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Sensors & Controllers

Graphic Panel

GP-S070

USER MANUAL

GP-S070

Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

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Preface

Thank you very much for selecting Autonics products.

Please familiarize yourself with the information contained in the **Safety Considerations** section before using this product.

This user manual contains information about the product and its proper use, and should be kept in a place where it will be easy to access.

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User Manual Guide

- Please familiarize yourself with the information in this manual before using the product.
- This manual provides detailed information on the product's features. It does not offer any guarantee concerning matters beyond the scope of this manual.
- This manual may not be edited or reproduced in either part or whole without permission.
- A user manual is not provided as part of the product package. Please visit our home-page (www.autonics.com) to download a copy.
- The manual's content may vary depending on changes to the product's software and other unforeseen developments within Autonics, and is subject to change without prior notice. Upgrade notice is provided through our homepage.
- We contrived to describe this manual more easily and correctly. However, if there are any corrections or questions, please notify us these on our homepage.

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User Manual Symbols

Symbol	Description
Note	Supplementary information for a particular feature.
Warning	Failure to follow instructions can result in serious injury or death.
Caution	Failure to follow instructions can lead to a minor injury or product damage.
Ex.	An example of the concerned feature's use.
※1	Annotation mark.

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Safety Considerations

- Following these safety considerations will ensure the safe and proper use of the product and help prevent accidents and minimize hazards.
- Safety considerations are categorized as Warnings and Cautions, as defined below:

Warning	Warning	Cases that may cause serious injury or fatal accident if instructions are not followed.
Caution	Caution	Cases that may cause minor injury or product damage if instructions are not followed.

Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
  Failure to follow this instruction may result in fire, personal injury, or economic loss.
- Use the unit within the rated specifications.
  Failure to follow this instruction may result in shortening the life cycle of the product or fire.
- Do not connect, repair, or inspect the unit while connected to a power source.
  Failure to follow this instruction may result in fire.
- Check 'Power Wiring' and 'Serial Interface' before wiring.
  Failure to follow this instruction may result in fire.
- In preparation for product damage, communication error, or malfunction, install external limit switch, emergency stop switch, or other protection circuit.
  Failure to follow this instruction may result in fire, personal injury, or economic loss.
- Since Lithium battery is embedded in the product, do not disassemble or burn the unit.
  Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit.
  Failure to follow this instruction may result in fire.
- Please contact to us for battery replacement.

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Caution

- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.
  Failure to follow this instruction may result in fire or explosion.
- Use dry cloth to clean the unit, and do not use water or organic solvent.
  Failure to follow this instruction may result in electric shock or fire.
- When connecting the power input, use AWG 23 cable or over and tighten the terminal screw with a tightening torque of 0.5 to 0.8N.m.
  Failure to follow this instruction may result in fire or malfunction due to contact failure.
- Keep metal chip, dust, and wire residue from flowing into the unit.
  Failure to follow this instruction may result in fire or product damage.
- Do not push over 2 point at the same time.
  Failure to follow this instruction may result in malfunction.

The above specifications are subject to change and some models may be discontinued without notice.

Be sure to follow cautions written in the instruction manual, user manual and the technical descriptions (catalog, homepage).

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Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Operate the product after supplying power to the product, input/output equipment, and load. If operate product before supplying power, it may result in output error or malfunction.
- Keep away from high voltage lines or power lines to prevent inductive noise.
  Do not use near the equipment which generates strong magnetic force or high frequency noise.
- Make a required space around the unit for radiation of heat, and do not block ventilation openings.
- Do not push the touch panel with a hard and sharp object or push the panel with excessive force. It may result in fire or malfunction.
  When skin is smeared with liquid crystal from the broken LCD, rinse with running water for over 15 minutes.
  If it gets into the eyes, rinse eyes with running water for over 15 minutes and contact a doctor.
- This unit may be used in the following environments.
  ①Indoors (in the environment condition rated in 'Specifications')
  ②Altitude max. 2,000m
  ③Pollution degree 2
  ④Installation category II

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1 Overview

1.1 Graphic Panel

Graphic Panel (after referred to as GP) is graphic interface device for monitoring parameters of controller such as PLC. It is one of human-machine interface (HMI) or man-machine interface (MMI).

If controller does not have visual interface, it is difficult to find out current value or status of process. In this case, GP is a practical device.

GP monitors control parameter visually by LCD screen or switches the other screen or designates variable value by touching touch screen. GP and controller are connected by serial communication and inter-change mutual information.

The variable for controller is displayed by various methods as tag which is graphic object. For example, if the physical variable for monitoring is temperature, GP displays temperature as numeral by numeral input tag, or as trend graph with changes by time. GP screen consists of these graphic objects combinations.

GP Editor which is dedicated software for user defined screen data in GP helps draw screen or edit data. After editing screen data such as tag form, arrangement, and attribution, download these to GP and GP starts to monitor by screen data.

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1.2 Feature of GP

- Product upgrade by web site

  We offer GP firmware, GP Editor, protocol, language and font, various manuals at www.autonics.com to download conveniently.

- Communication between heterogeneous controllers

  You can connect other type controller to serial port separately.
  GP monitors two different controllers simultaneously and relays communication between two controllers.

- Multi monitoring function

  You can connect same type of several controllers.

- Supports multilingual

  GP supports Korean, English and the other languages are available for the later.

- Supports several font

  GP supports various bitmap font and vector font. You can select the desired font and use it.

- Multi communication port

  GP supports several communication port such as RS232C / RS422 serial communication port.
  Two serial ports of RS232C / RS422 are designated for the device connecting by software (PLC, computer, printer, barcode reader, etc). By supported communication type of connected device, select port to communication.

- Monitoring function for controller device

  Without designed data, GP menu is available for monitoring connectable controller device.

- Print and barcode reader connection

  You can print alarm list by connecting printer.
  It is able to read barcode by connecting barcode reader.

- Touch interface

  It is able to input value in controller with touch switch on front screen.

- Slim size

  It is easy to utilize space with slim size.

- Various display function

  It is able to display data with various tags.

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1.3 Ordering information

GP - S 070 - T 9 D 6

① ② ③ ④ ⑤ ⑥ ⑦

Item		Description
①Item	GP	Graphic panel
②Series	S	S series
③Screen size	070	7 inch
④Display unit	T	TFT Color LCD
⑤Color	9	16,777,216 color
⑥Power supply	D	24VDC
⑦Interface	6	RS232C, RS422, USB Device, USB Host, Ethernet
	7	RS232C, RS232C, USB Device, USB Host, Ethernet

1.4 Specification

1.4.1 General specification

Model		GP-S070-T9D6	GP-S070-T9D7
Power supply		24VDC⎓	
Allowable voltage range		90 to 110% of power supply	
Power consumption		Max. 7.2W	
Serial interface		Asynchronous method: Each of RS232C, RS422	
		Each port of RS232C, RS422	Two ports of RS232C
USB interface		Each of USB Host, USB Device (Version 1.1)	
Real-time controller		RTC embedded	
Battery life time		3 years at 25℃ (alarm function for low battery embedded)	
Dielectric strength		500VAC (50/60Hz) for 1 minute	
Insulated resistance		Min. 100MΩ (at 500VDC megger)	
Ground		3rd grounding(Max. 100Ω)	
Noise immunity		The square wave noise (Pulse width 1 μs) by the noise simulator with ±500V R/S phase and repetition frequency 60Hz	
Withstanding voltage		500VAC (50/60Hz) for a minute	
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for a minute) in each of X, Y, Z directions for an hour	
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz (for a minute) in each of X, Y, Z directions for 10 minutes	
Shock	Mechanical	300m/s^2 (30G) X, Y, Z directions for 3 times	
	Malfunction	100m/s^2 (10G) X, Y, Z directions for 3 times	
Envir	Temperature	0 to 50℃, Storage: -20 to 60℃	

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Model		GP-S070-T9D6	GP-S070-T9D7
onment	Humidity	35 to 85% RH, Storage: 35 to 85% RH	
Protection		IP65 (front panel, IEC standard)	
Accessory		Fixing bracket: 4pcs, Battery(included)	
Approval		CE KC	
Unit weight		Approx. 520g	

※Environment resistance is rated at no freezing or condensation.

1.4.2 Performance specification

Display performance	
LCD type	TFT Color LCD
Resolution	800×480 dot
Display area	152.4×91.44mm
Color	16,777,216 color
LCD view angle	Within each 60°/45°/60°/60° of top/bottom/right/left
Backlight	White LED
Brightness	Adjustable by software
Graphic drawing performance	
Language	Korean, English※1
Text	Bitmap font High quality view of number, 6×8 ASCII character, 8×16 ASCII character(1 to 8 times bigger for width, 0.5 to 5 times for height) 16×16 regional characters(1 to 8 times bigger for width, 0.5 to 5 times for height) Vector font Font size: 8 to 300, Font: bold, italic, underline, strikethrough
Graphic drawing memory	16MB
Number of user screen	500 pages
Touch switch	Analog touch
Interface type	
Communication interface	GP-S070-T9D6: Each port of RS232C, RS422, USB Host, USB Device, Ethernet
	GP-S070-T9D7: Two ports of RS232C, USB Host, USB Device, Ethernet

※1. You can add other supported langauges.

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1.4.3 GP system setting

Function		Description
Monitoring	Device monitor	Monitors connected PLC device and changes the status
Environment	Language	Designates system language and character set
	Serial communication	Configures serial port for connecting between GP Editor and connected device, printer, barcode reader, or monitor
	Local Ethernet	Designates IP of GP-S070
	Clock	Designates current time and date
	Screen bright	Designates backlight brightness
	Assistance setting	Key of system setting menu: Designates the position for calling system setting menu
		Buzzer: Designates using buzzer or not
		Screen open time: Set time for open screen when supplying power
		Off time of back light: Set off time for backlight
		LATCH setting: Designates maintaining UW device value by GP battery during power OFF
Data	Data manager	Manages USB_DISK and GP/LP_DISK
	Base screen	Displays user-defined base screen title and number
	Window screen	Displays user-defined window screen title and number
	Comment	Displays downloaded comment list in GP
	Firmware update	Enables to update firmware
	System	System information: Displays current system information of GP
		Disk capacity: Checks total disk capacity and available disk capacity of GP
Functionality	Data transfer	Displays this menu during communicating (download/upload) between GP and GP Editor
	Time switch	Designates time switch
	Print out	Prints out alarm history with printer
	Data logger	Saves the specified device value by user-defined condition
Diagnostics	System initialization	Initializes every set value of system as default value
	Battery remaining	Displays battery remaining with percentage (%) and bar graph.
	Screen diagnosis	Checks bad pixel and font by diagramming color and figures as pattern.
	Touch diagnosis	Diagnosis touch

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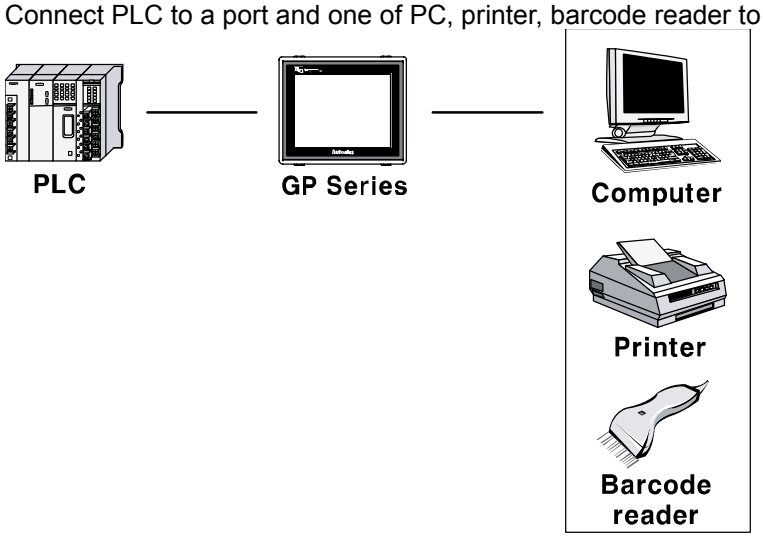
1.5 Communication

Depending on PLC model type, connections for PLC are different, therefore refer to 'GP, LP user manual for communication'.
Every device such as PLC is able to connect any RS232C or RS422 port.
CH1, CH2 is designates in GP Editor.

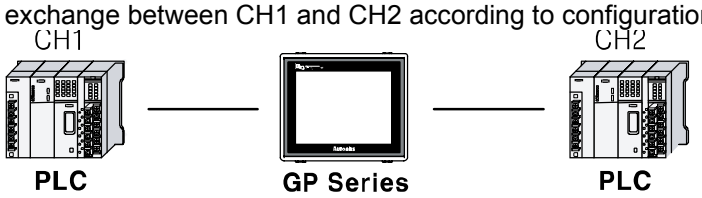
(1) Connection of 1 PLC

Connect PLC to a port and one of PC, printer, barcode reader to the other port.



(2) Connection of CH1 and CH2

Connect PLC to GP-S070 ports.
It is able to connect even if CH and CH2 are not same type PLC, GP can relay data exchange between CH1 and CH2 according to configuration.



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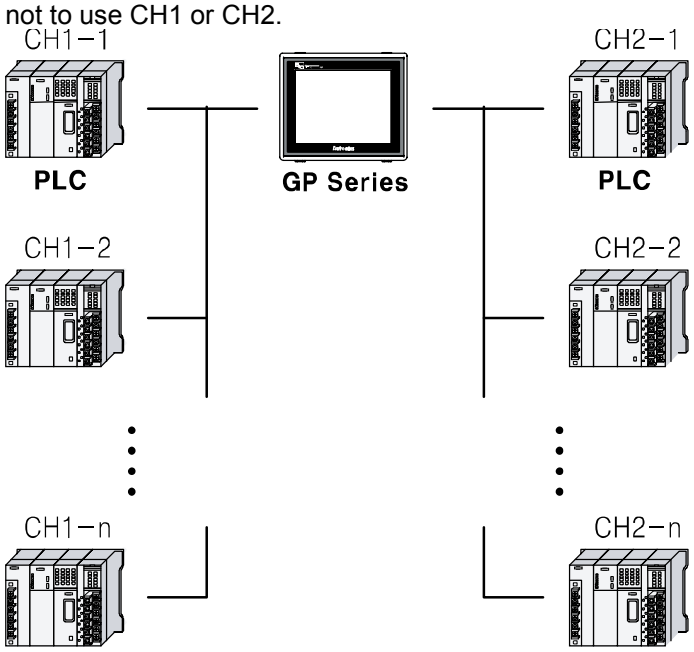
(3) Connection of plural PLCs

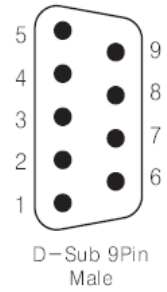
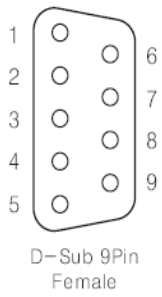
It is able to connect same device type to CH1 and CH2 as up to 32 by each.
In this case, GP can link data between CH1-1 to CH1-n and CH2-1 and CH2-n and it is able not to use CH1 or CH2.



1.5.1 Communication interface

1.5.1.1 Serial interface

(1) Serial port

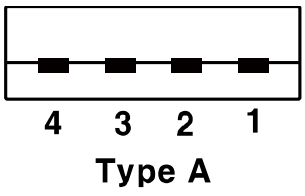
Port	Pin		Port	Pin	
RS232C-A RS232C-B  	1	Non-used	RS422  	1	TXD+
	2	RXD		2	RXD+
	3	TXD		3	Non-used
	4	DTR		4	Non-used
	5	SG		5	SG
	6	DSR		6	TXD-
	7	Non-used		7	RXD-
	8	Non-used		8	Non-used
	9	Non-used		9	Non-used

(2) Serial port setting

Designate the desired settings for below items at [Environment] - [Serial Communication].

Interface	RS232C/RS422
Baudrate	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps
Data length	7, 8 Bit
Stop bit	1, 2 Bit
Parity	ODD, EVEN
Flow control	XON/XOFF, DSR/DTR, NONE

1.5.1.2 USB interface

USB Device	Pin		USB HOST	Pin	
 	1	5V	 	1	5V
	2	D-		2	D-
	3	D+		3	D+
	4			4	GND
	5	GND			
You can download designed data of GP Editor and PLC program of SmartStudio by connecting USB Device PC.			You can update firmware by USB memory stick and install GP project file and SmartStudio project file.		

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1.5.1.3 Ethernet interface

IEEE802.3(U), 10/100 Base-T

You can download designed data of GP Editor and PLC program of SmartStudio by connecting PC.

- Crossover – Cable

PC1		Cable color		PC2	
Signal	Pin no.			Pin no.	Signal
Tx+	1	White	Orange	3	Rx+
Tx-	2	Orange		6	Rx-
Rx+	3	White	Green	1	Tx+
	4	Blue		4	
	5	White	Blue	5	
Rx-	6	Green		2	Tx-
	7	White	Brown	7	
	8	Brown		8	

Tx: Transmits data

Rx: Receives data

For connecting line sharer, user direct cable.

- Straight(Direct) through – Cable

PC1		Cable color		PC2	
Signal	Pin no.			Pin no.	Signal
Tx+	1	White	Orange	1	Rx+
Tx-	2	Orange		2	Rx-
Rx+	3	White	Green	3	Tx+
	4	Blue		4	
	5	White	Blue	5	
Rx-	6	Green		6	Tx-
	7	White	Brown	7	
	8	Brown		8	

Tx: Transmits data

Rx: Receives data

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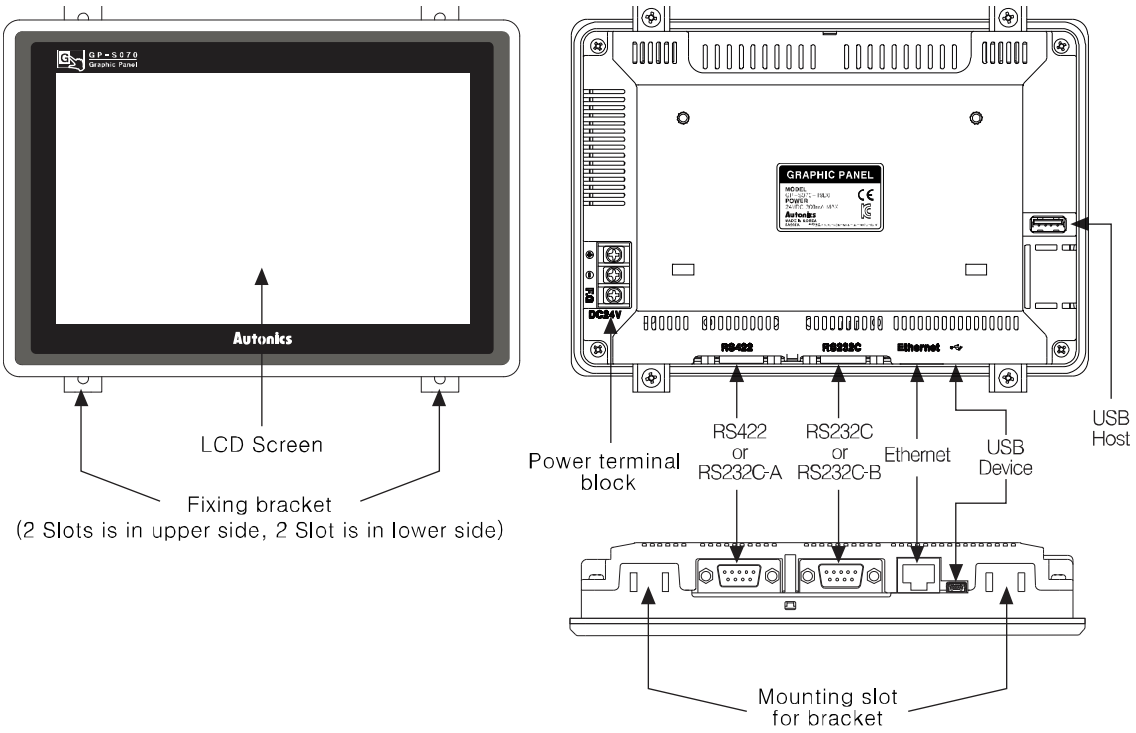
1.6 Unit description



- Ethernet port

  For connecting LAN cable and hub, use direct cable or for connecting PC directly, use cross cable.

- USB Device

  USB device is available for project upload and download (to install USB driver to PC) and utilizes as general USB memory (recognized portable disk) when connecting PC.

- USB Host

  Use USB host for data management, firmware update.

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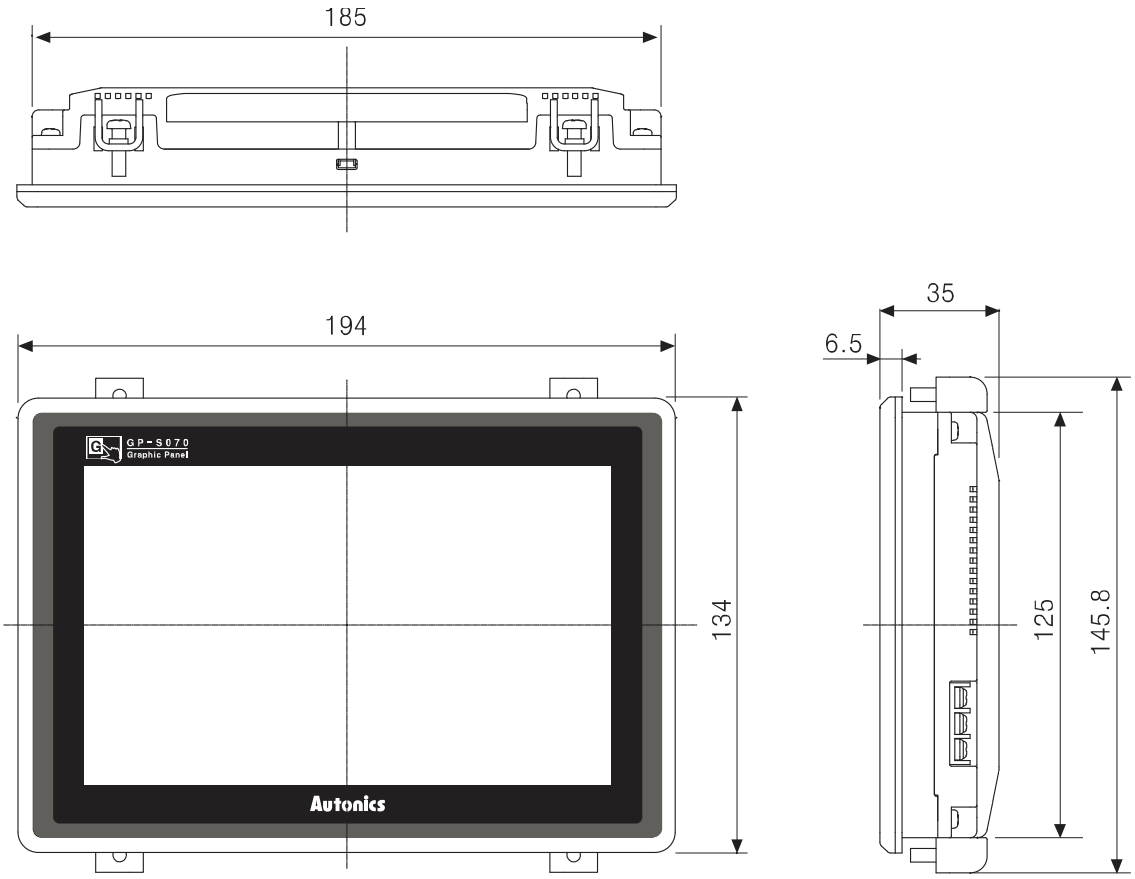
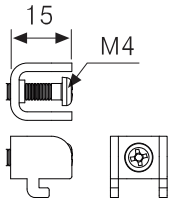
1.6.1 Dimensions

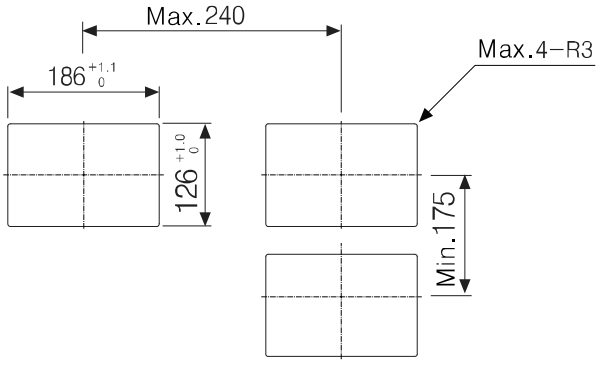
(unit: mm)



● Fixing bracket



● Panel cut out



Panel thickness: max. 4mm

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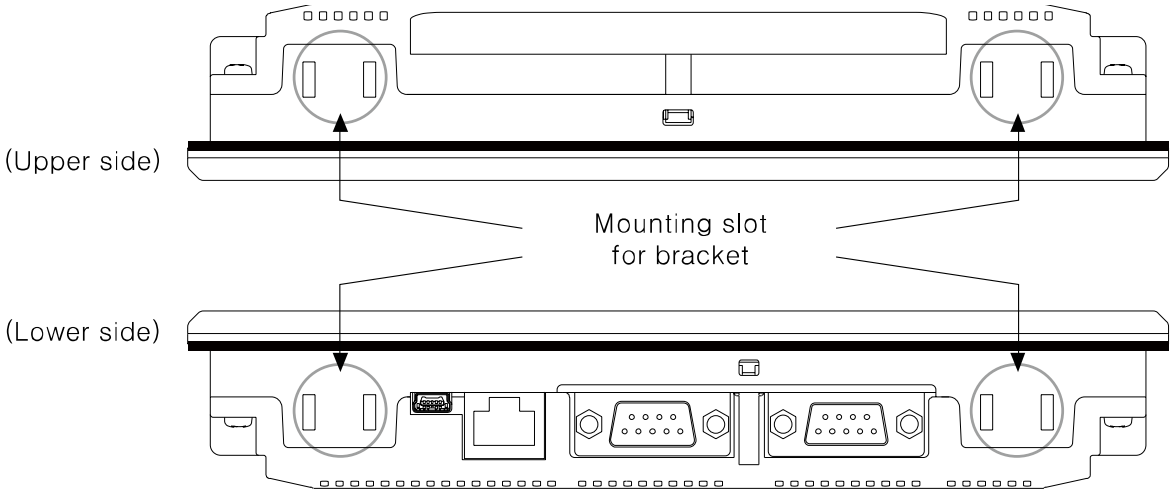
2 Installation

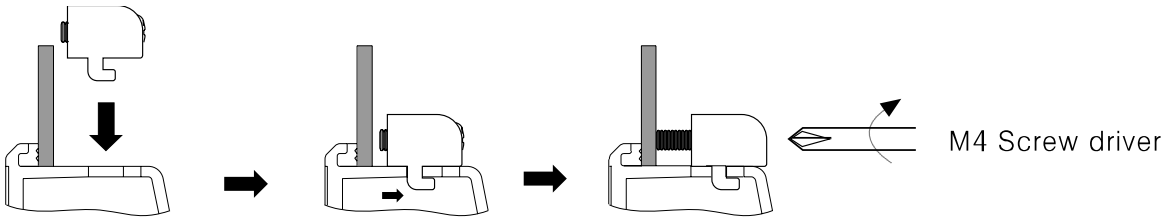
2.1 GP installation



1st Set GP-S070 in panel which is cut for panel cut out dimension.

2nd Set fixing brackes in slots (2 slots are in upper side, 2 slots are in lower side).

3rd Tightening fixing bracket with M4 Screw driver and tightening torque is 0.3 to 0.5N•m.



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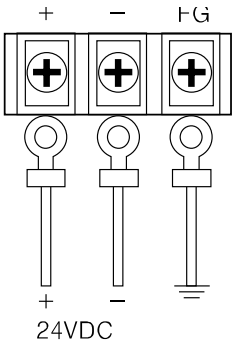
2.2 Power wiring

- For power supply, use the power line of which cross section is at least 0.75mm² and use the ground cable of which cross section is at least 1.25mm².
- Use crimp-on type ring terminal with at least 3mm of internal diameter and less than 6mm of external diameter.
- Do not supply power before connecting power line.
- Check power polarity.
- Tighten the terminal screw with 0.5 to 0.8 N•m torque.
- Ground resistance should be less than 100Ω and ground it separately.



Caution

Caution for power wiring

- Before connecting power line, you must check power polarity.
- Do not connect power when power is supplied.
- Observe following allowable voltage change range of power voltage.

Power voltage	24VDC
Allowable voltage change range	21.6V to 26.4VDC

- When connecting power, supply power by power supply which has inner protection circuit. If the power supply which does not have inner protection circuit is used, you must install protection circuits such as fuse before using this.

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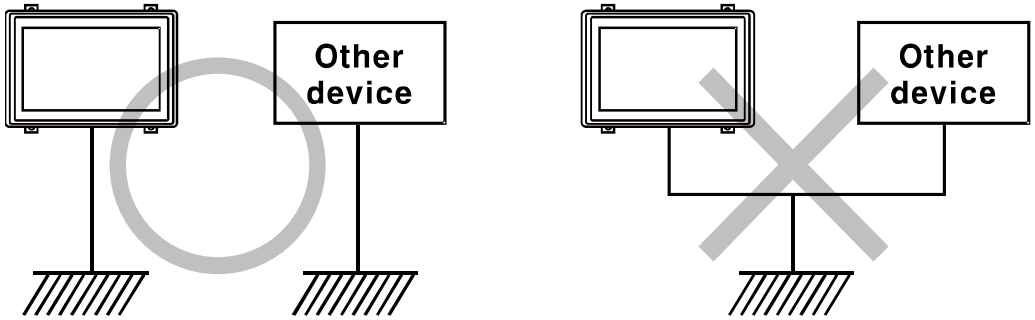
2.2.1 Ground wiring



Caution

Caution for ground wiring

- Connect max. 100Ω of ground resistance.
- Diameter of cable for ground wiring connection should be over than 2 ㎟.
- As above figure, separate from other device's ground wire.

2.3 Battery replacement

Please contact our service center to replace GP-S070 battery.

It may cause an explosion or a fire when using improper battery.

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2.4 USB driver installation

'GP/LP USB Driver' is driver for communication PC and GP-S070 by USB cable.

Before installing 'GP/LP USB Driver', visit our homepage(www.autonics.com) and download setup file.

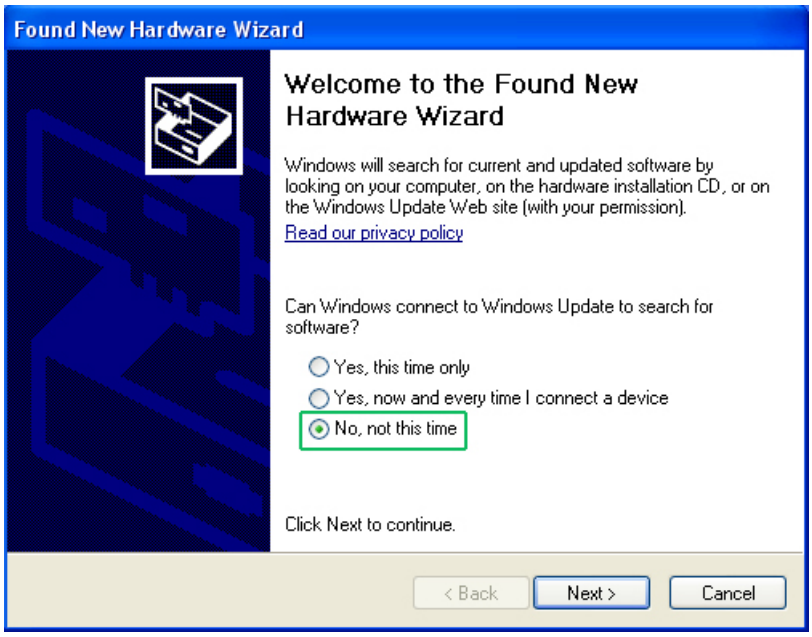
Downloaded zip file name is as following.

GP_LP_Series.inf, GP_LP_Series.sys

2.4.1 Install with found new hardware wizard

1st Connect GP-S070 to PC with USB cable and 'Found New Hardware Wizard' operates.

2nd Select 'No, not this time' and click 'Next'.



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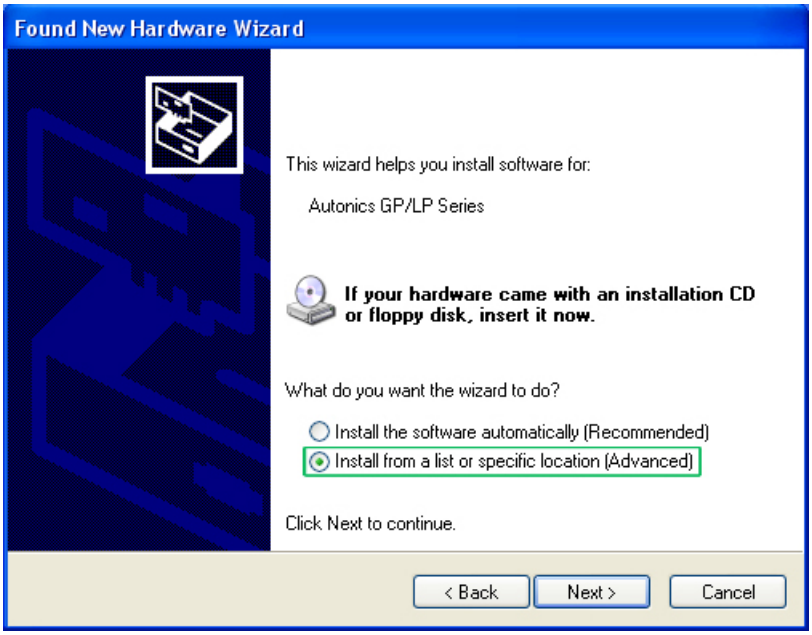
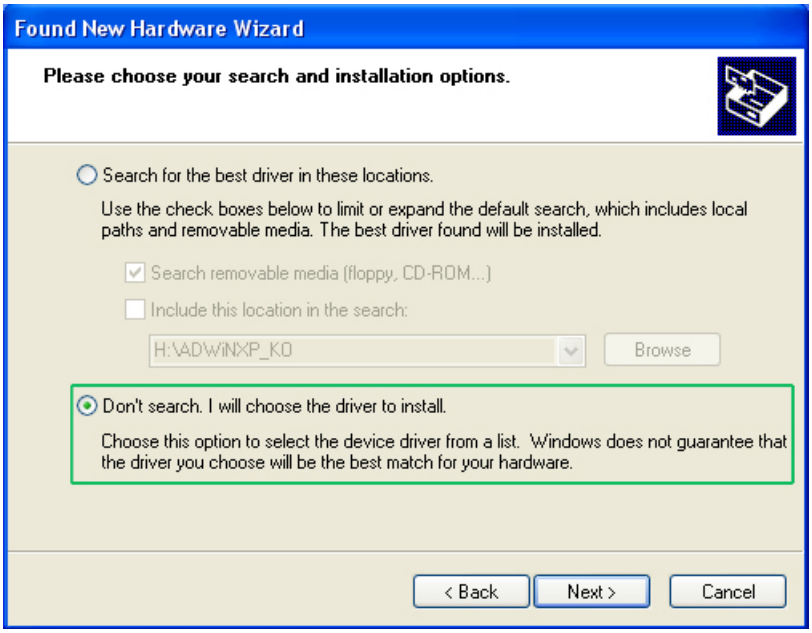
3rd Select 'Install from a list or specific location (Advanced)' and click 'Next'.



4th Select 'Don't search. I will choose the driver to install.' and click 'Next'.



