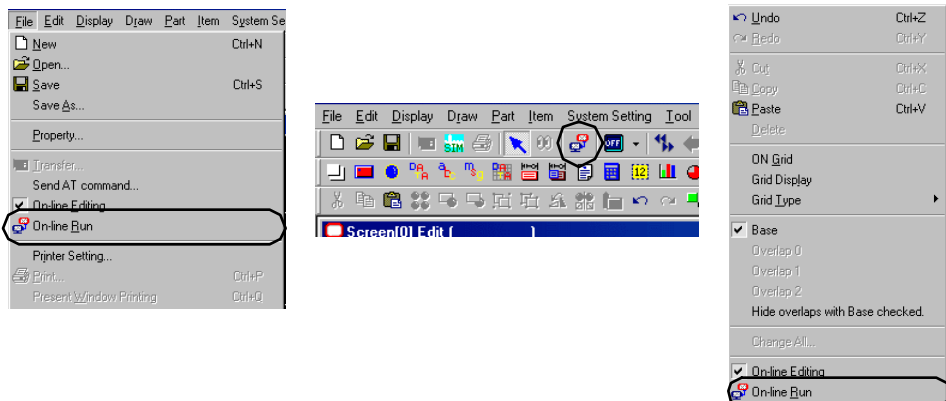
1. Select [On-line Editing] from the [File] menu or the right-click menu.



2. If there is a discrepancy between the screen data on the ZM series and the screen data being edited on the computer, the following inquiry message appears. When no discrepancy is found, go to step 4.



3. If transferring the screen data to the ZM series is allowed, click [Yes]. Online editing is started after the data is transferred.
4. After online editing is started, the [ON-line RUN] icon on the icon bar and [On-line Run] in the [File] menu and the right-click menu become active.



5. When the current screen or window is switched to another during online editing, the changed data is automatically transferred from the computer to the ZM series.
6. Aside from the automatic transfer mentioned above, you can transfer changed data by clicking the [ON-line RUN] icon or selecting [On-line Run] from the [File] menu or the right-click menu.

## Escaping from Online Editing

When escaping from online editing and going back to normal editing, the procedure is the same as used for starting online editing. Select [On-line Editing] from the [File] menu or the right-click menu. The [ON-line RUN] icon on the icon bar becomes inactive.

## Screen Data Transfer via Modem

---

With modems, it is possible to transfer screen data to the ZM series in a remote place.



## Preliminaries and Procedure

### Arrangements

---

Receive side: ZM series

- Modem (Accessories: RS-232C cable, modular cable, AC adaptor)
- ZM-80C
- RS-232C cross cable (page 5-37)
- ZM-71SE or communication software (HyperTerminal, etc.)

Send side: computer

- Modem (Accessories: RS-232C cable, modular cable, AC adaptor)
- ZM-71SE

### Data Transfer Procedure

---

Receive side: ZM series

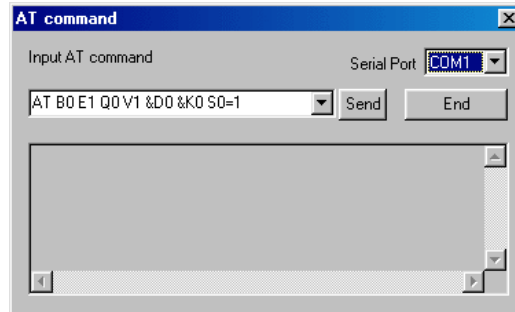
1. Connect the modem on the receive (ZM series) side to a computer according to the instruction manual.
2. Transfer AT commands to the modem (see the following page).
3. Disconnect the modem from the computer. Connect the modem to the ZM series (see page 5-37).
4. Set a baud rate between the ZM series and the modem (see page 5-36).

Send side: computer

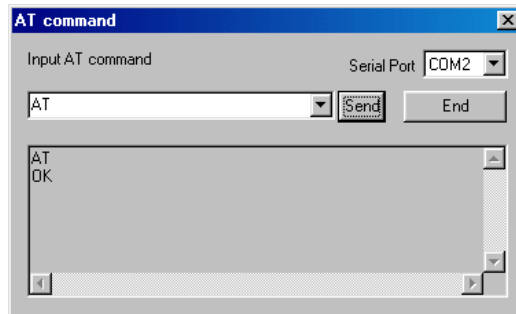
1. Connect the modem on the send (computer) side to a computer according to the instruction manual.
2. Start up the ZM-71SE software. Transfer AT commands to the modem (see the following page).
3. Make settings for communications between the computer and the modem (see page 5-38).
4. Transfer screen data. (\* Online editing is not allowed.)

## AT Command Setting

1. Start up the ZM-71SE software. Select [Send AT command] from the [File] menu. (If the ZM-71SE software is not available on the receive side, follow the steps below using communication software such as HyperTerminal.)
2. The [AT command] dialog is displayed.



3. Select a serial port at [Serial Port].
4. Select [AT] from the pull-down menu and click the [Send] button.



5. When [OK] is displayed, the modem and the computer are connected normally.
6. Send the commands below. The setting items and the contents will vary with the model of the modem. Check the settings for your modem.

AT commands for the receive (ZM series) side

Setting items	Contents
Result code presence/absence	Q0 (presence)
Result code display format	V1 (word format)
Echo back	E1 (yes)
Communication standard selection	B0 (ITU-T standard)
ER signal control	&D0 (ER signal normally ON)
Flow control <sup>*1</sup>	&K0 (No flow control)
Number of calls until arrival	S0 = 1 (except for "0")
Writing to non-volatile memory <sup>*2</sup>	&W0 The current operation status to be written to "STORE PROFILE 0"

\*1 Do not use the XON/XOFF flow control.

\*2 This command is required when you turn off the modem power after AT command setting.

AT commands for the send (computer) side

Setting items	Contents
Result code presence/absence	Q0 (presence)
Result code display format	V1 (word format)
Echo back	E1 (yes)
Communication standard selection	B0 (ITU-T standard)
ER signal control	&D2 (Line to be disconnected at ER ON → OFF)
Flow control <sup>*1</sup>	&K0
Writing to non-volatile memory <sup>*2</sup>	&W0 The current operation status to be written to "STORE PROFILE 0"

\*1 Do not use the XON/XOFF flow control.

\*2 This command is required when you turn off the modem power after AT command setting.

If the settings for your modem are the same as the above, select the commands below from the pull-down menu and send the AT commands.

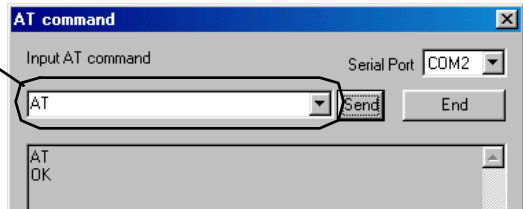
Receive (ZM series) side	AT B0 E1 Q0 V1 &D0 &K0 S0=1
Send (computer) side	AT B0 E1 Q0 V1 &D2 &K0

[OK] appears when the commands have been transferred normally.

- Turning the modem power off deletes the transferred commands. Therefore, select [AT&W0] from the pull-down menu and send it. [OK] appears when the commands have been transferred normally.

8. If the settings for your modem differ, delete the written AT commands and directly enter the AT commands written in your modem's manual.

Send the AT commands.



9. Enter AT command directly into this field.

## LCD Control Terminal ZM Series Setting

Set a baud rate between the ZM series and the modem.

1. On the [Main Menu] (local main) screen, press [Editor: MJ1]. The [Extended Function Setting] screen is displayed.
2. Select the desired baud rate for [Modem Comm. Baud Rate] using the arrow buttons [↑]/[↓]. Press the [Setting Finished] button to finish the selection. (Options: 4800, 9600, 19200, 38400, 57600, 115200)



After the [Setting Finished] button is pressed, the switches and function switches on the [Main Menu] screen do not work for 15 seconds.

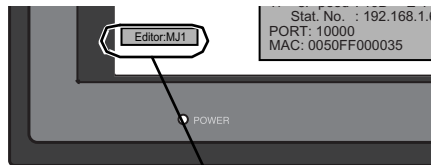


Pressing the [Setting Finished] button sends AT commands to the modem automatically and sets the baud rate between the ZM series and the modem.

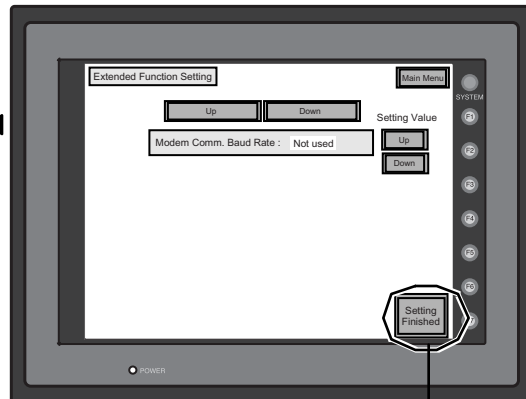
3. The [Main Menu] (local main) screen is displayed automatically. [Modem Connect Mode] automatically appears under [Editor: MJ1].
4. When a modem is not used for screen data transfer, specify [Not Used] for [Modem Comm. Baud Rate].



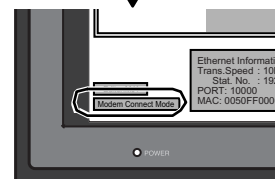
For screen data transfer while a computer is connected with ZM-80C, specify [Not Used] for [Modem Comm. Baud Rate].



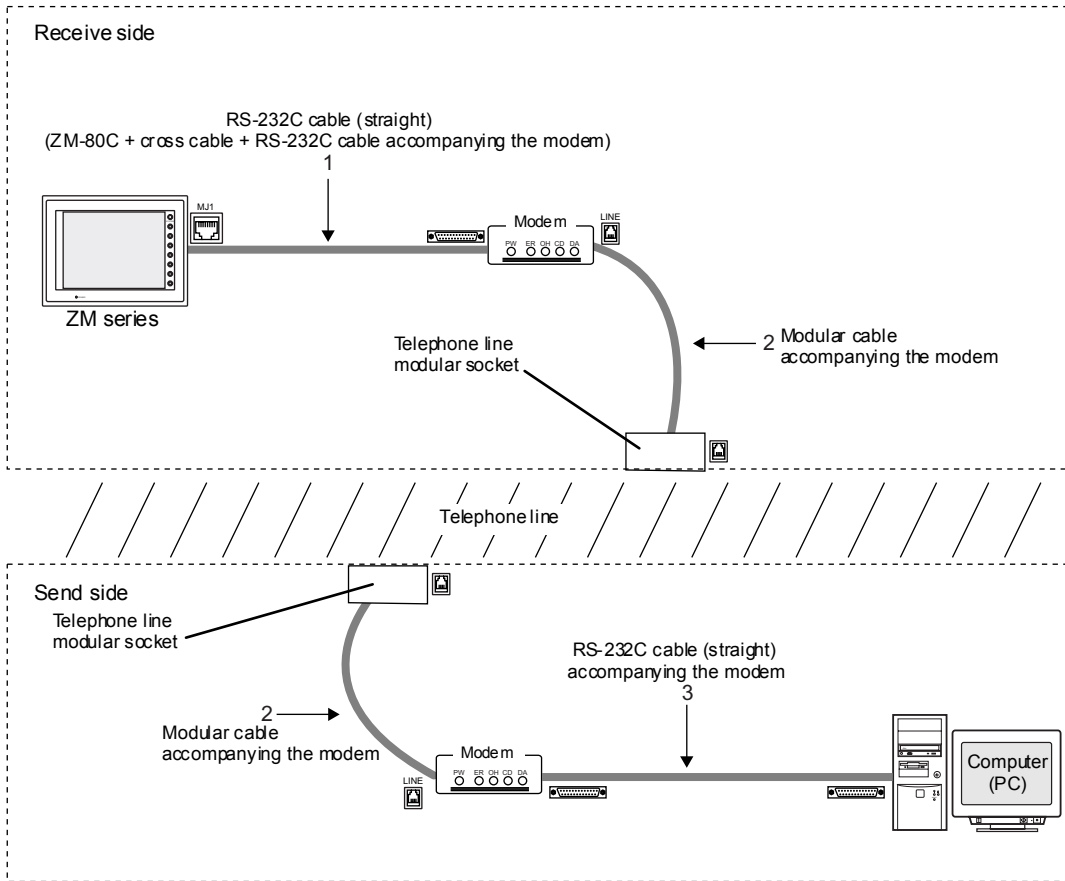
Pressing [Editor: MJ1] brings up the [Extended Function Setting] screen.



Pressing [Setting Finished] brings up the [Main Menu] (local main) screen again.



## Description of Connections



### Connection between ZM Series and Modem

- Connect the ZM-80C to the modular jack MJ1 on the back of the ZM series.
- Connect the RS-232C cable accompanying the modem to the RS-232C connector on the back of the modem.
- The cable to connect the ZM-80C and the RS-232C cable accompanying the modem should be arranged for by the customer.

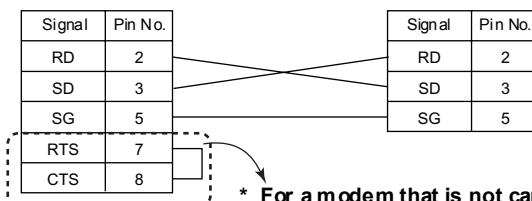
#### Cross Cable Connection

The ZM-80C is a cross cable. To bring the signal connection to a straight state, manufacture another cross cable to be connected.

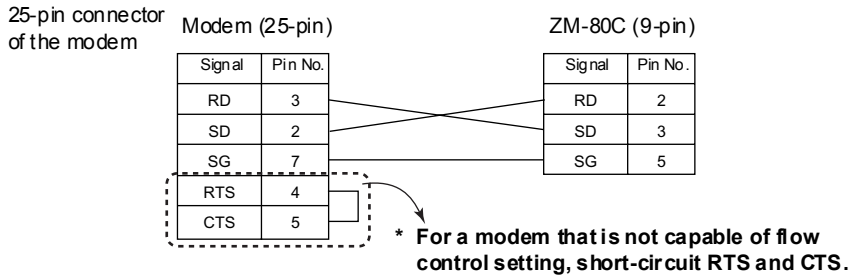
9-pin connector of the modem

Modem (9-pin)

ZM-80C (9-pin)



\* For a modem that is not capable of flow control setting, short-circuit RTS and CTS.



### Connection between Modem and Telephone Line

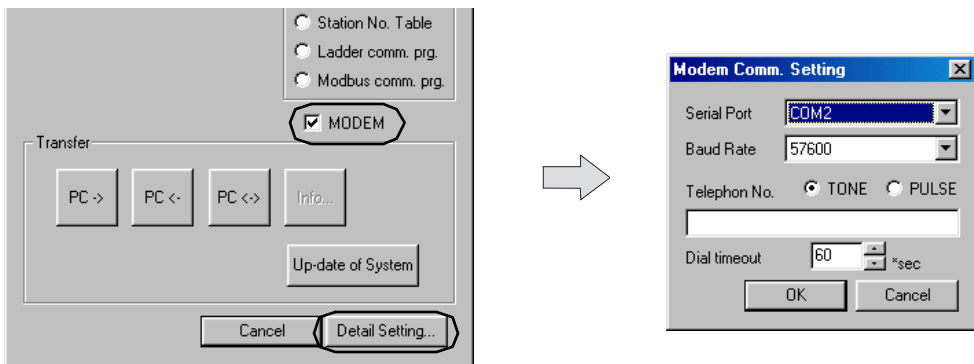
Connect the modular cable accompanying the modem between the modular jack (LINE) for telephone line on the back of the modem and the telephone line modular socket. If the distance between the modem and the telephone line is as long as tens of meters, data transfer failure may occur.

### Connection between Modem and Computer

Connect the RS-232C cable accompanying the modem between the RS-232C connectors on the back of the modem and on the computer.

### Screen Data Transfer

1. Start up the ZM-71SE software. Open a screen data file to be transferred.
2. Click the [Transfer] icon or select [Transfer] from the [File] menu.
3. The [Transfer] dialog is displayed.
4. Check [ MODEM]. Click the [Detail Setting] button.
5. The [Modem Comm. Setting] dialog is displayed.



[Serial Port] (COM1 - COM8)  
Select a serial port.

[Baud Rate] (9600, 19200, 38400, 57600)  
Select a data transfer rate between the computer and the modem.



**[TONE/PULSE]**

Select [TONE] (pushbutton) or [PULSE] (dial) according to the telephone line type in use.

**[Telephone No.]**

Specify the telephone number of the receiver.

**[Dial timeout] (sec)**

Set a timeout period until a normal response is given from the receiver. The default is 60 seconds.

6. When the dialog setting is concluded, click [OK]. The [Transfer] dialog is displayed again.
7. Click [PC ->] for [Transfer]. Screen data transfer starts.



When screen data transfer with a modem is executed while the [Main Menu] (local main) screen is displayed, a message "Transferring Data" appears at the bottom left of the screen. The message disappears on completion of transfer. For about 15 seconds after the message disappears, the switches and the function switches on the [Main Menu] screen do not work.

## Transfer Error Messages Displayed on ZM-71SE

The following error messages are added associated with the modem function. If any occur, the message is displayed on the ZM-71SE.

Error message	Symptom and solution
No response from target.	<ul style="list-style-type: none"> <li>• Check the connection with the other end for power-on/-off or cable disconnection.</li> <li>• Timeout may occur before a response is returned. Extend the timeout period.</li> </ul>
The circuit is cut.	The telephone line is disconnected on the other end.
Command error	A command that is not applicable to the target modem is transferred.
The target line is busy.	The target line is busy.
The telephone number is not specified.	Set the telephone number.
Cannot detect dial tone.	The response is NO DIALTONE.

# After Screen Data Transfer

When screen data transfer has been completed, allow the ZM series to communicate with the PLC and check whether the data has been received.

## Connection

The D-sub 25-pin connector is required for connection with the PLC.



For the cable to connect the PLC and the ZM series, see each ZM User's Manual.



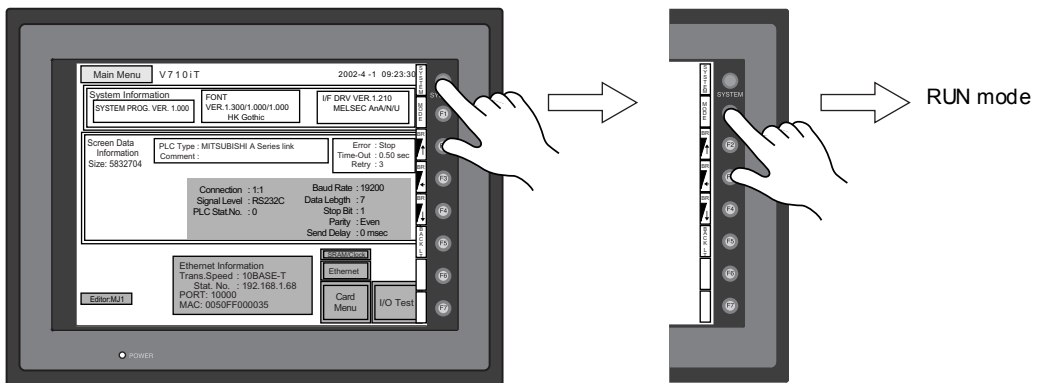
For using the universal serial communication, Ethernet communication, or other optional communication interface units, refer to their respective manuals.

## Screen Check

When the ZM series is in communication (RUN mode) with the PLC, the ZM series brings up the created screen data.

### When the [Main Menu] (Local Main) Screen is Displayed:

The ZM series stops communication with the PLC (in the STOP mode), and is not in the RUN mode. Press the [SYSTEM] key on the right or at the bottom of the ZM series. Menu options are displayed in a line vertically or horizontally. Press the [F1] (MODE) key next. The status is switched to the RUN mode, and the ZM series starts communication with the PLC.

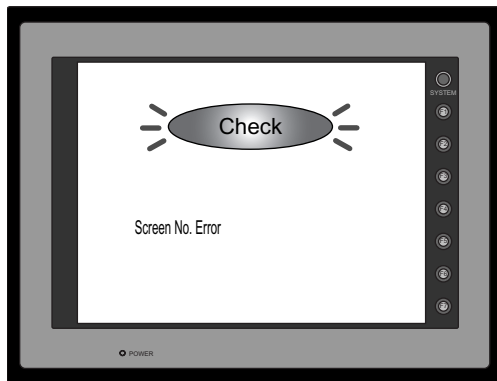


### If an Error Occurs:

The following error message will be displayed due to faulty communication cable connection or PLC or ZM series parameter setting mismatch. Check for these probable causes and restart communication (RUN).

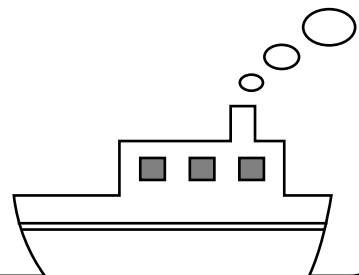


If the following error message is displayed, a screen number that does not exist may be specified in the read area memory address "n + 2." After the ZM series starts communication (RUN mode) with the PLC, it displays the screen specified in the read area address "n + 2." Check and correct the setting in the memory address.



# MEMO

Please use this page freely.



# Chapter 6 **Print**

Preliminaries.....	6-1
Available Printers.....	6-1
Preliminary Steps.....	6-1
[Option Setting] Dialog.....	6-2
Print Procedure.....	6-4
[Print Setting] Dialog.....	6-4
Printing the Currently Opened Window.....	6-7
Printing Examples.....	6-8



## Preliminaries

This chapter explains the procedure for printing the ZM series screen data file from the computer.



The procedures of connecting a printer to the ZM series and printing the screen data file from the ZM series are not explained here. For more information on printing from the ZM series, see "Chapter 15 Print" in the ZM-71SE Instruction Manual (Function).

## Available Printers

Any printer that is available in the Windows environment can print from the ZM-71SE editor.



These printers available in the Windows environment may not be used for printing from the ZM series. Please take note of this.

## Preliminary Steps

Follow the steps shown below.



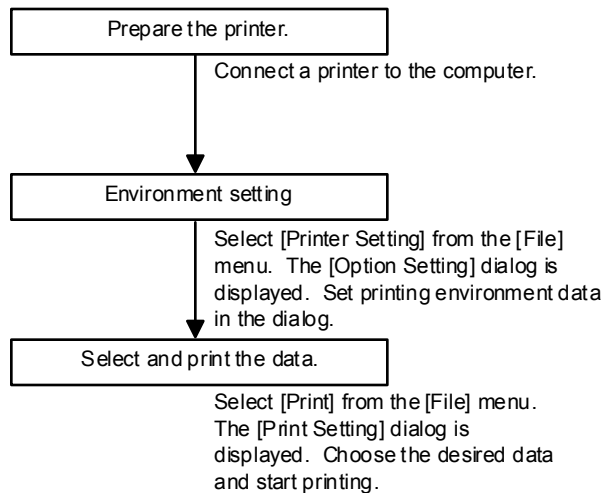
Refer to the above.



Page 6-2

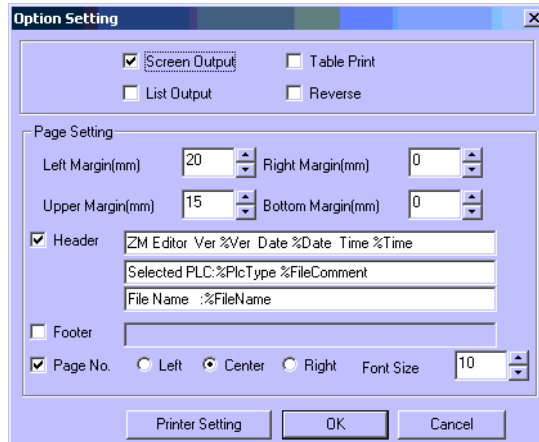


Page 6-4



## [Option Setting] Dialog

Select [Printer Setting] from the [File] menu. The [Option Setting] dialog containing the following options is displayed.



The following setting items are included.

[Screen Output]

Screen images are printed.

[List Output]

Items set for the screen are printed.

[Table Print]

The table of screen images is printed. When this option is checked, the [Screen Output] and [List Output] options are not active.

[Reverse]

The screens are printed in reverse video. Only the white and black portions are reversed.

[Monochrome]

If the printed screen data is difficult to see, check this box. Legibility may be improved.



## Options Under [Page Setting]

[Left Margin] [Right Margin] [Upper Margin] [Bottom Margin]

Enter the desired values for each option. The size of the printed screen depends on the settings of [Left Margin] and [Right Margin].

Header]

This option is checked () as default. The PLC type and file name are indicated automatically. The header setting can be changed as desired.

Footer]

This option is unchecked () as default. When a footer should be printed, check the box.

[Page No.] (Left/Center/Right)

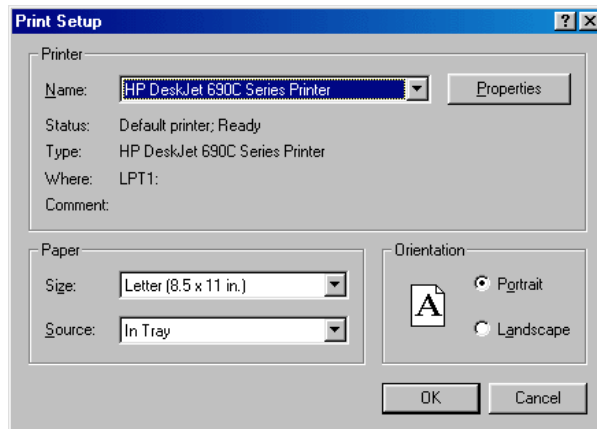
Page numbers are printed in any of the three positions. When page numbers should not be printed, uncheck the box.

[Font Size]

Set this option to determine the character size. The default value is "10."

## [Print Setup] Dialog

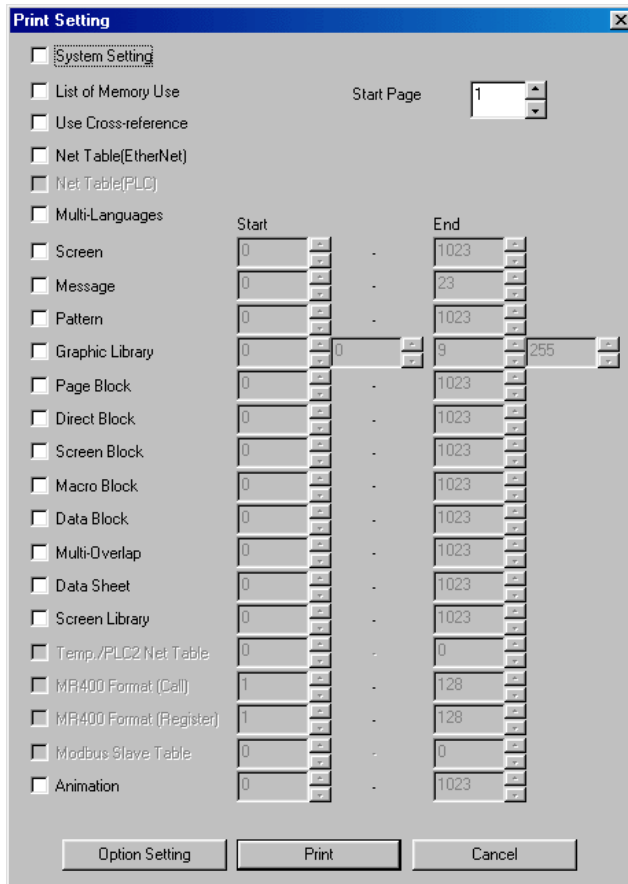
Clicking [Printer Setting] brings up the [Print Setup] dialog. Set paper size, and portrait or landscape mode.



# Print Procedure

## [Print Setting] Dialog

Select [Print] from the [File] menu. The [Print Setting] dialog is displayed as follows:



The following setting items are included.

[System Setting] (See page 6-9.)

Click this option for printing the system setting data. The tile list is also printed out.

[List of Memory Use] (See page 6-10.)

Memory use by screens and screen edit items is printed.

[Use Cross-reference] (See page 6-10.)

Memory addresses are printed to the following edit items.

- Message  
When messages are printed, memory addresses used in relay mode are also printed.
  - Graphic Library (valid when [ Screen Output] is checked)  
When graphic library is printed, memory addresses used in graphic relay mode are also printed.
  - Page, direct, and screen blocks  
When page, direct or screen blocks are printed, or when relay-sub mode is used, the corresponding memory addresses are also printed.
- Net Table (Ethernet)  
This option is valid when Ethernet is set. Check the box when printing the network table for Ethernet.
- Net Table (PLC)  
This option is valid when [Mitsubishi: Net10] or [OMRON: SYSMAC CS1 DNA], etc. is selected. Select this option when printing the network table.
- Multi-Languages  
The option is valid when “2” or more is selected for [Changing Characters]. Select this option when printing the multi-language edit window.
- Screen] (0 to 1023)  
Check the box when printing screen images or items set for the screens.
- Message] (0 to 23 (group))  
Messages grouped by edit numbers are printed.
- Pattern] (0 to 1023)  
Check the box when printing patterns.
- Graphic Library] (Group No.: 0 to 9, Graphic No.: 0 to 255)  
Check the box when printing graphics in the graphic library.
- Page Block] [ Direct Block] [ Screen Block] [ Macro Block]  
 Data Block] [ Multi-Overlap] [ Data Sheet] [ Screen Library]  
Select these options when printing respective items. Settings in the range of 0 to 1023 are valid.
- Temp./PLC2 Net Table] (0 to 31)  
This option is valid when the temperature control network or PLC2Way function is used. Select this option when printing the temperature control network or PLC2Way table.
- MR400 Format (Call)] (1 to 128)  
This option is valid when the ZM series is connected to the barcode printer “MR400.” Select this option when printing the MR400 format table (call).
- MR400 Format (Register)] (1 to 128)  
This option is valid when the ZM series is connected to the barcode printer “MR400.” Select this option when printing the MR400 format table (register).

[Modbus Slave Table] (0 to 255)

This option is valid when Modbus slave communication is in use. Select the option when printing the Modbus slave memory table.

[Animation] (0 to 1023) (For the ZM-300 series except for ZM-352D)

Select this option when printing the frame that is defined with an animation number. The frame used for the specified animation number can be printed.

[Start Page]

Specify the first page number to be printed.

### **[Option Setting] Button**

---

Clicking this button brings up the [Option Setting] dialog. For an explanation of the options, refer to "[Option Setting] Dialog."

### **[Print] Button**

---

Click this button. Printing is executed as specified.

## Printing the Currently Opened Window



Set the options in the [Option Setting] dialog in advance. (Select [Printer Setting] from the [File] menu).

Select [Present Window Printing] from the [File] menu. At the same time, a printing start command is given and the currently opened window is printed out as specified in the [Option Setting] dialog.

### When the [Memory Address Use] List Is Opened

The [Memory Address Use] list is displayed on the editor window as follows:

```

[Memory Address Use/Cross-reference]
D00000 - D09999

D00000 Comm. Parameter:Read Area
D00001 Comm. Parameter:Read Area
D00002 Comm. Parameter:Read Area
D00003 Buffering Area:Sample Control
D00050 Comm. Parameter:Write Area
D00051 Comm. Parameter:Write Area
D00052 Comm. Parameter:Write Area
D00100 Screen.No 5:Base:Num. Display:Div 0
D00100 Screen.No 5:Base:Num. Display:Div 0
D00100 Screen.No 5:Base:Num. Display:Div 0
D00100 Screen.No 5:Base:Num. Display:Div 0
D00100 Screen.No 5:Base:Num. Display:Div 0
D00101 Screen.No 5:Base:Num. Display:Div 0
D00102 Screen.No 5:Base:Num. Display:Div 0
D00103 Screen.No 5:Base:Num. Display:Div 0
D00105 Screen.No 5:Base:Num. Display:Div 0
D00106 Screen.No 5:Base:Char. Display:Div 0
D00107 Screen.No 5:Base:Char. Display:Div 0
D00108 Screen.No 5:Base:Char. Display:Div 0
D00109 Screen.No 5:Base:Char. Display:Div 0
D00120 Screen.No 8:OPEN Macro:LINE 4
D00120 Screen.No 8:Base:Table Data Display:Div 0
D00121 Screen.No 8:Base:Table Data Display:Div 0
D00122 Screen.No 8:Base:Table Data Display:Div 0
D00123 Screen.No 8:Base:Table Data Display:Div 0
D00124 Screen.No 8:Base:Table Data Display:Div 0
D00125 Screen.No 8:Base:Table Data Display:Div 0
D00126 Screen.No 8:Base:Table Data Display:Div 0
D00127 Screen.No 8:Base:Table Data Display:Div 0
  
```

However, it is printed out as below by clicking [Present Window Printing].

```

ZM-71SE Ver 2.00 DATE [2002/02/26] TIME [11:30:58]
Selected PLC : MITSUBISHI : ACPU Port File Comment :
File Name : D:\ZM-300data\ZM-300DEMO_ZM-381SA.Z37
  
```

```

[Memory Address Use/Cross-reference]
D00000 - D09999
  
```

```

D00000 Comm. Parameter:Read Area
D00001 Comm. Parameter:Read Area
D00002 Comm. Parameter:Read Area
D00003 Buffering Area:Sample Control
D00050 Comm. Parameter:Write Area
D00051 Comm. Parameter:Write Area
D00052 Comm. Parameter:Write Area
D00100 Screen.No 5:Base:Num. Display:Div 0
D00100 Screen.No 5:Base:Num. Display:Div 0
D00100 Screen.No 5:Base:Num. Display:Div 0
D00100 Screen.No 5:Base:Num. Display:Div 0
D00100 Screen.No 5:Base:Num. Display:Div 0
D00101 Screen.No 5:Base:Num. Display:Div 0
D00102 Screen.No 5:Base:Num. Display:Div 0
D00103 Screen.No 5:Base:Num. Display:Div 0
D00105 Screen.No 5:Base:Num. Display:Div 0
D00106 Screen.No 5:Base:Char. Display:Div 0
D00107 Screen.No 5:Base:Char. Display:Div 0
D00108 Screen.No 5:Base:Char. Display:Div 0
D00109 Screen.No 5:Base:Char. Display:Div 0
D00120 Screen.No 8:OPEN Macro:LINE 4
D00120 Screen.No 8:Base:Table Data Display:Div 0
D00121 Screen.No 8:Base:Table Data Display:Div 0
D00122 Screen.No 8:Base:Table Data Display:Div 0
D00123 Screen.No 8:Base:Table Data Display:Div 0
D00124 Screen.No 8:Base:Table Data Display:Div 0
D00125 Screen.No 8:Base:Table Data Display:Div 0
D00126 Screen.No 8:Base:Table Data Display:Div 0
D00127 Screen.No 8:Base:Table Data Display:Div 0
  
```

## Printing Examples

### Screen Output



### List Output

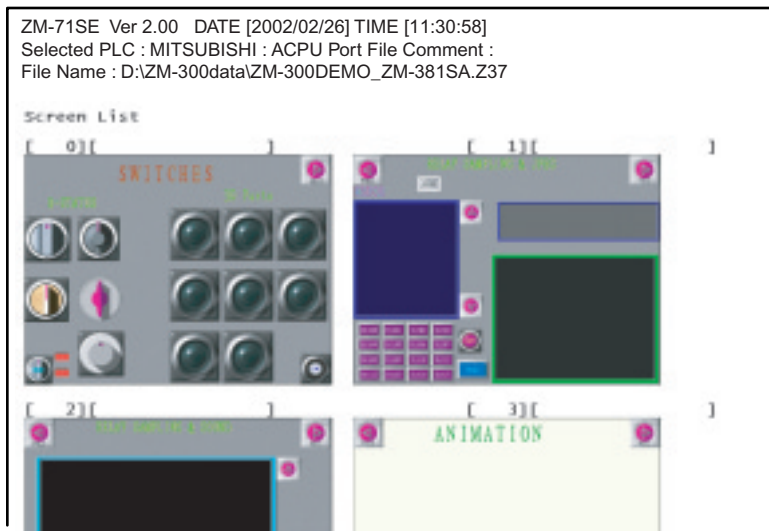
ZM-71SE Ver 2.00 DATE [2002/02/26] TIME [11:30:58]  
 Selected PLC : MITSUBISHI : ACPU Port File Comment :  
 File Name : D:\ZM-300data\ZM-300DEMO\_ZM-381SA.Z37

\*\*\* Screen No:0 [ ] \*\*\*

```
[Screen Setting]
Background FCL:19026 BLink:No BCL:0 BLink:No Title:0
Item Select Memory:No
Transfer of PLC Memory:Not Use
Receive Slice Level:40
OPEN Macro Not Use
CLOSE Macro Not Use
CYCLE Macro
000 ;

Local Function SwitchNot Use
Superimpose Transparent Color:0
Blend Value:255
Animation Transparent Color:25375
[Base]
[DIV No0]Switch Coordinate:(720,520)-(799,599)
[OFF Char.]
No.0:ON
[ON Char.]
Function:No
Output Memory:$u00120-00 Output Action:AlternateLamp Memory:$u00120-00
OFFColor: No Designation Frame Color: No Designation
ON Color: No Designation Frame Color: No Designation
Draw Mode:REP Process Cycle:High Speed
ON Macro:Not Use
OFFMacro:Not Use
InterLock
Not Use
Not Use Custom Bitmap
---OFF---
File Name:Desw61+$10.bmp
---ON---
Not Use Flash
File Name:Desw61+$11.bmp
```

## Table Print



## System Setting

ZM-71SE Ver 2.00 DATE [2002/02/26] TIME [11:30:58]  
 Selected PLC : MITSUBISHI : ACPU Port File Comment :  
 File Name : D:\ZM-300data\ZM-300DEMO\_ZM-381SA.Z37

```

*** System Setting ***
Selected PLC:MITSUBISHI FX series CPU
File Name:D:\V7\data\Eng.V7
File Comment:

[Comm. Parameter]
Connection           : 1:1
Comm. Error Handling : Stop
Local No.           : 0
Baud Rate           : 9600BPS
Data Length         : 7-bit
Parity              : Even
Stop Bit            : 1-bit
Signal Level        : RS422
Read Area           : 0000
Write Area          : 00050
R/W Area G0-80 Compatible : No
Calendar            : 3u16330
Ethernet            : Not Use
Text Process        : LSB->MSB
Code                : DEC
Time-Out Time       : 500 msec
Retrials            : 3
Send Delay Time     : 0
Start Time          : 0 sec

[Type] V7128 (800*600 32K Color)
[Memory Extension] (Non)
[Backlight]         ON
[Display]           Normal
[Buzzer]            Standard
[System Switch]     Disable
[Mode Switch]       Disable
[Change-over Time] 0 *sec
[Blink/Flash]
ON Time :default(500msec)

```

## Memory Use List

```
ZM-71SE Ver 2.00 DATE [2002/02/26] TIME [11:30:58]
Selected PLC : MITSUBISHI : ACPU Port File Comment :
File Name : D:\ZM-300data\ZM-300DEMO_ZM-381SA.Z37

*** Memory Use ***
[Screen ] 7 [Multi Overlap ] 0
[Data Block ] 0 [Message ] 2
[Pattern ] 0 [Macro Block ] 1
[Page Block ] 16 [Direct Block ] 0
[Screen Block ] 0 [Data Sheet Page ] 0
[Screen Lib. ] 0

[Animation Frame] 57

[Graphic Lib 0 ] 0 [Graphic Lib 1 ] 0
[Graphic Lib 2 ] 0 [Graphic Lib 3 ] 0
[Graphic Lib 4 ] 0 [Graphic Lib 5 ] 0
[Graphic Lib 6 ] 0 [Graphic Lib 7 ] 0
[Graphic Lib 8 ] 0 [Graphic Lib 9 ] 0

[Ex. Char.16 ] 0 [Ex. Char.32 ] 0

[Total Bytes] 3085662 / 5775360 byte
[Screen]
0 [Graphic 9 ] 0
```

## When [Use Cross-reference] is Checked:

### Ex.: Messages

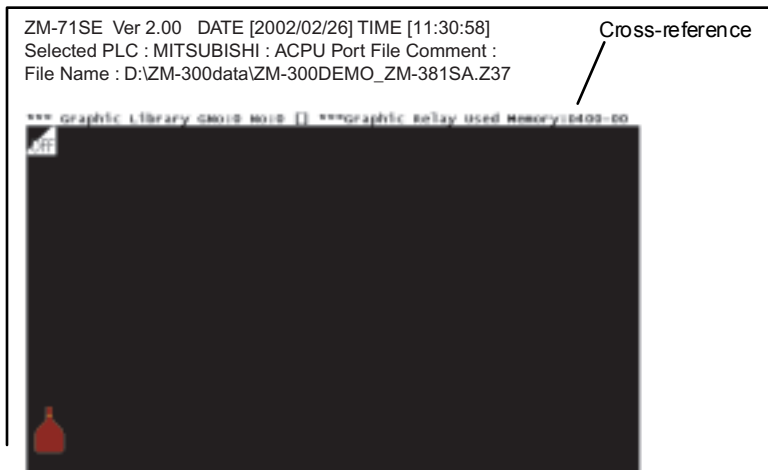
```
ZM-71SE Ver 2.00 DATE [2002/02/26] TIME [11:30:58]
Selected PLC : MITSUBISHI : ACPU Port File Comment :
File Name : D:\ZM-300data\ZM-300DEMO_ZM-381SA.Z37

*** Message Group 0 ***
Group No.:0
[== 0==] Relay M00150 [Absorption Error]
[== 1==] Relay M00151 [Lead Pitch Error]
[== 2==] Relay M00152 [No PCB]
[== 3==] Relay M00153 [Nozzle Absorption Check Error]
[== 4==] Relay M00154 [Chuck Detect Error]
[== 5==] Relay M00155 [Main Controller Emergency Stop]
[== 6==] Relay M00156 [Sub Controller Emergency Stop]
[== 7==] Relay M00157 [Feeder Unfastened Detected]
[== 8==] Relay M00158 [No Tool]
[== 9==] Relay M00159 [Detach Tool]
[== 10==] Relay M00160 [Tool Docking]
[== 11==] Relay M00161 [Tray Absorption Error]
[== 12==] Relay M00162 [Some Parts Missing on Tray]
[== 13==] Relay M00163 [Tray Rear Door Opened]
[== 14==] Relay M00164 [No Tray Plate]
[== 15==] Relay M00165 [Tray Plate Cover Opened]
[== 16==] Relay M00166 [ ]
[== 17==] Relay M00167 [ ]
[== 18==] Relay M00168 [ ]
[== 19==] Relay M00169 [ ]
[== 20==] Relay M00170 [Part feeder is not properly set.]

└──┬──┘
    |
    v
Cross-reference
```



### Ex: Graphic Library

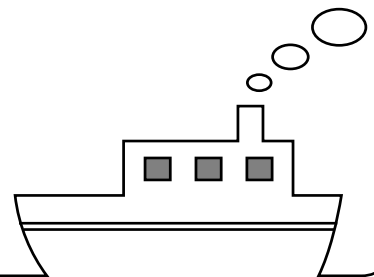


### When [Animation] is Checked:



# MEMO

Please use this page freely.



# Chapter 7

# Useful Techniques

Tools.....	7-1
[Too!] Menu List .....	7-1
Function 1: Error Check.....	7-2
Function 2: Memory Use.....	7-4
Function 3: Memory Address Use .....	7-5
Function 4: Change Memory .....	7-7
Function 5: Copy Image to Pattern .....	7-10
Function 6: Copy Image to Clip Board.....	7-12
Function 7: Paste Bitmap.....	7-14
Function 8: DXF File Convert .....	7-17
Function 9: Convert to Rich Text Format.....	7-19
Function 10: Add Video Menu .....	7-21
Function 11: Custom Part .....	7-21
Function 12: Tray .....	7-23
Function 13: Tag Table .....	7-26
File Management .....	7-27
File Management Outline.....	7-27
File Management: Screen Data File .....	7-29
File Management: Part File.....	7-35
File Management: File Copy.....	7-39
File Management: File Deletion .....	7-40
File Management: File Division and Combination .....	7-41
File Management: File Comparison.....	7-43



# Tools

The [Tool] menu provides useful tools for screen creation. If you are familiar with these tools, you can edit screen data quite easily.

## [Tool] Menu List

The [Tool] menu provides the following functions:

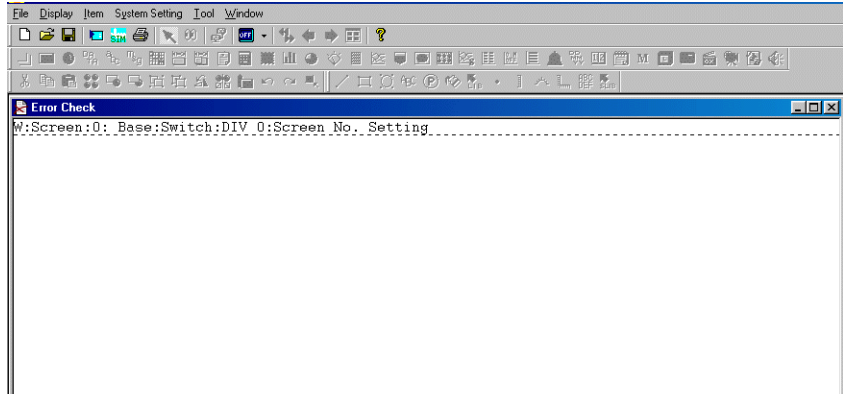
Tool	Uses	Ref.
Error Check	Files are checked for errors.	Page 7-2
Memory Use	Memory used by the current editing file is displayed.	Page 7-4
Memory Address Use	Memory addresses used in the current editing file are displayed.	Page 7-5
Change Memory	Memory addresses used in the current editing file are changed.	Page 7-7
Screen Image (Make Pattern)	The current screen image is registered as patterns.	Page 7-10
Screen Image (Copy to Clipboard)	The current screen image is copied to the clipboard.	Page 7-12
Paste Bitmap	Bitmap files are imported into screen data files (as patterns).	Page 7-14
DXF File Convert	DXF files are imported into screens.	Page 7-17
Convert to Rich Text Format	The printing image of a screen data is saved as a Rich Text file format.	Page 7-19
Add Video Menu Video	The ZM-300 video display function can be created and placed with ease.	Page 7-21
Custom Part	Custom parts are registered.	Page 7-21
Tray	Parts or items to be used often are stored in trays.	Page 7-23
Tag Table	Set the tag table when using Allen Bradley's Control Logix.	Page 7-26

## Function 1: Error Check

The files can be checked for errors. If any error is found, its cause and remedies are displayed.

