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## **04 Library**

last modified by Joey

on 2022/06/16 11:54

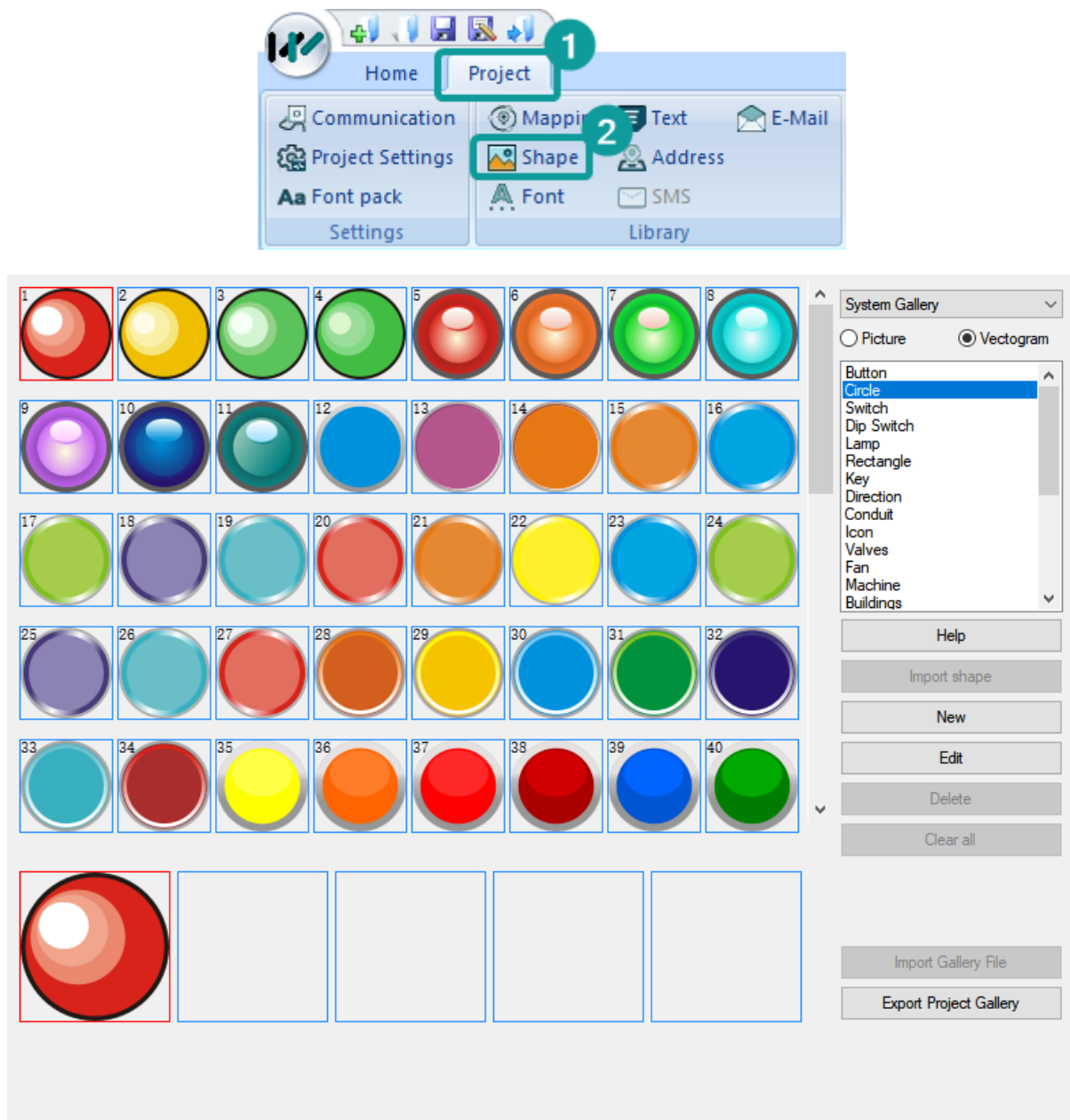
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# Shape

It is used for storing bitmaps. The source of bitmaps are: system bitmap library and imported bitmaps.



You could view all the bitmaps in the library, and import or export them according to your own needs. You can also create multi-state bitmaps.

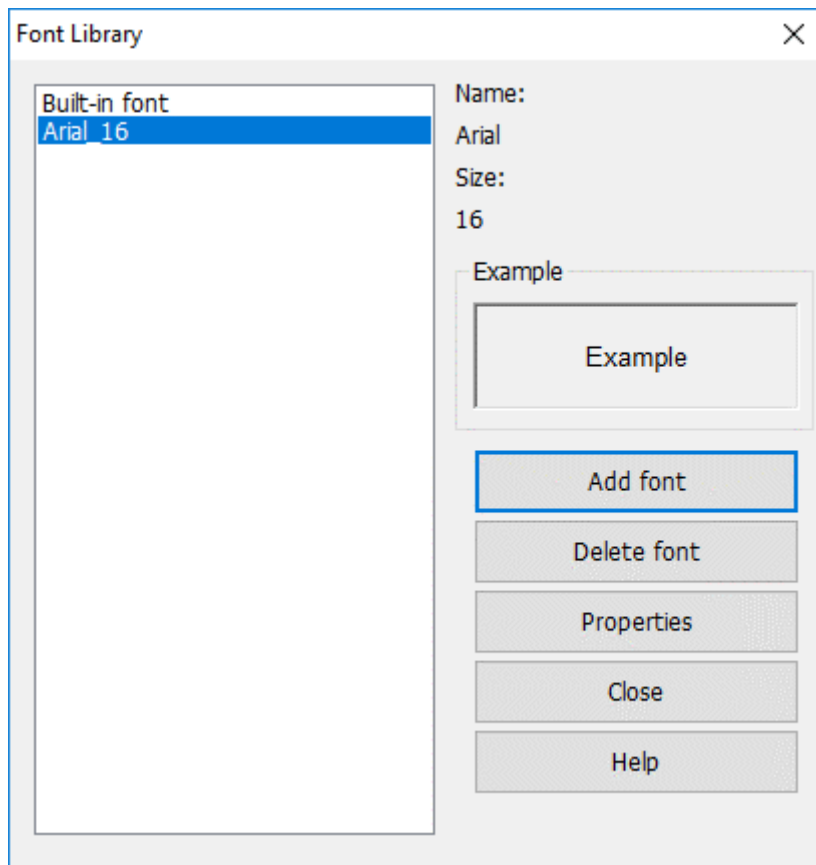
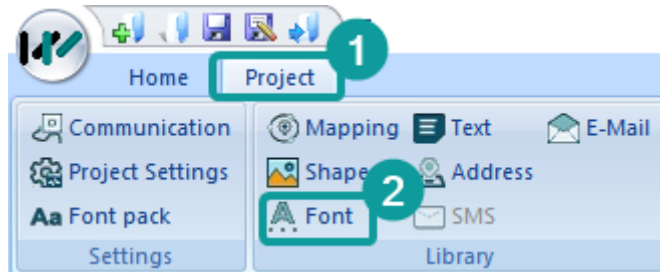
There are four kinds of galleries as follows.

