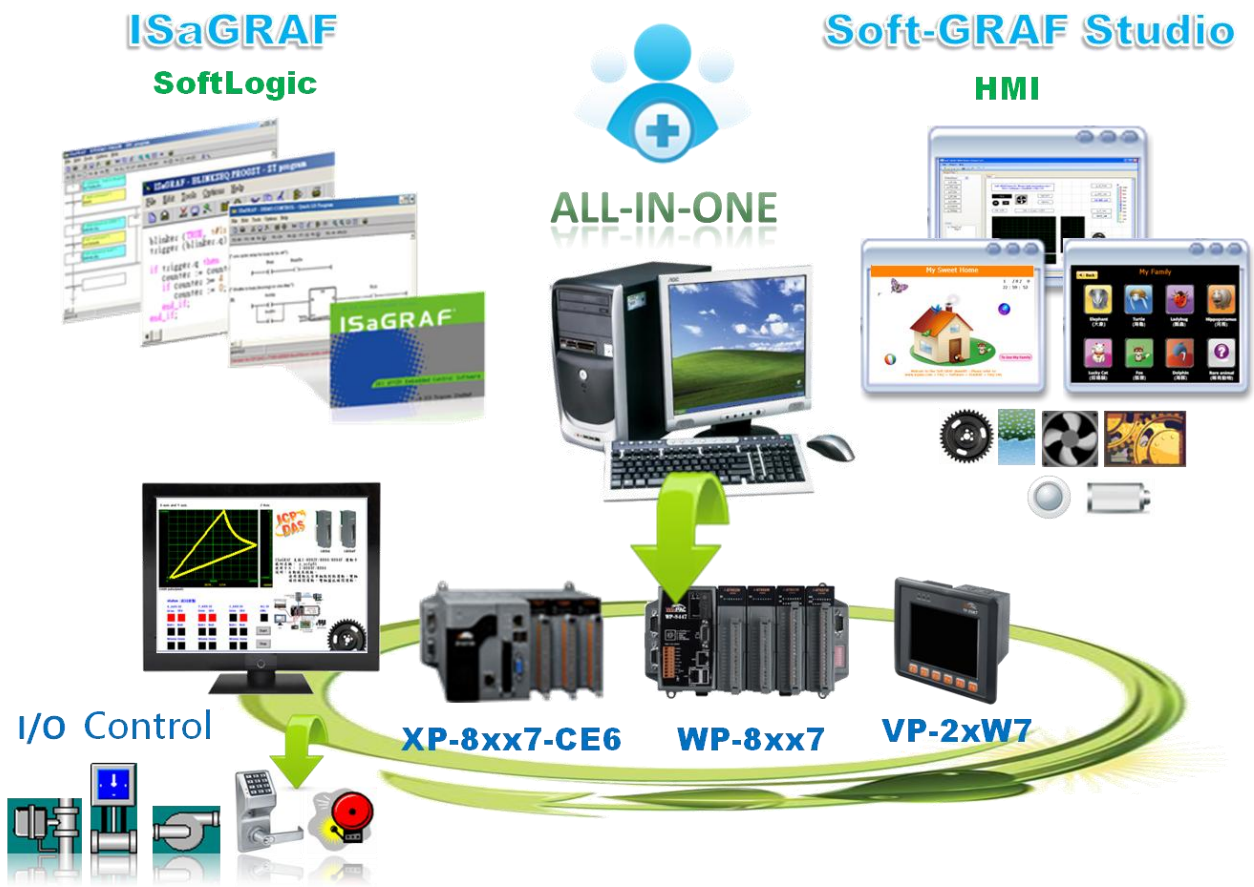
Soft-GRAF Studio : Create a Colorful HMI in the XP-8xx7-CE6 & WP-8xx7 & VP-2xW7 PAC

Soft-GRAF, an HMI software developed by ICP DAS, allows user to create his colorful HMI application running with the control logic in the same PAC. Using the PAC with the Soft-GRAF support, user can easily edit its HMI screen by Soft-GRAF Studio and design the control logic by ISaGRAF software.

There are three types of HMI Objects in the Soft-GRAF Studio:

"Label/Value", "Button/Input", "Drawing"

User can create the HMI object directly by using the mouse to drag and drop the Object into the editing screen and set the properties by mouse/keyboard to achieve different display.



1.1 : Soft-GRAF Studio Version and Installation

Soft-GRAF Studio Installation:

The Soft-GRAF Studio is version 1.01 now. Please get the document (faq146) and demo programs from the following folder of CD-ROM in your PAC package.

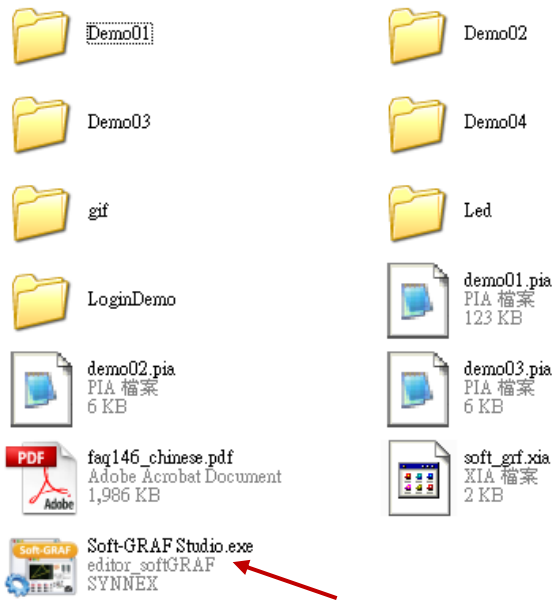
CD-ROM: \napdos\soft-graf\

Or download it from the following website.

www.icpdas.com > FAQ > Software > ISaGRAF > 146
http://www.icpdas.com/faq/isagraf.htm > 146

Other related information:
ISaGRAF User's Manual
http://www.icpdas.com/products/PAC/i-8000/getting_started_manual.htm

Soft-GRAF Studio, the software to edit the Soft-GRAF HMI, can run in the PC with the WinXP, Win Vista, Win7 or compatible Operating System and the .Net Framework V.3.5 or later version. The current version is 1.01. The execution program is included in the downloaded **FAQ-146 zip** file. After unzip the file, please copy the **"Soft-GRAF Studio"** folder into **"D:\"**. The "Soft-GRAF Studio" folder must include the following files (as below picture).



PAC Driver:
The following ISaGRAF driver versions support Soft-GRAF Studio:

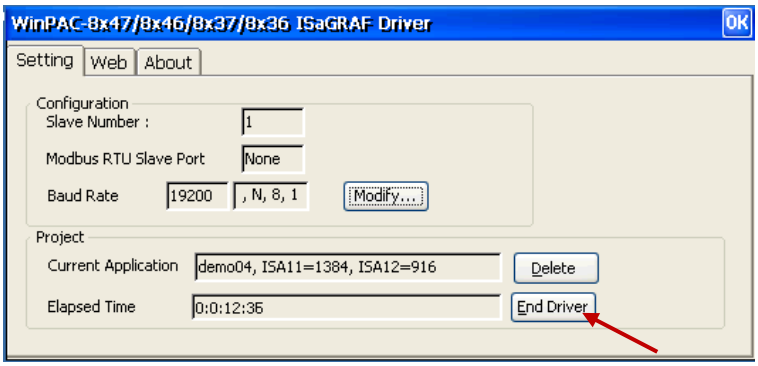
PAC Model	ISaGRAF Driver Version
WP-8xx7	Ver.1.39 or later
VP-25W7/23W7	Ver.1.31 or later
XP-8xx7-CE6	Ver.1.19 or later

If your PAC's ISaGRAF driver version is later than the version listed above, it supports the Soft-GRAF Studio.

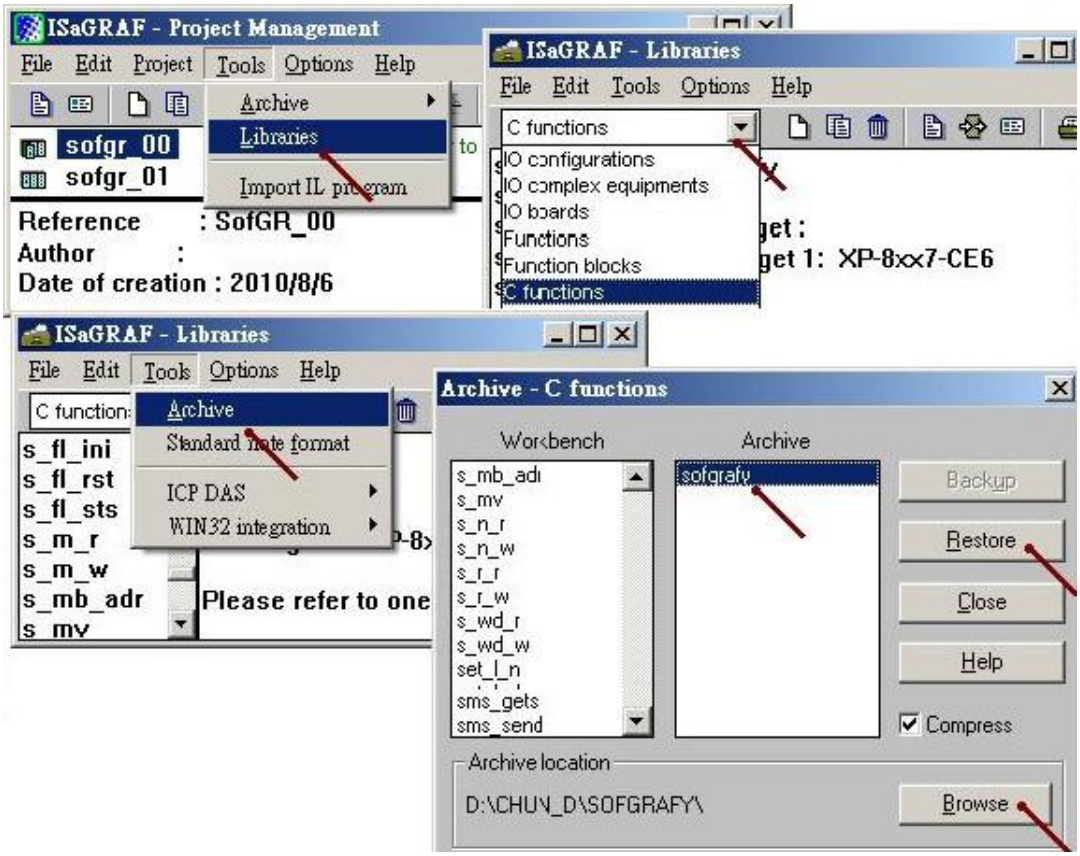
However if its version is older, please visit the following web site to download the latest ISaGRAF driver into your PAC.
http://www.icpdas.com/products/PAC/i-8000/isagraf-link.htm

After downloading, update the driver into the correct model of PAC. Please click on "End Driver" button in the "ISaGRAF driver" window of the PAC's VGA screen to end the ISaGRAF driver first, then unzip the downloaded file and copy all files and the sub-directory in the related version-number directory to the "\System_Disk\ISaGRAF\" path in your PAC via FTP or USB disk.

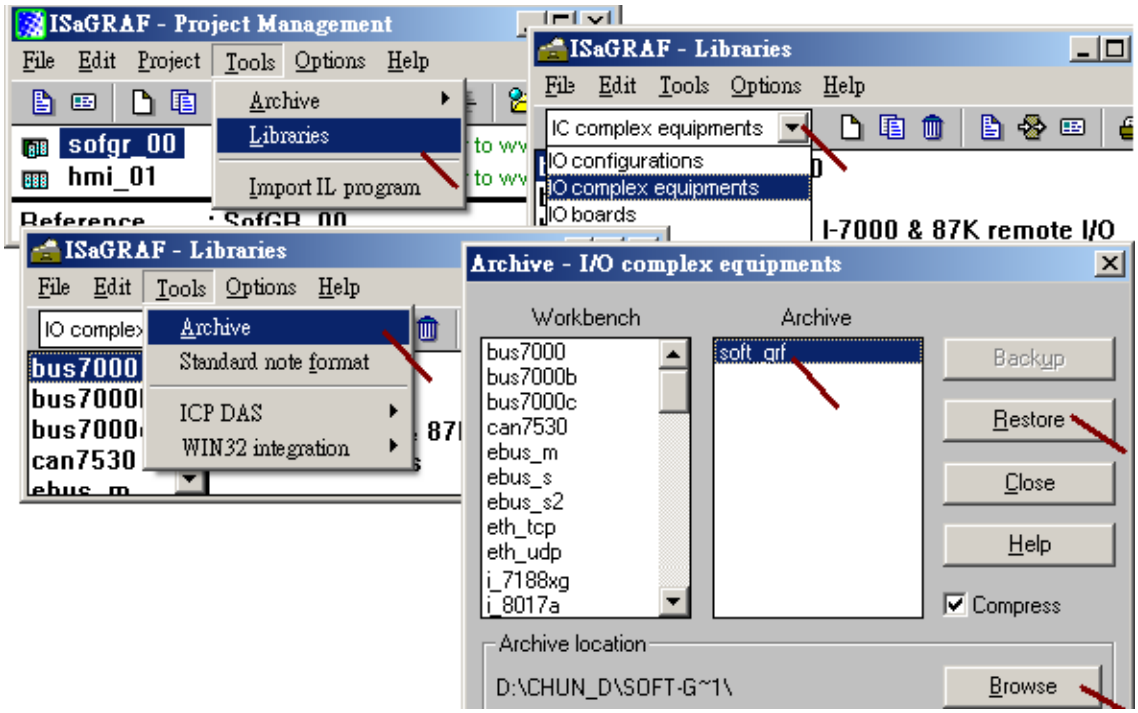
For instance, to update the ISaGRAF driver of XP-8xx7-CE6 to Version 1.19, please click on the "End Driver" button in the "ISaGRAF driver" window of PAC, then unzip the downloaded file "xp-8xx7-ce6-1.19.zip" and copy all files and the sub-directory "sofgrafy" in the "1.19" directory to the "\System_Disk\ISaGRAF\" path in the XP-8xx7-CE6. And then, reboot the XP-8xx7-CE6. Now, the driver of the PAC is updated.



Next, retore the file "sofgrafy.uia" that downloaded/unziped from the FAQ-146 of "faq146_chinese_demo.zip" into the "c functions" of the PC ISaGRAF, as below :



And also, restore "soft-grf.xia" into the "IO complex equipments"of the PC ISaGRAF.



The HMI objects below are supported by Soft-GRAF driver (since Ver.1.09):

Label/Value Type :

1	g_Label	Display a Label
2	g_B_Val	Display a Text to show a Boolean value
3	g_WD_Val	Display a 16-bit integer (occupy 1 Network addr. number)
4	g_N_Val	Display a 32-bit integer (occupy 2 Network addr. numbers)
5	g_F_Val	Display a 32-bit Float value (occupy 2 Network addr. numbers)
6	g_N_Text	Display a text to show an Integer value

Button/Input Type :

1	g_B_inp	Create a button to input a Boolean value
2	g_WD_inp	Create a button to input a 16-bit integer value (Occupy 1 Network addr.)
3	g_F_inp	Create a button to input a 32-bit Float value (occupy 2 Network addr. numbers)
4	g_N_inp	Create a button to input a 32-bit integer value (occupy 2 Network addr. numbers)
5	g_Login	Create a Login button with password
6	g_Logout	Create a Logout button
7	g_ToPage	Create a switch-page button

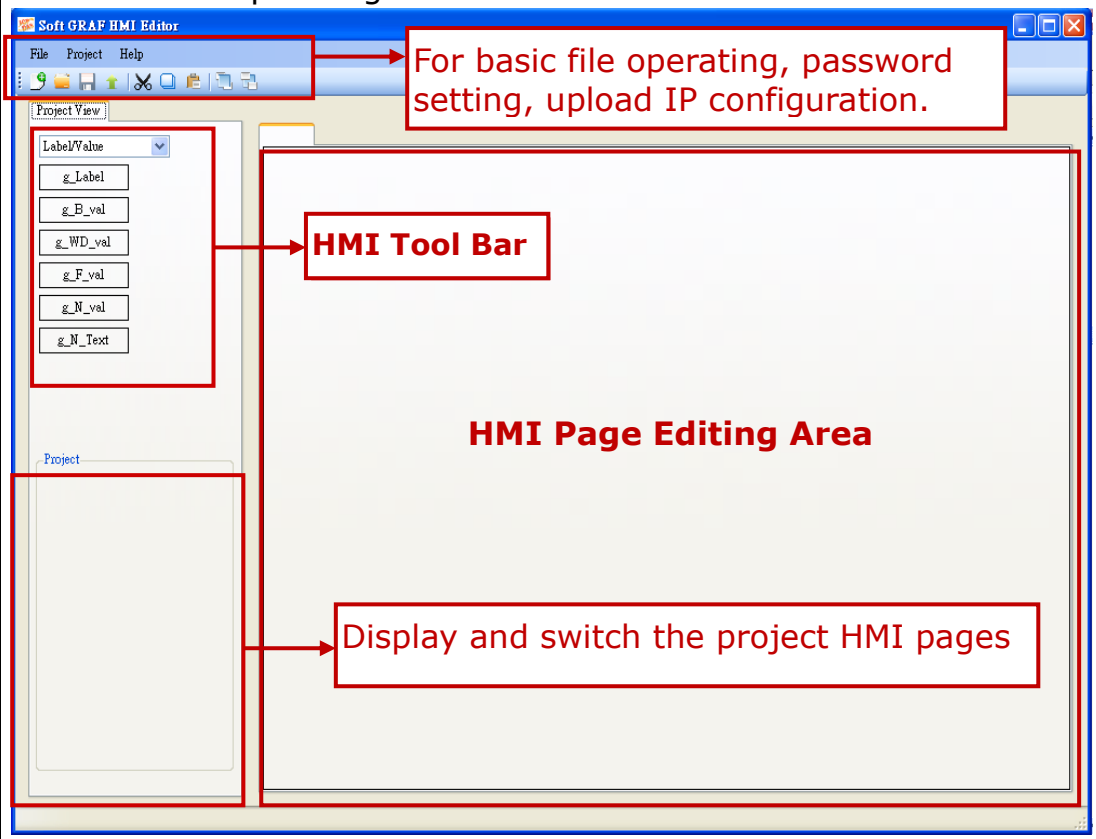
Drawing Type :

1	g_B_Led	Display a LED to show a Boolean value
2	g_B_Pic	Display a picture (JPG, PNG, GIF, BMP) to show a Boolean value
3	g_N_Pic	Display a picture (JPG, PNG, GIF, BMP) to show an Integer value
4	g_Trace2	Display a 2-axes (x , y) or 1-axis (x : Horizontal) or 1-axis (y : Vertical) moving trace map
5	g_Rect	Draw a Rectangle
6	g_Bar	Display one value as a bar-meter

1.2 : Edit the HMI by the Soft-GRAF Studio software

To test Soft-GRAF Studio demo projects, please refer to Ch.1.7.1 and the description for demo4 and "My Sweet Home"demo in Ch.1.7.2.
To execute the Soft-GRAF Studio, please double click the "D:\ Soft-GRAF Studio\Soft-GRAF Studio.exe". If "Soft-GRAF Studio.exe" doesn't found, please refer to Ch.1.1 to install it.

The software operating environment :

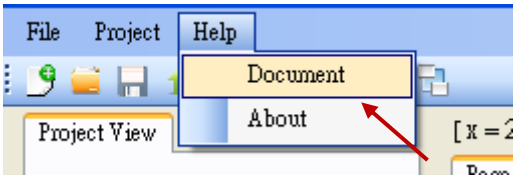


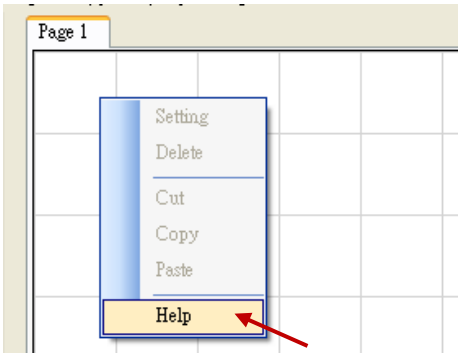
One Soft-GRAF project can contain maximum 200 HMI pages (No. 1 to 200). The PAC will display the Page No. 1 if it has enabled the Soft-GRAF in the program when powering it up. Every Page is displayed as full screen and only one Page is shown on the VGA monitor, so user must set up the VGA resolution when create a new project.

The PAC Resolution:

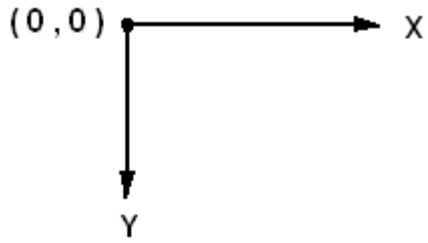
PAC	Support VGA Resolution
XPAC	640*480, 800*600, 1024*768
WinPAC	640*480, 800*600
VP-25W7	640*480
VP-23W7	320*240

Soft-GRAF Studio offers two ways to use the manual to query the functures. Click the menu bar "Help" > "Dociment" or in a project right click on the HMI editing area then select "Help".





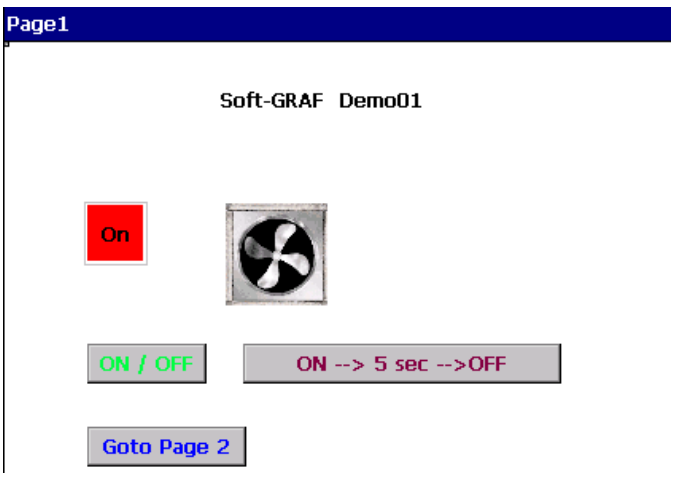
The origin of Soft-GRAF Studio axis, in the Soft-GRAF Studio editing screen, is at the top left of the axis position as follows:



The horizontal axis of the monitor is called "X axis", while vertical axis is called "Y axis". The original position of (X , Y) is (0 , 0) which resides at the most top-left position on the monitor. The value of X coordinate is increasing from left to right direction. The value of Y coordinate is increasing from top to bottom direction. The unit of the (X , Y) coordinate is "Pixel" . For example, the default resolution setting of the WP-8847 is 800 x 600, so its X coordinate ranges from 0 to 799, while ranges from 0 to 599 for Y coordinate; The default resolution setting of the VP-25W7 is 640 x 480, so its X coordinate ranges from 0 to 639, while ranges from 0 to 479 for Y coordinate.

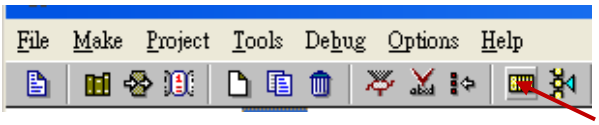
1.2.1: Edit a simple Soft-GRAF HMI

The following picture is the VGA Screen view when run "Demo01":

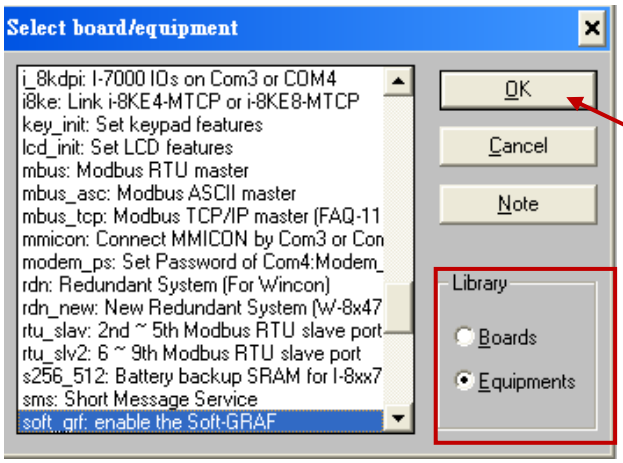


Before editing HMI page, ISaGRAF must have the following setting. If you are not familiar with ISaGRAF programming, please refer to the Ch1.1, Ch1.2 and Ch2 of "ISaGRAF Advanced User Manual". The manual website is as below:
http://www.icpdas.com/products/PAC/i-8000/getting_started_manual.htm

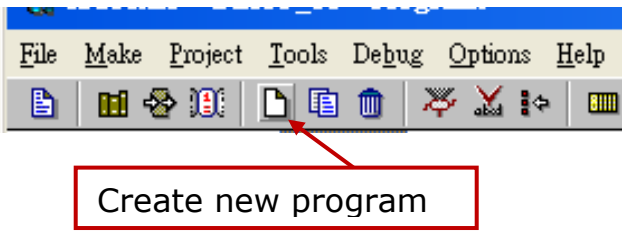
Open your project (or create a new one, ex: demo01), click the "I/O Connection" tool icon of the programs window.

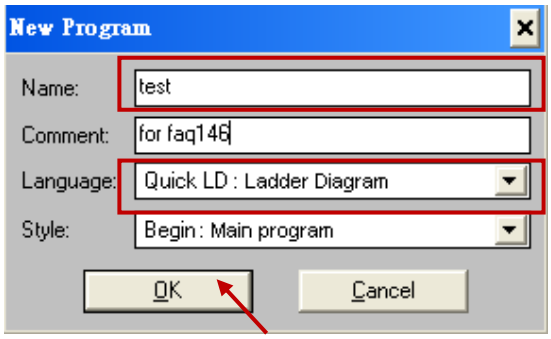


Set "soft_grf" to the "Slot" and the slot number must after "8" inorder not to conflict with the real I/O using slots of PAC.

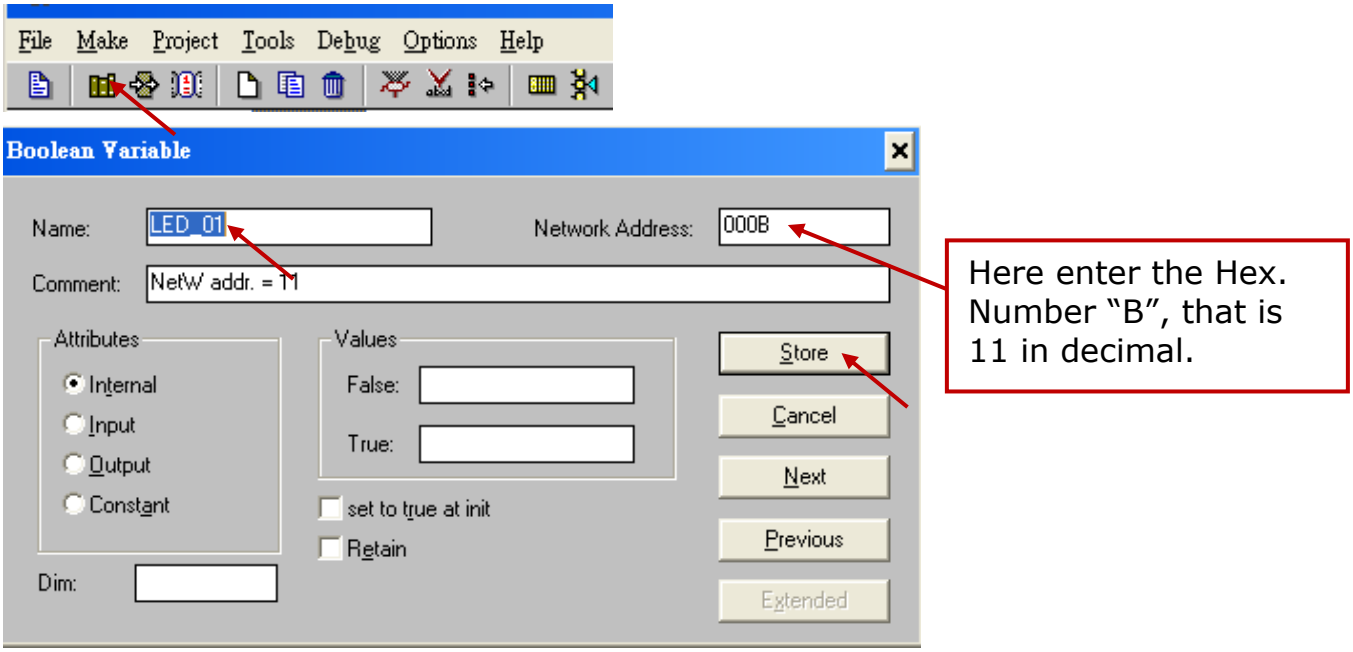


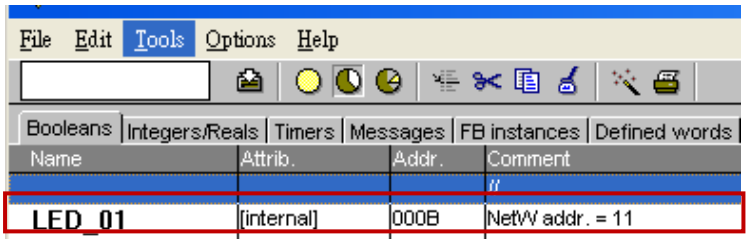
Then, create a new LD Ladder program in the project.





