

10 Advanced Function

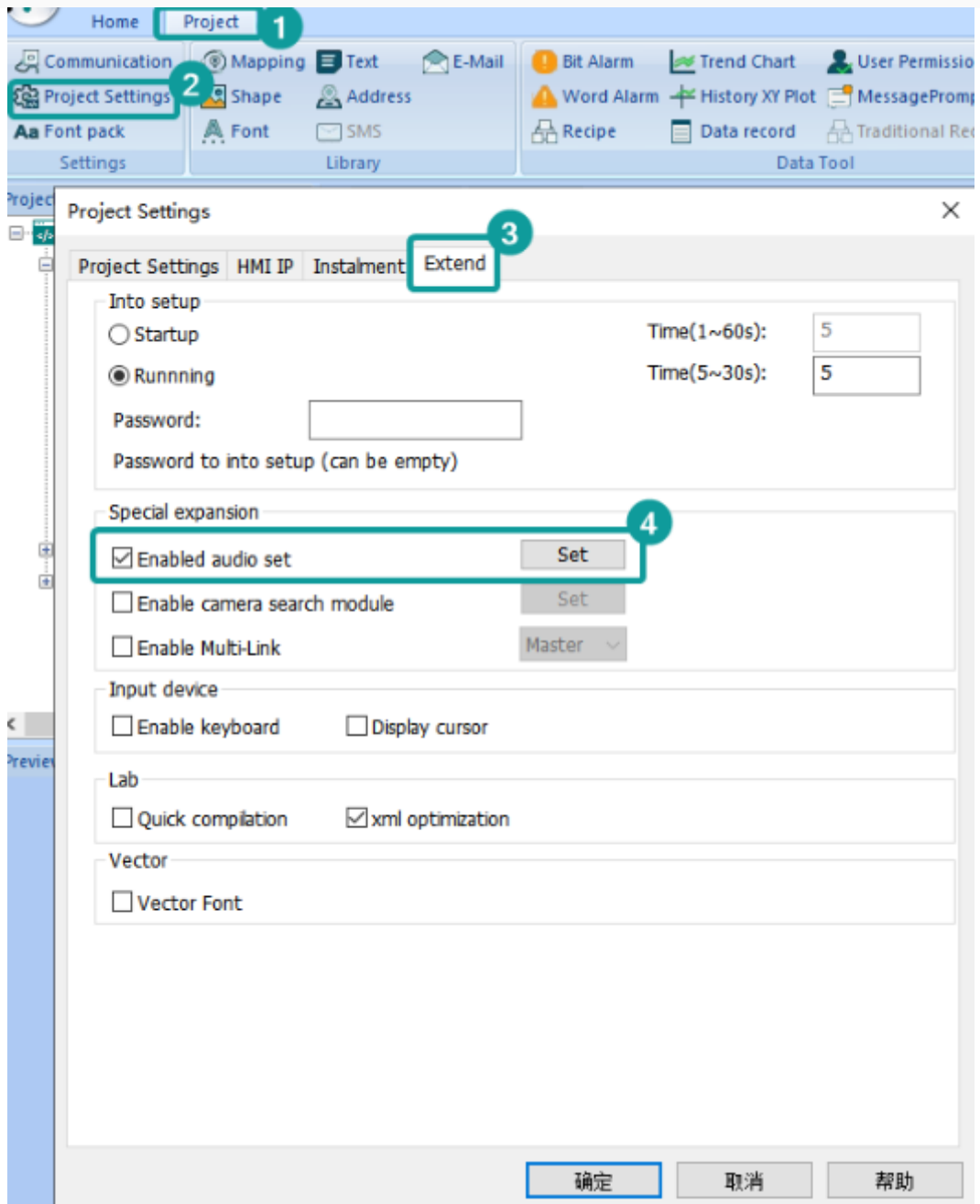
This chapter provides information about advanced functions in PISudio. **These advanced functions work only on special HMI models.**

Audio

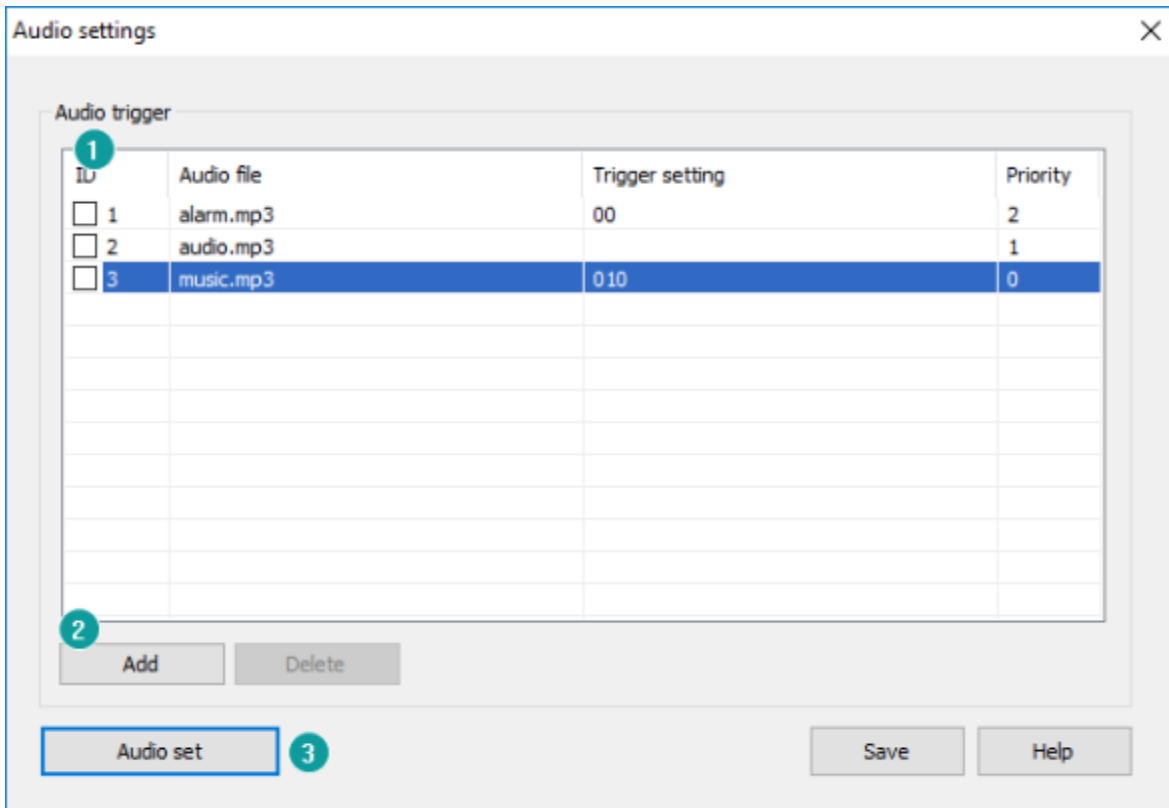
1. Audio playing could play audio on HMI. You need to configure the relevant information, triggered by the condition, broadcast the set the mp3 audio file. The audio file can only be stored in the flash mp3 file.
2. Only the 9000 Series HMIs with audio modules can use this feature, and an external 3.5mm headphone head is required.

Configuration

In PISudio software, the setting procedue is as follow.



Click "Set" to open "Audio settings" window.



- Audio list: Display the audio files you added. Double click the audio to configure it.
- Add: Add a new audio file.
- Delete: Delete selected audio file.
- Audio set: Set the configurations of the audio, controlled by address.

Trigger configuration for audio files

Audio trigger settings [X]

1

Audio file: ABC.mp3 [Select]

Priority: 0 [v]

2

Trigger mode

Time period of Trigger

Loop(H:M:S): 0 : 0 : 0

Trigger when conditions satisfaction

Trigger address: HDX0.0 [Edit]

Trigger conditions: Bit change [v]

Trigger when time satisfaction

24 hour(H:M): 0 : 0 [Repeat]

3

Play Settings

Loop Playback when Trigger: 1 [Times]

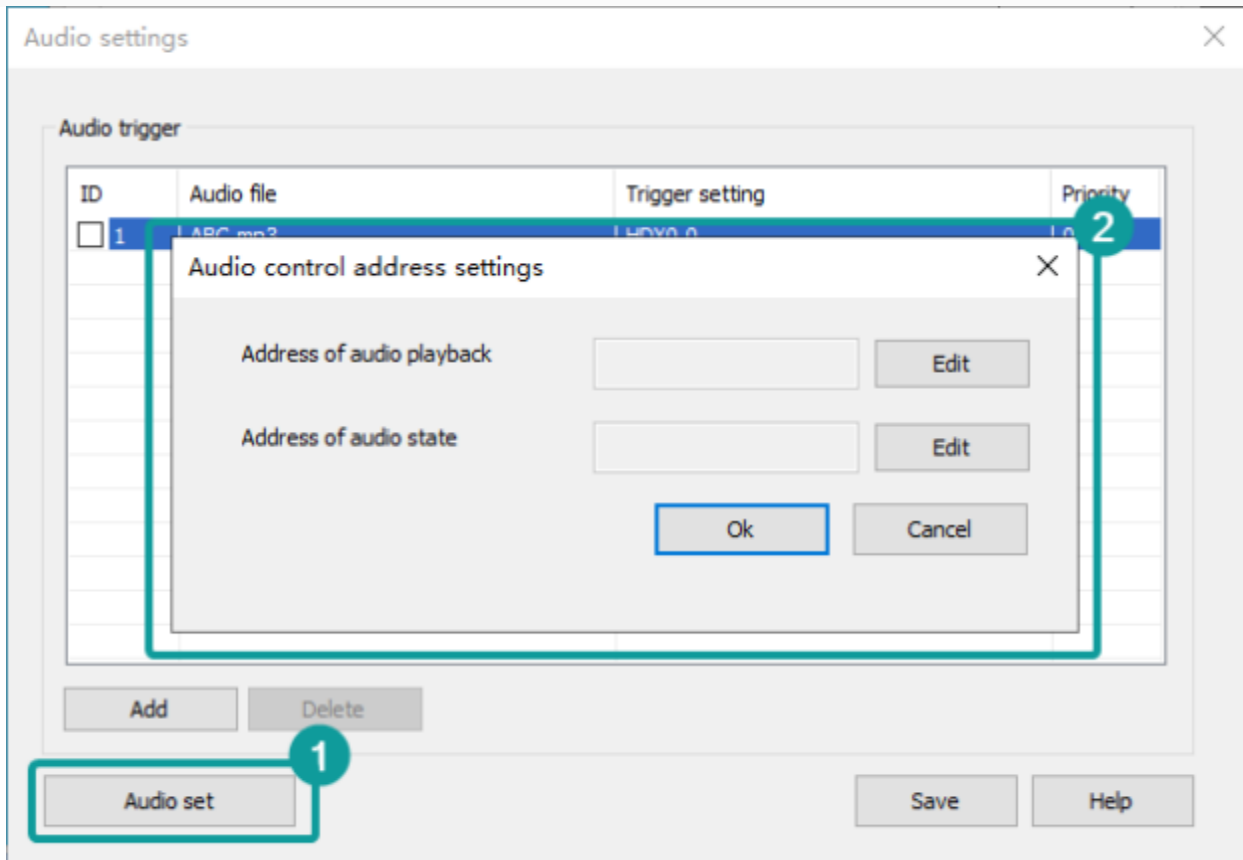
Interval(H:M:S): 0 : 0 : 0

[Ok] [Cancel]

- **Audio files**
 - MP3 file supported only.
 - The audio filesize should be less than 30MB.
 - The suffix .mp3 is necessary. The length of name should be less than 20 (including .mp3).
 - Audio file needs to be saved into the folder named mp3 in HMI flash, if not, it would not play. User could use the [CopyFile] script function to import audio files into the HMI flash.
- **Trigger mode settings:** There are 3 kinds trigger mode to choose. They could be valid at the same time.
 - **Play according to time interval:** Set the interval time. For example ,set 3 minutes, then it will play for each 3 minutes' interval.
 - **Trigger to play:** There are three bit trigger conditions: Rising edge, Falling edge and Bit change. You could trigger one condition to play the audio file.
 - **Play according to time:** Play the audio when the time is up.
- **Play settings.** Set the play times and the cycle interval when it is triggered.