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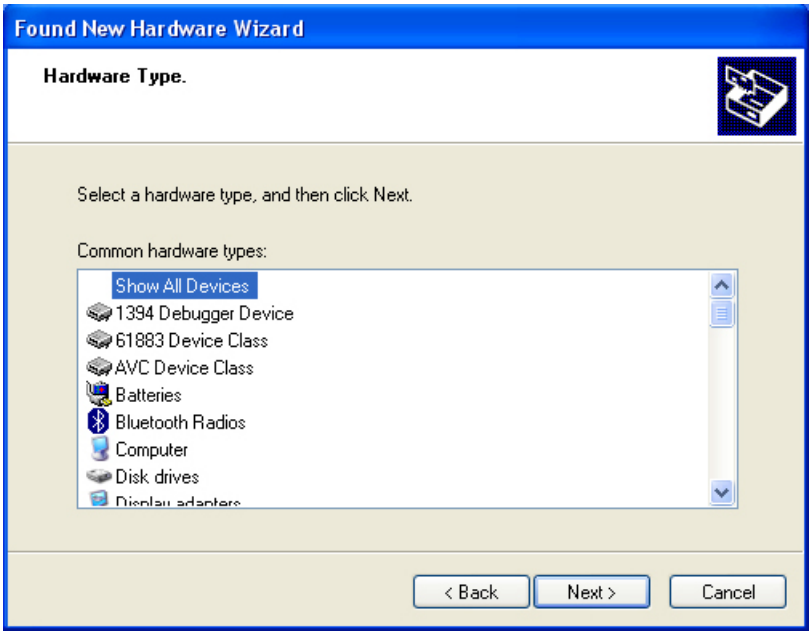
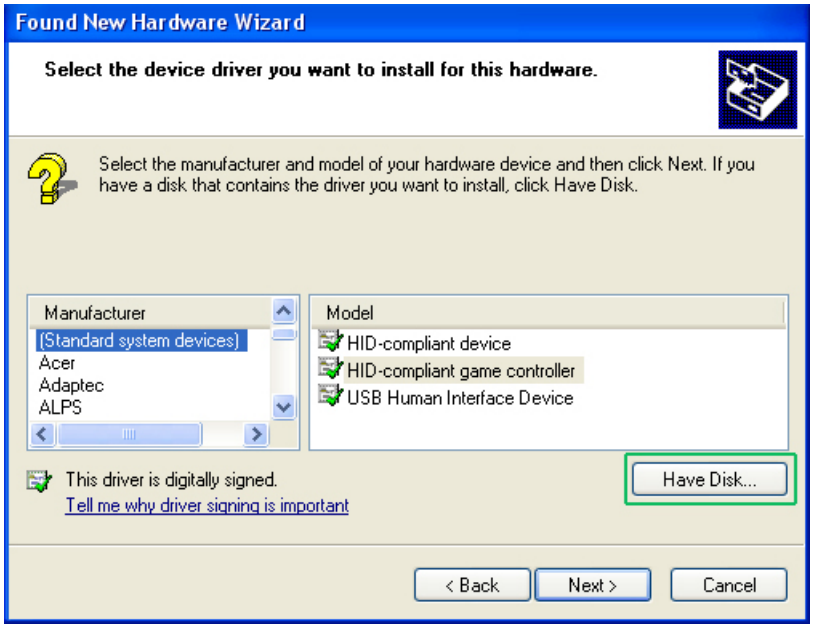
5th Select ‘Show All Devices’ for common hardware type and click ‘Next’.



6th Select ‘(Standard system devices)’ and ‘HID-compliant game controller’ and click ’Have Disk’ and ‘Install From Disk’ dialog box appears.



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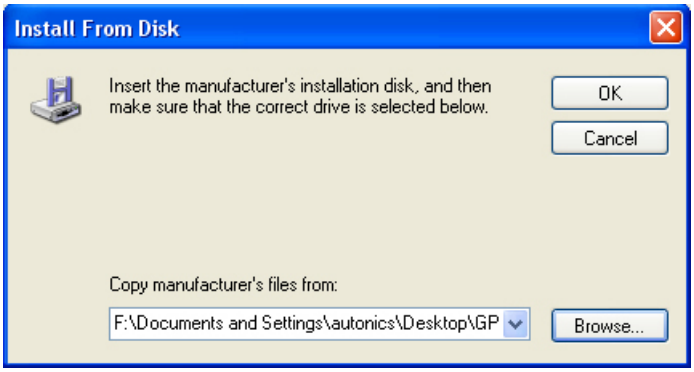
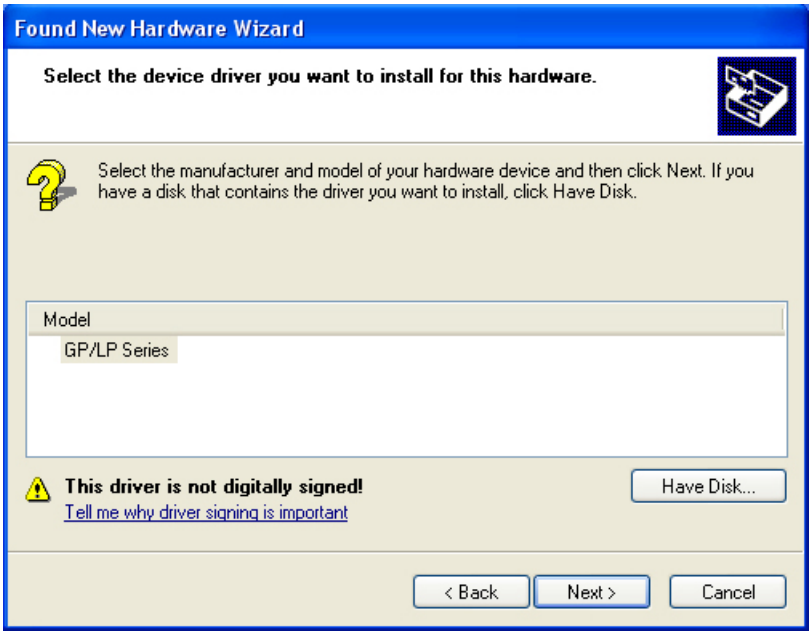
7th Click ‘Browse’ , designate GP/LP USB Driver folder and click ‘OK’.



8th Select ‘GP/LP Series’ as below feature and click ‘Next’.



During installing driver, if following message appears, click ‘Yes’ and continues installing driver.

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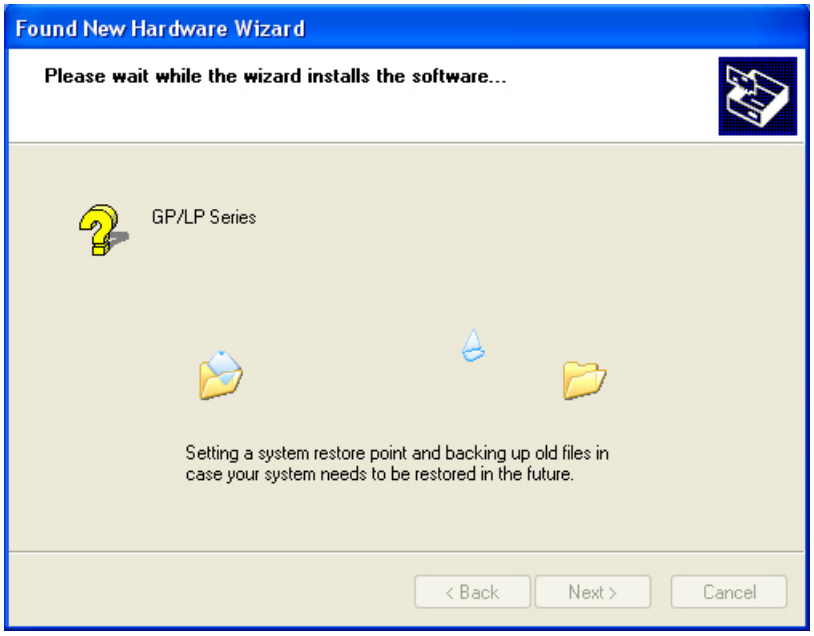
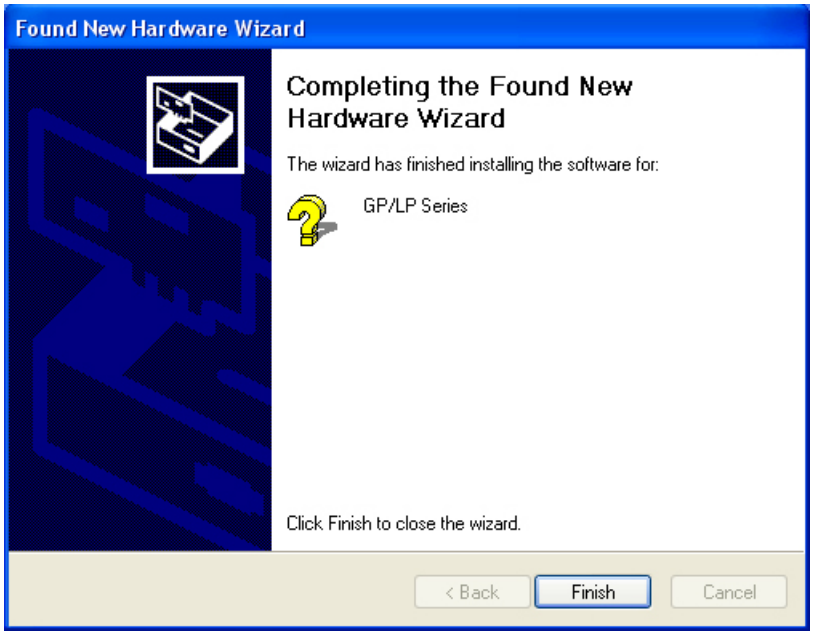
9th Processes installing GP/LP USB Driver.



10th Click 'Finish' and comepletes installing driver.



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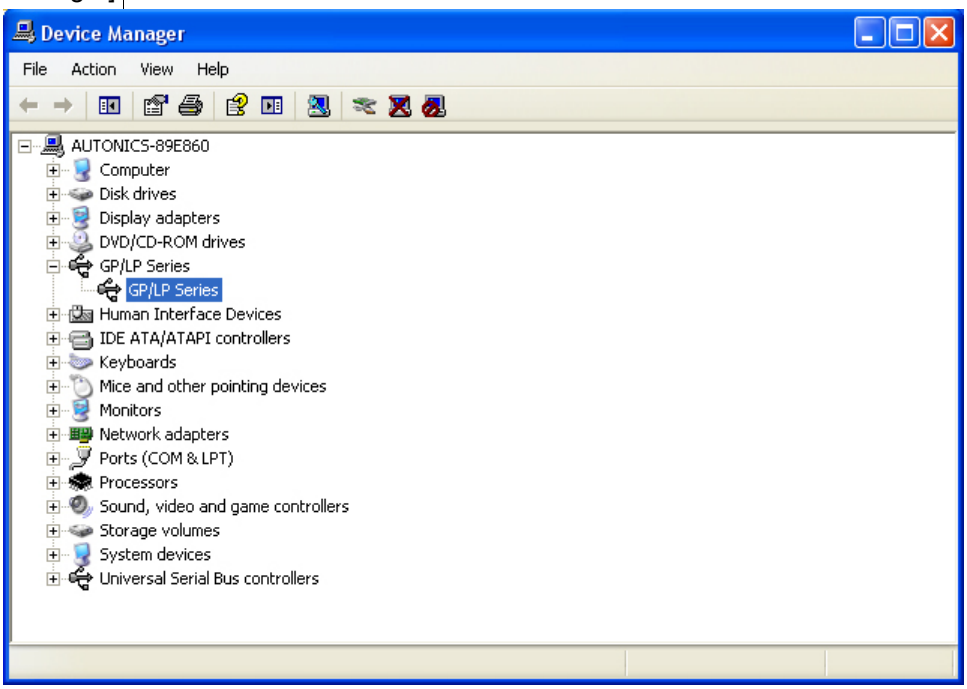
You can check installed driver at [Start]-[Control Panel]-[System]-[Hardware]-[Device Manager].



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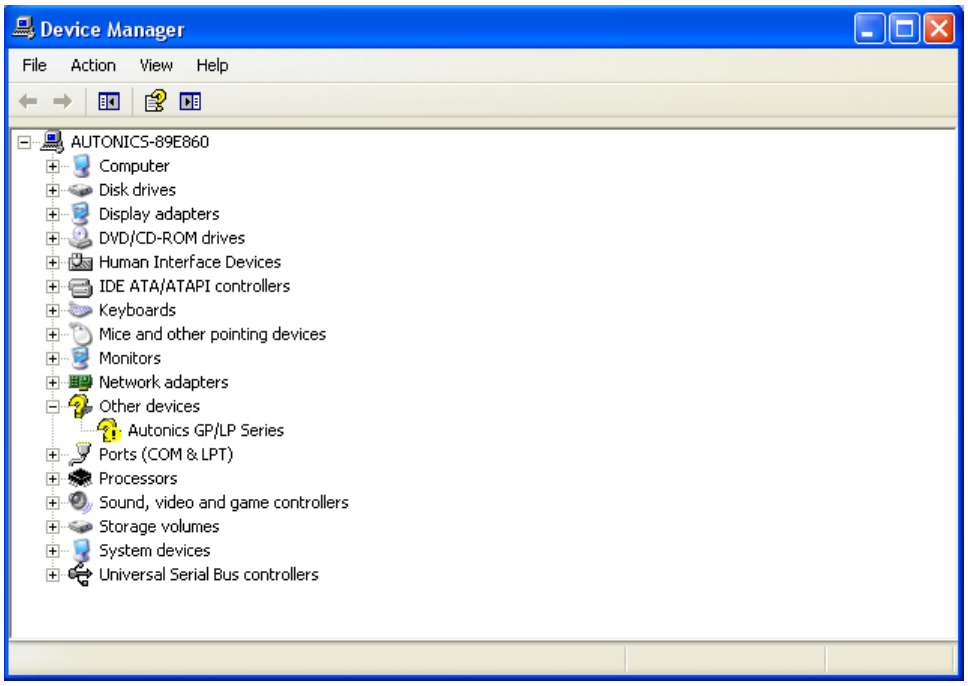
2.4.2 Install with device manager

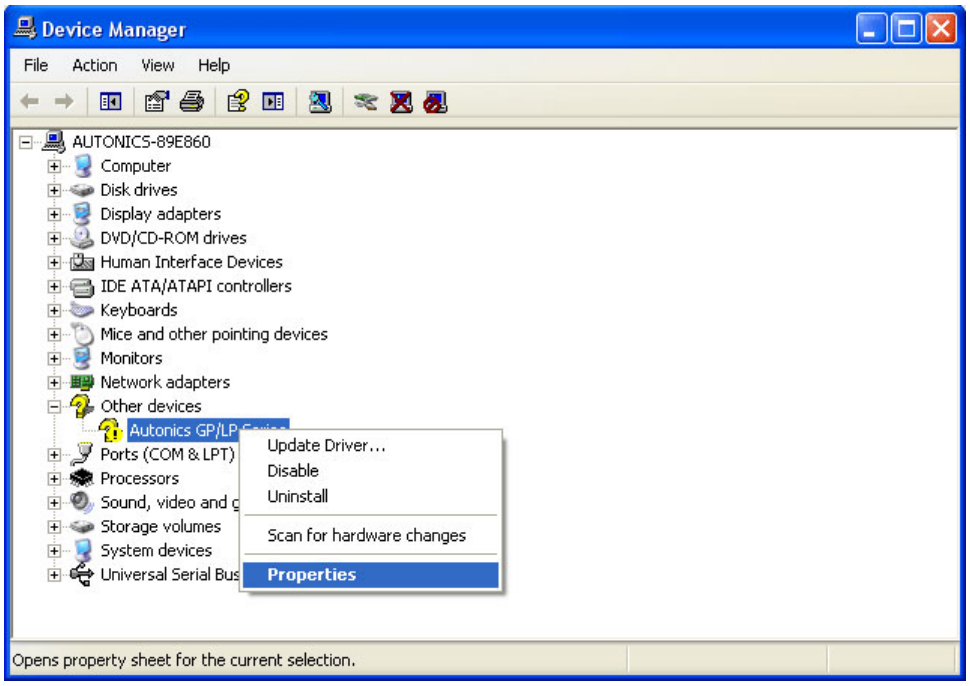
1st If 'Found New Hardware Wizard' does not operate, you can install USB driver at [Start]-[Control Panel]-[System]-[Hardware]-[Device Manager].

Uninstalled driver displays '?' as following feature.



2nd Click 'Autonics GP/LP Series' with right mouse button and pop-up menu appears.

Select 'Properties'.



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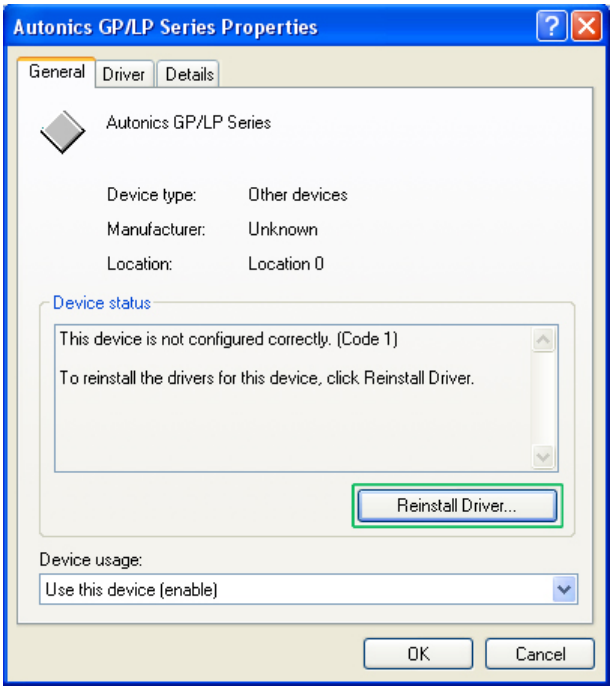
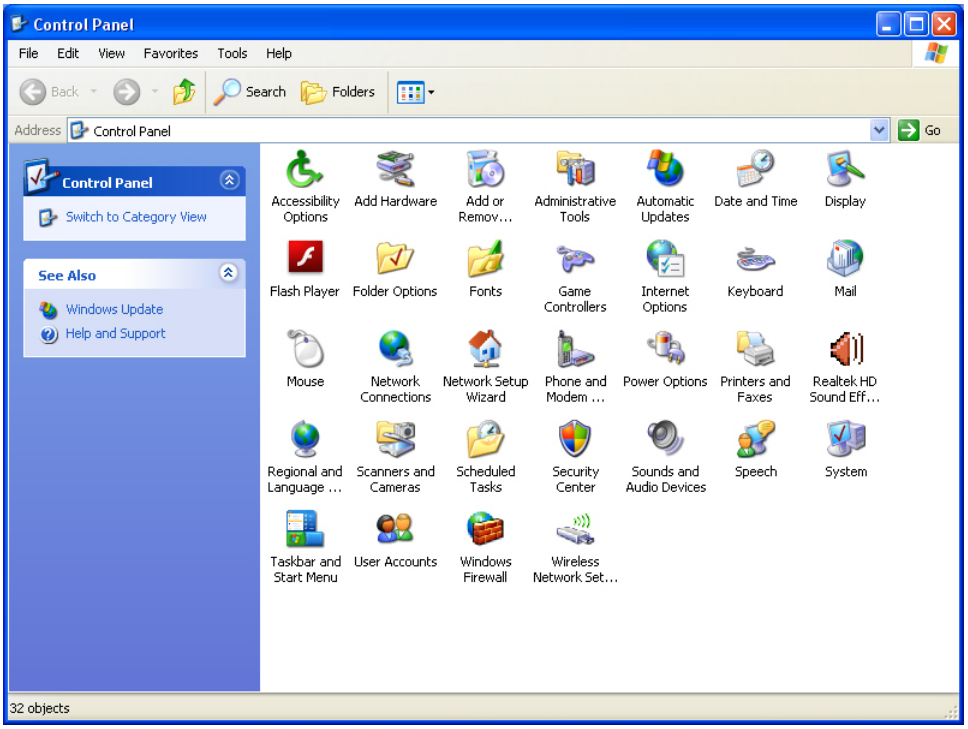
3rd ‘Autonics GP/LP Series Properties’ dialog box appears. Click ‘Reinstall Driver’.



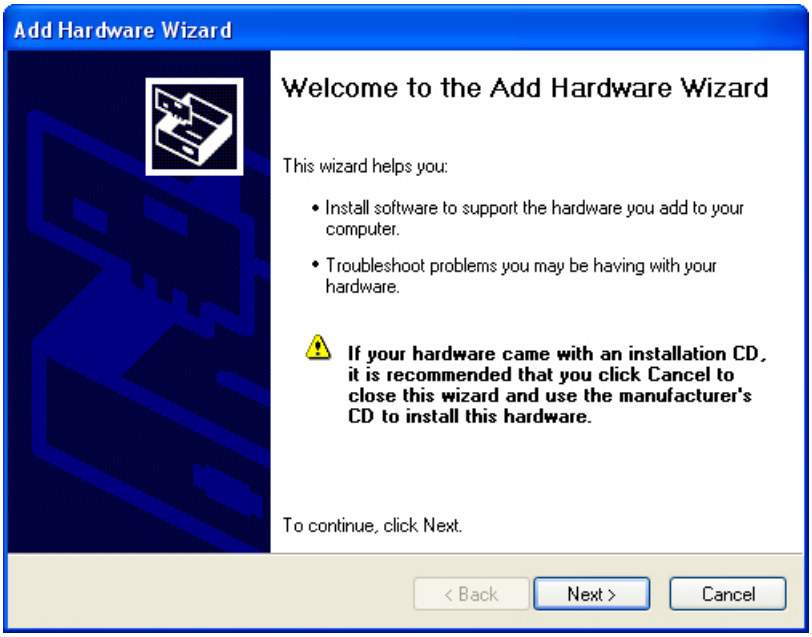
4th ‘Found New Hardware Wizard’ operates. Next steps are same as ‘2.5.1 Install with found new hardware wizard' and please refer this.

2.4.3 Install with control panel

1st Enter [Start]-[Settings]-[Control Panel] and click ‘Add Hardware’.



2nd ‘Add Hardware Wizard’ operates. Click ‘Next’.



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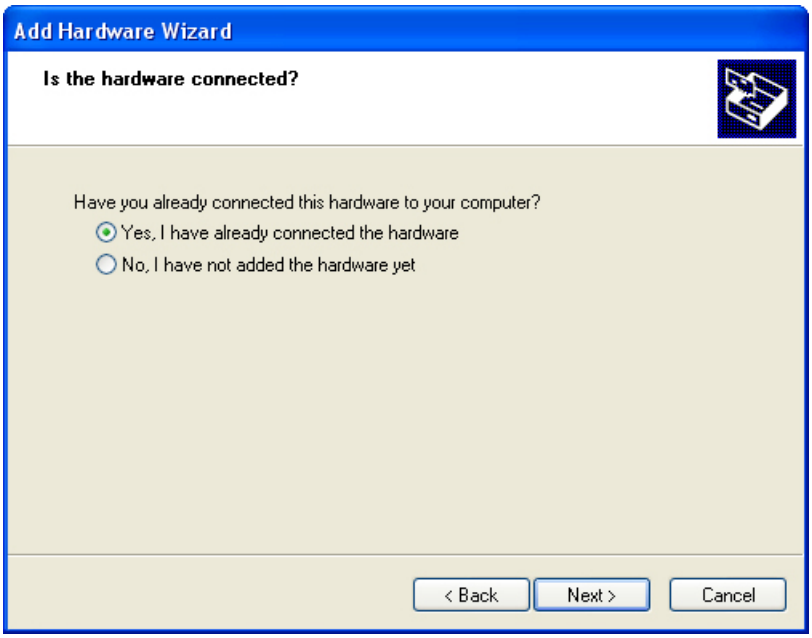
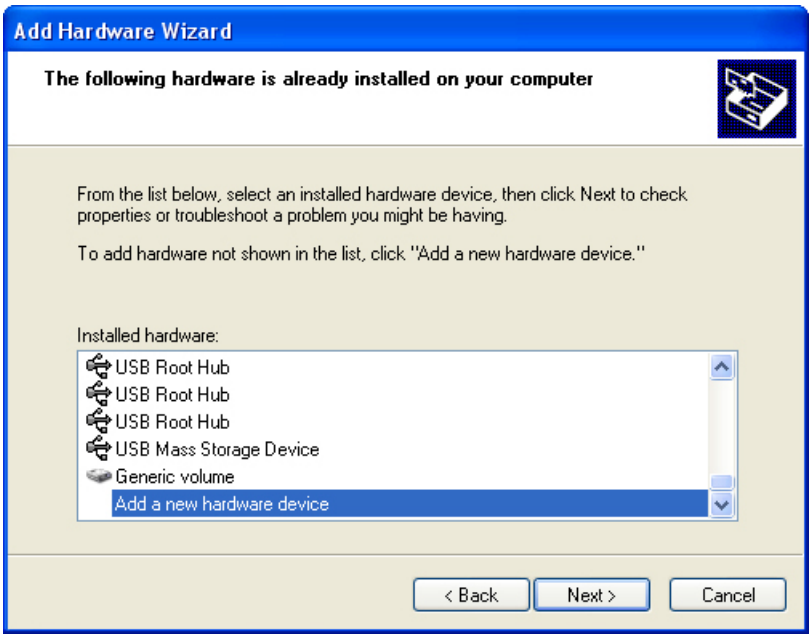
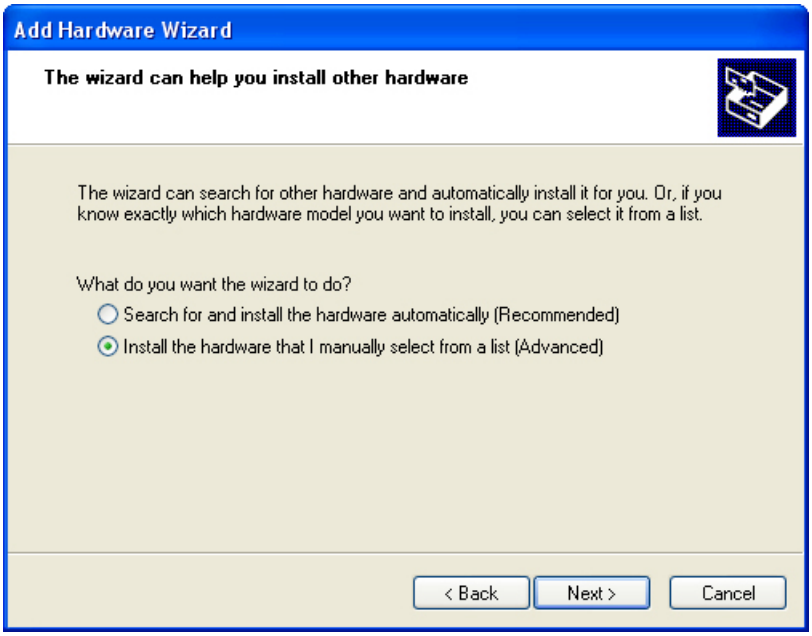
3rd Connect GP-S070 and PC with USB cable and select ‘Yes, I have already connected the hardware’ and click ‘Next’.



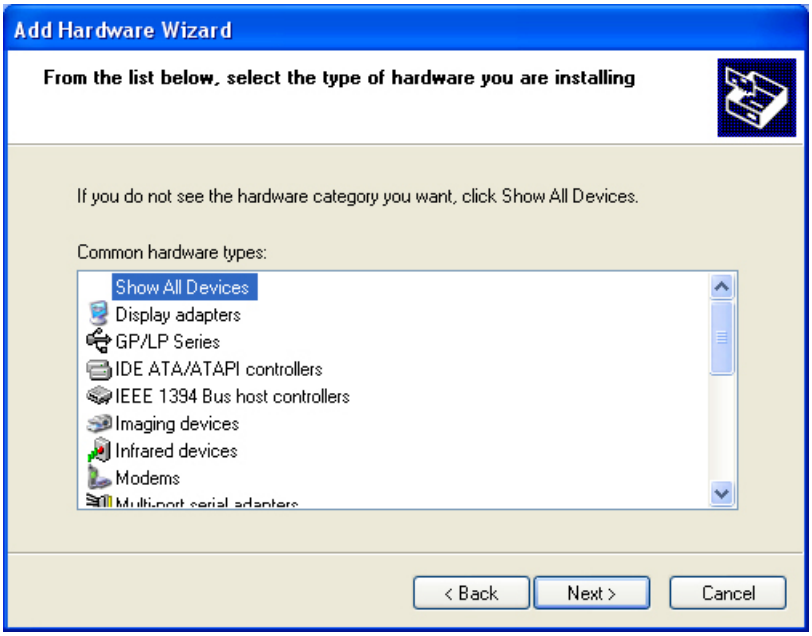
4th Select ‘Add a new hardware device’ and click ‘Next’.



5th Select ‘Install the hardware that I manually selected from a list’ and click ‘Next’.



6th Select ‘Show All Devices’ for common hardware typa and click ‘Next’.



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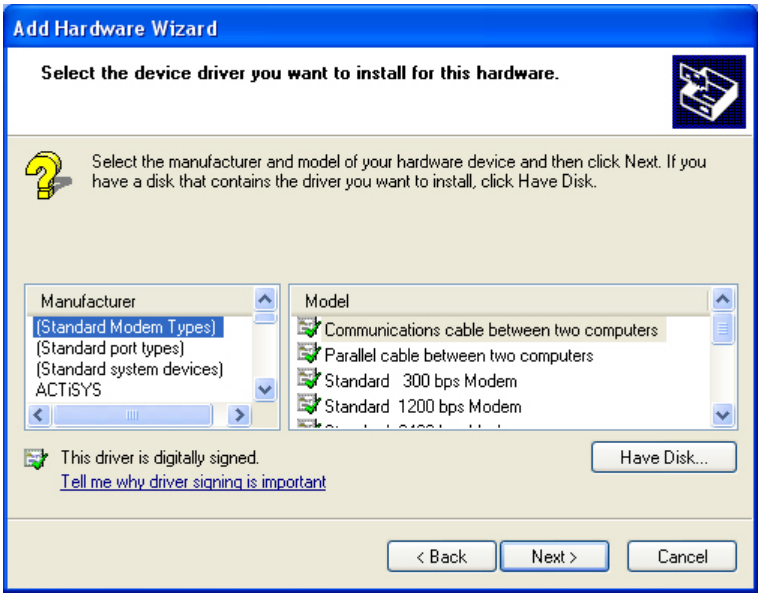
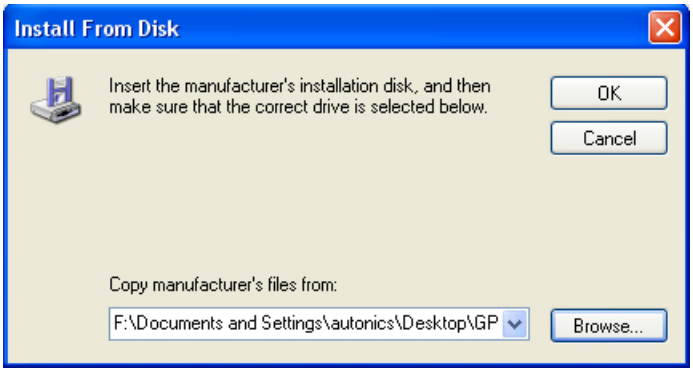
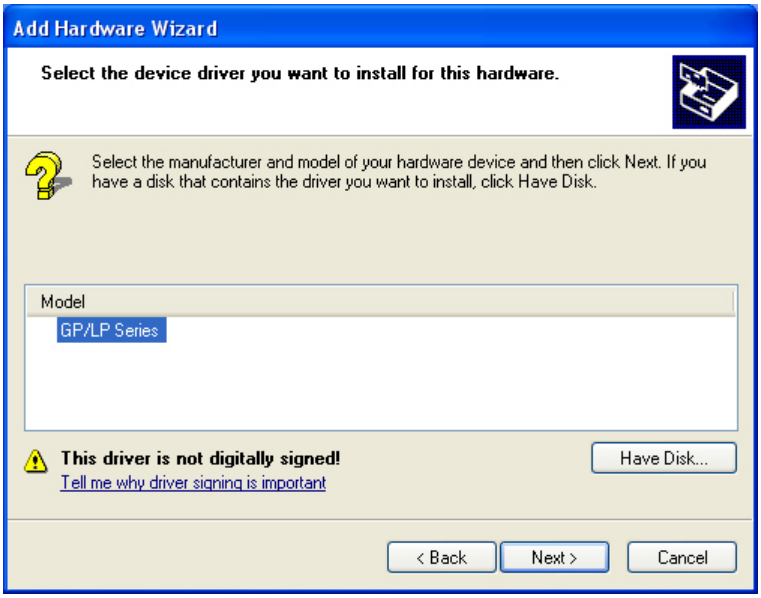
7th Click ‘Have Disk’ and ‘Install From Disk’ dialog box appears.



8th Click ‘Browse’ , designate GP/LP USB Driver folder and click ‘OK’.



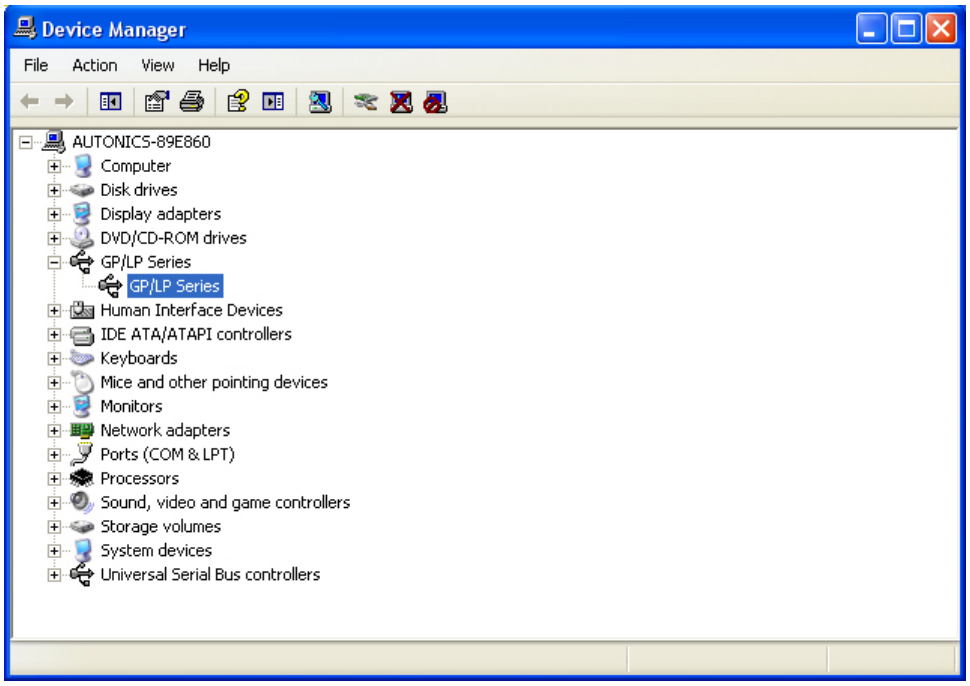
9th Select ‘GP/LP Series’ as below feature and click ‘Next’.



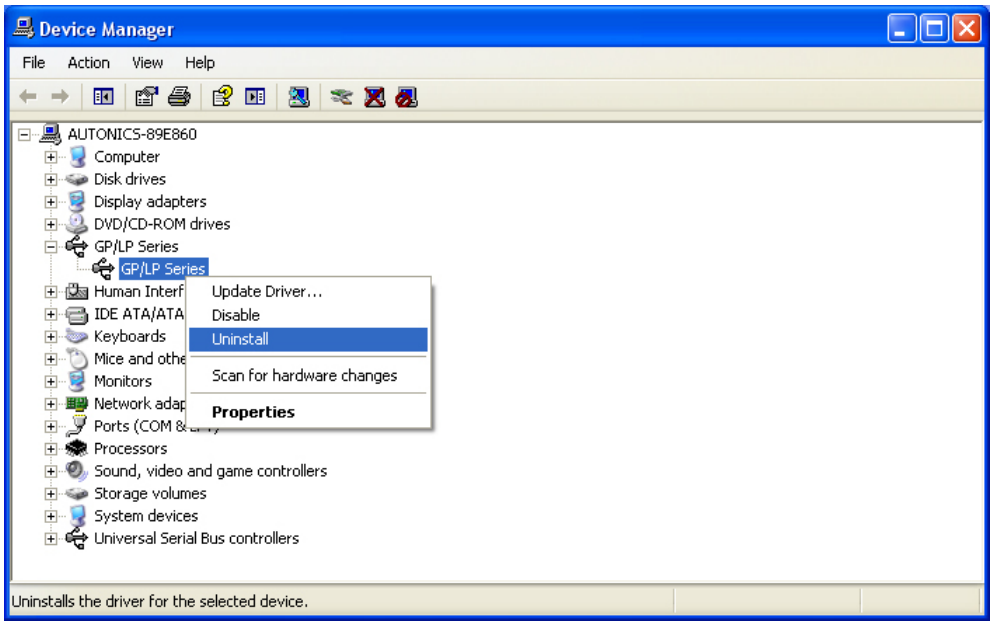
10th You can check installed driver with same method as 10th of 2.5.1 Install with found new hardware wizard.

2.4.4 Remove GP/LP USB driver

1st Connect GP-S070 to PC with USB cable and enter [Start]-[Settings]-[Control Panel]-[System]-[Hardware]-[Device Manager].



2nd Select GP/LP Series device and click with right mouse button and pop-up menu appears. Select 'Uninstall' menu.



