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## **06 Data Tool**

last modified by Joey

on 2022/06/16 14:56

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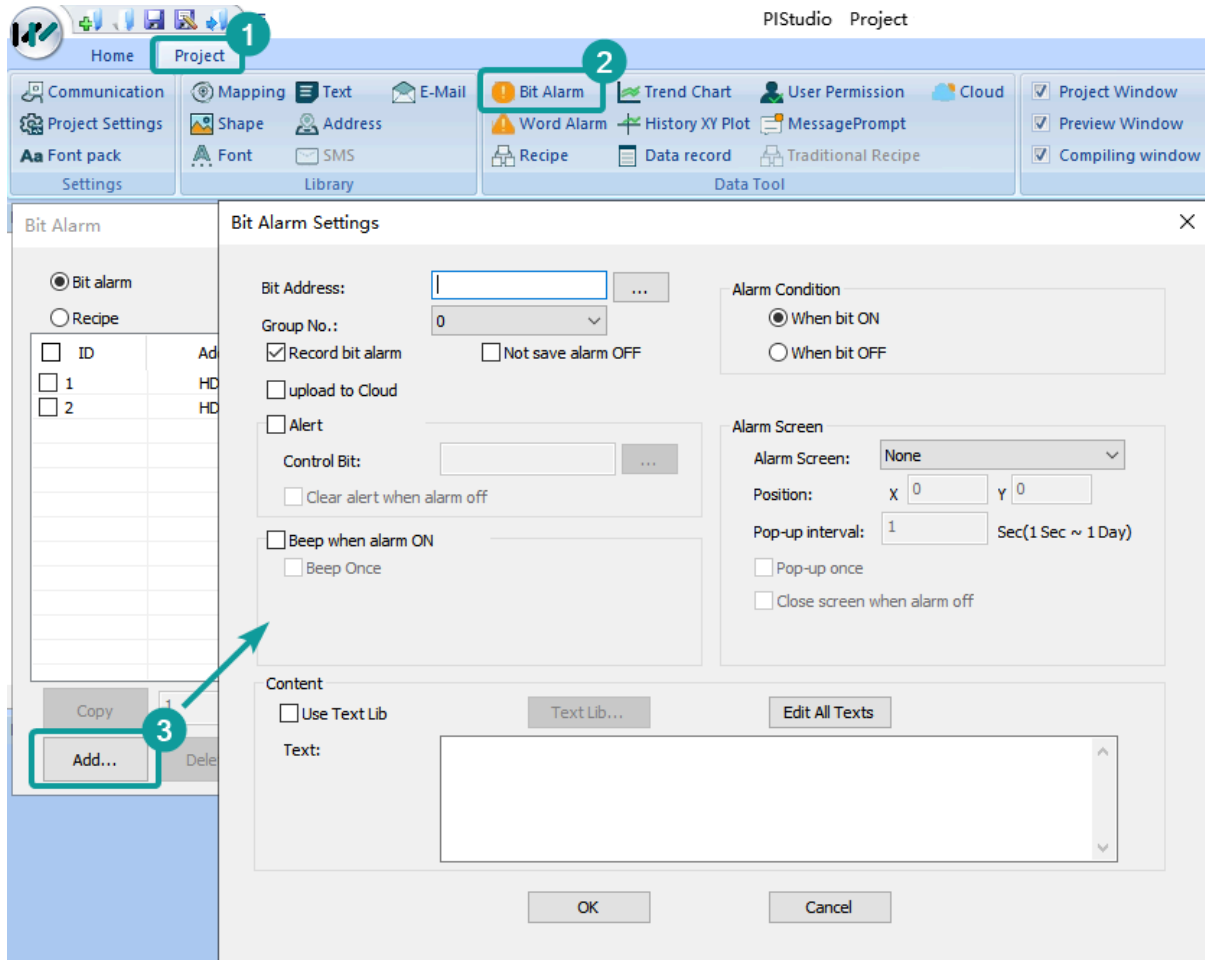
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This chapter provides information about basic functions and configuration in PISudio.

# Alarm

## Bit Alarm

Click "Project"->"Bit alarm", it is displayed as the following figure.



(1) **Group No.:** Group number of Bit alarm. The name is unique and cannot be duplicated.

(2) **Bit Address:** Bit address of alarm monitoring

1. **Record bit alarm by default:** Whether to record the alarm history data of bit alarm, if checked, it will be saved in the designated storage location.
2. **Not save alarm OFF:** If checked, after the alarm is dismissed, the corresponding alarm records will be deleted from the log file.

(3) **Upload to Cloud:** The data upload by "bit alarm" is stored in the Cloud and it is alarm data. (Only ig supported)

(4) **Alarm Condition:** It sets alarm trigger condition, there are two types: alarm when ON and alarm when OFF.

(5) **Alert:** It is used to mark whether the alarm has occurred. if an alarm occurs, the address of "control bit" will be written to 1. If "clear alert when alarm OFF" is checked, the address of "control bit" will be written to 0.

**(6) Beep when alarm ON:** The beep works when the alarm is triggered. If "beep once" is checked, bit address alarm only beep once and stop.

**(7) Content:** It is used for setting alarm content (command).

**(8) Alarm Screen:** Pop-up alarm screen (it need to be sub-screen);

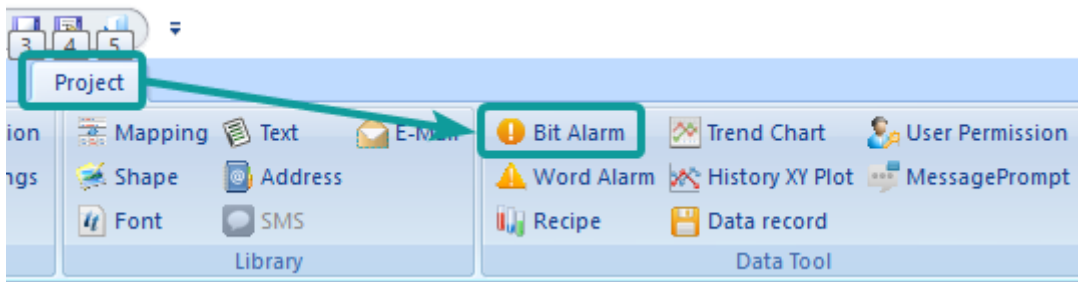
1. **Position:** The location of the screen alarm display.
2. **Pop-up Interval:** The time of reopen the alarm screen when alarm screen closed.
3. **Pop-up once:** Pop up alarm screen once, and the screen would not pop up again
4. **Close window when alarm off:** Automatically close the alarm screen when alarm off.

**#Note:**

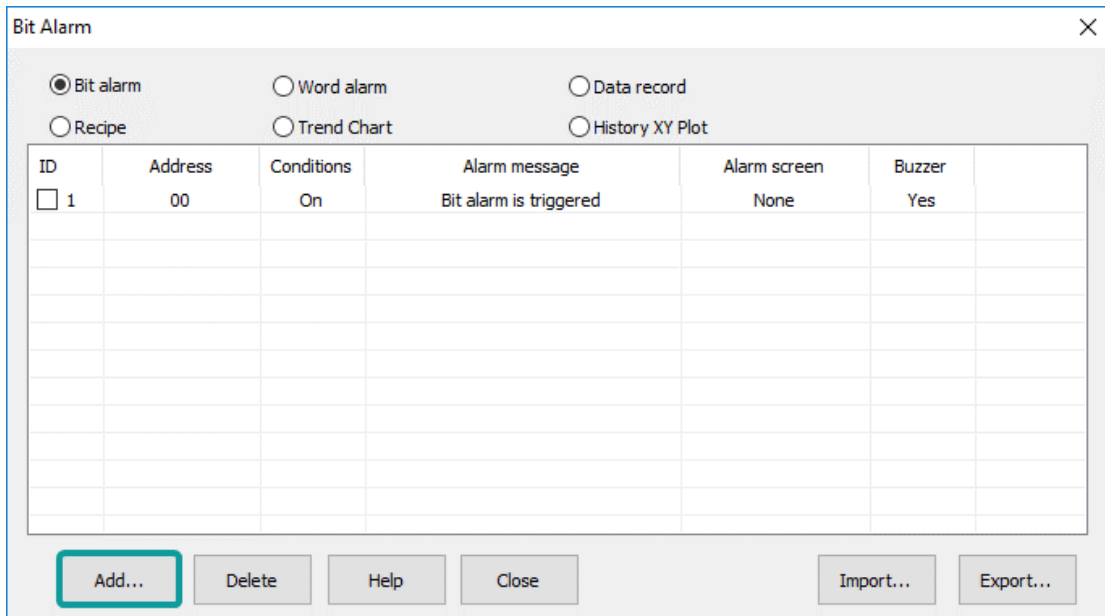
- If the "cloud" function is enabled and "upload to cloud" is checked, the communication port of the address in the configuration of the imported bit alarm record must be the same as that of the current project; otherwise, it cannot be used normally.
- The number of alarm configuration points reported to the cloud cannot exceed 20, or the sum of imported alarm records and the current alarm records cannot exceed 20. If it exceeds, please reconfigure.

**Operating Procedures of Adding One Alarm**

1. Click "Project"->"Bit Alarm" as below shows.



1. Click "Add" button to open "Bit Alarm" setting window.



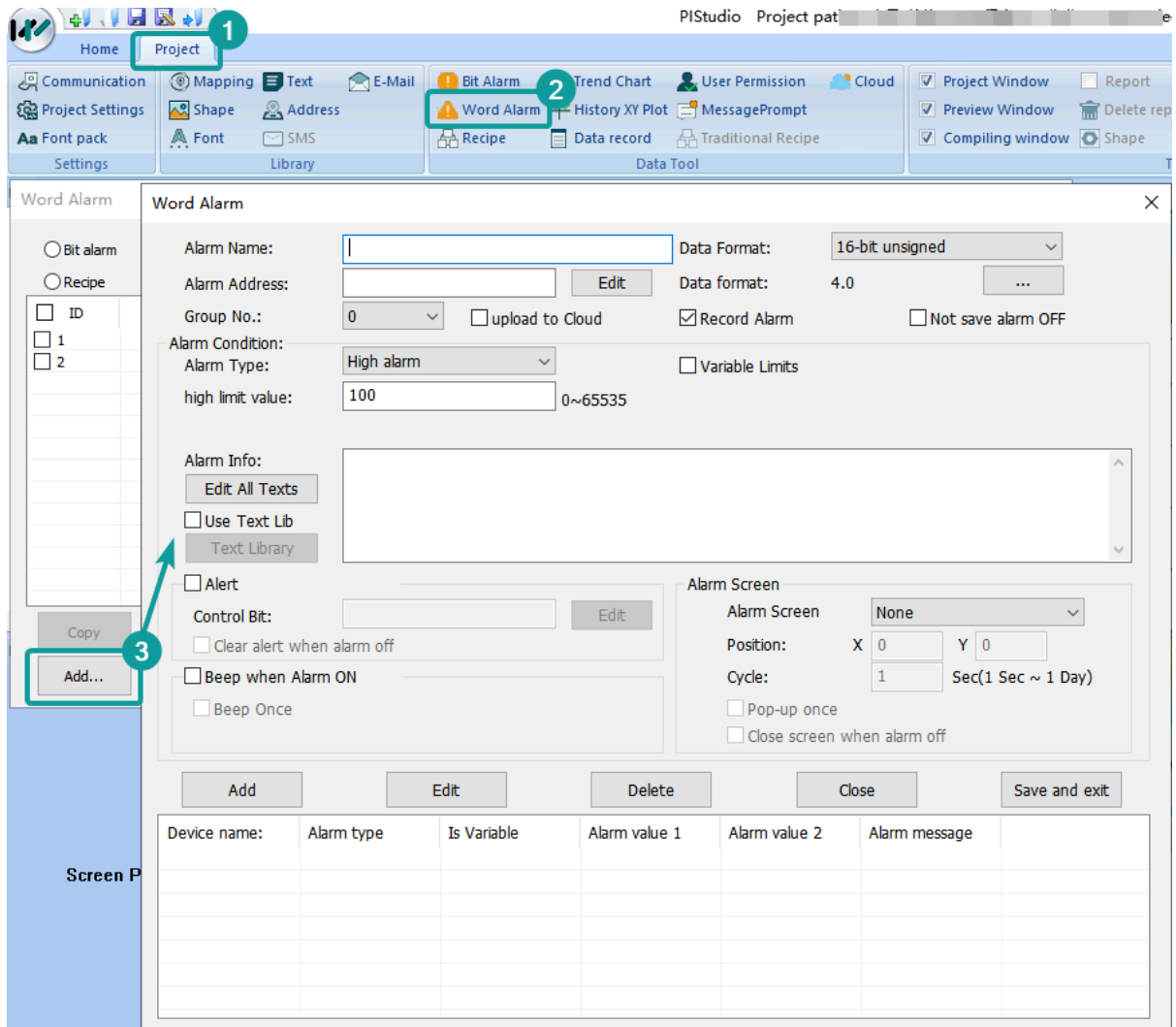
1. Set "Bit Address".
2. Set "Alarm Condition".
3. Set "Content".

