# PEP Designer Operating Manual

## FATEK AUTOMATION CORPORATION

V1.0

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# 1. Introduction

## 1.1 Operating Environment

### 1.1.1 Operating systems

- Windows 2000, Windows XP or Windows Vista

### 1.1.2 Hardware requirements

- CPU: Pentium 133 or better
- Memory: 64Mbytes or more
- Disk space: 30Mbytes or more

## 1.2 Functions and Features

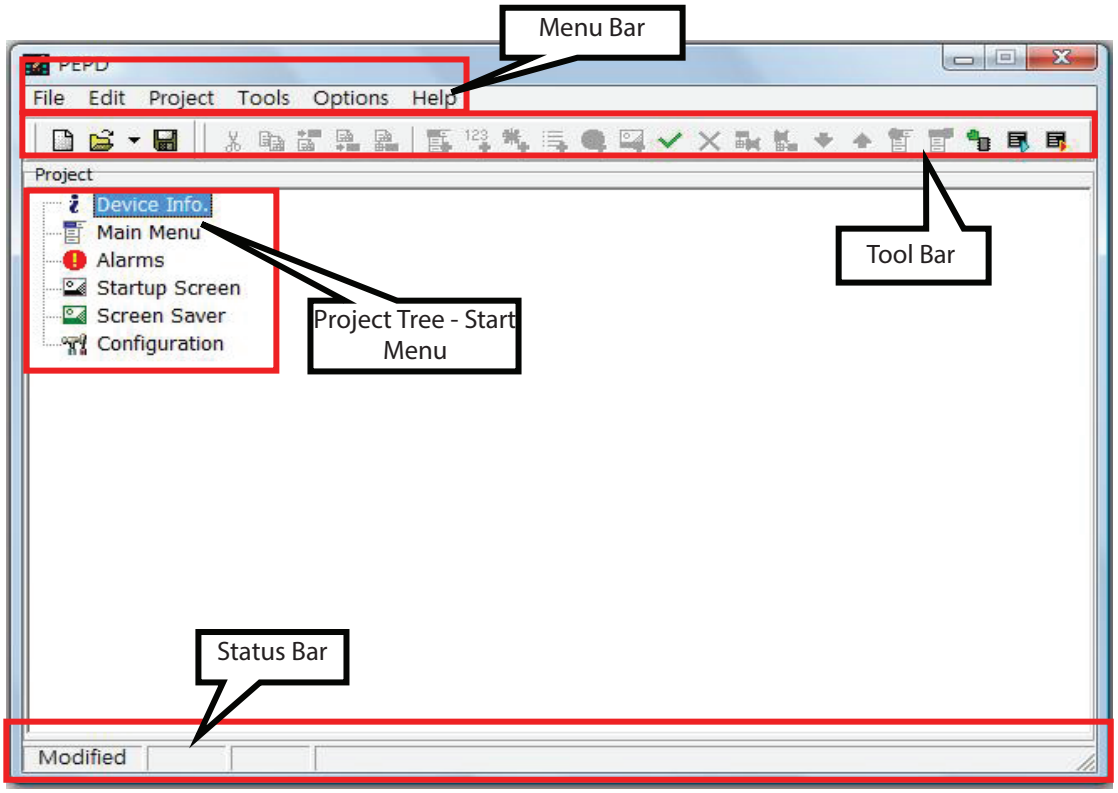
With PEP Designer, user can design the own operating menu and function screen for the **P**arameter**E**ntry **P**anel (PEP) products. Features of PEP Designer include:

- Various function items, such as menus, value items, action items, and lists.
- Hierarchical menu design supports 6 levels of menu and up to 10 menus for each level
- Hints for each menu items and can be shown on the screen if required.
- Design entry formatted with Unicode provide the capability of multilingual display on the panel.
- Unicode design for PEP designer provides the multilingual operation with a single package.
- Offline and online simulations accelerates design progress by saving the time for elaborated design downloads.
- Special character-input tool can store commonly used special symbols for future use.
- Configurable display font at design time for the panel.
- Multiple startup pages (graphics).
- Menu import and export.
- Flexible program editing functions accelerate design progress, including copy, paste, delete, and scroll up and down.
- Search function for searching data in the register and strings. Can call out and display the corresponding design section of matched item in the window with single click to the matched list.
- Alarms function with up to 64 alarm display pages and each page can define up to 3 dynamic data.

# 2. Examples of Operations

## 2.1 Operating Window

There are four parts in the operating window: Menu Bar, Toolbar, Project Tree, and Status Bar as shown below.




※ **Menu Bar:** The menu bar provides access to all the functions of **PEP Designer**, including the following six categories: File, Edit, Project, Tool, Options, and Help..

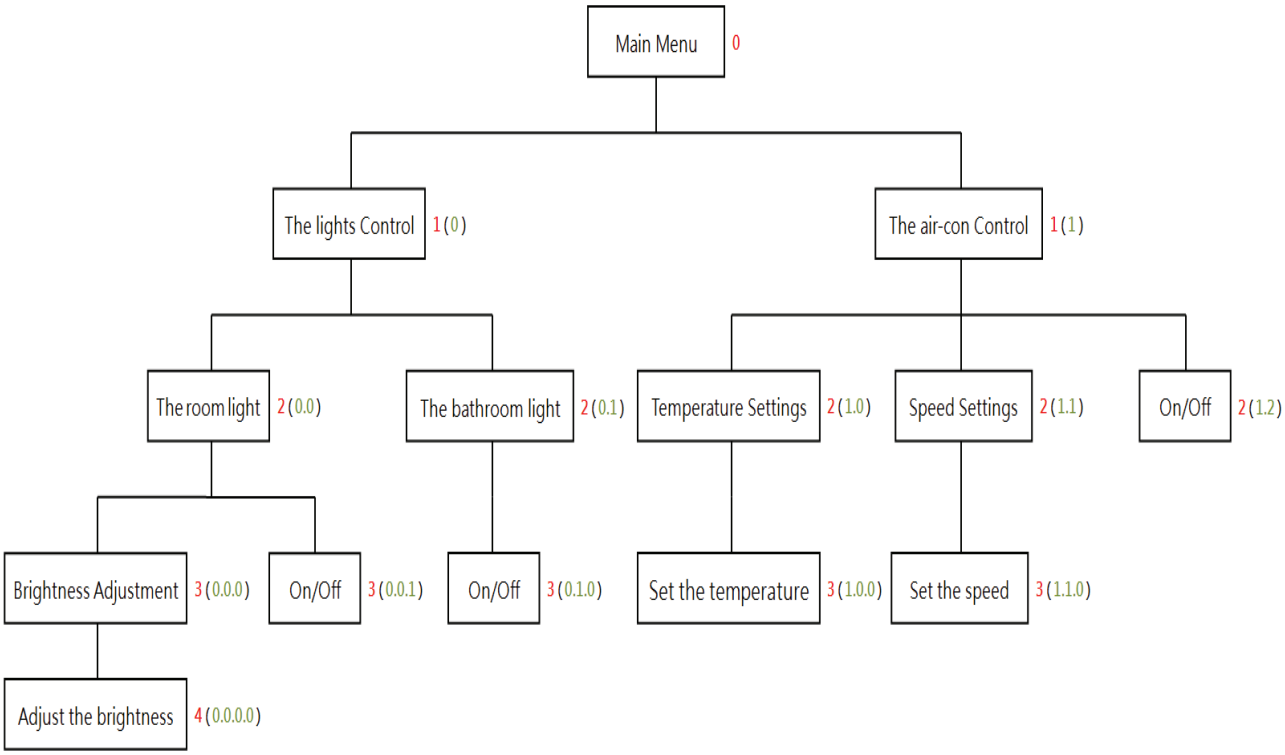
**Tool Bar:** The tool bar provides quick launch in iconic display to the commonly used functions in PEP Designer. By clicking on the respective icon, can directly launch to the selected function.

**Project Tree:** The project tree categorize the whole project into six top nodes: Device Info, Main Menu, Alarms, Startup Screen, Screen Saver, and Configuration.

**Status Bar:** The status bar displays the present menu item and project modification status. When the message "**Modified**" appears on the leftmost frame, the selected project has been modified but not yet saved.

## 2.2 Contents of Example

The following example illustrates how to plana project with the hierarchical menu and actions for the room appliance control. The two common features in room control, lights and air-conditioner, will be discussed in this example. First, we will divide the space into two areas: bedroom and bathroom, both of which are equipped with lights. The bedroom lights are equipped with dimming function, while the bathroom lights only with the on/off function. The air-conditioner is only equipped in the room with the set temperature and set fan speed functions. After editing all menus and functions, the entire operating process can be expressed in the tree diagram below:




※ **There is a set of numbers inside parentheses next to each item. The sequence of these numbers is 0, 1, 2, 3 and so on. The number on the leftmost indicates the level to facilitate users to plan a project and will not be displayed in PEP. The numbers within the parentheses, represent the level and item locations of the menu as shown below.**

**Lights Control (0):** Menu **0** on Level 0
**Air-con Control (1):** Menu **1** on Level 0.
**Room Lights (0.0):** Menu **0** on Level 1, i.e. one level below Menu **0** on Level 0.
**Bathroom Lights (0.1):** Menu **1** on Level 1; i.e. one level below Menu **0** on Level 0.
**Set the Temperature (1.0.0):** Menu **0**, one level below Menu **0** on the level below Menu **1** on Level 0.
**Set the Speed (1.1.0):** Menu **0**, one level below Menu **1** on the level below Menu **1** on Level 0.

※ **If you want to adjust the brightness of the room lights, adjust through the following path (0.0.0.0).**

⇨ Lights Control(0) Room Lights(0) Brightness Adjustment(0) Adjust Brightness(0)

**If you want to set the fan speed of the room air-con, adjust through the following path (1.1.0).**

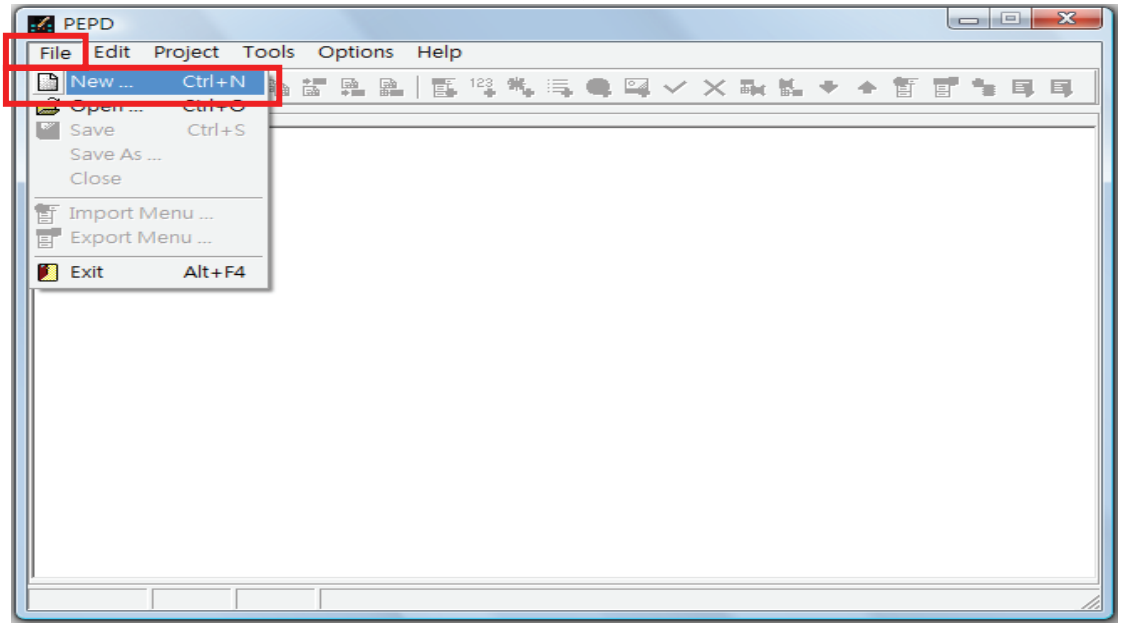
⇨ Air-con Control (1) Speed Settings (1) Set the Speed (0)

## 2.3 Add Menu

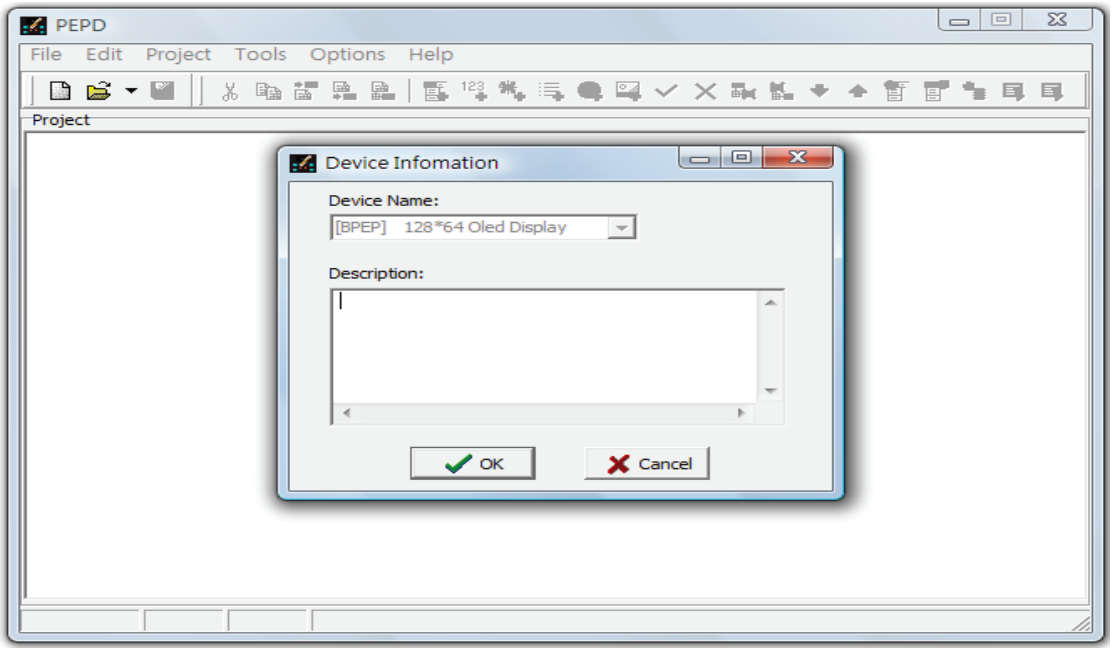
Menu acts as a function button. As PEP Designerprovides the hierarchial menu architecture, user can systemically categorize operatingfunctions by function and by application at different levels. You can also freely plan and design the categories and names of menus and add hint to the menus.

**Step 1:** Double-click left mouse button at the icon to start up PEP Designer.

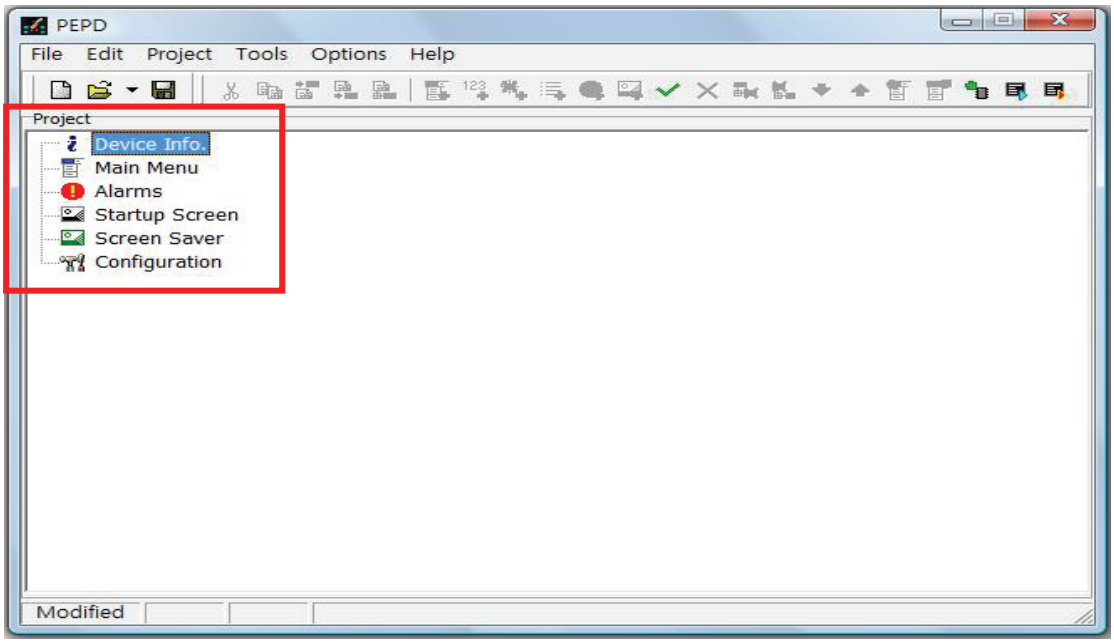
**Step 2:** After opening PEP Designer, a blank operating window will be opened. Select [File] →[New] from the menu bar withthe mouse or click on icon on the toolbar or press the [Ctrl] + [N] keys to open a new file as shown below.



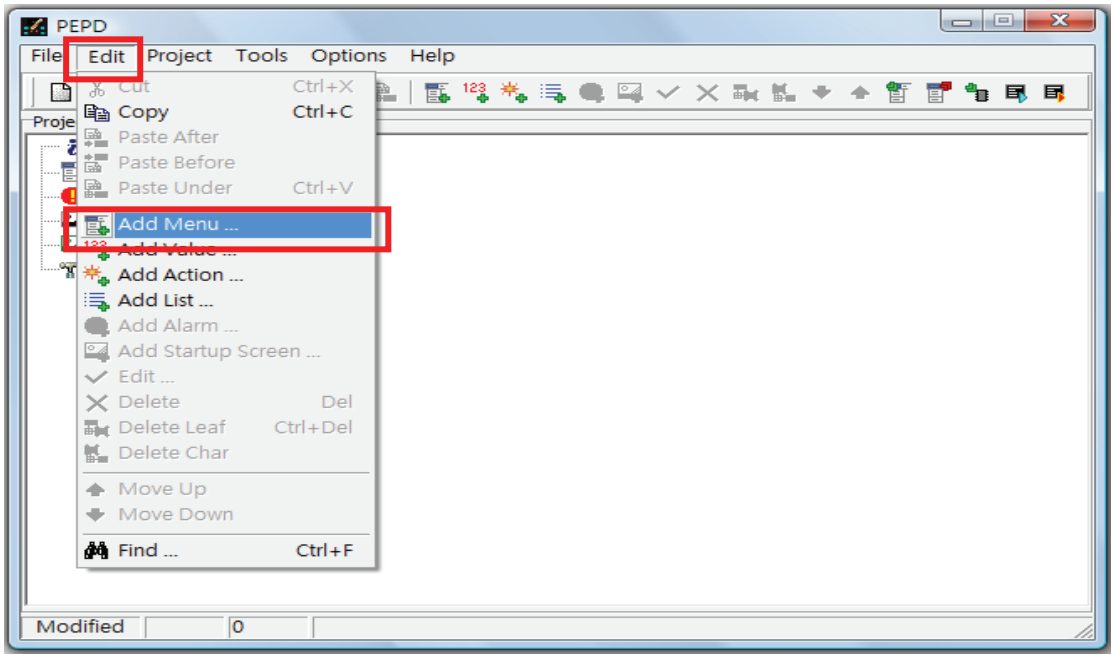

※ **The Device Info. window will pop up as shown below. The Device Name item represents the parameter entry device to be used in this project. You can input descriptions for this project in the Descriptions item. These descriptions will be displayed in the Open file dialog window which can facilitate the identifying and selecting among the different project files.**



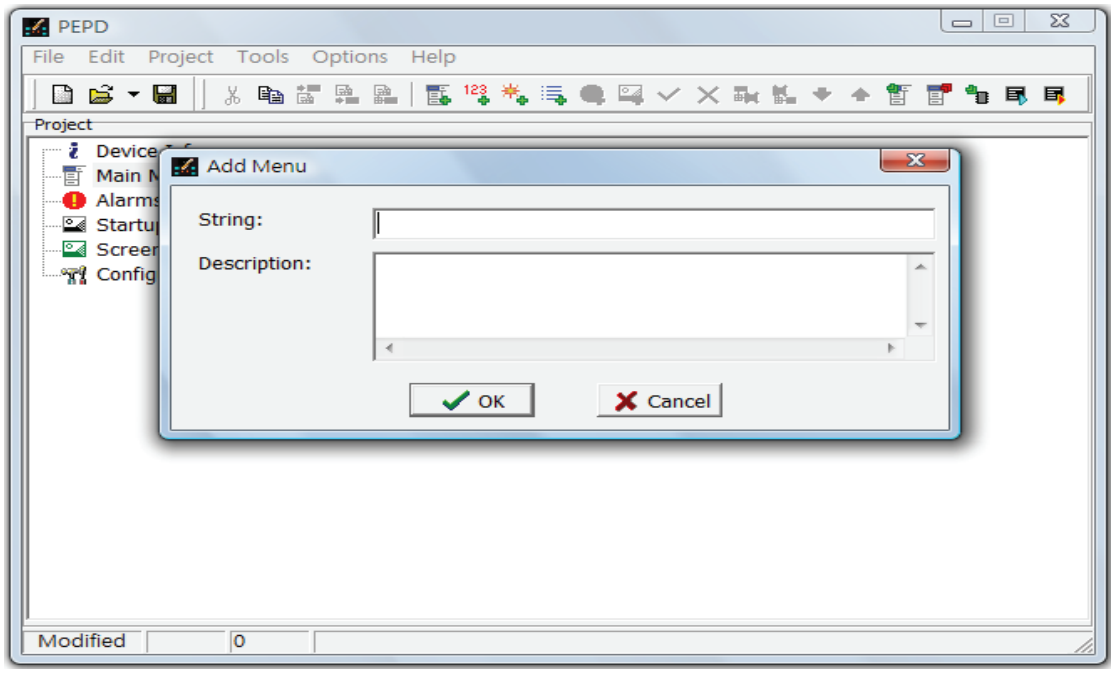

※ **You can add description to this program in the Description field. Otherwise, press the** OK **button and the project tree nodes in the red frame below will be generated automatically. These include the Device Info, Main menu, Alarms, Startup Screen, Screen Saver and Configuration menus. Now, you can begin planning and setting up the project contents.**



**Step 3:** Select Main menu on the screen with the mouse. Then select [Edit]→[Add Menu] from the menu bar. You may also simply right-click the item to call out the pop-up menu and select [Add Menu] as shown below.

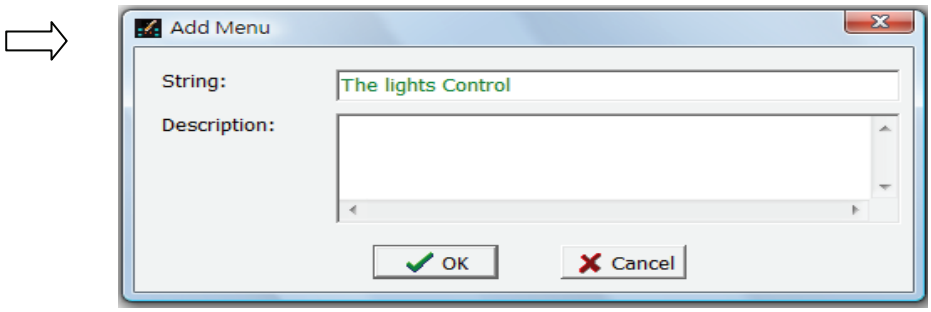



The Add Menu window will be shown as below.

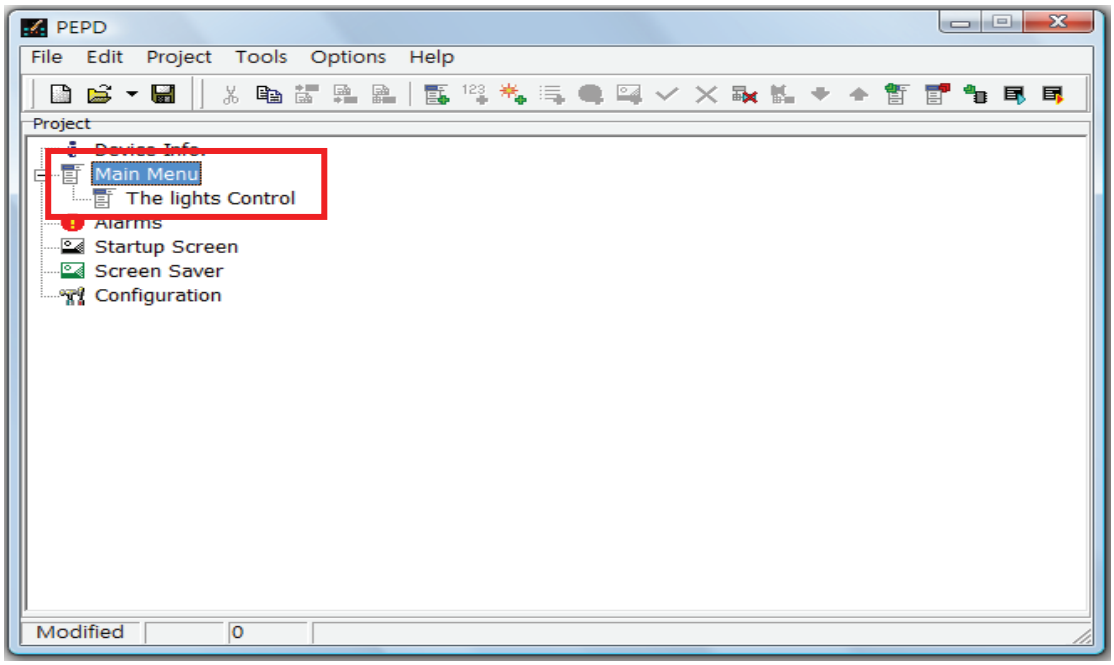



**※ "String" refers to the title of the menu item. Text in the "Description" field is the hint for this menu.**

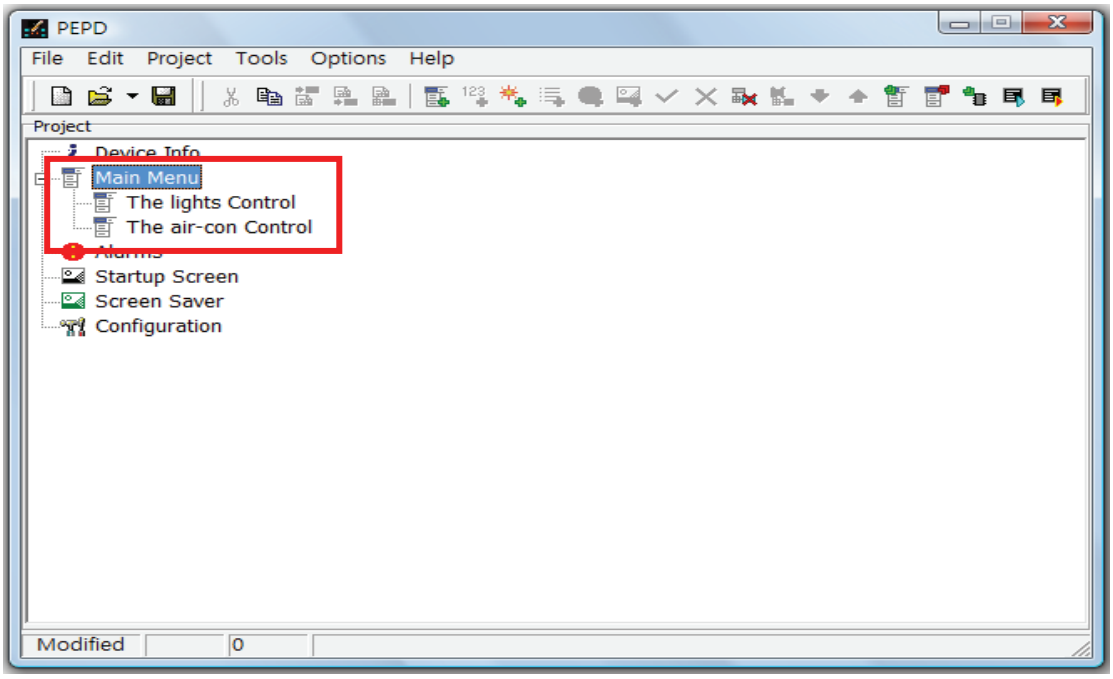
**Step 4:** Enter the title of the firstfunction menu “The Lights Control” in the String field and enter the functions or explanations of this menu in the Description field as shown below.




**Step 5:** After inputting data toboth fields, press the OK button to add the Lights Control menu to the project, and this Add Menu will appear under the Main menu node as shown below.

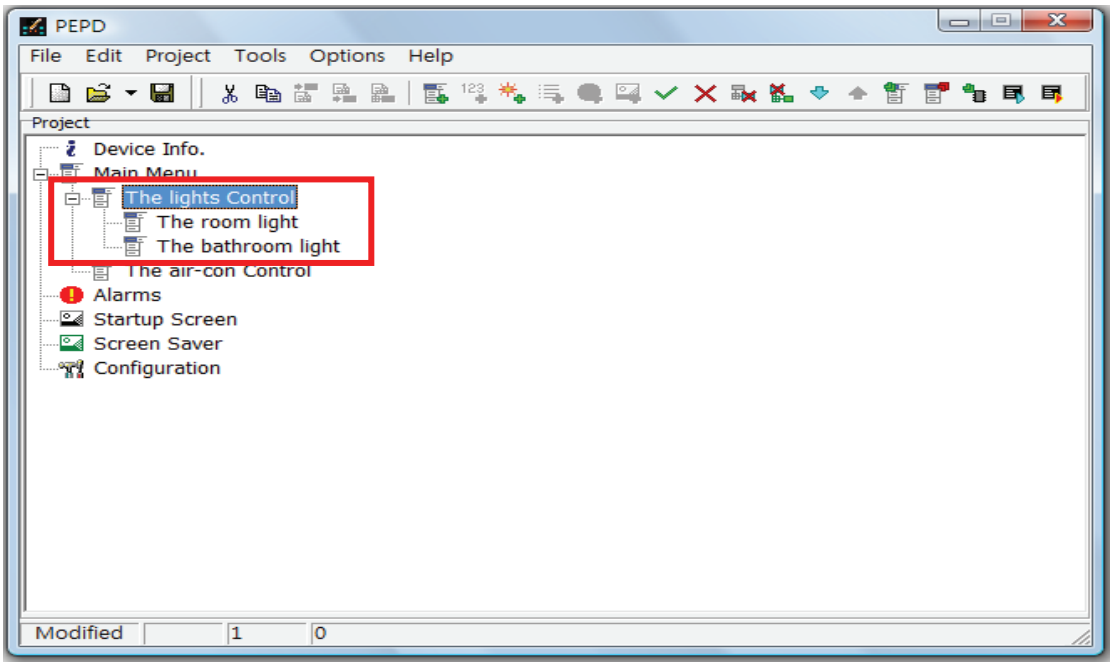


**Step 6**: Repeat Step 5 to add the second functionmenu Air-con Control to the project as shown below.

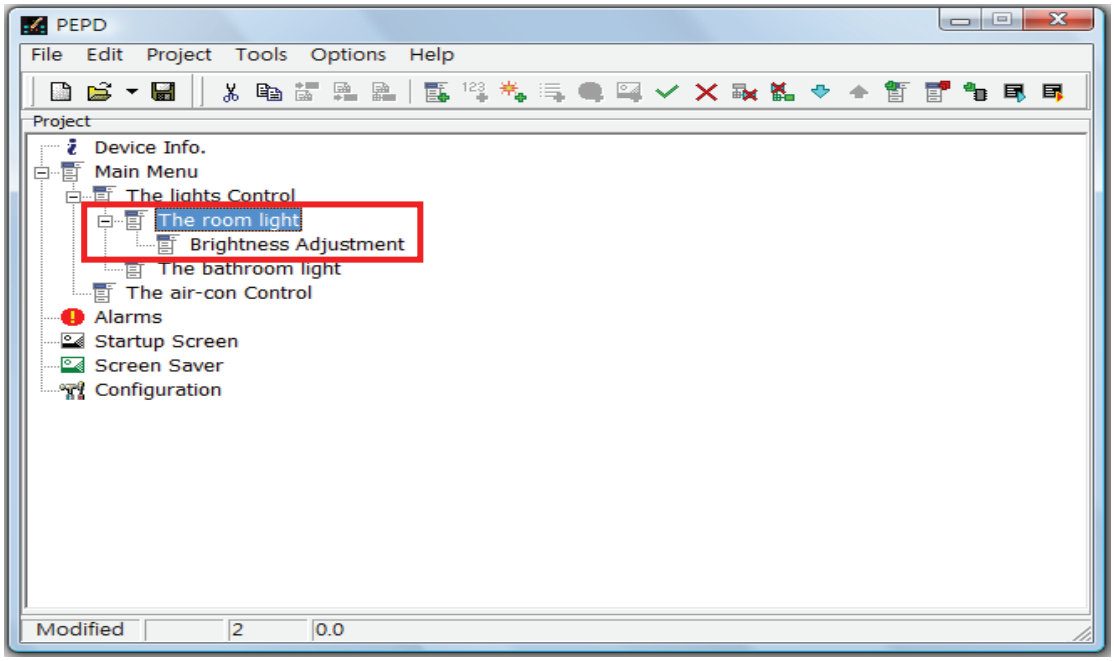



**※ After creating the two main function menus of the project, continue creating the internal space and function menus for the project.**

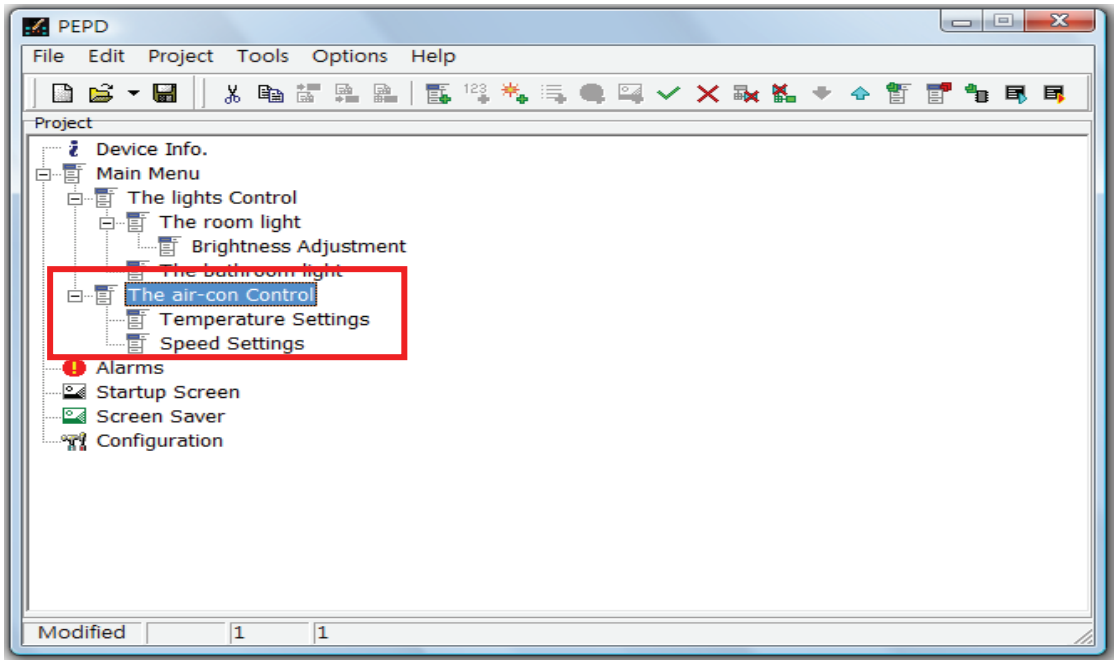
**Step 7**: Select Lights control on the screenwith the mouse. Then select [Edit]→[Add Menu] from the menu bar. You may also simplyright-click the item to call out the pop-up menu and select [Add Menu]. Now you can create the Room lights and the Bathroom lights menus under the Lights control menu as shown below.



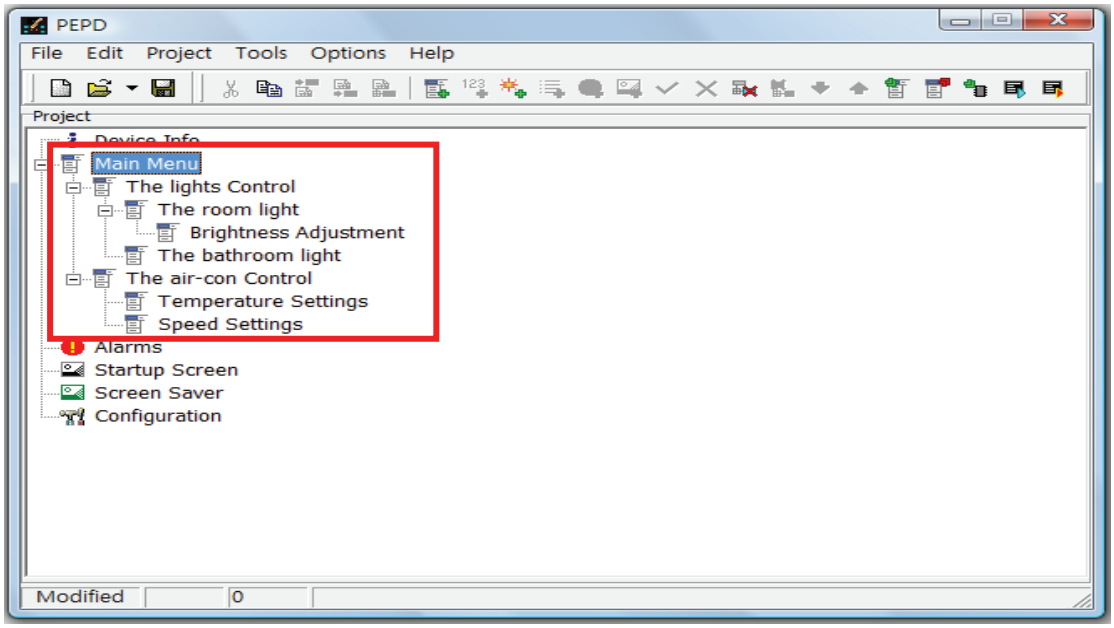
**Step 8:** Select the Room lights on the screenwith the mouse. Then select [Edit]→[Add Menu] from the menu bar. You may also simply right-click the item to call out the pop-up menu and select [Add Menu]. Now, you can create the Brightness Adjustment menu under the Room lights menu as shown below.