1. **Project gallery:** The bitmaps added in the project and the bitmaps applied in the project are displayed in the project gallery.
  - Rename: You could click one bitmap to rename. Bitmap names can be a combination of Chinese characters, numbers, and letters (case sensitive), but no special characters. The length of it cannot exceed 18 characters.
  - When you place the mouse on the display area of bitmap, its name and resolution would be displayed.
  - You can export the current project bitmap file, import the file in another project, and call it in the new project.

1. **System gallery:** The software system gallery, including pictures and vector diagrams (svg picture).
2. **Gallery file:** You can import the corresponding picture file from and call it in the project library.
  - You could import library files with suffixes "aa. pLb" and "aa. bLb".
  - Select one bitmap, right click to perform three operations: Use library, Delete library, and rename library (F2).
1. **Extended gallery:** The image applied in the screen style can be found in the extended gallery.

## Font

You could pre-set the font and directly call the settings in the font library when editing the project.

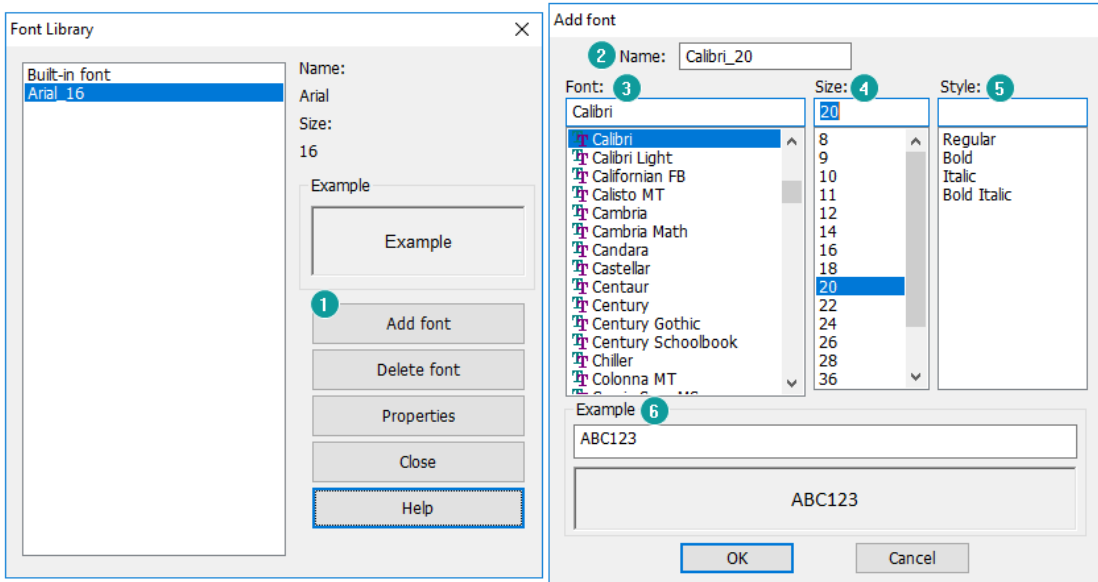


Items	Description
Add font	Add a new font in library
Delete font	Delete selected font
Properties	Edit selected font
Close	Close current setting window

Help

Click it to open help document

**Operating procedures of create font**

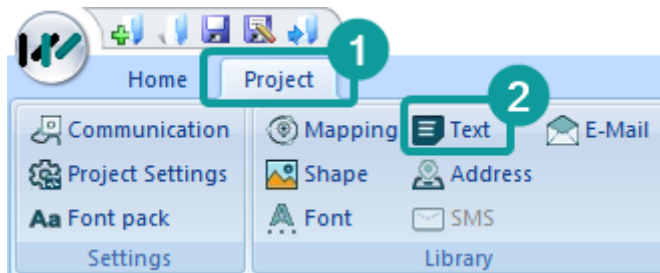


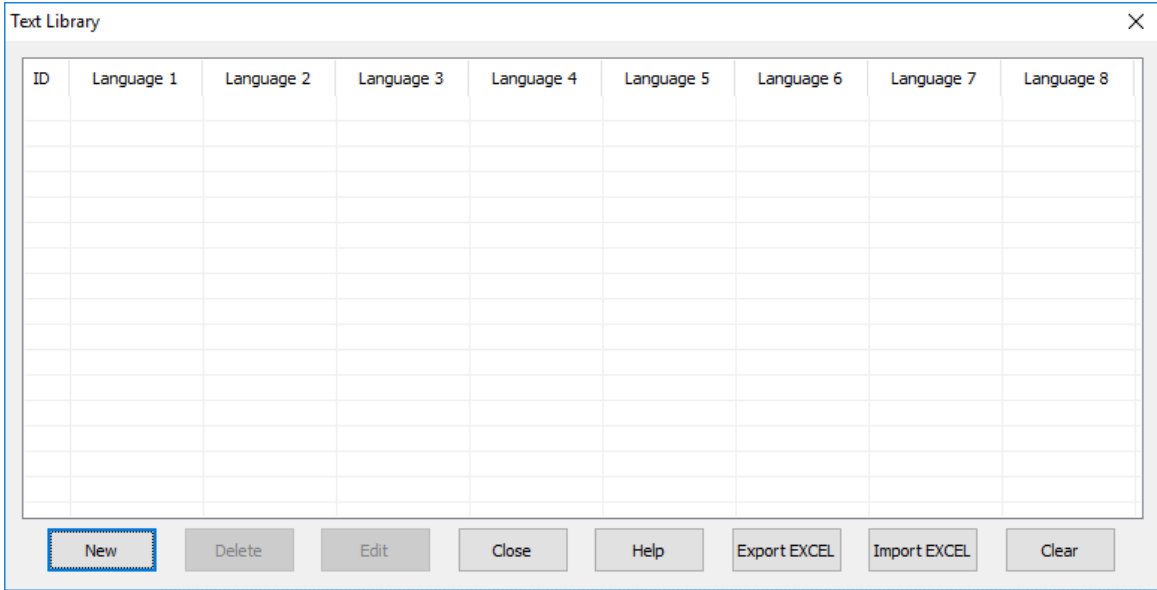
1. Click [Add font] to open setting window.
2. Enter font name.
3. Select font.
4. Select font size.
5. Select font style.
6. Preview font.

## Text

Text library contains commonly used text. It avoids setting the text repeatedly. HMI provides up to 8 languages in text library.

Click "Project"->"Text" to open the setting window.





Items	Description
ID	The identifier of the text in the list
Languages	One text can be set in 8 languages
New	Add an new text in list
Delete	Delete selected text
Edit	Edit select text
Close	Close text library list
Help	Open help document
Export EXCEL	Export text library to PC as excel file
Import EXCEL	Import text library from excel file
Clear	Delete all texts in list

**Operating procedures of creating new text**

1. Click "New" button to open setting windows as below.
2. Set at least one language and support up to 8 languages.
3. Click "Save" to complete operations.

Language	Character Count	Text
Language 1	5 characters	Hello
Language 2	2 characters	你好
Language 3	6 characters	привет
Language 4	5 characters	Hallo
Language 5	7 characters	Bonjour
Language 6	4 characters	Hola
Language 7	3 characters	Olá
Language 8	6 characters	안녕하세요,

**#Note:**

Text library: Supports importing edited Excel files into projects for use. However, the following two points need to be noted:

1. When importing an Excel file, if the contents of language one to language eight in ID (ID) information is all empty, the information of the subsequent ID will not be imported.
2. When importing Excel files, if there is pure digital content in the imported information, you need to set the format of the table box to "text" mode. Otherwise, the text import fails or an error occurs due to incorrect information format.

