# GP Series

# USER MANUAL

Thank you very much for selecting Autonics products.

**For your safety, please read and keep this instruction carefully before using.**

## ▣ Precaution for safety

※ Please keep the following for preventing from the accident or danger with safety using.
※ 'Precaution for safety' is consisted of 'Warning' and 'Caution', please refer to the following.

### Warning

Serious injury or death possibly caused if this instruction is not followed.

### Caution

Slight wound or product damage could possibly caused if this instruction is not followed.

※ Please keep this important instruction for using in the place every user can find it easily.

# ⚠ Warning

**1. Do not use on devices that require high safety and stability (ex: nuclear energy systems, power supply, medical devices, aircraft control devices, combustion devices, automobiles, riding, moving parts, etc.)**

It may cause a fire, human injury or property loss.

**2. For trains, ships, various safety devices, security devices, medical devices not directly related to life, and for applications that require reliability and safety,organize an alternative circuit by error-preventive design for overall system device.**

It may cause a fire, human injury or property loss.

**3. In case using the Graphic Panel touch switch for controlling, do not use the switch as an emergency switches or those related to safety that may cause physical injury or property damage in the event of a malfunction.**

It may cause a fire, human injury or property loss.

**4. In case controlling other devices through Graphic Panel telecommunication, and there is a possibility of malfunction due to telecommunication error, an alternative circuit must be constructed.**

It may cause a fire, human injury or property loss.

**5. Do not use the product in an area or an environment not specified in the manual.**

It may cause a fire, human injury or property loss.

**6. Do not connect, inspect or repair when power is on.**

It may cause a fire or give an electric shock.

**7. Do not disassemble the case. Please contact us if it is required.**

It may cause a fire or give an electric shock.

**8. Please use the rectified power with insulation trans.**

It may cause a fire or give an electric shock.

**9. Do not use the power exceeded the rated voltage.**

It may cause a fire or give an electric shock.

**10. Lithium battery is used in this product, do not disassemble or burn up.**

It may cause an explosion or a fire.

**11. Wire properly after check power terminal polarity.**

It may cause a fire or a malfunction.

# ⚠ Caution

**1. Please read all notes related to installation and wiring in the manual.**
If this is not observed, electrical shock or malfunction may occur.

**2. Make sure the ground wire of Graphic Panel is wired separately from the ground wires of other devices. Ground resistance must be less than 100Ω, and a lead wire of which sectional area is over 1.25mm² should be used.**
If this is not observed, electrical shock or malfunction may occur.

**3. When connecting Graphic Panel ports and constructing input/output, check the pin number and terminal block before connecting.**
It may cause a fire or a malfunction.

**4. Please tighten bolt on terminal block with specified tightening torque.**
It may cause a short circuit, fire or a malfunction.

**5. Do not press the surface of the touch panel with sharp or hard objects.**
The touch panel may be damaged.

**6. Keep Graphic Panel at the specified temperature.**
If stored at a temperature beyond the specification, damage may occur.

**7. Do not inflow dust or wire dregs into the unit.**
It may cause a fire or a malfunction.

**8. Do not use in an area with excessive humidity or temperature.**
The Logic Panel may malfunction, or its useful life may be shortened.

**9. Do not close ventilating opening of this product.**
Malfunction may occur due to temperature increase.

**10. Keep the product out of direct sunlight or excessive dust.**
The Logic Panel may malfunction, or its useful life may be shortened.

**11. Do not use or store in a place with shock or vibration.**
The Logic Panel may malfunction, or its useful life may be shortened.

**12. When liquid crystal from the broken LCD is smeared with skin, wash it for 15 minutes. If it is gotten in the eye, wash it for 15 minutes and contact with the medical specialist for more information.**

**13. In cleaning unit, do not use water or an oil-based detergent and use dry towels.**
**It may cause an electric shock or a fire.**

**14. Please separate as an industrial waste when disuse this unit.**

**15. To change the battery, contact the store or an authorized technician.**

**16. The manufacturer is not liable for damages that occur due to causes for which the manufacturer is not responsible, damages that occur due to an extraordinary situation, secondary damages, compensation for accidents, damages occurring on other products, compensation for other processes, and damage and loss of opportunity to the user due a malfunction of the product, regardless of the predictability of the accident.**

**CONTENTS**

# 1. OUTLINE

## 1.1 THE DEFINITION OF GP

GP(Graphic Panel) is a graphic interface device to monitor parameters of controllers as PLC. It is one of HMI(Human-Machine Interface) or MMI(Man-Machine Interface).

It is used to find out current value and status of process between controller and user, it also available to monitor control parameter on LCD screen, switch touch screen or set a variable. Mutual information between GP and controller is transmitted through serial communication. The variable of controllers are displayed as tags, for example, the physical variable is a temperature, it is displayed as numeral method with tags and it is available to monitor temperature change with trend graph.

All data of GP user screen is edited in private software GP Editor. After editing screen data including forms, arrangement, attribution of tags, download tags to GP, it starts to monitor by the screen data.

## 1.2 THE FEATURE OF GP2480

- Product upgrade in Web site
  GP OS, GP Editor, protocol, language, font and various manuals can be downloaded in www.autonics.com.

- Heterogeneous controllers communication
  Different model of controllers can be connected to serial ports separately.
  GP monitors two controllers simultaneously and relays communication between two controllers.
- Multi-monitoring function
  Same type of several controllers are connected.

- Multilingual feature
  Basically, Korean, English are provided and other languages are also available later on.

- Multi-font support
  Various selectable bitmap fonts are available.

- Multi communication port
  In RS232C / RS422, software connection device should be designated (PLC/PC/PRINTER/BARCODE) and user can set a port according to communication type supported by connection device.

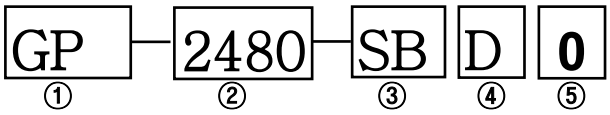
- Device monitoring function of controller
  It is able to monitor device of connectable controller in main menu of GP without graphic design data.

- Connection of printer and barcode reader
  Connect a printer and barcode reader with the main device, alarm history and barcode can be printed and read.

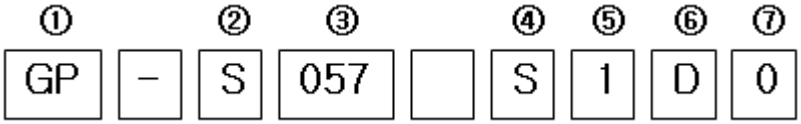
- Touch interface
  It is able to input value in controller with touch switch of front screen.
- Super slim size
  It is easy to utilize the space with slim size.

- Various display function
  It is able to display data with various tags.

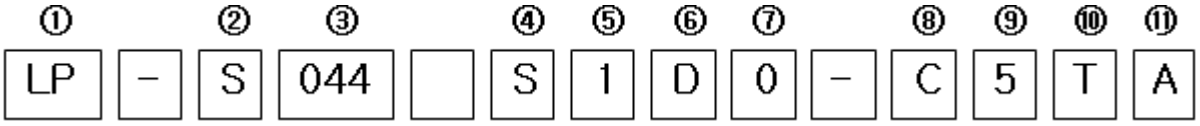
# 1.3 ORDERING INFORMATION




| | | |
|---|---|---|
| ① Series | GP | Graphic panel |
| ② LCD resolution | 2480 | 240X80 dots |
| ③ LCD type | SB | STN BLUE |
| ④ Power | D | 24VDC |
| ⑤ Serial port | 0 | RS232C, RS422 |
| | 1 | 2 ports of RS232C |




| | | |
|---|---|---|
| ① | Item | Graphic panel |
| ② | Series | S series |
| ③ | Monitor size | **044** : 4.4” **057**:5.7” |
| ④ | Display Unit | STN LCD |
| ⑤ | Color | MONO (BLUE) |
| ⑥ | Power Supply | DC 24V |
| ⑦ | Serial Port | **0** : RS232C, RS422 (1 each) / **1**: 232C (2) |




| | | |
|---|---|---|
| ① | Item | Logic Panel |
| ② | Series | S series |
| ③ | Monitor size | 4.4" |
| ④ | Display Unit | STN LCD |
| ⑤ | Color | MONO (BLUE) |
| ⑥ | Power Supply | DC 24V |
| ⑦ | Serial Port | **0** : RS232C, RS422 (1 each) / **1**: 232C (2) |
| ⑧ | Module | 일체형 |
| ⑨ | I/O composition | IN : 16 point, OUT : 16 point |
| ⑩ | I/O connector | **T** : terminal block connector **R** : ribbon cable connector |
| ⑪ | Expansion function type | Supports Type A |

# 1.4 THE RATING

| Model | | GP-2480 |
|---|---|---|
| Power supply | | 24VDC ±10% |
| Power consumption | | 3.6W max |
| Noise strength | | The square wave noise (Pulse width 1μs) by the noise simulator with ±1000V R/S phase and repetition frequency 60Hz |
| Dielectric strength | | 500VAC(50/60Hz) for a minute |
| Insulation resistance | | Min. 100MΩ (at 500VDC) |
| Ground | | 3rd grounding (Max. 100Ω) |
| Vibration | Mechanical | 0.75mm amplitude at frequency of 10~55Hz (for a minute) in each of X, Y, Z directions for an hour |
| | Malfunction | 0.5mm amplitude at frequency of 10~55Hz (for a minute) in each of X, Y, Z directions for 10 minutes |
| Ambient temperature | | 0℃ ~ 50℃(at non-freezing status) |
| Storage temperature | | -20℃ ~ 60℃(at non-freezing status) |
| Ambient humidity | | 35% ~ 85% RH (at non-dew status) |
| Protection structure | | IP 65F for front panel |
| Unit weight | | Approx. 300g |

| Model | | GP-S057 |
|---|---|---|
| Power supply | | 24VDC ±10% |
| Power consumption | | 3.6W max |
| Noise strength | | The square wave noise (Pulse width 1μs) by the noise simulator with ±500V R/S phase and repetition frequency 60Hz |
| Dielectric strength | | 500VAC(50/60Hz) for a minute |
| Insulation resistance | | Min. 100MΩ (at 500VDC) |
| Ground | | 3rd grounding (Max. 100Ω) |
| Vibration | Mechanical | 0.75mm amplitude at frequency of 10~55Hz (for a minute) in each of X, Y, Z directions for an hour |
| | Malfunction | 0.5mm amplitude at frequency of 10~55Hz (for a minute) in each of X, Y, Z directions for 10 minutes |
| Ambient temperature | | 0℃ ~ 50℃(at non-freezing status) |
| Storage temperature | | -20℃ ~ 60℃(at non-freezing status) |
| Ambient humidity | | 35% ~ 85% RH (at non-dew status) |
| Protection structure | | IP 65F for front panel |
| Unit weight | | Approx. 400g |

| Model | LP-S044 |
|---|---|

| | | |
|---|---|---|
| Power supply | | 24VDC ±10% |
| Power consumption | | 3.6W max |
| Noise strength | | The square wave noise (Pulse width 1㎲) by the noise simulator with ±1000V R/S phase and repetition frequency 60Hz |
| Dielectric strength | | 500VAC(50/60Hz) for a minute |
| Insulation resistance | | Min. 100MΩ (at 500VDC) |
| Ground | | 3rd grounding (Max. 100Ω) |
| Vibration | Mechanical | 0.75mm amplitude at frequency of 10~55Hz (for a minute) in each of X, Y, Z directions for an hour |
| | Malfunction | 0.5mm amplitude at frequency of 10~55Hz (for a minute) in each of X, Y, Z directions for 10 minutes |
| Ambient temperature | | 0℃ ~ 50℃(at non-freezing status) |
| Storage temperature | | -20℃ ~ 60℃(at non-freezing status) |
| Ambient humidity | | 35% ~ 85% RH (at non-dew status) |
| Protection structure | | IP 65F for front panel |
| Unit weight | | Approx. 350g |

# 1.5 SPECIFICATIONS

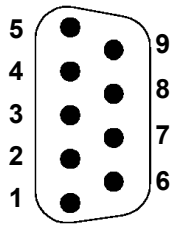
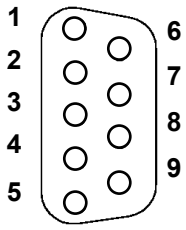
| | | | | |
|---|---|---|---|---|
| Model | | | xx-xxxx-xxD0 | xx-xxxx-xxD1 |
| LCD type | | | STN Blue Negative | |
| Resolution | | | 240 X 80 dots | |
| Display area | | | 112.8mm X 37.6mm | |
| Color | | | Single color (Blue, White) | |
| LCD visible angle | | | 30° of Up/Down/Left/Right direction | |
| Backlight | | | White LED | |
| Battery life cycle | | | 3 years at 25℃ | |
| Brightness | | | Adjust as software | |
| Serial communication | | | RS232C, RS422 | 2 ports of RS232C |
| Applicable device | | | PLC(Refer to **"Communication manual"**), Printer, Barcode reader | |
| Graphic drawing software | | | GP Editor | |
| Text font size | | | *6x8, 8x8 ASCII character, High quality number<br>*8X16 ASCII character, 16X16 regional character (Width 1,2,...,8 times, Height 0.5,1,2,..,5 times) | |
| User Screen | Graphic drawing memory | | 512kB | |
| | Figure display | | Line, Rectangle, Circle, Text, Bitmap | |
| | Tags | Numeral display | Display the designated device as numerical value. (Decimal, hexadecimal, octal, binary, real number) | |
| | | ASCII display | Display the designated device value as ASCII character. | |
| | | Time display | Display current time or date. | |
| | | Alarm history | Register alarm history. | |
| | | Alarm list | Display generated (not backed up) alarm. | |
| | | Comment display | Display the designated comment as device status or value. | |
| | | Lamp | Display lamp as device status. | |
| | | Part display | Display the designated parts as device status and value. | |
| | | Line graph | Display several device values with a graph of broken line. | |
| | | Trend graph | Display change of device value for time with a graph of broken line. | |
| | | Bar graph | Display a device value with a bar graph. | |
| | | Statistic graph | Display a ratio of several device values with pie graph. | |
| | | Panel meter | Display a device value as panel meter. | |
| | | Touch key | Screen is switched, word/bit device values are set when it touched. | |
| | | Numeral input | Configure user input value in device. | |
| | | ASCII input | Configure user input ASCII code value in device. | |
| | System information function | | Monitor/control GP operation from PLC. | |
| | Recipe function | | Read/Write several PLC device collectively. | |
| | Security function | | Only acceptable user can observe/operate important data. | |
| | Barcode read function | | Connect barcode reader, read barcode. | |
| | Floating alarm function | | Warning message is floated when alarm is generated. | |
| | Time operation | | Specific bit device is ON/OFF for designated day and time. | |
| | Overlap window | | Available to form dynamically overlapping another base screen on the base one. | |
| | Observe status function | | Change PLC device status/value of PLC when trigger is generated. | |

| | | | |
|---|---|---|---|
| SYSTEM SCREEN | Monitoring | Device Monitoring | Monitor connected PLC device and change the status. |
| | | (*)input/output Device Monitoring | Monitor the state of Input/output (supported in LP Series only) |
| | Preference | Language selection | Designate system language and character set. |
| | | Channel connection | Configure connection device of serial port connected to CH1, CH2, editor, printer, barcode reader and serial setup. |
| | | Current time | Configure current date and time. |
| | | Delete user data | Delete user data. |
| | | Configuration/access key | Designate the configuration/access key position of system menu. |
| | | Buzzer | ON/OFF buzzer |
| | | Switching of user screen | Configure time for initial screen when power it on. |
| | | Backlight | Configure Backlight OFF time if there is no operation. |
| | | Battery | Display the percentage of battery remaining. |
| | | Contrast | Adjust LCD contrast. |
| | Data check | Basic screen | Display title and number of base screen user made. |
| | | Window screen | Display title and number of window screen user made. |
| | | Comment | Display comment list downloaded in main body. |
| | | Check using memory | Display status of using graphic drawing memory. |
| | | Check model and version | Display model and firmware version of GP. |
| | Configuration of function | Data transmission | Display during communication (Download/upload) between GP and editor. |
| | | Time switch | Configure time switch |
| | | Print out | Print alarm history with serial printer. |
| | (*)LP Parameters | Filter | Display the configure value of a filter for a contract of I/O (supported in LP Series only) |
| | | Interrupt | Display the configure value of a interrupters for a contract of I/O (supported in LP Series only) |
| | | 4*4 key pad | Display the configure value of a 4*4 keypad for a contract of I/O (supported in LP Series only) |
| | | 7 segment | Display the configure value of a 7 segment for a contract of I/O (supported in LP Series only) |
| | | synchronous serial | Display the configure value of a synchronous serial communication for a contract of I/O (supported in LP Series only) |

Mark (*) is displayed at functions in LP Series only

# 1.6 SERIAL CONNECTION SPECIFICATIONS

## 1.6.1 Serial port

| Port | Pin(GP-2480) | | Pin(GP-S057) | Pin(LP-S044) |
|---|---|---|---|---|
| RS232C   D-Sub 9Pin Male | 1 | Non-used | Non-used | Non-used |
| | 2 | RXD | RXD | RXD |
| | 3 | TXD | TXD | TXD |
| | 4 | DTR | DTR | DTR |
| | 5 | SG | SG | SG |
| | 6 | DSR | DSR | DSR |
| | 7 | Non-used | Non-used | Non-used |
| | 8 | Non-used | Non-used | Non-used |
| | 9 | Non-used | Non-used | Non-used |
| RS422   D-Sub 9Pin Female | 1 | TXD+ | TXD+ | TXD+ |
| | 2 | RXD+ | RXD+ | RXD+ |
| | 3 | RTS- | Non-used | Non-used |
| | 4 | CTS+ | Non-used | Non-used |
| | 5 | SG | SG | SG |
| | 6 | TXD- | TXD- | TXD- |
| | 7 | RXD- | RXD- | RXD- |
| | 8 | RTS+ | Non-used | Non-used |
| | 9 | CTS- | Non-used | Non-used |

## 1.6.2 Connection of PLC

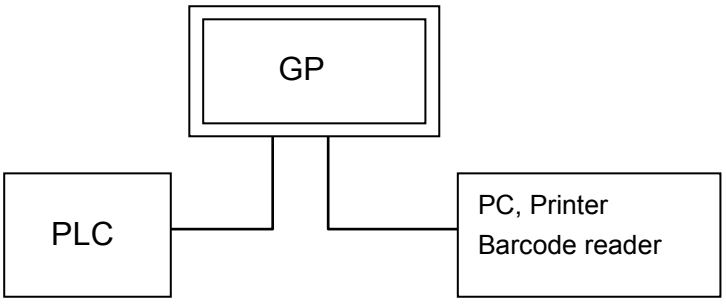
•Refer to “Communication manual” for connection because the wiring of each PLC model is different.

•All devices including PLC can be connected to RS232C/RS422.

•CH1, CH2 are designated in editor.

**◎Connection of 1 PLC**

Connect PLC to a port and one of PC, Printer, Barcode reader to another port.

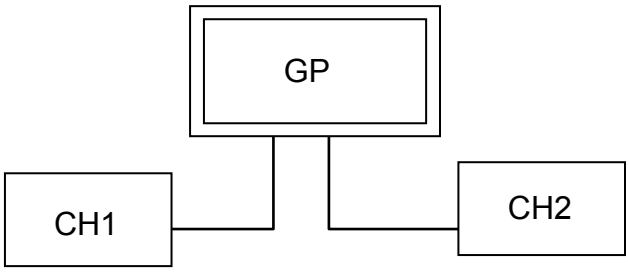


**◎Connection of CH1 and CH2**

•Connect PLC to both RS232C/RS422 port.

•GP observes CH1 mainly and accesses specified data register of CH2.

•It is able to connect even if CH and CH2 are not same type and GP can relay data exchange between CH1 and CH2 according to configuration.

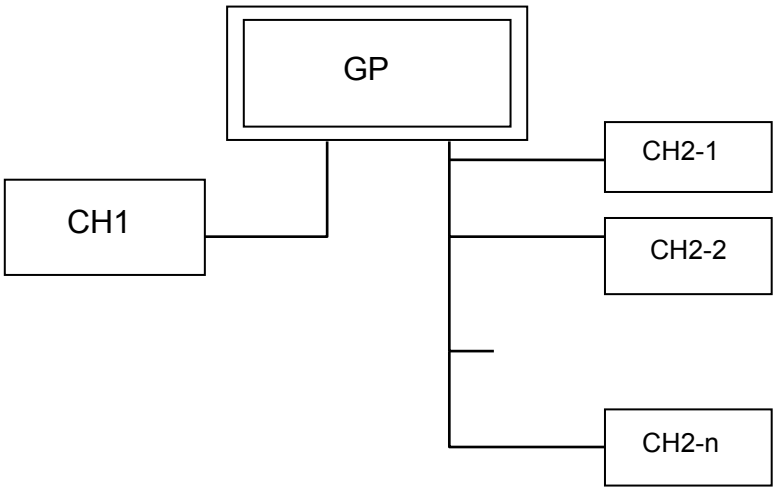



**◎Connection of plural PLCs**

•It is available to use same type of CH2 as max.32.

•In this case, GP can link data among CH1 and CH2-1,..,n.

•CH1 may not be used.




## 1.6.3 Configuration of serial port

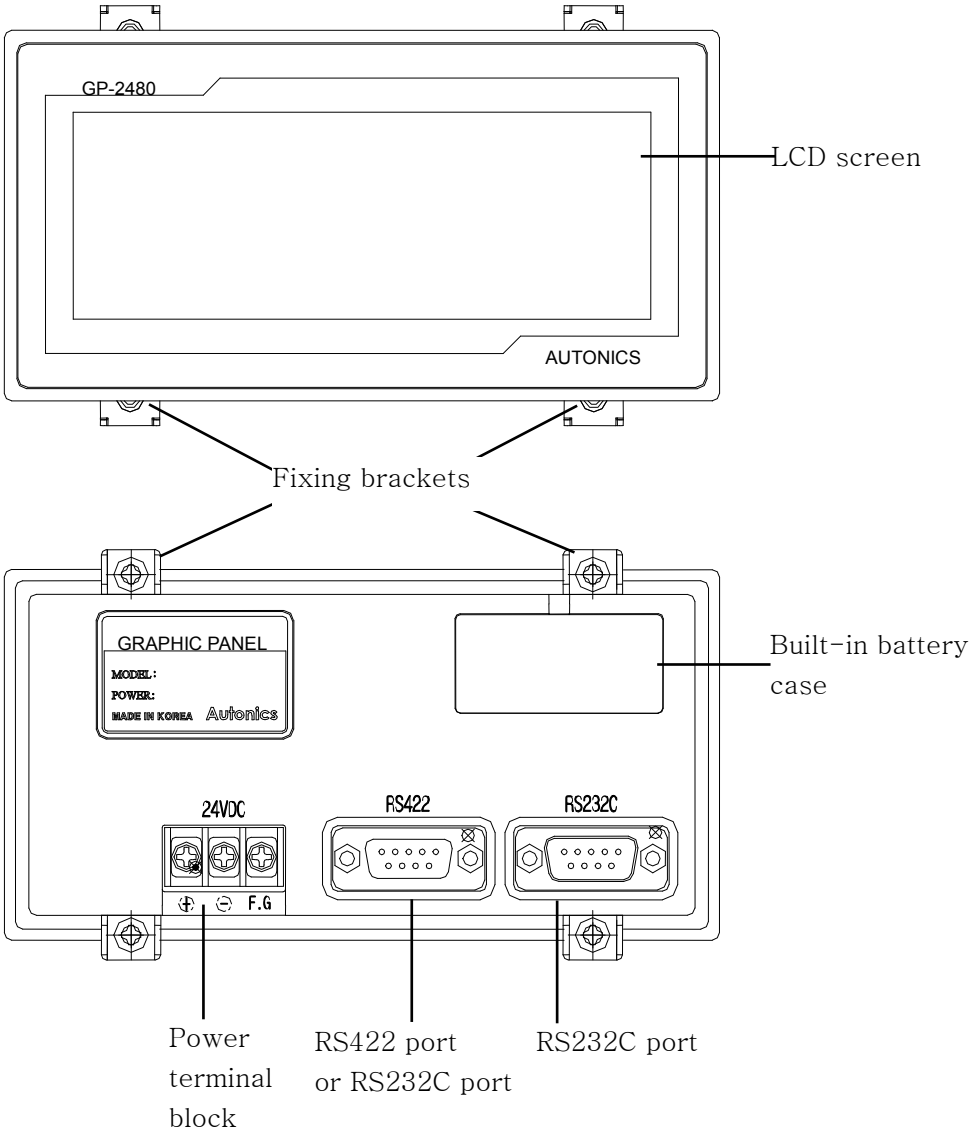
**Configure in [Preference]-[Serial connection].**

| | |
|---|---|
| Interface | RS232/RS422 |
| Speed | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps |
| Data length | 7, 8 Bit |
| Stop bit | 1, 2 Bit |
| Parity | ODD, EVEN, NONE |
| Flow control | XON/XOFF, DSR/DTR, NONE |

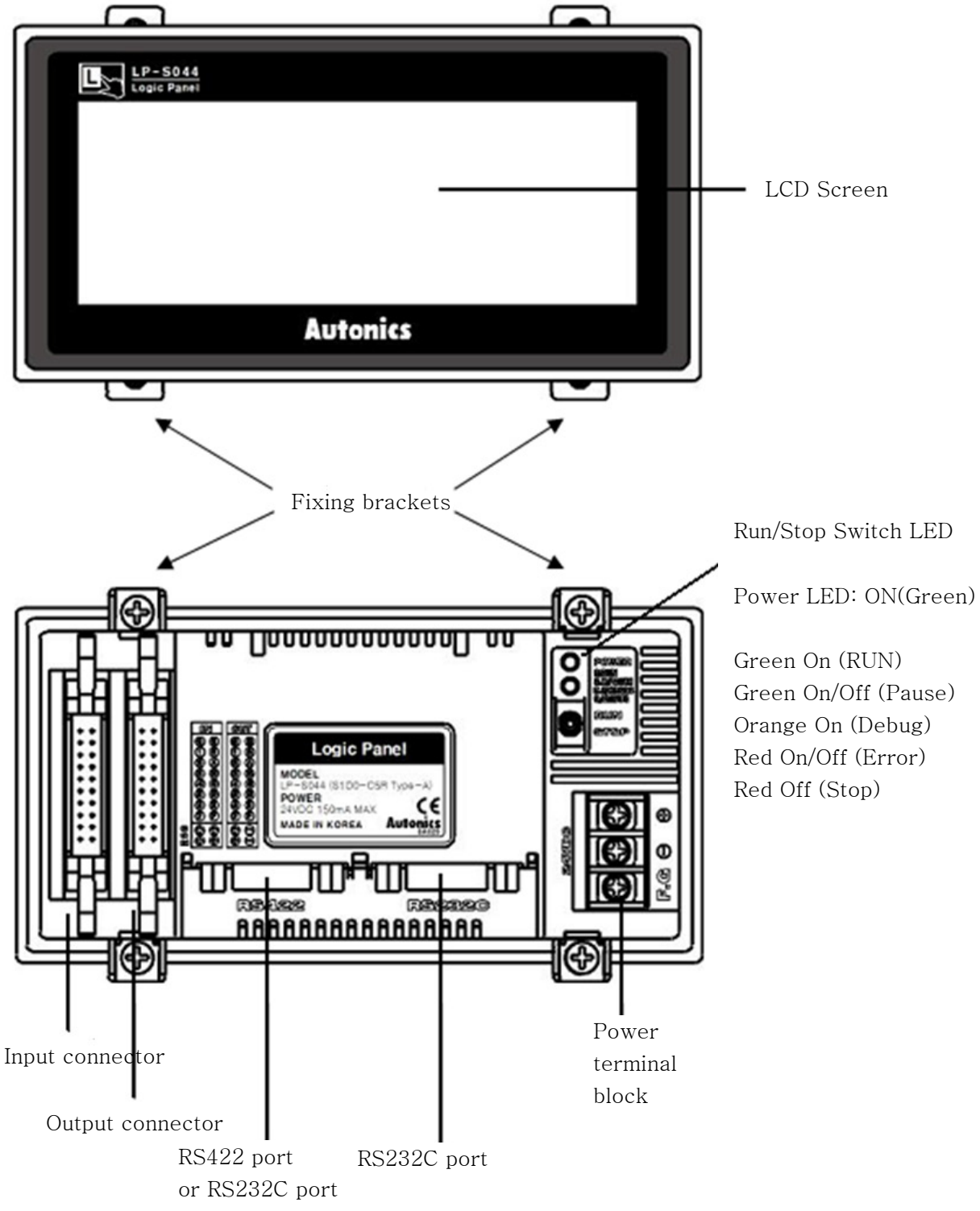
# 1.7 DIMENSIONS AND DESCRIPTION OF PARTS

## 1.7.1 Parts description

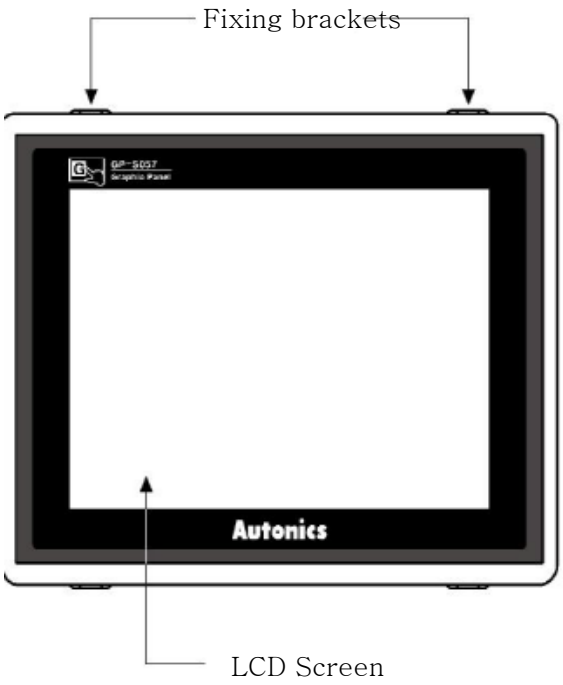
•GP-2480

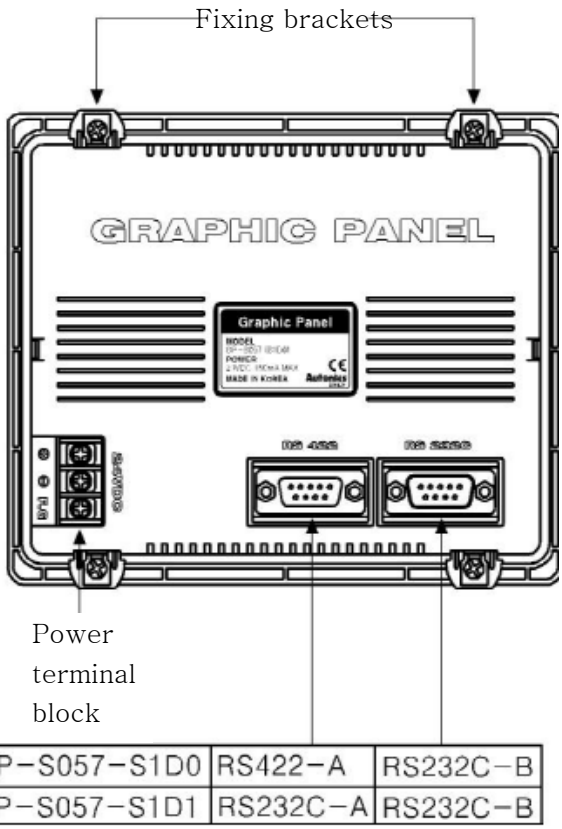


•LP-S044


LP-S044
Logic Panel
Autonics
LCD Screen
Fixing brackets
Run/Stop Switch LED
Power LED: ON(Green)
Green On (RUN)
Green On/Off (Pause)
Orange On (Debug)
Red On/Off (Error)
Red Off (Stop)
Logic Panel
MODEL
POWER
MADE IN KOREA
Input connector
Output connector
RS422 port
or RS232C port
RS232C port
Power
terminal
block

•GP-S057



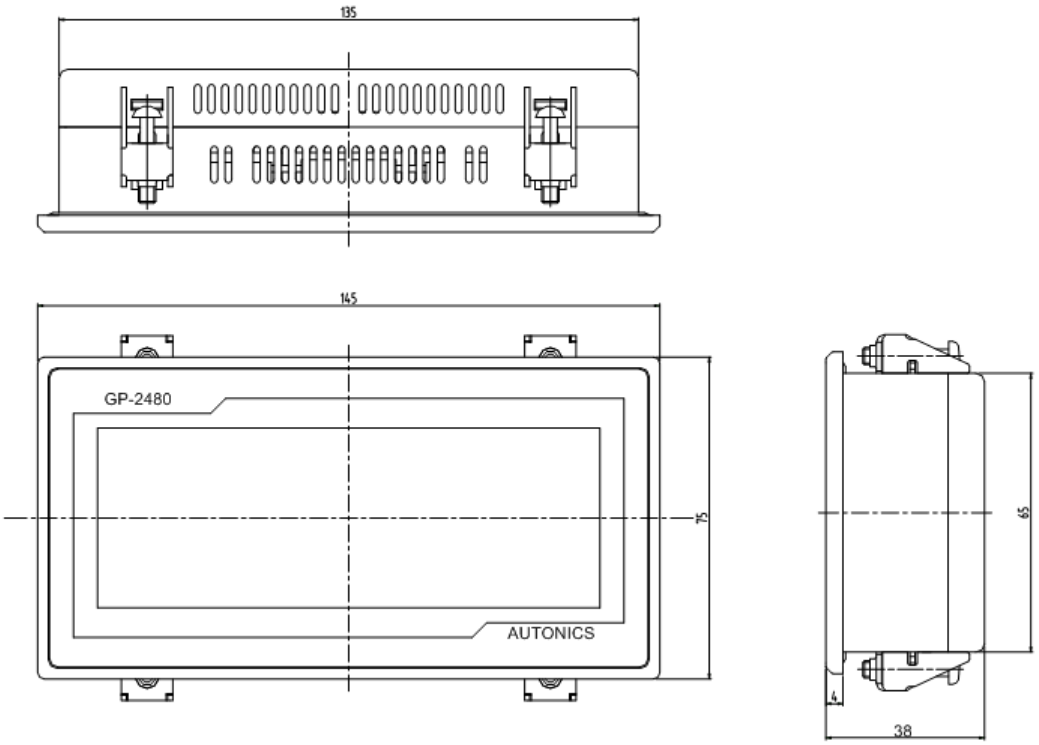

| | | |
|---|---|---|
| GP-S057-S1D0 | RS422-A | RS232C-B |
| GP-S057-S1D1 | RS232C-A | RS232C-B |

## 1.7.2 Dimensions

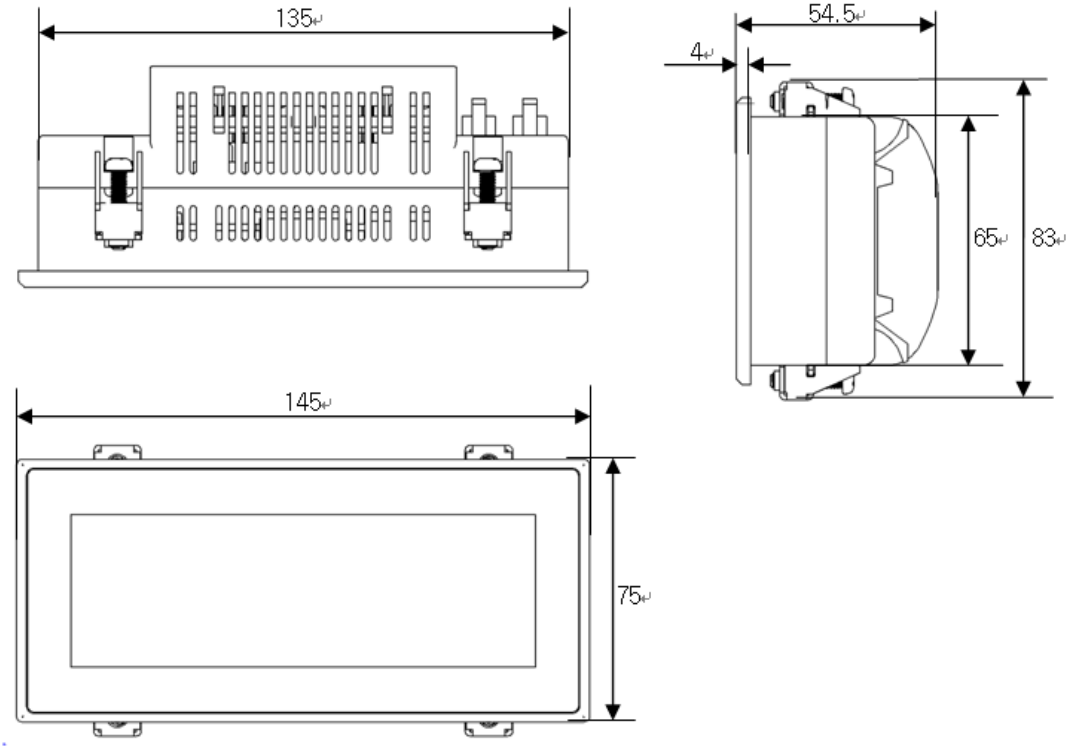
Color : IVORY

Unit : mm

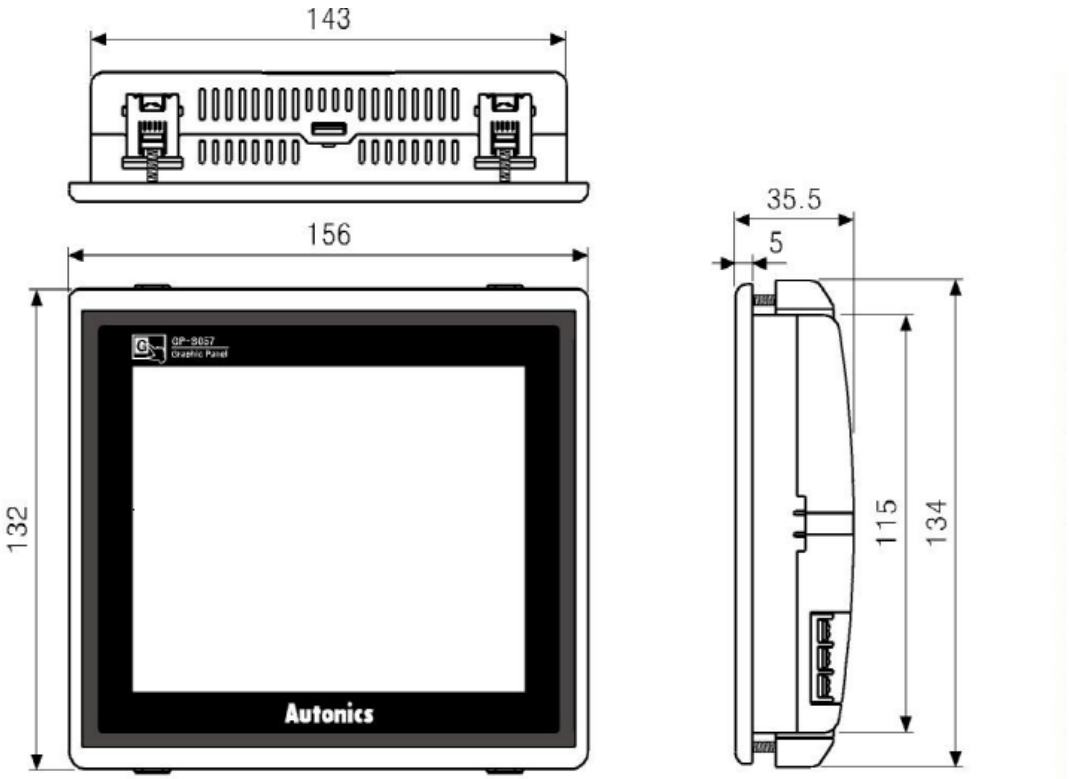
•GP-2480




•LP-S044



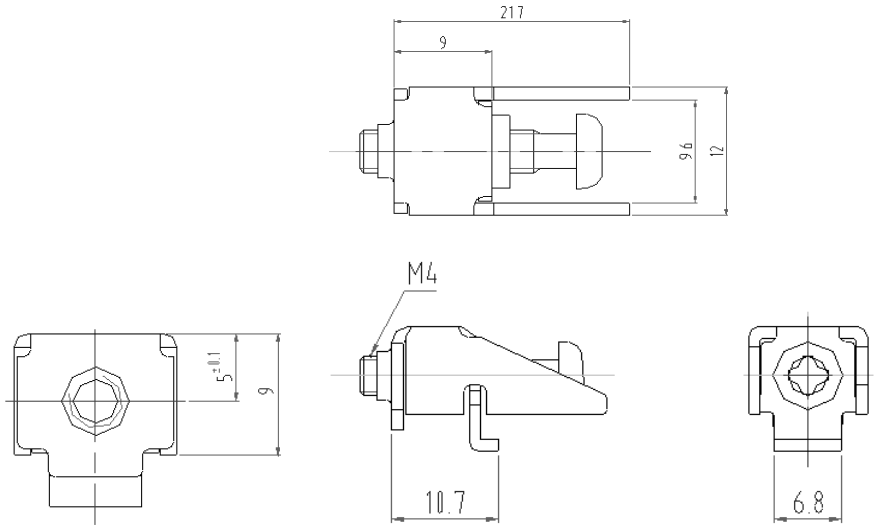
•GP-S057



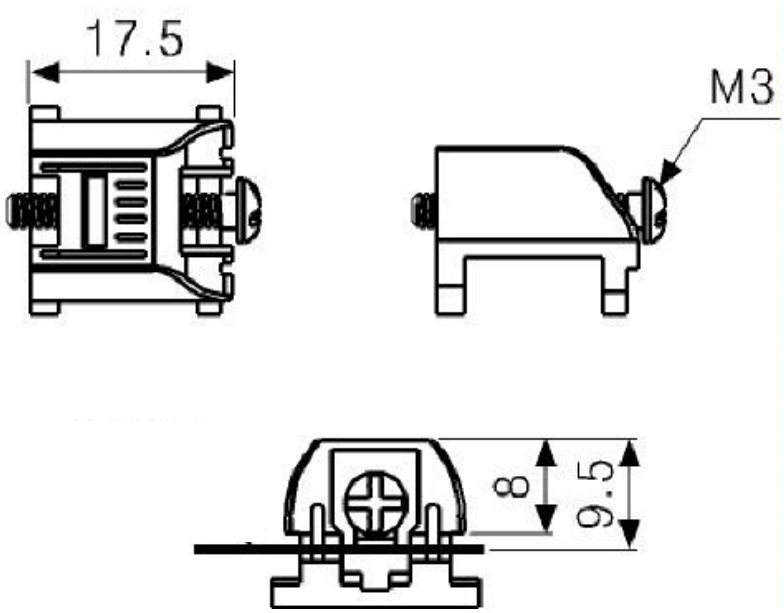

## 1.7.3 The fixing bracket (20060407)

Unit : mm

•GP-2480, LP-S044



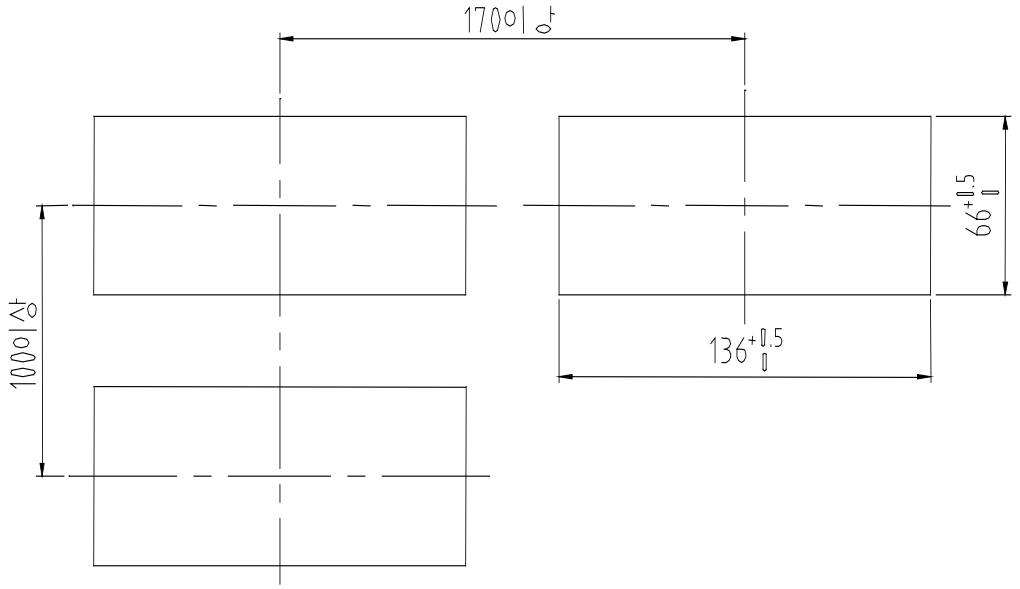
•GP-S057



## 1.7.4 Panel cut-out

Unit : mm

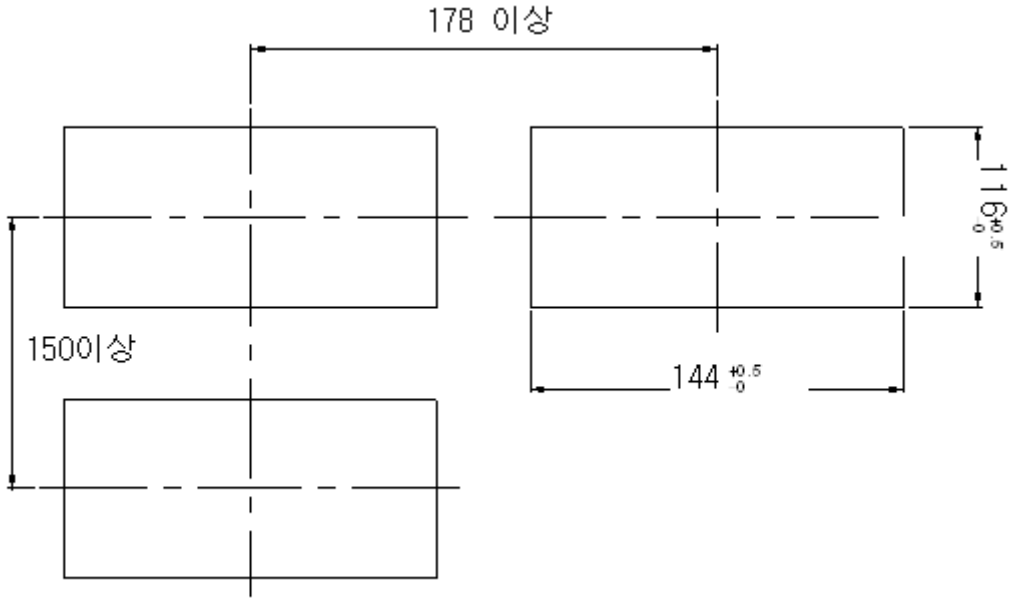
•GP-2480, LP-S044




*100 이상 : Min.100

* Over 100 : Min. 100

•GP-S057

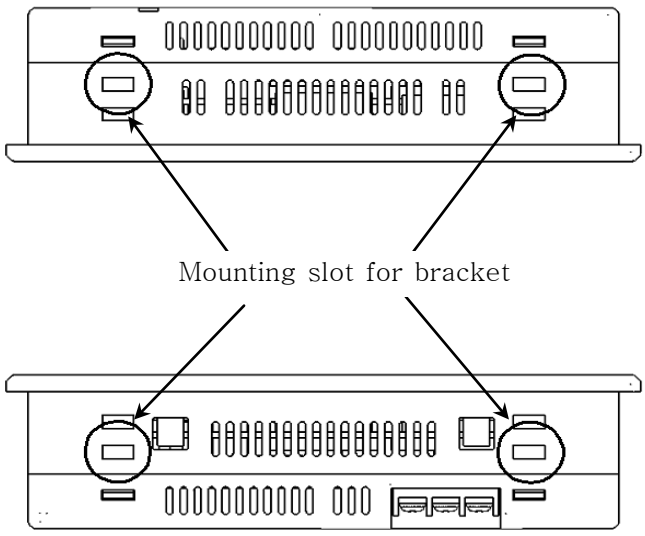


# 1.8 INSTALLATION PROCEDURE

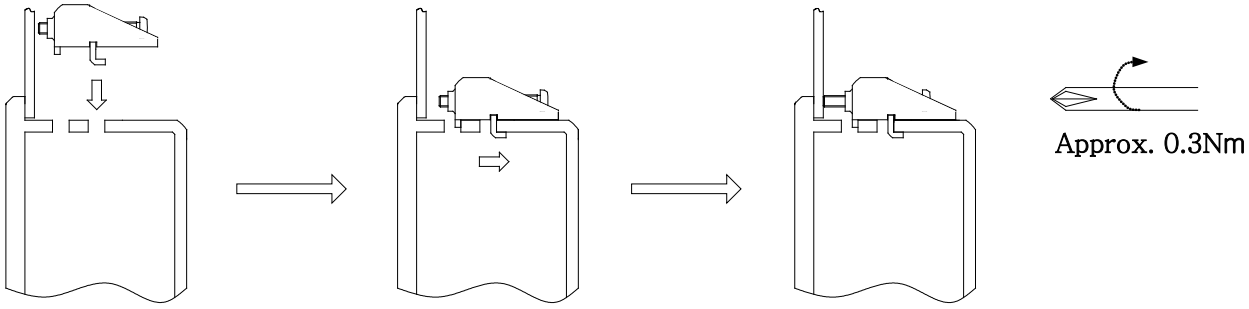
(1) Set a rubber waterproof ring in GP.

(2) Set GP in panel.

(3) Set brackets in 4 bracket slots and fix them.




**※ Procedure of mounting bracket**



# 1.9 THE WIRING OF POWER

**•Please use the power line as min.0.75mm$^2$, ground wire as min.1.25mm$^2$ of dimension.**

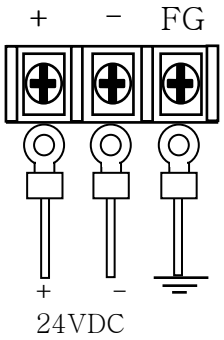
**•Please use crimp-on type ring terminal with min.3mm of inside diameter and max. 6mm of external diameter.**

**•Please check power is on before connecting a power line.**

**•Please check power polarity.**

**•Please tighten screws of each terminal as 0.5~0.8 Nm torque.**

**•Ground resistance should be max.100Ω, it is required to ground separately.**




# 1.10 BATTERY REPLACE

**Please contact close distributor to replace battery.**

It may cause an explosion or a fire when it is not genuine.

# 1.11 PRECAUTION FOR USING

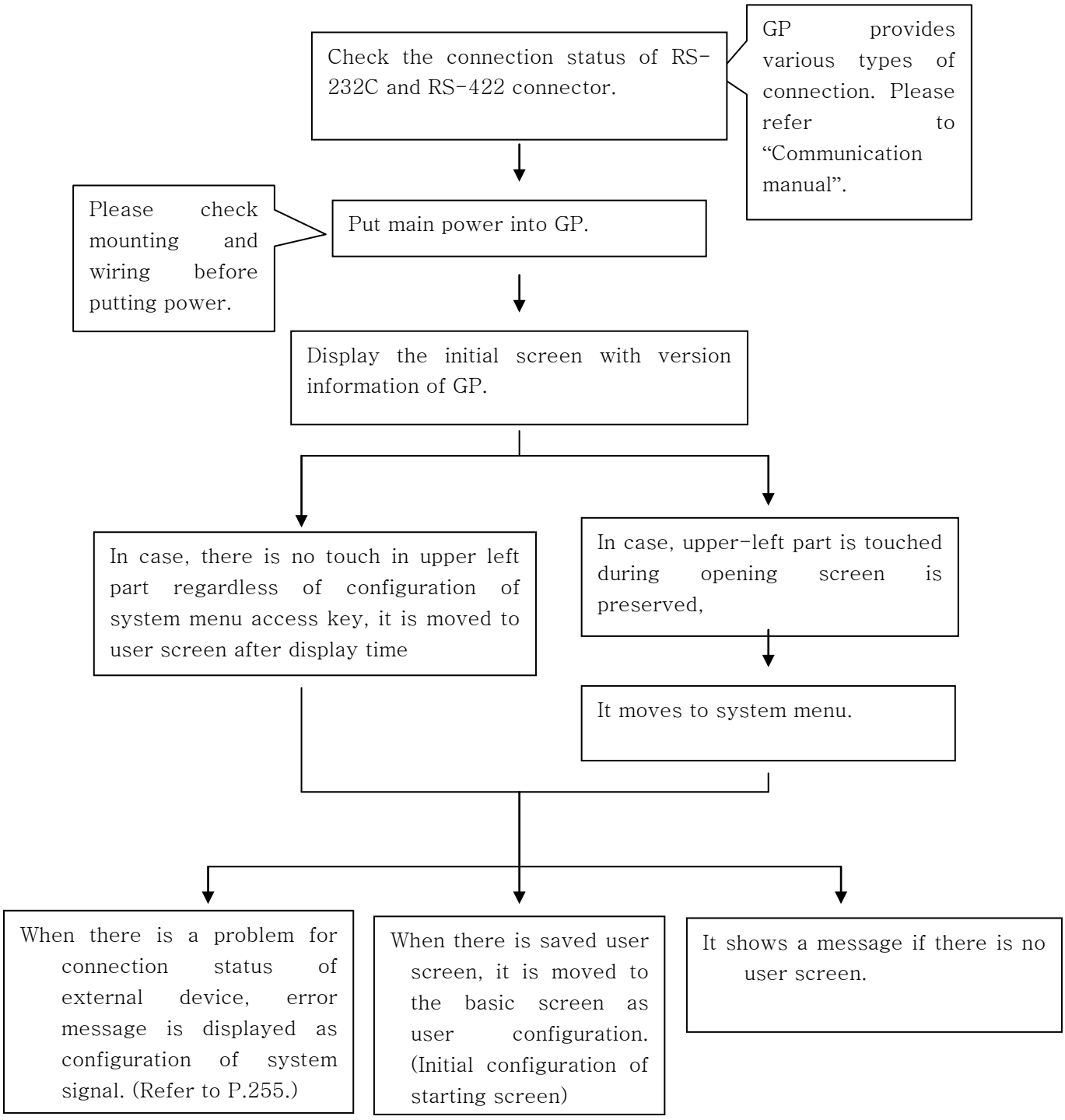
- Do not press touch panel with hard and sharp object.
- Please store the device in a place with recommended temperature range, or LCD panel can be damaged.
- Please check pin no in “Communication manual” for connecting communication port.
- Do not close ventilating opening of this product.
- Do not use or store in a place with direct ray of light or dust.
- Do not use or store in a place with shock or vibration.

**※Please keep the above instructions or it may cause a malfunction.**

# 2. START UP

This chapter explains a whole procedure from putting main power into GP to switching as user screen.

## 2.1 START UP PROCEDURE



## 2.2 INITIAL SCREEN DISPLAY

It displays model name, production year on the initial screen.
The version information in lower-right indicates GP firmware version.
The upgrade of regional language, fonts, protocol are executed in GP Editor.

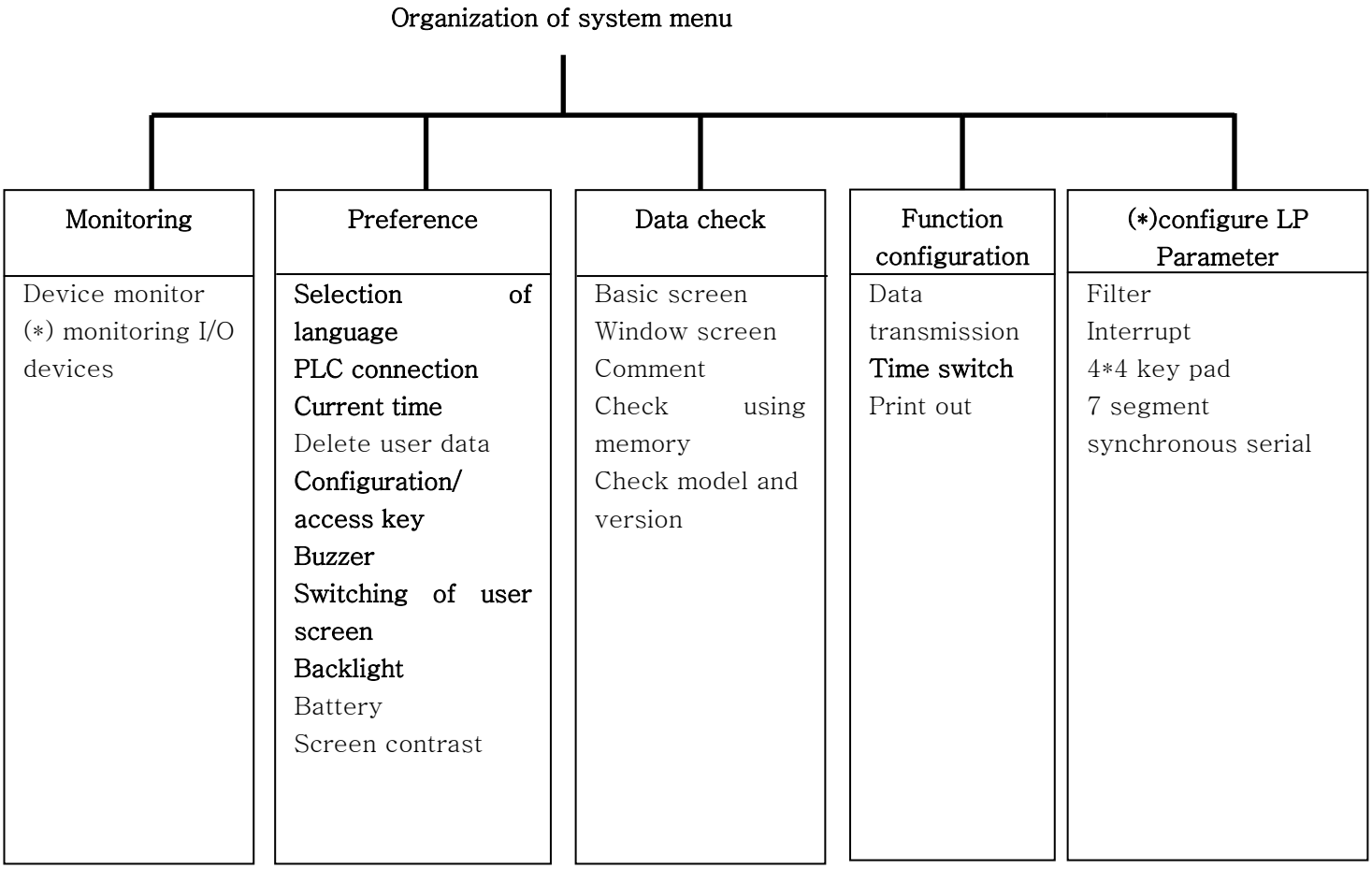

**※Notice**

- The initial screen display can be changed as releasing date of product.
- Please refer to the communication part in user manual for procedure of firmware upgrade.

# 3. SYSTEM DISPLAY

## 3.1 ORGANIZATION OF SYSTEM DISPLAY SCREEN

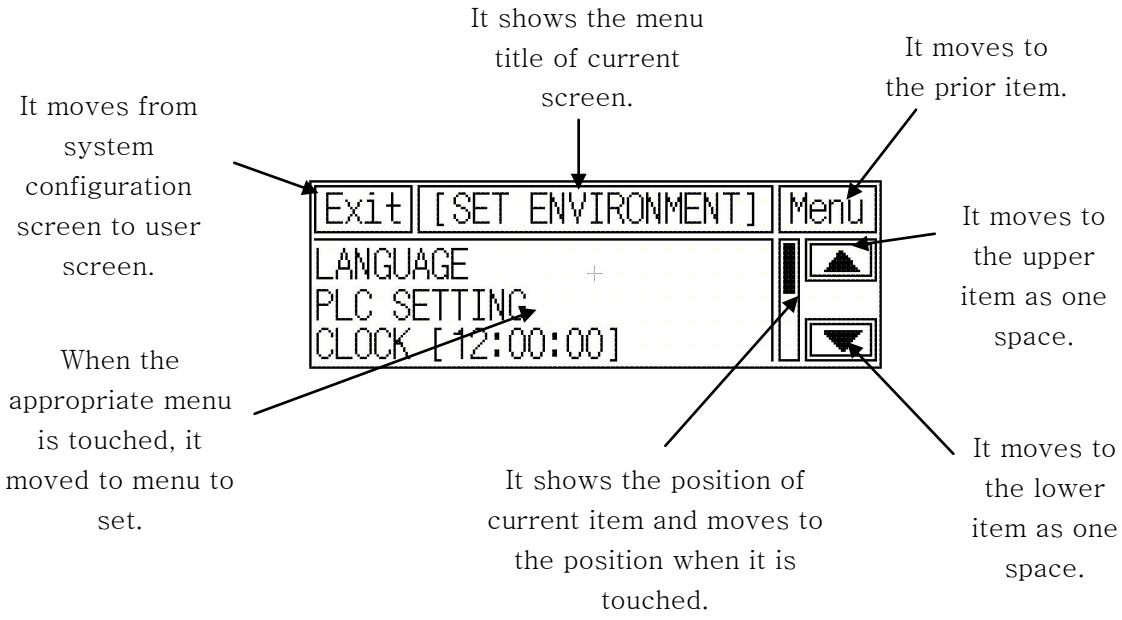
Menu screen including monitoring, preference, data check and function configuration is displayed when touching system screen access key. When each item is selected, the sub menus is displayed for each item. The whole screen organization is as below.




**※Reference**

- The bold item written in the above system menu is available to configure in GP Editor.
- Mark (*) is displayed at functions in LP Series only

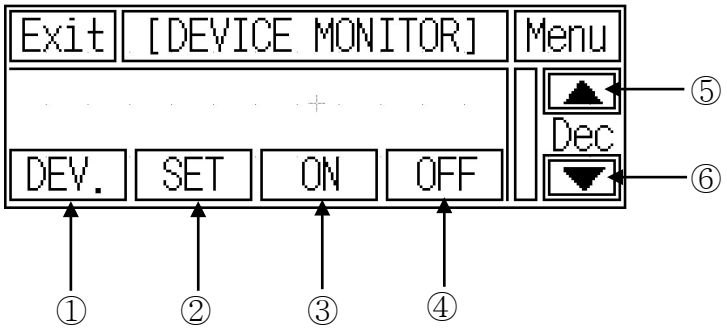
# 3.2 OPERATION OF SYSTEM DISPLAY SCREEN



# 3.3 MONITORING MENU

## 3.3.1 Device Monitoring

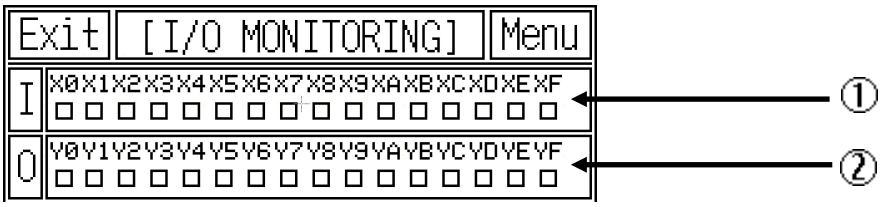
It monitors the connected inner device or configures the value at specified device. The applicable device can be differed from connected model, it is available to monitor bit and word device of connected machinery, special function of device, inner bit device and inner word device area of GP. Please refer to communication manual for confirming monitor each device.




| No. | Function and operation |
|---|---|
| ① | Able to call input window for selecting the specified device configuring as CH1. |
| ② | Able to call input window for configuring word device value in the place with cursor. |
| ③ | Set the bit device value in the place with cursor. |
| ④ | Reset the selected bit device. |
| ⑤ | It shows the adjacent upper device of list. |
| ⑥ | It shows the adjacent lower device of list. |

## 3.3.2 monitoring I/O device

The Menu for I/O device monitoring is only supported in LP Series



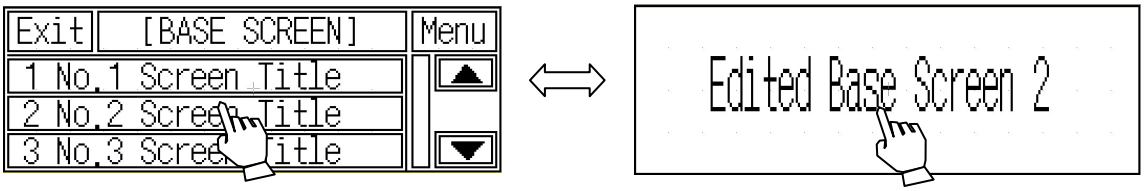

| No. | Function and Operation |
|---|---|
| ① | Monitor the states of a Input contact points, X0 ~ X0 |
| ② | Monitor the states of a output contact points, Y0 ~ YF |

# 3.4 DATA CHECK MODE

## 3.4.1 Base display screen

It shows the number of base screen and title list. The design status of the screen can be confirmed when touching a screen list.

### Screen check and operation




When touching a screen number of line to confirm, it moves to the screen.

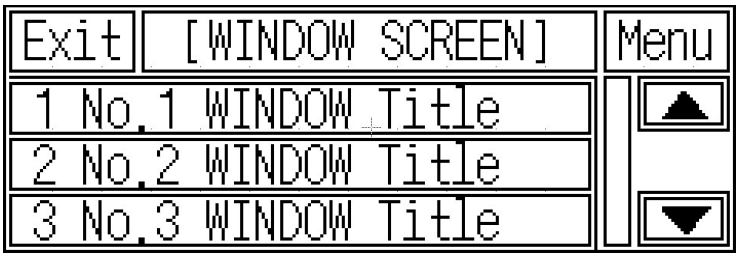
When touching on the screen called, it returns to basic screen list menu.

**※Notice**

If arranged units from the base screen list menu are display units, it is operated normally but it is not for input units.

## 3.4.2 Window screen

It shows the number of window screen and title list. It is available to check same with the base screen list function.

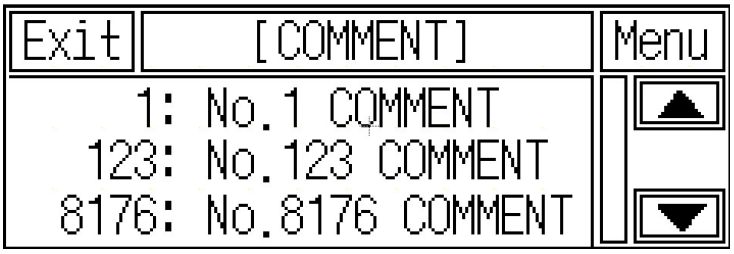



**※Notice**

• The window screen can be made up to max.500 in editor and max.3 can be downloaded to GP.

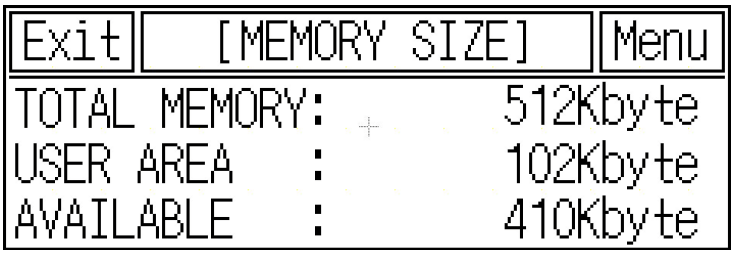
### 3.4.3 Comment list

It checks the downloaded comment of user.



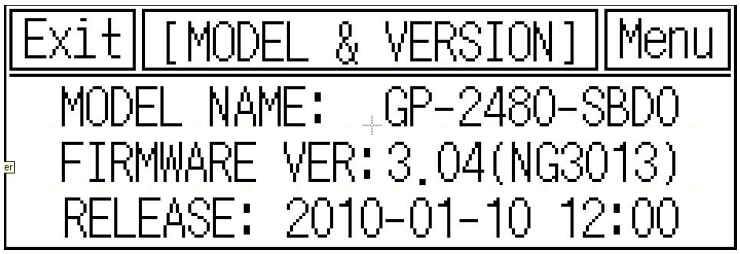

### 3.4.4 Check used memory

It displays used memory for design data and additional memory in 512 Kbyte of available user memory.




### 3.4.5 Check model and version

It displays model name of GP and firmware version.



# 3.5 PREFERENCE MENU

It confirms the configuration status of GP operation and resets it.

It can effect on the operation of GP as configuration status, it is designed to set password and cancel for protection of screen.

It is also available to check the current status of configuration on the right part for each item.

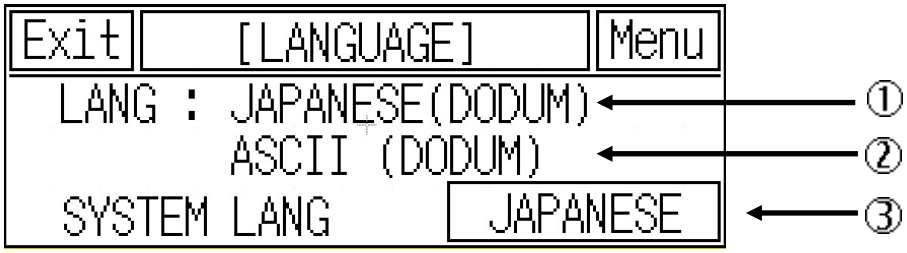
## 3.5.1 Selection of language

It displays the language using in system screen of GP, user screen and ASCII character fonts and it is available to set as the system menu language selecting one between using language and English.

Language types – Korean, English and other languages are also available later on.

Font types – It provides regional fonts.

The regional language, fonts, ASCII fonts can be changed with upgrade.




| Number | Function and operation |
|---|---|
| ① | It displays regional language and font configured in GP. Note 1) |
| ② | It displays ASCII character font configured. Note 1) |
| ③ | When it touched, the screen language of system configuration is changed as the designated language. |

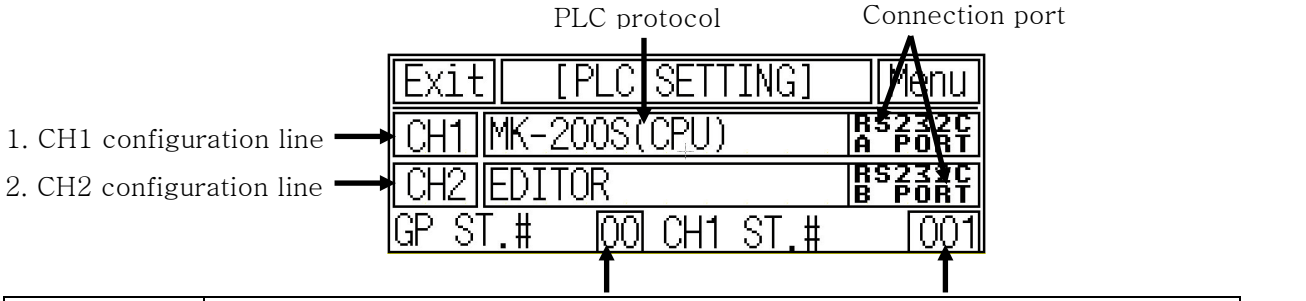
Note 1) In order to change the language, download new font in editor.

### ※Reference

• The font using in editor for design and in GP is same to protect from an error in design.

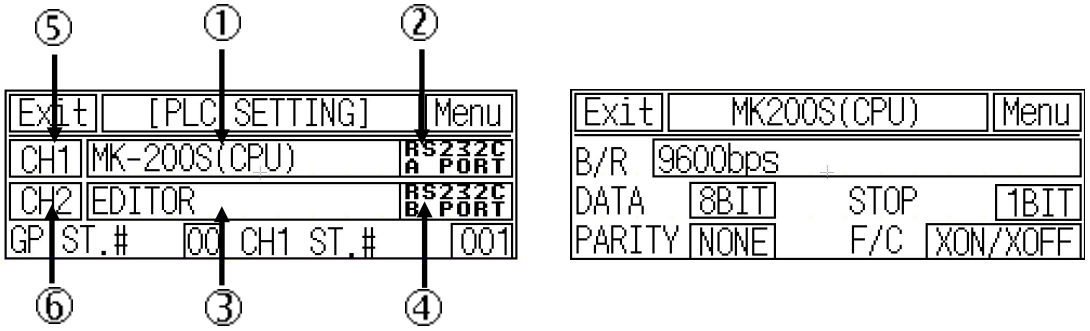
## 3.5.2 Connection of PLC

It displays/configures the device connected to RS232C, RS422 port of GP and configure the station of GP and device.



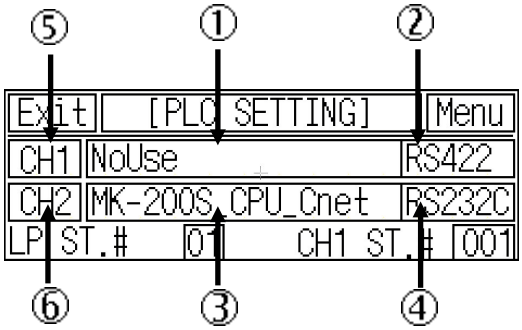

| | |
|---|---|
| **1. CH1 configuration line** | It refers to the device name of CH1 and connection port.<br>It is available to select one of protocol, editor, printer and barcode downloaded from default device and editor by touching and designate connection port as RS232C or RS422, CH1 is changed automatically as non-using port according to configuration of CH2 port. |
| **2. CH2 configuration line** | It refers to the device name of CH1 and connection port.<br>It is available to select one of protocol, editor, printer and barcode downloaded from default device and editor by touching and designate connection port as RS232C or RS422, CH2 is changed automatically as non-using port according to configuration of CH1 port.<br>In case, CH1 protocol is slave, monitor is not displayed. |
| **3. GP station configuration touch key** | When it touched, the input key pad for decimal is available, the station can be selected from 0~255. |
| **4. CH1 station configuration touch key** | When it touched, the input key pad for decimal is available, the station can be selected from 0~255. |

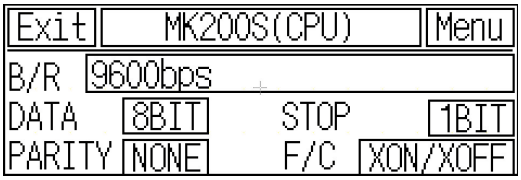
**- In case of download configuring to use CH1 only in editor.**




| | Item description | Operation when it touched |
|---|---|---|
| ① | It shows the protocol of CH1. | It rotates as Downloaded protocol → Editor → Printer → Barcode → Universal → Default protocol. |
| ② | It shows connection port of CH1.<br>It is designated as non-using port automatically in ④. | In case of GP-2480-SBD0, it rotates as RS422 A PORT ↔ RS232C B PORT. |
| | | In case of GP-2480-SBD1<br>It rotates as RS232C A PORT ↔ RS232C B PORT. |
| ③ | It shows the protocol of CH2.<br>Editor is default<br>It. | It rotates as Editor→ Printer → Barcode → Monitor → NoUse<br>In case, CH1 protocol is slave, monitor is not displayed. |
| ④ | It shows connection port of CH2.<br>It is designated as non-using port automatically in ②. | In case of GP-2480-SBD0, it rotates as RS422 A PORT ↔ RS232C B PORT. |
| | | In case of GP-2480-SBD1, it rotates as RS232C A PORT ↔ RS232C B PORT. |
| ⑤⑥ | Communication configuration for channel | It moves to selected communication configuration window of connection device.<br>It configures speed, data, stop bit, parity and flow control. |

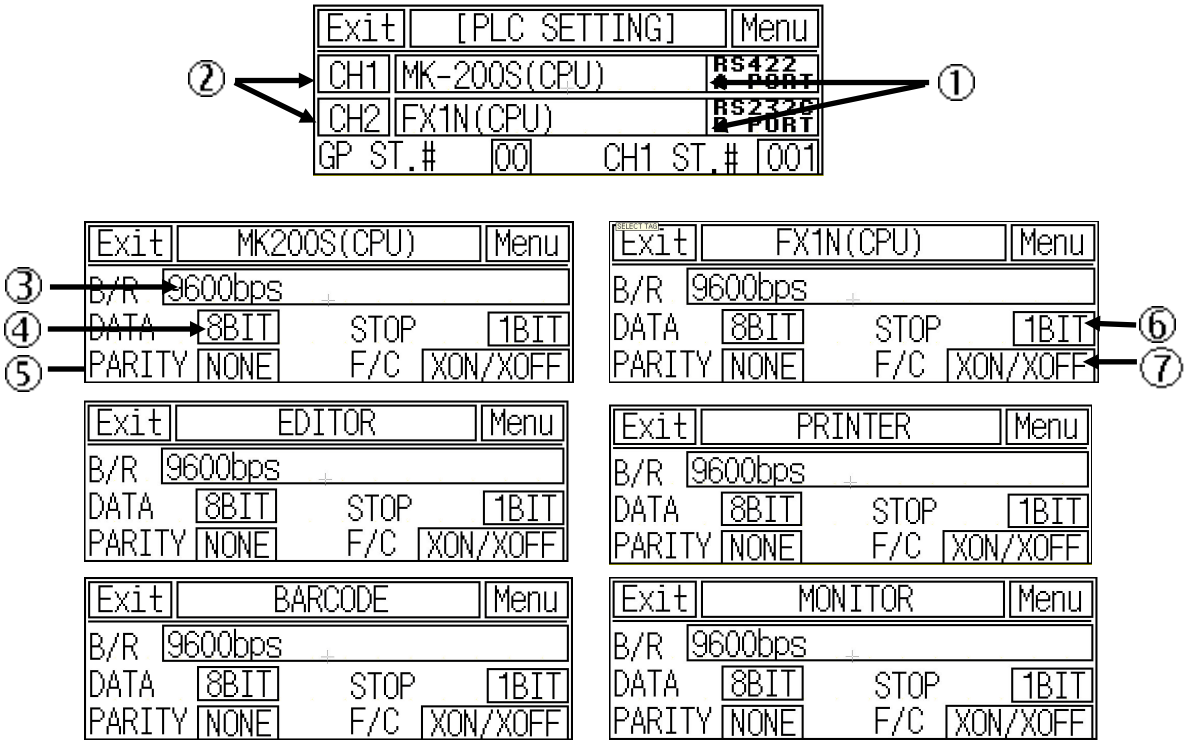
**- In case of download configuring to use CH2 only in editor.**




| | Item description | Operation when it touched |
|---|---|---|
| ① | It shows the protocol of CH1. | It rotates as Downloaded protocol → Editor → Printer → Barcode → Universal → Default protocol. |
| ② | It shows connection port of CH1.<br>It is designated as non-using port automatically in ④. | In case of GP-2480-SBD0, it rotates as RS422 A PORT ↔ RS232C B PORT. |
| | | In case of GP-2480-SBD1<br>It rotates as RS232C A PORT ↔ RS232C B PORT. |
| ③ | It shows the protocol of CH2. Downloaded protocol is default. | It rotates as Downloaded protocol→ Monitor → Editor → Printer → Barcode.<br>In case, CH1 protocol is slave, monitor is not displayed. |
| ④ | It shows connection port of CH2.<br>It is designated as non-using port automatically in ②. | In case of GP-2480-SBD0, it rotates as<br>RS422 A PORT ↔ RS232C B PORT. |
| | | In case of GP-2480-SBD1, it rotates as<br>RS232C A PORT ↔ RS232C B PORT. |
| ⑤⑥ | Communication configuration for channel | It moves to selected communication configuration window of connection device.<br>It configures speed, data, stop bit, parity and flow control. |

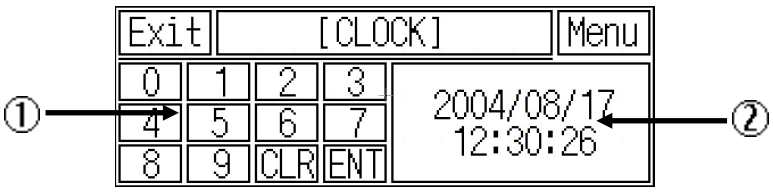
**- Detail configuration of CH1/CH2**




| Number | Function and operation |
|---|---|
| 1 | It configures operation mode.<br>CH1,2 protocol : PLC configured and downloaded in GP and editor communicates to each port.<br>Editor : It is an I/O mode and it is available to download user design data from GP Editor.<br>Printer : It is an output mode and prints alarm list of GP.<br>*Refer to print out menu of system menu/function configuration.<br>Barcode : It is an input mode reading data from a barcode.<br>*Refer to the description of barcode.<br>Monitor : It is configured only in CH2 and it monitors PLC connected to GP in PC directly. GP transmits data from PC to PLC and data from PLC to PC. But, MITSUBISHI FX-Series can be monitored in editor mode. |
| 2 | When it touched, detail configuration window of designated operation mode is displayed. |
| 3 ~ 7 | It configures the operation mode in detail.<br>Speed : It configures communication speed.<br>It provides 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps.<br>Data : It configures data bit.<br>It provides 7, 8 bit.<br>Stop bit : It configures stop bit.<br>It provides 1, 2 bit.<br>Parity : It configures parity type.<br>It provides even parity, odd parity, non-using parity.<br>Flow control : It configures data flow control.<br>It provides XON/XOFF, DSR/DTR. |

## 3.5.3 Current time

It sets and checks the current time.




| Number | Function and operation |
|---|---|
| ① | There are 12 input buttons to set date and time.<br><br>0~9 : It inputs setting time.<br><br>CLR : It cancels inputting of setting value and clears a cursor.<br><br>ENT : After completing the configuration, cursor is moved to next input position.<br>When [ENT] is touched, it moves in order of year, month, day, hour,<br>Minute and second.<br>The cursor is moved as the display order when new date type is designated in GP Editor. |
| ② | It displays current configured date and time.<br>When it reconfigured, touch the position among year, date, month, hour, minute and second to be configured, then a cursor is appeared, it is changed as input status. |

### ※Notice

- The set time is used in time display, alarm history and alarm list, please set a time appropriately.

- The current time is preserved by external power when it is supplied or it is preserved by battery power when external power is cut. If there is an error in current time as of inputting external power, it is the battery discharge status. In this case, check the battery status in [Preference]-[Battery].

## 3.5.4 Delete user data

### 3.5.4.1 Default GP Data

It deletes user data of GP and the deleted data cannot be restored.

In order to preserve alarm history, select [communication]-[upload] of main menu and check “Alarm history (ALHISTRY.TXT)” and “Alarm frequency (ALFREQUE.TXT)” to save as txt file.

In case, GP is connected with serial printer, select [Preference]-[Print up]-[Alarm history] and it can be saved after printing it.


| Number | Function and operation |
|---|---|
| ① | It deletes all information about screen data, part, comment and common configuration. The delete message is displayed during erasing data in memory and it is completed, the message notifying there is no user screen. |
| ② | Exit the menu without deleting data. |

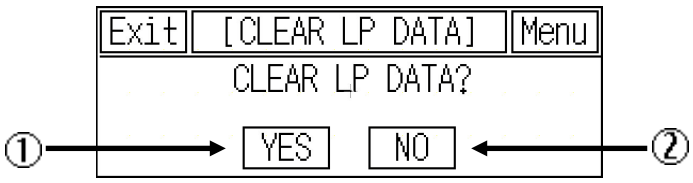
**※Notice**

- In case, the downloading of user-designed data is stopped, because of connection problem of power and cable, please delete GP data and re-download it.