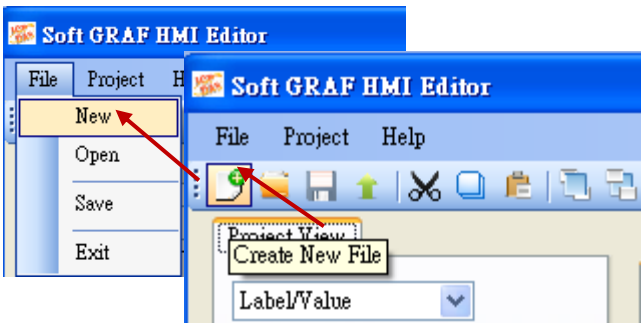
Add one Boolean variable "LED_01" into the Dictionary of the ISaGRAF project and set its address as 11 (key in the Hex. number: "B").



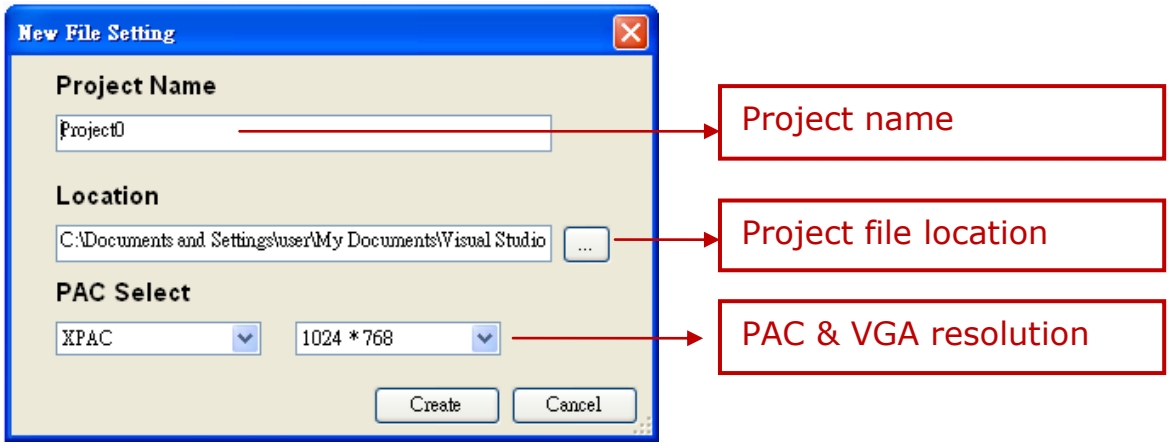


After finishing ISaGRAF SoftLogic, You must compile and download the ISaGRAF project into your PAC (Refer to Ch.2 of ISaGRAF Advanced manual for the steps.), then can design the HMI.

Run Soft-GRAF Studio to edit the HMI. First, create a project (*.sof) as below. Click **"File" > "New"** of menu bar or click **"Create New File"** tool icon.

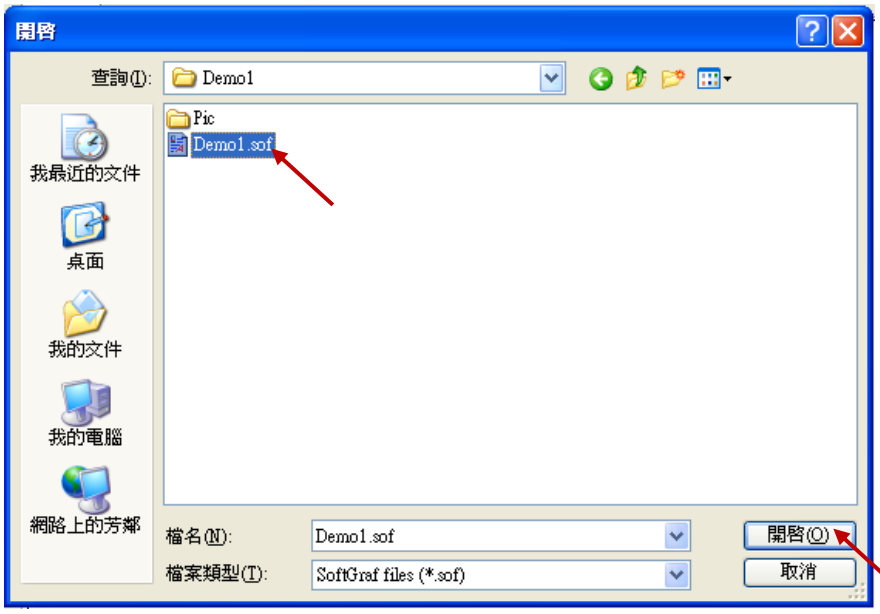


Give a project name and file location.



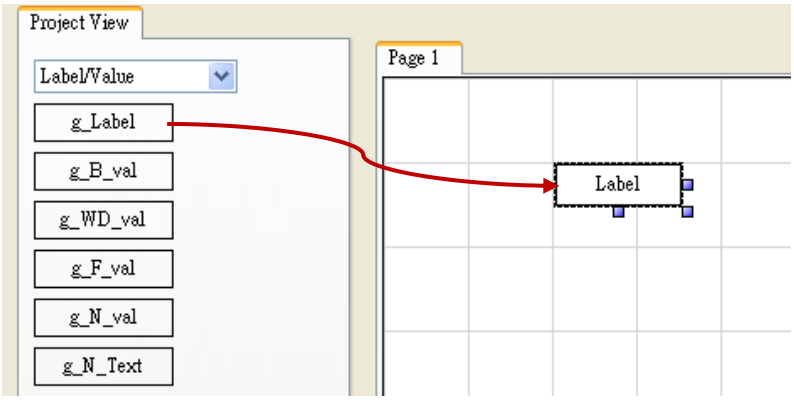
To open a file: Click **"File" > "Open"** of menu bar.

Change the directory to find the project (*.sof) in the File Dialog.

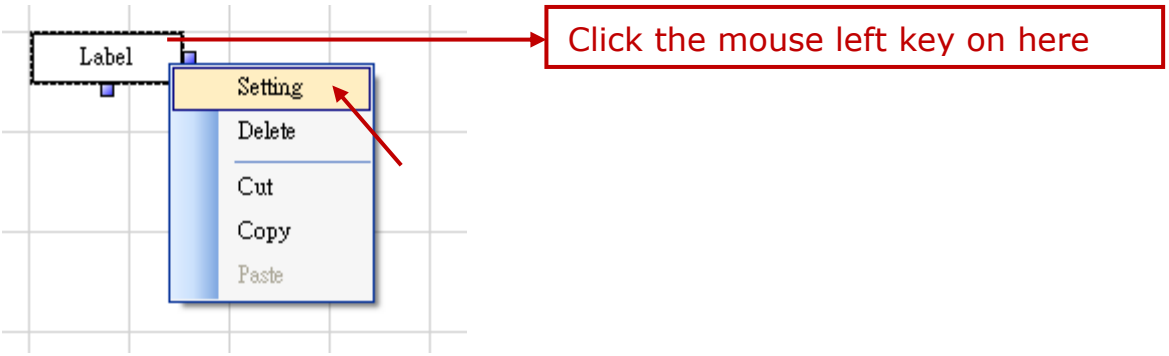


Now create a HMI page. The following HMI is the same as the Demo01, please set all the Network address in this project as 11 (the address is the same as the Boolean variable "LED_01" in ISaGRAF program).

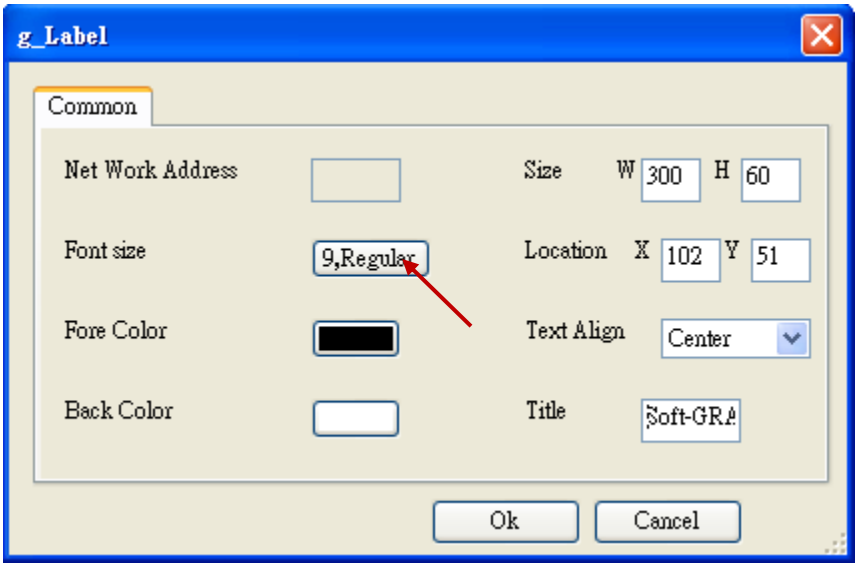
First, create a "g_Label" object. Drag & drop "g_Label" object into the editing area.

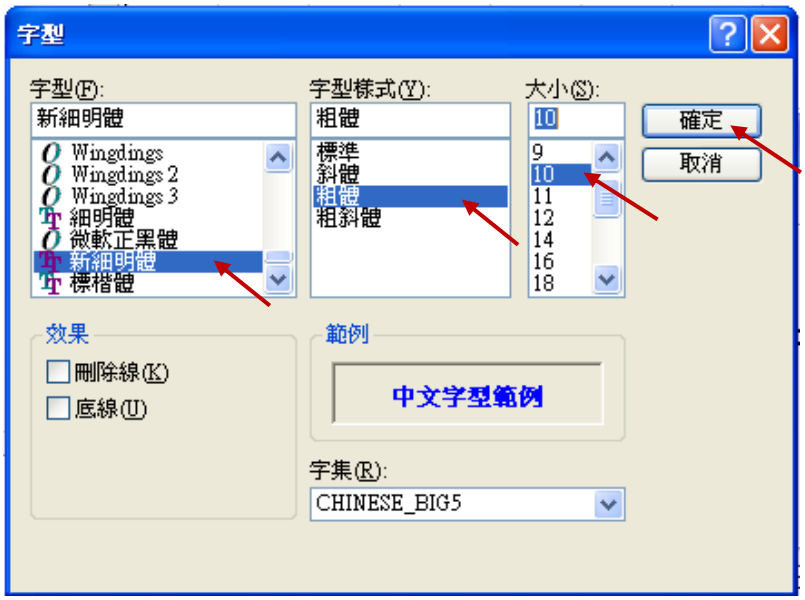


Mouse right clicks on the Object and selects the "Setting".

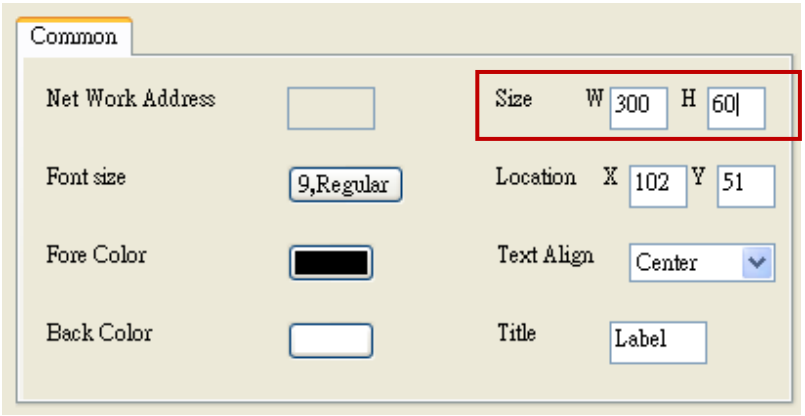


Click "Font size" to set up as "10,Bold".

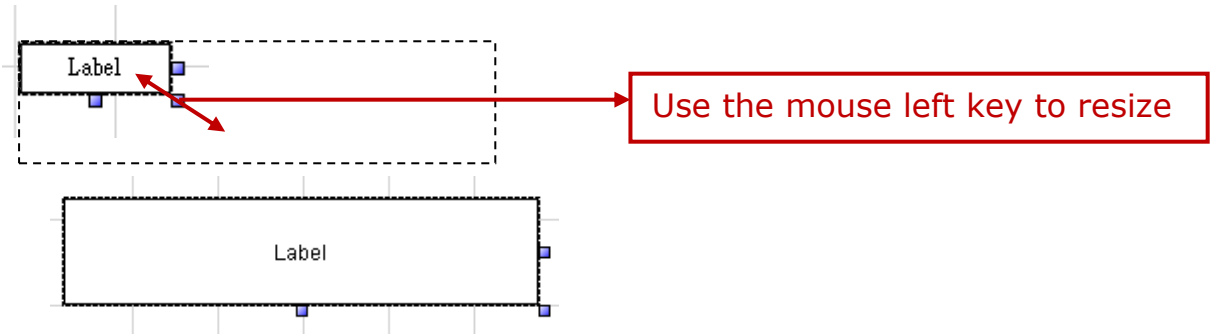




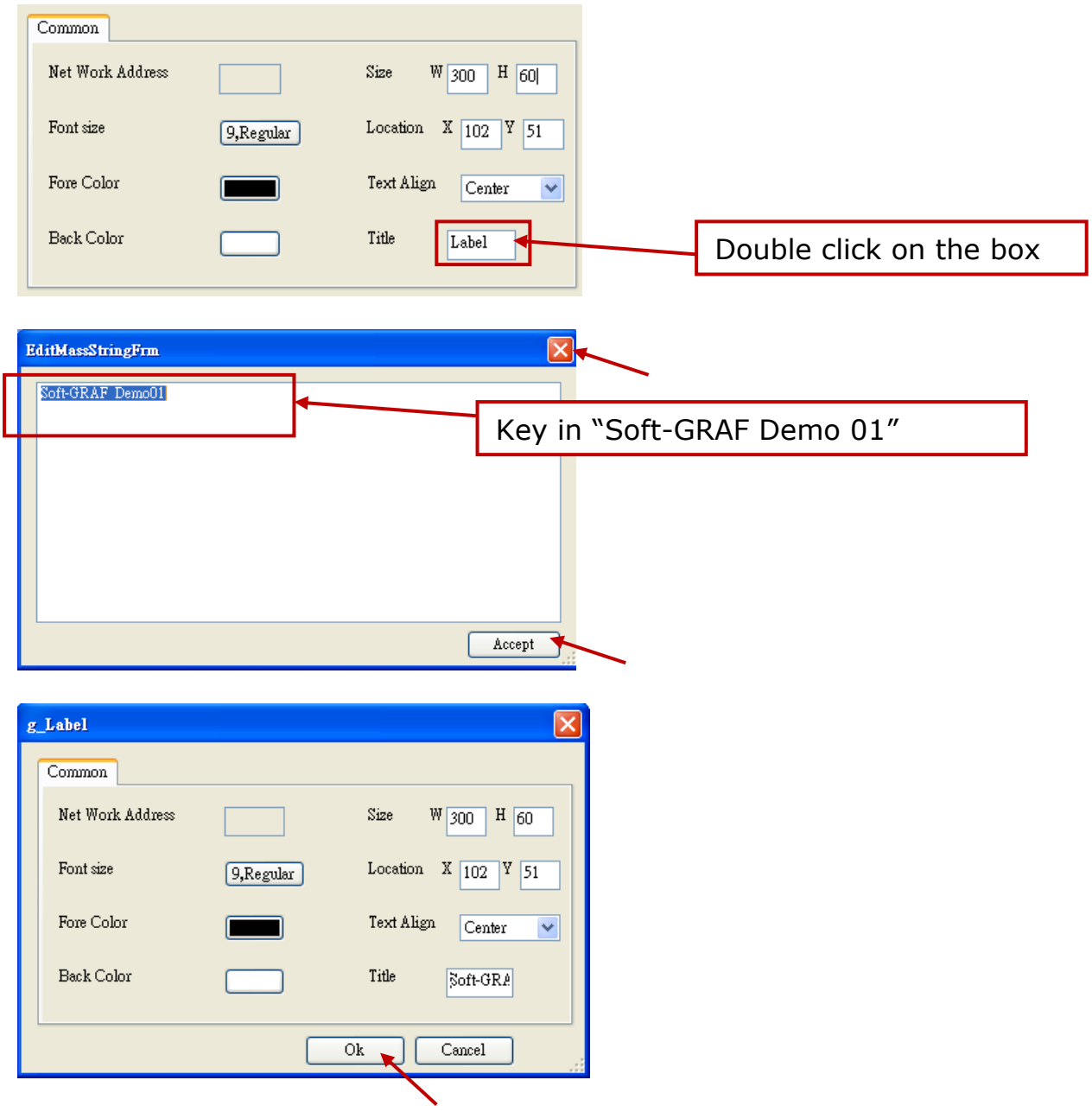
Set up the Object Size as W:300 and H:60.



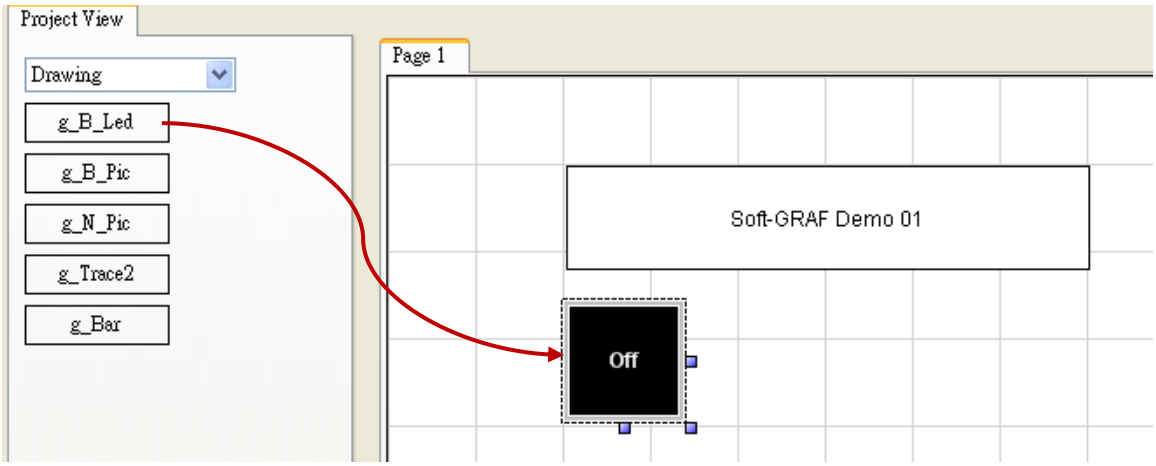
Or using the mouse left key to change the Object size.

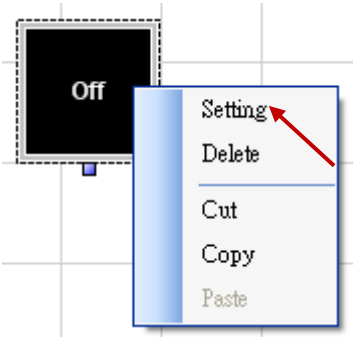


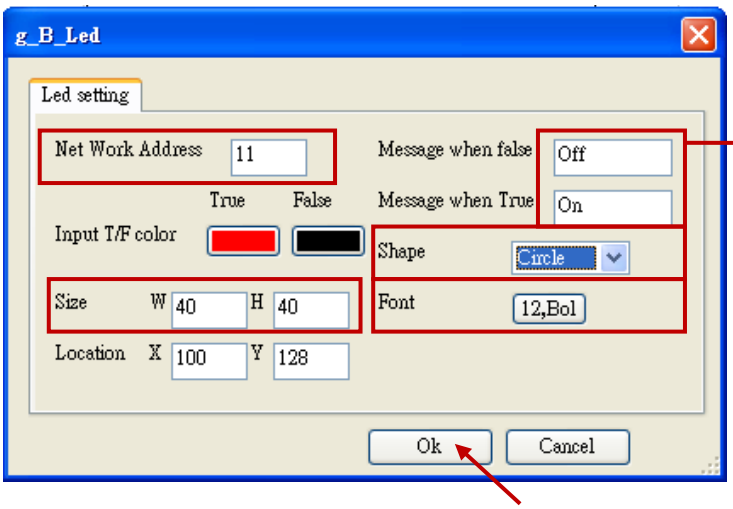
Next, set up the title of "g_Label" Object for the text displayed on the object. Double click the text box of the "Title" and key in "Soft-GRAF Demo 01", then click "Accept" button to close the window, and click "ok" to end the setup.



Next, create a "g_B_Led" object. Drag & drop a "g_B_Led" object to the editing area, mouse right key click on the object and select "setting" to configure the following setting, such as, Network address: 11, Size W: 40, Size H: 40, Font: 10,Bold, Shape: Circle.

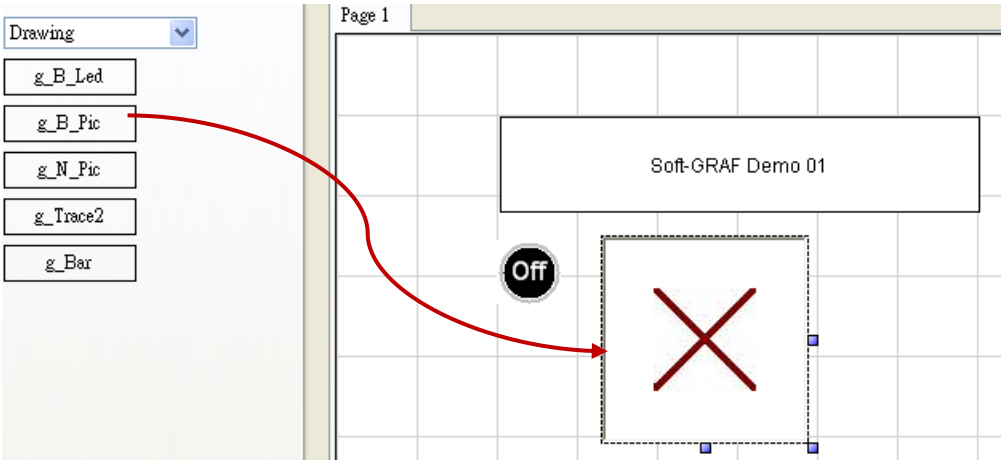




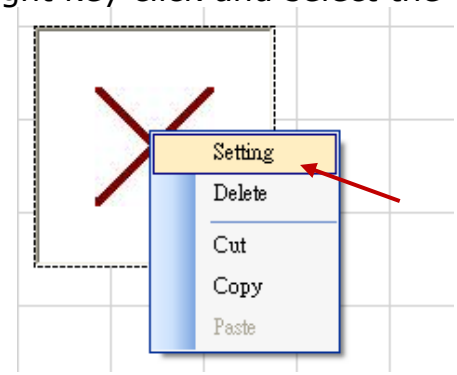


Set to show different message when False and True.

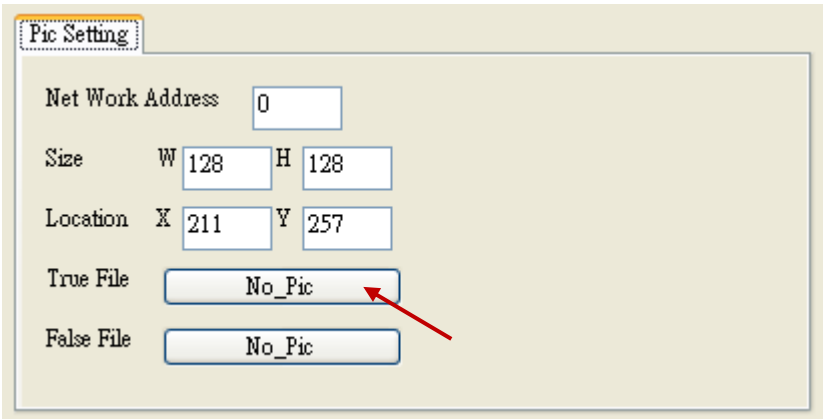
Drag & drop a "g_B_Pic" object to the editing area.



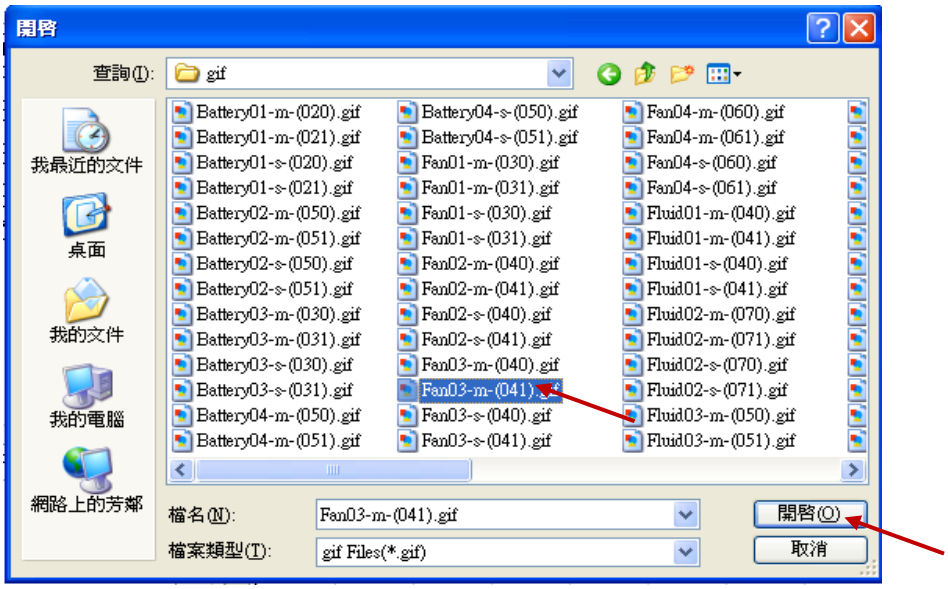
Right key click and select the "setting".



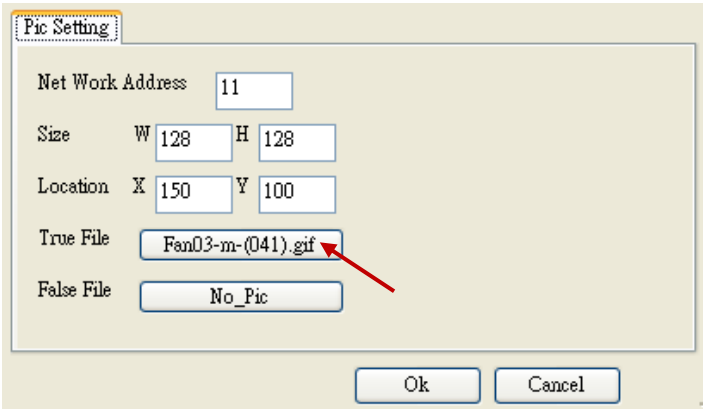
Set up the picture of "True File" for "True". The picture can be ".gif" dynamic image format. The demo picture can be got from the "//Picture//gif" directory of the demo file "faq146_chinese_demo.zip" (Refer to Ch.1.5 for more about the dynamic image format).

