

# Panasonic<sup>®</sup>

TOUCH TERMINALS

## GTWIN

### Reference Manual



# Before beginning

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- When physical defects are due to defective equipment other than the distributed product.
- When physical defects are due to modifications/repairs by someone other than PEWEU.
- When physical defects are due to natural disasters.

# Important Symbols

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One or more of the following symbols may be used in this documentation:



## **DANGER!**

The warning triangle indicates especially important safety instructions. If they are not adhered to, the results could be fatal or critical injury.



## **CAUTION**

Indicates that you should proceed with caution. Failure to do so may result in injury or significant damage to instruments or their contents, e.g. data.



## **NOTE**

Contains important additional information.



## **EXAMPLE**

Contains an illustrative example of the previous text section.



## **PROCEDURE**

Indicates that a step-by-step procedure follows.



## **REFERENCE**

Indicates where you can find additional information on the subject at hand.

# Table of contents

<b>1. Introducing GTWIN.....</b>	<b>10</b>
1.1 Overview of GTWIN.....	11
1.2 Windows Vista® .....	12
1.3 Booting GTWIN.....	13
1.3.1 Read From GT .....	14
1.3.2 GT Memory Editor.....	15
1.3.2.1 Upload Alarm History Information .....	15
1.3.2.2 Upload Line Graph Information.....	16
1.3.2.3 Edit GT Internal Memory.....	16
1.3.3 GT Ver_UP.....	16
1.3.4 Modem Connection.....	17
1.4 Create New File.....	18
1.5 GTWIN Configuration .....	19
1.6 GT Configuration .....	21
1.6.1 Basic Setup .....	23
1.6.1.1 Basic Communication Area to PLC.....	24
1.6.2 Communication Parameters.....	26
1.6.3 PLC Multiple Connection.....	28
1.6.3.1 Skip Communication Error Station.....	29
1.6.3.2 PLC Unit No. and Comment .....	30
1.6.4 Auto-Paging.....	31
1.6.5 Start-Up Screen.....	31
1.6.6 Setup 1 .....	32
1.6.6.1 Summer Time.....	35
1.6.7 Setup 2 .....	35
1.6.7.1 Countdown timer .....	37

1.6.8	Hold Device Value.....	38
1.6.9	Recipe .....	39
1.6.9.1	Recipe Control.....	41
1.6.10	Alarm History Setting.....	41
1.6.10.1	Alarm History Control .....	44
1.6.10.2	Save Alarm Data on SD Memory Card .....	46
1.6.11	Line Graph.....	48
1.6.11.1	Line Graph Control .....	50
1.6.12	Sound .....	51
1.6.13	Operation Security.....	52
1.6.14	GT Link.....	53
1.6.14.1	How GT Link Functions.....	55
1.6.15	Index Registration .....	56
<b>2.</b>	<b>GT Panel System Menu .....</b>	<b>58</b>
2.1	GT Panel System Menu Overview .....	59
2.2	Port.....	61
2.3	Clear Memory.....	62
2.4	Test Menu .....	64
2.5	DIP Switch Settings to Prevent System Menu Display.....	65
2.6	SD Memory Card Functions .....	66
2.6.1	Usable SD Memory Cards.....	68
2.6.2	Restrictions.....	69
2.6.3	Copy Screen Data to the SD Memory Card .....	71
2.6.4	Copy Screen Data to the GT .....	73
2.6.5	Copy PLC Program Files to the PLC .....	74
2.6.6	Copy PLC Program Files to the SD Memory Card .....	76
2.6.7	Delete Data from the SD Memory Card .....	78
2.7	FP Monitor .....	80
2.7.1	Installing FP Monitor on the GT .....	80
2.7.2	Uninstalling FP Monitor .....	82

2.7.3	Using FP Monitor .....	83
2.7.3.1	System Register Monitor Screen .....	84
2.7.3.2	Error Monitor Screen.....	84
2.7.3.3	Device Monitor Screen.....	85
2.7.3.4	Password Management Screen.....	90
2.7.3.5	Shared Memory Monitor Screen .....	92
<b>3.</b>	<b>The GTWIN User Interface .....</b>	<b>93</b>
3.1	What You See on Your Monitor .....	94
3.2	Menu Bar .....	95
3.3	Toolbar.....	96
3.4	Graphic Bar.....	98
3.5	Size/Coordinate Bar.....	101
3.6	Base Screen .....	102
3.7	Parts Library .....	103
3.7.1	New Parts Library.....	104
3.7.2	Flowchart Symbols Library.....	105
3.8	Screen Manager .....	106
<b>4.</b>	<b>Menus .....</b>	<b>107</b>
4.1	File Menu .....	108
4.1.1	New, Open, Close, Save, Save As, Delete.....	108
4.1.1.1	Windows Fonts Not Available .....	109
4.1.2	Print.....	110
4.1.3	Print Style Setup .....	111
4.1.4	Printer Setup .....	112
4.1.5	Transfer .....	113
4.1.6	Configuration .....	114
4.1.7	Keyboard Screen .....	115

---

4.1.8	Login Screen .....	116
4.1.9	Utility.....	116
4.1.9.1	PLC Model Convert.....	117
4.1.9.2	GT Model Convert.....	118
4.1.9.3	Convert Fixed (GTWIN) Font .....	119
4.1.9.4	Change Device.....	122
4.2	Edit Menu and Common Editing Functions .....	124
4.2.1	Multiple Copy.....	125
4.3	View Menu.....	126
4.4	Draw Menu .....	127
4.5	Base Screen Menu.....	128
4.6	Parts Menu .....	129
4.7	Start Editor Menu .....	131
4.7.1	Bitmap .....	131
4.7.1.1	How to Create a Bitmap with the Bitmap Editor.....	132
4.7.1.2	Using the Bitmap Editor .....	134
4.7.1.3	Importing Bitmap Files .....	136
4.7.1.4	Organizing Bitmap Files .....	137
4.7.1.5	Placing Bitmaps on Base Screens .....	137
4.7.2	Recipe .....	139
4.7.2.1	How to Create a Recipe File .....	139
4.7.2.2	Transferring Recipe Files .....	142
4.7.2.3	Example Recipe .....	142
4.7.3	SD Recipe .....	145
4.7.3.1	How to Save SD Recipe Data on the SD Memory Card.....	146
4.7.3.2	SD Recipe Basic Setup.....	147
4.7.3.3	Specify File No. by Control Device.....	148
4.7.3.4	Specify Recipe File Name by Touch Operation.....	148
4.7.3.5	SD Recipe Recipe Setting.....	149
4.7.3.6	Entering and Reading Device Values .....	150
4.7.3.7	Handshake Using Write Device .....	151
4.7.4	Flow Display .....	152

---

4.7.5	Write Device .....	154
4.7.6	Sound .....	156
4.7.7	Operation Security Password.....	158
4.7.8	Multi-Language Exchange String List .....	159
4.7.8.1	Setup with the String List .....	160
4.7.8.2	Setup for Individual Parts .....	163
4.7.8.3	Change the Language with a Function Switch .....	166
4.7.8.4	Change the Language with a PLC .....	168
4.7.9	Data Logging .....	169
4.7.9.1	Log File and CSV File Structure .....	171
4.7.9.2	Log File Setup .....	173
4.7.9.3	Control Setup for Data Logging .....	176
4.8	Window menu .....	179
4.9	Help Menu .....	180
<b>5.</b>	<b>Parts and Their Functions .....</b>	<b>181</b>
5.1	Switch Parts.....	182
5.2	Function Switch Parts .....	184
5.2.1	Multi Function .....	187
5.3	Lamp Parts .....	188
5.4	Message Parts.....	190
5.4.1	Message Part, Sample FPWIN Pro Program.....	191
5.5	Data Parts.....	194
5.5.1	Basic Setup for Data Parts.....	195
5.5.2	Input Settings for Data Parts .....	197
5.6	Bar Graph Parts.....	199
5.7	Clock Parts .....	201
5.8	Alarm List Parts .....	202
5.8.1	History of Alarms in Time Order.....	203

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5.8.2	History of Alarms in Order of Frequency .....	205
5.8.3	List of Active Alarms .....	206
5.9	Line Graph Parts .....	208
5.9.1	Configuration Parameters .....	208
5.9.1.1	"Display Data" Options on "Display" Tab .....	209
5.9.1.2	"Line Settings" Tab When "Reference Data" = "Device" (Basic Setup).....	210
5.9.1.3	"Line Settings" Tab When "Reference Data" = "SD Card (Logging Data)" (Basic Setup).....	211
5.9.2	Comparing Line Graph Modes .....	212
5.9.3	Basic Setup in Sampling Mode .....	215
5.9.4	Basic Setup in Block Mode.....	217
5.9.5	Line Graphs Combined with Bar Graphs .....	220
5.10	Keyboard Parts.....	223
5.10.1	Basic Setup for Keyboard Parts .....	224
5.10.2	Operation Setup for Keyboard Parts .....	226
5.10.3	Displaying and Hiding Keyboard Parts.....	226
5.11	Custom Parts.....	227
5.11.1	Custom Switch Parts .....	227
5.11.2	Custom Lamp and Custom Message Parts .....	228
5.11.3	Replacement Tab for Custom Parts.....	230
<b>6.</b>	<b>Troubleshooting.....</b>	<b>233</b>
6.1	Troubleshooting.....	234
6.2	Screen Messages.....	235
6.3	GT Series Error Codes.....	236
6.4	PLC Error Codes .....	239
6.5	General-Purpose Serial Communication Error Codes .....	242
6.6	What to do if Something Unusual Occurs .....	243
6.7	Operation Security Function.....	246

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<b>7. Connecting the GT to a PLC .....</b>	<b>247</b>
7.1 Panasonic FP-Series PLCs .....	248
7.2 PLC Multiple Connection .....	250
7.3 Cautions Regarding Connecting the 5V DC Type .....	252
7.4 Connecting the 5V Type to the TOOL Port of a Compact PLC .....	253
7.5 Connecting 24V Types to the TOOL Port of a Compact PLC.....	255
7.6 Connecting the 5V Type to the TOOL Port of FP2/FP2SH.....	257
7.7 Connecting 24V Types to the TOOL Port of FP2/FP2SH.....	259
7.8 Connecting to the COM Port of FP-X .....	261
7.9 Connecting to the COM Port of FPΣ/FP0(R)/FP-e .....	265
7.10 Connecting to the COM Port of FP2/FP2SH .....	269
7.11 Connecting to the FP2/FP2SH Computer Communication Unit .....	271
7.12 Connecting to the C-NET ADAPTER.....	273
7.13 Connecting Via GT Link.....	274
7.13.1 GT Link Using FP2/FP2SH .....	274
7.13.2 GT Link Using FP-X .....	277
7.13.3 GT Link Using FPΣ.....	282
<b>8. SD Card Data Upload from GT to PC .....</b>	<b>287</b>
8.1 Introduction to the GT_SD_Reader .....	288
8.2 Working with GT_SD_Reader .....	289
<b>Glossary of terms .....</b>	<b>293</b>

# Chapter 1

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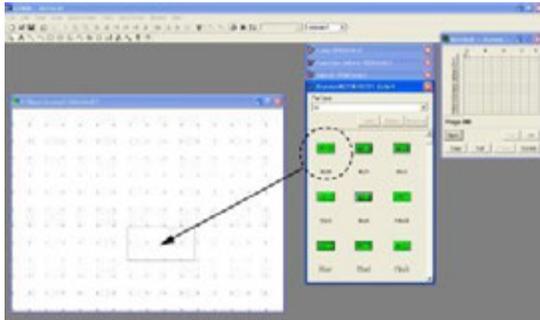
## Introducing GTWIN

## 1.1 Overview of GTWIN

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GTWIN is a screen creation software designed for the GT series. Using GTWIN you can design screens and download them to a GT touch panel, upload data from a GT panel or print.

You can compose messages or graphics. GTWIN comes with a host of pre-defined parts that make it easy for you to design screens quickly and easily, e.g. switches, lamps, clocks, keyboards, etc. Just drag and drop them onto your screen.



*A switch part being dragged and dropped*

You can also customize your own parts and store them in a user library.

Other features include:

- Line graph function to represent sampling data
- Recipe transfer between PC, GT and PLC
- Copy screens to a clipboard in bitmap format. This makes it easy for you to create an operation manual, for example.
- Bitmap editor
- Fonts include a TrueType GTWIN font as well as all the Windows fonts installed on the PC
- Multiple languages available
- Operation security functions such as security levels and passwords
- Firmware can be automatically updated (except for older GT models)

## 1.2 Windows Vista®

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Beginning with V2.91, GTWIN supports the 32-bit version of Windows Vista®. GTWIN does not support the 64-bit version of Windows Vista®. Beginning with V2.91, GTWIN is installed in the "My Documents" folder by default, not in the "Program Files" folder.



### ◆ NOTE

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**Under Windows Vista®, the "Program Files" folder is a system folder whose access is restricted.**

In versions prior to 2.91, GTWIN was installed in the "Program Files" folder by default. When you update older versions of GTWIN, the default folder destinations remain in "Program Files".

Please modify your folder destinations under Windows Vista® accordingly.

### Precautions when using Windows Vista®

- **File destinations.** Due to the operational specifications of Windows Vista®, you cannot store files in system folders such as "Program Files".
  - Screen data. If you attempt to save screen data in a system folder, GTWIN will issue an alarm message and urge you to choose another folder.
  - Part libraries, BMP library, multilanguage exchange string list, recipe data. If you attempt to store these files in system folders, **GTWIN will not issue an alarm message.** Instead the files will be stored in the "Virtual Store" folder. When you launch GTWIN the next time, GTWIN will search for them in the "Virtual Store" folder. However, the "Virtual Store" folder cannot be shared with other "login" users.
- **Multiple users.** Make sure to store files in folders to which all users have access.
- **Sound.** Windows Vista® does not provide a sound editor. For sound file conversion, you can use files edited with the sound recorder provided with Windows® XP or Windows® 2000 or use a commercial editing software that supports Windows Vista®.

## 1.3 Booting GTWIN

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When you boot GTWIN the following dialog appears.



Choose a command button and click [OK].

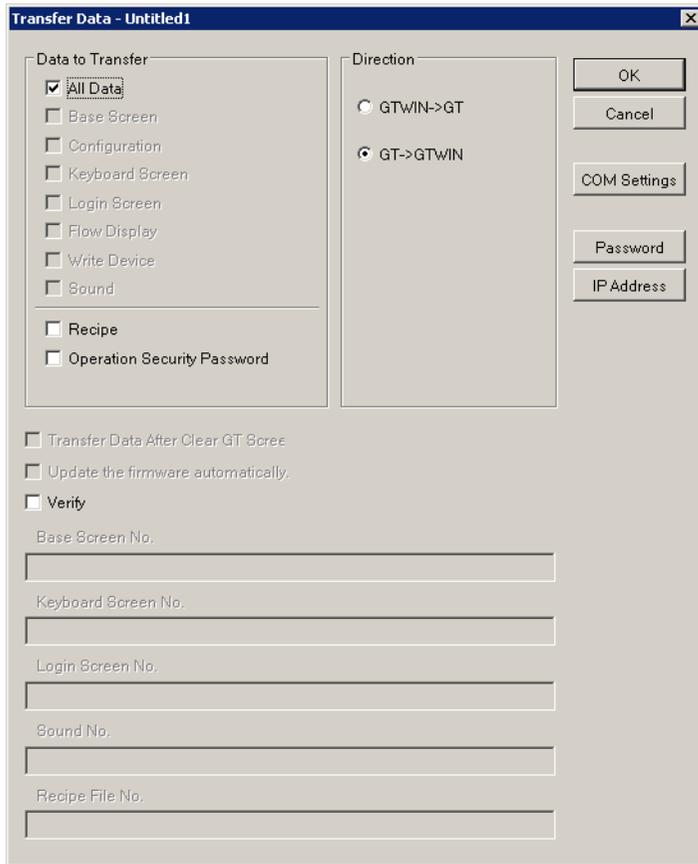
To boot via the taskbar: **Startup** → **Programs** → **Panasonic-ID SUNX Terminal** → **GTWIN**.

From the GTWIN subfolder, you can open several helpful PDF files or access a Tools subfolder, which contains:

- GT Memory Editor (see p. 15)
- GT Ver\_UP (see p. 16)
- Modem Connection (see p. 17)

### 1.3.1 Read From GT

If you selected "Read From GT", the following dialog appears.



You may have to enter a password. Select which data you wish to be transferred from GT to GTWIN as desired.



**◆ NOTE**

**Windows fonts are not available (see p. 109).**

## 1.3.2 GT Memory Editor



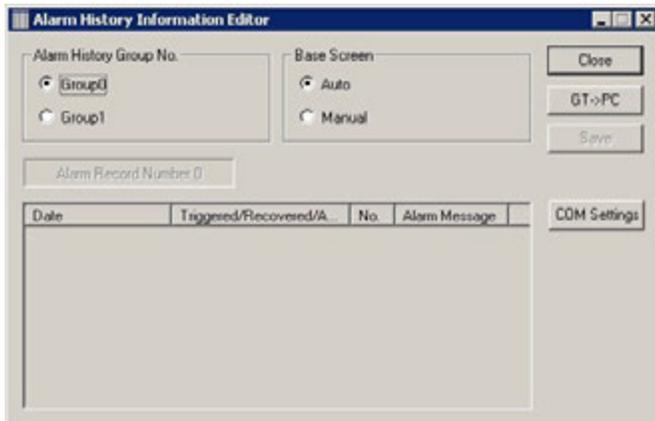
*GT Memory Editor dialog*

The GT Memory Editor allows you to:

- create CSV files for alarm history information stored in the GT
- create CSV files for line graph information stored in the GT
- edit the internal memory of the GT, which is particularly useful for general-purpose serial communication.

### 1.3.2.1 Upload Alarm History Information

When you select this option, the following dialog appears.

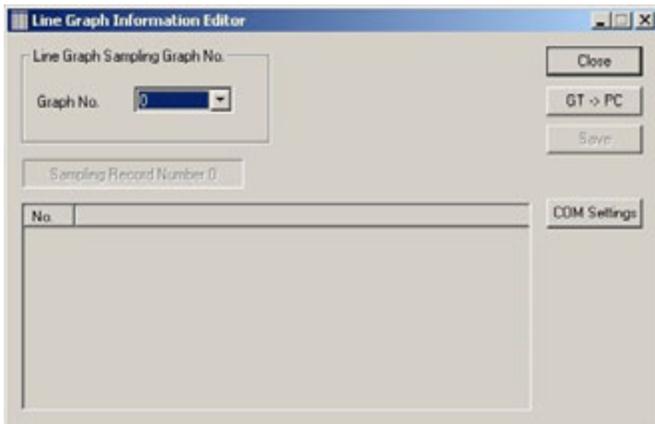


Click [GT->PC] to upload alarms. Under "Base Screen", when you select "Auto", all alarms will be uploaded, or you can select "Manual" to upload alarms associated with specific base screens.

Click [Save] to save the alarm history information as a CSV file.

### 1.3.2.2 Upload Line Graph Information

When you select this option, the following dialog appears.

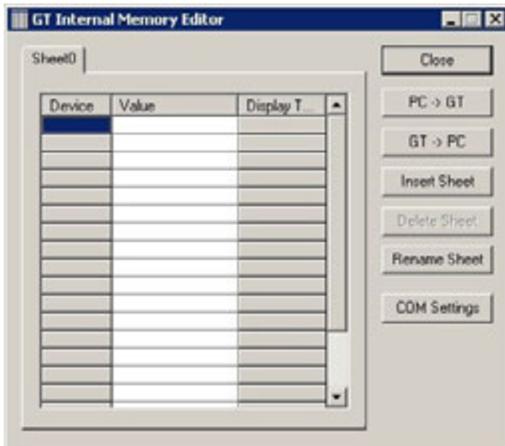


Select the desired line graph sampling group number and click [GT->PC] to upload line graph information.

Click [Save] to save the line graph information as a CSV file.

### 1.3.2.3 Edit GT Internal Memory

When you select this option, the following dialog appears.



You can upload device values from the GT to the PC, edit them, and/or download them from the PC to the GT. Simply double-click on any field, e.g. "Device", to edit or insert a value.

You can also insert, delete or rename sheets.

## 1.3.3 GT Ver\_UP

Use this dialog to manually perform a version upgrade. After calling up the dialog, choose [Select (Firmware)] and select the highest available version for your GT unit. If necessary,

modify the communication parameters via [COM Settings]. Select [Start] to perform the upgrade.

You may also upgrade the firmware automatically (see p. 113).

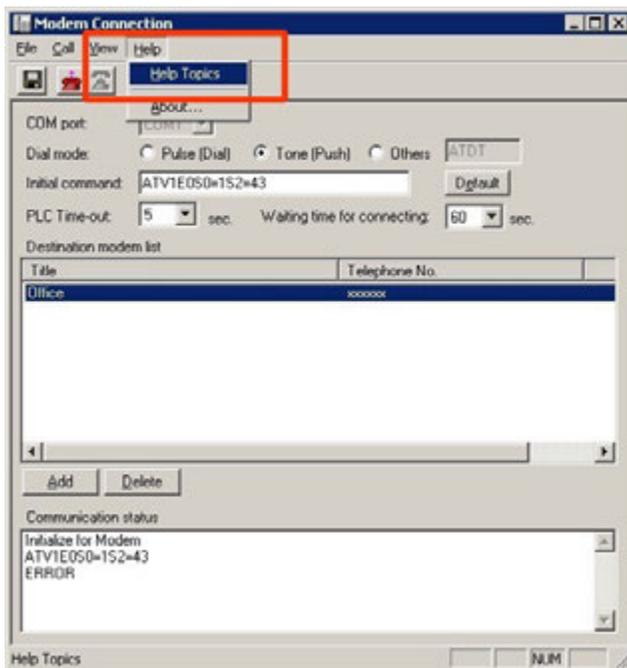


#### ◆ NOTE

- Do not turn off the power supply for the main unit while upgrading.
- Do not disconnect the cable between the PC and the GT unit; otherwise the GT unit may not reboot.
- The through function is not available during the version upgrade and while transferring screens.

### 1.3.4 Modem Connection

You may use the Modem Connection dialog to help establish a modem connection to a GT-PLC application.



*Modem Connection dialog*

Please refer to the separate online help under Help → Help Topics for assistance.

## 1.4 Create New File

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If you select "Create New File", the following dialog appears.



### GT Model

Select the GT model from the list in the text box.

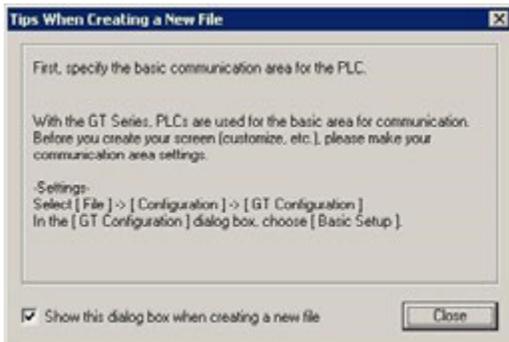
### PLC Model

Select a PLC model from the list in the text box. Please note, some PLCs of other manufacturers may not work with all GT models.

### Keep Current Settings

Select this check box so that the next time you create a new file, the GT model and PLC model you selected will appear as your default settings.

Next, the following dialog is displayed on the screen. Be sure to check your basic communication area (see p. 23) settings.

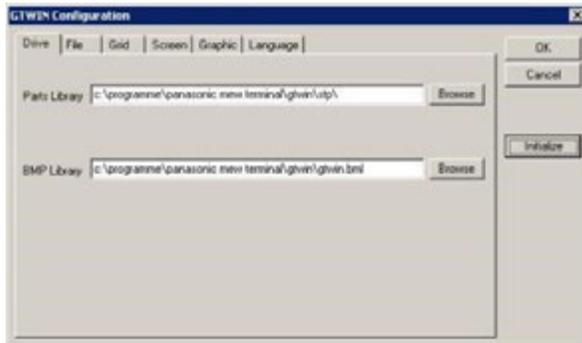


## 1.5 GTWIN Configuration

Call up the GTWIN Configuration dialog via **File** → **Configuration** → **GTWIN Configuration**.

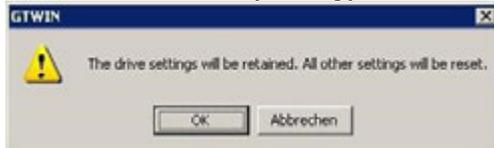


### GTWIN Configuration dialog



#### ◆ NOTE

If you click [Initialize] and then [OK], all settings except the drive settings will be reset to the default (factory) values.



### Configuration parameters

Tab	Field	Description
Drive	Parts Library	Defines the path where the data files for the parts library are stored.
	BMP Library	Defines the file where your bitmaps are stored.
File	Current Folder	Defines the default folder for saving or reading GTWIN files.
	Auto-Backup	Defines whether to back up your files automatically and in which interval.

Tab	Field	Description
Grid	Display	Select to display or not display.
	Pitch	Select the default setting or define your own grid. The values under "X (2 - 80)" and "Y (2 - 80)" to set the distance between the individual grid points in X and Y direction.
	Snap	Activate or deactivate the snap function (see p. 96).
	Color	Define the color of the grid.
	Display Guideline	Helps you to align one part with others. When you move a part in the vicinity of another, the guideline appears so that you can align the parts easily. By default, the guideline will be displayed on all sides of the object even if the grid is deactivated. The option "Distance" specifies at what distance the guideline display will be triggered.
Screen	Toolbar	Select to display or not display.
	Graphic bar	Select to display or not display.
	Zoom box	Select to display or not display.
	Parts Information	Select which parts information to display.
	Screen Manager	Select either the map or list format for the Screen Manager.
	Fill Pointer	Select whether to display the fill pointer (see p. 98) and its color on the base screen.
	Keyboard Parts	Select to display or hide keyboard parts (see p. 226) when creating screens.
	Tips Display	Select whether to display tips and when to display them. When creating files, GTWIN recommends defining the basic communication area. When saving files, GTWIN explains how files are stored.
Graphic	Circle/Oval	<p>Select how circles and ovals (see p. 98) are drawn.</p> <ul style="list-style-type: none"> <li>• Start from Center Point Beginning at the center of the circle, you trace an invisible rectangle that expands bilaterally and contains the circle or oval.</li> <li>• Start from Top Left Corner Beginning at the top left corner of the circle/oval, you trace an invisible rectangle which contains the circle/oval.</li> </ul>
Language	Default Character Set	Selects the character set for parts dragged and dropped from the parts library. Use "English" for Western European languages. If you want to use "Vietnamese", select either TrueType or Windows fonts. The fixed GTWIN font will not work.
	Menu and Dialog Language	Select in which language the graphical user interface appears.
	Multi-Language Exchange (see p. 159)	<p>Activate or deactivate the multi-language exchange function.</p> <p>Multi-language exchange allows you to change the languages displayed on screens created in multiple languages. A maximum of 16 languages can be registered.</p> <p>The multi-language exchange function is helpful, for example, if your GT is used with a machine intended for use in another country or whose operators speak a different language.</p>

## 1.6 GT Configuration

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Enter the configuration settings before using the GT unit. Call up the GT Configuration dialog via **File** → **Configuration** → **GT Configuration**.



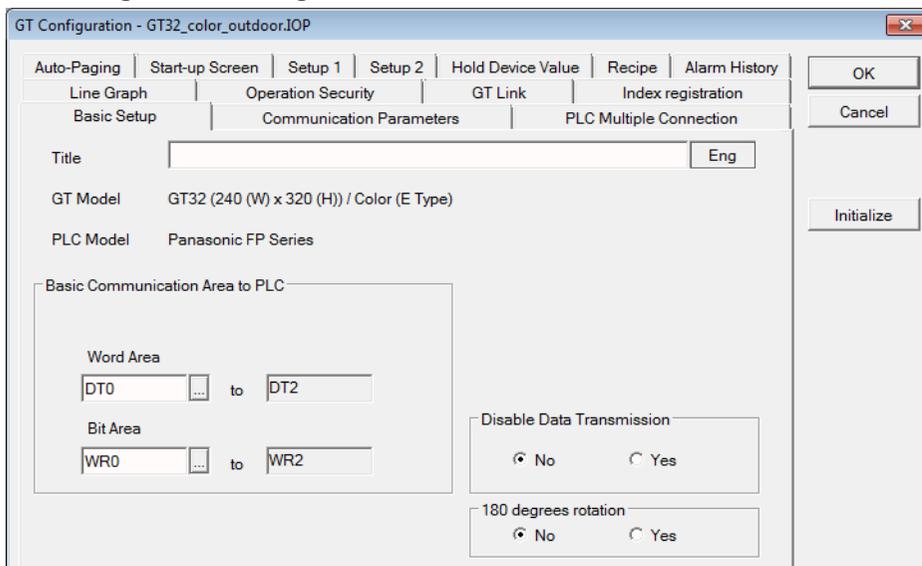
### ◆ NOTE

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**Which tabs and what appears on them may differ depending on:**

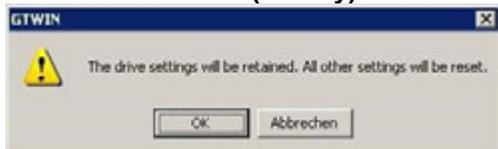
- which GT model you have selected
- whether you are communicating with a PLC or using general purpose (RS232C) communication

### GT Configuration dialog



#### ◆ NOTE

If you click [Initialize] and then [OK], all settings except the drive settings will be reset to the default (factory) values.

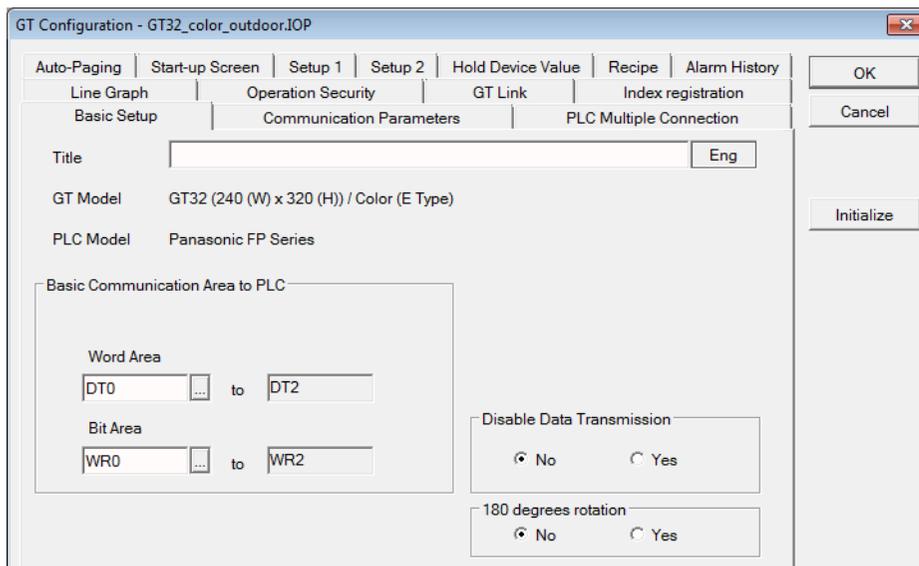


The following table describes what each tab is for. The settings for each tab are described in the corresponding sections.

Tab	Description
Basic Setup (see p. 23)	Specify basic items for the GT unit, e.g. the basic communication area to the PLC.
Communication Parameters (see p. 26)	Specify communication parameters between the GT unit and a PLC or between the PC (GTWIN) and the GT unit.
PLC Multiple Connection (see p. 28)	If you select "Yes", you can specify the unit number and name for multiple Panasonic FP series PLCs connected to the GT.
Auto-Paging (see p. 31)	Specify when to switch screens.
Start-up Screen (see p. 31)	Specify which screen is displayed and how long it is displayed when the GT is booted.
Setup 1 (see p. 32)	Enter settings for the clock, backlight, touch sounds, multi-language exchange, etc.
Setup 2 (see p. 35)	Depending on the GT model, either enter settings for the through function or the SD memory card.
Hold Device Value (see p. 38)	Specifies which PLC (Panasonic FP-Series PLCs only) and GT device values are held when power is turned off.
Recipe (see p. 39)	Specify recipe control device for the GT.

Tab	Description
Alarm History (see p. 41)	Enter settings for the alarm history.
Line Graph (see p. 48)	Enter settings for line graphs.
Sound (see p. 51)	Enter settings for sounds.
Operation Security (see p. 52)	Enter settings for operation security.
GT Link (see p. 53)	Enter settings for GT Link.
Index registration (see p. 56)	Register index devices.

## 1.6.1 Basic Setup



Basic Setup tab for GT32-E and an FP-Series PLC

### Basic Setup parameters

Field	Description
Title	Enter the title for the configuration settings file. Titles are convenient if each GT unit has its own configuration settings.
PLC Model	Displays the PLC model that will be connected to the GT.
GT Model	Displays the GT model.
Basic Communication Area to PLC (see p. 24)	The basic communication area allows the PLC and GT unit to exchange basic data. The devices/addresses assigned to this area must be set; <b>they must not be used for other purposes, neither by the PLC nor by the GT.</b> <b>Word Area.</b> Specify the device and starting address for the word area that reads and writes screen numbers and other information stored in word units. <b>Bit Area.</b> Specify the device and starting address for the bit area that reads and writes backlight control and other information stored in bit units.
Disable Data Transmission	Disables the data transmission. Use this parameter to prevent download of GT data to the PLC and vice versa. Note that if you have activated the option and deactivate it again, you need to clear the FROM (see p. 62) from the system menu. Only

Field	Description
	available for the following GT models: GT02, GT02L, GT03-E, GT05, GT12, GT32, GT32-E.
180 degrees rotation	Rotates the display of all screens by 180° when the GT panel is placed upside down. Only available for the following GT models: GT03-E and GT32-E. This function is also available when the GT panel is installed in portrait orientation.
<b>Options for general purpose serial communication</b>	
Communication Mode	<p>Please set in accordance with the standard RS232C device you are using. Please consult the manual of the device you are using for more information on the communications mode.</p> <p><b>Command Response.</b> The RS232C device connected to the GT has the transmission right, i.e. it transmits the control command to the GT and the GT executes a process in accordance with that command. The command response mode returns the result to the RS232C device.</p> <p><b>Two-way 1.</b> The RS232C device connected to the GT sends a control command to the GT. Data such as switch operations and data settings is transmitted to the RS232C device from the GT. In this mode, the GT does not reply to the command from the connected RS232C device so execution time is shorter.</p> <p><b>Two-way 2.</b> The RS232C device connected to the GT sends a control command to the GT. Data such as switch operations and data settings is transmitted to the RS232C device from the GT. In this mode the GT replies to the command from the connected RS232C device so execution time is longer. However, data transfer is more secure as a result of confirmation or error messages.</p>

### 1.6.1.1 Basic Communication Area to PLC



#### ◆ NOTE

**Make sure that your PLC does not use the word or bit areas, i.e. addresses assigned under "Basic Communication Area to PLC", for any other purpose!**

## Basic Communication Area Map

### Word area

Word position	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
n + 0, e.g. DT0	Screen no. read by GT from the PLC, in hexadecimal format.															
n + 1, e.g. DT1	Usage prohibited.															
n + 2, e.g. DT2	No. of currently displayed screen. GT writes data to PLC in hexadecimal format.															

### Bit area

Word position	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
n + 0, e.g. WR0	Buzzer*1	Forced display flag	Backlight valid flag	Backlight flashing	Backlight color		Touch sound*1	Reverse display*2			Backlight brightness*3					
n + 1, e.g. WR1	Usage prohibited.															
n + 2, e.g. WR2											SD memory card inserted flag*6	Password change screen display flag*4	Login screen display flag*4	Battery low flag*5	Battery*5	Data input in progress

\*1 Not applicable to GT02L

\*2 For monochrome types only

\*3 Not applicable to GT01, GT11, GT21, GT32

\*4 Not applicable to GT01, GT11, GT21

\*5 Applicable to models with batteries only

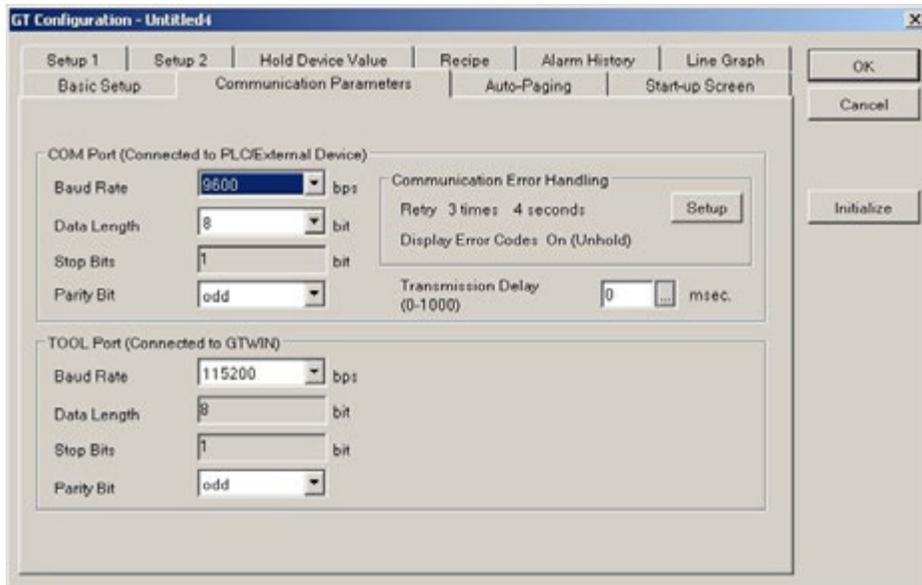
\*6 Applicable to models with SD memory card slot only

The following table provides a more detailed explanation for the bit areas for the various GT models.

Item	Explanation	
Buzzer	Turns on the buzzer.	
Forced display flag	0: Screens can be changed at will. 1: The screen specified as a number in the Word position n+0 of the PLC is forcibly turned ON and held.	
Backlight valid flag	When the bit is turned on, backlight flashing/backlight color control becomes effective.	
Backlight flashing	0: lighted (normal), 1: flashing	
Backlight color	GT01/GT02G/GT05G/GT12G 3-color LED backlight	00: Off, 01: Green, 10: Red, 11: Orange
	GT01 1-color LED backlight	00: Off, 01: Lighted, 10: Off, 11: Lighted (weak)
	GT02L/GT03-E/GT05S/GT32-E 1-color LED backlight	00: Off, 01: Lighted, 10: Lighted, 11: Lighted
	GT01R/GT02M/GT05M/GT12M 3-color LED backlight	00: Off, 01: White, 10: Red, 11: Pink
	GT11 3-color LED backlight	00: Off, 01: Green, 10: Red, 11: Orange
	GT11 1-color LED backlight	00: Off, 01: Lighted, 10: Off, 11: Lighted (weak)
	GT03-E, GT05S, GT21, GT30, GT32, GT32-R, GT32-E	00: Off, 01: Lighted, 10: Lighted, 11: Lighted
Touch sound	1: touch sound activated, i.e. switches will produce a beep when pressed if so defined. 0: touch sound not activated.	

Item	Explanation
Reverse display	For monochrome types only. 1: reverse display activated. All parts displayed in reverse, i.e. the light areas become dark and the dark areas become light. 0: reverse display not activated.
Backlight brightness	0000: no backlight brightness adjustment in Basic Communication Area. 0001-1111: the larger the value, the brighter the backlight.
Password change screen display flag	1: screen for changing the password displayed, or the screen for password management (administrator only) displayed. 0: finished with screen.
Login screen display flag	1: login screen displayed. 0: login finished.
Battery low flag	This bit turns on when the battery is low and the battery low icon appears on the lower right of the GT screen (if the battery error display is set to ON). Please replace the battery within 1 week.  Battery low icon: 
Battery	This bit turns on if clock data and "Hold PLC Device" data held in the SRAM are not being backed up normally.  This bit also goes on if the SRAM is not backed up by the internal secondary battery and the battery low icon appears on the lower right of the GT screen (if the battery error display is set to ON).  Battery low icon: 
Data input in progress	This bit is ON while data is being input.

### 1.6.2 Communication Parameters

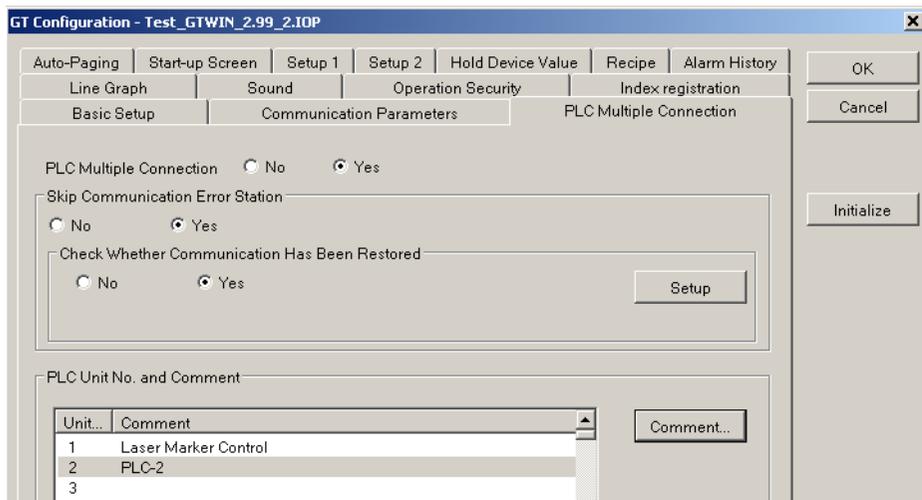


Communication Parameters tab for GT21 and an FP-Series PLC

## Communication parameters

Field	Description
COM Port	<p>Set the baud rate, data length, and parity bit. The stop bit is fixed at "1" by default.</p> <p><b>Communication Error Handling (not available for general purpose serial communication)</b></p> <p>To define how to handle a communication error, click [Setup] to call up the "Communication Error Handling" dialog.</p>  <p><b>Retry:</b> number of retries in case of a communication error.  <b>Wait:</b> how long to wait between retries.  <b>Display Error Code</b></p> <ul style="list-style-type: none"> <li>• Select "Off" to not display error messages on the screen.</li> <li>• Select "Yes (Hold)" to display error messages and hold them when power is turned off.</li> <li>• Select "Yes (Unhold)" to display error messages but clear them when power is turned off.</li> </ul>
TOOL Port	Set the baud rate and the parity bit. The data length and the stop bit value are read-only and fixed at "8" and "1", respectively.
Transmission Delay	<p>When the GT unit and any controller communicate with each other, they transfer data. Basically the GT is the master and requests an answer; the controller/PLC replies.</p> <p>Some circumstances may cause the GT unit to communicate faster than the controller and information may be lost. Set a transmission delay to ensure that the GT responds only after receiving all data from the PLC.</p>
<b>Options for general purpose serial communication</b>	
GT Unit Number	Specify the unit number of the GT connected to an external device (PLC).
COM Port	<p><b>Communication System</b></p> <p>For some GT models, select either "RS232C/RS442 communication (full-duplex)" or "RS485 communication (half-duplex)".</p>
<b>Options for Modbus RTU communication</b>	
PLC Unit Number	Specify the PLC unit number (1 - 247) connected to the GT unit that is to communicate using Modbus RTU.

### 1.6.3 PLC Multiple Connection



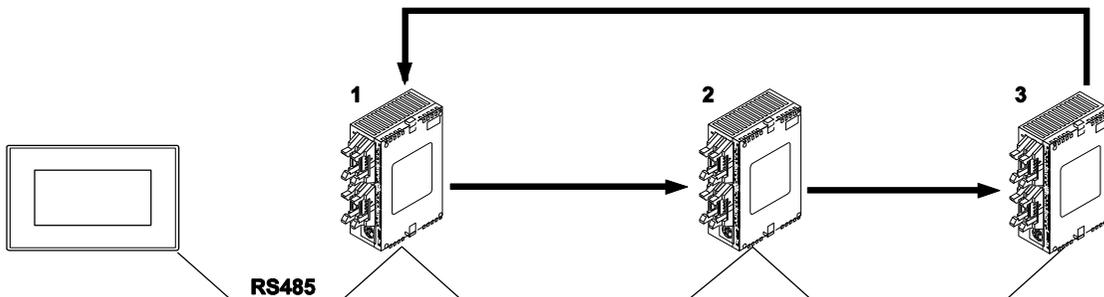
**NOTE**

Which tabs and what appears on them may differ depending on which GT model you have selected.

Activating "PLC Multiple Connection" will make the following fields appear:

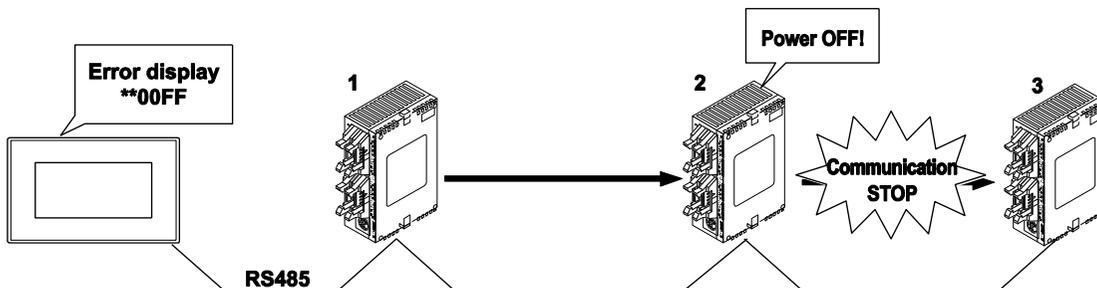
- Skip Communication Error Station (see p. 29)
- PLC Unit No. and Comment (see p. 30)

Once you have set up multiple PLCs, communication will occur as illustrated.

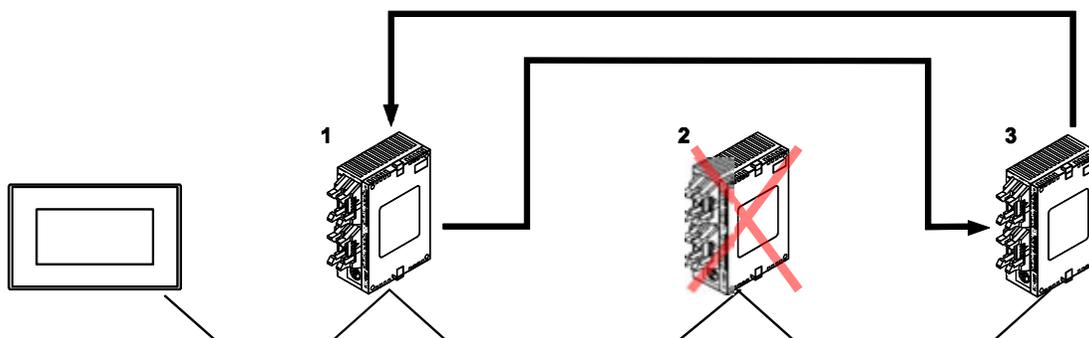


### 1.6.3.1 Skip Communication Error Station

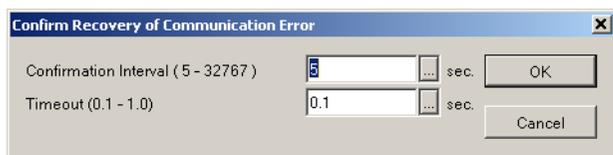
If this function is not activated, communication within a chain of multiple PLCs collapses and a communication error occurs if a PLC becomes disconnected or its power fails.



By activating this function, communication will bypass the defective PLC and continue with the other PLCs.



Once you activate "Skip Communication Error Station", you can poll the PLC to check whether the communication error has been recovered. Click [Setup] to call up the dialog.



The GT polls the defective PLC at the **Confirmation Interval** specified to see whether the communication error has been recovered. During polling, the PLC must respond during the specified **Timeout**. If the communication error has been recovered, communication is resumed. Otherwise the PLC is skipped until the next confirmation interval.



#### ◆ NOTE

- During the timeout, the GT panel cannot be operated.
- Frequent confirmation intervals and long timeouts will compromise system availability.

### 1.6.3.2 PLC Unit No. and Comment

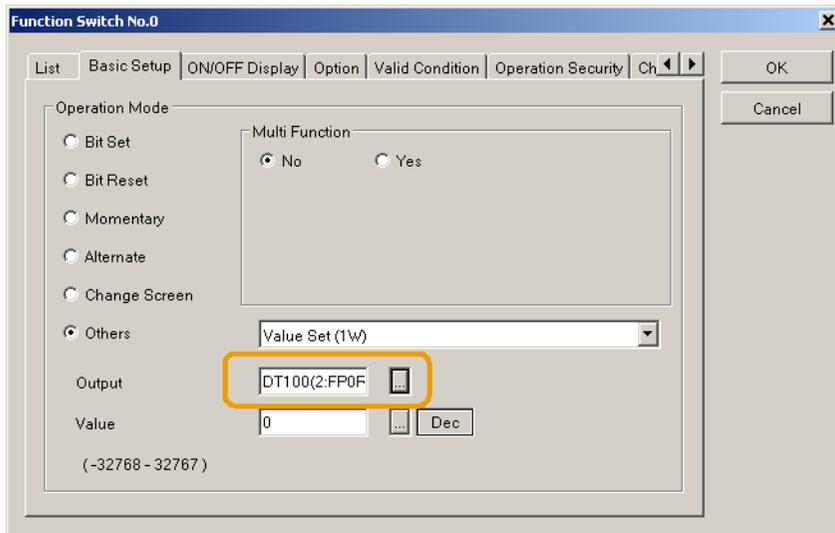
Press [Comment...] to set up multiple PLCs and assign meaningful names.



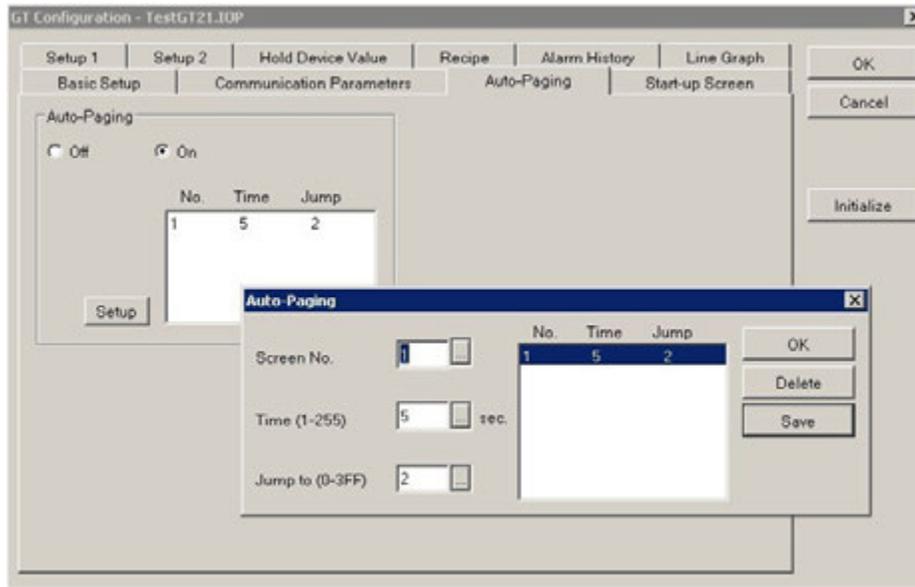
Once you have defined multiple PLCs, you will have to select the desired PLC when making device settings.



Similarly, the PLC unit number + comment will appear after device settings in other dialogs.



## 1.6.4 Auto-Paging



*Auto-paging tab with auto-paging configuration dialog*

### Auto-Paging parameters

Select the option button "On" and press [Setup] to configure auto-paging.

Item	Description
Screen No.	Specify which screen to jump from.
Time (1-255)	Specify how long to display the screen being jumped from.
Jump to (0-3FF)	Specify which screen to jump to.
[Delete]	Delete settings for a screen no.
[Save]	Save settings for a screen no.

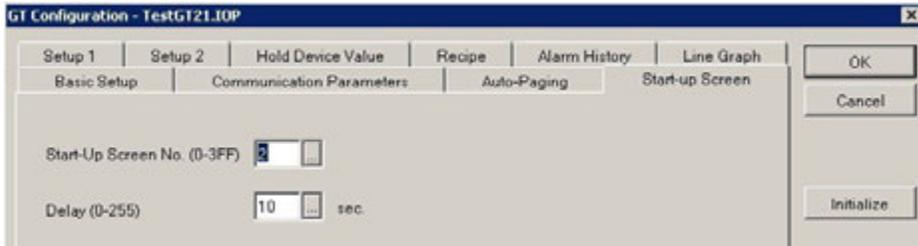
## 1.6.5 Start-Up Screen

Use the start-up screen function when it is necessary to delay communication between the GT and the PLC (external device) when the power supply on the PLC side is turned on.



### ◆ NOTE

**Communication between the GT and the PLC (external device) cannot be carried out during the time specified by "Delay".**



### *Start-Up Screen tab*

With the settings displayed above, "Start-up Screen No." 2 is displayed for 10 seconds. Switches, lamps and other devices that require addresses and hence communication will not be displayed during this time.



### *Screen 2, the temporary start-up screen*

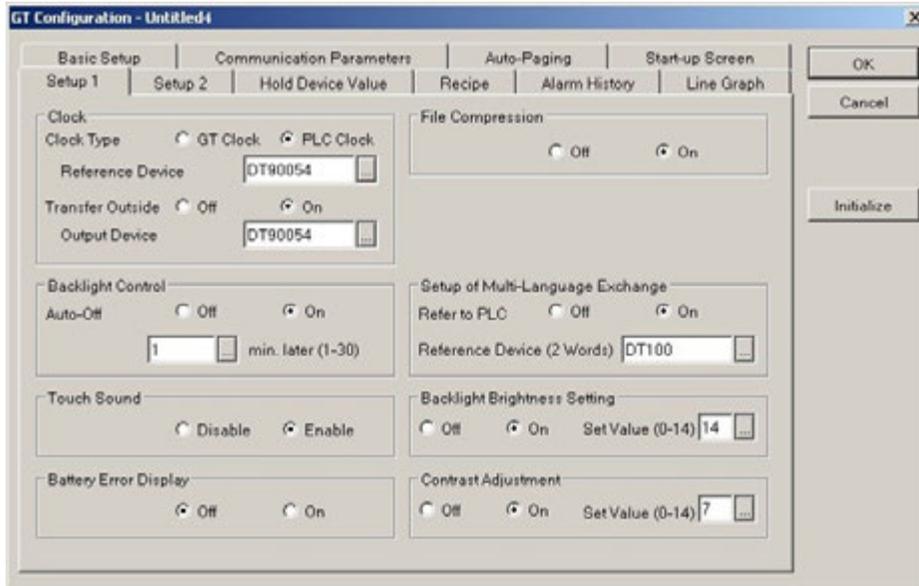
After this delay, the screen corresponding to the number stored in the initial address of the word device under "Basic Communication Area to PLC" (see p. 24) in the "Basic Setup" parameters under "GT Configuration" will be displayed.

## 1.6.6 Setup 1



### ◆ NOTE

Which tabs and what appears on them may differ depending on which GT model you have selected.



**Setup 1 parameters**

Field	Description
<p>Clock <b>(Not available for general purpose serial communication)</b></p>	<p><b>GT Clock</b> or <b>PLC Clock</b>: select which internal clock you wish to use as a reference value. (Some GT models do not have their own internal clock, but you can select the option to <b>Read from PLC</b>.)</p> <ul style="list-style-type: none"> <li>• <b>Reference Device</b>: if you selected "PLC Clock", specify the reference device, i.e. the starting address where clock data is stored.</li> <li>• <b>Transfer Outside</b>: select "On" to continually transfer clock data in BCD format (see explanation after table) to an external device. If you select "Off", clock data will only be transferred to the external device when communication is established.</li> <li>• <b>Output Device</b>: specify the output device, i.e. the starting address where clock data is stored.</li> </ul> <p><b>Note</b>: If you select a device address that does not exist in the PLC, an error (ER61) will occur.</p>
<p>Summer Time (if available) (see p. 35)</p>	<p>Select whether to use standard time ("Inactive") or one of the two summer time settings available:</p> <ul style="list-style-type: none"> <li>• "DST (USA)" for US-American Daylight Saving Time</li> <li>• "CEST (Europe)" for Central European Summer Time</li> </ul>
<p>Backlight Control <b>(Not available for general purpose serial communication)</b></p>	<p>Auto-Off: to enable this function select "On". Specify how long the GT must be inactive before the backlight shuts off.</p> <p>Touch the screen to turn it back on. Switches will only become effective after the screen is back on.</p> <p>The backlight can be forcibly turned using the "Backlight Valid" flag in the basic communication area to the PLC (see p. 24), e.g. if a sensor is to detect people and turn on the backlight.</p>
<p>Touch Sound</p>	<p>Enable or disable sound when a switch is pushed.</p>
<p>Battery Error Display</p>	<p>Select "On" to display the battery low symbol in the lower right corner on the GT screen when the battery is low or if clock data or hold data are not being backed up properly.</p>

Field	Description
File Compression	Select "On" to compress file size during transfer, which allows you to transfer more data, i.e. base screens and keyboard screens.
Font for Data Parts	Recent GT models support the display of Japanese (Hiragana, Katakana and Kanji (Chinese) characters), Chinese, and Korean for data parts (see p. 194). Note: The font selected is valid for all data parts.
Press Two Touch Switches	Select "On" to be able to use two touch switches at the same time.
Set-up of Multi-Language Exchange	Select "On" to enable the multi-language exchange function.
Backlight Brightness Setting	Select "On" and specify a value to adjust the backlight brightness before other settings are transferred to the GT unit.
Contrast Adjustment	Select "On" and specify a value (0 = low contrast, 14 = high contrast) to adjust the contrast before other settings are transferred to the GT unit.

**Clock data (BCD format)**

minute	second
day	hour
year	month
—	day of the week

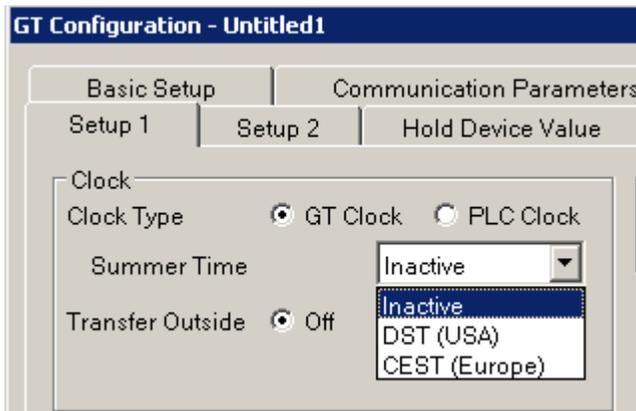
Address	Value	Description
DT90053	16#5118	(* Calendar/timer monitor: hour and minute 'sys w
DT90054	16#3414	(* Calendar/timer monitor and setting: minute and second
DT90055	16#2216	(* Calendar/timer monitor and setting: day and hour
DT90056	16#0603	(* Calendar/timer monitor and setting: year and month
DT90057	16#0003	(* Calendar/timer monitor and setting: day of the week
DT90058	16#8000	(* Calendar/timer: set the values (Bit 15) or 30s adjustmer

*Calendar functions as displayed by Control FPWIN Pro*

The value corresponding to the day of the week is as follows: 0: Sunday, 1: Monday, 2: Tuesday ... 6: Saturday

### 1.6.6.1 Summer Time

Certain GT models support summer time.



You can select:

- Inactive, i.e. standard time is used
- DST, daylight saving time for the USA
- CEST, Central European Summer Time for Europe

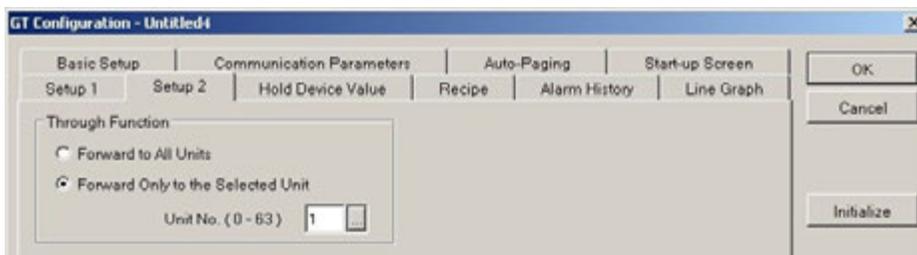


#### ◆ NOTE

- **Since GT touch terminals do not include an integrated calendar function, external measures must be taken to ensure that the switchover from standard time to summer time or vice-versa.**
- **Although CEST (Central European Summer Time) is provided as an option for summer time, it is incorrectly implemented: the switchover from standard time to summer time or vice-versa occurs according to Western European Summer Time.**

### 1.6.7 Setup 2

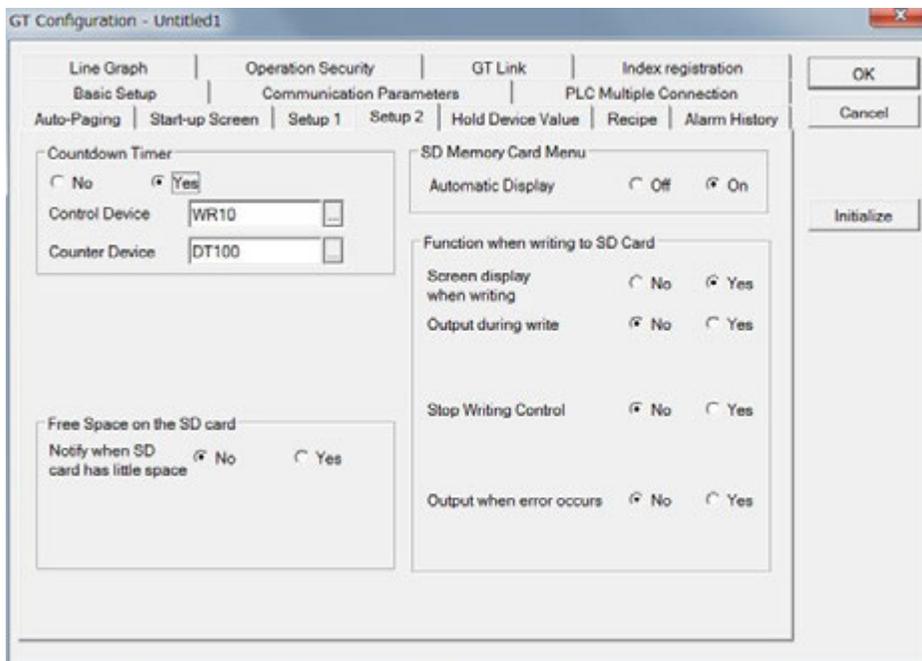
The settings on the setup 2 tab vary depending on the GT model.



*Setup 2 tab for GT21 and an FP-Series PLC*

**Setup 2 parameters**

Field	Description
Through Function (if available)	Specify to which units to send data when received from a higher-order PC or PLC.



Setup 2 tab for GT32

**Setup 2 parameters**

Field	Description
Countdown timer (see p. 37)	Select whether to use the countdown timer or not. There are 16 countdown timers available (number 0 to F). Only available for the following GT models: GT02, GT02L, GT03-E, GT05, GT12, GT32, GT32-E.
SD Memory Card Menu (if available)	Select whether to automatically display the SD memory card menu on the GT screen or not.
Free Space on the SD card	Activate to define at how much space to write to the device specified.
Function when writing to SD Card	<ul style="list-style-type: none"> <li>• <b>Screen display when writing:</b> when activated, "Saving Logging File" will appear on the GT screen when data is being written to the SD card.</li> <li>• <b>Output during write:</b> specify a device that will turn ON during writing.</li> <li>• <b>Stop Writing Control:</b> the save operation will be aborted if the device specified turns ON, such as when a power outage signal is detected.</li> <li>• <b>Output when error occurs:</b> if an error occurs during the save operation, e.g. if the SD memory card is full, this device turns ON.</li> </ul>

### 1.6.7.1 Countdown timer

The countdown timer counts down from the start value in seconds until the elapsed value is 0. There are sixteen countdown timers (number 0 to F) available. Every countdown timer needs two devices: one for controlling the start and completion of the countdown (control device), one for storing the start and the elapsed value (counter device).

Control device	Controls the start and completion of the countdown.
Counter Device	Stores the start and the elapsed value.

#### Control device

The control device uses two words beginning from the starting address specified. The first word stores the start bit, the second the completion bit. The countdown begins when the start bit is turned ON. When the elapsed value becomes 0, the start bit is turned OFF and the completion bit is turned ON.

Address	Timer number															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	
N	Start bit															
N+1	Completion bit															

#### Counter device

Sets the starting address for the start value (0–65535) and the elapsed value. The start value and the elapsed value are stored in the sixteen words after the starting address.

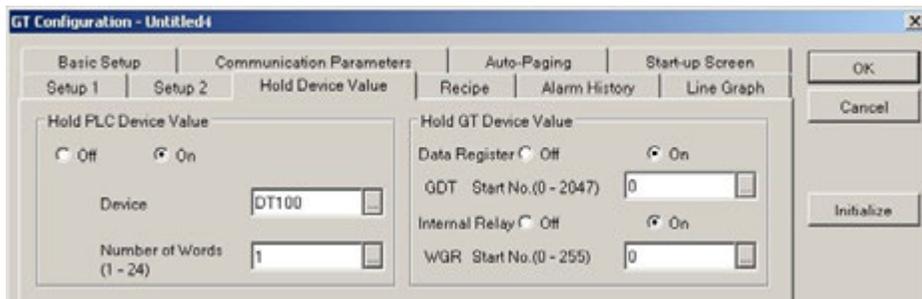
Address	Timer number	Contents
N+0	0	Start value and elapsed value
N+1	1	
N+2	2	
N+3	3	
N+4	4	
N+5	5	
N+6	6	
N+7	7	
N+8	8	
N+9	9	
N+10	A	
N+11	B	
N+12	C	
N+13	D	
N+14	E	
N+15	F	



**◆ NOTE**

- Once the countdown starts, GT counts the elapsed value internally. Even if the start value or elapsed value is changed during the countdown, the countdown will not start from the changed value.
- The countdown will stop temporarily when you enter the tab "Setup 1" in the GT configuration dialog to set the clock or change the contrast/brightness during the countdown. The countdown will restart once you leave the GT configuration dialog.
- The countdown will stop completely when you access the system menu. It will not restart when you leave the system menu.

**1.6.8 Hold Device Value**



*Hold Device Value tab for GT21 and an FP-Series PLC*

**Setup parameters**

Field	Description
Hold PLC Device Value <b>(Not available for general purpose serial communication)</b>	When you select "On", GT's SRAM holds the values specified for the PLC device ( <b>Device</b> plus <b>Number of Words</b> ) in case batteries go dead, for example. Data for PLC devices held in the GT will be written to the internal PLC device the next time that the power supply is turned on. If the power supply on the GT side is not turned on, the data can be held as long as the backup for the internal battery lasts.
Hold GT Device Value	Select the device values, i.e. <b>Data Register</b> and <b>Internal Relay</b> values to hold in case power is turned off.