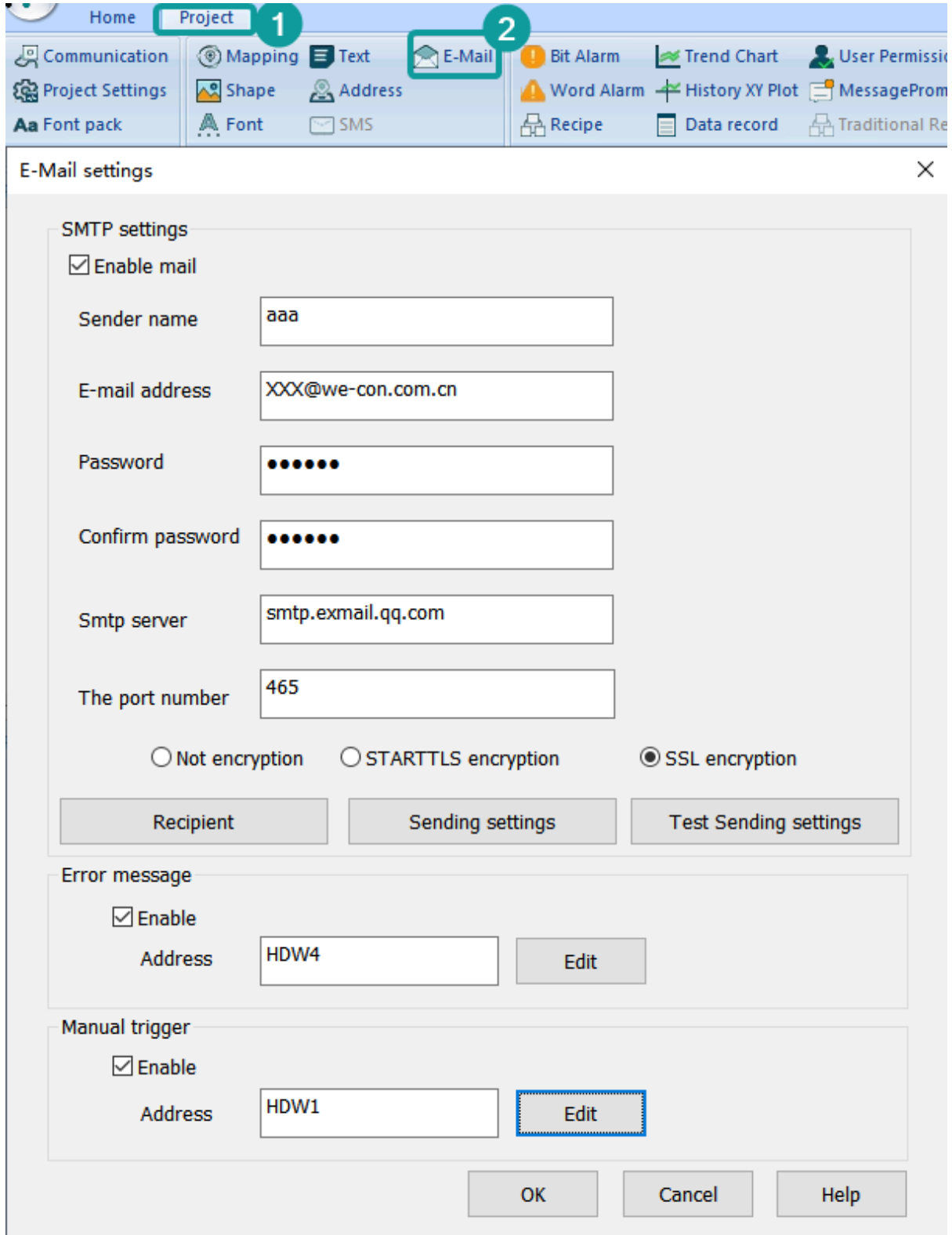
**Introduction**

Wecon HMI can send email with information from fields to the specified email address as soon as the conditions is triggered, but email sending is based on the network.

## Email

### Email setting

In "PIStudio" software, click "Project"-> "E-mail" to open email function setting screen.



(1) SMTP Settings





- the settings of SMTP server are incorrect
- The range of SMTP server ports number should be integer, which is between 1 and 65535.
- The type of encryption for SMTP is incorrect
- The name of sender or email address setting is incorrect.
- The names of Recipients or email address setting are incorrect.
- The names of CC recipients or email address setting are incorrect.
- The names of Secret delivery recipients or email address setting are incorrect.
- Email topic could not be blank
- Email content could not be blank
- Total size of attachments should be below 25M
- Attachment "xxxx" is nonexistent

Server's errors are as follows.

**Message**

- smtp-server: 554 DT: SPM
- smtp-server: 550 RP: TRC
- smtp-server: 550 Limitation of connecting counts
- smtp-server: 535
- smtp-server: 550 Error: Content rejected
- smtp-server: 451 Internal server error
- smtp-server: 535 Invalid login user or password
- smtp-server: 550 too many sending requests today
- smtp-server: 452 Too many recipients received this hour.
- smtp-server: 535 Error: Authentication failed, system busy
- could not connect: Connection timed out
- Unexpected EOF on SMTP connection
- could not initiate SSL/TLS connection
- smtp-server: 530 Need to issue a STARTTLS command first.
- could not resolve host
- could not connect: Connection timed out
- could not connect: Connection refused
- smtp-server: 550 User not found: aaa.163.com

**9) Manual Trigger**

It is for modifying the email sending settings when HMI is running. According to the set manual trigger address, the address is offset backward to get the address of the corresponding function (a total of 201 words). Take HDW100 as an example.

Address	Description
HDX100.0	Sending trigger
HDX101.0 to HDX101.15	It is used for triggering recipient groups, for example, HDW101.0 set ON, and the address in group 1 will be in recipient list.
HDX103.0 to HDX103.15	It is used for triggering recipient groups, for example, HDW103.0 set ON, and the address in group 1 will be in CC list.
HDX105.0 to HDX105.15	It is used for triggering recipient groups, for example, HDW105.0 set ON, and the address in group 1 will be in BCC list (Secret delivery).

HDW107 to HDW171

The subject length is limited to 64 words. (If it exceeds, it will intercept 64 words of content)