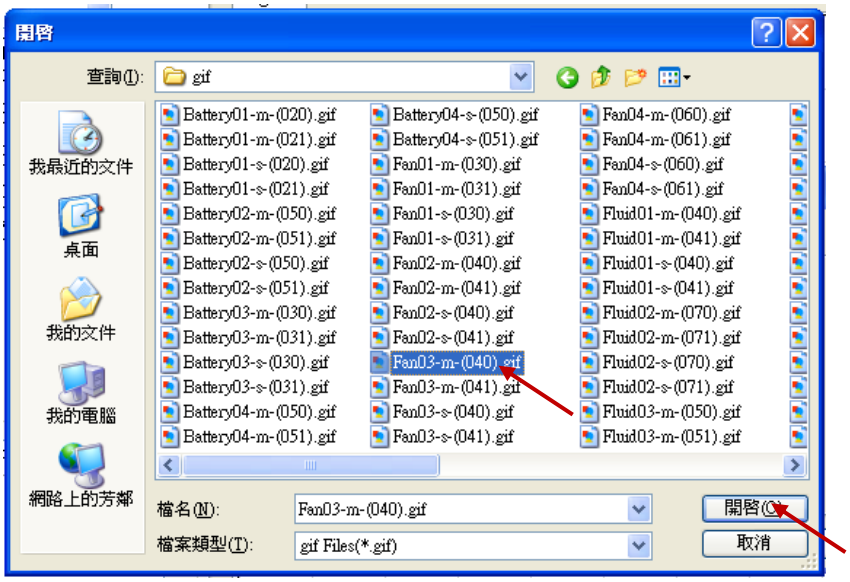


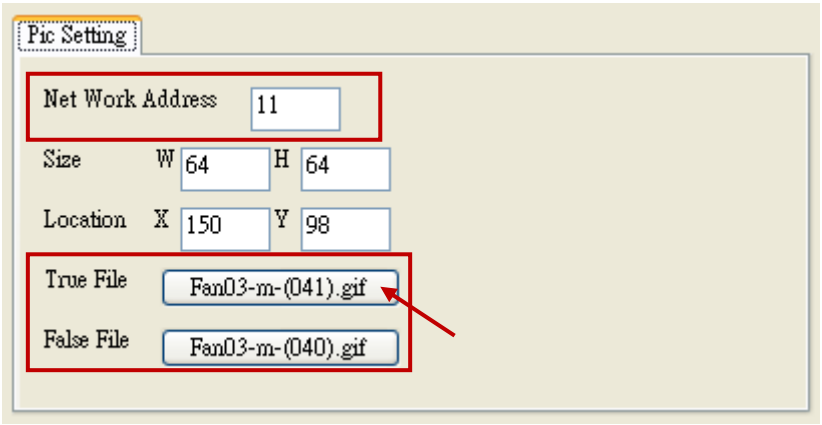
Select "Fan03-m-(041).gif" file and click Open(O).



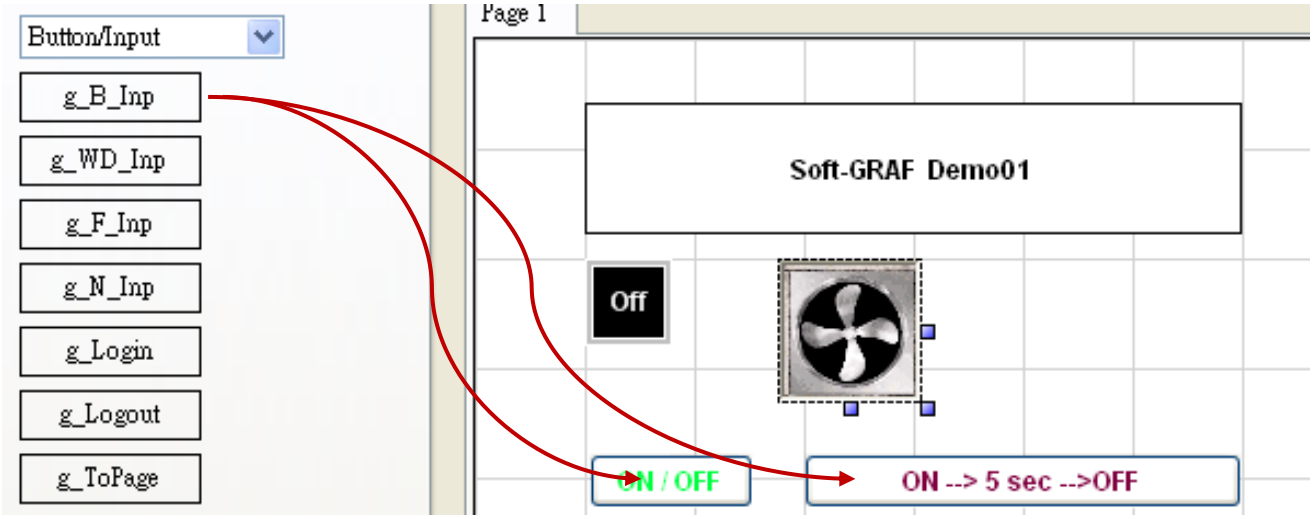
Set "False File" as "Fan03-m-(040).gif". Then, set "Net Work Address" as 11, and click "ok" to exit.



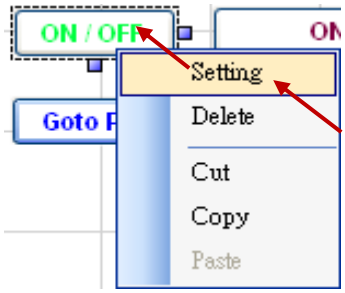


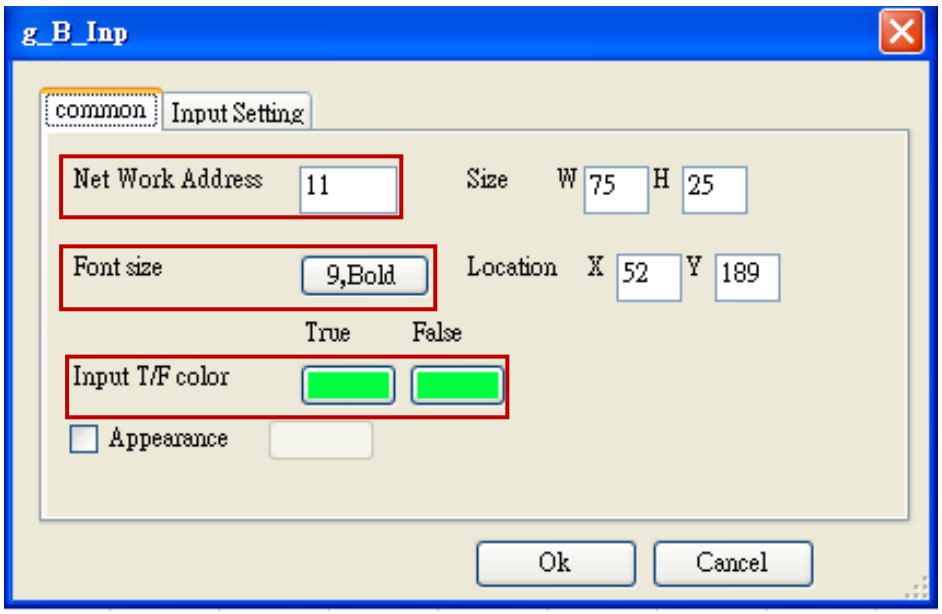


Next, create 2 "g_B_Inp" objects. Drag & drop a "g_B_Inp" object into the editing area.

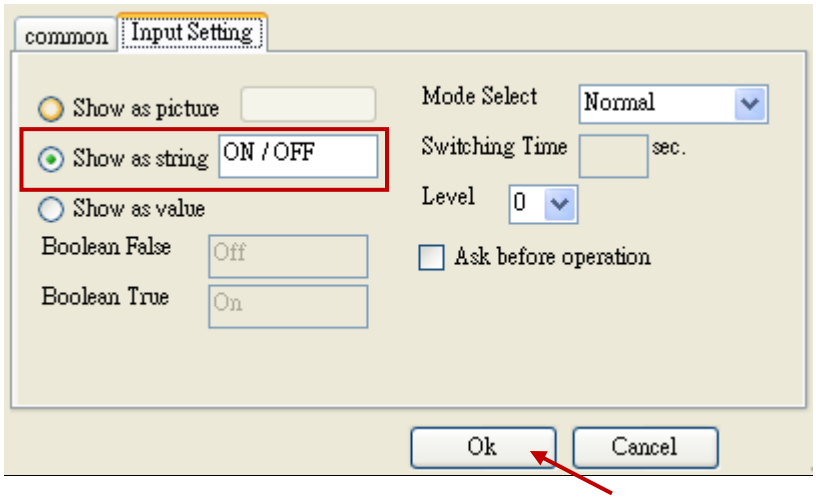


Mouse right key click and select "Setting", then set "Net Work Address" as 11, "Font Size" as "9,Bold" and set the same "Input color" for True and False.

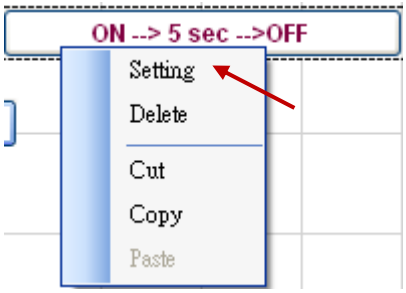


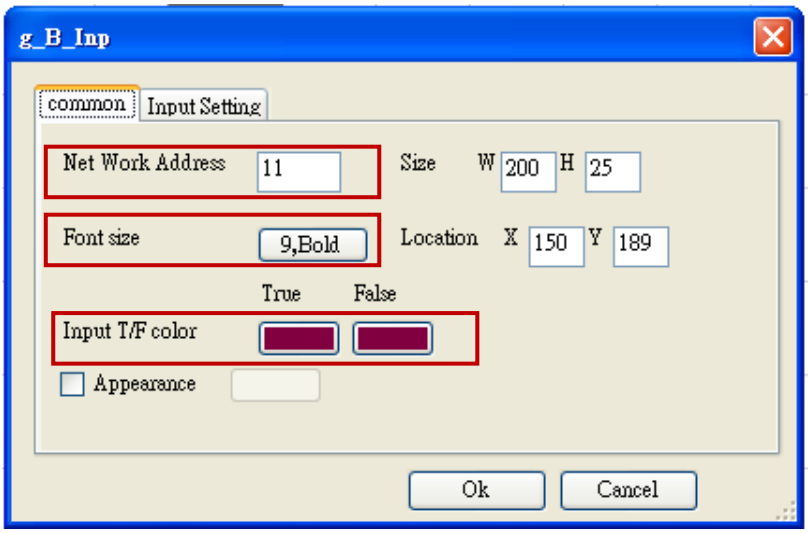


Switch to the "Input Setting" page, key in "ON/OFF" in the Textbox of "Show as string", and click "Ok".

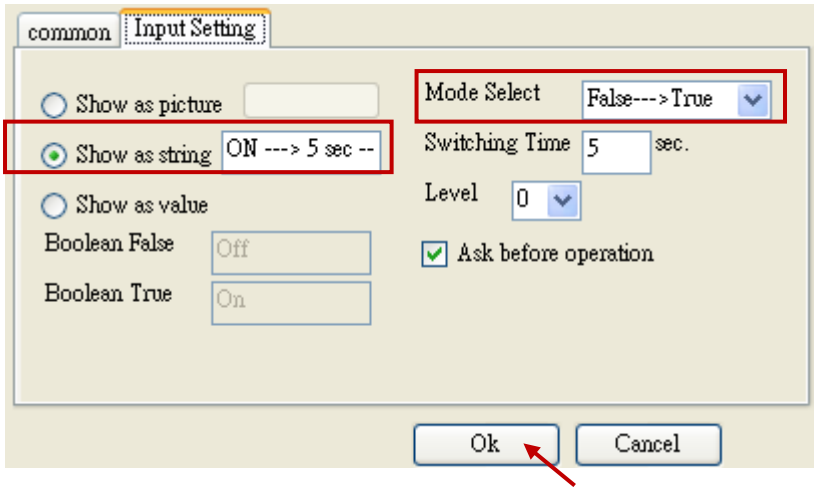


Then create another "g_Inp" object. Right click and select "Setting" to set the "Net work address" as 11, "Font Size" as "9,Bold" and set the same "Input color" for True and False.

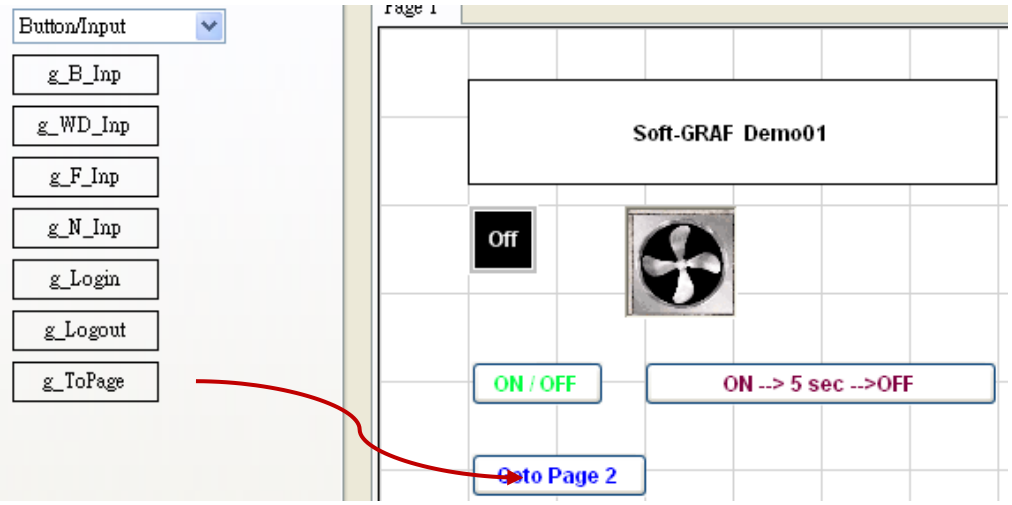




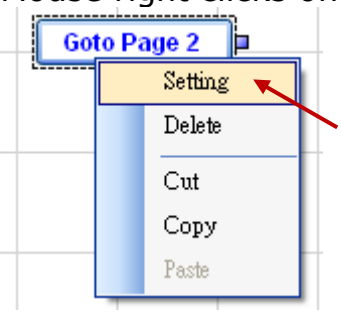
Switch to the "Input Setting" page, key in "ON → 5 sec → OFF" in the Textbox of "Show as string", select "False → True" for "Mode Select", set "Switching Time" as "5 Sec.", and then click "Ok".



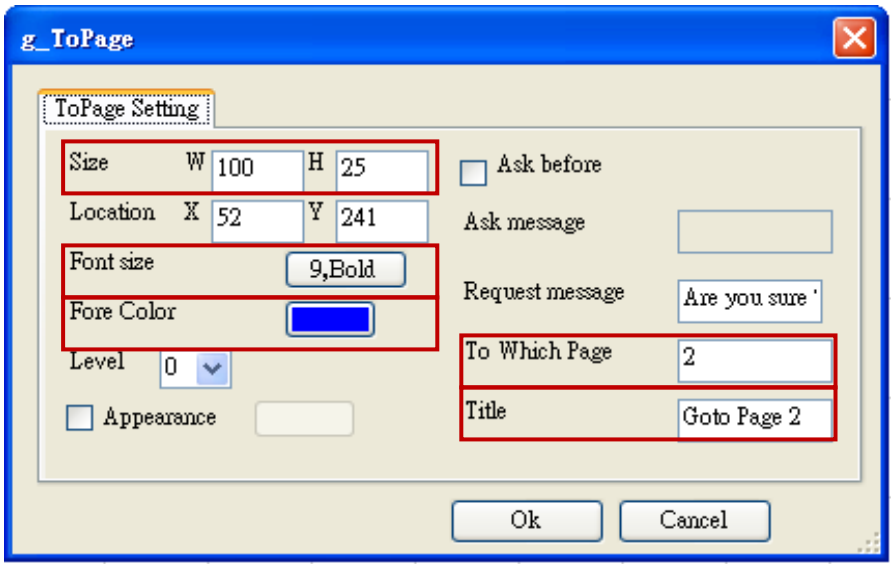
Next, create a "g_ToPage" object. Drag & drop a "g_ToPage" into the editing area.



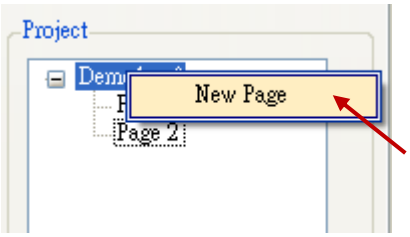
Mouse right clicks on the object and select "Setting".

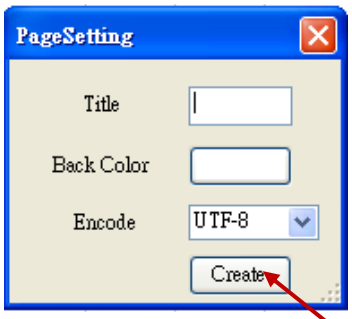


Set "Size W" as 100, "Size H" as 25, "Font size" as "9,Bold", "Fore Color" as the below picture, "To Which Page" as 2 and "Title" as "Goto Page 2".

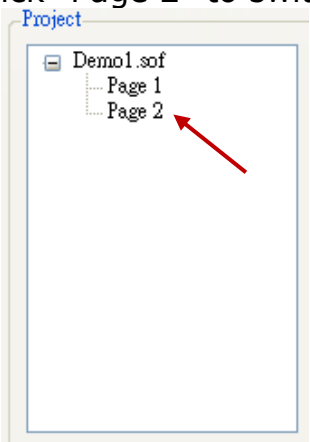


Mouse right clicks "Demo1.sof" in the Project structure tree, and select "New Page" to create page 2. The "Page Setting" can be left along, just click "Create".

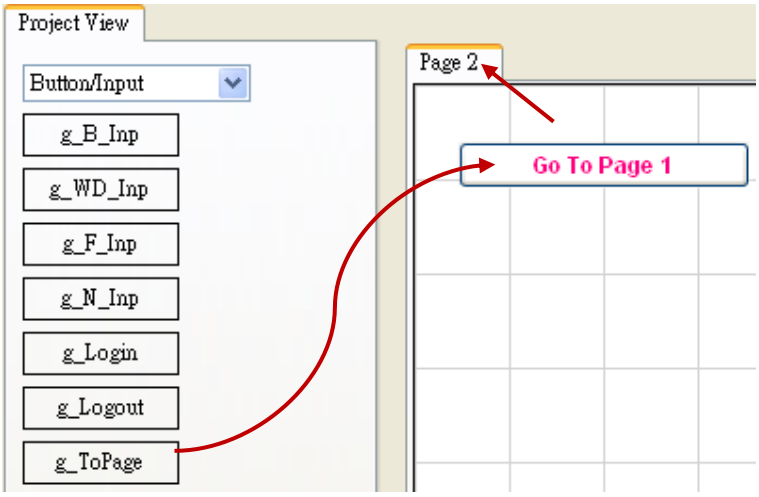




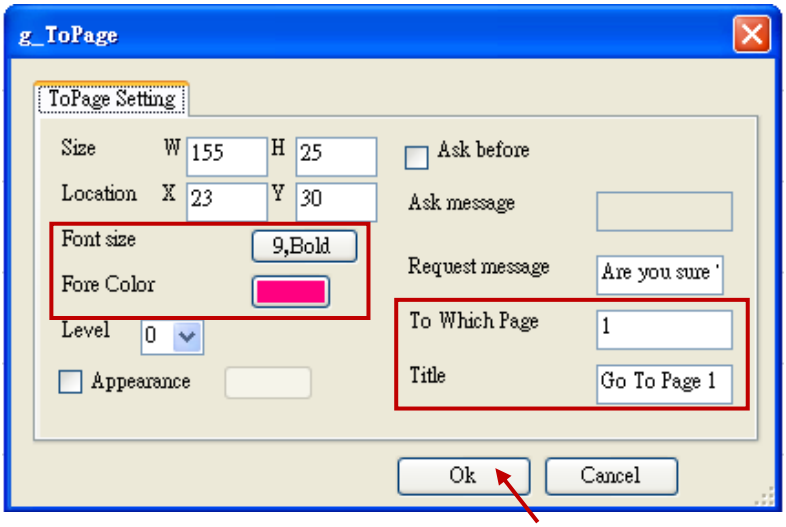
Click "Page 2" to switch to the page 2.



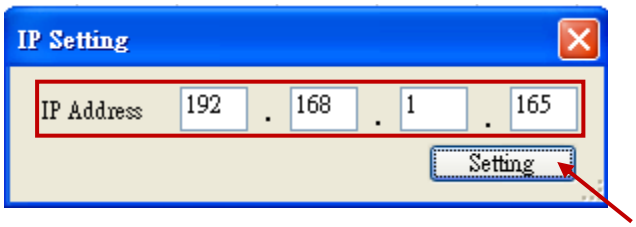
Drag & drop a "g_ToPage" into the page 2 for return the page 1.



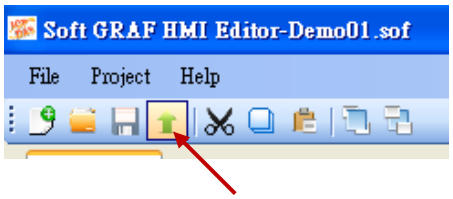
Set "Size W & H" as 155 & 25, "Fore Color" as the below picture, "To Which Page" as 1, "Title" as "Go To Page 1", and then click "Ok".

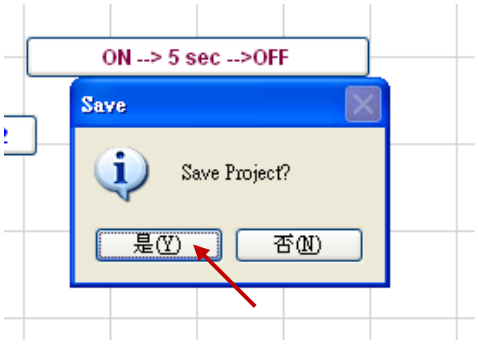


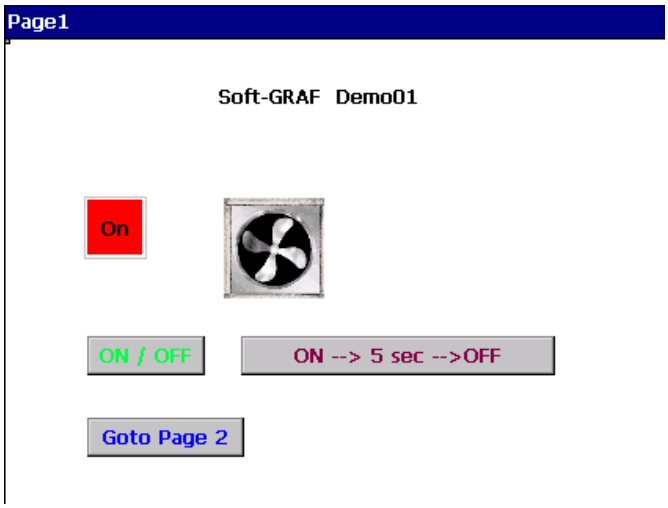
Next, set up the upload IP configuration. Click "Project"→"IP Setting", enter the IP address of PAC, and then click "Setting".



Click the upload tool icon  , click "Yes" to answer the "save project?" question, then the upload process begins. After uploading, the result shows up automatically on the PAC's VGA as the picture below if the HMI creation succeeds.

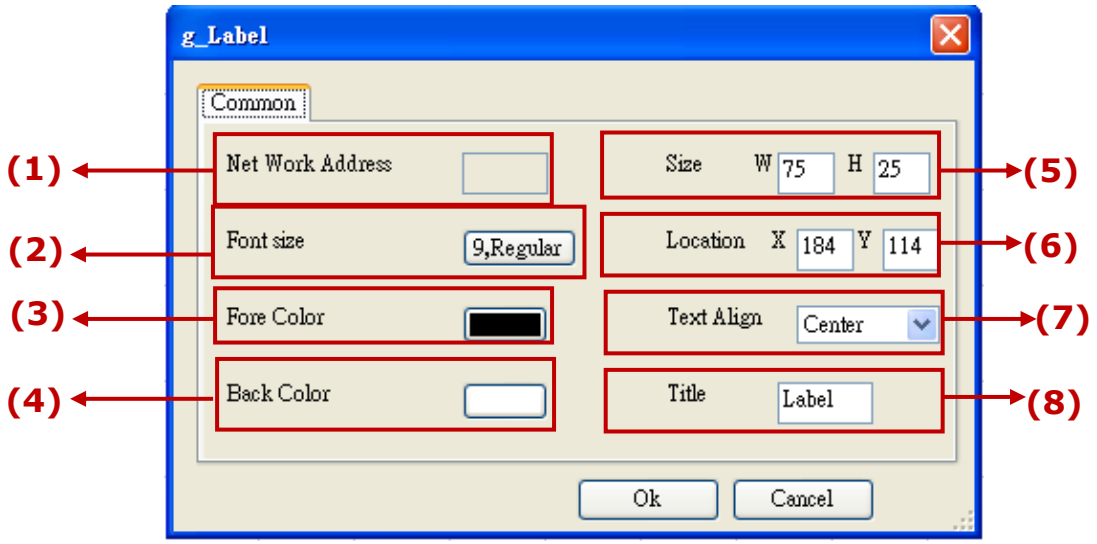



ON --> 5 sec -->OFF
Save
Save Project?
是(Y)
否(N)


Page1
Soft-GRAF Demo01
On
ON / OFF
ON --> 5 sec -->OFF
Goto Page 2

1.3 : HMI Objects Description

1.3.1 : g_Label: Display a Label



Options :

(1)Net work Address: the ISaGRAF Modbus NetWork Address for the variable, useless for in the g_Label object.

(2)Font size: set the font style and size of the label text, useless in other font setting

(3)Fore color: the fore color of the label

(4)Back color: the back color of the label

(5)Size: the size of the label; "W" for Width, "H" for height.

(6)Location: the X,Y-axis of the label. Refer to Ch.1.2 for how to display the axis.

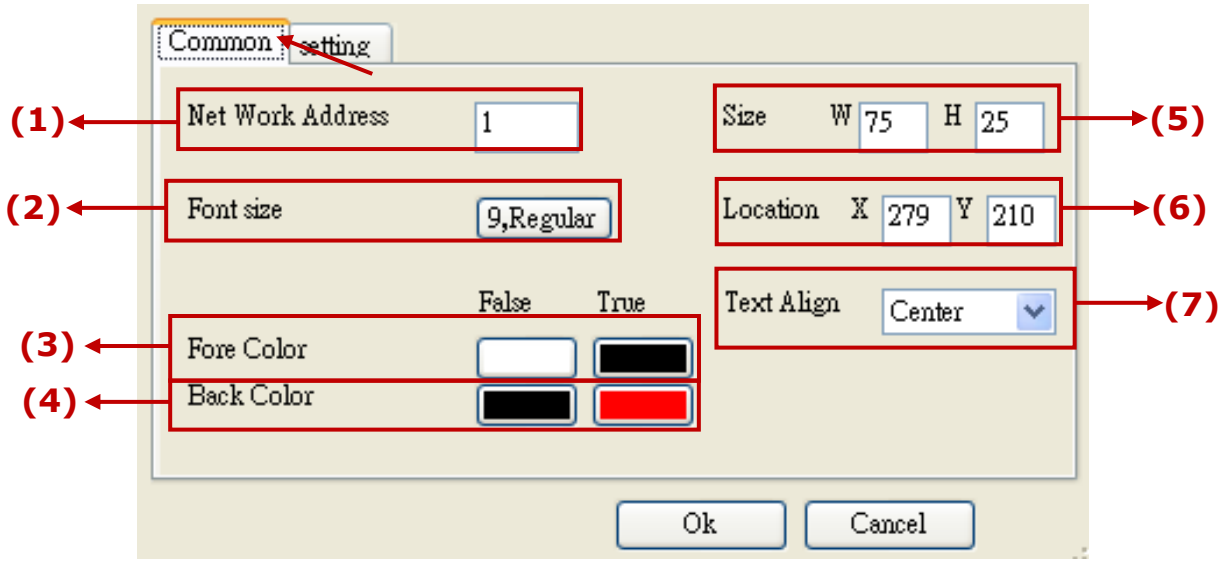
(7)Text Align: left, center and right align for the text

(8)Title: the text on the label. (Double click the Textbox to enter the long text.)