**Step 9:** Select the Air-con Control on the screenwith the mouse. Then select [Edit]→[Add Menu] from the menu bar. You may also simply right-click the item to call out the pop-up menu and select [Add Menu]. Now, youcan create the Temperature settings and Speed Settings menus under the Air-con Control menu as shown below.



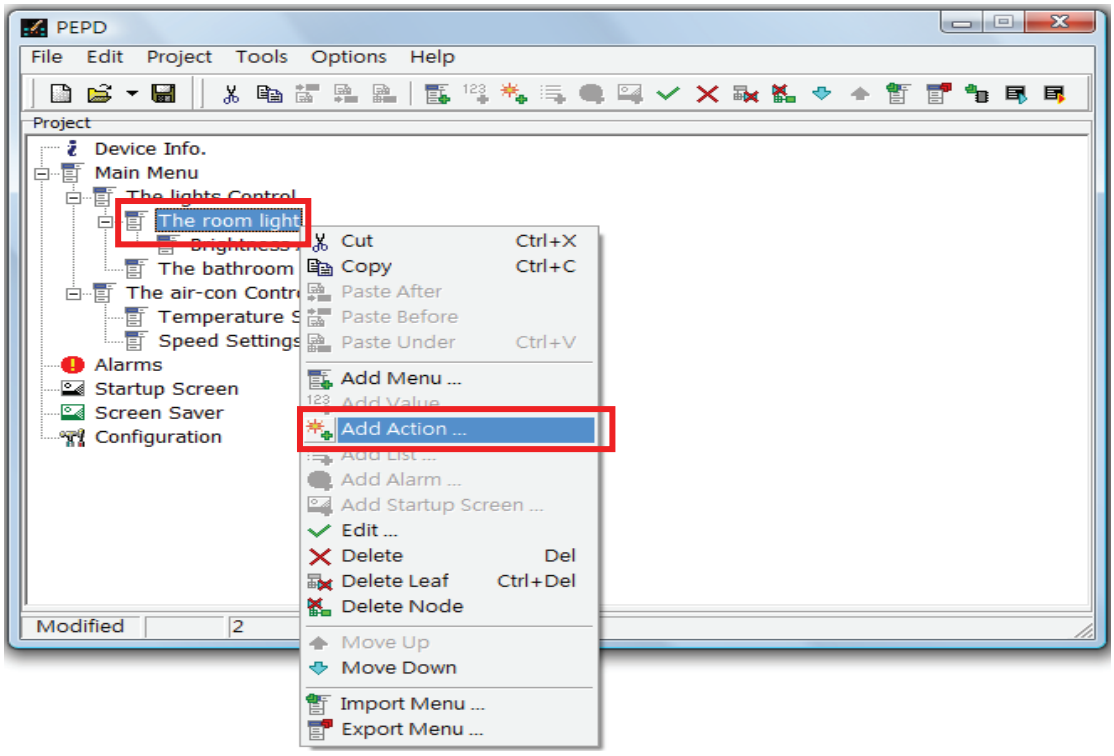
After creating the two main function menusand their sub-menus, these menus will be displayed under the Main menu as shown below.



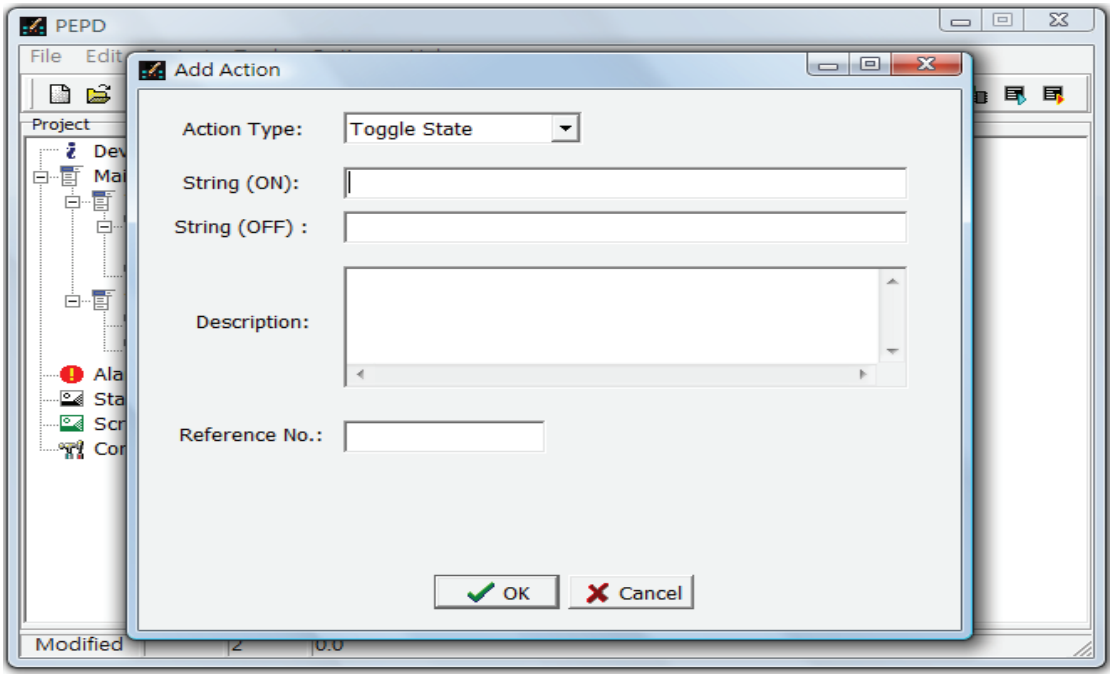

## 2.4 Set Action

After creating all menus in the Main menu, youmay continue with the controls: Light Switch and Air-con Switch. As a switch is used to turn the power ON and OFF, the functions in the Action item can fulfill this demand. Therefore, you can set the switchactions by selecting [Add Action].

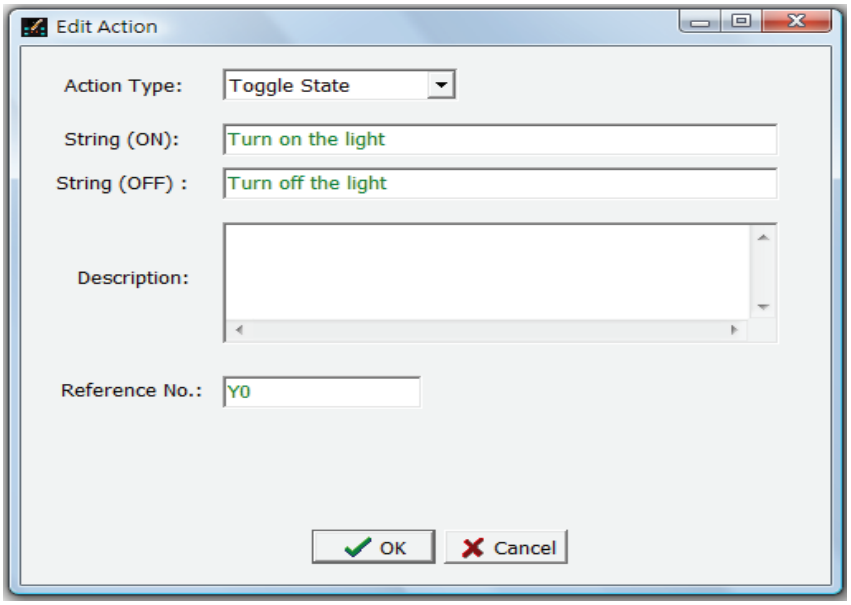
**Step 1:** Select the Room Lights on the screenwith the mouse. Then select [Edit]→[Add Action] from the menu bar. You may also simply right-click the item to call out the pop-up menu and select [Add Action] as shown below.



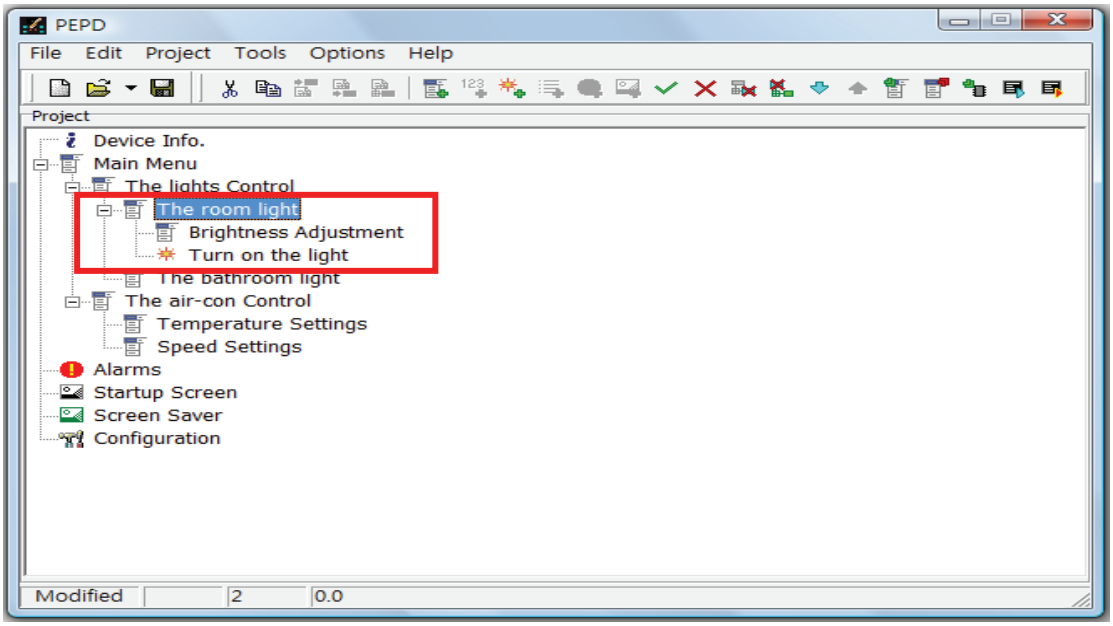
The [Add Action] window will pop up as shown below.




※ **In the Action Type item, select Toggle State for Light Switch. You can enter the action strings according to the information in the following example. According to the example, when the action is activated, "Y0" will be the reference number corresponding to the PLC, and the actions On and Off will be displayed alternately.**

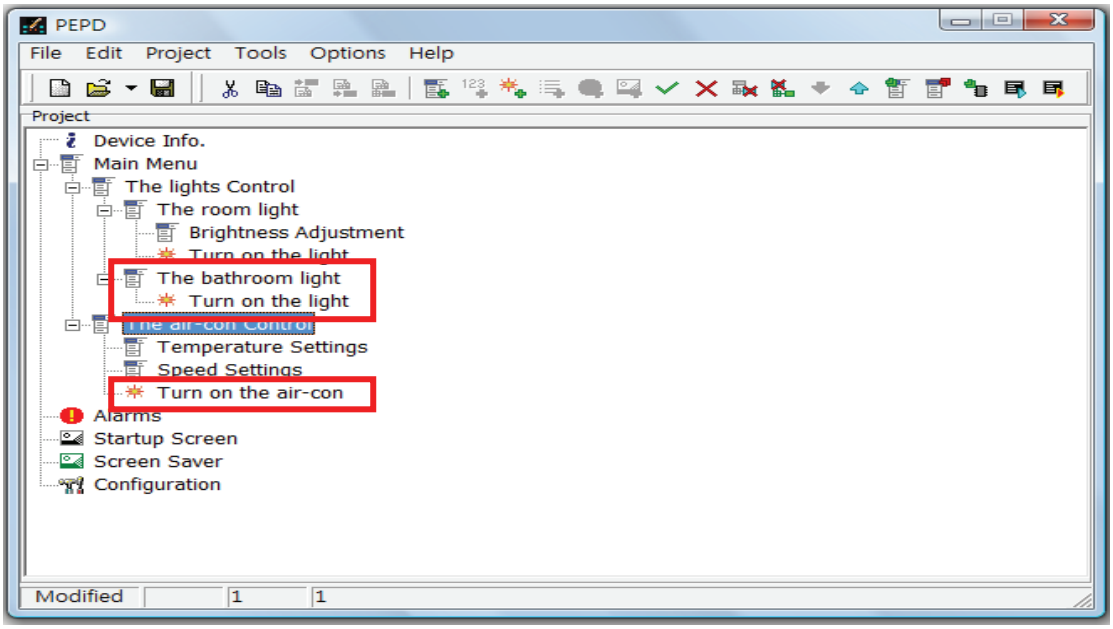


**Step 2:** After complete the input data, press the OK button to add the Turn on the Light action to the Room Lights menu as shown below.

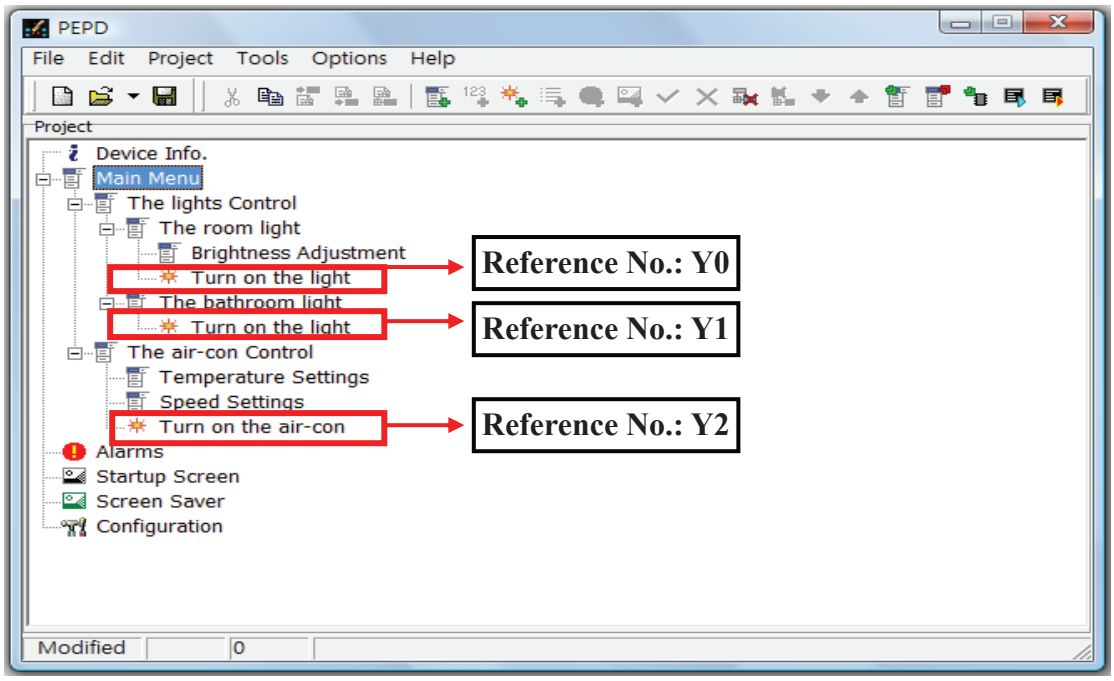



**※ If you want to modify the action, select the action with the mouse and select [Edit]→[Edit] from the menu bar. You may also simply double-click the item to call out the Edit Action function and modify the action. After modifying the action, press the OK button to confirm modifications.**

**Step 3:** Repeat Steps 1 and 2 to add actions to the Bathroom lights and the Air-con Control. After adding functions to these actions, they will be displayed under the respective items as shown below.



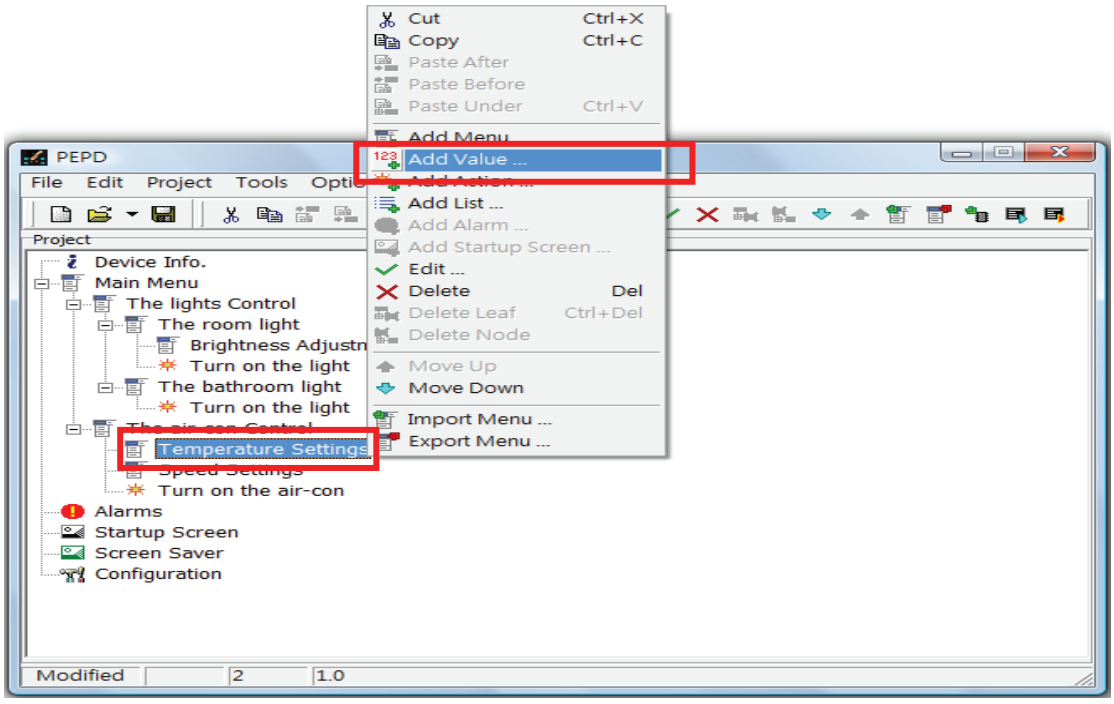

**※ In this example, the reference numbers corresponding to the PLC are: "Y0" for The Room lights (On/Off), "Y1" for The Bathroom lights (On/Off), and "Y2" for The Air-con Switch. As shown below.**



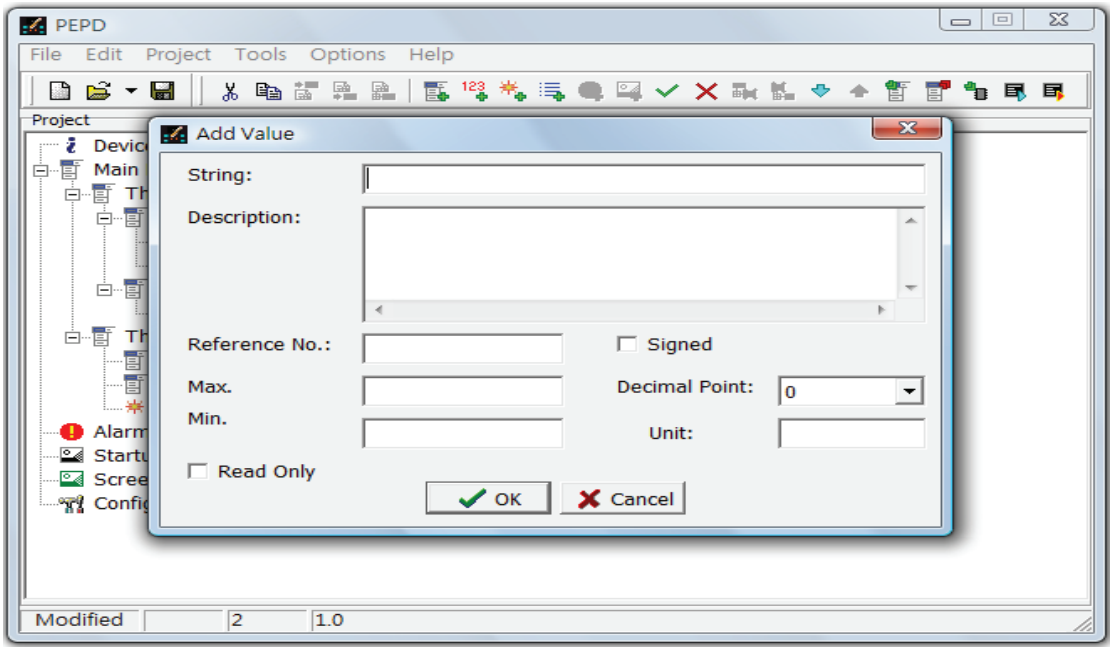

## 2.5 Set Value

There are two operations concerning the Air-con: Temperature Settings and Fan Speed Settings. Let us begin with Temperature settings. As temperature is set by means of value, the Add Value function can fulfill this demand. Therefore, we can achieve Temperature Settings with the Add Value function.

**Step 1:** Select Temperature Settings on the screen with the mouse. Then select [Edit]→[Add Value]. You may also right-click the item to call out the pop-up menu and select [Add Value] as shown below.

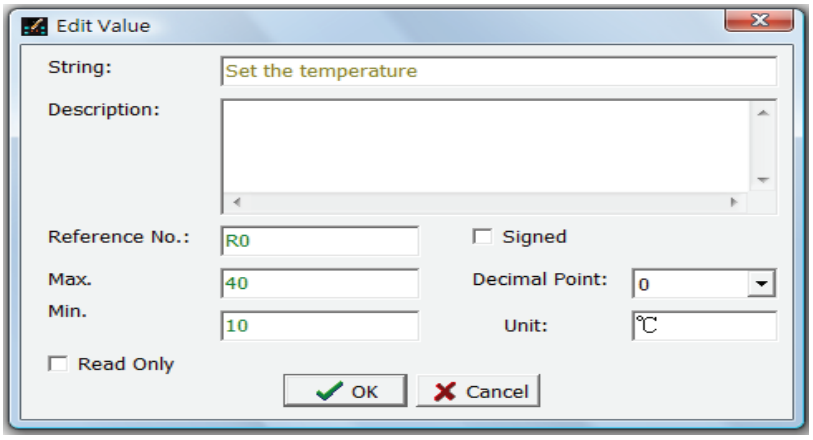


The Add Value window will pop up as shown below.



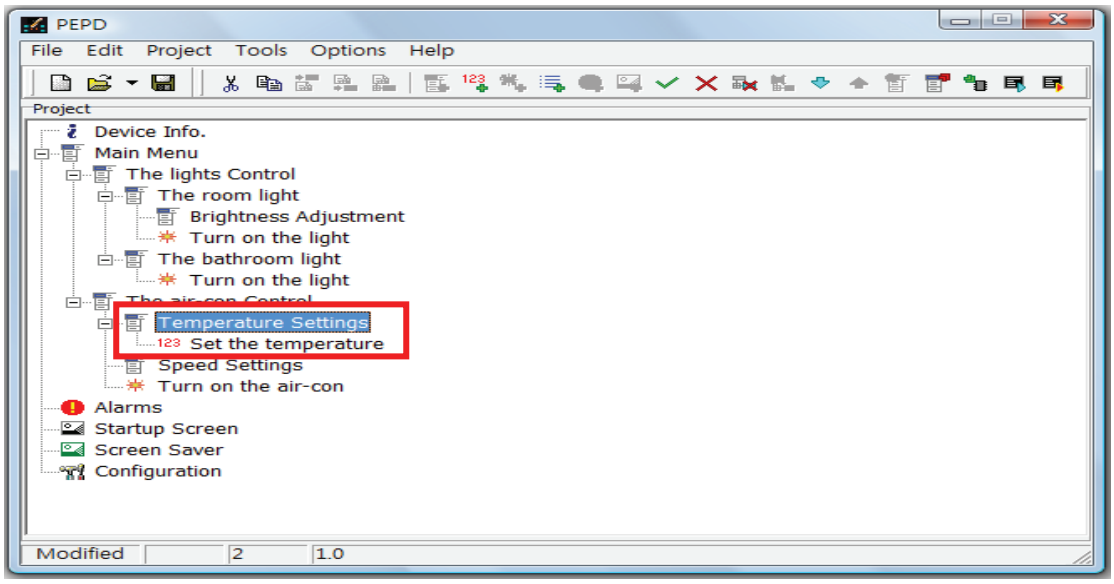

※ **"String" refers to the title of the value item. Assign a register in "Reference No." to store the value input by users. "Max." and "Min." represent the range of the value restriction when input the value.**

⇨




※ **In this example, "R0" is the reference number corresponding to the PLC, i.e. the register assigned to save the value for Set the Temperature. The Maximum and Minimum values are 40 and 10 respectively. The temperature unit is °C.**

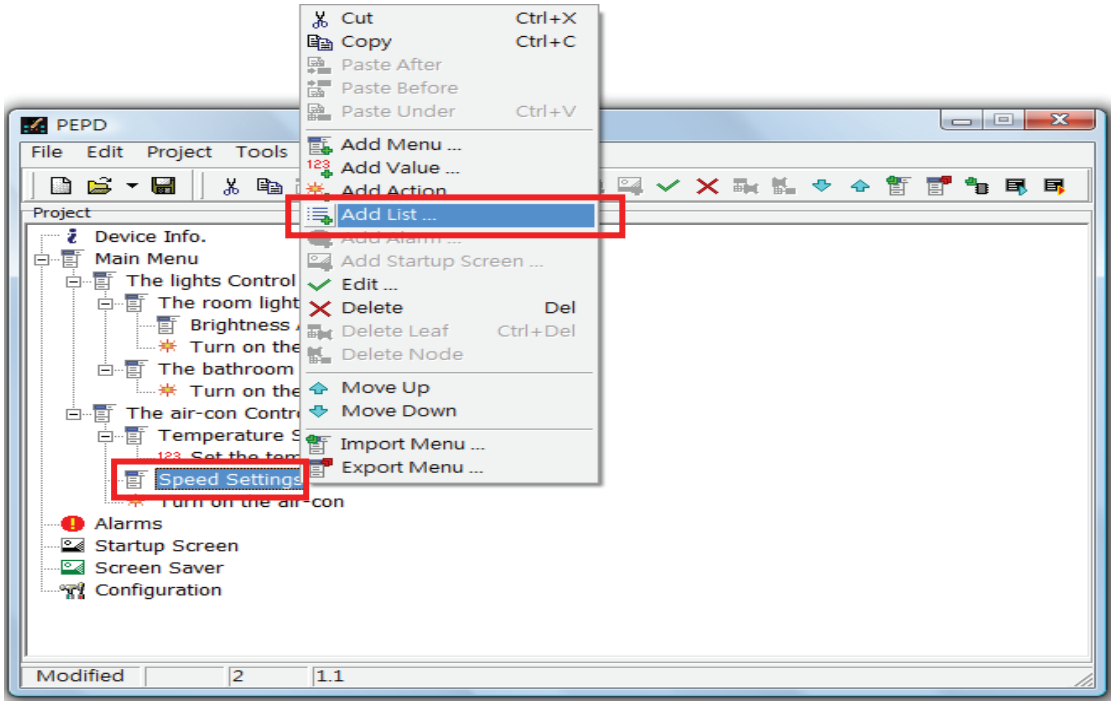
**Step 2:** After complete the input, press the OK button to add the Set the Temperature value item under the Temperature Settings menu as shown below.



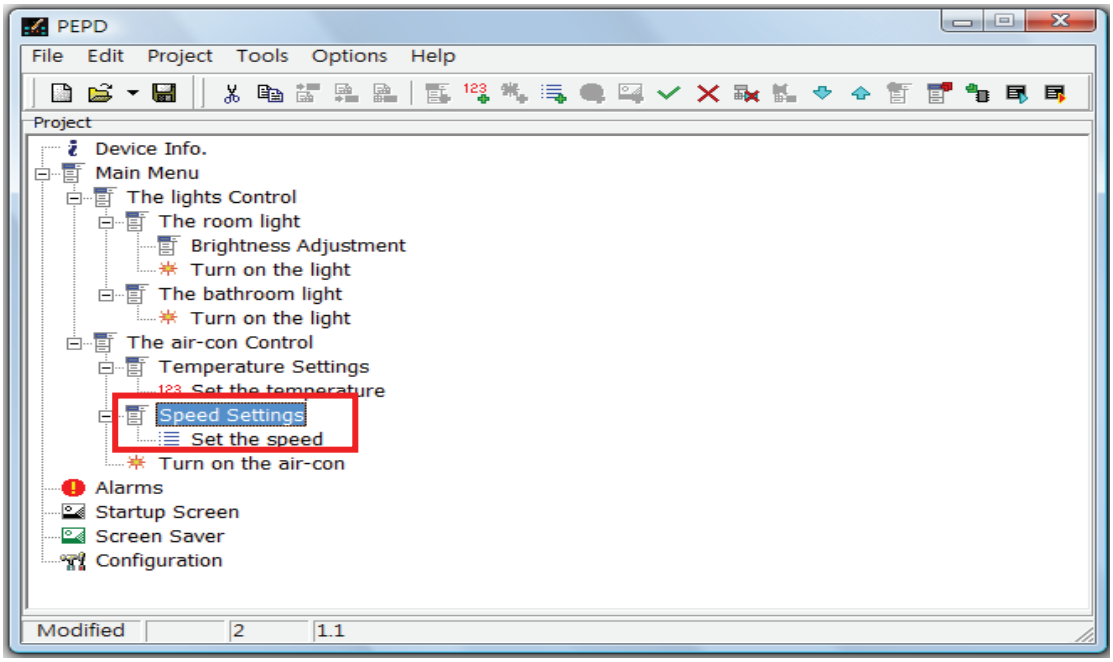

# 2.6 Set List

There are five choices for the Fan Speed Setings item in the Air-con Control menu: High, Medium, Low, Mild, and Auto. The choices for the Brightness Adjustment item in the Room Lights menu include High, Medium, and Low. As every function in the list must contain a corresponding value, when you select an choice, the corresponding value of the choice will be written in the PLC register as desired. Therefore, we can implement the Fan Speed Settings and Brightness Adjustment with the Add List function.

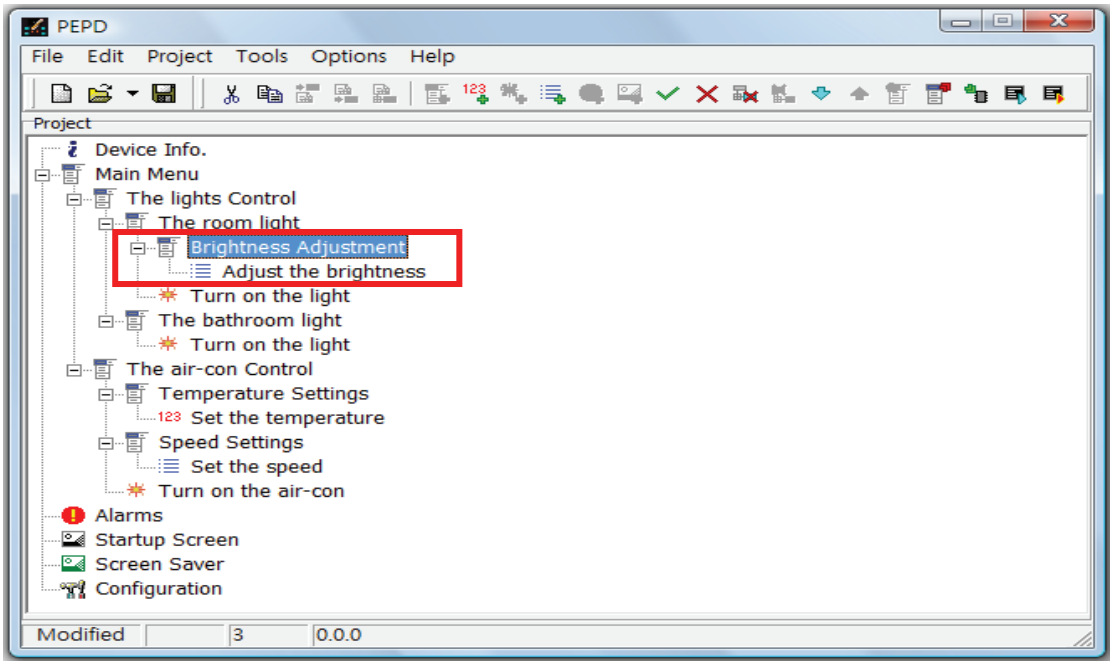
**Step 1:** Select Speed Settings on the screen with the mouse. Then select [Edit]→[Add List]. You may also right-click the item to call out the pop-up menu and select [Add List] as shown below.



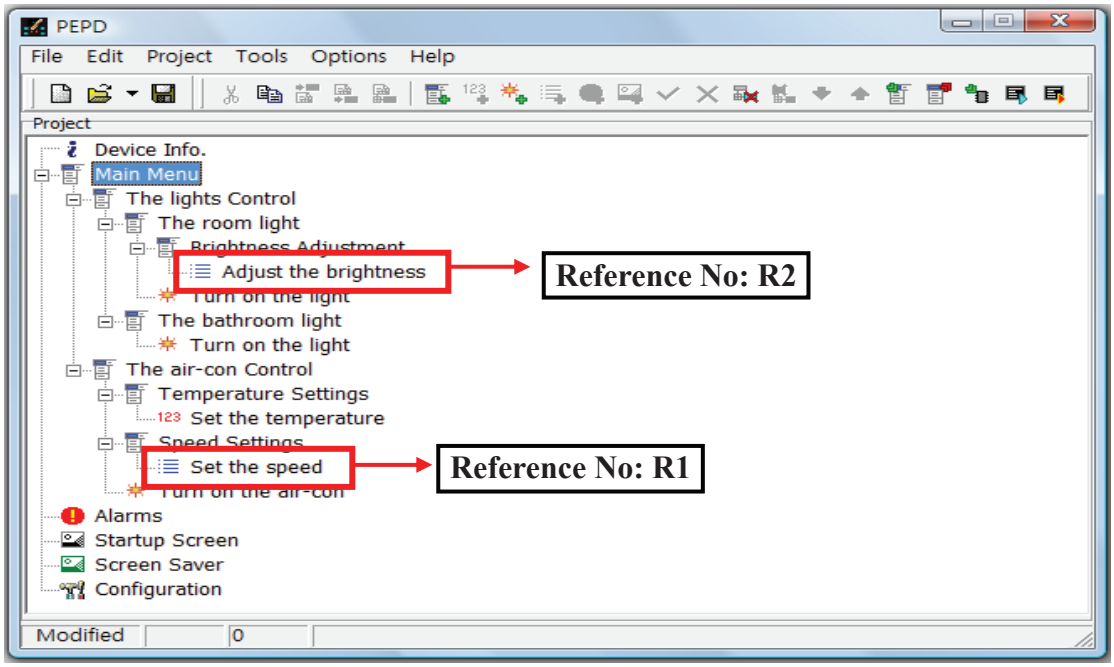
**Step 2:** After complete the input data, press the OK button to add the Set the Speed list to the Speed Settings menu as shown below




**Step 3:** Repeat Steps 1 and 2 to add the AdjusBrightness list to the Brightness Adjustment menu as shown below.



※ **In this example, the register R1 is assigned to list item - "Set the Speed", while the register R2 is assigned to list item - "Adjust Brightness".**



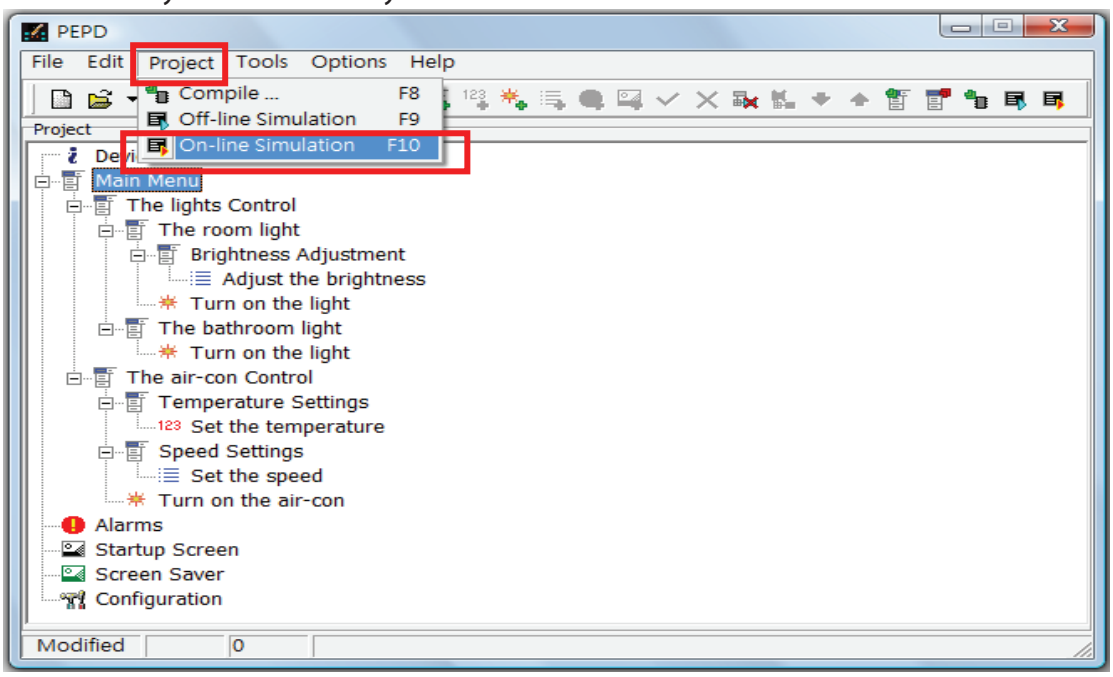

## 2.7 Simulation and Downloading of Designs

After creating the user menus,you may want to validate if they are consistent with the planning. Run the On-line Simulation to testthese menus. With the On-line Simulation, you can save labor and time from loading menus tourn the test on the operating device every time after editing a function. After finished the simulation test, only wheneverything is verified and validated, menus design is requied to download to PEP device.

