

# Chapter 9

## Logic Screen

In this chapter, let's create sample screens in the following practice project files, which are different from ones used in Chapter 1 through Chapter 8.

9.1 "preventive\_maintenance\_practice.prx"

9.2 "eco\_air\_conditioning\_system\_practice.prx"

Please refer to the following reference manuals for details about creation of a logic screen.

Chapter 27	Using Logic Program
Chapter 28	Logic Programming
Chapter 29	Ladder Instructions
Chapter 30	Controlling External I/O

## Chapter 9 Logic Screen

### 9.1 Preventive Maintenance Screen

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### 9.2 Ecological Air Conditioning System Screen

Ecological Air Conditioning System Screen .....	9-27
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# 9.1

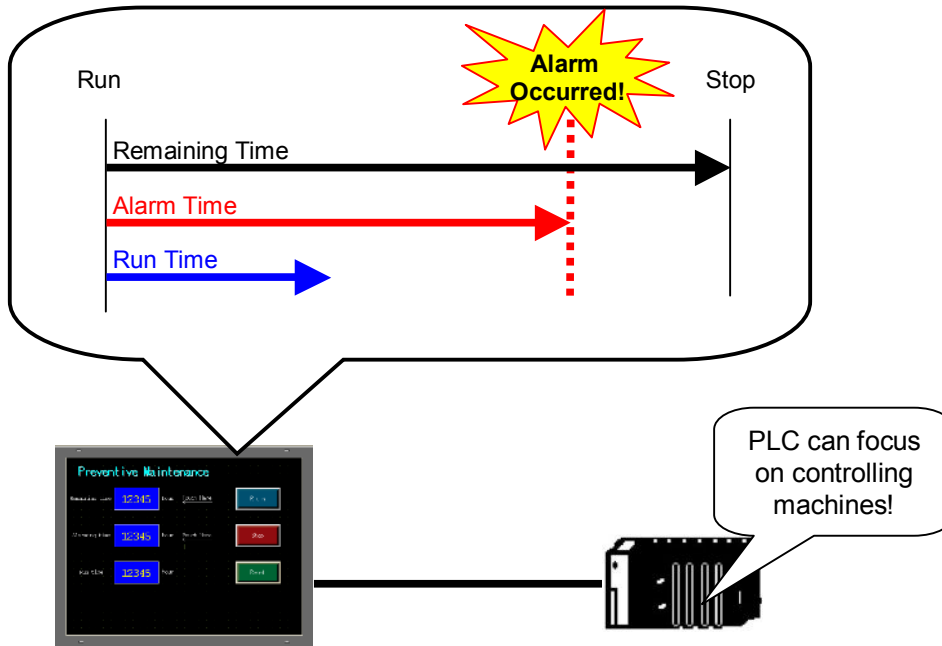
## **Preventive Maintenance Screen**



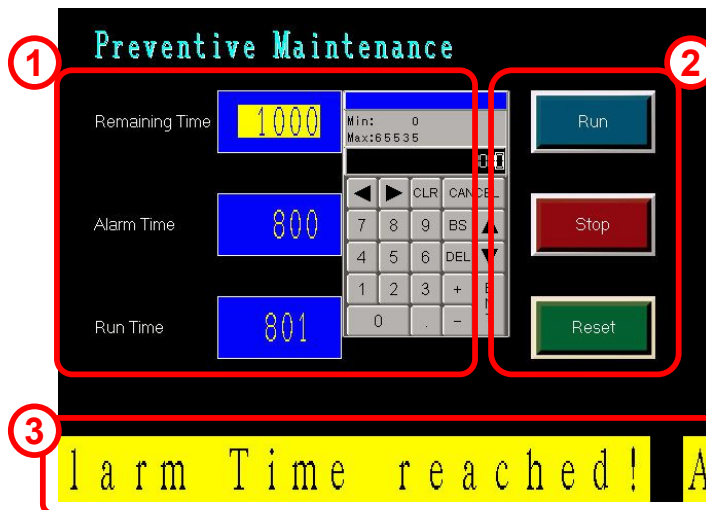
Instruction

## Preventive Maintenance Screen

The preventive maintenance screen is used to monitor the remaining service time of tools or consumable parts using the logic feature of the GP unit without any programs of a device/PLC's. The logic feature allows you to turn on and off contacts using a switch on a GP screen, display or input values of timers or counters.

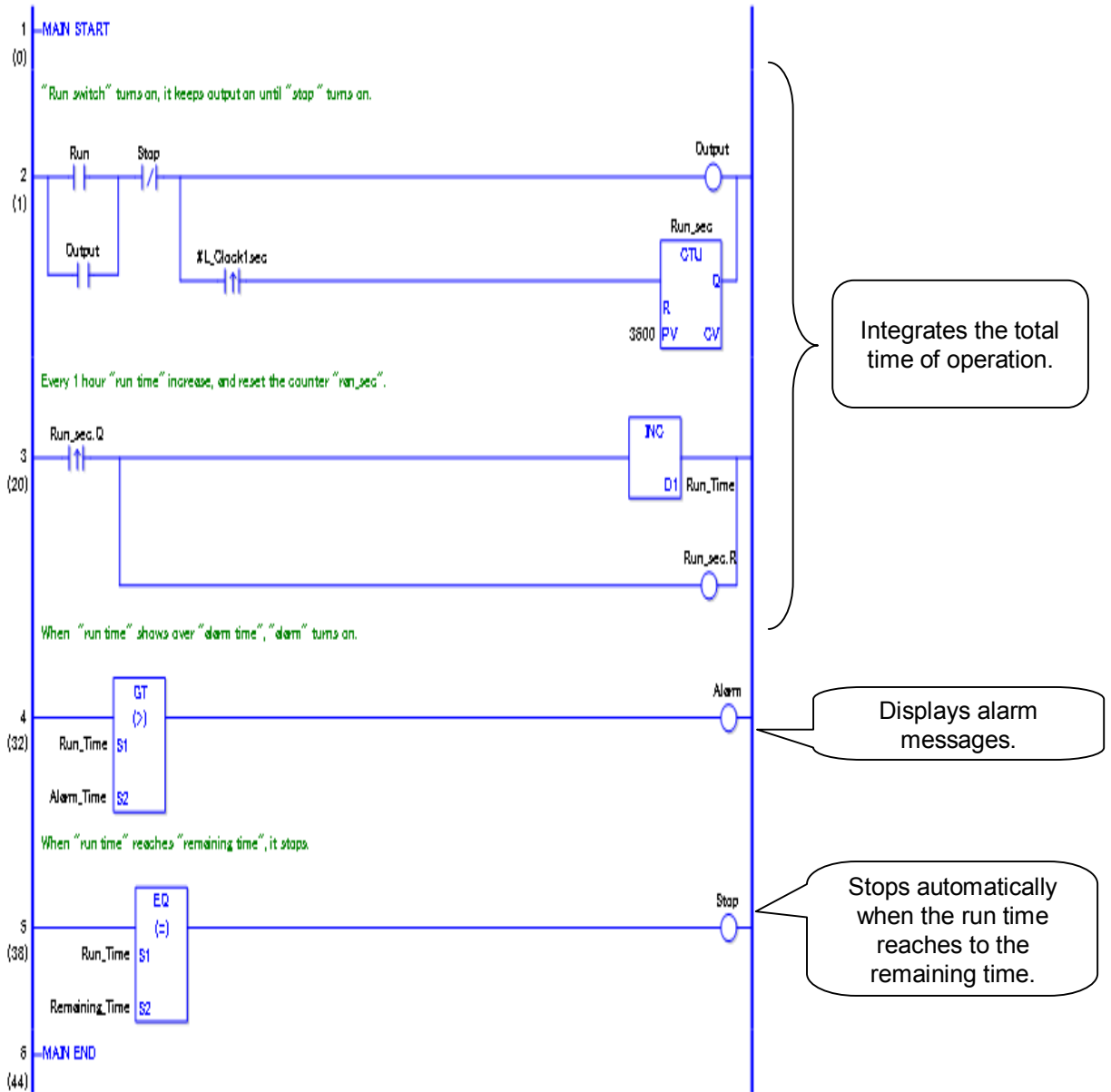


Screen example



- 1) Displays Remaining Time, Alarm Time, and Run Time. You can enter Remaining Time and Alarm Time using a pop-up keypad.
- 2) Runs, stops, and resets by switch operations. The Run switch blinks during running.
- 3) When the Run Time reaches the Alarm Time, a banner message will be displayed.

Completed Logic Screen (MAIN)



Symbol Variables  (See page 9-6.)

Edit Symbol Variables

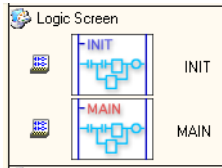
Name	Type	Array	Count	Address	Retentive	Comment
1 Run	Bit Variable	<input type="checkbox"/>			<input type="checkbox"/>	start to run
2 Stop	Bit Variable	<input type="checkbox"/>			<input type="checkbox"/>	stop to output.
3 Output	Bit Variable	<input type="checkbox"/>			<input type="checkbox"/>	during run time, always on.
4 Alarm	Bit Variable	<input type="checkbox"/>			<input type="checkbox"/>	show the scrolling alarm message
5 Run_Time	Integer Variable	<input type="checkbox"/>			<input checked="" type="checkbox"/>	Amount of time(hour)
6 Remaining_Time	Integer Variable	<input type="checkbox"/>			<input checked="" type="checkbox"/>	remaining time.
7 Alarm_Time	Integer Variable	<input type="checkbox"/>			<input checked="" type="checkbox"/>	time for showing alarm message.
8 Run_sec	Counter Variable				<input checked="" type="checkbox"/>	counter:count the second during

The values of these times are saved even if the power is turned off.

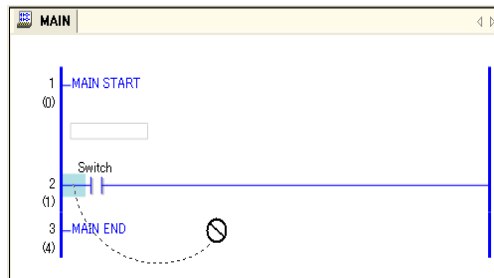
When [Retentive] is checked, the status of data is saved even after the power is turned off and tuned on again.

Procedures to Create Logic Screen and Base Screen

- 1) Create a logic screen.

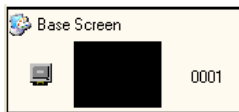


Open Logic Screen from the Screen List window in Work Space.

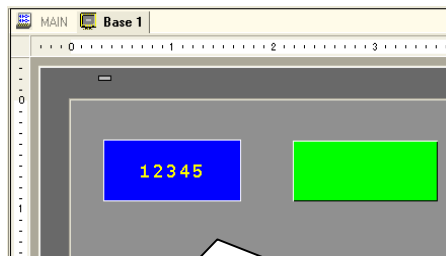


Enter a symbol variable, an address or a constant as an instruction operand.

- 2) Create a base screen.



Open Base Screen from the Screen List window in Work Space.