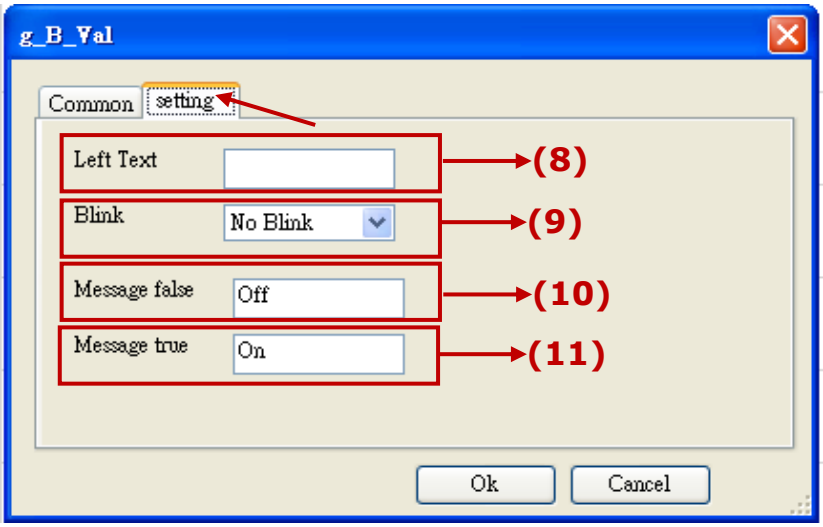
1.3.2 : g_B_Val: display a text to show a Boolean value.

Description: **Value= True** **Value= False**

Displayed figure: Working Stop



Options:
(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable
(2)Font size: set the font style and size of the text, useless in other font setting
(3)Fore color: the fore color of the object.
True: the fore color to display if the read ISaGRAF value is "True".
False: the fore color to display if the read ISaGRAF value is "False".
(4)Back color: the back color of the object
True: the back color to display if the read ISaGRAF value is "True".
False: the back color to display if the read ISaGRAF value is "False".
(5)Size: the size of the object; "W" for Width, "H" for height.
(6)Location: the X,Y-axis of the object. Refer to Ch.1.2 for how to display the axis.
(7)Align: left, center and right align for the text



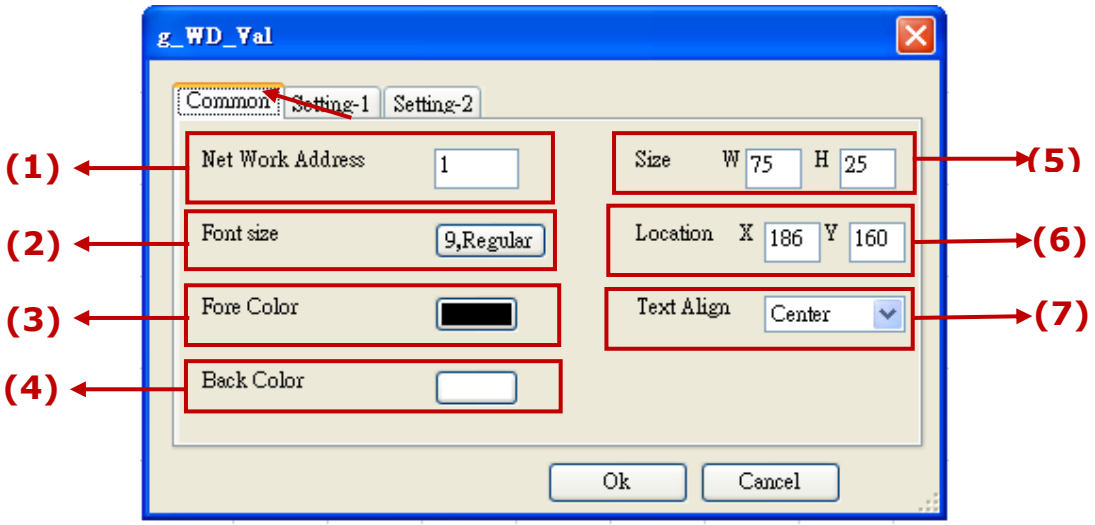
(8)Left Text: set up the text displayed on the left side of the object value. Ex: If set the “Left Text” as "Status: ", the object will show "Status: True" when the ISaGRAF Boolean value is “True”.

(9)Blink: Set the object text to blink. "No Blink": text not to blink, "Blink when true": blink when the value is true, “Blink when false": blink when the value is False, “All Blink": blink when the value is True or False.

(10)、(11): the message to display when the value is True/False.

1.3.3 : g_WD_val ,g_N_val, g_F_val : Display a 16-bit Integer, 32-bit Integer or 32-bit Float value

	Studio:		PAC:	
Description:	**Set text**	**Show text only**	**Show text & value**	**Show value only**
Displayed figure:	Preesure :	g_N_Val	Preesure : 5 Pa	5



Options :

(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable (32-bit Long integer and 32-bit REAL variables defined in the ISaGRAF must occupy two network addresses. Refer to chapter 4.2 of the "User Manual of ISaGRAF PAC".)

(2)Font size: set the font style and size of the text, useless in other font setting

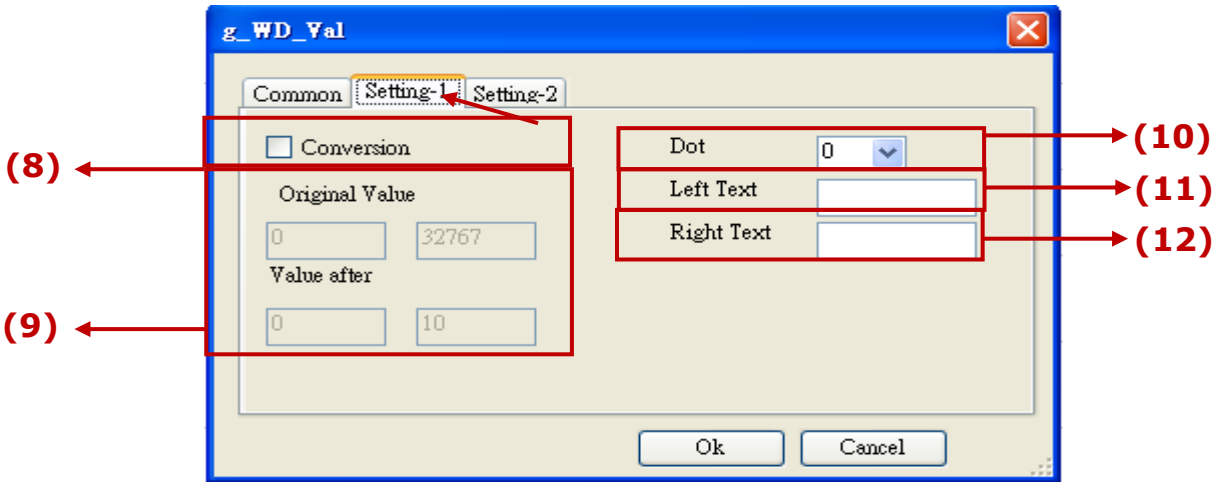
(3)Fore color: the fore color of the object.

(4)Back color: the back color of the object

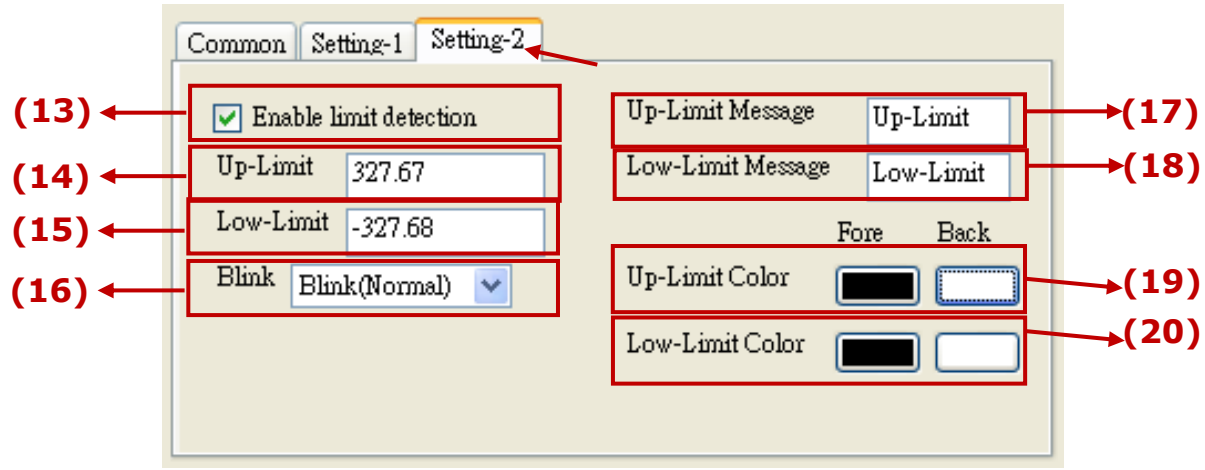
(5)Size: the size of the object; "W" for Width, "H" for height.

(6)Location: the X,Y-axis of the object. Refer to Ch.1.2 for how to display the axis.

(7)Align: left, center and right align for the text



(8)Conversion: check to convert the value (the g_F_val can input the decimal value)
(9)Original value: the range of the original value read(Ex: 0~32767,0~65535...etc.)
Value after: the range of the value after conversion(Ex: if the "Original value" is 0~32767 and the "Value after" is 0~1000, that means to convert the value from range of 0~32767 to range of 0~1000, such as, 16384 is converted to be 500.)
(10)Dot: define the number of digits displayed after the "." , for the number after conversion or the conversion not to use (Ex: Set "Dot" as 3, the original value "32767" will be displayed as "32.767".)
(11)Left Text: the text displayed on the value's left side
(12)Right Text: the text displayed on the value's right side



(13)Enable limit detection: check to enable the up/low-limit detection
(14)Up-limit: the upper limit value to detect
(15)Low-limit: the lowest limit value to detect
(16)Blink: select to blink or not when the value is inside/outside the limit range.
(17)Up-Limit Message: when the "Enable limit detection" is checked, the message will show up if the value is larger than the Up-Limit.
(18)Low-Limit Message: when the "Enable limit detection" is checked, the message will show up if the value is lower than the Low-Limit.
(19)Up-limit-Color: when the "Enable limit detection" is checked, the text color and background color will show up if the value is larger than the Up-Limit.
(20)Low-limit-Color: when the "Enable limit detection" is checked, the text color and background color will show up if the value is lower than the Low-Limit.

1.3.4 : g_N_Text: display a different text by the value of an integer variable.

Studio: PAC:

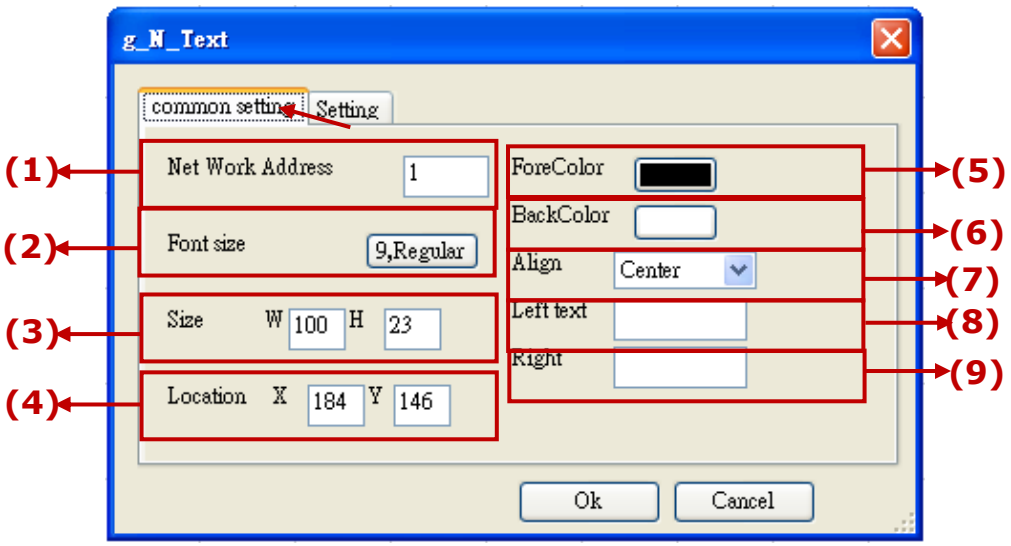
Description:

Displayed figure: g_N_Text

Value = 0 OK! Enjoy it ~

Value = 1 OKay! Have fun ~

Value = 2 I like it, too !!



Options :

(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable (32-bit Long integer and 32-bit REAL variables defined in the ISaGRAF must occupy two network addresses. Refer to chapter 4.2 of the "User Manual of ISaGRAF PAC".)

(2)Font size: set the font style and size of the text, useless in other font setting

(3)Size: the size of the object; "W" for Width, "H" for height.

(4)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.

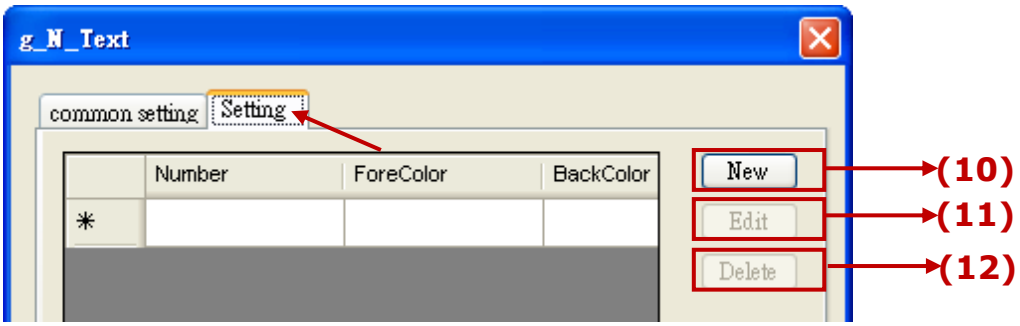
(5)Forecolor : the fore color of the object text

(6)Backcolor : the back color of the object

(7)Align : left, center and right align for the text

(8)Left Text : the text displayed on the left side of the object value.

(9)Right Text : the text displayed on the right side of the object value.



(10)New : create a new text

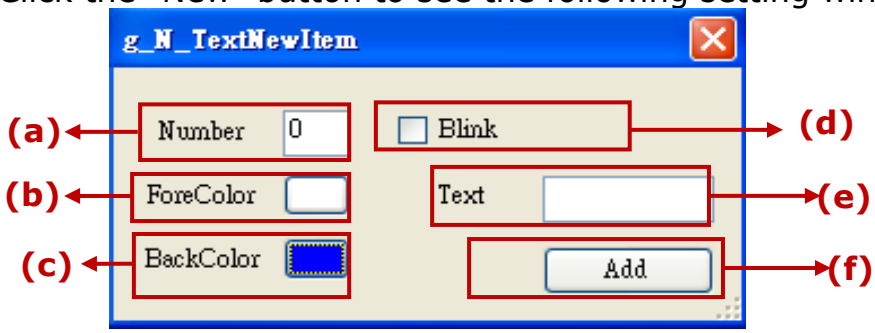
(11)Edit : edit the text

(12)Delete : delete the selected text

*Setting description:

New

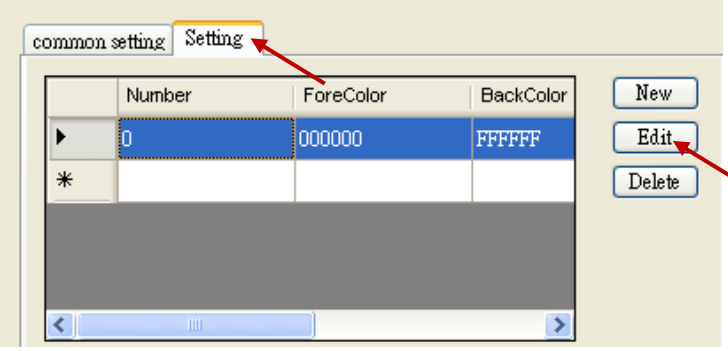
Click the "New" button to see the following setting window



(a)Number: if read this integer value, the object will display the setting text. Max. 50 numbers from 0~49.
(b)ForeColor: the fore color of the text
(c)BackColor: the background color of the text
(d)Blink: check to blink
(e)Text: the text to display
(f)Add: click to add this setting

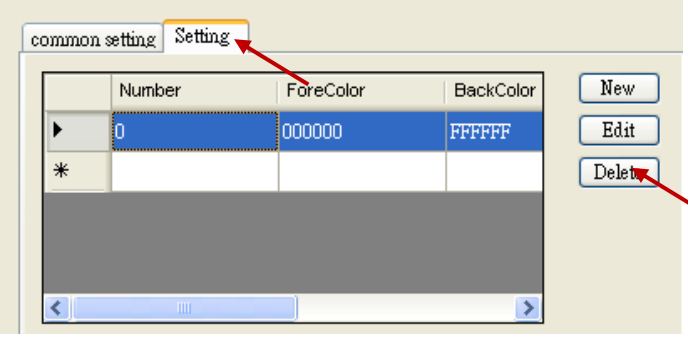
Edit

Select the item want to edit, then click "Edit" to open the setting window. After edit, click "Add" to save it. If forget to select any item, it will open the first item's window.



Delete

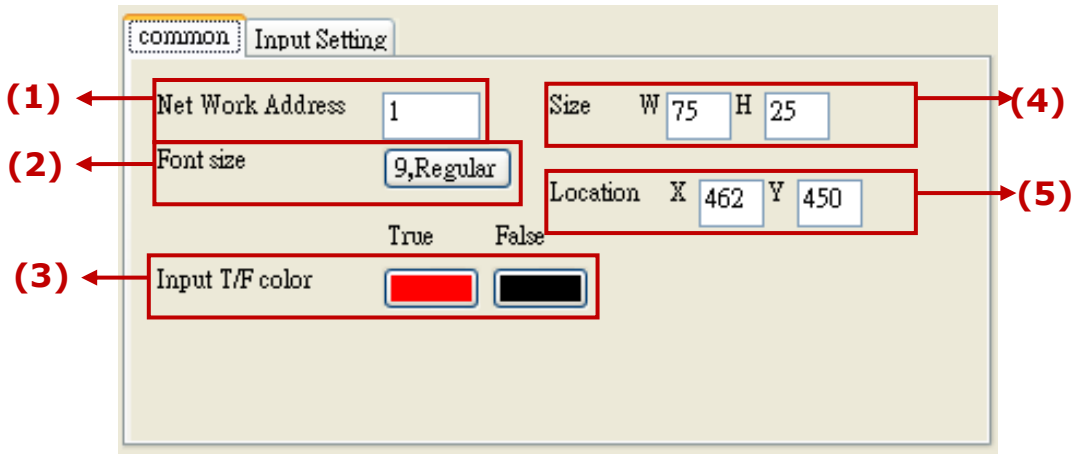
Select the item want to delete, then click "Delete" to delete it. If forget to select any item, it will delete the first item



1.3.5 : g_B_Inp : create a button, when user press it, it display a keyboard to input a Boolean to the mapping ISaGRAF Boolean vaiable.

Description: **Show as string** **Show as value** **Show as picture**

Displayed figure:



Options :

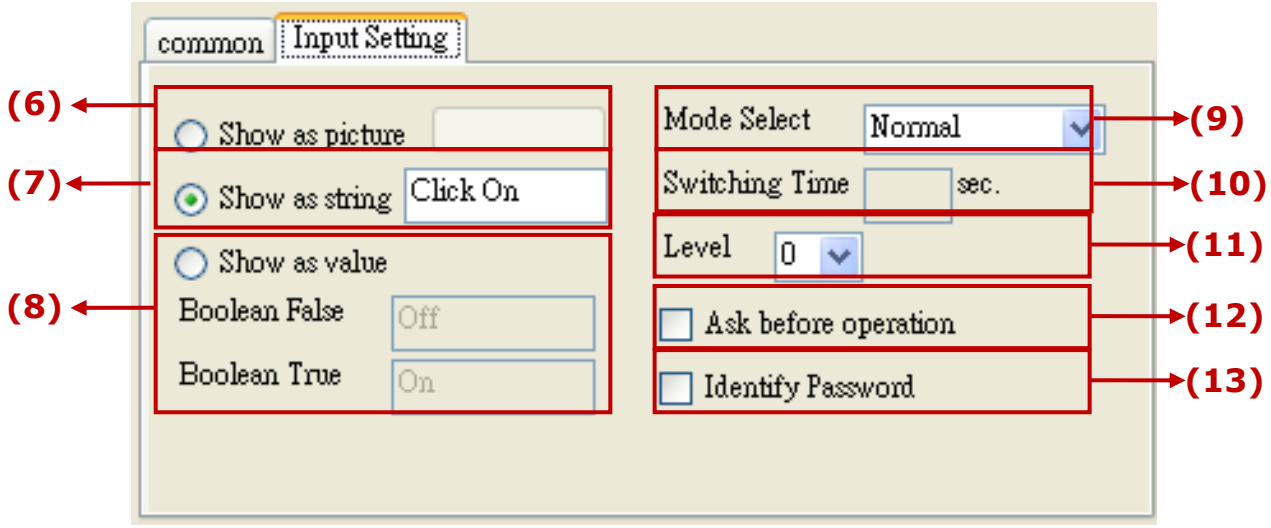
(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable

(2)Font size: set the font style and size of the text, useless in other font setting

(3)Input T/F Color: the color of True displays the fore color of the value when ISaGRAF read it "True". The color of False displays the fore color of the value when ISaGRAF read it "False".

(4)Size: the size of the object; "W" for Width, "H" for height.

(5)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.

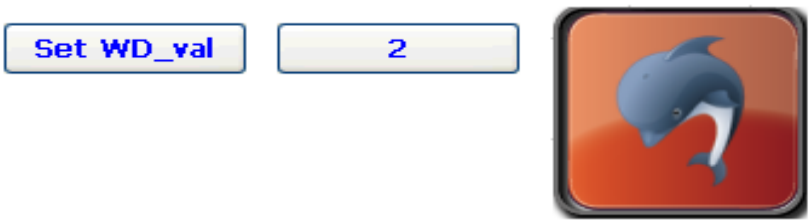


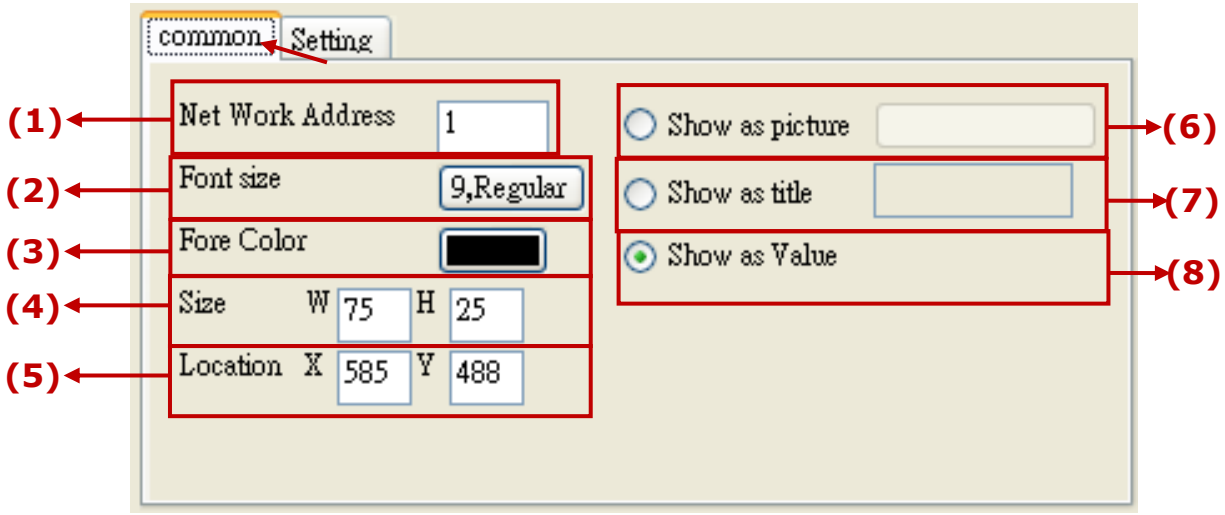
(6)Show as picture : the button is showed as a picture. The picture format can be JPG, GIF, PNG, BMP(BMP is not suggested due to the large size memory).
(7)Show as string: show the button as the setting text
(8)Show as value: depand on the value that Soft-GRAF read to show thereplaced text
Boolean False: the text is showed when the read number is a False boolean
Boolean True: the text is showed when the read number is a True boolean
(9)Mode: select the input mode of the Boolean. There are 5 modes :
(a)Normal: can input True or False
(b)Only False: False only
(c)Only True: True only
(d)True → False : True first, and switch to False after a setting time
(e)False → True: False first, and switch to True after a setting time
(10)Switching Time: if select the Mode of "False→True" or "True→False", set the switching time here. The time unit is secent, and range is 1~10 secents.
(11)Level: set the permission level, used when the HMI has the permission setting
(12)Ask before operation: to ask again before operation
(13)Identify Password: to re-input the password of that level (Refer to Ch1.4 for the permission setting.)

1.3.6 : g_WD_Inp, g_N_Inp, g_F_Inp : create a button , when user press it, it display a keyboard to input a 16-bit signed integer, 32-bit signed integer or 32-bit float to the variable.

Description: **Show as title** **Show as value** **Show as picture**

Displayed figure:





Options:

(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable (32-bit Long integer and 32-bit REAL variables defined in the ISaGRAF must occupy two network addresses. Refer to chapter 4.2 of the "User Manual of ISaGRAF PAC".)

(2)Font size: set the font style and size of the text, useless in other font setting

(3)Fore color : the fore color of the object text

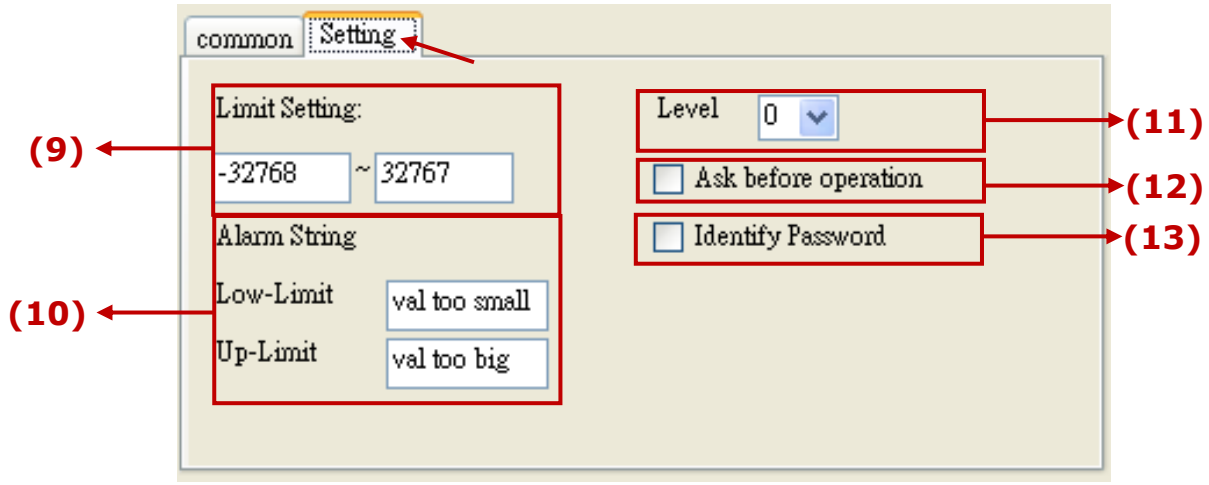
(4)Size: the size of the object; "W" for Width, "H" for height.

(5)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.

(6)Show as picture : the button is showed as a picture. The picture format can be JPG, GIF, PNG, BMP(BMP is not suggested due to the large size memory).