### 3.5.4.2 Default LP Data

This menu is only supported at LP Series only

This menu deletes LP User Data




| No. | Functions and Operations |
|---|---|
| ① | Deletes all of ladder programs and parameters and device data<br>Display a Message which show the now state of deleting while deleting all item data |
| ② | Exit from this menu, not deleting data |

**※주의**

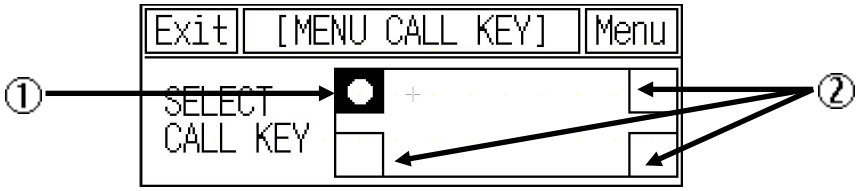
• 사용자가 작성한 래더 데이터를 다운로드 시에 전원 및 케이블의 연결 상태 등의 문제로 인하여 다운로드 중간에 멈췄을 경우에는 LP 의 데이터를 삭제 후 다시 다운로드 하십시오

**※Notice**

• You should download a LP data again after deleting the uncompleted downloaded LP data, when occurring a error by a power failed or a connection problem on downloading

## 3.5.5 Configuration/access key

It is used to check the position of key for moving from user screens to system screens or re-configure.



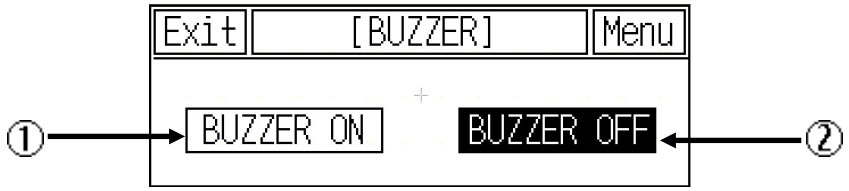

| Number | Function and operation |
|---|---|
| ① | It is set as configuration/access key position. |
| ② | It is not set as configuration/access key.<br><br>It can be configured up to max. 2 configuration/access keys. In this case, pressing 2 position keys simultaneously, it is moved to system configuration screens. |

### ※Notice

- When editing the screen with vertical direction, the default position of configuration/access key for designed data is in the upper left. (The bottom part of the screen is faced to the left side.)
- When inputting power during touch the point of the upper left, it is available to return to the system screen.
- If there are numeric input/ASCII input/touch key tag on the position of configuration/access key, tags are only operated and it is not moved to the system screens.

## 3.5.6 Buzzer

It configures buzzer sound for touch key operation, touch of numeric, ASCII input, system configuration menu and notification for start/end of communication.




| Number | Function and operation |
|---|---|
| ① | It operates buzzer when it touched.<br>It notifies the alternated item is configured. |
| ② | It stops to buzzer when it touched. |

## 3.5.7 Switching of user screens

It configures the time for displaying the initial screen before moving to the user screen after inputting the initial power.


| Number | Function and operation |
|---|---|
| ① | There are 12 input buttons to configure the display time of initial screen.<br>0~9 : Input the number when it is touched.<br>CLR : Cancel the inputting the setting value and delete a cursor displaying input status.<br>ENT : Update the setting value as inputted one.<br>The settable time range is from 0~60 sec. |

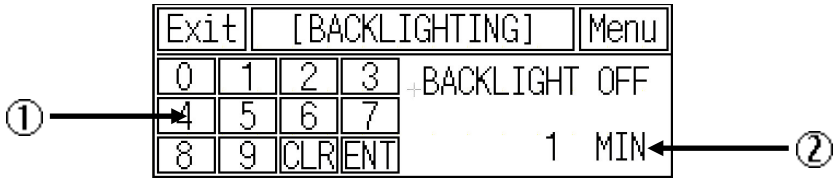
| | |
|---|---|
| ② | It displays the time for switching from current configured initial screen to user screen.<br>When touching time display position to reconfigure, a cursor is appeared and it is able to input time to configure. |

**※Reference**

• In the initial screen, it is available to check basic information of the product. (Releasing year, firmware version)

## 3.5.8 Backlight

It configures time of putting out backlight of LCD.




| Number | Function and operation |
|---|---|
| ① | There are 12 input buttons to configure the hour for putting out backlight when it is not touched.<br><br>0~9 : Input the number when it is touched.<br><br>CLR : Cancel the inputting of setting value and a cursor is disappeared.<br><br>ENT : Update a configuration value as inputted one.<br><br>The settable time range is from 0~99 min. The backlight is not put out when it configured as 0. Note 1)<br><br>The backlight function is controlled by system information device. Note 2) |
| ② | It shows the current configured time to putting out of backlight.<br>When touching time display position to reconfigure, a cursor is appeared and it is able to input time to configure. |

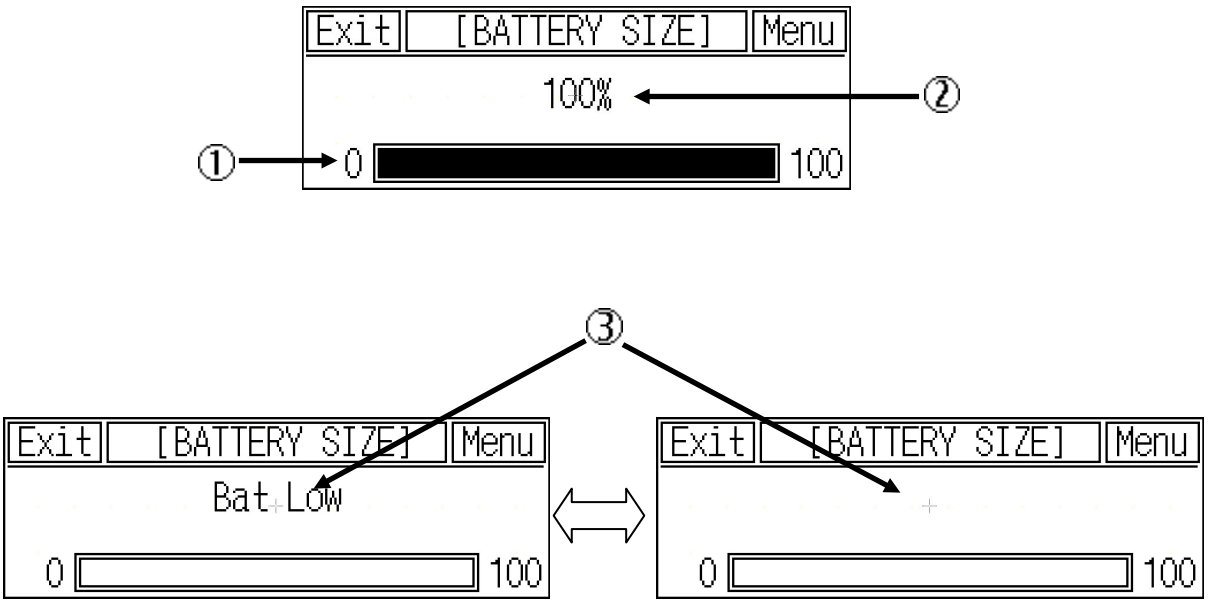
Note 1) If it is not touched during the set time, the backlight is put out. If it is touched during this status the any position, the backlight is on and other operations are not occurred.

Note 2) In accordance with the status of backlight control bit of read device of GP system information device, it controls the configured operation in this menu.

The configuration and operation of backlight is valid when the status of backlight control device is set (ON) and it is not worked when it is reset (OFF).
Please refer to the detail for system information.

## 3.5.9 Battery

It is displayed as percentage for battery remaining.



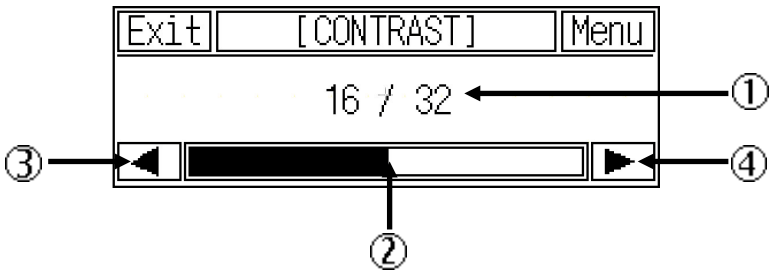

| Number | Function and operation |
|---|---|
| ① | It displays the battery capacity up to 100%~0% as bar graph. |
| ② | It displays the battery capacity up to 100%~0% as numerically. |
| ③ | The bat low message is flickered at a second intervals as of 0% of capacity. |

### ※Notice

• Please contact close distributor and change battery or it may cause an explosion accident when using non-certified batteries.

## 3.5.10 Screen contrast

It configures the color contrast of screens.



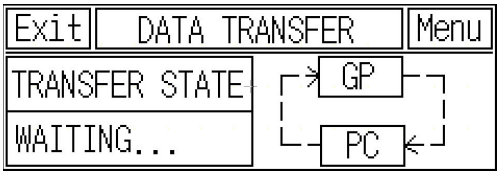

| Number | Function and operation |
|---|---|
| ① | It displays the current configuration status within 1/32 ~ 32/32. |
| ② | It displays the configured screen contrast ratio as graphic. |
| ③ | It lowers contrast ratio when it touched. |
| ④ | It raises contrast ratio when it touched. |

# 3.6 FUNCTION CONFIGURATION MODE

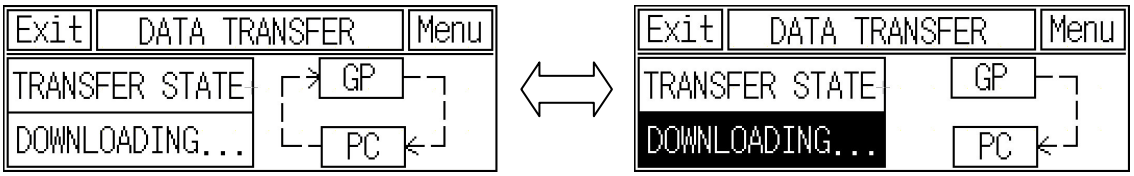
## 3.6.1 Data transmission

It is displayed during a communication (Upload, download) with GP Editor of PC.

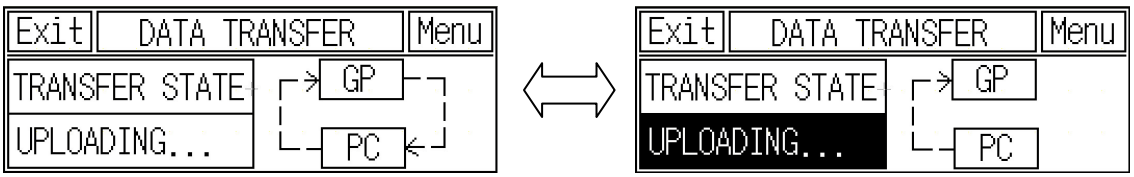
**Standby status**




**Download**




**Upload**

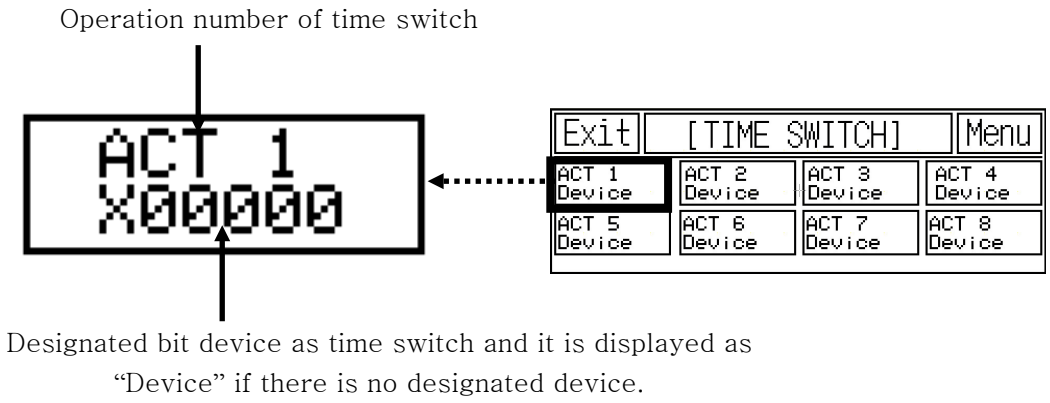


## 3.6.2 Time switch

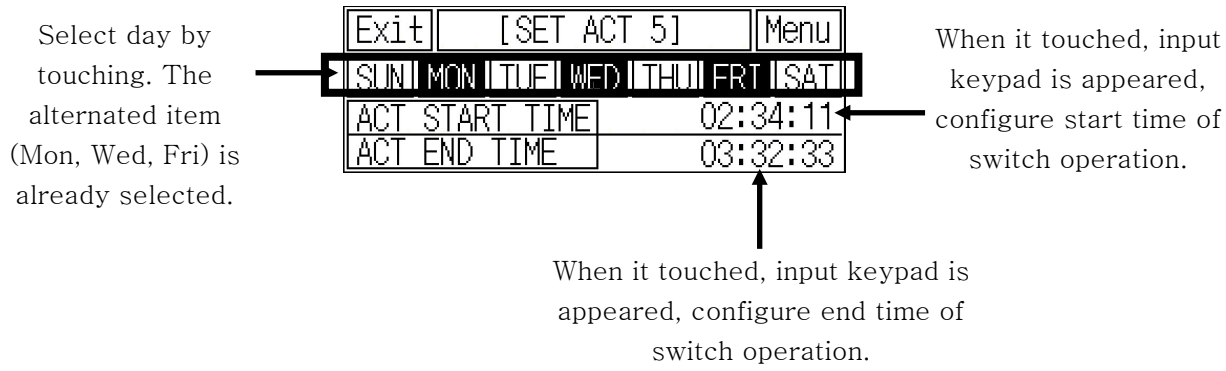
It executes ON/OFF the specified bit device of connected apparatus when it is on the designated day and time. It is configured in time action of GP Editor or time switch menu. It is only changed in GP Editor and it is not available on GP, the configuration of time switch operation time is only available.

It is able to operate up to max. 8 bit devices with successive number as time switch and it is also settable the operation time for each bit device.

The operation time of not designated ACTION item is displayed as [??:??:??].

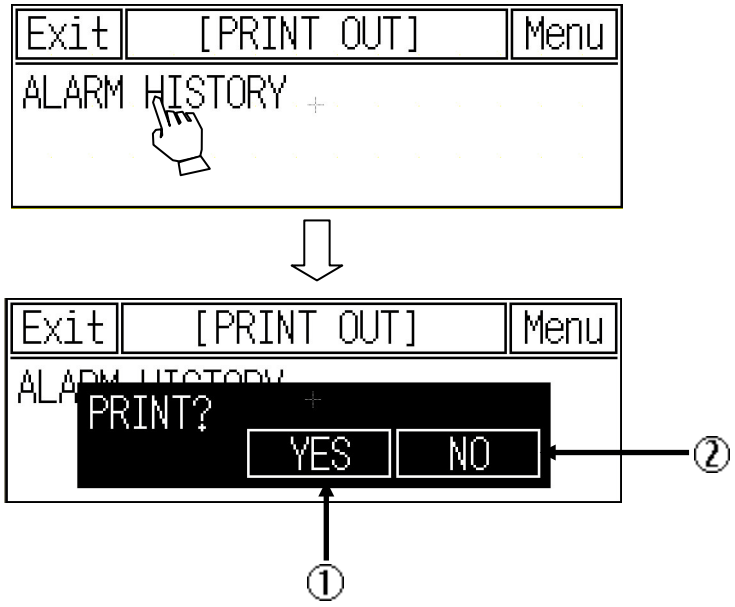



When the item is touched to allot bit device for each operation, the below window is displayed and it is able to configure operation time.
The operation time of not designated ACTION item is displayed as [??:??:??].



## 3.6.3 Print out

It transmits alarm history list stored during GP operation to external printer.




| Number | Function and operation |
|---|---|
| ① | It prints alarm history list when it touched.<br><br>Configuration of printer port<br>Configures the connection as printer in [Preference]-[Serial port].<br><br>CH1 does not use the out port of printer. |
| ② | Cancel the printer of alarm history. |

- Printing type of alarm history list

Alarm History List

| NO | DATE | TIME | MESSAGE |
|---|---|---|---|
| 0 | 4-09-16 | 08:31:40 | A Alarm is occurred |
| 1 | 4-09-16 | 08:31:40 | B Alarm is occurred |
| 2 | 4-09-16 | 08:31:40 | C Alarm is occurred |
| ⋮ | ⋮ | ⋮ | ⋮ |

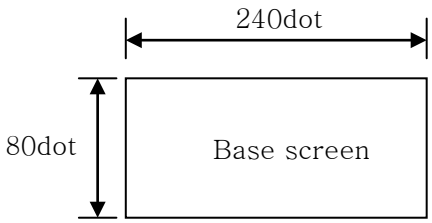
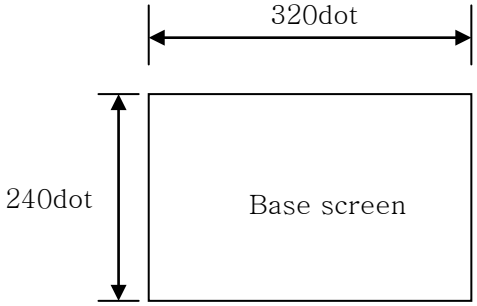
# 4. USER SCREEN

It is a base or window screen designed with GP Editor and this chapter describes the specification of base and window screens.

## 4.1 SCREEN SPECIFICATION

□the size of a base screen
The size base screen is a size included the size of a screen full area

the size of a base screen as a model

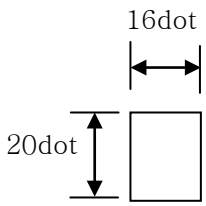
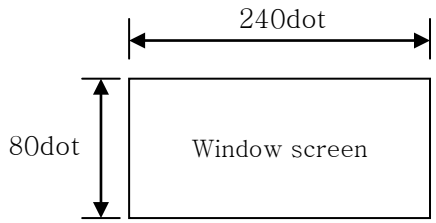
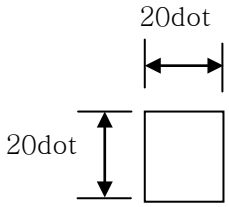
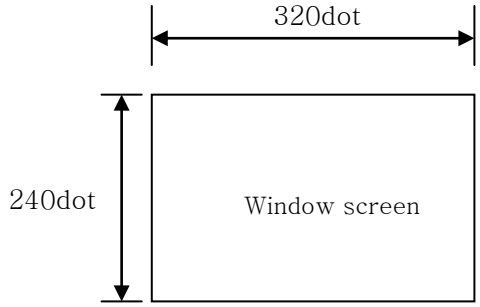
| model | the size of a base screen |
|---|---|
| GP-2480<br>LP-S044 |  |
| GP-S057 |  |

□the size of a window screen

The size of a window screen has a various size.

You can determine a window size and it's position in GP editor, and can assign the number of a window, which is unique from other window screen numbers like a base screen in GP editor

the size of a window screen as a model

| model | minimum size | maximum size |
|---|---|---|
| GP-2480<br>LP-S044 |  |  |
| GP-S057 |  |  |

| Model | contents | Base screen | Window screen |
|---|---|---|---|
| GP-2480 LP-S044 | Start position of screen (left-upper point) | (0,0) | (0, 0) ~ (223, 59) |
| | end position of screen (right-lower point) | (239, 79) | (15, 19)~(239, 79) |
| GP-S057 | Start position of screen (left-upper point) | (0,0) | (0, 0) ~ (223, 59) |
| | end position of screen (right-lower point) | (319, 239) | (19, 19)~(299, 219) |
| description | position by screen | Base Screen cannot be changed it's size but has always a fixed size from beginning | When a window screen size is too big to be contained at base screen, the right-lower point of the window screen be adjusted to the end point of base screen<br>So on some occasion, the positions between specified point and now displayed point are different |

□Screen number and number of screens

| | Base screen | Window screen |
|---|---|---|
| Screen number | Able to designate within 1~ 500 | Able to designate within 1~ 500 |
| The number of screens to design | 500 | 500 |
| The number of downloadable screens to GP | 500 Note 1) | 3 Note 2) |

Note 1) It is not transmitted normally when the capacity of designed data is exceeded user data area(512Kbyte). Please check the capacity of designed data and download it. (In LP, the area size of a user data is 384kbytes)

Note 2) The designed window screen is only used for user-defined keypad.
In this case, the number of downloadable screens to GP are max. 3.

# 4.2 SCREEN DISPLAY OBJECTS

□Available display objects for screens

| | Base screen | Window screen |
|---|---|---|
| Available display objects | Line, Rectangle, Circle, Character, Bitmap, Numeric display, ASCII display, **Numeric input, ASCII input,** Clock display, Comment list, **Alarm history, Alarm list,** Parts display, Lamp display, Line graph, Trend graph, Bar graph, Statistic graph, Panel meter, Touch key<br><br>**Bold part – They are only displayed on base screen.** | Line, Rectangle, Circle, Character, Bitmap, Numeric display, ASCII display, Clock display, Comment list, Parts display, Lamp display, Line graph, Trend graph, Bar graph, Statistics graph, Panel meter, Touch key |

□Limit the number of display objects for screen

There is no limit for using all tags on screens excluding some objects (Refer to the below.), but many objects are used on a screen, it reduces the monitor speed remarkably.

▪ Objects are not allowed to use as plural on a screen

Alarm history, Line graph, Trend graph, Alarm list with scroll option

▪ Objects are not displayed together on a screen

- Alarm history and alarm list with scroll option
- Line graph and trend graph

□Limit the number of display objects for project

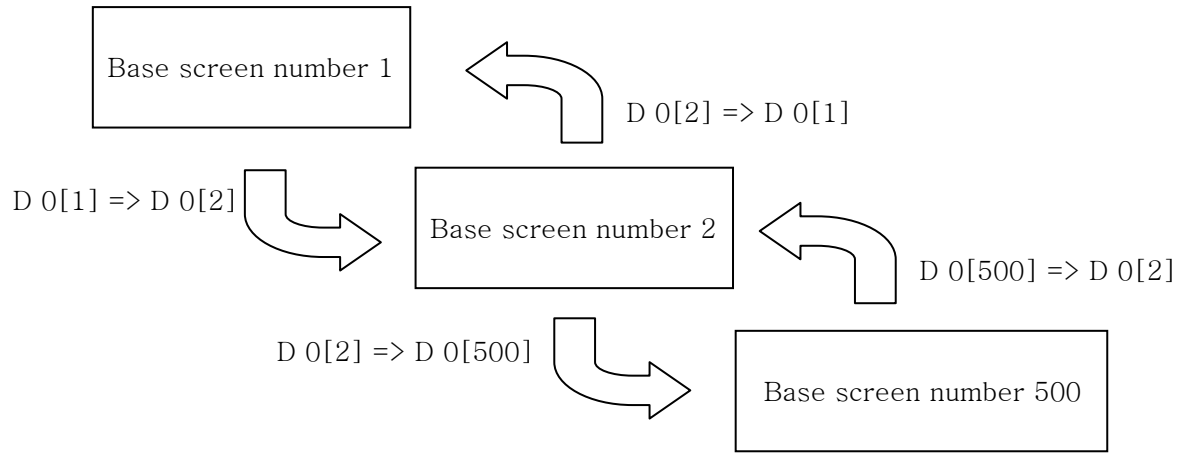
It is available to use objects with memory store function (Trend graph, alarm list) on a project max.16.

# 4.3 SCREEN SWITCHING

□ Screen switching device

The designed user screen in GP Editor has own number and it is downloaded to GP, it decides base screens to display switching device of base screen periodically. The switching device of screen is designated in editor. It recognizes the current value of device assigned to switching device of base screen as screen number, it displays the screen. In order to make same as the real screen number and device reference value for screen access, it is designed to display screen no.1 when the current value of device is “0”.

- The operation when configuring D0[Current value] device as device of base screen number.




It displays an error message if there is no screen number corresponding the device value of screen data.

□The method of screen switching

It is switched to the appropriate screen when changing screen switching device value. It is changed as below.

①Using touch key for switching screen : There is a switching function of touch key operations as follows.

(i) Switched to the fixed screen

(ⅱ)Switched to the previous screen

(ⅲ)Switched to the adjacent lower number of screen

(iv)Switched to the adjacent upper number of screen

②Numeric input : It is switched to the appropriate screen inputting screen number in screen switching device using numeric input tag.

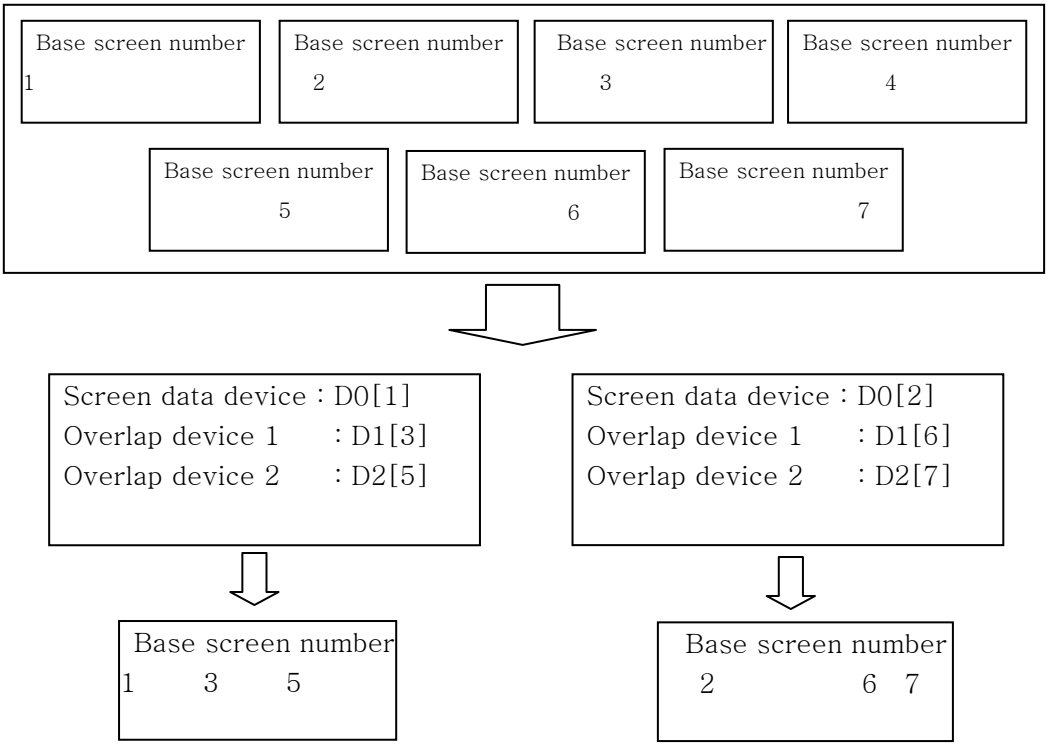
③Device monitor : It is switched from device on device monitor of system screen to the appropriate screen inputting the value in screen switching.

④Screen switching a screen by PLC program : When changing a screen switching device on PLC program, GP switches it into the appropriate screen.

# 4.4 OVERLAP WINDOW FUNCTION

GP monitors user-defined of 2 screen overlap devices and overlaps the screen satisfying current value of the device on a base screen.
In order to use screen overlap function, configure device for overlap window in GP Editor.

The overlap window is displayed in order of window 1, 2 on current screens as below.
In case, the value of overlap window device is exceeded the range (1~500) or not existed, the window is not displayed.

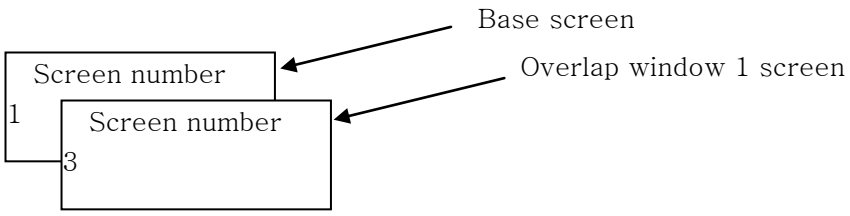


□Example of overlap screen operation

It describes assuming D0 is configured as screen access device, D1 as overlap window 1 device, D2 as overlap window device 2.

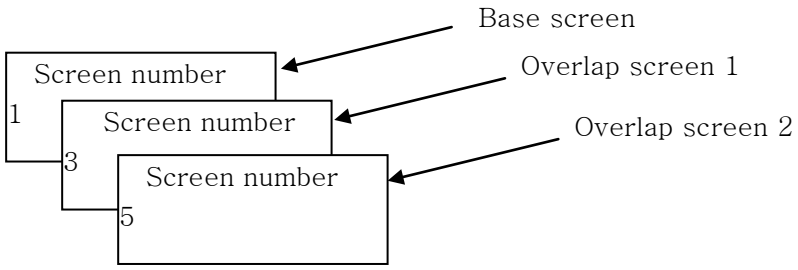
All user-defined base screen numbers : 1,2,3,4,5,6,7,8

In case of values as D0=1, D1=3, D2=11,




Overlap window 2 is not overlapped because the value of overlap window 2 device is not a existing base screen number.

In case of values as D0=1, D1=3, D2=5,




## ※Notice

Various tags of overlap screen in the upper part can cover lower part of tags and they are not shown. If touch keys or input tags are overlapped, the upper one is only operated when it touched.

# 4.5 DISPLAY OF DEVICE CONNECTION STATUS

GP displays a message when the device configured in [PLC connection] menu is not connected or there is an error as below.

The error message is appeared when touching a message window but it is popped an error message again if it is not recovered.


**※Notice**

• The error message of connection is only displayed on user screens excluding system configuration screen.

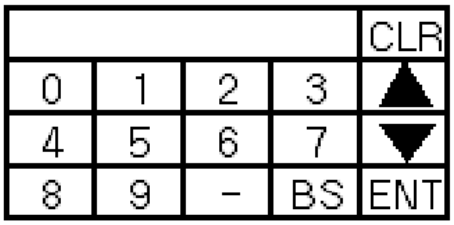
• When the 3rd (CH1), 4TH (CH1) bit of system signal 1 device in system information device are ON status, the error message is displayed on a screen for the appropriate connection device. Please refer to the details about system information.

# 5. SYSTEM KEY WINDOW

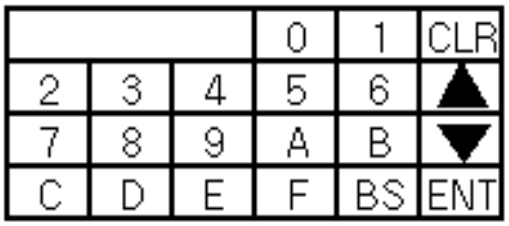
## 5.1 KEYPAD TYPES

Illustration of system keypad

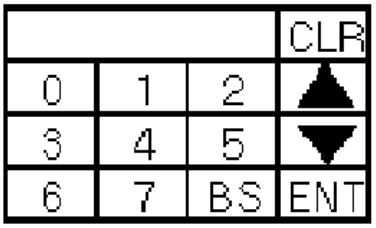
For decimal input



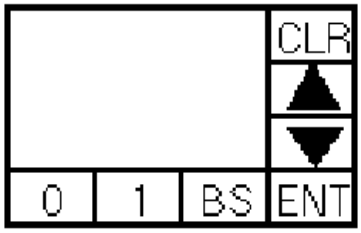

For hexadecimal input



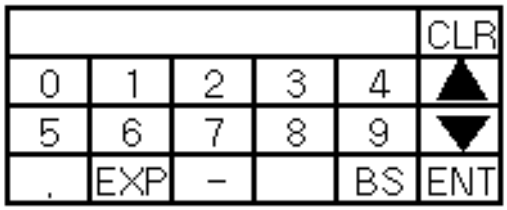

For octal input



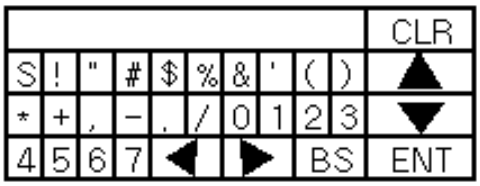

For binary input

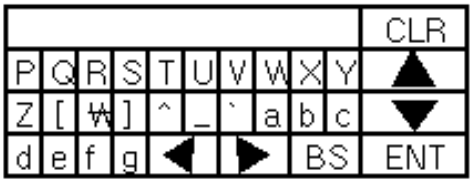


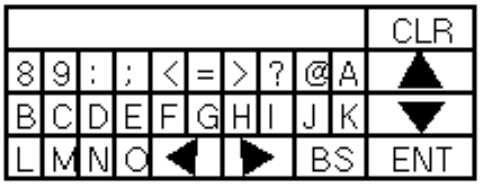

For real number input

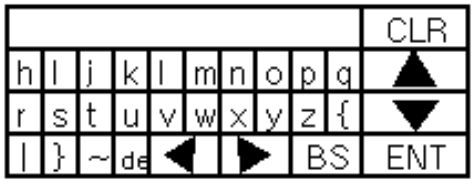



For ASCII input

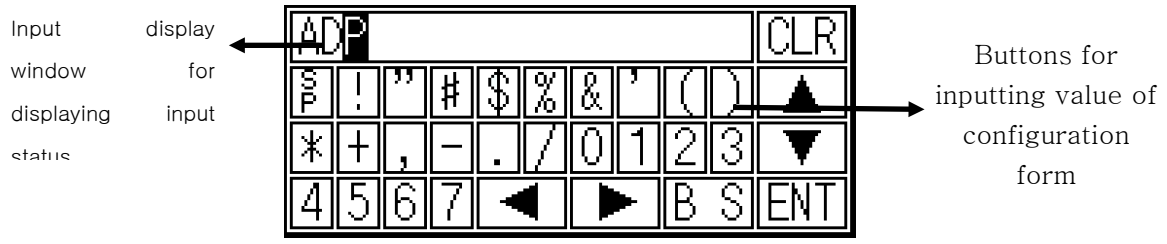


# 5.2 ORGANIZATION OF KEYPAD



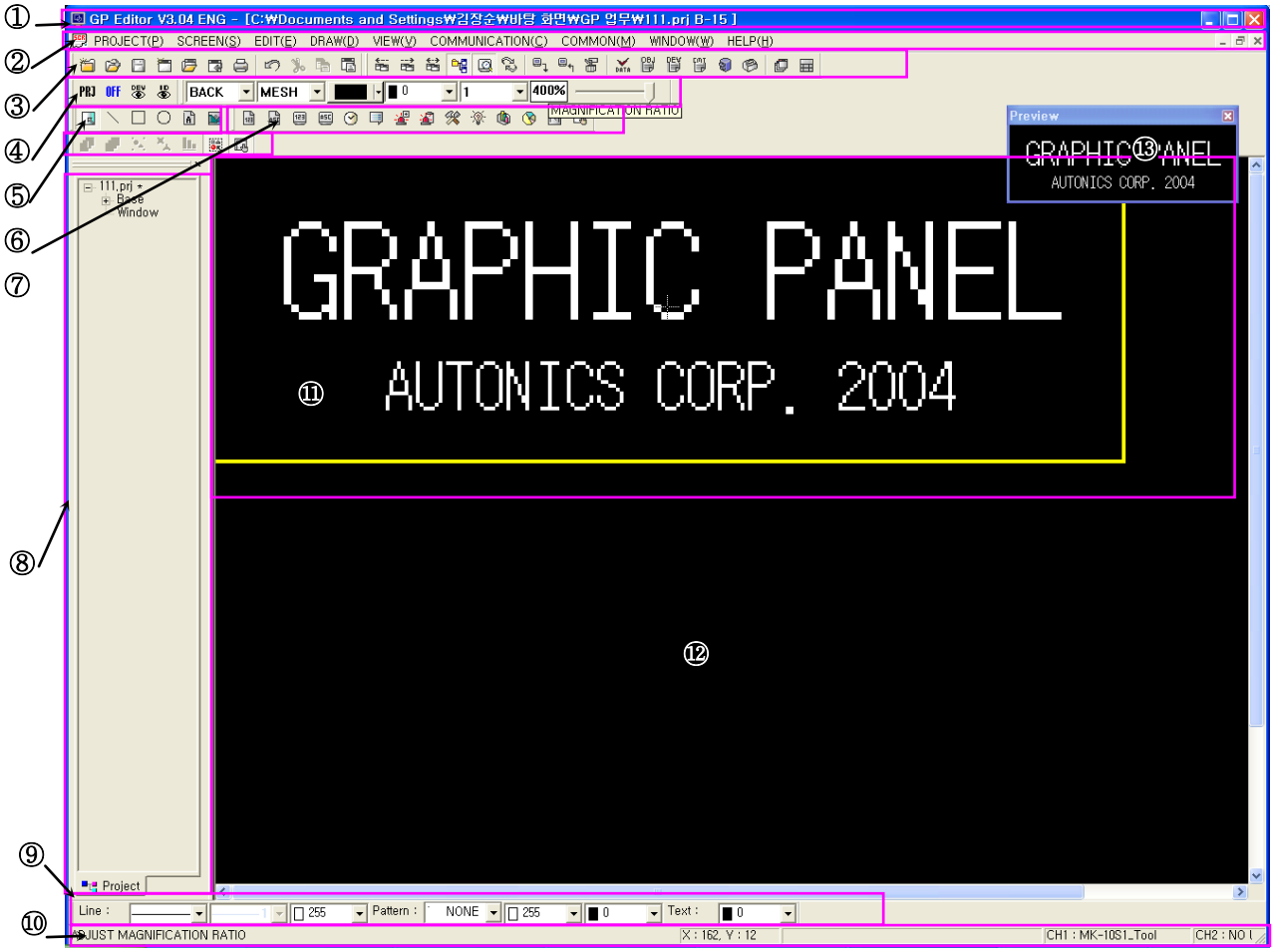

ENT: Execute write or input operation of writing value on a device.
CLR: Delete all input value.
BS: Delete the last letter.
▲: Move to the previous input field in accordance with configuration
▼: Move to the next input field in accordance with configuration
◄: Move to the previous page (Only for ASCII input key window)
►: Move to the next page (Only for ASCII input key window)

In key window of user screen, the movement operation of ENT, CLR, ▲, ▼ are different in accordance with “Key operation” of screen auxiliary configuration.

| Key operation | No movement | In order of user ID | Hide cursor and key window |
|---|---|---|---|
| CLR | Hold keypad | Hold keypad | Close keypad |
| ENT | Hold keypad | Hold keypad | Close keypad |
| ▲ | Not operated | Move to previous input tag | Move to previous input tag |
| ▼ | Not operated | Move to previous input tag | Move to previous input tag |

# 6. THE OUTLINE OF GP EDITOR

## 6.1 ORGANIZATION OF EDITOR PROGRAM WINDOW




| Number | Name | Description |
|---|---|---|
| ① | Title bar | Display number and title of working screen. |
| ② | Main menu | Menu for all editing function |
| ③ | System tool | Tool for project and screen operation |
| ④ | View tool | Tool for visual configuration such as tag, background on a edit screen |
| ⑤ | Graphic tool | Tool for drawing a graphic figure |
| ⑥ | Tag tool | Tool for creating tags |
| ⑦ | Edit tool | Tool for selecting an object, stack order and group |
| ⑧ | Work space | Display screen constituting project as a tree |
| ⑨ | Drawing tool | Tool for configuration of line, pattern and text of graphic objects |
| ⑩ | Status bar | Display type/size of selected object, mouse position. |
| ⑪ | Edit area | Available area designed screen data and downloaded to the device |
| ⑫ | Non-edit area | Unavailable area with screen data can be arranged as operation problem |
| ⑬ | Preview | Show screen on the device with 100% of enlargement ratio. |

# 6.2 ORGANIZATION AND DESCRIPTION OF MAIN MENU

| Menu | Shortcut key | Description |
|---|---|---|
| **Project** | | |
| New | Ctrl+N | Create a new project. |
| Open | Ctrl+O | Open saved project |
| Close | | Close project |
| Save | Ctrl+S | Save project |
| Save as | | Save project as other name |
| Import project | | Import base screen, window screen, part, comment on current project. |
| Print | Ctrl+P | Print project (Screen, Device list, Comment) with printer or as file. |
| Option | | Configure optional items such as save file, toolbar position, communication configuration. |
| Exit | Ctrl+X | Exit program |
| **Screen** | | |
| New | Alt+N | Create a new screen |
| Load | Alt+L | Load screen |
| Clear | Alt+W | Clear screen |
| Clear and Load | | Clear and load screen |
| Store | Alt+S | Store screen |
| Store as | | Store project as other name |
| Copy/Delete | | Copy/delete successive screens of project at a time. |
| Size adjustment | | Adjust size of window screen |
| **Edit** | | |
| Undo | Ctrl+Z | Undo movement, delete, size adjustment |
| Cut | Ctrl+X | Cut selected object and save it in clip board |
| Copy | Ctrl+C | Copy selected object on screen |
| Paste | Ctrl+V | Paste copied or cut objects on screen |
| Successive copy | | Copy selected object successively |
| Delete | Del | Delete selected object |
| Select all | Ctrl+A | Select all objects |
| Select object-Figure | | Select figure (Click a mouse or select all) |

| | | |
|---|---|---|
| Select object-Tag | | Select tag |
| Group | | Group selected objects |
| Ungroup | | Disorganize group |
| Bring to forward | Ctrl+F | Move selected object to the forward |
| Send to backward | Ctrl+B | Move selected object to the backward |
| Replace device | | Change device used for tag and it is available to select applicable range as all project, current screen, selected object, used device for common configuration. |
| Replace overlap screen | | Change overlapped screen as other screen |
| Attribution | | Edit attribution of selected object |
| Alignment | | Align screen arrangement of selected object |
| **Draw** | | |
| Panel Kit | | Panel Kit, panel kit registration, Drawing on screen, Save as file, Load etc. |
| Part | | Register selected object as part, Draw registered part on screen, Part library operation etc. |
| Line | | Able to draw lines, create a straight line connecting 2 points and configure color and style of line. |
| Rectangle | | Able to draw rectangles, configure color, style of outline and pattern filled inside of rectangle. |
| Circle | | Able to draw circles, color, pattern filled inside of outline and make an oval pulling a line. |
| Text | | Able to draw text, configure color and size. |
| Bitmap | | Draw bitmap image. |
| Numeric input | | Create numeric input tags and configure value of designated word device with key window. |
| ASCII input | | Create ASCII input tags and configure value of designated word device as ASCII code with key window. |
| Numeric display | | Create numeric display tag, display numeric value saved in PLC device. |
| ASCII display | | Create ASCII display tag, display ASCII value saved in PLC device. |
| Clock display | | Create clock display tag, display current time or date |
| Comment display | | Create comment display tag, display designated comment in accordance with change of designated PLC device value or status. |
| Alarm history | | Create alarm history tag, write alarm history. |
| Alarm list | | Create alarm list tag, display alarm list. |
| Part display | | Create part display tag, display designated part in accordance with change of designated PLC device value or status. |
| Lamp | | Create lamp tag, display designated type of lamp in |

| | | |
|---|---|---|
| | | accordance with ON/OFF of designated bit device. |
| Panel meter |  | Create panel meter tag, indicate percentage of max/min. value of designated word device with meter needle. |
| Line/Trend/Bar |  | Create line/trend/bar graph tag, display designated word device value with line/trend/bar graph type. |
| Statistic graph |  | Create statistic graph tag, display percentage of designated word device value as graph. |
| Touch key |  | Able to create touch key tag, switch screen, operate bit device, set word device and execute special function pressing touch key. |
| Overlap screen |  | Overlap screen on the current screen. |
| Key window position |  | Designate the position of key window appeared when inputting numeric and ASCII as upper left. |
| **View** | | |
| Preview |  | Show the figure for current screen is appeared in GP. |
| Tool palette |  | Display tools. |
| Tag list |  | Able to show tag list of current screen and edit each attribution. |
| Device list screen |  | Able to show device list used for tag of current screen and change it. |
| Device list-Project | | Able to show device list used for project of current screen and change it. |
| Overlap screen list | | Able to show overlapped screen list on current base screen and change it. |
| Status bar | | Status bar is displayed when it checked. |
| Toolbar – System | | System tool is displayed when it checked. |
| Toolbar – View | | View tool is displayed when it checked. |
| Toolbar – Figure | | Figure tool is displayed when it checked. |
| Toolbar - Edit | | Edit tool is displayed when it checked. |
| Toolbar – Tag | | Tag tool is displayed when it checked. |
| Toolbar – Draw | | Draw tool is displayed when it checked. |
| View-On image |  | Display tag as ON when it checked, or as OFF. |
| Refresh |  | Refresh it. |
| Option | | Configure arrangement of view option and tool assembly. |
| **Communication** | | |
| Download |  Ctrl+D | Download screen data on GP. |
| Upload |  Ctrl+U | Upload screen data of current GP. |
| Memory | | Able to check and delete screen data of GP. |
| Data check |  | Able to examine availability of edited data and edit error object. |
| GP firmware | | Able to examine availability of edited data and edit error |

| | | |
|---|---|---|
| Download | | object. |
| **Common** | | |
| Title-Project | | Allow title and detail description of project. |
| Title-Screen | | Allow title and detail description of screen. |
| PLC connection |  | Confirm and change of connection PLC. |
| System information | | Define facts about device using for special purpose. |
| Switching screen | | Designate device using switching screen. |
| Security | | Able to designate password for security level, usage of security for system screen and communication security. |
| Comment | | Edit comment using commonly in alarm history/alarm list/comment display tags. |
| Alarm history | | Configure monitor device for alarm and observe period. |
| Floating alarm | | Configure the item of floating alarm : Float specified comment from the right to left at the low row of screen when designated observation device is ON. |
| Observe status | | Configure the item of observe status : Configure bit device status or word device value when specified trigger device has designated status. |
| Recipe | | Configure the item of recipe : Execute read/write operation for several word devices when specified trigger device is ON. |
| Time action | | Configure the item of time action : Make bit device as ON status during certain time. |
| Barcode | | Configure the item of barcode input. |
| Auxiliary configuration-Project | | Auxiliary configuration of project : Configure key window operation, edit direction, communication, language, buzzer and position of system access button etc. |
| Auxiliary configuration-Screen | | Auxiliary configuration of screen : Configuration of input focus movement of data input tag, key window operation, allowance of floating alarm and security level etc. |
| **Window** | | |
| Cascade | | Arrange several screens hierarchically. |
| Tile | | Arrange several screens as tiles. |
| Icon alignment | | Align minimized screen icons. |
| **Help** | | |
| GP Editor | | Help for editor |
| Information of GP Editor | | Display editor version. |

# 6.3 DESCRIPTION OF TOOLS

| Icon | Menu | Description |
|---|---|---|
|  | Project-New | Create new project. |
|  | Project-Open | Open saved project. |
|  | Project-Save | Save project. |
|  | Screen-New | Create new screen. |
|  | Screen-Load | Load closed screen. |
|  | Screen-Store | Store screen. |
|  | Edit-Undo | Undo movement, delete, size adjustment. |
|  | Edit-Cut | Cut selected object. |
|  | Edit-Copy | Copy selected object. |
|  | Edit-Paste | Paste clip board objects. |
|  | - | Switch to previous number of screen. |
|  | - | Switch to next number of screen. |
|  | - |  Open closed screen for operation. |
|  | View-Preview | Preview main screen. |
|  | View-Tag list | Able to show tag list of current screen and edit attribution. |
|  | View-Device list | Able to show device list used for tag of current screen and change it. |
|  | Common-Comment | Edit comment using commonly in message tag. |
|  | Part/Panel kit | Able to access window operating part/panel kit library. |
|  | View-Tool palette | Tools assembly |
| PRJ SCR | | View tools are applied as project or screen unit. |
|  | View-Refresh | Refresh |
| ON OFF | View-ON/OFF | View ON/OFF image of tag. |
|  | View-Device | Display device used for tag. |
|  | View-Tag ID | Display tag ID. |
|  | | |
|  | - | Designate grid display method. |
|  | - | Configure grid interval. |
|  | - | Designate grid color. |
|  | - | Designate background color. |
|  | - | Configure grid snap. |
|  | - | Designate an enlargement ratio. |
|  | | Mouse cursor for selection. |

| | | |
|---|---|---|
| | Draw-Line | Able to draw line, create straight line connecting 2 points and designate color, style of line |
| | Draw-Rectangle | Able to draw rectangle, color and style of outline and pattern filled inside of rectangle |
| | Draw-Circle | Able to draw circle, designate outline color, pattern filled inside of rectangle and make an oval pulling a line |
| | Draw-Text | Able to draw text and designate color and size of letter |
| | Draw-Bitmap | Draw bitmap of bitmap file. |
| | Edit-Bring to forward | Move selected object to the top. |
| | Edit-Send to backward | Move selected object to the bottom. |
| | Edit-Group | Group selected objects. |
| | Edit-Ungroup | Ungroup |
| | Edit-Align | |
| | Edit-Select figure | Select figure. |
| | Edit-Select tag | Select tag. |
| | Draw-Numeric input | Able to create numeric input tag, designated word device value using key window |
| | Draw-ASCII input | Able to ASCII input tag, configure designated word device value as ASCII code using key window |
| | Draw-Numeric display | Able to create numeric display tag, display saved value in PLC device as numeric value on screen |
| | Draw-ASCII display | Able to ASCII display tag, display saved value in PLC device as ASCII letter |
| | Draw-Clock display | Able to create clock display tag, display current time or date |
| | Draw-Comment display | Able to create comment display tag, display designated comment in accordance with change of designated PLC device value or status |
| | Draw-Alarm history | Able to create alarm history tag, write alarm list |
| | Draw-Alarm list | Able to alarm list tag, display alarm list |
| | Draw-Part display | Able to create part display tag, display designated part in accordance with change of designated PLC device value or status |
| | Draw-Lamp | Able to create lamp tag, display designated type of lamp in accordance with bit device ON/OFF. |
| | Draw-Panel meter | Able to create panel meter tag, display percentage of max/min. value of designated word device value with meter needle |
| | Draw-Line/Trend/Bar | Able to create line/trend/bar graph tag, display designated word device value as line/trend/bar graph type |
| | Draw-Statistic graph | Able to create statistic graph tag, display percentage of designated word device value as graph |
| | Draw-Touch key | Able to create touch key tag, switch screen, operate bit |

| | | |
|---|---|---|
| | | device and configure of word device value, special function |

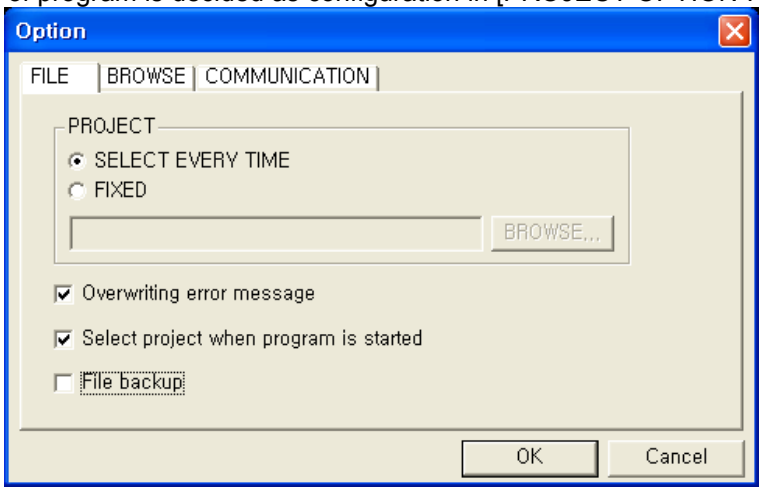
# 7. PROJECT OPERATION

This chapter describes to make project executing program, configure project attribution and manage project including save, open and import.

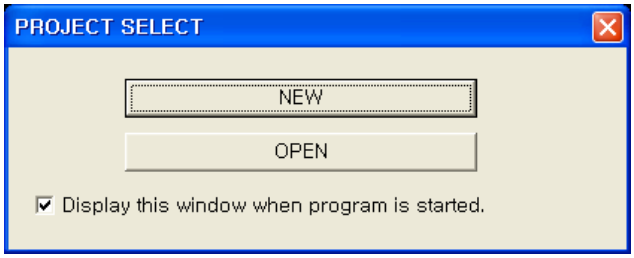
## 7.1 CREATE PROJECT

### 7.1.1 Startup program

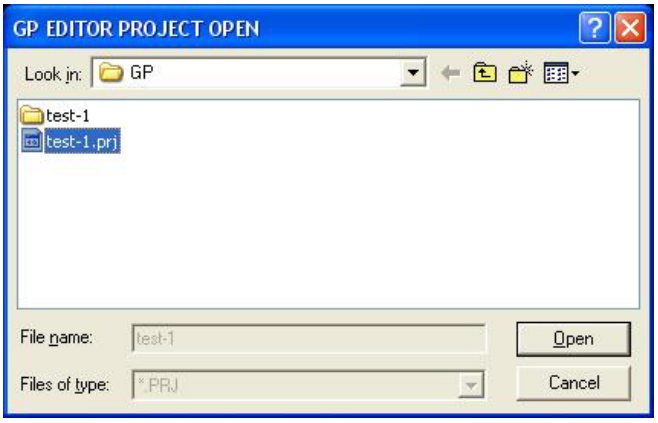
The start operation of program is decided as configuration in [PROJECT-OPTION-FILE TAP].



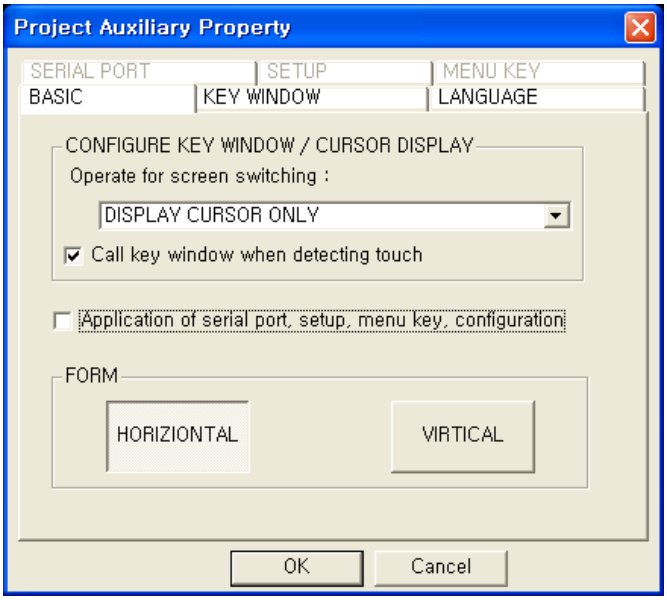

(1) When selecting 'Select every time' in PROJECT and checking 'Show "Select project" dialog when you start GP Editor':
User can select opening the existing project or new project calling project selection window when starting program.




After selecting open, designate the position of file, select project to open.



After selecting new project, call GP/PLC type window to select PLC type. Call project auxiliary configuration window, designate required items and create new project with base screen B-1.



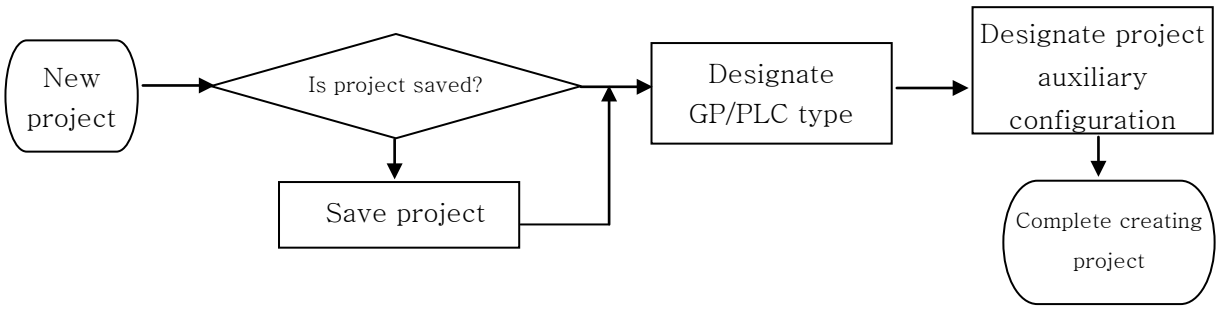

(2) When selecting **'Select every time'** in **project** and not checking **'Show "Select project" dialog when you start GP Editor'**: Create default project having a base screen B-1 when program is started and it follows the previous project configuration in this case.

(3) When selecting **'Fixed'** for **project** :

Open designated project on edit box when program is started.

## 7.1.2 Create new project

Create new project selecting [PROJECT-NEW] of main menu, pressing CTRL+L or **NEW PROJECT** of tool bar. Configure basic GP/PLC type when creating new project, designate basic configuration including edit direction, communication, language as **PROJECT AUXILIARY CONFIGURATION**.

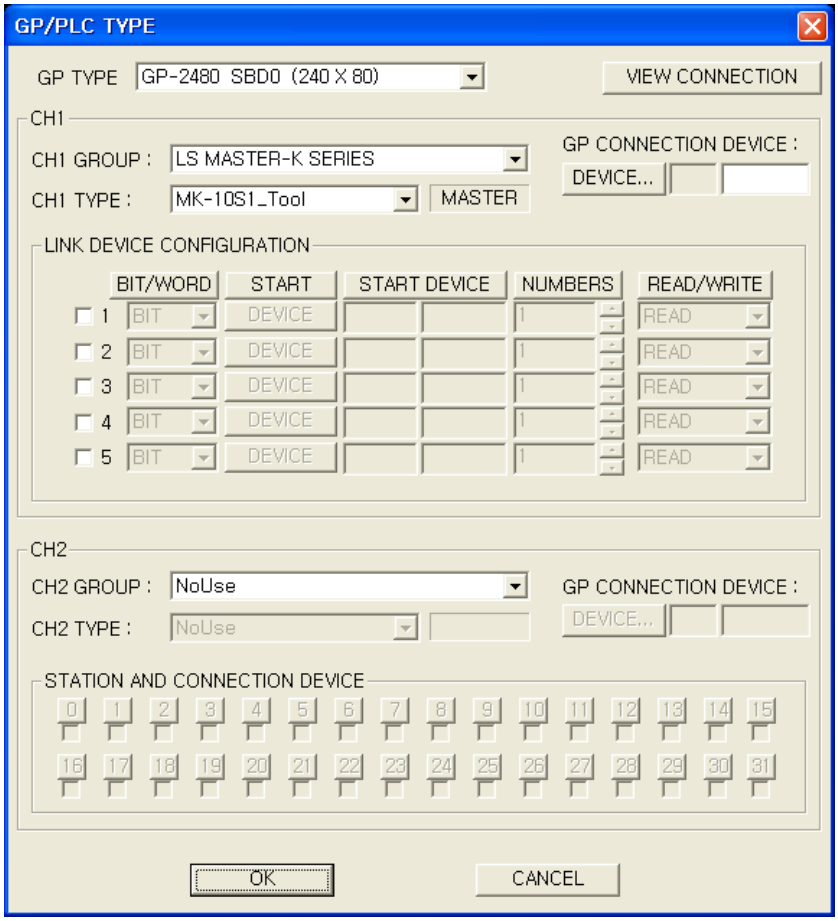



This is for reducing data writing error providing required items automatically when user create new project. User should keep this comment to protect from design errors when creating project and designate type of connection equipment, then, device of connection equipment can be defined automatically for editing.

# 7.2 CONFIGURATION OF GP/PLC TYPE

To operate downloaded screen data on GP, user should designate GP and PLC type to be used in the editor correctly.
It shows GP/PLC type window to designate GP/PLC type for creating new project.
When selecting '**Select every time'** in PROJECT and not checking **'Show "Select project" dialog when you start GP Editor'**, it does not show **GP/PLC type** window and make same project with previous configuration.
Use [COMMON-GP/PLC TYPE] menu to change project type with this option.
It is able to change device using the project as automatically or manually.

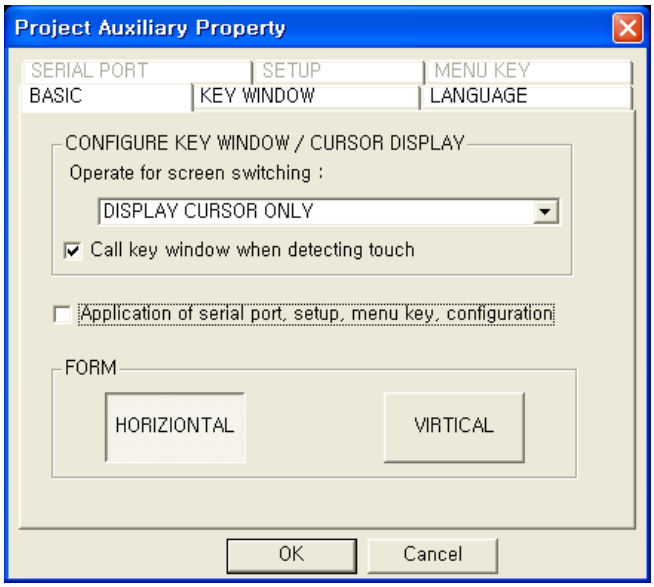
In order to transmit written data in GP editor to PLC, user should configure proper group, type and communication type of connected PLC.
Please refer to chapter 13. CHANGE OF PLC TYPE for the detail descriptions.



# 7.3 CONFIGURATION OF PROJECT AUXILIARY PROPERTY

## 7.3.1 Configuration of format type

Select **Horizontal** or **Vertical** in **format** group box of basic tap in project auxiliary configuration property window, edit GP screen as horizontal or vertical direction.




• Horizontal : Edit as horizontal direction
• Vertical : Edit as vertical direction

## 7.3.2 Configuration of key window display

Key window is used for inputting value into device in ASCII input/Numeric input.
It is able to designate call condition of key window and cursor appearance in project auxiliary configuration.

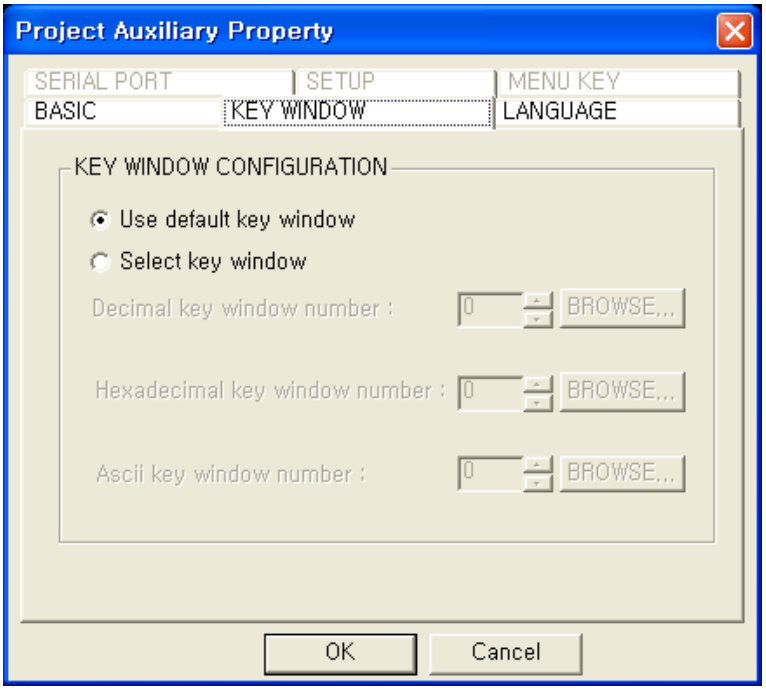
In operation of switching screen,

(1) When selecting **'Do not display cursor and key window'** in main device, cursor and key window are not displayed when switching into screen with key input.
(2) When selecting **'Display cursor only'**, cursor is displayed only when switching screen.
(3) When selecting **'Display cursor and key window'**, cursor and key window are displayed.

When selecting **'When touch is detected, open key window at the same time'**, key window is displayed for pressing input area or not when it is not checked.

## 7.3.3 Configuration of key window

There are 3 key windows for inputting DECIMAL (DEC), HEXADECIMAL (HEXA), ASCII CHARACTER (ASCII) using in GP.




• **Use default key window :**
Use key window provided from system.

• **Select key window** : Use user-defined key window. (User should designate key window separately.)
It is able to select alternating window for each items and have own window screen number with 0~500 of configuration range. When it designated as 0, default key window is used for the item.

**DEC key window number** : It is called when it is decimal with sign/without sign in numeric input tag.

**HEX key window number** : It is called when it is hexadecimal in numeric input tag.

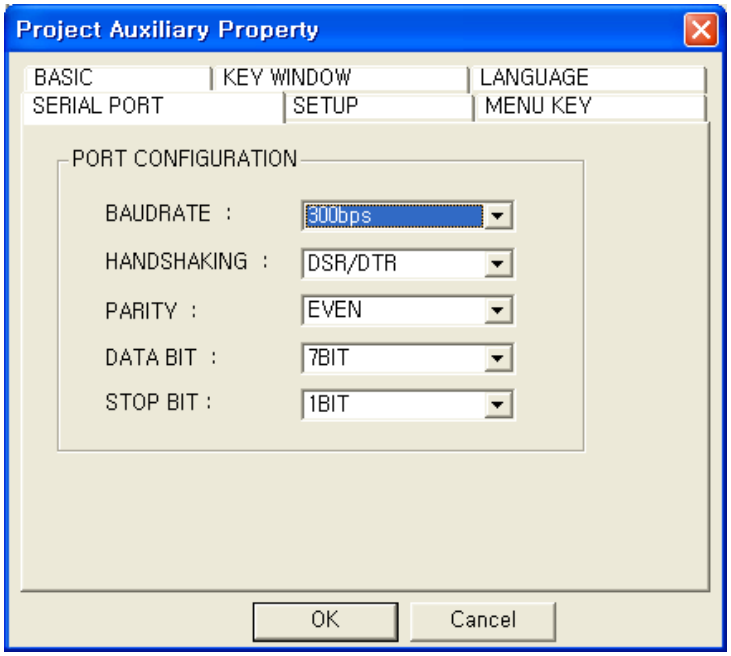
**ASCII key window number** : It is called in ASCII input tag.

## 7.3.4 Configuration of serial port

It is configuration of serial connection when connecting main device with editor, barcode reader and print.

It is configuration of port, not CH1 communication port, in system screen [Channel connection] of GP. In case of GP-2480-SBD0 and RS422 A PORT is using for CH1, it configures to connect editor, barcode reader, print with RS232C B PORT.

When using editor, printer, barcode, CH2, the object should be designated as the appropriate equipment connecting to port not connected with CH1 in [SERIAL PORT] in system screen of GP.

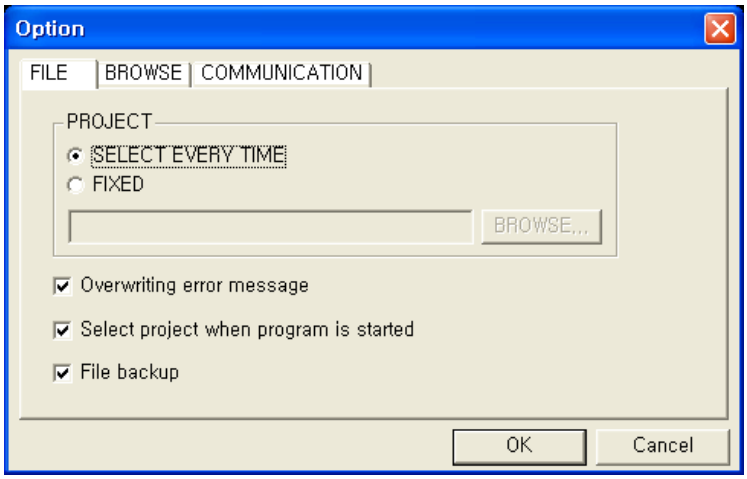



| Configuration item | Settable value |
|---|---|
| Speed | 300, 600, 900, 1200, 2400, 4800, 9600, 19200, 38400, 57600bps |
| Handshaking | XON/XOFF, DSR/DTR |
| Parity | None, Even, Odd |
| Data bit | 7, 8 bit |
| Stop bit | 1, 2 bit |

# 7.4 CONFIGURATION OF PROJECT OPTION

## 7.4.1 Configuration of overwrite message

If user check overwrite message box, it shows message prior project is changed whenever project is saved and it is able to cancel save command.

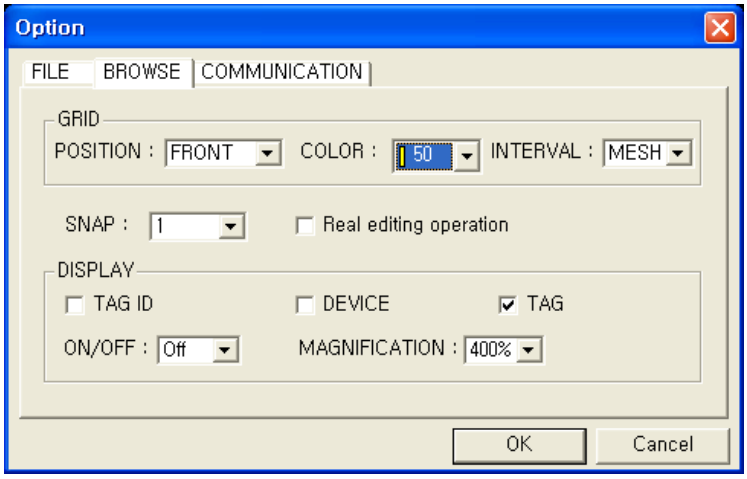



## 7.4.2 Configuration of backup file

If user check backup file check box, backup folder is created to the below of current working folder, all data in working folder are copied into backup folder whenever it is saved. It is able to protect existing data from saving wrong data.

# 7.4.3 Designation of view option

Grid display, screen enlargement, snap, tag, ID display and device display are for making screen data efficiently. It is able to configure in view tap.




(1) Grid : Scale indicating arrangement of objects for editing

• Grid position :

Front of object = Display on the tag, Behind of object = Display under the tag, None = Do not display.

• Designation of color : Designate among white, black, blue, red, pink, light green, light blue and gray

• Designation of interval : Designate among 2, 4, 8, 16, 24, 32, 40, 48, 56, 64 and Mesh.

(2) Option for tag display

• Tag ID : Decide display of tag ID.

• Tag : Decide display of tag content.

• Device : Decide display of device name connected with tag.

(3) Designation of screen enlargement ratio : Select among 100%, 200%, 300% and 400%.

(4) Designation of snap : Decide snap value of screen. It is able to select among 1, 2, 4, 8, 16 and Mesh.

(A mesh indicates same size (16×20) of resolution of touch switch.)

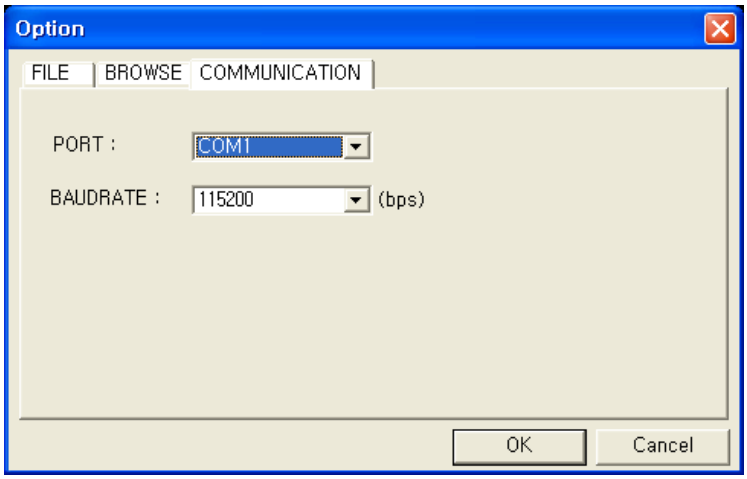
(5) ON/OFF : Display image status of tag and ON/OFF image of tag on screen.

(6) 'Show real image when editing object' is selected, it displays object as it is or outline only with dotted line.

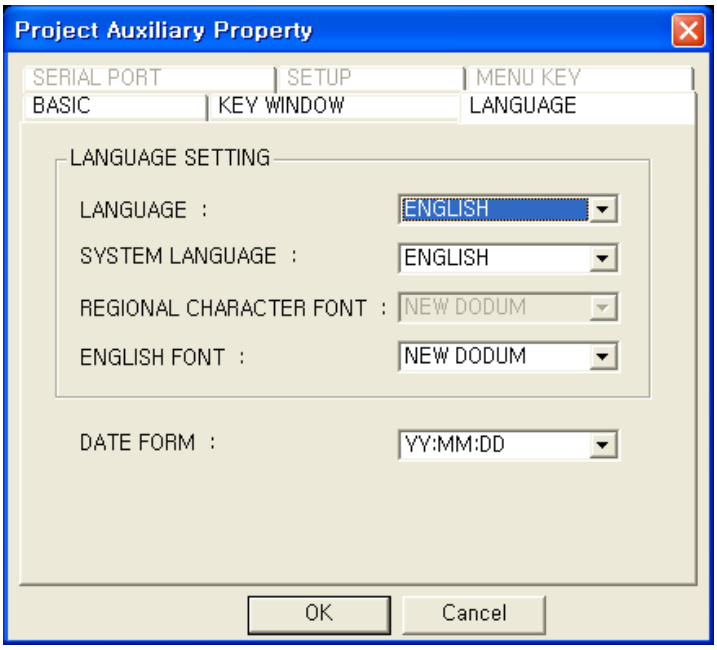
## 7.4.4 Communication configuration of PC/GP

Designate communication speed and serial port of PC for configuration of communication between PC and GP among 9600, 19200, 38400, 57600 and 115200.

When GP is connected with editor, it decides communication speed and upload/download automatically. Configure “communication” as “editor” in [Serial communication] screen.



## 7.4.5 Configuration of language and font




• **Language** : Configure using character set.
• **System language** : Configure character using in system screen of GP.
• **Regional font** : Configure regional character font.
• **English font** : Configure ASCII letter.
• **Date format**: The following 6 types of date format are using in date display of system screen.

Year-Month-Day
Year-Day-Month
Month-Day-Year
Month-Year-Day
Day-Month-Year
Day-Year-Month

### ▣ Configuration of language

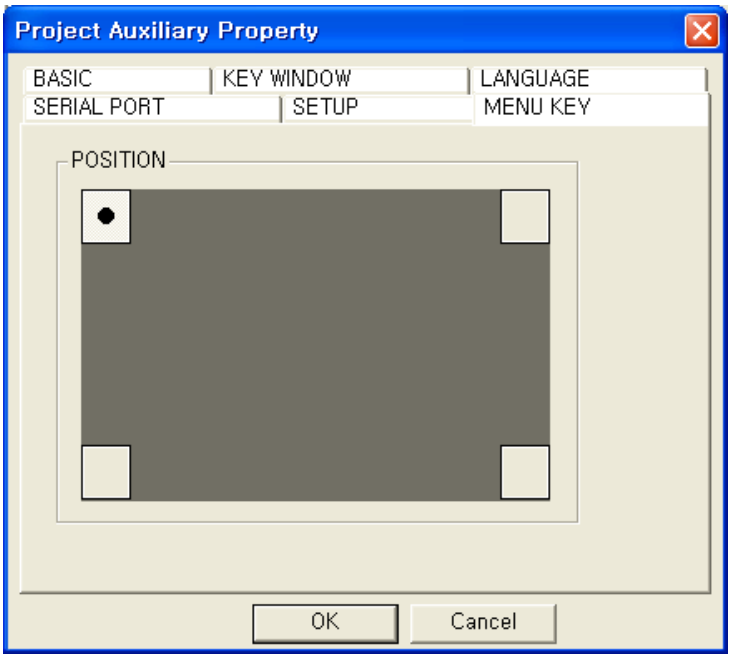
• The character display in editing on main device is displayed according to character code for configured language.
• For editing of text, configure same with language configuration of current operating system. For example, configure language as Japanese in PC using Korean OS, it is written as Korean, but it refers to Japanese character code.

### ▣ Configuration of font

• If configured font in language tap is in main device, it is downloaded together when downloading editor data.
• There are ASCII character font and regional character font.

## 7.4.6 Configuration/access key for system menu

Designate key position able to enter system screen.

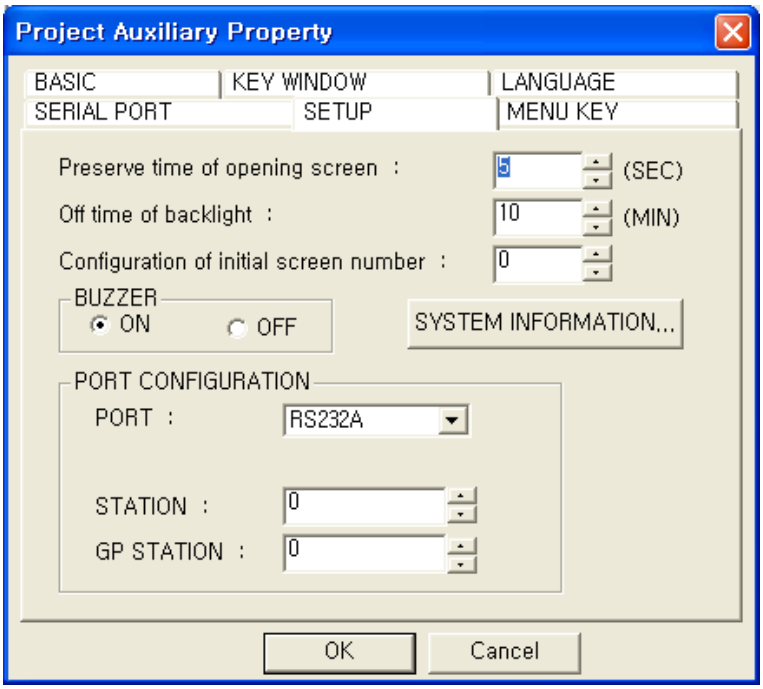



It is able to designate one or two among four corners of GP screen. Press two keys simultaneously to enter system menu when designating two points.

### ※Notice

**After inputting power, it is able to enter system screen touching corner of upper-left(Based on the width).**

## 7.4.7 Other auxiliary configurations




• **Preservation time of opening screen**

It shows basic information (Releasing year, firmware version) of product, it is able to set as second unit with range of 0~60 sec when inputting power.

• **Backlight OFF time**

If there is no touch on main screen during user-designated time, LCD backlight will be OFF and it is ON again when user touching it.

It is able to set as minute unit with range of 0~99 min and backlight will not be OFF when it is configured as 0 min.

• **Configuration of initial screen number**

It designates to use designed user screen as opening screen.

It is able to set 0~500 and it shows basic information (Releasing year, firmware version) of product if it is designated as 0 or there is no designated user screen number.

• **Configuration of port**

Port : Designate PLC and connecting port type. Select A PORT or B PORT.

Station : Designate station of PLC. It is able to designate 0~255.

GP station : Designate station of GP. It is able to designate 0~255.

• **Buzzer** : It configures to buzzer or not to buzzer when pressing touch key or other situation.

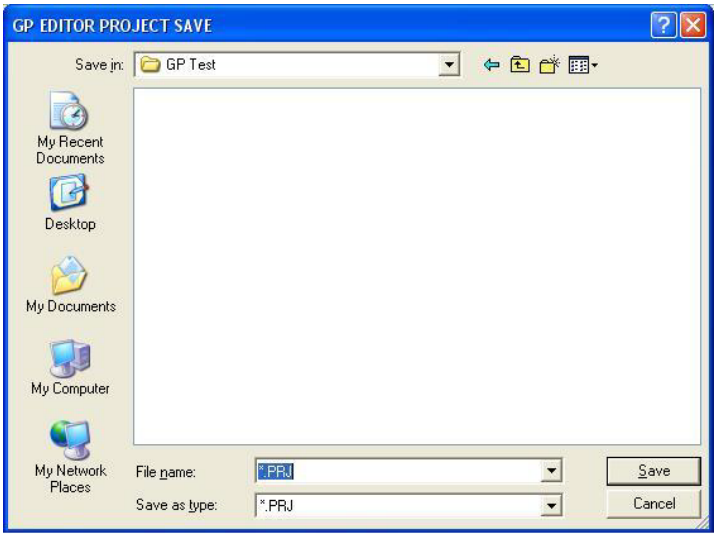
# 7.5 SAVE/OPEN PROJECT

## 7.5.1 Save project

(1) It is able to save editing project as file selecting [Project-Save] of main menu or pressing CTRL+S or save button on tool bar. Select [Project-Save as] of main menu to save with other name.

(2) Selecting [Project-Save], **Save GP project** window is popped up first. It will be saved in a designated folder after finding a path. It will be overwritten if it is saved once.

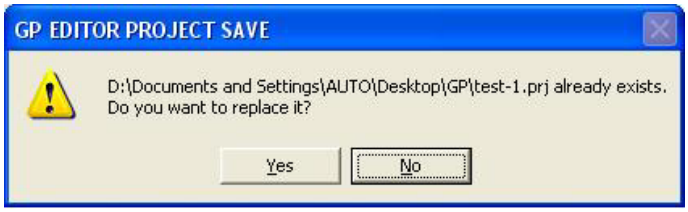
(3) Selecting [Project-Save as], **Save GP project** window is popped up and it is saved in a designated folder after finding a path.




**※Precaution for save**

(1) Check file backup check box of file tap in project option window to preserve previous status when it is saved. Backup folder is created under the working folder and it is saved in this folder.

(2) Check warning message check box for overwrite of file tab in project option window in order to cancel save comment, then it is popped up to warn previous one is changed whenever project is saved and user can cancel save comment.

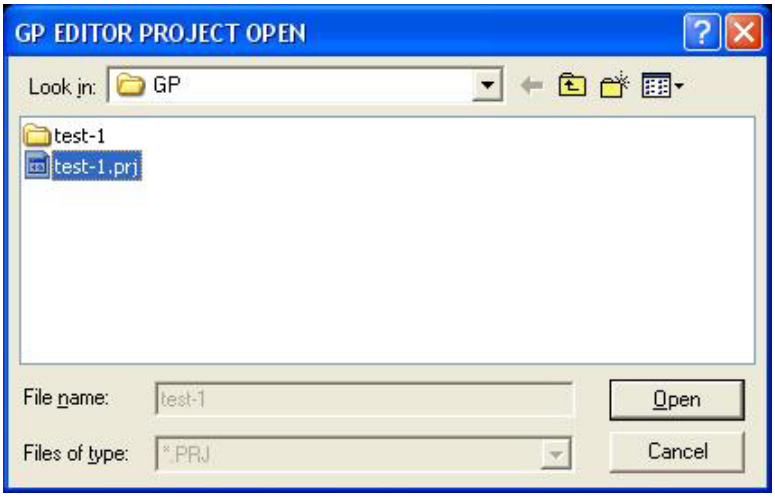


## 7.5.2 Open project

(1) Select [Project-Open] in main menu or press CRTL+O or open project of tool bar.

(2) If the current project is not saved, it shows warning message for save project.

(3) **Open GP project** window is opened.



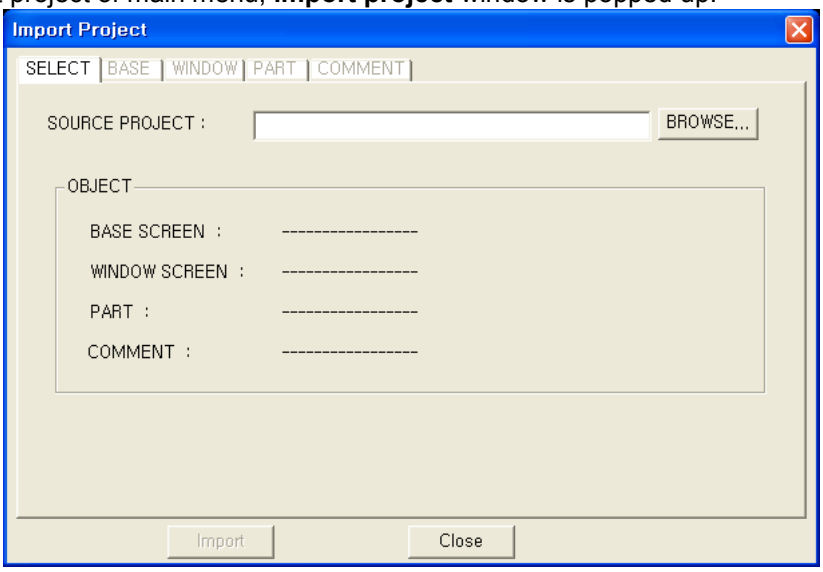

(4) Press open button after designating a path to open, selected project is opened.

