NOVAKON

HMI – Your Intelligent IIoT Gateway Solutions

iFACE Designer

USER MANUAL

Version 2.00

Contents

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HMI – Your Intelligent IIoT Gateway Solutions

iFACE Designer

NEW PROJECT

Version 2.00

This tutorial introduces how to install and use iFACE Designer. A practical project will be built through easy and fast operating method while using P10-N as an example. The project will be downloaded to HMI for users to easily realize the communication control with PLC.

1.1 iFACE Designer Installation

1.1.1 Installation and Start

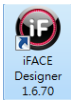
Install iFACE Designer in your personal computer where the project will be developed, designed and compiled. The project can be run in HMI or PC for monitoring the controller.

1.1.2 System Specifications and Requirements

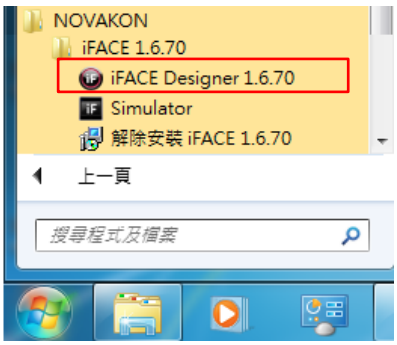
iFACE Designer is an HMI editor with powerful functions but without consuming too much of computer resources. If you wish to run iFACE Designer, the recommended basis system requirements are as follows:

Parameters	Recommended Specifications
RAM	1GB RAM (32-bit) or 2GB RAM (64-bit)
Processor	32- & 64-bit with 1 GHz or faster
OS	Microsoft Windows XP SP2 or above
	Microsoft Windows Vista
	Microsoft Windows 7 32- & 64- bit
	Microsoft Windows 8 32- & 64- bit

1.1.3 Start iFACE Designer

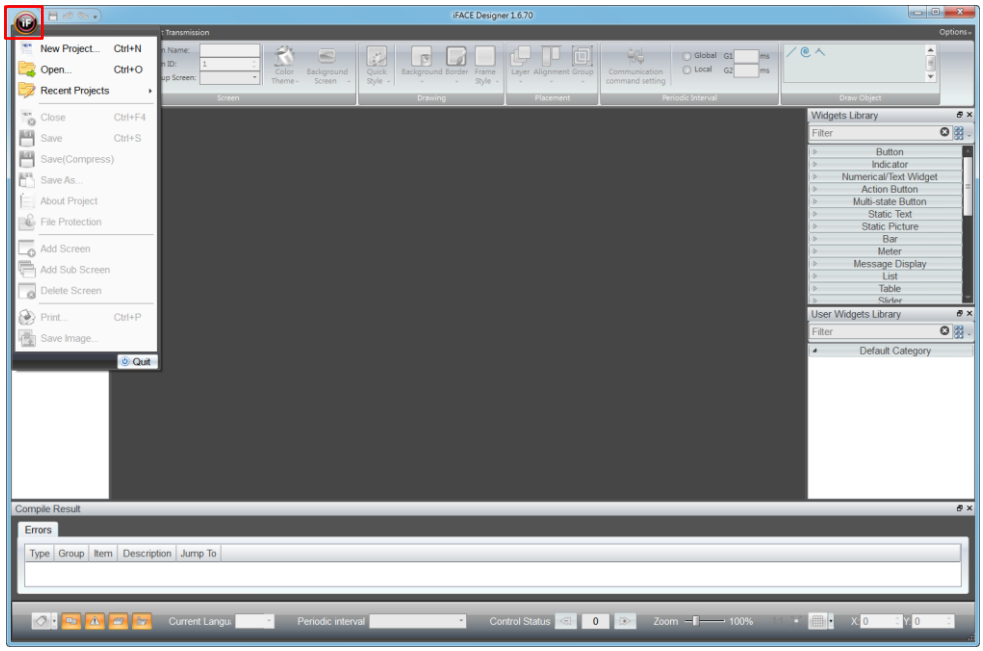
You can choose to create an iFACE Designer icon 

on Windows desktop for the installed program so that you can go to edit screen by double-click. Or you can also press 【Start】 Menu→【All Programs】→【iFACE 1.6.x】 (x is according to the installed version) and start iFACE Designer.



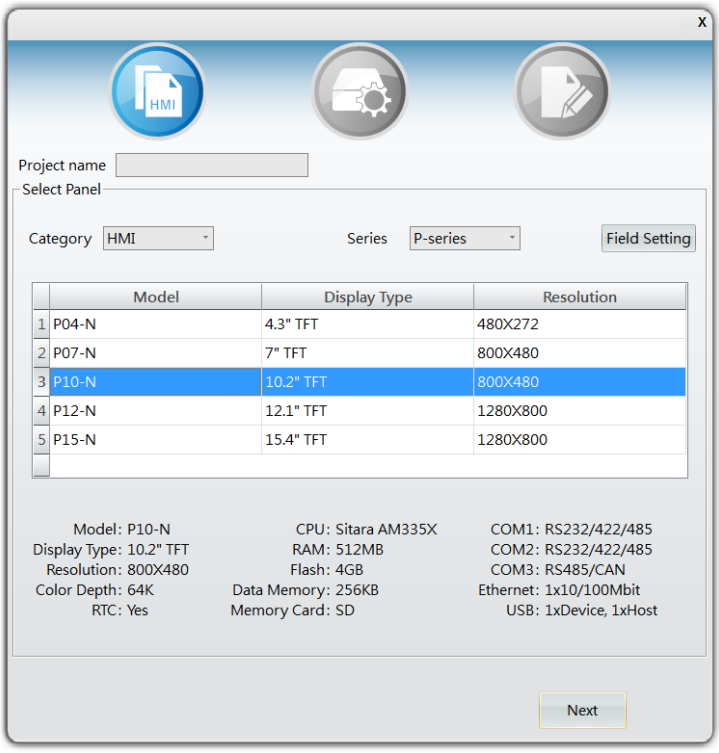
1.2 New Project

iFACE Designer has adopted the most intuitive Ribbon UI. You can click the icon on the upper-left corner and then start a new project after pressing【New Project …】.



1.2.1 Selection of HMI

Selection Panel: select HMI or PC for the category. In the product list, select the model of HMI used for the project and then the detailed hardware specifications will be shown below.

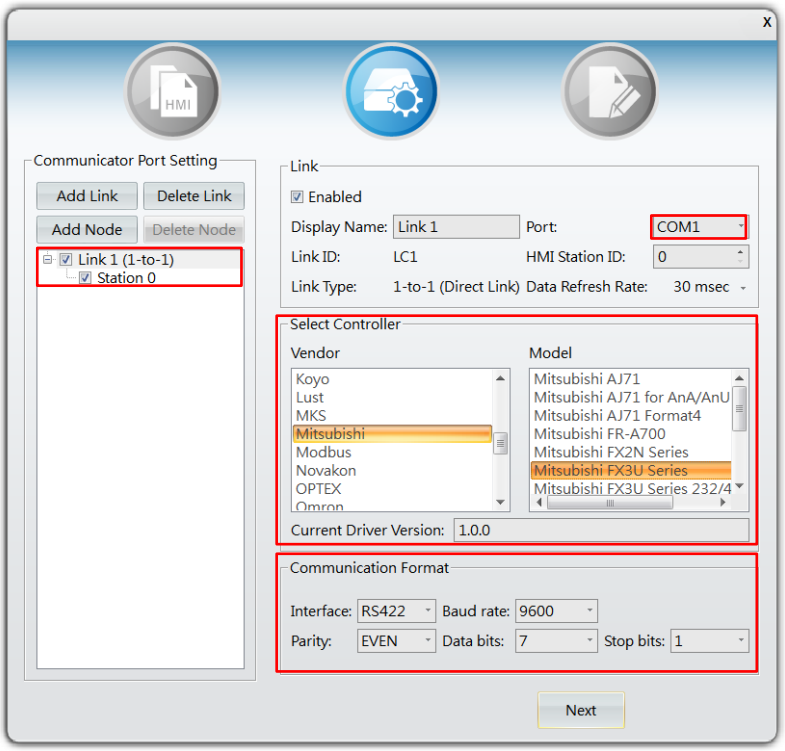


1.2.2 **Selection of Controller**

From【Communicator Port Setting】→Select【Add Link】.

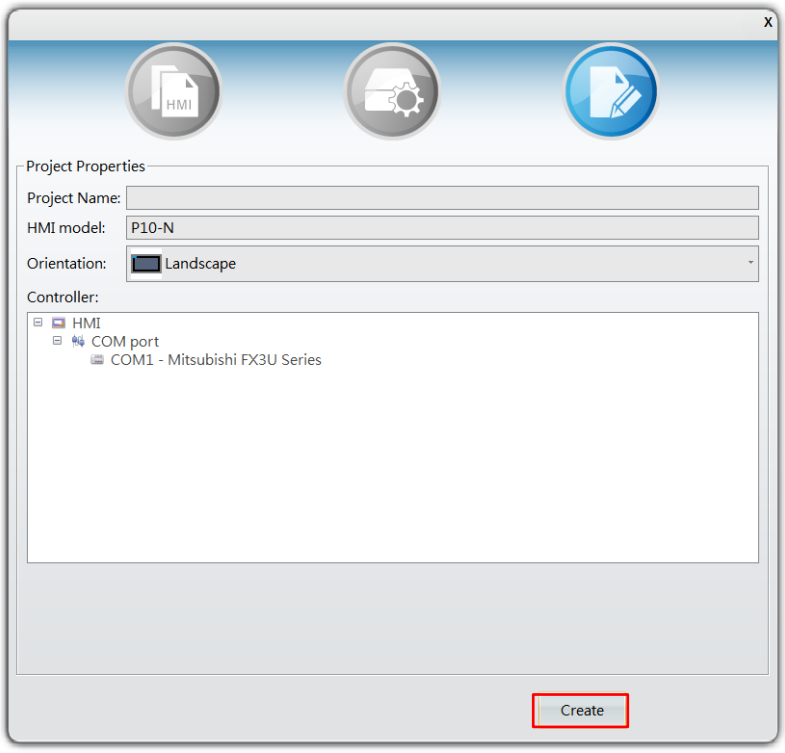
Set the COM port (Default value COM1 is used in this example) used and select the vendor of the controller and the corresponding model (The vendor of the controller in this example is set to be Mitsubishi and the model is Mitsubishi FX3U Series).

Set the communication format of the controller (It is set to be RS422, 9600, EVEN, 7, 1 in this example).



1.2.3 **View Settings**

View all the parameters set previously. The screen will show the set parameters for users to view them again. If adjustment is needed, click the icons on the top row to return to previous page and adjust the settings.
After confirming that everything is correct, press 【Create】 to go to edit screen and start the design.

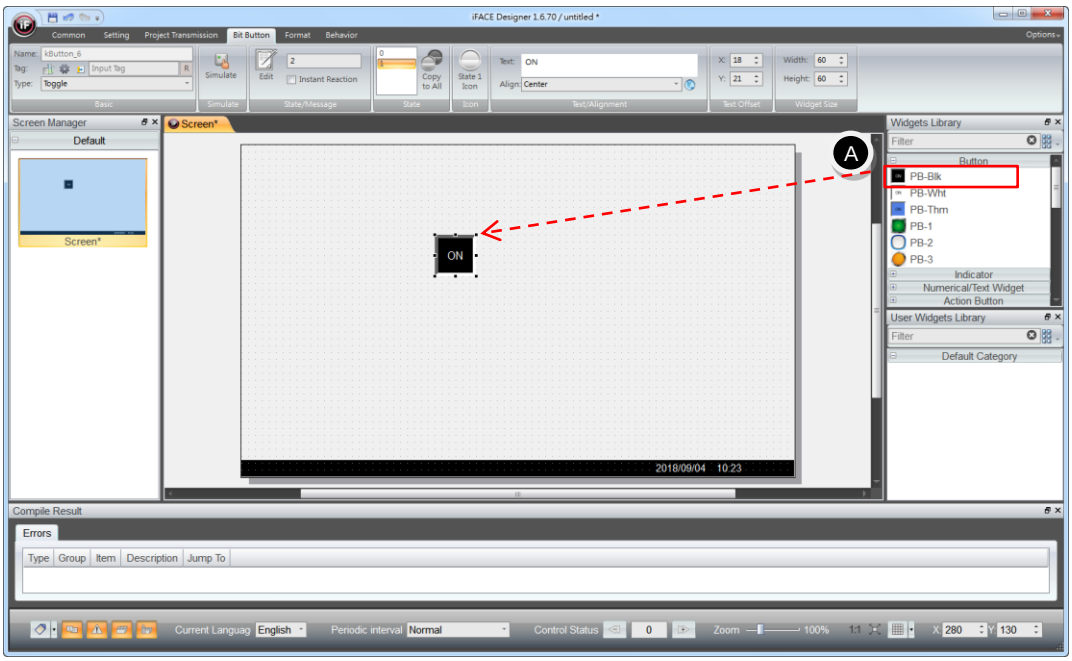


1.3 Project Design

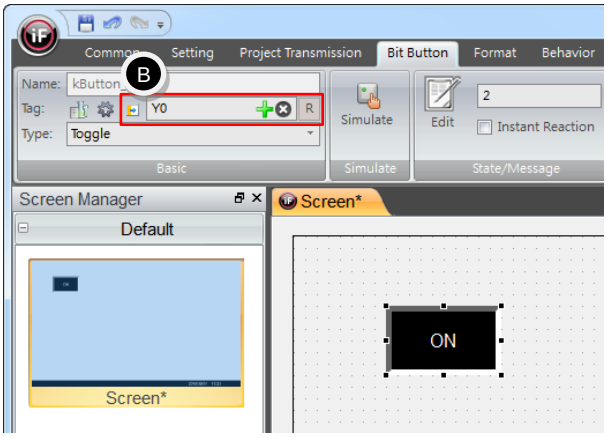
Next, we will explain the practical application of iFACE Designer. In this example, we will use buttons and indicators to connect the connection point of Mitsubishi FX3U Series PLC, Y0, Y1, Y2 for controlling PLC practically through COM port.

1.3.1 New Widget－Button

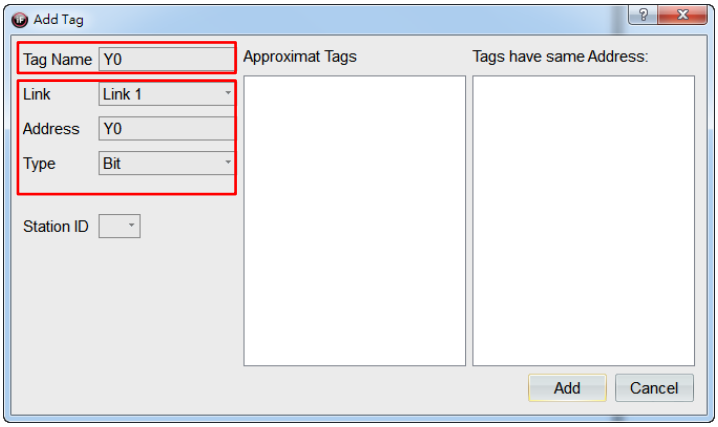
A. 【Widgets Library】 on the edit area of the screen includes many different kinds of widgets. We select a button icon from the item 【Button】 and drag it onto the Screen.



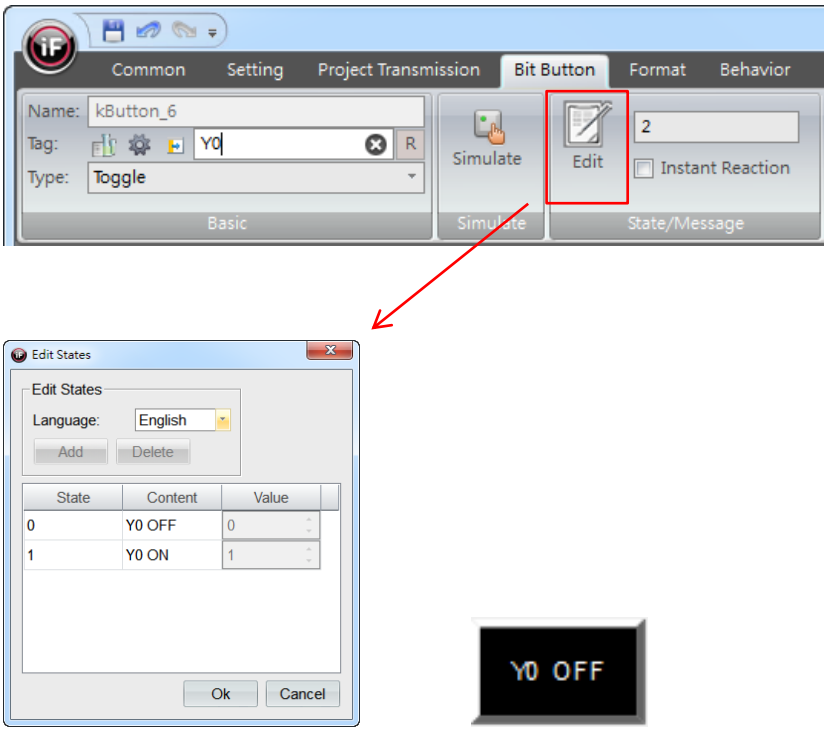
B. We can control the PLC register effectively through the connection between widget and tag. As you can see on the Screen of the following figure, press 【Bit Button】→【Basic】→【Tag】 and enter Y0 and press Enter.



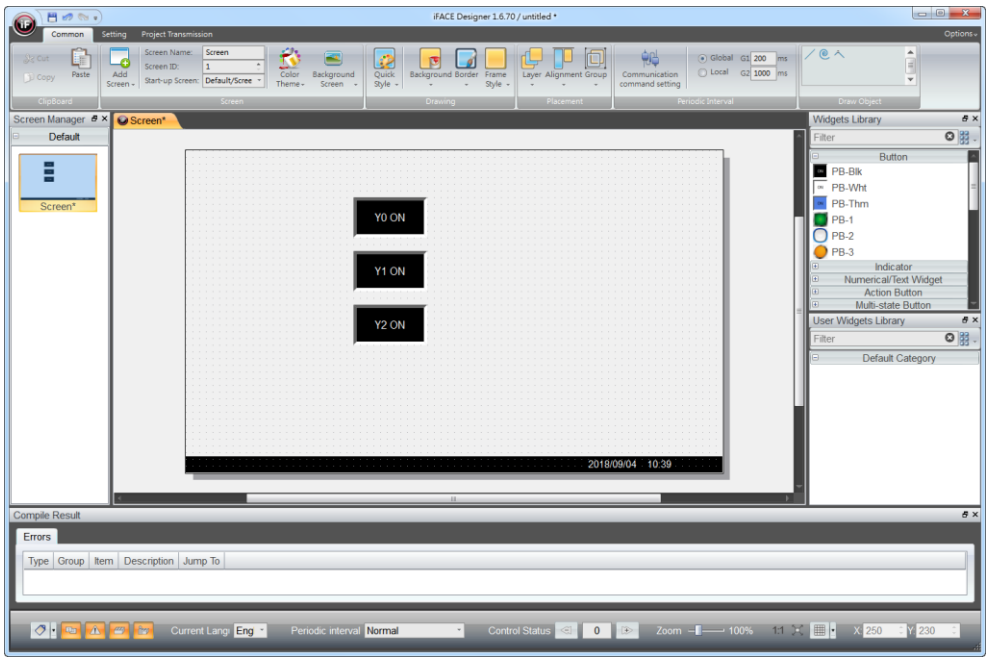
C. The software will search for matched widget automatically for the new tag name created. If the address is available, it will fill in the same address of the corresponding address automatically.



D. From 【Bit Button】→【State/Message】→【Edit】 to modify the text shown on the button.



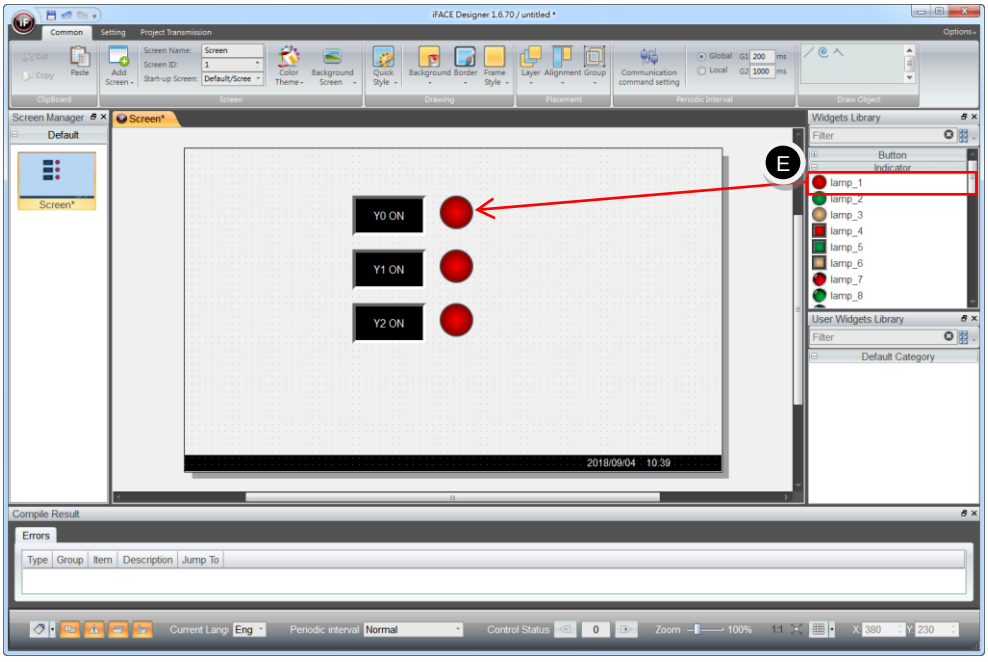
According to the steps above, you can drag two more button widgets respectively onto the Screen and enter Y1 and Y2 for the tag names. Then, modify them to be 【Y1 OFF】, 【Y1 ON】and 【Y2 OFF】, 【Y2 ON】 in edit states, respectively. It will be shown as in the following figure after completed.



1.3.2 **New Widget－Indicator**

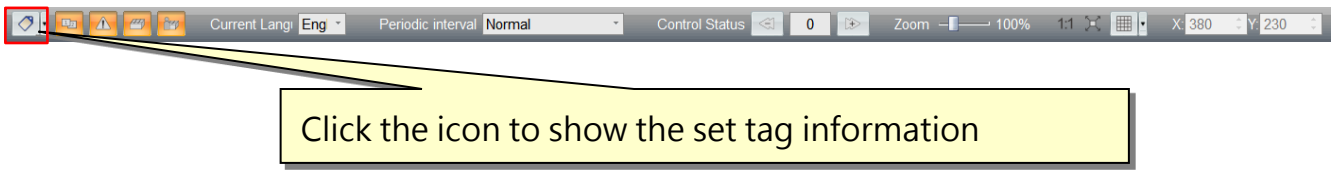
Add new indicators to match the addresses of FX3U PLC register Y0, Y1, Y2. Monitor the change of the indicators through toggling the buttons on the screen.

E. Select the 【Indicator】 widget from 【Widgets Library】 and drag three indicator widgets as in the following figure. After completed, define the tag name connecting to the indicators respectively.



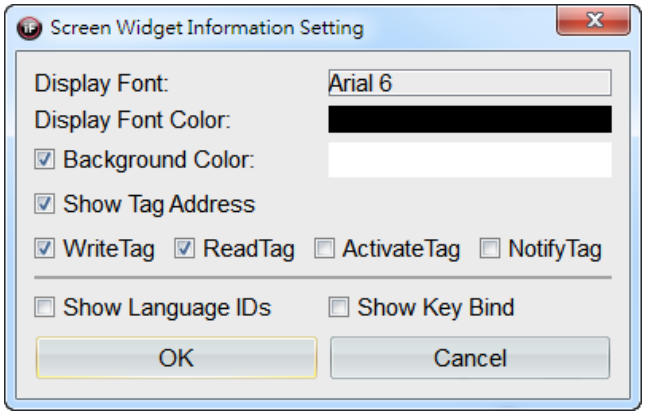
1.4 Show the Set Tag of the Widget on the Screen

The widget state bar is located at the bottom of the screen. You can use the icon  to check the set tag information.



a. After pressing the icon  , tag information will be shown or hidden on the upper-left corner of the widgets as in the following figure.

b. Press the arrow beside the icon to go to detailed setting for screen widget information. You can set the size of 【Display Font】, 【Display Font Color】, 【Background Color】and set whether to tick the options such as 【Show Tag Address】, 【Write Tag】, 【Read Tag】, 【Activate Tag】, 【Notify Tag】, 【Show Language IDs】, 【Show Key Bind】.

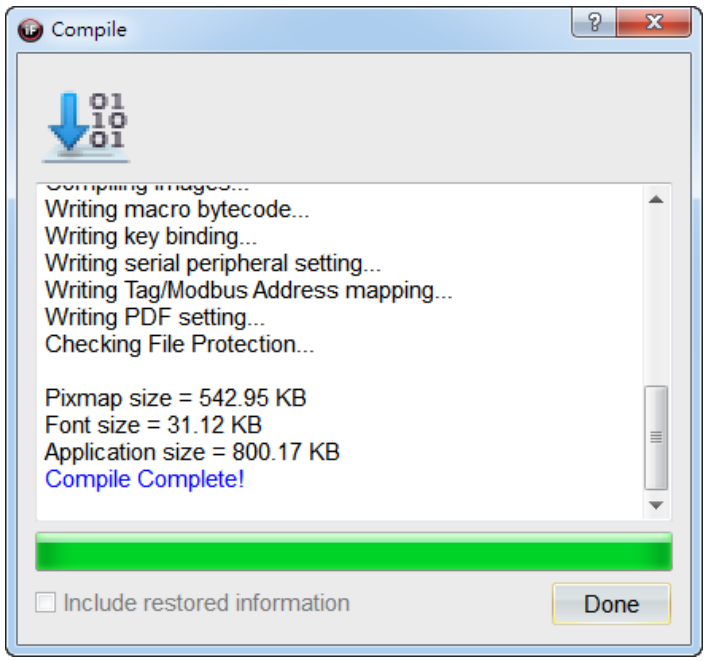


1.5 Project Download

We have completed a simple project example. The following steps will introduce how to download the project to HMI and how to actually connect to Mitsubishi FX3U PLC for monitoring.

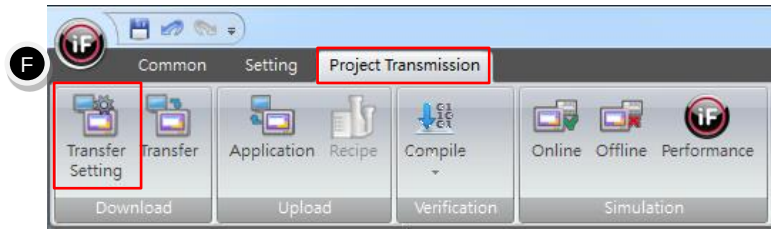
1.5.1 Compile

When finished editing the project, you need to save the project first and then compile this project. 【Compile】 will transform the project to downloadable *.KPC/ *.FMW files.
When editing, you may find errors or warnings. If warnings occurred, you can choose to neglect them since warnings will not affect the operation of the program. However, if errors occurred, then it is required to modify all errors and then compile successfully so that you can run this project smoothly.
Click 【Project Transmission】→【Compile】 and start running project compile action.



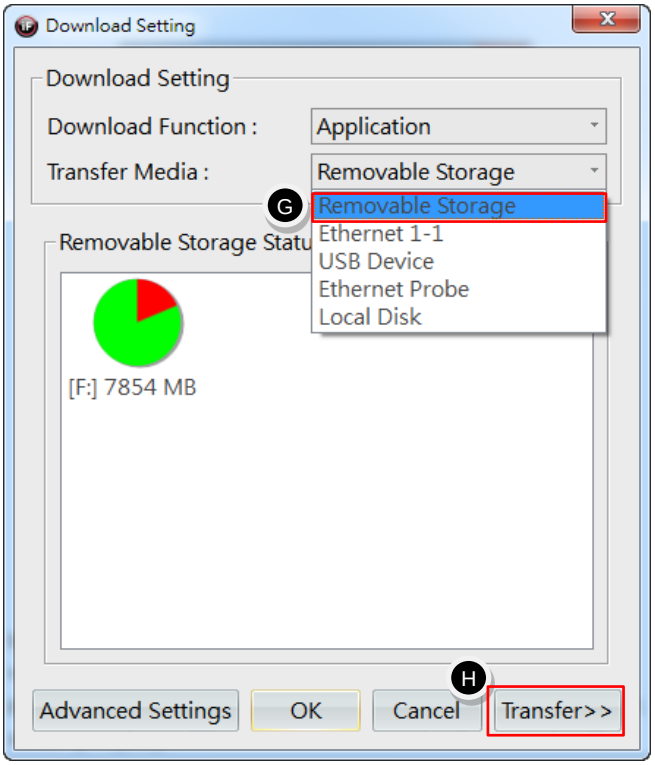
1.5.2 **Transfer Setting**

F. When the designed project is being compiled, press【Project Transmission】→【Transfer Setting】.



G. You can choose to download or transfer and save the compiled project to the specified transfer media including【Removable Storage】 (USB disk or SD card),【Ethernet 1-1】,【USB Device】(through the transmission cable for USB device),【Local Disk】(its directory can be specified).

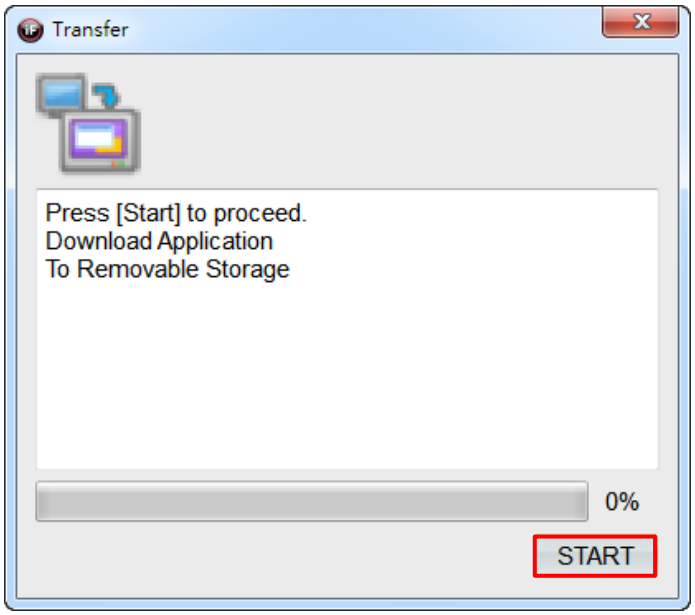
H. USB disk will be used in this example.



When downloading the project for the first time or changing software version, you need to download the firmware. For 【Download Function】, please select 【Application w/ Firmware】. For adding widgets or screen later, select【Application】.

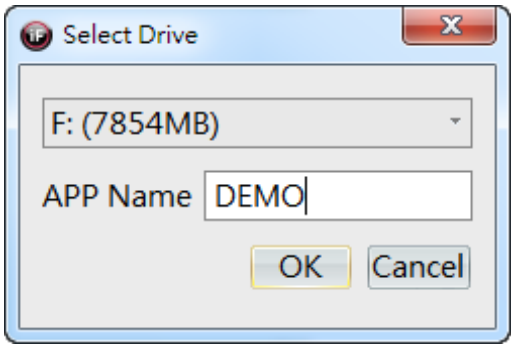
I. 【Transfer】 will download the compiled *.KPC / *.FMW files onto HMI or the

specified devices.



J. After pressing the 【Start】button, it will show different screens based on transfer media. The transfer media chosen in this example is 【Removable Storage】 (USB disk). Hence, it is required to select the drive letter for the inserted disk and the name and content of the application.

K. If you entered Chinese characters in the application name, then HMI will show garbled text. So, it is recommended to use only English words or numbers.



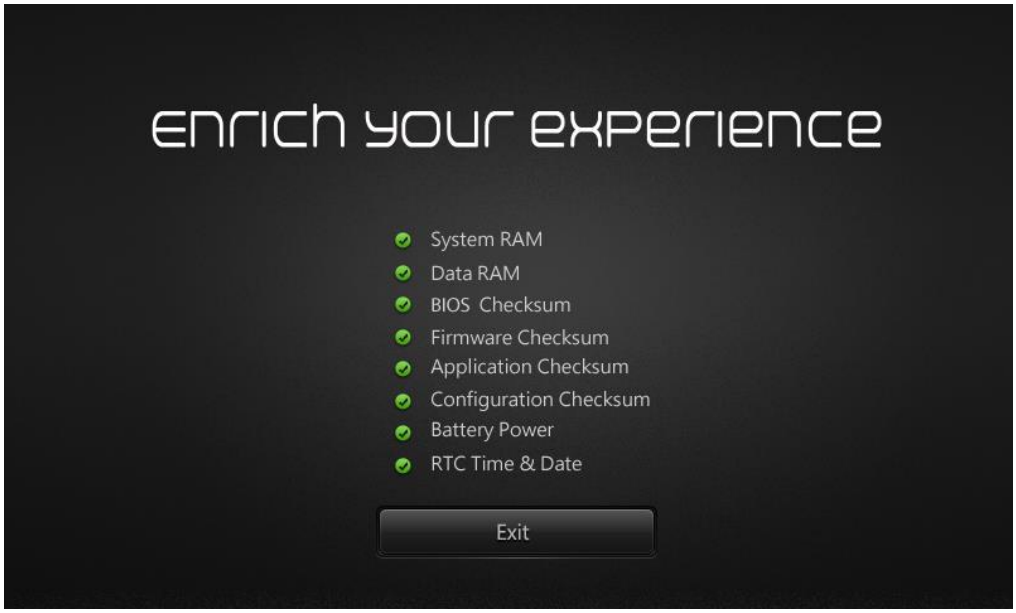
For other downloading methods, please refer to the chapter 【24. Project Transmission Setting】.

1.6 Run the Project

Next, we can download the project to HMI according to the following steps and begin testing the results of actually connecting HMI to PLC.

1.6.1 Power On Test

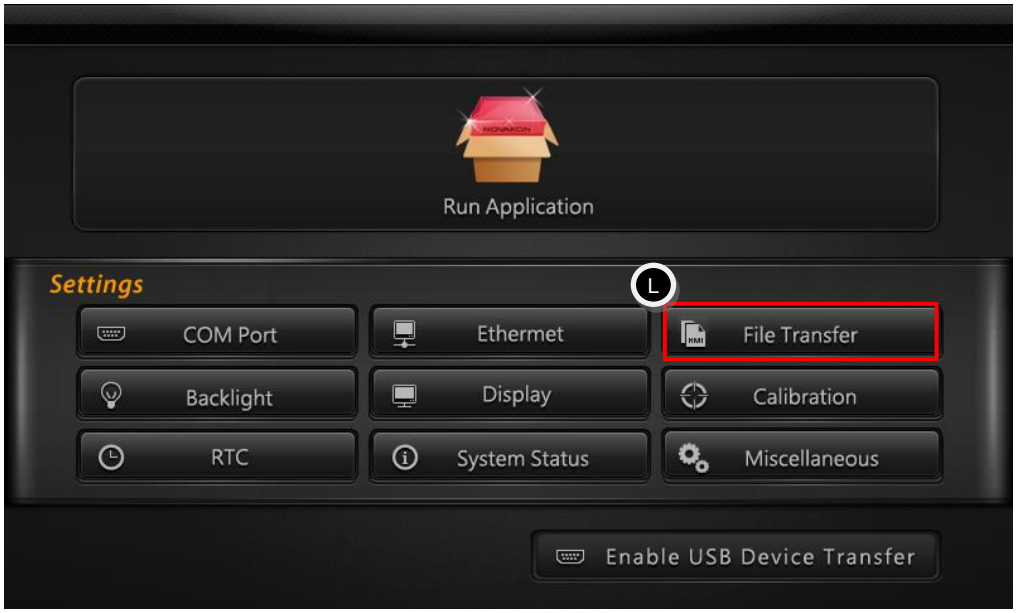
When starting HMI, it will check whether the hardware items are normal. If errors are found during the test, it will show the test results on the screen. If the check results are normal, then it will return to system menu automatically.



1.6.2 Project Transfer

Insert the USB disk with the saved *.kpc / *.fmw to HMI USB Host port as in the following figure.

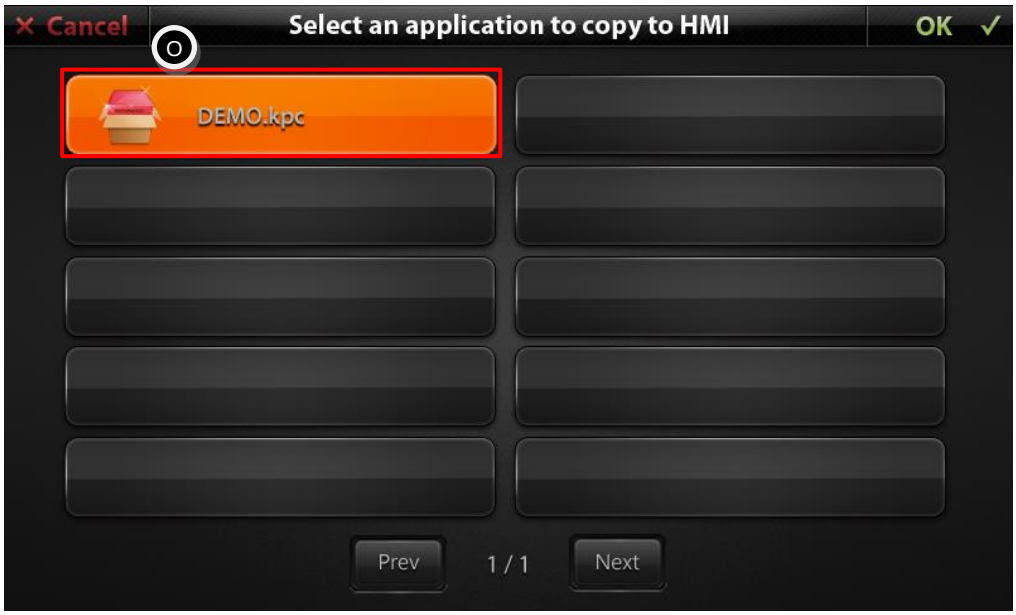
L. Click HMI System Menu→【File Transfer】function.



M. Go to the settings for 【File Transfer】.

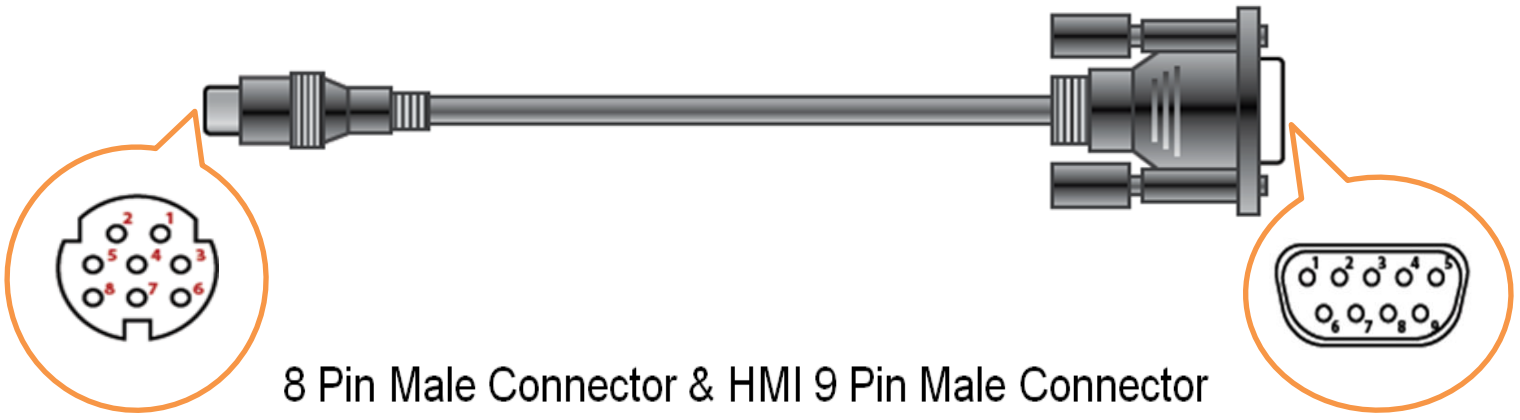
N. Select 【Firmware】 and then click 【OK】 to go to the page 【Select a firmware to copy to HMI】. As shown in the following figure, click PRelease1670.fmw firmware file first and then click 【OK】. Wait until firmware update is finished, then the system will reboot HMI.

O. Once again, go to the settings for【File Transfer】and select【Application】and click 【OK】 to go to the page 【Select an application to copy to HMI】. Select the project file we designed and download the project. As in the following figure, select the project file【Demo.kpc】first and then click【OK】to finish downloading the project.

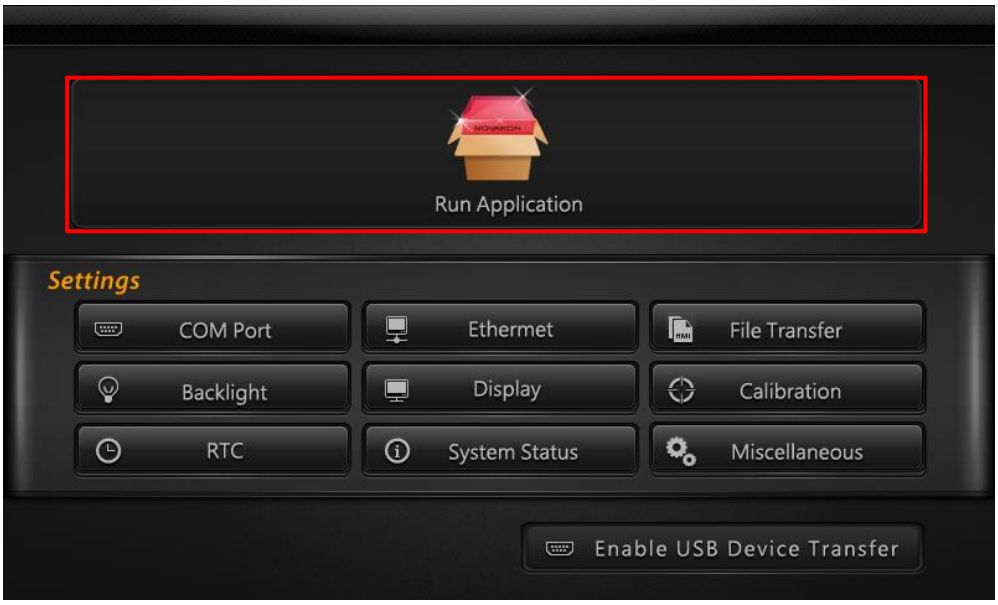


1.6.3 **Connection between HMI and FX3G**

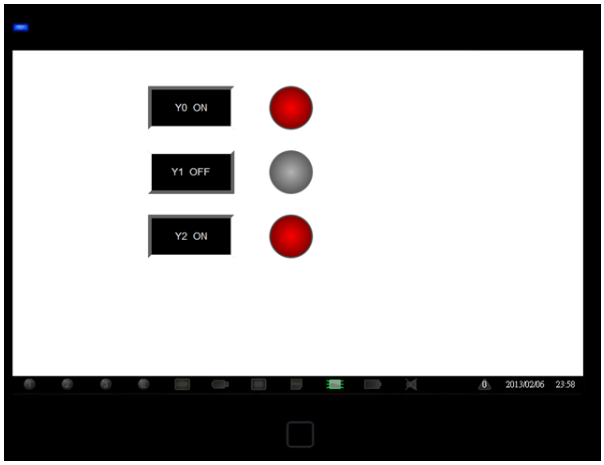
Refer to the following figure based on the selected controller (FX3U in this example) and make a connection between HMI and Mitsubishi FX3G Series PLC through a cable.



After the above cable is actually being connected to PLC, return back to HMI System Menu→【Run Application】to run the application.



The following figure shows the screen for the actual connection between P10-N and Mitsubishi FX3G PLC. When we pressed the buttons Y0 and Y2, the connection points Y0 and Y2 on PLC will change to ON immediately. The indicator for Y0 and Y2 on HMI will show the state change for the connection points on PLC immediately.



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iFACE Designer

SCREEN

Version 2.00

2.Screen

All the widgets on HMI shall be loaded onto the screen. Hence, we shall understand the usage of the screen before understanding the application of HMI widgets.

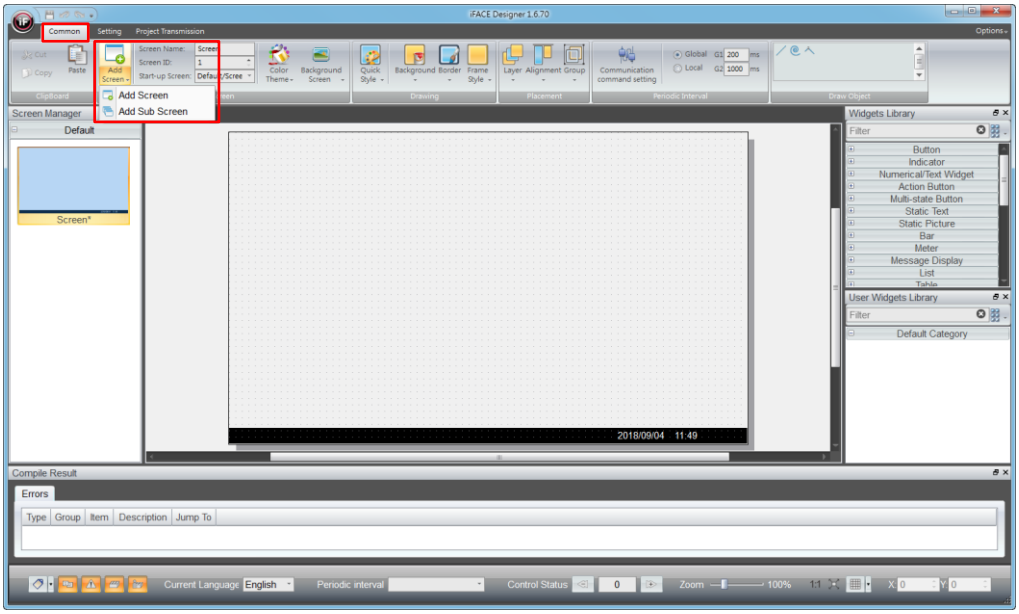
2.1 Add Screen and Delete Screen

When opening a new project, the system will create a new screen automatically. However, when we need to create projects with more than one screen, then we need to add a new screen manually.
Add screen and delete screen are introduced below:

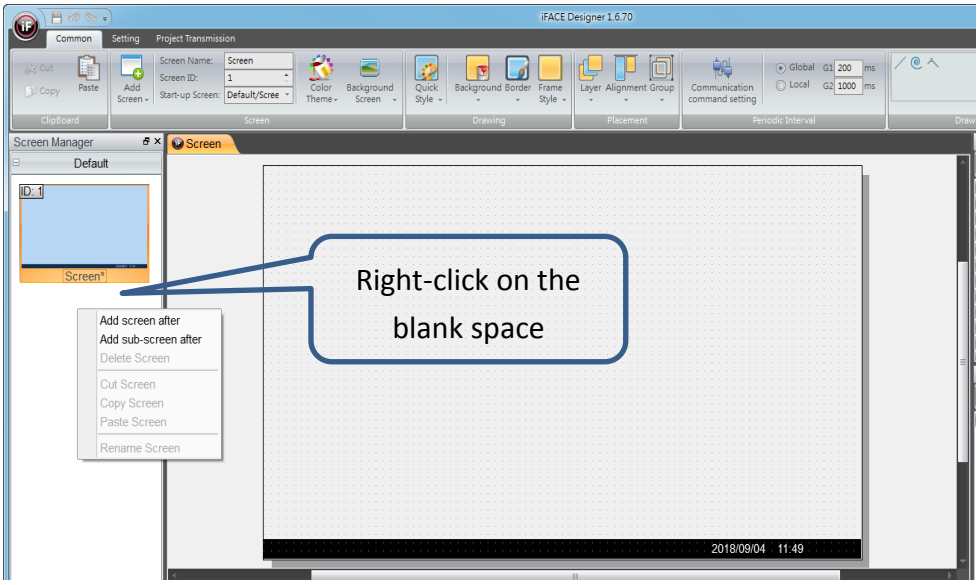
2.1.1 Add Screen

Add screen includes 【Add Screen】 and 【Add Sub Screen】. There are two ways to add:

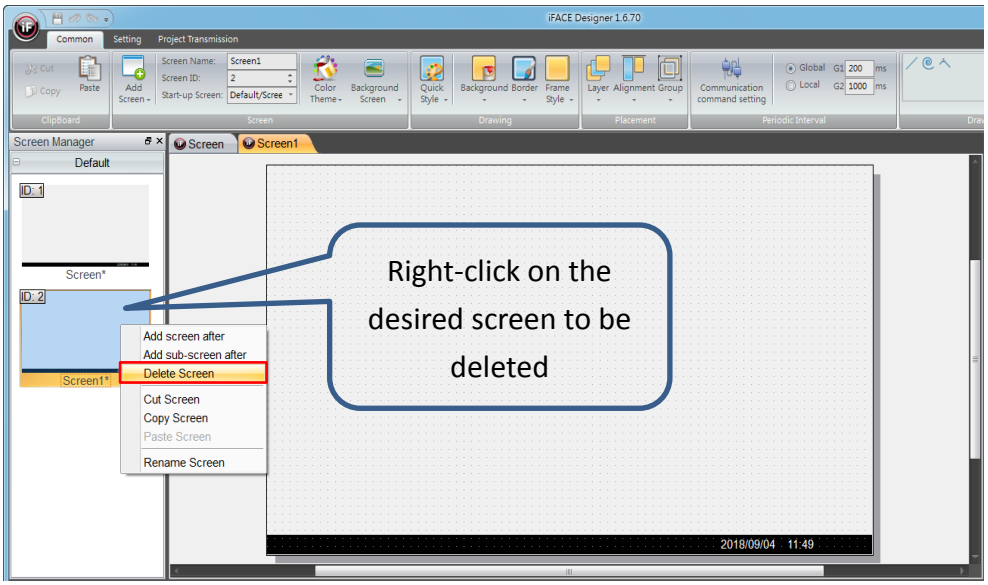
- Select the function tab 【Common】→Screen→【Add Screen】 or 【Add Sub Screen】.



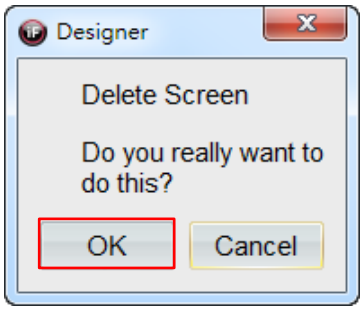
- In the blank space of 【Screen Manager】, right-click and a popup menu will be invoked and then click 【Add screen after】 or 【Add sub-screen after】.



2.1.2 **Delete Screen**

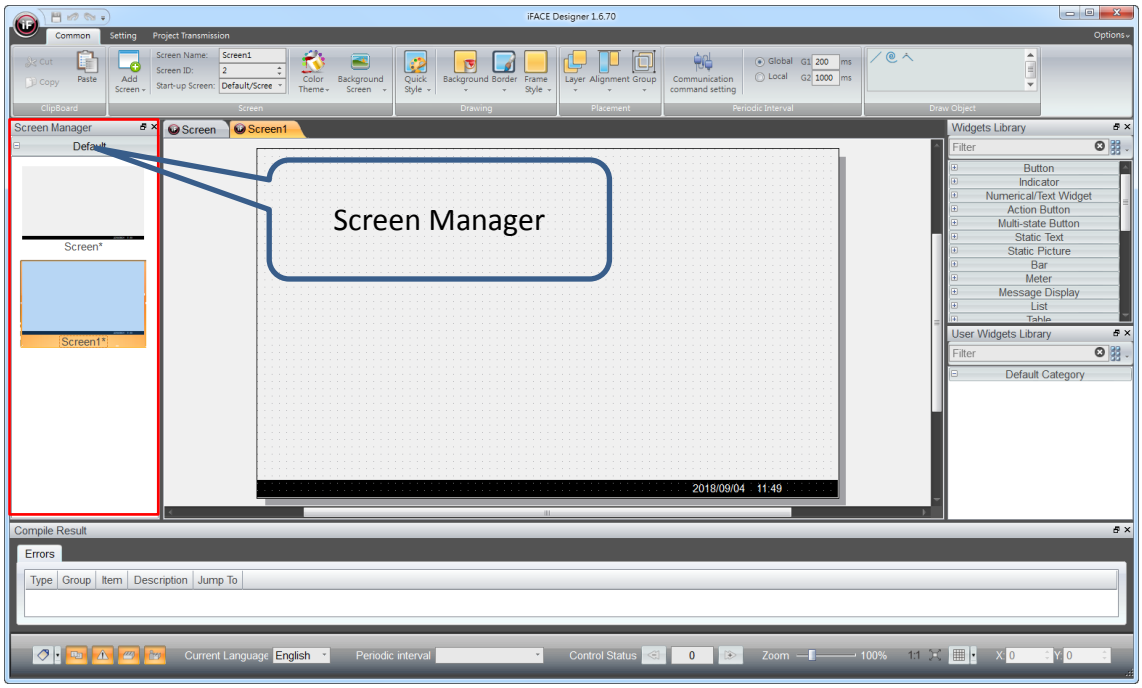


1. Move your cursor to screen manager.
2. Right-click on the desired screen to be deleted.
3. After the popup menu is being invoked, select 【Delete Screen】.
4. After the dialogue for 【Delete Screen】 appeared, press 【OK】 and then the action of delete screen will be performed.

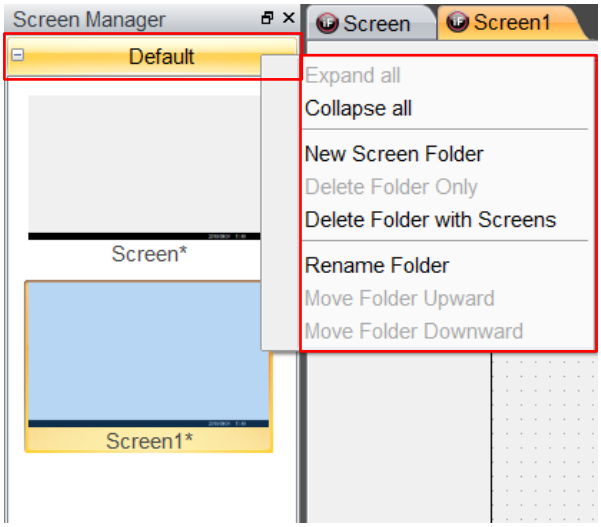


2.2 Screen Manager

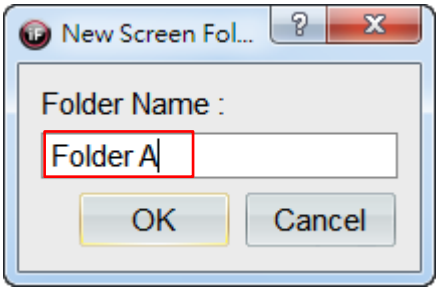
【Screen Manager】 is the screen management window for iFACE Designer. You can sort out the screens to different folders for convenient management and also you can move any screens to any folders.



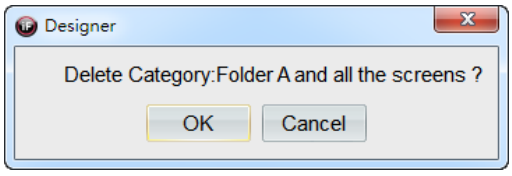
- Screen Folder: mainly used for the folder menu. The folder name provided by the system is 【Default】. Move your cursor to 【Folder】 and right-click and then a popup menu will be invoked.



- The popup menu provides the functions such as【New Screen Folder】,【Delete Folder Only】, 【Rename Folder】.
  - ✧ New Screen Folder: press 【New Screen Folder】to add a new folder.

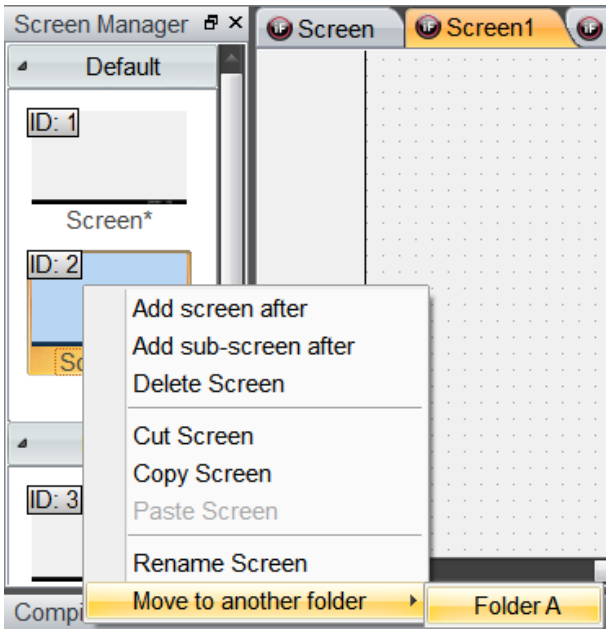


  - ✧ Enter the name of the new folder in folder name. The names support Chinese. 【Folder A】 is entered in this example. After entering, press 【OK】.
  - ✧ Delete Folders: it is separated into 【Delete Folder Only】 and 【Delete Folder with Screens】.
  - ✧ 【Delete Folder Only】: only delete the folder. All the screens in that folder will be moved to default folder automatically.
  - ✧ 【Delete Folders with Screens】: delete the folder along with the screens contained in the folder.



✧ Move to another folder: Move the selected screen to another folder.

For example, move 【Screen 1】 in the folder 【Default】 to 【Folder A】.

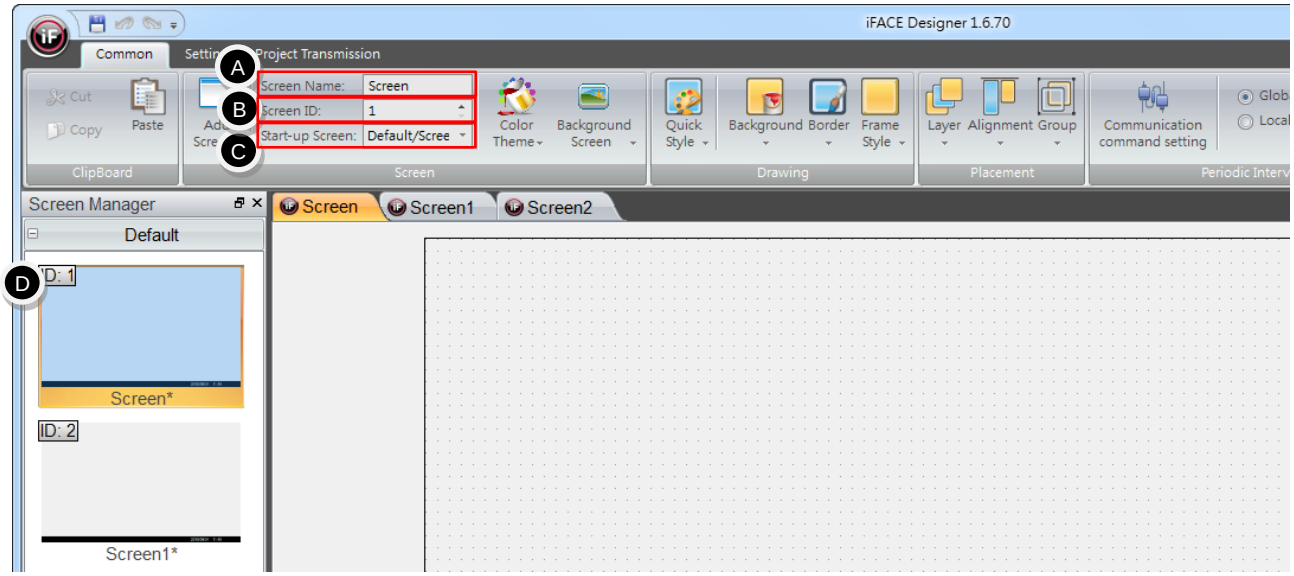


1. Move the cursor to the screen and right-click.
2. Select 【Move to another folder】in the popup menu.
3. Finally, select the folder to be moved.

The contents of the screens being moved (including screen name, screen ID) will not be changed due to being moved to another folder.

2.3 Start-up Screen and Screen ID

You can set the screen name, screen ID and start-up screen in the function tab 【Common】→Screen.



A. Screen Name

Screen name can not only specify the content of the screen, but also be used as the indicator for change screens setting using the action button. Hence, screen names will not be repeated within the same project.

B. Screen ID

Screen ID is a number for each screen and used as the indicator for the reference to change screens or displaying the current screens by PLC. Hence, screen IDs will not be repeated within the same project.

C. Start-up Screen

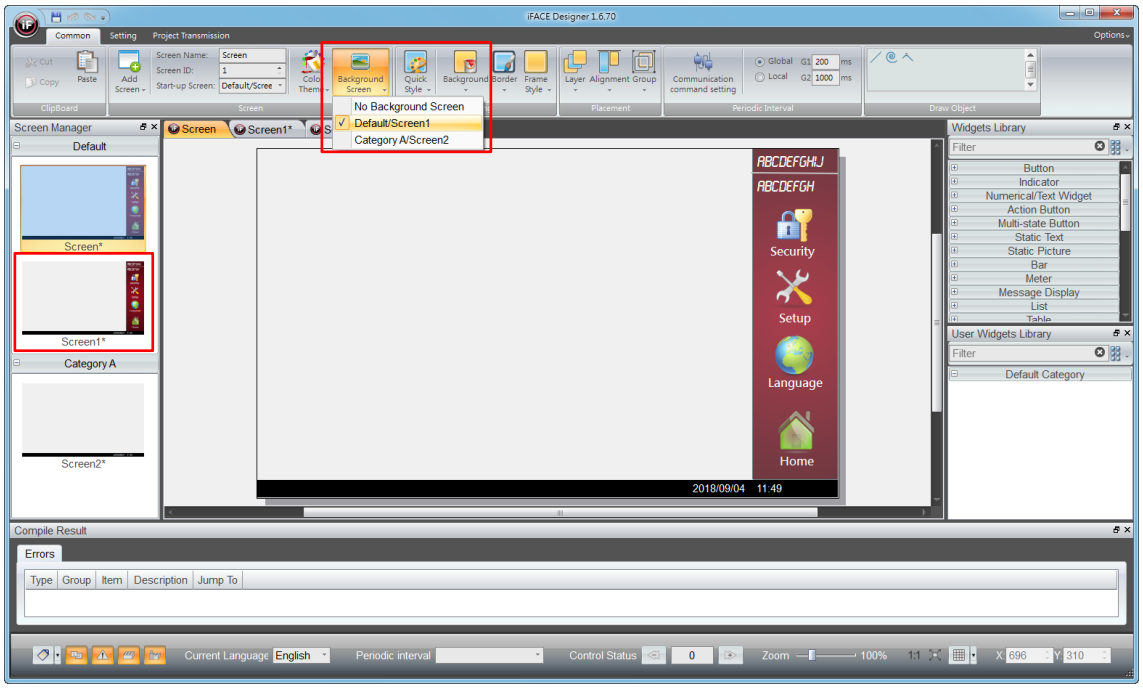
Start-up Screen will be the first executed screen after HMI is being powered on.