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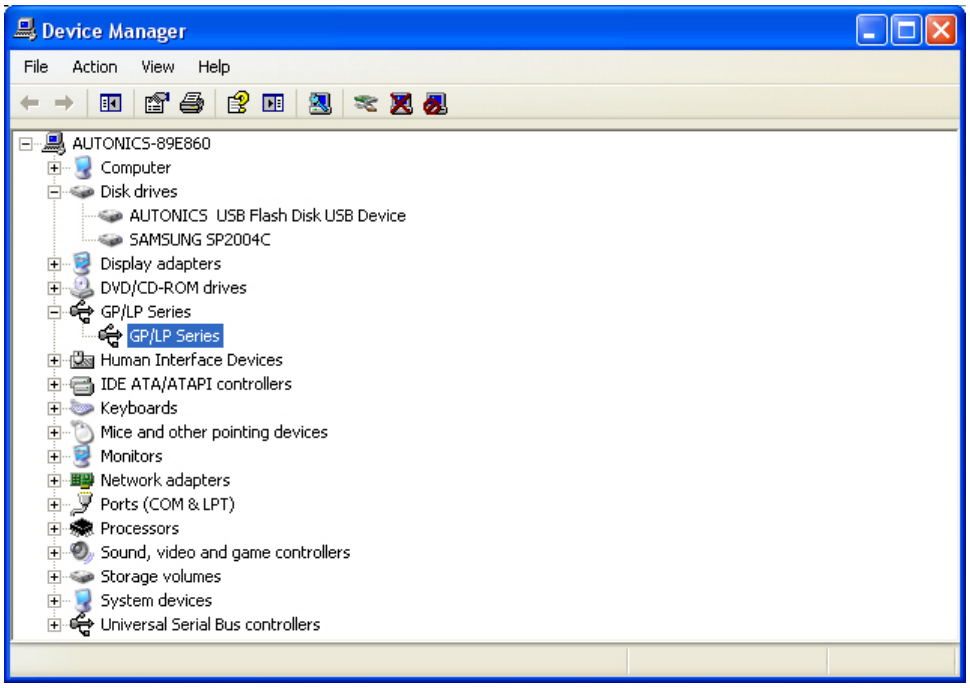
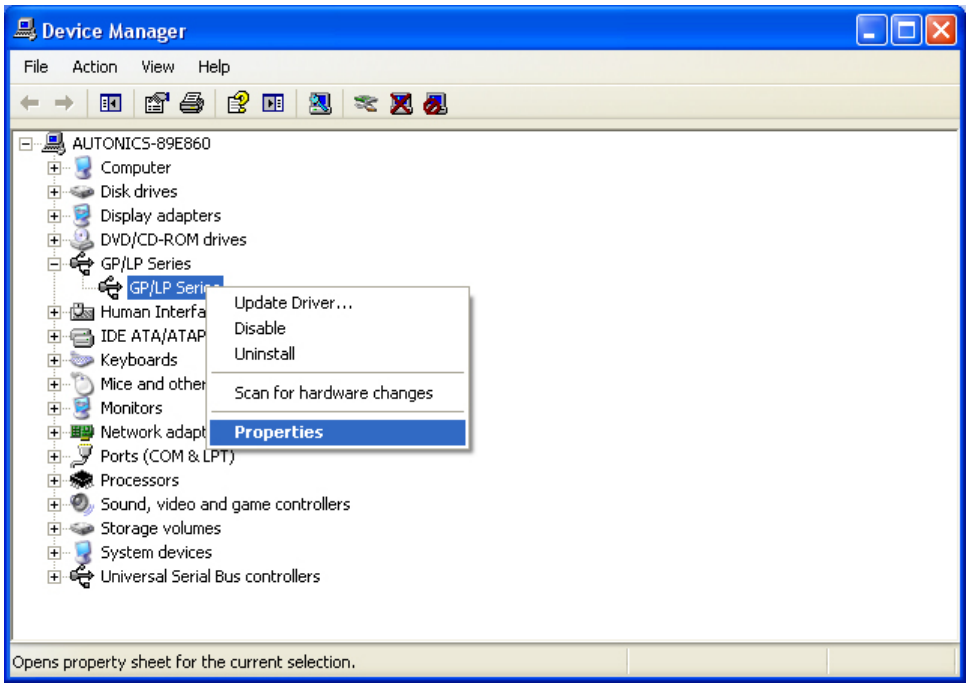
3rd ‘Confirm Device Removal’ dialog box appears. Click ‘OK’ to remove the driver.

2.4.5 Update GP/LP USB driver

1st Connect GP-S070 and PC with USB cable and enter [Start]-[Settings]-[Control Panel]-[System]-[Hardware]-[Device Manager].



2nd Select GP/LP Series device and click with right mouse button and pop-up menu appears. Select 'Properties' menu.



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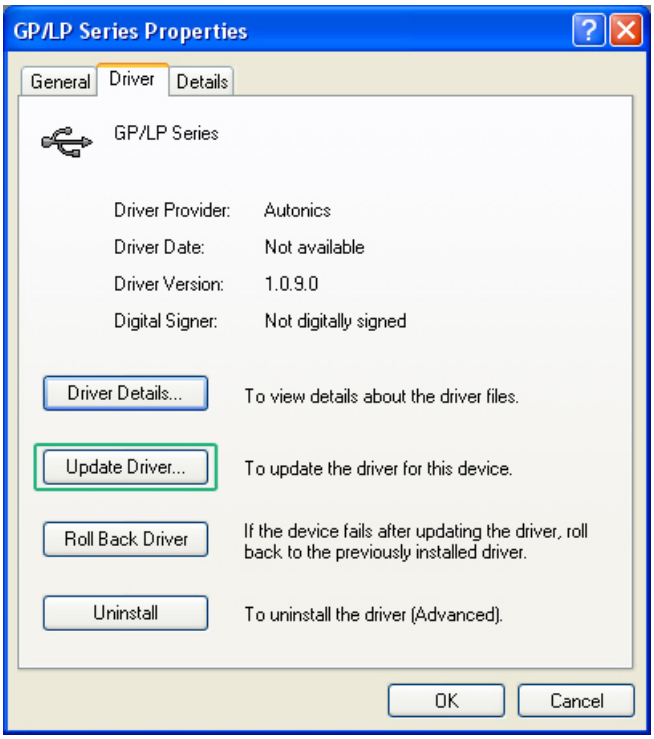
3rd ‘GP/LP Series Properties’ dialog box appears. Enter to ‘Driver’ tab and click ‘Update Driver’ to update driver.



‘Driver Update Wizard’ operates. Update method is same as ‘2.5.1 Install with found new hardware wizard’.

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3 Device Construction

3.1 Device element

- GP read device [UW, UB]

  This area is for controlling graphic panel function.
  For further details, refer to 'GP Editor user manual'.

- GP write device [UW, UB]

  This area is for displaying graphic panel state.
  For further details, refer to 'GP Editor user manual'.

- GP user device [UW, UB]

  This area is for using graphic panel function, general-purpose communication (universal communication) etc.

3.2 Device range

3.2.1 Bit device range

Mark	Name	Range	UB correspond address	Size
UB	READ AREA	UB000000 to UB00014F	UB000000 to UB00014F	00015F bit
UB	WRITE AREA	UB000015 to UB00029F	UB000015 to UB00029F	00015F bit
UB	USER AREA	UB000030 to UB01999F	UB000030 to UB01999F	01969F bit

3.2.2 Word device range

Mark	Name	Range	UB correspond address	Size
UW	READ AREA	UW00000 to UW00014	UW00000 to UW00014	00015 Word
UW	WRITE AREA	UW00015 to UW00029	UW00015 to UW00029	00015 Word
UW	USER AREA	UW00030 to UW01999	UW00030 to UW01999	01969 Word

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4 System Organization

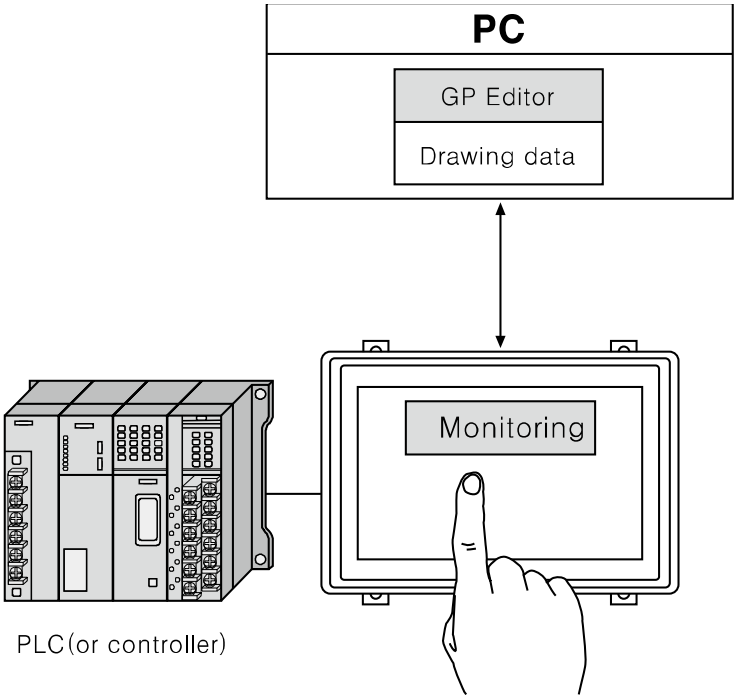
4.1 Connection with controller

4.1.1 1:1 organization

1:1 communication is the communication between one GP/LP and one PLC(or controller).

You can organize the system to monitor the action element (device, parameter, etc) status of the connected specified device during executing GP-S070 operation.

Both CH1 and CH2 are able to 1:1 communication with tag (Numeral input/display, ASCII input/display).



Note

If there are too much draw data, screen processing speed may be reduced. However, control program speed is not affected.

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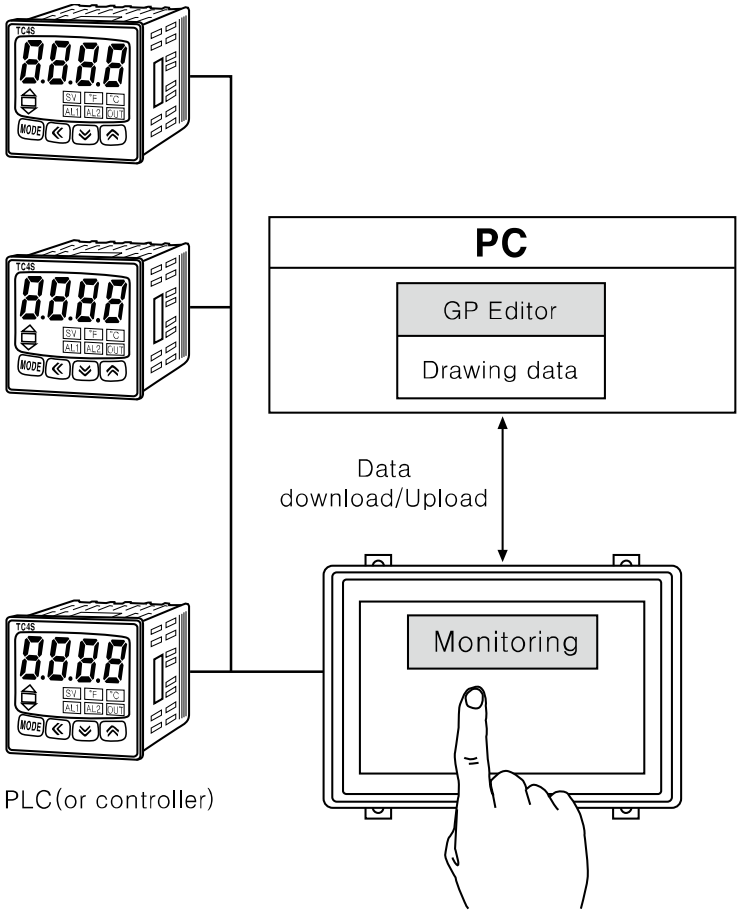
4.1.2 1:N organization

You can construct the system to monitor the action element (device, parameter, etc) status of the connected specified N devices which are same type controllers (PLC etc) during executing GP-S070 operation as following figure.



You can connect devices up to 32, it may be different by the product.
Respond time is different by the connected devcie during communication, data renewal time may be longer.
For further details, refer to ‘GP, LP user manual for communication’.

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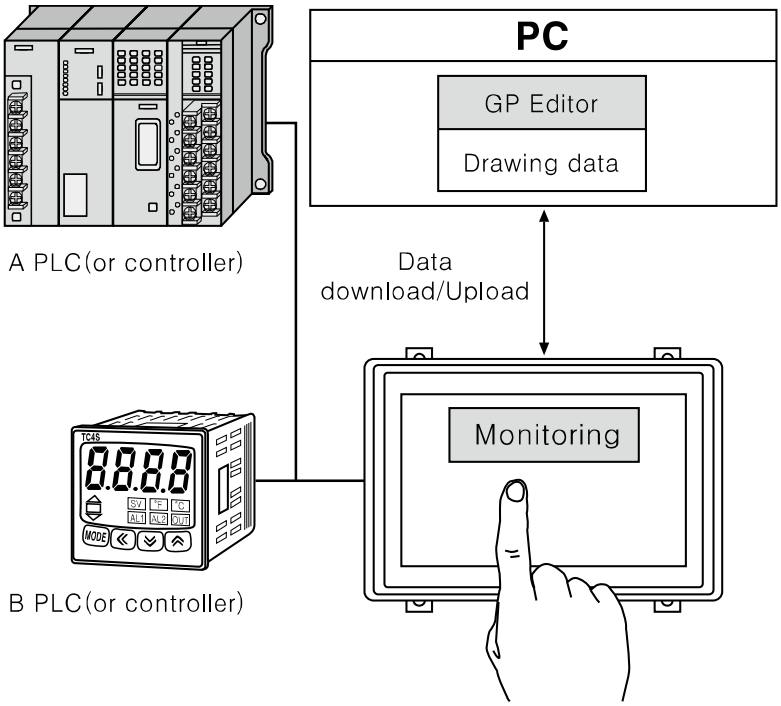
4.1.3 Heterogeneous organization

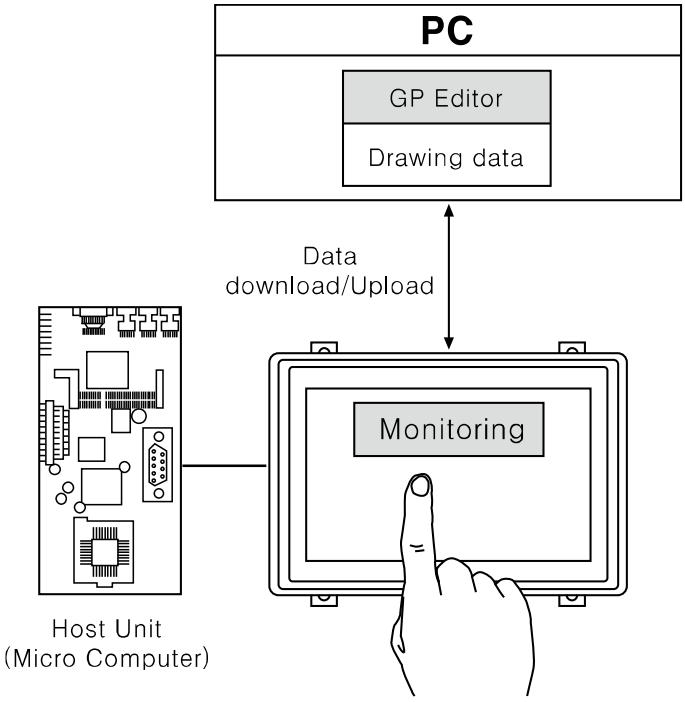
You can organize construct the system to monitor the action element (device, parameter, etc) status of between two devices which are connected at each port as different type controller (PLC, etc) during executing GP-S070 operation as following figure.



For further details, refer to ‘GP, LP user manual for communication’.

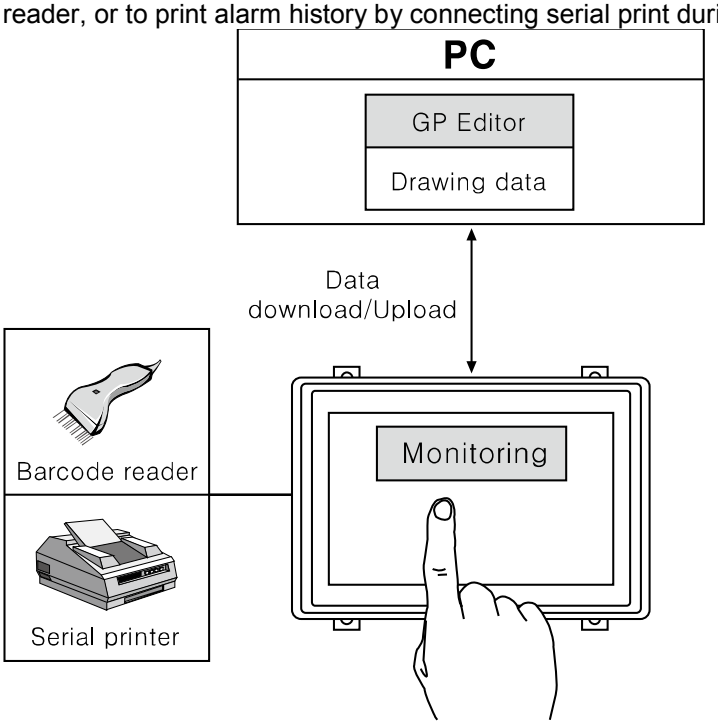
4.2 Universal organization

As following figure, you can organize the system to monitor or control host unit data by universal communication during executing GP-S070 operation.
For further details, refer to '5.4 Universal protocol' of 'GP,LP user manual for communication'.



4.3 Connect with barcode, printer

As following figure, you can organize the system to read barcode data by connecting barcode reader, or to print alarm history by connecting serial print during executing GP-S070 operation.



For further details, refer to 'GP, LP user manual for communication'.

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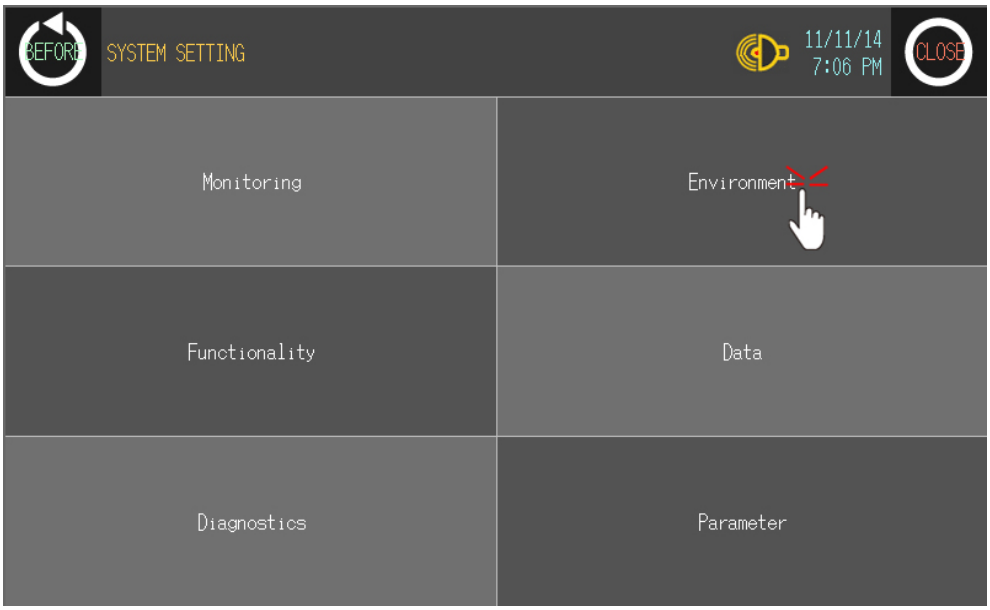
4.4 Connect with GP Editor

There are three ways to communicate between PC and GP-S070; serial communication, ethernet communication, USB.
Setting method is as below.

1st Enter system setting menu.

Touch left-upper point as default position of system setting menu.

2nd Select [Environment]-[Serial Communication].



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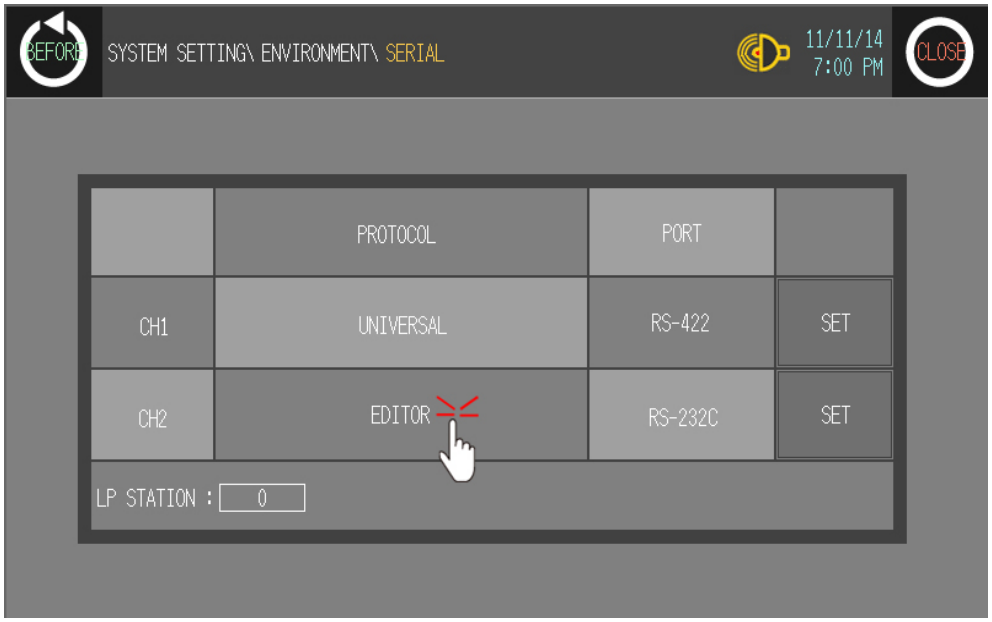
3rd Designate communication method.

① Serial setting: Select [Serial Communication] menu, check that CH2 configuraiton is as'EDITOR', and connected connection port with GP-S070 is as 'RS232C'.

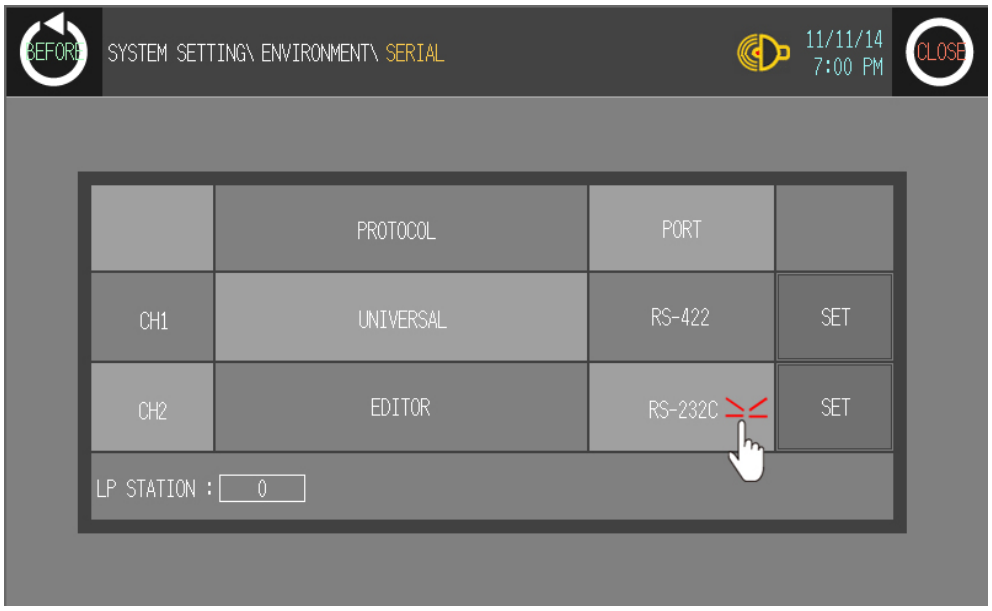
If the configuration is not as 'EDITOR', touch (PROTOCOL) part and cofigure as 'EDITOR'.

Touch this, it rotates in order as EDITOR → PRINTER → BARCODE → MONITOR.



Touch (PORT) area to configure the connection port of GP-S070.

Touch this, it rotates in order as [RS422] and [RS232C].



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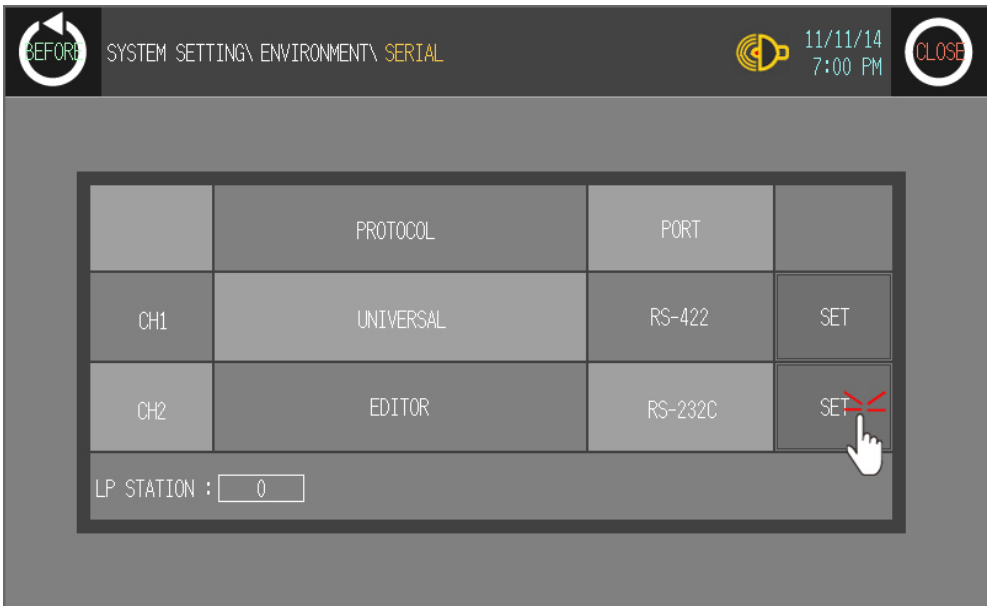
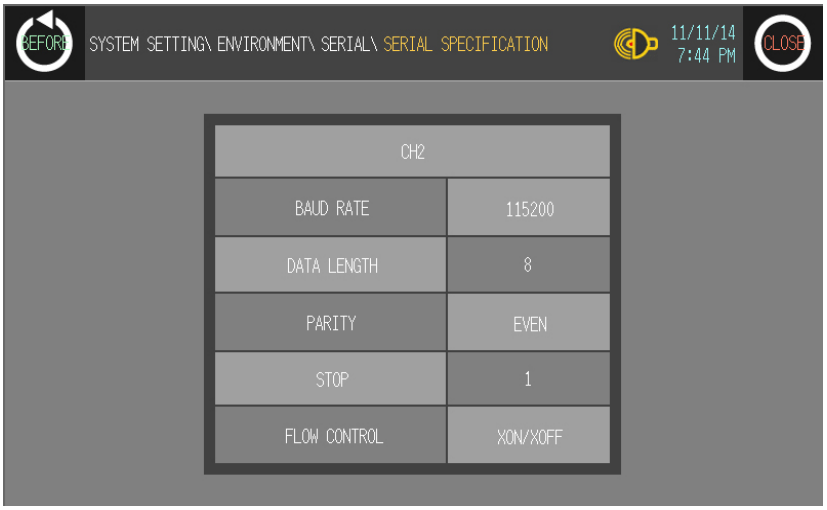
Touch CH2 to set B/R (Baudrate), data, stop, parity, and F/C (Flow control).

All communication parameters in GP/LP and GP Editor must be set identically.





Communication specifications of GP Editor are as followings.

Baudrate	Data bit	Parity bit	Stop bit	Flow control
115200bps	8bit	EVEN	1bit	XON/XOFF

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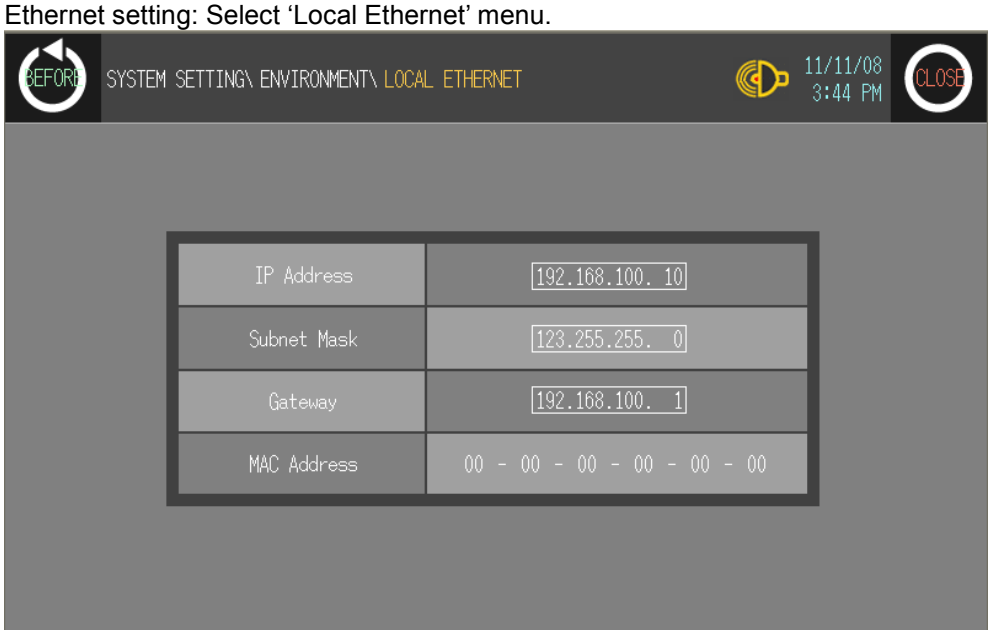
② Ethernet setting: Select ‘Local Ethernet’ menu.



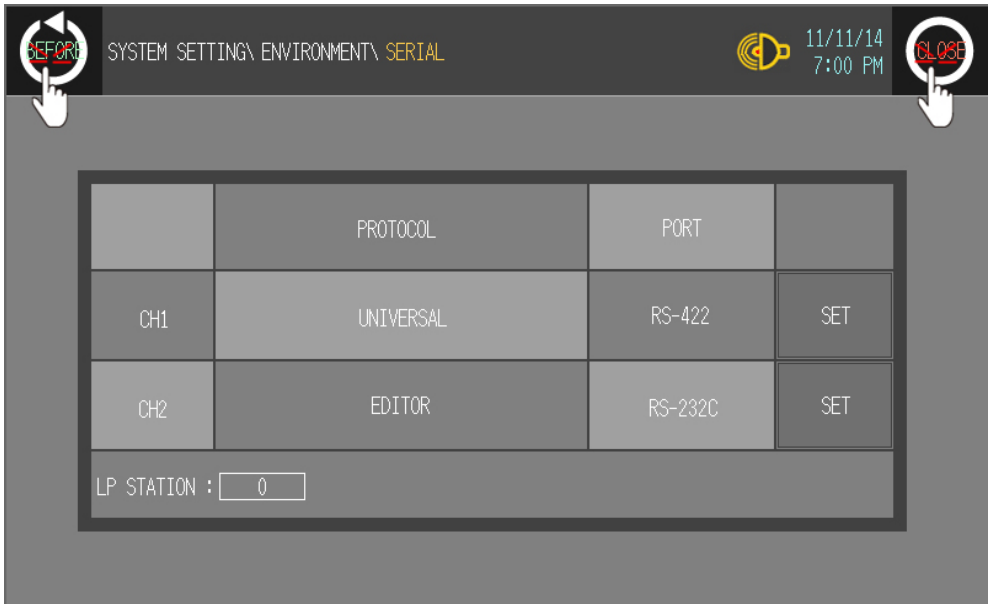
You can designate IP address, subnet mask, and gate way of GP-S070 and check MAC address.

Caution

IP setting of GP should not be duplicated with other communication devices. If IP address between other communication devices, communication is not able to operate by IP conflict.

③ USB setting: GP system menu does not have the setting of USB device. If there is Autonics USB driver in connected PC with GP, you can use it by PC.

4th Touch ‘BEFORE’, current setting values are saved and it returns to previous menu. Touch ‘CLOSE’, current setting values are saved and it returns to user screen after exiting system setting menu.



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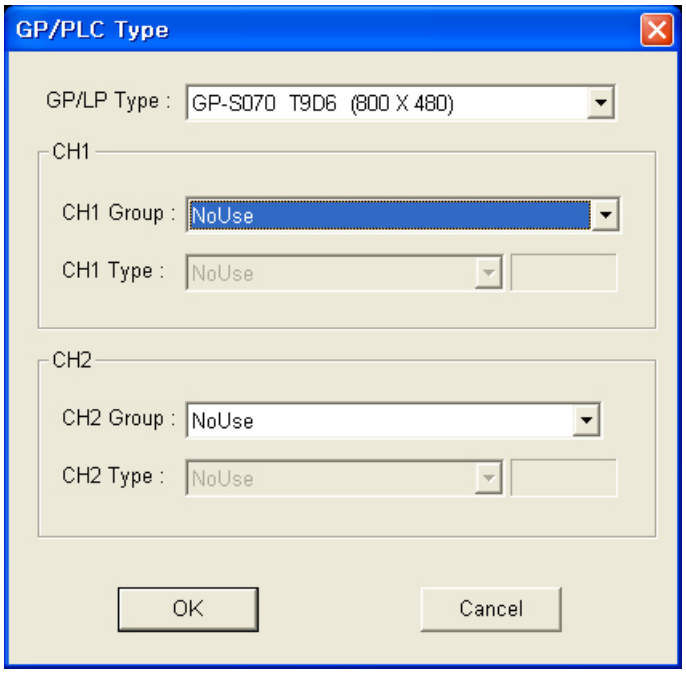
4.4.1 GP Editor configuration

1st Select [Common]-[GP/PLC Type] of GP Editor menu.

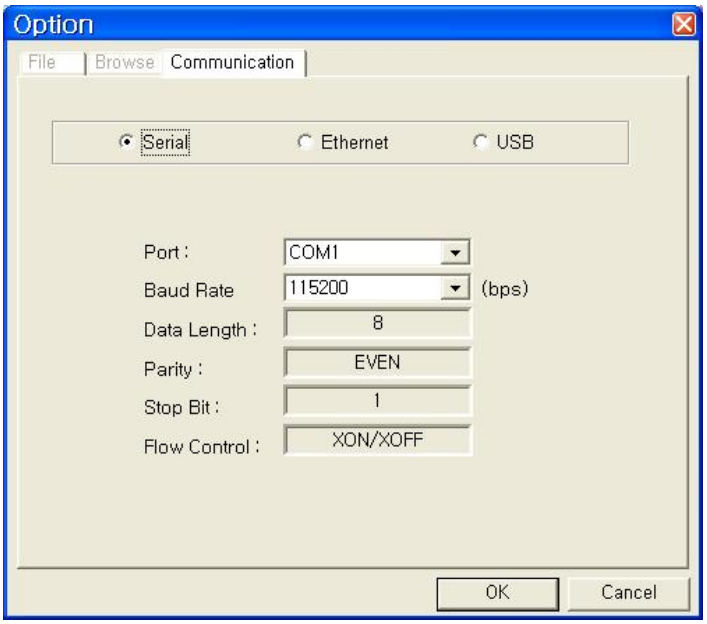
Desigante GP/LP type as the model name of 'GP-S070' by pull-down menu.



2nd Select [Communication]-[Option] and 'Option' dialog box appears.

Designate communication configuration as same as that of from GP-S070.

For further details of each option, refer to 'GP Editor user manual'.



3rd After configuration, connect GP-S070 and PC by communication cable to download and upload drawn program from GP Editor.

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5 Start up GP

This chapter describes start up procedure from supplying power to GP to switching user screen.

5.1 Checking list before supplying power

Before supplying power to GP-S070, please check the following list.

No	Check	Description
1	Install status	Check waterproof rubber ring is installed.
		Check all 4 fixing brackets are installed.
		Check fixing brackets are fixed with approved tightening torque.
2	Ground	Check ground cable is installed with separated other device ground cable.
		Check there is 3rd grounding.
3	Power cable	Check cable connection by polarity.
		Check the tightening status of screws on terminal.
4	Power	Check power voltage.
		Check this is installed as separated other device power.

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5.2 Operation order

Check the connection status of GP-S070 and RS232C connector and RS422 connector

↓

Supply power to GP-S070

↓

Open screen for GP-S070 version information appears

↓ (Touch left-upper point ○)

↓ (Touch left-upper point X)

Enters system setting menu	After the set screen open time, moves to user screen

↓

If there is connection problem between external device, it displays error message.	Moves to the designated user screen as start screen	If there is no user screen, it displays “USER SCREEN IS NOT FOUND” message. .

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6 System Screen

6.1 Organization of system screen

System setting screen appears for monitoring, environmet, data, functionality, diagnostics settings by touching system screen calling.
Select each menu and their sub-menu appears.

The system screen organization is as below.