Instructions and variables on a logic screen and parts on a base screen can be dragged and dropped to each other.  
See GP-Pro EX Reference Manual  
"28.13 Convenient features to create/edit logic"

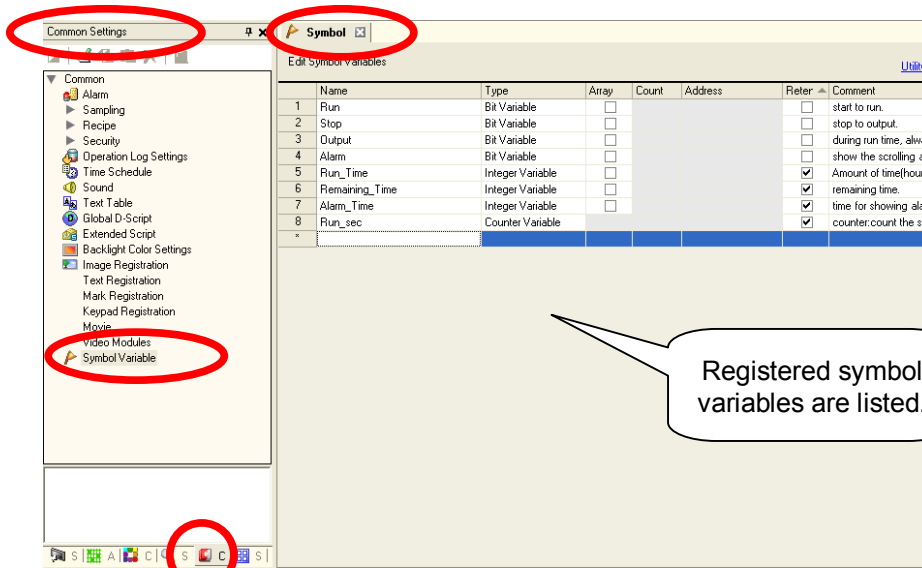
- 3) Save the project file and transfer it to the GP.
- 4) Debug the project file using Online Monitor.  
See GP-Pro EX Reference Manual  
"28.10 Correcting Logic Program Errors"

★ One Point

Variables

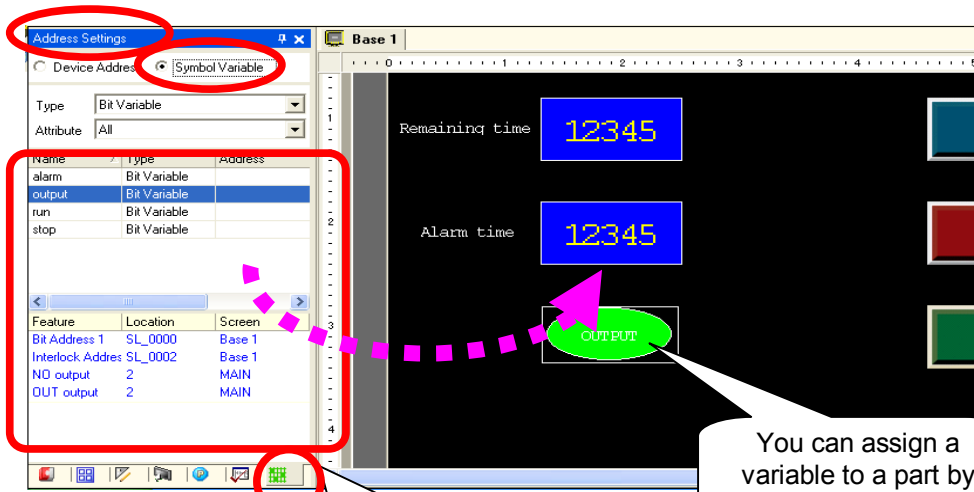
A variable is a location in a GP unit where data is stored. It is equivalent to a device address in a PLC program. Various types of variables are available with GP-Pro EX. You can create variables on a logic screen. You can also register or edit them on the [Symbol Variable] settings window in the Common Settings window.

Type
Bit Address
Word Address
Bit Variable
Integer Variable
Float Variable
Real Variable
Timer Variable
Counter Variable
Time Variable
Date Variable
PID Variable



Registered symbol variables are listed.

Registered variables can be searched where they are used in the Address window in Work Space, and can be assigned onto parts or instructions by drag-and-drop as well as PLC addresses.



You can assign a variable to a part by drag-and-drop.

You can confirm where addresses are used at a glance.

See GP-Pro EX Reference Manual "28.3 Registering Addresses"

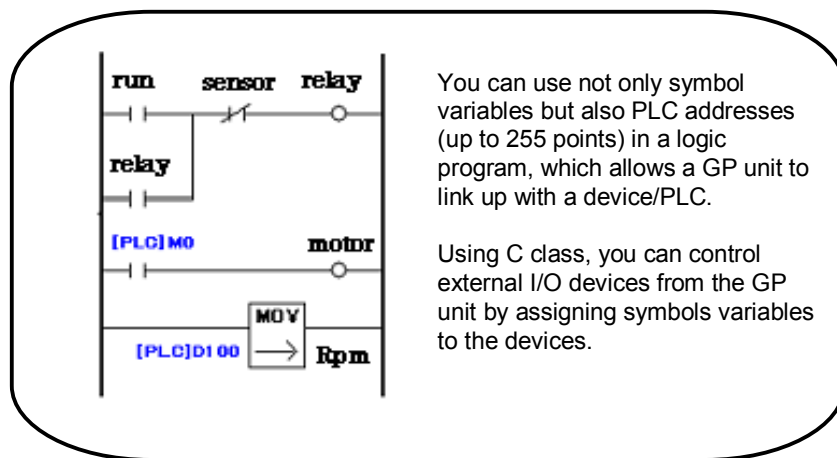
**★ One Point**

Advantages of creating logic screens on the display unit

- 1) The load in the PLC program can be reduced.  
Various features concerned with display or control can be performed without the PLC program.
- 2) The display unit can control an external I/O device directly. \*1  
Connecting an I/O device such as a sensor or a relay directly to the display unit allows you to reduce workload and improve flexibility in the control panel design.  
Since simple operation can be controlled by the display unit itself, the development cost can be greatly reduced.

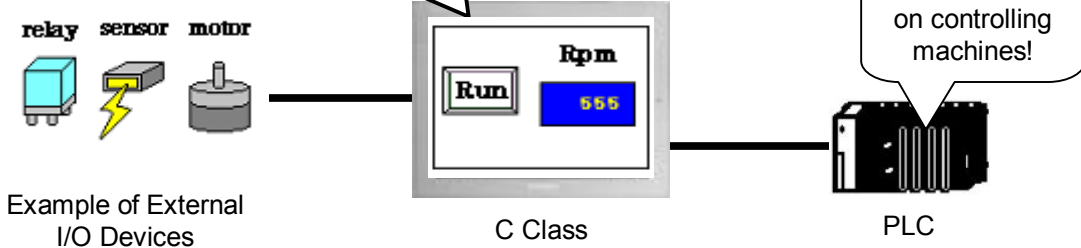
In addition to the above advantages, the logic feature helps you to configure various system tasks such as relaying data with a single display unit connected to PLCs from several manufacturers.

\*1 When “C class” in the GP3000 series is used.  
Please refer to our homepage or product brochure for the product lineup for each class.



You can use not only symbol variables but also PLC addresses (up to 255 points) in a logic program, which allows a GP unit to link up with a device/PLC.

Using C class, you can control external I/O devices from the GP unit by assigning symbols variables to the devices.



Example of External I/O Devices

C Class

PLC

\* In this chapter, any external I/O devices are not connected for the practice.

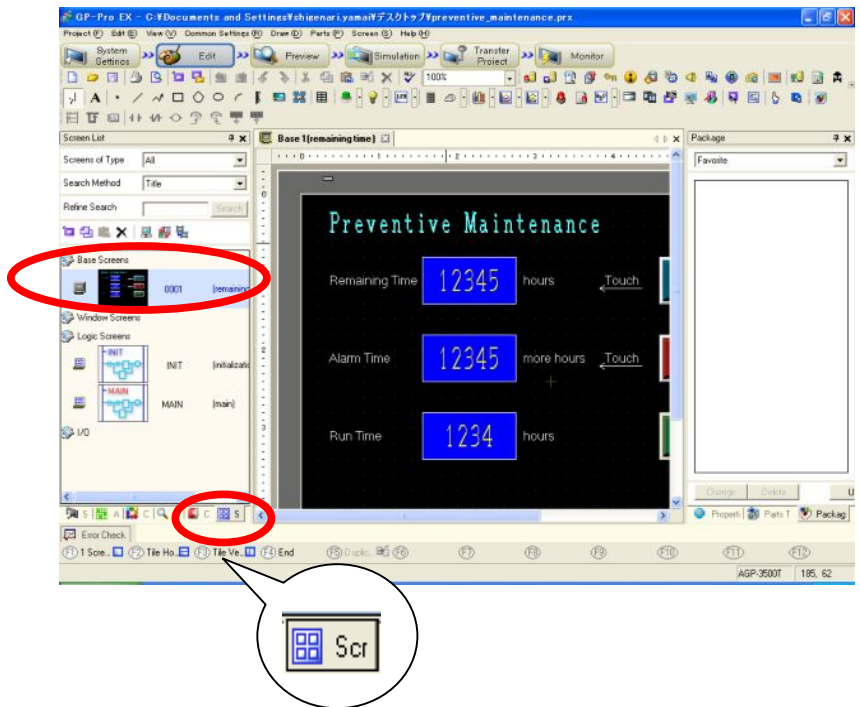
See GP-Pro EX Reference Manual  
“Chapter 30 Controlling External I/O”



Let's Create Logic Screen and Base Screen

**(1) Overview of Practice Project File**

Start the screen creation software program, GP-Pro EX and open the practice project file, "preventive\_maintenance\_practice.prx".

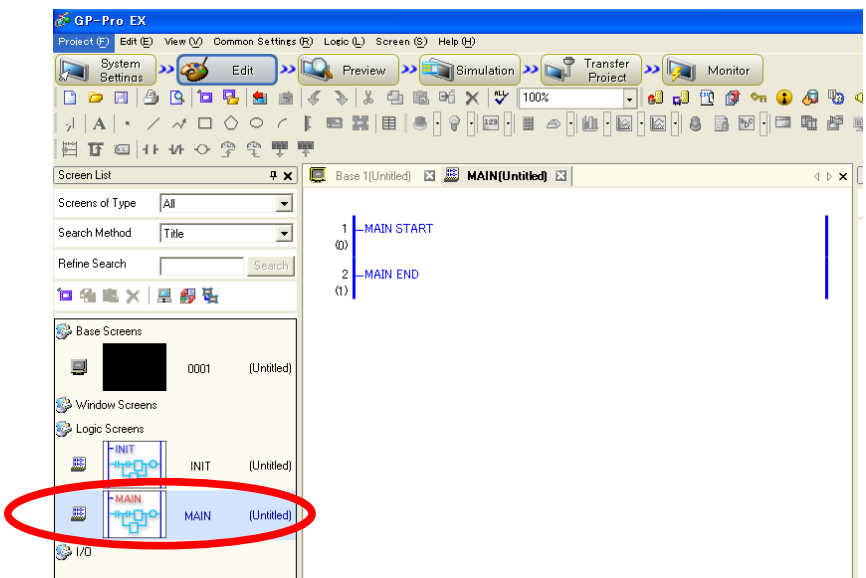


Base Screen 1 already has drawings and parts placed on it.

The addresses of parts are all set to GP internal addresses.

Let's assign variables after a logic program is completed.

**(2) Create Logic Program**



Let's create the logic screen [MAIN].

1) Select MAIN START by a click. Click the [Insert Rung] icon.

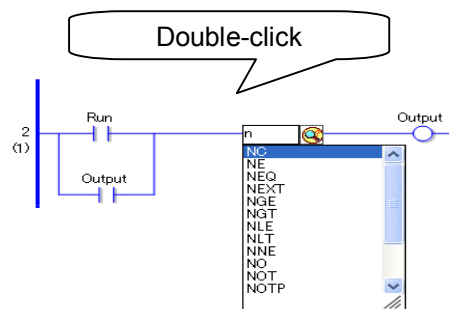
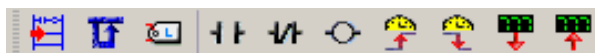
2) Click the [NO] (Normally Open contact) icon to insert on the rung. Next, enter "Run" in the field above the NO symbol. The Symbol Registration dialog box will appear. Click [Yes] to register it as a bit variable.