### 1.6.9 Recipe

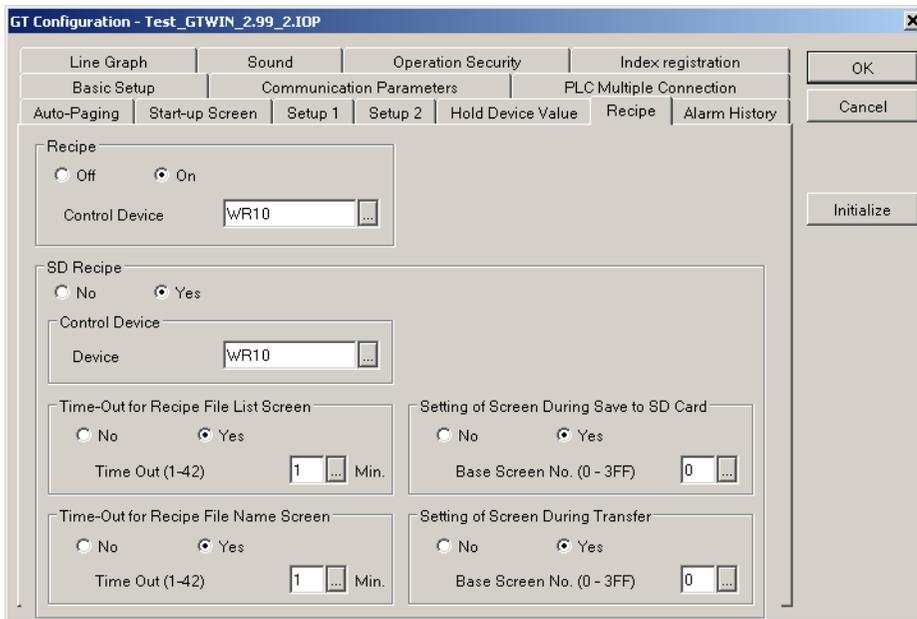


**◆ NOTE**

Which tabs and what appears on them may differ depending on which GT model you have selected.

Use this tab to turn on the following functions and make settings for them.

- Recipe (see p. 139)
- SD Recipe (see p. 145)



**Control device (see p. 41)**

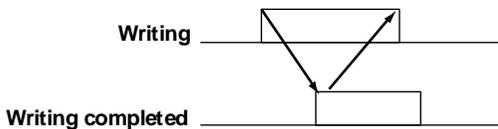
**SD Recipe, additional settings**

Field	Description
Time-Out for Recipe File List Screen	Specify how long the recipe file list screen is displayed when the recipe file name is input by touch operation.
Time-Out for Recipe File Name Screen	Specify how long the recipe file name screen is displayed when the recipe file name is input by touch operation.
Setting of Screen During Save to SD Card	Select "Yes" to display the base screen specified when saving SD recipe data to the SD card.
Setting of Screen During Transfer	Select "Yes" to display the base screen specified when transferring SD recipe data to a PLC.

**Timing of writing recipe data and completion of writing**

Writing recipe data to the PLC occurs in the following order:

1. **The user or PLC sets the write recipe flag to ON (bit 0) and the recipe is written into the PLC.**
2. **When writing is finished, the writing completed flag is automatically set to ON (bit 8).**
3. **The user or the PLC sets the write recipe flag to OFF (bit 0).**
4. **The writing completed flag is automatically reset (bit 8).**



*Timing diagram for writing recipe data*

Reading and deleting follow the same scheme. When several commands are given simultaneously by setting the respective bits to ON in the control device, the operations will be executed in the following order:

1. **Writing**
2. **Reading**
3. **Deleting.**

When writing, reading, and deleting are executed normally, the error flag is OFF, i.e. the error code is 00(H).

### 1.6.9.1 Recipe Control

When the GT terminal writes recipe data to a PLC or reads it from a PLC, the recipe control function stores the following information in the control device and the following 3 registers. Please note, within the Word address "n", bits 0-2 are set or reset by the user or PLC. Bits 8-F are automatically set or reset.

Bit Word	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
n	Error flag					Deleting completed (Not for SD recipe)	Reading completed	Writing completed						Delete recipe data on GT	Write from PLC to GT	Write from GT to PLC
n + 1	File number (SD recipe: folder number)															
n + 2	Recipe number (SD recipe: recipe file number)															
n + 3	Error code: 0: Normal operation, no error has occurred. 1: File/folder number does not exist in the GT. 2: Recipe number/recipe file number does not exist in the GT. 3: There is not enough memory left.															

"n" represents the starting word address you set for the device on the GT Configuration dialog's recipe tab. For example, if you selected the internal GT register WGR10 as the starting address for recipe control, n+1 will be stored in WGR11, n+2 in WGR12 and n+3 in WGR13.

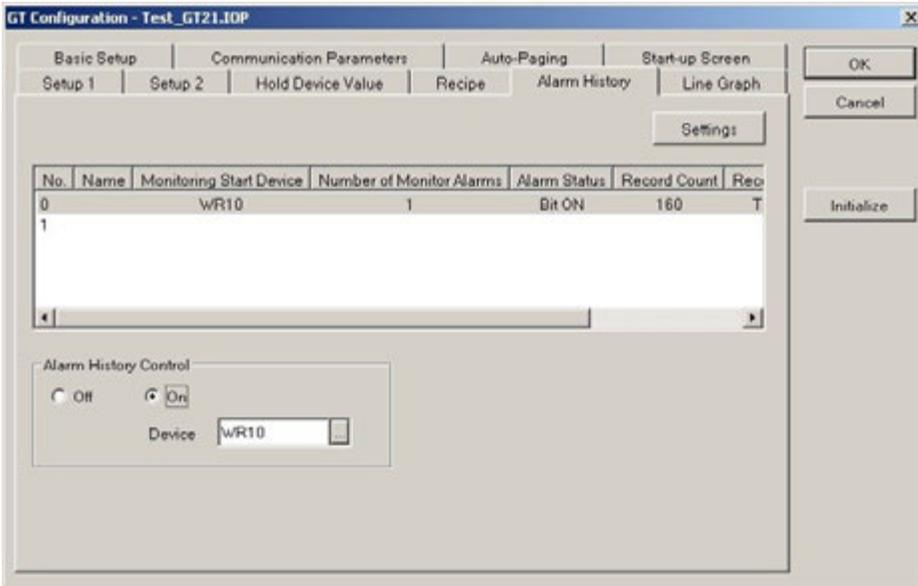
### 1.6.10 Alarm History Setting

Most GT models can monitor two groups of alarms. This section explains how to select the group for monitoring alarm history and start the alarm history function.



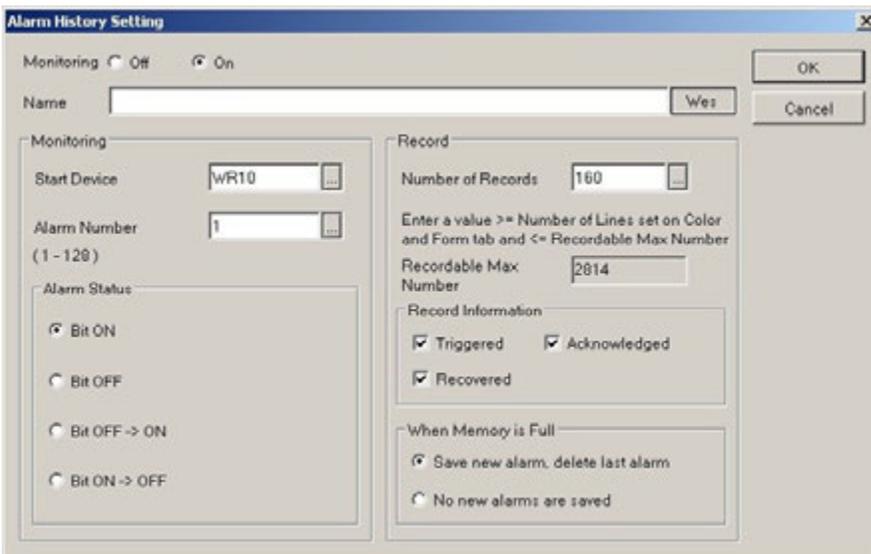
**NOTE**

**GT01 does not support alarm history.**



*Alarm History tab*

Select no. 0 or no. 1 in the first column and double-click or select [Setting] to configure the alarm history function. Next, set "Monitoring" to "On" to display the parameters. Under "Name" you can assign a title.



**Alarm History parameters**

Field	Description
Monitoring	Set the start device (see notes below) and the number of alarms to be recorded. Select which alarm status should trigger the recording of the alarms.
Record	<p><b>Number of Records:</b> Set the number of records to be stored. The value you enter must be greater than the setting in "Number of Lines" on the "Color and Form" tab (see p. 203). The maximum number of records is displayed below for your information. The alarm history and the line graph use the same memory area so the recordable maximum may vary considerably (see notes below).</p> <p><b>Record Information:</b> Select the information you wish to record.</p> <ul style="list-style-type: none"> <li>• Triggered: Time when the start device turns ON or OFF.</li> <li>• Acknowledged: Time when an alarm has been acknowledged, e.g. when the user pressed a function switch (the alarm list part needs to be combined with a function switch in this case).</li> <li>• Recovered: Time when the alarm has been reset.</li> </ul> <p><b>When Memory is Full:</b> Select what should be done when the memory is full.</p>




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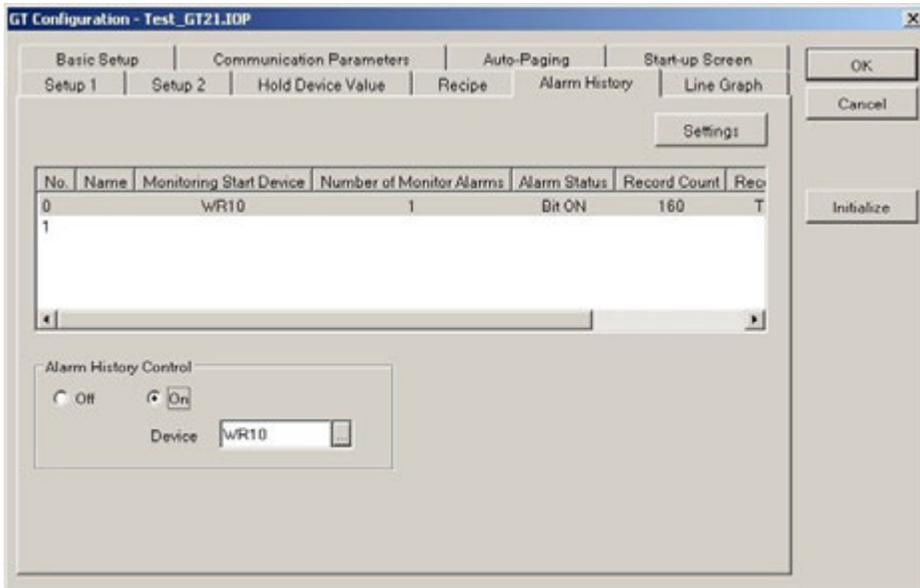
**◆ NOTE**


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- For general purpose serial communication, the start device needs to be an internal GT register, e.g. WGR10 (default setting).
- The total memory for the alarm history and the sampling data for line graph parts (see p. 208) is 28160 bytes. Each alarm record uses 16 bytes for initial information and 10 bytes for each event.

### 1.6.10.1 Alarm History Control

When you have made settings for the alarm history or defined a group, the alarm history control function becomes available. Select "On" if you want to use it and then select a register as the control device.



*Alarm History tab with control device enabled*

The control device helps you monitor group no. 0 and/or group no. 1 and provides the following functions:

- start and stop monitoring the alarm history of a group
- check whether the memory of a group is full
- clear the memory of a group
- check whether clearing the memory is completed
- save the history of a group to an SD memory card
- check whether the saving of a group to an SD memory card is completed

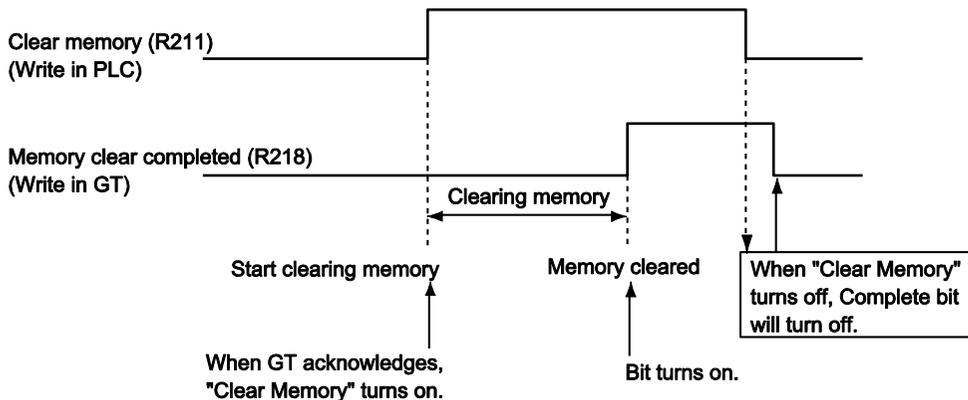
The table below explains the bit assignment of the control device.

Start device	Bit															
	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
n			Completed saving history of Group 1 in SD	Completed saving history of Group 0 in SD			Memory full, Group 1	Memory full, Group 0			Save history of Group 1 in SD	Save history of Group 0 in SD			Stop monitoring Group 1	Stop monitoring Group 0
n+1	Reserved (Do not use.)						Memory clear complete, Group 1	Memory clear complete, Group 0	Reserved (Do not use.)						Clear memory of Group 1	Clear memory of Group 0

When a bit is set, the status is true, i.e. the function is executed.

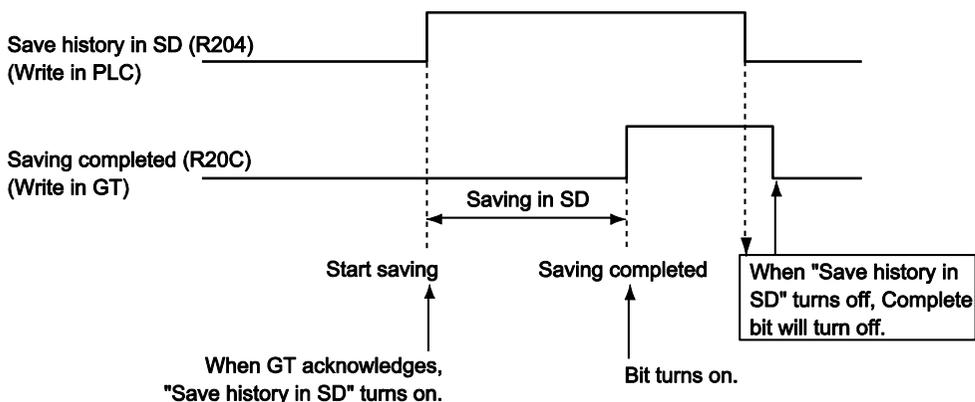
### Memory clear

When bit 9 is set to 1, the memory for group no. 1 is full. Clear it by setting bit 1 of byte n+1 (R211 if WR20 is the control device selected) to 1.



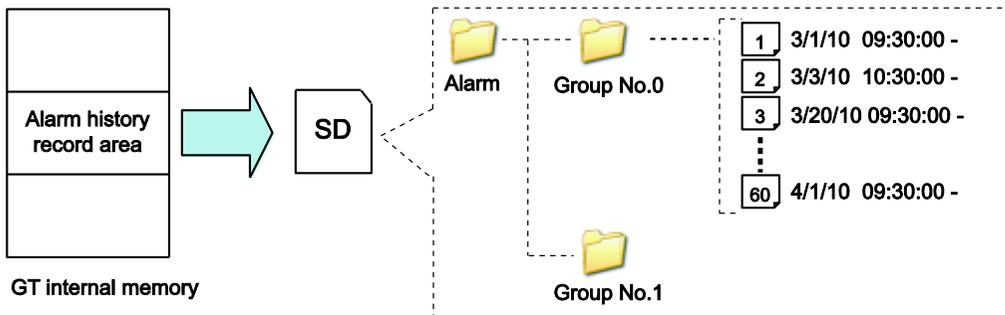
### Save history in SD memory card

Save the history of group no. 0 to the SD memory card by setting bit 4 of byte n (R204 if WR20 is the control device selected) to 1.



### 1.6.10.2 Save Alarm Data on SD Memory Card

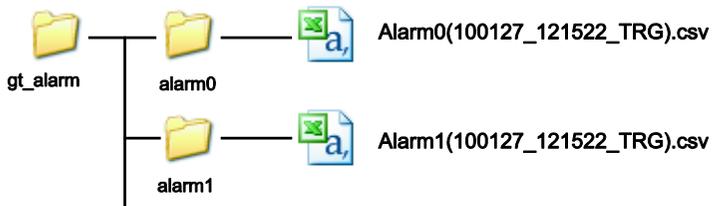
With models that support SD memory cards, up to 120 files recorded in the GT internal memory can be saved on an SD memory card, 60 files for each of the 2 groups. If the number of files is exceeded, the oldest file will be deleted and a new file will be stored.



The saving process on the SD card is explained in the section on alarm history control (see p. 44).

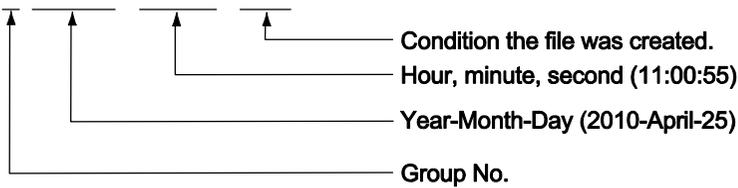
#### File name

Alarm history is saved on the SD memory card as follows:



Details of the file name:

**Alarm 0(100425\_110055\_TRG).csv**



The date and time are established the first time data is recorded.

If data is saved on the SD memory card without clearing the data in the internal memory, the file name will be the same and the previous file will be overwritten.

Conditions that create files	Recorded characters
When the device for saving alarm history on the SD memory card is turned on.	TRG
Data is not stored because the SD memory card becomes full while data is being stored.	ERR

**Image of .csv file**

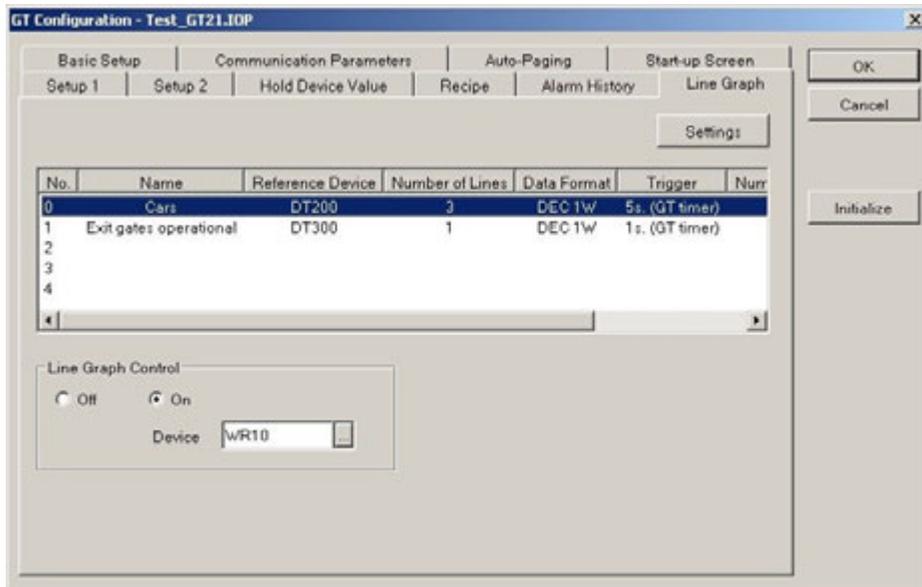
	A	B	C	D	E	F
1	Date	Time	Event	Ack	No.	Message
2	2006/1/1	0:04:21	Trig		0	Alarm0
3	2006/1/1	0:04:36	Trig	Acknowledged	1	Alarm1
4	2006/1/1	0:05:00	Ack		1	Alarm1
5	2006/1/1	0:05:25	Rev		1	Alarm1

Date
Time
Display Event
Alarm No.
Message

1. The strings registered for the alarm list parts are used. The data of the base screen with the smallest number is referenced.
2. "Acknowledged" indicates an alarm has been acknowledged. It cannot be changed.

### 1.6.11 Line Graph

**GT Configuration** → **Line Graph** allows you to define reference devices (i.e. addresses) which can be sampled in order to generate line graphs. Use a line graph part (see p. 208) to define how the line graph looks on the screen.

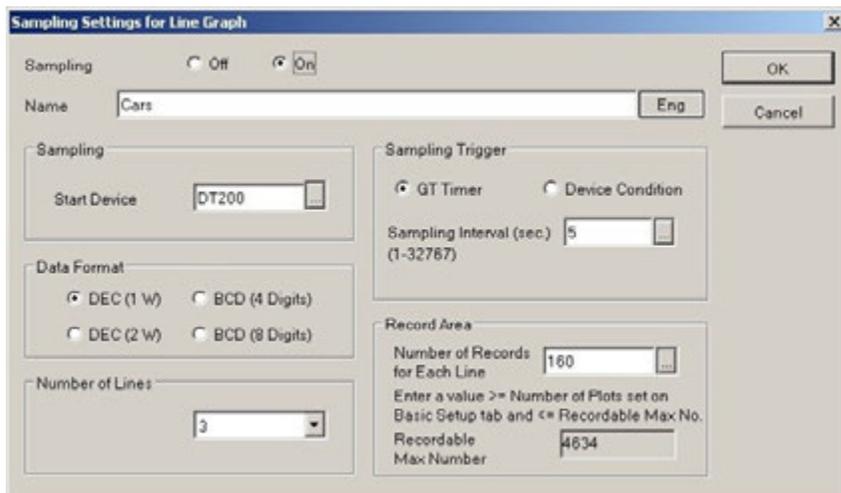


*Line graph tab for GT21*

Select [Settings] on the line graph tab to specify the settings for each "graph no.". You can specify as many graphs as the list allows.

#### Settings

Select [Settings] and then "On" to display the following dialog.



*Sampling settings for line graph objects*

Field	Description
Name	Enter the name for the selected graph.
Sampling	Specify the <b>Start Device</b> (i.e. address) for sampling.
Data Format	Specify the format of the data to be sampled.
Number of Lines	Specify the number of devices to be sampled, i.e. the number of addresses to be read, beginning with the address of the start device.
Sampling Trigger	Specify the sampling trigger: <ul style="list-style-type: none"> <li>• With the "GT Timer", also set the "Sampling Interval" in seconds.</li> <li>• With "Device Condition", specify the PLC register and whether a rising or a falling edge should trigger sampling.</li> </ul>
Record Area	<b>Number of Records for Each Line:</b> Set the number of records to be stored. The value you enter must be greater than the setting in "Number of Plots" on the "Basic Setup" tab for the line graph part (see p. 208). The current maximum number of records is displayed below for your information. The alarm history and the line graph use the same memory area so the recordable maximum may vary considerably (see notes below).

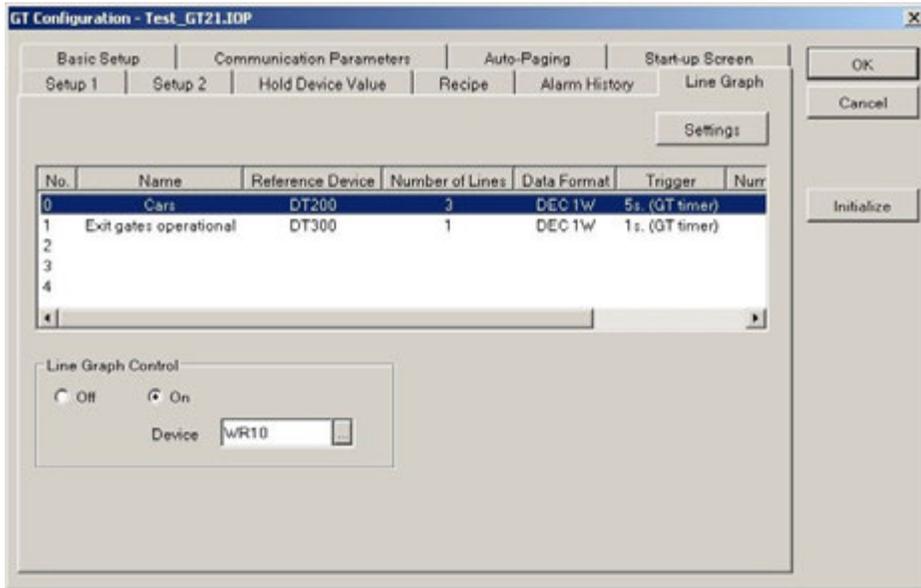


#### ◆ NOTE

- **For general purpose serial communication, the start device needs to be an internal GT register, e.g. WGR10 (default setting).**
- **The total memory for the alarm history and the sampling data for line graph parts (see p. 208) is 28160 bytes. Each line graph requires 16 bytes of memory initially plus the data required for each point.**

### 1.6.11.1 Line Graph Control

When you have defined one or more line graphs, the line graph control function becomes available. Select "On" if you want to use it and then select a register as the control device.

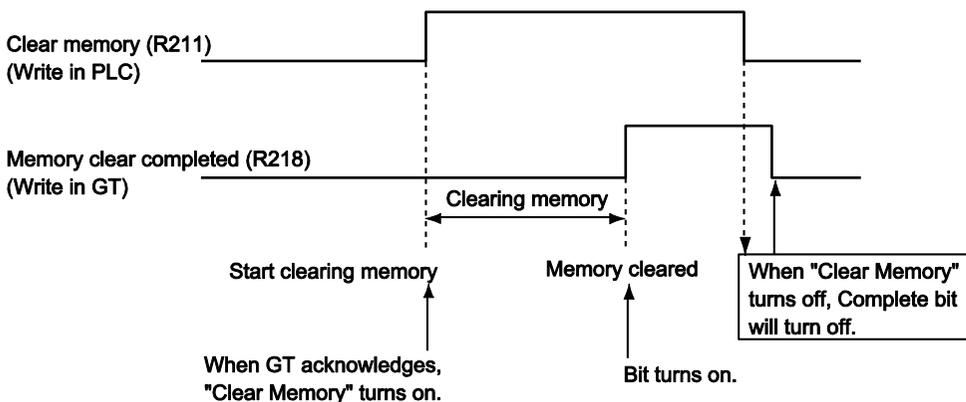


The control device helps you monitor sampling data for up to 5 graphs and allows you to perform the following functions for each graph: start and stop sampling data, check the status, or clear the memory. The table below explains the bit assignment of the control device.

Bit:	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
Start device number N + 0				Gr. 4	Gr. 3	Gr. 2	Gr. 1	Gr. 0				Gr. 4	Gr. 3	Gr. 2	Gr. 1	Gr. 0
	Status: Memory full									Function: Stop monitoring this graph						
Start device number N + 1				Gr. 4	Gr. 3	Gr. 2	Gr. 1	Gr. 0				Gr. 4	Gr. 3	Gr. 2	Gr. 1	Gr. 0
	Status: Memory cleared									Function: Clear memory of this graph						

Gr. = Graph

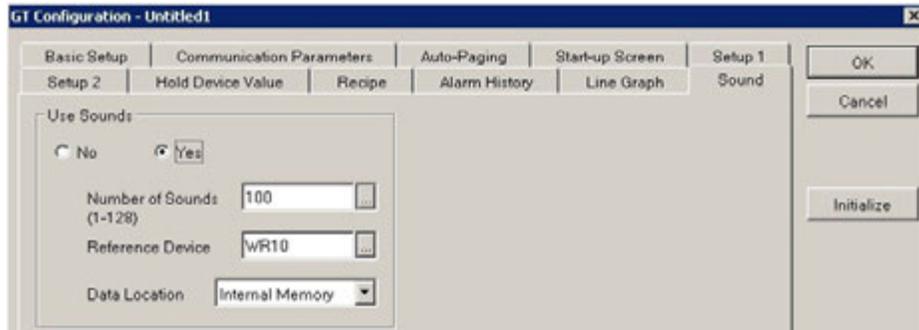
When a bit is set, the status is true, i.e. the function is executed. For example, when bit 9 is set to 1, the memory for graph 1 is full. Clear it by setting bit 1 of byte N+1 (WGR31 if WGR30 is the control device selected) to 1.



*Timing diagram for clearing the memory*

## 1.6.12 Sound

For example, if an alarm is issued, you may wish the GT to issue an alarm siren. A "Sound" tab is included for the GT configuration if your GT model has this capability.



### Requirements for using the sound function

- Audio output device (speaker with a built-in 3.5mm diameter miniplug amplifier)
- WAVE file (.wav). Format: PCM, 8kHz, 16 bits, mono.



### ◆ NOTE

**You can convert your WAVE files to this format by using Microsoft's Sound Recorder, for example. Open the Sound Recorder via Start Menu → Programs → Accessories → Entertainment → Sound Recorder. Open your WAVE file. Under File → Properties, in the "Format Conversion" field, select [Convert Now]. Then set the format (PCM) and attributes (8kHz, 16 bits, mono).**

If under "Use Sounds" you selected "Yes", the parameters in the following table appear.

Parameter	Description
Number of Sounds	Choose from 1 - 128. A 30-second sound file takes up about 512kB. For the GT internal memory, this means you can store approximately 19 30-second files. For the SD memory card, it depends on the capacity of the memory card and the size of the files.
Reference Device	Sets the PLC reference device (register) to trigger audio output. Please note, you can only use one type of reference device for all sounds.
Data Location	Select either "Internal Memory" or "SD Memory Card".

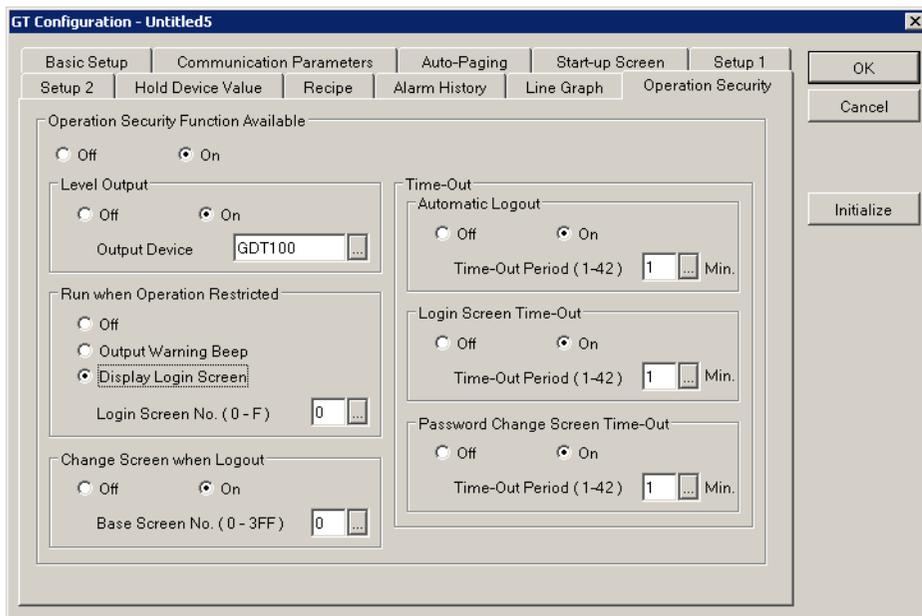
Use the sound editor (see p. 156) to configure sound files.

### 1.6.13 Operation Security

When activated, operation security allows you to assign passwords and various levels of security to GT parts.

16 security levels are available, i.e. levels 0 to 15. Level 0 requires no password. Access to any level grants the user access to that level and all levels below.

You can assign up to 64 passwords, enabling multiple registration per level.



Field	Description
Level Output	When "On", the operation security level currently used is output to the output device specified.
Function when Operation Restricted	When a user attempts to perform an operation at a level above the current security level, this field determines what happens.
Change Screen upon Logout	When "On", specifies to which base screen to switch upon logout.
Time-Out	<ul style="list-style-type: none"> <li>Automatic Logout: if the user performs no action within the time-out period specified and a security level has been set, the user is automatically logged out.</li> <li>Login Screen Time-Out: if the user performs no action when the login screen is displayed, the screen is closed and GT returns to the original screen.</li> <li>Password Change Screen Time-out: if the user performs no action when the password change screen is displayed, the screen is closed and GT returns to the original screen</li> </ul>

## 1.6.14 GT Link

Using the GT Link function (see "How GT Link Functions" on p. 55) allows you to connect up to 32 GT units to a single Panasonic FP series PLC if the GT unit supports this function.

GT Configuration - GT32T\_TestSound.IOP

Basic Setup | Communication Parameters | Auto-Paging | Start-up Screen | Setup 1 | Setup 2 | OK

Hold Device Value | Recipe | Alarm History | Line Graph | Sound | Operation Security | GT Link | Cancel

GT Link Available

Off  On

Set GT Station No. GT Station No. ( 0 - 31 ) 0 ...

Control Device WR20 ... to WR27

Priority Mode  Display Priority  Operation Priority

Momentary Switch  No exclusive communication with PLC  Exclusive communication with PLC when pressing SW

Exclusive communication with PLC when operating touch switch

Off  On Exclusive time after operation ( 1 - 255 ) 10 ... sec.

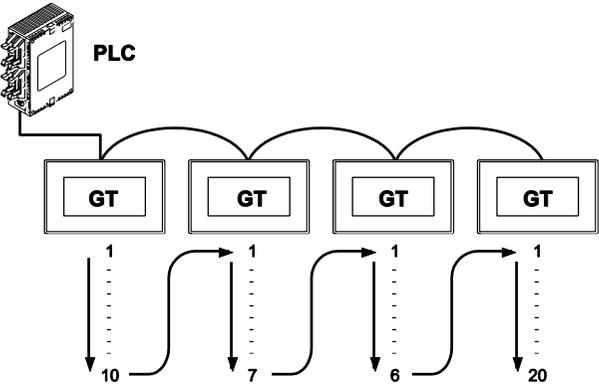
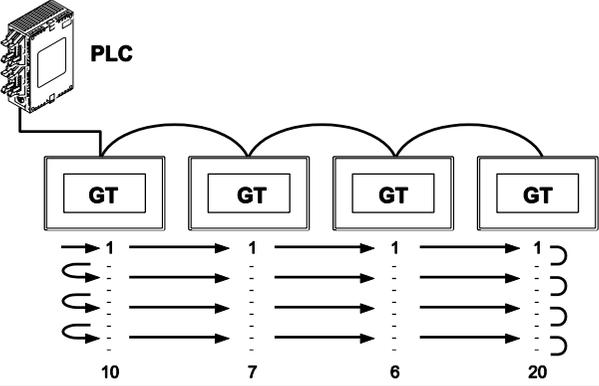
Display message in stand-by mode

Initialize

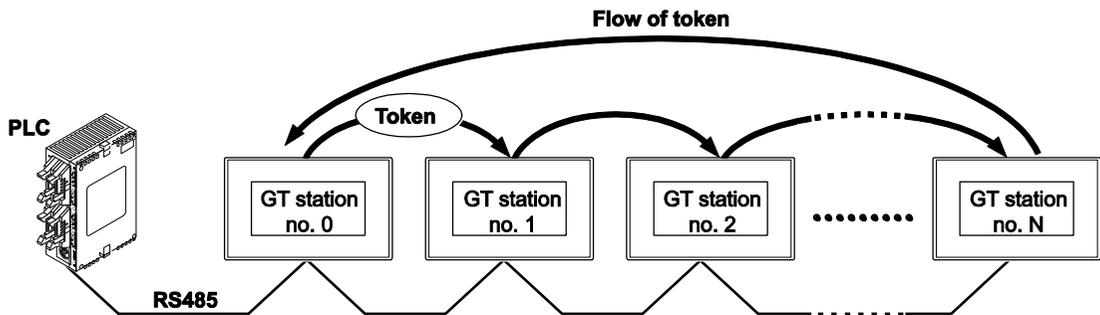


### ◆ NOTE

**The more GT units you use, the slower communication becomes. Please consider this when designing time-critical applications!  
In general we recommend not using more than 4 GT units.**

Item	Description
Set GT station no.	Set the GT station no. to which you wish to transfer the GT configuration. Be sure to assign the station no. 0 to one GT unit!
Control device	The address where information regarding GT link is stored (see "How GT Link Functions" on p. 55).
Priority mode	<p>In both cases, writing to the PLC always has high priority, and the GT must obtain the token before it can communicate.</p> <ul style="list-style-type: none"> <li> <b>Display priority.</b> each GT station completes all command and response operations necessary for its screens before passing the token to the next station.                     </li> </ul>  <ul style="list-style-type: none"> <li> <b>Operation priority:</b> the GT station processes 1 operation at a time, then passes the token to the next station.                     </li> </ul> 
Momentary switch	You can select whether pressing a momentary switch establishes exclusive communication between that GT station no. and the PLC. During "exclusive communication", there is no communication with other GT stations.
Exclusive communication with PLC when operating touch switch	You can select whether pressing any touch switch establishes exclusive communication between that GT station no. and the PLC for the time specified. During "exclusive communication", there is no communication with other GT stations.
Display message in stand-by mode	Until the station obtains the token, it is in "stand-by mode" and cannot communicate. Activating this option displays a message indicating this.

### 1.6.14.1 How GT Link Functions



With GT link, communication is performed via RS485 by passing a token. The GT that received the token performs necessary communication with the PLC and transfers the token to the next GT in ascending order.

Station numbers should be specified in both the GT and PLC. Station no. 0 should be assigned to ensure optimal boot speed. Do not assign the same station number to more than 1 unit.

#### GT link control device area

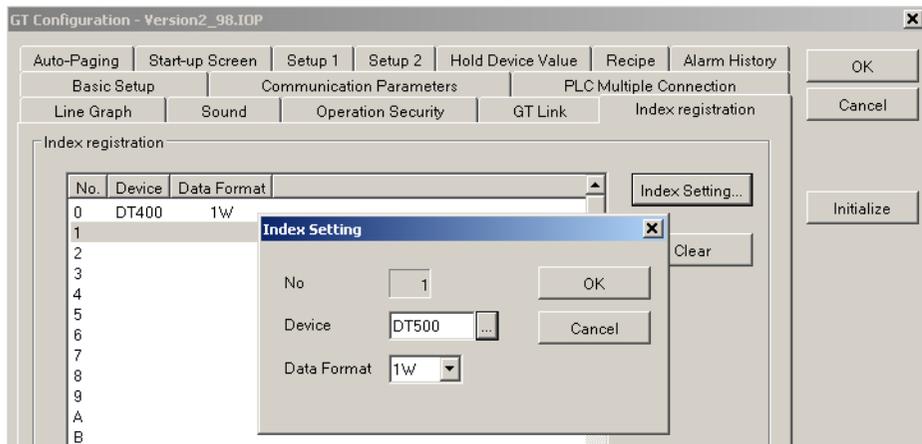
GT station numbers are allocated to the control device area for GT link. Turning on the bit that corresponds to the GT station no. on the PLC side enables the GT link connection.

Bit position	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
N, N+1	Connected GT designation area															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
N+2, N+3	Connected GT monitor area															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
N+4, N+5	Exclusive GT designation area															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
N+6, N+7	Exclusive GT monitor area															
	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16

Item	Description
Connected GT designation area	The bit that corresponds to the GT station number for which communication is occurring turns ON. If one unit is damaged, operation can be performed with remaining GT units when set to OFF.
Connected GT monitor area	The status of the GT units for which communication occurs properly can be monitored.

Item	Description
Exclusive GT designation area	<p>The GT with the designated station number occupies communication with the PLC by turning on this bit.</p> <p>This is used to prioritize the operation or display of the GT with a specific station number.</p> <p>Although the response speed of the GT with the designated station number increases, GT units with other station numbers cannot perform communication.</p>
Exclusive GT monitor area	The bit for the GT station number where the token currently resides.

### 1.6.15 Index Registration



You can register up to 63 index devices and their formats. Data parts (see p. 194) can use index devices in combination with reference devices to change multiple data displays at the same time, for example. When doing so, the value of the index device is added to the reference device to yield a new device from which values are read.

**◆ EXAMPLE**

A data part's reference device is set to DT100 and index modification has been activated to reference index no. 0 = DT400.

The screenshot shows the 'Data Parts No.0' configuration window. The 'Basic Setup' tab is selected. The 'Data to Display' section has 'No. of Digits (1 - 5)' set to 4 and 'Data Format' set to DEC(1 W). The 'Zero Suppression' section has 'On' selected. The 'Reference Device' section has 'Index modifier' set to 'Yes' and 'Index No.' set to 0 (DT400). The 'Size' section has 'Font' set to 1\*1 and 'Vertical' and 'Horizontal' settings. The 'Display Decimal Places' section has 'Off' selected. 'OK' and 'Cancel' buttons are on the right.

- When DT400 = 0, the data part will display the value of DT100 (DT100 + 0 = DT100).
- When DT400 = 10, the data part will display the value of DT110 (DT100 + 10 = DT110).
- When DT400 = 100, the data part will display the value of DT200 (DT100 + 100 = DT200).

## **Chapter 2**

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# **GT Panel System Menu**

## 2.1 GT Panel System Menu Overview

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By touching the GT panel screen in a certain pattern, you call up the system menu. This menu allows you to:

- adjust the screen's brightness and contrast
- set the Tool port and COM port communication settings
- set the GT internal clock (if available)
- clear the memory (see p. 62)
- check the DIP switch settings
- check the LCD (see p. 64)
- test the backlight and buzzer (see p. 64)
- set the GT unit no. (see p. 61)
- copy SD memory card contents from/to a GT unit (see p. 66)
- make Ethernet port settings
- perform FP monitoring, e.g. reading and setting registers
- etc.



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### ◆ NOTE

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- **What appears on the system menu and how the items are arranged depends on the GT model.**
- **When the system menu is displayed, the GT does not communicate with PLC.**
- **If you are using general-purpose serial communication, the GT is controlled by commands from external devices such as a PLC. The GT continues to receive commands and to write to internal devices even when the system menu is launched. However, while the system menu is displayed, the GT cannot perform the operations assigned to the internal devices.**

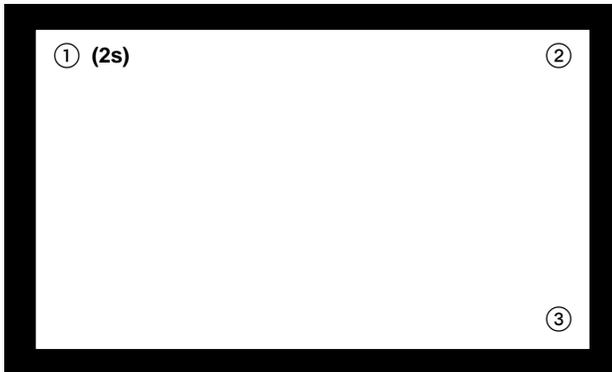


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**PROCEDURE**

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1. For most GT models, press the upper left corner of the screen for at least 2 seconds



2. Press the upper right corner of the screen briefly
3. Press the lower right corner of the screen briefly

## 2.2 Port

---

For COM port and TOOL port, the following terms need explanation:

- **GT Unit No.:** Set the unit number for the GT unit when communication with an external device is carried out in general purpose serial or Modbus Slave (RTU) mode.
- **Through:** When the through function is being used, specify the the number of the PLC with which communication is to take place.

## 2.3 Clear Memory

---

### Clear SRAM

Clearing the SRAM will initialize:

- line graphs
- PLC device hold data
- alarm history
- internal GT device data

### Clear FROM

Clearing the FROM will initialize:

- screen data
- configuration settings saved in the main unit's memory

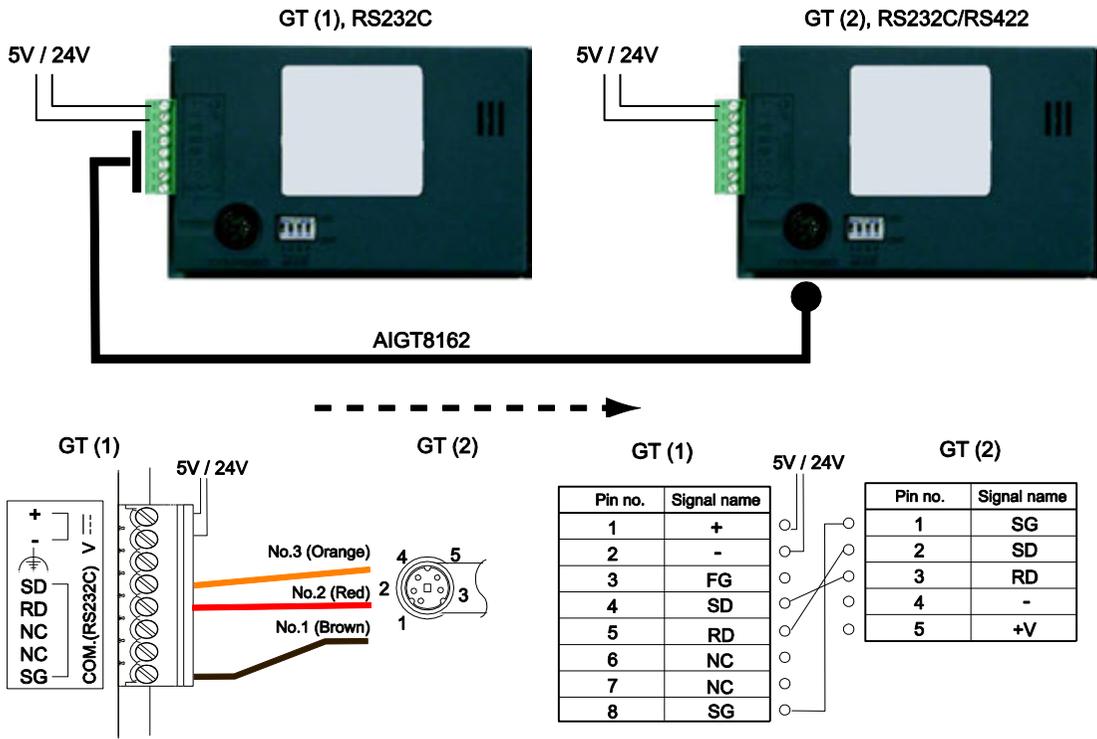
### Copy GT

You can copy the firmware and screen data from an RS232C type GT unit (only!) to an RS232C/RS422 type GT unit of the same model series. Connect the COM port of the source GT to the Tool port of the target GT.

### NOTICE

#### Loss of data

**If the GT units are not connected correctly, the source unit's screen data will be deleted!**



**◆ NOTE**

- Do not turn off the power or disconnect the cable during transfer, or you may not be able to restart the GT units.
- When a password is set in the source GT unit, the password is transferred to the target GT unit.

**Messages during transfer**

Message	Operation status	Countermeasure
Initializing	The target GT unit is being initialized.	—
Transferring	Firmware and screen data are being transferred.	—
Finished	Transmission successful.	—
Protected	A password has been set for the target GT.	Cancel the password.
Cannot copy (GT21 only)	The firmware of the source GT21 does not support the target GT21 if the source GT21 is below V1.100 and the target GT21 is V1.100 and above.	Upgrade the firmware for the source GT21.
Error	Communication error.	Make sure the communication settings for both GT units is the same.

## 2.4 Test Menu

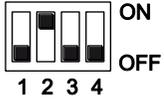
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The test menu allows you perform self-diagnosis for selected, available functions. For example, you can check the status of the DIP switches without having to remove the panel.

## 2.5 DIP Switch Settings to Prevent System Menu Display

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Set DIP switch 2 to ON to prevent the system menu from being displayed, e.g. to prevent unauthorized personnel from changing the GT configuration settings.



## 2.6 SD Memory Card Functions

You can use an SD memory card to do the following:

- Copy GT screen data to/from the GT
- Copy PLC program files from the PLC
- Delete files on the SD memory card
- Set the display of the SD memory card menu

### Precautions

To prevent data from being inadvertently lost, take appropriate precautionary measures.

- Make a backup copy of the SD memory card data on a different storage medium.
- Do not remove the card and turn off the power supply of the unit while the SD memory card access LED is lit as this may damage the data. The LED indicates when data is being read or written.
- Do not use the SD memory card in an incorrect manner.
- Avoid exposing the SD memory card to static electricity or electrical noise.

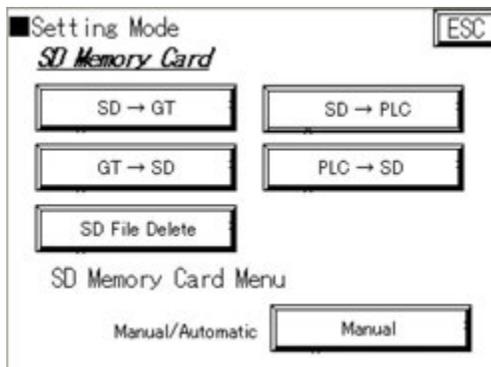
In order to use an SD memory card to manage GT or PLC data or the menu display, proceed as follows:



### ◆ PROCEDURE

1. Call up the system menu (see p. 59)
2. Select [Setting Menu]
3. Select [SD Memory Card]

The screen with the SD memory card functions is displayed.



The following options are available:

Option name	Type of data affected	Description
[SD → GT]	GT screen data	Copies screen data from the SD memory card to the GT.  Note: If the firmware version of the screen data on the SD memory card is different from the firmware version on the GT, a message will appear (see p. 73).
[GT → SD]		Copies screen data from the GT to the SD memory card (see folder structure on the SD memory card)
[PLC → SD]	PLC program files	Copies PLC program files from a PLC from the FP series to the SD memory card.
[SD File Delete]	Data and files on the SD memory card	Deletes screen data and PLC program files on the SD memory card.
[Manual / Automatic]	SD memory card menu	Set whether to display this menu when you insert a SD memory card in the GT or not. <ul style="list-style-type: none"> <li>Automatic: The menu is automatically displayed when you insert an SD memory card in the GT.</li> <li>Manual: The menu is not displayed automatically. To access the menu, call up the system menu (see p. 59).</li> </ul>

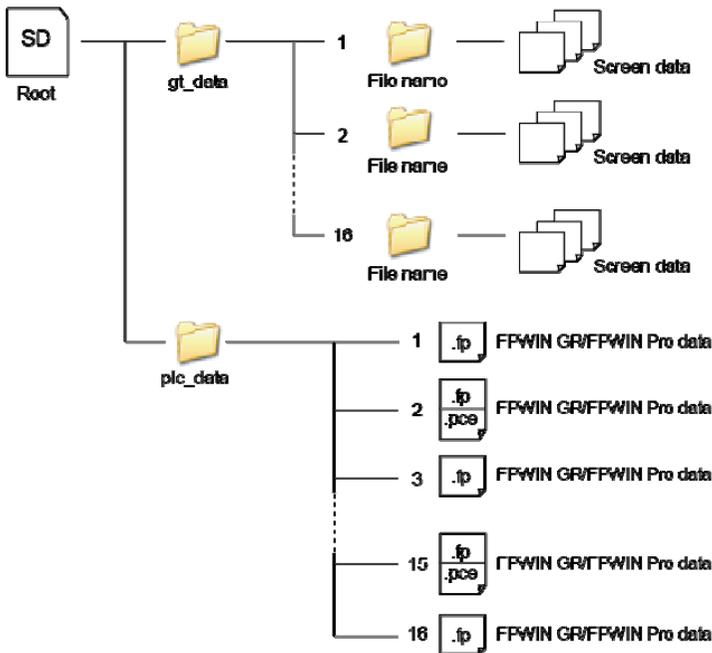


#### ◆ NOTE

While you are copying data to or from the SD memory card, the following GT functions are not available:

- Data logging
- Through function

• **Screen transfer**



File structure on the SD memory card

### 2.6.1 Usable SD Memory Cards

We recommend using SD memory cards from Panasonic only. There has been no operation check for SD memory cards from other manufacturers.

Logo on GT	GT version (Ver.)						Usable SD memory cards	
	GT02M2 GT02G2	GT03T-E	GT05	GT12	GT32	GT32-R GT32-E	Card type	Capacity
	—	—	1.39 or older	1.09 or older	1.49 or older	—	SD memory card	32MB to 1GB
	—	—	1.40 or later	1.10 or later	1.50 or later	—	SD memory card SDHC memory card CLASS 2 and 4 only	32MB to 2GB 4GB to 16GB
	1.00 or later	1.10 or later	1.39 or older	1.09 or older	1.49 or older	1.00 or later	SD memory card	32MB to 1GB
	1.00 or later	1.10 or later	1.40 or later	1.10 or later	1.50 or later	1.00 or later	SD memory card SDHC memory card	32MB to 2GB 4GB to 32GB




---

**NOTE**


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- **Make sure to check the logo of the SD memory card printed on the GT and the GT version so that you use the correct SD memory card.**
- **Do not use a SD memory card with a memory capacity higher than indicated in the table. Data on the SD memory card may be damaged.**

### Reading time of the SD memory card

When an SD memory card is inserted into the GT, the card will be read. While the SD memory card is being read, the GT cannot be operated.

The reading time varies according to the memory capacity of SD memory card.

SD memory card capacity	Rough estimate of reading time
2GB or less	Approx. 5 to 10 seconds
4GB	Approx. 5 to 15 seconds
8GB	Approx. 15 to 25 seconds
12GB	Approx. 20 to 35 seconds
16GB	Approx. 30 to 45 seconds
32GB	Approx. 60 to 90 seconds

## 2.6.2 Restrictions

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### Amount of data that can be copied

The following restrictions apply when you copy data to or from the SD memory card:

Type of data	No. of data that can be copied
GT screen data	16 files
PLC program files	16 (see note)




---

**NOTE**


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**It does not matter if the program files were created with different programming tools.**

### Password handling

It is possible to set a password setting on both the GT and the PLC. When a password has been set on the GT or the PLC, the following restrictions apply when you copy data to or from the GT:

Option name	Type of data copied	Restriction
[SD → GT]	GT screen data	When you select the copy command, the password entry screen is displayed. Enter the password set on the GT to copy the screen data (see p. 113).
[GT → SD]		It is not possible to copy the GT screen data.
[SD → PLC]	PLC program files	It is not possible to copy the PLC program files.
[PLC → SD]		

### PLC models available for program file transfer

The transfer of PLC program files is available for the following PLC models:

- FP-X
- FPΣ
- FP0
- FP0R
- FP2
- FP2SH
- FP-e



#### ◆ NOTE

- It is not possible to copy the comments in PLC programs created with FPWIN GR.
- When you copy PLC program files from the PC where you have installed the PLC programming software to the SD memory card, you need to create the folder \plc\_data in the root folder first. If the PLC program files are not located in the correct folder, you cannot copy them to the PLC.

	FPWIN GR	FPWIN Pro	
Command for file creation	File → Save	Online → EPROM File Services → Save in FP Hex Format	Extras → Backup Project (select *.pce for the file type, note 1)
File extension	*.FP	*.FP (note 2)	*.PCE (note 2)
Length of file name	8 alphanumeric characters		
Content	PLC ladder programs, system register information	PLC ladder programs, system register information	FPWIN Pro project files (except libraries)



### ◆ NOTE

1. When you are using FPWIN Pro version 6.x, select the file type "Packed Project Export files (Unicode)(\*.pce)".
2. Both files must have the same file name.

### PLC connection method

In order to be able copy PLC program files to or from the SD memory card, the PLC must be connected to the GT as follows:

Connection of PLC to GT	Copying possible?
1:1 communication	Yes
GT link function	No
PLC multiple connection	No

## 2.6.3 Copy Screen Data to the SD Memory Card

To copy screen data from the GT to the SD memory card, proceed as follows:



### ◆ PROCEDURE

1. In the SD memory card menu, select [GT → SD]  
A screen is displayed where you need to enter the file name.

Input file name.

1	2	3	4	5	6	7	8
A	B	C	D	E	F	9	0
G	H	I	J	K	L	ESC	CLR
M	N	O	P	Q	R	Y	BS
S	T	U	V	W	X	Z	ENT

2. Enter a file name  
The file name can be up to 8 characters long.
3. Press [ENT]  
A confirmation screen appears.



If you wish to change the file name again, press [File name] and repeat the previous two steps.

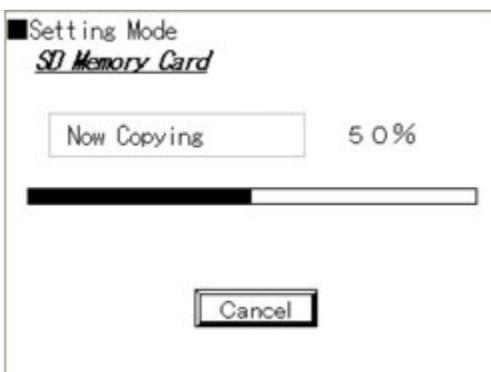
**4. Press [OK]**

If you have saved already a file with the file name you have just entered, the following screen appears.



**5. Press [OK] to overwrite the file**

The system starts to copy the screen data.



When the operation is complete, [Cancel] changes to [OK].

**6. Press [OK]**

This returns you to the screen with the SD memory card menu.

## 2.6.4 Copy Screen Data to the GT

To copy screen data from the SD memory card to the GT, proceed as follows:



### ◆ PROCEDURE

#### 1. Select [SD → GT] in the SD memory card menu

When a password has been set on the GT, the password input screen is displayed.

Input file name.						GT 1 2 3 4 5 6	
1	2	3	4	5	6	7	8
A	B	C	D	E	F	9	0
G	H	I	J	K	L	ESC	CLR
M	N	O	P	Q	R	Y	BS
S	T	U	V	W	X	Z	ENT

#### 2. Enter the password and press [ENT]

The list of files on the SD memory card is displayed.

Setting Mode ESC

*SD Memory Card*

Select file

10/01/15	▲ ▼ Copy

#### 3. Press the file name you wish to copy

or

Press the ▲ or ▼ button to select a file

#### 4. Press [Copy]

When the firmware on the SD memory card and on the GT are the same, the screen data is copied immediately. If the firmware on the SD memory card differs from the firmware on the GT, the following screen appears.



5. **Press [OK] to update the firmware**

Press [ESC] if you do not want to update the firmware. In this case, you cannot copy the GT screen data to the GT.

## 2.6.5 Copy PLC Program Files to the PLC

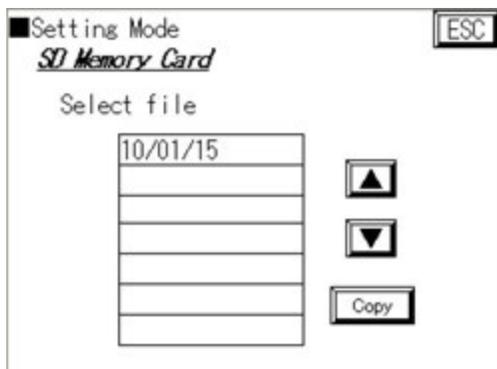
To copy PLC program files from the SD memory card to the PLC, proceed as follows:



### ◆ PROCEDURE

1. **In the SD memory card menu, select [SD → PLC]**

The list of files on the SD memory card is displayed.



2. **Press the file name you wish to copy**

or

Press the  or  button to select a file

3. **Press [Copy]**

A confirmation screen appears. The name of the PLC program file selected is displayed for your information.



#### 4. Press [OK]

In the following cases it is not possible to copy PLC program files from the SD memory card to the PLC:

- When there is no PCE file on the SD memory card
- When the PLC you are copying the files to has no comment memory
- When the PLC is in run mode

#### When there is no PCE file on the SD memory card

When you are using FPWIN Pro and there is no PCE file on the SD memory card, the following screen will appear:



In this case, check the contents of the SD memory card. Either the PCE file has the wrong file name (it must be the same as the corresponding FP file) or it has not been created yet. If the PCE file has not been created yet, start FPWIN Pro and create the FP and PCE file with the commands listed above.

### When the PLC you are copying the files to has no comment memory

This problem only occurs when the PLC program files have been created with FPWIN Pro.



- If you are using an FP0 or FPe: Press [OK]
- If you are using another PLC, check the file.

## 2.6.6 Copy PLC Program Files to the SD Memory Card

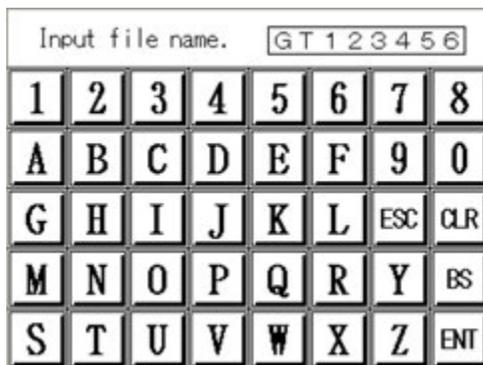
To transfer PLC program files from the PLC to the SD memory card, proceed as follows:



### ◆ PROCEDURE

1. In the SD memory card menu, select [PLC → SD]

A screen is displayed where you need to enter the file name.



2. Enter a file name

The file name can be up to 8 characters long.

3. Press [ENT]

A confirmation screen appears.



If you wish to change the file name again, press [File name] and repeat the previous two steps.

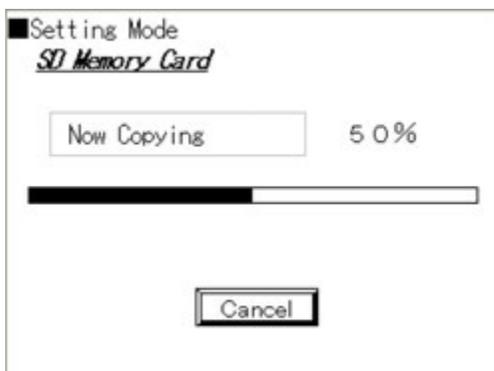
#### 4. Press [OK]

If you have saved already a file with the file name you have just entered, the following screen appears.



#### 5. Press [OK] to overwrite the file

The system starts to copy the screen data.



When the operation is complete, [Cancel] changes to [OK].

#### 6. Press [OK]

This returns you to the screen with the SD memory card menu.

## 2.6.7 Delete Data from the SD Memory Card

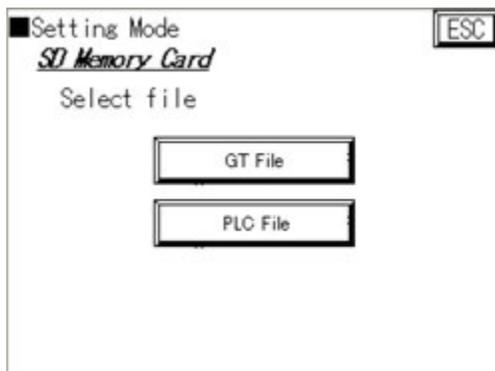
To delete screen data or PLC program files from the SD memory card, please proceed as follows:



### ◆ PROCEDURE

#### 1. In the SD memory card menu, select [SD File Delete]

A screen is displayed where you need to select whether you want to delete a GT file or a PLC file.



#### 2. Press [GT File] or [PLC File]

The list of files on the SD memory card is displayed.

#### 3. Press the file name you wish to delete

or

Press the ▲ or ▼ button to select a file

#### 4. Press [Delete]

A confirmation screen appears.



**5. Press [OK]**

This returns you to the screen with the SD memory card menu.

## 2.7 FP Monitor

With FP Monitor, you can check and control an FP series PLC connected to the GT. The following functions are available:

- Read and write system registers
- Read and write registers (bit and word data)
- Force registers on/off
- Monitor shared memory
- Monitor error status
- Manage passwords

FP Monitor supports all FP series PLCs developed since the mid 1990s. It does not support older models, e.g. FP-1, FP-M, etc.

### User memory required (FROM)

The user memory required by the FROM for FP Monitor depends on the GT model.

GT model	User memory required
GT02	146kb
GT02L	123kb
GT05M, GT05G, GT32M	264kb
GT03-E, GT05S, GT32T, GT32-R, GT32-E	329kb
GT12	183kb

### 2.7.1 Installing FP Monitor on the GT

Before you can use FP Monitor, you need to transfer the FP Monitor screens to the GT. There are two methods to transfer the FP Monitor screens:

- Via GTWIN
- Via SD memory card

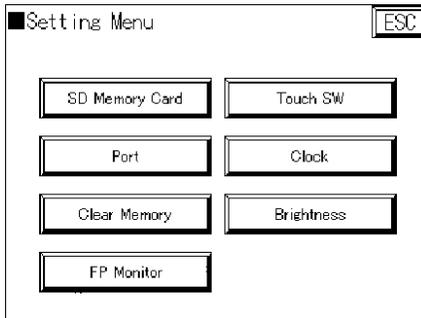
#### Via GTWIN



#### ◆ PROCEDURE

1. **File** → **Transfer**
2. **Activate the checkbox "FP Monitor"**  
You can activate other checkboxes if you wish to transfer other data, too.
3. **Check that "Direction" is set to "GTWIN->GT"**

4. **Select [OK]**
5. **Check whether the button [FP Monitor] is available in the settings dialog of the GT panel system menu (see p. 58)**



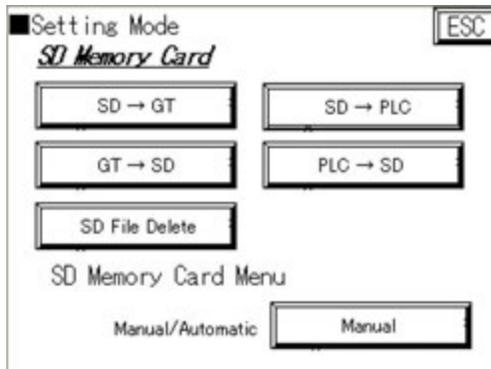
The button only appears if the FP monitor screen data has been successfully transferred to the GT. Only then can you start using the FP Monitor functions (see p. 83).

#### Via SD memory card



#### ◆ PROCEDURE

1. **Connect the SD memory card reader to the PC**
2. **File → Utility → Create SD Memory Card File**
3. **Select the drive with the SD memory card reader**
4. **Activate the checkbox "FP Monitor"**
5. **Select an existing file name or enter a new one**
6. **Select [OK]**
7. **Insert the SD memory card into the GT**
8. **Open the system menu on the GT**
9. **Select [Setting Menu]**
10. **Select [SD Memory Card]**  
The screen with the SD memory card functions is displayed.

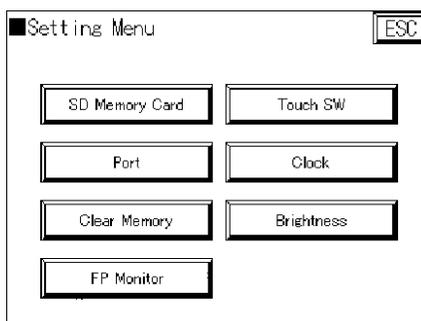


**11. Select [SD->GT]**

This transfers all data from the SD memory card to the GT.

**12. Select [ESC]**

**13. Check whether the button [FP Monitor] is available in the settings dialog of the GT panel system menu (see p. 58)**



The button only appears if the FP monitor screen data has been successfully transferred to the GT. Only then can you start using the FP Monitor functions (see p. 83).

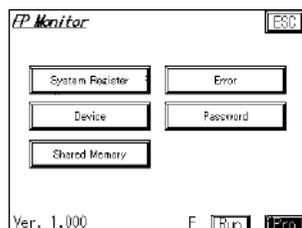
## 2.7.2 Uninstalling FP Monitor

In order to uninstall FP Monitor from the GT, you must:

1. **clear the user memory (see p. 62)**
2. **re-transfer the GTWIN data but without activating the FP Monitor checkbox**

## 2.7.3 Using FP Monitor

### FP Monitor main screen



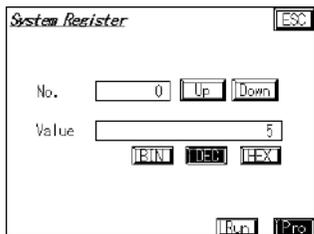
Item	Description
System Register	Displays the screen for reading and setting PLC system registers.
Error	Displays the screen for monitoring PLC errors.
Device	Displays the screen for reading and setting PLC data registers.
Password	Displays the screen for setting or removing PLC passwords.
Shared Memory	Displays the screen for reading values from the shared memory.
Ver x.xxx	Displays the version number of the FP Monitor
F	Only appears and flashes if devices have been forced ON or OFF.
Run	Switches the PLC to RUN mode. The button is available on all screens except input screens.
Prog	Switches the PLC to PROG. mode. The button is available on all screens except input screens.