GP-S070 system setting menu	Monitoring	Device monitor
	Environment	Serial communication
		Language
		Local Ethernet
		Screen bright
		Assistance setting
		Clock
	Data	Data manager
		Firmware update
		System
		User screen
	Functionality	Time switch
		Data transfer
		Data logger
		Print out
	Diagnostics	System initialization
		Battery remaining
		Screen diagnosis
		Touch diagnosis

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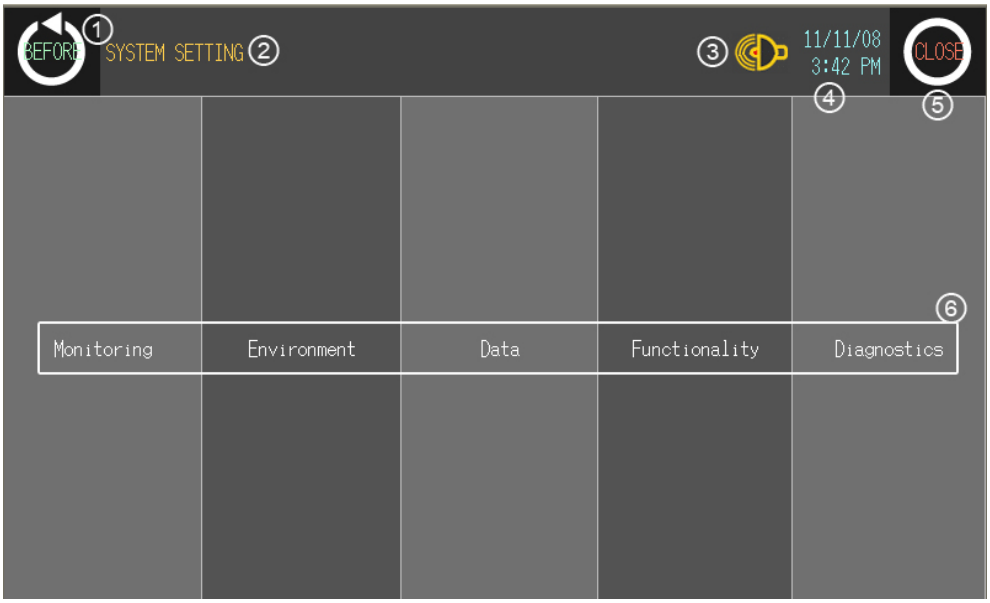
6.2 Operation of system screen



No.	Function and operation
①	Moves to the prior menu.
②	Displays the menu title of current screen. Touch desired item and it moves it.
③	Set buzzer ON/OFF
④	Displays current time and date.
⑤	Exits system setting
⑥	Touch desired menu and sub menu is displayed.

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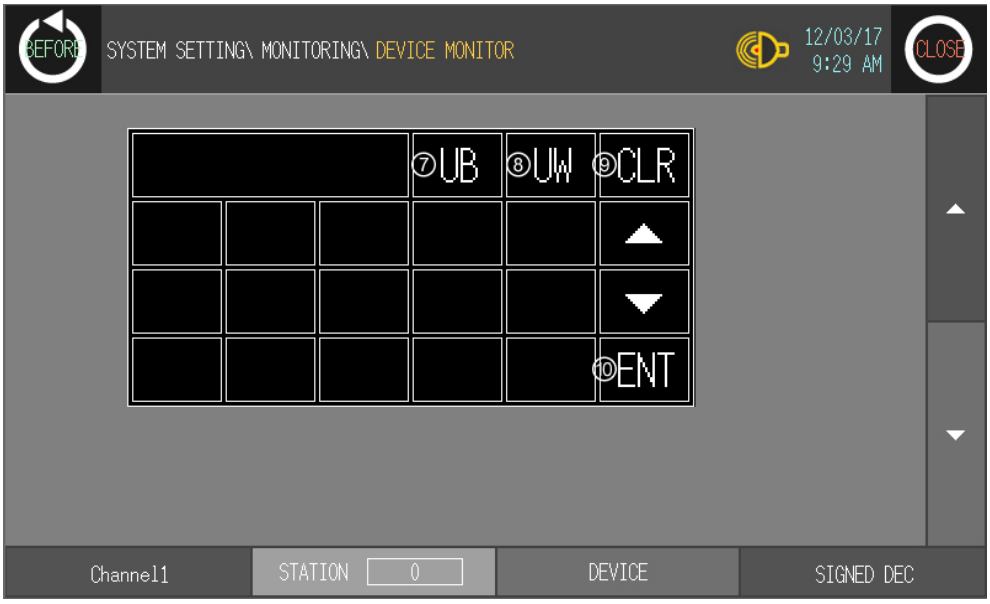
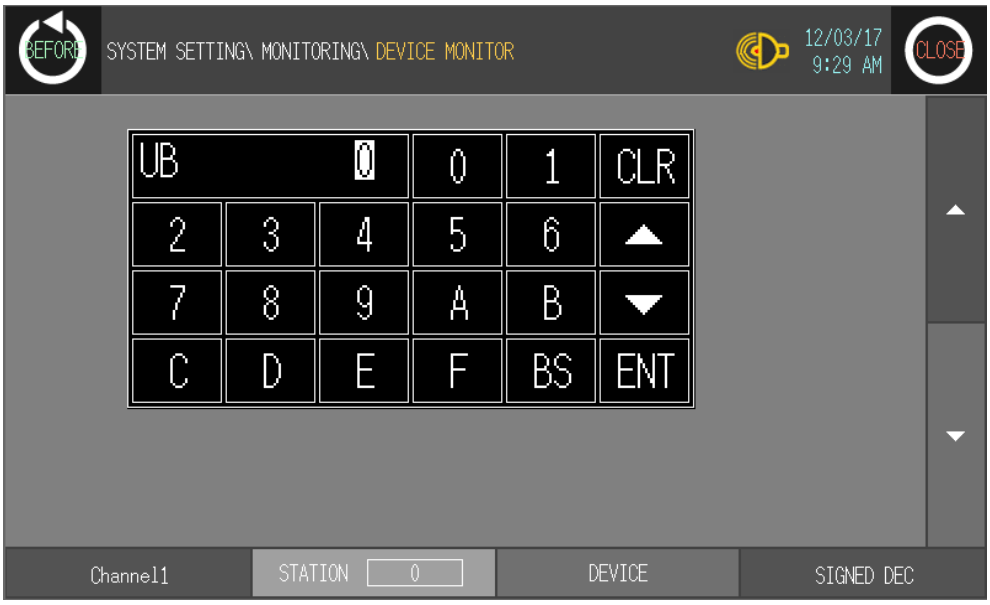
6.3 Device monitor

Device monitor menu is for monitoring inner device of connected device or for designateing the value to inner device of GP–S070.

It is able to monitor bit or word device of connected device, special function device, inner bit device of GP, or inner word device area.

Monitorable device is different depending on connected device. Confirm monitorable device by each device from ‘GP, LP user manual for communication’.





No.	Function and operation
①	Designate channel for connected device. Touch this it changes as Channel 1, Channel 2, Internal.
②	Designate station. (Range: 0 to 255) Touch this and decimal key pad appears.
③	Input key pad appears to select the device of selected device by channel (Channel 1, Channel 2, Internal).
④	Monitors the specified word device as decimal with sign, decimal without sign, or hexadecimal.
⑤	Moves lower device.
⑥	Moves upper device.
⑦	Select the specified bit device. Touch this and hexadecimal key pad appears.
⑧	Select the specified word device. Touch this and decimal key pad appears.
⑨	Cancels setting value input.
⑩	Enters setting value input. .

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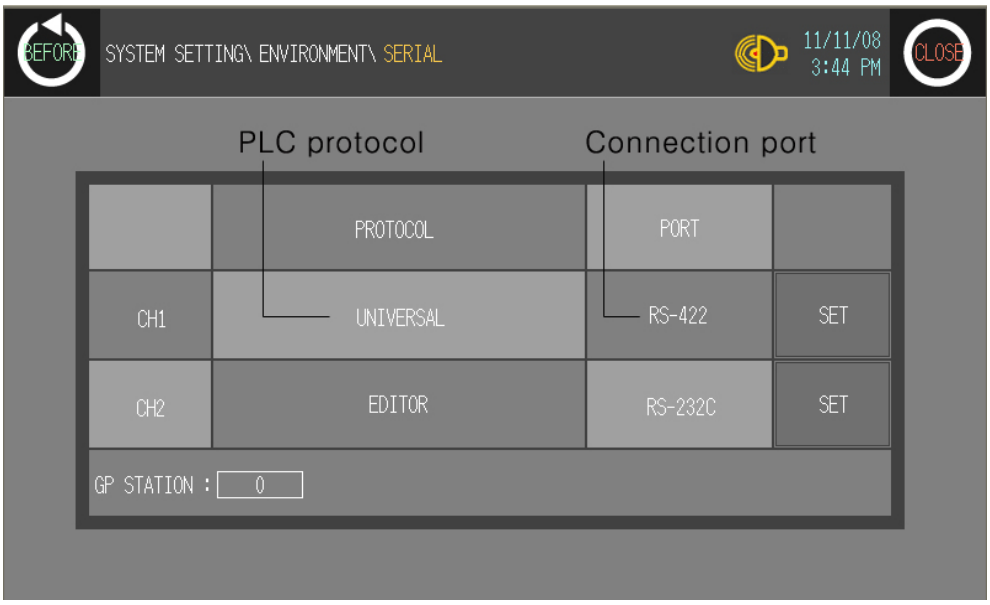
6.4 Environment

6.4.1 Serial communication

This menu displays connected device to RS232C, RS422 port of GP-S070. You can designate station and connected port by each channel.



Function	Operation
①CH1 configuration line	Displays connected device and connect port for CH1. Touch this to select one from downloaded protocol in GP Editor, EDITOR, PRINTER, BARCODE, UNIVERSAL, or DEFAULT protocol and designate connect port. (Select RS232C/RS422 or RS232C-A / RS232C-B). Depending on CH2 setting, CH1 may be changed as 'No Use'.
②CH2 configuration line	Displays connected device and connect port for CH2. Touch this to select one from downloaded protocol in GP Editor, EDITOR, PRINTER, BARCODE, UNIVERSAL, or DEFAULT protocol and designate connect port. (Select RS232C/RS422 or RS232C-A / RS232C-B or depending on CH1 setting, CH2 may be changed as 'No Use'.) If CH1 is SLAVE, MONITOR does not appear.
③GP station configuration touch key	Touch this and input key pad for station appears. GP station set range: 0 to 31
④Configuration touch key by each channel	Designate communication details of connected port for CH1 and CH2. You can designate baudrate, data bit, parity, stop bit, and flow control.

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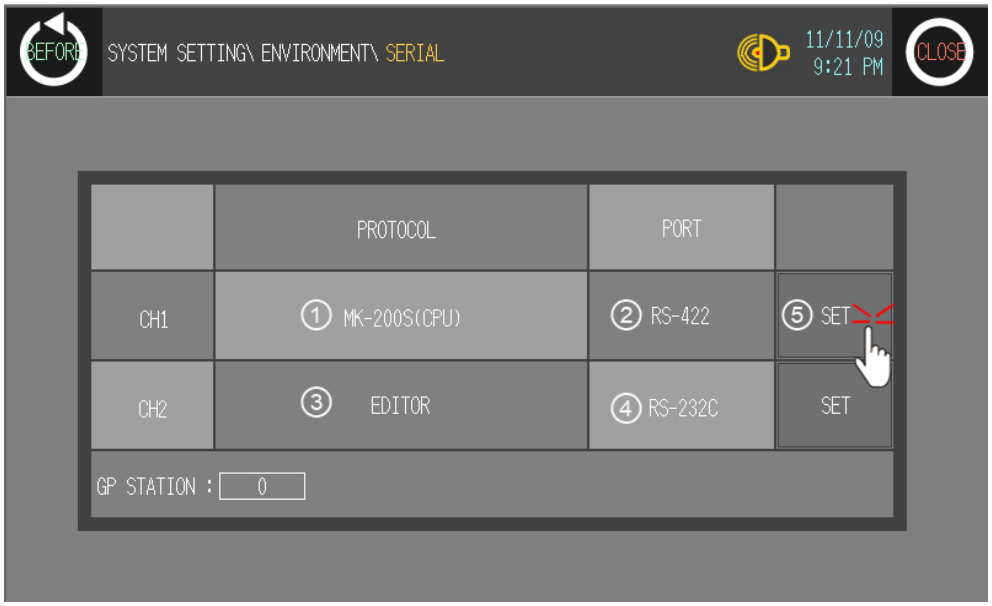
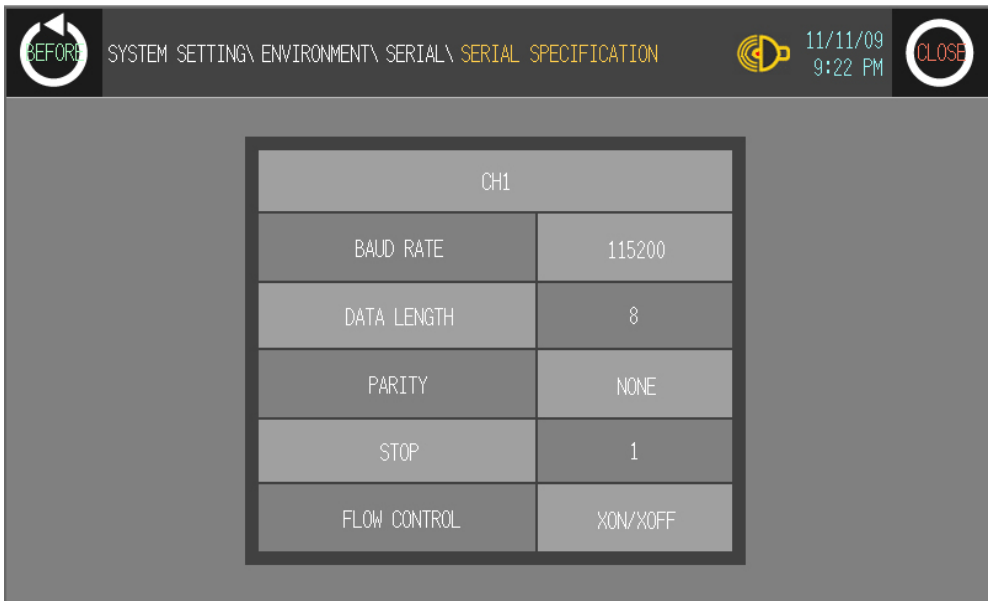
(1) In case of using only CH1 configured in GP Editor





Item	Operation with touching
①Displays CH1 protocol	Rotates in order as downloaded protocol in GP Editor → EDITOR → PRINTER → BARCODE → UNIVERSAL → DEFAULT protocol (When CH2 is No Use.)
②Displays CH1 connect port (Designates automatically as non-using port in ④)	GP-S070-T9D6: RS422 PORT ↔ RS232C PORT
	GP-S070-T9D7: RS232C A PORT ↔ RS232C B PORT
③Displays CH2 protocol (as EDITOR for default)	Rotates in order as EDITOR → PRINTER → BARCODE → MONITOR → UNIVERSAL → No Use If CH1 is SLAVE, MONITOR does not appear.

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Item	Operation with touching
④ Displays CH2 connect port (Designates automatically as non-using port in ②)	GP-S070-T9D6: RS422 PORT ↔ RS232C PORT
	GP-S070-T9D7: RS232C A PORT ↔ RS232C B PORT
⑤Communication configuration by each channel	Moves communication configuration setting window for selected connected device. You can designate baudrate, data bit, parity, stop bit, and flow control for each channel.

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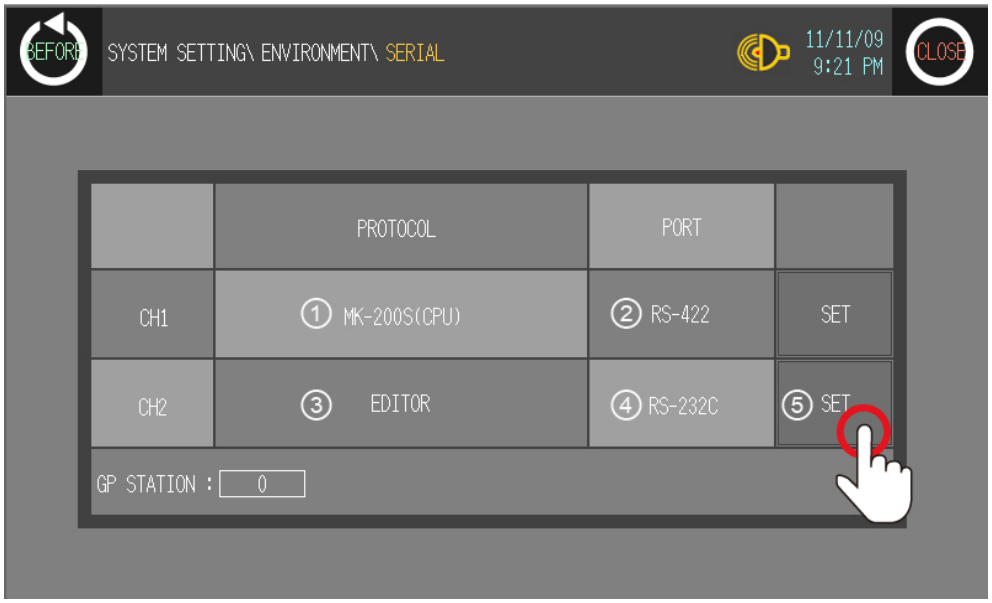
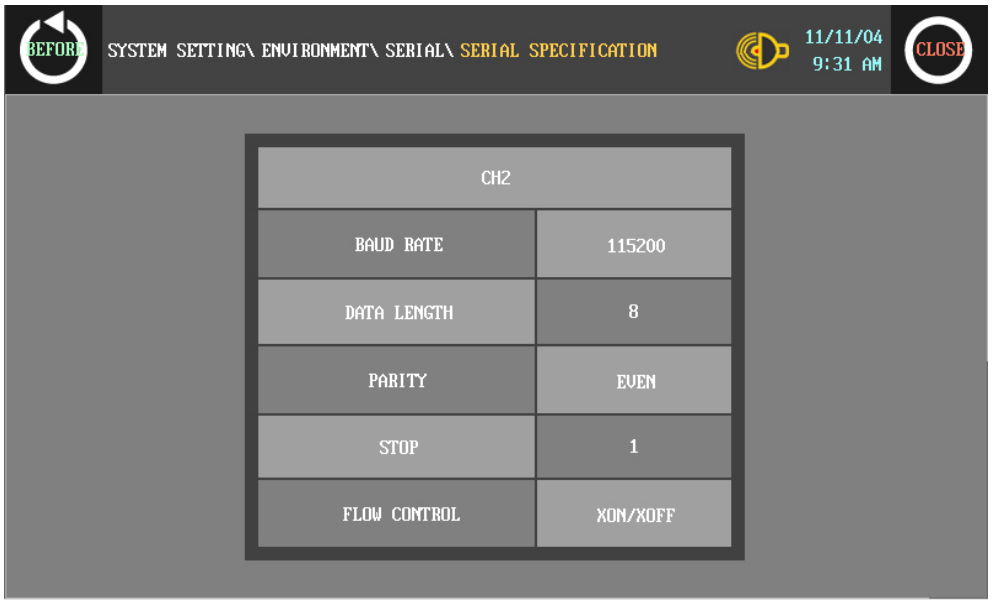
(2) In case of using only CH2 configured in GP Editor





Item	Operation with touching
①Displays CH1 protocol	Rotates in order as NoUse → EDITOR → PRINTER → BARCODE → UNIVERSAL → DEFAULT protocol.
② Displays CH1 connect port (Designates automatically as non-using port in ④)	GP-S070-T9D6: RS422 PORT ↔ RS232C PORT
	GP-S070-T9D7: RS232C A PORT ↔ RS232C B PORT
③Displays CH2 protocol (as downloaded protocol for default)	Rotates in order as downloaded protocol in GP Editor → EDITOR → PRINTER → BARCODE

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Item	Operation with touching
④ Displays CH2 connect port (Designates automatically as non-using port in ②)	GP-S070-T9D6: RS422 PORT ↔ RS232C PORT
	GP-S070-T9D7: RS232C A PORT ↔ RS232C B PORT
⑤Communication configuration by each channel	Moves communication configuration setting window for selected connected device. You can designate baudrate, data bit, parity, stop bit, and flow control for each channel. If CH1 is as NoUse, it is not able to communication configuration.

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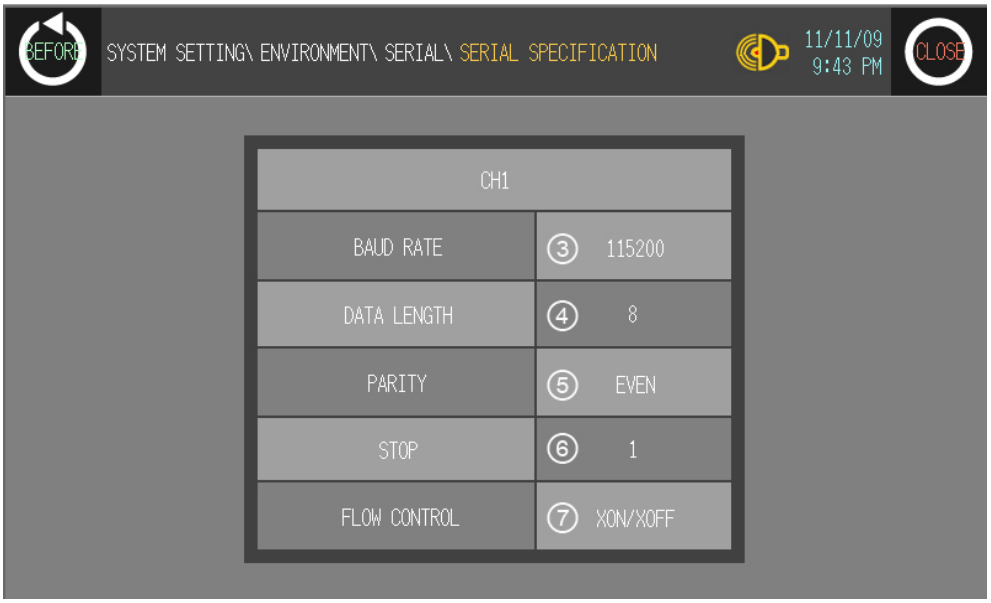
6.4.2 Serial details configuration

(1) CH1/ CH2 details configuration



No.	Function and operation
①	Designate operation mode. ▪ CH1, CH2 protocol: Communication mode for set PLC by GP and GP Editor by each port. ▪ EDITOR: I/O mode for downloading user-designed data from GP Editor ▪ PRINTER: Print mode for printing alarm history of GP ▪ BARCODE: Input mode for reading data from barcode For further details, refer to Barcode description. ▪ MONITOR: Available only in CH2. Monitoring mode for PLC which is connected to GP from PC directly. GP is as transmitter by transmitting data from PC to PLC and data from PLC to PC.

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No.	Function and operation
	In case of MITSUBISHI FX-Series, editor mode is available for monitoring. ▪ NoUse: Displayed only not using appropriate CH.
②	Touch this, detailed configuration screen for designated operation mode appears.
③ to ⑦	Designate detailed configuration for designated operation mode. ▪ Baudrate: Designate baud rate. Supports 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 bps ▪ Data: Designate data bit ▪ Stop bit: Designate stop bit. Supports 1 bit, or 2 bit. ▪ Parity: Designate parity type. Supports even, odd, or none parity. ▪ Flow control: Designate data flow control. Supports XON/ XOFF, or DSR/DTR.

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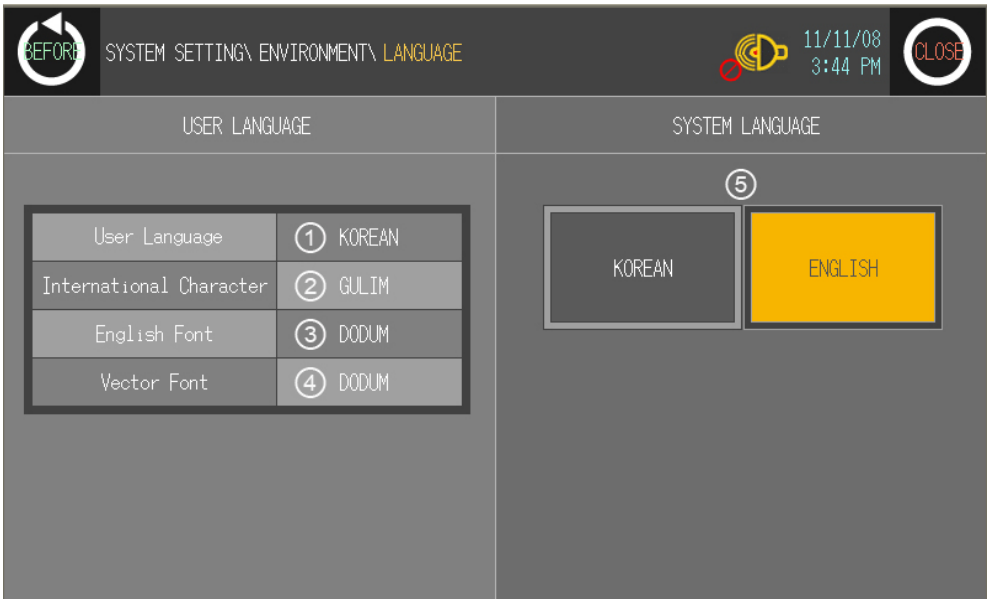
6.4.3 Language

User language for GP-S070 displays user langauge for displaying user-defined screen, international character font, English font, vector font. You can designate system langauge for GP-S070 inner system language.

- Supported language: It supports Korean, English at first and the other languages are supported later with upgrade.
- Font type: It supports various fonts by each language.



No.	Function and operation
①	Displays designated user language
②	Displays designated international character font
③	Displays designated English font (ASCII character) in GP-S070
④	Displays designated vector font in GP-S070
⑤	Touch the desired system language as displayed

To change system language, download new fonts from GP Editor.

Note

It prevent error at designing level with using the same font between designing font from GP Editor and used font in GP-S070.

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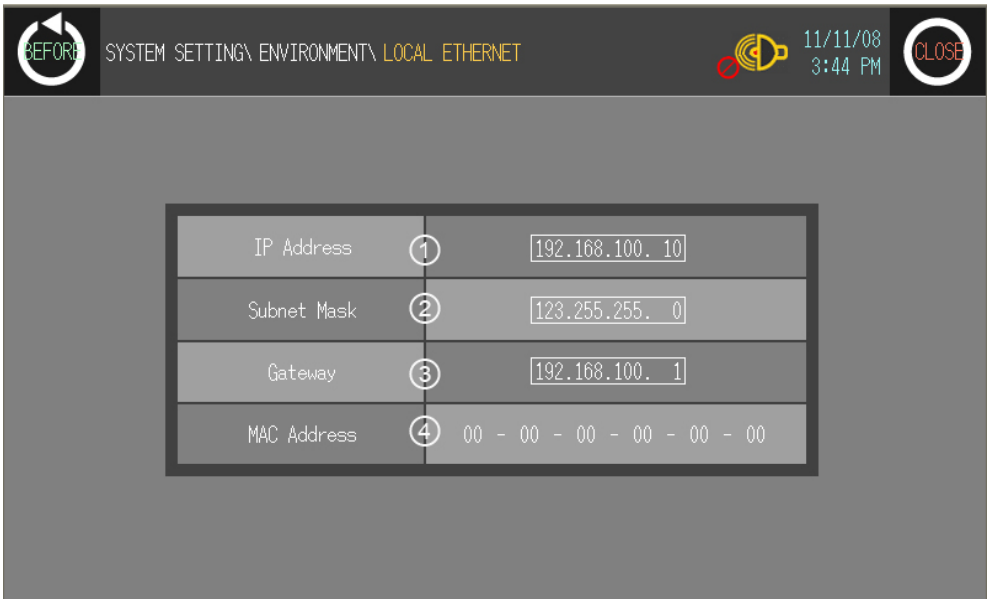
6.4.4 Local Ethernet

By this local ethernet menu,between PC and GP-S070 communication is available.



No.	Function and operation
①	IP of GP-S070 for Ethernet communication
②	Subnet mask of GP-S070 for Ethernet communication
③	Gateway of GP-S070 for Ethernet communication
④	MAC address of GP-S070 for Ethernet communication

Caution

IP configuration of GP should not be duplicated with other network devices on same network.
Duplicated IPs may cause IP conflict and communication cannot operate.

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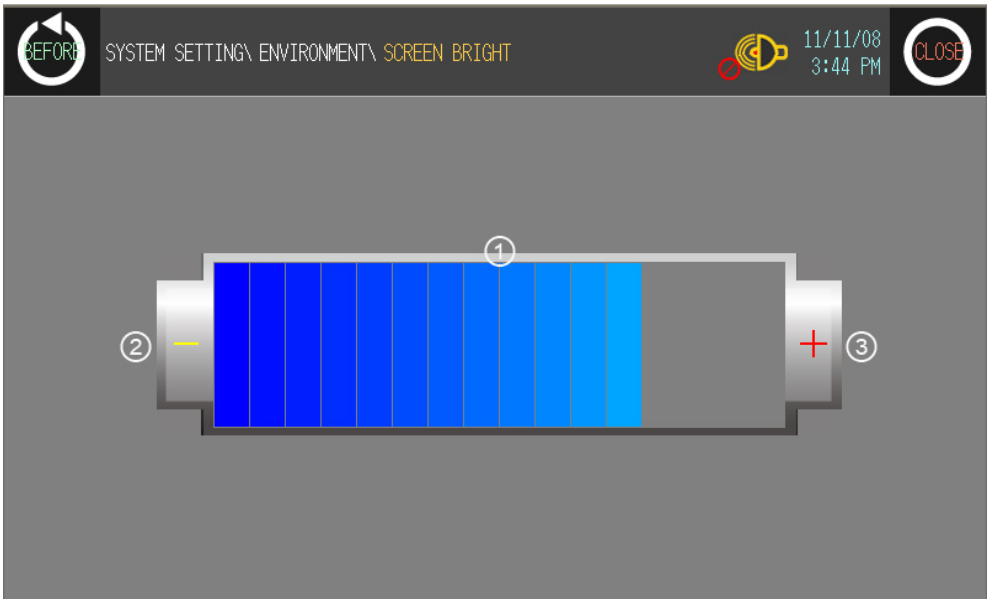
6.4.5 Screen bright

This menu is for designating screen brightness.



No.	Function and operation
①	Displays designated screen brightness as bar graph
②	Decreases one step of screen brightness with touching.
③	Increases one step of screen brightness with touching.

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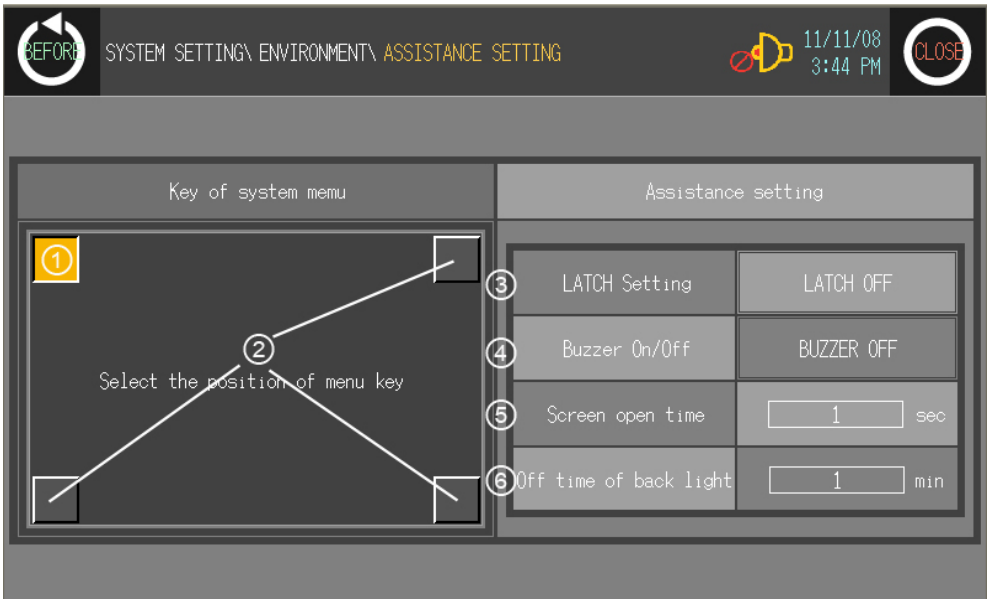
6.4.6 Assistance setting

This menu is for selecting the position of system setting menu key and designating UW device value LATCH function, buzzer on/off, screen open time, or off time of back light.



No.	Function and operation
①, ②	Check or select the position of system setting menu key to enter from user screen. ①: Displayed that this position is already designated for system setting menu key. ②: Displayed that this position is not designated for system setting menu key. You can designate system setting menu key up to two keys. If two keys for system setting menu is set, you should touch both two keys simultaneously to enter system setting menu.※1
③	Function for maintaining UW device value by battery even though power OFF. Touch this, rotates LATCH ON, or LATCH OFF. UW device value LATCH function setting menu is for GP Series.
④	Designate buzzer on or off for touch key operation, numeral or ASCII input touch, system setting menu touch, communication start and complete, or alarm. Touch this, rotates Buzzer On or Buzzer Off.
⑤	Menu for set time of open screen when supplying power. Touch time displayed position and numeral input key pad appears to enter setting time. ▪ Setting time: 0 to 60 sec
⑥	Designate back light off time. If there is no touch on screen of GP/LP until off time of backlight, LCD backlight is OFF. Backlight is ON again when user touches it. In this case touching is only for backlight ON and the other operation is not valid. Touch time displayed position and numeral input key pad appears to enter setting time. ▪ Setting time: 0 to 60 min. (If 0 is set, backlight is not OFF.) Depending on the status from [System information device]–[Backlight control bit of read device] in GP–S070, controls the designated operation. Backlight setting and operation is available only when backlight control device is SET (ON). If backlight control device is RESET (OFF), it does not operate

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No.	Function and operation
	irrespectively menu setting.

※1. In case screen direction is vertical (bottom side from front screen is placed at left status), default position of system setting menu key is placed at left-upper point.
Touch left-upper point as soon as re-supply power and it enters to system setting menu.
If there is numeral/ASCII input or touch key tag at system setting menu key position, it executes only tag operation and it does not enter system setting menu.

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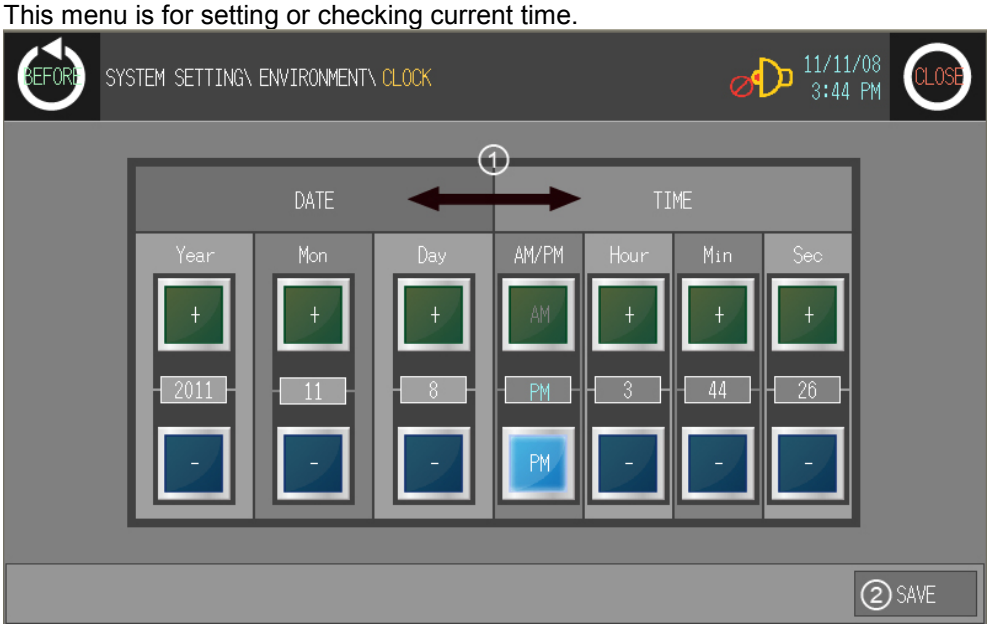
6.4.7 Clock

This menu is for setting or checking current time.



No.	Function and operation
①	Designate user designate time and data from current time. Touch the desired item to reset, numeral input key pad appears to input directly. Or touch +, - button to set.
②	Saves designated time. If this button is not touched and returns previous menu or exits menu after designating time, the designated time is not applied and is not saved. You should touch this button for saving desired time.

Caution

- Designated time is applied for clock, alarm history, alarm list, or data logger which is related with time.
- In case of connected external power, current time is maintained by external power. If external power is cut, current time is maintained by battery. If there is time error with connected external power, battery may be discharged. Please check battery status from [Diagnostics]-[Battery Remaining] of system setting menu.