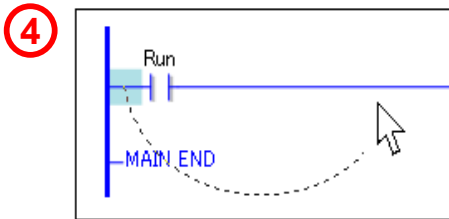
3) Click the [OUT] (Out Coil) icon. Enter "Output" and register it as a bit variable.

★ One Point

Insert Instruction

You can also insert an instruction by double-clicking the rung and searching with an initial letter of the instruction.





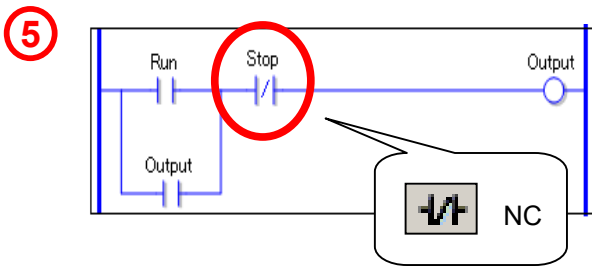
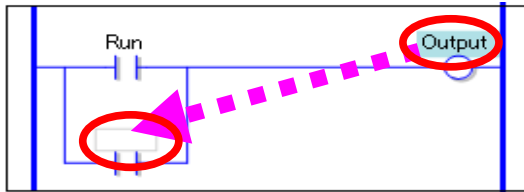
4) Drag the mouse cursor from the left of the Normally Open contact onto the right, where the cursor turns into an arrow.

A branch (OR Circuit) will be inserted. Insert an [NO] on the branch and drag the variable name of the coil, "Output".

**Note**

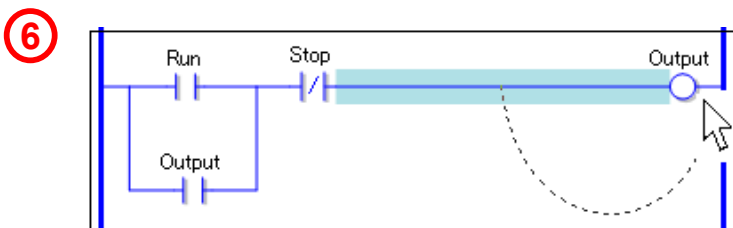
To copy the name, do not drag the entire instruction but drag only the part of the variable name.

**Correct**      **Incorrect**




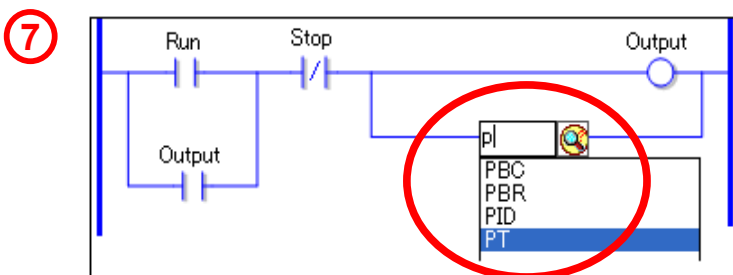
5) Insert an [NC] (Normally Close contact) on the center of the rung. Enter "Stop" and register.

(A self-retaining circuit has been created.)



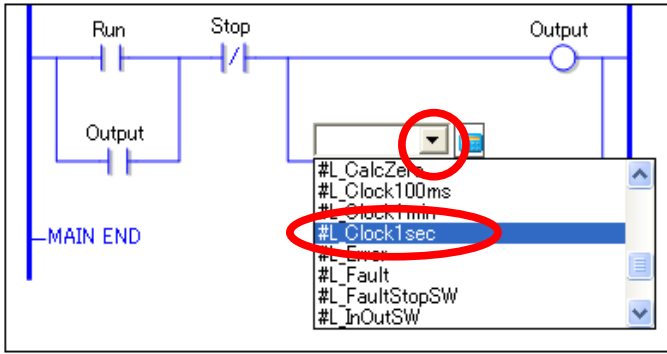
6) Drag the mouse cursor from the right of the Normally Close contact to the right of the [OUT] coil to insert a branch.

You can insert a branch by clicking the [Insert Branch]  icon.



7) Double-click the branch and insert a [PT] (Positive Transition contact).

As shown on the left figure, if you enter "P" in the entry field, instructions starting with "P" will be listed. Select [PT] from the list.

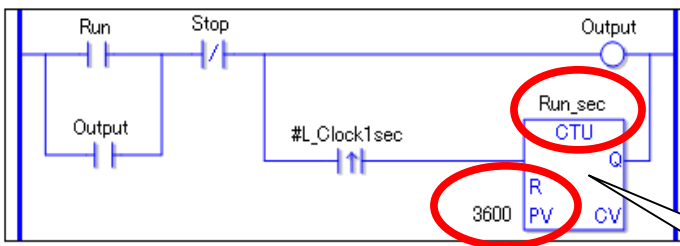


Next, select “# L\_Clock1sec” from the pull-down menu of the variable names.

**★ One Point**

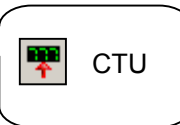
Variables starting with “#” are system variables that have been stored in the GP.  
See GP-Pro EX Reference Manual Appendix A.6

8

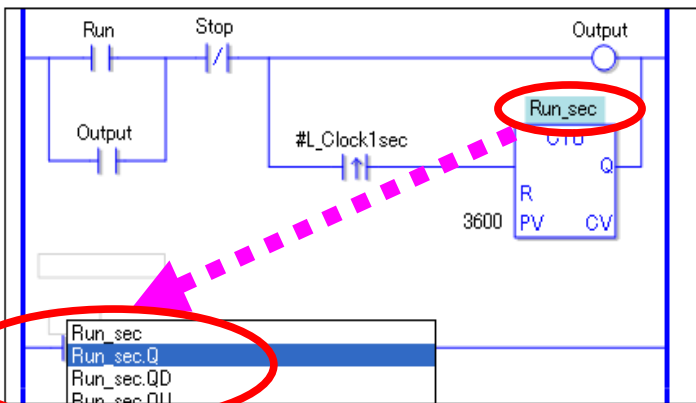


8) Insert a [CTU] (Up Counter) on the right of the contact. Enter “Run\_sec” and register it as a counter variable.

Enter a constant value “3600” on PV (preset value).

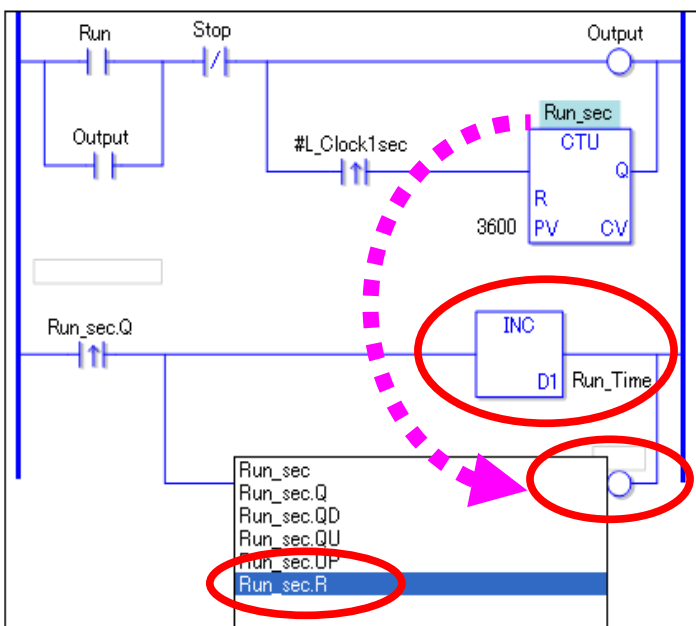


9



9) Add another rung below and insert a [PT]. If you drag the variable name, “Run\_sec”, to the newly added contact, a list of the extensions is displayed. Select “Run\_sec.Q”. \*  
\* “.Q” is a counter output bit.

10



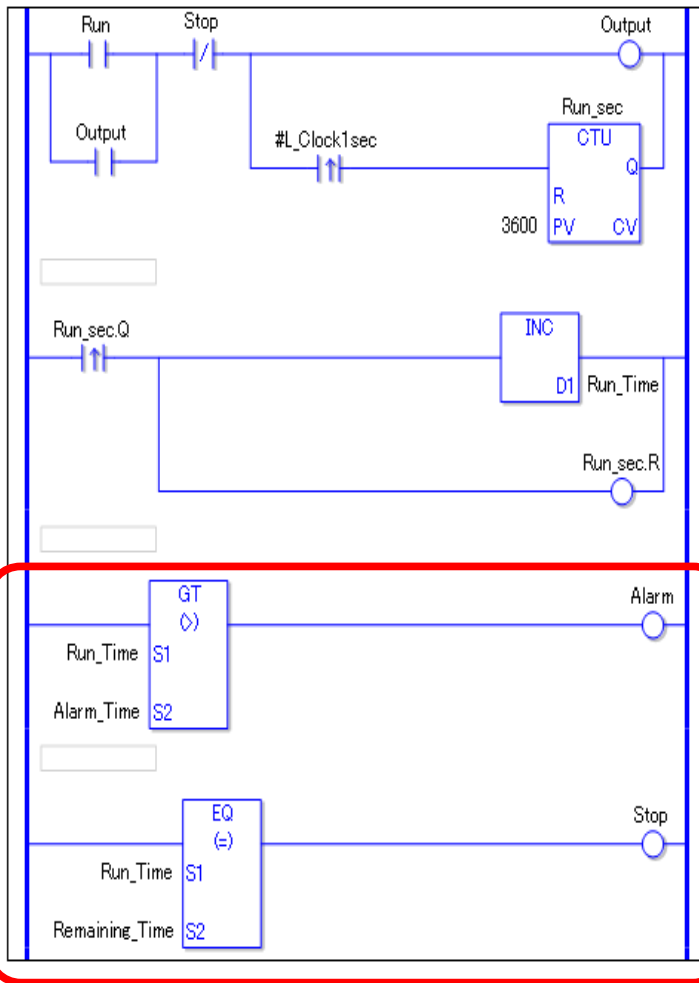
10) Insert an [INC] (Increment) on the right of the [PT]. Enter “Run\_Time” and register it as a integer variable.

Add an branch below, insert an [OUT], and drag the variable name “Run\_sec” to it. Select “Run\_sec.R” from the list of the extensions. \*  
\* “.R” is a counter reset bit.

**★ One Point**

Counters and timers are structure variables.  
See GP-Pro EX Reference Manual “29.5 Instruction Descriptions”

11



11) Add two rungs below.

Insert a [GT] (Greater Than, >) onto one rung, and enter "Run\_Time" on S1, and "Alarm\_Time" on S2. Insert an [OUT] coil on the right of the instruction and enter "Alarm".

Insert an [EQ] (Equal To, =) onto the other rung, and enter "Run\_Time" on S1 and "Remaining\_Time" on S2. Insert an [OUT] on the right of the instruction and enter "Stop".

The logic screen "MAIN" has been completed.

**Note**

**Integrate Long Period of Time**

Using a one-second pulse, or one-minute pulse as described above can decrease deviations in integrated time because it is counted in synchronization with clock accuracy of the display unit.

To measure or integrate short period of time, several seconds or several minutes, for example, the Timer instructions (TON, TOF, TONA) are useful.

Note, however, that some deviations may be observed on Timer instructions due to the scan time. Please check the accuracy before using them in your program.