Audio file playback setting

This function is to control the playback of audio file in the list by address. (It should be used with file list.)



Control address

The table below describes each bit address function (including play, pause, etc). If the audio control address is HDW120, then specific function details are as shown in the table below.

Function	Address	Description
Play Control	HDX120.0 (0th bit)	Play control bit: Play the audio file when this bit address is triggered
	HDX120.1 (1st bit)	Pause control bit: Pause playback when this bit address is triggered, or resume playback after pause
	HDX120.2 (2nd bit)	Stop control bit: Stop the play when this bit address is triggered
	HDX120.3 (3rd bit)	Last audio: Play last audio when this bit address is triggered.

	HDX120.4 (4th bit)	Next audio: Play next audio when this bit address is triggered.
	HDX120.5 (5th bit)	Volume increase(not supported yet), increase by 10
	HDX120.6 (6th bit)	Volume decrease(not supported yet), decrease by 10
Mode Selection	HDX120.7 (7th bit)	once: Only play current audio file only one time
	HDX120.8 (8th bit)	Single cycle: Repeat playing current audio file
	HDX120.9 (9th bit)	Order: Play audio file orderly and stop as soon as the tas finished
	HDX120.10 (10th bit)	Repeat in order: Repeat to play the audio file of the list

State address

The audio play status address occupies a continuous 35 word addresses. If audio play status address is set as HDW200, the specific function allocation details are shown as below table

Address	Function	Description
HDW200	Playback status storage address	=0 : stop play =1 : playing =2 : pause play
HDW201	Volume value storage address	Range from 0 to 100(default value is 100, and it is not adjustable so fars)
HDW202~HDW234	Audio file name	Displays the file name of the audio currently playing

Note:

- The audio file needs to be stored in the flash of PI9000 series HMI.
- Only PI9000 series HMI with audio module could support this function, and an external 3.5mm headphone is required.

Video

Introduction

1. Configure related information and play video files through conditional trigger.
2. Only HMI 9000 series support this function.
3. Video playing could play video on HMI project screen.
4. It requires "Customized Object" and "File List" objects.
5. Currently, the video format support by Wecon HMI are including ASF, AVI, MKV, MP4, RM, and FLV.

Configuration

Custom object configuration

Customized Object

General

1

Function Address: HDW100 [Edit]

DLL file name: Custom_MoviePlayer [Select]

Position: X: 520 Y: 289

Size: Width: 118 Height: 122

Custom address 2

ID	Address
1	HDW101
2	HDW102
3	HDW103
4	HDW104
5	HDW105
6	
7	
8	
9	
10	

OK Cancel Help

Basic

The function address doesn't have to be configured. DLL file name needs to be "Custom_MoviePlayer".

Custom Address

- ID1 is the address for storing the video file name (including the suffix). It could not be empty and the length is 32 words.
- ID2 is the address for video control, and occupies 1 word. It could not be empty. Please refer to "[Video control address](#)".
- ID3 is the address of video status, and occupies 1 word. It could not be empty. 0 indicate stop, and 1 indicates play.
- ID4 is the address for storing the volume of video file, and occupies 1 word.
- ID5 is the address for the video file path, and occupies 1 word. It could not be empty. Please refer to "[Video file path](#)".

Control address

Function	Address		Description
Play Control	0th bit	HDX102.0	Bit for playing control: Play the video file when this bit address is triggered
	1st bit	HDX102.1	Bit for pause control: Pause playing when this bit address is triggered, or resume playing after pause
	2nd bit	HDX102.2	Bit for full screen control: Maximize the video when this bit address is triggered
	3rd bit	HDX102.3	Last video: Play the last video when this bit address is triggered.
	4th bit	HDX102.4	Next video: Play the next video when this bit address is triggered.
	5th bit	HDX102.5	Volume increase: Increased by 10
	6th bit	HDX102.6	Volume decrease: Decreased by 10
Mode Selection	7th bit	HDX102.7	Once: Only play current video file once
	8th bit	HDX102.8	Single cycle: Repeat to play current video file
	9th bit	HDX102.9	Order: Play video file of the list and stop after done
	10th bit	HDX102.10	Repeat in order: Repeat to play the video file of the list

File path

Value	Video File Path	Description

0	USB flash disk	Please create a folder named mp4 in the U disk directory to store the video files to be played
1	SD card	Please create a folder named mp4 in the SD card directory to store the video files to be played
2	HMI flash	Copy the video files to the mp4 folder in the directory of flash

Case

Operating Procedures of File List Object Settings

File list
✕

General

Shape setting

Background color

Head color

Text color

Line color

Select line color

Coordinate Set

Function

File type Custom folder

Root SDCard

Folder MP4

Select line Edit

Folder name address HDW150 Edit

Advanced

Use function address(20 words)

Function address Edit

ID	Name
1	File1
2	File2

OK
Cancel
Help

Configure the customized object as the above picture

Configure the file list object as below:

1. Select the directory as the MP4 folder in USB flash disk. Set the file name address as HDW150
2. Create a folder named MP4 in the SD card directory to store the video files to be played.
3. Add the video controlling address, refer to the above video controlling address table.
4. Compile the project and download it to HMI, trigger the bit address to play the video from the list.

Email

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 setting

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

Home Project 1 2

Communication Mapping Text E-Mail Bit Alarm Trend Chart User Permission
Project Settings Shape Address Word Alarm History XY Plot MessageProm
Font pack Font SMS Recipe Data record Traditional Re

E-Mail settings

SMTP settings

Enable mail

Sender name:

E-mail address:

Password:

Confirm password:

Smtip server:

The port number:

Not encryption STARTTLS encryption SSL encryption

Error message

Enable

Address:

Manual trigger

Enable

Address:

SMTP Settings

- **Sender Name:** Fill the sender's name, which is composed of Chinese characters, letters (case sensitive) and numbers. But it can not contain the following special English symbols: ',', ';', '"', '<'. Maximum character length 32 is allowed.
- **Password:** Fill in the password or authorization code of the mailbox. If the server needs to set the authorization code, the authorization code needs to be used. If the authorization code is not used, the password is used. Please refer to the SMTP service in the mailbox for the authorization code information. It cases sensitive, maximum character length 32 allowed in password.
- **Confirm Password:** Confirm the password or authorization code of the mailbox.
- **Email Address:** Fill in the sender's email address, case sensitive, maximum character length 32 allowed in it. Such as support@we-con.com.cn.
- **SMTP Server:** Please refer to the mailbox account settings. If you enter a common mailbox, the corresponding server address will be automatically written. such as smtp.exmail.qq.com.

Email	Email server	Port number
163 email	smtp.163.com	465
126 email	smtp.126.com	465
QQ email	smtp.qq.com	465
Sina email	smtp.sina.com	465
Sohu email	smtp.sohu.com	465
Yahoo email	smtp.mail.yahoo.com.cn	465
Google email	smtp.gmail.com	465

Note: Gmail also needs to enable the [allow unsafe apps] option in the account, otherwise the mail will not be sent normally.

- **Encryption Type:** SSL is a security protocol that provides security and data integrity for network communications. It encrypts network connections at the transport layer; TLS (STARTTLS) upgrades connections to SSL instead of using a separate encrypted communication port.
- **The Port Number:** Enter corresponding port number according to the SMTP serve address entered. You could only enter interger between 1 and 65535. Do not enter more than 6 digits in length. Common port numbers are port 25, 465 and 587.
 - Port 25: It does not protect the original data when transmitting data. The data can be seen. Generally, port 25 must be selected as no encryption or TLS(STARTTLS) encryption mode to send data correctly.
 - Port 465: It protect the original data when transmitting data. The data can not be seen. Generally, port 465 must be selected as SSL encryption mode to send data correctly.

- Port 587: The original data is protected only after the TLS(STARTTLS) command is executed. Generally, port 587 must be selected as TLS(STARTTLS) encryption mode to send data correctly.

🔪 **Note:** Port 25 is open to SMTP servers, mainly for sending mail. But the port has vulnerability. Hackers often use port 25 to find SMTP servers to forward spam.

- **Error Message**

- Set the error message receiving address, you could use the information to get the reasons of errors.
- The error types in the mail function are divided into two types: custom rule error and server's error.
- Custom rule errors are as follows.

Message
Email settings are incorrect
Email account is incorrect
Email password could not include blank
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

- **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

The screenshot shows the 'E-Mail settings' dialog box with the 'Sending settings' sub-dialog open. The 'Sending settings' sub-dialog contains a table with the following data:

ID	Trigger sending	Content of email	Recipient group
<input checked="" type="checkbox"/> 1	HDX2.0Send on rising edge	df	Group 1;

Numbered callouts in the image indicate: 1. The 'Sending settings' button in the main dialog; 2. The 'New' button in the sub-dialog; 3. The 'Recipient group' column header in the table.

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.

Sending settings ✕

Content of email 1

Theme

ID	Types	Text content
1	Ordinar...	df

Sending method 3

Timed send interval Hour Minute

Bit address trigger transmission

Bit address

Triggering conditions

4

Add CC

5

Add secret delivery

6

Preview 2

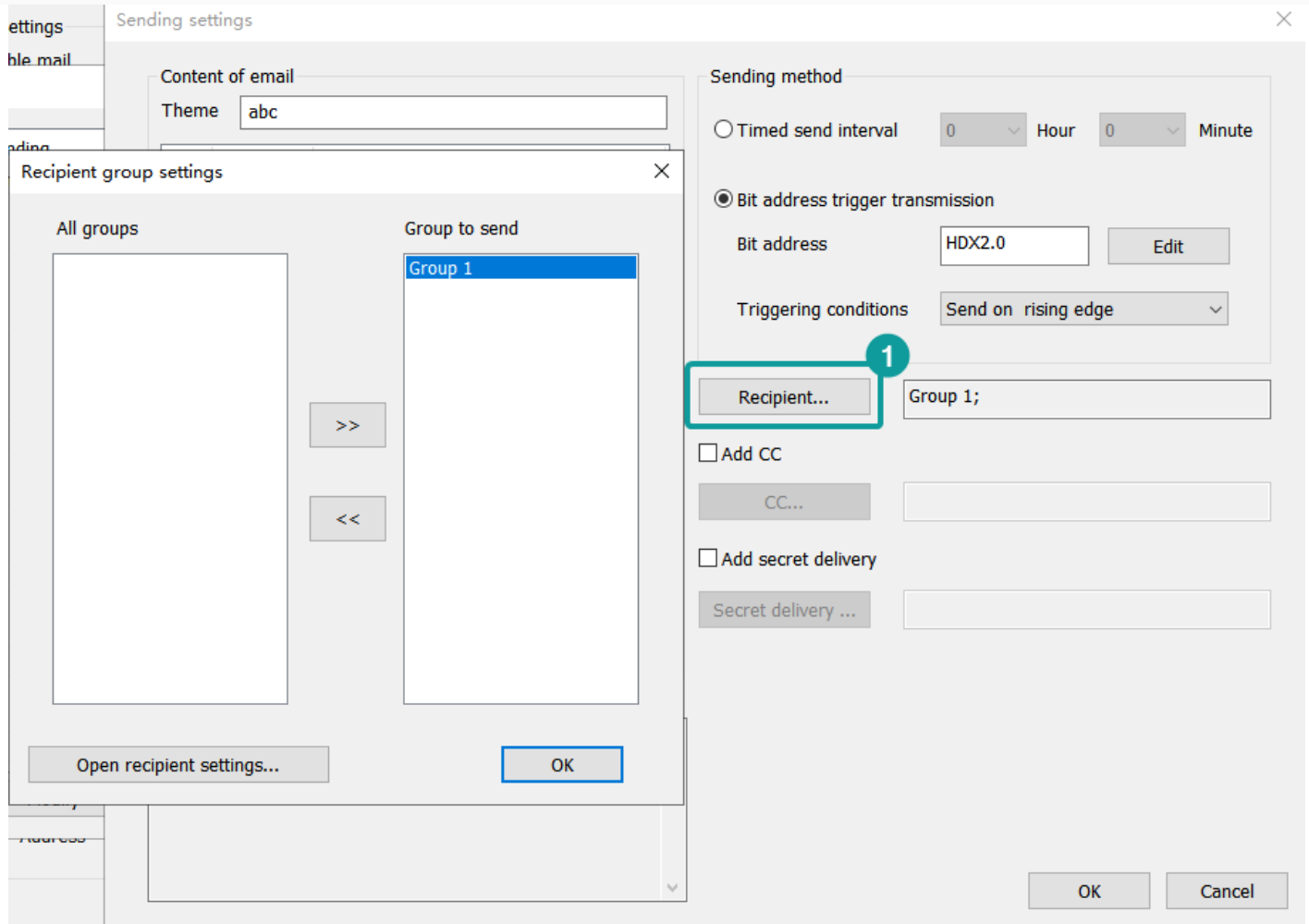
Email sending configuration.