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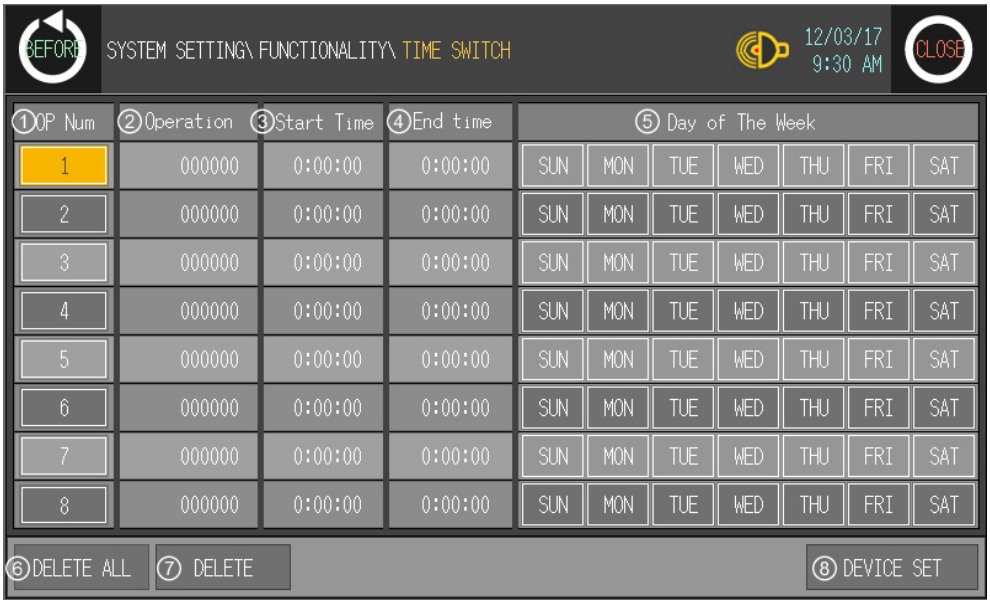
6.5 Functionality

6.5.1 Time switch

When the designated time and day of the week, it turns bit device of connected device ON/OFF. Maximum 8 bit devices which have consecutive numbers operate as time switch.It is able to set operation time by each bit device.

Time switch function is also able to set at [Common]-[Time Action] menu of GP Editor.



No.	Function and operation
①, ②	① Touch each number and set bit device operation time individually. ② Bit devices as time switch operation which have consecutive number are able to display up to 8.
③, ④	Touch this, numeral input key pad appears to input start time and end time. Not designated time action is displayed as [0:00:00]. Time switch displays 24H and start time should be earlier value than end time. Default is 0:00:00, and end time should be input before inputting start time.
⑤	Touch desired day of the week. Set day is displayed with reversed color.
⑥	Deletes all of set time switch data.
⑦	Select the to be deleted OP Num (①) and touch this to delete time switch individually. DELETE is for deleting set time and day of the week items. For deleting set device item, touch 'DELETE ALL'.

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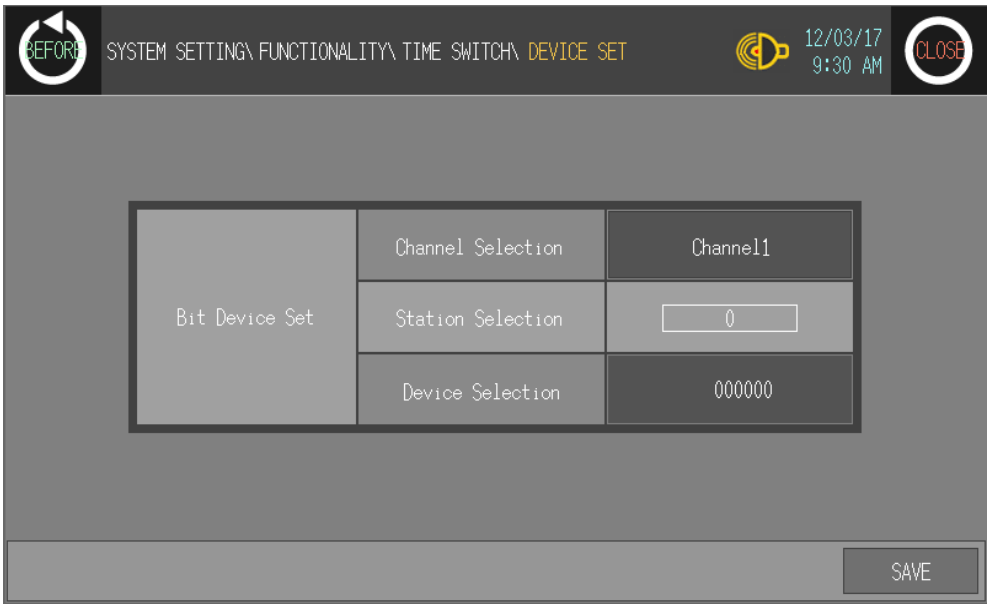
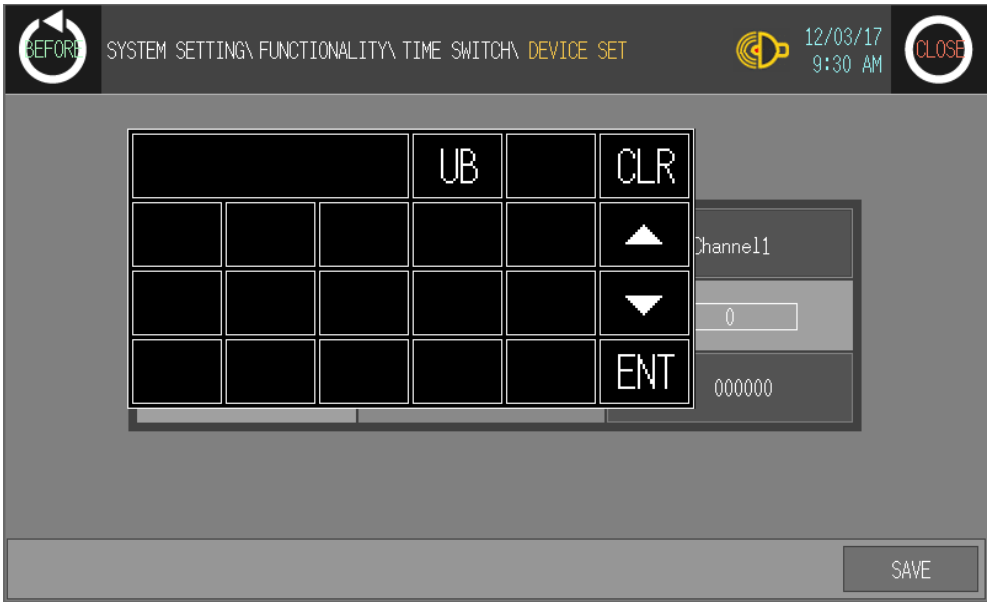
No.	Function and operation
	Touch this, it moves to device set menu. 
⑧	Designate channel (Channel 1, Channel 2, Internal) and station (0 to 255). Touch the number (000000) and input key pad appears to set the appropriate bit device. 

6.5.2 Data transfer

This menu screen is displayed during communicating (download/upload) between GP Editor of PC and GP.

No.	Function and operation
①	You can check download or upload statue of data.

Caution

If download stops during downloading due to power and cable connection problem, delete GP-S070 data and try download again.

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6.5.3 Data logger

Data logger is for saving the specified device value by the user-defined conditions.

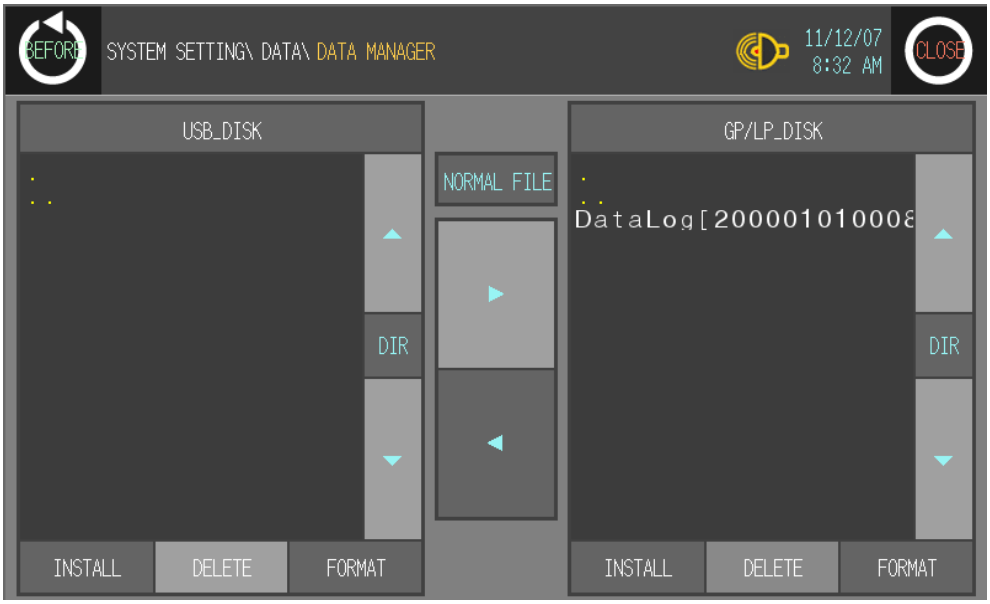
It records and saves the related device value when user-defined conditions are satisfied.

6.5.3.1 Log data file

Log data file is saved as DataLog[yyyymmddhhmm(year,month,date,hour,minute)].txt form. The capacity of GP/LP Disk saved log data is.32MByte, and max. log data file is max.1MByte.
(If 32 log data files are created, new log data file is overwritten on the oldest log data file.)

Ex.

If alloted save area for one file (max. 1MByte) is used all, log data file (up to 32) is created additionally. You can save max. 12,000 data to one file.



To save 8 log data hourly,

You can save log data as one file (1,500 hours)×32 = 48,000 hours = 2,000 days = approx. 5.4 year.

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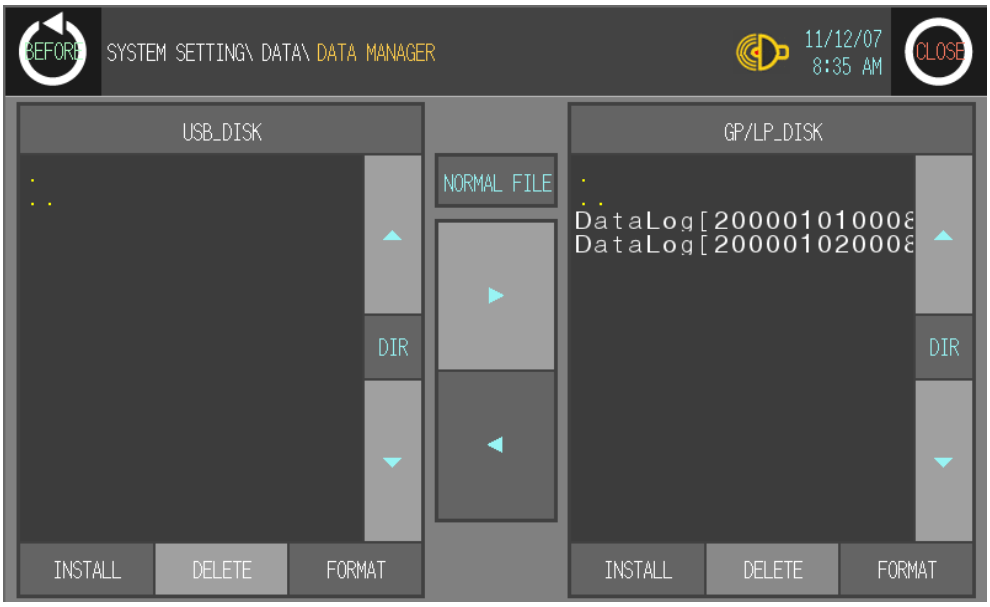
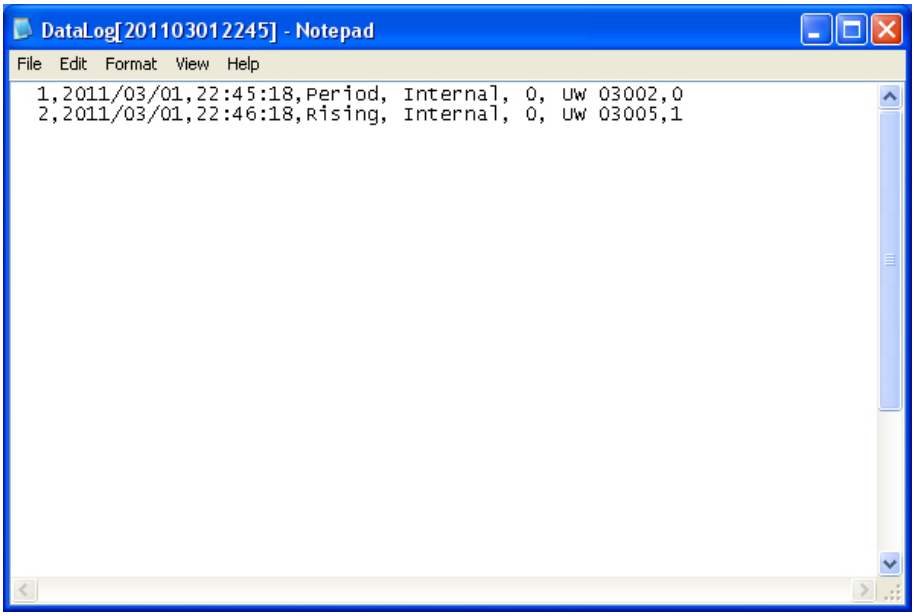
You can check saved data file by copying to portable disk at [Data]-[Data Manager] of system setting menu.



The below is the notepad to open saved data file.



Each item is devided by comma (,), and item are as followings.

1	2012/09/12	22:45:18	Period	Internal	0	UW 03002	0
Order	Date	Time	Action conditions※1	Channel	Address	Save device	Device value

※1. In case of period logging, it displays “Period”. In case of conditional logging, “Rising” for rising edge, “Falling” for falling edge, “Change” for changing.

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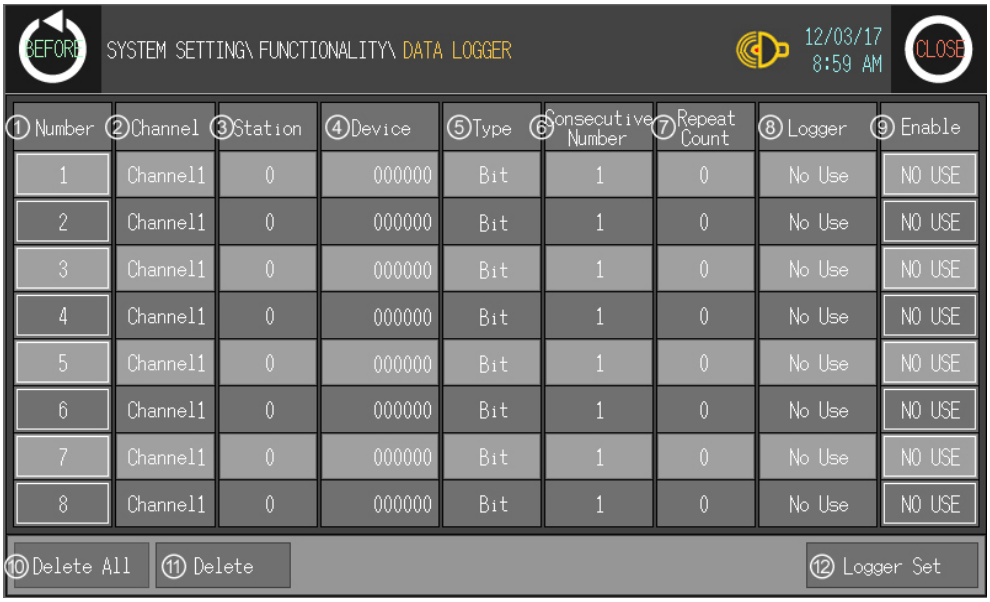
6.5.3.2 Logger conditions settings

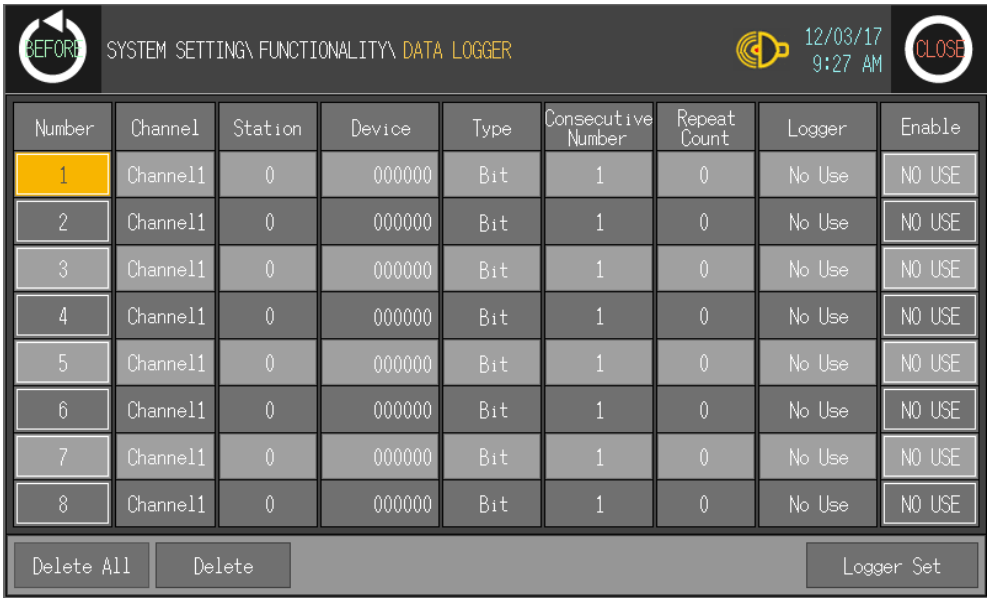


No.	Function and operation
①	The serial number of data logger. Supports it up to 8. Touch each number and you can delete the saved data or set logger conditions.
②	Displays channel information (Channel 1, Channel 2, Internal).
③	Displays address.
④	Displays save device.
⑤	Displays save device type (BIT, WORD).
⑥	Displays the continuous number of the set logger condition's device In case of conditional logging, the continuous number of device is fixed as (1) by logger characteristics.
⑦	Displays the repeat number of set logger condition.
⑧	Displays the set logger condition (period logging, conditional logging).
⑨	Set the saved data logger function. Touch this, it switches 'USE' or 'NO USE'.
⑩	Delete all the saved data loger data.
⑪	Select to-be deleted series number (①) and touch to delete the selected logger data.
⑫	Select to-be set series number of data logger and touch the properiate button to move logger condition setting menu.

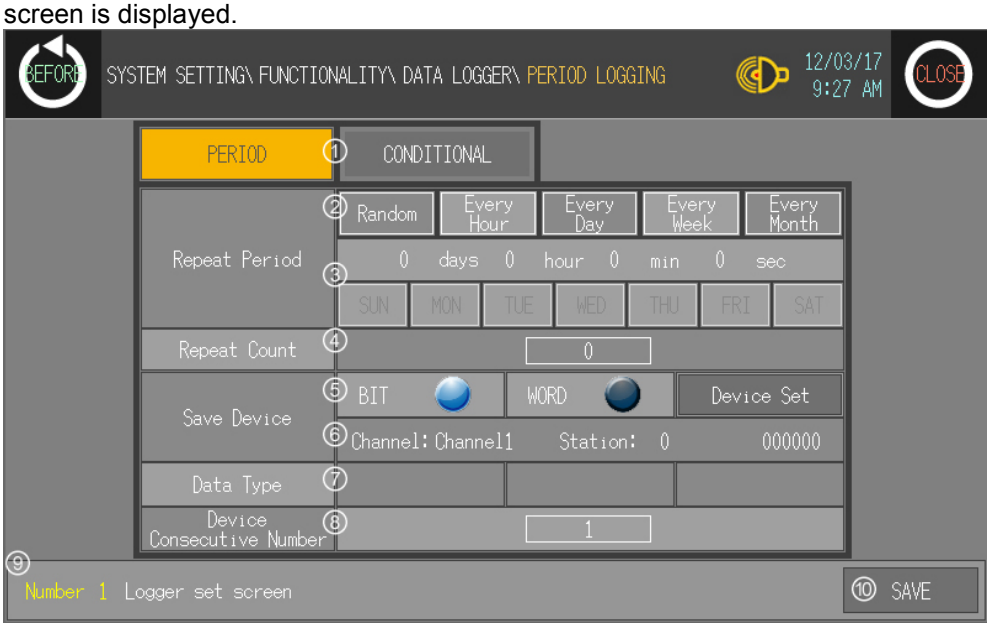
6.5.3.3 Period logging

Period logging reads the set save device value at the desiganted time and saves it.

(1) Period logging setting



Touch to-be set number as data logger and touch 'Logger Set' and 'PERIOD LOGGING' screen is displayed.



No.	Function and operation
①	Touch this, it moves to period logging setting screen, or conditional logging setting screen.
②	Logging operates by the set time type. ▪ Random: Designate time interval to activate log function from the current time. ▪ Every Hour: Designate minute and second to start logging. ▪ Every Day: Desigante hour, minute, second to start logging. ▪ Every Week: Designate the day of week, hour, minute, second to start logging.

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No.	Function and operation
	▪ Every Month: Designate day, hour, minute, second to start logging. Touch to-be set time type and it moves to the relevant setting screen.
③	Displays time and day of repeat period by the set type.
④	Designate the repeat number of times to save after starting logging. Default is 0, if this is set as 0, repeat count is infinite.
⑤	If the device is satisfied with the set condition, it saves logging device (save device) to the file. Select the device type (word or bit) and touch 'Device Set' and it moves to the device menu.
⑥	Displays the set channel, address, device of the save device.
⑦	If it is word device, it displays the set data type (Signed Word: decimal with sign, Unsigned Word: decimal without sign) of the device.
⑧	Displays the number of device to be read continuously from the start address of set save device. (Default is 1. In case of bit device, it is available to set up to 8. In case of word device, it is available to set up to 4.)
⑨	Displays the number of logger setting screen.
⑩	Saves the set of logger data.

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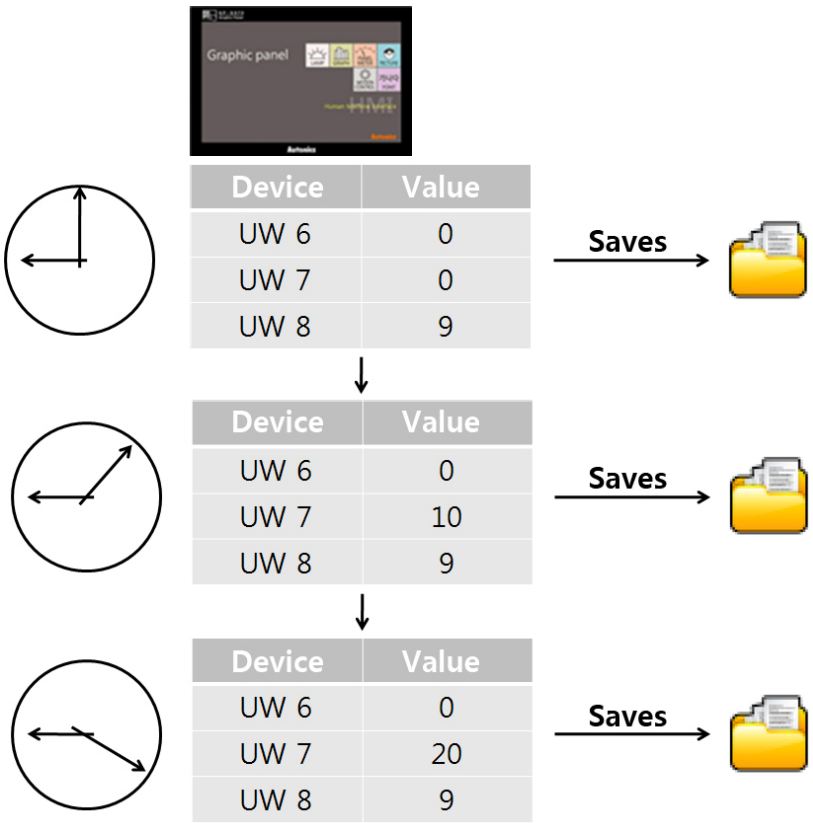
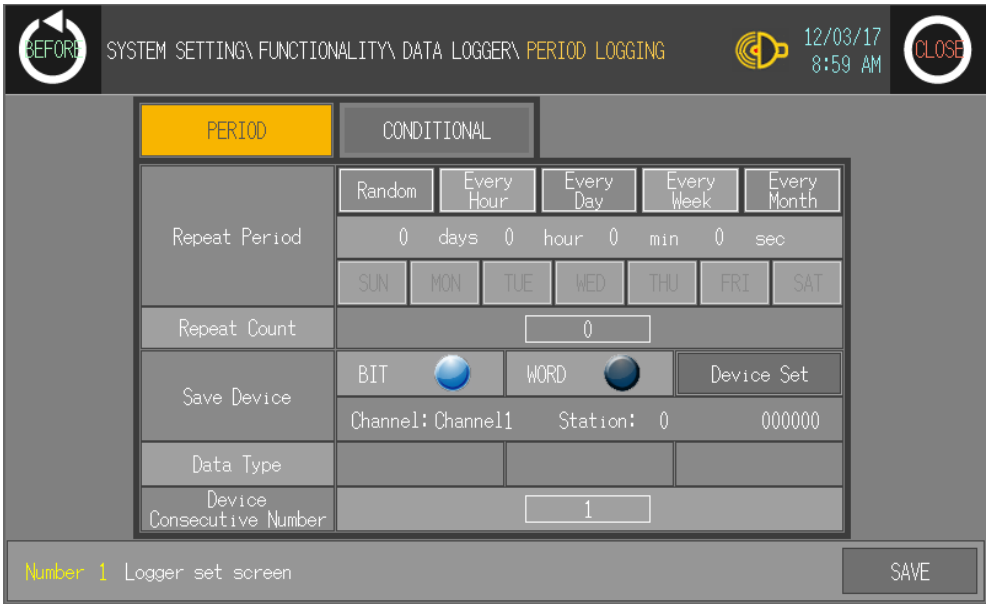
Ex.

The following example is that logging starts at currrent time (09:00) by the 10 minutes period at 3 consecutive numbers of device with 3 repeats number of times.



1st Touch ‘PERIOD’ and it moves to ‘PERIOD LOGGING’ set screen.



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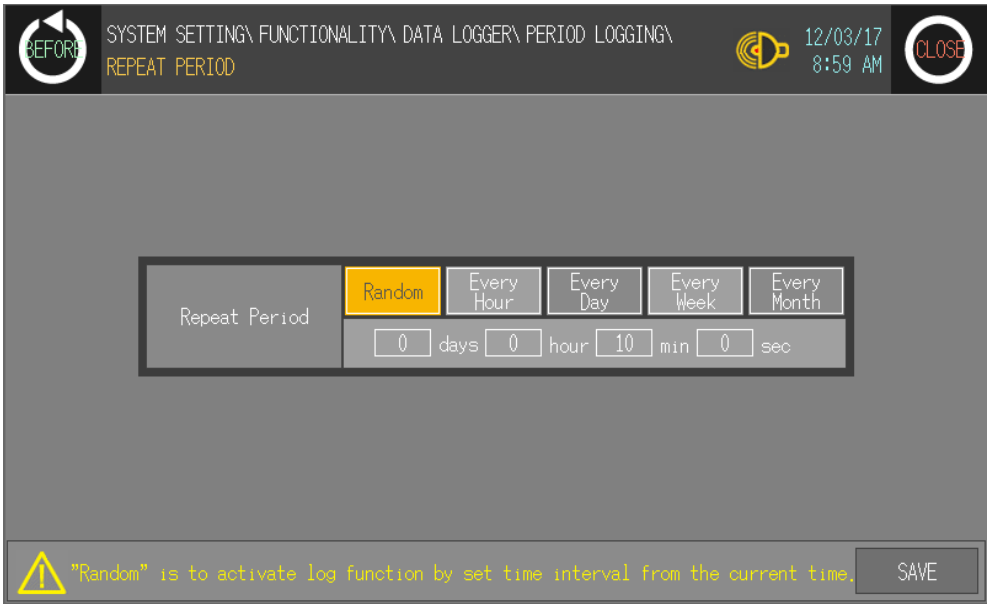
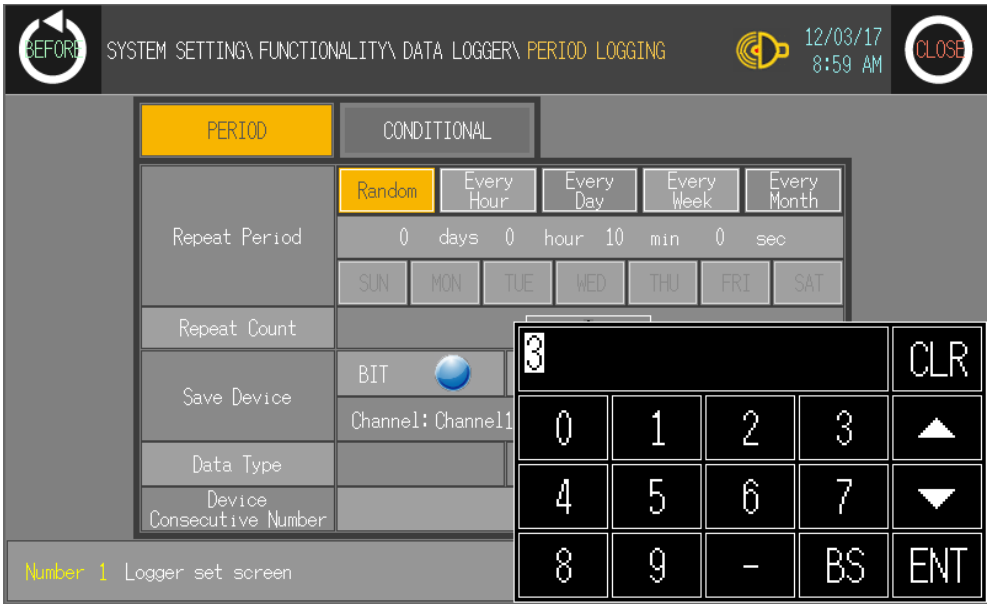
2nd Touch ‘Repeat Period’ and it moves to touch ‘Random’.

3rd It is 10 minute period, touch ‘min’ and input key pad appears. Enter ‘10’.

4th Touch ‘SAVE’ to save the setting.



5th Designate ‘Repeat Count’. Touch the number of repeat count and input key pad appears. Enter ‘3’. If this is set as 0, repeat count is infinite.



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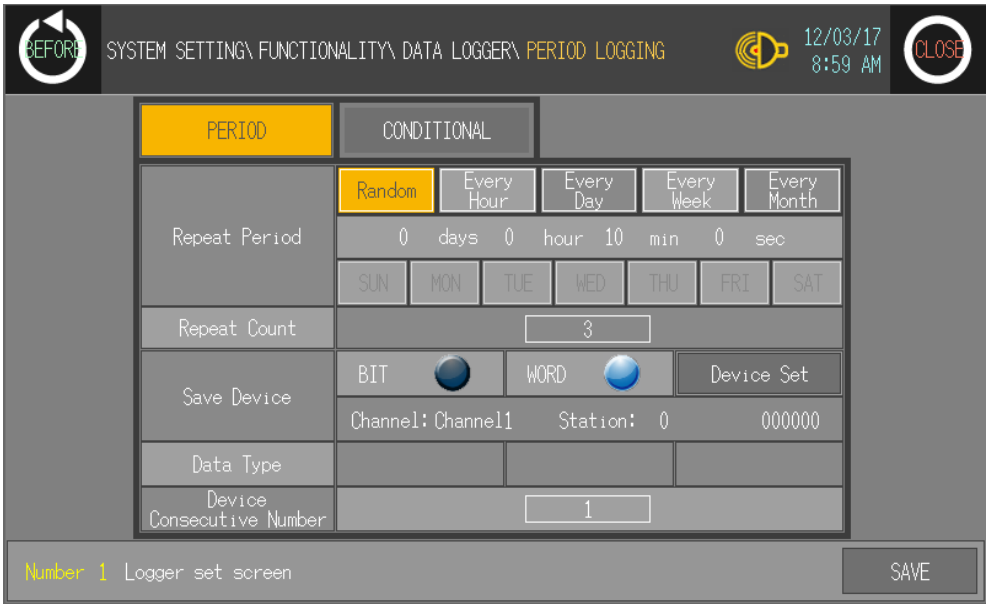
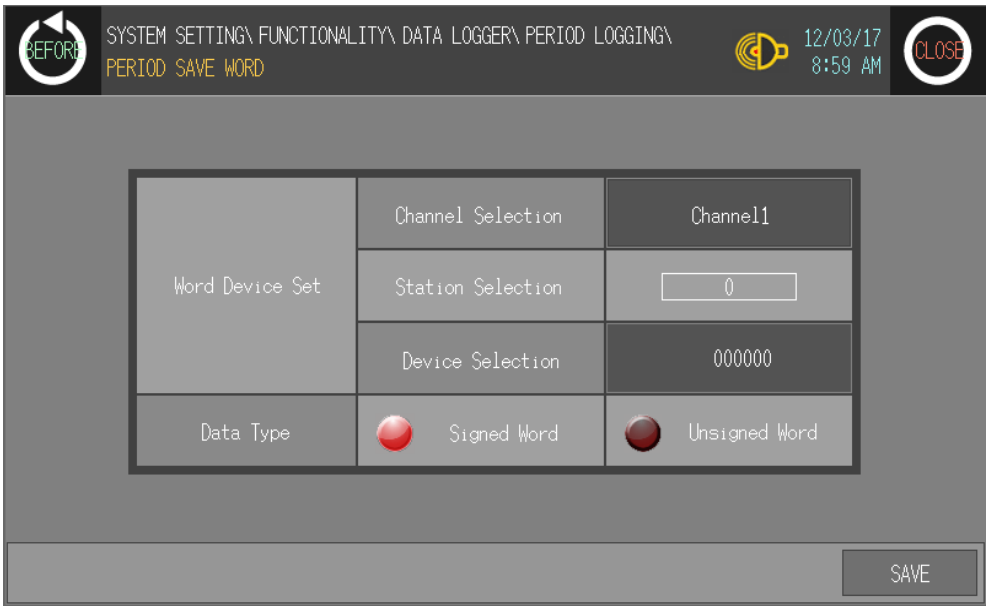
6th Designate save device. Select 'WORD' to set 'UW'.



7th Touch 'Device Set' and it moves to word device set menu.

You can set channel (Channel 1, Channel 2, Internal), station (0 to 255), device, and data type.



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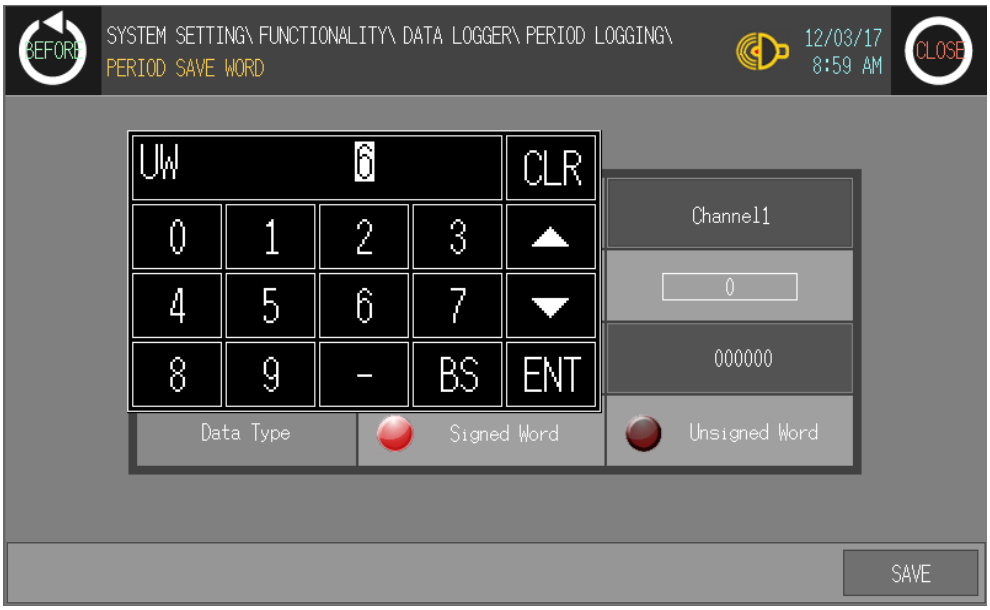
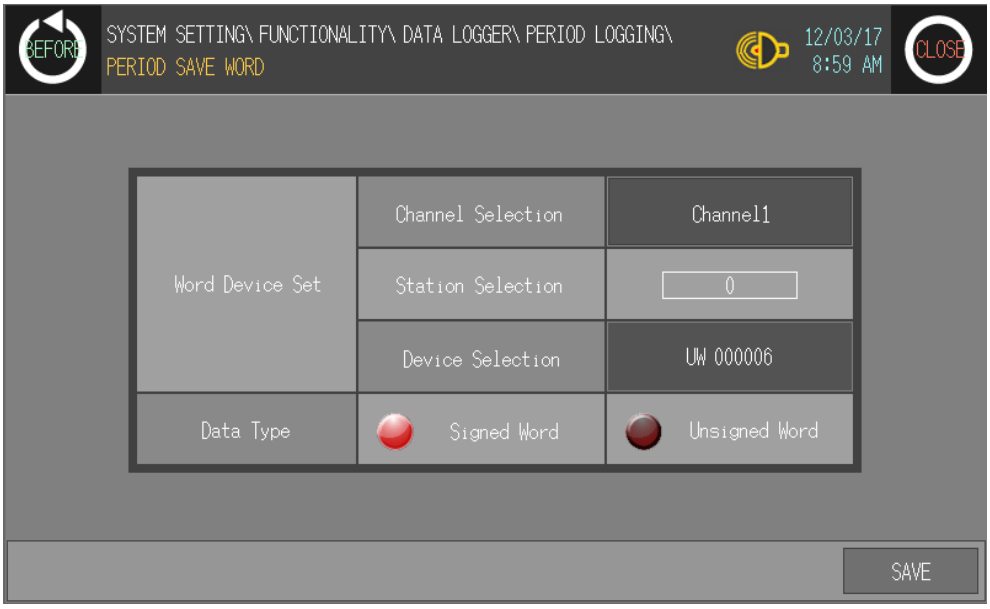
8th Touch ‘Device Selection’ and input key pad appears to set appropriate device. Enter ‘UW’ 6.