See GP-Pro EX Reference Manual "29. 5 Instruction Descriptions"

## ★ One Point

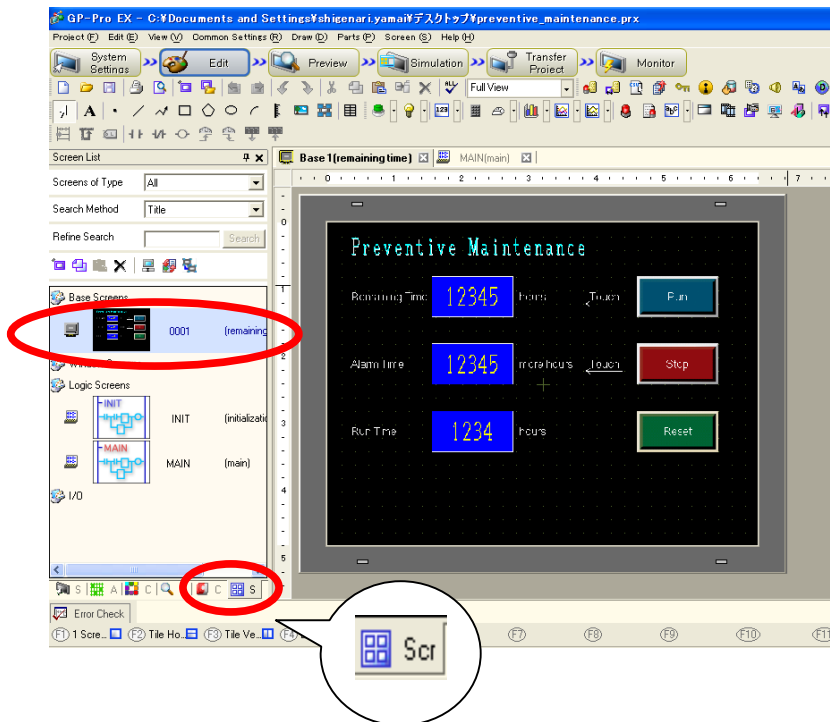
Using function keys on the keyboard allows you to insert instructions and debug in the logic program.

- ◆ List of function keys for the logic screen

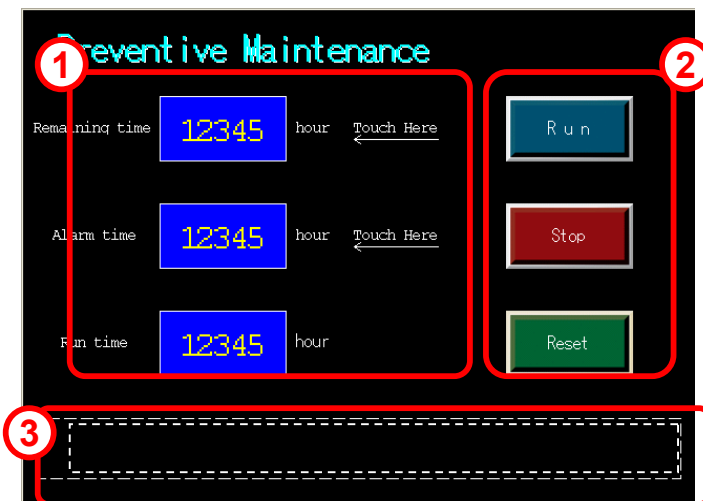
Drawing	F1	Opens the manual.
	Shift + F3	Creates a new screen.
	Shift + F4	Opens a screen.
	Ctrl + F1	Opens the previous screen.
	Ctrl + F2	Opens the next screen.
	F10	Indicates the menu.
	F11	Changes to the full screen display.
Logic Editing	F5	Inserts the NO instruction.
	F6	Inserts the NC instruction.
	F7	Inserts the OUT instruction.
	F8	Inserts a ladder instruction.
	F9	Inserts a symbol variable comment.
	Shift + F5	Inserts the NO-OR instruction.
	Shift + F6	Inserts the NC-OR instruction.
	Shift + F7	Inserts the OUT-OR instruction.
	Shift + F8	Inserts the instruction-OR instruction.
	Ctrl + F5	Inserts the PT instruction.
	Ctrl + F6	Inserts the NT instruction.
	Ctrl + F7	Inserts the JMP instruction.
Ctrl + F8	Inserts the JSR instruction.	
Debugging	F12	Starts the Simulation feature.
	Shift + F2	Performs error check.
	Shift + F11	Starts monitoring.
	Shift + F12	Transfer data.

**(3) Create Base Screen**

Open the base screen "0001" on the Screen List in Work Space.



Base Screen 1



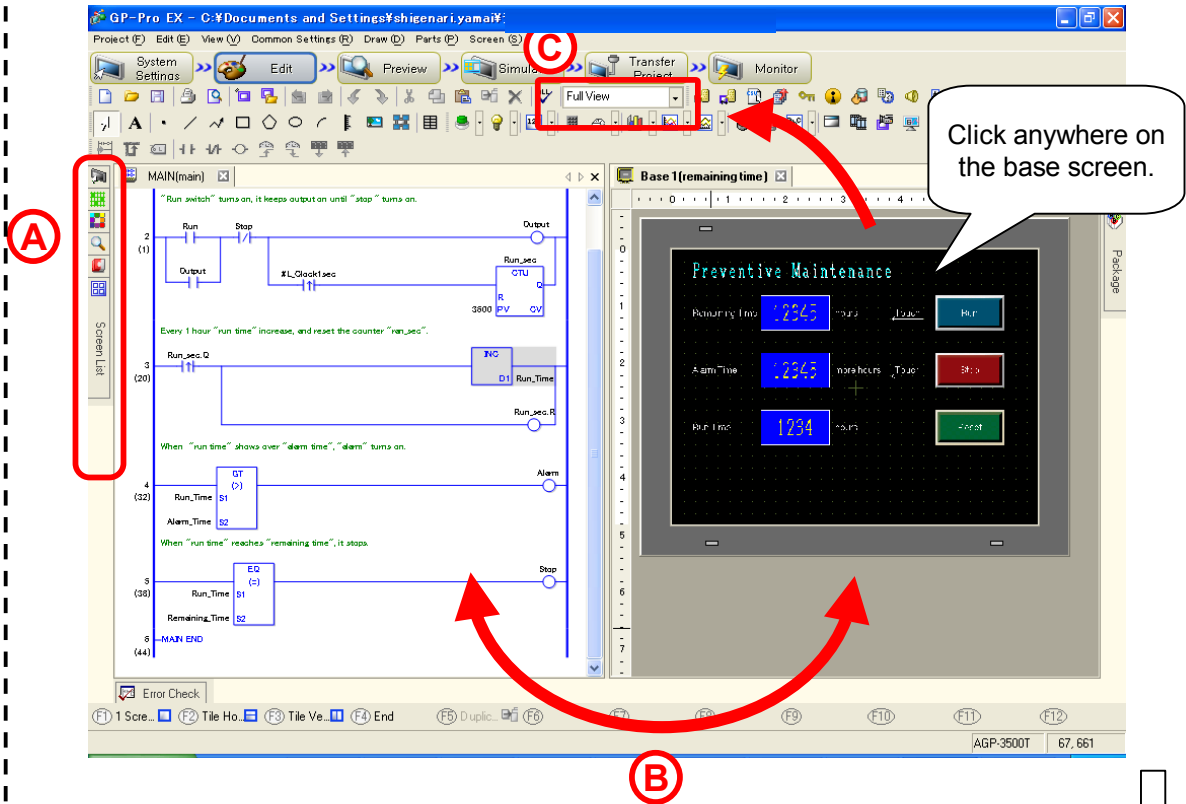
Base Screen 1 has already drawings and parts placed on it. Shapes, colors, and labels are already set on these parts. Let's assign variables, which have been created on in the logic program, to these parts.

For details of settings of the parts, see each chapter below.

- Data Display ..... Chapter 2
- Bit Switch ..... Chapter 4
- Word Switch ..... Chapter 5
- Alarm (Banner Message) ..... Chapter 6

★ One Point

Changing the environment of the main window as below allows you to edit a logic screen and a base screen efficiently referring to the both.



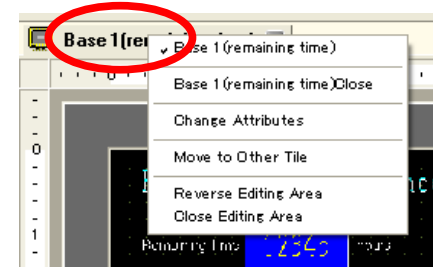
A) The Auto-Hide feature allows you to hide the work space to the left.

Click the push pin icon on the title bar of the work space. See Introduction for more details.

B) Tile screen blocks horizontally.

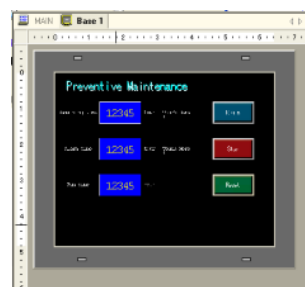
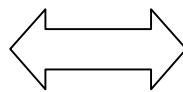
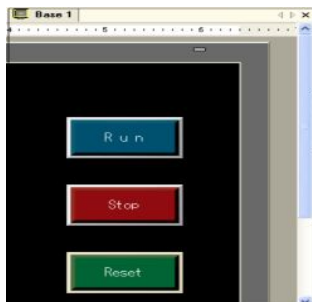
Right-click the screen tab and select the option from the displayed menu.

C) Select [Full View] for the display size of the base screen. The screen is scaled down so that you can view the entire screen.

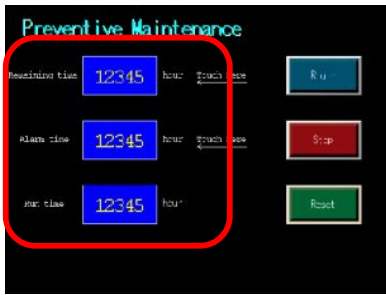


100%

Full View



① Set Data Displays.



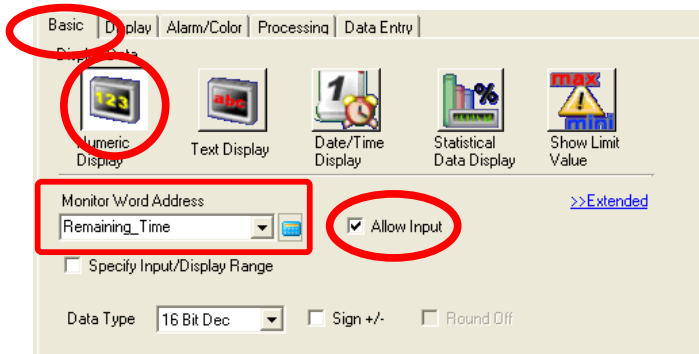
Double-click the data displays and make settings of each as below.



**One Point**

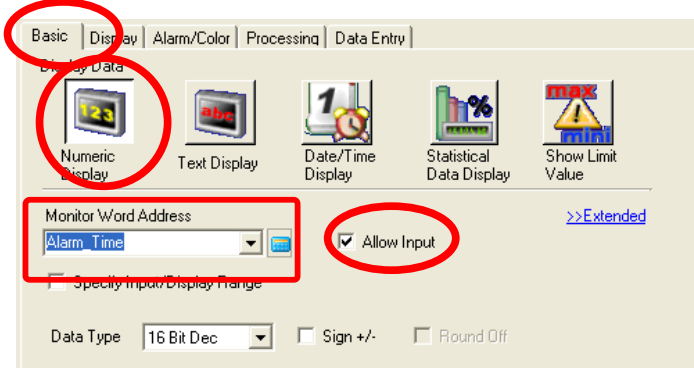
To assign a variable name to a part, you can also drag and drop one from the logic screen.

Top: Remaining Time



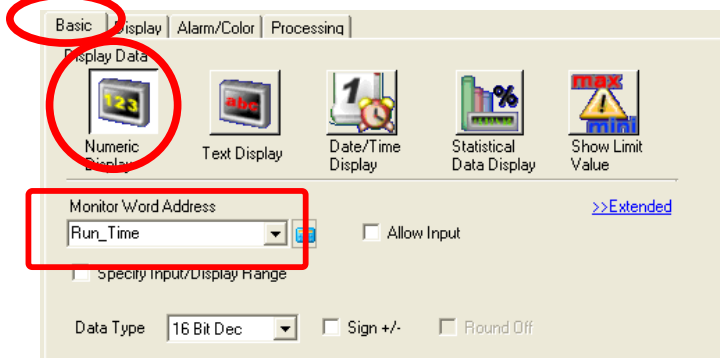
On the [Basic] tab, select [Numeric Display]. Select "Remaining\_Time" from the pull-down menu for Monitor Word Address. Check [Allow Input].