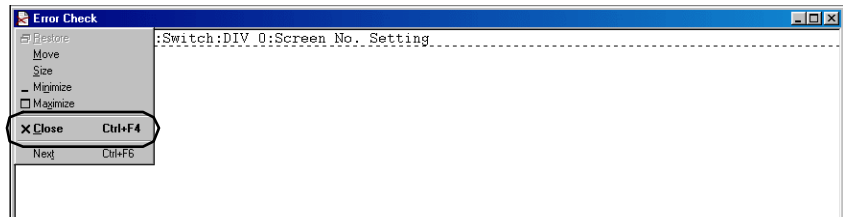
### Operation Procedure

1. Select [Error Check] from the [Tool] menu.
2. The check result is indicated in the [Error Check] window.



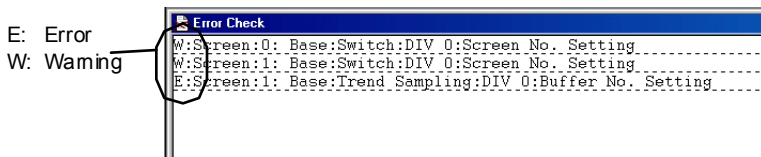
When no error is found, "No Error" is displayed.

3. To close this window, click the [X] (Close) button at the upper right, or the click the upper left icon and select [Close].



### Reading the Error Check List

When an error occurs, the following [Error Check] window is displayed.



Each line is composed of the following information:

E (error)/W (warning): Layer: Function: Division No.: Error occurring position



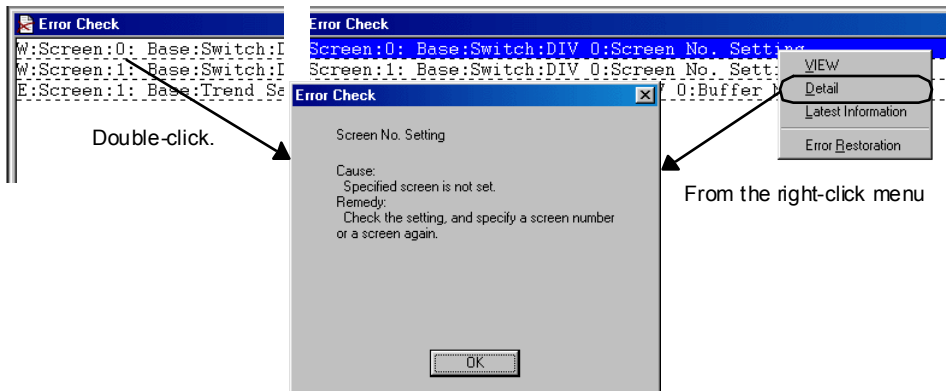
### Difference between Error and Warning

[E] denotes an error. If you attempt to transfer data indicated with [E] to ZM, "Data has some error." is displayed and data cannot be transferred correctly. Be sure to transfer data without any error.

[W] denotes a warning. This is a moderate error that is detected due to discrepancy in setting but does not cause any problem in operation on ZM.

### Checking Method for Details

To check the details of the error or warning, double-click the line, or click the line, right-click the mouse and select [Detail] from the menu. The [Error Check] dialog shown below is displayed.



### Right-click Menu

[VIEW]

It is possible to jump to the error occurring position.

[Detail]

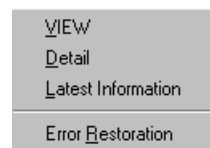
Refer to the explanation above.

[Latest Information]

The latest error information is displayed.

[Error Restoration]

This item is valid for some kinds of errors. For more information, consult your local distributor.



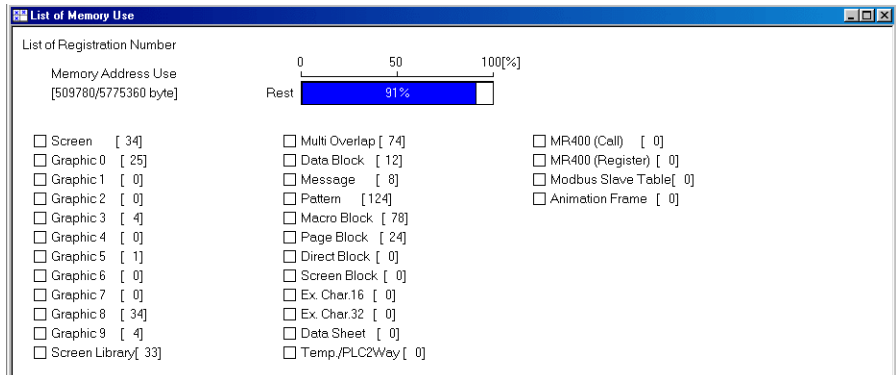
## Function 2: Memory Use

This window indicates the remaining memory and items registered in screen data files.

### Operation Procedure

#### Opening/Closing the List of Memory Use

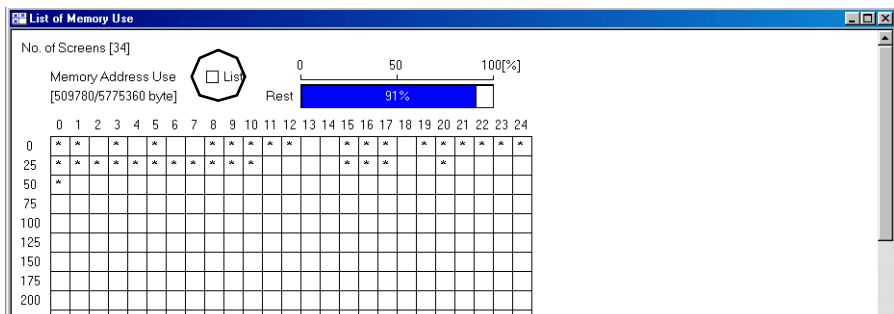
1. Select [Memory Use] from the [Tool] menu.
2. The [List of Memory Use] window is displayed.



3. To close this window, click the [X] (Close) button at the upper right, or the click the upper left icon and select [Close].

#### Bringing Up the Detailed List of Edit Items

1. Click the box of the desired item on the [List of Memory Use] window.
2. The list of items is displayed. The boxes with registration are shown with an “\*.”
3. To go back to [List of Registration Number], click the [List] box.



The list of the desired items can also be chosen from the [Display] menu while the [List of Memory Use] window is displayed.





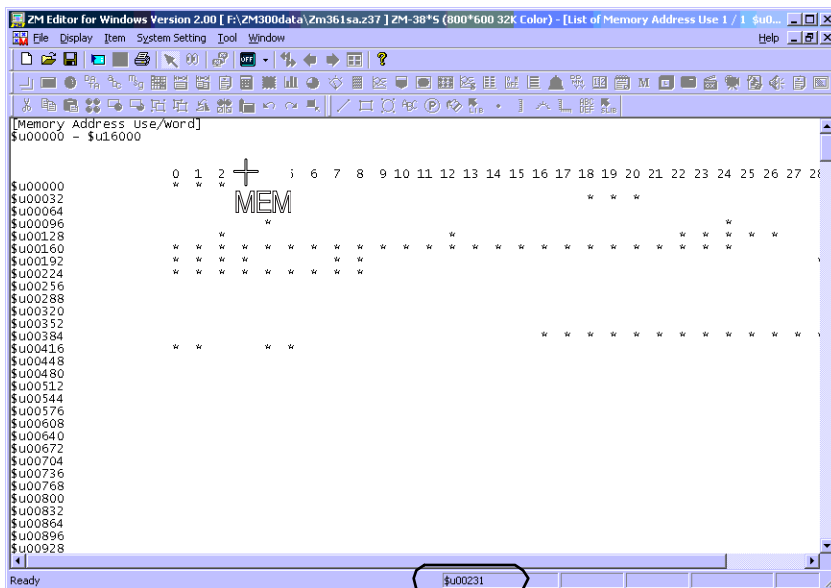
5. If you would like to see the memory use of the current screen, check  Display only [Screen/h]. To check the memory use of the entire file, do not check this box.
6. Click [OK]. The [List of Memory Address Use] is displayed.



About “\*”

When  Cross-reference] is not checked, “\*” is shown for the used memory addresses. Double-clicking an asterisk mark (\*) brings up the screen or dialog to which the memory address is allocated.

By locating the cursor on an asterisk mark (\*), the mouse turns into “+MEM” mark and the corresponding address is indicated on the status bar.



Address where the “+MEM” cursor is placed

7. To close this window, click the [x] (Close) button at the upper right, or the click the upper left icon and select [Close].

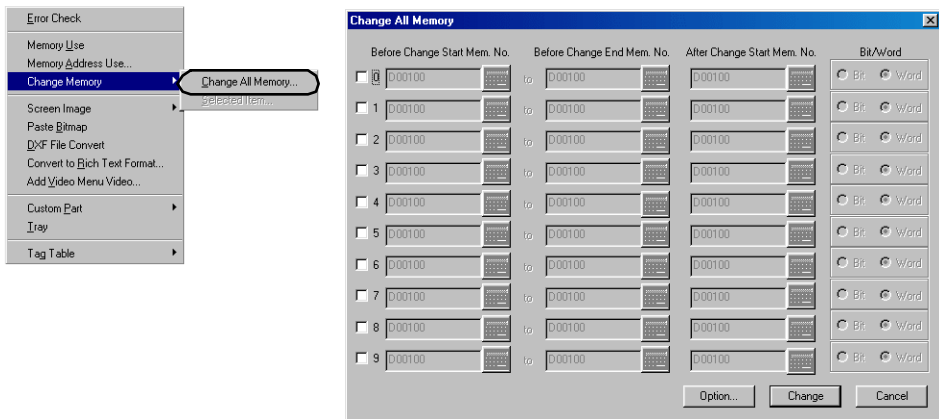
## Function 4: Change Memory

### Change All Memory

Memory addresses allocated to the current editing file can be changed simultaneously. Up to 10 different memory ranges can be set.

#### Operation Procedure

1. Select [Change Memory] from the [Tool] menu. The sub-menu is displayed. Click [Change All Memory].
2. The [Change All Memory] dialog is displayed.



3. Check the numbered box. Memory address selection becomes available.
4. Choose [Bit] or [Word]. Memory change is performed in units of bits or words as selected.
5. Enter the first address of the memory addresses to be changed for [Before Change Start Mem. No.]. Likewise, enter the last address of the memory addresses to be changed for [Before Change End Mem. No.].
6. Enter the desired first address after change for [After Change Start Mem. No.] in the same manner.
7. Click [Option] and set the items of which memory addresses should be changed. For more information, refer to the next section.
8. Click [Change]. The specified memory addresses are changed at one time.

## [Change Item Select] Dialog

Click [Option] in the [Change All Memory] dialog. The [Change Item Select] dialog is displayed.

Item	Start	End
<input checked="" type="checkbox"/> Screen	0	1023
<input checked="" type="checkbox"/> Macro Block	0	1023
<input checked="" type="checkbox"/> Data Block	0	1023
<input checked="" type="checkbox"/> M. LIB	0	1023
<input checked="" type="checkbox"/> Data Sheet	0	1023
<input checked="" type="checkbox"/> S. LIB	0	1023
<input checked="" type="checkbox"/> Temp. CTRL/PLC2Way	0	31
<input checked="" type="checkbox"/> MR400 Format Table	1	128
<input checked="" type="checkbox"/> Modbus Slave Table	0	255
<input checked="" type="checkbox"/> System Setting		
<input type="checkbox"/> Compare Station No.		
<input type="checkbox"/> Compare File No.		
<input type="checkbox"/> Compare CPU No.		
<input type="checkbox"/> Compare Record No.		
<input type="checkbox"/> Compare Temp. Control Station No.		

The following items are included.

[Screen] [Macro Block] [Data Block] [M.LIB] [Data Sheet] [S.LIB]  
[Temp. CTRL/PLC2Way] [System Setting]

Check the desired items. If a range should be set, enter the numbers for [Start] and [End].

Compare Station No.]

This option is valid when [1 : n] (multi-drop) is selected for [Connection].  
Check this box to include port numbers of the PLCs for memory change.

Compare CPU No.]

Choose this option for setting the CPU number of PLC.

Compare Temp. Control Station No.]

This option is valid when the temperature control network is used. Check this box to include the port number of the temperature controller.

[Compare File No.] [Compare Record No.]

Choose these options for specifying addresses in the memory card.



This is not available during on-line editing.

---

## Changing Memory of Selected Items Only

Memory addresses of the selected screen items in the current editing file can be changed simultaneously.

### Operation Procedure

---

1. Select the desired items for memory change.
2. Select [Change Memory] from the [Tool] menu. The sub-menu is displayed. Click [Selected Item].
3. The [Change All Memory] dialog is displayed.
4. Check the numbered box. Memory address selection becomes available.
5. Choose [Bit] or [Word]. Memory change is performed in units of bits or words as selected.
6. Enter the first address of the memory addresses to be changed for [Before Change Start Mem. No.]. Likewise, enter the last address of the memory addresses to be changed for [Before Change End Mem. No.].
7. Enter the desired first address after change for [After Change Start Mem. No.] in the same manner.
8. Click [Option] and set the items of which memory addresses should be changed. For more information, refer to the next section.
9. Click [Change]. The specified memory addresses are changed at one time.

### Option Setting

---

Click the [Option] button in the [Change All Memory] dialog. The [Change Item Select] dialog shown below is displayed. The following items are included.

Compare Station No.]

This option is valid when [1 : n] (multi-drop) is selected for [Connection].  
Check this box to include port numbers of the PLCs for memory change.

Compare CPU No.]

Choose this option for setting the CPU number of PLC.

Compare Temp. Control Station No.]

This option is valid when the temperature control network is used. Check this box to include the port number of the temperature controller.

[Compare File No.] [Compare Record No.]

Choose these options for specifying addresses in the memory card.

## Function 5: Copy Image to Pattern

The screen being displayed on the computer can be registered as a pattern. A pattern can be pasted to a screen change switch to show the target screen instead of text, or can be used in various ways.

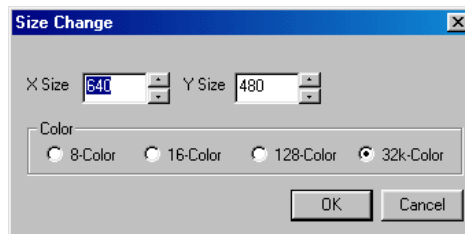


The following edit items can be registered as patterns:

- Screen
- Graphic library
- Multi-overlap
- Data block
- Screen library

### Operation Procedure

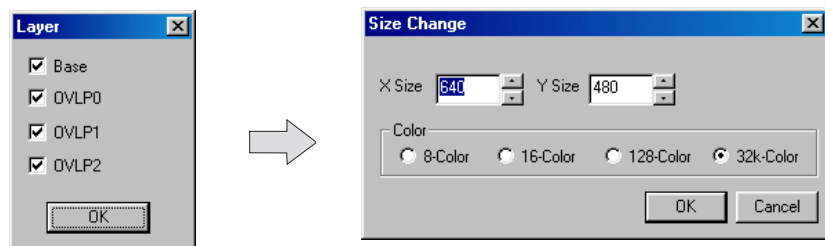
1. Bring up the desired screen.
2. Select [Screen Image] from the [Tool] menu. The sub-menu is displayed. Click [Make Pattern].
3. The [Size Change] dialog is displayed.



When a normal overlap is placed on the screen, the [Layer] dialog appears first. Choose the editing layer to be displayed. Click [OK]. The [Size Change] dialog is displayed.

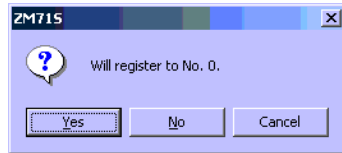
#### Ex:

For a screen with three normal overlaps:

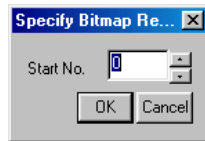


4. Specify [X Size] and [Y Size] of the pattern. They can be set to the screen size.

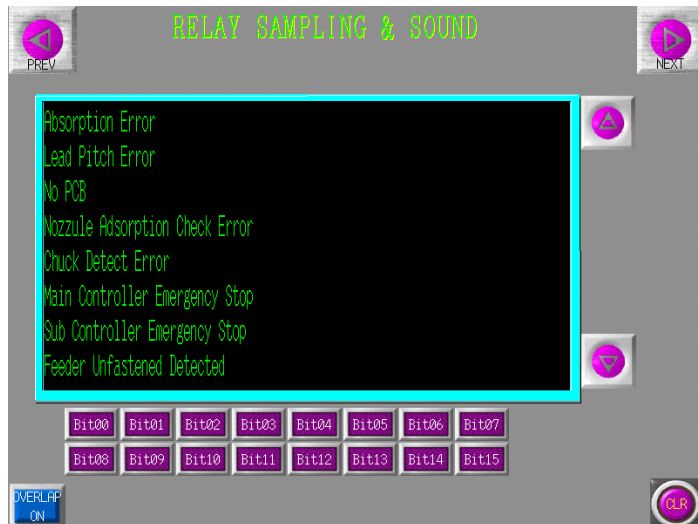
5. Choose the number of colors of the pattern.  
 ZM-42 to 82 8, 16, or 128 colors  
 ZM-300 8, 16, or 128, 32,000-colors
6. Click [OK]. The message “Will Register to No. x” appears. When the registration destination is the correct one, click [Yes]. To change the destination, click [No].



Clicking [No] brings up the [Specify Bitmap Read] dialog. Specify the desired number.



Ex.: If the following screen is converted to a pattern, it changes as shown below.



Screen size [800 × 600]



Pattern size [120 × 90]



## Function 6: Copy Image to Clip Board

---

The screen being displayed on the computer can be copied to the clipboard. The copied image can be imported into word processing software, etc.

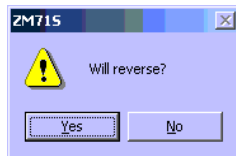


The following edit items can be copied to the clipboard.

- Screen
- Graphic library
- Multi-overlap
- Data block
- Screen library

### Operation Procedure

1. Bring up the desired screen on the computer.
2. Select [Screen Image] from the [Tool] menu. The sub-menu is displayed. Click [Copy to Clipboard].
3. The following dialog is displayed. When reversing the monochrome color on a screen, click [Yes]. When keeping the present color, click [No].



When a normal overlap is placed on the screen, the [Layer] dialog is displayed after this message. Select display or non-display for the base screen and each overlap, and click [OK].

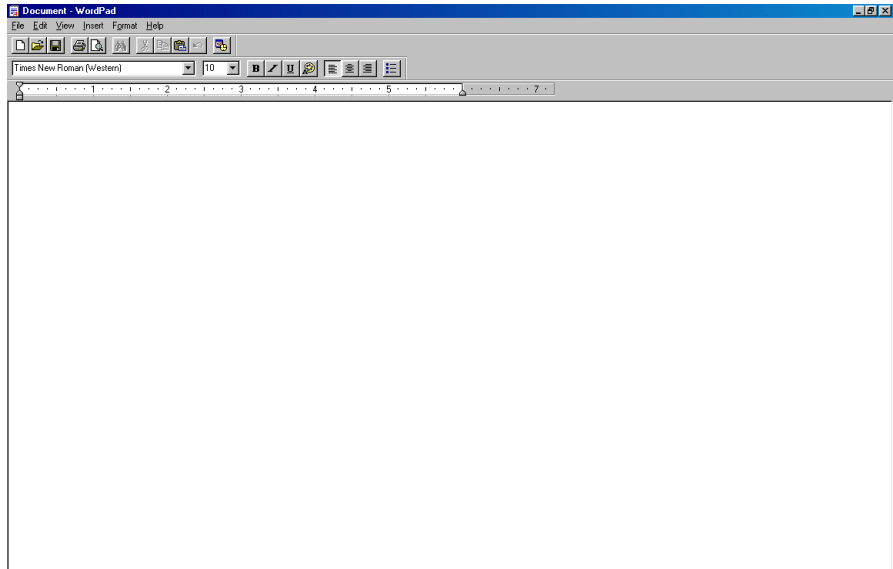
4. The screen is copied to the clipboard automatically.



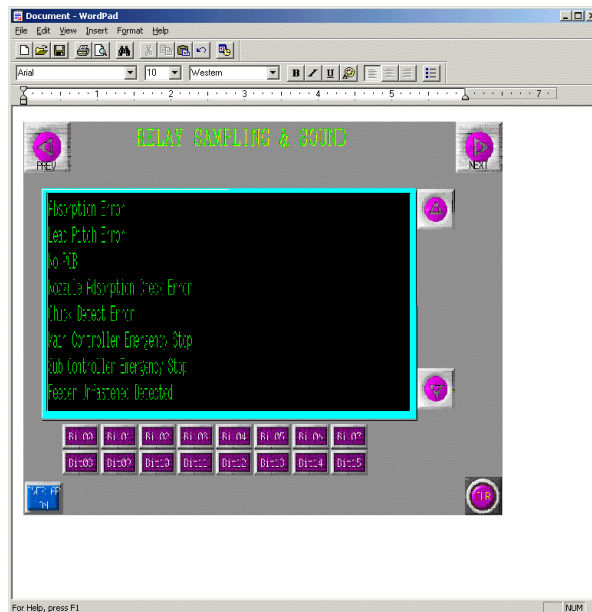
## Import of Screen Image into Word Processing Software

Ex.: This section explains how to paste a ZM-300 screen to a Microsoft Word screen.

1. Copy the desired screen to the clipboard as explained above.
2. Start the Word software.
3. Move the cursor to the position to place the copy.



4. Select [Paste] from the [Edit] menu. The copied image is pasted on the document. The size of the image can be changed by dragging a handle.



---

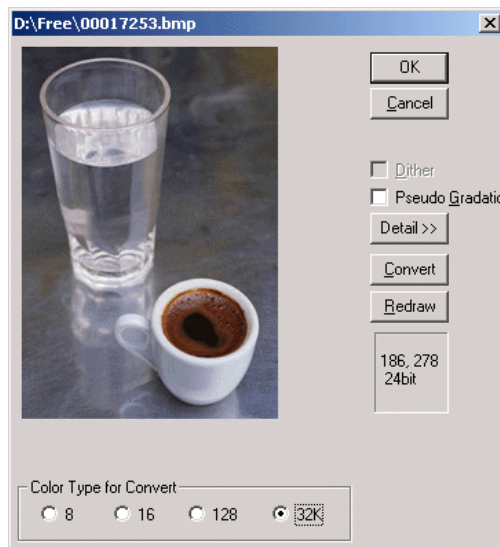
## Function 7: Paste Bitmap

---

By specifying a bitmap file (with extensions “.BMP”), the bitmap can be pasted to the screen. The bitmap file is imported as a pattern automatically.

### Operation Procedure

1. Select [Paste Bitmap] from the [Tool] menu. The [Open a Bitmap File] dialog is displayed.
2. Click the desired bitmap file and then [Open]. The bitmap can be previewed in the dialog.

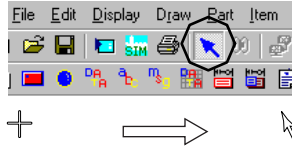


For information on the setting items in the dialog, see the next page.

3. The bitmap size is indicated in the dialog. Choose the desired number of colors from [Color Type for Convert].
  - ZM-42 to 82 8, 16, or 128 colors
  - ZM-300 8, 16, or 128, 32,000-colors
4. Click [OK]. A mover tool and a dotted box of the bitmap size are displayed on the screen.
5. Click the mouse in the position for placing the bitmap. The bit map is pasted to the screen. The same bitmap can be pasted repeatedly by clicking the mouse while the mover tool is displayed on the screen.



Note that the bitmap is pasted each time you click the mouse. To cancel bitmap placement, click the [Select] icon and clear the mover tool.



When the size of a bitmap file is too large, it is partitioned automatically and stored in several boxes when it is registered in pattern editing. The capacity of patterns that can be registered in one box is 128 KB.



When changing the setting of  [Use 3D Parts] in the [Environment Setting] tab window of the [Unit Setting] dialog, the pallet is changed and colors of the placed bitmap are also changed. To reset, paste the bitmap again.

## Bitmap Preview Dialog

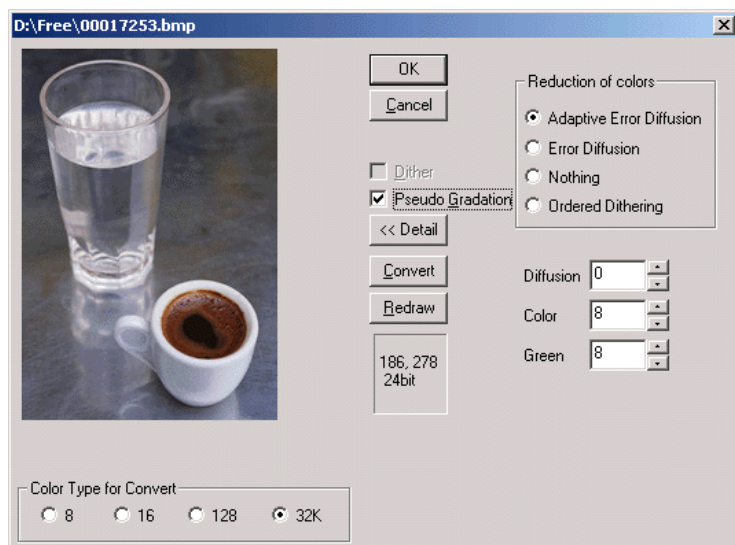
The following setting items are included.

### [Dither]

The option is valid when an option other than [32K] is selected for [Color Type for Convert]. When  [Dither] is checked, middle tones are corrected. Dithering is performed to make the colors of the bitmap closer to the original.

### [Pseudo Gradation]

When this option is checked, pseudo gradation is used. When the [Detail >>] button is clicked, the detail setting is possible. The following items are included.





When  Use 3D Parts] is checked in the [Environment Setting] tab window of the [Unit Setting] dialog with the ZM-42 to 82 series, this option and  Dither] cannot be selected. The  Pseudo Gradation] display is automatically selected.

[Adaptive Error Diffusion]

Error diffusion adapted to each individual part of the image can be performed. This function places emphasis on smoothness of image more than the following [Error Diffusion] does.

[Error Diffusion]

If a color of the source image is not included in the color pallet, two bits in similar colors are placed alternately so as to reproduce the color.

[Nothing]

A pallet similar to the source image color is selected.

[Ordered Dithering]

Error diffusion pattern is made closer to regular pattern.

[Diffusion] (0 - 3, standard: 1)

Specify a level of diffusion.

[Color] (0 - 15, standard: 8)

Assign priority to brightness or color for depicting. When a specified number gets smaller, brightness takes priority over color.

[Green] (0 - 15, standard: 8)

Assign priority to blue-green-based color or red-yellow-based color for depicting. When a specified number gets smaller, green-based color takes priority over other colors.

[Convert]

Clicking this option (depressed) brings up the preview of the placed image.

[Redraw]

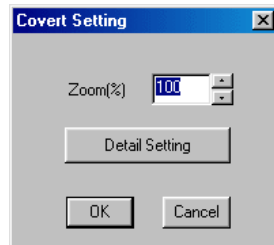
When any setting  Dither] or  Pseudo Gradation] has been changed, click [Convert] (depressed) and [Redraw]. The image according to the change is previewed.

## Function 8: DXF File Convert

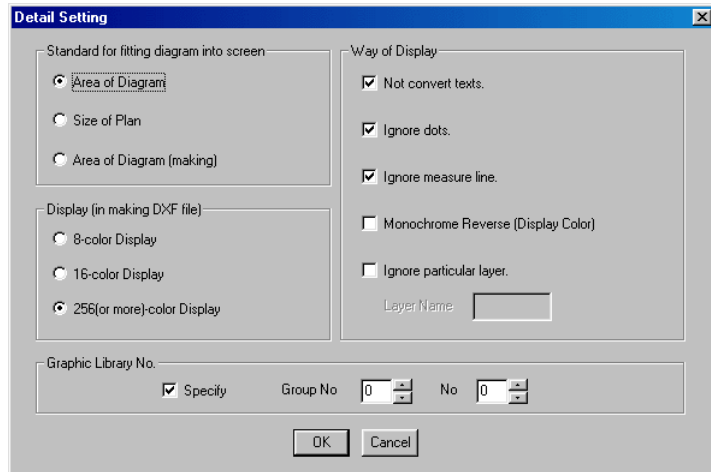
A DXF file can be imported into a screen data file as graphic data.

### Operation Procedure

1. Select [DXF File Convert] from the [Tool] menu. The [DXF File Select] dialog is displayed.
2. Choose the desired DXF file and click [Open]. The [Convert Setting] dialog is displayed.

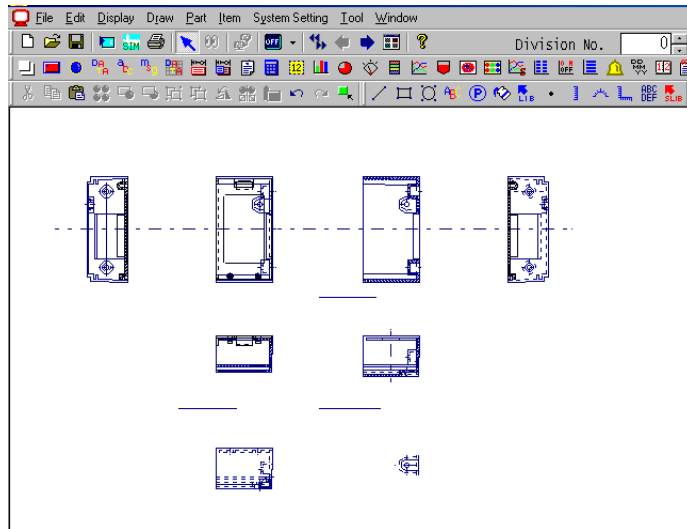


3. Specify [Zoom] in the range of 10% to 250%.
4. When setting conditions for file import, click [Detail Setting].



For more information, see the next section.

5. Click [OK]. The cross cursor with the dot-lined square is displayed. Clicking any location on a screen shows the converted DXF file as the grouped drawings.



These figures are converted to the drawings in the ZM-71SE editor. The drawings are grouped. The displayed color depends on the original DXF file.

### **[Detail Setting] Options**

---

The following items are included.

[Standard for Fitting Diagram into Screen]

[Area of Diagram]

Only areas containing graphics are read during file import.

[Size of Plan]

Drawing sizes are read during file import.

[Area of Diagram (making)]

If the graphics could not be read in the above manner, the ZM-71SE sets an area and the data within the area is read.

[Display (in making DXF file)]

{[8-color Display] [16-color Display] [256 (or more)-color Display]}

Choose the option specified for DXF file creation.

[Way of Display]

Not Convert Texts]

Choose whether or not text in DXF file is converted. (1 character is converted into 16 × 16 dots.)

Ignore Dots]

Choose whether or not dots as graphics are ignored.

Ignore Measure Line]

Choose whether or not the dimension lines in DXF file are ignored.

 Monochrome Reverse (Display Color)]

Choose whether or not inverting to black-on-white is executed. (When a file is imported into the ZM-71SE editor, white-on-black or some other color line is used for display as default.)

 Ignore Particular Layer]

Choose whether or not layers not to be converted are specified. Specify the names of such layers instead of their numbers.

## [Graphic Library No.]

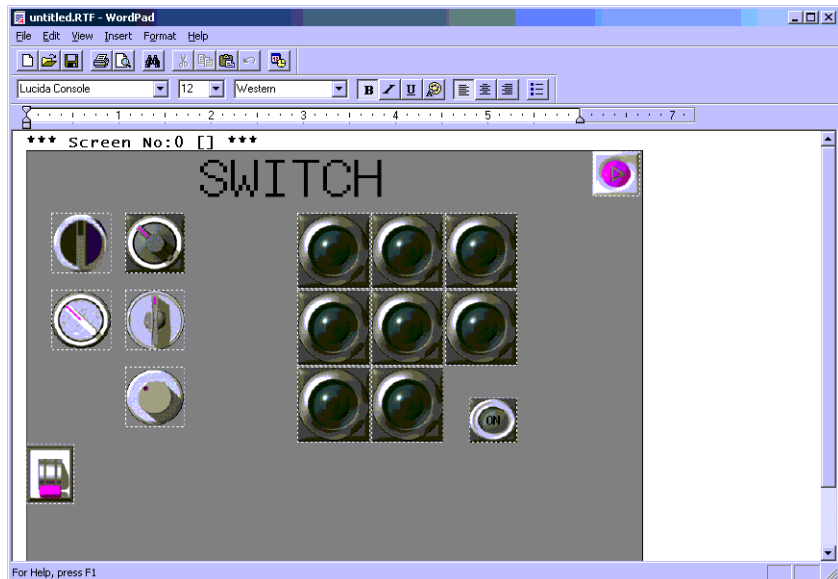
 Specify]

When blocks are used in a DXF file, choose whether or not they are registered in the graphic library.

After setting, click [OK].

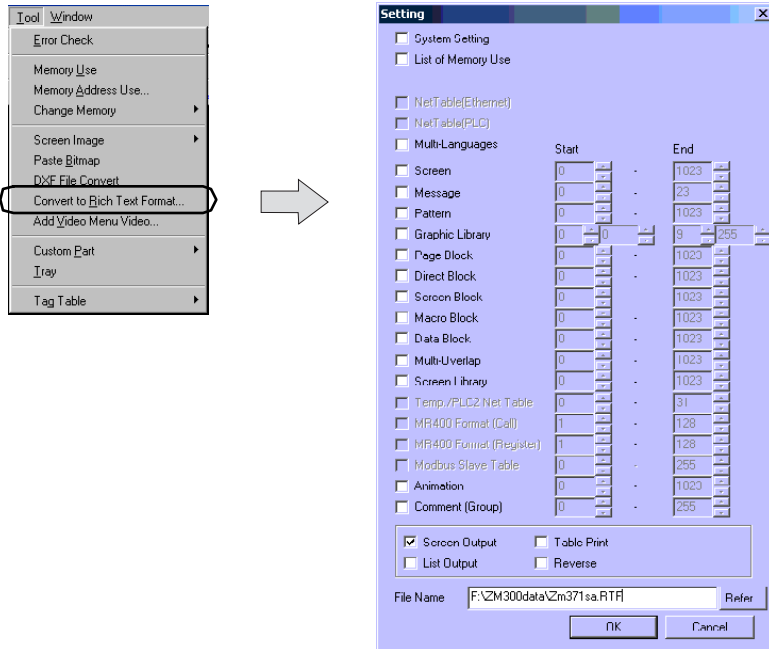
## Function 9: Convert to Rich Text Format

The contents of the screen data can be converted to the Rich Text file (with extensions [.RTF]) as the same image as printing. This function makes it possible to check the screen setting or the image picture without using paper. Finally, only the necessary data can be printed out through a word processor application software on a personal computer.



## Operation Procedure

1. Click [Convert to Rich Text Format] in the [Tool] menu. The following dialog is displayed.



2. Check each item to convert to a Rich Text file, and input the range of each editing item.



Data Sheet cannot be converted to Rich Text file.

The setting items, [ Screen Output], [ List Output], [ Table Print], [ Reverse], are same as printing.



For more information, see "Chapter 6 Print."

3. Specify the name and the location of a Rich Text file at the [File Name] setting. When changing the name or the location, press the [Refer] button.
4. When the dialog setting is concluded, click [OK].



The size of the Rich Text file made by the ZM-71SE editor is much larger because it is not compressed. The size will become smaller if the Rich Text file is saved as the normal document file (e.g.: [.doc] in Microsoft Word) by the [Save As] command.



## Function 10: Add Video Menu

When a video display item is used, it is possible to automatically place an overlap using a macro command for video quality adjustment.



For more information, see “Chapter 18 Video Display” in the ZM-71SE Instruction Manual (Function).

## Function 11: Custom Part

A maximum of 512 items or parts can be registered in the custom parts file (with extensions “.Z3F/Z7F”). The file is independent of screen data files, and registered parts can be used for creating screens.

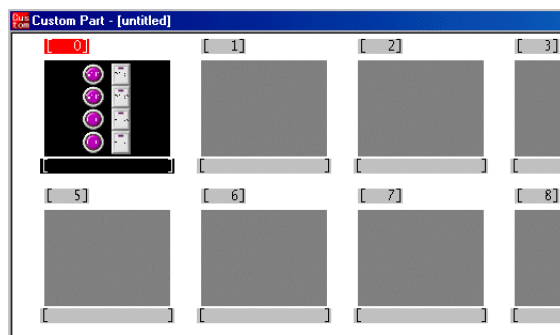
### Operation Procedure

#### Registration in Custom Parts File

1. Choose and copy the part or item to be registered as a custom part.



2. Select [Custom Part] from the [Tool] menu. The sub-menu is displayed. Click [New].
3. 512 boxes are displayed in the [Custom Part] window.
4. Click the box for registration. Its number is highlighted in red. Paste the copied part or item in the box that is highlighted. The copied part or item is pasted.





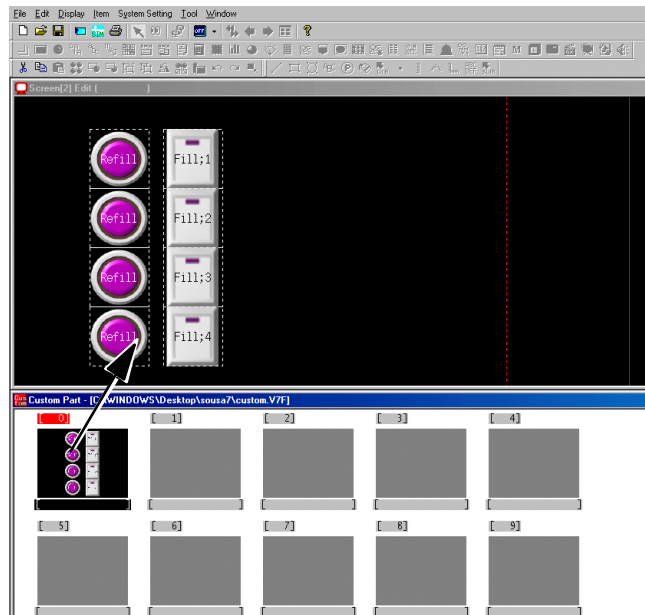
Tile the screen edit window and the tray (icon display) window. Hold down the CTRL key, and drag the chosen item to the tray window. The item can also be registered in this manner.

5. Click the [Save] icon for saving the file. The message, “Will save custom part file [untitled]?” appears.
6. Click [Yes]. The [Select Custom Parts File to Save] dialog is displayed. Specify the file name and click [Save].
7. To delete the registered custom parts, click the box for deletion, and push the [Delete] key or click [Delete] on the [Edit] menu.

### Pasting a Custom Part to the Screen

1. Select [Custom Part] from the [Tool] menu. The sub-menu is displayed. Click [Open].
2. The [Select Custom Parts File] dialog is displayed. Choose a file and click [Open].
3. The [Custom Part] window is displayed. Select [Tile] from the [Window] menu. The [Custom Part] window and the screen edit window are tiled.
4. Drag the desired custom part from the [Custom Part] window to the screen edit window.

Drag and place.



## Function 12: Tray

Parts or graphics can be stored in 15 trays. These parts or graphics can be used in different screen data files. Since the trays are registered in the environment file (“Zm71e.try”), they can be used any time until the file is deleted.

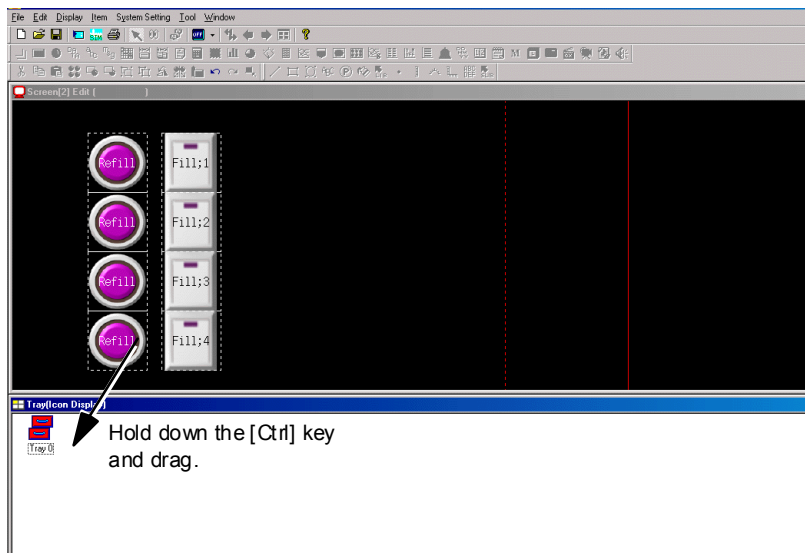
### Operation Procedure

#### Registration/Deletion in/from Trays

1. In a screen edit window, choose a part or graphic to be registered in a tray and copy it.
2. Select [Tray] from the [Tool] menu. The [Tray (Icon Display)] window is displayed.
3. Paste the copied part or graphic to the tray window. The copied item is reduced to an icon and displayed in the window.



Tile the screen edit window and the tray (icon display) window. Hold down the CTRL key, and drag the chosen item to the tray window. The item can also be registered in this manner.

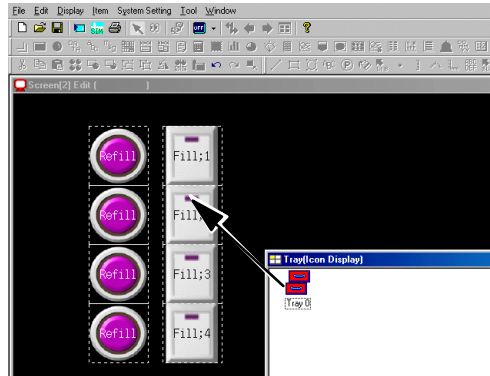


4. When deleting a tray icon, click it and press the DEL key, or select [Delete] from the [Edit] menu.

## Pasting Part in Tray to Screen

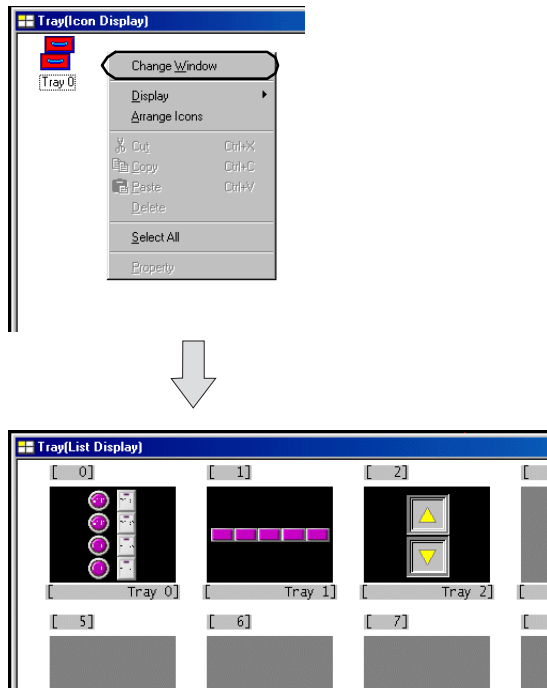
1. Tile the screen edit window and the tray window.
2. Drag the tray icon of the desired part to the screen edit window. The part is pasted to the window.

Drag and place.

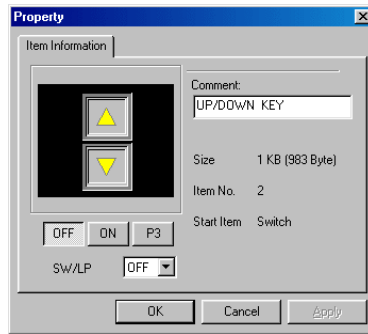
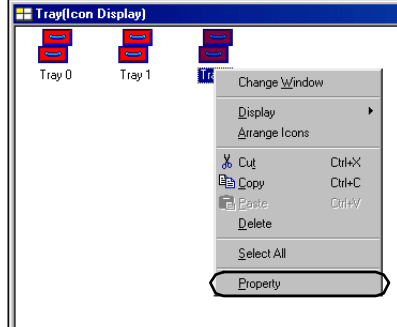


## Tray Display Change

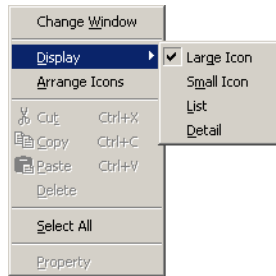
- Right-click on the tray window and select [Change Window]. The [Tray (List Display)] window is displayed instead of the [Tray (Icon Display)] window. The contents of each tray can be viewed. Clicking [Change Window] again brings back the tray (icon display) window.