D. Display ID

Move the cursor to the preview screen on screen manager, it will display the ID of the screens.

2.4 Background Screen

Background screen is mainly used as joint page for other screens. When there are parts of the content repeated in multiple screens, then you can consider using background screen. The biggest advantage is that when these settings required adjustments, you only need to adjust them once.



A. First, decide which page to be set as the background screen (e.g. Screen1) and design the jointly used widgets on other screens.

B. Click other page such as Screen.

C. Select the function tab 【Common】→Background Screen.

D. Tick the desired background screen (Screen1 in our example).

E. By doing so you can see that the background screen Screen1 will be shown on Screen.

Remark:

(1) Other screens can also be selected in background screen to be set as the background screen.

(2) You cannot adjust the content of background screen directly on other screen; it is required to perform the adjustments on that background screen.

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THE USE OF TAG

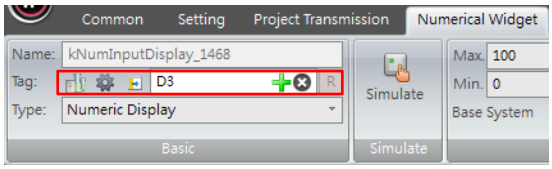
Version 2.00

3. Tag Setting

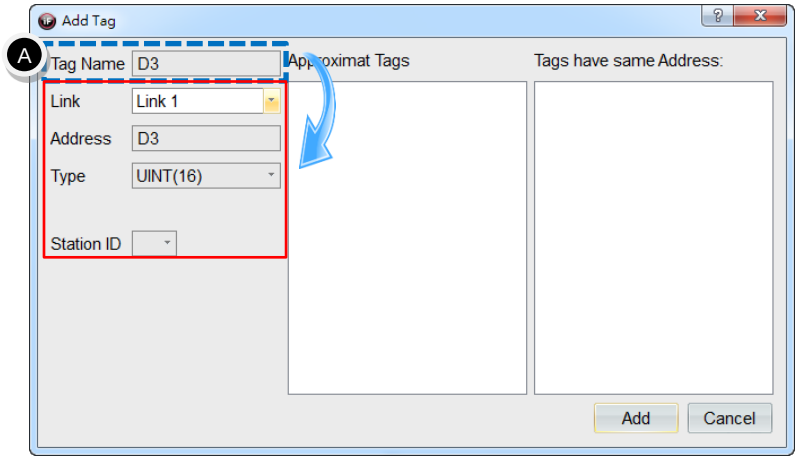
Tags can connect the specified address to send or receive values.

3.1 Add Tag

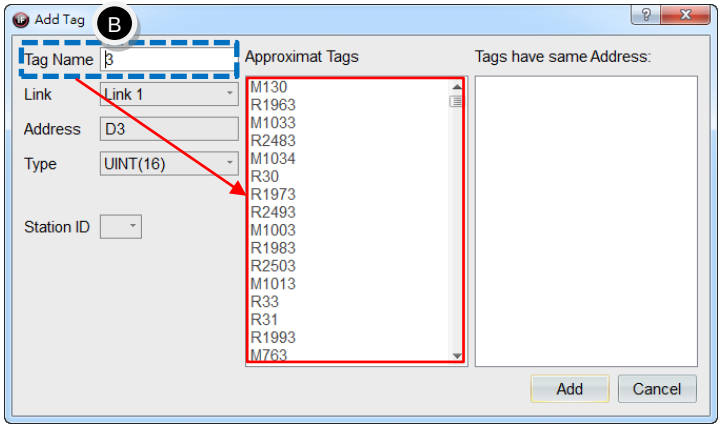
Fill in the name of the tag in tag name and press Enter on your computer keyboard, then add tag dialog will appear.



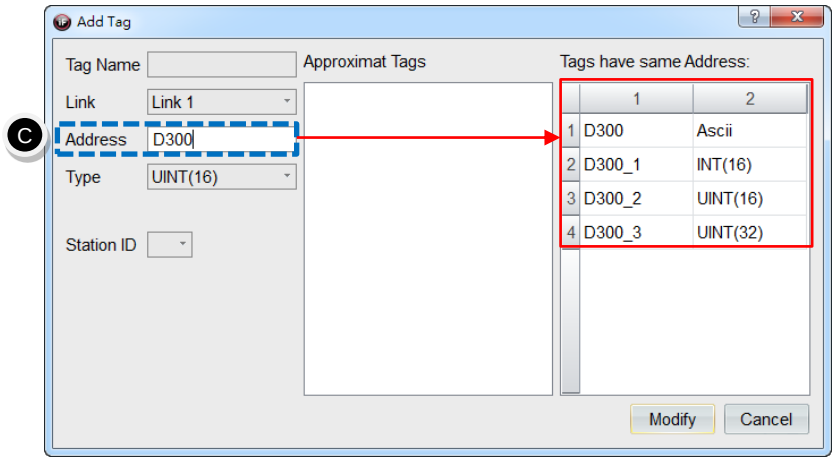
A. It will search for PLC link, address and type by the tag name automatically. If there is a match, then it will automatically import the information for the parameters (link/address/type).



B. Remove Y in the tag name and retain the number 3, then the system will automatically search for similar tag names among current tags.

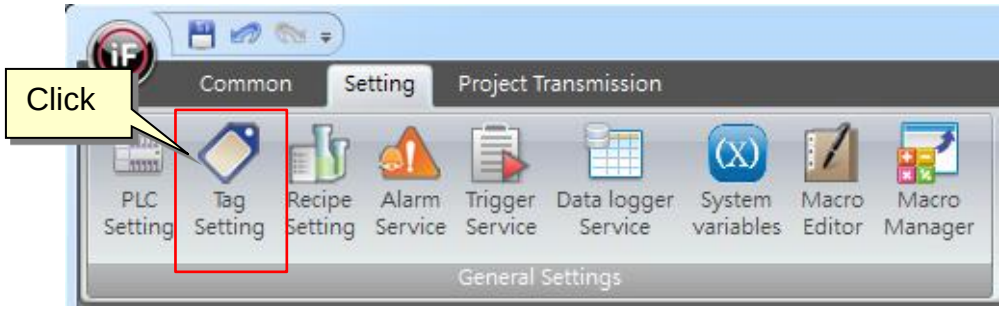


C. Change PLC address to D300, then it will automatically search for tag names that have the same PLC address in 【Tag Setting】.
As in the figure below, there are 4 tags that have the same address PLC D300.



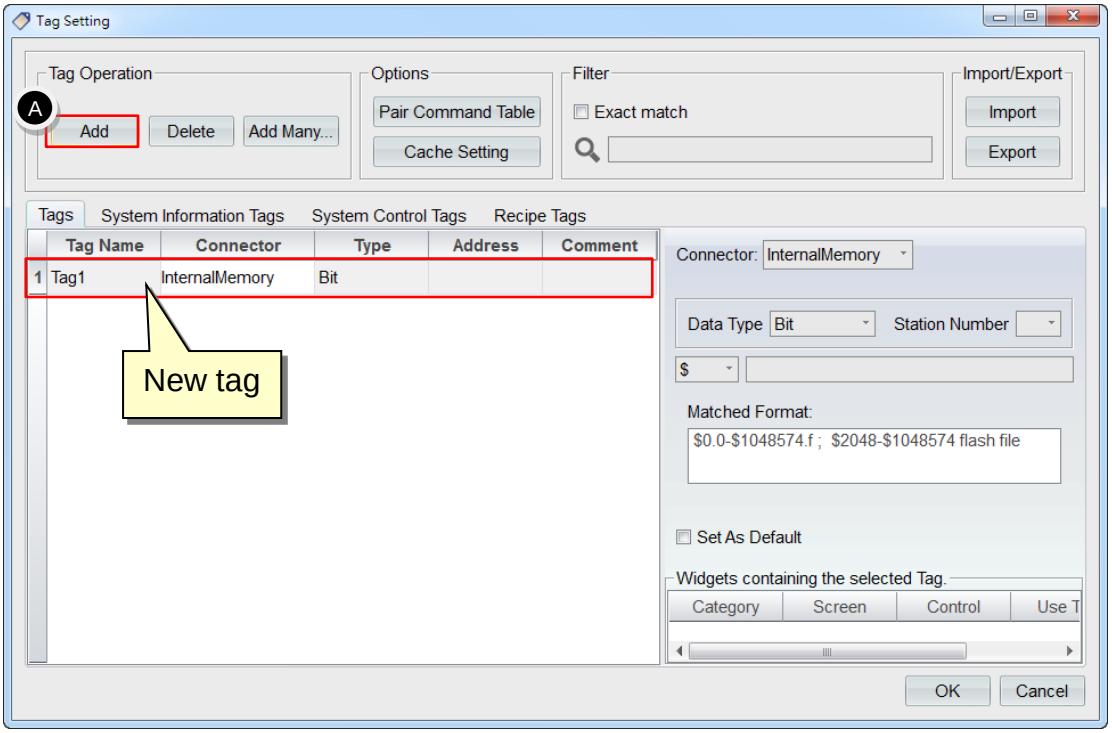
3.2 **Tags**

Go to the tab 【Setting】→【General Settings】→【Tag Setting】.



After editing the information of the tag, you can drag and directly used them in corresponding tags of widgets by default and also connect them by applying other specific functions (alarms, recipes, etc.) .

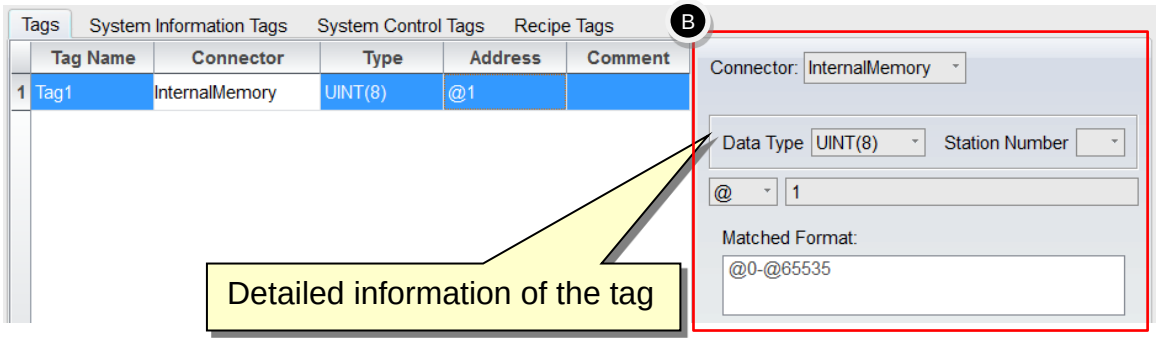
a. Open the dialog of tag setting and press 【Tags】.



b. Add a new tag.

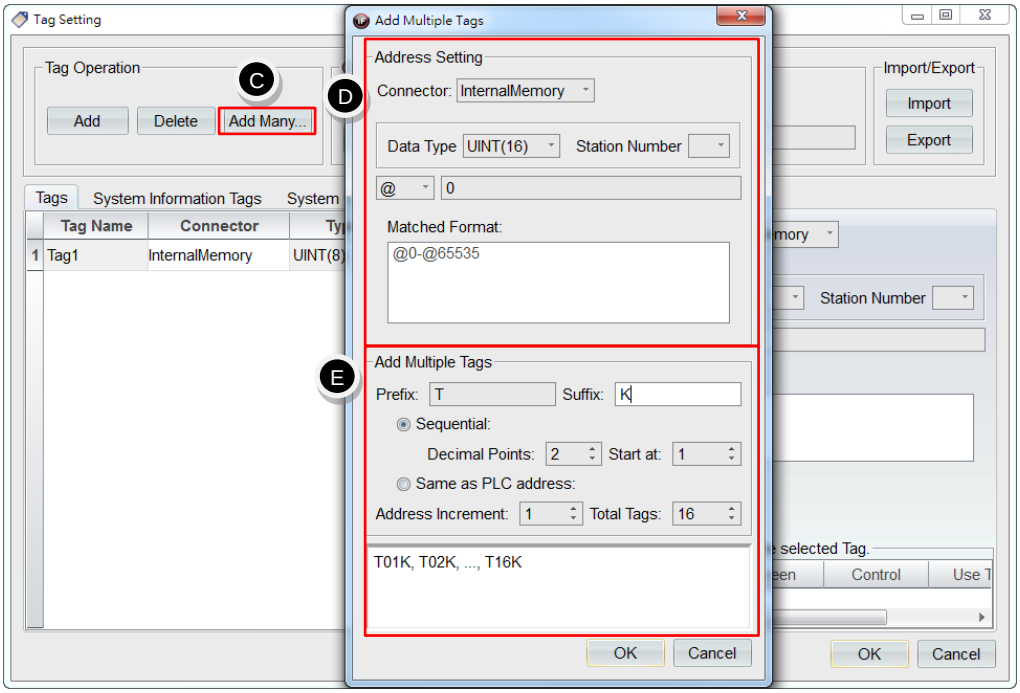
A. After pressing 【Add】 button, the table below will add a new tag to the list. You can double-click the fields inside the table to change the setting of the tag.

B. Or after clicking the tag which requires modification, the detailed set value of the current selected tag will be shown in the subwindow on the right side and also the modification can be made here.



c. Add multiple tags

C. After pressing the button【Add Multiple…】, the dialog【Add Multiple Tags】 will be opened.



D. 【Address Setting】 is for setting the type of connectors, data type, station number and starting address.

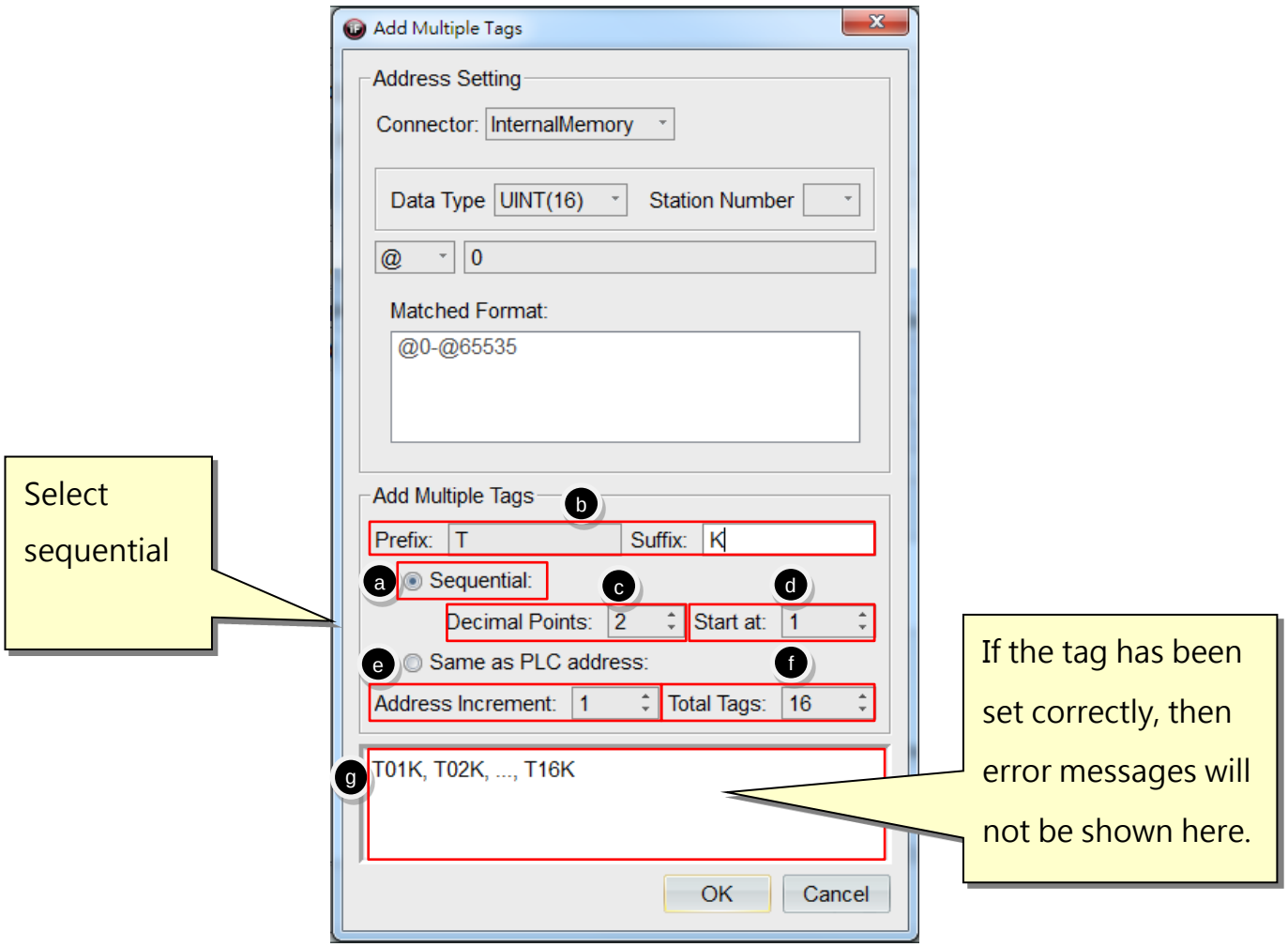
E. 【Add Multiple Tags】 sets the applied tag names. You can choose 【Sequential】 or 【Same as PLC address】. If you select 【Same as PLC address】, then please jump to item e.

a. Select 【Sequential】to indicate that the tag name is defined sequentially by users.
b. First, set 【Prefix】 (T is set in this example) and 【Suffix】 (K is set in this example) for the tag name.
c. Set 【Decimal Points】 to decide the number of the digits for the tag name (2 is set in this example).
d. Set 【Start at】 to decide the starting value for the tag (1 is set in this example).
e. Set 【Address Increment】 to decide the increment value for tag (1 is set in this example).
f. Set 【Total Tags】to decide quantities for new tags (16 is set in this example).

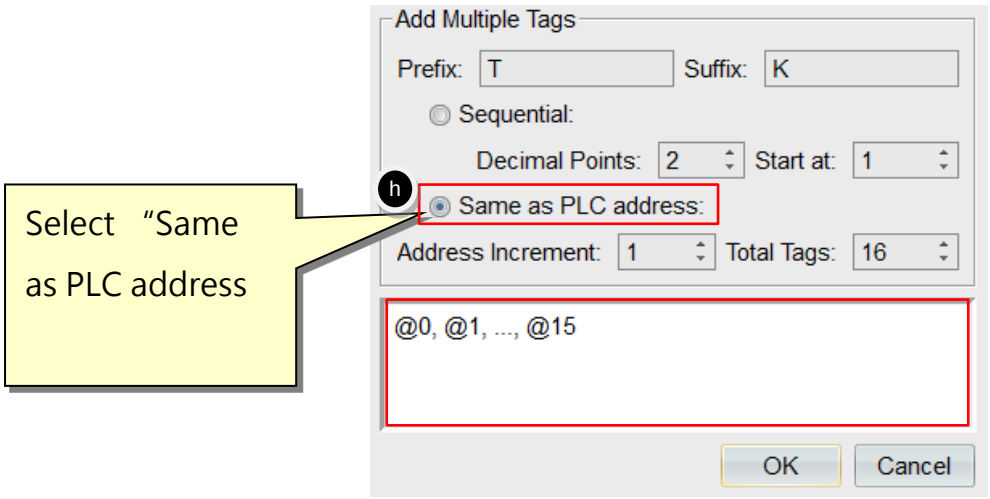
After pressing 【OK】, the new sequential tag name will be:

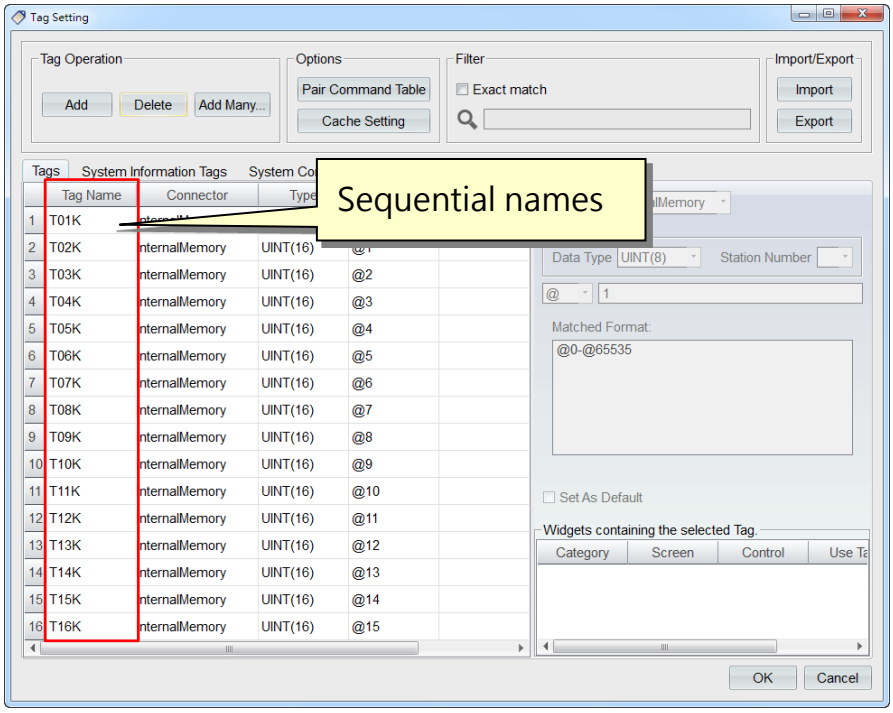
T (Prefix) 01 (2 digits, starting at 1) K (Suffix)...T16K (increment is 1 and the number of total tags is 16)

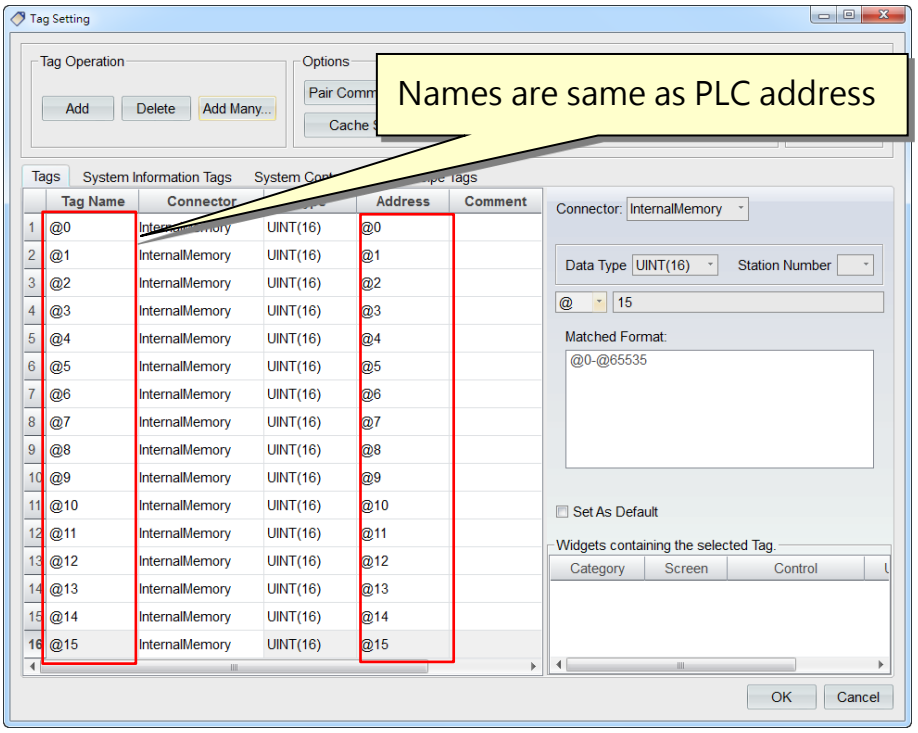
g. It will create tag names for preview immediately based on the set information for new tags. If the settings were wrong, it will give out hints such as 【Invalid Address】 or 【Invalid Setting】.



h. Select 【Same as PLC address】, then the tag name will be the same as the actual PLC address.

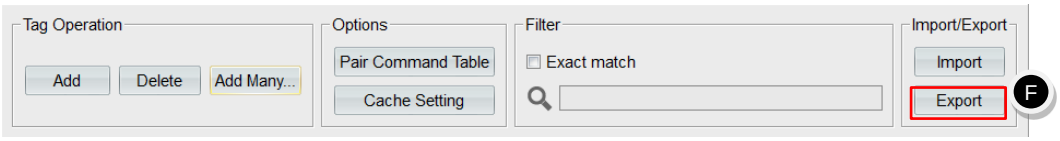

Add Multiple Tags
Prefix: T
Suffix: K
Sequential:
Decimal Points: 2
Start at: 1
h
Same as PLC address:
Address Increment: 1
Total Tags: 16
@0, @1, ..., @15
OK
Cancel
Select "Same as PLC address


Tag Setting
Tag Operation
Add
Delete
Add Many...
Options
Pair Command Table
Cache Setting
Filter
Exact match
Import/Export
Import
Export
Tags
System Information Tags
Sequential names
Tag Name
Connector
Type
T01K
T02K
T03K
T04K
T05K
T06K
T07K
T08K
T09K
T10K
T11K
T12K
T13K
T14K
T15K
T16K
UINT(16)
Data Type
UINT(8)
Station Number
Matched Format:
@0-@65535
Set As Default
Widgets containing the selected Tag.
Category
Screen
Control
OK
Cancel

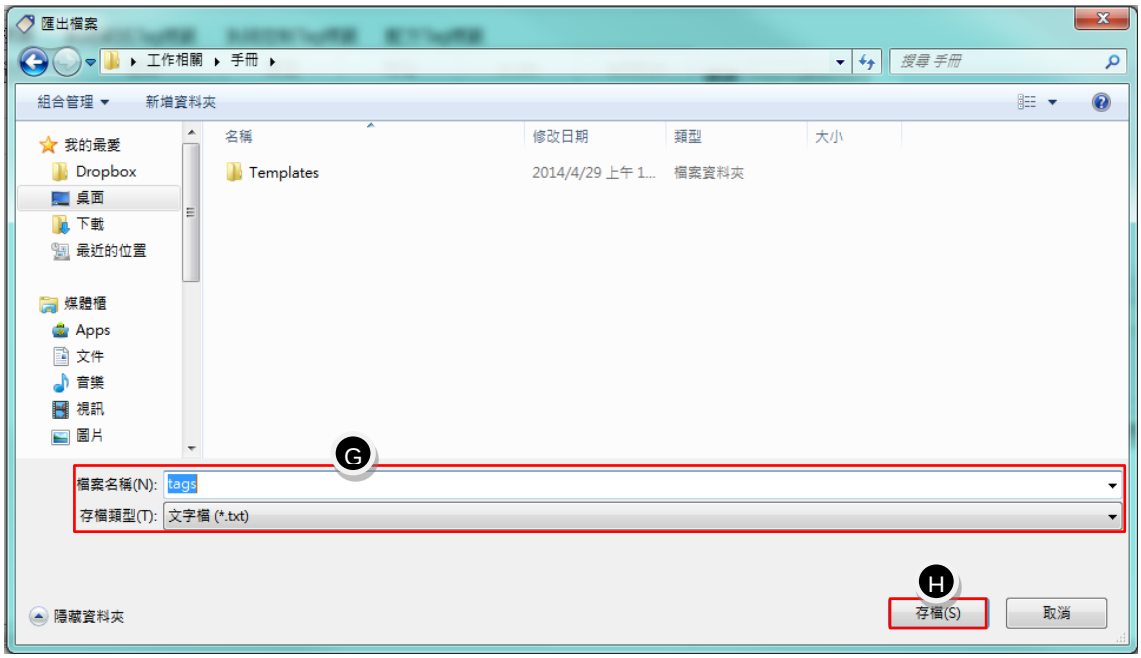


d. Export tag

Tag information can be exported into a *.txt file. The text file can be opened and modified in Excel, then be imported back to iFACE Designer to enhance work efficiency.



F. In the dialog【Tag Setting】, press【Export】, then the dialog【Export File】 will be invoked as in the figure below.



G. Set the directory and file name for the text file to be saved.

H. Press 【Save】, then the text file will be exported.

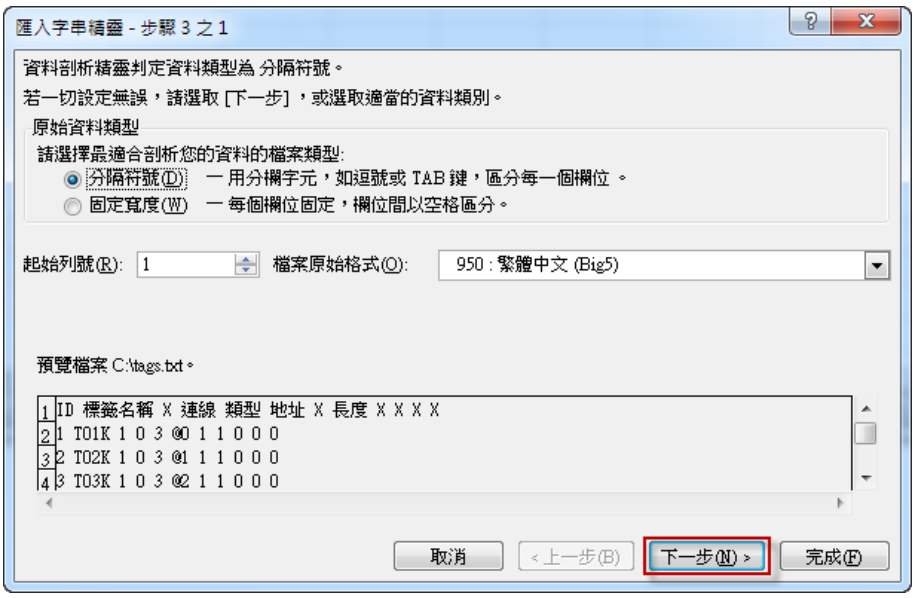
The text file can be opened directly by Excel. For the convenience of editing, it is recommended to load the file using 【Text Import Wizard】in Excel. The setting method is as follows:

(1) Open Excel. Select 【File】→【Open】.

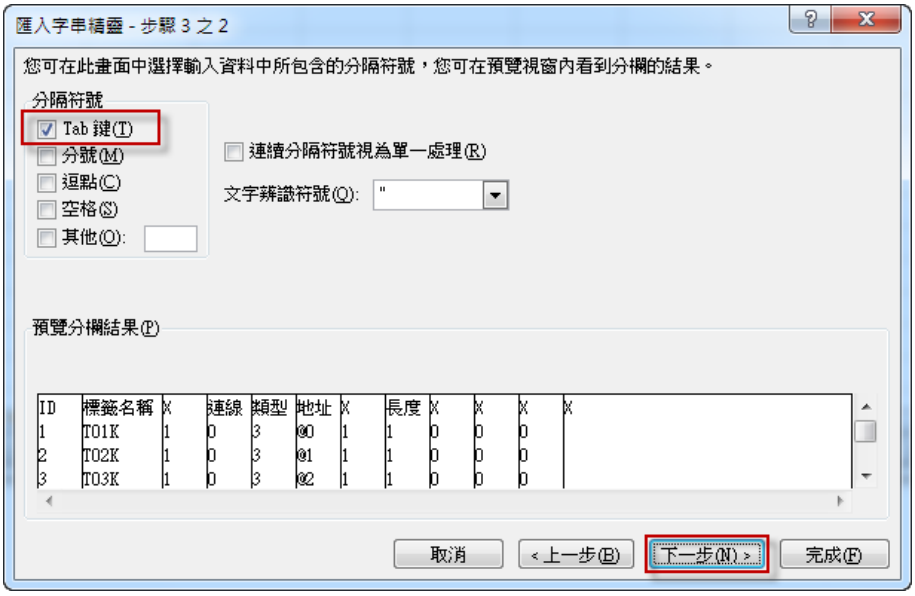
(2) Select【Text Files】for file type. After going into the directory where the text file is saved, find the text file and open it.

(3) Now, Excel will open 【Text Import Wizard】 and complete the following operating procedure in order.

(4) Step 3-1 of 【Text Import Wizard】 sets the original data type. The default is 【Delimiter】. So, press 【Next >】 directly.

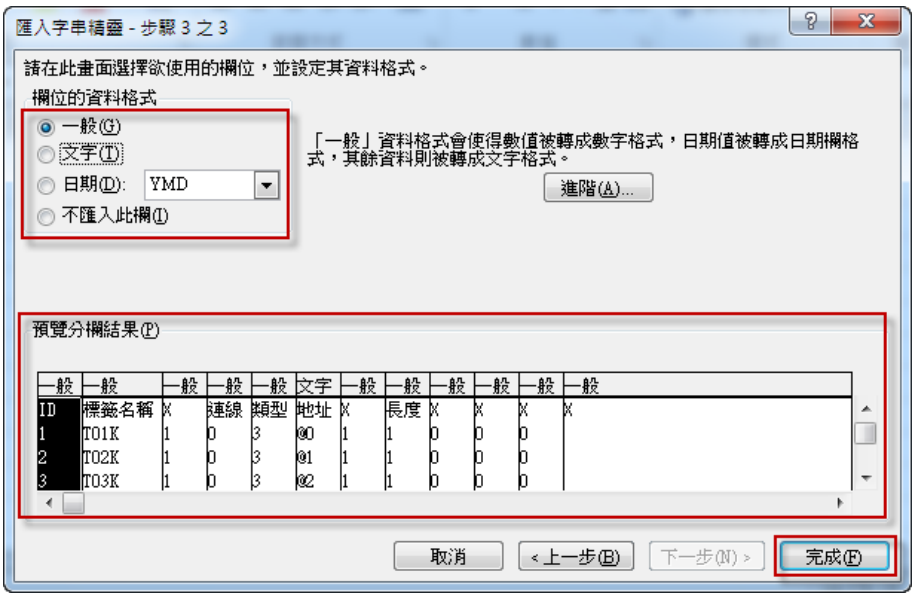


(5) Step 3-2 of 【Text Import Wizard】 sets delimiters of the input data. Please tick 【Tab】 and then press 【Next >】.

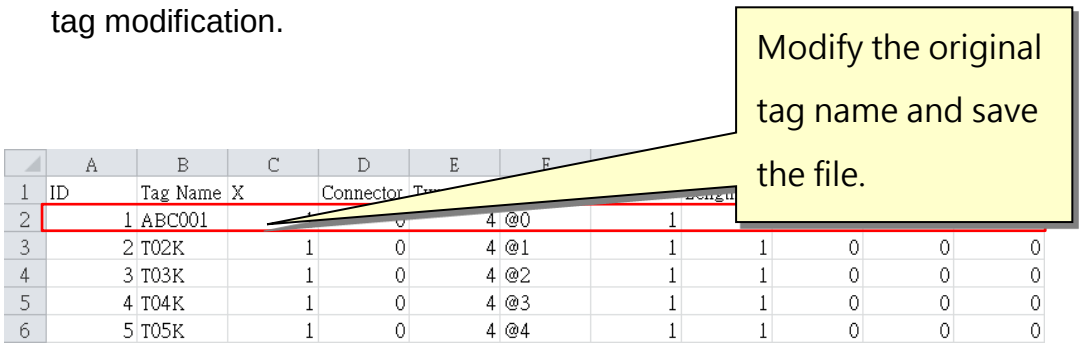


(6) Step 3-3 of 【Text Import Wizard】 sets the data format of each field. You can first preview the result columns and select the desired set column, then set data format of the field. Since some symbols have their own special meaning in Excel (e.g. @), it is recommended to change the format of the field to 【Text】 to avoid problems when modifying.

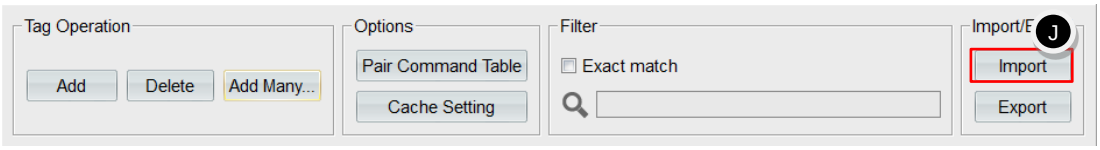
After checking that everything is correct, press 【Finish】.



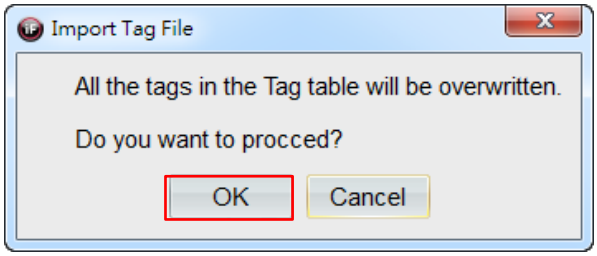
I. After modifying the text file, press to finish the steps for export tag and tag modification.



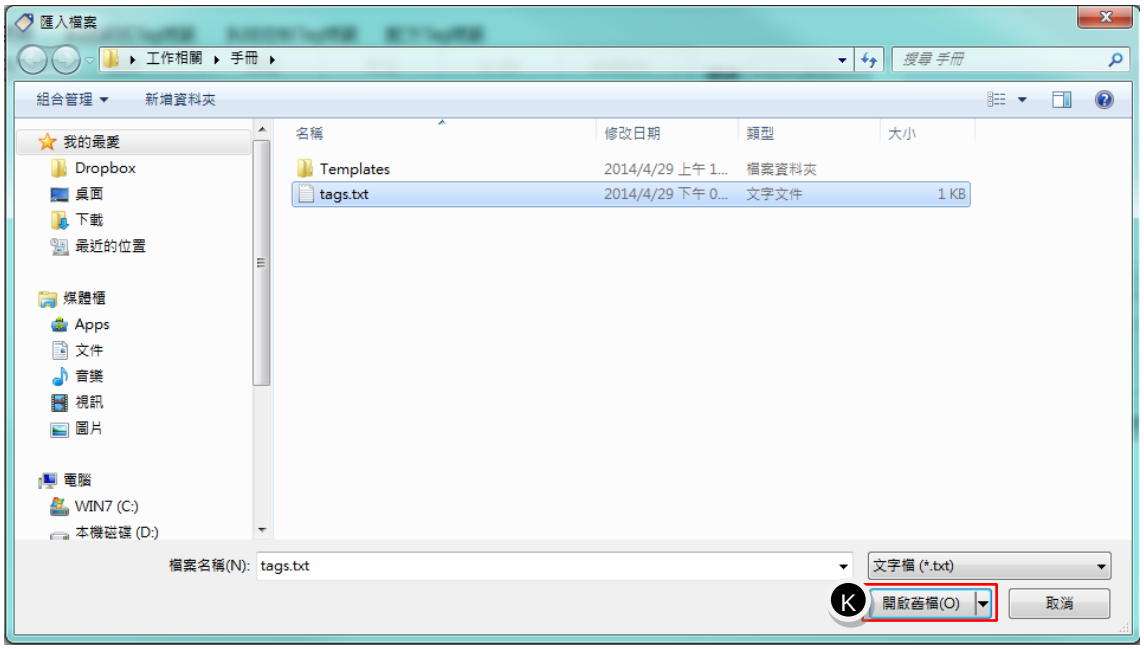
e. Import tag



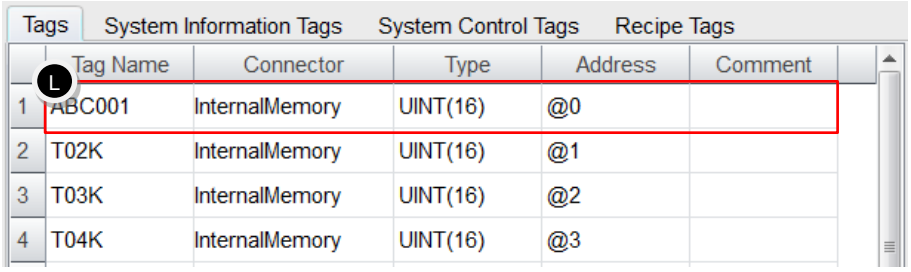
J. Return back to the dialog 【Tag Setting】. After pressing 【Import】, a dialog will appear. If you press 【OK】, the dialog for choosing the files to import will appear. Please select the tag text file to replace the original tag setting; if you press 【Cancel】, then the action of importing tag files will be discard.



K. Select the text file (*.txt) to import and press 【Open】.



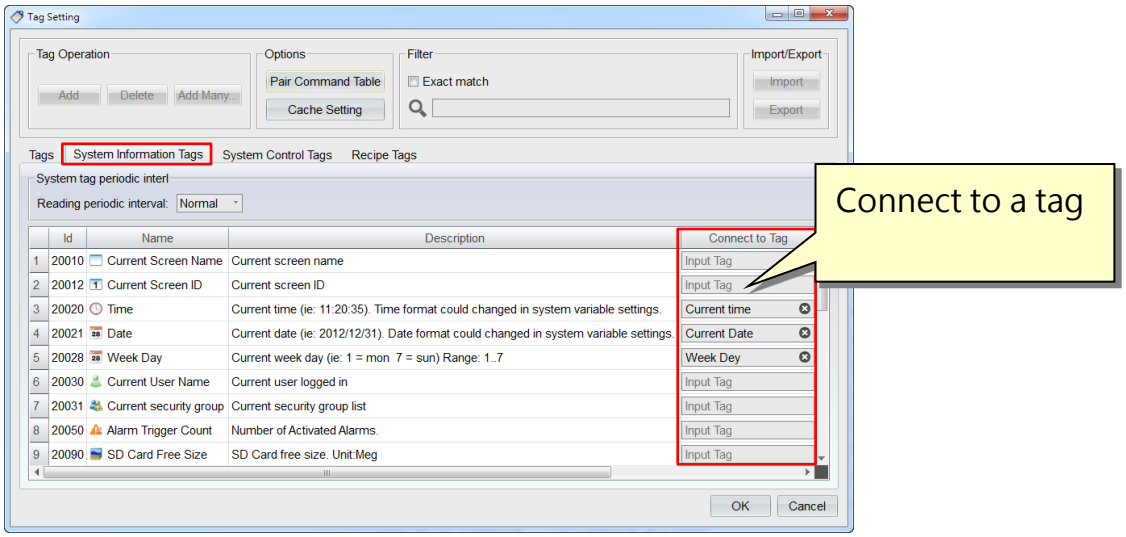
L. You can see in the tag settings that tag names are replaced by the imported text file.



3.3 System Information Tags

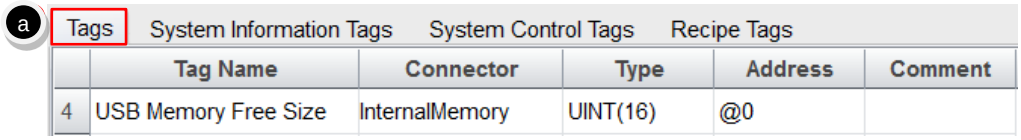
Press 【System Information Tag】, then you can see the list of system information tags. System information tags are mainly for the information related to system status of HMI, including 【USB Memory Free Size】, 【Time】, 【Date】, etc.

System information tag can also write HMI information to tags through 【Connect to Tag】 for PLC control application.



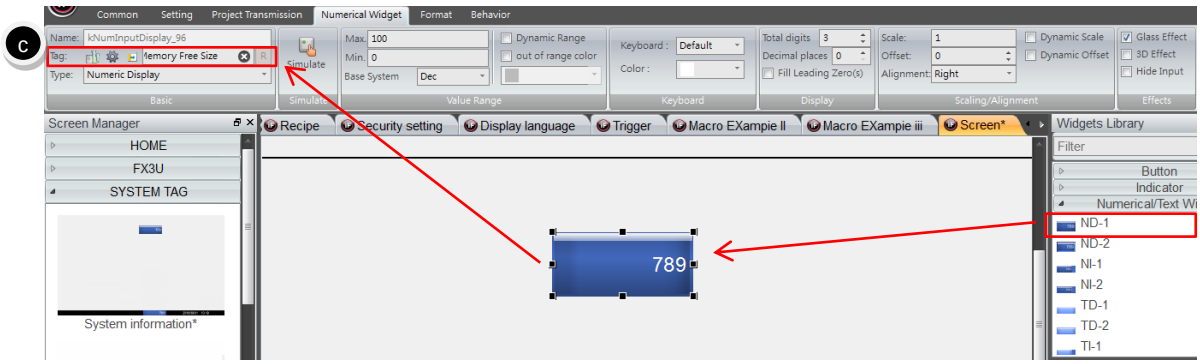
The example below used 【Tags】 to connect 【System Information Tag】 and show USB memory free size of the USB disk connected to HMI.

a. 【Tags】→【Add】, add a tag with the name defined as 【USB Memory Free Size】 and specify its corresponding address 【@0】.



b. In 【System Information Tag】, select 【USB Memory Free Size】 to import the name 【USB Memory Free Size】 connecting to the tag.

c. Drag a 【Numerical Widget】 from 【Widgets Library】 onto the screen. At the same time, specify the tag for the numerical widget as 【USB Memory Free Size】.

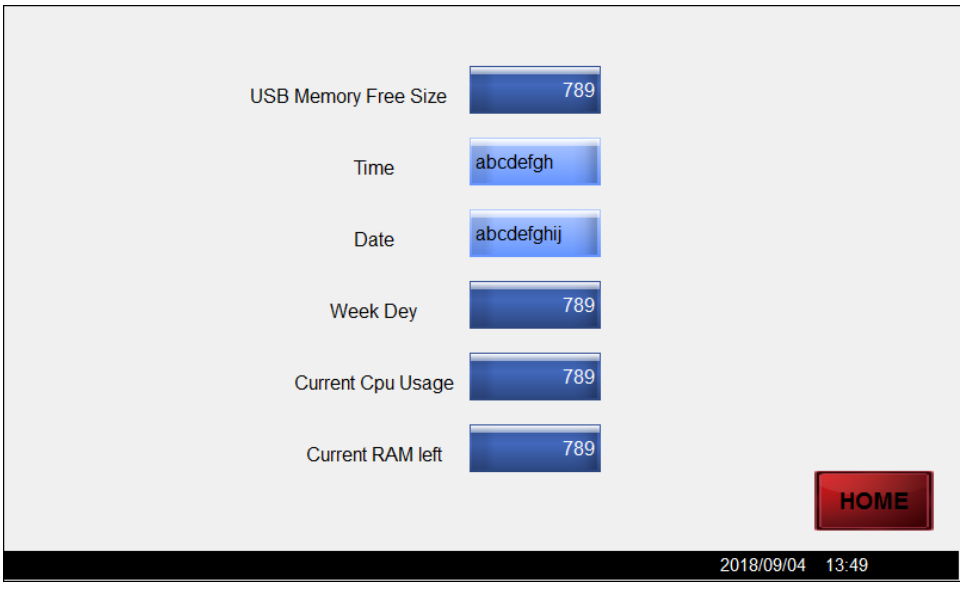


d. After the project is being saved, compile and download it to HMI for verification.

(1) When the USB disk is not connected to HMI,【USB Memory Free Size】will be shown as 0.

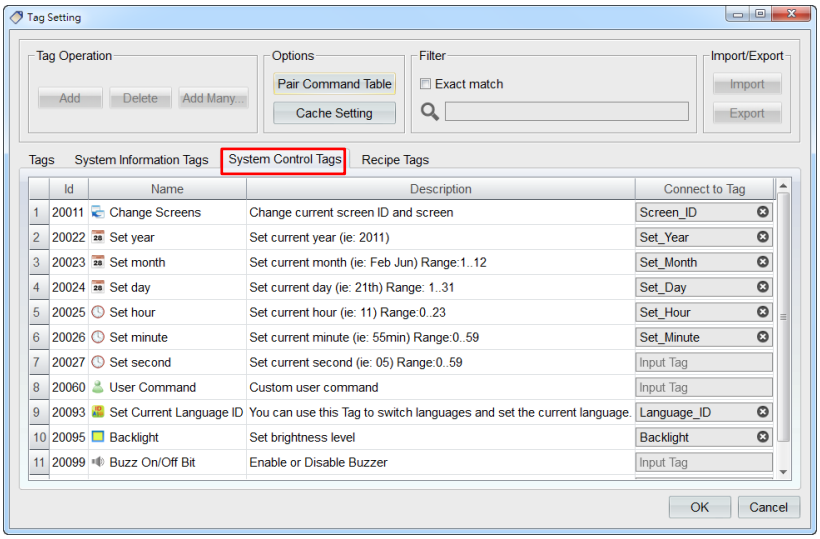
(2) After the USB disk is being connected to HMI,【USB Memory Free Size】will then show USB memory free size.

Exercise: Add new functions related to reading system time/date/week, current CPU usage and current RAM left onto the screen and download to HMI and verify.



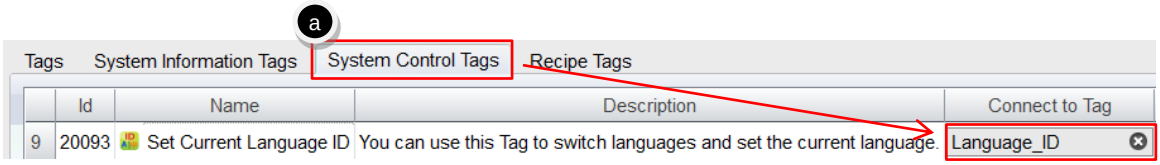
3.4 System Control Tags

System control tags are mainly used for controlling the information related to the system status of HMI. Press 【System Control Tag】 to see the list of system control tags, including 【Set Current Language ID】, 【Change Screens】, 【Backlight】, etc. System control tag can also write information from external device (e.g. PLC) to HMI through 【Connect to Tag】 to control the information related to the system status of HMI.



The following example uses 【Tags】 to connect to 【System Control Tag】 to switch the current language shown on HMI.

a. 【Tags】→【Add】, add a tag with the name defined as【Switch Language ID】and its corresponding address【@1】. Next, connect the name【Set Current Language ID】 in 【System Control Tags】 to the tag 【Switch Language ID】.



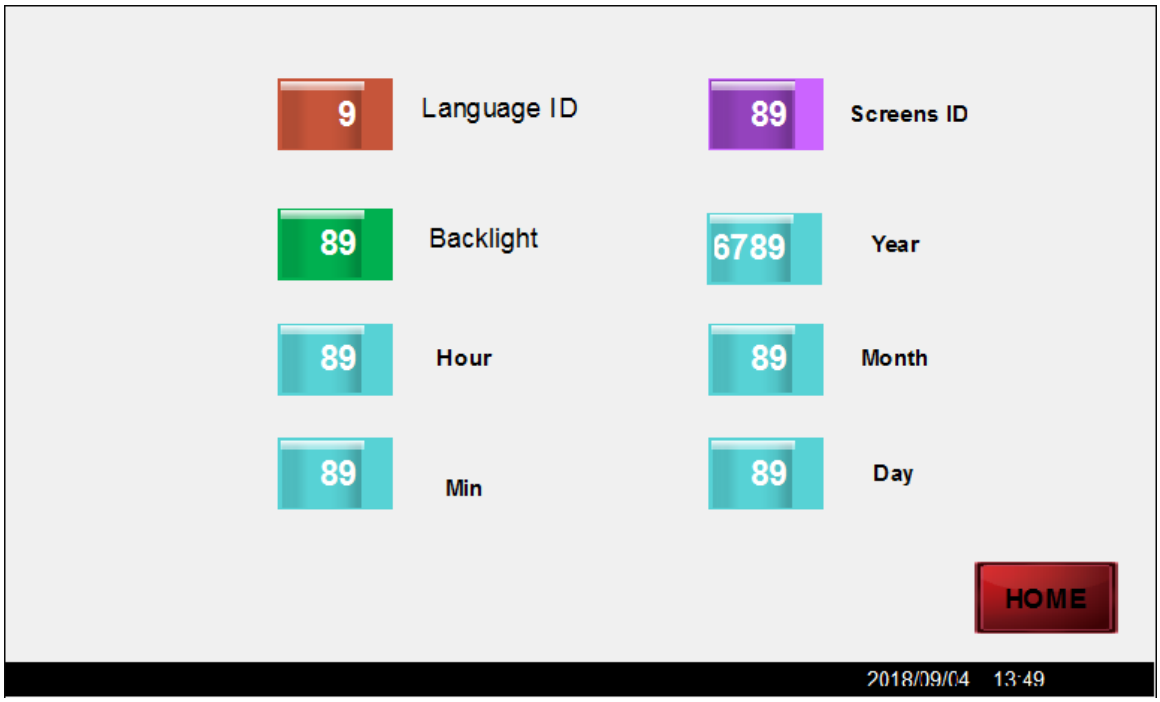
b. Drag a 【Numerical Widget】 from 【Widgets Library】 onto the screen. Connect the numerical widget to Switch language ID.

c. Then drag a 【Static Text】. The system has three default languages, namely, 【0：English】, 【1:繁體中文】, 【2:简体中文】. You can enter the three kinds of languages on the static text respectively in order as

shown in the figure below. (The setting method for multi-language can be referred to the chapter 【18. Multi-Language】).

d. After saving the project, compile and download and then run and verify.
When the value of 【Switch language ID】 is 0, the static text will display as English.
When the value of 【Switch language ID】 is 1, the static text will display as Chinese Traditional.
When the value of 【Switch language ID】 is 2, the static text will display as Chinese Simplified.

Exercise: Add the new functions related to setting brightness level, current time, change current screen, etc. onto the screen and download to HMI and verify.

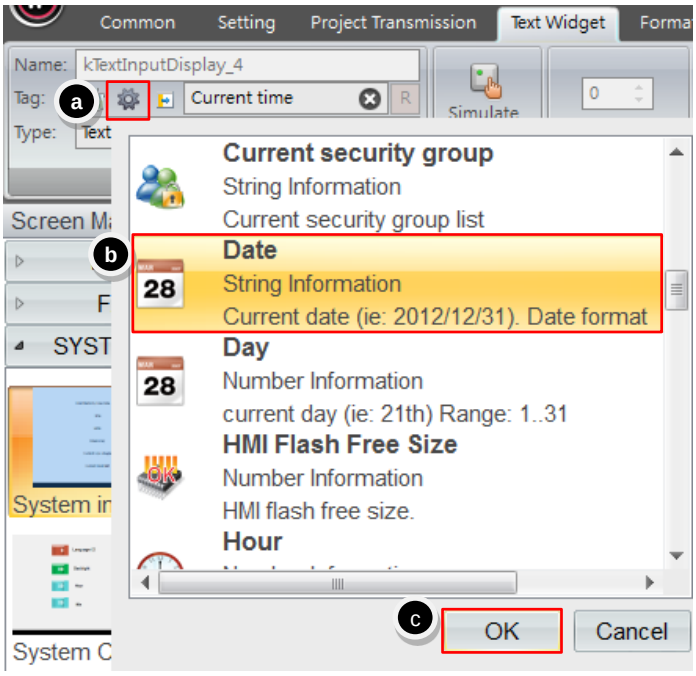


3.5 Internal System Tags

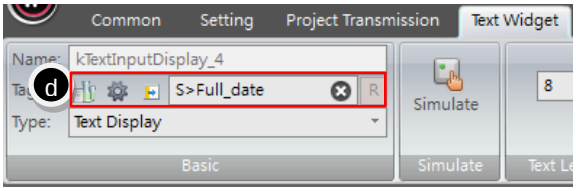
Beside through 【System Information Tags】 or 【System Control Tags】 to connect to 【Tags】, we also provide internal system tags, widgets that can be directly connected to internal system tags such as system information tags or system control tags.
The following information shows how to connect a 【Numerical/Text Widget】 directly to 【System Information Tags】 for displaying current date of HMI.

(1) Drag a 【Numerical/Text Widget】 onto the screen.
(2) Connect the corresponding 【System Information Tags】 to the related setting.

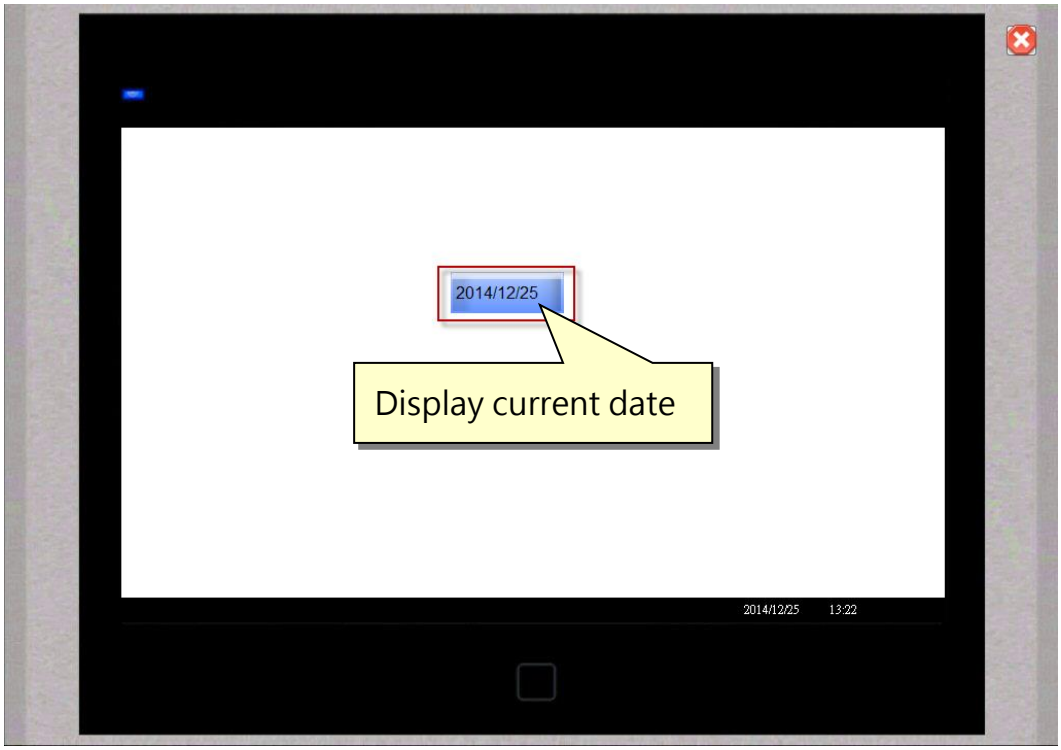
a. Under the tab 【Text Widget】→【Basic】→【Tag】, press the icon button for add system tag 【 】.
b. Scroll down the bar and select the system tag 【Date】.
c. Press 【OK】.



d. You can see that the tag of the text widget becomes 【S>Full_date】. 【S>】 represents System Tag.



(3) After the project is being saved, compile, download and then run for verification. You can see that the content of the system tag are transmitted to the text widget for display so that the date can be seen on the screen as in the figure below.



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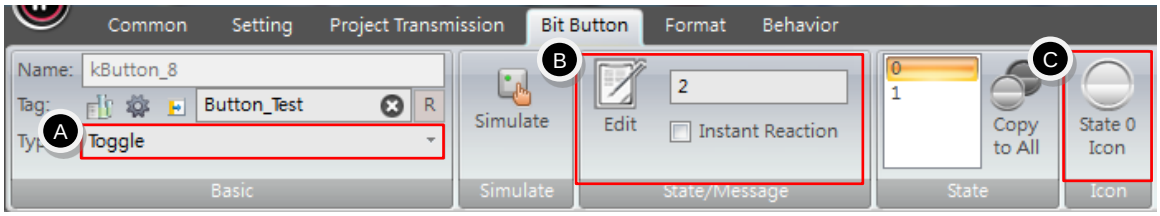
BUTTON AND INDICATOR

Version 2.00

4. Button

Buttons and indicators are the most commonly applied basic widgets on HMI. Buttons replaced actual switches as an operating widget for triggering the controller; while indicators can display the state of the connection points of the controller.

4.1 Button



A. Type: set the action for the button. It can be divided into:

- 【Toggle】: when being pressed once, then it becomes ON; while being pressed again, then it becomes OFF.
- 【Set ON Button】: after being pressed, it holds as ON.
- 【Set OFF Button】: after being pressed, it holds as OFF.
- 【Momentary ON Button】: when being pressed and held, it becomes ON; while being released, it becomes OFF.
- 【Momentary OFF Button】: when being pressed and held, it becomes OFF; while being released, it becomes ON.
- 【Sequential】: After being pressed, it will transit a series of waves continuously.

B. State: you can change to different state of displaying the icons and text.

C. Icon: you can set the icon of the button based on its state.

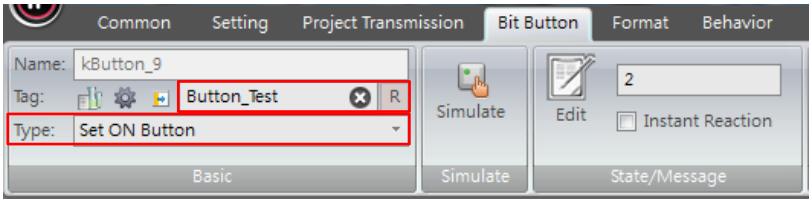
Exercise：

a. In 【Tags】, add a tag with the name defined as 【Button test】 and specify its corresponding address 【@31.0】.