### ◆ NOTE

- When you call up the FP Monitor using a function switch on the GT screen, all functions except flow display and multi language are active. However, if you call up the FP Monitor via the settings dialog in the GT panel system menu (see p. 58), all functions besides FP Monitor are suspended.
- When communication between PLC and GT cannot be established, the FP Monitor does not function.

### 2.7.3.1 System Register Monitor Screen



Option	Description
No.	Displays the number of the system register. To enter a number, touch the number field, and wait for the keyboard to display. Alternatively, use the [Up]/[Down] buttons to select a number.
Value	Displays the value of the system register selected. To enter a value, touch the value field, and wait for the keyboard to display. Values can be displayed in binary, decimal, or hexadecimal format. Use the BIN/DEC/HEX buttons to change the display format. The currently selected display format is highlighted.



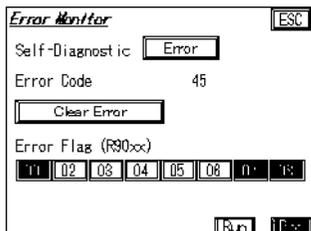
#### ◆ NOTE

**When a password has been set on the PLC, the password input screen is displayed. The appearance of the password input screen depends on whether the password has 4 or 8 digits (see p. 90).**

### 2.7.3.2 Error Monitor Screen

PLCs from the FP series are equipped with a self-diagnostic function which monitors the operation of the PLC. Use this screen to view self-diagnostic errors.

This is what the error monitor screen looks like when an error has occurred. In this example, the error code is 45, and the following error flags have been set: R9000 (self-diagnostic error flag), R9007 (operation error, hold), and R9008 (operation error, non-hold).



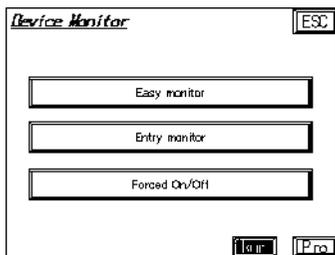
Option	Description
Self-Diagnostic	Displays "No error" during normal operation and "Error" (flashing) when an error has occurred.
Error Code	Displays the error code. Please refer to the PLC manual for details.
Clear Error	Use this button to clear errors with error code 43 and higher.

Option	Description
Error Flag	Displays the status of the special internal relays R9000 and R9002 to R9008. Dark error flags are OFF.

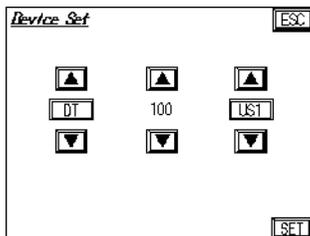
### 2.7.3.3 Device Monitor Screen

The device monitor offers three options:

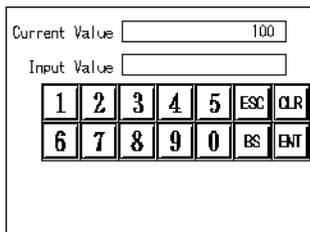
- Easy monitor
- Entry monitor
- Forced on/off



Whenever you select a device on the screen, the following input screen appears:



You can use the  and  button to scroll through the list of devices or directly press a device type, device number, or display format button to display the input screen where you can input device number or values.



The following device types are available:

Device type	Description
DT	Data register (default)
LD	Link register
SV	Timer/counter set value
EV	Timer/counter elapsed value
FL	File register
WGR	Data register (GT internal)
GDT	Internal relay (GT internal)
WX	External input
WY	External output
WR	Internal relay
WL	Link relay
T	Timer
C	Counter
X	Input
Y	Output
R	Internal special relay
L	Link relay

For word devices, three display formats are available. Due to the limited screen size, the display format has to be abbreviated.

Abbreviation	Format
US1 (default)	Decimal (1 word, unsigned)
S1	Decimal (1 word, signed)
US2	Decimal (2 words, unsigned)
S2	Decimal (2 words, signed)
H1	Hexadecimal (1 word)
H2	Hexadecimal (2 words)
BIN	Binary (1 word)
ASC	ASCII (1 word)
BC1	BCD (1 word)
BC2	BCD (2 words)

### Easy monitor

Use the easy monitor to read or write values from a specified device. You can monitor both word and bit devices.



**◆ NOTE**

- After the second line, all devices are listed by number in ascending order.
- The display of the current device value may be delayed for up to one minute.
- The number of devices listed on a screen depends on the screen size of the GT model.

The example screen for word devices shows the following device values:

	Device type	Device No.	Device value	Display format
	DT	100	200	US1 (decimal, 1 word, unsigned). This is the default display format (see p. 85).
	DT	200	50	
	DT	102	100	
DT	108	300		

The example screen for bit devices shows the following device values:

	Device type	Device No.	Device value
	R	100	Bit 0 – 3: OFF, bit 4 – 7: ON
	R	108	Bit 0 – 3: OFF, bit 4 – 7: ON
	R	110	Bit 0 – 3: ON, bit 4 – 7: OFF
R	118	Bit 0 – 3: ON, bit 4 – 7: OFF	

Option	Description
Device type	Displays the currently selected device type. Touch the button to change the device type.
Device No.	Displays the number of the device (address). To enter a number, touch the number field and wait for the keyboard to display. Alternatively, use the [Up]/[Down] buttons to select a device.
Device value	<ul style="list-style-type: none"> <li>• For word devices: device value in the display format selected.</li> <li>• For bit devices: bit status (ON = light/OFF = dark)</li> </ul> Touch the value or bit button to change it.
Display format	Only for word devices. The display format (see p. 85) can be changed with the ▲ and ▼ buttons.
[Up]/[Down]	Use the buttons to scroll through the list of devices.

Entry monitor

Use this monitor to enter values for up to 32 devices (word and bit devices). The device types, device numbers, and display formats of the devices are held even after you turn off the power.

The example screen shows the following device values:

Device type	Device No.	Device value	Display format
DT	100	50	US1 (decimal, 1 word, unsigned)
DT	200	-100	S1 (decimal, 1 word, signed)
R	100	Bit 0 – 3: ON Bit 4 – 7: OFF	—

Option	Description
Device type	Displays the currently selected device type. Touch the button to change the device type.
Device No.	Displays the number of the device (address). To enter a number, touch the number field and wait for the keyboard to display. Alternatively, use the [Up]/[Down] buttons to select a device.
Device value	<ul style="list-style-type: none"> <li>For word devices: device value in the display format selected.</li> <li>For bit devices: bit status (ON = light/OFF = dark)</li> </ul> Touch the value or bit button to change it.
Display format	Only for word devices. Select which display format (see p. 85) should be used.
[Up]/[Down]	Use the buttons to scroll through the list of devices.

Forced On/Off

**CAUTION**

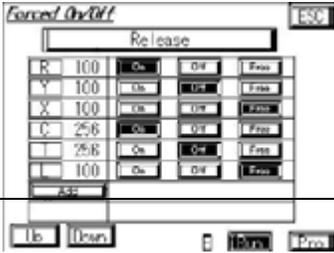


**Hazardous situation!**

**Forcing inputs/outputs is extremely hazardous. Make sure to pay sufficient attention to the status of peripheral devices and equipment before executing this function.**

Use this monitor to forcibly turn on or off up to 16 bit devices. The addresses of the devices entered in this monitor are held even after you turn off the power.

Device type	Device No.	Device value
R	100	Forced ON
Y	100	Forced OFF
X	100	Not forced, i.e. free to be controlled by the PLC.

				Device type	Device No.	Device value
	C	256	Forced ON			
	T	256	Forced OFF			
	L	100	Not forced, i.e. free to be controlled by the PLC.			

Option	Description
Release	Deletes the list and releases all forced bit devices. However, if the PLC is in the PROG. mode or the device was forcibly turned ON without the state being changed in the PLC program, the bit device may not turn OFF correctly. We recommend turning OFF the bit device forcibly before selecting [Release].
Device type	Displays the currently selected device type. Touch the button to change the device type.
Device No.	Displays the number of the device (address). To enter a number, touch the number field and wait for the keyboard to display. Alternatively, use the [Up]/[Down] buttons to select a device.
ON	Forces the bit device ON.
OFF	Forces the bit device OFF.
Free	Specifies that the bit device should operate as specified by the PLC program. However, if the PLC is in the PROG. mode or the device was forcibly turned ON or OFF without the state being changed in the PLC program, the bit device will remain in the forced state.
Add	Select this button to add another bit device.
[Up]/[Down]	Use the buttons to scroll through the list of devices.



## ◆ NOTE

- When using the FP monitor, do not force bit devices ON/OFF with another tool such as FPWIN Pro / FPWIN GR. Otherwise, the display on the "Forced On/Off" screen of the FP Monitor may differ from the status of the PLC.
- All forced inputs/outputs in the PLC will be released when you switch the PLC from RUN to PROG. or PROG. to RUN.
- In the PROG. mode, you can only turn ON the following bit devices: Y (external output), R (internal relay), and L (link relay).
- To save the bit devices in the list, press [Esc] to return to the device monitor.

### 2.7.3.4 Password Management Screen

Use this screen to set or delete passwords for password-protected PLCs. You can use 4-digit or 8-digit passwords.



#### NOTE

- When you create a new password or delete a password without actually entering anything, the default password will be used. The default password is 0000 for a 4-digit password and 8 spaces for a 8-digit password.
- Not all PLCs support 8-digit passwords.

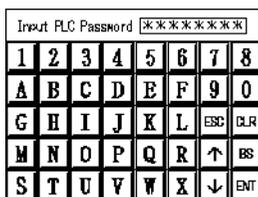
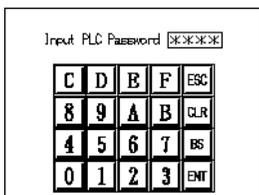
#### Setting a new password



#### PROCEDURE

1. Select [New Password]

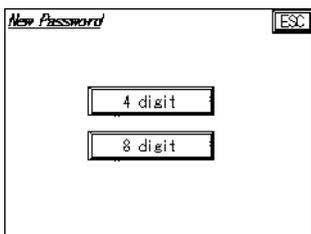
The password-input screen appears. Its appearance depends on whether the PLC has a 4-digit or 8-digit password.



If the PLC is not password-protected, the password input screen will not appear.

2. Enter the password
3. Select [ENT]

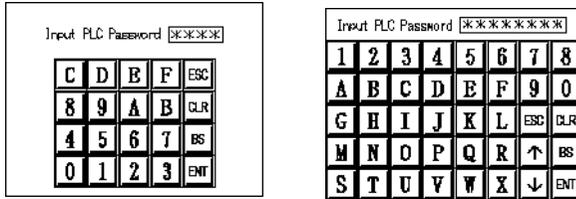
The screen for entering the new password appears.



**4. Select the number of digits**

If a password already exists and you only want to change the password length, you need to delete the password first and then set a new one.

**5. Enter the new password**



**6. Select [ENT]**

When you create a new password without actually entering anything on the password input screen, the default password will be used. The default password is 0000 for a 4-digit password and 8 spaces for a 8-digit password.

**Deleting a password**

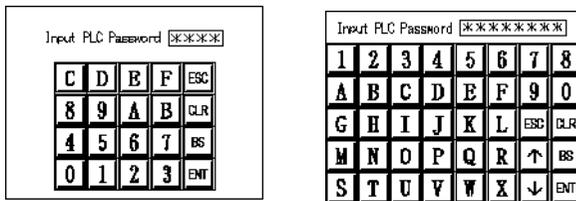
If you want to change from a 4-digit to an 8-digit password or vice versa, you need to delete the existing password first.



**PROCEDURE**

**1. Select [Cancel Password]**

The password-input screen appears. Its appearance depends on whether the PLC has a 4-digit or 8-digit password.



If the PLC is not password-protected, the password input screen will not appear.

**2. Enter the password**

**3. Select [ENT]**

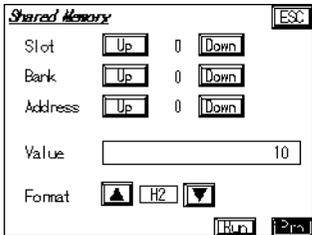
The following screen appears.



4. Select [OK]

2.7.3.5 Shared Memory Monitor Screen

The screen is read-only and displays the value of the shared memory address selected.



Option	Description
Slot	Displays the slot number. To enter a number, touch the number field, and wait for the keyboard to display. Alternatively, use the [Up]/[Down] buttons to select a number.
Bank	Displays the bank number. To enter a number, touch the number field, and wait for the keyboard to display. Alternatively, use the [Up]/[Down] buttons to select a number.
Address	Displays the address number. To enter a number, touch the number field, and wait for the keyboard to display. Alternatively, use the [Up]/[Down] buttons to select a number.
Value	Displays the value of the shared memory address selected.
Format	Display format of the value. The display format (see p. 85) can be changed with the  and  buttons.

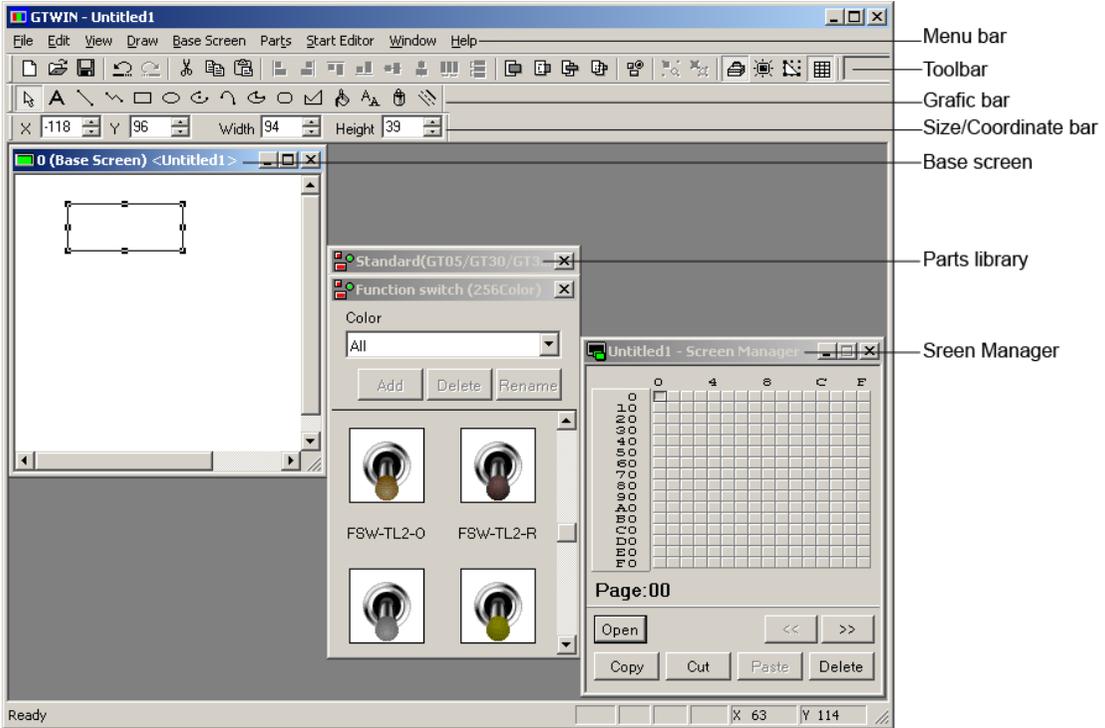
## **Chapter 3**

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# **The GTWIN User Interface**

### 3.1 What You See on Your Monitor

If you have created a new file, in the Screen Manager (see p. 106), double-click any screen number and GTWIN will appear as follows on your monitor.



Item	Description
Menu bar (see p. 95)	All GTWIN operations and functions can be accessed via menus.
Toolbar (see p. 96)	Frequently used functions can be easily accessed via the toolbar.
Graphic bar (see p. 98)	Text can be created, graphics can be drawn and colors can be specified using the icons on the graphic bar.
Size/Coordinate bar (see p. 101)	The size/coordinate bar displays the coordinates of the top left corner of the selected part as well as the part's width and height.
Base screen (see p. 102)	On the base screen, you create the screen that will be displayed on the GT panel. Via <b>View</b> → <b>Zoom</b> , you can change the magnification. Please note, for the smaller GT units, the initial screen size is set to 200% in GTWIN.
Parts library (see p. 103)	The parts library contain switches, lamps, clocks, keyboards, etc., which you can drag and drop to the base screen and configure as required.
Screen Manager (see p. 106)	The Screen Manager manages multiple base screens in a map (grid) or list format as a single screen file. Double-click on any screen number in the map or list to display it. Screens that already exist can be easily identified by a red rectangle in the map. You can also use the Screen Manager to copy, move and delete base screens.

## 3.2 Menu Bar

---

You can access all GTWIN operations and functions via menus.

Menu item	Description
File (see p. 108)	Contains menu commands for working with screen files, as well as for printing, transferring files, and entering configuration settings.
Edit (see p. 124)	Contains menu commands for cutting, pasting, and copying graphics and text, and positioning objects.
View (see p. 126)	Contains menu commands to change base screen grid settings and size ratios, turn toolbar and status bar displays on and off, and carry out other operations related to screen displays.
Draw (see p. 127)	Contains menu commands to help you design your screen.
Base screen (see p. 128)	Contains menu commands to change the attributes of base screens, confirm memory sizes, and carry out other operations related to base screens.
Parts (see p. 129)	Contains menu commands to open parts libraries, change parts' attributes, and carry out other parts-related operations.
Start Editor (see p. 131)	Contains menu commands to boot the bitmap, recipe, flow display, write device, and multi-language exchange string list editors.
Window (see p. 179)	Contains window-related menu commands to display various windows, change and arrange windows, etc.
Help (see p. 180)	Via this menu you can access the online help or obtain information about GTWIN.

### 3.3 Toolbar

The following table provides descriptions for non-Windows icons in the toolbar.



**◆ NOTE**

**You can undo steps in drawings, text, parts and for some operations of the various editors that can be booted from the menu bar. Please be aware that other operations cannot be "undone".**

Icon	Icon name	Description
	Left	Align selected objects.
	Right	
	Top	
	Bottom	
	Horizontal center	Center selected objects horizontally.
	Vertical center	Center selected objects vertically.
	Horizontal distribution	Distribute selected items horizontally.
	Vertical distribution	Distribute selected items vertically.
	Forward	Brings selected item forward one level.
	Backward	Sends selected item backward one level.
	Front	Brings selected item to the front.
	Back	Sends selected item to the back.
	Open a parts library	Opens a list of parts libraries at your disposal.
	Group	Groups selected objects.
	Ungroup	Ungroups selected object.
	Display/Hide graphic bar	Displays or hides the graphic bar.
	Redraw	Refreshes the base screen. When a base screen is being edited, deleting or moving graphics may cause problems with the positions of previous and subsequent graphics. If this happens, the base screens can be "redrawn".
	Enable/disable snap	Enables or disables the snap function. When the snap function is activated, objects "snap" to specific grid positions.
	Display/Hide keyboard parts	Displays or hides keyboard parts on base or keyboard screens to ease design.
	Toggle status	Switches a selected switch's or lamp's state to ON or OFF.

At the end of the toolbar, two text boxes appear:

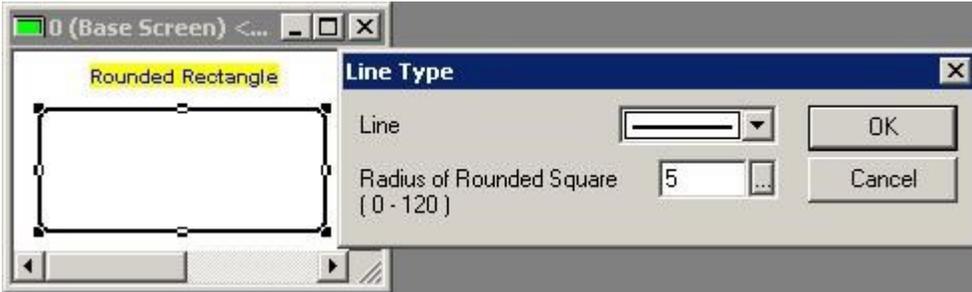


- **Status (ON/OFF)**. Switches a selected switch's or lamp's state to ON or OFF (or use the icon ).
- **Language No.** (for most GT models). When you have entered texts in different languages for each part, this option displays the texts of the selected language number.

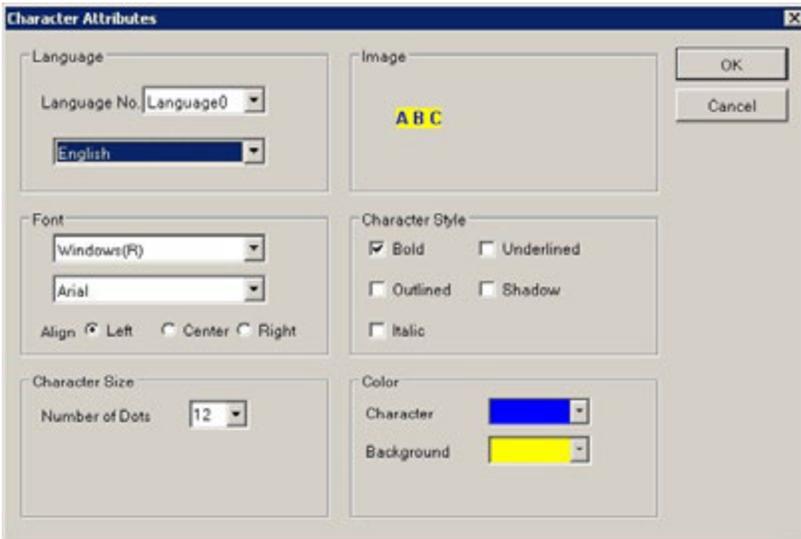
### 3.4 Graphic Bar

The following table provides descriptions for the icons in the graphic bar. While an object is selected, you can change the properties of lines, characters or graphics:

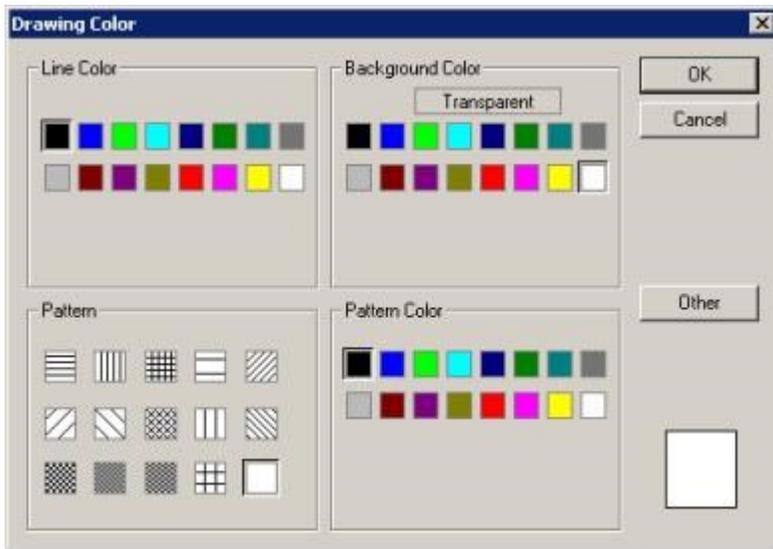
- by using the right mouse button to access a pop-up menu
- via the "Line Type", "Character Type" or "Color" icon, or "Draw" submenu



*Line Type dialog*



Character Attributes dialog via "Character Type" submenu or icon



Drawing Color dialog via "Color" submenu or icon for GT21

Icon	Icon name	Description
	Select	Selects an object on the base screen. (Not available in the Bitmap Editor; use the select area command instead.)
	Character String	Enters text. For the Bitmap Editor only: this function is not available when you have selected <b>View</b> → <b>Zoom In</b> . Zoom out of the image if you wish to add character strings with the text tool.
	Straight Line	Draws a straight line. Press <Shift> to draw a vertical or horizontal line.
	Continuous Line	Draws a continuous line.
	Rectangle	Draws a square (press <Shift>) or rectangle.
	Circle/Oval	Draws a circle (press <Shift>) or oval (see p. 19).
	Arc/Elliptical Arc	Draws an arc (press <Shift>) or an elliptical arc. <b>Procedure</b> 1. Click on the base screen and draw the size of the arc. 2. Click again to set the size. 3. Click again to delete unwanted section. 4. Click again to finish.
	Curve	Draws a curve. (Also known as Bézier curve.) <b>Procedure</b> 1. Click on the base screen and draw the length of the curve. 2. Click and pull the invisible anchor point to bend the curve. 3. Click again to finish.
	Segment/Oval Segment	Draws a circular (Press <Shift>) or an oval segment. <b>Procedure</b> 1. Click on the base screen and draw the size of the segment. 2. Click again to set the size.

Icon	Icon name	Description
		3. Click again to create the fan. 4. Click again to finish.
	Rounded Rectangle	Draws a rounded square (press <Shift>) or rounded rectangle. Define the radius of the rounded edges via the "Line Type" dialog.
	Polygon	Draws a polygon. Press <Shift> to draw a vertical or straight line. Draw the individual lines, then double-click to finish the polygon.
	Fill	Fills in an area with the color and pattern defined in the "Drawing Color" dialog.
	Character Type	Changes the text's language, font, style, size and color. The image field in the "Character Attributes" dialog displays the settings you have made.
	Color	Click to access the "Drawing Color" dialog to define the color and pattern of text or graphics.
	Line Type	Defines a line's appearance, e.g. thick, thin, dotted, etc.

## 3.5 Size/Coordinate Bar

The size/coordinate bar displays the coordinates of the top left corner of the selected part as well as the part's width and height. You can change the position and size by entering values in the fields. As long as no part is selected, all fields are blank resp. read-only.



When you have selected more than one part, fields with values shared by all selected parts will be displayed while those with different values are blank.



## 3.6 Base Screen

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On the base screen, you create the screen that will be displayed on the GT panel. You can create text, draw graphics or place parts on the base screen. Use the Screen Manager (see p. 106) to open and manage your base screens.

The backlight status icon on the left side of the title bar allows you to see the status of the backlight at a glance.



Via the "Base Screen" menu or a right mouse click while the cursor is on the base screen, you can:

- assign screen attributes, e.g. screen name, language, background color, pattern and pattern color, and backlight settings (see note)
- check how much memory the screen requires
- close all screens



*Base Screen menu*



### ◆ NOTE

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- The "Base Screen Attribute" dialog and "Memory Usage" window may differ slightly depending on the GT model.
- If the memory used exceeds the limit, the base screen cannot be closed and the screen cannot be transferred.

## 3.7 Parts Library

The parts library contains parts, i.e. functions prepared and stored ahead of time. When GTWIN is booted, the "standard" parts most commonly used are displayed. The parts available depend on the GT model.

Part	Description
Switch (see p. 182)	Switch parts turn the bit device of the corresponding PLC on and off.
Function switch (see p. 184)	Function switch parts are used to switch screens or execute arithmetic operations when the switch is touched, etc.
Lamp (see p. 188)	Lamp parts change color when the bit device (i.e. address) of the PLC being referenced is turned on or off.
Message (see p. 190)	Message parts display messages when the corresponding bit in a word device (i.e. address) of the PLC being referenced is turned on or off. Up to 16 different messages can be displayed.
Data (see p. 194)	Data parts are used to display the contents of internal PLC devices (i.e. addresses) directly on the screen. They can also be used in conjunction with keyboard parts or keyboard screens to change or input values for internal PLC devices from the GT side.
Bar graph (see p. 199)	Bar graph parts display values of the PLC device, either vertically or horizontally.
Clock (see p. 201)	Clock parts display the year, month, day, and time based on the internal clock in the programmable display unit.
Alarm list (see p. 202)	Alarm list parts can show: 1) a list of currently active alarms, 2) a history of alarms in chronological order, or 3) a list of alarms based on frequency.
Line graph (see p. 208)	Line graph parts can display the values of individual or several registers over time.
Keyboard (see p. 223)	Keyboard parts are used to enter values in combination with data parts.
Custom (see p. 227)	You can customize switch, lamp and message parts.

You can open a parts library by opening a base screen via the Screen Manager (see p. 94) or via the Parts menu.



### ◆ PROCEDURE

#### 1. Parts → Open Parts Library

The "Select Parts Library" dialog appears.



## 2. Select a library

Multiple parts libraries can be opened and used at the same time. Click on the title bar of the desired parts library to make it active.

From the library, simply drag and drop parts onto the base screen. Parts cannot be placed on top of other parts. Character strings, graphics, and other objects cannot be placed on top of parts; they will automatically be placed behind parts.

From the "Select Parts Library" dialog, you can also:

- Delete non-standard libraries
- Change the title of non-standard libraries. (You must change libraries' titles before you open them.)
- Create new parts libraries (see p. 104)

### 3.7.1 New Parts Library

You can create a new parts library to conveniently store frequently used or customized parts. Simply drag the parts from the base screen and drop them in the library. You will be prompted to register the parts.

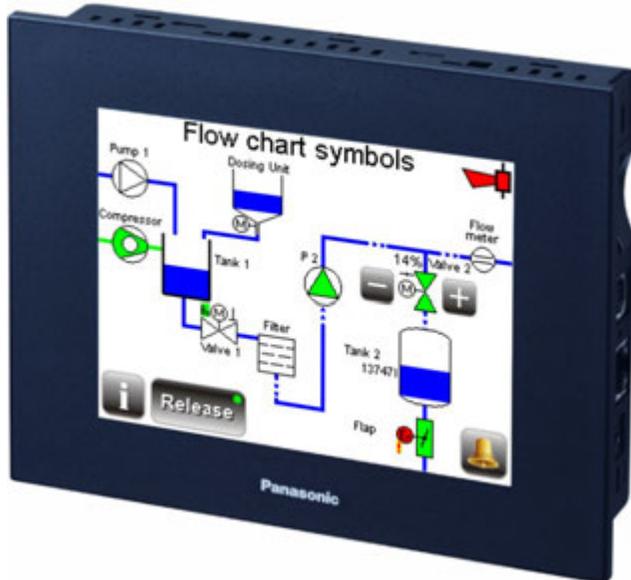
Once in the new parts library, you can change the parts' names, delete them, change their order or move them to the lamps group (right click the part → Move → Lamps).



A new "TankMonitoring" parts library

### 3.7.2 Flowchart Symbols Library

The Flowchart symbols library contains different key and flow chart symbol collections that can be used for comprehensive and well arranged GT projects for machines and production lines. The symbols are especially suited for water management applications.



From version 2.E2 onward, the flowchart symbols library is included with the default GTWIN installation.



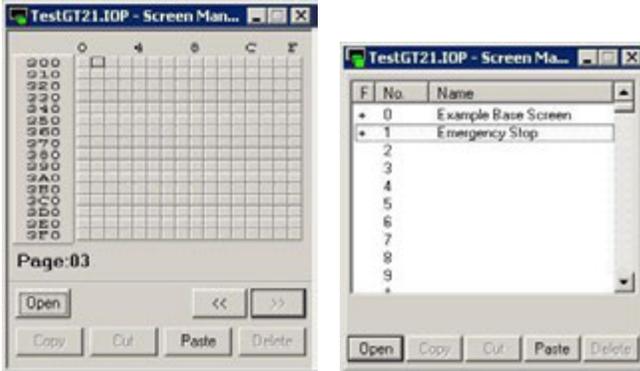
#### ◆ REFERENCE

For a PDF file with a detailed description of the library symbols, please refer to the folder ..\Program Files\Panasonic-ID SUNX Terminal\GTWIN\TB-SYMKEYS 2.

Sample applications are stored in ..\Program Files\Panasonic-ID SUNX Terminal\GTWIN\TB-SYMKEYS 2\GT Apps.

## 3.8 Screen Manager

The Screen Manager manages multiple base screens in a map (grid) or list format as a single screen file. You can choose which display format you desire via **View** → **Screen Manager Display** → **Map Method** or **List Method**.



*Screen Manager displayed as map or list*

Double-click on any screen number in the map or list to display it. Screens that already exist can be easily identified by a red rectangle in the map. You can also use the Screen Manager to copy, move and delete base screens.

You can manage up to 1024 (0 to 3FF) base screens, which are displayed in hexadecimal format in the Screen Manager. 256 screens appear on one map, and there are 4 maps all together. Navigate between them using [**<<**] and [**>>**] at the bottom right of the map display, or scroll when using the list display.

# Chapter 4

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**Menus**

## 4.1 File Menu



### File menu

The file menu commands are described in the following sections.

#### 4.1.1 New, Open, Close, Save, Save As, Delete

For the most part, the **File** menu commands New, Open, Close, Save, Save As and Delete behave like typical Windows commands.



In the GTWIN Configuration dialog (see p. 19) you define the default pathway for storing GTWIN projects. When you create a new project, a folder is saved at this location. Inside the folder, a project of the same name with the ending \*.IOP is created along with several other files.



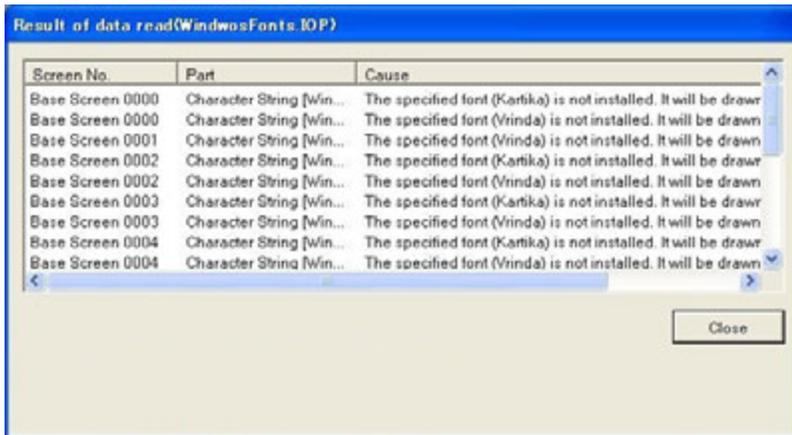
#### ◆ NOTE

- When you use the "Save As" menu command, a new folder will be created inside the folder that is currently open unless you manually select another path. It will NOT automatically be saved at the default location.
- Upon Open, Windows fonts are not available (see p. 109).

### 4.1.1.1 Windows Fonts Not Available

Not all PCs have the same fonts installed on them. Hence, if you open a GTWIN project created on another PC that uses Windows (R) fonts not installed on your PC, GTWIN will notify you. This can also occur when you:

- Read from GT
- Read from an SD memory card file



Double-click on the line for information on the converted fonts.

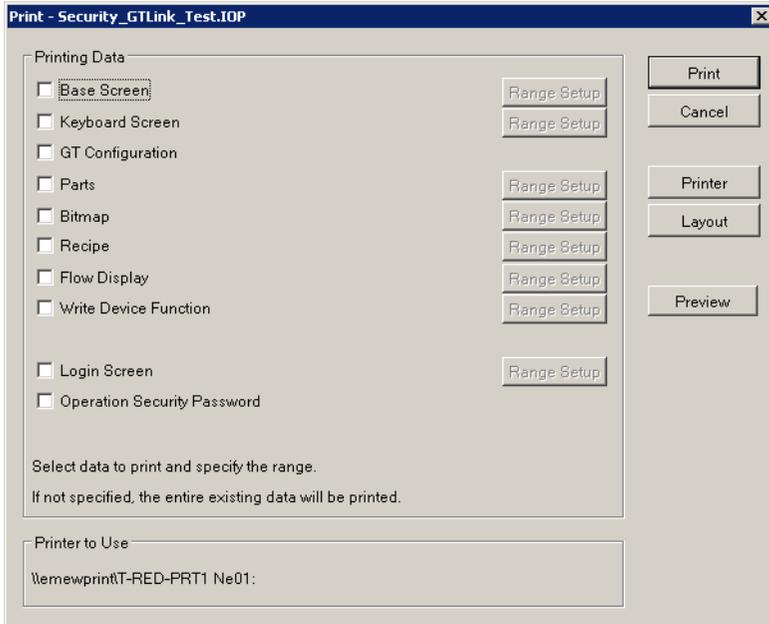


#### ◆ NOTE

**If you wish to preserve the fonts, either install the missing fonts on your PC or save the project on a PC with the fonts installed.**

### 4.1.2 Print

GTWIN provides formidable printing options that allow you to print out your projects in as great or as little detail as you wish.



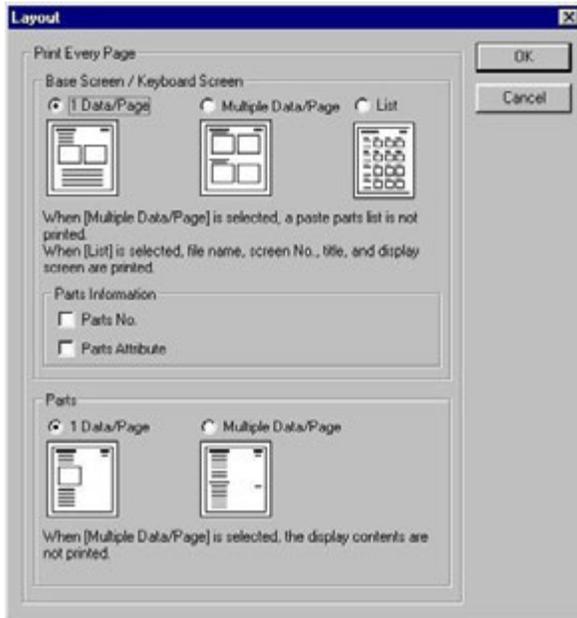
*Print dialog*



#### ◆ NOTE

Which tabs and what appears on them may differ depending on which GT model you have selected.

After you select what you want to print, you can also determine the range by choosing [Range Setup]. Choose [Layout] to specify how much or little information to include on a page.



*Layout dialog*

Via **File** → **Print Style Setup** (see p. 111) you can further refine what to print.

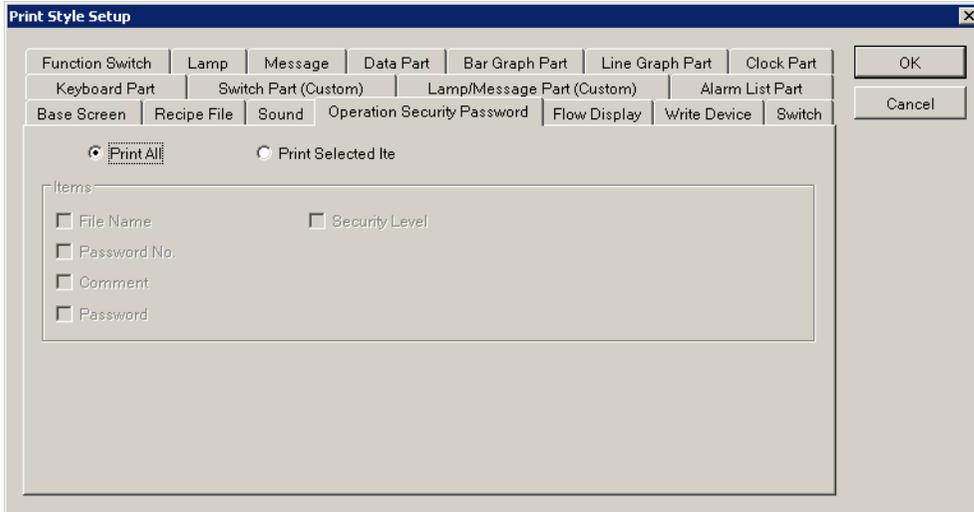
### 4.1.3 Print Style Setup

The "Print Style Setup" dialog allows you to further refine which information to print for the options selected in the "Print" dialog (see p. 110).



**◆ NOTE**

Please note the restrictions at the bottom of the respective index cards.



*Print Style Setup dialog*



**◆ EXAMPLE**

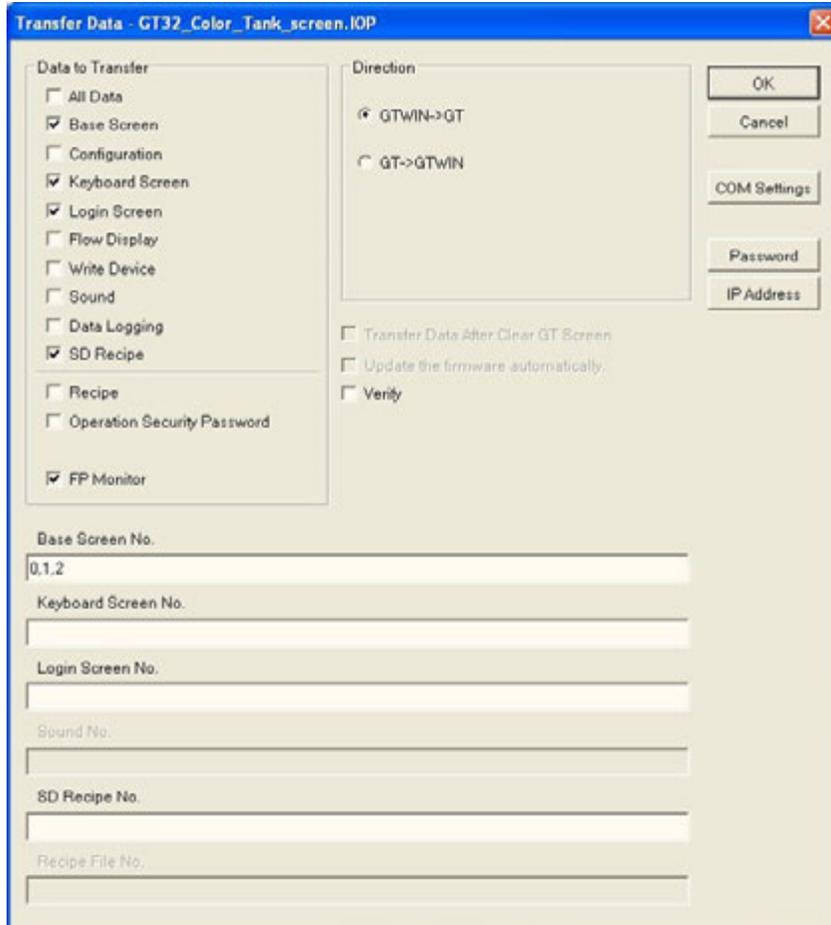
You may just want a printout of your base screens' file names, display and screen size, for example to try and save memory. In the "Print" dialog, select the check box "Base Screen"; in the "Print Style Setup" dialog, select the check boxes "File Name", "Screen Size" and "Display Screen".

**4.1.4 Printer Setup**

Select the printer to print your files via **File → Printer Setup**.

## 4.1.5 Transfer

Once your PC and the GT unit are connected and communication is working, you can transfer data from GTWIN → GT or from GT → GTWIN. What appears in the "Transfer Data" dialog depends on your GT unit.



If you select "Base Screen", "Keyboard Screen", "Login Screen", "SD Recipe" or "Recipe File", you can further specify which screens or files to transfer. Separate them using commas (0,1) or combine consecutive files with a hyphen (0-3).

### Update the Firmware Automatically

The firmware will automatically be updated if it is not the latest version. You may also upgrade the firmware manually (see p. 13).



#### ◆ NOTE

- Do not turn off the power supply for the main unit while upgrading.
- Do not disconnect the cable between the PC and the GT unit; otherwise the GT unit may not reboot.

- **The through function is not available during the version upgrade and while transferring screens.**

### All Data

Selecting "All Data" only applies to data in this field above the line. When "All Data" is selected, the other options above the line will be grayed out. You must select any other options in addition if you wish to transfer such data.

### Verify

Use this function to verify that the project you have open in GTWIN corresponds to the project on the GT unit.

### Com Settings

Select [Com Settings] to modify the communication parameters.

### Password

You can set a password with up to 8 alphanumeric characters. They are not case sensitive.

You can "unprotect" the GT unit by entering your old password and then leaving the "New Password" and "Reenter new password" fields blank.

### FP Monitor

Use this function to transfer the FP Monitor screens (see p. 80) to the GT unit.



### ◆ NOTE

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**Do not forget your password. If you should forget it, the GT unit's memory must be cleared entirely.**

## 4.1.6 Configuration

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Via **File** → **Configuration**, you can configure:

- GTWIN (see p. 19)
- the GT unit (see p. 21)

Use **File** → **Transfer** to selectively transfer the configuration or other data between GTWIN and the GT unit.

### 4.1.7 Keyboard Screen

Via **File** → **Keyboard Screen**, you can call up a list of keyboard screens you have created. A plus sign within the square brackets indicates that this keyboard screen has been created.

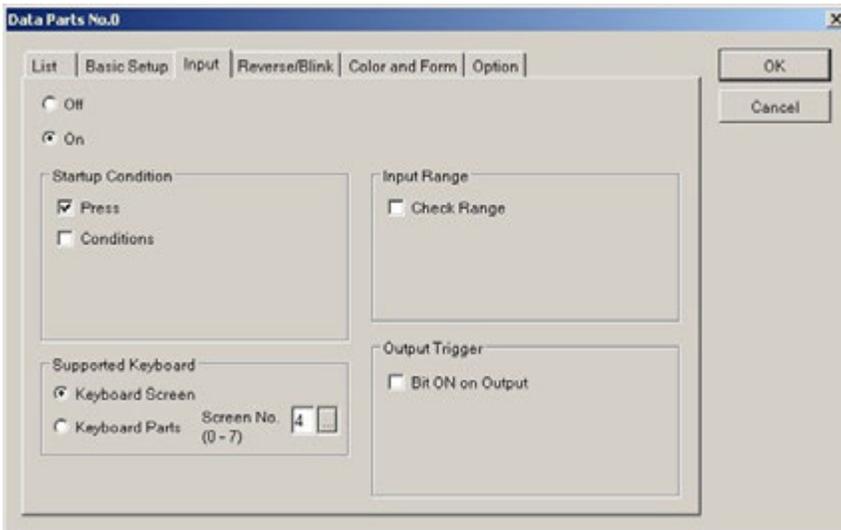


In the list, double-click the line highlighted or select [Draw] to open the desired keyboard screen.

Although keyboard screens look like base screens, they are managed via the keyboard screen menu command, not via the screen manager. Keyboard screens are meant primarily to contain keyboard parts coupled with data parts.

#### Relationship between keyboard screens or keyboard parts and data parts

Keyboard screens or keyboard parts must be supported by a corresponding data part. Call up the data part's (see p. 194) "Attribute", select the "Input" tab and activate the option button "ON". Under "Supported Keyboard", specify the keyboard screen or keyboard part used with that data part.



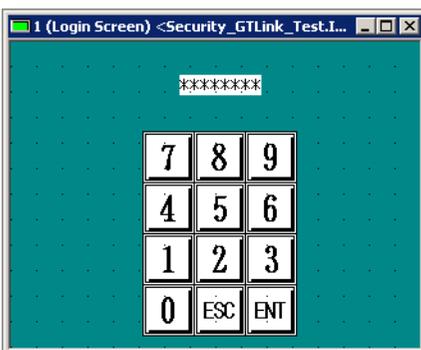
*"Input" tab of a data part with keyboard screen assigned*

### 4.1.8 Login Screen

You can draw up to 16 login screens.

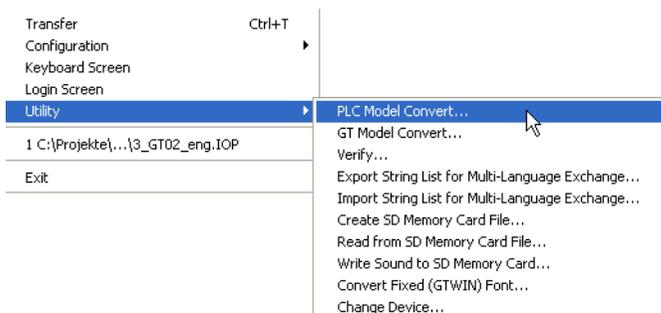


You must place a keyboard part and a data part on the login screen. You may place other parts as well.



Otherwise, design the login screen as you would a keyboard screen (see p. 115).

### 4.1.9 Utility



The utility menu command contains the following submenus.

Item	Description
PLC Model Convert (see p. 117)	Use this dialog to convert to a new PLC model. Select [Settings] to convert the addresses, i.e. to map the bit and word devices.
GT Model Convert (see p. 118)	Use this dialog to convert to a new GT model. Select the GT model and the screen size and type and click [Convert.]
Verify	Use this function to verify that the project you have open in GTWIN corresponds to the project on the GT unit.
Export/Import String List for	If you work with multiple languages, use this function to export the strings to a text file. This text file can be opened in Excel for easier editing and

Item	Description
Multi-Language Exchange	translation. When you have finished editing and entering texts for all languages required, use the import command to import the texts into your GTWIN file.
Create SD Memory Card File*	Use this option to save data on an SD memory card (if option is available).
Read from SD Memory Card File*	Use this option to read data from an SD memory card. (What to do if Windows fonts are not available (see p. 109).)
Write Sound to SD Memory Card*	Use this option to write sound data to an SD memory card (if option is available).
Convert Fixed (GTWIN) Font (see p. 119)	Use this option to convert fixed fonts to a different type of font or font size.
Change Device (see p. 122)	Use this function to change multiple device at once.
*An SD memory card reader/writer is required for reading, writing screen data from GTWIN and writing sound files. We recommend one manufactured by Panasonic.	

#### 4.1.9.1 PLC Model Convert

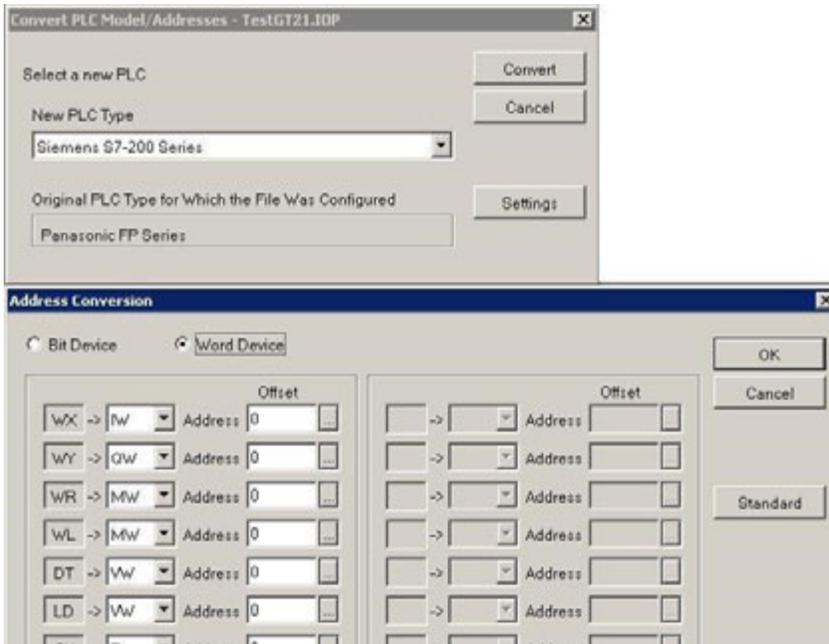
Use this dialog to convert to a new PLC model. Select [Settings] to convert the addresses, i.e. to map the bit and word devices.



#### ◆ NOTE

- **Before you start the conversion, create a backup of the file with the command File → Save As.**

- If the original PLC type's device numbers exceed the range allowed for the new PLC type, they will be converted to the maximum device number allowed by the new PLC. Before you convert to the new PLC model, we recommend adjusting the device numbers for the original PLC type so that they fall within the range supported by the new PLC type after conversion.



*PLC Model Convert, mapping word device addresses*

### 4.1.9.2 GT Model Convert

You can convert screen data from one GT model to another. The following restrictions apply:

- It is only possible to convert screen data to a new GT model whose screen size is equal to or larger than the original GT model. Only compatible GT models are available in the drop-down list under **File** → **Utility** → **GT Model Convert**.
- The number of parts that can be converted is limited to less than 256 parts for most GT models and depends on whether you are using custom parts, keyboard or alarm list parts.



**◆ NOTE**

- **Before you start the conversion, create a backup of the file with the command File → Save As.**
- **Once the conversion has been performed, it cannot be undone.**

### Scaling of screen data

Depending on the screen size of the GT model you are converting to, the screen data will be scaled proportionally. Texts will be scaled depending on the font they are using.



#### ◆ NOTE

- Only True Type and Windows fonts can be scaled automatically. For the fixed GTWIN font, use the command "Convert Fixed (GTWIN) Font".
- Text on keyboard or alarm list parts will not be scaled.

The screen data of the following GT models can be scaled.

Original GT model	Models available for conversion
GT01 (monochrome)	GT02 (no SD card)
	GT02 (SD card)
	GT02L (monochrome)
GT01 (vertical, monochrome)	GT02 (vertical, no SD card)
	GT02 (vertical, SD card)
	GT02L (vertical, monochrome)
GT11 (monochrome)	GT12 (monochrome)
	GT12 (8 shades of gray)
GT11 (vertical, monochrome)	GT12 (vertical, monochrome)
	GT12 (vertical, 8 shades of gray)

### Conversion from GT10

When converting from GT10 to GT02, GT11 or GT12, each part on the screen is scaled to fit the screen size. However, font sizes or keyboard parts are not scaled and need to be adjusted after the conversion.

### Conversion from GT30 color

When you convert a color GT30 model to a monochrome GT model, you can specify how the colors should be converted by clicking [Settings] in the "GT Model Conversion" dialog.

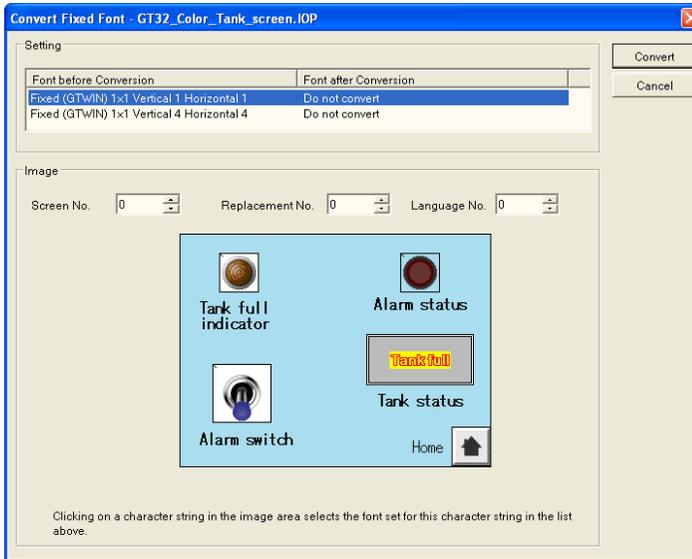
#### 4.1.9.3 Convert Fixed (GTWIN) Font

To convert fixed fonts to a different type of font or font size, proceed as follows:



#### ◆ PROCEDURE

1. File → Utility → Convert Fixed (GTWIN) Font  
The "Convert Fixed Font" dialog appears.



In the top half, you see all the fixed (GTWIN) fonts used in the data listed in the column of "Font before Conversion". Every font is only listed once, even if it is used in multiple character strings or parts. All texts using the same font are converted to the same font selected under "Font after Conversion".

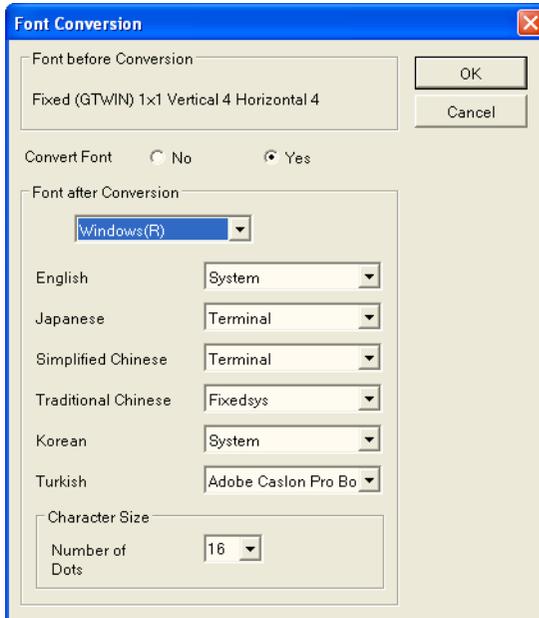
The bottom half displays the first screen containing a part or text using the fixed font. You can check parts from other screens by entering the screen, replacement, or language number.

**2. Double-click a fixed font to select the font to convert to**

The "Font Conversion" dialog appears.

**3. Set "Convert Font" to "Yes"**

Now you can select either a different size for the fixed font (useful when you have converted screen data for a bigger GT model and need to scale the texts proportionately) or a different font.



#### 4. Select a font from the list box "Font after Conversion"

For True Type fonts, also specify the character size in dots. For Windows fonts, specify a font per language and the character size in dots.

#### 5. Select [OK]

The image in the bottom half of the "Convert Fixed Font" dialog will show a preview of the screen with the fonts converted. Select [Convert] if you want to perform the font conversion or repeat the procedure from step 2.



### ◆ NOTE

The following restrictions apply:

- The conversion setting will not be saved, you have to set it for each fixed font you wish to convert.
- When a font conversion would lead to a part being moved outside the screen area, GTWIN automatically adjusts the display position. You can see a preview in the bottom half of the "Convert Fixed Font" dialog. When you select [Convert], a dialog box lists all the parts whose position has been adjusted to accommodate the new font and character size. You may have to modify the position of the parts manually after the conversion.
- Before you start the conversion, create a backup of the file with the command File → Save As.

### 4.1.9.4 Change Device

Use this dialog to change multiple devices at once.



#### ◆ NOTE

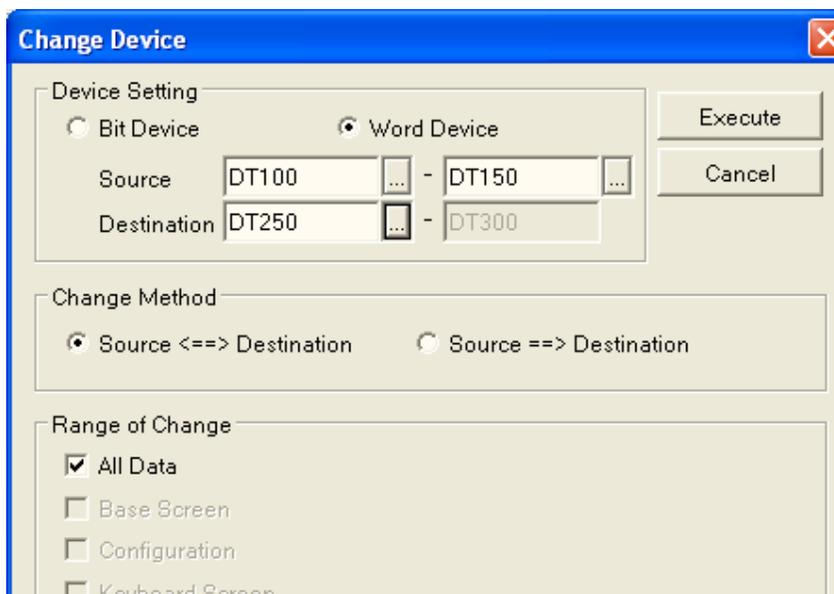
Save your project before executing a device change as original data cannot be restored once you select [Execute].



#### ◆ PROCEDURE

1. File → Utility → Change Device

The "Change Device" dialog appears.



2. Make your settings and choose [Execute]

### Settings

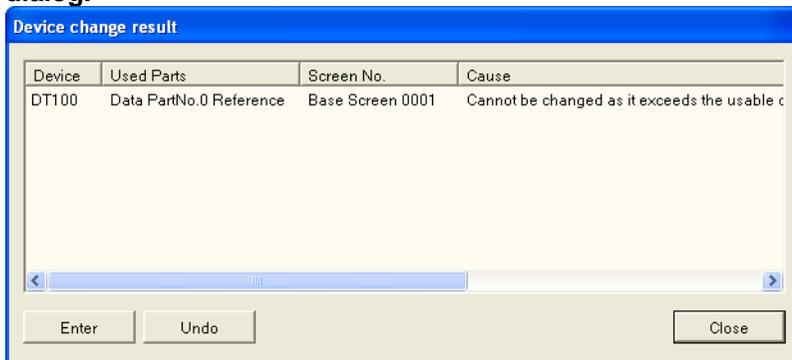
Field	Description
Device Setting	Specifies "Bit Device" or "Word Device" as well as the start and end device under "Source" and the destination device under "Destination". If you only want to change one device number, e.g. DT100, you still have to enter DT100 in both fields next to "Source".
Change Method	Specifies the change method. <ul style="list-style-type: none"> <li>• Source &lt;==&gt; Destination (default): Device numbers will be exchanged, i.e. after executing the change, objects using the source device use the destination device and vice versa.</li> <li>• Source ==&gt; Destination: Device numbers will be changed, i.e. after executing the change, objects using the source device use the destination device. Objects using the destination device will not be changed.</li> </ul>

Field	Description
Range of Change	Specifies the range of data to be changed. By default, "All Data" is activated, and all other check boxes are disabled. Deactivate "All Data" to select individual data to be changed. Note: Enter screen numbers separated by commas like 1, 3, 5 or specify a range like 1-5.



**◆ NOTE**

If the selected devices to be changed contain a setting that cannot be changed, the dialog below will be displayed. When you select [Enter], the devices that can be changed will be changed, while the unchangeable setting will be ignored. When you select [Undo], the change will not be executed and the dialog remains open. [Close] cancels the change operation and closes the dialog.



**Restrictions on changing devices**

Devices cannot be changed under the following circumstances:

Cause	Example
The usable device range has been exceeded.	There is a data part which uses DT100 as the reference device and DEC (2 Words) as the data format. When you set DT100-DT100 as the source and DT90511 as the destination, the device change cannot be executed as this would mean that DT101 would have to be changed to DT90512 when the last address of DT is DT90511.
The destination device is write-protected.	There is a switch part which uses R100 as the reference device. When you set R100-R100 as the source and T0 as the destination, the device change cannot be executed because T0 is a write-protected device.
The source device is in the basic communication area (word or bit) and the destination device is not.	The PLC is from the Keyence KV-10/16/24/40 series and the word area for basic communication starts with DM0. When you set DM0-DM0 as the source and T0 as the destination, the device change cannot be executed because T0 cannot be used as a basic communication area. The same goes for the bit area for basic communication.
The source device is a word of bit device and the destination device is not.	The monitoring start device for the alarm history is set to WR10. When you set WR10-WR10 as the source and FL10 as the destination, the device change cannot be executed because the FL devices cannot be used as word of bit devices.

## 4.2 Edit Menu and Common Editing Functions

Many editing functions can be conveniently executed via the toolbar (see p. 96). We assume that the user is familiar with standard Windows editing functions, e.g. copy, paste, etc.

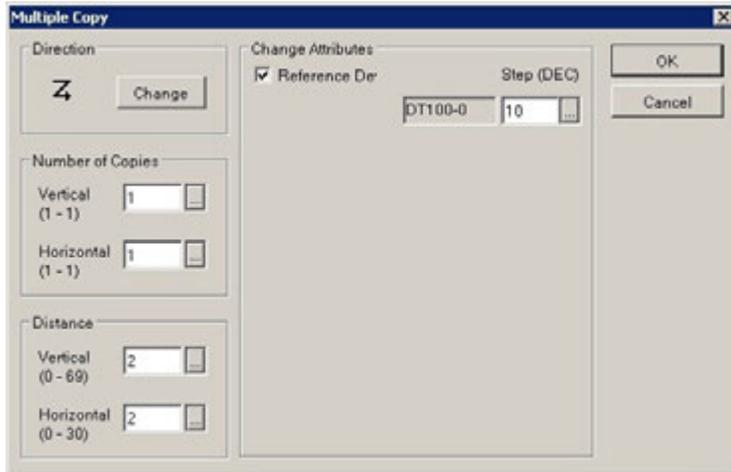
Menu command	Description
Undo, Redo	<p>Undo or redo up to 16 actions. In addition, in the edit menu you can see which action will be done or undone. If you have not used undone, you can repeat the last action.</p> 
Multiple Copy	The multiple copy command (see p. 125) allows you to create multiple copies of a part.
Copy Bitmap Base Screen	Makes a bitmap of the base screen and copies it to the Windows clipboard, e.g. to paste into operation manuals and other documents.
Align	Aligns or distributes the objects selected (see p. 96).
Center	Vertically and horizontally centers an object or a group of selected objects on the screen.
Rotate	Rotates a selected object or group of objects 90° clockwise.
Mirror	<p>Mirrors a selected object or group of objects.</p> <ul style="list-style-type: none"> <li>• <b>Right/Left:</b> mirrors the object along its vertical axis.</li> <li>• <b>Top/Bottom:</b> mirrors the object along its horizontal axis.</li> </ul>
Screen Clear	Clears the active base screen completely.
Bring Forward Send Backward Bring to Front Send to Back	Order objects from front to back (see p. 96).
Group Ungroup	Groups or ungroups selected objects (see p. 96).
Select	Calls up the "Select Character String/Graphic/Parts" dialog, which presents a list of all objects on the base screen. This list is handy for seeing what exactly is on the base screen or for selecting objects that are otherwise difficult to select or see.
Select All	Selects all objects on the base screen.

### Changing the size of parts

You can change the size of parts by selecting them and dragging one of the anchor points. Press <Shift> to change the size proportionally.

## 4.2.1 Multiple Copy

The multiple copy function allows you to create multiple copies of a part to save you time.



### ◆ PROCEDURE

1. **Select the part on the base screen for which you wish to make multiple copies**
2. **Edit → Multiple Copy**  
The "Multiple Copy" dialog appears. The settings available in the dialog depend on what kind of part you wish to copy.
3. **Make your settings and choose [OK]**

### Settings

Field	Description
Direction	Specifies the direction in which the copies will be inserted.
Number of Copies	Specifies the number of copies.
Distance	Specifies the distance between copies.
Change Attributes	Specifies the value for the copies' attributes. The decimal value specified for <b>Step (DEC)</b> is added to the address, screen no., etc. for each subsequent part. Exactly where the value is added depends on the part being copied.

## 4.3 View Menu

You can access many of the commands found in the **View** menu elsewhere in the GTWIN user interface. For details, please refer to the cross-references.

### View menu commands

Menu command	Description
Redraw	Redraw, i.e. refresh base screen (see p. 98).
Grid	Display grid (see p. 19).
Toolbar Status bar Graphic bar Size/Coordinate bar	Activate to make the specified bar appear.
Screen Manager Display	Select <b>Map Method</b> or <b>List Method</b> (see p. 106).
Zoom	Select one of the zoom settings.
Zoom Box	Acts like a magnifying scope with your cursor at the center of the crosshairs. You can change the box's size by dragging its sides or corner.
Parts No.	Display part no., e.g. FS0 (function switch 0).
Parts Attribute	Display part attribute, e.g. JP3 (jump to screen 3).
Status	Select OFF or ON to display switches in the OFF or ON state (see p. 96).
Language no.	Changes the language no. (see p. 96) of the selected base screen.
Total Memory Usage	Calculates and displays how much memory is used.
GT Usage Device	Displays a list of devices (i.e. addresses and flags) used. This is very handy for programming the PLC and avoiding addressing conflicts. You can also use this function to output the list to a CSV file or to change multiple device numbers (see p. 122) at once.