- Right-click a tray icon on the [Tray (Icon Display)] window and select [Property]. The [Property] dialog is displayed. The information on the registered part and its image are displayed. When necessary, a comment (name) can be attached by entering data for [Comment].



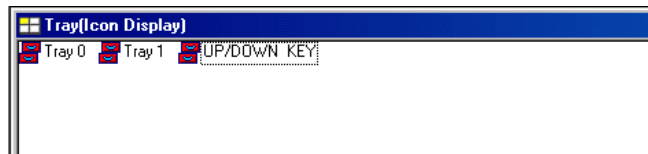
- Click [Display] on the [Tray (Icon Display)] window. The display format can be selected from four options.



[Large Icon] Large tray icons are displayed.



[Small Icon] Small tray icons are displayed.



[List] All tray icons are listed.



[Detail] The number of registered parts and bytes, and the top part of each tray are displayed.

Name	Size	No. of Items	Start Item
Tray 0	1 KB	8	Switch
Tray 1	1 KB	5	Switch
UP/DOWN KEY	1 KB	2	Switch

## Function 13: Tag Table

This option is valid only when Allen-Bradley's Control Logix is selected for the PLC model.

# File Management

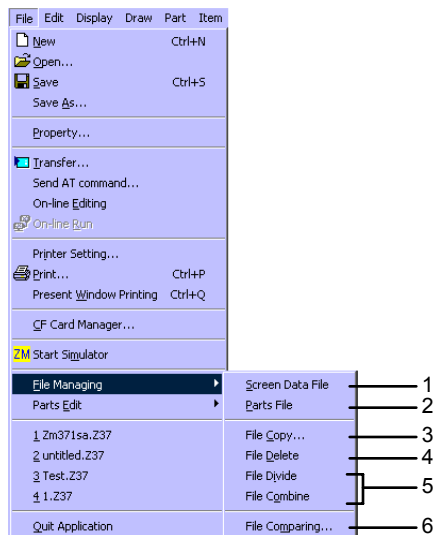
This feature makes it possible to copy or delete any screen data file. It is also possible to copy only a selected item included in a file, such as a screen, message, or graphic. It is also possible to copy parts between part files. A screen data file can be partitioned for storage on floppy disks, and can be recombined.

## File Management Outline

### File Management Functions

The following options are included in [File Managing].

1. Selected screens or messages can be copied to a different file.
2. Parts can be copied between part files.
3. Entire files can be copied.
4. Unnecessary files can be deleted.
5. A file occupying large amounts of memory can be partitioned and recombined.
6. Files can be compared.



## Files for File Management

The following two types of files can be handled by the file management function. When copying files, specify two files with the same extensions.

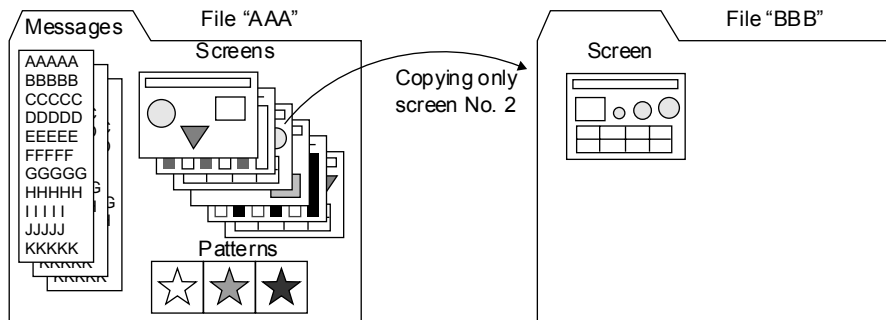
1. Screen data file (with extensions “.Z37” or “.Z71”).
2. Part file (with extensions “.Z3P” or “.Z7P”).



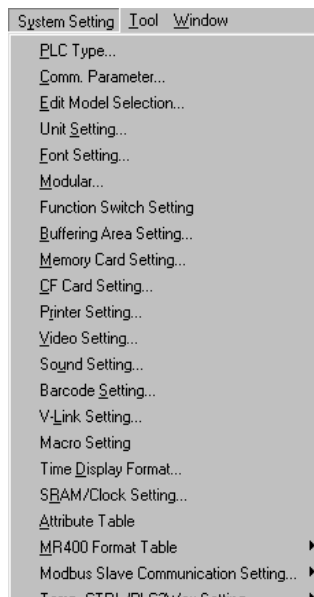
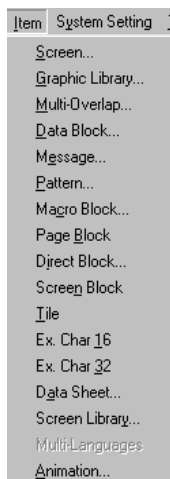
The file management function is not available for files with different extensions.

## Screen Data File Management

One file can be copied entirely. Also, selected items in the file can be copied to a different file.



With screen data file management, the items are copied by the categories shown in the [Item] menu: such as “screens,” “graphics library,” “messages,” “patterns,” “tiles,” and “external characters.” In addition, animation tables, system setting and color palettes are copied.





In addition to the function as mentioned above, the following are also available:

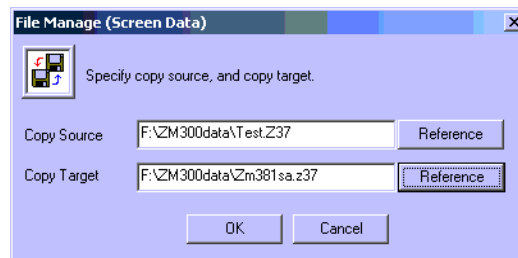
- Copying files
- Deleting files
- Partitioning a file occupying large amounts of memory
- Combining the partitioned sections of a file

## Part File Management

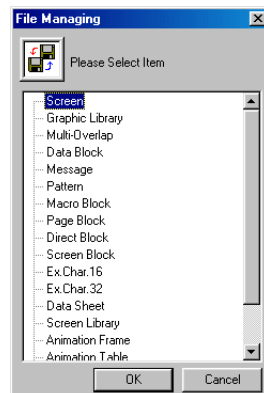
The desired parts can be copied between part files.

### File Management: Screen Data File

1. Select [File Managing] from the [File] menu.
2. Select [Screen Data File]. The [File Manage (Screen Data)] dialog is displayed.
3. Specify the desired files for [Copy Source] and [Copy Target] respectively. Files can be selected by clicking [Reference].

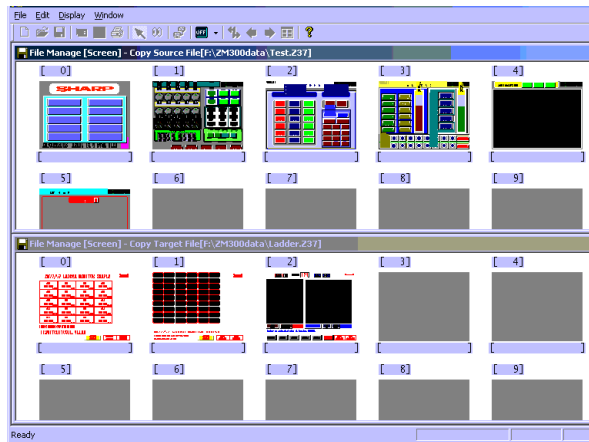


4. Click [OK]. The [File Managing] dialog is displayed. The contents to be displayed vary somewhat depending on the selected item from the dialog.

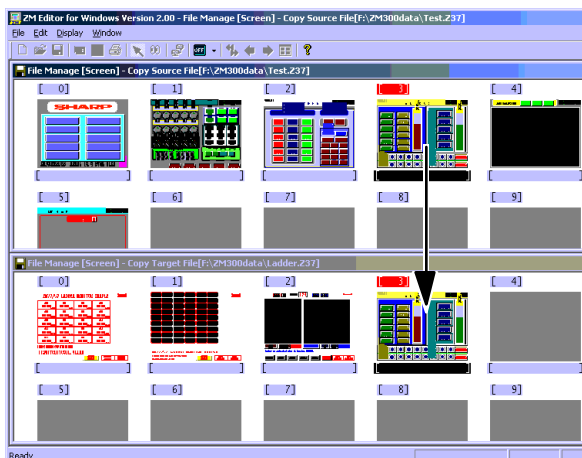


## Copying Screens between Windows

- The copy source and target file windows are displayed as shown below when any of the following items are selected from the [File Managing] dialog. Screen, Graphic Library, Multi-Overlap, Data Block, Pattern, Data Sheet, Screen Library, Animation Frame
- The copy source and target file windows are displayed. The source file window is placed above the other. Perform copying as described below.
  1. Click the screen to be copied in the source file window. The screen number is highlighted in red.

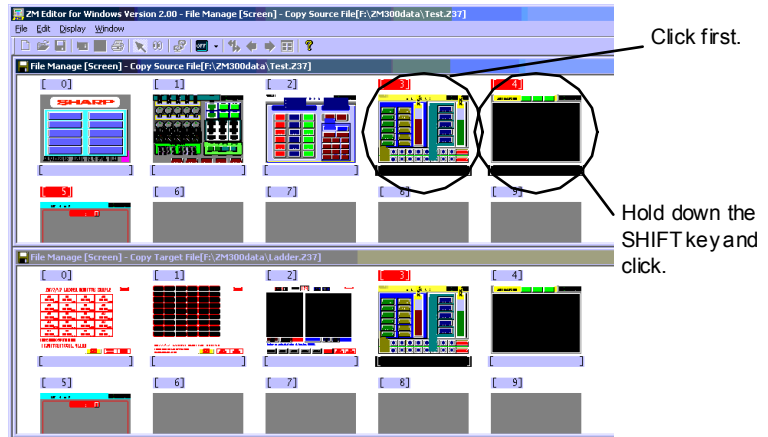


2. If necessary, scroll the target file window until the desired file number comes into view.
3. Drag the selected screen to the desired target box number. The copied screen is displayed in the target position by releasing the mouse.

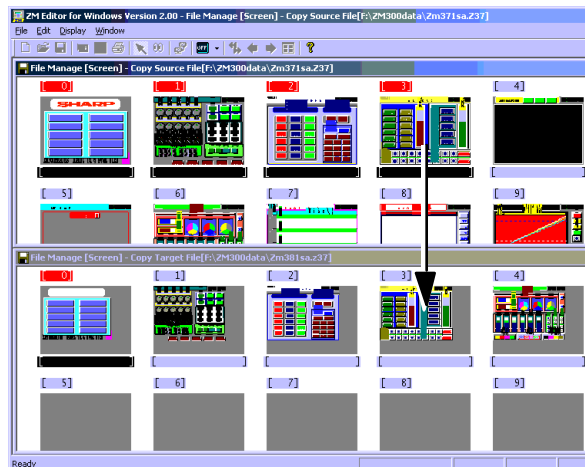


In the case of a screen, only the screen is copied. The pattern or graphic library that is used on the screen is not copied.

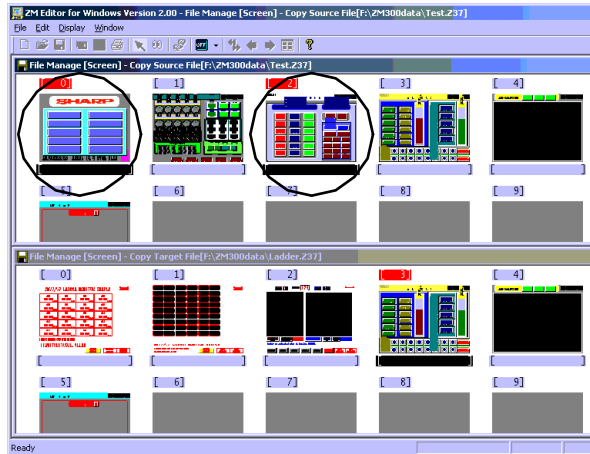
4. To copy consecutive screens, click the first number of the source screens.
5. While holding down the SHIFT key, click the last number of the source screens. The screens for the first number to the last number are selected at one time.



6. Drag one of the selected screen to the copy target box. All the selected screens are copied to the target file window at one time by releasing the mouse.



- When selecting screens to be copied individually, click the screens one by one while holding down the CTRL key.



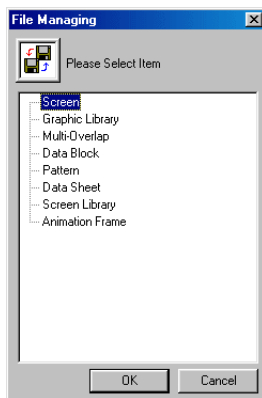
- Drag one of the selected screens to the copy target box. All the selected screens are copied to the target file window at one time by releasing the mouse.



Even if screens to be copied are selected individually, their copies appear in the consecutive boxes in the target file window.

### Change to a Different Item

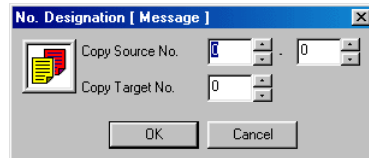
- Select [Change Display] from the [Display] menu with the screen list window open.
- The [Change Display] dialog is displayed. Choose the desired item and click [OK].



- The corresponding window appears.

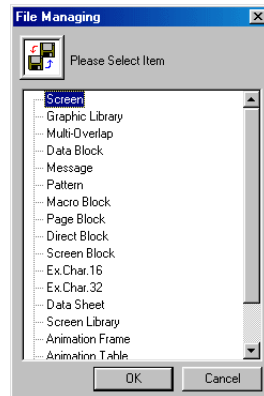
## Copying Items by Designating Item Numbers

- When any of the following items are selected from the [File Managing] dialog, the screen list windows are displayed and then the [No. Designation] dialog is displayed on them.  
Message, Macro Block, Page Block, Direct Block, Screen Block, System setting options
- Specify the desired numbers for [Copy Source No.] and [Copy Target No.], and click [OK]. Copying is executed.

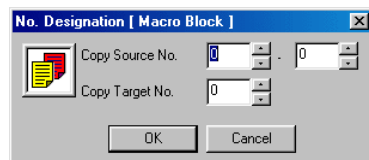


## Change to a Different Item

1. Select [Copy by Specifying No.] from the [Edit] menu.
2. The [File Managing] dialog is displayed. Click the desired option and then [OK].



3. The [No. Designation] dialog for the option is displayed.



## Other Setting Items

The following items can be copied to the clipboard when they are selected.  
Animation Table, System Setting, Color Pallet

## [File] Menu for File Management



Before closing the copy target file window, choose whether or not to save the copied data.

Clicking [File] brings up the following menu items.



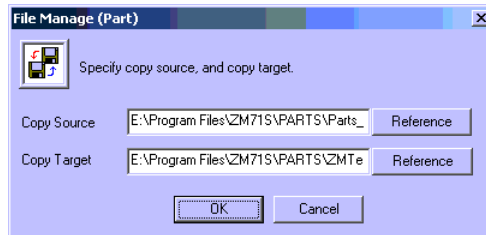
- [Copy Target New]  
Creates a new copy target file.
- [Copy Target Open]  
Opens a copy target file.
- [Copy Target Save]  
Overwrites the currently opened copy target file.
- [Copy Target Save As]  
Click this option to give a different name to the currently opened copy target file for saving.
- [Copy Source Open]  
Opens a copy source file.
- [Quit File Managing]  
Quits [File Managing].
- [Quit Application]  
Quits the ZM-71SE editor.

---

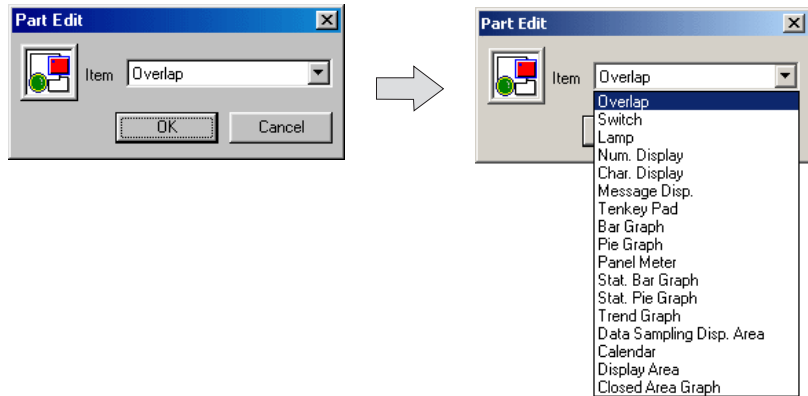
## File Management: Part File

---

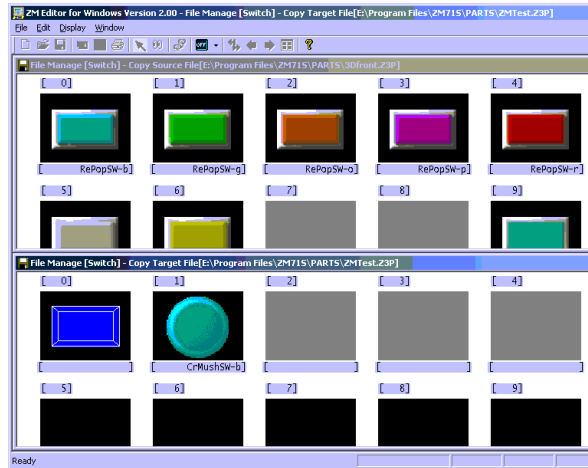
1. Select [File Managing] from the [File] menu.
2. Select [Parts File]. The [File Manage (Part)] dialog is displayed.
3. Specify the desired files for [Copy Source] and [Copy Target] respectively. Files can be selected by clicking [Reference].



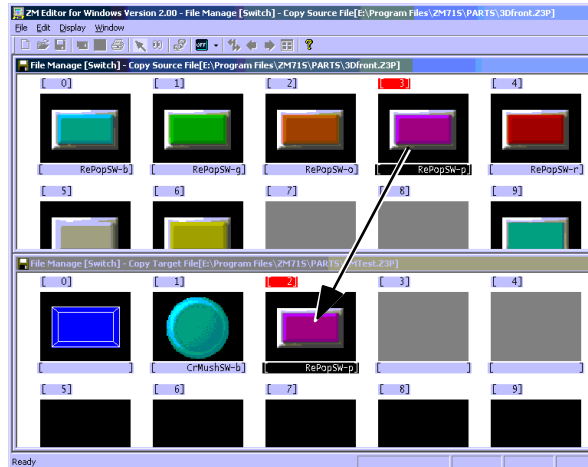
4. Click [OK]. The following dialog is displayed.



5. Choose the item for copy and click [OK]. The copy source and target file windows are displayed. The source file window is placed above the other.



6. Click the part to be copied in the copy source file window. The part number is highlighted in red.
7. Drag the part to the desired box in the copy target file window. (If a part has already been registered in the box, the message for overwriting confirmation appears.)



**Copy of Parts in Consecutive Numbers**

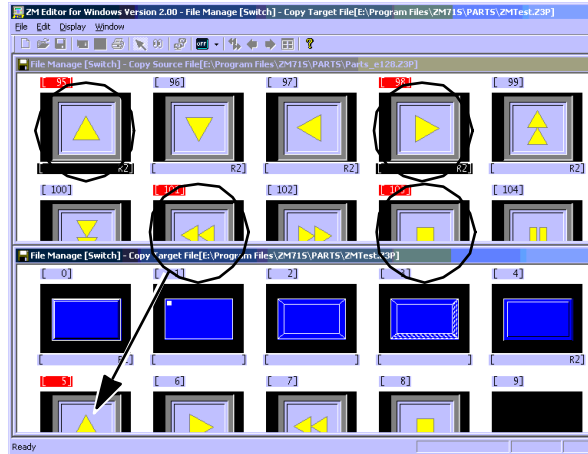
1. Click the first part of the parts to be copied.
2. While holding down the SHIFT key, click the last part of the parts to be copied.
3. Check that all the desired parts numbers are highlighted. Drag one of them to a box in the target file window.





### Copy of Parts by Selecting them Individually

1. While holding down the CTRL key, click parts to be copied one by one.
2. Check that all the desired parts numbers are highlighted. Drag one of them to a box in the target file window. The copied parts are displayed consecutively.



## [File] Menu for Parts File Management



Before closing the copy target file window, choose whether or not to save the copied data.

Clicking [File] brings up the following menu items.



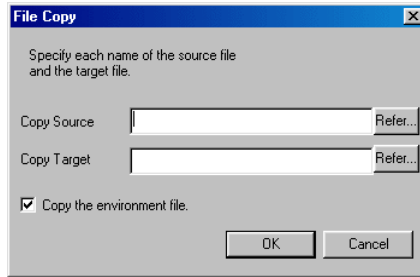
- [Copy Target New]  
Creates a new copy target file.
- [Copy Target Open]  
Opens a copy target file.
- [Copy Target Save]  
Overwrites the currently opened copy target file.
- [Copy Target Save As]  
Click this option to give a different name to the currently opened copy target file for saving.
- [Copy Source Open]  
Opens a copy source file.
- [Quit File Managing]  
Quits [File Managing].
- [Quit Application]  
Quits the ZM-71SE editor.

---

## File Management: File Copy

---

1. Select [File Managing] from the [File] menu.
2. Select [File Copy].
3. The [File Copy] dialog is displayed. Specify the desired files for [Copy Source] and [Copy Target].

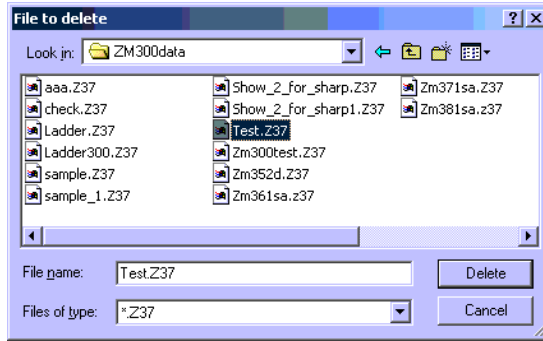


4. [When  Copy the Environment File] is checked, the environment file for the copy source file (with extensions ".ENV") is also copied. The environment file is not copied when unchecked.
5. Click [OK]. Copying is executed.

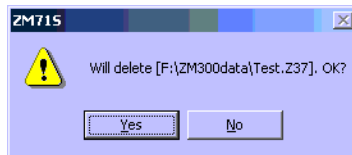
## File Management: File Deletion

---

1. Select [File Managing] from the [File] menu.
2. Select [File Delete].
3. The [File to Delete] dialog is displayed. Specify the file to be deleted.



4. Click [Delete]. The confirmation message is displayed.



5. Click [Yes]. The file and its environment file of the same name are deleted.

## File Management: File Division and Combination

The ZM-300 series can create a screen data file of great capacity. With the ZM-42 to 82 series, it is also possible to create a screen data file using large amounts of memory depending on the model. However, such a file cannot be stored on only one floppy disk. Using [File Divide] and [File Combine], the file can be divided into several sections for storage on floppy disks and can be recombined.

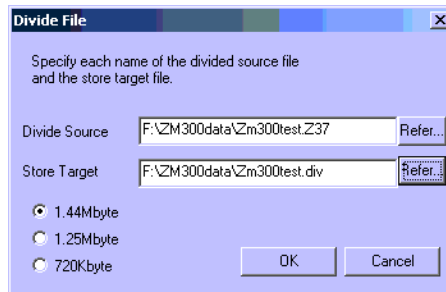
### File Divide

1. Select [File Managing] from the [File] menu.
2. Select [File Divide]. The [Divide File] dialog is displayed.
3. Specify the desired file name for [Divide Source]. Clicking [Refer] brings up the [File to Divide] dialog. A file can be selected from the dialog.
4. Specify the desired file name for [Store Target]. The extensions “.div” is provided.



At this time, the divided sections of the file cannot be stored on floppy disks. Store them on the hard disk once.

5. Select the floppy disk capacity from [1.44 Mbyte], [1.25 Mbyte], or [720 Kbyte].



6. Click [OK]. The file is divided automatically.



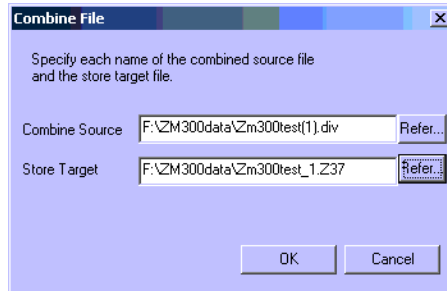
The divided sections of the file are stored in the format of “file name (n).div.” Save all the files to recombine them.

## File Combine



When the divided sections of a file are stored on different floppy disks, copy them to one directory in advance.

1. Select [File Managing] from the [File] menu.
2. Select [File Combine]. The [Combine File] dialog is displayed.
3. Specify the desired file name for [Combine Source].



The divided sections of the file are stored in the format of “file name (n).div.” Specify one of the divided sections.

4. Click [Open]. At the same time, the file name before division is entered for [Store Target].
5. Click [OK]. The sections are combined automatically.

## File Management: File Comparison

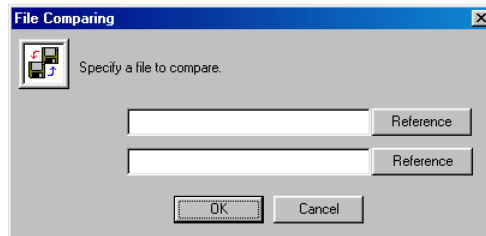
Two screen data files are compared and the result is reported.



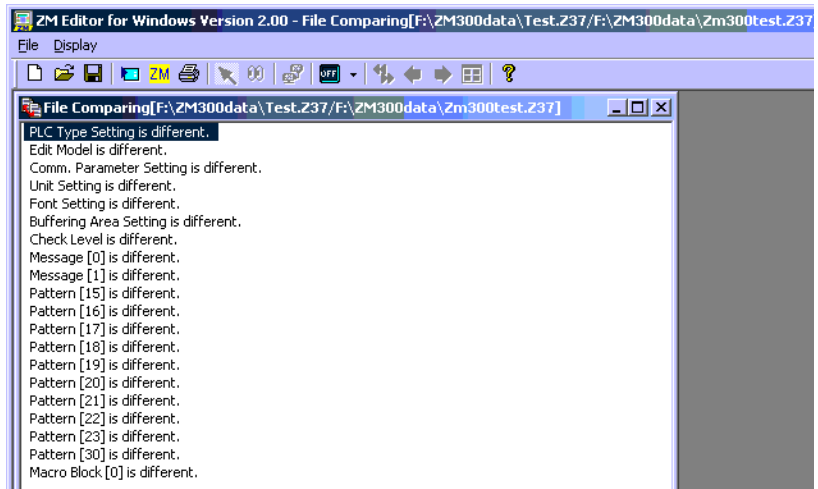
It is not possible to compare files of the ZM-300 series and the ZM-42 to 82 series.

### File Comparing

1. Select [File Managing] from the [File] menu.
2. Select [File Comparing].
3. The [File Comparing] dialog shown below is displayed. Specify the files to be compared.



4. Click [OK]. File comparison is started and the result is reported in the window shown below. When the files are consistent, “Data corresponds.” is displayed.



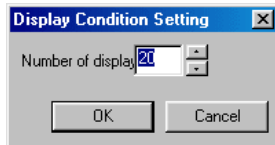
## About Menu Items

### [Save to TEXT File] ([File] Menu)

The contents after comparison can be saved in a text file (extension “\*.txt”).

### [Display Condition Setting] ([Display] menu)

Selecting this command brings up the [Display Condition Setting] dialog.

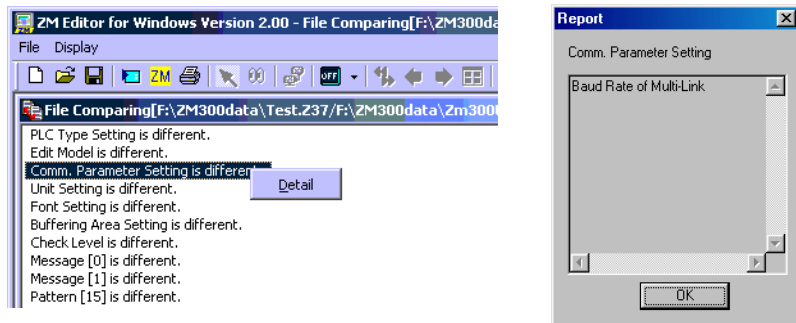


[Number of Display] (10 to 100) (default: 20)

The number of errors specified is displayed in the report window.

For errors having detailed information, the details (discrepant items) can be checked in the following procedure.

- [Display] → [Detail]
- Double-click the error.
- Right-click the error and select [Detail].



- [Enter] key on the keyboard



# Chapter 8

# Applications for ZM-71SE Editor

Simulator.....	8-1
Outline .....	8-1
Composition.....	8-1
Operation Procedure .....	8-1
Preliminaries.....	8-4
Starting up and Closing .....	8-6
Starting and Stopping Communication .....	8-7
Setting Items Necessary for Communication.....	8-9
About SIM Files .....	8-12
Testing .....	8-17
Useful Operations.....	8-21
Menu and Icons.....	8-28
Error List .....	8-31
ZM-MDD Transfer Utility.....	8-32
Outline .....	8-32
Composition.....	8-32
Operation Procedure .....	8-33
ZM-MDD Transfer Utility .....	8-33



# Simulator

## Outline

- Normally, when a ZM series screen has been created, perform an operation check connecting the ZM series to the PLC. However, when the Simulator is used, it is possible to perform an operation check on a newly created screen without the PLC. The Simulator runs on Windows, and it is possible to set/reset bit device as well as input data to word device.



It is not possible to use the Simulator for the ZM series of universal serial communication. For the ZM series with Ethernet communication, the simulation via Ethernet is not possible; however, it is possible with serial communication using the ZM-80C cable.

- By starting up ZM-71SE and the simulator simultaneously on a computer, either software can be operated independently by switching the active window. The operations of the parts placed on the screen can be checked just between the computer and the ZM series. Therefore, both screen creation and debugging become possible on one computer and time can be saved.
- A test sheet based on ZM screen data memory called an “SIM file” is created on each screen. One SIM file is created for each screen. Additionally, an SIM file can be created based on the memory addresses of any edit screen (system setting, normal overlap, multi-overlap, data block, or data sheet).

## Composition

The Simulator is automatically installed when screen creation software ZM-71SE is installed.

## Operation Procedure

### Possible Simulation

- Automatically create SIM files based on the screen data file currently open on your personal computer, and perform a test. (See page 8-2.)
  - This is used when the Simulator is started up from the ZM-71SE editor.
  - The SIM file created cannot be saved.
- Create a new SIM file and perform a test. (See page 8-3.)
  - An SIM file can be created freely.
  - The SIM file created can be saved.



#### **SIM File**

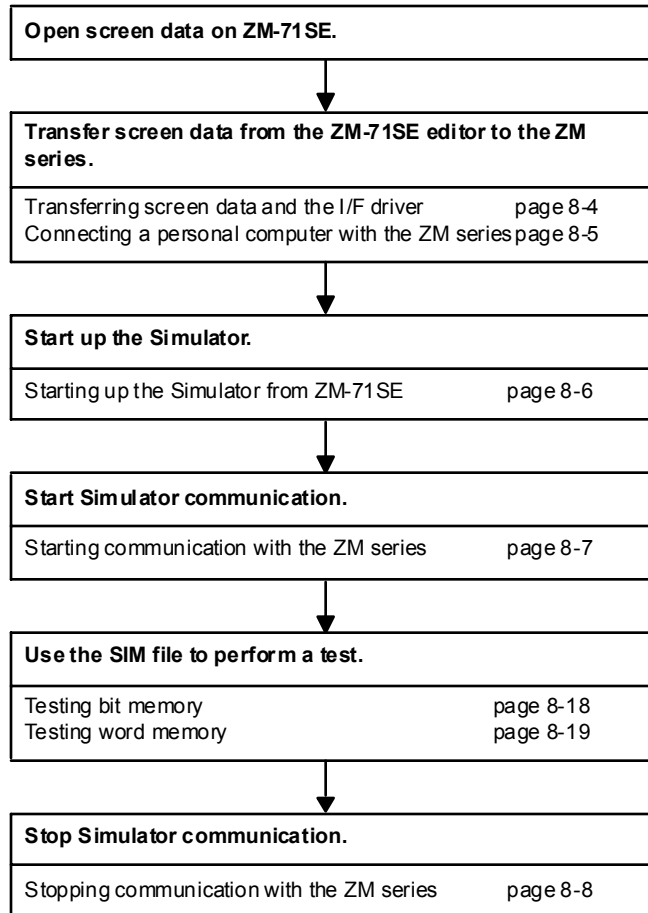
A memory file used to read and write PLC memory on the Simulator screen.

## Operation Procedure

### Creating SIM File(s) Automatically

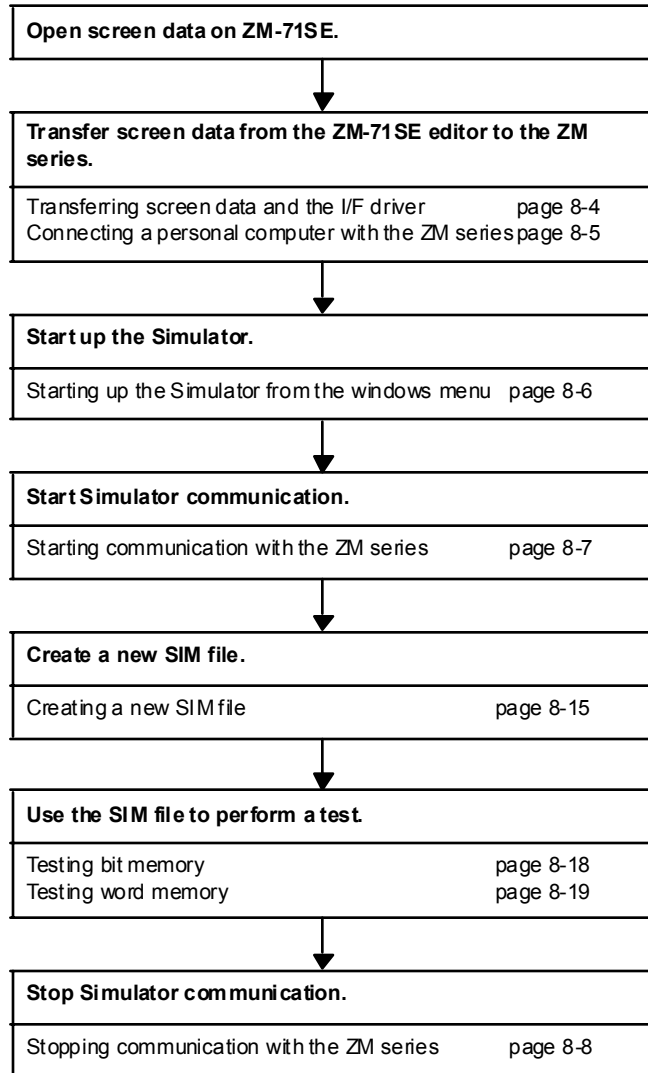
---

Refer to the following flowchart for the procedure of starting up both ZM-71SE and the Simulator, creating SIM file(s) based on the currently open screen data file, and then performing a test. SIM files are always kept in their most recent statuses as determined by screen transfer or update of screen data. It is not possible to save SIM file(s) due to the fact that it is automatically updated each time it is started up.



## Creating a New SIM File

The procedure for creating a new SIM file and then performing a test is shown below. The SIM file name, memory to be tested, etc., can be set freely. The contents of the SIM file created here can be saved.



## Preliminaries

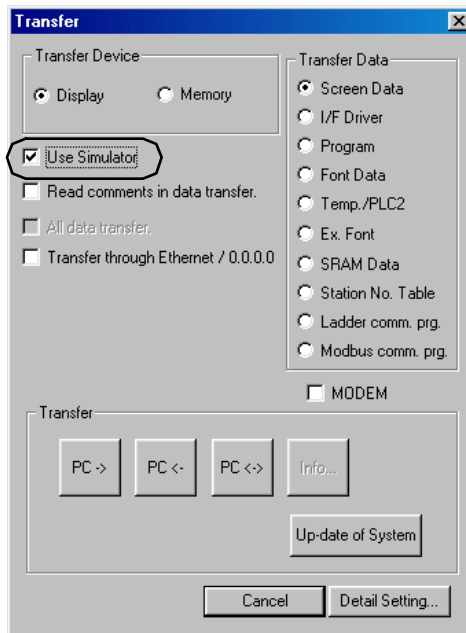
### Transferring Screen Data and the I/F Driver

Transfer the screen data and the I/F driver from the ZM-71SE editor to the ZM series for debugging on the Simulator.

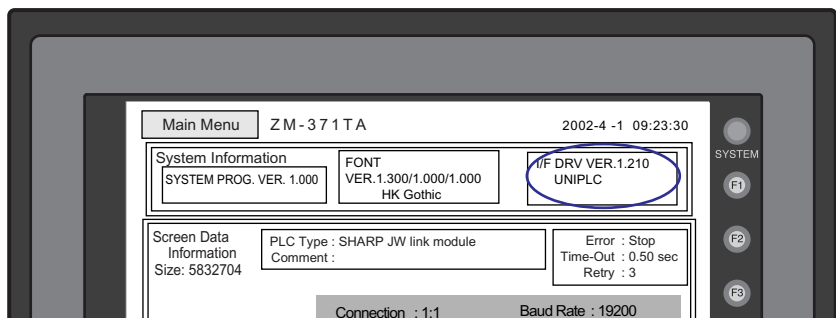
1. Click the [Transfer] icon in the tool bar. The [Transfer] dialog is displayed.



2. Check the  Use Simulator box and choose [Screen Data] for [Transfer Data]. Transfer the screen data.



3. After transferring the data, check that PLC I/F driver type is “UNIPLC20” on the Main Menu screen of the ZM series.



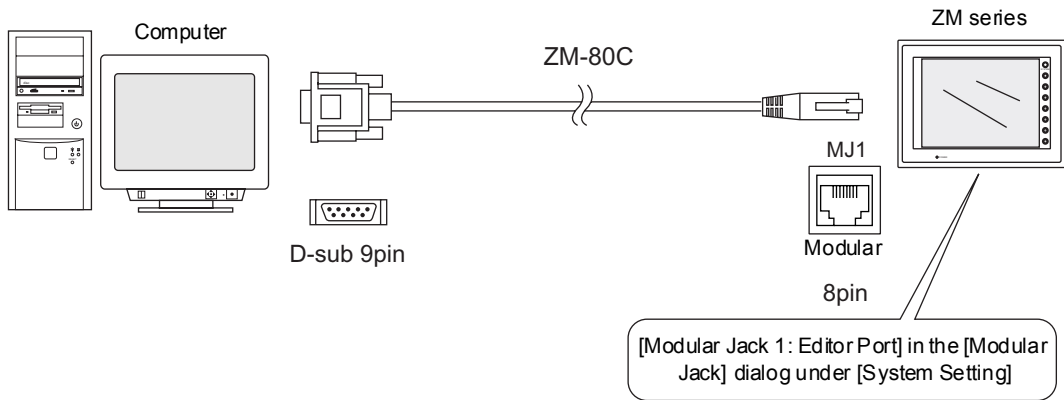


### UNIPLC20

This is a type of I/F driver used when a personal computer and the ZM series communicate using the Simulator. The file named [UNIPLC20.TPB] is automatically transferred.

## Connecting a Personal Computer with the ZM Series

Connect the ZM series to a computer using the data transfer cable (ZM-80C). On the ZM series side, use MJ1 (modular jack 1). On the ZM-71SE editor, select [Modular Jack 1: Editor Port] in the [Modular Jack] dialog selected from the [System Setting] menu.

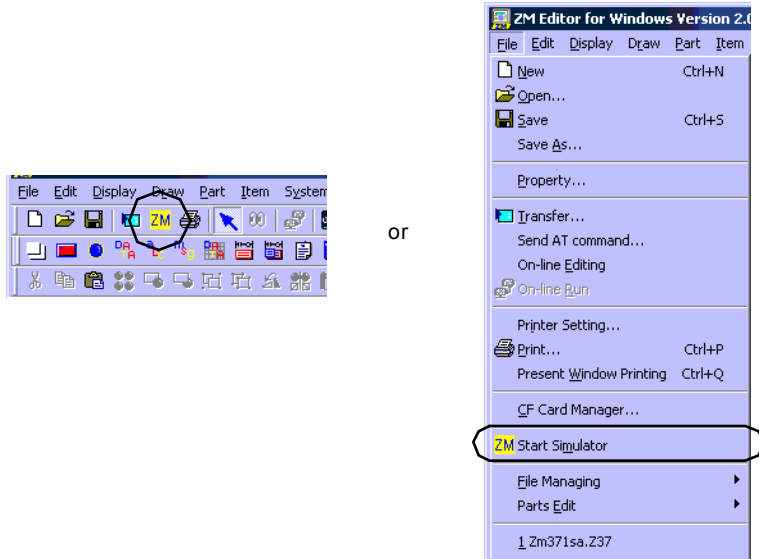


It is possible to use the Simulator only when ZM series and PLC are 1 : 1 connection. It is impossible to use the Simulator when ZM series and PLC are 1 : n or n : 1 connection.

## Starting up and Closing

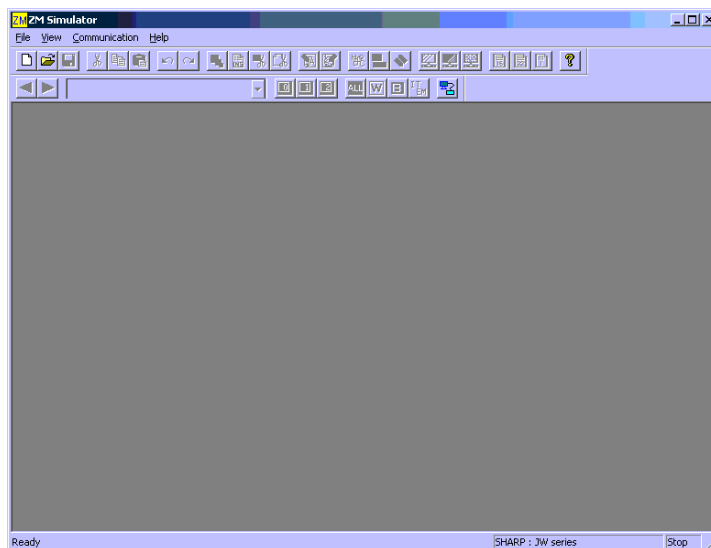
### Starting Up the Simulator from ZM-71SE

1. Use ZM-71SE to open the screen data file that will be tested with the Simulator.
2. Click the [Start Simulator] icon, or go to the [File] menu and click on [Start Simulator]. The simulator will start with the SIM files which are automatically displayed.



### Starting Up the Simulator from Windows Menu

1. Click in the order of [Start], [Programs], [Zm-71s] and [Simulator].
2. The simulator initial screen is displayed.







Or, double-click the simulator program icon to open a simulator file.

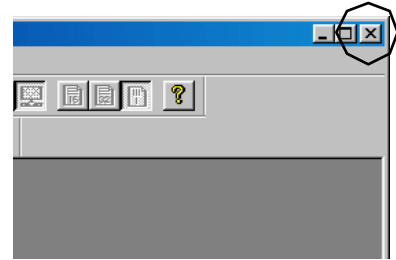


## Closing a Simulator File

1. Click [Exit] in the [File] menu of the Simulator or the [Close] button.



or

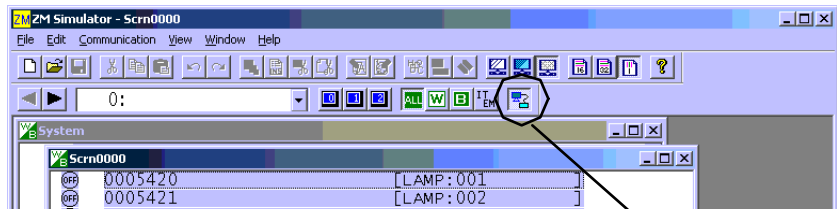


2. The file is closed. When the file has been modified, a message as to whether the file is to be saved appears.

## Starting and Stopping Communication

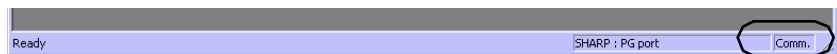
### Starting Communication with the ZM Series

Click the [Start Simulator] icon, or go to the [File] menu of the ZM-71SE editor and click on [Start Simulator]. The communication is automatically started. To confirm whether the communication is established or not, check if the [Communication] icon is depressed. Also, “Comm.” is displayed on the status bar of the Simulator during communications.



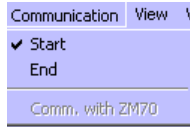
or

Depressed



When the Simulator is started from the Windows menu, the communication is not started. In this case, start the communication by following the steps described below.

1. Choose [Start] from the [Communication] menu. Or click the [Communication] icon. The ZM series has established the communication with the computer.

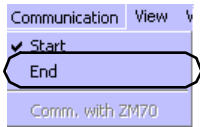


2. The simulator state displayed on the screen is changed from [Stop] to [Comm].



### Stopping Communication with the ZM Series

1. Choose [End] from the [Communication] menu.



Or click the [Communication] icon. The communication between the ZM series and a personal computer stops. The Main Menu screen is displayed on the ZM series automatically.



2. The Simulator state on the status bar is changed from [Comm.] → [Stop]. To restart communications, click [Start] from the [Communication] menu or click the [Communication] icon.



## Setting Items Necessary for Communication

This describes how to make settings necessary for communication between a personal computer and the ZM series. To check the communication setting, stop the communication with the ZM series.



If the following settings are made incorrectly, the ZM series and personal computer will not communicate normally.