4. Other settings can be set according to the actual situation".
5. Click "OK" button to complete settings.

## Word Alarm

Word alarm is to monitor the word address of a device. If the data meets the set conditions, an alarm will be generated.

Click "Project"->"Word alarm", it is displayed as the following figure.



(1) **Alarm Name:** You can set alarm name for it. Alarm Name can only consist of (0~9), (a~z), (A~Z), ('\_'), (' ') and other non-English characters.

(2) **Alarm Address:** It is used for setting word address for word alarm, such as HDW0.

(3) **Data Format:** 16-bit unsigned decimal, 16-bit signed decimal, 16-bit BCD, 32-bit unsigned decimal, 32-bit signed decimal, 32-bit BCD, 32-bit float.

(4) **Group No.:** Group number of word alarm. The name is unique and cannot be duplicated.

(5) **Upload to Cloud:** The data upload by "word alarm" is stored in the Cloud and it is alarm data. (Only ig supported)

**#Note:**

- If the "cloud" function is enabled and "upload to cloud" is checked, the communication port of the address in the configuration of the imported word alarm record must be the same as that of the current project; otherwise, it cannot be used normally.
- The number of alarm configuration points reported to the cloud cannot exceed 20, or the sum of imported alarm records and the current alarm records cannot exceed 20. If it exceeds, please reconfigure.

**(6) Record alarm:** Whether to record the alarm history data of word alarm, if checked, it will be saved in the designated storage location.

**(7) Not save alarm OFF:** If checked, after the alarm is dismissed, the corresponding alarm records will be deleted from the log file.

**(8) Alarm Condition:** Alarm is triggered when designated address meets the alarm condition, it provides four conditions;

1. **High alarm:** Alarm is triggered when it reaches high limit. It can be a constant or a variable
2. **Low alarm:** Alarm is triggered when it reaches low limit. It can be a constant or a variable
3. **Range alarm:** Alarm is triggered when it exceeds the range. It can be a constant or a variable
4. **Equivalent alarm:** Alarm is triggered when the value equals to the given data. It can be a constant or a variable

**(9) Alarm Info:** It is used for setting alarm content (command);

**(10) Alert:** It is used to mark whether the alarm has occurred. if an alarm occurs, the address of "control bit" will be written to 1. If "clear alert when alarm OFF" is checked, the address of "control bit" will be written to 0.

**(11) Alarm Screen:** Pop-up alarm screen (it need to be sub-screen);

1. **Position:** The location of the screen alarm display.
2. **Pop-up Interval:** The time of reopen the alarm screen when alarm screen closed.
3. **Pop-up once:** Pop up alarm screen once.
4. **Close window when alarm off:** Automatically close the alarm screen when alarm off.

**(12) Beep when alarm ON:** beep works when the alarm is triggered, in the default mode, the beep works until the alarm is released.

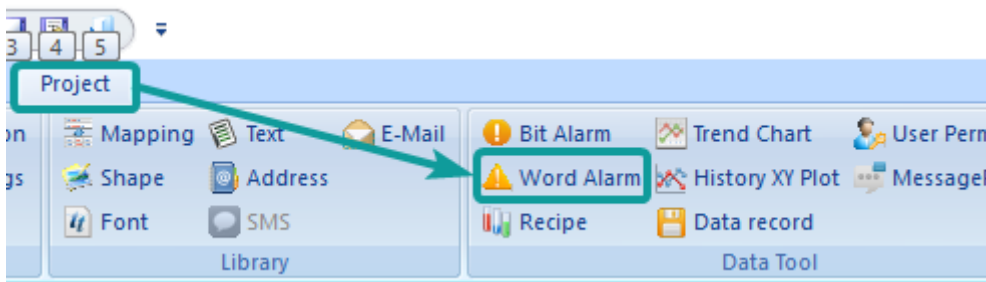
**(13) Beep once:** Beep works once, when alarm is triggered.

#### **(14) Alarm List**

It displays all the word alarm lists; it will show the alarm information;

#### **Operating Procedures of Adding One Alarm**

1. Click "Project"-> "Word Alarm" as below shows.



1. Click [Add] button to open [Word Alarm] setting window.

Word Alarm

Bit alarm
  **Word alarm**
 Data record

Recipe
  Trend Chart
  History XY Plot

ID	Name	Address	Data format	Number ...	GroupID
<input type="checkbox"/> 1	test	40	16-bit unsigned	40	0

1. Set Basic information of word alarm.
2. Set "Content".
3. Other settings can be set according to the actual situation.
4. Click "OK" button to complete settings.

#### HMI Alarm Demo Download Link

[https://drive.google.com/open?id=1Llq03CMISM\\_1mMlfU308hxFbs4rGdQGP](https://drive.google.com/open?id=1Llq03CMISM_1mMlfU308hxFbs4rGdQGP)

## Recipe

Traditional recipe is composed of multiple groups of information with the same structure and different data. Due to the similarity of these information, you could edit them into a set of recipes to facilitate the transfer of data between HMI and PLC.

Data operation

1. **Read:** Read a group of data from the recipe file and assign the group of data to the set address.
2. **Write:** Read a group of data from the set address and assign the group of data to the corresponding recipe file.

PI Series HMI has Recipe function, Recipe function keeps data in the HMI, used to download the data from HMI to designated device addresses, or upload the data from device addresses to HMI.

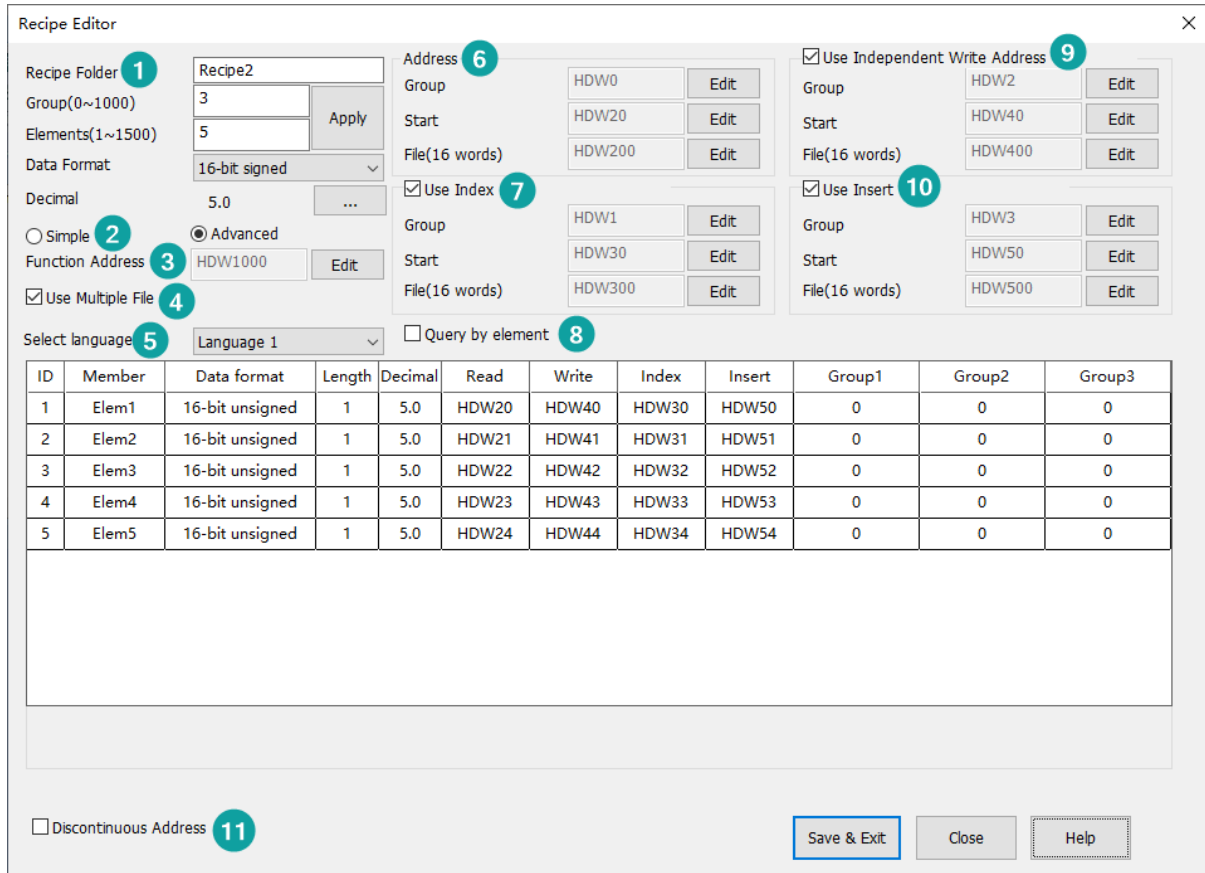
The maximum number of group in recipe is 1000, and the maximum number of member in each group is 1500.

Recipe could store the data in USB flash disk and SD card and view the recipe data by object "Recipe display". It has two mode: simple mode and advanced mode.

1. **Simple:** Only support the data operation of one recipe file, including read and write.
2. **Advanced:** Support the data operation of multiple recipe files, including read, write, insert and index. View and select recipe file by object "File list".

Recipe function settings will be display in "[Recipe display](#)" object.

#### Description



**(1) Basic**

- Recipe Folder:** Give Recipe folder name (It can be used, when setting Recipe display object);
  - #Note:** Recipe Folder name can only consist of (0~9), (a~z), (A~Z), ('\_'), (' ') and other non-English characters;
- Group:** It sets the groups' initial number of recipe;
- Elements:** It sets members' initial number of each group;
- Data Format:** There are some formats can be supported in Recipe, like 16-bit BCD, 16-bit signed, 16-bit unsigned, 32-bit BCD, 32-bit signed, 32-bit unsigned, 32-bit floating and string. If each member requires different formats, please set it one by one in form;
- Decimal:** It sets integer and scale digits;

**(2) Mode Selection**

Users could select Simple or Advanced mode.