(7)Show as Title: show the button as the setting text

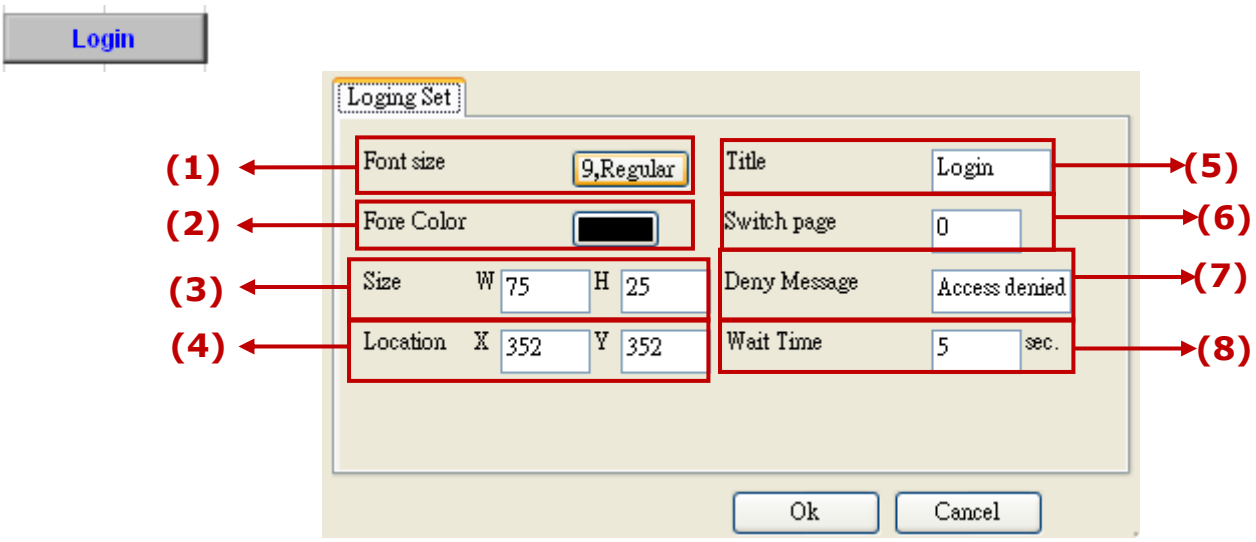
(8)Show as value: show the value that ISaGRAF read



(9)Limit setting: set the up/low limit of the input value
(10)Alarm string: a pop-up window text when user input a value beyound the limit
Low-limit: the text when the input value is lower than the Low-limit
Up-limit: the text when the input value is higher than the Up-limit
(11)Level: set the permission level, used when the HMI has the permission setting
(12)Ask before operation: to ask again before operation
(13)Identify Password: ask to re-input the password of that level

1.3.7 : g_Login : Create a Login button

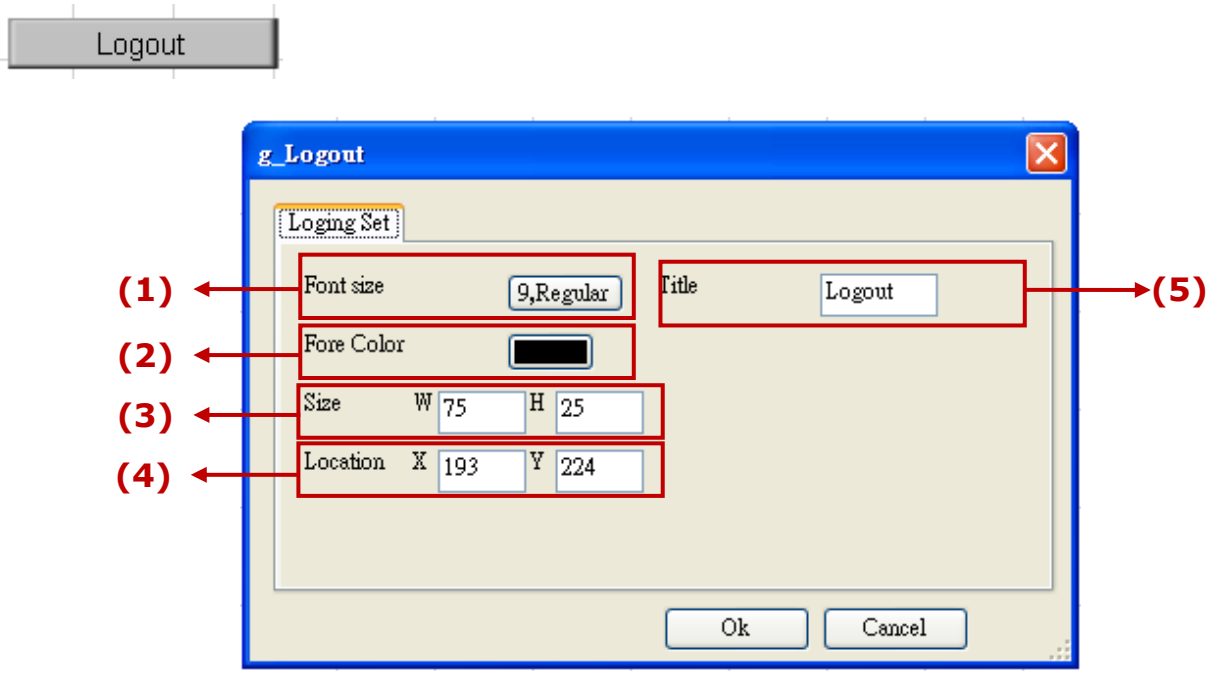
This object creates a Login button. When users press it, a keyboard will display and request the user to key-in a password. There are maximum 12 characters in a password (only number 0 to 9). This g_Login object can only put on the Page No. 1 and only one g_Login allowed. When user presses the g_Login button, the Soft-GRAF driver in the PAC will read a password file to check if this is a valid user who has a permission level (1 ~ 10), and the larger number has the higher authority. (Refer to Ch1.4 for the permission setting.)



Options:
(1)Font size: set the font style and size of the text, useless in other font setting
(2)Fore Color: the fore color of the object text
(3)Size: the size of the object, "W" for width, "H" for height.
(4)Location : the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.
(5)Title: the text displayed on the button
(6)Switch page: the number of page want to switch to when login successfully
(7)Deny message: the message want to display when the login fail.
(8)Wait time: the period of time to auto-Logout. The unit is second. The value can be 0 and 10 ~ 3600; 0 means do not enable the auto-logout (Need to press the g_Logout button to logout.). Ex: set the "wait time" as "60", Soft-GRAF will auto-logout and switch to the first page if user has not any operation over 60 secents after login the HMI.

1.3.8 : g_Logout : Create a Logout button

This object can create a Logout button. When user presses the button, it pops up a confirmation dialog. If user answers “Yes”, the Soft-GRAF will logout and switch to the first Page (Page 1). (Refer to Ch1.4 for the permission setting.)

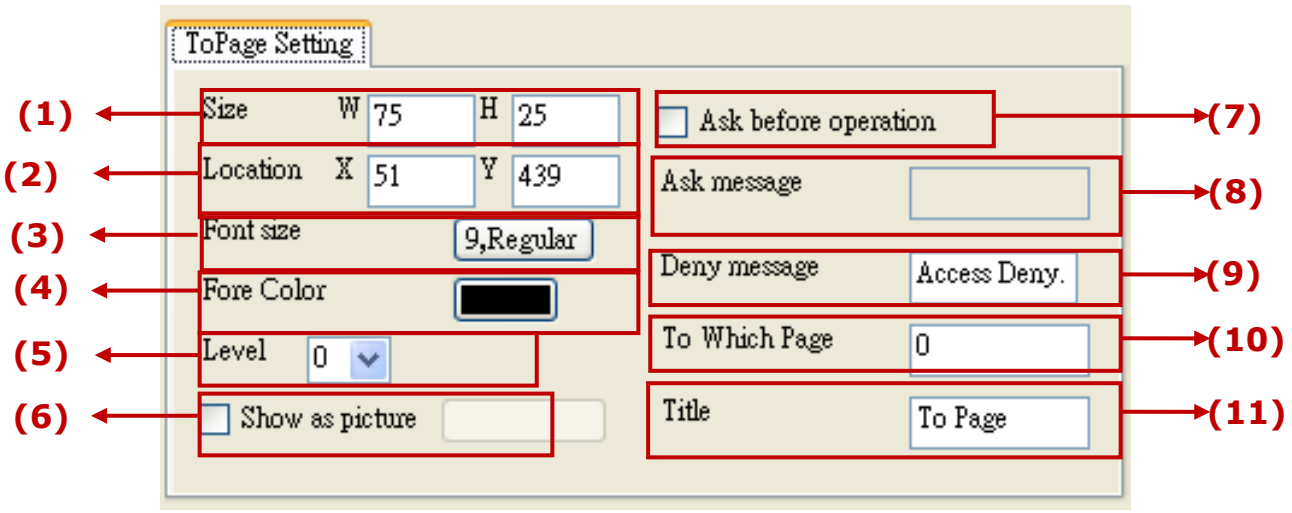


Options:
(1)Font size: set the font style and size of the text, useless in other font setting
(2)Fore Color: the fore color of the object text
(3)Size: the size of the object, "W" for width, "H" for height.
(4)Location : the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.
(5)Title: the text displayed on the button

1.3.9 : g_ToPage : Create a switch-page button

Description: **Show as text** **Show as picture**

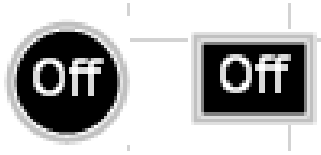
Displayed figure: Goto Page2 Back

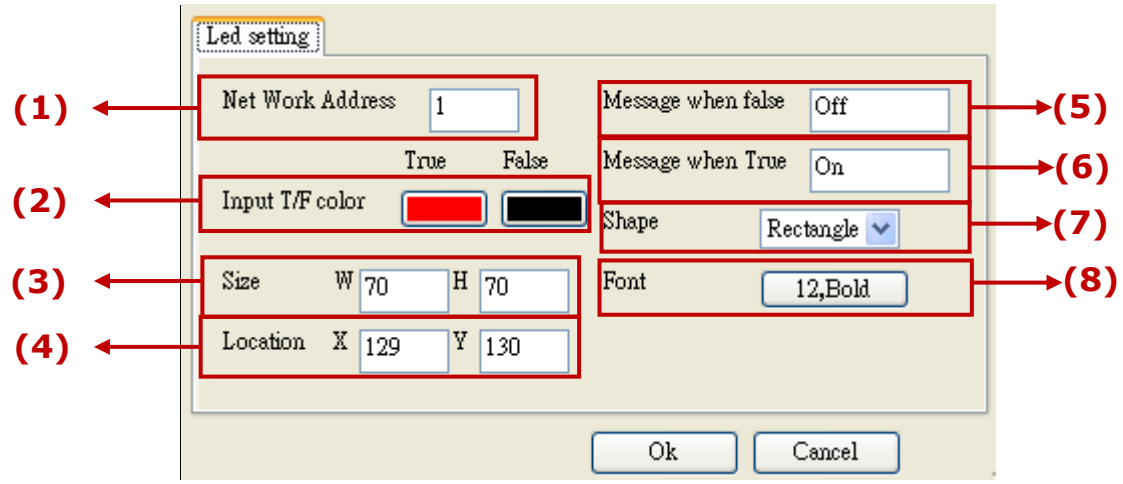


Options :

(1)Size: the size of the object, "W" for width, "H" for height.
(2)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.
(3)Font size: set the font style and size of the text, useless in other font setting
(4)Fore Color: the fore color of the object text
(5)Level: set the permission level, used when the HMI has the permission setting. When user's login permission level is higher than this level, the user can access the function.
(6)Appearance: show the object by a picture. The picture format can be JPG, GIF, PNG, BMP(BMP is not suggested due to the large size memory).
(7)Ask before operation: to ask again by a pop-up window before operation
(8)Ask message: the text in the pop-up window of "Ask before operation"
(9)Deny message: the message will show when the user Level is too low to access the switch page. Its default message is "Access denied !" if left it blank.
(10)To Which Page: the page want to switch to
(11)Title: the text displayed on the object

1.3.10 : g_B_Led : can display a LED picture to show a Boolean value.

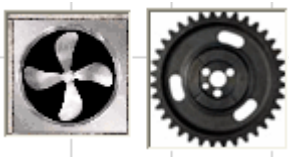


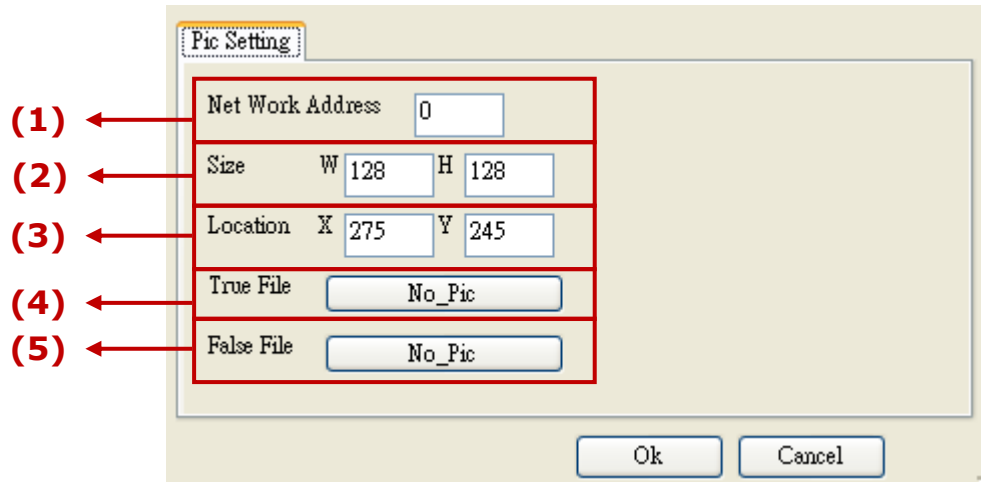


Options:
(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable
(2)Input T/F Color : the color of True displays the fore color of the value when ISaGRAF read it “True”. The color of False displays the fore color of the value when ISaGRAF read it “False”.
(3)Size: the size of the object; "W" for Width, "H" for height.
(4)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.
(5)Message when False: the text showed on the object when read a False value
(6)Message when True: the text showed on the object when read a True value
(7)shape: set the Led shape, can be rectangle or ellipse
(8)Font size: set the font style and size of the text, useless in other font setting

1.3.11 : g_B_Pic : Display a picture to show a Boolean value.

The picture format can be JPG, PNG, GIF or BMP (BMP is not suggested due to the large size memory).





Options:
(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable
(2)Size: the size of the object; "W" for Width, "H" for height.
(3)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.
(4)True File: the picture showed when read a True value (Refer to Ch.1.5 for more about the dynamic image format).
(5)False File: the text showed when read a False value (Refer to Ch.1.5 for more about the dynamic image format).

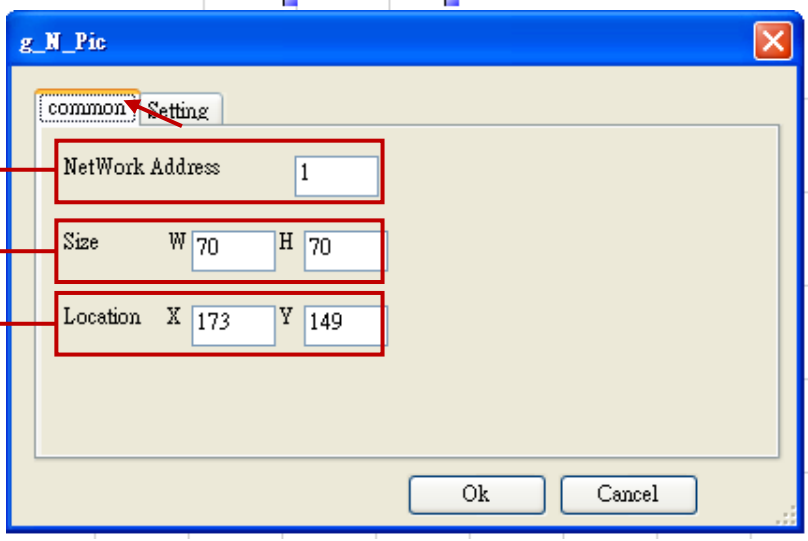
1.3.12 : g_N_pic : Display a picture to show a Integer value.

The picture format can be JPG, PNG, GIF or BMP (BMP is not suggested due to the large size memory).

Studio: **PAC:**

Description: **Value= 0** **Value=** **Value = 2**

Displayed figure:

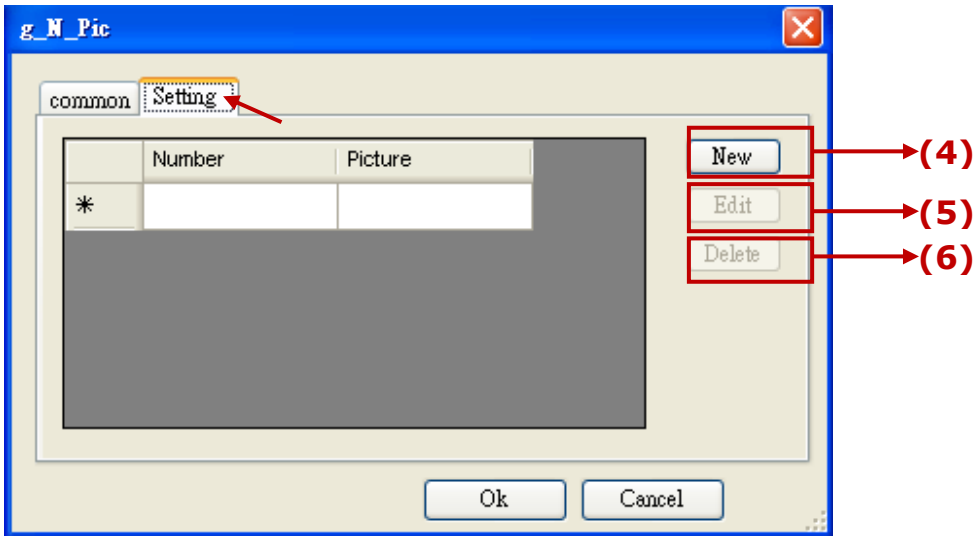


Options :

(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable (32-bit Long integer and 32-bit REAL variables defined in the ISaGRAF must occupy two network addresses. Refer to chapter 4.2 of the "User Manual of ISaGRAF PAC".)

(2)Size: the size of the object; "W" for Width, "H" for height.

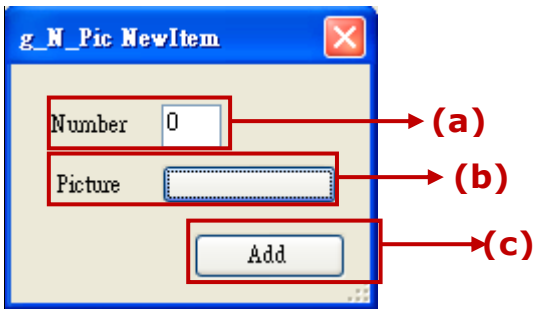
(3)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.



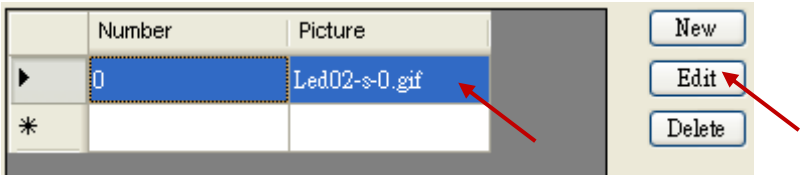
(4)New: open a setting window to add a new picture
(5)Edit: edit a picture setting
(6)Delete: delete a picture

* Setting description:

New
Click the "New" button to see the following setting window



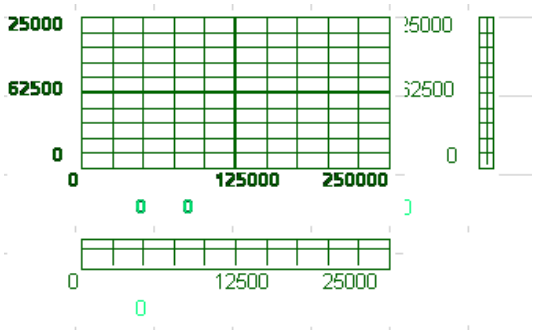
(a)Number: if read this integer value, the object will display this setting picture.
Max. 50 numbers from 0~49.
(b)Picture: the picture's file name to display
(c)Add: click to add this setting



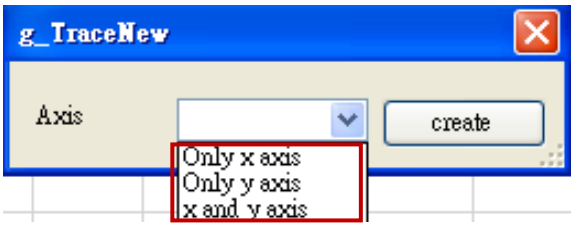
Edit
Select the item want to edit, then click "Edit" to open the setting window. After edit, click "Add" to save it. If forget to select any item, it will open the first item's window.

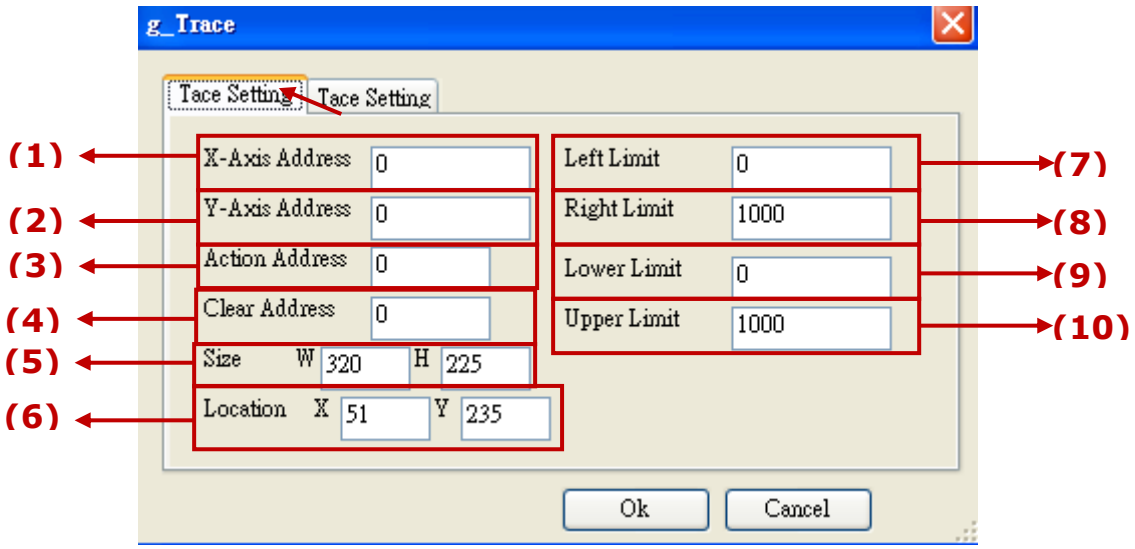
Delete
Select the item want to delete, then click "Delete" to delete it. If forget to select any item, it will delete the first item

1.3.13 : g_Trace2 : display a 2-axes (x , y) or 1-axis (x : Horizontal) or 1-axis (y : Vertical) moving trace map



Please drag the object into the editing area and select one of the axis options: Only x-axis, Only y-axis, x and y axis.





Options:

(1)X-Axis Address: the Network addr. of ISaGRAF variable for the X-axis

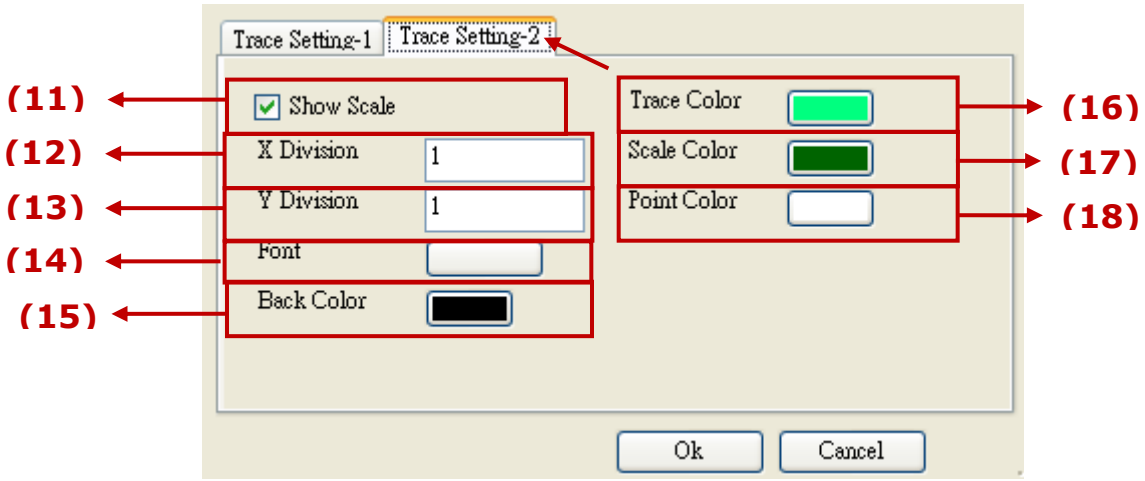
(2)Y-Axis Address: the Network addr. of ISaGRAF variable for the Y-axis
(32-bit Long integer and 32-bit REAL variables defined in the ISaGRAF must occupy two network addresses. Refer to chapter 4.2 of the "User Manual of ISaGRAF PAC".)

(3)Action Address: the Network addr. of ISaGRAF Integer variable.
0: no drawing (type 0: stop) ; 1: drawing both of trace curve and the current point (type 1: drawing both) ; 2: drawing only the current point. ; Not within 1 ~ 8191: the same as type 2, drawing only the current point.

(4)Clear Address: a ISaGRAF Boolean variable. Its network address can be 1 ~ 8191.

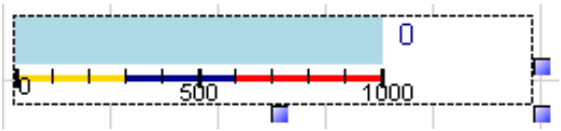
If the Boolean is True, the trace curve is cleared once, and then Soft-GRAF will change the Boolean to False automatically. In ISaGRAF software, user can manually set the Boolean to True to clear the trace curve. If its network address is not within 1 ~ 8191, the clearing function will not enable.

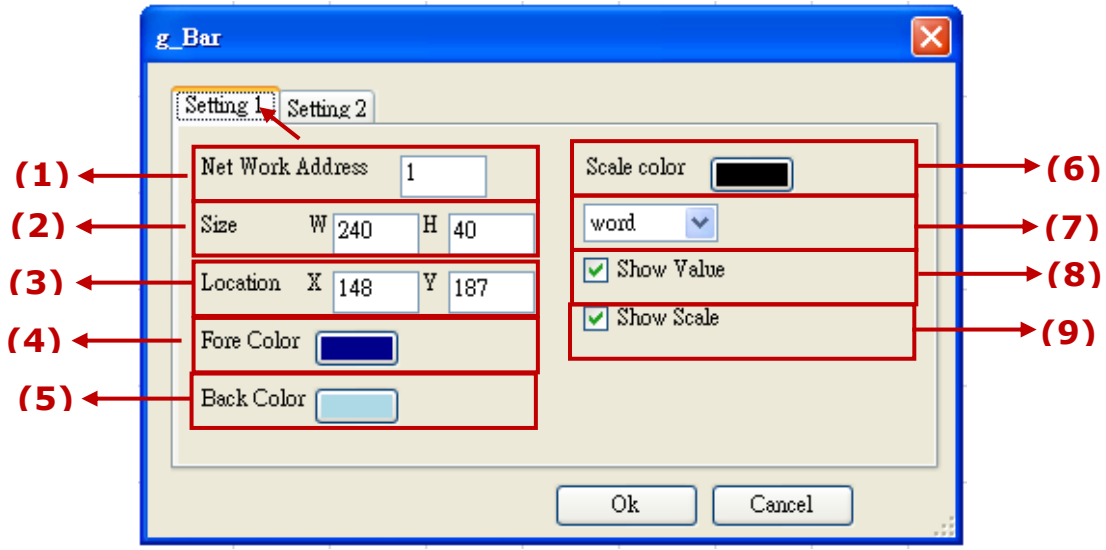
(5)Size: the size of the object; "W" for Width, "H" for height.
(6)Location : the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.
(7)Left Limit: set the left limit of the X-axis in the trace map
(8)RightLimit: set the right limit of the X-axis in the trace map
(9)Lower Limit: set the bottom limit of the Y-axis in the trace map
(10)Upper Limit: set the upper limit of the Y-axis in the trace map



(11)show scale: check box to show the border of the axis and its scale
(12)X Division: if "show scale" is checked, it means displaying the current position value at the bottom and divide the X-axis by this integer value.
(13)Y Division: if "show scale" is checked, it means displaying the current position value at the bottom and divide the *-axis by this integer value.
(14)Font: set the font style and size of the text, useless in other font setting. The maximum size is 10 and the minimum is 6 for this object.
(15)Back Color: the backcolor of the trace map
(16)Trace Color: the color of the trace curve
(17)Board Color: the color of mesh and border
(18)Point Color: the color of the current point

1.3.14 : g_Bar : display a Bar-meter picture to show a 32-bit signed integer, 16-bit signed integer or 32-bit float value





Options:

(1)Net Work Address: the ISaGRAF Modbus Network Address for the variable (32-bit Long integer and 32-bit REAL variables defined in the ISaGRAF must occupy two network addresses. Refer to chapter 4.2 of the "User Manual of ISaGRAF PAC".)