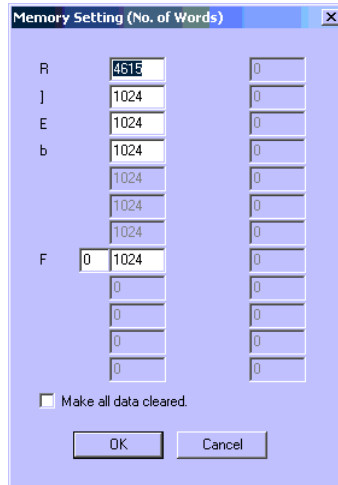
Click on the [File] menu. Make settings for [PLC Type...], [Baud Rate], [COM Port], and [Memory Setting...].



1. PLC Type  
Set the PLC type corresponding to the screen data transmitted to the ZM series.
2. Baud Rate  
Set the baud rate for communication between a personal computer and the ZM series. (This has no relation to the actual communication baud rate between the ZM series and the PLC.)
3. COM Port  
Set the RS-232C COM port for the personal computer.

4. Memory Setting

The starting address is either 0 or 1 for each device. Determine the starting address for the device and then enter the correct number of words. For example. If you check  Make All Data Cleared], all the memory values for the SIM file will be cleared.



It is also possible to clear all the memory values by going to the [Edit] menu to [Initialize Memory].



Starting up the Simulator from the ZM-71SE editor and automatically creating an SIM file:

- The PLC model set in screen data is displayed in the [PLC Type] tab window.
- The necessary words for [Memory Setting] are set automatically based on the memory data used in screen data.
- Additionally, if there is a change in the memory used by screen data, the setting value can be corrected by going to the [File] menu to [Apply ZM Data].



Be careful when setting [Memory Setting...] in the following cases:

When using EM (expanded memory) in OMRON's SYSMAC (CV)

Follow the registration procedure below when using multiple banks:

EM        
└─ Bank No.     └─ No. of word

To set bank number 0 as 100 words, and bank number 1 as 150 words:

1. Enter "02" for the bank number and "100" for the number of words.
2. Then, enter "1" for the bank number and "150" for the number of words. The newly entered values will be displayed in place of the values entered in 1.

To check and see if registration took place normally after you are finished making entries, enter "0" and then "1" for the bank number, and confirm that the corresponding word number for each is displayed.

When using F (file register) for each type of Sharp's PLC

Follow the registration procedure below when using multiple files:

F        
└─ File No.     └─ No. of word

To set file No. 1 as 100 words, and file No. 2 as 150 words:

1. For file No. 1, enter "100" for the number of words.
2. Then, for file No. 2, enter "150" for the number of words.

The newly entered values will be displayed in place of the values entered in 1.

To check and see if registration took place normally after you are finished making entries, enter "1" and "2" for the file number, and confirm that the corresponding word number for each is displayed.

When using W (user file) for two types of FUJI's MICREX-F

Follow the registration procedure below when using multiple user files:

W        
└─ File No.     └─ No. of word

To set file No. 30 as 100 words, and file No. 31 as 150 words:

1. For file No. 30, enter "100" for the number of words.
2. Then, for file No. 31, enter "150" for the number of words. The newly entered values will be displayed in place of the values entered in 1.

To check and see if registration took place normally after you are finished making entries, enter "30" and "31" for the file number, and confirm that the corresponding word number for each is displayed.

## About SIM Files

An SIM file is a memory file used to read and write PLC memory on the Simulator screen.








### Timing of Creating or Updating SIM File Automatically

When the ZM-71SE editor and the Simulator are both started up, an SIM file is created automatically. SIM file update timing:

1. When you go to the [Tool] menu for ZM-71SE and select [Start Simulator] (or)
  2. When screen data is sent from ZM-71SE (or)
  3. When you go to the [File] menu for the Simulator and select [Apply ZM Data]
- Update occurs automatically in both cases, followed by the display of an SIM file sheet on screen.

### Names of Automatically Created SIM Files

An automatically created SIM file is saved temporarily in "\TEMP." The following file names are attached to these SIM files.

 Scrn <u>0010</u> .sim <div style="margin-left: 100px;">└─ Screen number</div>	The memory data for items set on each screen is saved here.
 Mlib <u>0010</u> .sim <div style="margin-left: 100px;">└─ Multi-overlap number</div>	The memory data for items set on each multi-overlap is saved here.
 ScrnOv <u>00100</u> .sim <div style="margin-left: 50px;">Screen number  </div> <div style="margin-left: 100px;">└─ Overlap number</div>	The memory data for normal overlaps within each screen is saved here.
 Dtblk <u>0010</u> .sim <div style="margin-left: 100px;">└─ Data block number</div>	The memory data for data display set on each block is saved here.
 Tyo <u>0010</u> .sim <div style="margin-left: 100px;">└─ Data sheet number</div>	The memory data for data display set on each data sheet is saved here.
 System.sim	The memory data for the system memory of the screen data file is saved here.
 Buffer.sim	The memory data for the buffering area is saved here.



When SIM files are automatically created, all the SIM files in the "\TEMP" folder are deleted. If you have created a SIM file, do not save it in the "\TEMP" folder.

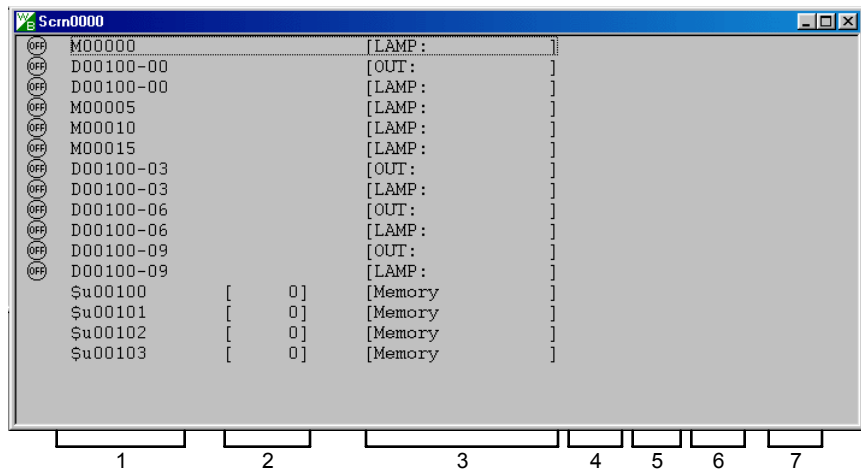
## Memo

If you close a sheet mistakenly, go to the [File] menu to [Open...] and choose the SIM file that you wish to re-open from the directory displayed.

## Sheet Configuration

Test sheet (SIM file) configuration is as follows:

This example includes the format display, item display, and comment display.



1. Address..... Shows the address.
2. Setting value ..... Shows the setting value currently entered.
3. Display type ..... Shows the display format currently set.
4. Data length ..... Shows the data length currently set.
5. ASCII display..... Shows the current setting value in ASCII code.
6. Item display..... Shows the placement layer, division number, and item number.
7. Comment display..... Shows comments. For an automatically created SIM file, this display shows the switch/lamp OFF characters, as well as the allocated functions.



Sheet background color

Gray sheet ..... An SIM file automatically created from the ZM-71 SE editor or an SIV file  
White sheet ..... A newly created SIM file



Be careful about the following points at the gray sheet.

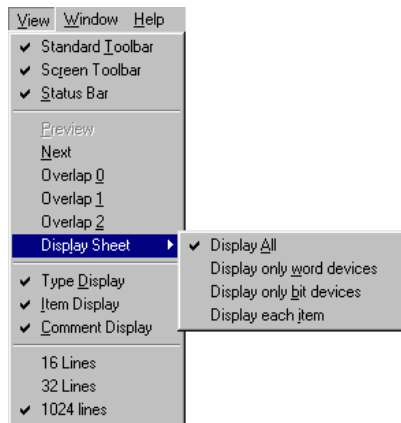
- The display type returns to the default whenever transferring the data.
- It is impossible to add a new memory.
- It is impossible to save the setting value.

To perform these operations, create the white sheet. (However, even with white sheet, the setting data in the internal memory (\$s) cannot be saved.)

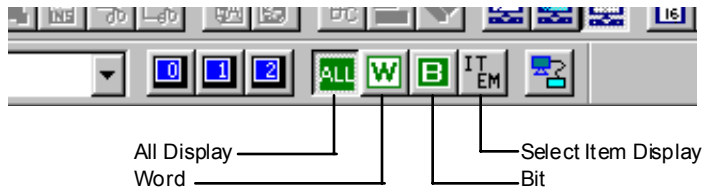
## Changing the Display on a Sheet

In an automatically created SIM file(s), or SIM file(s) created from an SIV file, memory set for different items is jumbled together on one sheet. It is possible to display this jumbled memory on a personal computer according to such classifications as item type, function, etc.

1. Go to the [View] menu and click on [Display Sheet]. 4 menu items will be displayed.



2. Click on your preference. Only the filtered results will be displayed on your personal computer.
3. You can perform the same operation by clicking on the tool bar icons.



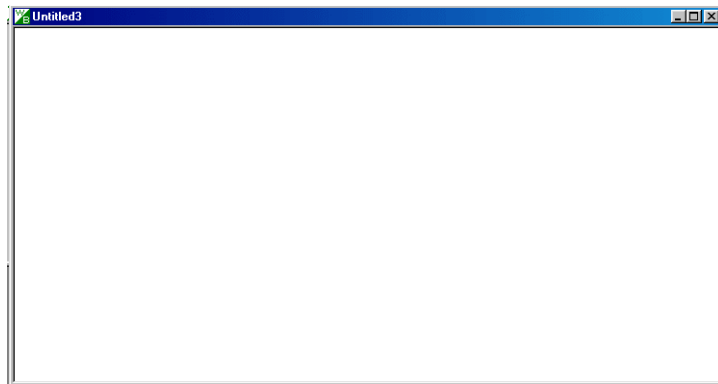
It is possible to combine [Word] or [Bit] and [Comment Display].



## Creating a New SIM File

The procedure for creating a new SIM file is described below. When a new file is created, you can set the memory that is displayed on the sheet as you wish. You can also choose the SIM file name. It is possible to create a new SIM file even when an automatically created SIM file, or an SIV-based SIM file, is already displayed on the personal computer.

1. Go to the [File] menu and click on [New...]. Or, click on the [New (Word)] icon on the tool bar.
2. A sheet with the title [Untitled x] is displayed. Add or insert the memory that you wish to test.



## Saving a Newly Created SIM File

The procedure for saving a newly created SIM file is described below.

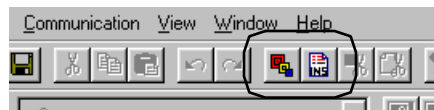
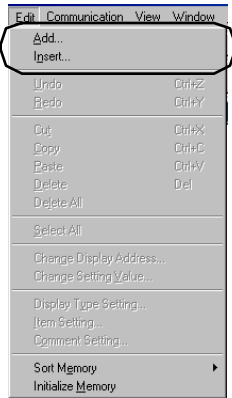
1. Click on the [File] menu. There are two options, [Save] and [Save As...].
2. Choosing [Save]:  
If this is the first time that you have saved, the [Save As...] dialog will be displayed. Enter a file name and click on [Save].
3. Choosing [Save As...]:  
The [Save As...] dialog will be displayed. Enter a file name and click on [Save].

## Adding or Inserting Memory in the Sheet

The procedure for adding memory that you wish to test to the end of the test sheet, or for inserting this memory between lines, is described below.

### Memo

It is only possible to add or insert into a newly created sheet (white sheet).



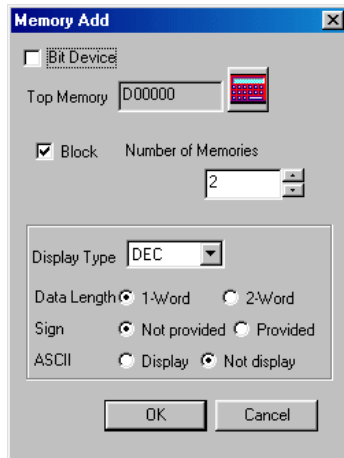
### 1. Adding

Go to the [Edit] menu and click on [Add]. Or, click on the [Add] icon.

#### Inserting

Click on the line where you wish to insert memory to highlight it. Go to the [Edit] menu and click on [Add]. Or, click on the [Insert] icon. In either case, the [Add] or [Insert] dialog shown to the right will be displayed.

1024 pieces of memory can be registered on 1 sheet.



2. Check the  Bit Device] box only when adding memory in bit units. When a bit device is specified as [Top Memory] (described later), a hyphen and bit number are displayed at the end of the memory, and a test can be performed in bit units.

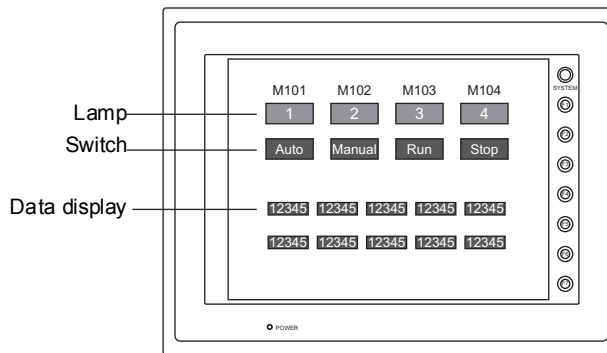


Note that if this box is not checked and a bit device is specified as [Top Memory] (described later), bits are treated as word units, and memory will be added in 16-bit increments.

3. Specify the top address for the memory that will be added to [Top Memory].
4. If you click on the  Block] box, it is possible to continuously add multiple pieces of memory. Enter the amount of memory that you wish to add in [Number of Memories]. The maximum setting is 1024.
5. When adding word device, make settings for display format, data length, with/without sign, and ASCII code display/non-display. For the display contents, see page 8-13.
6. Click [OK]. For adding, memory will be added to the end of the sheet. For inserting, memory will be inserted immediately above the line that was selected.

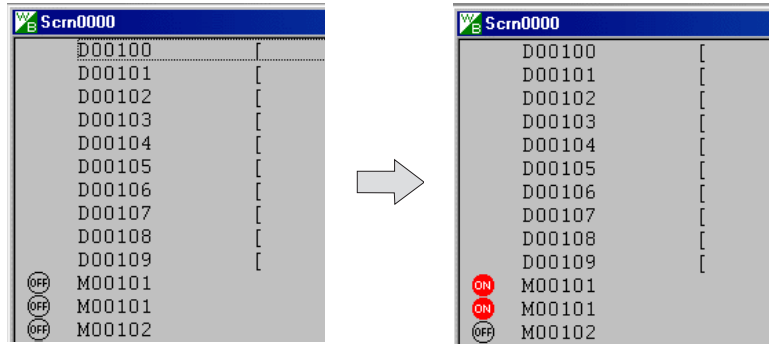
## Testing

Testing will be explained using the screen shown below as an example.



## Testing Bit Memory

- From the ZM series to the Simulator
  - Use the Simulator to check the output signal. As an example, M101 is set as output memory on the [Auto] switch on the far left side.
  - 1. Press the [Auto] switch on the far left side of the ZM series.
  - 2. M0101 will turn on at the Simulator. The left icon will change from [OFF] to [ON].



- From the Simulator to the ZM series
  - Use the Simulator to turn the lamp on. As an example, M104 is set for lamp "4" on the far right side.
  - 1. On the Simulator, click the [OFF] icon for M104 (lamp memory).
  - 2. The icon will change from [OFF] to [ON]. Lamp "4" will light up on the ZM series.



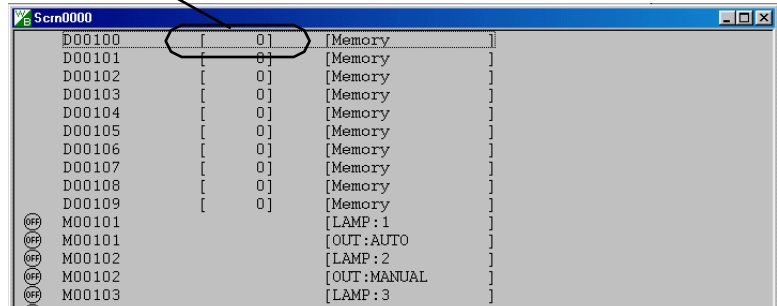
When pressing the space key with the memory selected by cursor, the bit device can be reversed. Regarding the way to reverse multiple bits simultaneously, see page 8-20.

## Testing Word Memory

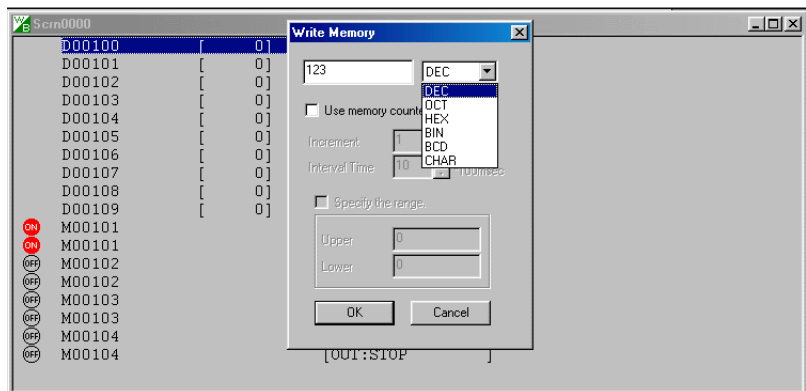
The procedure for changing the numerical value of the data display is described here. As an example, the value D100 will be changed.

1. Double-click on the setting value on the data display.

Double-click here.



2. The [Write Memory] dialog is displayed.
3. Enter the desired number into the box.
4. If necessary, change the format of the value that you enter. As an example, "123" is entered in decimal notation.



5. Click on [OK] to close the dialog.
6. "123" is displayed on the ZM series.



#### Setting/Resetting Multiple Bits Simultaneously

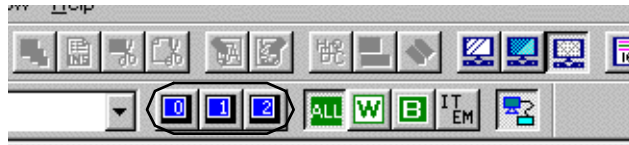
1. Select the bit memory that will be set/reset (multiple selections possible). Select sequentially by holding down the [SHIFT] key and clicking the mouse. Select randomly by holding down the [CTRL] key and clicking the mouse.
2. Pressing the space bar sets the bits.
3. Pressing the space bar again resets the bits.

#### Entering Numerical Values for Multiple Pieces of Memory Simultaneously

1. Select the memory that you will set numerical values for (multiple selections possible). Select sequentially by holding down the [SHIFT] key and clicking the mouse. Select randomly by holding down the [CTRL] key and clicking the mouse.
2. Right-click on any of the lines that are selected, and then click on [Change Setting Value...].
3. Set the desired number and click [OK]. The numbers of all the selected lines will be changed simultaneously.

## Testing Overlap

1. Display the screen that has an overlap setting on the ZM series.
2. Click on one of the icons for [Overlap 0] to [Overlap 2]. The registered overlap will be displayed on the ZM series.



3. Once the overlap is displayed on the ZM series, the overlap test sheet with items registered on it will be displayed on the Simulator. If you click on the same icon again, the overlap on the ZM series and the overlap test sheet on the Simulator disappear.
4. When an overlap switch registered on the screen is pressed, the overlap will be displayed on the ZM series. An overlap test sheet will be displayed on the Simulator at the same time.

#### Note:

In the case of a multi-overlap with the internal command setting, it is impossible to open the overlap from the Simulator.

## Useful Operations

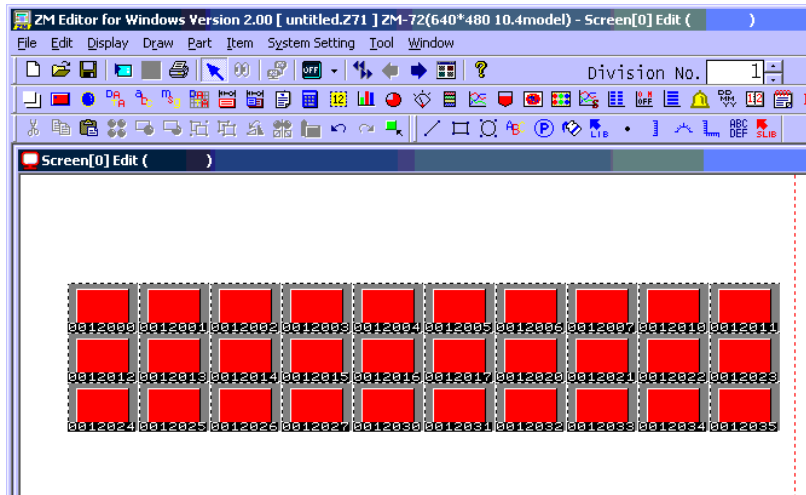
### Creating a New SIM File Using a Shortcut Key

By directly dragging an item displayed on the ZM-71SE editor (such as a switch or numerical display) to the Simulator, you can automatically display the applicable memory and comments for that item. The procedure is described below.

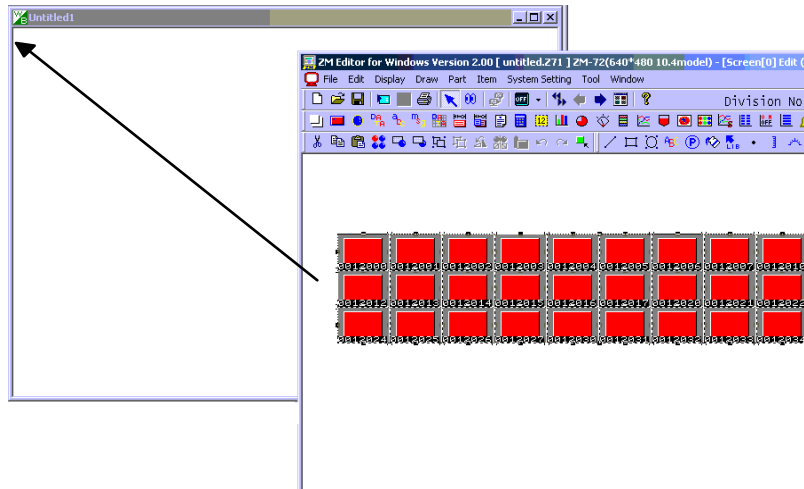
1. Go to the [File] menu on the Simulator and click on [New] to create a new file. Or, click the [New (Word)] icon to create a new file.



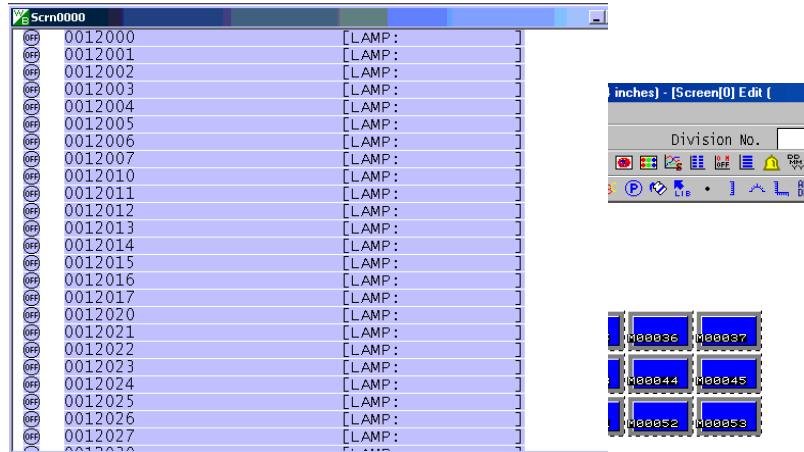
2. Open screen data with the ZM-71SE editor and display the screen that will be tested. As an example, a screen with lamps arranged is shown here.



- Click on a lamp to select it, and then hold down the [CTRL] key while dragging it to the Simulator.



- Memory addresses will be displayed as follows in the new file:





## Incrementing or Decrementing Memory Values

It is possible to increment or decrement numerical values of word memory by setting the memory counter.

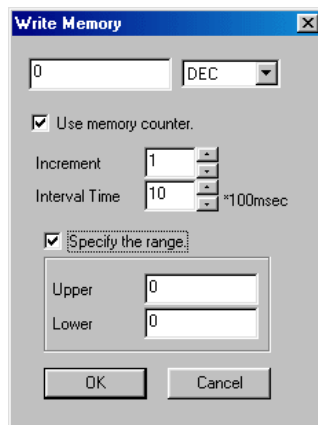
### Setting Method

1. To set the memory counter, double-click on the current memory value. The [Write Memory] dialog is displayed.



If you right-click on the memory that will be set as a timer counter, a menu is displayed. From there, it is possible to display a dialog by clicking on [Change Setting Value...]. The same dialog can be displayed by going to the tool bar and clicking on the [Setting Value] icon.

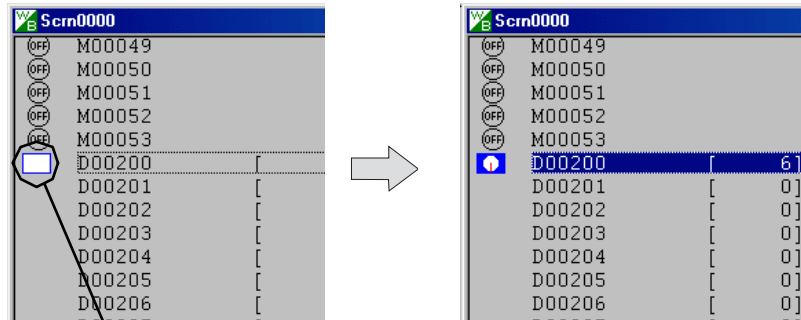
2. Check the  Use Memory Counter] box. The memory counter setting items become active.
3. Make the desired entries for [Increment Value] and [Interval Time]. An increment value from –1000 to 1000 can be entered. An interval time from 1 to 300 can be entered.
4. When the  Specify the Range] box is checked, it is possible to set the upper and lower limits. The maximum upper limit setting is 2147483647, and the maximum lower limit setting is –2147483648.



5. Click [OK] to close the dialog. A white square-shaped icon will be displayed to the left of memory on the sheet.

### Use Method

1. Click on the white square-shaped icon to the left of memory on the sheet. Or, select memory that is set for the memory counter and then press the space bar. The icon will change to a clock indicating that the memory counter has started.



2. To stop the memory counter, either click on the clock icon on the left, or press the space bar. The icon will revert to a white square-shape.



When the memory counter reaches the upper or lower limit, it will revert to 0 and continue counting.

#### Setting the Memory Counter for Multiple Pieces of Memory Simultaneously

1. Select the memory that will be set for the memory counter (multiple selections possible). Select sequentially by holding down the [SHIFT] key and clicking the mouse. Select randomly by holding down the [CTRL] key and clicking the mouse.
2. Right-click on one of the selected lines and then click [Change Setting Value...].
3. Set the memory counter according to the procedure described on the next page.

The way to set/reset multiple bits simultaneously is the same as setting the memory counter.

#### Simultaneously Starting or Stopping the Memory Counters

1. Select all the memory that has a timer setting.
2. Press the space bar. All the timers will start simultaneously.
3. Pressing the space bar again will cause all the timers to stop simultaneously.

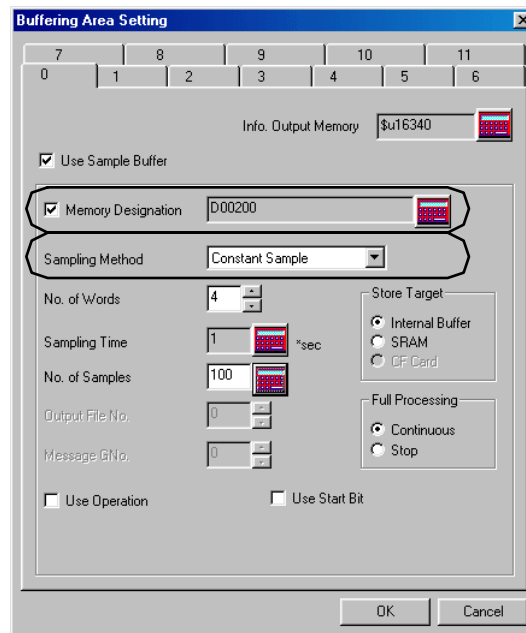
## Testing Sampling Mode with a CSV File

By creating simulation data with a CSV file and then reading that data with the Simulator, it is possible to display a sampling screen on the ZM series that is very close to the actual image.

### Conditions for a Test

The following conditions must occur if you wish to perform a test on a ZM series screen data file by using a CSV file:

- In the [Buffering Area Setting] dialog the  Memory Designation] box should be checked.
- [Sampling Method] should be [Constant Sample] or [Bit Synchronize].



### Notes on Creating a CSV File

- Each sampling data should be entered on one line.
- Memory set for [Sampling Buffer Word No.] in each sampling mode should be entered (beginning with the most recent) from the left of each line.
- Only create necessary data on the display. If a title line or row exists, it will not be displayed correctly.
- Do not leave lines or rows blank. Data in blank lines or rows will be displayed as "0."

### CSV File Setting Example

The following example shows settings for a CSV file created with Microsoft EXCEL.

Using buffering area No. 0

Memory Designation    D200  
 Sampling Method        Constant sample  
 No. of Words            4  
 No. of Samples         100  
 Store Target            Internal buffer  
 Full Processing         Continuous

When a CSV file like this is created with Microsoft EXCEL:

The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H	I	J
1	0	210	1154	7745						
2	1	211	1155	7746						
3	2	212	1156	7747						
4	3	213	1157	7748						
5	4	214	1158	7749						
6	5	215	1159	7750						
7	6	216	1160	7751						
8	7	217	1161	7752						
9	8	218	1162	7753						
10	9	219	1163	7754						
11	10	500	1164	7755						
12	11	501	1165	7756						
13	12	502	1166	7757						
14	13	503	1167	7758						
15	14	504	1168	7759						
16	15	505	1169	7760						
17	16	506	1170	7761						
18	17	507	1171	7762						
19	18	508	3325	7763						
20	19	509	3326	7764						
21	20	510	3327	7765						
22	21	511	3328	7766						
23	22	512	3329	7767						
24	23	990	3330	7768						
25	24	991	3331	7769						
26	25	992	3332	2254						
27	26	993	3333	2255						
28	27	994	2224	7755						

Annotations in the image:

- "1st sampling data" points to row 1.
- "Word No. 0" points to column A.
- "Word No. 1" points to column B.
- "Word No. 2" points to column C.
- "Word No. 3" points to column D.



When the number of sampling times is smaller than the CSV file data amount:

Example: Sampling frequency is 20 but the CSV file has 60 pieces of data.

[Stop]

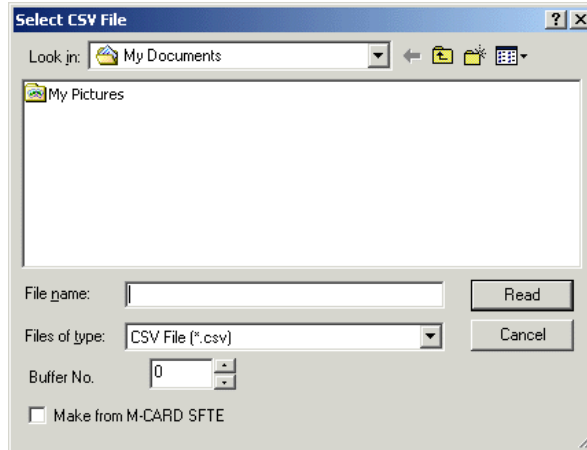
The program will stop after displaying 20 pieces of data. 20 points are displayed on the ZM series.

[Continuous]

The first 20 pieces of data are continuously displayed.

## Read Procedure

1. Go to the [File] menu and click on [Read CSV File]. The [Select CSV File] dialog is displayed.



2. Select the file name to read.
3. Set the buffer number for the stored data. For the setting example on the previous page, this setting would be “0.”
4. If the CSV file that is read is one that was created with ZM-CARD Software, click on the  Make from M-CARD SFTE] box.

### Note:

“ZM-CARD SFTE” is memory card editor. This is an application software separate from the ZM-71SE editor.



When writing sampling data stored in the memory card as a CSV file (using ZM-CARD Software), time data appears at the far left of each line. When you check [Make from M-CARD SFTE], the time data is not recognized as sampling data and thus, is not read.

5. Click the [Read] button.
  - For [Sampling Method: Constant Sample], the data read is immediately shown on the ZM series graph.
  - For [Sampling Method: Bit Synchronize], the data read will be shown on the ZM series depending on whether the sample control memory trigger sets or resets the bit.

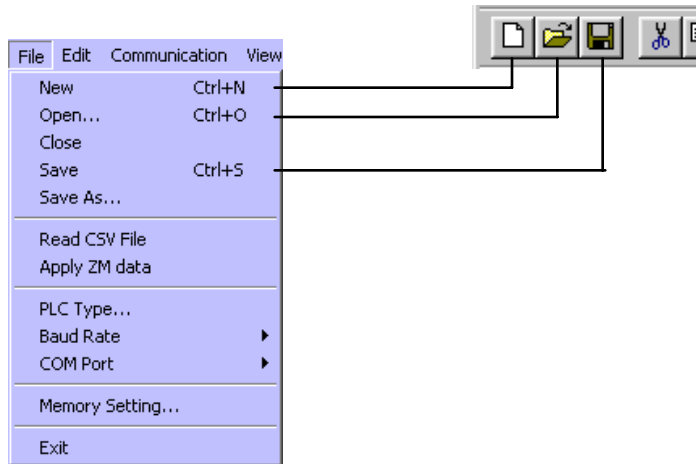


For details on the sampling method or sample control memory, see “Chapter 10 Sampling” in the ZM-71SE Instruction Manual (Function).

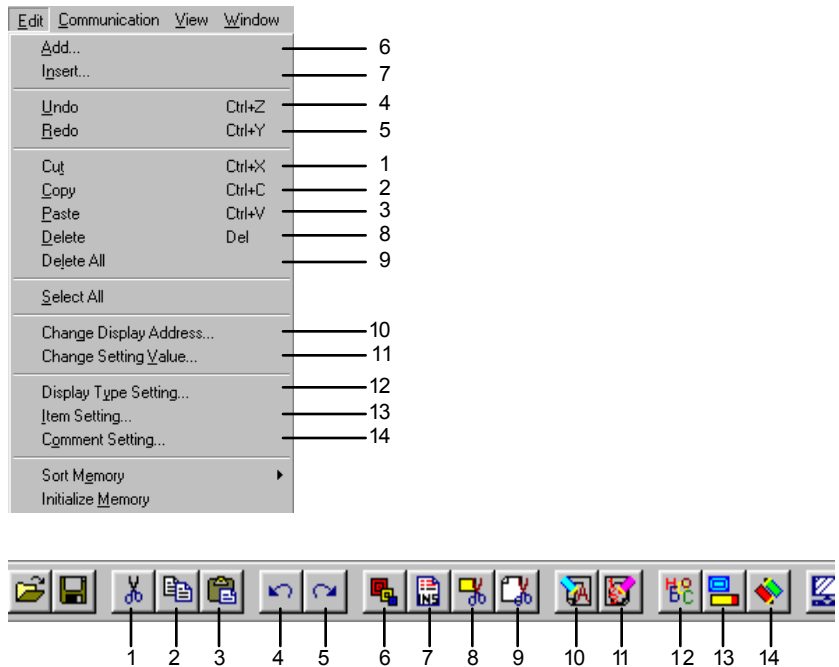
## Menu and Icons

Commands included in each menu correspond to the icons as shown below:

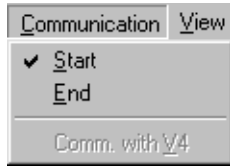
### File Menu



### Edit Menu

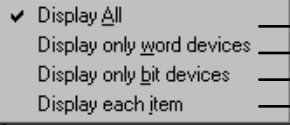
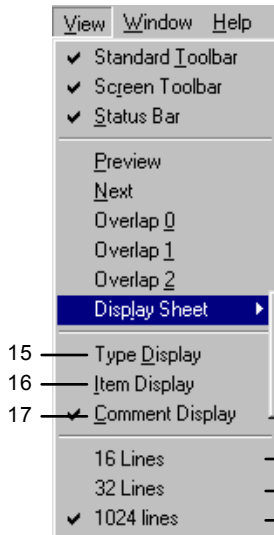


## Communication Menu

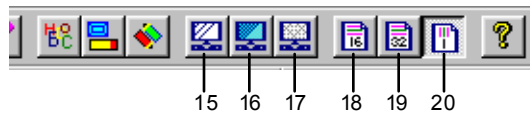


Click:  
Depressed .... Start  
Raised ..... End

## View Menu

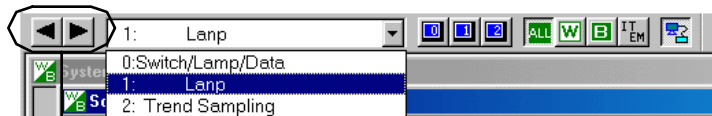


15 — Type Display  
16 — Item Display  
17 — Comment Display  
18 — 16 Lines  
19 — 32 Lines  
20 — 1024 lines

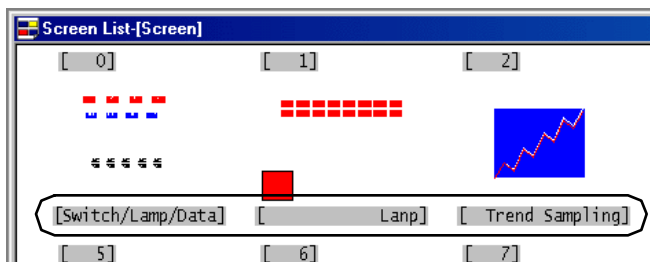


## Screen Number and Comment Display

The comment registered during screen edit is displayed here.

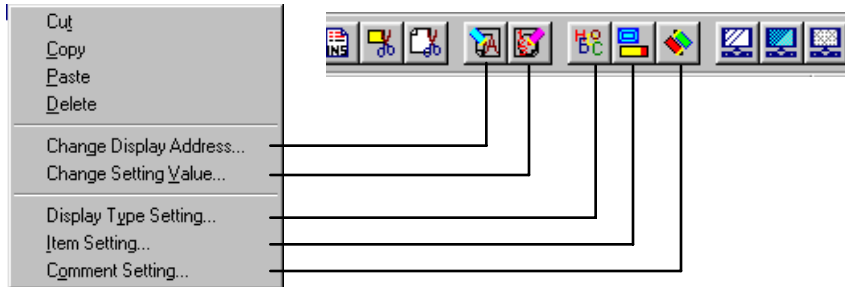


When a screen is selected here, the screen shown on the ZM series will change.



## Right-click Menu

A menu like the one shown here is displayed when the right mouse button is clicked.

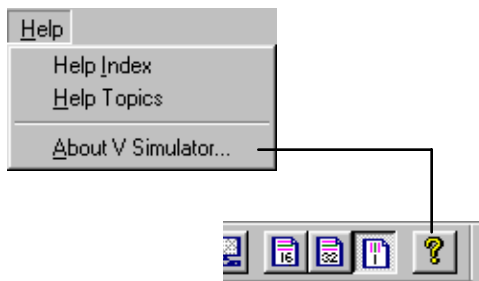


However, the following menu items are only active for a new file.

- Cut
- Paste
- Delete
- Change Display Address
- Item Setting
- Comment Setting

## Help Menu

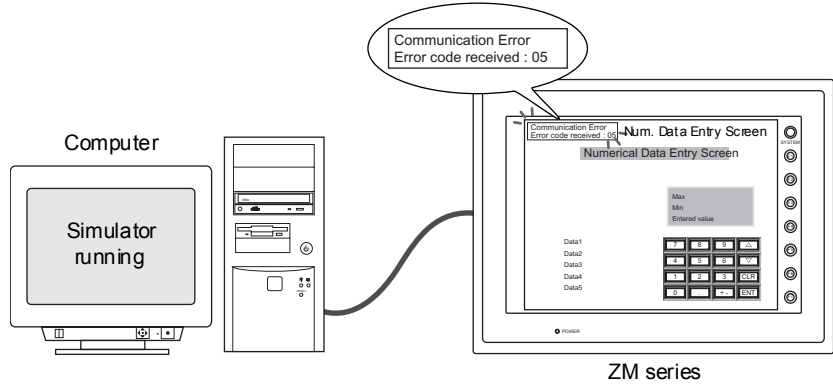
Help functions are accessible from the [Help] menu. Information such as the operation method can be displayed on the personal computer by clicking on [Help Index] and [Help Topics]. Additionally, version information can be checked by clicking [About V Simulator] or the [About V Simulator] icon.





## Error List

The following errors may arise on the ZM series screen during communication between the ZM series and simulator (computer).



Message	Contents	Measures
Check I/F driver	When sending a communication request to a personal computer (simulator), there is no reply from a personal computer.	Check the following items: <ul style="list-style-type: none"> <li>• Wiring between ZM series and personal computer</li> <li>• Settings of baud rate and COM port</li> <li>• PLC I/F driver on the ZM series side (UNIPLC20)</li> </ul> If the error is not recovered after checking the above items, re-start the simulator.
Received Code: 01	Communication error, such as a parity error	A communication error arises between ZM series and the computer. Check if there are any adverse effects due to noise, etc.
Received Code: 02	Command error (unregistered commands)	
Received Code: 03	Format error (characters in nonconforming formats)	
Received Code: 04	Sum check error	
Received Code: 05	Memory address error (unacceptable memory type/address)	Select [Memory Setting] from the [File] menu and specify the correct memory address (used for the ZM series).

---

# ZM-MDD Transfer Utility

---

## Outline

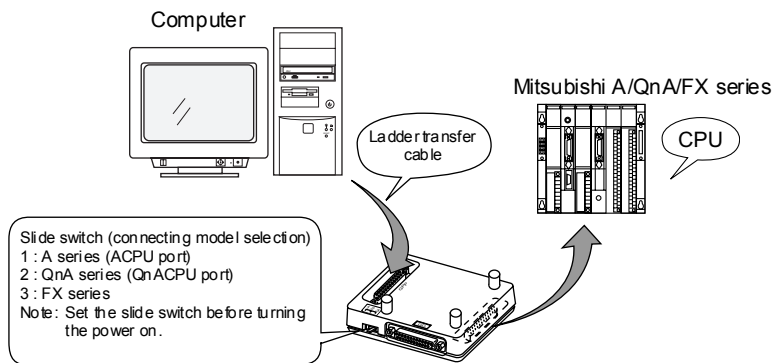
---

The ZM-MDD transfer utility is a utility program that is used to update the ZM-MDD program.



### What is ZM-MDD?

The ZM-MDD used to change the programmer port into two ports with Mitsubishi A series, QnA series or FX series CPU. This is useful when you would like to connect LCD control terminal directly to the CPU of the A series, the QnA series or the FX series.



---

## Composition

---

The ZM-MDD transfer utility is automatically installed when screen creation software ZM-71SE is installed.

## Operation Procedure

1. Connect the ZM-1MD2 to the RS-422 connector at Mitsubishi's A/QnA/FX series CPU.
2. Connect the computer and the ZM-1MD2 (on the GPP port side) using the ladder transfer cable.
3. Turn the PLC power on. The ZM-1MD2 is activated at the same time. (Be sure to set the ZM-1MD2 slide switch before turning the power on.)
4. Start up the ZM-MDD transfer utility on the computer, and transfer the ZM-1MD2 program file "dpprg.mdd."



### About "mdd" File

The "mdd" file ("dpprg.mdd") is located in the "Tpa" folder that is installed with the ZM-71SE editor. To check the program version of the ZM-MDD, the ZM-MDD transfer utility must be used. The latest "mdd" file can be downloaded from Sharp Manufacturing Systems' Web site.



For the procedure of starting and operating the ZM-MDD transfer utility, refer to "ZM-MDD Transfer Utility" in the next section.

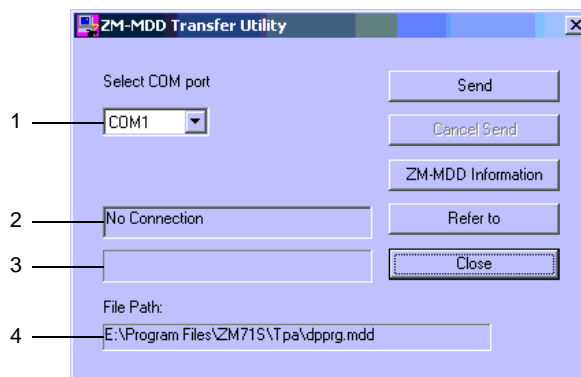


**Do not remove or attach the cable during program transfer. If communication is suspended, turn the power off and on, and transfer the program again.**

## ZM-MDD Transfer Utility

### Starting

1. Click in the order of [Start] → [Programs] → [Zm-71s] → [ZM-MDD Transfer Utility].
2. The [ZM-MDD Transfer Utility] dialog is displayed.



It is possible to start from the ZM-MDD transfer utility shortcut icon.



## Closing

Click the [Close] button in the [ZM-MDD Transfer Utility] dialog. The ZM-MDD transfer utility is closed.

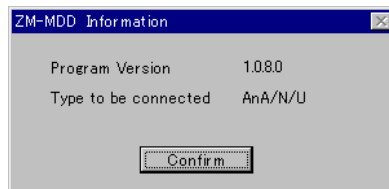
## [ZM-MDD Transfer Utility] Dialog

[Select COM Port]

Select the port to be used.

[ZM-MDD Information]

Click the [ZM-MDD Information] button. The following dialog is displayed. Check the ZM-MDD program version and the PLC model.



When the [ZM-MDD Information] or [Send] button is clicked again after communication with the ZM-1MD2 was performed, the message “Time Over for waiting Receiving” is displayed. Turn the PLC power off and on, and try again.