9th Check the set and touch ‘SAVE’.



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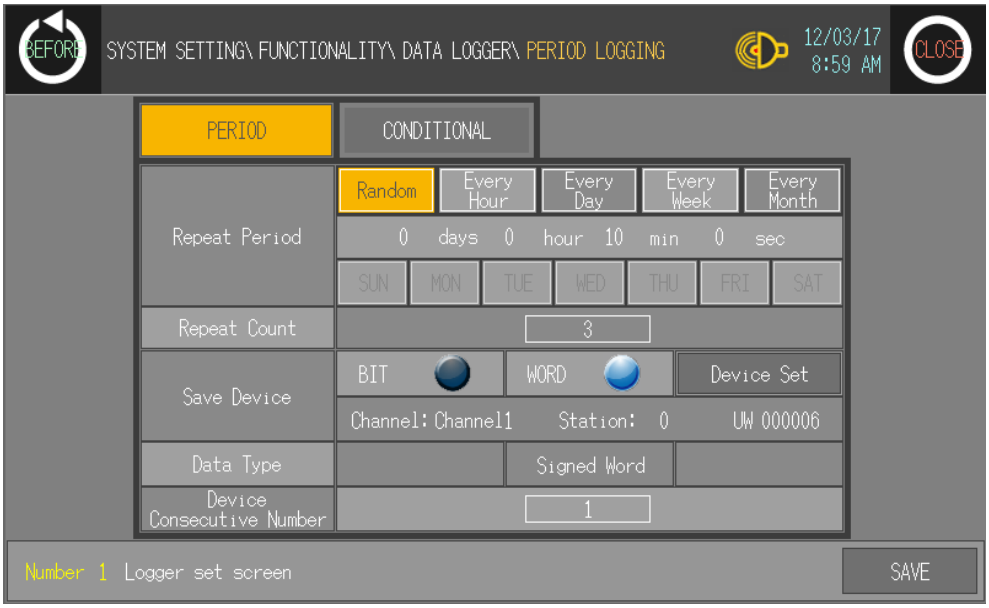
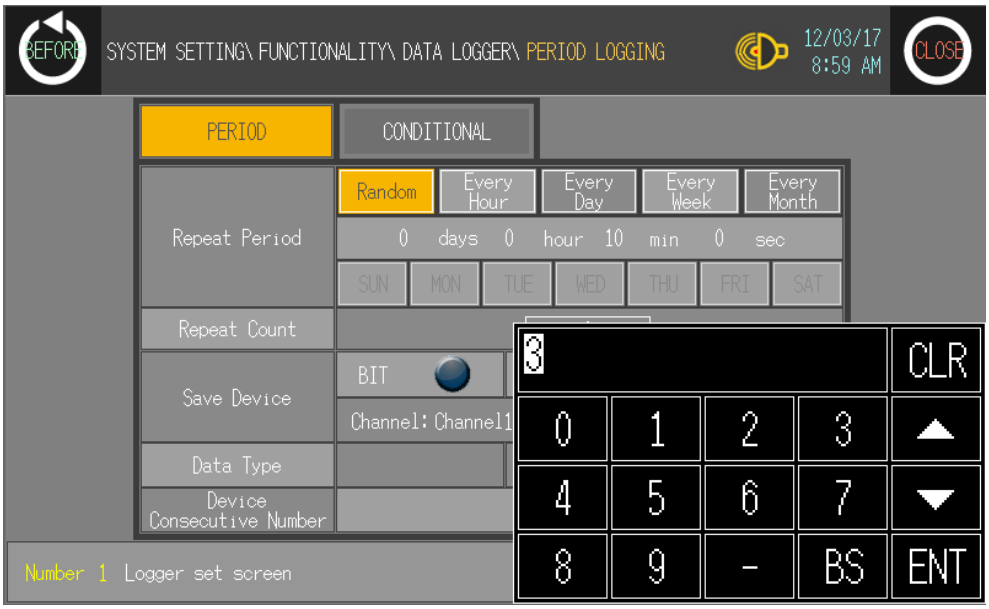
10th Designate ‘Device Consecutive Number’.



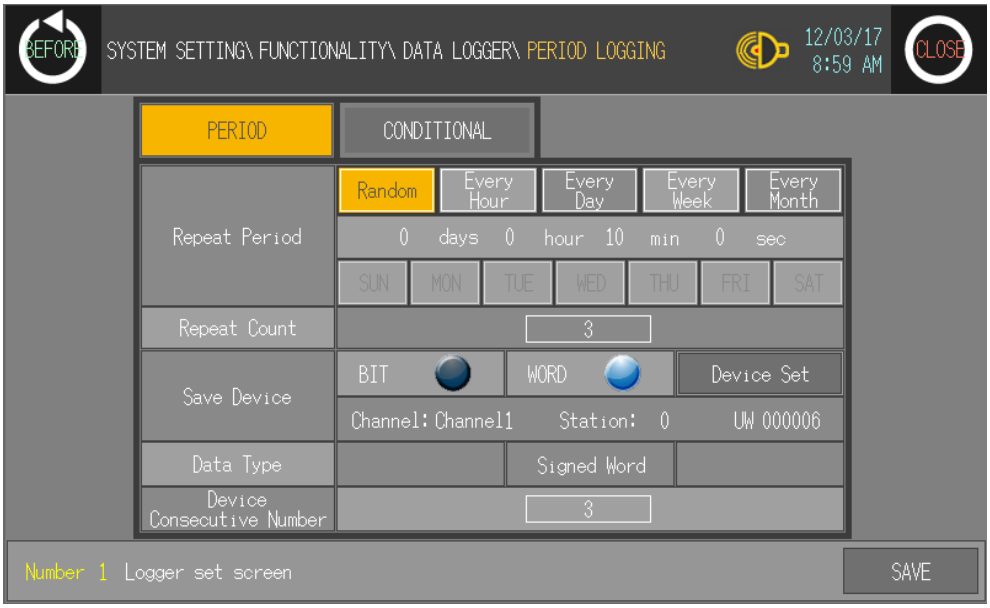
11th Touch ‘Number (1)’ of device consecutive number and input key pad appears.

Designate the number of device to be read continuously from the start address of set save device.

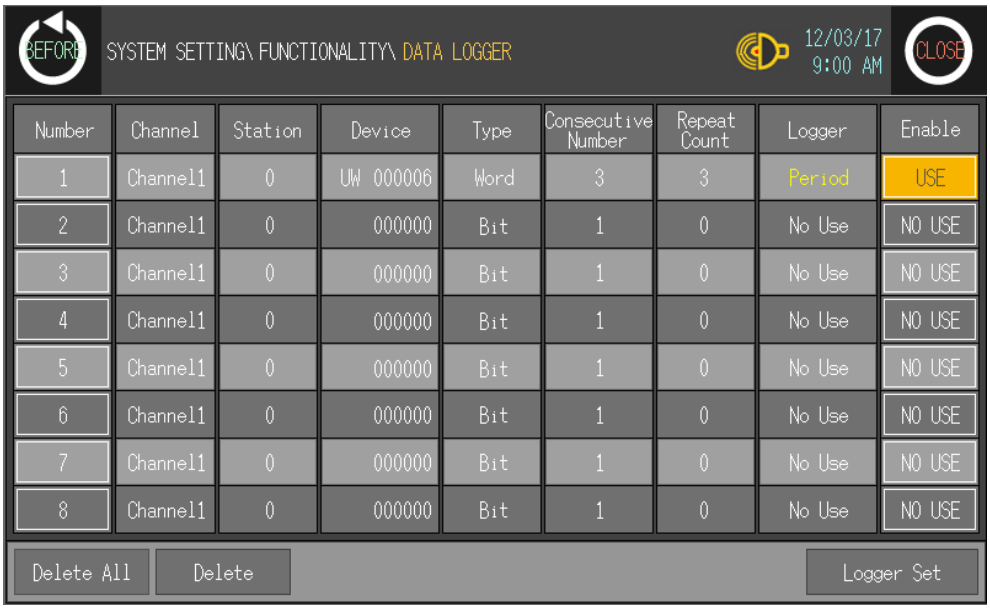
To read from UW6 to UW7, UW8 continouse device, enter ‘3’.



12th Check the set and touch ‘SAVE’.



13th Set ‘USE’ of Enable and data logger function operates.



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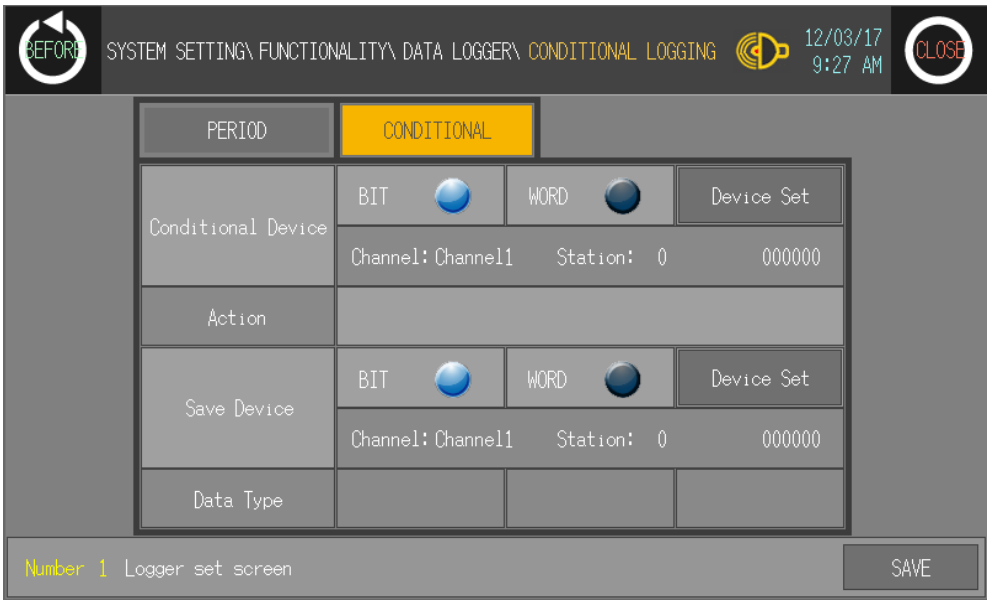
6.5.3.4 Conditional logging

Conditional logging starts logging when conditional device is satisfied with the set action condition (rising edge, falling edge, change).

- Action condition for Bit device
  - Rising edge: When the specified bit device is rising edge, it saves the set save device value.
  - Falling edge: When the specified bit device is falling edge, it saves the set save device value.
  - Change: When the specified bit device is changing (rising or falling) edge, it saves the set save device value.
- Action condition for Word device
  - Change: When the specified word device is changing, it saves the set save device value.

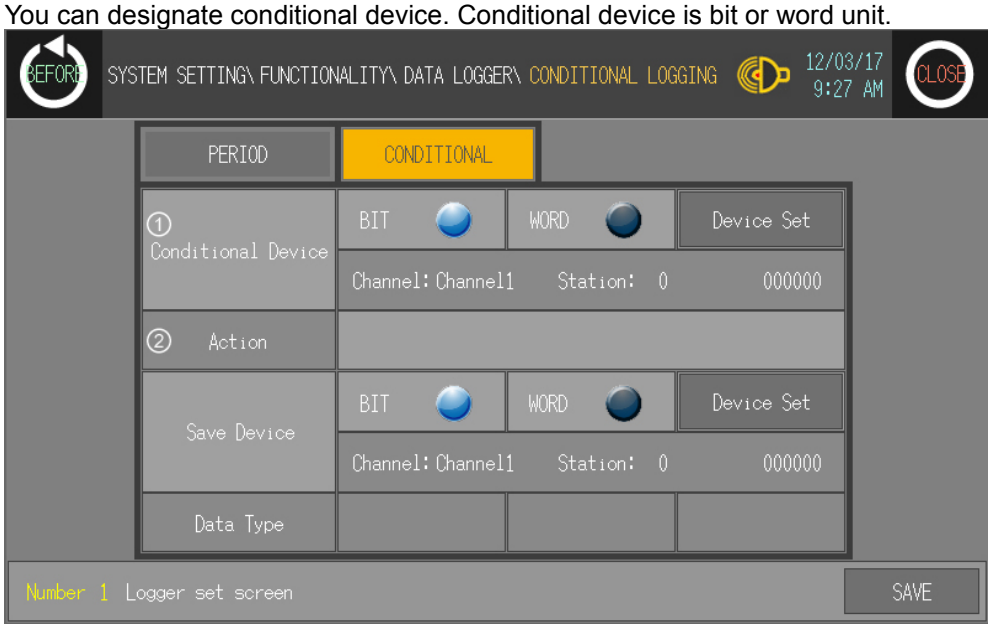
Touch the desired number to set logger condition and touch ‘Logger Set’.

Touch ‘CONDITIONAL’ and it moves to ‘CONDITONAL LOGGING’ set screen.



(1) Conditional device setting

You can designate conditional device. Conditional device is bit or word unit.



No.	Function and operation
①	Records save device value to file when conditional device is satisfied with set action (rising edge, falling edge, or change). Select the device type (bit or word) to set conditional device and touch 'SET', and it moves to the specified device menu.
②	Displays set action conditions of conditional device at the specified device menu. ▪ Bit device action conditions: Rising edge, falling edge, or change ▪ Word device action conditions: Change

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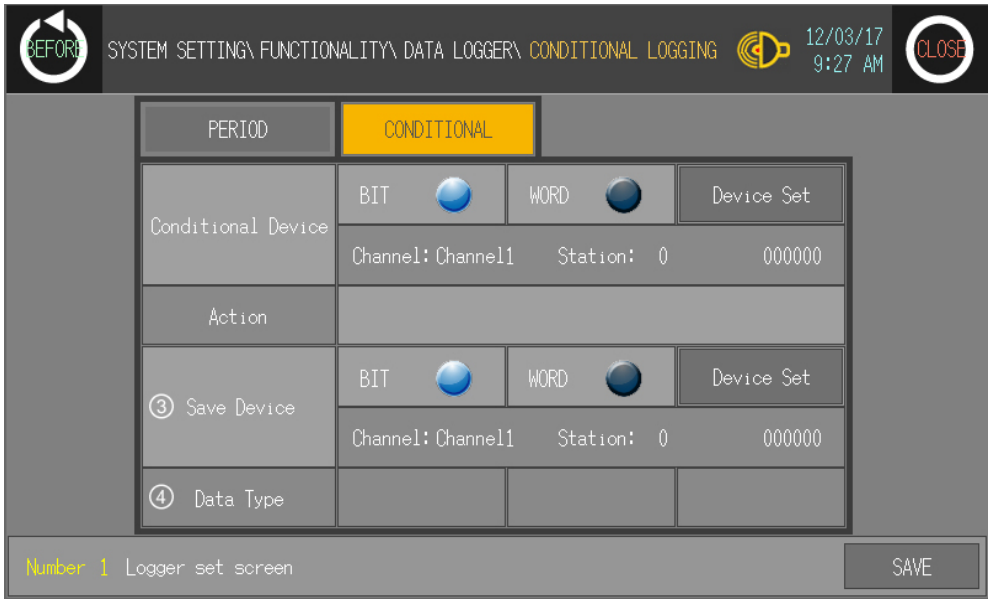
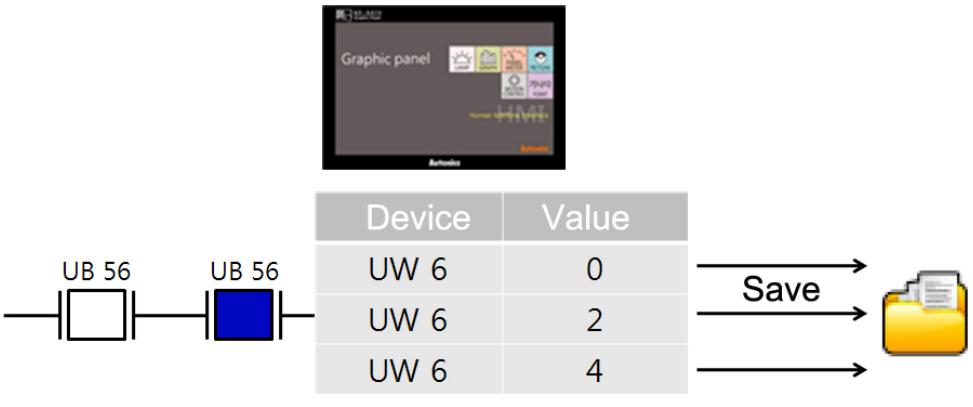
(2) Save device setting



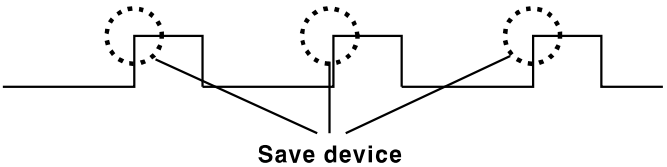
No.	Function and operation
③	Records save device value to file when conditional device is satisfied. Select the device type (bit or word) and touch 'SET', and it moves to the specified device menu.
④	Displays word device type (Signed Word: decimal with sign, Unsigned Word: decimal without sign) when the device type is selected as word.

Ex.

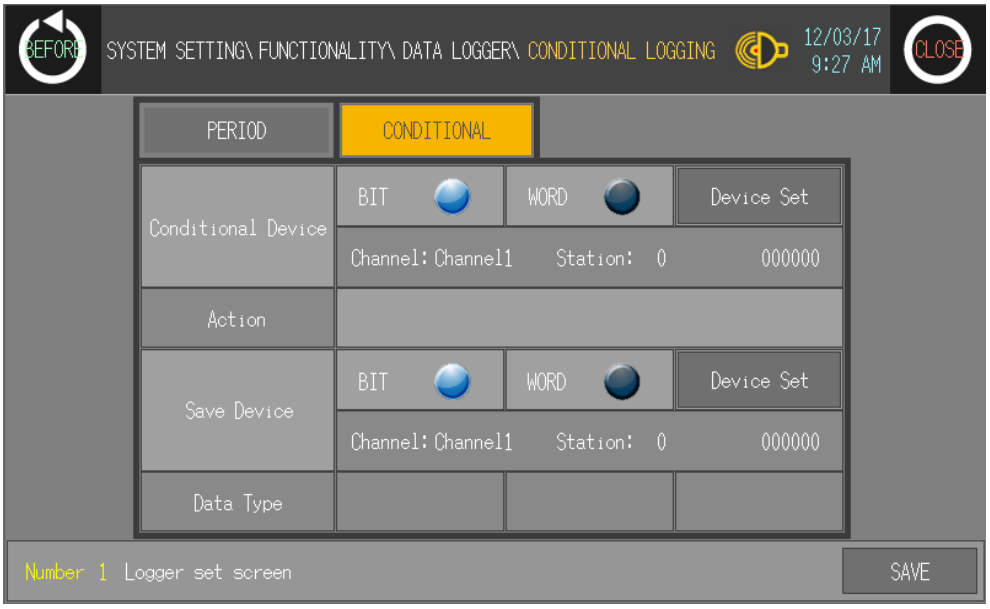
The following example is that conditional device is UB56 (Action conditions: Rising edge) and save device is UW6. When conditional device is On, the designated device value as save device is saved at file.



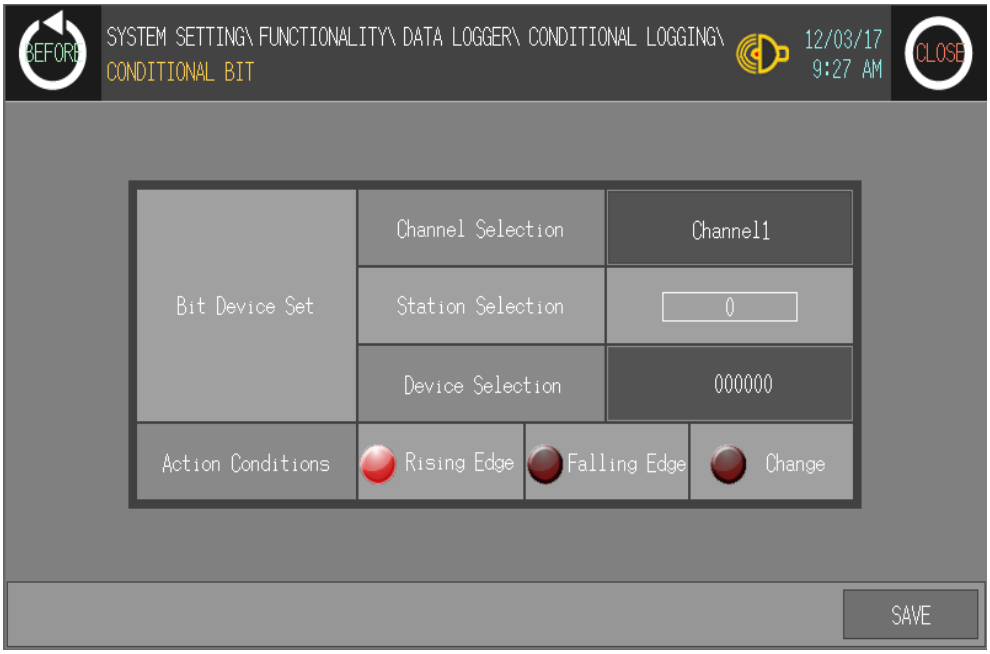
Conditional device ON
(Action conditions: Rising edge)



1st Touch ‘CONDITIONAL’ and moves to ‘CONDITIONAL LOGGING’ set screen.



2nd Input conditional device. To set UB56 (action condition: rising edge), as example, select ‘BIT’ and touch ‘Device Set’.



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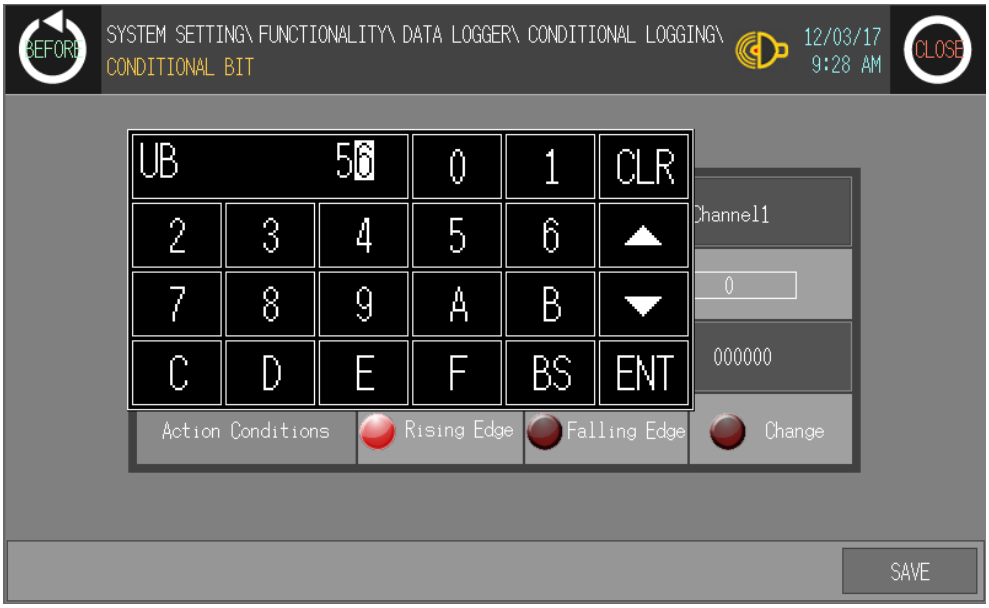
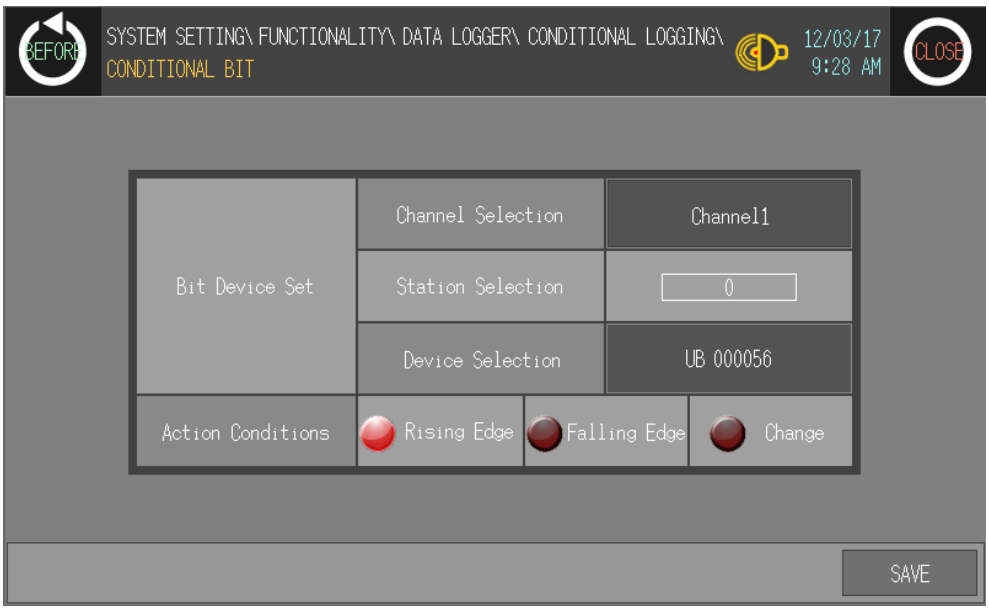
3rd Touch ‘Number (000000)’ to select device and input key pad appears. Enter ‘UB56’.





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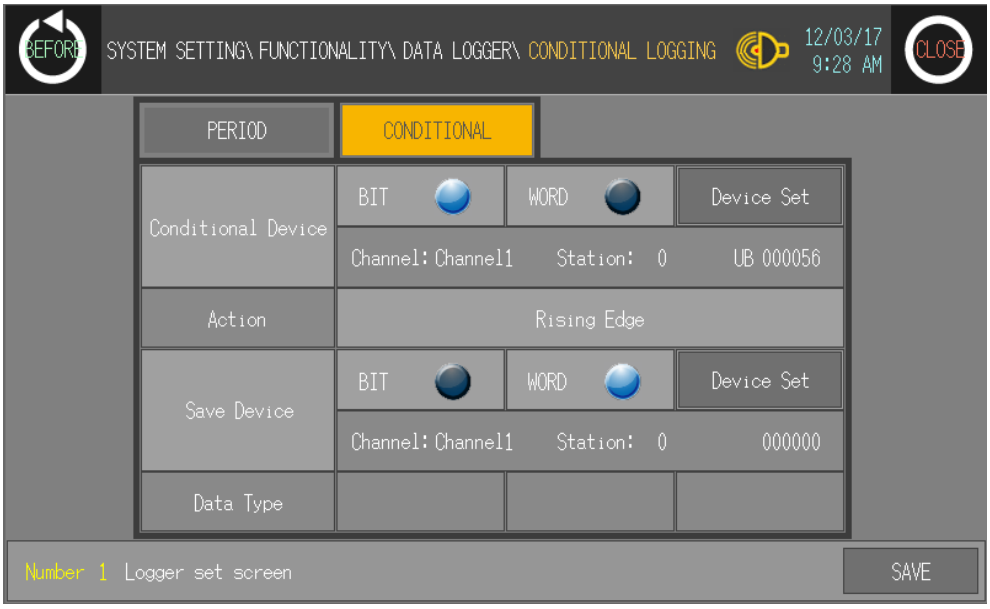
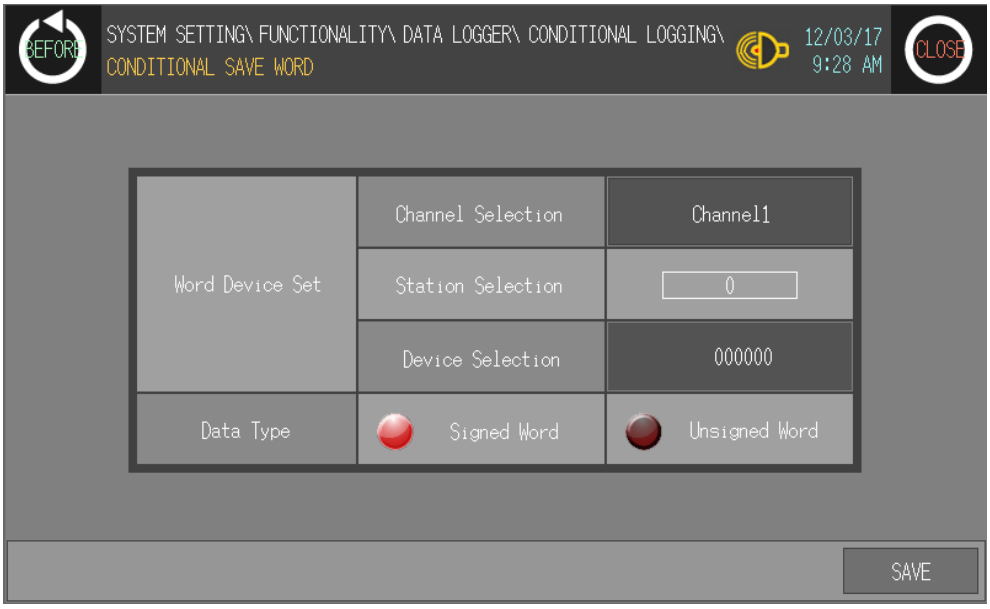
4th Designate save device. Select ‘WORD’ to set save devcie and touch ‘Device Set’.



5th Touch ‘Number (00000)’ of Device Selection at Word Device Set for save device and input key pad appears.



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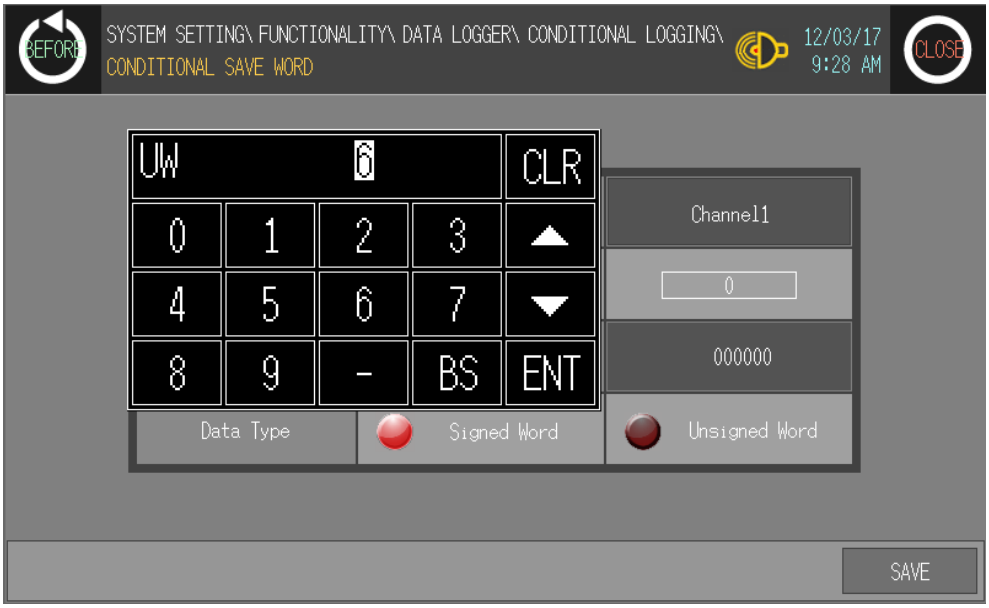
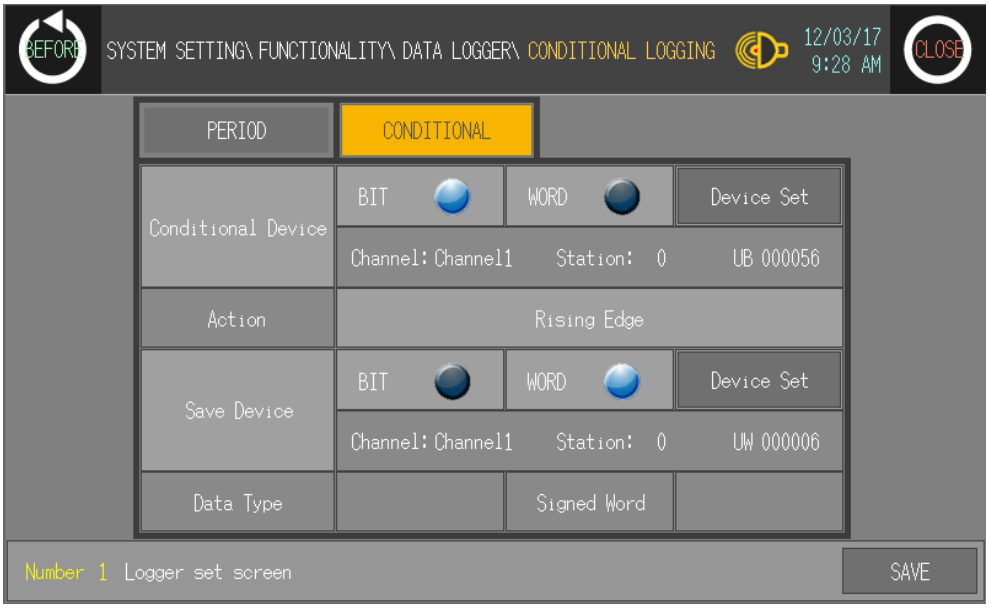
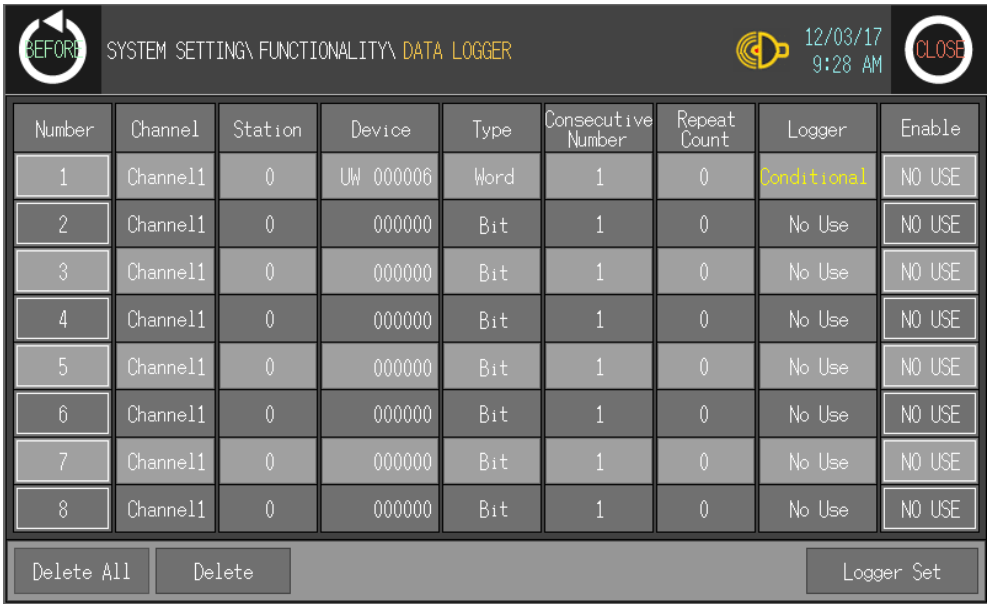
6th Enter ‘UW6’ and save this set.





7th Set ‘USE’ of Enable for logger condition, data logger function operates.