- **Theme.** The value cannot be empty and case sensitive. The total length cannot exceed 256 characters.
- **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.
- **Preview.** Combine the content of current edited email and display it for you to modify the content conveniently. The preview length cannot exceed 1024.
- **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.
- **Recipient.** It is set in groups. You could send multiple groups, and each group can have multiple recipients.
- **Add CC.** Sends the current email to other recipients.
- **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.
- **Recipient priority.** Set the priority order of recipients to recipient, BCC, and CC.

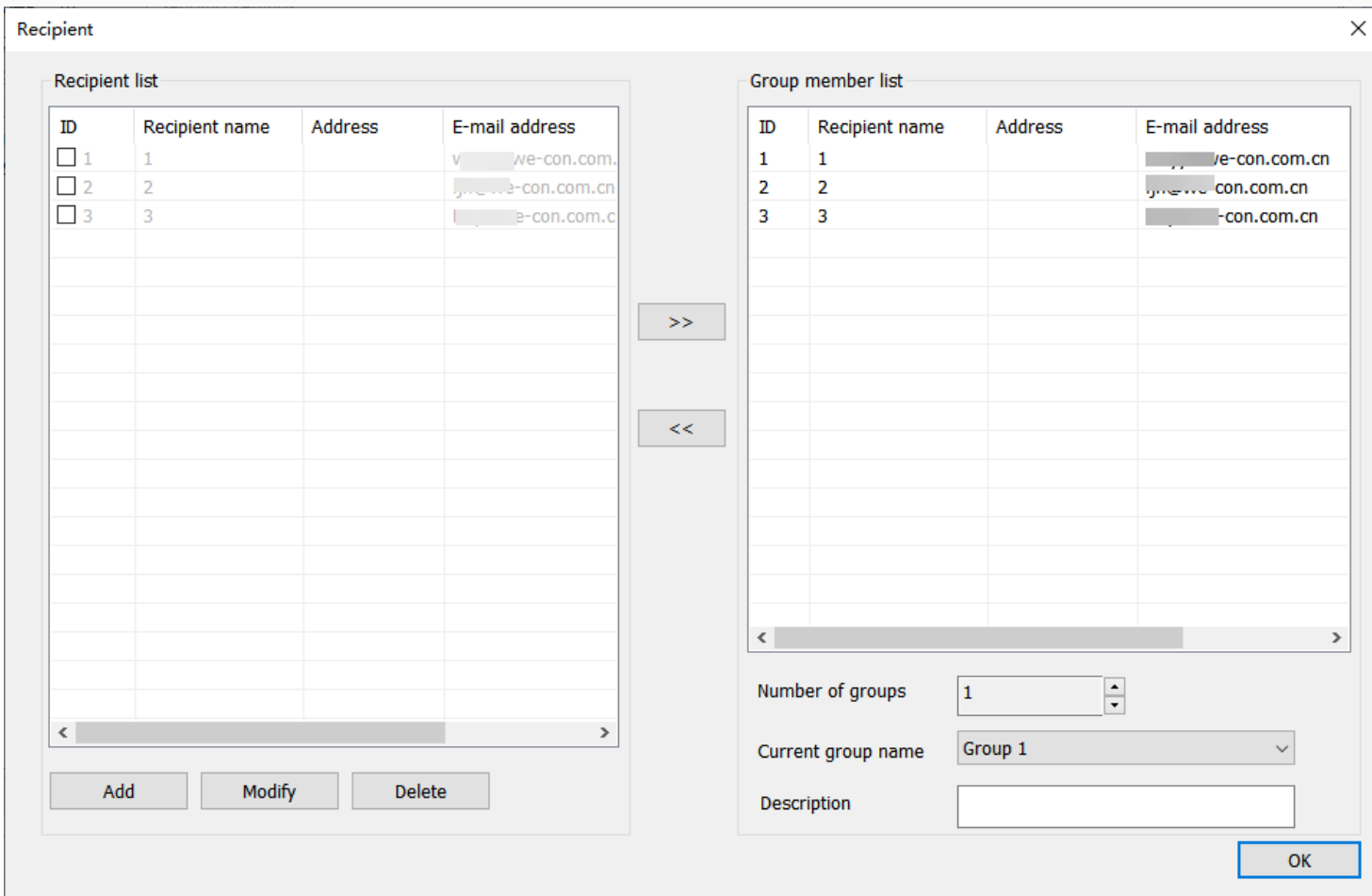
🔪 **Note:** If the recipient address you select exists in all three positions, it exist only in the highest priority position. For example, if the recipient of an email has aaa, the bcc has aaa, and the cc has aaa, then let aaa only be the recipient.

Recipient group setting

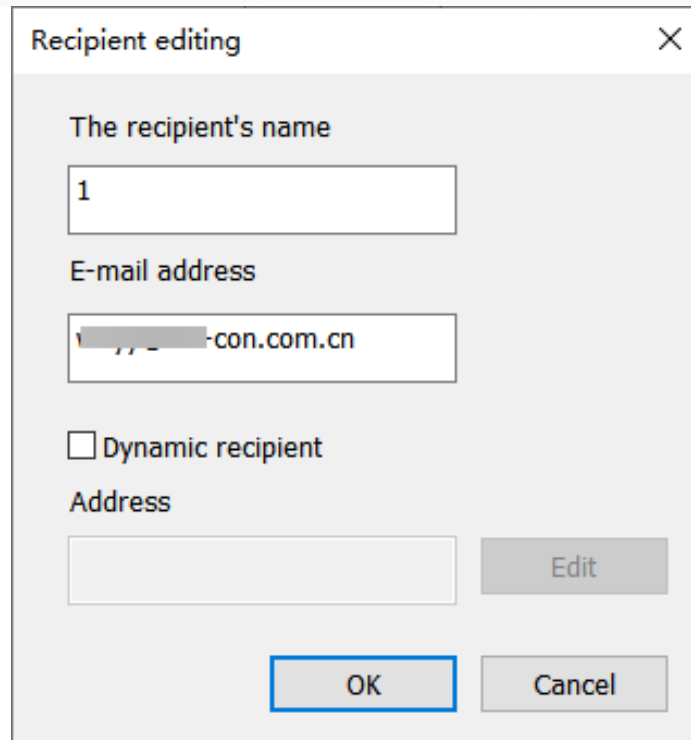


1. **All Group.** The groups you added.
2. **Group to send.** The groups that you send the emails to.
3. **Open recipient settings.** Set the information of recipients, and add and subtract groups.

Recipient setting



1. **Add.** Add a recipient. There are non-dynamic recipient and dynamic recipient. They cannot be used at the same time. You may just fill in the recipient's name and email address. The dynamic recipient address is limited to 32 characters, and a maximum of 40 recipients can be added.

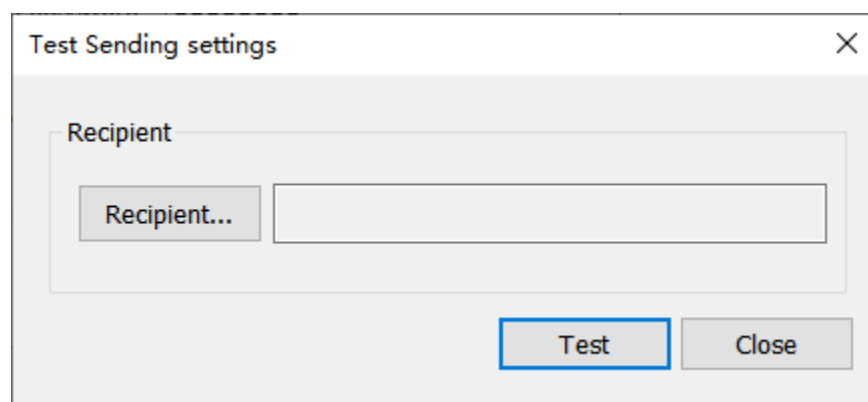


The dialog box is titled "Recipient editing" and has a close button (X) in the top right corner. It contains the following fields and controls:

- The recipient's name:** A text input field containing the number "1".
- E-mail address:** A text input field containing a partially obscured email address ending in "-con.com.cn".
- Dynamic recipient:** A checkbox that is currently unchecked.
- Address:** A text input field that is currently empty.
- Buttons:** An "Edit" button is positioned to the right of the "Address" field. At the bottom of the dialog are "OK" and "Cancel" buttons.

2. **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.
3. **Delete.** Select one recipient or multiple recipients to delete, or click the ID column to select all.
4. **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.
5. **Description.** To decribe the group information. The total length shall not exceed 32.

Test sending settings



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

- Recipient:** A large text input field containing a "Recipient..." button on the left and an empty text area on the right.
- Buttons:** "Test" and "Close" buttons are located at the bottom right of the dialog.

Note:

1. You can open this after the SMTP server is set.
2. When NetEase mail (126, 163 and yeah) occurs erros 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.

3. When TOM mail is sender's mail, the name of it and the recipient tested must be English, otherwise the email would be returned.
4. When testing with Zoho mailbox, there was a delay of less than 3 minutes.
5. 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	RCVBUF_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

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.

Custom rule error

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

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

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.

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.