HDW172 to HDW300

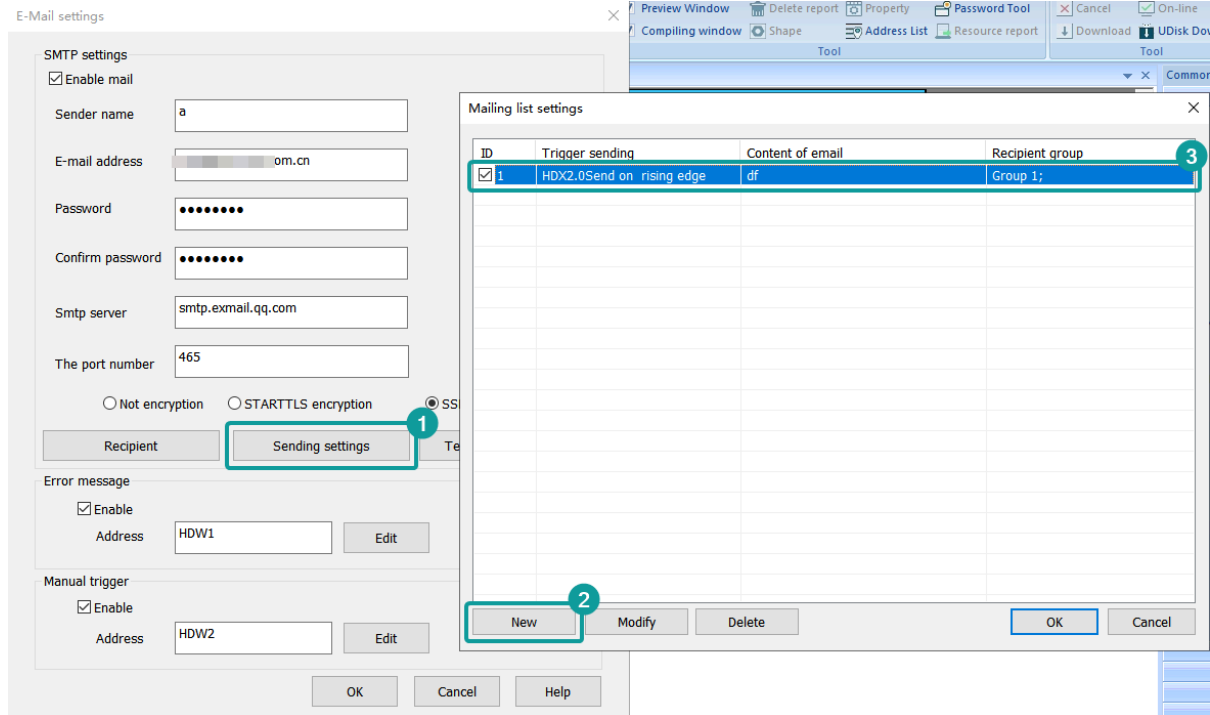
The content length is limited to 128 words. (If it exceeds, it will intercept 128 words of content)

HDX301.0

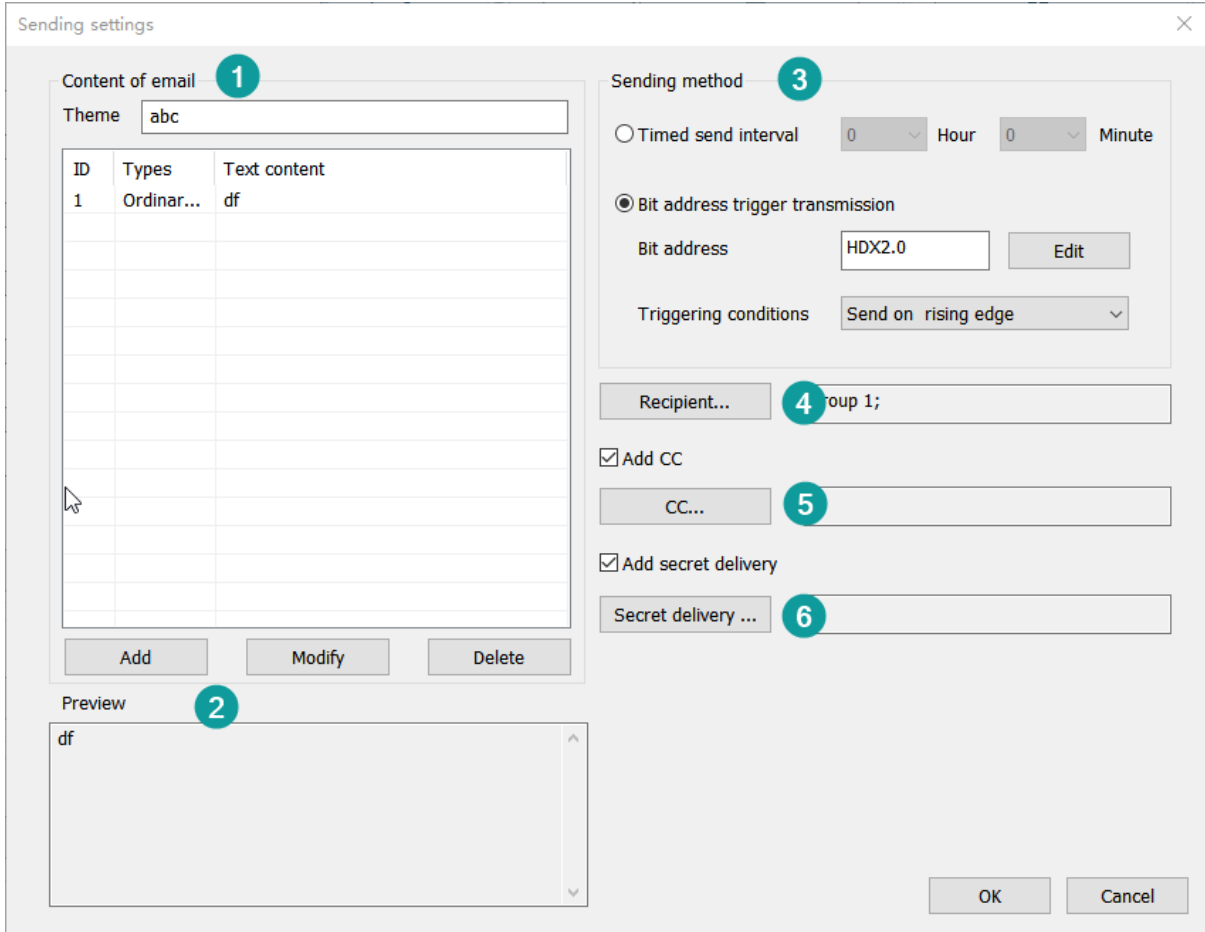
Whether to send an alarm record attachment (a file named AlarmDataFile.db)

1. Emails that sent manually are not queued. Emails trigger by bit change, rising edge, falling edge and timing need to be sent in the sequence of triggering. The maximum value is 100, and those who are added after it is exceeded will be discarded. If an email is sending, it would send immediately after the current email is sent. If there is no email sending, it would send immediately.
2. If the trigger condition sent manually is the rising edge trigger, before the mail is sent, no new mail will be sent even if it is triggered again. No matter the email is sent successfully or not, the corresponding trigger would be OFF.
3. Emails that sent manually would only be sent once no matter the sending error is custom error, network or other errors.

## Email sending settings



1. **Add.** A maximum of 1024 email can be added.
2. **Modify.** Select an email to modify the content and configuration.
3. **Delete.** You could select an email to delete or click the "ID" column to delete in batch.



**(1) Email sending configuration.**

**1) Theme.** The value cannot be empty and case sensitive. The total length cannot exceed 256 characters.

**2) Content of email.** The contents are divided into three combinations: text, alarm and variable. The list can contain only 32 items at most, and the total length of the preview cannot exceed 1024 items.

- **Text.** You could directly edit the text of language 1 to language 3. If you need to set multiple languages, click "edit all text" to set. You may also select "Text library". The content is case sensitive, and the total length of English/Chinese characters/numbers/symbols does not exceed 253.
- **Alarm.** You could select "bit alarm" or "word alarm" from the list. The content is from alarm text. if the alarm changes, the content changes with it. The content is case sensitive, and the total length of English/Chinese characters/numbers/symbols does not exceed 253.
- **Variable.** Set the corresponding variable address. Read value or strings according to the specified format, and the read information will be displayed in the corresponding position in the mail content.