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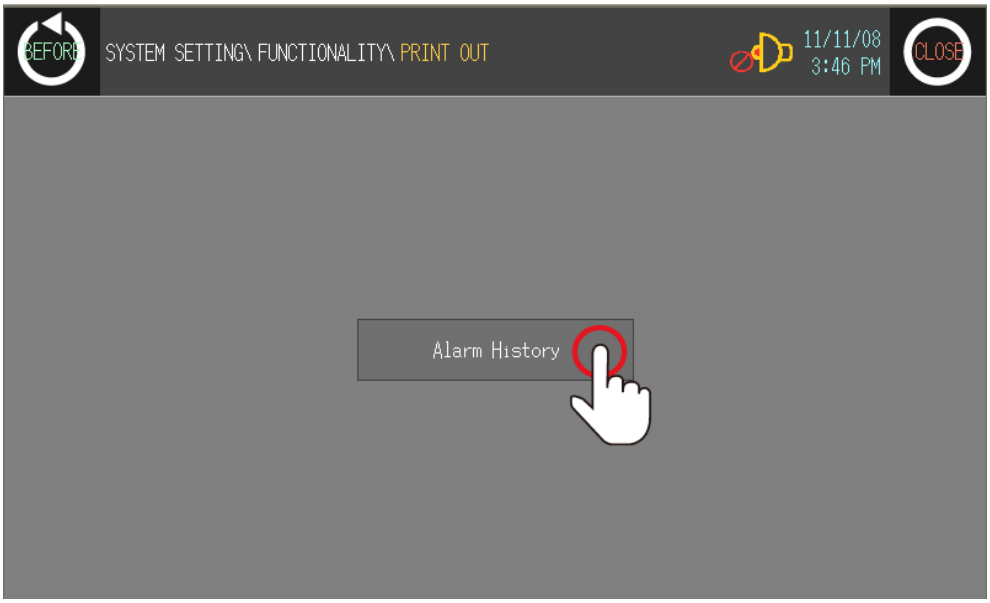
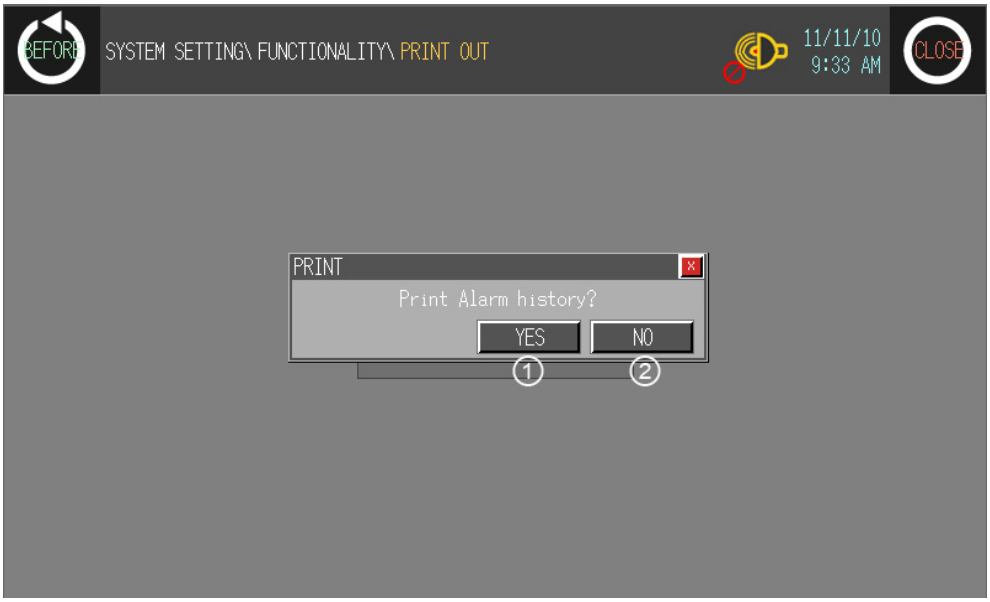
6.5.4 Print out

This menu is for printing alarm history which is listed during GP operation by external printer.



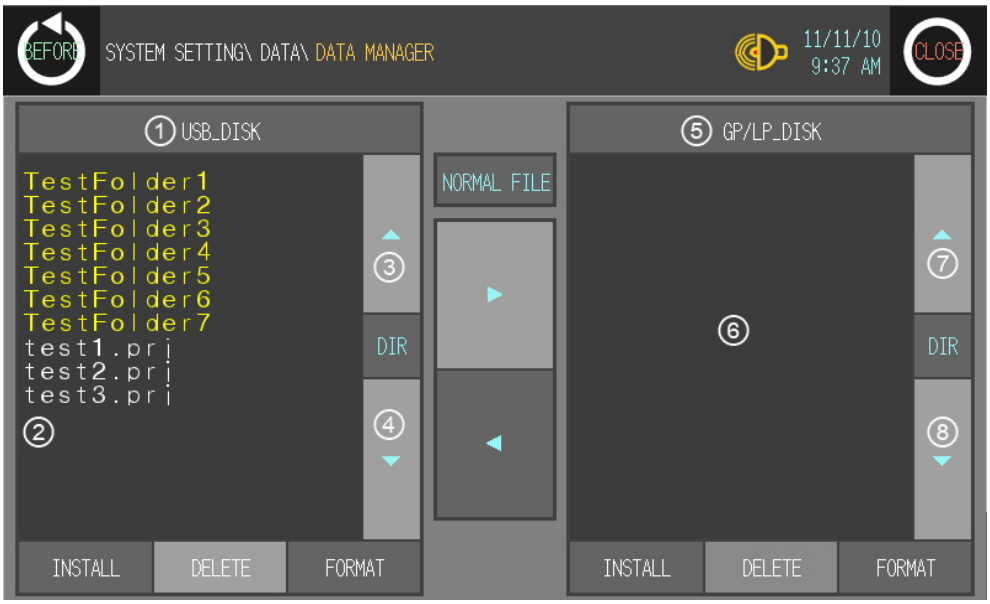


No.	Function and operation
①	Prints alarm history with touching. Printer port setting: From [Environment]-[Serial Communication] of system setting menu, set 'PRINTER'
②	Cancels printing alarm history.

6.6 Data

6.6.1 Data manager

You can check file list of GP/LP_ DISK of USB_DISK connected GP-S070.
Selected file with touching is able to install, delete, or format.



No.	Function and operation
①, ⑤	Select USB DISK or GP/LP DISK.
②, ⑥	Displays inner files of selected DISK.
③, ④ ⑦, ⑧	If inner files of selected DISK are out of list box, touch ▲, ▼ to move the list up and down.

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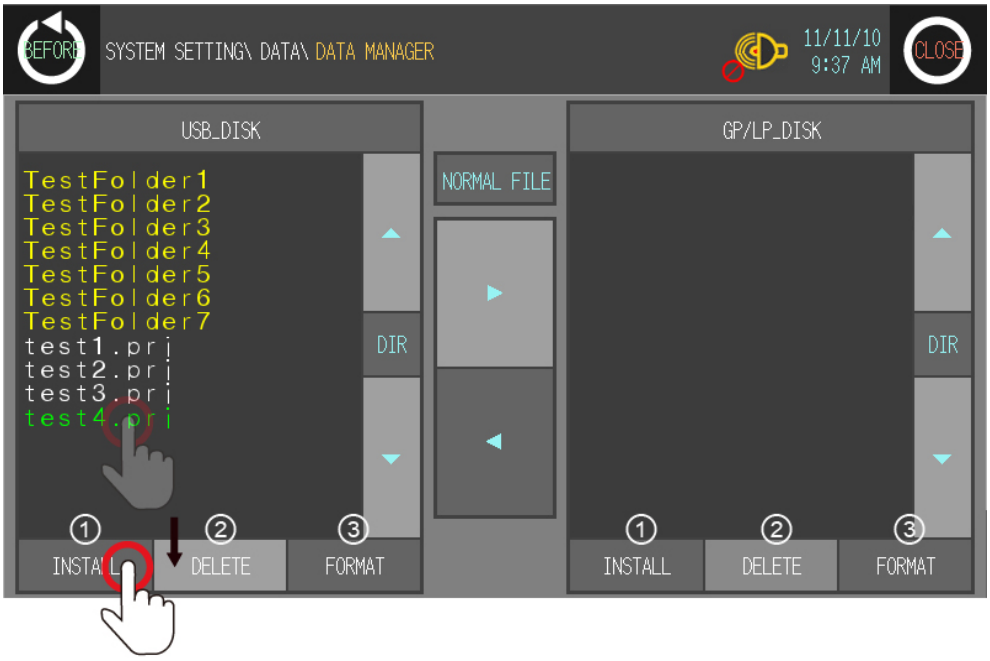
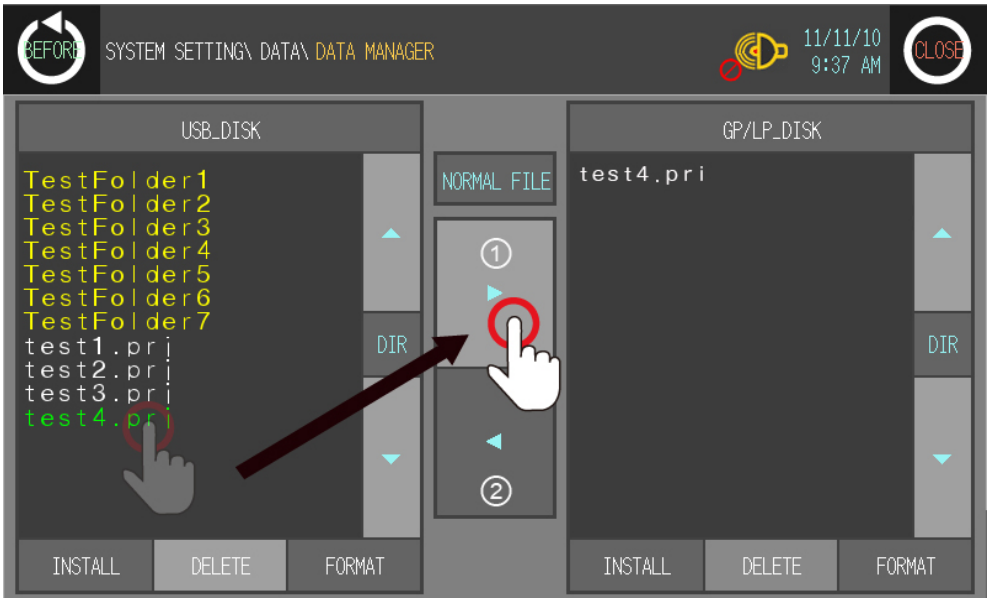
6.6.1.1 INSTALL, DELETE, FORMAT



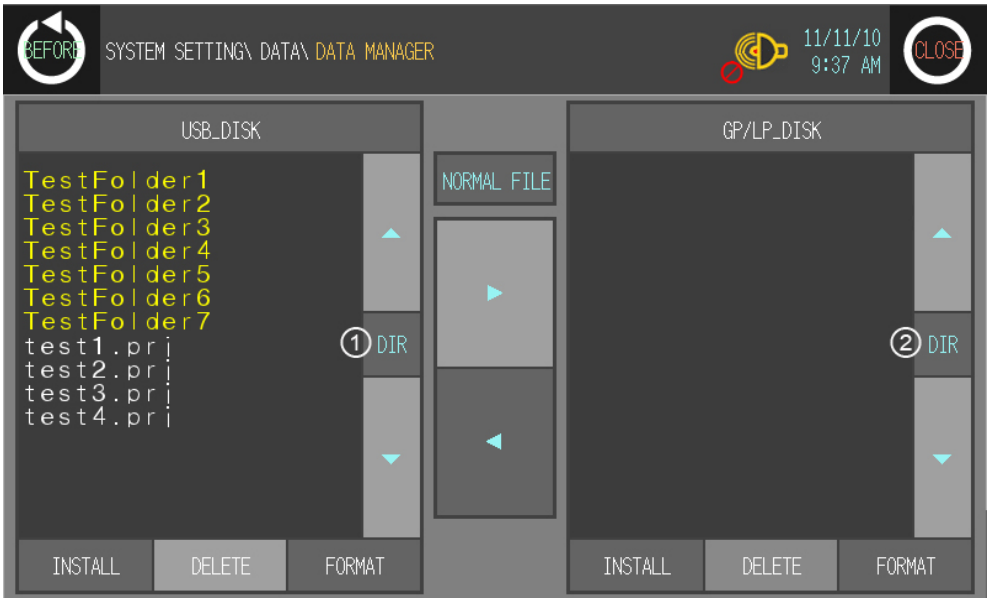
No.	Function and operation
①	Check the designed screen at user screen with touching 'INSTALL' when connecting USB memory stick which has project file designed from GP Editor.
②	Deletes selected data.
③	Formats selected DISK.

6.6.1.2 File copy



No.	Function and operation
①, ②	It is able to copy selected file to GP/LP_DISK or USB_DISK.

6.6.1.3 Directory movement



No.	Function and operation
①, ②	Moves top folder or sub folder of folder list in disk. (Moveable top folder is displayed as '..' with yellow, and sub folder is displayed as 'folder title' with yellow.) Touch the desired folder and touch 'DIR' button to move.

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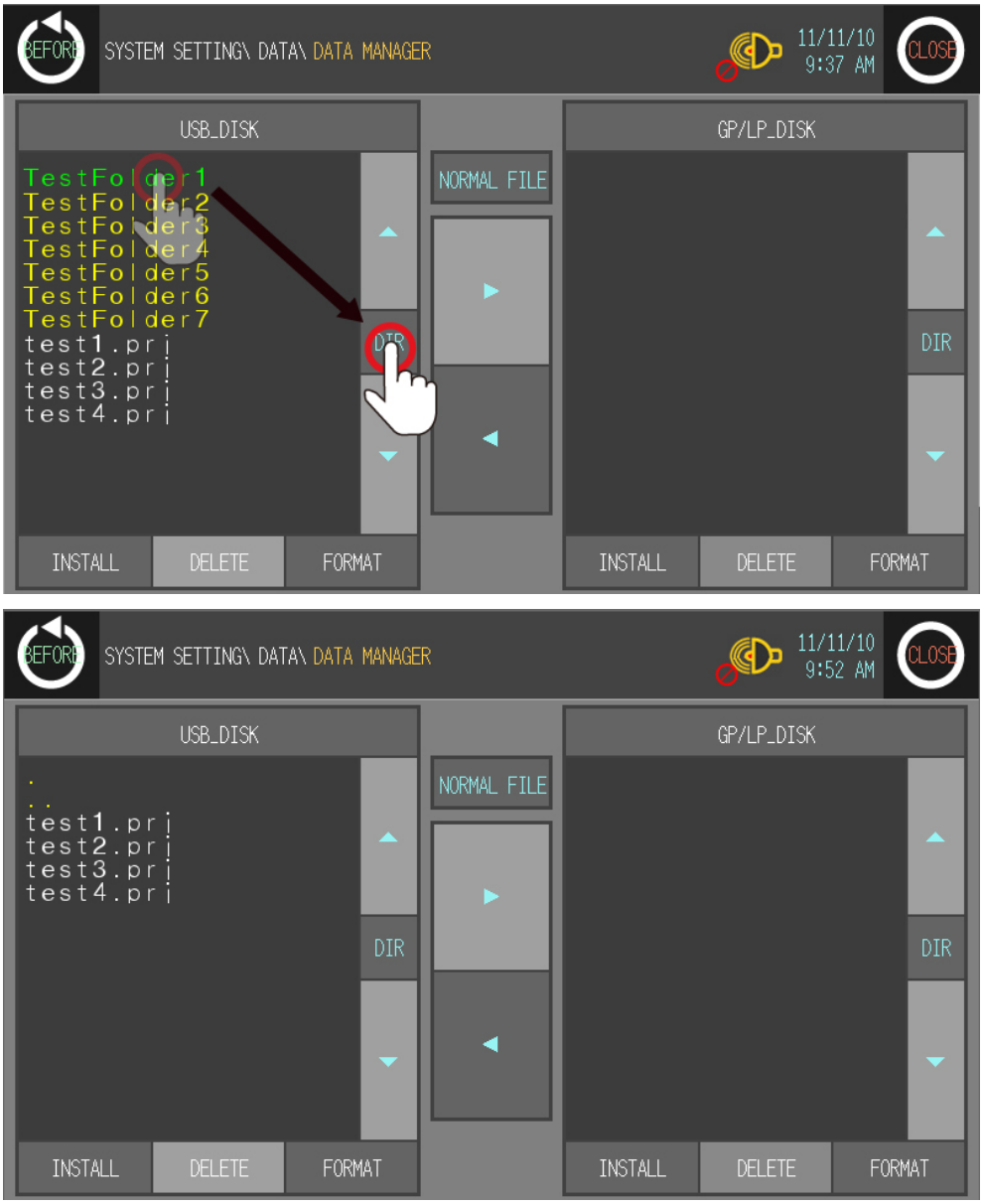
Ex.

For moving sub directory, touch ‘folder title’ with yellow and touch ‘DIR’ button to move.



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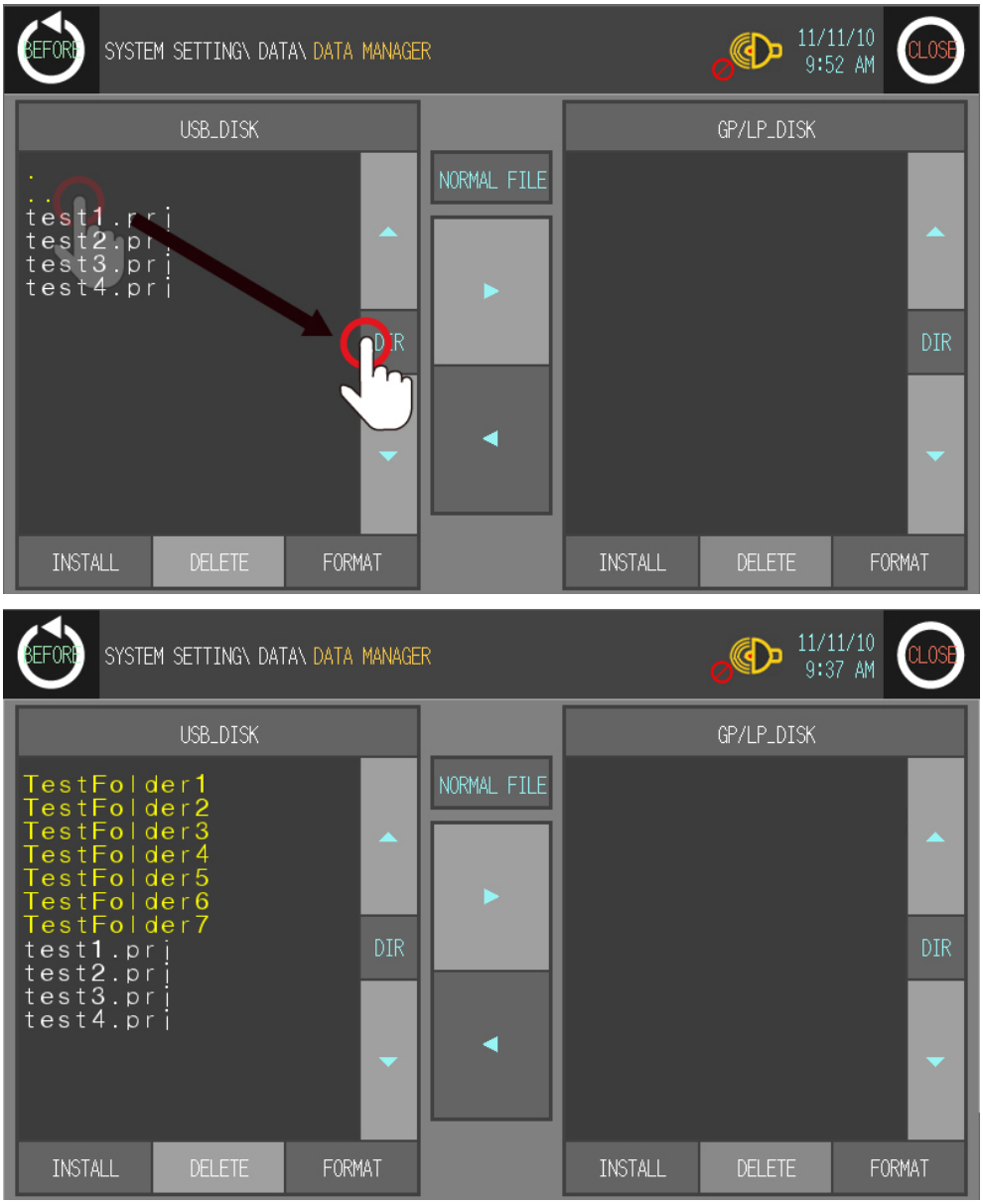
For moving top directory, touch '..' directory path with yellow and touch 'DIR' button to move.



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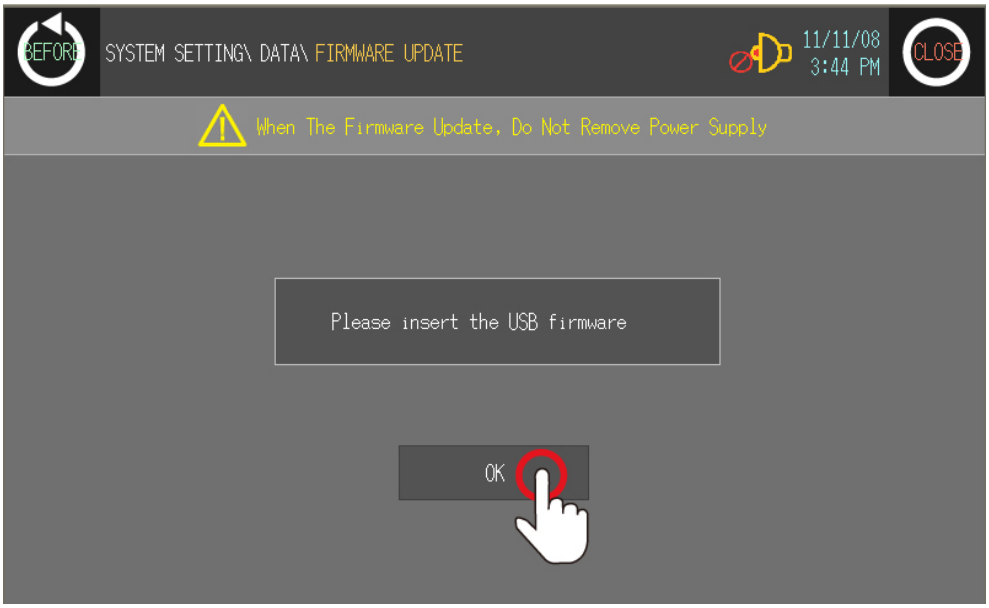
6.6.2 Firmware update

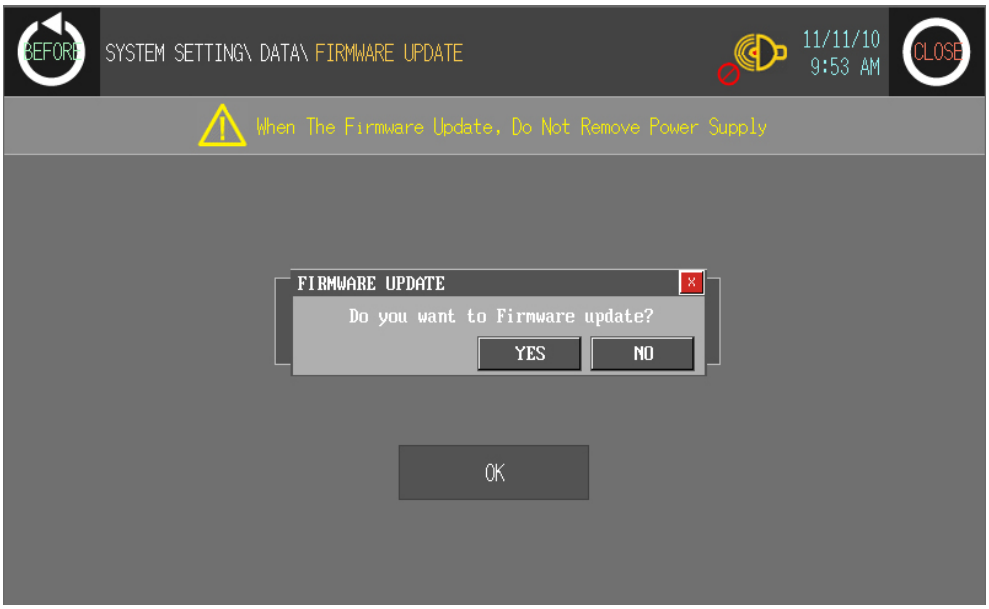
You can update firmware periodically if necessary.

1st For update firmware, visit our homepage (www.autonics.com) and download GP-S070 firmware file properly. Save this file to USB DISK.(Please format USB DISK before saving this file.)

2nd Connect GP-S070 and USB DISK and enter [Data]–[Firmware update] of system setting menu. Touch 'OK' to start firmware update.



3rd Checking firmware update dialog box appears. Touch 'YES' to start firmware update.



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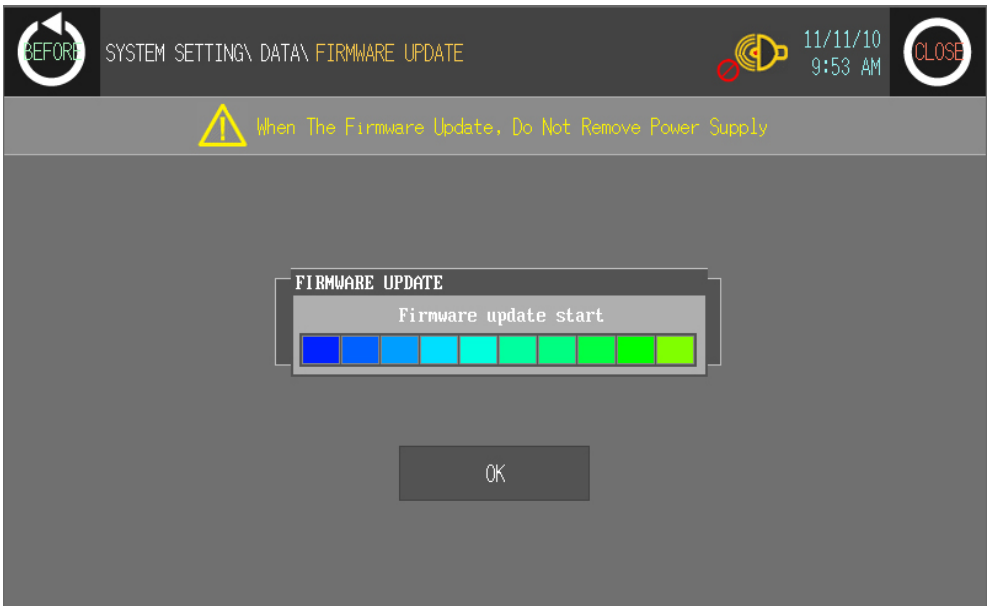
4th Firmware update progress is displayed as bar graph type.
If update completes, restart GP-S070.



Caution

Do not power OFF to GP-S070 during firmware update.

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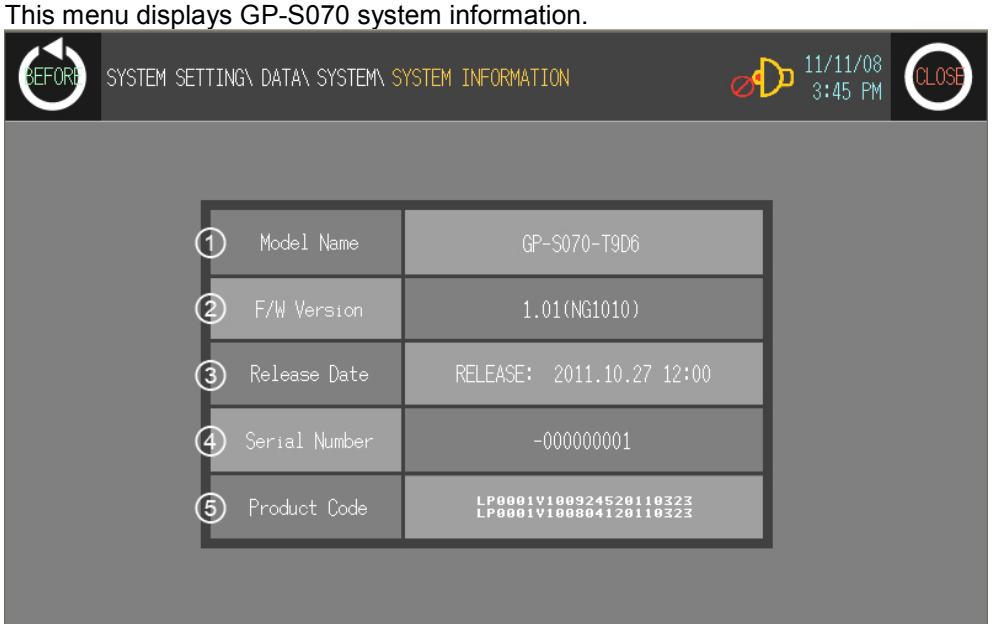
6.6.3 System

6.6.3.1 System information

This menu displays GP-S070 system information.



No.	Function and operation
①	Displays detail model name.
②	Displays firmware version
③	Displays update date of firmware version.
④	Displays serial number.
⑤	Product code for recognizing product information.

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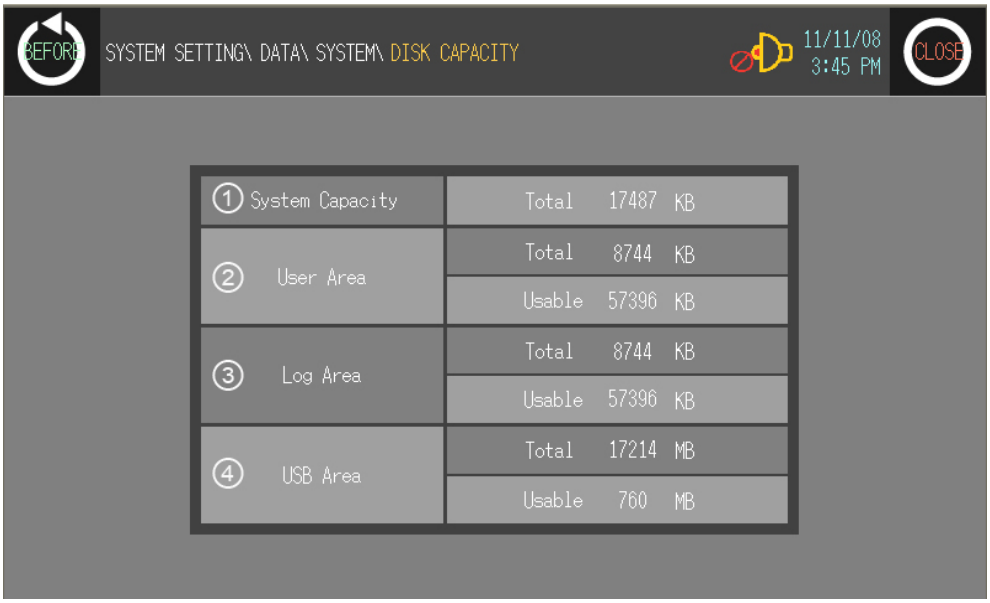
6.6.3.2 Disk capacity

This menu displays total disk capacity and available capacity of GP-S070.



No.	Function and operation
①	Displays total system disk capacity.
②	Displays total and usable user disk area.
③	Displays total and usable log disk area.
④	Displays total and usable USB disk area connected GP-S070

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6.6.4 User screen

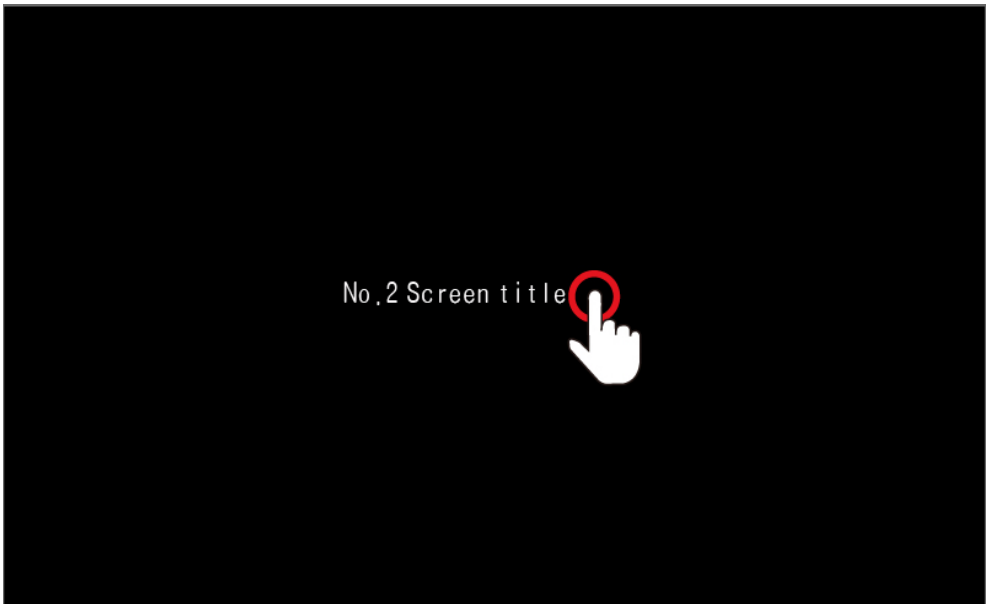
6.6.4.1 Base screen

This menu displays screen number and screen title list for base screen. Touch the desired screen, you can check designed status of the screen.

- Screen check and operation

1st Touch the desired screen line to check and it moves the selected screen to check.

2nd At moved screen, touch any point to return to the previous.



Caution

By checking base screen from the list, the display object of the selected base screen operates normally but the input object of the selected screen does not operate.

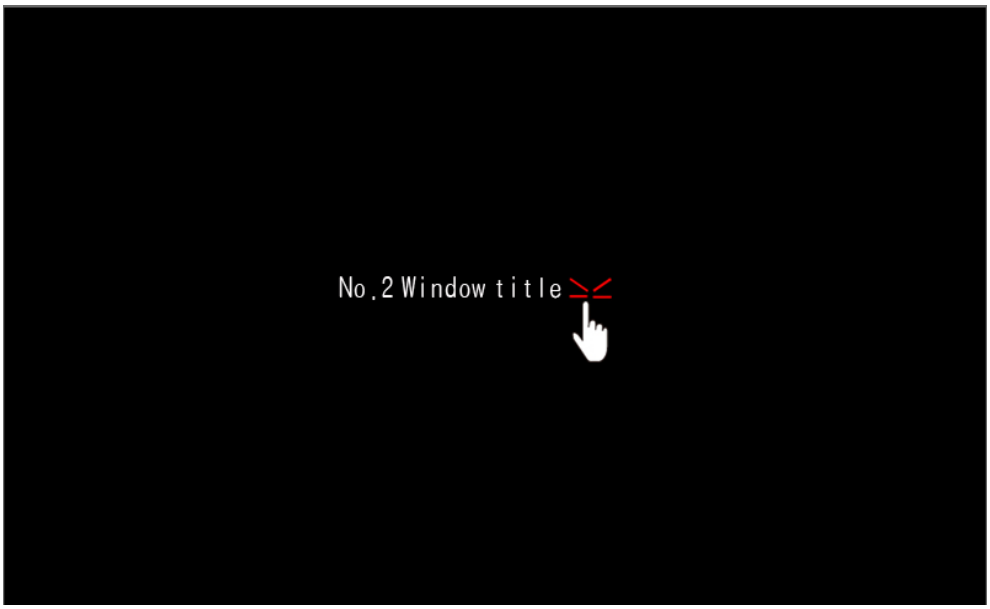
6.6.4.2 Window screen

This menu displays screen number and screen title list for window screen. Screen check method is same as base screen's .

- Screen check and operation

1st Touch the desired screen line to check and it moves the selected screen to check.

2nd At moved screen, touch any point to return to the previous.



Caution

Window screen is designed up to 500 from GP Editor but actial downloadable window screens are up to 3 to GP-S070.

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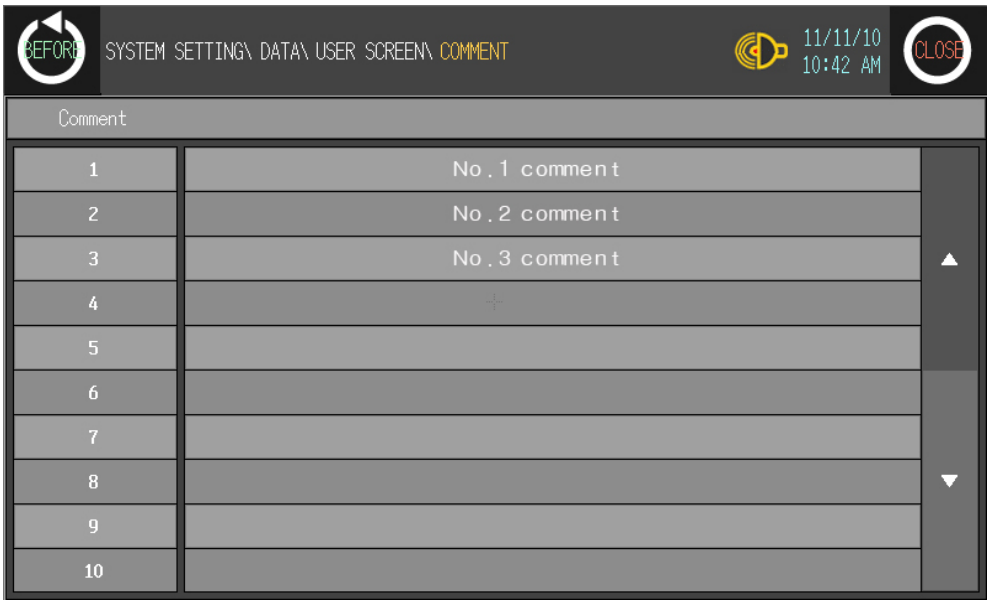
6.6.4.3 Comment

This menu displays downlowaded user-defined comment.