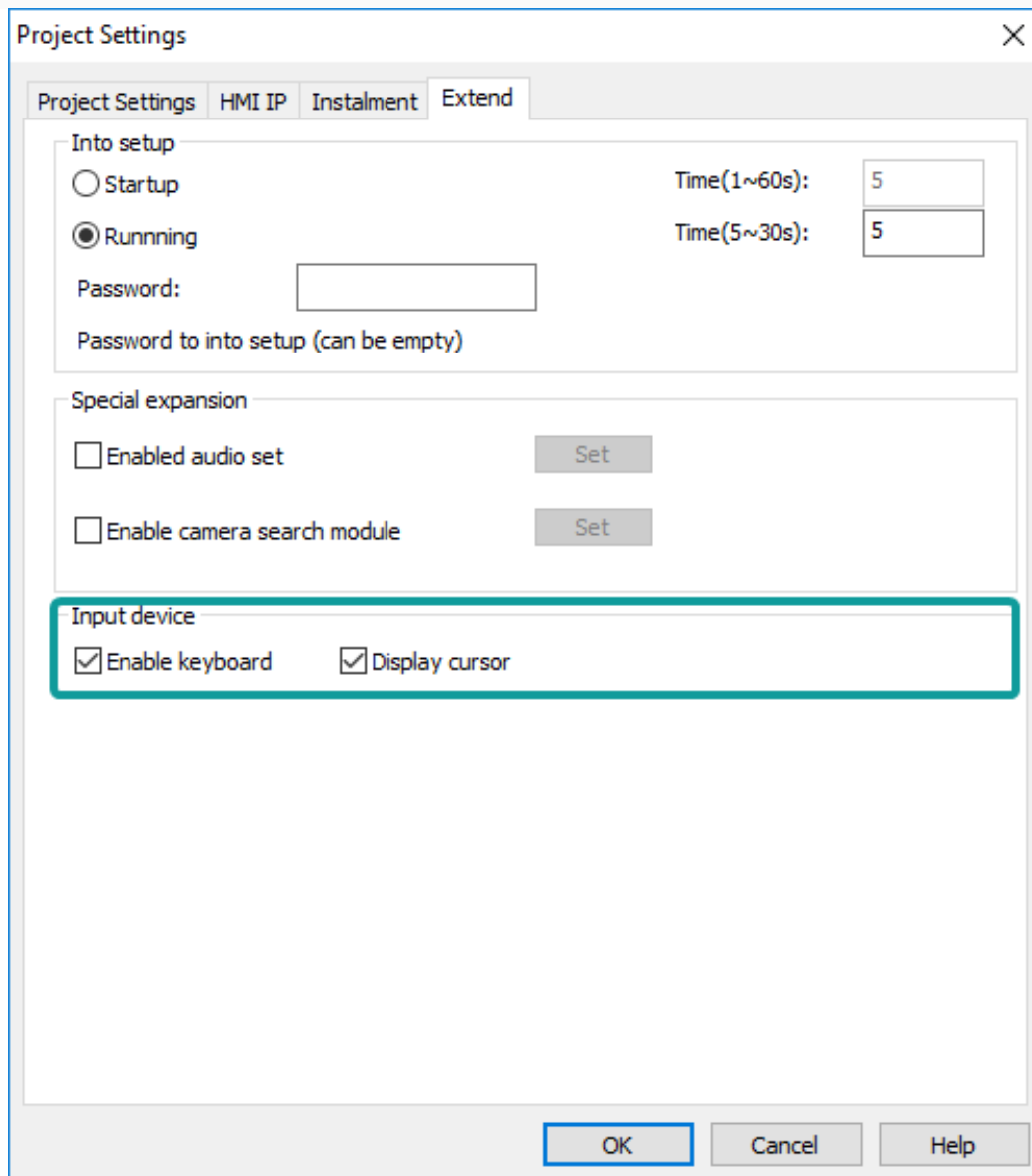
USB keyboard

Introduction

1. HMI support keyboard via USB port of HMI.
2. When the keyboard function is enabled, the "Cursor Display" function is enabled by default. The user could move the cursor through the "up, down, left and right buttons" of the keyboard, and then press the Enter key to select the object.
3. Multiple devices could be connected with HMI via USB HUB (up to 4 external devices), such as: mouse, keyboard, scanner, magnetic stripe reader, etc.

Enable function

In the software PIStudio, Click "Project" → "Project settings" → "Extend", and check "Enable keyboard" in "Input device" settings area as below.



Configuration description

1. When the keyboard function is enabled, the "Cursor Display" function is enabled by default. The user could move the cursor through the "up, down, left and right buttons" of the keyboard, and then press the Enter key to select the object;
2. NumLock: When NumLock key is not lit, the keypad number is not allowed to be input (offline simulation does not allow all numeric keys to be input, including the numeric keys on the left side of the keyboard);
3. Key combination: (1) "Shift" + the left side of the keyboard and the special symbol button, to achieve special character input, such as: ~ ! @ # \$ % ^ & * () _ + { } : "<> ? ;
4. Use the system special addresses "HSW1073 and HSW1074" to write custom key combinations in the script (currently only two key combinations are supported);
5. Caps Lock: In lowercase mode, shift+ letters, to enter uppercase; in uppercase mode, shift+ letters enter lowercase;

System special address

In practical application, the [Enable Keyboard] function could be combined with the related "system special address" to achieve multi-key combination operation.

Address	Description	Function
HSW1073	Keyboard key value	The currently pressed key value is displayed. The key value is shown in Table 1 (The Numeric/Character display object is not updated when it is being entered)
HSW1074	Keyboard key status	Display current key states =0: key release =1: key press =2: Press and hold long (The Numeric/Character display object is not updated when it is being entered)
HSW1075	Cursor speed	Control the movement speed of the cursor, the range is 0~100, the default is 20
HSW1076	X coordinate value of cursor	The X value of the current position of the cursor, range: 0~screen width-1
HSW1077	Y coordinate value of cursor	The Y value of the current position of the cursor, range: 0~screen height-1
HSW1078	The ASCII code of keyboard key	Only the ASCII values of letters, numbers, and symbols are displayed. The ASCII value of the function keys is not displayed, as shown in Table 2 (The Numeric/Character display object is not updated when it is being entered)
HSW1079	Enable cursor position and Enter key mode	HSX1079.0 = 1: Set the cursor position according to HSW1076 and HSW1077 value; HSX1079.1 = 0: When Numeric/Character display object is entered, enter key is for end input instruction. When no Numeric/Character display object is entered, enter key is for normal click; HSX1079.1 = 1: Enter key only for normal click, not for keyboard end input instruction;

Key-Value Appendix Table (Decimal) (104Keys)

Key	Value	Key	Value	Key	Value
ESC	1	i l	23	Alt (Right)	100
F1	59	o O	24	windows(Right)	126
F2	60	p P	25	Menu	127
F3	61	[{	26	Right_ctrl	97
F4	62	] }	27	Print Screen	99
F5	63	Enter	28	ScrollLock	70
F6	64	CapsLock	58	PauseBreak	119
F7	65	a A	30	Insert	110
F8	66	s S	31	Home	102
F9	67	d D	32	PageUp	104
F10	68	f F	33	Delete	111
F11	87	g G	34	End	107
F12	88	h H	35	PageDown	109
` ~	41	j J	36	↑	103
1 !	2	k K	37	↓	108

2 @	3	I L	38	←	105
3 #	4	; :	39	→	106
4 \$	5	' "	40	NumLock (Keypad)	69
5 %	6	\ |	43	/ (Keypad)	98
6 ^	7	Shift (Left)	42	* (Keypad)	55
7 &	8	z Z	44	- (Keypad)	74
8 *	9	x X	45	+ (Keypad)	78
9 (	10	c C	46	Enter (Keypad)	96
0)	11	v V	47	. (Keypad)	83
- _	12	b B	48	0 (Keypad)	82
+ =	13	n N	49	1 (Keypad)	79
Backspace	14	m M	50	2 (Keypad)	80
Tab	15	, <	51	3 (Keypad)	81
q Q	16	. >	52	4 (Keypad)	75
w W	17	/ ?	53	5 (Keypad)	76
e E	18	Shift (Right)	54	6 (Keypad)	77

r R	19	Ctrl (Left)	29	7 (Keypad)	71
t T	20	Windows(Left)	125	8 (Keypad)	72
Y y	21	Alt (Left)	56	9 (Keypad)	73
u U	22	space	57		

ASCII Code

Code	Value	Code	Value	Code	Value	Code	Value
32	space	56	8	80	P	104	h
33	!	57	9	81	Q	105	i
34	"	58	:	82	R	106	j
35	#	59	;	83	S	107	k
36	\$	60	<	84	T	108	l
37	%	61		85	U	109	m
38	&	62	>	86	V	110	n
39	'	63	?	87	W	111	o
40	(	64	@	88	X	112	p
41	)	65	A	89	Y	113	q

42	*	66	B	90	Z	114	r
43	+	67	C	91	[	115	s
44	,	68	D	92	\	116	t
45	-	69	E	93	]	117	u
46	.	70	F	94	^	118	v
47	/	71	G	95	_	119	w
48	0	72	H	96	`	120	x
49	1	73	I	97	a	121	y
50	2	74	J	98	b	122	z
51	3	75	K	99	c	123	{
52	4	76	L	100	d	124	|
53	5	77	M	101	e	125	}
54	6	78	N	102	f	126	~
55	7	79	O	103	g		

Scripts example

'HSW1073 key value

'HSW1074 key states

- 0: released;
- 1: pressed;
- 2: Holding pressed

'HSW1078 ASCII value of key

Example 1

```
if @W_HSW1073 = 29 then [ ] 'Ctrl key value is 29
```

```
    if @W_HSW1074 = 1 or @W_HSW1074 = 2          'Press Ctrl key
```

```
        [ ] @W_HDW1000 = 1
```

```
    else [ ] 'Release Ctrl key
```

```
        @W_HDW1000 = 0
```

```
    endif
```

```
endif
```

Example 2

```
if @W_HSW1073 = 59 and (@W_HSW1074 = 1 or @W_HSW1074 = 2) then [ ] 'F1 key value is 59
```

```
    if @W_HDW1000 = 1 then                                'Combination Ctrl + F1
```

```
        [ ] @W_HDW2000 = @W_HDW2000 + 1 [ ] 'Function of combination key is
HDW2000 + 1
```

```
    endif
```

```
endif
```

Example 3

```
if @W_HSW1073 = 60 and (@W_HSW1074 = 1 or @W_HSW1074 = 2) then [ ] 'the value of F2 is 60
```

```
    if @W_HDW1000 = 1 then                                'Combination Ctrl + F2
```

```
        [ ] @W_HDW2000 = @W_HDW2000 - 1 [ ] 'Function of combination key is
HDW2000 - 1
```

```
    endif
```

```
endif
```

Example 4

```
if AsString(@W_HSW1078) = "a" and (@W_HSW1074 = 1 or @W_HSW1074 = 2) then [ ] 'Page up
```

```
    if @W_HSW13 > 0 then
```

```
        @W_HSW13 = @W_HSW13 - 1
```

```
    endif
```

endif

Example 5

```
if AsString(@W_HSW1078) = "b" and (@W_HSW1074 = 1 or @W_HSW1074 = 2) then  Page down
```

```
    @W_HSW13 = @W_HSW13 + 1
```

```
    if @W_HSW13 > 3 then
```

```
        @W_HSW13 = 3
```

```
    endif
```

endif

rtsp web camera

Introduction

1. An external IP Camera (web camera) can be used to display the screen captured by the it to achieve real-time monitoring of the scene of the equipment.
2. ONVIF protocol and H.264 coding camera (RTSP web camera) are supported.

