Pro-face

For customers who use Pro-face products for the first time –

First step of screen creation and settings

GP4100 Series Quick Guide

3.4-inch
Compact Graphic Operator Interface
GP4100 Series

GP4100 Series

The GP4100 Series is a 3.4" compact graphic operator interface.
This product is recommended to customers who have used interfaces other than graphic operator interfaces, such as digital counters, signal switches and message displays for use on small machine tools, food machinery, packaging machines, monitors for fast chargers, etc.

Compact HMI with easy-to-read display.

- 200 x 80 pixel resolution
- 16 levels of grayscale
- 3-color backlight

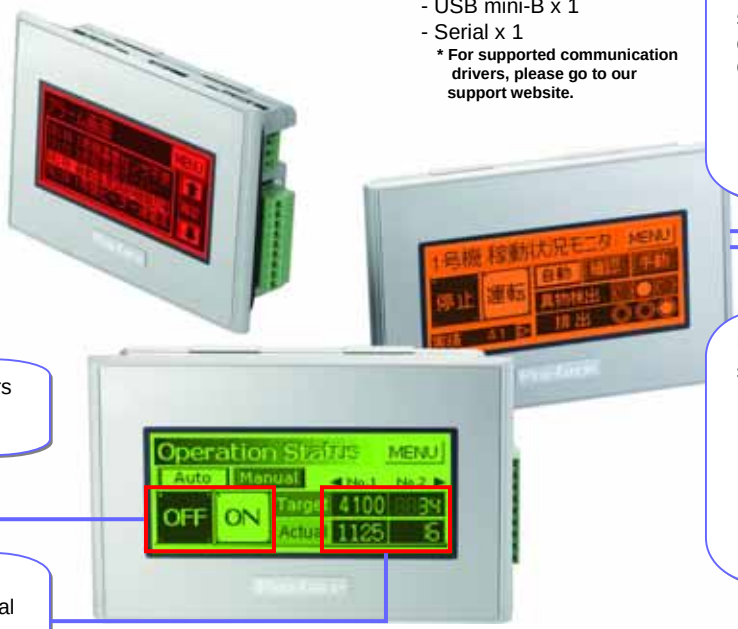
GP-410*G: Green | Orange | Red

GP-410*W: White | Pink | Red

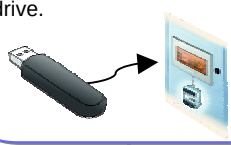
Compact HMI with easy connections.

- USB Type-A x 1
- USB mini-B x 1
- Serial x 1

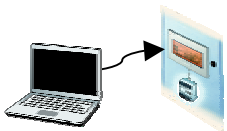
*** For supported communication drivers, please go to our support website.**



USB port (Type-A x 1) is standard. It allows screen data transfer via a USB flash drive.



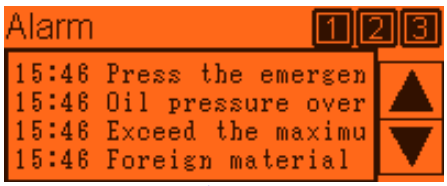
USB port (mini-B x 1) is standard. It allows PLC Ladder to be edited through HMI. (Pass-through feature)



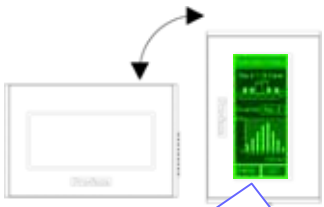
Easy to read small characters on switches.

Easy to read numeric characters even when several values are displayed on the same screen.

A wide variety of graphs are available to provide visual representation of operation status.



Error messages allow you to easily identify what kinds of errors are detected.



Vertical installation is also available.

Contents

>> Let's start!

You will learn how to create screen data and configure settings for the GP4100 Series starting on the next page.

How to Get Pro-face Screen Editing Software, GP-Pro EX

GP-Pro EX Ver.2.6 or later is required to create HMI screen data for the GP4100 Series.
GP-Pro EX provides simple operation with an enhanced user interfaces.

- Free upgrade service is available to users of GP-Pro EX Ver.2.0 or later from our support site, Otasuke Pro! (Free member registration is required.)
  > http://www.pro-face.com/otasuke/

- GP-Pro EX Ver.2.6 Limited Edition is a trial software, which is also a upgrade module for users of Ver.2.0 or earlier and for test use

GP-Pro EX Ver. 2.6

•GP-Pro EX Ver.2.6 Operating Environment

OS (64-bit OS is not supported.)	Windows Vista (Ultimate, Home Premium, Home Basic, Business) Windows XP (Home Edition, Professional Edition) Windows 2000 (SP3 or later)
CPU	Windows Vista: Pentium 4 1GHz or greater Windows XP, Windows 2000: Pentium III 800MHz or greater (Pentium 4 1.3GHz or greater recommended)
Memory	Windows Vista: 1GB or greater (2GB or greater recommenced) Windows XP, Windows 2000: 512MB or greater (1GB or later recommended)
Hard Disk Space	720MB or greater (free space necessary for installation)

Screen Editor GP-Pro EX, compatible with all Pro-face products!

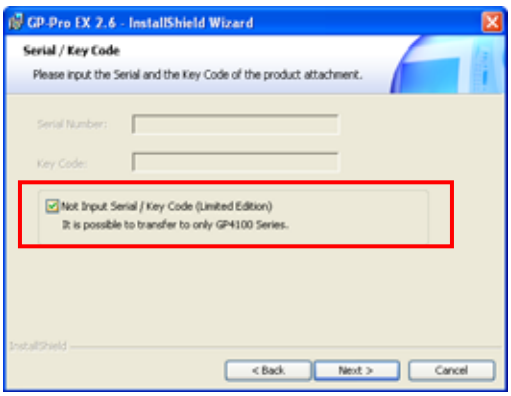
How to Install GP-Pro EX

1. Install GP-Pro EX and Transfer Tool

Start the installer, and then “SET UP MENU” appears.
Click [GP-Pro EX] to start installing the software.
In the Limited Edition, entering a serial number and key code is not required.

After the installation of GP-Pro EX is completed, the installation of Transfer Tool automatically starts.

After the installation of Transfer Tool is completed, restart the PC to activate the Transfer Tool.



Transfer Tool can be solely installed.

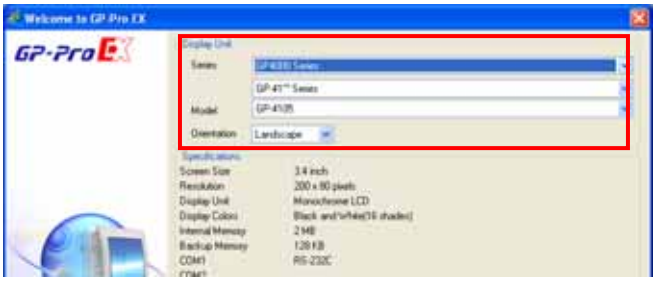
If you would like to control editorial authority, install only the Transfer Tool separately on PC at site. This allows operators only to transfer screen data.

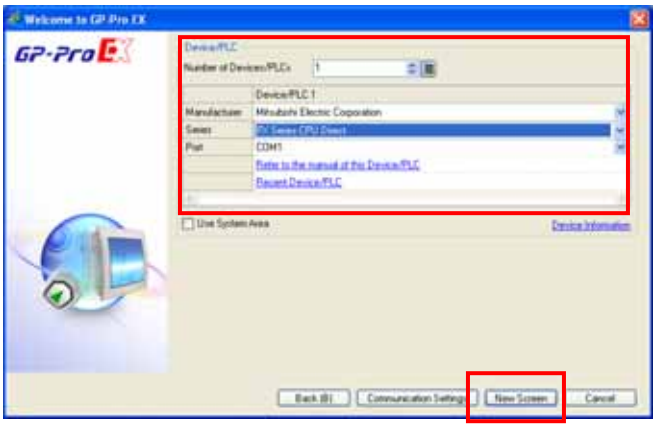
2. Completion of the installation

The GP-Pro EX icon is shown on the desktop of the PC after the installation is completed.

How to Use GP-Pro EX

GP-Pro EX allows you to create HMI screen data and to configure settings for the GP4100 Series.





1. Start-up and default settings of GP-Pro EX

Double-click the icon on the desktop to start GP-Pro EX.
After a pop-up window appears, select [New] and specify [Display Unit] and [Orientation] (“Landscape” or “Portrait”).