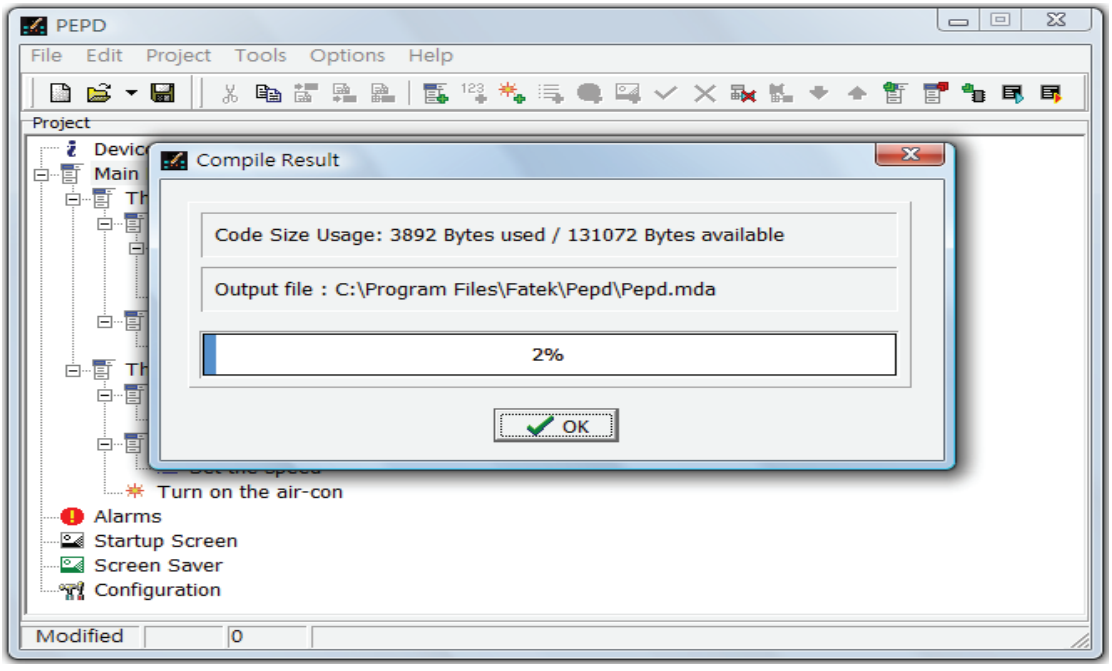
### 2.7.1 On-line Simulation

Similar to the Off-line Simulation, which runs the simulation on the PC, the only difference between the offline and online simulation is that the former does not connect to the PLC, while the latter connects to the PLC viathe communication port on the PC running the simulation.

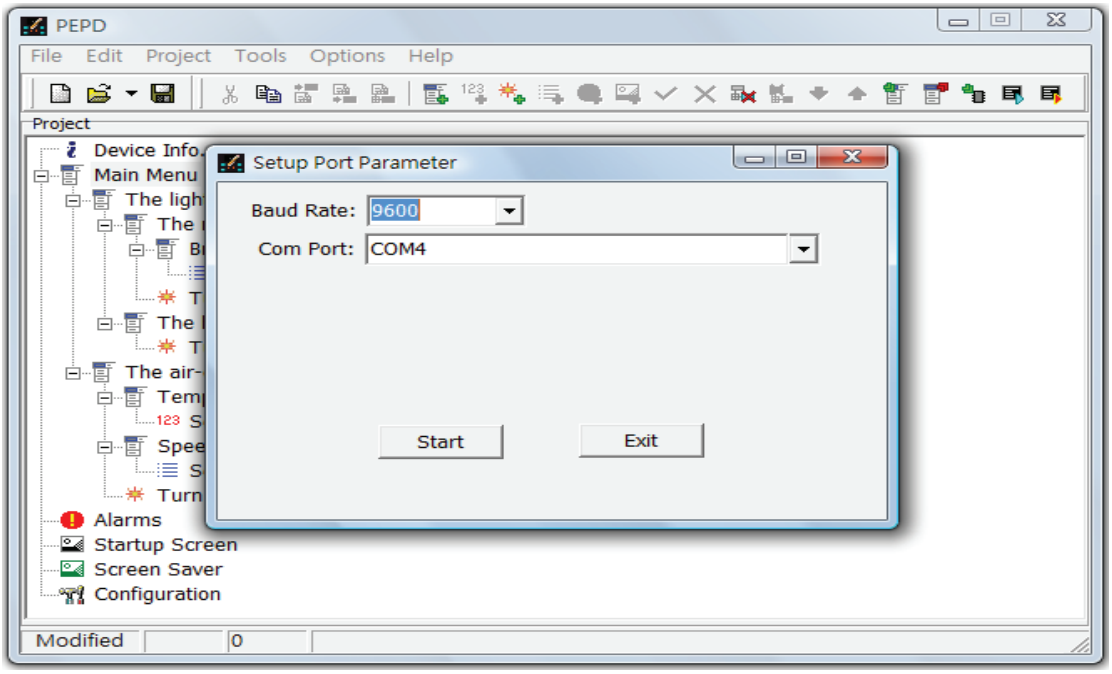
**Step 1:** Select [Project]→[On-line Simulation] from the menu bar with the mouse. You may also click the icon on the toolbar or press the [F10] function key on the keyboard to directly launch to the On-line Simulation as shown below.



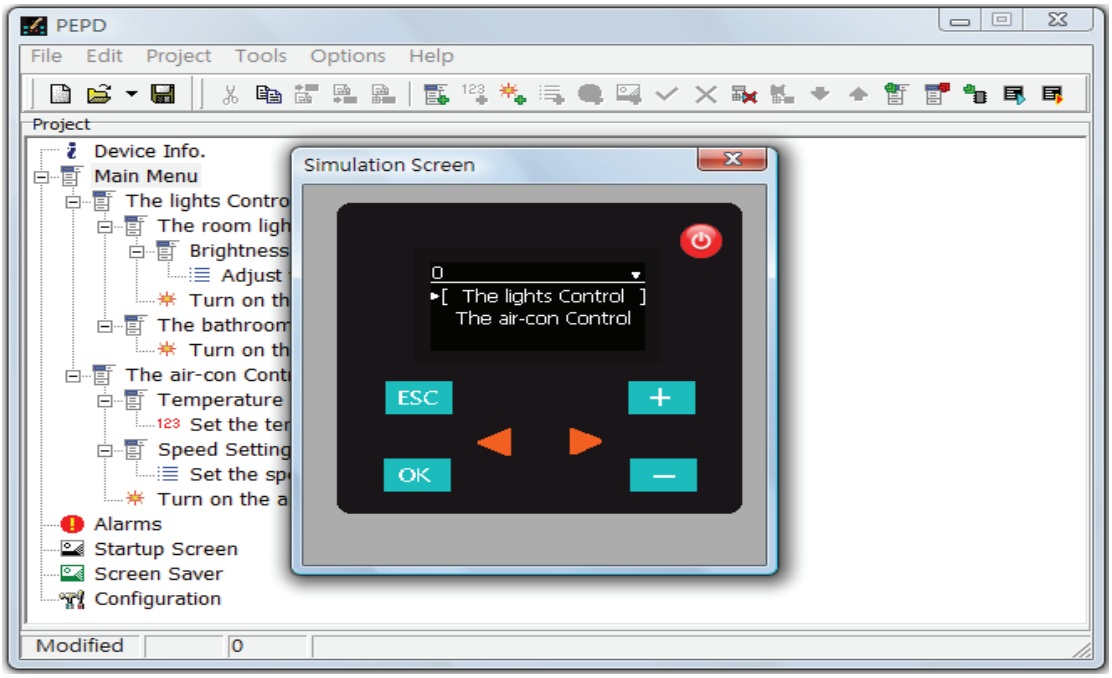

**Step 2:** The "Compile Result" window will pop up. The information in the window includes Code Size Usage and Output File as shown below.



**Step 3:** After verify the compile result is OK, press the OK button and the Setup Port Parameter window will pop up as shown below.




**Step 4:** After setting up the Baud Rate and Com Port, press the Start button. The [On-line Simulation] screen will pop up as shown below.



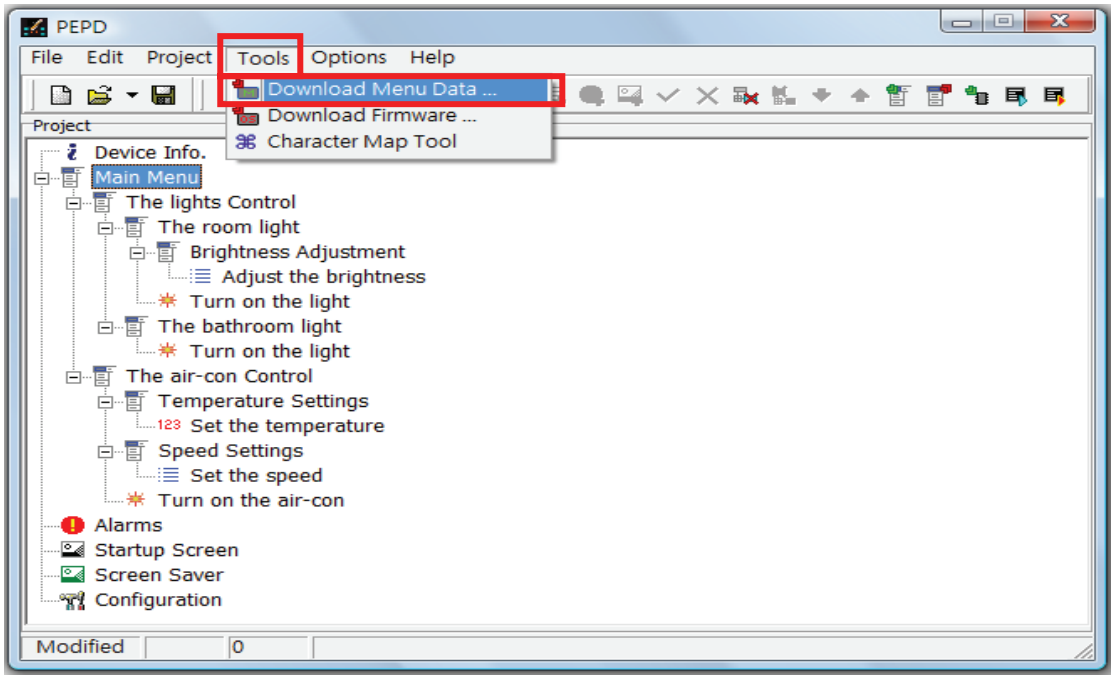

## 2.7.2 Download Design to PEP

After validating the function ofdesign with the simulation, you may download the design to PEP. Before download design to PEP, you must first switch PEP devi ce into system menu mode.

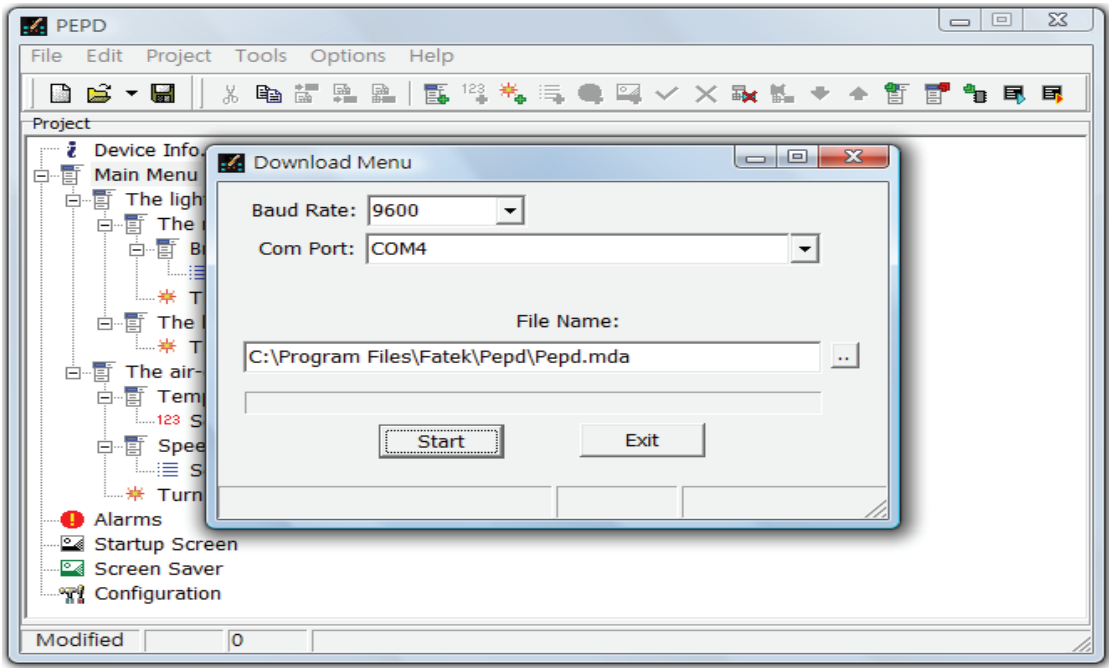
**Step 1:** At PEP device side: Press the ESC key on the PEP device for at least 6 seconds to enter the System Menu as shown belowSelect [Load User Menu] and press the OK key. The screen will show “Load User Menu?” and “ Press OK to Confirm ”.

If you want to load user menus, press the OK key. The screen will show “Waiting for connection…” and “Press ESC to Abort ”. This means the PEP device is waiting for PEP Designer to transfer the design.

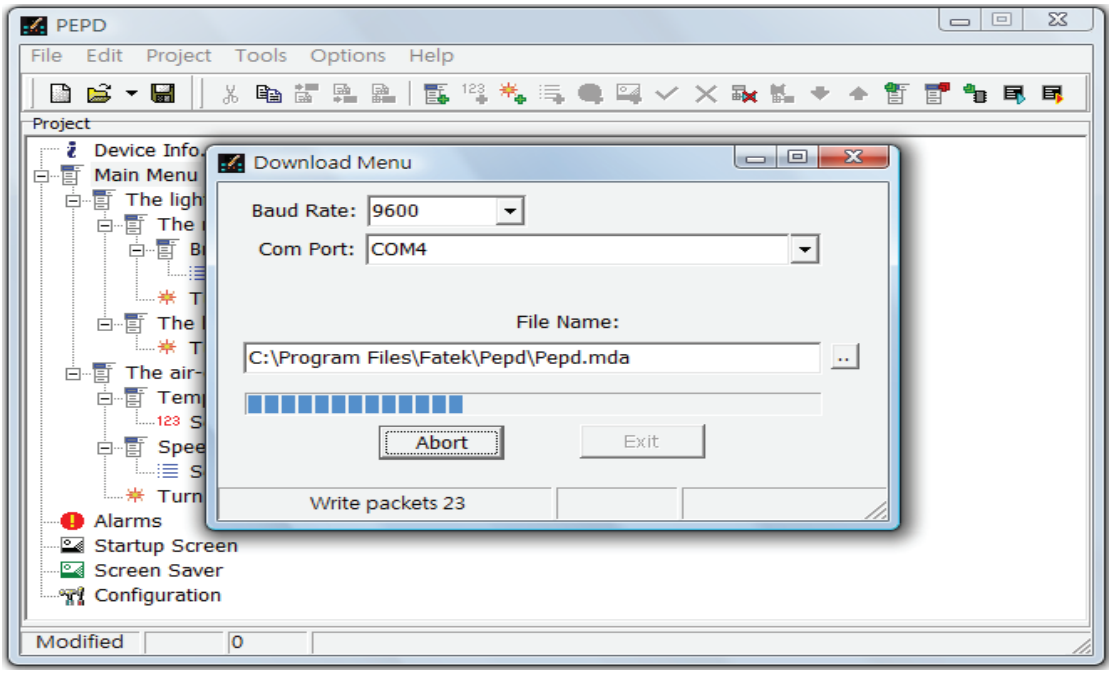
**Step 2:** At PC side: Select [Tool] →[Download Menu Data] from the menu bar with the mouse as shown below.



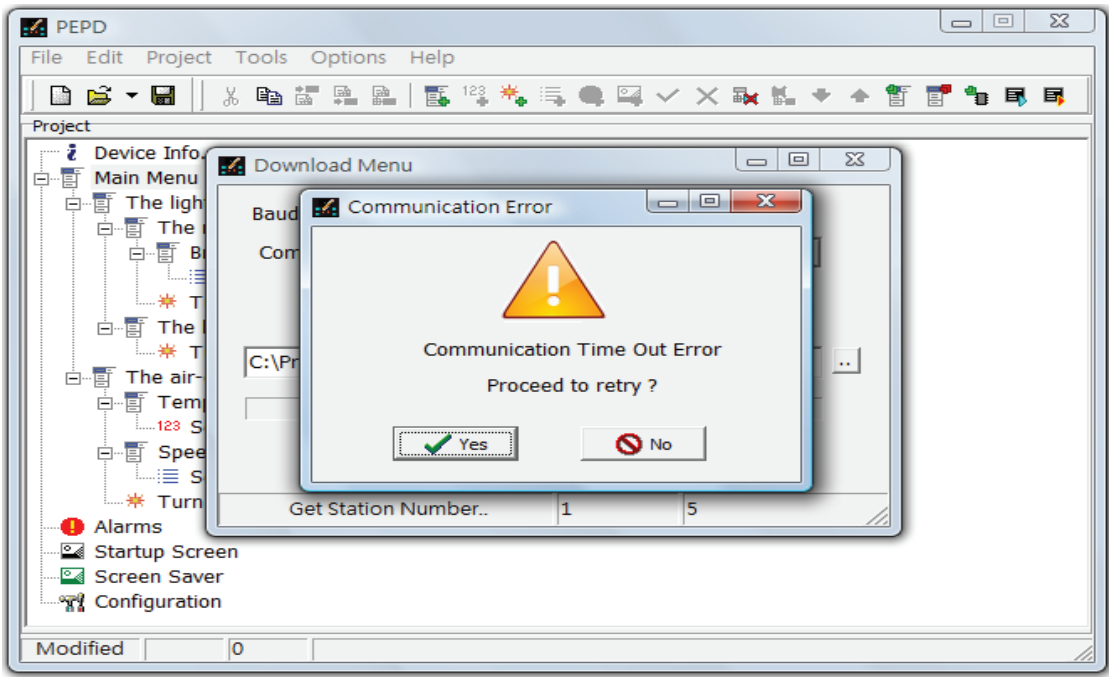
The “Download Menu” window will pop up as shown below.



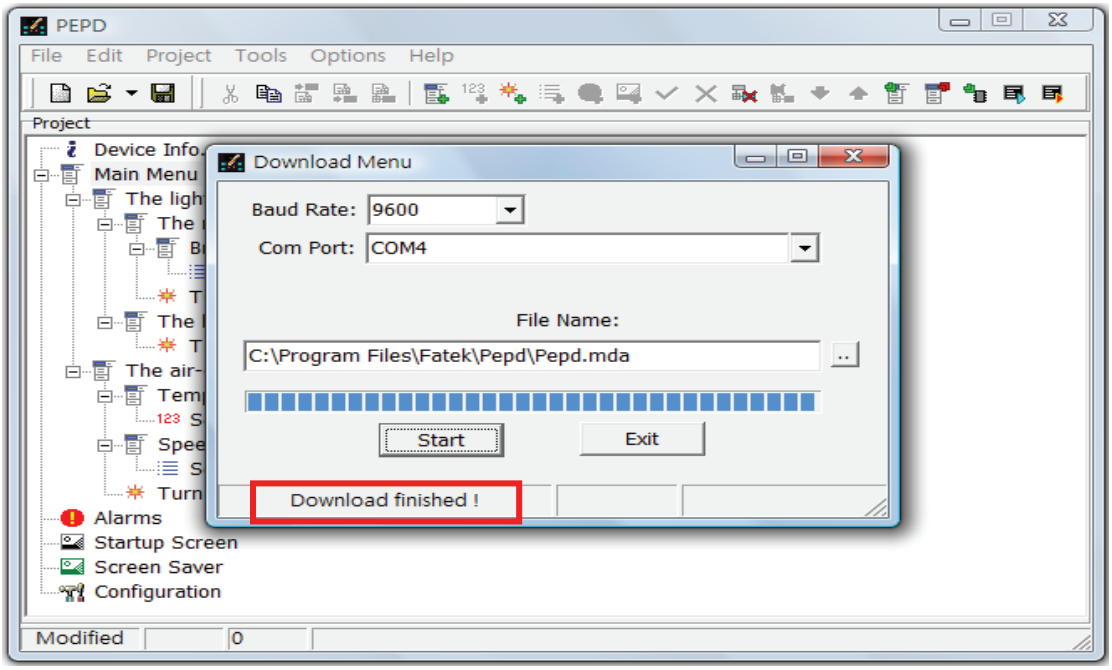

**Step 3:** After setting the Baud Rate and Port and the compiled design filename, press the Start button to download design to PEP device as shown below.



※ **When there is a communication connection error, the "Communication Error!" message box as shown below will pop up.**




※ **When design is completely downloaded to PEP, the message "Download finished!" will display in the status bar of the Download Menu window as shown below.**

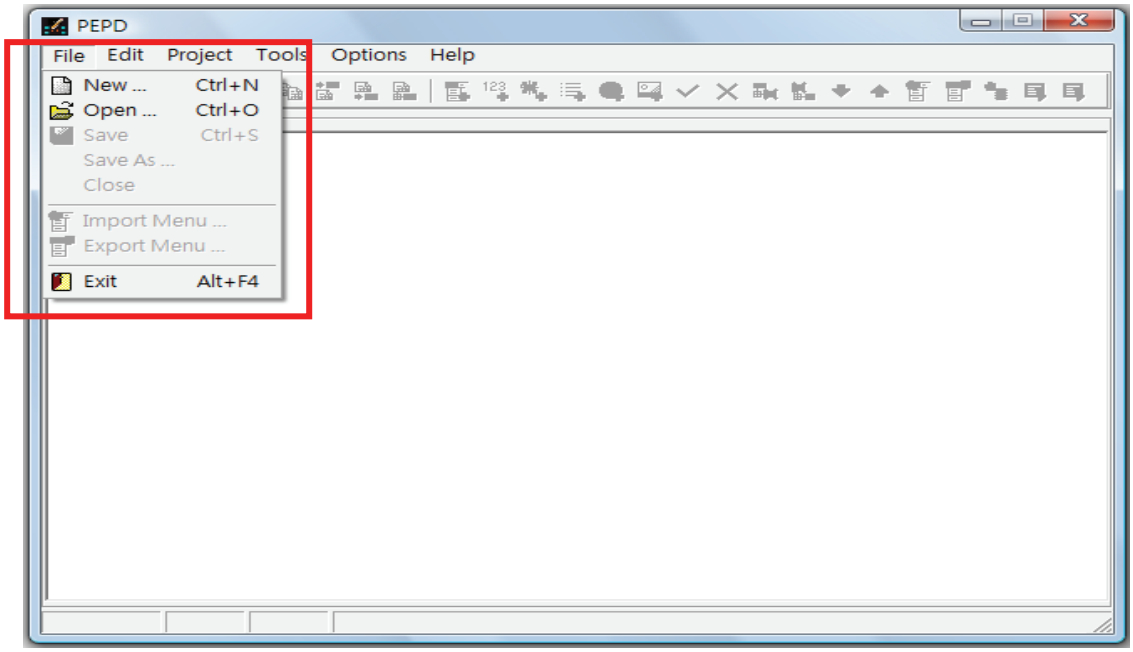



**Step 4:** Lastly, press any key on PEP to return to the System Menu screen. Select [Run User Menu] and press the OK key to let PEP back to normal work.

# 3. Operations in Detail

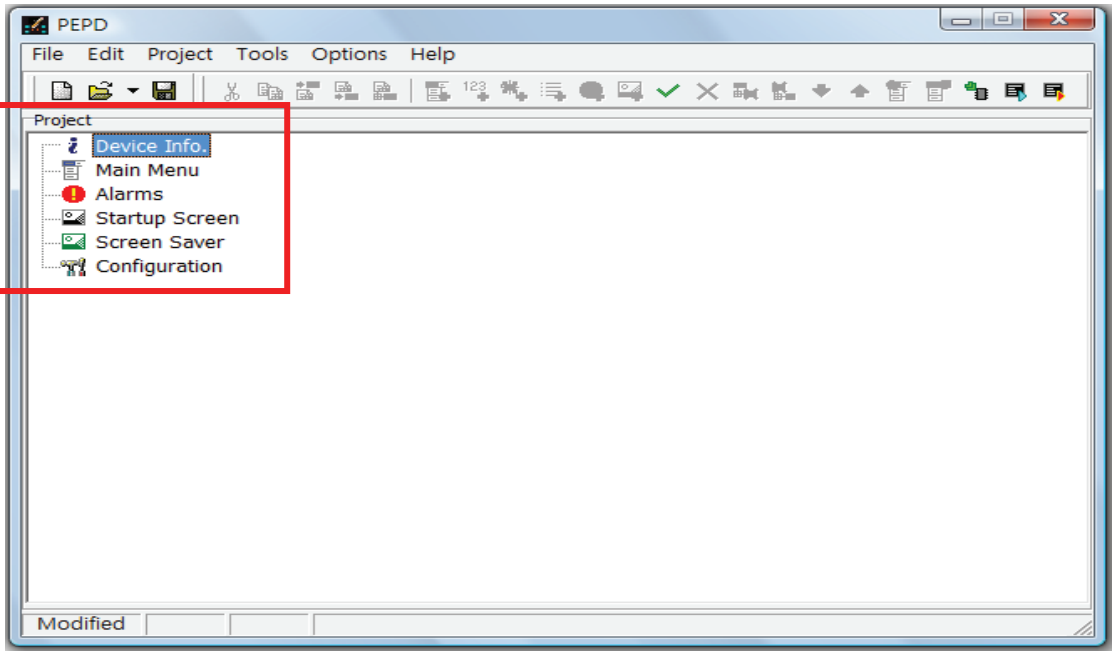
## 3.1 File

Select File with the mouse from the menu bar or press [Alt] + [F] keys on the keyboard. The File pull-down menu as shown below will appear.



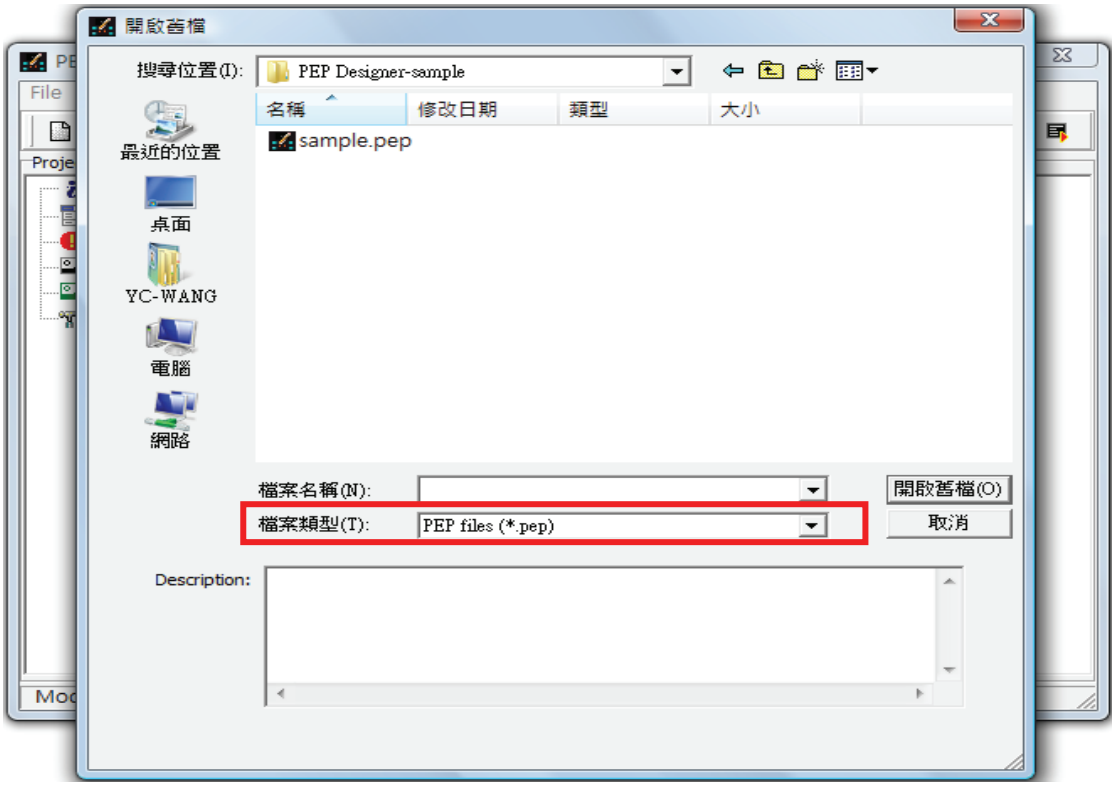

### 3.1.1 Create a File (New)

Select [File] →[New] with the mouse from the pull-down menu, or click the from the toolbar, or press the [Ctrl] + [N] keys on the keyboard to open a new file. Items in the file as shown in the red frame below, including Mainmenu, Alarms, Startup Screen, Screen Saver, and Configuration, will be generated automatically. Now, you canstart planning the desired screens and settings.

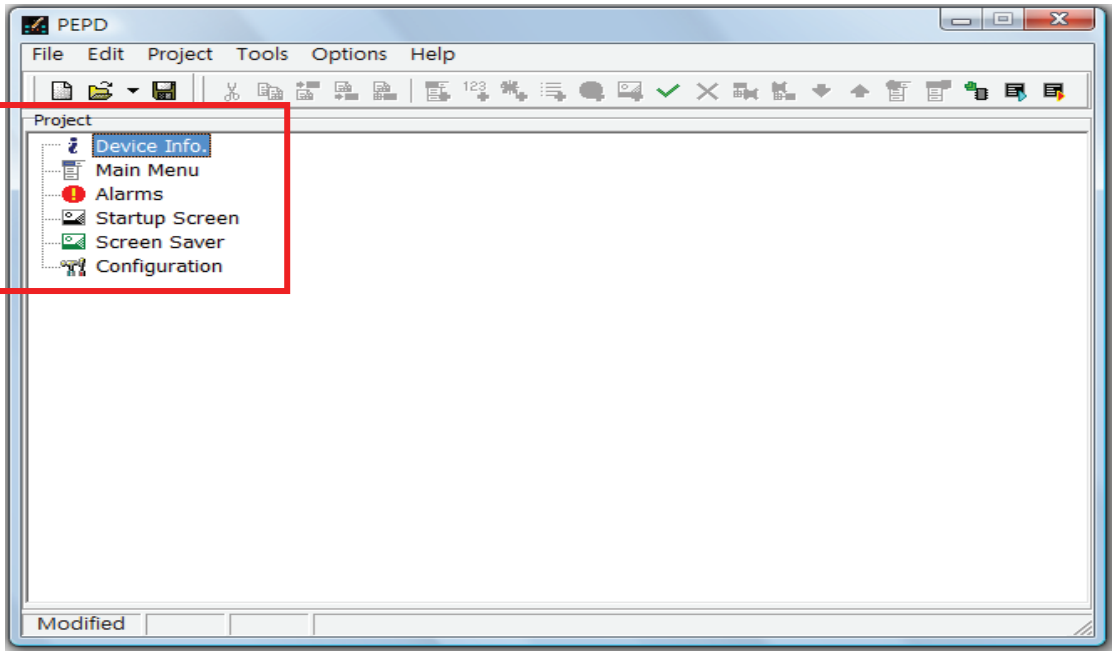



## 3.1.2 Open a File (Open)

Select [File] →[Open] with the mouse from the menu bar or press the [Ctrl] + [O] keys on the keyboard to open an existing file.

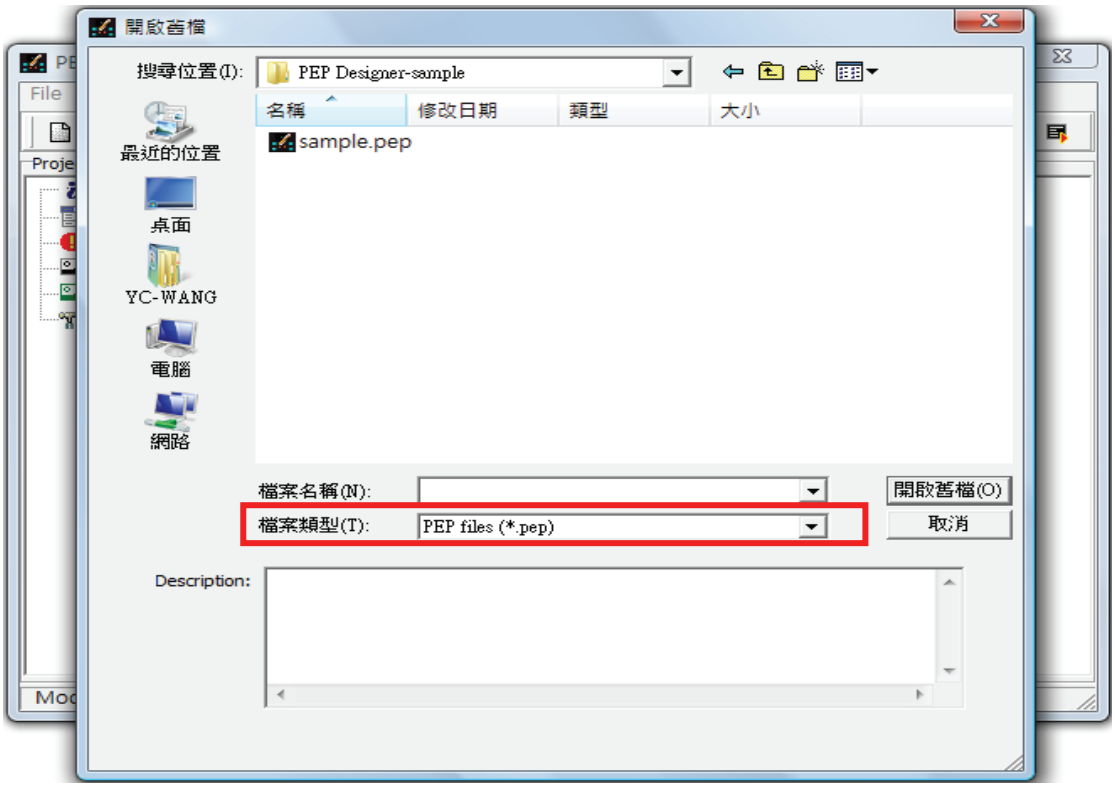



**※ The file extension of project file of PEP Designer is .pep.**



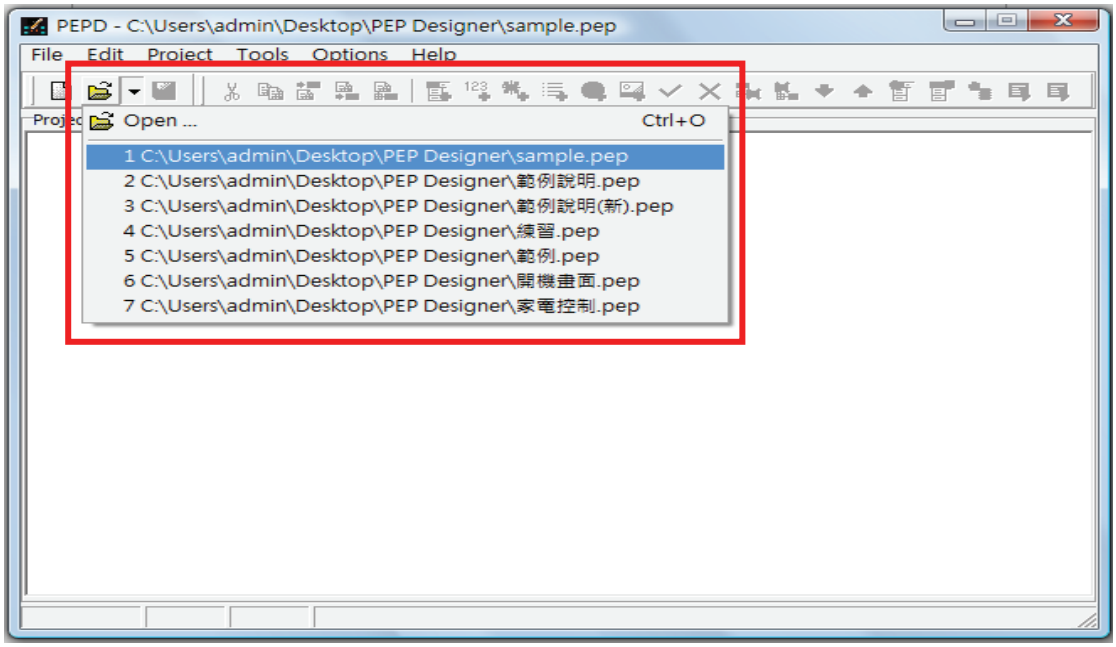

## 3.1.2 Open a File (Open)

Select [File] →[Open] with the mouse from the menu bar or press the [Ctrl] + [O] keys on the keyboard to open an existing file.



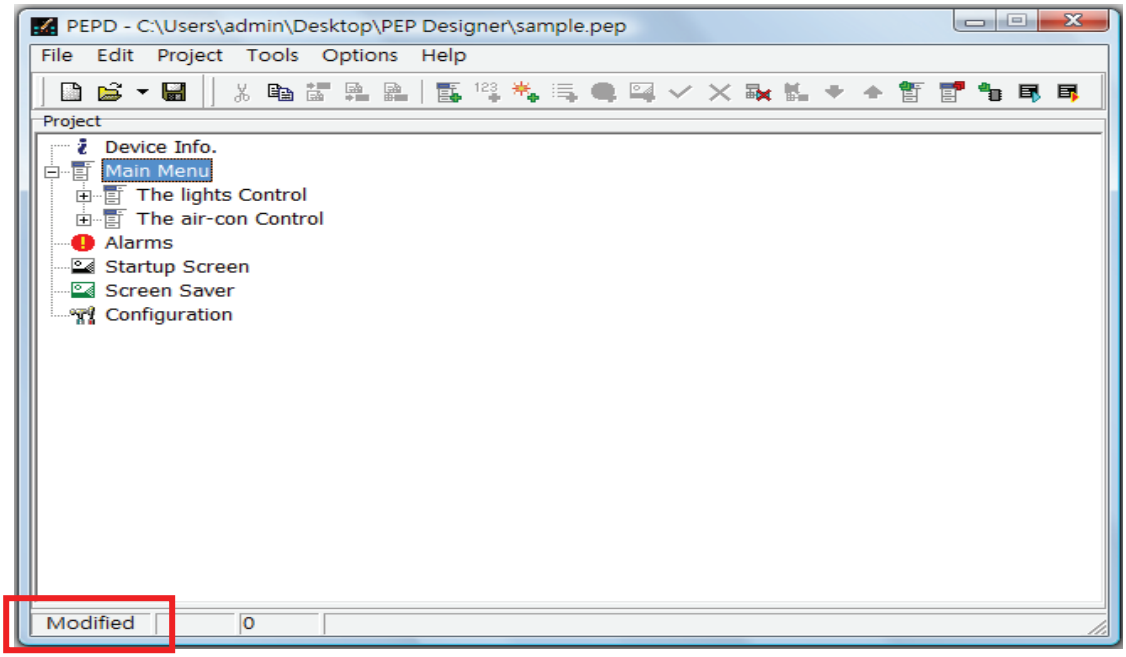

**※ The file extension of project file of PEP Designer is .pep.**

You may also click the pull-down menu next to the icon to open a file that has been edited previously.