**3) Preview.** Combine the content of current edited email and display it for you to modify the content conveniently. The preview length cannot exceed 1024.

**4) Sending method.** It is divided into timed send interval and bit address trigger transmission. The two methods cannot be used at the same time.

- **timed send interval.** After booting, the current system time is used to start calculating, and each time the time is up, the information will be sent to the set recipient in the form of an email, and the minimum time should be set to 5 minutes. **Note:** The first boot is not sent.
- **Bit address trigger transmission.** When the set trigger address meets the trigger condition, the information will be sent to the set recipient in the form of an email. If the content select alarm, the alarm address would be

written in the trigger address. There are three methods to trigger: sending on rising edge, sending on falling edge and send when the bit changes.

**5) Recipient.** It is set in groups. You could send multiple groups, and each group can have multiple recipients.

**6) Add CC.** Sends the current email to other recipients.

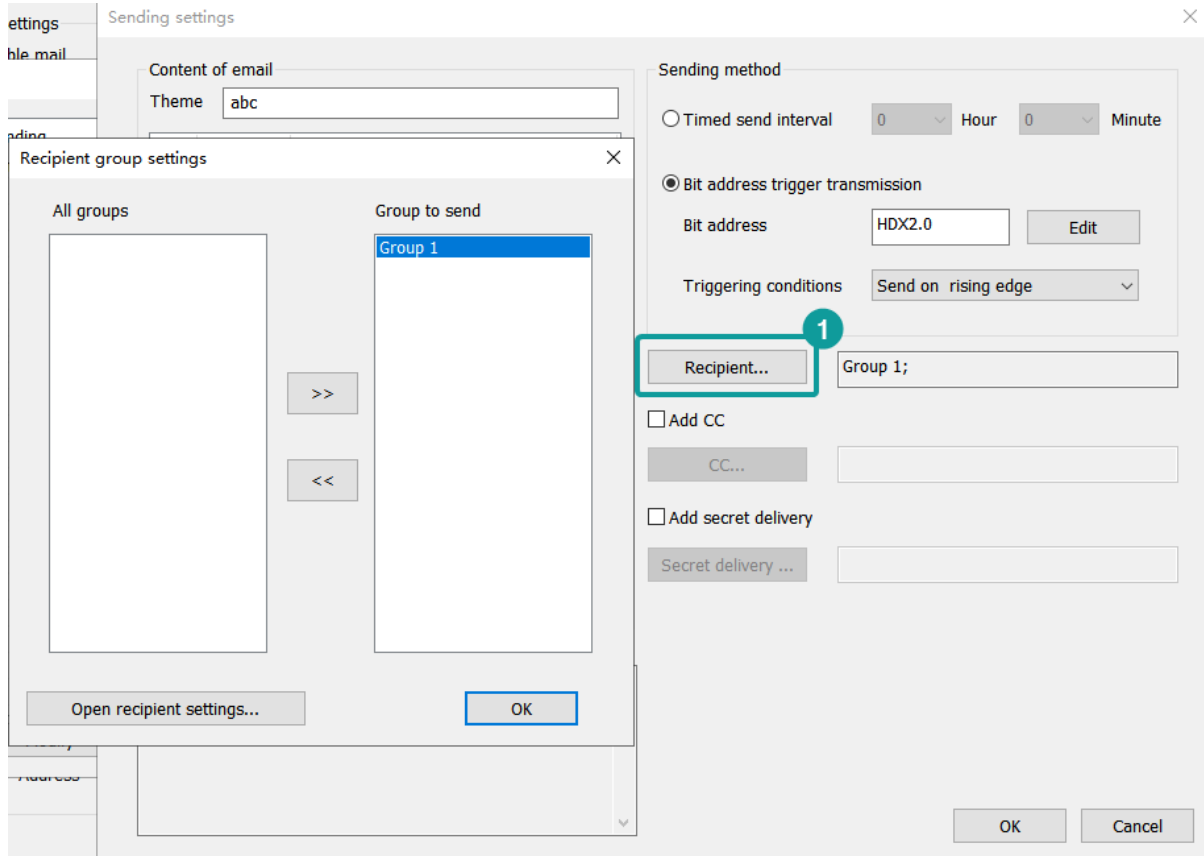
**7) Add secret delivery.** Sends the current email to other recipients, but the recipient and cc recipients do not see the BCC recipient.

when sending an email, you must set a recipient. CC recipients and BCC recipients are not to be set. The total number of recipient, CC recipients and BCC recipients is 40.

**8) Recipient priority.** Set the priority order of recipients to recipient, BCC, and CC.

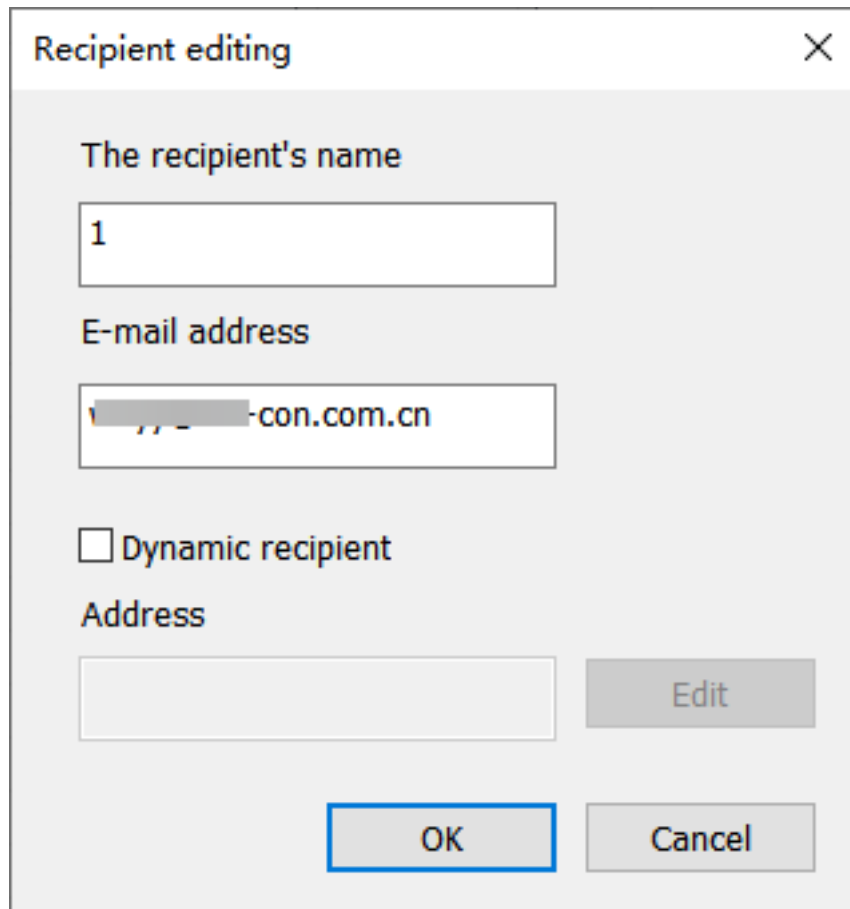
**#Note:** If the recipient address you select exists in all three positions, it exist only in the highest priority position. For example, if the recipient of an email has aaa, the bcc has aaa, and the cc has aaa, then let aaa only be the recipient.