To create screen data for the GP4100 Series, select the options for [Display Unit] as follows:
Series: GP4000 Series and then GP-41** Series
Model: GP4105 or GP-4106

2. Select a Device/PLC

Select a device or PLC connected.

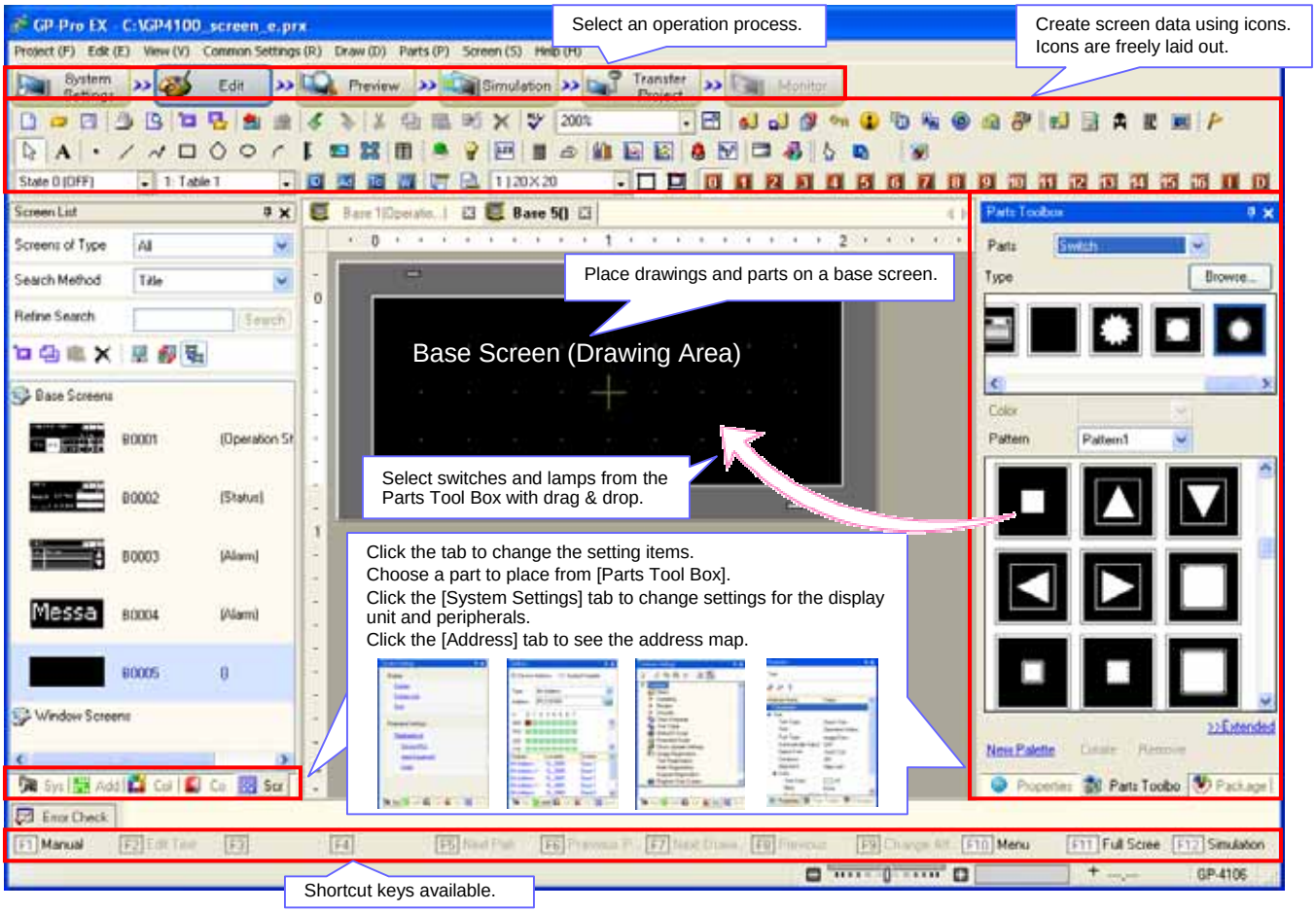
For details on new and updated drivers, please go to our support website, Otasuke Pro!
→ http://www.pro-face.com/otasuke/

3. Start the main window

Click [New Screen]. The main window appears.

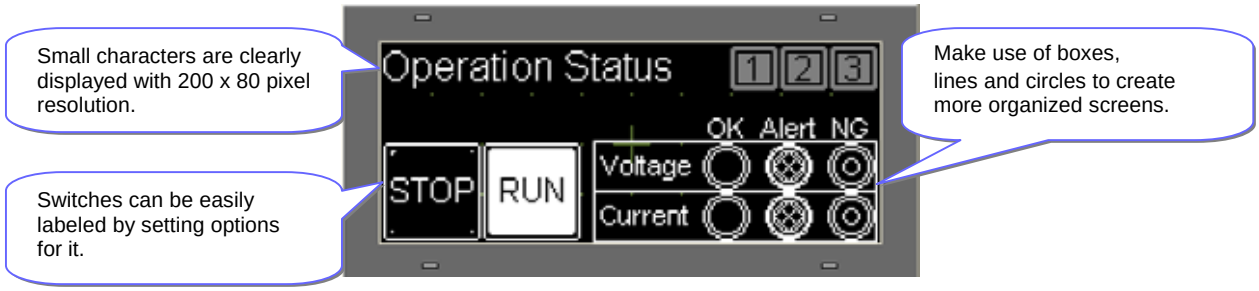
GP-Pro EX Main Window

Any needed action can be carried out on the main window of GP-Pro EX.



Text and Drawings

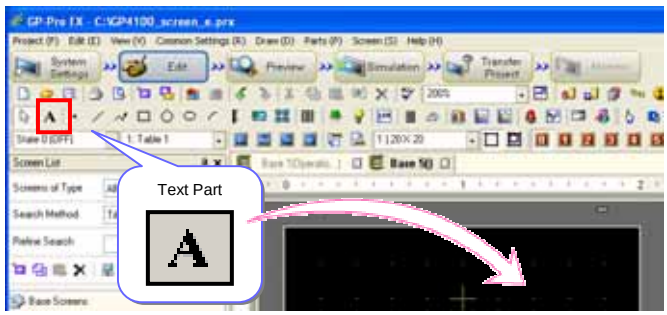
A wide variety of Windows fonts (image fonts) to create easy-to-read screens is available.
The drawing feature allows for fine layout with various options for lines and graphics.



How to Place Texts and Drawings

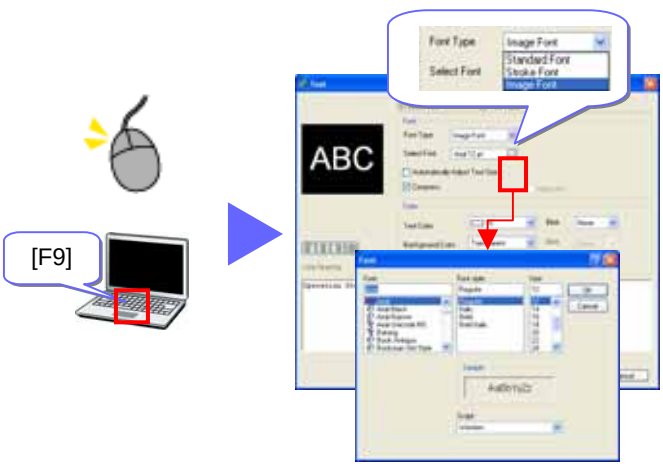
1. Place a text part

Click the icon of a text part on the main window to place the part on the base screen.



2. Specify settings for a text part

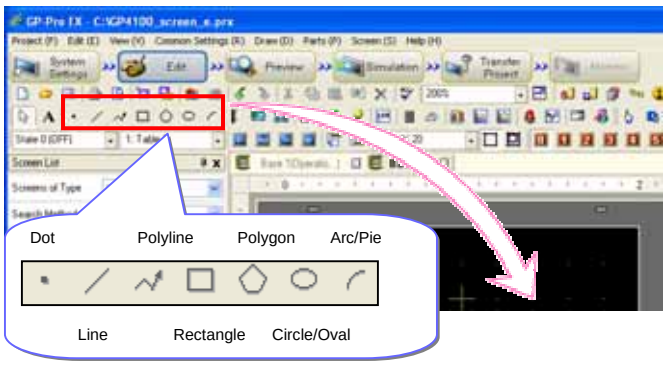
Double-click the placed part or press the [F9] key to show the setting window to specify a font type, size, etc.