[File Path]

The target location of the ZM-1MD2 program file (“mdd” file) is displayed. As default, “C:\PROGRAM FILES\Z3W\Tpa\dporg.mdd” is selected. Select the desired program file and click the [Refer to] button. The [Select Program File] dialog is displayed. Select the program to be transferred.

[Send]

Turn the PLC power off and on. Click the [Send] button. The program is transferred. When no program to be transferred is selected, the [Select Program File] dialog is displayed. Select the program in this dialog. The communication status (“Connecting to ZM-MDD,” “Transferring the Data,” etc. is shown in 2. During transfer, a bar is shown in 3. When transfer has been completed, “Transfer Finished” is displayed. To cancel program transfer, click the [Cancel Send] button.



When the [ZM-MDD Information] or [Send] button is clicked again after communication with the ZM-1MD2 was performed, the message “Time Over for waiting Receiving” is displayed. Turn the PLC power off and on, and try again.



# Chapter 9 Wizard

Outline .....	9-1
Opening the [Wizard] Dialog .....	9-1
Wizard Usage Examples .....	9-2
Radio Button Creation .....	9-2
Error Display .....	9-6
Trend Graph Display .....	9-11
Deleting Placed Parts .....	9-16



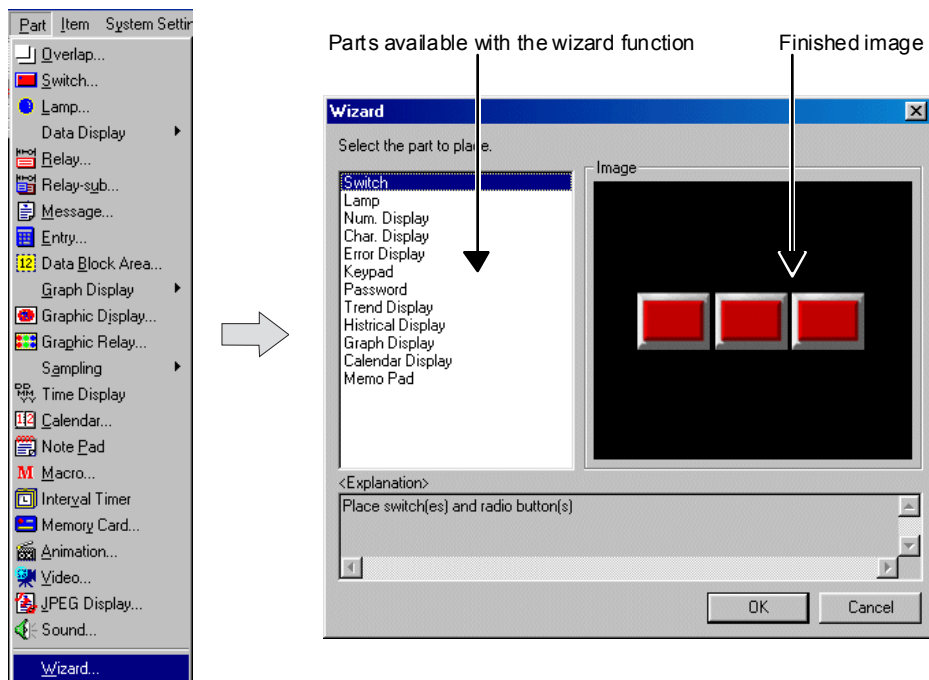
## Outline

The wizard function is provided to aid you in setting, for instance, the entry mode or sampling mode, which will be complicated in combination with other parts like switches or display areas. Screens in these modes can be created with ease by following the instructions to be given.

## Opening the [Wizard] Dialog

Open the [Wizard] dialog when using the wizard function.

Select [Wizard] from the [Part] menu. The [Wizard] dialog is displayed.



Select the desired part from the list while referring to [Image] and [Explanation] in the dialog and click the [OK] button. Follow the instructions to be given on the screen.

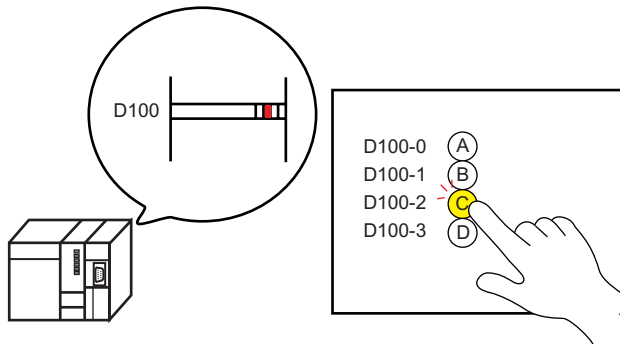
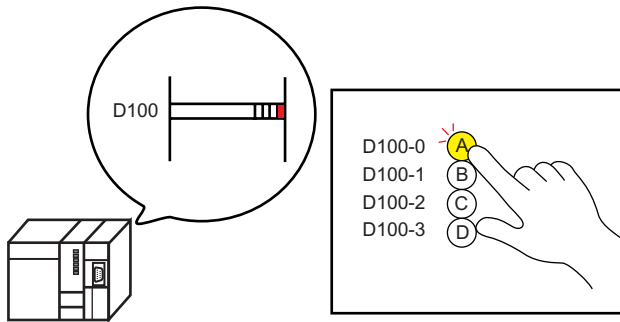
# Wizard Usage Examples

## Radio Button Creation

This section explains the procedure for creating four radio buttons with output memory D100-0 to D100-3.



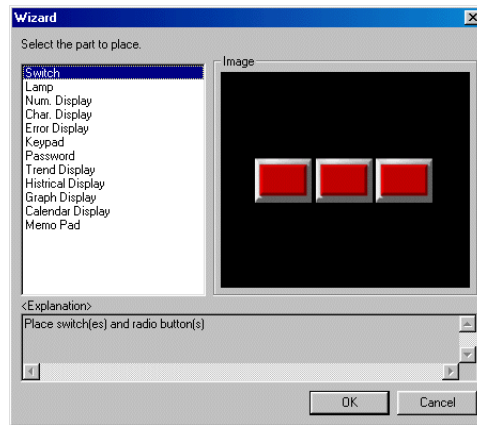
Radio buttons operate in such a manner that only the button currently being pressed is activated in output memory and the others are deactivated in output memory.



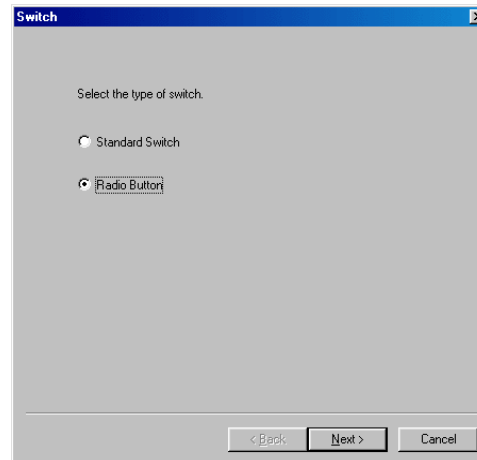


## Setting Procedure

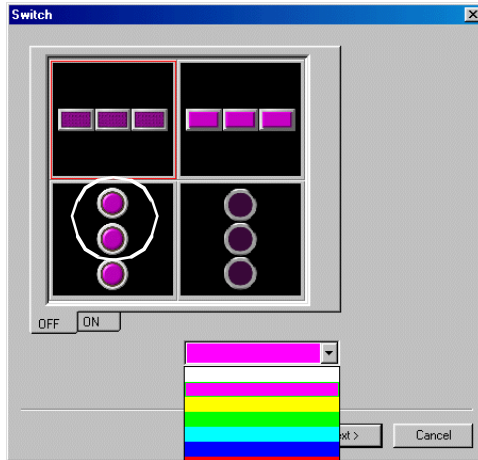
1. In the [Wizard] dialog, select [Switch] from the parts list and click the [OK] button.



2. Select [Radio Button] and click the [Next] button.



3. Four types of radio buttons are previewed.



[ON] and [OFF] tab

Open either window to check the image.

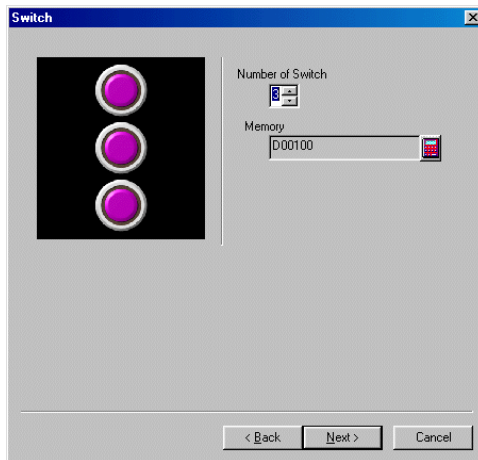
Pull-down menu

Select a color as desired.

Click the desired type from the four. The lower left type is selected in this example. The selected type is enclosed in a red frame.

Click the [Next] button.

4. The selected switch image is displayed.



[Number of Switch]

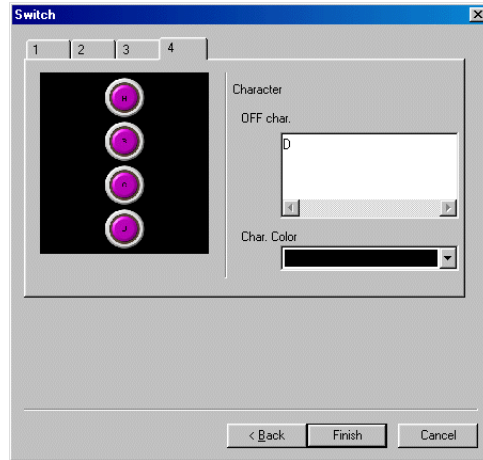
Select the number of switches. "4" is selected in this example.

[Memory]

Allocate a memory address to the switches. "D100" is allocated in this example.

Click the [Next] button.

5. Enter texts to be placed on the switches.



[1] to [4] tabs

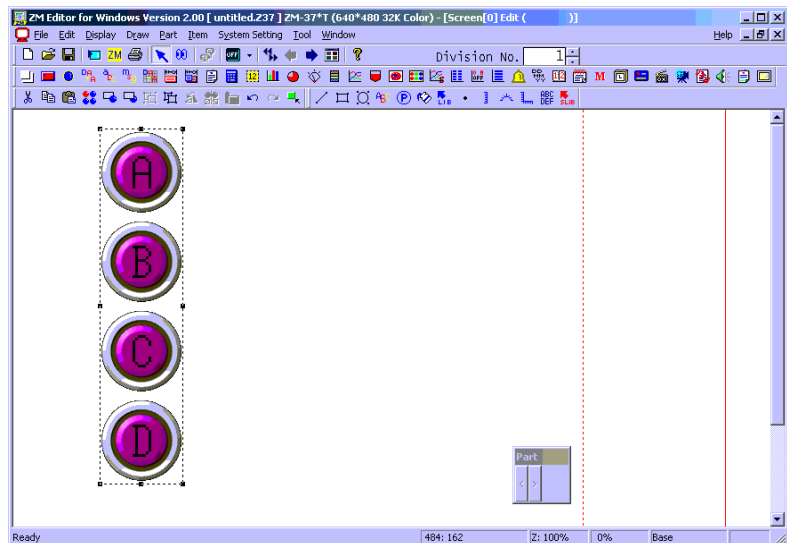
Open tab windows one by one and enter texts of the switches in the OFF status. "A," "B," "C," and "D" are entered respectively for the four switches in this example.

[Char. Color]

Select a text color from the pull-down menu.

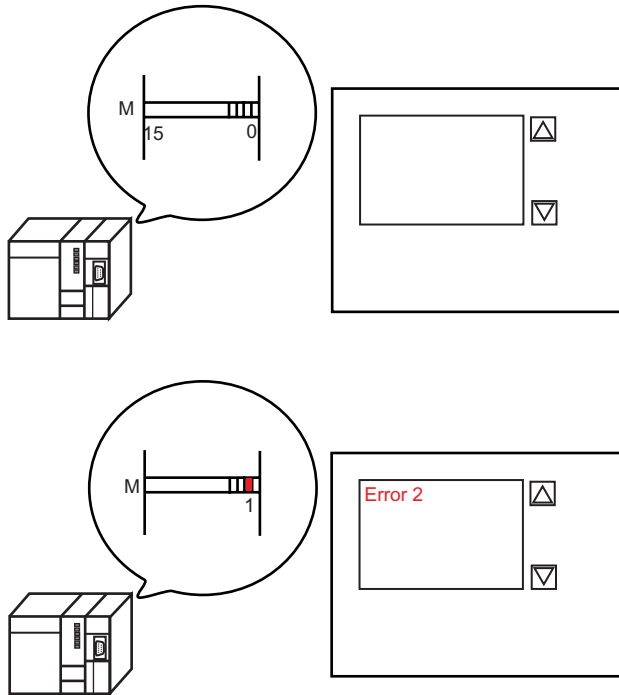
Click the [Finish] button.

6. A cross cursor is displayed. Click it in the desired position.



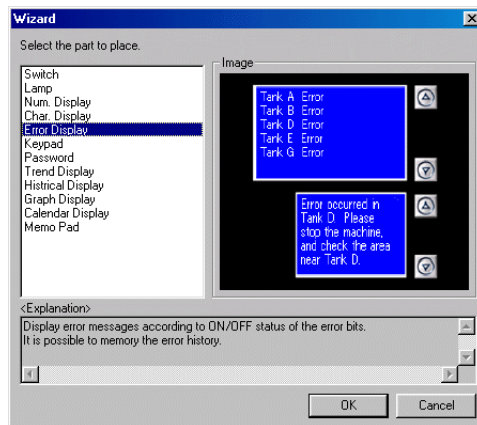
## Error Display

This section explains the settings to place an error display, in which errors currently occurring will be shown from ten registered messages and placed from the top position in order of importance.



### Setting Procedure

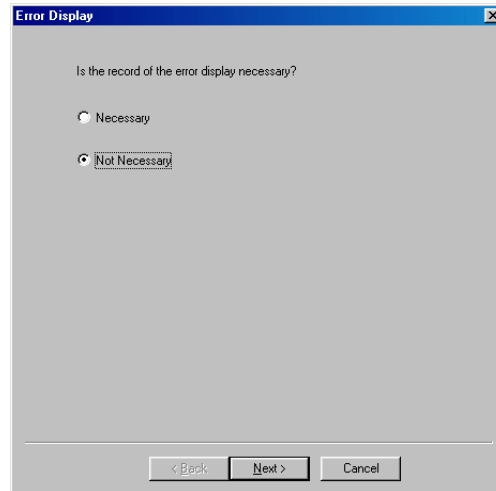
1. In the [Wizard] dialog, select [Error Display] from the parts list and click the [OK] button.



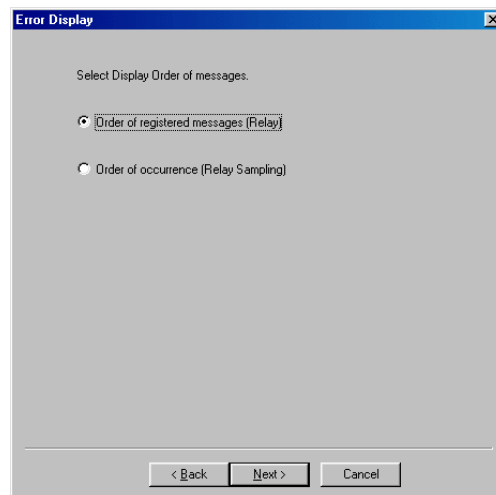
2. Select whether or not error history records are necessary.

It is necessary to know the errors currently occurring in this example. Therefore, select [Not Necessary].

Click the [Next] button.



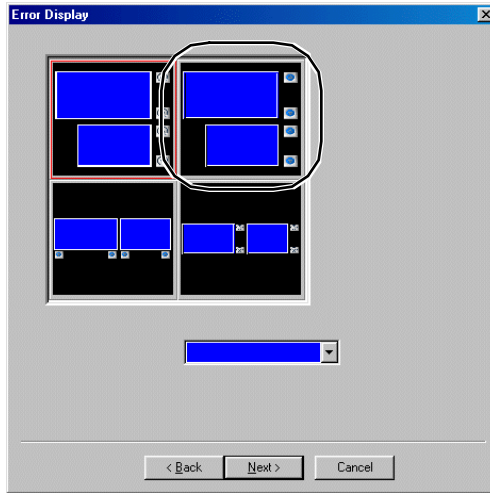
3. Select in which order error messages are to be displayed. Select [Order of Registered Messages (Relay)].



“(Relay)”:  
The relay mode is established on completion of setting.

Click the [Next] button.

4. Four types of message displays are previewed.



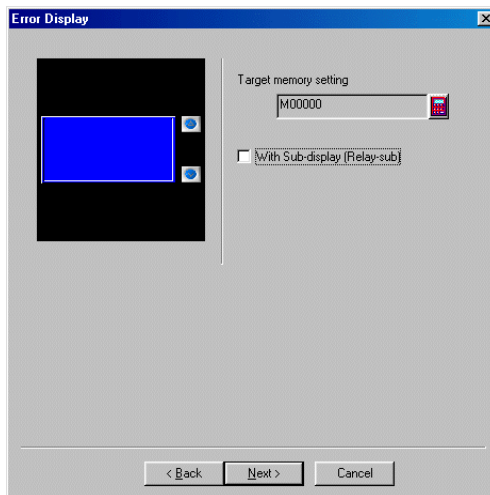
Pull-down menu

Select a color as desired.

Click the desired type from the four. The upper right type is selected in this example. The selected type is enclosed in a red frame.

Click the [Next] button.

5. The selected display image is displayed.



[Target Memory Setting]

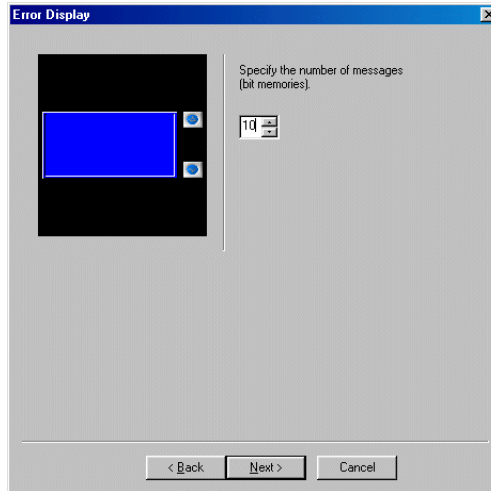
Allocate a memory bit for error message display. "MO" is allocated in this example.

[ ] With Sub-display (Relay-sub)]

Check this when detailed information should be displayed as a sub-message. Uncheck the option in this example.

Click the [Next] button.

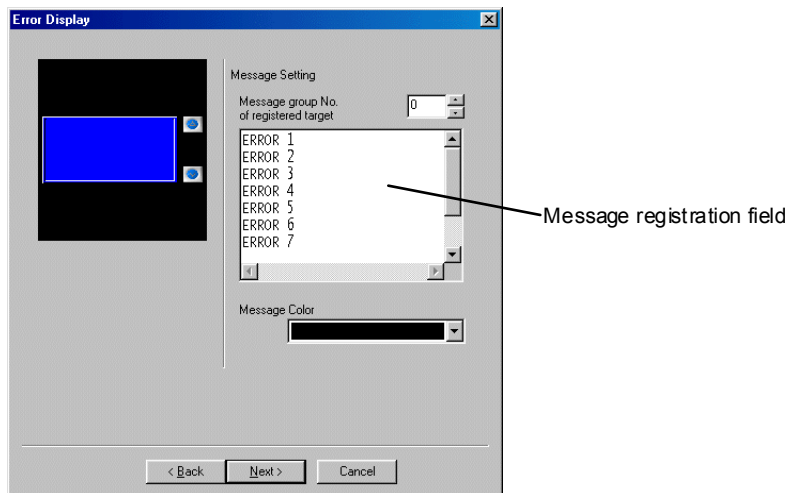
6. Specify the number of error messages (memory bits).



“10” is specified in this example.

Click the [Next] button.

7. Register error messages.



[Message Group No. of Registered Target] (0 - 23)  
Specify a message editing group number.



Leave the number setting as default generally. To change, select a number with no registered message.

Message registration field

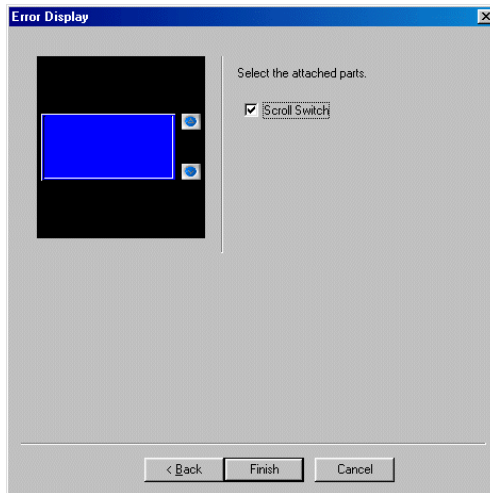
Register error messages. In step 6, “10” is specified as the number of error messages. Register ten lines of messages.

[Message Color]

Select a message color as desired.

Click the [Next] button.

8. Attached parts are available.

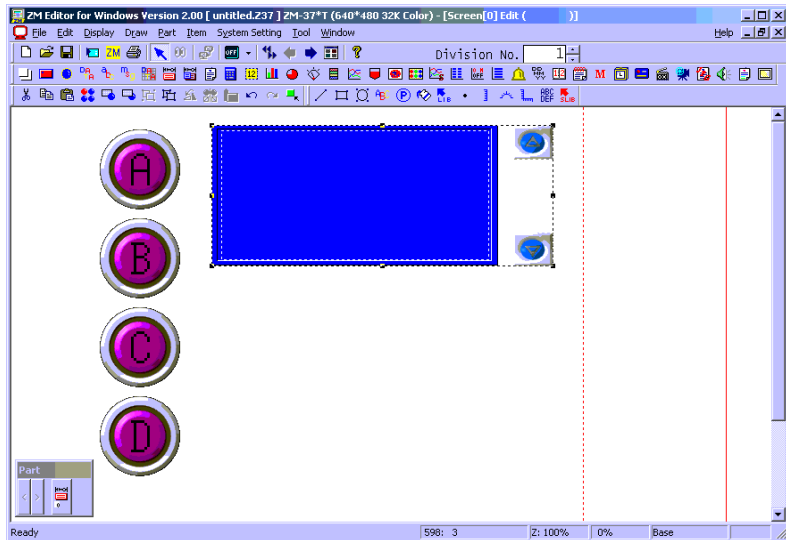


Scroll Switch]

Uncheck the option if message scroll switches are not necessary.

Click the [Finish] button.

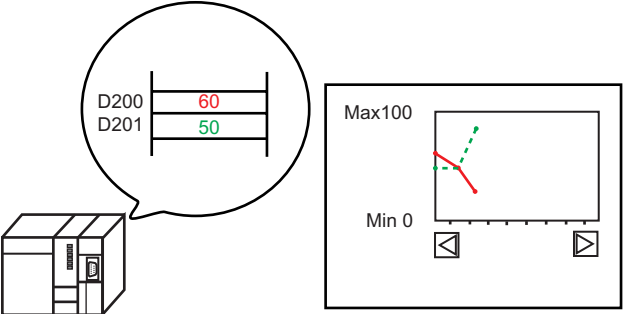
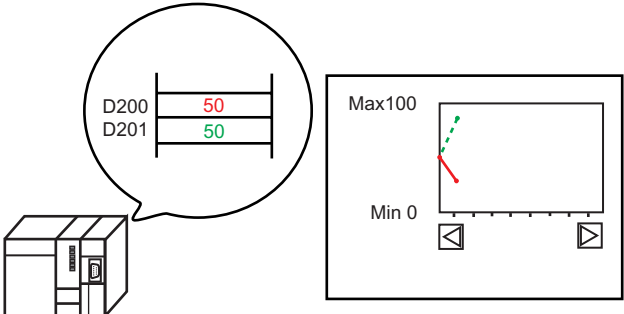
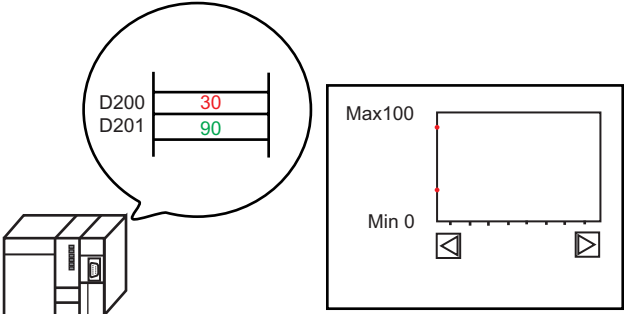
9. A cross cursor is displayed. Click it in the desired position.





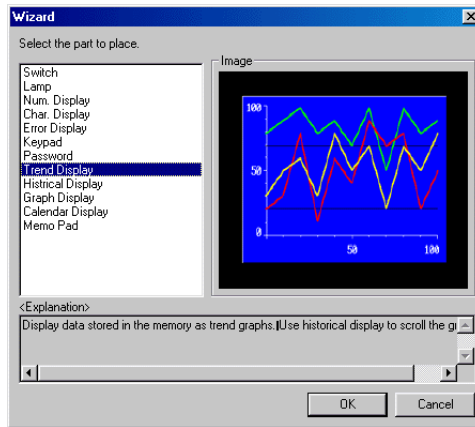
# Trend Graph Display

This section explains the settings to place a trend graph, in which sampling data in memory specified as desired (D200 and D201) will be expressed by two lines at one-second intervals.

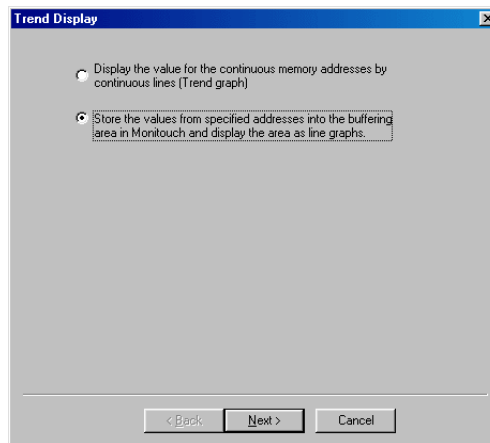


## Setting Procedure

1. In the [Wizard] dialog, select [Trend Display] from the parts list and click the [OK] button.



2. Data in the desired memory addresses should be sampled at regular intervals. Select [Store the values from specified addresses into the buffering area in LCD Control Terminal and display the area as line graphs.] (Trend sampling).

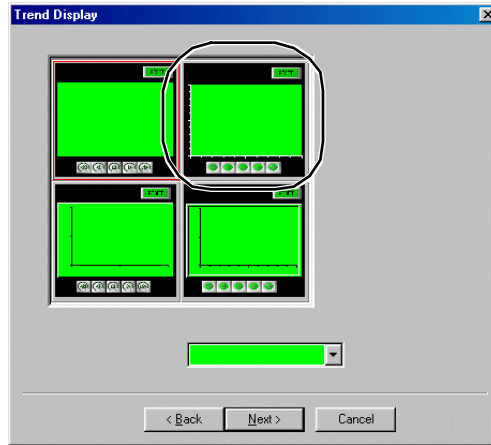


(Trend sampling):

Trend sampling function in the sampling mode is established on completion of setting.

Click the [Next] button.

3. Four types of graphs are previewed.



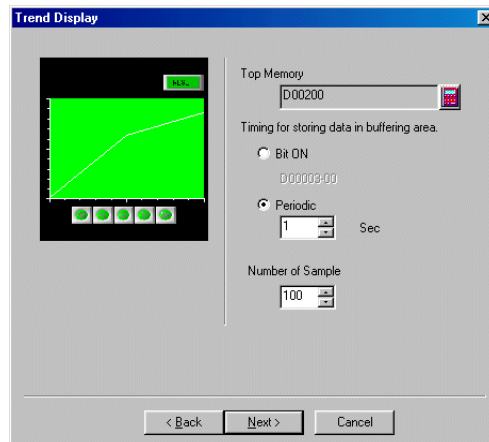
Pull-down menu

Select a color as desired.

Click the desired type from the four. The upper right type is selected in this example. The selected type is enclosed in a red frame.

Click the [Next] button.

4. The selected display image is displayed.



[Top Memory]

Specify a memory address for data sampling. "D200" is specified in this example.

[Timing for Storing Data in Buffering Area]

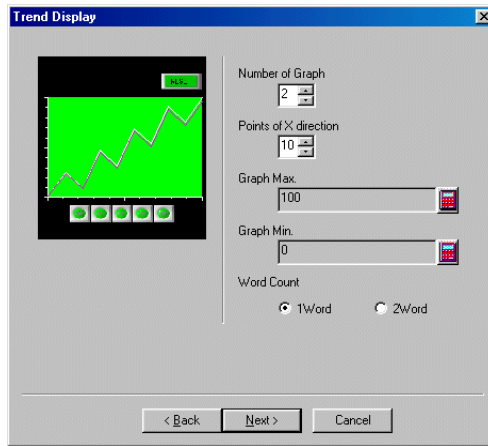
Specify the timing for storing data in the buffering area. "1" (sec.) is specified for [Periodic] in this example.

[Number of Sample]

Specify the number of sampling times. "100" is specified in this example.

Click the [Next] button.

5. [Number of Graph]  
Specify the number of lines in the trend graph. “2” is specified in this example.

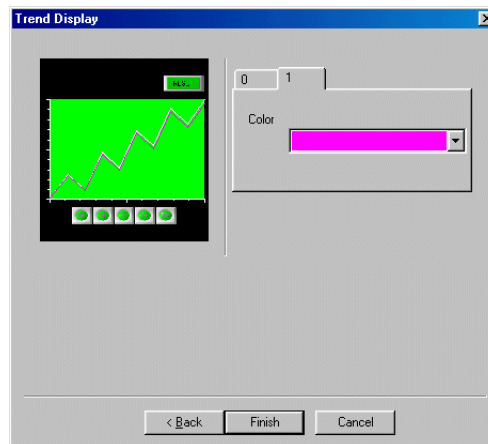


[Points of X Direction]

Specify the number of points on the X axis in the trend graph. “10” is specified in this example.

[Graph Max.] and [Graph Min.]

Specify the maximum and minimum values in the trend graph. “100” and “0” are specified respectively in this example.



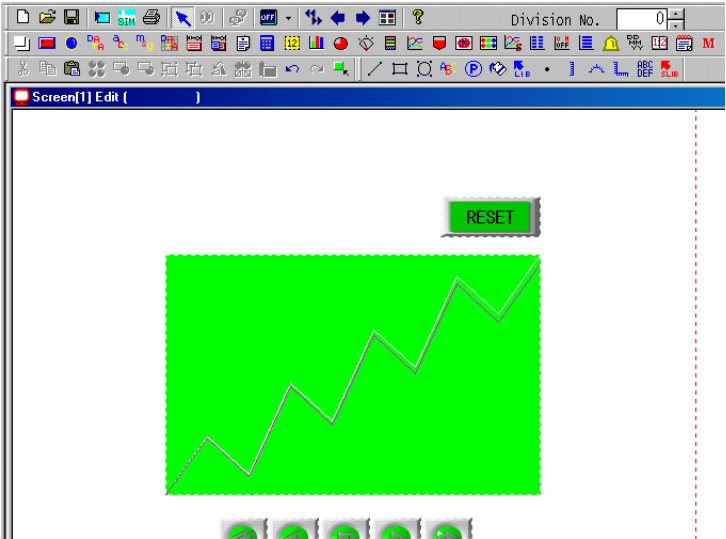
[Word Count]

Select the number of words for data sampling memory specified in step 4. [1 Word] is selected in this example.

Click the [Next] button.

6. Select colors as desired. Open each tab window and select a graph color.

7. A cross cursor is displayed. Click it in the desired position.



## Deleting Placed Parts

---

When deleting a part placed by the wizard function, follow the procedure below.

1. Select [Undo Wizard] from the [Edit] menu.



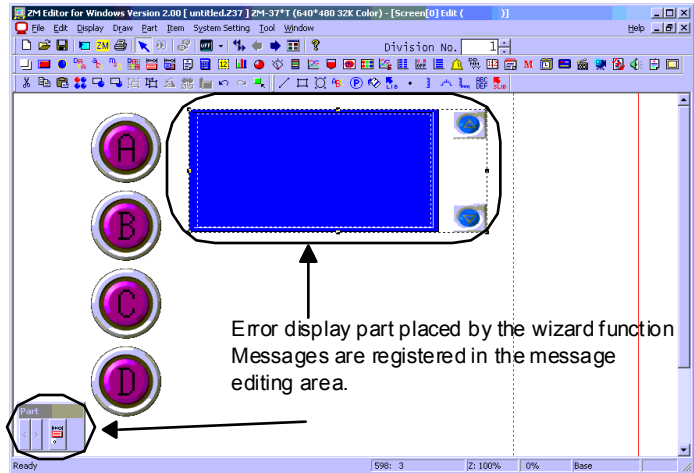
2. The following message appears.



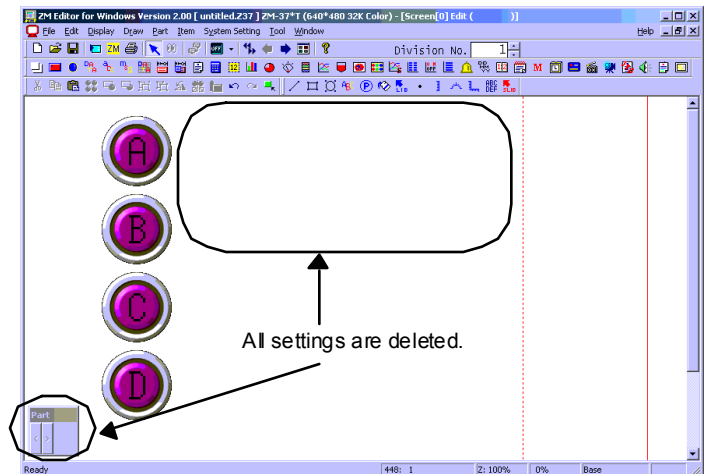
This message always indicates the final part placed by the wizard function and its screen number. Click the [OK] button.

3. The specified part is deleted from the editing screen. Deletion is completed.

Before deletion



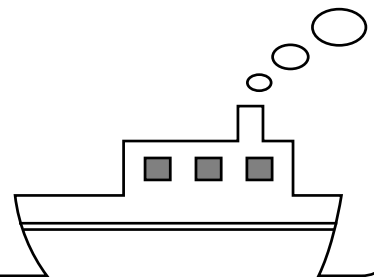
After deletion



When a placed part is selected by clicking and then deleted by the command in the right-click menu or the deletion icon, the part is deleted from the screen; however, the settings in the message editing area and the buffering area remain. To avoid such an instance, go to the [Edit] menu and select [Undo Wizard] as explained above when deleting a part.

# MEMO

Please use this page freely.





# Appendix 1 **Fonts**

Types of Fonts .....	APP1-1
Font Setting .....	APP1-2
Available Fonts .....	APP1-3
HK Gothic and HKTimes.....	APP1-4



# Types of Fonts

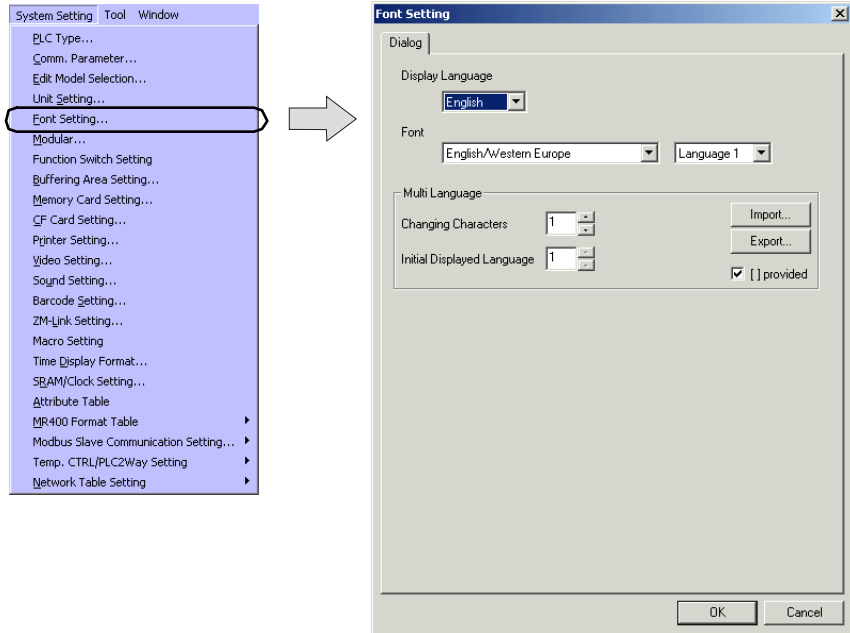
The following fonts are available on the ZM series.

Font	Screen memory capacity when the font is in use (unit: KB)			Ref.
	ZM-300 series	ZM-52/72/82/52HD	ZM-42/43/62E	
Japanese	5,376	3,264	1,216	–
Japanese 32	4,992	2,816	768	–
English/Western Europe	5,648	3,456	1,408	Page APP 1-3
Chinese	5,504	3,328	1,280	Page APP 1-3
Chinese (simplified)	5,376	3,264	1,216	Page APP 1-3
Korean	5,504	3,392	1,344	Page APP 1-3
Gothic	As per setting			Page APP 1-4
English/Western Europe HK Gothic				
English/Western Europe HK Times				

The ZM-71SE version 2.00 or greater is available with all the above fonts though there are some limitations on editing in each font type. This chapter provides notes on font usage and description of editing in different fonts.

## Font Setting

When performing font setting, select [Font Setting] from the [System Setting] menu.



By transferring screen data together with the selected font file to the ZM series, the font can be displayed on the ZM series. Generally, only one type of font is available in one screen data file.



With the language selection function, however, it is possible to specify multiple fonts in one screen data file and to select one font. For more information, see “Chapter 29 Language Selection” in the ZM-71SE Instruction Manual (Function).

---

## Available Fonts

---

### English/Western Europe Fonts

The following languages are included in the English/Western Europe Fonts.

(Latin-1)

- Icelandic
- Italian
- Dutch
- Spanish
- German
- Portuguese
- Faeroese
- Irish
- English
- Swedish
- Danish
- Norwegian
- Finnish
- French

### Chinese and Chinese (Simplified)

Screens in Chinese or simplified-type Chinese can be created.

### Korean

Screens in Korean (using the Hangul alphabet) can be created.

---

## HK Gothic and HK Times

---

### Outline



On the ZM series it is possible to use fonts similar to the Windows True Type fonts (Arial and Times). The font similar to Arial is called English/Western Europe HK Gothic. The font similar to Times is called English/Western Europe HK Times.



English/Western Europe HK Gothic



English/Western Europe HK Times

The English/Western Europe HK Gothic and English/Western Europe HK Times fonts used for the ZM series are Sharp Corporation's original fonts.

The English/Western Europe HK Gothic and HK Times feature:

- The English/Western Europe font creates a smooth typeface when the specified enlargement factors are even numbers; however, only a normal typeface is available when the factors are odd numbers. With the English/Western Europe HK Gothic or HK Times font, a smooth typeface is created in any size.

English/Western Europe font

Enlargement factors: odd (1 × 1)

(3 × 3)

Enlargement factors: even (2 × 2)



English/Western Europe HK Gothic font

12 points

20 points

28 points

36 points



- In the case of the English/Western Europe font, the minimum enlargement factors are X: 1 and Y: 1. When smaller characters should be displayed, the 1/4 size must be selected. With the English/Western Europe HK Gothic or HK Times font, the number of points is used to specify a character size in place of enlargement factors. The minimum permissible number of points is eight. A smoother typeface can be realized as a result.

## English/Western Europe font

Minimum size (1/4)

A B C D E F G

(1 × 1)

A B C D E F G

## English/Western Europe HK Gothic font

Minimum size 8 points

A B C D E F G

9 points

A B C D E F G

11 points

A B C D E F G

12 points

A B C D E F G



It is not possible to use the English/Western Europe HK Gothic or HK Times font in combination with the English/Western Europe font.

## Points of English/Western Europe HK Gothic/HK Times

The following sizes are supported.

Points	Selection from Used or Not used
8	Available
9	Available
10	Available
11	Available
12	Set to be used
14	Available
16	Available
18	Available
20	Available
22	Available
24	Available
26	Available
28	Available
36	Available
48	Available
72	Available

← When [English/Western Europe HK Gothic] or [English/Western Europe HK Times] is selected for [Font], the 12-point size is automatically recognized as the font to be used and the data is transferred to the ZM series.

## Display Function Specifications

Characters available for display	Latin 1	Icelandic, Irish, Italian, English, Dutch, Swedish, Spanish, Danish, German, Norwegian, Portuguese, Finnish, Faeroese, French		
Character sizes	8 points	6 × 11 dots		
	12 points	8 × 16 dots		
Displayed characters	Display resolution	320 × 240	640 × 480	800 × 600
	8 points	53 characters × 21 lines	100 characters × 43 lines	100 characters × 54 lines
	12 points	40 characters × 15 lines	80 characters × 30 lines	100 characters × 37 lines



---

## Setting Procedure

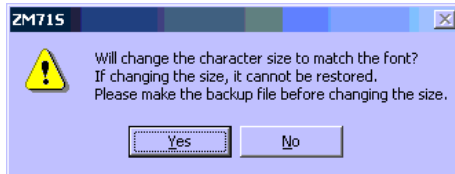
1. Font type setting (page APP1-8 in this chapter)  
Select [English/Western Europe HK Gothic] or [English/Western Europe HK Times] for [Font].
2. Font setting for individual functions in use (page APP1-9 in this chapter)  
Specify the number of points as a character size in property setting when setting a part, mode, or text in drawing.
3. Manual font setting (page APP1-11 in this chapter)  
When automatic font setting is not valid for any function set in step 2, make a manual font setting.
4. Data transfer to the ZM series (page APP1-13 in this chapter)  
Transfer the screen data using the HK font to the ZM series.

## Font Type Setting

In the [Font Setting] dialog selected from the [System Setting] menu, select [English/Western Europe HK Gothic] or [English/Western Europe HK Times] for [Font].



If you attempt to change a [Font] setting from [English/Western Europe] to [English/Western Europe HK Gothic] or [English/Western Europe HK Times], the following alarm message appears.



When [Yes] is clicked, the English/Western Europe font is converted into the HK Gothic or HK Times (whichever is selected) that is in the number of points closest to the X enlargement factor of the English/Western Europe font. If no backup copy of the screen data is saved, click [No] and save a backup copy.

If you attempt to change a [Font] setting from [English Western Europe HK Gothic] or [English/Western Europe HK Times] to [English/Western Europe], an alarm message appears as well. The table below shows the character sizes in relation to font conversion.

[English/Western Europe] → HK Fonts

Points	X enlargement factor
1	12
2	24
3	36
4	48
5	72
6	72
7	72
8	72

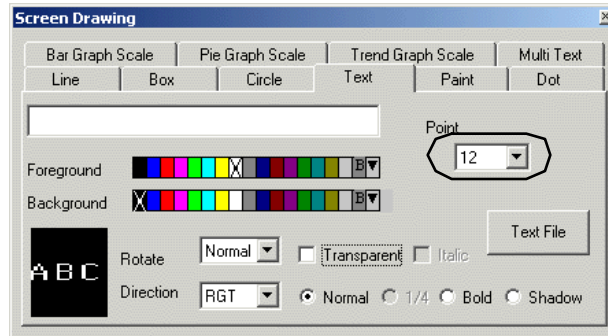
HK Fonts → [English/Western Europe]

Points	X and Y enlargement factors
8	1 × 1
9	1 × 1
10	1 × 1
11	1 × 1
12	1 × 1
14	1 × 1
16	1 × 1
18	1 × 1
20	2 × 2
22	2 × 2
24	2 × 2
26	2 × 2
28	2 × 2
36	3 × 3
48	4 × 4
72	6 × 6

## Font Setting for Individual Functions

With [English/Western Europe HK Gothic] or [English/Western Europe HK Times] selected for [Font], the character property setting made for a function (part or mode) is altered to the setting for the HK font.

Ex.: Text in drawing (created from [Draw] and [Text])



When either HK font is used, specify a character size in points in the dialog. Both X and Y sizes are enlarged/reduced equally according to the specified number of points.



[1/4] and [Italic] options are inactive in the property setting.

For each function (part of mode), the number of character points, and whether automatic or manual font setting is to be made for placed texts, differ as the table on the following page indicates.

### Note:

For automatic font setting and manual font setting mentioned in the table, refer to “Manual Font Setting.”

Function	Automatic font setting	Manual font setting	No. of points
Switch, lamp	Texts on switch and lamp	–	Variable
Numerical data display	Numerical data display	–	Variable
Character display	–	Character display	Variable
Message display	–	Message display	Variable
Relay mode	Message in display area *, messages on switch and lamp	–	Variable in display area, Limited to 12 points on switch and lamp
Relay-sub	Message in display area	–	Variable
Message mode	Message in display area, messages on switch and lamp (Requirements: [Block] is selected for [Action select] and [Internal] for [Command].)	Message in display area, messages on switch and lamp (Requirements: [Block] or [Message] is selected for [Action select] and [External] for [Command].)	Variable in display area, Limited to 12 points on switch and lamp
Data sampling	Numerical data and character displays	–	Limited to 12 points
Bit sampling	Message in display area	–	Limited to 12 points
Relay sampling	(as mentioned for "Relay mode")	–	(as mentioned for "Relay mode")
Alarm display	Message in display area, numerical data display	–	Limited to 12 points
Memory card mode	File number and record number displays in display area	File name and record name displays in display area	Variable
Calendar display	Calendar numerical data and text	–	Variable
Time display	Time display	–	Variable
Table data display	Numerical data display and text in drawing *	Character and message displays	Variable
Text in drawing	Displayed characters	–	Variable
Multi-text	Displayed characters	–	Variable
Data sheet	(None)	(None)	(None)

\* Refer to the notes on the following page.