## 4.4 Draw Menu

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The menu commands found in the draw menu can also be found in the graphic bar (see p. 98). The **Draw** menu contains just one additional command: Bitmap (see p. 131).

Via **Draw** → **Bitmap**, you can insert a bitmap stored in GTWIN's bitmap library onto the base screen.

## 4.5 Base Screen Menu

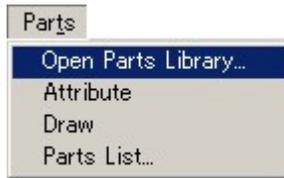
---



The base screen (see p. 102) menu contains three menu commands:

- **Screen Attribute:** displays the active base screen's attributes
- **Memory Usage:** displays how much memory the active base screen uses
- **Close All:** closes all screens and windows except for the screen manager

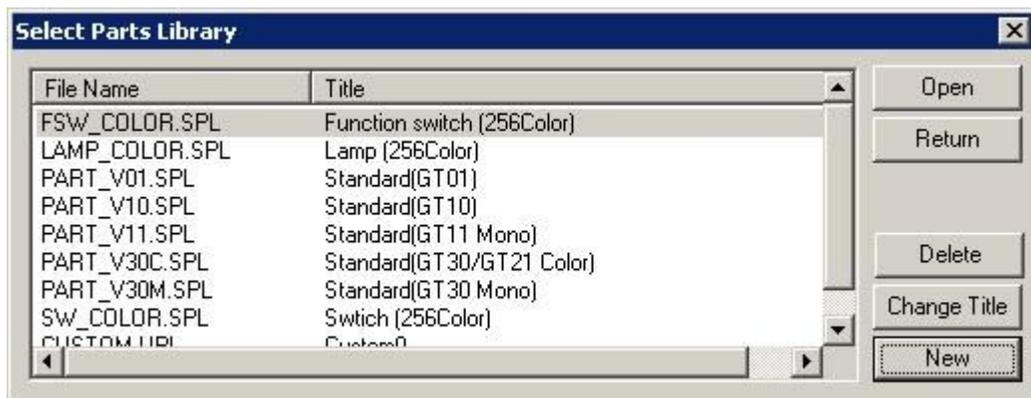
## 4.6 Parts Menu



The parts menu contains four menu commands: **Open Parts Library**, **Attribute**, **Draw** and **Parts List**.

### Open Parts Library

The "Open Parts Library" menu command displays a list of available libraries.



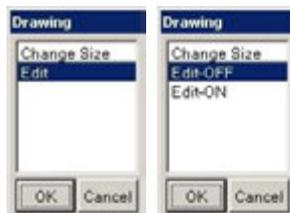
Select [New] to create a new parts library (see p. 104), e.g. to conveniently store frequently used parts of any type.

### Attribute

The "Attribute" menu command displays the attributes of the part selected. You may modify the settings.

### Draw

After you have placed a custom part (see p. 227) on the base screen and it is active, select the draw menu command to call up the "Drawing" dialog.



*The drawing dialog for custom switch and message parts (left) and custom lamp parts (right)*



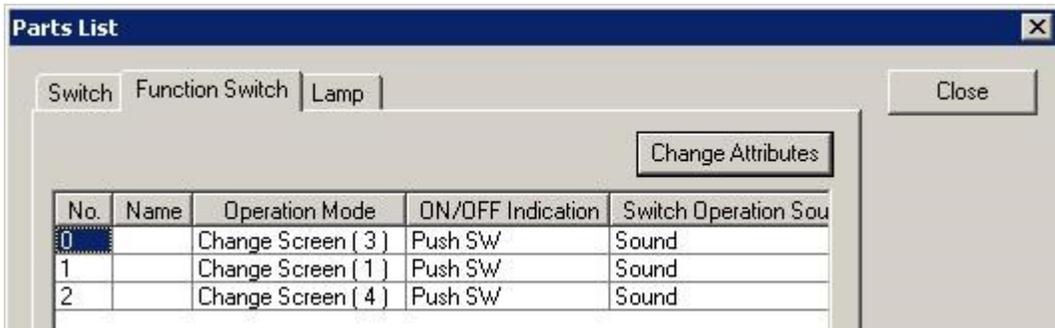
**◆ NOTE**

**Leave the "Drawing" dialog open, i.e. do not click [OK], until you have finished modifying the custom part's size or accompanying image!**

- Select the row "Change Size" to change the size of the custom part.
- Select the row "Edit" to draw or edit the image associated with the custom part.
- For lamp parts, select Edit-OFF or Edit-ON to draw the lamp display in its OFF- or ON-state.

**Parts List**

The "Parts List" menu command displays a list of all switches, function switches, lamps and data parts used on the active base screen, including their attributes. Displaying the parts list is not only handy, but by simply double-clicking in the list, you can reconfigure any part, including custom parts that may be located behind a bitmap.



## 4.7 Start Editor Menu

---

The "Start Editor" menu contains the following menu commands, depending on the GT model:

- Bitmap (see p. 131)
- Recipe (see p. 139)
- SD Recipe (see p. 145)
- Flow Display (see p. 152)
- Write Device (see p. 154)
- Sound, for GT models with sound functionality (see p. 156)
- Operation Security Password (see p. 158)
- Multi-language Exchange String List (see p. 159)
- Data Logging (see p. 169)



*"Start Editor" menu commands for GT32T1*

### 4.7.1 Bitmap

---

The bitmap editor serves to create and save pictures so you can paste them onto the base screen. The bitmap editor allows you to draw pixel by pixel. In addition, you can import and edit Windows bitmap files (file extension \*.bmp), for example with company and product logos or illustrations. However, a file so imported will be reduced to 16 colors.



#### ◆ NOTE

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**You can directly paste a picture file from a different application onto a base screen. The color reduction in this case is limited to the particular GT panel's capacity to display colors.**

Bitmaps are stored in a GTWIN bitmap library (by default: gtwin.bml). The name and the location of the library is defined on the "Drive" tab of the GTWIN configuration dialog box (see p. 19). The bitmaps in the library can be managed like other files (see p. 137), i.e. they can be cut, copied, pasted, and deleted.

### 4.7.1.1 How to Create a Bitmap with the Bitmap Editor

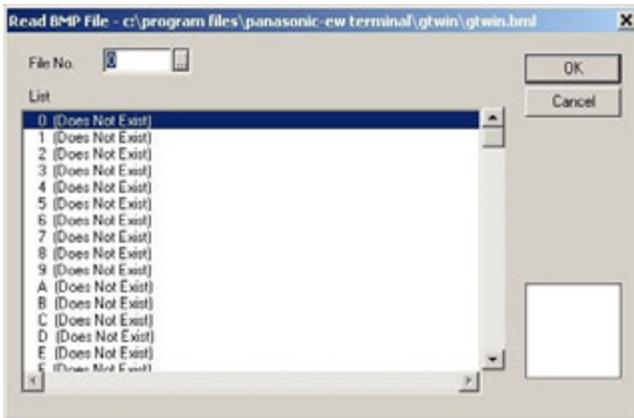
If you want to create a bitmap, please proceed as follows:



#### ◆ PROCEDURE

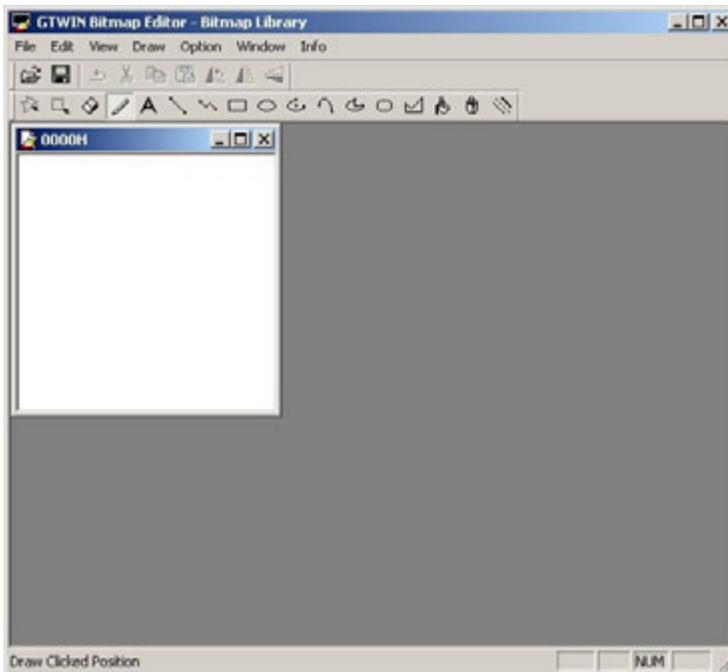
1. **Start Editor** → Bitmap...

The GTWIN Bitmap Editor opens together with a dialog box where you can select a BMP file.



2. **Select a file number [OK]**

The selected BMP file opens.



**3. Option → Bitmap Title...**

Before you save the bitmap file, we recommend assigning a title. The title may be up to 64 characters long and will later appear in the list of bitmap files when you open the "Read BMP File" or the "Edit BMP File" dialog box.

**4. Enter a meaningful title [OK]**

Note that the title only appears in the list of bitmap files. The title bar of the bitmap window still displays the bitmap file number.

**5. Option → Change Size**

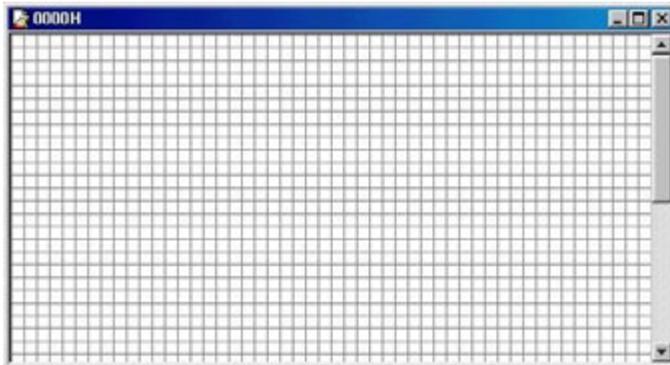
The default bitmap size is 200x200 pixels. However, depending on the GT model you have connected, this may be too big. Before starting to edit, make sure the bitmap has the right size, because changing the size later may cause part of the bitmap contents to be lost.

**6. Enter values for the width and the height [OK]**

If the values you enter exceed the limits for the GT model you are using, an error message appears.

**7. Save the file****8. Edit the bitmap**

Use **View → Zoom In** to enlarge the bitmap. Every square represents a pixel.

**◆ NOTE**

- When you have used the zoom function to enlarge the bitmap, you cannot add a character string. This function is only available in the normal bitmap view.
- Be careful when changing the bitmap size **AFTER** editing a bitmap. If the specified size is smaller than the size of the figure you have drawn, changing the size will cause part of the bitmap contents to be lost.
- When drawing graphics for custom parts, pay careful attention to the size. The height is set to 24 bits in the default size setting for custom parts.

- **Size restrictions also apply when you try to paste a bitmap onto a base screen. Check the size restriction for the GT model you have connected. If the bitmap is too large, an error message appears and the operation will be cancelled.**

### 4.7.1.2 Using the Bitmap Editor

The bitmap editor offers many functions, many known from other Windows applications and drawing and design software. Most functions are available in two ways: via the menu and via icon bars. The icon bars and the status bar at the bottom are displayed by default, but they can be switched off with **View** → **<bar name>**. In addition, you can move the icon bars to any position on your monitor.

The standard toolbar is by default located at the top. Apart from the standard functions like open a file, save a file, undo the last operation, cut, copy, and paste, it contains the following editing functions:

Icon	Icon name	Function
	Rotate	Rotates the currently selected area counterclockwise by 90 degrees.
	Right/Left	Mirrors the currently selected area vertically.
	Top/Bottom	Mirrors the currently selected area horizontally.



#### ◆ NOTE

**Please note that the rotated area needs to remain within the bitmap. If rotating the selected area would move a part of the area beyond the edges of the bitmap, an error message appears and the operation is cancelled.**

The graphic bar is by default located below the toolbar. It contains the following editing functions:

Icon	Icon name	Description
	Area (free)	Selects an area with the freehand tool. The selected area can then be rotated, mirrored, deleted, filled with a color etc.
	Area (square)	Selects an area with the rectangle tool. The selected area can then be rotated, mirrored, deleted, filled with a color etc.
	Clear	Deletes the selected pixel.
	Freehand	Freehand tool for drawing. <ul style="list-style-type: none"> <li>• Click the left mouse button once: colors the selected pixel in the selected line color (icon )</li> <li>• Click the left mouse button, hold it and drag: Colors all pixels touched by the cursor.</li> <li>• Right mouse click: colors the selected pixel in white.</li> </ul>

The following icons are also found on GTWIN's graphic bar.

Icon	Icon name	Description
	Select	Selects an object on the base screen. (Not available in the Bitmap Editor; use the select area command instead.)
	Character String	Enters text. For the Bitmap Editor only: this function is not available when you have selected <b>View</b> → <b>Zoom In</b> . Zoom out of the image if you wish to add character strings with the text tool.
	Straight Line	Draws a straight line. Press <Shift> to draw a vertical or horizontal line.
	Continuous Line	Draws a continuous line.
	Rectangle	Draws a square (press <Shift>) or rectangle.
	Circle/Oval	Draws a circle (press <Shift>) or oval (see p. 19).
	Arc/Elliptical Arc	Draws an arc (press <Shift>) or an elliptical arc. <b>Procedure</b> 1. Click on the base screen and draw the size of the arc. 2. Click again to set the size. 3. Click again to delete unwanted section. 4. Click again to finish.
	Curve	Draws a curve. (Also known as Bézier curve.) <b>Procedure</b> 1. Click on the base screen and draw the length of the curve. 2. Click and pull the invisible anchor point to bend the curve. 3. Click again to finish.
	Segment/Oval Segment	Draws a circular (Press <Shift>) or an oval segment. <b>Procedure</b> 1. Click on the base screen and draw the size of the segment. 2. Click again to set the size. 3. Click again to create the fan. 4. Click again to finish.
	Rounded Rectangle	Draws a rounded square (press <Shift>) or rounded rectangle. Define the radius of the rounded edges via the "Line Type" dialog.
	Polygon	Draws a polygon. Press <Shift> to draw a vertical or straight line. Draw the individual lines, then double-click to finish the polygon.
	Fill	Fills in an area with the color and pattern defined in the "Drawing Color" dialog.
	Character Type	Changes the text's language, font, style, size and color. The image field in the "Character Attributes" dialog displays the settings you have made.
	Color	Click to access the "Drawing Color" dialog to define the color and pattern of text or graphics.
	Line Type	Defines a line's appearance, e.g. thick, thin, dotted, etc.

### 4.7.1.3 Importing Bitmap Files

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Apart from creating your own bitmap files, you can also import bitmap files. This is useful when company and product logos already exist in other applications, for example.



#### ◆ NOTE

---

- You can directly paste a picture file from a different application onto a base screen.
- The Bitmap Editor retains the size of the imported bitmap, which may be too large for the GT terminal. Use Option → Change Size to adjust the imported bitmap size to the GT model's requirements.
- If the bitmap to import is bigger than the maximum size available (320 pixels wide x 240 pixels high), the bitmap image will be cut to the maximum size. Please note that this may cause part of the bitmap contents to be lost.
- If the bitmap to import contains more than 16 colors, the colors will be changed to the nearest color from the 16 colors available. For monochrome GT terminals, colors above a certain threshold turn to black, the remaining colors turn to white.

To import a bitmap, please proceed as follows.



#### ◆ PROCEDURE

---

##### 1. Create a bitmap with the bitmap editor

Use the standard procedure (see p. 132) for creating bitmaps including the step where you assign the bitmap title.

##### 2. File → Import BMP File...

The standard dialog box for opening files appears.

##### 3. Select drive and path of the file to be imported

##### 4. Click file name [Open]

The selected bitmap file is imported. When the selected bitmap is smaller than or equal to the currently selected GTWIN bitmap size, the bitmap is imported and displayed in the bitmap editor. If the selected bitmap is bigger than the currently selected GTWIN bitmap size, a message warns you that the bitmap data is too large and that the bitmap size will be adjusted. For bitmaps **smaller** than the maximum size of 320 x 240 pixels, the GTWIN bitmap size will be adjusted to the size of the imported bitmap. For bitmaps **bigger** than the maximum size of 320 x 240 pixels, they will be cut at the right and bottom until their size is 320 x 240 pixels.

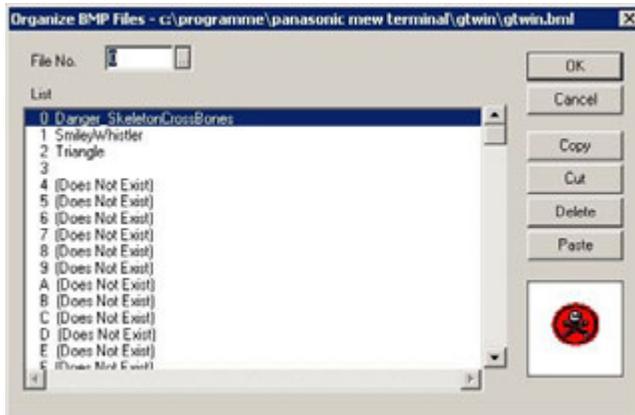
### 4.7.1.4 Organizing Bitmap Files

The bitmap editor contains file handling functions for the bitmaps you have created, i.e. you can cut, copy, paste or delete bitmaps without having to open them first. To use the file handling functions, please proceed as follows.



#### ◆ PROCEDURE

1. **File → Edit** if no bitmap file is open, or **File → Organize** if a bitmap file is open



2. **Select a file**

The little window at the bottom right shows a preview of the selected bitmap.

3. **Cut, copy, paste, or delete bitmaps as required**

### 4.7.1.5 Placing Bitmaps on Base Screens

When you have edited and saved a bitmap in the GTWIN bitmap library, the bitmap is ready to be placed on a base screen.



#### ◆ NOTE

**If you try to place a bitmap that is too big for the base screen of the GT terminal, an error message appears and the operation is cancelled.**

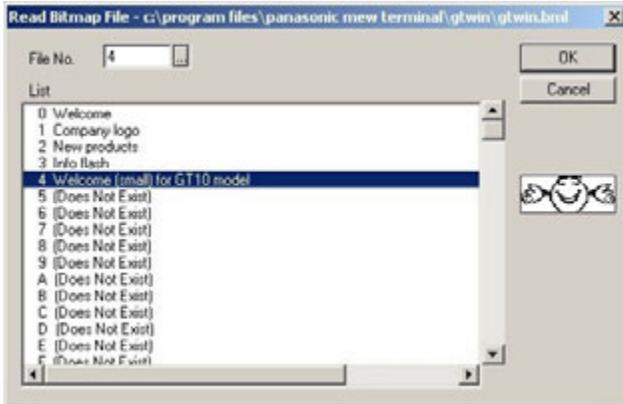
To place a bitmap on the base screen, please proceed as follows.



#### ◆ PROCEDURE

1. **Draw → Bitmap...**

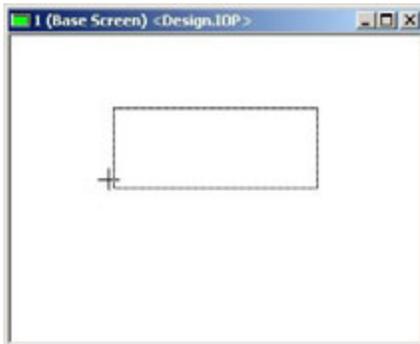
This opens the bitmap library where you can select a BMP file.



This is where the bitmap titles you have assigned are displayed. You can also see a preview of the bitmap in the small window on the right of the dialog box.

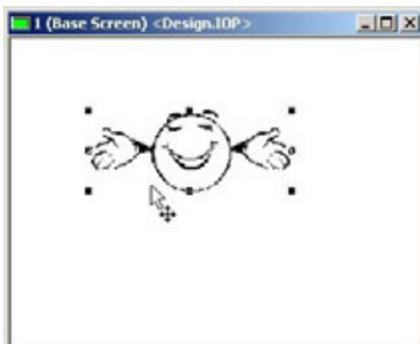
2. **Select a bitmap from the list [OK]**
3. **Position the mouse on the base screen**

The bitmap is displayed as a rectangle.



4. **Click to place the bitmap on the screen**

While the mouse cursor displays as a cross of two arrows and the 6 sizing handles (little black squares) are visible, you can change the position of the bitmap by dragging the mouse. Click and drag a sizing handle to change the size of the bitmap.





## ◆ NOTE

Bitmaps can also be placed inside custom parts (see p. 227).

### 4.7.2 Recipe

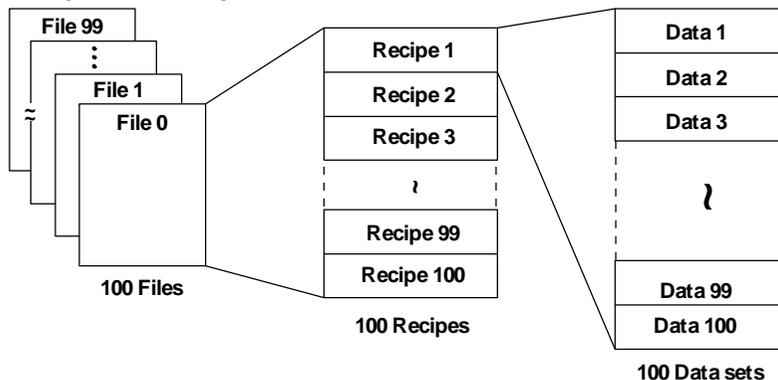
The recipe function is similar to the recipe editor of the PLC programming tool. The recipe is a data record containing all variables necessary for a certain recipe, e.g. for manufacturing a product. You can use the recipe function of GTWIN to enter, change or read values for the variables stored in the recipe.

#### Structure of a recipe file

Up to 100 files can be created. The individual recipe files can be copied and moved within the "Recipe" dialog. You can check how much memory your recipes require via **View** → **Total Memory Usage**.

Each file can contain up to 100 recipes. Each recipe can contain up to 100 sets of data = values. If you are handling large amounts of data, you can export the recipe to a CSV file, edit it with Excel, for example, and import. If you need to enter values for the recipe on site, you can do so via keyboard parts (see p. 223).

#### Recipe data composition



You can set a device (i.e. register) to control the transfer of recipe data between GT and PLC in the GT configuration dialog's recipe tab (see p. 21).

#### 4.7.2.1 How to Create a Recipe File

This section explains how to create recipe data.



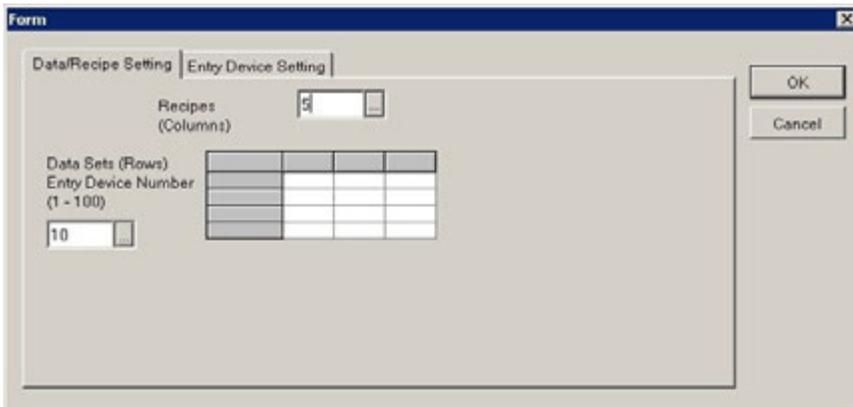
## ◆ PROCEDURE

### 1. Start Editor → Recipe

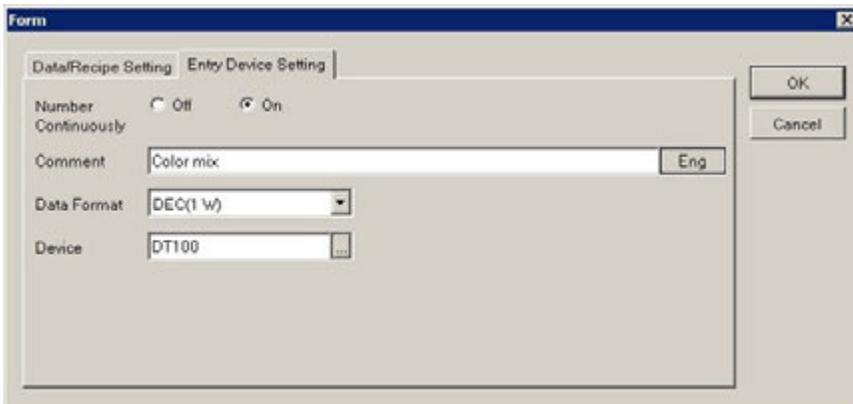
This opens the "Recipe" dialog box.



2. Select a number from the list
3. Select [Open] to open the "Form" dialog with the "Data/Recipe Setting" tab



4. Specify the number of recipes (columns) and the number of data sets (rows)  
The maximum number of recipes and data sets is 100.
5. Select the "Entry Device Setting" tab



6. Set "Number Continuously" to "On" if desired  
More options become available. You can enter a comment here.
7. Select the data format

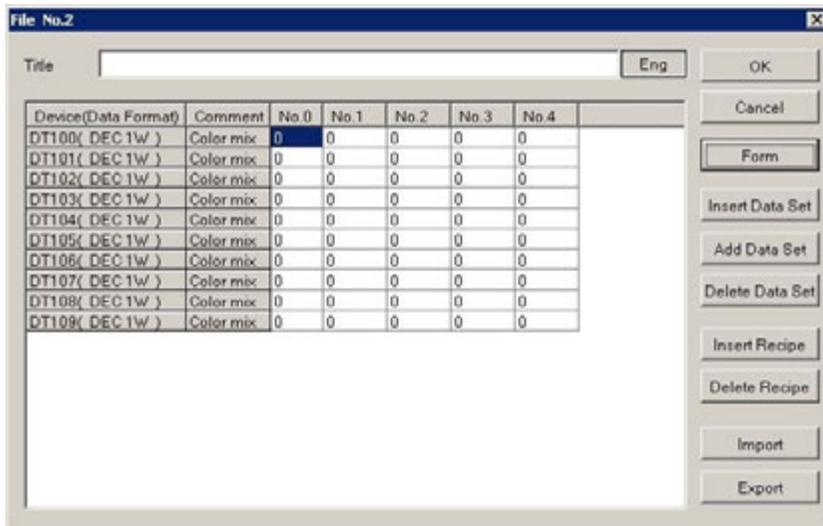
The data format will be the same for all data sets.

**8. Select the device which will be inserted first in the table**

For example, if you enter "10" under "Data Sets Entry Device Number" and select "DT100" under "Device", the recipe file will contain a data table from DT100 to DT109.

**9. Select [OK]**

The recipe editor displays the number of recipes and data sets you have selected in table form.



**10. Enter the title for the file no.**

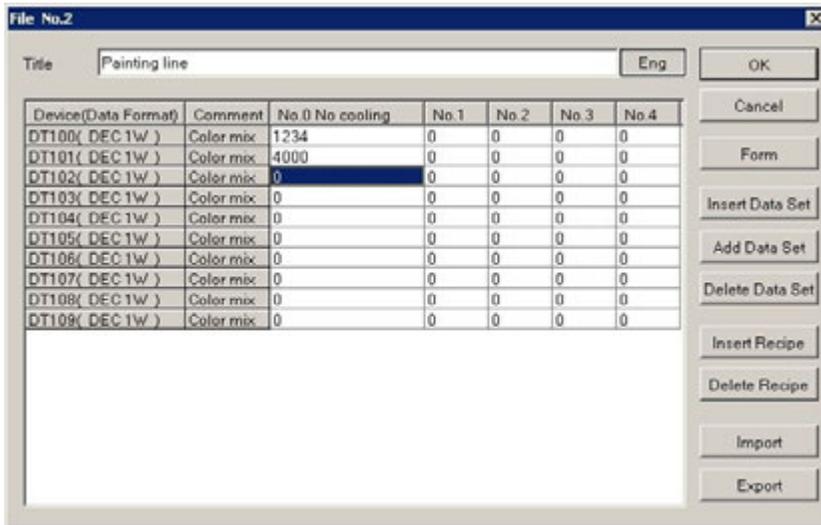
This will help to identify the recipe in the "Recipe" dialog box's list of recipes.

**11. Double click on a recipe, e.g. No.0, to give each recipe a title**

The recipe attribute dialog appears.



## 12. Enter the values for the recipe



### ◆ NOTE

If the export/import function does not work, check the regional settings on your PC to see whether commas or semicolons are used to separate values.

### 4.7.2.2 Transferring Recipe Files

The recipe data created with the recipe function can be transferred from GTWIN to the GT terminal (see p. 113).



### ◆ NOTE

When you transfer all data, make sure the check box "Transfer Data after Clear GT Screen" is deactivated if you do not wish to delete the recipe data in the GT terminal!

### 4.7.2.3 Example Recipe

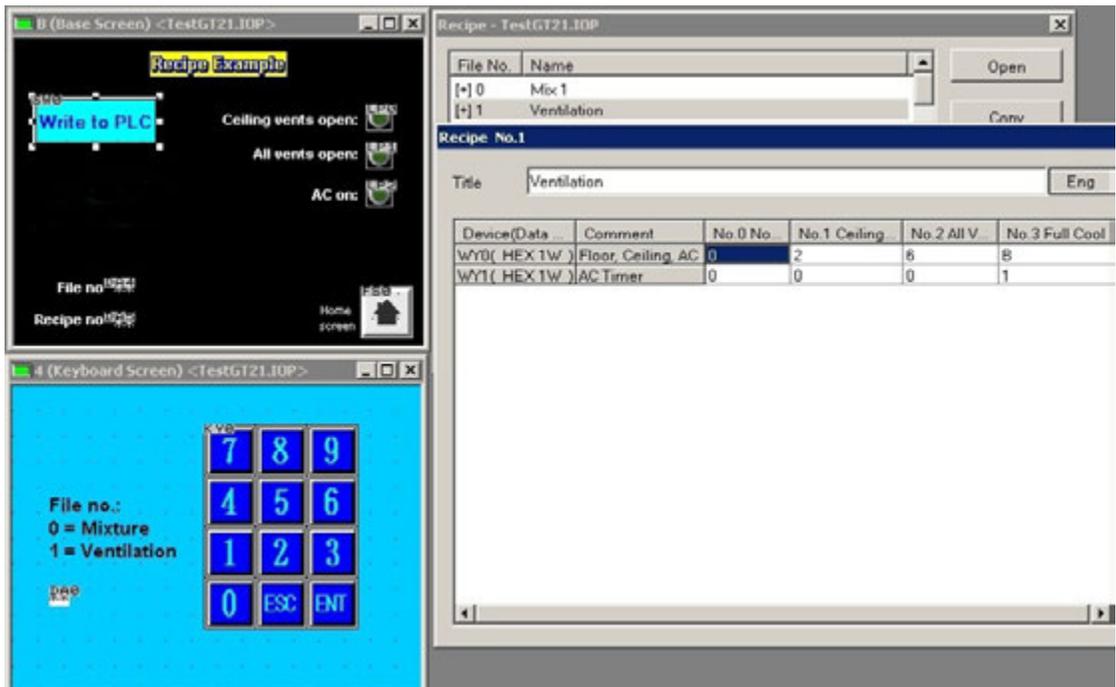
Imagine you have a room in a factory that can get quite hot. You have three measures at your disposal to cool it down:

- Ceiling vents
- Floor vents
- Air-conditioning

If opening the ceiling vents does not cool off the room, you can open floor vents to increase circulation. If the room is still too hot, you can turn on the air-conditioning. Simultaneously you wish to close the floor vents and turn on a timer to the air-conditioner to save energy.

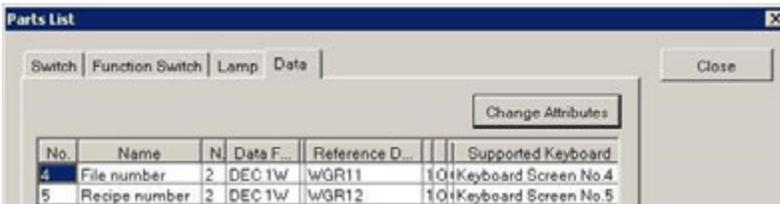
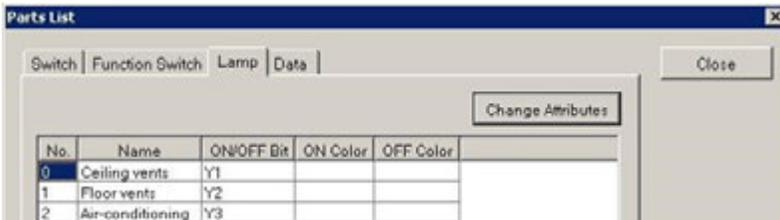
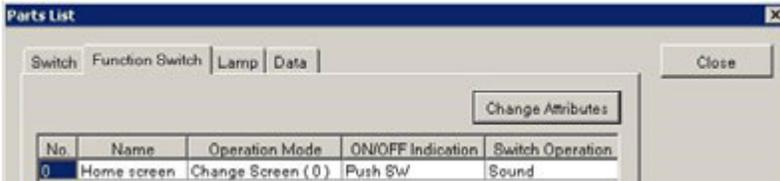
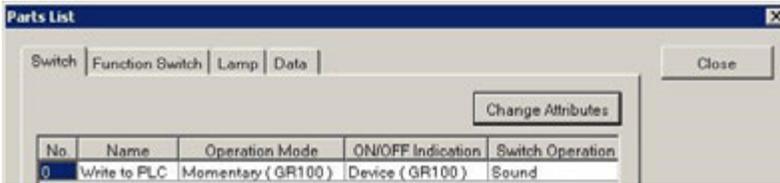
You can can configure such tasks easily using the recipe editor.

### GTWIN setup



This illustration consists of a base screen, a keyboard screen, the recipe editor and recipe file number 1, entitled "Ventilation". In the GT configuration dialog's recipe tab, the control device is set to WGR10.

Here are the most important settings for the parts found on the base screen.

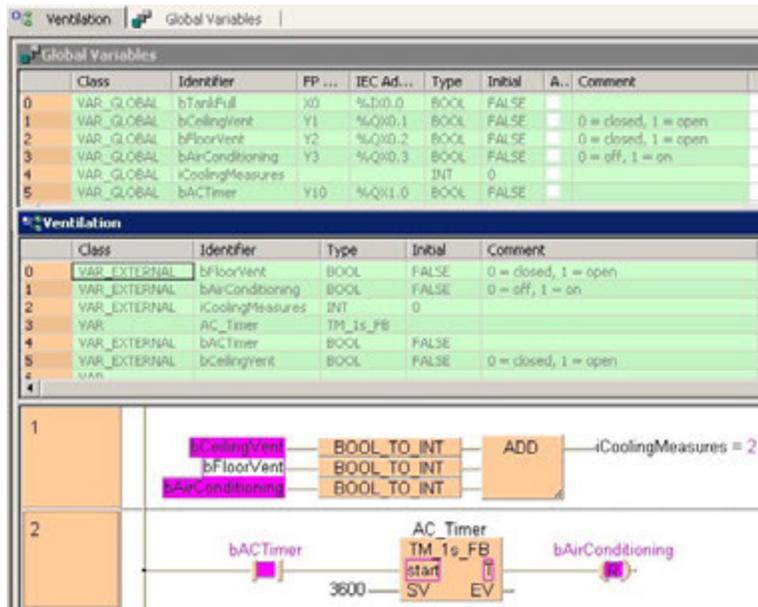


If we transfer recipe file number 3, entitled "Full Cooling" to the PLC, the following events are triggered.

- For device data WY0, outputs Y1, Y3 are set and output Y2 is reset, i.e. the ceiling vents are opened, the floor vents are closed and the air-conditioning is turned on.
- For device data WY1, output Y10 is set, which triggers a timer that will turn off the air conditioner after 1 hour has expired.

**Monitoring in FPWIN Pro when recipe number 3 is written to the PLC**

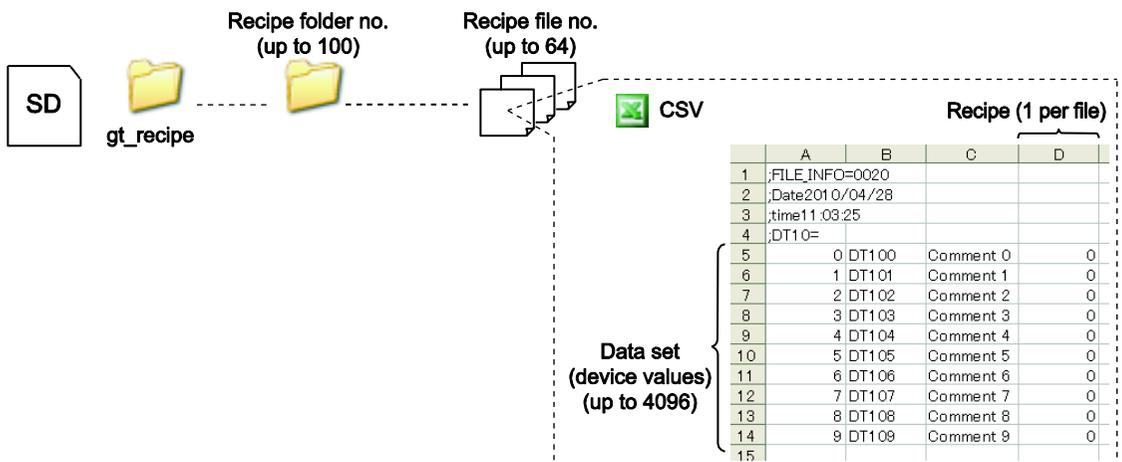
Note how global variables are used to correspond to "device assignment" in GTWIN.



**4.7.3 SD Recipe**

With the SD recipe function, recipes can be saved on an SD memory card, where they can be written to PLCs and device values read from PLCs.

Within the SD recipe area on the SD card, 100 recipe folders can be created. Each recipe folder can hold up to 64 recipe files. Each recipe file can contain a data set of up to 4096 ingredients (device values).



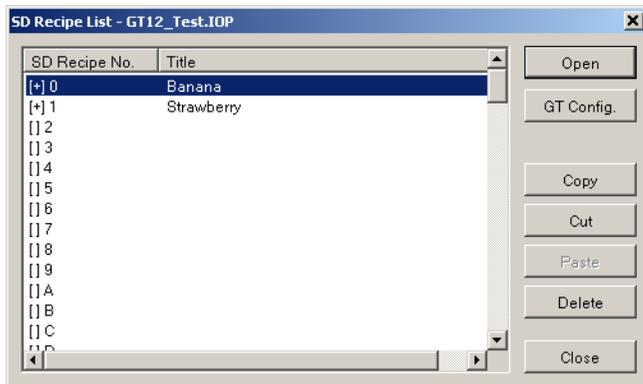
Recipe files are generated as CSV files, in which the device values that comprise the data sets can be edited by Microsoft Excel.



**◆ NOTE**

The regional settings for your computer must specify a period (full stop) as the decimal symbol in order for GTWIN to create a properly formatted CSV file. The CSV file should look like those in the illustrations. If a comma is specified, the CSV file will not be properly formatted and the recipes will not be able to be processed.

**SD Recipe List**



The SD Recipe List provides an overview of up to 64 recipes in the recipe file no. Click [Open] to call up the SD Recipe No. dialog, which includes the:

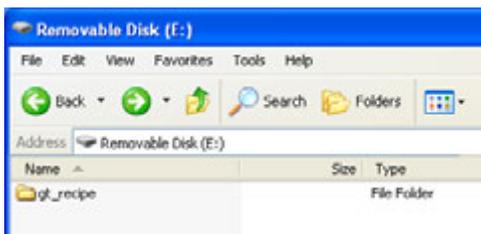
- Basic Setup (see p. 147)
- Recipe Setting (see p. 149)

**4.7.3.1 How to Save SD Recipe Data on the SD Memory Card**



**◆ PROCEDURE**

1. Create a folder on the SD memory card and name it "gt\_recipe".

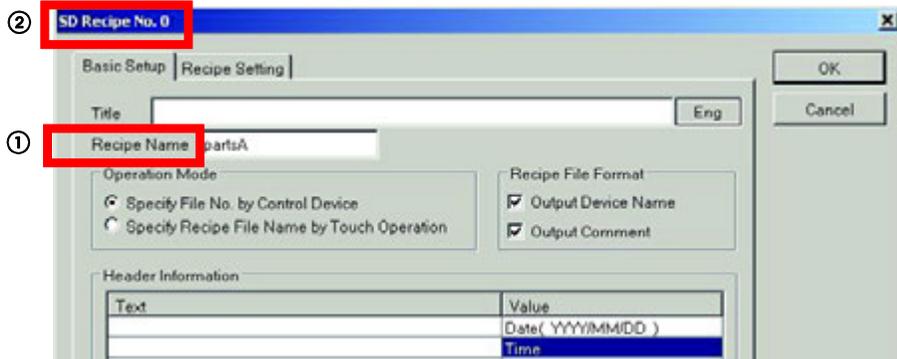




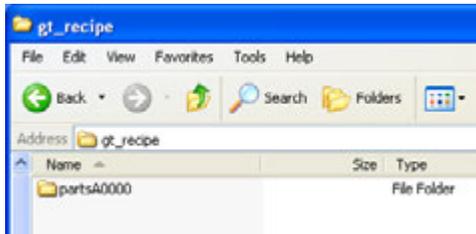
## ◆ NOTE

You must name the folder "gt\_recipe"!

1. Within "gt\_recipe", create the recipe folder that will contain your recipe files. To name the recipe folder, combine the Recipe Name with SD Recipe No. expressed as a hexadecimal number (e.g. 0 = 0000, 3A = 003A), as found on the Basic Setup tab (see p. 147).

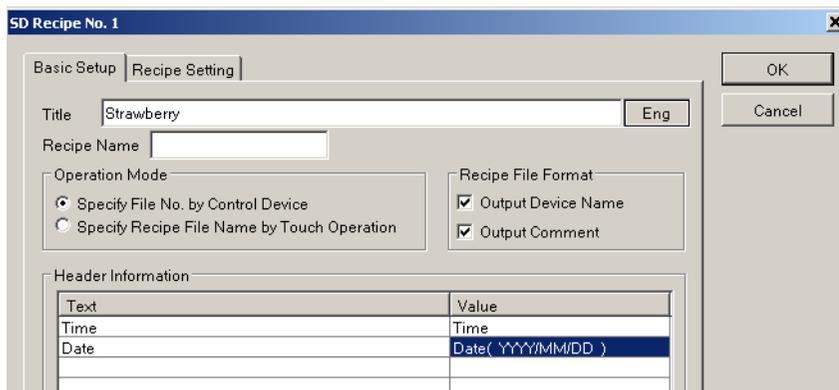


In this example, the recipe folder name is "partsA0000".



2. Copy the recipe files into this folder.

### 4.7.3.2 SD Recipe Basic Setup



There are two operation modes:

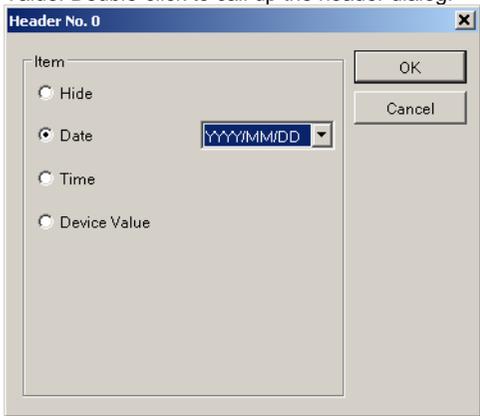
- Specify File No. by Control Device (see p. 148)
- Specify Recipe File Name by Touch Operation (see p. 148)

Specifying recipe numbers and naming recipe files differs depending on the operation mode.

**Other fields**

Field	Description
Title	The title can be long and meaningful.
Recipe Name	The recipe name is limited to 12 characters.
Recipe File Format	Activate these check boxes to have this information written to the CSV file.
Header Information	<p>You can add text and values (date, time, device) to the header in the CSV file.</p> <ul style="list-style-type: none"> <li>• Text: Enter text directly.</li> <li>• Value: Double-click to call up the header dialog.</li> </ul>

	A	B	C
1	FILE INFO	0020	
2	.Date	2010/04/28	
3	.time	11:03:25	
4	.device1		
5	.device2		
6	.device3		
7	Device	Comment	Value
8	DT100	Speed	0
9	DT101	Parts pitch	0
10	DT102	Array	0
11	DT103	Case (H)	0
12	DT104	Case (W)	0
13	DT200	Tray	0



**4.7.3.3 Specify File No. by Control Device**

Use the control device (see p. 41) to:

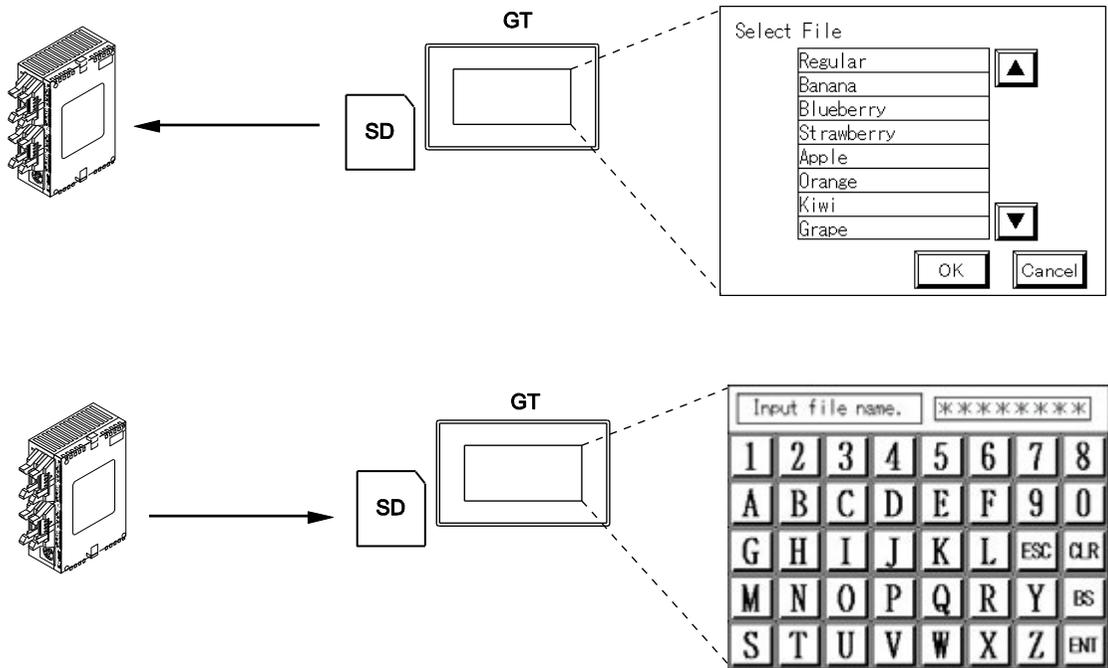
- write data to (n, bit 0) or read data from (n, bit 1) the PLC
- specify the recipe folder no. (n + 1)
- specify the recipe file no. (n + 2)

**4.7.3.4 Specify Recipe File Name by Touch Operation**

Use the control device (see p. 41) to:

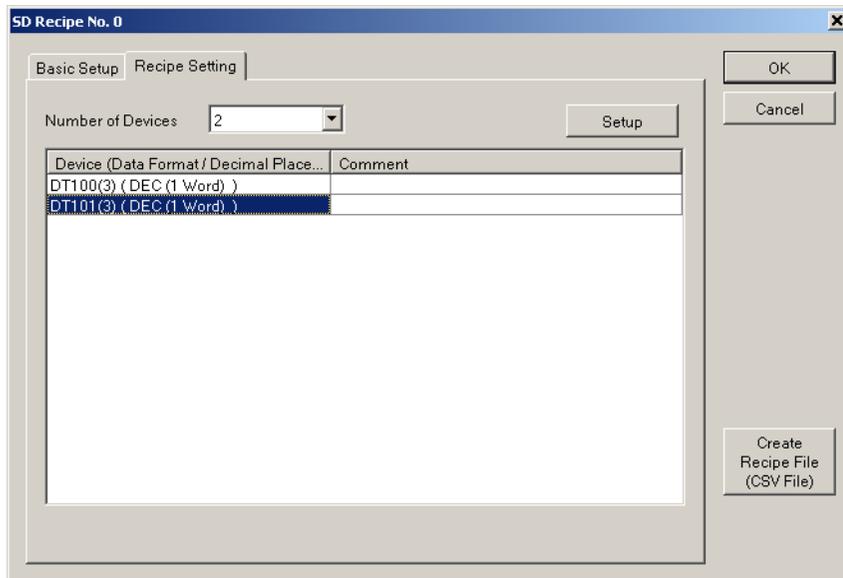
- specify the recipe folder no. (n + 1)

- specify the recipe file no. by touch operation



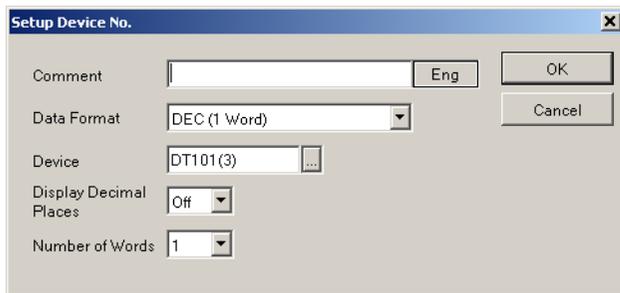
### 4.7.3.5 SD Recipe Recipe Setting

Set up the SD recipe with GTWIN.



However, in contrast to the recipe function, device values are entered in CSV files (see p. 150).

Click **[Setup]** to call up the Setup Device No. dialog.



What happens when you click **[Create Recipe File (CSV File)]** depends on the operation mode.

- For the control device method (see p. 148), you must choose a recipe file no.



Then a CSV file is created consisting of 4 one-byte numbers corresponding to the recipe file no. **Save the CSV file name as generated!**

- For the touch operation method (see p. 148), you must assign a name consisting of a maximum of 8 one-byte alphanumeric characters. **Do not use longer names!** They will not display properly.

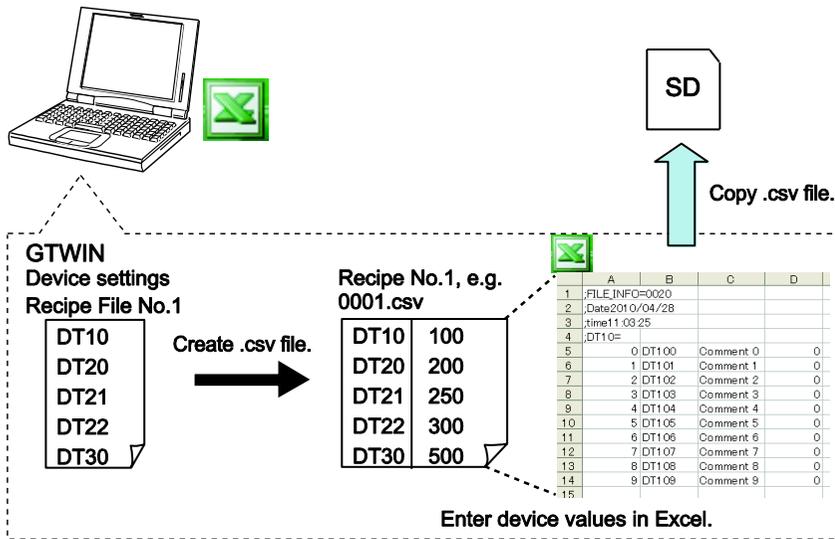
#### 4.7.3.6 Entering and Reading Device Values



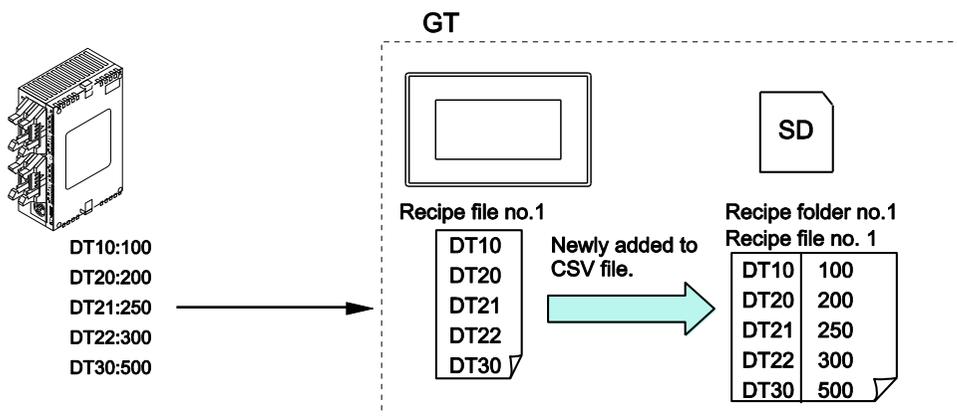
#### ◆ NOTE

The regional settings for your computer must specify a period (full stop) as the decimal symbol in order for GTWIN to create a properly formatted CSV file. The CSV file should look like those in the illustrations. If a comma is specified, the CSV file will not be properly formatted and the recipes will not be able to be processed.

### Entering device values



### Reading device values



#### 4.7.3.7 Handshake Using Write Device

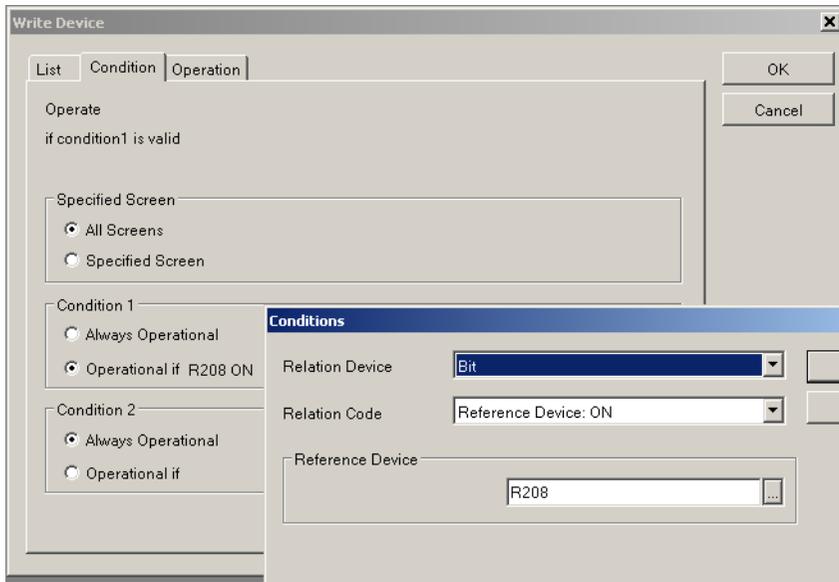
You can handshake when writing SD recipe data from the GT to the PLC by using the write device function (see p. 154) in combination with the recipe control device (see p. 41).



#### ◆ EXAMPLE

If the control device is WR20, the bit that signals that writing is completed is R208. Bit R200 that triggers writing to the PLC will automatically turn off when R208 turns on.

Set the conditions for write device as follows:



#### 4.7.4 Flow Display

The flow display function allows you to display a text or message streaming right to left at the bottom of the screen like an electronic bulletin board.

The flow display function has the following characteristics:

- Messages are triggered by the status of a reference device (ON/OFF).
- If several messages are triggered, the messages are displayed consecutively in order of priority or, if the same priority has been assigned, the messages are displayed in numeric order. It is not possible to display more than one message at the same time.
- Each message can display up to 128 letters.
- Up to 128 messages can be created.

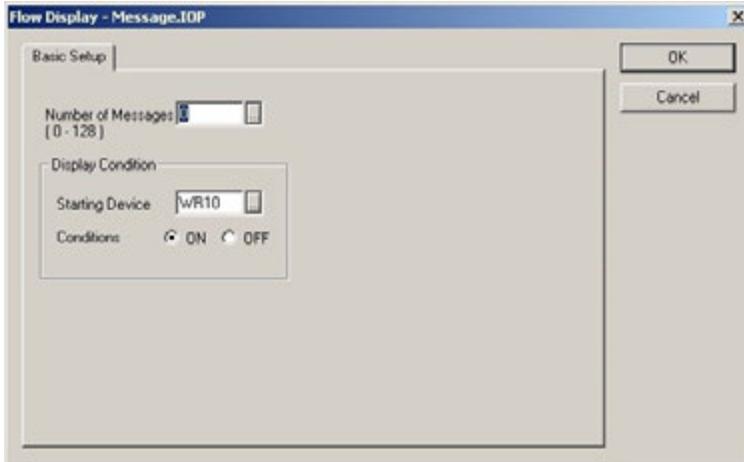
This is how you set up the flow display of messages.



#### ◆ PROCEDURE

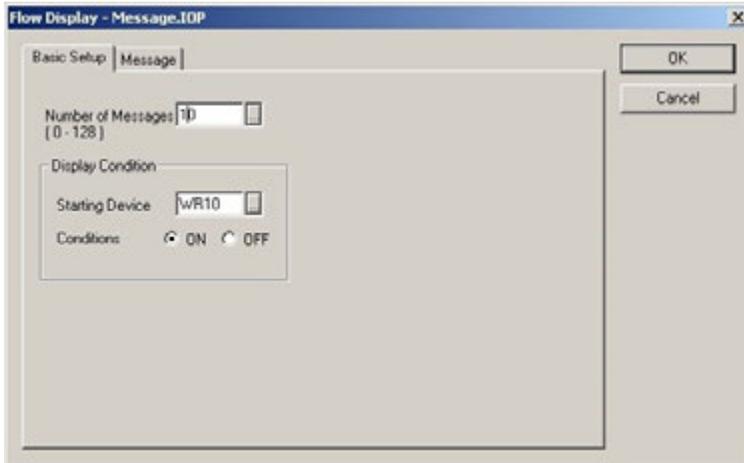
##### 1. Start Editor → Flow Display

The "Flow Display" dialog box opens with only one tab visible.



**2. Enter a figure in the field "Number of Messages"**

The second tab "Message" appears.



**3. Set the configuration parameters as required**

Tab	Field	Description
Basic Setup	Number of Messages	Specifies the number of messages to be displayed.
	Starting Device	The message is triggered when the starting device has the status defined under "Condition".
	Condition	Select the condition to trigger the message display.
Message	No.	Message number (read-only)
	Condition	Displays the reference device and status which trigger the display of this message.
	Title	Brief explanation or group name of the message (can be used as title of the message).
	Message	Double-click to enter the message text. The message appears with the currently active "Char. Type" settings in the preview window at the top.
	Search	If there are many messages and you need to find a specific

Tab	Field	Description
		message, enter a keyword from the the message and select [>>] to search downward from the currently selected message.
	Language	If you have set the option "Multi-Language Exchange" on the "Language" tab in the GTWIN configuration (see p. 19) to "ON", select the "language" (i.e. character set) for the message.
	Char. Type	Opens a dialog box where you can set character attributes like the font, size, style, and color.

### 4.7.5 Write Device

This function allows you to write data from the GT terminal to a PLC and control the ON/OFF bit state. You can define up to 100 sets of conditions and operation data, which are executed in ascending order starting with the lowest number. The write device function is triggered when the specified screen and a maximum of two conditions are valid.

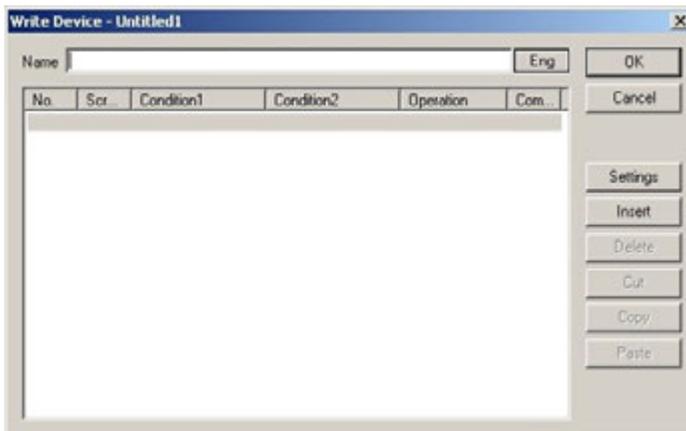
This is how you set up the write device function.



#### ◆ PROCEDURE

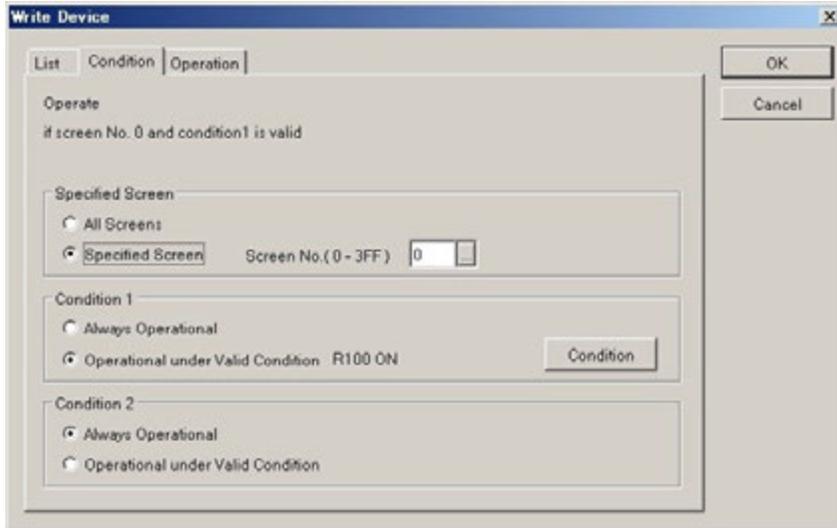
1. **Start Editor** → Write Device

The "Write Device" dialog box opens.

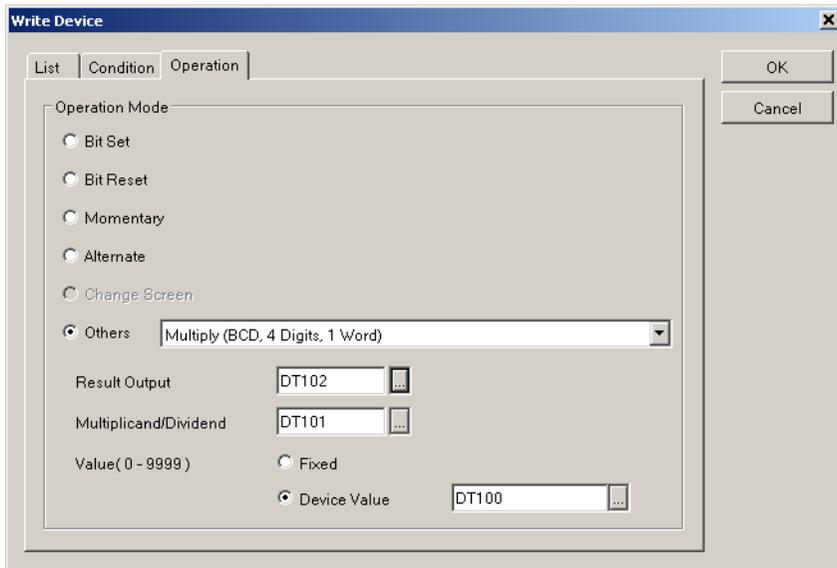


2. **Assign a name**
3. **Double-click the gray line in the table, or select [Settings]**

This opens the dialog box with the write device attributes.



4. **If desired, specify the screen number which must be valid to trigger the write device function**
5. **Define "Condition 1" and "Condition 2"**  
The conditions dialog is the same as for switch parts (see p. 182).
6. **Specify which "Operation" to execute when the specified screen and conditions are valid**



Explanations for most operation modes can be found under function switch parts (see p. 184). In addition, under "Others", Write Device offers various multiplication and division operations (see table following procedure).

7. **[OK]**

**Additional operation modes for Write Device under "Others"**

Selection	Description
Multiply	Multiplicand (Multiplicand/Dividend) x multiplier (Value) = result (Output) Multiply the "Multiplicand" by the "Value" in the data format defined. The result is stored in the device defined for "Output".
Divide	Dividend (Multiplicand/Dividend) / divisor (Value) = result (Output) Divide the dividend by a "Value" in the data format defined. The result is stored in the device defined for "Output".



**◆ NOTE**

When certain operations are selected under "Others", the value (i.e. the addend, subtrahend, multiplier or divisor) can either be fixed or read from a device.

**4.7.6 Sound**

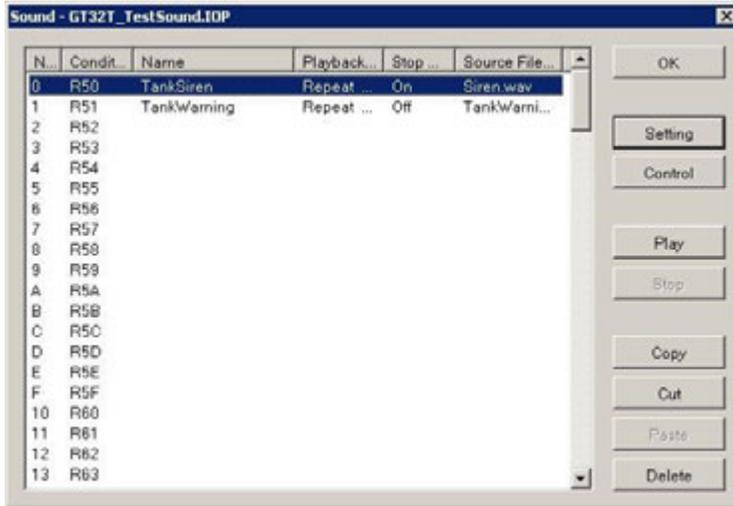


**◆ CAUTION**

**Overriding data!**

**Sounds assigned to lower bits of the reference device will override sounds assigned to higher bits.**

The sound editor allows you to configure sounds. Select **Start Editor** → **Sound** to call up the sound editor.



The command buttons on the right side of the dialog are self-explanatory.

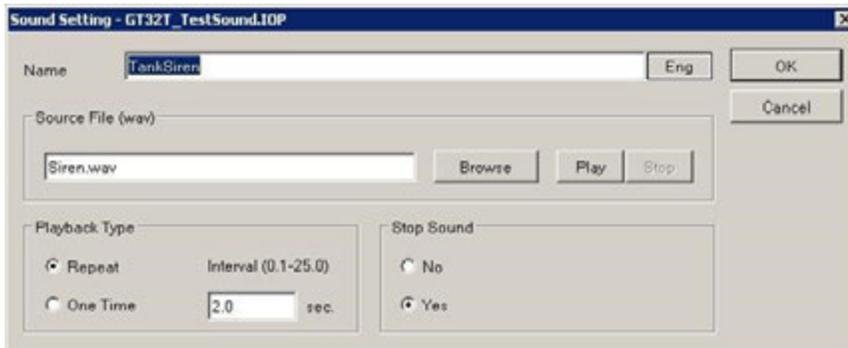


### ◆ NOTE

If you select [Control], which calls up the sound tab in the GT configuration dialog, you make global configurations that apply to all sounds.

Click [Setting] to configure the sound settings.