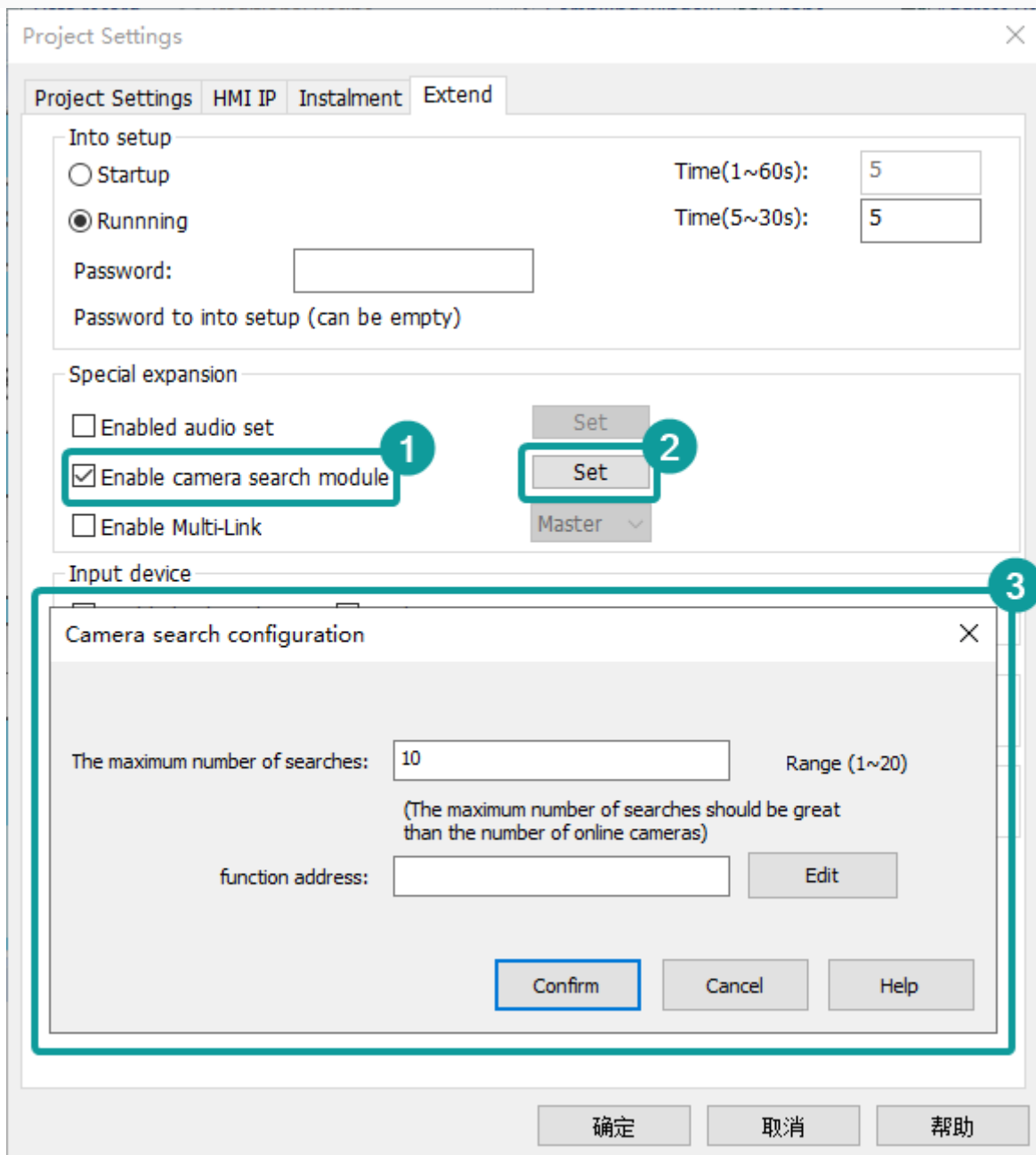
Supported Model:

- Hikvision
 - DS-2CD1321D-I
 - DS-2CD3T20FD-I3W
 - DS-2CD1221D-I3
 - DS-2CV3Q21FD-IW
- Dahua
 - DH-IPC-HFW1025D
 - DH-IPC-HFW1235M-I1

1. 8000 series HMI can view only **one** IP Camera monitoring screen at a time (only **one** camera object can be placed in a project).
2. 8000 series HMI can view only **four** IP Camera monitoring screen at a time (only **four** camera object can be placed in a project).

Camera search

In the software PISudio, Click "Project" -> "Project settings"-> "Extend", and check "Enable camera search module", shown as below.



The maximum number of searches: Configure the number of online camera. The maximum number of searches does not exceed 20, and should be greater than that of online camera.

Function address

To configure the information of searches and the records of search results. There are as follows.

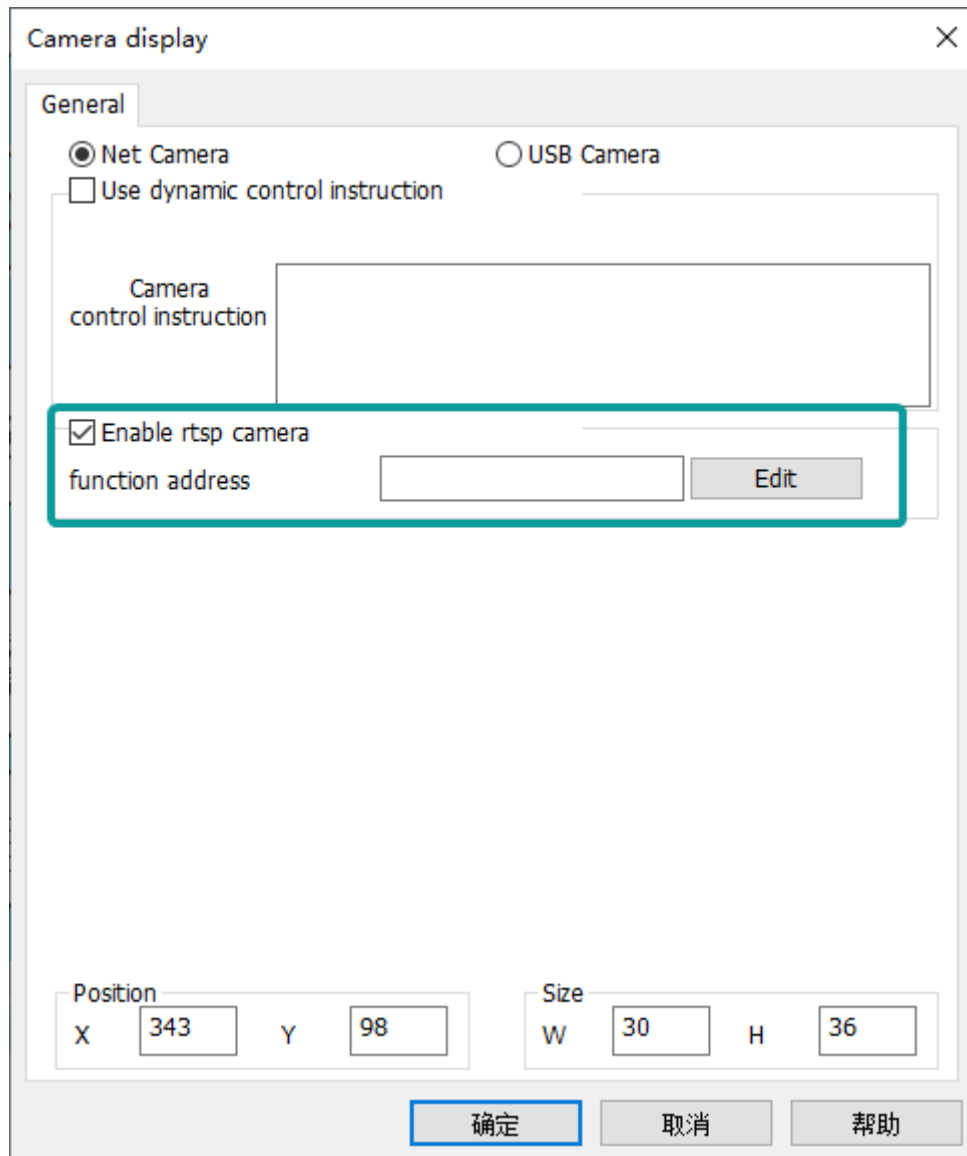
Address	Description	Length

HDW200	Username	20 words
HDW220	Password	20 words
HDX240.0	Falling edge trigger search	1 bit
HDX240.1	Search status 0: The search is complete. 1: It is searching.	1 bit
The first search result		80 words
HDW241	IP address	16 words
HDW257	=1: correct password =0: wrong password	1 word
HDW258	Device serial number	43 words
HDW301	Camera alias	20 words
The second search result		80 words
HDW321	IP address	16 words
...

The username and password of function address need to be entered manually. When searching for cameras, the username and password will be matched first, then each camera under the account will be retrieved, and the retrieved results will be stored in the response address. If the password is correct, the corresponding serial number will be displayed.

Camera display

Add the object "camera display" to the project, click "Enable rtsp camera", as below.



Compile and download project, please click [Search Camera] button to get camera information in LAN The username and password here need to be entered manually. During searching camera, it will try to use this username and password to log in IP camera and store the result of login. If the password is correct, the “password correct” address will be displayed as 1 and the device serial number will be displayed. If the “password correct” address is 0, the device serial number would not be displayed.

Function address

Address	Description	Length
HAW100	Username	20 words

HAW120	password	20 words	
HAW140	Alias	20 words	
HAW160	Device serial number	43 words	
HAW203	Camera ID	1 word	
HAW204	Camera Control	1 word	
	HAX204.0	Open camera	1 word
	HAX204.1	Close camera	1 word
	HAX204.2	Camera up	1 word
	HAX204.3	Camera down	1 word
	HAX204.4	Camera left	1 word
	HAX204.5	Camera right	1 word
	HAX204.6	screenshot	1 word
	HAX204.7	Binding camera	1 word
	HAX204.8	Set Alias	1 word
HAX204.9	Camera stop moving	1 word	
HAW205	Camera status	1 word	

	=0: camera disconnected =1: camera connected =2: Camera is connecting	
HAW206	Screenshot save location =0: Screenshot is saved into flash =1: Screenshot is saved into USB disk =2: Screenshot is saved into SD card	1 word

Operating Procedures

Fill the camera ID address with the camera serial number searched by the camera search module, and trigger the binding address to fill username and password.

- If the camera searching is disabled, then users need to manually enter the information of this camera, including username, password, and device serial number. Device serial number could be obtained by checking the label of camera.



- If the IP CAMERA was triggered successfully, we could see the monitor screen and we could also set a alias for the camera and control the movement of the camera(up, down, left and right, some IP camera could not support the movement) or the screenshot. These operations could not be performed if camera off.

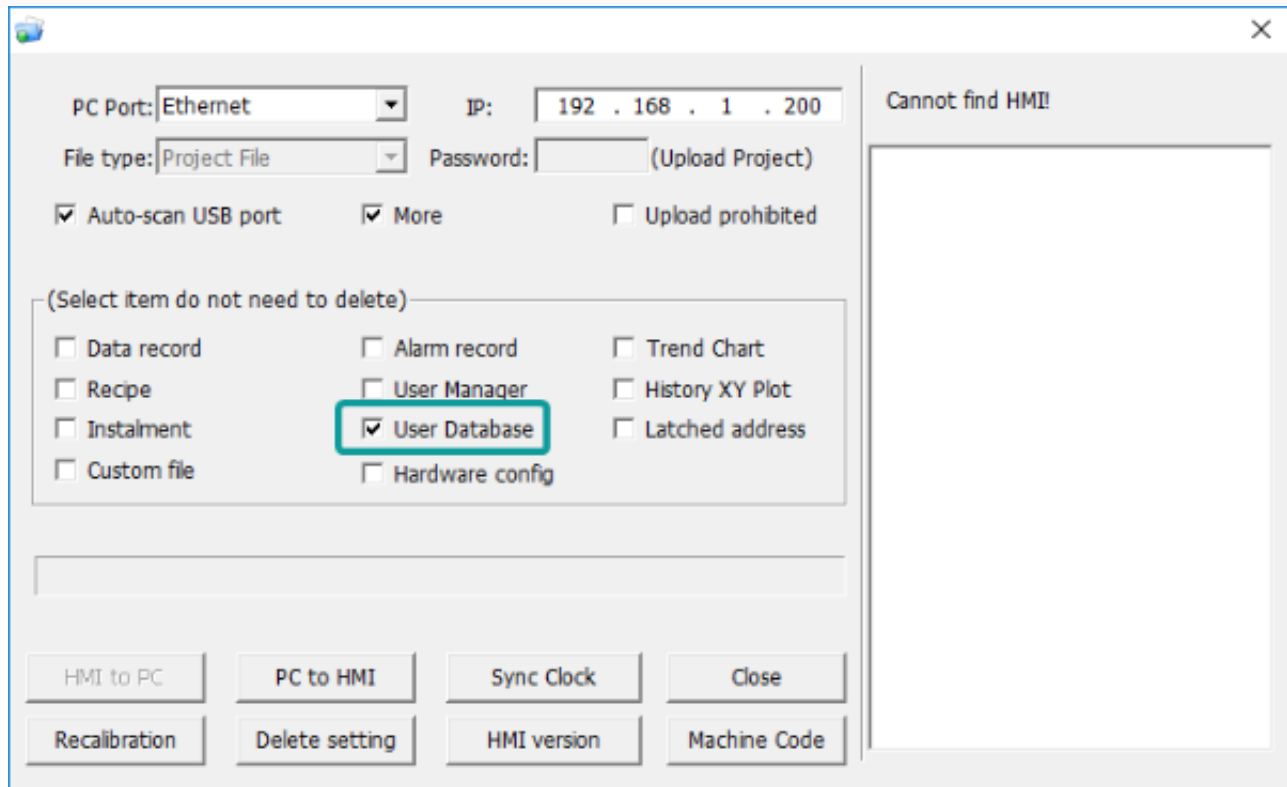


Note:

- Camera configuration. When you get the camera, you need to activate the camera and enable the onvif protocol for the camera according to the user manual and tools provided by the camera manufacturer. If the configuration is not correct, the camera cannot be used on the HMI.
- When reading camera information, you need to configure the user name and password for the camera. When multiple cameras are enabled, you are advised to set the user names and passwords of all cameras to be the same.
- When using the camera function, ensure that the camera and HMI are on the same LAN. When the HMI is directly connected to the camera through a network cable, set both HMI and camera to static IP addresses as follows.