* Other than using the icon, text parts can be placed from the [Draw] menu.

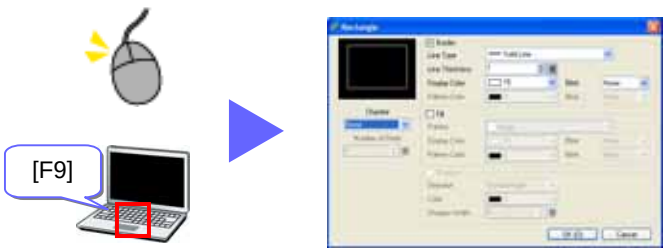
1. Select a drawing type

Click the icon of a desired drawing to place the drawing on the base screen.



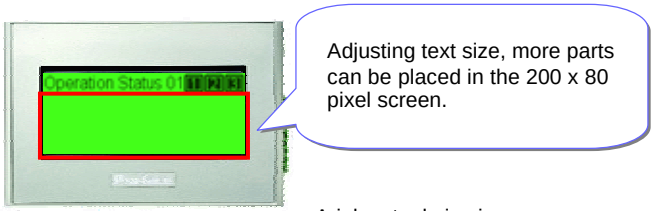
2. Specify settings for a drawing

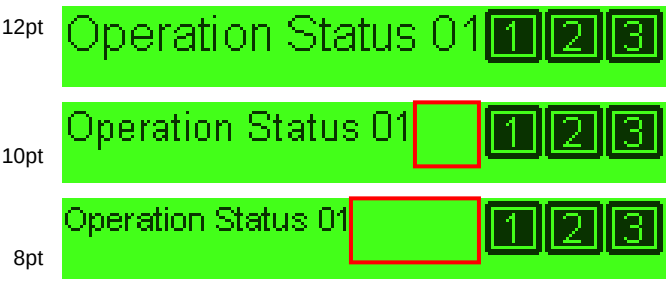
Double-click the placed drawing or press the [F9] key to show the setting window to specify a color and shape of the drawing.



* Other than using the icon, drawings can be placed from the [Draw] menu.

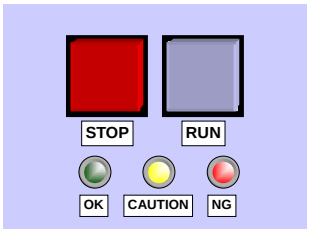
8pt to 72pt available for Windows fonts (image fonts)



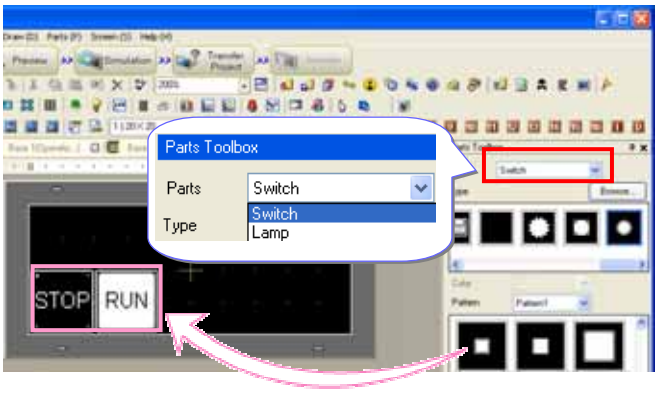


Switch and Lamp

Make your choice from a wide variety of switches and lamps, such as push buttons and toggle switches. It can be freely placed on the screen by one bit.



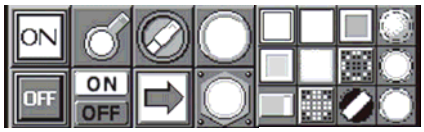
How to Place Switches and Lamps



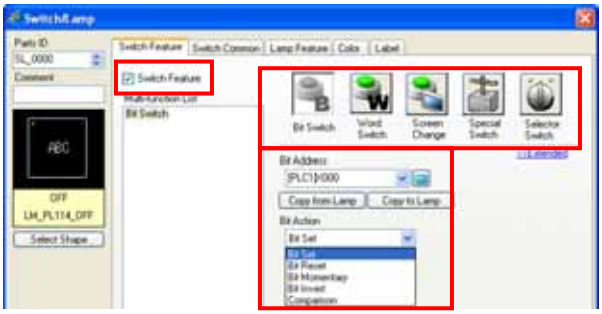
1. Place a switch on the base screen

Referring to page 4, display [Parts Tool Box] on the main window.

Select a switch part from the [Parts Tool Box], and drop and drag it on the base screen.

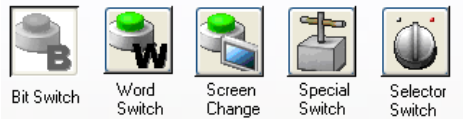


16-grayscale parts downloadable from our support website, “Otasuke Pro!”



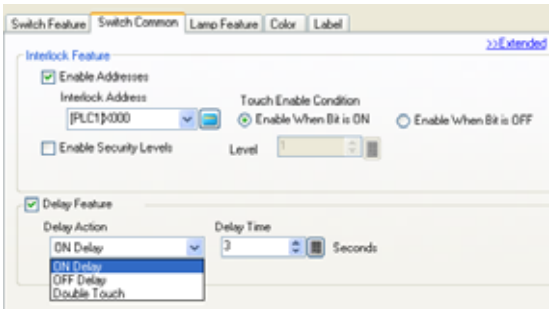
2. Specify settings for a switch

Double-click the part to show the setting window.



Click the icon to select a switch type.

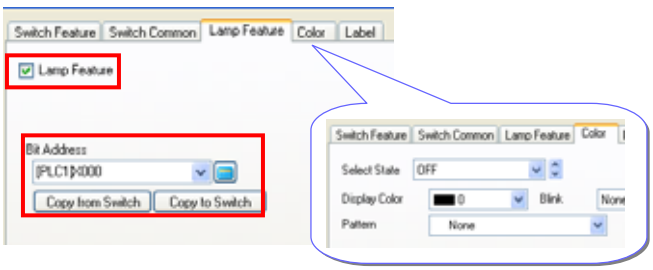
If a bit switch is selected, a bit address and bit action should be selected. The default for bit action is “Bit Momentary.”



3. Add features to a switch

Click the [Switch Common] tab to add the features to avoid wrong operation by setting conditions of switch action.

- Interlock Feature
  Operation is allowed only when a specified bit is ON or OFF.
- Delay Feature
  Operation becomes enabled in a certain period of time after a switch is touched.



4. Place a lamp

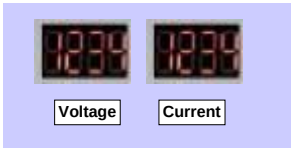
To use a part as a lamp, place a lamp by dragging and dropping from [Parts Tool Box], or check [Lamp Feature] in the [Lamp Feature] tab on the setting window.
When the same bit address as the switch has is specified, the lamp reacts at the same time as the switch is touched.

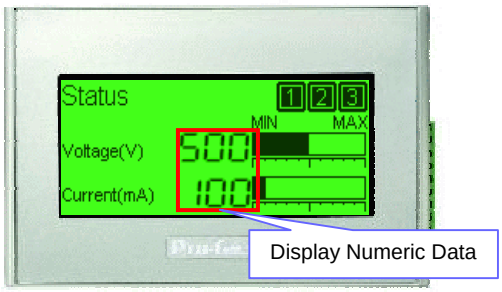
In the [Color] and [Label] tabs, the settings to specify a color when the bit is ON or OFF and texts for the label.

* Other than using the icon, switches can be placed from the [Parts] menu.

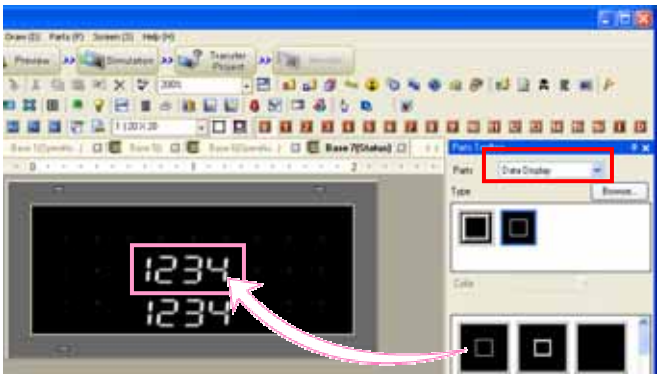
Data Display

Values stored in a connected device (such as PLC) can be displayed.
It also allows for inputting numeric characters and displaying texts too.