## 3.1.3 Save a file (Save)

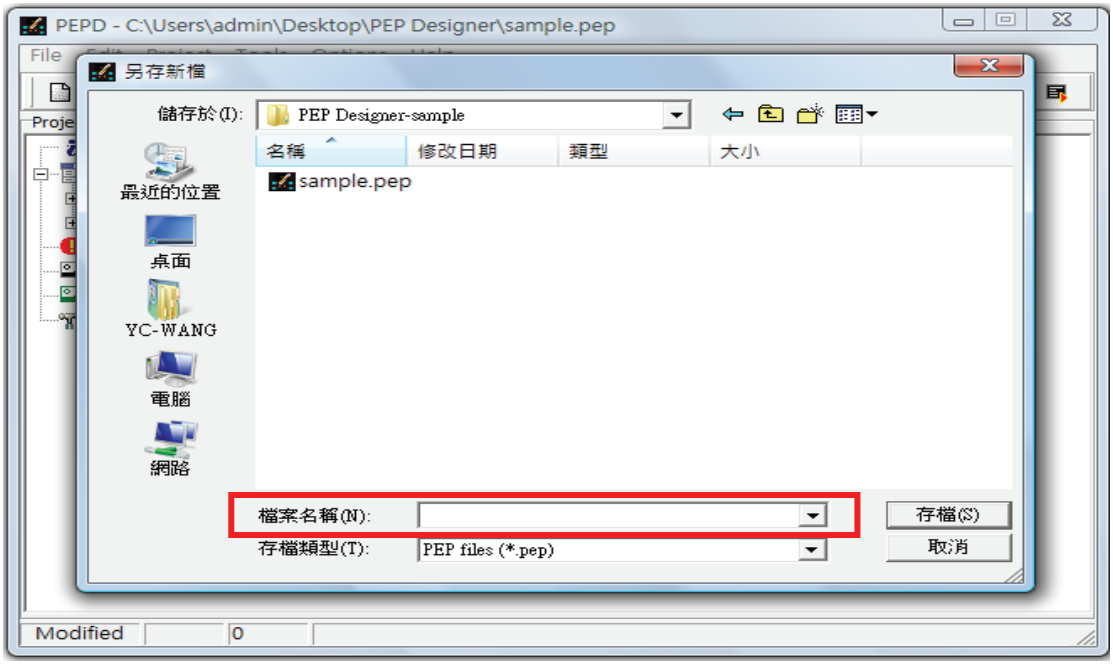
After editing an existing file, if you want to save the changes, select [File]→[Save] from the menu bar, or click the on the toolbar, or press the [Ctrl] + [S] keys on the keyboard to save the file in the same filename and location.



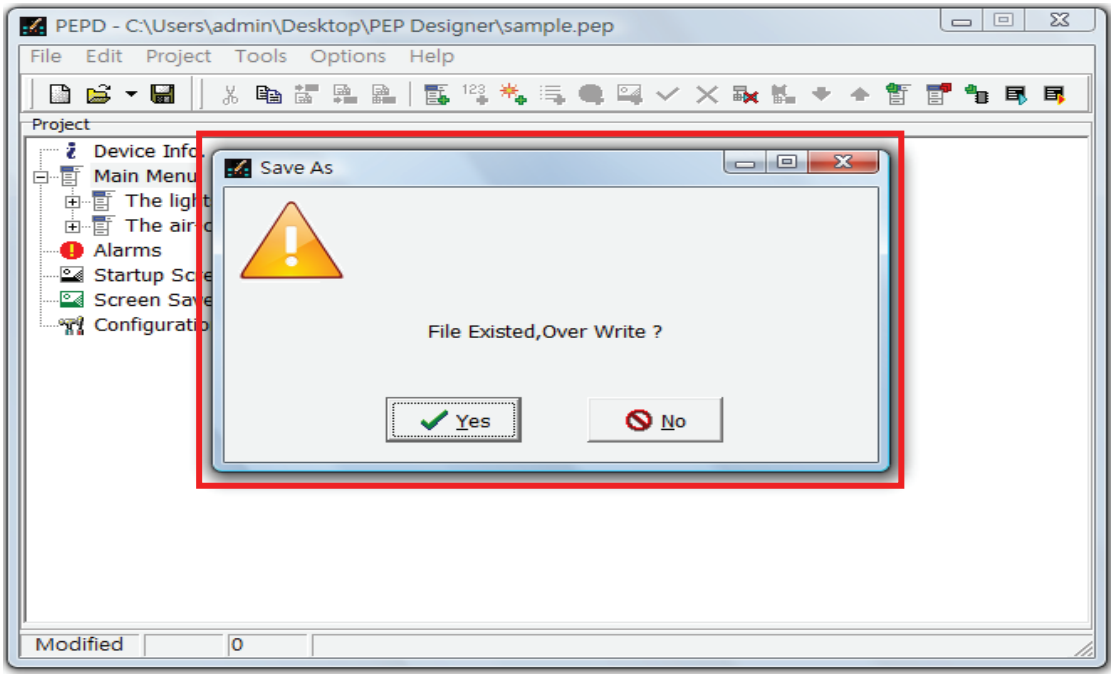

**※ Modified: This means the file has been modified but not yet saved.**

## 3.1.4 Save as Another File (Save As)

After editing a new file, you can only save it as another file by selecting [File]→[Save As] from the menu bar to save the new file in the designated folder. If you want to change the name of an existing file, you can select [File]→[Save As] from the menu bar to save the file using a new file name (generated by the system).



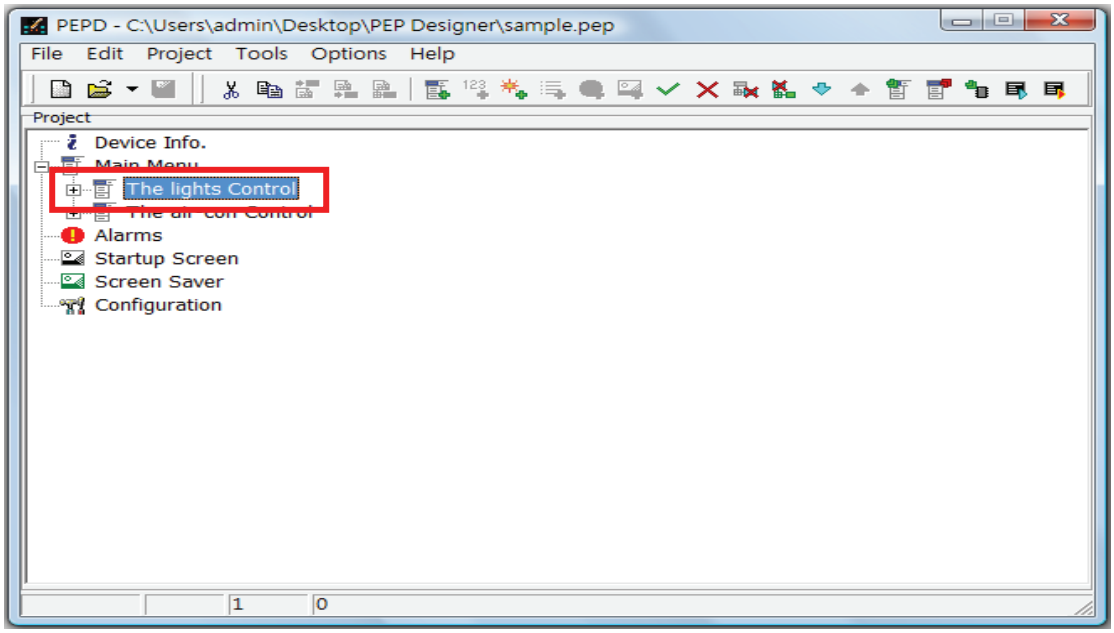

※ **Attention! If you want to save an existing file in another file, you must give this file a new name that does not appear in the folder where it is saved. Otherwise, this file will replace the file having the same file name in the folder as shown below.**



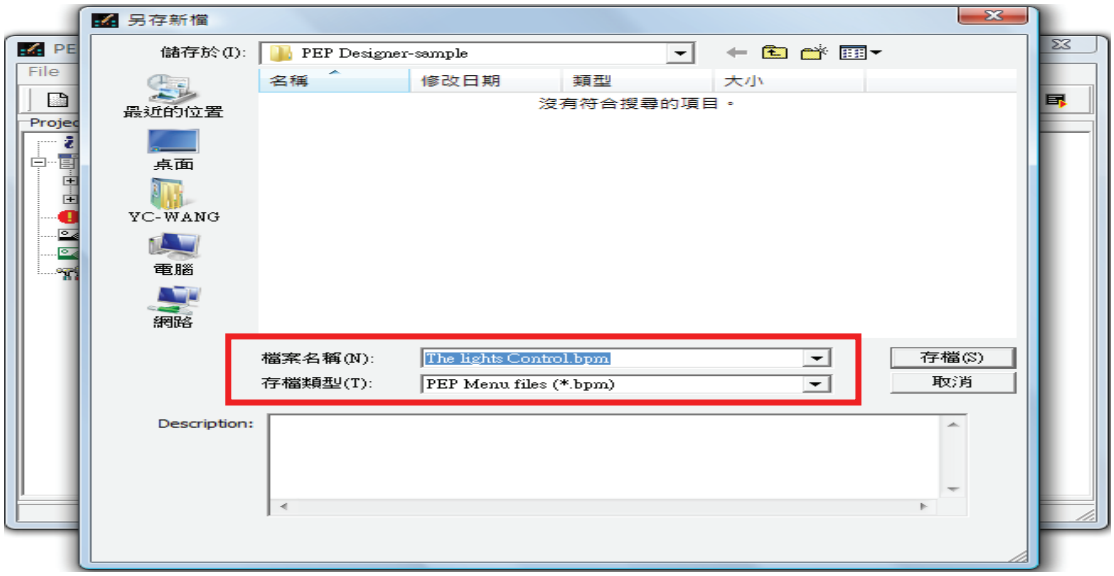
## 3.1.5 Export a File (Export)

As some menus can be shared with other projects, you can use the Export function to export a menu and its submenus to another file for future use. When you need to use them, you can use the Import function to import the selected menu file. Follow the steps below to export a menu and its submenus.

**Step 1:** Select the menu with the mouse as shown below.




**Step 2:** Select [File]→[Export] from the menu bar. The following window will pop up. Select the folder where the menu is exported and input the file name, and press the 存檔(S) button to export the selected menu.

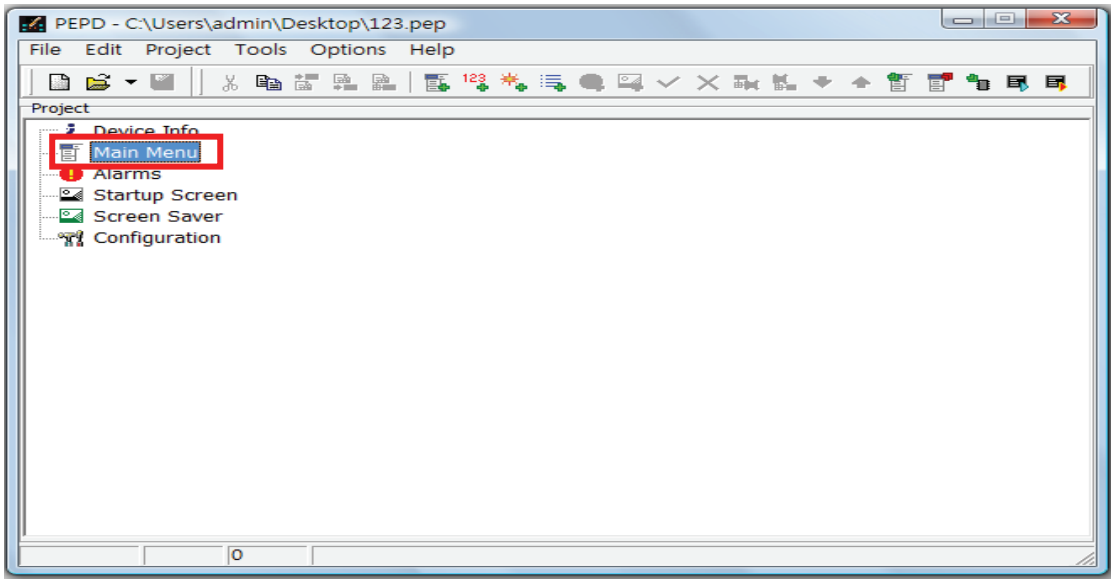



**※ The extension of the menus exported is .bpm.**

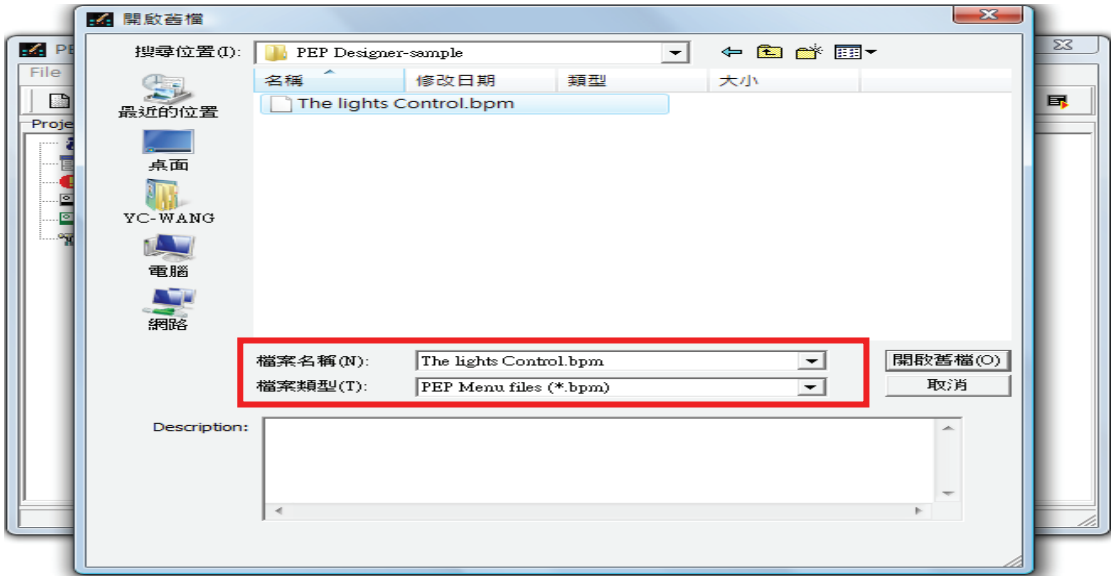
## 3.1.6 Import

When the present project needs some menus that have been created, we can search them from the folder where the exported menus are stored. If there are suitable menus, use the Import function to import them in order to save time from re-creating them. Follow the steps below to import the menus.

**Step 1:** Select the destination of import with the mouse. As shown below, the destination is Main menu.

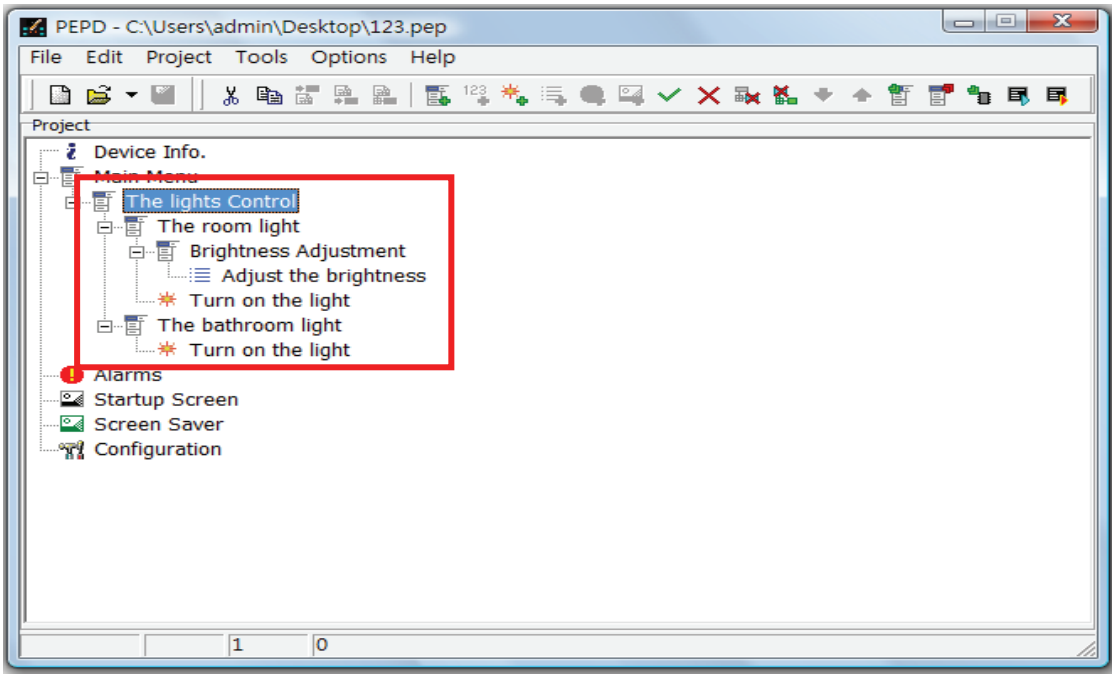



**Step 2:** Select [File] →[Import] from the menu bar. The following window will pop up. Select the required file and press the Open button to import the selected file.




**※ The extension of the files imported must be .bmp. Like the project file, users can add descriptions to an export file**

**Step 3:** After importing the menu, the menu and its submenus will be displayed under the destination (Main menu) as shown below.




# 3.2 Load and Edit Designs

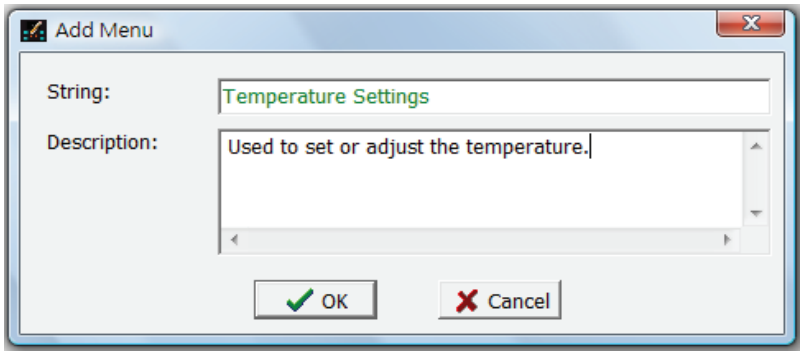
PEP Designer shows screen planning in terms of tree structure. Each “menu”, “value”, “action” and “list” is displayed hierarchically for users to clearly identify what they are in the operations in order to check if the sorting and structure of the entire planning are consistent with the requirements.

## 3.2.1 Menu

The main function of menu is to categorize “values", “actions” and “lists” into various levels according to their applications and functions. This way, users can operate them instinctively. The following example describes how the menu function works in terms of temperature, switch, and adjustment.

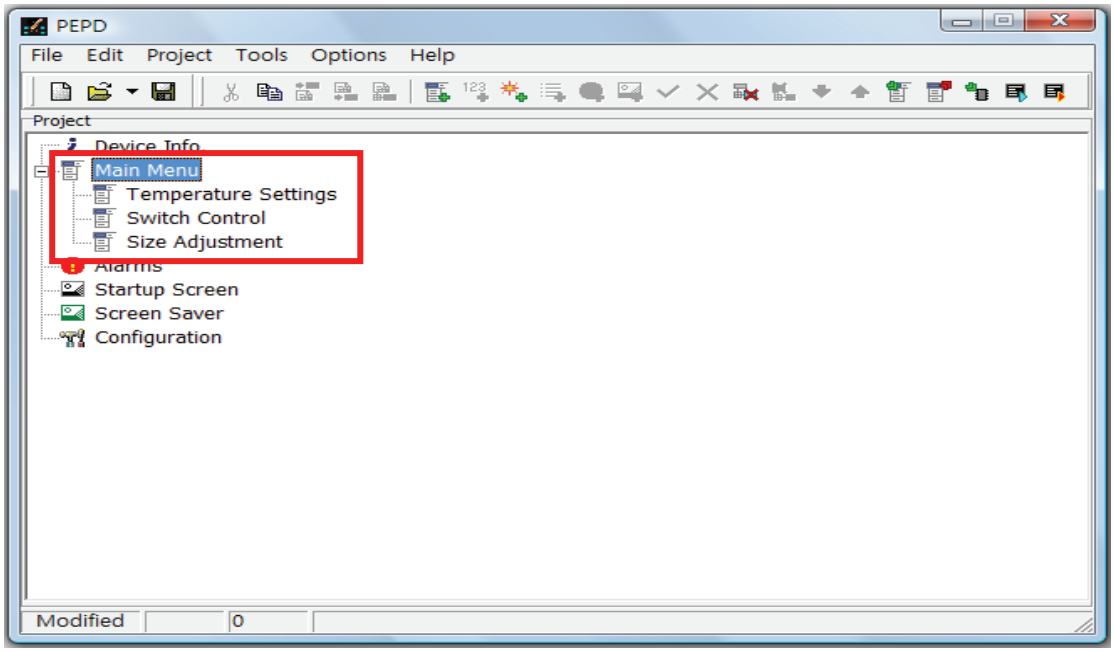
**Step 1:** Select the Main menu on the screen with the mouse. Then select [Edit]→[Add Menu] from the menu bar, or right-click the item to call out the pop-up menu and select [Add Menu].

**Step 2:** When the [Add Menu] window pops up, enter Temperature settings in the String field and press the OK button to add the Temperature settings menu to the Main menu as shown below.




※ **String:** The title of the added Menu.
**Description:** Hint text for the added Menu.

**Step 3:** Repeat Steps 1 and 2 toadd the “Switch Control” and “Size Adjustment” menu as shown below.



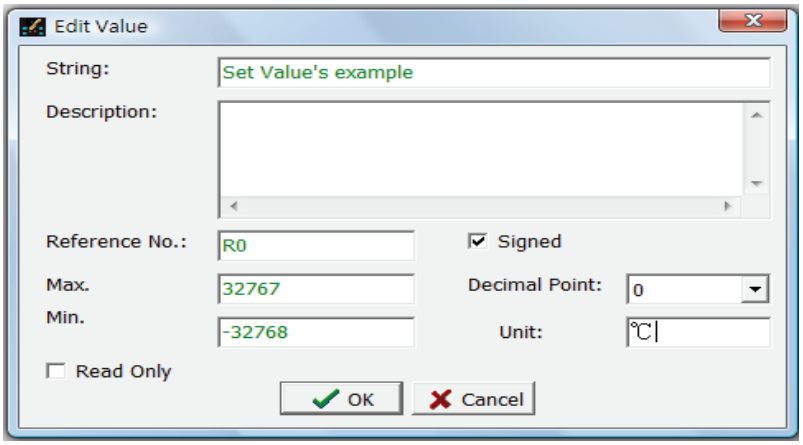

※ **Please note that each level can place 10 menus or functions at most. Also, a menu can only mix with other menus or actions at same level. That is, if you want to add a menu/action item at certain level, there should not already have the value or list items in that level. The menu item can have an attached lower level while value, action and list item is not (button level).**

## 3.2.2 Value

The value item allows users to read or set thePLC register contents from PEP. Users can use this function when designing actions involvingvalue setup. We can use the above example to illustrate this: Temperature Settings.

**Step 1:** Select Temperature Settings on the screen with the mouse. Then select [Edit]→[Add Value] from the menu bar or right-click the item to call out the pop-up menu and select [Add Value].

**Step 2:** When the [Edit Value] window pops up, enter the requirements and settings to respective fields and press the OK button to add a value item to the Main menu as shown below. Descriptions of the Edit Value window are as follows:




※ **String:** Title of the value item

**Description:** Hint of the value item.

**Reference Number:** The reference number corresponding to the PLC register, either 16-bit (R, D) or 32-bit (DR, DD).

**Signed:** When the item is checked, values of the register is signed number otherwise is non-signed number.

**Maximum:** The upper limit of the value. No limit when blank.

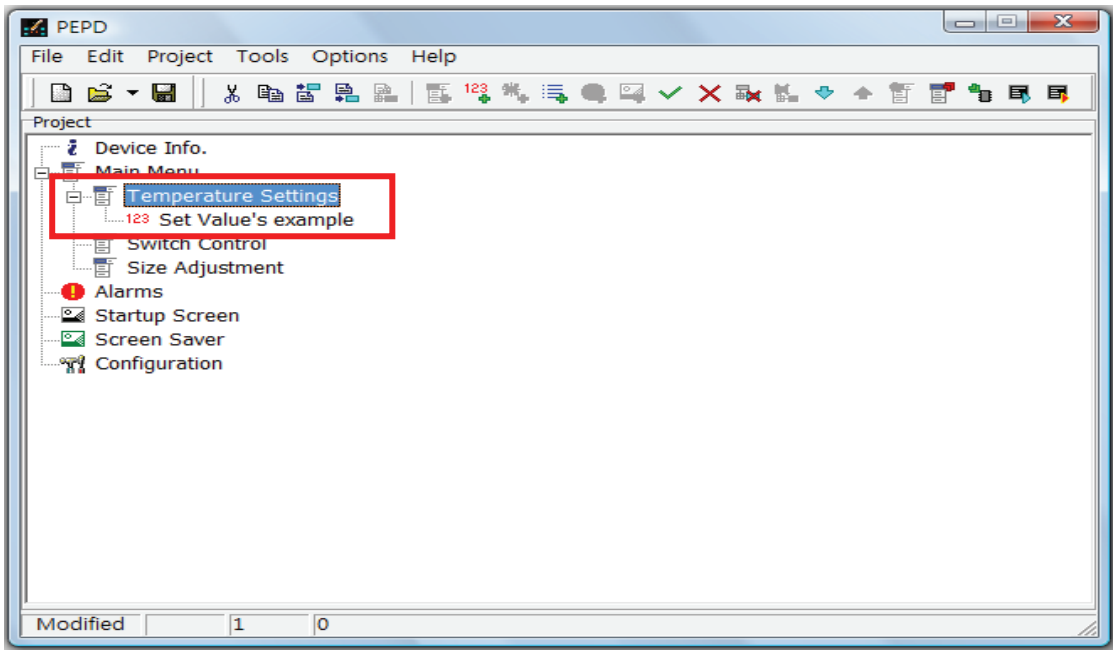
**Minimum:** The lower limit of the value. No limit when blank.

**Decimal Point:** The decimal location of the displayed value.

**Read-only:** Value can be displayed but cannot be modified or set.

**Unit:** Unit of the value, here is °C.

After completing these steps, the value item will be added to the Temperature settings menu as shown below.

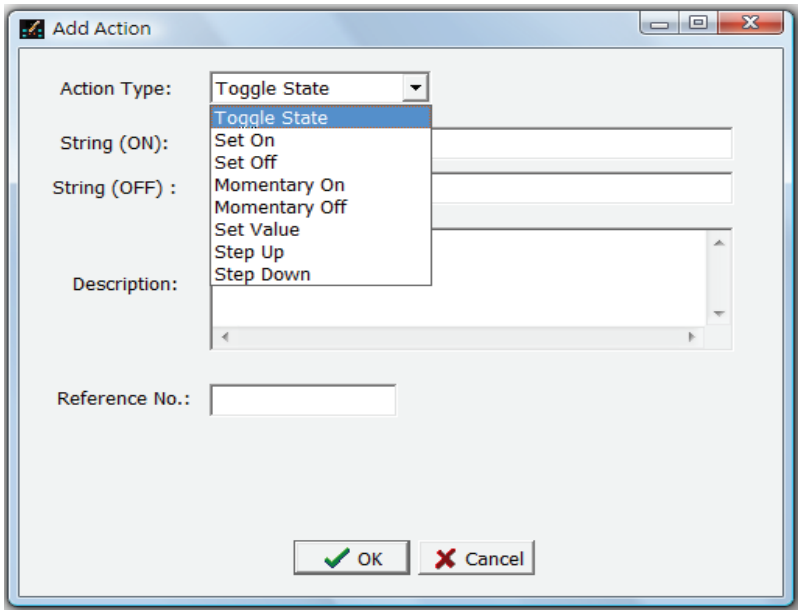



## 3.2.3 Action

There are eight types of actions in PEP Designer. The "Switch Control" in this example is only one of them. Users can use the Action function to design Toggle State, ON/OFF, Set Value or Step Up/Down actions. In this section, in addition to the Switch Control in the example, we will further introduce to you other action options in this function.

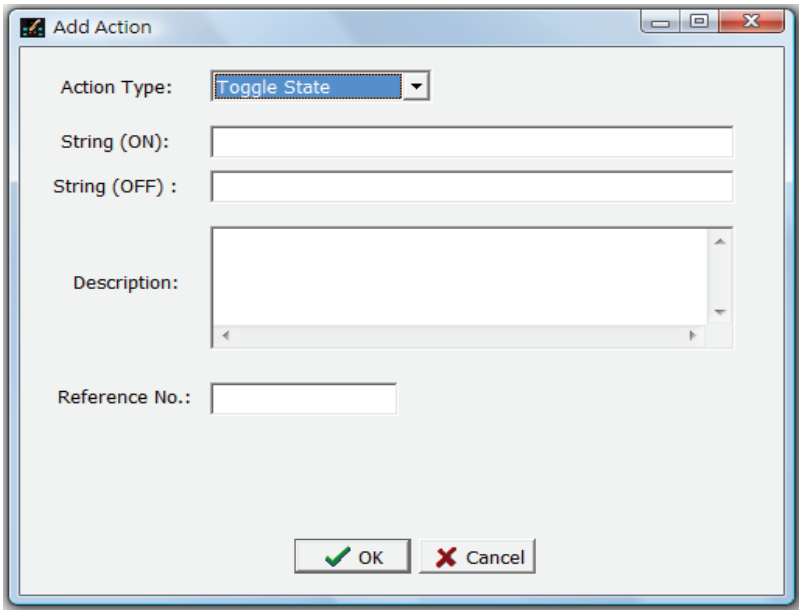
**Step 1:** Select Switch Control on the screen. Then select [Edit]→[Add Action] from the menu bar, or right-click the item to call out the pop-up menu and select [Add Action].

**Step 2:** After selecting the required action from the pull-down menu of the Action Type item in the [Add Action] window, press the OK button to add the selected action to the Switch Control menu. The example is as follows.




※ **Options for actions include: Toggle State, Set On, Set Off, Momentary On, Momentary Off, Set Value, Step Up, and Step Down as described below.**

**1. Toggle State: On and Off alternate actions**



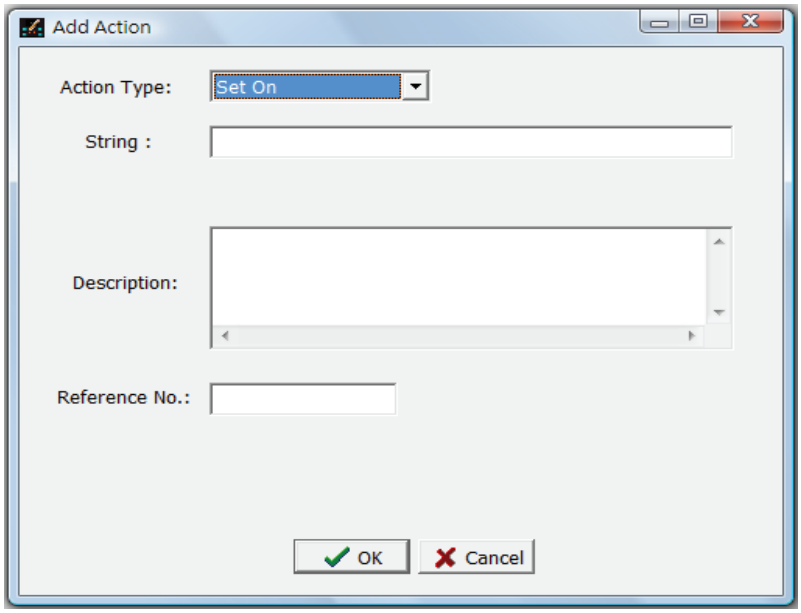

※ **String On:** When the corresponding status is On, the text to be displayed on the menu.

**String Off:** When the corresponding status is Off, the text to be displayed on the menu.

**Description:** Hint of action.

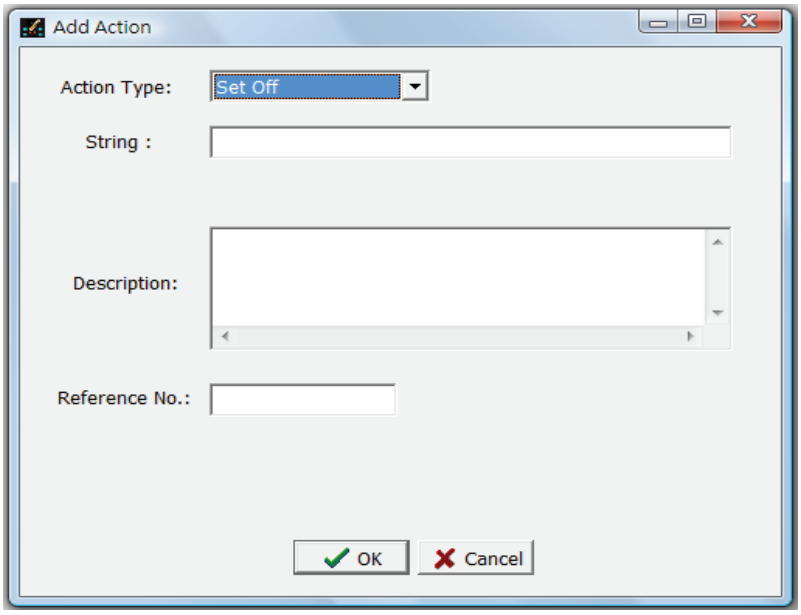
**Reference No.:** Contact number corresponding to the PLC.

2. **Set On:** Set corresponding status to On.



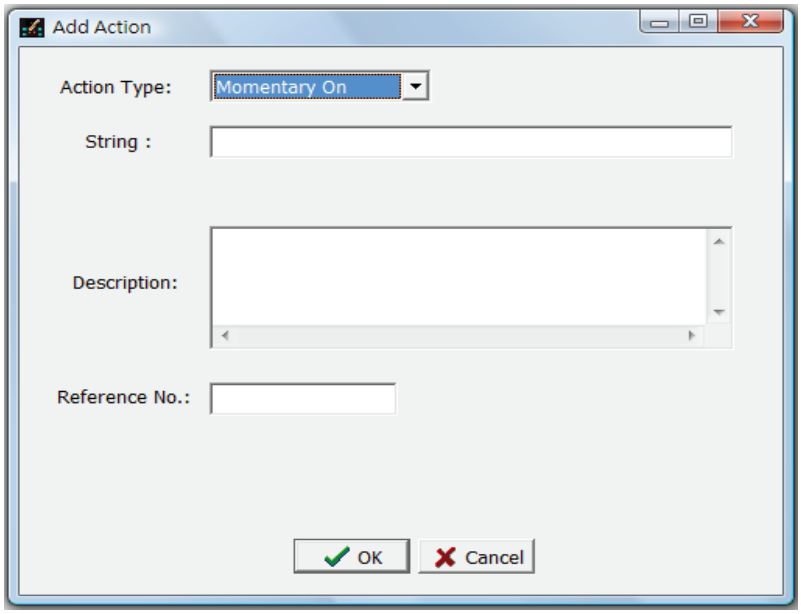

※ **String :** Title of the corresponding action.
**Description:** Hint of this action.
**Reference No.:** Contact number corresponding to the PLC.

3. **Set to Off:** Set corresponding status to Off



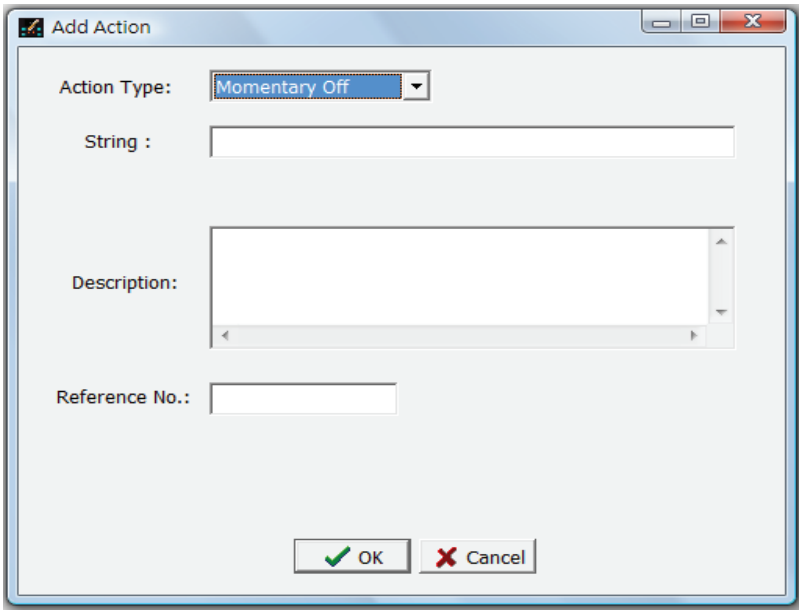

※ **String:** Title of the corresponding action.
**Description:** Hint of this action.
**Reference No.:** Contactr number corresponding to the PLC.

4. **Mometary On:** Set corresponding status to On whepressing and Off when releasing.



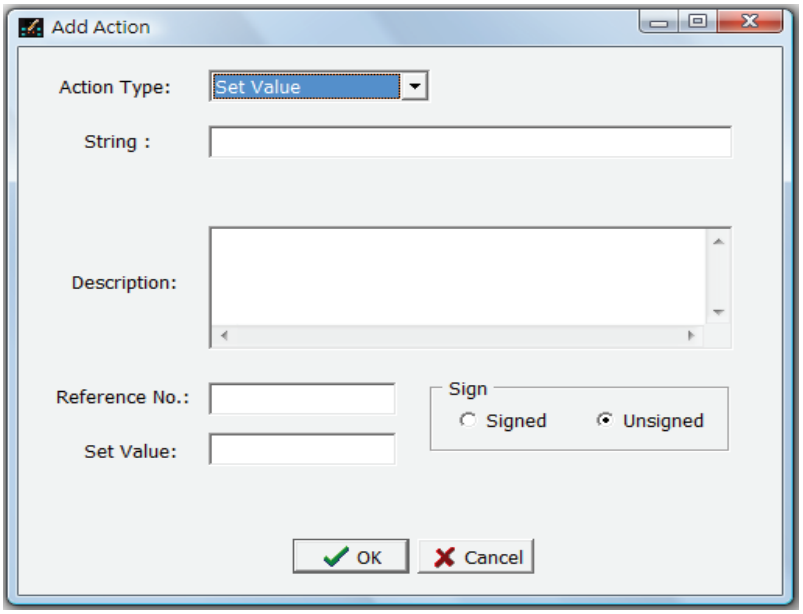

※ **String:** Title of the corresponding action.
**Description:** Hint of this action.
**Reference No.:** Contact number corresponding to the PLC.