(2)Size: the size of the object; "W" for Width, "H" for height.

(3)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.

(4)ForeColor: the fore color of the Bar-meter

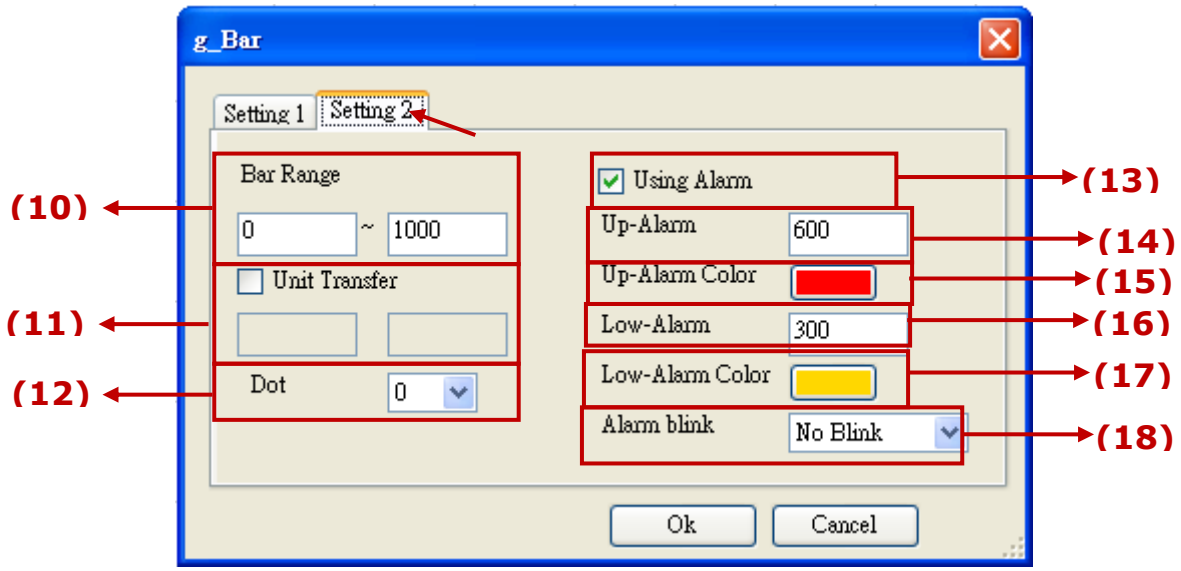
(5)BackColor: the back color of the Bar-meter

(6)Scale Color: the color of the scale

(7)Data Type: select the data value type. Can be "long" (32-bit sign intger), "word" (16-bit signed integer) or "real" (32-bit float).

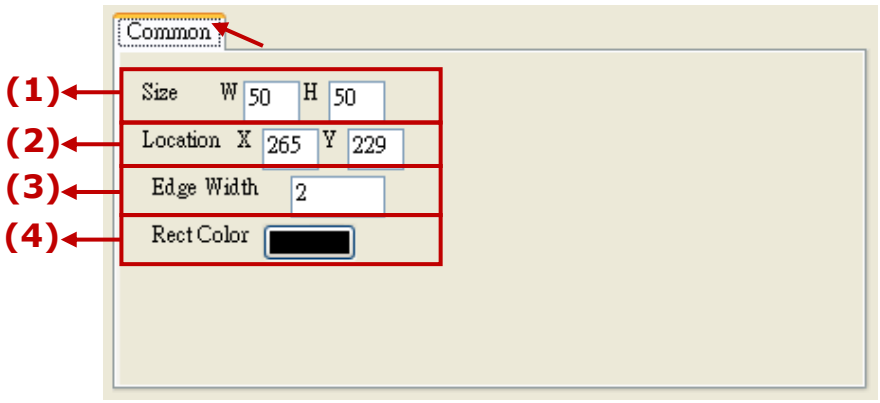
(8)Show Value: check to show the current value.

(9)Show Scale: check to show the scale



(10)Bar Range: set the maximum and minimum limit of the Bar range
(11)Unit Transfer: the unit transfer function. If checked to enable, it transfers the value according to the range of Bar Range. Ex: Bar Range = 0.0 ~ 1000.0, means the minimun value is 0.0, the maximum is 1000.0; set Unit Transfer = 0~32767, it will tranfer (0 ~ 32767) to (0.0 ~ 1000.0)
(12)Dot: define the digital number after the dot, can be 0 ~ 6.
(13)Using Alarm: using the Alarm function. If checked to enable, then can set the value and color of Low-Alarm/Up-Alarm.
(14)Up-Alarm: the Up-limit of the Alarm
(15)Up-Alarm Color: the color of the Up-Alarm
(16)Low-Alarm: the Low-limit of the Alarm
(17)Low-Alarm Color: the color of the Low-Alarm
(18)Alarm Blink: set the alarm blinking options when the value is larger/smaller than the Up-Alarm or Low-Alarm. There are 4 options:
(a)No Blink: no blink
(b)Up-Alarm: blink if larger than the Up-Alarm value
(c)Low-Alarm: blink if smaller than the Low-Alarm value
(d)All Blink: blink both when larger and smaller

1.3.15 g_Rect : Draw a rectangle



(1)Size: the size of the object; "W" for Width, "H" for height.
(2)Location: the X,Y axis of the object. Refer to Ch.1.2 for how to display the axis.
(3)Edge Width : set up the border line's width, 1~10.
(4)Rect Color : set up the border color of the rectangle

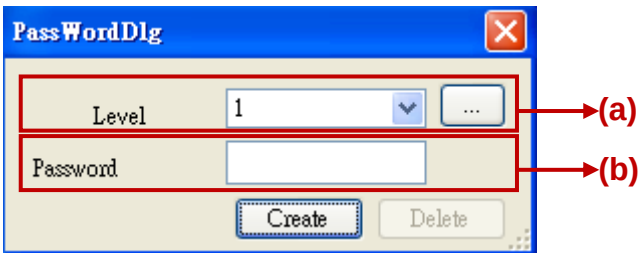
1.4 : How to set up the access permission of HMI

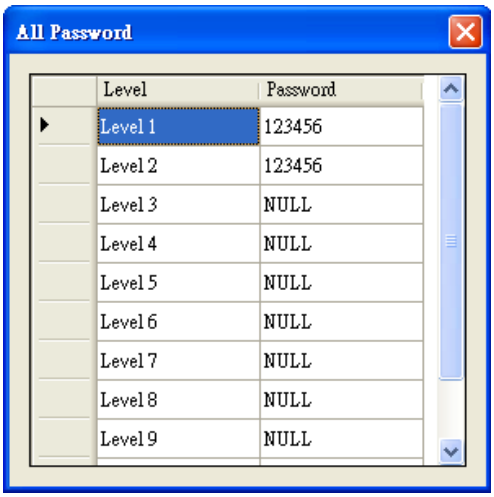
The Soft-GRAF provides a password setup for the HMI security, please refers to the following steps. The HMI password security is accomplished by the menu of "Project" > "password" and two HMI objects "g_Login" and "g_logout".

The Setting Steps:

(1) Open a project of the Sort-GRAF Studio and lick the "Project"→"Password"

(2) Set the password and level

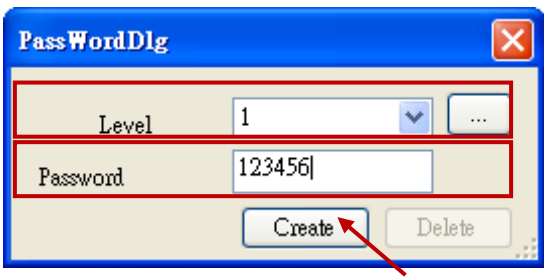




(a)Level: the security levels can be 1~10. The larger number has the higher authority. Click the button ... to see the setting passwords for all levels. "NULL" means that level doesnot set password.

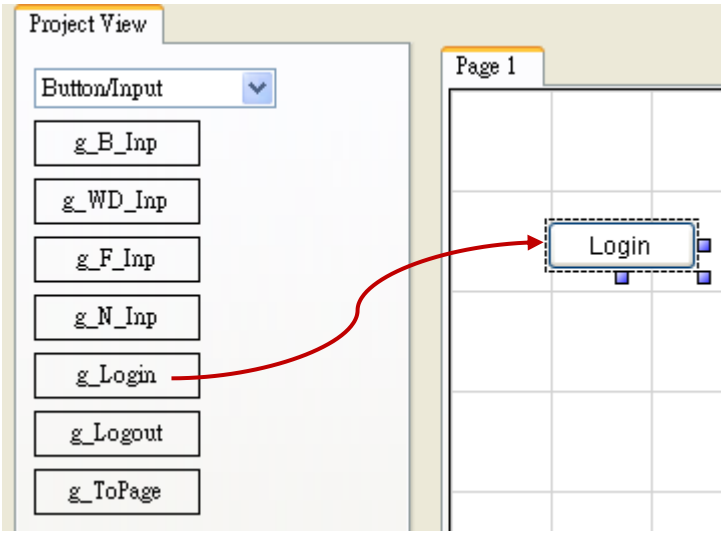
(b)Password: the password of the selected level.

(3) Create a new password: first, select a Level. If this level has no password yet, it is blank. Then, key in a password and click "Create".

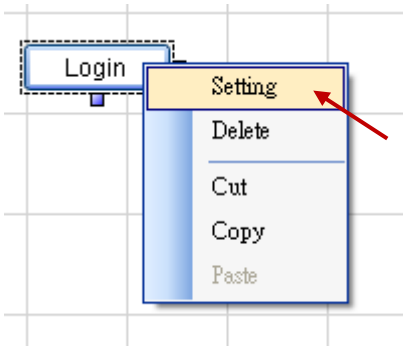


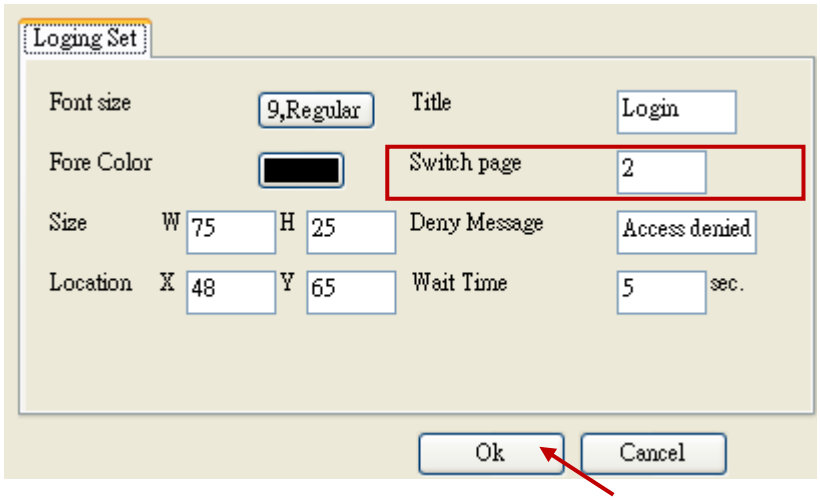
(4) Change/Delete password: select the Level that wants to change. The "password" column will show the current password. Key in the new password and click "Create" to replace the password. If user wats to delete the password, please click "Delete".

(5) In the HMI editing area, drag the g_Login object into the "Page 1"

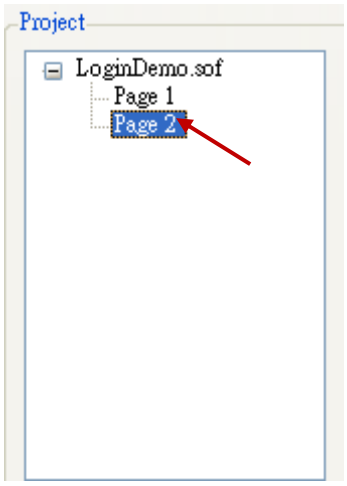


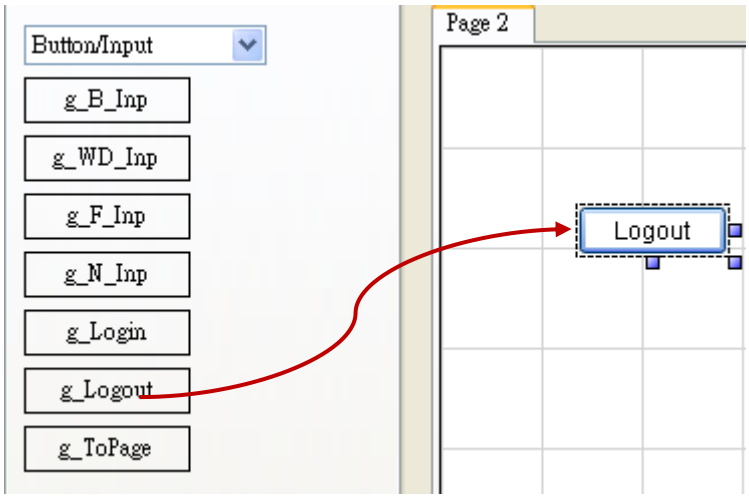
(6) Right key click on "Login" button, select "Setting", and then enter the page number that want to switch to for the Login button. Enter page number "2" for this demo.



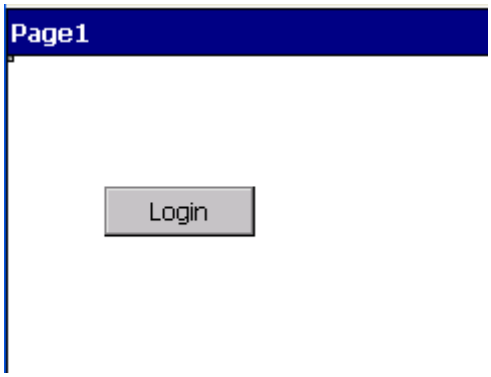


(7) Switch to Page 2, and drag the "g_Logout" object into the editing area. Now this page is protected by the password security.





(8) Upload the project to the PAC. Click the "Login" button and enter password can login the HMI project. Click Logout button can exit the HMI project.



1.5 : How does the Soft-GRAF driver distinguish the picture animate or not?

NOTE: Only the objects **g_B_Pic** and **g_N_Pic** can use the animate picture that support by **Soft-GRAF.**

The animate picture file should be named as *(ABC).gif (or .jpg or .png). The ABC is three number of 0 ~ 9. If the picture format is correct and the file name is correct, the Soft-GRAF driver will display it as animate picture. The AB defines the amount of pictures to be animate. The C defines the time-period to switch pictures, can be 0 to 9. If C is 0, it means the picture is not animate. The unit of C is about 0.125 seconds for XP-8xx7-CE6 PAC, while is about 0.25 seconds for WP-8xx7 and VP-2xW7 PAC.

For ex., '\gif\Fan04-s-(061).gif' means the file is an animate picture. It contains 6 pictures. The switching time is about 0.125 seconds for the XP-8xx7-CE6 PAC (about 0.25 seconds if running in the WP-8xx7 and VP-2xW7PAC).

For ex., '\gif\Fan04-s-(062).gif' means the file is an animate picture. It contains 6 pictures. The switching time is about 2 x 0.125 = 0.25 seconds for the XP-8xx7-CE6 PAC (about 0.5 seconds if running in the WP-8xx7 and VP-2xW7PAC).

For ex., '\gif\Fan04-s-(060).gif' is not an animate picture because the switching time is 0. The following picture is the content in the \gif\Fan03-s-(041).gif . It consists of 4 small pictures to become a big picture (from left to right). The Soft-GRAF driver will display it as animated picture.

User can find the default burned-in pictures in the following CD-ROM or web site.

WP-8xx7 CD:\napdos\isagraf\wp-8xx7\driver\wp-8x47\1.37\sofgrafy
XP-8xx7 CD :\napdos\isagraf\xp-8xx7-ce6\driver\1.18\sofgrafy
VP-2xW7 CD:\napdos\isagraf\vp-25w7-23w7\driver\1.29\sofgrafy
or www.icpdas.com > FAQ > Software > ISaGRAF > FAQ-146 in the downloaded ZIP file.

1.6 : Other Features introduction

The Soft-GRAF Studio provides the Clipboard and the function of arranging the object layer order.

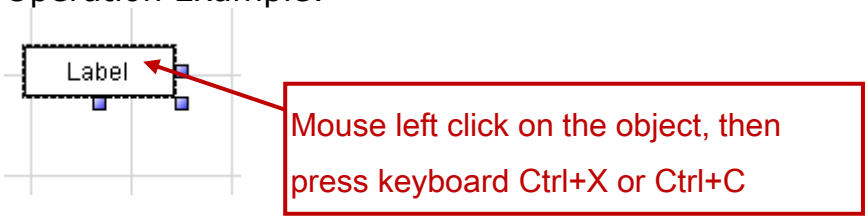
1.6.1 : Use Clipboard Feature to Copy the HMI Object

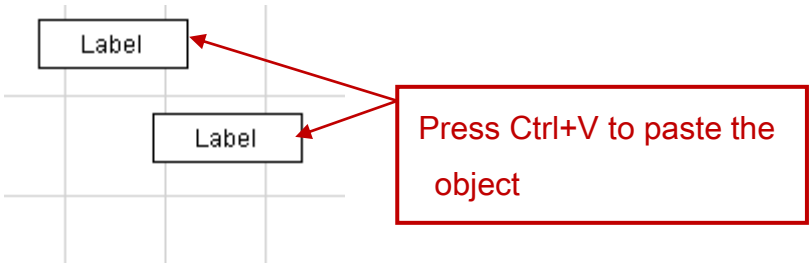
The clipboard allows there stardard commands: Cut, Copy & Paste

(1) Using the hot key :

Ctrl+X : Cut the object
Ctrl+C : Copy the object
Ctrl+V : Paste and replace the object after the Cut or Copy

Operation Example:

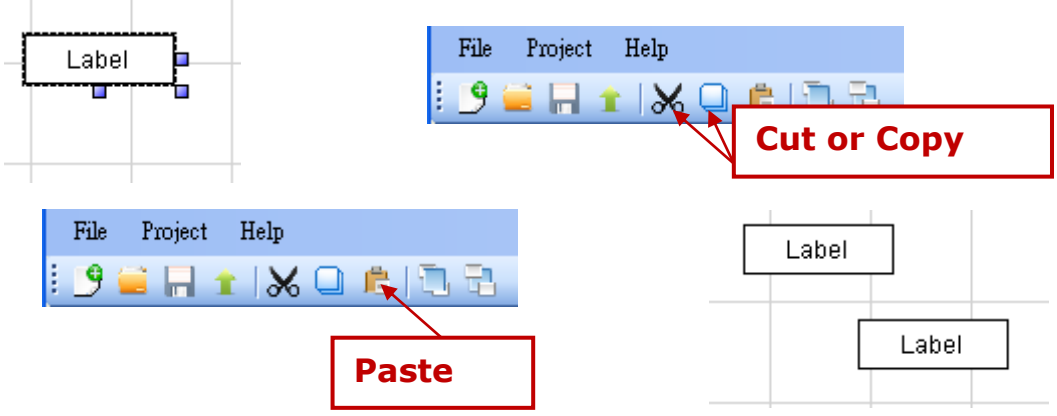




(2) Using the tool icon :

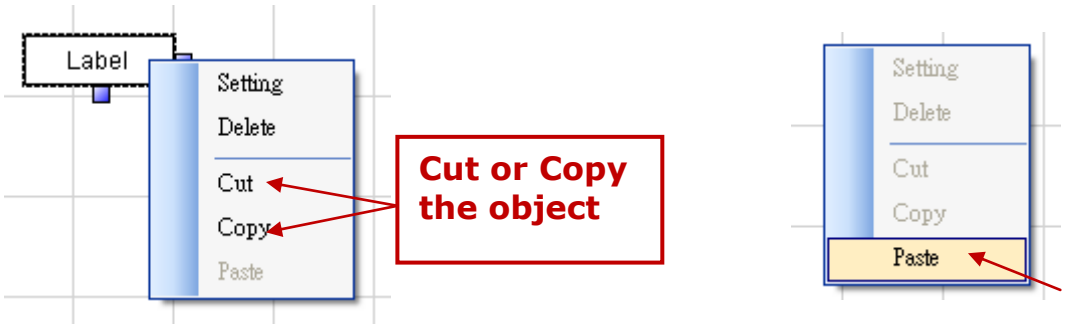
Use the clipboard icons in the tool box

Operation Example:
Mouse left click the object, then the icon ”Cut” or ”Copy”, and then the icon ”Paste”.



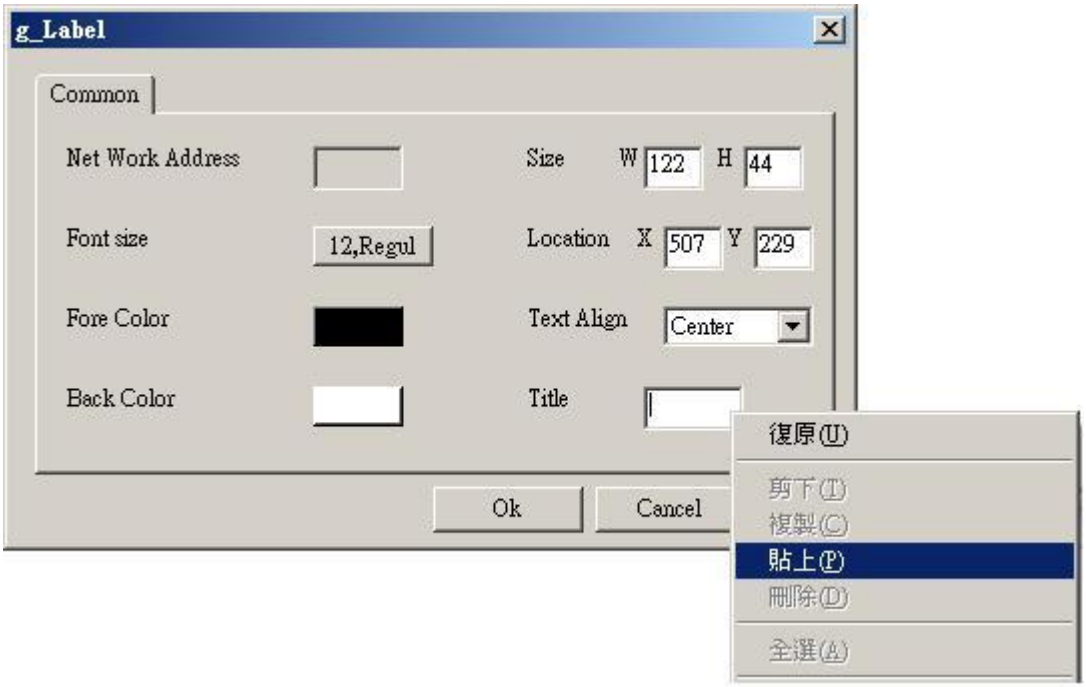
(3) Using the mouse right key :

Mouse right key click on the object, then select the ”Cut” or ”Copy” from the popup menu. Then, mouse right key click on the blank editing area and select the ”Paste”.



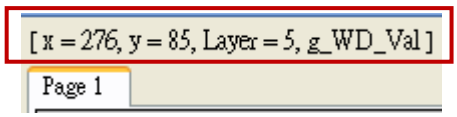
1.6.2 : Use Clipboard Feature to Paste the Text into HMI Object

After copying the text, mouse left click the box of “Title” in the HMI, then mouse right click and select the “Paste”.



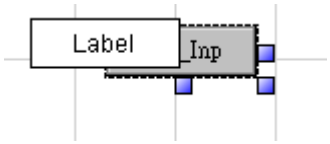
1.6.3 : Adjust the Objects order

Soft-GRAF Studio offers the function to adjust the layer order of the object. The first created object in the Soft-GRAF Studio default has the highest level Layer. The higher Layer object is above the lower Layer object when the objects overlap with others. User can change the Layer level to use the overlapped object. When you click an object, its layer level and position will show on the left-up corner of the HMI editing area, the larger number Layer with the higher level.

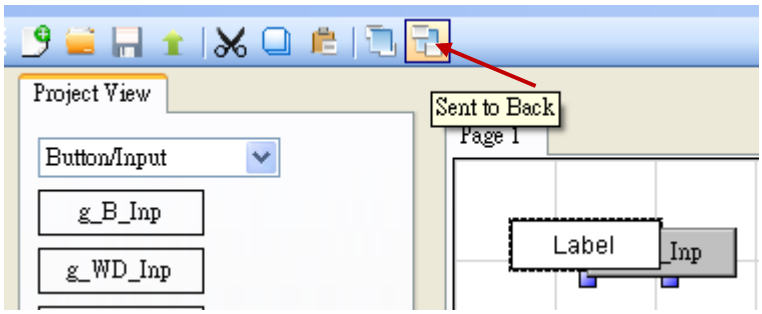


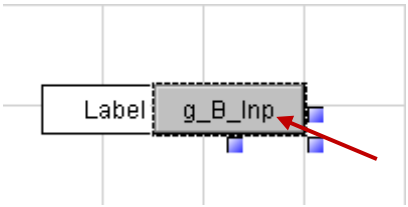
Operation Example:

There are two overlapped objects, g_Label (Label button) and g_B_Inp. The object g_Label has the higher Layer than the g_B_Inp, and covers on it.

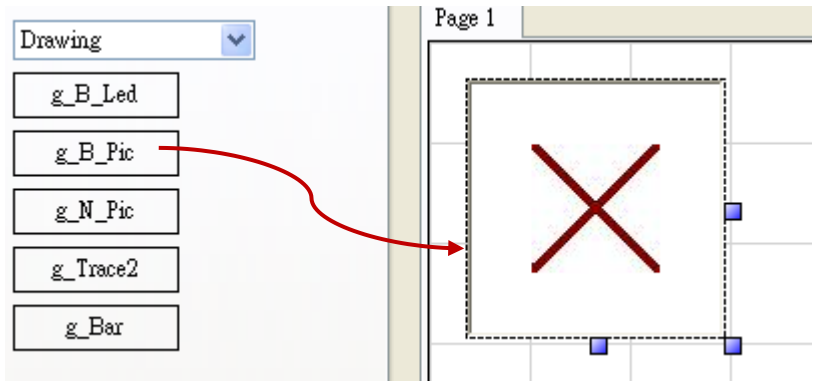


Select the Label and click on the tool icon "Sent to Back", then can see g_B_Inp .