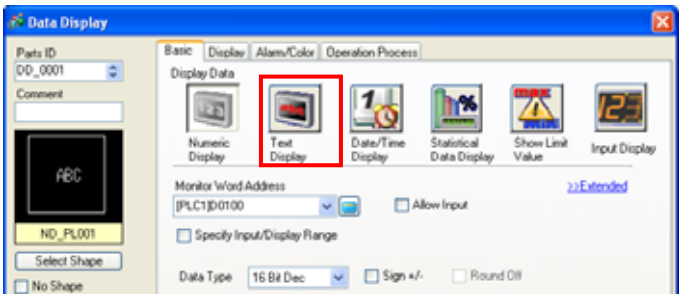
How to Place Data Display



1. Place a Data Display on the base screen

Referring to page 4, display [Parts Tool Box] on the main window.

Select a Data Display part from the [Parts Tool Box], and drop and drag it on the base screen.

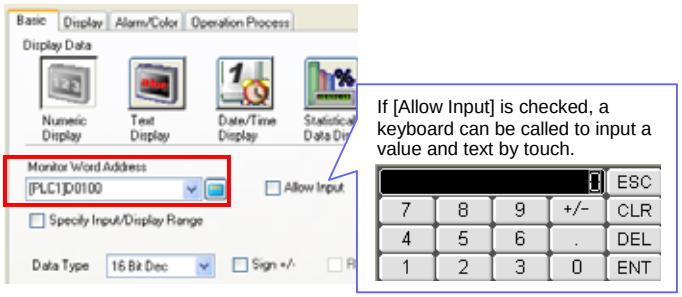


2. Specify settings for a Data Display

Double-click the part to show the setting window.

If [Text Display] is selected, text data is displayed.

For example, an error code in Hex format stored in a connected device can be displayed as text in ASCII format.



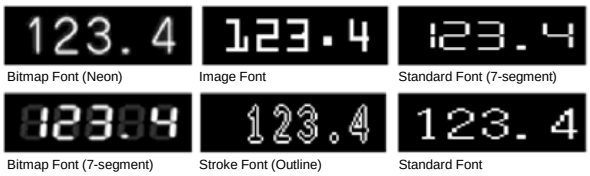
3. Set an address in a connected device

In [Monitor Word Address], input an address of which value is stored in a connected device.

If [Allow Input] is checked, a keyboard can be called to input a value and text by touch.

4. Specify a font

Click the [Display] tab to select a font type, a font size and display digits.

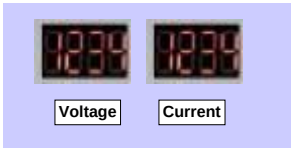


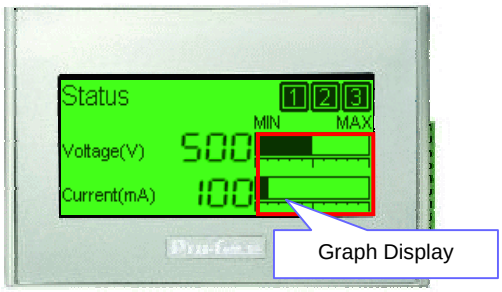
Easy-to-read display of numeric characters using clear bitmap fonts and Windows fonts (image fonts).

* Other than using the icon, Data Display can be placed from the [Parts] menu.

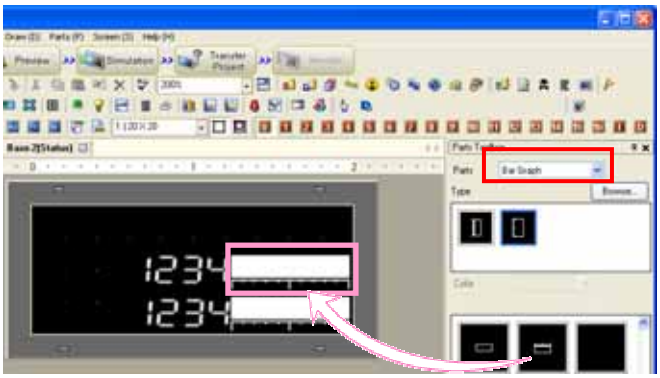
Graph Display of Operation Status

Visually check operation status on screen with numerical information shown in bar or trend graphs.





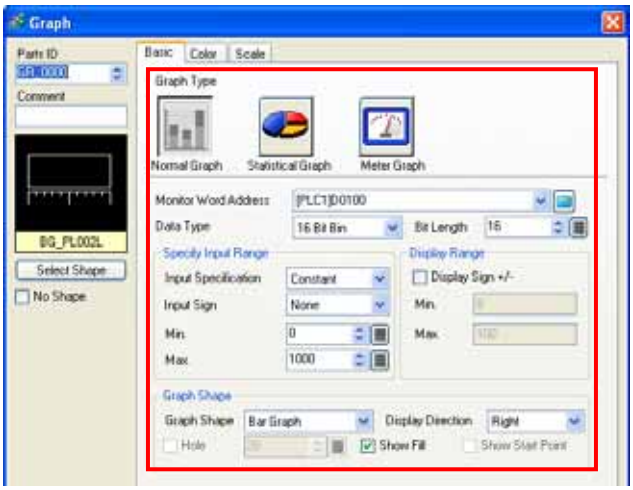
How to Place Bar Graphs



1. Place a bar graph on the base screen

Referring to page 4, display [Parts Tool Box] on the main window.

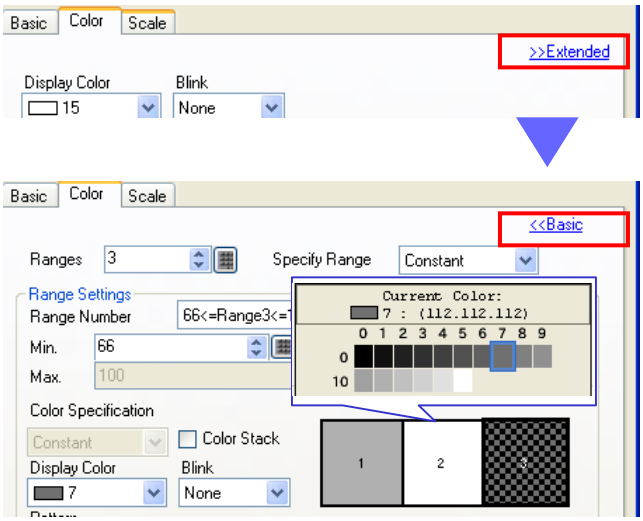
Select a bar graph from the [Parts Tool Box], and drop and drag it on the base screen.



2. Specify settings for a bar graph

Double-click the part to show the setting window.

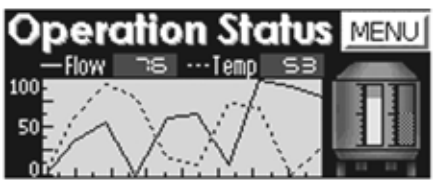
- Select a graph type
- Specify [Monitor Word Address]
  In [Monitor Word Address], input an address of which numeric data is stored in a connected device.
- Data type
  Select Bin, BCD or Float to display numeric data in the graph.
- Specify the range
  Display from a minimum value to a maximum value in a graph by percentage.



3. Specify a color

Click the [Color] tab to select a display color.

Click [Extended] to specify details on the color, for example, to change a gradation setting for high visibility.



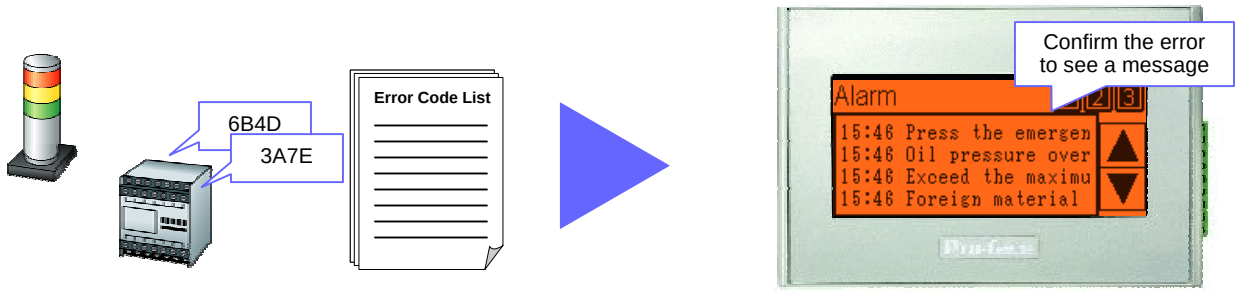
Display graphs making good use of 16 levels of grayscales.