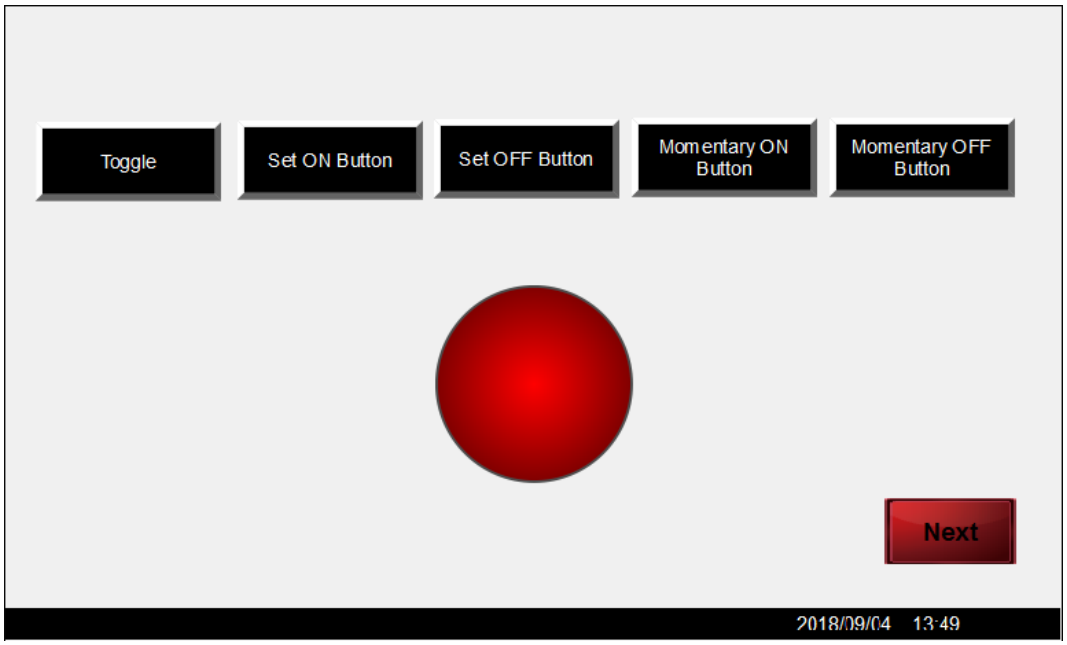
Tags | System Information Tags | System Control Tags | Recipe Tags

	Tag Name	Connector	Type	Address	Comment
19	Multi_state_Button	InternalMemory	UINT(16)	@32	

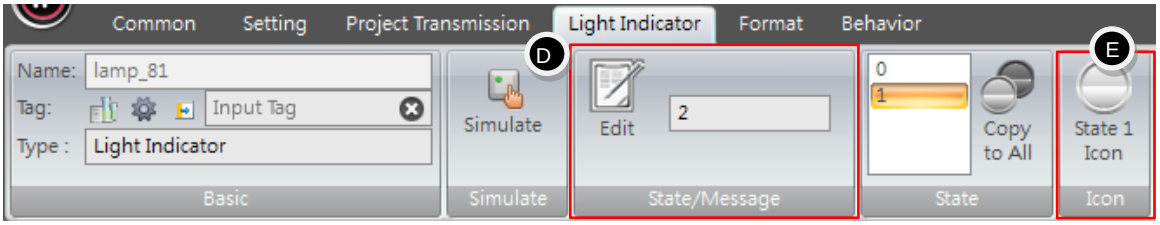
b. Drag five 【Button】 widgets and one 【Indicator】 widget from 【Widgets Library】 onto the screen. All of them are connected to the tag【Button test】 and each button is defined as 【Toggle】, 【Set ON Button】, 【Set OFF Button】, 【Momentary ON Button】, 【Momentary OFF Button】,respectively. After completed, save, compile and download the project and then run it.



c. After the project is being saved and compiled, observe the actions of the indicators corresponding to the five different types of buttons.



4.2 Indicator

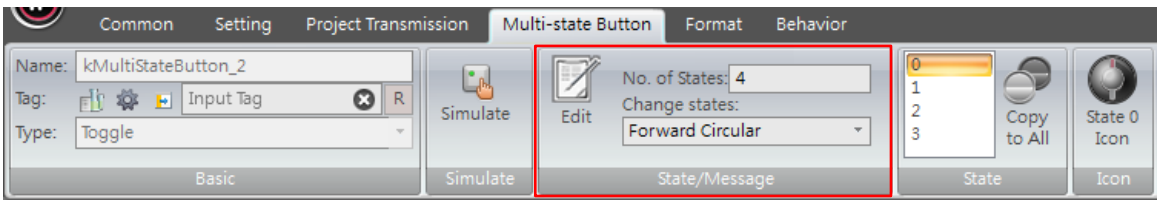


D. State/Message: Select 【Edit】 to increase state value. Each indicator can support up to 256 states. Changing to different states will display different icons and text.

E. Icon: you can set the icon of the indicator based on its state.

4.3 Multi-state Button

【Multi-state button】 is a kind of button and is very similar to a knob in daily life. However, the difference between normal buttons and multi-state buttons is that multi-state buttons usually have more than one state. When you pressed the multi-state button every time, its state value will be incremented forward or backward by 1.



【Change States】: after a multi-state button is being pressed, it will change its state. There are three different ways of state change that you can choose from:

A. 【Forward Circular】: from state 0→state 1→state 2→state 3→state 0→…runs in forward circulation. i.e. 0→1→2→3→0→1→2→3…

B. 【Backward Circular】: from state 0→state 3→state 2→state 1→state 0→…runs in backward circulation. i.e. 0→3→2→1→0→3→2→1…

C. 【Forward & Reverse】: from state 0→state 1→state 2→state 3→state 2→state 1→state 0→…runs back-and-forth like the swing of a pendulum. i.e.

0→1→2→3→2→1→0→1…

Exercise:

a. In【Tags】, add a tag with the name defined as【Multi-state test】and specify its corresponding address 【@32】.

Tags | System Information Tags | System Control Tags | Recipe Tags

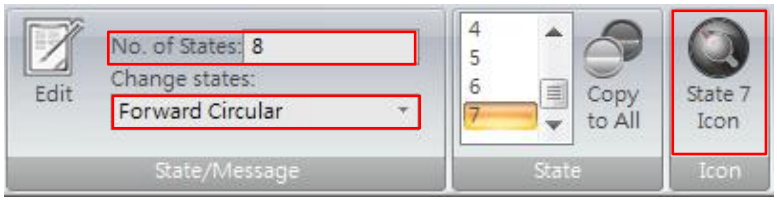
	Tag Name	Connector	Type	Address	Comment
19	Multi_state_Button	InternalMemory	UINT(16)	@32	

b. Drag 3 【Multi-state Button】 widgets and one 【Indicator】 widget from 【Widgets Library】 onto the screen. All of them are connected to the tag 【Multi-state test】.

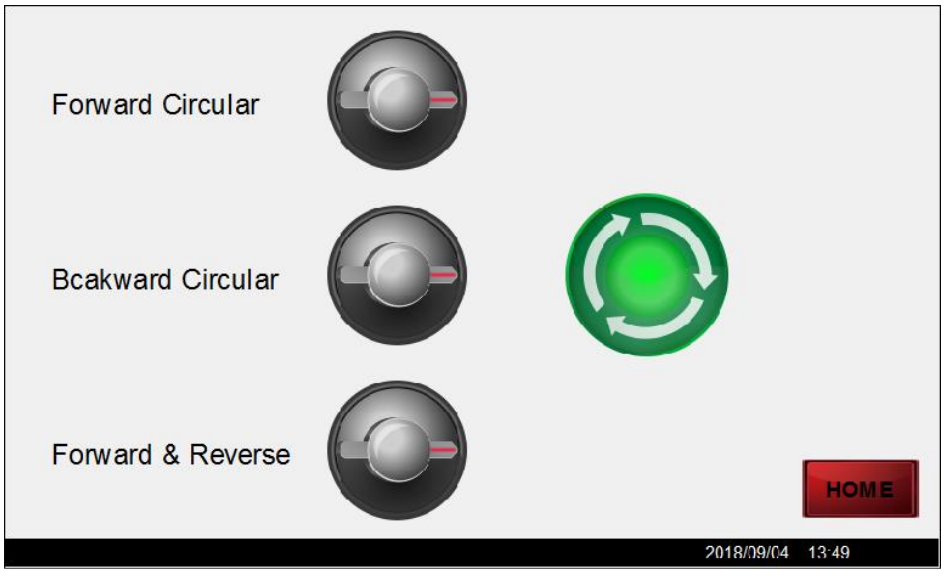
c. Each multistate button defines a different way of 【Change States】. After completed, save, compile and download the project and then run it.

d. Edit the state of the indicator and the multi-state buttons:

【No. of States】: 8 and 【Icon】: edit and set the state value 0-7 corresponding to the icons.



This exercise is based on the following figure, observe the state change effect of the three multi-state buttons and the corresponding reaction of the indicator.



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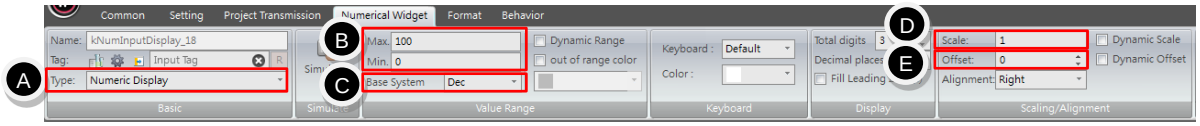
VALUE RELATED WIDGETS

Version 2.00

5. Value Related Widgets

When HMI is being connected to devices, not only the traditional numerical widgets, but also the widgets such as meters, bars, sliders can be used to show state of the data when reading and writing data.

5.1 Numerical Widget



A. Type: can be set as one of the two types, 【Numeric Input】/【Numeric Display】

B. 【Max./Min.】: its value can be set within the value range between 【Max.】 and 【Min.】. The available value range will be based on its type and base system.

C. 【Base System】: the base system of the value can be set as【Dec】,【Hex】, 【Oct】 or 【Bcd】.

D. 【Scale】: the state value of the tag undergoes multiplication (set as integer) or division (set as decimal) operation by the value of 【Scale】.

E. 【Offset】: Widgets undergoes addition (set as positive numbers) or subtraction (set as negative numbers) operation by the value of 【Offset】.

The calculation formula is: actual displayed value＝value of the tag＊（Scale）＋（Offset）.

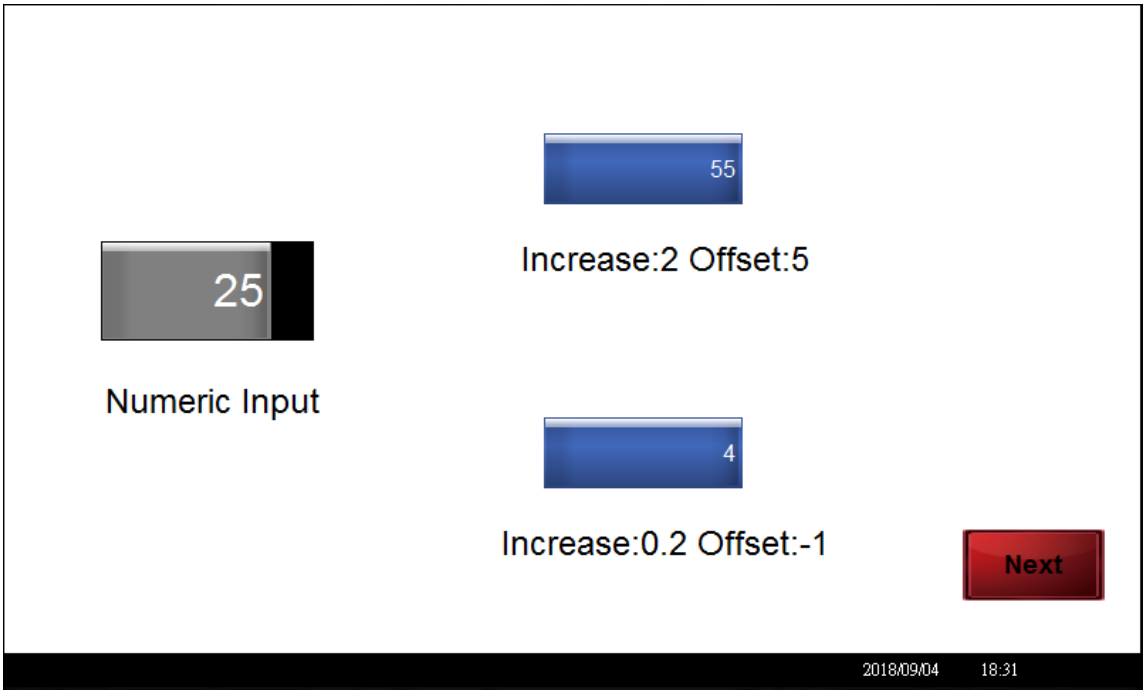
Exercise：

a. In 【Tags】, add a tag with the name defined as 【Value test】 and specify its corresponding address 【@33】.

Tags | System Information Tags | System Control Tags | Recipe Tags

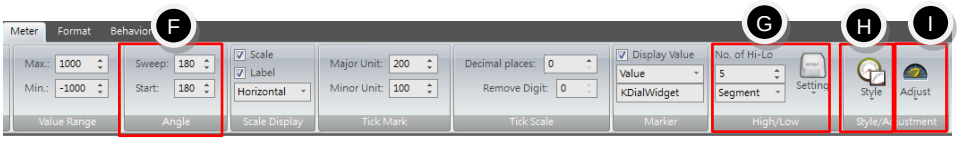
	Tag Name	Connector	Type	Address	Comment
20	Numeric_Test	InternalMemory	UINT(16)	@33	

b. Drag a 【Numerical Input】 widget and two 【Numerical Display】 widgets from【Widgets Library】onto the screen. All of them are connected to the tag 【Value test】.
c. Edit the property of the first 【Numerical Display】 widget: set scale as 2 and offset as 5 in scaling/alignment.
d. Edit the property of the second【Numerical Display】widget: set scale as 0.2 and offset as -1 in scaling/alignment.



※ Scale is 2 and offset is 5. When the state value of the tag is 25, the displayed value will become 2*25+5=55.
※ Scale is 0.2 and offset is -1. When the state value of the tag is 35, the displayed value will become 0.2*25-1=4.

5.2 Meter

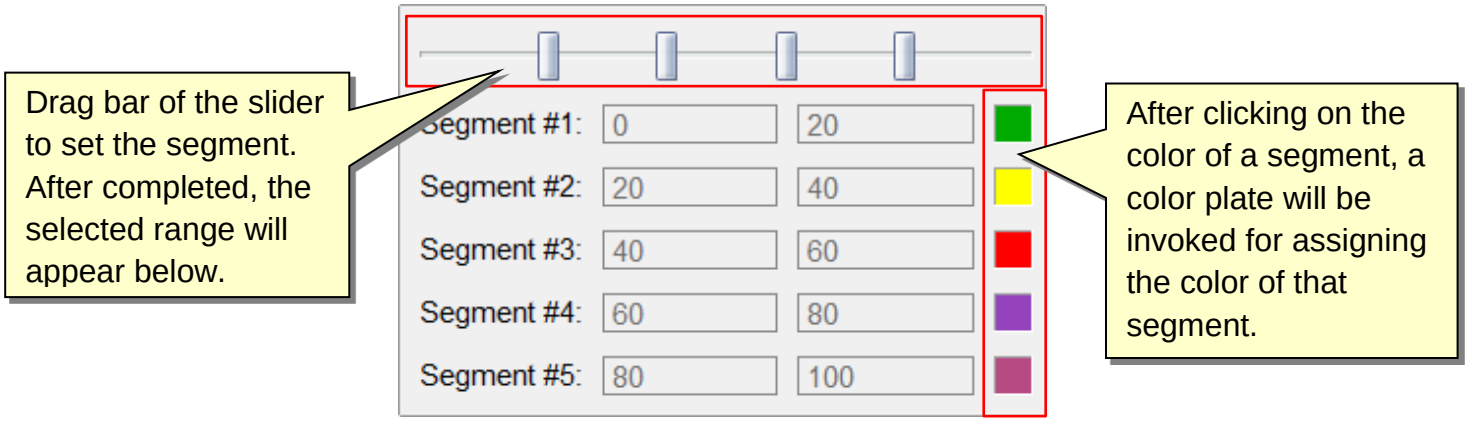


F. 【Angle】: 【Sweep】 can be set between 0 degrees to 360 degrees. （0 degree=no display, 360 degrees=full circle）, 【Start】 is for setting the angle of the meter when starting at 0 degree and its available setting range is 0~359.

G. 【High/Low】: set the parameters related to the segmented range of the meter.

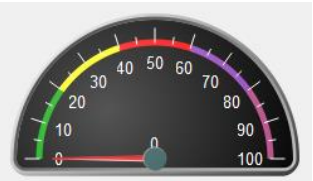
The meter can support multi-segmentation for displaying different value range. The display method can be chosen among 【Gradient】 or 【Segment】 or None. The range and color of the segments can also be defined respectively.

No. of Hi-L can be set up to 8. After pressing 【Setting】, a dialog will be invoked for defining the range and color of each segment.

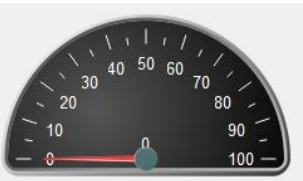


The display effect for 【Gradient】

The display effect for 【Segment】



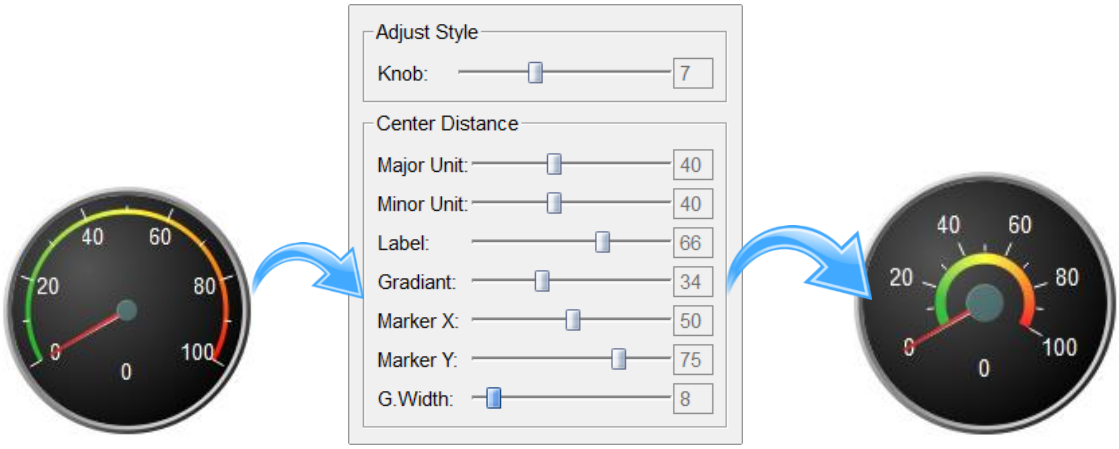
The display effect for 【None】



H. 【Style】: set the property for the appearance of the meter. You can set different kinds of meter onto the four quadrant, including 【Full Circle】,

【Semi-Circle (Upward)】, 【Semi-Circle (Downward)】, 【Square】, 【Rectangle (Upward)】, 【Rectangle (Downward)】, etc.

I. 【Adjustment】: set the property for the components of the meter, including 【Knob】, 【Unit】, 【Label】, 【Gradient】, etc. You can adjust them to create a gauge with a unique style.



Exercise：

a. In 【Tags】, add a tag with the name defined as 【Meter test】 and specify its corresponding address 【@34】.

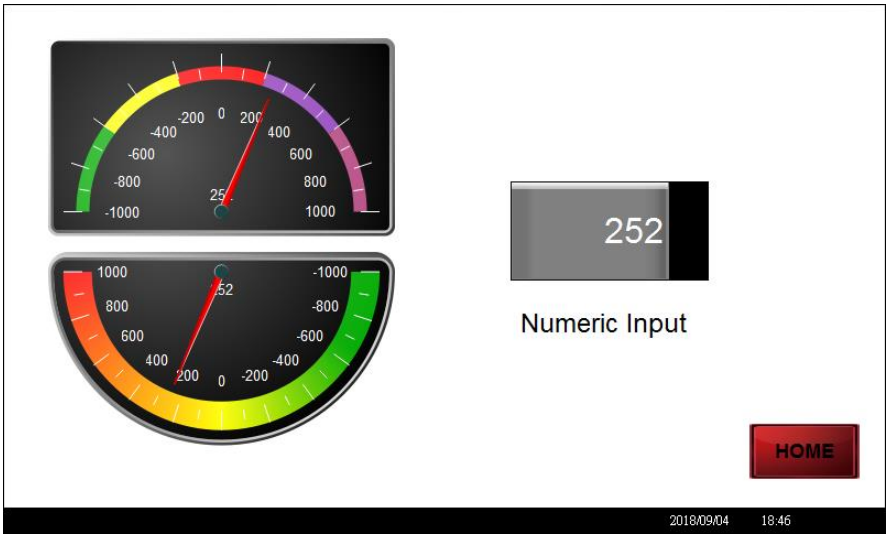
Tags | System Information Tags | System Control Tags | Recipe Tags

	Tag Name	Connector	Type	Address	Comment
22	Meter_Test	InternalMemory	INT(16)	@35	

b. Drag a 【Numerical Input】 widget and two 【Meter】 widgets from 【Widgets Library】 onto the screen. All of them are connected to the tag 【Meter test】.

c. Practice the modification of 【Style】, 【Value Range】, 【High/Low】, etc. of the meter.

d. Test whether you can design a gauge with an effect same as the figure below and verify.



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ACTION BUTTON

Version 2.00

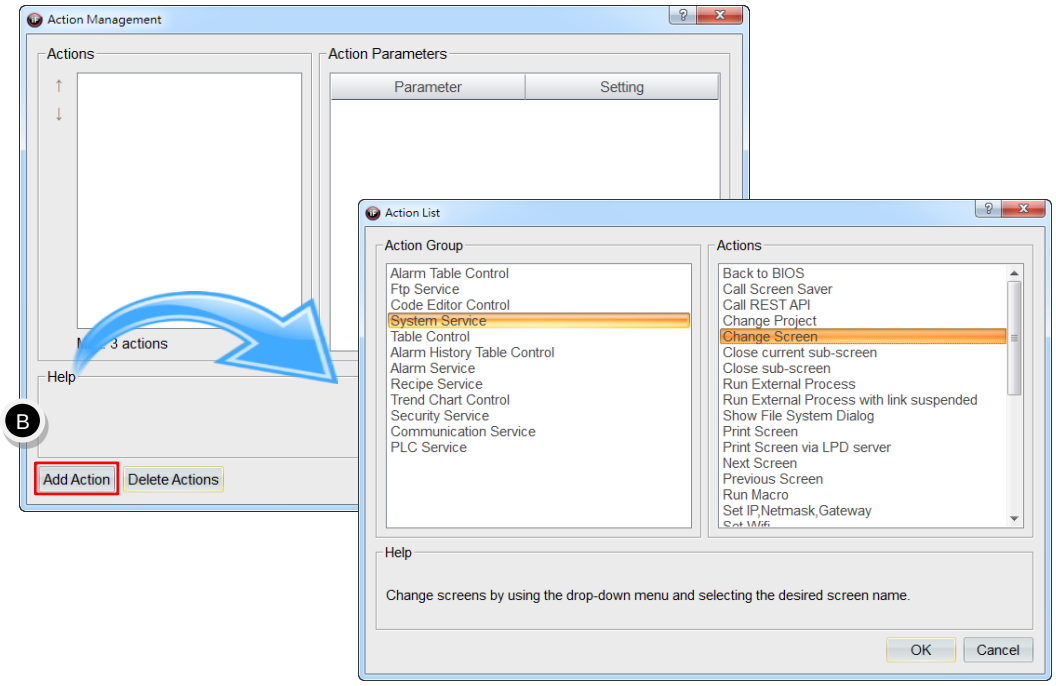
6. Action Button

Action button is similar to 【Button】, but tag address is not required to set. Its main application is to specifically run all kinds of settings in 【Action】.

6.1 Action Button

Since the function tab and format tab of the action button is very similar to button, so the detailed description related to these settings can be referred to the section 【Button】 in this manual and will not be given here.

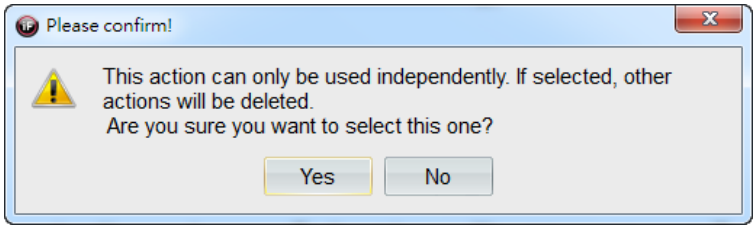
A. 【Behavior】can set the related properties of function behavior. Press【Edit】 and open action management dialog.



B. 【Add Action】: You can add at most 3 actions based on the property of the action. But some actions can only be used independently.

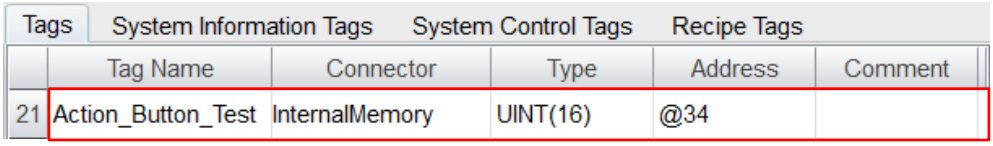
C. For example, add the action 【Back to BIOS】, etc. The hint message for

confirmation of independent action will appear.



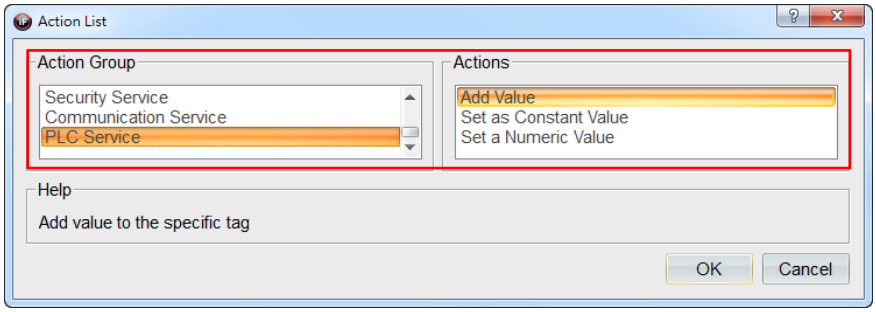
Exercise 1:

a. In 【Tags】, add a tag with the name defined as 【Action_button_test】 and specify its corresponding address 【@34】.

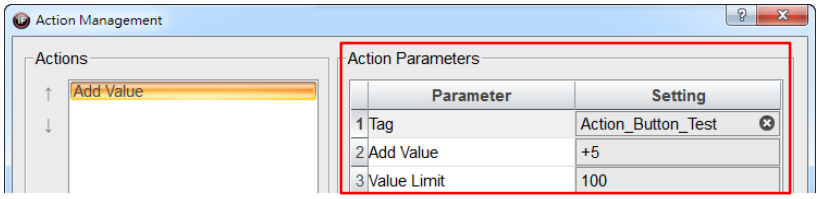


b. Drag a 【Action Button】 widget from 【Widgets Library】 onto the screen.

c. 【Action Button】→【Behavior】→【Edit】. After pressing【Add Action】, select the action group 【PLC Service】→【Add Value】in action list.



d. In【Action Parameters】, connect the tag to the tag【Action Button test】; set the setting for add value as 【+5】 and the setting for value limit as 【100】.

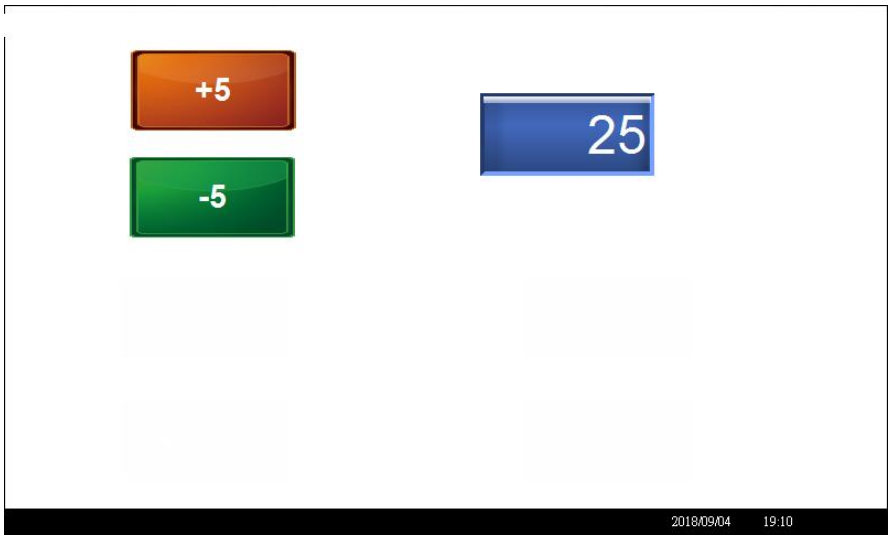


e. Add a new action button according to the procedure described in (2) - (4). In 【Action Parameters】, connect the tag to the tag 【Action button test】; set the setting for add value as 【-5】 and the setting for value limit as 【0】.

f. Drag a【Numerical Display】widget from【Widgets Library】onto the screen and connect to the tag 【Action button test】.

Simulation & Verification:

It can be seen in the following figure. Press the action button 【Add value +5】 once and then the displayed value will add 5. If you continued to press the button, the value will be increasing up to 100 and then it will stop adding up; on the other hand, by pressing the action button 【Subtract value -5】 once and then the value will subtract 5. If you continued to press the button, the value will be decreasing to 0 and then it will stop subtracting.



Exercise 2:

Continue the previous exercise and drag a 【Action Button】 widget from 【Widgets Library】 and then edit the property of 【Behavior】. Specify the actions such as 【Change Screen】, 【Back to BIOS】, 【Set Backlight】, etc. respectively and then test and verify.


+5
25
-5
Set Backlight (5)
Set Backlight (20)
Back to BIOS
HOME
2018/09/04 19:10

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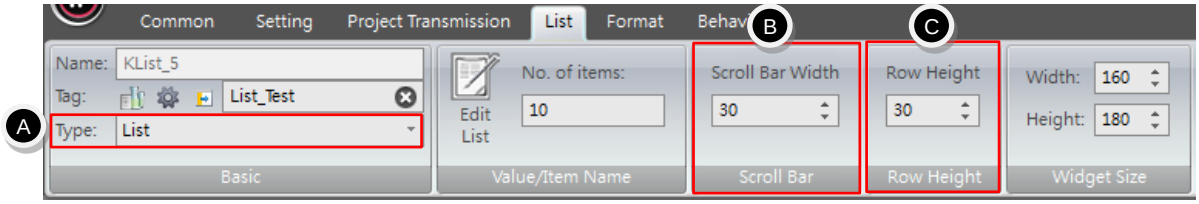
LIST

Version 2.00

7.List

List is a widget for displaying options by listing to users for making a choice.

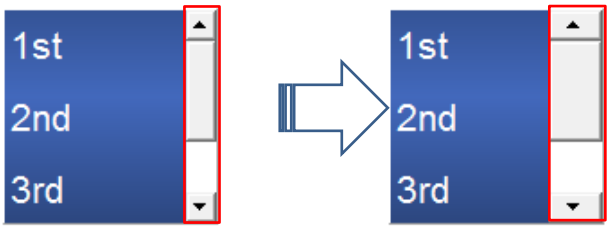
7.1 List



A. Lists can be divided into three types:【List】,【Drop-down Menu (Upward)】,【Drop-down Menu】.

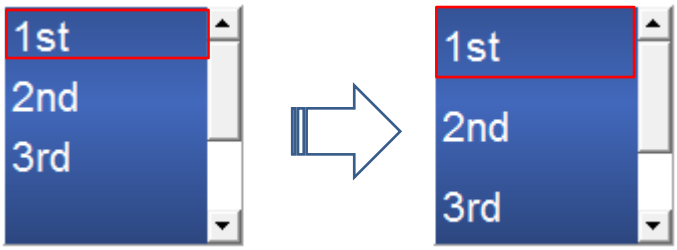
- 【List】: use the scroll bar to display the content of the items and then select an item.
- 【Drop-down Menu (Upward)】: select the symbol 【▲】 to display the drop-down menu and then use the scroll bar to display the content of the items and then select an item.
- 【Drop-down Menu】: Select the symbol【▼】to display the drop-down menu and then use the scroll bar to display the content of the items and then select an item.

B. 【Scroll Bar】: set the width of the scroll bar in the range between 10 to 50. For example, change the width of the scroll bar from 10 to 20.



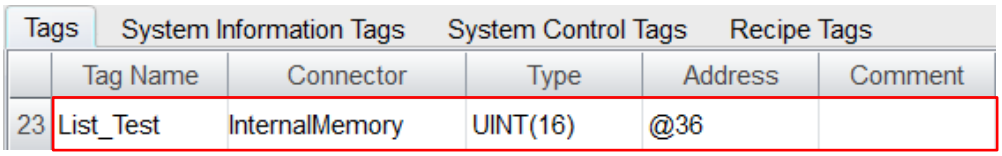
C. 【Row Height】: set the spacing between items on the list. Define row height

for each items on the list in the range between 10 to 100.
For example, change row height from 30 to 60.

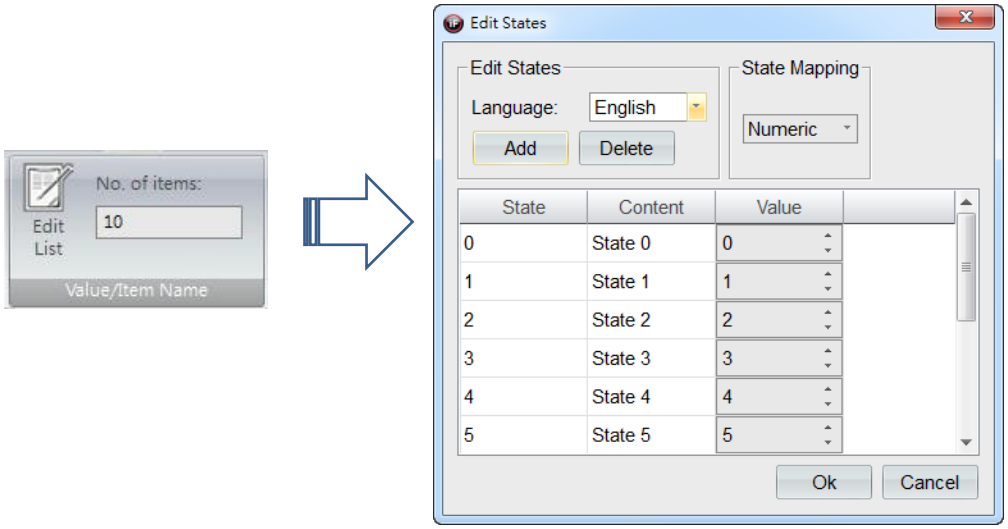


Exercise:

a. In 【Tags】, add a new tag with the name defined as 【List test】 and specify its corresponding address 【@35】.

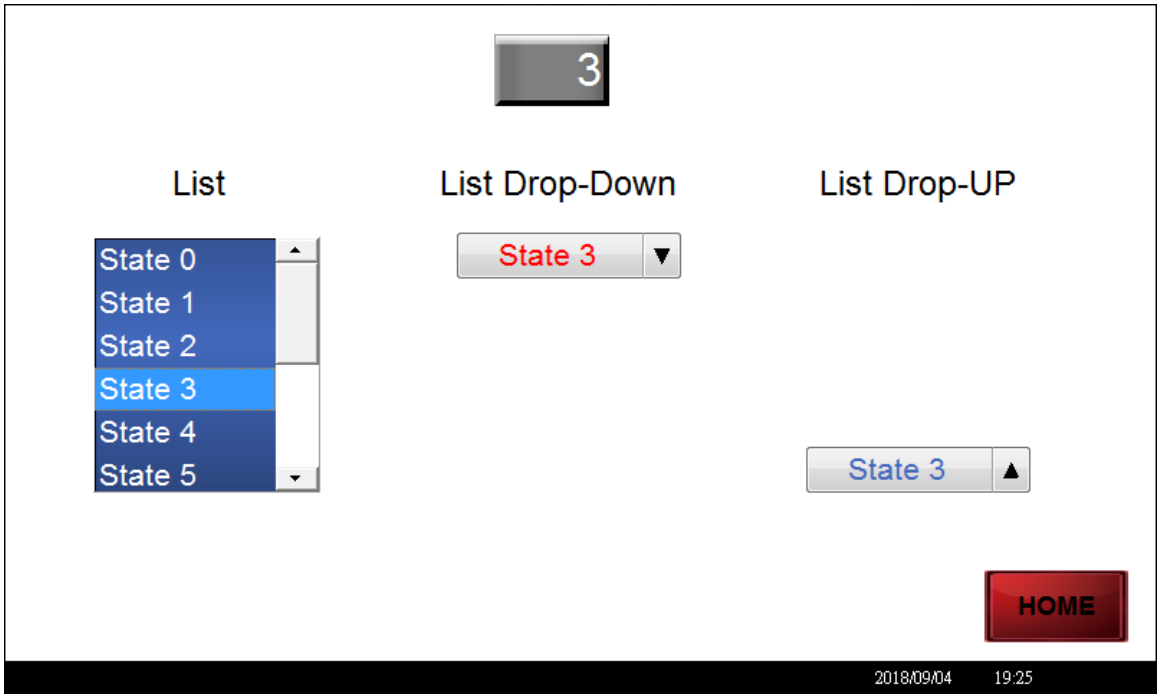


b. Drag a【Numerical Input】widget and a【List】widget, a【Drop-down Menu (Upward)】 widget, a 【Drop-down Menu】 widget from 【Widgets Library】 onto the screen. All of them are connected to the tag 【List test】.
c. Edit 【List】 widget to make a list with 10 states.



Simulation & Verification:

Perform a test to select the items on the list and the displayed value will also be changed based on the state value.



※List will transmit the corresponding value based on the item being selected and also display the corresponding item based on the value read.

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iFACE Designer

CONTAINER

Version 1.03

8. Container

This chapter mainly introduces three kinds of container widgets provided by iFACE Designer. Users can gradually learn about the usage of related setting and its application through simple operation.

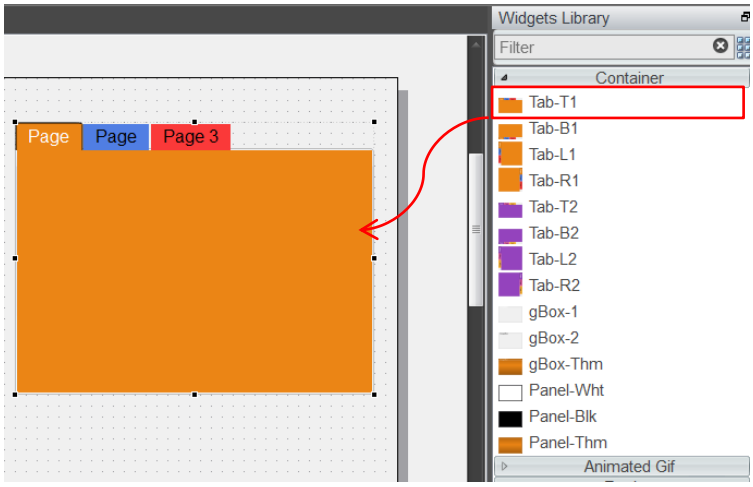
8.1 What are Containers?

Containers can collect and arrange one or more widgets as a group by its properties based on their joint type or purpose to accomplish the effect of making the designers design flexibly and the users operate conveniently.
When containers are being moved, the widgets placed inside the containers will also be moved along with the containers. So, no re-adjustments are required.
iFACE Designer has provided three kinds of containers:

A. Tab Folder
B. Group Box
C. Panel

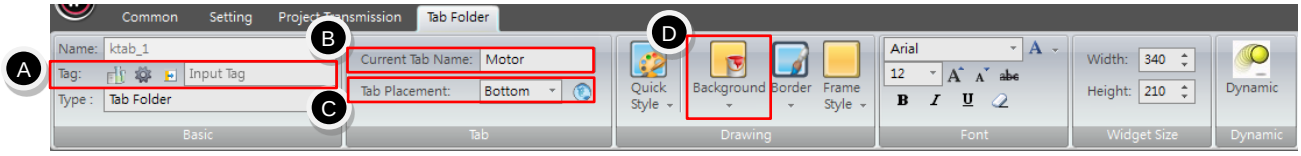
A. Tab Folder
Tab folders are for categorical management of screen data and you can switch rapidly between different tabs. At the same time, the performance of each screen can be enlarged through the function of tab folder, which is similar to rebuilding a bungalow to a high-rise tower.
Operating procedure:

a. First, we will start by dragging a tab folder from【Widgets Library/Container】.



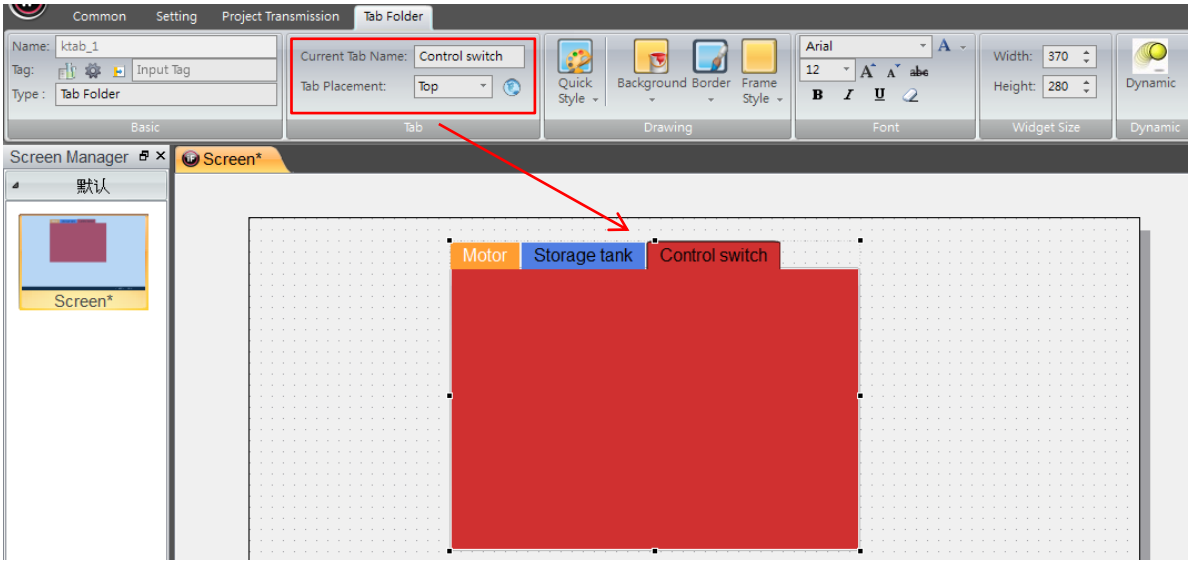
b. The default tab folder has three tabs. Color and name of the tab name can be set respectively and tab placement can also be set.

c. Select the tab folder on the screen and then the tab 【Tab Folder】 will appear.

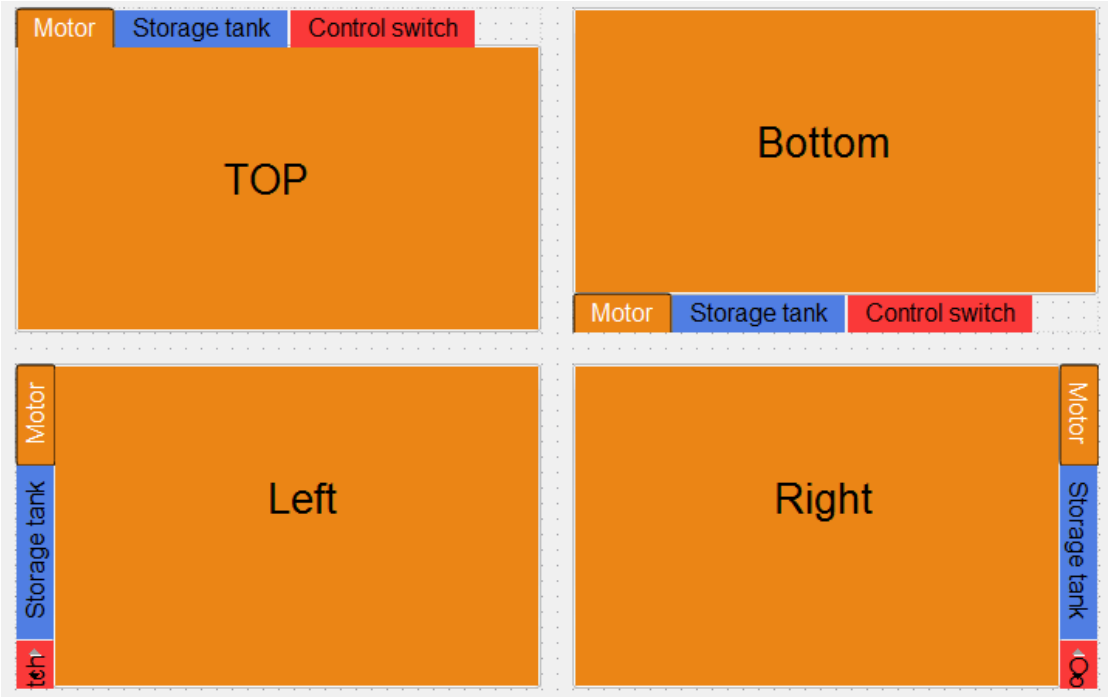


A. 【Tag】: can be set to control the page of the tab folder to display. For example, if the tag is set as 0, then the tab folder will show its first page.

B. Current Tab Name: set the name of the current tab. For example, we can change the name of the first tab from 【Page】 to 【Motor】. Next, we can change the name of the second tab to 【Storage Tank】 and the third tab to 【Control Switch】respectively.



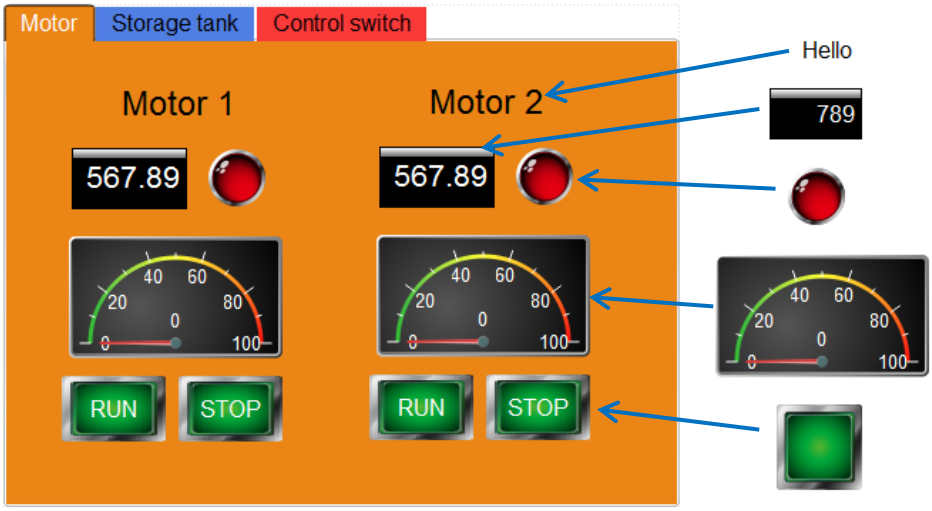
C. Tab Placement: set the placement of the tab such as 【Top】, 【Bottom】, 【Left】, 【Right】.



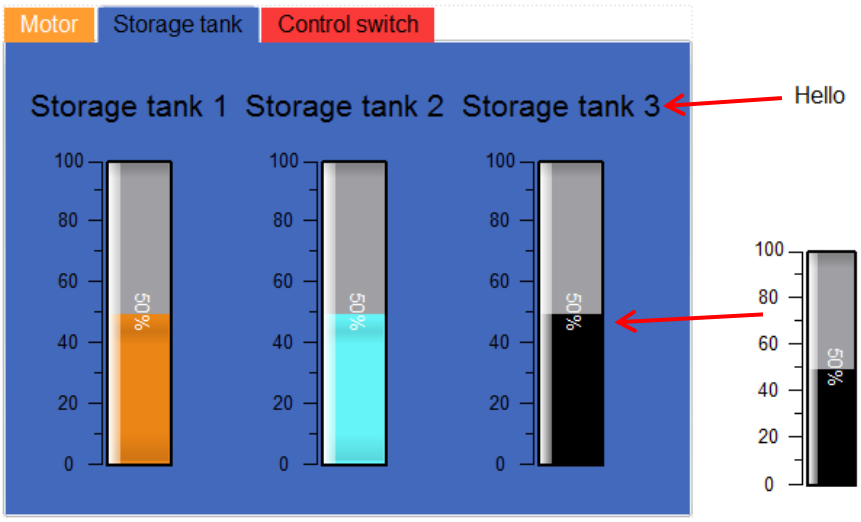
D. The color of the current tag can be set in 【Drawing/Background】.

Next, we can put the widgets onto the tab folder respectively.

a. Select the tab【Motor】for the display and control of the rotation speed of the motor.
b. In this tab, we will use the widgets such as 【Static Text】, 【Numerical Widget】, 【Indicator】 and 【Meter】, 【Button】.

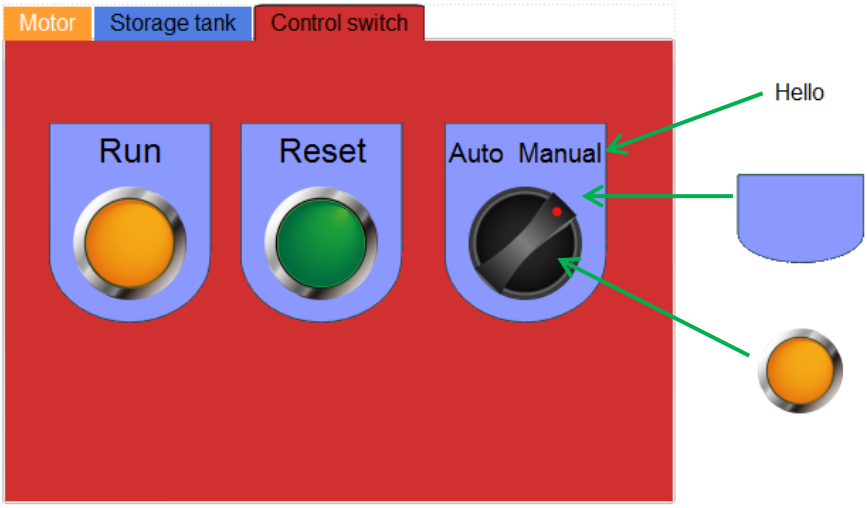


c. Select the tab 【Storage Tank】 for the liquid level of the storage tank.
d. In this tab, we will use the widgets such as 【Static Text】 and 【Bar】.



e. Select the tab 【Control Switch】 for some control buttons.

f. In this tab, we will use the widgets such as 【Static Text】, 【Flow Control】, 【Button】.



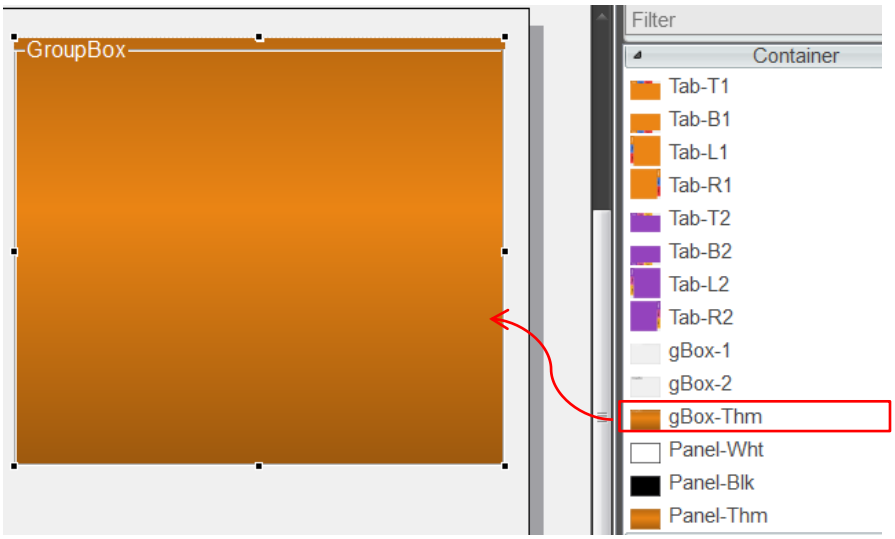
After completed, we can select each tab to view and make sure that everything is correct, and then the setting is finished.

B. Group Box

Group box can combine some control widgets by a frame with text.
These control widgets are often belonged to the same type or collected to accomplish a certain purpose together.

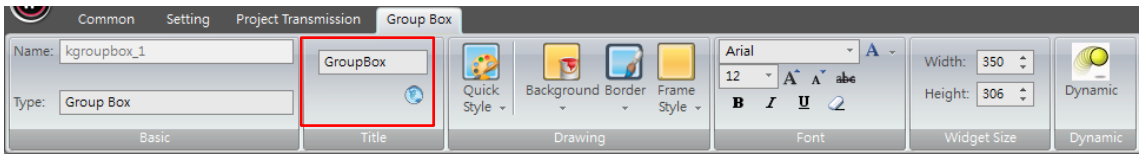
Operating procedure:

a. First, we will drag a group box from 【Widgets Library/Container】.

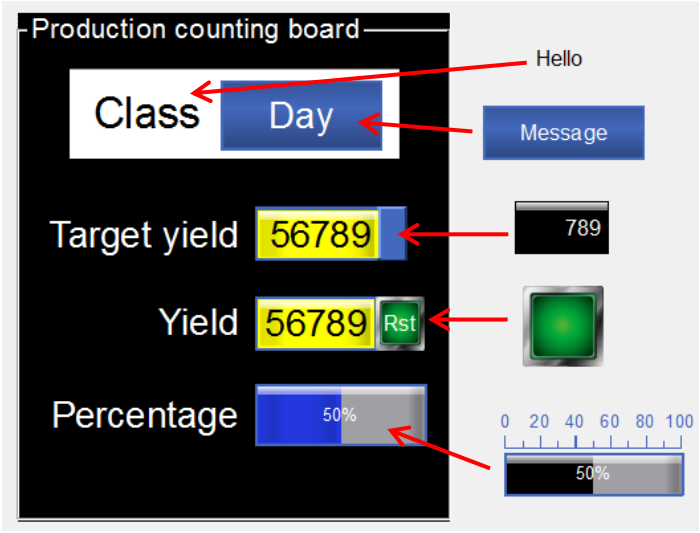


b. Next, you can set the 【Title】 and background color of the group box.

c. If we wish to make a board to record daily production, we can set the title as 【Production counter】. The color is set in background. Black is set in this example.



d. Next, add all required widgets into the group box. In this example, we will use the widgets such as【Static Text】,【Message Display】,【Numeric Widget】, 【Action Button】, 【Bar】 (as in the following figure). So, a production counting board that includes instruction is completed.



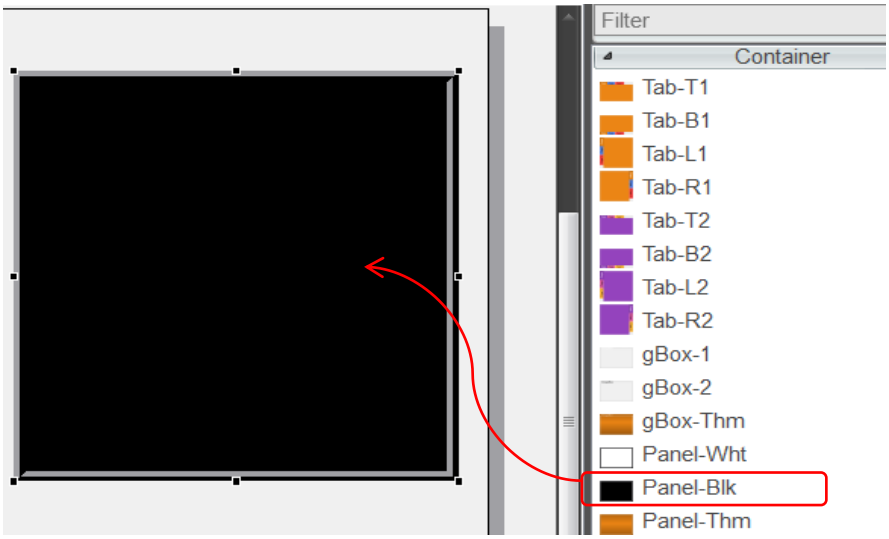
C. Panel

Panel is a special frame that combines some control widgets and applies special effects such as all kinds of colors or materials to make a beautiful and practical control panel.

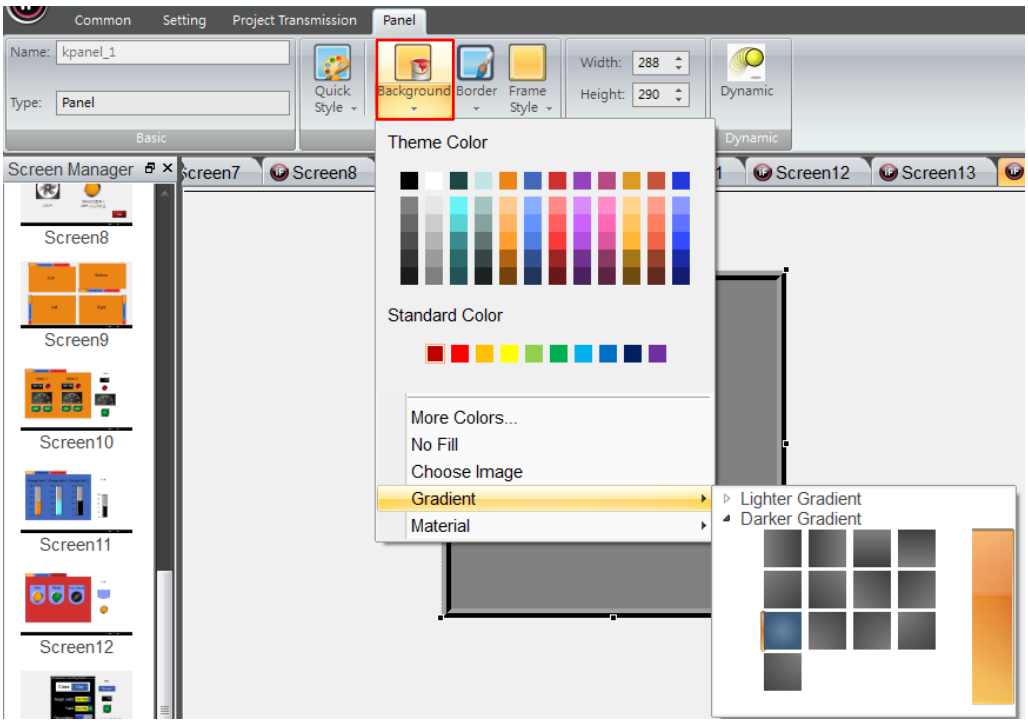
For example, the control panel for temperature controller and frequency converter, name plate on the widget.

Operating procedure:

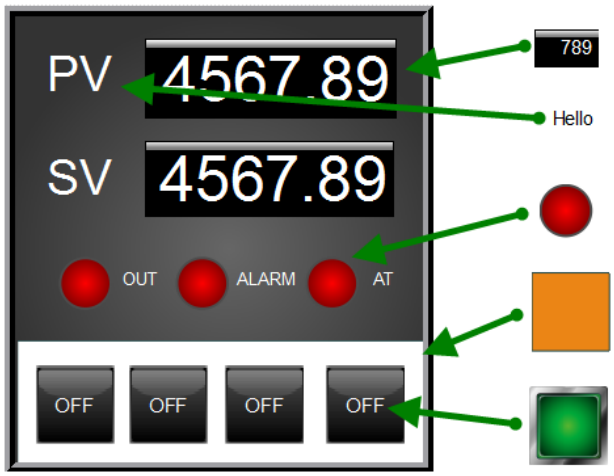
a. First, we drag a panel from 【Widgets Library/Container】.



b. Next, we can set the color of the panel. Assume that we want to make a panel for simulated temperature controller, and then the background of the panel can first be set as light gray, which can be combined with the gradient effect to produce special feelings of plastic panel.



c. Next, we can add the required widgets onto the panel in order.
In this example, we will use the widgets such as 【Static Text】, 【Numerical Widget】, 【Indicator】, 【Flow Control】, 【Button】.



d. Therefore, we can use 【Panel】 at ease and a beautiful panel for temperature controller is completed.

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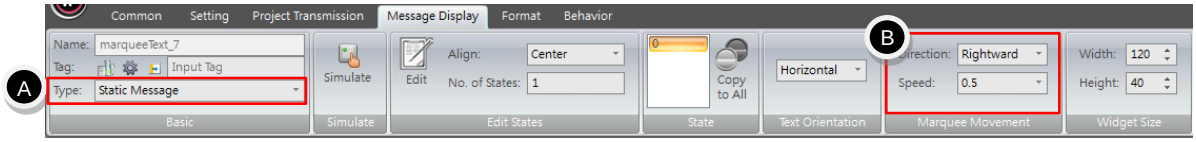
MESSAGE DISPLAY

Version 2.00

9.Message Display

The specified message is displayed based on the set state value of the tag. We can display the corresponding contents based on its state. Also, we can display in the form of marquee.

9.1 Message Display



A. Widgets for message display can be divided into three types: 【Static Message】, 【Marquee Message】, 【Alarm Message】.

- 【Static Message】: read the corresponding texts and display them on the widget by changing the state value of the tag. The displayed text is static, which is similar to static text. The difference between them is that static message can display texts of multiple states.
- 【Marquee Message】: read the corresponding texts and display them on the widget by changing the state value of the tag. The displayed text will move in the form of marquee.
- 【Alarm Message】: When an alarm occurred, it will read the texts of the alarm message and display them by moving in the form of marquee. The settings related to alarms can be referred to the chapter 【Alarm】 in this manual.

B. 【Marquee Movement】: set the display properties related to marquee message. You can set its 【Direction】 and 【Speed】.

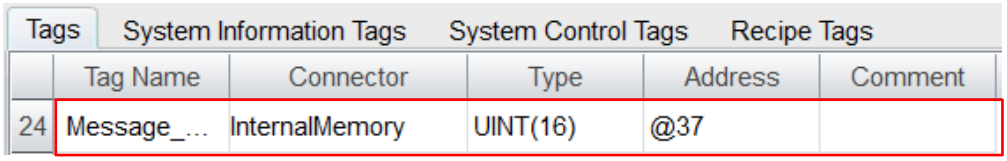
- 【Direction】: The relative movement direction of marquee can be set based on 【Text Orientation】 of message display. If text orientation is set as【Vertical】, then the movement direction can be set as【Upward】 or 【Downward】; if the text orientation is set as 【Horizontal】, then the movement direction can be set as 【Leftward】 or 【Rightward】.