### Sound Setting dialog



Field	Description
Name	Enter a name for the sound.
Source File (wav)	Displays the .wav sound file. From this field, you can browse for or play a file.
Playback Type	<ul style="list-style-type: none"> <li>• <b>Repeat.</b> Define an <b>interval</b>. The sound will play and will repeat after the interval has elapsed.</li> <li>• <b>One Time:</b> the sound will play once.</li> </ul>
Stop Sound	<ul style="list-style-type: none"> <li>• <b>No:</b> the sound will not stop until it has been played fully.</li> </ul>

Field	Description
	<ul style="list-style-type: none"> <li>• <b>Yes:</b> the sound will stop as soon as the condition that triggered the sound is no longer valid.</li> </ul>

### 4.7.7 Operation Security Password

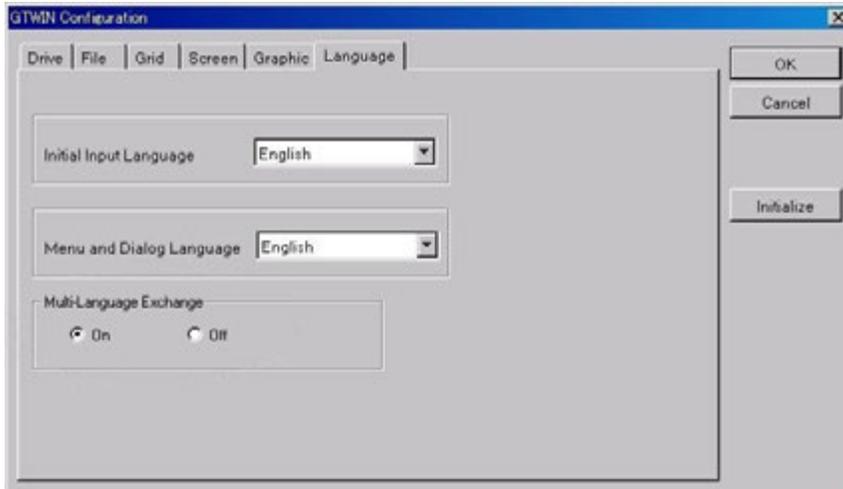


You can assign up to 64 passwords in total for security levels 1 to 15. You can assign more than one password per security level.



### 4.7.8 Multi-Language Exchange String List

For GT models with this function, you can set up screens or parts for multi-language display. You can register up to 16 languages when you have enabled the multi-language function by setting the option "Multi-Language Exchange" on the "Language" tab in the GTWIN configuration (see p. 19) to "ON".



Additionally, you need to enable the corresponding foreign language keyboard by changing the "Regional Options" in the control panel of your operating system.



#### ◆ EXAMPLE

You can set up bilingual screens to change the display for example from Japanese to English and vice versa.



Japanese

English



#### ◆ NOTE

- Please note that each language screen is saved as a separate screen. Memory consumption increases with each language according to the formula "number of languages x the number of screens".
- Please note that you can only set the font type and size set for language 0 and these settings are used for all other languages as well.

There are two possibilities to set up multilingual screens. Each method has advantages and disadvantages. Please bear this in mind and choose the method most suited to your needs.

Method	Recommended if	Advantage	Disadvantage
Use the multi-language exchange string list (see p. 160)	There are many parts and many screens for which you want to enter text in several languages	All parts and all texts are listed in one table. This means <ul style="list-style-type: none"> <li>• consistent translation</li> <li>• no part is overlooked</li> </ul>	If a translation is too long, you get an error message. You need to cancel translating, adjust the part size and then re-enter the translation.
Enter multi-language texts for each individual screen part (see p. 163)	There are only a few parts for which you want to enter text in several languages	If a translation is too long, the part size is adjusted automatically to fit the longest language. However, you need to check afterwards whether the adjusted part overlaps other parts on the screen.	You only see the translations for the part you are currently editing. If texts occur several times, you need to remember how you translated them.

To switch the screen display from the main language (language0) to another language, either place a function switch (see p. 166) on the screen or use a PLC register (see p. 168).

#### 4.7.8.1 Setup with the String List

This function allows you to enter translations in a table. You need to bear in mind that while you are in the table translating the string list, it is not possible to adjust the part size.

#### Editing .txt files in Excel



#### ◆ NOTE

- **Use File → Utility → Export String List for Multi-Language Exchange to export all texts for all languages into a text file. This text file can be imported into Excel if you have defined the full stop (.) as the decimal separator in the control panel. Also upon import, set "Text qualifier" to "{none}" and "Column data format" to "Text".**
- **Edit language strings only! Do not edit the header lines or the left 2 columns. If they are changed, the import cannot be executed.**
- **Do not change the font type or size in Excel. If they need to be changed, change them in GTWIN.**

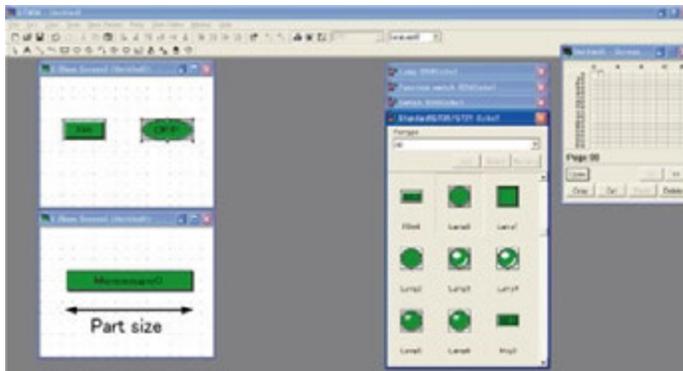
#### Editing in GTWIN



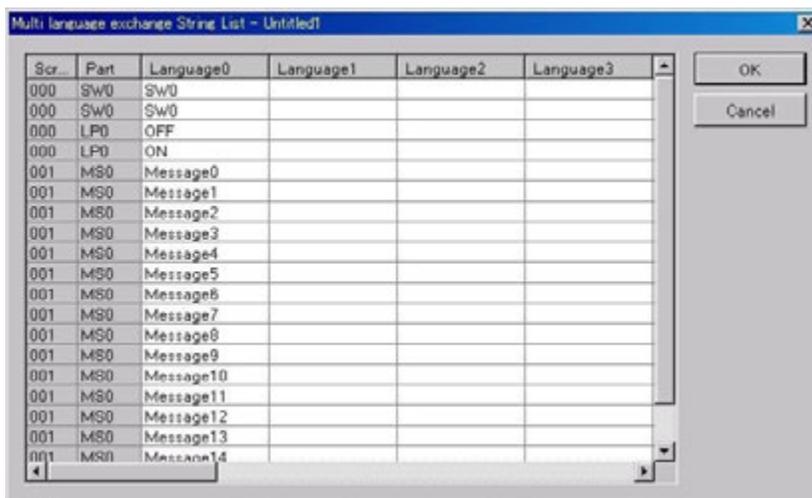
#### ◆ PROCEDURE

1. **Create a screen with parts labelled in the main language**

Make sure to give parts their maximum size to allow for longer texts in translation. Otherwise you will receive an error message and will have to edit the part size or text font later.



## 2. Start Editor → Multi-Language Exchange String List



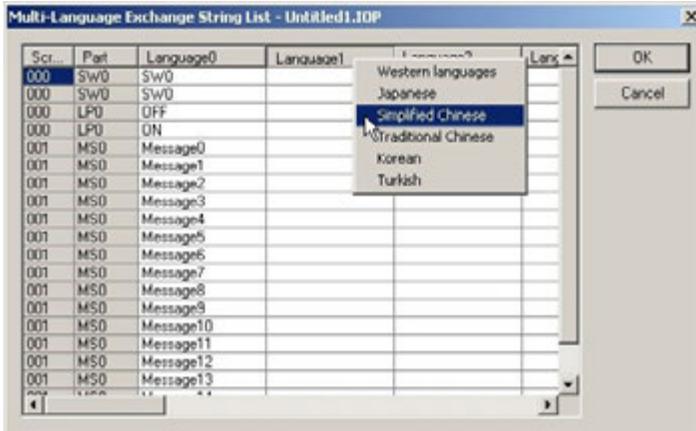
A table appears displaying a list of all screens and all parts with their text labels. The first column lists the screens in ascending order, the second the parts. The following columns contain language0 to language15. In this example, we will input simplified Chinese as language1

### 3. Click the column heading "Language1"

A pop-up menu appears listing the character sets available.

### 4. Select the character set you wish to input

In this case, select "Simplified Chinese"



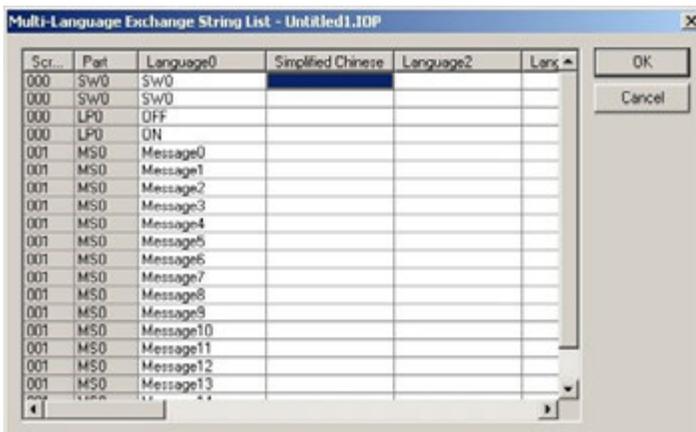
The heading "Language1" is replaced by "Simplified Chinese"

**5. Change the keyboard layout in the Windows task bar**

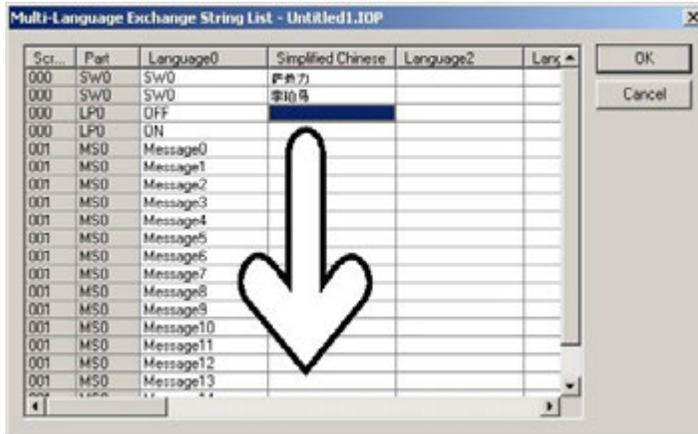
If you have enabled simplified Chinese as an input language in the "Regional Options" dialog box of the control panel, you can simply switch to a different keyboard now. In some cases you have to choose another "Input Mode", too.



**6. Click the first cell to start entering text**



## 7. Enter a translation for the string displayed in column "Language0" [Enter]



### ◆ NOTE

GTWIN checks the length of the translated string because the translation cannot be longer than the part itself. If the translation is too long, a warning message appears. In that case, you need to enter a shorter translation, edit the part size, and return to the translation. This is why we recommend creating parts with a maximum size when you set up multilingual screens. Alternatively, you can change the font size of the part, but this also requires leaving the list of multilingual strings.

#### 4.7.8.2 Setup for Individual Parts

This function allows you to enter translations for one part. The part size is adjusted automatically to fit the longest language when you click [OK].



### ◆ NOTE

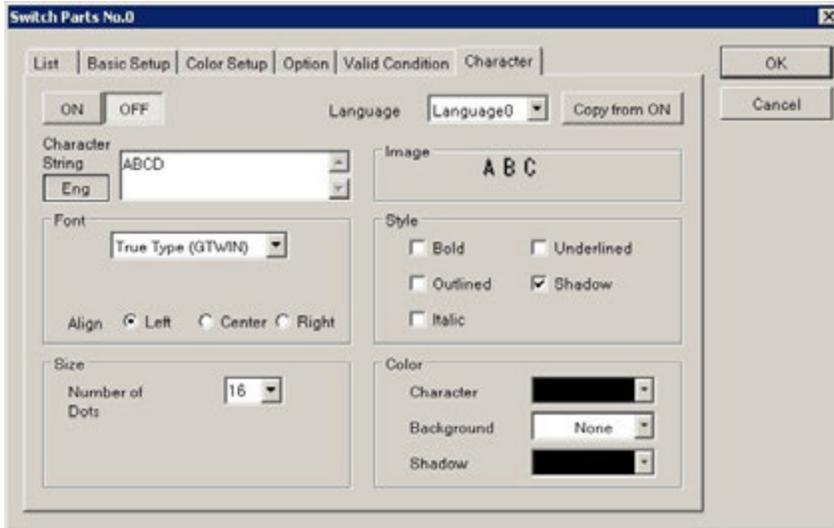
- As the part size is adjusted automatically to fit the longest language, you need to check afterwards whether the adjusted part overlaps other parts on the screen now.
- Please note that you can only set the font type and size set for language 0 and these settings are used for all other languages as well.



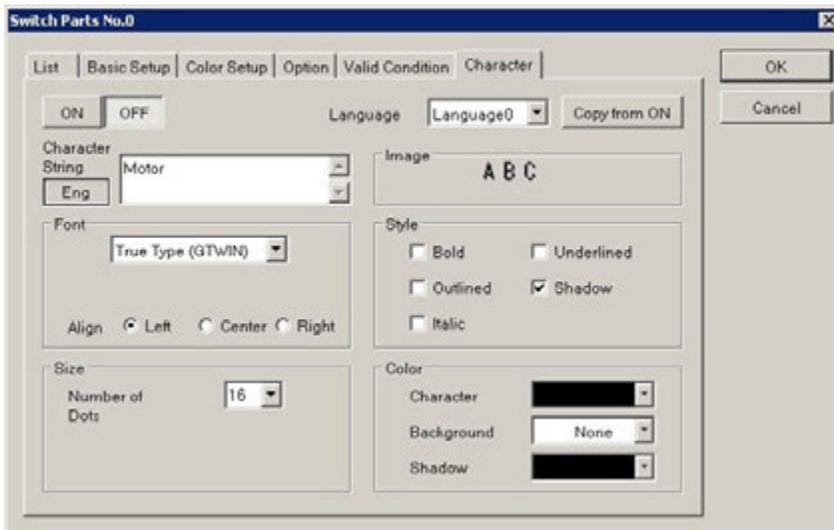
### ◆ PROCEDURE

1. Double-click the part you wish to edit
2. Select the "Character" tab

By default, the main language (Language0) is displayed.



3. Click the field "Character String" to enter text for language 0

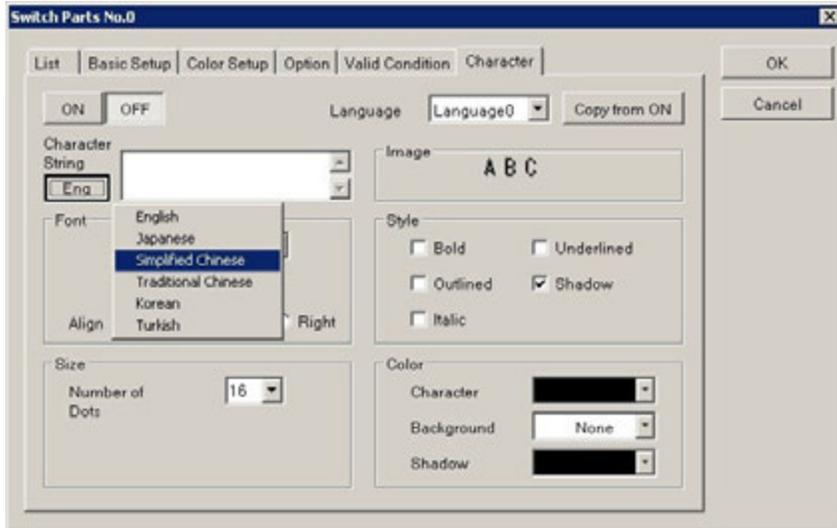


4. Set the font type, size, style, and color

You can only make these settings for language 0. The settings are used for all other languages you may set up. The alignment options only work for texts that are longer than one line and for parts with texts in multiple languages when one language is much longer than the others.

5. Under "Language No.", select "Language1"
6. Click "Eng" under "Character String"

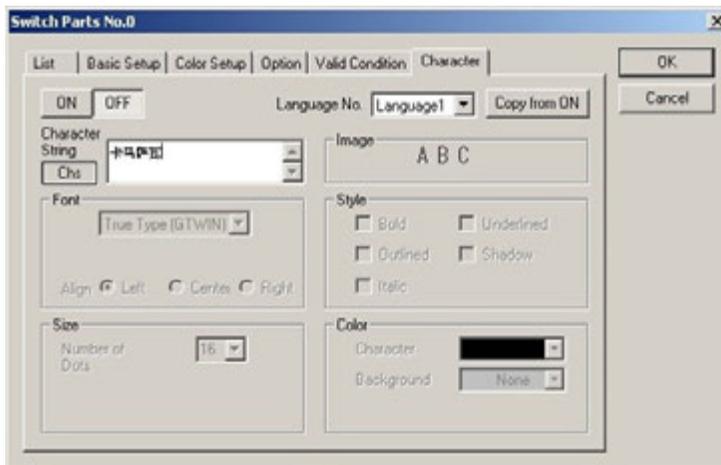
This displays a pop-up menu with the character sets available. The current setting "Eng" is for Western languages like English, French, German, Spanish, etc.



### 7. Select "Simplified Chinese"

If you have enabled simplified Chinese as an input language in the "Regional Options" dialog box of the control panel, the operating system switches to the correct keyboard.

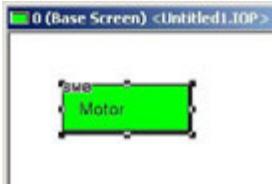
### 8. Enter the text



### 9. Repeat steps 6 to 9 for further languages, if required

### 10. Select [OK]

The part is displayed with the text you have entered for language0. Depending on the length of the texts you have entered for other languages, the part is now bigger than when you created it. The text for language0 shows the alignment you have selected under the "Character" tab (left in this example).

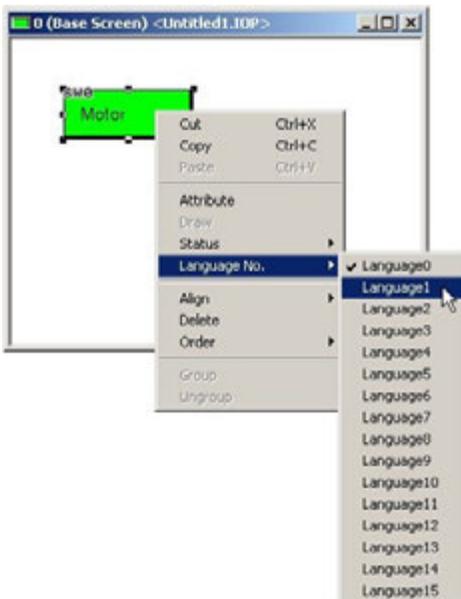


You can change the screen display language to see the translated texts.

**11. Right-click a part**

A pop-up menu is displayed.

**12. Language No. → Language1**



The screen display shows all parts labelled with text entered under language1. Note that the part length is long enough to fit in the longer text for language1. If a part has not been translated, the part will appear empty.



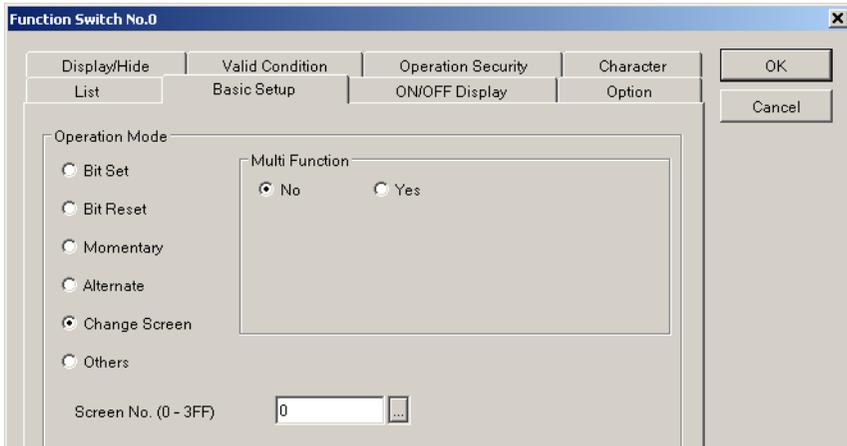
**4.7.8.3 Change the Language with a Function Switch**

If a screen has been set up for multi-language display, you can switch to a different language with the help of a function switch.

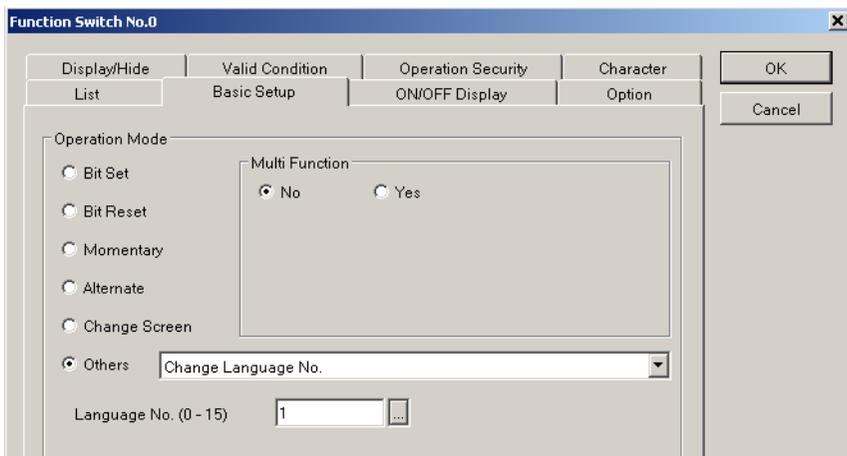


## ◆ PROCEDURE

1. Drag a function switch onto the base screen
2. Double-click the function switch

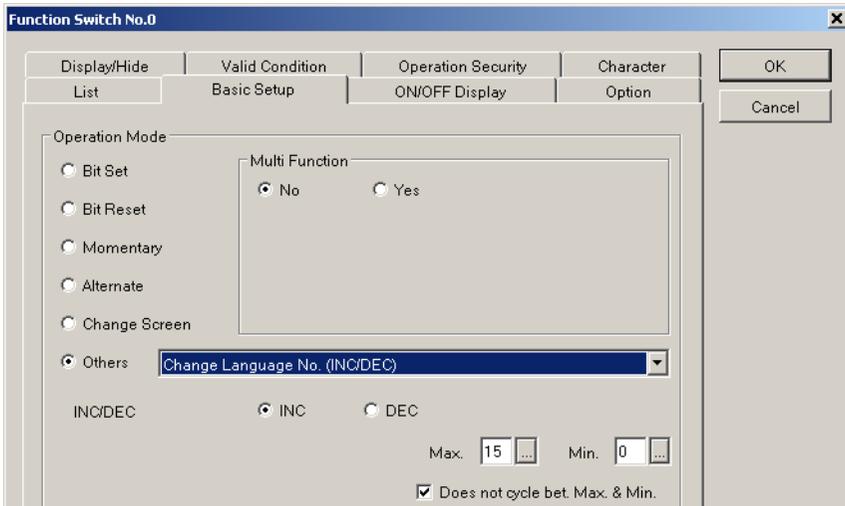


3. On the "Basic Setup" tab under "Others", select "Change Language No."
4. Select the number of the language you wish to display



5. Make the other switch settings

Set the text and switch color and other function switch properties (see p. 184). If you have set up more than two languages, you can "scroll" through the different languages by activating the option "Change Language NO. (INC/DEC)" and setting the scrolling range, i.e. from language 0 to 6. If the check box "Does not cycle between Max. and Min." is selected, the function switch will not go back to the initial value when it has reached the last value of the range. When it is selected, pressing the function switch again after it has reached the maximum value will return it to the minimum value (for "INC/DEC" = "INC", i.e. the function switch counts incrementally).



#### 4.7.8.4 Change the Language with a PLC

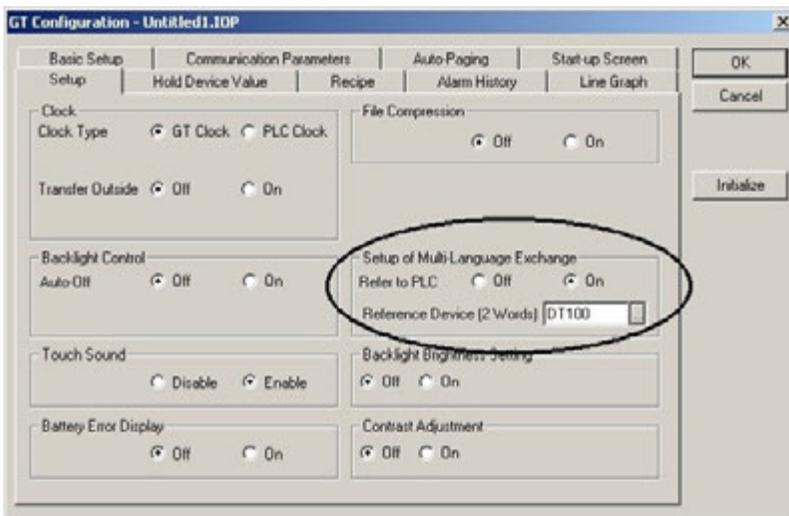
You can also change the language of the screen externally by using a PLC register (reference device).



#### PROCEDURE

1. **File → Configuration → GT Configuration**
2. **On the "Setup" tab, set "Refer to PLC" to "On"**

This displays an additional field where you can set the PLC register which will trigger the change of the screen language and provide the language number to switch to.



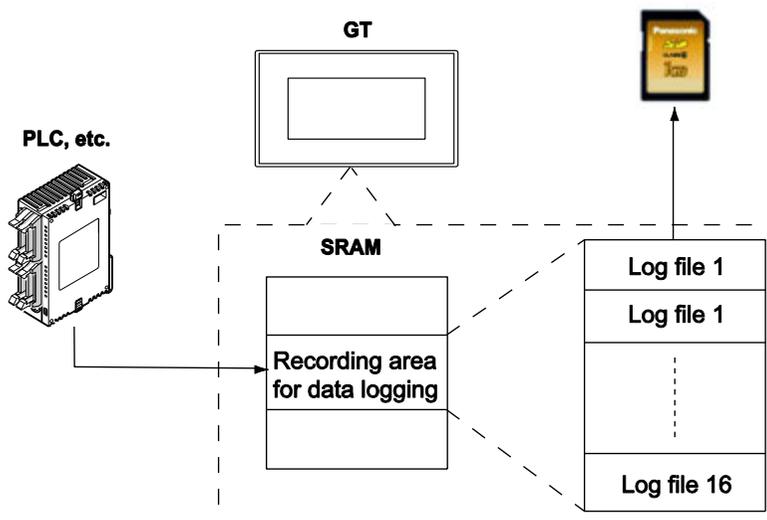
3. **Under "Reference Device", set the PLC register**

If the value for the reference device specified here changes, the screen display is changed to a language number between 0 and 15 depending on the value.

"Reference Device" = "DT100"	DT100	Language No. specified by PLC in HEX format (GT reads register from the PLC)
	DT101	No. of the language currently displayed in HEX format (GT writes to PLC register)

### 4.7.9 Data Logging

For certain GT models, data logging is available. Data from specified devices is collected and stored in the GT unit's SRAM and written as log files to an SD memory card in CSV format when specified.



You must install the backup battery in the GT unit because the clock setting is necessary in order to trigger logging activities.

**NOTICE**

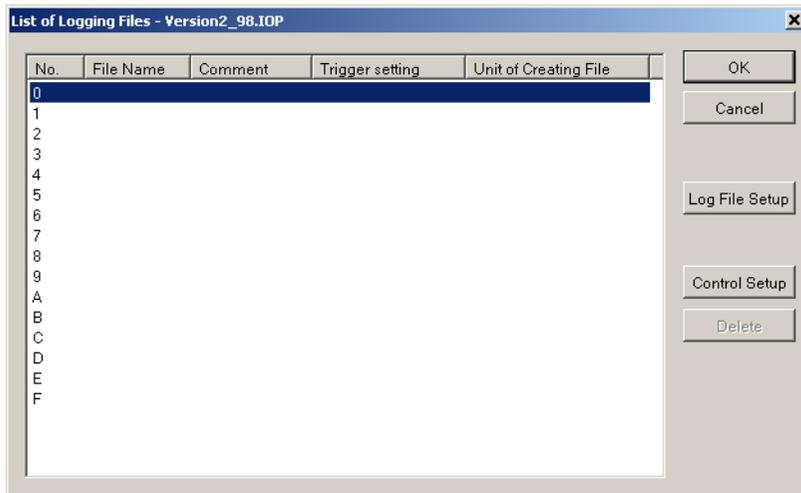
**Loss of data**

To prevent data from being inadvertently lost or deleted from the SD memory card, take appropriate precautionary measures.

- Downloading the GT configuration from the PC to GT will erase the SRAM. Make sure all logging information is saved beforehand.
- If you do not want data to be overwritten in the SRAM logging area when the SD memory card is full, set up a device to send notification when the SD memory card has little space left (see p. 35).
- Eject the SD memory card only if no data is being written to it, e.g. by using Stop Writing Control (see p. 35).
- In case of a power failure, stop logging data and creating logging files on time by using an appropriate device.

**Create Logging Files**

Open the "List of Logging Files" dialog via the Start Editor menu (see p. 131).



Press [Log File Setup] to set up log files (see p. 173).

Press [Control Setup] to call up the "Control Setup for Data Logging" dialog, if you wish to control certain processes with a PLC (see p. 176).

**Specifications on the logging area and log files.**

Item	Description
Record area capacity for data logging in the SRAM	65536 + 28160 bytes
Number of log files	1 to 16
Number of records stored in 1 log file	1 to 60000
Number of data points that can be stored in 1 log file	Max. 128 data points (256 words)
Total number of data points that can be stored in all 16 log files	Max. 400 data points (400 words)
Number of records that can be stored in the SRAM	64



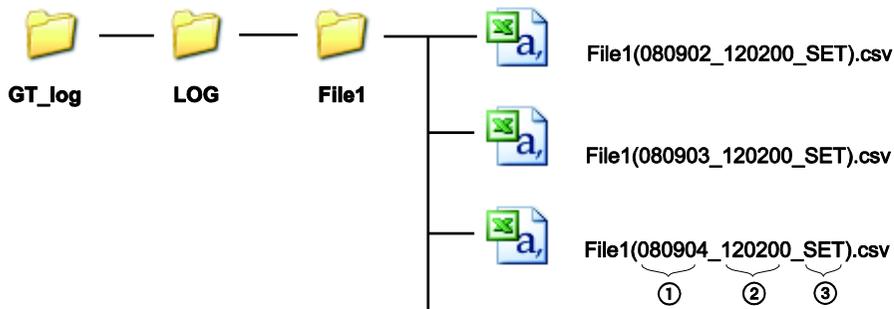
**◆ NOTE**

**Data in the SRAM will be overwritten if its capacity is exceeded. Data stored on the SD memory card is automatically cleared from the SRAM.**

**4.7.9.1 Log File and CSV File Structure**

**Log file structure**

The file name, date and time of the logging data is recorded in CSV format on the SD memory card if logging conditions are met. If logging conditions are not met, a work file is created with the name File1(-----CURRENT-----).csv, for example, and converted once conditions are met.



- ① Year, month, day (Sept. 2, 2008)
- ② Hour, minute, second (12:02:00)
- ③ Condition under which the file was created.

Condition	Characters recorded
File reached condition set for "Create Logging File After" field for the logging file basic setup.	SET
A file creation device was turned on.	TRG

Condition	Characters recorded
Data in a work file was renamed after power was turned on.	POW
Data was not filed completely because the SD memory card became full while logging files were being stored.	ERR
The clock for the GT was set during logging.	TIM

**CSV file structure**

CSV files created are structured as illustrated.

	A	B	C	D	E
1	Date	Time	1	2	3
2			<b>Power consumption</b>	<b>Voltage</b>	<b>Temperature</b>
3			[PLC1]DT00010	[PLC1]DT00011	[PLC1]DT00012
4			kWh	V	°C
5	2008/9/2	10:02:30	1000	203.6	27.5
6	2008/9/2	10:03:00	1005	203.6	27.6
7	2008/9/2	10:03:30	1020	203.6	27.5
8	2008/9/2	10:04:00	1030	203.6	28.1
9	2008/9/2	10:04:30	1035	203.6	28.3
10	2008/9/2	10:05:00	1040	203.6	28.6
11	2008/9/2	10:05:30	1040	204.6	28.7
12	2008/9/2	10:06:00	1050	204.6	28.7
13	2008/9/2	10:06:30	1055	205.8	29
14	2008/9/2	10:07:00	1060	205.8	28.9
15	2008/9/2	10:07:30	1080	204.6	28.1
16	2008/9/2	10:08:00	1100	204.6	27.5
17	2008/9/2	10:08:30	1150	204.6	27.5

No.	Item	Description
①	Logging device information	1: Registration no. Power consumption: Name (specified by user) [PLC]DT00010: Target address (initial address only) kWh: Unit (specified by user)
②	Trigger setting	Specified time with 30s interval
③	No. of records (1 to 60000)	Number of records stored in a file. Example: For 1000 records, when 1000 records are recorded, a log file is created.
④	No. of data points (1 to 128)	Number of data points that can be executed simultaneously.

### 4.7.9.2 Log File Setup

#### Basic setup tab

Field	Description
File name	Specify file name if desired.
Comment	Add a comment if desired.
Trigger setting	<p>A CSV file with the characters "SET" (see "Log File and CSV File Structure" on p. 171) will be recorded when the conditions for this dialog are met.</p> <p><b>Fixed cycle</b> The trigger will be executed in a fixed cycle.</p> <p><b>Specified time</b> Specify the start time for logging, the intervals between each log and the no. of logs to record. "Start time" means o'+ CHAR(39) + 'clock, e.g. 1 Hour 30 Min. = 1:30 a.m.</p> <p><b>Condition</b> The trigger will be executed when the conditions specified are met.</p>
Create Logging File After ...	The settings for this field determine when the data in the SRAM is written as files to the SD memory card. The settings available depend on what you have specified for the trigger setting.



#### ◆ NOTE

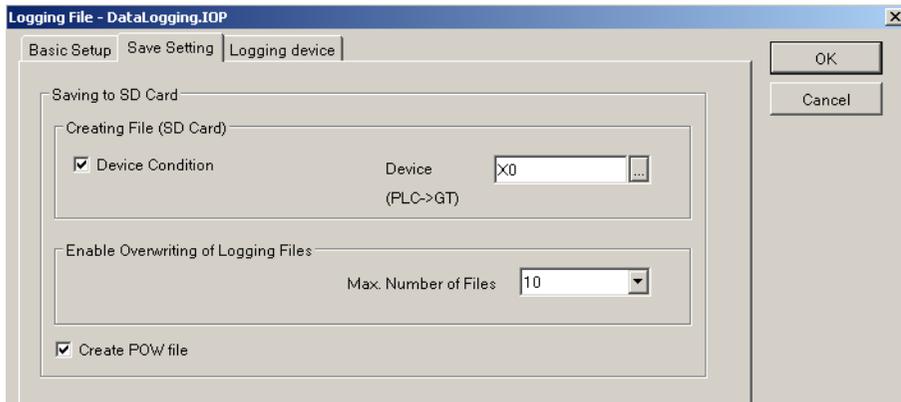
**Restrictions: the same settings can be used for multiple logging files. However, a 1-second trigger can only be set for 1 file. Triggers at intervals of less than 10 seconds can be set for a maximum of 2 files.**

Save setting tab



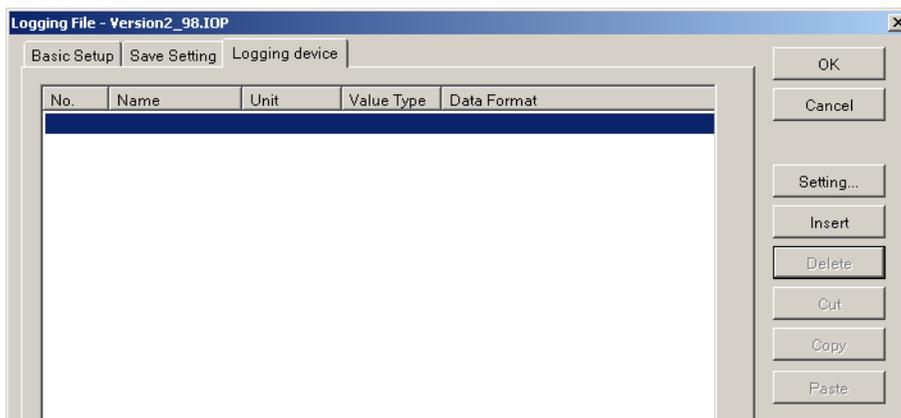
◆ NOTE

A CSV file with the characters "TRG" (see "Log File and CSV File Structure" on p. 171) will be recorded when the conditions for this dialog are met and logging data has accumulated.



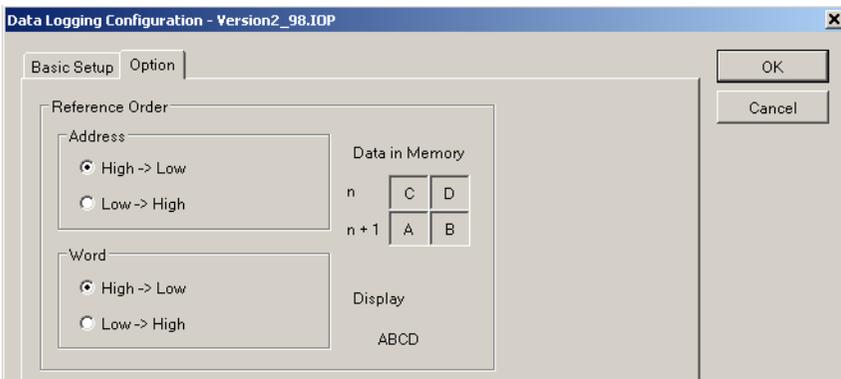
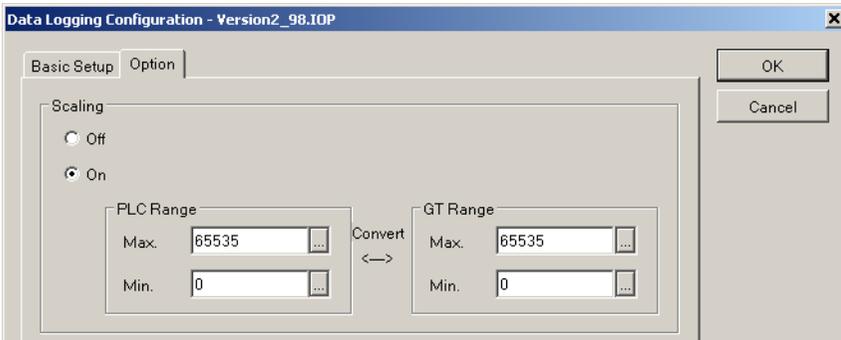
Field	Description
Saving to SD Card	Specify a device to trigger writing logging files to the SD memory card.
Enable Overwriting of Logging Files	Specify the maximum number of files allowed before they are overwritten.
Create POW file	Activate to create a CSV file with the characters "POW" (see "Log File and CSV File Structure" on p. 171).

Logging device tab



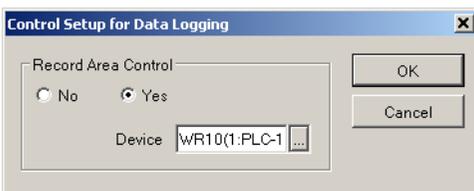
The logging device tab provides an overview of the logging device used for the logging file.

Field	Description
Name	Specify a name for the device if desired.
Unit	Specify a unit for the device if desired, e.g. kW, °C, etc. This may be helpful when reading the CSV data.
Value Type	<ul style="list-style-type: none"> <li>• <b>Momentary Value:</b> logs the actual value of the device.</li> <li>• <b>Difference Value:</b> logs the difference between the actual and previous value of the device.</li> </ul>
Data Format	Select format in which to log the data.
Device	The device from which values are read.
Zero Suppression	Activate higher-order zero suppression for the CSV logging file if desired.
Output Decimal Places	You can specify if or how many digits behind the decimal point to output.
Number of Digits	For the data format ASCII or Japanese (Shift JIS), you can select the number of digits to log.
Number of Words	Select the number of words to log.



Field	Description
Scaling	For certain data formats, scaling is available. When activated, you can set max. and min. limits and scale the data between the PLC and GT.  For example, if you set the max. value for the GT range to 100 and the max. value of the PLC range to 10, the GT values will be scaled, i.e. divided by 10 when written to the SD memory card.  Values beyond the limits will be set to the limit value and then scaled.
Reference Order	Available when ASCII or Japanese (Shift JIS) are selected as the data format. Specify the order for referencing such data.

### 4.7.9.3 Control Setup for Data Logging



You can control certain data logging functions from a PLC by activating record area control and specifying the initial address in the control device. Following is a description of the record control areas.

Area	Description
Trigger stop PLC → GT	Deactivate the logging trigger and stop logging data.
Logging file creation	Turns on when logging file is being created. Use it to determine the file

Area	Description
GT → PLC	number being logged.
Record area clear PLC → GT	Turns on when data in record area is being cleared. Use it to forcibly clear the record area if desired.
Record area clear complete GT → PLC	Turns on when clear is complete. This bit can also be used to reset the bit "Record area clear".

### Record area control

Addr.	Bit	Description	Addr.	Bit	Description
N+0	0	Log file 0 trigger stop.	N+1	0	Log file 0 record area clear.
	1	Log file 1 trigger stop.		1	Log file 1 record area clear.
	2	Log file 2 trigger stop.		2	Log file 2 record area clear.
	3	Log file 3 trigger stop.		3	Log file 3 record area clear.
	4	Log file 4 trigger stop.		4	Log file 4 record area clear.
	5	Log file 5 trigger stop.		5	Log file 5 record area clear.
	6	Log file 6 trigger stop.		6	Log file 6 record area clear.
	7	Log file 7 trigger stop.		7	Log file 7 record area clear.
	8	Log file 0 logging file creation.		8	Log file 0 record area clear complete.
	9	Log file 1 logging file creation.		9	Log file 1 record area clear complete.
	A	Log file 2 logging file creation.		A	Log file 2 record area clear complete.
	B	Log file 3 logging file creation.		B	Log file 3 record area clear complete.
	C	Log file 4 logging file creation.		C	Log file 4 record area clear complete.
	D	Log file 5 logging file creation.		D	Log file 5 record area clear complete.
E	Log file 6 logging file creation.	E	Log file 6 record area clear complete.		
F	Log file 7 logging file creation.	F	Log file 7 record area clear complete.		

Addr.	Bit	Description	Addr.	Bit	Description
N+2	0	Log file 8 trigger stop.	N+3	0	Log file 8 record area clear.
	1	Log file 9 trigger stop.		1	Log file 9 record area clear.
	2	Log file A trigger stop.		2	Log file A record area clear.
	3	Log file B trigger stop.		3	Log file B record area clear.
	4	Log file C trigger stop.		4	Log file C record area clear.
	5	Log file D trigger stop.		5	Log file D record area clear.
	6	Log file E trigger stop.		6	Log file E record area clear.
	7	Log file F trigger stop.		7	Log file F record area clear.
	8	Log file 8 logging file creation.		8	Log file 8 record area clear

Addr.	Bit	Description	Addr.	Bit	Description
					complete.
	9	Log file 9 logging file creation.		9	Log file 9 record area clear complete.
	A	Log file A logging file creation.		A	Log file A record area clear complete.
	B	Log file B logging file creation.		B	Log file B record area clear complete.
	C	Log file C logging file creation.		C	Log file C record area clear complete.
	D	Log file D logging file creation.		D	Log file D record area clear complete.
	E	Log file E logging file creation.		E	Log file E record area clear complete.
	F	Log file F logging file creation.		F	Log file F record area clear complete.

## 4.8 Window menu

---

Via the window menu, you can:

- **Cascade** your base screens, i.e. they will be placed on top of each other in a cascading fashion
- **Tile** your base screens, i.e. the base screens will be arranged in an orderly fashion and each screen will be completely visible
- **Arrange icons.** If you have minimized your base screens and the minimized icons (title bars) are arranged haphazardly on your monitor, select "Arrange Icons" to arrange them in an orderly manner at the bottom left of your monitor.
- Activate open base screens.

## 4.9 Help Menu

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Via the help menu, you can:

- access the online help
- access our Web site
- find out which version of GTWIN and which drivers are installed on your PC

# Chapter 5

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## Parts and Their Functions

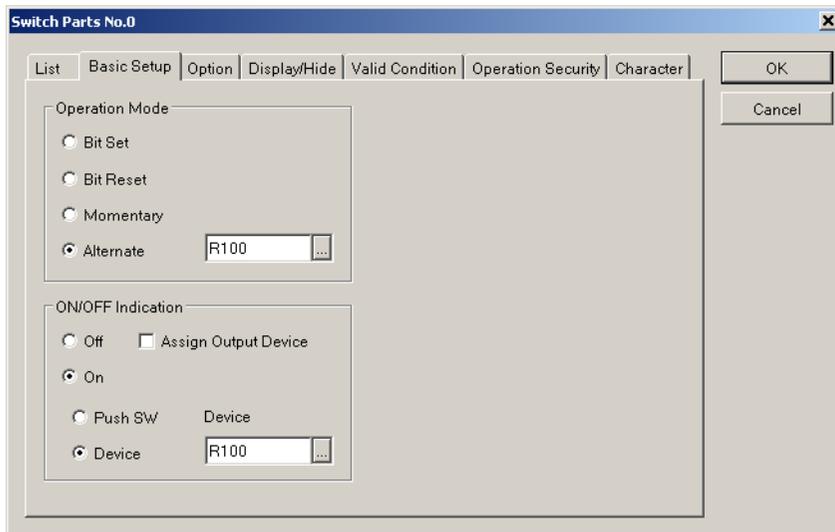
## 5.1 Switch Parts

Switch parts turn the bit device of the corresponding PLC on and off. Depending on the GT model, the switches come in various designs (e.g. push-button, toggle, rotating switches, etc.) and, like real switches, exhibit different operation modes, e.g. momentary and alternate.



Example switch parts from various GT models

Depending on the GT model, switch parts may be available from the standard parts library and a color library. Double-click the switch part that has been placed on the base screen to set its attributes.



### Configuration parameters



#### ◆ NOTE

Which tabs and what appears on them may differ depending on which GT model you have selected.

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup	Operation Mode	<p><b>Bit Set:</b> sets, i.e. turns on, the specified PLC bit device (e.g. R100) specified in the "Device Setting" box.</p> <p><b>Bit Reset:</b> resets, i.e. turns off, the specified PLC bit device.</p> <p><b>Momentary:</b> turns on the specified PLC bit device as long as the switch part is pressed.</p> <p><b>Alternate:</b> reverses the status of the specified PLC bit device (ON or OFF) each time the switch part is pressed.</p>
	ON/OFF Indication	<p><b>Off:</b> the switch's appearance does not change on the GT screen even if you press it or the status of the output destination device changes.</p> <p><b>On:</b> the switch goes on or off when you press the switch part or the status of the output destination device changes.</p> <ul style="list-style-type: none"> <li>• <b>Push SW:</b> the switch goes on or off only while you are pressing it.</li> <li>• <b>Device:</b> the switch goes on or off based on the status of the output destination device. The check box "<b>Assign Output Device</b>" refers to the device specified for the operation mode.</li> </ul>
Color Setup	Image	The image field displays the settings you have made.
	ON Color	Select the color for the switch when it is ON.
	OFF Color	Select the color for the switch when it is OFF.
	Plate	Select the color for the virtual plate upon which the switch is mounted (not for all switch types available).
Option	Switch Sound	Select whether a sound is produced when a switch part is pressed.
Display/Hide	Conditions	The default setting for a switch is "Display". However, you can define the switch to be hidden and only displayed under certain conditions, which you define in this field.
Valid Condition	—	<p><b>Always Operational</b> (normal setting) or <b>Operational under Valid Condition</b>. For this setting, click [Setup] to define the "Conditions" when the switch can be used.</p> <ul style="list-style-type: none"> <li>• <b>Relation Device:</b> bit, word, double word</li> <li>• <b>Relation Code:</b> for bit, set the device to ON or OFF; for word and double word, select the desired comparative relationship, e.g. =, &gt;, etc. Depending on your selection, you may have to set the corresponding values or select a device from which to read the value.</li> <li>• <b>Reference Device:</b> define the device used as a reference for the relation code.</li> </ul>
Operation Security	—	Set the security level to restrict the display and/or operation of the part.
Character	—	<p>Change the text's language, font, style, size and color.</p> <p>Click [Copy from ON] or [Copy from OFF] to copy settings made for the switch's ON or OFF state for easy modification.</p> <p>The image field displays the settings you have made.</p>

## 5.2 Function Switch Parts



### ◆ NOTE

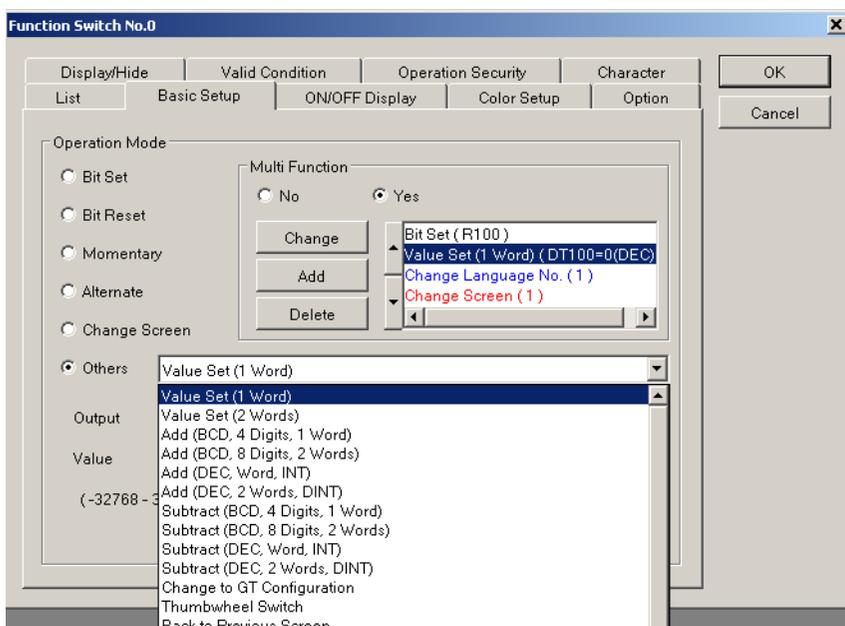
Please refer to the "Switch Part" dialog (see p. 182) for all settings other than for the "Basic Setup" tab.

Function switch parts are used to switch screens or execute arithmetic operations when the switch is touched, etc. These switches execute various functions, depending on the operation mode.



Example function switch parts from various GT models

Depending on the GT model, function switch parts may be available from the standard parts library and a color library. Double-click the switch part that has been placed on the base screen to set its attributes.



### Configuration parameters



### ◆ NOTE

Which tabs and what appears on them may differ depending on which GT model you have selected.

### Basic Setup Operation Modes

Please refer to the "Switch Part" dialog (see p. 182) for all settings other than for the "Basic Setup" tab.

Option button	Description
Bit Set	Sets, i.e. turns on, the specified bit device (e.g. R100) specified in the "Device Setting" box.
Bit Reset	Resets, i.e. turns off, the specified bit device.
Momentary	Turns on the specified bit device as long as the switch part is pressed.
Alternate	Reverses the status of the specified bit device (ON or OFF) each time the switch part is pressed.
Change Screen	Switch to the GT settings screen selected via the option button.
Others	See following table.
Multi Function	See section on Multi Function (see p. 187).

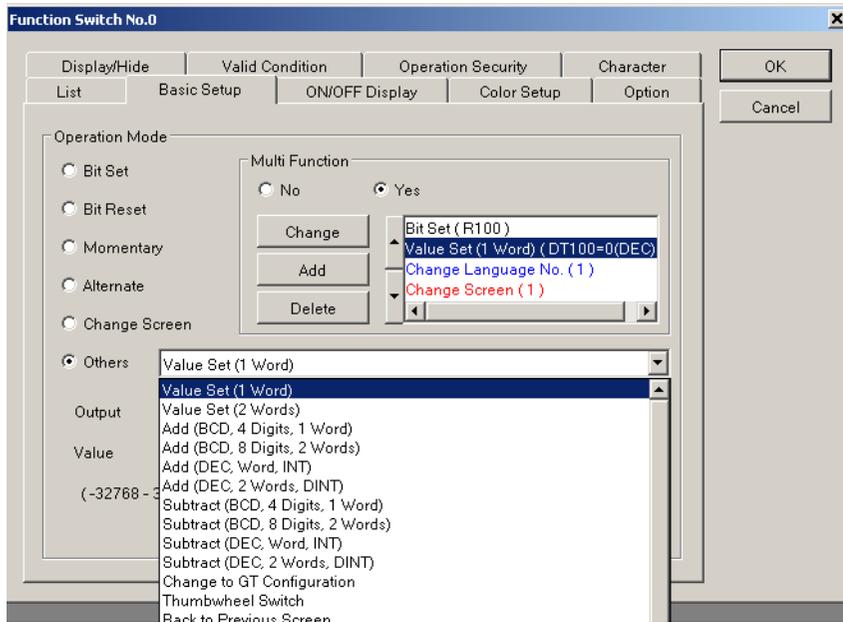
### "Others" option button

Selection	Description
Value Set	Set a defined value in a defined data format to a defined output.
Add	Augend (Augend/Minuend) + addend (Value) = sum (Output) Add a "Value" in the data format defined to the value stored in the "Augend/Minuend". The sum is stored in the device defined for "Output".
Subtract	Minuend (Augend/Minuend) - subtrahend (Value) = difference (Output) Subtract a "Value" in the data format defined from the value stored in the "Augend/Minuend". The difference is stored in the device defined for "Output".
Change to GT Configuration	Switch to the GT settings screen selected via the option button.
Thumbwheel SW	<p>Selecting this option will make the function switch behave like a thumbwheel switch, i.e. you can turn it up or down (add or subtract values) and it has definite limits.</p> <p>Select <b>INC</b> to add or <b>DEC</b> to subtract 1 to the hexadecimal digit position specified.</p> <p><b>Digit</b> specifies the hexadecimal position in word data. Enter a value between 0 and 3.</p> <p><b>Word (Hex):</b> _ _ _ _                    ↑ ↑ ↑ ↑  <b>Digit: 3 2 1 0</b></p> <p>Under <b>Inc/Dec Range</b>, you define the min. and max. limits of the thumbwheel switch. If you select <b>Does not cycle between Max. and Min.</b>, the value will not reset when it reaches its max. or min. value but remain at the limit.</p>
Back to Previous Screen	Switches to the previous screen.
Change Language No.	Changes to the language no. as defined in the multi-language exchange list (see p. 159).
Change Language No. (INC/DEC)	Increases or decreases the language no. as defined in the multi-language exchange list (see p. 159) within the range defined. When the maximum or minimum language number has been reached, the process will cycle unless you activate "Does not cycle between Max. and Min."

Selection	Description
To Operate Alarm Parts	<p>In combination with alarm list parts (see p. 202), function switches can be set up to</p> <ul style="list-style-type: none"> <li>• scroll up or down per line or per page,</li> <li>• acknowledge an alarm,</li> <li>• display guidance, or</li> <li>• delete an alarm.</li> </ul>
For Operation Security Function	<p>Select one of the following functions:</p> <p><b>Login:</b> switches to the login screen no. specified on the lower right hand part of the screen.</p> <p><b>Logout:</b> logs out as specified on the lower right hand part of the screen.</p> <p><b>Password Change:</b> jumps to pre-configured password change screen.</p> <div data-bbox="440 600 1044 1054" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: right;"><b>ESC</b></p> <p><b>Password Change Screen</b></p> <p>Current Password <input style="width: 100px;" type="password"/></p> <p>New Password <input style="width: 100px;" type="password"/></p> <p>Re-type Password <input style="width: 100px;" type="password"/></p> <p style="text-align: center; margin-top: 20px;"><b>Change</b></p> </div> <p><b>Password Management for Administrator:</b> jumps to pre-configured password management screen. You must have administrator rights, i.e. have security level 15.</p> <div data-bbox="440 1155 1044 1609" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: right;"><b>ESC</b></p> <p><b>Password Management Screen</b></p> <p>No. <input style="width: 30px;" type="text"/> **      Level <input style="width: 30px;" type="text"/> **</p> <p>New Password <input style="width: 100px;" type="password"/></p> <p>Re-type Password <input style="width: 100px;" type="password"/></p> <p style="text-align: center; margin-top: 20px;"> <input style="width: 100px;" type="button" value="Change / Add"/>      <input style="width: 100px;" type="button" value="Delete"/> </p> </div>
Call FP Monitor Screen	Calls up the system menu and displays the FP Monitor (see p. 80) screen.

## 5.2.1 Multi Function

Use "Multi Function" to execute multiple operations with a single switch by adding them to the list. You can add up to 32 operations to the list.



You can determine the order in which the functions are executed by moving them up or down using the arrow keys. Colors indicate certain restrictions:

- **Black:** no restriction
- **Blue:** executed after instructions indicated in black. Only one such instruction can be executed.
- **Red:** final instruction executed. Only one such instruction can be executed.

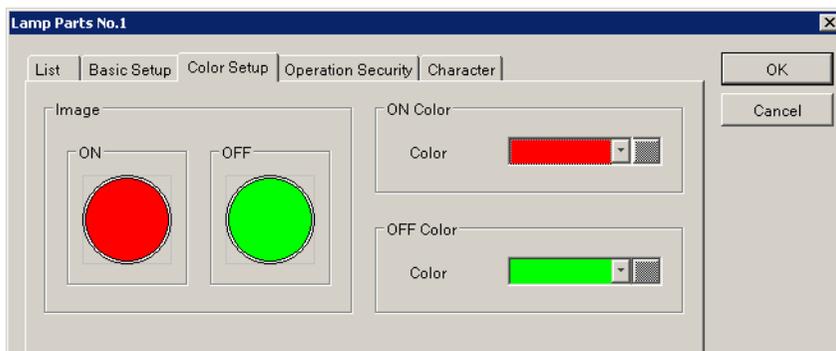
### 5.3 Lamp Parts

Lamp parts change color when the bit device (i.e. address) of the PLC being referenced is turned on or off.



Example lamp parts from various GT models

Depending on the GT model, lamp parts may be available from the standard parts library and a color library. Double-click the lamp part that has been placed on the base screen to set its attributes.



#### Configuration parameters



**NOTE**

What appears on the tabs may differ depending on the lamp part and which GT model you have selected.

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup	ON/OFF Bit	Assigns the specified PLC bit device (e.g. R100) which activates the lamp part.
Color Setup	Image	The image field displays the settings you have made.
	ON Color	Select the color for the switch when it is ON.
	OFF Color	Select the color for the switch when it is OFF.
	Plate	Select the color for the virtual plate upon which the switch is mounted.
Operation Security	—	Set the security level to restrict the display and/or operation of the part.
Character	—	Change the text's language, font, style, size and color.

---

Tab	Field	Description
		Click [Copy from ON] or [Copy from OFF] to copy settings made for the switch's ON or OFF state for easy modification. The image field displays the settings you have made.

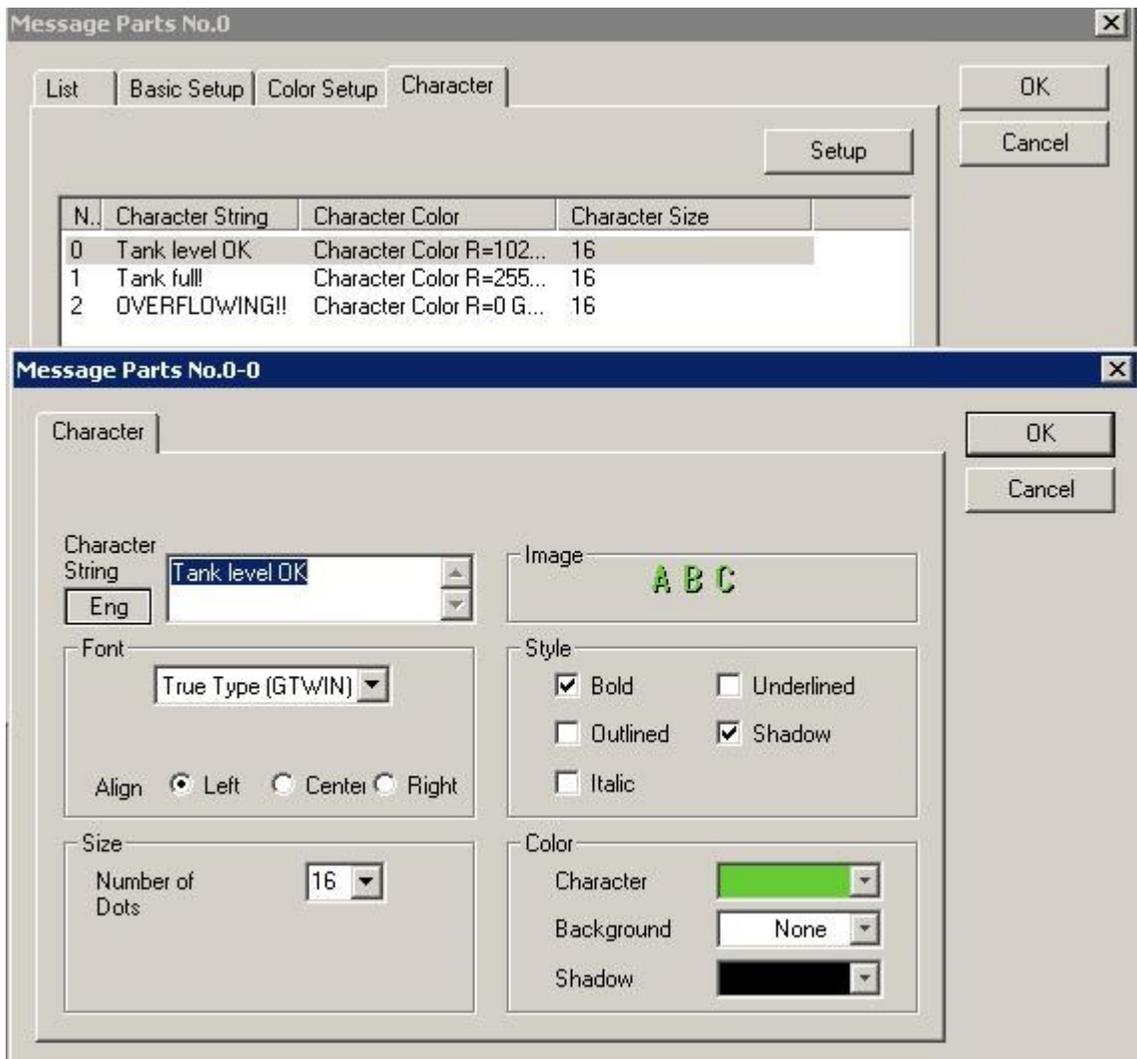
## 5.4 Message Parts

Message parts display messages when the corresponding bit in a word device (i.e. address) of the PLC being referenced is turned on or off. Up to 16 different messages can be displayed.



*Example message part*

Depending on the GT model, the color setup for message parts may be available or not. Double-click the message part that has been placed on the base screen to set its attributes.



## Configuration parameters



### ◆ NOTE

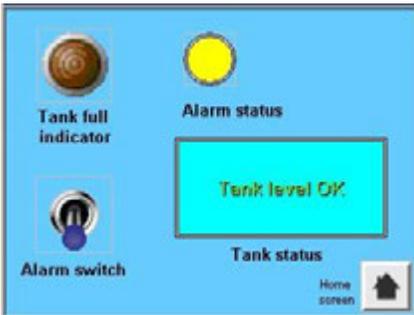
Depending on the GT model, the color setup for message parts may be available or not.

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup	Number of Messages	You can define up to 16 messages.
	Reference Device	Assigns the address and hexadecimal digit for the first message (i.e. Message 0) to the specified PLC word device (e.g. DT100-0). Subsequent messages are triggered by the corresponding hexadecimal digit.
Color Setup	Image	The image field displays the settings you have made.
	Plate	Select the color for the virtual plate upon which the switch is mounted.
Operation Security	—	Set the security level to restrict the display and/or operation of the part.
Character	—	Displays a list of messages, the number of which you defined under "Basic Setup". Click on any line in the list and select [Setup] to make your settings. Enter the character string, font, style, size and color. If you are working with multiple languages (see p. 163), set up the messages in all languages required. The image field displays the settings you have made.

### 5.4.1 Message Part, Sample FPWIN Pro Program

In this example, you can see how a GT21 and Control FPWIN Pro work together to monitor the level in a tank.

1. The GT screen indicates that the tank level is OK. In Control FFWIN Pro, monitoring shows that nothing has been triggered and that message 0 (16#0000) is displayed on the GT screen.



**Global Variables**

Class	Identifier	FP Address	IEC Address	Type	Initial	Aut...	Comment
VAR_GLOBAL	bTankFull	X0	%D0.0	BOOL	FALSE		
VAR_GLOBAL	bSendAlarm	Y0	%Q0.0	BOOL	FALSE		
VAR_GLOBAL	bManualAlarm	R200	%M0.20.0	BOOL	FALSE		
VAR_GLOBAL	wMessage	DT100	%MWS.100	WORD	0		16#0000 = Tank level OK 16#0001 = Tank full 16#0002 = Overflowing!

**PMW\_output**

Class	Identifier	Type	Initial	Comment
VAR_EXTERNAL	bTankFull	BOOL	FALSE	
VAR	AlarmTimer	TM_1s_FB		
VAR_EXTERNAL	bSendAlarm	BOOL	FALSE	
VAR_EXTERNAL	bManualAlarm	BOOL	FALSE	
VAR_EXTERNAL	wMessage	WORD	0	16#0000 = Tank level OK

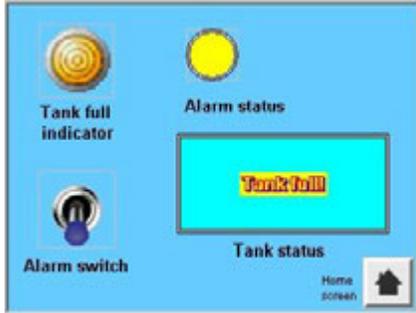
  

**Ladder Logic**

Network 1: bTankFull (NO) and bManualAlarm (NO) are connected to the start input of an AlarmTimer (TM\_1s\_FB) block. The setpoint (SV) is 30. The output (EV) of the timer is connected to bSendAlarm.

Network 2: bTankFull (NO) is connected to a BOOL\_TO\_INT block. bTankOverflow (NO) is connected to another BOOL\_TO\_INT block. The outputs of both blocks are connected to an ADD block. The output of the ADD block is connected to an INT\_TO\_WORD block, which outputs wMessage = 16#0000.

2. The GT screen indicates that the tank is full, but an alarm has not yet been sent. In Control FPGWIN Pro, monitoring shows that a sensor has activated the global variable "bTankFull" at input X0 (%IX0.0). However, the 30-second timer to whose input "bTankFull" is attached has not expired, hence no alarm has been sent. Message 1 (16#0001) is displayed on the GT screen.