Making good use of solid lines, dashed lines and 16-grayscale display, clearly display multiple channels of trend graphs on one screen.

* Other than using the icon, bar graphs can be placed from the [Parts] menu.

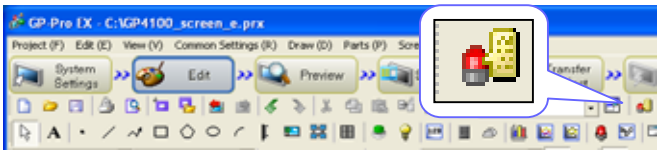
Display Error Messages (1)

Specify alarm settings to display error messages shown by changes of bit address or data in a connected device.



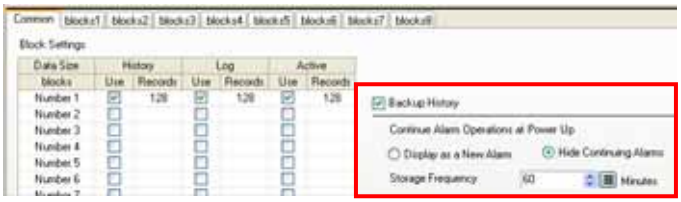
How to Set Alarms: Register a corresponding message to each bit address

When the address M0000 is ON, display ”Press the emergency stop button.”
When the address M0001 is ON, display ”Oil pressure overload.”
When the address M0002 is ON, display ”Exceed the maximum pressure.”
When the address M0003 is ON, display “Foreign material is detected. Remove it immediately.”



1. Show the alarm setting screen

Click the icon to show the alarm setting screen.



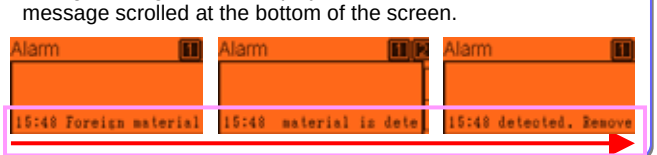
2. Specify a backup history

If [Backup History] is checked, alarm records remain saved even after a GP4100 Series unit is turned OFF.

3. Specify settings for an alarm

Register bit addresses, trigger conditions and messages.
The registered alarm information can be grouped into up to 8 blocks by setting addresses and messages in each block.

A long message can be displayed on screen as a banner message scrolled at the bottom of the screen.

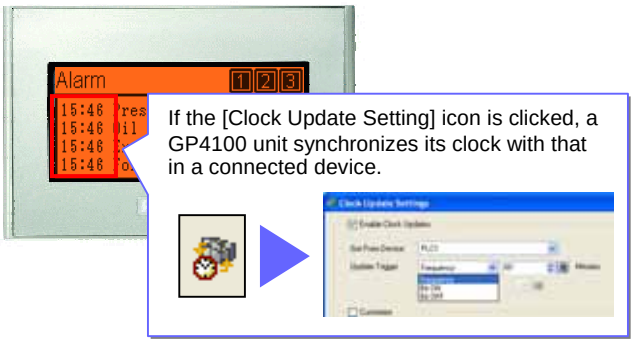


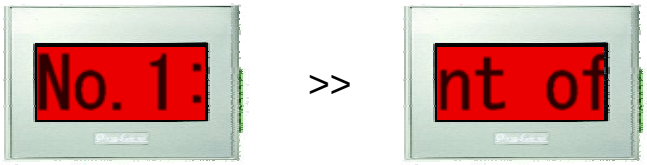
If [Word Monitoring] is selected, messages are registered to be shown on screen in accordance with changes of data values in a connected device.

If [Bit Monitoring] is selected, messages are registered to be shown on screen in accordance with changes of corresponding bit addresses.

* Other than using the icon, alarm settings can be made from the [Common Settings] menu.

Display Error Messages (2)

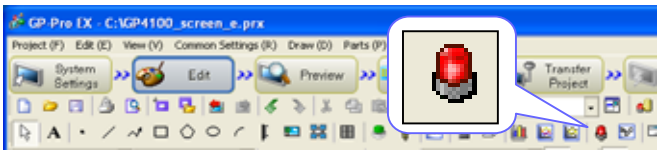




No.1: Over current of the heater

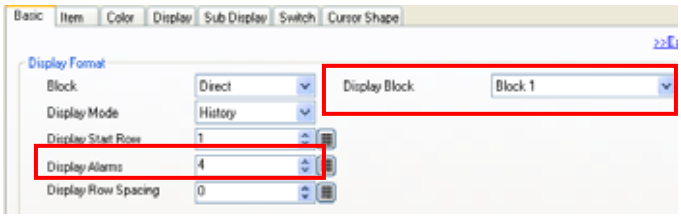
The GP4100 Series can be used as a message display, enlarging a message on the entire screen.

How to Set Alarms: Specify how to display messages



1. Place an Alarm Display

Click the [Alarm] icon to place an Alarm Display on the base screen. Double-click the placed part to show the setting window.

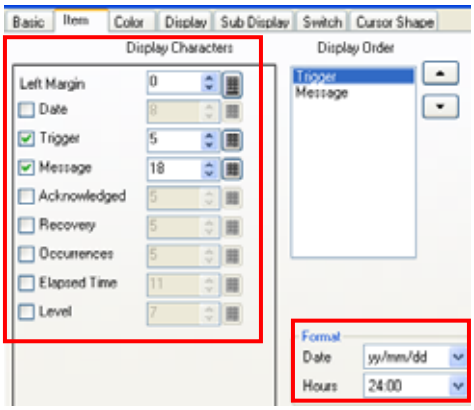


2. Specify settings for an Alarm Display

Select a block in which necessary alarm information is registered in [Display Block].

In [Display Alarms], select the number of alarm messages to be displayed at once.

To use a GP4100 unit as a message display, select “1” in [Display Alarms] in [Display Format].



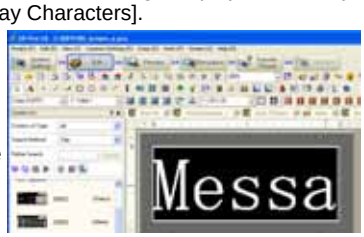
3. Specify the number of characters

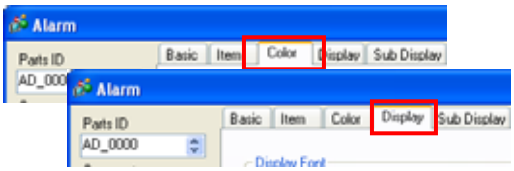
Select the number of characters for one line in each item to be displayed.

If any one of [Date], [Trigger], [Acknowledged] and [Recovery] is selected, it is displayed in a selected format according to the alarm triggered.

To use a GP4100 unit as a message display, check only [Message] in [Display Characters].

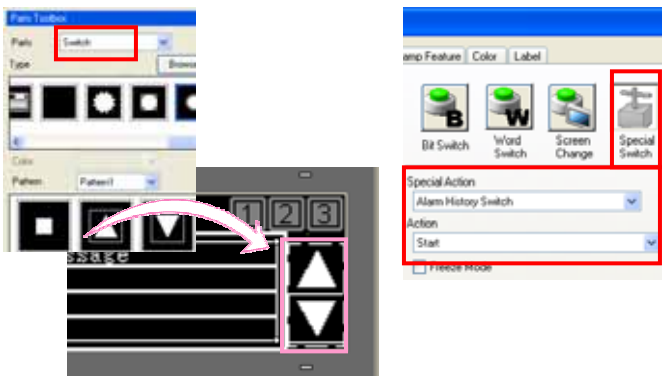
An enlarged message can be placed on the entire base screen.





4. Specify settings for display

Select a color, font and frame for an Alarm Display to display an easy-to-read message using image fonts.



5. Place and specify a special switch to scroll a message list

Use a special switch to scroll up/down multiple alarm messages.

Select a switch part from the [Parts Tool Box], and drop and drag it on the base screen. Double-click the part to set it as an alarm history switch. If one of following options is selected, scrolling up/down messages is available.