**(3) Function Address:**

All the operations for recipe is by this address

- =0 No operation.
- =1 Read data from recipe.
- =2 Insert a new group or write data to exist group.
- =4 Inserted (only advanced mode).
- =8 Delete.
- =16 Delete and Sequence.

**(4) Use Multiple File**

Check it to use more than one recipe file in HMI, but this option only valid in [Advanced mode];



**(5) Select language**

The text in HMI can be in 8 languages, user can set language in here;

**(6) Address**

1. **Group:** This address is for selecting group number;
2. **Start:** This is starting address is for reading and writing in recipe, PIStudio will automatically assigns addresses for each members;
3. **File(16 words):** This address only available when enable the Use Multiple File. This setting address is for input the recipe file's filename.

**(7) Use Index**

If the value from Group address is changed, Read address will display the new data according to new group number immediately. Relatively, if the data of write address is changed, the corresponding group from table is also changed.

**(8) Query by Element**

Enable it for querying group by specify element, select a primary key from all the elements, except the group number. This element value from all groups must be unique if want to set as primary key;

**#Note:** When this option is enabled, Group address will be invalid.

**(9) Use Independent Write Address**

To separate Recipe read address and write address.

**(10) Use Insert**

It inserts data into the specified group, if the specified group already exists, it would not cover the original data, while it will move the original group next one after it.

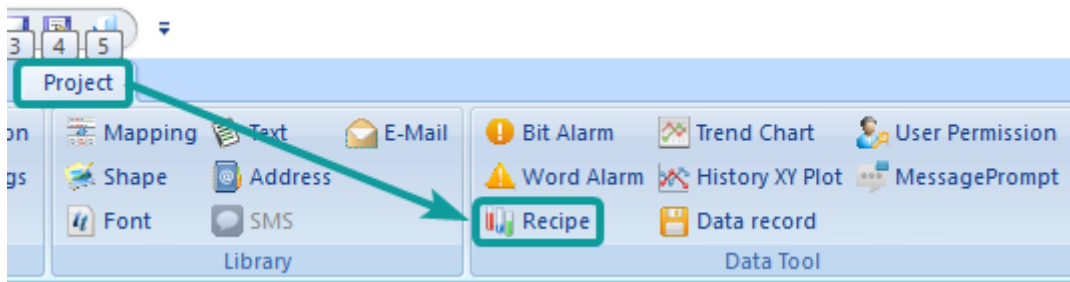
**(11) Discontinuous Address**

Whether enable the non-consecutive recipe operation addresses or not. If disabled, the recipe address will recover as the continuous addresses.

**#Note:** This function only supported in HMI+, i series, ie series, ig series.

**Operating Procedures**

- 1) Click "Project"->"Bit Alarm" as below shows.



- 2) Click "Add" button to open "Recipe" setting window.

ID	Name	Elements	Groups	Mode	Multiple file	Independen...	Index	Insert
<input type="checkbox"/> 1	Test	3	100	Simple				

- 3) Set basic settings for recipe.
- 4) Select mode according to actual condition.
- 5) Other settings can be set according to the actual situation.
- 6) Click [OK] button to complete settings.

#### Recipe Demo Download Link

[https://drive.google.com/open?id=1Cjbq\\_tW-NIirHFBpxt47g7IKvoYaWqUR](https://drive.google.com/open?id=1Cjbq_tW-NIirHFBpxt47g7IKvoYaWqUR)

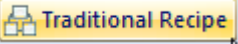
## Traditional Recipe

Traditional recipe is composed of multiple groups of information with the same structure and different data. Due to the similarity of these information, you could edit them into a set of recipes to facilitate the transfer of data between HMI and PLC.

Traditional recipe function is valid only when the LEVI project is converted to the PI project, and the original project uses the traditional recipe.

**#Note:** Currently, only HMI+, i series, ie series, and ig series support the traditional recipe.

### Simple recipe mode

Click the "Traditional Recipe"  in the "Data tool" bar in the upper side of the software, and the following interface will pop up:

Recipe edit

Description:

Setting

Group :  Total member:

Data format:  Word:  Decimal 5.0 ...

Cont.Address Start   Language:

Recipe edit

Member	Group 1	Group 2	Group 3
Group name	Red	Green	Blue
Car Top	11	21	31
Car Bottom	12	22	32
Car Outside	13	23	33
Member 4	14	24	34
Member 5	15	25	55

Trigger

Download trigger:    ON  OFF

Upload trigger:    ON  OFF

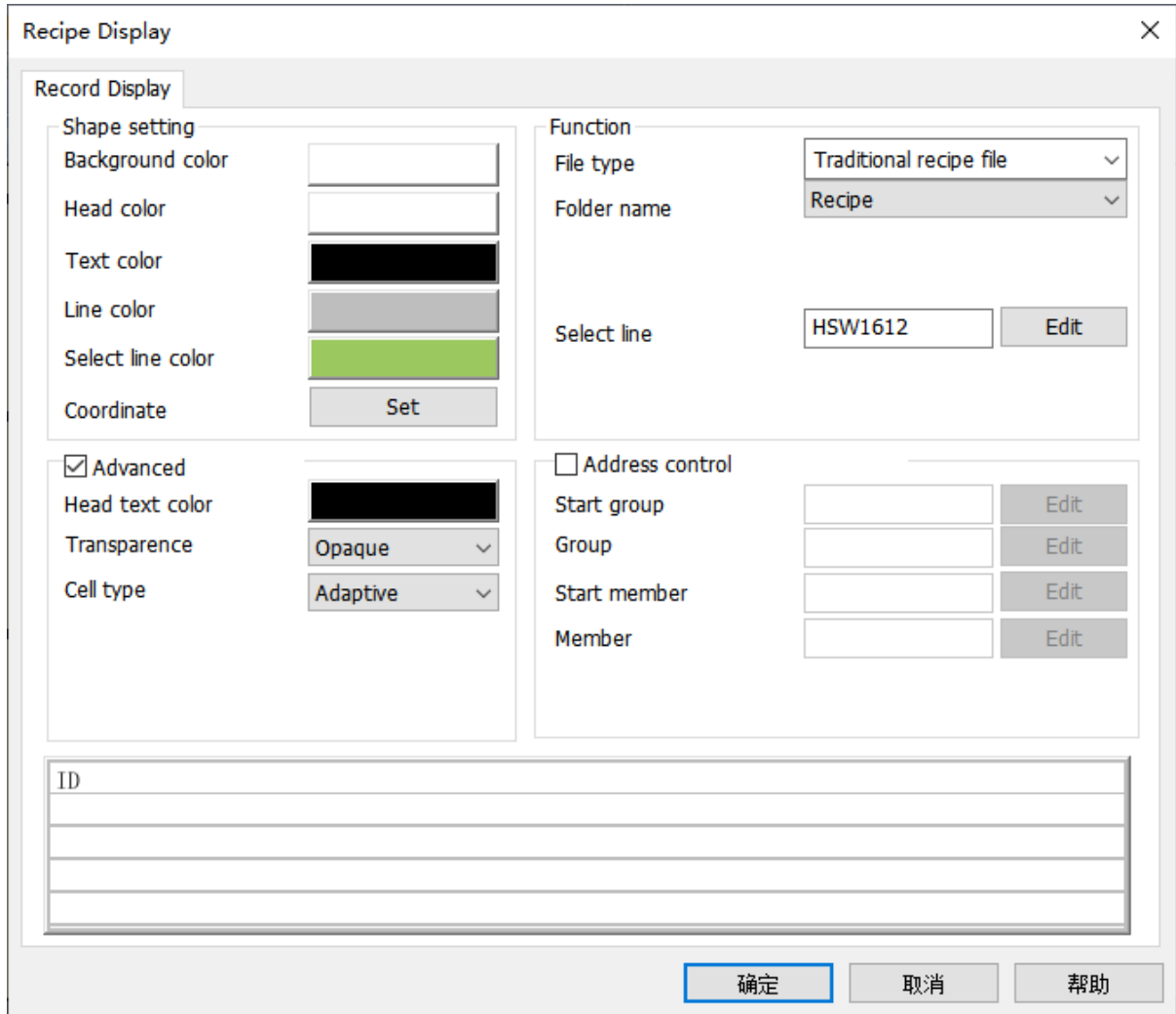
**#Note:**

- The recipe folder name can only consist of (0~9), (a~z), (A~Z), ('\_'), (' ').
- The element name of the recipe cannot include following 5 special characters: ", " | ", " < ", " > ", " & " .

## Recipe display

Select the file type "Traditional recipe file" in object "Recipe Display", and it is recommended to fill in the traditional recipe group number HSW1612 to the address of select line.

**#Note:** The Recipe Display can display up to 50 groups of 100 elements, which can be to display out of range by enabled "Address Control", as following shown:



## Recipe transmission address

The special addresses used in the Recipe are shown in the following table:

Address	Description	Function
HSW1611	Traditional Recipe transfer operation.	=1: Recipe download. =2: Recipe upload.
HSW1612	Traditional Recipe group number.	Traditional Recipe group number.
HSW242	Recipe operation result prompt:  Upload: Data is written to recipe file from address.  Download: Data is written to the address from recipe file.	=1: Recipe download, start.  =2: Recipe download, execution error. =6: Recipe download, successful. =7: Recipe upload, start. =8: Recipe upload, execution error. =11: Recipe group name does not exist. =12: Recipe upload, successful.

## Recipe index

The recipe index address RPW is mainly used for editing traditional recipes, and it is more convenient to modify the data and display of recipes. Only need to modify and display the data of the recipe file through "Numeric Input/Display" Object and "Word Switch".

The recipe index area (RPW)'s instruction as follows:

1. RPW\*\*####, a total of six digits, the first two \*\* represent the Recipe group number, #### represents the element order number. For example, RPW010000 indicates the 1st element of the Recipe group No.1, and RPW110002 indicates the 3rd element of the Recipe group No.11.
  2. If the indexed group number or element number does not exist, the value of RPW defaults to zero. For example, RPW110011 represents the 12th element of the Recipe group No.11. If it does not exist, the value returned by accessing RPW110011 is zero. The value written in RPW110011 will not be saved to the recipe file.
    - **#Note:** As long as RPW\*\*#### exists, any object "writes" to HPW\*\*#### will be saved to the recipe file.
1. The RPW register only supports word address access.
  2. It can be known from the coding method of RPW\*\*#### that the range of RPW is from RPW000000-RPW990450, wherein the range of group number is 0-100, and the range of element is 0-450.

## Recipe example

The recipe index makes the modification and display of recipe data more convenient. Only need to modify and display the data of the recipe file through "Numeric Input/Display" Object and "Word Switch".

(1) Edit the recipe configuration, create three groups of recipes, 4 elements for per group: Red, green, blue, spraying time, as following shown:

The screenshot shows the 'Recipe edit' dialog box with the following configuration:

- Description: Recipe file
- Setting:
  - Group: 3
  - Total member: 4
  - Data format: Unsigned
  - Word: Single W
  - Decimal: 5.0
- Cont.Address:  Start: HDW000000
- Language: Language1

The 'Recipe edit' table contains the following data:

Member	Group 1	Group 2	Group 3
Group name	Car Top	Car Bottom	Car outside
Red(kg)	2	3	2
Green(kg)	2	1	3
Blue(kg)	1	2	3
Spray Time	30	3	20

Additional controls include 'Delete recipe', 'Recipe import', 'Recipe export', 'Clear', 'Copy', 'Paste', 'OK', 'Help', and 'Cancel' buttons.