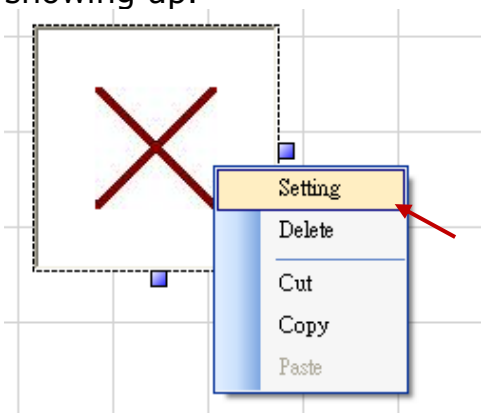


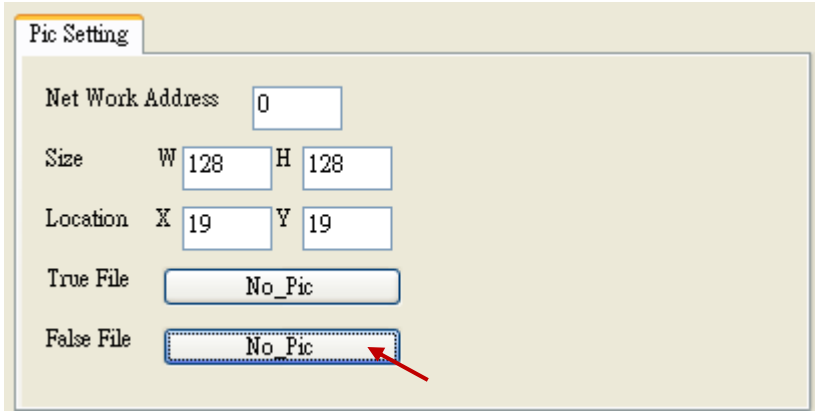


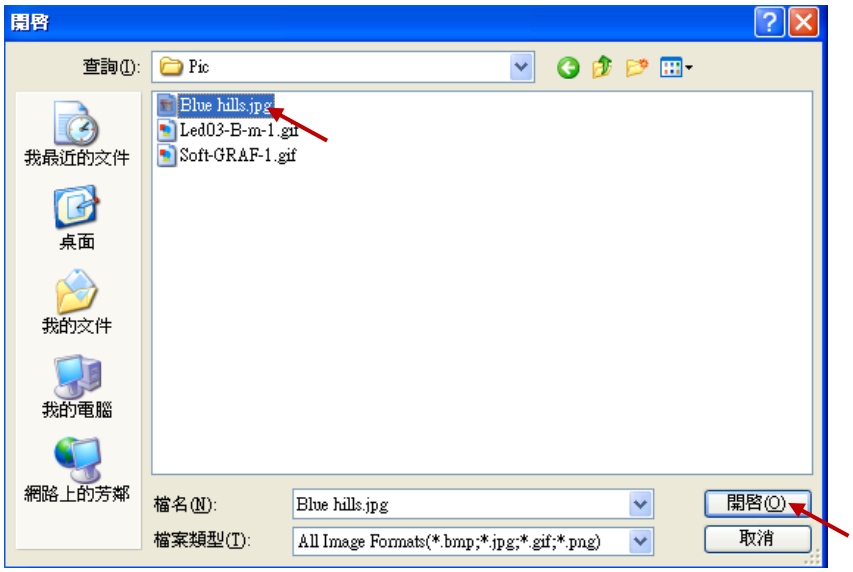
When the HMI page needs a background picture, please add it via g_B_Pic object. (Recommand user to add it at the last step for the convenience.)
First, drag a g_B_Pic object.

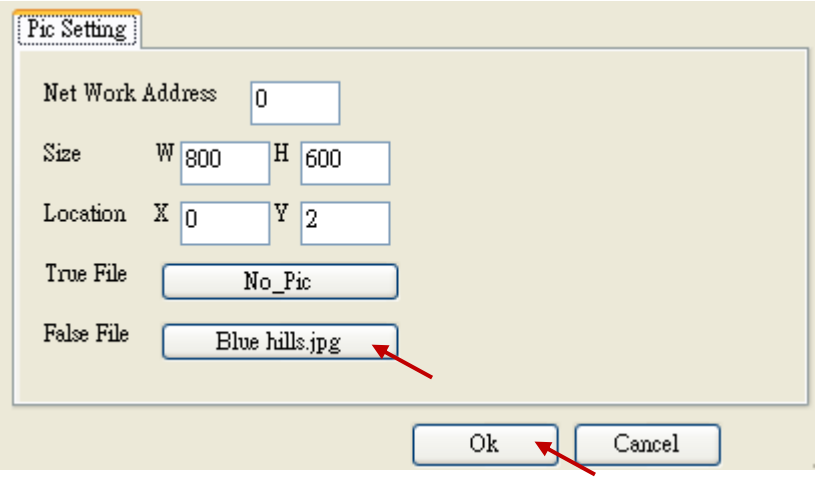


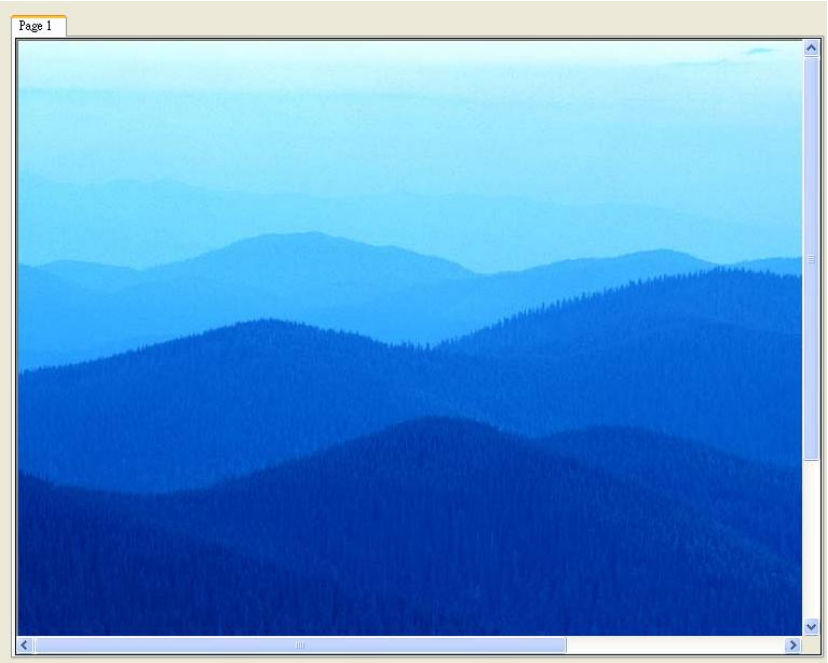
Mouse right-click on the object, select "Setting" and set the "False File". Select a background picture for the "False File" and then click "Ok". If the picture is covering other objects, please select it and click the "Sent to Back" until all other objects showing up.








Pic Setting
Net Work Address
0
Size
W
800
H
600
Location
X
0
Y
2
True File
No_Pic
False File
Blue hills.jpg
Ok
Cancel


Page 1

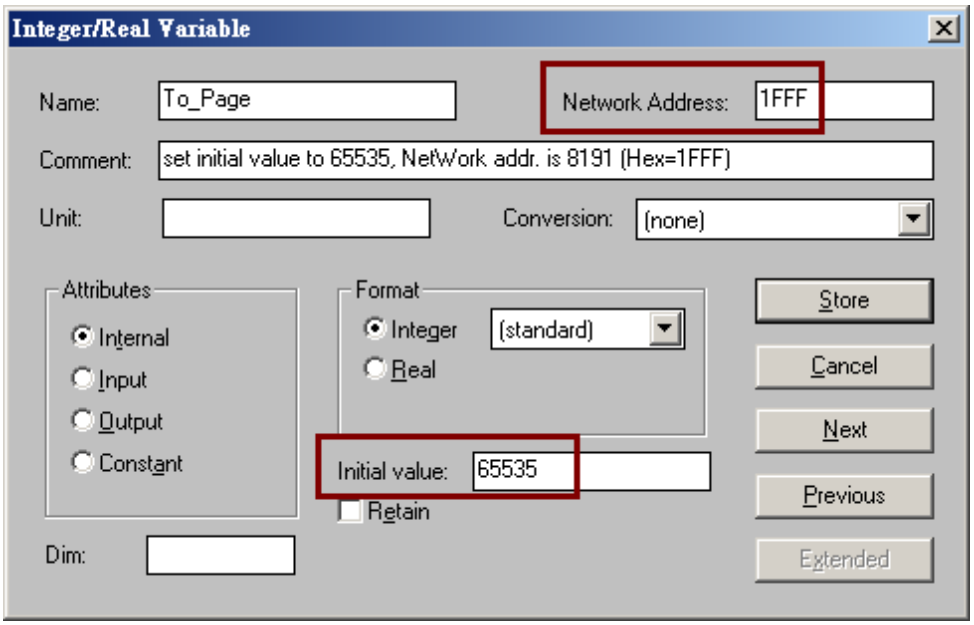
1.6.4: Switch the Soft-GRAF HMI page by ISaGRAF program

User can declare the below two ISaGRAF integer variables to switch the page of the Soft-GRAF HMI and to read the current page number. (**Note: Only the Soft-GRAF driver version 1.06 and later version supports this function.**)

The integer variable which with the network address number 8191 (Hex is 1FFF) is for switching the Soft-GRAF page. Please must declare it as "internal" and assign an initial value 65535. For example, as the "To_Page" in the below table. If setting it as 1, the Soft-GRAF HMI will switch to the Page 1 and then this "To_page" will be reset as 65535 by HMI automatically. If setting it as 2, the Soft-GRAF HMI will switch to the Page 2 and then the Soft-GRAF HMI will reset "To_Page" as 65535 automatically. If setting it as a non-existing page number, the Soft-GRAF HMI will not swtich the page.

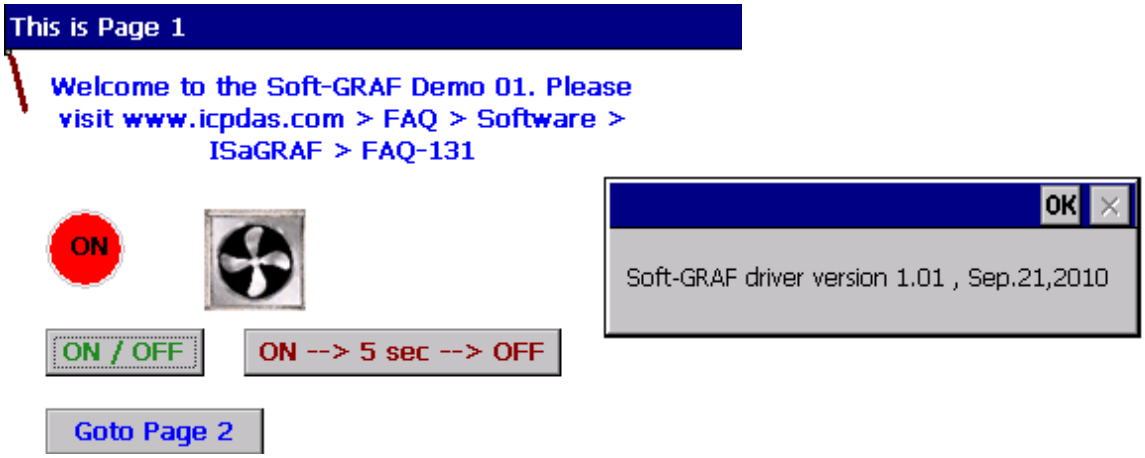
The integer variable which with the network address number 8190 (hex is 1FFE) is for reading the current Soft-GRAF HMI page number. The value can be 1, 2, 3, ...

Name	Type	Attribution	NetWork Addr.	Description
To_Page	Integer	Internal	8191 (Hex = 1FFF)	**must set an initial value 65535.** for switching HMI page
Current_Page	Integer	Internal	8190 (Hex = 1FFE)	For reading the current page number.



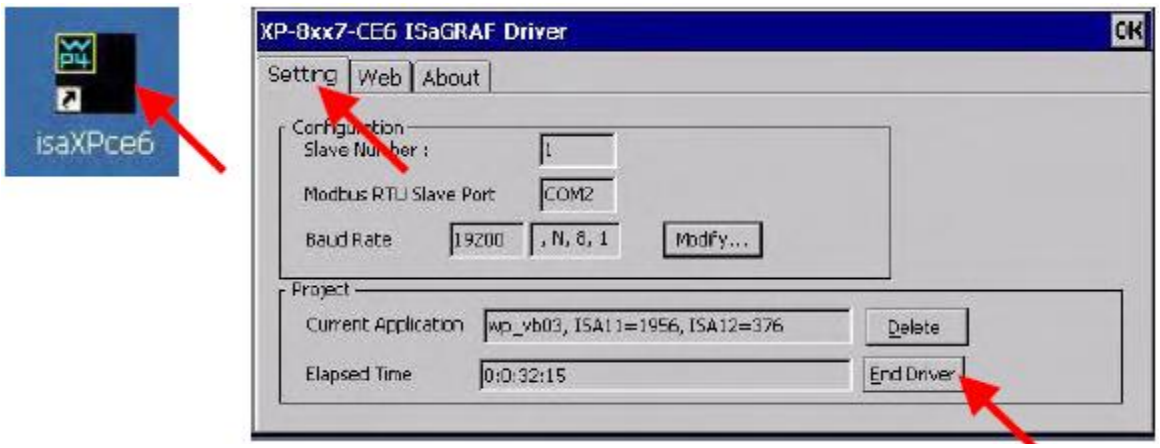
1.6.5: Check/Upgrade the Soft-GRAF driver version

Check the current Soft-GRAF driver version: click the left-top corner of "Page 1".



Upgrade the Soft-GRAF driver:

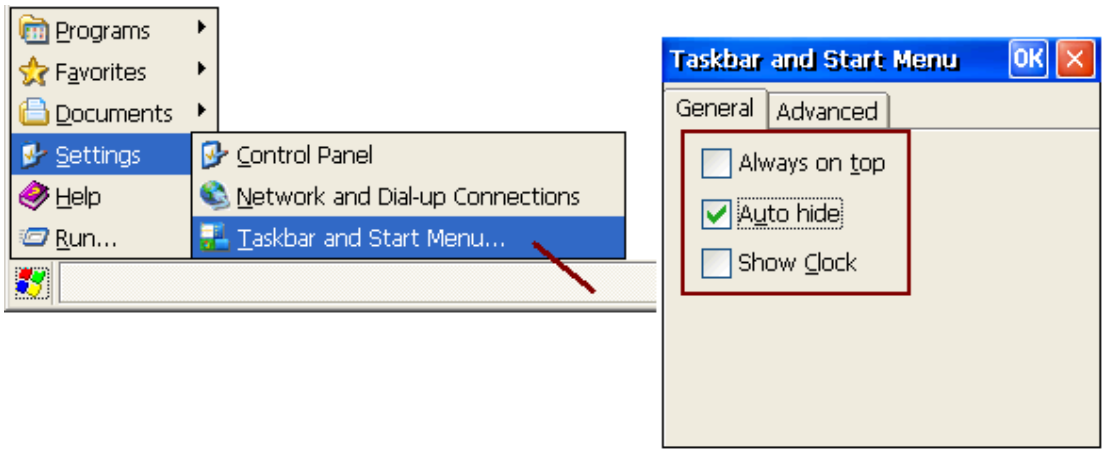
1. Stop the running ISaGRAF driver

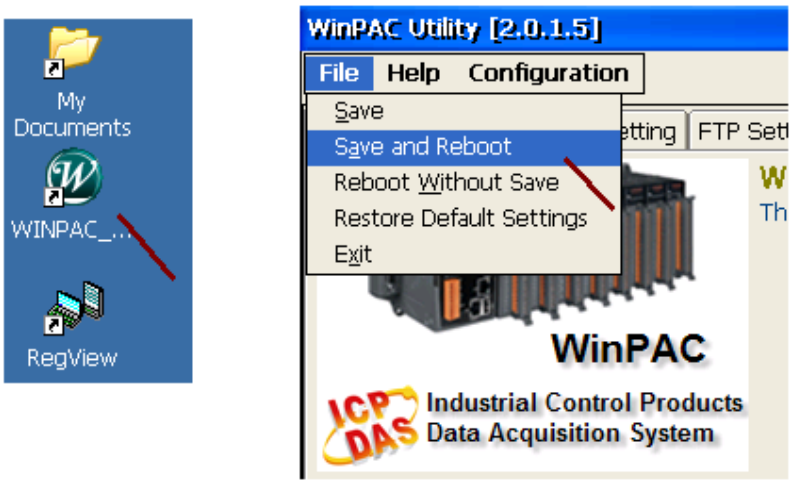


2. Download FAQ-146 (http://www.icpdas.com/faq/isagraf_c.htm > 146), and copy the file "Soft-GRAF.exe" in the "faq146_demo_chinese.zip" to the directory of \system_disk\isagraf\ in the PAC via ftp or USB disk method (replace the old file "Soft-GRAF.exe").

1.6.6 : To display the Soft-GRAF HMI with real FULL SCREEN

When complete all design and testing of the control logic and Soft-GRAF HMI, user may do the following setting to display the Soft-GRAF HMI with real full screen. This prevents anyone to mis-operate the PAC's OS.

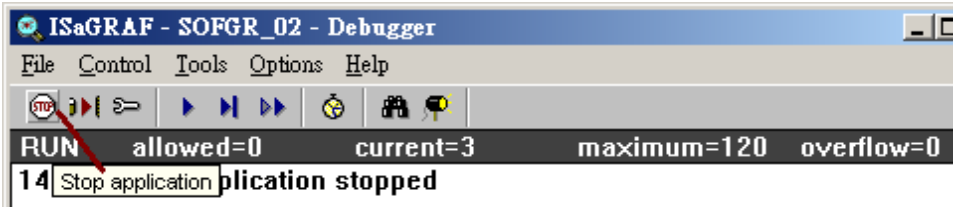




How to stop the real full screen ?

When the PAC is setting as "Toolbar Auto hide", the Soft-GRAF HMI will occupy the full screen. Then it is not possible to do any operation with the PAC's OS. There is two possible ways to solve this problem.

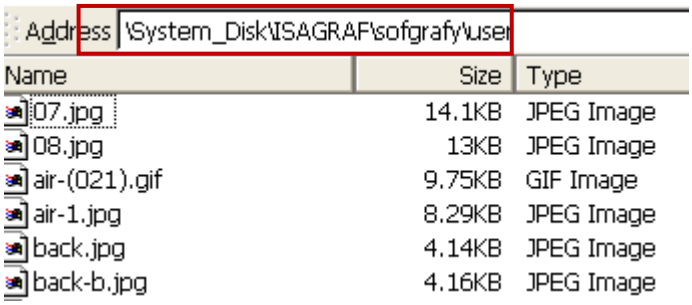
1. (Recommend using this way) : PC running ISaGRAF to connect to the PAC and then click "Stop application" .



2. Power OFF the PAC and turn the PAC's Rotary-switch to 1: Safe mode, Power it up with "Safe Mode".

1.6.7 : File management for user edited pictures

Picture files in the PAC:
All user used pictures in the project will be stored in "\System_Disk\ISaGRAF\sofgrafy\user\" directory after upload into the PAC. If there are too many pictures and you want to manage them, you can delete all the pictures files under "\System_Disk\ISaGRAF\sofgrafy\user\" (But do not delete the folder "user".) and upload pictures again via Soft-GRAF Studio.



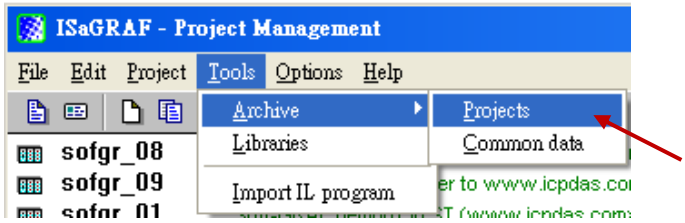
For saving the upload time, Soft-GRAF checks the file name and size when upload the project to the PAC to decide overwrite that file or not. If the file size is the same, it will not upload that file. So, when the picture of HMI screen is not update, please delete the non-updated files in the "**\System_Disk\ISaGRAF\sofgrafy\user\" of the PAC**, and then upload the project again via Soft-GRAF Studio.

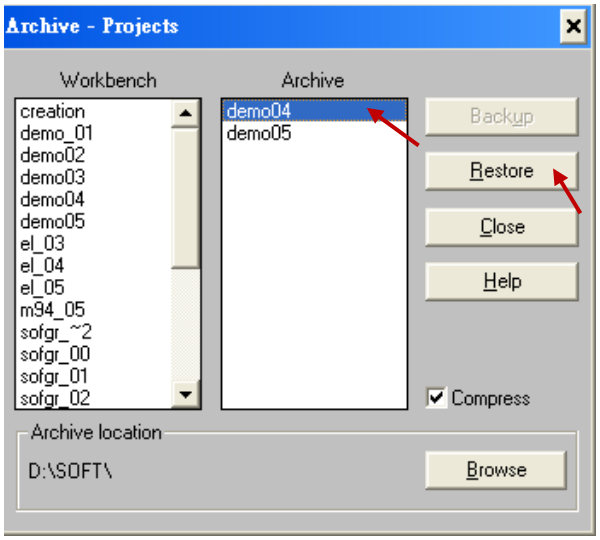
Picture files in the PC / Soft-GRAF Studio:
Normally, the Soft-GRAF Studio will copy all user edited picture files to the D:\Soft-GRAF Studio\ <project-name> \pic\ directory when using them. If user wants to modify the picture file, please close the Soft-GRAF Studio first, then edit the picture file in the D:\Soft-GRAF Studio\ <project-name> \pic\ directory.

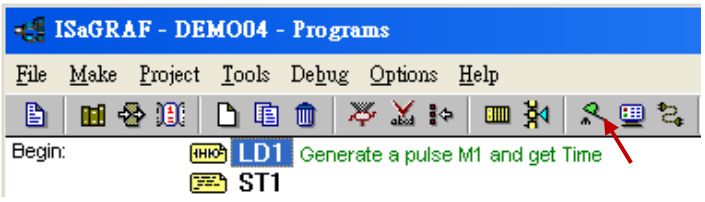
1.7 The description of some Soft-GRAF Studio demo projects

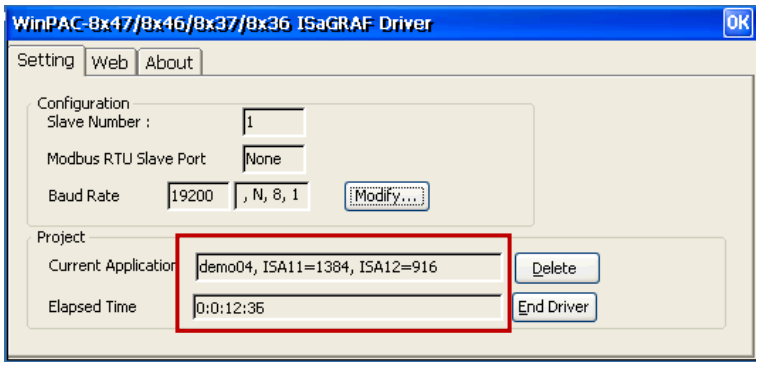
1.7.1 Demo04: display the Objects and the HMI access

This demo displays all HMI Objects and basic operation. First, restore "demo04.pia" and upload it to the PAC.

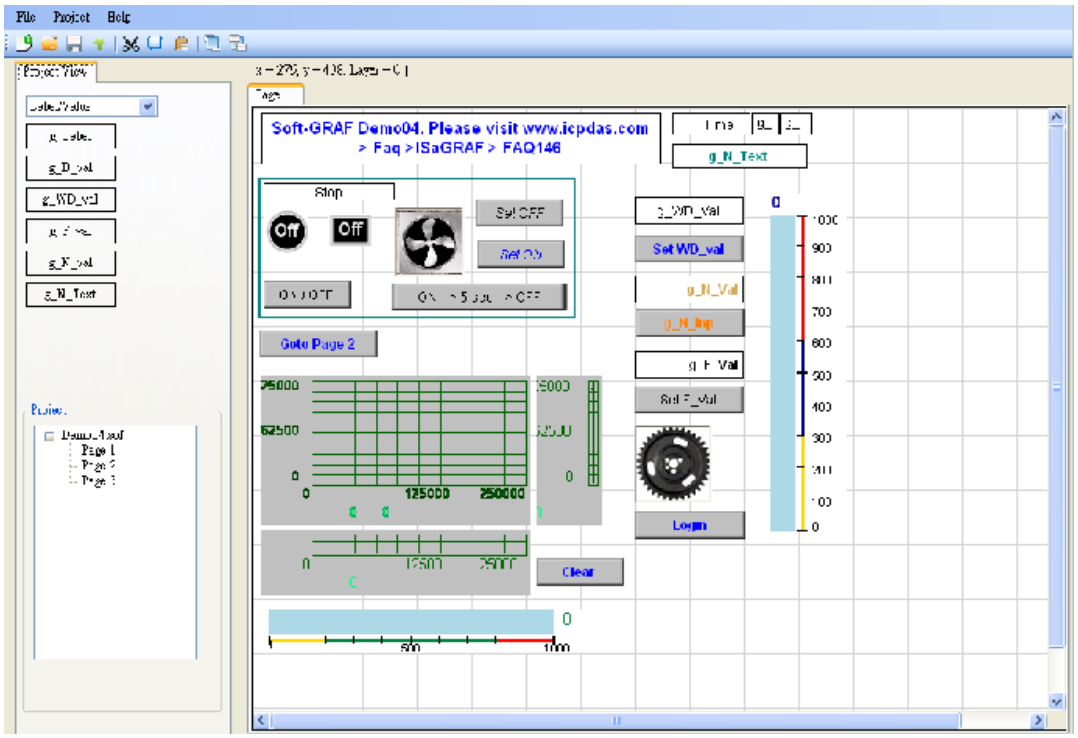


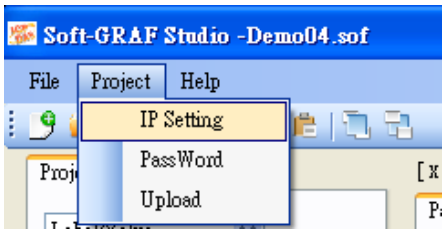


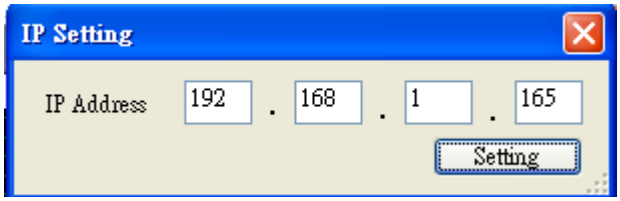


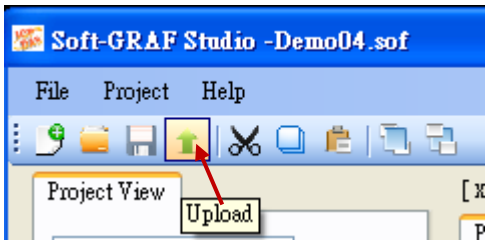


Use Soft-GRAF Studio software to open “demo04.sof”. It shows as below. (Refer to Chap.1.2 for the steps.) Set up the upload IP and then upload the project.



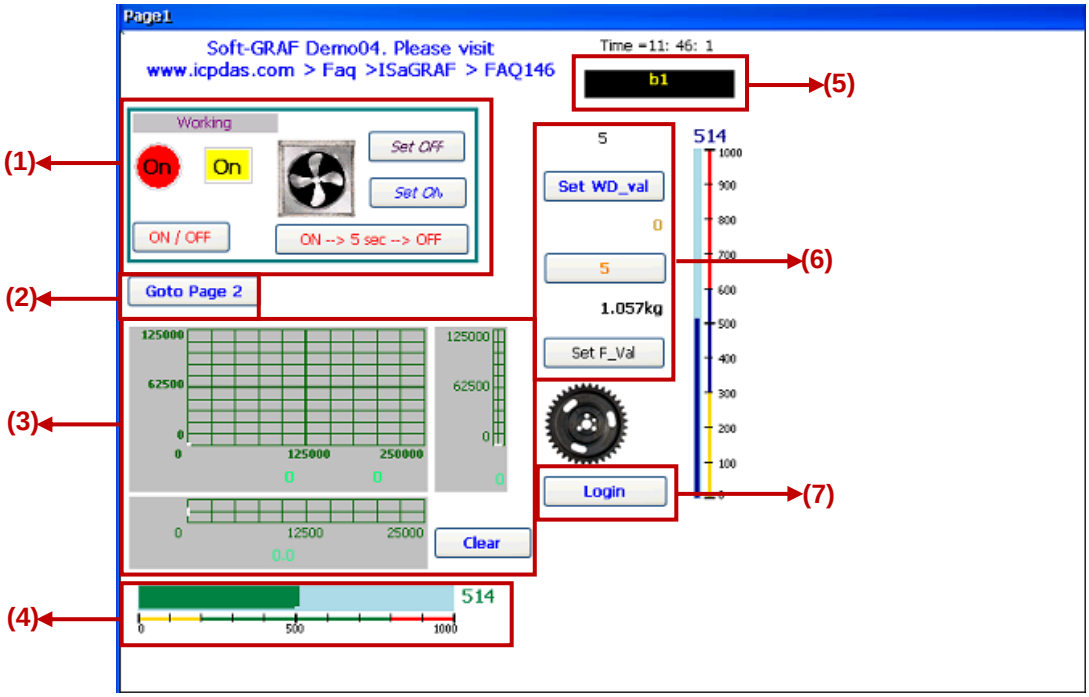






The HMI screen of PAC is as the following picture. "Demo04" contains three HMI pages: Page1 displays all objects, and Page2 & Page3 display the using of security.