Middle: [Alarm time]



On the [Basic] tab, select [Numeric Display]. Select "Alarm\_Time" from the pull-down menu for Monitor Word Address. Check [Allow Input].

Bottom: [Run time]



On the [Basic] tab, select [Numeric Display]. Select "Run\_Time" from the pull-down menu for Monitor Word Address.

2 Set Switches.

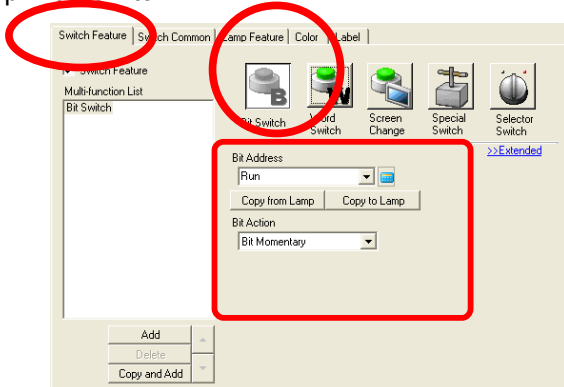


Double-click the switches and make settings of each as below.

★ One Point

To assign a variable name to a part, you can also drag and drop one from the logic screen.

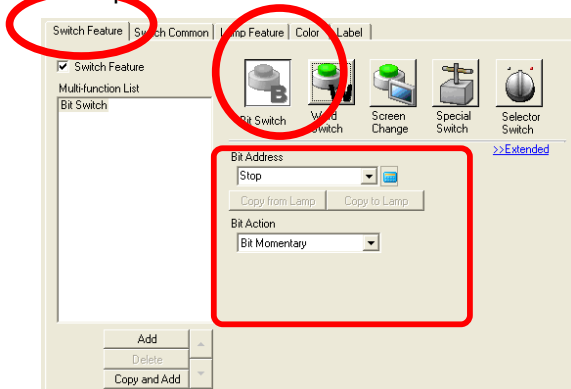
Top: Run Switch



On the [Switch Feature] tab, select [Bit Switch]. Select "Run" from the pull-down menu for Bit Address and "Bit Momentary" for Bit Action.

On the [Lamp Feature] tab, check [Lamp Feature] and set Bit Address to "Output".

Middle: Stop Switch



On the [Switch Feature] tab, select [Bit Switch]. Select "Stop" from the pull-down menu for Bit Address and "Bit Momentary" for Bit Action.

On the [Lamp Feature] tab, check [Lamp Feature] and set Bit Address to "Stop".

Bottom: Reset Switch (Multi-function switch)

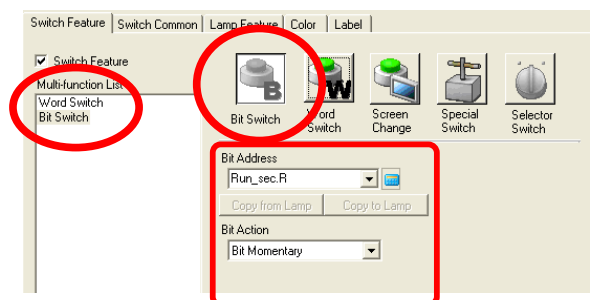
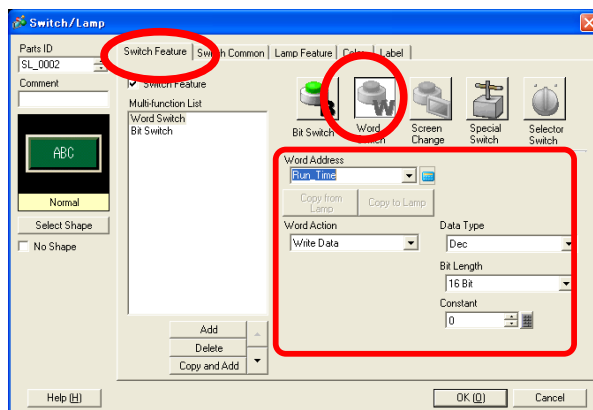
On the [Switch Feature] tab, set multi functions on a switch.

Word Switch: Set Word Address to "Run\_Time" from the pull-down menu, Word Action to "Write Data", and Constant to "0".

Bit Switch: Select "Run\_sec.R" \* and "Bit Momentary".

\* Structure variables cannot be selected from the pull-down menu or dragged and dropped.

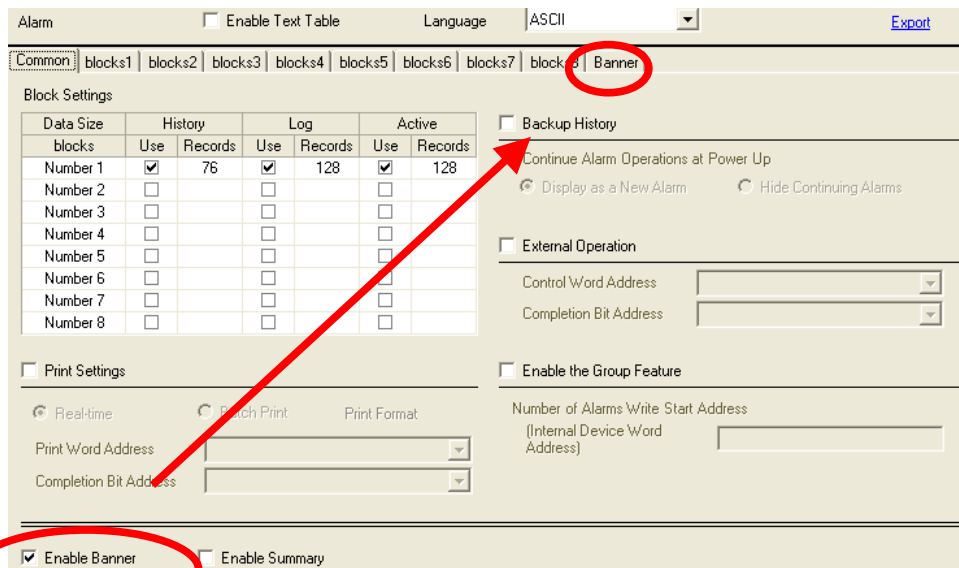
On the [Switch Common] tab, check [Interlock Feature] and set Interlock Address to "Output". Select [Enable when Bit is Off].



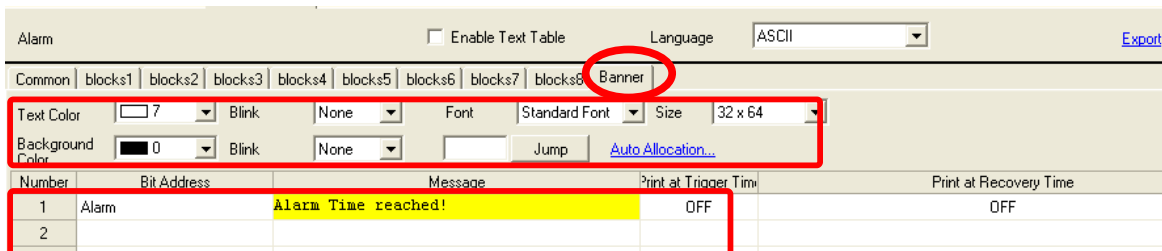
3 Set Banner Messages.



Click the Alarm settings  icon.



Check [Enable Banner]. On the [Banner] tab, make settings as below.



Set Bit Address to “Alarm”, which can be selected from the pull-down menu also, and enter “Alarm Time reached!” in the Message field.  
Set [Text Color], [Background Color], [Size], etc. as you like.



## Let's Transfer Data to GP and Check Performance



- A Displays the remaining time, the alarm time, and the run time. The number displays of the Remaining Time and the Alarm Time enable you to input their values via pop-up keypad.
- B Runs, stops and resets by each switch. The Run switch turns on as a lamp while in operation.
- C Displays banner messages when the set time reaches to the alarm time.

✓ Practice

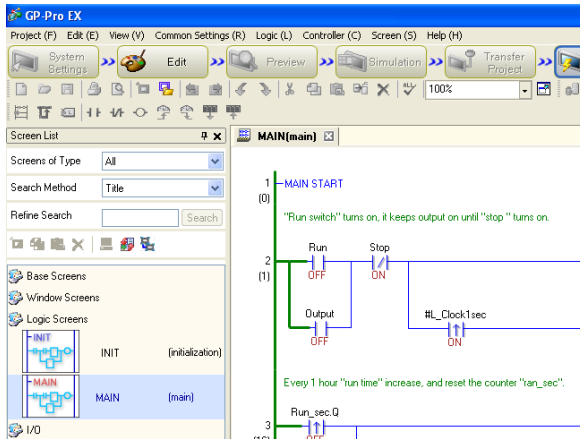
Let's Monitor Logic Program on PC

1)



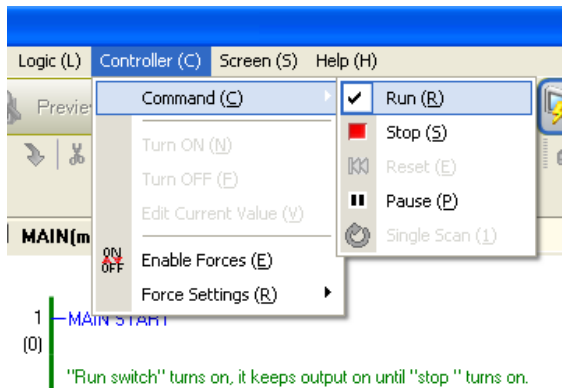
Start Online Monitor by clicking [Monitor] on the status bar.

2)



The operational status of the logic program will be shown in green.

3)



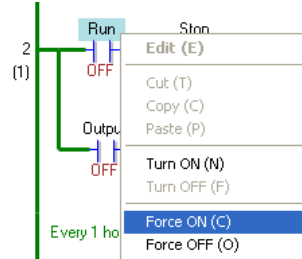
To stop the logic program, select [Command (C)] from the [Controller (C)] and then click [Stop (S)] or [Pause (P)].

**★ One Point**

You can change values of symbol variables while monitoring the operation of the logic program.

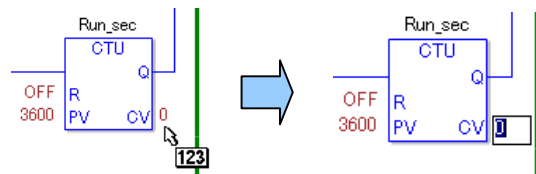
■ Force ON and Force OFF of Contacts

Select the variable name of the contact and right-click it. From the displayed menu, select [Force ON] or [Force OFF].



■ Changing Current Value of Symbol Variable

If you put the cursor close to the symbol variable to be changed, the **123** icon will be displayed. Double-click it to input the value.



You can also change the symbol variables in the list.

■ Displaying Watch List

Select the [View] menu -> [Work Space] -> [Watch List].

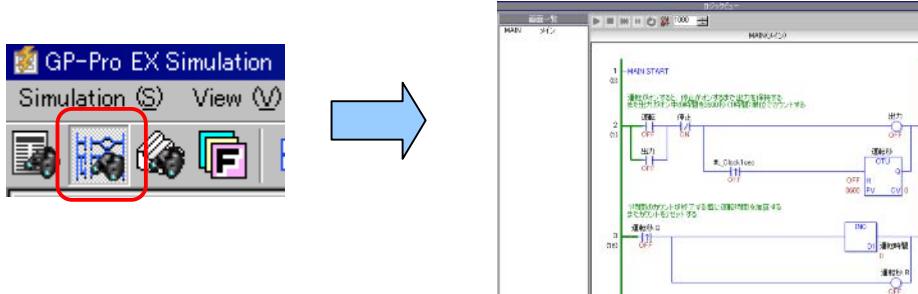
■ Registering Symbol Variables in Watch List

While monitoring, select a symbol variable to be displayed and right-click it. Select [Watch List (W)] from the menu.