5. **Mometary Off :** Set corresponding status to Off whenpressing and On when releasing.




※ **String:** Title of the corresponding action
**Description:** Hint of this action.
**Reference No.:** Contact number corresponding to the PLC.

6. **Set Value:** When pressing the key, the value inthe corresponding register increases by one value.




※ **String:** Title of the corresponding action.

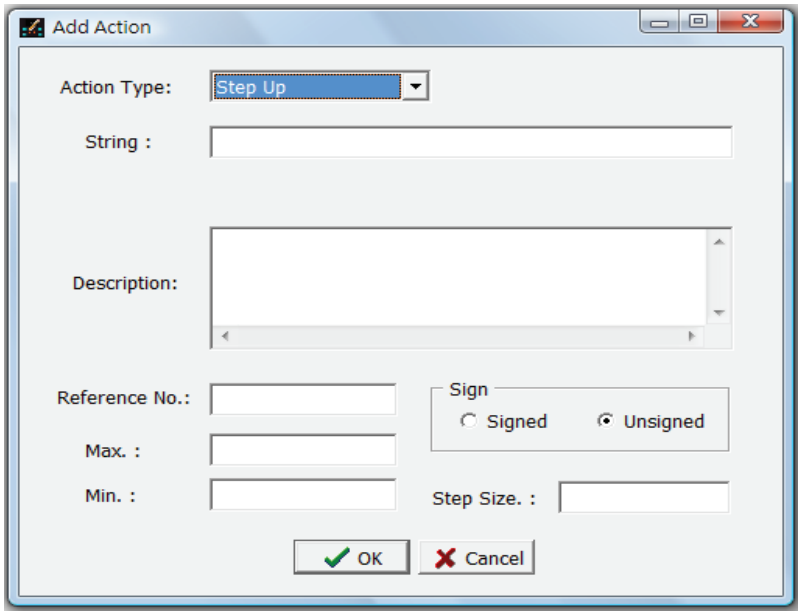
**Description:** Hint of this action.

**Reference Number:** The reference number corresponding to the PLC register, either 16-bit (R, D) or 32-bit (DR, DD).

**Set Value:** Value to be set when press this action

**Signed:** When the item is checked, values of the register are signed ; otherwise unsigned.

7. **Step Up:** When pressing the key, the value in the corresponding register increases by one value.




※ **String:** Title of the corresponding action.

**Description:** Hint of this action.

**Reference Number:** The reference number corresponding to the PLC register, either 16-bit (R, D) or 32-bit (DR, DD).

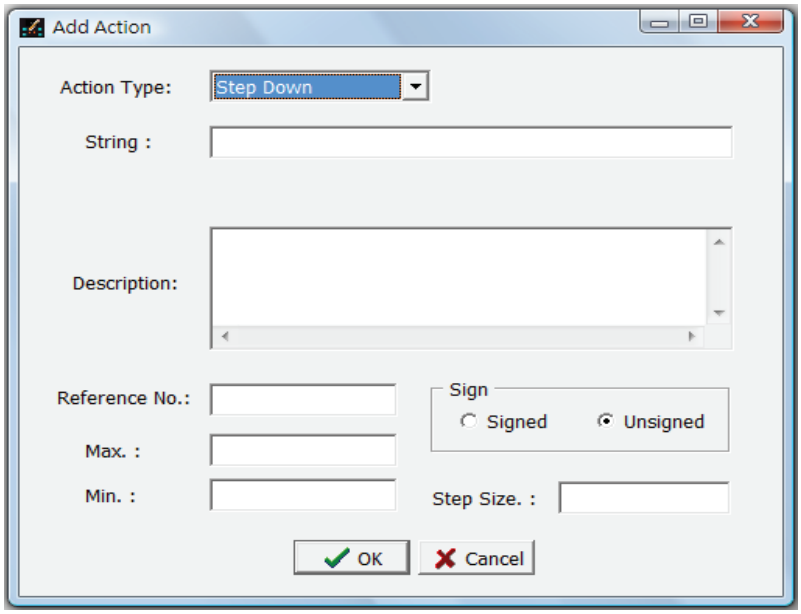
**Maximum:** Maximum value. No limit when blank.

**Minimum:** Minimum value. No limit when blank.

**Signed:** When the item is checked, values from the register are unsigned; otherwise signed.

**Step Size:** The number of values increases every time this button is pressed.

8. **Step Down:** When pressing the key, the value in the corresponding register decreases by one value.




※ **String:** Title of the corresponding action.

**Description:** Hint of this action.

**Reference Number:** The reference number corresponding to the PLC register, either 16-bit (R, D) or 32-bit (DR, DD).

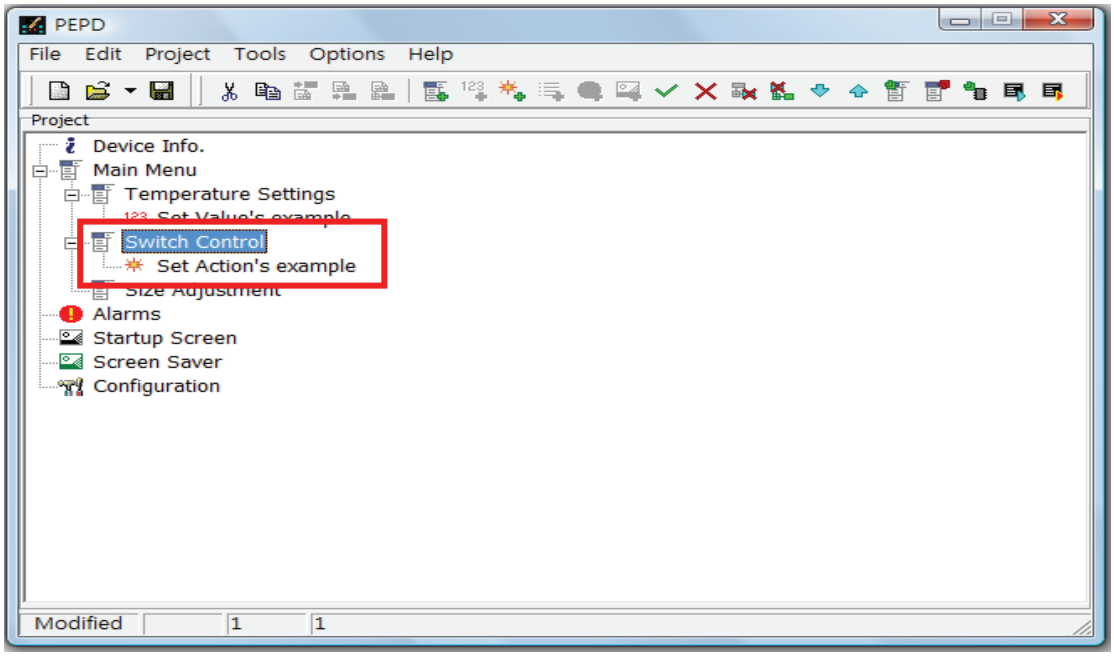
**Maximum:** Maximum value. No limit when blank.

**Minimum:** Minimum value. No limit when blank.

**Signed:** When the item is checked, values from the register are either unsigned or signed.

**Step Size:** The number of values decreases every time this button is pressed.

In this example, the action type of the Switch Control is alternate, meaning pressing the button for the first time is On and second time Off as shown below.

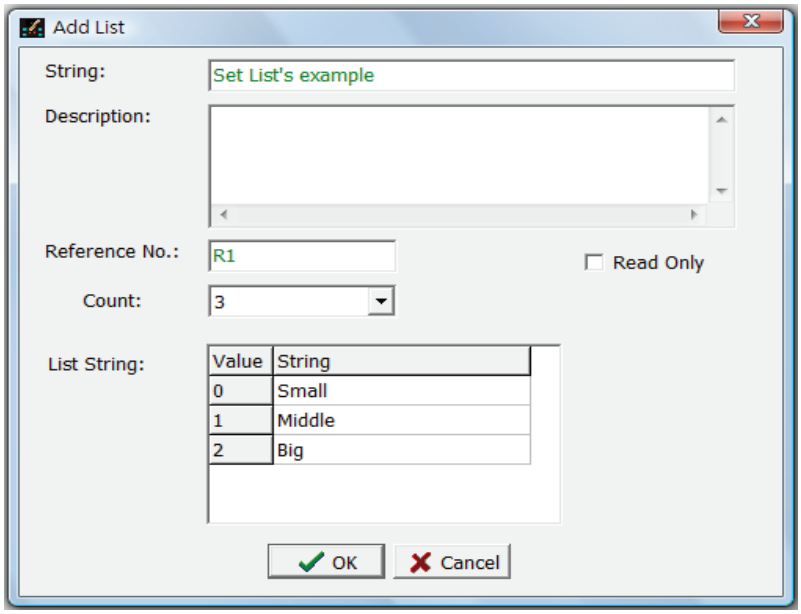



## 3.2.4 List

The function of list is to represent the register content with a string or set the register value(0-63) by chosen a string. Based on the above example, we can illustrate this function with the Size Adjustment function.

**Step 1:** Select Size Adjustment on the screen. Then select [Edit]→[Add List] from the menu bar, or right-click the item to call out the pop-up menu and select [Add List].

**Step 2:** Input the requirements and settings in the [Add List] window and press the OK button to add the list. The example is as follows.



※ **String:** Title of the list.

**Description:** Hint of the list.

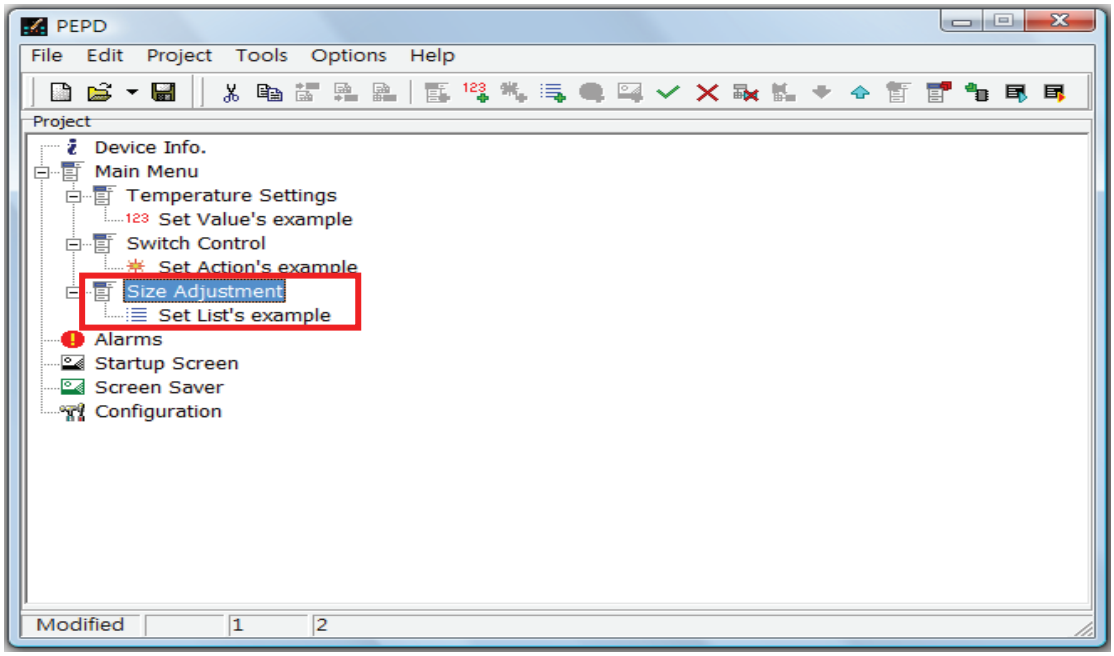
**Reference Number:** The reference number corresponding to the PLC register.

**Count:** The total number of strings (2-64)to which the register corresponds.

**Read-only:** Value can be displayed but cannot be modified or set.

**List String:** Corresponding String refers to thedescription of the corresponding item, and Value refers to thevalue of the corresponding item.

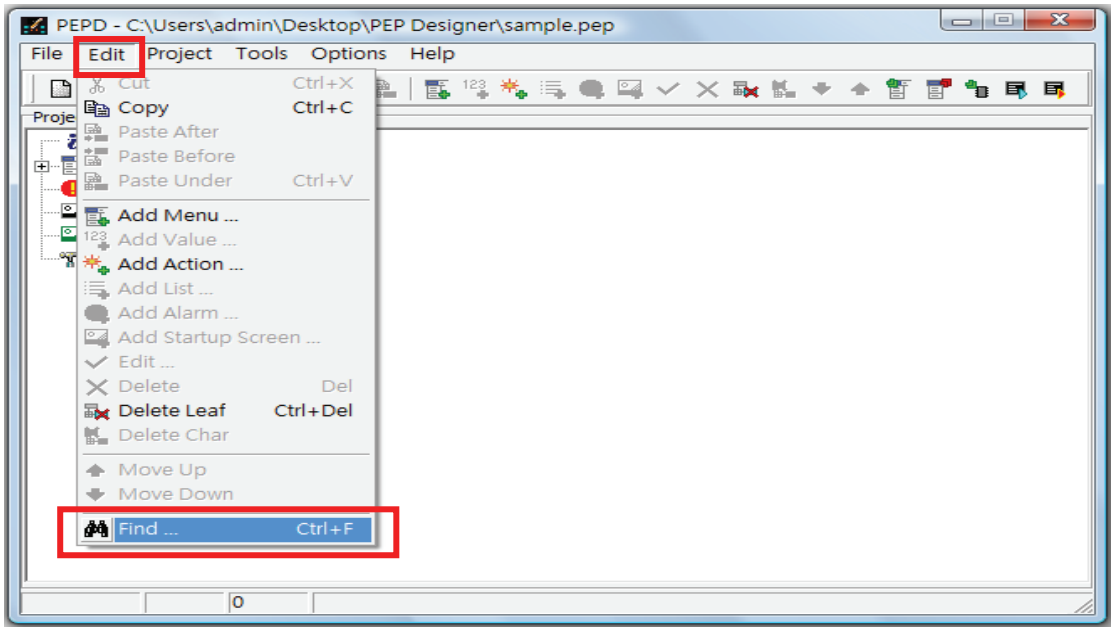
After completing the list, it will be added to the Adjustment as shown below.



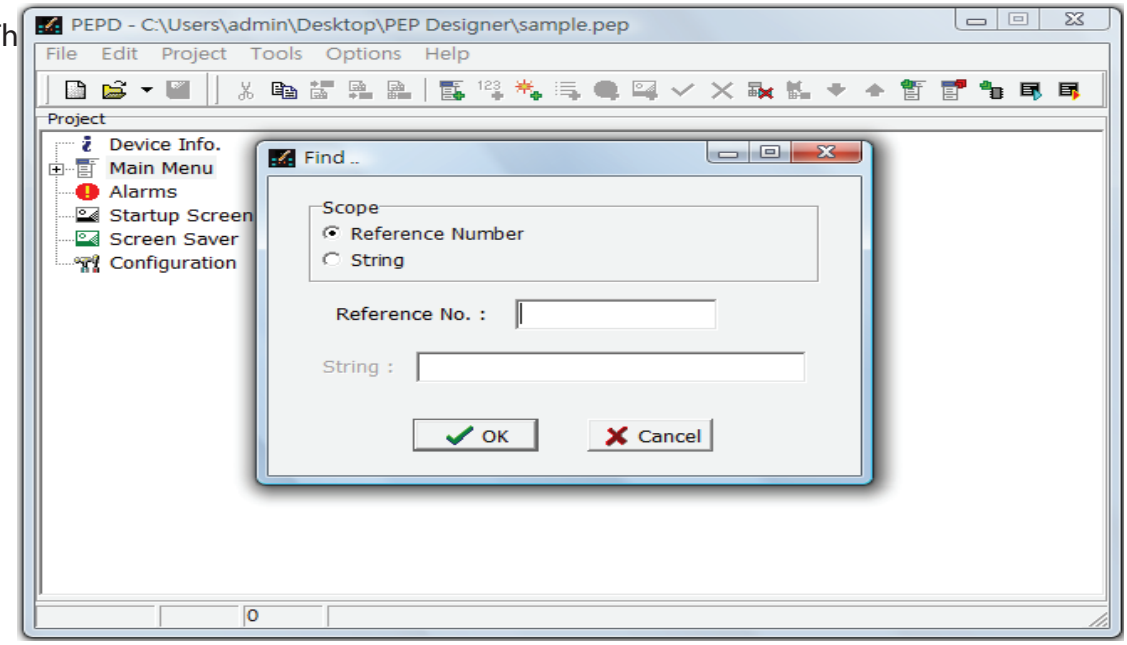
## 3.2.5 Find

In a complex and complicated project, users often need to spend much time finding a register or string to modify it. With the [Find] function, users simply input the keyword and PEP Designer will automatically search all registers or strings containing the "keyword" and display them in a list. The information also includes the location of the matched registers or strings; i.e. in which menu or function they are located. Therefore, it is very convenient. The follow shows you how to use the Find function.

**Step 1:** Select [Edit] →[Find] with the mouse from the menu bar, or press the [Ctrl] + [F] keys from the keyboard to call out the function as shown below.

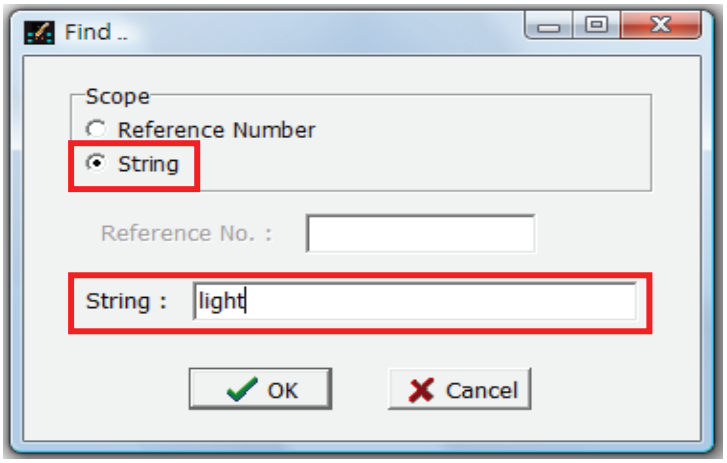



Th

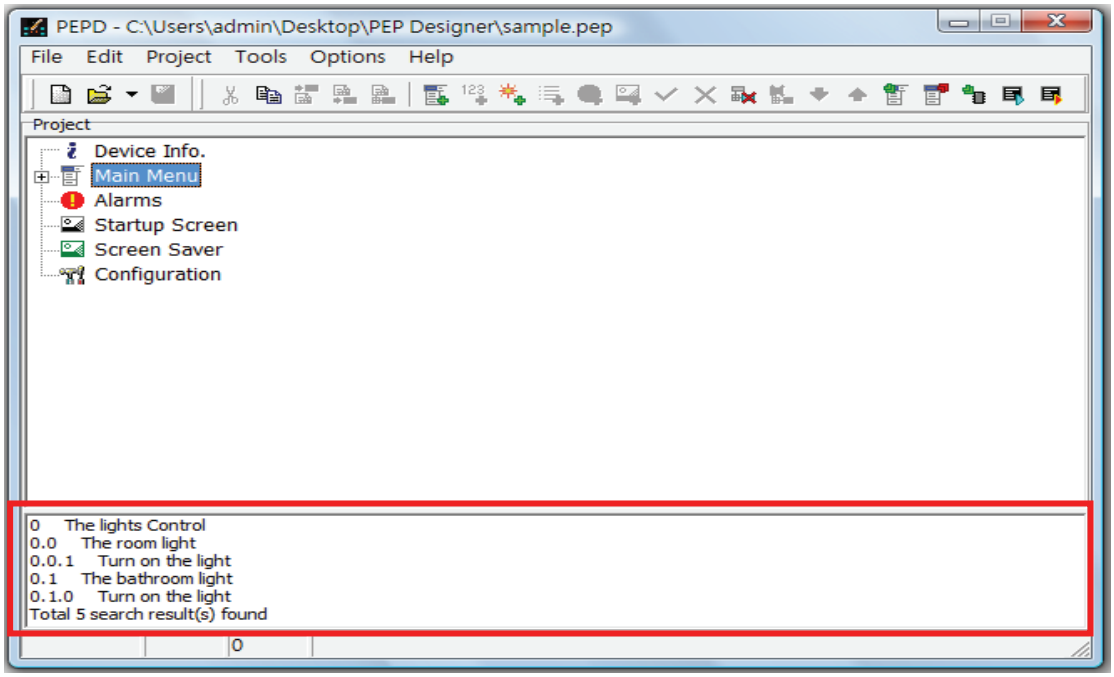


※ **Scope:** Two options: Reference No. and String for users to choose.
**Reference No.:** Search contacts or registers in the project, e.g. R0, X1, Y2.
**String:** Search strings in the project, e.g. Temperature, Switch.

**Step 2:** After selecting the Scope and inputting the search string in the String field, press OK as shown below.

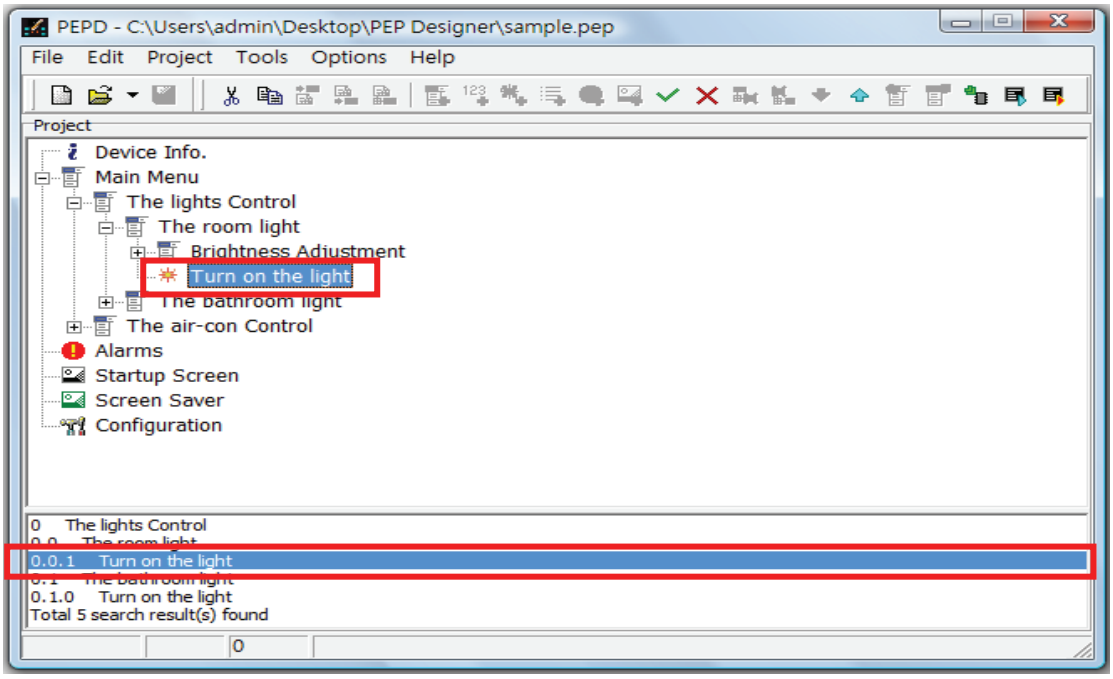



The matched items, registers or strings containing the keyword will be displayed in the list below the window, including their locations as shown below.

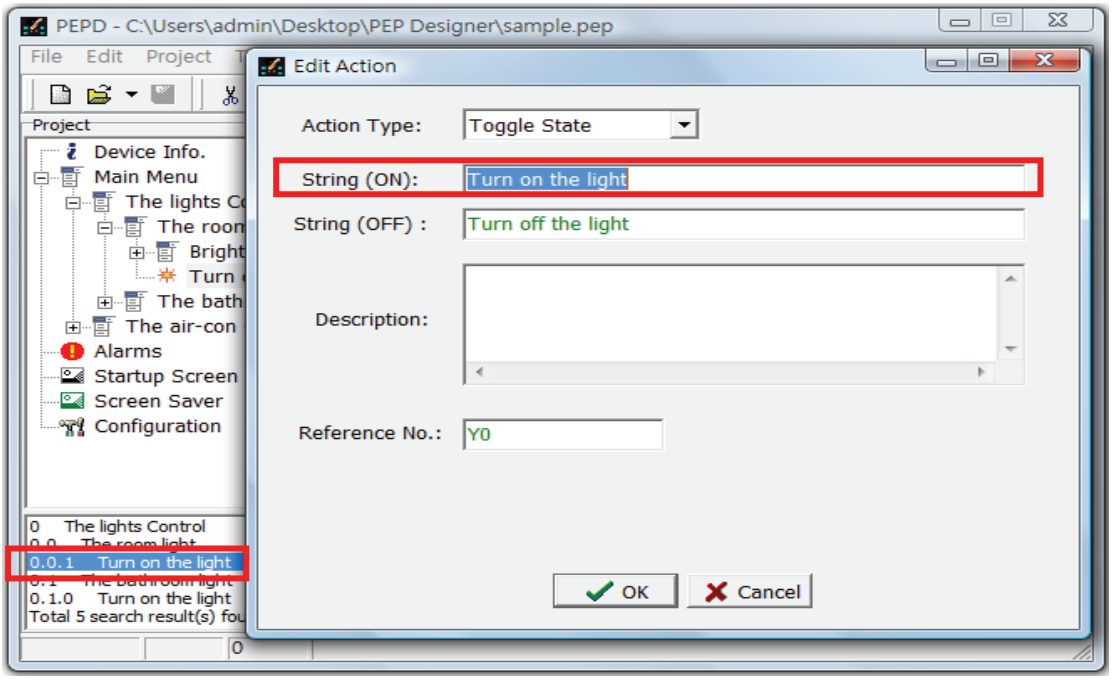



※ **Right-click list and two options will pop up: Clear Search Results and Close Window.**

**Step 3:** Select a matched item in the list with the mouse to show the details of the item's location as shown below.

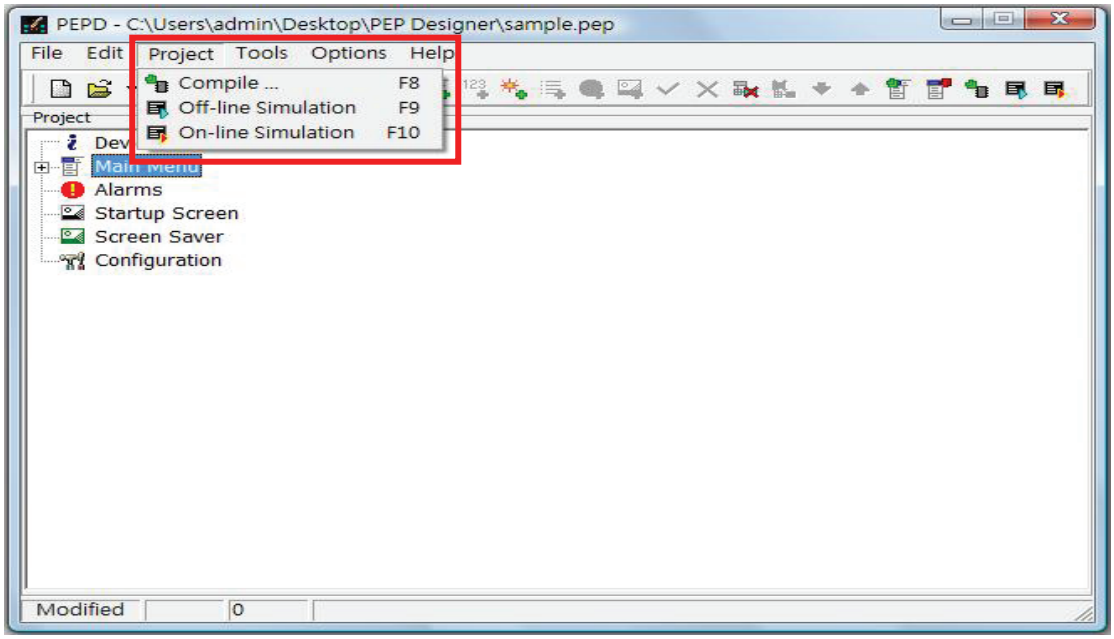



※ **Double-click the item and the edit window of the selected item will pop up. Users can directly edit or modify the contents as shown below.**



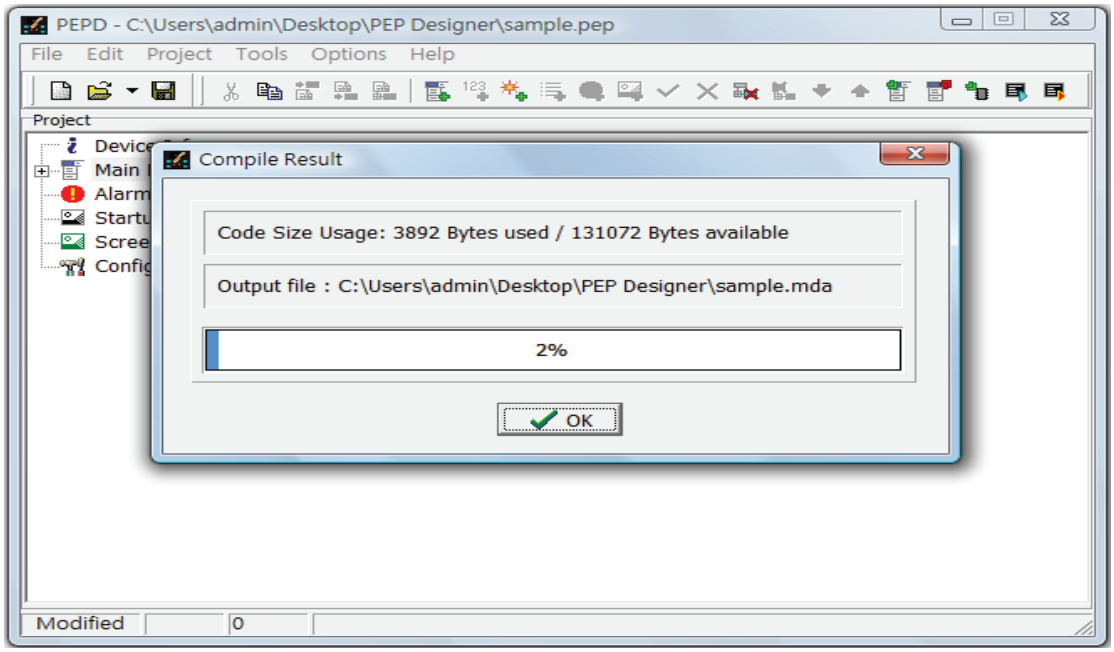

## 3.3 Project

Select [Project] from the menu bar. The [Project Menu] will pop up. Options in the Project Menu include [Compile Menu], [Off-line Simulation], and [On-line Simulation] as shown below.




## 3.3.1 Compile Menu

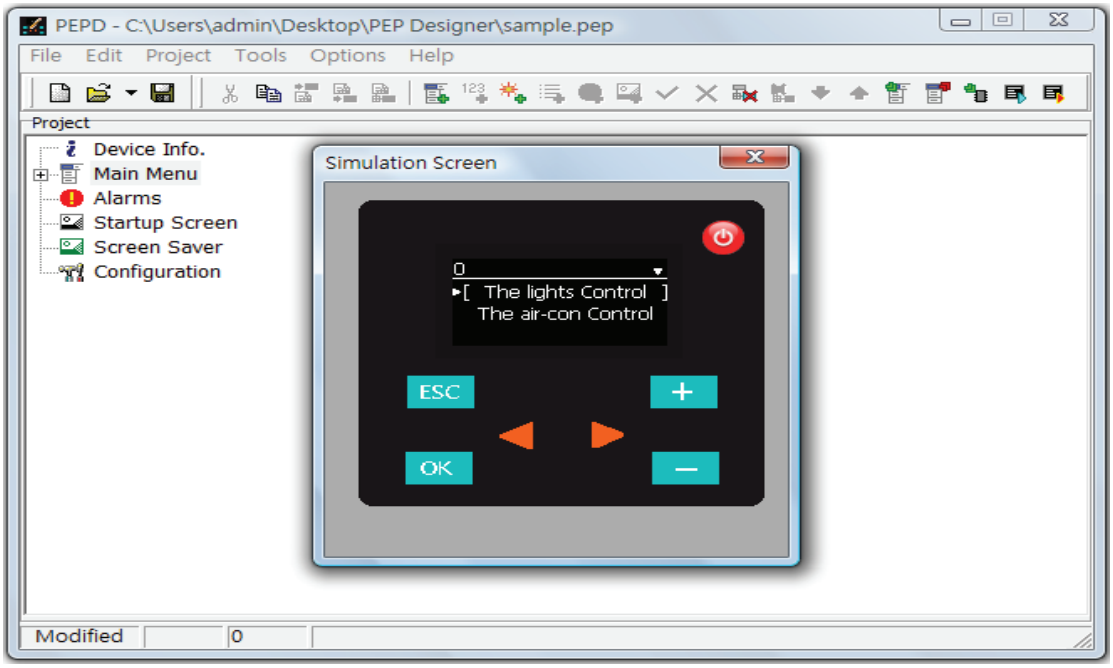
After editing a menu, compile the menu by selecting [Project]→[Compile Menu] from the menu bar, or clicking the icon on the toolbar, or pressing the function key [F8] to directly launch to the compile menu function. With the compilation function, the designed menus are converted into task codes executable by PEP and the statistics of the used code size are provided.




**※ The information in the window includes "Code Size Usage" and "Output File".**

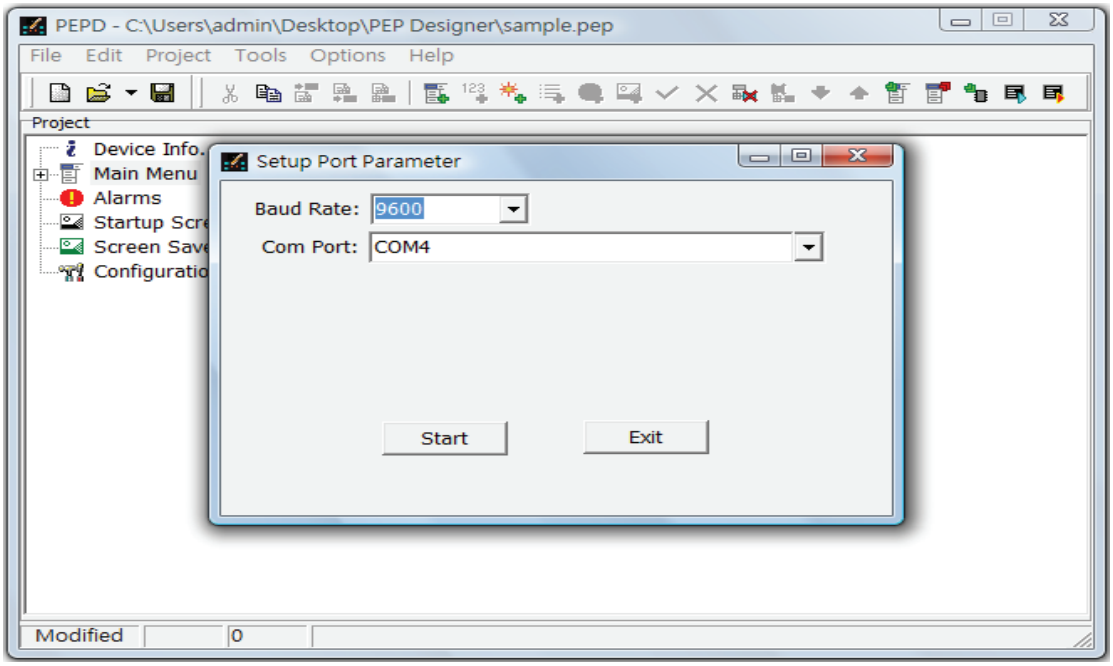
## 3.3.2 Off-Line Simulation

After creating the user menus,you may want to validate if they are consistent with the planning. You can use the Off-Line Simulation. Select [Project]→[Off-Line Simulation] with the mouse from the menu bar, or click on the icon on the toolbar,or press the function key [F9] to launch the function. After verifying the compilation, press the button to call out the simulation screen as shown below.




## 3.3.3 On-Line Simulation

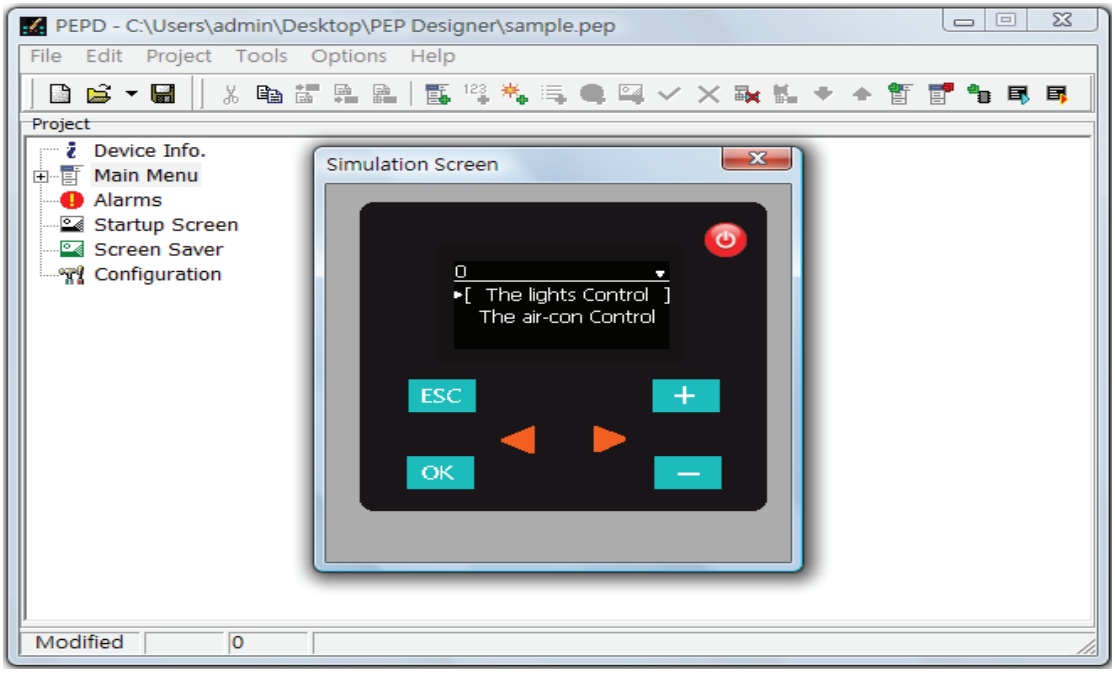
Similar to the [off-line simulation] which runs the simulation on the PC, the only difference between the offline and online simulation is that the former does not connect to the PLC, while the latter connects to the PLC via the communication port on the PC running the simulation. Select [Project]→[On-Line Simulation] with the mouse from the menu bar, or click on the icon on the toolbar, or press the function key [F10] to launch the function. After verifying the compilation, press the button. The Setup Port Parameter window as shown below will pop up.