Global Variables								
	Class	Identifier	FP Address	IEC Address	Type	Initial	Aut...	Comment
0	VAR_GLOBAL	bTankFull	X0	%IX0.0	BOOL	FALSE		
1	VAR_GLOBAL	bSendAlarm	Y0	%QY0.0	BOOL	FALSE		
2	VAR_GLOBAL	bManualAlarm	R200	%MX0.20.0	BOOL	FALSE		
3	VAR_GLOBAL	wMessage	DT100	%MWS.100	WORD	0		16#0000 = Tank level OK 16#0001 = Tank full 16#0002 = Overflowing!

PMW_output					
	Class	Identifier	Type	Initial	Comment
0	VAR_EXTERNAL	bTankFull	BOOL	FALSE	
1	VAR	AlarmTimer	TM_1s_FB		
2	VAR_EXTERNAL	bSendAlarm	BOOL	FALSE	
3	VAR_EXTERNAL	bManualAlarm	BOOL	FALSE	
4	VAR_EXTERNAL	wMessage	WORD	0	16#0000 = Tank level OK

The ladder logic diagram consists of two rungs. Rung 1 shows a normally open contact for 'bTankFull' connected to the 'start' input of an 'AlarmTimer' block. The 'AlarmTimer' block has a 'SV' (Set Value) of 30 and an 'EV' (Event) output connected to a coil for 'bSendAlarm'. Rung 2 shows a normally open contact for 'bTankFull' connected to a 'BOOL\_TO\_INT' block, followed by an 'ADD' block, and then an 'INT\_TO\_WORD' block connected to a coil for 'wMessage = 16#0001'. A normally open contact for 'bTankOverflow' is also connected to the 'ADD' block.

3. After the time set for the timer has expired, bSendAlarm will be set to TRUE and an alarm will be sent.

## 5.5 Data Parts

Data parts are used to display the contents of internal PLC devices (i.e. addresses) directly on the screen. They can also be used in conjunction with keyboard parts (see p. 223) or keyboard screens (see p. 115) to change or input values for internal PLC devices from the GT side.

There is only one type of data part registered in the standard parts library.

-\*\*\*\*

*The data part*

### Using Japanese, Chinese, or Korean characters

The following GT models support the display of Japanese (Hiragana, Katakana and Kanji (Chinese) characters), Chinese, and Korean for data parts. The input of one-byte Kana is available with the Kana keyboard when you open the parts library "KANAKEY.SPL" via **Parts** → **Open Parts Library**.

Usable GT	
GT05	Ver1.40 or later
GT12	Ver1.10 or later
GT32	Ver1.50 or later
All GT versions released in 2010 and after.	

### Configuration parameters



#### ◆ NOTE

- What appears on the tabs may differ depending on the GT model you have selected.
- You can use either Japanese, Chinese, or Korean for data parts, but not all together at the same time.

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup (see p. 195)	Data to Display	Select the number of digits and the data format. If you want to display data parts in Japanese, Chinese or Korean, set "Data Format" to "String" and use the [Set] button to select the language. The font for data parts is set in the GT configuration (see p. 32).
	Zero Suppression	<b>Off:</b> Leading zeros will be displayed. <b>On:</b> Leading zeros will be omitted.
	Reference Device	Define the device used as a reference for the data display.
	Font and Size	Define the font and its size.
	Display Decimal Places	Select whether or not to display decimal places.
Input (see p. 197)	Startup Condition	Select whether or not you want to allow the user to input values for devices such as a PLC with a data part and associated

Tab	Field	Description
		keyboard.
	Supported Keyboard	Select the keyboard which will be used for inputting values.
	Input Range	Select the valid range of input values.
	Output Trigger	Sets the time for a trigger signal to an external device.
Reverse/Blink	Normal	Specify how the data part appears "normally", e.g. if it blinks, etc.
	When Condition is True	Specify how the data part appears when a certain condition is true, e.g. if it blinks, etc.  Press [Setup] to choose from among an extensive range of conditions.  The setting for "When Condition is True" takes priority over the setting for "Normal".
Color and Form	Character	Specify the color for the digits.
	Background	Select the color for the background.
	Display Frame	Sets a frame and its color, if desired.
Option	Scaling	When the data format is DEC or HEX, you can set max. and min. limits and scale the data between the PLC and GT.  For example, if you set the max. value for the GT range to 100 and the max. value of the PLC range to 10, the GT values will be scaled, i.e. divided by 10 when entered into the PLC device.  Values beyond the limits will be set to the limit value and then scaled.
	Reference Order	When the data format is ASCII, you can specify how the hexadecimal data is stored.
Operation Security	—	Set the security level to restrict the display and/or operation of the part.

### 5.5.1 Basic Setup for Data Parts

This section explains the basic setup parameters in detail.



#### ◆ NOTE

**What appears on the tab may differ depending on the data format you have selected.**

#### Number of Digits

Specify the number of digits displayed by the data part. Note that the number of digits allowed varies depending on the data format. The valid range of digits is displayed.

#### Data Format

Select the data format.

Data format	Contents	Maximum no. of digits	Display range	No. of words
BCD (4 digits)	Binary coded decimal display	4	0 to 9999	1
BCD (8 digits)	Binary coded decimal display	8	0 to 99999999	2
DEC (1 W)	Decimal display	5	-32768 to +32767	1
DEC (1 W/ unsigned)	Decimal display (unsigned)	5	0 to 63535	1
DEC (2 W)	Decimal display	10	-2147483648 to +2147483647	2
DEC (2 W/ unsigned)	Decimal display (unsigned)	10	0 to 4294967295	2
HEX (1 W)	Hexadecimal display	4	0 to FFFF	1
HEX (2 W)	Hexadecimal display	8	0 to FFFFFFFF	2
BIN	Binary display	16	0 to 1111111111111111	1
ASCII	ASCII code display	20	Based on code content	1 to 10
Float	Floating point display (IEEE754 32-bit)	10	-9999999999 to 9999999999	2
Japanese (Shift JIS)	Katakana and Japanese Kanji display.	10	Based on code content	1

### Fraction

Select whether to round down or round off a fraction.

### Zero Suppression

When this parameter is "On" (default setting), leading zeros will be omitted. When it is "Off", leading zeros will be displayed.

### Reference Device

Select the device whose value should be referenced, e.g. a PLC register. For information on specific reference devices, refer to the manual for the PLC you are using.

You can use an index modifier if you have registered index devices (see p. 56).

### Font and Size

You can select between GTWIN fixed or TrueType fonts and Windows fonts on your system. The relative font size allowed depends on the GT model you are using. You will be prevented from making the font size too large for the screen.

### Display Decimal Places

Select "On" to display digits after the decimal point and specify how many digits after the decimal point you wish to see. Please remember that the digits used for the decimal places will be subtracted from the total number of digits.

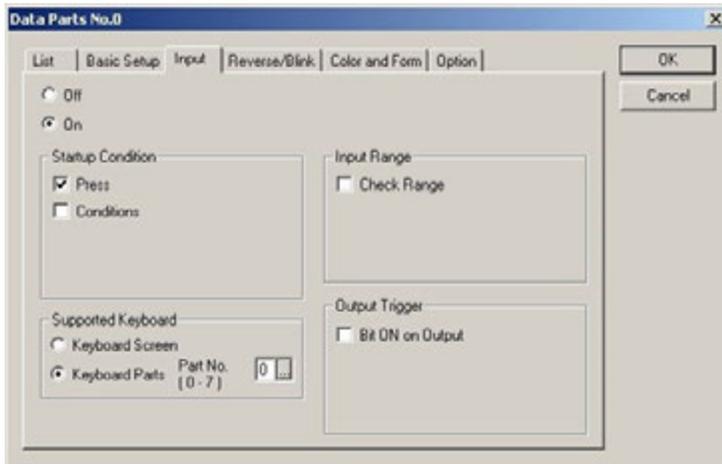


#### ◆ EXAMPLE

Display	Setting
	<ul style="list-style-type: none"> <li>• Number of Digits = 4</li> <li>• Display Decimal Places = On</li> <li>• Decimal Places = 2</li> </ul>

## 5.5.2 Input Settings for Data Parts

This section explains the parameters on the "Input" tab in detail. Select "On" to display the parameters.



#### ◆ NOTE

If you want to allow the user to input values for devices such as a PLC with a data part, the data part must be used in conjunction with a keyboard part (see p. 223) or a keyboard screen (see p. 115).

### Startup Condition

This parameter activates the data part for data input. One or both of the parameters can be selected.

Option	Functionality
Press	Pressing the data part on the base screen activates the data part. Then you can input data via

Option	Functionality
	the keyboard part.
Conditions	Specify the condition and the reference device which have to be met in order for you to be able to input data.

### Supported Keyboard

Data is input using either keyboard parts or keyboard screens. Select one or the other here and enter the necessary settings.

### Input Range

Activate this option if you wish to check whether input values are within the range of maximum and minimum values you set.



#### ◆ NOTE

**If a user inputs values outside the specified range, a beep sound alerts the user, and the input is not accepted.**

### Output Trigger

GTWIN can output a trigger signal for a certain time to an external device connected to the system when the user has finished inputting a value for the data part and presses <Enter>. Specify which device to trigger and for how long.

### Display Asterisk instead of Input No.

If the value to be input with the keyboard is confidential, e.g. a password, use this option to hide the user input by displaying "\*" instead of the actual number.



#### ◆ NOTE

**This option is only available when "Display Decimal Places" is set to off on the "Basic Setup" tab and for the data formats: BCD(4 Digits), BCD(8 Digits), DEC(1 W)Unsigned, DEC(2 W)Unsigned.**

## 5.6 Bar Graph Parts

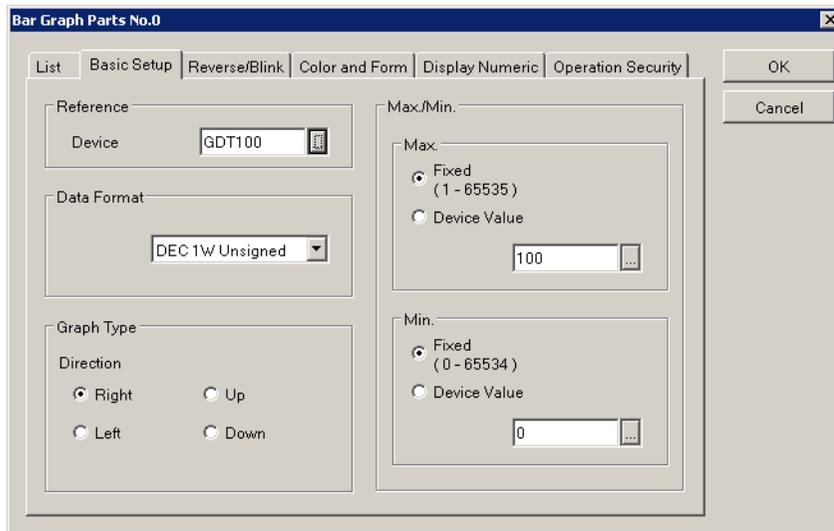
Bar graph parts display values of the PLC device, either vertically or horizontally. The example below shows bar graphs in which the black bar moves from left to right.

You can specify the bar's color and direction as well as choose to display the reference value as a figure or percentage.



Example bar graphs

Double-click the bar graph that has been placed on the base screen to set its attributes.



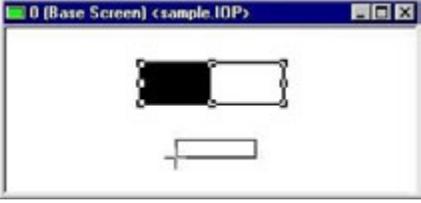
### Configuration parameters



**◆ NOTE**

Which tabs and what appears on them may differ depending on which GT model you have selected.

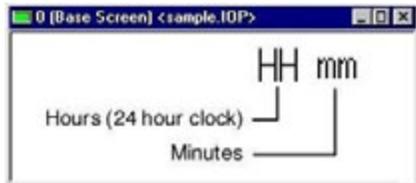
Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.

Tab	Field	Description
Basic Setup	Reference	Sets the PLC device whose value will be displayed as a bar graph.
	Data Format	Sets the data format of the referenced value.
	Graph Type	Sets the direction of the bar graph and whether it displays horizontally or vertically.
	Max./Min.	<b>Fixed.</b> This setting allows you to observe the relationship between the reference device value and fixed values. <b>Device Value.</b> This setting allows you to observe the relationship between the reference device value and another device value.
Reverse/ Blink	Normal, When Condition is True	You can specify how the part appears, e.g. if it blinks, etc., under normal conditions or when a certain condition is true. Press [Setup] to choose from among an extensive range of conditions. The setting for "When Condition is True" takes priority over the setting for "Normal".
Color and Form	Graph Design	Sets the bar and the background color of the bar graph, a tiling pattern and a pattern color, if desired.
	Display Frame	Sets a frame and its color, if desired.
Display Numeric	—	When ON, the percentage of the maximum value is displayed. Select "Display %" to display the percentage sign. (To display the actual value instead of a percentage, use a data part (see p. 194), for example.) You can also define the character size and color. When you close the attributes dialog, GTWIN displays a text frame for the percentage value. Drag the text frame to the desired position. 
Operation Security	—	Set the security level to restrict the display and/or operation of the part.

## 5.7 Clock Parts

Clock parts display the year, month, day, and time. The values are either read from the GT's internal clock (see p. 59) or PLC's internal clock, which you define in the GT Configuration's Setup 1 tab (see p. 32) for most GT models.

There is only one type of clock part registered in the standard parts library. Use a separate clock part for each date and time element you wish to display.



*Base screen with a clock part for hours and a 2nd clock part for minutes*

### Configuration parameters



#### ◆ NOTE

Which tabs and what appears on them may differ depending on which GT model you have selected.

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup	Clock	Time format of the clock: year, month, day, hour, minute, second, etc.
	Zero Suppression	<b>Off:</b> Leading zeros will be displayed. For example, a time of 7am will be displayed as 07. <b>On:</b> Leading zeros will be omitted. For example, the month of July will be displayed as 7, not 07.
	Size	Sets the relative font size.
Reverse/ Blink	Normal, When Condition is True	You can specify how the part appears, e.g. if it blinks, etc., under normal conditions or when a certain condition is true. Press [Setup] to choose from among an extensive range of conditions. The setting for "When Condition is True" takes priority over the setting for "Normal".
Color and Form	Color	Sets the color for the characters and the background.
	Display Frame	Sets a frame and its color, if desired.
Operation Security	—	Set the security level to restrict the display and/or operation of the part.

## 5.8 Alarm List Parts

Alarm list parts are available in three modes:

- "Active List" shows a list of currently active alarms (see p. 206).
- "History (Time Order)" shows a list of alarms in chronological order (see p. 203). The time displayed can either be the time when the alarm was triggered, when it was acknowledged or when it was recovered.
- "History (Frequency Order)" shows a list of alarms in order of frequency (see p. 205).

Alarm0	MM/dd 24:00:00 Trig Alarm0
Alarm1	MM/dd 24:00:00 Trig Alarm1
Alarm2	MM/dd 24:00:00 Trig Alarm2
Alarm3	MM/dd 24:00:00 Trig Alarm3
Alarm4	MM/dd 24:00:00 Trig Alarm4
Alarm5	MM/dd 24:00:00 Trig Alarm5
Alarm6	MM/dd 24:00:00 Trig Alarm6
Alarm7	MM/dd 24:00:00 Trig Alarm7

*Alarm list and alarm history part*

Depending on the mode selected, the setup of the alarm part differs. The alarm history part comes with prepared function switches to scroll through the alarm list and to acknowledge an alarm. Alarm list and history parts can be combined with guidance. Guidance is integrated in the shape of additional texts to inform the user about the nature of the alarm and what needs to be done. The guidance text can be displayed with the help of an additional function switch (see p. 184), which the user needs to configure manually.



### ◆ NOTE

- Alarm list parts are not available for all GT models, e.g. GT01.
- You can only place one alarm list part per screen.
- Alarm data is monitored in 2 groups, which you set up in the GT configuration's alarm history tab (see p. 41).

## 5.8.1 History of Alarms in Time Order

In this operation mode, the alarm part shows a chronological list of alarms.

*Setup of an alarm list part for displaying alarms in chronological order*

### Configuration parameters



#### ◆ NOTE

What appears on the tabs differs depending on which operation mode you have selected on the "Basic Setup" tab.

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup	Operation Mode	<b>Active List</b> (see p. 206) <b>History (Time Order)</b> : displays a chronological list of alarms. <b>History (Frequency Order)</b> (see p. 205)
	Reference	<b>Group No.:</b> alarm data can be monitored in two groups. Use [Config.] to set up the groups in the GT configuration (see p. 21). <b>Alarm Number:</b> specifies the number of alarms to be monitored.
	Display Form	<b>Date:</b> specifies the format for displaying the date. <b>Time:</b> specifies the format for displaying the time.
	Display Event	Specify which alarm event should be displayed. By default, all events are listed. <b>Triggered:</b> time when an alarm is triggered. <b>Acknowledged:</b> time when an alarm is acknowledged, i.e. when the user presses the "Ack" button on the screen.

Tab	Field	Description
		<b>Recovered:</b> time when an alarm is reset.
	Stop Updating	By default, the alarm history is updated continuously. You can set a PLC register to stop the updating when you select "On".
Color and Form	Display Area	<b>Number of Lines:</b> specifies the number of lines (1 to 12) on the base screen to display alarms. The line width automatically adapts to fit the longest list entry.
	Display Frame	Specifies whether the alarm list will be displayed with a frame and what lines will appear as well as the frame color.
	Color & String	Specifies the string and background color as well as the text for each alarm event. If you work with multiple languages (see p. 159), you can enter alarm event texts for all languages used.
Guidance	No	Suppresses the display of the guidance text of the alarm list on the GT screen.
	Display Text	When this is selected, you need to specify the number of lines for the guidance text as well as the string and the background color.
	Display Frame	Sets a frame and its color, if desired.
	Display Area	Specifies the number of lines to display. The line width automatically adapts to fit the longest list entry.
	Change Screen	Change to the screen defined in the Screen No. text box.
	Color	Specifies the color for the guidance text and its background.
Operation Security	—	Set the security level to restrict the display and/or operation of the part.
Element Setup	Language No.	If you work with multiple languages (see p. 159), you can enter alarm texts for all languages used.
	Message	Double-click an alarm message or select [Setup] to enter the text for each alarm condition.
	Guidance	This column is displayed if you have selected "Display Text" on the "Guidance" tab. Enter the guidance text to be displayed when the corresponding function switch is pressed.

## 5.8.2 History of Alarms in Order of Frequency

In this operation mode, the alarm part shows a list of alarms in the order of frequency.

*Setup of an alarm list part for displaying alarms in order of frequency*

### Configuration parameters



#### ◆ NOTE

What appears on the tabs differs depending on which operation mode you have selected on the "Basic Setup" tab.

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup	Operation Mode	<b>Active List</b> (see p. 206) <b>History (Time Order)</b> (see p. 203) <b>History (Frequency Order)</b> : displays a list of alarms in order of frequency.
	Reference	<b>Group No.:</b> alarm data can be monitored in two groups. Use [Config.] to set up the groups in the GT configuration (see p. 21). <b>Alarm Number:</b> specifies the number of alarms to be monitored.
	Display Form	Specify the display order, either the message first and then the number of occurrences or vice versa.
Color and Form	Display Area	<b>Number of Lines:</b> specifies the number of lines (1 to 12) on the base screen to display alarms. The line width automatically adapts to fit the longest list entry.
	Display Frame	Specifies whether the alarm list will be displayed with a frame and what lines will appear as well as the frame color.
	Color	Specifies the color for the alarm string and the background for the table.

Tab	Field	Description
Operation Security	—	Set the security level to restrict the display and/or operation of the part.
Guidance	No	Specifies whether the guidance text of the alarm list is displayed on the GT screen.
	Display Text	When this is selected, you need to specify the number of lines for the guidance text as well as the string and the background color.
	Display Frame	Sets a frame and its color, if desired.
	Display Area	Specifies the number of lines to display. The line width automatically adapts to fit the longest list entry.
	Change Screen	Change to the screen defined in the Screen No. text box.
	Color	Specifies the color for the guidance text and its background.
Element Setup	Language No.	If you work with multiple languages (see p. 159), you can enter alarm texts for all languages used.
	Message	Double-click an alarm message or select [Setup] to enter the text for each alarm condition.
	Guidance	This column is displayed if you have selected "Display Text" on the "Guidance" tab. Enter the guidance text to be displayed when the corresponding function switch is pressed.

### 5.8.3 List of Active Alarms

In this operation mode, the alarm part shows a list of all currently active alarms.

#### Configuration parameters



#### ◆ NOTE

**What appears on the tabs differs depending on which operation mode you have selected on the "Basic Setup" tab.**

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup	Operation Mode	<b>Active List:</b> displays a list of active alarms. <b>History (Time Order)</b> (see p. 203) <b>History (Frequency Order)</b> (see p. 205)
	Monitoring	<b>Start Device:</b> address of the first word of the memory area assigned to the alarms. The total size of the memory area depends on the number of alarms set below (minimum 1 word). <b>Alarm Number:</b> specifies the number of alarms to be monitored. <b>Alarm Status:</b> sets which status of the start device will trigger the alarm.
Color and Form	Display Area	<b>Number of Lines:</b> specifies the number of lines (1 to 12) on the base screen to display alarms. The line width automatically adapts to fit the longest list entry.

Tab	Field	Description
	Display Frame	Specifies whether the alarm list will be displayed with a frame and what lines will appear as well as the frame color.
	Color	Specifies the color for the alarm message and its background.
Operation Security	—	Set the security level to restrict the display and/or operation of the part.
Guidance	No	Specifies whether the guidance text of the alarm list is displayed on the GT screen.
	Display Text	When this is selected, you need to specify the number of lines for the guidance text as well as the string and the background color.
	Display Area	Specifies the number of lines to display. The line width automatically adapts to fit the longest list entry.
	Display Frame	Sets a frame and its color, if desired.
	Change Screen	Change to the screen defined in the Screen No. text box.
	Color	Specifies the color for the guidance text and its background.
Element Setup	Language No.	If you work with multiple languages (see p. 159), you can enter alarm texts for all languages used.
	Message	Double-click an alarm message or select [Setup] to enter the text for each alarm condition.
	Guidance	This column is displayed if you have selected "Display Text" on the "Guidance" tab. Enter the guidance text to be displayed when the corresponding function switch is pressed.

## 5.9 Line Graph Parts

Line graph parts are available in two drawing modes (see p. 212):

- Sampling mode (also called history mode) (see p. 215), which shows the trend of one or more PLC addresses every  $n^{\text{th}}$  second or when triggered
- Block mode (see p. 217), which shows several PLC address values or logging data in one graph when triggered to visualize the relationship between the addresses



### ◆ NOTE

- How lines graphs are created is set up in the GT configuration (see p. 21).
- The line graph data stored in the GT's internal memory can be converted to CSV data with a supplementary tool.

### 5.9.1 Configuration Parameters

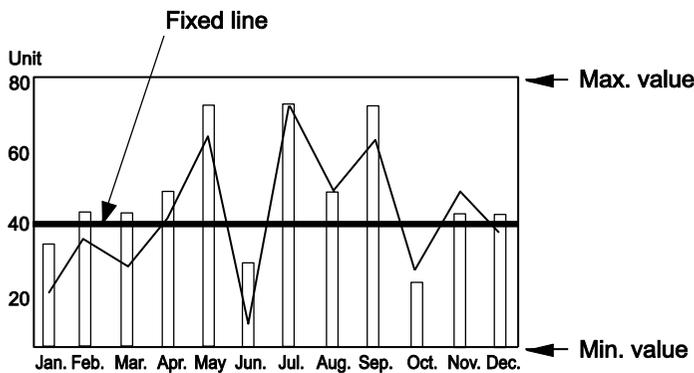
The parameters on the tabs change depending on the following settings on the "Basic Setup" tab:

- "Method to Draw" (block or sampling)
- "Bar Graph" (only visible when "Method to Draw" = "Block")
- "Reference Data" (only visible when "Method to Draw" = "Block")

#### Configuration parameters that are available regardless of settings

Tab	Field	Description
List	Name	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Basic Setup	Method to Draw	Sampling (see p. 215)
	Method to Draw	Block (see p. 217)
Display	Display Data	The options available differ depending on the setting of "Bar Graph" (see "Display Data" Options on "Display" Tab" on p. 209)
	Background Color	Select the background color of the line graph.
	Display Frame	Specifies whether a frame should be displayed. If yes: <ul style="list-style-type: none"> <li>• <b>Whole:</b> the frame will surround the line graph completely.</li> <li>• <b>X-/Y-axis:</b> the "frame" will consist of an x-axis and a y-axis.</li> </ul>
	Scale	Specify whether calibration markings in the shape of horizontal and vertical lines forming a grid are displayed in the line graph. Select the number of "rows" and "columns" created by the lines and the line color.
Operation Security	—	Set the security level to restrict the display and/or operation of the part.
Element Setup (select [Setup] to	Line Settings	The options available differ depending on the setting of "Bar Graph" and "Reference Data" on the "Basic Setup" tab: <ul style="list-style-type: none"> <li>• Reference Data = Device (see p. 210)</li> <li>• Reference Data = SD Card (see p. 211)</li> </ul>

Tab	Field	Description
display the setting options)	Reverse/Blink	You can specify how the part appears, e.g. if it blinks, etc., under normal conditions or when a certain condition is true.  Press [Setup] to choose from among an extensive range of conditions.  The setting for "When Condition is True" takes priority over the setting for "Normal".
	Color and Form	<b>Line Type/Color/Mark.</b> Specify the thickness and the color of the line as well as a distinguishing mark, if necessary.
Display Fixed Line  (select [Setup] to display the setting options)	Comment	Add a comment here if desired.
	Data Format	Select the same data format as the one specified under "Line Settings".
	Max./Min.	Set the maximum/minimum value for the fixed line.
	Value (Position)	Set the position of the fixed line in the graph. The value has to be within the range specified by "Max./Min.".
	Line Type/Color	Specify the thickness and the color of the line.

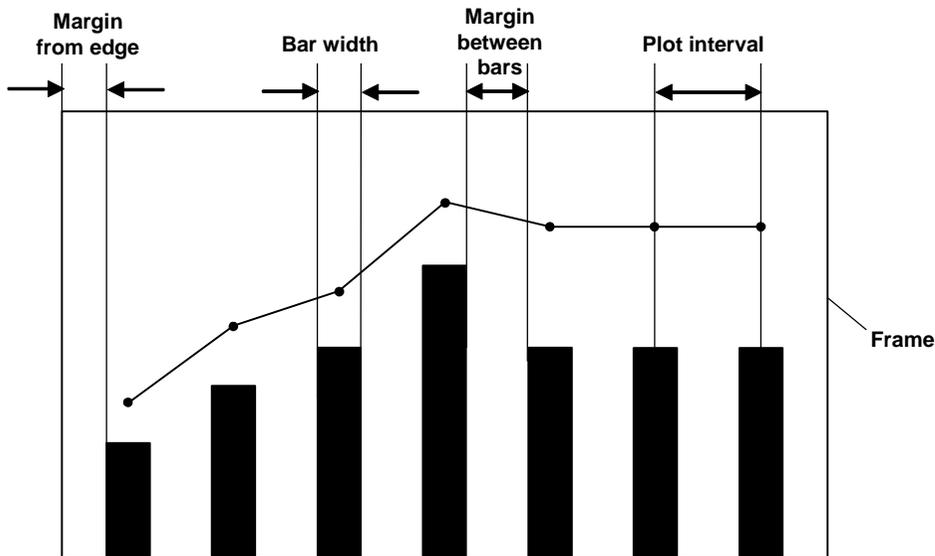


Display fixed line in a line graph part

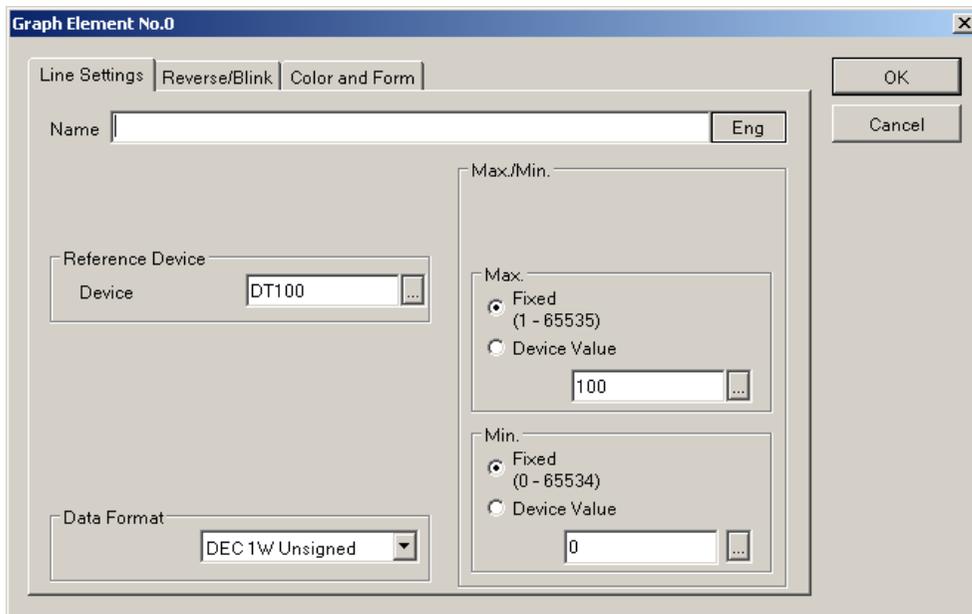
### 5.9.1.1 "Display Data" Options on "Display" Tab

When "Bar Graph" = "Yes" on the "Basic Setup" tab		When "Bar Graph" = "No" on the "Basic Setup" tab
Bar Width	Specify width of the bars (see below).	—
Margin between Bars	Specify the distance between the individual bars.	—
Margin from Edge	Specify the distance from the line graph frame	—
Plot Interval	Read-only field. Value is set automatically by the system	Specify the distance between each plot displayed in the line graph.

**Display data options**



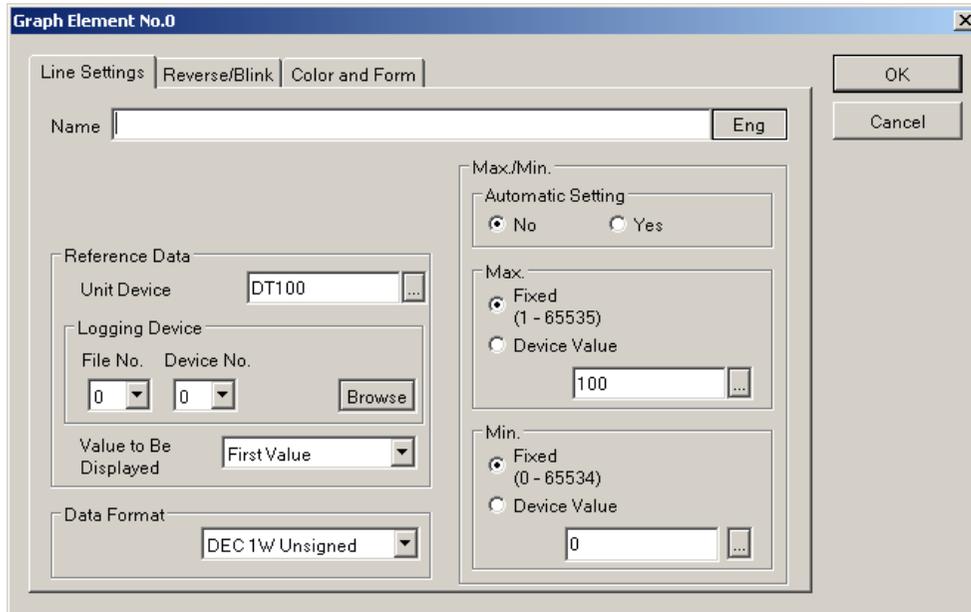
**5.9.1.2 "Line Settings" Tab When "Reference Data" = "Device" (Basic Setup)**



Field	Description
Graph Type (only visible when "Bar Graph" = "Yes" on the "Basic Setup" tab)	Specify whether the selected line should be displayed as a line or a bar graph.
Reference Device	Define the PLC device supplying the data to display in the graph.
Data Format	Specify the format of the data to be displayed.
Max./Min.	These values determine the bottom and top values of the line graph part.

- **Fixed:** Enter a numerical value in the range displayed in the brackets. The range changes depending on the data format you have selected.
- **Device Value:** Define the PLC device supplying the maximum/minimum value.

### 5.9.1.3 "Line Settings" Tab When "Reference Data" = "SD Card (Logging Data)" (Basic Setup)



Field	Description
Unit Device	Specify the register containing the start date for displaying the logging data. <b>Note:</b> We recommend creating a keyboard and a data part to enter the start date on the screen.
Logging Device	<ul style="list-style-type: none"> <li>• <b>File No.:</b> Specify the number of the logging file (see p. 169).</li> <li>• <b>Device No.:</b> Specify the logging device (see p. 173).</li> </ul>
Value to Be Displayed	Specify which value to display with the line graph. <b>See example following this table.</b> <ul style="list-style-type: none"> <li>• <b>First value:</b> Displays the first value only for the unit selected.</li> <li>• <b>Total value:</b> Displays the total values for the units that comprise the unit selected. For example, when "Unit" = "1 Year (Month unit)", the graph displays the total of the data for each month.</li> <li>• <b>Mean value:</b> Displays the mean values for the units that comprise the unit selected.</li> <li>• <b>Accumulated value:</b> The total value of the first time unit (month, day, or hour) is added to the total value of the second time unit. This is the first accumulated value. To this accumulated value, the total of the next time unit is added and so forth until the total of the last time unit has been added.</li> </ul>
Data Format	Specify the format of the data to be displayed.
Max./Min.	These values determine the bottom and top values of the line graph part. <ul style="list-style-type: none"> <li>• <b>Automatic:</b> The system retrieves the maximum and minimum values from the logging</li> </ul>

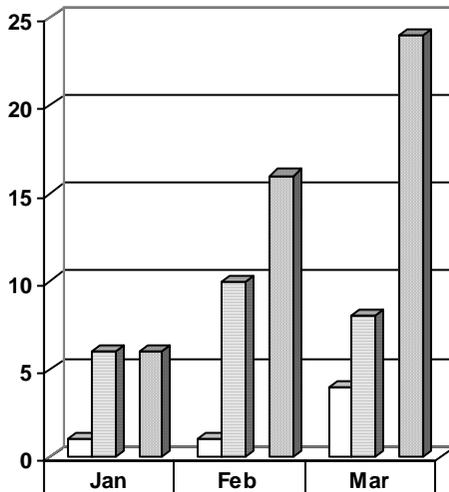
Field	Description
	data. You can select whether or not to output the maximum value to a PLC register. <ul style="list-style-type: none"> <li>• <b>Fixed:</b> Enter a numerical value in the range displayed in the brackets. The range changes depending on the data format you have selected.</li> <li>• <b>Device Value:</b> Define the PLC device supplying the maximum/minimum value.</li> </ul>



**◆ EXAMPLE**

This example illustrates the value displayed depending on the option selected. The unit selected is "Year".

Logging data		
Jan	Feb	Mar
1	1	4
2	2	2
2	4	1
1	3	1



<input type="checkbox"/> First	1	1	4
<input type="checkbox"/> Total	6	10	8
<input type="checkbox"/> Mean	1.5	2.5	2.0
<input type="checkbox"/> Accumulated	6	16	24

**5.9.2 Comparing Line Graph Modes**

This section should give you an idea of the difference between sampling mode and block mode.

The first table below provides the settings for a graph line part. In sampling mode, the part contains 5 lines, i.e. 1 line for each device value over time. In block mode, the part contains 1 line that compares 5 device values at a given time.

The second table provides the actual values of the DT registers over time. Following the tables are illustrations of what would appear on your GT screen, first in sampling mode, then in block mode.

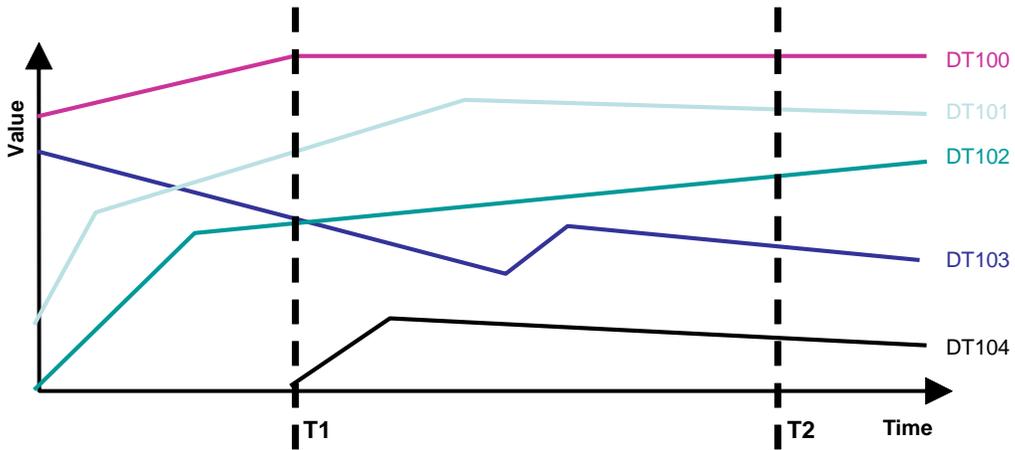
Depending on the mode selected, the setup of the line graph part differs.

### Settings for line 0

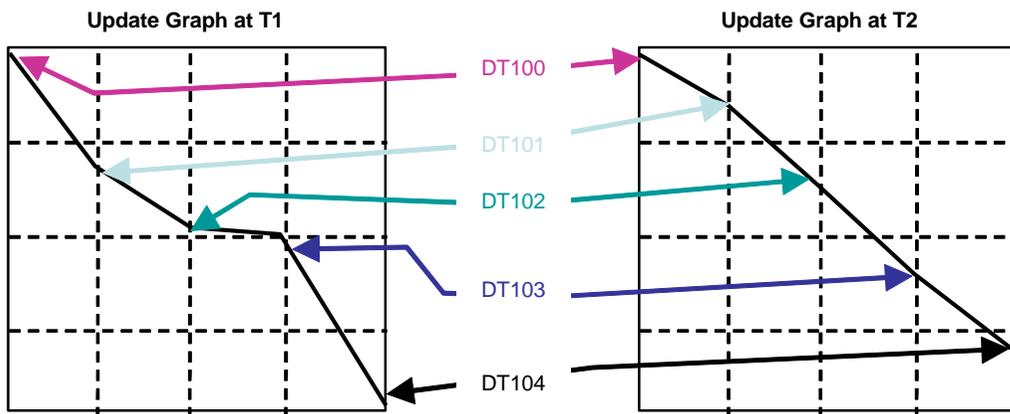
Option name	Setting	Option location, Comment
Number of Lines in sampling mode	5	Attributes dialog, "Basic Setup" tab, Reference Specifies how many lines the graph will contain.
Number of Lines in block mode	1	Attributes dialog, "Basic Setup" tab, No. of Lines Specifies how many lines the graph will contain.
Reference Device	DT100	GT Configuration, Line Graph tab, [Settings], Sampling, Start Device: DT100.  The reference device is the address sampled for the first line. Successive lines result from successive addresses being sampled.
Sampling Trigger in sampling mode	GT Timer, Sampling Interval: 10s	GT Configuration, Line Graph tab, [Settings], Sampling Trigger: GT Timer, Sampling Interval: 10s.
Update Device in block mode	R100	Attributes dialog, "Basic Setup" tab, Update Device.  When R100 is ON, the values of DT100 - DT104 are read.
Number of divisions	4 horizontal 4 vertical	Attributes dialog, "Display" tab, Scale, Horizontal/Vertical Line, Number of Divisions: 4
Line graph control device (see p. 48)	WGR10	GT Configuration, Line Graph tab, Line Graph Control

### DT register values over time

Time (s)	DT100	DT101	DT102	DT103	DT104
0	32	8	0	28	0
10	36	23	15	24	0
20 (T1)	40	28	20	20	0
30	40	35	22	15	8
40	40	34	24	19	7
50 (T2)	40	33	26	18	6
60	40	32	28	17	5



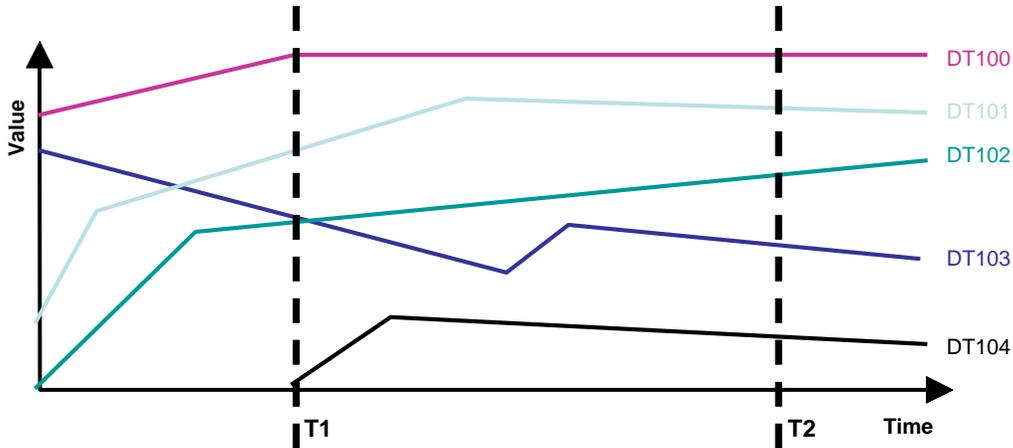
Line graph part in sampling mode with two trigger times



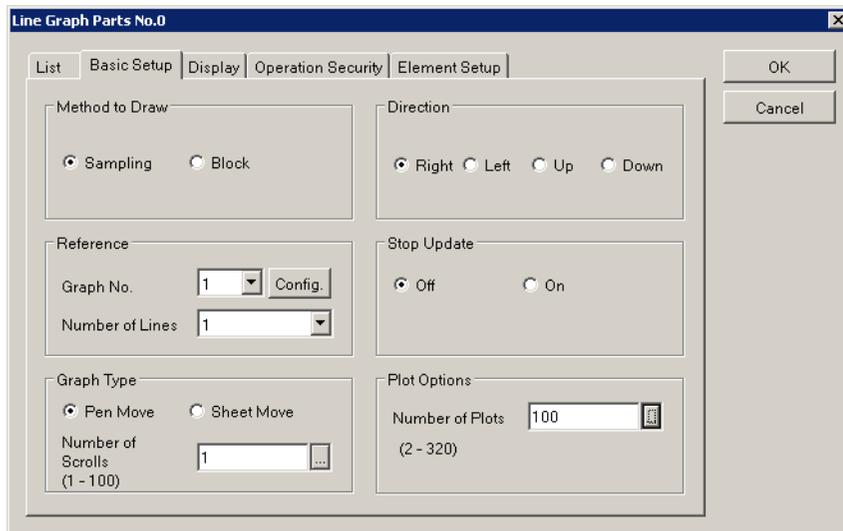
Line graph part in block mode at two different trigger times

### 5.9.3 Basic Setup in Sampling Mode

In sampling mode, the line graph part shows the trend of one or more PLC addresses every  $n^{\text{th}}$  second or when triggered.



Example of a line graph containing 5 lines in sampling mode



Basic Setup tab with default settings when "Method to Draw" is "Sampling"

#### Basic Setup configuration parameters for sampling mode

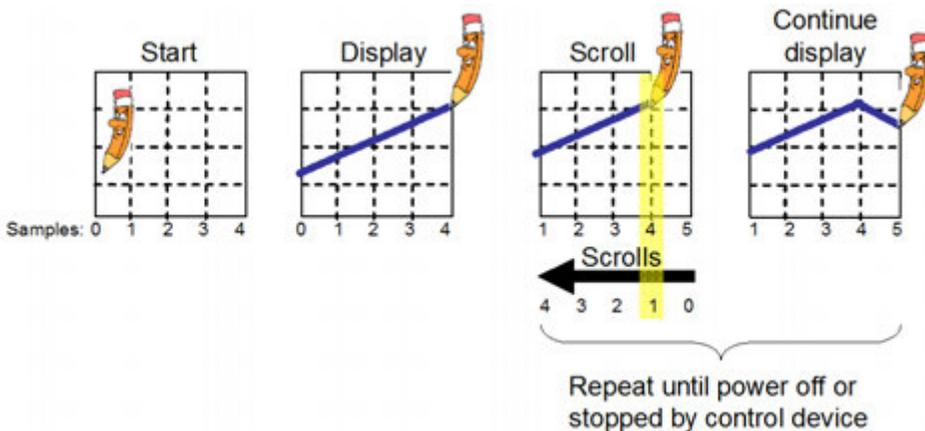
Field	Description
Method to Draw	Sampling
Reference	<b>Graph No.:</b> up to 5 graph nos. can be defined in the GT configuration (see p. 21). Select [Config.] to call up GT configuration. <b>Number of Lines:</b> specifies the number of lines displayed in the line graph.
Graph Type	<b>Pen Move.</b> The number of lines specified are drawn in the direction specified until the display area is full. Then the graph is shifted as specified in "Number of Scrolls" (see figure below).

Field	Description
	<p><b>Sheet Move.</b> The number of lines specified are drawn continuously in the direction specified.</p> <p><b>Number of Scrolls.</b> Specify how far to scroll ahead when the display area is full (see figure below).</p>
Direction	Specify which direction to draw the line graph.
Stop Update	By default, line graph data is sampled continuously. You can set a PLC register to stop updating the line graph by selecting "On".
Number of Plots	In sampling mode, a "plot" occurs for each sampling interval. For example, if the "Number of Plots" = 20, an address is sampled 20 times, scrolling across the screen in 20 steps before disappearing off the edge.

**Pen Move**

When the line graph fills the complete display area, the graph is shifted by the amount specified in "Number of Scrolls". For example, with the following settings the line graph would be displayed as shown below.

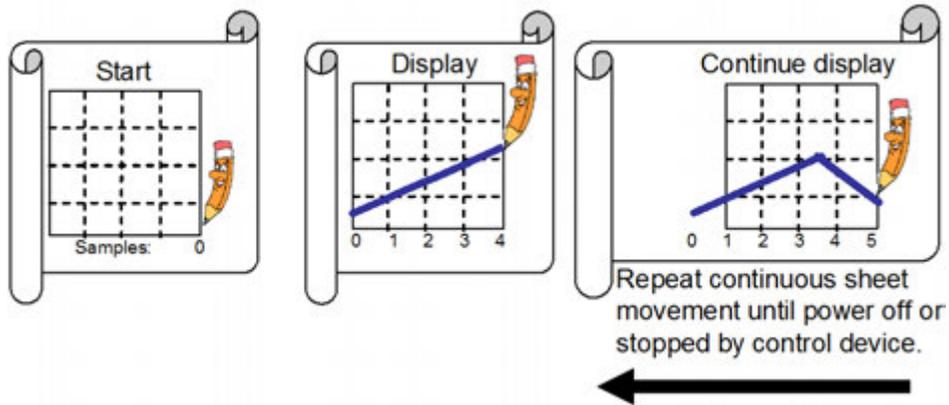
Number of Scrolls	1
Direction	Right
Number of Plots	5



**Sheet Move**

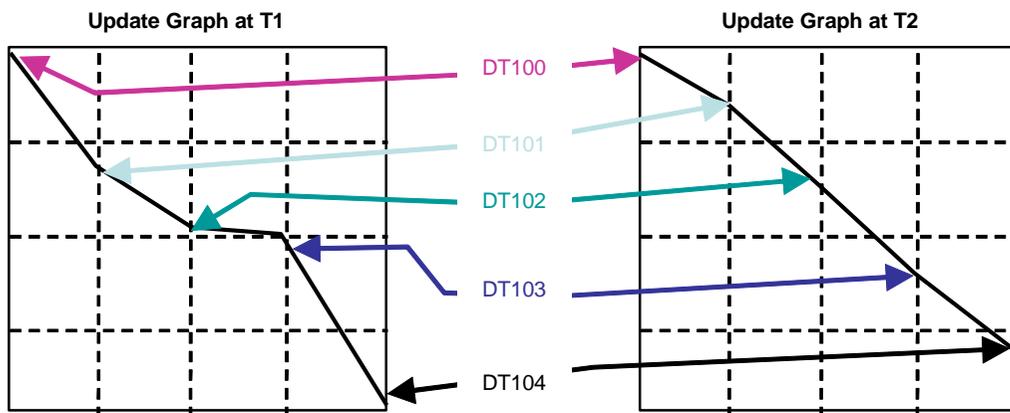
The number of lines specified are drawn continuously in the direction specified. This function can be compared to a printer using continuous paper - the print head always stays in the same position while the paper moves forward. For example, with the following settings the line graph would be displayed as shown below.

Direction	Left
Number of Plots	5

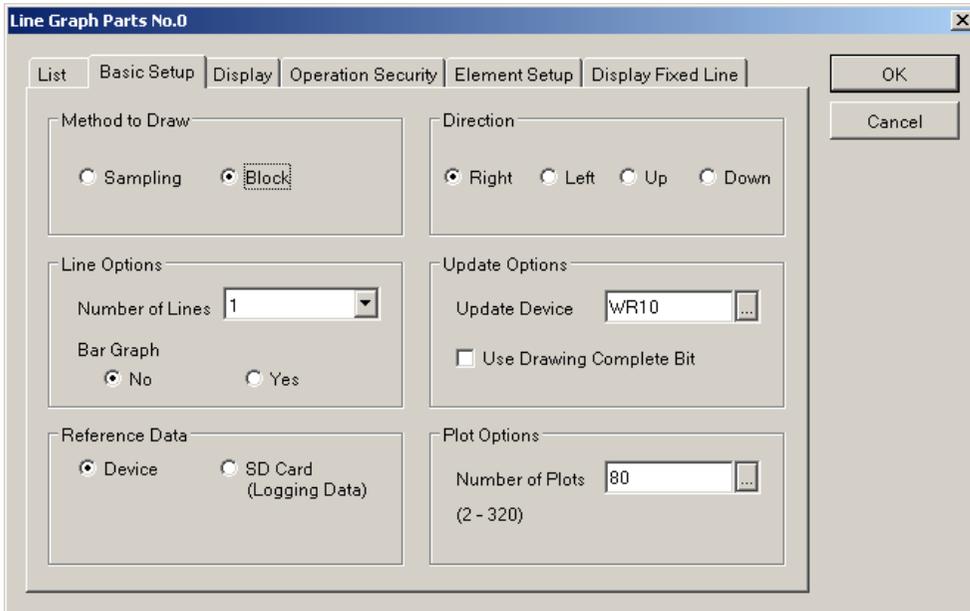


### 5.9.4 Basic Setup in Block Mode

In block mode, the line graph shows the value of one or more PLC addresses when triggered.



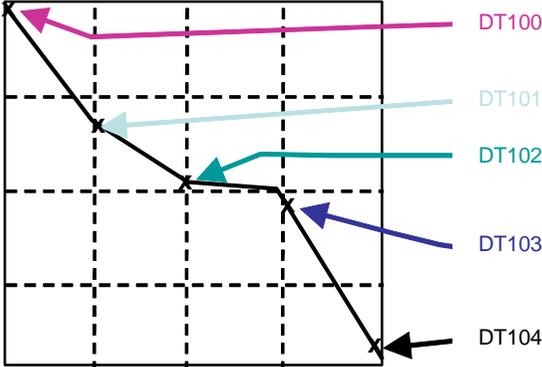
Line graph containing 1 line in block mode comparing 5 device values at two different trigger times



Basic Setup tab with default values when "Method to Draw" is "Block"

**Basic Setup configuration parameters for block mode**

Field	Description
Method to Draw	Block
Number of Lines	Specifies the number of lines. <b>Note:</b> In the element setup tab, you still have to define a reference device (starting address) for each line.
Bar Graph	Select whether to display one or more lines as bar graphs (minimum: 1 line).
Reference Data	Specify whether to display data from a device or logging data from an SD card (see p. 208). <ul style="list-style-type: none"> <li>When you select "Device", specify the "Reference Device" on the line settings tab (see p. 210).</li> <li>When you select "SD Card", the field "Unit" appears (see p. 211). Specify the time unit for the logging data.</li> </ul>
Unit (only visible when you activate "SD Card (Logging Data)" <b>Note:</b> see explanation following table.	<ul style="list-style-type: none"> <li><b>1 Year (Month unit):</b> Displays the data for 12 months by month in 12 plots. The graph starts with January.</li> <li><b>1 Month (Day unit):</b> Displays the data for 31 days by day in 31 plots.</li> <li><b>1 Day (Hour unit):</b> Displays the data for 24 hours by hour in 24 plots.</li> <li><b>Number of Plots:</b> Specify the desired number of plots on the right side under "Number of Plots". You can, for example, display the data for 1 hour beginning with the first value of the hour and continuing until the number of plots has been reached. No mathematical calculation can be performed on the data, i.e. no mean, total or accumulated value.</li> </ul>
Direction	Specify in which direction the reference devices sampled are displayed.
Update Device	Specify the device used to trigger updating the line. Subsequent devices trigger subsequent lines (see "Update Device" at the end of this section).
Use Drawing Complete Bit	Sets a bit when the graph has been updated (see "Update Device" at the end of this section).

Field	Description
Number of Plots	<p>In block mode, the number of plots = number of reference devices sampled and displayed simultaneously on the line. If the number of plots is greater than the number of devices sampled, the extra plots will be displayed as 0. The max. value will be displayed for all reference device values that exceed the max. value specified in the element setup tab.</p> <p><b>Tip:</b> Under "Element Setup → [Setup] → Color and Form", specify a "mark" to clearly identify each reference device sampled.</p> 



**EXPLANATION**

Data parts in combination with a keyboard part are used to enter **2 digits** for the reference device for the year, month, day and hour. In the following table for the line graph part under Element Setup, GDT100 is specified as the unit device.

Reference data for SD card, Unit	Data part reference device, example	Description
1 Year (Month unit)	GDT100:09	Data is sorted and read by the month.
1 Month (Day unit)	GDT100:09 GDT101:10	Data is sorted and read by the day. You need 1 data part for GDT100 (the year 2009) and 1 data part for GT101 (the month October).
1 Day (Hour unit)	GDT100:09 GDT101:10 GDT102:11	Data is sorted and read by the hour. You need 1 data part for GDT100 (the year 2009), 1 data part for GT101 (the month October), and 1 data part for GDT102 (the day 11th).
Number of plots	GDT100:09 GDT101:10 GDT102:11 GDT103:12	Data is sorted and read by the minute. You need 1 data part for GDT100 (the year 2009), 1 data part for GT101 (the month October), 1 data part for GDT102 (the day 11th), and 1 data part for GDT103 (the hour 12:00).

**Update Device**

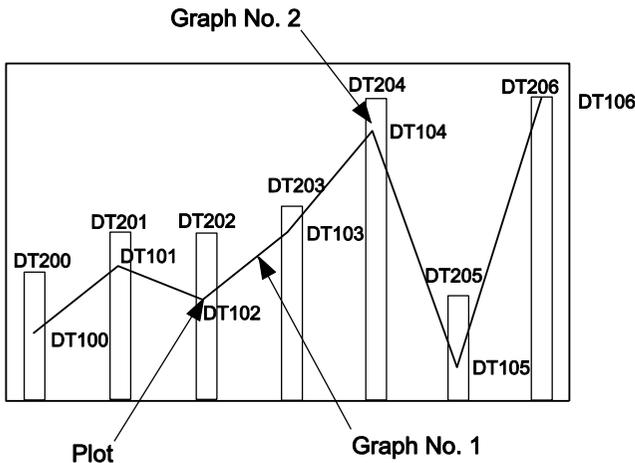
The bit assignments for updating up to 8 lines are as follows:

Address	Bit F	Bit E	Bit D	Bit C	Bit B	Bit A	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
□	Line No. 7 Drawing complete	Line No. 6 Drawing complete	Line No. 5 Drawing complete	Line No. 4 Drawing complete	Line No. 3 Drawing complete	Line No. 2 Drawing complete	Line No. 1 Drawing complete	Line No. 0 Drawing complete	Line No. 7 Update	Line No. 6 Update	Line No. 5 Update	Line No. 4 Update	Line No. 3 Update	Line No. 2 Update	Line No. 1 Update	Line No. 0 Update

For example, if WR10 is the "Update Device", then R100 triggers the update of line no. 0 and R101 triggers the update of line no. 1. When "Use Drawing Complete Bit" is activated, R108 indicates when the drawing of line 0 is complete.

**5.9.5 Line Graphs Combined with Bar Graphs**

It is possible to display one or more lines within a line graph part as bar graphs.



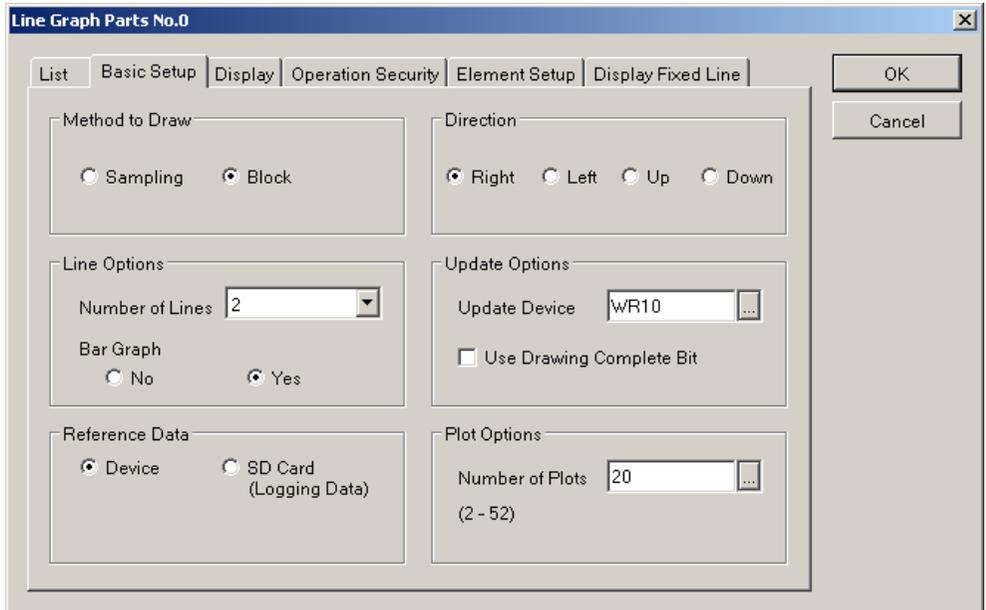
To set up a line graph object with one or more line graphs and bar graphs, please proceed as follows:



**PROCEDURE**

1. Create a line graph part

2. On the "Basic Setup" tab, make the settings as shown below



If you select "SD Card (Logging Data)" as the reference data, you need to configure the time unit, too (see p. 217). You can set the number of plots within the range displayed in the brackets underneath.

3. Select the "Element Setup" tab

The selected number of lines is listed.

4. Double-click the first line or select the line and then [Setup]

5. On the "Line Settings" tab, set the graph type

At least one line from the total number of lines needs to be set to "Bar Graph", if the option "Bar Graph" on the "Basic Setup" tab has been set to "Yes".

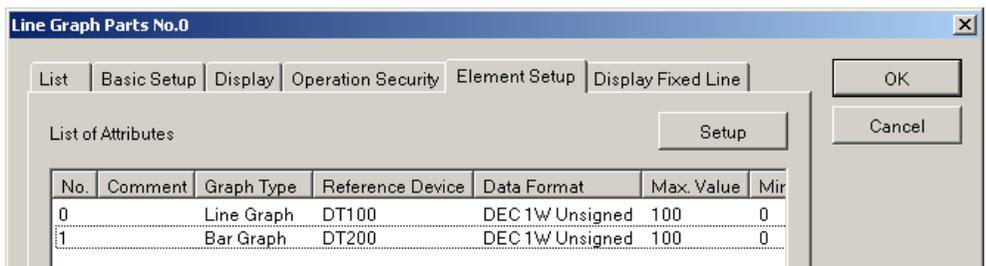
6. Set the reference device and the data format

7. Set the maximum and minimum values

8. Select [OK]

9. Set the other line accordingly

When you have set up both lines, the list will look similar to this.



If you forget to set at least one line to graph type "Bar graph", you will receive an error message saying that you need to set up a bar graph.

## 5.10 Keyboard Parts

Keyboard parts are used to enter values, for example when the values of PLC devices displayed by data parts need to be changed.

You can find keyboard parts in the standard parts library, part type: keyboard. Drag and drop the keyboard part onto the base screen or keyboard screen as with any other part.

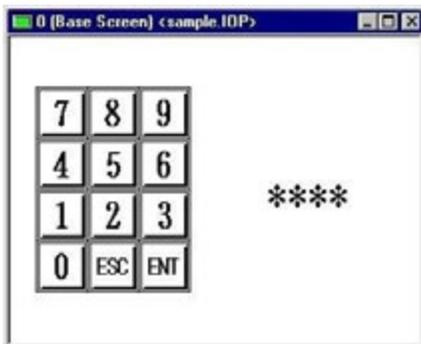
Double-click on the keyboard part to configure the settings for:

- List. As with all other parts, enter a meaningful name for the keyboard part if desired.
- Basic setup (see p. 224)
- Operation setup (see p. 226)
- Color and form. Here you define the appearance of the keys and characters.
- Operation security. Set the security level to restrict the display and/or operation of the part.



### ◆ NOTE

- **Keyboard parts must be used together with data parts (see p. 194).**
- **Keyboard parts can be hidden (see p. 226) during base screen design to give you a better overview.**



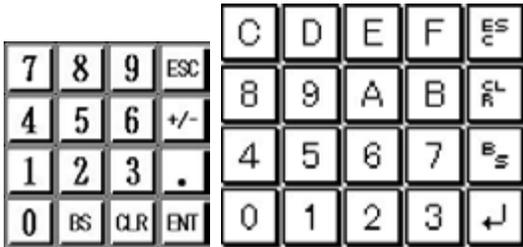
*Sample base screen with keyboard and data part*

There are two ways to use keyboard parts:

- You can use a keyboard part on the same base screen as the data part (see p. 194) displaying the value to be changed.
- You can create a particular keyboard screen containing the desired keyboard part. Switch to the keyboard screen from the base screen by touching the data part on the base screen. The corresponding data part must be located on both the base and keyboard screen. Enter the values on the keyboard part. When you press "ENT" on the keyboard, you will automatically jump back to the base screen. This is handy if you do not wish to clutter your base screen with a keyboard (see "Example Recipe" on p. 142).

In addition, you can set up a keyboard part so that it is hidden and will only be displayed when data needs to be entered.

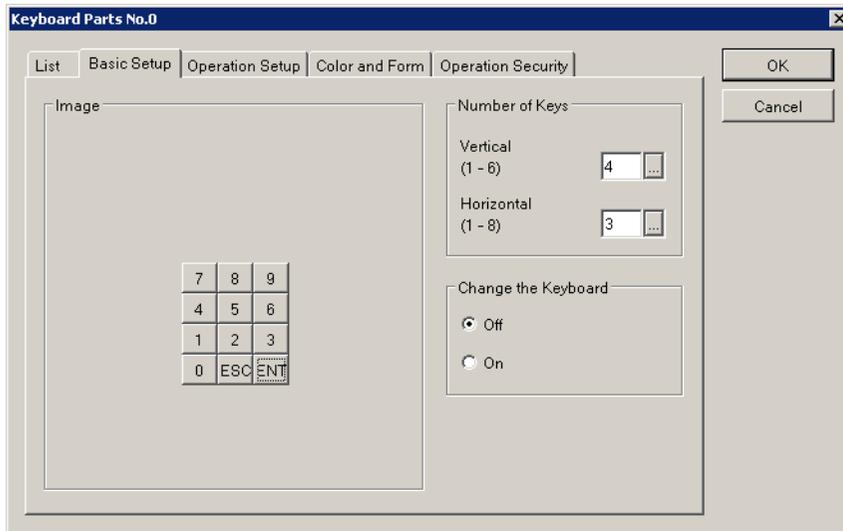
There are different types and shapes of keyboards available for the different GT models. Consider the format of the values to be input when setting up a keyboard.



Example keyboards for decimal and hexadecimal input

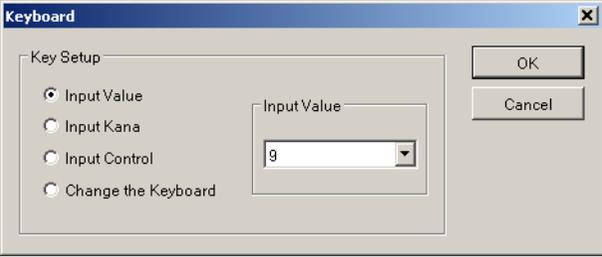
### 5.10.1 Basic Setup for Keyboard Parts

You can use any of the standard keyboards from the library as they are or modify them to suit your requirements.



"Basic Setup" tab of a standard keyboard part

Field	Description
Image	<b>Replacement No.:</b> appears if you have selected "On" for "Change the Keyboard" (see below). Click on each key of the keyboard displayed to call up the keyboard dialog to configure the key.

Field	Description
	 <p><b>Key Setup:</b></p> <ul style="list-style-type: none"> <li>• <b>Input Value:</b> specify value for the key.</li> <li>• <b>Input Kana:</b> you can enter 1:1 size Katakana characters. Katakana input is valid if you specified "ASCII" or "Japanese (Shift JIS)" for the data format for the data part.</li> <li>• <b>Input Control:</b> specify control command for the key, e.g. clear, backspace, +/-, etc.</li> <li>• <b>Change the Keyboard:</b> Specify whether to change to the "previous screen", i.e. previous keyboard, or the "next screen", i.e. next keyboard. See also the field "Change the Keyboard" below.</li> </ul>
Number of Keys	Specify the number of vertical columns and horizontal rows for the keyboard.
Change the Keyboard	Turn "On" to design numerous "replacement" keyboards for one screen. You can maneuver between keyboards by defining the key to "change the keyboard" (see "Key setup" under the "Image" field above.)

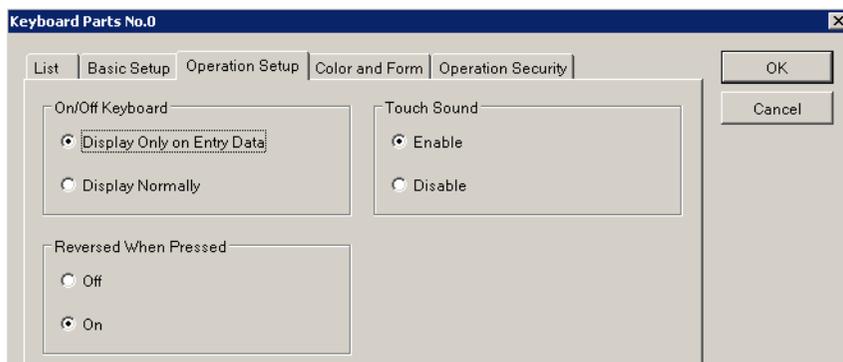
### Using Japanese, Chinese, or Korean characters

The following GT models support the display of Japanese (Hiragana, Katakana and Kanji (Chinese) characters), Chinese, and Korean for data parts. The input of one-byte Kana is available with the Kana keyboard when you open the parts library "KANAKEY.SPL" via **Parts** → **Open Parts Library**.

Usable GT	
GT05	Ver1.40 or later
GT12	Ver1.10 or later
GT32	Ver1.50 or later
All GT versions released in 2010 and after.	