## Recipient group setting



1. **All Group.** The groups you added.
2. **Group to send.** The groups that you send the emails to.
3. **Open recipient settings.** Set the information of recipients, and add and subtract groups.



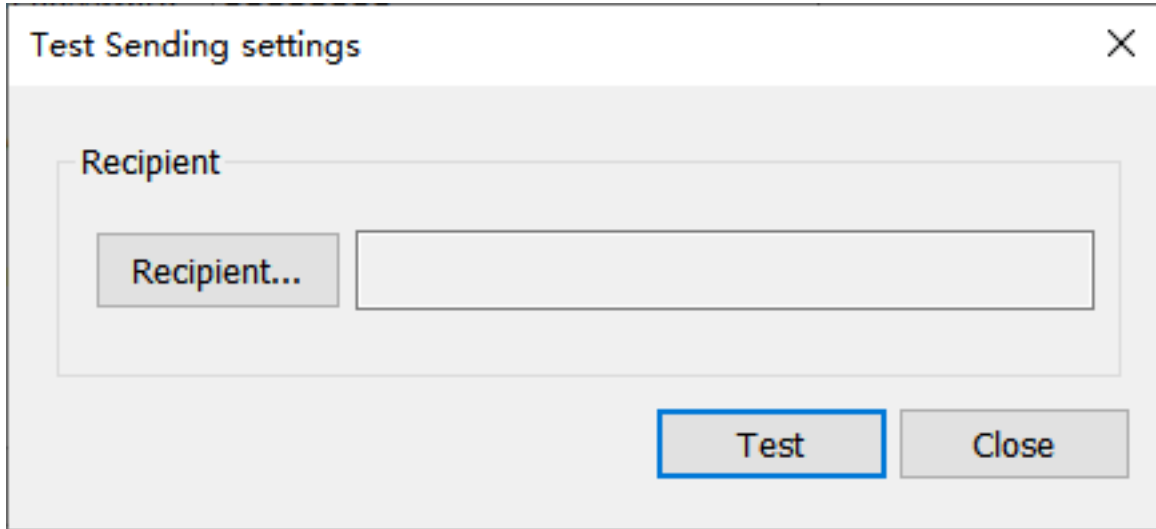


The dialog box is titled "Recipient editing" and has a close button (X) in the top right corner. It contains the following fields and controls:

- The recipient's name:** A text input field containing the number "1".
- E-mail address:** A text input field containing a partially redacted email address ending in "-con.com.cn".
- Dynamic recipient:** A checkbox that is currently unchecked.
- Address:** A text input field that is currently empty.
- Edit:** A button located to the right of the "Address" field.
- OK:** A button at the bottom center, highlighted with a blue border.
- Cancel:** A button at the bottom right.

1. **Modify.** Select one recipient and click "modify" or double click the recipient to modify. If it is non-dynamic recipient, you could modify the name and email address. The email is unique. If it is dynamic recipient, you could modify the address, and the address is unique.
2. **Delete.** Select one recipient or multiple recipients to delete, or click the ID column to select all.
3. **Nuber of group.** You could click the up/down arrow to increase or devrease groups. The default number is 1. The maximum number is 16.
4. **Description.** To decribe the group information. The total length shall not exceed 32.

## Test sending settings



**#Note:**

- You can open this after the SMTP server is set.
- When NetEase mail (126, 163 and yeah) occurs errors 554, it may be that the mailbox used is restricted by the anti-spam mechanism, and the performance may be that it cannot send emails in bulk or directly.
- When TOM mail is sender's mail, the name of it and the recipient tested must be English, otherwise the email would be returned.
- When testing with Zoho mailbox, there was a delay of less than 3 minutes.
- The custom errors for the test error is as follows.

Error code	Cause of reason
0	CSMTP_NO_ERROR
100	WSA_STARTUP = Unable to initialize winsock2
101	WSA_VER = Wrong version of the winsock2
102	WSA_SEND = Function send() failed
103	WSA_RECV = Function recv() failed
104	WSA_CONNECT = Function connect failed
105	WSA_GETHOSTBY_NAME_ADDR = Unable to determine remote server
106	WSA_INVALID_SOCKET = Invalid winsock2 socket
107	WSA_HOSTNAME = Function hostname() failed
108	WSA_IOCTL_SOCKET = Function ioctlsocket() failed
109	WSA_SELECT
110	BAD_IPV4_ADDR = Improper IPv4 address
200	UNDEF_MSG_HEADER = Undefined message header
201	UNDEF_MAIL_FROM = Undefined mail sender
202	UNDEF_SUBJECT = Undefined message subject
203	UNDEF_RECIPIENTS = Undefined recipient
204	UNDEF_RECIPIENT_MAIL = Undefined mail recipient
205	UNDEF_LOGIN = Undefined user login
206	UNDEF_PASSWORD = Undefined user password
207	BAD_LOGIN_PASSWORD = Invalid user login or password



208	BAD_DIGEST_RESPONSE = Server returned a bad digest MD5 response
209	BAD_SERVER_NAME = Unable to determine server name for digest MD5 response
300	COMMAND_MAIL_FROM = Server returned error after sending MAIL FROM
301	COMMAND_EHLO = Server returned error after sending EHLO
302	COMMAND_AUTH_PLAIN = Server returned error after sending AUTH PLAIN
303	COMMAND_AUTH_LOGIN = Server returned error after sending AUTH LOGIN
304	COMMAND_AUTH_CRAMMD5 = Server returned error after sending AUTH CRAM-MD5
305	COMMAND_AUTH_DIGESTMD5 = Server returned error after sending AUTH DIGEST-MD5
306	COMMAND_DIGESTMD5 = Server returned error after sending MD5 DIGEST
307	COMMAND_DATA = Server returned error after sending DATA
308	COMMAND_QUIT = Server returned error after sending QUIT
309	COMMAND_RCPT_TO = Server returned error after sending RCPT TO
310	MSG_BODY_ERROR = Error in message body (邮件正文中出现错误)
400	CONNECTION_CLOSED = Server has closed the connection
401	SERVER_NOT_READY = Server is not ready
402	SERVER_NOT_RESPONDING = Server not responding
403	SELECT_TIMEOUT
404	FILE_NOT_EXIST = File not exist
405	MSG_TOO_BIG = Message is too big
406	BAD_LOGIN_PASS = Bad login or password
407	UNDEF_XYZ_RESPONSE = Undefined xyz SMTP response
408	LACK_OF_MEMORY = Lack of memory
409	TIME_ERROR = time() error
410	RECVBUF_IS_EMPTY = RecvBuf is empty
411	SENDBUF_IS_EMPTY = SendBuf is empty
412	OUT_OF_MSG_RANGE = Specified line number is out of message size
413	COMMAND_EHLO_STARTTLS = Server returned error after sending STARTTLS
414	SSL_PROBLEM = SSL problem
415	SSL_PROBLEM = SSL problem
416	STARTTLS_NOT_SUPPORTED = The STARTTLS command is not supported by the server
417	LOGIN_NOT_SUPPORTED = AUTH LOGIN is not supported by the server

## Email status

### (1) Network disconnection error

If the fault is determined as a network disconnection error, the system does not delete the sent information and does not record the number of errors, and it would make an infinite send attempt.

**(2) Custom rule error**

If the fault is determined as a custom rule error, delete the information.