Address	Type	Radix	Current V
Run_sec	Counter Vari	-	-
PV	Integer Vari	Dec	3600
CV	Integer Vari	Dec	0
Q	Bit Variable	-	OFF
QD	Bit Variable	-	OFF
QU	Bit Variable	-	OFF
UP	Bit Variable	-	OFF
R	Bit Variable	-	OFF

★ One Point

The logic program can be also monitored on the Simulation screen.



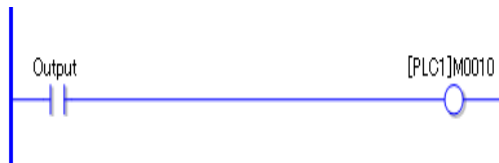
MEMO



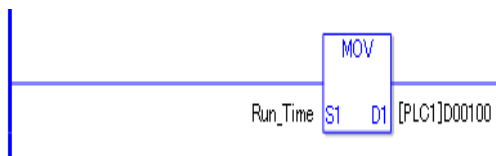
## Example of Customization

### Example 1: Use PLC Address In Logic Program

Sharing the On/Off status of a bit or value data with PLC addresses allows the logic program to interact with the control program in the PLC.



e.g.) Sends the On/Off status of the output bit to bit address M10 of the device/PLC.



e.g.) Writes the value of Run Time to word address D100 of the device/PLC.

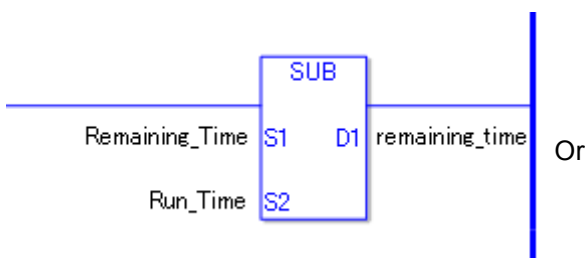
#### Note

Since this practice project file has been created using Memory Link, you cannot select PLC addresses. To connect a device/PLC, select a PLC driver by following [System Settings] → [Device/PLC].

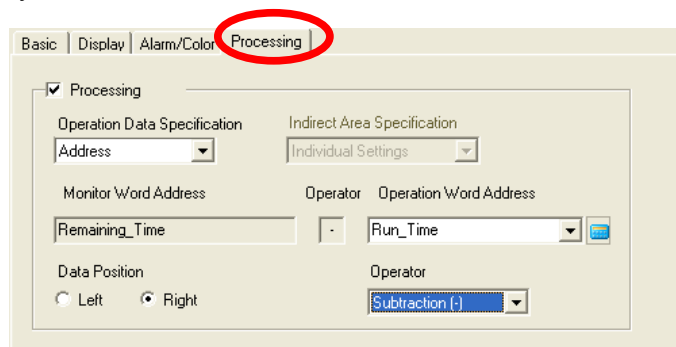
### Example 2: Display Remaining Time

Display the result of the arithmetic operation, the remaining time, on the SUB instruction in the logic program.

Or use the processing feature of the data display.

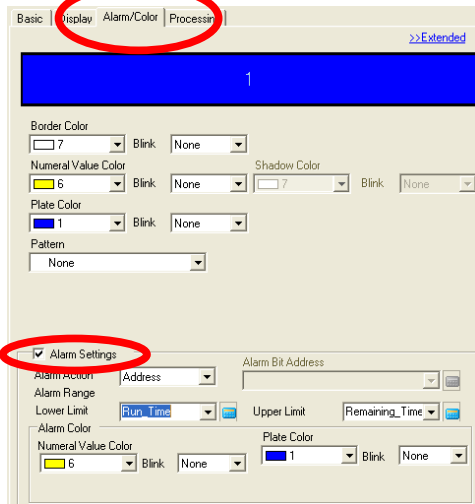


Or



**Example 3: Restrict Input Range of Alarm Time**

To restrict to input the values out of the alarm range, make the alarm settings of the data display. Doing so restricts input from the popup keypad.

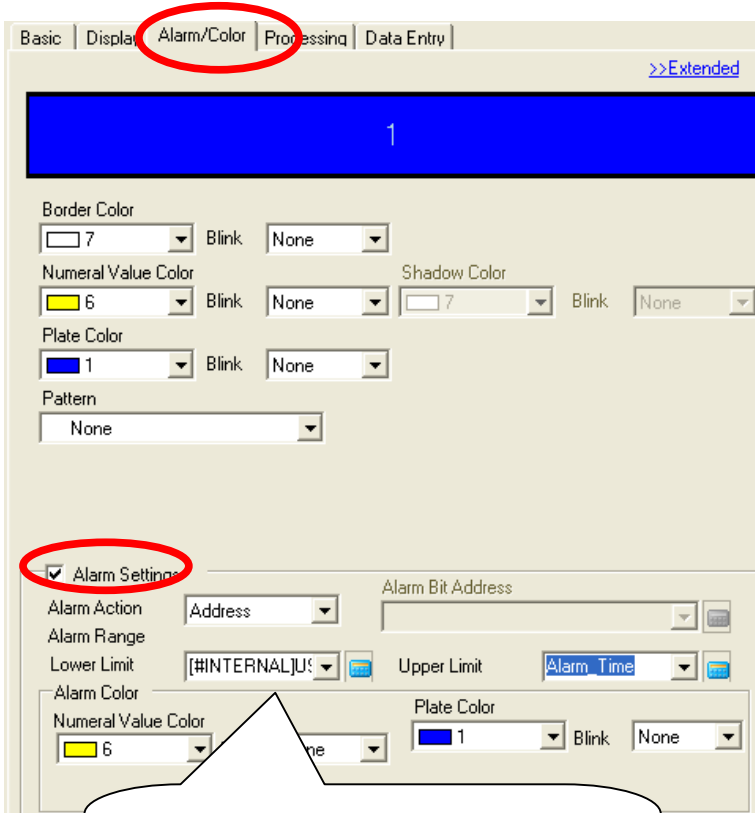


Settings in this practice  
 Lower Limit: Run\_Time  
 Upper Limit: Remaining\_Time

See Otasuke GP-EX! Chapter 5

**Example 4: Change Color when Run Time gets to Alarm Time**

To change the color of the data display as well as the banner message when the run time exceeds the alarm time, make the alarm settings of the data display.

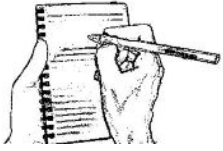


Lower Limit: #INTERNAL\_USR0000  
 Upper Limit: Alarm\_Time

When the value of the word address specified in the Basic settings gets out of the specified range, the set alarm color is displayed.

See Otasuke GP-EX! Chapter 5

An unused address in the GP internal USR area is used for the lower limit. (Zero is stored as a fixed value.)



MEMO

# 9.2

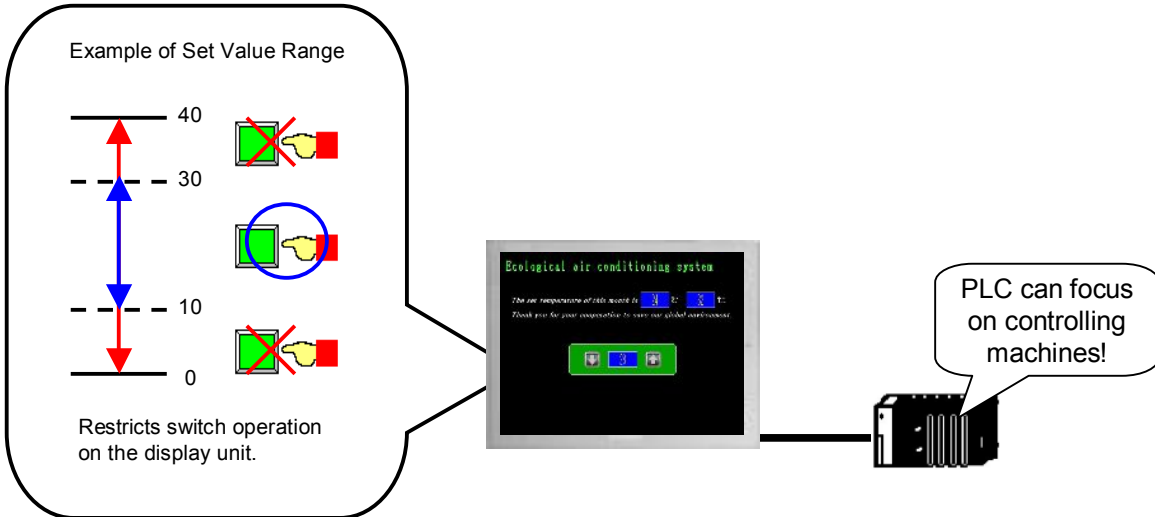
## Ecological Air Conditioning System



Instruction

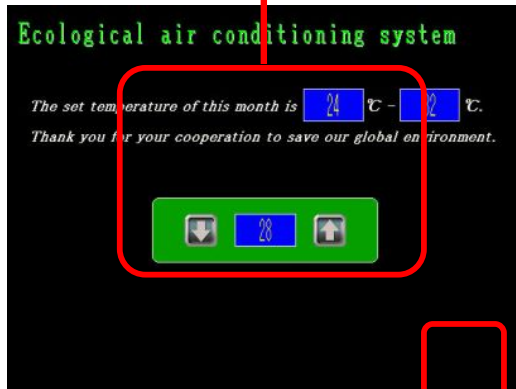
## Ecological Air Conditioning System Screen

The ecological air conditioning system screen is used to restrict a range of the addition/subtraction operation such as a temperature setting.

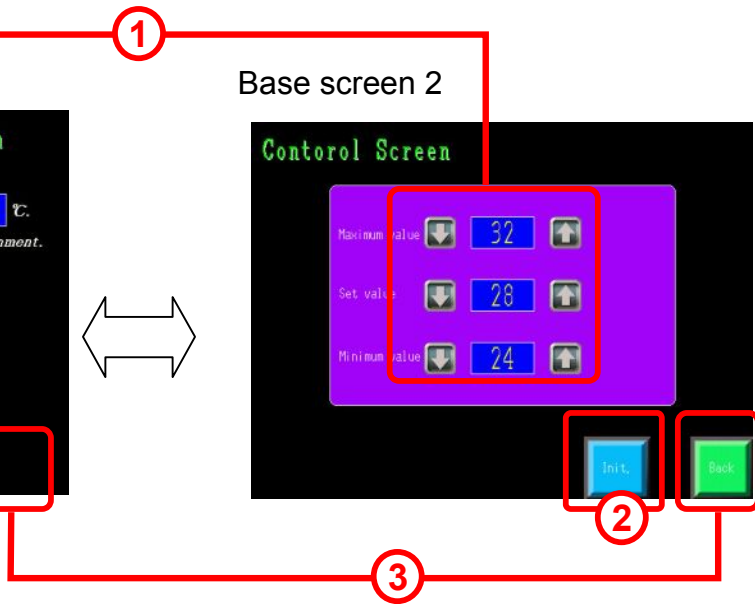
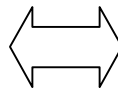
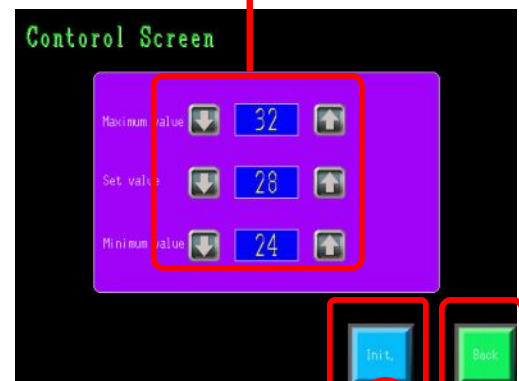


### Screen example

Base screen 1

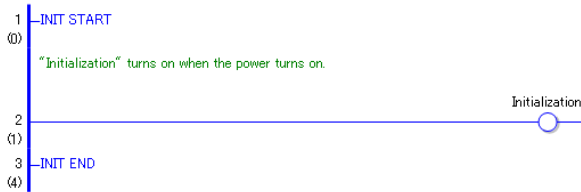


Base screen 2



- 1) B1 has data displays for the set value, the maximum value, the minimum value on it. B2 has switches for addition/subtraction on it. B1 allows you to change only the set value on it and B2 allows you to change all of the values on it.
- 2) A switch to initialize values.
- 3) Switches to change screens. To change screens from B1 to B2, touch the switch (no shape) on the right bottom on the B1 screen. The switch has been set the On Delay feature on it to change screens by touching for 3 seconds.