Trigger settings:

- Download trigger:  Address: HDX0.0 (ON/OFF)
- Upload trigger:  Address: HDX0.1 (ON/OFF)

(2) RPW 0~3 can display the data of group for the selected line. RPW10000~10003, RPW20000~20003, RPW30000~30003 each address can display the single element. Directly modify the content of the RPW address and then modify the recipe data, as following shown:

The screenshot shows the HMIUI interface with the following components:

Group name	Red (kg)	Green (kg)	Blue (kg)	Spray Time
Car Top	2	2	1	30
Car Bottom	3	1	2	3
Car outside	2	3	3	20

Group	Red	Green	Blue	Spray Time
2	3	1	2	3
Car Top	2	2	1	30
Car Bottom	3	1	2	3
Car Outside	2	1	2	3

Mock PLC Address: 0 0 0 0

Buttons: Download, Upload

(3) After selecting the 2nd group, trigger the download button to download the whole group data to the corresponding element address (For this case, the data will write into HDW0~3), or trigger the upload button to upload the content of the element address to the specified recipe group.

The screenshot shows the HMIUI interface with a 'Recipe downloaded successfully!' notification. Below the notification is a table of spray recipes:

Group name	Red (kg)	Green (kg)	Blue (kg)	Spray Time
Car Top	2	2	1	30
Car Bottom	3	1	2	3
Car outside	2	3	3	20

Below the table is a configuration panel with the following fields and values:

- Group: 2
- Red: 3
- Green: 1
- Blue: 2
- Spray Time: 3

Below these fields is a table with a highlighted row:

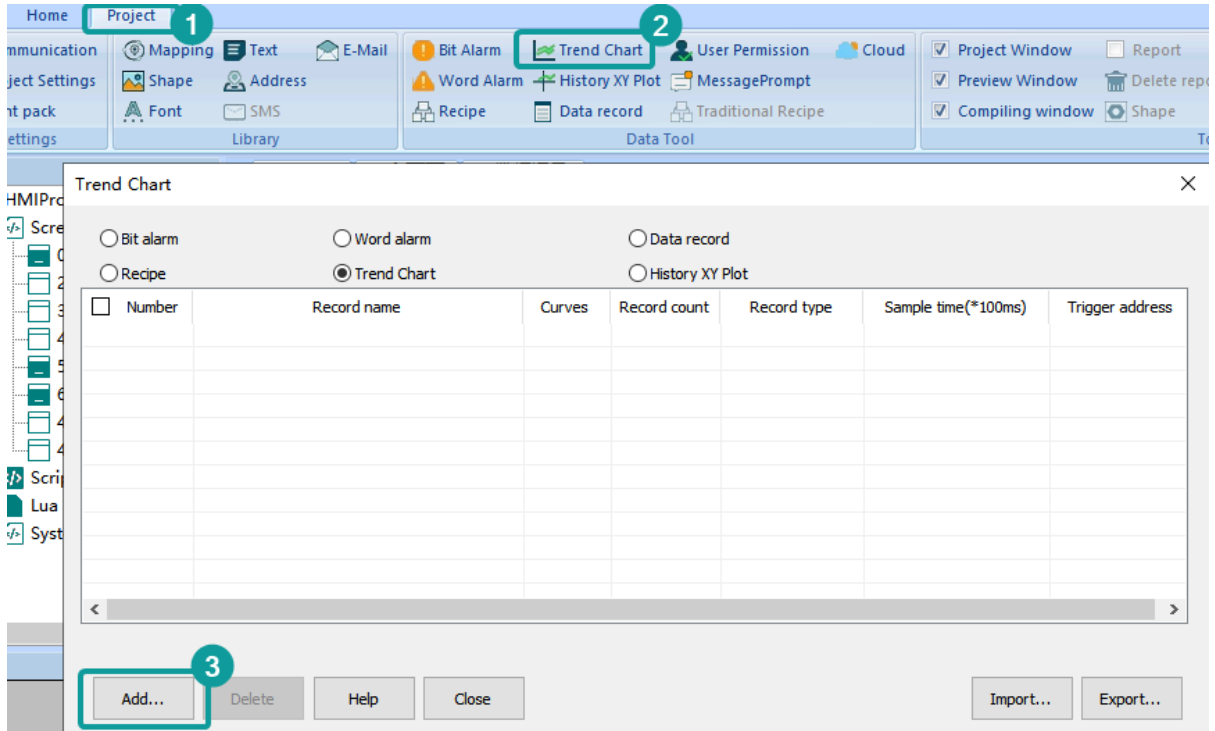
	Red	Green	Blue	Spray Time
Car Top	2	2	1	30
Car Bottom	3	1	2	3
Car Outside	2	1	2	3

At the bottom of the configuration panel, there are 'Mock PLC Address' fields with values 3, 1, 2, and 3. To the right of these fields are 'Download' and 'Upload' buttons.

## Trend Chart

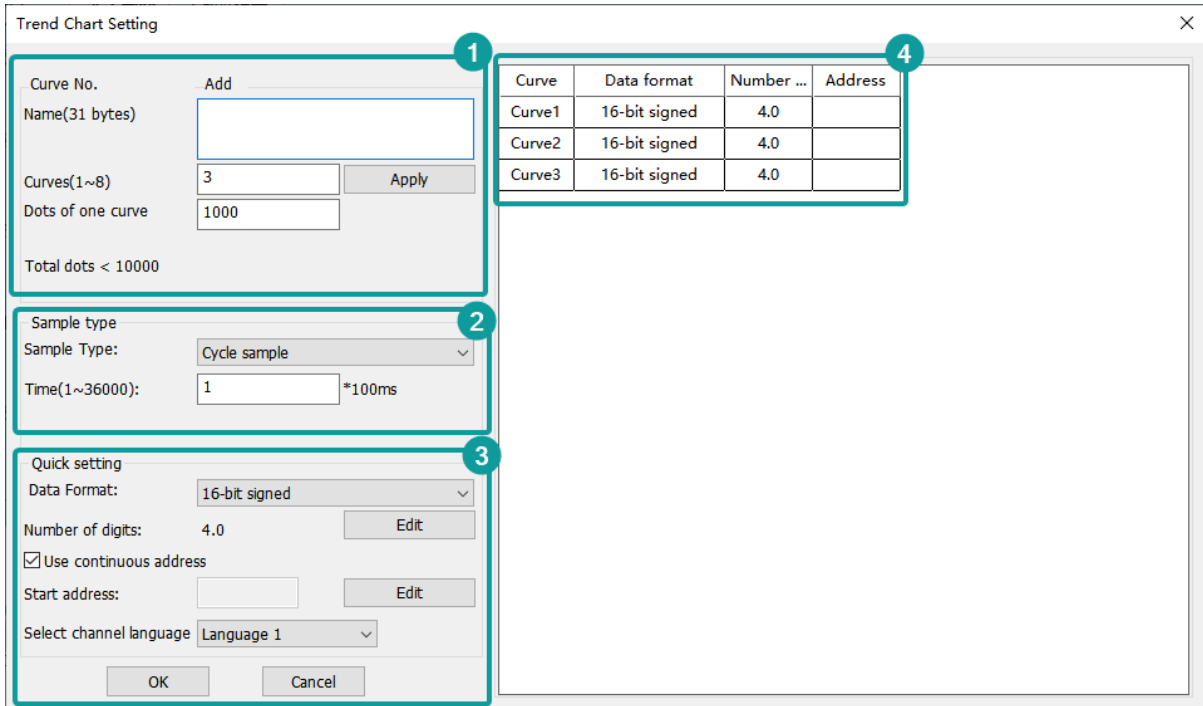
Trend chart function is used for displaying the real-time data in HMI as curve graph, which X axis represent as time, Y axis represent as data.

Click "Project" → "Trend chart", it will pop up the following screen. Click "Add" to create new curve record.



**Settings**





**(1) Basic settings**

1. **Curve NO.:** It is for setting curvenumber,
2. **Curve Name:** It is for setting curve name. The length limitation is 31 bytes.
3. **Curve (1~8):** It is for setting the number of curves. The default is 3.
4. **Dots of one curve:** It is for setting dots number of each curve. The default is 1000, but the maximum dots are 10,000 for all the curves.

**(2) Sample Type**

1. **Sample method:** There are two types, one is Cycle sample, the other is Trigger cycle sample. If you select Trigger cycle same mode, the trigger sample address is required to edit.
2. **Sample unit:** 100ms.

**(3) Quick Setting**

1. **Data format:** It is for setting all the curves, select the data format for all curves, and setting the reading addresses for curves. There are as follows.

- 16-bit BCD
- 16-bit signed
- 16-bit unsigned
- 32-bit BCD
- 32-bit signed
- 32-bit unsigned
- 32-bit floating

1. **Sample address:** Fill in the start address that read the device data. If the sample address is consecutive, check "use continuous address". For example, set HDW0 as start address, curve number is 3, then the HDW0 is for Curve 1, HDW1 is for Curve2, HDW2 is for Curve 3.

(4) **Curve Table:** The sample address you have set would display on it. Click the corresponding box to modify the content.

**#Note:** Curve names can only consist of Chinese characters, (0~9), (a~z), (A~Z), ('\_') (' '), and other non-English characters.

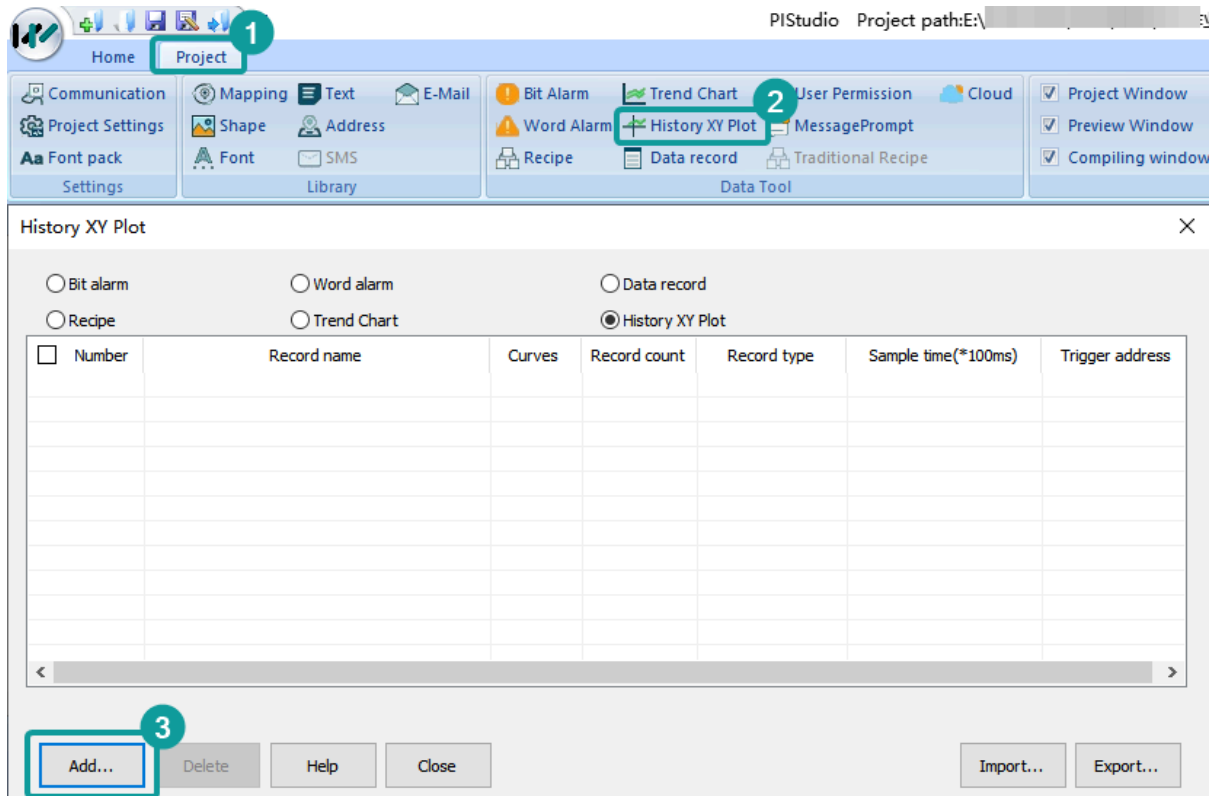
**Trend Chart Demo Download Link**

[https://drive.google.com/open?id=1smnaAvSxOWC0WQK4\\_uvqHXWn4vUZxGJC](https://drive.google.com/open?id=1smnaAvSxOWC0WQK4_uvqHXWn4vUZxGJC)

## History XY Plot

Different from TrendChart, users need to set history XY curve items in project. Please click "Project"-> "History XY Plot" to open the setting screen.