※ **Baud Rate:** The transfer baud rate between the PC running the simulation and the PLC.

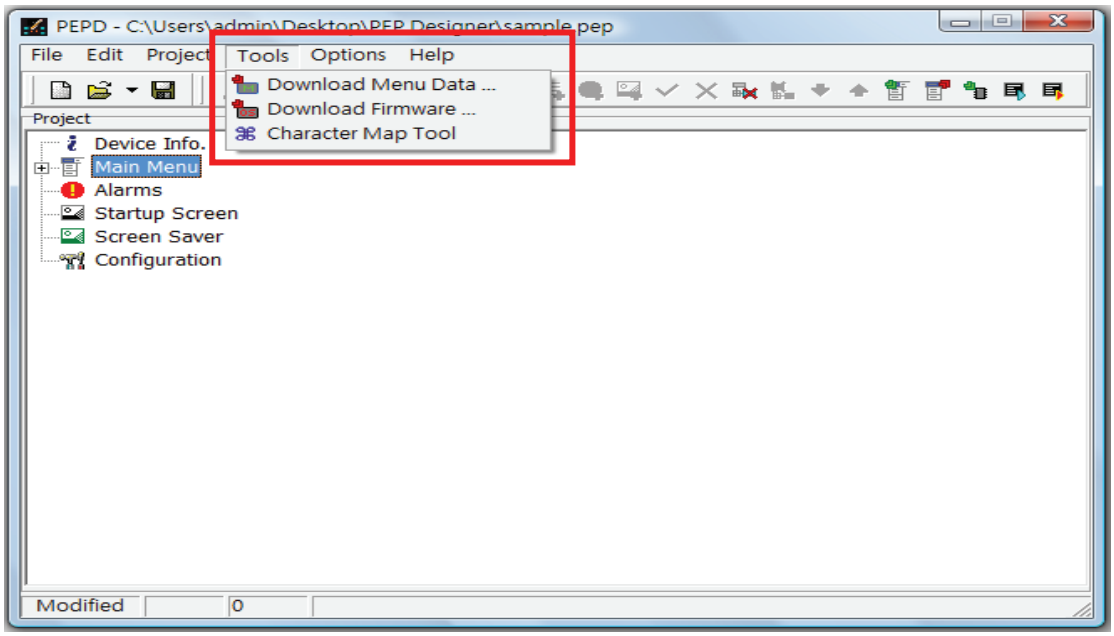
**Com Port:** The PORT on the PC connecting to the PLC

After setting up the "Baud Rate" and "Com Port", press the Start button. The On-line Simulation screen like that of the [Off-line Simulation] will pop up as shown below.



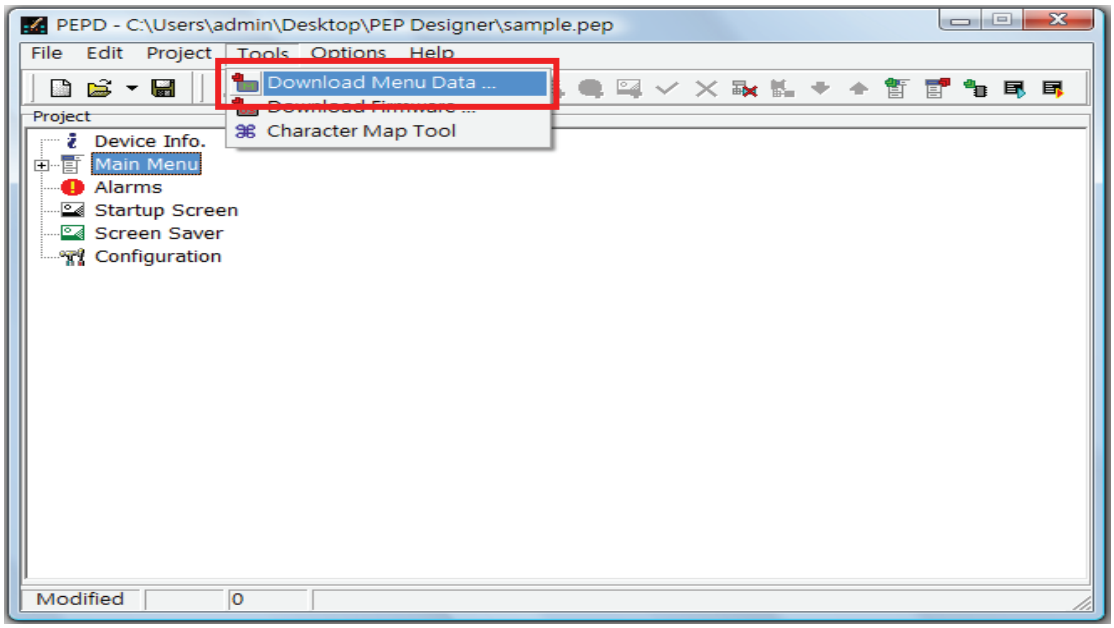

## 3.4 Tools

There are three tools in the [Tools] function on the menu bar: [Download Menu Data], [Download Firmware], and [CharacterMap Tool] as described below.

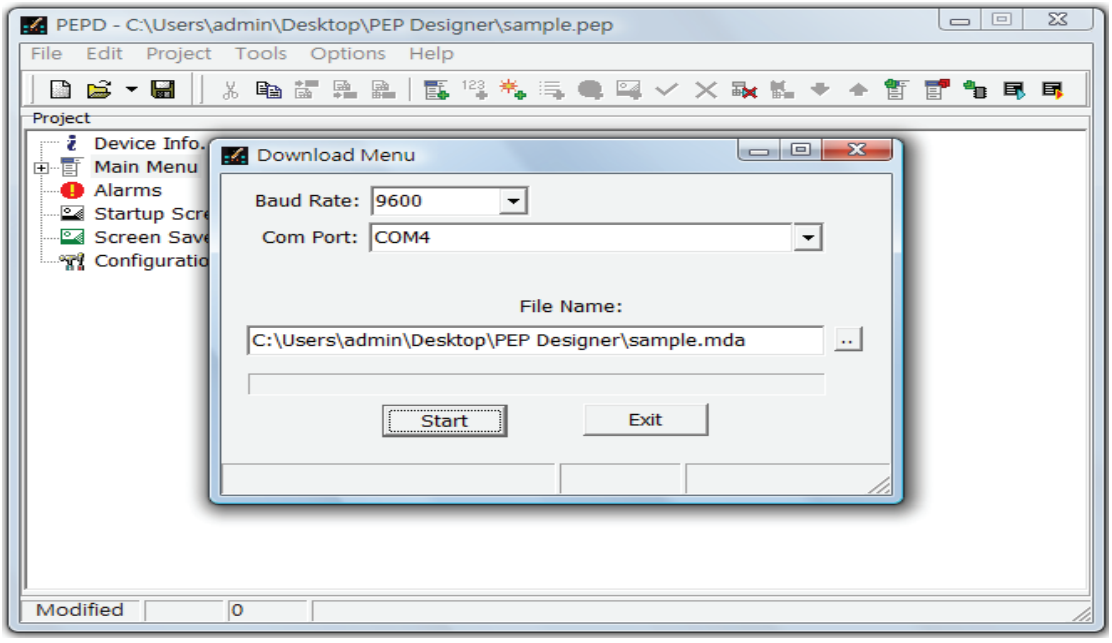



## 3.4.1 Download Menu

After validating the menu designwith the simulation, you maynow download the design to PEP. Before downloading design to PEP, you must switch PEP device to system menu mode. Then, select [Tools]→[Download Menu Data] from thefunction menu as shown below.



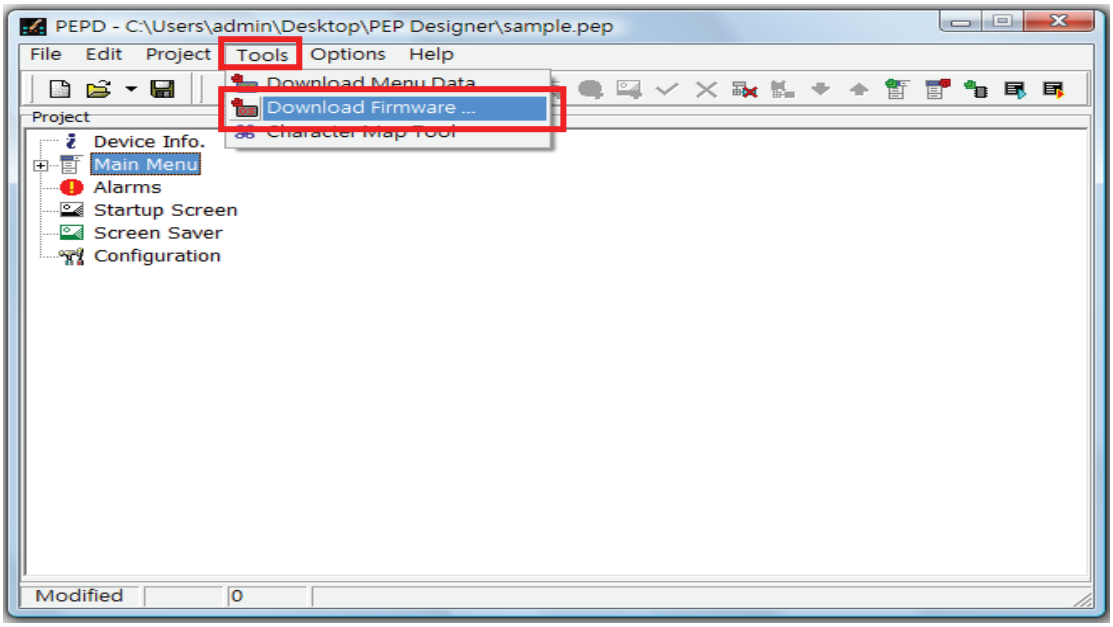

The Download Menu windows as shown below will pop up.



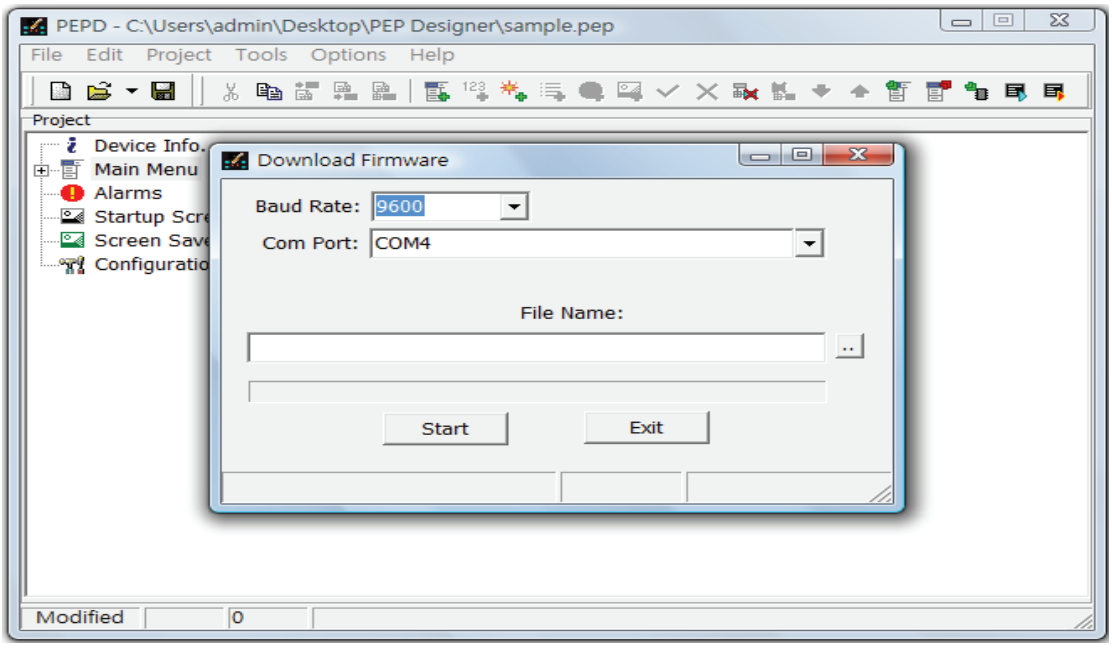

After setup the "Baud Rate" and "Com Port" settings and select the file name, press the Start button to download design to PEP for real operations.

## 3.4.2 Download Firmware

When it is necessary to update the PEP firmware, select [Tools] → [Download Firmware] from the menu bar as shown below.




The Download Firmware window will pop up.



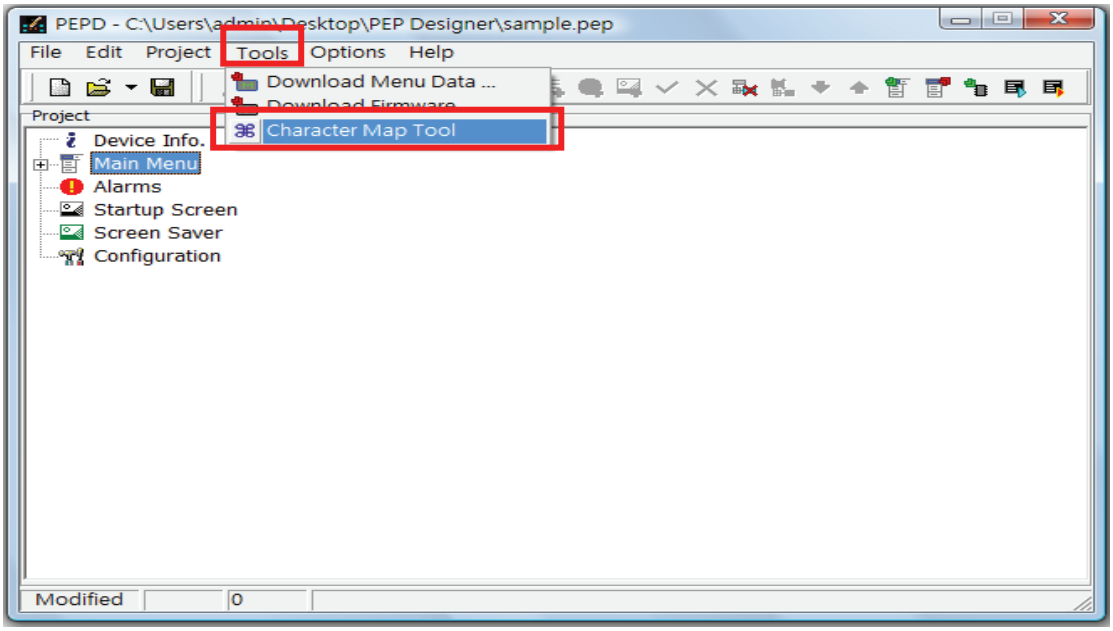

※ **File name:** Select the OS file to be updated.

※ **Contact your dealer for details concerning firmware update.**

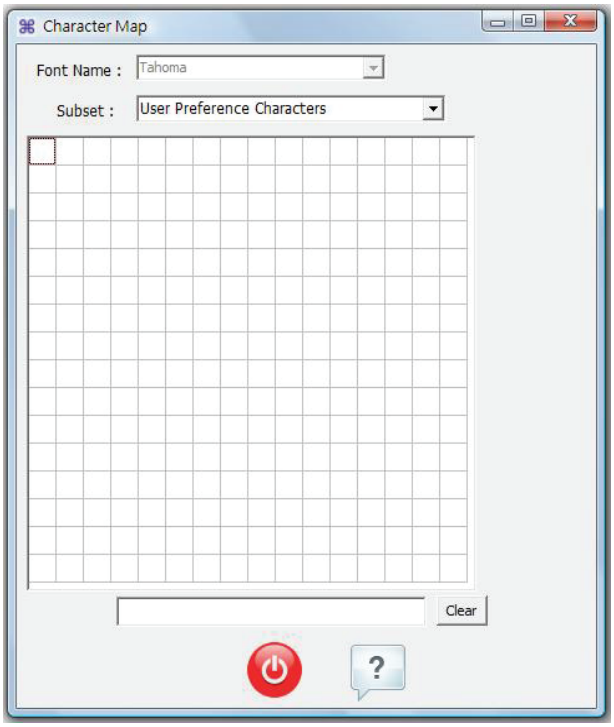
## 3.4.3 Character Map

When it is necessary to display special characters or symbols on PEP, input these characters and symbols with the [Character Map Tool] as shown below.

**Step 1:** Select [Tools]→[Character Map] with the mouse from the menu bar as shown below.



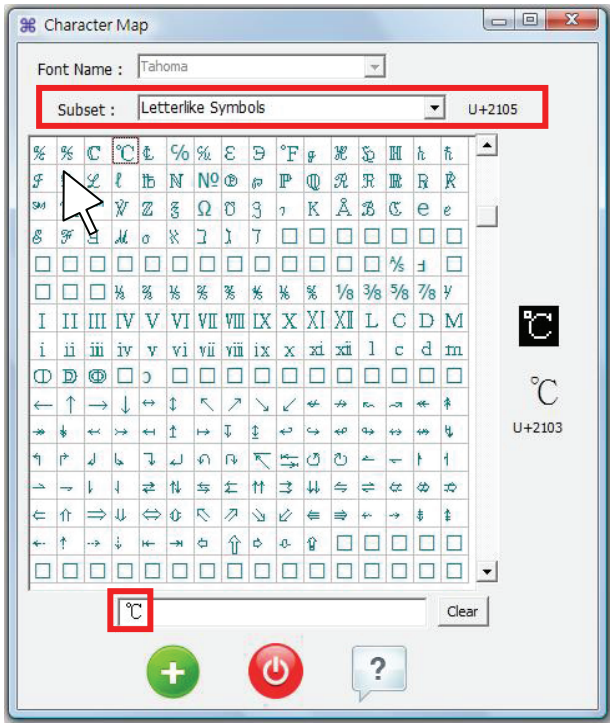

The Character Map Program will be run and the following screen will be shown.




※ **Font Name:** The name of font currently used by the PEP Designer (modifiable from [Option]→[Preference Output Font] on the menu bar).

**Subset:** If this combo list is selected to "User Preference Characters", then all the collected characters or symbols commonly used by users will be shown. User can directly jump to specific character subsets by control this combo list.

**Step 2:** Select a font class from the pull-downmenu or search the required character or symbol. Select the required character orsymbol with the mouse and it will be displayed on the blank field as shown below.

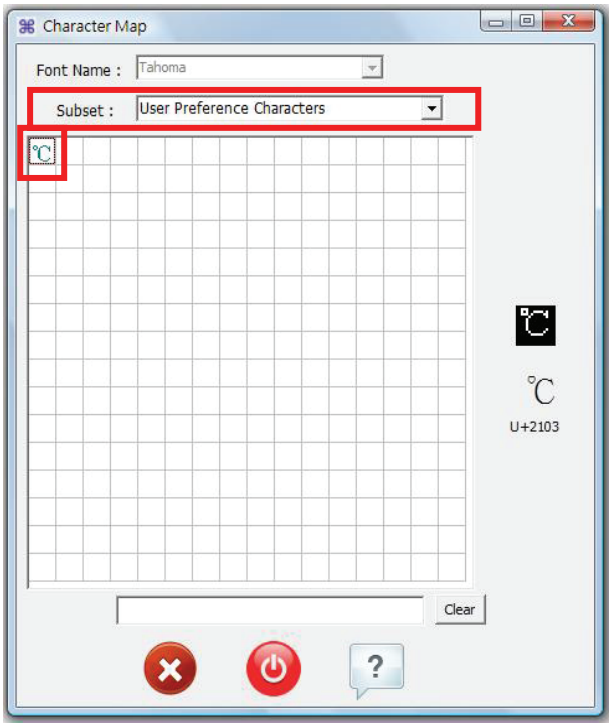


※ **Press the** **button to remove incorrectly chosen or unwanted characters or symbols from the field.**

※ **The "Character Map" is an independent application that will not affect the operations or editing tasks of PEP Designer.**

※ **Press the** **button to exit "Character Map".**

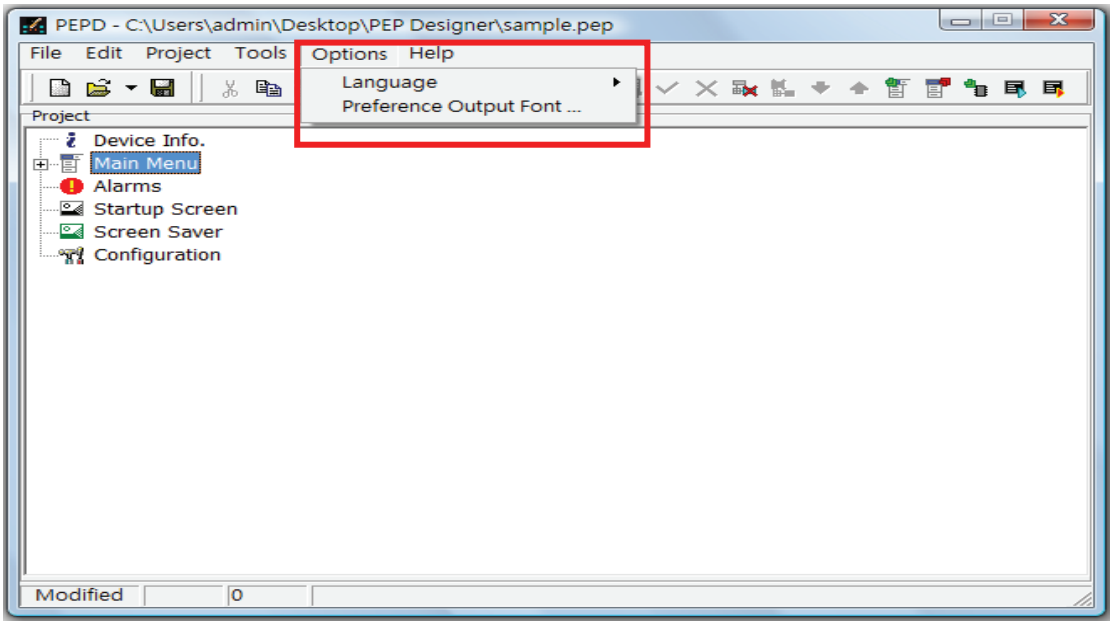
**Step 3:** Lastly, press the button to add the selected characters or symbols to "User Preference Characters" as shown below.




**Step 4:** If you want to use a selected character or symbol, click it with the mouse to copy it. Then move to the place where you want to use it, press the right mouse button and select "Paste" from the pop-up menu to paste it. You may also press [Ctrl] + [V] to paste the selected character or symbol.

# 3.5 Options

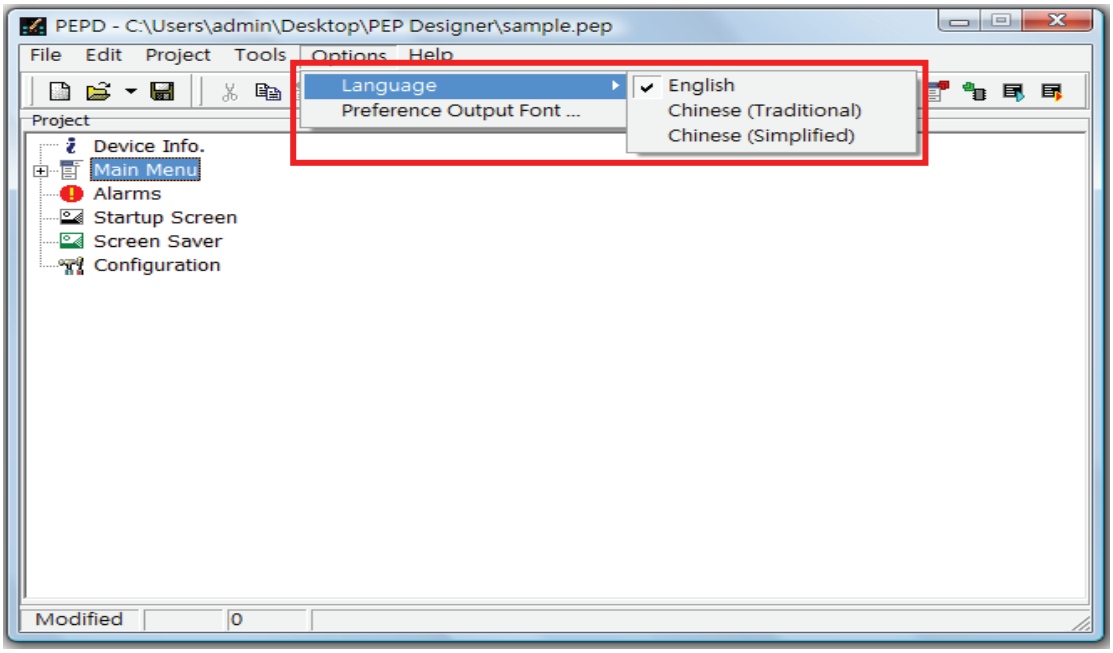
There are two options in [Options]: [Language] and [Preference OutputFont] as described below.




## 3.5.1 Language

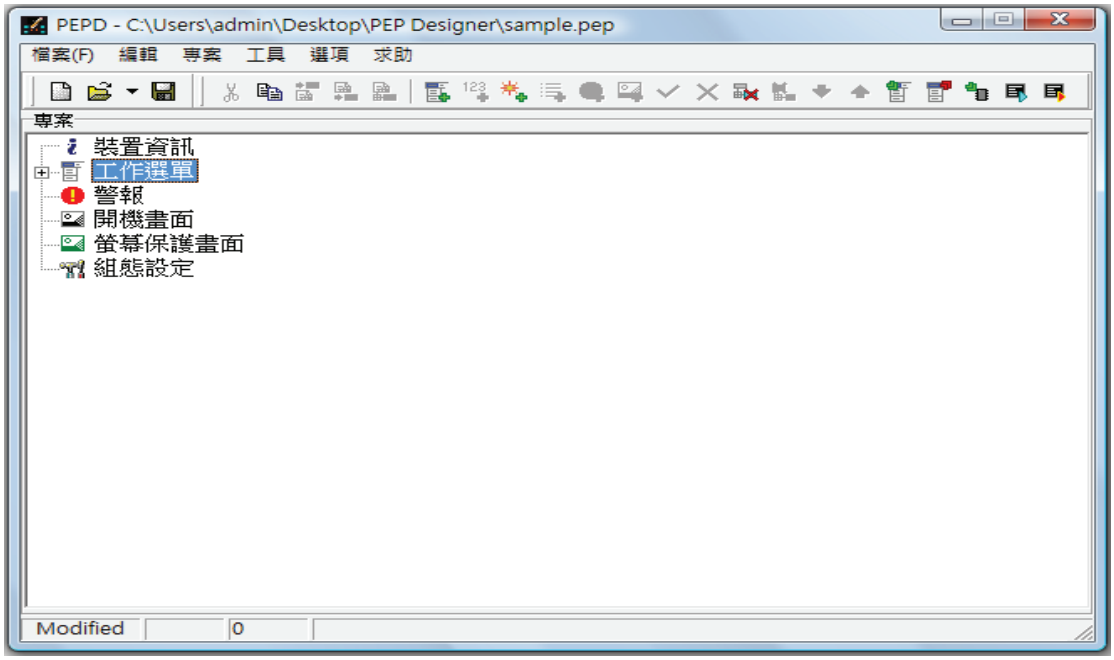
PEP Designer offers three language options: English, Traditional Chinese, and Simplified Chinese. You can select any of them as shown below.

**Step 1:** Select [Options]→[Language] with the mouse from the menu bar as shown below.

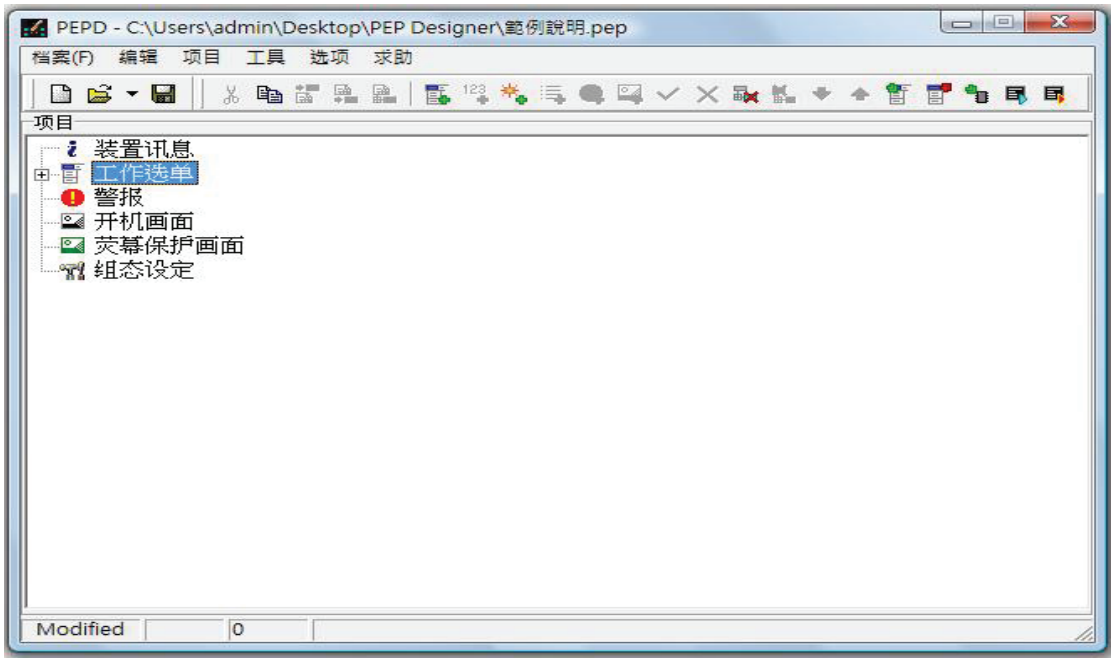



**※ The above screen is displayed in English.**

**Step 2:** Three language options will appear in the pop-up menu. You will not need to re-start the PEP Designer after changing a language, and everything will be displayed in the selected language.



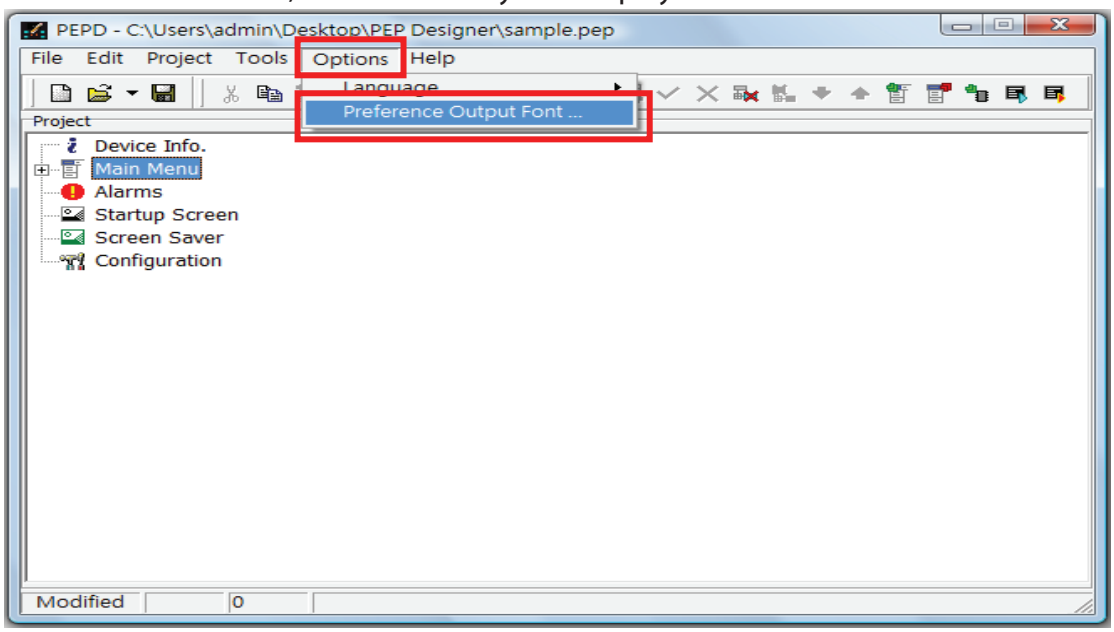

※ **The above screen is displayed in Traditional Chinese.**



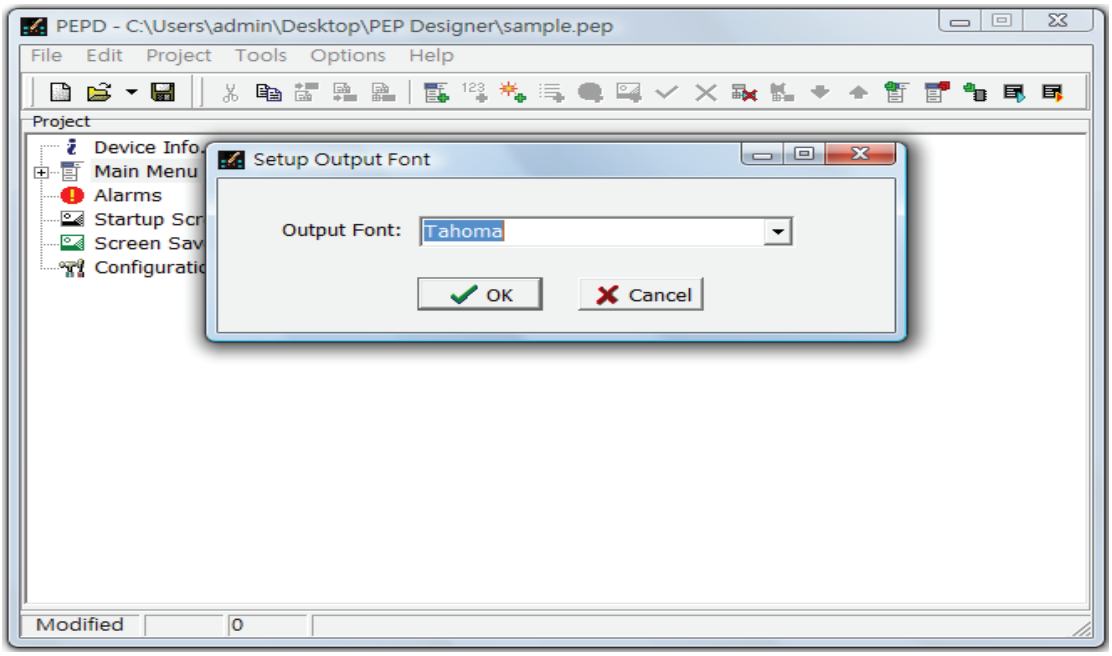

※ **The above screen is displayed in Simplified Chinese.**

## 3.5.2 Preference Output Font

Select [Options]→[Preference Output Font] with the mouse from the menu bar to select the font of the characters, numbers and symbols displayed on the PEP as shown below.

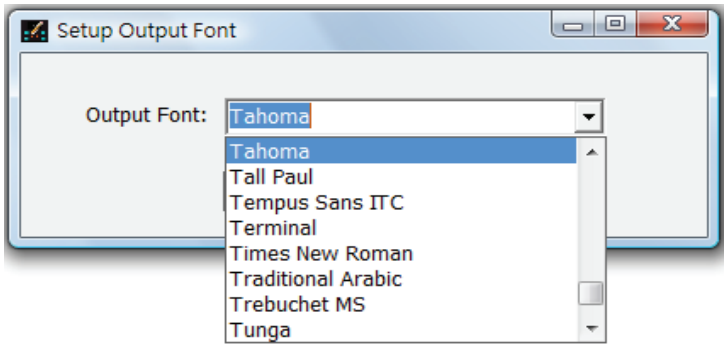



The [Preference Output Font] window will pop up.



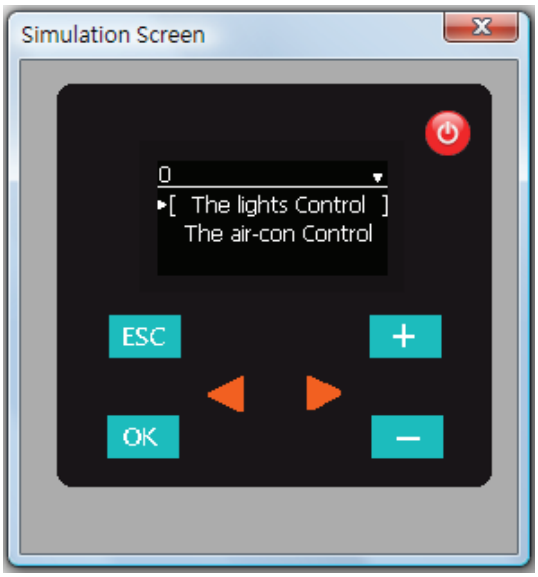

Select the preferred font from the pull-down menu in the Output font field. There are many choices.

⇨




After selecting the desired font, press the OK button. The font on the PEP will be changed into the selected font. You can validate this with the [Off-line Simulation] function as shown below.