# 7.6 IMPORT PROJECT

It registers to editing project importing partial or whole of base, window screen, comment and part of other project.

## 7.6.1 Import base screen

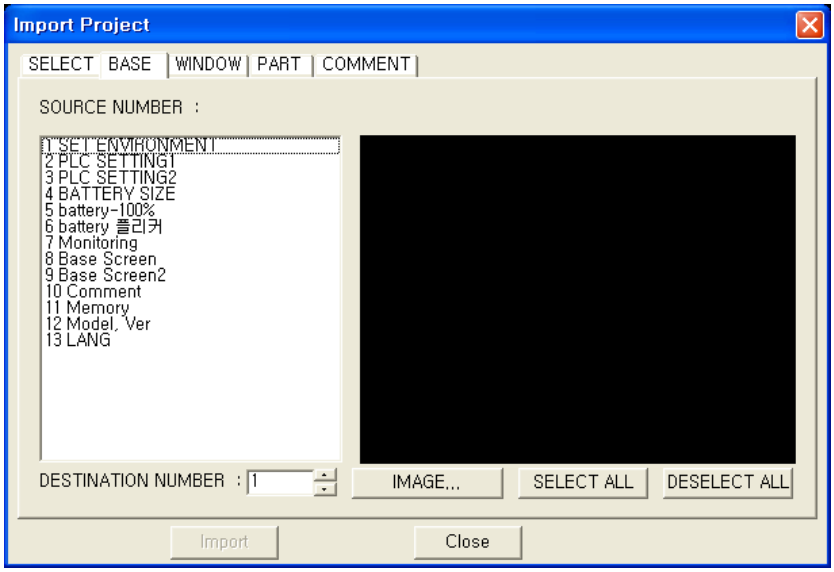
(1) Select import project of main menu, **import project** window is popped up.




(2) Press **Browse** button, open file window is popped up.

(3) Select project to import in this window.

(4) Move to **base** tap.




* Base screen list of importable project is specified on list box of source number.

* Select one item from list box of source number, the image is displayed on the beside it.

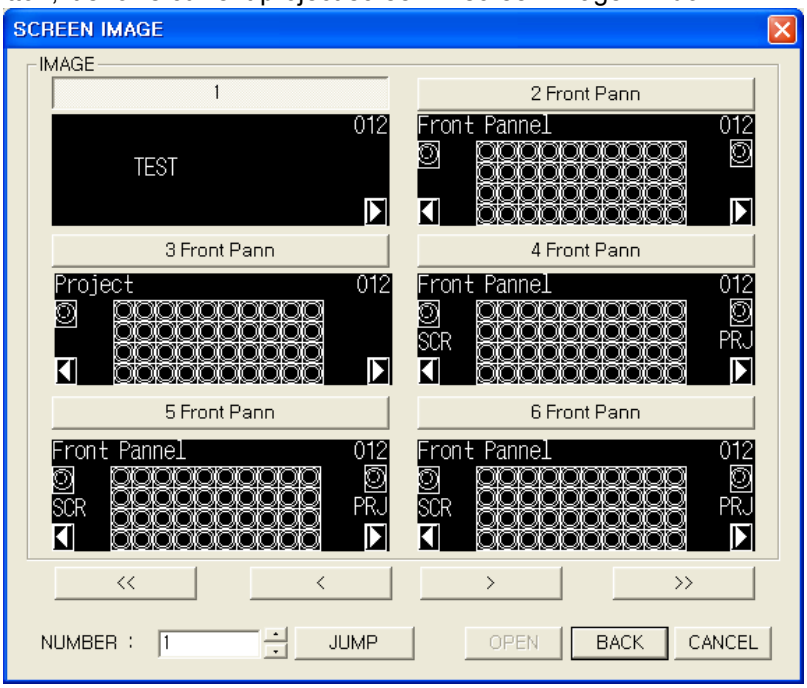
(5) Select importable project screen clicking/dragging the item of source number list or using select all, deselect all button.

•Select item of source list box

- All items are selected pressing select all button.
- All items in dragged area are selected dragging with mouse.
- Click one by one with mouse pressing Ctrl key.
- Several items are selected with Up/Down key pressing Shift key.

(6) Input screen number of current project in spin box of destination number. It is able to designate value of destination number using image button.

* Press **image** button, it shows current project screen in screen image window.

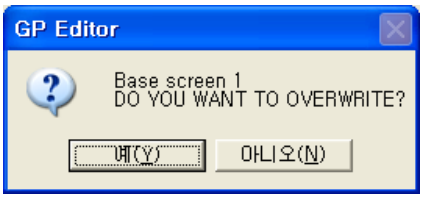



• Operation of **screen image** window

- Pressing **<<,<,>,>>** buttons, screen image is changed as one page or previous/next number of screen as one.
- Input value in **number** spin box and press **jump** button, screen image of next number is displayed with the number of screen at the head.
- Click the screen image with mouse or input value in **number** spin box when proper screen is founded.
- Pressing **back** button, the value in number spin box is inputted in spin box of **destination number**.

(7) Pressing **import** button, screens selected in source number list box are copied in order from destination number of current project.

(8) It shows warning message for overwrite in (7).

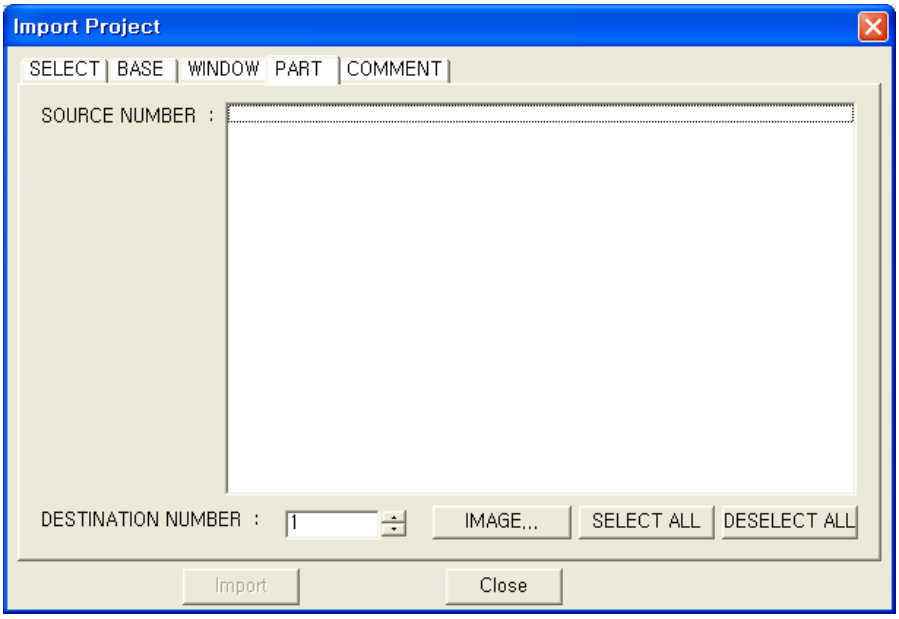


## 7.6.2 Import window screen

It is operated same with import base screen.

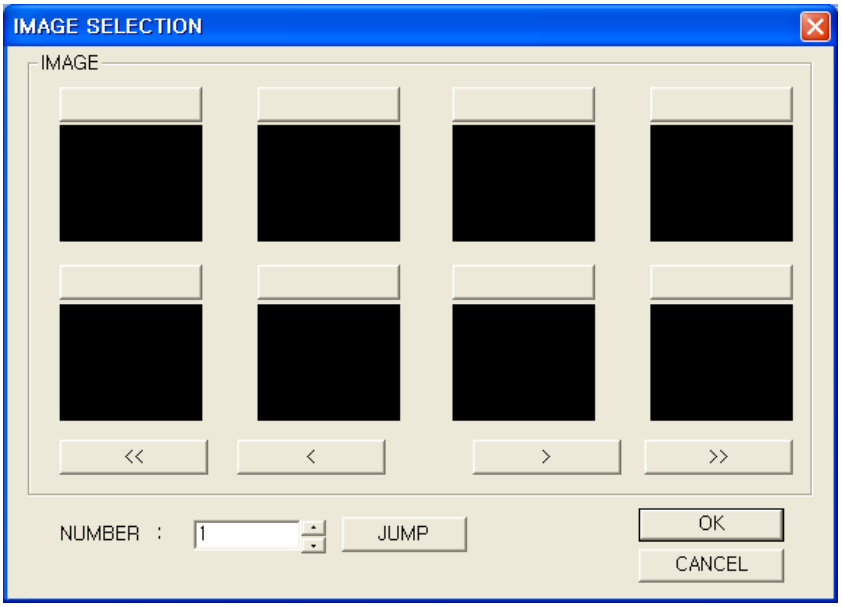
## 7.6.3 Operation procedure of import parts

(1) Select project using **view** button, if it is not selected in **select** tap.
(2) Move to **part** tap.




(3) Select part from **source number** list box. The selecting operation is same with operation in base tap.

(4) Designate value in **destination number** of spin box. It is able to designate the value using image button. Pressing image button, image select window is popped up and it shows part images of current editing project.



•Operation of image select window

- Pressing **<<,<,>,>>** buttons, screen image is changed as one page or previous/next number of screen as one.
- Input value in **number** spin box and press **jump** button, screen image of next number is displayed with the number of screen at the head.
- Click the screen image with mouse or input value in **number** spin box when proper screen is founded.
- Pressing **OK** button, the value in number spin box is inputted in **destination number of spin box**.

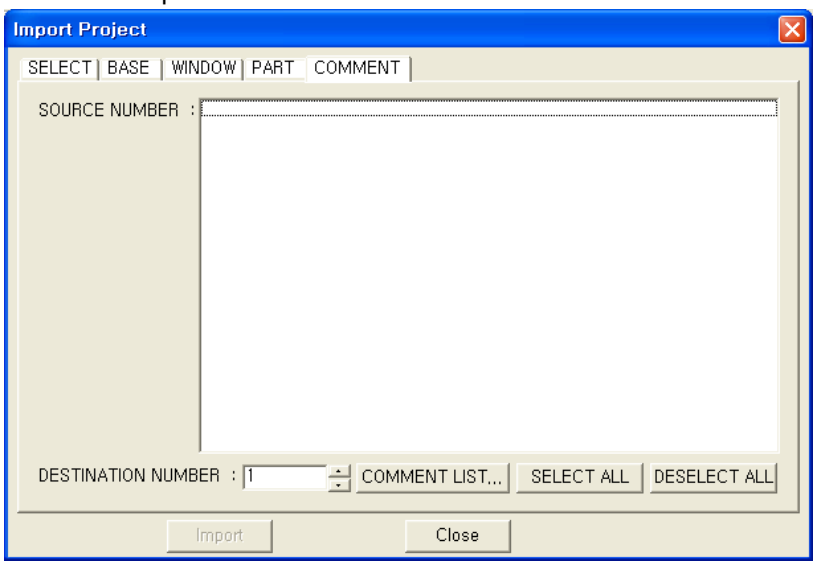
(5) Pressing **import** button, parts selected in source number of list box are registered as current project part in order with designated as destination number at the head.

(6) The importing part of number is registered, it shows message for overwrite.

## 7.6.4 Import comment

(1) Select project using **view** button, if it is not selected in **select** tap.

(2) Move to **comment** tap.

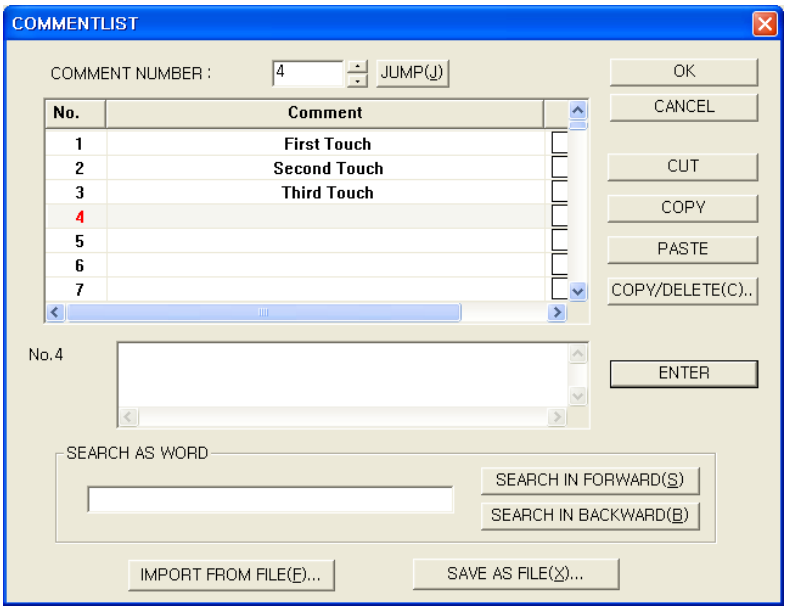



(3) Select proper comment in **source number** list box.

(4) Designate value in **destination number** spin box and it is able to designate the value using **comment list** button.

Pressing **comment list** button, **comment list** window is popped up and it shows comment list of current editing project.

Select proper item of the list and press **OK** button, the value of **comment number** spin box is inputted in **destination number** of spin box.




(5) Pressing **import** button, parts selected in source number list box are registered as current project part in order with destination number at the head.

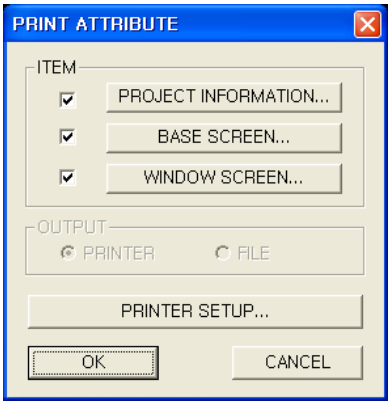
(6) The importing part of number is registered, it shows message for overwrite.

# 7.7 PRINT OUT PROJECT

It outputs image, tag, configuration of tag and device list of screen as print or file.

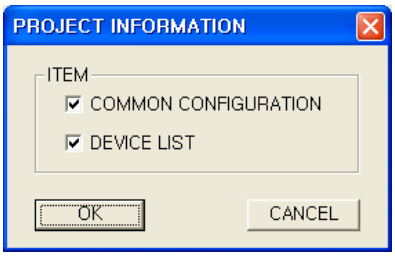
## 7.7.1 Print procedure

(1) It calls **print property** window when executing print command in menu.

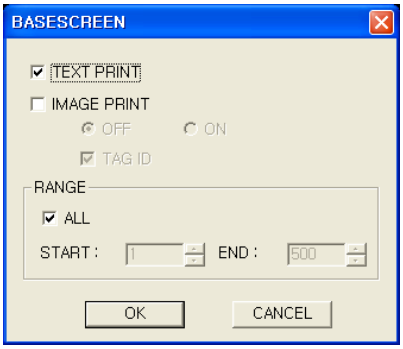



(2) Select **printer** in **output** menu as printer or **file** to output as a file.
It is only able to print as file when project is saved.

(3) In order to print common configuration or device list, check **project information** check box and press **project information** button. Select between common configuration and device list.



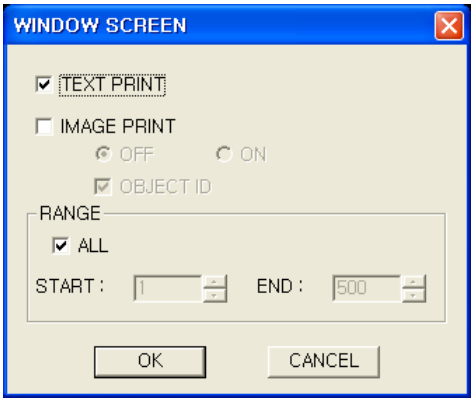

(3) To print base screen, check **base screen** and press **base screen** button.




•Checking text print, number, title, used tag of base screen are printed as text.
•Checking image print, base screen image is printed. It is saved as bitmap file when it is printed as file.
•ON/OFF radio box designates to print ON image or OFF image.
•Tag ID check box decides to display tag ID on tag image.

•Range : Checking all boxes, all screens of project are able to print or range of screen number to print at from, to, spin box.

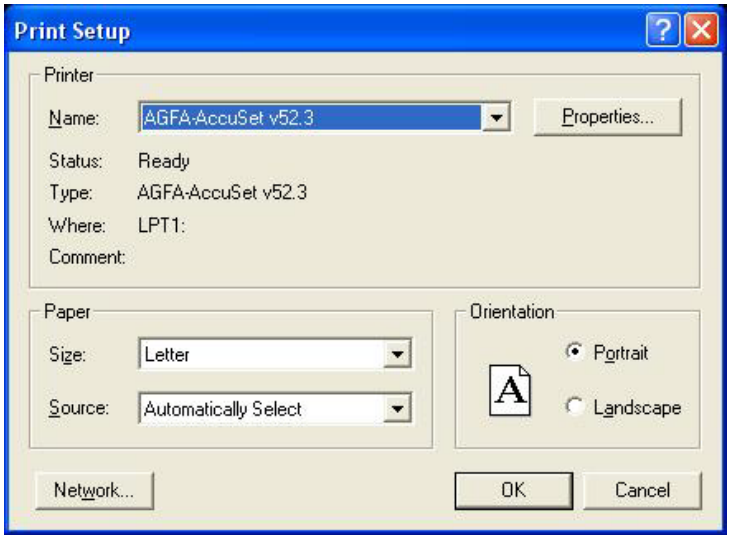
(5) In order to print window screen, check window screen check box and press window screen button.




The operation of this window is same with base screen operation.

(6)If output is configured as printer, press setup button to call print setup window. Select installed printer, form and format type.

**※ Please set as A4 and column.**




(7) Pressing OK button in print setup window, it is printed.

### 7.7.2 Creating folder when printing as file

Printing as file, GPDOC folder is created in the folder with project. Refer to the following description for files in GPDOC folder.

① project.txt :
It is created when project information is checked and there are common configuration and device list.
② BASE1.txt : It is about each base screen in project.
③ WINDOW1.txt : It is about each window screen in project.
④ Base1.bmp, Base2.bmp,.... : Image of each base screen
⑤ Window1.bmp, Window2.bmp,.... : Image of each window screen

## 7.8 END PROJECT

Selecting [Project-Exit], editor program is completed.
If editing project is not saved, it shows warning message to save.

# 8. SCREEN OPERATION

It describes the operation of screen specification, creating of screen, load, store and copy. The screen is divided into base screen and window screen. In base screen, it observes arranged graphic objects. The window screen is able to access when touching input object and it is used as key pad.

## 8.1 GP SCREEN

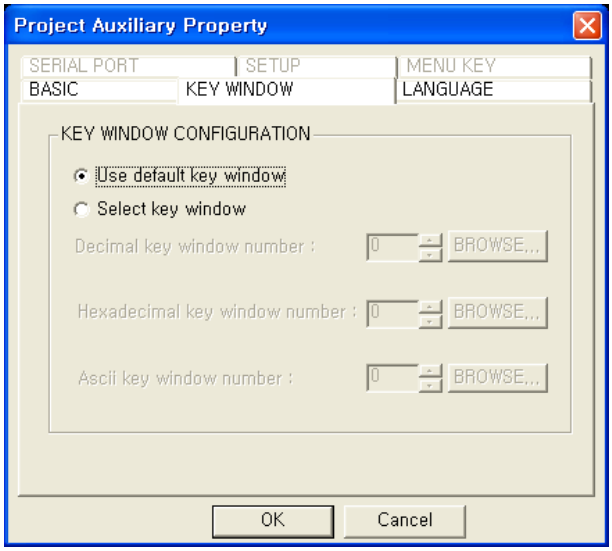
### 8.1.1 Base screen

• It has 240×80 dots of edit area.
• It is able to design max.500 of base screen with range as 1~500.
Each base screen has own screen number and it is controlled by screen number user can define and adjust. It is switched by touch key and user-defined data is downloaded to the main device.

### 8.1.2 Window screen

• It has 16×20~240×80 dot of editing area.
• It is able to design max.500 with range of 1~500.

Window screen is called when touching numeric or ASCII input tag. The user-defined window is called when inputting decimal, hexadecimal and ASCII.
It is able to design max.500 of window screen in editor, but only 3 screens are downloaded to the main device.
In accordance with designation in key window tap of project auxiliary configuration window, the window for input type is decided. Refer to the following configuration to use user-defined window.




Select key window : Select
Decimal key window number : Designate window screen number when inputting decimal number.
Hexadecimal key window number : Designate window screen number when inputting hexadecimal number.

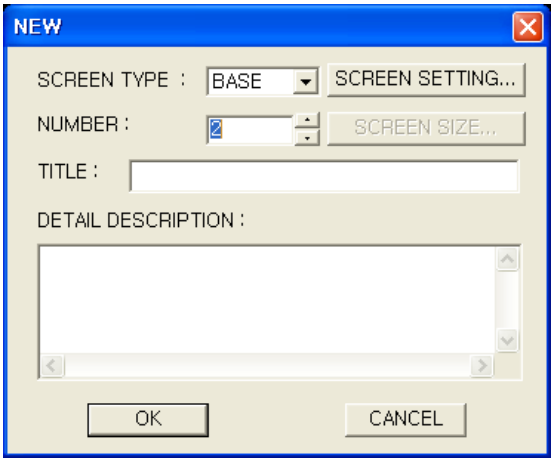
ASCII key window number : Designate window screen number when inputting ASCII.
If it is designated as 0, default key window supported by GP is called.

# 8.2 CREATE NEW SCREEN

## 8.2.1 Operation procedure

Base screen no.1 is created when project is made and refer to the following procedure to create new screen.

(1) Select new screen in screen of main menu and **new screen** window is displayed.
(2) Select **base** in **screen type** combo box to create base screen, **window** for window screen.
(3) Designate number of screen will be created.
(4) Write a title in **title** with max.32 letters editor box. It is information downloaded on the GP memory.
(5) Write detail description with max.512 letters of screen on **detailed description** editor box.
(6) In order to decide movement of cursor, screen color, security level for completion of key window input, click **Screen configuration** and configure it.
(7) Pressing **screen size** button to designate window size.
(8) Pressing **OK** button, new screen is displayed.

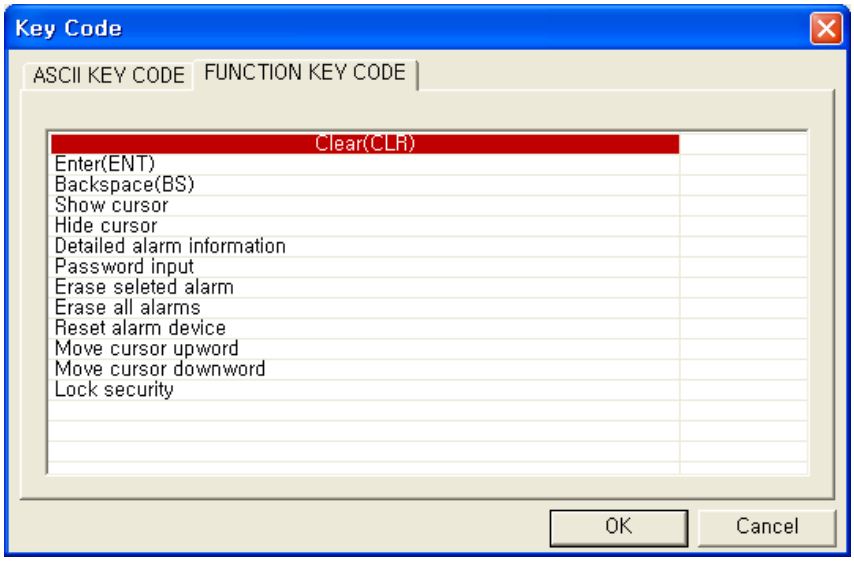


## 8.2.2 Adjustment after design

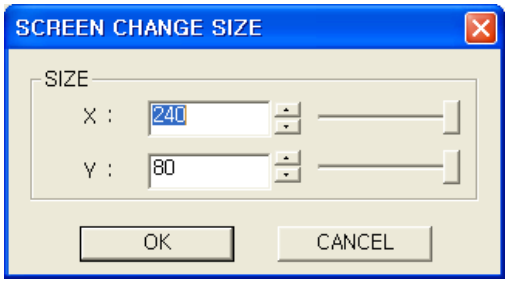
• To change screen number, use [Screen]-[Save as] or copy function of [Screen]-[Screen Copy/Delete].
• To edit screen title, detail description, use [Common]-[Title] menu.
• To designate movement of cursor, screen color and security level, use [Common]—[Auxiliary configuration]-[Screen] menu.
• To change window size, use [Screen]-[Change size] menu.

## 8.2.3 Precaution of designing key window

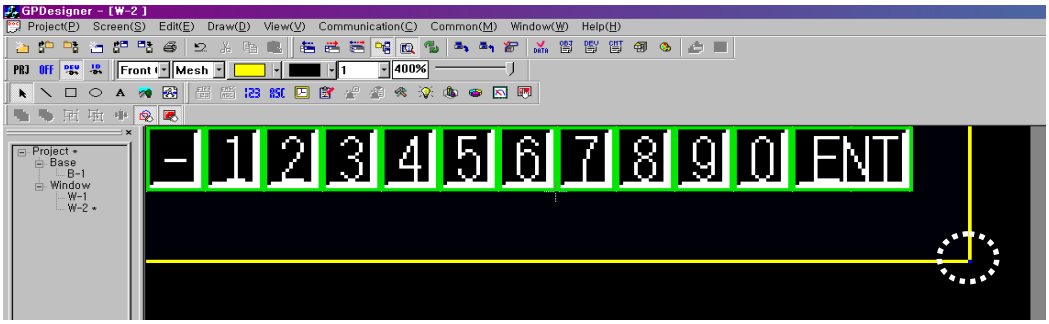
In order to key window register input data into input object when touching numeric input or ASCII input object, key code input function of touch key should be used.
Check key code after selecting operation tap in touch key property window, spin box is activated.
In order to input number or ASCII character, input the appropriate ASCII code, it is able to input directly or in window displayed by pressing a view button.
Select proper item in key code tap to insert ENT, CLR buttons.




• Adjustment of window size : Select [Screen] - [Change size] menu, window for changing size is popped up. It is able to change window size adjusting spin box or slide bar.

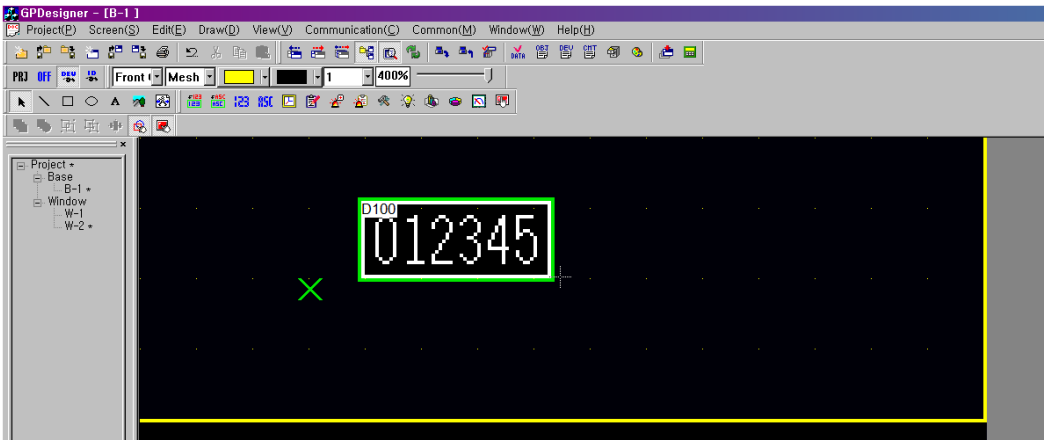


Or drag bottom-left (Indicated with white circle) of window by mouse, window size is changed.



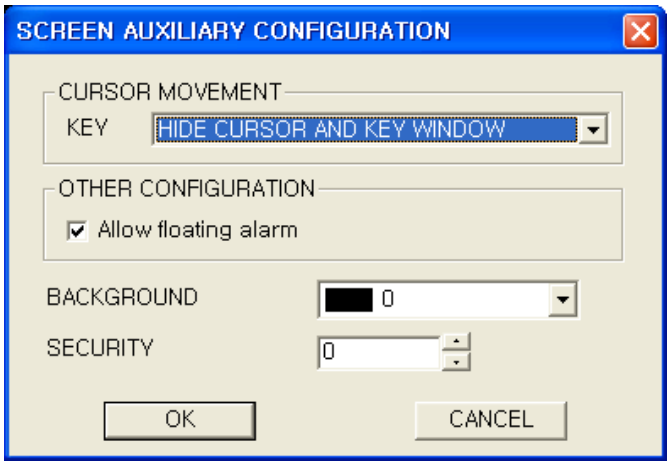

•Designate display position of key window

It is able to designate key window position in editor. Select [Draw]-[Key window], X mark is appeared and key window having top-left of X mark is appeared. If window is exceeded screen range based on this point, it is adjusted.



## 8.2.4 Screen property

It is able to designate movement of cursor, floating alarm, background color and security level for property of each base screen.



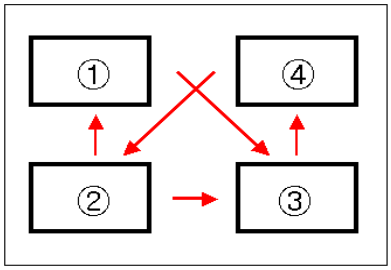

ⓐ Cursor movement

It is a configuration for cursor movement when touching ENT, CLR, up/down movement key in numeric input or ASCII input mode.

(1) Not moved.

When touching CLR, ENT key of key window, key window is not closed and it dose not move cursor to other input tag even using up/down key.

(2) In order of user ID : When touching ENT, it is moved as in configured order of user ID.




| Input tag | User ID | Destination ID |
|---|---|---|
| ① | 3 | 1 |
| ② | 4 | 1 |
| ③ | 1 | 2 |
| ④ | 2 | 4 |

- Touch at ① : Repeat ①→③→④→②→③→④→②③④.
- Touch at ② : Repeat ②→③→④→②③④.
- Touch at ③ : Repeat ③→④→②→③→④→②③④.
- Touch at ④ : Repeat ④→②→③→④→②③④.

(3) Do not display cursor and key window

When touching CLR/ENT, it does not display key window and cursor. Cursor is moved in accordance with designated value when touching up/down key of key window, in case user ID and destination ID are designated.

ⓑ Other configurations

- Configure to use floating alarm function.
- Check the allowing of floating alarm, the appropriate comment is floated when configured alarm is occurred.

ⓒ Background color : Designate background color of currently editing screen.

ⓓ Security level : Configure screen security level currently editing screen.

If it is 0, it is a non-specified security and the lowest level is 1 and 15 is the highest level. ☞Refer to security part.

# 8.3 LOAD SCREEN

It opens stored screen to edit.

## 8.3.1 Operation procedure

(1) Select [Screen]-[Load] and **load screen** window is popped up.

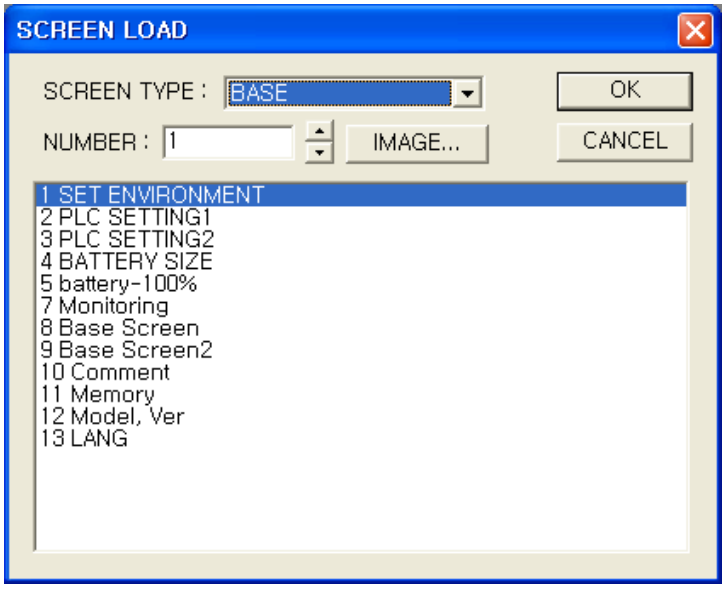
(2) Designate screen type in **screen type** combo box. Select base to load base screen and window for window screen, then, screen number and titles of project are displayed in order of numbers in list box.

(3a) Designate screen number to load in **number** spin box. Pressing image button, it is able to review all screen images and select screen number to load.

(3b) Click and select the item about screen to load in list box. It is able to select several items at a time using Ctrl key.

(4) Pressing OK button, designated(selected in list box) screen is popped up.

## 8.3.2 Detail description of load screen window




| Load screen | Load screen |
|---|---|
| Screen type | • Designate screen type to be loaded.<br>• Select base screen or window screen. |
| Number | • Designate screen number to import.<br>• It is able to designate number inputting by user directly or using spin box. If screen is saved in a project but closed one, it loads again and it creates new screen for input number, in case, it is not saved in a project but closed one. |
| Image | • Call screen image window and review images of base screen in a project. |
| List box | • The numbers and titles written in a project are displayed in order of number.<br>• Click and select items for screen to load. It is also able to select several items at a time dragging or using Ctrl key together. |
| OK | • Load selected screen. |
| Cancel | • Do not load selected screen, close the window. |

**※Notice**

Pressing  ,  in toolbar, the lower/higher number of screen than currently editing screen will be a edit object. If  is pressed, it opens closed screen and it will be a editing object.

## 8.4 CLEAR SCREEN

Select [Screen]–[Clear], it clears editing screen. If only one screen is loaded, it shows warning message, but it is not cleared.
If editing screen is not a saved status, it shows warning message and it is able to save.
Select [Screen]-[Clear and load], it closes currently editing screen, call load screen window to load screen.
[Screen]-[Clear] is not for delete screen, it just clears loading one to edit.
In order to delete screen, use screen copy/delete command.

## 8.5 STORE SCREEN

Select [Screen]-[Store], it stores currently editing screen. It shows warning message for overwriting if there is a existing screen and the message is only showed when configuring to show the warning message of overwriting in project option.

# 8.6 STORE AS

Store currently editing screen as new number of screen.

□Operation procedure

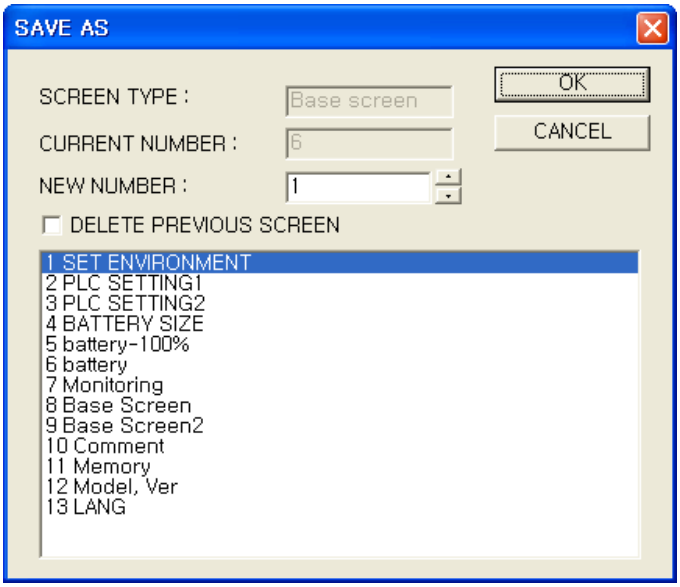
(1) Select [Screen] - [Store as], then, store as window is popped up

(2) Designate new number of screen in new number spin box.

(3) In order to delete existing screen, check delete old screen.

(4) Press OK, title window is popped up.

(5) In order to add title and description of screen, press OK button after editing it. Then, it is saved as a new screen.

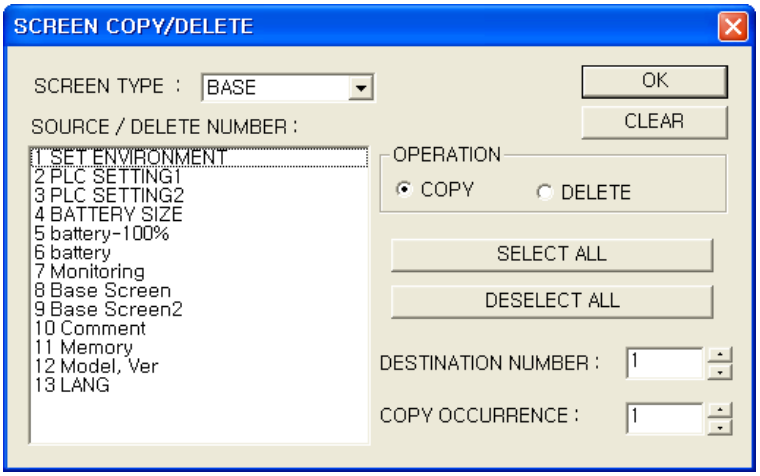



□ Description of store as window

| Store as | **Configuration of store screen** |
|---|---|
| Screen type | • It displays the object to be stored is base screen or window screen. |
| Current number | • It displays editing screen number and it is stored as other number of screen. |
| New number | • New screen number for storing designated number screen in current number.<br>• It is able to designate number inputting in combo box directly, using spin box and selecting in list box. |
| Delete old screen | • If it is checked, it stores selected screen as a new number of screen and delete previous number of screen. |
| List box | • It displays number and titles of screen written in a project in order of number.<br>• The screen number of selected item is inputted in a new number clicking a mouse. |

# 8.7 COPY/DELETE SCREEN

In order to delete or copy several screens at a time, select [Screen]-[Screen copy/delete].




| Copy/Delete | **Screen copy/delete** |
|---|---|
| Screen type | • Select screen type to be copied/deleted. |
| Copy | • Copy selected screen in a list to the number of screen inputted in destination number.<br>• Selected screens are copied as many as copy frequencies repeatedly from the destination number.<br>Ex) Selected screen=1,4,5, Destination number=10, Copy frequency=3<br>Screen#10<-- Screen #1, Screen #13<-- Screen #4, Screen #14<-- Screen #5,<br>Screen #15<-- Screen #1, Screen #18<-- Screen #4, Screen #19<-- Screen #5,<br>Screen #20<-- Screen #1, Screen #23<-- Screen #4, Screen #24<-- Screen #5<br>If there is a written screen already in the destination screen, it shows a overwrite warning message to cancel copy. |
| Delete | Delete all selected screens in a list.<br>Destination number and copy number are deactivated. |
| List box | It displays screen number and title written in a project in order to number.<br>Select the object to copy or delete clicking with a mouse.<br>It is able to select several items and deselect with shift key and mouse of keyboard in case of successive selection such as windows explorer and Ctrl key, a mouse in case of scattered selection. |
| Execute | It deletes or copies. |
| Select all | It selects all items in a list. |
| Deselect all | It deselects all items in a list. |
| Destination number | It designates screen number to paste selected number of screen in a list box. If inputted number is already in a project, it shows a warning message for overwrite and it creates and copies new screen in case of non-existing screen. . |
| Copy frequency | It inputs repeat frequency for paste inputted number of screen in a destination number. |
| Close | Close a window. |

# 9. EDIT

In this chapter, it describes basic editing function of GP Editor.

## 9.1 UNDO OPERATION

In case, delete the object on a screen, change size or position and it is able to return to the before operation status undoing the previous operation. Select [Edit]-[Undo] in a menu or press CTRL+Z to execute.

※Notice

•Undo function is activated after delete the object on a screen, change size or position.
•It is not able to undo in case of adjusting the size of object having character.
•It is not able to undo in case of changing the property through the window.

## 9.2 CUT OBJECTS

Select [Edit]-[Cut] in a menu or press CTRL+X to delete selected object on a screen, it is executed. Cut object is copied on a clipboard and paste function is activated after execution. It is able to arrange cut objects on a screen again with paste command.

## 9.3 DELETE OBJECTS

Select [Edit]-[Delete] in a menu or press Del key to delete selected object on a screen, it is executed. Use undo function to restore with paste command because deleted object is not copied to the clipboard.

## 9.4 COPY OBJECTS

It copies selected objects to clipboard, it is not changed on a screen. Select [Edit]-[Copy] in a menu or press CTRL+C to execute. It is able to create objects with same property arranging on a screen with paste command.

## 9.5 PASTE OBJECTS

It pastes copied objects on a clipboard by cut or copy on a screen. Select [Edit]-[Paste] in a menu or press CTRL+V, it is executed. It is able to create objects with same property arranging on a screen with paste command.

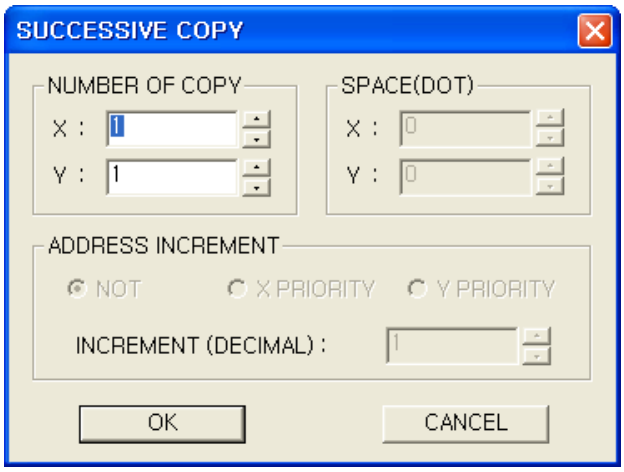
### ※Notice

When the object can be existed only one on a screen will be two by paste, or the object can not be existed in a screen together will be existed by paste, paste is not worked.

- The object can be existed only one a screen :
  Alarm history, alarm list with scroll option, trend graph, line graph and key window position mark
- The object cannot be existed in a screen together :
  Alarm history, alarm list with scroll option, trend graph and line graph

# 9.6 SUCCESSIVE COPY

It copies selected objects successively and arranges on a screen. Select [Edit]-[Successive copy], the window is popped up. Designate the number of objects to be copied, interval between objects, address increment and press OK button to execute.

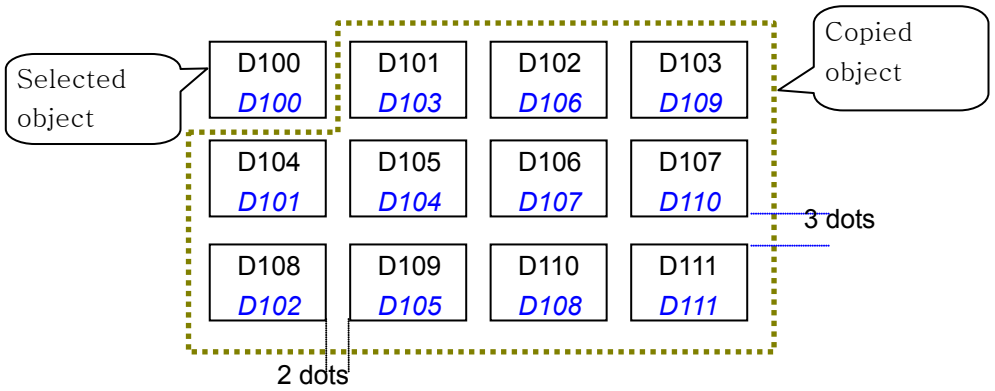



Configuration and operation of successive copy

| Successive copy | Copy selected objects successively in accordance with configuration |
|---|---|
| Number X | • Designate the number of objects to copy with horizontal direction. |
| Number Y | • Designate the number of objects to copy with vertical direction . |
| Interval X | • Designate the interval between objects of horizontal direction as dot units. |
| Interval Y | • Designate the interval between objects of vertical direction as dot units. |
| None | • Do not increase the object address to be copied.<br>• It is configured as none for figures. |
| X priority | • It copies to the horizontal direction increasing object address. |
| Y priority | • It copies to the vertical direction increasing object address. |
| Increment | • Increase the address as designated unit. |
| OK | • It executes to copy and exit window. |
| Cancel | • It does not execute to copy and exit window. |

**Example of successive copy**

If the object configured as D100 is specified as number of X = 4, number of Y=3, inter of X=2, interval of Y=3, increment=1, it is copied as below. Total X * Y=12 of objects are created and adjacent two objects have 2 dots for horizontal direction, 3 dots for vertical direction of interval. In case, X priority is selected, address is increased to the horizontal first and Y priority(Italics)is selected, address is increased to the vertical first.




## ※Notice

- It is applied when single object and several objects are selected.
- It is applied to all figures and tags.
- In case, the object to be copied exceeds the working area, it shows error message and it is not executed.
- In case of successive copy of tag with address, it shows error message and it stops to execute when it exceeds address range.
- When the object can be existed only one on a screen will be two by paste, or the object can not be existed in a screen together will be existed by paste, paste is not worked.

# 9.7 SELECTION OBJECTS

It is able to change the clicked object or object included in dragged area into selection status and designate selection object.

Select [Edit]-[Select object]-[Draw]/[Tag] or , in tool bar. It is useful to separate and edit a figure object or tag only when figure and tag are existed closely.

| | | **Selection object** |
|---|---|---|
| Press | Cancel | • Select only figures |
| Cancel | Press | • Select only tag |
| Press | Press | • Select all figures |
| Cancel | Cancel | • Disable to select any object |

# 9.8 SELECT ALL OBJECTS

Select [Edit]-[Select all] or press Ctrl+A, all objects on a screen are selected. In this case, the object to be subjected in accordance with selection condition of designated object is selected.

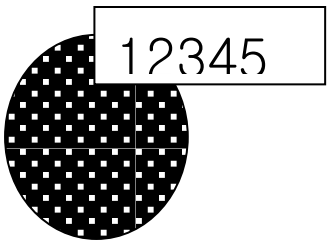
# 9.9 STACKING ORDER

If there is an overlap between two objects when the object is displayed on a screen, the order for one object is hidden by other object or hide other objects is a stacking order.

## 9.9.1 Stacking order between objects

(1) Figure and tag :

Tag has higher rank than figure object, it is displayed in front of figure.




(2) Figure and figure, tag and tag :

The stacking order between figure and figure object, tag and tag is decided as the latest created one has high priority rank. The later drawn one is able to hide the previous one. Overlap screen : Base screen has a higher order than overlapped screen, it is displayed in front of overlap screen. Figure and tag of base screen are put in front of figure and tag of overlap screen. If there are more than two overlap screens, later overlapped screen object is on the front. When there are

two overlap screens, it is displayed as following order.

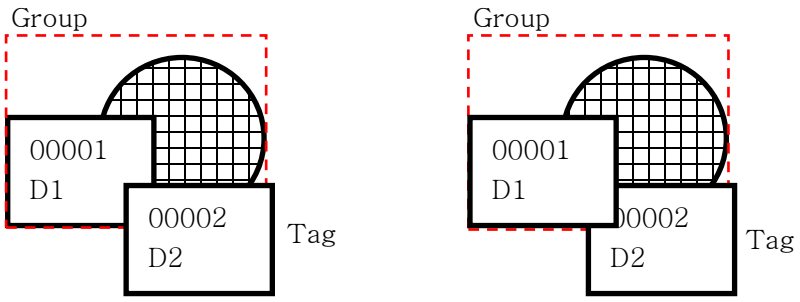
Tag of base screen > Figure of base screen > Tag of overlap screen2 >
Figure of overlap scree2 > Tag of overlap screen1 > Figure of overlap screen1

## 9.9.2 Change stacking order between objects

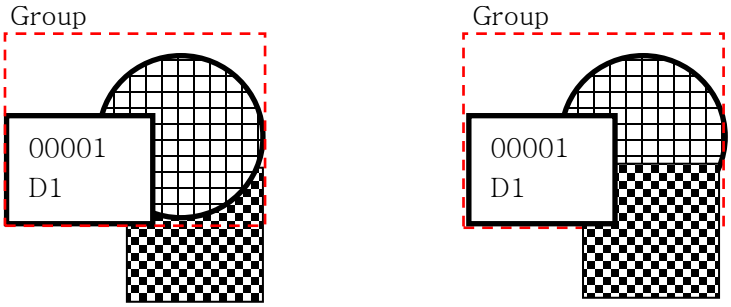
• Bring to forward : Change stacking order to selected object is put in the front.
• Send to backward : Change stacking order to selected object is put in the back.

### ※Notice

• It is not able to change the order between figure and tag with bring forward, send to backward.
• The stacking order of figure is changed with bring forward command, it is put on the front among figures but it cannot be placed in the front for any tags.
• The stacking order of tag is changed with send backward command, it is put on the behind among tags but it is put on the front than any figure.
• When executing bring forward, send to backward command after selecting several objects, the stacking order between selected objects is kept and it is put on the front or on the behind than not selected objects.
• If selecting overlap screen and executing send to backward command, it is put on the behind among overlap screens.
• The stacking order of group and tag
The order between two is decided by “Bring forward” or “Send to backward”. Tag is placed on the upper than figure regardless with single object of tag or object including tag.



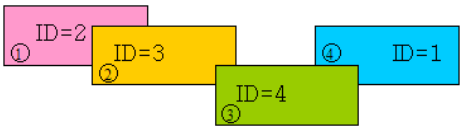
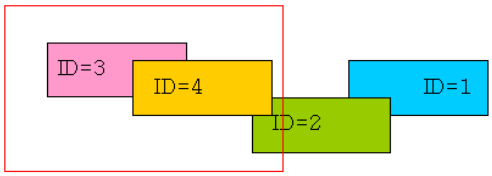
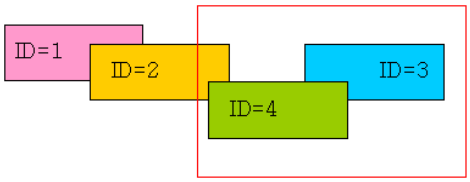

• Figure included in a figure or group
The order between two is decided by “Bring to forward” or “Send to backward”, figure is placed on the lower than tag.



# 9.10 GROUP

It is executed with [Edit]-[Group] command to bind more than 2 objects as one. Existing group can be a factor of new group. Grouped object is recognized as an object and all function including copy, cut, bring forward, send backward is also applied.

• Inner figure and tag property of grouped object is kept continually.
• Tag ID is given upper ID automatically than currently designed tag and later designed tag is arranged on the upper part in turns.
• The stacking order of objects in a group is preserved when grouping, but the stacking order is changed as group objects put on the upper part than not grouped objects. ID is changed as bigger value. When any tag will be a factor of group with [Edit]-[Group] command, for example, tag ID is changed to have bigger value than not grouped tags. It is applied same to figures.

| | |
|---|---|
| Tag arrangement before grouping |  |
| After grouping ① and ② |  |
| After grouping ③ and ④ |  |

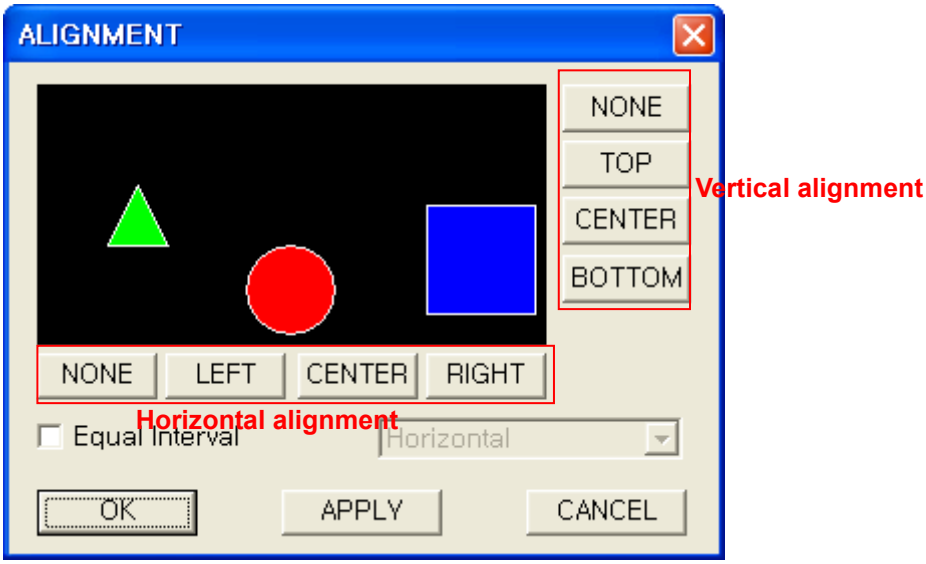
• Group objects are registered on panel kit to use.
• Figure object of group is registered on part library to use.
• When group object registered in panel kit and part library is arranged on a screen, it preserves group information.
• When uploading group object on main screen, it preserves information in download.
• It is able to adjust size of figure object.

## 9.11 UNGROUP

Select group object and [Edit]-[Ungroup] command, it separates each object as previous status.

## 9.12 ALIGNMENT

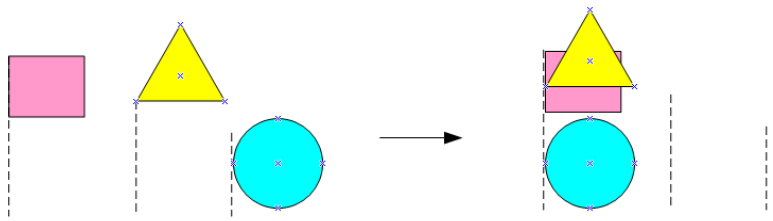
It is useful to arrange objects as up/down/left/right when several objects are on a screen. When selecting [Edit]-[Align], align window is popped up and it is aligned pressing **apply** button.



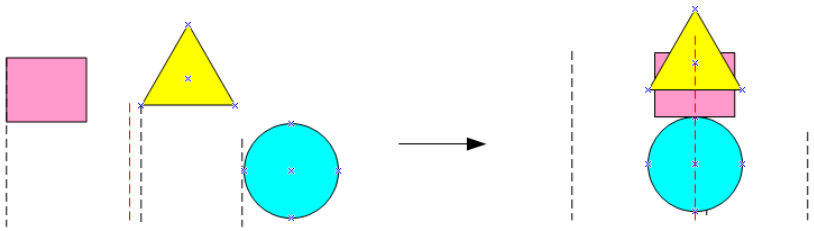

### 9.12.1 Horizontal alignment

▣ No : There is no horizontal alignment.

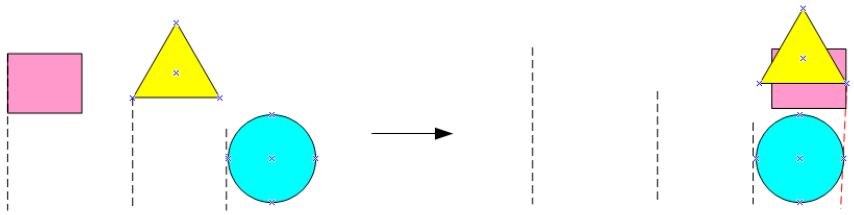
▣ Left : It moves top-left X coordinate of selected all objects to make same as X coordinate of top-left of leftmost object with horizontal way.



▣ Center : It moves central point X coordinate of selected all objects to make same as an average of top-left X coordinate of leftmost object and rightmost object with horizontal way.



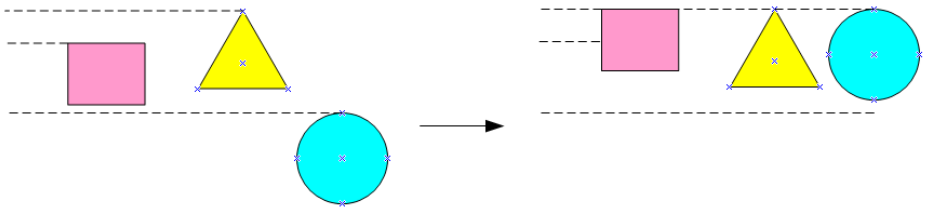
▣ Right : It moves top-right X coordinate of selected all objects to make same as top-right X coordinate of rightmost object with horizontal way.



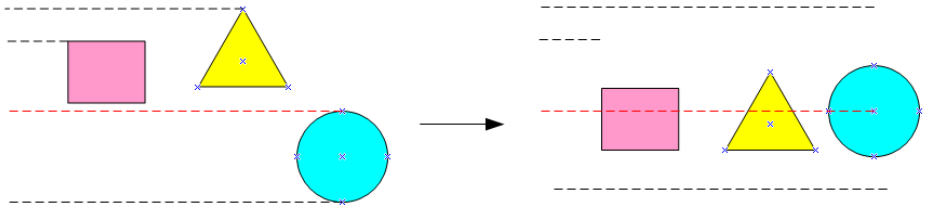
## 9.12.2 Vertical alignment

▣ No : There is no vertical alignment.

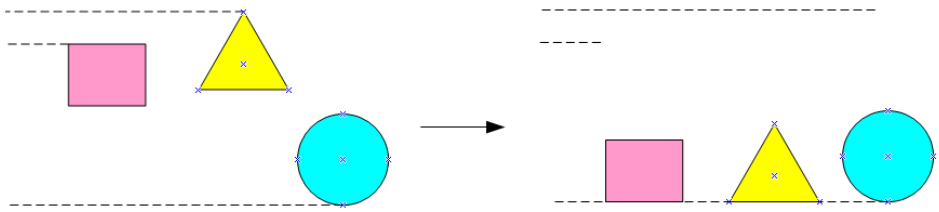
▣ Top : It moves top-left Y coordinate of selected all objects to make same as top-left Y coordinate of topmost object with vertical way.



▣ Center : It moves central point Y coordinate of elected all objects to make same as an average of top-left Y coordinate of topmost object and bottommost object with vertical way.

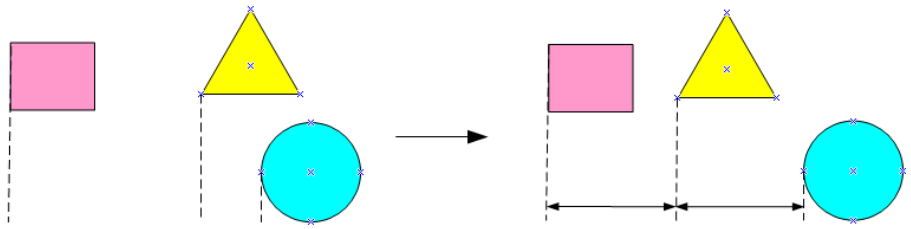


▣ Bottom : It moves top-left Y coordinate of selected all objects to make same as top-left Y coordinate of bottommost object with vertical way.

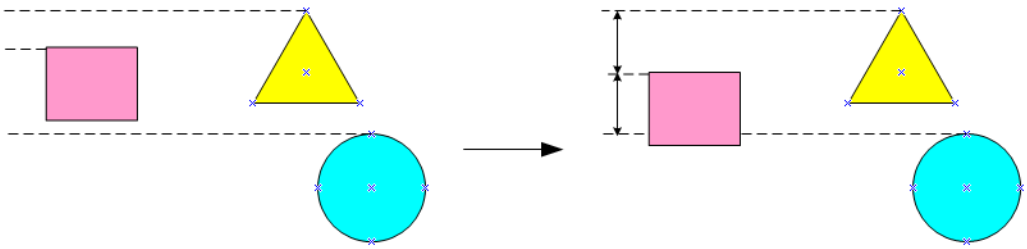


## 9.12.3 Equal interval of alignment

▣ **Horizontal :** Leaving objects with left end of X coordinate on leftmost and rightmost among selected objects, move other objects as horizontal way to make left end of X coordinate of other objects to position equally between left end of X coordinate of two objects.
If left end of X coordinate among more than 2 objects is same, front part of object is moved to the right. When right end of X coordinate of moving object is out of the right border, right end of X coordinate is on a border.



▣ **Vertical** : Leaving objects with top end of Y coordinate on topmost and bottommost among selected objects, move other objects as vertical way to make top end of Y coordinate of other objects to position equally between top end of Y coordinate of two objects.
If left end of Y coordinate among more than 2 objects is same, front part of object is moved to the bottom. When bottom end of X coordinate of moving object is out of the bottom border, bottom end of Y coordinate is on a border.

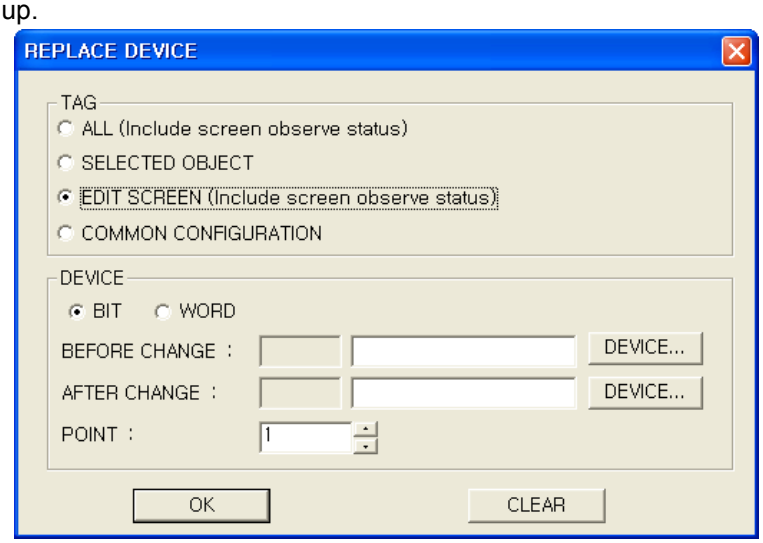


# 9.13 CALLING OF PROPERTY WINDOW

Select [Edit]–[Property] in main menu, property of popup menu clicking with right button of mouse, double-click the left button of mouse or press Alt+Enter key after selecting object, property window of the appropriate object is popped up. If executing property command when overlap screen is selected, overlap window is popped up with the appropriate overlap screen selected.

# 9.14 DEVICE REPLACEMENT

It is able to replace device using in a project collectively. Select [Edit]-[Replace devices], replace window is popped up.




(1) Designate tag to replace device according to selecting radio button of tag group box.

- All (Including screen observe status)

  Replace tag device on all base screen in a project. All devices configured about each base screen designated at screen tap of observe status window are replaced.

- Editing screen (Including screen observe status)

  Replace tag device on a editing screen. All devices configured about current editing screen designated in a screen tap of observe status window are replaced.

- Selected

  Replace selected tag device of editing screen.

- Common

  Replace tag device of common configuration.

(2) Device

- Bit/Word : Bit/Word device is selected when selecting bit/word in combo box.
- From/To : Change device designated in **from** as device designated in **to**.
- Points : Designate the number of device to be changed.

### ※ Notice

• Default configuration according to calling condition of replace device window

Selecting edit-device replace menu,

(a) Edit screen is selected as a default if there is no selected tag.

(b) Selected object for a default if there is selected tag.

• When destination device designated as lead device and point is out of the range, it displays “Some device are not changed because they are out of device range.”

# 10. DRAW

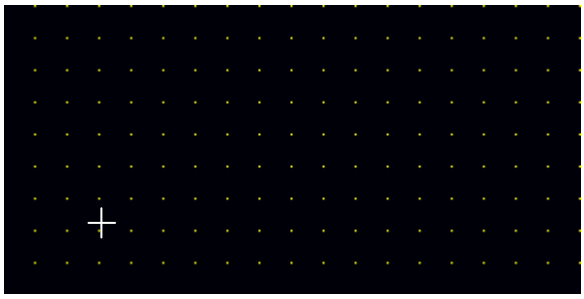
In this chapter, it describes basic operation of tag arrangement on a screen.

## 10.1 DRAW FIGURES

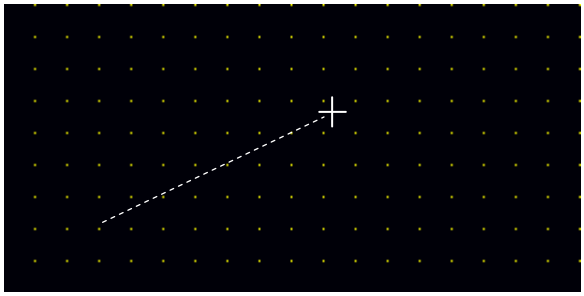
### 10.1.1 Draw lines

(1) Select [Draw]-[Line] or click in toolbar, then, mouse cursor is appeared indicating draw mode on a screen.

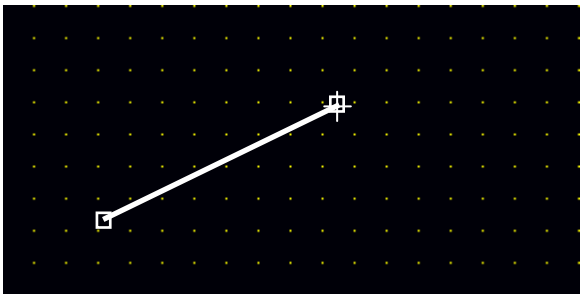
(2) Place a mouse on a start point of straight line and click left button.



(3)Pressing a left button, drag a cursor to the end point of the line. The dotted line will be appeared up to current cursor position.



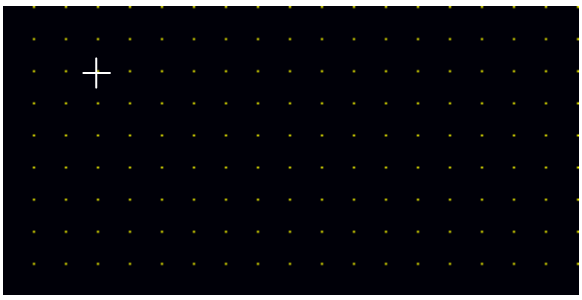
(4) Take off from the mouse button after dragging up to the end point of straight line. The line will be created connecting from start point to current mouse position.



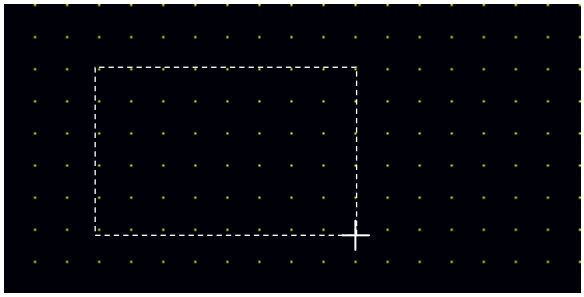
## 10.1.2 Draw rectangles

(1) Select [Draw]-[Rectangle] or click ☐ in toolbar, then, mouse cursor indicating draw mode is appeared on a screen.

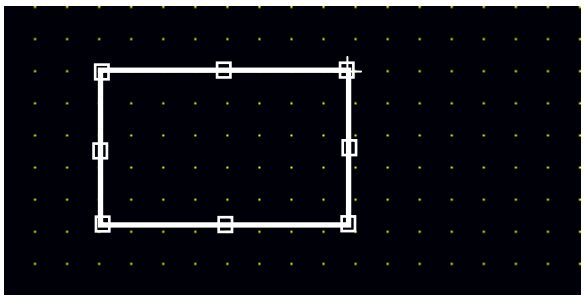
(2) Place a mouse on a summit position of rectangle and click left button.



(3) Pressing left button and drag it, the dotted rectangle is created with summit facing the initial clicked point and current cursor position.



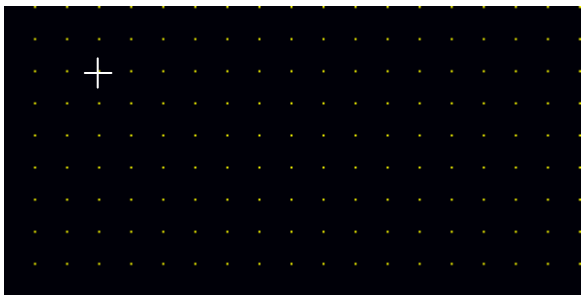
(4) Take off from a mouse button. The solid line of rectangle is created same with the dotted rectangle.



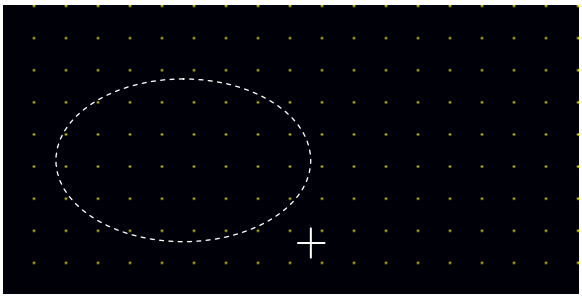
## 10.1.3 Draw circles

(1) Select [Draw]-[Circle] or click  in a toolbar, then, mouse cursor indicating draw mode is created on a screen.

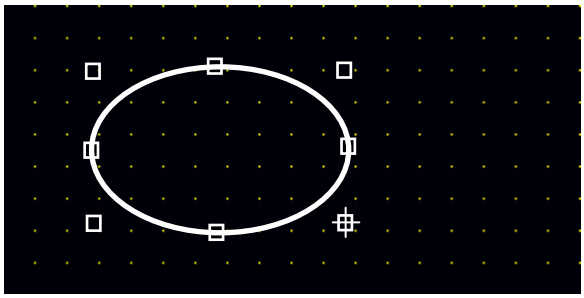
(2) Place a mouse cursor on a proper position, click left button.



(3) Pressing left button and drag it. The dotted oval is created in a rectangle with summit facing the initial clicked point and current cursor position.

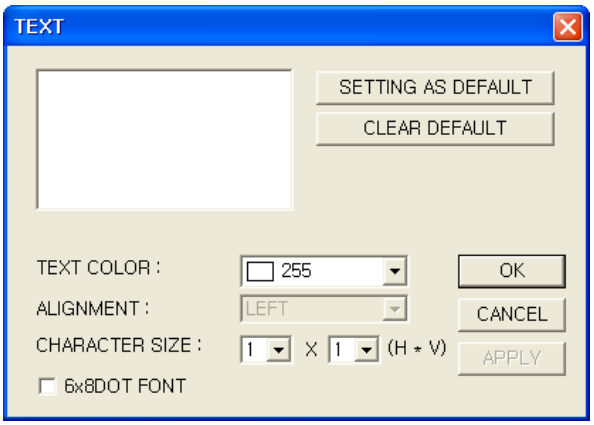


(4) Take off from a mouse button. The solid line of oval is created same with the dotted oval.

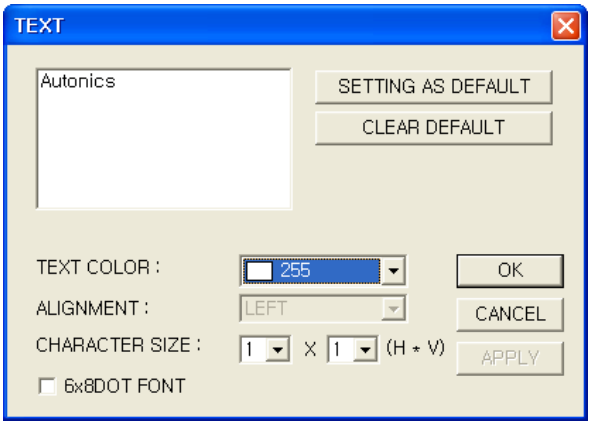


## 10.1.4 Text

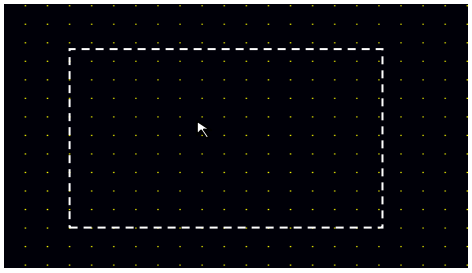
(1) Select [Draw]-[Text] in a menu or click  in a toolbar, then, text property window is popped up.

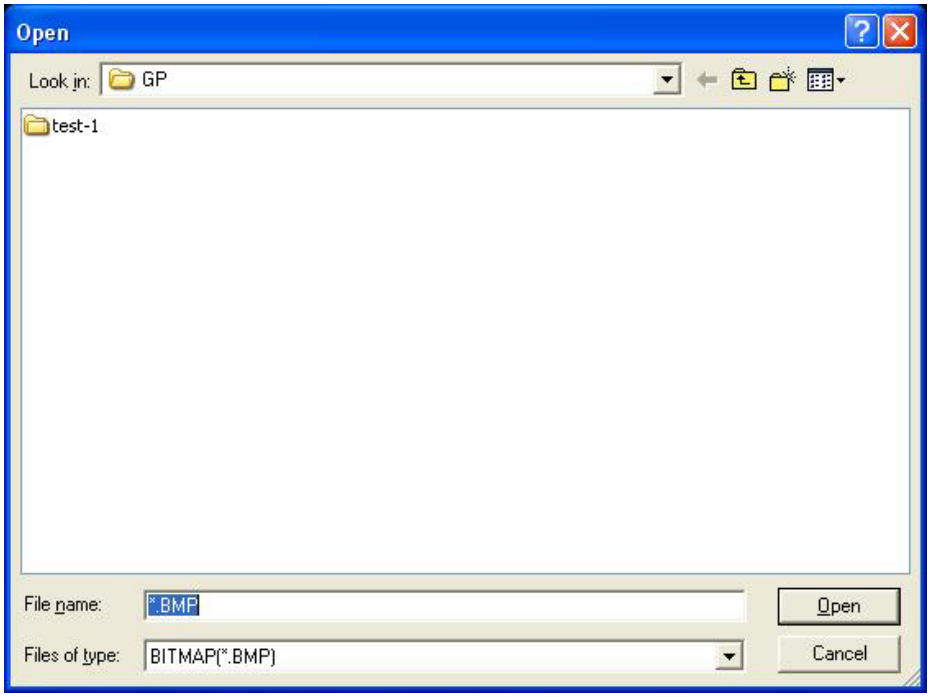



(2) Input text to display on a window and designate color and size.




(3) Pressing OK button, dotted rectangle is dangling after a mouse cursor.

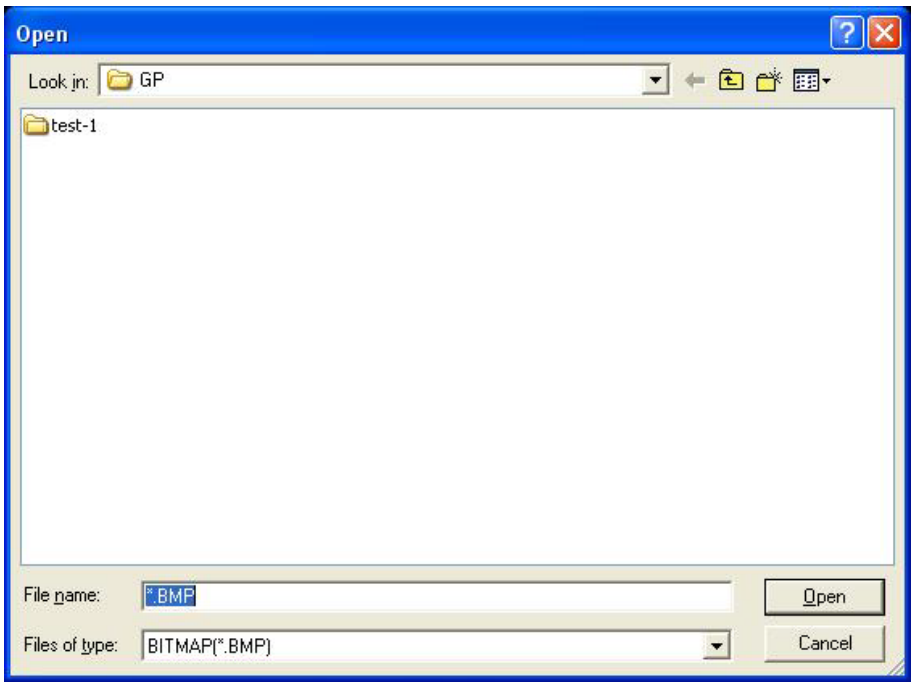





(4) Place a mouse cursor on a proper position, click left button. Text is arranged on a screen.

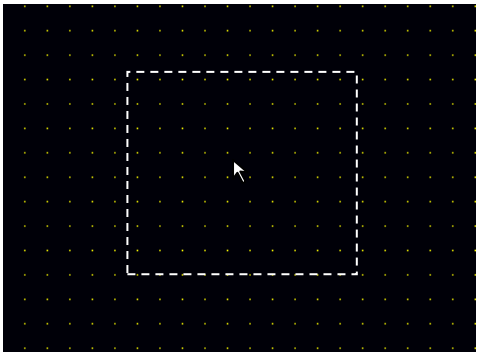
## 10.1.5 Bitmap

(1) Select [Draw]-[Bitmap] in a menu or  in a toolbar, file open window is popped up.

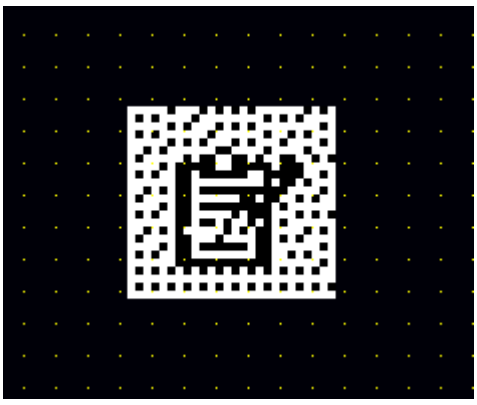



(2) Select proper bitmap image file in this window and press open button.

(3) Pressing OK button, dotted rectangle is dangling after a mouse cursor.



(4) Pressing left button of mouse, bitmap image is appeared on a rectangle position.

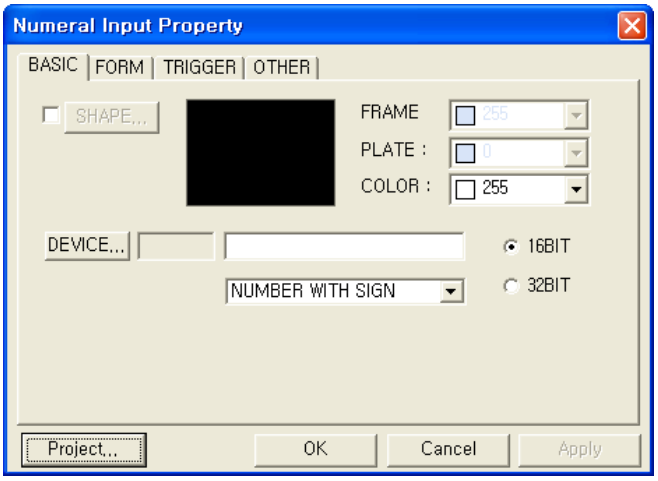


# 10.2 DRAW TAGS

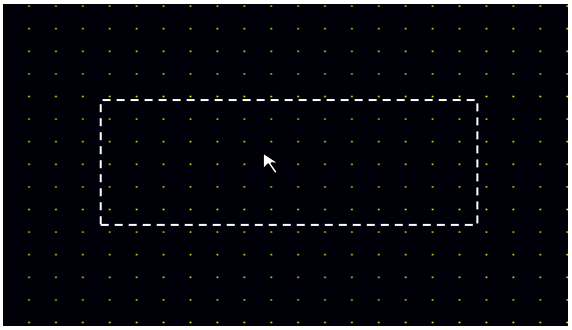
It describes example drawing numeric display and other tags are drawn with same procedure.

(1) Select icon for appropriate tag in a menu or toolbar.

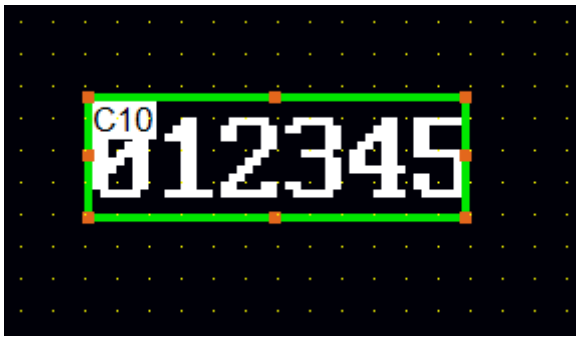
(2) Property window of the appropriate tag is popped up. (Example of numeric display)




(3) Complete configuration of window and press OK button, dotted rectangle is created with size as to be drawn on a screen.



(4) Click mouse left button on a proper position, the appropriate tag is arranged on a screen.



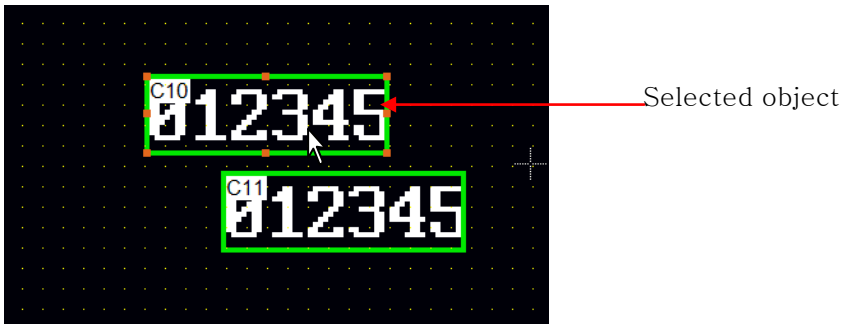
# 10.3 OBJECT SELECTION, MOVEMENT AND SIZE ADJUSTMENT

## 10.3.1 Select an object

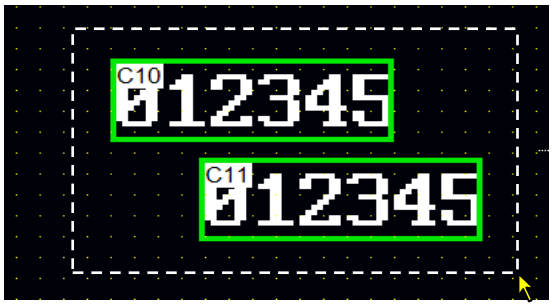
It is able to change clicked or included object in a drag area into selecting status. In this case, it is able to designate selection target.

|  |  | **Selection target** |
|---|---|---|
| Press | Release | Select only figure object. |
| Release | Press | Select only tag. |
| Press | Press | Select all objects. |
| Release | Release | It is not able to select any object. |

(1)Click the object with left button of mouse, it is changed into selected status. Selected object displays mark to adjust size as following figure.

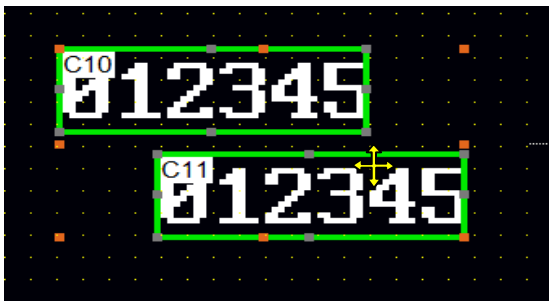


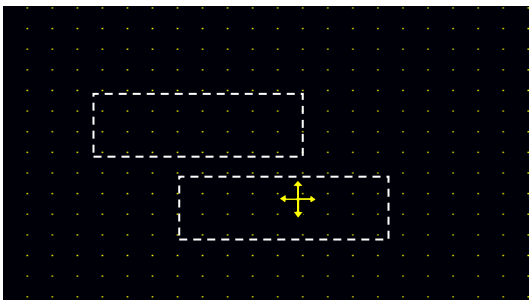

(2)Pressing left button of mouse and drag it, dotted rectangle is created. The object included in a rectangle is changed as selected status when taking off from a mouse.




## 10.3.2 Move an object

When clicking selected object, mouse cursor is appeared to move. It dangles after a mouse displaying the object outline as dotted line when it dragged. It is moved to the right position when taking off from a button.

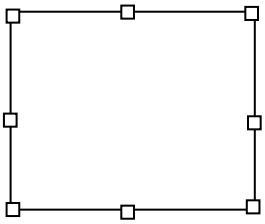


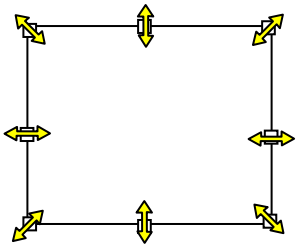



Checking image display check box when moving view tap of option window, the object drawn on a screen is moved as it is.

## 10.3.3 Adjust size of object

The selected object displays mark to adjust size as following figure. There is a mark to adjust on each summit and side. When moving a cursor to the mark, other shape of cursor is appeared as second figure.





Adjust width of selected object.

Adjust height of selected object.

Adjust width and height of selected object at the same time.

Adjust width and height of selected object at the same time.