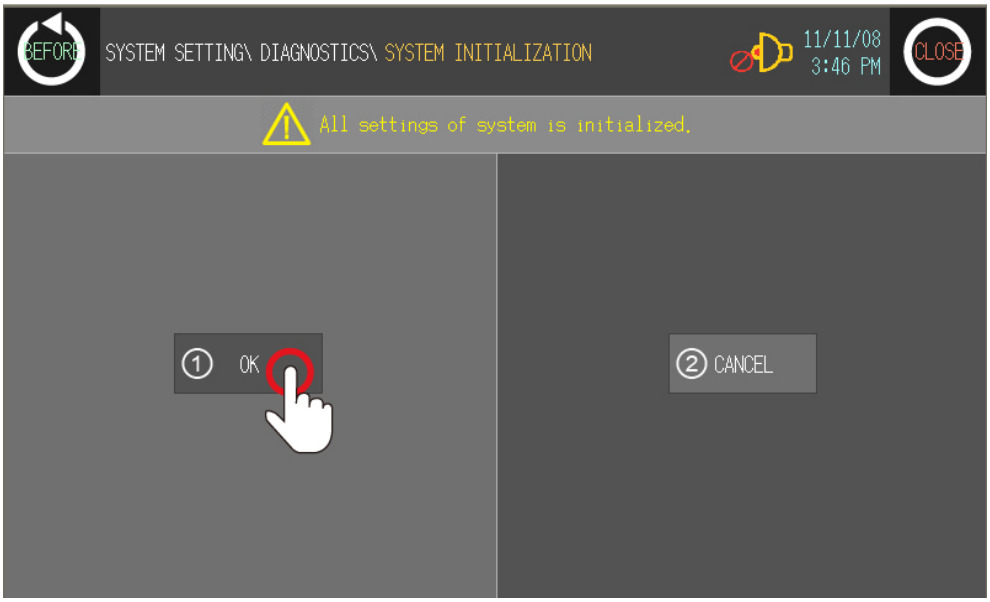


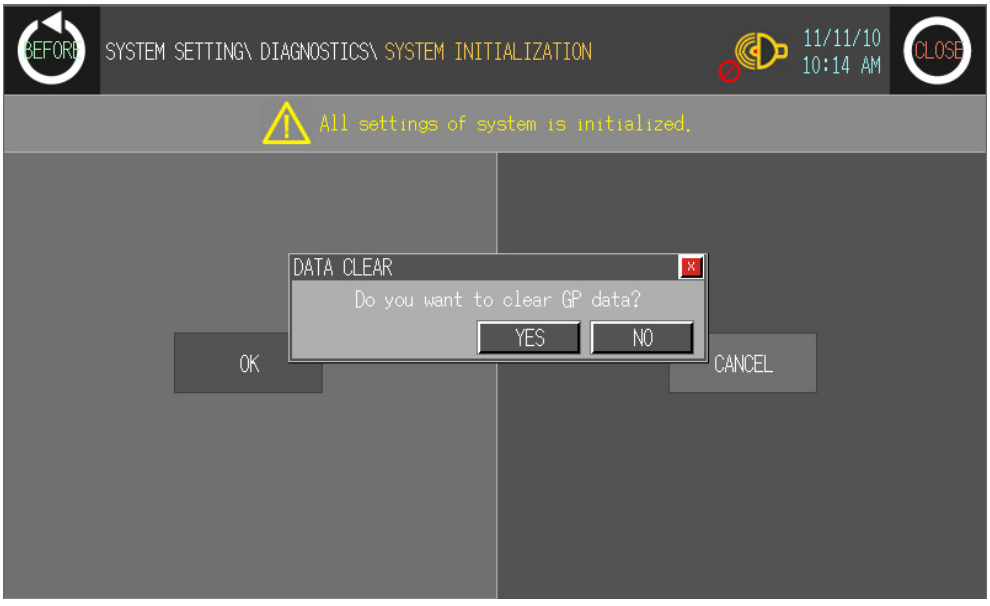
6.7 Diagnostics

6.7.1 System initialization

This menu is for initializing user data and setting values of GP-S070.
Be sure that once deleted data cannot recover.

Especially for saving alarm history contents, by GP Editor upload alarm history and alarm frequency with checking 'Alarm History (Alarmhistory.txt)' and 'Alarm Frequency (Alarmfrequency.txt)' in tag box of 'Monitor Data Upload' dialog box from [Communication]–[Upload] menu to save txt files. If GP-S070 and serial printer is connected, you can print alarm history in [Functionality]–[Print Out] of system setting menu.





No.	Function and operation
①	Initializes every data of screens of GP-S070, part, comment, and common configuration information. After completing initializing, user screen displays 'USER SCREEN IS NOT

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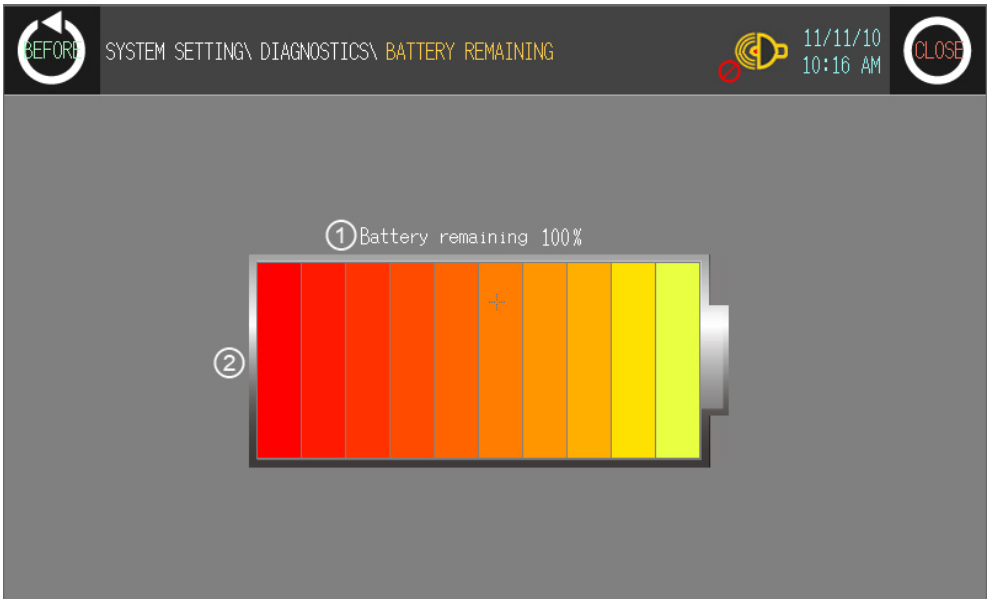
No.	Function and operation
	FOUND' message.
②	Exits this menu without initializing data.

Caution

During downloading user-designed data and ladder data, if download is stop in the middle of progressing by power and cable statue, initialize the data of GP and download it again.

6.7.2 Battery remaining

You can check battery remaining from [Diagnostics]-[Battery remainaing] of system setting menu in GP-S070. Please replace battery if battery remaining is below 5%.



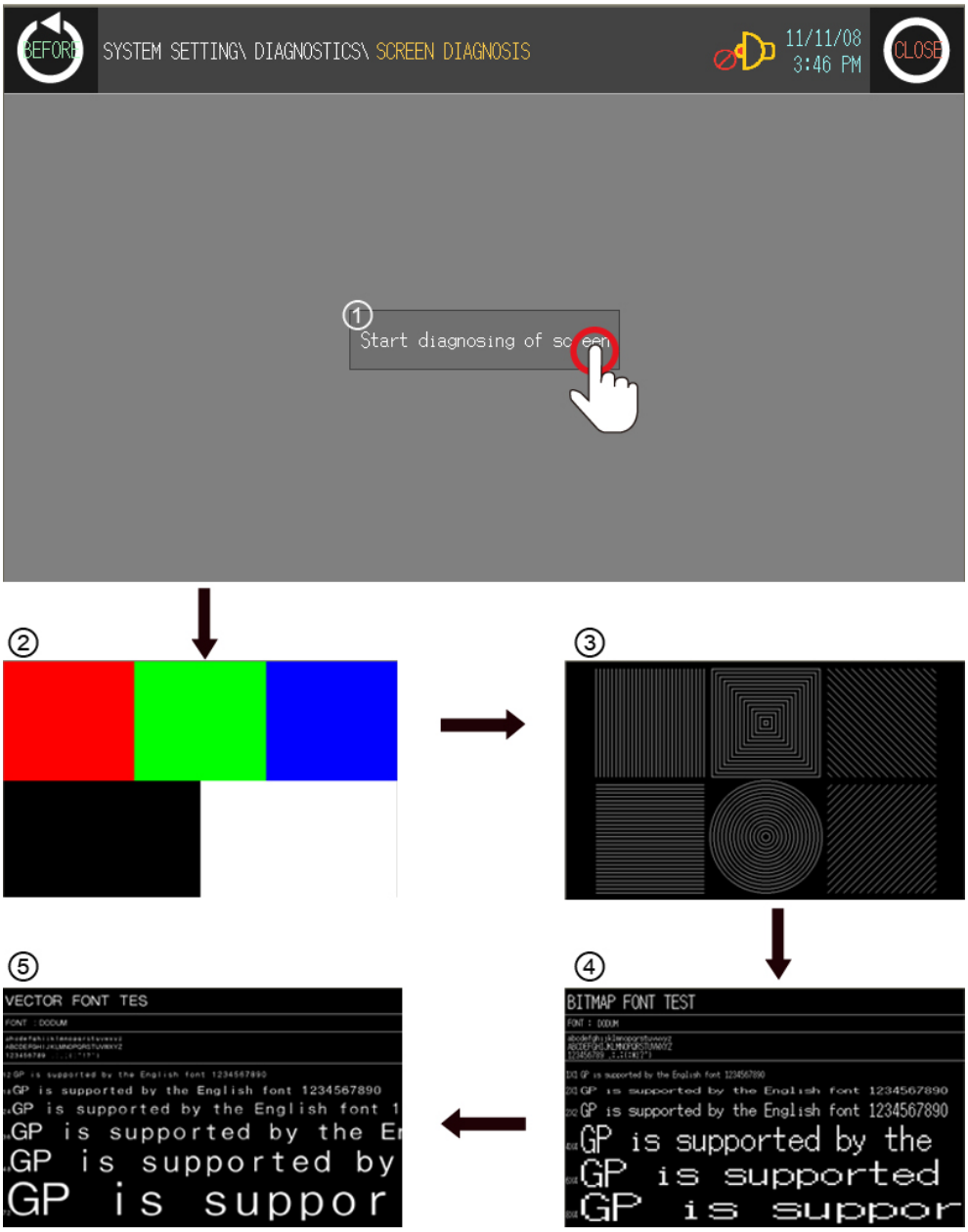
No.	Function and operation
①	Displays battery remaining with 0 to 100% as numerical percentage.
②	Displays battery remaining with bar graph

Caution

Please contact our service center to replace battery.
It may cause an explosion or a fire when using improper battery.

6.7.3 Screen diagnosis

This menu is for user to diagnose LCD screen and font of GP-S070.



No.	Description	Operation with touching
①	Touch this for starting screen diagnosis	①Screen diagnosis menu → ②Check LCD color and bad pixel of GP
②	You can check LCD color and bad pixel of GP.	②LCD color and bad pixel of GP check → ③Displays LCD screen pattern of GP
③	You can check LCD screen pattern of GP.	③Displays LCD screen pattern of GP → ④Check the set bitmap font of GP

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No.	Description	Operation with touching
④	You can check the set bitmap font of GP.	④Check the set bitmap font of GP → ⑤Check the set vector font of GP
⑤	You can check the set vector font of GP.	⑤Check the set vector font of GP → ①Screen diagnosis menu

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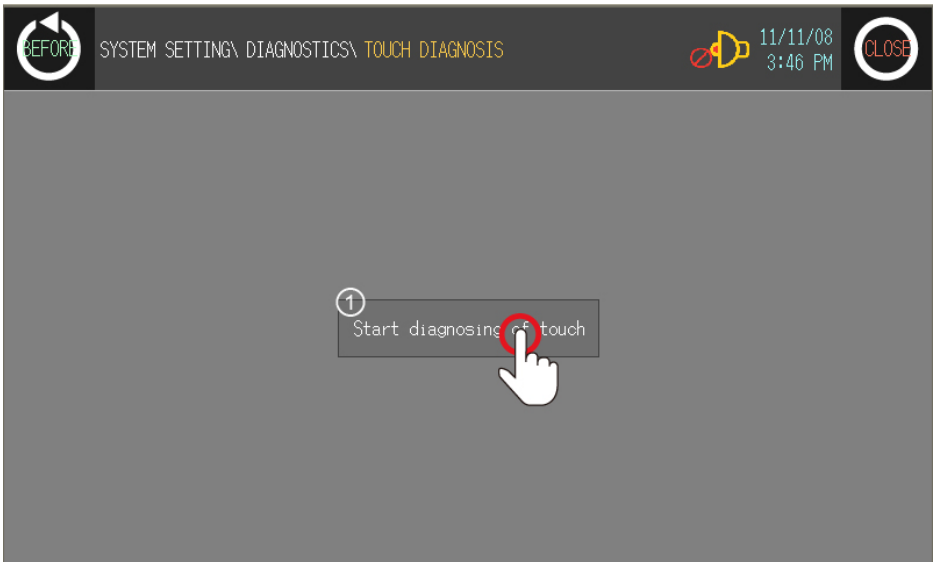
6.7.4 Touch diagnosis

This menu is for diagnosing touch and minimizing touch errors.



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No.	Function and operation
①	Touch this, it moves diagnostics screen and starts diagnosing touch.
②	First cross reference point of diagnosis is activated at left-upper based on the screen. Only when you touch within the diagnosis point, next touch diagnosis point is activated in order. Based on the screen, touch diagnosis points are activated in order as left-upper → left-lower → right-upper → right-left side. If you touch outside of the diagnosis point, error message appears. Touch 'RESET' and diagnose touch again.
③	Returns to previous screen.
④	Re-starts touch diagnosis.
⑤	When touch diagnosis is completed, saving message for diagnosis value appears.

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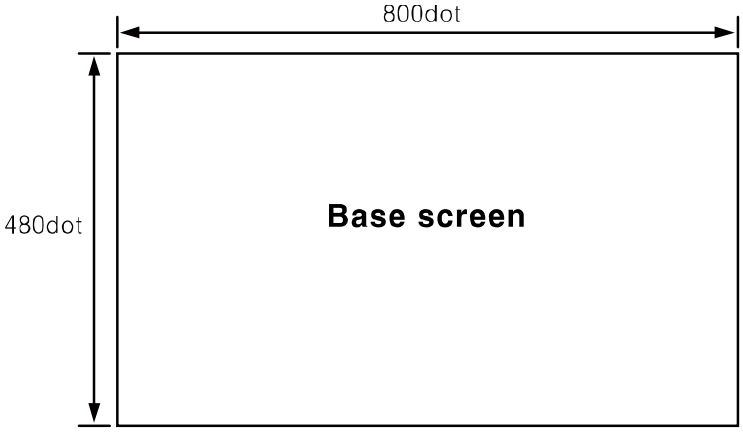
7 User Screen

User screen is a base or window screen designed with GP Editor.

7.1 Screen specification

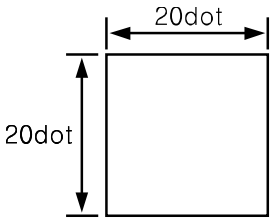
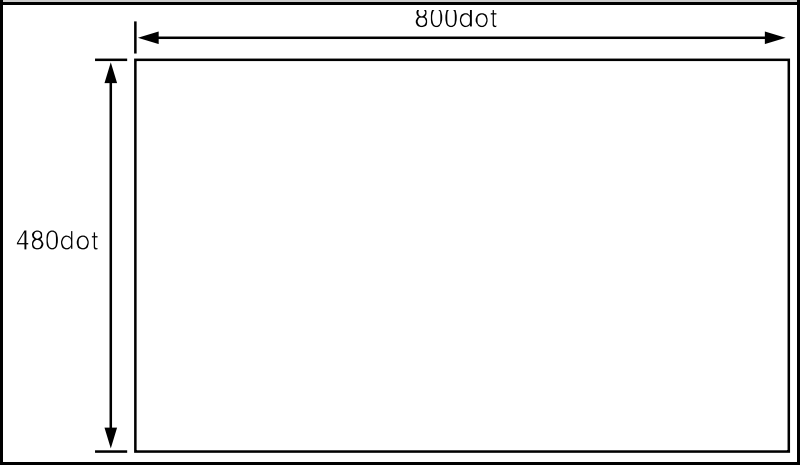
(1) Base screen size

Base screen size is 800X480dots as entire area of the screen.



(2) Window screen size

Window screen size is min. 20X20dots to max. 800X480dots.
You can designate window screen size and it is position in GP Editor, and also assign individual screen number for window screen as base screen number.

Minimum size	Maximum size
	

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(3) Screen position

Content	Base screen	Window screen
Start position of screen (left-upper point)	(0, 0)	(0, 0) to (779, 459)
End position of screen (right-lower point)	(799, 479)	(19, 19) to (799, 479)
Position by screen type	Base screen size is not changeable and has fixed coordinate value.	If window screen is over maximum size, right-lower point moves automatically to the end point of screen. Therefore, it may different between user-defined position and window screen position.

(4) Screen number and the number of screen

Item	Base screen	Window screen
Screen number	Enable to designate from 1 to 500 range	
The number of designable screen	500	
The number of downloadable screen	500※1	3※2

※1. If designed base screen capacity is over user data area, data transmittion does not operates normally. Please check designed data capacity and download it again.

※2. Designed window screen is for user-defined key pad. In this case, maximum number of downlodable screen to GP is 3.

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7.2 Screen display object

(1) Available display object by screen type

	Base screen	Window screen
Available display object	Line, rectangle, circle, text, bitmap, numeral display, ASCII display,**numeral input**※1**, ASCII input**※1**, clock**, comment list, **alarm history**※1**, alarm list**※1**,** part display, lamp display, line graph, trend graph, bar graph, statistic graph, panel meter, touch key	Line, rectangle, circle, text, bitmap, numeral display, ASCII display clock, comment list part display, lamp display, line graph, trend graph, bar graph, statistic graph, panel meter, touch key

※1. These are displayed only on base screen .

(2) Limit the number of display objects by screen type

Except below some objects, there is no limit the number of displaying for all tags on screen. However, too many objects on a screen may cause reducing monitor speed remarkably.

- Object which can exist only one on a screen

  Alarm history, alarm list with scroll option, trend graph, and line graph

- Object which cannot exist on a screen

  Alarm history, alarm list with scroll option, trend graph and line graph

(3) Limit the number of display objects by project

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

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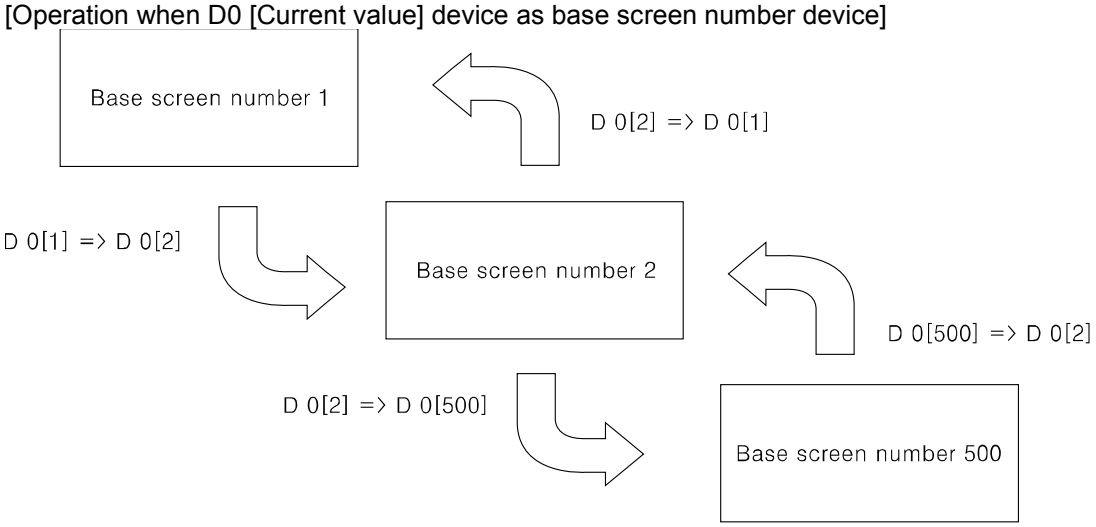
7.3 Screen switching

(1) Screen switching device

The designed user screen in GP Editor has own number and it is downloaded to GP, GP-S070 monitors base screen switching device periodically and decides to be displayed base screen. Screen switching device is designated in GP Editor. It recognizes the current value of device assigned to switching device of base screen as screen number, it is displayed 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'.

[Operation when D0 [Current value] device as base screen number device]



If there is no screen number corresponding the device value of screen data, error message appears as below screen.

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(2) Screen switching methods

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

1) Using touch key for switching screen
   There are switching function of touch key operations as follows.

   - Switching to the fixed screen
   - Switching to the previous screen
   - Switching to the adjacent lower number of screen
   - Switching to the adjacent upper number of screen

2) Numeral input
   It is switched to the appropriate screen inputting screen number in screen switching device using numeral input tag.

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

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

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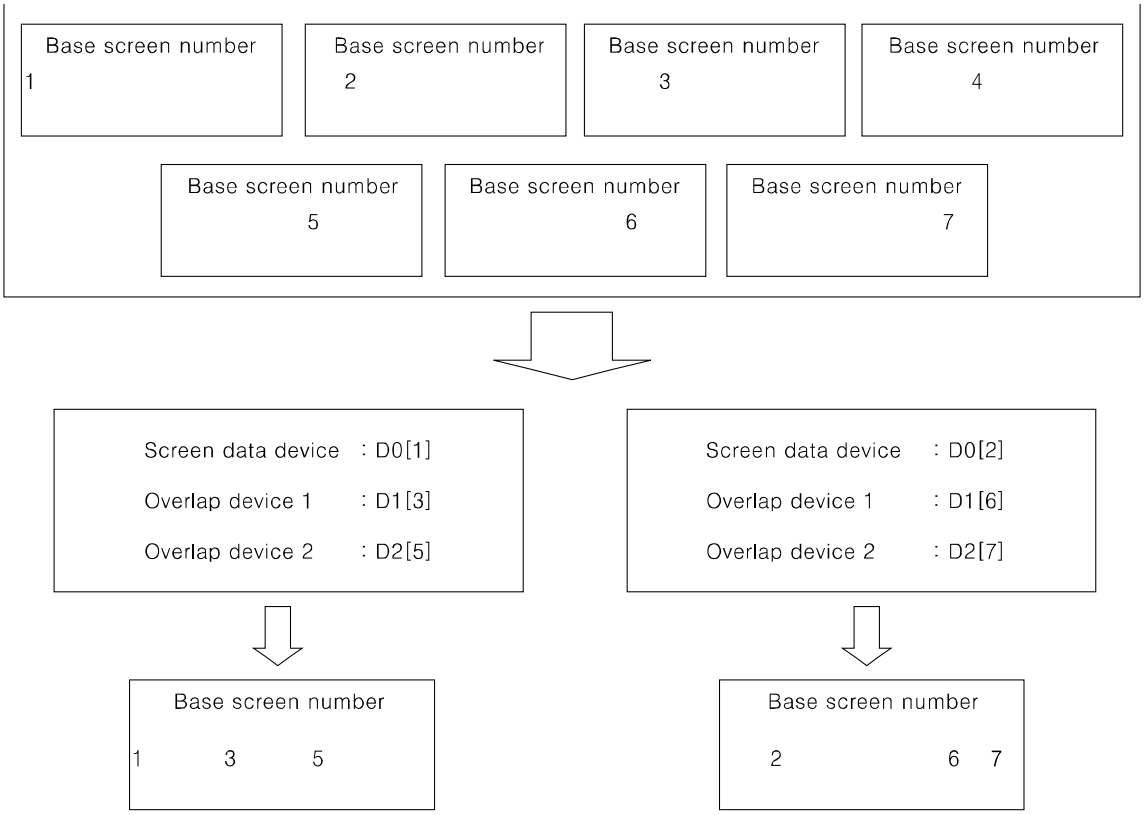
7.4 Overlap window function

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, designate the 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 to 500) or does not exist, the window is not displayed.

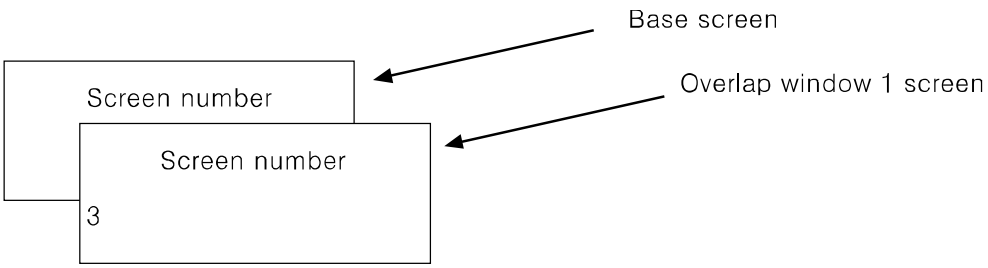


Ex.

It discibes when screen calling device is D 0, overlap window 1 device is D 1, overlap window 2 device is D 2.

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

- In case of D0=1, D1=3, D2=11,



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

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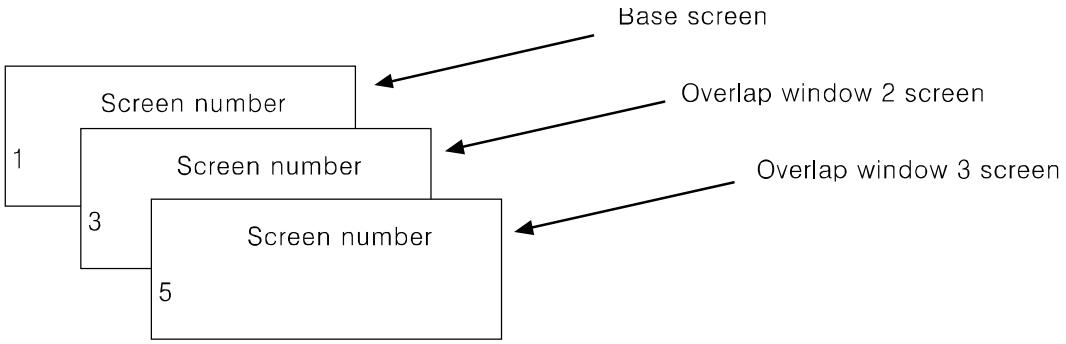
- In case of D0=1, D1=3, D2=5,

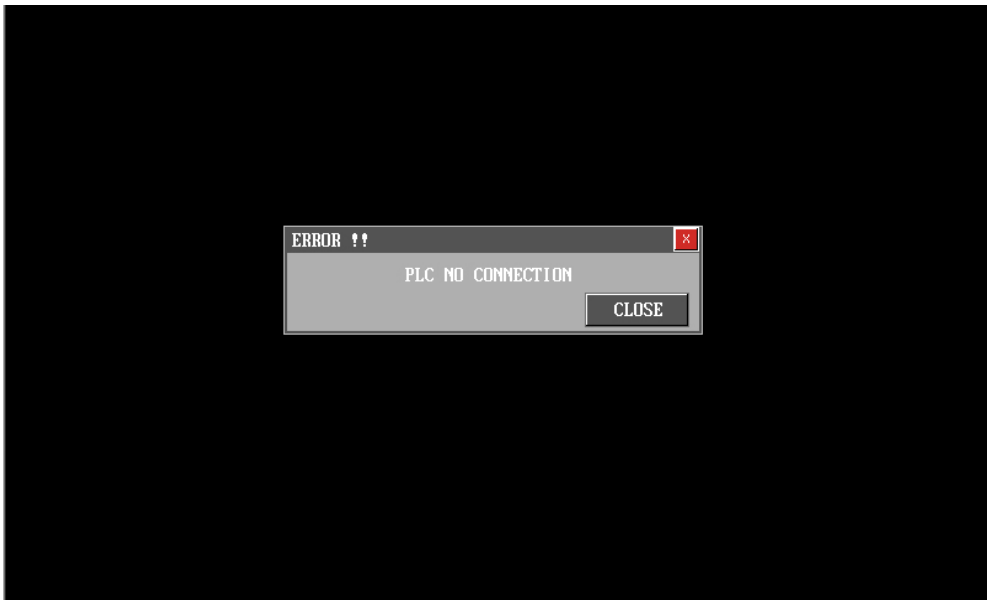


Caution

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.

7.5 Device connection status display

If configurated connect device is not connected or connection has error, at [SYSTEM SETTING] - [Environment] - [Serial Communication] menu displays error message as following screen.



Touch ‘CLOSE’ and error message dialog box disappears. If connection error is not resolved after 5 seconds, error message appears again on the screen.

Caution

Connection error message appers only on user screen.

When the third (CH1), fourth (CH2) bit of system signal 1 device in system information device are ON status, error message for specified connect device appears on the screen.

For further details, refer to ‘GP Editor user manual’.

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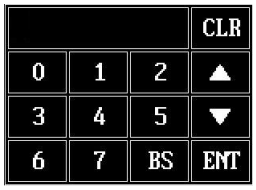
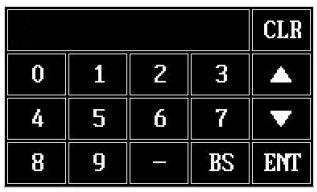
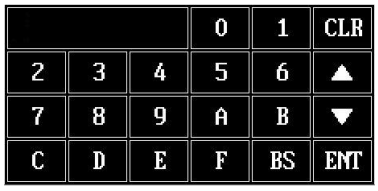
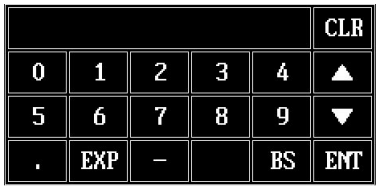
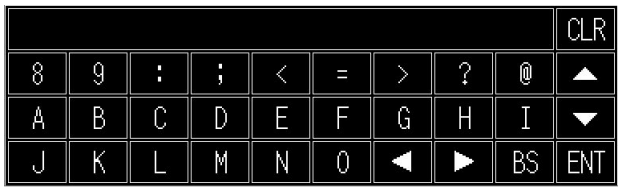
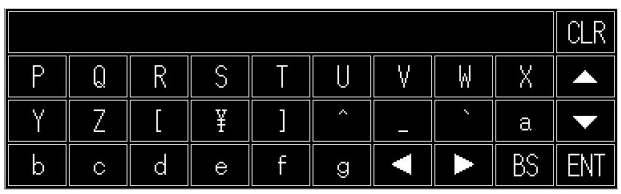
8 System Window

8.1 Key pad type

No.	Type	Key pad screen
1	Binary	
2	Octal	
3	Decimal	
4	Hexadecimal	
5	Real number	
6	ASCII	  

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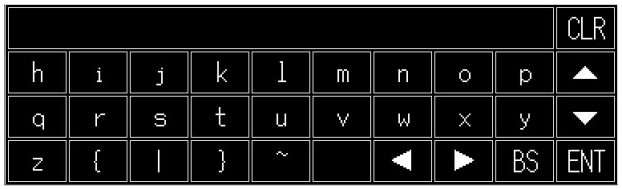
No.	Type	Key pad screen
		

8.2 Key pad organization

KEY	Operation
ENT	Writes or inputs writing value on device.
CLR	Deletes all input value.
BS	Deletes latest input.
▲	Moves to the previous input field in accordance with configuration.
▼	Moves to the next input field in accordance with configuration.
◀※1	Moves to the previous page.
▶※1	Moves to the next page.

※1 Those keys are displayed only for ASCII input key pad.

ENT, CLR, ▲, ▼ key operation of user screen is according to 'Key Action' settings of 'Screen Auxiliary Configuration' dialog box.

Key operation	CLR	ENT	▲	▼
No movement	Holds keypad	Holds keypad	Not operated	Not operated
In order of user ID	Holds keypad	Holds keypad	Moves to previous input tag	Moves to next input tag
Hide cursor and key window	Closes keypad	Closes keypad	Moves to previous input tag	Moves to next input tag

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9 Troubleshooting

This chapter is for possible errors in using GP-S070, for diagnosis method by several errors and for troubleshootings.

9.1 Error and troubleshooting

No	Error description	Troubleshooting (Further details, refer to additional description)
1	There is error for writing, reading, or monitoring program	Troubleshooting in communication connection error

(1) Troubleshooting in communication connection error

Check as following list by number. If error is not solved, please notify this to our service center.

Check item	Error
Do you configure communication configuration (baudrate, data bit, stop bit, and parity) correctly?	
Is the specification and wiring of communication cable rated at our specification? ※1	

For connect GP-S070, external device and PC, you must use the provided cable (sold separately).

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10 Repair and Check

10.1 Change repair component

10.1.1 Battery change

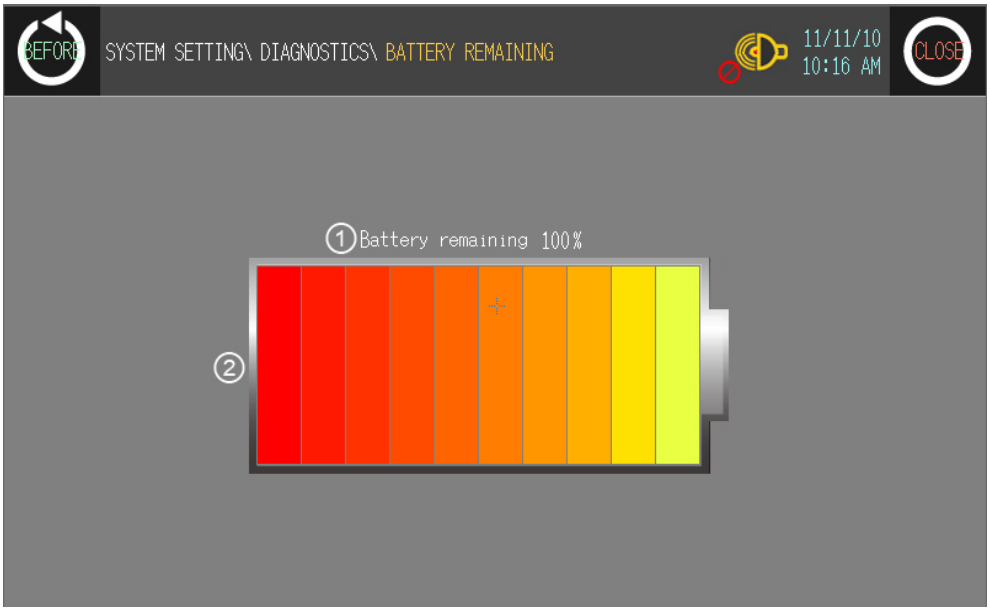
Battery of GP-S070 is available for maintain user-defined setting, data backup of latch area, and time if there is unexpected power failure or it is not able to supply power. You need to change battery regularly.

(1) The status with discharged battery

- When time is not correct.
- After power failure, time is reset.
- After power failure, data of latch area is reset.

(2) Battery residual quantity display

You can check battery remaining from [Diagnostics]-[Battery remaining] of system setting menu in GP-S070. Please replace battery if battery remaining is below 5%.



No.	Function and operation
①	Displays battery remaining with 0 to 100% as numerical percentage.
②	Displays battery remaining with bar graph

(3) Special register for battery

Current backup battery error [F0002C]	Turns ON when battery voltage is below than standard value
Maintain backup battery error [F0002D]	If current backup battery error turns ON at once, it maintains ON status before restarting GP-S070.

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10.2 Check

10.2.1 General check

The following table is for checking by every day/week.

Item	Description	Standard	Troubleshooting
Environment	Temperature	0 to 50℃	Adjust the ambient temperature
	Humidity	35 to 85%RH	Adjust the ambient humidity
	Vibration	No vibration	Establish vibration protection
Mounting status of GP-S070	Check screw loosening for bracket	It should be mounted without a shaken.	Tight the screw.
Connection status of communication cable	Check screw loosening of connection cable	Cable connection part should be tightened.	Tight the screw. Use the standard cable

10.2.2 Periodic check

The following table is for checking by every month.

Item	Description	Standard	Troubleshooting
Power voltage	Measure power voltage	Within power voltage specification	Change supply power
Battery	Battery remaining status	Battery remaining 95%	Change battery
Waterproof rubber ring	Waterproof rubber ring status	Waterproof rubber ring should not be corroded.	Change waterproof rubber ring
Water leak and dusk proof	Water leak and dusk proof status	There is no water leaking, and no dust.	Establish water leak and dust protection
Inflammability gas	Leak inflammability gas	It should not be exposed at inflammability gas.	Establish leak inflammability gas protection

Caution

Caution for periodic check

- For checking power voltage, use the specified measuring device.
- If there are error elements, please write down the error and notify us with details.
- For changing the product, power must be turned OFF.
- For removing dust, foreign substance, use dry cloth without moist, or detergents.

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Dimensions or specifications on this manual are subject to change and some models may be discontinued without notice.

MTG-GPS070U1-V1.3-1801US