\* In the case of the matrix type (ZM-72/82)

Spacing of characters is different between the matrix type and the analog type. The matrix type shows characters based on dots at regular intervals. The space between characters varies with the specified number of points.

20-point-size characters in the relay mode

Touch switch: Analog switch

Machine Error  
System Error  
Communication Error  
Emergency Stop  
RUN Mode Stop  
Setting Value Over

Touch switch: Matrix switch

Machine Error  
System Error  
Communication Error  
Emergency Stop

## Manual Font Setting

In the case of the HK fonts, character codes used on screens will be recognized automatically or manually, depending on the used functions (part or mode) (see the table on the previous page).

### Automatic Font Setting

By means of automatic font setting, character codes used on the screen are recognized and only partial sections of the font data including the codes are transferred to the ZM series.

There is no special operation to be performed by the user.

### Manual Font Setting

When text data, for instance, to be displayed on a character display or message display will vary, such text data is not determined on the software. In such a case, select probable items of font data to be used and transfer them to the ZM series. This operation is a manual font setting.

It is necessary to check the number of points specified for the placed text as well as the function (mode or part) in which the text is placed. Whether or not to make manual font settings is determined as a result. (See the table on page APP1-10 in this chapter.)



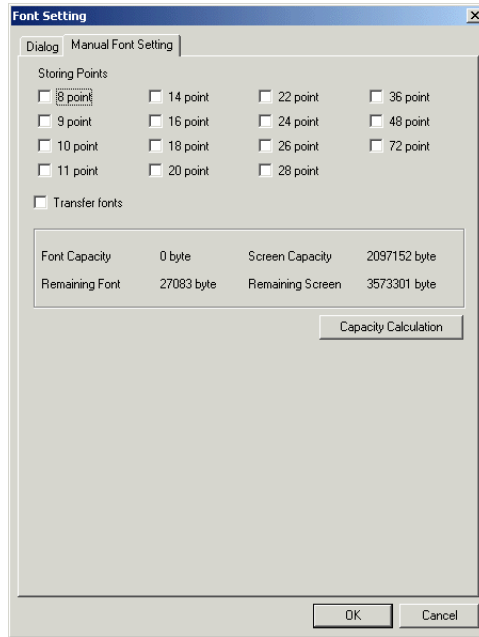
Since the 12-point size data is transferred to the ZM series first, manual font setting is not necessary.



For more information on the 12-point size data, see page APP1-14 in this chapter.

When any function (mode or part) that needs manual font setting is used on the screen, proceed to set the [Font Setting] dialog.

1. Open the [Font Setting] dialog from the [System Setting] menu. Open the [Manual Font Setting] tab window.



As seen from the window, every option is provided with a check box.

Check the boxes of the options used in the screen data. All checked options are transferred as font data.



**[  Transfer Fonts ]**

This option is displayed for the ZM-42 to 82. If your ZM-42 to 82 system program version is earlier than 1.520 and the ZM-42 to 82 data is transferred to a memory card with this box checked, the manual font setting data is also transferred as screen data. When uploading the data from the memory card to the ZM-42 to 82, not all HK font data (HK Gothic and HK Times) is specified as the data to be uploaded even with [Font Data] selected on the ZM-42 to 82 screen. To allow the manual font setting data to be uploaded, select [Screen Data].

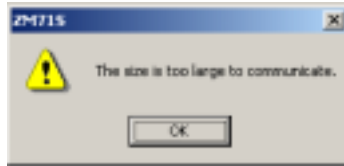
2. Click the [Capacity Calculation] button. The amounts of memory used by the checked options and available memory are indicated.



Memory for manual font setting data is limited to 4 MB for the ZM-300 (or 6 MB if only manual font setting data is stored in a CF card) and to 2 MB for the ZM-42/43/52/62/72/82 even if available memory still remains. Check the value specified for [Remaining Font].



If data transfer to the ZM series is executed while a minus value is specified for [Remaining Font] or [Remaining Screen], the editor software gives the following alarm message.



If the alarm occurs, a size that cannot be displayed normally on the ZM series may be specified in the font data. Check [Remaining Font] or [Remaining Screen] and correct the data as necessary.

3. When the tab window setting is concluded, click [OK].

## Data Transfer to the ZM Series

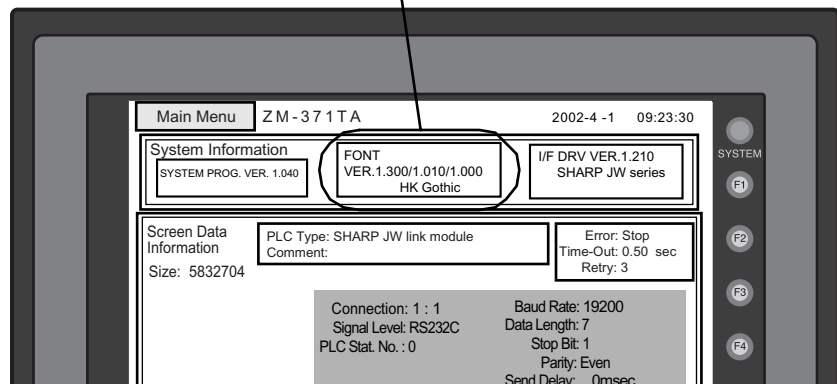


When a ZM-42/43/52/62/72/82 is used, transfer the ZM-42/43/52/62/72/82 system program to the ZM-42/43/52/62/72/82 to update the program before transferring screen data.

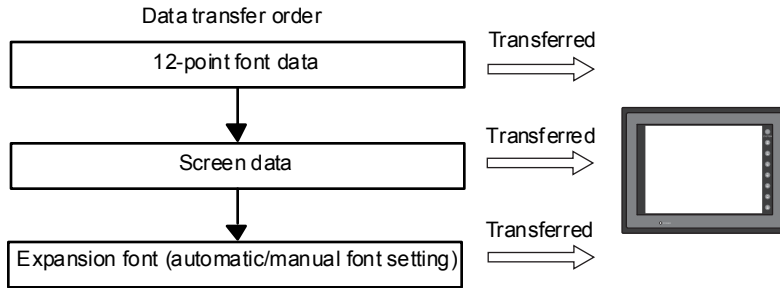
Transfer screen data including the HK font data to the ZM series.

In the [Transfer] dialog, select [Screen Data] and click the [PC ->] button. The screen data and the font data are transferred to the ZM series.

This section changes.



When screen data is transferred, the 12-point font data is always transferred to the ZM series first.



**Notes on Font Data to be Transferred**

---

If changes are made to the [Manual Font Setting] tab window during online editing, the correct font data according to the changes will not be transferred. Stop online editing and perform data transfer.

**Error for the ZM series**

- Item No.  
22 : Expansion font
- Error No. (as per the following)

Error No.	Contents	Remedies
204	The font data specified by manual font setting in the screen data does not exist in the ZM series. Texts specified by automatic font setting are displayed normally. However, in the case of font data that does not exist on the ZM series, texts are displayed in the 12-point size temporarily.	Transfer the screen data again.



# Appendix2 3D Parts

3D Parts.....	APP2-1
With ZM-300 Series .....	APP2-1
With the Model ZM-352D.....	APP2-15
With ZM-42 to 82 Series.....	APP2-21
Customizing.....	APP2-23



# 3D Parts

3D parts provided from Sharp Corporation will aid in more realistic display of parts on the screen. This chapter explains the 3D parts setting procedure on the screen and the notes on usage. The explanation slightly varies with the edit model (ZM-300 or ZM-42 to 82 series). Check the model in use and the corresponding explanation. For the functions of parts, see the ZM-71SE Instruction Manual (Function).

## With ZM-300 Series

This section provides notes on 3D parts usage and the setting procedure for the ZM-300 series<sup>\*1</sup>. Read the following thoroughly in advance.

\*1 For the model ZM-352D, see page APP2-15 in this chapter.

### Notes on Usage

#### Parts File

Sharp Corporation provides ten 3D parts files for the ZM-300 series. Depending on the components selected at the time of installation, the installed parts files vary.

- Installed as standard (only  Program Files] is checked)
  - 3DStd.z3p: Switches, lamps (2 patterns), other parts
  - 3Dfront.z3p: Switches, lamps (2 and 3 patterns), ZM-42 to 82 compatible
  - 3Dside.z3p: Switches, lamps (2 and 3 patterns), ZM-42 to 82 compatible
- Installed as options ( 3D Parts] is checked)
  - 3Dnow\_p2.z3p: Switches, lamps (2 patterns), other parts
  - 3Dnow\_p3.z3p: Switches, lamps (3 patterns)
  - 3Dnow\_p4.z3p: Switches, lamps (4 patterns)
  - 3Dnow\_p5.z3p: Switches, lamps (5 patterns)
  - 3Dnow\_p6.z3p: Switches, lamps (6 patterns)
  - 3Dnow\_p7.z3p: Switches, lamps (7 patterns)
  - 3Dnow\_p8.z3p: Switches, lamps (8 patterns)

During software installation, the selected files are stored in the [~\ZM71SE\Parts] folder.



Do not move the [Parts] folder, [Parts3D] folder, and bitmap files in folders to different storage places. Do not change their names.

## Memory Capacity

3D parts need more memory than memory for ordinary parts. Check the current status of memory use by selecting [Memory Use] from the [Tool] menu.



If a message "The size is too large to communicate." is given during data transfer, memory expansion by installing an optional memory cassette ZM-300EM is recommended.

## Limitation on Parts Placement

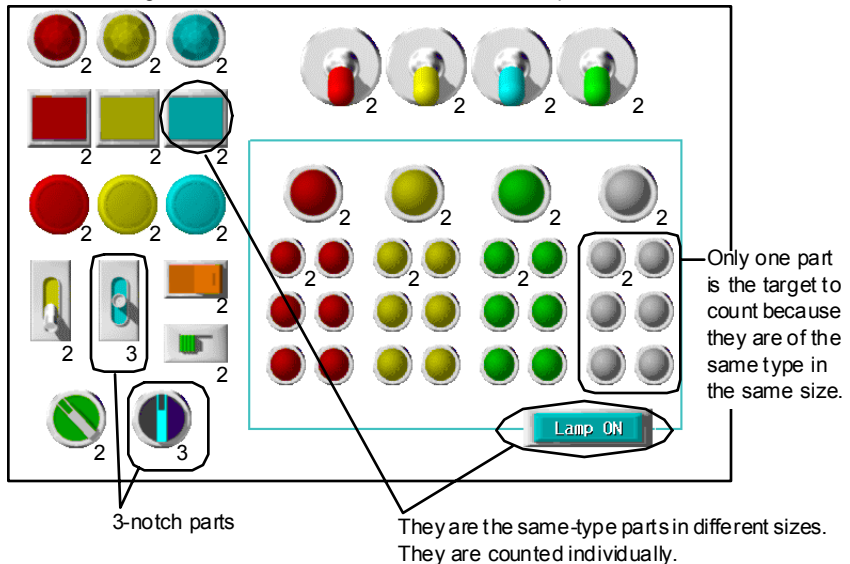
A maximum of 1,023 patterns of 3D parts can be used in one screen data file.

- Pattern count

- When one part or multiple parts of the same type in the same size are placed:  
Switch/lamp ..... Count the notch number of one part.  
Parts other than switch and lamp ... Count one pattern.
- When parts of the same type in different sizes are placed:  
Switch/lamp ..... Count the notch number of each part.  
Parts other than switch/lamp ..... Count one pattern for each part.

Ex: The switch and lamp parts on the following screen use 58 patterns.  
 $2 \text{ (-notch)} \times 26 \text{ (pieces)} + 3 \text{ (-notch)} \times 2 \text{ (pieces)} = 58$

Each bottom right value indicates the notch number of the part.



## Setting Procedure

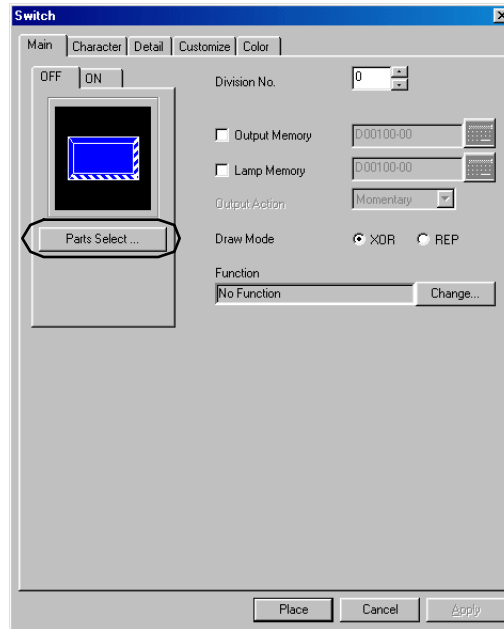
### Switch and Lamp

This section explains the 3D switch parts setting procedure. Also follow the same procedure when placing lamps.

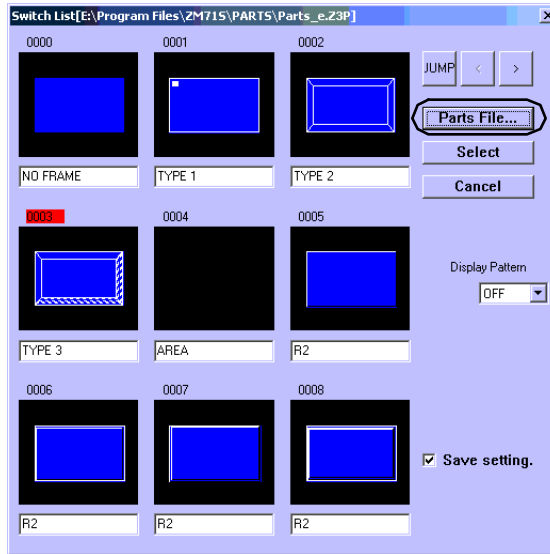


The procedure varies for ZM-42/43/52/62/82-compatible 3D parts (3Dfront.z3p/3Dside.z3p). Refer to page APP2-10 in this chapter.

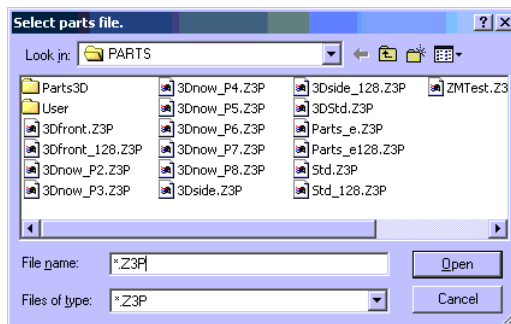
1. Click the [Switch] icon.
2. The [Switch] dialog is displayed. Click the [Parts Select] button.



- The [Switch List] window is displayed. When the desired 3D parts file is already displayed, go to step 5. Click the [Parts File] button.

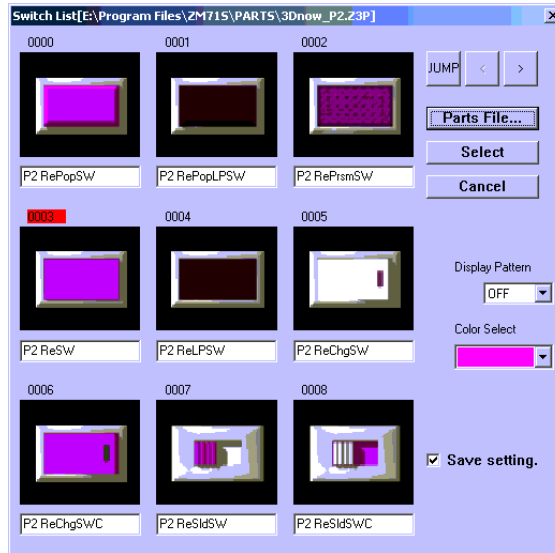


- The [Select Parts File] dialog is displayed. Select a parts file [3DStd.z3p] or [3Dnow\_p□.z3p] according to the number of the switch patterns.



Ex: When the file [3Dnow\_p4.z3p] is selected, a 4-pattern switch can be selected.

## 5. 3D parts are displayed in the [Switch List] window.



## [JUMP] [&lt;] [&gt;]

These buttons scroll up/down the parts list.

## [Parts File]

Click this button when selecting another parts file.

## [Select]

Click this button to select a switch part.

## [Display Pattern]

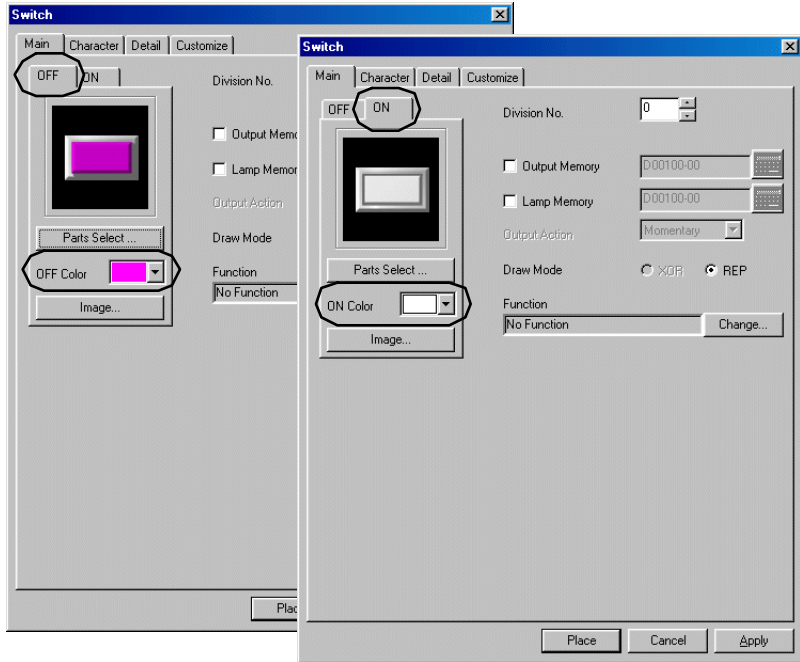
This option is used to check the displays of the OFF, ON, and P3 to P8 patterns.

## [Color Select]

This option is used to select a color from eight.

Select the desired part and color, and click [Select].

6. The selected part is previewed in the [Switch] dialog.



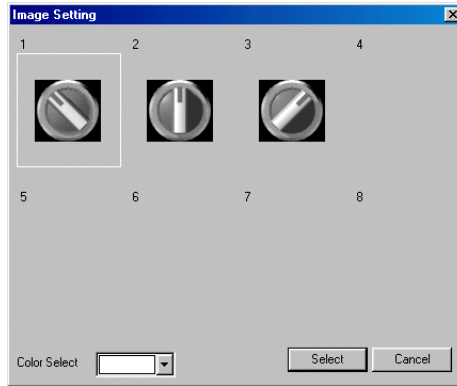
[OFF/ON/P3/P4/P5/P6/P7/P8] [OFF/ON/P3/P4/P5/P6/P7/P8 Color]  
Clicking each tab shows the preview of the corresponding pattern. Color change (8 colors) is possible while the preview is displayed.



[Image]

A part selected from the parts list has different ON, OFF, and P3 to P8 patterns (as per "Image setting": "No" below). When making the ON and OFF patterns the same or interchanging the ON and OFF patterns (as per "Image setting": "Yes" below), use this button.

- 1) When changing a pattern, show the preview of the desired part and click the [Image] button. The [Image Setting] dialog is displayed.



- 2) Select a pattern. A setting example is provided below. Colors are changeable.

Image setting	No	Yes
OFF		
ON		

Image setting	No	Yes
OFF		
ON		
P3		

The above step completes a part selection.



For other settings such as memory, see the ZM-71SE Instruction Manual (Function).

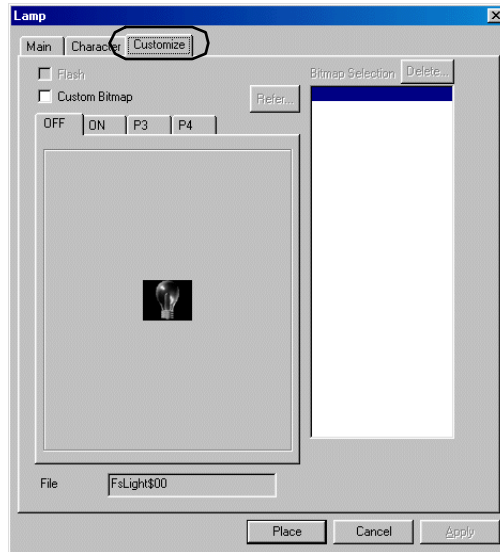
## Flash Function

When 3D parts in the file [3DStd.z3p] or [3Dnow\_p□.z3p] are used, the OFF pattern and a pattern of ON and P3 to P8 can be displayed alternately like they are flashing. The following explains the lamp flashing setting procedure. Also follow the same procedure in the case of switches.

## Setting Procedure

---

1. Open the [Lamp] dialog. Open the [Customize] tab window. The [OFF] pattern is previewed.

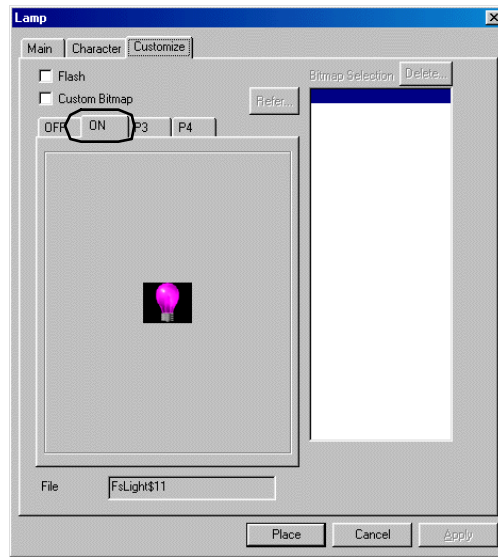


**Note:**

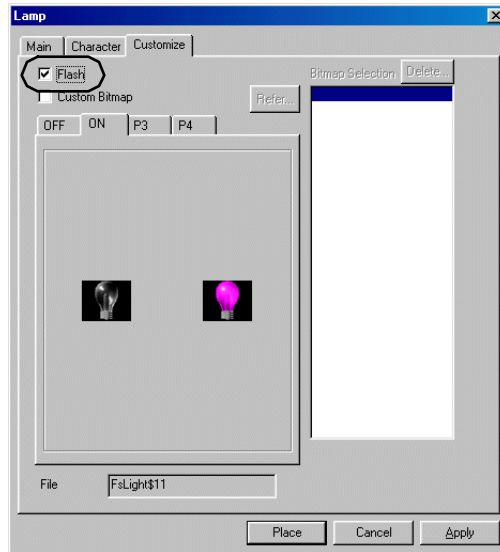
For [□ Custom Bitmap], see page APP2-23 in this chapter.

2. Select the tab of a pattern for flashing. The pattern is previewed.

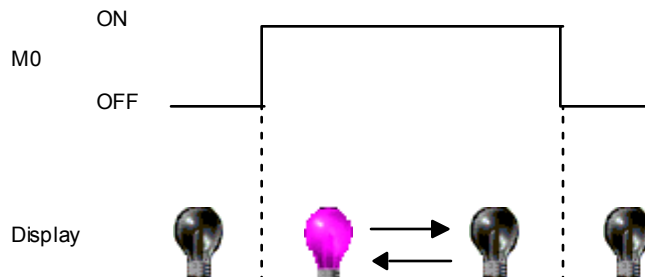
Ex: [ON] pattern selected for flashing display



3. Check [ Flash].



Ex: When lamp memory M0 is specified for the above setting:





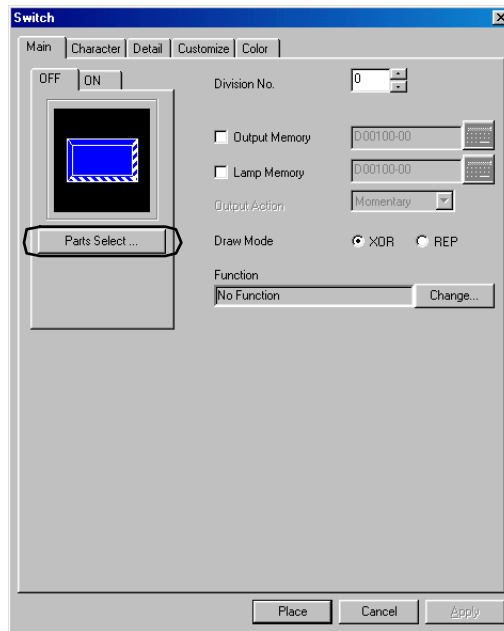
A flashing time interval corresponds to the [Blink/Flash] tab window settings in the [Unit Setting] dialog selected from the [System Setting] menu.

### Switch/Lamp (ZM-42 to 82 Compatible)

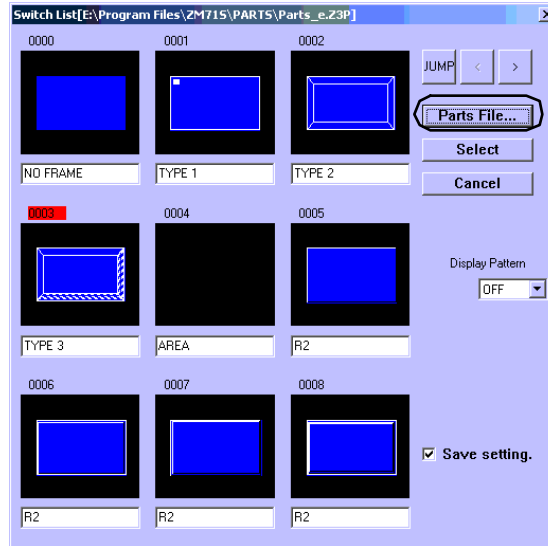
---

This section explains the procedure for setting ZM-42 to 82-compatible 3D switch parts. Also follow the same procedure when placing lamps.

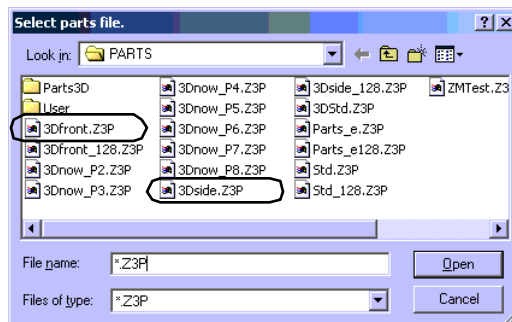
1. Click the [Switch] icon.
2. The [Switch] dialog is displayed. Click the [Parts Select] button.



3. The [Switch List] window is displayed. When the desired 3D parts file is already displayed, go to step 5. Click the [Parts File] button.



4. The [Select Parts File] dialog is displayed. Select a parts file [3Dfront.z3p] or [3Dside.z3p].



5. 3D parts are displayed in the [Switch List] window.



[JUMP] [<] [>]

These buttons scroll up/down the parts list.

[Parts File]

Click this button when selecting another parts file.

[Select]

Click this button to select a switch part.

[Display Pattern]

This setting is active only when a switch or lamp part is selected. The displays of the OFF, ON, and P3 to P8 patterns can be shown.

Select the desired switch part and click [Select]. The selected part is previewed in the [Switch] dialog.

The above step completes a part selection.

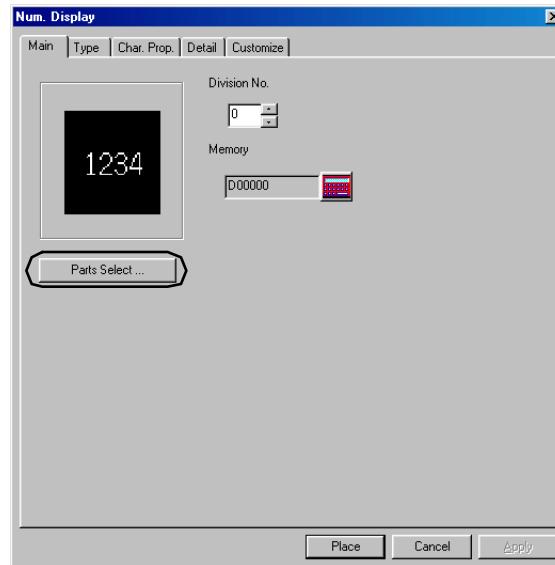


For other settings such as memory, see the ZM-715E Instruction Manual (Function).

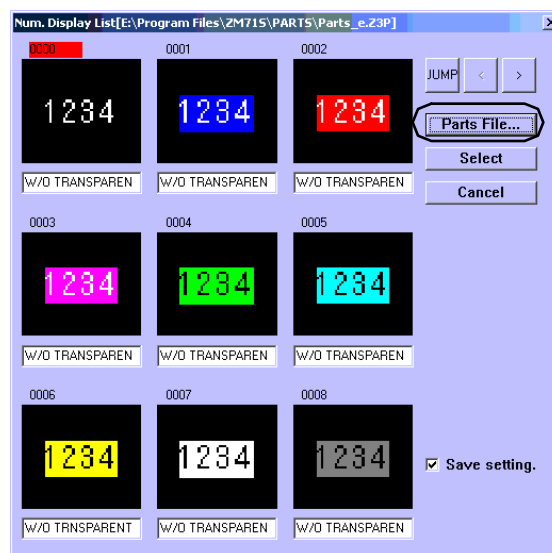
## Numerical Data Display, Character Display, Message Display, Bar Graph, Pie Graph, Panel Meter, Statistic Graph, Closed Area Graph, and Calendar Parts

This section explains the procedure for setting 3D numerical data display parts. Also follow the same procedure when placing the other parts.

1. Click the [Num. Data Display] icon.

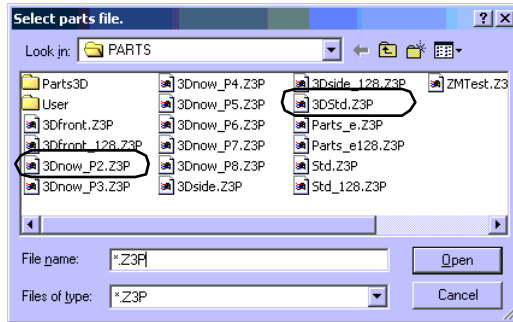


2. The [Num. Display] dialog is displayed. Click the [Parts Select] button.
3. The [Num. Display List] window is displayed. When the desired 3D parts file is already displayed, go to step 5.



- Click the [Parts File] button.

- The [Select parts file.] dialog is displayed. Select a parts file [3DStd.z3p] or [3Dnow\_p2.z3p].



Make sure to select either [3DStd.z3p] or [3Dnow\_p2.z3p] parts file. Any files other than these two show only 3D switch/lamp parts.

- 3D parts are displayed in the [Num. Display List] window.



[JUMP] [<] [>]

These buttons scroll up/down the parts list.

[Parts File]

Click this button when selecting another part file.

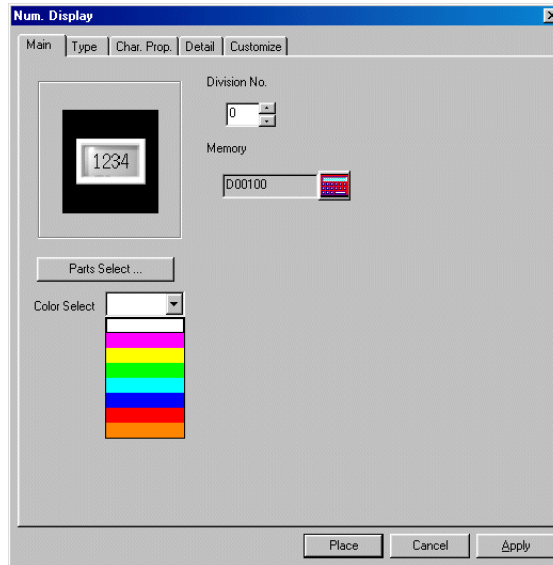
[Select]

Click this button to select a switch part.



**[Color Select]**

This option is used to select a color from eight.



Select the desired part and color. Click the [Select] button.

- The selected part is previewed in the [Num. Display] dialog. The [Color Select] option is valid to change the color.

The above step completes a part selection.



For other settings such as memory, see the ZM-71SE Instruction Manual (Function).

## With the Model ZM-352D

This section provides notes on 3D parts usage and the setting procedure for the ZM-352D. Read the following thoroughly in advance.

### Notes on Usage

#### Parts File

Sharp Corporation provides two 3D parts files for the ZM-352D. During installation of the ZM-71SE software, the files are stored in the [Parts] folder included in the [Zm71S] folder.

- 3Dfront\_128.z3p: (Switches, lamps)
- 3Dside\_128.z3p: (Switches, lamps)



Do not move the [Parts] folder and bitmap files in the folder to different storage places. Do not change their names.

## Memory Capacity

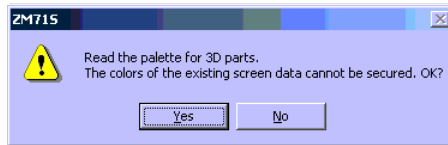
3D parts need more memory than memory for ordinary parts. Check the current status of memory use by selecting [Memory Use] from the [Tool] menu.



If a message “The size is too large to communicate.” is given during data transfer, memory expansion by installing an optional memory cassette ZM-300EM is recommended.

## Color Pallet

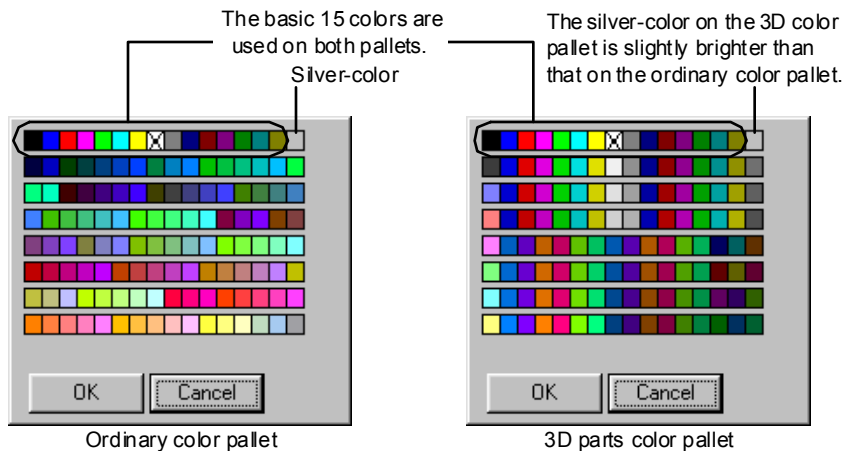
Use the color pallet for 3D parts instead of the ordinary color pallet when setting the colors of 3D parts. Open the [Environment Setting] tab window in the [Unit Setting] dialog selected from the [System Setting] menu. Check [Use 3D Parts]. The message below appears.



Click [Yes] to start reading of the 3D parts pallet file. Then the colors used in the already created screen data are changed to 3D parts colors while the basic 15 colors remain the same.



Both ordinary color pallet and 3D parts color pallet cannot be used in one file. The pallet to be used is selected by checking/unchecking  Use 3D Parts]. See this option setting to check which pallet is selected.



## Limitation on Parts Placement

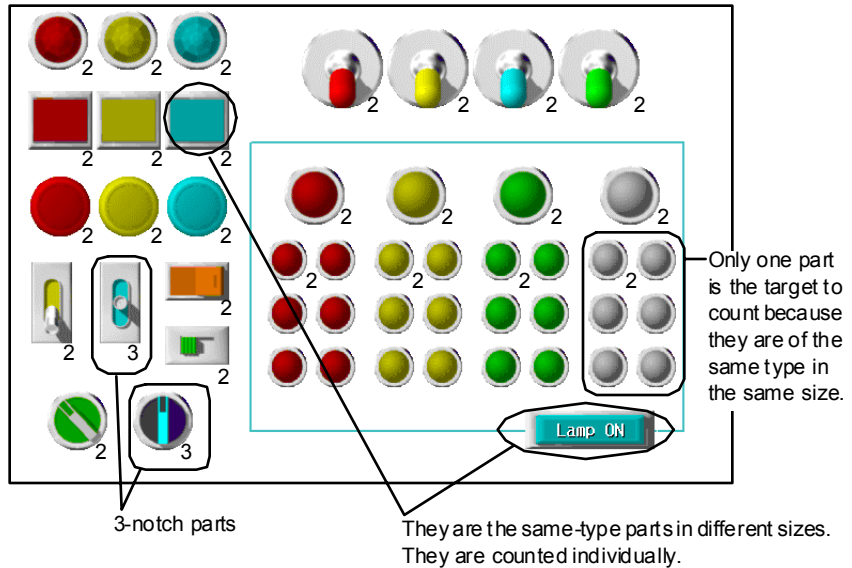
A maximum of 1,023 patterns of 3D parts can be used in one screen data file.

- Pattern Count

- When one part or multiple parts of the same type in the same size are placed:  
Count the notch number of one part.
- When parts of the same type in different sizes are placed:  
Count the notch number of each part.

Ex: The switch and lamp parts on the following screen use 58 patterns.  
 $2 \text{ (-notch)} \times 26 \text{ (pieces)} + 3 \text{ (-notch)} \times 2 \text{ (pieces)} = 58$

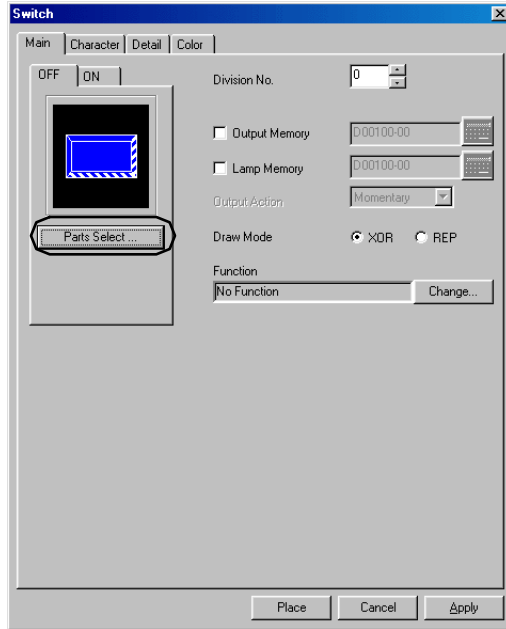
Each bottom right value indicates the notch number of the part.



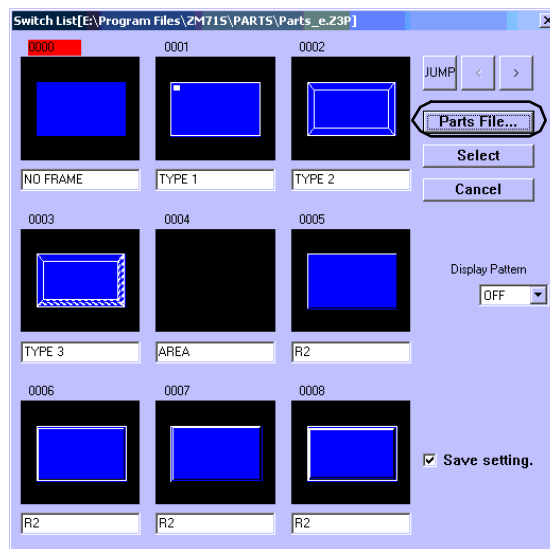
## Setting Procedure

This section explains the 3D switch parts setting procedure. Also follow the same procedure when placing lamps.

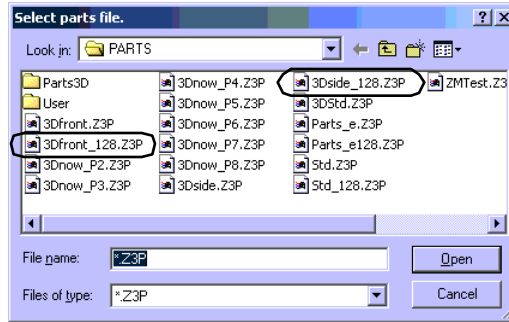
1. Click the [Switch] icon.
2. The [Switch] dialog is displayed. Click the [Parts Select] button.



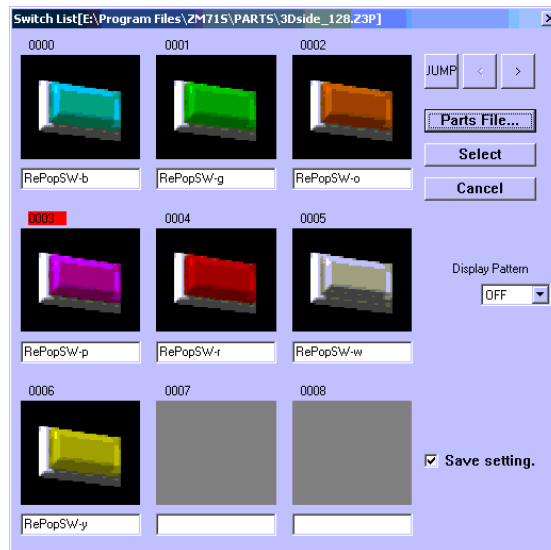
3. The [Switch List] window is displayed. When the desired 3D parts file is already displayed, go to step 5. Click the [Parts File] button.



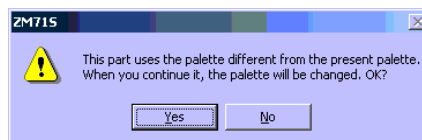
4. The [Select Parts File] dialog is displayed. Select a 3D parts file [3Dfront\_128.z3p] or [3Dside\_128.z3p].



5. 3D parts are displayed in the [Switch List] window.



6. The following message appears. Click [Yes]. The 3D parts color pallet becomes available (page APP2-15 in this chapter).



[JUMP] [<] [>]

These buttons scroll up/down the parts list.

[Parts File]

Click this button when selecting another parts file.

[Select]

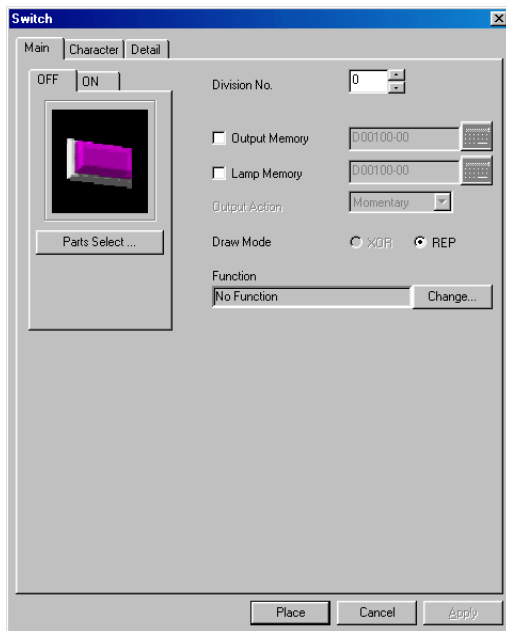
Click this button to select a switch part.

[Display Pattern]

This setting is active only when a switch or lamp part is selected. The displays of the OFF, ON, and P3 to P8 patterns can be shown.

Select the desired switch part and click [Select].

- 7. The selected part is previewed in the [Switch] dialog.



The above step completes a part selection.



For other settings such as memory, see the ZM-71SE Instruction Manual (Function).

## With ZM-42 to 82 Series

The notes on 3D parts usage and the setting procedure for the ZM-42 to 82 series are almost the same as for the ZM-352D. This section, therefore, provides the notes associated with the ZM-42 to 82 series only. Read the section for ZM-352D as well.

### Notes on Usage

#### Applicable ZM-42 to 82 Series

Using 3D parts may result in exhaustion of memory. In terms of available memory, the following versions are recommended. (For the hardware version of the ZM-42 to 82 series, see "LOT NO." on the sticker put on the back of the ZM-42 to 82 series.)

Recommended hardware versions

Analog type	
Model	Version
ZM-82T*	F or later
ZM-82DC	E or later
ZM-72TS*	F or later
ZM-72T*	G or later
ZM-72D	F or later
ZM-52D	D or later
ZM-52HD	All versions

Matrix type	
Model	Version
ZM-82TCM	Other than D
ZM-72TCM	(All versions)
ZM-72DM	Other than D



If the used ZM-42 to 82 is not in recommended versions (ZM-52/72/82), open the [Memory Expansion] tab window in the [Unit Setting] dialog selected from the [System Setting] menu and uncheck [ Memory Capacity +2M]. Without this setting, the memory use list ([Memory use] from the [Tool] menu) will not indicate correct values.

If using 3D parts with the ZM series in any version other than recommended, it is recommended that Sharp Corporation' optional memory cassette ZM-4EM or ZM-43EM (not available with ZM-42D/42L and ZM-62E) be installed for memory expansion. With either memory cassette (ZM-4\*EM) installed, open the [Memory Expansion] tab window in the [Unit Setting] dialog from the [System Setting] menu and select [4M (Memory Extension 1)].

#### Memory Capacity

3D parts need more memory than memory for ordinary parts. Check the current status of memory use by selecting [Memory Use] from the [Tool] menu.



If a message "The size is too large to communicate" is given during data transfer even though there is available memory, check the hardware version of the ZM series.

## Parts File

---

Sharp Corporation provides the following two 3D parts files for the ZM-42 to 82 series. During installation of the ZM-71SE software, the files are stored in the [Parts] folder included in the [ZM71SE] folder.