# 10.4 PART/PANEL KIT LIBRARY

It is a library to reuse frequent figure and tag easily and there are three type of part/panel kit library.

**□Part library**

- It is not able to edit because it is a basic library supported by developer.
- It is not able to user edit or copy any library and library image in part library but user can design in panel kit.

**□Panel kit library**

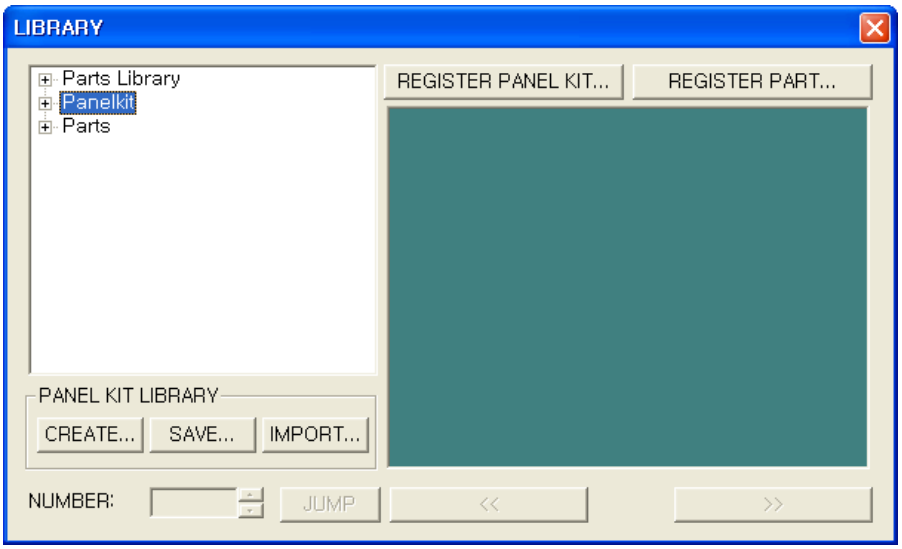
- It is user-made library and able to register frequent figure and tag as library part.
- It is able to make max.50 of independent and user-defined library.
- It can be used in other project after making it.
- It is saved as separate file and loaded saved library to use.

**□Part**

- It is able to register plural groups of figure object (Line, Rectangle, Circle, Text and BMP) and it is used in part display, lamp and touch.
- It is required to register separately for each project and it can be imported from other project.
- It is downloaded to main device.

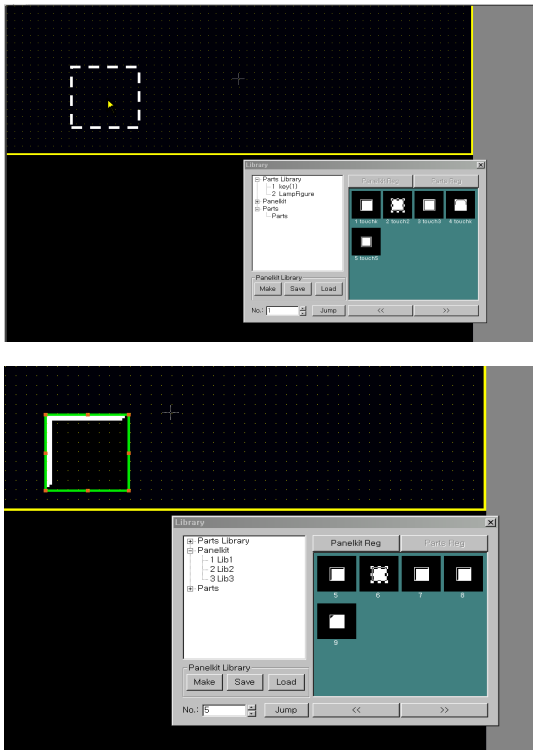
## 10.4.1 Panel kit window

It is modaless window and executes all operation about panel kit, part library and part. Select [Draw]-[Panel kit] or [Draw]-[Part] in a menu, library icon, then, part/panel kit library window is popped up.



## 10.4.2 View/draw contents of library

(1) Select one among part library/panel kit library/part in a tree view and lower folder.
Then, items of the appropriate library on a image view.
(2) Select proper item of image view.
(3) Place a mouse on a editing screen and object with dotted outline dangles after a mouse.
(4) Click mouse button on a proper position, the appropriate part/panel kit is arranged.




## 10.4.3 Create/delete panel kit library

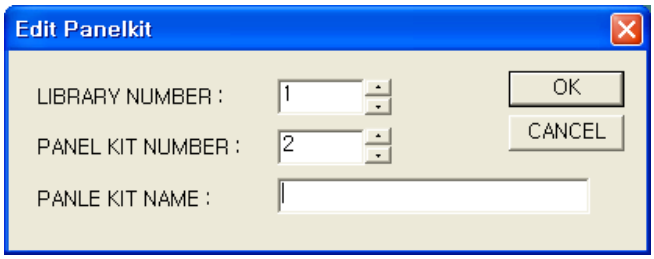
Pressing a make button, panel kit library window is popped up and designated library is created when designating name and number of panel kit in a window.


Select specific library, press delete button, it deletes selected library after confirmation. After clicking right button of mouse in selected library, select delete to remove library on a pop-up menu.

## 10.4.4 Register/delete/copy kit in panel kit library

•Register

Panel kit register button is activated when selected object is on a screen. Pressing this button, edit panel kit window is popped up and register number and name of kit in this window. If there is a designated number of kit, it shows warning message to overwrite or cancel it.




Library number : Library number to be registered

Panel kit number : Kit number of library to be registered

Panel kit name : Panel kit name

• Delete

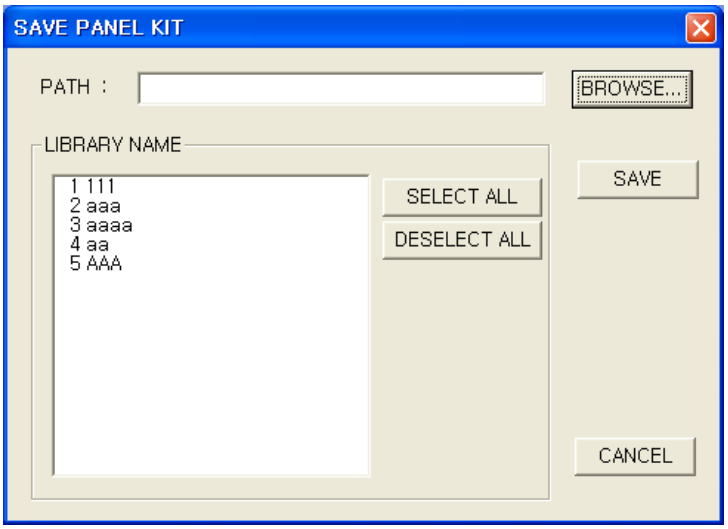
Select specific item on image view and press delete key, it is able to remove selected item.

• Copy (Register as)

In a status of selecting specific item on image view, press Ctrl+C key, edit panel kit window is popped up and selected item is registered as designated in window.

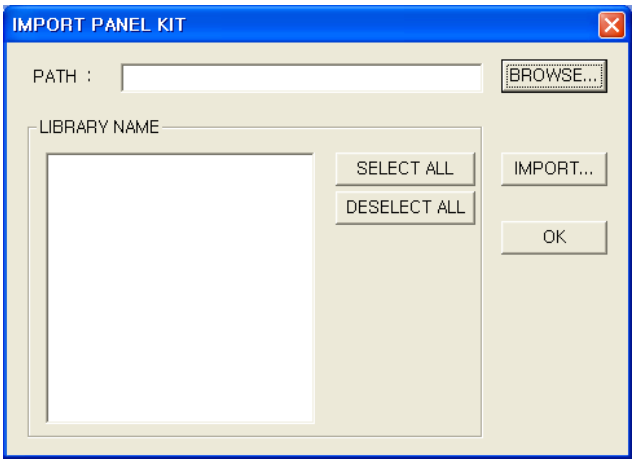
## 10.4.5 Save/import panel kit library

Panel kit library is used in all project after register. In order to manage library as a file, save it as a file. Pressing save button, panel kit window is popped up. Select library to save in a list, designate path, press save button and it is saved in the path.




Pressing a import button, it shows browser to designate path and panel kit library list existing on the

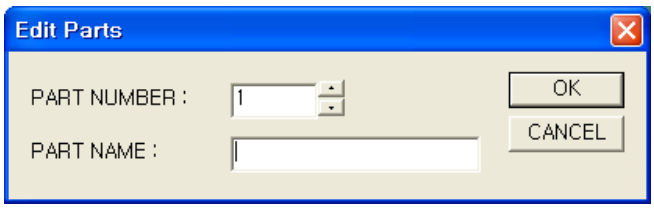
path configured in a browser. After selecting items on a list and press import button, libraries of selected library file are loaded to currently using editor.




## 10.4.6 Register/Copy/Delete/Draw part

• Register

It is able to register as part when plural objects or group only consisted with figures (Straight line, rectangle, circle, text and BMP) are selected. Part register button is activated selecting figure object on a screen, edit part window is popped up when pressing this button and part will be registered when designating number and name of part on a window. If there is a designated number of part, it shows warning message to replace or cancel it.




• Copy/delete

In a status of selecting specific item on image view, click right button of mouse, it is able to delete part selecting delete on a pop-up menu. When selecting a copy, edit part window is popped up and register as designated number and name.

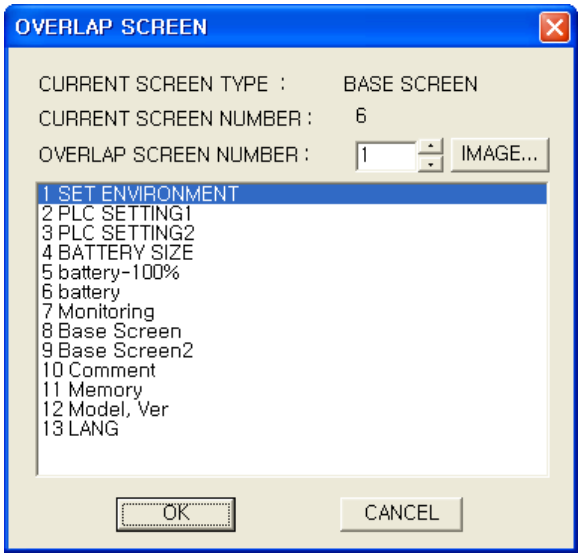
• Draw

Select proper part on a image view and place a mouse on editing screen. The object with dotted outline dangles after a mouse and click mouse button on proper position to arrange the part.

# 10.5 OVERLAP SCREEN

It overlaps editing screen and it is useful to produce common part among several screens as an independent screen to write screen data and save data capacity when using it as an overlap screen. It is not able to use overlap function in window screen.

Select [Draw]-[Overlap screen] in a menu, overlap base screen window is popped up and base screen selected in this window is overlapped.




| Overlap base screen | Draw overlap screen |
|---|---|
| Screen type | • Base screen |
| Screen No. | • Editing base screen number |
| No. | • Base screen number to be used as overlap |
| Image | • Look through image of base screen calling screen image window. |
| List | • List title of base screen in a project with number. |
| OK | • Draw number of base screen configured in overlap screen number as overlap screen and exit window. |
| Cancel | • Exit window. |

### ※Notice

•It is able to overlap only as one step for each screen. When overlapping base screen having overlap screen, tags of base screen are only overlapped, tags of overlap screen are not overlapped again.

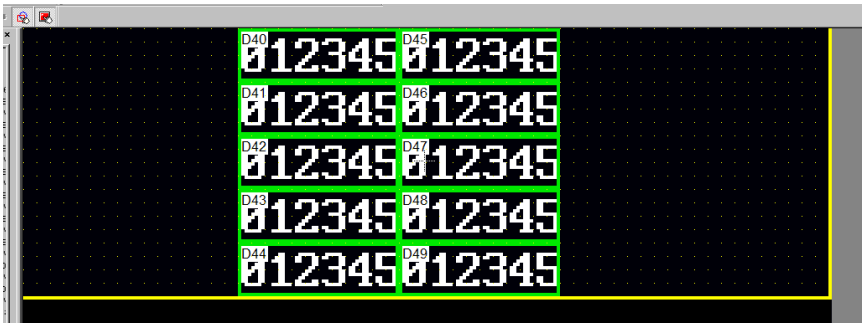
•It is overlapped up to max.5 screens.

•When several screens are overlapped, it is displayed as in order of tags of base screen are placed on uppermost and tag on the last overlapped screen, …, tag on the first overlapped screen.

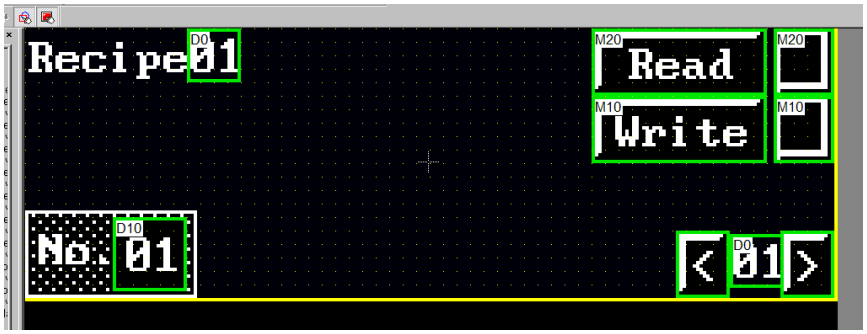
•Configuration of cursor movement and floating alarm is set again according to screen configuration, user and destination ID of tags configured in overlap screen preserve original value.

□ **Example of overlap**

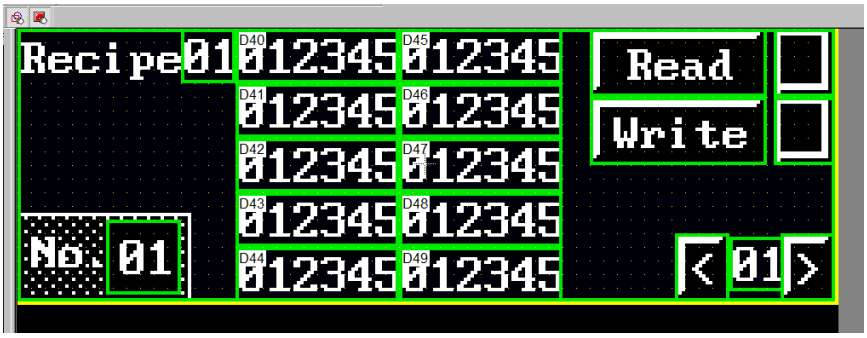
Base screen




Overlap screen




Base screen after overlapping

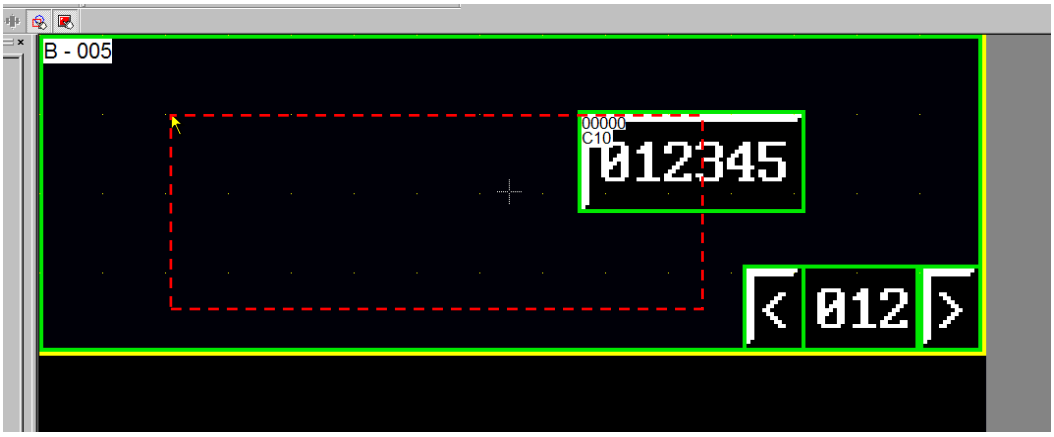


# 10.6 DESIGNATION OF KEY WINDOW POSITION

It designates key window position for inputting value of numeric or ASCII input. Select [Draw]-[Key window] in a menu, red dotted rectangle dangles after a mouse. It is an outline of key window showing position when key window is called.

If rectangle is out of the editing area, position is adjusted to show whole key window when it is called.

When key window position is decided, all types of key window is displayed as window having mark as top-left point.




# 11. COMMUNICATION

## 11.1 OUTLINE

Editor and GP main device communicate as serial through RS232C or RS422 port.
It is able to execute following operations with communication.

- Screen data download : Download project written on editor to main device.
- Upload main device data : Upload project stored in main device to editor.
- Confirmation of main device memory : Confirm delete, memory for specific screen of main device in editor.
- Firmware download : Replace main device software as improved one.

### ※Notice

In order to communicate with editor, **use a port is not used by CH1** and designate **CH2 as "Editor"** in **[Preference]-[Channel connection]** of GP system configuration.
It is able to communicate regardless of speed, data length when connecting to editor.

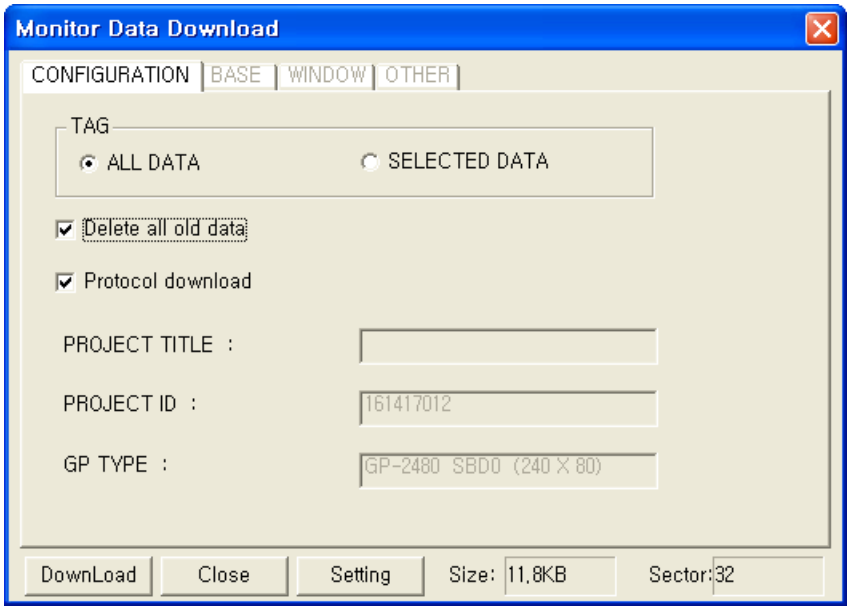
## 11.2 DOWNLOAD DESIGN DATA

After writing screen data, select [Communication]–[Download] or  , then, screen data download window is popped up. Pressing download button after configuration of data to be downloaded and download option, it starts to download.

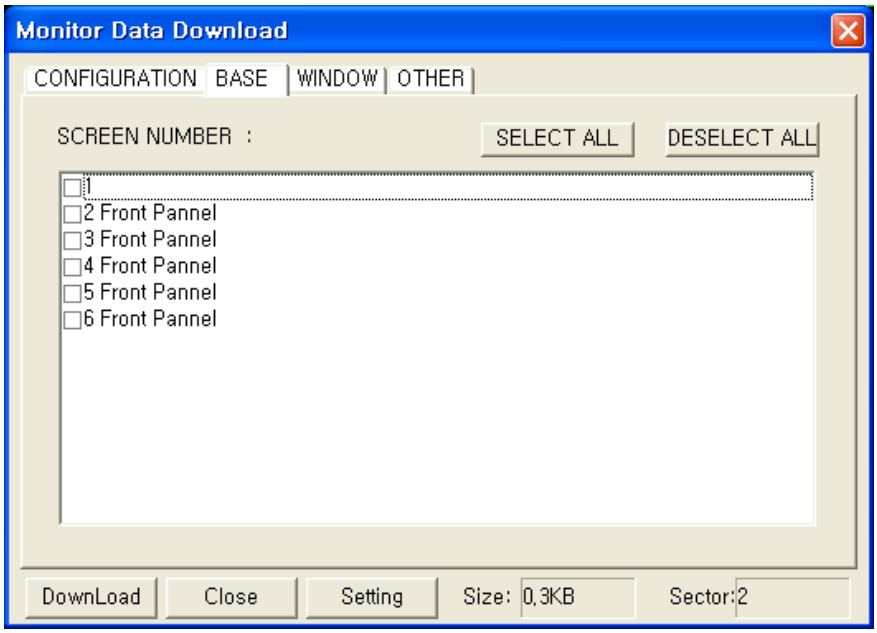
### 11.2.1 Precaution of configuration

(1) It is able to confirm and change communication configuration. Confirm and designate PC port and communication speed on communication tap of operation window.
(2) When checking delete all old monitoring data, all data downloaded on main device is deleted.
(3) When selecting all data in object group box, all data of project is downloaded and base, window, other taps are activated, designated item is only downloaded when selecting selected data. In window tap, it shows window screen to be downloaded, it is key window number configured in project auxiliary configuration, it is not downloaded optionally. It is able to download selecting comment and part among comment, part, common setting in other tap.
(4) Each project has ID and if project ID of main device and to be downloaded are different when downloading part of project without checking delete all old data, it shows warning message for downloading. If it is progressed, selected item is downloaded.
(5) Before downloading, execute "Data check". If there is a problem, cancel download and adjust data by user.

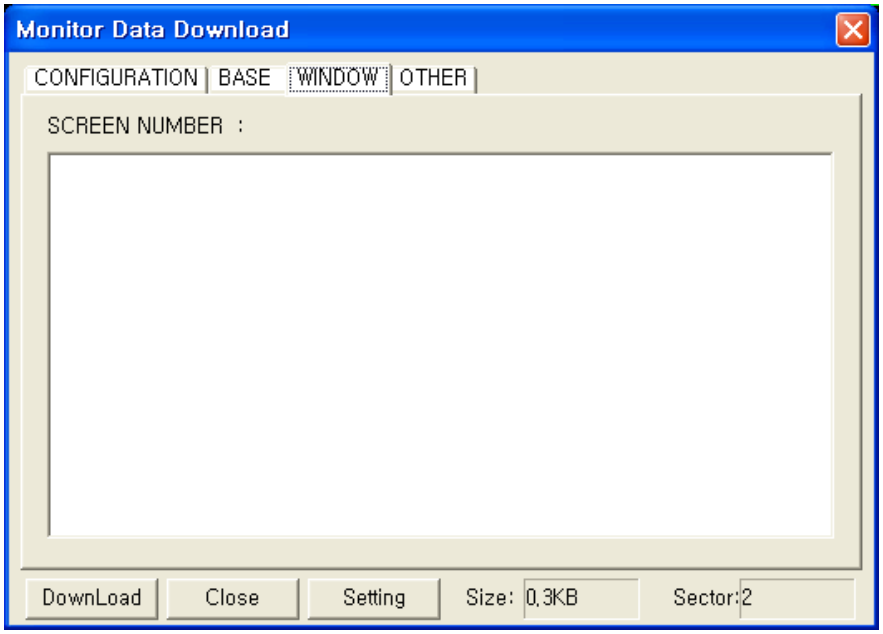
## 11.2.2 Detail description of download window



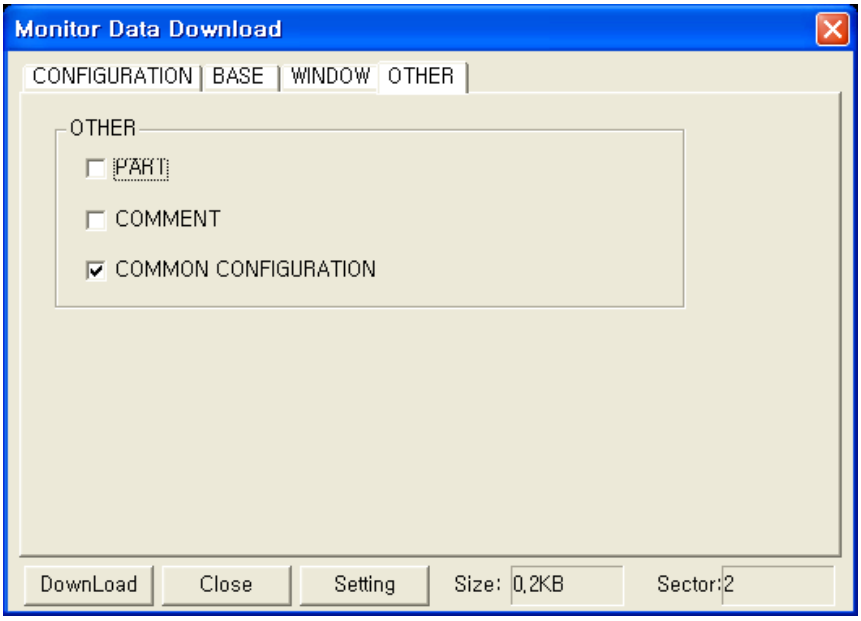

| Download | Configuration of editor data download and execution of download |
|---|---|
| All data | • All screen data designed in current project is downloaded.<br>• Select one between base screen and window screen. |
| Selected data | • Select part of data designed in a project and download it. Base tap, window tap and other tap are activated when it selected and only selected item of each tap is downloaded. |
| Delete all old data | • Delete old user data in GP memory before download it, download new screen data when it selected.<br>• Select this item and press download button, window is popped up to confirm deleting old data. |
| Protocol download | • When it is not selected, download the appropriate protocol in case, device to be downloaded is not existed.<br>• When it is selected, download the appropriate protocol even though there is a device to be downloaded on GP memory. |
| Project title | • Display project name to download. To adjust project name, select [Common]–[Title]–[Project] in a menu and edit it. |
| Project ID | • Display project ID to download. |
| GP type | • Display GP type. |
| Size | • Display total capacity of screen data of project to download as Kbyte.<br>• It is not able to exceed 512 Kbyte of maximum capacity of project. |
| Download | • Press a button, it starts to download. |
| Setting | • In order to configure about communication between PC and GP, change configuration in [Communication]-[Option]-[Communication] tap. |
| Close | • Close window. |




| | |
|---|---|
| Base tap | Select base screen to download.<br>It is activated when data selected in setting tap is checked. |
| Base No. | • Display number and title of screen existing on a project in order of number.<br>• Only checked screens are downloaded. |
| Select all | • Select all items displayed on a list. |
| Deselect all | • Deselect all items displayed on a list. |




| | |
|---|---|
| **Window tap** | **Display window screen to be downloaded.**<br>It shows window screen designated as key window in project auxiliary configuration, but it is not able to user select and download in this tap. |




| **Other tap** | **Select part/comment download** |
|---|---|
| Part | • Download all parts registered in current project when it selected. |
| Comment | • Download all comments registered in current project when it selected. |
| Common setting | • Download all configured items on common setting. |

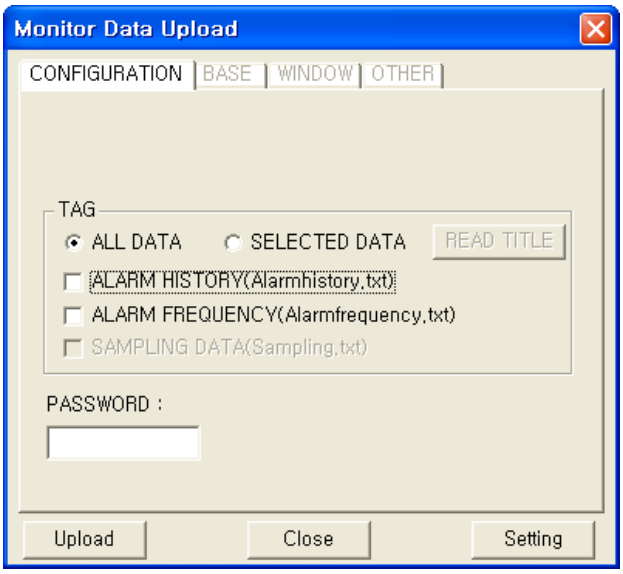
# 11.3 UPLOAD

It uploads monitoring project file on main device to editor. It is also able to upload alarm history. Select [Communication] - [Upload] in a menu or  , then, upload window is popped up and it executes detail configuration and operation for upload.

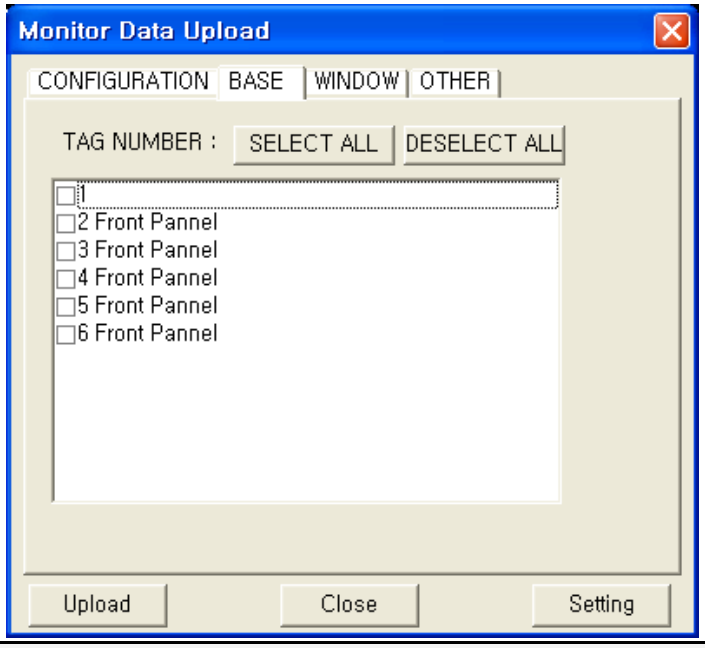
## 11.3.1 Upload procedure

(1) Confirm communication configuration of editor and main device.
(2) Designate path upload data to be saved.
(3) Select all data to upload all data of project.
(3a)To upload part of project data, select selected data and press read title button. Check items required in base/window/other tap.
(4) To upload alarm history, check alarm history.
(5) To upload alarm frequency, check the number of frequency.
(6) If communication password is set, register password.
(7) Press upload button to execute.

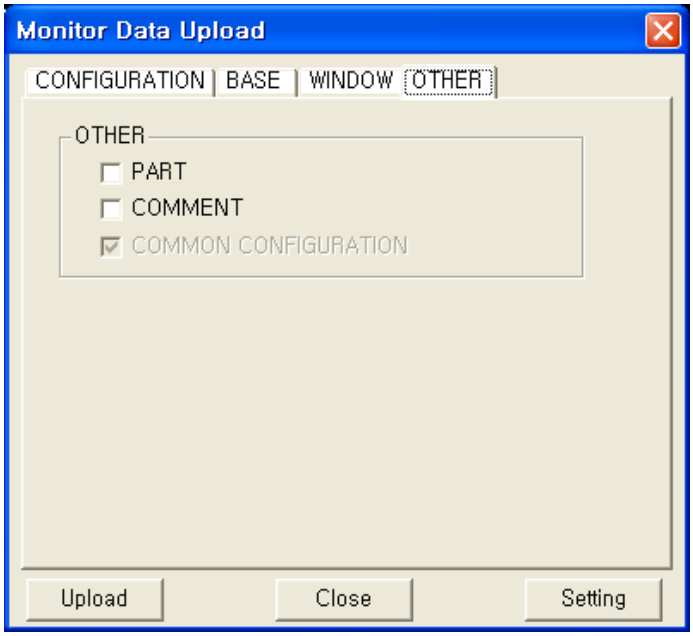
## 11.3.2 Detail description of upload window




| Upload | Execution of upload main device data |
|---|---|
| Upload destination path | • Designate folder to save project to be uploaded.<br>• Other screen data is saved in a designated path, warning window to overwrite before overwrite is popped up. |
| All data | • Select to upload all screen data. |
| Selected data | • Select part of project to upload.<br>Click read title button after selecting this item, it loads screen information communicating with GP and activates base, window and other tap. Select items required in each tap. |
| Read title | • Pressing a button, it loads number and title of base/window screen in main device communicating with main device. |
| Alarm history | • Select to upload alarm history and it is uploaded as text. |
| Alarm frequency | • Select to upload the alarm frequency. |
| Password | • Input password if communication password is set in [Common]-[Password]. If password is not conform with password, it does not upload. |
| Upload | • Execute to upload. |




| Base(Window) tap | Select base(window) screen to upload |
|---|---|
| Base(Window) number | • Display number and title of base(window) screen existing on GP in order of number. Only checked screens are uploaded. |
| Select all | • Select all items displayed on a list. |
| Deselect all | • Deselect all items displayed on a list. |




| Other tap | Select part/comment to upload |
|---|---|
| Part | • Upload all parts in project when it checked. |
| Comment | • Upload all comments in project when it checked. |
| Common configuration | • Upload items configured in common menu.<br>Configurable time operation, project auxiliary configuration in main device are uploaded as configuration for download. |

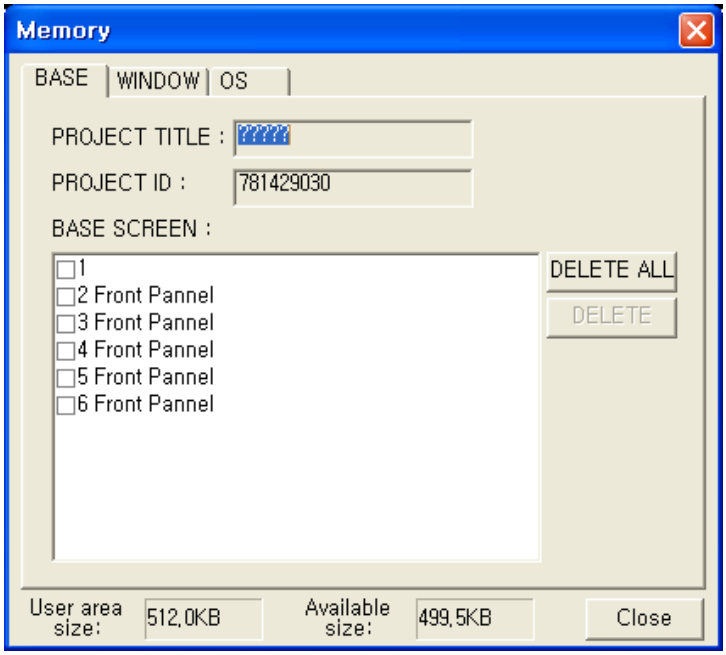
# 11.4 MEMORY FUNCTION

It confirms screen organization, memory capacity and firmware version of main device of project in GP and deletes specific screen of project. It shows detail information about project to user not loading all data reading memory.

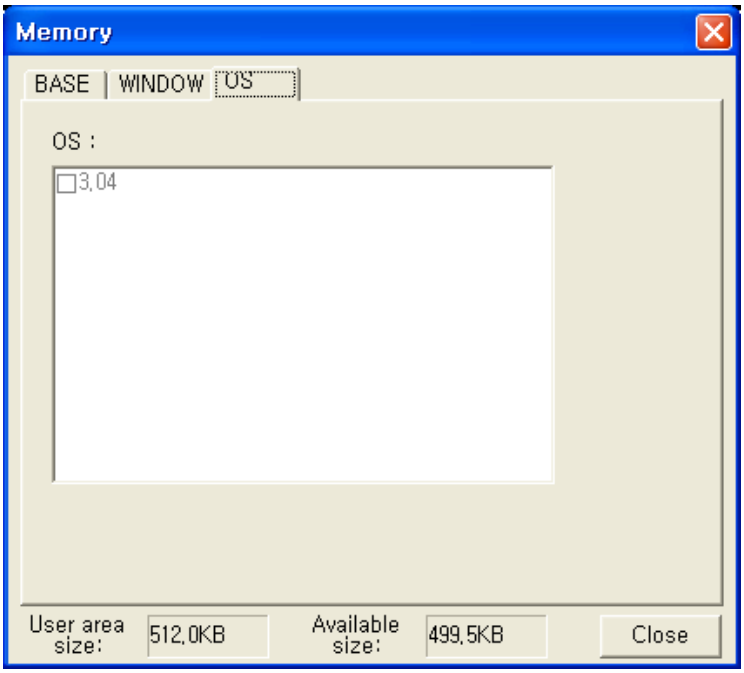
## 11.4.1 Operation procedure

(1) Select [Communication]-[Memory] in a menu.
(2) Warning message about stopping monitor is appeared.
(3) Password window is popped up, if communication password is registered and it cancels memory command, if inputted password is not matched.
(4) Memory window is popped up if password(Communication password of security window) is not registered or password is matched.
(5) It executes requiring operation in memory window.

## 11.4.2 Detail description of memory window




| Base tap | View, select and delete base screen in GP |
|---|---|
| Project title | • Display project title in main device. |
| Project ID | • Display project ID in main device. |
| Base screen | • Display list of all base screen existing in project of main device.<br>• Check specific item in a list, delete button is activated and checked item is deleted from main device memory pressing delete button. |
| Delete all | • Delete all base screen in main device. |
| Delete | • Adjust checked item in a list. |
| User area size | • Display available total memory size as byte unit. |
| Available size | • Display remaining size of available space as byte unit. |
| Close | • Exit window. |




| | |
|---|---|
| OS tap | **It shows software version using in GP.**<br>In order to upgrade as improved version, use [Communication]-[GP firmware download] and download new firmware. |

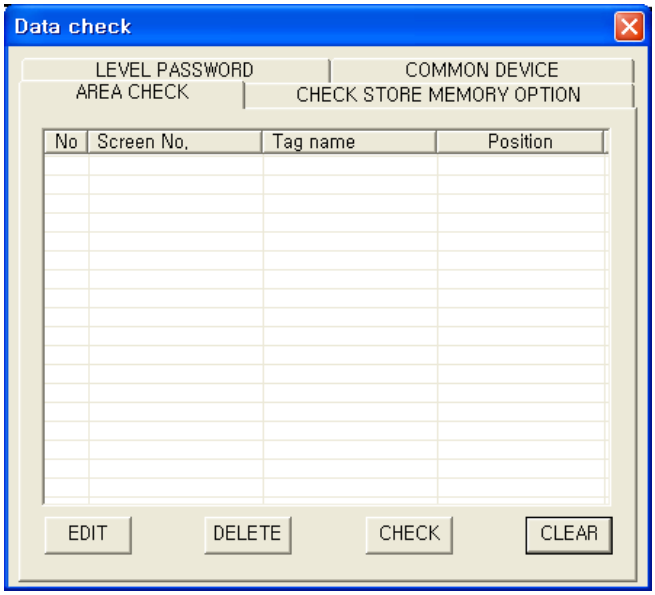
## 11.5 DATA CHECK

It checks error data and makes user to adjust it when writing screen data in editor. It is executed automatically when downloading to main device.

If there is an error data, data check window is popped up and it writes on a list. This window is modaless and it is able to edit screen data without closing window.

## 11.5.1 Check tap of area

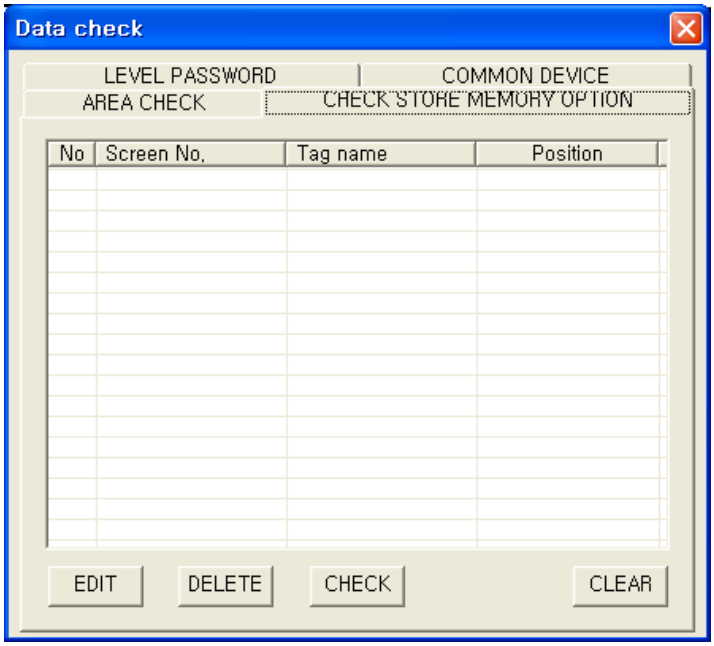
It lists data out of the editing area.




| Data area tap | Display and edit tag out of design area |
|---|---|
| Title | • Base or window screen or number of the appropriate tag. |
| Tag name | • Tag name |
| Position | • Coordinates the appropriate tag is drawn. It is displayed as “(Left, Top)(Right, Bottom)”. |
| Edit | • Pressing a edit button after selecting item, it shows screen with the tag and it will be selected status. It executes as same with double-click. |
| Delete | • Delete tag of selected item. |
| Check | • Check data again. |
| Close | • Exit window. |

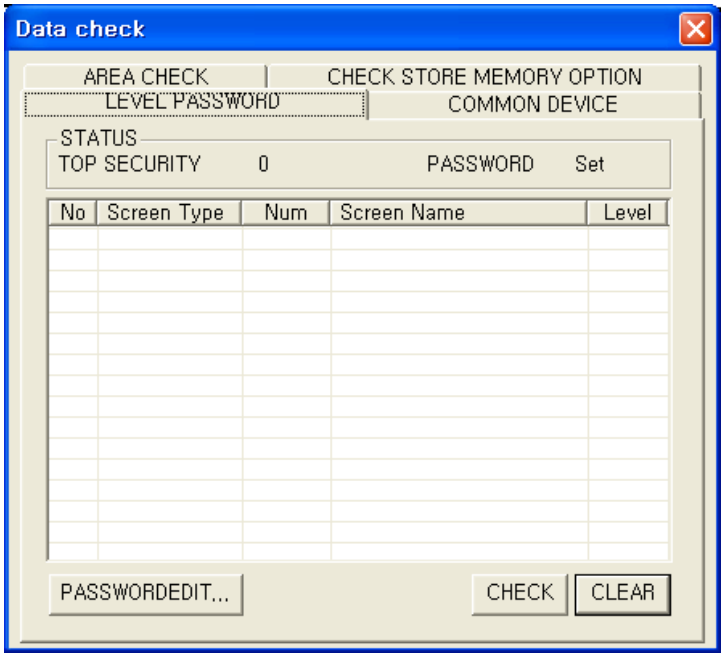
## 11.5.2 Check tap of Store memory option

It checks store memory option of alarm list and trend graph are used more than 17. It shows list of tag using store memory option and makes user to edit. The operation is same with area check tap.




## 11.5.3 Level password tap

It checks password is inputted for the highest level of base screen with project security level.



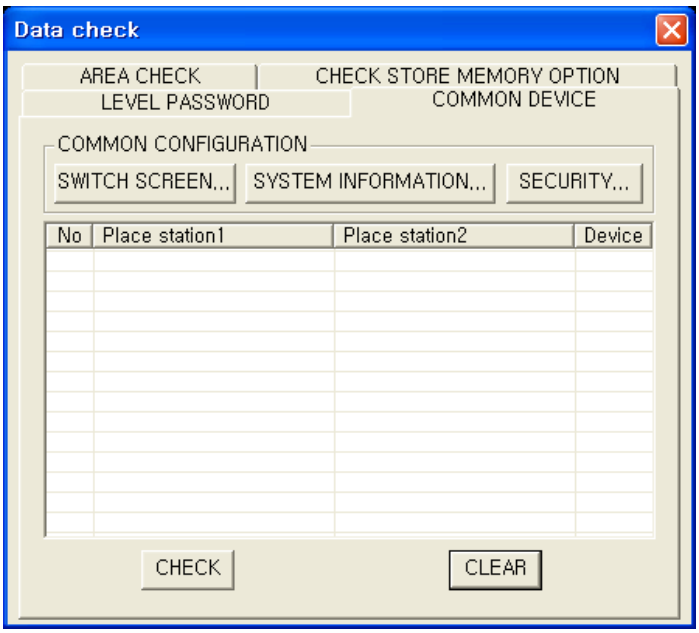

- Status : It shows the highest security level and password designation of written base screen.
- Max. security level : The highest security level of written base screen
- Password status : If password is not configured, it is “Not set”, “Set” when it is set.
- List box : It displays number and level of screen configured with the highest security. Double-click

and move to security window of [Common]-[Password], input and adjust each security level, password.

• Check : After inputting and adjusting security level and password, press “Check”, it executes to check for security level and it displays “Set” in password status when there is no error.

## 11.5.4 Common device

It checks duplication of device configured in common function.




• Switching screens

Move to [Common]-[Switching screens] window, check device using in current configured base screen, switching of overlap screen 1,2.

• System information

Move to [Common]-[System information] window, check configuration status of device is able to communicate with GP and PLC device.

• Password

Move to [Common]-[Password] window, check configuration status of device related with security level using in project.

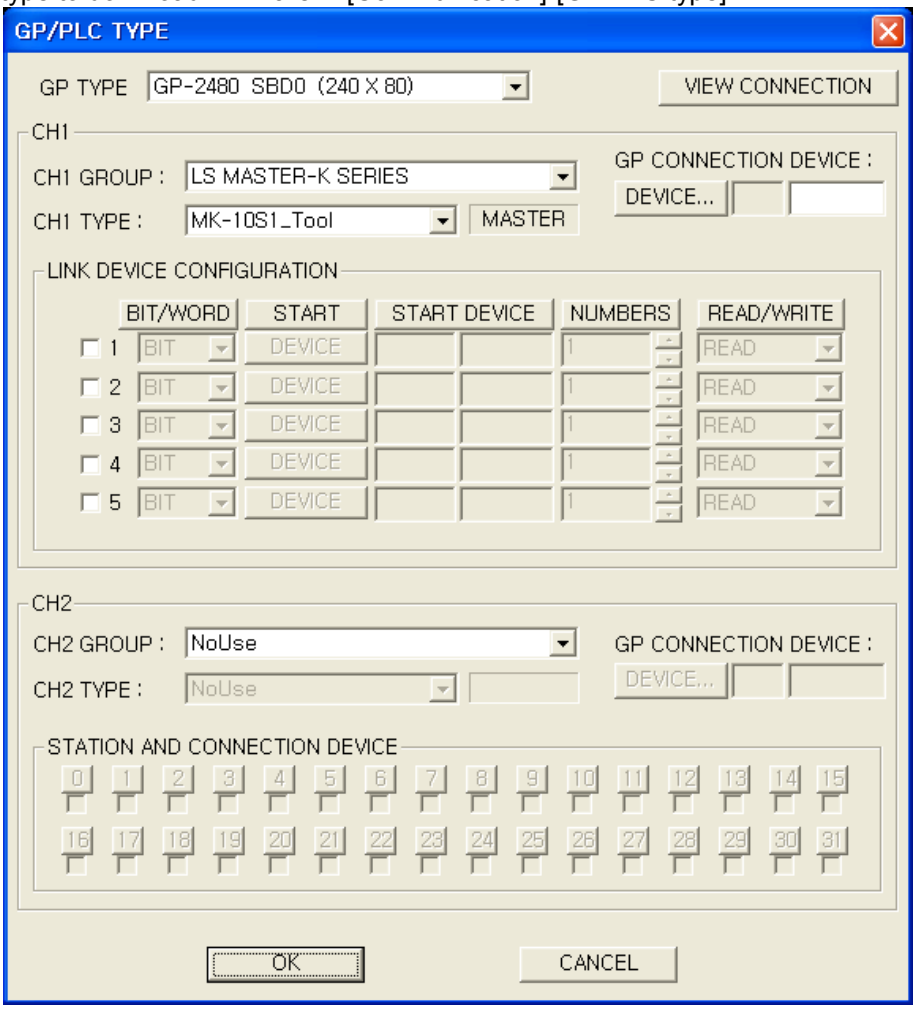
# 11.6 FIRMWARE DOWNLOAD

It is able to download and replace firmware of main GP from editor.

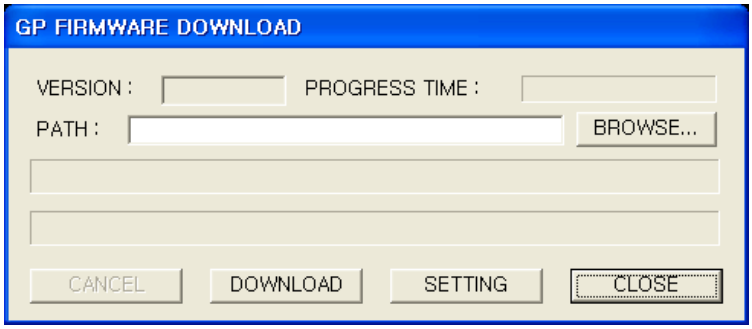
## ▣ Procedure of firmware download

(1) Firmware file is classified by GP model, it is only loaded for same firmware with GP type configured in editor.

Set GP type to download firmware in [Communication]-[GP/PLC type].

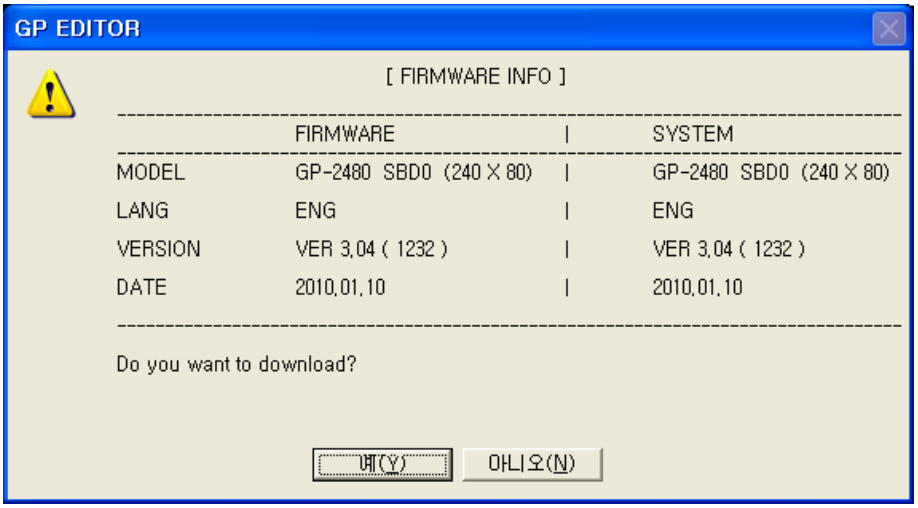



(2) Select [Communication]-[Firmware download]. Then, GP firmware download window is popped up.

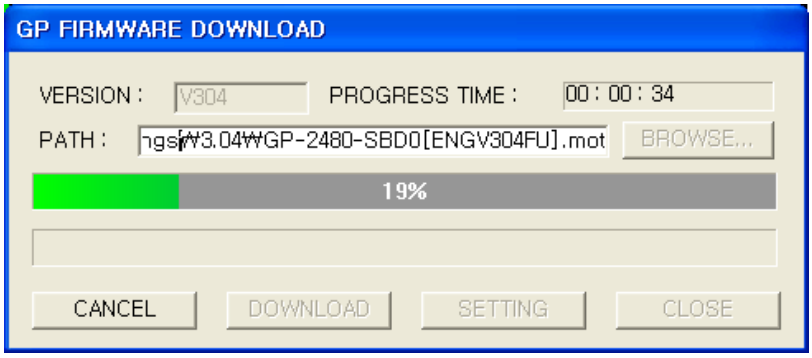



(3) Select firmware file to download using browse button.

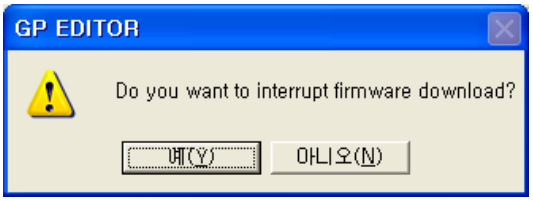
(4) Pressing download button, it shows firmware version saved in main device and asks to progress. If connected GP main device is different with GP type configured in [Communication]-[GP/PLC type], error message is displayed.




(5)Select “Yes”, “GP FIRMWARE UPGRADE” is displayed in main screen and it starts to download.




(6) Pressing cancel button during download, it asks for stop and it stops when selecting “Yes”. When canceling download, reset main device.




(7) When download is completed successfully, “UPGRADE OK PLEASE POWER OFF” is shown on main screen, “UPGRADE NG PLEASE POWER OFF” is shown, if it is failed and turn on and off the main power. In this case, and it protects previous status and it does not affect to GP operation.

## ※Notice

User data of GP main device are deleted after upgrading firmware.
Protect data using [Communication]-[Upload] before upgrade firmware.
At a product which has two RS-232C ports, a firmware data should be downloaded through the B Port of the RS-232Cs.

At a product which has one RS-422 and one RS-232C Port, a firmware data should be downloaded through only RS-232C Port.

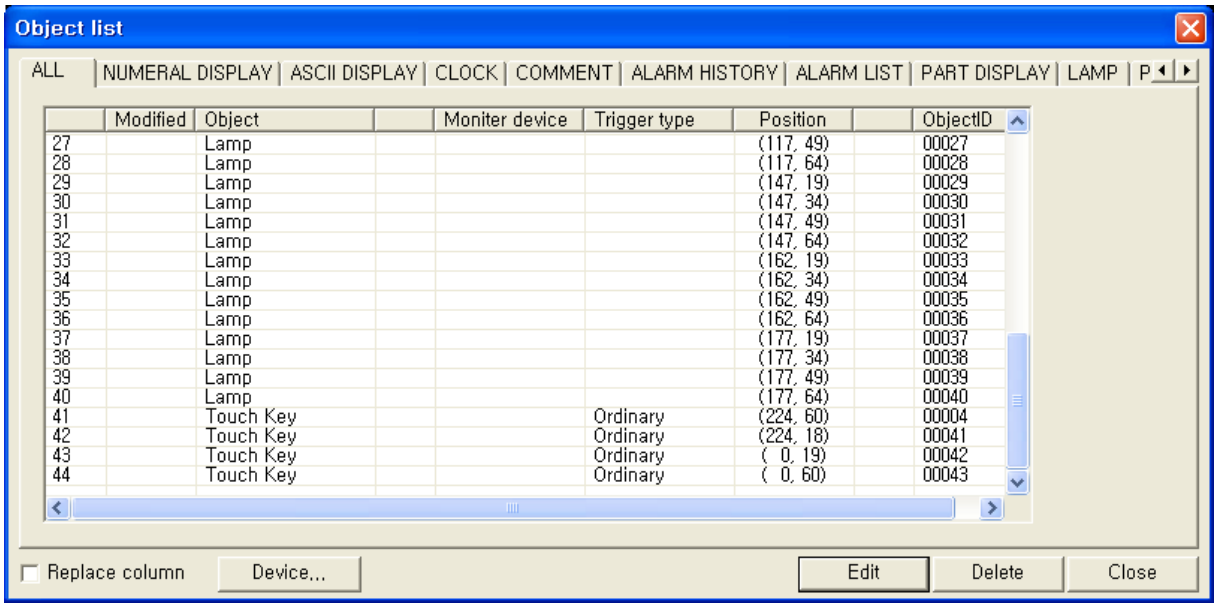
# 12. VIEW

It describes tool bar option and view of tag/device list for edit.

## 12.1 TAG LIST

It shows all tag list using in current editing screen and edits each main property.
It is able to check all type of tag arrange on a screen or each tag.
Select [View]-[Tag list] in main menu, tag list window is popped up.
It shows tag list using in screen, setting device, position in all taps. It displays tag list in numeric display, ASCII display and edits main property.

### 12.1.1 All taps

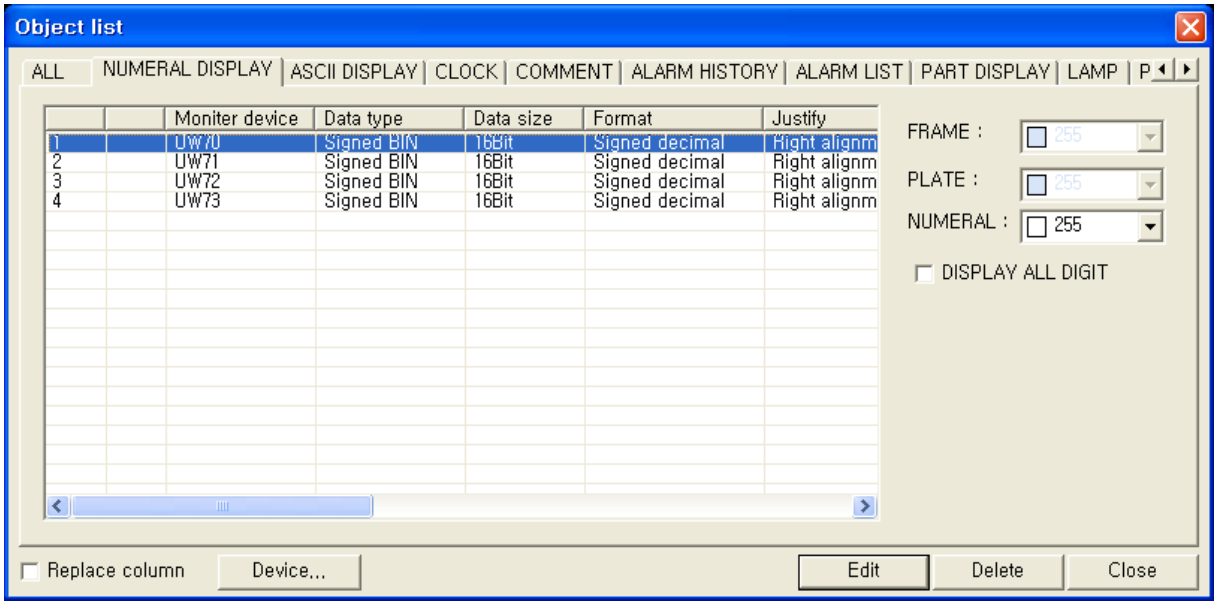



▪It displays all tags arranged in current editing screen with main attribution as a table.
▪If there is monitor device used for tag, device button is activated when selecting the tag and it is able to change device address pressing device button.
▪Clicking device column by mouse and input directly. In this time,"*" is marked at front part of the row for adjusted device.
▪It is able to edit, delete selecting the tag using edit and delete button.

| | |
|---|---|
| Modify | • "*" is marked when the item is modified. |
| Tag | • Display tag name. |
| Monitor device | • Display configured monitor device on tag. |
| Trigger type | • Display designated trigger when using trigger. |
| Position | • Display position (Upper left coordination) on screen of tag. |
| Tag ID | • Display tag ID. |
| Replace column | • Check replace column check box, change device pressing device button and it changes all devices of monitor device column as new devices. |

| | |
|---|---|
| Device | • It is used to change selected device to new device.<br>• Pressing this button, select window of device is displayed and selected device is changed to new device designating new device. |
| Edit | • Pressing this button, it calls attribution window of selected tag and it is able to edit it. |
| Delete | • Selected tag (on screen) is deleted pressing this button. |
| Exit | • Exit window. |

## 12.1.2 Numeral display tap




| | |
|---|---|
| Monitor device | • Display configured monitor device on tag. |
| Data type | • Display data type of device. |
| Data size | • Display data size of specified device. |
| Format | • Display numeral display type. |
| Alignment | • Display alignment method using in display numeral. |
| Display all digits | • Display option of all digits. (In case of right alignment, fill all blanks with “0”.) If option is designated, it displays as “Configure” or “Not configured”. |
| Size | • Display size of letter as width×length using on tag. |
| Digits | • Display digits. |
| Decimal point | • Display ciphers under a decimal point. |
| Frame | • Display frame color. |
| Plate | • Display plate color. |
| Numeral | • Display color of number. |
| Position | • Tag position on a screen. |
| Tag ID | • Tag ID |
| Frame (Combo) | • Designate frame color. |
| Plate (Combo) | • Designate plate color. |
| Numeral (Combo) | • Designate color of display number. |
| Display all digits (Combo) | • Designate display option for all digits. |

●It is similar to use other tap with numeral display tap.

# 12.2 VIEW DEVICE LIST

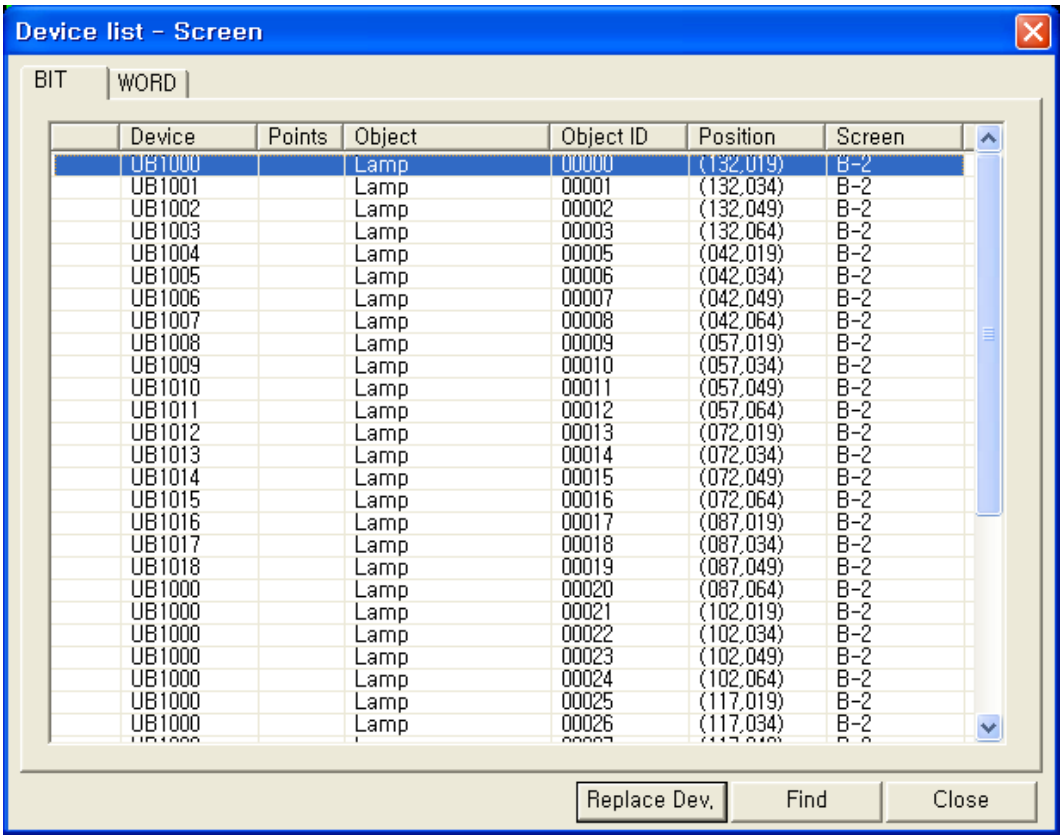
It shows device list using in whole project or specific screen.

It is very useful to correct an error for device configuration since it displays which device is using on tag collectively.

Select [View]-[Device list]-[Screen] in menu for editing device list and device list-screen window is popped up.

Select [View]-[Device list]-[Project] in menu for whole device list of project and device list-project window is popped up.

Refer to the following example of device list-project window and it is same to use with device list-screen window.




| | |
|---|---|
| **Device list** | **It shows device list, search/change device.**<br>It is same to use except bit tap is for bit device, word tap is for word device. |
| Device | • It displays used device. |
| Point | • It displays the number of relating device when the tag uses several devices successively from the lead tag. |
| Tag | • It displays type of tag using for device. |
| Tag ID | • It displays tag ID. |
| Position | • It displays upper left point of tag area on a screen. |
| Screen | • It displays screen number of tag.<br>• It displays as common if it is designated device in common configuration. |

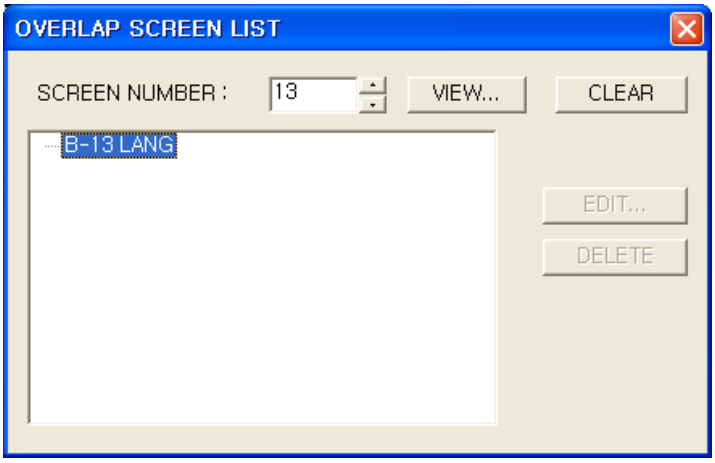
| | |
|---|---|
| Replace device | • It calls device replace window and change the selected device of the list into other one. |
| Search | • It calls device input window, input device to find and if there is same device with inputted device, it scrolls to the position and show as the item is selected. |

# 12.3 VIEW OVERLAP SCREEN LIST

It combines the existing screen and make it as new one.

Selecting [View]-[Overlap screen list], overlap screen list window is popped up.

It confirms and edits overlapped screen list using this window.



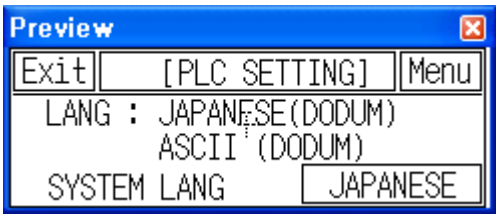

| Overlap screen list | Change/Delete of list display of overlap screen |
|---|---|
| Screen number | • It designates base screen to display overlap screen list. |
| View | • It selects screen to input on screen number looking through the base screen image. |
| Tree | • It displays number and title of overlap screen.<br>• The below screen of tree is later overlapped screen. |
| Edit | • It changes selected screen at a tree as new screen.<br>• Pressing a button, overlap base screen window is called. After selecting new screen of window and press OK button, selected screen is changed as new screen. |
| Delete | • It deletes selected overlap screen of tree. |

## 12.4 PREVIEW

It displays the editing screen same with screen to be showed as 100% of enlargement ratio.

Checking [View]-[Preview] in menu, preview window is popped up.

The background color of screen is displayed as white when it is designated as white and black for other colors.




## 12.5 TOOL PALETTE

There are required tags and drawing tool for design and it is popped up when checking [View]-[Palette] in menu.

It is able to design selecting tag in palette same with tool bar.


## 12.6 VIEW ON/OFF IMAGE

In accordance with ON/OFF, the image of screen tags can be changed. (Lamp, Touch etc)

It is able to display editor screen image as ON or OFF status.

Operating 

button in [View]-[On image] of menu or tool bar.

When it is checked in menu, it displays image on a editor screen when each tag is ON status.

## 12.7 SCREEN REFRESH

It draws editor screen again.

## 12.8 STATUS BAR

It displays current designing contents as a message.

If specified tag is selected on a screen, “Select […]”is displayed and “Ready” for others.
It displays status bar only when [View]-[Status bar] is checked.

## 12.9 TOOL BAR

It is able to operate display of specified group of tool in menu or designate in project configuration.

In configuration of Project/Option/View tap or [View]-[Tool bar],

* System tool bar : Designate display of main tool bar.
  New project, Open project, Save project, New screen, Open screen, Store screen,
  Cut, Copy, Paste, Preview, Previous screen, Next screen, Open closed screen, Tag list,
  Download, Upload, PLC connection, Data check, Device list, Comment list, Library, Palette,
  Refresh
* View : Designate display of view tool bar.
  ON/OFF image, Device display, Tag ID display, Grid color, Background color,
  Snap, Grid interval, Display of grid, Enlargement ratio
* Figure : Designate display of tool bar related with figures.
  Line, Rectangle, Circle, Text, BMP
* Tag : Designate display of tool bar related with tags.
* Edit : Designate display of tool bar related with edit.
  Bring forward, Send backward, Group, Ungroup, Select figure, Select tag
* Draw : Designate display of tool changing attribution of figure.
  Line - Style, Color
  Pattern– Pattern, Foreground color, Background color,
  Text color

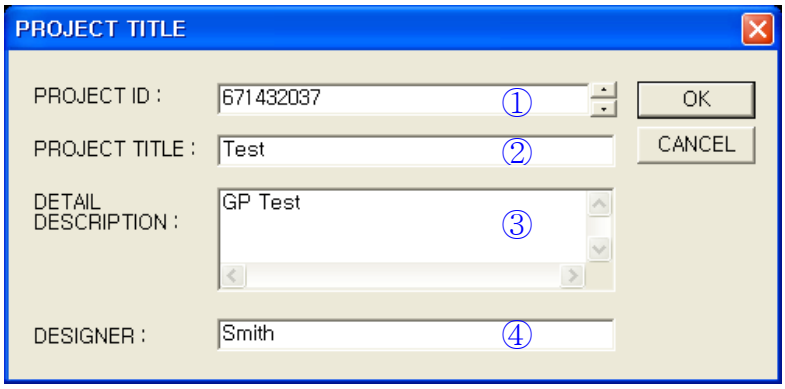
# 13. COMMON CONFIGURATION

## 13.1 SCREEN INFORMATION

It is able to write project ID, title and detail description to control in main device and editor and this information is downloaded to the main device and uploaded to the editor.

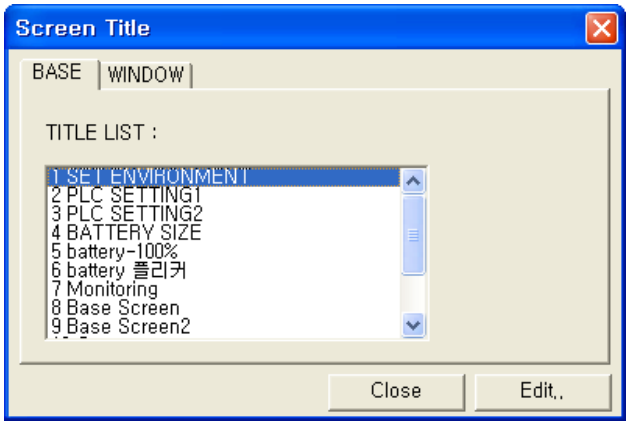
It is also available to invest title and detail description for each base and window screen. The title is downloaded to the main device and uploaded to the editor, detail description is not downloaded to the main device and title is used to view a screen in the main device.

### 13.1.1 Configuration of project information

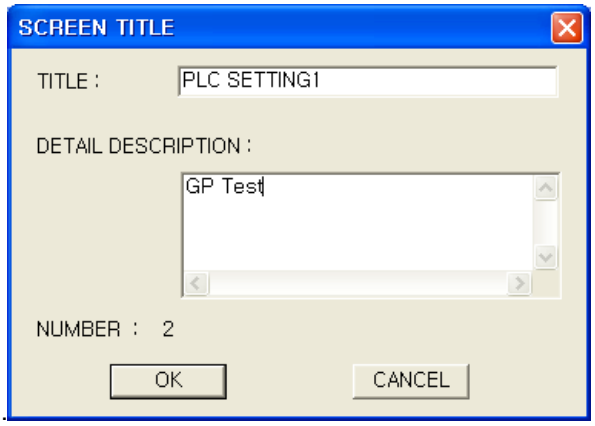



| Project Title | Configuration of project information |
|---|---|
| ①Project ID | • It is available when project is created.<br>• It is editable within 1~4,294,967,295 by user.<br>• It shows warning message if the existing project ID and ID of project to be downloaded is not same when downloading the project in GP without erasing it. |
| ②Project title | • It edits project title.<br>• It is available to designate max.32 letters and omit. |
| ③Detail description | • It edits detail description of project.<br>• It is available to write max.512 letters and omit. |
| ④Designer | • Input the name of writer.<br>• It is available to input max.8 letters and omit. |

## 13.1.2 Configuration of screen information



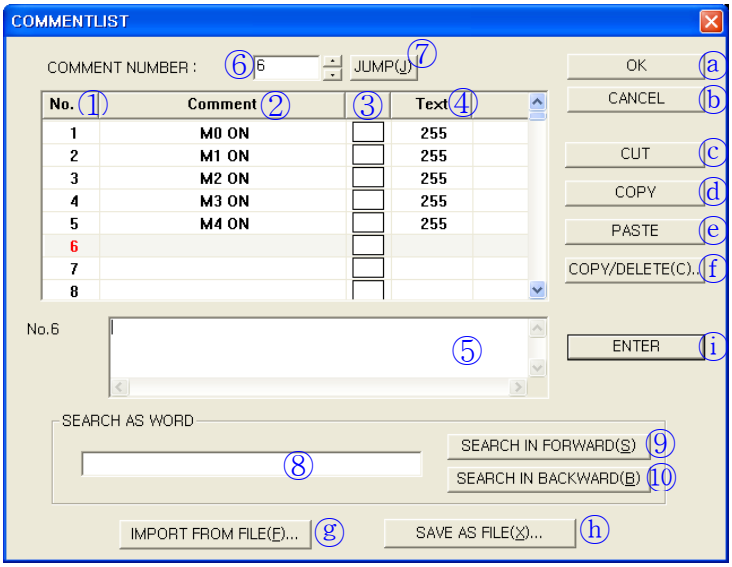

It edits user-defined title and detail description of base and window screen.
Put a cursor on a base to be edited and press button, “Edit screen title” window is popped up.



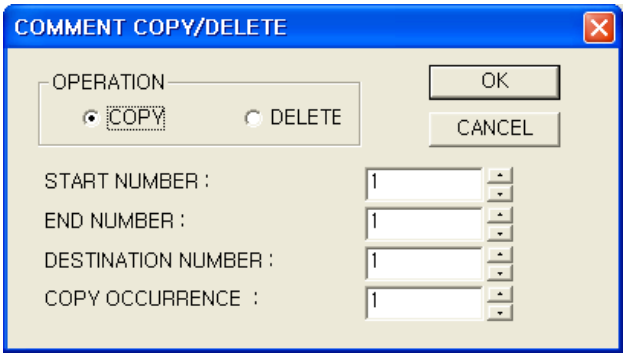

| Edit screen title | Edit each screen of title and detail description |
|---|---|
| Title | • Edit the screen title.<br>• It is available to input max.32 letters and omit.<br>• The information downloaded to GP memory |
| Detail description | • Edit detail description for the screen.<br>• It is available to input max.512 letters and omit.<br>• It is not downloaded to the main device. |
| Number | • It is the screen number. |

# 13.2 COMMENT

It is commonly used to display alarm or comment in alarm history, alarm list and comment display.
It is able to write max.2000, they are downloaded to GP but it is required to write with care for memory capacity, the comment is in system menu of GP.
The comment color of alarm history, alarm list, comment display is displayed as written in comment list, not configured in each tag.
The comment list is saved as text file, it is also able to register the file written as text in comment list.
Selecting [Common]-[Comment] in main menu, comment list window is popped up and it is able to operate all about comment list.




| Comment list | Comment edit |
|---|---|
| ①Number | • Display comment number. |
| ②Comment | • Display comment contents. |
| ③,④Text color | • Display letter color for display comment. |
| ⑤Comment | • Edit selected comment content. |
| ⑥Comment number | • Comment number to jump |
| ⑦Jump | • Pressing this button, it scrolls list to put comment of designated number ⑥ into the front of the list |
| ⑧Comment | • Input comment contents to search. |
| ⑨Forward search | • Pressing this button, it searches same comment with inputted comment in ⑧, in the direction of higher number than current selected number. If there is a same comment, it scrolls list to put it in the front of the list. |
| ⑩Backward search | • It is same with ⑨ except it searches in the direction of lower number. |
| ⓐOK | • It saves current configuration and close the window. |
| ⓑCancel | • It does not save current configuration and close the window. |
| ⓒCut | • Cut selected item. |
| ⓓCopy | • Copy selected item. |
| ⓔPaste | • Overwrite copied/cut comment on selected item. |

| | |
|---|---|
| ⓕCopy/Delete | • Copy or delete several items of list at a time.<br>• Pressing this button, copy/delete window is called.<br>  <br><br>▪ Operation : Copy=Copy, Delete=Delete<br>▪ Start number: First number of the object to copy/delete<br>▪ End number: Last number of the object to copy/delete<br>▪ Destination number: Destination number to copy<br>▪ Copy frequency: The numbers of copy frequency<br>▪ Execute :<br>* In case of copy : Start contents of start number~end number from destination number, copy successively as the number of copy.<br>* In case of delete : Delete contents of start number~end number. |
| ⓖImport from file | ▪ Register comment list of text file or XML file as comment list. |
| ⓗSave as file | ▪ Save comment list as text file or XML file. |
| ⓘInput | ▪ Register contents inputted comment in ⑤ at comment list. |

●Text file format when comment is saved.

//Comment number
“Comment content”,
Color,0,0,0,0

| Ex |
|---|
| **//1**<br>**“Comment 1”,**<br>**255,0,0,0,0**<br>**//2**<br>**“Comment 2”,**<br>**255,0,0,0,0** |

# 13.3 CHANGE PLC TYPE

Select the device connecting to GP first. Selecting [Common]-[GP/PLC type], GP/PLC type window is displayed, it is able to change PLC type and device using in a project as automatic or manual in this box.

## 13.3.1 PLC connection

▪Refer to “Communication manual” because connection method is different in accordance with PLC type.

▪It is able to connect all equipments including PLC to both RS232C/RS422.

Designate PLC type correctly to operate downloaded screen data in GP.

PLC connection window is displayed to designate PLC type for designing new project.

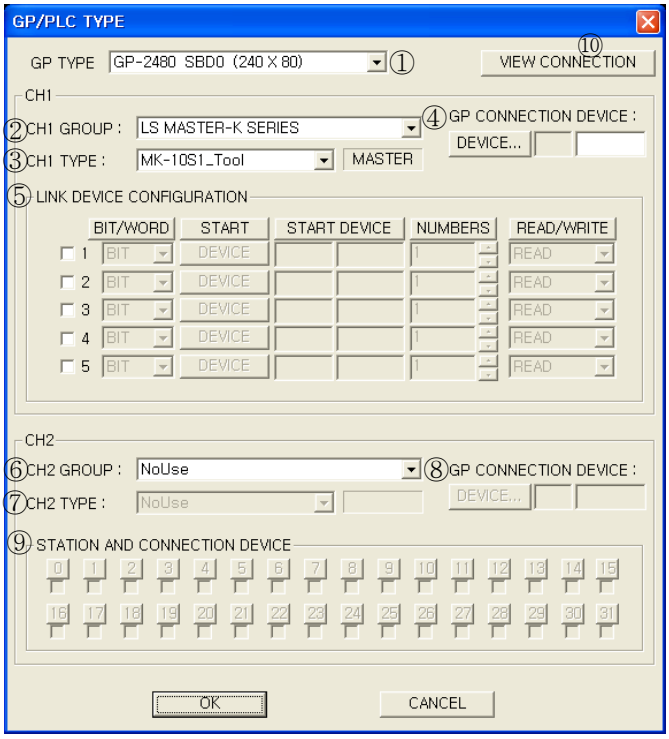
PLC connection window is not displayed when select of project group box in [Project]-[Option] menu is selected, [Select program when program is started] is not checked and it makes project same with previous configuration.

In order to change project type created with this option, select [Common]-[GP/PLC type] menu.

It is able to executes device using in project as automatic or manual.

## 13.3.2 Configuration of connection PLC with GP/PLC type window

In order to transmit written data in GP editor to PLC, configure group, type, communication type of connected PLC.




| GP/PLC type | Configuration of PLC type connected to GP |
|---|---|
| ①GP type | • Designate current using GP model type. |
| ②CH1 group | • Designate current connected PLC group of CH1 |
| ③CH1 type | • Configure PLC type for connected CH1 group. |
| ④GP connection device | • Configure the lead word address of GP to communicate with CH1.<br>• If data link is required between GP and CH1, it is only available when ⑤ is configured. |
| ⑤Configuration of link device | • If data interlock is required between GP and CH1, configure CH1 address to communicate with GP.<br>• Checking a box, the line is activated, configure start device, bit/word, numbers, read/write of CH1 to communicate with GP. |
| ⑥CH2 group | • Designate current connected PLC group of CH2. |
| ⑦CH2 type | • Configure PLC type for selected CH2 group. |
| ⑧GP connection device | • Configure the lead word address of GP to communicate with CH2. |
| ⑨Station and connection device | • Configure station and the lead address of PLC2 to communicate with GP.<br>• Check the station to use, a proper button is activated and start device of CH1 to communicate with GP, bit/word, numbers, read/write are configured displaying same type of window with ⑤when selecting a button. |
| ⑩Connection diagram | • Display configuration of device link as a table between configured GP-CH1 and GP-CH2. |

## 13.3.3 Data link of CH1

GP monitors CH1 device generally, it is also used to link CH1 device to GP device.

In this chapter, D(i) is GP i-th device, Dk(i) is i-th CH1 with check number is k in a list.

- CH1 GP connection device : D(i)
- Configuration of link device
  - 1:Check, Start device:D1(i), Bit/Word:Word, Numbers:A, Read/Write:Write
  - 2:Check, Start device:D2(i), Bit/Word:Word, Numbers:B, Read/Write:Read
  - 3:Check, Start device:D3(i), Bit/Word:Word, Numbers:C, Read/Write:Read
  - 4:Check, Start device:D4(i), Bit/Word:Word, Numbers:D, Read/Write:Read
  - 5:Check, Start device:D5(i), Bit/Word:Word, Numbers:E, Read/Write:Write

| GP device (Word) | Data movement | CH1 | |
|---|---|---|---|
| | | Checked number | Device |
| First A units of device from D(i) | -----> | 1 | D1(i) ~ D1(i+A-1) |
| B units of device from the next | <----- | 2 | D2(i) ~ D2(i+B-1) |
| C units of device from the next | <----- | 3 | D3(i) ~ D3(i+C-1) |
| D units of device from the next | <----- | 4 | D4(i) ~ D4(i+D-1) |
| E units of device from the next | -----> | 5 | D5(i) ~ D5(i+E-1) |

- CH1 GP connection device:D(i)
- Configuration of link device
  - 1:Check, Start device:D1(i), Bit/Word:Word, Numbers:A, Read/Write:Write
  - 2:Check, Start device:D2(i), Bit/Word:**Bit**, Numbers:B, Read/Write:Read
  - 3:Check, Start device:D3(i), Bit/Word:Word, Numbers:C, Read/Write:Read
  - 4:Check, Start device:D4(i), Bit/Word:**Bit**, Numbers:D, Read/Write:Read
  - 5:Check, Start device:D5(i), Bit/Word:Word, Numbers:E, Read/Write:Write

| GP device (Word) | Data movement | CH1 | |
|---|---|---|---|
| | | Checked number | Device |
| First A units of device from D(i) | -----> | 1 | D1(i) ~ D1(i+A-1) |
| **[(B+16-1)/16] units of device from the next** | **<-----** | **2** | **D2(i) ~ D2(i+[(B+16-1)/16]-1)** |
| C units of device from the next | <----- | 3 | D3(i) ~ D3(i+C-1) |
| **[(D+16-1)/16] units of device from the next** | **<-----** | **4** | **D4(i) ~ D4(i+[(D+16-1)/16]-1)** |
| E units of device from the next | -----> | 5 | D5(i) ~ D5(i+E-1) |

In case, configured CH1 link device as bit, it is linked as below because GP device is word.