- 【Speed】： the movement speed of every word in the marquee message. You can set the speed as 【0.5】, 【1】, 【1.5】 or 【2】. The smaller the value is, the faster the movement speed is.

Remark: You can set movement direction and speed of marquee for 【Marquee Message】 and 【Alarm Message】. But marquee movement does not work for 【Static Message】.

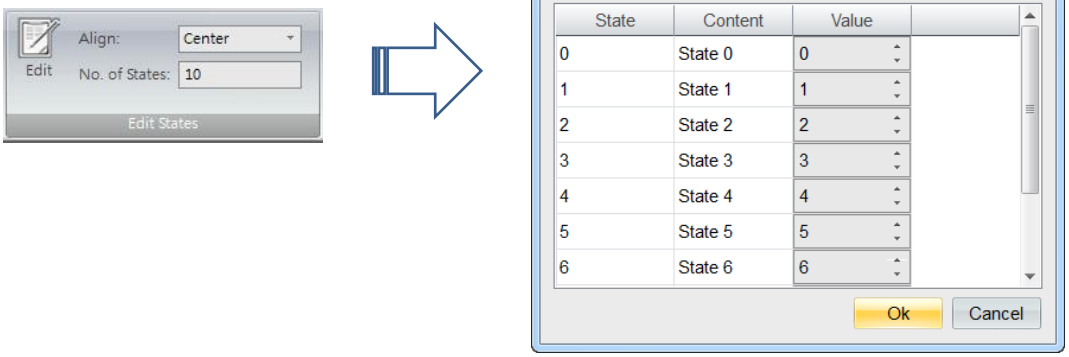
Exercise:

a. In【Tags】, add a new tag with the name defined as【Message display test】 and specify its corresponding address 【@36】.

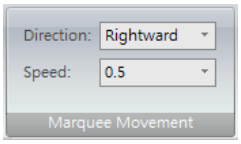


b. Drag a 【Numerical Input】 widget and a 【Static Message】 (Horizontal) widget, a 【Marquee Message】 (Horizontal) widget from【Widgets Library】 onto the screen. All of them are connected to the tag【Message display test】.

c. Edit 【Static Message】 (Horizontal) widget and 【Marquee Message】 (Horizontal) widget to make both of them having 10 states each.

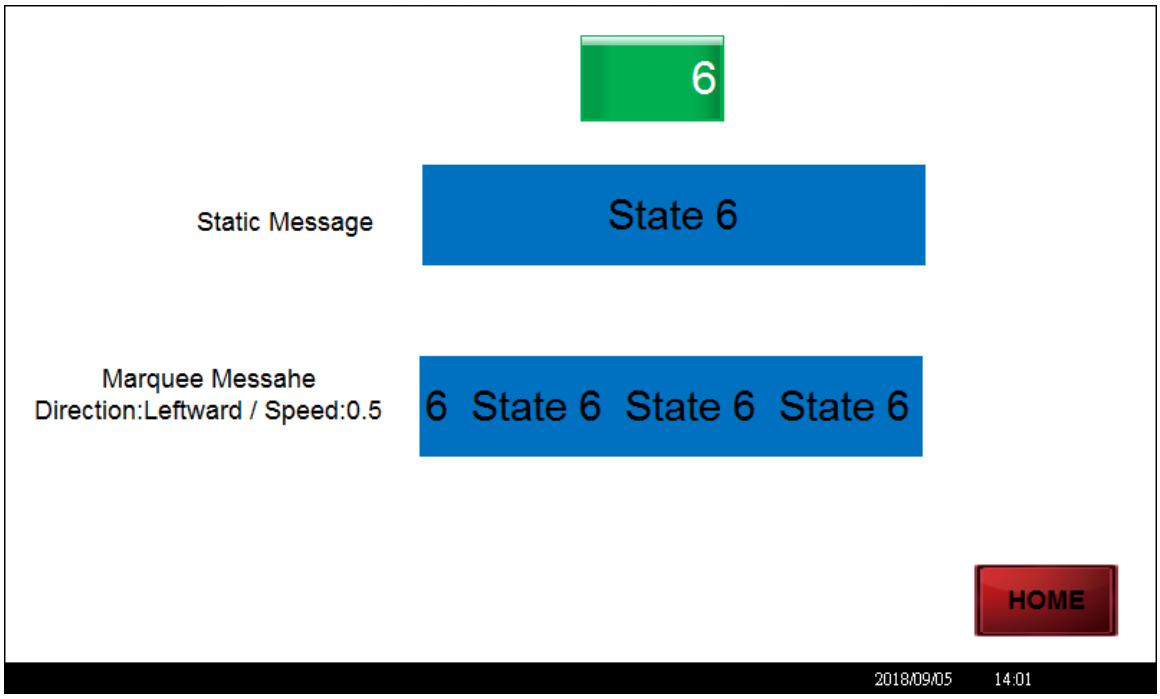


d. Set the properties of the 【Static Message】 (Horizontal) widget. You can edit movement direction and speed. For example, change【Direction】 to leftward and 【Speed】 to 0.5.



Simulation & Verification:

Modify the value to change the state of the message display. Static message is displayed with state 6 and the marquee message is moved to the left every 0.5 second.



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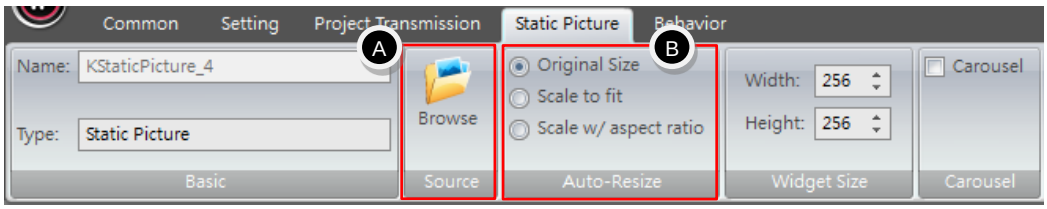
STATIC PICTURE AND ANIMATED GIF

Version 2.00

10. Static Picture and Animated Gif

Static picture and animated gif are mainly for directly displaying the pictures in your computer on the screen without the control by tag. A common application is for displaying company LOGO or status of the machine and also making them look nicer on HMI screen.

10.1 Static Picture

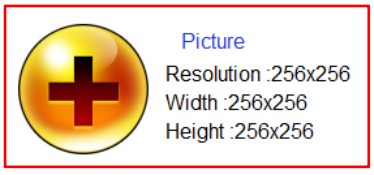


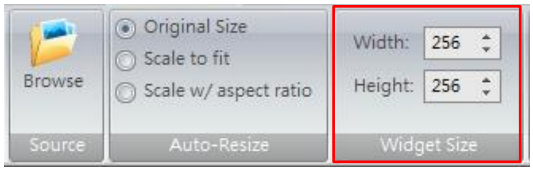
A. 【Static Picture】 can be applied by choosing from external pictures. Source of the static pictures can support up to eight kinds of image file formats such as png, jpg, bmp, gif, jpe, xbm, xpm, svg.

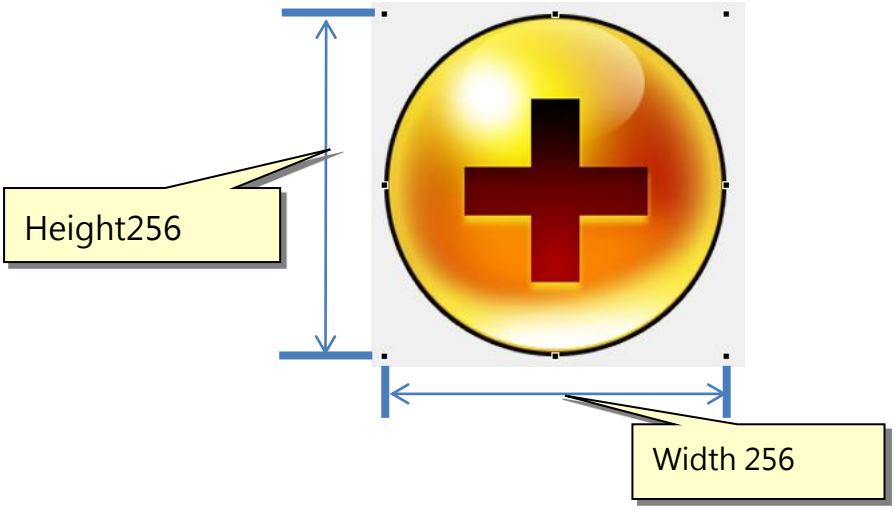
B. 【Auto-Resize】 can change the ratio of the picture to be displayed on the screen. You can choose among the three options: 【Original Size】, 【Scale to fit】, 【Scale w/aspect ratio】 and the description of them are as follows.

10.1.1 Original Size

The original picture taken from the source has the size of 256 x 256. After the picture is being imported, if 【Original Size】 is being selected, then you need to set the width and height of the 【Static Picture】 as 256 x 256 pixels in order to display the complete original picture. It can be seen in the figure below:

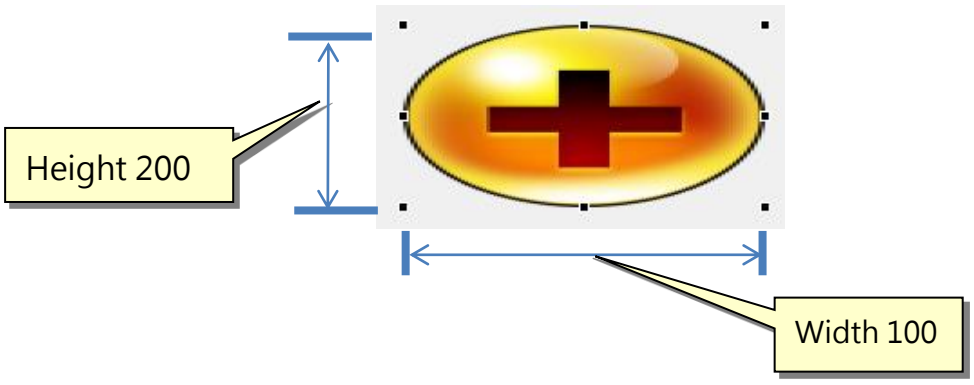






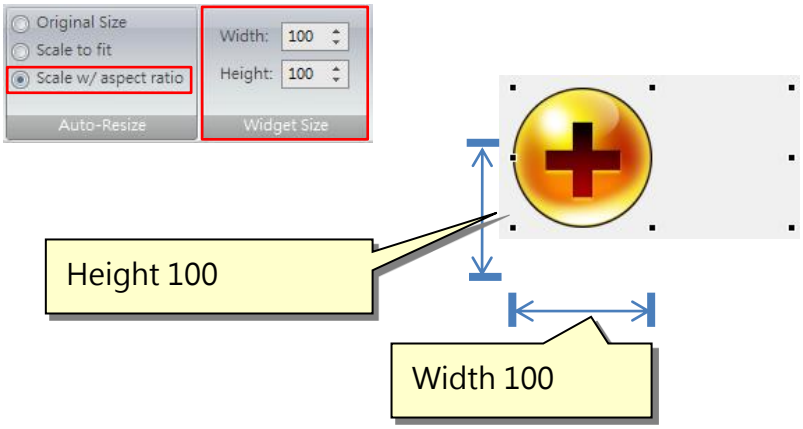
10.1.2 **Scale to Fit**

If【Scale to fit】is selected, then the size of【Static Picture】will be changed to 200 x 100 automatically. The ratio for displaying the original picture with the resolution of 256x256 will be based on the set widget size automatically. Since it will try to fill the picture in the widget, it is more likely to have obvious distortion. It can be seen in the figure below:



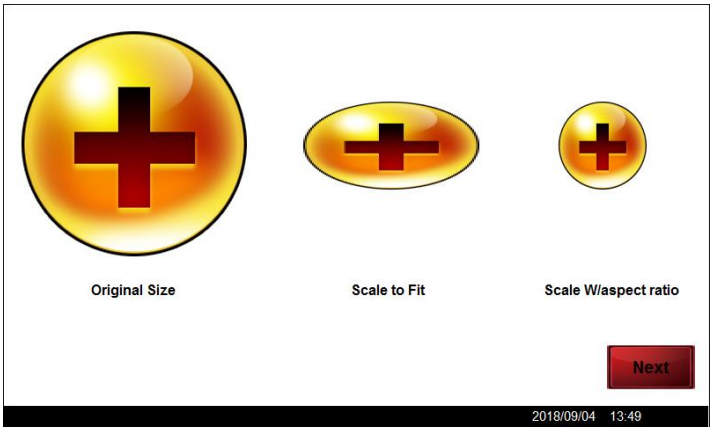
10.1.3 **Scale w/aspect ratio**

If 【Scale w/aspect ratio】 is selected, then the size of 【Static Picture】 will be kept as 200 x 100 automatically. The ratio for displaying the original picture with the resolution of 256x256 will be adjusted in accordance with the ratio of widget size. It can be seen in the figure below:

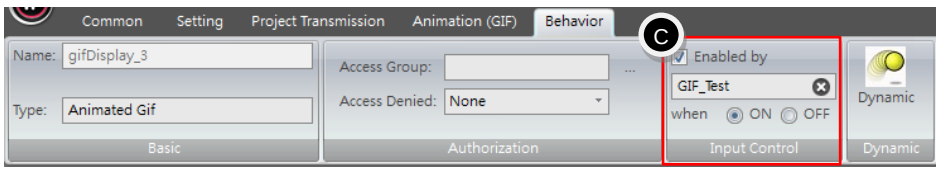


Exercise:

Please add static pictures to practice the automatic adjustments based on the screen below.



10.2 **Animated Gif**



When you add an animated gif on the screen, it will start its dynamic behavior. If you want to control the activation and stop the behavior of the animated gif, you can do so

by input tag under the tab 【Behavior】→【Input Control】→【Enabled by】 and set when to activate.

Exercise:

a. In【Tags】, add a new tag with the name defined as【Animated gif test】and specify its corresponding address 【@38.0】.

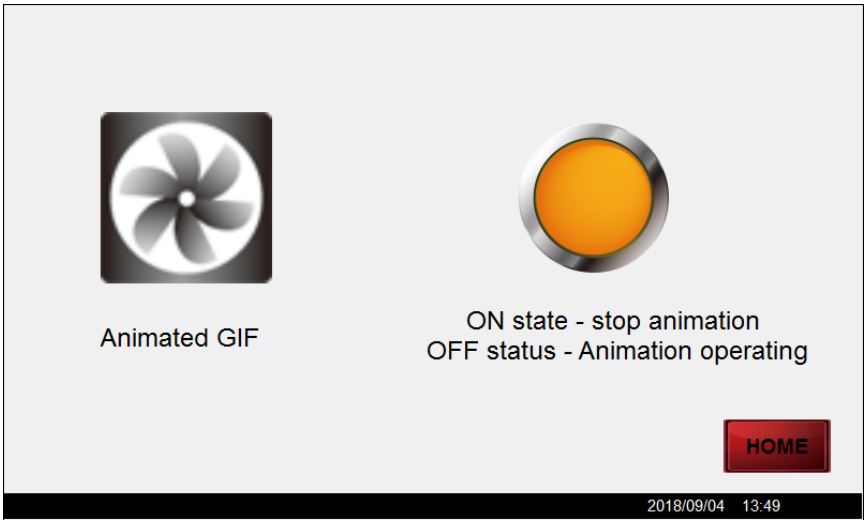
Tags | System Information Tags | System Control Tags | Recipe Tags

	Tag Name	Connector	Type	Address	Comment
25	GIF_Test	InternalMemory	Bit	@38.0	

b. Drag a 【Button】 widget and an 【Animated Gif】 widget from 【Widgets Library】 onto the screen. Connect 【Button】 to the tag address and set the tag 【Animated gif test】 in 【Enabled by】 under the tab 【Behavior】→【Input Control】.

Simulation & Verification:

The animation of the fan can be seen in the following figure. The activation or stop of the behavior is controlled by the tag 【Animated gif test】. If the state of the tag is ON （i.e. 【Animated gif test】＝1）, the animation will show a rotating fan; on the other hand, if the state of the tag OFF （i.e. 【Animated gif test】＝0）, then animation will stop and show a static fan.



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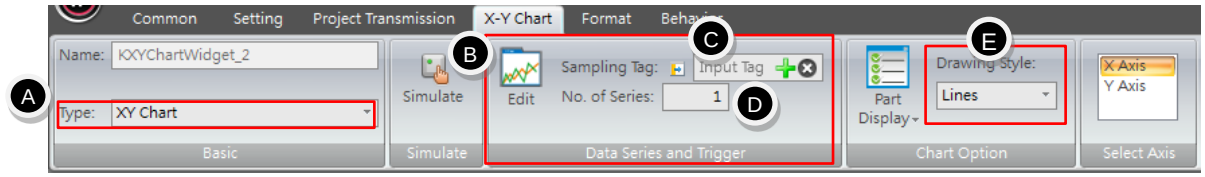
X-Y CHART

Version 2.00

11. X-Y Chart

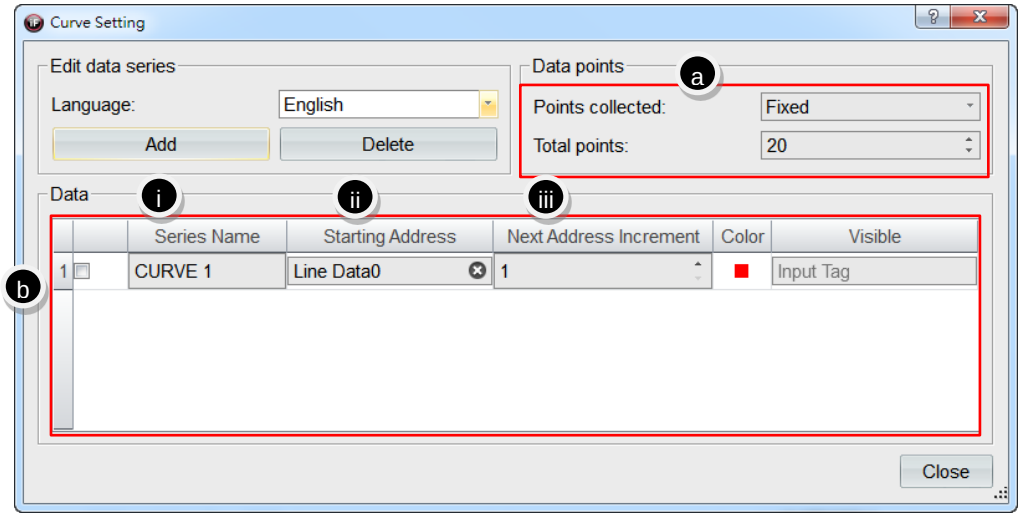
【Line Chart】 and 【X-Y Chart】 are curves drawn by sampling from data series for convenient analysis.

11.1 X-Y Chart



A. These charts can be divided into two types: 【Line Chart】 and 【X-Y Chart】.

B. 【Edit】 will invoke curve setting dialog.



a. 【Points collected: Fixed】: number of points displayed on the curve is based on total points. For example, if total points is set as 20, then the number of sampling points for each curve will be 20.

【Points collected: Variable】: number of points displayed on the curve is based on the state value of the tag. For example, if the connected tag is TAG1, then the number of sampling points of each curve will be 30 when the state value of TAG1 is 30.

b. 【Data】: set the data of each curve.
   i. 【Series Name】: set the name of the curve. The name supports multi-language.
   ii. 【Starting Address】: input the corresponding tag as the starting address for the curve sampling.
   iii. 【Next Address Increment】: set the increment number for the next sampling point.

C. 【Sampling Tag】: Input a tag to trigger curve drawing function. When the state value of the tag=1 (ON), it will draw the curve; when the state value of the tag=0(OFF), it will clear the drawn curve.

D. 【No. Of Series】: set the number of curves to display.

E. 【Drawing Style】: There are 5 kinds of styles provided for users to choose and use, including 【Dots】, 【Lines】, 【Curves】, 【Line Area】, 【Curve Area】.

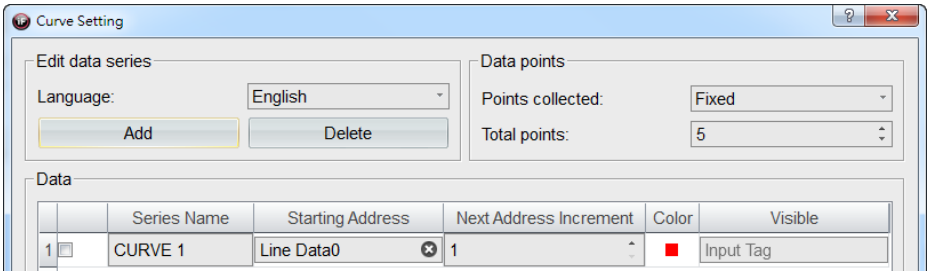
Exercise for X-Y Charts:

a. In 【Tags】, add 7 new tags.
b. Their names are defined as 【Curve trigger control】 and its corresponding address 【@39.0】; 【Data series 0-5】 and their corresponding addresses 【@40】 - 【@45】,respectively.

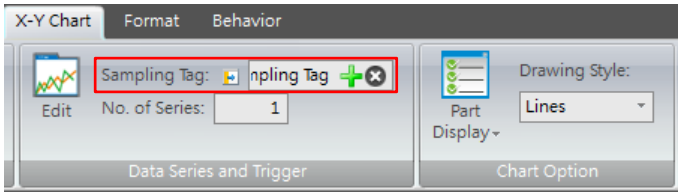
Tags | System Information Tags | System Control Tags | Recipe Tags

	Tag Name	Connector	Type	Address	Comment
26	Lin Samplin...	InternalMemory	Bit	@39.0	
27	Line Data0	InternalMemory	UINT(16)	@40	
28	Line Data1	InternalMemory	UINT(16)	@41	
29	Line Data2	InternalMemory	UINT(16)	@42	
30	Line Data3	InternalMemory	UINT(16)	@43	
31	Line Data4	InternalMemory	UINT(16)	@44	
32	Line Data5	InternalMemory	UINT(16)	@45	

c. Drag a 【Line Chart】 widget from 【Widgets Library】 and edit data. Points collected is as 【Fixed】, total points is set as 【5】 and starting address is set as 【Data series 0】 (as seen in the figure below).



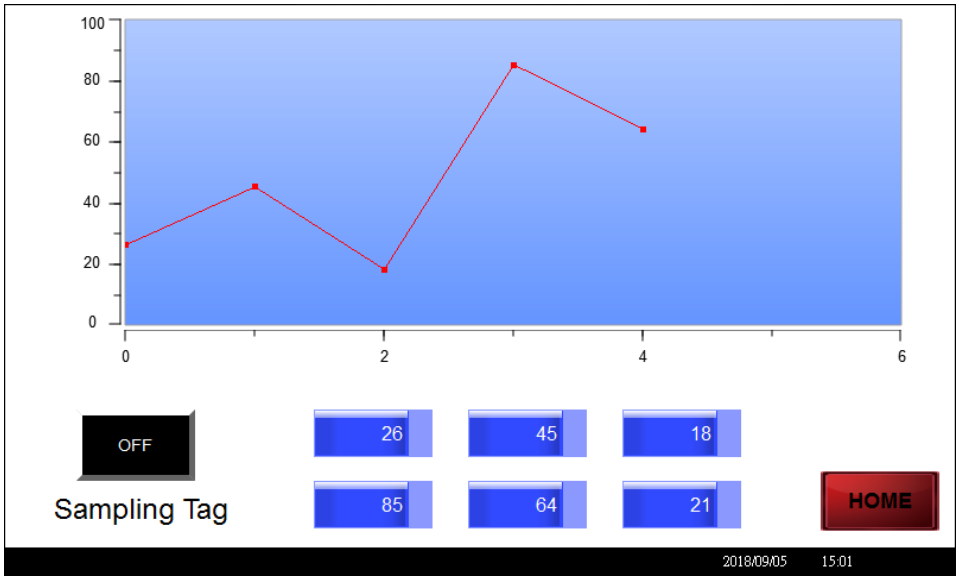
d. Input【Curve trigger control】 in 【Sampling Tag】.



e. Drag a 【Button】 widget and 6 【Numerical Input】 widgets from 【Widgets Library】 onto the screen. Connect 【Button】 to the tag 【Curve trigger control】and connect【Numerical Input】widgets to the tags Data series 0-5.

Simulation & Verification:

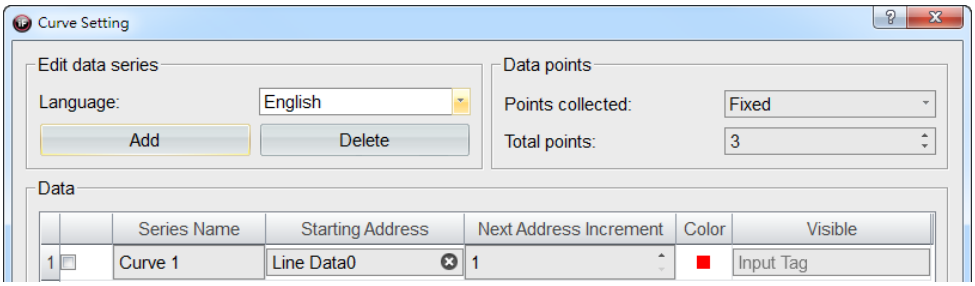
It will be the same as shown in the figure below. After finishing editing and entering the value, click the button on the screen. Line chart function will draw a line chart based on the 6 data series.



Exercise for X-Y Charts:

a. Continuing the previous exercise, use the tag addresses for 【Curve trigger control】 and 【Data series 0-5】.
b. Drag a 【Line Chart】 widget from 【Widgets Library】 and edit data. Points collected is set as 【Fixed】, total points is set as 【3】 and starting address

is set as 【Data series 0】 (as seen in the figure below).

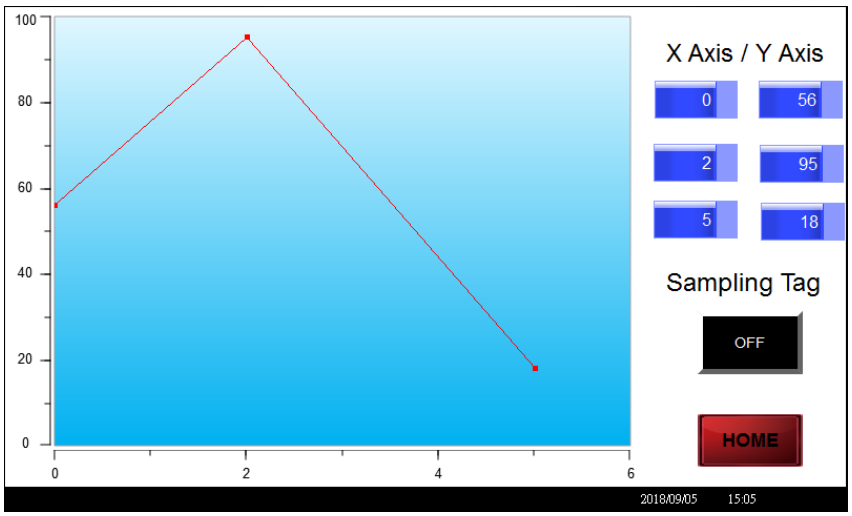


c. Input 【Curve trigger control】 in 【Sampling Tag】.

d. Drag a 【Button】 widget and 6 【Numerical Input】 widgets from 【Widgets Library】 onto the screen. Connect 【Button】 to the tag 【Curve trigger control】 and connect 【Numerical Input】 widgets to the tags 【Data series 0-5】.

Simulation & Verification:

It can be seen in the figure below. After finishing editing and entering the value, click the button on the screen. Line chart function will draw a line chart based on the 6 data series.



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DATA LOGGING

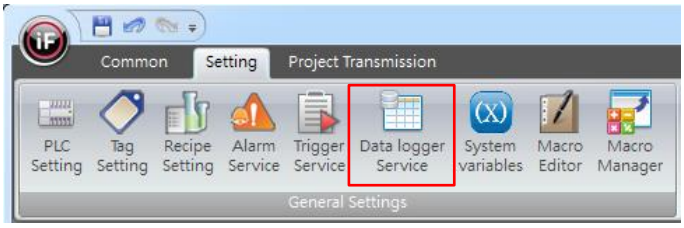
Version 2.00

12. Data Logging

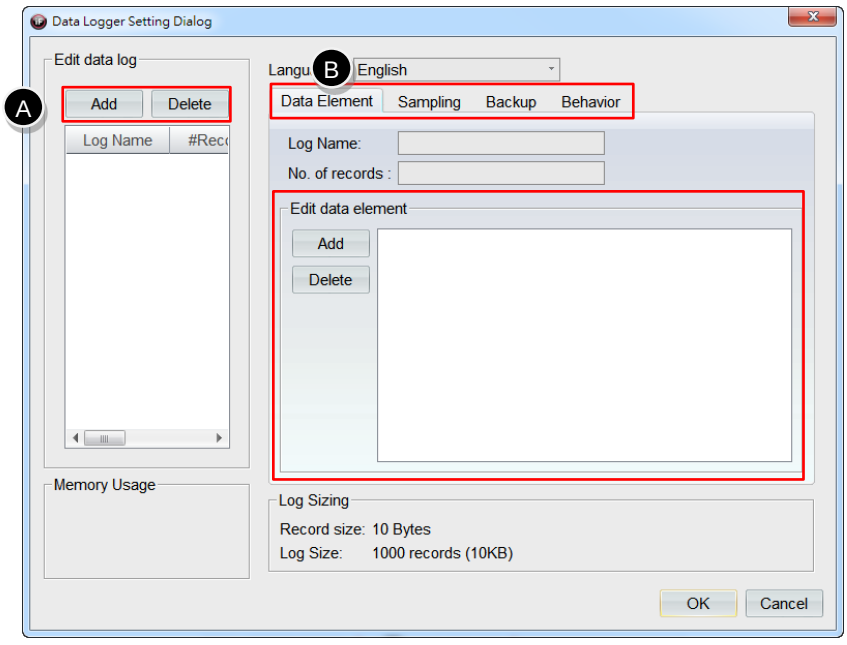
Data logger is mainly for saving data in the default buffer of HMI temporarily. If the buffer was not full yet, users can browse through old data at any time in HMI; if the buffer is full or it has reached the set condition, then the system will backup the data in the buffer to USB disk or SD card.

12.1 Data Logger Service

Click 【Data logger Service】 in the item group 【General settings】 under the tab 【Setting】.



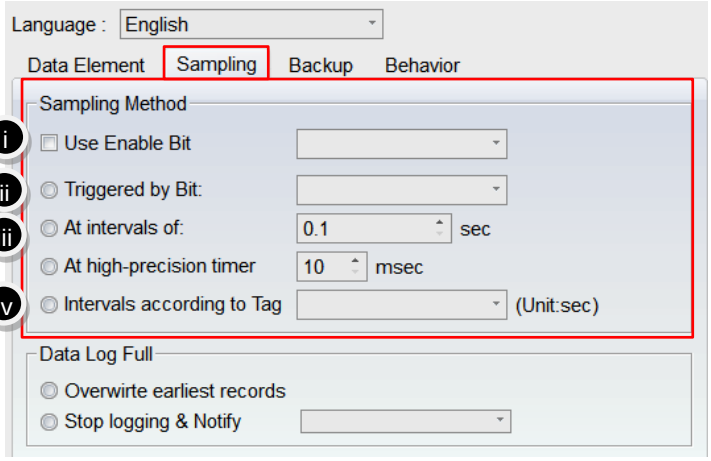
12.1.1 Data Logger Setting Dialog



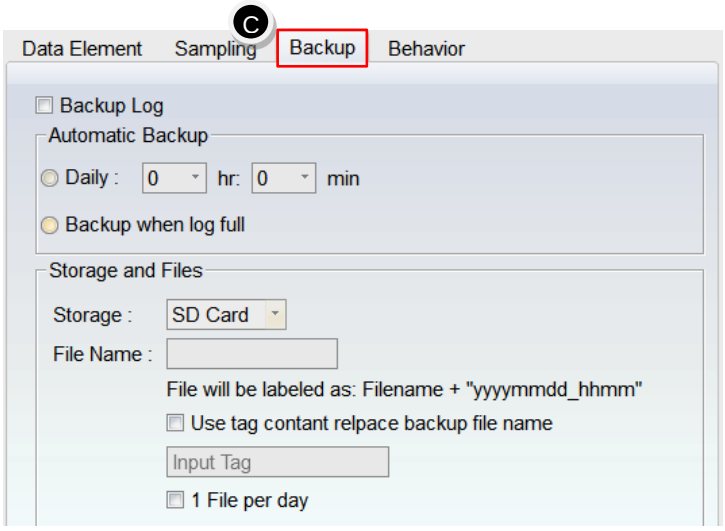
A. Log name can be added up to 16 data logs.

B. Every data log can independently define the fields such as【Data Element】, 【Sampling】, 【Backup】, 【Behavior】.

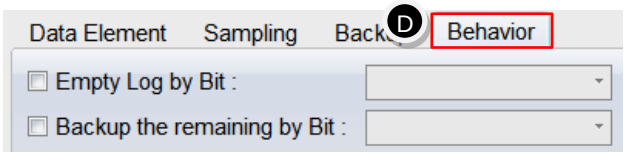
- 【Data Element】: each data log can support up to 32 tag addresses.
- 【Sampling】: set sampling method and the action when the data log is full.
  - i. 【Use Enable Bit】: when the state of the tag is ON, perform the sampling based on the conditions below; when the state of the tag is OFF, do not perform the sampling whether the conditions below hold or not.
  - ii. 【Triggered by Bit】: when the state of the tag turned ON, it will perform the sampling once. However, it is required to first set the state of the tag as OFF before triggering it once again.
  - iii. 【At intervals of】: set a fixed time interval for performing the sampling.
  - iv. 【Intervals according to Tag】: set the interval for performing the sampling based on the state value of the tag. The unit is in seconds.



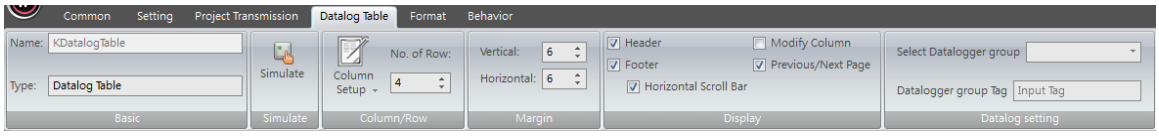
C. 【Backup】: set when to backup time and for what storage and files.

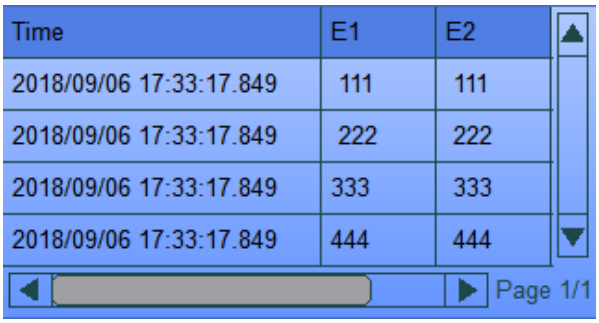


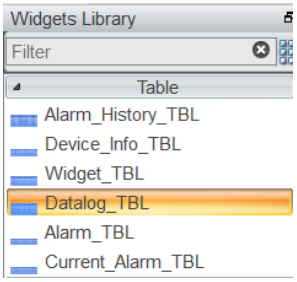
D. 【Behavior】: empty log or backup the remaining to USB disk or SD card.



12.2 **Datalog Table**



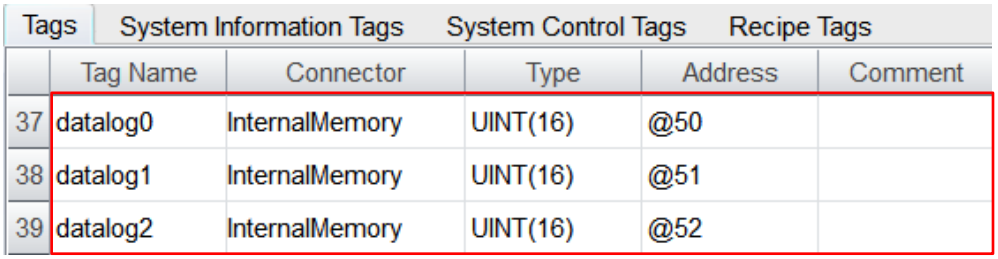




Use a table to browse through the contents of data log.

Exercise:

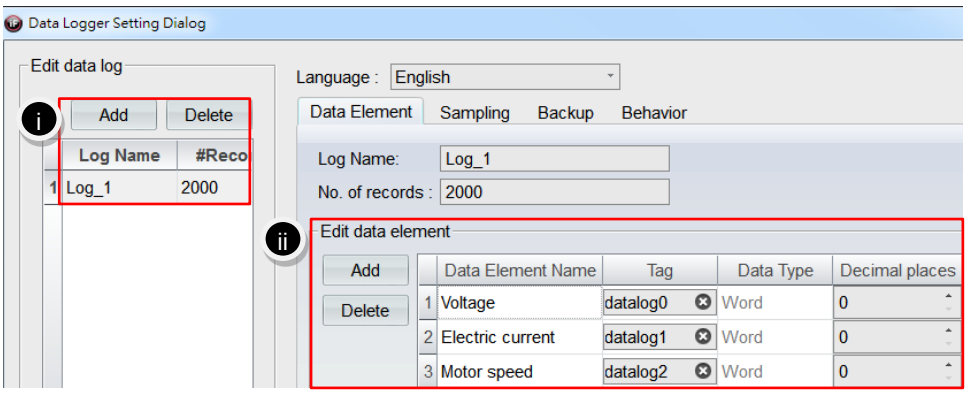
a. In 【Tags】, add 3 tags with their names defined as 【Data log 0-2】 and specify their corresponding addresses 【@50】 - 【@52】.



	Tag Name	Connector	Type	Address	Comment
37	datalog0	InternalMemory	UINT(16)	@50	
38	datalog1	InternalMemory	UINT(16)	@51	
39	datalog2	InternalMemory	UINT(16)	@52	

b. Edit data logger service 

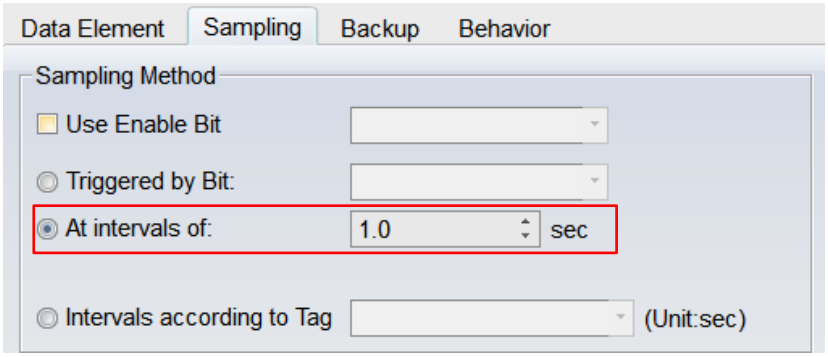
.



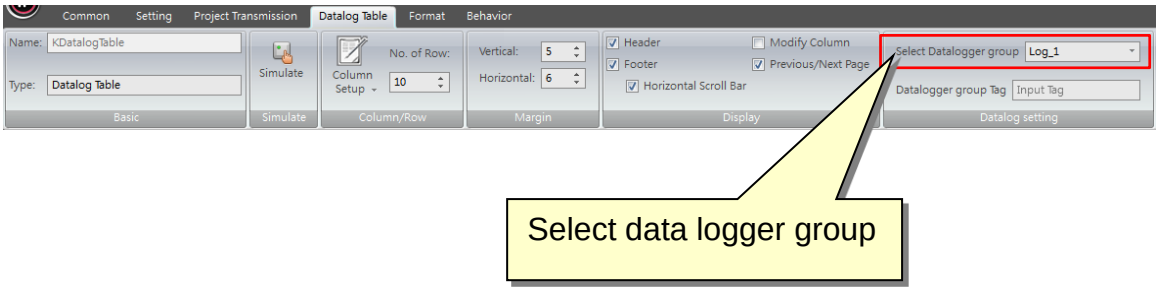
i. Add a data log.

ii. Add 3 data elements and fill in【Data log 0】-【Data log 2】in the field Tag.

c. Sampling: set at intervals of 1 second.

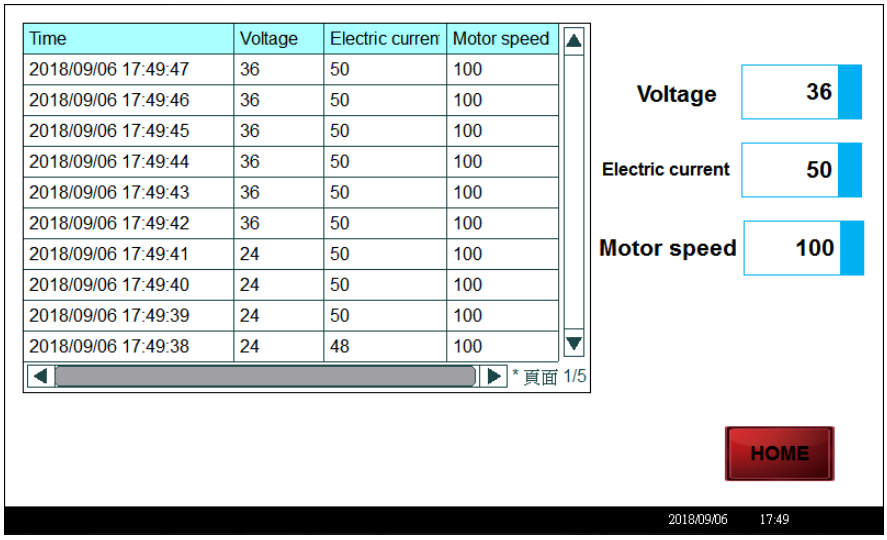


d. Drag a 【Datalog Table】 widget and 3 【Numerical Input】 widgets from 【Widgets Library】 onto the screen. The 3 【Numerical Input】 widgets are connected to the tags【Data log 0】-【Data log 2】, respectively. Select Data logger group 【Log_1】 in 【Data Setting】.

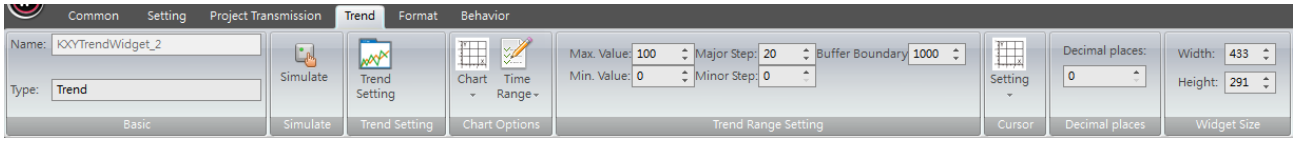


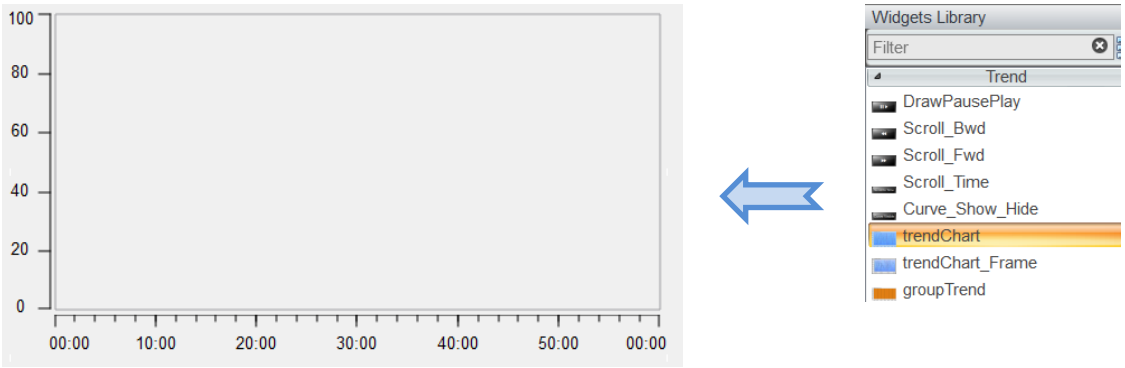
Simulation & Verification:

As shown in the figure below, 【Datalog Table】 reads the state values of voltage, current, motor rotation speed every second.



12.3 **Trend**





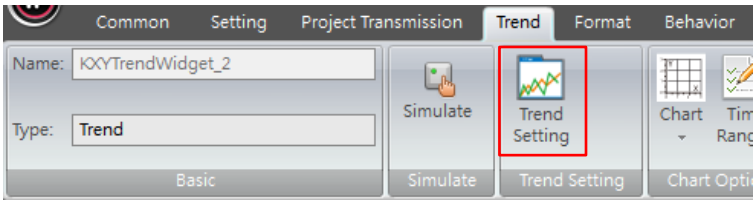
Use trend to browse through the contents of data log.

Exercise:

a. Keep the settings for the data log and tag addresses here the same as in chapter 11.2's exercise.
b. Drag a 【Trend】 widget and 3 【Numerical Input】 widgets from 【Widgets

Library】 onto the screen. The 3 【Numerical Input】 widgets are connected to the tags 【Data log 0-2】, respectively.

c. Click 【Trend】 to edit trend setting.

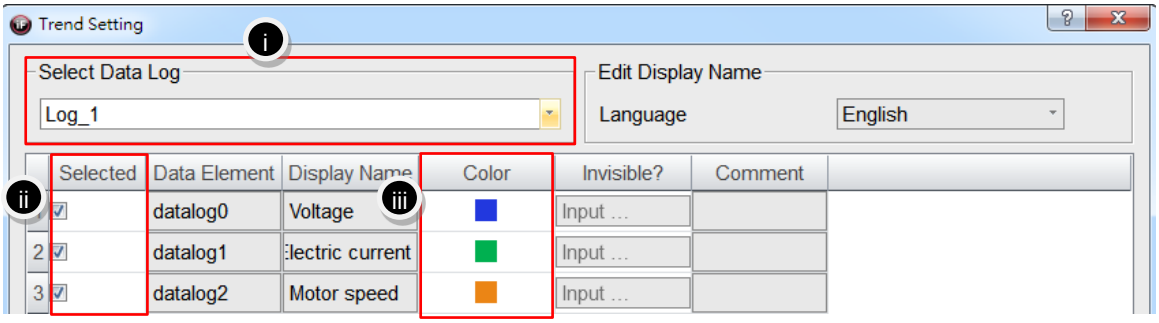


d. Trend Setting

i. Select Data Log: select Log_1.

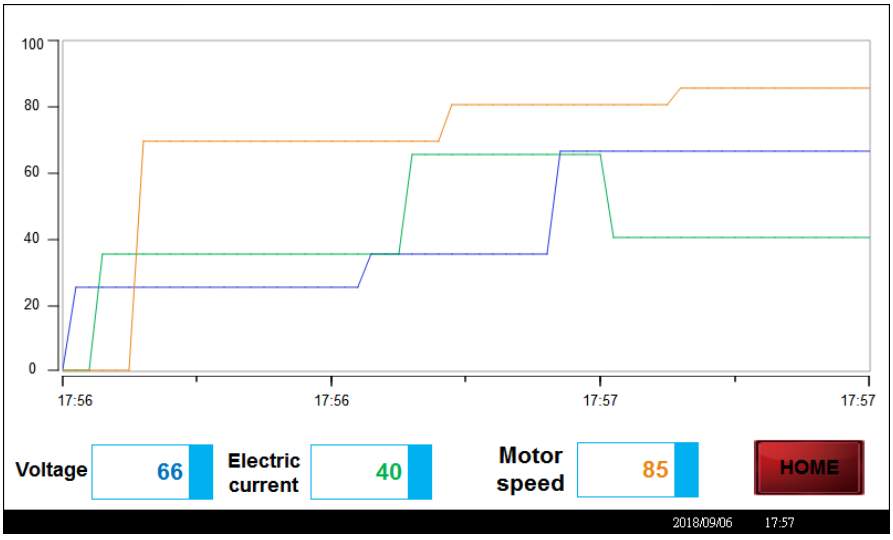
ii. Selected: tick box of the data log desired to display.

iii. Color: set the color of the trend.



Simulation & Verification:

It will be the same as shown in the following figure. 【Trend】 reads the data of voltage, current, motor rotation speed every second to draw the curve and display the effect by trend.



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ALARM SERVICE

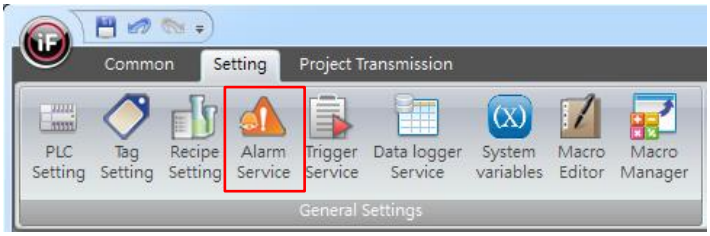
Version 2.00

13. Alarm Service

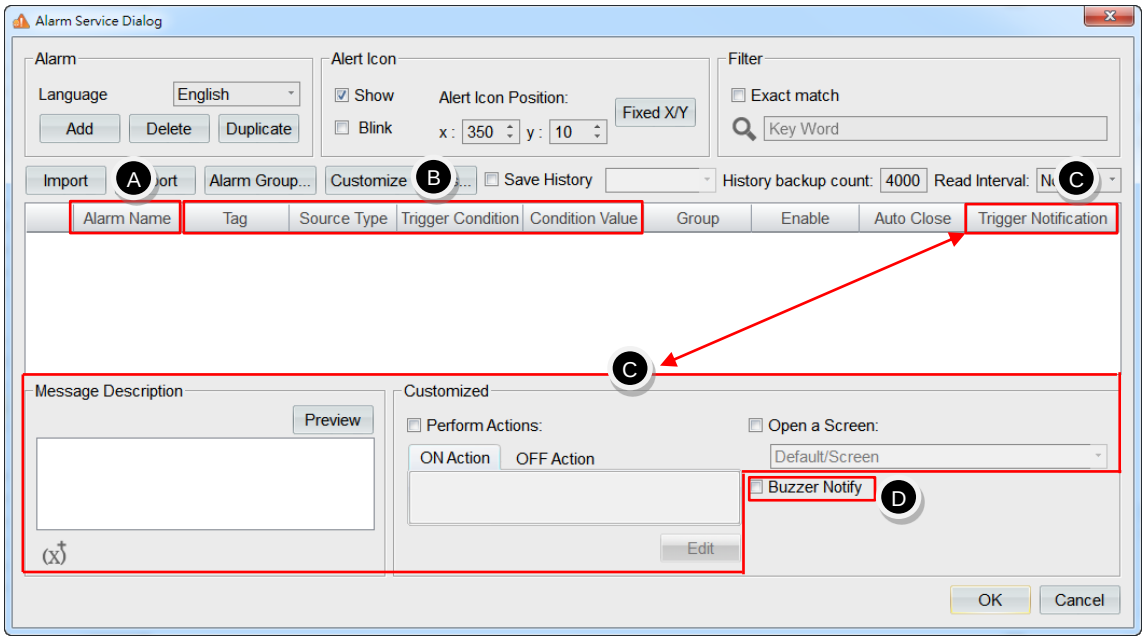
Alarm is being arranged into the design of the application in advance for abnormal situations that may occur during production process. When the abnormal situation occurred, it will give a hint of the reference for machine maintenance or simple trouble-shooting to the operator through HMI.

13.1 Alarm Service

Click on 【Alarm Service】 in the item group 【General Settings】 under the tab 【Setting】.



13.2 Alarm Service Dialog

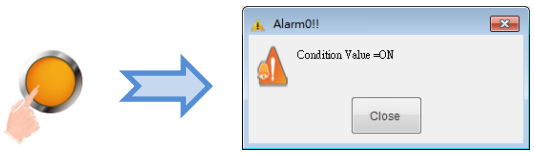


A. 【Alarm Name】: the corresponding texts of the alarm message will display when an alarm occurred.

B. 【Tag】: set the parameters 【Source Type】, 【Trigger Condition】, 【Condition Value】 in order by connecting the tag to determine the condition value for the alarm to occur.

Source Type	Trigger Condition	Condition Value
Bit Type	SET = 1 Clear = 0	No need to fill in. No effect if filled in.
Register Type	= (equal) =! (not equal) > (greater than) < (less than) >= (equal to or greater than) <= (equal to or less than)	Any value. Does not support characters as condition value for determination.

C. 【Trigger Notification】: When the trigger condition is established and the alarm has gone off, trigger notification can be given at the same time.

Simple Description	Use sub screen to display the content of the alarm. For example, when trigger condition has reached, it will create a corresponding sub screen for the alarm. 
Custom Description	1. You can define the corresponding action when the alarm goes off/releases. 2. Open the specified screen.

D. 【Buzzer Notify】: when the trigger condition is established, the buzzer will sound.

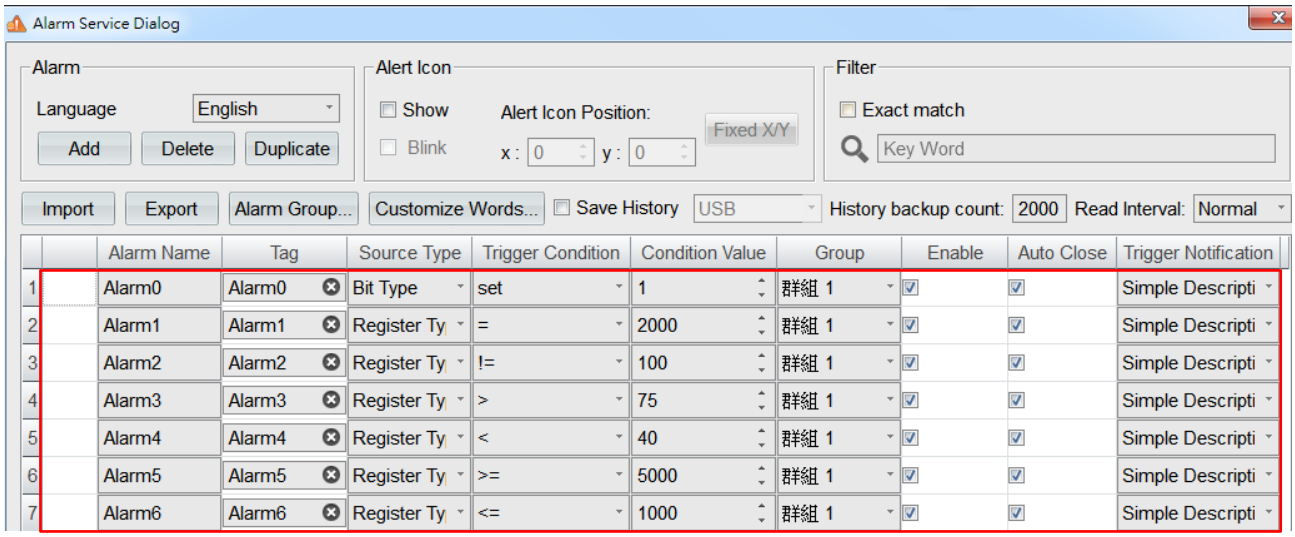
Exercise for Alarm Service:

a. In 【Tags】, add 7 new tags with their names defined as 【Alarm trigger point 0】~【Alarm trigger point 6】 and specify their corresponding addresses 【@53.0】 and 【@54】 - 【@59】, respectively.

Tags | System Information Tags | System Control Tags | Recipe Tags

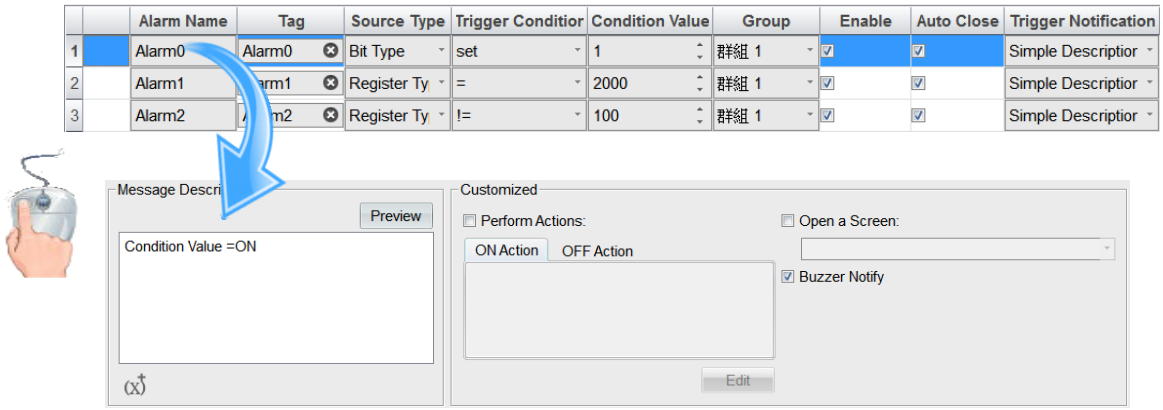
	Tag Name	Connector	Type	Address	Comment
40	Alarm0	InternalMemory	Bit	@53.0	
41	Alarm1	InternalMemory	UINT(16)	@54	
42	Alarm2	InternalMemory	UINT(16)	@55	
43	Alarm3	InternalMemory	UINT(16)	@56	
44	Alarm4	InternalMemory	UINT(16)	@57	
45	Alarm5	InternalMemory	UINT(16)	@58	
46	Alarm6	InternalMemory	UINT(16)	@59	

b. Open alarm service dialog. Add 7 new alarms and edit their alarm names, tags, source types, trigger conditions, condition values and trigger notification according to the following figure.



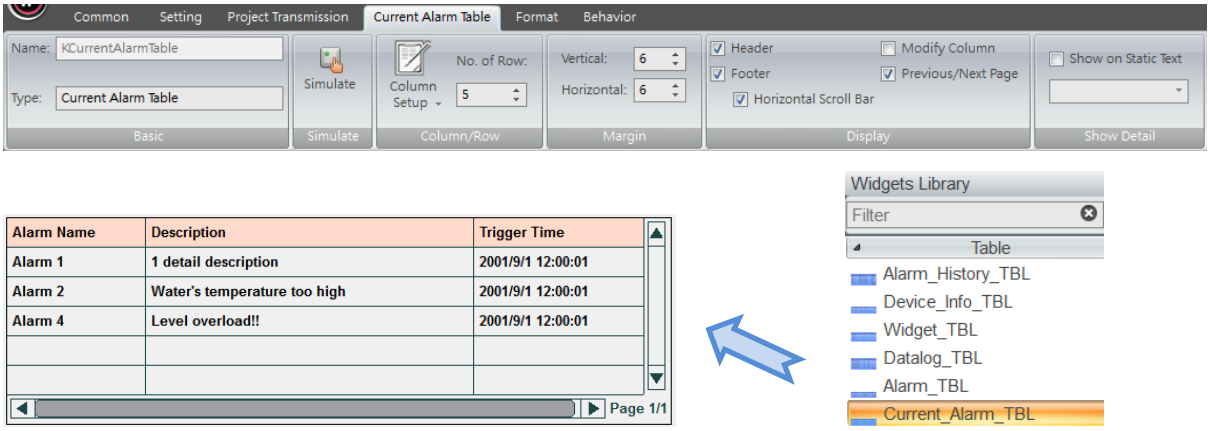
	Alarm Name	Tag	Source Type	Trigger Condition	Condition Value	Group	Enable	Auto Close	Trigger Notification
1	Alarm0	Alarm0	Bit Type	set	1	群組 1	☑	☑	Simple Descripti
2	Alarm1	Alarm1	Register Ty	=	2000	群組 1	☑	☑	Simple Descripti
3	Alarm2	Alarm2	Register Ty	!=	100	群組 1	☑	☑	Simple Descripti
4	Alarm3	Alarm3	Register Ty	>	75	群組 1	☑	☑	Simple Descripti
5	Alarm4	Alarm4	Register Ty	<	40	群組 1	☑	☑	Simple Descripti
6	Alarm5	Alarm5	Register Ty	>=	5000	群組 1	☑	☑	Simple Descripti
7	Alarm6	Alarm6	Register Ty	<=	1000	群組 1	☑	☑	Simple Descripti

※Remark: Every trigger notification and buzzer notify for the alarm are independent settings. Use the left button of the mouse to click on the alarms required to edit, then that row will appear with background color blue so that the trigger notification can be edit.



13.3 **Current Alarm Table**

Current alarm table is mainly for displaying the content of current ongoing alarms inside the table. The alarm will be cleared from the table once the alarm has been released.

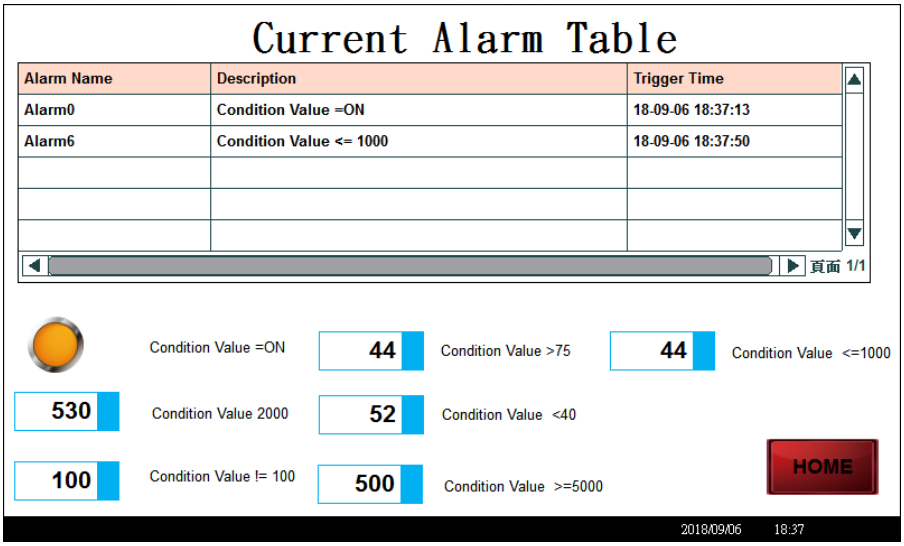


Exercise for Current Alarm Table:

a. Drag a 【Button】 widget, 6 【Numerical Input】 widgets and a 【Current Alarm Table】 widget from 【Widgets Library】 onto the screen.
b. Refer to the alarm service dialog from the previous section and connect 【Button】 and 【Numerical Input】 widgets to the tags 【Alarm trigger point 0】 - 【Alarm trigger point 6】, respectively.