[Start] : To enable an alarm history switch.
[Move Upward/Downward]: Scroll up/down messages by touch

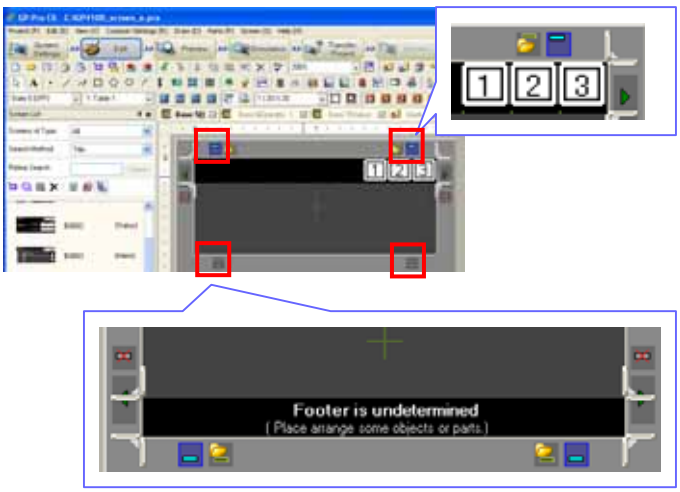
If [No Shape] is selected for the shape of a [Start] switch and this switch is put over the [Move Upward] and [Move Downward] switches, the screen space can be saved.

* Other than using the icon, alarms can be placed from the [Parts] menu.

Additional Features for Screen Creation

The Header/Footer feature allows for reduction of development time.
Register a start-up screen to utilize a waiting time during the start-up.
Text Table is available for easy creation of screens in multiple languages.

1. Register frequently used parts in header/footer for common use with other screens



1. Set a header and footer

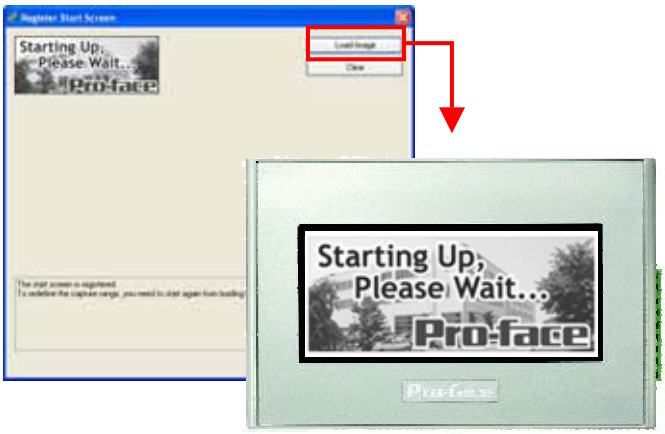
Click on the screen to change to the editing screen for header/footer.
Click again to return to the base screen.

2. Specify common parts

Place on the header/footer editing screen texts and parts such as a change screen switch which are likely to be used on multiple screens.

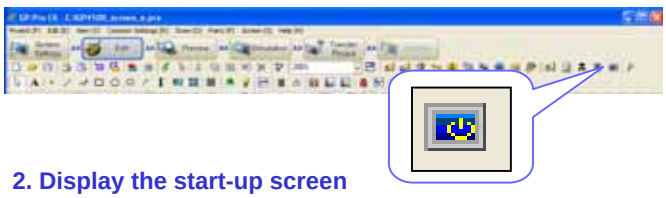
Up to 20 headers and 20 footers can be registered.

2. Register an original start-up screen



1. Register a start-up screen

Click the [Register Start Screen] icon to register a start-up screen.
The screen size is W200 x H80 pixels (W80 x H32 mm).



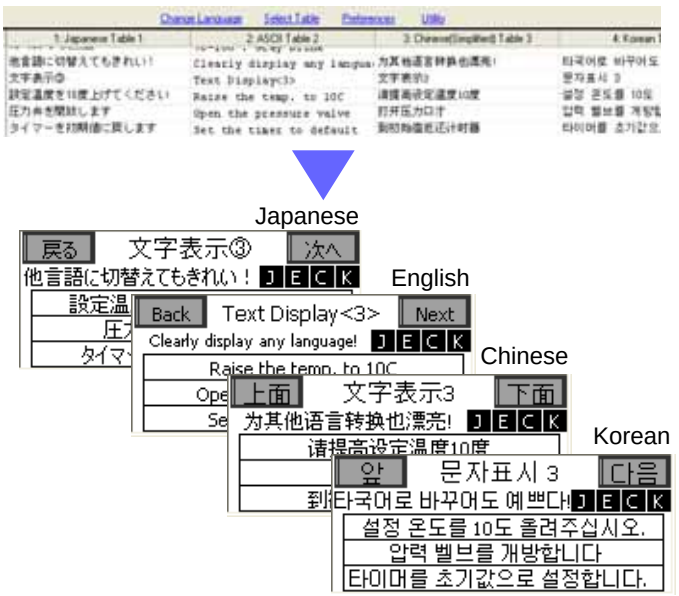
2. Display the start-up screen

The start-up screen is displayed when a GP4100 unit is turned ON.

JPEG and BMP images can be clearly displayed with 16 levels of grayscales.

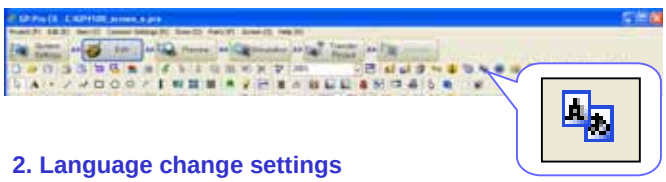
* Other than using the icon, a start-up screen can be registered from the [Common Settings] menu.

3. Change language settings at once



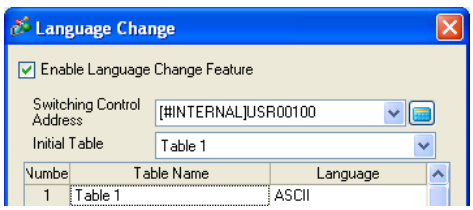
1. Set a text table

Click the [Text Table] icon to register messages in each language.



2. Language change settings

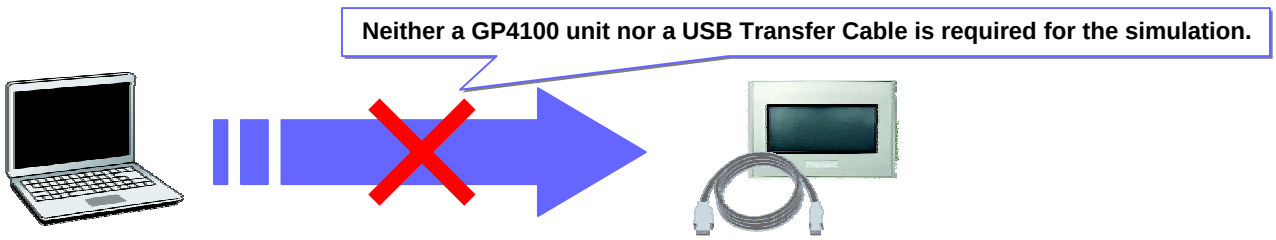
Specify a switching control address in where the table number is stored for language change.



* Other than using the icon, a text table can be registered from the [Common Settings] menu.

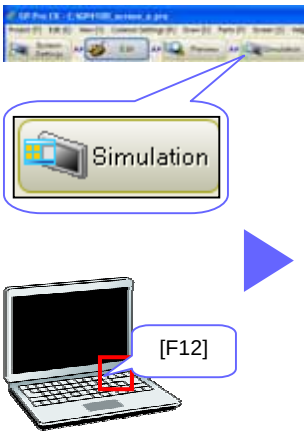
Screen Operation Check on PC (Simulation)