	HMI	Camera
IP address	192.168.1.1	192.168.1.2
Gateway	192.168.1.1	192.168.1.1

- You could obtain the camera from the "Camera Search module" in "Project parameters" or manually fill in the address. You can obtain resources for the camera display object in the Camera Search module or manually enter the parameters.
- You are advised to configure and confirm the user name and password of the camera before using it. Do not use the wrong user name (password) to search for or link to the camera. Once the wrong user name (password) is exceeded for a certain number of times, the camera will be locked. During the lock period, the camera will reject any connection for at least half an hour generally.
- When monitoring HMI cameras, do not monitor the same camera at the same time. Otherwise, the monitoring screen may be lost.
- When the camera is disconnected due to network reasons, the system would try to reconnect the camera every 20 seconds.
- The alias of the camera is saved in the user database. The alias in old project is retained when downloading new project, if [user database] is selected. Otherwise the it will be deleted.



Demo download link

<https://drive.google.com/open?id=10UR1cg8KDjcTvKJYgk1KR8z4YIAplsD8>

LAN Monitoring

WECON provides [HMI Monitor System] software for user to monitor PI3000 series HMI in Local area network (LAN). This function is only for the model with -O. For example PI3070N-O.

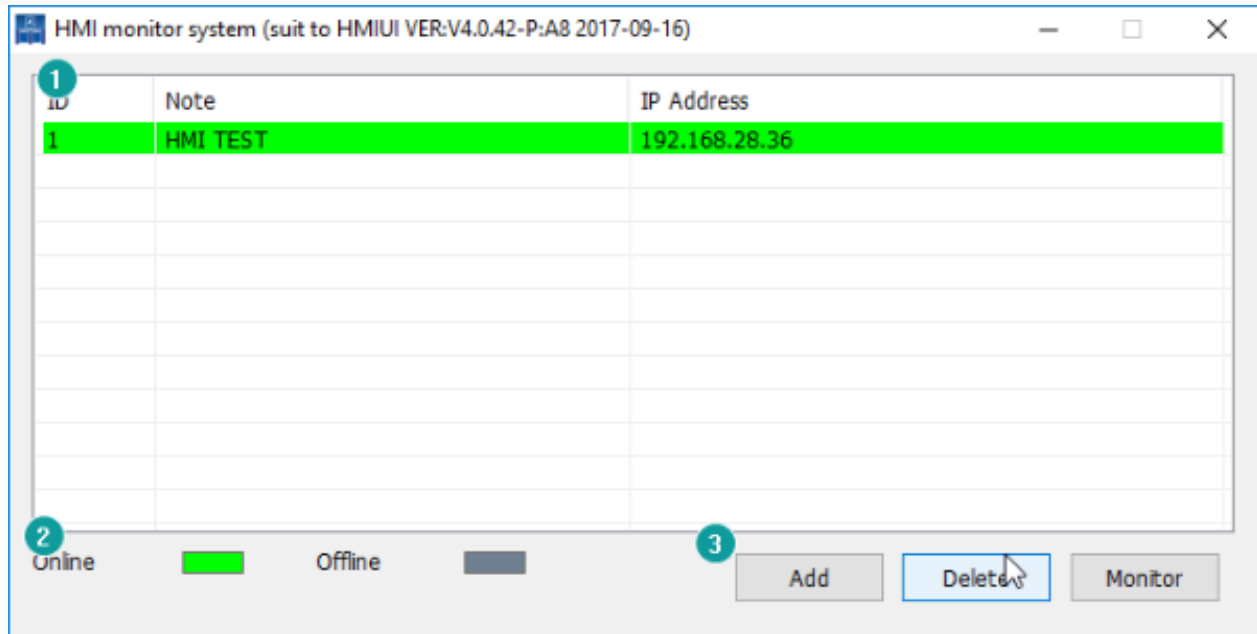
[HMI Monitor System] software

Device List: It displays HMIs, that connected into this monitor software;

State Indicator: It shows state of HMI, green means online, gray means offline;

Operation Buttons: It provides three operations for HMI device;

- Add: Click it to open add setting window;
- Delete: Click it to delete selected HMI device;
- Monitor: Click it to open monitor window for selected HMI device;



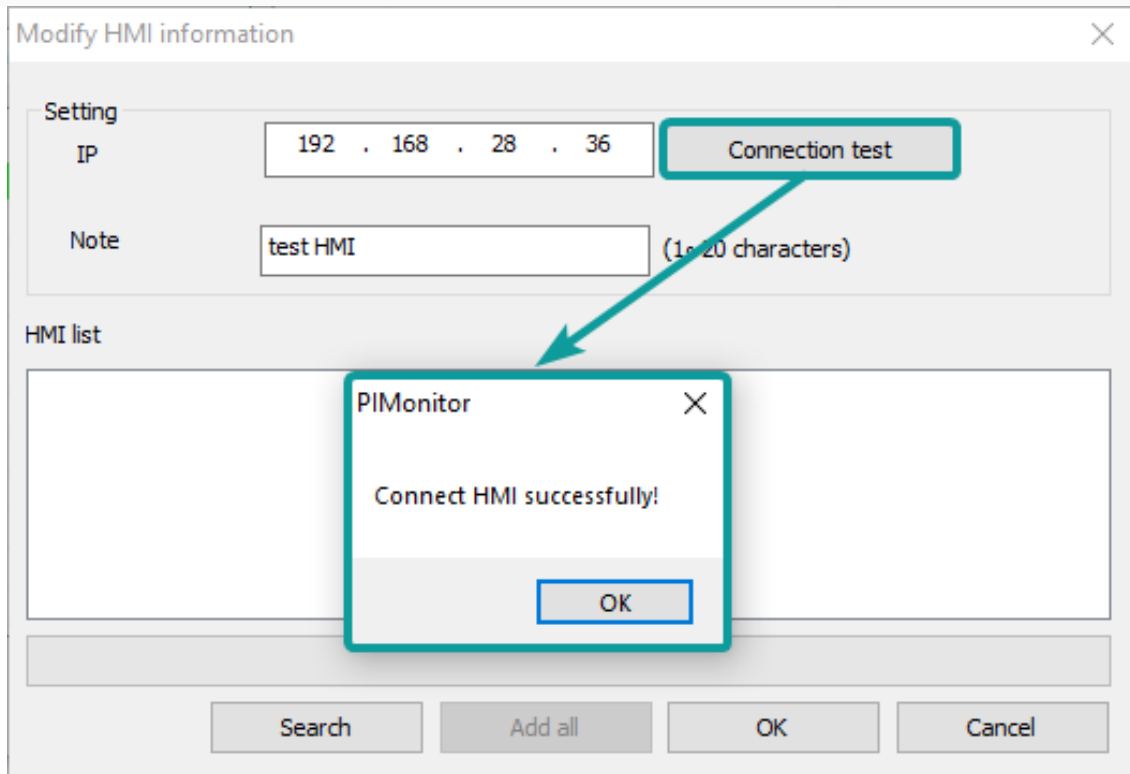
Operating procedures

Click [Add] button to open setting window;

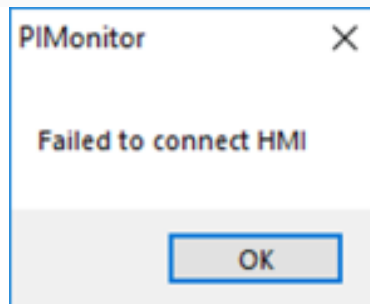
Enter HMI IP and Note;

Click [Connection test] button;

- If IP is correct, it will display tip as below;



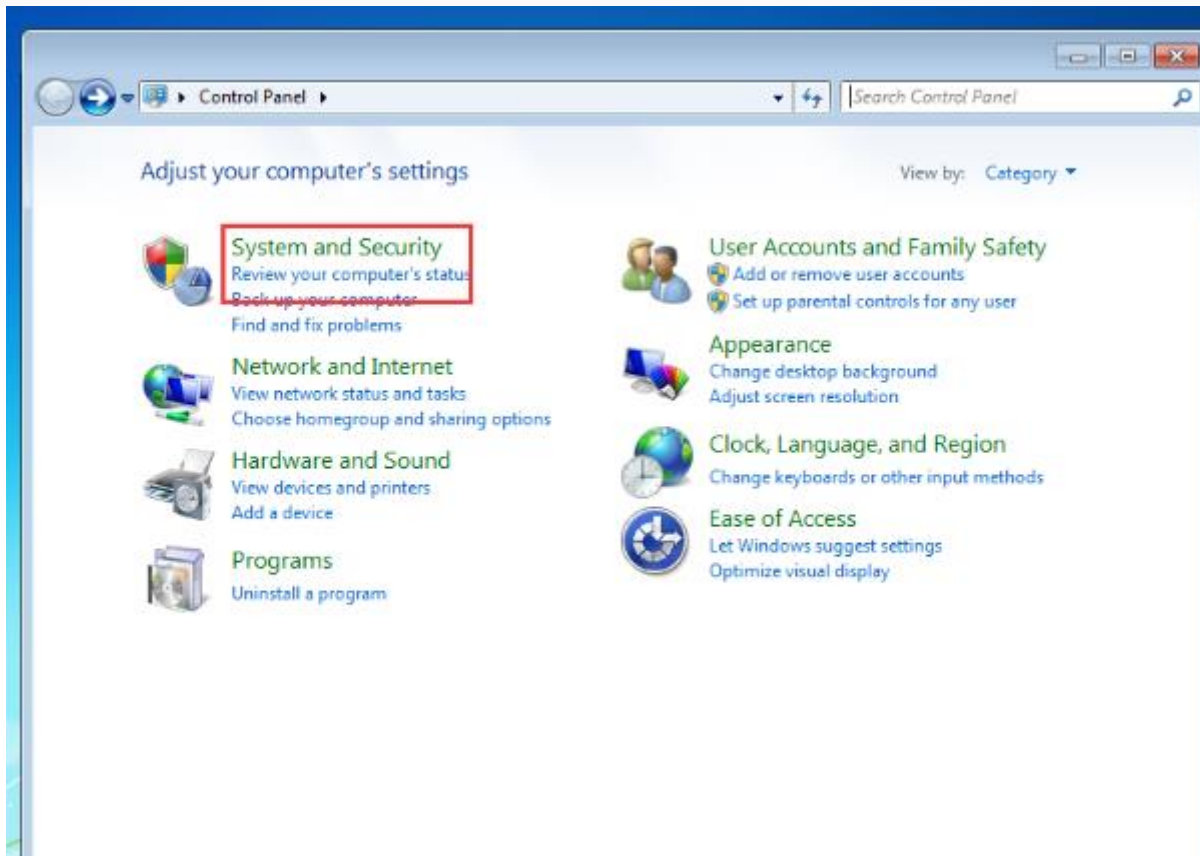
- If IP is incorrect, it will display tip as below