Recipe function settings will be display in "History XY Plot" object.



History XY Plot

Curve No. Add

Name(31 bytes) |

Curves(1~8) 3 Apply

Total records(1~800) 400

Sample type

Sample Type: Cycle sample

Time(1~36000): 1 \*100ms

Quick setting

Data Format: 16-bit signed

Number of digits: 4.0 Edit

Use continuous address

Start address: Edit

Select channel language Language 1

OK Cancel

Curve	Data format	Number ...	X Address	Y Address
Curve1	16-bit signed	4.0		
Curve2	16-bit signed	4.0		
Curve3	16-bit signed	4.0		

### (1) Basic settings

1. **Curve NO.:** It is for setting curvenumber,
2. **Curve Name:** It is for setting curve name. The length limitation is 31 bytes.
3. **Curve (1~8):** It is for setting the number of curves. The default is 3.
4. **Dots of one curve:** It is for setting dots number of each curve. The default is 1000, but the maximum dots are 10,000 for all the curves.

### (2) Sample Type

1. **Sample method:** There are two types, one is Cycle sample, the other is Trigger cycle sample. If you select Trigger cycle same mode, the trigger sample address is required to adit.
2. **Sample unit:** 100ms.

### (3) Quick Setting

1. **Data format:** It is for setting all the curves, select the data format for all curves, and setting the reading addresses for curves. There are as follows.

16-bit BCD  
 16-bit signed  
 16-bit unsigned  
 32-bit BCD  
 32-bit signed  
 32-bit unsigned  
 32-bit floating

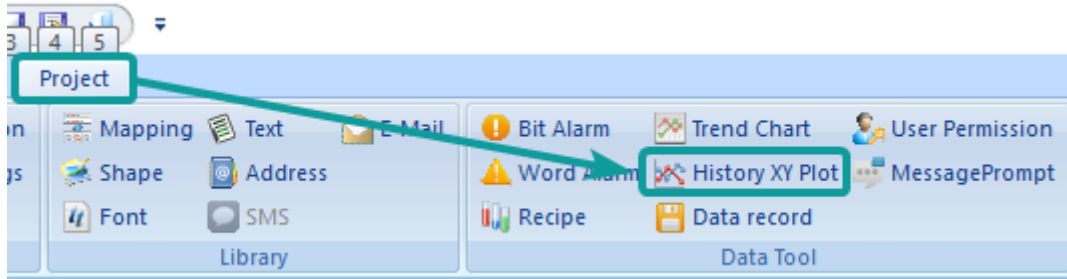
1. **Sample address:** Fill in the start address that read the device data. If the sampl address is consecutive, check "use continous address". For example, set HDW0 as start address, curve number is 3, then the HDW0 is for Curve 1, HDW1 is for Curve2, HDW2 is for Curve 3.

**(4) Curve Table:** The sample address you have set would display on it. Click the corresponding box to modify the content.

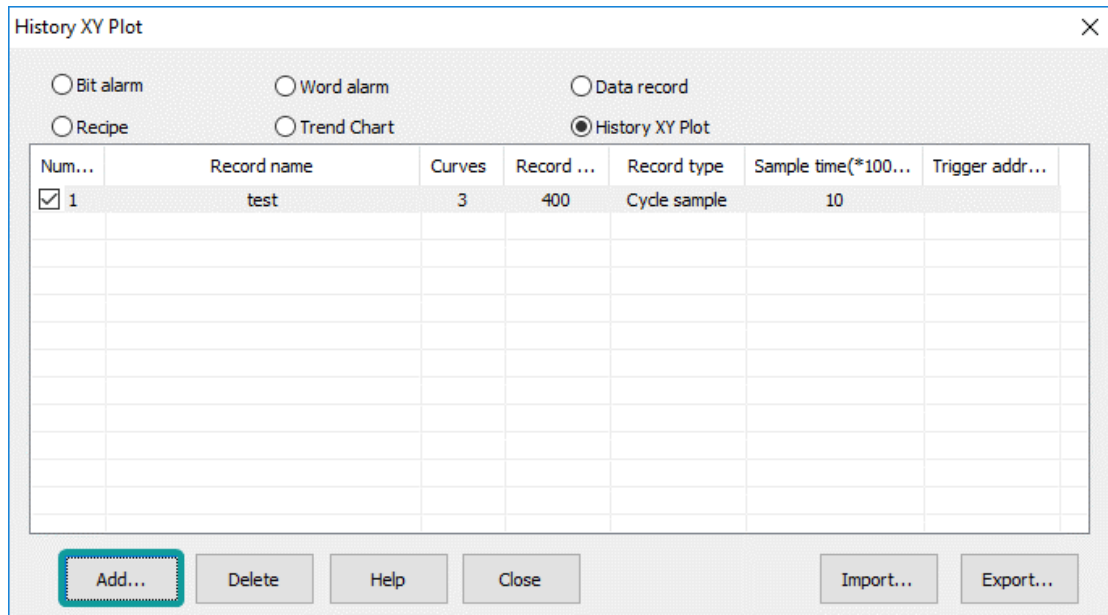
**#Note:** Curve names can only consist of Chinese characters, (0~9), (a~z), (A~Z), ('\_' (' ')), and other non-English characters.

### Operating Procedure

1. Click "Project" -> "History XY Plot" to open the function selecting windows.



1. Click "Add" button to open [History XY Plot] setting windows.



1. Setting the function of History XY Plot.
2. Click "OK" to save the setting.

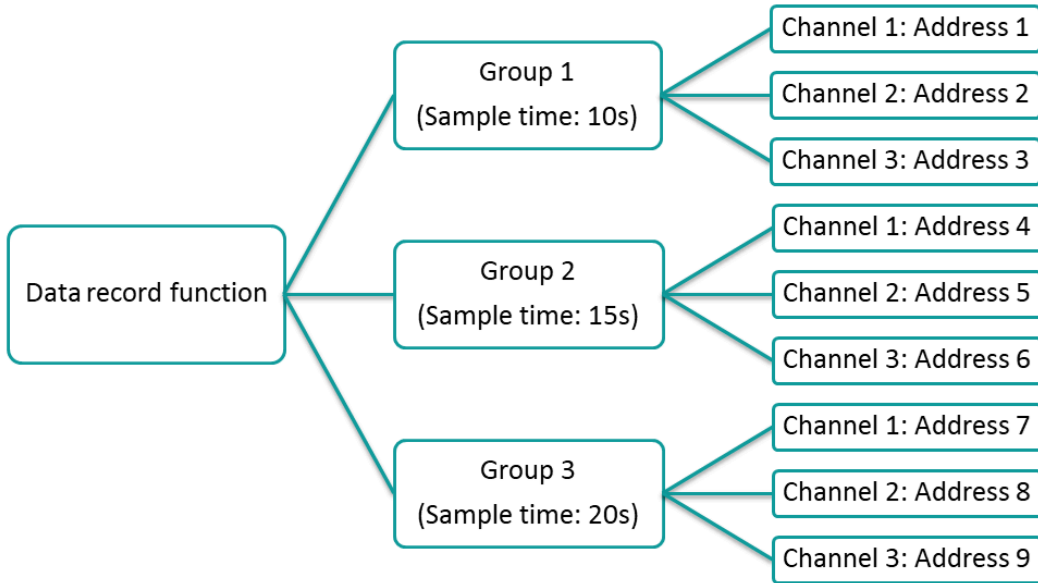
### Download Link

[https://drive.google.com/open?id=1t4\\_HuRmIJJ-B5ryA2kVMadD9FywKhZ4r](https://drive.google.com/open?id=1t4_HuRmIJJ-B5ryA2kVMadD9FywKhZ4r)

# Data Record

The data record function is organized according to the structure below. In a project, there can be multiple record groups, each record group containing multiple channels. Different groups have different sampling times.

The topology is shown in the following figure.



The data record stored in SD card is also organized according to the above figure.

The sample time and save time is consistent in the same recorded group. There are multiple channels in the group, When the sampling time is up, every channel would collect data to PLC register according to its own address.

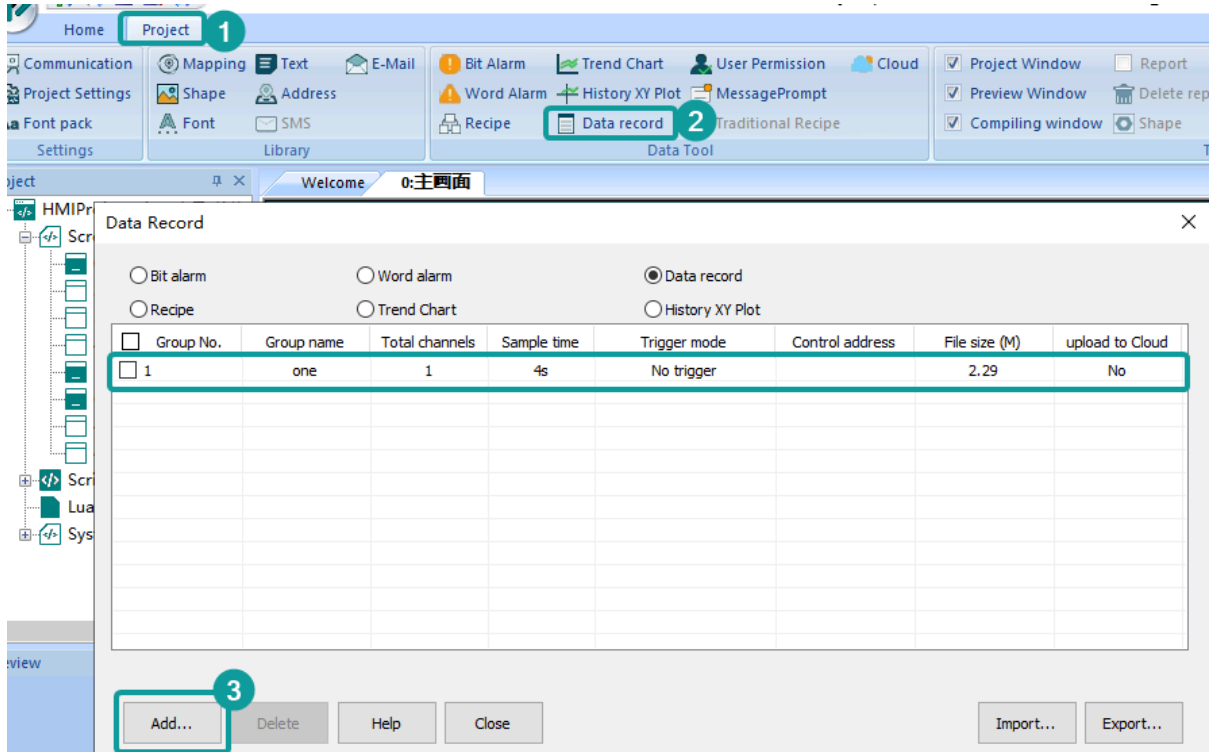
**Sampling interval:** The interval between two consecutive samples was recorded.