- 3Dfront.z7p: Switches, lamps (2 and 3 patterns)
- 3Dside.z7p: Switches, lamps (2 and 3 patterns)



Do not move the [Parts] folder and bitmap files in the folder to different storage places. Do not change their names.



# Customizing

When a part being edited for creating a ZM-300 screen has the [Customize] tab in the part setting dialog, a user-created bitmap is available for the part.

## Types of Parts

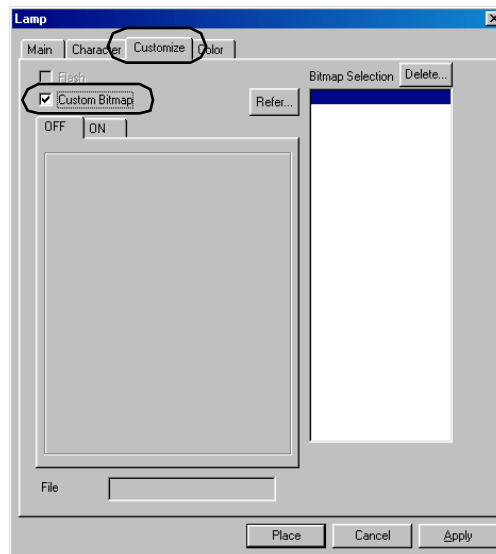
The parts below are provided with the [Customize] tabs in their respective dialogs.

- Switch
- Lamp
- Numerical data display
- Character display
- Message display
- Bar graph
- Pie graph
- Panel meter
- Statistic graph
- Closed area graph
- Calendar

## Setting Procedure

A lamp is used as an example for the following customizing procedure. Also follow the same procedure in the case of the other parts.

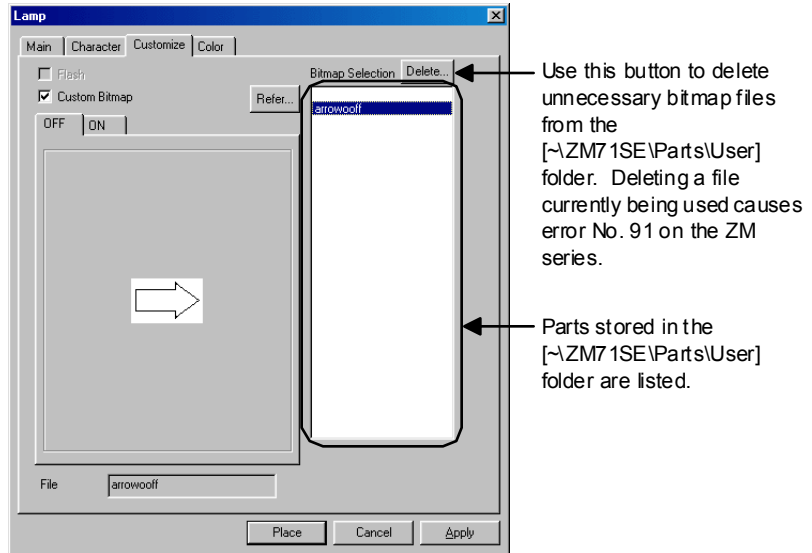
1. Open the [Lamp] dialog. Open the [Customize] tab window.
2. Click [ Custom Bitmap].



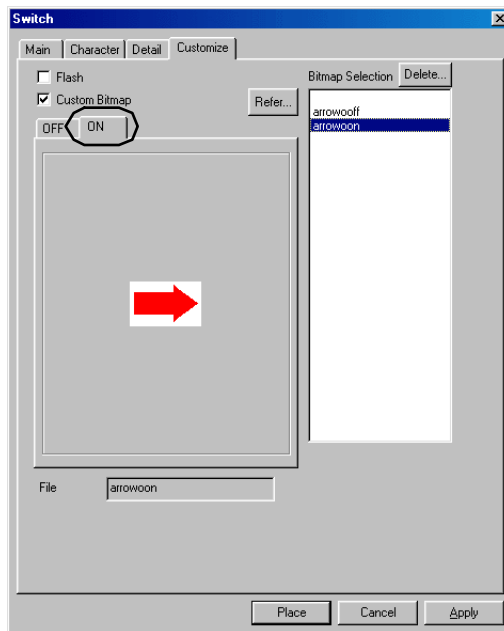
Checking [ Custom Bitmap] deletes the 3D parts setting.

3. Select a bitmap file from [Bitmap Selection].

If the [Bitmap Selection] column does not include the desired bitmap file, click the [Refer] button and select the desired one. The bitmap file is copied to the [-\ZM71SE\Parts\User] folder and displayed under [Bitmap Selection].



4. The selected bitmap and its file name are displayed. The file is opened. In the case of a lamp part, as many tabs as the notch number of the part are provided; therefore, a bitmap can be selected individually. Perform step 3 in each tab window.



For information on [ Flash], refer to "Flash Function" (page APP2-8 in this chapter).

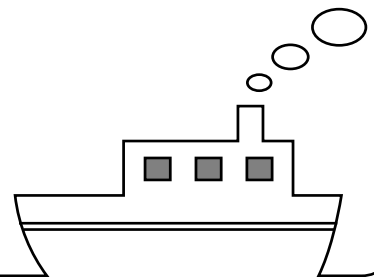
---

## Notes on Usage

- If the [~\ZM71SE\Parts\User] folder in the computer you are going to operate for screen editing does not store a bitmap used in the screen data, the bitmap file is automatically created at the time of opening the screen data and is registered in the folder. If another bitmap file having the same name already exists, the above-mentioned automatic file creation is not executed. Use the [Refer] button in the [Customize] tab window and execute reading of the bitmap file again. A bitmap file registered by automatic creation is not completely identical to the original file.
- Switches and lamps are drawn in the REP mode.
- Transparent color  
The ZM series recognizes areas on a screen colored black (code 0000) as transparent. When there is an area that should not be depicted on the screen, color it black. To depict black areas instead of transparent areas, draw them using a color code similar to black.

# MEMO

Please use this page freely.



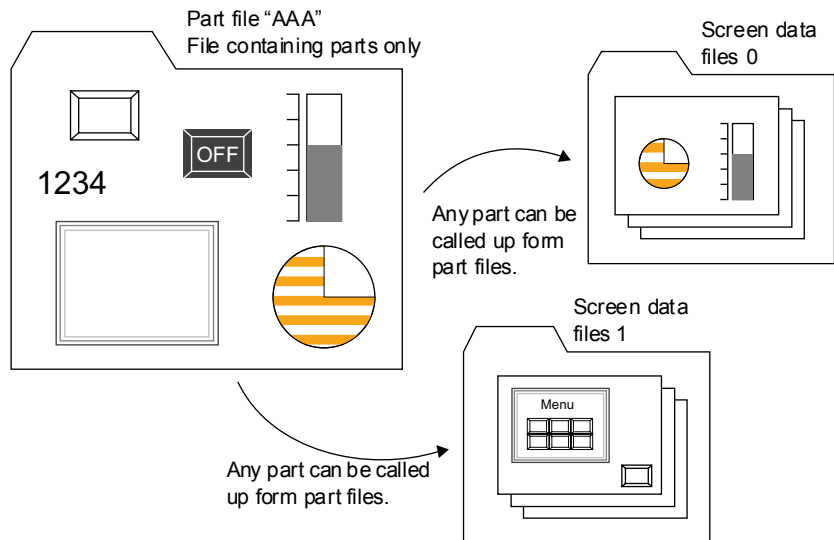
# Appendix 3 **Part Editing**

Outline .....	APP3-1
Components of Parts .....	APP3-2
Modifying Parts (In Screen Data Files) .....	APP3-3
Parts Modifying Procedure .....	APP3-3
Creation and Storage of Part Files.....	APP3-4
Creating Part Files.....	APP3-4
Saving and Closing Part Files.....	APP3-6
Editing Procedures for Each Part.....	APP3-7
Editing Overlap Parts .....	APP3-7
Editing Switch/Lamp Parts .....	APP3-9
Editing Data Display Parts .....	APP3-14
Editing a Keypad.....	APP3-15
Editing Graph Parts .....	APP3-17
Editing Display Area Parts for Data Sampling .....	APP3-29
Editing Calendar Parts.....	APP3-31
Editing Display Area Parts .....	APP3-33
Printing the Part (Part File).....	APP3-34
Printing Procedure .....	APP3-34
Part File Management .....	APP3-36
Part File Managing Procedure .....	APP3-36
Part Editing Menu .....	APP3-38
In a Part Edit Window .....	APP3-38
In a [Modify Part] Window .....	APP3-42

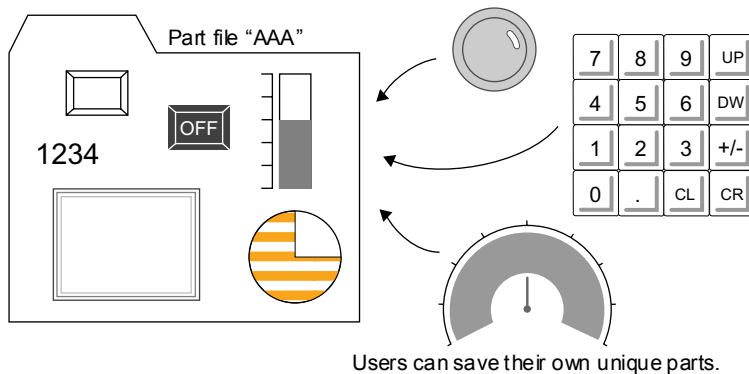


# Outline

All items making up screens, such as switches, lamps, numerical data, and overlaps, are called “parts” and are saved in “part files.” The “part file” is an independent file and is separate from screen data files. Any part can be copied from part files to screen data files at any time. The same part can be placed in different screen data files.



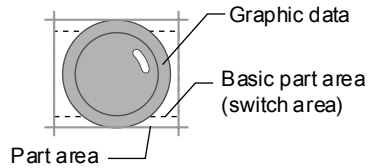
Users can create and save their own parts together with the standard parts originally saved in part files. With this feature, the user can easily create a screen by using parts of their own design, such as switches and graphs.



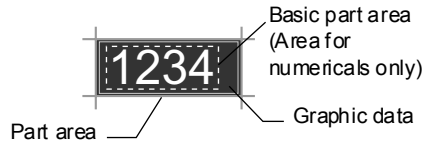
# Components of Parts

Parts saved in a part file may be different in shape but have common components. A part is basically composed of three different elements: a “basic part area,” “part area,” and “graphic data.” The “basic part area” is the area which possesses the part’s function. The “part area” is the area covering the whole part, which is equivalent to the part’s size.

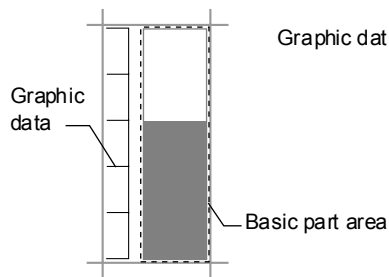
- Switch part



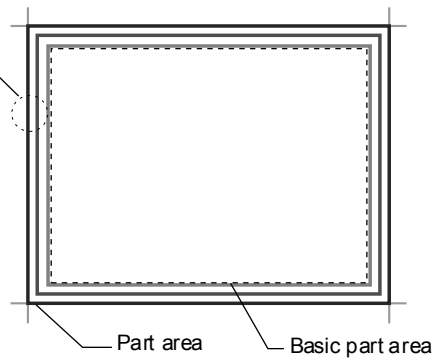
- Num. data display part



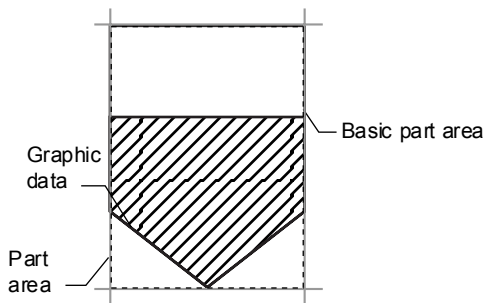
- Bar graph part



- Closed area graph part



- Display area part





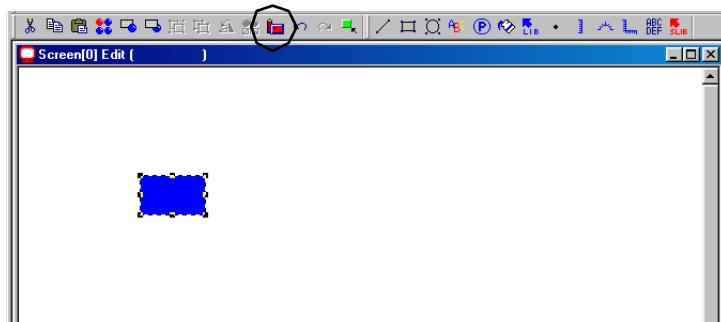


## Modifying Parts (In Screen Data Files)

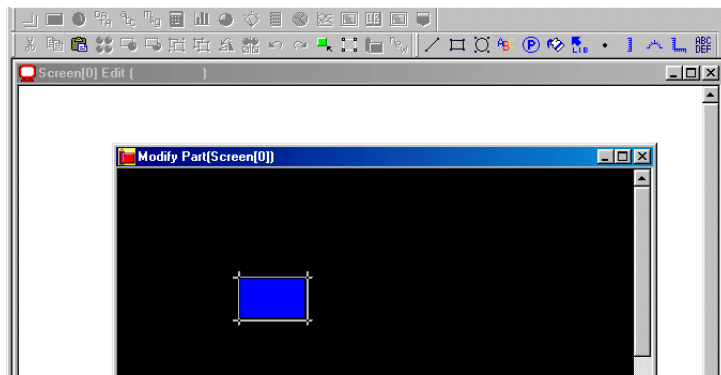
This section describes the procedure for modifying parts. It is possible to slightly modify parts in screen editing, keeping the original parts stored in the part file unchanged.

### Parts Modifying Procedure

Click a part placed on the screen. Handles are shown around it. Click the [Change the Setting of a Part Placed] icon in the tool bar.



The [Modify Part] window is displayed. Modify the part. Adjust the frame to fit the modified part if necessary. The part modifying procedure is almost the same as the part editing procedure. For more information, see “[Modify Part] window” (page APP3-8) in “Editing Procedures for Each Part” described in this chapter.



After the part has been modified, close the [Modify Part] window. The former screen edit window is displayed. The modified part is shown on the screen.



How to save a part in a part file after modifying it in screen editing:

- Copy the desired part.
- Open a part file, and bring up the edit window of the copied part.
- Paste the copied part to the target window for registration.
- Click [Save] or [Save As] to save the part.

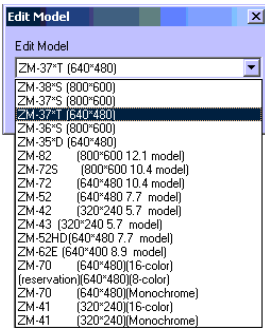
Registration has been completed.

# Creation and Storage of Part Files

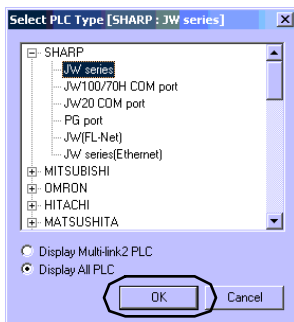
## Creating Part Files

### Creating a New File

1. Select [Parts Edit] from the [File] menu, and click [New].
2. The [Edit Model] dialog is displayed. Choose the correct model and click [OK].

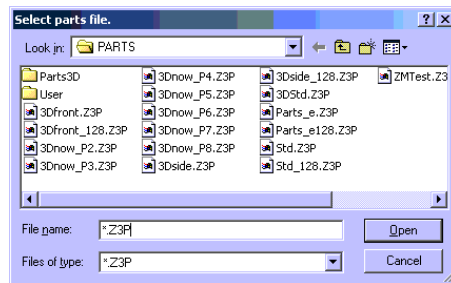


3. The [Select PLC Type] dialog is displayed. Choose the PLC model to be used for the screen data file for the part file you are going to create. Click [OK].



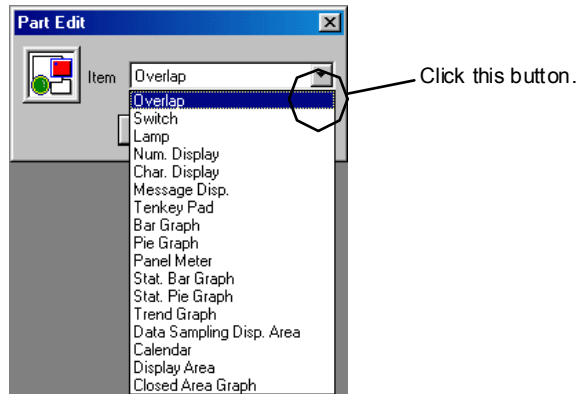
### Opening an Existing File

1. Select [Parts Edit] from the [File] menu, and click [Open].
2. The [Select parts file.] dialog is displayed.

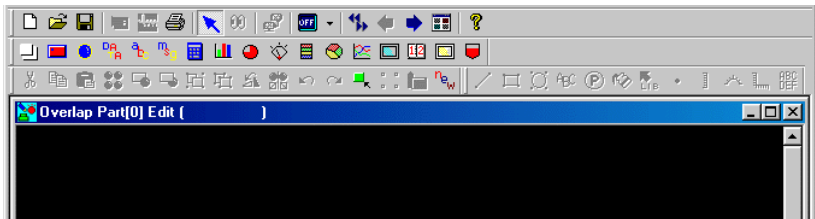


When opening a ZM-300 part file, specify “\*.z3P” for [Files of type]; when opening a ZM-42 to 82 part file, specify “\*.z7P.” Select the desired part file, and click [Open].

4. The [Part Edit] dialog is displayed. Choose the part to be edited and click [OK].



5. The [Part [0] Edit] window for the selected part is displayed.



6. When an existing file is opened, click the [Screen List] icon. Double-click the target box for registration. The corresponding [Part Edit] window is displayed.
7. To change a part for modification in the [Part Edit] window, click the desired part icon. The [Part Edit] dialog is displayed.



Specify the desired number and click [OK]. The corresponding [Part Edit] window is displayed.

8. Create a part. (See “ Editing Procedures for Each Part” (page APP3-7).)

- Outline

[Part Edit] window

↓ [New Part] icon

↓ [Change the Setting of a Part Placed] icon

[Modify Part] window

↓ Modify a part. Icons, edit menu options, or right-clicking menu options for the selected part are displayed.

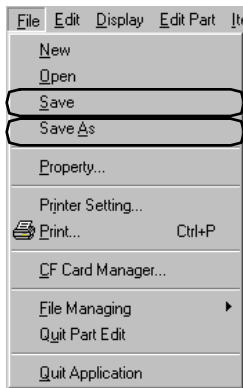
[Part Edit] window



The base color of the [Part Edit] window can be changed so that the image of the part can be obtained when it is placed on the screen. Select [Display Environment] from the [Display] menu. The [Display Environment] dialog is displayed. Open the [Menu Dsp.] tab window. Choose the desired color for [Background]. (See page APP3-39.)

## Saving and Closing Part Files

---



1. For a new part file, select [Save] or [Save As] from the [File] menu. Give the file a name.
2. When overwriting an existing file, select [Save] from the [File] menu.
3. Select [Quit Part Edit] from the [File] menu. This step completes part editing. By selecting [Quit Application] in the [File] menu, the ZM-71SE editor is terminated.

# Editing Procedures for Each Part

## Editing Overlap Parts

In overlap parts, the “basic part areas” equal the “part areas” in size.

### Editing Procedure

Procedure to edit and register a new part is explained below:

#### [Overlap Part Edit] window

1. Check that the edit window indicating the selected registration number is opened.

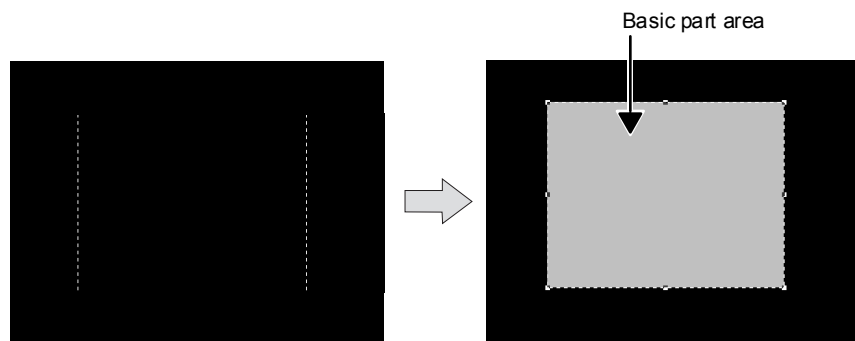


2. Click the [New Part] icon. A dotted box and a mover tool appear.



[New Part] icon

3. Click the mover tool in the desired position. A new overlap part is placed in the window.



4. Double-click the overlap part. The [Overlap (Normal)] dialog is displayed. Set the dialog as desired.



The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

5. Select the overlap part. Click the [Change the Setting of a Part Placed] icon.

### [Modify Part] window

6. The [Modify Part] window for the overlap part is opened. Edit the part or change its size.



[Change the Setting of a Part Placed] icon



- Frame adjustment cannot be used for overlap parts because they have no frames.
- No graphic outside the basic part area is active. Draw graphics within the area.
- A basic part area color can be specified in the [Overlap] dialog.

7. After editing the part, close the [Modify Part] window.

### [Overlap Part Edit] window

8. The former [Overlap Part Edit] window is displayed. The modified overlap appears in the window.

## Editing Switch/Lamp Parts

Editing procedures for switches and lamps are almost the same. Unlike other parts, different displays for ON and OFF (/P3/P4/P5/P6/P7/P8) should be created.

### Notches

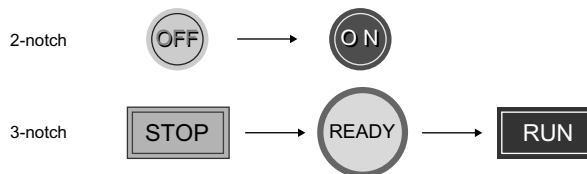
A maximum of seven types of the switch or lamp part are available, such as two different displays for ON and OFF, three different displays (ON, OFF and another), etc. The relation between patterns and notches is shown below.

Notches	Patterns
2-notch	OFF + ON = 2 patterns
3-notch	OFF + ON + another type = 3 patterns
4-notch	OFF + ON + other 2 types = 4 patterns
5-notch	OFF + ON + other 3 types = 5 patterns
6-notch	OFF + ON + other 4 types = 6 patterns
7-notch	OFF + ON + other 5 types = 7 patterns
8-notch	OFF + ON + other 6 types = 8 patterns



Determine the number of notches when placing a new part. Note that once the number of notches has been chosen, it cannot be changed later.

For a 2-notch switch or lamp part, two different displays for ON and for OFF should be created. For a 3-notch part, three different displays are required. Likewise, register as many graphics as required for the notches (2, 3, 4, 5, 6, 7 or 8) of the switch or lamp part.



### Editing Procedure (Ex.: 2-notch switch part)

Procedure to edit and register a new part is explained below:

#### [Switch Part Edit] window

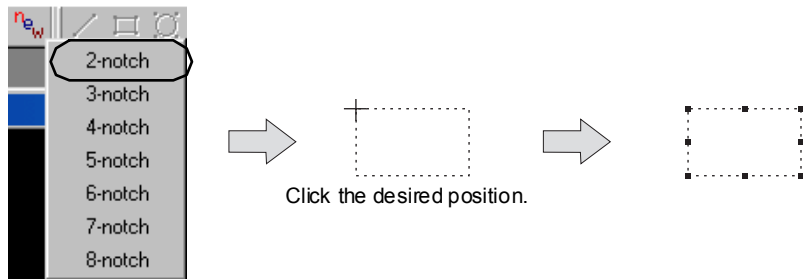
1. Check that the edit window indicating the selected registration number is opened.



- Click the [New Part] icon. [2-notch] to [8-notch] can be chosen.



- Click [2-notch]. A dotted box and a mover tool appear.
- Click the mover tool in the desired position. A new switch part is placed in the window.



- Double-click the placed part. The [Switch] dialog is displayed. Set the dialog as desired.



The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

- Create the OFF display of the switch. Check that the [OFF] icon is depressed. If not, click the icon.



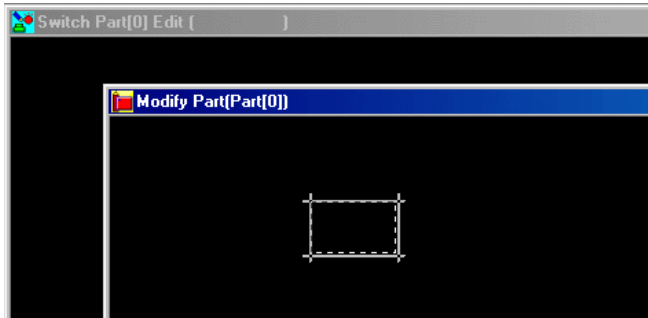


7. Select the switch part. Click the [Change the Setting of a Part Placed] icon.



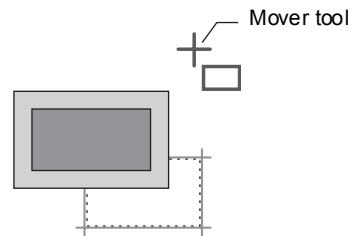
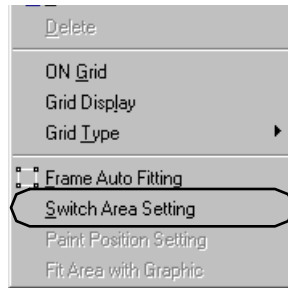
**[Modify Part] window**

8. The [Modify Part] window for the switch part is opened. Edit the part or change its size.

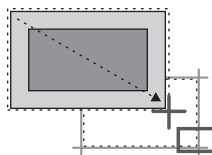


**“Switch Area” Setting**

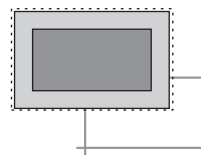
A switch part contains a “switch area.” Pressing here activates the switch. This area can be moved in switch part editing. Select [Switch Area Setting] from the [Edit] menu. (Or, right-click the mouse and select [Switch Area Setting] from the pop-up menu.)



The switch area can be moved to the desired position by dragging the mover tool.



Drag the mover tool while fitting it to the switch part.



The switch area is moved to the position.

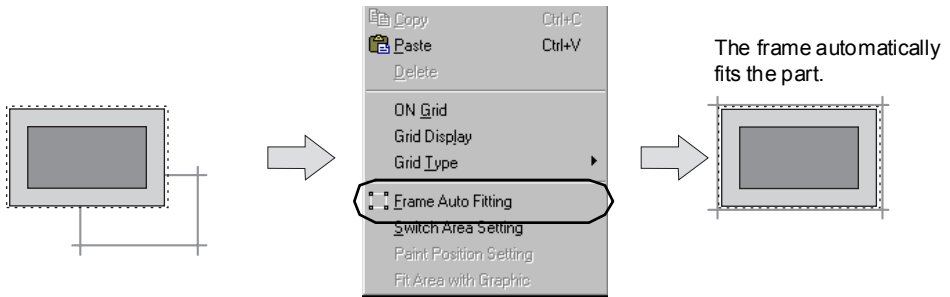


**Part Frame Setting**

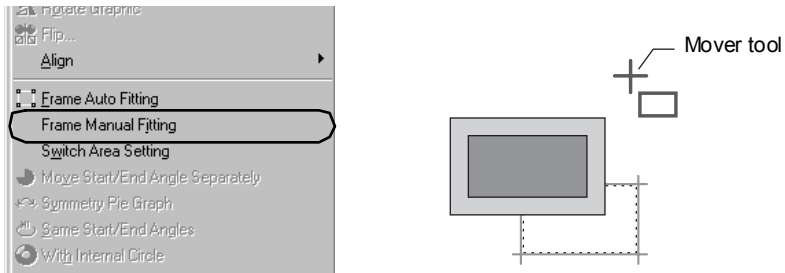
In a switch part, the graphic size may differ from the switch area. If an irregular graphic is drawn for a switch part, the switch area may not fit the graphic. The part frame can be adjusted to fit the whole part in this situation.

The part frame can be set either automatically or manually.

When fitting a frame to a part automatically, select [Frame Auto Fitting] from the [Edit] menu. (Or, click the [Frame Auto Fit] icon, or choose [Frame Auto Fitting] from the right-clicking menu.)



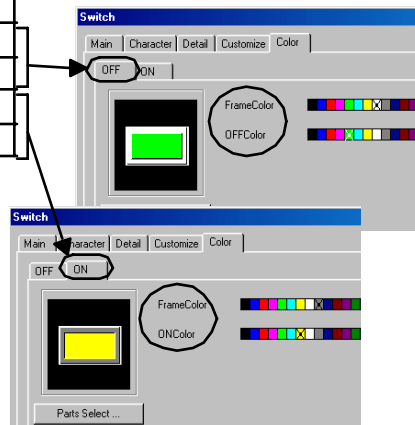
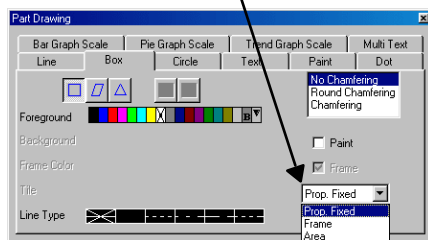
A frame can be set manually as desired. Select [Frame Manual Fitting] from the [Edit] menu. The mover tool appears as shown below: Drag the mover tool to the desired position. The frame is placed in the position.



**Frame or Area Property for the Graphic**

When creating ON and OFF displays for a switch/lamp part, their colors can be changed directly from the [Switch/Lamp] dialog by designating the ON/OFF graphics as frame property ([Frame]) or area property ([Area]). Refer to the following table.

Part Graphic Property		In [Switch/Lamp] Dialog
When creating OFF display	[Frame]	[OFF Frame Color]
	[Area]	[OFF Color]
When creating ON display	[Frame]	[ON Frame Color]
	[Area]	[ON Color]



\* The above function is also used for lamp parts.



### Switch Grids

As default, [ Place Switches on Switch Grids] is checked. Switches are placed and enlarged/reduced, or switch areas are moved along switch grids. With the matrix type ZM-42 to 82, switch areas can be moved only along switch grids. Keep [ Place Switches on Switch Grids] checked. With analog switches, switches can be moved dot by dot, regardless of switch grids. To do this, select [Display Environment] from the [Display] menu, open the [Grid] tab window, and uncheck [ Place Switches on Switch Grids].

### Preparation for Creating the ON Display of a Switch Part

When creating a switch part, the ON display is placed on top of the OFF display. When the ON or OFF state of a switch is distinguished only by color change, the ON and OFF displays of the switch must be in the same position. To create the ON display after the OFF display has been created, copy the OFF display in the [Modify Part] window, then paste the copied display to the [Modify Part] window for the ON display and finish it as the ON display.

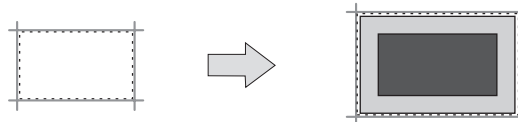
9. After editing the OFF display, copy the display for creating the ON display.
10. Close the [Modify Part] window. The former [Switch Part Edit] window is displayed. The OFF display as created appears in the window.

### [Switch Part Edit] window

11. Create the ON display of the switch. Click the [ON] icon in the tool bar.
12. Click the switch part, and click the [Change the Setting of a Part Placed] icon.

### [Modify Part] window

13. The [Modify Part] window for the switch part is opened. Edit the part for the ON display. Paste the copied OFF display to the window. After editing, reset the part frame by choosing [Frame Auto Fitting].



14. Close the [Modify Part] window. The ON display as created appears in the window.



Whether or not the created switches or lamps appear as desired in the ON, OFF, and P3 to P8 displays depends on the [Draw Mode] selection between [XOR] and [REP].

For a 3- to 8-notch part, the same drawing or editing procedure applies.

## Editing Data Display Parts

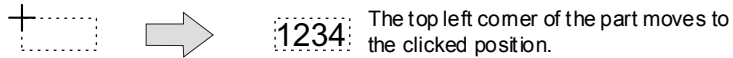
There are three different types of data display parts: “numerical data display,” “character display,” and “message display.” However, the editing procedure is the same for all of them.

### Editing Procedure (Ex.: Numerical data display part)

Procedure to edit and register a new part is explained below:

#### [Num. Display Part Edit] window

1. Check that the edit window indicating the selected registration number is opened.
2. Click the [New Part] icon. A dotted box and a mover tool appear.
3. Click the mover tool in the desired position. A new numerical data display part is placed.



4. Double-click the part. The [Num. Display] dialog is displayed. Set the dialog as desired.



The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

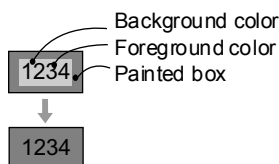
5. Select the numerical data display part by clicking. Click the [Change the Setting of a Part Placed] icon.

#### [Modify Part] window

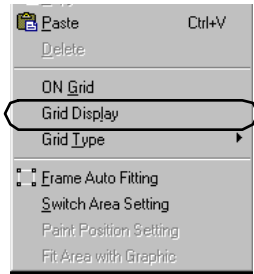
6. The [Modify Part] window for the numerical data display part is displayed. Edit the part or change its size.



For a numerical data display part with a painted box, it is recommended that the box color be specified for [Background] in the [Char. Prop.] tab window of the [Num. Display] dialog and that [Transparent] be unchecked. With [Transparent] checked, a flickering will occur on the LCD Control Terminal screen when the data on the display part is changed, and the data display speed will be slow.



7. After editing the part, click the [Frame Auto Fit] icon. The frame automatically fits the part.



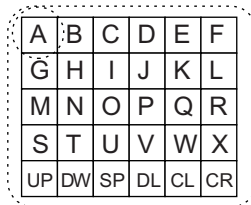
8. Close the [Modify Part] window.

#### [Num. Display Part Edit] window

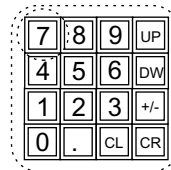
9. The former edit window is displayed. The modified numerical data display part appears in the window.

## Editing a Keypad

The keypad for inputting numerals or characters consists of numerous individual switch parts, but is registered in the part file as a single part. Therefore, to create and register a keypad part, each individual part should be created, following the procedure explained in “Editing Switch/Lamp Parts” and should be grouped into one part.



A keypad part consists of a group of switch parts. ([Function] of each switch part is selected from [Entry].)

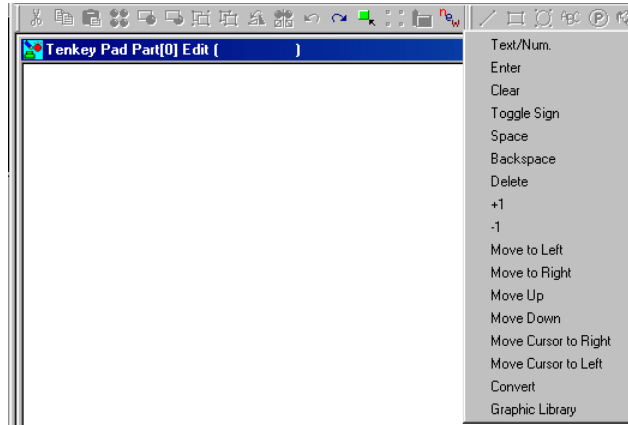


When creating a switch for a keypad, there is no option for choosing the number of notches. (The parts for the keypad must be “2-notch.”) However, a function must be chosen from the switch function pull-down menu.

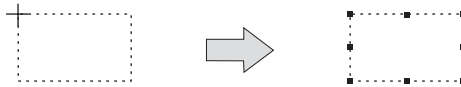
## Editing Procedure

Procedure to edit and register a new part is explained below:

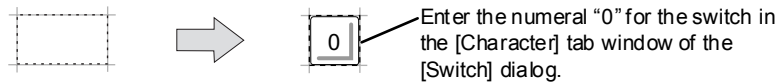
1. Check that the edit window indicating the selected registration number is opened.
2. Click the [New Part] icon. The function pull-down menu is displayed.



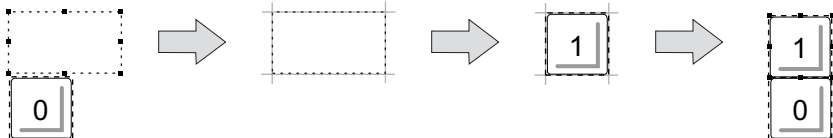
3. Choose [Text/Num.], for example. A dotted box and a mover tool appear. Click the mover tool in the desired position. A new switch part is placed in the window.
4. Create the ON and OFF displays of the switch as explained in “Editing Switch/Lamp Parts” (steps 6 to 14 on page APP3-10).



5. After editing the switch, close the [Modify Part] window. The former edit window is displayed.



6. Create additional switches for a keypad. Follow steps 3 to 5.





### Characters on a Keypad

When [Text/Num.] is selected from the switch function pull-down menu, enter characters/numerals for the switches in the [Character] tab window of the [Switch] dialog. When a switch is pressed, the character or numeral of the switch is recognized. Characters/numerals registered in the graphic library can also be used for switches in screen editing. See “Chapter 7 Entry Mode” in the ZM-71 SE Instruction Manual (Function). In this case, however, the character or numeral is not recognized when a switch is pressed.



### Multiple Copies

When creating a keypad consisting of the same-shape switches, create one switch and copy it using the multi-copy function. Then set their functions and characters/numerals in the [Switch] dialog.



Several switch parts for a keypad are registered as a keypad part. When placing a keypad part in screen editing, the switch parts are grouped. To relocate the switch parts, ungroup a keypad part into single parts.

## Editing Graph Parts

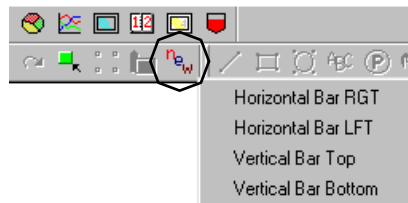
There are seven different types of graph parts, “bar graph,” “pie graph,” “panel meter,” “statistics graph (bar),” “statistics graph (pie),” “trend graph,” and “closed area graph.” To create these graph parts, follow their individual procedures.

### Bar Graph Editing Procedure

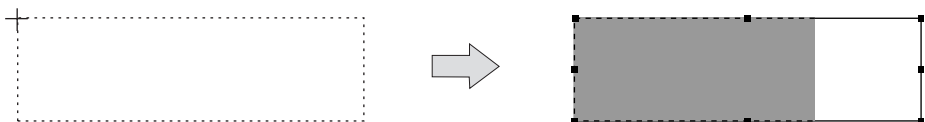
Procedure to edit and register a new part is explained below:

#### [Bar Graph Part Edit] window

1. The edit window indicating the selected registration number is opened.
2. Click the [New Part] icon. The bar graph type pull-down menu is displayed.



3. Choose [Horizontal Bar RGT], for example. A dotted box and a mover tool appear.
4. Click the mover tool in the desired position. A new graph part is placed.



5. Double-click the part. The [Bar Graph] dialog is displayed. Set the dialog as desired.



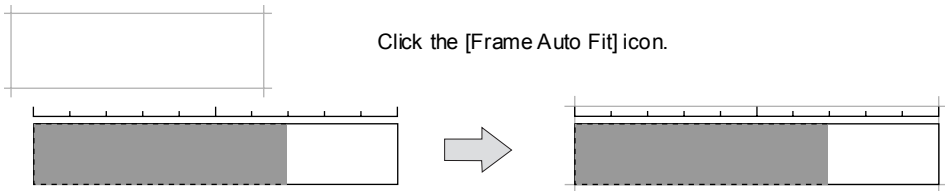
The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

6. Select the bar graph part. Click the [Change the Setting of a Part Placed] icon.



**[Modify Part] window**

7. The [Modify Part] window for the bar graph part is displayed. Edit the part or change its size.
8. After editing the part, click the [Frame Auto Fit] icon. The frame automatically fits the part.
9. Close the [Modify Part] window.



**[Bar Graph Part Edit] window**

10. The [Modify Part] window for the bar graph part is displayed. Edit the part or change its size.



## Pie Graph Editing Procedure

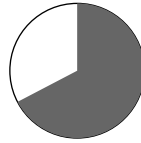
### Pie Graph Types

The following types of pie graph parts are available.

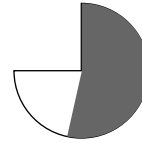
Without internal circle,  
Symmetry



Without internal circle,  
Complete Round



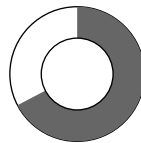
Without internal circle,  
Asymmetry



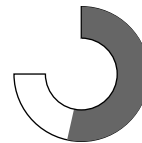
With internal circle,  
Symmetry



With internal circle,  
Complete Round



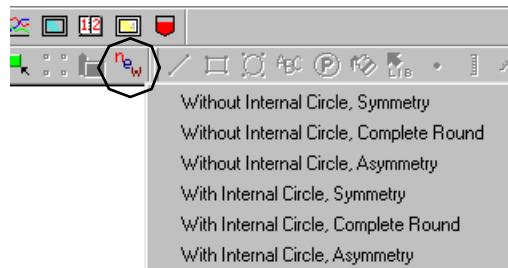
With internal circle,  
Asymmetry



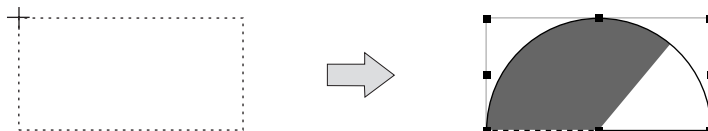
Procedure to edit and register a new part is explained below:

### [Pie Graph Part Edit] window

1. Check that the edit window indicating the selected registration number is opened.
2. Click the [New Part] icon. The pie graph type pull-down menu is displayed.



3. Choose [Without Internal Circle, Symmetry], for example. A dotted box and a mover tool appear.
4. Click the mover tool in the desired position. A new pie graph part is placed.



5. Double-click the part. The [Pie Graph] dialog is displayed. Set the dialog as desired.



The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

6. Select the pie graph part. Click the [Change the Setting of a Part Placed] icon.

**[Modify Part] window**

7. The [Modify Part] window for the pie graph part is displayed. Edit the part or change its size.



The pie graph has a size limit.

- The radius of a pie graph without internal circle must be 16 dots or more.
- The inside radius of a pie graph with internal circle must be 10 dots or more, and the difference between the inside and outside radii must be 16 dots or more.

8. After editing the part, click the [Frame Auto Fit] icon. The frame automatically fits the part.
9. Close the [Modify Part] window.

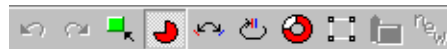
**[Pie Graph Part Edit] window**

10. The former edit window is displayed. The modified pie graph part appears in the window.



**Icons for Editing Pie Graph Parts**

In the window for editing pie graph parts, unique icons appear in the tool bar.



- A. [Move Start/End Angles Separately]
- B. [Symmetry]
- C. [With Internal Circle]
- D. [Same Start/End Angles]

**A. [Move Start/End Angles Separately]**

There are “start angles” and “end angles” for all pie graphs except circles. These angles can be changed freely when the graph is edited. Click icon A and click the part area of the pie graph. Handles are shown around the part.

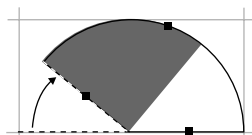


Click this icon.

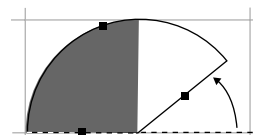


Click the part. Handles are shown.

Drag either handle on “start angle” or “end angle” to the desired size.



Drag the start angle to change it.

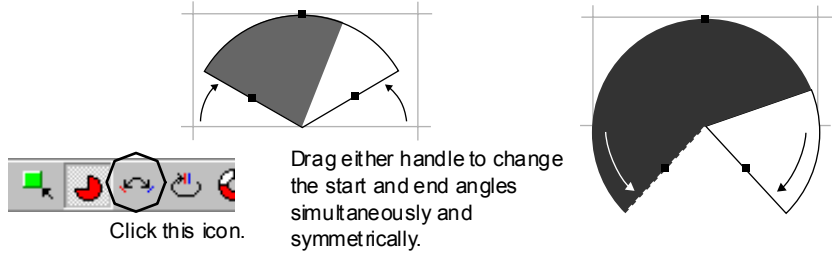


Drag the end angle to change it.



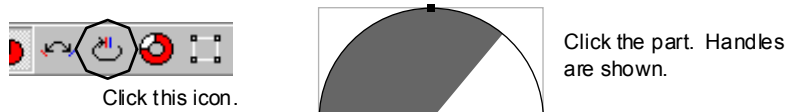
**B. [Symmetry]**

Unlike icon A, this icon changes “start angle” and “end angle” simultaneously and symmetrically. Click icon B, and click the part area of the pie graph. Handles are shown around the part. Drag either handle to change both angles simultaneously and symmetrically.

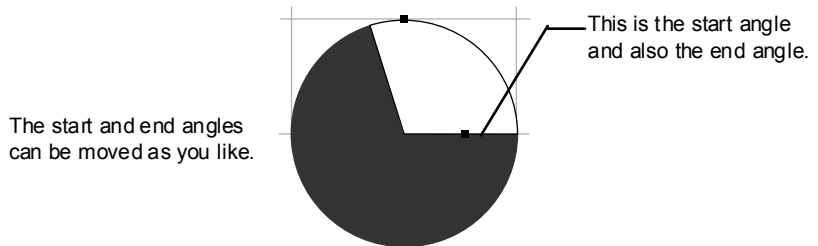


**C. [Same Start/End Angles]**

Click icon C and click the part area of the pie graph part. Handles are shown around the part.