⇨




※ **The font in the above screen is Tahoma.**

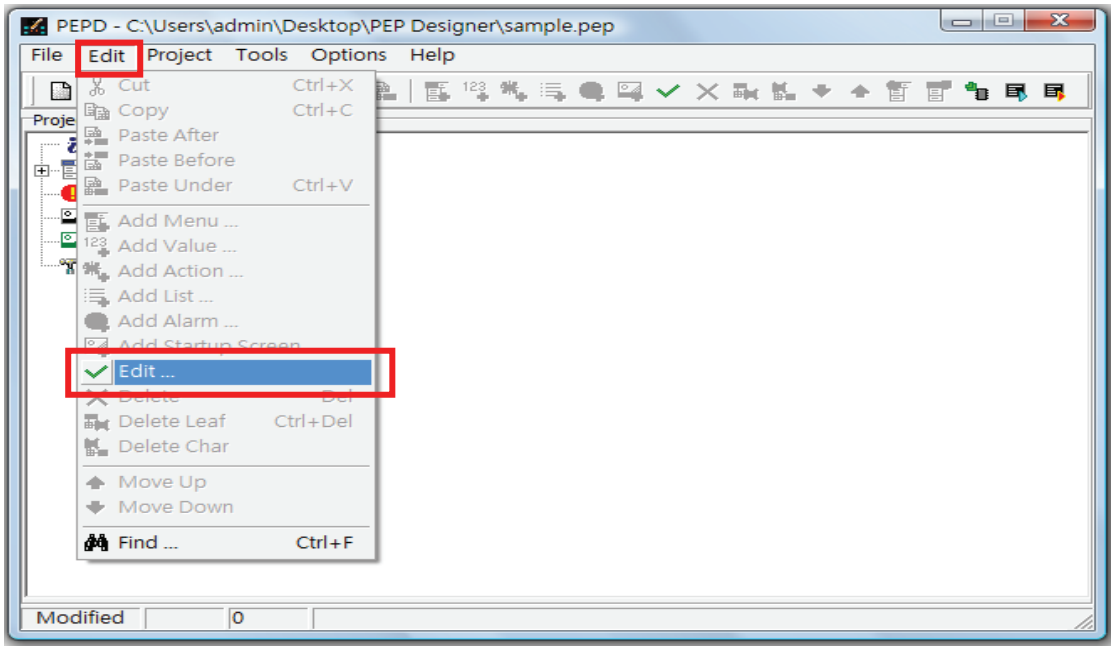
⇨

※ **The font in the above screen is Arial Black.**

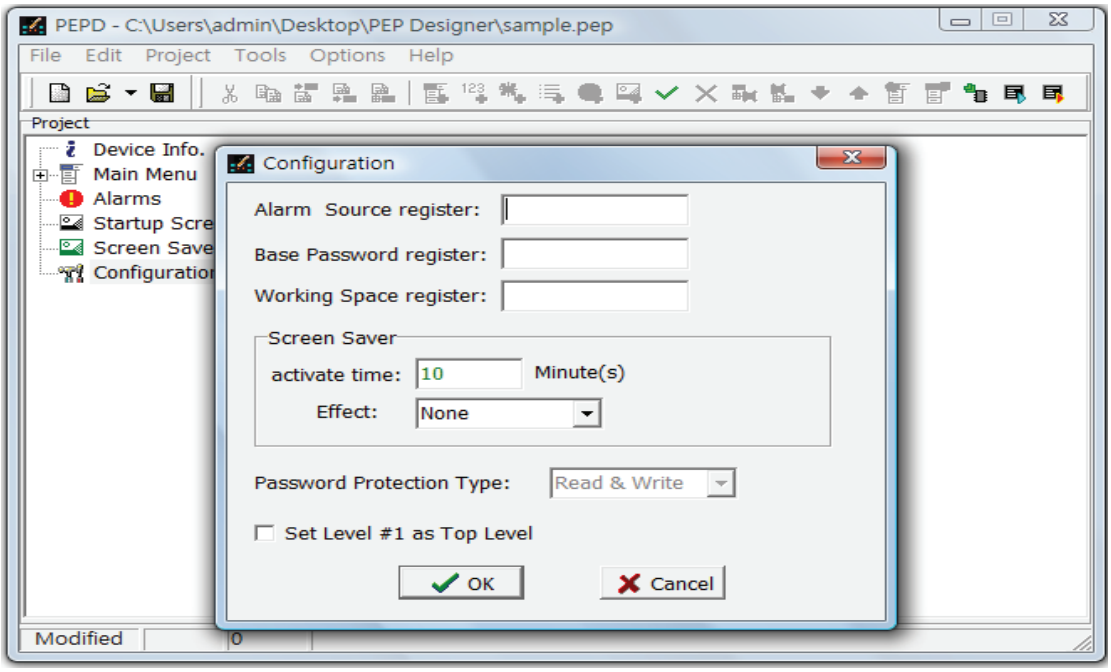
# 3.6 Configuration

In addition to the main menu, you can configure PEP from Configuration. Items in the Configuration include “Alarm Source Register”, “Base Password Register”, “Working Space Register”, "Screen Saver”, “Password Protection Type”, and “Set Level #1 as Top Level”. When configuring “Alarm Source” and “Base Password”, you must assign a register first. Procedures of configuration are described below.

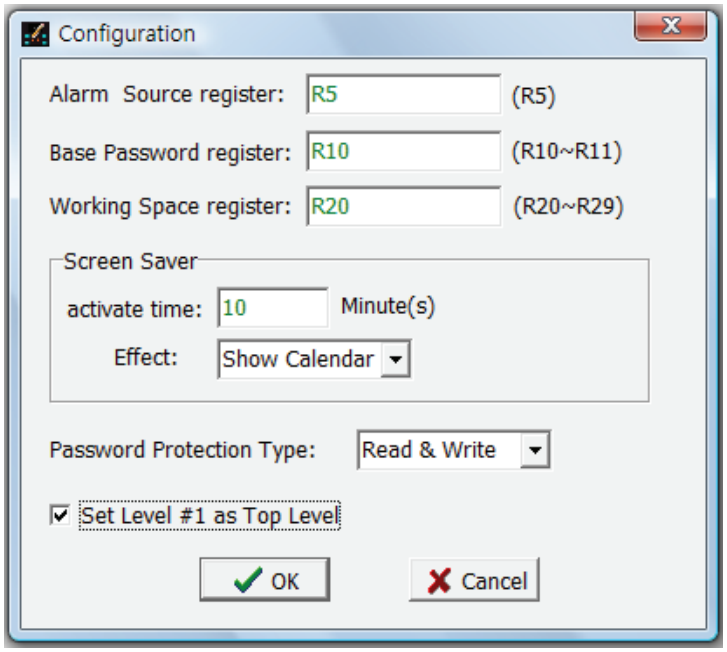
Select Configuration on the screen with the mouse. Then select [Edit]→[Edit] from the menu bar or right click the item and select [Edit] from the pop-up menu. You may also double click Configuration as shown below.




The Configuration Window as shown below will pop up.



The following shows an example of a Configuration. Features in the Configuration function will be explained and described below. This is for your reference only.




**※ Alarm Source Register:** Set the address of the register storing conditions activating alarms. It is a 16-bit register. As shown in the example, the Alarm Source Register is R5, which means R5 is the register where the key values activating alarms are stored. When the values in R5 and the designed index are identical, the alarm activates. When the field is blank, there is no alarm.

**※ Base Password Register:** Set the address of the register storing the user and supervisor passwords. Users can store a password with one word or two words. The above example uses one word for storing passwords. Register R10 stores the Operator Password and R11 the supervisor password. When the field is blank, there is no password protection. However, when the value of the corresponding register is 0, it also means there is no password. When the supervisor password is set, you must enter the corresponding password before you can access the system operating menu. When using two words to store passwords, set register to DR, e.g. DR10.

**※ Working Space Register:** The number of working register allocated for PEP application is 10 registers. In the above example, the register is R20, this means registers R20-29 are the Working Space Registers. After setting the Working

Space Registers, R20 will be used to store the path of the last active screen before system powerdown, while others are for future expansion. When the field is blank, the last active screen is not retentive.

**※ Screen Saver:** In the example, when the system idles for 10 minutes, the Show Calendar screen saver will activate to protect your screen. Please see 4.4 for details.

**※ Password Protection Type:** The policy has two options: “read/write protection” and “write-only protection”. In read/write protection, users will need to enter the correct password before they can access the operating menu. In write-only protection, users can access the operating menu, but they need to enter the correct password in order to operate the system or set values.

**※ Set Level #1 as Top Level:** When this item is unchecked, if users press the

key for 2 seconds or longer when operating the PEP, the system will immediately return to the menu on Level 0, regardless of the level of the previous menu. When this item is checked, the system will return to Level 1. If users want to return to Level 0 with this item checked, they must return to Level 1 first, and press for 2 seconds or longer to return to Level 0. This feature allows users to lock the menu at the top level to Level 1 in order to provide multilingual operations with this feature (by setting the language menu at Level 0) and hide the menu function.

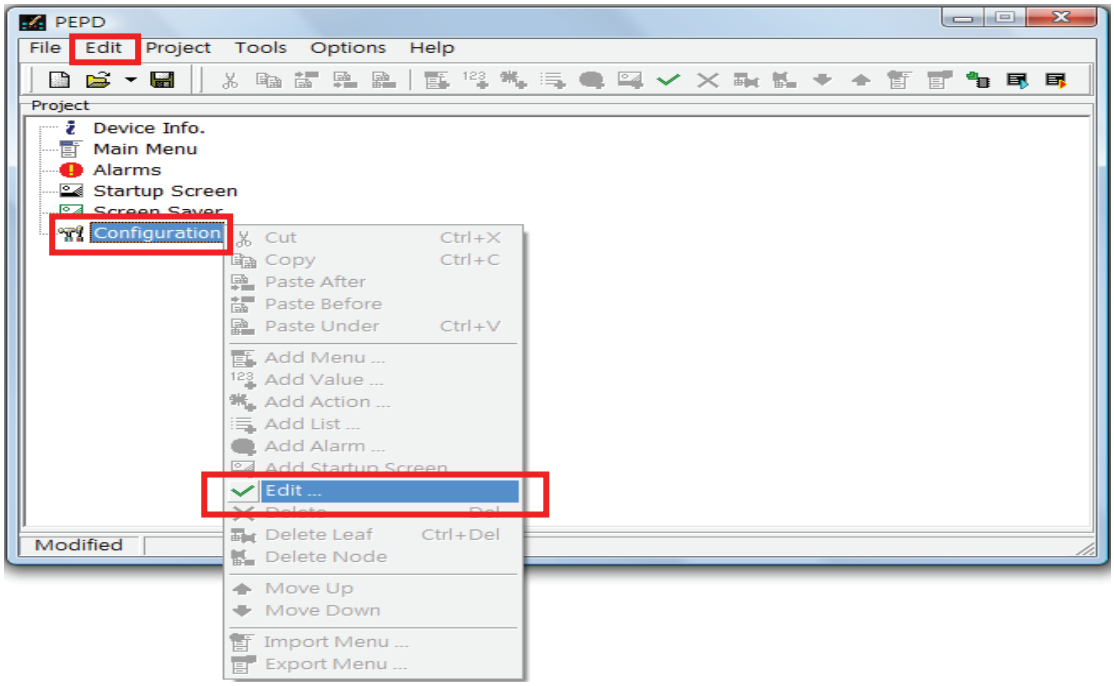
# 4. Examples and PEP Screens

## 4.1 Alarms

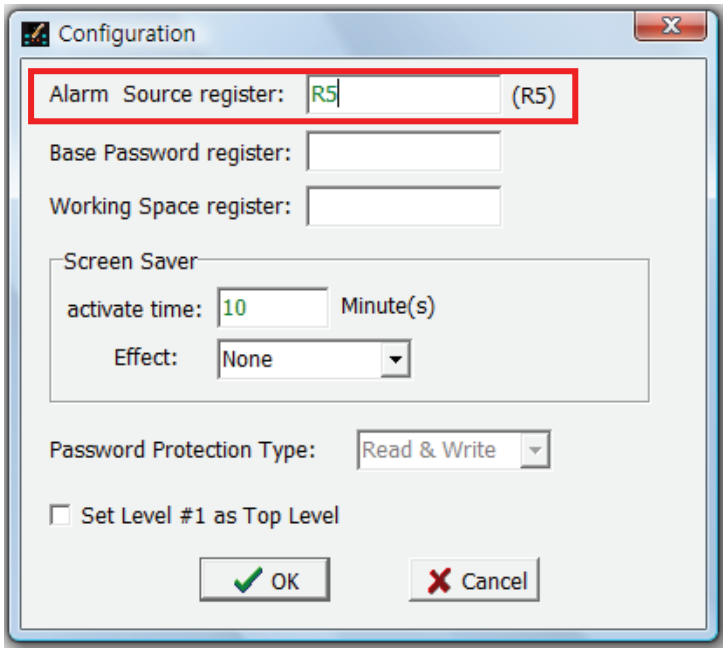
PEP provides the alarm function. The alarm activates when the value in the “Alarm Source Register” is identical to the “Index”. At the same time, the corresponding alarm message of the Index will pop up on the screen. The index includes 01-64, which means users can set 64 alarms. When the Index is “0”, this means there is no alarm. The follow shows how to set an alarm.

**Step 1:** Select [File] →[New] with the mouse from the menu bar.

**Step 2:** Select [Configuration] on the screen with the mouse. Then select [Edit]→[Edit] from the menu bar, or right click the item and select [Edit] from the pop-up menu as shown below.

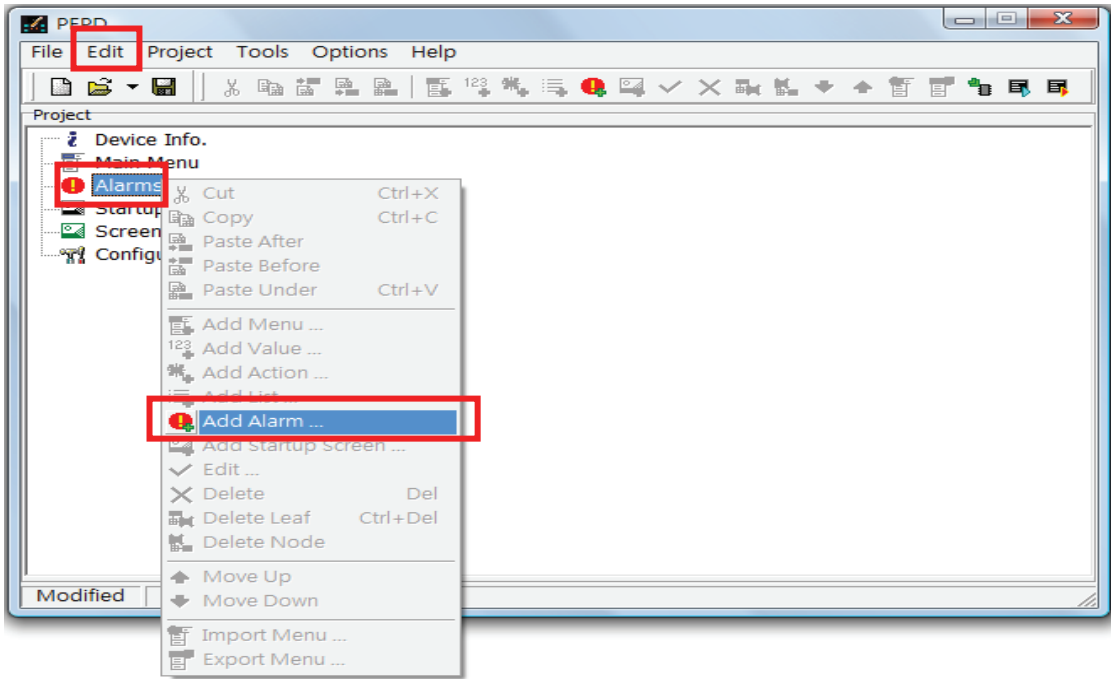


**Step 3:** Assign a register in the "Alarm Source Register" item from the pop-up window as shown below.

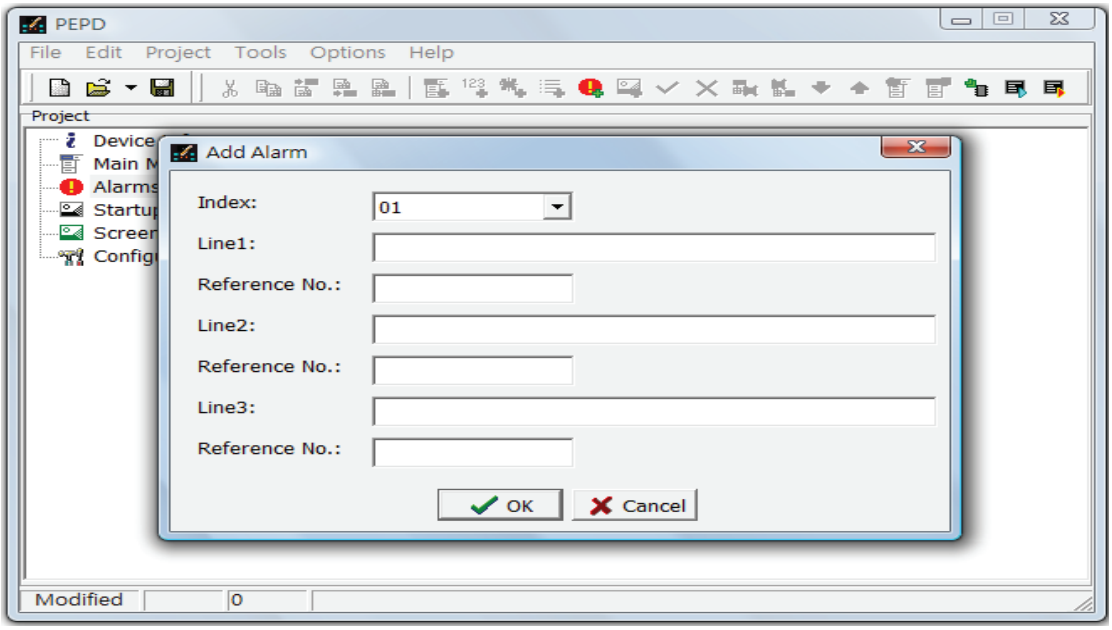



**※ In the above example, register R5 is assigned to the Alarm Source Register, i.e. R5 is the register where the key values activating the alarm are stored. When the values in R5 are identical to the index that has associate setup, the alarm activates.**

**Step 4:** Select Alarm on the screen with the mouse. Then select [Edit→[Add Alarm] from the menu bar, or right click the item tocall out the pop-up menu and select [Add Alarm] as shown below.



The Add Alarm window as shown below will pop up.

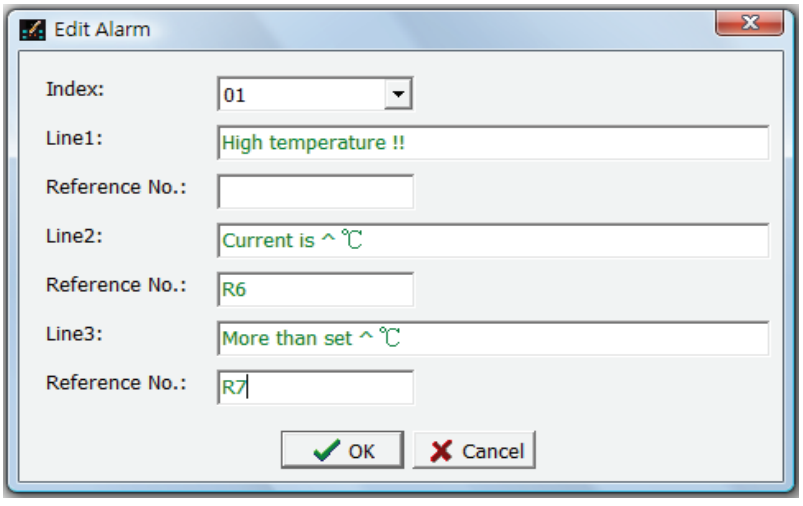



※ **Index :** Users can set any number from 01-64. When the value in the Alarm Source Register in Configuration is identical with the Alarm No., the alarm message of the corresponding Index will be activated. Therefore, the maximum number of alarms is 64.

**Line :** The PEP screen supports the display of three lines of text at the same time. Therefore, Line 1 represents the text on Line 1, Line 2 on Line 2, and Line 3 on Line 3. Users can input the alarm message here. One variable is allowed in each string, and users can indicate its position with the "^" symbol.

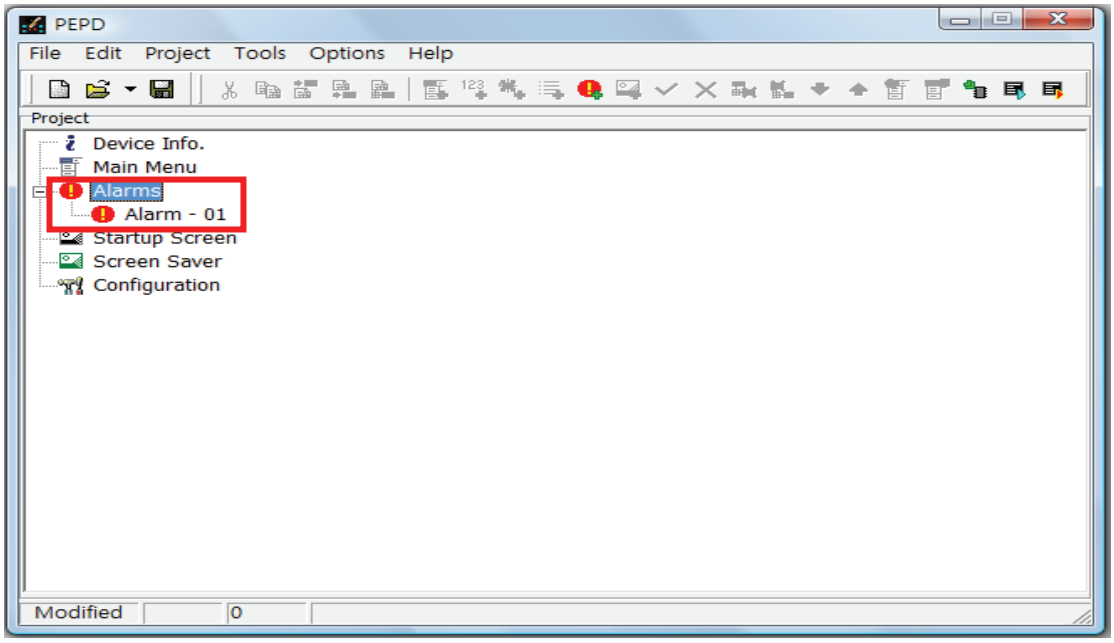
**Reference No.:** The PLC register number corresponds to the variable.

**Step 5:** Set the "Index", "Alarm Message", and "Reference Number" in the [Add Alarm] window as shown below.

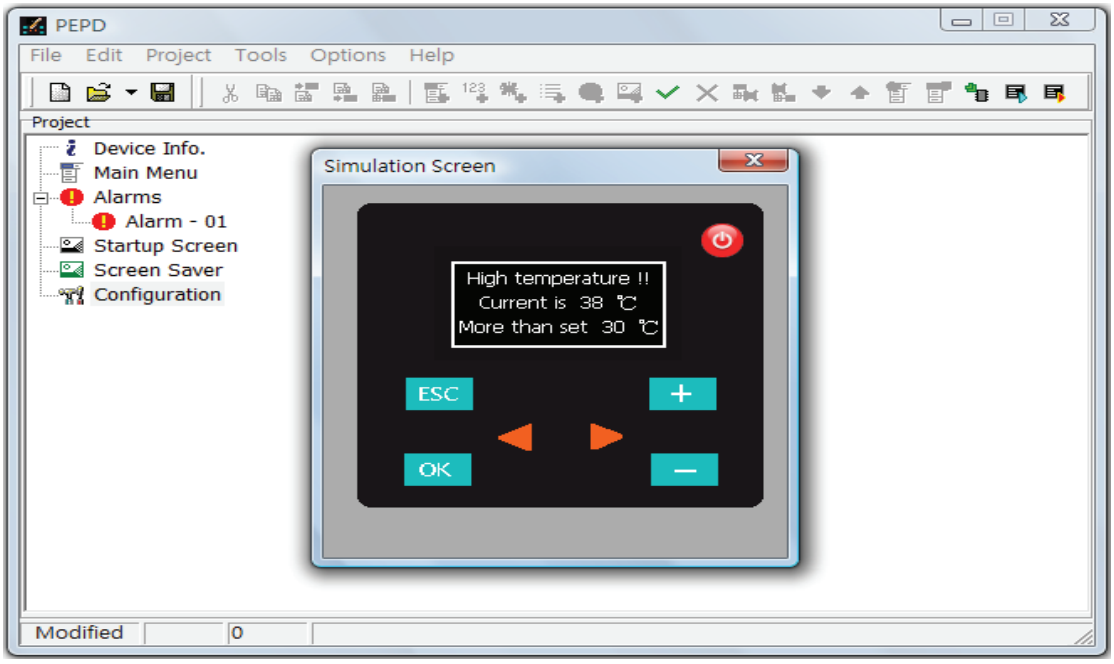



**※ In Line 2, the "^" symbol marks the display location of R6 content; and in Line 3, the same symbol marks the display location of R7 content.**

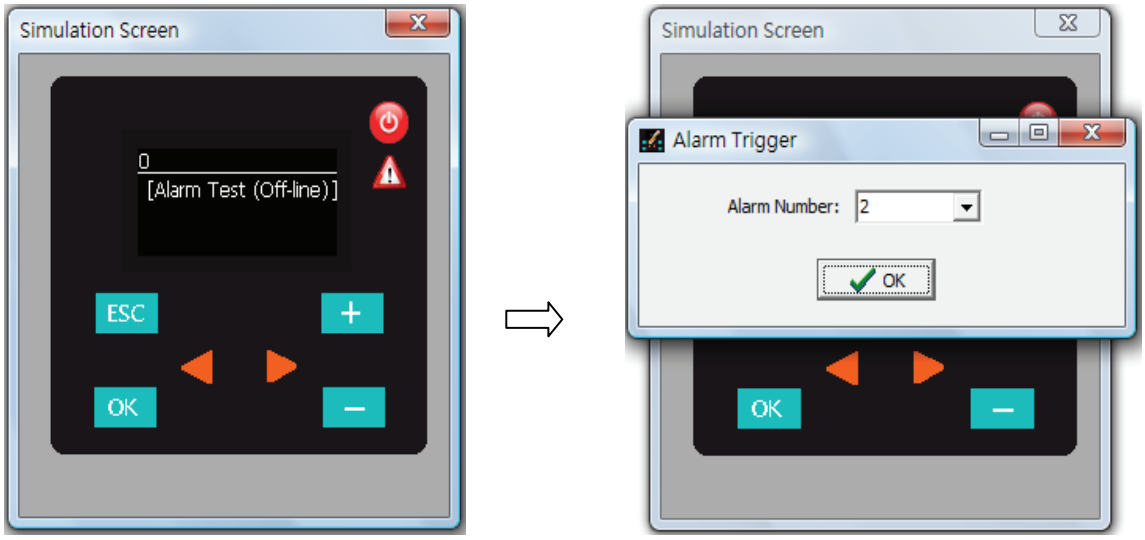
After setting the alarm, press the OK button and the alarm will be added to Alarm as shown below.




**Step 6:** Check the alarm configuration with [On-line Simulation] as shown below.




**※ You can also check the alarm configuration with [Off-line Simulation]. When an alarm is set, the icon will appear on the [Off-line Simulation] screen. Click the icon to select the "Index" for running "Alarm Trigger" as shown below.**




After selecting the desired "Index", press the OK button and the corresponding "Alarm Message" will be displayed on the simulation screen as shown below.

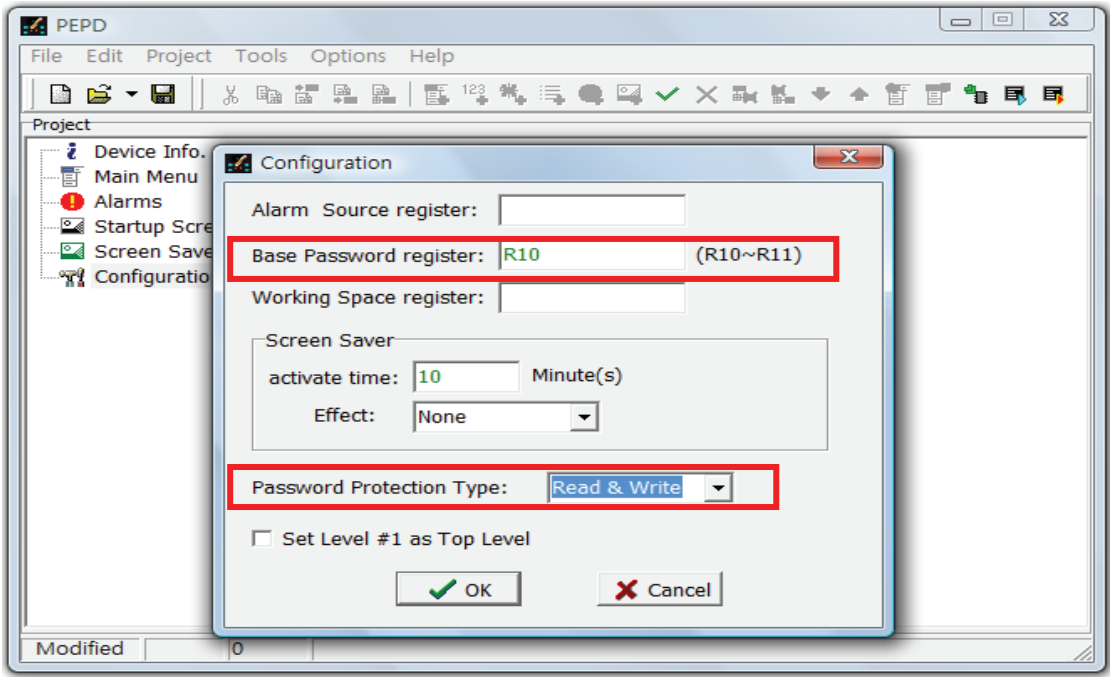
## 4.2 Password Protection

PEP provides a password protection function. Users can set "Operator" and "supervisor" passwords. When the "Operator Password" is set, users will need to enter the password according to the settings in the Configuration before they are allowed to operate PEP. If the "Supervisor Password" is set, users must enter the supervisor password before they can access the System Functions. Both passwords can be stored in one word or two words (set register to DR). When this field is blank, there is no password protection. When password protection is enabled, but the value in the corresponding register is 0, no password is set. The following shows how to set a one-word password.

**Step 1:** Select [File] → [New] with the mouse from the menu bar.

**Step 2:** Select Configuration on the screen with the mouse. Then select [Edit] → [Edit] from the menu bar, or right click the item and select [Edit] from the pop-up menu.

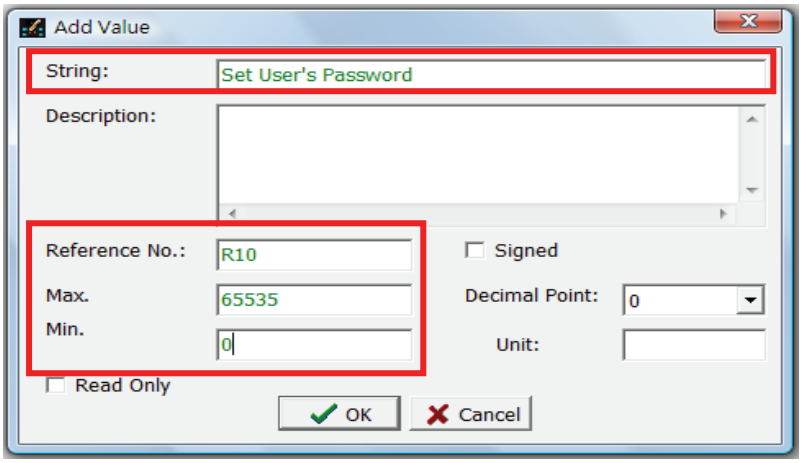
**Step 3:** In the Configuration Setup window, assign a register in the "Base Password Register" and select the "PasswordProtection Type" as shown below.



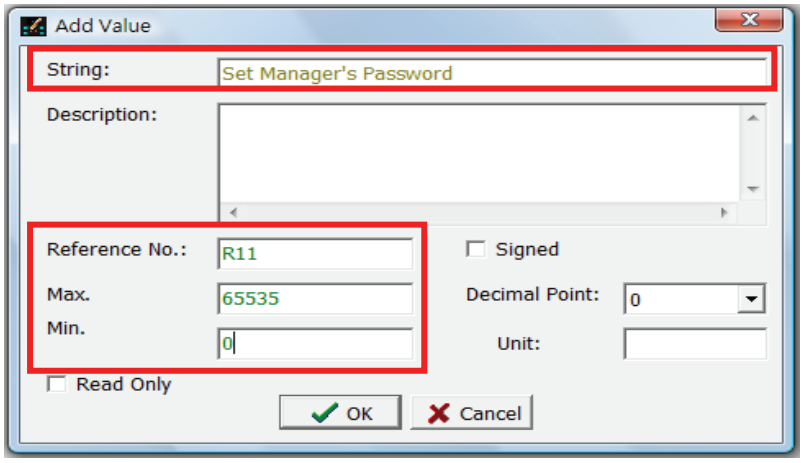

**※ In the above example, register R10 is assigned to the "Base Password Register", which means that users can set the Operator Password in R10 and the supervisor password in R11. The "Password Protection Type" is Read/Write Protection, which means that users are requested to enter the correct password before they can access the operating menu.**

**Step 4:** Select Main Menu on the screen with a mouse. Then select [Edit]→[Add Menu] from the menu bar, or right click the item and select [Add Menu] from the pop-up menu. Now, create a menu called Set Password.

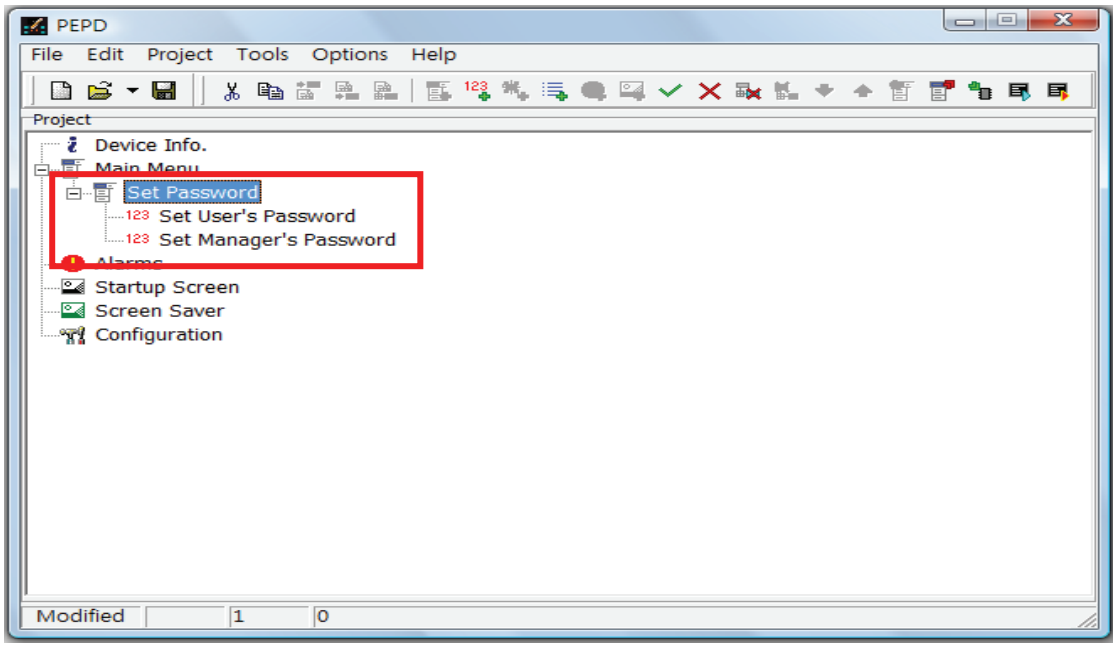
**Step 5:** Select Set Password with the mouse. Then select [Edit]→[Add Value] from the menu bar, or right click the item and select [Add Value] from the pop-up menu. Now, set the Operator Password format as show below.



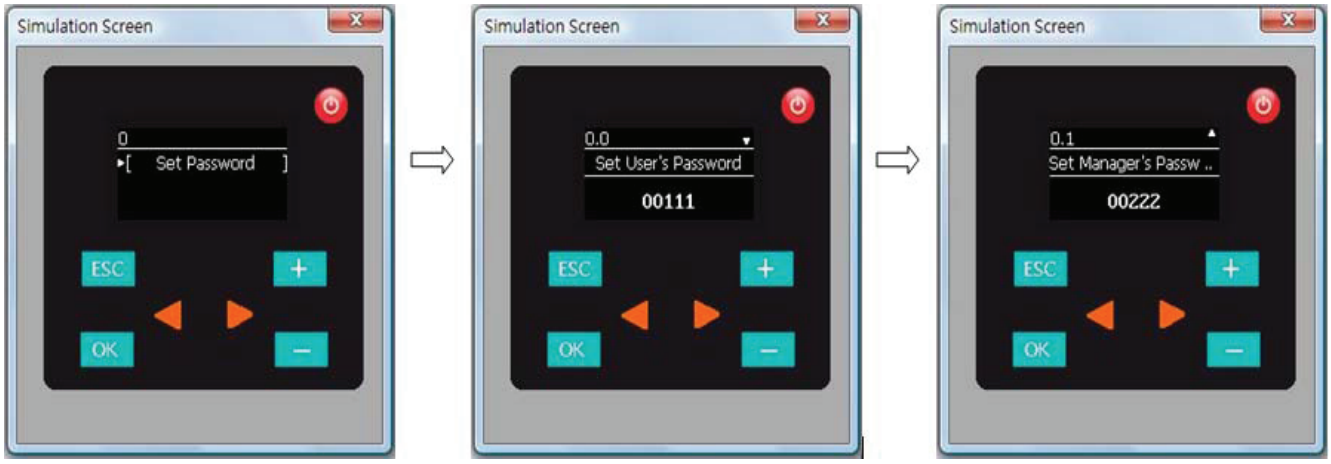
※ **If you want to set the supervisor password, see the example below.**




After setting the password values, press the OK button to add the value items under the Set Password menu as shown below.



**Step 6:** Check password functions with [On-line Simulation] as shown below.




After setting the passwords, shut down the simulation and re-start the [On-line Simulation]. Before entering the menu page, you will be requested to enter the password. You must enter the correct password in order to access to the menu as shown below.