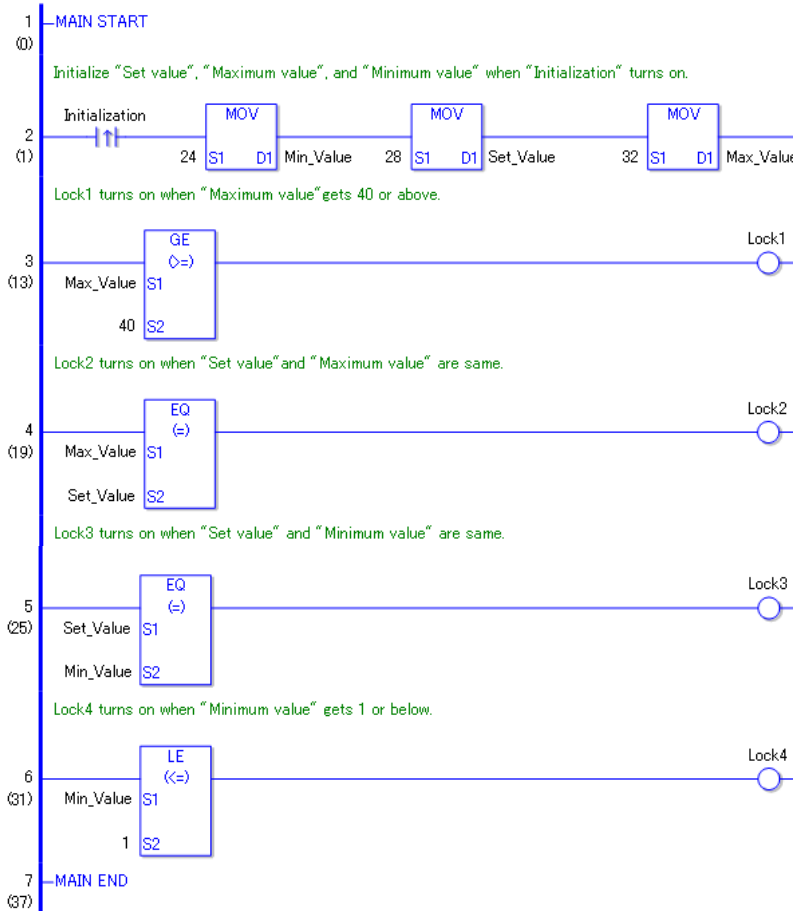
Completed Screen (INIT)



★ One Point

INIT (Initialization) screen is scanned only one time when a GP turns on.  
If there is no instruction on the left, coils or instructions such as arithmetic operations, transfer operations are always processed.

Completed Screen (MAIN)



Initializes values when the power is on and when the "Init" switch is touched.

Restricts the input ranges of the values.

Symbol Variable  (See page 9-6.)

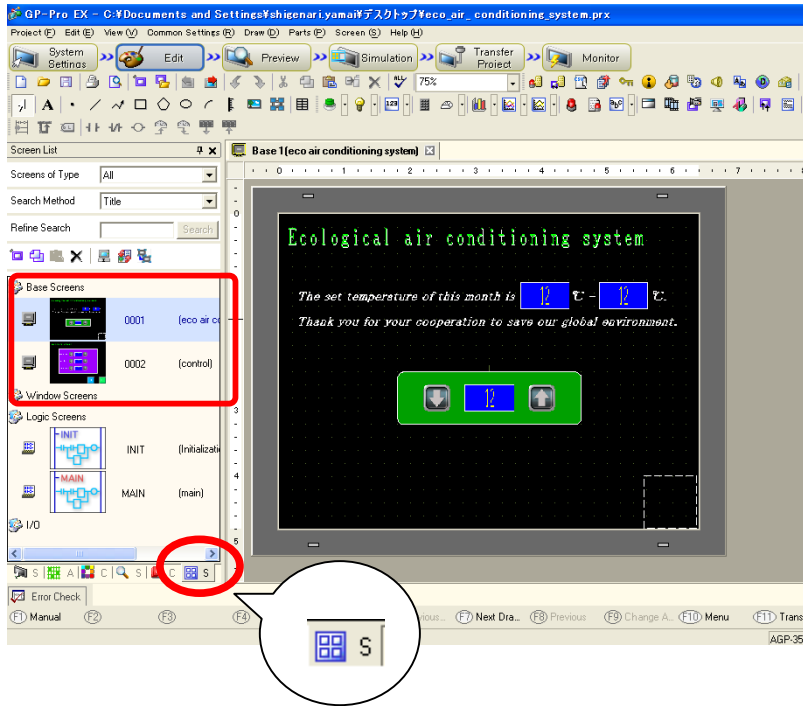
Name	Type	Array	Count	Address	Retentive	Comment
1 Initialization	Bit Variable	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
2 Lock1	Bit Variable	<input type="checkbox"/>			<input type="checkbox"/>	Lock the max of maximum.
3 Lock2	Bit Variable	<input type="checkbox"/>			<input type="checkbox"/>	Lock the max of setting.
4 Lock3	Bit Variable	<input type="checkbox"/>			<input type="checkbox"/>	Lock the setting value.
5 Lock4	Bit Variable	<input type="checkbox"/>			<input type="checkbox"/>	Lock the minimum value.
6 Max_Value	Integer Variable	<input type="checkbox"/>			<input type="checkbox"/>	Max value of setting.
7 Min_Value	Integer Variable	<input type="checkbox"/>			<input type="checkbox"/>	Min value of setting.
8 Set_Value	Integer Variable	<input type="checkbox"/>			<input type="checkbox"/>	Setting value of temperature.
*						



Let's Create Logic Screen and Base Screen

(1) Overview of Practice Project File

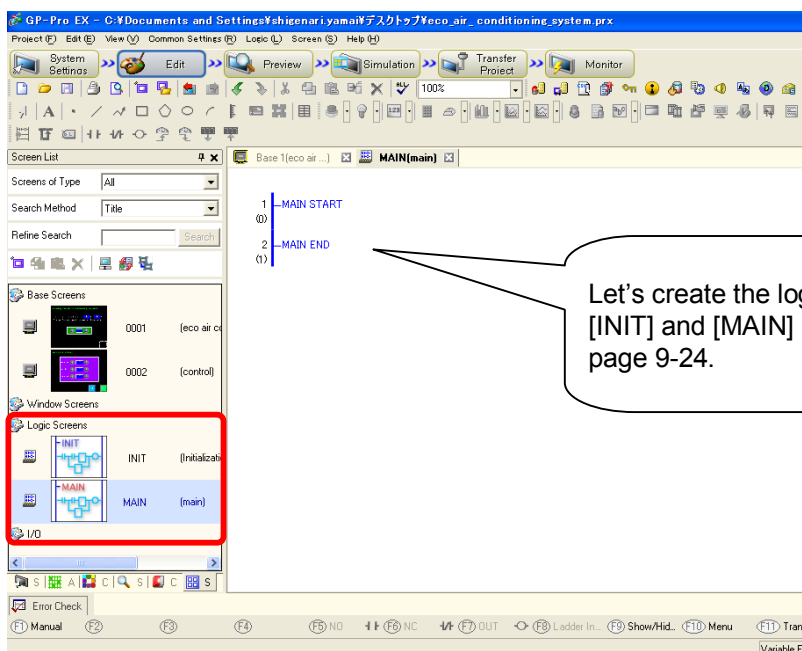
Start the screen creation software program, GP-Pro EX and open the practice project file, "eco\_air\_conditioning\_system.prx".



Base Screen 1 and 2 already have drawings and parts placed on each of them.

Shapes, colors, and labels are already set on these parts. The addresses of parts are all set to GP internal addresses. Let's assign variables after a logic program is completed.

(2) Create Logic Program



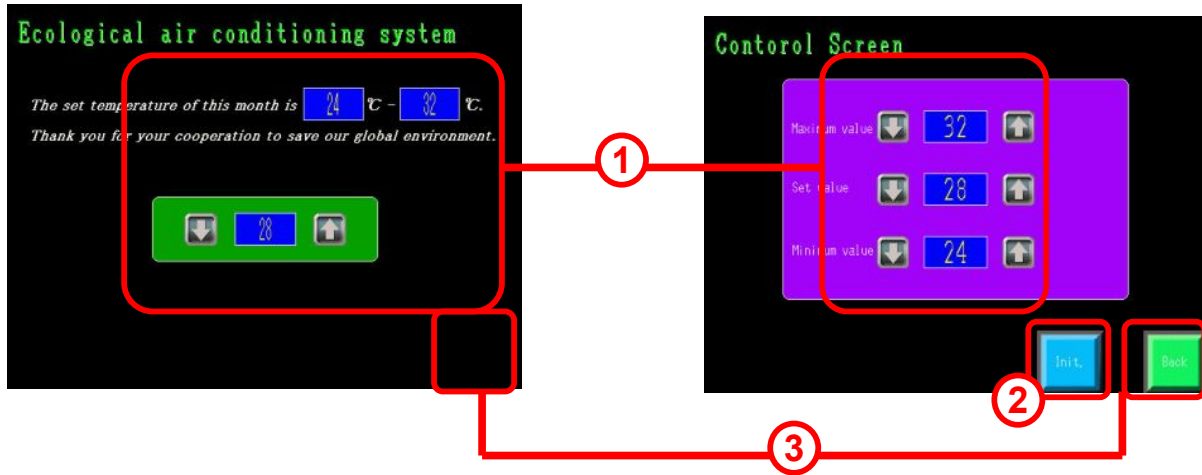
Let's create the logic screens [INIT] and [MAIN] referring to page 9-24.

**(3) Create Base Screen**

Open the base screens "0001" and "0002".

Base Screen 1

Base Screen 2



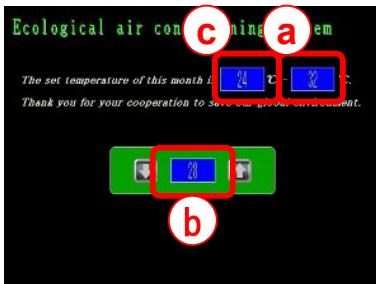
For details of settings of the parts, see each chapter below.

- Data Display ..... Chapter 2
- Word Switch ..... Chapter 5
- Bit Switch ..... Chapter 4
- Change Screen Switch ..... Chapter 1

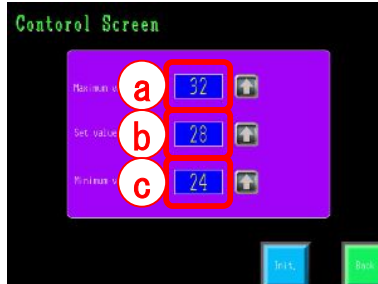
1 Set Data Displays and Switches for addition/subtraction.