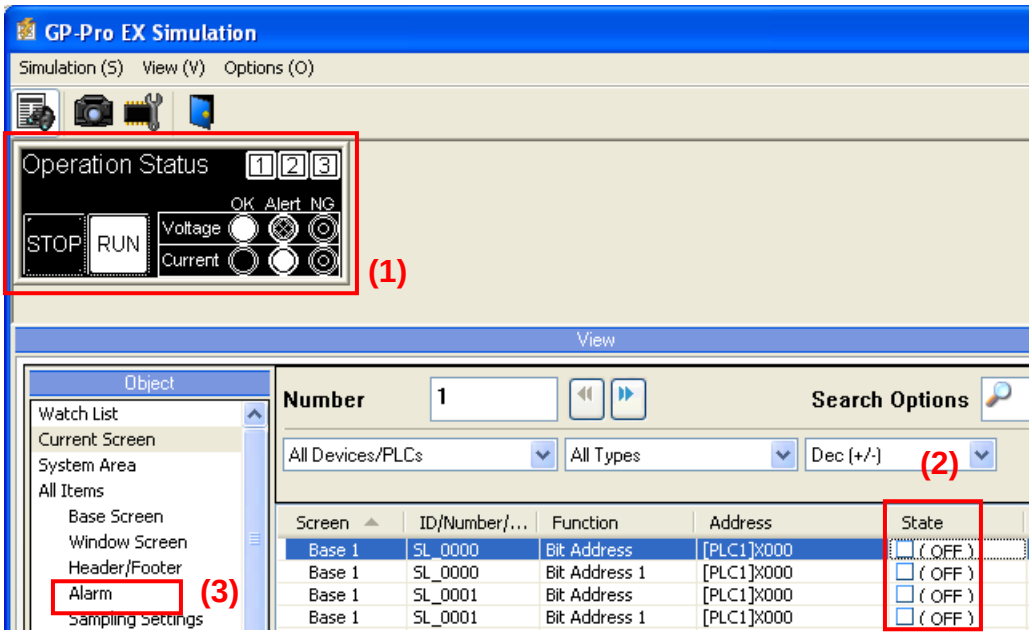
Screen operations can be tested on a PC before HMI software application is transferred to a GP4100 unit.



How to Use the Simulation Feature

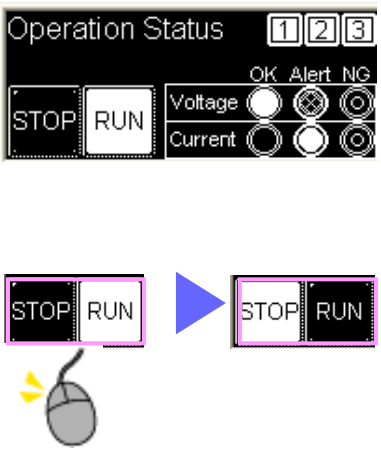
To start a simulation, click the [Simulation] icon or press the [F12] key on PC.





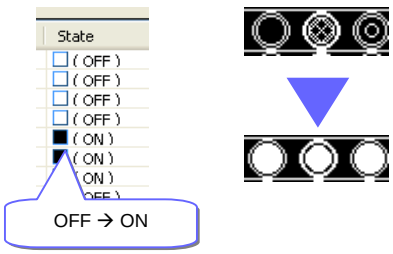
1. Switch Operation

Switch operation can be confirmed with a mouse click.



2. Lamp ON/OFF Operation

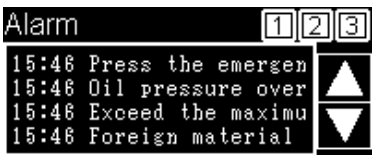
Lamp operation can be confirmed by changing the status of registered bit addresses.



Operations of Data Displays and graphs can be confirmed by changing values of registered word addresses.

3. Alarm Messages

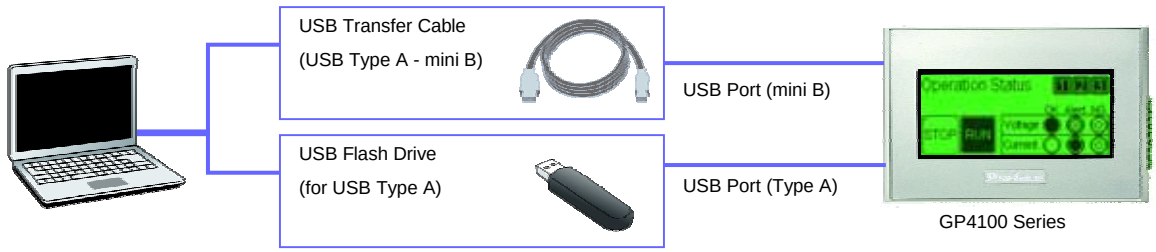
Alarms can be confirmed by changing the status of registered addresses.



Banner messages scrolling can be confirmed too.

Screen Transfer to GP4100 Series

Transfer screen data to a GP4100 unit using a USB Transfer Cable or USB flash memory.



Transfer with USB Transfer Cable

1. Start Transfer Tool

Click the [Transfer Project] icon to show the Transfer Tool window.

2. Transfer screen data

Click the [Send Project] icon to start the transfer.
The transfer status is shown during the transfer.

Transfer with USB Flash Drive

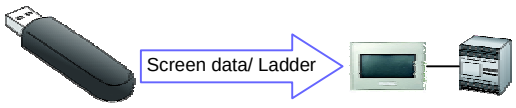
1. Start Transfer Tool

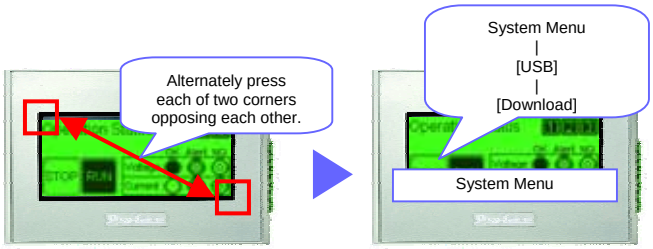
Click the [Transfer Project] icon to show the Transfer Tool window.

2. Save screen data to a USB flash drive

Click the [Memory Loader] icon to [Create Backup File].
Select the destination (a drive name) on PC to create the data to transfer.

If Toshiba Machine's PLC (TC mini/TC200) is connected, a ladder program in a USB flash drive can be transferred via a GP4100 unit.





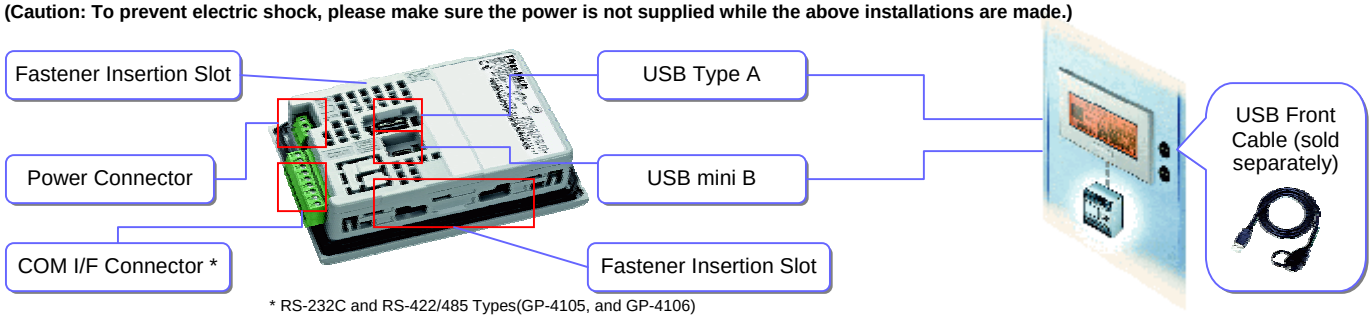
3. Download the data in a USB flash drive to a GP4100 unit

Open the System Menu on a GP4100 unit to download the screen data in a USB flash drive.
The System Menu is shown at the bottom of the screen if each of two corners of the unit opposing each other are alternately pressed.

Precautions for Installation

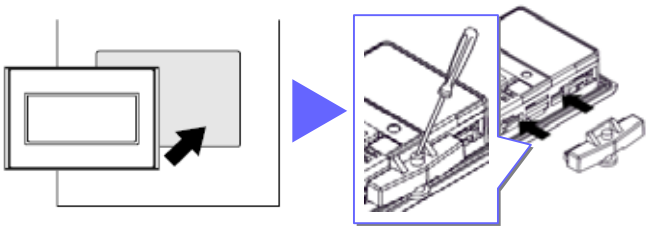
Use an installation fastener to install a GP4100 unit on a operation panel and make wire connections for power and communication cables.

(Caution: To prevent electric shock, please make sure the power is not supplied while the above installations are made.)



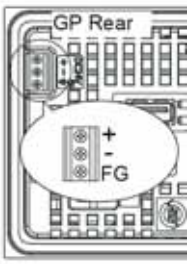
* RS-232C and RS-422/485 Types(GP-4105, and GP-4106)

Precaution for Fastener



- Panel thickness acceptable: 1.0mm - 5.0mm [0.04 – 0.20in]

Precaution for Power Connection

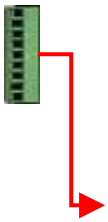


Power Cord Diameter	Simple Wire: 0.75 to 1.5mm^2 Stranded Wire: 0.75 to 1mm^2 (18 - 16 AWG)
Conductor Type	Simple or Twisted Wire
Conductor Length	5mm [0.2 in.]