### 5.10.2 Operation Setup for Keyboard Parts

Specify how keyboard parts will be displayed and how the keys will behave on the GT screen.



Field	Description
On/Off Keyboard	This field only applies to keyboards placed on base screens, NOT keyboard screens. You can specify to have the keyboard part display: <ul style="list-style-type: none"> <li>• upon data entry, i.e. it will appear when you press the corresponding data part on the GT screen.</li> <li>• normally, i.e. all the time.</li> </ul>
Reversed When Pressed	Select whether the image "reverses" when the switch is pressed. The dark areas will become light, and the light areas dark.
Touch Sound	Enable or disable sound when a key is pushed.

### 5.10.3 Displaying and Hiding Keyboard Parts

Keyboard parts tend to be large and can occupy a big portion of the setup screen, making it difficult to create and position other parts. To make screen creation easier, you can hide keyboard parts so that only a dotted line indicates its presence and position.

*Base screen with keyboard displayed and keyboard hidden*

To display and hide keyboard parts during screen creation, you need to set the option "Keyboard Parts" on the register tab "Screen" in the GTWIN configuration (see p. 19).

Use the icon  in the toolbar to display/hide the keyboard part or select "Display Keyboard Parts" and the appropriate submenu command from the pop-up menu.

## 5.11 Custom Parts

Custom parts are blank parts for which you can draw (see p. 129) your own design or overlay a bitmap. From the standard parts library (Part type: Custom), simply drag and drop the type of custom part you need onto your base screen.



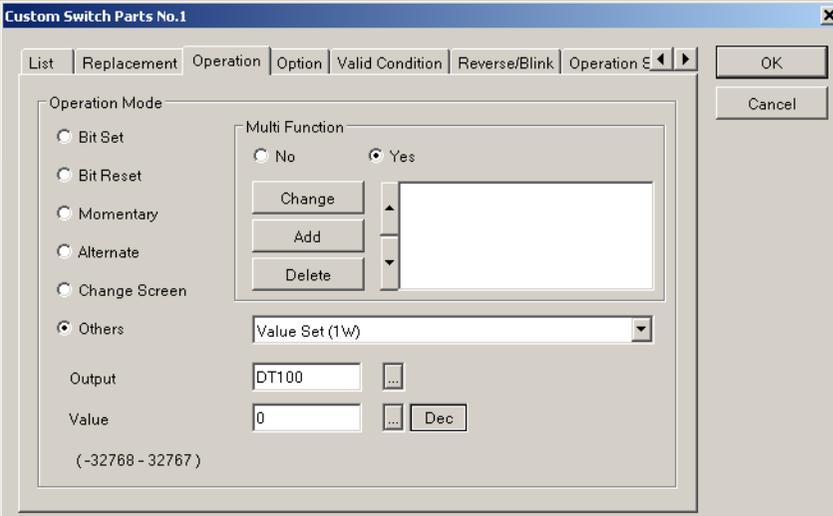
Three types of custom parts are available from the standard parts library:

- Custom switch part (see p. 227), which encompasses much of the functionality of standard switch and function switch parts.
- Custom lamp part (see p. 228)
- Custom message part (see p. 228)

### 5.11.1 Custom Switch Parts

Custom switch parts encompass much of the functionality of normal switch parts (see p. 182) and function switch parts (see p. 184). However, because the configuration tabs for custom parts differ slightly from standard parts, the table will help you find your way quickly.

Tab	Description
List	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Replacement	Use the replacement tab (see p. 230) to configure how the custom part's appearance changes.

Tab	Description
Operation	 <p>Refer to function switch part (see p. 184), Basic Setup tab</p>
Option	<ul style="list-style-type: none"> <li>• <b>SW Sound:</b> Select whether a sound is produced when a switch part is pressed.</li> <li>• <b>Reversed When Pressed:</b> Select whether the image "reverses" when the switch is pressed. The dark areas will become light, and the light areas dark.</li> </ul>
Display/Hide	Switch part (see p. 182), Display/Hide tab.
Valid Condition	Switch part (see p. 182), Valid Condition tab.
Reverse/Blink	<p>The reverse/blink tab only applies to character strings (see p. 98) that you have drawn on the custom switch.</p> <p>You can specify how the part appears, e.g. if it blinks, etc., under normal conditions or when a certain condition is true.</p> <p>Press [Setup] to choose from among an extensive range of conditions.</p> <p>The setting for "When Condition is True" takes priority over the setting for "Normal".</p>
Operation Security	Set the security level to restrict the display and/or operation of the part.
Element Setup	Visible if on the Replacement tab, the check box "Change Attribute Every Screen" has been activated. Pressing [Setup] calls up the same tabs described above in this table and allows you to configure the custom part's behavior for each reference device.

### 5.11.2 Custom Lamp and Custom Message Parts

Except for the default settings on the "Replacement" tab, the configuration tabs for custom lamp and custom message parts are the same. Though lamp parts are usually graphic parts and message parts are character strings, they both function the same way.

When you draw (see p. 129) lamp parts, you should design the lamp's appearance in the ON-state (Edit-ON) and the OFF-state (Edit-OFF).

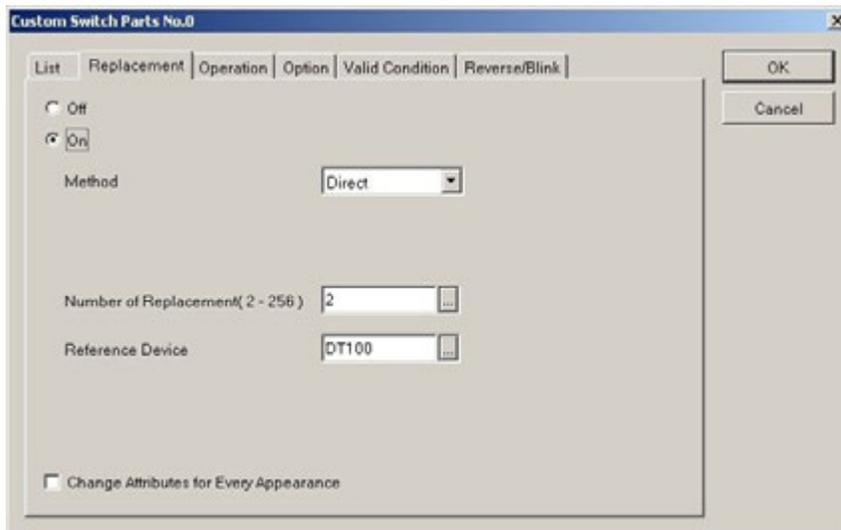


Custom lamp and message parts encompass much of the functionality of normal lamp parts (see p. 188) and message parts (see p. 190). However, for custom lamp parts and custom message parts, the configuration tabs differ considerably. The table will help you find your way quickly.

Tab	Description
List	You can assign the configuration settings a name. Below this field, a list displays the current configuration settings.
Replacement	Use the replacement tab (see p. 230) to configure how the display switches. The replacement tab for the custom lamp and custom message parts functions exactly the same as the custom switch part's replacement tab, except that there is no "Push SW" option button.
Display/Hide	Display: part is displayed. SW Display/Hide. Under conditions, select [Setup] to specify the conditions when to display or hide the part.
Reverse/Blink	The reverse/blink tab only applies to character strings (see p. 98) that you have drawn on the custom part. You can specify how the character string behaves, e.g. if it blinks, etc., under normal conditions or when certain conditions are met.
Operation Security	Set the security level to restrict the display and/or operation of the part.
Element Setup	Visible if on the Replacement tab, the check box "Change Attribute for Every Appearance" has been activated. Pressing [Setup] calls up the same tabs described above in this table.

### 5.11.3 Replacement Tab for Custom Parts

Activate the "On" option button to enable replacement, i.e. to enable changing the appearance of the custom part.



Then enter settings to specify when the appearance is changed and which reference device triggers the change. Remember, "replacement" has nothing to do with the custom part's operation but only with the appearance of the custom part when the specified reference device is active!

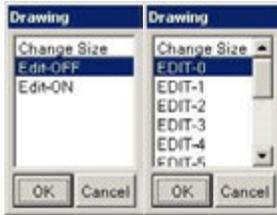


#### ◆ EXAMPLE

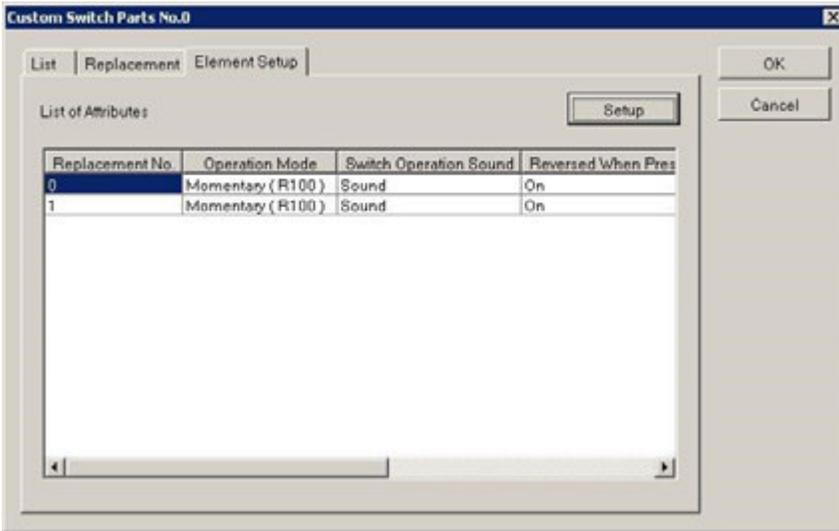
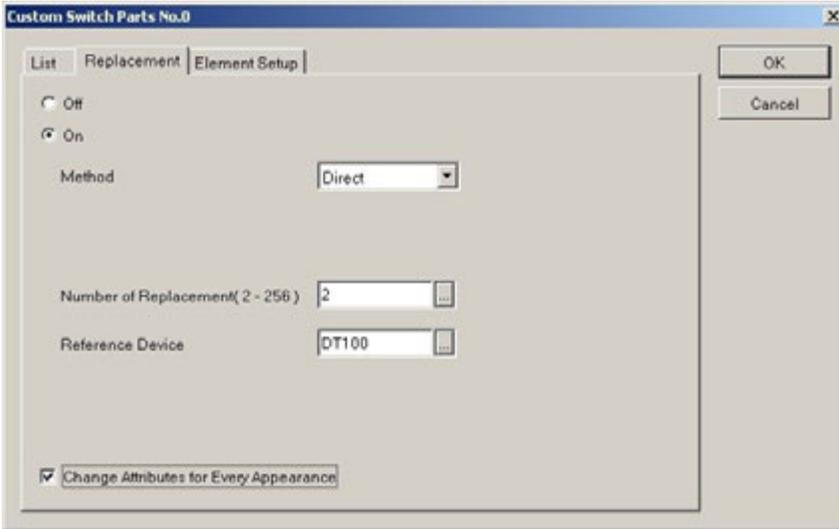
Here is the drawing dialog (see p. 129) when you have defined the method ON/OFF. The custom part will assume 1 of 2 appearances.



Here is the drawing dialog (see p. 129) when you have defined the method direct, for example, with number of replacements = 10. The custom part will assume 1 of 10 appearances based on which reference device is active.



Item	Description
Method	<p>Select how the custom part's appearance is to be changed.</p> <ul style="list-style-type: none"> <li>• <b>ON/OFF</b>. Since only 2 states are possible, the custom part can only assume 2 different appearances. The change in appearance can be triggered by simply pushing the switch (<b>Push SW</b>) or by the <b>Reference Device</b>.</li> <li>• <b>Direct</b>. The custom part's appearance changes in response to the reference device.</li> <li>• <b>Digit</b>. The custom part's appearance changes in response to the state of a specific bit (digit) of the reference device.</li> </ul>
Number of Replacements	The number of replacements, i.e. the number of appearances the custom part can assume, depends on the method chosen and is indicated in parentheses.
Reference Device	If available, specify the type and number of the reference device.
Change Attribute for Every Appearance	Allows you to change the operation for each appearance of the custom part, i.e. for each state of the reference device, via the "Element Setup (see p. 227)" tab.



Custom switch part dialog with the "Change Attribute for Every Appearance" check box selected, and the "Element Setup" tab

# Chapter 6

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# Troubleshooting

## 6.1 Troubleshooting

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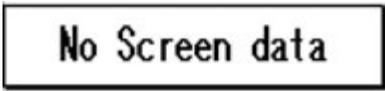
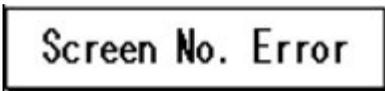
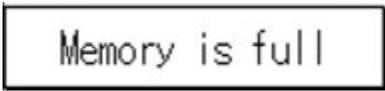
In addition to the normal screens, the GT screen displays other helpful information, for example:

- Screen messages (see p. 235)
- GT errors (see p. 236)
- PLC errors (see p. 239)

This section is intended to help you understand such information and provide useful tips on what to do if something unusual occurs (see p. 243).

## 6.2 Screen Messages

In addition to screen data, the GT unit also displays the following messages.

Screen message	Description
 <p>Transferring PC ---&gt; GT</p>	Data is being transferred from the PC to the GT unit.
 <p>Transferring GT ---&gt; PC</p>	Data is being transferred from the GT unit to the PC.
 <p>No Screen data</p>	<p>There is no base screen data.</p> <ul style="list-style-type: none"> <li>If necessary, create base screen data and transfer it to the GT unit.</li> </ul>
 <p>Screen No. Error</p>	<p>Screen settings from the PLC, the GT main unit's switch part or the auto-paging indicate an unregistered screen number.</p> <ul style="list-style-type: none"> <li>Create and register screen content or specify the correct screen number.</li> </ul> <p>When bringing up the keyboard screen during data input, an unregistered keyboard screen number was specified.</p> <ul style="list-style-type: none"> <li>Create and register keyboard screen or specify the correct keyboard number.</li> </ul> <p>GT configuration data and keyboard screen data exist in the GT main unit, but there is no base screen data.</p> <ul style="list-style-type: none"> <li>If necessary, create base screen data and transfer it to the GT unit.</li> </ul>
 <p>Memory is full</p>	<p>The total capacity of transferred base screen data exceeds the capacity the GT unit (View menu → Total Memory Usage).</p> <ul style="list-style-type: none"> <li>When transferring data, select "Transfer Data After Clear GT Screen".</li> <li>Delete part of the base screen data.</li> </ul>

## 6.3 GT Series Error Codes

An error code is displayed in the upper right corner of the GT screen when an error occurs.

### For GT01, GT11, GT21

Error code	Error	Cause and solution
ERFF	Time up error. No response from the PLC.	<ul style="list-style-type: none"> <li>The PLC connection cable is disconnected. Check the cable.</li> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> </ul>
ER21	Data error. A data error occurred during communication.	<ul style="list-style-type: none"> <li>The communication settings for the PLC and GT do not match. Check them.</li> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> </ul>
ER22	Overrun error. The GT unit cannot receive data.	The reception buffer in the GT unit is overflowing. There may be an error in the PLC. Resupply power to the PLC and GT unit.

### For all other GT models

Error code	Error	Cause and solution
**00FF	Time up error	<ul style="list-style-type: none"> <li>The PLC connection cable is disconnected. Check the cable.</li> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> </ul>
**0100	Keyboard screen data parts digit error	Check that the digit of the data parts on the keyboard screen has been set correctly.
**0101	Alarm history error	When updating the alarm history display is stopped, the alarm history data displayed on the GT screen has been stored in the memory. When the stop display update is canceled, new data is displayed.
**0500	Tool setting error	A device that does not exist in the selected PLC model is specified. Correct.
**1000	SD memory card not inserted	The SD memory card is not properly inserted into the SD memory card slot.
**1001	SD memory card writing error	Data cannot be written to the SD memory card. Make sure the SD memory card is not write-protected.
**1002	SD memory card memory full	Delete some data on the SD memory card or prepare a new SD memory card.
**1003	SD memory card reading error	The SD memory card cannot be read. Use a PC to check whether the data saved on the SD memory card has been damaged.
**1005	SD memory card saved file name error	You have not specified the file name to be saved on the SD memory card from the GT unit properly. Specify a proper "*.gsd" file.
**1006	SD memory card recognition error	The SD memory card is not recognized. Check the SD memory card.
**1020	Noncompatible PLC program error	The PLC program to be transferred uses commands, etc. not supported by the destination PLC. Rewrite the program so that it can be supported by the destination PLC.

Error code	Error	Cause and solution
**1021	Unsupported PLC model error	The selected PLC model is not supported.
**1022	Password protection error	<ul style="list-style-type: none"> <li>An incorrect password has been input three times or more. Turn the power supply off and on again and then input the correct password.</li> <li>Upload protection has been turned on for the PLC.</li> <li>The number of digits was changed when a new password with the FP monitor function was set. Cancel the password setting before changing the number of digits.</li> </ul>
**1023	Master memory error (FP-X only)	A master memory has been installed in the FP-X. It is not possible to transfer programs from an SD memory card to a PLC with the a master memory.
**1025	General-purpose memory shortage	There is not enough general-purpose memory available in the destination PLC.
**1027	Remote mode error (FP2/FP2SH only)	The PLC is set to RUN mode. Change to REMOTE mode or PROG. mode.
**102D	Forced operation error	Check whether a device that cannot be forced in PROG. mode has been forcibly turned on or off.
**1040	The record area for data logging in the GT was overwritten	No SD memory card is inserted.
	There was an overflow of the SRAM.	The functions for data logging, line graph and alarm history jointly use the SRAM. Transfer all data from GTWIN to avoid the error message.
**1041	The record area for data logging in the GT was overwritten	Data cannot be written onto the SD memory card. Check whether the SD memory card is write-protected.
**1042	The record area for data logging in the GT was overwritten	The SD memory card is full.
**1043	SD memory card writing error	The command to stop writing to the SD card has been sent. Turn off the command.
**1044	The record area for data logging in the GT was overwritten	The command to stop writing to the SD card has been sent. Turn off the command.
**1045	The record area for data logging cannot be reserved in the SRAM	Transfer all data.
**1060	Index register value error	The device value setting for the index modifier is out of range. Set a value that is in range.
**1080	Start time device value error	The value set at the start of the line graph function is out of range. Set a value that is in range. Setting a value greater than 32 when "no. of plots" is selected will also result in this error message.
**1100	Ethernet IP address setting error	The IP address for Ethernet is not specified correctly. Check the IP address for the GT unit.
**1101	Ethernet subnet mask setting error	The subnet mask for Ethernet is not specified correctly. Check the subnet mask for the GT unit.
**1102	Ethernet default gateway setting error	The default gateway for Ethernet is not specified correctly. Check the default gateway for the GT unit.
**1103	Ethernet port no. setting	The port no. for Ethernet is not specified correctly. Check the port

Error code	Error	Cause and solution
	error	no. for the GT unit.
**2000	Connected GT designation area error	<p>The bit in the connected GT designation area corresponding to the station number of the connected GT is not on.</p> <p>Check the connected GT designation area.</p>
**20FF	Token error	<p>A GT is not responding to the token.</p> <p><b>When the error code is indicated temporarily after the power is turned on:</b></p> <ul style="list-style-type: none"> <li>• The timing when turning on multiple GT units is different. Arrange the wiring so that all power supplies are turned on simultaneously.</li> <li>• The screens for all GT units have not finished booting. The error code disappears after all screens have booted.</li> <li>• The settings for the startup screen display vary. Make the same setting for all GT units.</li> <li>• A GT is reading a SD card. The indication disappears when reading the SD card has completed.</li> </ul> <p><b>When the error code is always indicated:</b></p> <ul style="list-style-type: none"> <li>• There is an unconnected or faulty GT. Check whether a GT indicates [**20FF]. Reconnect the GT, or turn off the bit in the connected GT designation area.</li> <li>• The communication parameters are not specified correctly. Check the baud rate and transmission format for the GT.</li> <li>• The same station number is used for more than one GT unit. Check the station number setting of the GT units.</li> </ul>
**E000	Sending data overflow error	<p>The data sent to the PLC has caused an overflow so that not all data could be transmitted. Check whether the GT communicates correctly with the PLC.</p>
**F000	User's memory error	<p>The memory for saving screen data may be damaged. Please contact us.</p>

## 6.4 PLC Error Codes

An error code is displayed in the upper right corner of the GT screen when an error occurs.

### Panasonic FP-Series PLCs

Error code		Error	Possible cause and solution
GT01/11/21	Other GT		
ER21	ER0021	Data error. A data error occurred during communication.	<ul style="list-style-type: none"> <li>The communication settings for the PLC and GT do not match. Check them.</li> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> </ul>
ER22	ER0022	Overrun error. The PLC is not receiving data.	The CPU unit's reception buffer is overflowing. There may be an error in the PLC. Resupply power to the PLC and GT unit.
ER40	ER0040	BCC error. A data error occurred during communication.	<ul style="list-style-type: none"> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> <li>There is an error in the CPU unit. Resupply power to the PLC and GT unit.</li> </ul>
ER41	ER0041	Format error. The PLC has been sent a command that does not match the protocol.	<ul style="list-style-type: none"> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> <li>There is an error in the CPU unit. Resupply power to the PLC and GT unit.</li> </ul>
ER42	ER0042	NOT support error. The GT has sent a non-supported command to the PLC.	<ul style="list-style-type: none"> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> <li>There is an error in the CPU unit. Resupply power to the PLC and GT unit.</li> </ul>
ER53	ER0053	BUSY error. The PLC is currently processing another command.	A large amount of data is being communicated with another RS232C port on the PLC. Wait.
ER60	ER0060	Parameter error	The specified parameter does not exist, or it cannot be used.
ER61	ER0061	Data run error. There is an error in the register or relay number.	<p>A register or relay number which does not exist in the PLC was specified during screen creation using GTWIN.</p> <ul style="list-style-type: none"> <li>Correct the output device being used with the part.</li> <li>In GT Configuration → Setup → Clock, you have selected a device address that does not exist in the PLC.</li> </ul>

**Mitsubishi PLCs**

Error code		Error	Possible cause and solution
GT01/11/21	Other GT		
ERFF	—	Time up error. There is no response from the PLC.	<ul style="list-style-type: none"> <li>The PLC connection cable is disconnected. Check the cable.</li> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> </ul>
ER10	—	Data error. A data error occurred during communication.	<ul style="list-style-type: none"> <li>The communication settings for the PLC and GT do not match. Check them.</li> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> </ul>
ER12	—	Overrun error. The PLC is not receiving data.	PLC runaway might be the problem.
ER61	ERFFFE	NAK error. A NAK error has been returned from the PLC.	Verify the PLC settings.

**Omron PLCs**



**◆ NOTE**

- Error codes other than these are based on Omron PLC error codes.
- Be sure to use the PLC in monitor mode. Otherwise, communication will not work properly.

Error code		Error	Possible cause and solution
GT01/11/21	Other GT		
ER00	—	Time up error. There is no response from the PLC.	<ul style="list-style-type: none"> <li>The PLC connection cable is disconnected. Check the cable.</li> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> </ul>
ER01	ER001	Cannot be executed due to operation mode. (The PLC received a command that cannot be executed in the operation mode.)	Change the PLC mode from operation to monitor mode.
ER10	ER0010	Data error. A data error occurred during communication.	Check for errors in the communication settings.
ER12	ER0012	Overrun error. The GT unit cannot	PLC runaway might be the problem.

Error code		Error	Possible cause and solution
GT01/11/21	Other GT		
		receive data.	
ER15	ER0015	Numerical data error Designated read/write area is not available.	Verify the basic communication area and whether the reference devices used for each part are in a readable or writable area.

### Modbus

Error code		Error	Possible cause and solution
GT01/11/21	Other GT		
ERFF	**0001	Time up error. There is no response from the PLC.	<ul style="list-style-type: none"> <li>The PLC connection cable is disconnected. Check the cable.</li> <li>There is a temporary error due to noise, etc. Resupply power to the PLC and GT unit.</li> </ul>
ERFE	**ERFE	Response error. An abnormal response was returned from the external device.	Check the data to be returned from the external device.

### Toshiba

Error code (GT02/05/12/32)	Error	Possible cause and solution
ERFFFE	Parameter error.	The specified parameter does not exist, or it cannot be used.

## 6.5 General-Purpose Serial Communication Error Codes



### ◆ NOTE

The last two digits of the error code are the same no matter which model is used, though the beginning can differ.

Error code (last 2 digits)	Error name	Cause and solution
00	BCC error	The value of the BCC may be incorrect. Check the calculation.
01	Format error	A command format may be incorrect. Check if it is correct.
02	NOT supported error	A command used is not supported with the version of the GT. Upgrade the GT version or use another command.
03	Address error	The address specified does not exist in the GT. Check the address of the command transmitted.
04	Receive buffer overflow	The command sent exceeds the number of bytes that can be received. Check the number of bytes in the command sent.
05	Request overflow	The readout command sent exceeds the number of bytes that can be sent back. Check the number of words that can be read.
06	Data error	The communication condition for the GT may not match that of the destination device. Check the communication conditions.
07	Data write inhibit error	A command was sent to an address that is not available. Check the address.



### ◆ REFERENCE

GT Series General-purpose Serial Communication Manual, ARCT1F356E.

## 6.6 What to do if Something Unusual Occurs



### ◆ NOTE

**Solutions may depend on your GT model and its capabilities.**

Problem	Possible cause	Possible solution
Screen is blank	Power is not on.	Supply power to unit as per specifications.
	When only lamp and message parts are configured on the base screen, the value of replacement reference device does not exist in replacement data.	Check the address of the replacement reference device and the device values on the PLC side.
Screen display: [No Screen data]	There is no base screen data in the GT. (Appears even when GT configuration data exists.)	Transfer base screen data from GTWIN.
Screen display: [Screen No. Error]	Screen settings from the PLC, the GT's switch part or auto-paging indicate an unregistered screen number.	Create and register screen content or specify the correct screen number.
	When bringing up the keyboard screen during data input, an unregistered keyboard screen number was specified	Create and register keyboard screen or specify the correct keyboard number.
	GT configuration data and keyboard screen data exist in the GT, but there is no base screen data.	Transfer base screen data from GTWIN.
Screen display: [Memory is Full]	The total capacity of transferred base screen data exceeds the memory capacity of the GT (see GT Series User Manual.)	Delete unnecessary base screens or parts of the base screens. You can check how much memory each base screen requires (see p. 128).
An unspecified screen appears. Trouble switching screens.	The screen specification in the PLC screen setting, the GT unit switch part or the auto-paging is wrong.	Specify the correct screen number.
	The startup screen is specified in the GT configuration settings (GTWIN).	Check the start-up screen setting for the GT configuration settings in GTWIN. Delete unnecessary settings and re-transfer configuration data.
	An erroneous device or value is specified for the first word of the basic communication area word device.	Check the device content specified on the PLC side for the first word of the basic communication area. (Do not use the basic communication area with PLC programs.)
Screen does not switch	No screen number has been written to the screen setting area (the first word in the basic communication area word device) from the PLC.	Specify correct screen number.
	The screen number to which you are attempting to switch has already been written to by the PLC in the screen setting area (the first word in the basic communication area word device.)	For the function switch, use the operation mode "Value Set" to change the contents of the first word in the basic communication area (see p. 24).
Screen is dim	The power voltage may be low.	Check whether the capacity of the power supply unit is sufficient for the GT unit.
	The contrast is set too low.	Bring up the system menu (see p. 59) and adjust the contrast.

Problem	Possible cause	Possible solution
	The backlight is off due to the [Backlight Auto-off] setting in the [Setup] of the GT configuration settings in GTWIN.	Touching any area of the screen lights that area. If a switch part is set on the touched area, the area will not light even if touched. To change the setting, change the content of the backlight auto-off settings.
	The backlight brightness is too dark.	Bring up the system menu (see p. 59) and adjust the brightness.
Backlight goes off too quickly	The backlight auto-off timer setting is too short.	Change the backlight auto-off timer setting.
Date/time display is incorrect (GT internal clock)	The GT's internal clock used as a reference is incorrect.	Adjust the clock from the system menu (see p. 59)
	No battery has been inserted.	Purchase a battery and install it.
	The battery is low or dead.	Replace the battery.
Hold PLC Device data content isn't saved	No battery has been inserted.	Purchase a battery and install it.
	The battery is low or dead.	Replace the battery.
Date/time display is incorrect	The PLC's internal calendar timer used as a reference is incorrect.	Adjust by rewriting the value in the PLC's internal calendar timer.
Touch panel doesn't work	Valid conditions have been set for the switch part, but those conditions have not been met.	Check that the device status conditions on the PLC side are valid.
No operating sounds are heard when the touch panel is pressed.	The [Switch Sounds] setting under [Options] in the switch part attributes is set to [Disabled].	Change the setting to [Enabled].
	The [Touch Sounds] setting under [Setup] in the GT configuration settings in GTWIN is set to [Disabled].	Change the setting to [Enabled].
Nothing happens for about 10 seconds after turning on power.	The communication settings for the PLC and GT COM port do not match.	Verify that the communication settings for GT and the PLC are the same.
Buzzer sounds continuously	Bit F of the first word in the basic communication area bit device is set to ON.	Set the F bit to OFF on the PLC side. (Do not use the basic communication area with ladder programs.)
Backlight color changes/ flashes	Bits A and B, and bit D of the first word (backlight color setting) in the basic communication area bit device are set to ON. Or bits C and D (backlight flashing setting) are set to ON.	Perform correct bit operations on the PLC side. (Do not use the basic communication area with ladder programs.)
Cannot transfer data from GTWIN	The screen transfer, USB or LAN cable is not connected.	Confirm that the cable is correctly and firmly connected.
	The PC and GT unit COM port are connected.	Connect the cable correctly.
	GT01, GT11, GT21: TOOL port's baud rate set to 230400bps.	Use GTWIN to set communication condition to 230400bps before transferring data.
	The network type in the communication settings has been set to a type not available for your GT.	Select the appropriate network type in the communication settings.
Screen is blank (power supply and substitution settings noted above do not apply). An incorrect screen is	An error has occurred in the GT system.	1) After confirming the safety of the device, etc., turn off the power supply and then turn it on again. The GT main unit CPU will be reset.  ↓ 2) If 1) produces no change, bring up the

Problem	Possible cause	Possible solution
<p>displayed (error codes and erroneous date and time items noted above do not apply). Switch does not work (grid and validity settings noted above are correct).</p>		<p>system menu and initialize the memory (F-ROM), then transfer data again from GTWIN to the GT main unit.</p> <p><b>Note:</b> When doing this, all base screen data, GT setting data, keyboard screen data, and bitmap data will be lost. Before doing this, back up all data.</p> <p style="text-align: center;">↓</p> <p>3) If 2) produces no change, set the operating mode setting switches 2, 3 and 4 on the rear of the GT unit to ON and reset the power supply.</p> <p><b>Note:</b> When doing this, the factory default settings will be reset and the GT unit's memory will be cleared. Before doing this, back up all data.</p>
<p>No sound is output</p>	<p>The speaker is not connected.</p>	<p>Connect an audio output equipment (speaker with a built-in Ø3.5-mini plug amplifier).</p>
	<p>The setting for using sound is not on.</p>	<p>Set the sound setting of the GT configuration settings to ON.</p>

## 6.7 Operation Security Function

Message	Cause	Solution
"Incorrect password" is displayed on the login screen.	An unregistered password was entered.	Enter the registered password.
"Incorrect password" is displayed on the password change screen.	An incorrect password was entered in the current password field.	Enter the registered password correctly.
"Please verify your password again" is displayed on the password change screen.	The New Password and Re-type Password entries differ.	Enter the same password in both fields.
"Use another password" is displayed on the password change screen.	The password has already been registered.	Enter a different password.
"Password setting incomplete" is displayed on the password change screen.	Some items have not been entered.	Enter all items.
"Your password cannot be deleted" is displayed on the password management screen.	—	In GTWIN, delete your password via the dialog "Edit Operation Security Password" (see p. 158).
"Your level cannot be changed" is displayed on the password management screen.	—	In GTWIN, change your level via the dialog "Edit Operation Security Password" (see p. 158).

# Chapter 7

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## Connecting the GT to a PLC

## 7.1 Panasonic FP-Series PLCs

You can connect:

- A PLC to a GT panel.
- One PLC to several GT panels (see p. 53).
- One GT panel to several PLCs (see p. 28).



### ◆ REFERENCE

**For more information on the communication settings, please refer to the GT Series User Manual.**

Here is a list of available devices for Panasonic's FP-Series PLCs.

Bit device (see p. 293)	Address
Input relay	X0000-X511F
Output relay	Y0000-Y511F
Internal relay	R0000-R886F
Link relay	L0000-L639F
Timer	T0000-T3071
Counter	C0000-C3071
Special internal relay	R9000-R910F

Word device (see p. 293)	Address
Input relay	WX0000-WX511
Output relay	WY0000-WY511
Internal relay	WR0000-WR886F
Link relay	WL0000-WL639F
Data register	DT00000-DT10239
Link register	LD0000-LD8447
Timer/Counter set value area	SV0000-SV3071
Timer/Counter elapsed value area	EV0000-EV3071
File register	FL00000-FL32764
Special data register	DT90000-DT90511

**Example communication parameter settings****GT**

Item	Setting
Baud rate	19200bps
Data length	8
Stop bits	1
Parity bit	Odd

**PLC**

Item	Setting
Communication mode	MEWTOCOL-COM Slave [Computer link]
Baud rate	19200bps
Data length	8
Stop bits	1
Parity bit	Odd
End code	CR
Start code	No STX
Unit no.	1
Modem connection	Disabled

## 7.2 PLC Multiple Connection



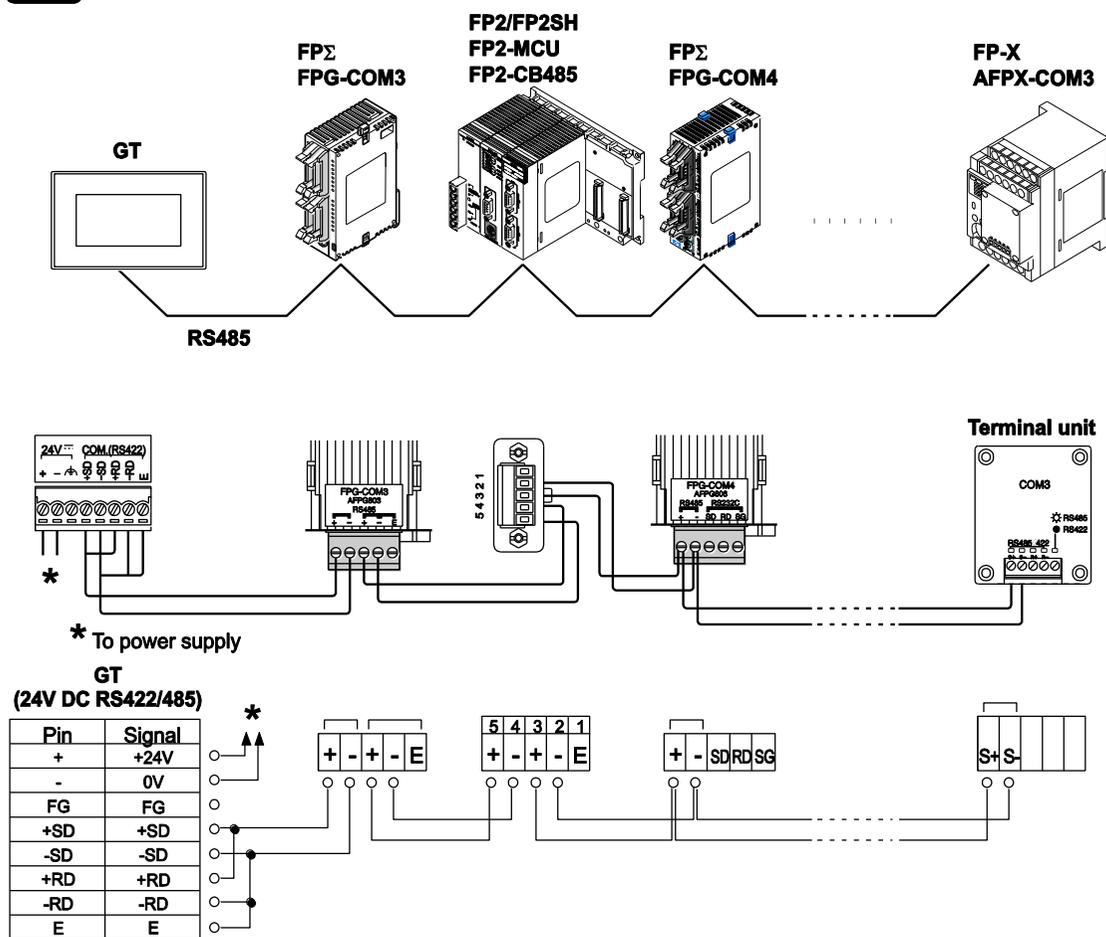
### REFERENCE

For more information on the communication settings, please refer to the GT Series User Manual.

For GT touch terminals that support the function "PLC Multiple Connection", one GT can be connected to up to 31 Panasonic PLCs that support communication via RS485. The PLC Multiple Connection tab (see p. 28) appears for the GT Configuration (see p. 21) if the particular GT unit supports this function.

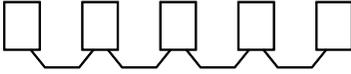


### EXAMPLE



**◆ NOTE**

- **Make sure to configure the terminal units.**
- **Wire the units from one to the next. Never wire multiple units to a single unit.**

**Correct****Incorrect**

## 7.3 Cautions Regarding Connecting the 5V DC Type



### ◆ NOTE

- When directly connecting the GT01/GT02 to an FP-Series TOOL port, the number of units that can draw power from the FP-Series power supply is limited. Please proceed in accordance with the information given below.
- Please perform connections with the power turned off.

FP-Series type	Limitations when connecting a GT 5V DC type
FP-X	The number of units which can be expanded depends on the unit type.
FP0/FP0R	Maximum of two expansion units *
FPΣ	Maximum of six expansion units *
FP2	The method for calculating the number of units that can be expanded is provided in the hardware manual. Follow that formula and keep the GT's power consumption no higher than 200mA when calculating.
FP2SH	
FP-e	No particular restrictions.

\* Expansion is possible with the number of units given above, regardless of the type of unit.



### ◆ REFERENCE

For further information, refer to the FP-X User's Manual and FP2/FP2SH Hardware Manual.

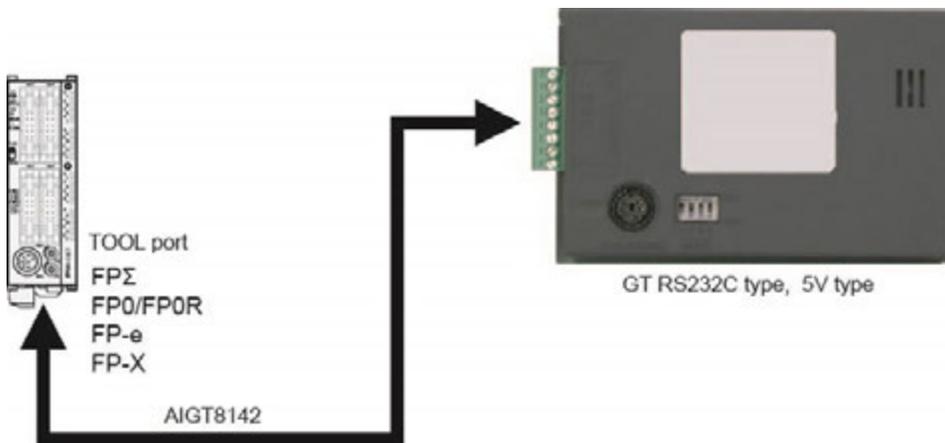
## 7.4 Connecting the 5V Type to the TOOL Port of a Compact PLC

The 5V DC type is powered via the TOOL port cable.



### ◆ NOTE

Please read the cautions regarding the power supply before connecting (see p. 252).



### Communication format settings

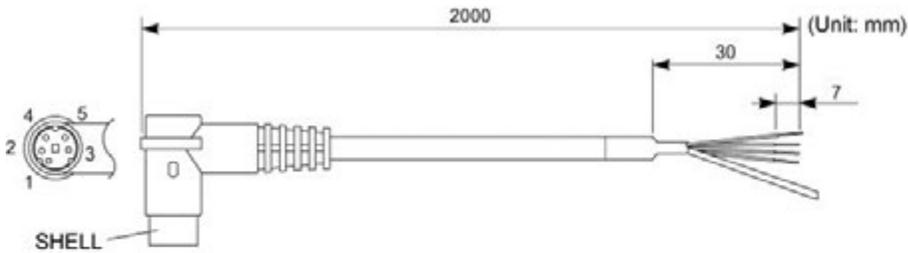
System register no.	Item	Value set
410		1
412	Modem connection	No modem connection
413	Sending data length	8 bits
	Parity check	Yes, Odd
	Stop bits	1 bit
	End code	CR (fixed)
	Start code	No STX (fixed)
414	TOOL port baud rate setting	9600 bps



### ◆ REFERENCE

For more information on the communication settings, please refer to the GT Series User Manual.

**PLC communication cable: Mini-DIN 5-pin loose-wire cable (AIGT8142)**

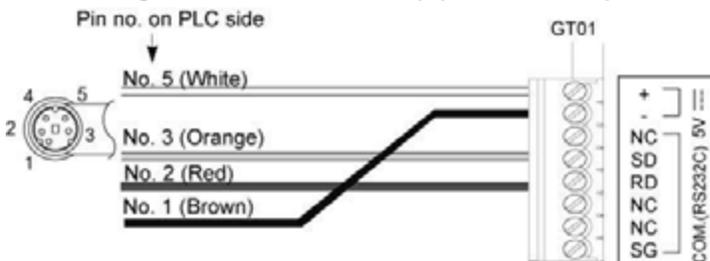


Mini DIN plug side signal

Pin no.	Signal name	Wire color
1	SG	Brown
2	SD	Red
3	RD	Orange
4	-	-
5	+5V	White
-	SHELL	Black

Shield

**Connecting to the FP-X/FPΣ/FP0(R)/FP-e TOOL port**



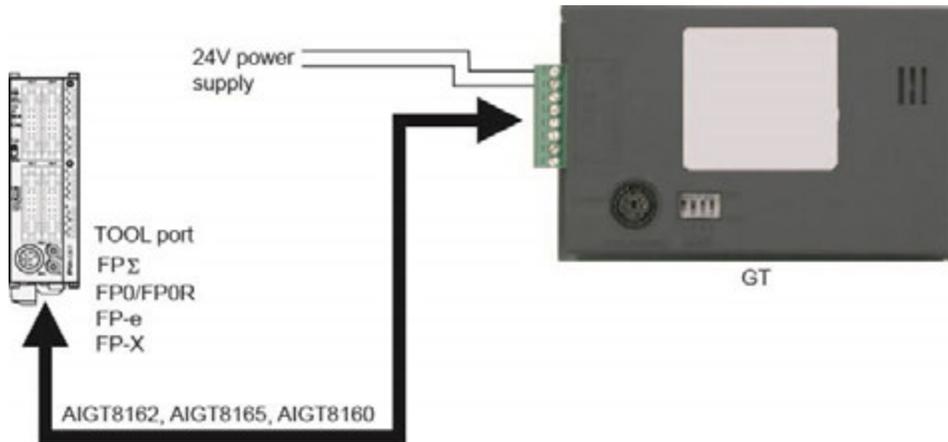
PLC side		GT main unit side	
Pin no.	Signal name	Pin no.	Signal name
1	SG	1	+
2	SD	2	-
3	RD	3	NC
4	-	4	SD
5	+5V	5	RD
		6	NC
		7	NC
		8	SG



**◆ NOTE**

- The cable should not exceed 3m.
- When connecting to a PLC with all expansion slots used, prepare an external 5V DC power supply for the GT due to current consumption limits.

## 7.5 Connecting 24V Types to the TOOL Port of a Compact PLC



### Communication format settings

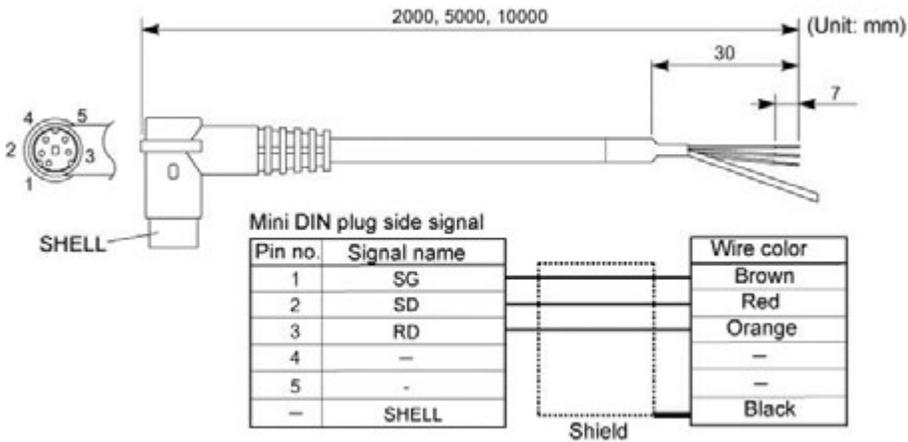
System register no.	Item	Value
410	TOOL port station number	1
412	Modem connection	No modem connection
413	Sending data length	8 bits
	Parity check	Yes, Odd
	Stop bits	1 bit
	End code	CR (fixed)
	Start code	No STX (fixed)
414	TOOL port baud rate setting	9600 bps



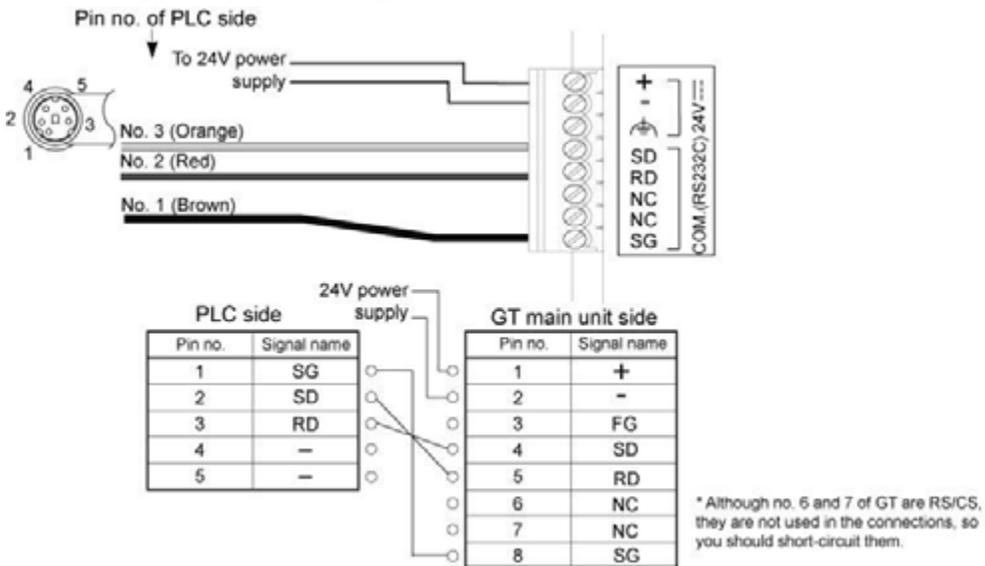
### ◆ REFERENCE

For more information on the communication settings, please refer to the GT Series User Manual.

**PLC communication cable: Mini-DIN 5-pin loose-wire cable (AIGT8162, AIGT8165, AIGT8160)**



**Connecting to the FP-X/FP-Sigma/FP0(R)/FP-e TOOL port**



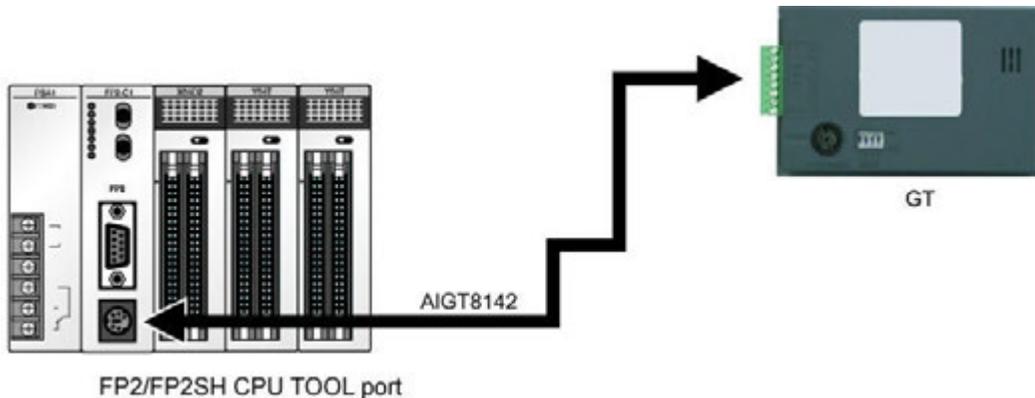
## 7.6 Connecting the 5V Type to the TOOL Port of FP2/FP2SH

The 5V type is powered via the TOOL port cable.



### ◆ NOTE

Please read the cautions regarding the power supply before connecting (see p. 252).



### Communication format settings

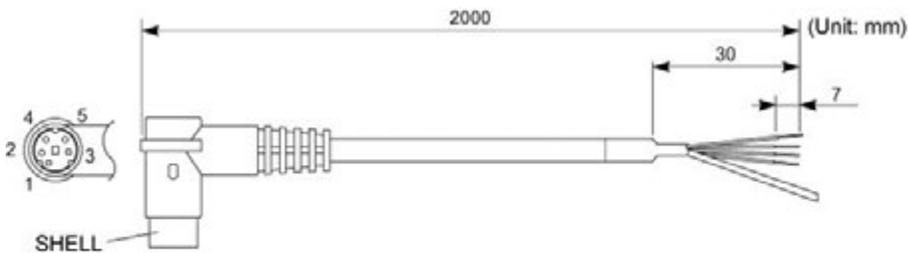
System register no.	Item	Value
410	TOOL port station number	1
411	Sending data length	8 Bits
411	Modem connection	No modem connection
414	TOOL port baud rate setting	9600 bps



### ◆ REFERENCE

For more information on the communication settings, please refer to the GT Series User Manual.

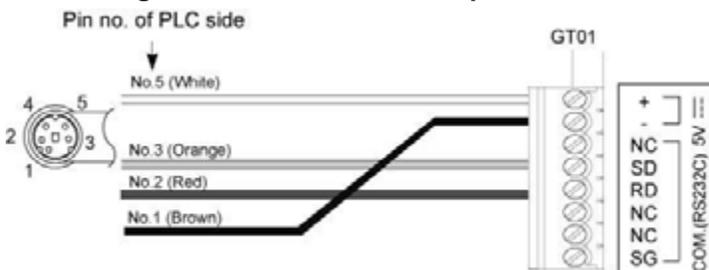
**PLC communication cable: Mini-DIN 5-pin loose-wire cable (AIGT8142)**



Mini DIN plug side signal

Pin no.	Signal name	Shield	Wire color
1	SG	[Shielded Area]	Brown
2	SD		Red
3	RD		Orange
4	-		-
5	+5V		White
-	SHELL	Black	

**Connecting to the FP2/FP2SH TOOL port**



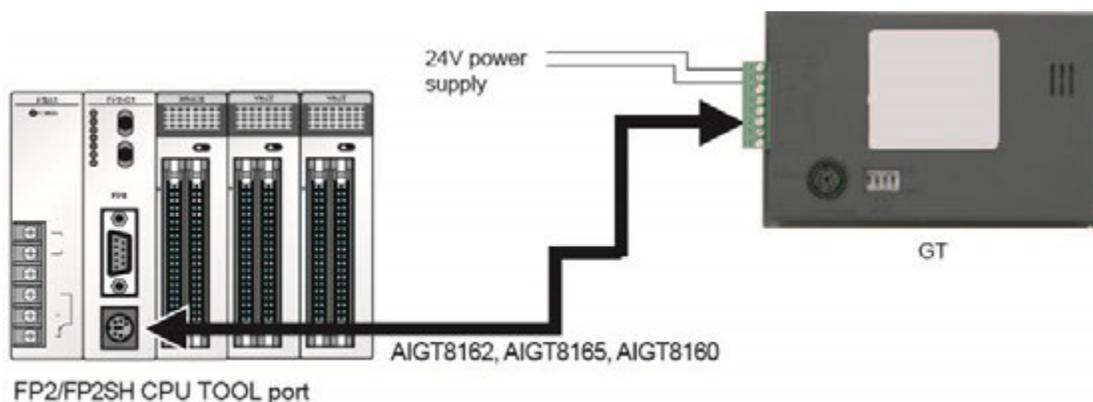
PLC side		GT main unit side	
Pin no.	Signal name	Pin no.	Signal name
1	SG	1	+
2	SD	2	-
3	RD	3	NC
4	-	4	SD
5	+5V	5	RD
		6	NC
		7	NC
		8	SG



**NOTE**

- The cable should not exceed 3m.
- When supplying power from the TOOL port, verify whether or not it will be possible by using the method of calculation for the number of expansion units provided in the PLC Hardware Manual.

## 7.7 Connecting 24V Types to the TOOL Port of FP2/FP2SH



### Communication format settings

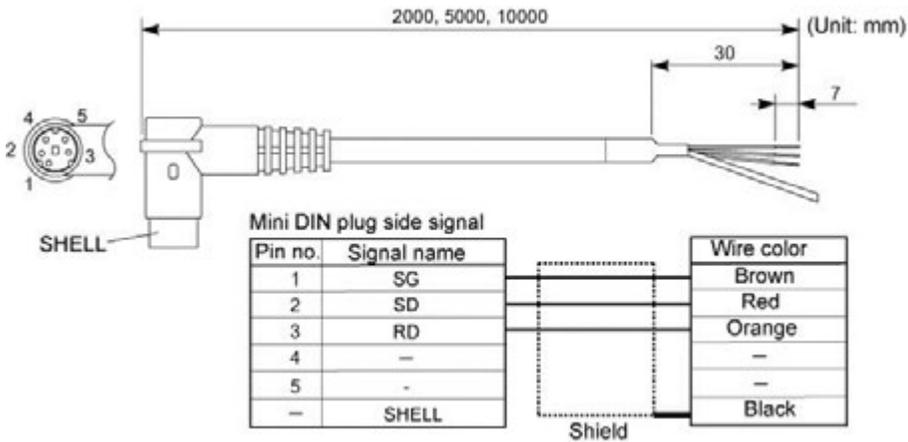
System register no.	Item	Value
410	TOOL port station number	1
412	Modem connection	No modem connection
413	Sending data length	8 bits
	Parity check	Yes, Odd
	Stop bits	1 bit
	End code	CR (fixed)
	Start code	No STX (fixed)
414	TOOL port baud rate setting	9600 bps



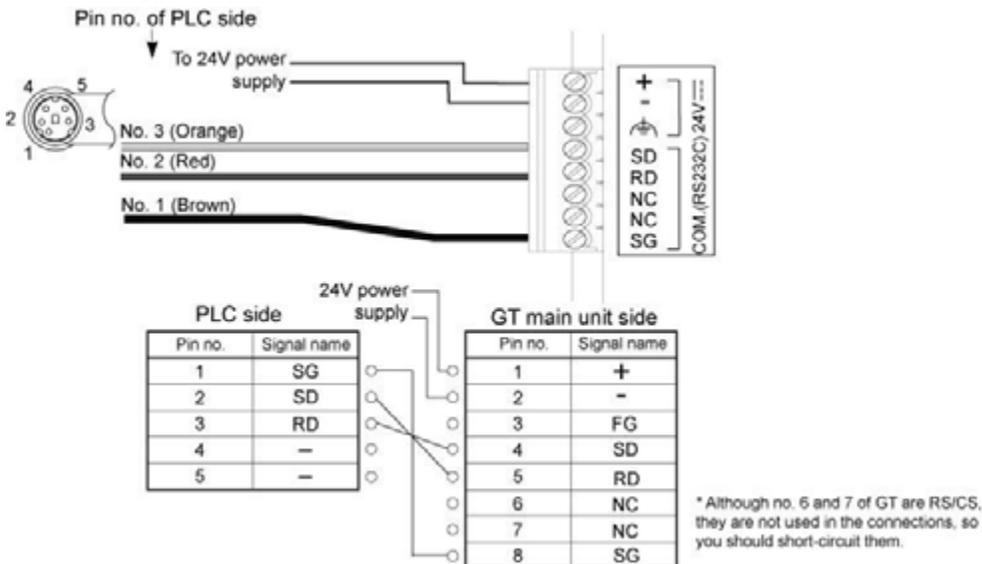
### ◆ REFERENCE

For more information on the communication settings, please refer to the GT Series User Manual.

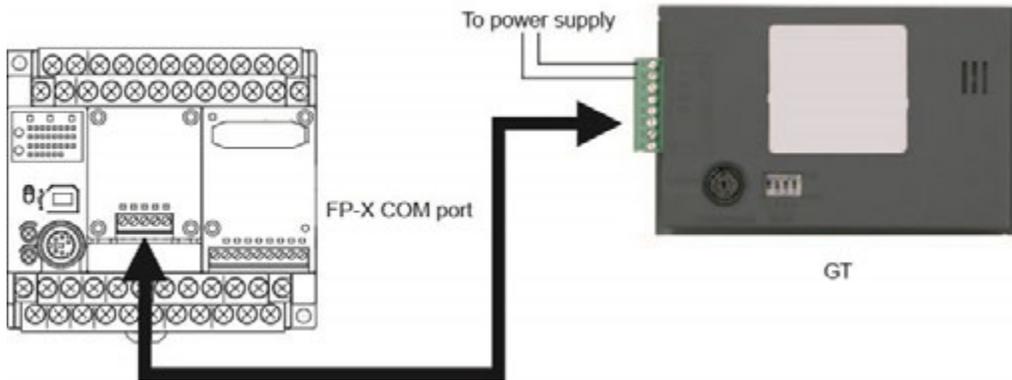
**PLC communication cable: Mini-DIN 5-pin loose-wire cable (AIGT8162, AIGT8165, AIGT8160)**



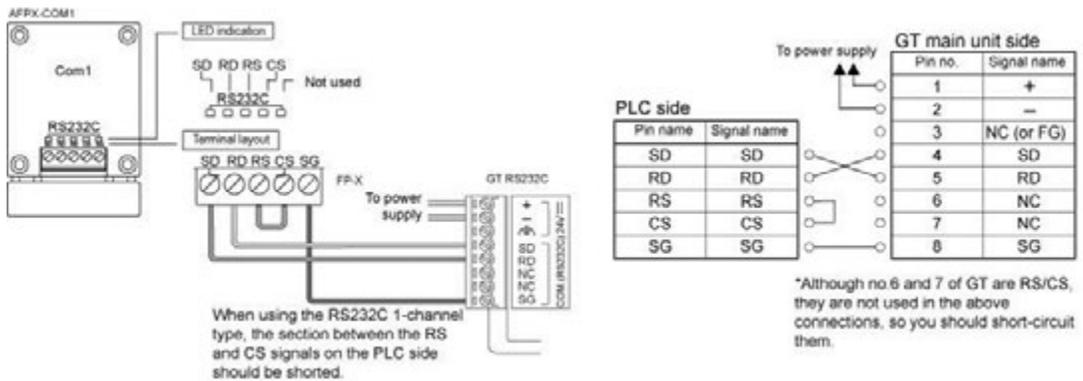
**Connecting to the FP2/FP2SH TOOL port**



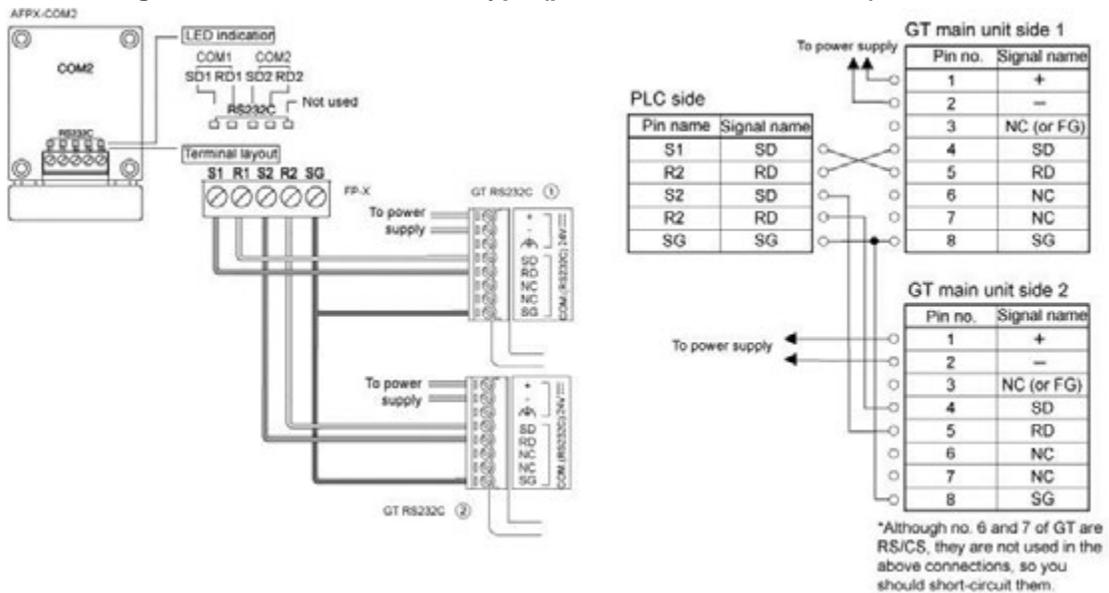
## 7.8 Connecting to the COM Port of FP-X



### Connecting to the 1- channel RS232C type (product no.: AFPX-COM1)

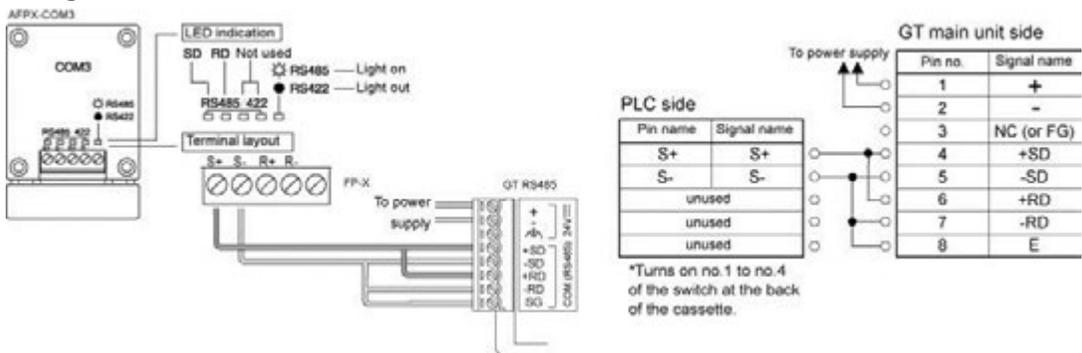


Connecting to the 2-channel RS232C type (product no.: AFPX-COM2)

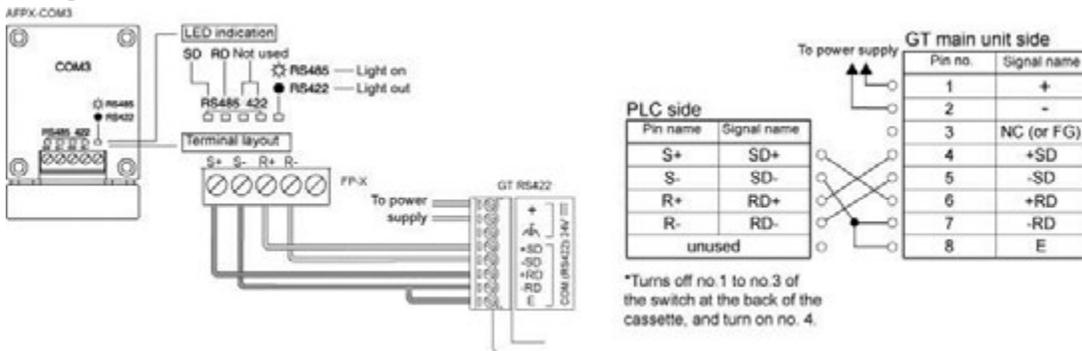


Connecting to the 1-channel RS485/RS422 type (product no.: AFPX-COM3)

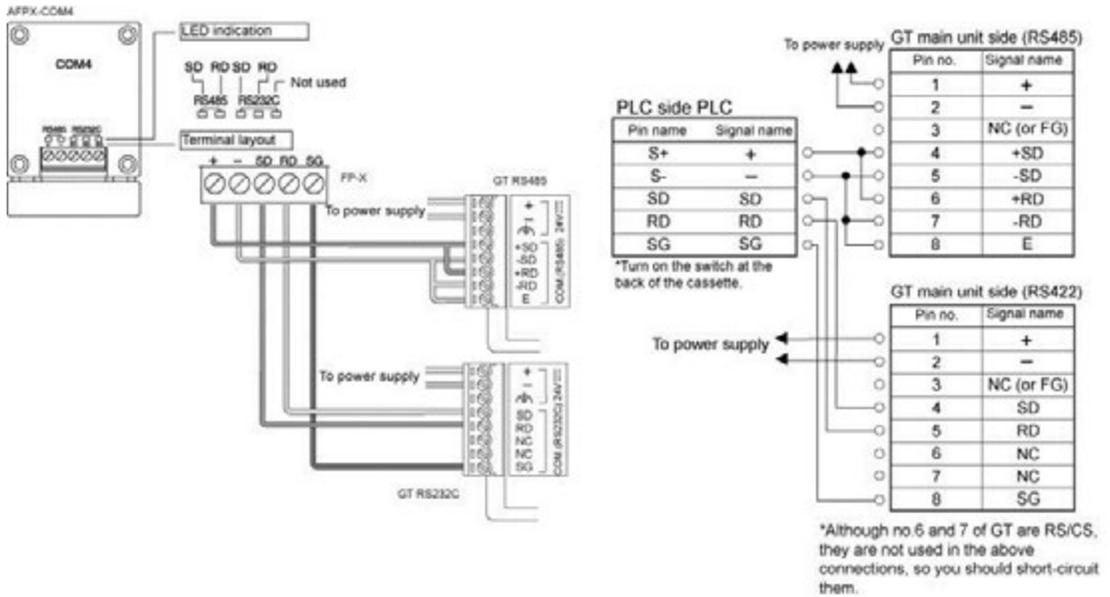
Using RS485



Using RS422

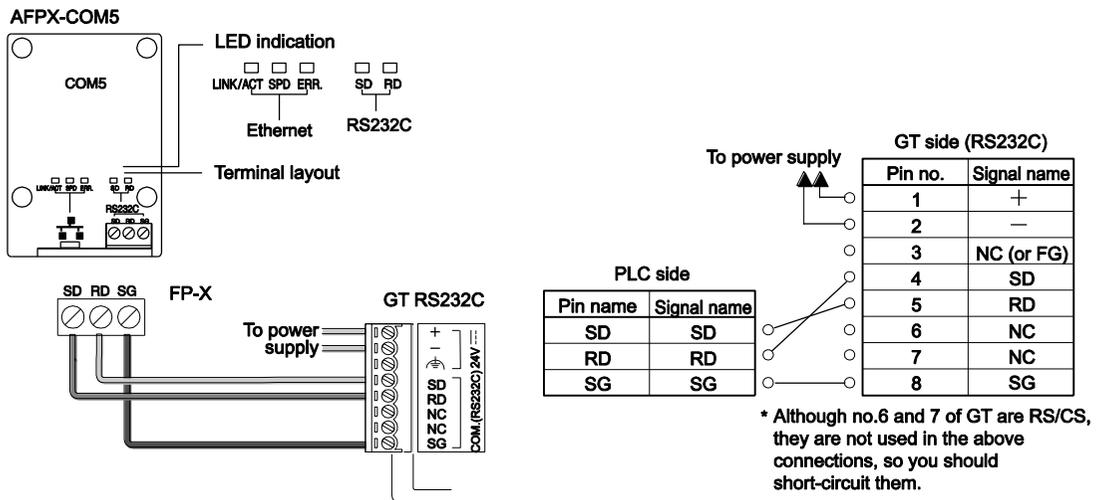


**Connecting to the 1-channel RS485 and 1-channel RS232C combination type (product no.: AFPX-COM4)**



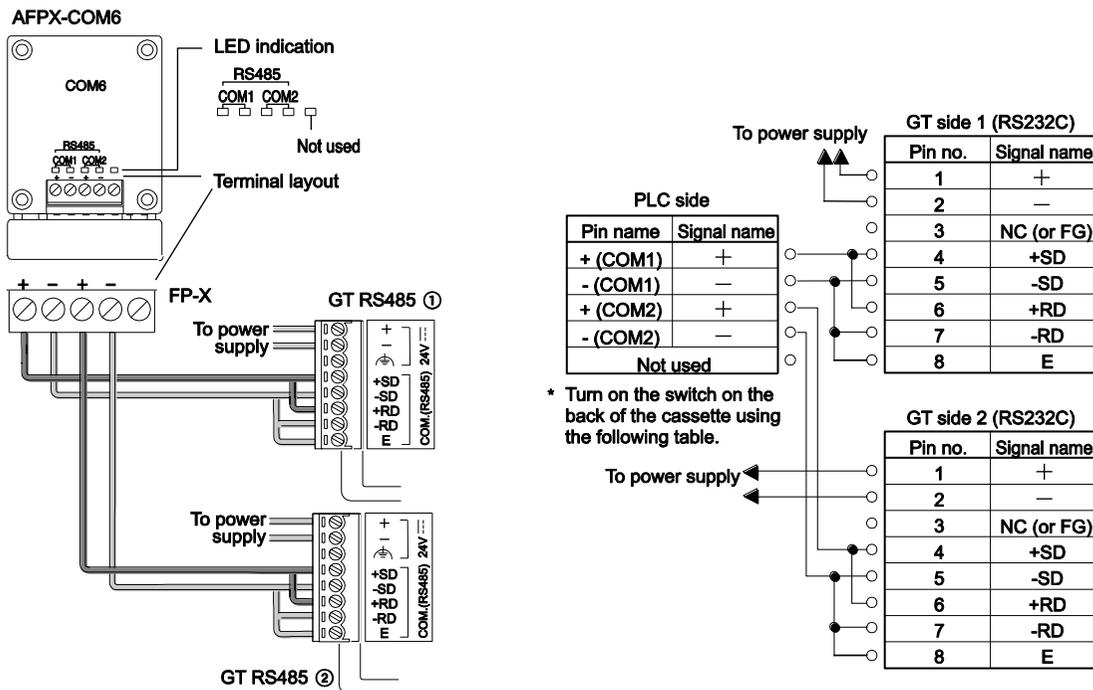
**Connecting to the 1-channel Ethernet and 1-channel RS232C combination type (product no.: AFPX-COM5)**

Only RS232C communication can take place between the AFPX-COM5 communication cassette and the GT unit.