- CH1 bit device 1~16 units <------> GP word device a unit
- CH1 bit device 17~32 units <------> GP word device 2 units

Ex 1)

- CH1 GP connection device:D(0)
- Configuration of link device

1:Check, Start device:K(0), Bit/Word:Word, Numbers:5, Read/Write:Write

2:Check, Start device:M(0), Bit/Word:Word, Numbers:3, Read/Write:Write

3:Check, Start device:D(0), Bit/Word:Word, Numbers:4, Read/Write:Read

4:Check, Start device:D(10), Bit/Word:Word, Number:6, Read/Write:Write

| GP | | Data movement | CH1 | | |
|---|---|---|---|---|---|
| Device (Word) | Number | | Checked number | Device | Numbers |
| D(0) ~ D(4) | 5 | -----> | 1 | K(0) ~ K(4) | Word 5 |
| D(5) ~ D(7) | 3 | -----> | 2 | M(0) ~ M(2) | Word 3 |
| D(8) ~ D(11) | 4 | <----- | 3 | D(0) ~ D(3) | Word 4 |
| D(12) ~ D(17) | 6 | -----> | 4 | D(10) ~ D(15) | Word 6 |

Ex 2)

- CH1 GP connection device:D(0)
- Configuration of link device

1:Check, Start device:K(0), Bit/Word:Word, Numbers:5, Read/Write:Write

2:Check, Start device:M(0), Bit/Word:Word, Numbers:3, Read/Write:Write

3:Check, Start device:P(10), Bit/Word:Bit, Numbers:20, Read/Write:Read

4:Check, Start device:D(10), Bit/Word:Word, Numbers:6, Read/Write:Write

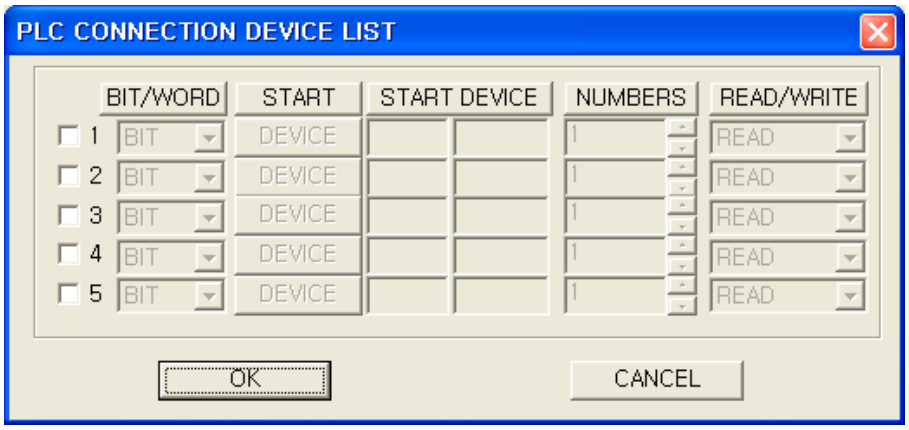
| GP | | Data movement | CH1 | | |
|---|---|---|---|---|---|
| Device (Word) | Numebrs | | Checked number | Device | Numbers |
| D(0) ~ D(4) | 5 | -----> | 1 | K(0) ~ K(4) | Word 5 |
| D(5) ~ D(7) | 3 | -----> | 2 | M(0) ~ M(2) | Word 3 |
| **D(8)** | **1** | **<-----** | **3** | **P(10) ~ P(13)** | **Bit 4** |
| D(9) ~ D(14) | 6 | -----> | 4 | D(10) ~ D(15) | Word 6 |

※Notice

When numbers are configured as bigger than available numbers, the maximum range of number is used.

## 13.3.4 Data link of CH2

GP monitors CH1 device generally, it is available to monitor indirectly, linking CH2 device with GP device.




Check CH2 station to be connected, same type of dialogue with CH1 check box is displayed.
It configures same with CH data link.
It is able to connect to several equipments and configure several stations.

In this chapter, D(i) is GP i-th device, N-Dk(i) is CH2 i-th device with station is N and checked number is k of list.

- CH2 GP connection device:D(i)
- Configuration of station and connection device
  <Station N>
  - 1:Check, Start device:N_D1(i), Bit/Word:Word, Numbers:$A_N$
  - 2:Check, Start device:N-D2(i), Bit/Word:Word, Numbers:$B_N$
  - 3:Check, Start device:N-D3(i), Bit/Word:Word, Numbers:$C_N$
  - 4:Check, Start device:N-D4(i), Bit/Word:Word, Numbers:$D_N$
  - 5:Check, Start device:N-D5(i), Bit/Word:Word, Numbers:$E_N$

| GP device (Word) | Data movement | CH2 | | |
|---|---|---|---|---|
| | | Station | Checked number | Device |
| First $A_0$ units of device from D(i) | Read/Write | 0 | 1 | 0_D1(i) ~ 0_D1(i+$A_0$-1) |
| $B_0$ units of device from the next | Read/Write | | 2 | 0_D2(i) ~ 0_D2(i+$B_0$-1) |
| $C_0$ units of device from the next | Read/Write | | 3 | 0_D3(i) ~ 0_D3(i+$C_0$-1) |
| $D_0$ units of device from the next | Read/Write | | 4 | 0_D4(i) ~ 0_D4(i+$D_0$-1) |
| $E_0$ units of device from the next | Read/Write | | 5 | 0_D5(i) ~ 0_D5(i+$E_0$-1) |
| $A_1$ units of device from the next | Read/Write | 1 | 1 | 1_D1(i) ~ 1_D1(i+$A_1$-1) |
| $B_1$ units of device from the next | Read/Write | | 2 | 1_D2(i) ~ 1_D2(i+$B_1$-1) |

| | | | | |
|---|---|---|---|---|
| $C_1$ units of device from the next | Read/Write | | 3 | 1_D3(i) ~ 1_D3(i+$C_1$-1) |
| $D_1$ units of device from the next | Read/Write | | 4 | 1_D4(i) ~ 1_D4(i+$D_1$-1) |
| $E_1$ units of device from the next | Read/Write | | 5 | 1_D5(i) ~ 1_D5(i+$E_1$-1) |
| | … | … | … | … |
| $A_{31}$ units of device from the next | Read/Write | 31 | 1 | 31_D1(i) ~ 31_D1(i+$A_{31}$-1) |
| $B_{31}$ units of device from the next | Read/Write | | 2 | 31_D2(i) ~ 31_D2(i+$B_{31}$-1) |
| $C_{31}$ units of device from the next | Read/Write | | 3 | 31_D3(i) ~ 31_D3(i+$C_{31}$-1) |
| $D_{31}$ units of device from the next | Read/Write | | 4 | 31_D4(i) ~ 31_D4(i+$D_{31}$-1) |
| $E_{31}$ units of device from the next | Read/Write | | 5 | 31_D5(i) ~ 31_D5(i+$E_{31}$-1) |

※ “Bit/Word” configuration is bit, it is communicated with GP as same link structure in case, CH1 link device is bit. Refer to P.145 for more details.

Example)
- CH2 GP connection device:D(0)
- Configuration of station and connection device
  <Station 1>
  1:Check, Start device:K(0), Bit/Word:Word, Numbers:5, Read/Write:Write
  2:Check, Start device:M(0), Bit/Word:Bit, Numbers:3, Read/Write:Write
  3:Check, Start device:D(0), Bit/Word:Word, Numbers:4, Read/Write:Read
  4:Check, Start device:D(10), Bit/Word:Word, Numbers:6, Read/Write:Write
  <Station 3>
  2:Check, Start device:K(10), Bit/Word:Bit, Numbers:2, Read/Write:Read
  4:Check, Start device:M(16), Bit/Word:Word, Numbers:5, Read/Write:Write
  <Station 11>
  3:Check, Start device:D(20), Bit/Word:Word, Numbers:7, Read/Write:Read
  4:Check, Start device:D(30), Bit/Word:Word, Numbers:2, Read/Write:Write
  5:Check, Start device:M(32), Bit/Word:Bit, Numbers:4, Read/Write:Write

| GP | | Data movement | CH2 | | | |
|---|---|---|---|---|---|---|
| Device | Numbers | | Station | Checked number | Device | Number |
| D(0) ~ D(4) | 5 | -----> | 1 | 1 | K(0) ~ K(4) | Word 5 |
| D(5) | 1 | -----> | | 2 | M(0) ~ M(3) | Bit 3 |
| D(6) ~ D(9) | 4 | <----- | | 3 | D(0) ~ D(3) | Word 4 |
| D(10) ~ D(15) | 6 | -----> | | 4 | D(10) ~ D(15) | Word 6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| D(16) | 1 | <----- | 3 | 2 | K(10) ~ K(11) | Bit 2 |
| D(17) ~ D(21) | 5 | -----> | | 4 | M(16) ~ M(20) | Word 5 |
| D(22) ~ D(28) | 7 | <----- | 11 | 3 | D(20) ~ D(26) | Word 7 |
| D(29) ~ D(31) | 2 | -----> | | 4 | D(30) ~ D(31) | Word 2 |
| D(32) | 1 | -----> | | 5 | M(32) ~ M(35) | Bit 4 |

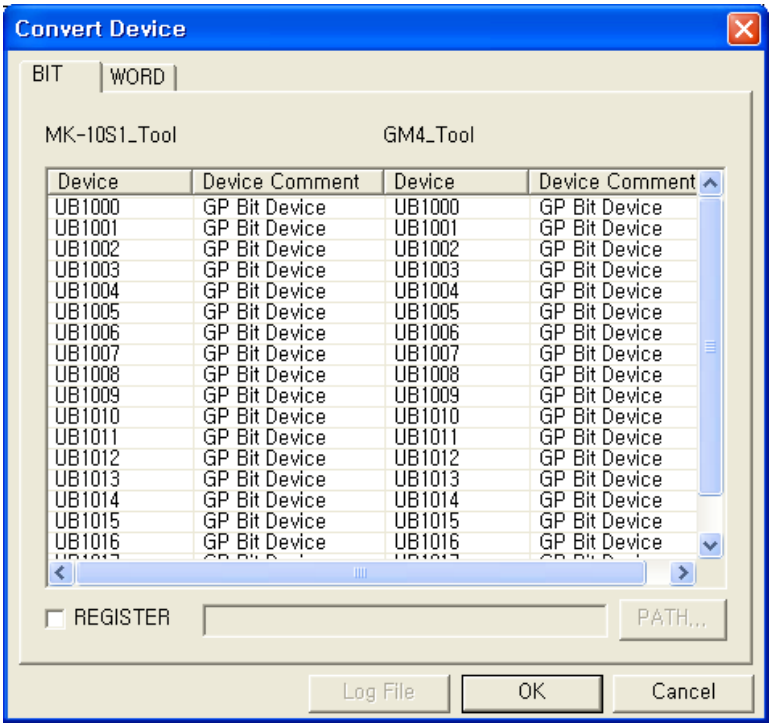
## ※Notice

When numbers are configured as bigger than available numbers, the maximum range of number is used.

## 13.3.5 Switch device for changing PLC type

Change PLC type and press OK button, switch device window is popped up. It shows device list changed automatically using device project to device using in new device as a classified bit/word device.

It is able to user change the device not switched manually.




| Switch device | **Device switch when changing PLC type** |
|---|---|
| ① | • It displays before-changed PLC type. |
| ② | • It displays after-change PLC type. |
| ③Device | • It shows using device in a current project. |
| ④Comment | • It indicates device features in same line of ③. |
| ⑤Device | • It shows device of same line of ③ and corresponding in new PLC type.<br>• It displays as ??, if there is no correspondent one.<br>• It is able to user designate inputting corresponding device. |
| ⑥Comment | • It indicates device features in same line of ⑤. |
| ⑦Record | • It designates save the changed contents in window as a file or not.<br>• It is able to designate path of file to be saved because ⑧, ⑨ are activated when they checked. |
| ⑧ | • It designates path of log file to be saved. |
| ⑨Path | • It designates path of log file to be saved. |
| ⑩Log file | • Pressing button, it saves displaying contents of current list as a log file(text). |
| ⑪OK | • Device is switched, PLC type is changed and close window. |
| ⑫Exit | • Close window without changing PLC type. |

□ Example of log file

| Before change | -> | After change |
|---|---|---|
| **- Change of Bit device -** | | |
| **M0(Inner aux.relay#1)** | **->** | **R0(Keep relay for power failure#1)** |
| **M1(Inner aux.relay#1)** | **->** | **R1(Keep relay for power failure #1)** |
| **M2(Inner aux.relay#1)** | **->** | **R2(Keep relay for power failure #1)** |
| **M3(Inner aux.relay#1)** | **->** | **R3(Keep relay for power failure #1)** |
| **- Change of Word device -** | | |
| **T0(Timer current value[100ms])** | **->** | **EV0(Timer current value[10ms])** |
| **T1(Timer current value[100ms])** | **->** | **EV1(Timer current value[10ms])** |
| **T2(Timer current value[100ms])** | **->** | **EV2(Timer current value[10ms])** |
| **C0(Counter current value[16b]#1)** | **->** | **EV200(Counter current value[1000ms]#1)** |
| **C5(Counter current value[16b]#1)** | **->** | **EV205(Counter current value[1000ms]#1)** |
| **D0(Data register#1)** | **->** | **DT0(Data register)** |
| **D100(Data register#1)** | **->** | **DT100(Data register)** |

# 14.FIGURE

There are 5 figures, straight line, rectangle, circle, text and bitmap using in GP.
It is displayed on a screen as it is regardless of controller (PLC) connected with GP.

Figures are displayed under the others, registered as individually, a group or a part and used in part display, lamp and touch key.

## 14.1 LINE

Draw a straight line thick as a dot on a screen.
It is able to designate a line as white/black, solid/dotted/wave/a dashdot/two dashdot style.

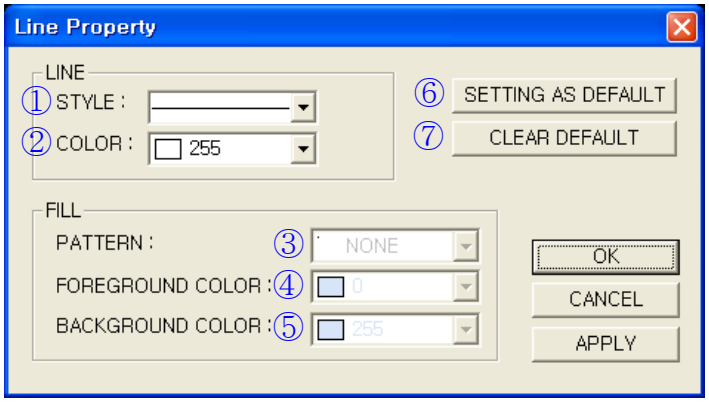
### 14.1.1 Edit procedure in editor

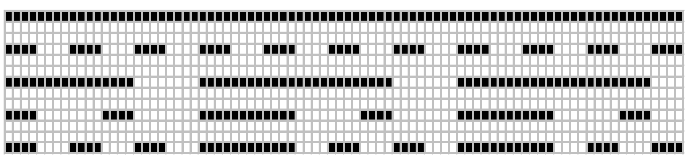
(1)Select Draw-Line in menu or  in tool bar, drawing cursor is appeared.

(2)A straight line is created connecting start and end point of drag when dragging with a mouse.

(3)To change color and style of line, click double a line and designate color and style in window of line property.

### 14.1.2 Detail configuration




| ITEM | DESCRIPTION |
|---|---|
| ①Style | •Designate style of line and choose one among as following.<br>Solid<br>Dotted<br>Wave<br>A dashdot<br>Two dashdot<br>  |
| ②Color | • Designate color(White/Black) of line. |
| ③~⑤ | • Not-used. |
| ⑥Set as default | • Draw next straight line with currently designated color and style. |
| ⑦Clear default | • Draw next straight line with white solid line. |

# 14.2 RECTANGLE

Draw a rectangle with thick as a dot on a screen.
It is able to designate color, style of outline and fill the inside with any pattern.

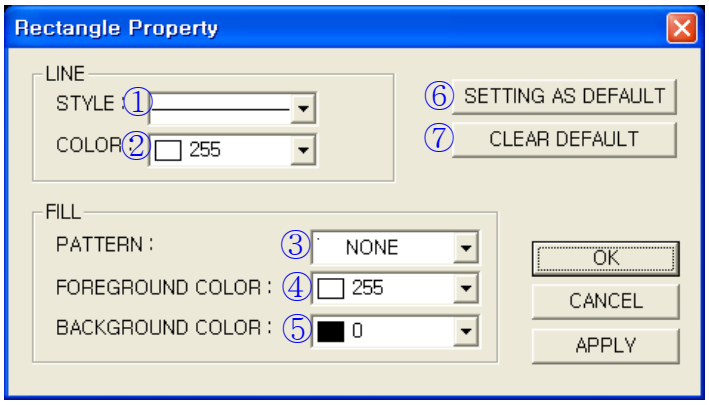
## 14.2.1 Edit procedure in editor

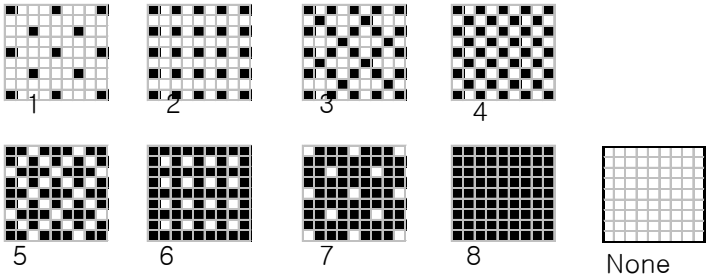
(1) Select Draw-Rectangle in menu or  in toolbar, drawing cursor is appeared.

(2) A rectangle is created having start and end point of drag as opposite angle point when dragging with a mouse.

(3) Click double a rectangle and it is able to change color, style of outline and designate pattern fill the inside in window of rectangle property.

## 14.2.2 Detail configuration




| ITEM | DESCRIPTION |
|---|---|
| ①Style | • It is same with straight line to designate outline style. |
| ②Color | • Designate outline color(White/Black). |
| ③Pattern | • Select a pattern to fill the inside of rectangle.<br>  |
| ④Foreground color | • Designate foreground color of pattern (Black part among the above) as white or black. . |
| ⑤Background color | • Designate background color of pattern (White part among the above) as white or black. |
| ⑥Set as default | • Draw next rectangle with current configuration. |
| ⑦Clear default | • Draw next rectangle with following configuration.<br>Outline : White solid, Pattern : None, Foreground color : White, Background : Black |

# 14.3 CIRCLE

Draw a circle with thick outline as a dot on a screen.
It is able to designate color, style of outline and fill the inside with any pattern.

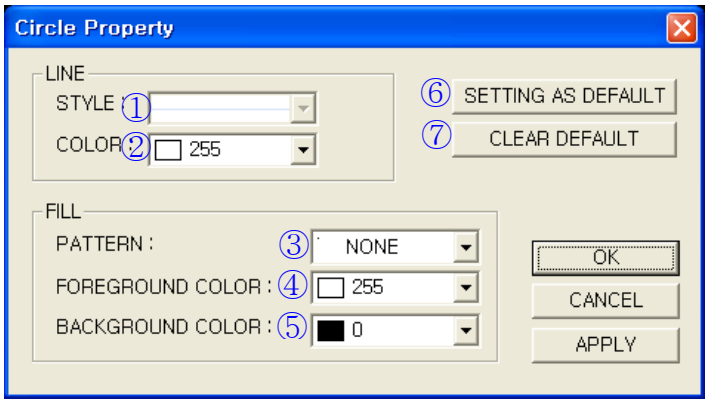
## 14.3.1 Edit procedure in editor

(1) Select Draw-Circle in menu or  in toolbar, drawing cursor is appeared.

(2) A circle or an oval is created can be held by a rectangle having start and end point of drag as opposite angle point when dragging with a mouse.

(3) Click double a rectangle and it is able to change color, style of outline and designate pattern fill the inside in window of rectangle property.

## 14.3.2 Detail configuration




| ITEM | DESCRIPTION |
|---|---|
| ①Style | • It is not able to use. |
| ②Color | • Designate outline color of circle(White/Black). |
| ③Pattern | • Designate pattern fill the inside of a circle.(Same with rectangle) |
| ④Foreground color | • Designate foreground color of pattern as white or black. |
| ⑤Background color | • Designate background color of pattern as white or black. |
| ⑥Set as default | • Draw next circle with current configuration. |
| ⑦Clear default | • Draw next circle with following configuration.<br>Pattern : None, Foreground : White, Background : Black |

# 14.4 TEXT

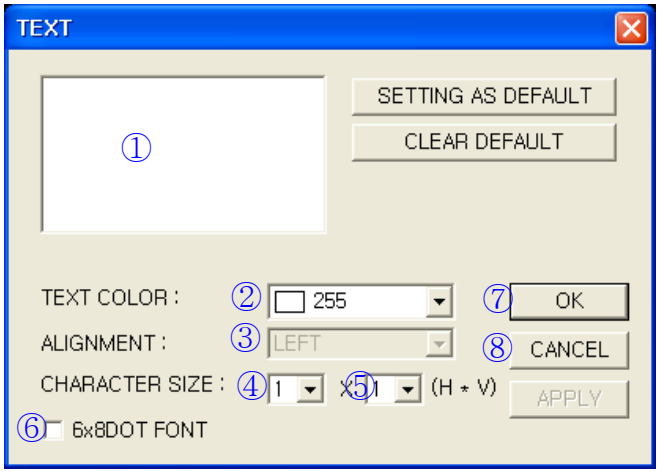
Arrange user-defined text on a screen.

## 14.4.1 Edit procedure in editor

(1)Select Draw-text in main menu or press  button of tool bar, text property window is popped up.

(2)Input text to display in property window, designate size, color of letter and press OK button, it is arranged on a screen.

## 14.4.2 Detail configuration




| ITEM | DESCRIPTION |
|---|---|
| ①Text editor | • Edit text to display<br>When width or length size is out of the screen during text input, a message, “Out of panel size” with red is appeared on a lower part of editor box. It is also same when changing configuration of letter size.<br>It is disappeared when adjusting size or numbers of letter not to exceed. |
| ②Text color | • Designate color of text to display. White/Black |
| ③Alignment | • Designate alignment when inputting more than two lines, Left/Right/Center<br>• It is only activated when inputting more than two lines.<br>• Left : Display a letter from the left of tag area<br>• Right : Display a letter from the right of tag area<br>• Center : Display a letter in a center of tag area |
| ④Width size | • Designate width size of letter.<br>• Default=1, Range=1, 2, 3, 4, 5, 6, 7, 8<br>• It is only 1 is available when length size is 0.5 and not available as 2, 3, 4. |
| ⑤Length size | • Designate width size of letter.<br>• Default=1, Range=0.5,1,2,3,4,5<br>• It is not available to designate as 0.5 when width size is 2, 3, 4. |

| | |
|---|---|
| ⑥6x8 dot font | • Designate to use 6x8 dot letter or not.<br>• 6x8 dot font is only available in ASCII character.<br>• In case, there is no 6x8 dot font, it is displayed as a rectangle filled with letter color. |
| ⑦Set as default | • Draw next text with current configuration when pressing this button. |
| ⑧Clear default | • Draw next text with current configuration when pressing this button.<br>Text color : White, Size : 1x1, Alignment : Left |

※Text font size

*6×8, 8×8 dot ASCII characters

*ASCII character and regional character with enlarged 8×16 size of dot font

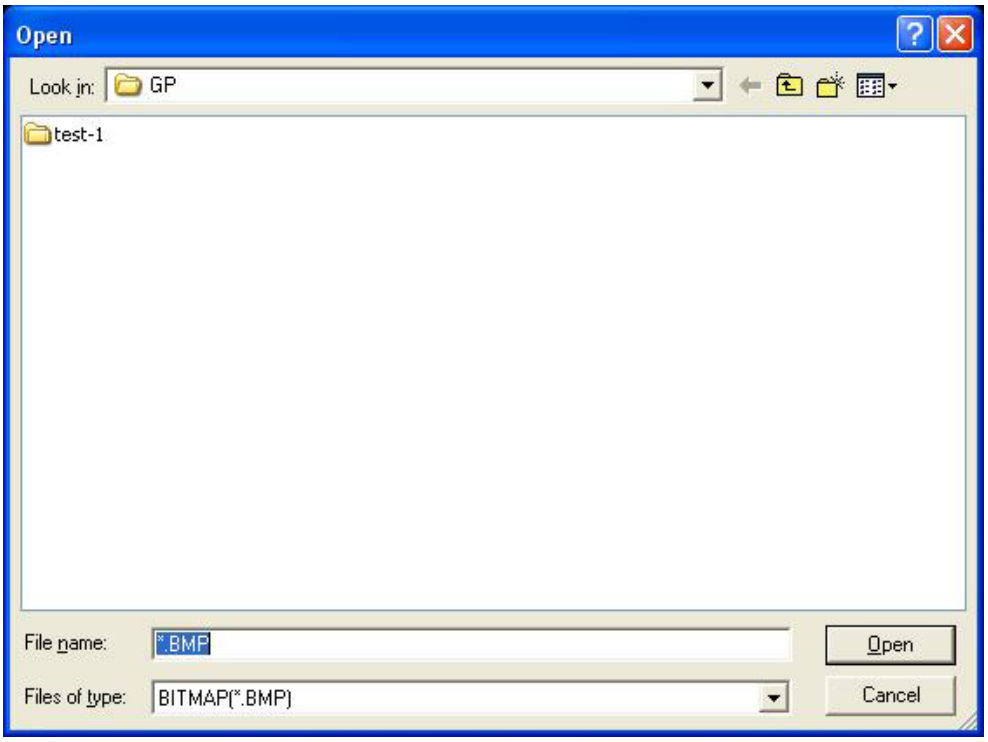
| | | | | | | |
|---|---|---|---|---|---|---|
| 8×8 | 8X16 | 8X32 | 8X48 | 8X64 | 8X72 | 8X80 |
| 16×8 | 16X16 | 16X32 | 16X48 | 16X64 | 16X72 | 16X80 |
| --- | 24X16 | 24X32 | 24X48 | 24X64 | 24X72 | 24X80 |
| --- | 32X16 | 32X32 | 32X48 | 32X64 | 32X72 | 32X80 |
| --- | 40X16 | 40X32 | 40X48 | 40X64 | 40X72 | 40X80 |
| --- | 48X16 | 48X32 | 48X48 | 48X64 | 48X72 | 48X80 |
| --- | 56X16 | 56X32 | 56X48 | 56X64 | 56X72 | 56X80 |
| --- | 64X16 | 64X32 | 64X48 | 64X64 | 64X72 | 64X80 |

# 14.5 BITMAP IMAGE

Draw bitmap image on a screen and it switches and draw with a single color when it is not a single bitmap.

## Edit procedure in editor

(1) Select Draw-Bitmap in menu or  in tool bar, file open window is popped up.




(2) Select proper bitmap image file in this window, press OPEN.

(3) The loaded image is appeared on a mouse cursor and put on a proper position.

# 15.NUMERAL DISPLAY

It indicates the value in specified device as designated type of numeral.

## 15.1 PROCEDURE OF BASIC CONFIGURATION

(1) Select [Draw]-[Numeral display] in main menu or click  in tool bar, numeral display property window is popped up.

(2) Configure a device.

(3) Designate data type(With sign/Without sign 16/32bit)of device.

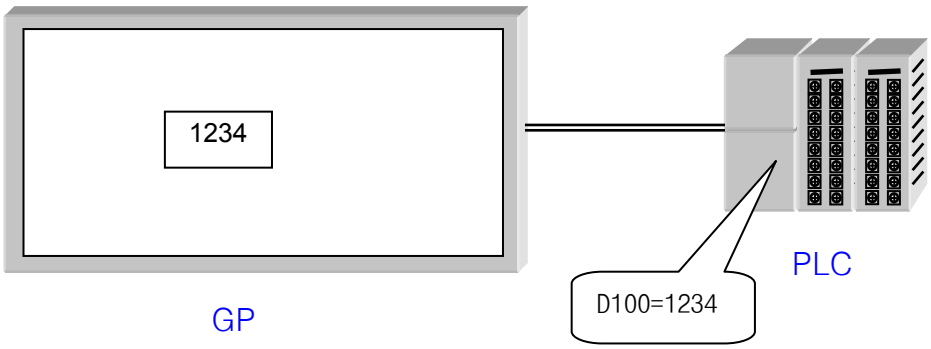
(4) Designate digits to be displayed and type in form tap.

(5) Designate operation in operation tap.

(6) Pressing OK button, numeral display is completed.

## 15.2 BASIC OPERATION

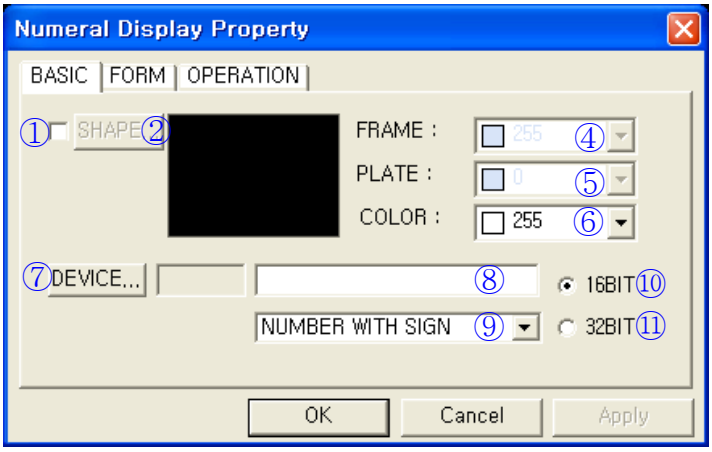
It indicates user-defined of PLC device value as designated type of numeral.




Above figure is an example when it is configured to display as decimal and device is D100, the saved value is 1234.

# 15.3 DETAIL CONFIGURATION

## 15.3.1 Basic tap

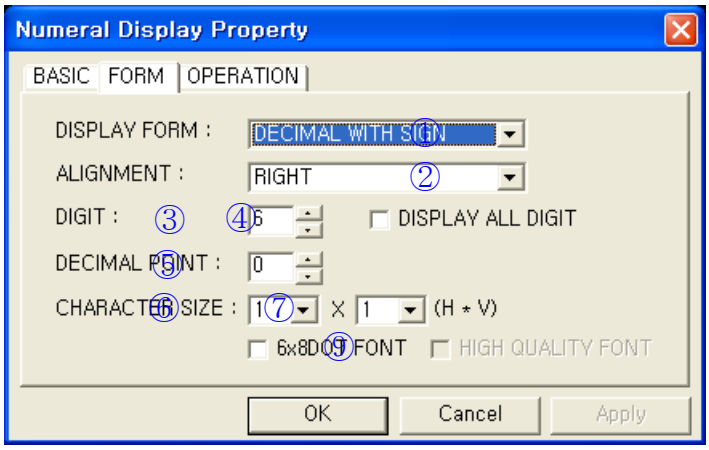



| BASIC TAP | DESIGNATE SHAPE OF PLC DEVICE AND TAG |
|---|---|
| ①Shape | • Designate to use shape menu or not.<br>• It is able to select tag shape provided by program.<br>• Designate no.1 of memorized shapes as a default. |
| ②Shape | • It is activated when ① is checked.<br>• Pressing this button, **image selection window** is displayed and select a shape. |
| ③Shape | • Display current selected image. |
| ④Frame | • Designate frame color. |
| ⑤Plate | • Designate plate color. |
| ⑥Numeral | • Designate color of letter to be displayed. |
| ⑦Device | • Designate device to be monitored displaying **device window**. |
| ⑧Device | • Input by user directly or display designated device ⑦. |
| ⑨Data type | • Designate data type.<br>• Number with sign : It is regarded as a positive number with sign.<br>• Number without sign : It is regarded as a positive number without sign. |
| ⑩16 bit | • Select when monitor device is 16 bit word device. |
| ⑪32 bit | • Select when monitor device is 32 bit word device. |
| Shape | • It is only designated color of frame and plate when using shape.<br>• Setting default: Frame=White, Background=Black, Letter=White<br>• If it is not selected, tag will be become transparent, the object behind is seen but it is selected, tag will be opaque because the inside is filled with plate color. |

### ※Notice

In accordance with connection device, it is only available to use with 32 bit. Refer to “Communication manual”.

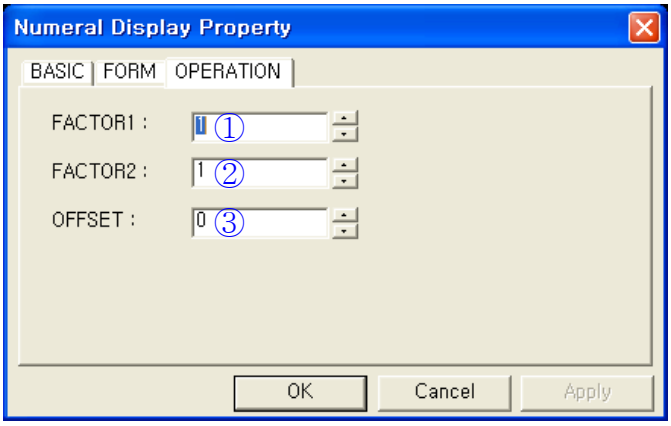
## 15.3.2 Form tap




| FORM TAP | DESIGNATE NUMERAL DISPLAY TYPE AND LETTER SIZE |
|---|---|
| ①Display type | Designate numeral display type<br>• Decimal with sign : Display with decimal interpreting as a positive number with sign.<br>• Decimal without sign : Display with decimal interpreting as a positive number without sign.<br>• Hexadecimal : It displays as hexadecimal number.<br>• Octal : It displays as octal number.<br>• Binary : It displays as binary number.<br>• Real number : Display with real number interpreting as IEEE floating-point number. Refer to the next chapter for details. |
| ②Alignment | • Designate alignment type (Right, Center, Left)<br>• It is aligned when displaying letter is smaller than designated digits at ③.<br>• Right = Display character from the right of tag area.<br>• Left = Display character from the left of tag area.<br>• Center= Display a letter in a center of tag area. |
| ③Digits | • Designate the numbers of number to be displayed.(Include - . E.)<br>• When the number is not displayed as designated type, it is displayed as HHHH..., LLLL... |
| ④Display all digits | • Fill the blank with 0 when displaying number of digit is smaller than the digit(③).<br>• It is only available when alignment (②) is right. |
| ⑤Decimal point | • It is not available when display type is hexadecimal, octal and binary.<br>• When display type is a decimal with sign/without sign, put a decimal point in front of the number designated at ⑤ counting from the back.<br>• Refer to the next chapter for real number. |
| ⑥Width size | • Designate width size of letter.<br>• Default=1, Range=1,2,4,6,8 (1 is only available when length size is 0.5.) |
| ⑦Length size | • Designate length size of letter.<br>• Range = 0.5, 1, 2, 3, 4 |
| ⑧6x8 dot font | • It is displayed with 6x8 dot font when it checked. |

| | |
|---|---|
| ⑨High-definition font | • High quality of vivid font is used.<br>• It is activated when the width size (⑥) of letter is bigger than 4, the length size (⑦) is bigger than 2. |

## 15.3.3 Operation tap




| Operation tap | Display the result value applying for arithmetical operation to saved value |
|---|---|
| ①Gain 1 | • Multiply device value by designated value. |
| ②Gain 2 | • Divide device value by designated value. |
| ③Offset | • Add device value to designated value. |
| Operation | • When it is displayed with real number, the operation is not applied.<br>• Operation is progressed in order of multiplication, division and addition.<br>Device value=V<br>Display value = (Gain 1*V)/ Gain 2 + Offset<br>• The range is differentiated in accordance with device type designated in basic tap and display type. |

# 15.4 DISPLAY TYPE AND OPERATION

## 15.4.1 Numeral display range for data type (Operation is not applied.)

| Data type | Minimum value | Maximum value |
|---|---|---|
| Decimal with sign 16bit | -32,768 | 32,767 |
| Decimal without sign 16bit | 0 | 65,535 |
| Decimal with sign 32bit | -2,147,483,648 | 2,147,483,647 |
| Decimal without sign 32bit | 0 | 4,294,967,295 |

## 15.4.2 Numeral display procedure

It is executed in order as below, if display form is not a real number.

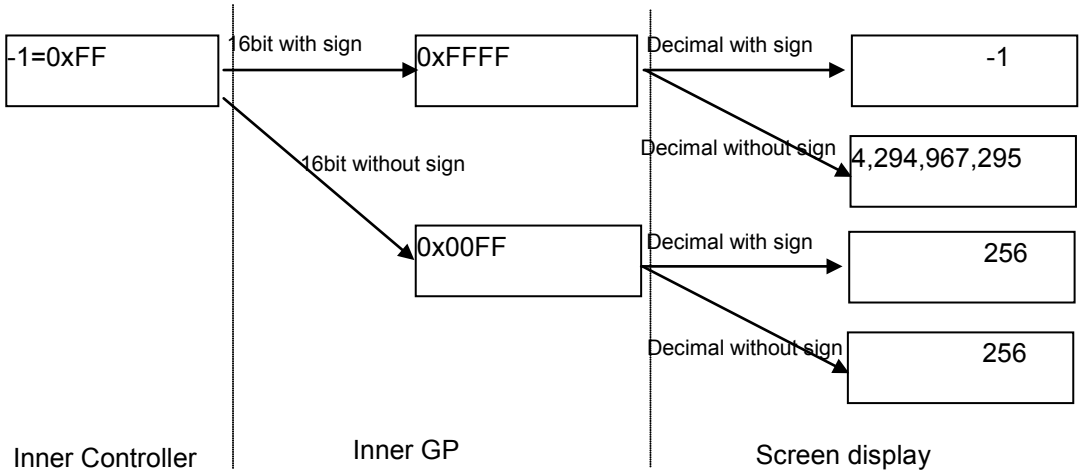
1. It saves the value read from serial communication and interpreted as designate data type in 32 bit memory. It is saved in 32 bit inner memory even if device designated in a basic tap is 16 bit.
2. It executes the operation with designated factor1, factor2 and offset in operation tap.
3. It is displayed with designated type.

### ※Notice

(1) In level 1, if controller(PLC) device is 32bit with sign/without sign, the value saved in device is copied to 32bit GP memory.
If controller(PLC) device is 16bit with sign/without sign and positive number, the value saved in device is copied to lower word of 32bit GP memory.
If it is a 16bit of negative number with sign, it requires to notice, for example, it is assumed saved value in 16bit memory of controller is interpreted as a positive number, it is same with negative number -1, the value saved in a controller is $2^{16}$-1=65535, complement of 2 for -1. When it is saved 32bit GP memory, complement of 2 for -1, $2^{32}$-1=4,294,967,295 is saved for 32bit.

(2) The value can be different in accordance with a decimal with sign or without sign for display type. The result value operated is regarded as 32bit positive number with sign if it is a decimal with sign and 32bit positive number without sign, if it is a decimal without sign.

The following diagram indicates saved value -1 in 16bit memory of controller is saved to 32bit GP memory in accordance with designation of 16bit with/without sign and display form is shown in GP screen in accordance with/without sign.




## 15.4.3 32bit floating-point type (IEEE standard 754)

| Upper 16bits | | | | | | | | | | | | | | | | Lower 16bits | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | E7 | E6 | E5 | E4 | E3 | E2 | E1 | E0 | A22 | A21 | A20 | A19 | A18 | A17 | A16 | A15 | A14 | A13 | A12 | A11 | A10 | A9 | A8 | A7 | A6 | A5 | A4 | A3 | A2 | A1 | A0 |
| B31 | B30 | B29 | B28 | B27 | B26 | B25 | B24 | B23 | B22 | B21 | B20 | B19 | B18 | B17 | B16 | B15 | B14 | B13 | B12 | B11 | B10 | B9 | B8 | B7 | B6 | B5 | B4 | B3 | B2 | B1 | B0 |
| sign bit | Exponet | | | | | | | | Mantissa | | | | | | | | | | | | | | | | | | | | | | |

- Sign bit: B31; Negative number for '1', 0 or positive number for '0'.
- 8bit exponent: B23~B30 or E0~E7
- 23bit mantissa : B0~B22 or A0~A22
- Number to be displayed

$$x = (-1)^{A_{31}} \times (2^0 + A_{22}2^{-1} + A_{21}2^{-2} + A_{20}2^{-3} + \cdots + A_0 2^{-23}) \times 2^{(E_7 2^7 + E_6 2^6 + E_5 2^5 + \cdots + E_0 2^0 - 127)}$$

•Display range:

Number with max.absolute value to display : $2^{127}(2-2^{-23}) \approx 3.402823466 \times 10^{+38}$

Number with min.absolute value to display: $2^{-126} \approx 1.175494351 \times 10^{-38}$

Range of number to display : $-3.402823466 \times 10^{+38} \sim +3.402823466 \times 10^{+38}$

- '0' or 255 of exponent part is reserved for an exceptional condition and the above formula is not applied to this case.

## 15.4.4 Real number display of GP

Refer to the following rules to display real number.

(1)If it is a positive number, do not add '+'sign.

(2)Do not add '+' sigh on exponent part.

(3)Round off the numbers to next of displaying the last decimal place.

Refer to the following example to display $x = \pm a_0.\, a_{-1}a_{-2}a_{-3}\cdots\times 10^{e}$ in accordance with configuration of exponent (e) and **digits**, **decimal digits** to be displayed.

**Case 1**. Absolute value to be displayed is bigger than 1 (e>=0)

Display with fixed point if it is able to display as fixed point type with digits or display with floating point.

♣ Example 1 : Real number=1234.567

(a) Digit=10, Decimal digit=2 ; Display number = 1234.56

(b) Digit=10, Decimal digit=6 ; Display number = 1234.56700

♣ Example 2 : Real number=12.34567 ; When designated digits can display positive number part, it is displayed as floating point without respect of accuracy.

(a) Digit=6, Decimal digit=4 ; Display number = 12.345

(b) Digit=4, Decimal digit=2 ; Display number = 12.3

♣ Example 3: When it is not able to display with designated digits, use floating point.

Real number= 1234567.0 =1.234567e+6

(a) Digit=6, Decimal digit=2 ; Display number = 1.23E6

(b) Digit=5, Decimal digit=2 ; Display number = 1.2E6

♣ Example 4: Real number=1234567.0=1.234567e+6

(a) Digit=6, Decimal digit=2 ; Display number = 1.23E6

(b) Digit=5, Decimal digit=2 ; Display number = 1.2E6

♣ Example 5: Real number=1.234567X10$^{+15}$

Digit=3, Decimal digit=1 ; Display number = E15 ; Abbreviate '+' sign.

♣ Example 6: Real number=-1.234567X10$^{+15}$

(a) Digit=4, Decimal digit=2 ; Display number = -E15 ; Add '-' sign.

♣ Example 7 : Real number=1.234567e+15 ; When it is not able to display sign or exponent, display 'H' so many as digits, in case of positive number.

Digit=2, Decimal digit=0 ; Display = **HH**

♣ Example 8 : Real number=-1.234567e+15 ; When it is not able to display sign or exponent, display 'L' so many as digits, in case of negative number.

Digit=3, Decimal digit=2 ; Display = **LLL**

**Case 2**: Absolute value to be displayed is smaller than 1 (e < 0)

When absolute value is bigger than 1/1000(e ≥ -2), display with fixed point.

$0.a_0a_{-1}\cdots a_{-d+3}$ $\quad$ $-0.a_0a_{-1}\cdots a_{-d+4}$

$0.0a_0a_{-1}\cdots a_{-d+4}$ $\quad$ $-0.0a_0a_{-1}\cdots a_{-d+5}$

♣ Example 9: Real number=0.1234567

(a) Digit=10, Decimal digit=8 ; Display number= 0.12345670

(b) Digit=10, Decimal digit=5 ; Display number= 0.12345

♣ Example 10: Real number=0.01234567

(a) Digit=10, Decimal digit=8 ; Display number= 0.01234567

(b) Digit=10, Decimal digit=5 ; Display number= 0.01234

• When absolute value is smaller than 1/1000(e<-2), display with floating point.

$a_0.a_{-1}\cdots a_{-d+4}E-e_1$ (Digit ≤ e + 1)

$a_0.a_{-1}\cdots a_{-d+4}E-e_1$ (Digit ≤ e + 1)

♣ Example 11: Real number=0.001234567

(a) Digit=10; Display number= 1.23456E-3

(b) Digit=6; Display number= 1.2E-3

(c) Digit=3; Display number= E-3

♣ Example 12: Real number=-1.234567X10$^{-15}$

(a) Digit=8; Display number= -1.2E-15

(b) Digit=5; Display number= -E-15

• When it is not able to display sign or exponent, display ‘0’ so many as digits, in case of floating point.

♣ Example 13: Real number=0.001234567

Digit=2 ; Display number= **00**

♣ Example 14: Real number=-1.234567 X10$^{-15}$

Digit=4; Display number= **000**

# 16. ASCII DISPLAY

It displays word device value as the appropriate character. It is same with ASCII input tag excluding input function.

## 16.1 BASIC CONFIGURATION

(1) Select [Draw]-[ASCII display] in main menu or click in tool bar, ASCII display property window is popped up.

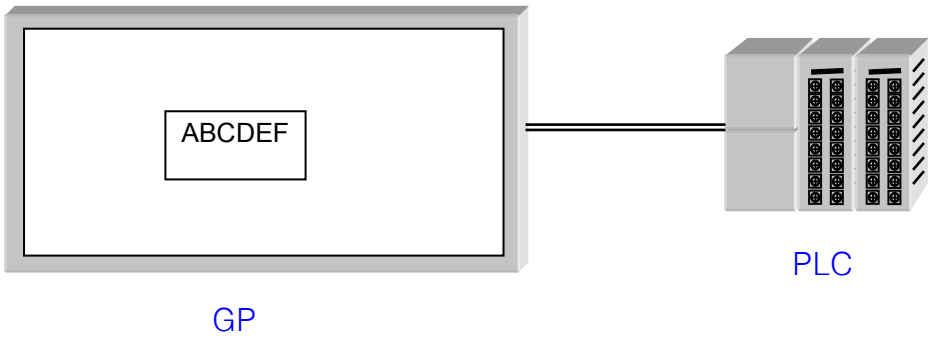
(2) Configure device.

(3) Designate the number of characters to display in form tap.

(4) Press OK button, ASCII input tag is created.

## 16.2 BASIC OPERATION

It displays the appropriate character for user-defined PLC device value.




ASCII input tag is 'ABCDEF' when device of ASCII display tag as D100, PLC device value is as below.

| Device | D100(Lower) | D100(Upper) | D101(Lower) | D101(Upper) | D102(Lower) | D102(Upper) |
|---|---|---|---|---|---|---|
| Value | 41H | 42H | 43H | 44H | 45H | 46H |
| Character | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' |

### ※Notice

•The display character has saved value in designated device as a character code.

•The next contents of digit/ 2 word devices at the head designated device.

•The character of device lower address of device is displayed (Left) first.

•If the lower/upper byte is half-width (1 byte) character of code in same word device, the lower byte of character is displayed first.

(Example) Device=D100, Digit=6,

The appropriate character of each byte value is displayed in order of D100(Lower), D100(Upper), D101(Lower), D101(Upper), D102(Lower), D102(Upper).

•If there is '0' in the middle, the next character is not displayed. For example,

D100(Lower) =41H='A', D100(Upper) =42H='B', D101(Lower) =43H='C',

D101(Upper) =00H='\0', D102(Lower) =44H='E', D102(Upper) =45H='F',

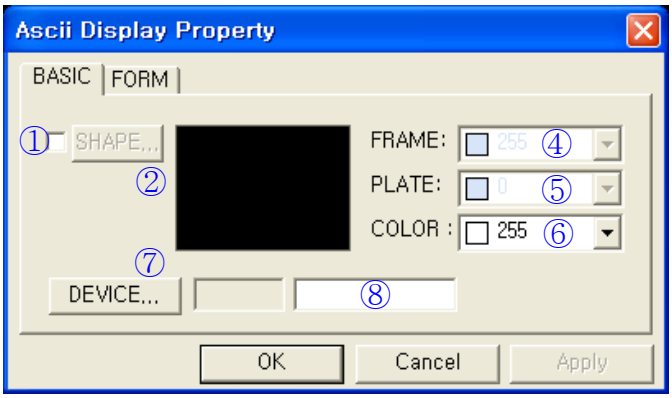
ABC is displayed.

•In case, it is designated as 6x8 font, 2 byte character is displayed as rectangle filled with designated character color.

•In case, there is no the appropriate character or it is not able to display (control character) for value saved in device, it is displayed as rectangle.

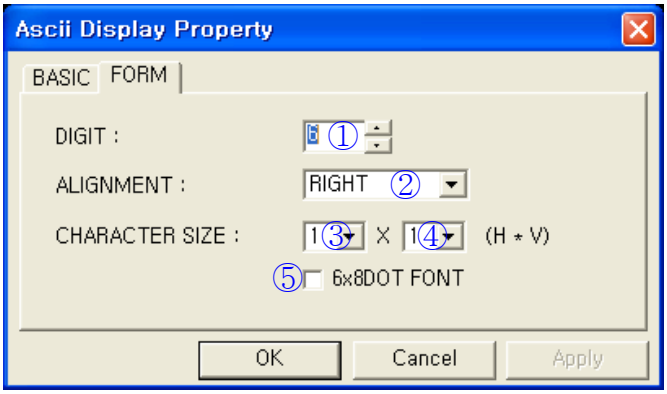
# 16.3 DETAIL CONFIGRATION AND OPERATION IN MAIN DEVICE

## 16.3.1 Basic tap




| Basic tap | Configure PLC device and shape of tag |
|---|---|
| ①Shape | • Designate to use shape. |
| ②Shape | • It is activated when checking ① and able to select shape in image selection window pressing a button. |
| ③Shape | • Display image of currently selected shape. |
| ④Frame | • Designate frame color. |
| ⑤Plate | • Designate plate color. |
| ⑥Text | • Designate character color to be display. |
| ⑦Device | • Call device window and designate device to be monitored. |
| ⑧Device | • Inputted by user directly or display designated device ⑦. |

## 16.3.2 Form tap




| Form tap | Designate character size and display type |
|---|---|
| ①Digits | • Designate the number of character to be displayed.<br>• Able to designate only as an even number within 2~40. |
| ②Alignment | • Designate alignment type and it is only available when display character is smaller than digits.<br>• Left : Display a letter from the left of tag area<br>• Right : Display a letter from the right of tag area<br>• Center : Display a letter in a center of tag area |
| ③Width size | • Designate width size of character<br>• 1, 2, 4, 6, 8 (It is only available to configure as 1 when length size is 0.5.) |
| ④Length size | • Designate length size of character<br>• Designate within 0.5, 1, 2, 3, 4. |
| ⑤6x8 dot font | • Display with 6x8 dot font when it checked.<br>Other characters excluding ASCII character are displayed as rectangle because there is no 6x8 dot font. |

# 17. NUMERAL INPUT

It inputs numeral in specific device using key window or key code of user-defined touch key.

## 17.1 BASIC CONFIGURATION

(1) Select [Draw]-[Numeral input] in main menu or click  in tool bar, numeral input property is popped up.

(2) Configure device.

(3) Designate device data type. (16/32bit with/without sign)

(4) Designate digits to display or form in form tap.

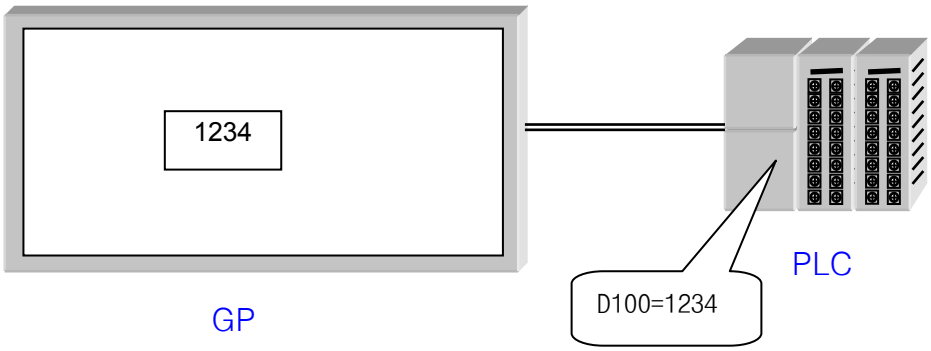
(5) Designate range of input value in others tap.

(6) Pressing OK button, numeral input tag is created.

## 17.2 BASIC OPERATION

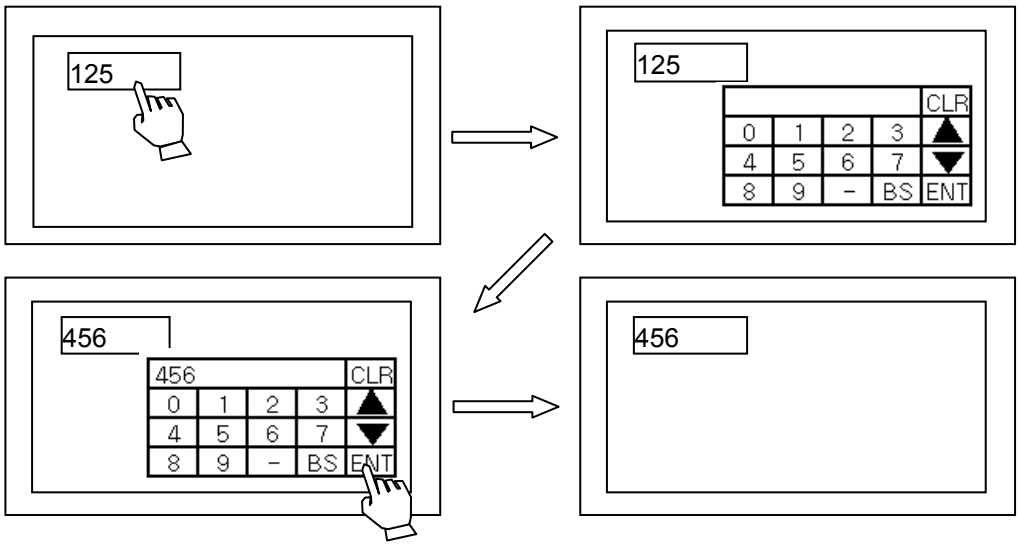
▣ It is operated same with numeral display if there is no user input.

It displays the numeral for user-defined PLC device value as designated type.




The above figure is for the numeral input device is D100 and saved value is 1234.

▣ Common operation procedure




(1) Touch the area of numeral input tag is positioned on a screen.

(2) The numeral input keypad is appeared.

(3) Input numeral on a keypad, press ENT.

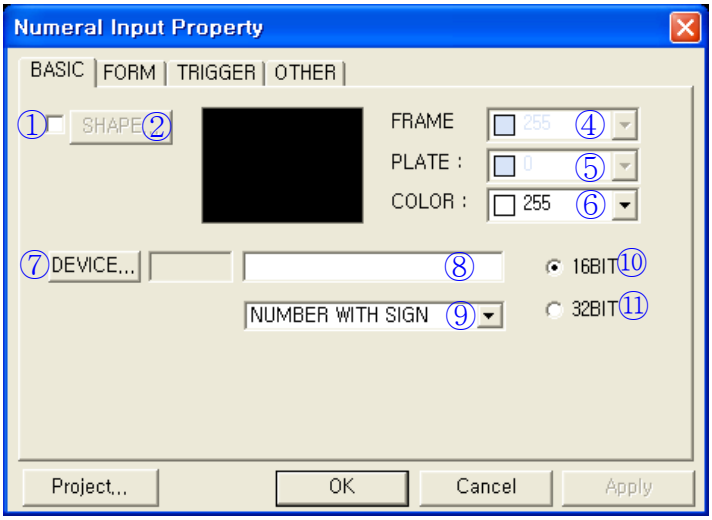
(4) Keypad is disappeared and inputted numeral is displayed on a numeral input tag area.

## ※Notice

Call condition of cursor and keypad is decided by configuration of basic tap key window/cursor display of project auxiliary window and movement of input focus is decided by operation of screen switching in screen auxiliary configuration.

# 17.3 DERAIL CONFIGURATION

## 17.3.1 Basic tap

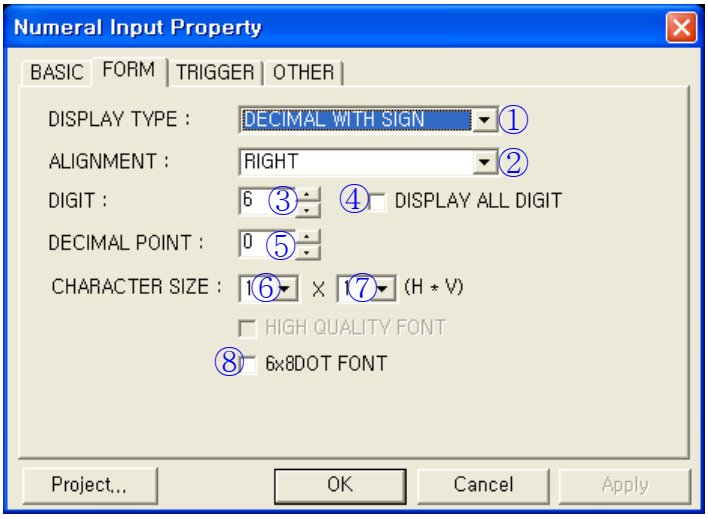



| Basic Tap | Designate PLC device and shape of tag |
|---|---|
| ①Shape | • Designate to use shape.<br>• Checking it, shape 1 is designated as a default. |
| ②Shape | • It is activated when ① is checked.<br>• Pressing button, it is able to select shape calling **image selection window**. |
| ③Shape | • Display image of currently selected shape. |
| ④Frame | • Designate frame color. |
| ⑤Plate | • Designate plate color. |
| ⑥Numeral | • Designate color of character to be displayed. |
| ⑦Device | • Designate word device calling **device window**. |
| ⑧Device | • Inputted by user directly or display designated device ⑦. |
| ⑨Data type | • Designate device type. |
| ⑩16/32bit | • Designate data size of device to be inputted. |
| ⑪Project | • Configure selection/display of key window calling **project auxiliary window**. |
| Input range for device type | The following range of value can be inputted with positive number in accordance with data type.<br>• 16bit with sign : -32768 ~ 32767<br>• 16bit without sign : 0 ~ 65535<br>• 32bit with sign: -2147483648 ~ 2147483647<br>• 32bit without sign: 0 ~ 4294967295 |

### ※Notice

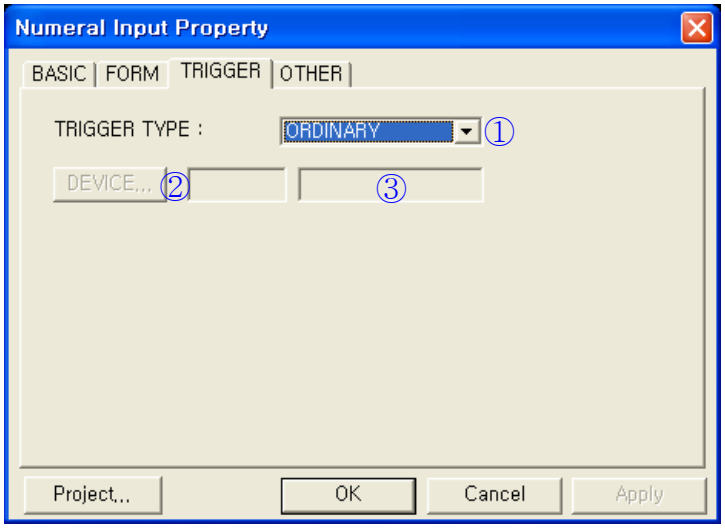
It can be only used with 32bit in accordance with connection device, refer to “Communication manual”.

## 17.3.2 Form tap



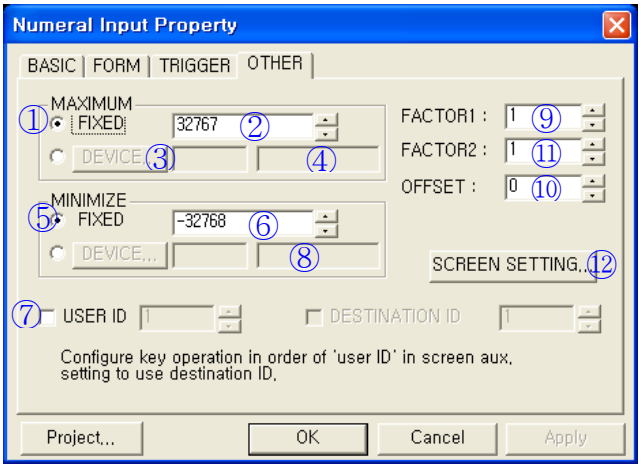

| Form tap | Designate input type and character size |
|---|---|
| ①Display type | • Select among decimal with sign/without sign, hexadecimal, octal and real number. The real number is only selected when it is designated as 32bit in basic tap. |
| ②Alignment | • Designate alignment type. (Right, Center, Left)<br>• It is only available when display character is smaller than digits.<br>• Left : Display a letter from the left of tag area<br>• Right : Display a letter from the right of tag area<br>• Center : Display a letter in a center of tag area |
| ③Digits | • Designate the number of display character.<br>• Default is 6 and it is able to designate within 1~32. |
| ④Display all digits | • Fill the blank with '0' when display number is smaller than digit (③). It is applied when alignment (②) is configured as right. |
| ⑤Decimal point | • Designate digits under decimal point.<br>• It is not available when it is hexadecimal, octal type and display putting a point under decimal point position as digits when decimal with/without sign. |
| ⑥Width size | • Designate width size of character.<br>• Range=1,2,4,6,8 (1 is only available when length size is 0.5.) |
| ⑦Length size | • Designate length size of character.<br>• Range=0.5,1,2,3,4 |
| ⑧ High-definition font | • Display numbers using higher definition font than usual one and it is able to use with min. 4X2 of character size(⑥,⑦). |
| ⑨6x8 dot font | • Display numeral with 6x8 dot font when it checked. |

## 17.3.3 Trigger tap




| Trigger tap | Designate input trigger |
|---|---|
| ①Trigger type | • Ordinary: Trigger function is not used.<br>• ON: Use ON trigger.<br>• OFF: Use OFF trigger.<br>• It is able to input numeral when designated bit device is trigger status. |
| ②Device | • Call **device window** and designate trigger device. |
| ③Device | • Display designated bit device by ② or inputted it by user directly. |
| Numeral input trigger | • Calling of key window check box is checked when touch is detected in **project auxiliary configuration**: It is able to input calling key window with pressing tag input area when the trigger condition is satisfied. If trigger condition is not satisfied, buzzer is sound and key window is not called when pressing tag input area.<br>• Cursor and key window is configured as display in **project auxiliary configuration**:<br>If there is not input tag satisfied trigger condition, it is not able to input because key window is not called when switching screen. |

## 17.3.4 Other tap




| Other tap | Definition of input range, operation and key input focus movement |
|---|---|
| ①~④ for maximum | • Designate max. value to be inputted.<br>• When it is designated as **fixed**, use inputted value in ② as a max. value.<br>• It is able to designate **device** indirectly to make device value as max., not **fixed**.<br>• Use **device window** selecting radio button of device part, pressing ③ or input device directly in ④ to designate, then this device value is designated as max. |
| ⑤~⑧ for minimum | • Designate min. value to be inputted.<br>• When it is designated as fixed, inputted value in ⑥ as a min. value.<br>• Use **device window** selecting radio button of device part, pressing ⑦ or input device directly in ⑧ to designate, then this device value is designated as min. |
| ⑨Factor 1 | • Define operation to be applied to the input value. |
| ⑩Factor 2 | |
| ⑪Offset | |
| ⑫Screen setting | • Call **screen auxiliary setting window** and configure movement of input focus.<br>When key operation definition of **screen auxiliary setting window** is in order of 'user ID' after inputting and pressing ENT key in main device:<br>Input focus is moved to input tag with use ID designated in ⑭.<br>• For 'No movement': Input focus is not moved.<br>• For 'Clear cursor and key window': Cursor and key window are disappeared. |
| ⑬User ID | • After inputting tag having this value as destination ID, input focus is returned to this tag.<br>• When it is set as 'No movement', input focus is not moved. |
| ⑭ Destination ID | • After inputting current tag, input focus is moved to tag having this value as user. |

## 17.3.5 Operation in numeral input

If inputted value in keypad is Vin, Vdev inputted value in device is as below.

Vdev = (Factor 2*(Vin-Offset))/Factor 1

The operation is only for a positive number, division operation only takes a quotient.

The display value for numeral input tap is as below.

(Factor 1*Vdev)/Factor 2 + Offset

Example 1. Factor 1 = 10, Factor 2=1, Offset =0

Input 12 in keypad and ENT.

Inputted value in device = (Factor 2*(Vin-Offset))/Factor 1

= (1*(12-0))/10 = 12/10 = 1

Displayed value in tag

(Factor 1*Vdev)/Factor 2 + Offset = (10*1)/1 + 0 = 10

Example 2. Factor 1 = 1, Factor 2=10, Offset=0

Input 12 in keypad and ENT.

Inputted value in device = (Factor 2*(Vin-Offset))/Factor 1

= (10*(12-0))/1 = 120

Displayed value in tag

(Factor 1*Vdev)/Factor 2 + Offset = (1*120)/10 + 0 = 12

Example 3. Factor 1 = 1, Factor 2=1, Offset=10

Input 12 in keypad and ENT.

Inputted value in device = (Factor 2*(Vin-Offset))/Factor 1

= (1*(12-10))/1 = 2

Displayed value in tag

(Factor 1*Vdev)/Factor 2 + Offset = (1*2)/1 + 10 = 12

Example 4. Factor 1 = 10, Factor 2=1, Offset =5

Input 12 in keypad and ENT..

Inputted value in device = (1*(12-5))/10 = 7/10 = 0

Displayed value in tag

(Factor 1*Vdev)/Factor 2 + Offset = (10*0)/1 + 5 = 5

# 18. ASCII INPUT

It inputs character string in PLC device using key window on screen.

## 18.1 BASIC CONFIGURATION

(1) Select [Draw]-[ASCII input] in main menu or click  in tool bar, ASCII input property window is popped up.

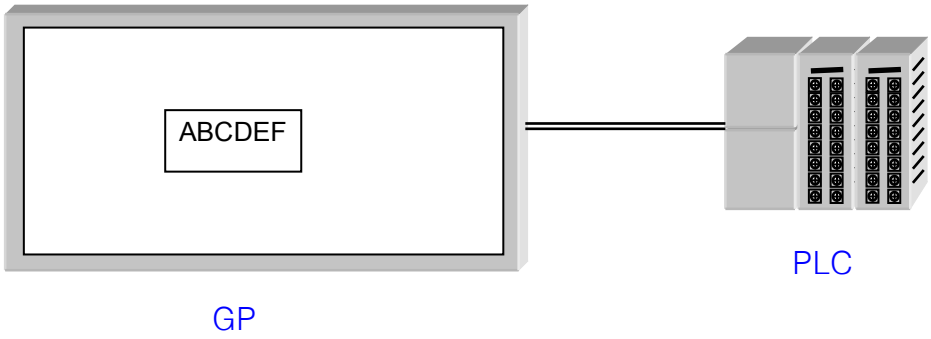
(2) Configure device.

(3) Designate the number of character to be displayed in form tap.

(4) Pressing OK button, ASCII input tag is created.

## 18.2 BASIC OPERATION

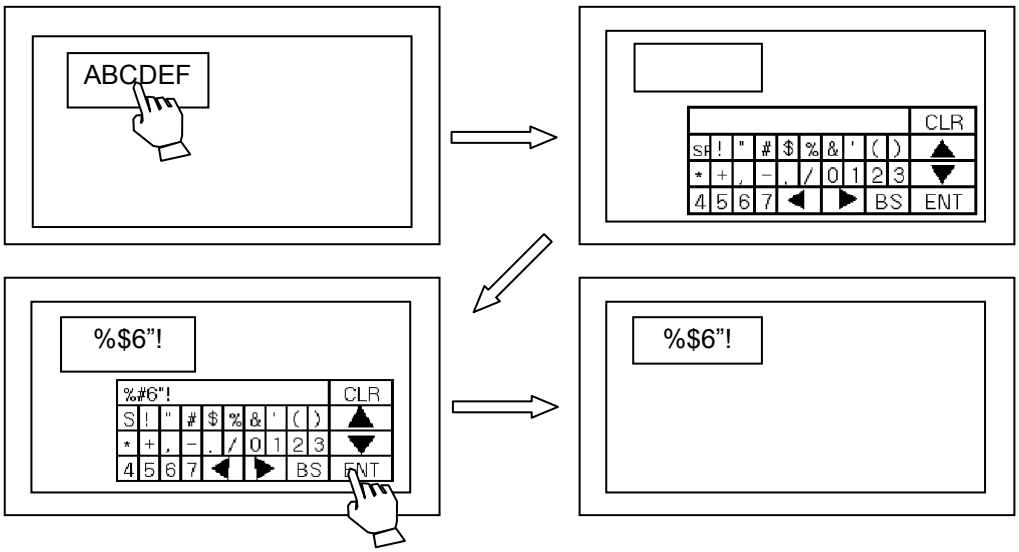
If there is no user-input, it is operated same with ASCII display. It displays appropriate character for the value of user-defined PLC device.




The device of ASCII input tag is configured as D100 and ASCII input tag is ‘ABCDEF’, PLC device value is as below table.

| Device | D100(Lower) | D100(Upper) | D101(Lower) | D101(Upper) | D102(Lower) | D102(Upper) |
|---|---|---|---|---|---|---|
| Value | 41H | 42H | 43H | 44H | 45H | 46H |
| Character | ‘A’ | ‘B’ | ‘C’ | ‘D’ | ‘E’ | ‘F’ |

▣ Common operation procedure




(1) Touch screen area with ASCII input tag is positioned.

(2) ASCII input keypad is appeared.

(3) Input character in keypad, press ENT.

(4) Keypad is disappeared and inputted character string is displayed in ASCII input tag area.

## ※Notice

• Calling condition of cursor and keypad is decided by configuration of basic tap key window/cursor display of project auxiliary window and movement of input focus is decided by operation of screen switching in screen auxiliary configuration.

• The display character has saved value in designated device as a character code.

•The next contents of digit/ 2 word devices at the head designated device.

• If the lower/upper byte is half-width (1 byte) character of code in same word device, the lower byte of character is displayed first.

(Example) Device =D100, Digit=6,

The appropriate character of each byte value is displayed in order of D100(Lower), D100(Upper), D101(Lower), D101(Upper), D102(Lower), D102(Upper).

•If there is '0' in the middle, the next character is not displayed. For example,

D100(Lower) =41H='A', D100(Upper) =42H='B', D101(Lower) =43H='C',

D101(Upper) =00H='\0', D102(Lower) =44H='E', D102(Upper) =45H='F',

ABC is displayed.

•In case, it is designated as 6x8 font, 2 byte character is displayed as rectangle filled with designated character color.

•In case, there is not character or it is not able to display (control character) for value saved in device, it is displayed as rectangle.

•Firstly inputted character code is saved in order of lower-upper from the lead address.

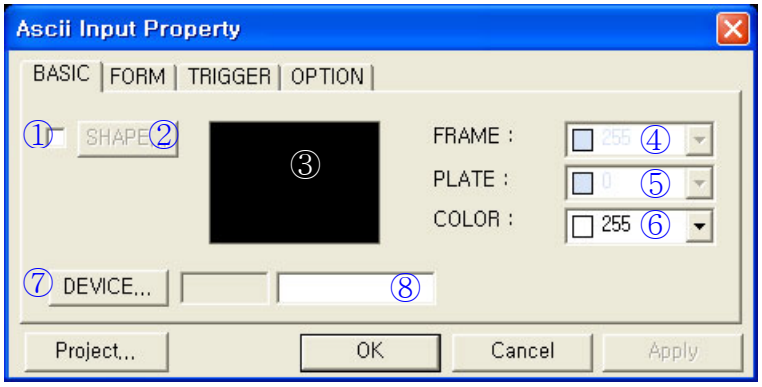
•In case, input ENT without inputting character as designated digits in main device, it is filled with '0' from the next saved space.

(Example) In case of inputting, A,B,C and ENT when Device =D100, Digit=6,

D100 = 4241H, D101=0043H, D102=0000H

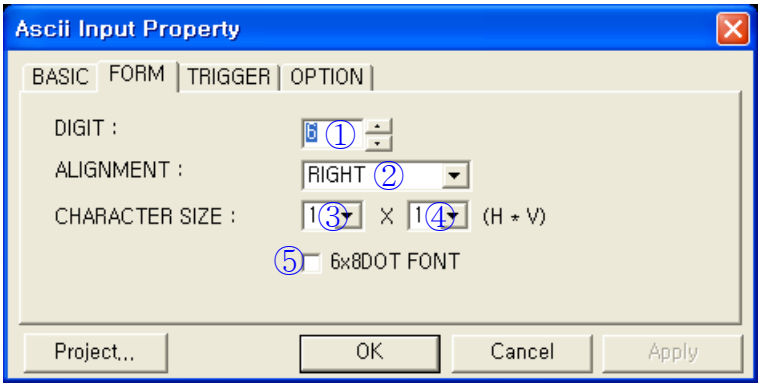
# 18.3 DETAIL CONFIGURATION AND OPERATION IN MAIN DEVICE

## 18.3.1 Basic tap



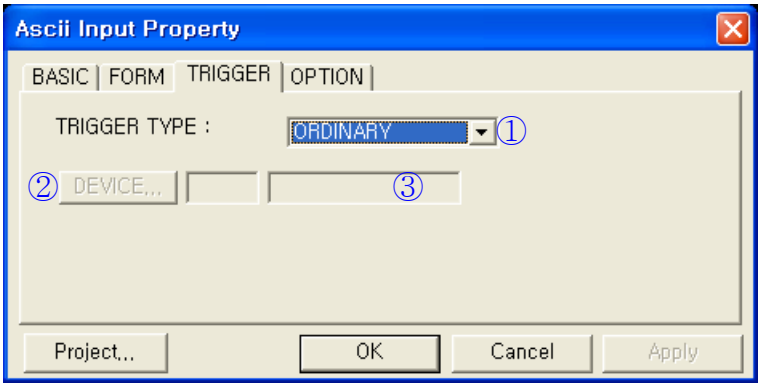

| Basic Tap | Designate PLC device and shape of tag |
|---|---|
| ①Shape | • Designate to use shape or not. |
| ②Shape | • It is activated when ① is checked.<br>• Select shape calling image selection window pressing button. |
| ③Shape | • Display image of currently selected shape. |
| ④Frame | • Designate frame color. |
| ⑤Plate | • Designate plate color. |
| ⑥Text | • Designate color of character to be displayed. |
| ⑦Device | • Designate monitor device calling **device window**. |
| ⑧Device | • Inputted by user directly or display designated device ⑦. |
| ⑨Project | • It is able to configure for key window call in **project auxiliary configuration** window. |

## 18.3.2 Form tap



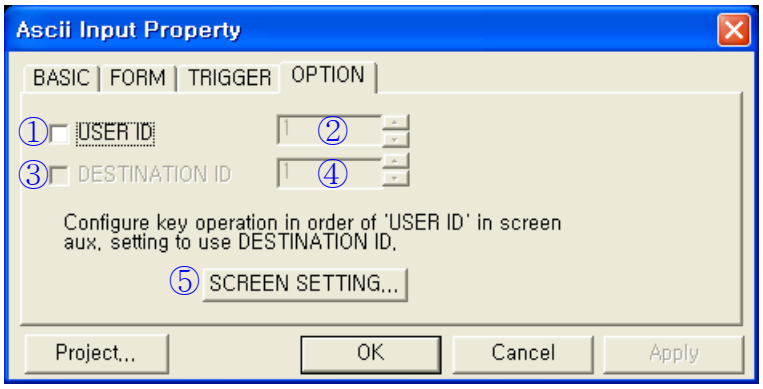

| Form tap | Designate character size and display type |
|---|---|
| ①Digits | • Designate the number of character to be displayed.<br>• Designate as even number with Default= 6 and within 2~40.<br>• If word device designated in basic tap is D100 and pressing A, B, C, D and ENT in key window, ASCII code is inputted in PLC device as below.<br>D100 Lower=41H='A',D100 Upper=42H='B', D101 Lower=43H='C',<br>D101 Upper=44H='D',D102 Upper=0H<br>• D102 Upper=0H indicates end of character string when pressing ENT key. |
| ②Alignment | • Designate alignment type. (Right, Center, Left)<br>• Default is right and it is only available when display character is smaller than digits.<br>• Left : Display a letter from the left of tag area<br>• Right : Display a letter from the right of tag area<br>• Center : Display a letter in a center of tag area |
| ③Width size | • Designate width size of character among 1,2,3 and 4.<br>• 1 is only available to designate when length size is 0.5, not as 2,3,4. |
| ④Length size | • Designate length size of character among 0.5,1,2,3 and 4.<br>• 0.5 is not available to designate when width size is 2,3 and 4. |
| ⑤6x8 dot font | • Display as 6x8 dot font of character when it checked.<br>• Other characters excluding ASCII character are displayed as rectangle because there is no 6x8 dot font. |

## 18.3.3 Trigger tap




| Trigger tap | Designate trigger condition |
|---|---|
| ①Trigger type | • Designate trigger type<br>• Common: Do not use trigger function.<br>• ON: Use ON trigger.<br>• OFF: Use OFF trigger. |
| ②Device | • Designate bit device calling **device window**.<br>• It is deactivated when trigger type is common. |
| ③Device | • Selected by ②, display bit device or input by user directly<br>• It is deactivated when trigger type is common. |
| ASCII input trigger | • It satisfies trigger condition when bit device of ③ has status of ①.<br>• Calling key window check box is checked when touch is detected in **project auxiliary configuration**: It is able to input calling key window with pressing tag input area when the trigger condition is satisfied. If trigger condition is not satisfied, buzzer is sound and key window is not called when pressing tag input area.<br>• Cursor and key window is configured as display in **project auxiliary configuration**: If there is not input tag satisfied trigger condition, it is not able to input because key window is not called when switching screen. |

## 18.3.4 Option tap



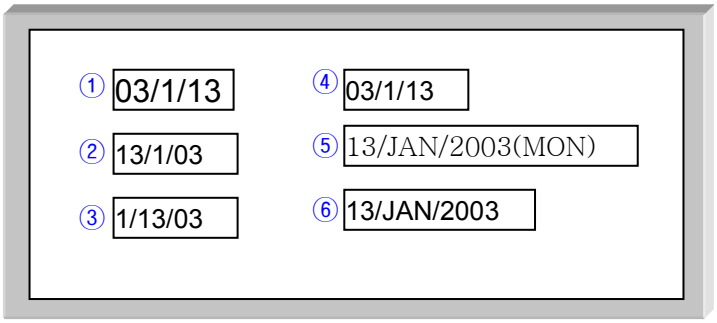

| Option tap | Definition of key input focus movement |
|---|---|
| ①User ID | • Designate to configure user ID or not. |
| ②User ID | • Designate user ID and it is able to designate within 1~50. |
| ③ Destination ID | • Designate to configure destination ID or not.<br>• It is activated when key operation definition is in order of 'User ID' in screen auxiliary configuration. |
| ④ Destination ID | • Designate destination ID. |
| ⑤Screen configuration | • Designate input focus movement calling **screen auxiliary window**. |
| Focus movement of input tag | When pressing ENT after inputting in main device, if key operation definition item in screen auxiliary configuration is in order of<br>• 'User ID':<br>Input focus is moved to input tag having destination ID designated in ④.<br>• 'No movement': Input focus is not moved.<br>• 'Clear cursor and key window': Cursor and key window are disappeared. |

# 19. TIME DISPLAY

It displays time or date using a clock of inner GP regardless of controller (PLC) connected with GP.

## 19.1 BASIC OPERATION

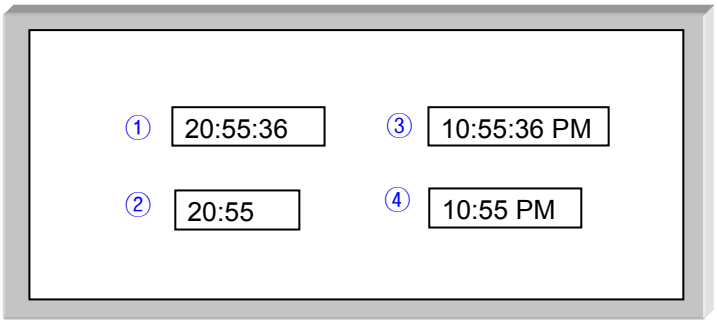
**▣ Date display**




**▣ Date display type**

| | Display type | Date type |
|---|---|---|
| ① | Date | YY/MM/DD |
| ② | Date | DD/MM/YY |
| ③ | Date | MM/DD/YY |
| ④ | Date | DD/MM/YYYY(DAY) |
| ⑤ | Date | DD/MM/YYYY |

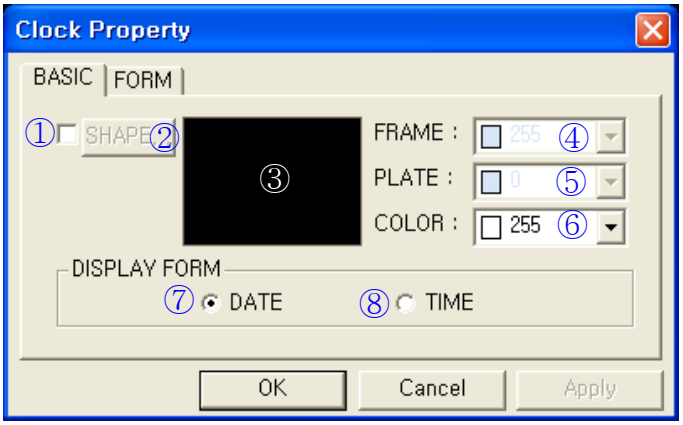
**▣ Time display**




**▣ Time display type**

| | Display type | Time type |
|---|---|---|
| ① | Time | 24H(HH:MM:SS) |
| ② | Time | 24H(HH:MM) |
| ③ | Time | 12H(HH:MM:SS) |
| ④ | Time | 12H(HH:MM) |

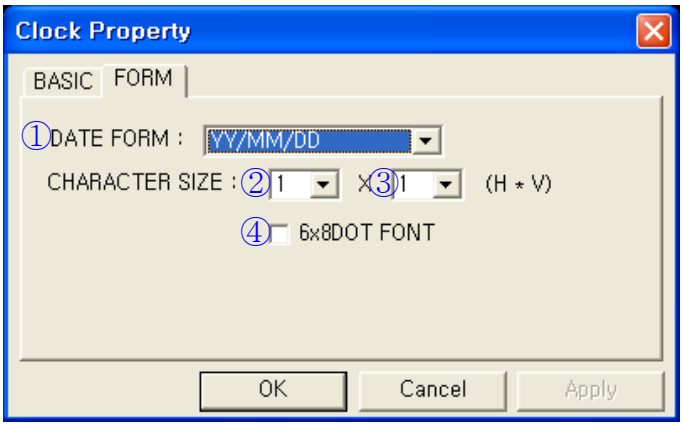
# 19.2 DETAIL CONFIGURATION




## 19.2.1 Basic tap

| Basic tap | Designate selection of time/date and shape of tag |
|---|---|
| ①Shape | • Designate to use shape or not.<br>• It is able to select shape of tag in program when it checked.<br>• When it checked, shape 1 is designated as a default. |
| ②Shape | • It is activated when ① is checked.<br>• Pressing button, select shape calling **image selection window**. |
| ③Shape | • Show image of currently selected shape. |
| ④Frame | • Designate frame color. |
| ⑤Plate | • Designate plate color. |
| ⑥Color | • Designate color of character to be displayed. |
| ⑦Date | • Designate current date to display. |
| ⑧Time | • Designate current time to display. |

## 19.2.2 Form tap




| Form tap | Designate character size and display type | |
|---|---|---|
| ①Date type | • Display type = Date | Example |
| | YY/MM/DD : Year/Month/Day<br>DD/MM/YY : Day/Month /Year<br>MM/DD/YY : Month/ Day/Year<br>DD/MM/YYYY(DAY) : Day/Month/ Year(DAY)<br>DD/MM/YYYY: Day/Month/Year | 03/1/13<br>13/1/03<br>1/13/03<br>13/JAN/2003(MON)<br>13/JAN/2003 |
| | • Display type = Time | Example |
| | 24H(HH:MM) : Hour:Minute<br>24H(HH:MM:SS): Hour:Minute:Second<br>12H(HH:MM) : Hour:Minute AM/PM<br>12H(HH:MM:SS): Hour:Minute:Second AM/PM | 22:55<br>22:55:36<br>10:55 PM<br>10:55:36 PM |
| ②Width size | • Designate width size of character<br>• Default=1, Range=1,2,4,6,8<br>• 1 is only available when length size is 0.5.<br>• It is deactivated when ⑤ is checked. | |
| ③Length size | • Designate length size of character<br>• Default=1, Range=0.5,1,2,3,4<br>• It is not able to designate as 0.5 when length size is 2,4,6 and 8.<br>• It is deactivated when ⑤ is checked. | |
| ④6x8 dot font | • It displays character with 6x8 dot font when it checked. | |

# 20. COMMENT DISPLAY

It displays comment in accordance with ON/OFF status of designated bit device or word device value.