※ **The main difference between the operator password and supervisor password is that the former allows users to access the menus but not the system functions when the supervisor password protection is enabled. In this case, users need to use the supervisor password to access the system functions.**

# 4.3 Startup Screen

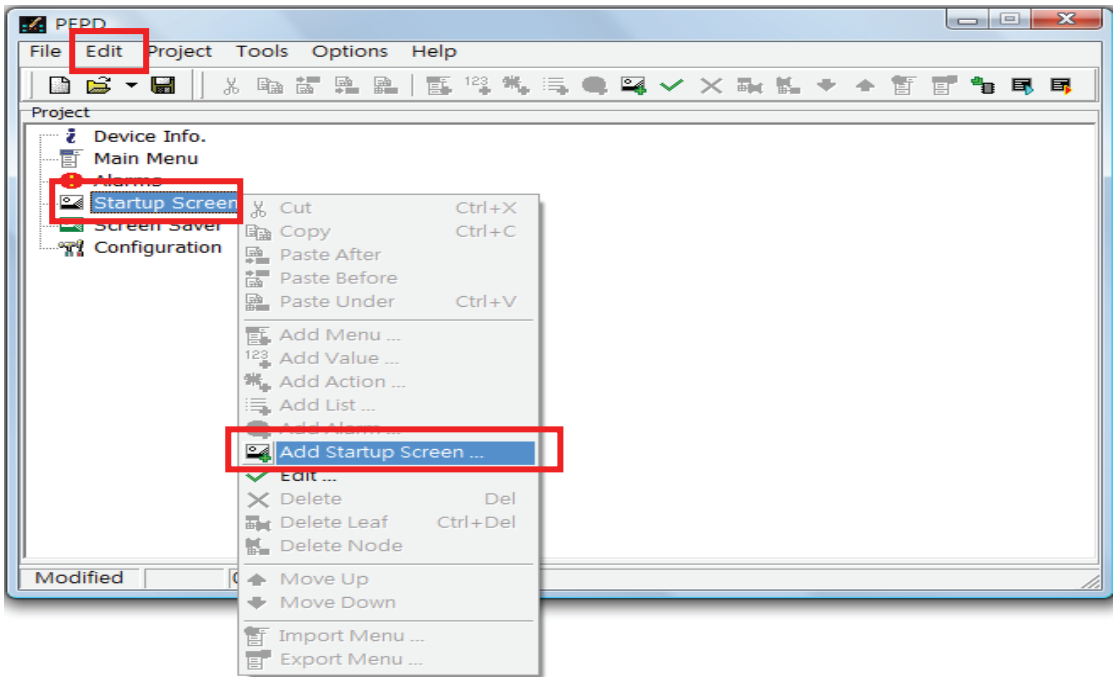
With PEP Designer, users can design and plan the startup screen of PEP. As there is space for up to 16 startup screens, users can design a small active startupscreen. In the following example, we will show you how it works with the registered trademark of FATEK Automation Corporation.

**Step 1:** Images used in the startup screen must be stored in the computer.

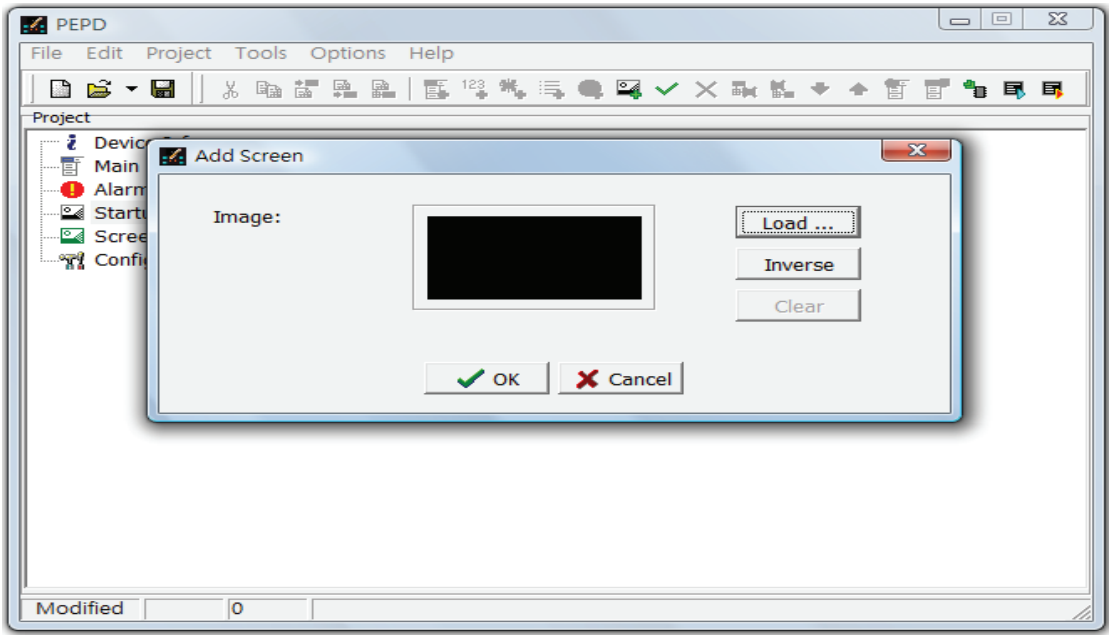
※ **PEP Designer supports images in BMP, ICO, EMF and WMF formats.**

※ **Image size: 128 x 64.**

**Step 2:** Select Startup Screen on the screen with the mouse. Then select [Edit]→[Add Screen] from the menu bar, or right clickthe item and select [Add Screen] from the pop-up menu as shown below.




The Add Screen window as shown below will pop up.



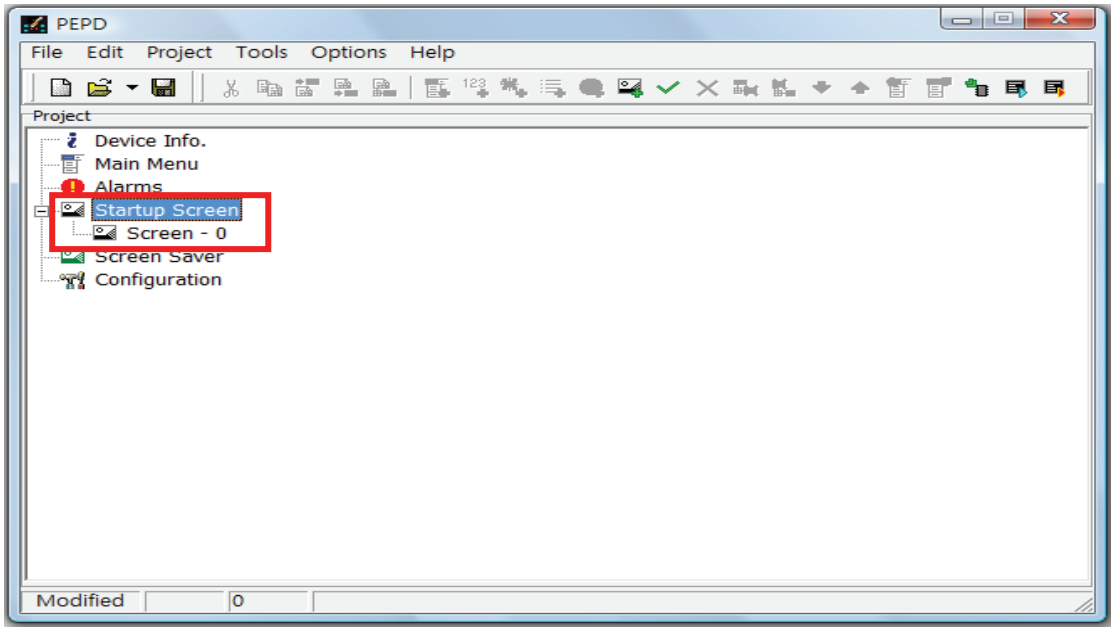

※ **Load Image:** Select an image from the computer for the startup screen

**Inverse Image:** Inverse the color of the selected image (black to white, white to black)

After loading the required image for the startup screen, press th OK button.

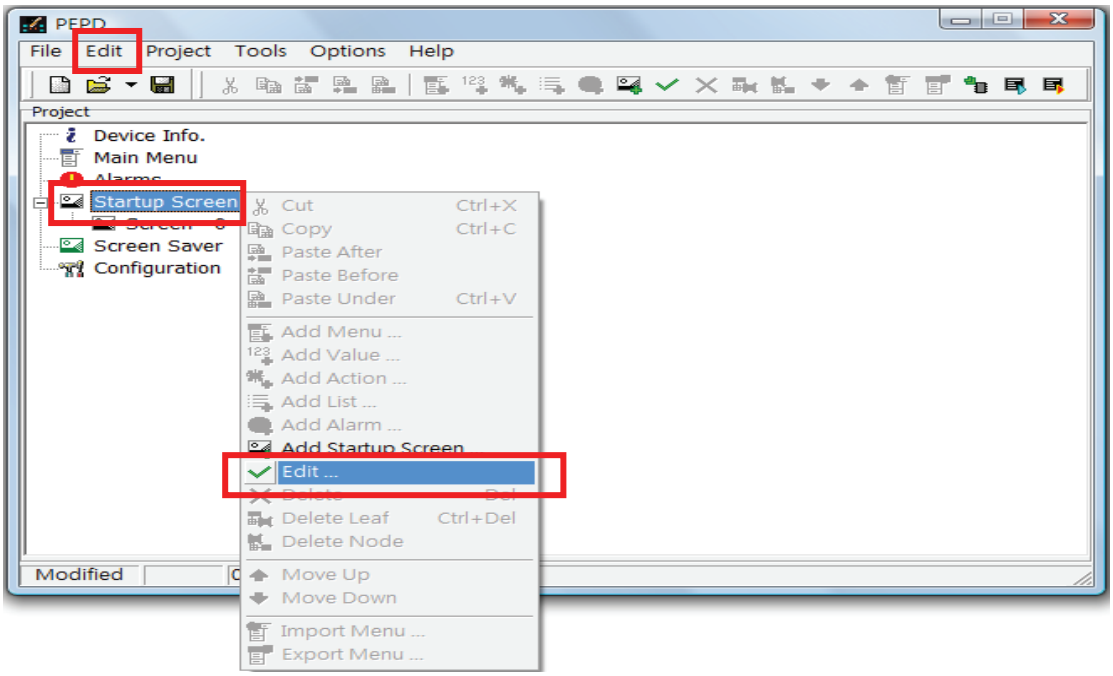
※ **Effect after image inverse**

The new startup screen Screen0 is added to the Startup Screen menu as shown below.

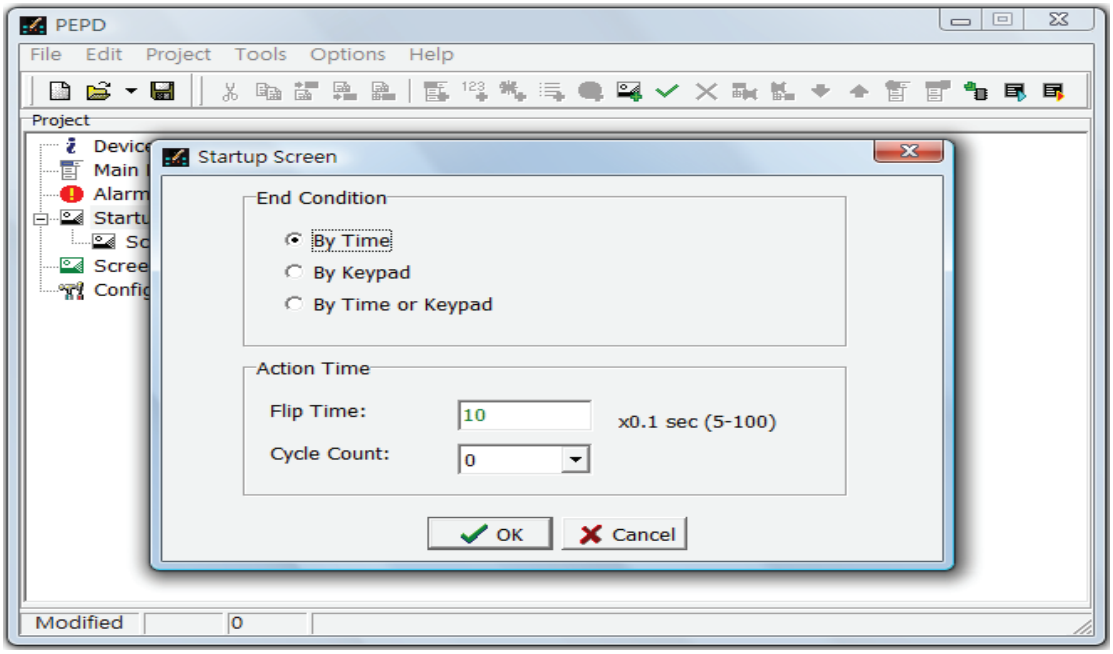



※ **The "0" in Screen-0 represents the first startup screen. There is space for up to 16 startup screens.**

**Step 3:** Select Startup Screen on the screen with the mouse. Then select [Edit]→[Edit] from the menu bar, or right click the item and select [Edit] from the pop-up menu as shown below.




The Startup Screen window as shown below will pop up.




※ **End Condition:** In what conditions the startup screen will end.

**By Time:** The display of the startup screen is controlled by time.

**By Keypad:** The display of the startup screen is controlled by key: press any key to end the startup screen.

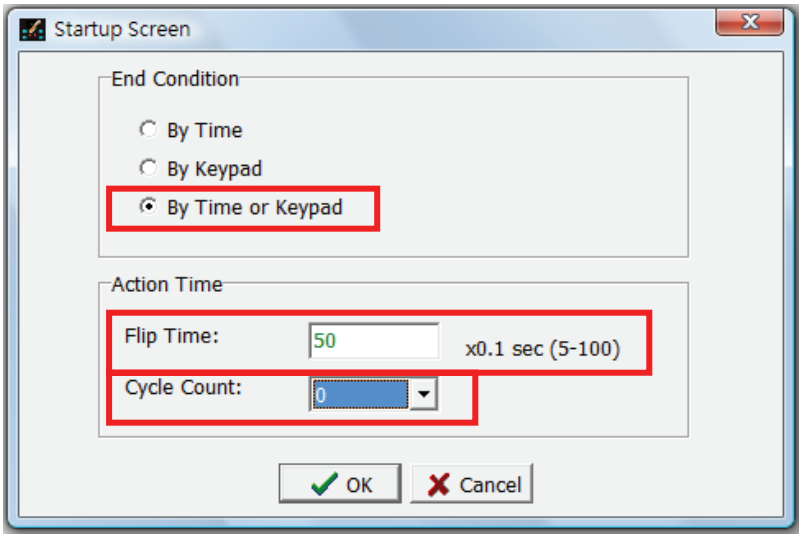
**By Time or Keypad** The display of the startup screen is controlled by time or key at the same time.

※ **Action Time:** Set the time of startup screen activation.

**Flip Time:** The time of display of the startup screen page(5-100): 0.5 seconds is the shortest, and 10 seconds is the longest.

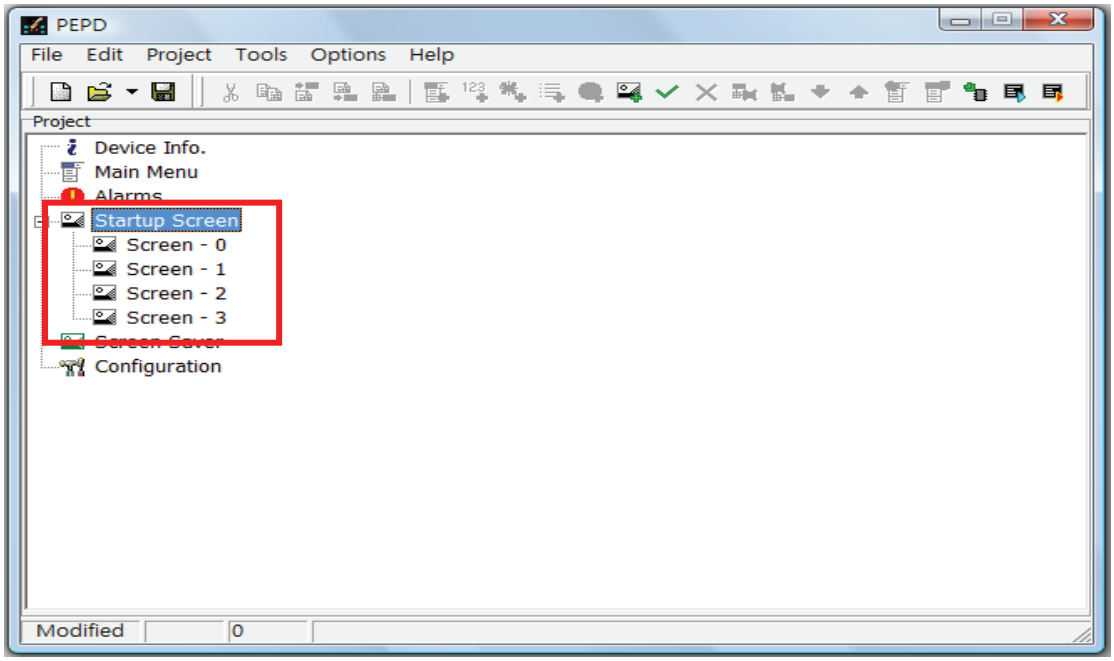
**Cycle Count:** The repetition of startup screen, maximum 10 times.

The settings in the following example are: Screen Flip Time: 5 seconds, without repetition. When the flip time is up or the user presses any key, the system will enter the main screen.

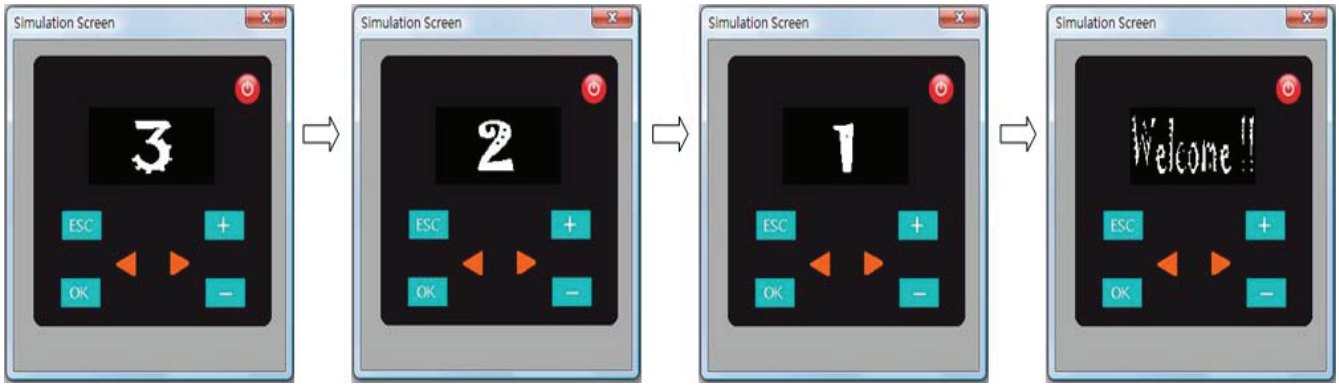



After setting the conditions and actions, press the OK button. You can check the settings with [Off-line Simulation] as shown below.

※ **If you want to design a small live startup screen, you can design more startup screens (preferable with related images) and select the Flip Time and Cycle Count as shown below.**




After setting the conditions and actions, check the settings with [Off-line Simulation] as shown below.

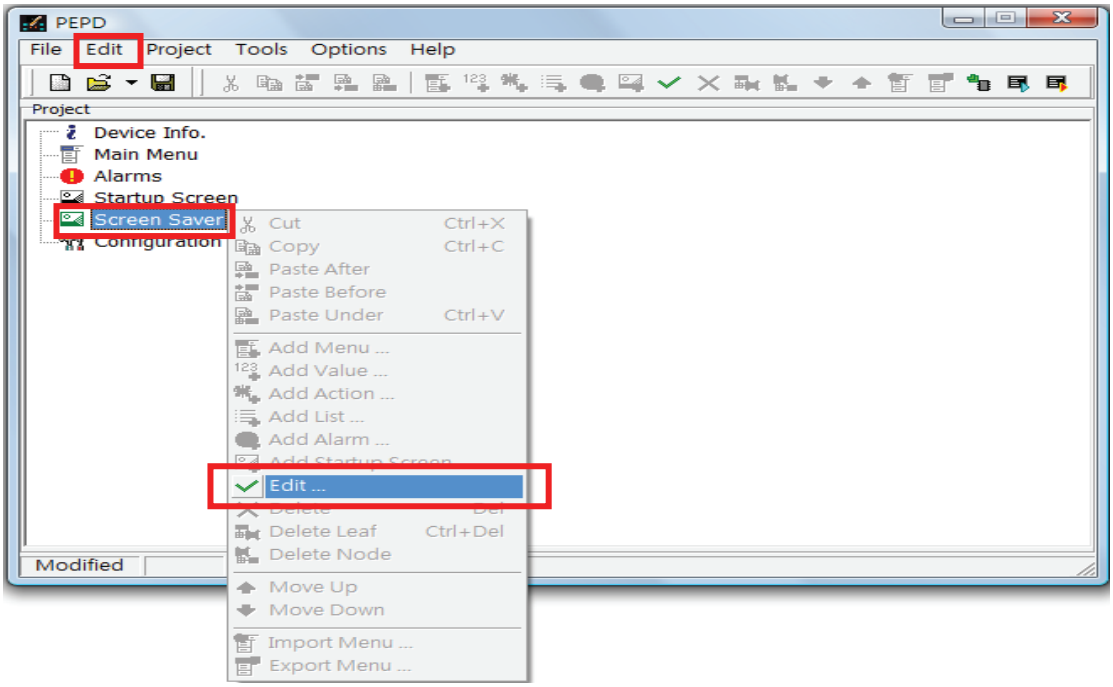



※ **If you want to enter the Main menu after running the startup screen once, set Cycle Count to 0. If you want to run several time, you can set the Cycle Count according to the desired times. The maximum is 10 Cycle Counts.**

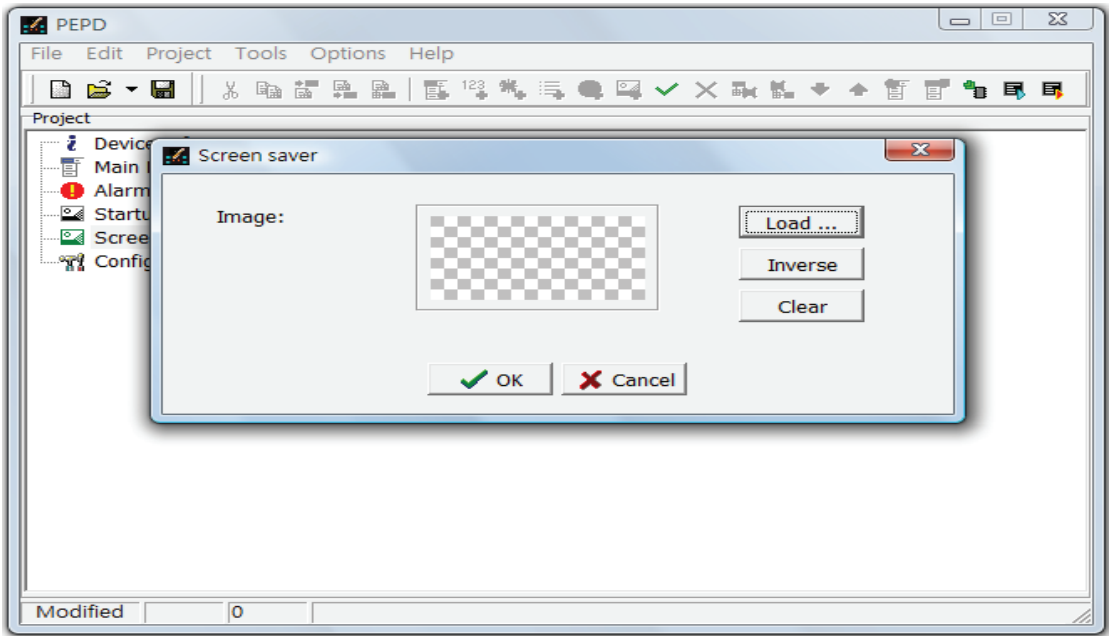
## 4.4 Screen Saver

The screen saver function of PEP Designer delivers the following five effects: “None”, “Dimout”, “Show Image”, “Show Calendar”, and “Blackout”. You can configure the idling time of the system before activating the screen saver.

**Step 1:** Select "Screen Saver" on the screen with the mouse. Then select [Edit]→[Edit] from the menu bar, or right click the item and select [Edit] from the pop-up menu as show below.




The "Screen Saver" window as shown below will pop up.



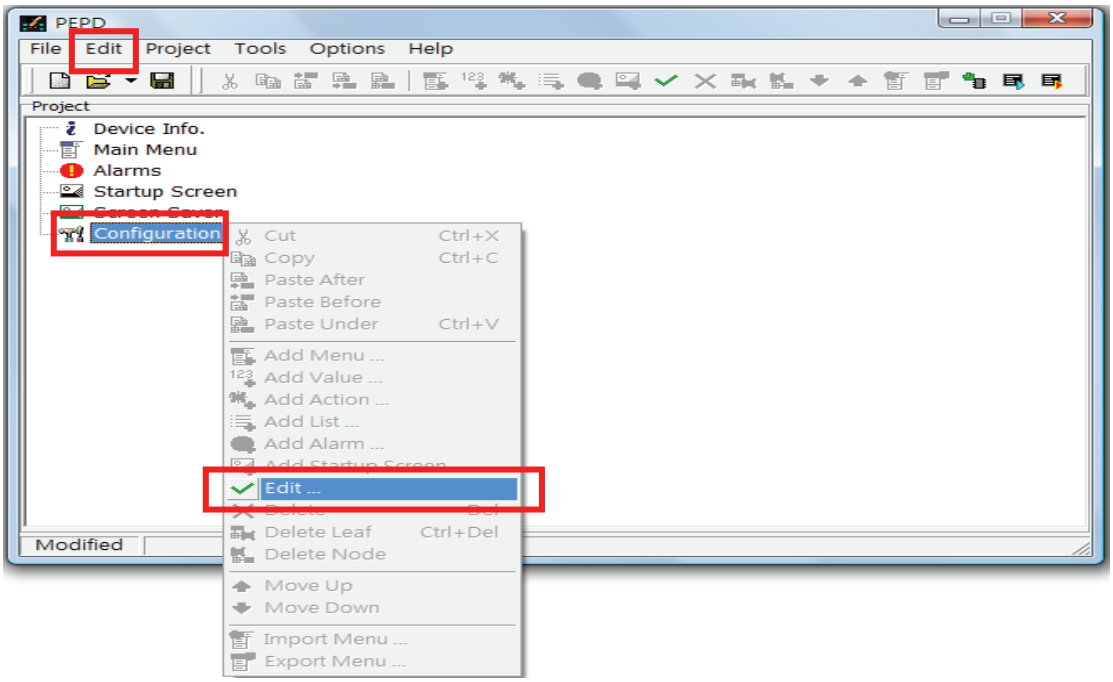

※ **Load Image:** Load the image for the screen saver from the computer.

**Inverse Image:** Inverse image colors (black to white and white to black). Set the background to black to prolong the screen life.

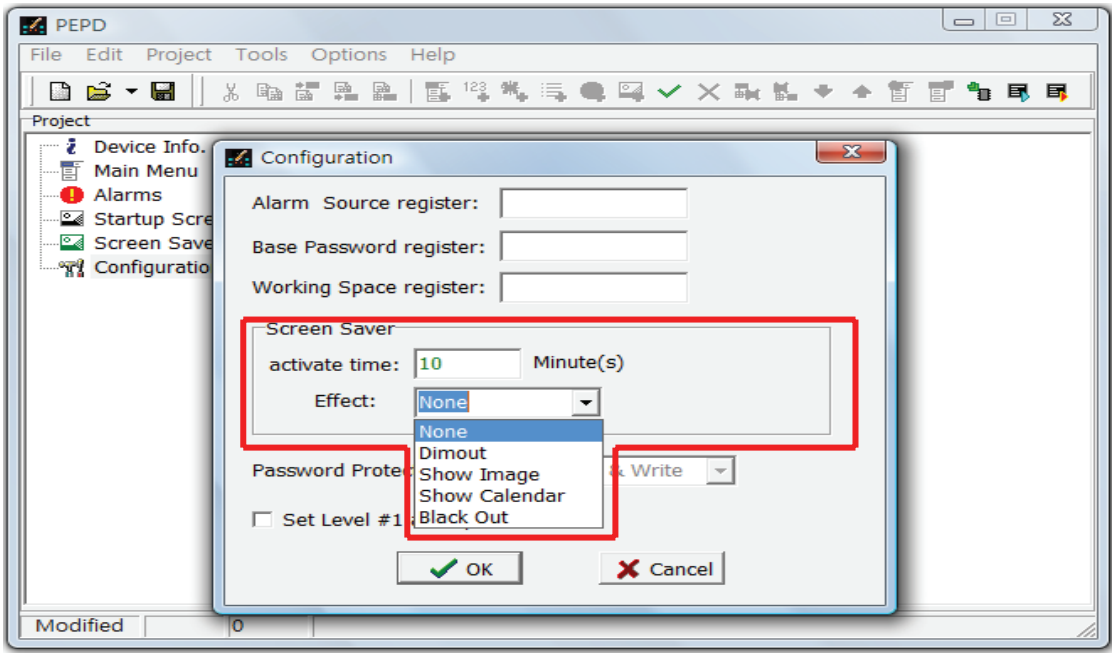
**Clear:** Clear the selected image.

**※ To extent the screen life, please choice the black color as picture background as possible.**

**Step 2:** Select "Configuration" on the screen with the mouse. Then select [Edit]→[Edit] from the menu bar, or right click the item and select [Edit] from the pop-up menu as shown below.



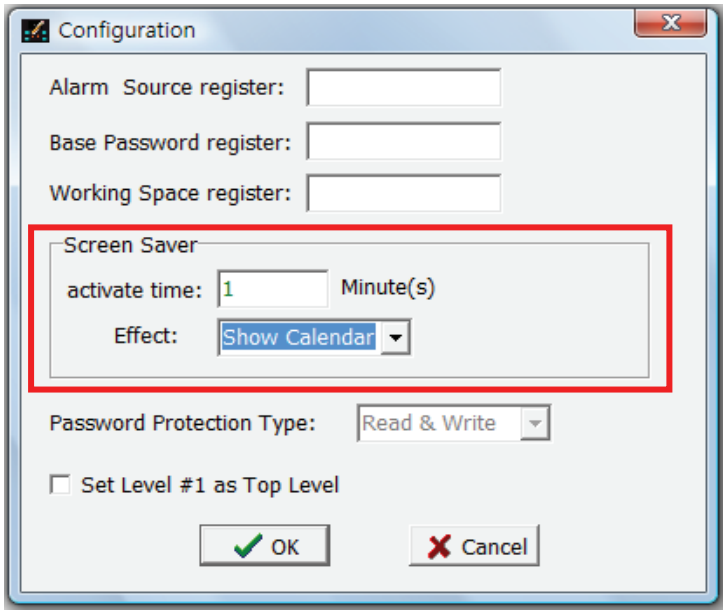

The "Configuration" window as shown below will pop up.




※ **Activate Time:** Set the idling time before screen saver activation.

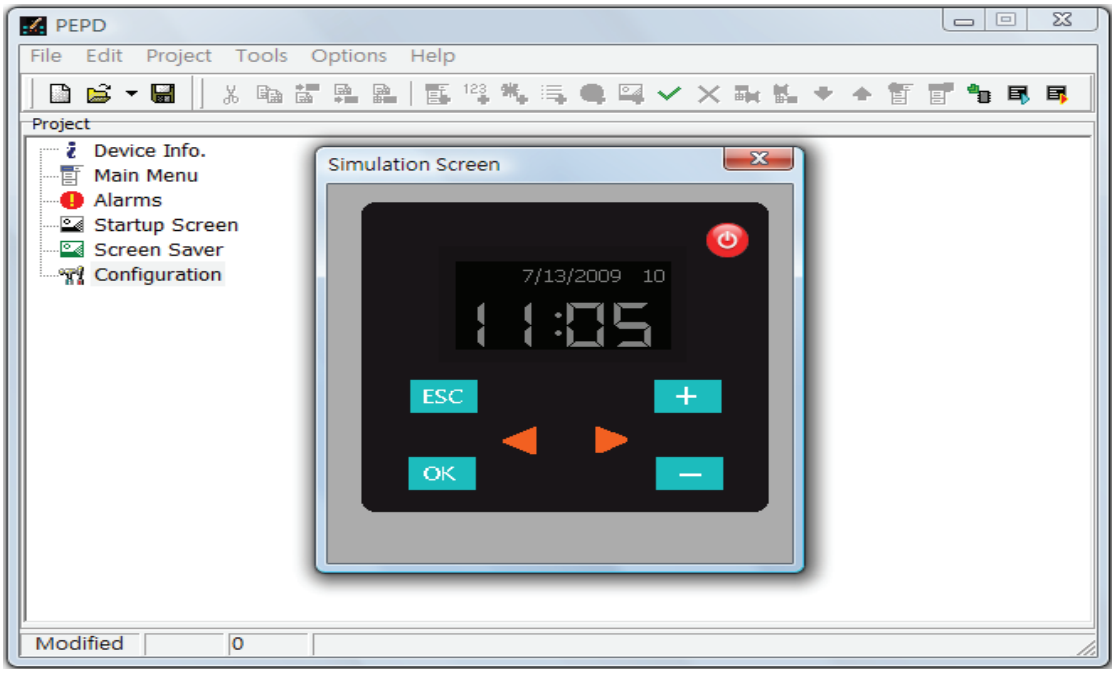
**Effect:** Select any of the following effects: None, Dimout, Image, Time, or Blackout.

In the following example, when the system idles for one minute, the screen saver will activate. The present time will be displayed on the screen, and the background will be Dimout as shown below. You may need to enter the password, if enabled, in order to end the screen saver and return to the normal screen.



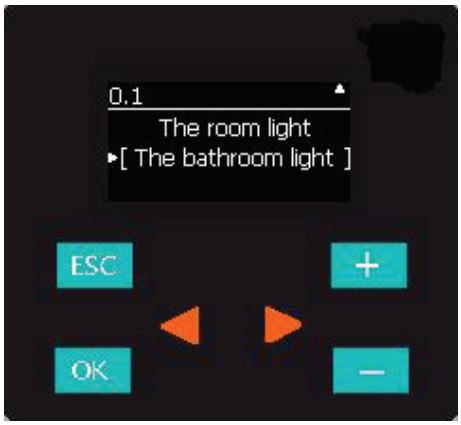

After setting the time and effect, press the button. You can check the settings with [Off-line Simulation] as shown below. When “None” is selectd, though no screen saver action will be activated when the idling time is up, you still need to enter the password, if enabled, to re-enter the normal screen.





# 4.5 BPEP

BPEP is a member of the PEP product family from Fatek. The following example shows the BPEP simulation with the PEP Designer. The functions and screens of the panel features are described below.




※ **Screen description:** Black background and white font as shown below.

The number "1.1" on the left top corner represents the current menu path.
Up arrow symbol ▲: if appears means there are more menus above.
Down arrow symbol ▼: if appears means there are more menus below.

Right arrow symbol ▶: There is a hint for this item. Press the ▶ key to view the hint.

Left arrow symbol ◀: When you are viewing the hint. Press the ◀ key to exit.

※ **Key description:** There are six keys, including +, –, ◀, ▶, OK, and ESC as shown below.

ESC : Press the key to return to the previous level. Press for 1.5 seconds to go to the top level. Press for 6 seconds to go to the system function menu.

OK : When selecting functions, press the key to enter the selected function (or the next level of the function). In function control, press the key to control the selected function. In function setup, press the key to begin setup. After inputting data, press the key to confirm data.

: When selecting functions, press the key to move upward at the same level. When inputting values, press the key to step up the value by “+1”. When there are the “+” and “–“signs in the value item, press the key to switch to and from “+” and “–.”

: When selecting functions, press the key to move downwards at the same level. When inputting values, press the key to step down the value by “-1”. When there are the “+” and “–“ signs in the value item, press the key to switch to and from “+” and “–“. When the selected digit of a value is 0, press the key continuously to reset the entire value to zero.

: When selecting functions, if the right arrow symbol appears on the right top corner, this means there is a hint for this item. Press the key to view the hint. When inputting values, press the key to move to the next digit on the right.

: When viewing the hint, press the key to return to the respective function menu. When inputting values, press the key to move to the next digit on the left. When Set Level #1 as Top Level is set in the Configuration, you must return to Level 1 first and press the key continuously to return to the top level.

# 5. FAQ

**Q1: How many levels of menus can be created in a project? How many functions can be set in each level?**

**Ans.** Users can create up to 6 levels of menus in a project and set up to 10 menus or functions at each level. However, menus can only be created independently or in association with actions. Therefore, when you create a menu with actions, you cannot create a menu with lists at the same level.

**Q2: Why can't I create a menu with actions and a menu with lists at the same level?**

**Ans.** This is because the nature of actions and menus differs from that of the value and list. In the former, you can put different items in the same screen; in the latter, you can only put one item in the screen. Therefore, they cannot exist at the same level.

**Q3: Can new menus or functions be added behind a value, action or list item?**

**Ans.** No menus or functions can be added behind a value, action or list item. You can only add menus or functions behind a menu.

**Q4: Under what circumstances will we use the Character Map tool?**

**Ans.** When designing menus, you may need to use some special characters and symbols, such as temperature units like °C and °F. In this case, you can use the Character Map. First, search the required characters or symbols from the Character Map. After selecting them with the mouse, you can paste them to the designated fields by pressing the hotkeys [Ctrl] + [V].

**Q5: How many alarms can be set? How do I activate these alarms?**

**Ans.** The Index ranges from 01-64, which means you can set up to 64 alarms. When the value in the Alarm Source Register in Configuration is identical to the Index, the alarm activates. At the same time, the corresponding alarm message (same Index) will be displayed on the screen.

**Q6: When editing an alarm, the text of the alarm message is input in the String field. Now, what does the Reference Number field mean?**

**Ans.** In the Add Alarm window, both the String and Reference number can be edited. The String is the text displayed in the alarm message. When an alarm event occurs, in addition to the preset alarm text, users may need to know the cause, severity and scope of the alarm event. In this case, you can enter the number of the corresponding register in the Reference Number field. The position of display of the current register value in the alarm message can be marked with the "^" symbol. This way, when an alarm event occurs, the current register value will replace the "^" symbol in the alarm message.

**Q7: How many startup screens can be created in a project?**

**Ans.** You can create up to 16 startup screens for a project.

**Q8: In Configuration, what is the difference if checking and un-checking the "Set Level # 1 as Top Level" option when operating the PEP?**

**Ans.** If the option is unchecked, when you press the ESC key for 2 seconds or longer while operating PEP, the system always returns to the menus at Level 0 (top), regardless at what level you were at. If the option is checked, the system will return only to Level 1. When the item is checked and you want to return to Level 0 when operating PEP, you must first return to Level 1 and press the key for 2 seconds or longer in order to return to Level 0. See 3.6 for details.

**Q9: How can users enter the System Menu of PEP?**

**Ans.** Press the ESC key for 6 seconds or longer at any level to enter the System Menu. However, when the supervisor password is enabled, you will need to enter the correct supervisor password in order to enter the System Menu.

**Q10: What should we do if PEP does not function properly as a result of download menu failure?**

**Ans.** First, turn off the power and press the ESC key continuously (do not release it). Then restart the system to go to the "System Mode". Now, select [Erase Menu Flash] to clear the menus previously loaded. Then, select [Run User Prog.] to enter the System Menu. You can load the user menu again to see if it works properly.