### Connecting to the 2-channel RS485 type (product no.: AFPX-COM6)

You can connect the AFPX-COM6 communication cassette to one or two GT units.



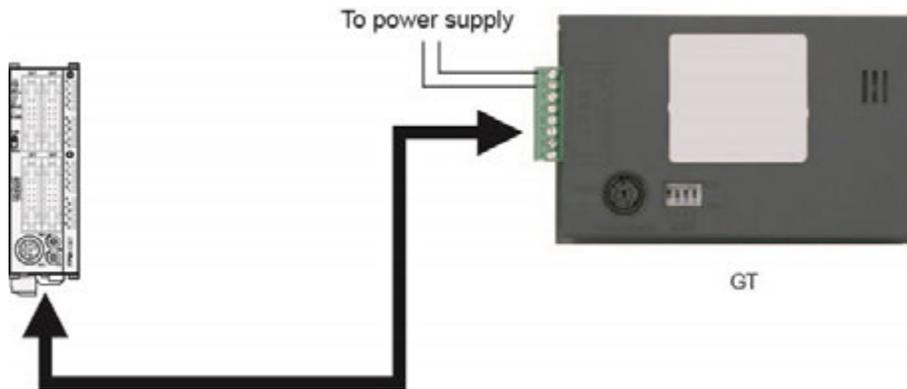
Switch setting	Terminal unit	Switch setting	Baud rate (bps)*
	COM1		115200
	COM2		19200
			9600
			*Set the baud rate with both the DIP switches and the system register.



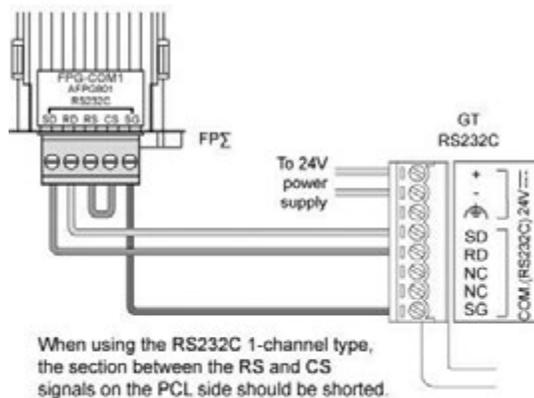
## REFERENCE

For more information refer to the FP-X User's Manual. For information on the connection via RS485, refer to the GT Series User Manual.

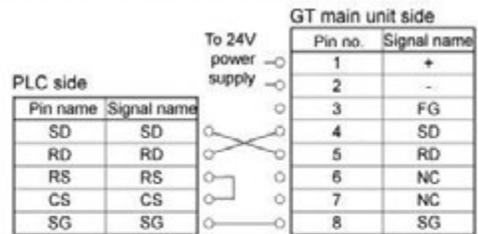
## 7.9 Connecting to the COM Port of FPΣ/FP0(R)/FP-e



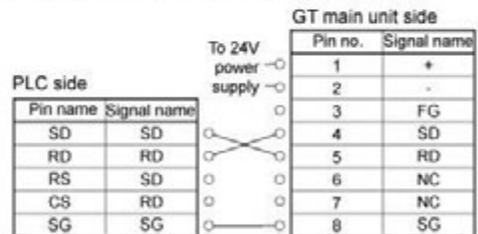
### Connecting to the FPΣ COM1 and COM2 cassettes



When using the RS232C 1-channel type (AFPG801)

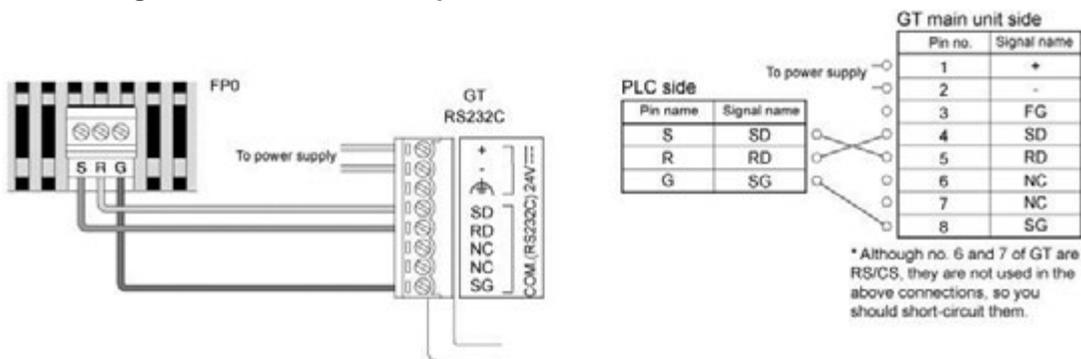


When using the RS232C 2-channel type (AFPG802)



\*Although no. 6 and 7 of are RS/CS, they are not used in the above connections, so you should short-circuit them.

Connecting to the FP0/FP0R COM port



◆ **NOTE**

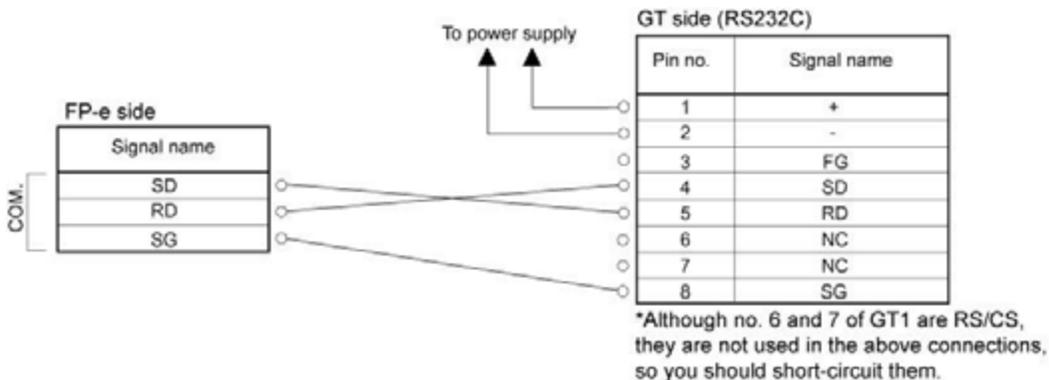
We do not provide a dedicated cable for hard wiring to the FP0/FP0R COM port. Please provide your own cable and use AWG28 to 16 size shielded cable (with a conductor cross sectional area of 0.08 to 1.25mm<sup>2</sup>).



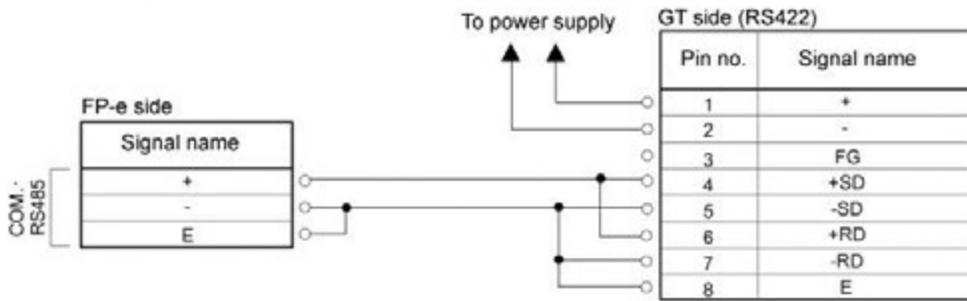
◆ **REFERENCE**

For more information on the communication settings, please refer to the GT Series User Manual.

Connecting to the FP-e (RS232C)



**Connecting to the FP-e (RS485)**



**REFERENCE**

For further information, refer to the FP-e User's Manual.

**Connecting to the FPΣ COM 3 cassette**

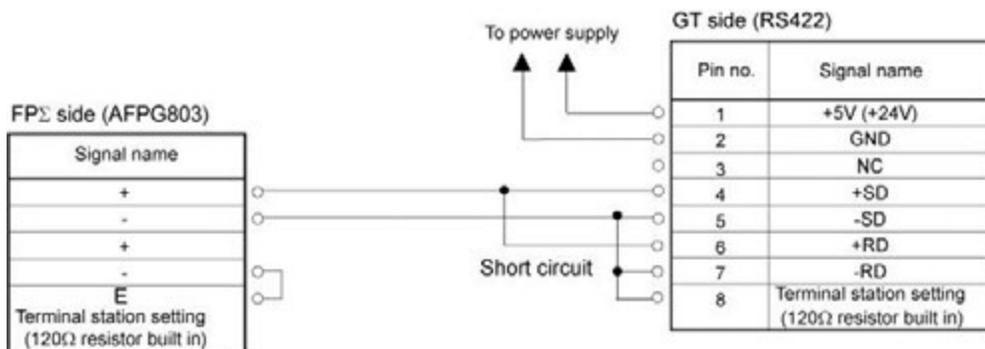
**Communication format settings**

Item	Value
COM port 1 station number	No. 1
COM port 1 communication mode	Computer link
COM port 1 transfer format	8 bits, odd, 1 stop, terminal CR (fixed), no STX
COM port 1 baud rate setting	38400bps, 57600bps, 115200bps
<b>Note: Use a baud rate of 38400bps or higher.</b>	



**REFERENCE**

For more information on the communication settings, please refer to the GT Series User Manual.

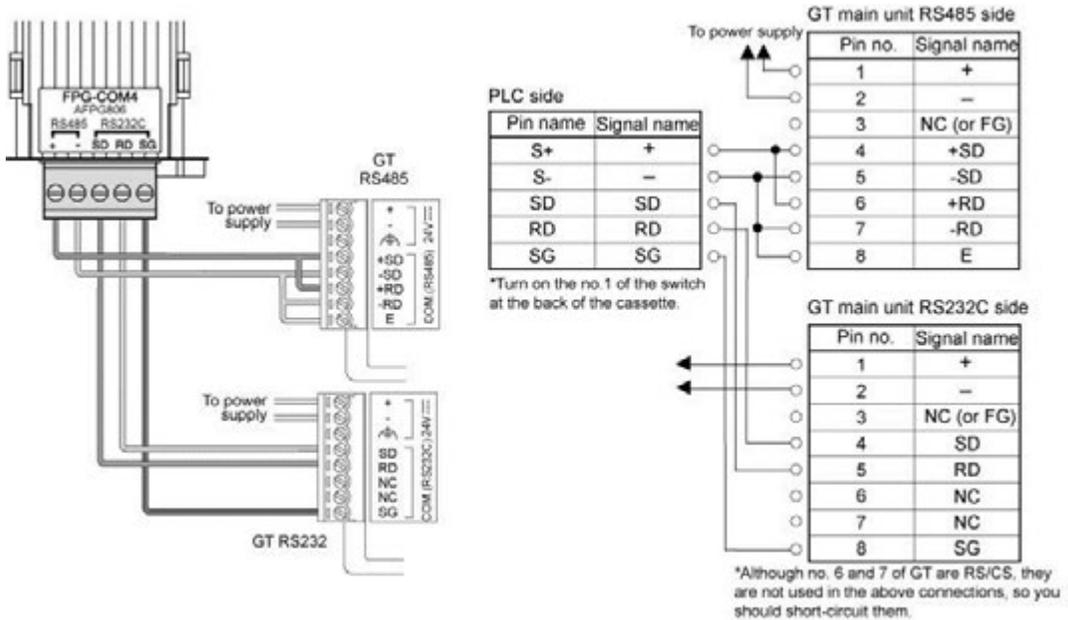




**NOTE**

- Use with 1:1 connection.
- If noise is a problem, use a shielded cable and employ countermeasures such as installing a ferrite core.
- The transfer distance is 30m maximum. (Up to 500m is possible with the 24V type).

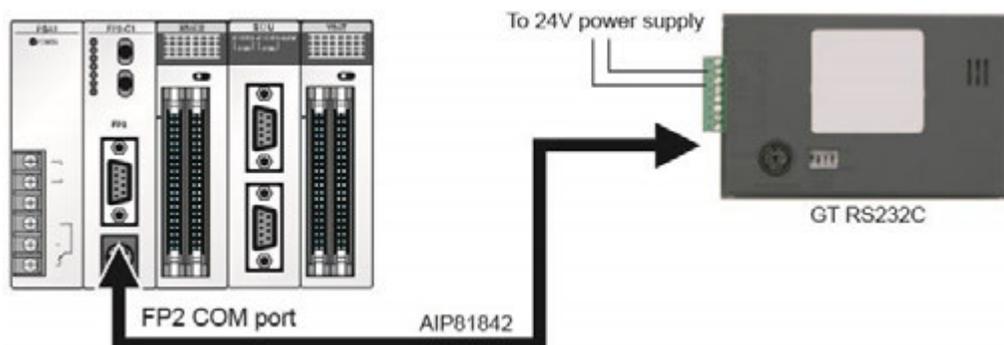
**Connecting to the FPΣ COM 4 cassette**



**REFERENCE**

For more information on the connection via RS485, refer to the GT Series User Manual.

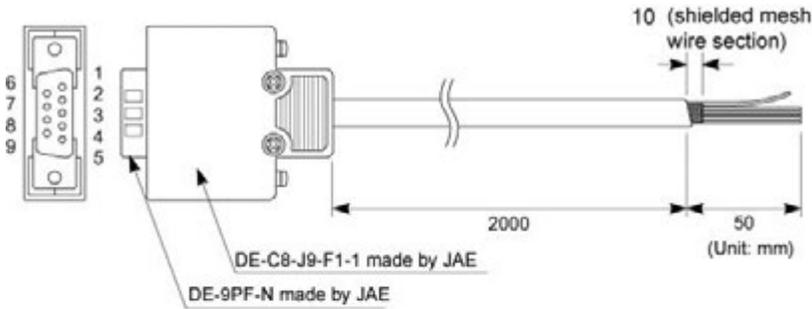
## 7.10 Connecting to the COM Port of FP2/FP2SH



### Communication format settings

System register no.	Item	Value	System register value
412	Selection of target use of RS232C port	Computer link	K1
413	Sending data length	8 bits	K3
	Parity check	Yes	
	Parity setting	Odd	
	Stop bits	1 bit	
	End code	CR	
	Start code	No STX	
414	Baud rate setting	9600bps	K1
415	Station number	1	K1
416	Modem connection	No modem connection	H0

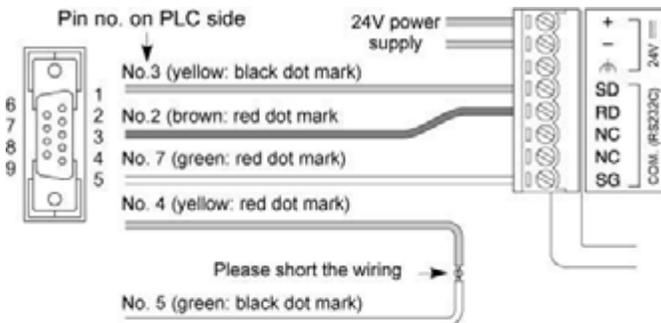
**PLC communication cable: D-Sub 9-pin loose-wire cable (AIP81842)**



Signals on D-Sub side

Pin no.	Wire color	Dot mark
1	Brown	Black dot
2	Brown	Red dot
3	Yellow	Black dot
4	Yellow	Red dot
5	Green	Black dot
6	—	—
7	Green	Red dot
8	—	—
9	—	—

**Connecting to the FP2/FP2SH COM port**



PLC side

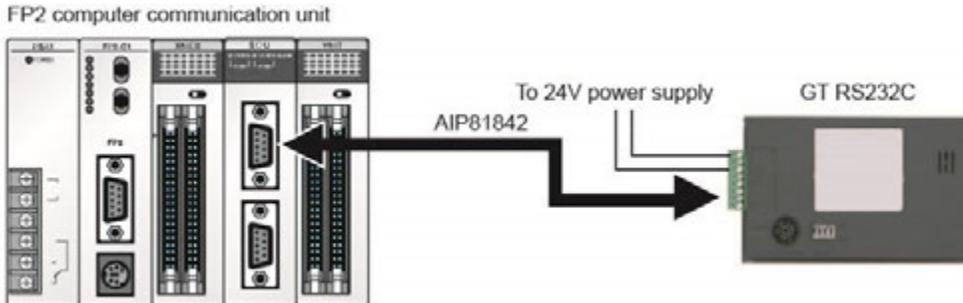
Pin no.	Signal name
1	FG
2	SD
3	RD
4	RS
5	CS
6	N.C.
7	SG
8	N.C.
9	ER

GT main unit side

Pin no.	Signal name
1	+
2	-
3	FG
4	SD
5	RD
6	NC
7	NC
8	SG

\* Although no. 6 and 7 of GT are RS/CS, they are not used in the above connections, so you should short-circuit them.

## 7.11 Connecting to the FP2/FP2SH Computer Communication Unit



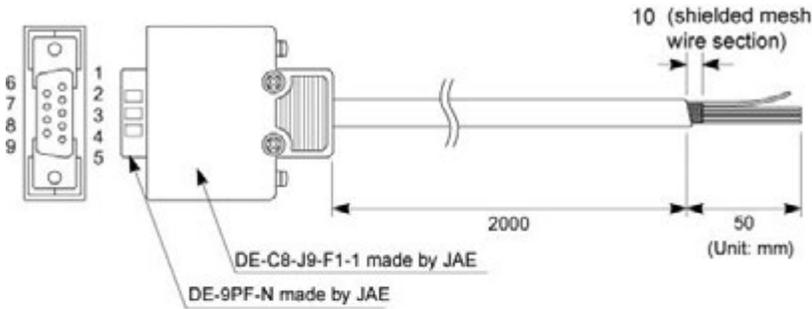
### DIP switch settings on reverse side of FP2 computer communication unit

If both serial ports of the FP2 computer communication unit are being used, each port should be set individually as shown below.

SW No.	Setting contents	Value	Switch status
1	Reserved for system		ON
2	COM1 baud rate	9600bps	OFF
3			ON
4	COM1 data length	8 bits	ON
5	Reserved for system		ON
6	COM2 baud rate	9600bps	OFF
7			ON
8	COM2 data length	8 bits	ON

With the FP2 CCU, the parity check is fixed at “Odd”, and the number of stop bits is fixed at “1bit”.

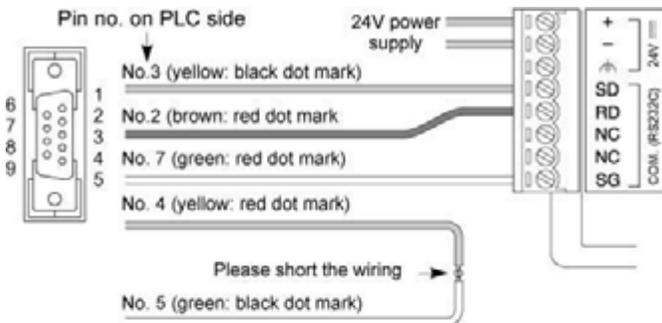
**PLC communication cable: D-Sub 9-pin loose-wire cable (AIP81842)**



Signals on D-Sub side

Pin no.	Wire color	Dot mark
1	Brown	Black dot
2	Brown	Red dot
3	Yellow	Black dot
4	Yellow	Red dot
5	Green	Black dot
6	—	—
7	Green	Red dot
8	—	—
9	—	—

**Connecting to the FP2 computer communication unit (CCU)**



PLC side

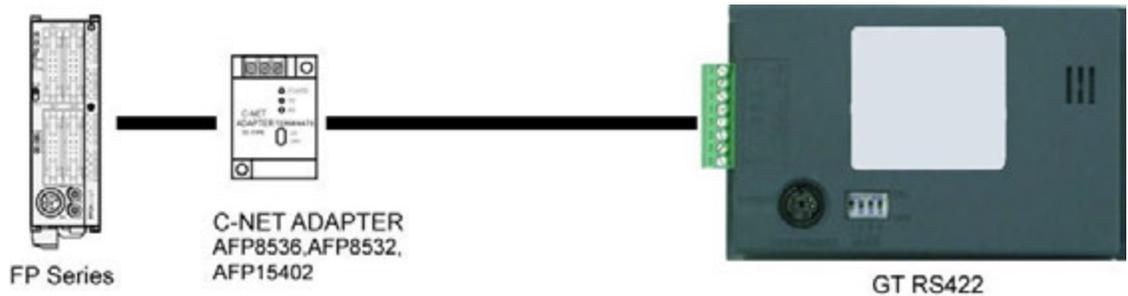
Pin no.	Signal name
1	FG
2	SD
3	RD
4	RS
5	CS
6	N.C.
7	SG
8	N.C.
9	ER

GT main unit side

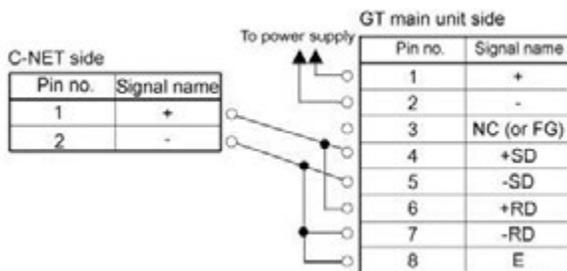
Pin no.	Signal name
1	+
2	-
3	FG
4	SD
5	RD
6	NC
7	NC
8	SG

\* Although no. 6 and 7 of GT are RS/CS, they are not used in the above connections, so you should short-circuit them.

## 7.12 Connecting to the C-NET ADAPTER



### Connection method



### Setting the communication conditions

GT communication settings (Set via GTWIN)

Item	Value set
Baud rate	19200bps
Sending data length	8 bits
Parity check	1 bit
Stop bit	Odd

### Communication settings on the PLC side

The communication settings for the GT unit and PLC should match. Check each with the corresponding software tool.



### ◆ REFERENCE

For more information on the communication settings, please refer to the **GT Series User Manual**.

### C-NET adapter setting

Set the termination (TERMINATE) to on.

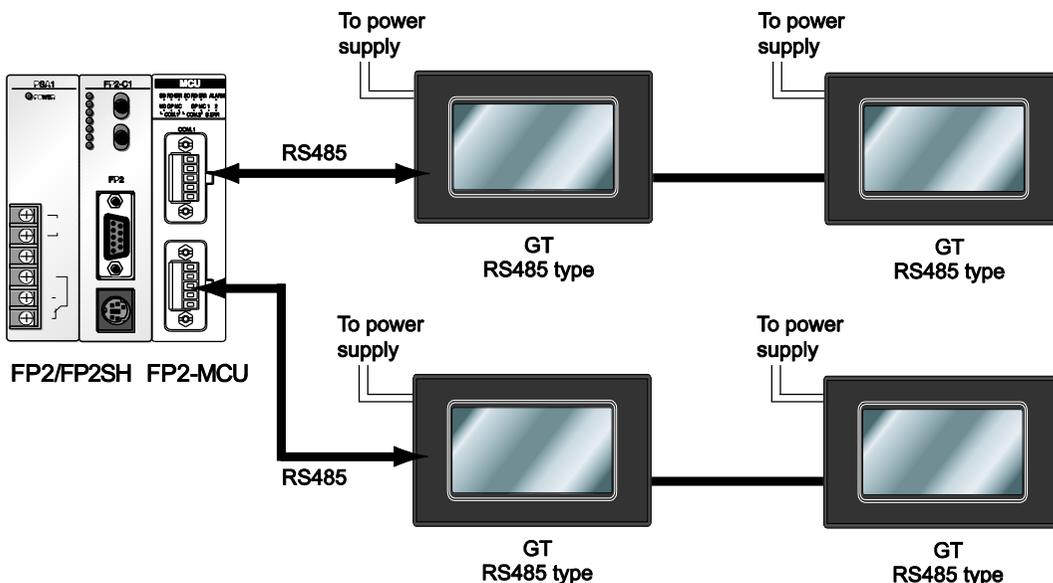
## 7.13 Connecting Via GT Link

You can establish a connection from one of the following PLCs to several GT units if the GT model supports this function:

- FP2/FP2SH (see p. 274)
- FP-X (see p. 277)
- FPΣ (Sigma (see p. 282))

### 7.13.1 GT Link Using FP2/FP2SH

The FP2 Multi-Communication Unit (FP2-MCU) with the RS485 communication block are required to establish the GT link connection between the GT units and the FP2/FP2SH. Communication can occur between one or two RS485 communication blocks.



#### Available devices

Bit device (see p. 293)	Address
Input relay	X0000-X511F
Output relay	Y0000-Y511F
Internal relay	R0000-R886F
Link relay	L0000-L639F
Timer	T0000-T3071
Counter	C0000-C3071
Special internal relay	R9000-R910F

Word device (see p. 293)	Address
Input relay	WX0000-WX511F
Output relay	WY0000-WY511F
Internal relay	WR0000-WR886F
Link relay	WL0000-WL639F
Data register	DT00000-DT10239
Link register	LD0000-LD8447
Timer/Counter set value area	SV0000-SV3071
Timer/Counter elapsed value area	EV0000-EV3071
Special data register	DT90000-DT90511



### ◆ NOTE

- If you enter a value that is out of range on the GT side, GTWIN will issue an error message.
- The address range actually available depends on the specific PLC model. Please refer to the PLC manual for details.

### Communication parameters, example settings



### ◆ NOTE

The baud rate must be set to 115200bps.

Setting values for GT:

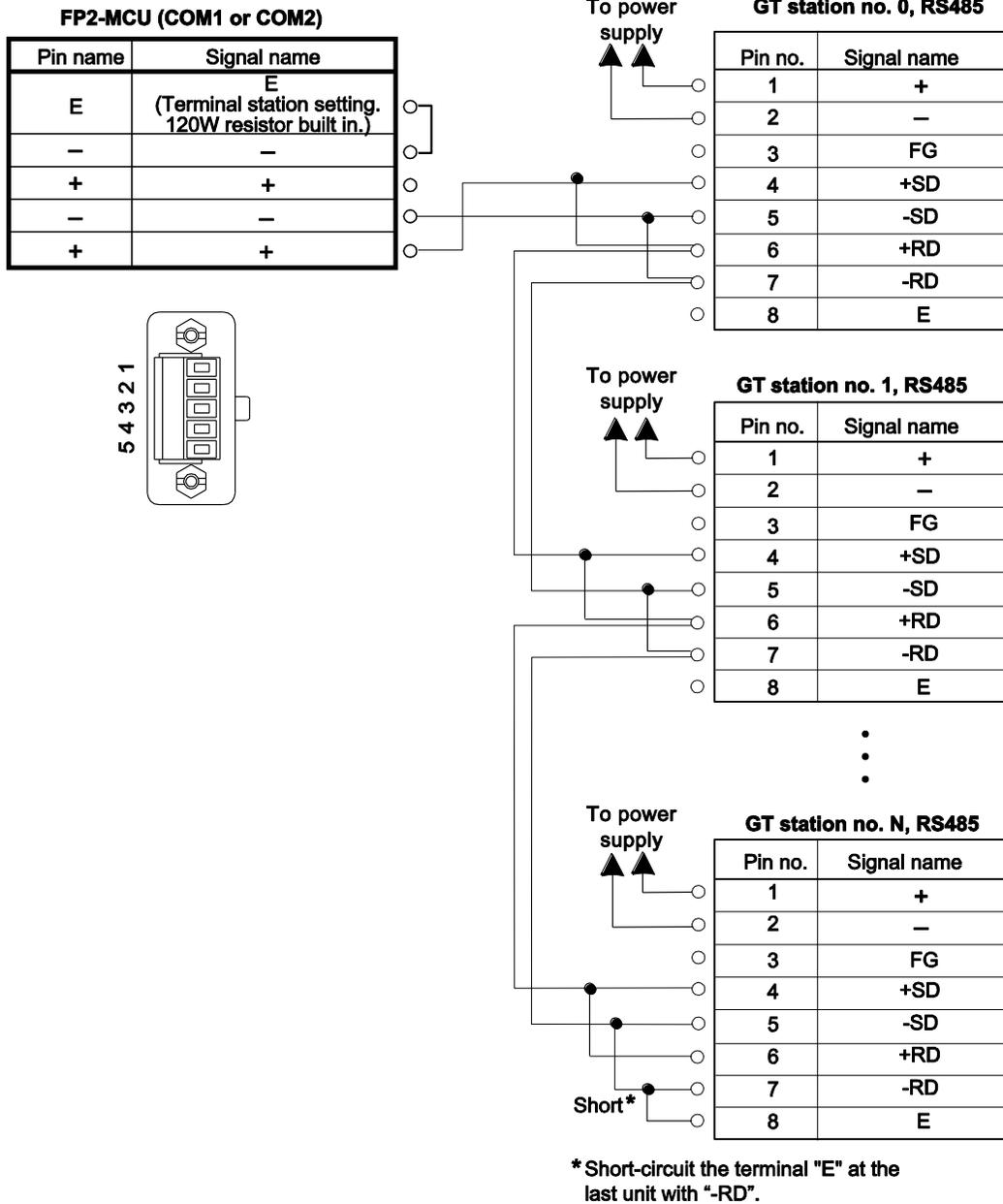
Item	Setting
Baud rate	115200bps
Data length	8
Stop bits	1
Parity bit	Odd

Setting values for FP2-MCU unit

Item	Setting
Communication mode	MEWTOCOL-COM Slave [Computer Link]
Unit no.	1
Baud rate	115200bps
Data length	8
Stop bits	1
Parity	Odd
Initialize modem	No

**Wiring diagrams**

For GT with RS485 interface:

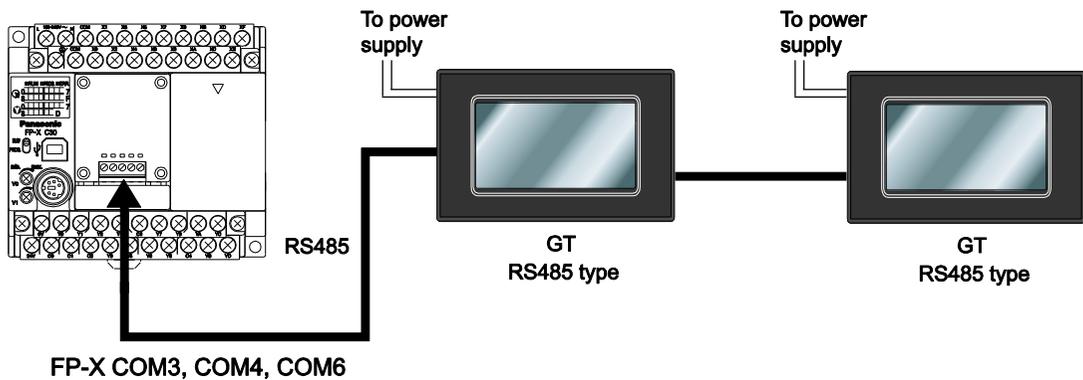


**DIP switch settings on back of FP2-MCU**

		Port	COM1				COM2			
		<b>DIP switch</b>	1	2	3	4	5	6	7	8
<b>Communication mode</b>	MEWTOCOL-COM Slave [Computer Link]		ON	ON			ON	ON		
<b>Baud rate</b>	115200bps				OFF	OFF			OFF	OFF

**7.13.2 GT Link Using FP-X**

A communication cassette capable of RS485 communication is required to establish the GT link connection between the GT units and the PLC.



**Available devices**

Bit device (see p. 293)	Address
Input relay	X0000-X511F
Output relay	Y0000-Y511F
Internal relay	R0000-R886F
Link relay	L0000-L639F
Timer	T0000-T3071
Counter	C0000-C3071
Special internal relay	R9000-R910F

Word device (see p. 293)	Address
Input relay	WX0000-WX511F
Output relay	WY0000-WY511F
Internal relay	WR0000-WR886F
Link relay	WL0000-WL639F
Data register	DT00000-DT10239
Link register	LD0000-LD8447
Timer/Counter set value area	SV0000-SV3071
Timer/Counter elapsed value area	EV0000-EV3071
Special data register	DT90000-DT90511



### ◆ NOTE

- If you enter a value that is out of range on the GT side, GTWIN will issue an error message.
- The address range actually available depends on the specific PLC model. Please refer to the PLC manual for details.

### Communication parameters, example settings



### ◆ NOTE

The baud rate must be set to 115200bps.

Setting values for GT:

Item	Setting
Baud rate	115200bps
Data length	8
Stop bits	1
Parity bit	Odd

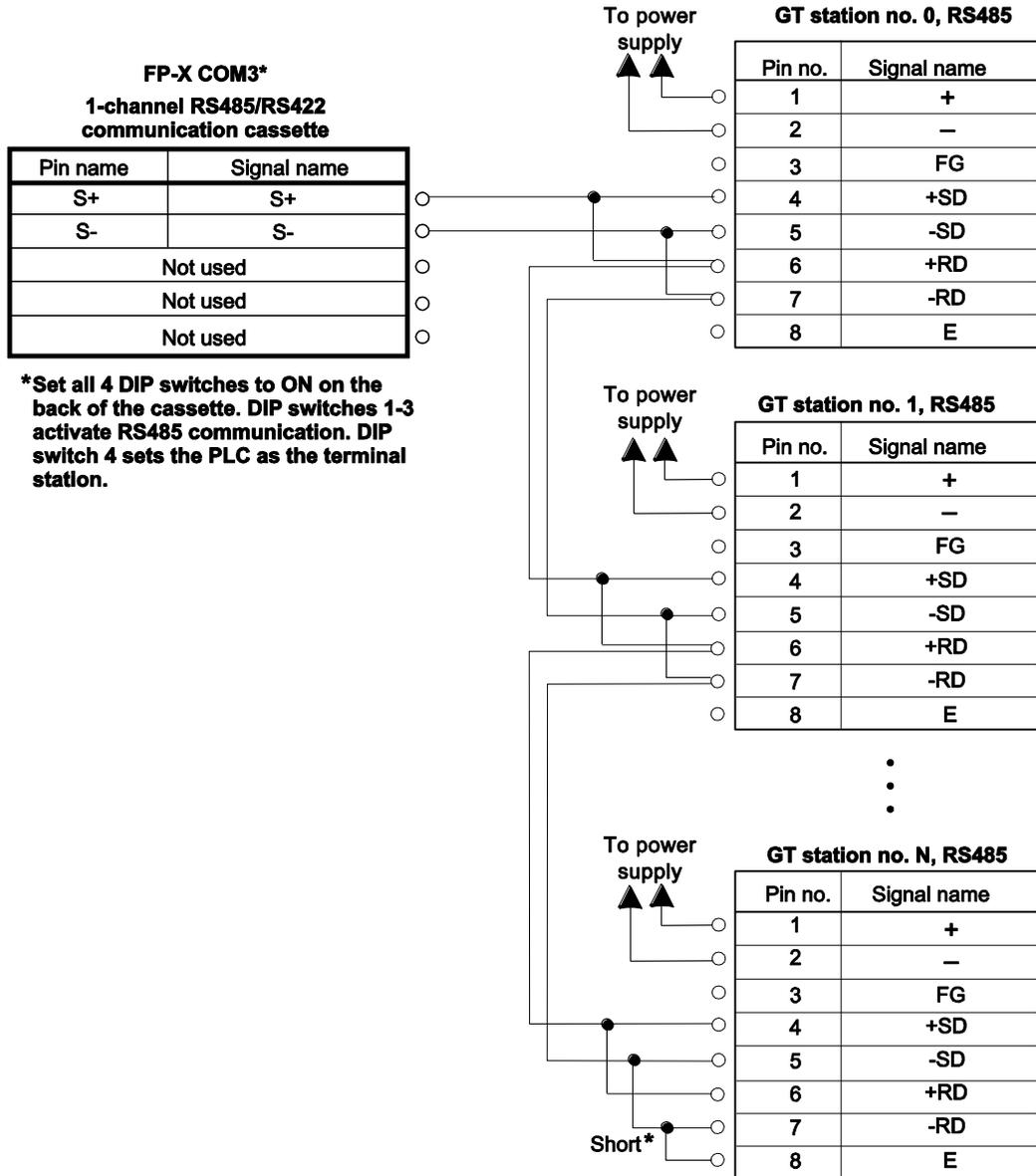
Setting values for the PLC

Item	Setting
Communication mode	MEWTOCOL-COM Slave [Computer Link]
Station no.	1
Baud rate	115200bps
Data length	8
Stop bits	1
Parity	Odd
Start code	No STX

End code	CR
Modem connection	Disable

**Wiring diagrams**

For GT with RS485 interface and FPX COM3



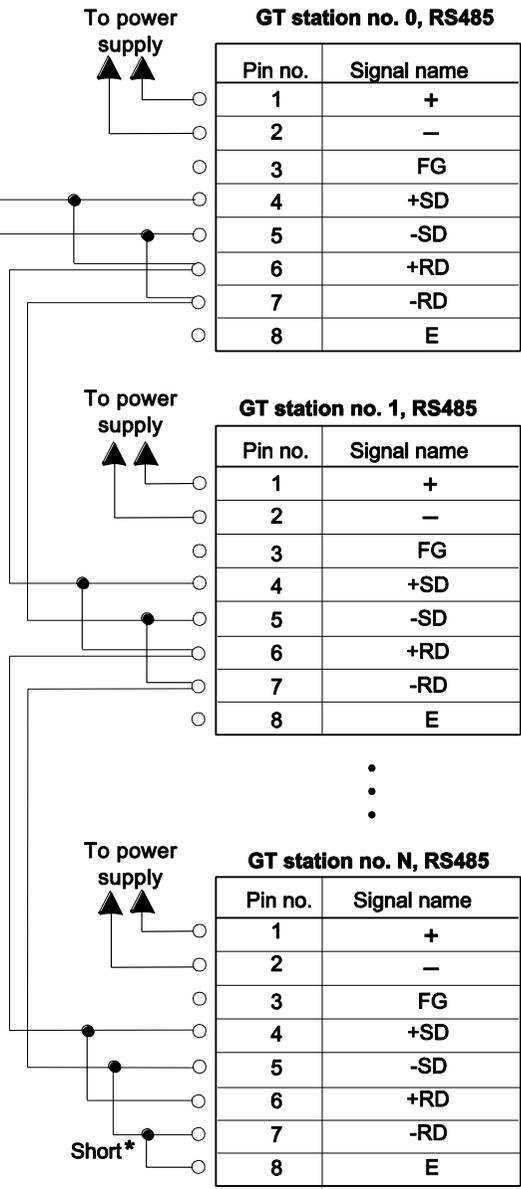
\* Short-circuit the terminal "E" at the last unit with "-RD".

For GT with RS485 interface and FP-X COM4

**FP-X COM4\***  
**1-channel RS485, 1-channel RS232C**  
**combination communication cassette**

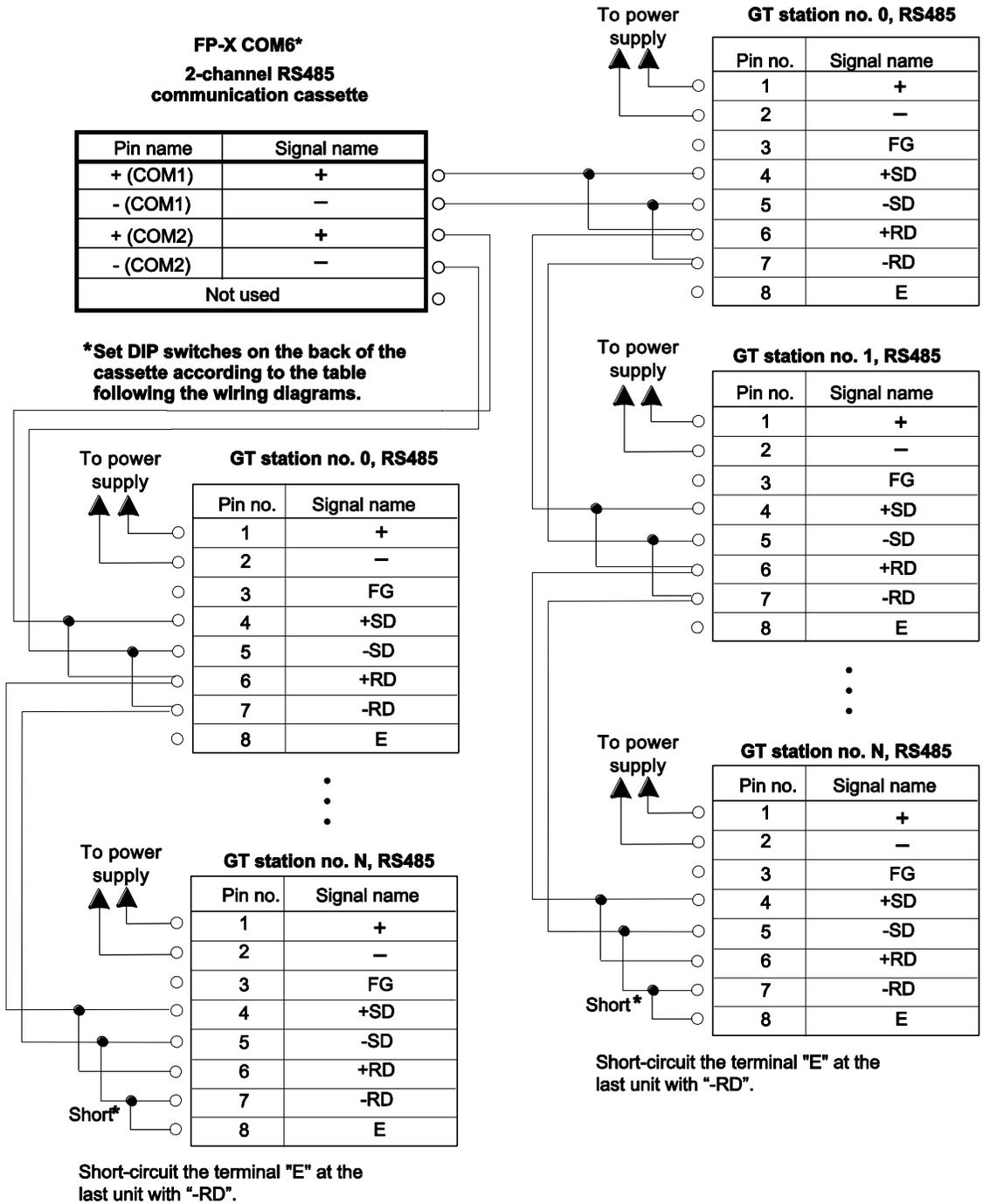
Pin name	Signal name
S+	+
R-	-
SD	SD
RD	RD
SF	SF

\*Set the DIP switch to ON on the back of the cassette.



Short-circuit the terminal "E" at the last unit with "-RD".

For GT with RS485 interface and FP-X COM6

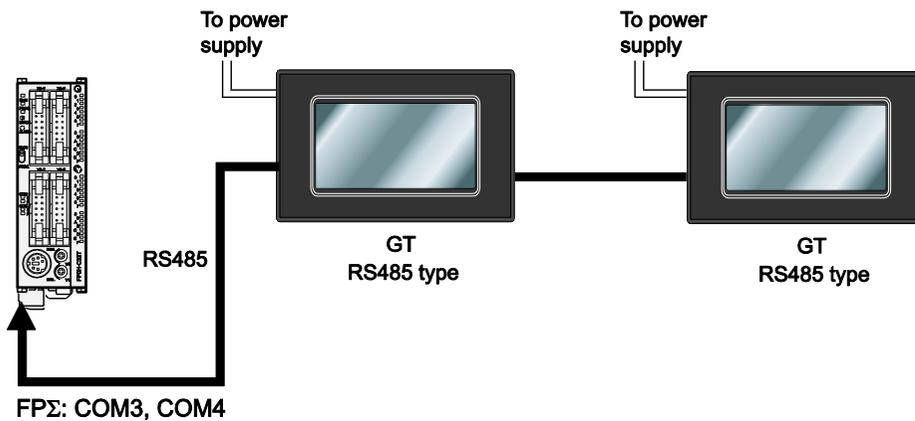


**DIP switch settings for the FP-X COM6 communication cassette**  
Specify the baud rate with both the DIP switch and the system register

Terminal resistance		COM2 baud rate	
	COM1 general unit (default)		115200bps
	COM1 is terminal unit		115200bps
	COM2 general unit (default)		19200bps
	COM2 is terminal unit		9600bps (default)

### 7.13.3 GT Link Using FPΣ

A communication cassette capable of RS485 communication is required to establish the GT link connection between the GT units and the PLC.



#### Available devices

Bit device (see p. 293)	Address
Input relay	X0000-X511F
Output relay	Y0000-Y511F
Internal relay	R0000-R886F
Link relay	L0000-L639F
Timer	T0000-T3071
Counter	C0000-C3071
Special internal relay	R9000-R910F

Word device (see p. 293)	Address
Input relay	WX0000-WX511F
Output relay	WY0000-WY511F
Internal relay	WR0000-WR886F
Link relay	WL0000-WL639F
Data register	DT0000-DT10239
Link register	LD0000-LD8447
Timer/Counter set value area	SV0000-SV3071
Timer/Counter elapsed value area	EV0000-EV3071
Special data register	DT90000-DT90511



#### ◆ NOTE

- If you enter a value that is out of range on the GT side, GTWIN will issue an error message.
- The address range actually available depends on the specific PLC model. Please refer to the PLC manual for details.

### Communication parameters, example settings



#### ◆ NOTE

The baud rate must be set to 115200bps.

Setting values for GT:

Item	Setting
Baud rate	115200bps
Data length	8
Stop bits	1
Parity bit	Odd

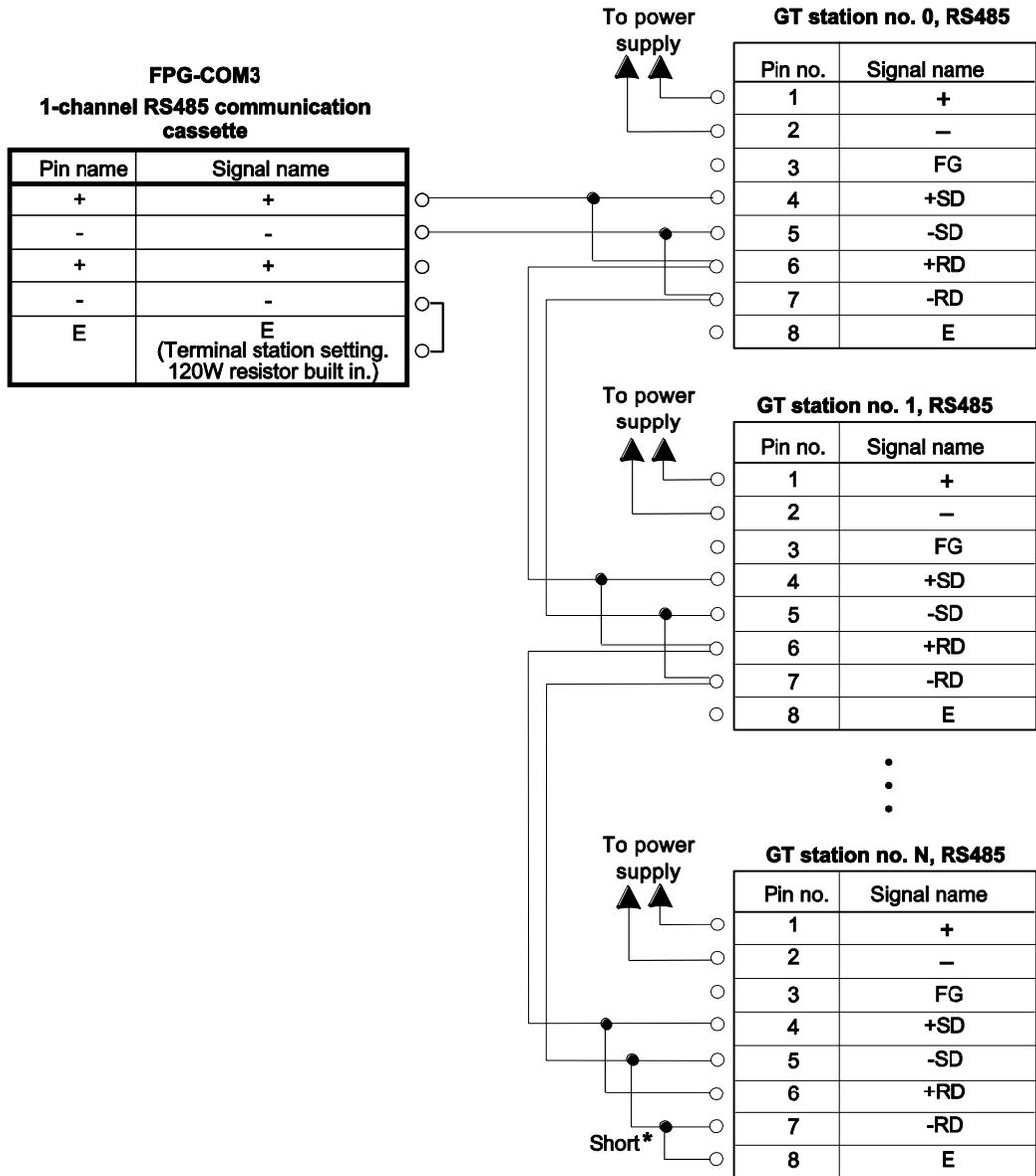
Setting values for the PLC

Item	Setting
Communication mode	MEWTOCOL-COM Slave [Computer Link]
Station no.	1
Baud rate	115200bps
Data length	8

<b>Item</b>	<b>Setting</b>
Stop bits	1
Parity	Odd
Start code	No STX
End code	CR
Modem connection	Disable

**Wiring diagrams**

For GT with RS485 interface and FPG-COM3



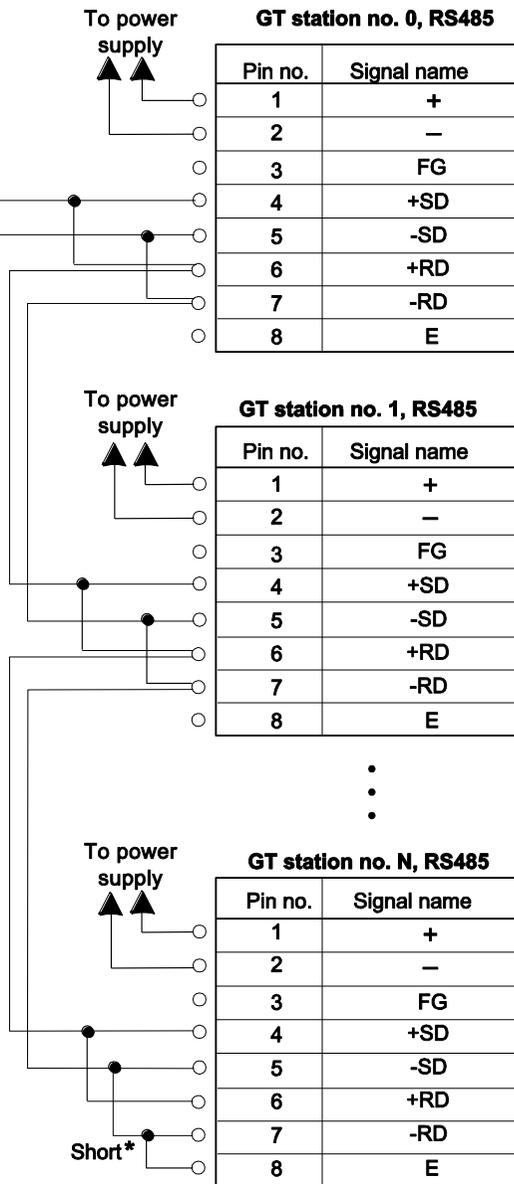
\* Short-circuit the terminal "E" at the last unit with "-RD".

For GT with RS485 interface and FPG-COM4

**FPG-COM4\***  
**1-channel RS485, 1-channel RS232C**  
**combination communication cassette**

Pin name	Signal name
S+	+
R-	-
SD	SD
RD	RD
SF	SF

**\*Set both DIP switches to ON on the back of the cassette. DIP switch 1 sets the PLC as the terminal station. DIP switch 2 sets the baud rate to 115200bps for RS485 communication.**



Short-circuit the terminal "E" at the last unit with "-RD".

## **Chapter 8**

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### **SD Card Data Upload from GT to PC**

## 8.1 Introduction to the GT\_SD\_Reader

With the GT\_SD\_Reader software, you can upload data saved in an SD memory card which is inserted in the GT to a PC that is connected to the GT with a USB cable. To transfer the data it is not necessary to remove the SD card from the GT. The PC needs to have GTWIN installed as the GT\_SD\_Reader software is installed together with GTWIN.



### ◆ NOTE

**You can upload or delete data from the SD memory card, but it is not possible to edit or write data.**

### Compatibility of GT model and version

The data upload with the GT\_SD\_Reader software only works for GT models with a certain version, see table below. If you are using a GT with an unsupported version, please upgrade it. The latest version can be downloaded from our web site.

Model	Applicable version
GTWIN	Ver. 2.E01
GT_SD_Reader	Ver. 1.00
GT02*	Ver. 1.61
GT03-E*	Ver. 1.01
GT05	Ver. 2.21
GT12*	Ver. 1.91
GT32	Ver. 2.31
GT32-E	Ver. 1.31

\* Applicable to models with SD memory card slot only.

### Data that can be uploaded

The table lists all the data that can be uploaded using the SD card data upload function. Data that is not related to the GT panel and data in the GT internal memory cannot be uploaded.

Item	Readable files and data
Logging function log file <sup>*1</sup>	Files in CSV format
Alarm history file <sup>*2</sup>	Files in CSV format
Sound file	Sound files in GT's unique format
SD recipe file	Files in CSV format
Screen data	Files saved on an SD memory card by the option [GT → SD] from the GT panel system menu or screen data created with the command File → Utility → Create SD Memory Card File.
Programs for PLC	Files saved on SD memory card by the option [GT → PLC] from the GT panel system menu or files created with FPCWIN GR for GT.

<sup>\*1</sup> Data stored in the SRAM cannot be uploaded.

<sup>\*2</sup> Data that has not been saved on the SD memory card cannot be uploaded.

## 8.2 Working with GT\_SD\_Reader

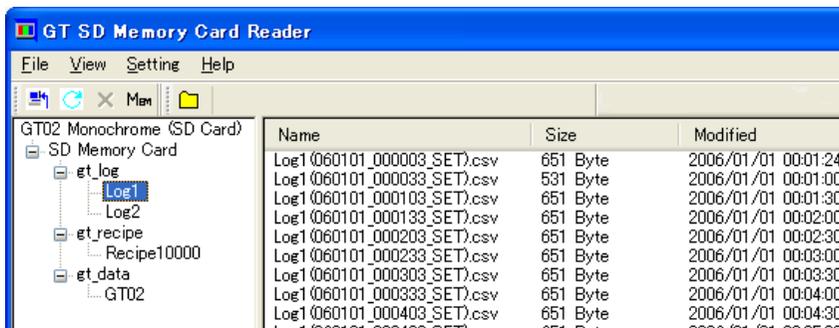
To start GT\_SD\_Reader, please proceed as follows:



### ◆ PROCEDURE

1. **Connect the PC which has GTWIN installed and the GT unit with a USB cable**
2. **Switch on the power of the GT unit**
3. Start → Programs → Panasonic-ID SUNX Terminal → GTWIN → Tools → GT\_SD\_Reader

The main screen of GT\_SD\_Reader is displayed. The left side shows a tree with the folder structure on the SD memory card. The GT model displayed at the top of the tree.



### ◆ NOTE

- **When the PC is not connected to the GT or the communication settings are wrong, the communication setting dialog is displayed instead of the main screen of GT\_SD\_Reader. In this case, check the connection between the GT and PC and the communication settings.**
- **It is not possible to display other than GT files and folders on the SD memory card.**

### GT\_SD\_Reader settings

The following settings should be made before managing data with GT\_SD\_Reader.

Option	Description
Communication Settings	Use the following settings for the communication between PC and GT. <ul style="list-style-type: none"> <li>• COM Port: USB</li> <li>• Wait: 5 (seconds)</li> </ul>
Language Settings	Sets the menu and dialog language for GT_SD_Reader.
Folder Settings	Sets the target folder on the PC to which files are saved when you upload from an SD memory card.

## Uploading files and folders from the GT to the PC

You can upload data by file or by folder using either the menu or an icon.



### ◆ PROCEDURE

#### 1. Select the file or folder to upload from the tree

It is possible to select more than one file or folder.

#### 2. File → Upload (GT > PC) or select

If you have not set a target folder on the PC, a dialog appears where you have to specify a folder. Uploaded files will be saved directly in the target folder, uploaded folders will create a new folder in the target folder.

## Deleting files on the SD memory card

You can delete files from the SD memory card.



### ◆ PROCEDURE

#### 1. Select the file to delete from the list of files

It is possible to select more than one file.

#### 2. Select "Delete" from the context menu or



### ◆ NOTE

- Before you delete files, check that the files you are about to delete are not used by the GT unit currently. If the GT unit uses the file(s), it may not operate properly after deletion.
- Files are only deleted on the SD memory card and not on the PC.

## Refreshing the Display

The GT unit keeps working while you are running GT\_SD\_Reader. However, the GT\_SD\_Reader window shows the information from the time when the SD memory card information was loaded from the GT unit, so it is possible that there is a difference between what is displayed and the actual data on the SD memory card.

Use **View** → **Apply** or the icon  to refresh the display.

**Displaying GT internal memory information**

You can see a number of data registered in the GT internal memory with GT\_SD\_Reader.

The following information can be displayed with **View** → **GT Internal Memory** Information or the icon :

- Number of logging data registered by the data logging function (only logging data that is still located in the GT internal memory and that has not already been output to the SD memory card)
- Number of registered alarm histories
- Number of line graphs in sampling mode



# Glossary of terms

## **Base screen**

A base screen is the standard screen you design with GTWIN. Keyboard screens are the other kind of screen you design with GTWIN. After you transfer these screens, they can be displayed on the GT unit. The base screen number corresponds to the screen number on the GT unit.

## **Basic communication area to PLC (Controller)**

The basic communication area (see p. 24) allows the PLC and GT unit to exchange basic data and for the PLC to control basic functions in the GT unit. Therefore, the PLC must not use these addresses for other purposes!

You must specify a basic communication area.

## **Bit device**

A bit device represents 1-bit information, e.g. TRUE or FALSE. It can be an internal flag, e.g. R, L, GR, or I/O information, e.g. X or Y. (Other vendors may use different nomenclature for bit devices.)

## **Control device**

A control device species a WORD area (16 bits) for controlling or monitoring 16 relays (WX, WY, WR, WL, WGR).

## **Device, Reference Device**

A "device" or "reference device" refers either to a bit device (see p. 293) or word device (see p. 293).

## **Index device**

An index device (see p. 56) is used in combination with a reference device to yield a new device from which values are read by data parts.

## **Keyboard screen**

Keyboard screens are designed to be used together with data parts for entering data. They are administered separately from base screens.

## **Start device**

The start device is the beginning address of a word device (see p. 293) in a contiguous memory area.

## **Word device**

A word device represents 16-bit information, e.g. a relay (WX, WR, etc.), timer or counter (SV, EV), PLC register (DT, LD, FL) or GT internal relay or register (e.g. WGR, GDT). (Other vendors may use different nomenclature for word devices.)

# Record of Changes

Manual No.	Date	Description of Changes
ACGM0357V10END	May 2007	First European edition
ACGM0357V11EN	October 2007	<ul style="list-style-type: none"> <li>• GT05 added</li> <li>• Recipe editor terminology improved</li> <li>• Line graph editor terminology and description improved</li> <li>• Custom parts terminology improved</li> </ul>
ACGM0357V12EN	December 2007	Windows Vista® information added
ACGM0357V13EN	July 2008	<ul style="list-style-type: none"> <li>• Security options added</li> <li>• GT Link function added</li> <li>• External manufacturer PLCs added</li> </ul>
ACGM0357V20EN	June 2009	<ul style="list-style-type: none"> <li>• GT12 added</li> <li>• PLC Multiple Connection (see p. 28) (GT:PLC = 1:N) for Panasonic FP-Series PLCs introduced</li> <li>• Multi Function added for function switch parts (see p. 184) and custom switch parts</li> <li>• External manufacturer PLCs deleted and now appear in separate manual, GT Series Connection to Other Manufacturers' PLCs, ARCT1F449, which you can download free of charge from our Web site</li> </ul>
ACGM0357V21EN	September 2009	<ul style="list-style-type: none"> <li>• PLC data logging function</li> <li>• For data parts, index modification (see p. 56) can be used in combination with reference devices to yield new devices from which values are read</li> <li>• Hide/display function for switch, function switch and custom switch parts</li> <li>• Japanese character display for data parts</li> <li>• Japanese Katakana can be entered on keyboard parts</li> <li>• GT panel system menu (see p. 59) can be used to enter the GT unit no</li> <li>• Monochrome screens support "reverse display" of all data parts at once (see p. 24)</li> <li>• SD memory card contents can be copied to GT even if GT is protected by a password once you enter the password. Use the GT panel system menu (see p. 59)</li> <li>• PLC multiple connection (see p. 28) supported by Modbus (RTU)</li> <li>• "X" and "WX" can be set as output devices for switches</li> <li>• "Screen No. Error" screen (see p. 235) contains "Back to previous screen" button to aid in debugging</li> </ul>
ACGM0357V3EN	January 2010	<ul style="list-style-type: none"> <li>• Japanese/Chinese/Korean data parts (see p. 194)</li> <li>• SD memory card menu to copy data to and from the GT or a PLC</li> <li>• Hide/display function for keyboards (see p. 226)</li> </ul>

Manual No.	Date	Description of Changes
ACGM0357V4EN	June 2010	<ul style="list-style-type: none"> <li>• GTWIN V2.A0</li> <li>• GT02 added</li> <li>• SD Recipe Function added (see p. 46)</li> <li>• System Menu information added (see p. 58)</li> <li>• Save alarm data on SD card added (see p. 46)</li> <li>• Write Device functionality expanded (see p. 154)</li> <li>• Function added to skip a station with a communication error for PLC Multiple Connection (see p. 28)</li> </ul>
ACGM0357V5EN	November 2010	<ul style="list-style-type: none"> <li>• GT02L added</li> <li>• Data parts (see p. 194) now support TrueType and Windows system fonts</li> </ul>
ACGM0357V6EN	July 2011	<ul style="list-style-type: none"> <li>• GT32E added</li> <li>• FP Monitor function added (see p. 80)</li> <li>• PLC and font conversion tools added</li> </ul>
ACGM0357V7EN	June 2013	<ul style="list-style-type: none"> <li>• Supports the 64-bit version of Windows 7®</li> <li>• GT03-E added</li> <li>• GT32/GT05 vertical mounting is possible</li> <li>• Contrast adjustment for GT02/GT02L/GT12</li> <li>• Possibility to change multiple devices (see p. 122) at once</li> <li>• CSV output function (see p. 126) for device parameters</li> <li>• Russian and Vietnamese (see p. 19) language support</li> <li>• Size/coordinate bar (see p. 101) added</li> <li>• Guidelines (see p. 19) are added for aligning parts</li> <li>• SD card insertion flag (see p. 24) (only for panels that support SD cards)</li> <li>• GT_SD_READER software (see p. 288) added to manage contents of SD card</li> </ul>
ACGM0357V8EN	August 2014	<ul style="list-style-type: none"> <li>• GT32-R added</li> <li>• The following panels support Windows 8: GT02 Ver. 1.65, GT02L Ver. 1.55, GT03-E Ver. 1.05, GT05 Ver. 2.25, GT12 Ver. 1.95, GT32 Ver. 2.35, GT32-E Ver. 1.35</li> <li>• Flowchart symbols library (<a href="http://www.panasonic-electric-works.com/peweu/en/html/gt_series_touch_terminals.php">http://www.panasonic-electric-works.com/peweu/en/html/gt_series_touch_terminals.php</a>) TB-SYMKEYS added</li> <li>• Countdown timer (see p. 37) function</li> <li>• 180° rotation of the display (see p. 23) (GT32-R, GT32-E, GT03-E)</li> <li>• Data transmission can be disabled (see p. 23) to prevent data download/upload</li> </ul>

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