< Data Display >

B1



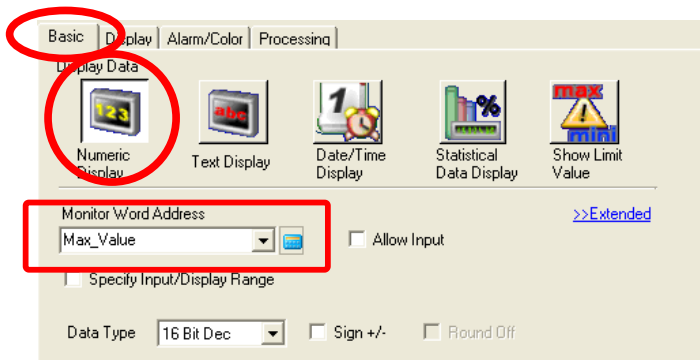
B2



Double-click the data displays and make settings of each as below.

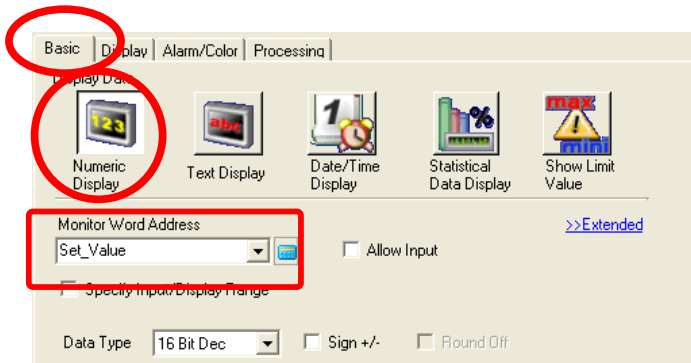
Settings of "a", "b", and "c" on the both screens are same.

a Maximum Value



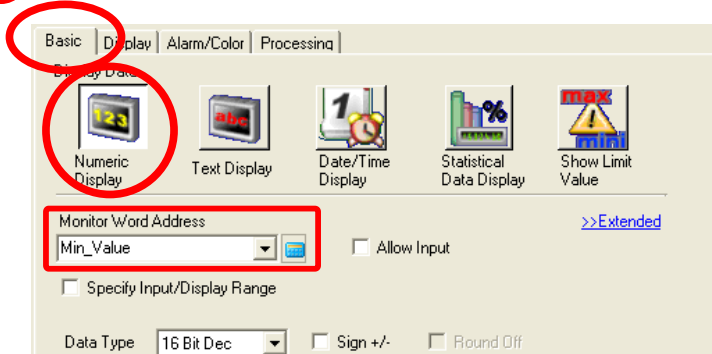
On the [Basic] tab, select [Numeric Display].  
Select "Max\_Value" from the pull-down menu for Monitor Word Address.

b Set Value



On the [Basic] tab, select [Numeric Display].  
Select "Set\_Value" from the pull-down menu for Monitor Word Address.

c Minimum Value



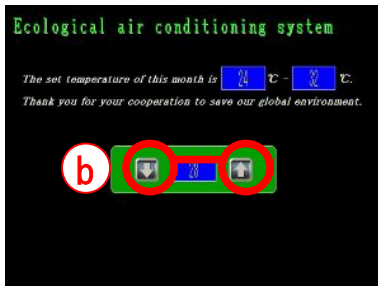
On the [Basic] tab, select [Numeric Display].  
Select "Min\_Value" from the pull-down menu for Monitor Word Address.

★ One Point

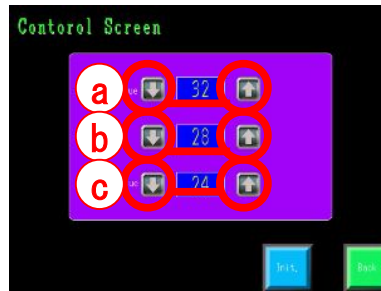
To assign a variable name to a part, you can also drop and drop one from the logic screen.

<Switch for addition/subtraction>

B1

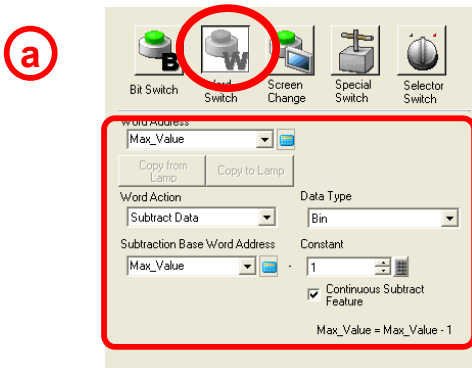


B2

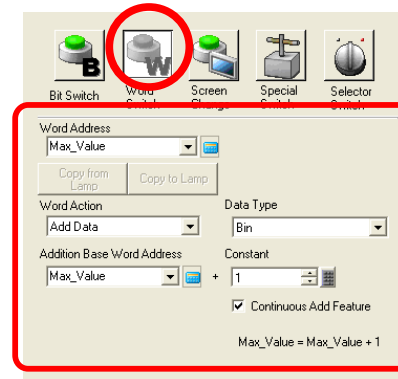


Double-click the switches and make settings of each as below.

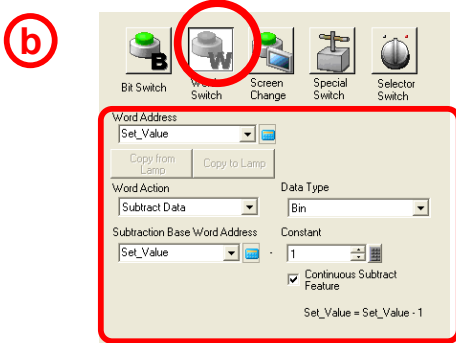
These switches are all to set to word switches. Switches on the left are for "Subtract Data" and ones on the right are for "Add Data".



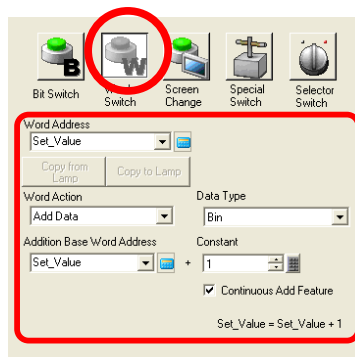
In addition to the settings above, set Interlock Address to "Lock2" and select [Enable when Bit is OFF] on the [Switch Common] tab.



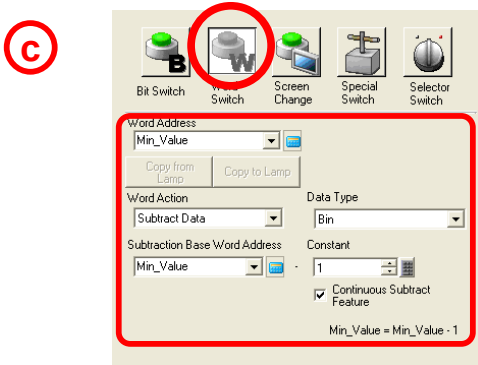
In addition to the settings above, set Interlock Address to "Lock1" and select [Enable when Bit is OFF] on the [Switch Common] tab.



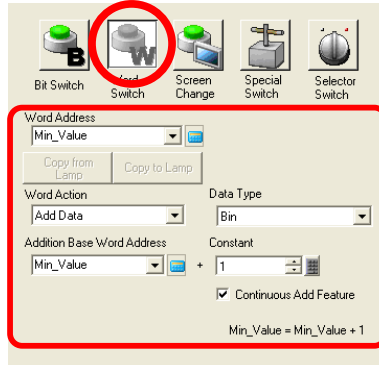
In addition to the settings above, set Interlock Address to "Lock3" and select [Enable when Bit is OFF] on the [Switch Common] tab.



In addition to the settings above, set Interlock Address to "Lock2" and select [Enable when Bit is OFF] on the [Switch Common] tab.



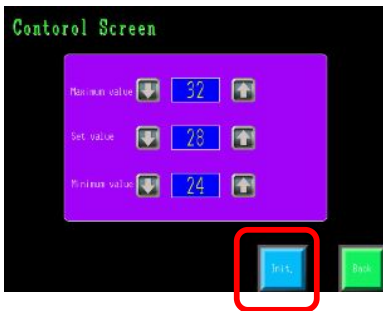
In addition to the settings above, set Interlock Address to "Lock4" and select [Enable when Bit is OFF] on the [Switch Common] tab.



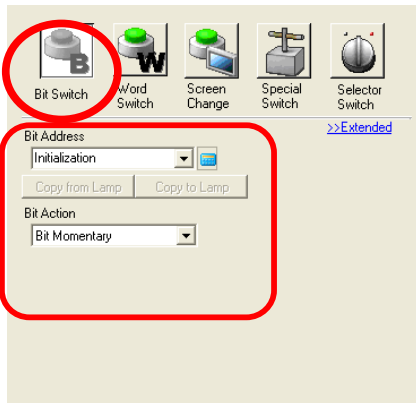
In addition to the settings above, set Interlock Address to "Lock3" and select [Enable when Bit is OFF] on the [Switch Common] tab.

- ② Set Switch to initialize values.

B2



Double-click the switch and make settings.



On the [Basic] tab, select [Bit Switch].  
 Select "Initialization" from the pull-down menu for Bit Address and "Bit Momentary" for Bit Action.

Base screens have been created.  
 Save the project file under an arbitrary file name and transfer it to the GP.  
 Then, check the performance referring to page 9-23, 9-24.

To use Online Monitor on the computer:  
 See GP-Pro EX Reference Manual  
 "28.11 To monitor logic programs on the computer (Online Monitor)"



Start Online Monitor by clicking [Monitor] on the status bar.

See GP-Pro EX Reference Manual  
 "28.12 To monitor logic programs on the GP (Logic Monitor) "

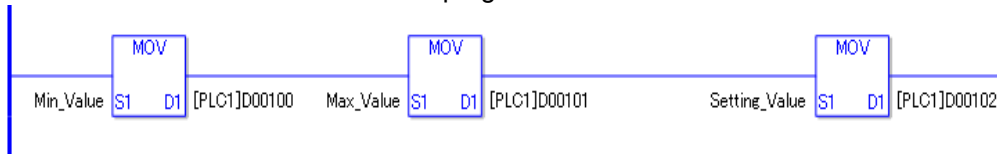


Practice

## Example of Customization

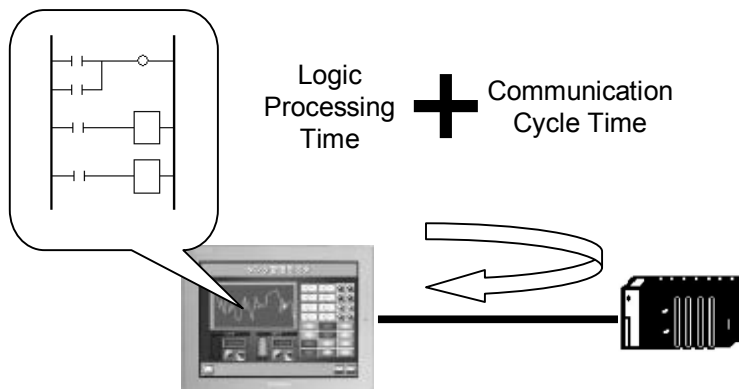
### Example: Control Set Value in PLC

To write data of each variable to a device/PLC, use the MOVE instruction.  
Written data can be used in a PLC ladder program.



### Note

- 1) Since this practice project file has been created using Memory Link, you cannot select PLC addresses. To connect a device/PLC, select a PLC driver by following [System Settings] → [Device/PLC].
- 2) If a PLC address is processed directly using an arithmetic or comparison instruction in the logic, it may take longer to be processed than variables and GP internal addresses. This is because the communication cycle time (the time to read and write data in the PLC) is added to the scan time of the logic program.



For details of communication between GP and PLC, see  
GP-Pro EX Reference Manual Appendix "A.1 Communication"

- 3) The maximum registration numbers of addresses that can be used in a logic program are as follows.

Word Address:	256
Bit Address:	256