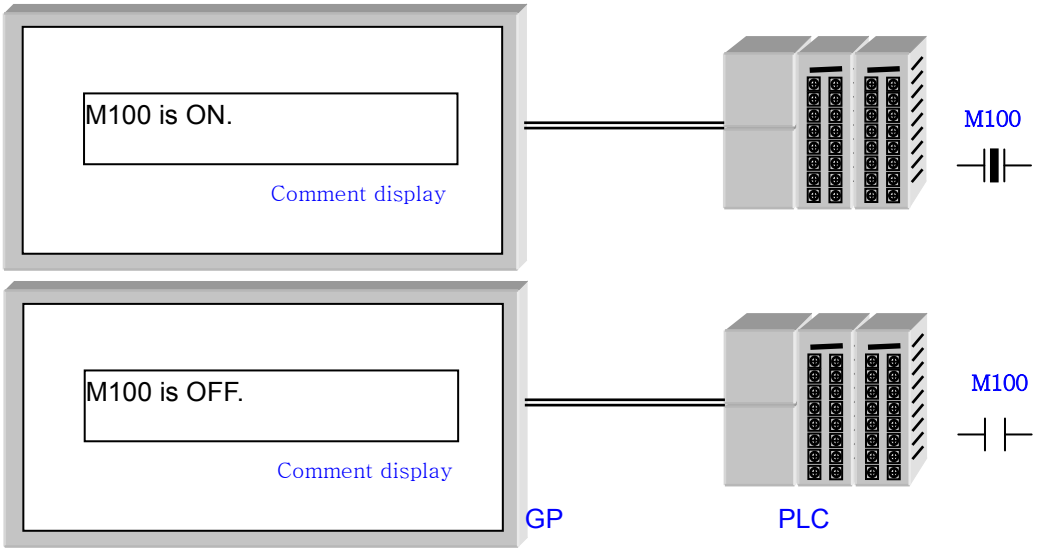
## 20.1 BASIC OPERATION

### 20.1.1 Bit operation

It displays appropriate comment in accordance with ON/OFF of designated bit device.
The following figure is operation when monitor device is configured as M100,

Display comment when it is ON : **M100 is ON.**

Display comment when it is OFF : **M100 is OFF.**

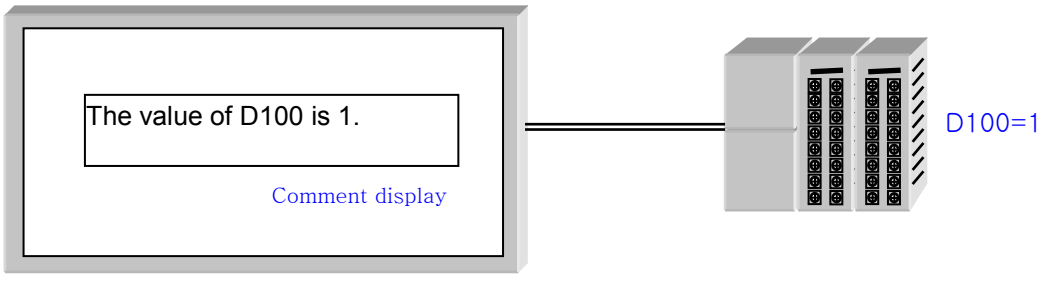


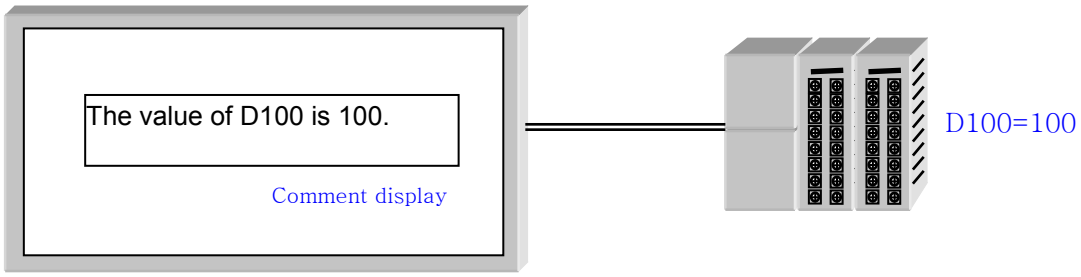

### 20.1.2 Word operation

It displays appropriate comment registered in comment list in accordance with designated word device value. The following figure is operation when monitor device is configured as D100,

Comment No.1 : The value of D100 is 1.

Comment No.100 : The value of D100 is 100.






## 20.2 BASIC CONFIGURATION

(1) Select [Draw]-[Comment display] in main menu or in tool bar, comment display property window is popped up.

(2) Select monitor and bit/word operation in basic tap.

(3) Designate character size of designated comment.

(4) Designate comment number to be displayed in accordance with ON/OFF in bit tap or write comment directly. In case of word operation, designate appropriate comment number corresponding to device value.

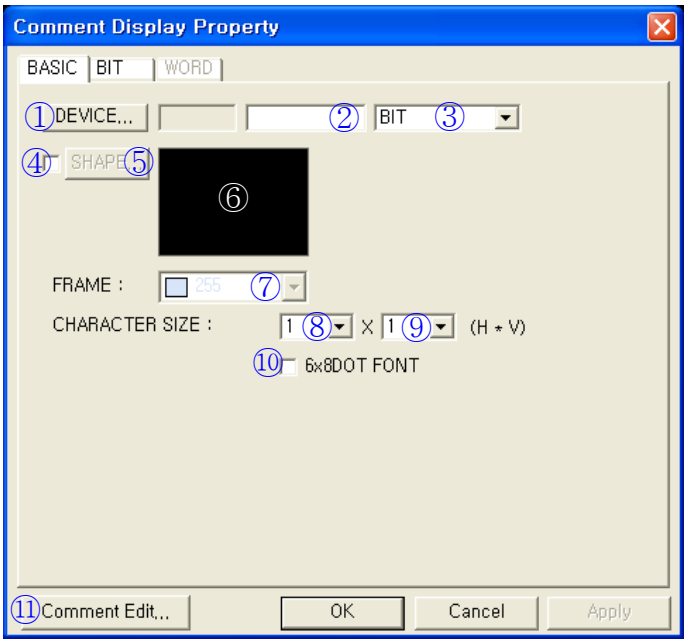
(5) Pressing OK button, comment display tag is created.

(6) Arrange it in an appropriate position.

**※Size adjustment**

- Comparing default character size and length of comment character, decide tag size based on specified comment.
- All characters including 6x8 font, 0.5x1 are reduced/enlarged as a size of configured ASCII character.

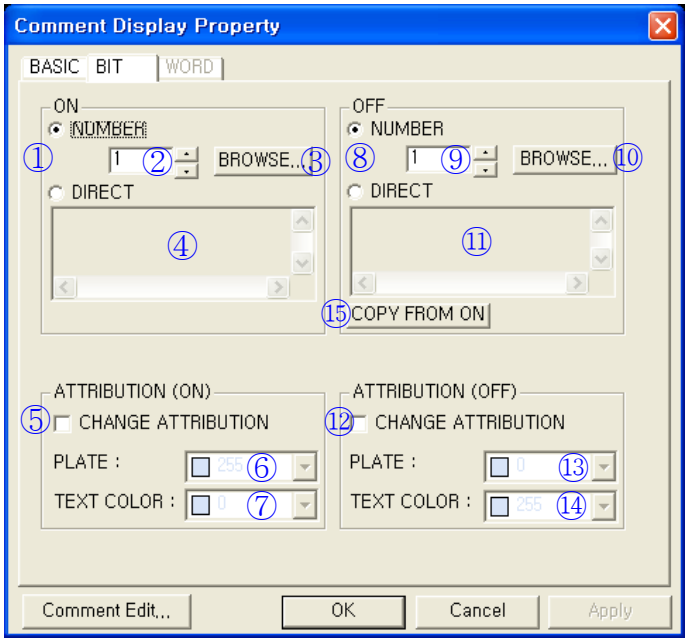
# 20.3 DETAIL CONFIGURATION




## 20.3.1 Basic tap

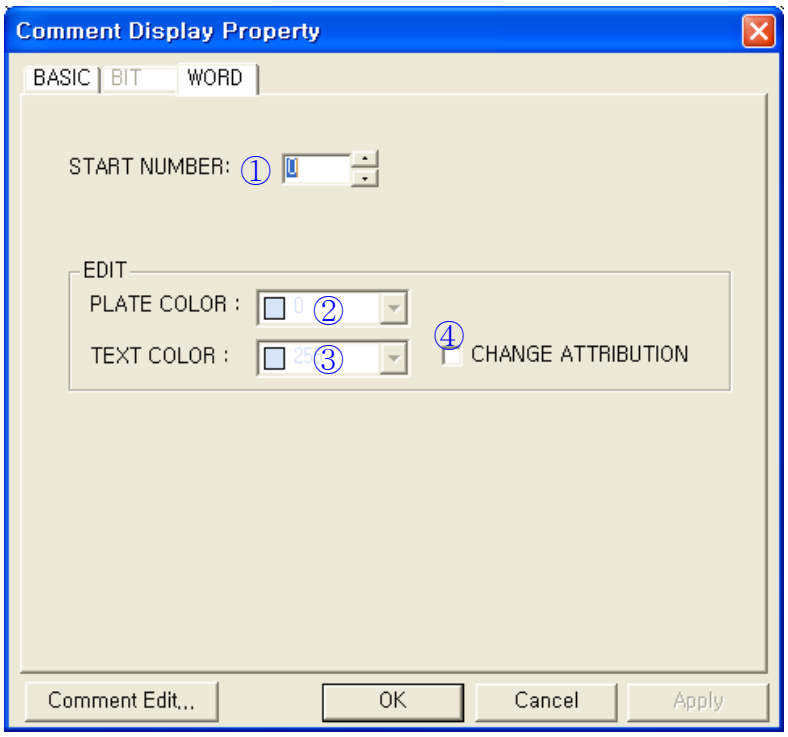
| Basic tap | Designate detail about comment display type |
|---|---|
| ①Device | • Designate monitor device, bit/word device in accordance with bit/word definition. |
| ②Device | • Able to display designated device and designate by input directly. |
| ③Type | • Designate device type as bit or word. |
| ④Shape | • Designate to use shape or not. |
| ⑤Shape | • It is activated when ④ is checked.<br>• Selecting a button, it is able to select shape calling **image select window**. |
| ⑥Shape | • Display image of currently selected shape. |
| ⑦Frame | • Designate frame color.<br>• It is activated when shape is designated. |
| ⑧Width size | • Designate width size of character.<br>• Range=1,2,4,6,8 (1 is only available when length size is 0.5.) |
| ⑨Length size | • Designate length size of character.<br>• Default=1, Range=0.5,1,2,3,4 |
| ⑩6x8 Dot font | • Display character with 6x8 dot font when it checked. |
| ⑪Comment edit | • It is able to check and edit comment list in comment list window. |

## 20.3.2 Bit




| Bit tap | Designate content about comment display when monitor device is bit device |
|---|---|
| ①,⑧ No./Direct | • Designate to use registered comment in comment list or directly designated comment.<br>• No..: Use comment registered in comment list.<br>• Direct : Use comment inputted directly. |
| ②,⑨ No. | • Designate comment number to display.<br>• Designated number of comment is displayed in accordance with monitor device status. |
| ③,⑩ Browse | • Designate comment number to display arranging comment list in a row. |
| ④,⑪ Direct | • Designate comment to display directly.<br>• Designated comment is displayed in accordance with monitor device status. |
| ⑤,⑫ Change attribute | • When making plate color and character color different with default configuration, it is checked. |
| ⑥,⑬ Plate | • Designate plate color. |
| ⑦,⑭ Text | • Designate character color of comment. |
| ⑮ Copy from ON | • Copy designated number, directly configured text in On to Off. |

## 20.3.3 Word




| Word | Designate content about comment display when monitor device is word |
|---|---|
| ①Start No. | • Comment with **Word device value + Start number** is displayed. |
| ②Plate color | • Designate color of character to display. |
| ③Text color | • Designate plate color. |
| ④Change attribute | • Check to change color of plate/character designated as default. |

# 21. ALARM HISTORY

It records occurred alarm history and it is able to records occurrence time, backup time and occurrence frequency. It is also available to print alarm history connecting with serial print and upload to PC.

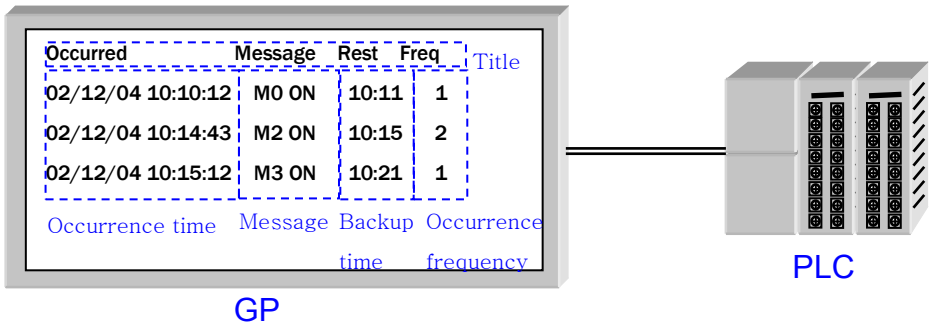
## 21.1 BASIC FUNCTION IN GP

▪ Monitored bit device records ON/OFF history with time information.

▪ Monitor device, monitor cycle and operation are configured in common configuration, display type of alarm history is configured in property window.

▪ Cursor movement, item delete for detail screen display, selection of specified history item are operated connected with touch key allowed key code.

▪ Monitor device is 256 of successive bit devices, it is able to save max.1024 of alarms and 32767 of occurrence frequency.




## 21.2 EDIT

(1) Select [Draw]-[Alarm history] or click  in toolbar, alarm history property window is popped up.

(2) Click common configuration button in basic tap, call common configuration window of alarm history.

(3) Designate monitor device, monitor cycle and operation mode in common configuration window.

(4) Configure display type in alarm history property.

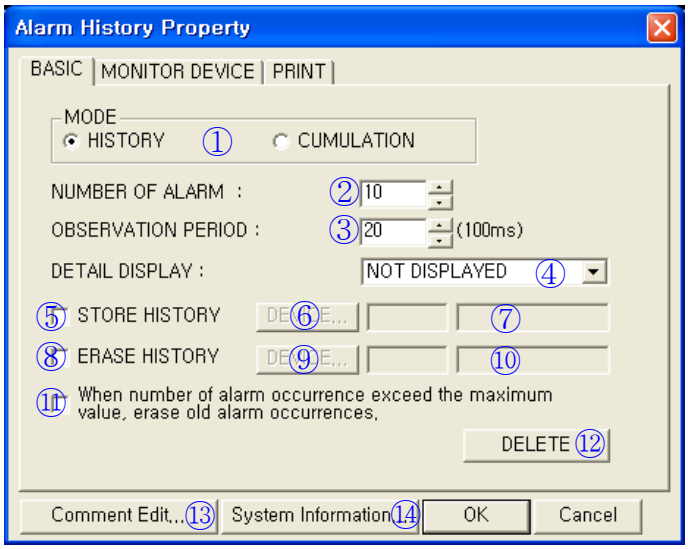
(5) Press OK button, tag is created on a screen.

**※Notice**

It is only able to write an alarm history in a screen.

# 21.3 COMMON CONFIGURATION OF ALARM HISTORY

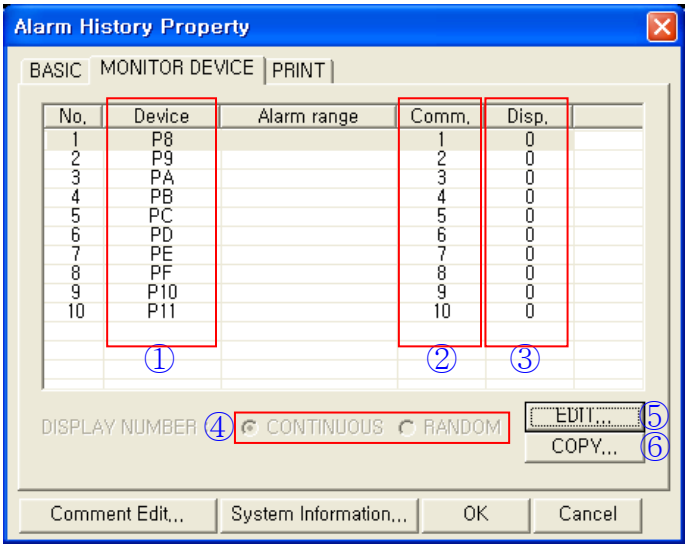
## 21.3.1 Basic tap



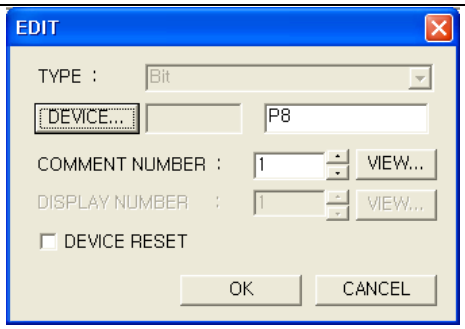
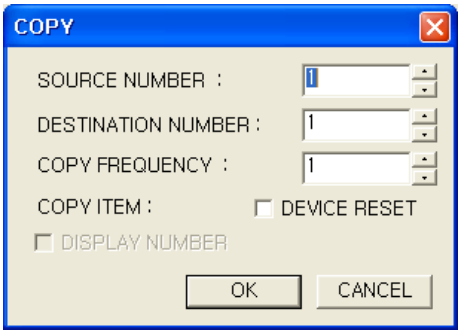

| Basic tap | Designate operation mode, the number of monitor device and monitor cycle of alarm history |
|---|---|
| ①Mode | • History : Display date and time of device ON and appropriate comment.<br>• Cumulation : Display occurrence frequency with the contents of history mode. |
| ②Alarm | • Configure the number of bit device to monitor<br>• It is able to designate within 1~256.<br>• When designating the lead device in monitor device tap, later bit device will be monitor object. |
| ③Observance cycle | • Configure monitor cycle.<br>• It is able to designate as an interval of 100ms within 600ms(6)~80sec(8000). |
| ④Detailed display | • Designate display type of detail screen.<br>• It shows detail screen as base or window screen in accordance with configuration when pressing touch key with key code FFA6H.<br>• Not display : Do not display detail screen.<br>• Comment window : Display detail screen as comment window type. Move alarm history cursor to view detail screen and press view the detail screen touch key, comment window screen designated as detail screen is displayed. The appropriate alarm comment is displayed on a window.<br>• Base screen : Move alarm history cursor to view detail screen and press view the detail screen touch key, it is moved to the base screen designated as detail screen. It is able to return to the original one after confirming detail information when switch touch key for previous screen is made. |
| ⑤History store | • Check to designate save device for the number of currently occurred alarms.<br>• Register not stored alarm of currently occurred at device designated in ⑦. |
| ⑥Device | • Call **device** window and designate word device to save the number of currently occurred alarms. |

| | |
|---|---|
| ⑦Device | • It is able to designate device recording the number of occurrence alarm. |
| ⑧History erase | • Configure bit device to delete alarm history and frequency.<br>• When bit device designated in ⑩ is ON, all alarm history and frequency are deleted.<br>• **Any alarm is not be registered during bit device designated in ⑩ is ON.** |
| ⑨Device | • Call **device** window and designate device of currently deleted alarm history. |
| ⑩Device | • It is able to designate directly showing designated bit device. |
| ⑪When the number of alarm occurrences exceed the maximum value, delete oldest alarm occurrences. | • The oldest alarm is deleted to record new alarm when alarm histories are 1024. If it is not selected, it is not able to add alarm history when it exceeds the available save history.<br>• It is activated in history mode and deactivated in cumulation mode. |
| ⑫Delete | • Pressing delete button, all edited contents are deleted and configured as default value. |
| ⑬Comment edit | • Edit registered comment list calling **comment list** window. |
| ⑭System information | • Edit contents related about alarm history calling **system information** window. |

## 21.3.2 Monitor device tap

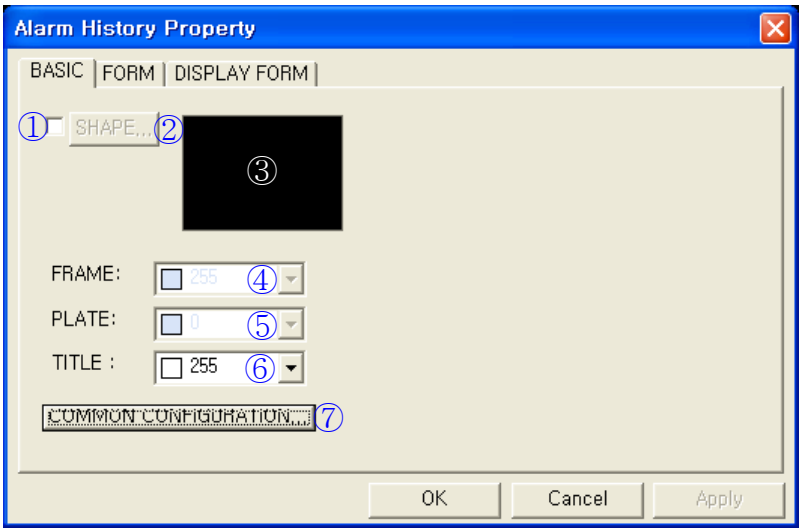



| Monitor device | Configure comment number, detail screen display to be recorded in monitor device and alarm history |
|---|---|
| ①Device | • Display bit device to be monitored.<br>• Bit device is appeared as the number of devices configured in basic tap and configure device and the appropriate comment no. clicking edit button. |
| ②Comment | • Show comment no. to record when alarm is occurred(When device configured in a same row is ON).<br>• Click comment edit button and edit the appropriate comment. |
| ③Display | • Show comment no. or base screen no.<br>• When detail display is comment window, it is comment no. and base screen no. for base screen. |
| ④Display No. | • It is activated when detail display item is not a 'not display' of basic tap.<br>• Designate comment no. or base screen no. as successively when it shows detail screen.<br>• When it is designated as continuous, comment no. or base screen no. (③) is designated successively when detail screen is showed and it is able to designate detail screen/comment no. pressing edit button(⑤) when it is designated as random. |
| ⑤Edit | • Call edit window and designate monitor device, detail screen/comment no. and reset.<br>• Edit window : When designating the lead device of alarm history and opening an edit, all appropriate items are activated and selecting under the lead device and opening an edit , device reset is only configured individually.<br>If it is designated as random, display no. is activated under the lead device and it is able to edit individually. |

| | |
|---|---|
| |  <br>• Type : Fixed as bit. (Word device is not supplied.)<br>• Device : Configure the lead bit device to monitor.<br>• Comment no. : Configure comment no. to display the appropriate message.<br>Call comment list window pressing view button, check and designate comment no..<br>• Display no. : Designate no. to be displayed in ③.<br>Pressing touch key of detail screen, it will be a comment no. to be displayed on comment window when detail display is comment window.<br>Pressing view button in this case, call **comment list window**, check and designate comment no.<br>Pressing touch key of detail screen, it will be a base screen no. to be switched when detail display is base screen. Pressing view button in this case, call **screen image window**, check and designate comment no.<br>• Device reset : The device with this item will be reset when pressing touch key with code value of FFAAH. |
| ⑥Copy | • Designate device reset and copy display no. property(③).<br>  <br>• Among device reset designation/display number of source no. in a list, copy checked property from destination no. to item of the numbers of copy. |

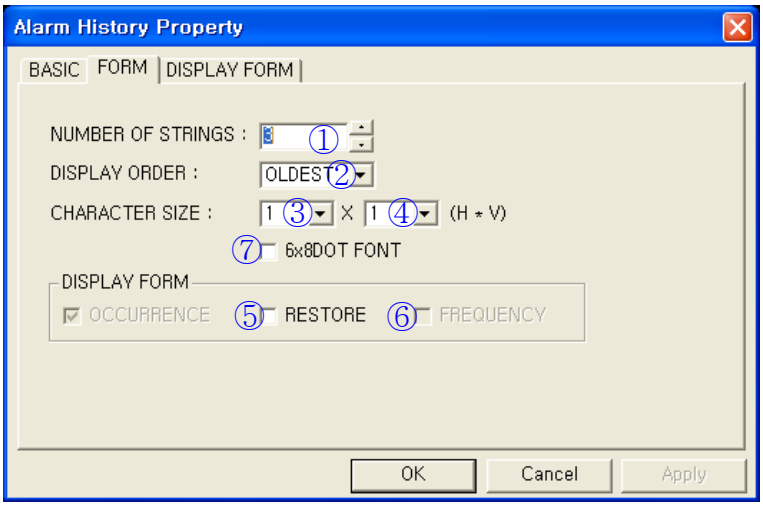
# 21.4 CONFIGURATION OF ALARM HISTORY TAG PROPERTY

## 21.4.1 Basic tap



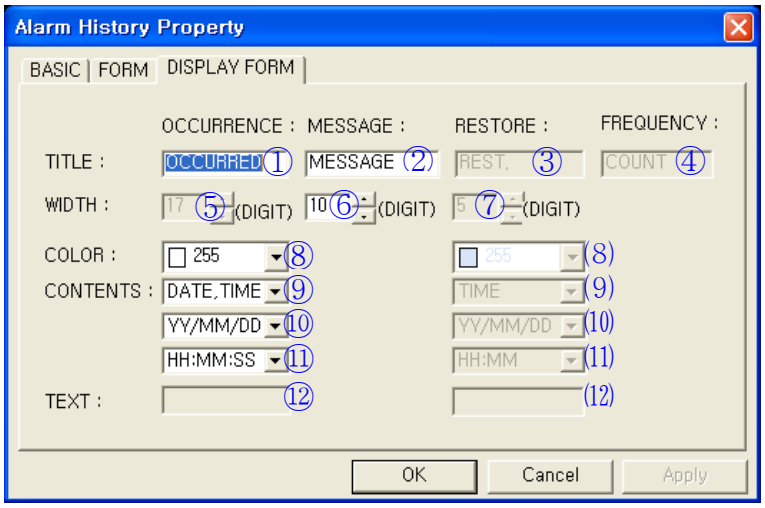

| Basic tap | Designate tag shape of alarm history |
|---|---|
| ①Shape | • It is able to select tag shape provided by program.<br>• Designate no.1 of memorized shapes as a default. |
| ②Shape | • It is activated when ① is checked.<br>• Pressing a button, select shape calling **image selection window**. |
| ③Shape | • Display image of currently selected shape. |
| ④Frame | • Designate frame color.<br>• It is activated when shape is designated. |
| ⑤Plate | • Designate plate color.<br>• It is activated when shape is designated. |
| ⑥Title | • Designate character color of title. |
| ⑦Common configuration | • Call common configuration window of alarm history and designate detail about alarm preservation. |

## 21.4.2 Form tap




| Form tap | Configure type of alarm history to display |
|---|---|
| ①Display rows | • Designate the number of alarm to display.<br>• In accordance with designation of length size, it is limiting the number of item to display. |
| ②Sort | • Designate an order to display alarm history.<br>• Oldest : Display older one first.<br>• Latest : Display recent one first. |
| ③Size | • Designate width size of character<br>• Designate one among 1,2,4,6 and 8 and 1 is only available when length size is 0.5. |
| ④Size | • Designate length size of character<br>• Designate one among 0.5,1,2,3 and 4. |
| ⑤Restoration | • Designate to display time of alarm restored.<br>• It is activated regardless of history/cumulation mode. |
| ⑥Occurrence frequency | • Designate to display the number of occurrence.<br>• It is only activated when it is cumulation mode. |
| ⑦6x8 dot font | • It displays character with 6x8 dot font when it checked. |

## 21.4.3 Format tap



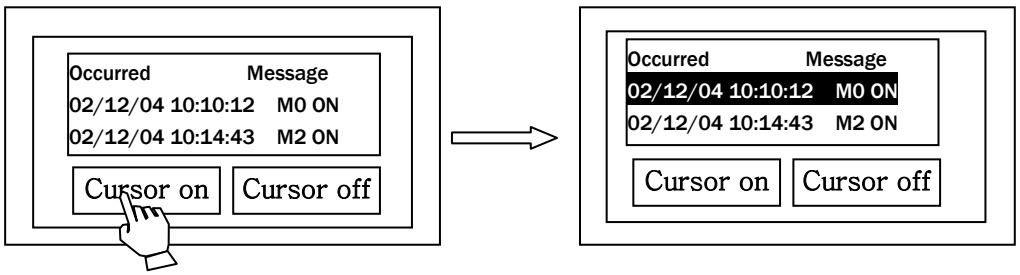

| Format tap | Detail configuration of format of alarm |
|---|---|
| ①Occurrence | • Designate the row title displaying occurred time. |
| ②Message | • Designate the row title displaying message. |
| ③Restoration | • Designate the row title displaying restored time.<br>• It is activated when restoration is checked in form tap. |
| ④Occur frequency | • Designate the row title displaying occurrence frequency.<br>• It is activated when occur frequency is checked in form tap. |
| ⑤Wide | • Display the number of character displaying occurred time.<br>• It is decided by time format. |
| ⑥Wide | • Designate the number of character for display message |
| ⑦Wide | • Display the number of character displaying restored time.<br>• It is decided by time format. |
| ⑧Color | • Designate character color display occurred time. |
| ⑨Contents | • Designate format displaying occurred time.<br>• “Date, Time”: Display date and time together.<br>Digits of wide value for this item is fixed as<br>**Digit for date display + Digit of current configured time display + 1(Spacing)**<br>• “Date”: Display only date.<br>• “Time”: Display only time.<br>• “Text”: Display user-designated character. |
| ⑩Date | • Designate format displaying date.<br>• Designate one among YY(year)/MM(month)/DD(day), MM/DD/YY, DD/MM/YY and MM/DD. |
| ⑪Time | • Designate format displaying time.<br>• Designate one among HH(hour):MM(min):SS(sec) and HH:MM. |
| ⑫Text | • Designate text to write in a part displaying occurred time. |
| ⑧~⑫ | • It is activated when restoration is checked in form tap.<br>• It is for restoration time corresponding ⑧~⑫. |

# 21.5 TOUCH KEY FOR ALARM HISTORY

Cursor control to select specific line displaying detail information in basic function of alarm history is used with appropriate key code in touch key configuration and arrange on a screen.

| Key code | Function | Descriptions |
|---|---|---|
| FFA4h | Cursor ON | When touching touch key with key code FFA4, it is displayed as top item of alarm list is selected, if there is an alarm in alarm list screen. |
| FFA5h | Cursor OFF | When touching touch key with key code FFA5, cursor is disappeared in alarm list. |
| FFABh | Cursor UP | When touching touch key with key code FFAB, upper item of currently selected is changed as selected status. |
| FFAChh | Cursor DOWN | When touching touch key with key code FFAC, below item of currently selected is changed as selected status. |
| FFA8h | Delete | When touching touch key with key code FFA8, currently selected item is deleted. |
| FFA9h | Delete all | When touching touch key with key code FFA9, restored alarm list is deleted. |
| FFA6h | Call detail screen | When touching touch key with key code FFA6, detail screen[window comment or base screen] of currently selected item is displayed. |
| FFAAh | Device Reset | When device designating monitor device reset is ON and the item of alarm list is selected, touch the key with key code FFAA, the device is reset. |

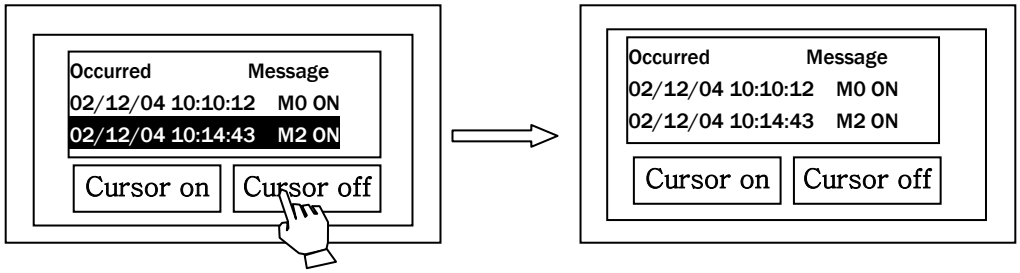
**(1) Cursor ON (FFA4h)**




Press touch key configured as FFA4h.

The top row is selected.

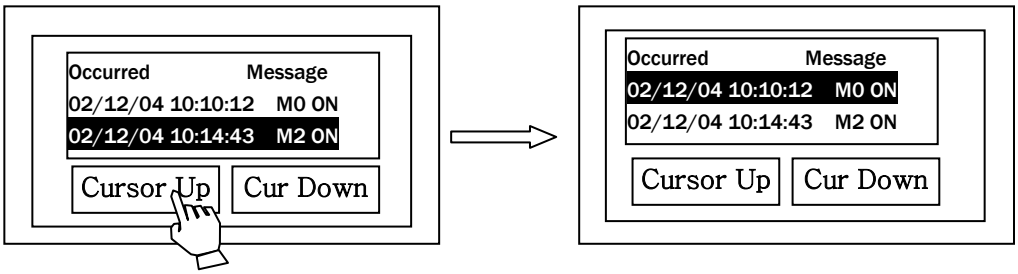
**(2) Cursor OFF (FFA5h)**




Press touch key configured as FFA5h.

It does not choose any row.

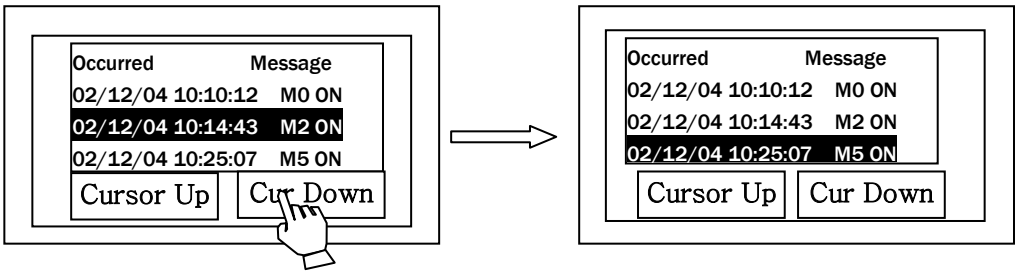
**(3) Cursor UP (FFABh)**




Press touch key configured as FFA6h.

The upper one is selected status.

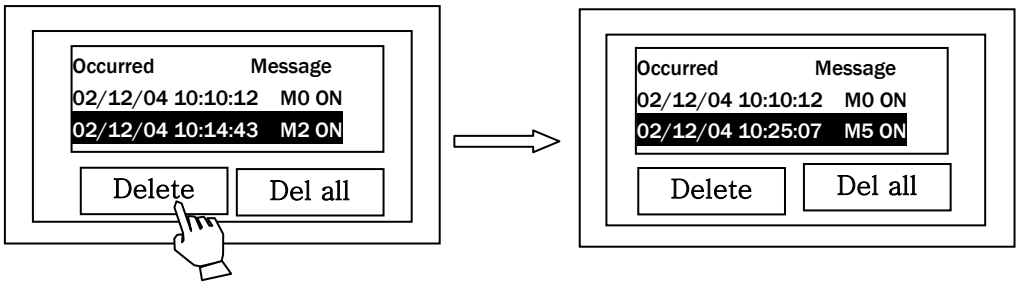
**(4) Cursor DOWN (FFACh)**




Press touch key configured as FFA7h.

The lower one is selected status.

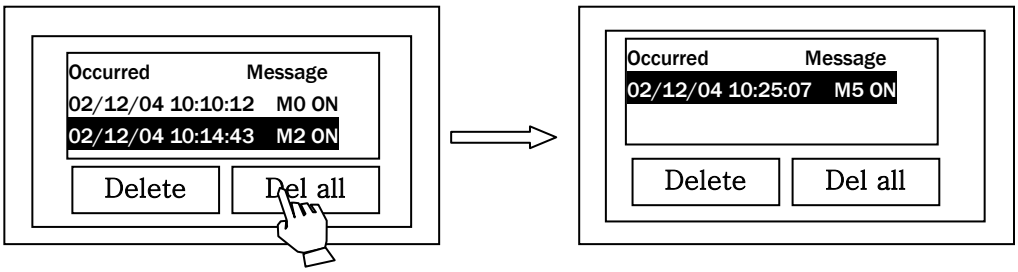
**(5) Delete (FFA8h)**




Press touch key configured as FFA8h.

When selected item is restored alarm, it is deleted.

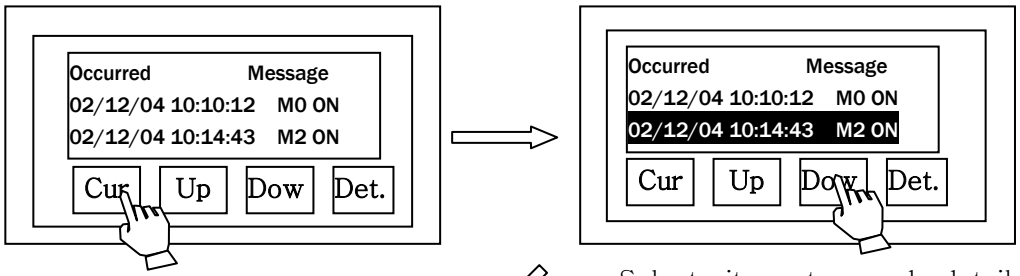
**(6) Delete All (FFA9h)**




Press touch key configured as FFA9h.

Restored alarm of list is deleted.

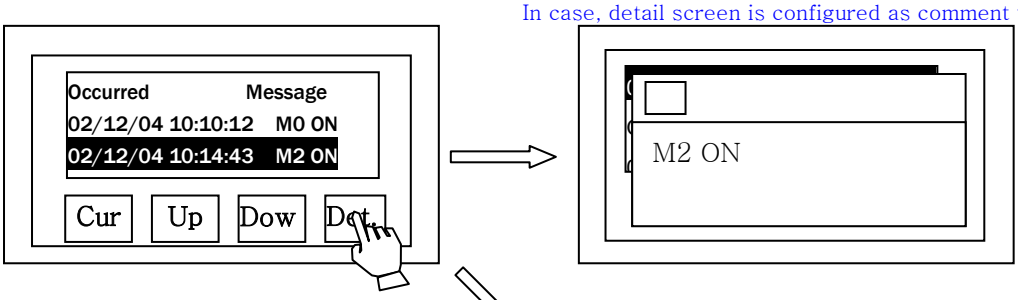
### (7) Call detail screen (FFA6h)




Display cursor with cursor key.

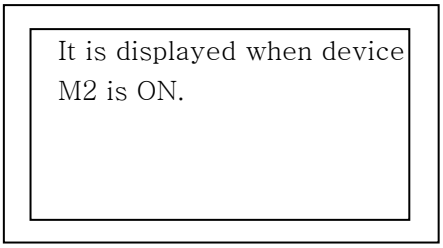
Select item to read detail information with Up/Down key.

In case, detail screen is configured as comment window.

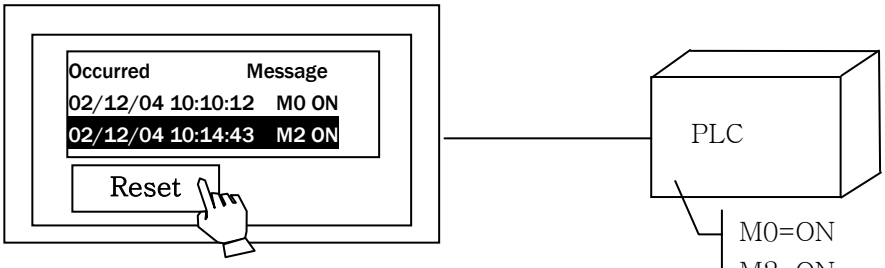



Press detail key(FFA6h).

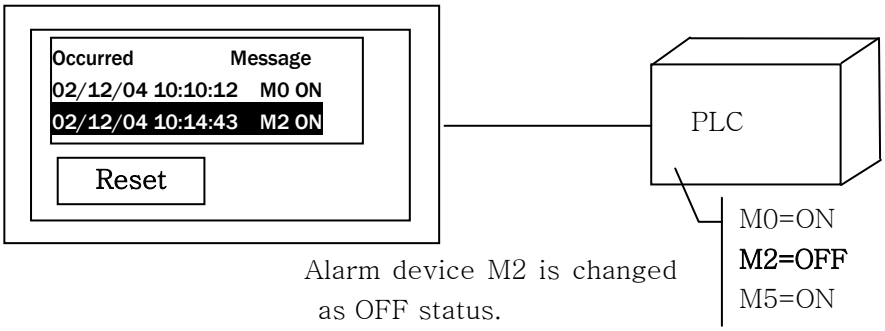
In case, detail screen is configured as base window.




### (8) Device reset (FFAAh)




In status of selecting alarm configured to reset in editor configuration, press touch key configured as FFAAh.




Alarm device M2 is changed as OFF status.

# 22. ALARM LIST

When designated monitor bit device is ON, it displays designated comment and ON time.

It is similar with alarm history but it is disappeared when appropriate device is OFF on user screen while alarm history displays old history continually when appropriate device is OFF.

## 22.1 EDIT PROCEDURE IN EDITOR

(1) Select [Draw]-[Alarm list] in main menu or click  in toolbar, alarm list property window is popped up.

(2) Configure shape to be displayed in basic tap.

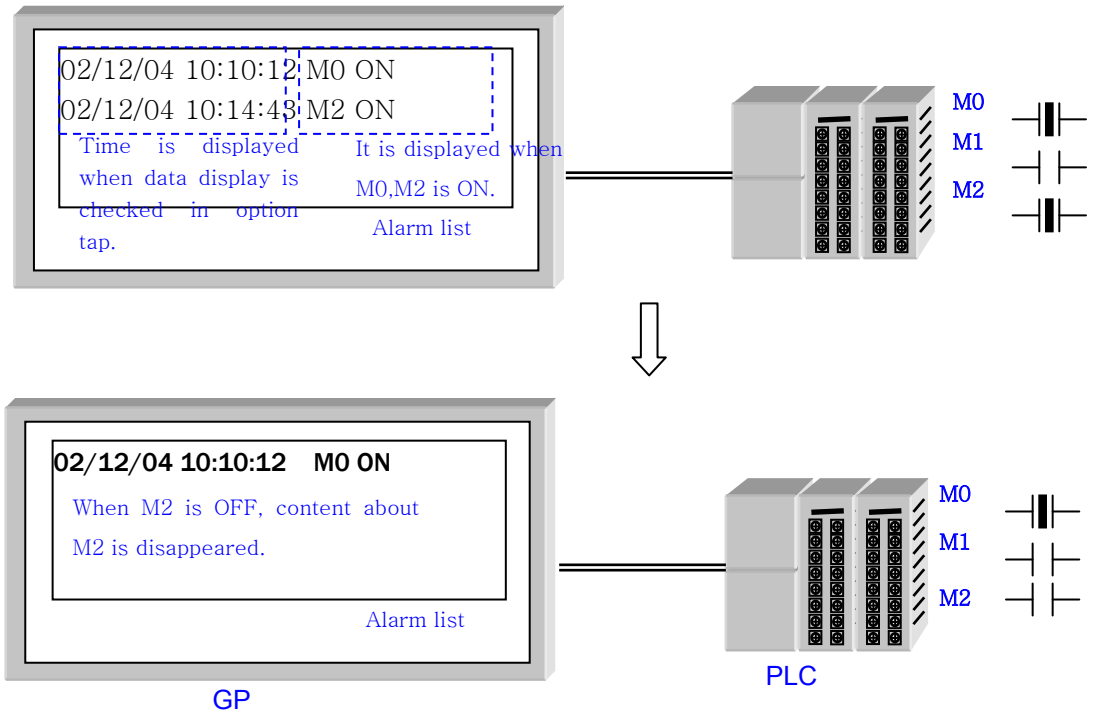
(3) Designate monitor device, the number of device in form tap.

(4) Configure necessary function in option tap.

(5) Press OK button, alarm list tag is created.

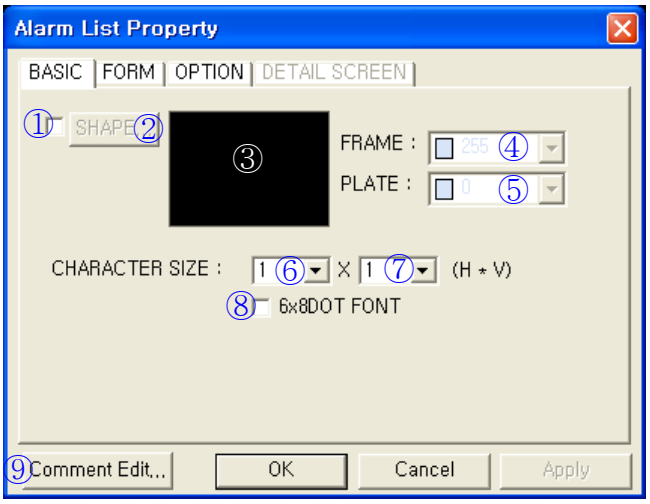
## 22.2 BASIC OPERATION

Example of alarm list operation when monitor device is M0,M1 and M2.



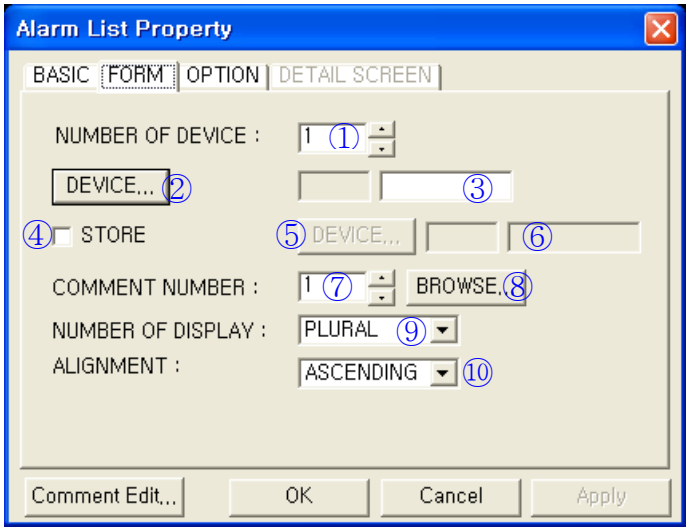
# 22.3 DETAIL CONFIGURATION AND OPERATION OF MAIN DEVICE

## 22.3.1 Basic tap



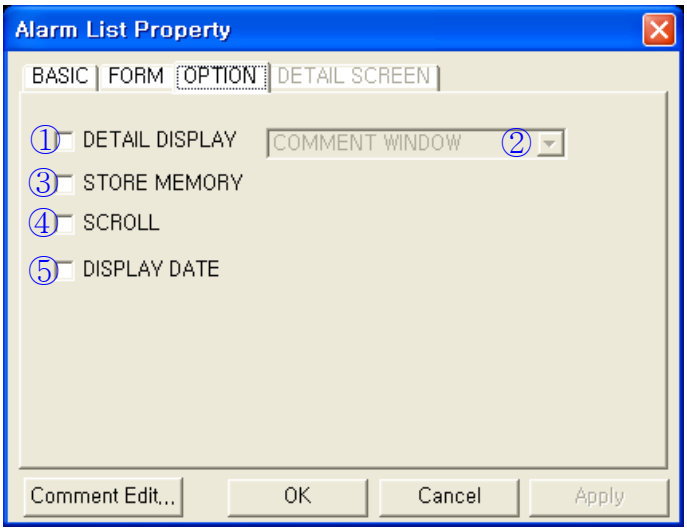

| Basic tap | Designate shape of alarm list and character size to be displayed. |
|---|---|
| ①Shape | • Designate to use shape.<br>• Checking it, shape 1 is designated as a default. |
| ②Shape | • Pressing button, it is able to select shape calling image selection window. |
| ③Shape | • Display image of currently selected shape. |
| ④Frame | • Designate frame color. |
| ⑤Plate | • Designate plate color. |
| ⑥Size | • Designate width size of character.<br>• It is able to configure among 1,2,4,6 and 8. (1 is only available when length size is 0.5.) |
| ⑦Size | • Designate length size of character.<br>• It is able to configure among 0.5,1,2,3 and 4. |
| ⑧6x8 dot font | • It displays character with 6x8 dot font when it checked. |
| ⑨Comment edit | • Edit registered comment calling **comment list window**. |

## 22.3.2 Form tap




| Form tap | Designate details about alarm list display |
|---|---|
| ①Device points | • Designate the number of monitor device related with alarm list. (Range of 1~256) |
| ②Device | • Configure device calling **device window** when pressing button.<br>• Successive bit devices amount of numbers inputted in ⑨ with this device at the head will be monitor device of alarm list. |
| ③Device | • It is able to display designated lead device and input directly. |
| ④Storage | • Check to save the number of ON status of monitor device (currently occurred alarm) in word device. |
| ⑤Device | • Call **device window** and designate word device saving the number of occur alarm. |
| ⑥Device | • It is able to display designated word device and input directly. |
| ⑦Comment no. | • Designate comment number to be displayed when the lead device is ON.<br>• Later device from the lead device corresponds successively with higher number of comment than designate number. |
| ⑧Browse | • Call registered **comment list window** and find appropriate comment. |
| ⑨Number | • Designate display one or more comment on screen.<br>• Plural : Display min. 2 comments (error message) on screen area.<br>• Single : Display an alarm currently occurred. |
| ⑩Sort | • Designate alignment method of alarm list.<br>• Ascending : Display from high number in accordance with bit device number.<br>• Descending : Display from low number in accordance with bit device number.<br>• Oldest : Display oldest one first.<br>• Latest : Display latest one first. |

## 22.3.3 Option tap

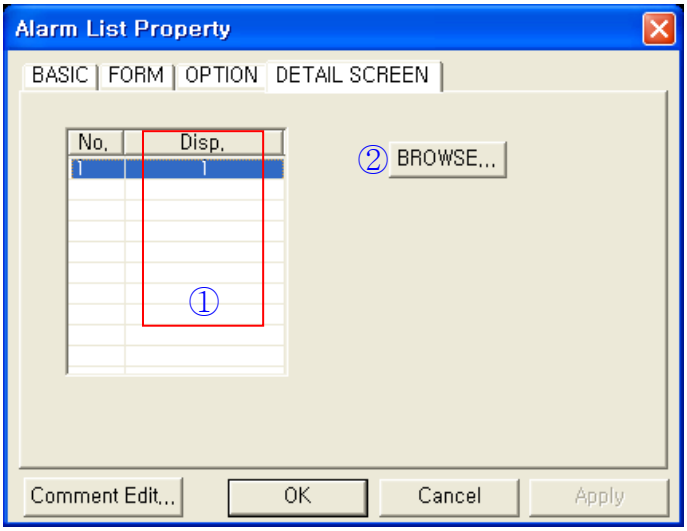



| Option tap | Configuration of option function |
|---|---|
| ①Detailed display | • Designate to display detailed information using function key(touch key).<br>• Place a cursor in specific item displayed in alarm list, press function key to display detailed screen, detailed information of the appropriate alarm as window or base screen type in accordance with configuration of ②. |
| ②Detailed display | • Comment window : Display detailed screen as comment window type.<br>• Base screen : Display detailed screen as base screen type. |
| ③Store memory | • Save ON date and time of device monitored when it checked.<br>• **Example of store memory operation** : ON time of monitor device when device to be monitored configured as M0, M1 and M2 and alarm list tag is arranged on base screen1 is,<br>M0:02/08/08 12:01 M1:02/08/08 12:10 M2:02/08/08 12:20 and switch time from base screen2 to 1 is 12:18, alarm list is as below. |

| Select store memory, | | Not select store memory | |
|---|---|---|---|
| M0 | 02/08/08 12:01 M0 error | M0 | 02/08/08 12:18 M0 error |
| M1 | 02/08/08 12:10 M1 error | M1 | 02/08/08 12:18 M1 error |
| M2 | 02/08/08 12:20 M2 error | M2 | 02/08/08 12:18 M2 error |

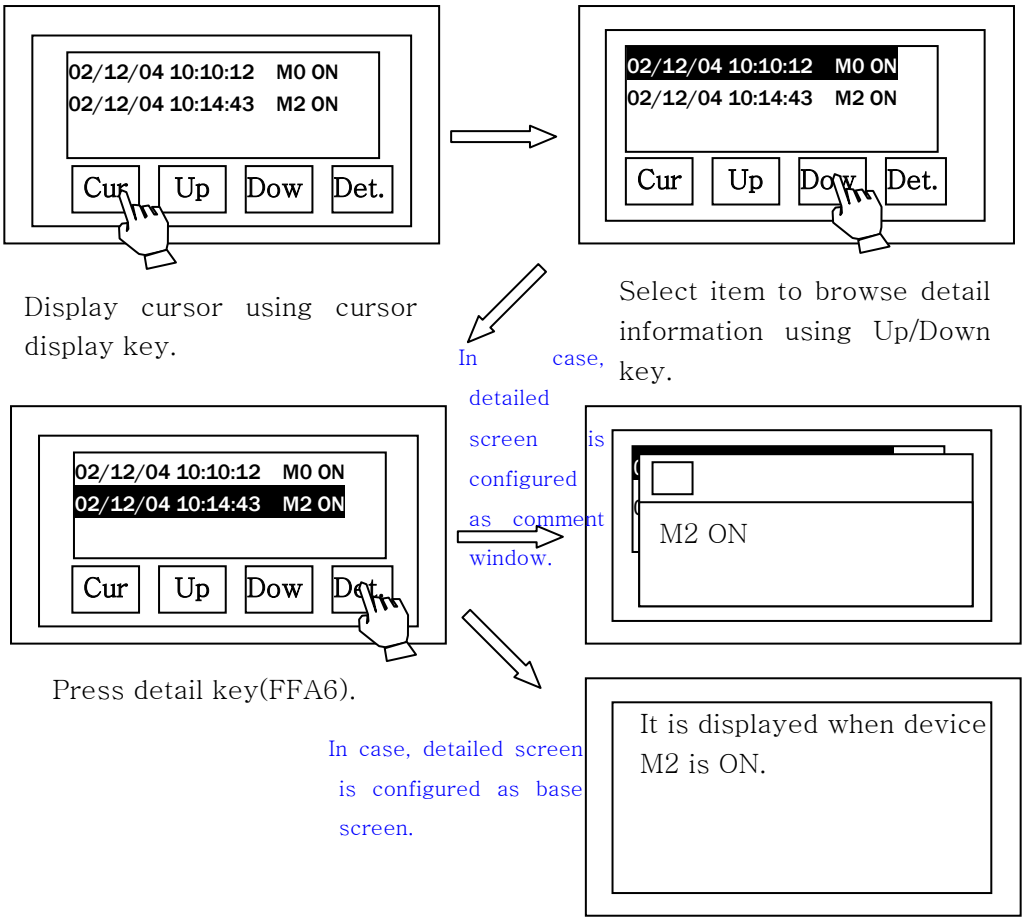
| | |
|---|---|
| ④Scroll | • If the number of occurred alarms are not displayed in tag area, scroll it to show the list. It is able to scroll using cursor up (FFABh), cursor down (FFACh) key after displaying cursor with cursor display touch key (key code FFA4h) or it is not able to scroll alarm list with cursor keys.<br>※ **When this option is applied, it is not able to arrange with alarm history on a same screen.** |
| ⑤Display date | • When this option is applied, data and time are displayed together with comment and appropriate bit device comment only when it is not designated. |

## 22.3.4 Detail display tap




| Detail display tap | Designate base screen or comment number to be displayed when alarm detail information is displayed. |
|---|---|
| ①Display | • In accordance with display screen selected in detail display, it shows designated appropriate detail comment number or base screen number. |
| ②Browse | • If comment window is selected in detail display, comment number is designated calling comment list window when pressing browse button.<br>• If base screen is selected, select base screen displaying detailed information calling screen image window configured by user when pressing browse button. |

## 22.3.5 Alarm detail information



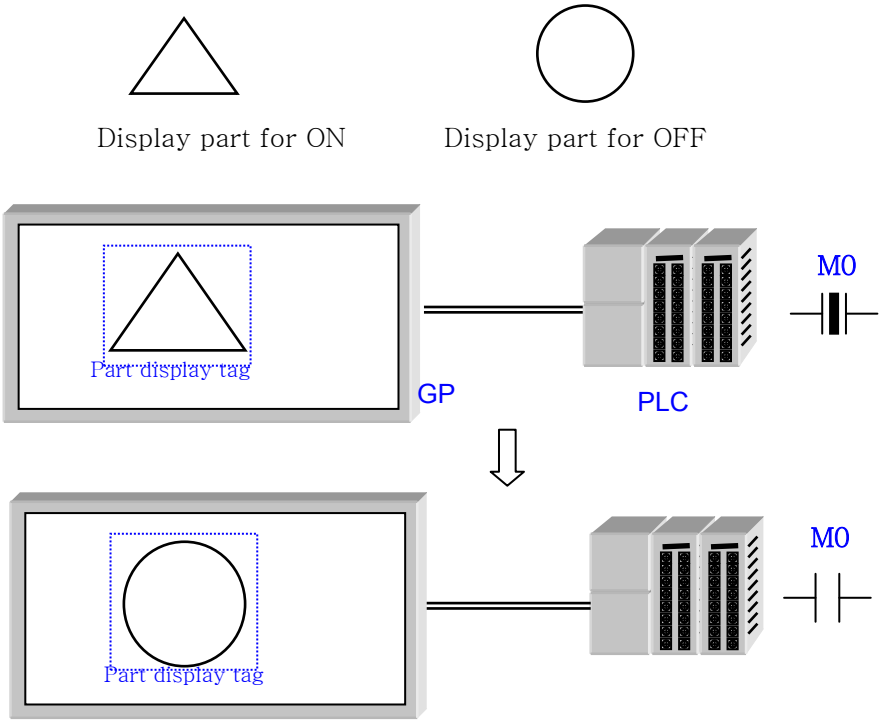
# 23. PART DISPLAY

Display part on a screen in accordance with designated bit device status or word device value.

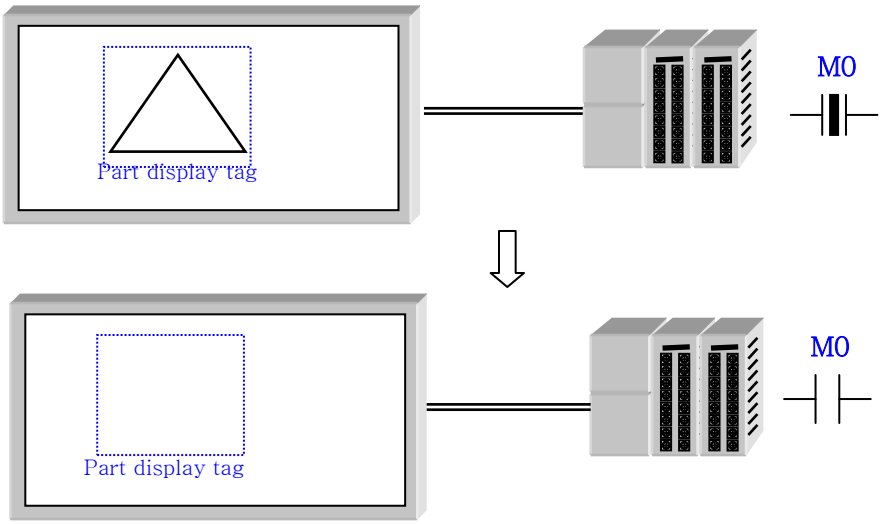
## 23.1 BASIC OPERATION

### 23.1.1 Bit operation

Display designated part in accordance with ON/OFF of bit device.

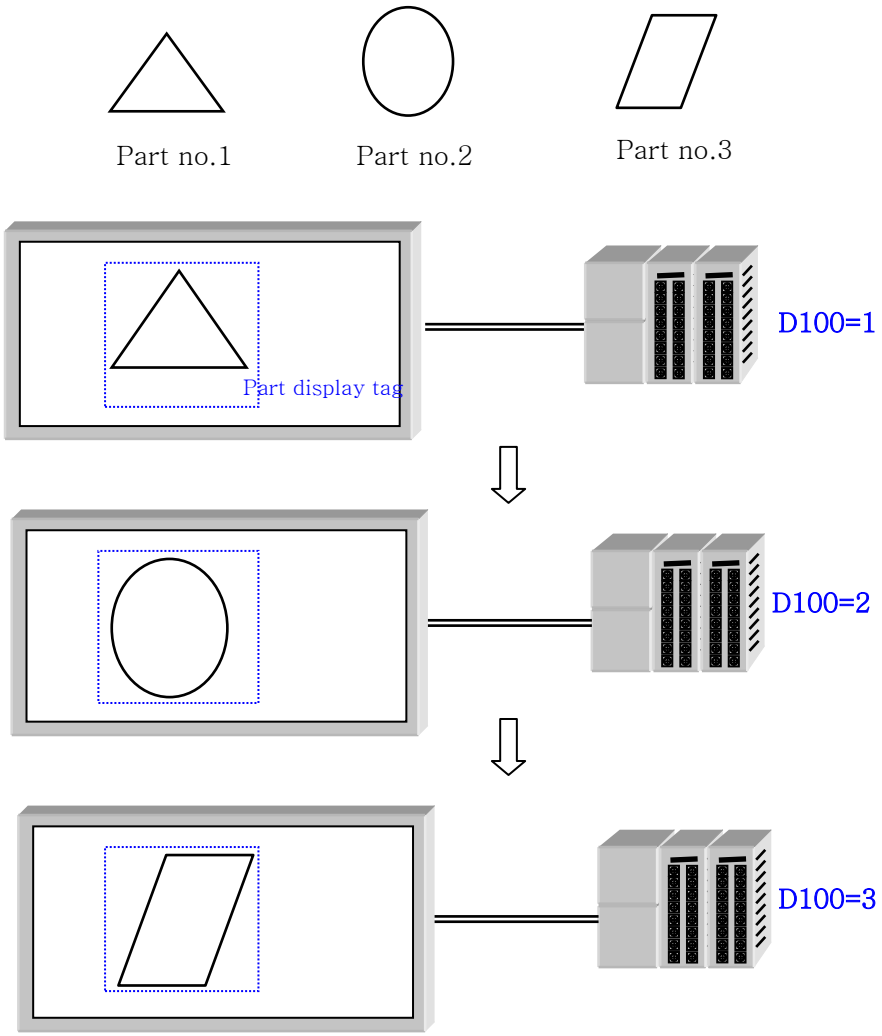



When using mark option, it shows specific part in accordance with device status, not switching part.



### 23.1.2 Word operation

It displays part in accordance with word device value.




## 23.2 EDIT PROCEDURE IN EDITOR

(1) Select [Draw]-[Part display] or  in toolbar, part display property window is popped up.

(2) Designate part switching in basic tap.

(3) Select device when part switching is device and part number for fixed.

(4) Designate display mode.

(5) Designate part or color about ON/OFF in bit tap when device is bit.

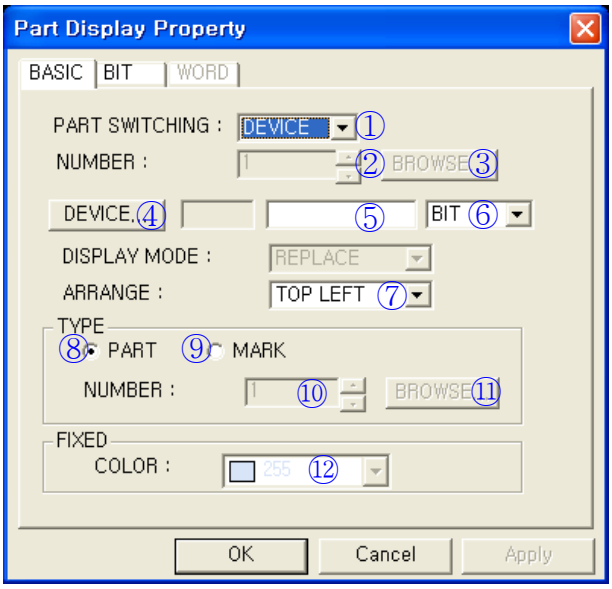
(6) Designate start number in word tap when device is word.

(7) Press OK button, part display tag is created.

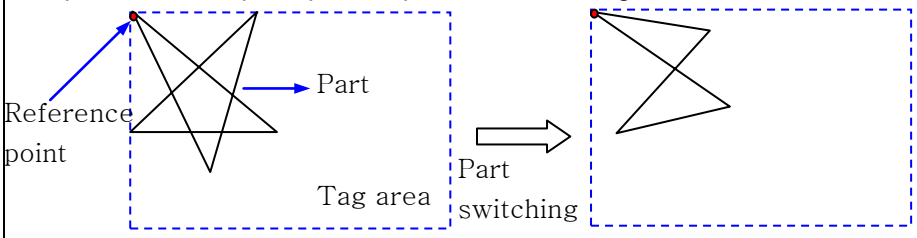
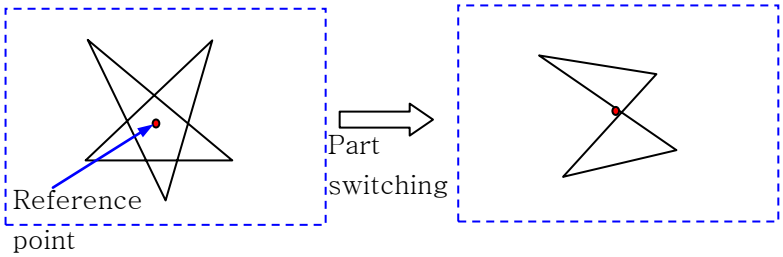
(8) It is arranged in proper position.

# 23.3 Detail configuration and operation

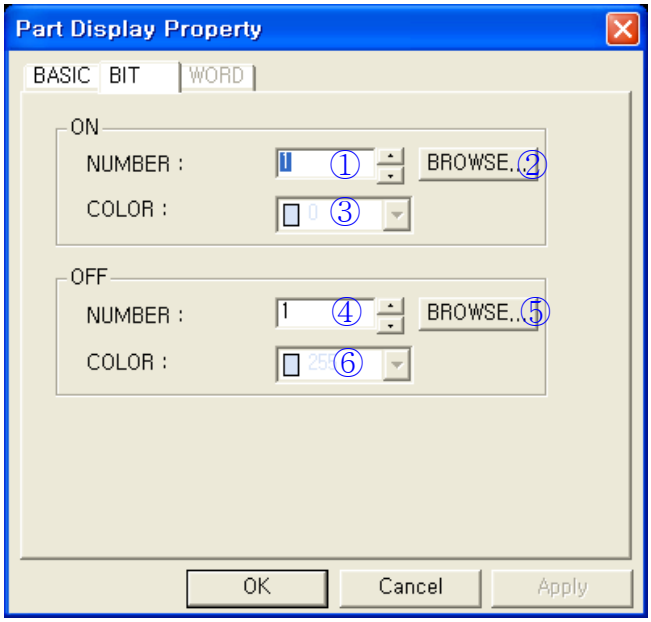
## 23.3.1 Basic tap




| Basic tap | Designate detail about part display |
|---|---|
| ①Part switching | • Designate one between device or fixed.<br>• Device : Switch part in accordance with status of designated bit/word device.<br>• Fixed : Display one designated part. |
| ②No. | • Part switching=It is activated only when it is fixed.<br>• Part for inputted number in spin box is displayed. |
| ③Browse | • Call **image selection window**, select part registered in part library. Selected part number is inputted in spin box when selecting part. |
| ④Device | • Part switching=It is activated only when it is device.<br>• Designate bit/word device in accordance with selecting bit/word in ⑥.<br>• When bit device is selected, designated part is displayed in bit tap in accordance with ON/OFF of bit device.<br>• When word device is selected, part of part number is displayed for word device value. |
| ⑤Device | • Display selected device and input device directly. |
| ⑥Data type | • Select to use bit device or word device for part switching. |

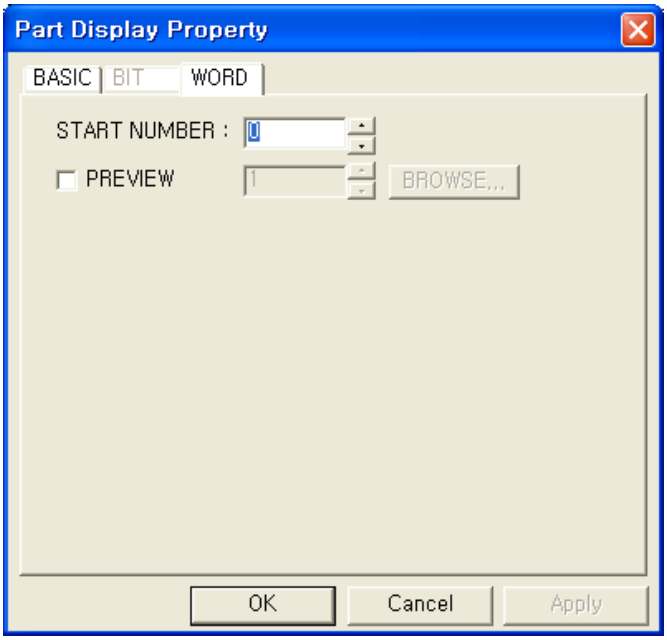
| | |
|---|---|
| ⑦Positioning | • Top-left : Place top-left point of part in center of tag area.<br>  <br><br>• Center : Place center point of part in center of tag area.<br>  <br> |
| ⑧Part | • Mark option is not used. |
| ⑨Mark | • It is deactivated when selecting word device.<br>• Part switching=The white of designated part in ② is changed designated color in ⑫ when it is fixed.<br>• Part switching= The white of designated part in ⑩ is changed designated color in bit tap in accordance with ON/OFF of device when it is device.<br>• When designating mark color as black, part is not displayed when background color is black, because only white/black are used. |
| ⑩Number | • Part switching=It is activated when it is device and mark are selected.<br>• Designate part to be displayed when using mark option. |
| ⑪Browse | • Designate part to be displayed using image selection window for mark option. |
| ⑫Color | • Part switching=The white of designated part in ② is changed designated color in this part when it is fixed.<br>• Designate same color with background, it is not displayed on screen. |

## 23.3.2 Bit tap




| Bit tap | Configuration related with part display according to bit device |
|---|---|
| ①,④ | • Designate part number to be displayed for ON/OFF.<br>• It is activated when type is designated as part in basic tap. |
| ②,⑤ | • Designate part number to be displayed for ON/OFF using **image selection window**. |
| ③,⑥ | • It is activated when type is designated with mark in basic tap.<br>• White of designated part is displayed as specified color at ③,⑥ according to device ON/OFF.<br>• Part is not shown when it is specified same with background color. |

## 23.3.3 Word




| Word tap | Configuration related with part display according to word device value |
|---|---|
| ①Start number | • Designate part number to be displayed when the value of specified word device is 0.<br>• Start number : The part of **word device value + start number** is displayed.<br>• It is able to input the value within -32768~32767 and default is 0.<br>• When word device value+start number is under 0, it does not display. |
| ②Parts preview | • Parts preview : Designate to display part in editor screen.<br>• When checking the box, part of part number inputted in spin box is displayed on editor screen or only tag area is displayed. |
| ③Parts preview | • Designate part number displayed on editor screen. |
| ④Browse | • Review part registered in part library using **image selection window** and select it.<br>• When selecting part, selected part number is inputted in spin box. |

# 24. LAMP DISPLAY

It executes ON/OFF the lamp according to ON/OFF of bit device.

It is able to use lamp provided by GP or designed by user.

## 24.1 EDIT PROCEDURE IN EDITOR

(1) Select [Draw]-[Lamp display] or  in toolbar, lamp display property window is popped up.

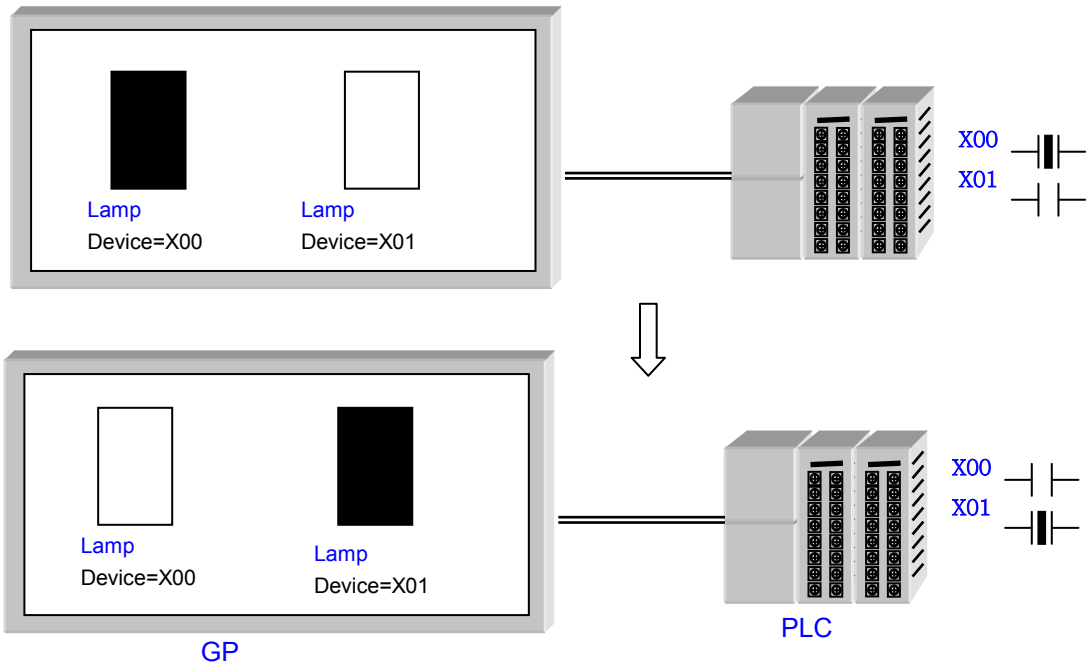
(2) Designate shape of lamp in window.

(3) Designate monitoring device and other property.

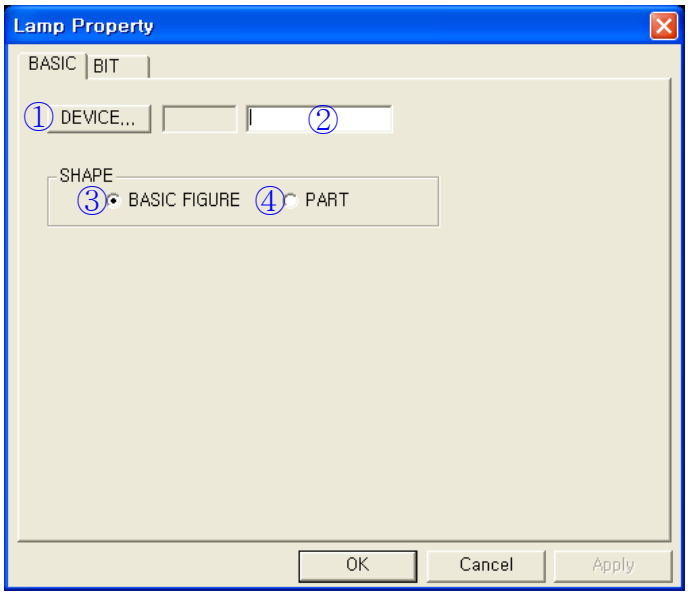
(4) Press OK button, click proper position, then, it is arranged on a screen.

In case, use supported shape from program, it is made as min. 16X16 dot. In case, use user-designed part as a lamp, it is made as over 16X16 of rectangle including ON.OFF part.

## 24.2 BASIC OPERATION



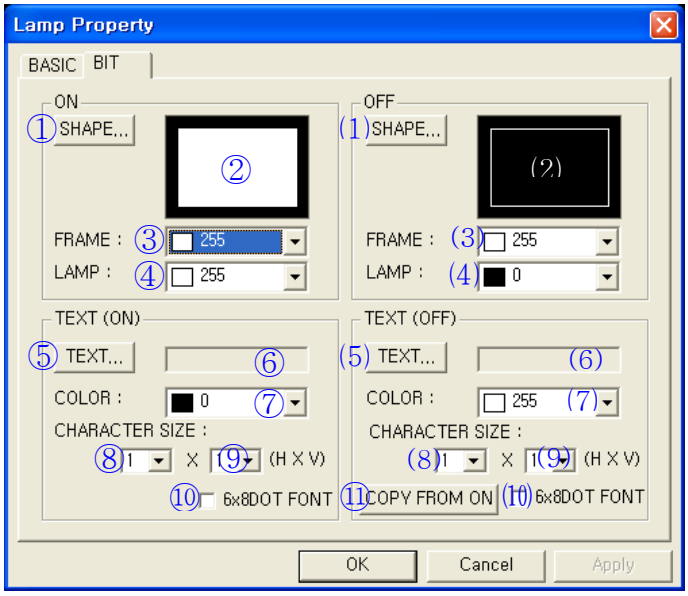
# 24.3 DETAIL CONFIGURATION

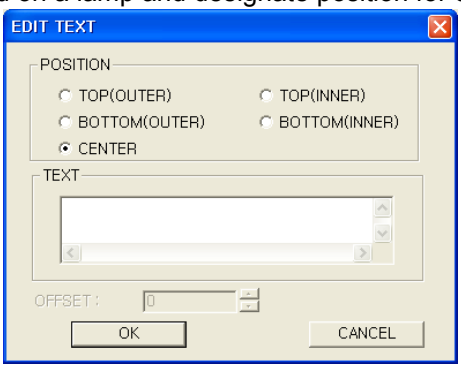
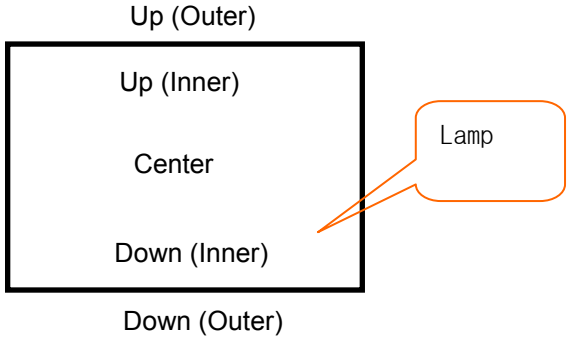



## 24.3.1 Basic tap

| Basic tap | Designate shape of PLC device and tag |
|---|---|
| ①Device | • Designate monitoring device calling **bit window**. |
| ②Device | • Editor box inputting PLC device directly |
| ③Basic figure | • Use supported figure of lamp from system. |
| ④Part | • Use user-defined part as a figure of lamp. |

## 24.3.2 Bit tap


Lamp Property
BASIC
BIT
ON
①
SHAPE...
②
FRAME :
③
255
LAMP :
④
255
OFF
(1)
SHAPE...
(2)
FRAME :
(3)
255
LAMP :
(4)
0
TEXT (ON)
⑤
TEXT...
⑥
COLOR :
⑦
0
CHARACTER SIZE :
⑧
1
X
⑨
(H X V)
⑩
6x8DOT FONT
TEXT (OFF)
(5)
TEXT...
(6)
COLOR :
255
(7)
CHARACTER SIZE :
(8)
1
X
(9)
(H X V)
⑪
COPY FROM ON
(10)
6x8DOT FONT
OK
Cancel
Apply

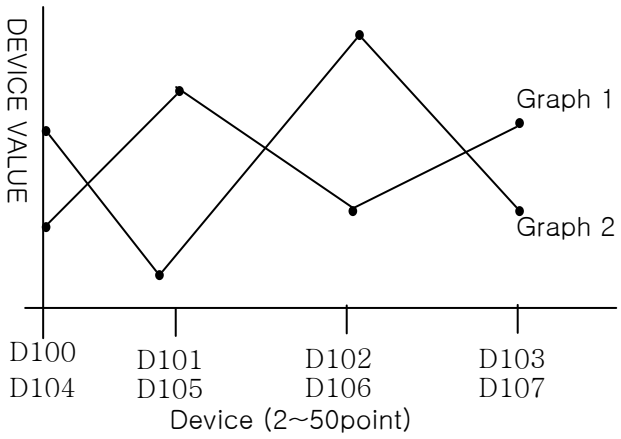
| Bit tap | Designate details about lamp display. |
|---|---|
| ①Figure | • In case, specified shape in basic tap is basic figure, it is able to user designate lamp type among program supported lamps.<br>• In case, specified shape in basic tap is **part**, it is able to user designate ON part among program supported parts. |
| ②Figure | • Display image of currently selected figure. |
| ③Frame | • Designate frame color for ON.<br>• It is only applied for basic figure. |
| ④Lamp | • Designate lamp display color for ON.<br>• It is only applied for basic figure. |
| ⑤Text | • Edit text to be displayed on On lamp calling **text editing window**. |
| ⑥Text | • Display text to be displayed on lamp for ON. |
| ⑦Color | • Designate text color to be displayed. |
| ⑧Size | • Designate width size of text to be displayed. (1,2,4,6,8) |
| ⑨Size | • Designate length size of text to be displayed. (0.5,1,2,3,4) |
| ⑩6X8 dot font | • Designate to use 6X8 dot font. |
| ⑴~⑽ | • It is same with ①~⑩ except for concerning for OFF. |
| ⑪ | • Specified text(⑥) for ON is also applied for OFF(⑥). |
| Display text on a lamp. | • Pressing ⑤,⑸ buttons, text editing window is called. It is able to edit text to be displayed on a lamp and designate position for displaying text.<br>  <br>• Text position<br>  |

# 25. LINE GRAPH

It designates more than two devices and displays saved value of device as line graph.

## 25.1 BASIC FUNCTION

- It is able to draw as max.8 lines having max.50 of device points.
- It is able to designate max/min value displayed on a graph and it does not display point out of the range.
- It is able to designate to allot from lead device of left to right or right to left on X axis.
- It cannot display specified value according to configuration.



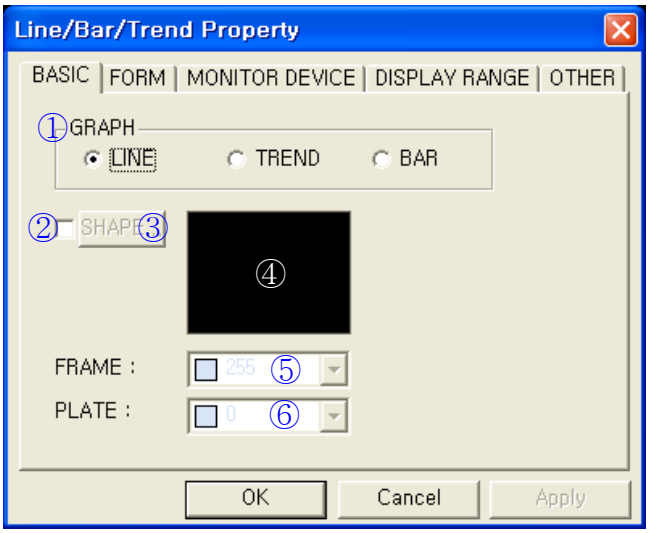

## 25.2 EDIT PROCEDURE OF LINE GRAPH IN EDITOR

(1) Select [Draw]-[Line/Trend/Bar] in main menu or  in toolbar, then, Line/Trend/Bar graph property window is popped up.
(2) Select line in basic tap.
(3) Designate the number of graph and point in form tap.
(4) Designate monitor device, data type and graph type in monitor device tap.
(5) Designate the value of high limit and low limit of graph in display range tap.
(6) Press OK button, line graph tag is created on a screen.
(7) Adjust as proper size.

**※Notice**

One line graph is only be arranged in a screen and it is not able to arrange with trend graph in a screen.