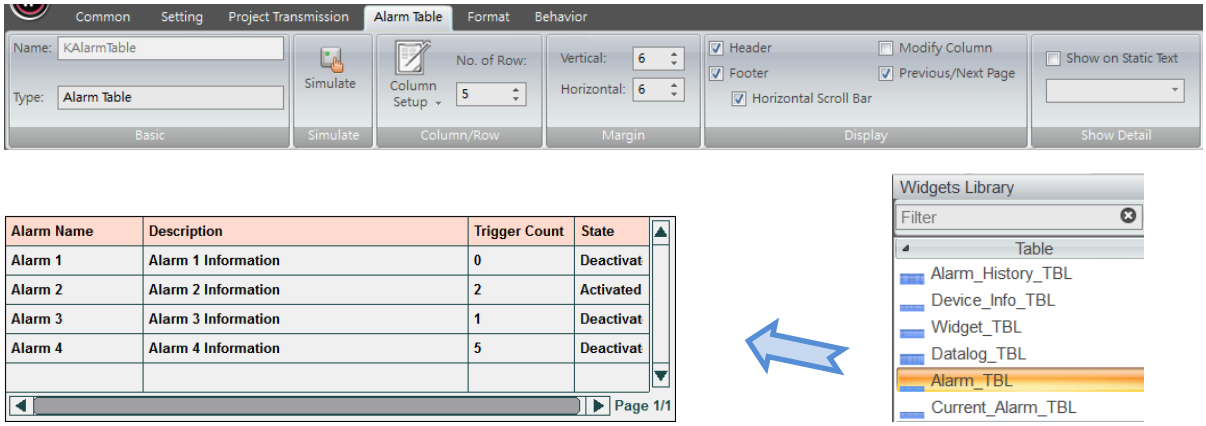
Simulation & Verification:

It will be the same as shown in the following figure. When the state value of the tag satisfies the trigger condition, then 【Current Alarm Table】 will display the alarm.



13.4 **Alarm Table**

Alarm table is mainly for recording the number of occurred alarms.

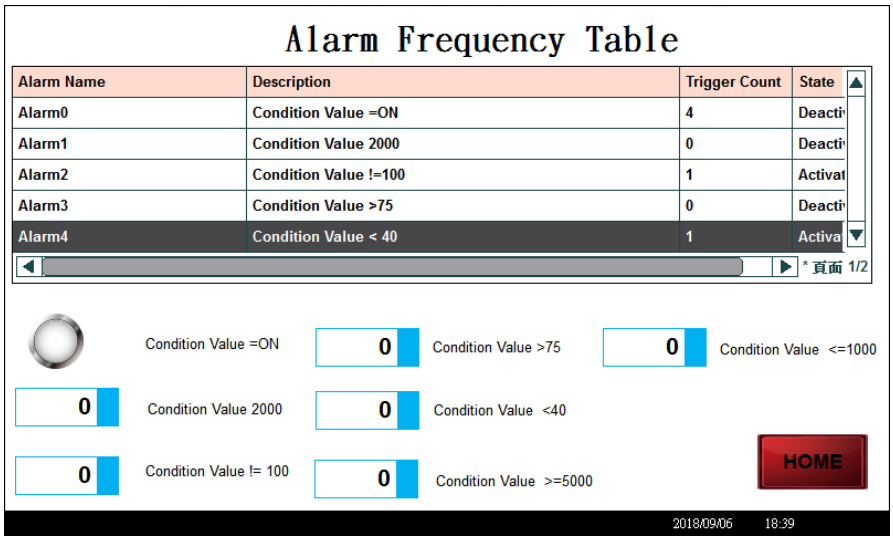


Exercise for Alarm Table:

a. Drag a【Button】widget, 6【Numerical Input】widgets and an【Alarm Table】from 【Widgets Library】 onto the screen.
b. Refer to the alarm service dialog from previous section and connect the 【Button】widget and【Numerical Input】widgets to the tags【Alarm trigger point 0】 - 【Alarm trigger point 6】, respectively.

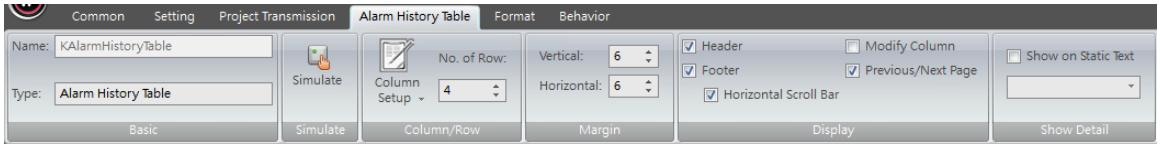
Simulation & Verification:

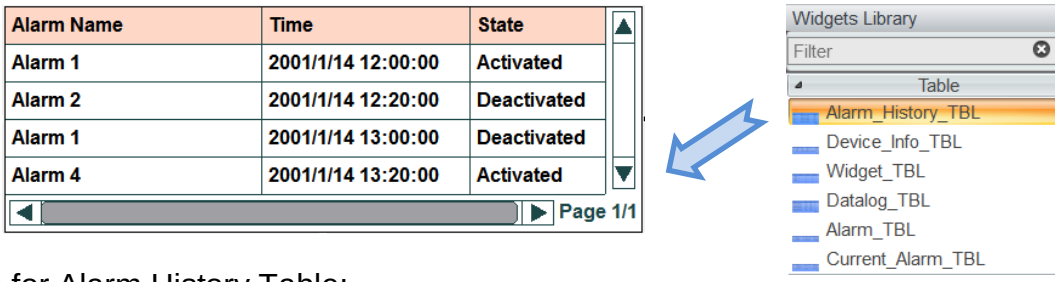
It can be seen in the figure below. When the state value of the tag satisfies the trigger conditions, the 【Alarm Table】 will record the number of times the alarm has been triggered.



13.5 **Alarm History Table**

Used to record the state when the alarm is triggered or released.



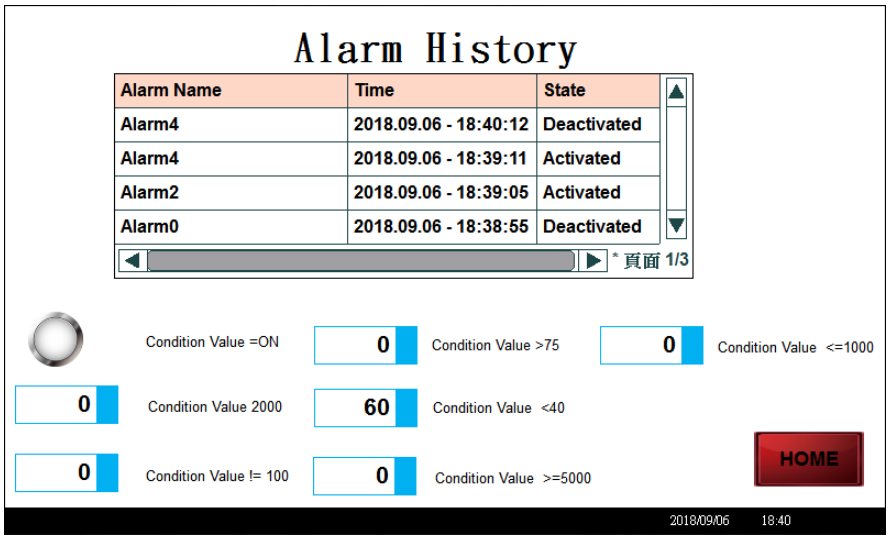


Exercise for Alarm History Table:

a. Drag a【Button】widget, 6【Numerical Input】widgets and a【Alarm History Table】 from 【Widgets Library】 onto the screen.
b. Refer to the alarm service dialog from previous section and connect the 【Button】 and 【Numerical Input】 widgets to the tags 【Alarm trigger point 0】 - 【Alarm trigger point 6】, respectively.

Simulation & Verification:

It can be seen in the figure below. When the state value of the tag satisfies the trigger condition, the 【Alarm History Table】 will record the content of the occurred alarm.



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RECIPE SETTING

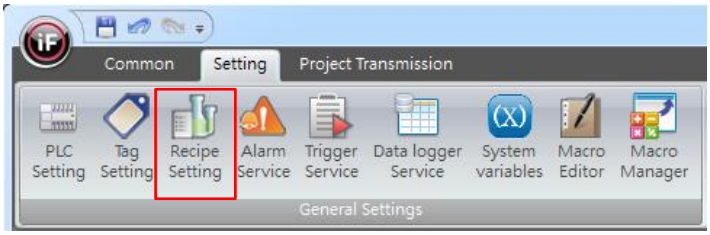
Version 2.00

14. Recipe Setting

【Recipe】 is similar to the concept of database in programming. We can edit the state value of each field in advance by recipe and then write the state value in PLC or read from PLC back to recipe for preservation later.

14.1 Recipe Setting

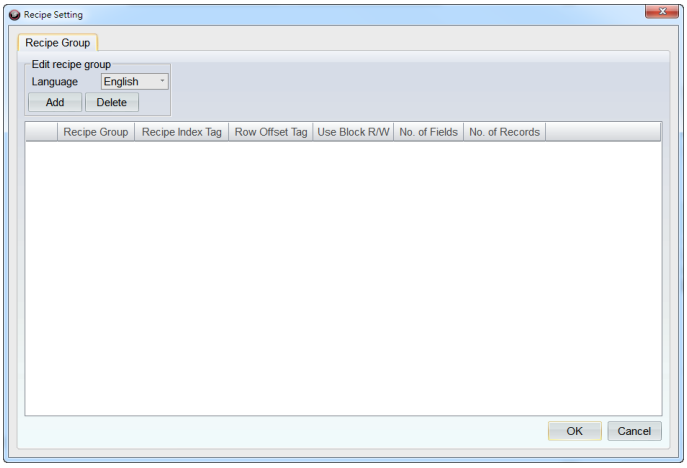
Click 【Recipe Setting】 in the item group 【General Settings】 under the tab 【Setting】.



14.2 Structure of Recipe Setting

There are 3 tabs in recipe setting as follows:

a. 【Recipe Group】: define the recipe group of the application, including 【No. of Fields】 and 【No. of Records】
b. 【Recipe Field】: each recipe group can add up to 99 recipe fields.
c. 【Recipe Record】: can add multiple recipe record and edit the default parameters for each field.



Exercise:

It can be seen in the figure below, the original production table in Excel from a client. Use recipe in iFACE Designer to import the production table for edit and use.

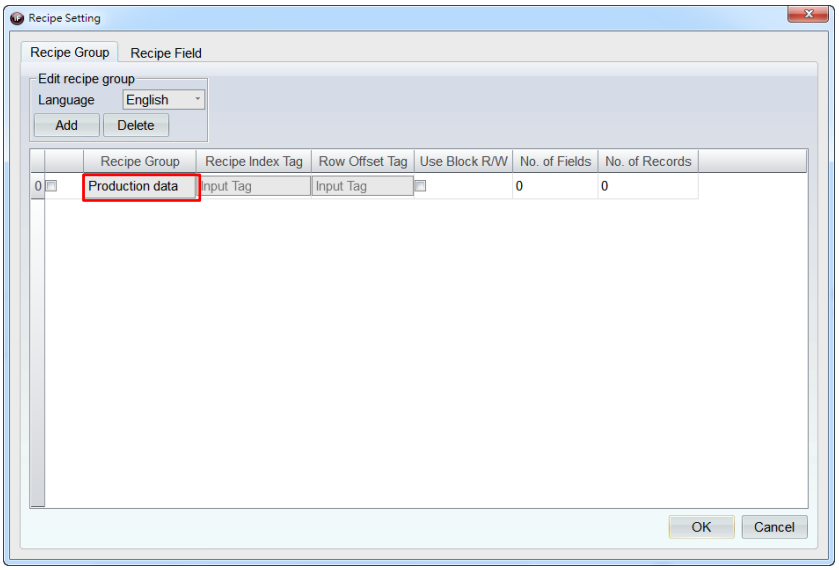
	A	B	C	D	E
1	Gas replacement times	Positive pressure setting H	Positive pressure setting L(mmHg)	Vacuum setting(Torr)	Cooling to temperature(TIC05)
2	23	32	152	35	12
3	46	23	36	65	32
4	12	23	36	15	12
5	18	22	43	35	56
6	24	17	50	25	56
7	30	12	57	20	67
8	36	7	64	15	78
9	42	2	71	10	89
10	48	56	78	5	100
11	54	78	85	53	112

a. In【Tags】, add 6 new tags with their names defined as【Recipe index】and its corresponding address 【@60】; 【Recipe data 0】 - 【Recipe data 4】and their corresponding addresses 【@61】~【@65】, respectively.

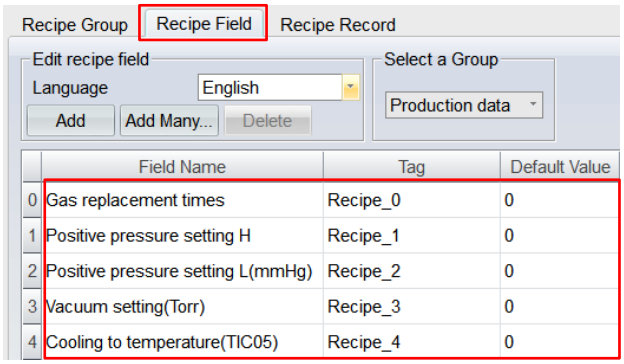
Tags | System Information Tags | System Control Tags | Recipe Tags

	Tag Name	Connector	Type	Address	Comment
47	Recipe Index	InternalMemory	UINT(16)	@60	
48	Recipe_0	InternalMemory	UINT(16)	@61	
49	Recipe_1	InternalMemory	UINT(16)	@62	
50	Recipe_2	InternalMemory	UINT(16)	@63	
51	Recipe_3	InternalMemory	UINT(16)	@64	
52	Recipe_4	InternalMemory	INT(16)	@65	

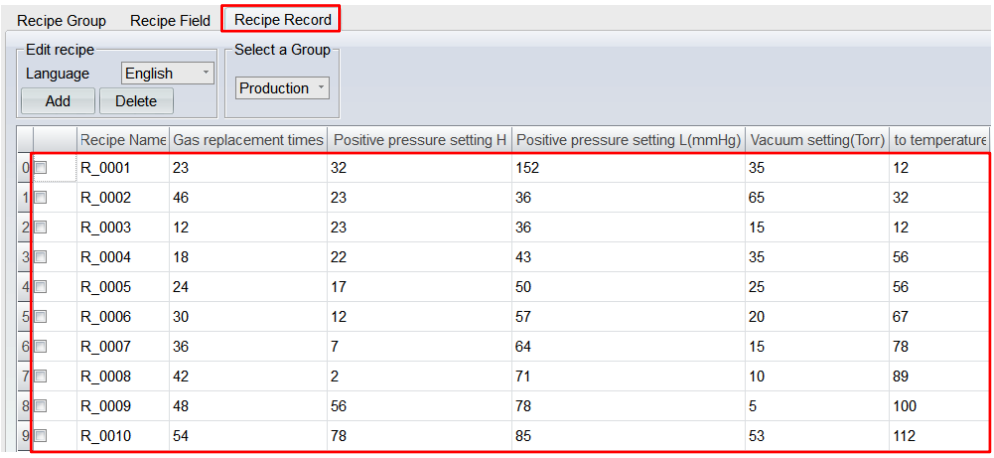
b. Open 【Recipe Setting】. Add a new recipe group with the name defined as 【Production data】.



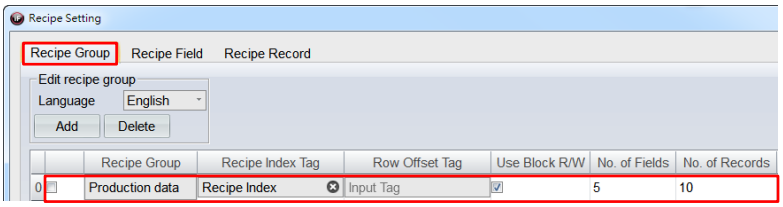
c. Switch to the tab 【Recipe Field】 and add 5 recipe fields. Define the field names based on the figure below and connect the tags to 【Recipe data 0】 - 【Recipe data 4】.



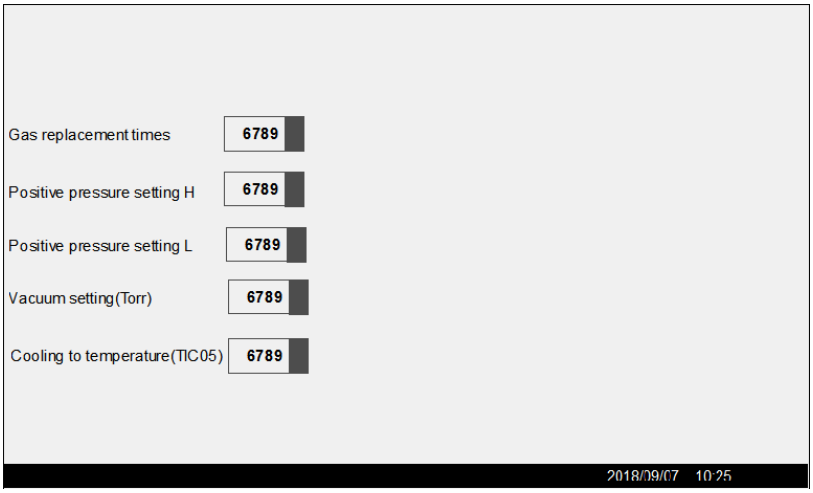
d. Switch to the tab 【Recipe Record】 and add 10 recipe record. Edit the contents based on the example production table in Excel.



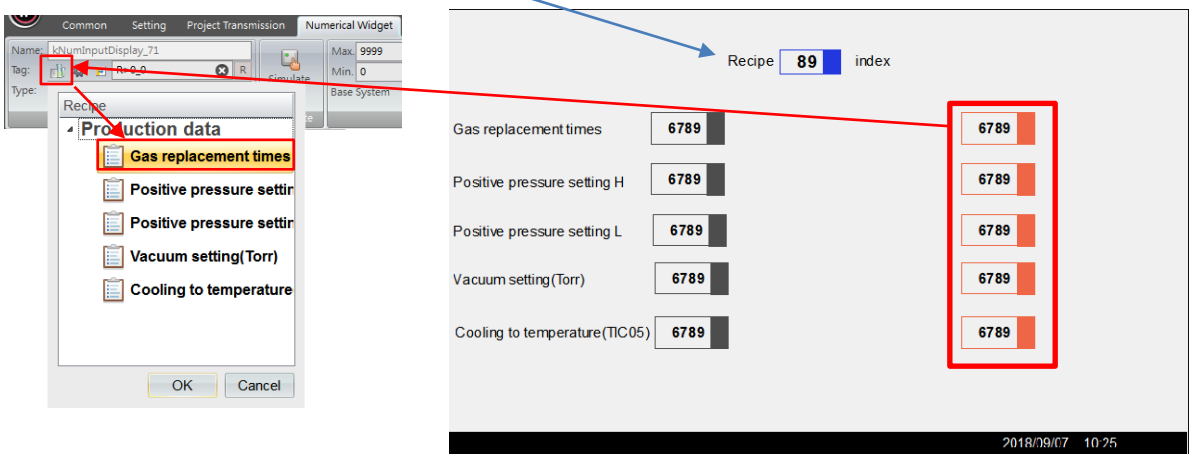
e. Return to the tab 【Recipe Group】, connect 【Recipe Index Tag】 to the tag 【Recipe index】. Since sequential addresses are used in this example, so it is recommended to tick 【Use Block R/W】 to speed up reading and writing.



f. Drag 5 【Numerical Input】 widgets onto the screen and connect them to the tags 【Recipe data 0】 - 【Recipe data 4】,respectively.



g. Then drag 6 【Numerical Input】 widgets. Connect one of them to the tag 【Recipe index】 and the other 5 【Numerical Input】 widgets to the corresponding recipe fields by recipe index tag.

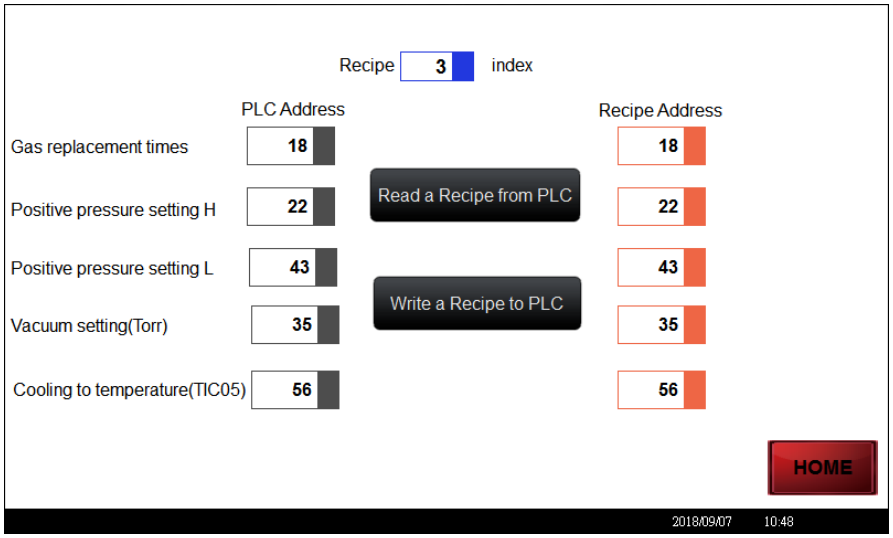


h. Add two action buttons and edit their action as 【Recipe Service】→【Read a Recipe from PLC】 and 【Write a Recipe to PLC】, respectively.

Simulation & Verification:

It can be seen in the figure below, the numerical input in the boxes with black outline on the left are the current data of the device while on the right are the data in the recipe.

i. A specific field of the data can be written to the recipe on the right.
j. Use the action button to write the data in the recipe back to the device or write the latest data of the device to the recipe.


Recipe 3 index
PLC Address
Recipe Address
Gas replacement times
18
18
Positive pressure setting H
22
22
Positive pressure setting L
43
43
Vacuum setting(Torr)
35
35
Cooling to temperature(TIC05)
56
56
Read a Recipe from PLC
Write a Recipe to PLC
HOME
2018/09/07 10:48

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HMI – Your Intelligent IIoT Gateway Solutions

iFACE Designer

SECURITY SETTING

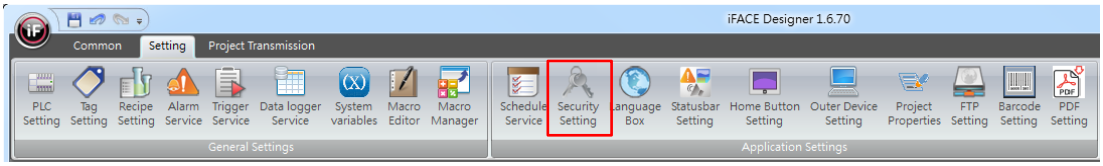
Version 2.00

15. Security Setting

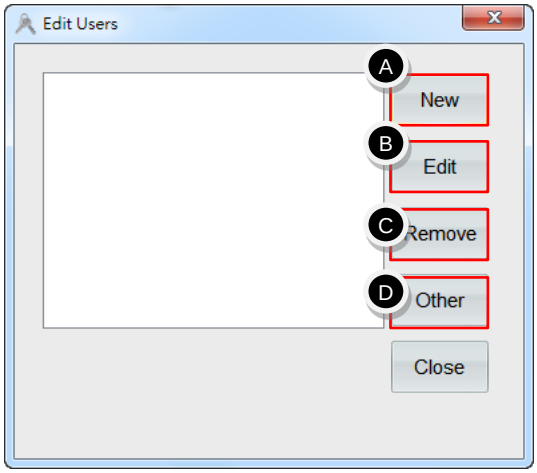
Beside the drawing widgets and shape widgets from widgets library, every widget can set their access group. After the authorization has been set for a widget, only the users that satisfy the authorization are allowed to view this widget or operate this widget. Before setting the authorization for a widget, it is required to create users and user groups.

15.1 Security Setting

Click 【Security Setting】 in the item group 【Application Settings】 under the tab 【Setting】.



15.2 Edit Users



A. 【New】: add a new user.

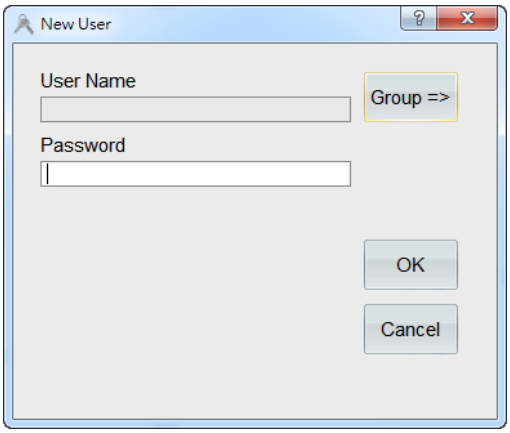
B. 【Edit】: edit the selected user.

C. 【Remove】: remove the selected user.

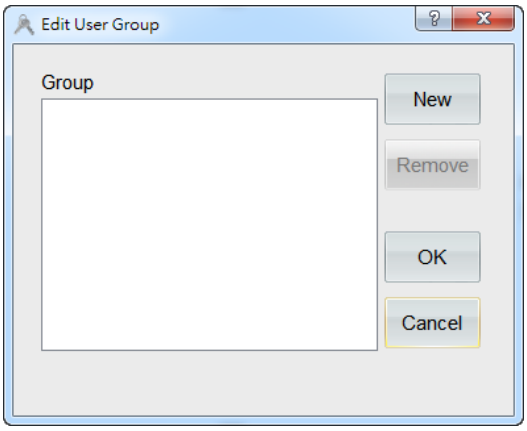
D. 【Other】: set common security settings such as 【Set time for auto logout】, 【Set time to close login dialog】, etc.

15.2.1 **New**

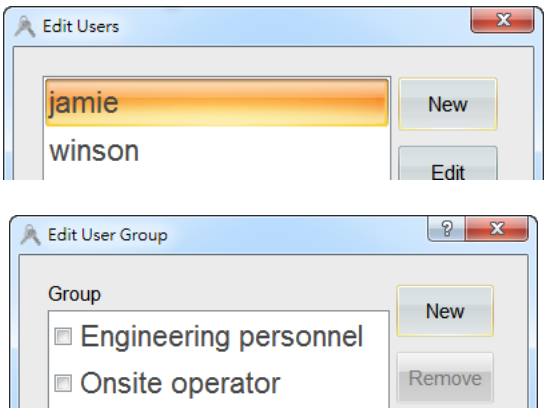
Add 【New user】and edit 【User Name】 and 【Password】.



【Group =>】: used in applications for restrictions of widget use in accordance with user groups.

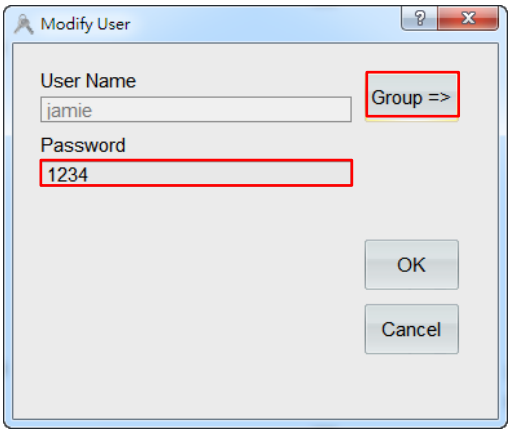


For example, add new users: 【winson】 and 【jamie】 and use 【Group =>】 to add the two groups 【Engineering personnel】 and 【Onsite operator】.

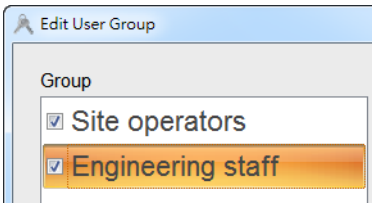


15.2.2 **Edit**

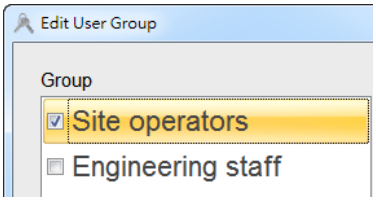
Edit user password and user group setting.



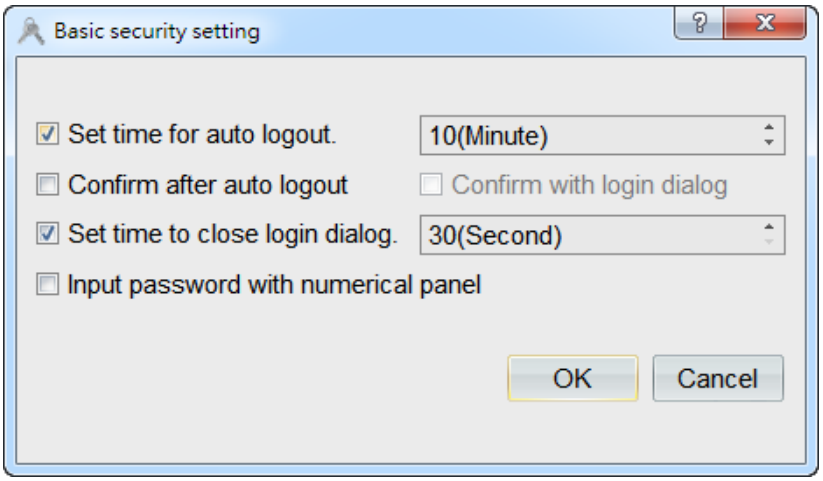
For example, you can tick both groups, engineering personnel and onsite operator for the user winson.



Only tick the group, onsite operator, for the user Jamie.



15.2.3 **Other**



【Set time for auto logout】: when stayed in idle for a certain amount of time, it will automatically logout the current user.
【Confirm after auto logout】: before reaching the auto logout time, the system will invoke a dialog inquiring whether to extend login time or not.

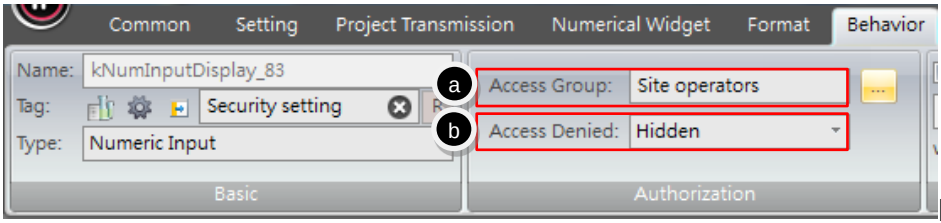
【Set time to close login dialog】: If a certain amount of time has already passed after clicking on the login window without login, then it will automatically close the login window.

【Input password with numerical panel】: If the password contains only numbers, then you can use a numerical panel to replace the default alphabetic panel for the convenience of users to type.

15.2.4 **Authorization Setting**

Every widget can set authorization. After an authorization has been set for a widget, only the users satisfied the authorization are allowed to view this widget or operate this widget.

For example, the item group 【Authorization】 for numerical input widgets are under the tab 【Behavior】.

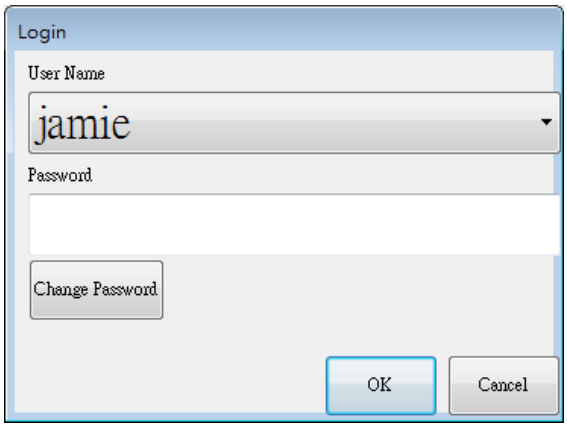


k. 【Access Group】: set the user groups that can view or operate this widget.

Press ... on the right to invoke the pop-down menu for the selection of groups. Authorize the access to the widget for multiple groups. When the login user belongs to the access groups, then he/she can operate this widget.

l. 【Access Denied】

【Login Dialog】: when access is being denied, it will invoke a 【Login Dialog】 automatically. The operator has to select his/her username and enter the correct password in order to perform operations on the widget.



【Hidden】: When access is being denied, the widget will be hidden and that you are not able to see it.

【Access Denied Icon】: when access is being denied, it will display a symbol 【⛔】 at the upper-left corner of the widget to indicate that this widget cannot be operated by him/her.

Exercise:

a. In 【Tags】, add a new tag with the name defined as 【Security setting】and specify its corresponding address 【@66】.

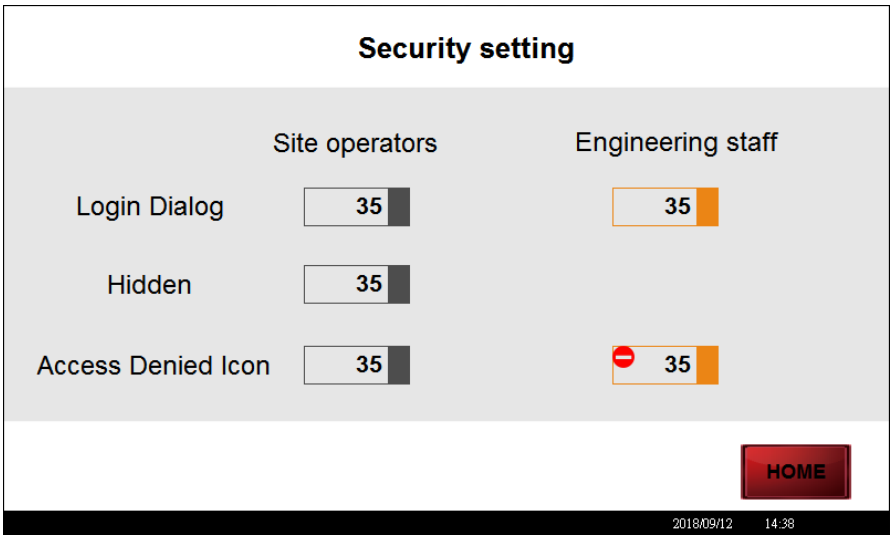
Tags | System Information Tags | System Control Tags | Recipe Tags

	Tag Name	Connector	Type	Address	Comment
53	Security set...	InternalMemory	UINT(16)	@66	

b. Drag 6 【Numerical Input】 widgets from the 【Widgets Library】 onto the screen and connect them to the tag 【Security setting】.
c. For the 3 numerical input widgets in boxes with black outline on the left, tick 【Onsite operator】 under the tab 【Behavior】→【Access Group】 and set 【Access Denied】 as【Login Dialog】, 【Hidden】, 【Access Denied Icon】, respectively.
d. For the 3 numerical input widgets in boxes with orange outline on the right, tick【Engineering personnel】under the tab【Behavior】→【Access Group】 and set 【Access Denied】 as 【Login Dialog】, 【Hidden】, 【Access Denied Icon】, respectively.

Simulation & Verification:

The login dialog is shown in the figure below.
If select the user: Jamie and enter the password: 1234, then it only allowed him to operate numerical input widgets in black on the left; if select the user: Winson and enter the password: 8888, then it would allow him to operate the numerical input widgets both on the left and on the right normally.



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HMI – Your Intelligent IIoT Gateway Solutions

iFACE Designer

FTP SETTING

Version 2.00

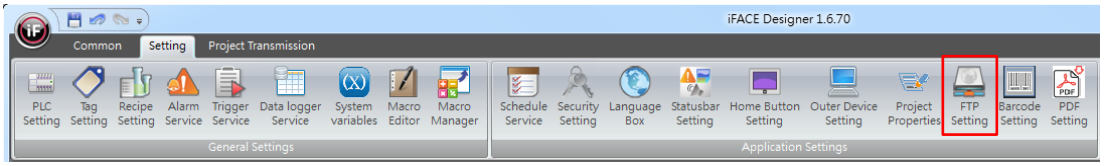
16.FTP Setting

This chapter will introduce how to use FTP【HMI as client】/【HMI as server】 to read remote data and send remote data at a certain time.

Remark: Server data is saved in external USB disk or SD card. So, users should insert an external memory card in advance.

16.1 FTP Setting

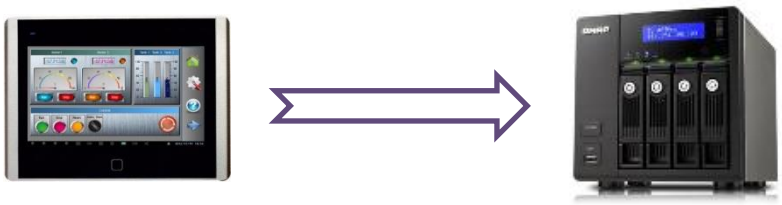
Click 【FTP setting】 in the item group 【Application Settings】 under the tab 【Setting】.



16.2 HMI as Client

【HMI as Client】

For example, you can define same time points every day to upload recipe or data log to FTP server or set the upload action by an action button.

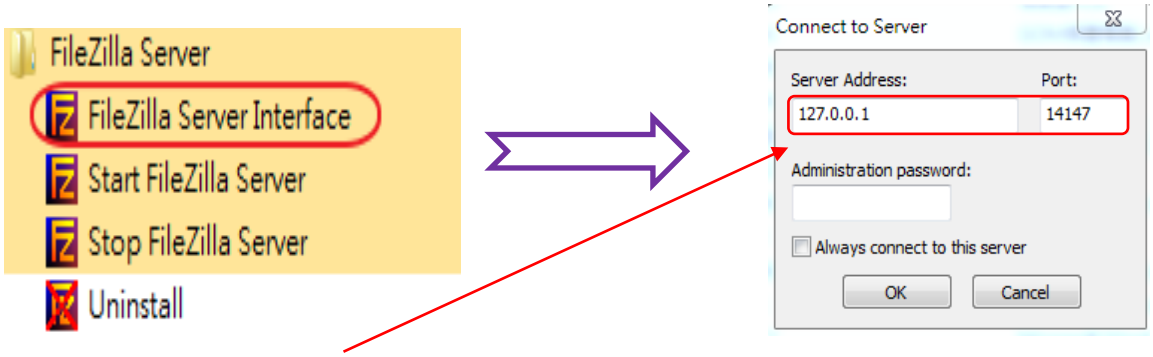


Default IP for the exercise: 192.168.0.188 **IP： 192.168.0.119**

Exercise:

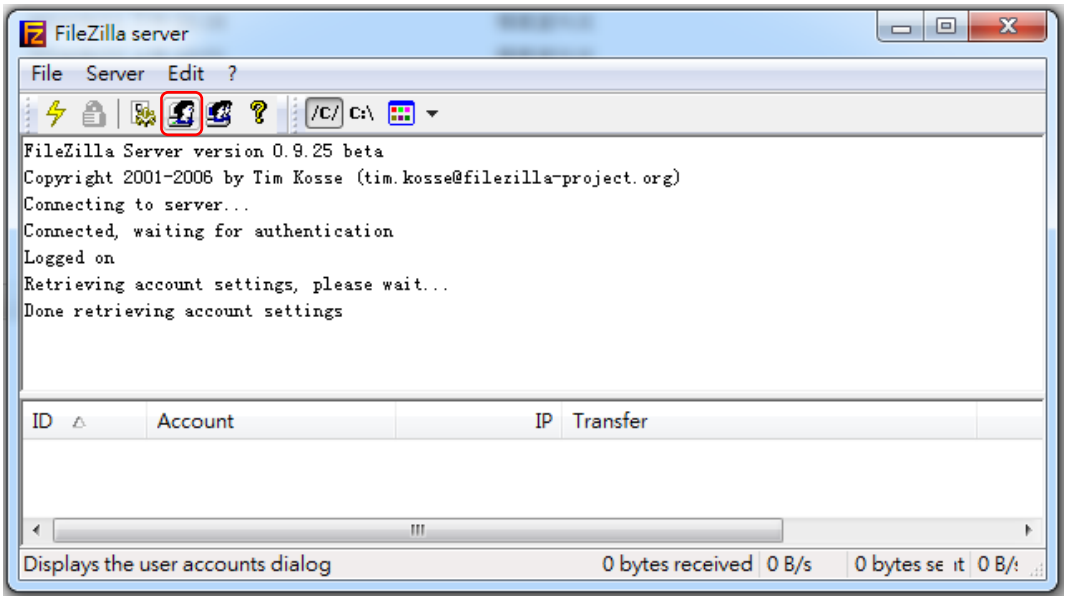
The computer is simulated as a server and connected to HMI. Use the action button to upload the data log to FTP server.

a. Install the software FileZilla in the computer.
b. Run the FileZilla Server Interface and set the server address, port and administration password.



*. **IP:127.0.0.1 Port:14147** Default server address for the software. If you changed the address, you will get a message saying “the connection has failed” or “Cannot access user configuration ”.

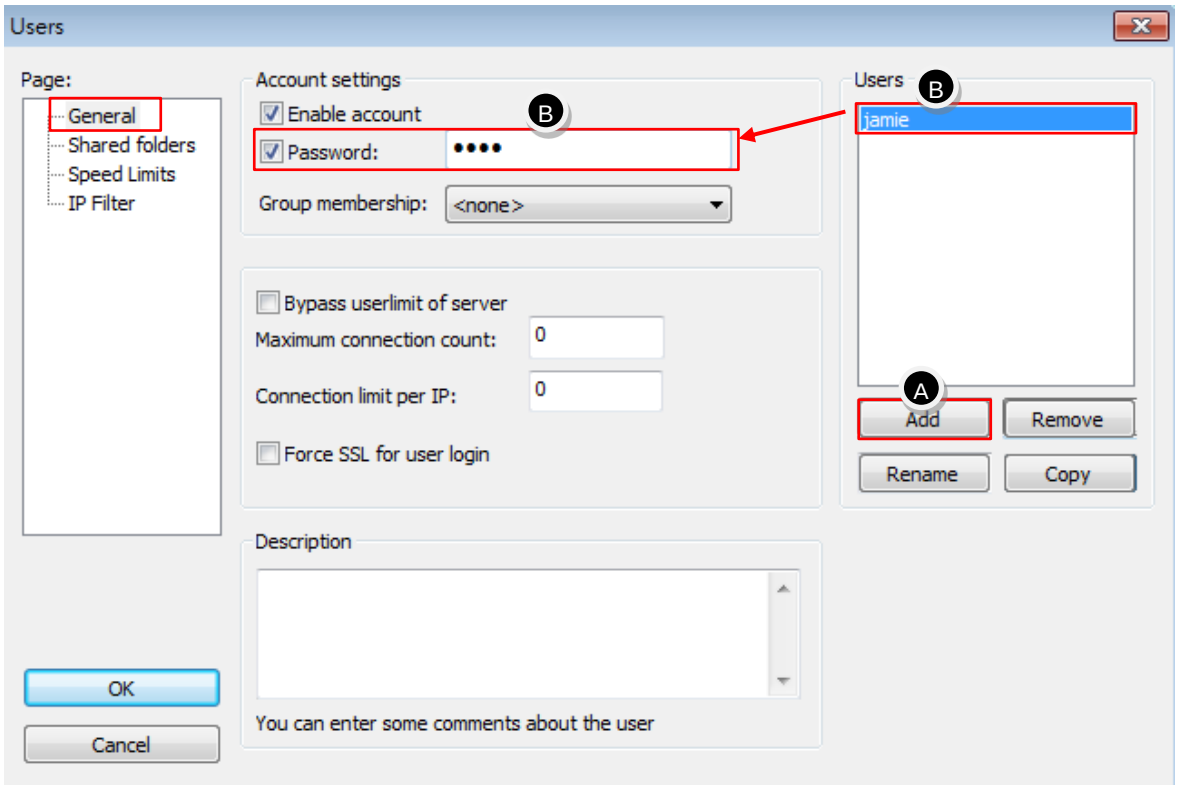
c. Go to the FileZilla server, click the icon in the figure below to enter user configuration to add user account name and password for FTP connection.



d. Page/General

A. Add a new user.

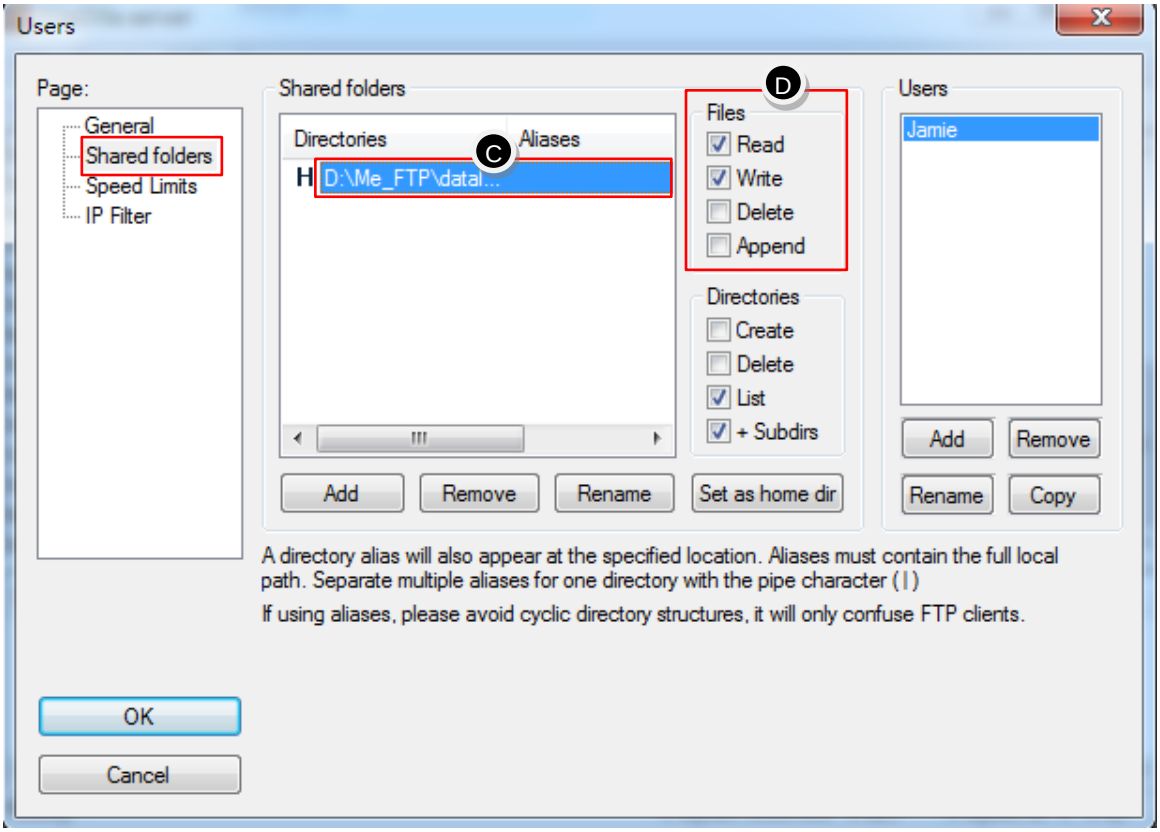
B. Enter password. For example, create a user account name: Jamie and the password: 1234.



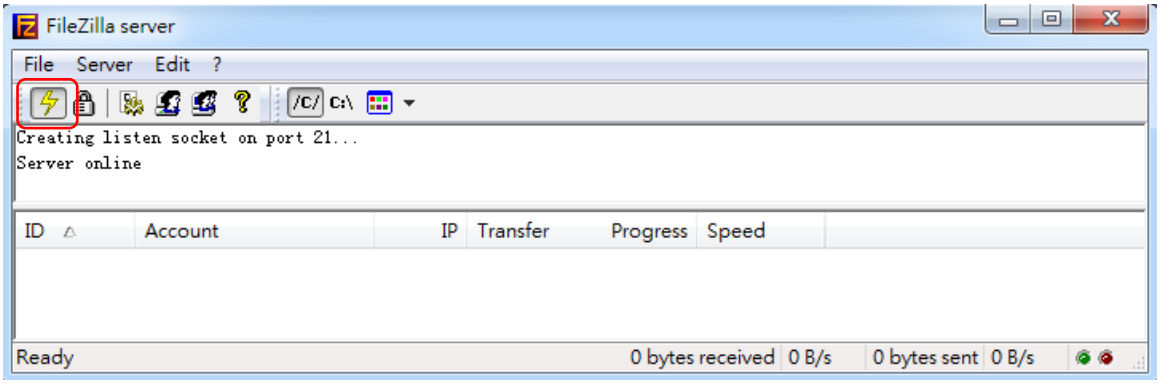
e. Page/Shared folders

C. Edit the directories such as D:\Me_FTP\Datalog\ in the figure below.

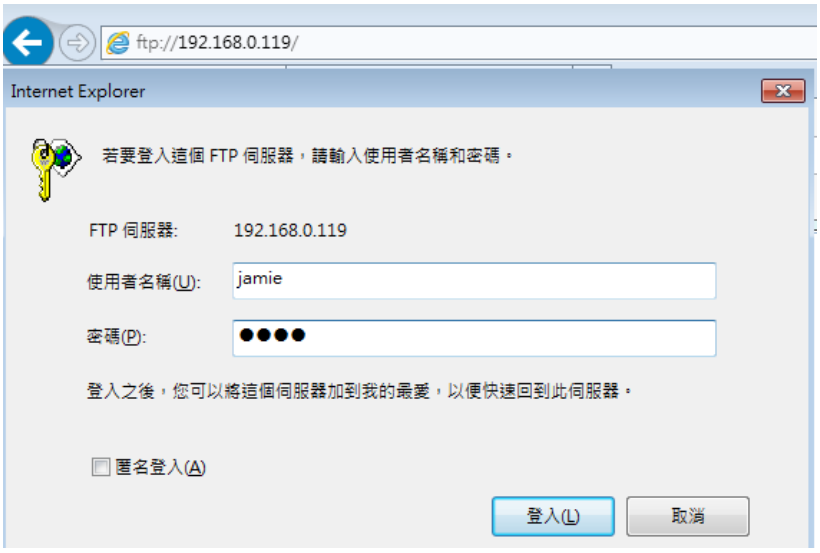
D. Tick the permissions for files.



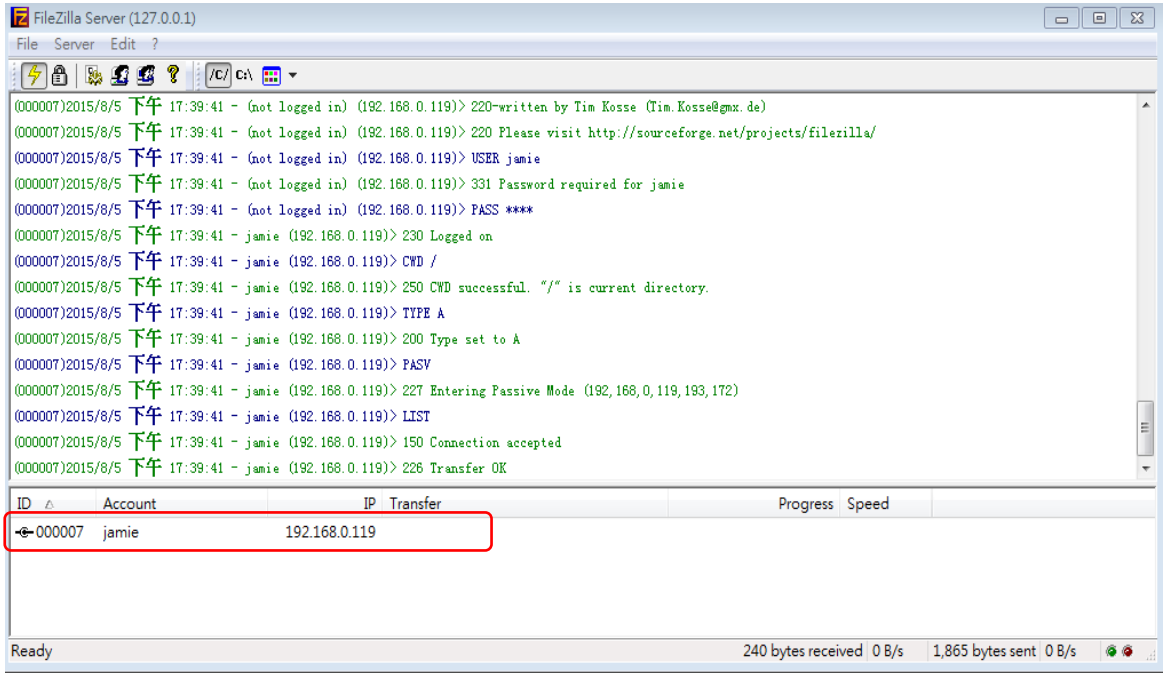
f. Activate FTP server after the setting is complete.



g. Simple connection test can be done using Windows file manager. For example, enter the IP of your own computer **FTP://192.168.0.119**. After confirmation, it will show the login window. Enter previously set user account name/password to login and connect.



h. If the connection is successful, then FileZilla server will show the connection state of the device.



i. Open iFACE Designer to set HMI as client in FTP setting.

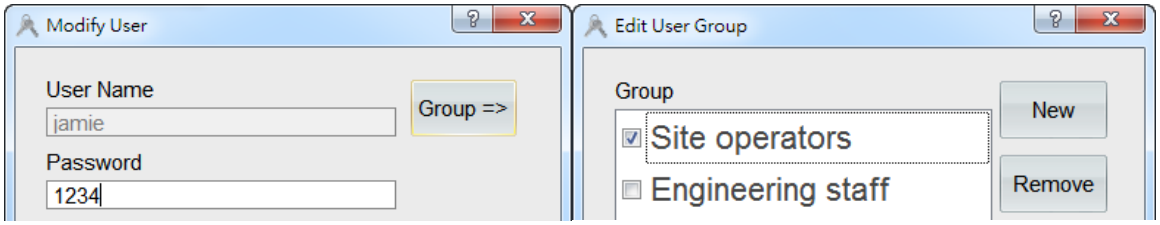
【FTP user group】 is combined with security setting so designers are required to set 【Security Setting】 in advance.

A. Create the same user account name and password as in FTP server.

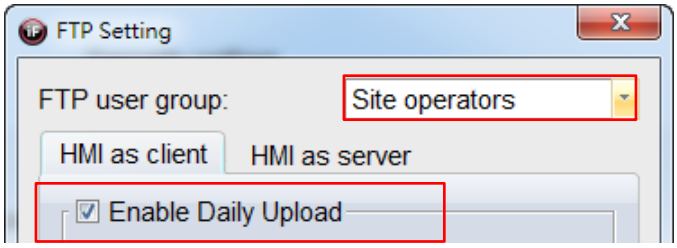
B. For example, the user account name: Jamie and password: 1234 used in

the previous example.

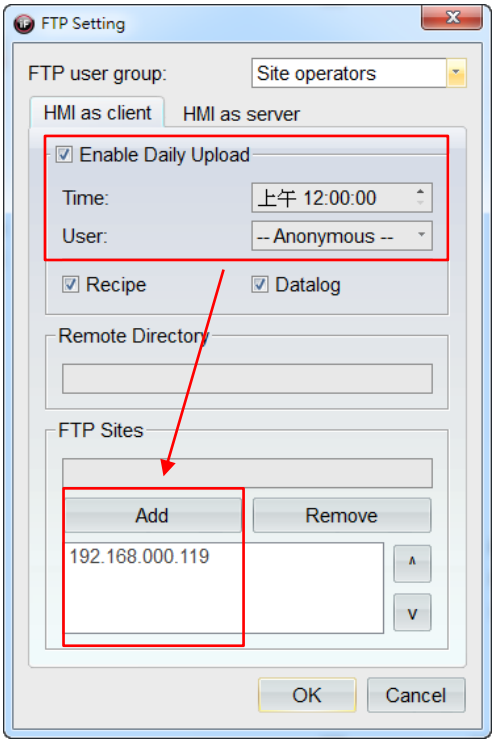
C. The details of security setting can be referred to chapter 15 of this manual.



D. Open FTP Setting: HMI as server – tick 【Enable server at project startup】.



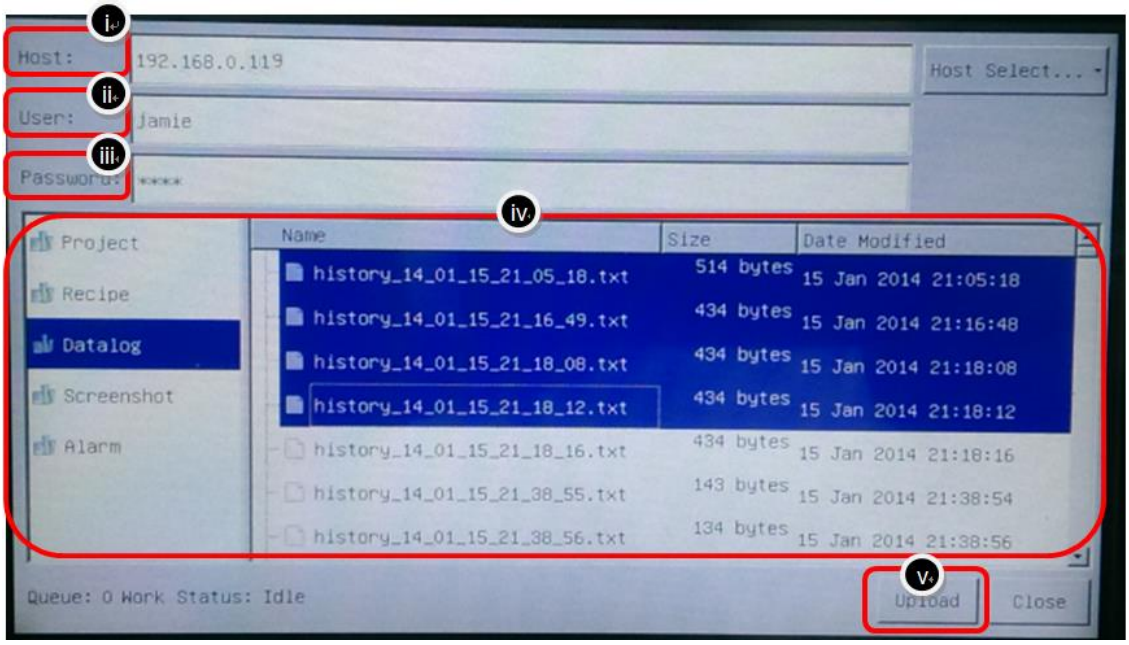
E. Enable Daily Upload. As seen in the example shown in the figure below, connect to the server address 192.168.0.119 at 12 a.m. every day and start uploading the recipe/data log.



F. Create an action button to open 【FTP upload dialog】.

When HMI is running, click the action button to open 【FTP upload dialog】 as shown in the figure below.

i. Host: enter the desired server address for upload. It is set as 192.168.0.119 in this example.
ii. User: enter the user account name. It is set as Jamie in this example.
iii. Password: enter the user account password. It is set as 1234 in this example.
iv. Select the datalog required to be uploaded.
v. Upload.



※ Upload data at a certain time every time or use the action button to open 【FTP upload dialog】. After the upload action is completed, you can check the previously set directory D:\Me_FTP\Datalog\ to make sure that data are being successfully written.

※ If the uploading action of server data to PC has failed, please check whether it is being blocked by Windows firewall of your PC. It is recommended to close the firewall first before testing the upload function of FTP.

16.3 **HMI as Server**

【HMI as server】: remote connection to the database in HMI server.
For example, perform remote connection in PC to the database in HMI server to check the data such as recipe/alarm/datalog/project/current screen, etc.

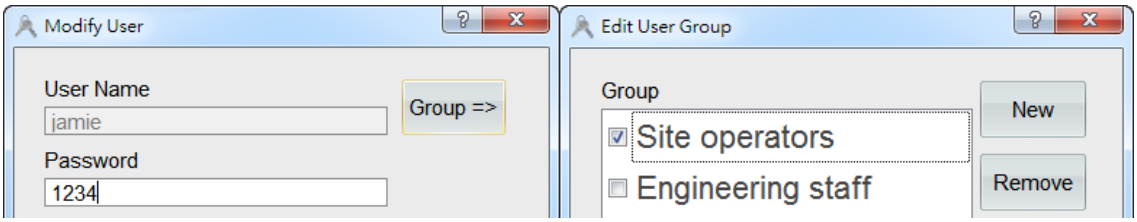
Default IP for the exercise: 192.168.0.119　　IP：192.168.0.188

Exercise:

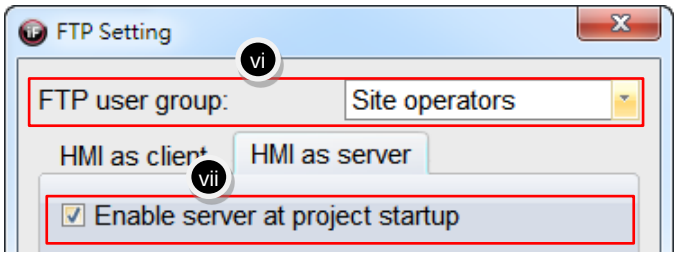
Use IE or file manager to connect to HMI server for checking the database.

a. HMI as server

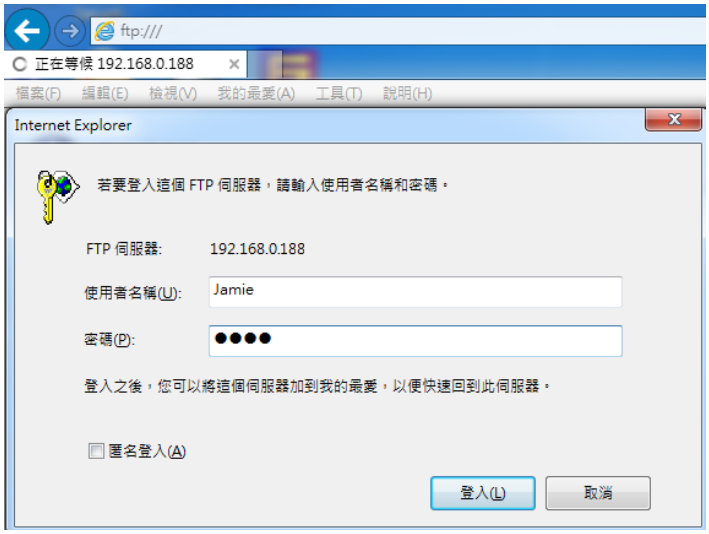
vi. 【FTP user group】 is combined with security setting so the designers are required to edit 【Security setting】 in advance.
Create the same user account name and password as in FTP server. For example, the user account name: Jamie and password: 1234 used in the previous example.