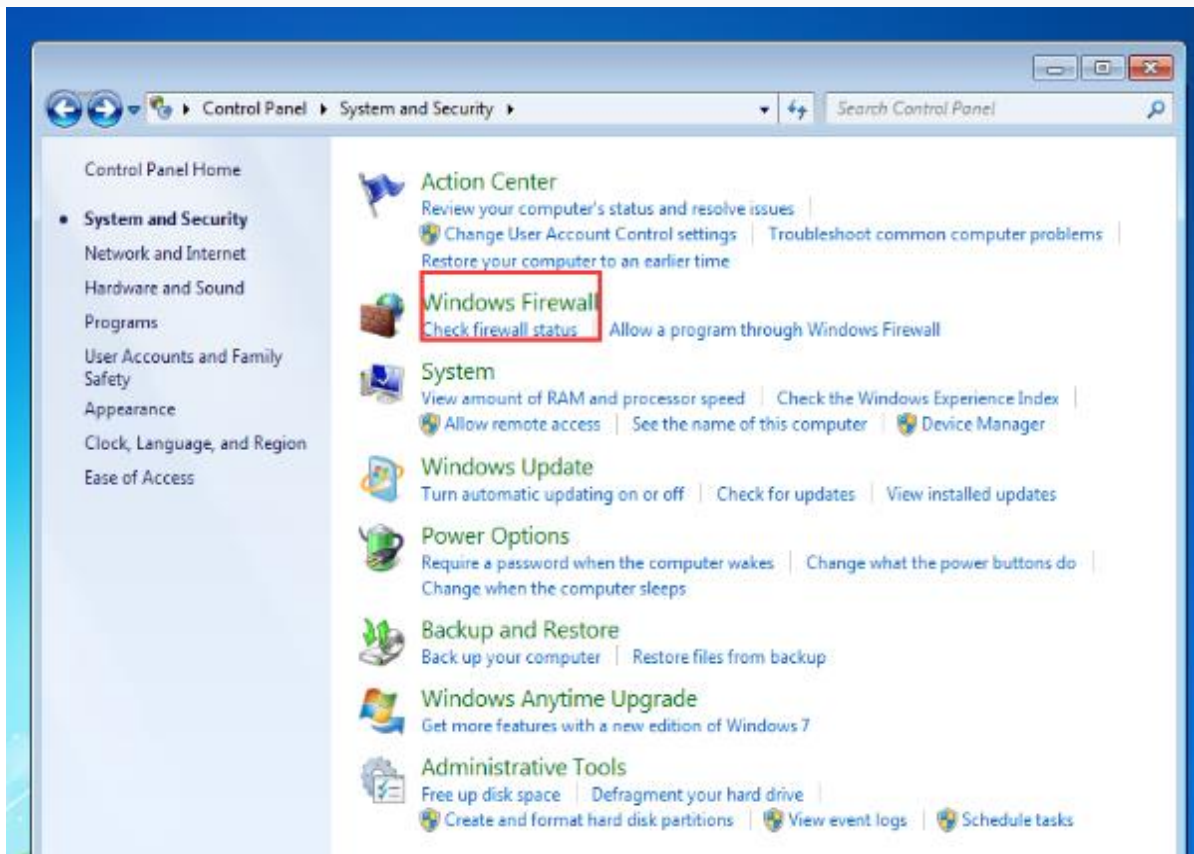
Note: For using this function in PC, it requires the setup of LAN Monitoring Firewall, using Windows 7 system as example. **If this function works well in your PC, please ignore below content.**

Solution 1: Disable Firmware Completely

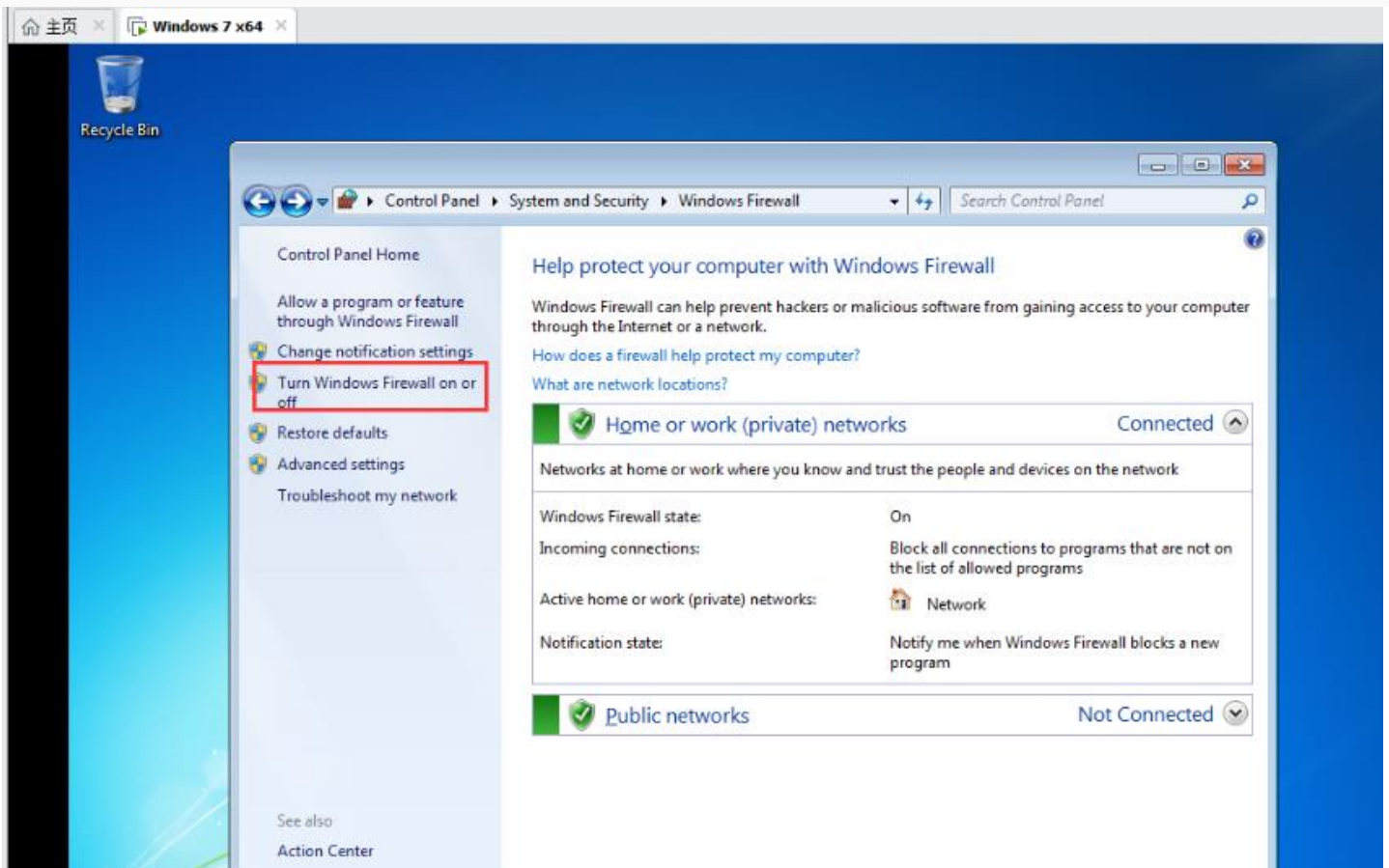
Open "Control Panel" and select "System Security".



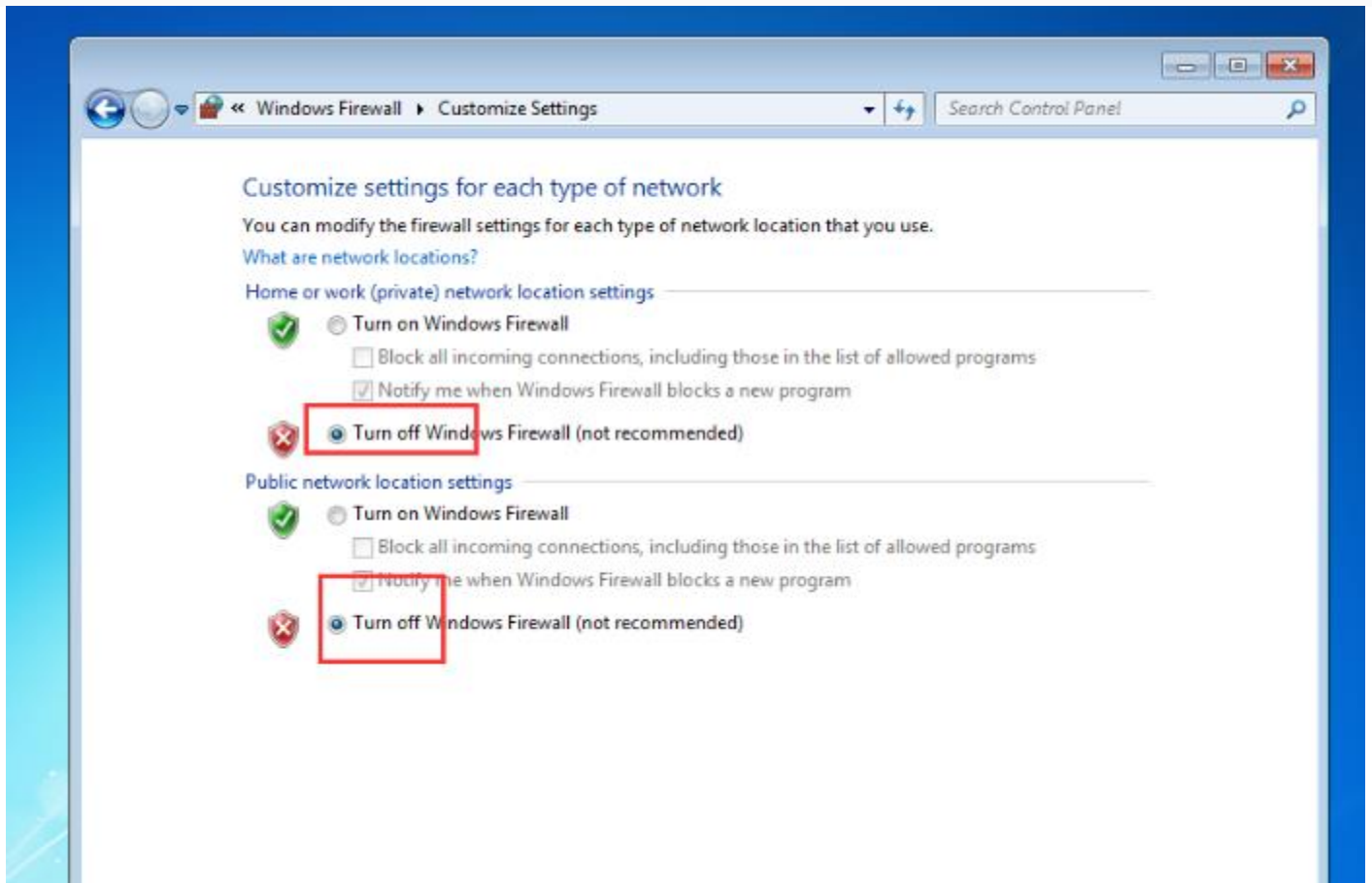
Select "Windows Firewall"



Select "turn Windows Firewall on or off"



Select "Turn off Windows Firewall"