**(3) Server return error**

If the fault is determined as a server return error, then the error time add 1. It would try to send the email for 3 times. Regardless of whether the transmission is successful or not, it would delete the email to be sent. The test results are as follows.

Server name	The number of sent	Consequences of exceeding the limit
126	160	No more delivery on that day
163	160	No more delivery on that day
we-con	800	No more delivery on that day
qq	50	It can be sent again after a few minutes or a few hours
sohu	160	No more delivery on that day
sina	50	It can be sent again after a few minutes or a few hours, but cannot be received normally
gmail	500	No more delivery on that day

**(4) Message Prompt**

1. If the email to be sent is deleted, a message will pop up.
2. If the email is sent successfully, a message will pop up: "The email is sent successfully."
3. If the five symbols ',', '|', '<', '>' and '&' appear in the fields set by the message prompt, the message prompt will display an abnormal message.

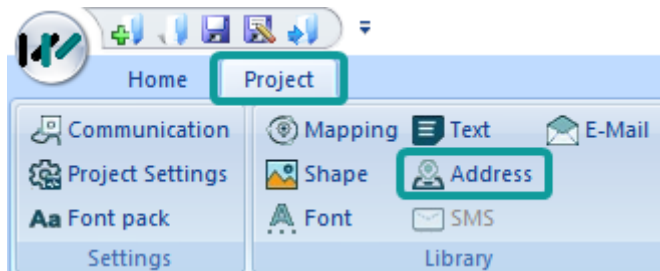
**(5) Mail attachment**

Currently, the email attachment function only supports sending the specified alarm record (AlarmDataFile.db file), and does not support selecting content to send.

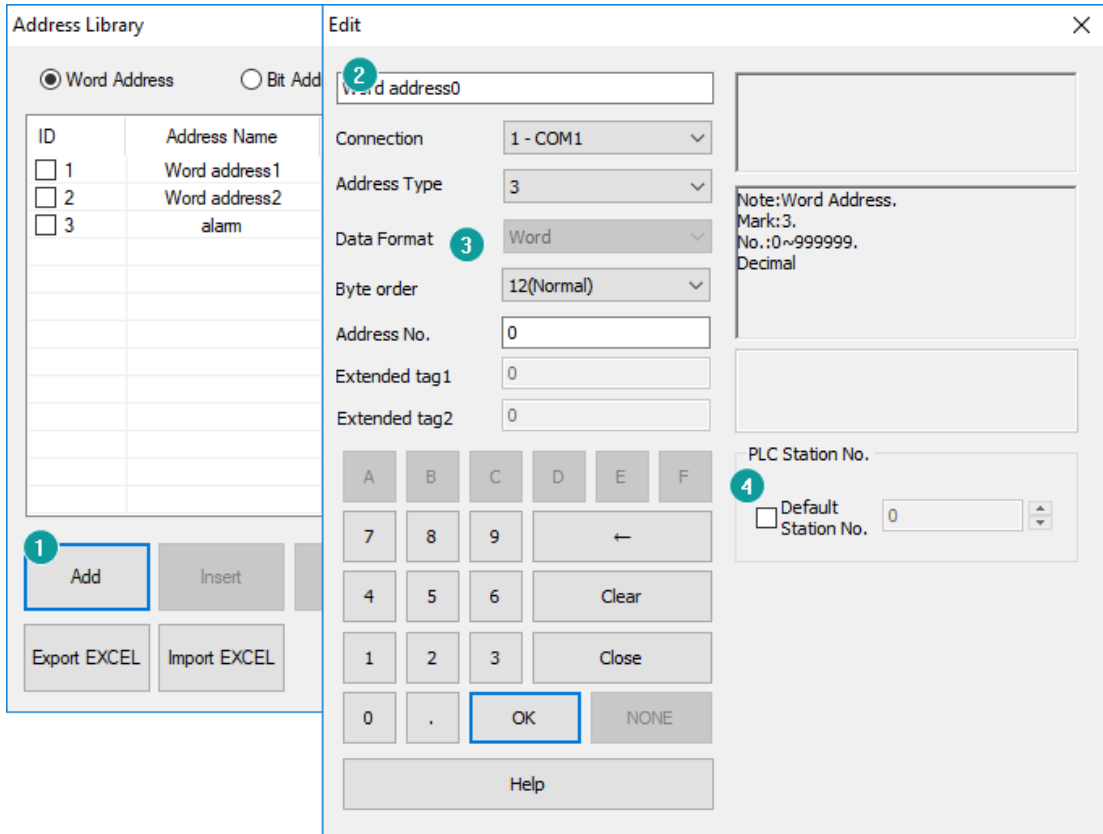
# Address

Address library contains commonly used addresses. It not only avoids setting the addresses repeatedly but also expresses the function of an address more clearly.

Click "Project"->"Address" to open the setting window.







1. Click "Add" to open address edit window.
2. Set "Address name".
3. Set address.
4. Set PLC station number (It is not necessary setting, the user sets according to the actual situation).

**#Note:**

Address Library: it supports importing addresses information from Excel files. However, the following two points need to be noted:

1. When importing an Excel file, if the contents of a certain Name, Type, and Address are all empty, the information of the subsequent ID will not be imported.
2. When importing Excel files, if there is pure digital content in the imported information, you need to set the format of the table box to "text" mode. Otherwise, the text import fails or an error occurs due to incorrect information format.