Page1:



Description and testing:

(1) Use a Boolean variable to test g_B_val, g_B_Inp, g_B_Led, g_B_Pic. Set the g_B_Inp as different input type to switch the Boolean variable, such as, press the button "ON→ 5 sec → OFF" can set the Boolean to "True" for 5 seconds and then set it to "False".

(2) Switch to Page2.

(3) Display the Trace function – draw the curve according to the read value. Setting the "Action Address" can select the way to draw, and setting the "Clear Address" can clear the curve by manual. In the HMI Page2, user can press the button "Clear" to clear the trace curve.

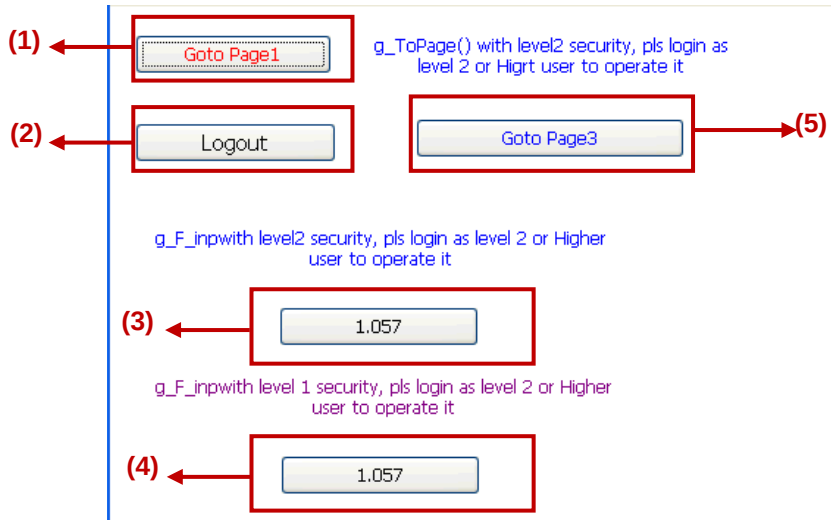
(4) Display a Bar-meter.

(5) A g_N_Text object: display the specific text according to the read value.

(6) The buttons set a Word, Integer or Float value from up to down.

(7) Press the login button can go to Page2.

Page2:



(1) Press the button to go to the Page1

(2) Log out. If login from the "Login" button of Page1 and login successfully, press this button can return to Page1 and logout.

(3) This is a g_F_Inp object with the level 2 authority protection. If user does not login with the Level 2 (or upper Level) password that setup in the Soft-GRAF Studio designing step, user cannot input this Float value. For test this button, please go to Page1, press the button "Login" and enter the password "012345", then the system will go to Page2 automatically, and then user can press this button to change its value.

(4) The function is the same as (3). For testing, go to Page1 and enter the Level 1 or Level 2 password.

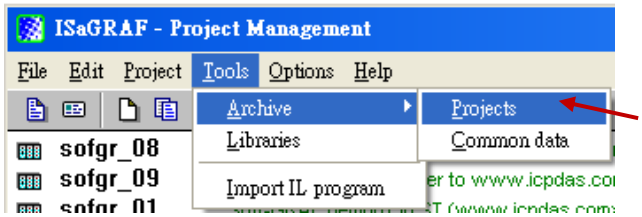
(5) Switch to Page3. This button, the same with the authority protection, switches to Page3 only when the user logins in with the password of Level 2 or upper level.

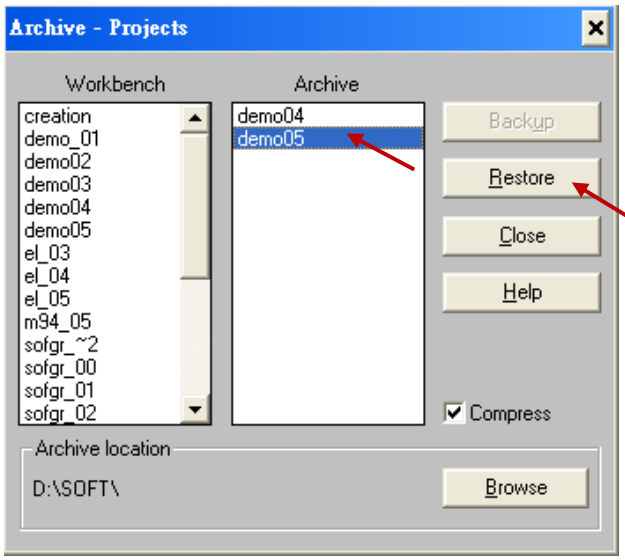
Page3:

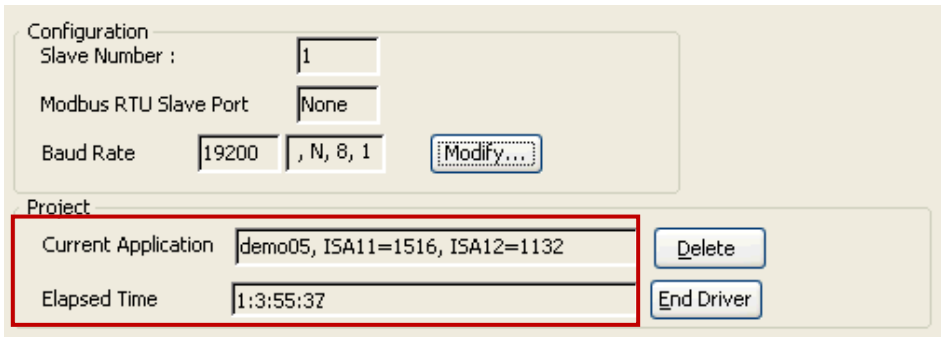
(1) Switch to the Page2.

1.7.2 Demo05: My Sweet Home Demo Description

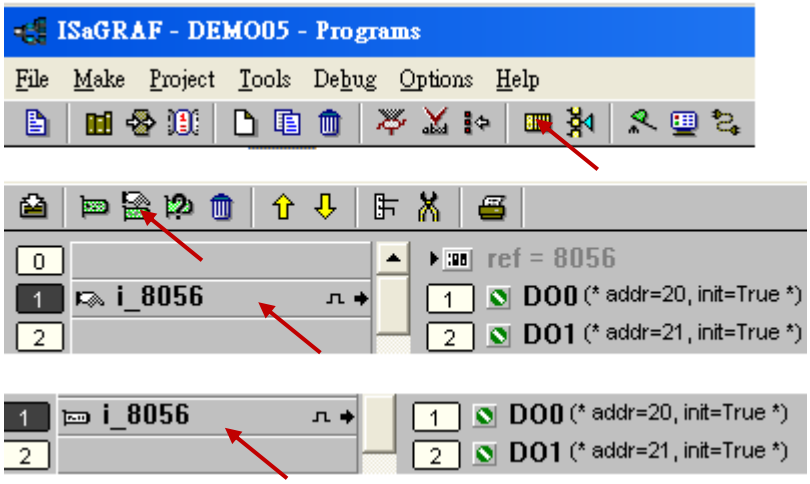
This demo shows how to design an interactive and dynamic HMI page. Restore "demo05.pia" and upload to the PAC.



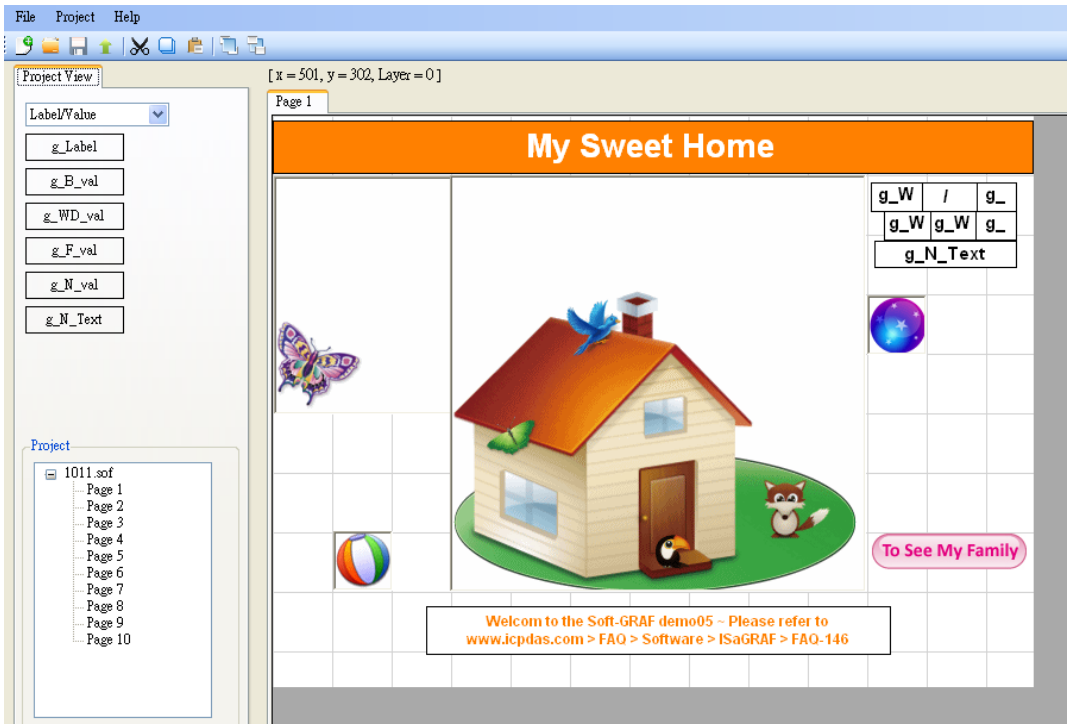




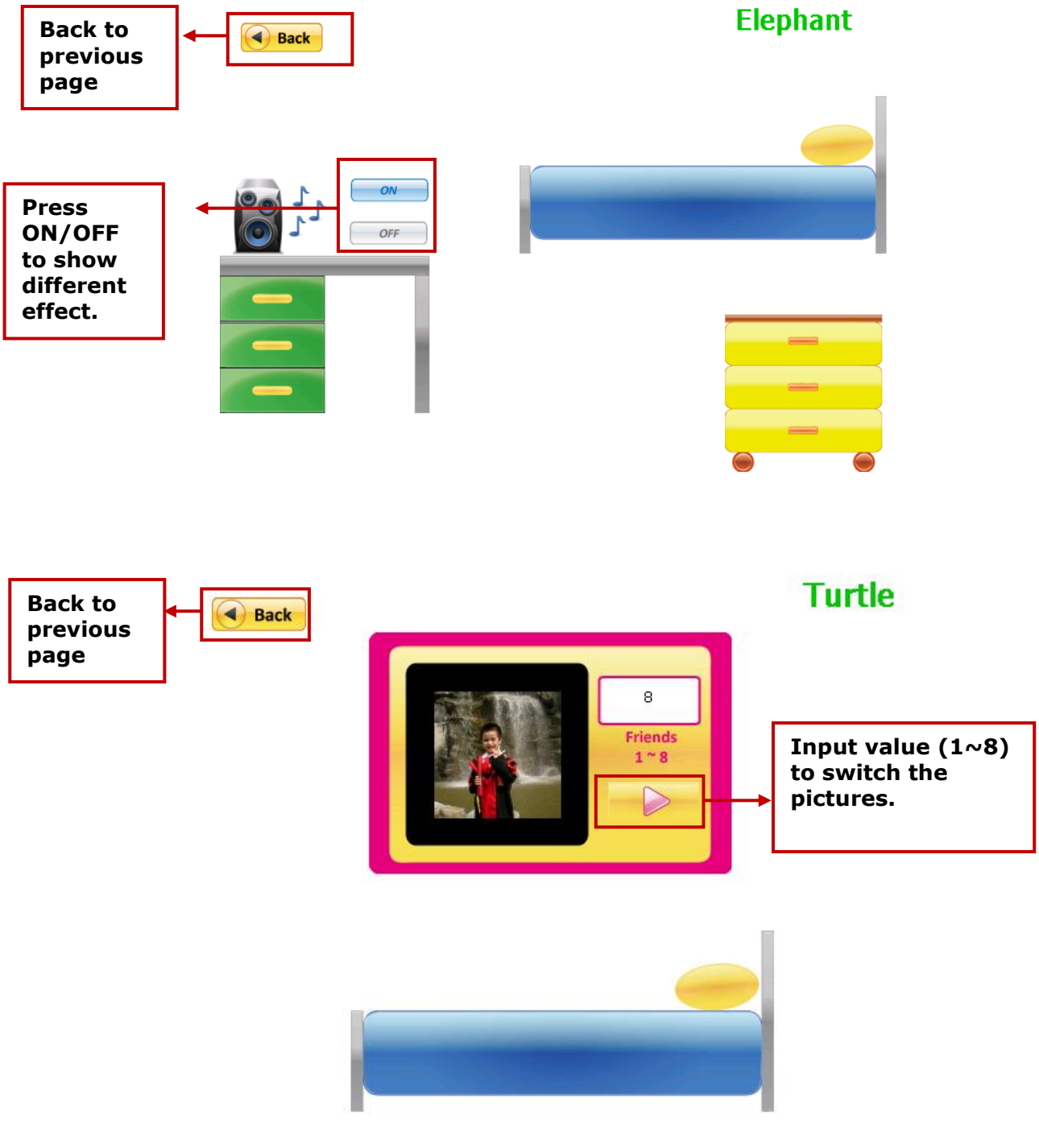
This demo default without use I/O card. If need the I/O card, user can install an I-8056W in the Slot 1 of the PAC, change the i_8056 of the IO Connection setting in ISaGRAF project to "Real board", re-compile project and download it into the PAC. The DO control points in this demo will output to the I-8056W card.

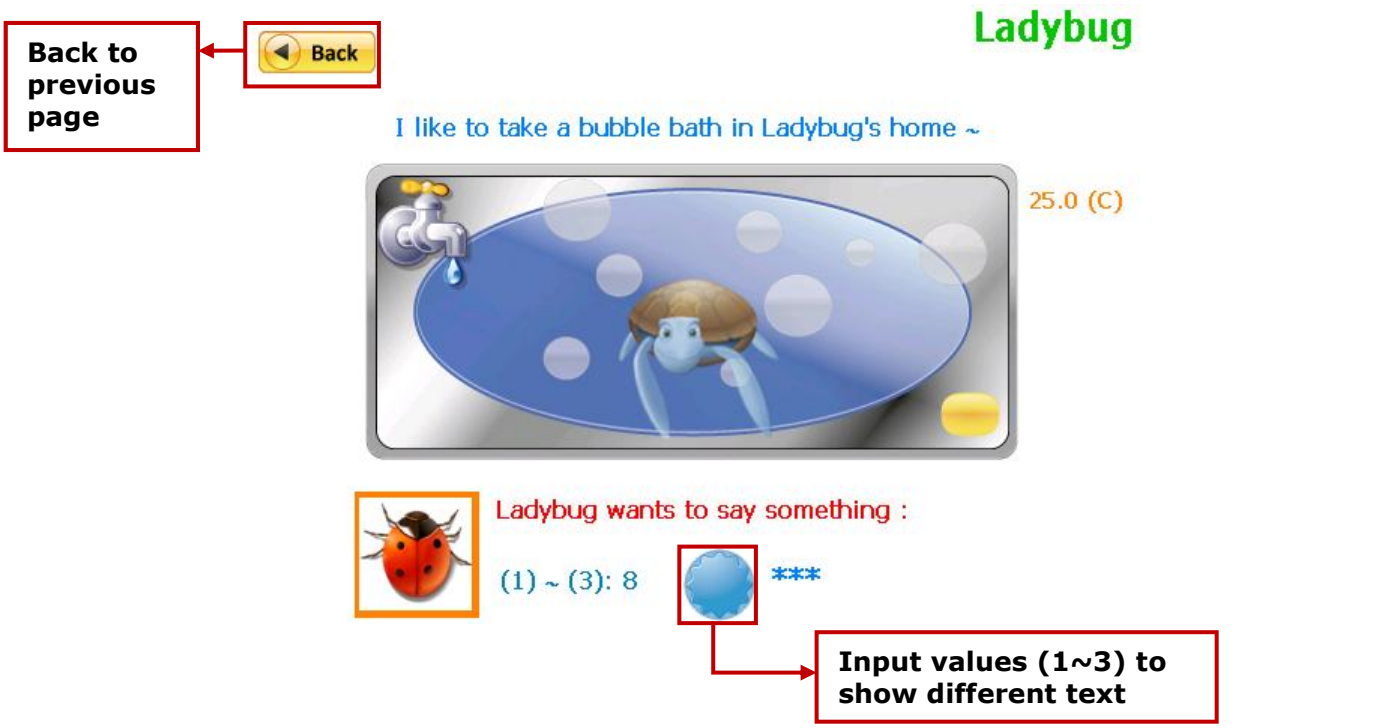


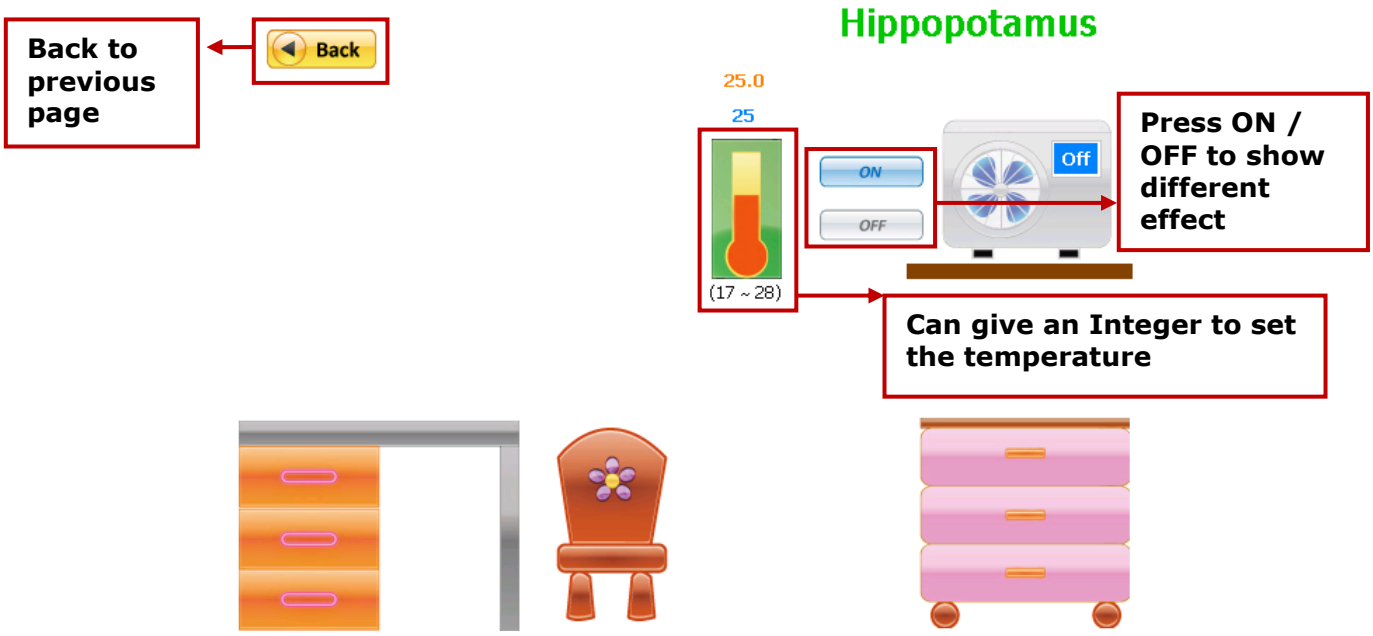
Use Soft-GRAF Studio software to open the "Demo05.sof" as below. (Refer to Chap. 1.2 for the steps.) Set up the Soft-GRAF Studio upload IP and upload the project. (Refer to Chap.1.7.1 for the steps.)

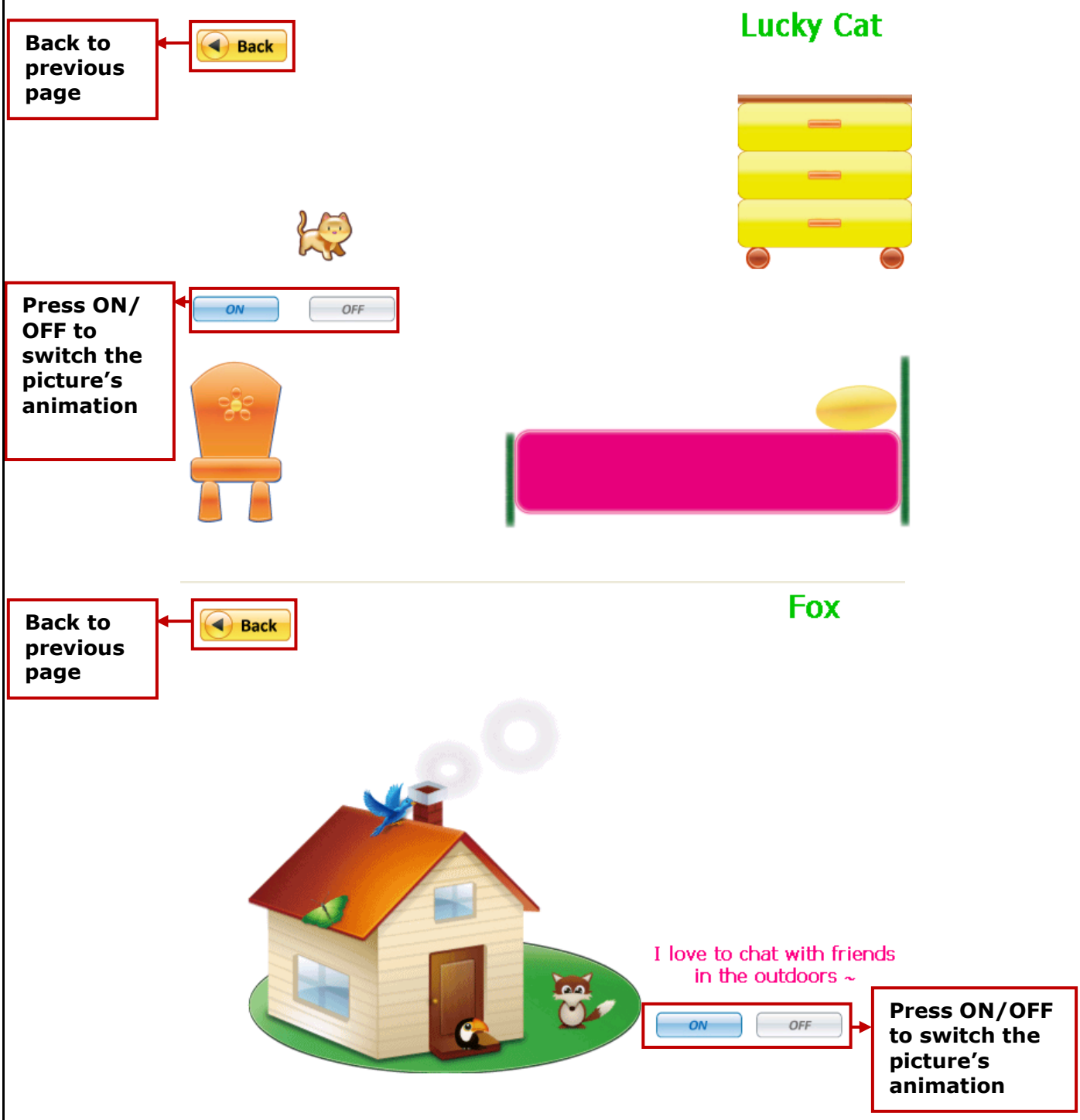


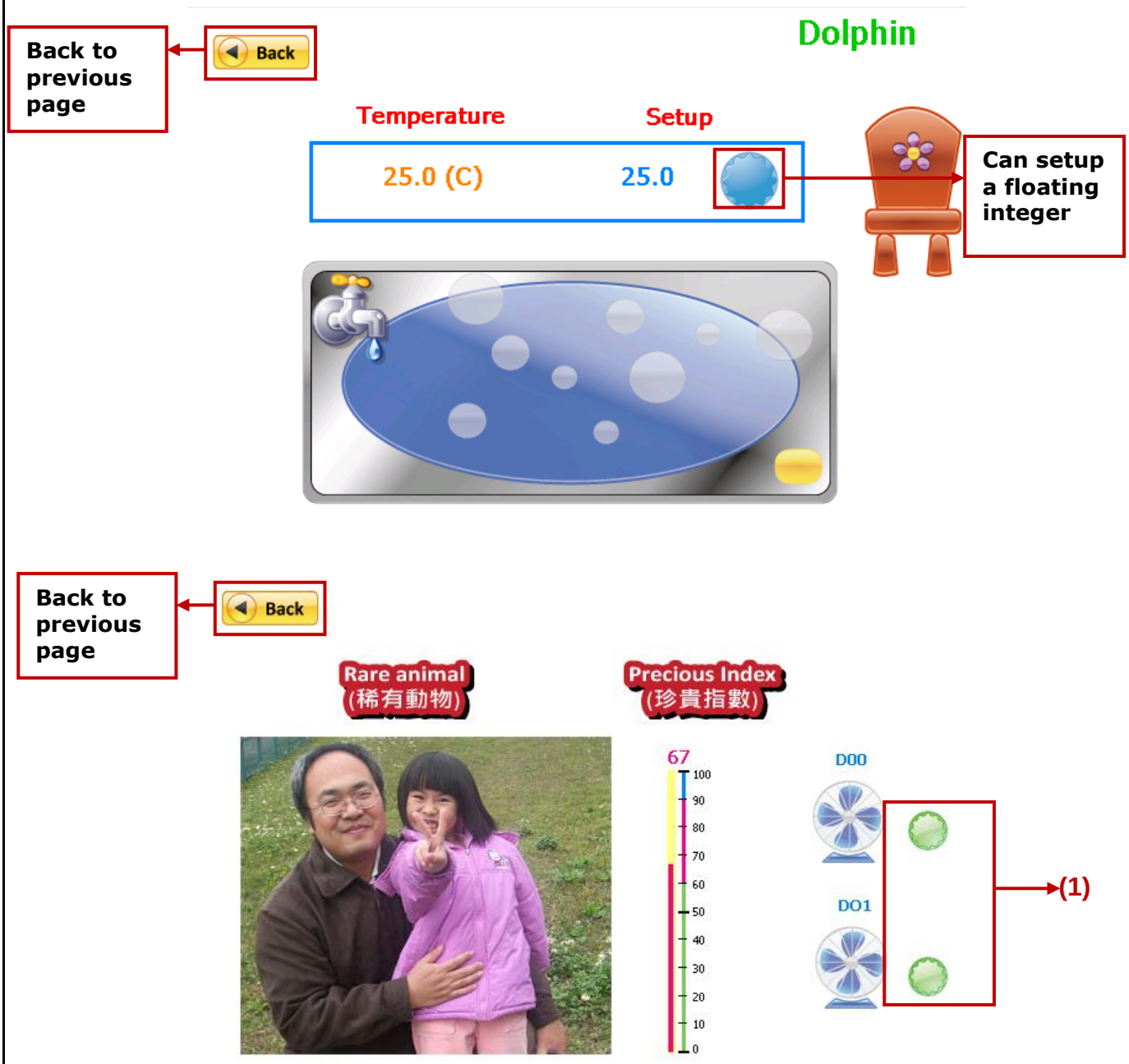
The HMI screen on the PAC is as below. Demo05 has 10 pages and illustrated as following.


Back to previous page
Back
Elephant
Press ON/OFF to show different effect.
ON
OFF
Back to previous page
Back
Turtle
8
Friends 1 ~ 8
Input value (1~8) to switch the pictures.


Back to previous page
Back
Ladybug
I like to take a bubble bath in Ladybug's home ~
25.0 (C)
Ladybug wants to say something :
(1) ~ (3): 8
***
Input values (1~3) to show different text


Back to previous page
Back
Hippopotamus
25.0
25
(17 ~ 28)
ON
OFF
Off
Press ON / OFF to show different effect
Can give an Integer to set the temperature


Back to previous page
Back
Lucky Cat
Press ON/ OFF to switch the picture's animation
ON
OFF
Back to previous page
Back
Fox
I love to chat with friends in the outdoors ~
ON
OFF
Press ON/OFF to switch the picture's animation



(1) They are two g_B_Inp objects. User can plug one I-8056 card on the PAC Slot 1 to test the DO switches. Setting object to TRUE can enable the picture's animation.