As long as the project uses the data record function and supports the large-capacity storage module, the system will sample data according to the set sampling interval and save data according to the set saving interval.

For the file storage of data, see the file size configuration during data record configuration.

**#Note:** The record group name can only be composed of Chinese characters, (0~9), (a~z), (A~Z), ('\_'), ('"') and other non-English characters.

## Settings



### Operating Procedures

1. Click "Project"->"Data record" as below shows.
2. Click "Add" button to open "Data record" setting window.
3. Enter group name, the default is "GroupName0"
4. Select "Trigger function" mode, such as "No trigger".
5. Set "Total channels", such as 3.
6. Click "Apply" button.
7. Set Sample cycle, such as 15.
8. Set "Start channel" in "Quick settings", such as 4 0.
9. Check group information in "Channel list" as below.
10. Click "Save" button to complete settings.

The figure above display the group of current project. The data record file would stored in "DataLogFile" folder, and the data of every group would have a data file. The file suffix is in "db" format.

#### #Note:

- For HMI series 8000 and above, the size of a single file cannot exceed 300M and the total file capacity cannot exceed 1000M.
- For HMI series 3000, the size of a single file cannot exceed 4M and the total file capacity cannot exceed 10M.
- If the total amount exceeds the range, an alarm will be given during project compilation.

Record group setting

General

1 Group Name: GroupName1 [Edit]

2 Trigger Function: No trigger

3 Total channels(1~100): 10 [Apply]

4 Sample Cycle(s): 15

Timing address

5 Max. File Size: 300M, Max. Records: 2995931  
Total records: 209715  
Current file size: 21.00M  
 Sample abnormal value when communication error

6  upload to Cloud: 1 ~ 1

7  Quick setting  
Start channel: [Edit]  
Data format: 16-bit signed  
Number of digits: 4.0 [Edit]  
Select channel language: Language 1

8 Channel List

No.	Channel name	Address	Data format	Data l...	Number o...
1	Channel1		16-bit signed	1	4.0
2	Channel2		16-bit signed	1	4.0
3	Channel3		16-bit signed	1	4.0
4	Channel4		16-bit signed	1	4.0
5	Channel5		16-bit signed	1	4.0
6	Channel6		16-bit signed	1	4.0
7	Channel7		16-bit signed	1	4.0
8	Channel8		16-bit signed	1	4.0
9	Channel9		16-bit signed	1	4.0
10	Channel10		16-bit signed	1	4.0

Save Close

(1) **Group name:** Set group name, and the name should be unique.

(2) **Trigger function:** There are four modes to trigger record.

1. **No trigger:** Data will be recorded in every sample time.
2. **Trigger to record by sample cycle:** Data will be recorded in every same time, when trigger control bit set ON.
3. **Trigger to record once and reset:** Data will be recorded when trigger control bit set ON, and the bit will be reset automatically.
4. **Trigger to record once:** Data will be recorded when trigger control bit set ON, and the bit need to be reset manually.
5. **Trigger address:** It is only valid when the trigger condition is selected. The monitoring cycle for trigger sampling address is 1s.

(3) **Total channels (1~100):** Set the numbers of channels. Click "apply" to view the channel lists on the right record channel.

(4) **Sampling cycle:** If you check "collect control address", the sampling interval is the value of the address. The unit is second. For example, Sample cycle=15s. It means that records data one time every 15s.

**Timing address:** It sets address to change sample time when HMI is running;

**(5) Total records:** It sets data record number in one data record file. If the data file size is beyond the current file size. The old data will be deleted, and the new data will replace the old data. Please remember to back up the old data record file.

**Abnormal value:** It sets a value, when communication fails, data record will record this value;

**(6) Upload to Cloud:** The data uploaded by Data Record is stored in the Cloud(Only ig series). The maximum number of record is 20.

#### **(7) Quick Settings**

1. **Start Channel:** It sets the continuous addresses for channels.
2. **Data Format:** It sets the same data format for channels.
3. **Number of Digits:** It sets the digits' number for channels.
4. **Language Settings:** The text in HMI can be in 8 languages, user can set language in here.

**(8) Channel List:** Besides quick settings, user can set channel name, address, data format, and so on one by one according to real situation.

#### **#Note:**

- After enabling the Cloud function and checking the upload to the Cloud, the communication port settings of the address in the imported Data record configuration must be the same as the communication settings of the current project, otherwise it cannot be used normally.
- The range of upload to the Cloud from Data record configuration must not exceed 50, or the total number of imported Data records and the number of currently existing Data records must not exceed 50. If it exceeds, it will prompt you to reconfigure, should reduce the number.
- The channel name can only be composed of English characters, (0~9), (a~z), (A~Z), ('\_'), (' ').
- The channel name does not include these 5 special characters: ", ", "|", "<", ">", "&".
- The data would be overwritten automatically if the capacity exceed the maximum capacity. For 8000/9000 series, the size of single file cannot exceed 300MB, and total capacity of data records cannot exceed 1000MB. For 3000/3000i/3000ie series, the size of single file cannot exceed 4MB, and total capacity of data records cannot exceed 10MB. If the total amount exceeds the range, an error will be prompted when the project is compiled.

You could click here to jump to object "[Data Record Display](#)"

#### **PI Data Record Demo Download**

[Demo Link](#)

[Video Link](#)

## **User Permission**

### **Introduction**

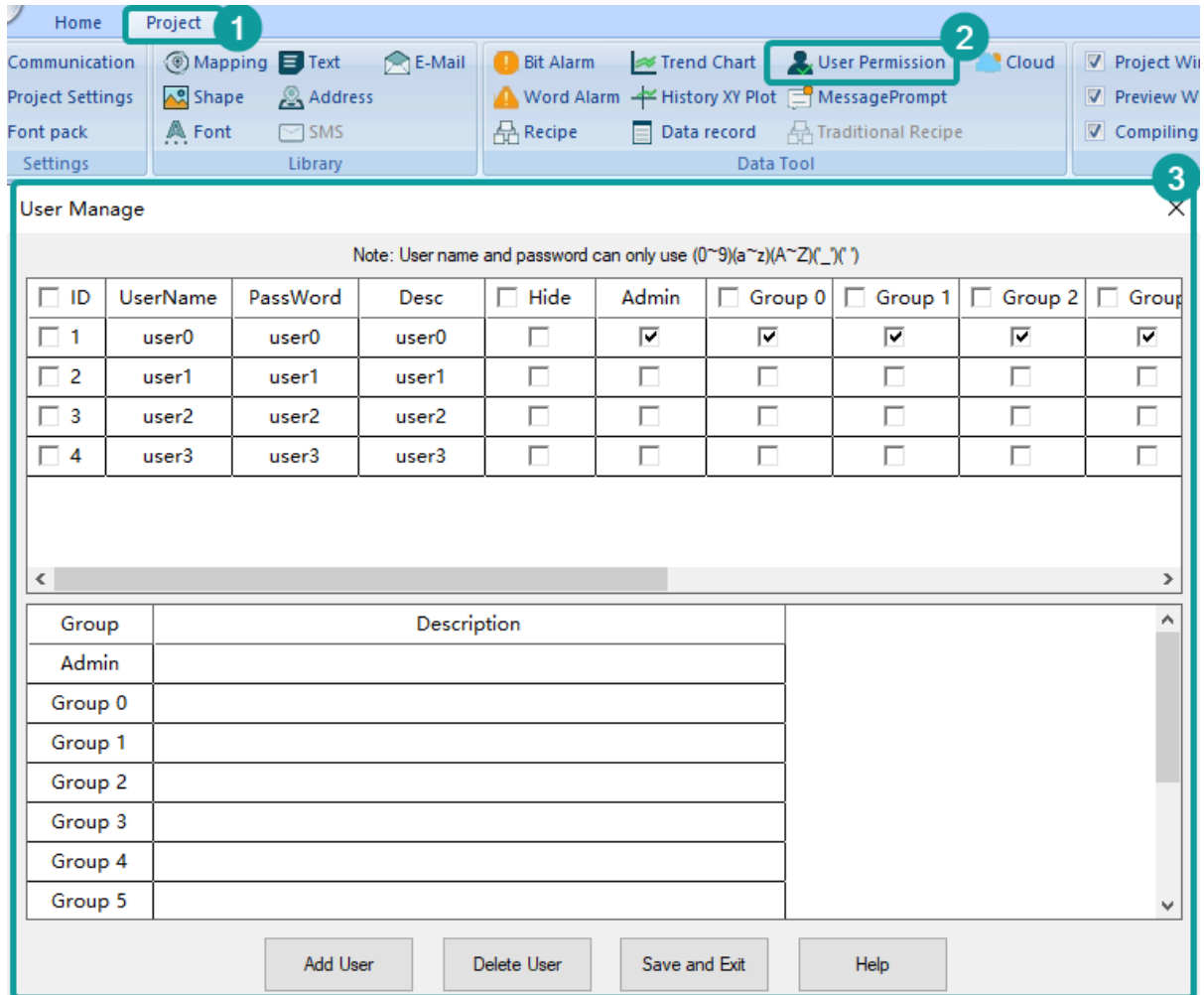
1. User permission is one of expansion function in PI Series HMI; it provides multi-level of permission for control HMI operations.
2. User need to set the user and group during designing project. Different groups have different permission levels for accessing. Each user should be added into the specified group; it is possible to add the same user into different groups.
3. Operating record: it records user operations information, the records files are saved in HMI flash; its path is [ \flash\UserOperationLogs.db].
4. When it is on simulator mode, the files are saved in C disk, its path is [C:\\WECON\UserMgrFile \\UserOperationLogs.db].

**#Note:** The user name and password must be unique.



## Settings

Open PISudio software, then operate as the following figure.