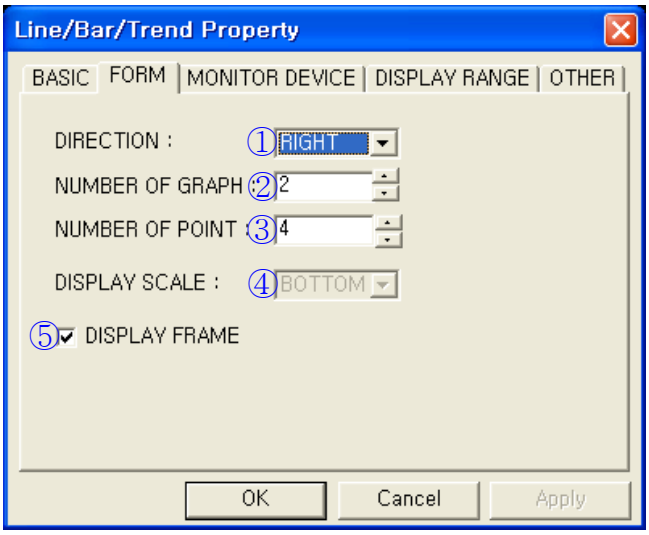
# 25.3 DETAIL CONFIGURATION AND OPERATION OF MAIN DEVICE

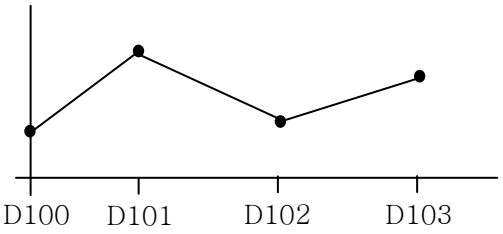
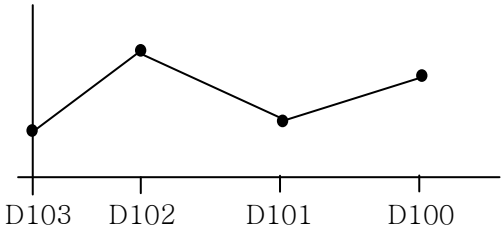



## 25.3.1 Basic tap

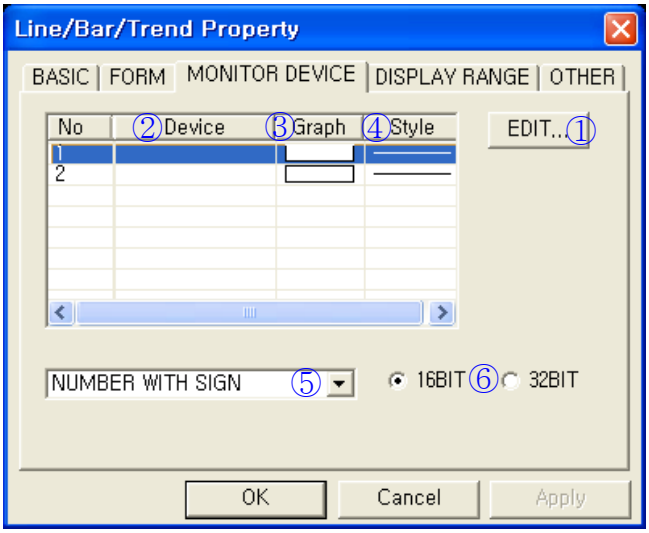
| Basic tap | Designate type and shape of graph |
|---|---|
| ①Graph | Select graph type.<br>• Line: Line graph • Trend: Trend graph • Bar: Bar graph |
| ②Shape | • Designate to use shape<br>• When checking it, no.1 of memorized shapes is designated as a default. |
| ③Shape | • It is activated when ② is checked.<br>• Pressing a button, it is able to select shape calling **image selection window**. |
| ④Shape | • It shows image of current selected shape. |
| ⑤Frame | • Designate frame color.<br>• It is activated when designating shape. |
| ⑥Plate | • Designate plate color.<br>• It is activate when designating shape. |

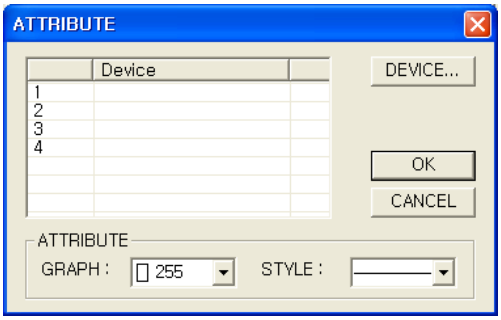
## 25.3.2 Form tap




| Form tap | Configuration of graph type including direction, points etc |
|---|---|
| ①Direction | • It is able to designate right/left.<br>• In case of right direction, device address is increased to right of X axis.<br>  <br><br>• In case of left direction, device address is increased to left of X axis.<br>  <br> |
| ②Number | • Designate the number of graph to be displayed in line graph.<br>• It is able to designate within 1~8. |
| ③Points | • Designate the number of device to be displayed in one graph.<br>• Designate as max.50 points.<br>• Designate lead device in monitor device tap. |
| ④ Scale position | • It is not available in line graph. |
| ⑤Frame | • Designate to display graph frame. |

## 25.3.3 Monitor device tap



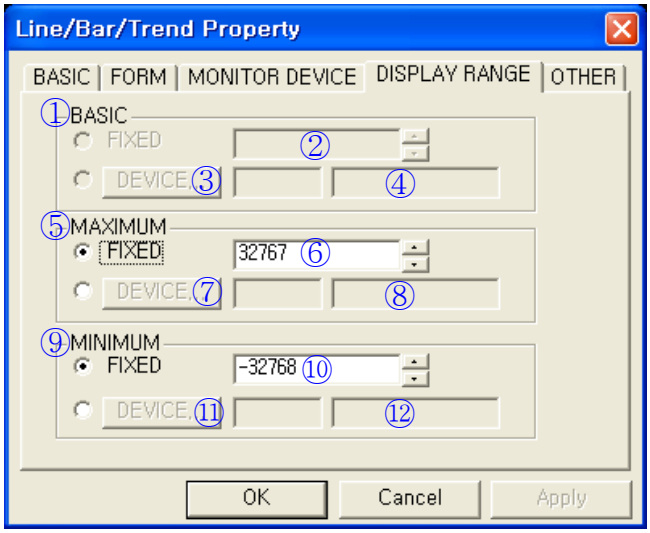

| Monitor device | Designate device to be monitored. |
|---|---|
| ①Edit | • Designate color, style of device and graph calling property window.<br>  <br>• Property window<br>* Device : Designate lead device calling **device window**.<br>* Graph : Designate line color to be displayed on a graph.<br>* Style : Designate line style among solid/dotted/wave/a dashdot/two dashdot to display a graph. |
| ②Device | • Display lead device of each graph. |
| ③Graph | • Display color of each graph.<br>• Double-click the item to adjust. |
| ④Style | • Display line color of each graph.<br>• Double-click the item to adjust. |
| ⑤Data type | • Designate data type of monitor device.<br>Number with sign : It interprets device value as positive number with sign.<br>Number without sign : It interprets device value as positive number without sign. |
| ⑥Bit | • Designate bit size of data. 16bit : Single word, 32bit : Double word<br>• In case of 32bit, address is allotted as double word units from lead device. |



### ※Notice

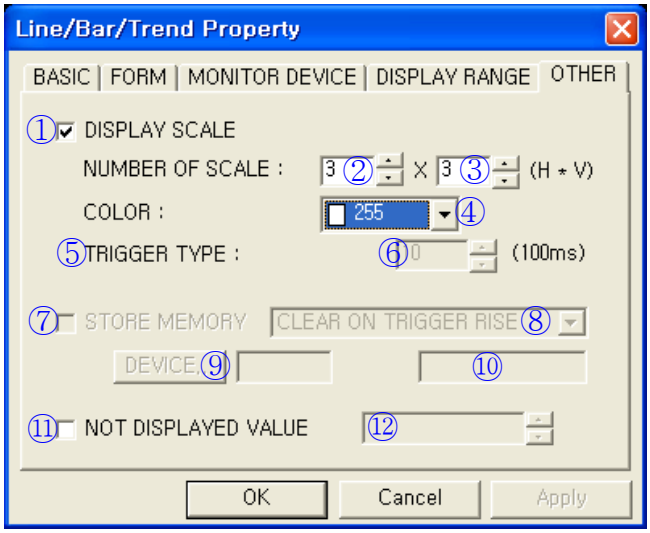
It can be only used with 32bit in accordance with connection device, refer to “Communication manual”.

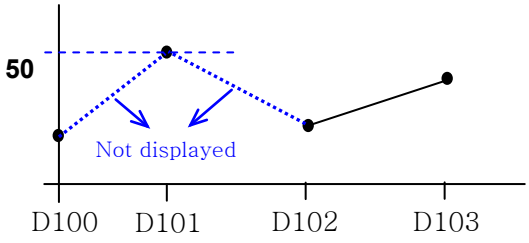
## 25.3.4 Case tap




| Case tap | Designate max/min.value to be displayed on a graph |
|---|---|
| ① | • It is not used in line graph. |
| ② | |
| ③ | |
| ④ | |
| ⑤ | • In case of **fixed**, designated value is used for fixed max.value.<br>• Designate specific device and use it as max.value when it is not **fixed**.<br>In this case, max.value is changed together when device value is changed. |
| ⑥ | • In case of **fixed**, designate the value to be used as fixed max.value. |
| ⑦ | • Designate max.deivce calling **device window**. |
| ⑧ | • Display device specified in ⑦. |
| ⑨ | • In case of **fixed**, designated value is used for fixed min.value.<br>• Designate specific device and use it as min.value when it is not **fixed**.<br>In this case, min.value is changed together when device value is changed. |
| ⑩ | • In case of **fixed**, designate the value to be used as fixed min.value. |
| ⑪ | • Designate min.device calling **device window**. |
| ⑫ | • Display device specified in ⑪. |

## 25.3.5 Other tap



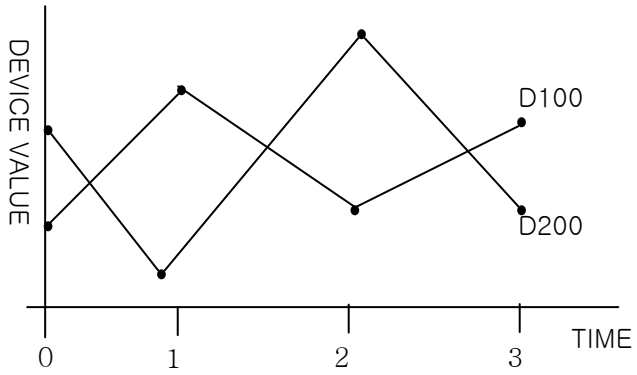

| Other tap | Configuration of scale display and other option |
|---|---|
| ①Scale display | • Designate to use scale. |
| ② Scale points (Width) | • Designate the number of scale points on X axis. |
| ③ Scale points (Length) | • Designate the number of scale points on Y axis. |
| ④Color | • Designate color of scale. |
| ⑤ | • It is not used in line graph. |
| ⑥ | |
| ⑦ | |
| ⑧ | |
| ⑨ | |
| ⑩ | |
| ⑪Value not displayed | • Check not to display specific value. |
| ⑫ Value not displayed | • Designate the value not to be displayed. |
| Function of value not displayed | • In case, value not to be displayed is set as 50<br>: It does not display lines connecting D100 and D101, D101 and D102, because the value of D101 is 50.<br>  |

# 26. TREND GRAPH

It displays saved value in designated device as line graph for time passing.

## 26.1 BASIC FUNCTION

- X, Y axis indicates time and device value respectively.
- It is able to designate max/min.value to be displayed on a graph, it does not display point out of the range.
- It is able to draw max.8 lines with 50 of sample points.
- It is able to configure sampling cycle up to 100ms~3600s with 100ms units.
- It is able to designate direction of graph according to time passing.
- If it is switched into other screen according to configuration, it saves sample data in GP inner memory and it is able to display old history using this data for screen restore.




## 26.2 EDIT PROCEDURE OF TREND GRAPH IN EDITOR

(1) Select [Draw]-[Line/Trend/Bar] or  in tool bar, then, Line/Trend/Bar property window is popped up.

(2) Select trend in basic tap.

(3) Designate the number of graph and point in form tap.

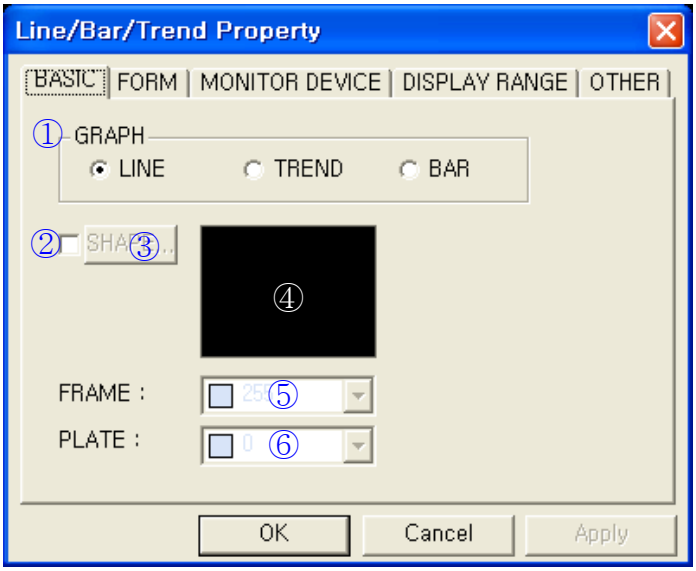
(4) Designate monitor device, data type and graph type in monitor device tap.

(5) Designate the value of high limit and low limit of graph in case tap.

(6) Press OK button, line graph tag is created in a screen.

(7) Adjust as proper size.

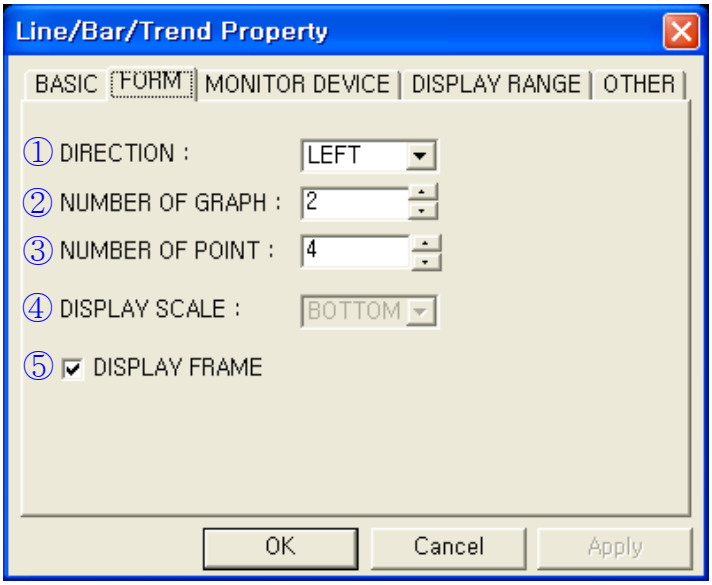
# 26.3 DETAIL CONFIGURATION AND OPERATION OF MAIN DEVICE

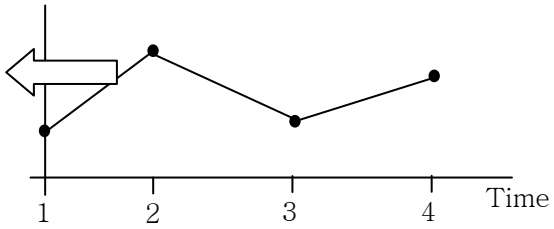
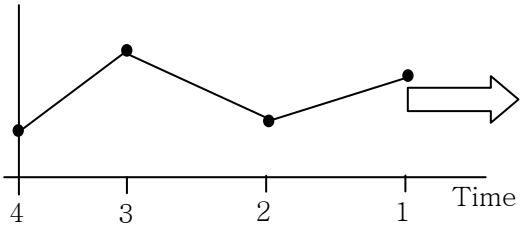
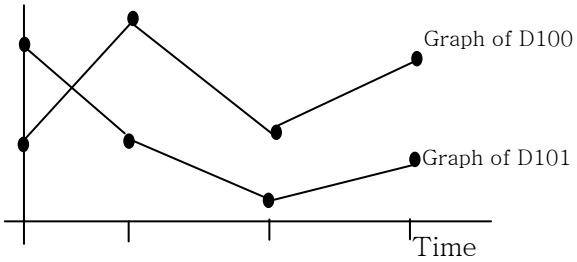



## 26.3.1 Basic tap

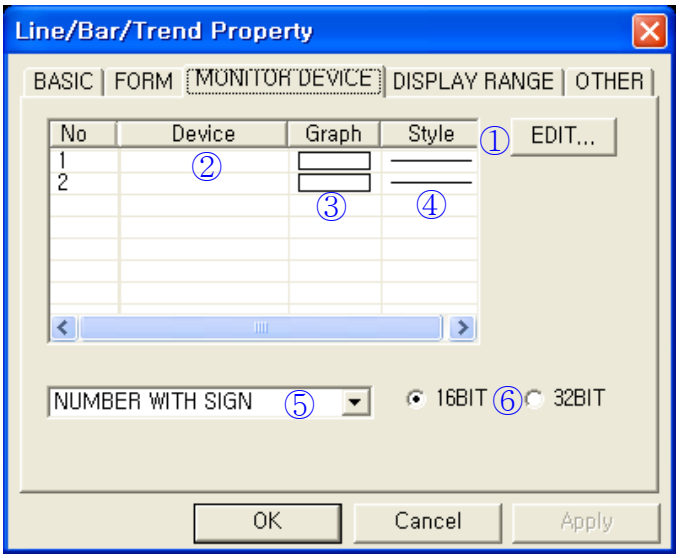
| Basic tap | Designate type and shape of graph |
|---|---|
| ①Graph | • Select trend, trend graph is created. |
| ②Shape | • Designate to use shape.<br>• When checking it, no.1 of memorized shapes is designated as a default. |
| ③Shape | • Press a button, select shape calling **image selection window**. |
| ④Shape | • It shows image of currently selected shape. |
| ⑤Frame | • Designate frame color.<br>• It is activated when designating shape. |
| ⑥Plate | • Designate plate color.<br>• It is activated when designating shape. |

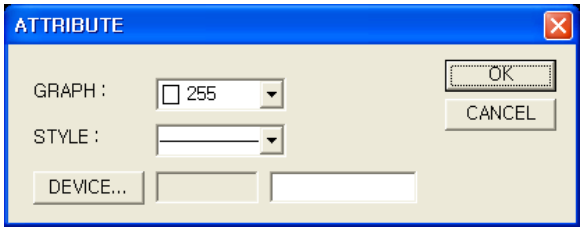
## 26.3.2 Form tap



| Form tap | Configuration of graph type including direction, points of graph |
|---|---|
| ①Direction | • It is able to right/left direction.<br>• In case of right direction, time is increased to right of X axis. Graph is floated to the left and the latest sample is in the rightmost.<br>  <br><br>• In case of left direction, time is increased to left of X axis. Graph is floated to the right and the latest sample is in the leftmost.<br>  <br> |
| ②Number | • Designate the number of graph to be displayed on trend graph.<br>• It is able to designate up to max.8. |
| ③Points | • Designate the number of sample to be displayed in a graph.<br>• It is able to designate up to max.50 points.<br>  <br><br>• The above figure is for line graph when the number of graph=2, points=4 and lead device is D100. Two graphs are displayed because the number of graph=2 and 4 samples are allotted for a graph because points=4.<br>• Lead device is designated in monitor device tap. |
| ④Scale position | • It is not used in trend graph. |
| ⑤Frame | • Designate to display graph frame. |

## 26.3.3 Monitor device tap



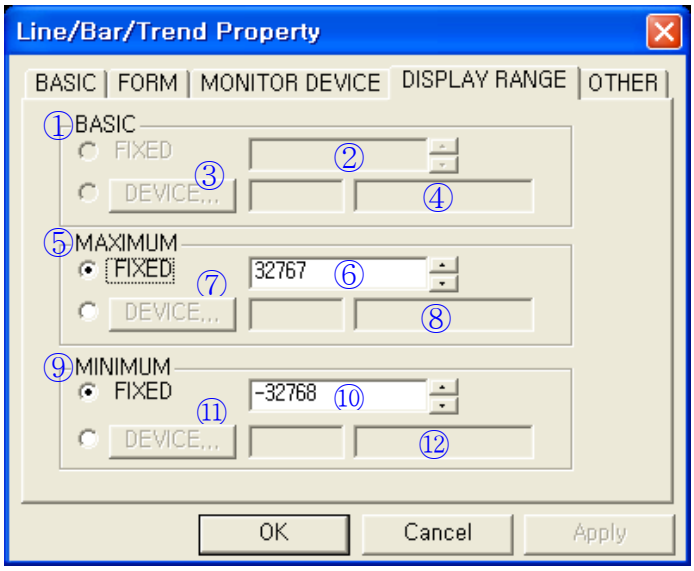

| Monitor device tap | Designate color of monitor device and graph |
|---|---|
| ①Edit | • Call property window and designate color, style of device and graph.<br>  <br>• Property window<br>* Device : Designate lead device calling **device window**.<br>* Graph : Designate line color to be displayed on a graph as white/black.<br>* Style : Designate line style among solid/dotted/wave/a dashdot/two dashdot to display a graph. |
| ②Device | • Display lead device of each graph. |
| ③Graph | • Display color of each graph. |
| ④Style | • Display line color of each graph. |
| ⑤Data type | • Designate data type of monitor device. Number with/without sign, BCD |
| ⑥Bit | • Designate bit size of data. 16bit : Single word, 32bit : Double word |



### ※Notice

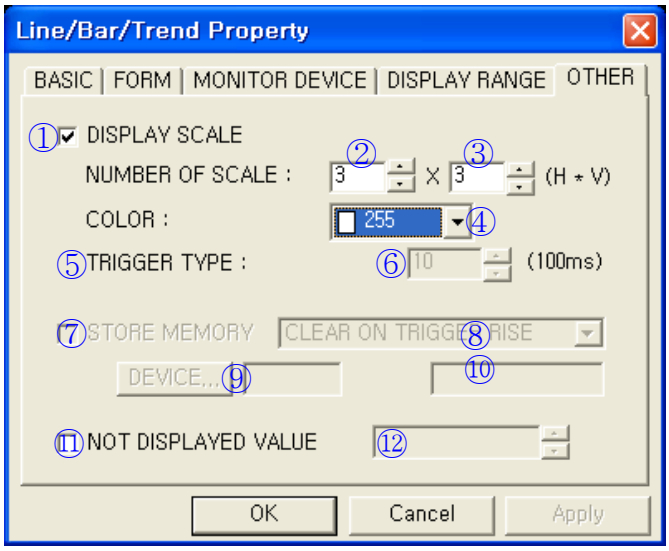
It can be only used with 32bit in accordance with connection device, refer to “Communication manual”.

## 26.3.4 Case tap




| Case tap | Designate max/min.value to be displayed on a graph |
|---|---|
| ① | • It is not used in trend graph. |
| ② | |
| ③ | |
| ④ | |
| ⑤ | • It is designated as fixed, use specified value as fixed max.value. |
| ⑥ | • It is designated as fixed, specify value to use as fixed max.value. |
| ⑦ | • It is activated when it is not a fixed.<br>• Designate max.device calling **device window**. |
| ⑧ | • Display device designated in ⑦. |
| ⑨ | • It is designated as fixed, use specified value as fixed min.value. |
| ⑩ | • It is designated as fixed, specify value to use as fixed min.value. |
| ⑪ | • It is activated when it is not a fixed.<br>• Designate min.device calling **device window**. |
| ⑫ | • Display device designated in ⑪. |

## 26.3.5 Other tap



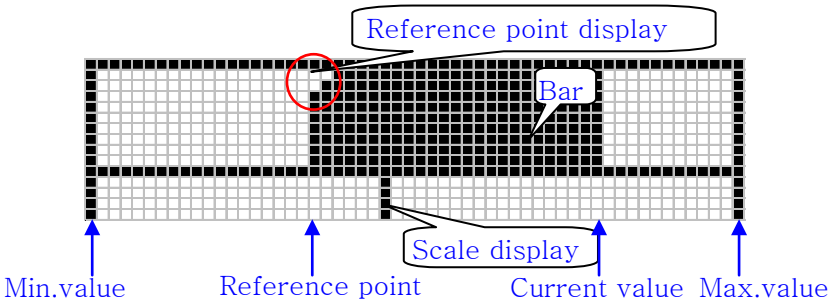

| Other tap | Configuration of scale display and other option |
|---|---|
| ①Scale display | • Display scale on X/Y axis of graph when it checked. |
| ②, ③Scale points | • Designate scale points on X/Y axis. |
| ④Color | • Designate scale color. |
| ⑤Trigger type | • It is not used. |
| ⑥Sampling time | • Designate sampling cycle.<br>• It is able to configure within 100ms(1)~3600sec(36000) with 100ms unit. |
| ⑦Store memory | • If it is not checked, it is switched to other screen and draw again without old history when it is restored.<br>• Checking it, it saves in GP inner memory with continuous sampling and it shows graph calling saved data from inner memory when screen with trend graph is restored, not losing old history.<br>• Store memory option is in alarm list display, it should not be used over 17 times. |
| ⑧Store memory | • Configuration of initialization of GP memory for memory store.<br>• No clear trigger : Not use initialization function of GP inner memory related with trend graph.<br>• Clear on trigger rise : When device item is activated, bit device is configured, it initializes GP inner memory related with trend graph and draw again at rising edge.<br>• Clear on trigger fall : It activates GP inner memory in falling edge of trigger device. |
| ⑨Device | • It is activated when ⑦ is checked and ⑧ is not a status of no clear trigger. Configure trigger device calling bit device window. |
| ⑩Device | • Editor box with displaying selected trigger device or inputting directly. |
| ⑪Value not displayed | • It is not used. |

# 27. BAR GRAPH

It displays saved value in designated device as bar graph.

## 27.1 BASIC FUNCTION

- Display the value from reference value to device current value designating max/min/reference value.
- Min.size is 16x16 dot.
- Display 3 dots inversing in the opposing side of start scale of bar to display reference display.
- Draw a oblique line when device value is out of the max/min.range.




## 27.2 BAR GRAPH EDIT PROCEDURE IN EDITOR

(1) Select [Draw]-[Line/Trend/Bar] or  in tool bar, Line/Trend/Bar property window is popped up.

(2) Select bar in basic tap.

(3) Designate direction of graph in form tap.

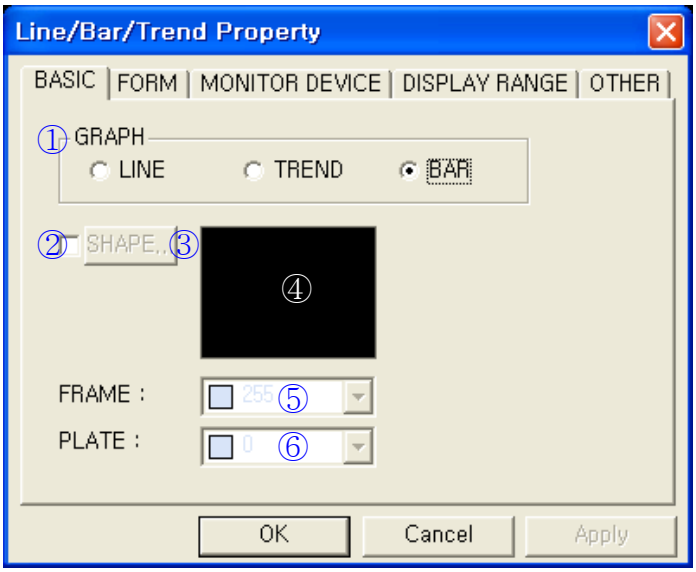
(4) Designate monitor device and data type in monitor device tap.

(5) Designate value of reference, high limit, low limit of graph in case tap.

(6) Press OK button, bar graph tag is created on a screen.

(7) Adjust proper size.

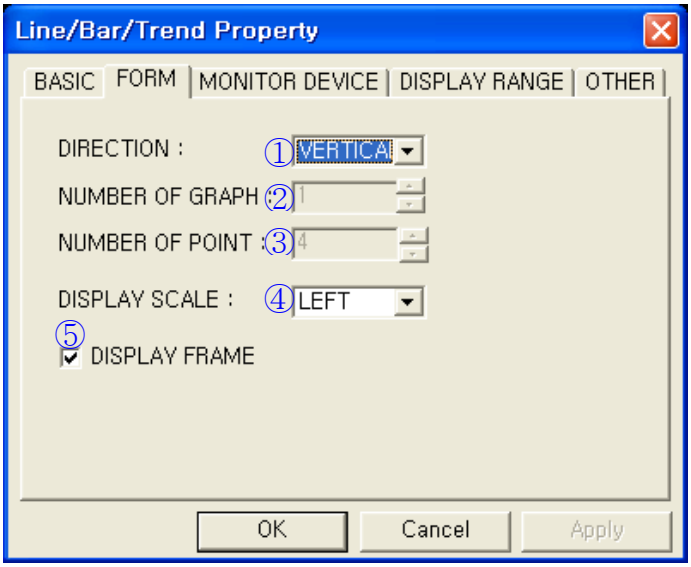
# 27.3 DETAIL CONFIGURATION

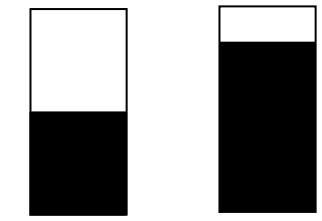
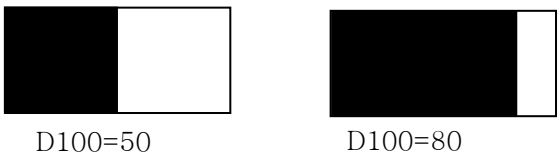



## 27.3.1 Basic tap

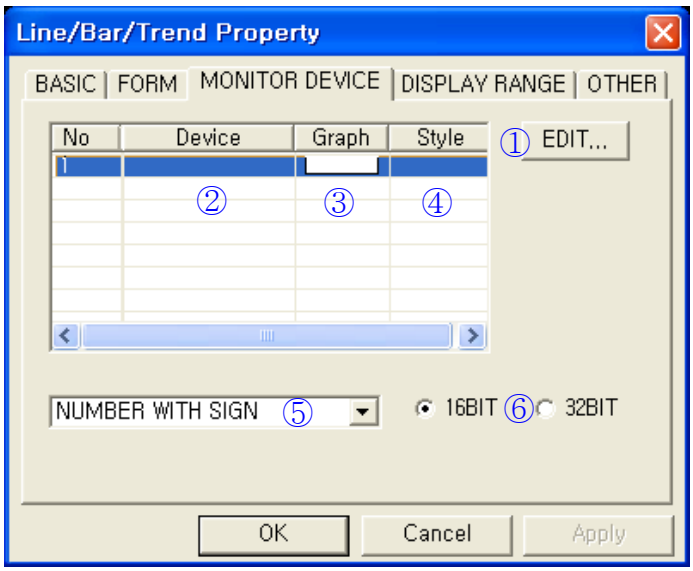
| Basic tap | Designate type and shape of graph |
|---|---|
| ①Graph | • Bar graph is created when selecting bar. |
| ②Shape | • Designate to use shape.<br>• When checking it, no.1 of memorized shapes is designated as a default. |
| ③Shape | • It is activated when ② is checked.<br>• Pressing a button, select shape calling **image selection window**. |
| ④Shape | • It shows image of current selected shape. |
| ⑤Frame | • Designate frame color.<br>• It is activated when shape is specified. |
| ⑥Plate | • Designate plate color.<br>• It is activated when shape is specified. |

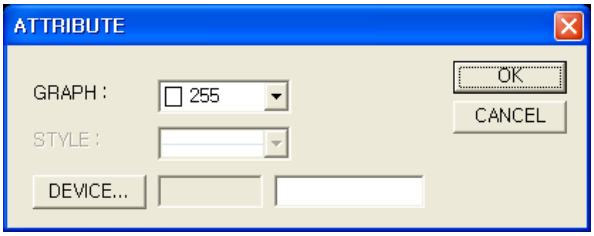
## 27.3.2 Form tap



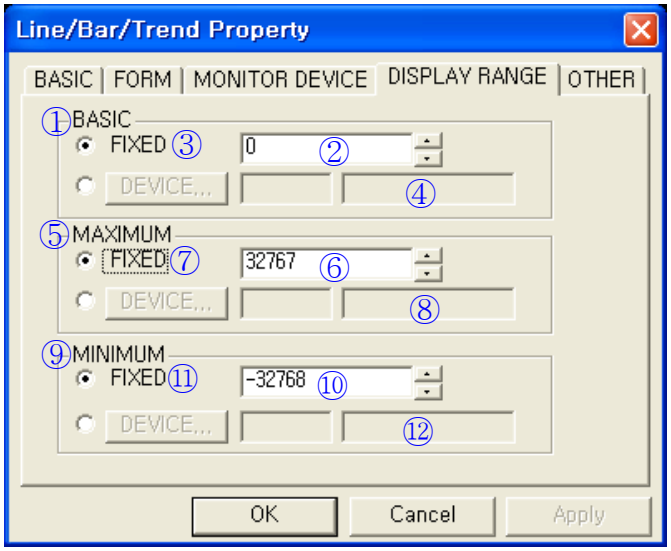

| Form tap | Configuration of graph type including direction, points of graph |
|---|---|
| ①Direction | • It is able to designate as length or width.<br>• When it is designated as length, bar is progressed as vertical way.<br>  <br><br>The above figure is D100=50, 80 when monitor device is designated as D100 and length direction.<br>• When it is designated as width, bar is progressed as horizontal way.<br>  <br><br>The above figure is D100=50, 80 when monitor device is designated as D100 and width direction. |
| ②Number<br>③Points | • It is not used in bar graph. |
| ④Scale position | • Designate position to display scale.<br>• It is able to configure right/left when direction is length.<br>Display scale in right/left=graph, left/right of frame.<br>• It is able to configure up/down when direction is width.<br>Display scale in up/down=graph, upper/lower of frame. |
| ⑤Frame | • Designate to display frame of graph. |

## 27.3.3 Monitor device tap



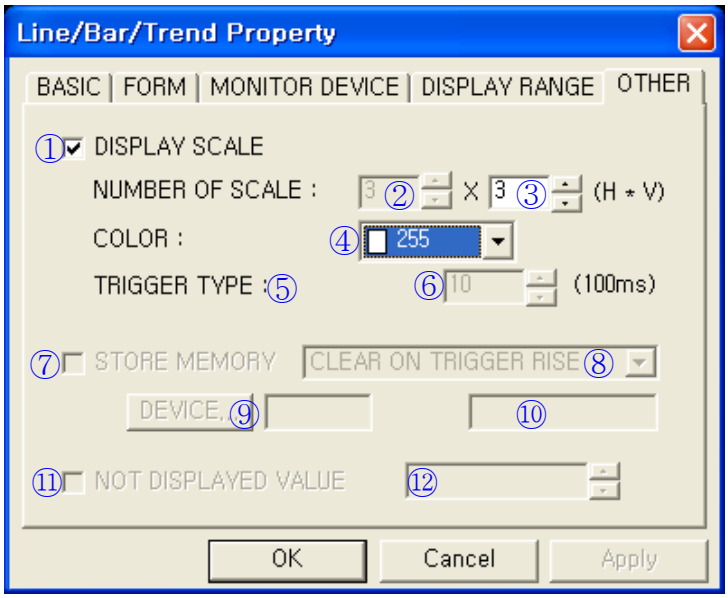

| Monitor device tap | Designate device to be monitored. |
|---|---|
| ①Edit | • Designate color of device and bar calling property window.<br>• Property window<br>  <br>* Device : Designate monitor device calling **device window**.<br>* Graph : Designate line color to display in graph. |
| ②Device | • Display designated device. |
| ③Graph | • Display color of designated bar.<br>• Double-click the item to adjust. |
| ④Style | • It is not available to use. |
| ⑤Data type | • Designate data type of monitor device.<br>Number with/without sign, BCD |
| ⑥Bit | • Designate bit size of data.<br>16bit : Single word<br>32bit : Double word |

## 27.3.4 Case tap




| Case tap | Designate reference/min/max.value. |
|---|---|
| ①~④Reference | • Designate reference value.<br>• Specified value for fixed is used as reference value.<br>• Designate any device and use the value as reference value when it is not a fixed. |
| ⑤~⑧ Max. | • Designate max.value. |
| ⑨~⑫ Min. | • Designate min.value. |

## 27.3.5 Other tap

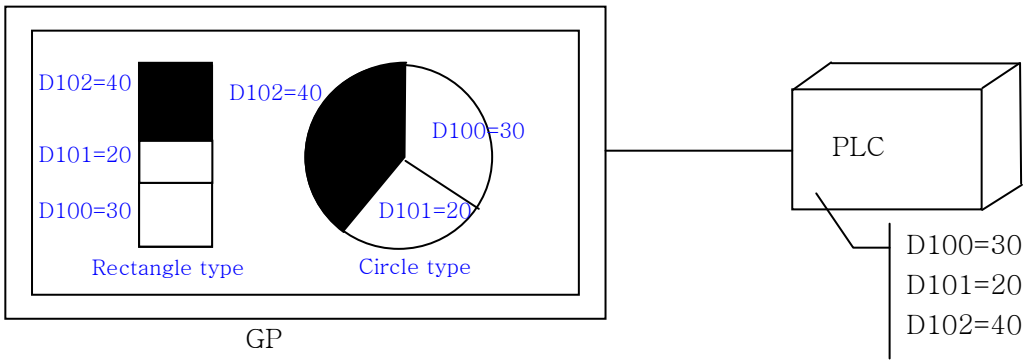



| Other tap | Designate the number and color of scale. |
|---|---|
| ①Scale display | • Designate to display scale. |
| ②Number | • It is activated when it is width.<br>• Designate the number of scale to display on a bar graph. |
| ③Number | • It is activated when it is length.<br>• Designate the number of scale to display on a bar graph. |
| ④Color | • Designate scale color. |
| ⑤~⑫ | • It is not used in bar graph. |

# 28. STATISTICS GRAPH

It displays more than 2 of value as a percentage. It is able to display with rectangle and circle graph according to configuration. The whole graph displayed on statistics graph is a sum total of absolute value from word device configured as parts of statistics graph and dimension corresponding to each device is same with percentage of absolute value of device value for the sum total of whole absolute value. It is able to display for 2~8 of devices.

## 28.1 BASIC FUNCTION




The above figure indicates rectangle and circle type of statistics graph according to device value when monitor device is configured as D100, D101, D102.

The dimension of graph is divided as a percentage of 30:20:40 when

D100=30,D101=20,D102=40.20:40.

It is able to designate base direction among the bottom side or left for rectangle statistics graph. For upper direction, it is displayed from the bottom to upper and left to right for right direction, appropriate area for each device is allotted and displayed from lead device. Circle type of statistics graph has same diameter of regular circle and it displays device value as a percentage for the sum total of all device value with clock wise based on 12 o'clock.

## 28.2 STATISTIKCS GRAPH EDIT PROCEDURE IN EDITOR

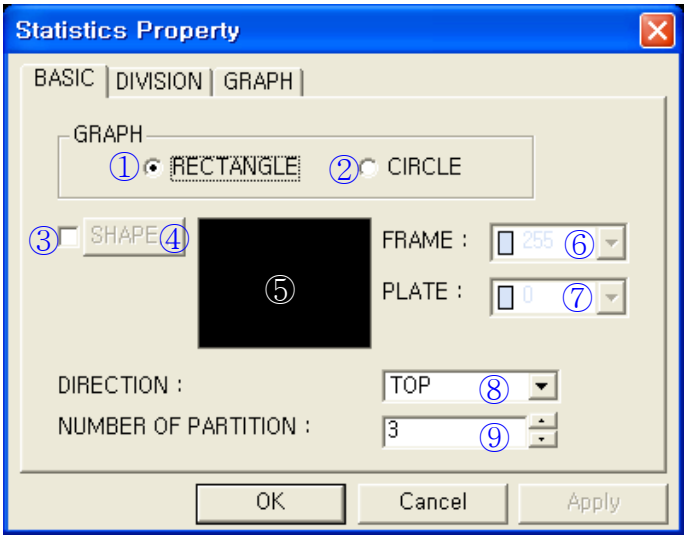
(1) Select [Draw]-[Statistics graph] or  in toolbar, statistics graph property window is popped up.

(2) Designate graph type (Rectangle/Circle) in base tap of property window and the number of partition.

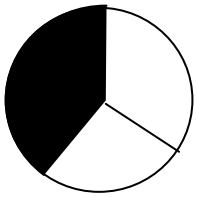
(3) Designate monitor device, color of each partition data type in division tap.

(4) Press OK button, statistics graph is created and adjust as proper size.

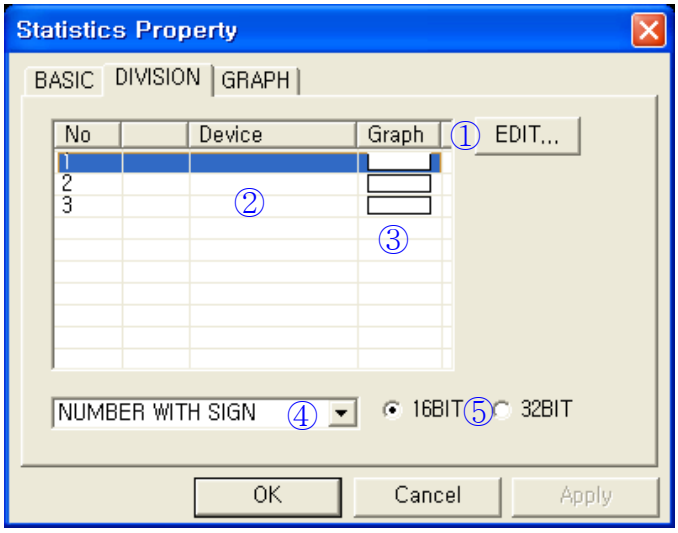
# 28.3 DETAIL CONFIGURATION

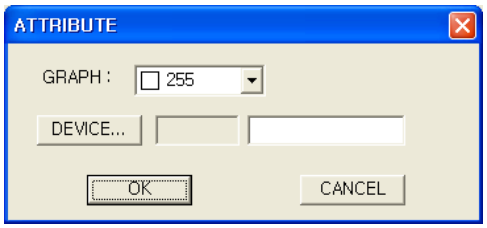



## 28.3.1 Basic tap

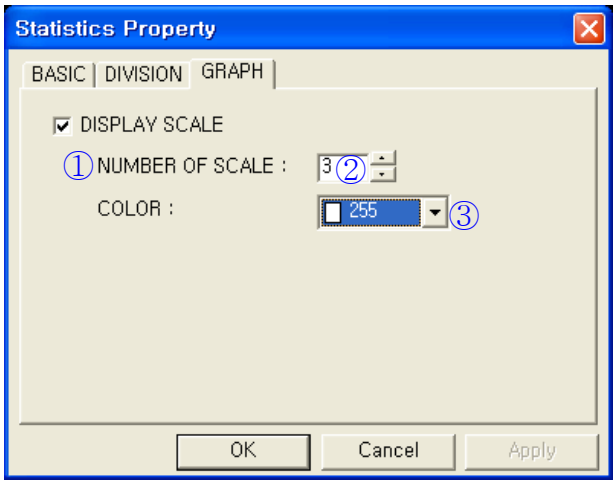
| Basic tap | Designate type and external form of statistics graph. |
|---|---|
| ①Rectangle | • Create rectangle type of graph.  |
| ②Circle | • Create circle type of graph.  |
| ③-⑤ shape | • Designate external form. |
| ⑥Frame | • Designate frame color. |
| ⑦Plate | • Designate plate color. |
| ⑧Direction | • It is activated when it is rectangle graph and it designates direction of graph to be drawn.<br>• It is able to designate upper or right, type according to designation is as follows.<br>  Direction=Upper  Direction=Right<br>• In case of upper, device with lower address is drawn corresponding with lower part of partition and device with lower address is drawn corresponding with left partition when right direction. |
| ⑨The numbers of partition | • Decide the number of partition to be displayed on a graph.<br>• As one partition is corresponded with one device, it is same with designation of device point to be used on statistics graph. |

## 28.3.2 Division tap




| Division tap | Configuration of set device display, color, number and data type of each device. |
|---|---|
| ①Edit | • Designate color of device and partition calling property window.<br>• Property window<br>  <br>*Device : Designate monitor device calling **device window**.<br>*Graph : Designate color of partition. |
| ②Device | • Display designated device. |
| ③Graph | • Display color of designated partition.<br>• Double-click the item to adjust. |
| ④Data type | • Designate data type of monitor device.<br>Number with sign : It interprets device value as positive number with sign.<br>Number without sign : It interprets device value as positive number without sign. |
| ⑤Bit | • Designate bit size of data.<br>16bit : Single word<br>32bit : Double word<br>• When data type is configured as number with sign, it calculates percentage changing reference value as **absolute value**. |

## 28.3.3 Graph tap



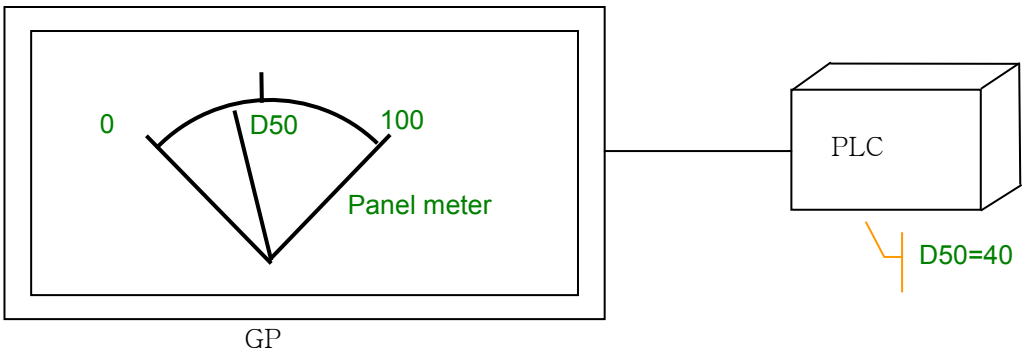

| Graph tap | Configuration of scale |
|---|---|
| ①Scale display | • Designate to display scale.<br>• In case of rectangle, the scale is displayed in the bottom of the graph when direction is right and left for upper of graph.<br>• It is displayed according to circumference as numbers with regular intervals based on 12 o'clock.<br>• In case of rectangle, it is displayed according to left side of rectangle for upper direction and bottom side of rectangles for right direction. |
| ②Scale points | • Designate the number of scales to display.<br>• It is able to designate within 2 ~ 50. |
| ③Color | • Designate outline color of scale and graph. |

# 29. PANEL METER

It displays the occupying position of current value of specific word device within designated max/min.value with needle of panel meter to monitor device value.

## 29.1 BASIC FUNCTION OF PANEL METER

The following figure is configured as 0~100 of panel meter range, D50=40. The needle indicates the appropriate value for 40.




## 29.2 BASIC CONFIGURATION IN EDITOR

(1) Select [Draw]-[Panel meter] or  in toolbar, then, panel meter property window is popped up.

(2) Select word device to be monitored on basic tap.

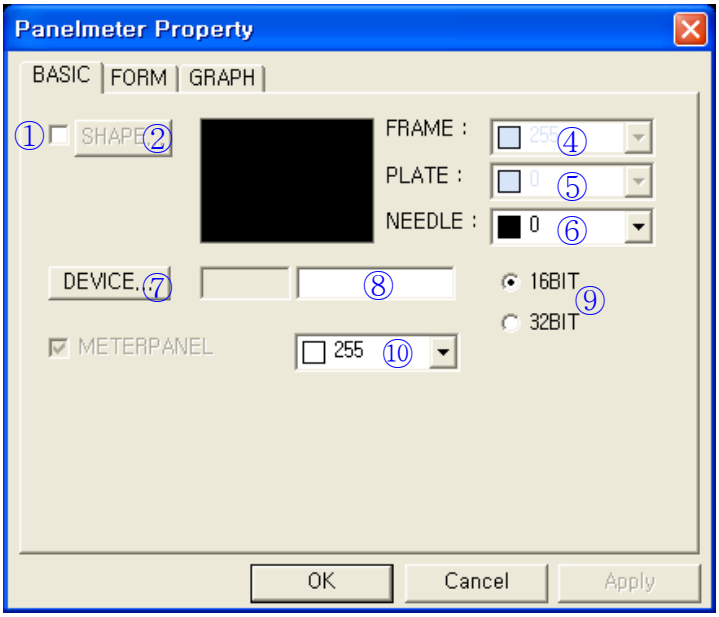
(3) Configure panel meter type and needle direction in form tap.

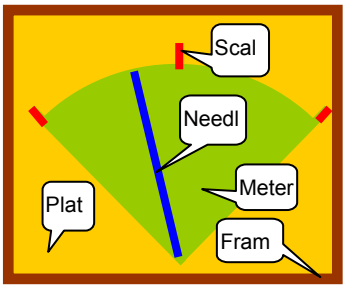
(4) Designate data type of device and high/low limit value.

(5) Press OK button, panel meter tag is created.

# 29.3 DETAIL CONFIGURATION AND OPERATION OF MAIN DEVICE

## 29.3.1 Basic tap



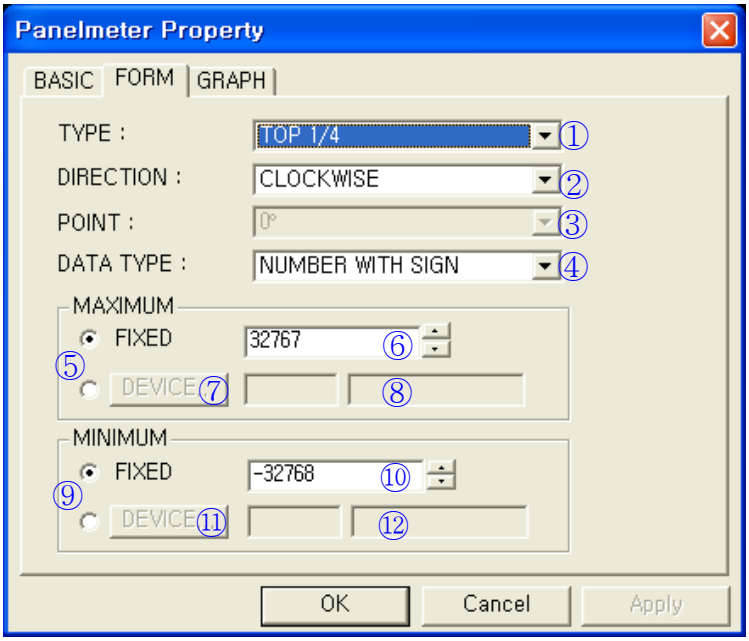

| Basic tap | Designate external appearance and monitor device |
|---|---|
| ①Shape | • Designate to use shape.<br>• When it checked, designate no.1 of memorized shapes as a default. |
| ②Shape | • Press a button, it is able to select shape calling **image selection window**. |
| ③Shape | • It shows image of current selected shape. |
| ④Frame | • Designate frame color. |
| ⑤Plate | • Designate plate color. |
| ⑥Needle | • Designate needle color. |
| ⑦Device | • Select device to be monitored calling device window. |
| ⑧Device | • It shows designated device in ⑦ and it is able to input device directly. |
| ⑨Data | • Configure data size of word device as 16bit/32bit. |
| ⑩Meter Panel | • Designate panel color of meter as white/black. |
| Panel meter |  |

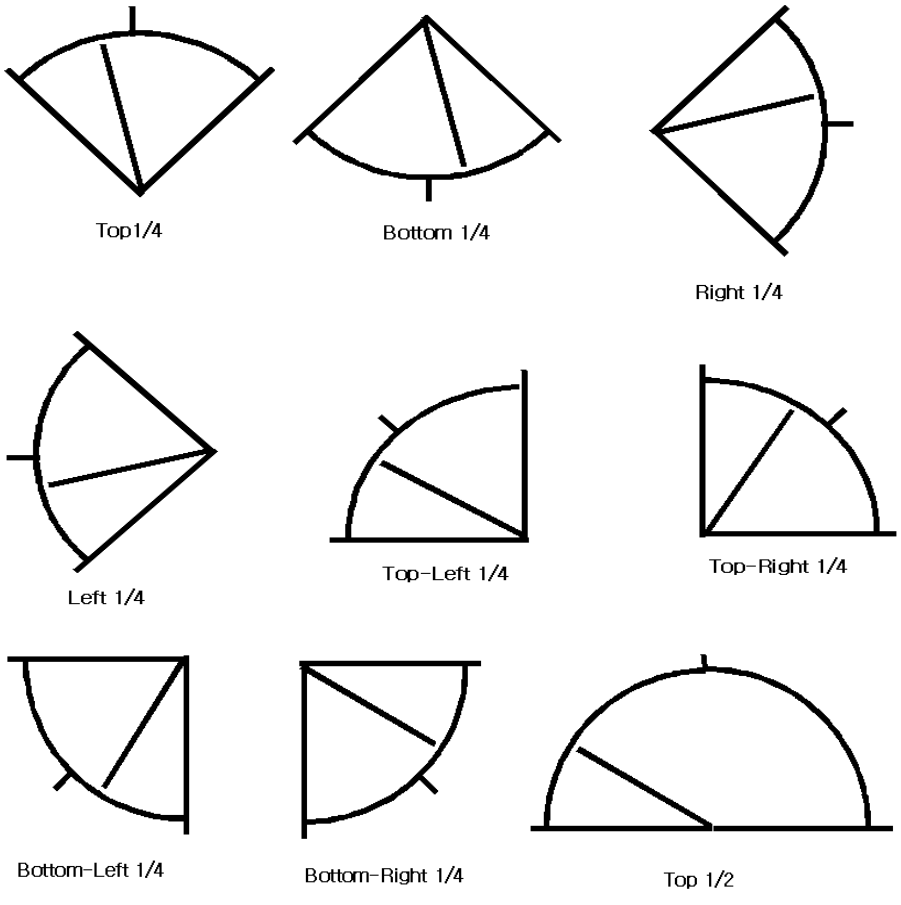


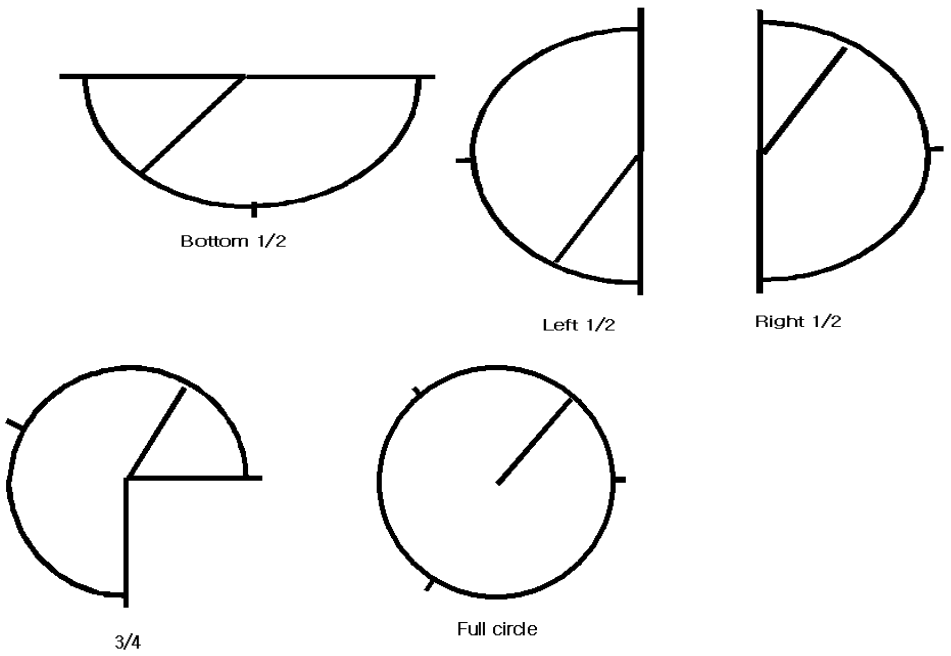
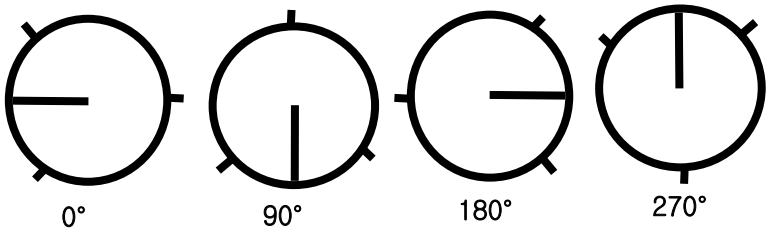
**※Notice**

In accordance with connection device, it is only available to use with 32 bit. Refer to “Communication manual”.

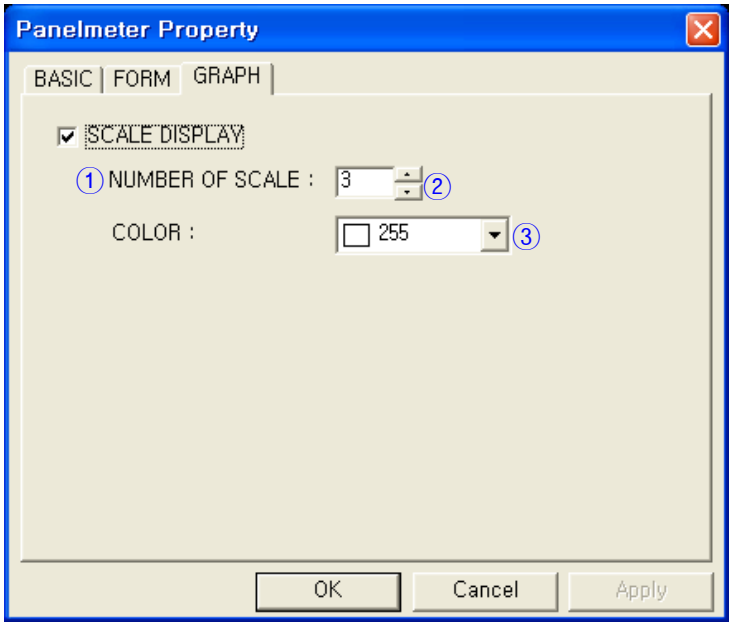
## 29.3.2 Form tap




| Form tap | Designate panel meter type and range of value |
|---|---|
| ①Type | • Designate panel meter type.<br>Up 1/4, Down 1/4, Left 1/4, Right 1/4, Top-left1/4, Top-right1/4, Down-left 1/4, Down-right 1/4, Up 1/2, Right 1/2, Left 1/2, Down 1/2, 3/4, Circle<br>  |

| | |
|---|---|
| |  |
| ②Direction | • Designate moving direction of needle as device value is bigger.<br>• Designate as clockwise/counterclockwise. |
| ③Point | • It is activated only when it is a circle and designates scale position on a frame, 0°,90°,180°, 270°. The start point of needle designated in a point is +180°,<br>Point = p, Number of scale=N, scale position is (degree),<br>p, p+360°/N, p+2*360°/N, …, p+(N-1)*360°/N<br>  <br>Shape according to point designation for number of scale=3. |
| ④Data type | • Designate data type of designated word device.<br>• Number with sign : It interprets device value as positive number with sign.<br>• Number without sign : It interprets device value as positive number without sign. |
| ⑤ | • The fixed value is used as max.value displayed by panel meter needle when designating as fixed.<br>• Designate word device and use it as max.value when it is not fixed. |
| ⑥ | • Designate fixed max.value. |
| ⑦ | • Select device to be referred as max.value calling device window. |
| ⑧ | • It shows designated device in ⑦ and it is able to input device directly. |
| ⑨~⑫ | • Designate min.value displayed by panel meter needle. |

## 29.3.3 Graph tap




| Graph tap | Designate number and color of scale |
|---|---|
| ①Scale display | • Designate to display scale. |
| ②Scale points | • Designate to number of scale to display |
| ③Color | • Designate scale color |

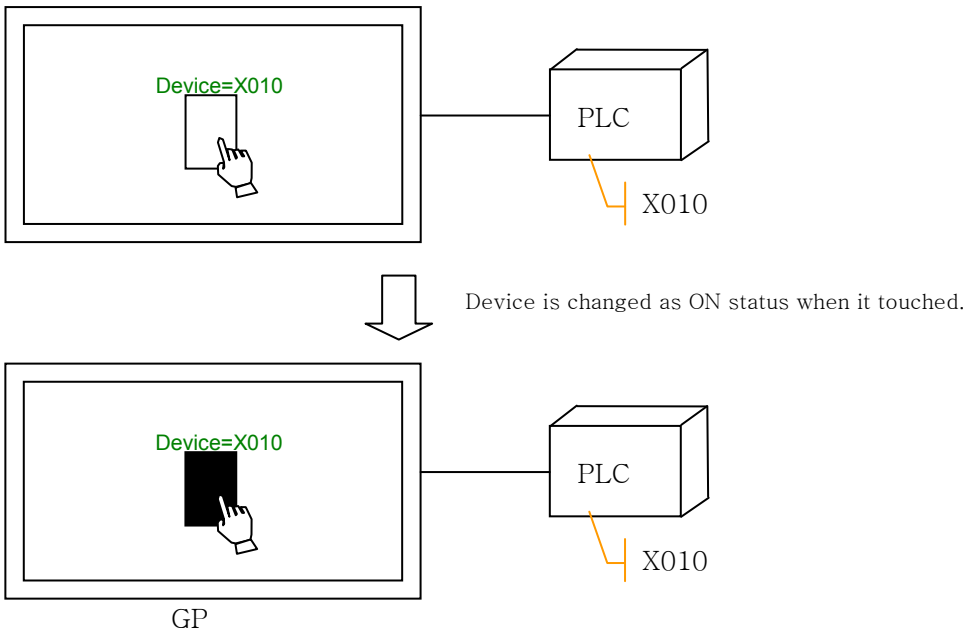
# 30. TOUCH KEY

It executes configuration of bit/word device, screen switching and specific function of key code according to configuration when touching screen area of tag arranged.

## 30.1 BASIC FUNCTION OF TOUCH KEY

### 30.1.1 Bit device configuration

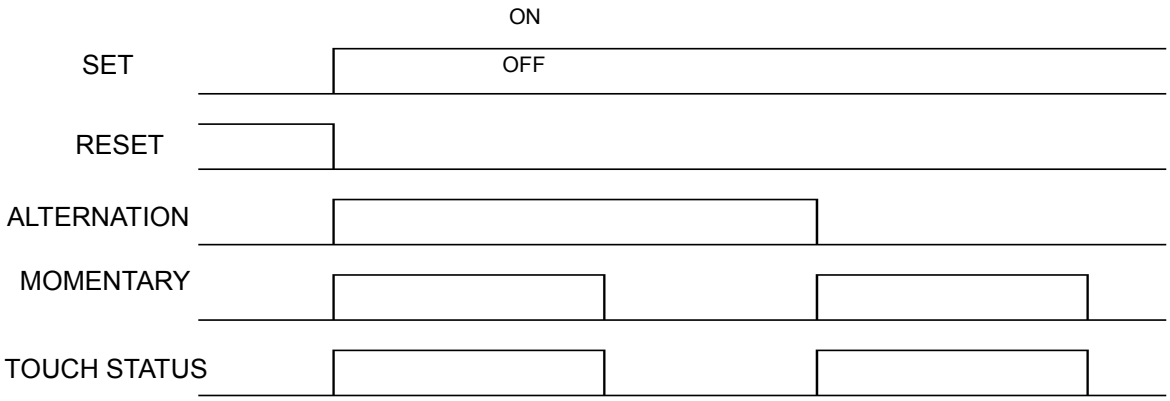
ON/OFF status of PLC bit device is controlled with touch.




Example of SET operation

**# Operation mode**

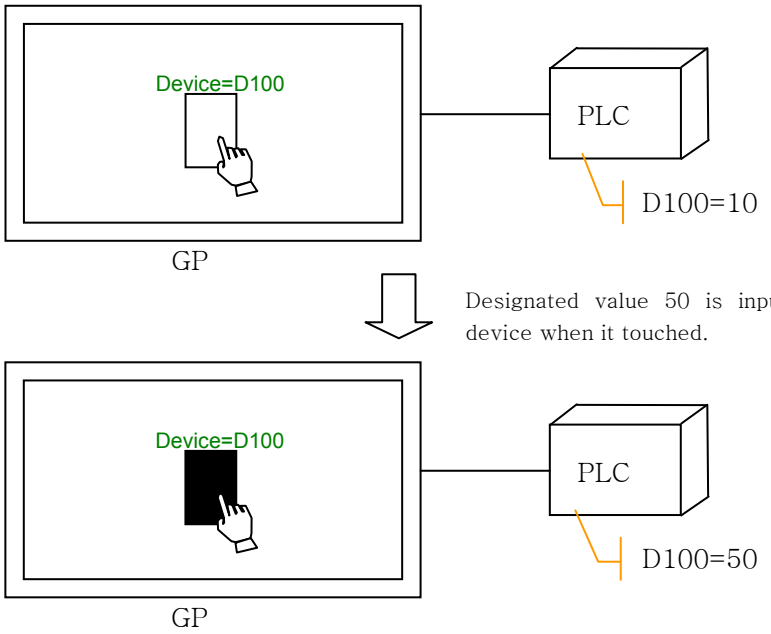
- Momentary : The appropriate device keeps ON status during touching a touch key.
- Alternation : The current status of the appropriate device is alternated when touching a touch key.
- Set : The appropriate device will be ON status when touching a touch key.
- Reset : The appropriate device will be OFF status when touching a touch key.




Mode operation according to touch status

## 30.1.2 Configuration of word device

Configure value on designated word device when touching tag.

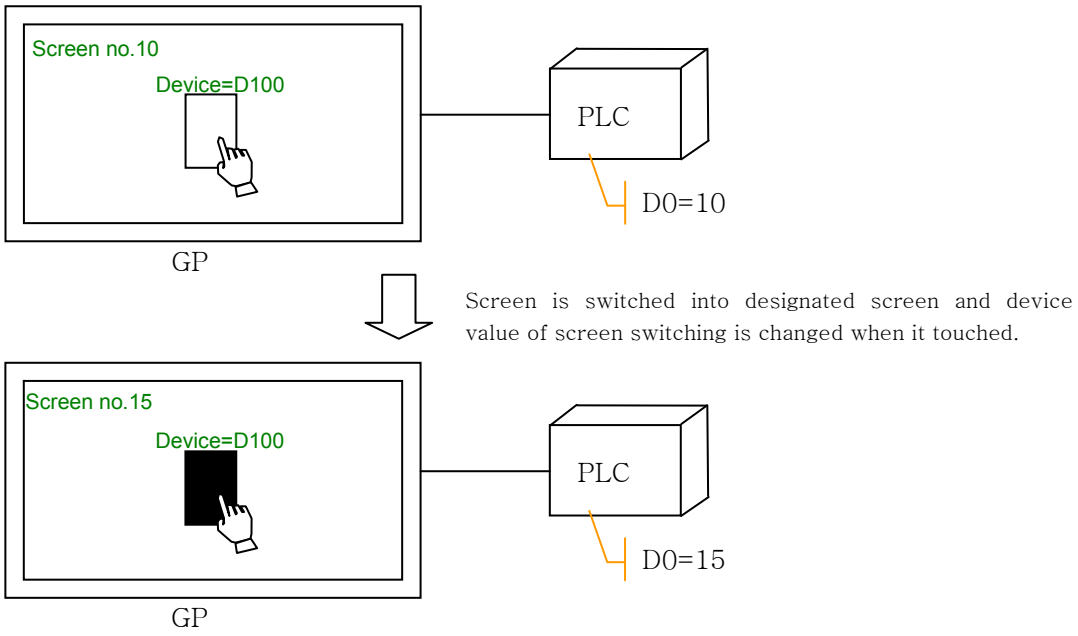



**Example of word operation**: When it is configured as inputting fixed value 50 in D100.

- It is able to designate as 16bit/32bit of word device.
- It is able to configure value inputted in device to be changed as fixed value and designate indirectly to input the sum total of specific device in the appropriate word device.
- It is able to reset device value.

## 30.1.3 Screen switching

Switch screen when touching tag.




Example of screen switching operation : When device of screen switching is D0.

There are 4 operation modes for screen switching function as follows.

(1) +1 of screen movement : Move from current screen number to adjacent upper screen.

(2) -1 of screen movement : Move from current screen number to adjacent lower screen.

(3) Move to designated screen : Switch to designated screen number of screen.

(4) Move to previous screen : Move to previous screen before switched as current screen.

It changes saving device value of base number displaying on GP with touch operation. Simultaneously, it is switched as base screen of configuration number with screen designated. Only one operation is executed for one touch key.

## 30.1.4 Special function with Key code

Touch function with key code is divided into input key in numeral/ASCII input and touch for alarm list, alarm history and security function. The former one, key code conforms to ASCII code of character to be inputted and the character is inputted in input field when it touched. The latter one, it uses special code.

| Key code (Hexadecimal) | Function | Description |
|---|---|---|
| FFA1 | Clear input(CLR) | Clear up to current input in key window. |
| FFA2 | Enter input(ENT) | Complete to input in key window. |
| FFA3 | Backspace(BS) | Clear the last inputted character in key window. |
| FFA4 | Show cursor | Display a cursor in alarm list/alarm history. |
| FFA5 | Hide cursor | Hide a cursor in alarm list/alarm history. |
| FFA6 | Detail information of alarm | Call detail screen in alarm list/alarm history. |
| FFA7 | Calling of password input window | Call key window to input password. |
| FFA8 | Clear selected alarm | Clear selected alarm in alarm history. |
| FFA9 | Clear all alarm | Clear all restored alarm in alarm history. |
| FFAA | Reset alarm device | Reset alarm device selected in alarm history. |
| FFAB | Move a cursor to the top | Move a cursor up to the top in alarm list/alarm history. |
| FFAC | Move a cursor to the down | Move a cursor up to the down in alarm list/alarm history. |
| FFAD | Reset security | Reset security. |

### ※Notice

(1)Bit/Word operation, screen switching function can be invested repeatedly in one touch key, base switching function can be used only once.

(2)The priority of operation with one touch key is high as in order of word configuration, bit momentary, bit set, bit alternation, screen switching. If same operation is configured more than two, prior one is operated first.

## 30.2 EDIT TOUCH KEY IN EDITOR

(1)[Draw]-[Touch key] in menu or click  in toolbar.

(2)Configure display of touch key in basic tap.

(3)Configure external shape and text to input in form tap.

(4)Configure automatic repeat function in action tap.

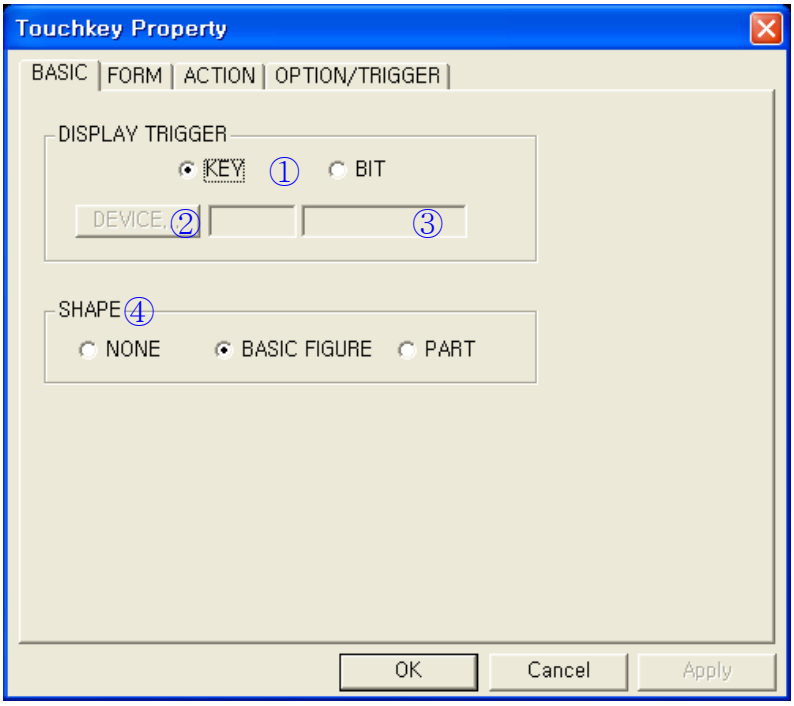
(5)Press OK button, tag is created on a screen.

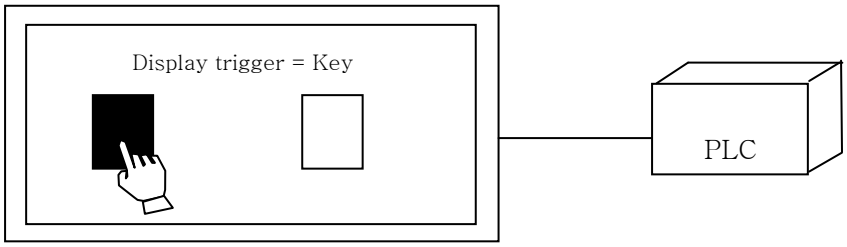
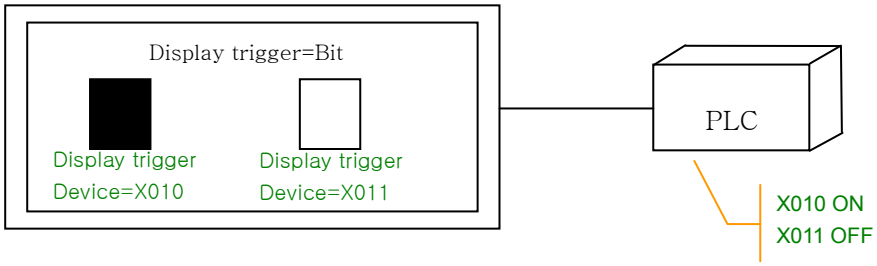
### ※Notice

The size of range recognizing user touch operation is 16X20 dot and independent touch area of one screen is consisted with total 15X4. One mesh of editor is same with one of touch switch. It is able to avoid unexpected operation of other adjacent touch key writing touch key **within a mesh**.