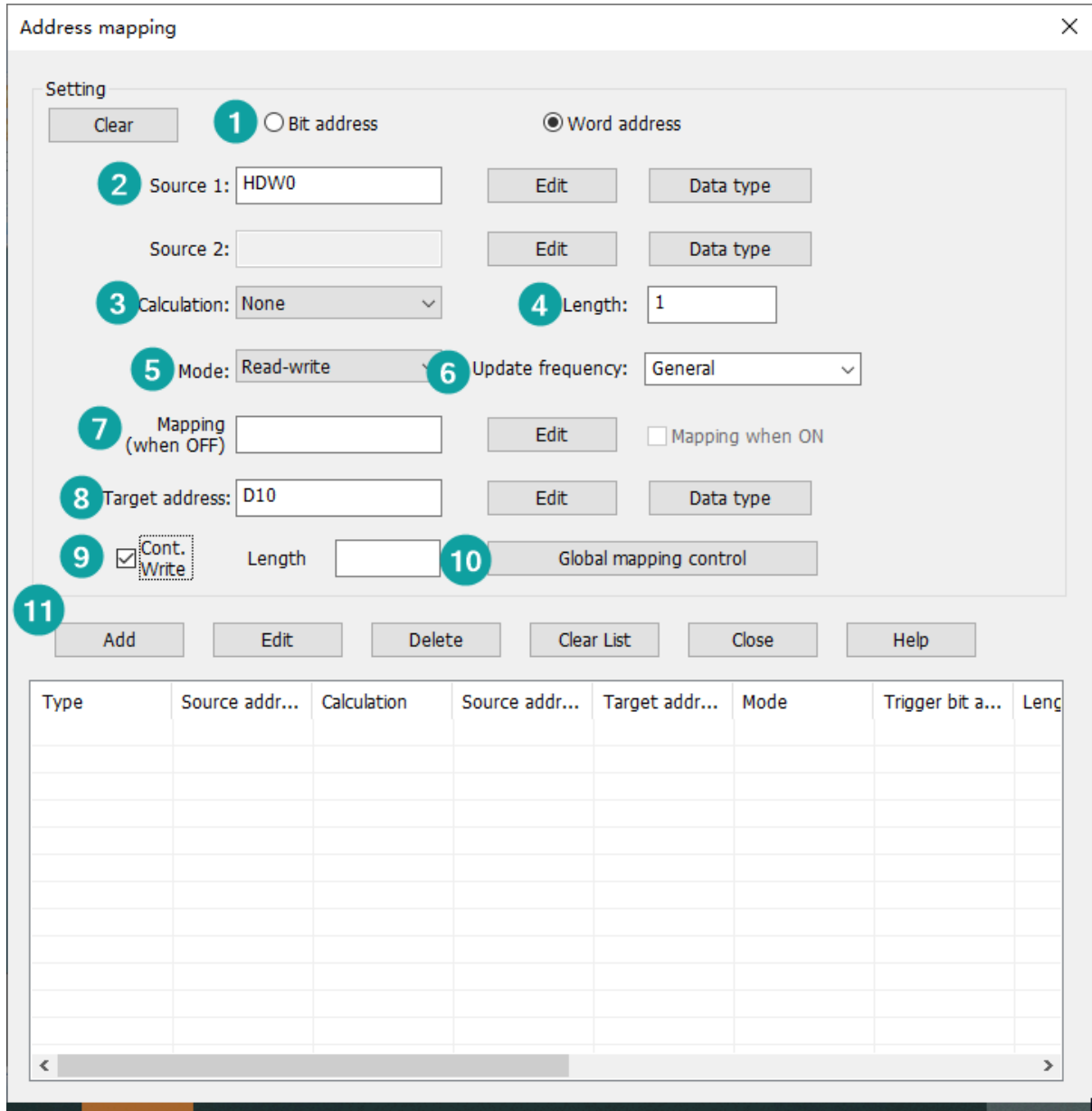
## Mapping

Address mapping is to build the relationship between two different addresses. Forwarding address from source address to target address, so the value in both addresses would be same according to the predefined mapping mode. Both addresses could be from different, in this way, to make HMI processing faster.

For example:

Forward "D0" to "HDW100" (length: 10), so the address D0, D1, ..., D9 would be related to HDW100, HDW101, ..., HDW109.

**Description**



**(1) Address type**

It is used for selecting address type in address mapping.

**(2) Source address**

The origin address that need to be mapped to other addresses. If there is calculation, 2 source addresses are required, and the result would be saved in "target address".

**Data type:** Only word address need to set data type. If it is the address of 32-bit register, check "32-bit register".

**(3) Calculation**

Designated mathematical relationship between two source addresses, the result will be saved in target address.

**(4) Length**

It is used to set the length of the operation address.

**For example**

Source address is D0, target address is 40, and length is 10.

**Result**

- 40=D0
- 41=D1
- ...
- 48=D8
- 49=D8

**(5) Mode**

It provides two modes, Read-write and read only. The value of source address would not change if target value changed after read only selected.

**(6) Update frequency**

It provides two modes, general and read-through.

**General:** Read data from HMI cache (Recommended)

**Read-Through:** Read data directly from the device without going through the HMI cache

**(7) Mapping**

This is control bit for mapping one item, the default mode is mapping when OFF; If user want to change control condition, please check [Mapping when ON];

**(8) Target address:**

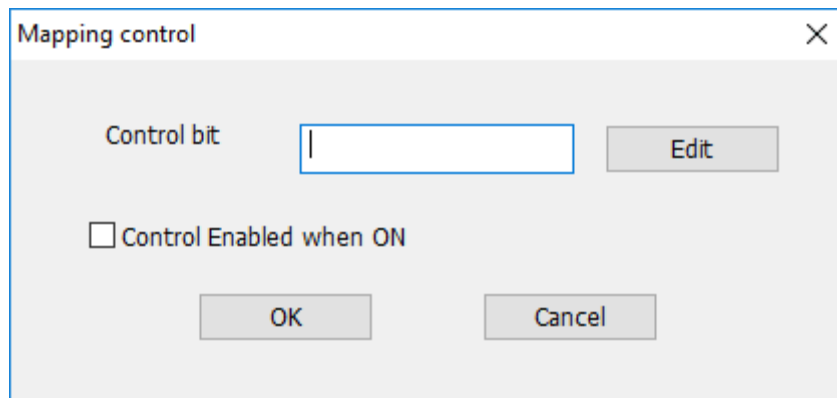
It is address used to store source address data;

**(9) Cont. Write:**

Write address length for single time, used for some special device addresses that need to be written continuously;

**(10) Global mapping control**

The function and mode are similar to [Mapping], but it is used to control all mapping items. The setting screen as below show;



**(11) Buttons**

- **Clear:** Delete all settings in settings, such as [Source address], [Length] and so on.
- **Add:** Create a new mapping item.
- **Edit:** Change selected item.

- **Delete:** Delete selected item.
- **Clear list:** Delete all mapping items in list.
- **Close:** Close address mapping window.
- **Help:** Click it to open help document.

### (12) Item List

It lists all address mapping items.

#### #Note:

- Too many [Read-Through] items will cause HMI running slow.
- If there are multiple consecutive addresses, please increase the length to reduce the mapping items

#### Function description

Address mapping is to map the source address to the destination address or the two source addresses are mapped to the destination address by some operation. The source and destination addresses can be PLC addresses or internal addresses or from different serial ports.

For example: Map D0 to HDW100, the map length is 10, then the value of D0 to D9 are mapped to HDW100 to HDW109.

There are two map methods: read and write and read-only.

1. **Read and write:** If the value of source address is changed, the value of the destination address changes accordingly. After the value of the destination address is changed, the value of the corresponding source address does not change. For some four operations or logical operations, they can only be selected in this way.
2. **Read-only:** If the value of source address is changed, the value of the destination address changes accordingly. After the value of the destination address is changed, the value of the corresponding source address changes too. For some four operations or logical operations, they can not be selected in this way.

There can be two sets of source addresses, and mapping the results to the destination address through operations (four operations or logical operations). For example: source address 1 is HDW100, source address 2 is HDW200, Map to destination address HDW300 by addition and the map length is 10.

- $HDW300=HDW100+HDW200$
- $HDW301=HDW101+HDW201$
- $HDW309=HDW109+HDW209$

You could use the bit address to control whether to enable the mapping function. There is one bit address for bits and one for words. Each mapping block also has a bit address. For bit address mapping and word address mapping, there are controlled by their own global bit addresses. Each mapping block relationship can also have its own control address, but the global control bit address has a high priority.

#### #Note:

1. Some of four operations do not have inverse operation such as trigonometric function, shift, remainder and so on. They can only be read-only.
  - For example: If HDW100 is divided by HDW200, and the value is mapping to HDW300. When the value of HDW300 changes, the value of HDW100 will not change. Because you can't calculate what the HDW100 value should be.
1. The maximum length of each mapping block is 65535.
2. If there is no bit address to control the mapping, the mapping is enabled by default. If you set the bit address, the mapping is disabled when the value of the bit address is 1 and it is enabled when the value of the bit address is 0. If you select "control on closed state", the result is opposite.
3. Update frequency refers to the update frequency of reading device data. The default is 0.
  - Normal read speed is 0, read through value is 1, fast read value is 2. There is no need to fill in the data type in address mapping. The selection of "32-bit register" is special for some PLC whose address interval is 1 in 32 bits. You don't have to choose it.