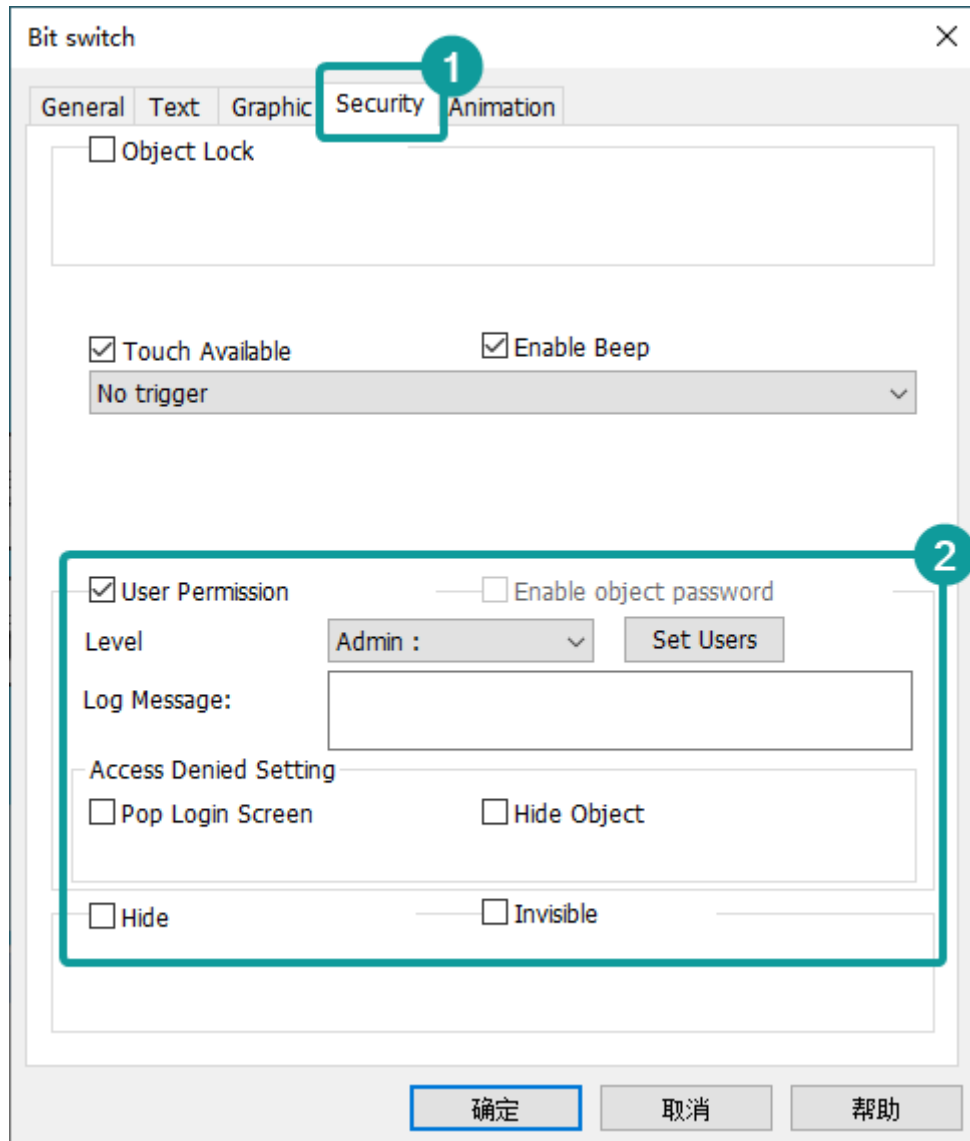


1. Click "User Permission" in "Data Tool" toolbar.
2. Edit user name, click "User0" cell under "UserName", and then enter the user name, one project allows maximum 20 users.
3. Edit password, click "User0" cell under "PassWord", and then enter the user name.
4. Edit description, click "User0" cell under "Desc", and then enter, description is not necessary.
5. Check the groups for each user, there are 11 groups beside admin.
6. Editing groups' description, but it is not necessary.
7. Click "Save and Exit" button to complete all settings.

### #Note:

- Only a maximum of one administrator permission is allowed in a profile with one user permission. If you want to use "Function address" to modify the user permission, you must log in the administrator account to operate.
- When the configured file does not have the administrator account, a new user can be added through "Function address" and set as the administrator.
- If you select hidden function when configuring user account, the account would display as "\*\*\*\*\*" in the list. You only need to enter the password of the corresponding hidden user to log in.

## Object permission configuration



### Operation Procedure of Object Permission

1. Open the object setting windows;
2. Select [Security] windows;
3. Check the [User Permission];
4. Select [Level] to set permission level;
5. Enter [Log Message], it is for operation records, if it was empty, the operation for this object would be not be recorded;
6. Select the [\[Access Denied Setting\]](#) mode;

### Log information description

1. A combination of Chinese characters, numbers, and uppercase and lowercase letters can be entered, and the number does not exceed 63.
2. The format of insert variable:{variable address, data format}. e.g., {HDW100,UW2.1}.

The data format are as follows.

Letter	Meaning
B	Binary
O	Octonary
U	Unsigned decimal
H	Hexadecimal
b	BCD
F	32-bit float
S	Signed decimal
C	Character
W	Single word
D	Double word

1. Examples.

- Unsigned decimal, BCD, 32-bit float and Signed decimal are as follows.

{HDW100,UW2.1}: Indicates the variable address is HDW100. The data format are: unsigned decimal, single word, two integer bits, one decimal place.

- Binary, Octonary and Hexadecimal are as follows.

{HDW100,HD8}: Indicates the variable address is HDW100. The data format are: hexadecimal, double word, eight integer bits.

- Character is as follows.

{HDW100,C32}: Indicates the variable address is HDW100. The data format are: 32 characters.

When a record is generated, the contents of this variable are replaced by the value of your corresponding address.

## Function address

A user must first log in before performing an operation, and after the login is successful, the user can perform the required operation, and log out after completing the operation, making the operation permission invalid. User login, log out, modification of user password during operation and user management and other functions need to be configured.

HMI allows managing user accounts on screen. Including adding, deleting and editing the user account. HMI provide built-in screen for [Sign in] and [change password] (screen No. 1006 and 1007).

Functions and addresses are as follows.

Function	Address	Object type	Address function
Sign in	HUW1158~1335	Drop down list	User name
	HUW1002	Character input object	Password
	HUW1000	Word Switch (Input 1)	OK (sign in)
Change password	HUW1158~1335	Drop down list	User name
	HUW1002	Character input object	Old password
	HUW1006	Character input object	New password
	HUW1010	Character input object	Confirm password
	HUW1000	Word Switch (Input 2)	OK(change password)
Sign out	HUW1000	Word Switch (Input 3)	Sign out
New user *1	HUW1014	Character input object	User name
	HUW1006	Character input object	password
	HUW1010	Character input object	Confirm password
	HUW1000	Word Switch (Input 4)	OK(add new user)

	HUW1336~1345 HUX1347.0	Character input object Bit switch	User description =1: User hidden  =0: Visible (Defaults)
Delete user *2	HUW1000 HUW1158~1335	Word Switch (Input 8) Drop down list	Save(add Hide features) User name
Delete Profile	HUW1000	Word Switch (Input 5)	OK (delete user)
Export Profile	HUW1000	Word Switch (Input 9)	OK(delete)
Import profile	HUW1000	Word Switch (Input 10)	OK(export)
Export log file	HUW1000	Word Switch (Input 11)	OK(import)
Delete log file	HUW1000	Word Switch (Input 12)	OK(export)
Current user name	HUW1000	Word Switch (Input 13)	OK (delete)
System state information	HUW1349	Character object	32 Word
Permission settings	HUW1030	Character input object	System state information
	HUW1014	Character input object	User name
	HUW1348	Bit switch	Set the user group:  HUX1348.0 = 1 administrator;  HUX1348.1 = 1 group 0 permission;  HUX1348.2 = 1 group 1 permission;  (Total group 0 - group 10)
	HUW1000	Word Switch (Input 6)	Add user rights (set according to HUW1348)
User login mode setting	HUW1382	Word Switch/Numeric input object	0: Select a user name from the drop-down list  1: Use character input object (address HUW1014) to log in with a user name

When the user performs a function operation, the operation result is displayed in the HUW1001.

Value (HUW1001)	Meaning
1	Insufficient permissions.
2	Username does not exist.
3	Username already exists.
4	Wrong username or password.
5	Login successfully.
6	Passwords are inconsistent in twice time.
7	Password changed successfully.
8	User added successfully.
9	User deleted successfully.
10	Maximum number of users exceeded.
11	Admin user already exists.
12	User permission modified successfully.
13	File imported successfully.
14	File imported failed.
15	File exported successfully.
16	File exported failed.

17	Logout successfully.
18	Profile deleted successfully.
19	Log file deleted successfully.
20	Hide settings modified successfully.
21	Hide settings modified failed.
22	Password already occupied, please reset. (For both username and password, it can not repetition)

**#Note:**

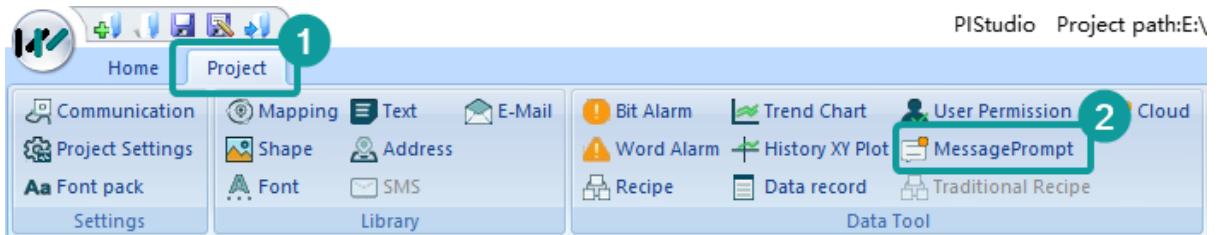
- \*1: If there is an admin user account, then the new user can no longer add one more admin, that is, one project can only have one administrator account.
- \*1: When adding new user, the password could not be duplicated with other users.
- \*2: When deleting user, it is forbidden to delete the admin user.