# 30.3 DETAIL CONFIGURATION AND OPERATION OF MAIN DEVICE

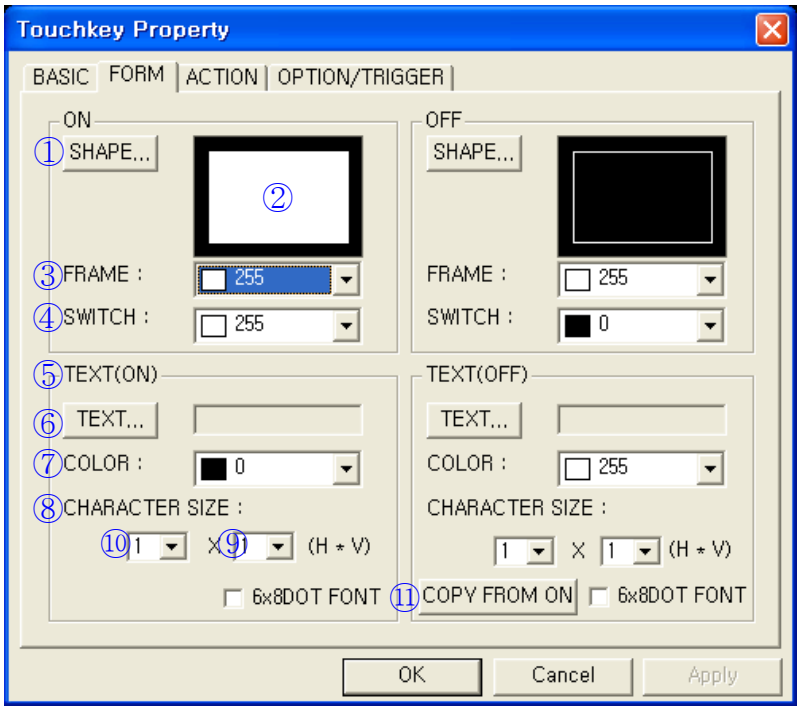
## 30.3.1 Basic tap



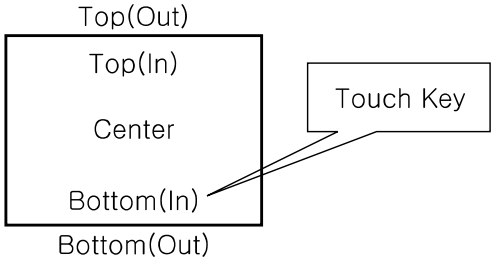

| Basic tap | Define condition of key shape and change key shape |
|---|---|
| ①Display trigger | • It defines change condition of ON/OFF shape of touch key.<br>• Key : It displays shape of ON during touch status.<br>  <br>• Bit : According to ON/OFF of trigger device(Designate in ②), it displays shape for ON/OFF only and ON/OFF of this device has no relation with touch key operation.<br>  <br>( The key function defined in action tap is executed when it touched.) |

| | |
|---|---|
| ②Device | ( Call device window and designate trigger device.) |
| ③Device | ( It is able to input trigger device directly showing designated device in ②. |
| ④Shape | ( No : Display outline of touch area only.<br>( Basic figure : Use system-supported form for touch key.<br>( Part : Use user-defined part as a shape. |

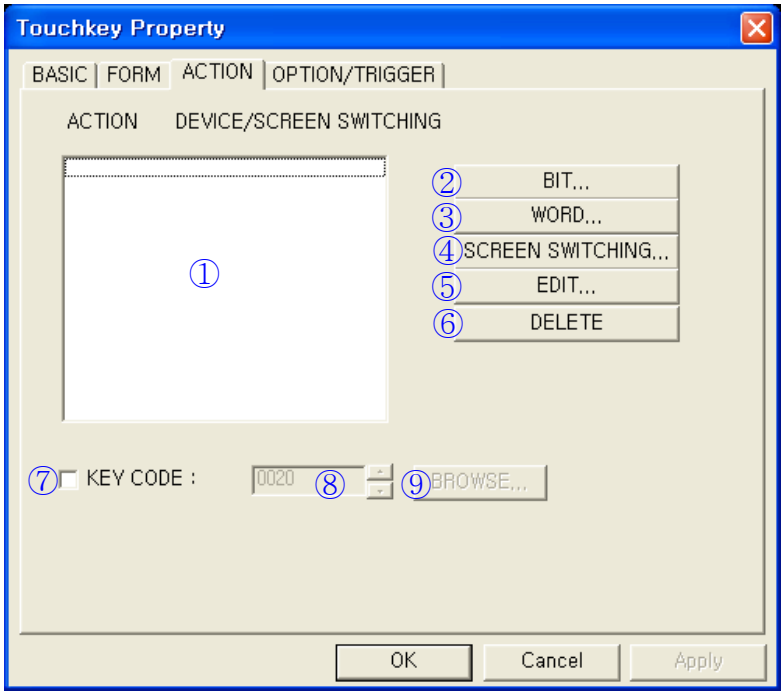
## 30.3.2 Form tap

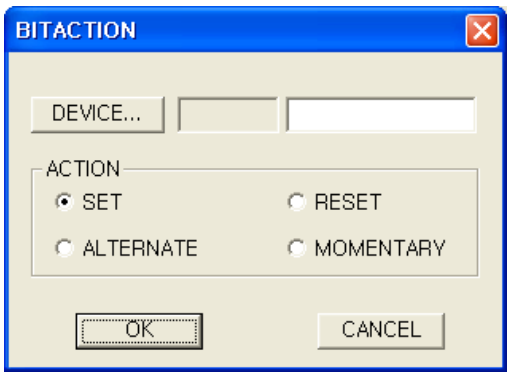


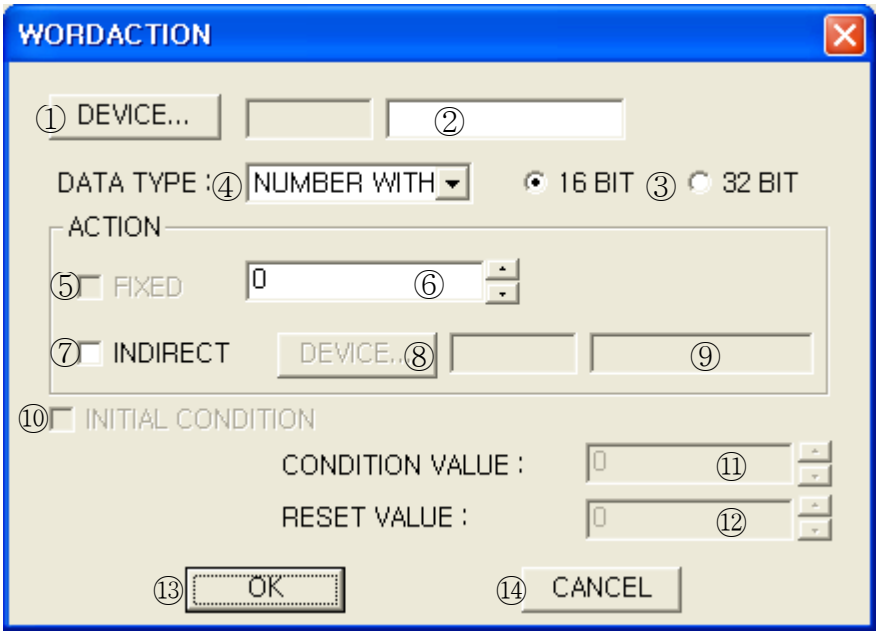

| Form tap | Designate shape and text of touch key |
|---|---|
| ①Shape | When click shape button, image selection window is popped up and system supported basic figures are displayed when basic figure is designated in basic tap.<br>In case, part is selected for designated shape in basic tap, list user registered part and designate part to be shown when it is ON. Click shape button, call image selection window and select a part.<br>If No is designated in basic tap, it is deactivated.<br>When touch key has parts for shape, touch is made with minimum size including ON/OFF part. When minimum size including ON/OFF is smaller than minimum size size of touch key, it is made with minimum size of touch. |
| ②Shape | It shows image of selected shape. |
| ③Frame | It designates frame color for ON.<br>It is applied for basic shape only. |
| ④Switch | It designates color of switch display for ON.<br>It is applied for basic shape only. |

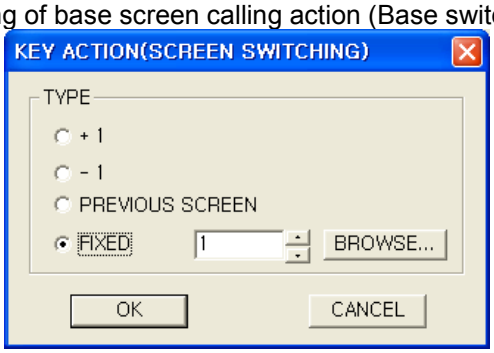
| | |
|---|---|
| ⑤Text | Call text editing window, register text to be displayed on a shape for ON. It is able to edit text to be displayed on touch key and designate position to display text.<br>  <br> |
| ⑥Text | • It shows text to be displayed on touch key for ON. |
| ⑦Color | • It designates color of text to be displayed. |
| ⑧Size | • It designates width size of text to be displayed.(1,2,4,6,8) |
| ⑨Size | • It designates length size of text to be displayed. (0.5,1,2,3,4) |
| ⑩6X8 dot font | • It designates to use 6X8 dot font. |
| ⑴~⑽ | • It is same with ①~⑩ except for relation when it is OFF. |
| ⑪Copy from ON | •Designated text for ON is also designated to OFF. |

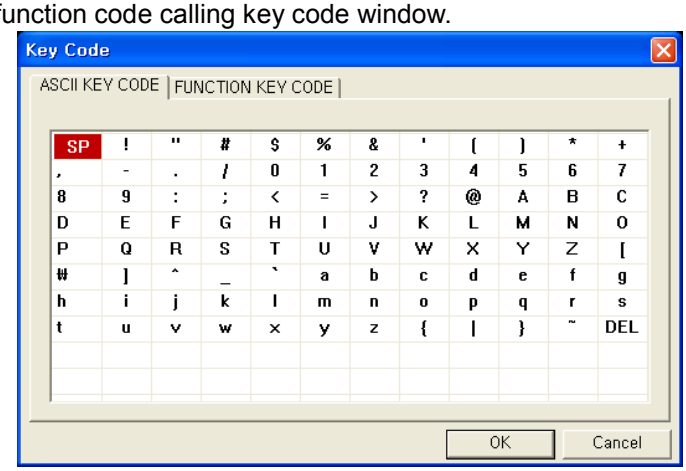
## 30.3.3 Action tap

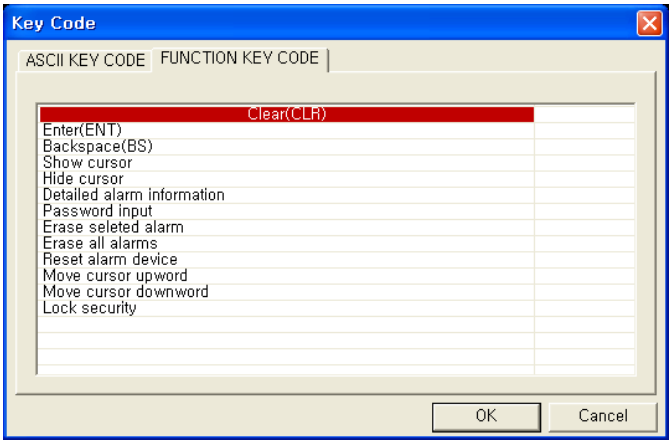



| Action tap | Configure the operation of touch key |
|---|---|
| ①Action list | • It shows list of configured touch key operation.<br>• Double click the item to adjust. |
| ②Bit | • Call action(bit) window and configure bit operation.<br>• Action(Bit) window<br>  <br>*Device : Designate bit device calling bit device window.<br>*Operation : Designate operation for specified device when it touched.<br># Set : Set device when it touched.<br># Reset : Reset device when it touched.<br># Alternate : When it touched, it is changed from ON to OFF, OFF to ON.<br># Momentary : It is ON during it is touched and it is OFF when taking off from it. |

| | |
|---|---|
| ③Word | • Configure bit operation calling action(word) window.<br>• Action(word) window<br>  <br><br>① : Designate word device influenced by touch key operation calling device window.<br>② : It displays device designated as ① and input directly.<br>③ : It designates bit size of device specified in ②.<br>④ : It designates data type of device specified in ②.<br>⑤ : Assign the value designated in ⑥ to device designated in ②.<br>⑥ : Designate fixed value to assign to device designated in ②.<br>⑦ : Assign to device value designated in ⑨ when ⑤ is not checked.<br>Assign to device designated in ② adding device value designated in ⑨ to value designated in ⑥ when ⑤ is checked.<br>⑧ : Designate indirect device calling device window.<br>⑨ : Display indirect device designated as ⑧ or input directly.<br>⑩ : It is reset as the initial value when it checked.<br>⑪ : Designate device specified in ② is reset as the initial value.<br>⑫ : Designate the initial value.<br><br>※**Notice** It can be only used with 32bit in accordance with connection device, refer to “Communication manual”. |

<table>
<tr><td>④Base switching</td><td>• Configure switching of base screen calling action (Base switching) window.<br> 

<br>• +1: Move to the adjacent screen among higher number of screens than current one.<br>• -1: Move to the adjacent screen among lower number of screens than current one.<br>• Previous : Move to screen right before switching to current screen<br>• Fixed : Move to screen with number designated in editor box.</td></tr>
<tr><td>⑤Edit</td><td>• Edit the item selected ① of list.</td></tr>
<tr><td>⑥Delete</td><td>• Delete the item selected ① of list.</td></tr>
<tr><td>⑦Key code</td><td>• Execute key code function when it checked.</td></tr>
<tr><td>⑧Key code</td><td>• It shows designated key function code as hexadecimal and input directly.</td></tr>
<tr><td>⑨View</td><td>• Design function code calling key code window.<br> 

<br> 

<br>(2) It is consisted with first tap, input ASCII value and second tap, input special function key value.</td></tr>
</table>

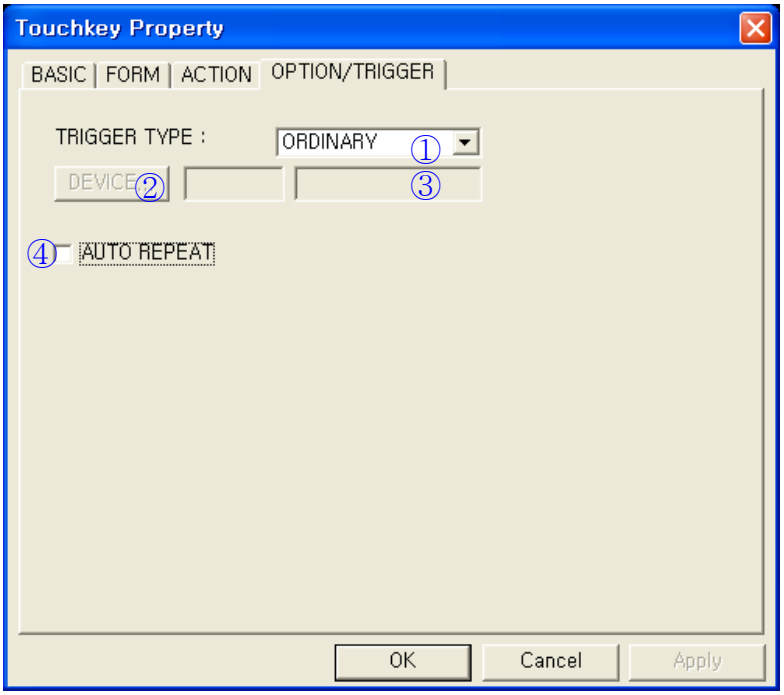
● Arrangement of ASCII tap character – After inputting, real code value displaying in real key code editor.

| | | | | | |
|---|---|---|---|---|---|
| 0020H SP | 0021H ! | 0022H “ | 0023H # | 0024H $ | 0025H % |
| 0026H & | 0027H ‘ | 0028H ( | 0029H ) | 002AH * | 002BH + |
| 002CH , | 002DH - | 002EH . | 002FH / | 0030H 0 | 0031H 1 |
| 0032H 2 | 0033H 3 | 0034H 4 | 0035H 5 | 0036H 6 | 0037H 7 |
| 0038H 8 | 0039H 9 | 003AH : | 003BH ; | 003CH < | 003DH = |
| 003EH > | 003FH ? | 0040H @ | 0041H A | 0042H B | 0043H C |
| 0044H D | 0045H E | 0046H F | 0047H G | 0048H H | 0049H I |
| 004AH J | 004BH K | 004CH L | 004DH M | 004EH N | 004FH O |
| 0050H P | 0051H Q | 0052H R | 0053H S | 0054H T | 0055H U |
| 0056H V | 0057H W | 0058H X | 0059H Y | 005AH Z | 005BH [ |
| 005CH ? | 005DH ] | 005EH ^ | 005FH _ | 0060H ‘ | 0061H a |
| 0062H b | 0063H c | 0064H d | 0065H e | 0066H f | 0067H g |
| 0068H h | 0069H I | 006AH j | 006BH k | 006CH l | 006DH m |
| 006EH n | 006FH o | 0070H p | 0071H q | 0072H r | 0073H s |
| 0074H t | 0075H u | 0076H v | 0077H w | 0078H x | 0078H x |
| 0079H y | 007AH z | 007BH { | 007CH \| | 007DH } | 007EH ~ |

● Select tap of special function key value when clicking description of each function in the list.

| Key code (Hexadecimal) | Function |
|---|---|
| FFA1 | Clear input value |
| FFA2 | Apply input value |
| FFA3 | Backspace |
| FFA4 | Show cursor |
| FFA5 | Hide cursor |
| FFA6 | Detail information of alarm |
| FFA7 | Calling of password input window |
| FFA8 | Clear selected alarm |
| FFA9 | Clear all alarm |
| FFAA | Reset alarm device |
| FFAB | Move a cursor to the top |
| FFAC | Move a cursor to the down |
| FFAD | Reset security |

## 30.3.4. Option/trigger tap

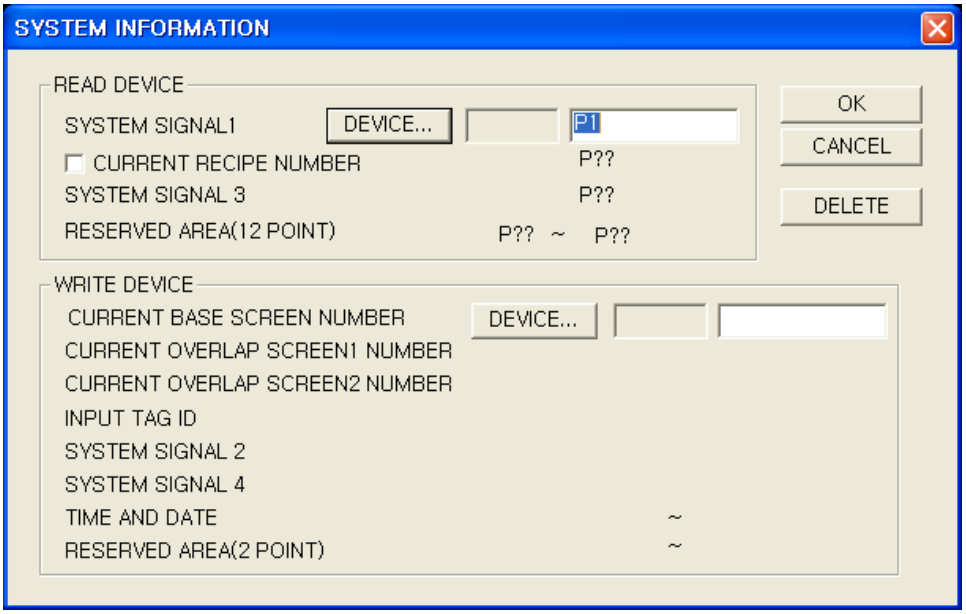



| Option/trigger tap | Designate touch key trigger and other option |
|---|---|
| ①Trigger type | • Designation of trigger type<br>• Ordinary : Do not use trigger function.<br>• ON: It executes touch key function when device designated in ③ is ON status.<br>• OFF: It executes touch key function when device designated in ③ is OFF status. |
| ②Device | • Select trigger device calling **device window**. |
| ③Device | • It shows designated trigger device and input directly. |
| ④Auto repetition | • It executed repeatedly with regular intervals during pressing a touch key. |

# 31. SYSTEM INFORMATION

## 31.1 OUTLINE

It controls GP operation according to read device and monitors GP status according to write device communicating GP inner read/write device and PLC device configured in editor system information.
Select [Common] – [System information], system information configuration window is popped up.




## 31.2 READ DEVICE

It reads PLC device in GP and controls GP. It designates word device in system information of editor.

### 31.2.1 System signal 1

•Bit 0 : It clears all alarm history (history and occurrence) when this bit is OFF -> ON, it does not clear in ON -> OFF status.
Alarm history clear function is executed by set delete old alarm in common configuration of alarm history and it is operated separately with this bit.

•Bit 1 : Backlight is turned off when this bit is OFF -> ON and designated time in system preference is passed. Backlight is turned on when OFF this bit or touch the screen. When this bit is ON status, backlight is operated and it is not operated in OFF status.

•Bit 2 : When GP and external device(**CH1**) is disconnected or connection problem is occurred, it shows error message when this bit is ON.

•Bit 3 : When GP and external device(**CH2**) is disconnected or connection problem is occurred, it shows error message when this bit is ON.

•Bit 4 : [Disable to input barcode signal] When this bit is ON, it processes data read from current barcode reader as invalid.

•Bit 5 : [Completion signal of barcode input read] When this bit is ON, barcode input read is completed and barcode reader is ready to receive new data. It switches completion signal of writing the

barcode input data from into OFF.

•Bit 7 : When this bit is ON, it switches completion bit signal(Bit4 of system signal 2) of numeral input into OFF.

※ Refer to barcode part for the details about Bit 4, Bit 5.

### 31.2.2 Current recipe number

Configure recipe number to read and write among several files of recipe. Write recipe in recipe, configure recipe number in this device and give a read/write trigger signal, each operation is occurred.

+1 of designated word device address is allotted in system information of editor.

※ Refer to recipe for the details.

### 31.2.3 System signal 3

•Bit 0 : Buzzer control. Buzzer is ON when it is ON status, buzzer is OFF when it is OFF status.

•Bit 4 : Backlight control.

Backlight is OFF when it is ON status, backlight is ON when it is OFF status.

•Bit 5 : Print control. It starts to print alarm when it is changed as OFF->ON.

### 31.2.4 Reserved area (12 points)

## 31.3 WRITE DEVICE

It monitors GP status reading GP device in PLC.

### 31.3.1 Current base screen number (Write device)

It writes current screen number of GP.

When user switches screen, this device value is changed into number of switched screen.

### 31.3.2 Current overlap screen number 1(Write device+1)

It registers screen number of overlap screen 1 of GP in PLC device configured in system information. +1 of designated word device address is allotted in system information of editor.

### 31.3.3 Current overlap screen number 2(Write device +2)

It registers screen number of overlap screen 2 of GP in PLC device configured in system information.

### 31.3.4 Input tag ID(Write device+3)

It saves user ID of input tag in this device if there is a screen configured numeral input or ASCII input.

## 31.3.5 System signal 2(Write device+4)

•Bit 0 : This bit is ON during one alarm monitor bit is ON. In case, monitor bit is ON, this bit preserves the status.

•Bit 4 : It is ON when numeral input is completed. In case of numeral input or ASCII input tag, it is ON when input value is registered correctly.
It is required to reset in PLC program because it is not reset automatically.

•Bit 8 : [Barcode input signal] It is set when completing the write of barcode input data from GP to PLC.

•Bit C : It is set when battery is Low reading voltage status of backup battery.

## 31.3.6 System signal 4(Write device+5)

• Bit 0 : Flag of alarm print (1 for printing, 0 for other.)
• Bit 5 : 0.5sec clock
• Bit 6 : 1sec clock
• Bit 7 : 2sec clock
• Bit 8 : Communication port 1 Frame error
• Bit 9 : Communication port 1 Parity error
• Bit A : Communication port 1 Overrun error
• Bit C : Communication port 2 Frame error
• Bit D : Communication port 2 Parity error
• Bit E : Communication port 2 Overrun error

## 31.3.7 Time and date (7 points )

## 31.3.8 Reserved area (2 points )

User cannot use reserved area.

# 31.4 GP INNER DEVICE

●System information (UW0~UW29) : When configuring device in system information of editor, these devices and GP inner device UW0~UW29 are share same value.

| UW area | Read area | Write area |
|---|---|---|
| UW0 | | Screen number displaying of GP |
| UW1 | | Overlap 1 screen number displaying of GP |
| UW2 | | Overlap 2 screen number displaying of GP |
| UW3 | | User ID number of input tag |
| UW4 | | System signal 2 |
| UW5 | | System signal 4 |
| UW6 | | Clock sec |
| UW7 | | Clock min |
| UW8 | | Clock hour |
| UW9 | | Date day |
| UW10 | | Date month |
| UW11 | | Date year |
| UW12 | | Date day |
| UW13 | | Reserved write area |
| UW14 | | Reserved write area |
| UW15 | System signal 1 | |
| UW16 | Current recipe number | |
| UW17 | System signal 3 | |
| UW18~UW29 | Reserved read area | |

● UW30~UW2047 : It is used as general data register.
● UW2048~UW6047 : It is used as general data register, it is required to notice for using recipe.

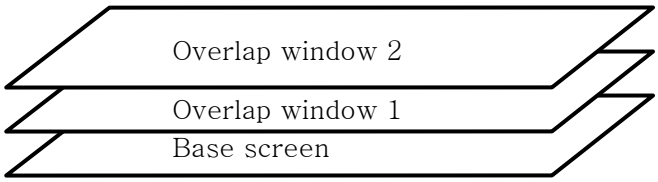
| UW area | Read area | Write area |
|---|---|---|
| UW30 | User area | User area |
| … | User area | User area |
| … | User area | User area |
| UW2047 | User area | User area |
| UW2048 | User area (Recipe using area) | |
| … | | |
| … | | |
| UW6047 | | |

# 32. SCREEN SWITCHING AND OVERLAP WINDOW

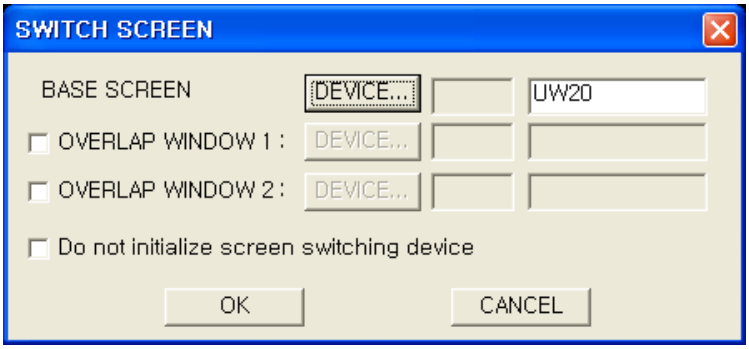
## 32.1 OVERLAP WINDOW

Base screen and overlap screen are switched according to value configured in designated word device.

To switch base screen, one of device register should be allotted, one data register is designated as a default. It is able to use two overlap windows for option, overlap window 1,2 are overlapped successively on a base screen.




## 32.2 CONFIGURATION AND OPERATION IN EDITOR




| Screen switching | Configuration about switching of base screen and overlap screen |
|---|---|
| ①Base screen device | • Call **device selection window** and designate device using switching base screen.<br>• Designated device saves the number of current displaying screen and base screen is switched into the appropriate base when this value is changed.<br>• One of data register is saved as a default and user can change it.<br>• GP inner device UW20 is designated as the initial value. |
| ②Device | |

| | |
|---|---|
| ③Overlap window 1 | • Check to use overlap window 1, then the appropriate base screen is overlapped according to value of designated word device.<br>• If overlap window 1,2 are designated simultaneously, overlap window 2 is existed on a overlap window 1.<br>• When it is overlapped, it is influenced by security configuration of the appropriate screen and it is overlapped when it cancelled.<br>• It shows currently allowed object of security level only. |
| ④Device | • Configure word device using screen switching of overlap window 1..<br>• When value of this device is changed, screen of overlap window 1 is switched into the screen coming under the changed value. |
| ⑤Device | |
| ⑥Overlap window 2 | • Check to use overlap window 2. According to the value of designated word device, base screen coming under the value is overlapped. |
| ⑦Device | • Configure word device using screen switching of overlap window 2.<br>• When value of this device is changed, screen of overlap window 2 is switched into the screen coming under the changed value. |
| ⑧Device | |
| ⑨Do not initialize screen switching device. | • If the box is not checked, it initializes device value using screen switching. It preserves device value of basic screen, overlap screen 1,2 and PLC device value is initialized if it is not checked.<br>• If it is not checked, it is designated as basic screen device=1, overlap screen 1,2=0 when it is downloaded. |

# 33. BARCODE READER

It saves data reading from a barcode reader in PLC.

## 33.1 SPECIFICATION OF AVAILABLE BARCODE READER

In order to use barcode reader, configure the connection as “BARCODE” in [Preference]-[Serial port] of system configuration and speed, data length corresponding to specification of barcode reader.

| | |
|---|---|
| **Interface** | RS232/RS422 |
| **Speed** | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 bps |
| **Data length** | 7, 8 Bit |
| **Stop bit** | 1, 2 Bit |
| **Parity** | ODD, EVEN, NONE |
| **Flow control** | XON/XOFF, DSR/DTR, NONE |
| **Communication format** | ASCII Character code and Exit code CR[0DH] [ASCII data + Exit code] |

Interface and speed are designated same with other serial devices connected with GP.

## 33.2 BASIC OPERATION

In order to read barcode, configure the following in editor.

- Size of space for device reading barcode and data to be saved. (Select [Common]-[Barcode])
- Designate system signal 1 of system information. (Select [Common]-[System information])

Barcode read operation is controlled by three bits among devices designated in system information.

(1) Limit signal of barcode input [ PLC → GP ]:
- Bit4 of word device designated in read device of system information in editor.
- When this bit is ON, it does not read barcode input.

(2) Completion signal of barcode read [ PLC → GP ]:
- Bit5 of word device designated in read device of system information in editor.
- When this bit is ON, barcode input signal will be OFF and it is not able to input until this signal is reset.

(3) Barcode input signal [ GP → PLC ]:
- Bit8 of system signal2 of system information in editor is allotted.
- This bit will be ON automatically when GP save barcode input value into PLC with save device of PLC.
- When completion signal of read the code input is set, this bit is reset.

### ※ Notice

Disable signal of barcode input and completion signal of read are controlled in PLC program.
Barcode information read from a barcode is saved in barcode device and move barcode information to other space for next reading. In order to move, logic controlling signals is required to create.

# 33.3 READ PROCEDURE OF BARCODE

Step 1. Reset limit bit of barcode input and completion bit of barcode read to read barcode.

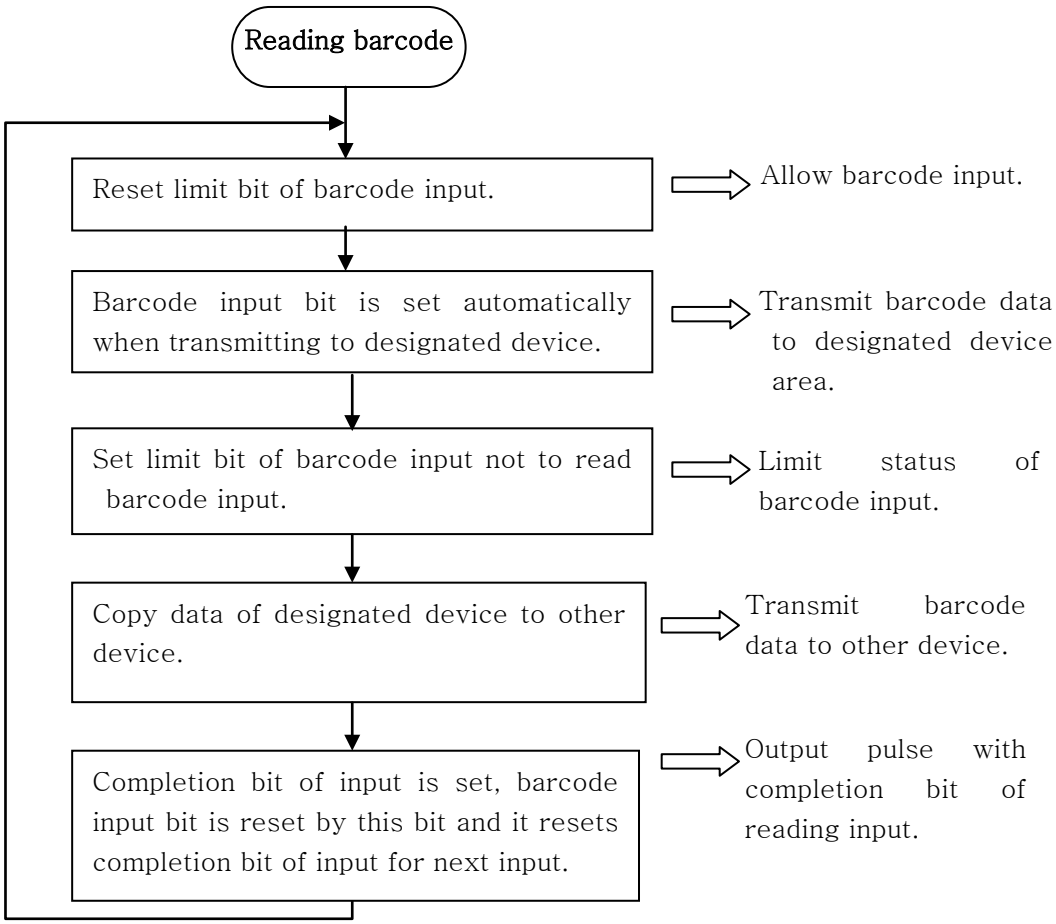
Step 2. Barcode input signal is set when reading barcode.

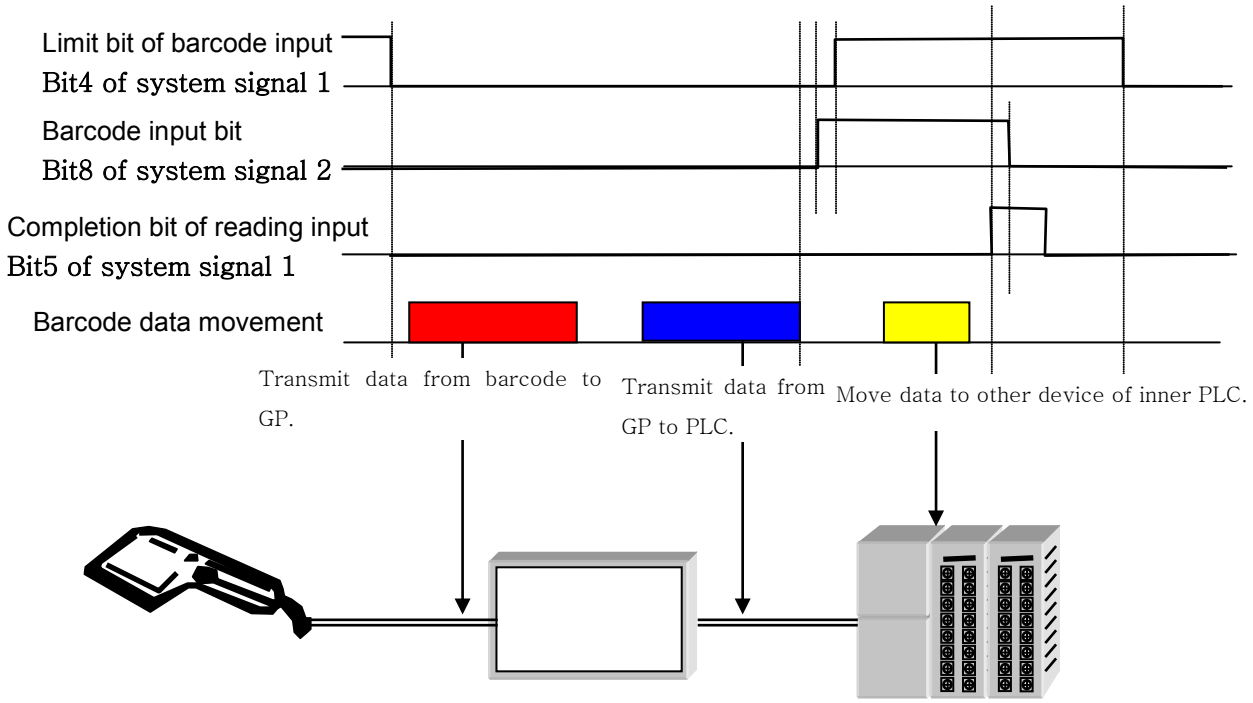
Set limit bit of barcode input not to read the input.

Step 3. Move data saved in barcode device to other space.

Step 4. If completion bit of read is set, barcode input signal is reset.

Step 5. Repeat step 1~4.






## 33.4 SAVE

Select [Common]-[Barcode] in main menu, barcode window is popped up.
Designate device to save data reading from barcode reader in this window.
When designating lead device and device point, successive word registers as points including lead device are used for saving barcode data.


- Save the number of read byte(number of character) in lead device.
- Save read (ASCII) code in after this device.
- In case, data are smaller than the number of designated save devices, other area will be filled with 20H[SPACE].
- In case, data are more than the numbers of designated save device, it saves up to available area and others are not saved. The number of actual read are saved in lead device in this case.

Ex 1) In case, barcode="1234567", device=D100, the number of device=7,

| Device | Save data | ASCII character | Description |
|---|---|---|---|
| D100 | 0007H | | The number of read byte. |
| D101 | 3231H | '1''2' | Save data from lower byte to upper byte. |
| D102 | 3433H | '3''4' | |
| D103 | 3635H | '5''6' | |
| D104 | 2037H | '7' ' ' | After the last device address is filled with 20H(space). |
| D105 | 2020H | | |
| D106 | 2020H | | |

Ex 2) In case, barcode="1234567", device=D100, the number of device=4,

| Device | Save data | ASCII character | Description |
|---|---|---|---|
| D100 | 0007H | | The number of read byte. |
| D101 | 3231H | '1''2' | Save data from lower byte to upper byte and other data are not saved. |
| D102 | 3433H | '3''4' | |
| D103 | 3635H | '5''6' | |

# 34. OBSERVE STATUS

It monitors ON/OFF status of designated bit device(monitor device), ON/OFF the appropriate bit device of PLC according to the status or registers the value in specific word device.

Select [Common]-[Observe status] in main menu, observe status window is popped up and monitor device, monitor cycle and operation for trigger are configured.

## 34.1 BASIC OPERATION

It is divided into observe function of whole project and specific screen.

• Observe function for project :

It monitors designated observe device regardless of screen showing in current main device and executes set operation if it satisfies with trigger condition.

• Observe function for screen :

When observe status is configured for showing screen, it monitors designated observe device and executes designated operation if it satisfies with trigger condition.

### 34.1.1 Operation procedure

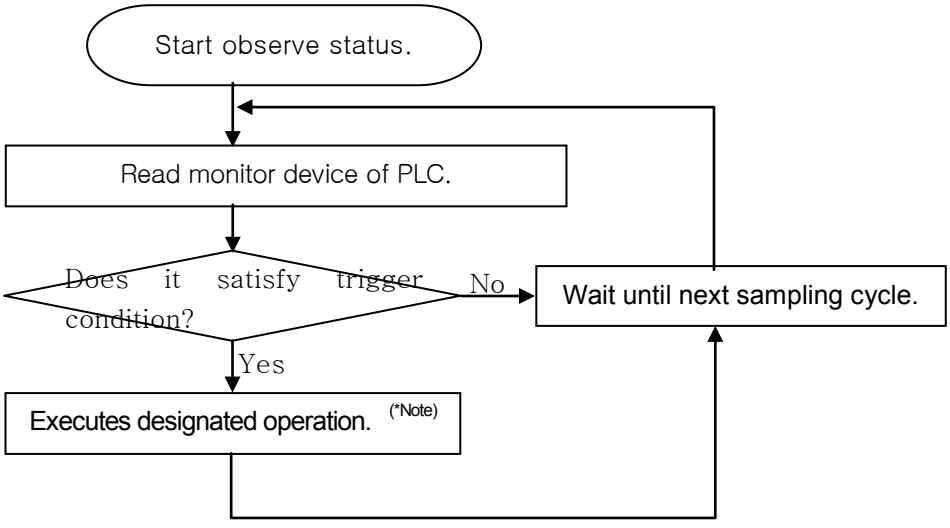
(1) GP reads observe device of designated PLC.

(2) It distinguishes observe device satisfies trigger condition. (Inner GP)

(3) Configure the value of the appropriate bit device and word device when it satisfies trigger condition. (GP-->PLC)

(4) Wait until the next sampling cycle.

Repeat operation of (1)~(4).




(*Note) If it satisfies trigger condition at the point of previous sampling time, it omits designate operation in current time. When trigger condition is lasted during successive sample section, designated operation is executed in the first sample. In order to preserve device as ON status during satisfying trigger condition for momentary of designated operation, ON the device by PLC program or forced input.

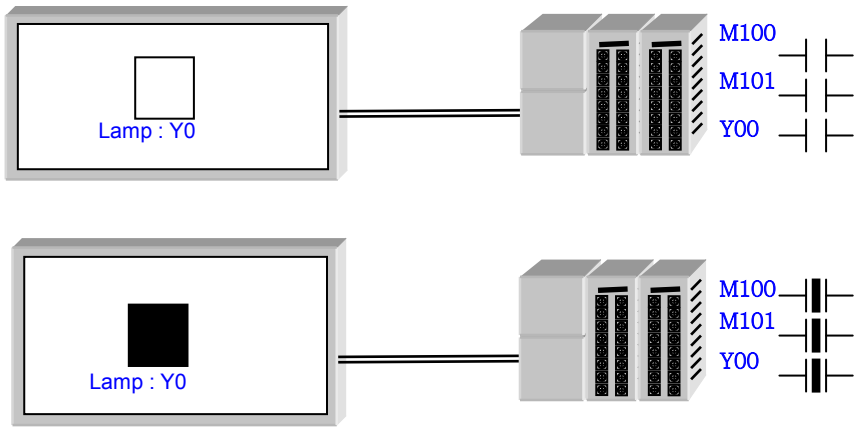
## 34.1.2 Operation type

Observe device is divided into bit configuration and word configuration when it satisfies trigger condition.

**A. Bit operation**

The following figure is an operation configuring Y0 device as ON trigger device as M100, M101 and two bit devices are ON.

There is a lamp displaying Y0 status in GP screen. M100, M101 are in OFF status, it does not satisfy trigger condition in the first figure. GP Y0 into ON status satisfying trigger condition of observe status when M100, M101 are changed as ON.



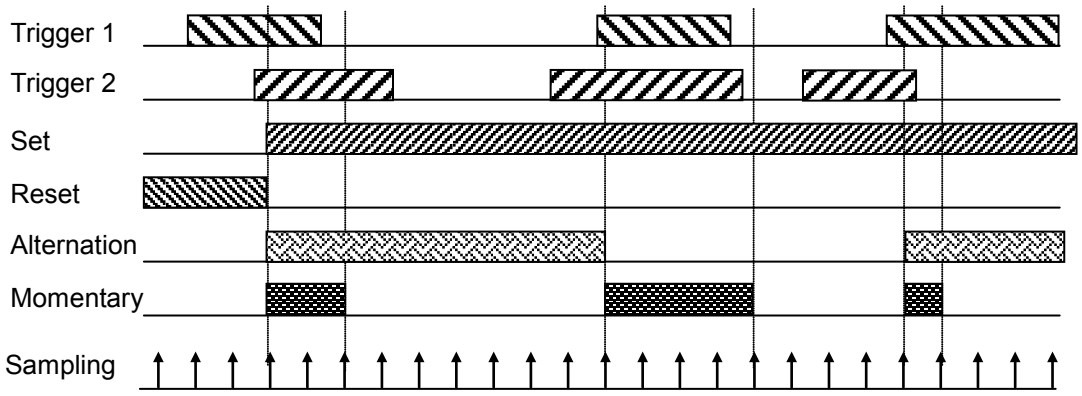

It is able to designate four types of operation in bit operation as following.

(1) Set : It makes device as ON status when trigger is occurred.

(2) Reset : It makes device as OFF status when trigger is occurred.

(3) Alternation : It alternates device status when trigger is occurred.

(4) It preserves device as ON status during occurring momentary trigger.




The figure displays trigger device status, set, reset, alternation and momentary operation with sampling. Trigger1, trigger2 display status of designated two device and it satisfies trigger condition when they are ON.

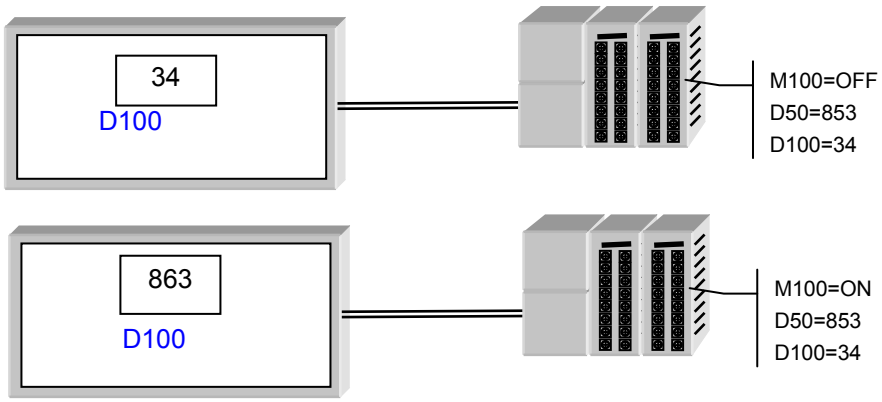
**B. Word operation**

(1) Word configuration of 16bit : Assign the value to 16bit word device.

(2) Word configuration of 32bit : Assign the value to 32bit word device.

•It is able to configure with fixed value and designate indirectly using device.

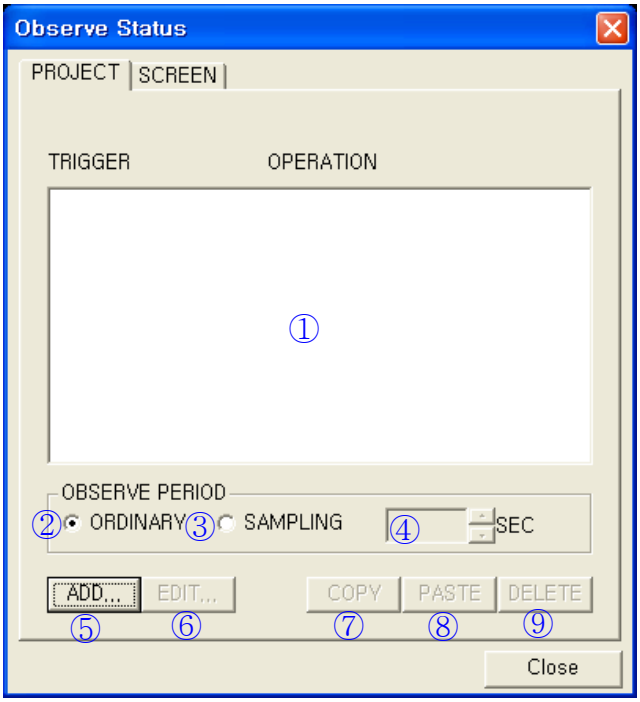
Example of indirect designation : In case, configure trigger device as M100(ON), fixed value=10, indirect device=50 for D100, the value of D50+10 is configured in D100 when M100 is ON.




# 34.2 DETAIL CONFIGURATION AND OPERATION IN EDITOR

- When trigger is occurred, the number of save device monitored in each project and screen are 40 and the number of trigger can be monitored are 80 at a time.
- When configuring observe bit for a screen, observe bit of overlap screen called on base screen is not operated, observe bit configured in base screen is operated only.
- Observe function is not available for window screen.

## 34.2.1 Project tap




| Observe status project | Configure observe status function for project. |
|---|---|
| ① Trigger/operation | • It shows currently designated trigger/operation simply. |
| ② Ordinary | • It executes observe operation once with minimum cycle to execute in system. |
| ③ Sampling | • It executes observe operation with user-configured time of ④. |
| ④ Sampling | • It is activated when ③ is selected.<br>• Default is a sec, it is able to configure range 1~60 sec with a sec. |
| ⑤ Add | • Create trigger/operation calling trigger/operation configuration window.<br>• It is able to write a list maximum 40. |
| ⑥ Edit | • Edit selected item of list calling trigger/operation configuration window. |
| ⑦ Copy | • Copy configuration of selected list item. |
| ⑧ Paste | • Paste copied contents to the last number of list. |
| ⑨ Delete | • Delete configuration of selected trigger/operation from a list. |

## 34.2.2 Screen tap

It operates same with project but configuration in **project** is executed regardless of GP screen, configured observe operation is only executed in **screen**.

• Base screen : Designate base screen number configuration is applied. It is able to select base screen through spin box and screen image window clicking browser button.

## 34.2.3 Trigger tap

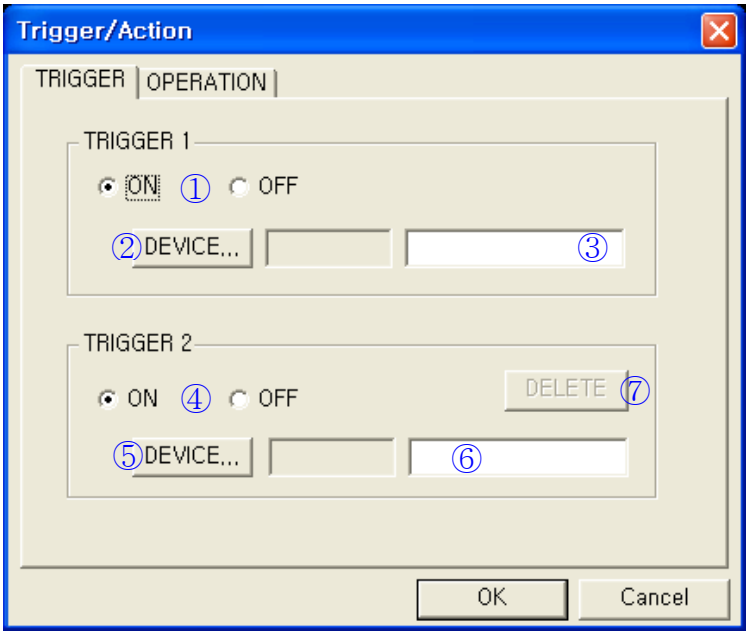
•It is called when clicking add or edit button in observe status window.

•Configure device using as trigger and trigger occurrence condition.

•It is able to designate independent trigger condition for maximum two bit devices.

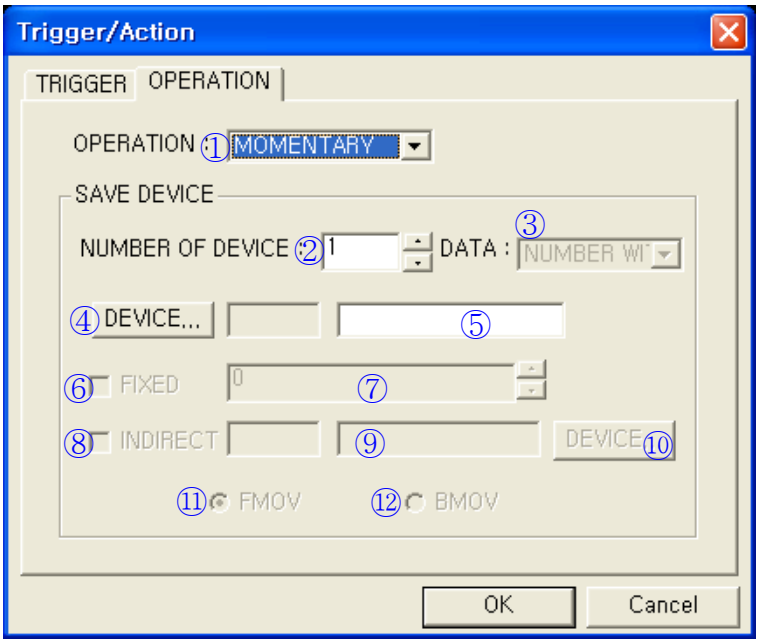
•It executes configured function when trigger 1,2 are configured and two conditions are satisfied simultaneously.

•Trigger1 should be designated, but trigger2 is not required to designate necessarily.




| Trigger/operation | Designation of trigger device |
|---|---|
| ①Trigger1 | • ”ON”, “OFF” : Designate trigger status of trigger1. |
| ②Device | • Designate trigger1 device calling device window. |
| ③Device | • It is able to designate inputting directly showing designated trigger1 device. |
| ④Trigger2 | • ”ON”, “OFF” : Designate trigger status of trigger2. |
| ⑤Device | • Designate trigger2 device calling device window. |
| ⑥Device | • It is able to designate inputting directly showing designated trigger2 device. |
| ⑦Delete | • It makes as trigger2 is not designated. |

## 34.2.4 Operation tap




| Trigger/operation | Configuration of operation executing when trigger is occurred. |
|---|---|
| **①Operation** | • Designate type of operation executing when trigger is occurred.<br>• Operation type:<br>Momentary, Set, Reset, Alternation, Word configuration(16bit) and Word configuration(32bit)<br>• Set : It makes bit device as ON status when trigger is occurred.<br>• Reset : It makes bit device as OFF status when trigger is occurred.<br>• Alternation : It alternates bit device status when trigger is occurred.<br>• Momentary : It preserves bit device as ON status during satisfying trigger condition.<br>• Word configuration(16bit): Configure the value in 16bit word device.<br>• Word configuration(32bit): Configure the value in 32bit word device. |
| **②Points** | • Designate the number of device this configuration is applied.<br>• It is operated as many as the number of successive device from device designated in ④.<br>• Limit the number of device<br>- Bit device : 40<br>- 16bit word device : 20<br>- 32bit word device : 10 |
| **③Data** | • It is activated when the operation is word configuration(16bit) or word configuration(32bit).<br>• Number with sign : Configure device value as positive number with sign.<br>• Number without sign : Configure device value as positive number without sign. |
| **④Device** | • Designate device executing operation.<br>• If operation is related with bit device, it calls bit device window and word device window is popped up if it is related with word device. |
| **⑤Device** | • It is able to display and edit designated device. |

| | |
|---|---|
| **⑥Fixed** | • It is activated if operation is for word device.<br>• Check to configure the appropriate word device as fixed value when trigger is occurred.<br>• Example of operation for trigger in case, ”Indirect” ⑧ is not checked.<br>Setting : Save device (⑤) = D100, Fixed value (⑦)=64, Points(②)=4<br>Operation : D100 <-- 64<br>D101 <-- 64<br>D102 <-- 64<br>D103 <-- 64 |
| **⑦Value** | • It is activated when operation is word device and ⑥ is checked.<br>• Designate fixed value to be saved in the appropriate word device when trigger is occurred. |
| **⑧Indirect** | • It is activated when operation is related with word device.<br>• Check to configure value of the appropriate word device same as any device value when trigger is occurred.<br>• Add configured fixed value to the current value of word device designated indirectly at the time trigger is occurred and save in designated word device.<br>**Fixed value ⑦+ Indirect device value ⑨ --> Save device ⑤**<br>• Device type designated indirectly conforms type of device executing operation. For example, 32bit word device is designated as save device, indirect designation device is also configured as 32bit type. |
| **⑨Device** | • It is able to edit showing designated indirect device. |
| **⑩Device** | • Designate indirect device calling device window. |
| **⑪FMOV** | • It is activated when operation is related with word device and point is over 2.<br>• Save the current value of indirect device adding fixed value in all save devices.<br>Ex)Fixed value ⑦=100, Indirect device ⑧=D100, Save device ⑤= D200(16bit), Points②=3. Write operation when trigger is occurred.<br>D100 <-- The value of 100 +D100<br>D101 <-- The value of 100 +D100<br>D102 <-- The value of 100 +D100 |
| **⑫BMOV** | • It is activated when operation is related with word device and point is over 2.<br>• The operation writing the current value of indirect device adding fixed value in all save devices is same with FMOV while the series of device taking indirect device as lead device are made as many as points.<br>Ex)Fixed value=100, Indirect device=D100, Save device=D200(16bit), Points=3<br>Write operation when trigger is occurred.<br>D200 <-- 100(Fixed value)+D100<br>D201 <-- 100(Fixed value)+D101<br>D202 <-- 100(Fixed value)+D102 |

## ※Notice

It can be only used with 32bit in accordance with connection device, refer to “Communication manual”.

# 35. RECIPE

It reads and writes several PLC devices and read or write operation are operated by read or write trigger.

It is able to transmit large volumes of data to device collectively through recipe function using write operation and save large volumes of PLC inner device value to recipe memory of GP using read operation.

## 35.1 CONFIGURATION IN EDITOR

(1) Designate device of “System signal1” in system information window and “Current recipe number” in check box.

(2) Write each recipe file : It is able to write 256 recipe files from 1 to 256. The name of recipe file is configured maximum 32 of ASCII character, GP recognizes recipe file number, not a recipe file name, user can designate name as convenient to divide.

(3) Designation of read/write trigger device : It is able to designate read/write trigger separately. Recipe read function is not used, read trigger is not required to designate while write trigger should be designated.

(4) Designation of read/write trigger condition : It is able to designate as ON, OFF. When it is designated as ON, trigger is occurred in rising edge of trigger device and it is occurred in falling edge when it is designated as OFF.

(5) Designation of save device : It is able to configure only with 16bit word device and designate as maximum 4000 for a recipe. Configuration of device point and read/write trigger for recipe files excluding the first recipe is fixed as the value configured in the first file and devic and device data type and the initial value of device are only can be configured differently.

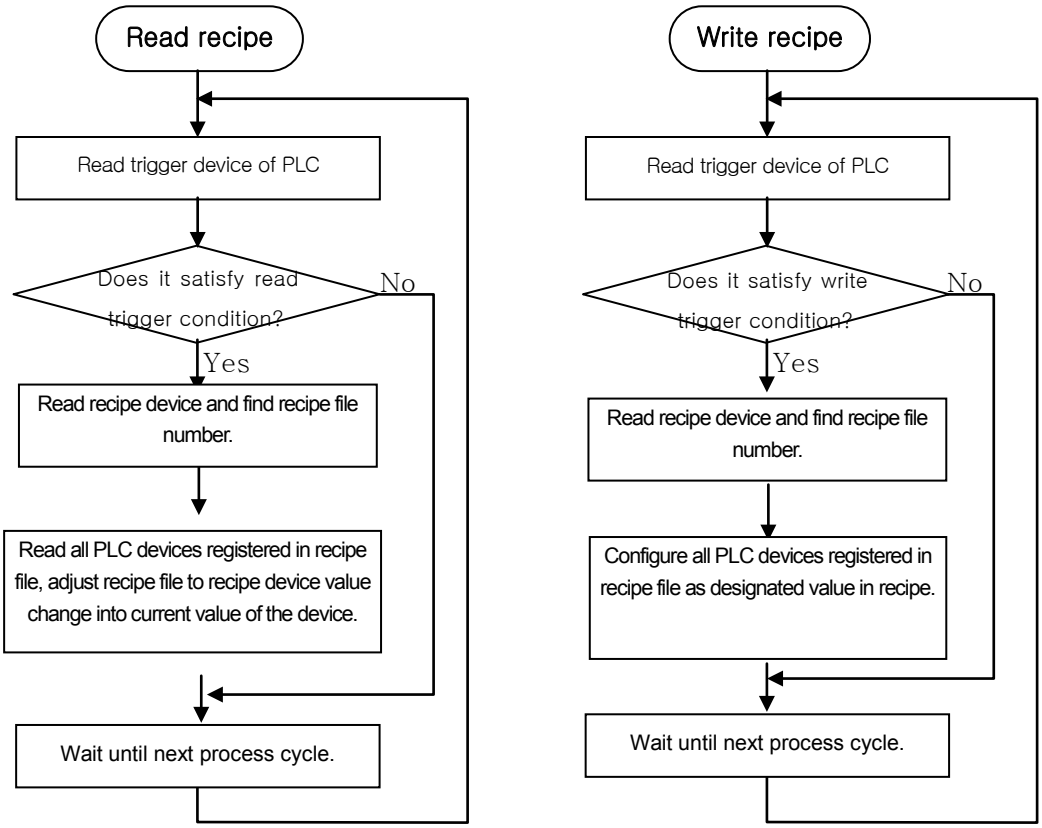
## 35.2 OPERATION PROCEDURE IN MAIN DEVICE

(1) Read read/write device of PLC.

(2) Confirm read/write trigger.

(3) Read recipe device when read/write trigger is occurred, execute read/write operation for the appropriate file with recipe file number.

- Recipe read operation : Read all PLC devices registered in recipe file and adjust recipe file to recipe device value change into current value of the device.
- Recipe write operation: Configure all PLC devices registered in recipe file as designated value in recipe.



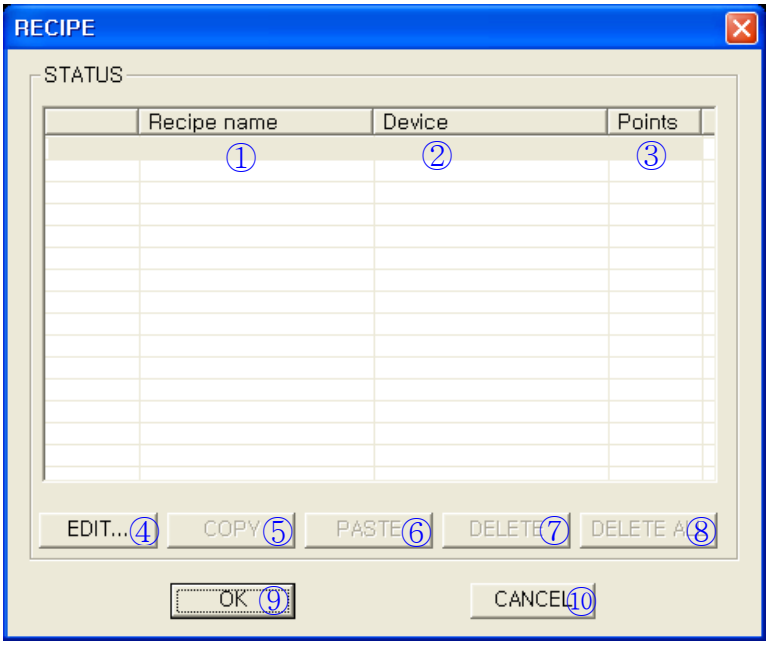

**※Notice**

(1) It is required to notice for using because the maximum memory capacity to execute recipe function can be allotted up to approximately 256X4000X(16bit)=2,000kbyte, but actual memory capacity of GP is below the level.

(2) Flash memory can be damaged when executing write operation more than regular frequency, it is required to notice to configure PLC program or related device not to occur write trigger frequently.

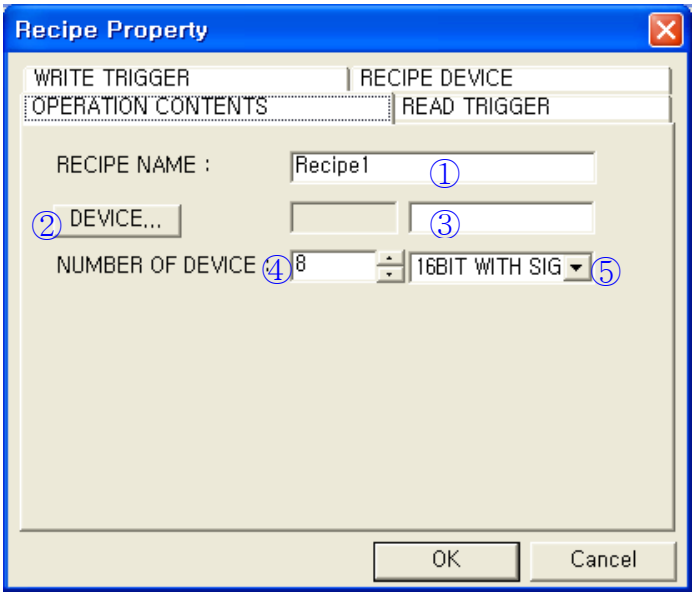
# 35.3 DETAIL CONFIGURATION AND OPERATION IN EDITOR

## 35.3.1 Recipe window




| Recipe | Edit list of recipe file |
|---|---|
| ①Recipe name | • Display configured recipe name. |
| ②Device | • Display lead device using configured recipe. |
| ③Point | • Display point of each recipe device. |
| ④Edit | • Call recipe property window, change configuration for recipe of item selected in a list or write new recipe. |
| ⑤Copy | • Copy selected item. |
| ⑥Paste | • Paste copied item into selected column. |
| ⑦Delete | • Delete selected item. |
| ⑧Delete all | • Delete selected all recipe. |
| ⑨OK | • Save changes and exit window. |
| ⑩Cancel | • Do not save changes and exit window. |

## 35.3.2 Recipe property window

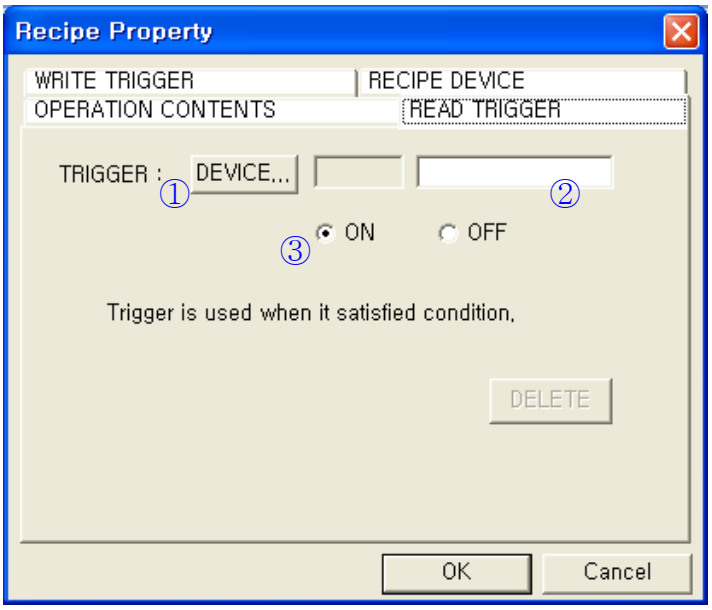



| Recipe property | Edit property of each recipe. |
|---|---|
| ①Recipe name | • Write recipe name.<br>• It is able to write as maximum 32 of ASCII character. |
| ②Device | • Designate lead word device using in recipe calling device window. |
| ③Device | • It is able to edit directly showing selected word device. |
| ④Points | • Designate the number of the series of device doing recipe function from configured lead device. .<br>• It is able to designate as maximum 4000. |
| ⑤Data type | • 16bit with/without sign<br>• Configure the value of 16bit word device as the number with/without sign. |

### ※Notice

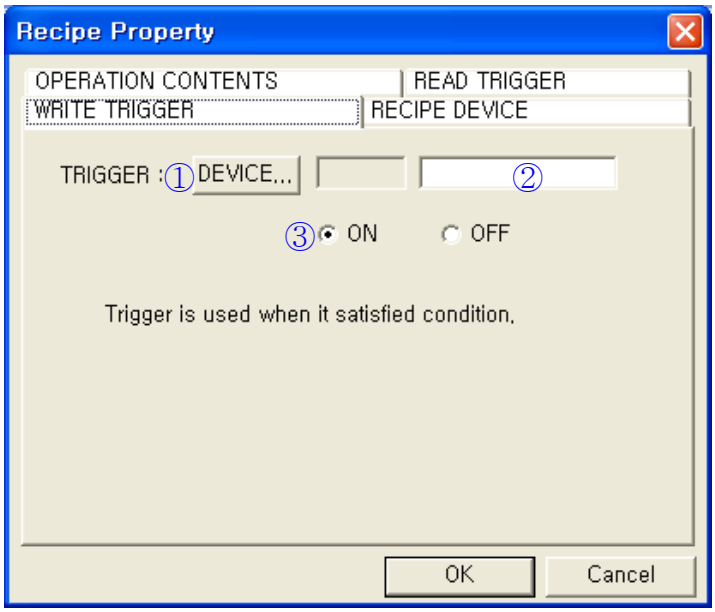
It can be only used with 32bit in accordance with connection device, refer to “Communication manual”.

## 35.3.2 Read trigger tap




| Read trigger | Configuration of read trigger. |
|---|---|
| ①② device | • Designate bit device for read trigger. |
| ③ trigger | • ON : It executes read operation at the moment designated device is changed as ON status.<br>• OFF : It executes read operation when designated device is changed as OFF status. |

## 35.3.3 Write trigger tap

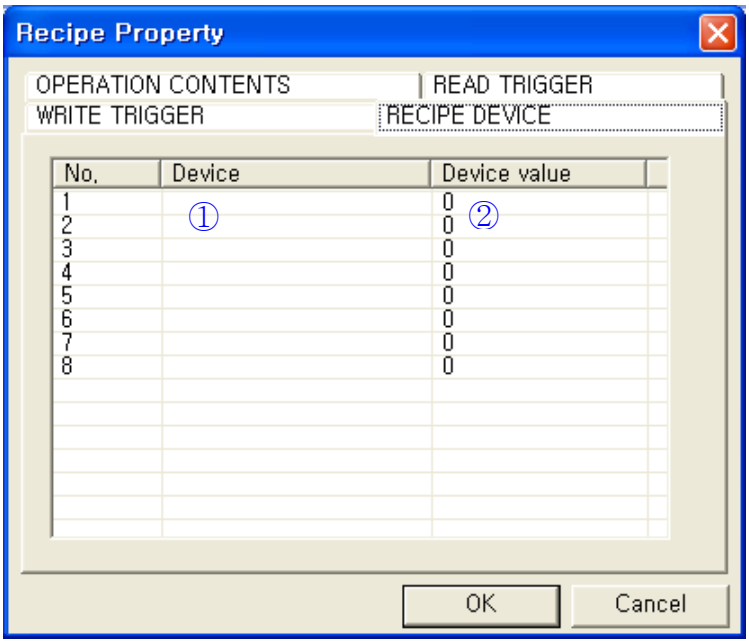


| Write trigger | Configuration of write trigger |
|---|---|
| ①② device | •Designate bit device for write trigger. |
| ③ trigger | •ON: It executes write operation at the moment designated device is changed as ON status.<br>•OFF: It executes write operation when designated device is changed as OFF status. |

**※Notice**

Read trigger is optional, but write trigger is essential.

## 35.4 Recipe device




| Recipe device | Configuration of recipe value |
|---|---|
| ①Device | • Show device using in recipe. |
| ②Points | • It is able to edit directly showing configured recipe device value. |

# 36. SECURITY FUNCTION

In order to allowed user can observe or adjust important data, designate password on base screen and system screen and register password to access.

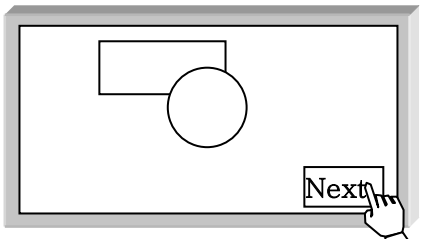
## 36.1 BASIC FUNCTION

To configure security in any screen, set the value as security level excluding 0 in screen auxiliary configuration window and it is able to configure 0~15. The screen with security level 0 can be accessed by anyone without register specific password.

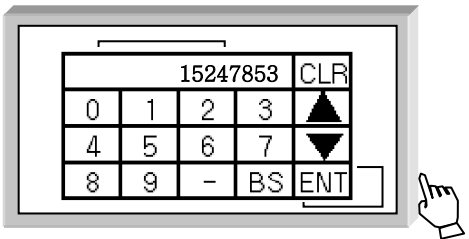
Designate password for the appropriate security level in security window. To access the screen for operation in main device, security should be cancelled by register higher password of the security level. For example, user knows password of security level 5, register password of level 5 and operate all screen configured under level 5. It cannot be access over level 6.

### ●Calling of key window for password register

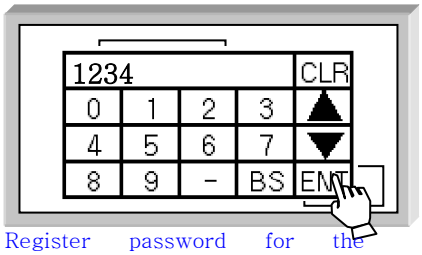
- Press touch key of function key(FFA6), key window is popped up to input password.
- When it is switched into screen with higher level than security cancelled level, key window is called to input password automatically.



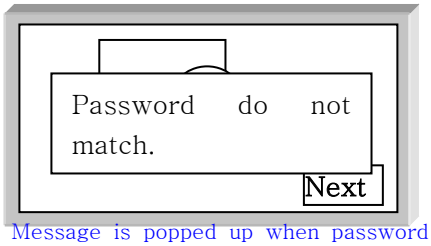

It is switched into the next screen security configured.



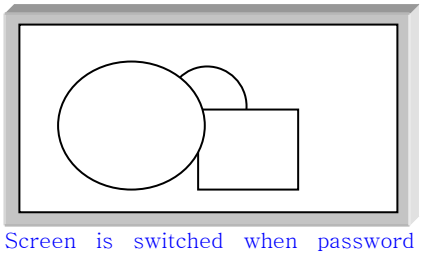

When switching into the next screen, key window is called to register input if security is configured.




Register password for the appropriate security level.




Message is popped up when password is not matched.



Screen is switched when password is matched.

※Notice

Password code is showed when password input key window is displayed, it is encoded about the top level password. When it cannot be used because you lose the password, send to us this code and we will inform you the password.

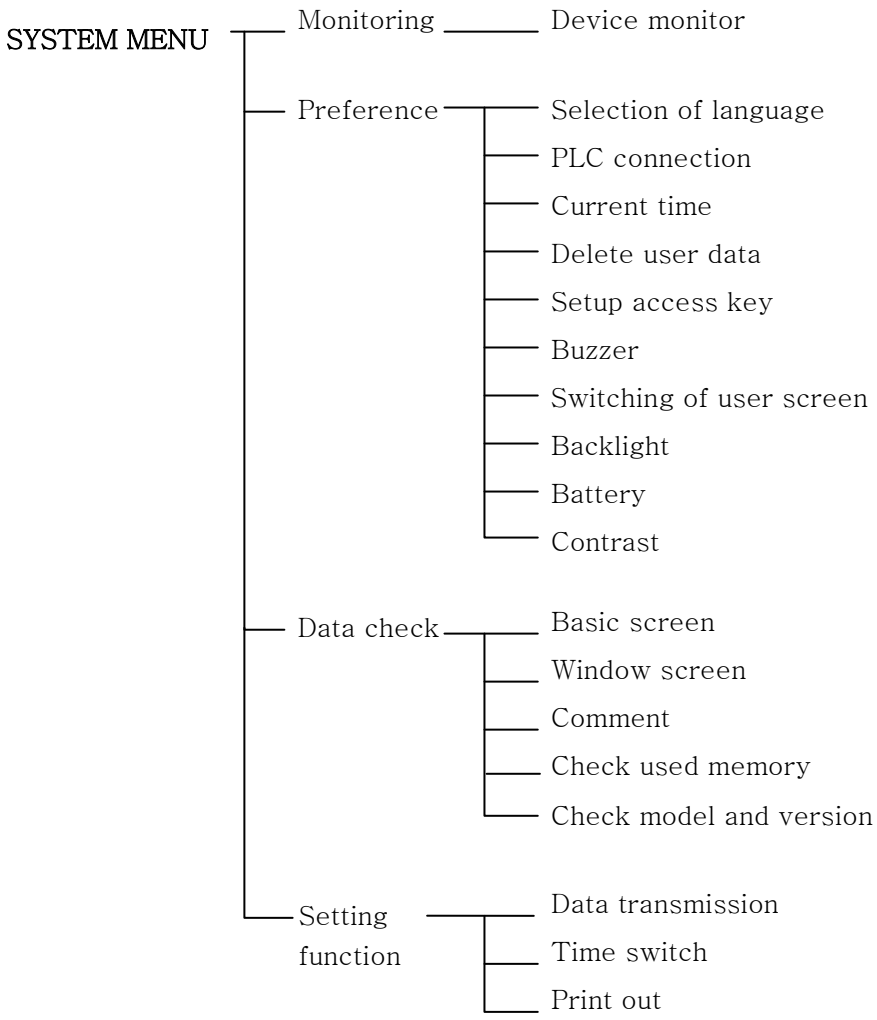
## ●Security reconfiguration

Reconfigure security pressing touch key of function key(FFAD). Register password again when switching into security cancelled screen.

## ●Security about system screen

It is able to configure security not to change important configuration without permission in system screen. It is able to configure security in the bottom screen in system menu.

When security is configured, key window for password register is displayed when select a menu switching into each screen from system screen and it is not switched if password is not matched.



## ●Overlap of screen configured security

When it is switched into base screen with overlapped screen, higher security level of screen than the base screen is not displayed and same or lower security level of screen is displayed.

The operation of screen switching when designating security level and password as below in editor.

| Screen | Security level | Password |
|---|---|---|
| Base screen 1 | 0 | -- |
| Base screen 2 | 1 | 11 |
| Base screen 3 | 2 | 22 |
| Base screen 4 | 3 | 33 |

- In case of overlapping base screen 2,3 on base screen 1 in editor,

  Base screen is only displayed when calling base screen 1 in main device.

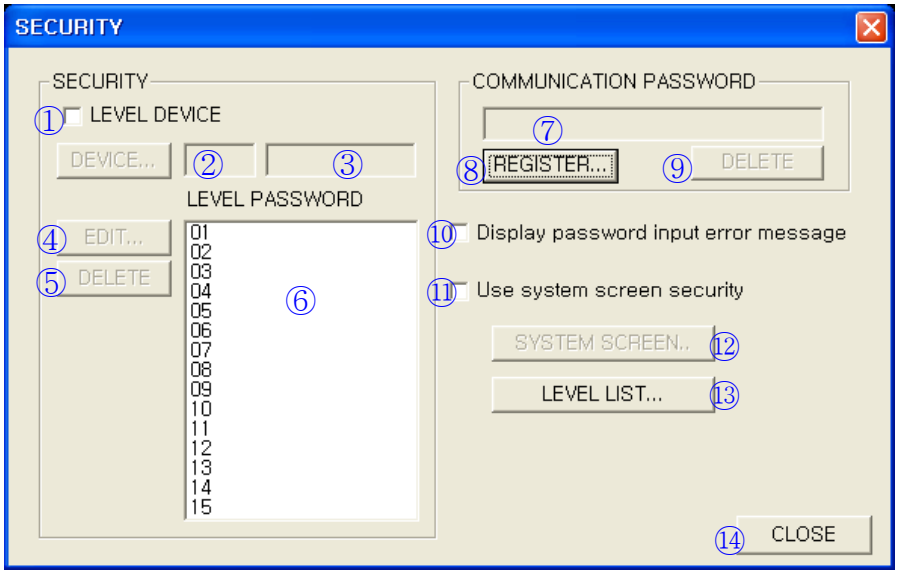
- In case of overlapping base screen 2,4 on base screen 3 in editor,

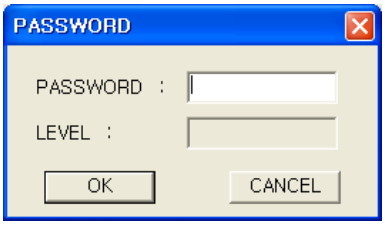
  When calling base screen 3 from main device, keypad is displayed automatically and registering password of security level of base screen 3, base screen 3 overlapped base screen 2.

## ●Security for using upload/memory function

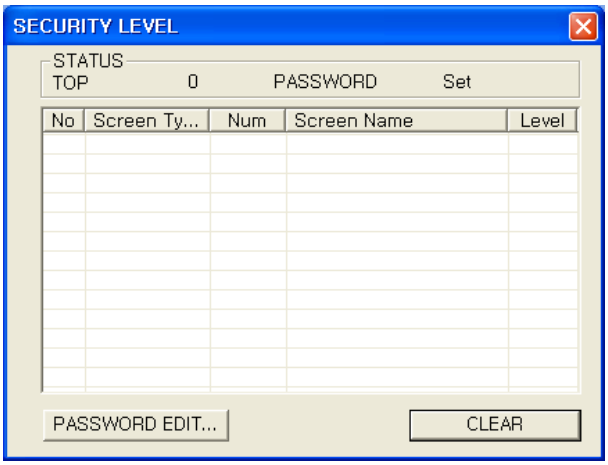
When using upload/memory function in editor, allowed user only can use this function registering password.

# 36.2 DETAIL CONFIGURATION AND FUNCTION IN EDITOR




| Security | Designation of detail about security |
|---|---|
| ① Level device | • It saves the cancelled top security level. Check to use this device.<br>• It is able to display using numeral display on a screen to confirm security level of screen displayed on a screen by user.<br>• 1~15 of password is not registered, this device has 0 for value, for example, level 10 of password is registered, this device value is 10. |
| ②Device | • Select level device calling device window. |
| ③Device | • It is able to edit directly showing current designated level device. |
| ④Edit | • Edit password for the item selected in list ⑥ calling password window.<br>  <br><br>• Designate password within 8 digits using.<br>• If there is designated password, it is able to edit when it is matched. |
| ⑤Delete | • Delete password about the item selected in the list ⑥.<br>• If there is designated password, it is able to delete when it is matched. |

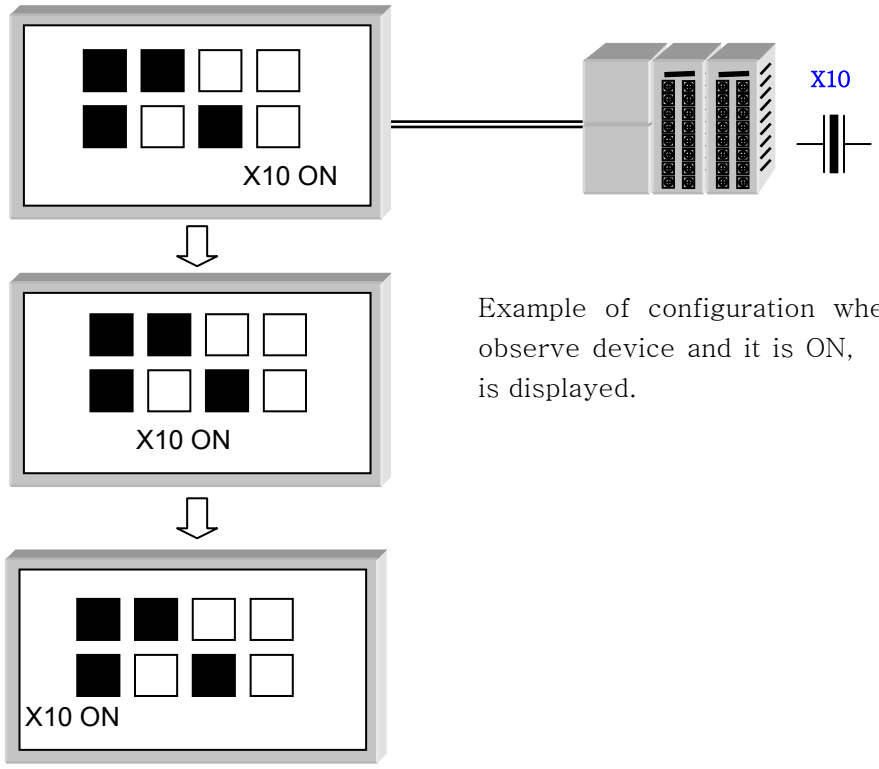
| | |
|---|---|
| ⑥List | • It shows password register for each security level 1~15.<br>• If password is designated, it is displayed as *******.<br>• It is able to designate security level 0~15 for each base screen in screen auxiliary configuration.<br>• Security level 1~15 can be designated with 8 digits using 0~9.<br>• For level designated password, it is showed as "********" regardless of digit.<br>• The screen with security level 0 can access without inputting password.<br>• Security level is 1~15, it is accessed with inputting password. When specific security level is inputted, the lower security level of screen is opened without inputting password.<br>• If base screen and system screen with security level not configured among 1~15, it is able to access inputting higher level of password.<br>• Supply power again in a status of security releasing, all security will be in non-release status. |
| ⑦ Communication password | • Password using in communication is configured, it is displayed as *******.<br>• When using upload/memory function, GP data and memory is uploaded inputting password and password input window is popped up automatically. |
| ⑧Register | • Register password applying for using upload/memory function.<br>• It is able to adjust when registered password is matched. |
| ⑨Delete | • Delete password using in communication.<br>• It is able to delete when password is matched. |
| ⑩Display password input error | • Check to show error message when registered password is not matched in main device.<br>• When this is checked, it shows message as password is not matched. |
| ⑪Use system screen security | • Check to use security function for system screen. |
| System screen | • **It is activated when ⑪ is checked.**<br>• Designate security level for each screen of system screen calling system screen tap of screen auxiliary configuration.<br>• When it checked, system screen button is activated, screen auxiliary configuration window is displayed pressing a button. Security level of system screen is 15 for default and it is able to designate security level of each system screen in screen auxiliary configuration.<br>• Security function for system screen is not used when check box of using system screen security is not checked. Security level of system screen is configured as 0.<br>• When password for the top security level is not registered among 1~15, check in [Communication]-[Data check] for download. |

| | |
|---|---|
| ⑬Level list | • Press a button to confirm password for the top level is configured.<br>  <br><br>• Security level is 1~15, if designated base screen is not existed and check box of using system screen security is not checked, security function is not used.<br>• Security level is 1~15, if designated base screen is existed and check box of using system screen security is not checked, security function is only used for base screen and error message is occurred if password for the top security level is not configured. Check it before download. |
| ⑭Close | • Save configurations and close window. |

# 37. FLOATING ALARM

## 37.1 FUNCTION

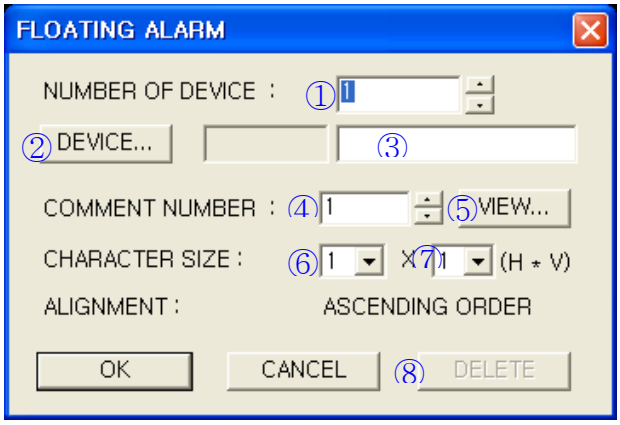
When designated alarm device(bit device) is ON status, the comment is displayed floating from right to left with character size configured in bottom of the screen. If alarm is cancelled(OFF), the comment is disappeared. It is displayed as maximum 512 of ASCII character with one line, it moves as width size of character and it is displayed on a object in screen.




Example of configuration when X10 is observe device and it is ON, "X10 ON" is displayed.

# 37.2 CONFIGURATION IN EDITOR

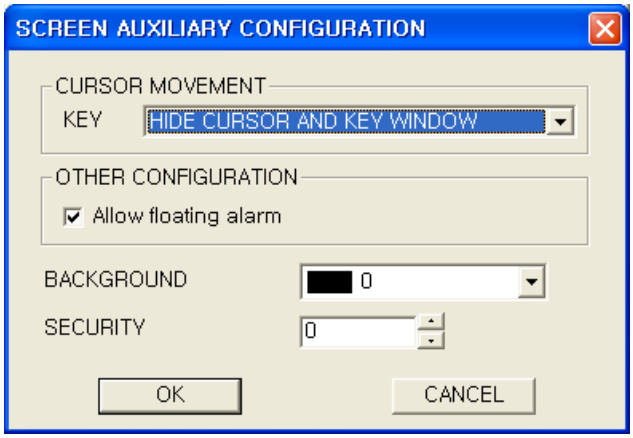
## 37.2.1 Floating alarm window




| Floating alarm | Detail configuration for floating alarm |
|---|---|
| ① Device points | • Designate the number of bit device to be observed.<br>• Range : 1 ~ 256 |
| ② Device | • Designate lead device among bit device to be observed. |
| ③ Device | • It is able to edit showing designated device.<br>• Device as many as the number of devices from designated device will be observe object. |
| ④ Comment no | • Designate comment number to be shown when lead device is ON.<br>• The comment to be shown when device is ON corresponds in this number successively. |
| ⑤ Browse… | • Show comment registered in project calling comment list window and designate comment number to be registered in ④. |
| ⑥ Size | • Designate width size of character of comment to be displayed.<br>• 1, 2, 3, 4 |
| ⑦ Size | • Designate length size of character of comment to be displayed.<br>• 1, 2, 3, 4 |
| ⑧ Delete | • Delete configured contents. |

## 37.2.2 Screen auxiliary configuration

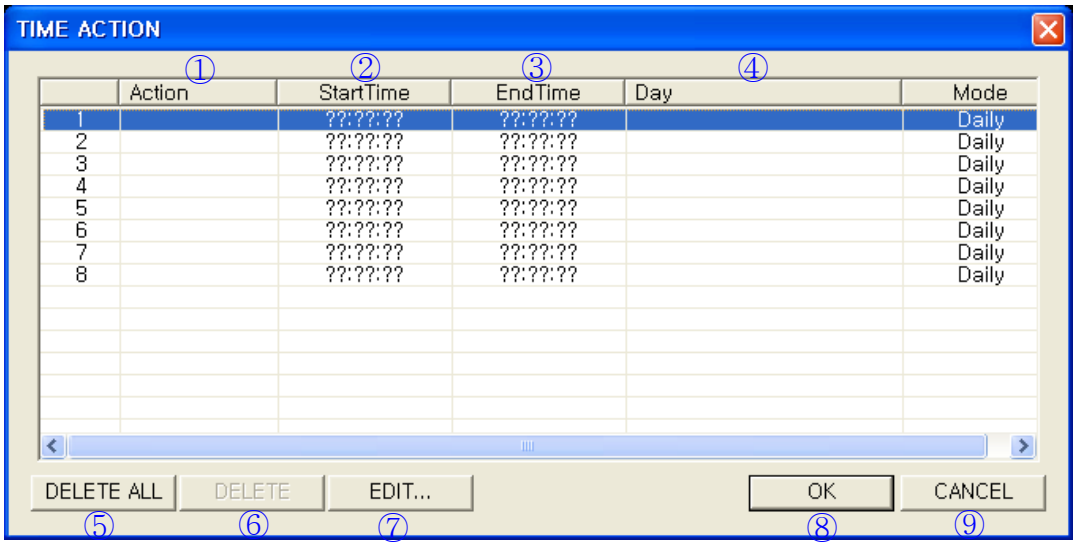
Floating alarm is operated only in screen with floating alarm is checked in screen auxiliary configuration.



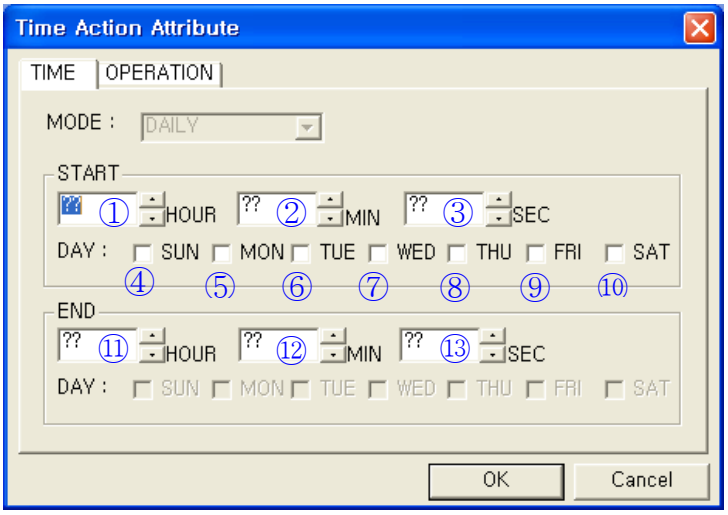
# 38. TIME ACTION

It ON/OFF specific bit device of inner PLC when designated day and time. It is able to configure time action set in inner GP in editor or [Setting function]-[Time switch]. It can be configured as maximum 8 of bit device with successive number.
It ON designated bit device at the moment of start time, OFF at end time.

Select [Common]-[Time action] in main menu of editor, time action window is popped up.
When downloading data from editor, designated item is displayed in [Setting function]-[Time switch]. It is not able to upload contents of [Setting function]-[Time switch] to editor.




| Time action | To show designations for time action |
|---|---|
| ①Action | • Display bit device configured time action. |
| ②Start time | • Display start time occurring each action. |
| ③End time | • Display end time for each action. |
| ④Day | • Display day occurring each action. |
| ⑤Delete all | • Delete all designated contents. |
| ⑥Delete | • Delete selected item in a list. |
| ⑦Edit | • Edit detail items for each time action calling time action property window.<br>• Bit device related with action is designated when editing the first item of list and other items have successive address after the device and they are allotted automatically. |




| Time action | Configuration of each time action |
|---|---|
| ①,②,③ | • Hour/Min/Sec of start time occurring the action |
| ④ ~ ⑩ | • Check the day occurring the action |
| ⑪,⑫,⑬ | • Hour/Min/Sec of end time of the action |
| | Action tap configures bit device related with action, it is able to designated lead device for the first item only. It ON the appropriated bit device at the moment of start time in checked day and OFF at end time. |

# Revision History

* The revision data is mentioned in bottom right of the last page.

| Revised | Contents of revision |
|---|---|
| 2008-01-21 | V4.1<br>LP Series & New GP Series Release에 따른 추가 사항 적용 |