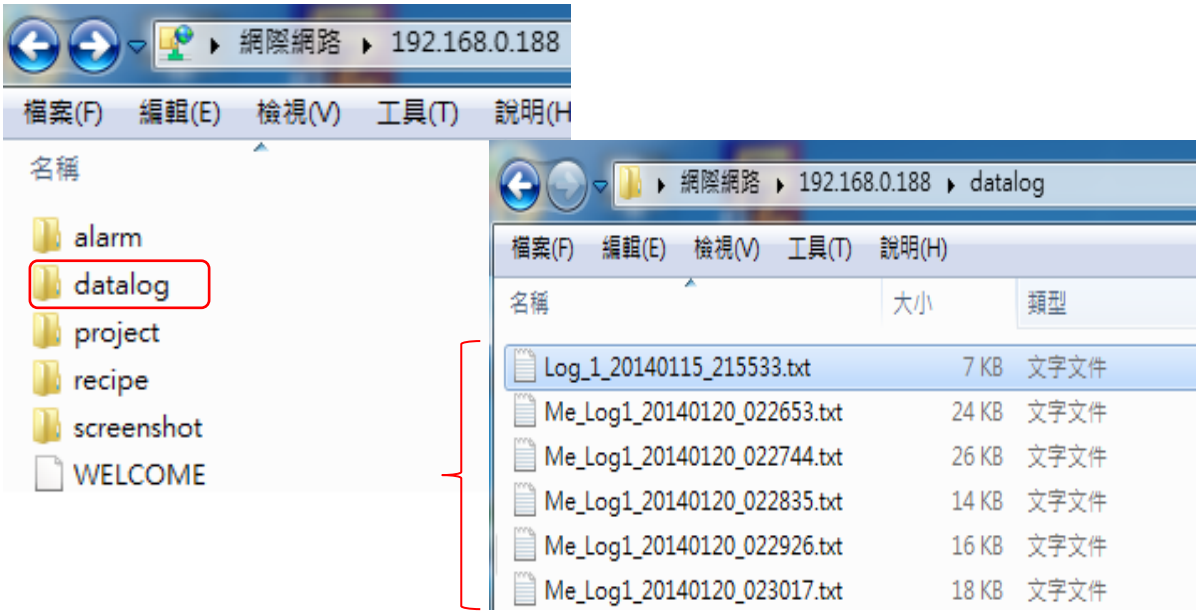
vii. Select the tab 【HMI as server】 and tick the option 【Enable server at project startup】.



viii. For PC, enter ftp://192.168.0.188 in an internet browser or file manager. After entering the user account name and password, you are login to HMI as server directly. Or use the method of **ftp://account name：password@address** to log in.



ix. After login, you can browse the folders (recipe/alarm/datalog/project/current screen).



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HMI – Your Intelligent IIoT Gateway Solutions

iFACE Designer

VNC Remote Monitoring

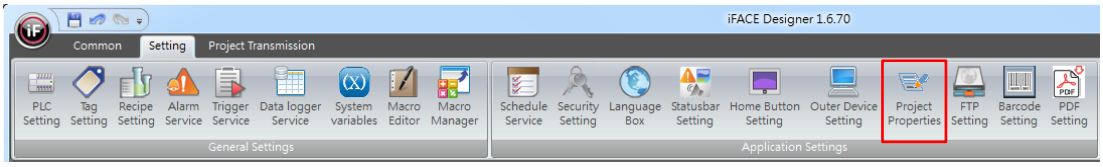
Version 2.00

17.VNC Remote Monitoring

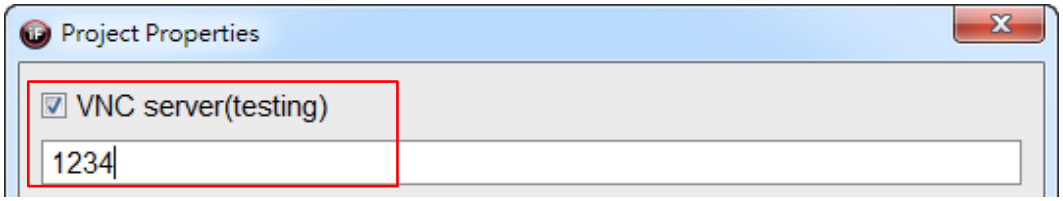
This chapter introduces how to use perform VNC remote monitoring to control or operate HMI simultaneously.

Remark: the function of VNC remote monitoring only supports network HMI.

Click 【Project Properties】 in the item group 【Application Settings】 under the tab 【Setting】.



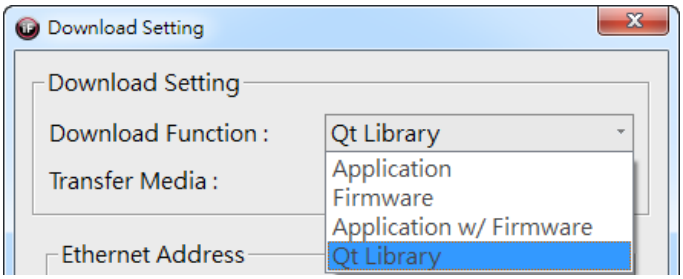
17.1 Project Properties



【VNC server (testing)】: Tick VNC server and edit the password for VNC server in the field below.

17.2 Setting of Project Setting Window

Click 【Transfer Setting】 in the item group 【Download】 under the tab 【Project Transmission】.



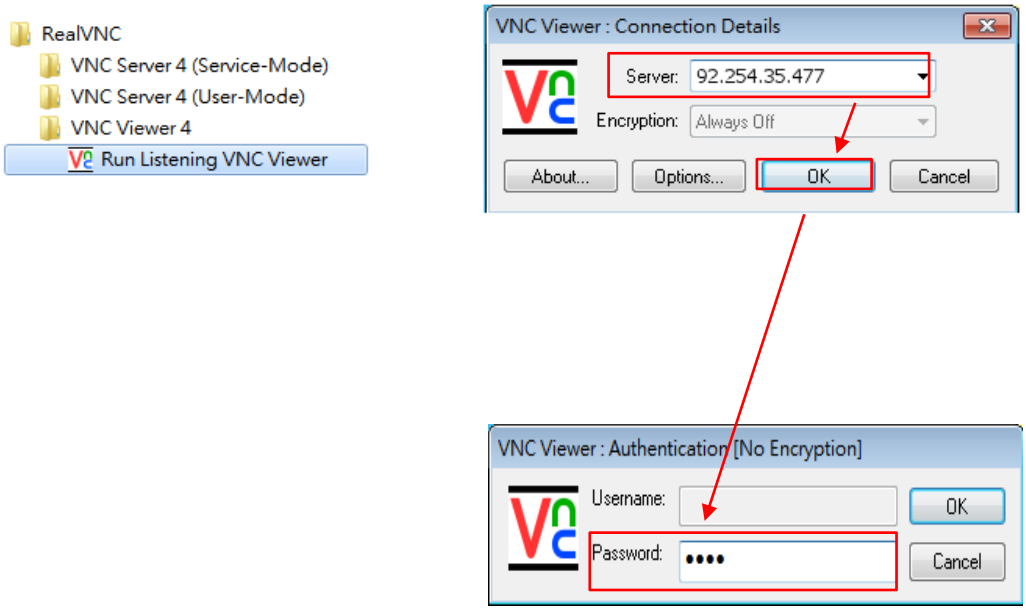
Using VNC server for the first time: If you are using N series machine, then please install 【QT Library】 before downloading (only required to install once); if you are using P series machine, then it is not required to install 【QT Library】 additionally.

After the installation is completed, download 【Application w/ Firmware】.

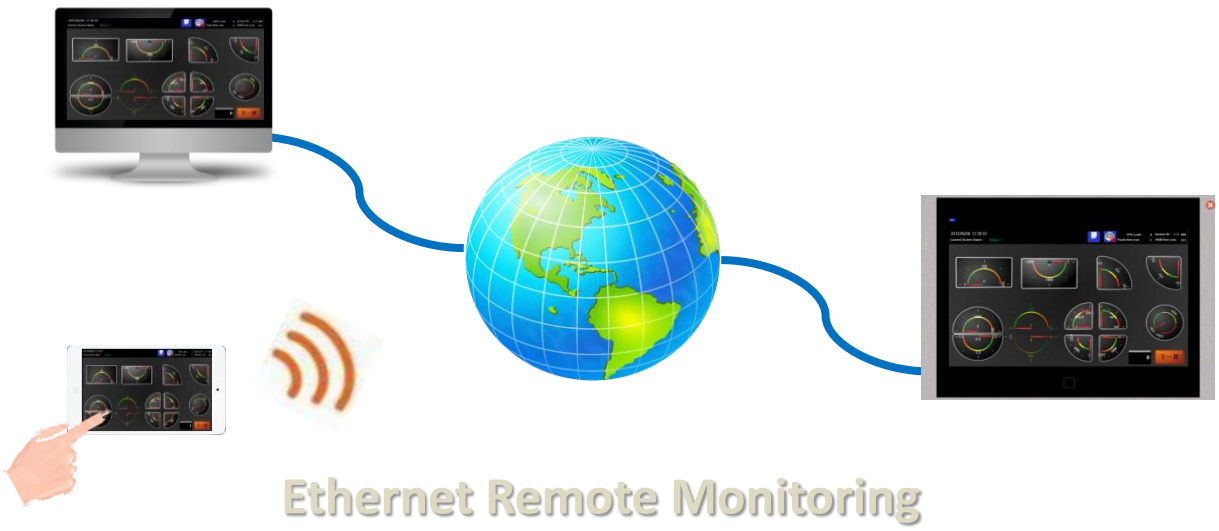
Simulation & Verification:

Run the program for VNC remote monitoring on the computer to monitor HMI.

You can download free VNC software (VNC Viewer is used in this example). After installing it in the computer, open Run Listening VNC Viewer.
For server, enter server address of HMI or the IP of the same local network. After completed, press OK.
After entering the password for authentication, you can perform the remote control normally.



Not only free software on computers but also free APP on IOS or Android tablets or cell phones support VNC remote monitoring. You can download them to monitor HMI.



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iFACE Designer

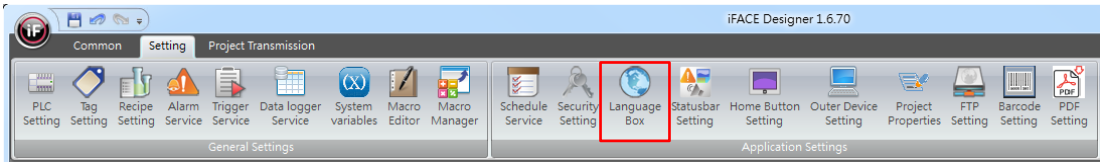
MULTI-LANGUAGE

Version 2.00

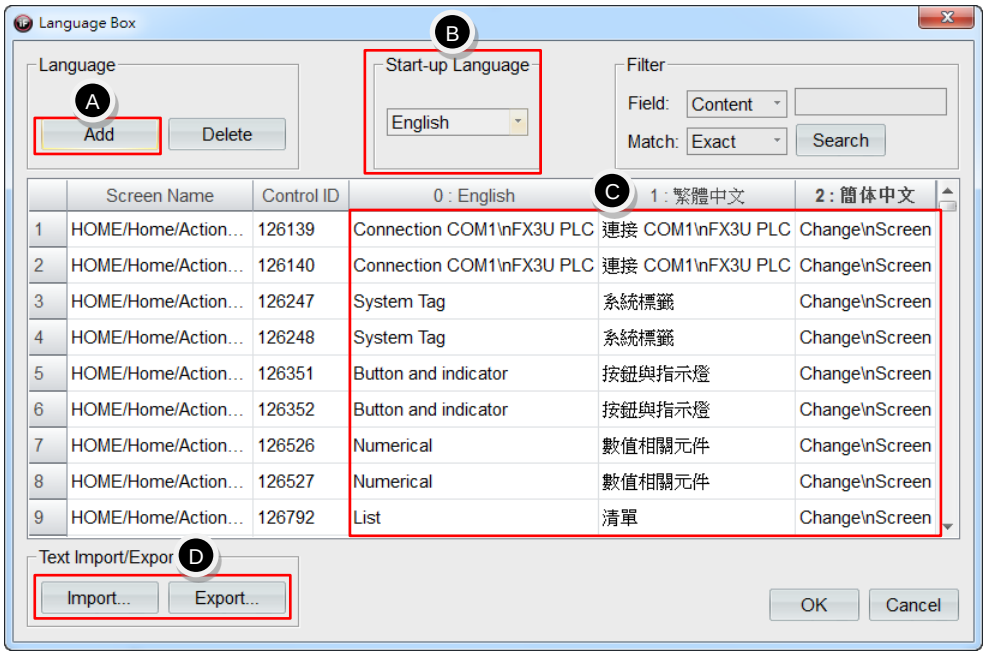
18. Multi-Language

In accordance to custom language of local users, multi-language becomes quite important. Most widgets in iFace Designer support multi-languange. When we add a widget that supports multi-language on the screen, it will automatically add language information of the widget to language box.

Click 【Language Box】 in the item group 【Application Settings】 under the tab 【Setting】.



18.1 Language Box



A. 【Add】: There are 3 kinds of default languages: 【English】, 【繁體中文】, 【简体中文】. You can add up to 16 kinds of different languages.

B. 【Start-up Language】: Set the start-up language for HMI when being powered on.

C. 【Edit the texts of the widgets in different languages】: You can edit the texts

of the widget in different languages.

D. 【Text Import/Export】: You can export multi-language text to TXT file and hand over to language specialist for translation and then import them back to use.

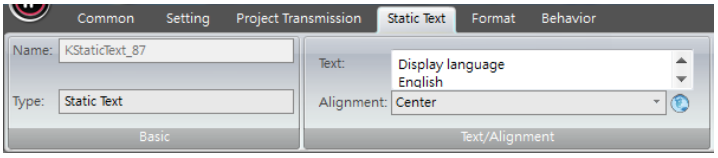
18.2 Switch Languages

E. Check whether the language of the widget on the screen is correct. You can select 【Current Language】 in the widget state bar below the edit area to change the display.

For example, change current language from 【English】 to 【繁體中文】. Then the texts on the screen will change from English to Chinese immediately.

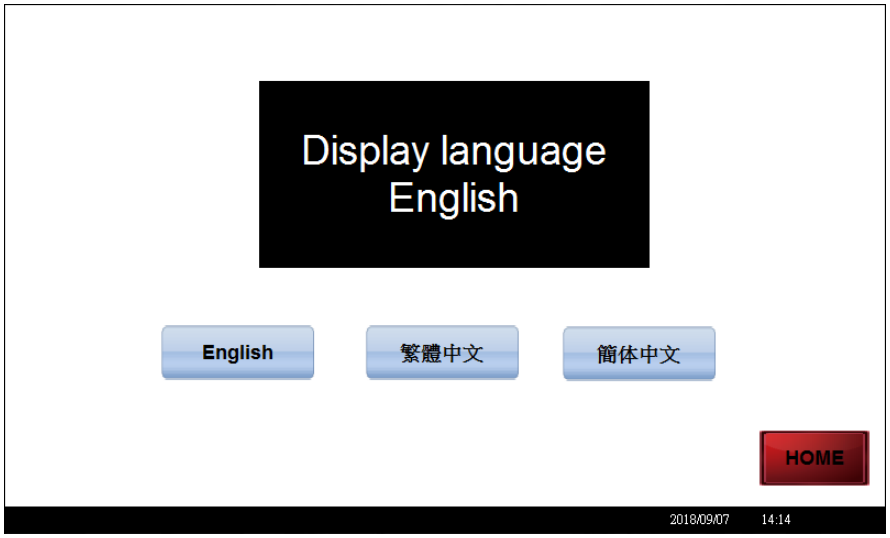
Exercise:

a. Drag a【Static Text】widget and 3【Action Button】widgets from【Widgets Library】 onto the screen.
b. Click on action button widgets and set their actions as 【System Service】→【Set Language】 and set setting of action parameters as the three languages: 【English】, 【繁體中文】, 【简体中文】, respectively.
c. You can use the field【Current Language】 at the widget state bar below the edit area to switch to the desired language rapidly for editing the contents of static text and action button conveniently.



Simulation & Verification:

It can be seen in the figure below, you can press the 3 action buttons to switch the language of the static text. The static text will display the contents in the corresponding language immediately.



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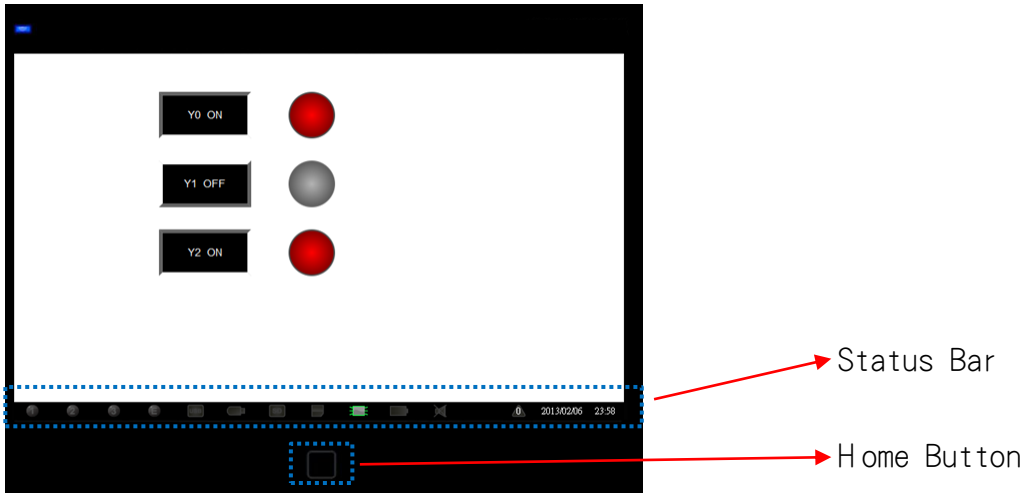
iFACE Designer

HOME BUTTON AND STATUS BAR

Version 2.00

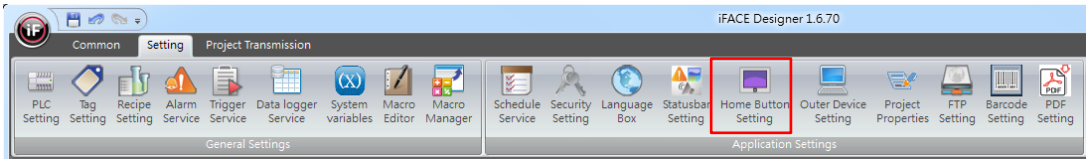
19. Home Button and Status Bar

Home button is a generic function key for performing the same action whenever being pressed on any page. For example, functions such as back to main screen, turn on/turn off backlight. The status bar is for displaying message states related to HMI.

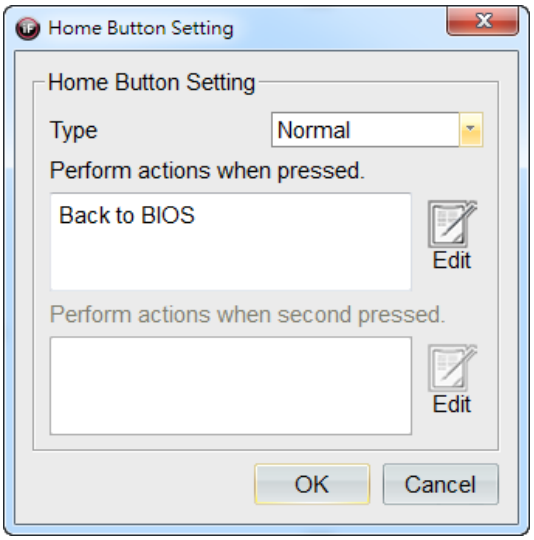


19.1 **Home Button Setting**

Click 【Home Button Setting】 in the item group 【Application Settings】 under the tab 【Setting】.



19.1.1 **Home Button Setting**



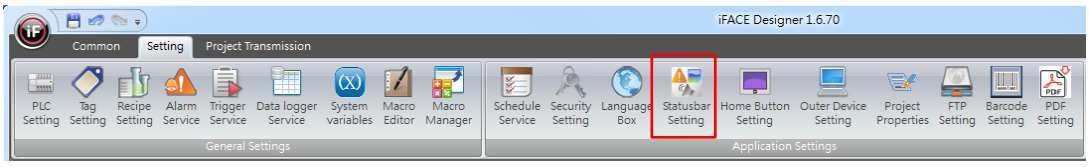
【Normal】: perform actions when pressed.

【Toggle】: perform action when pressed for the first time and perform other actions when second pressed.

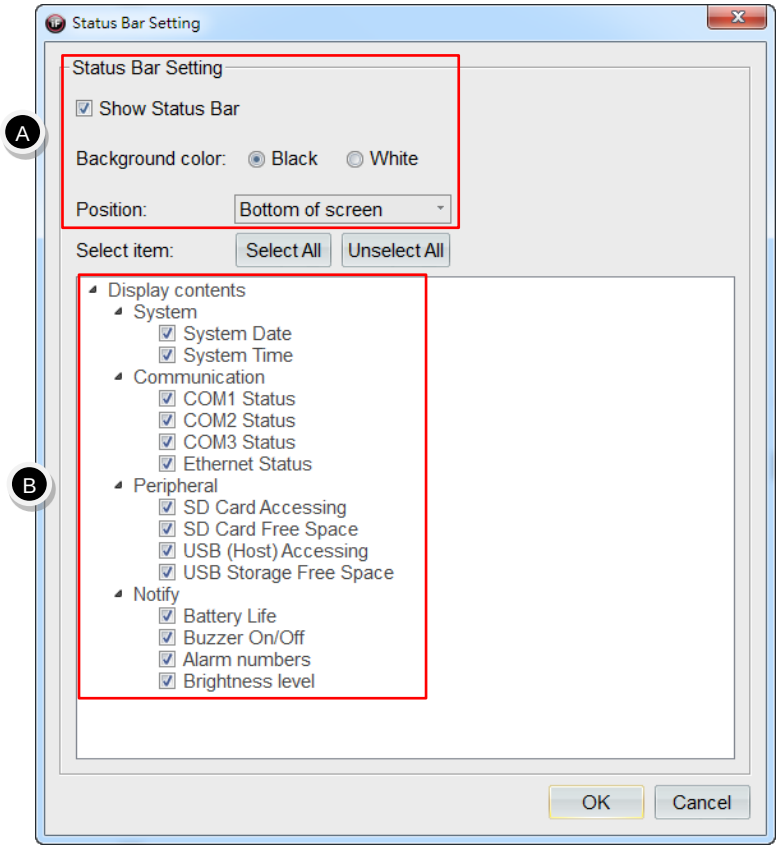
※ The edit method for actions when pressed the home button is the same as the action button, so please refer to chapter 6.

19.2 **Status Bar Setting**

Click 【Status Bar Setting】 in the item group 【Application Settings】 under the tab 【Setting】.



19.2.1 Status Bar Setting



A. 【Status Bar Setting】: You can select between two kinds of background color, 【Black】 or 【White】 and select among the 4 positions for the status bar, Right, Left, Top, Bottom of the screen.

B. 【Display contents】: It can be divided into 4 parts: System, Communication, Peripheral and Notify. Users can tick the related items on the screen based their design requirement.

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iFACE Designer

TRIGGER SERVICE

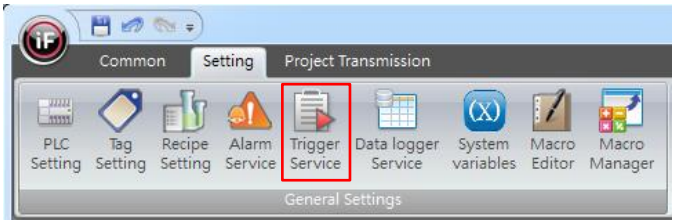
Version 2.00

20. Trigger Service

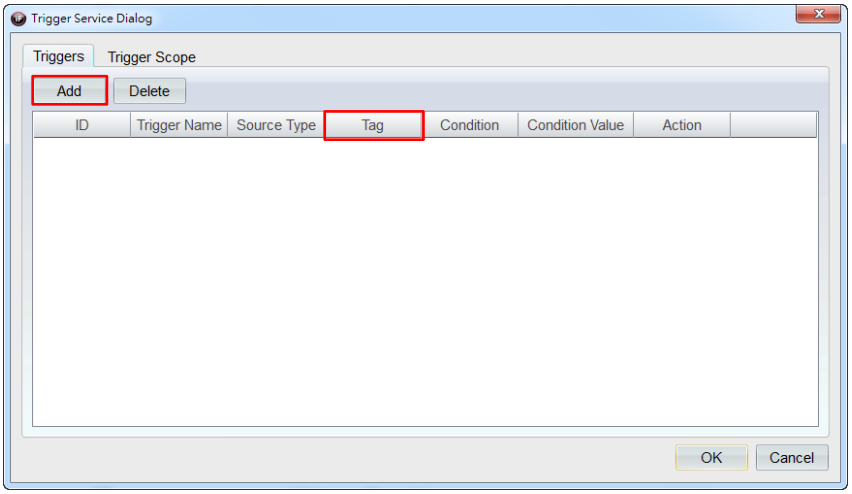
Set the state value of the tag read during communication as the trigger condition to perform actions that are designed and edit in advance when the condition values hold.

20.1 Trigger Service

Click 【Trigger Service】 in the item group 【General Settings】 under the tab 【Setting】.



20.1.1 Trigger Service Dialog

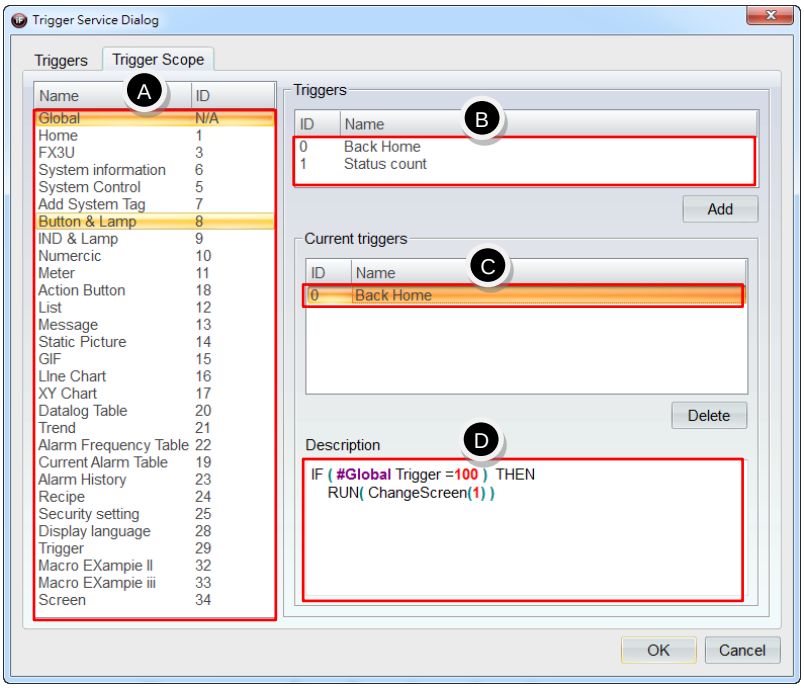


【Tag】: Edit 【Trigger Name】 and set 【Source Type】, 【Condition】, 【Condition Value】 and 【Action】 when triggered by connecting the tag.

Source Type	Condition	Condition Value
Bit Type	SET = 1 Clear = 0 Changed (state change)	No need to fill in. No effect if filled in.
Register Type	= (equal) =! (not equal) > (greater than) < (less than) >= (equal to or greater than) <= (equal to or less than) Changed (state change)	Any value. Does not support characters as condition value for determination.

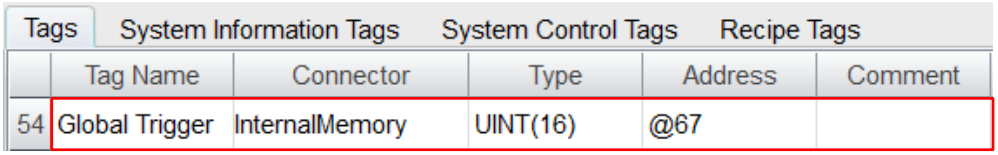
20.1.2 **Trigger Scope**

A. We provided 【Global】 and individual 【Screen】 for trigger scope.
B. 【Triggers】: display the current trigger names that have been edited.
C. 【Current triggers】: display the trigger name that has been added.
D. 【Description】: display the content for the selected 【Triggers】.

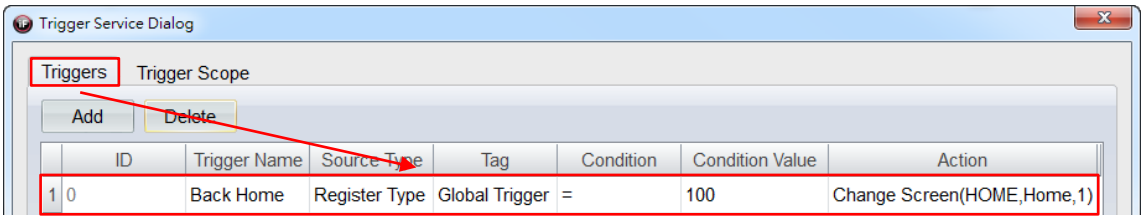


Exercise 1:

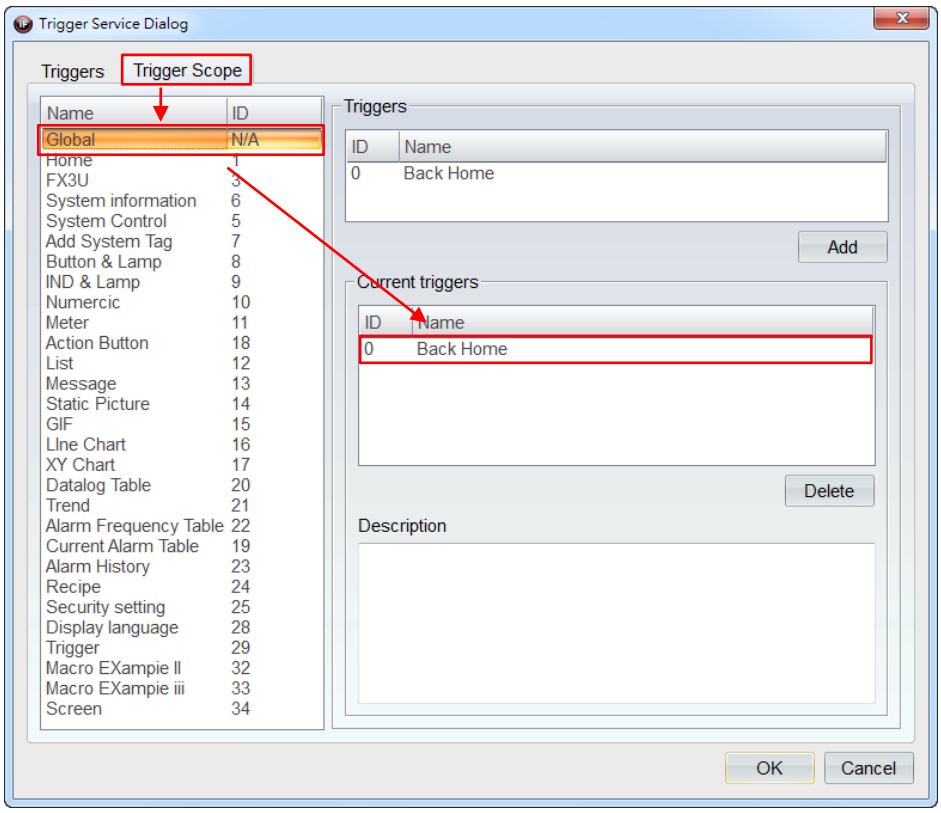
a. In 【Tags】, add a new tag with the name defined as 【Global trigger service test】 and specify its corresponding address 【@67】.



b. Under the tab 【Triggers】, add one trigger. Fill in the tag 【Global trigger service test】 in the field tag and set condition value as 100 and the action as change screen.



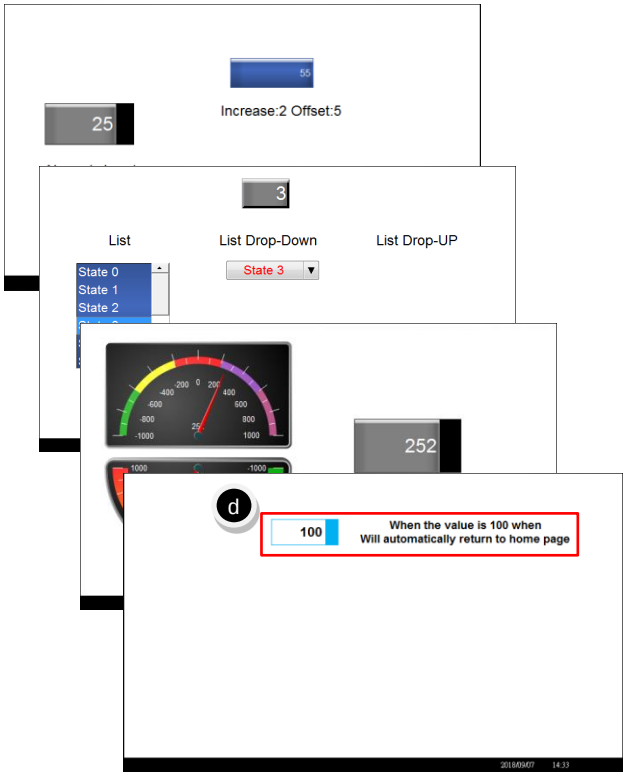
c. Select【Global】under the tab【Trigger Scope】and add back to main page into current triggers.

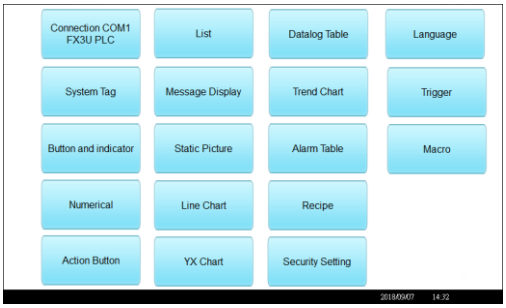


d. Drag a 【Numerical Input】 widget from 【Widgets Library】 onto the screen and connect it to the tag 【Global trigger service test】.

Simulation & Verification:

Add the tag 【Global trigger service test】 and enter the value = 100 in any screen in any exercise from previous section, it will switch the screen back to main page automatically.

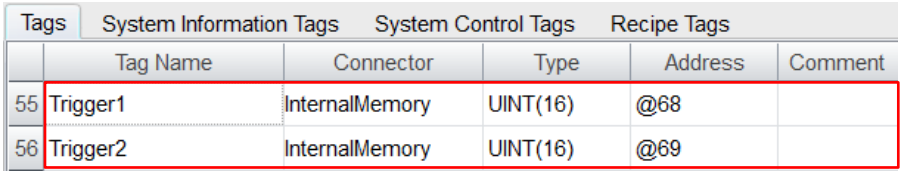




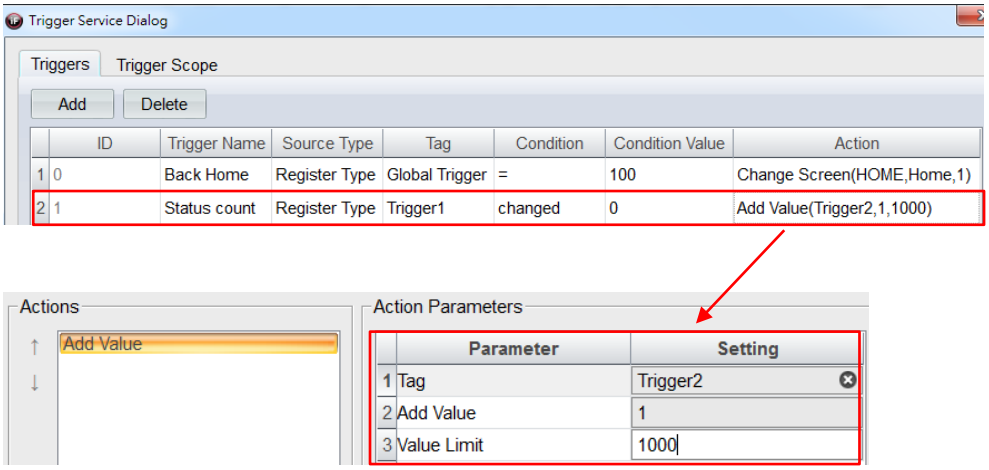
When the stage value of the tag 【Global trigger service test】 =100, it will switch the screen back to main page automatically.

Exercise 2:

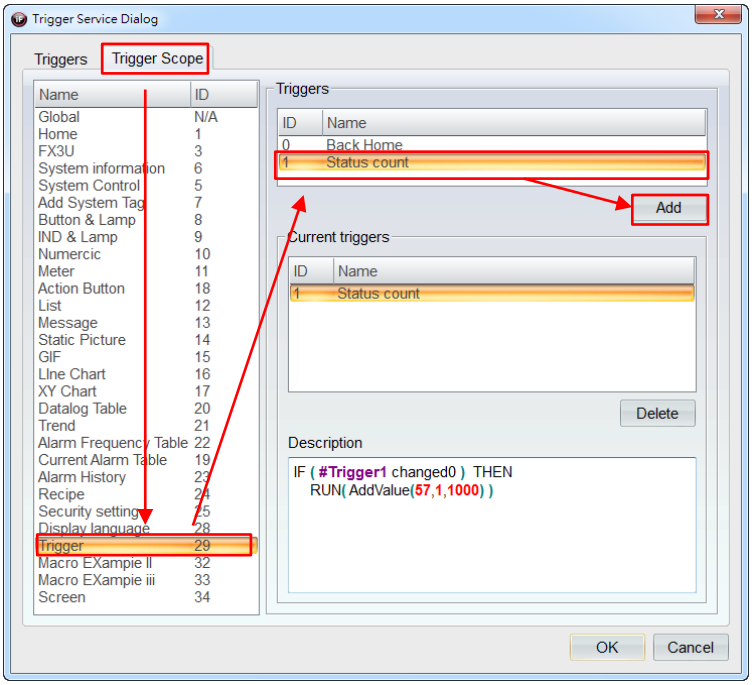
a. In 【Tags】, add 2 tags with their names defined as 【Trigger test 1】 and 【Trigger test 2】and specify their addresses 【@68】 and 【@69】, respectively.



b. Under the tab 【Triggers】, add one trigger and connect to the tag 【Trigger test 1】, set condition as 【changed】 and set the action as 【PLC Service】→【Add Value】 making the tag 【Trigger test 2】 add 1 to its state value.

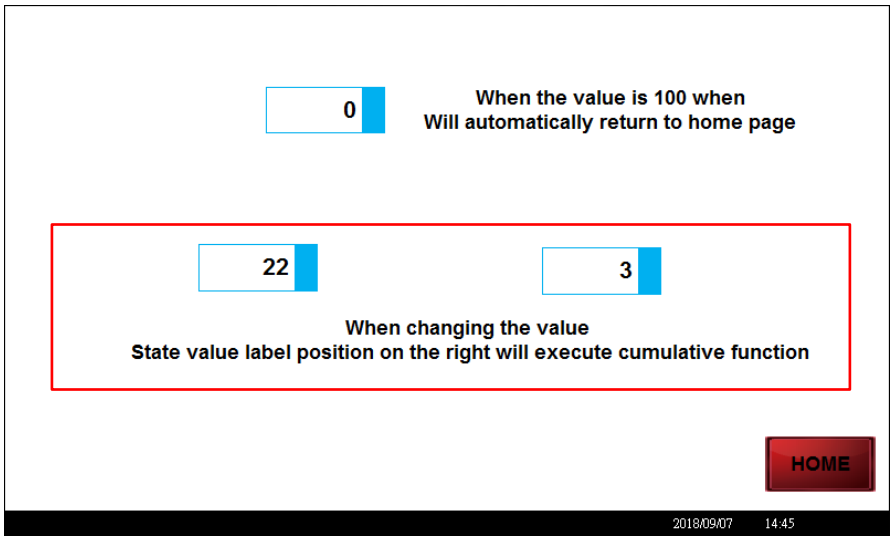


c. Click 【Trigger Service】 under the tab 【Trigger Scope】 and add a state counter to current triggers.



Simulation & Verification:

Modify only the state value of the numerical widget connected to the tag【Trigger test 1】 on the trigger service screen. If finished, the action of adding 1 to the state value of the tag 【Trigger test 2】 will be performed.



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iFACE Designer

MACRO

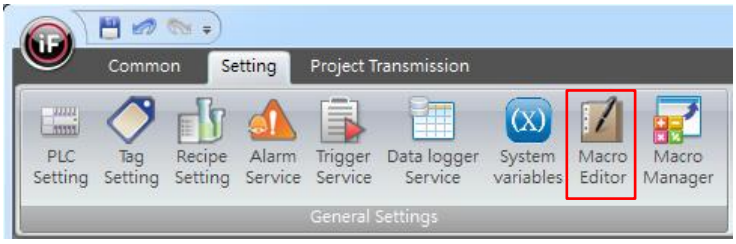
Version 2.00

21. Macro

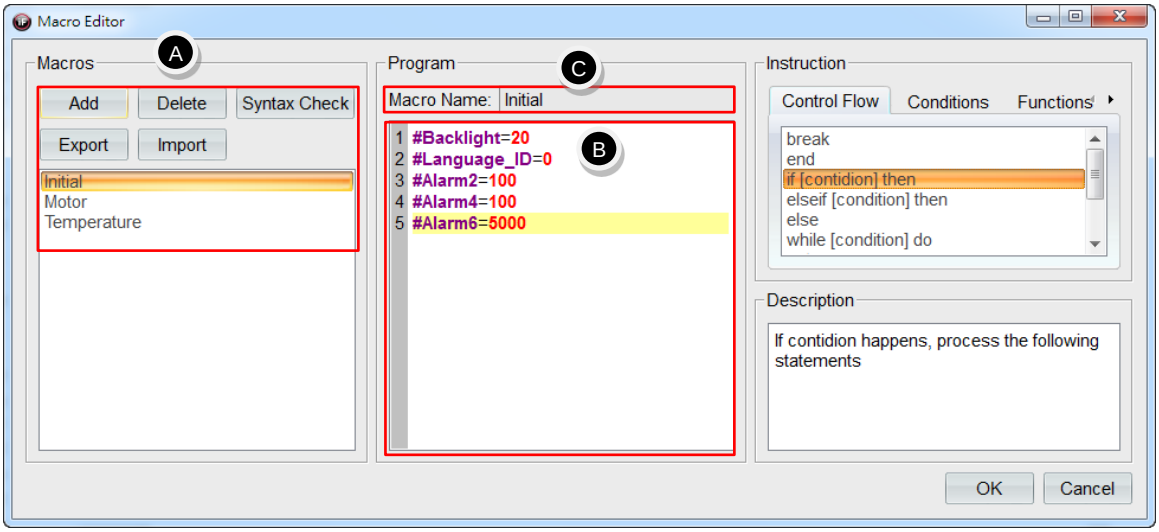
iFACE Designer provides convenient and powerful method for macros. It also provides effective system integration through the functions of macros such as 【Control Flow】, 【Conditions】, 【Functions】 for becoming the most low-cost structure for hardware.

21.1 Macro Editor

Click【Macro Editor】in the item group【General Settings】under the tab【Setting】.



21.1.1 Macro Editor



A. Add a new macro by 【Add】 or 【Import】.

B. Please refer to the user manual for the description of 【Program】such as control flow, syntax, functions.

※Remark:

1. When using tags in macro, you need to add the symbol 【#】 in front of the tag name.
2. Tag name cannot have special characters. For example, 【@】, 【$】, etc.

C. 【Syntax Check】: select 【Syntax Check】 after editing the program for macro to make sure whether the program of macro is correct.

21.1.2 Instruction List

Instruction	**Description**	Macro Syntax
Control Flow		
Break	Loop command: Breaks a loop	break
End	Loop command: End a loop	end
If … then	Loop command: If...then...	if （Conditional） then
else if … then	Loop command: otherwise, if...then...	else if （Conditional） then
Else	Loop command: otherwise	else
While … then	Loop command: continue the loop if the condition holds	while （Conditional） do
Goto	Force to skip to the specified line	goto （tag name）
For [var = start，end]	Loop command: run increment circulation for the range	for parameter = start value, end value do
Comment	comment	--
Conditions		
==	Determine whether A1 equals to A2	A1==A2
~=	Determine whether A1 is not equal to A2	A1~=A2
>	Determine whether A1 is greater than A2	A1>A2
<	Determine whether A1 is less than A2	A1<A2
>=	Determine whether A1 is equal to or greater than A2	A1>=A2
<=	Determine whether A1 is equal to or less than A2	A1<=A2
Functions		
ABS	Calculate the absolute value	A1=ABS（A2）
ADD	Addition	A1=ADD（A2，A3）

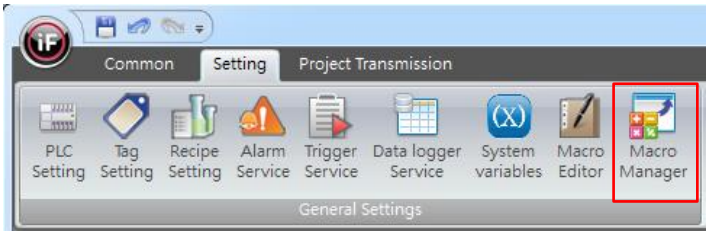
AND	Logic AND	A1=AND（A2，A3）
ASC	Convert Hex to ASCII	A1=ASC（A2）
BCD	Convert BIN to BCD	A1=BCD（A2）
BIN	Convert BCD to BIN	A1=BIN（A2）
BMOV	Move blocks	BMOV（A1，A2，A3）
BMOVB	Move bit blocks	BMOVB（A1，A2，A3，A4，A5）
COS	Trigonometric function (Cosine function) COS	A1=COS（A2）
COT	Trigonometric function (Cotangent function) COT	A1=COT（A2）
CSC	Trigonometric function (Cosecant function) CSC	A1=CSC（A2）
DELAY	Delay in milliseconds	DELAY（A1）
DIV	Division	A1=DIV（A2，A3）
FG	Return the corresponding value of the coordinates	A1 = FG(A2, A3, A4)
FILL	Fill up the memory	FILL（A1，A2，A3）
HEX	Convert ASCII to Hex	A1=HEX（A2）
INV	Inverse the lowest bit	A1=INV（A2）
INVB	Specify inverse bits	A1=INVB（A2，A3）
IRD	Indirect read	A1=IRD（A2，A3）
IWR	Indirect write	IWR（A1，A2，A3）
LG	Find the larger value	A1=LG（A2，A3）
LOG	Calculate natural log of the parameter value	A1=LOG（A2）
LOG10	Calculate natural log with 10 as base of the parameter value	A1=LOG10（A2）
MAX	Find the maximum	A1=MAX（A2，A3）
MEAN	Calculate the average value	A1=MEAN（A2，A3）
MIN	Find the minimum	A1=MIN（A2，A3）
MMOV	Move item by item	MMOV(A1,A2,A3,A4,A5,A6,…)
MOD	Division and take remainder	A1=MOD（A2，A3）
MOVB	Move bits	MOVB (A1，A2，A3，A4)
NEG	Take the complement of 2 for the parameter value	A1=NEG（A2）
NOT	Logic NOT	A1=NOT（A2）
OR	Logic OR	A1=OR（A2，A3）

P2R	Write PLC value to the recipe	P2R（A1，A2，A3，A4，A5）
R2P	Write the recipe value to PLC	R2P（A1，A2，A3，A4，A5）
R2PS	Write multiple recipe values to PLC	R2PS（A1，A2，A3，A4，A5，A6）
R2R	Copy the recipe	R2R(A1,A2,A3)
R2T	Write the data of recipe A to recipe B	R2T(A1, A2, A3, A4, A5, A6, A7
RCNT	Obtain the quantity of the recipe	RCNT(A1)
RDB	Read the nth digit of the parameter	A1=RDB（A2，A3）
RN2P	Write the recipe name to a string tag	RN2P（A1，A2，A3）
RNID	Search for recipe name	A3=RNID（A1，A2）
RST	Clear the lowest bit	A1=RST（A2）
RSTB	Clear the specified bit	A1=RSTB（A2，A3）
RSTR	Clear the recipe log	A1=RSTR（A2，A3）
SCMP	Compare strings	A1=SCMP（A2，A3，A4）
SEC	Trigonometric function (Secant function) SEC	A1=SEC（A2）
SET	Set the lowest bit	A1=SET（A2）
SETB	Set the specified bit	A1=SETB（A2，A3）
SHL	Shift the bit to the left	A1=SHL（A2，A3）
SHR	Shift the bit to the right	A1=SHR（A2，A3）
SIN	Trigonometric function (Sine function) SIN	A1=SIN（A2）
SM	Find the smaller value	A1=SM（A2，A3）
SUB	Subtraction	A1=SUB（A2，A3）
SUM	Calculate the sum	A1=SUM（A2，A3）
SWAP	Swap endianness	A1=SWAP（A2）
SYNC	Sync and update data to PLC	SYNC（A1）
SYNCB	Sync and update all data to PLC	SYNCB（）
T2R	Send the data from the tag to recipe	T2R(A1, A2, A3, A4)
TAN	Trigonometric Function (Tangent Function) TAN	A1=TAN（A2）

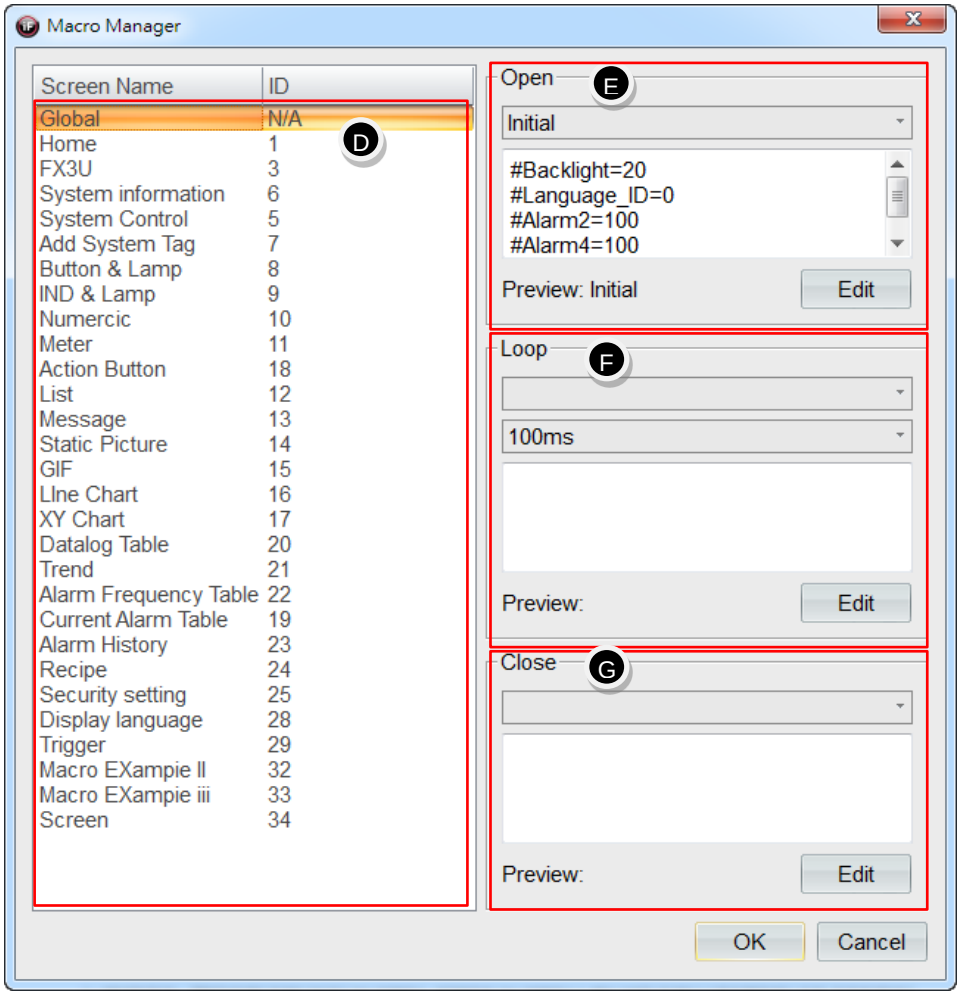
WRB	Determination of zero	A1=WRB（A2，A3，A4）
XOR	Logic XOR	A1=XOR（A2，A3）
Math Operation		
=	Equal	A1=A2
+	Addition	A1=A2+A3
—	Subtraction	A1=A2-A3
*	Multiplication	A1=A2*A3
/	Division	A1=A2/A3
%	Division and take the remainder	A1=A2%A3
()	Call the macro	Macro name ()

21.2 **Macro Manager**

Select 【Macro Manager】 in the item group 【General Settings】 under the tab 【Setting】



21.2.1 **Macro Manager**



D. Screen Name: display all the screens in the project.

- 【Global】: represents that the macro will run based on the set time condition no matter which screen it is on.
- 【Screen】: represents that the macro will only run based on the set time conditions when stayed on that screen.

Remark: Beside sub screens, every screen can set the condition for running macro.

E. 【Open】: macro will only run once when the screen is opened. If 【Global】 is being set, then the macro will only run once when the project is being activated.

F. 【Loop】: macro will run periodically when opening the screen based on the time interval set below. If 【Global】 is being set, then macro will continue to run periodically after the project is being activated.

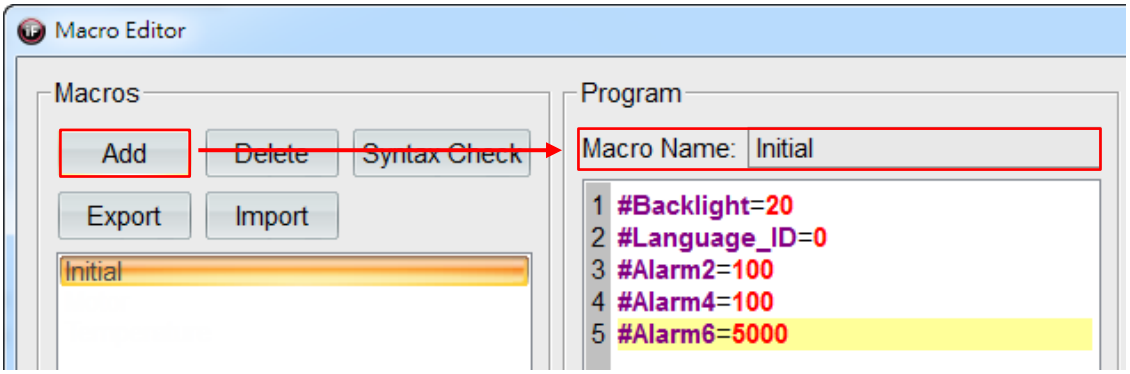
G. 【Close】: macro will only run once before closing the screen. If 【Global】 is being set, then macro will run once before the project is being closed.

21.2.2 **Example of Macro Program-Default Parameter Setting**

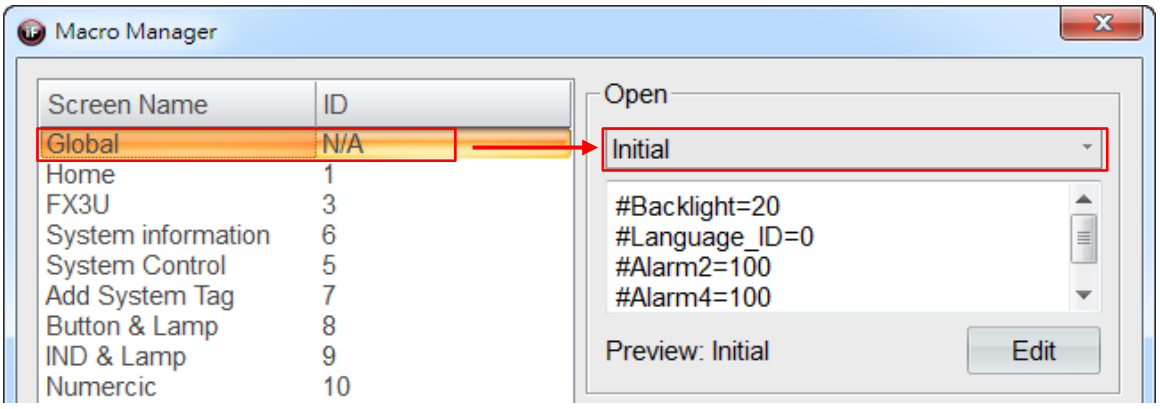
Based on the example exercises in previous chapter, such as the exercise for system control tags in chapter 3 and the exercise for alarm in chapter 13, they will create problems such as alarm messages or changing the backlight to dark when electricity was resent to HMI every time. You can ensure that start-up to be normal by using macro to initialize.

a. 【Tag Setting】: keep using the tags in the exercises of chapter 3 【System Control Tag】 and chapter 13 【Alarm Service】.

b. 【Macro Editor】: add a new macro. Set the macro name as 【Initial parameters】. The macro program is shown in the figure below:

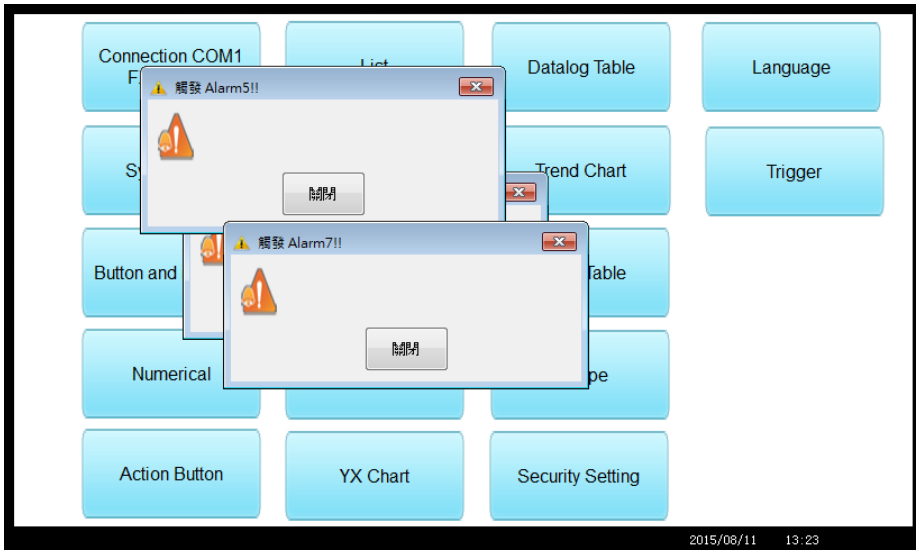


c. 【Macro Manager】: set the screen name as【Global N/A】and then select the macro name 【Initial parameters】 in 【Open】.

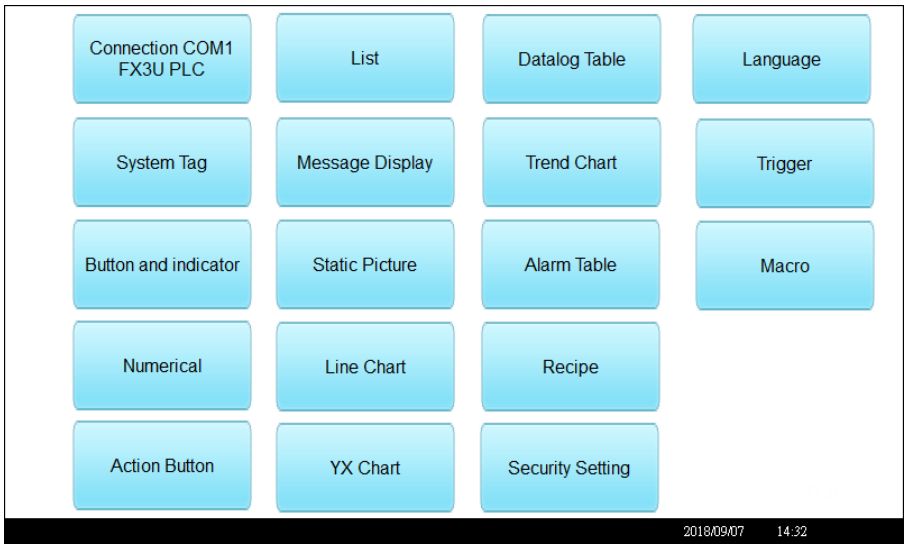


Simulation & Verification:

When macro is not being performed, the display language on the screen will be English when HMI runs the project every time after HMI is being powered on again. Since the trigger condition for the alarm is being satisfied, so it will create sub screens for the alarm.



After running the macro, , the display language on the screen will be 繁體中文 when HMI runs the project every time after HMI is being powered on again. Since the trigger condition for the alarm is not being satisfied, so it will not create sub screens for the alarm and the backlight will be displayed as the brightest.



21.2.3 **Example of Macro Program－Unit Conversion**

Unit conversion has been commonly set as macro program. In this example, temperature in Celsius is converted to temperature in Fahrenheit.

a. In【Tags】, add 2 tags with their names defined as【Temperature in Celsius】and 【Temperature in Fahrenheit】 and specify their corresponding addresses 【@70】 and 【@71】, respectively. Set type as INT (16).