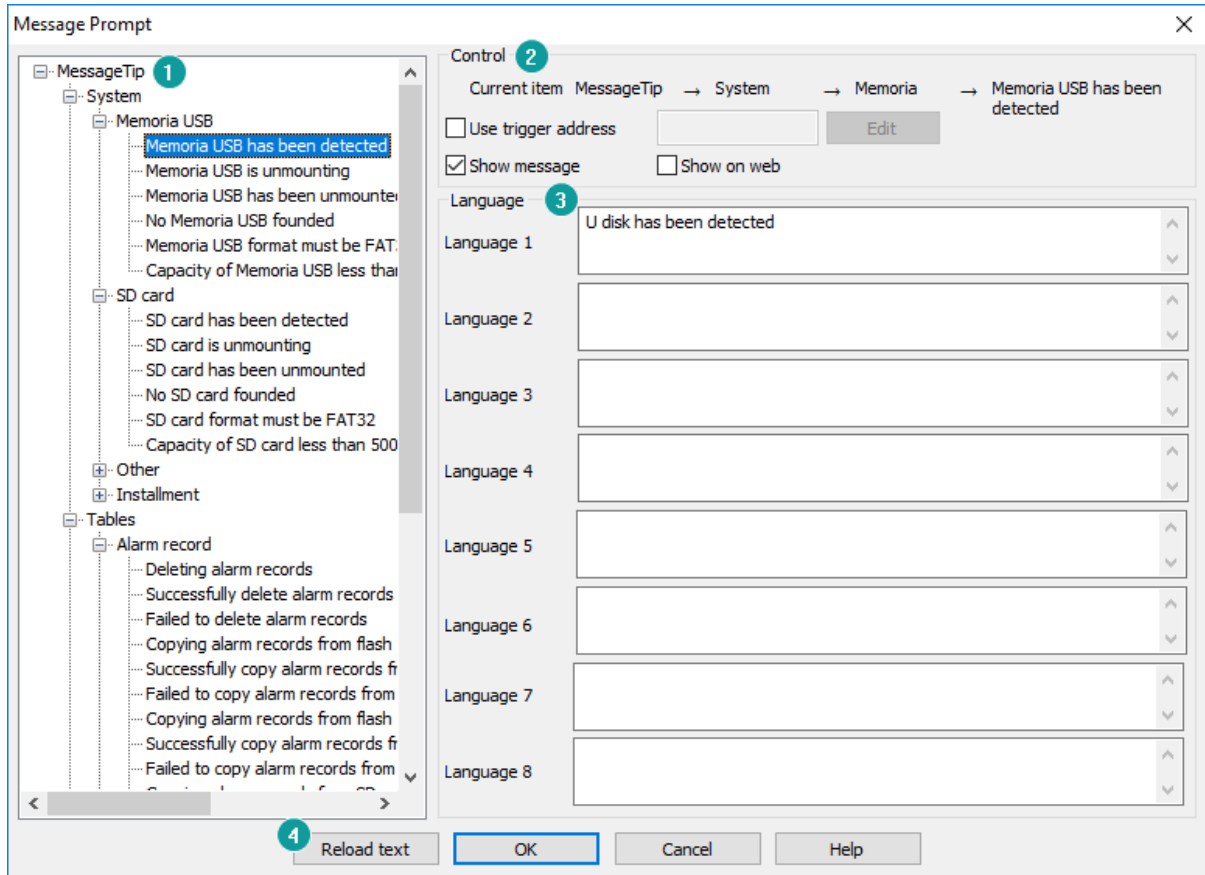
**User Permission Demo Download**

[https://drive.google.com/open?id=1qOiEDvo\\_1H1YqpoLDpS77dGaAFm8nrGq](https://drive.google.com/open?id=1qOiEDvo_1H1YqpoLDpS77dGaAFm8nrGq)

## Message Prompt

A message box is a window used to show some prompts or warnings to users. For example, the application process a task in the process of pop-up message box, suggesting that "U disk has been detected", then the customer can carry out data dump function.





**(1) Message**

It includes system classes (u disk, SD card, and others), chart classes (alarm, data record, recipe, file list), curve classes (Trend Chart, historical XY trend Plot).

**(2) Control**

- 1. **Current item:** It shows selected message information.
- 2. **Use trigger address:** When the message is triggered, the trigger address would be set ON.

**For Example:**

Trigger address is 011, during inserting a USB flash disk into HMI, and 011 would be set ON, once HMI recognizes USB flash disk, and display message.

- 1. **Show message:** Check it to display message when HMI is running. It is checked by default.
- 2. **Show on web:** Check it to display message when remote access HMI screen, it is unchecked by default.

**(3) Message Content**

Each message has default content, but you could set different content according to the actual situation. And the same message could be displayed in 8 languages.

**(4) Reload Text:** It means discard changes.

**For Example**

User deletes default content or modifies default content, but he wants to give up modification back to original, just click "Reload text".


#### #Note:

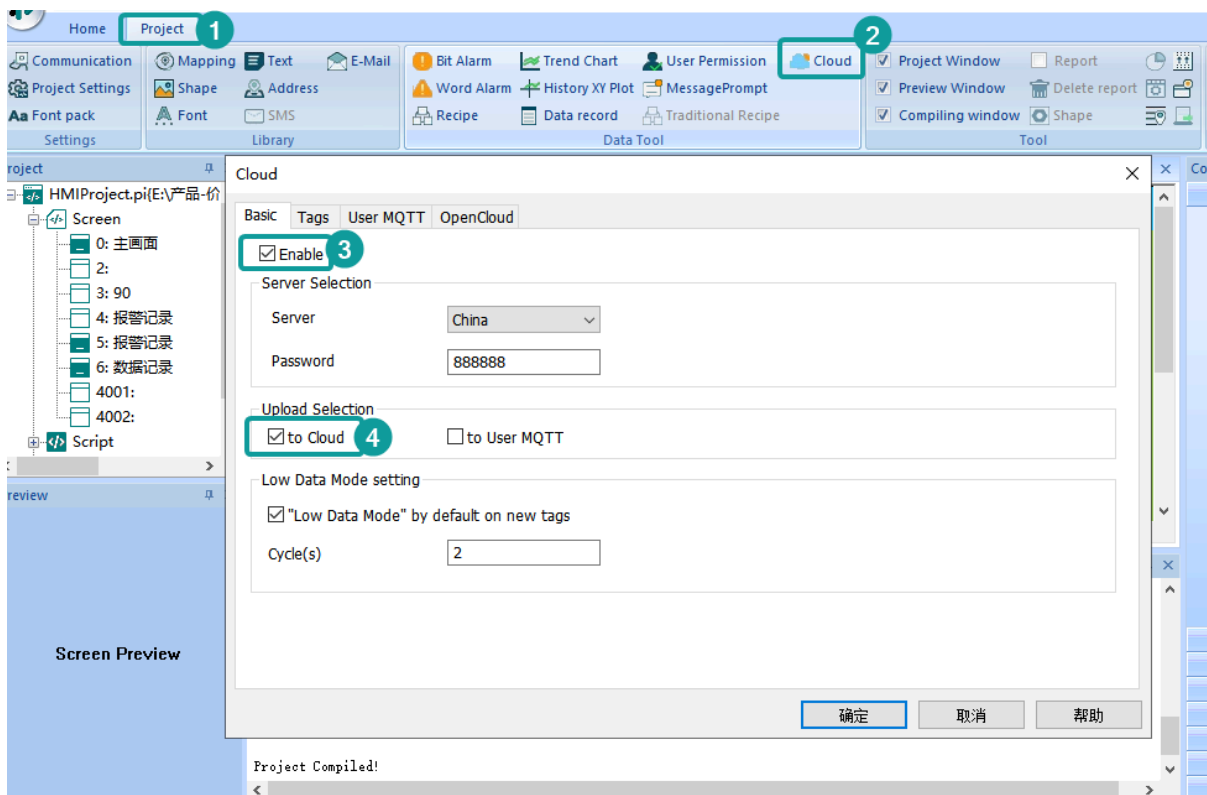
- If you do not want this prompt during the running of HMI, please uncheck "Show message".
- "Reload text" function would be invalid after clicking "save".
- These 5 special characters are not supported in the header Multilanguage settings: ",", "|", "<", ">", "&".

## Cloud (Only ig series)

### Introduction

You may configure the basic settings of Cloud functions, tags, and User MQTT according to your needs. (If the device supports the Cloud function, you can use the function and configure the tags after checking the box to enable it, or upload the data to the 3rd party server.)

Click "Project"->  "Cloud" in the upper left corner of the software, as shown in the following figure.



#### (1) Enable

If the HMI supports Cloud, select "enable" and "to cloud", then it will upload the real-time data sampled by the HMI to the cloud. The number of tags is limited, the specific parameters are as follows.

1. In Cloud, the monitoring tags upload to the cloud in real time is limited to 100.
2. The total number of data upload to the Cloud for the Alarm records of word alarms and bit alarms is limited to 20. (See "[Alarm](#)" for details).
3. The total number of data upload to the Cloud for Data record is limited to 50. (For details, please refer to "[Data Record](#)").

## (2) Server Selection

**Server:** China, ASEAN, and Europe.

### Password:

1. If the HMI is not bound, this access password will be updated and downloaded into the HMI screen simultaneously.
2. If the HMI is bound, this access password in the project cannot effectively change the binding password of the device, and it can only be changed through V-NET.

## (3) Upload Selection:

To upload the data collected by HMI to the cloud or a to the third-party server, only one upload method can be selected.

1. **to Cloud:** All the configured tags, data records, and alarm records would be pushed to V-NET.
2. **to User MQTT:** All the configured tags, data records, and alarm records would be pushed to to the third-party server, and the relevant Lua function calls please refer to "[Cloud interface](#)".

After the "to User MQTT" is checked. The tags, data records, and alarms cannot be viewed on V-NET, but the device can be bound to V-NET and remote monitoring the device screen normally.


## 4) Low Data Mode setting

1. When you check the "low Data Mod" by default on new tags, the newly added tags will be enabled in Low Data Mode by default.
2. The longer the refresh interval, the slower the data upload, and the more traffic data will be saved. This function is only used for the control of tags.

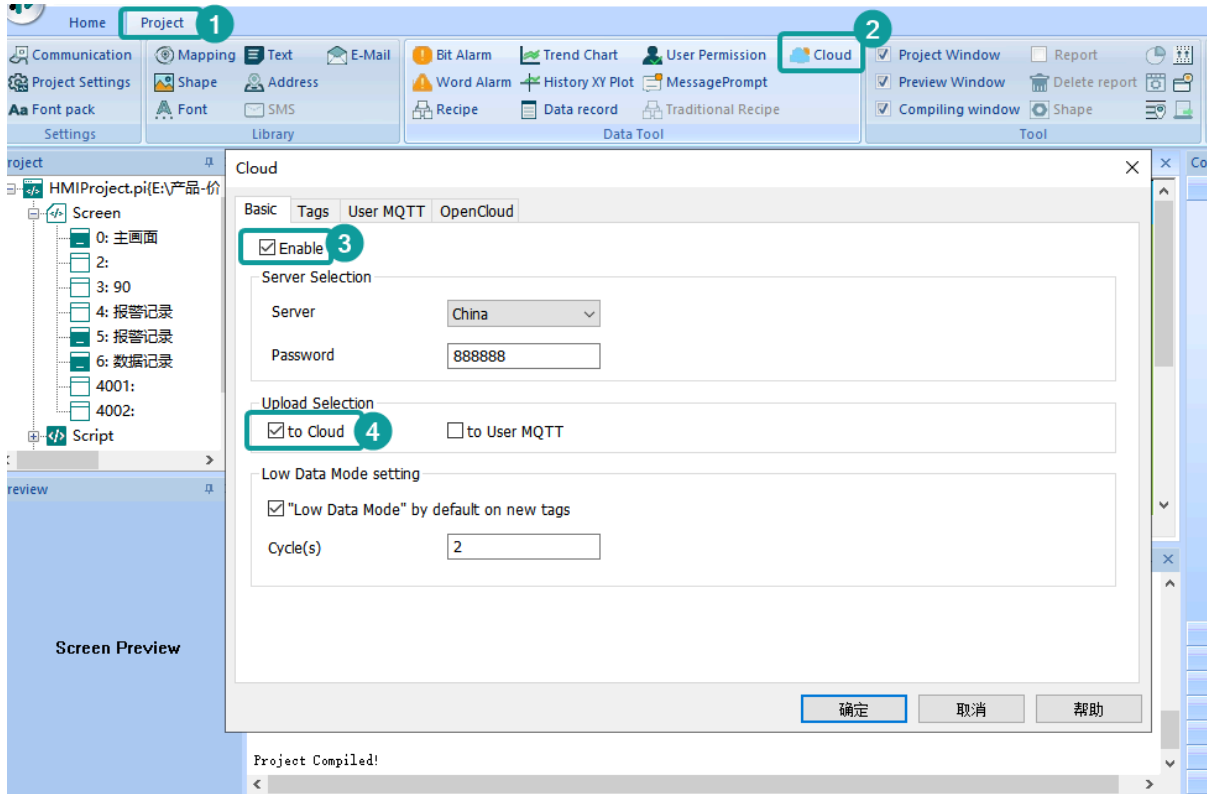
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