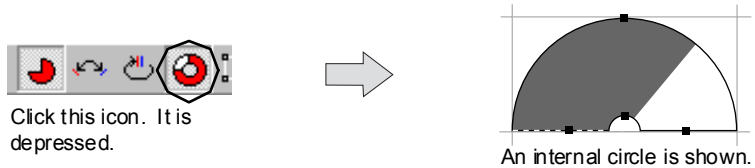


Drag either handle on “start angle” or “end angle”. They are put together. The sector becomes a complete circle. (The “start angle” moves to the “end angle.”)

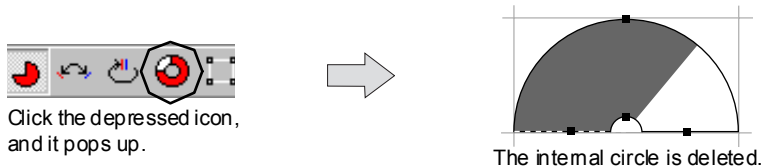


**D. [With Internal Circle]**

The circle at the center of the pie graph is called the “internal circle.” The graph looks like a donut. This circle can be created or deleted as you like. Click icon D once. The icon is depressed, and an internal circle (hole) is created in the pie graph part.

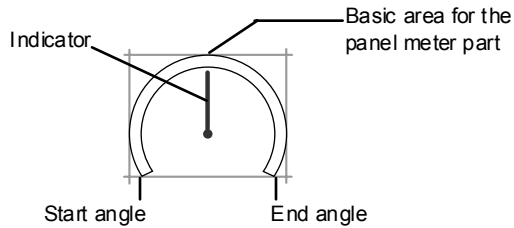


Click the depressed icon D. It pops up. The internal circle (hole) is deleted.



## Panel Meter Editing Procedure

Basically, the panel meter composition is similar to the pie graph. The pie graph indicates the value with execution color, but the panel meter uses an indicator. Both “start angle” and “end angle” can be changed in the same manner as in pie graphs.



The panel meter always has an internal circle. The [With Internal Circle] icon is, therefore, inactive when the panel meter is edited. The panel meter has a size limit. The inner radius must be 10 dots or more. The difference between the inner and outer radii must be 16 dots or more.



The procedure for editing and registering panel meter parts is the same as used for pie graph. See the example for editing pie graphs explained previously (page APP3-19).

## Statistic Graph (Bar) Editing Procedure

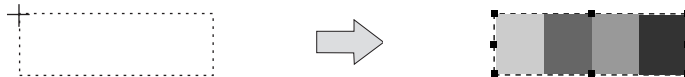
Procedure to edit and register a new part is explained below:

### [Stat. Bar Graph Part Edit] window

1. The edit window indicating the selected registration number is opened.



2. Click the [New Part] icon. The statistic graph (bar) type pull-down menu is displayed.
3. Choose [Horizontal Bar Graph], for example. A dotted box and a mover tool appear.
4. Click the mover tool in the desired position. A new graph part is placed.



5. Double-click the part. The [Stat. Bar Graph] dialog is displayed. Set the dialog as desired.



The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

6. Select the statistic graph part. Click the [Change the Setting of a Part Placed] icon.

### [Modify Part] window

7. The [Modify Part] window for the statistic graph (bar) part is displayed. Edit the part or change its size.



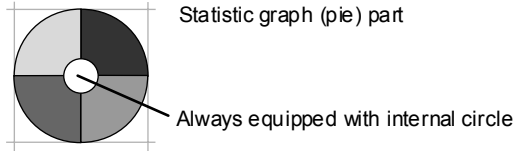
8. After editing the part, click the [Frame Auto Fit] icon. The frame automatically fits the part.
9. Close the [Modify Part] window.

### [Stat. Bar Graph Part Edit] window

10. The former edit window is displayed. The modified statistic graph (bar) part appears in the window.

## Statistic Graph (Pie) Editing Procedure

There is only one type of statistic graph (pie), [With Internal Circle, Complete Round]. Unlike pie graphs, there are no options such as the sector or other types for statistic graph (pie).



The procedure for editing statistic graph (pie) parts is the same as used for statistic graph (bar) parts. See the previous section, "Statistic Graph (Bar) Editing Procedure" (page APP3-23).



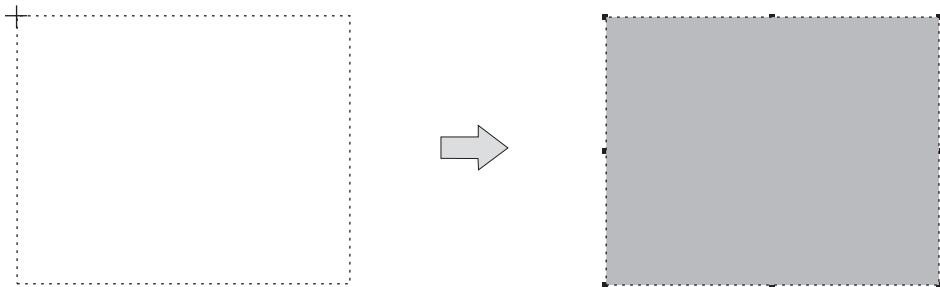
The statistic graph (pie) has a size limit. The inner radius must be 10 dots or more. The difference between the inner and outer radii must be 16 dots or more.

## Trend Graph (Trend Sampling) Editing Procedure

The part registered in this section is used for trend graphs and also for display area parts for trend sampling mode.

### [Trend Graph Part Edit] window

1. Check that the edit window indicating the selected registration number is opened.
2. Click the [New Part] icon. A dotted box and a mover tool appear.
3. Click the mover tool in the desired position. A new graph part is placed.



4. Double-click the part. The [Trend Graph] dialog is displayed. Set the dialog as desired.



The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

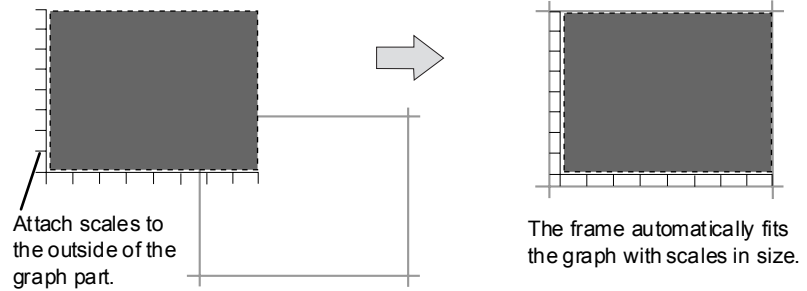
5. Select the trend graph part. Click the [Change the Setting of a Part Placed] icon.

**[Modify Part] window**

- The [Modify Part] window for the trend graph part is displayed. Edit the part or change its size.



- After editing the part, click the [Frame Auto Fit] icon. The frame automatically fits the part.
- Close the [Modify Part] window.

**[Trend Graph Part Edit] window**

- The former edit window is displayed. The modified trend bar graph part appears in the window.





**[Modify Part] window**

5. The [Modify Part] window for the closed area graph part is displayed. Edit the part or change its size.



- Editing Procedure

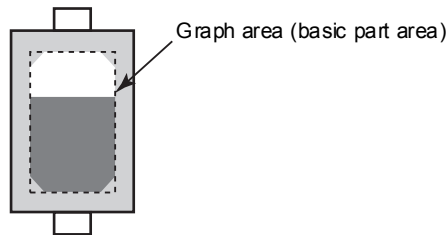
- 1) Draw a closed area graphic using [Line], [Box], or [Circle] in the [Draw] menu. The max. size of a closed area graphic is  $W \times H = 65,536$  bytes. (ZM-42/43: 32,768 bytes)



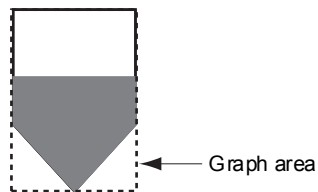
Useful tools:

[Point Search] [Enlarge items including circles in the opposite angle] [Item List]

- 2) Set the graph area (basic part area) with a dotted box. The graph area is recognized as a graph. Move the graph area (dotted box) to the closed area graphic. Adjust to the desired size by dragging a handle. If you want to use the graphic as a graph area, right-click the mouse and choose [Fit Area with Graphic] from the pop-up menu.

**Fit Area with Graphic**

The graph area snaps into the drawn graphic.

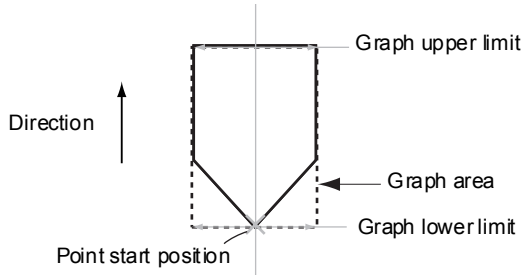


- 3) Right-click the mouse, and select [Paint Position Setting].



**[Paint Position Setting]**

Determine the start position for painting a closed area graph.

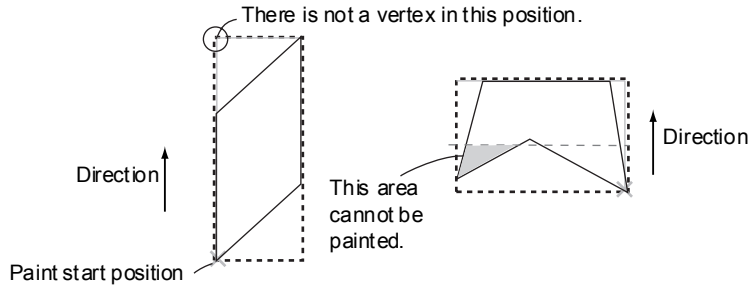


Select [Paint Position Setting] from the right-clicking menu. Move the cursor to the graph area and click it. Drag the cursor and release the mouse in the target position. (The paint start position “x” is moved along the horizontal line 1 dot above the graph lower limit.)

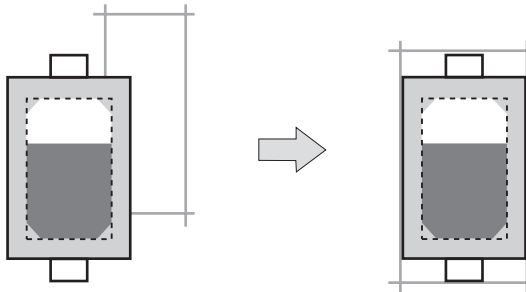
If painting is not performed correctly after the paint start position has been determined, raise the lower limit of the graph area by 1 dot and set the position again. When confirming the paint start position, open the [Detail] tab window in the [Display Environment] dialog (from the [Display] menu) and uncheck [ Paint Dsp.]. Click [OK]. The paint start position is indicated with “x.”

If a closed area graphic does not have a vertex in the vertical direction from the paint start position, the graphic cannot be painted correctly. (See the figures shown below.)

Ex:



6. After editing the part, click the [Frame Auto Fit] icon. The frame automatically fits the part. (See the figures shown below.)



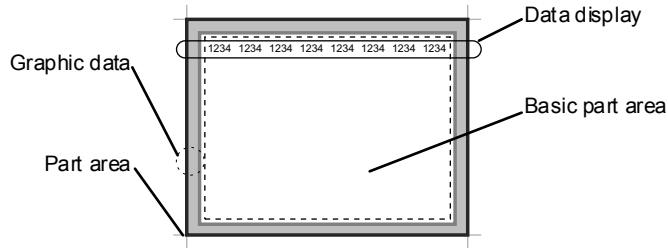
7. Close the [Modify Part] window.

**[Closed Area Graph Part Edit] window**

8. The former edit window is displayed. The modified closed area graph part appears in the window.

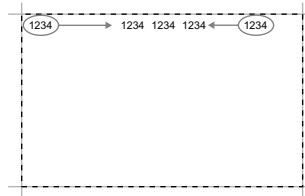
## Editing Display Area Parts for Data Sampling

Display area parts for data sampling are required for “data sampling” in the “sampling mode.” A display area part for data sampling consists of a “basic part area,” “graphic data,” and “data display.”

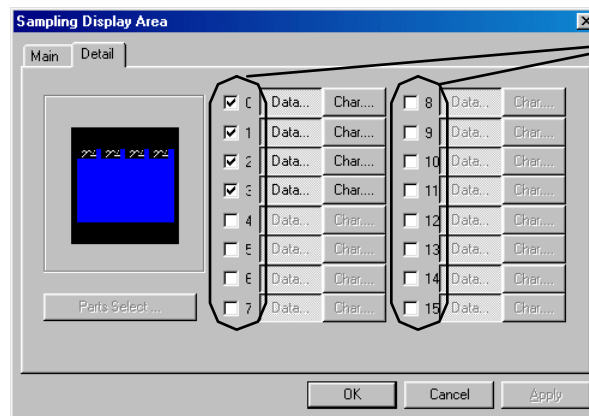


This “data display” differs from “data display part.” It exists only in a display area part for data sampling. Data displays are located on the top line of the basic part area. (The position can be changed horizontally.)

It can be moved horizontally.



A maximum of 16 data displays can be placed in a part. Whether or not to display data is determined in the [Sampling Display Area] dialog.



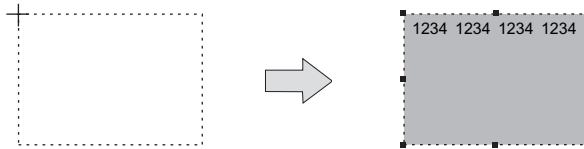
To display data, check the box.

## Editing Procedure

The procedure to create a new display area part including four items of data for data sampling is explained below:

### [Data Sampling Disp. Area Part Edit] window

1. The edit window indicating the selected registration number is opened.
2. Click the [New Part] icon. A dotted box and a mover tool appear.
3. Click the mover tool in the desired position. A new data sampling display area part is placed.



4. Double-click the part. The [Sampling Display Area] dialog is displayed. Set the dialog as desired.



The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

5. Select the display area part. Click the [Change the Setting of a Part Placed] icon.



### [Modify Part] window

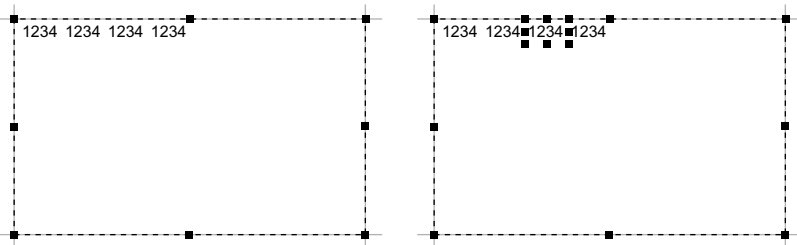
6. The [Modify Part] window for the data sampling display area part is displayed. Edit the part or change its size.



#### Changing the Position of Data

Data shown in the part (data sampling display area part) can only be moved horizontally.

1. Click the data sampling display area part. Handles are shown around the part.
2. Click the desired data to select it. Handles are shown around the data.
3. Drag the selected data to the desired position.



7. After editing the part, click the [Frame Auto Fit] icon. The frame automatically fits the part.
8. Close the [Modify Part] window.

#### [Data Sampling Disp. Area Part Edit] window

9. The former edit window is displayed. The modified display area part appears in the window.

## Editing Calendar Parts

A calendar part can consist of all calendar items (year, month, day, hour, minute, second, and day of the week). It is also possible to create individual parts in order to use them separately.

This is one calendar part.

02 - 06 - 15 17 - 20 - 15 Sunday

6 / 20

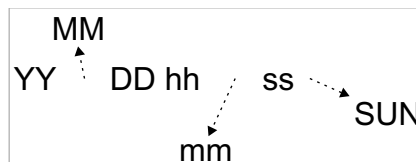
Sunday

These are separate calendar parts.

17 : 20

### Composition of Calendar Parts

The calendar part consists of several calendar items. Each calendar item can be enlarged or moved separately within the part area.

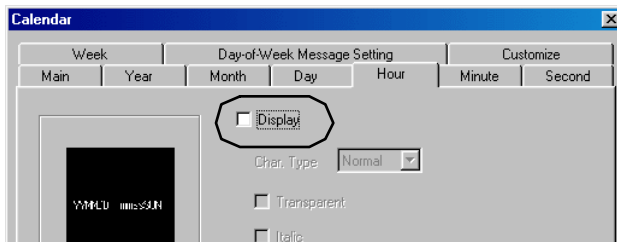


Any calendar item can be moved within the part area of the calendar part.



Calendar items can be moved only within the area of the calendar part.

Determine whether or not to display calendar items of year, month, day, hour, minute, second, and day of the week in the [Calendar] dialog. When [ Display] is unchecked in the tab window of a calendar item, the item is not displayed.



## Editing Procedure

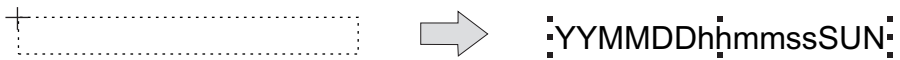
The procedure to edit and register a new calendar part consisting of “year,” “month,” and “day” is explained below:

### [Calendar Part Edit] window

1. Click the [Screen List] icon. In the screen list window, double-click the desired box for registration.
2. The [Calendar Part Edit] window indicating the selected registration number is opened.



3. Click the [New Part] icon. A dotted box and a mover tool appear.
4. Click the mover tool in the desired position. A new calendar part is placed.



5. Double-click the calendar part. The [Calendar] dialog is displayed. To delete unnecessary items from the part, open the [Hour], [Minute], [Second], and [Week] tab windows one by one and uncheck  Display in each window. Clicking [OK] deletes [hh], [mm], [ss], and [SUN] from the calendar part.



The dialog for each part cannot be set after the [Modify Part] window is opened. Set the dialog before opening or after closing the window.

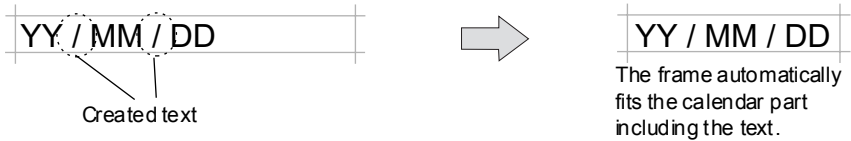
6. Enlarge the calendar part if necessary. Click the part and drag its handle until the part is enlarged as desired.
7. Select the calendar part. Click the [Change the Setting of a Part Placed] icon.

**[Modify Part] window**

8. The [Modify Part] window for the calendar part is displayed. Edit the part or change its size.



9. After editing the part, click the [Frame Auto Fit] icon. The frame automatically fits the part.



10. Close the [Modify Part] window.

**[Calendar Part Edit] window**

11. The former edit window is displayed. The modified calendar part appears in the window.

## Editing Display Area Parts

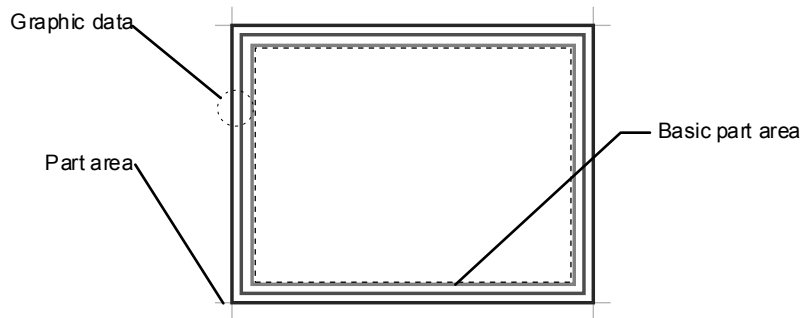
The display area part is used in relay mode or in message mode to display messages, or in graphic mode to display graphics.

### Editing Procedure



The procedure for editing display area parts is almost the same as used for overlap parts. See the procedure explained on page APP3-7.

However, the frame setting is used for display area parts. Unlike overlap parts, the “basic part area” and the “part area” of the display area part are independent. This makes it necessary to reset the frame in editing.



# Printing the Part (Part File)

---

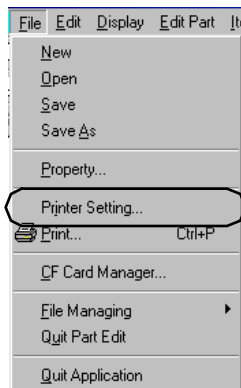
An explanation of how to print out the contents of the part file is provided below.

## Printing Procedure

---

### [Option Setting] Dialog

1. While a part edit window is opened, select [Printer Setting] from the [File] menu.

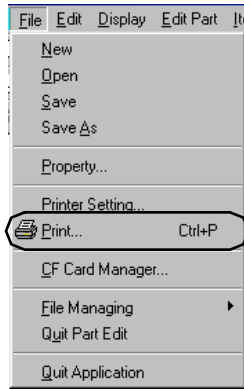


2. The [Option Setting] dialog is displayed.
  - Screen Output  
Part graphics are printed.
  - List Output  
Items set for parts are printed.
  - Table Print  
The table of parts is printed. When this option is checked, the [Screen Output] and [List Output] options are not active
  - Reverse  
The parts are printed in reverse video. Only the white and black portions are reversed.
  - Monochrome  
If the printed part is difficult to see, check this box. Legibility may be improved.
  - [Page Setting]  
Set the margins, and header and footer lines.
  - [Printer Setting]  
Set the printer mode, paper size, and portrait or landscape mode.After setting, click [OK].



## Printing

1. After specifying the above settings, execute printing. Select [Print] from the [File] menu.



2. The [Part Print] dialog is displayed. Check the necessary options for printing. Specify the starting part number and ending part number for [Start] and [End] respectively.
3. Click [Print] at the bottom left of the dialog. Printing starts.

# Part File Management

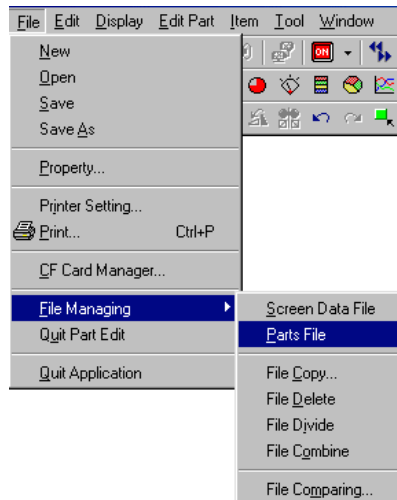
Parts from different part files can be copied into other files. Close the current file. Copying is performed by bringing up the copy source file and copy target file windows.

## Part File Managing Procedure



Clicking [File Managing] brings up the menu. The [File Copy], [File Delete], [File Divide], and [File Combine] commands are not active for part file management.

1. Select [File Managing] from the [File] menu, and click [Parts File].

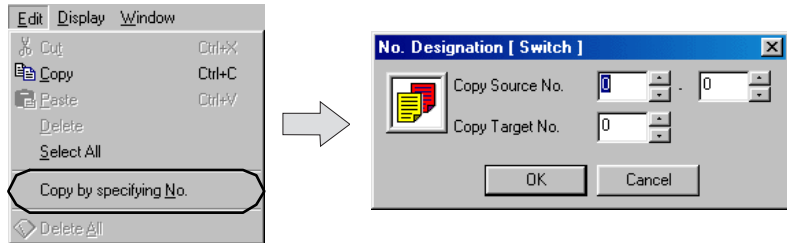


2. The [File Manage (Part)] dialog is displayed. Specify the desired files for [Copy Source] and [Copy Target], and click [OK].
3. The item selection pull-down menu is displayed. Choose [Switch], for example. Click [OK].
4. The copy source and target file windows are displayed. The source file window is placed above the target file window.
5. Drag the desired part from the copy source file window to the target file window. Copying is executed. Multiple parts are selected simultaneously by clicking the first part, and then while holding down the SHIFT key, clicking the last part.

- If you want to copy different parts, select [Change Display] from the [Display] menu. The item selection dialog is displayed. Choose the desired part and click [OK].



- In addition to copying by dragging as explained above, copying by designating part numbers is also possible. Select [Copy by Specifying No.] from the [Edit] window. The item selection dialog is displayed. Choose the desired part and click [OK]. The [No. Designation] dialog is displayed. Specify the desired numbers for [Copy Source No.] and [Copy Target No.].



- To save the copied parts, select [Copy Target Save] or [Copy Target Save As] from the [File] menu.
- To quit, select [Quit File Managing] from the [File] menu.

# Part Editing Menu

---

Use the following commands to create new parts or to edit existing parts.

## In a Part Edit Window

---

### [File] Menu

- [New]  
Choosing this command creates a new part file.
- [Open]  
Choosing this command brings up an existing part file name list.
- [Save]  
Choosing this command saves the most recent version of the opened part file and deletes its previous contents.
- [Save As]  
Choosing this command saves the opened part file with a new file name, different from the original.
- [Printer Setting]  
Choosing this command allows you to specify the settings for printing a part file. For more information, see page APP3-34.
- [Print]  
Choosing this command prints out the part files. For more information, see page APP3-34.
- [CF Card Manager]  
The CF card manager starts. For more information, see the ZM-71SE Instruction Manual (Function).
- [File Managing]  
Choosing this command allows you to copy parts between part files. For more information, see page APP3-36.
- [Quit Part Edit]  
Choosing this command closes the part edit window.
- [Quit Application]  
Choosing this command quits the editor.

### [Edit] Menu

The [Edit] menu commands are almost the same as those for screen data files except for the [Place New Part] command.

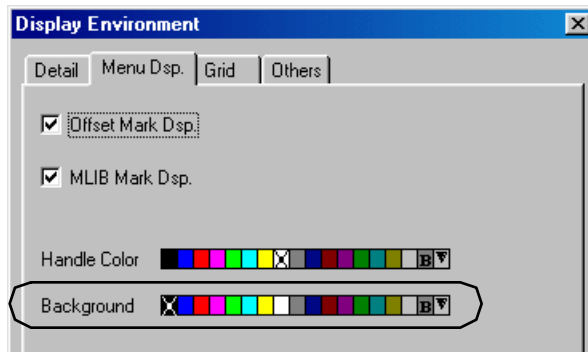
- [Place New Part]  
A new part is placed in the opened part edit window. The [New Part] icon functions in the same manner.



## [Display] Menu

The [Display] menu commands are the same as those for screen data files, except for the [Display Environment] command.

- [Display Environment]  
Open the [Menu Dsp.] tab window in the [Display Environment] dialog. The [Background] option can be used to change the base color of a part edit window.



## [Edit Part] Menu

- [Overlap]  
Choosing this command allows you to edit overlap parts.
- [Switch]  
Choosing this command allows you to edit switch parts.
- [Lamp]  
Choosing this command allows you to edit lamp parts.
- [Num. Display]  
Choosing this command allows you to edit numerical data display parts.
- [Char. Display]  
Choosing this command allows you to edit character display parts.
- [Message Disp.]  
Choosing this command allows you to edit message display parts.
- [Key Pad]  
Choosing this command allows you to edit keypad parts.
- [Bar Graph]  
Choosing this command allows you to edit bar graph parts.
- [Pie Graph]  
Choosing this command allows you to edit pie graph parts.
- [Panel Meter]  
Choosing this command allows you to edit panel meter parts.
- [Stat. Graph]  
Choosing this command allows you to edit statistic graph (bar) parts.

- [Stat. Pie Graph]  
Choosing this command allows you to edit statistic graph (pie) parts.
- [Trend Graph]  
Choosing this command allows you to edit trend graph parts.
- [Data Sampling Disp. Area]  
Choosing this command allows you to edit display area parts for data sampling.
- [Calendar]  
Choosing this command allows you to edit calendar parts.
- [Display Area]  
Choosing this command allows you to edit display area parts.
- [Closed Area Graph]  
Choosing this command allows you to edit closed area graph parts.

### **[Item] Menu**

- [PLC Type]  
Specify the PLC model for the screen data file when using a part file in the screen data file.
- [Edit Model Selection]  
Specify the model of LCD Control Terminal for the screen data file when using a part file in the screen data file.
- [Use Gothic Font]  
Select this option when creating a part using the Gothic font.

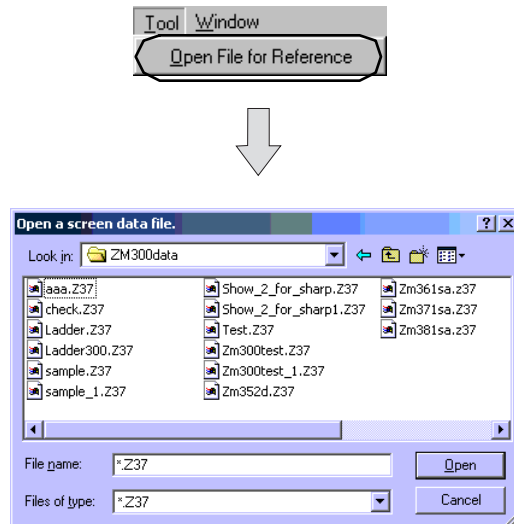
## [Tool] Menu

- [Open File for Reference]

This command is used when choosing [Pattern] or [Graphic Call] from the [Draw] menu in part editing. Part files do not contain graphics or patterns. However, graphics or patterns exist in screen data files using part files.

Therefore, it is possible to use graphics or patterns for creating parts.

Graphics or patterns in a screen data file can be referred to and used in the part edit window using the [Open File for Reference] command. Click [Open File for Reference], and choose the desired screen data file. Graphics in the selected screen data file can be called up when [Graphic Call] or [Pattern] is selected from the [Draw] menu in part editing.



## [Window] Menu

The [Window] menu commands are the same as those for screen data files.

## In a [Modify Part] Window

---

### [File] Menu

- [Quit Part Modifying]  
Clicking this command closes the [Modify Part] window and brings up the former part edit window.

### [Edit] Menu

The [Edit] menu commands are the same as those for screen data files, except for the following commands.

- [Frame Auto Fitting]  
When a graphic is too large to fit in the part area, click this icon to enlarge the frame so that it fits the whole part including the graphic. The [Frame Auto Fit] icon functions in the same manner. (This command is inactive for overlap parts because graphics cannot extend beyond the part areas.)
- [Frame Manual Fitting]  
The frame of a part can be adjusted manually using the mouse. For more information, see page APP3-12.
- [Switch Area Setting]  
This command is used to reset the switch area (operating area). For more information, see page APP3-11.
- [Move Start/End Angles Separately]  
This command is used to adjust pie graph or panel meter part angles. The [Move start/end angles separately.] icon functions in the same manner. For more information, see page APP3-20.
- [Symmetry Pie Graph]  
This command is used to symmetrically adjust pie graph or panel meter part angles. The [Symmetry] icon functions in the same manner. For more information, see page APP3-21.
- [Same Start/End Angles]  
This command is used to modify pie graph or panel meter part shape forming a complete circle. The [Same Start/End Angles] icon functions in the same manner. For more information, see page APP3-21.
- [With Internal Circle]  
This command is used to add or delete an inner circle to or from a pie graph. [With Internal Circle] icon functions in the same manner. For more information, see page APP3-21.
- [Paint Position Setting] [Fit Area with Graphic]  
This command is valid only for the closed area graph part. For more information, see page APP3-28.

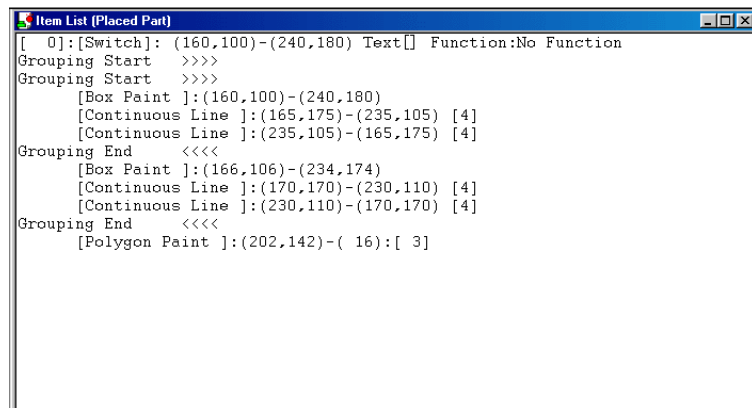
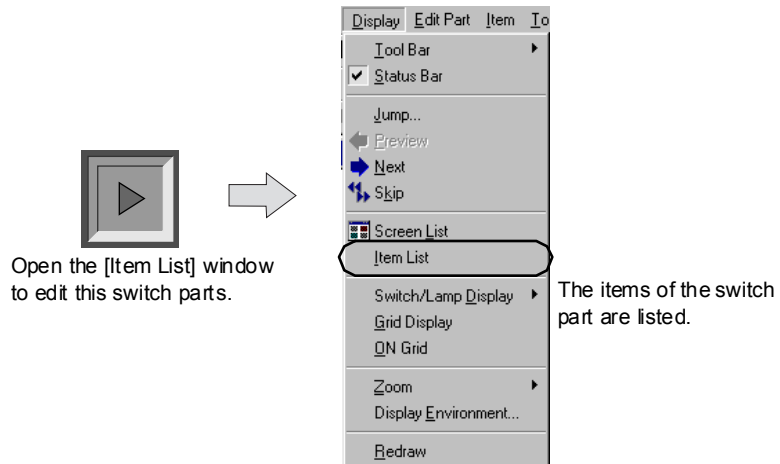


## [Display] Menu

The [Display] menu commands are the same as those for part edit windows.

- [Item List]

When modifying a part including complicated graphics, the contents of the part are known from the [Item List] window. The part and graphic data are indicated separately in the list. This list is useful for changing only graphic properties, etc.



Click the item whose property is to be changed, and click the [Detail/Prop. Change] icon. The property can be changed with ease.

## [Draw] Menu

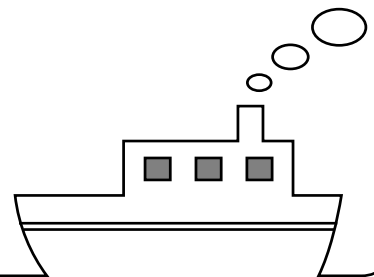
The [Draw] menu commands are the same as those for screen data files.

## [Window] Menu

The [Window] menu commands are the same as those for screen data files.

# MEMO

Please use this page freely.



# INDEX

## Numerics

3D parts .....	APP2-1
customize .....	APP2-23
ZM-42 to 82 series .....	APP2-21
parts file .....	APP2-22
ZM-300 series .....	APP2-1
flash function .....	APP2-8
parts file .....	APP2-1
ZM-352D .....	APP2-15
parts file .....	APP2-15
setting procedure .....	APP2-18

## A

Add Video Menu .....	7-21
Align .....	1-39
animation .....	2-55, 4-85

## B

background color .....	2-7
bar graph .....	2-48
blinking .....	2-63
blinking time .....	2-63
setting procedure .....	2-63

## C

calendar	
part editing .....	APP3-31
calendar display .....	2-52
capacity	
per screen .....	2-6
CF card	
screen data transfer .....	5-15
chamfered box .....	3-8
Change All	
Change All Division No. ....	1-33
Change All Process Cycle .....	1-33
change memory .....	7-7
closed area graph .....	2-48
color	
setting	
128-color type .....	2-61
32,000-color type .....	2-58
monochrome type .....	2-62
type .....	2-57
column .....	2-6
convert to rich text format .....	7-19
Copy	
global copy .....	1-37
Multi Copy .....	1-35
custom part .....	7-21
customize .....	APP2-23

## D

data block .....	4-25
data block area .....	2-47
data display .....	2-40
part editing .....	APP3-14
data sampling	
part editing .....	APP3-29
data sheet .....	4-75
dialog .....	1-17
operating technique in dialogs .....	1-17
direct block .....	4-65
display area	
part editing .....	APP3-29
display environment .....	2-10
detail .....	2-10
grid .....	2-13
menu display .....	2-12
others .....	2-16
[Display] menu .....	1-14, 1-27
division .....	2-2
[Draw] menu .....	1-15, 3-1
drawing .....	3-1
basic operation .....	3-2
content .....	3-1
drawing method	
bar graph scale .....	3-29
box .....	3-7
circle .....	3-12
dot .....	3-29
line .....	3-5
multi-text .....	3-35
paint .....	3-26
pattern .....	3-23
pie graph scale .....	3-31
Screen LIB .....	3-37
text .....	3-18
trend graph scale .....	3-33
drawing tools	
graphic call .....	3-27
[Screen Drawing] dialog .....	3-2
selecting colors .....	3-3
selecting line styles .....	3-4
selecting tiles .....	3-3
DXF file convert .....	7-17

## E

[Edit] menu .....	1-12, 1-22, 1-35
entry mode .....	2-47
error check .....	7-2
ex. font .....	5-27

**F**

file division and combination  
 file combine ..... 7-42  
 file divide ..... 7-41  
 file management ..... 7-27  
 file copy ..... 7-39  
 file deletion ..... 7-40  
 manageable files ..... 7-28  
 outline ..... 7-27  
 part file ..... 7-35, APP3-36  
 screen data file ..... 7-28  
 [File] menu ..... 1-11, 1-42  
 transfer ..... 5-10  
 flash function ..... APP2-8  
 Flip ..... 1-39  
 font ..... APP1-1  
 Chinese ..... APP1-3  
 Chinese (simplified) ..... APP1-3  
 English/Western Europe ..... APP1-3  
 available font ..... APP1-3  
 font setting ..... APP1-2  
 font data ..... 5-26

**G**

graph display  
 part editing ..... APP3-17  
 graphic library ..... 4-4  
 graphic mode ..... 2-50  
 graphic relay mode ..... 2-50  
 grid ..... 2-13, 2-14, 2-15

**H**

[Help] menu ..... 1-16

**I**

I/F driver ..... 5-21  
 interval timer ..... 2-54  
 Item List ..... 1-27  
 [Item] menu ..... 1-15, 4-1

**J**

JPEG display ..... 2-56  
 Jump ..... 1-22

**K**

keypad  
 part editing ..... APP3-15

**L**

ladder comm. prg. .... 5-28  
 lamp ..... 2-39  
 part editing ..... APP3-9  
 layer ..... 2-35  
 line ..... 2-6

**M**

macro ..... 2-54  
 macro block ..... 4-55  
 memo pad ..... 2-54  
 memory address use ..... 7-5  
 memory card ..... 2-55  
 screen data transfer ..... 5-13  
 memory use ..... 7-4  
 [Menu Dsp.] tab window ..... 2-12  
 modify part  
 modifying parts ..... APP3-3  
 modifying parts ..... APP3-3  
 monochrome 8-gradation ..... 2-16  
 Multi Copy ..... 1-35  
 multi-language ..... 4-84  
 multi-overlap ..... 4-20

**O**

ON Grid ..... 2-13, 2-15  
 online editing ..... 5-30  
 overlap ..... 2-34  
 part editing ..... APP3-7

**P**

page block ..... 4-61  
 panel meter ..... 2-48  
 part editing  
 bar graph ..... APP3-17  
 calendar ..... APP3-31  
 closed area graph ..... APP3-26  
 component ..... APP3-2  
 data display ..... APP3-14  
 data sampling display area ..... APP3-29  
 display area ..... APP3-29  
 lamp ..... APP3-9  
 menu ..... APP3-38  
 outline ..... APP3-1  
 overlap ..... APP3-7  
 panel meter ..... APP3-22  
 pie graph ..... APP3-19  
 statistic graph (bar) ..... APP3-23  
 statistic graph (pie) ..... APP3-24  
 switch and lamp ..... APP3-9  
 area ..... APP3-12  
 creating ON display ..... APP3-12  
 frame ..... APP3-12  
 keypad ..... APP3-15  
 part frame setting ..... APP3-12  
 switch area setting ..... APP3-11  
 switch grid ..... APP3-13  
 trend graph ..... APP3-24  
 trend sampling ..... APP3-24  
 part file  
 creating procedure ..... APP3-4  
 creation and storage ..... APP3-4  
 printing ..... APP3-34  
 [Part] menu ..... 1-15

**P**

parts	
change	2-26
enlargement/reduction	2-27
notes on parts placement	2-18
placement	2-25
animation	2-55
bar graph, pie graph	2-48
calendar display	2-52
data block area	2-47
data display	2-40
entry mode	2-47
graphic mode and graphic relay mode	2-50
interval timer	2-54
JPEG display	2-56
macro	2-54
memo pad	2-54
memory card	2-55
message mode	2-46
overlap	2-34
panel meter, closed area graph	2-48
relay and relay-sub modes	2-46
sampling	2-51
sound	2-56
statistic graph	2-49
switch and lamp	2-39
time display	2-52
trend graph	2-50
video	2-56
type	2-17
parts file	2-21
kinds	2-21
list	2-22
[Parts] tab window	2-17
password	1-42
screen data	1-42
paste bitmap	7-14
pattern	4-37
placing	3-23
pie graph	2-48
Point Search	1-41
printing	6-1
available printers	6-1
[Option Setting] dialog	6-2
part file	APP3-34
preliminaries	6-1
preliminary steps	6-1
[Print Setting] dialog	6-4
printing currently opened window	6-7
printing example	
animation	6-11
list output	6-8
memory address use list	6-10
screen output	6-8
system setting	6-9
table print	6-9
Use Cross-reference	6-10
program	5-25
Property	1-42

**R**

registration item	4-1
animation	4-85
content	4-2
data block	4-25
environment setting	4-27
data sheet	4-75
direct block	4-65
graphic library	4-4
data display	4-16
environment setting	4-17
offset	4-5
parameter	4-6
macro block	4-55
message	4-28
environment setting	4-35
multi-overlap	4-20
outline	4-1
page block	4-61
pattern	4-37
bitmap import and storage	4-49
environment setting	4-53
placing	4-54
transforming	4-47
screen	4-3
screen block	4-69
screen library	4-80
tile	4-72
relay mode	2-46
relay sub-mode	2-46
right-click	
menu	1-32
Rotate	1-38

**S**

sampling	2-51
screen	4-3
background color	2-7
capacity	2-6
composition	2-1, 2-5
resolution	2-5
screen block	4-69
screen data transfer on Ethernet	5-14
screen library	4-80
placing	3-37
Screen List	1-23
[Screen Setting] dialog	2-7
Select Environment	1-41

**S**

simulator ..... 8-1  
 closing ..... 8-7  
 communication  
     start ..... 8-7  
     stop ..... 8-7  
 communication setting ..... 8-9  
 composition ..... 8-1  
 error list ..... 8-31  
 I/F driver ..... 8-4  
 icon ..... 8-28  
 memory  
     decrement ..... 8-23  
     increment ..... 8-23  
 menu ..... 8-28  
 operation procedure ..... 8-2  
 outline ..... 8-1  
 preliminaries ..... 8-4  
 sheet ..... 8-13  
 SIM file ..... 8-3  
 starting up ..... 8-6  
 testing ..... 8-17  
     CSV file ..... 8-25  
 useful operation ..... 8-21  
 sound ..... 2-56  
 special edit ..... 3-11  
 SRAM data ..... 5-27  
 statistic graph ..... 2-49  
 status bar ..... 1-10  
 superimpose ..... 2-8  
 switch ..... 2-39  
     part editing ..... APP3-9  
 [System Setting] menu ..... 1-16  
 system updating ..... 5-28

**T**

Temp./PLC2 ..... 5-27  
 tile ..... 4-72  
 time display ..... 2-52  
 tool ..... 7-1  
     Add Video Menu ..... 7-21  
     change memory ..... 7-7  
     convert to rich text format ..... 7-19  
     copy image to clip board ..... 7-12  
     copy image to pattern ..... 7-10  
     custom part ..... 7-21  
     DXF file convert ..... 7-17  
     error check ..... 7-2  
     memory address use ..... 7-5  
     memory use ..... 7-4  
     menu list ..... 7-1  
     paste bitmap ..... 7-14  
     tag table ..... 7-26  
     tray ..... 7-23  
 tool bar ..... 1-8, 2-28  
 tool box ..... 2-29  
 [Tool] menu ..... 1-16, 7-1

transfer ..... 5-1  
     ZM-80C ..... 5-12  
         after screen data transfer ..... 5-40  
         CF card ..... 5-15  
         I/F driver  
             file list ..... 5-21  
             memory card ..... 5-17  
             online editing ..... 5-30  
             preliminary steps ..... 5-1  
             system updating ..... 5-28  
         transfer data  
             ex. font ..... 5-27  
             font data ..... 5-26  
             I/F driver ..... 5-21  
             ladder comm. prg. .... 5-28  
             modbus comm. prg. .... 5-28  
             program ..... 5-25  
             SRAM data ..... 5-27  
             station no. table ..... 5-27  
             Temp./PLC2 ..... 5-27  
     [Transfer] dialog ..... 5-10  
     transfer method  
         CF card ..... 5-7  
         Ethernet ..... 5-6  
         memory card ..... 5-8  
         modem ..... 5-9  
         preliminaries ..... 5-3  
         ZM-80C ..... 5-5  
 transfer via modem ..... 5-32  
 tray ..... 7-23  
 trend graph ..... 2-50

**V**

video ..... 2-56

**W**

wallpaper ..... 2-9  
     setting ..... 2-9  
 [Window] menu ..... 1-16  
 wizard ..... 9-1  
     deleting placed parts ..... 9-16  
     outline ..... 9-1  
     usage example ..... 9-2  
         error display ..... 9-6  
         radio button ..... 9-2  
         trend graph display ..... 9-11

**Z**

ZM-MDD transfer utility ..... 8-32  
     closing ..... 8-34  
     composition ..... 8-32  
     operation procedure ..... 8-33  
     outline ..... 8-32  
     starting ..... 8-33  
     [ZM-MDD Transfer Utility] dialog ..... 8-33

# SHARP®

**SHARP MANUFACTURING SYSTEMS CORPORATION**

Information about Sharp programmable controller is available at our internet homepage <http://sharp-world.com/sms/>