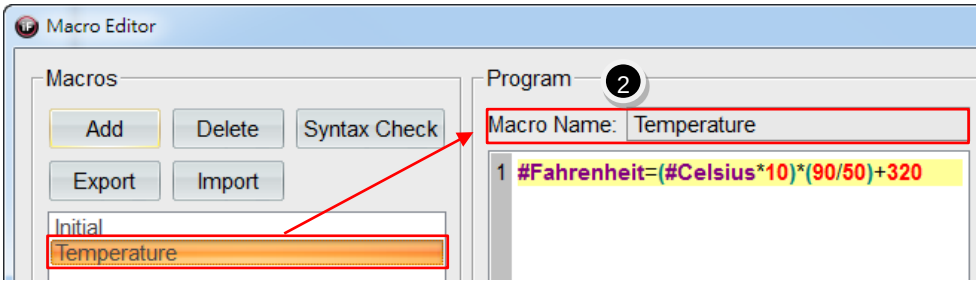
Tags | System Information Tags | System Control Tags | Recipe Tags

	Tag Name	Connector	Type	Address	Comment
57	Celsius	InternalMemory	INT(16)	@70	
58	Fahrenheit	InternalMemory	INT(16)	@71	

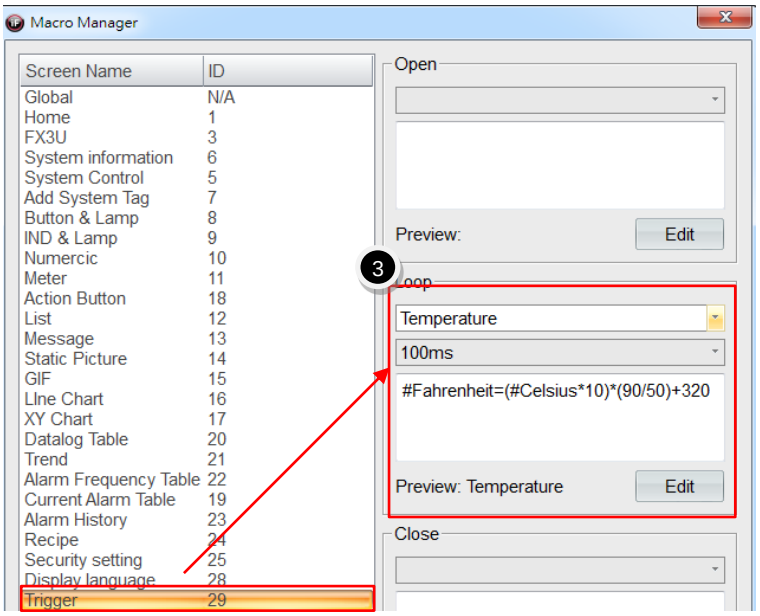
b. 【Macro Editor】: add a new macro Set the macro name as【Convert Celsius to Fahrenheit】.

Original formula: Fahrenheit＝Celsius*(9/5) + 32. If it was being calculated directly, then the obtained decimal will not be displayed. So, you must multiply the whole formula by 10 to calculate the temperature in Fahrenheit correctly.

The macro program is shown in the figure below:



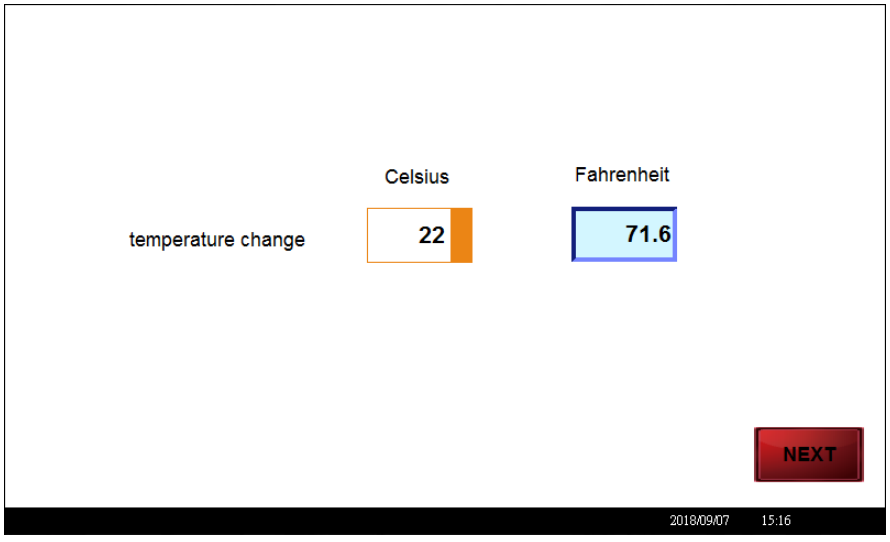
c. 【Macro Manager】: set the screen name as 【Macro example 2】. Select the macro name 【Convert Celsius to Fahrenheit】 in 【Loop】 and set the time interval as 1000ms.



d. Drag 2 【Numerical Widget】 from 【Widgets Library】 onto the screen. Connect them to the tags 【Temperature in Celsius】 and 【Temperature in Fahrenheit】. Remark: since we did first multiply 【Temperature in Celsius】 by 10, so we must set the decimal places as 1 to display the actual value of 【Temperature in Fahrenheit】correctly.

Simulation & Verification:

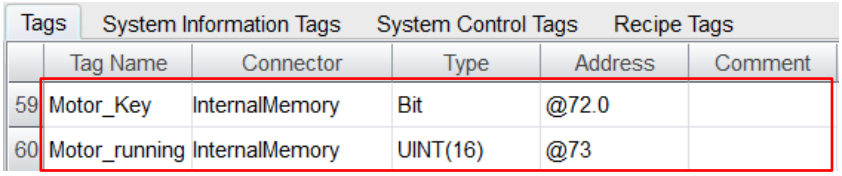
Temperature in Celsius 22 degrees = Temperature in Fahrenheit 71.6 degrees



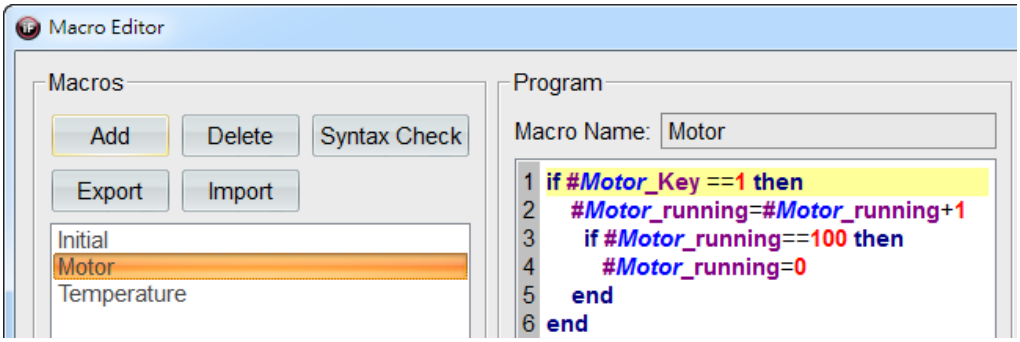
21.2.4 **Example of Macro Program-Conditional Determination**

Design a button for triggering the conditions. When triggered, the value will start to add up. When the value has reached the value limit, then it will return to zero.

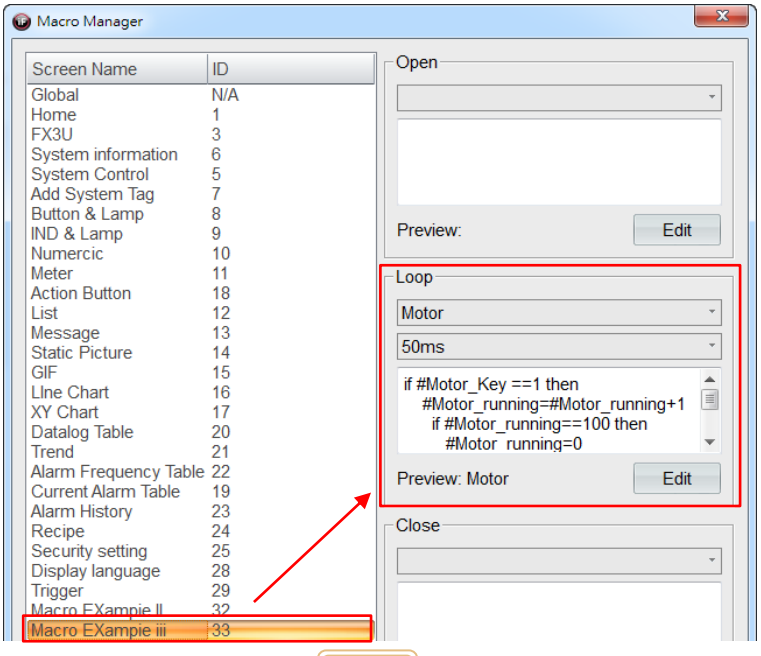
a. In 【Tags】, add 2 tags with their names defined as 【Motor trigger switch】 and 【Motor rotation speed】 and specify their corresponding addresses 【@72.0】 and 【@73】, respectively.



b. 【Macro Editor】: add a new macro. Set the macro name as 【Conditional determination】. The macro program is shown in the figure below:



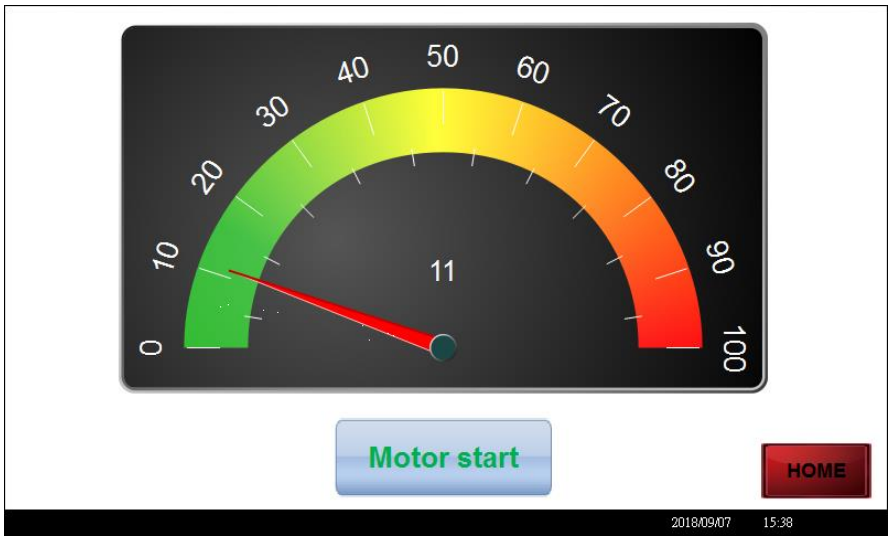
【Micro Manager】: set the screen name as 【Macro example 3】. Select the macro name 【Conditional determination】 in 【Loop】 and set the time interval as 500ms.



c. Drag a 【Button】 widget and a 【Meter】 widget from 【Widgets Library】 on to the screen. Connect them to the tags 【Motor trigger switch】 and 【Motor rotation speed】, respectively.

Simulation & Verification:

When the button 【Motor trigger switch】 is being switched to ON state, the state value of the meter will add up from 0 to 100 in forward circulation.



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PERIODIC INTERVAL

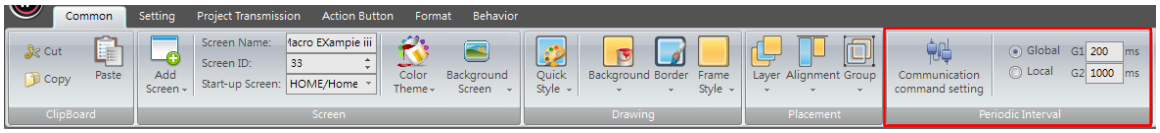
Version 2.00

22. Periodic Interval

Periodic command is a brand-new communication method. It is different from the tradition polling communication method such that it adopts time as the basis for whether to make the communication or not. After each communication command is completed, the periodic command will check whether the current time has reached the set time interval and then make communication when time exceeds.

22.1 Periodic Interval

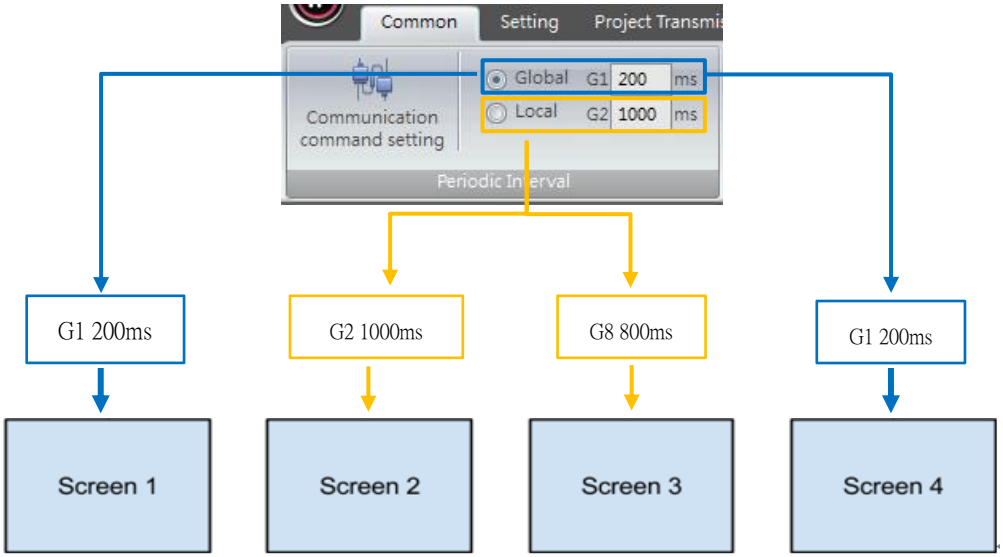
Select periodic interval as【Global】or【Local】in the item group【Periodic Interval】under the tab 【Common】.



Two sets of periodic command are provided for every screen. Users can set the periodic interval for each set of periodic command. Since the communication state of each screen is not the same in each project, we recommended you to take the baud rate for communication and the communication rate of the connected PLC or controller into account when setting the periodic interval.

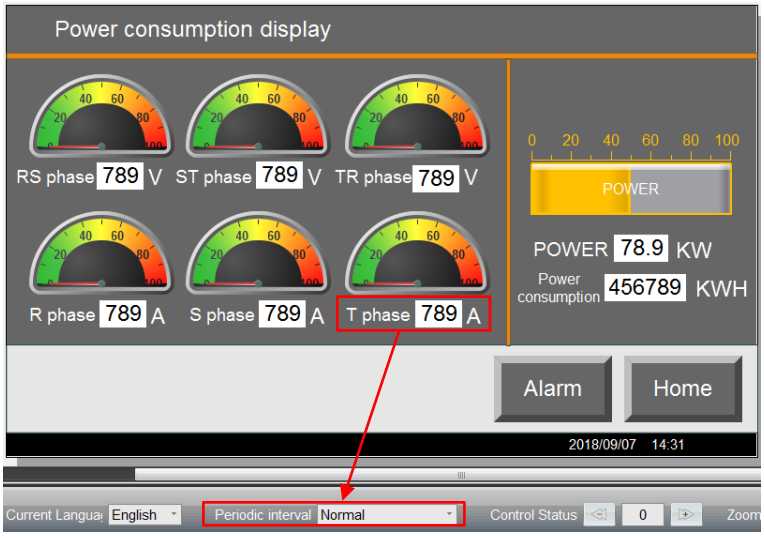
For periodic interval 【Global G1】, the screens that have selected 【Global】 in periodic interval will be changed when the periodic interval 【Global】 is changed.

For periodic interval 【Local G2】, each screen can define its own periodic interval independently . Tick 【Local】 in periodic interval to match the needs of the screen. If you need to have a more accurate periodic interval for the state of the screen, select 【Local】 in periodic interval will be a good option for you.



22.2 **Periodic Interval of a Widget**

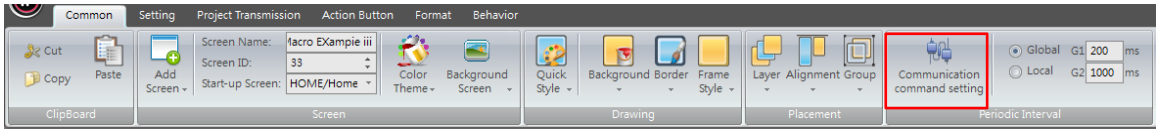
Set the periodic interval for reading based on the needs of a widget. Select 【Periodic Interval】 located at the bottom of the screen for the widget.



22.3 **Communication Command Setting**

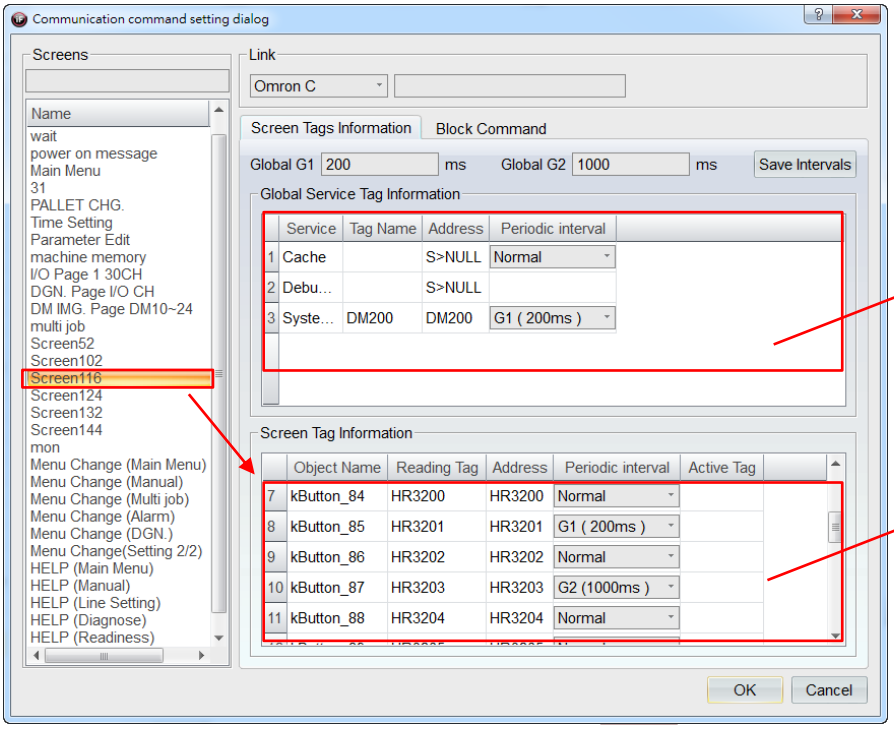
We provide all kinds of services in iFace Designer to assist the users to complete the required function easily and rapidly. For example, the alarm service can provide alarm messages for handling incidental conditions; trigger service can handle specific work-based state value of tags; macro can help high-level users to design the more advanced and accurate actions in the project.
Most of these services requires reading the information of tag, so we provide 【Communication command setting】 for users to define the read action for these services more accurately.

Two sets of periodic interval (G1 and G2) can be set in the item group 【Periodic Interval】 under the tab 【Common】 first, then click on 【Communication command setting】 in the same item group for more advanced setting.



22.3.1 **Screen Tags Information**

Browse through the periodic interval of global service tag information and screen tag information in every screen and make modifications to the periodic interval.



【Global Service Tag Information】

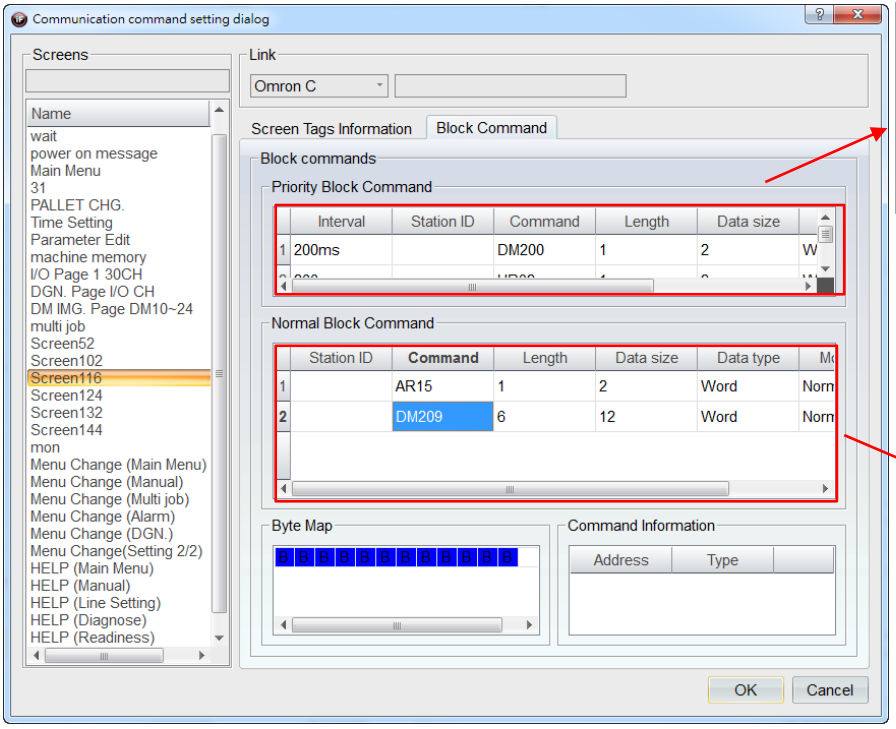
Check the periodic of all screen alarms/data log/macro/trigger service, etc.

【Screen Tag information】

View the label and read periodic time interval of the selected page.

22.3.2 **Block Command**

Browse the configuration of block command in every screen.



【Priority Block Command】

Widgets displayed in priority block command can enhance its speed by 【Periodic interval】.

【Normal Block Command】

The number of blocks composed by all the widgets on a screen can be seen here. If the discontinuity of the data is higher, then the number of blocks for the composition will increase, which will affect the communication rate.

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SCHEDULE SERVICE

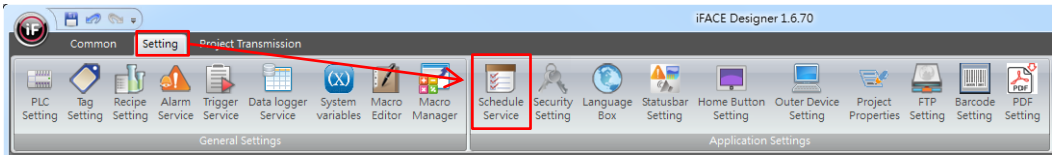
Version 2.00

23. Schedule Service

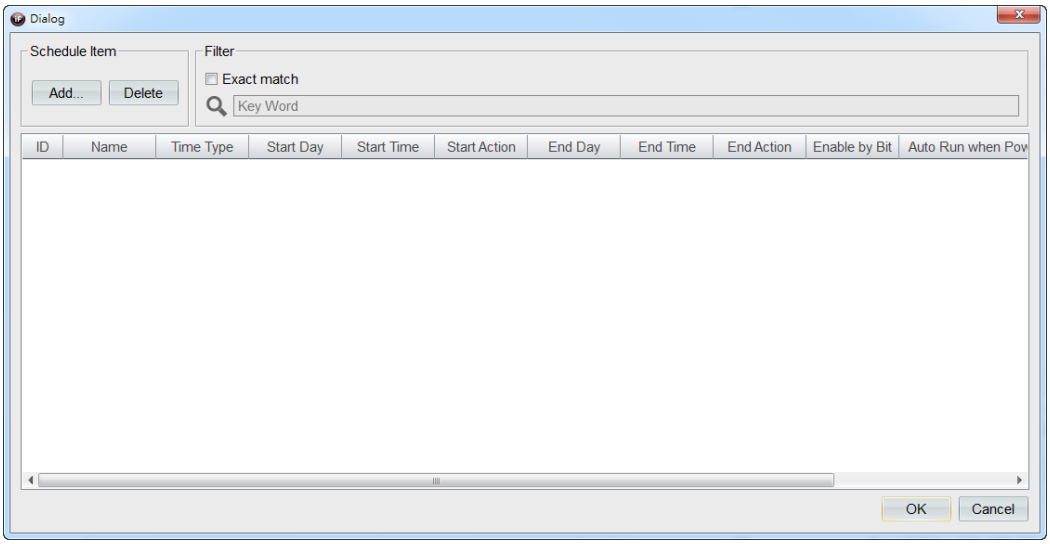
【Schedule Service】 is a tool for users to set actions in advance easily and conveniently. For example, turn off the power of devices that are not used for security during lunch break time every day and turn them back on during office hours automatically, etc.
Make good use of 【Schedule Service】 can greatly reduce these complicated and repeated actions run by PLC.

23.1 Schedule Service

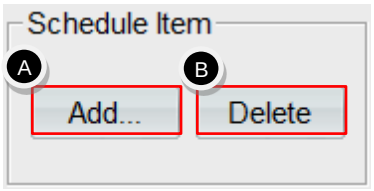
To set schedule service, please click 【Schedule Service】 in the item group 【Application Settings】 under the tab 【Setting】.



The figure below shows the dialog for schedule service.
We must set all the possible schedule items one by one when editing the project. Once the project is running, you can only modify the date and time of the schedule type 【Dynamic】.



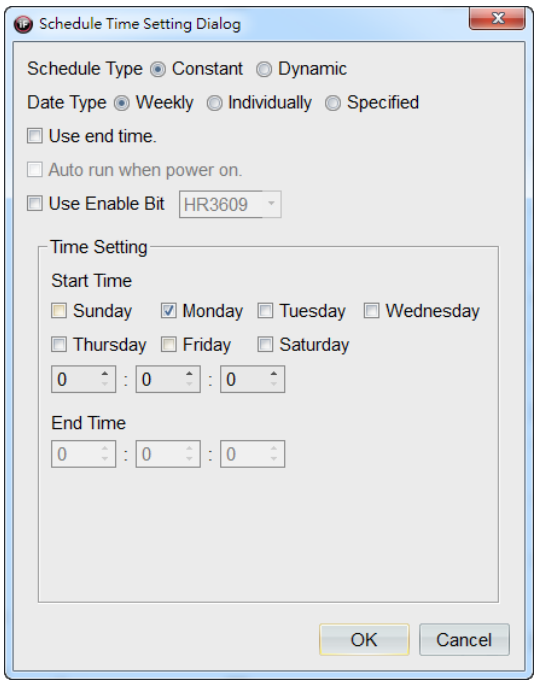
You can add or delete a 【Schedule Item】.



A. 【Add】: you can add a schedule item. Currently, you can add up to 100 schedule items.

B. 【Delete】: you can delete all the selected schedule items.

After pressing 【Add】 in 【Schedule item】, it will invoke a 【Schedule Time Setting Dialog】, then we can start to design the required schedule items one by one.



【Schedule Type】: set the schedule type, 【Constant】 or 【Dynamic】.

a. 【Constant】: set a constant time, such as a certain month or starting from a certain hour, minute, second to a certain hour, minute, second on certain days in a week, to perform the specified actions periodically.

b. 【Dynamic】: set a certain time setting at any time during the operation to perform the specified actions.

【Data Type】: set the date type for the schedule item, 【Weekly】, 【Individually】 or 【Specified】.

a. 【Weekly】: set a certain amount of time on certain days (may set number of days) each week to perform the specified actions.
b. 【Individually】: set a certain amount of time on a certain day (only one day) each week to perform the specified actions.
c. 【Specified】: set a certain amount of time on a certain day to perform the specified actions.

【Use end time】: if you tick this option, then you can enable 【End Time】 in time setting.

【Auto run when power on】: If that schedule time setting is being activated and kept running, then it will perform the specified actions automatically when being powered on again.

Remark: since trigger conditions for schedule items is the set【Start time】, then it will perform the specified actions when reaching that moment (an upper differential pulse). Hence, the system will not perform the specified actions when power on if you did not tick that option.

【Use Enable Bit】: tick this option and set a tag, then the tag can be used as a specified indicator for triggering the schedule item. For example, if the state value of the tag is ON, then the schedule item will be triggered; if state value of the tag is OFF, then the schedule item will not be triggered. You can combine it with【Alarm Service】 or 【Trigger Service】 in your project so that you can design with more flexibility.

23.2 【Constant/Weekly】

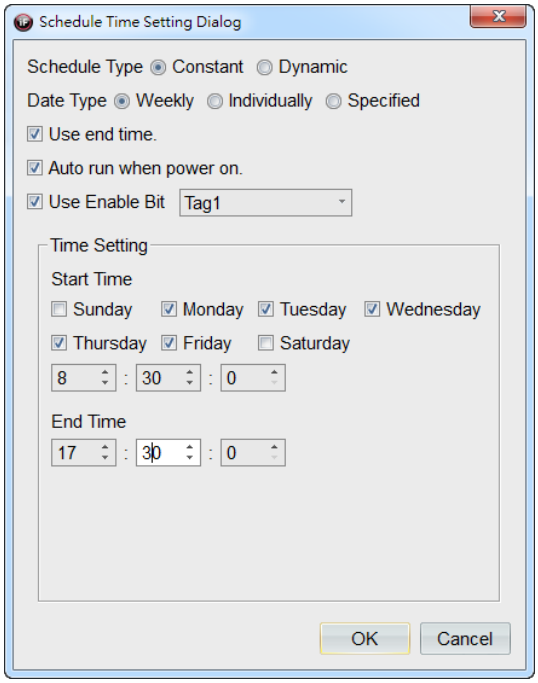
Time setting can be set as starting from a certain time to a certain time on certain days of a week to perform the specified actions. The period of the schedule is a week.

For example, after we add a schedule item, it will invoke 【Schedule Time Setting Dialog】.

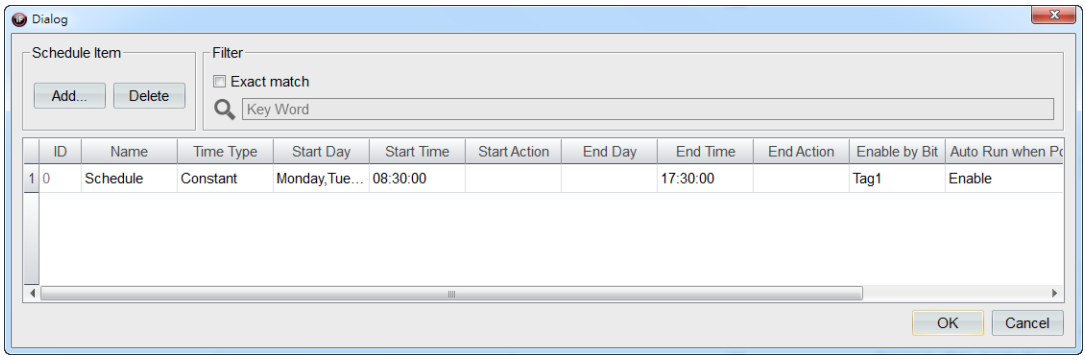
Select 【Constant】 in 【Schedule Type】, select 【Weekly】 in 【Data Type】. We can tick the option 【Use end time】, 【Auto run when power on】 and 【Use Enable Bit】.

We must set the start time and end time in time setting.

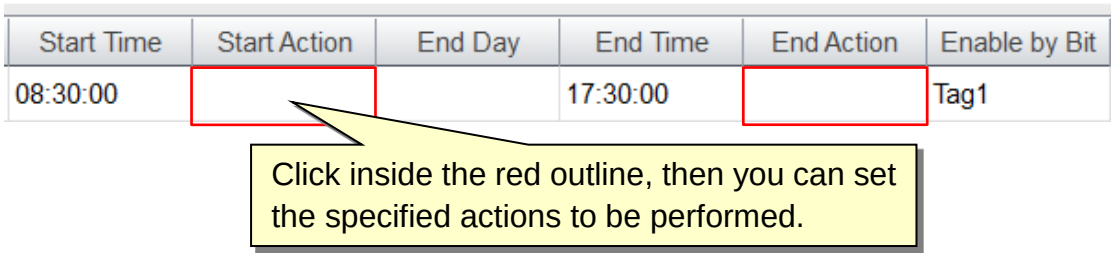
Since we selected the schedule type/data type 【Constant/Weekly】, we can tick any certain days from 【Sunday】 to 【Saturday】 as in time setting. Then set the start time as a certain hour, minute, second using drop-down menu; if you have also ticked 【Use end time】, then you must set the end time as a certain hour, minute, second.



After the setting is completed, press 【OK】, then it will add the set contents into the dialog for schedule service.



Next, we can modify the【Name】of the schedule item and then click【Start Action】and 【End Action】 to set the specified actions.



Please refer to chapter 6 【Action Button】 in this manual for how to set 【Action】.

23.3 【Constant/Individually】

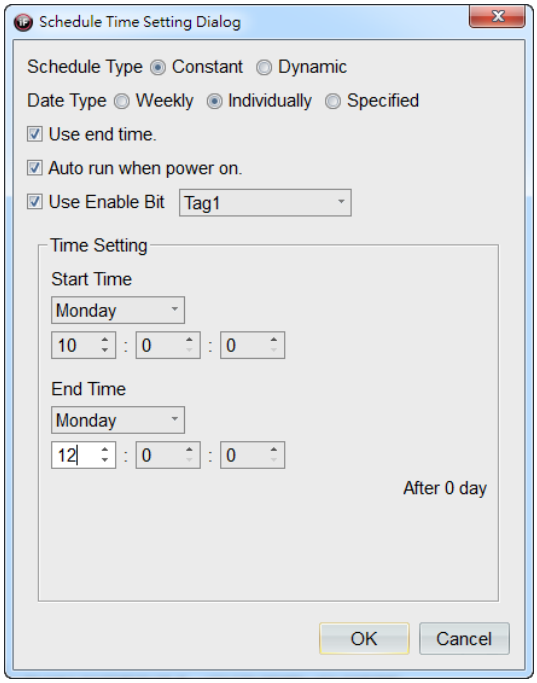
Time setting can be set as starting from a certain time in a certain 【Day】 in a week to a certain time in a certain【Day】in a week for the specified action to be performed. The period for the schedule item is a week.

For example, after we add a schedule item, it will invoke a 【Schedule Time Setting Dialog】.

Select 【Constant】 in 【Schedule Type】, select 【Individually】 in 【Data Type】. We can tick 【Use end time】, 【Auto run when power on】 and 【Use Enable Bit】.

We must set the start time and end time in time setting.

Since we selected the schedule type/data type of【Constant/Individually】, we can set the start time as a certain hour, minute, second on a certain 【Day】 in week in the drop-down menu to perform the specified actions. If you have also ticked 【Use end time】, then you must set the end time as a certain hour, minute, second on a certain 【Day】 in a week to perform the specified actions for end time



23.4 【Constant/Specified】

Time setting can be set as starting from start time to end time on a certain date during January to December to perform the specified actions. The period for the schedule item is a year.

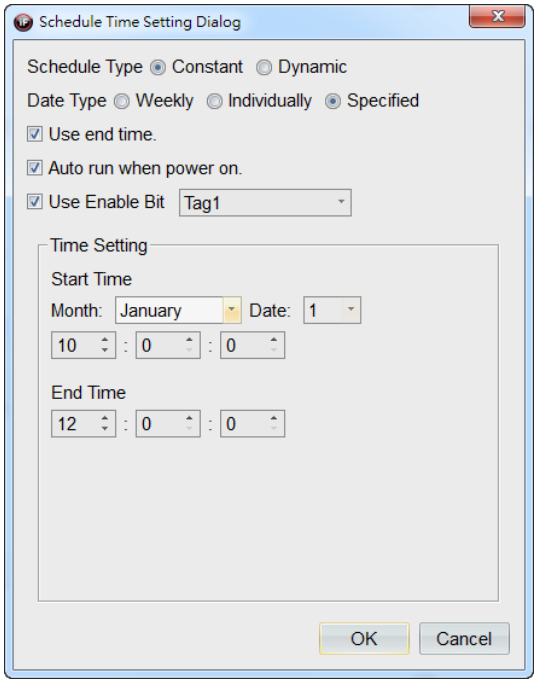
For example, after we add a schedule item, it will invoke a 【Schedule Time Setting Dialog】.

Select【Constant】in【Schedule Type】and select【Specified】in【Data Type】. We can tick 【Use end time】, 【Auto run when power on】 and 【Use Enable Bit】.

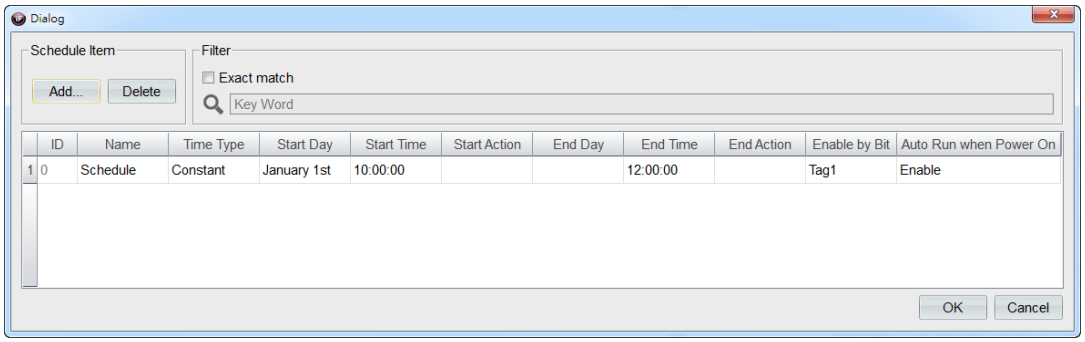
We must set the start time and end time in time setting.

Since we selected the schedule type/data type【Constant/Specified】, we can set the start time as a certain hour, minute, second on a certain【Day】in a certain【Month】to perform the specified actions. If you have also ticked 【Use end time】, then you must set the end time as a certain hour, minute, second to perform the specified actions for end time.

It can be seen in the figure below.



After the setting is completed, press【OK】and then all the set contents will be added to the dialog for schedule service.



23.5 【Dynamic/Weekly】

Dynamic means that it can be adjusted on PLC or HMI at any time. Time setting is specified in the state value of the tag. Each corresponding tag is specified with a start time (day, hour, minute, second) and an end time (day, hour, minute, second). Similarly, you must also specify the actions to be performed, respectively.

For example, after we add a schedule item, it will invoke a 【Schedule Time Setting Dialog】.

Select 【Dynamic】 in 【Schedule Type】, select 【Weekly】 in 【Data Type】. We can tick 【Use end time】, 【Auto run when power on】 and 【Use Enable Bit】.

We must set the start time and end time in time setting.

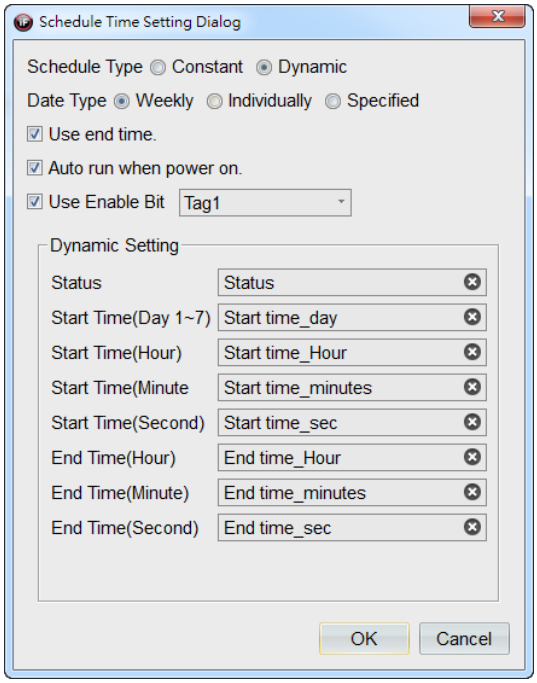
Since we selected the schedule type/data type 【Dynamic/Weekly】, we must input the appropriate tag based on the field.

a. 【Status】: display the state for the dynamic setting of the schedule item.

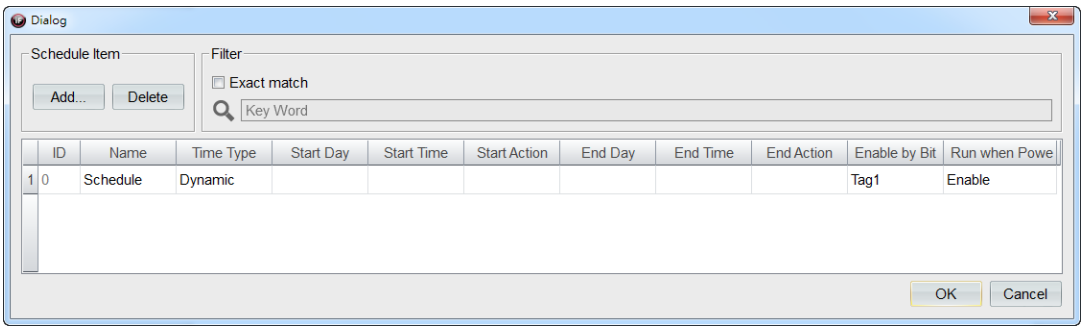
Dynamic setting_State	State Value
State value will display as 0	Schedule item is not being triggered.
State value will display as 1	Successfully read the dynamic address
State value will display as 2	Fail to read the dynamic address
State value will display as 3	Time or date read is invalid

b. 【Start Time (Day 1~7)】: set the start time (day) of the schedule item. When the state value 1 of the corresponding tag represents Monday; the state value 7 represents Sunday.
c. 【Start Time (Hour)】: set the start time (hour) of the schedule item, which is within the range 0-23.
d. 【Start Time (Minute)】: set the start time (minute) of the schedule item, which is within the range 0-59.
e. 【Start Time (Second)】: set the starting time (second) of the schedule item, which is within the range 0-59.
f. 【End Time (Hour)】: set the start time (hour) of the schedule item, which is within the range 0-23.
g. 【End Time (Minute)】: set the start time (minute) of the schedule item, which is within the range 0-59.
h. 【End Time (Second)】: set the start time (second) of the schedule item, which is within the range 0-59。

Remark: 【End time】 cannot be earlier than 【Start time】. If the setting is wrong, the state value will display as 【3】.



After the setting is completed, press 【OK】 and then the set contents will be added to dialog for schedule service.

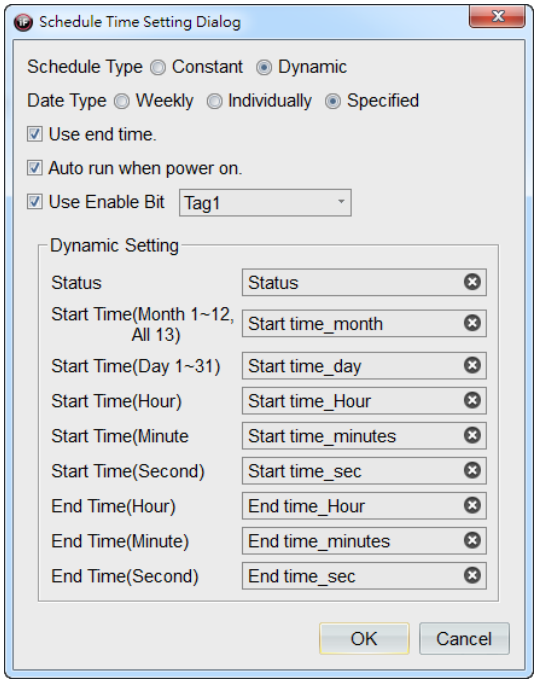


23.6 【Dynamic/Individually】

The settings for 【Dynamic/Individually】 is similar to 【Dynamic/Weekly】. Please refer to the previous section, we will not describe them here again.

23.7 【Dynamic/Specified】

You can specify a certain time to trigger schedule item by PLC or HMI. The time setting can be set as a certain day during January to December or set as a certain day in every month to perform the specified actions.



NOVAKON

HMI – Your Intelligent IIoT Gateway Solutions

iFACE Designer

PROJECT TRANSMISSION

Version 2.00

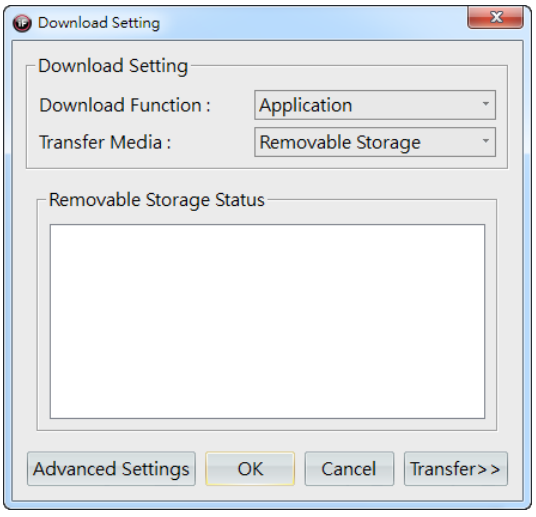
24. Project Transmission

Project transmission mainly contains all kinds of settings to be performed when downloading the project to HMI.
Before downloading the project every time, it is strongly recommended to save and compile first to ensure that the downloaded HMI project has the newest design.

24.1 Transfer Setting

Click 【Transfer Setting】 in the item group 【Download】 under the tab 【Project Transmission】.

24.1.1 Download Function



Download Function: the selected option will be downloaded and updated.

【Application】: only download the application This option is suitable for updating the settings or screens of projects on HMI.

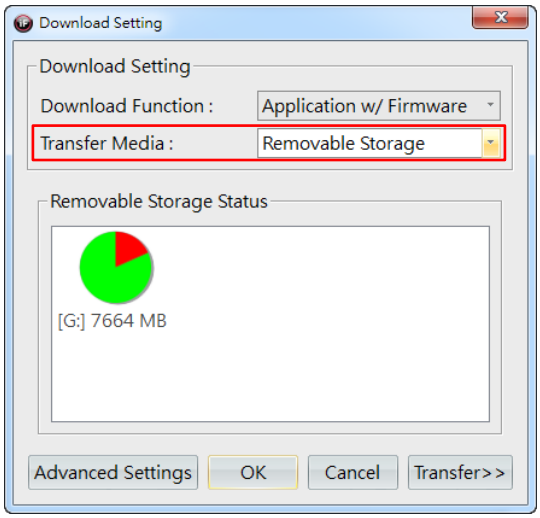
【Firmware】: software version will correspond to firmware. This option is suitable for upgrading software version as well as updating the firmware. After the firmware is downloaded, the HMI project must be downloaded again.

【Application w/ Firmware】: update both the application and the firmware. This option is suitable when old projects will be opened and compiled in new software version.

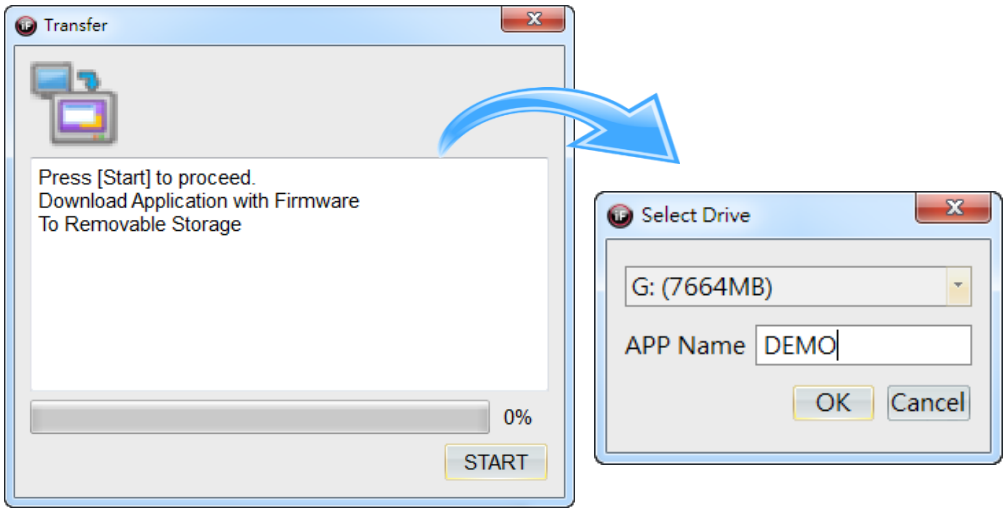
【QT Library】: only N series are required. Update internal QT version and turn on parts of the functions. For example, HMI display the screen with 90 degrees turn, VNC remote monitoring, etc.

24.1.2 **Transfer Media – Removable Storage**

【Removable Storage】 is the external storage device that PC connected to. For example, USB disk/SD card.

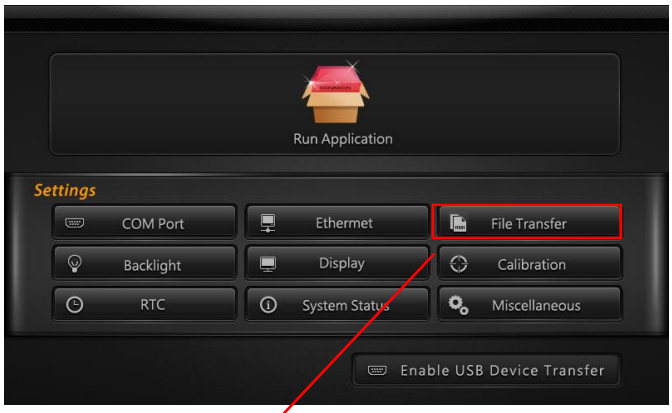


a. Press 【Transfer >>】 to edit the project *.KPC or convert and download the firmware *.FMW based on selection in download function. Users can select the drive code of the storage and set the application name. (It is recommended to name the application in English, otherwise it will show garbled text)



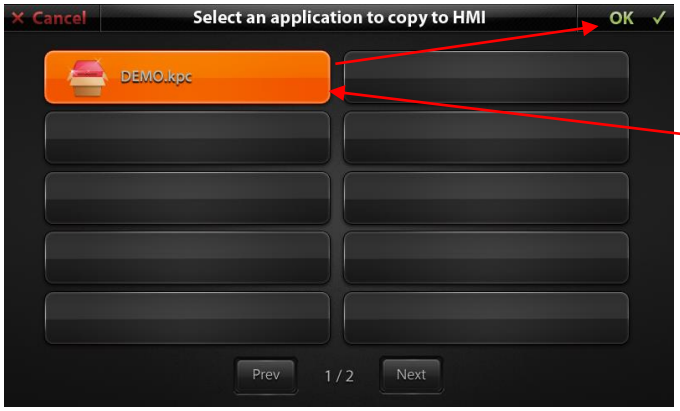
b. Insert the USB disk that stored the transferred application to HMI USB Host port as shown in the figure below.

c. Switch to HMI System Menu and perform file transfer.



Select the firmware or application to be updated

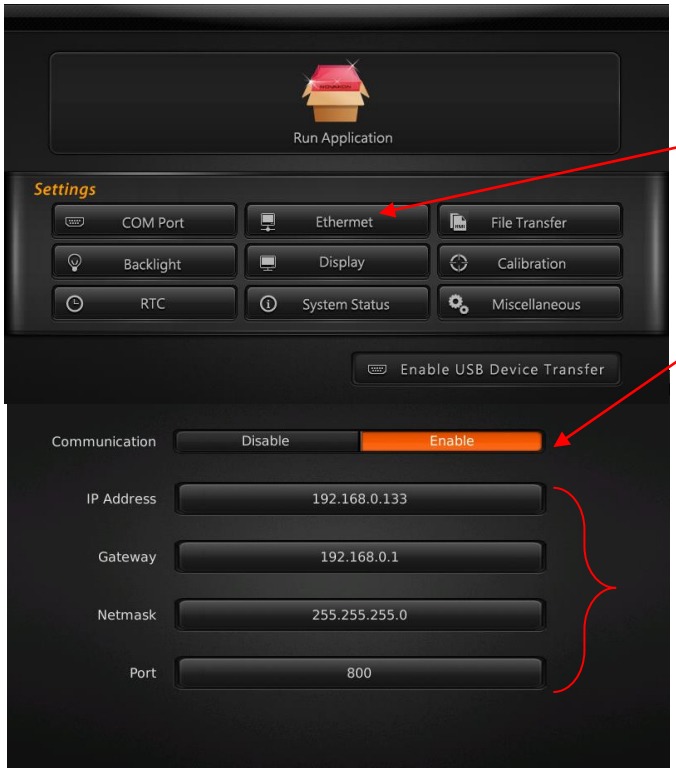
Select the source directory of the updated data
(1) USB disk
(2) SD card
(3) FTP



Select the application to be loaded to HMI on the screen. After completed, you can click the application and run it.

24.1.3 **Transfer Media – Ethernet 1-1**

a. Set the corresponding IP based on the IP of network HMI and transfer the updated application or firmware to it.

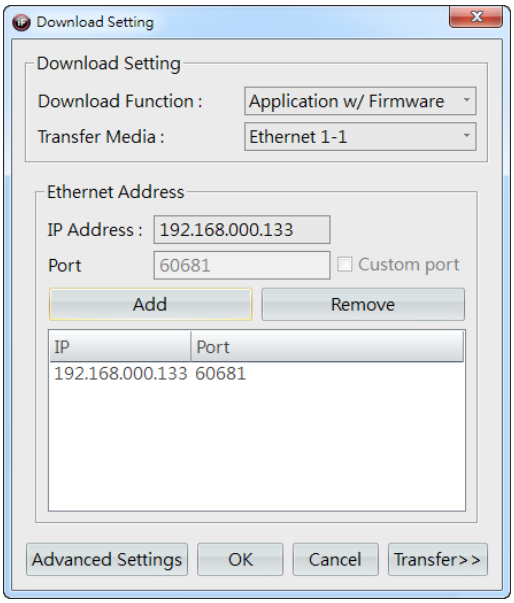


Click Ethernet on BIOS screen.

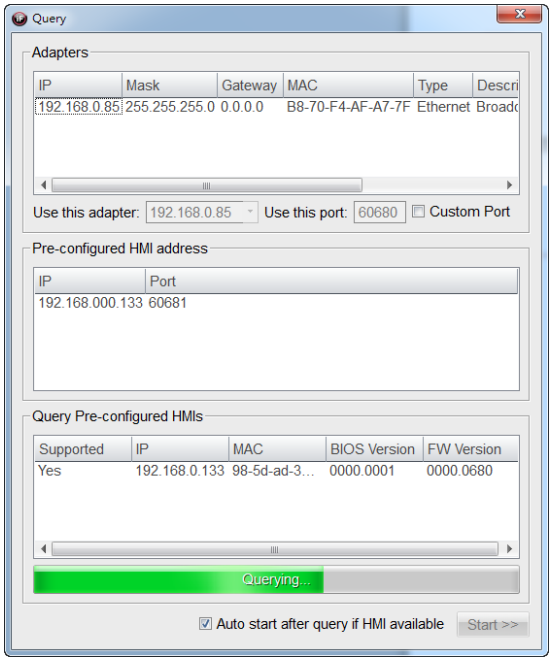
Communication: set as enabled to use the internet

Connect to the internet to upload or download the application, set the IP/gateway

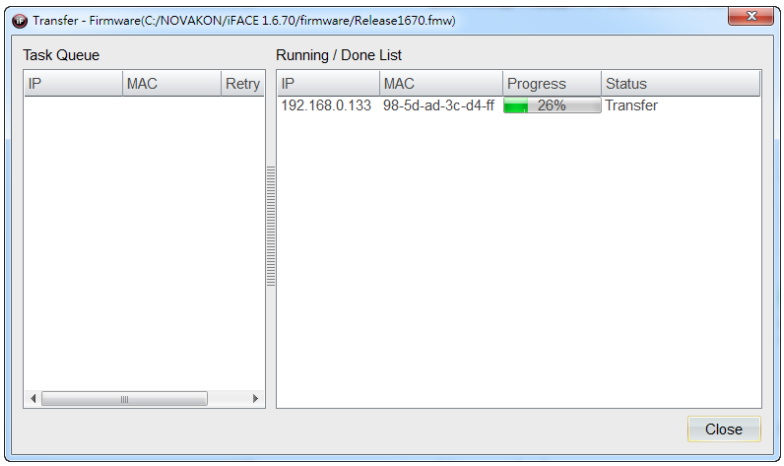
b. Select Ethernet 1-1 in transfer media. Enter the IP address of HMI (In this example: 192.168.000.133) and press 【Add】. It can be seen in the following figure.



c. Start the transfer: press 【Transfer >>】, it will start searching for the previously set IP address of HMI and connect to the internet.



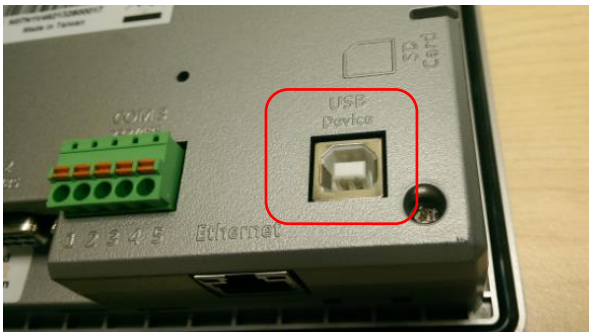
d. After searching and detecting, it will start copying the firmware and the application to HMI.



Remark: after the firmware is being downloaded, you need to wait until HMI automatically restart to continue downloading the application.

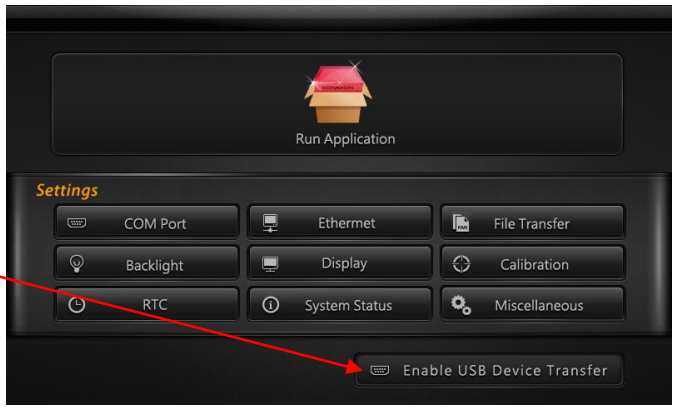
24.1.4 **Transfer Media – USB Device**

a. Use the transmission cable for USB device to connect the USB port on personal computer to HMI USB device port.



b. Switch to HMI System Menu to perform file transfer.

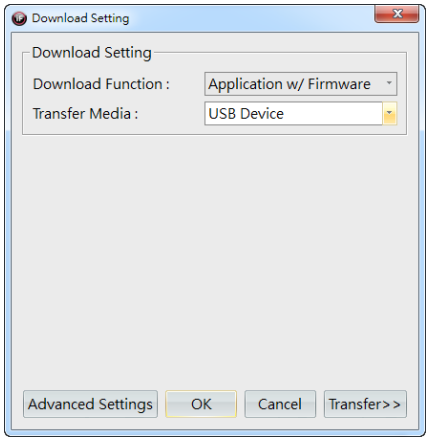
Click【Enable USB Device Transfer】



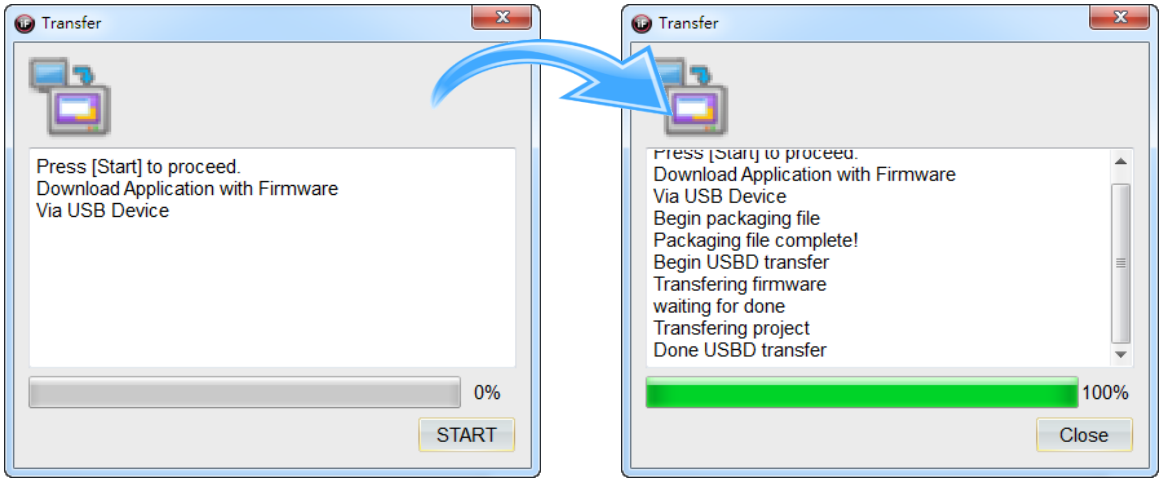
HMI will stay on this screen.

At this time, you can operate your computer to get ready for downloading.

c. Please select 【USB Device】 in transfer media.



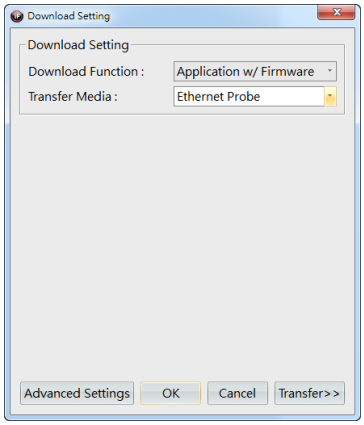
d. Start the transfer: download the firmware and the application to HMI through transmission cable for USB device. Wait until it is completed.



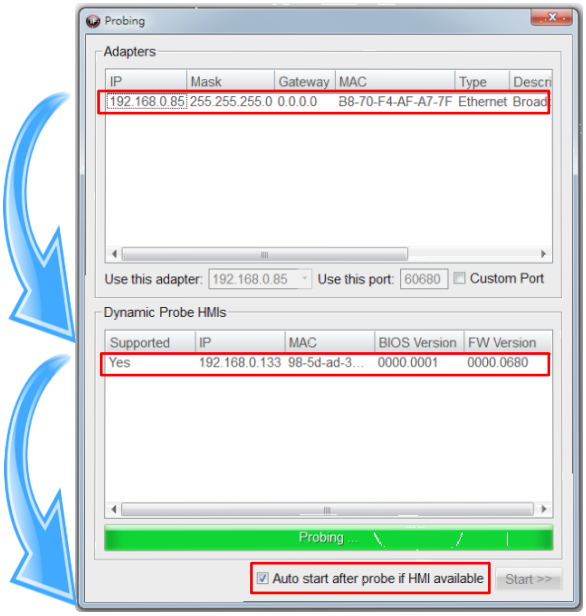
24.1.5 **Transfer Media – Ethernet Probe**

Know the number of HMIs connected to the current local network and then download the firmware and application to all HMI directly through Ethernet probe.

a. Select 【Ethernet Probe】 in transfer media.



b. It can be seen in the figure below: the system will automatically search for IP address of the PC (In this example: 192.168.0.85). Then it will search for HMIs connected to the same local network (In this example: 192.168.0.XXX and it has found 1 of them).