- A power connector is not removable from a GP unit. Do not unnecessarily pull or jiggle the connector. It could damage the power connector.

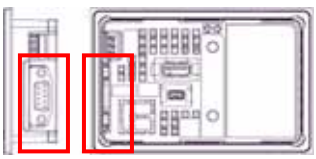
Precaution for Communication Cable Connection

RS-232C and RS-422/485 Types (GP-4105, and GP-4106)



RS-232C type				RS-422/485 type			
Label	Signal Name	Direction	Meaning	Label	Signal Name	Direction	Meaning
CI	CI(RI)	Input	Called status display	CSB	CSB	Input	Send Possible B (-)
CD	CD	Input	Carrier Detect	CSA	CSA	Input	Send Possible A (+)
CS	CS(CTS)	Input	Send Possible	ERB	ERB	Output	Data Terminal Ready B (-)
RS	RS(RTS)	Output	Request to Send	ERA	ERA	Output	Data Terminal Ready A (+)
SG	SG	–	Signal Ground	SG	SG	–	Signal Ground
DR	DR(DSR)	Input	Data Set Ready	RDB	RDB	Input	Receive Data B (-)
ER	ER(DTR)	Output	Data Terminal Ready	RDA	RDA	Input	Receive Data A (+)
RD	RD(RXD)	Input	Receive Data	SDB	SDB	Output	Send Data B (-)
SD	SD(TXD)	Output	Send Data	SDA	SDA	Output	Send Data A (+)

RS-485 (isolation) Type (GP-4107)



- PLC connection cable for each supported PLC is available as accessory (see page 15).

Communications Cable Diameter*1	0.14 to 1.5mm^2 (28 - 16 AWG)
Conductor Type	Simple or Stranded Wire*2
Conductor Length	7 mm [0.28 in]

Please refer to the Device/PLC Connection Manual for the connections with other PLCs. Make sure that the connector is not connected with a GP unit while the connector wiring is made. Otherwise, it could lead electric shock.

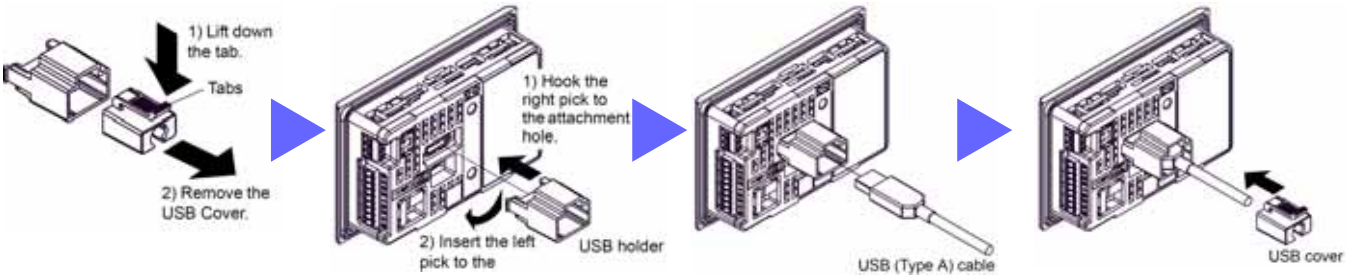
The connector is D-Sub9 (socket).

Regarding the pin connection, please refer to the GP-4100 Series Hardware Manual.

Precaution for USB Cable Clamp (sold separately)

Two types of USB Cable Clamp: for Type A and for mini B.

This clamp is used to prevent a USB cable connected to USB Interface of a GP unit from being unplugged due to vibration or other causes.



- When a USB Cable Clamp for Type A is used, remove a USB cover from a USB holder prior to the installation.

Precaution for USB Front Cable (sold separately)

USB Front Cable allows for the use of USB interface without opening an operation panel.

USB Flash Drive (USB Type A)
- Screen Transfer
- Ladder Transfer
(Supporting only PLC of Toshiba Machine)

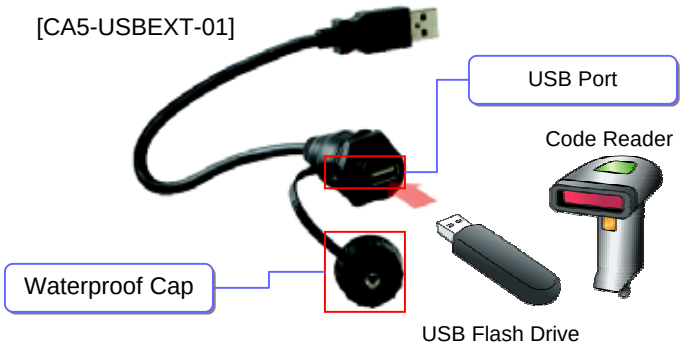
PC (USB mini B)
- Screen Transfer
- Ladder Transfer
(Pass-through)

Easy data reading by easy settings of connecting a USB code reader to a USB port (Type A).

* When a USB code reader is used, the power should be supplied via a self-powered hub.

- Only if the waterproof cap is attached to this cable, IP65f is applied only to the front side.
- Fasten the waterproof cap tightly.

[CA5-USBEXT-01]



GP4100 Series Main Units and Accessories

■Units

Product Name	Model No.	Backlight	Display Type	Serial (COM1)
GP-4105G	GP4105G1D	Green/Orange/Red	3.4" STN Monochrome LED	RS-232C
GP-4105W	GP4105W1D	White/Pink/Red		
GP-4106G	GP4106G1D	Green/Orange/Red		RS-422/485
GP-4106W	GP4106W1D	White/Pink/Red		
GP-4107G	GP4106G1D	Green/Orange/Red		RS-485 (isolation)
GP-4107W	GP4106W1D	White/Pink/Red		

■Optional Products

Product Name	Model No.	Description
GP-Pro EX	EX-ED-V26	Screen-creation software (Ver.2.6 or later required to use GP4100 series)
USB Transfer Cable (USB A/mini-B) (1.8 m)	ZC9USCBMB1	Cable for transferring screen data from a PC (Type-A) to the GP (USB mini-B)
Mitsubishi PLC Q-Series CPU I/F Cable (3 m)	ZC9CBQ31	Connects the GP directly to the CPU programming port on the Mitsubishi Electric PLC Q series
Mitsubishi PLC FX-Series CPU I/F Cable (5 m)	ZC9CBFX51	Connect the GP directly to the CPU programming port on the Mitsubishi Electric Mitsubishi PLC FX-Series PLC FX series
Mitsubishi PLC FX-Series CPU I/F Cable (1 m)	ZC9CBFX11	
Mitsubishi PLC A-Series Cable (5 m)	ZC9CBA51	Connects the GP directly to the CPU programming port on the Mitsubishi Electric PLC A/QnA series
Panasonic Electonic Works PLC Series CPU Cable (2m)	ZC9CBFP21	Connects the GP directly to the CPU port on the Panasonic Electric Works PLC FP series
USB Panel-mount Extension Cable (USB mini-B 1m)	ZC9USEXMB1	Extension cable attaching to the USB (mini-B) port on the front side of the operation panel
USB Panel-mount Extension Cable (USB Type A 1m)	CA5-USBEXT-01	Extension cable attaching to the USB (Type-A) port on the front side of the operation panel
USB-Serial (RS-232C) Conversion Cable (0.5m)	CA6-USB232-01	Cable for converting a GP unit's USB interface (Type-A) into a serial interface (RS-232C)
3.4-inch Screen Protection Sheet	ZC9DS31	Disposable, dirt-resistant sheet for the GP unit's screen (5 sheets/set)
USB Clamp TypeA (1 Port)	ZC9USCL1	USB (Type A) Cable clamp for 1 port products to prevent disconnection (5 pcs/set)
USB Clamp Type mini-B (1port)	ZC9USCLMB1	USB (mini-B) Cable clamp for 1 port products to prevent disconnection (5 pcs/set)

■Maintenance Items *Please purchase when the product is damage or lost.

Product Name	Model No.	Description
3.4-inch Installation Fastener	ZC9AF31	Used to install the GP into a solid panel (2 pcs/set)
3.4-inch Installation Gasket	ZC9WG31	Provides dust and moisture resistance when GP is installed into a solid panel (1 piece)
3.4-inch COM I/F Connector	ZC9CMC1	Connector for Serial I/F (1 piece)

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