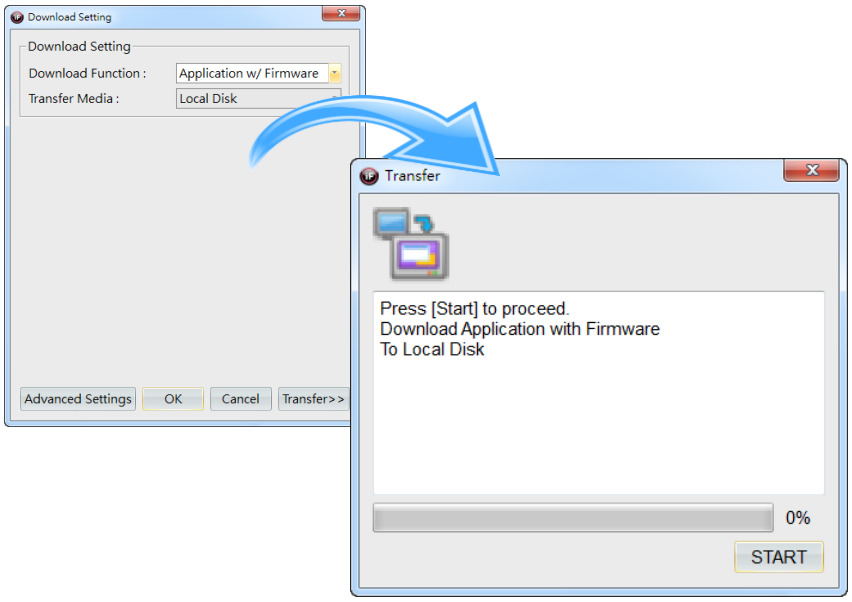


c. If tick the option【Auto start after probe if HMI available】, then the system will automatically download the firmware and the application; if untick the option, it will not download automatically after the detection. But you can assign IP to download manually.

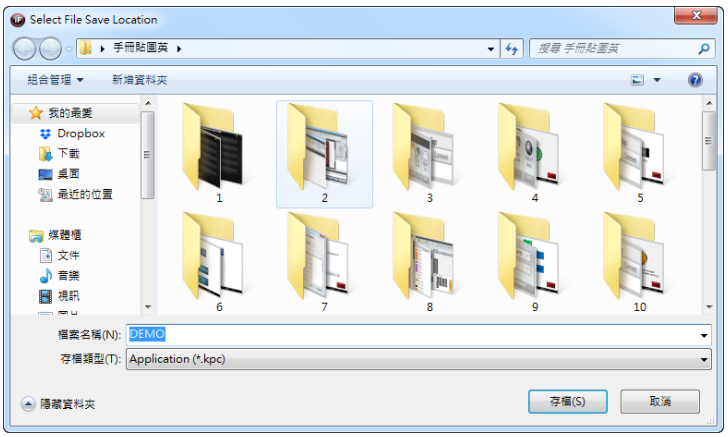
24.1.6 **Transfer Media – Local Disk**

You can save the firmware or application to the specified directory of local disk. The advantage of this option other than convenient management and use is that you can download to the disk and use directly and then sent the files to clients through Email or other methods.

a. Select 【Local Disk】 in transfer media.

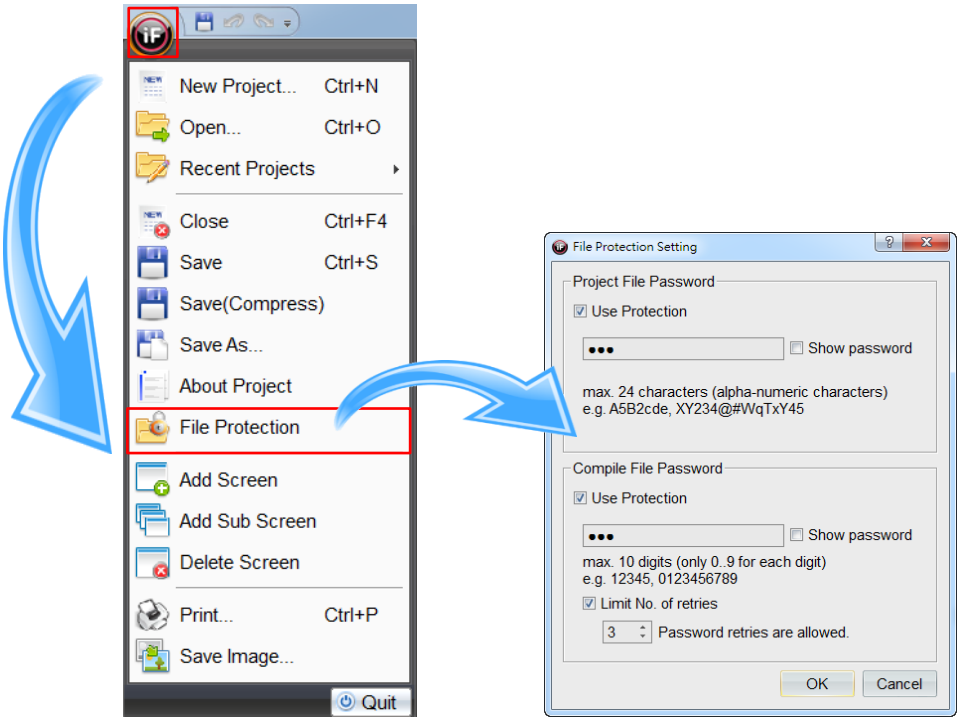


b. Specify the directory of the local disk and application name.



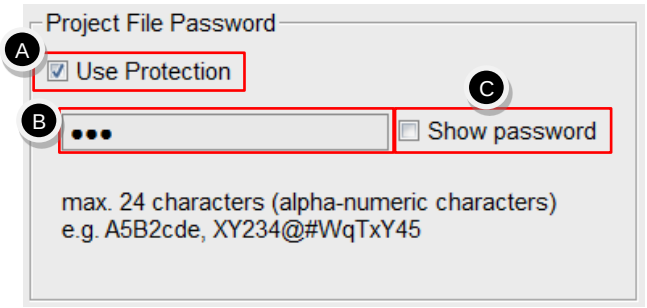
24.2 **File Protection**

File protection can provide users to protect their projects by password.
Every project supports two kinds of protection measures provided to users. By clicking the iF icon on the upper-left corner 【  】, you can find the item 【File Protection】.



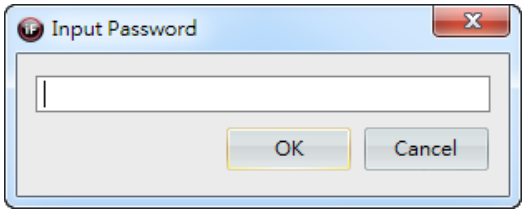
24.2.1 **Project File Password**

Project file password setting is a protection mechanism that will invoke a dialog for input password when opening the project. After the file protection setting is saved, it will invoke a dialog for input password when the project is being opened once again.



A. 【Use Protection】: enable project file password protection. It will invoke a

dialog for input password when opening the project next time. If the password is entered correctly, the project will be opened.

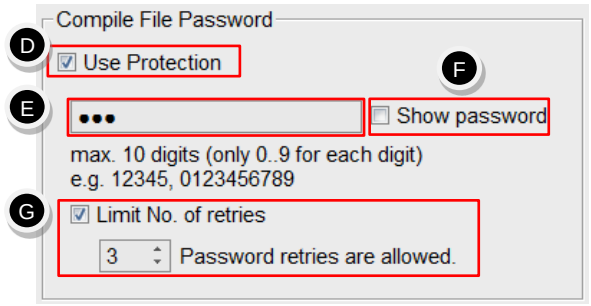


B. 【Password】: Enter the password to be set. Password will have max. 24 characters, including uppercase and lowercase characters (uppercase and lowercase characters are considered as different character), numbers, special characters.

C. 【Show password】: show the entered password. If untick the option, then password will be shown as asterisk.

24.2.2 **Compile File Password**

Compile file password setting is a protection mechanism that will invoke a dialog for input password when uploading HMI application. After the compile file password setting is saved, it will invoke a dialog for input password when you wish to upload the application.



D. 【Use Protection】: enable compile file password protection. It will invoke a dialog for input password when uploading the application through Ethernet or USB device.

If the application will be uploaded to external devices through 【File Transfer】, then HMI will invoke a numerical panel for input password.

If the password is entered correctly, then you can upload the application; if the password is wrong, then it is required to re-enter the correct password to upload the application.

E. 【Password】: Enter the password to be set. Password has max. 10 digits.

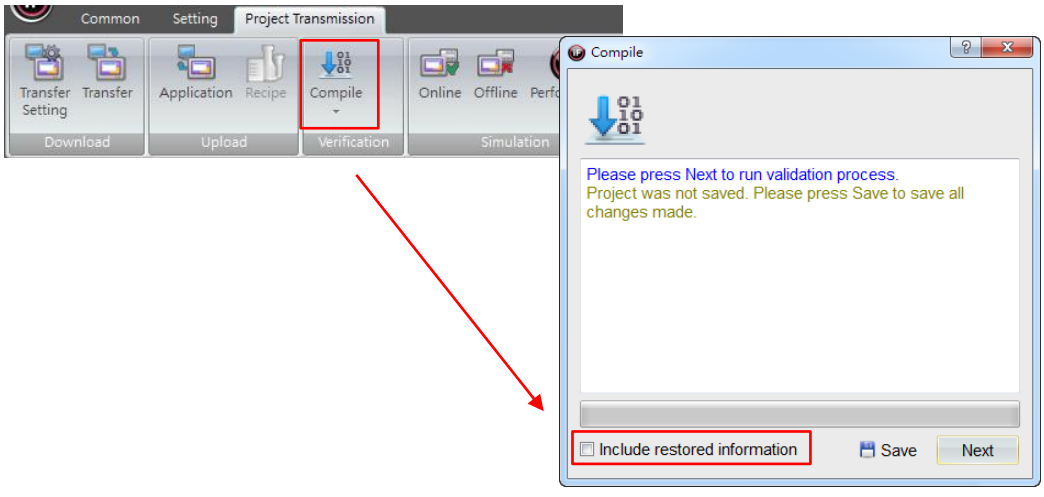
F. 【Show password】: show the entered password. If untick the option, then the password will be shown as asterisk.

G. 【Limit No. for retries】: set the allowed number of retries when the entered password is wrong. If you cannot enter the correct password within the limit number, then it will cancel the upload until the upload program runs next time.

Remark: After the password is set, you need to save the project. For 【Compile File Password】, you must compile and download to HMI for it to take effect.

24.2.3 **Compile – Restore Information**

When the application is compiled for verification, the option 【Including restored information】will appear at bottom-left of the dialog. If untick the option, then it will not have an effect when uploading the application later.



24.3 Upload Application

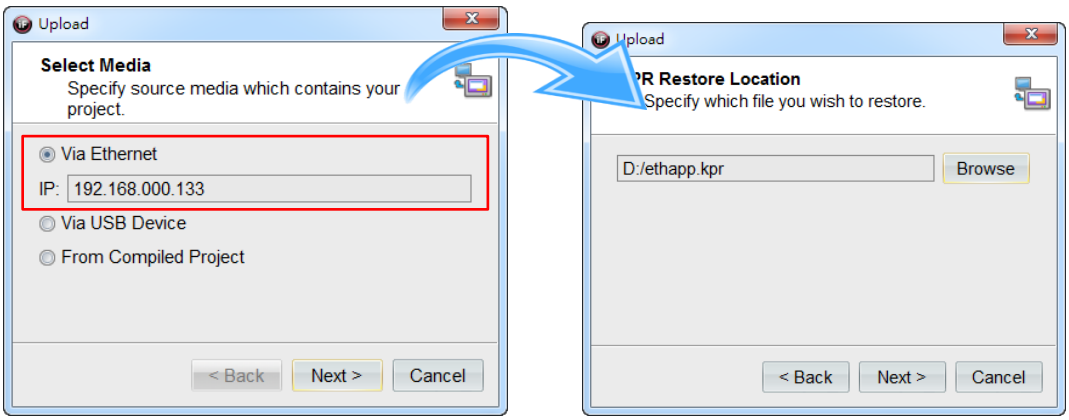
Application can be uploaded by using iFACE Designer or through external disk on HMI.

24.3.1 Upload Application by iFace Designer

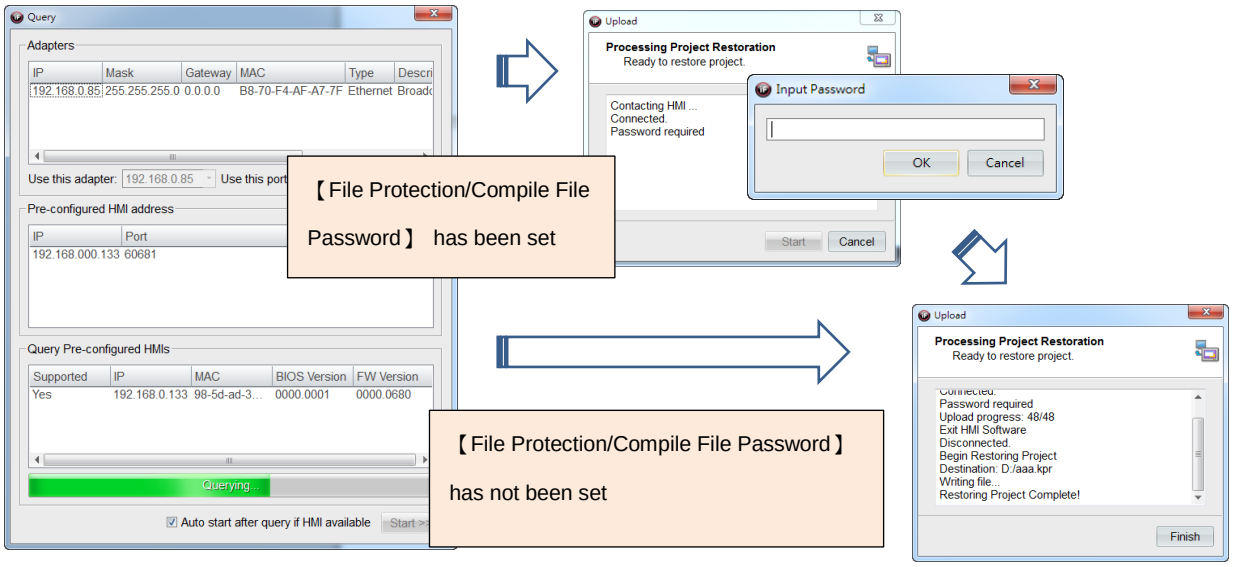
Upload application invokes similar dialog as download. The application can be obtained from three kinds of sources. After uploading, it will perform restore action for users directly.
Click 【Application】 in the item group 【Upload】 under the tab 【Project Transmission】.

24.3.2 Upload and Restore by Ethernet

When selecting Ethernet as the project source to transfer HMI application, it is required to enter the IP of HMI. After pressing 【Next】, it will ask you to specify the directory for the application and the application name. If you don't want to enter, you can use the default directory and name.



After pressing 【Next】, the system will start uploading. If 【Compile File Password】 in 【File Protection】 has been set for the application, it will invoke a dialog for input password when uploading the application. If not been set, then wait for the upload and restore to finish.

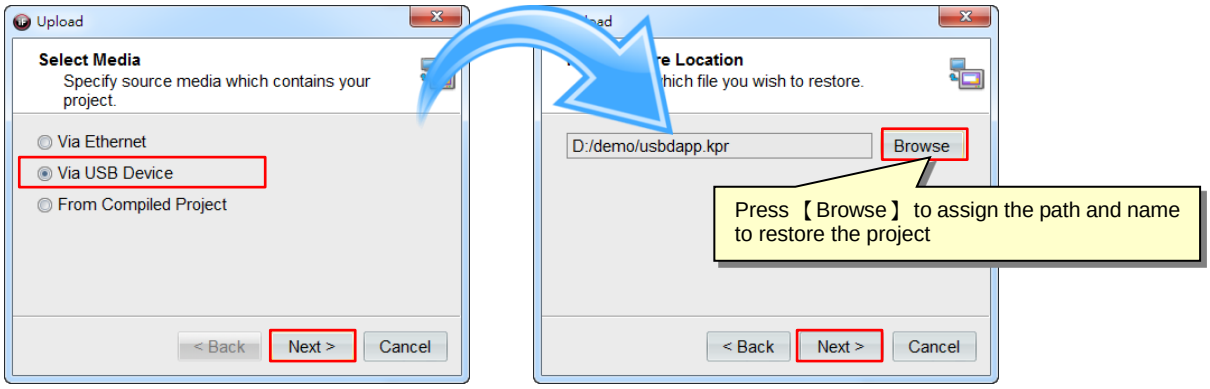


After uploading is finished, you can find the restored application at the specified directory.

24.3.3 **Upload and Restore by USB Device**

When selecting USB device as project source to transfer HMI application, it is required to download the application through USB device based on method introduced previously. First, click the button 【Enable USB Device Transfer】 on HMI System Menu. Then wait until it stays on the waiting screen of 【Enable Transfer】.

After pressing 【Next】, it will ask you to specify the directory and application name. If you don't want to enter, you can use the default directory and name.



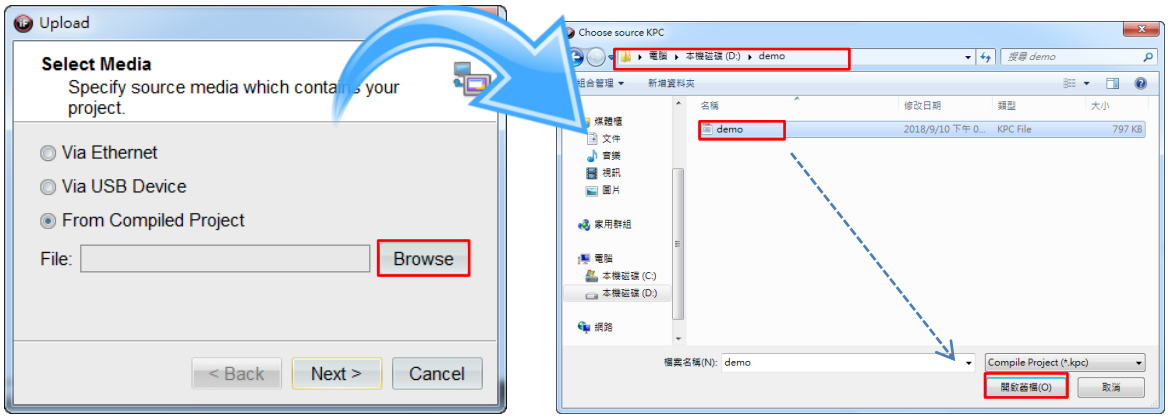
After pressing 【Next】, the system will start uploading. If 【Compile File Password】 in 【File Protection】 has been set for the application, it will invoke a dialog for input password when uploading the application. If not been set, then wait for the upload and restore to finish.

24.3.4 **Restore from Application in Disk**

When selecting compiled project as project source, the project source can come from 【Upload File Transfer】 or 【Local Disk】.

You can also upload the application by 【File Transfer】 and the method is described as follows:

When using this method to transfer the application to an external device, it will save the application with the name application .kpc in root directory by default.



After selecting 【From compiled project】 as project source, press 【Browse】 to specify the directory and application name. After completed, press 【Open】.
Return to the dialog for project source selection and press 【Next】 and confirm the file to be restored and its directory. If you do not want to change, you can use the default directory and file name.
Similarly, after pressing 【Next】, the system will start the restore procedure. If 【Compile File Password】 in 【File Protection】 has been set for the application, it will invoke a dialog for input password when uploading the application. If not been set, then wait for the upload and restore to finish.

NOVAKON

HMI – Your Intelligent IIoT Gateway Solutions

iFACE Designer

Wi-Fi Application

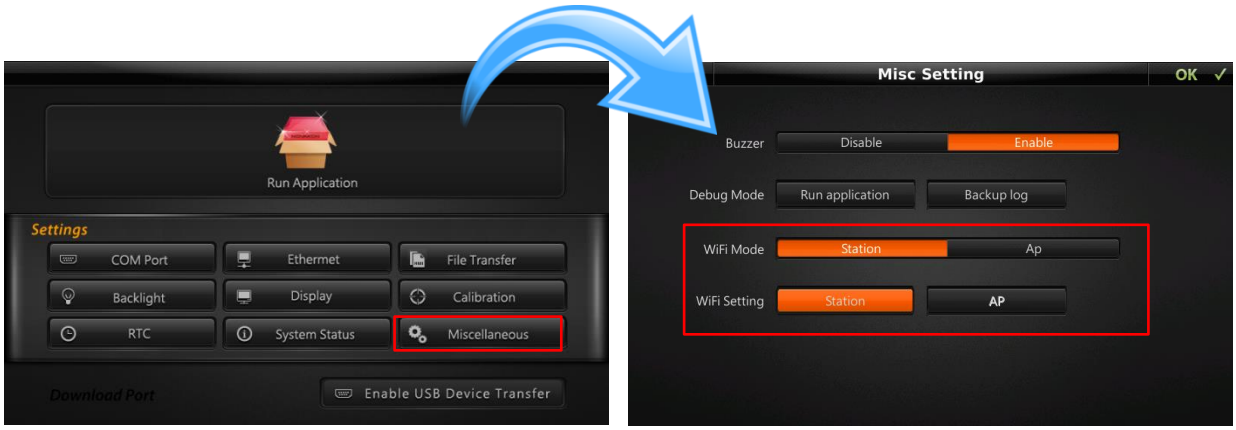
Version 2.00

25. Wi-Fi Application

Wi-Fi (Wi-Fi local network technology) is one of the earliest high-speed network technologies appeared. It is used not only in common electrical product for consumption, but also in applications of industry. IoT also shares data and information during production process through Wi-Fi network mobile communication.

25.1 Basic Setting

Before starting to use Wi-Fi, we need to insert the converter for Wi-Fi to HMI USB host port, then open HMI, go to HMI System Menu and press 【Miscellaneous】 to misc. Setting for Wi-Fi.



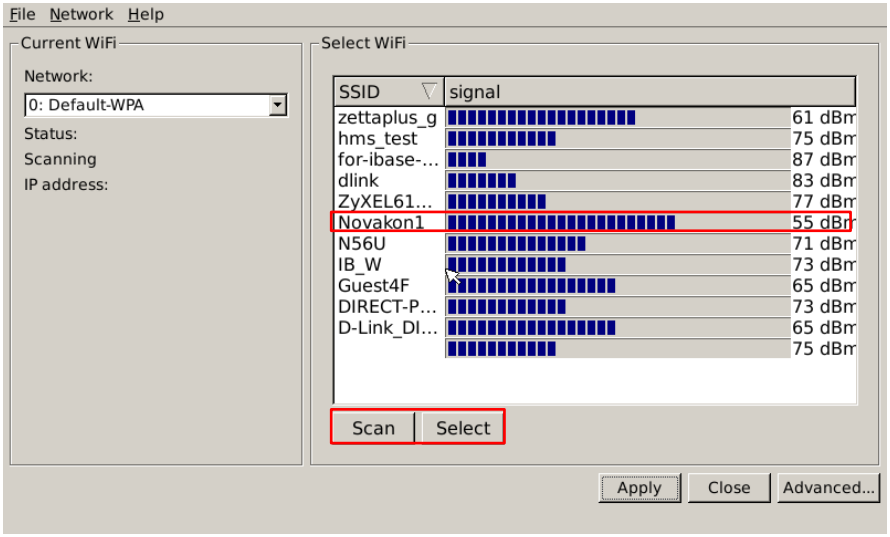
25.2 WIFI Setting－Station

【Wi-Fi Mode】：you can select 【Station】 or 【AP】 mode. 【Station】 mode is the workstation mode. It can connect to AP itself but does not allow other Wi-Fi device to connect. 【AP】 mode allows other Wi-Fi device to connect for providing data communication.

Remark:

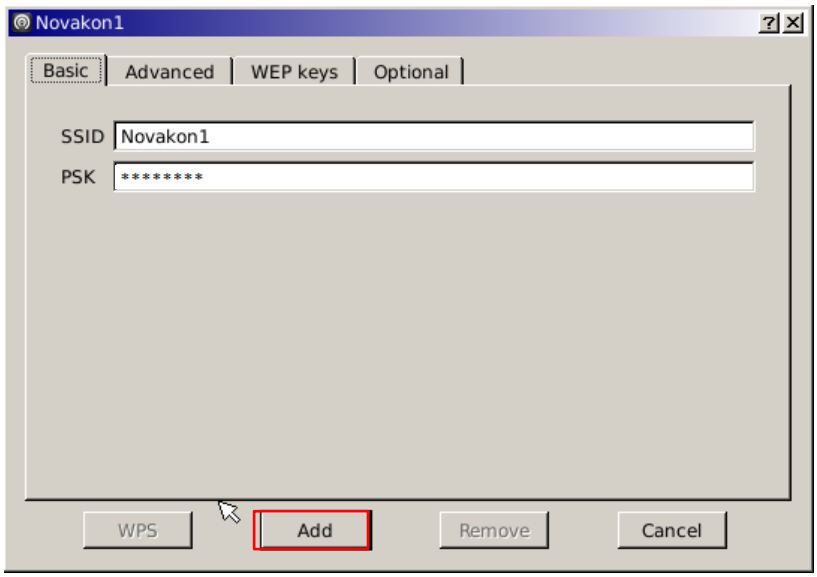
(1) Activate Wi-Fi (Station & AP) function requires 40 seconds, please wait patiently.
(2) After shifting between Station or AP modes, system will request to save the setting and reboot HMI.

After entering the setting screen, it will invoke the dialog as in the following figure. The system will automatically search for the current Wi-Fi network name that are available to connect (SSID：Service Set Identifier).

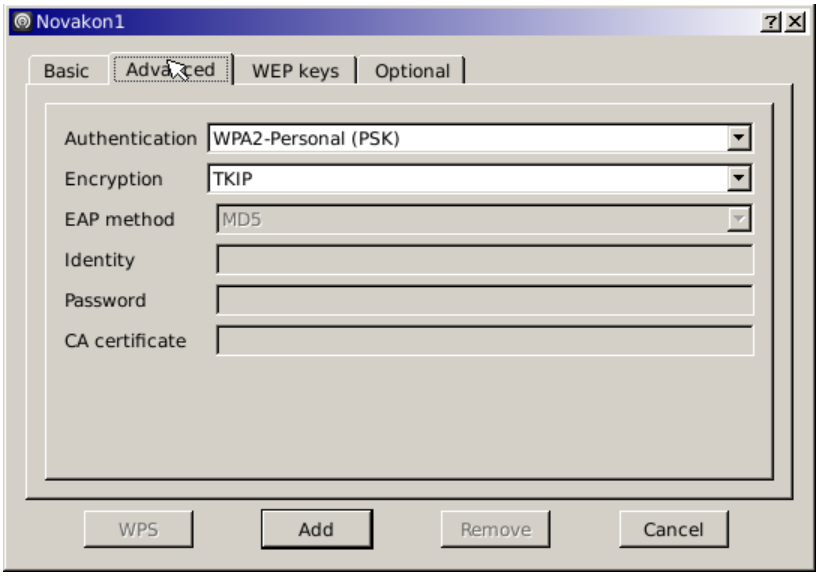


a. First, click on the SSID to be connected. We use 【Novakon1】 as example here. After clicking 【Novakon1】 on the screen, press 【Select】 to go to the detail setting of 【Novakon1】.

If you cannot find the desired network name to connect, you can press 【Scan】 to search once again.

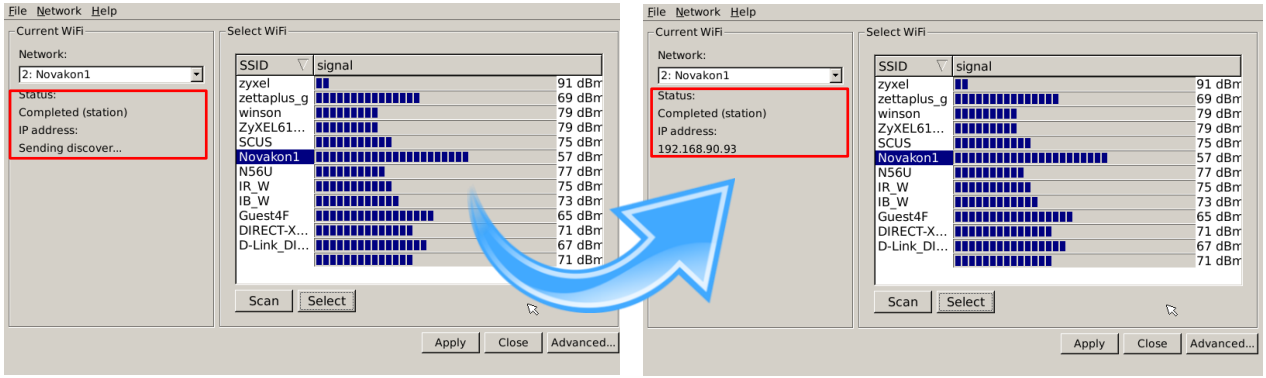


b. Enter the password of Wi-Fi network in the field 【PSK】.



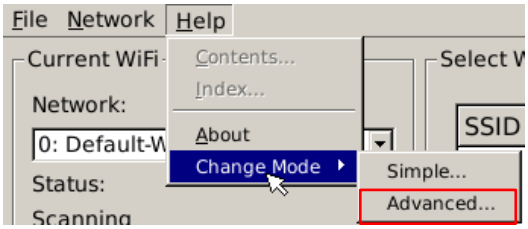
c. The default encryption is 【TKIP】. If modification is required, you can go to 【Advanced】 to adjust advanced settings. After the setting is completed, press 【Add】 and save the set parameters in the system.

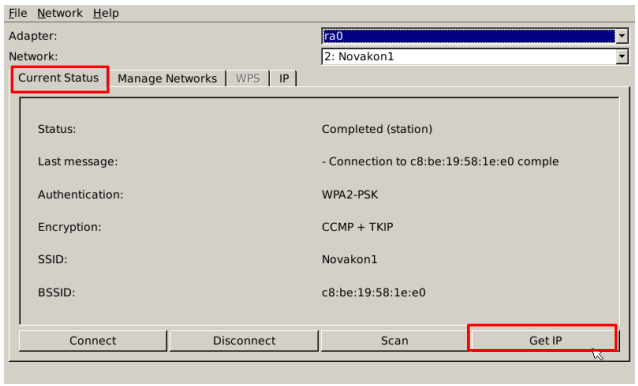
d. Press 【Cancel】 to exit this window.

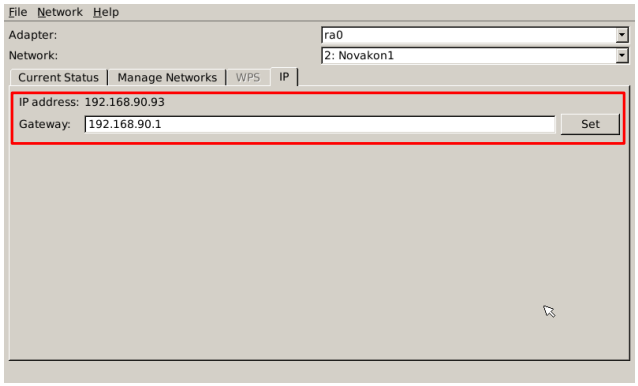


e. Start network connection: after connected, the current connected IP address will be shown on the screen.

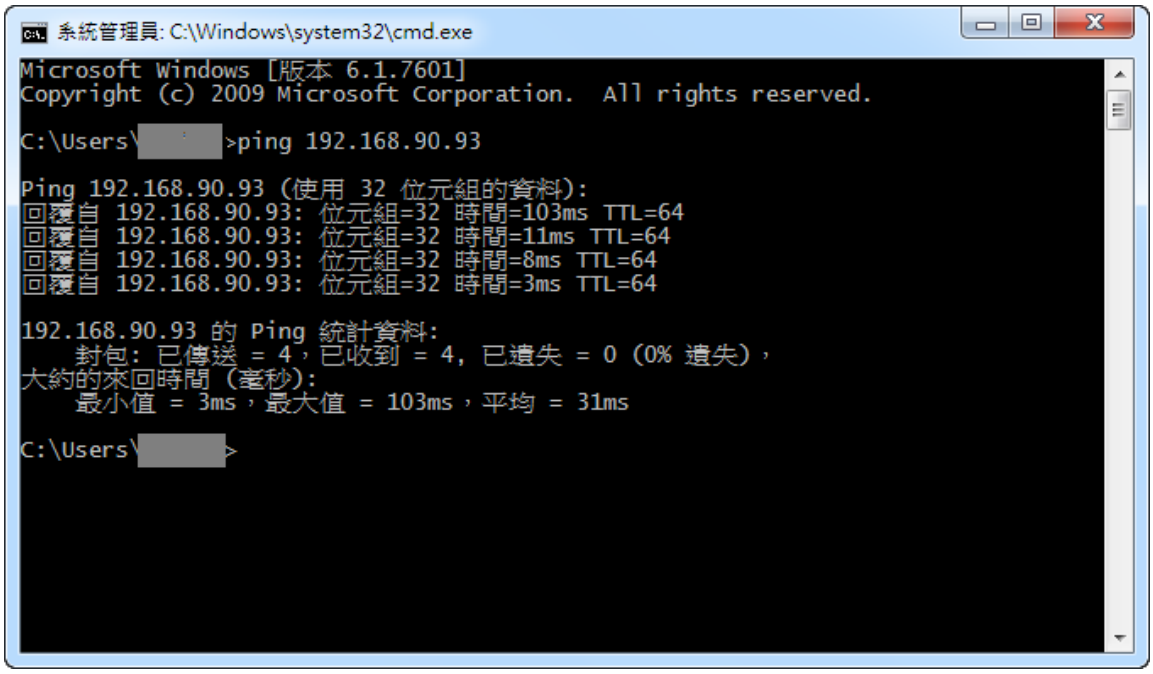
f. Click 【Help】→【Change Mode】→【Advanced…】→【Current Status】 to see the state of the current connection.







g. After pressing【Get IP】, you can switch to the tab IP tab to view【IP address】 and 【Gateway】.



h. Wi-Fi setting is done. When being powered on next time, it will use the set parameters to connect automatically. We can go to system manager to perform PING command and check whether it can make normal communication or download a simple application.

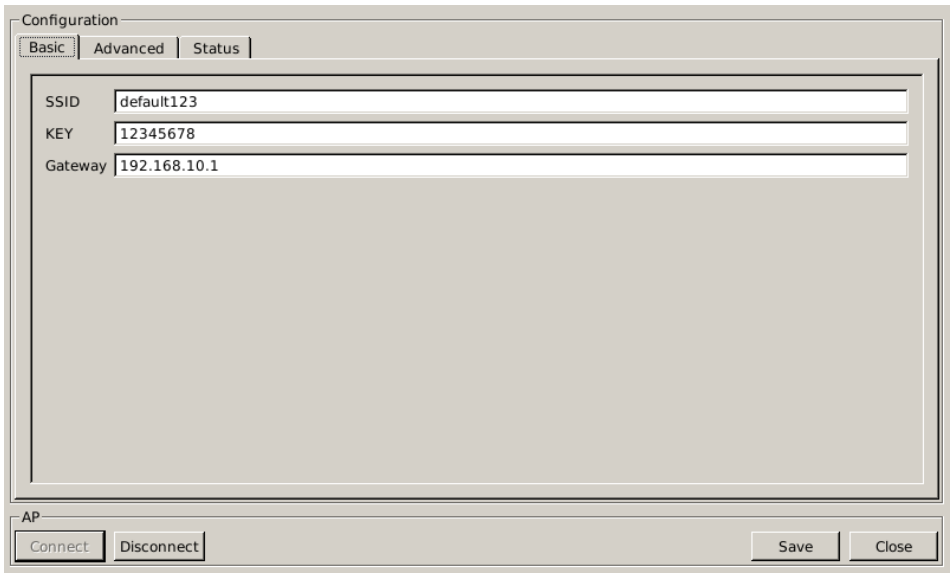
Remark: If you want to use Wi-Fi to download application, please untick the option 【Ethernet】 communication in HMI System Menu.

25.3 **Wi-Fi Setting – AP**

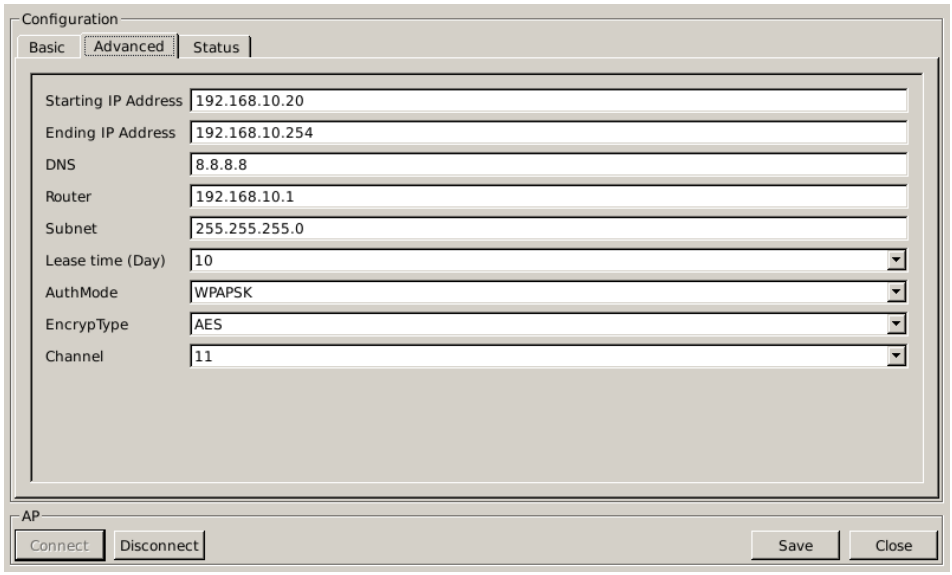
Other than【Station】mode,【AP】mode is also being provided.【AP】mode allows other Wi-Fi devices to connect and provide data communication.

Remark:

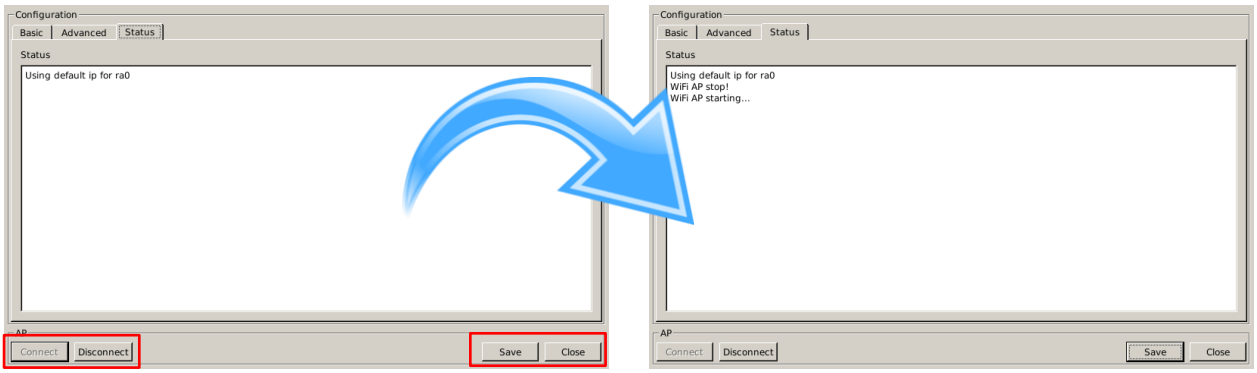
(1) Activate Wi-Fi (Station & AP) function requires 40 seconds, please wait patiently.
(2) After shifting between Station or AP modes, system will request to save the setting and reboot HMI.



a. Go to HMI System Menu. Click 【AP】 mode in 【Wi-Fi Mode】 to go to AP setting screen. We can set SSID (network name) and KEY (network password) based on our custom. In this example, we will use the default value to test (SSID: 【default123】; KEY: 【12345678】).



b. 【Advanced】 is the advanced setting of AP. If the users are not familiar with inner network setting, inappropriate modification can lead to unable to connect normally.



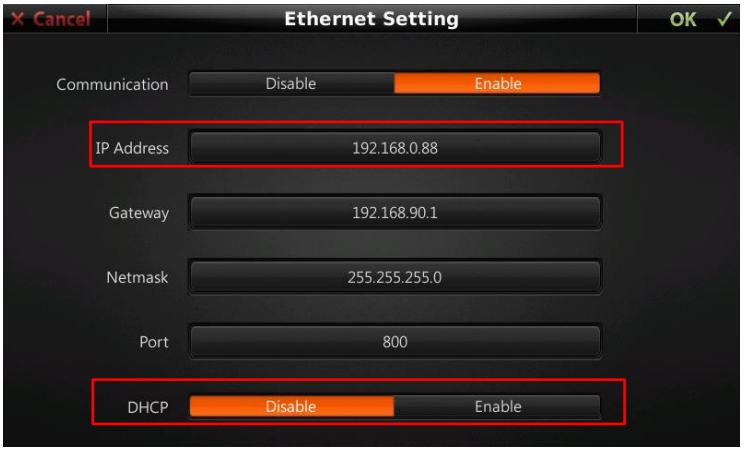
c. Press 【Connect】, then it will start the connection; press 【Disconnect】 to stop the connection.

Remark: After the setting completes, please press 【Save】 and 【Close】. A popup window will be invoked, please press 【Ok】 then the system will reboot the HMI.

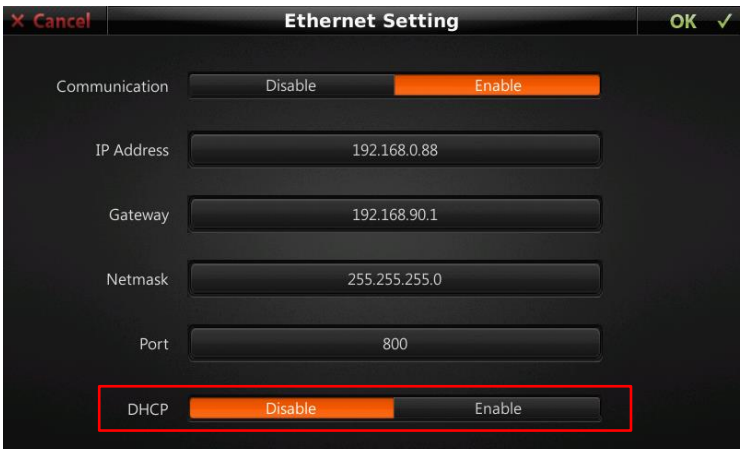
d. Detect the Wi-Fi network from computer. It detects 【default123】 and you can enter the password: 【12345678】to connect normally.

25.4 **DHCP Setting**

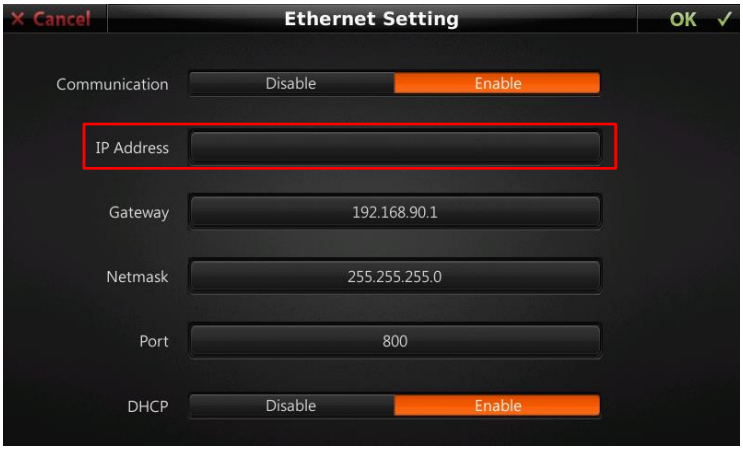
The system supports DHCP (obtain IP automatically) function. Its advantage is that it can avoid to accidentally set the same IP when setting IP causing connection problems to appear, which can reduce the trouble for network manager.



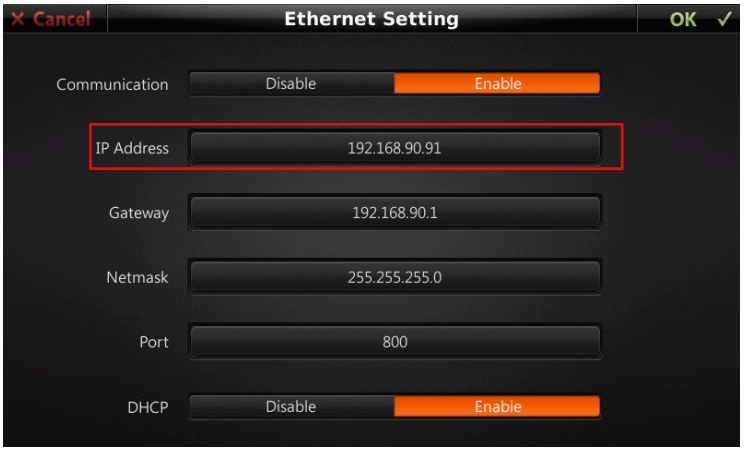
a. To use DHCP, go to BIOS screen first. After pressing 【Ethernet】, go to Ethernet Setting. IP address will display the ex-factory default value and DHCP setting is 【Disable】.



b. Set【DHCP】as【Enable】. Press【OK】after plugging in the internet cable. Return to HMI System Menu.



c. After pressing 【Ethernet】, it will go to Ethernet setting screen. Currently, IP address is blank.



d. After pressing 【Cancel】 to exit, press 【Ethernet】 to go to Ethernet setting screen. At this time, it has obtained IP address automatically.

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iFACE Designer

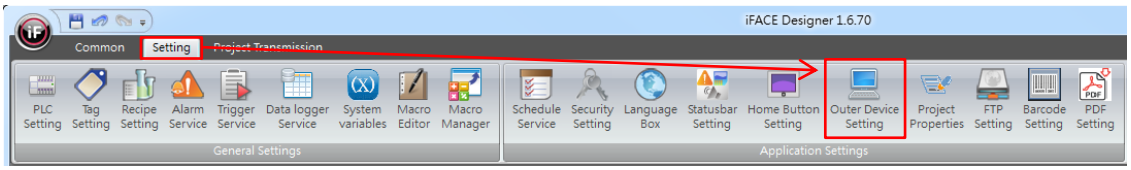
REST API APPLICATION

Version 2.00

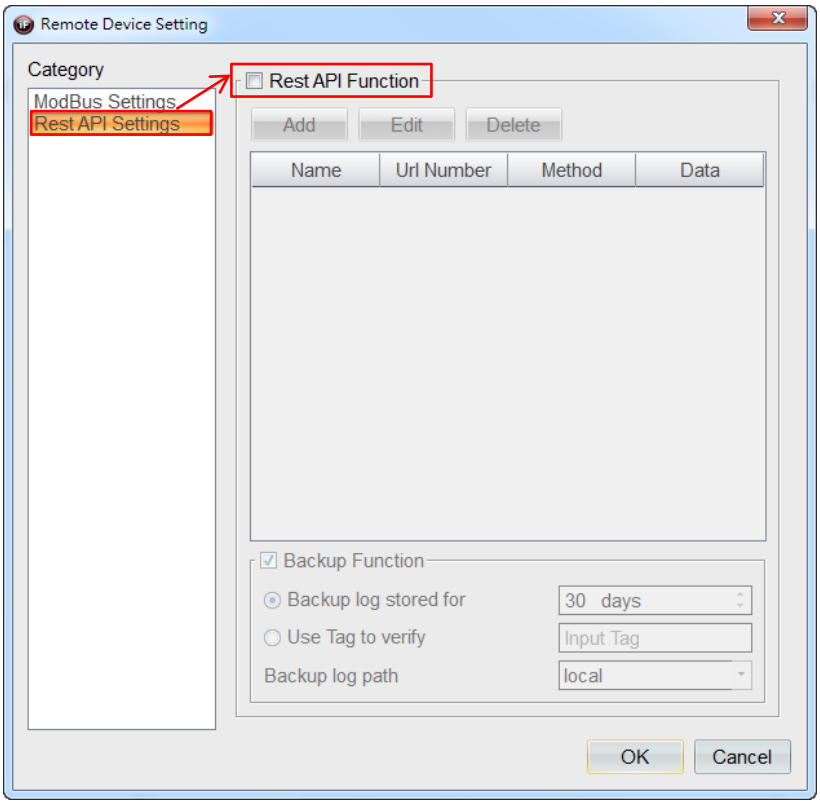
26. Rest API Application

Rest API means that information undergoes state transfer using a certain format (usually JSON format) on the network. HMI sends requests by JSON format through Rest API and receives the response from the cloud to satisfy the requirement of IoT application.

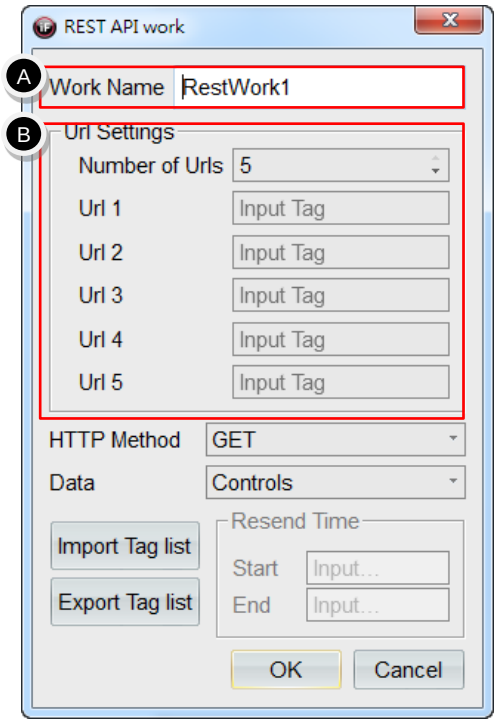
26.1 Rest API Setting



e. To activate Rest API setting, please click the tab 【Setting】→【Outer Device Setting】.



f. After selecting 【REST API Settings】, tick 【REST API Function】.



g. After pressing 【Add】, you will invoke a 【REST API Work】 dialog.

A. 【Work Name】: you can define the Work name. The default is set as 【RestWork1】.

B. 【URL Setting】: decide the quantity of used URL first, 5 at most. Then assign the tag used by URL1 - URL5 based on their used quantity. These tags are required to be strings. When performing actual operation, it will read the content of these tags as the target IP to send data.

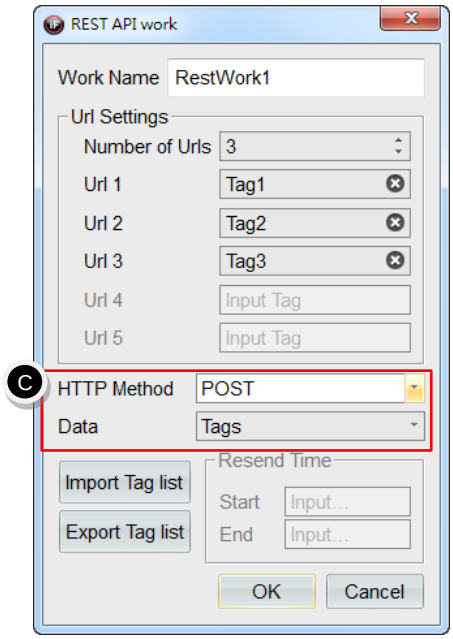
Remark: 【http://】 or 【https://】 in front of the IP address cannot be omitted.

For example, we create 3 tags 【Tag1】 - 【Tag3】 first and specify the addresses 【@10】, 【@20】, 【@30】, respectively. Their types are all set as 【String】 with length 20. It is shown in the figure below.

Tags | System Information Tags | System Control Tags | Recipe Tags

	Tag Name	Connector	Type	Address	Comment
1	Tag1	InternalMemory	Ascii	@10	
2	Tag2	InternalMemory	Ascii	@20	
3	Tag3	InternalMemory	Ascii	@30	

Next, open 【REST API Work】 dialog to set URL quantity as 3 and specify the tags used by URL1 - URL3 as Tag1 - Tag3, respectively. It can be seen in the figure below.



C. 【HTTP Method】: specify send data action for this job. It can be set as 【GET】, 【POST】, 【PUT】.

When 【HTTP Method】 is selected as 【POST】 or 【PUT】, 【Sending data】 can be set as the function 【Tags】 and 【Resend】.

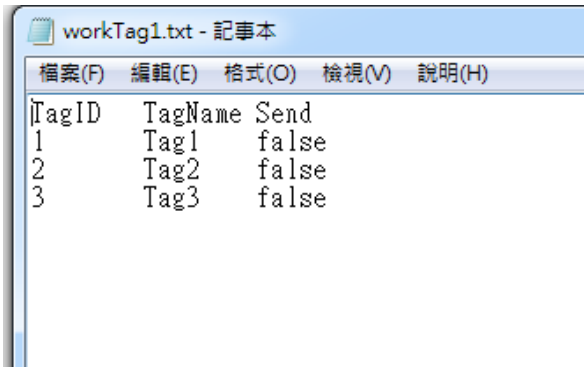
i. 【Tags】: Pack the specific tag and its state value as JSON string and send, then read the reply contents. Next, it will analyze the reply contents and write the values contained into the tag. In addition, if it has turned on backup function, then the data send every time will produce log automatically to perform backup.

ii. 【Resend】: read the backup log as described above and pack the assigned time log as JSON array and send. It will not perform analysis or apply action to the replied contents.

D. 【Export Tag List】: Export the tag list of that job. If the tag list has not been set previously, then it will export the default text file.

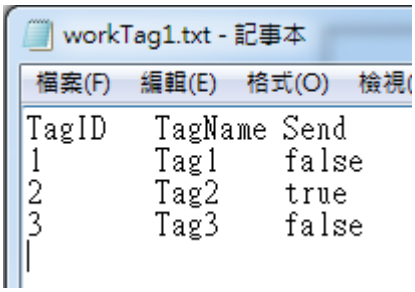
For example, after pressing 【Export Tag List】, the file dialog will be invoked. After specifying the desired directory, enter the file name (for example: workTag1.TXT) and press save to complete the export action.
You can use notebook or excel to open the files. After opening, it will list the fields, Tag ID, Tag Name and Send.

【Tag ID】: id number of the tag. Please do not change this column.
【Tag Name】: tag name. please do not change this column.
【Send】: whether this tag is sent. If true, then it will make the delivery; if false, then it will not make the delivery.

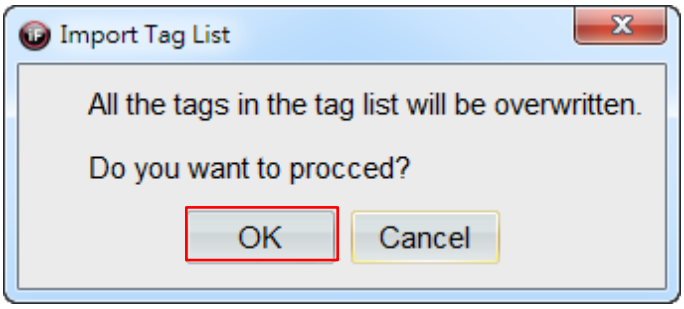


E. 【Import Tag List】: import text files for the tag list of that job.

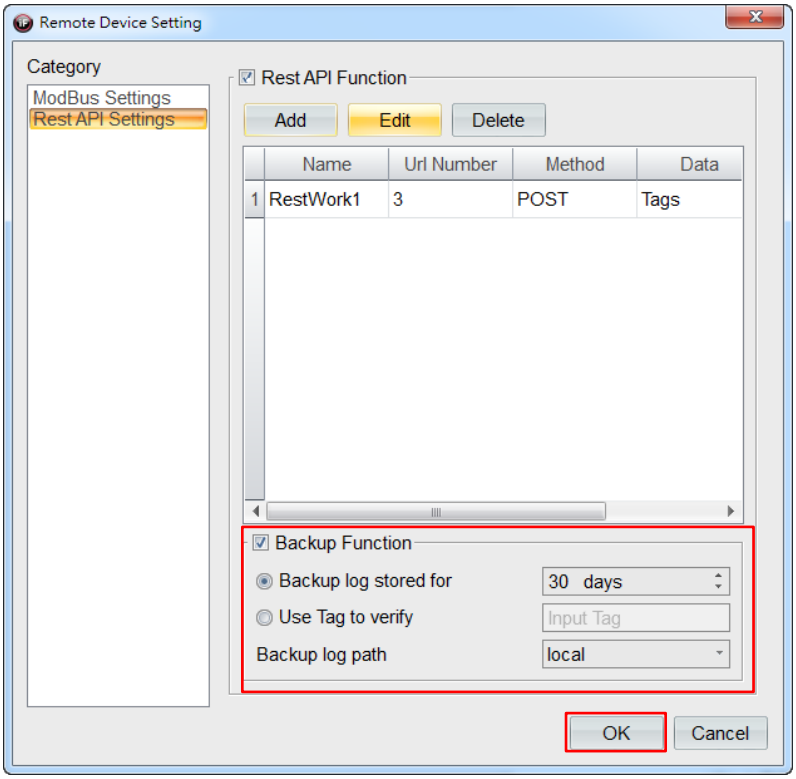
For example, change the【Send】content of【Tag2】in the text file we just exported from 【false】 to 【true】 as in the figure below.



When pressing 【Import Tag List】, the original file name is opened in file dialog. At this time, the system will make a hint saying that it will cover the previous tag list setting. Select 【OK】 to complete the importing action.



h. After the setting is completed, press 【OK】, then it will exit the job setting dialog.



i. 【Backup Function】 can set up data backup time. The default is 30 days; you can also use the tag to assign the number of days for backup. 【Backup log path】 can be set as 【Local end】, 【USB】, 【SD Card】 based on the requirement.

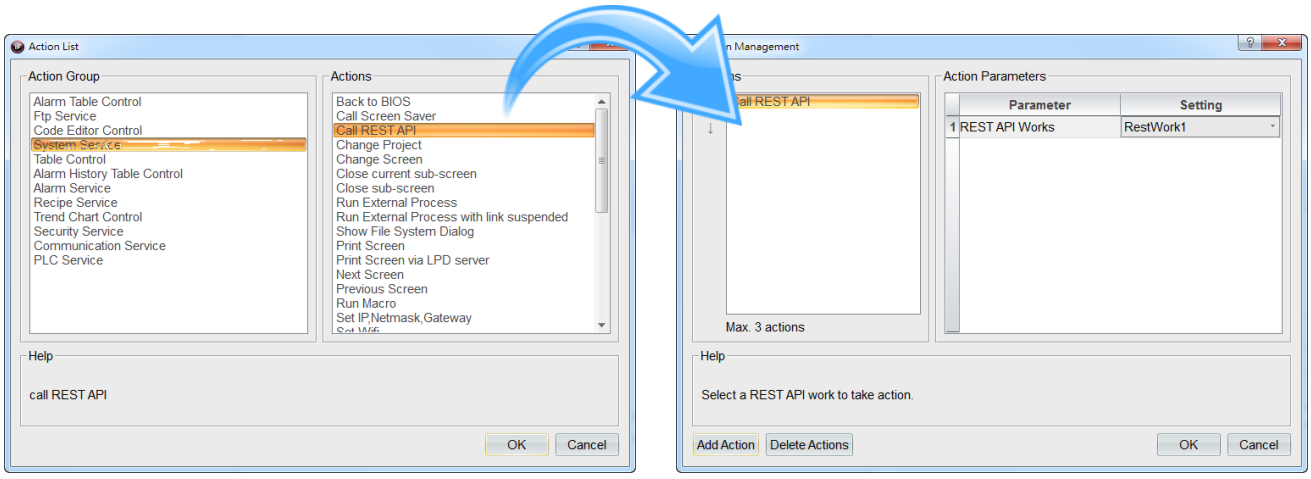
j. After the setting is completed, please press 【OK】.

According to the setting in our example, when performing this work later, it will send Tag2 and its state value.

26.2 **Actions Related to REST API**

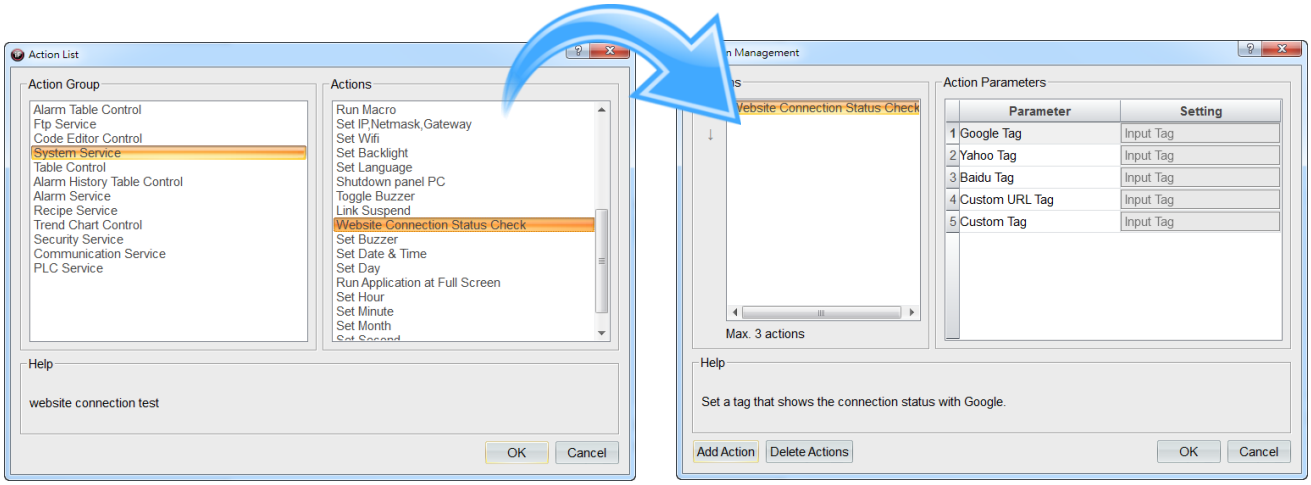
Manage the actions related to REST API, including 【Call REST API】 or 【Website Connection Status Check】.

26.2.1 **Call REST API**



You can use any widget or service in previous chapter to call action and open 【Call REST API】 to assign job to be performed based on the requirement of actual case.

26.2.2 **Website Connection Status Check**



When opening REST API, you can perform the action 【Website Connection Status Check】 to make sure that the network has normal communication. Set the tags used

in every item. If the connection is successful, then that tag will return 0; if not successful, then that tag will return 1.

a. 【Google Tag】: use bit tag to return the results of connecting google to the assigned tag.
b. 【Yahoo Tag】: use bit tag to return the results of connecting yahoo to the assigned tag.
c. 【Baidu Tag】: use bit tag to return the results of connecting baidu to the assigned tag.
d. 【Custom URL Tag】: use string tag to specify self-defined URL.
e. 【Custom Tag】: use bit tag to return the results of connecting self-defined URL to the specified tag.