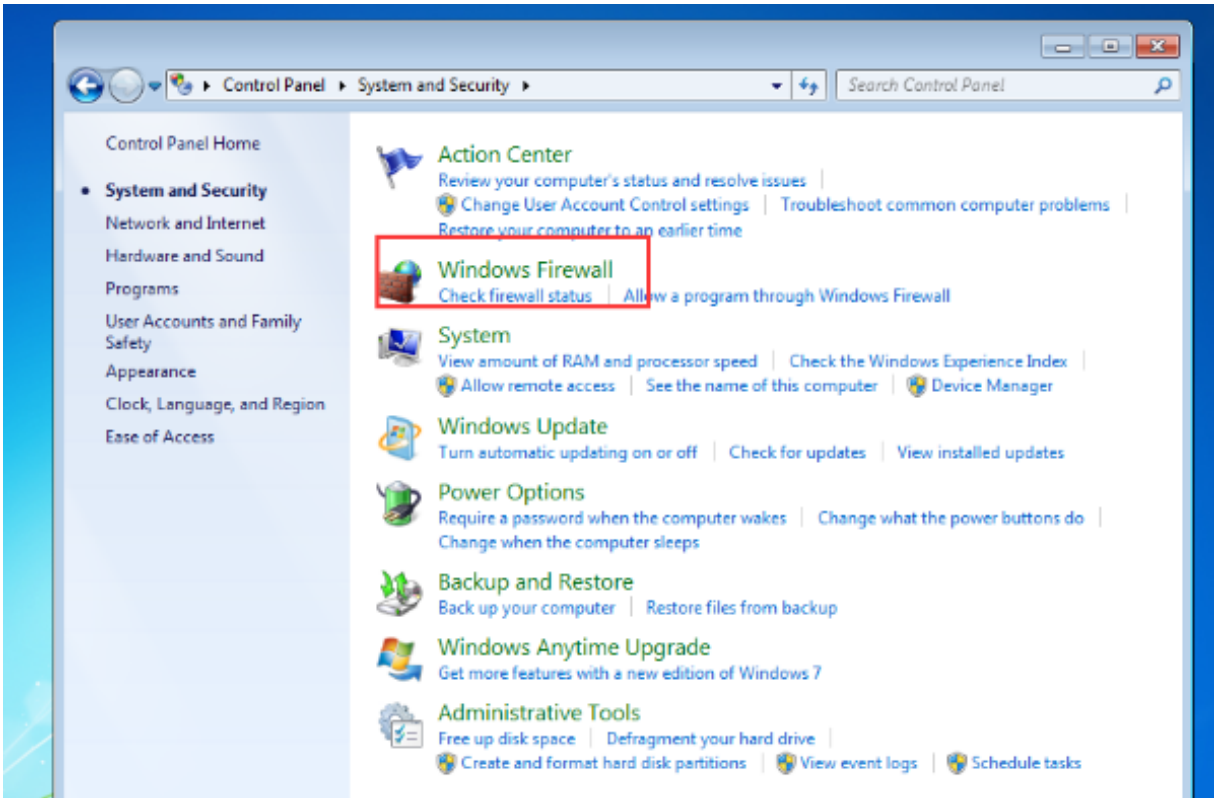


Solution 2: Do not close the firewall, but allow HMIUI to pass through the firewall

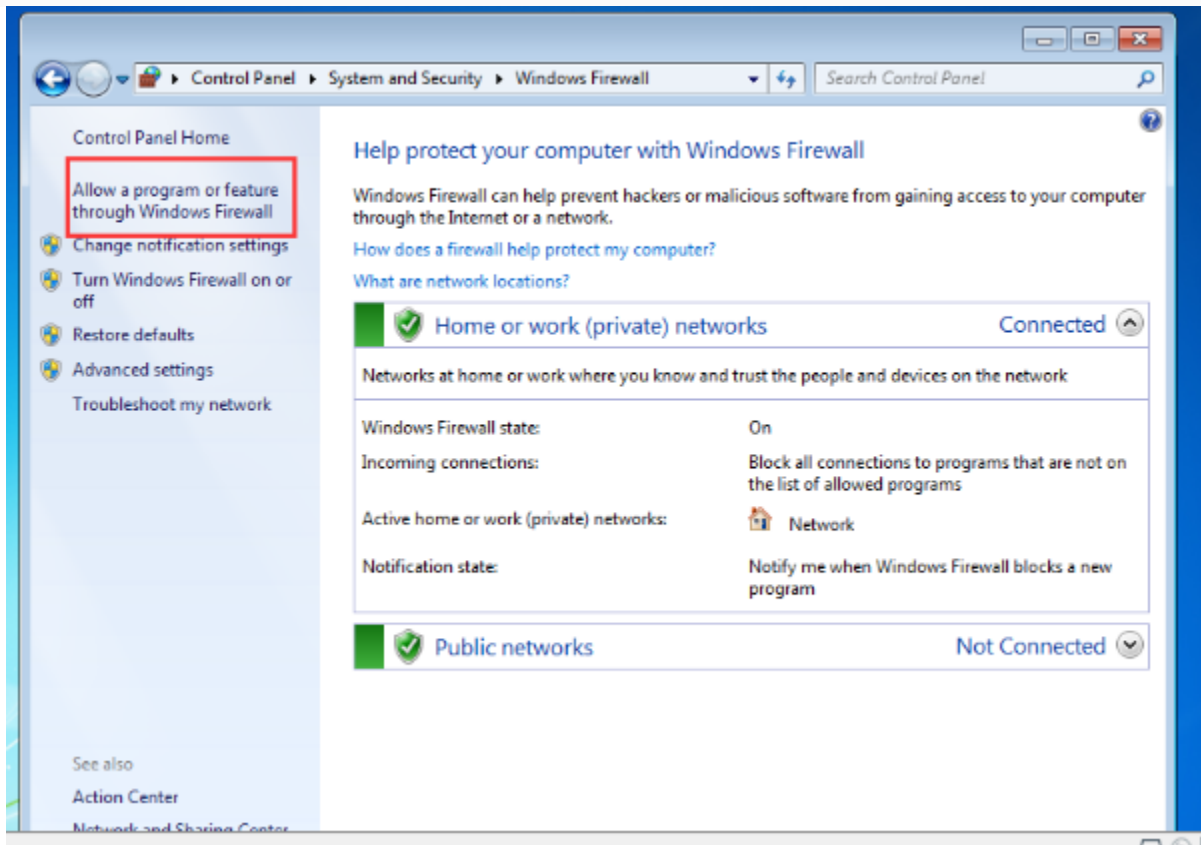
Open Control Panel selection "system Security"



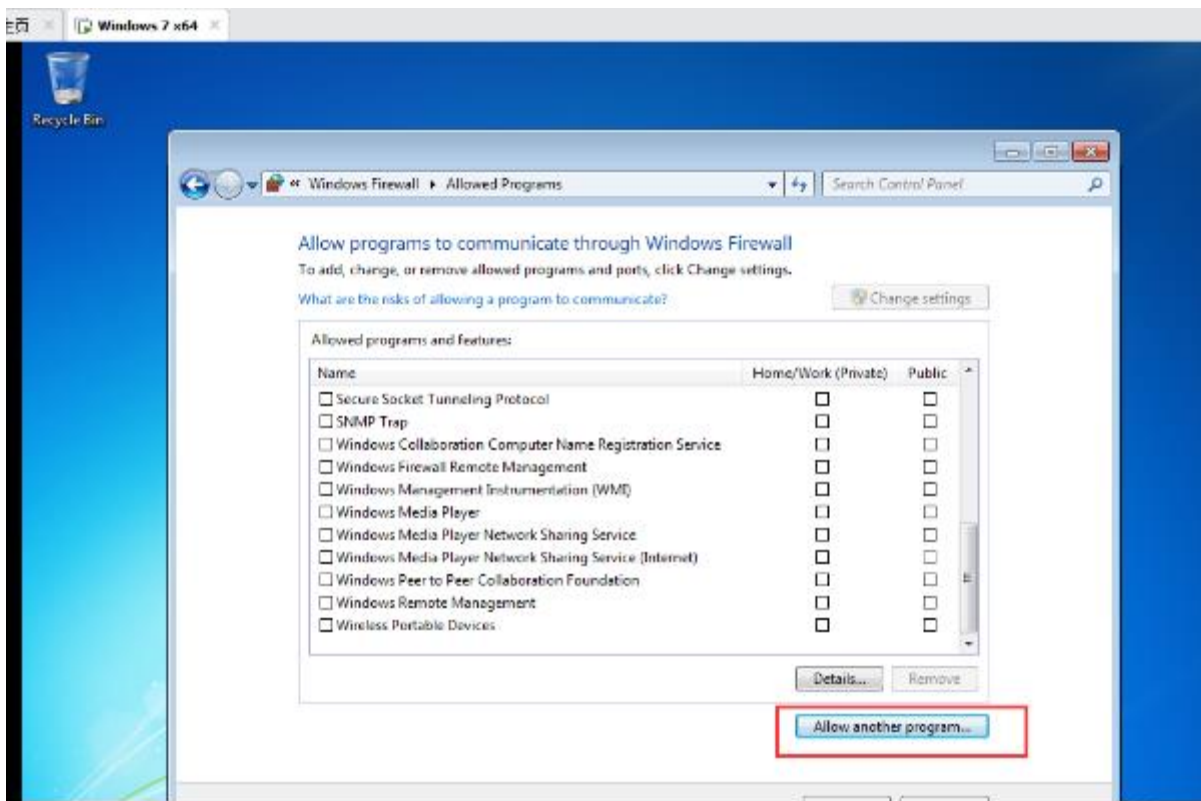
Select "Windows Firewall"



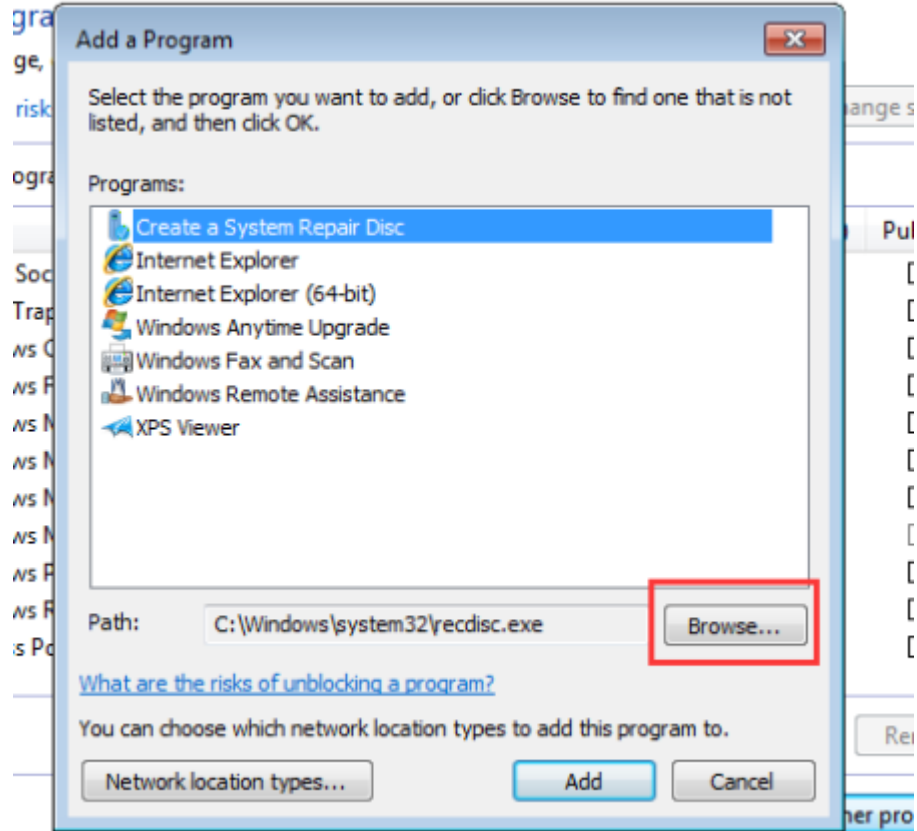
Select "run a program or function through Windows Firewall"



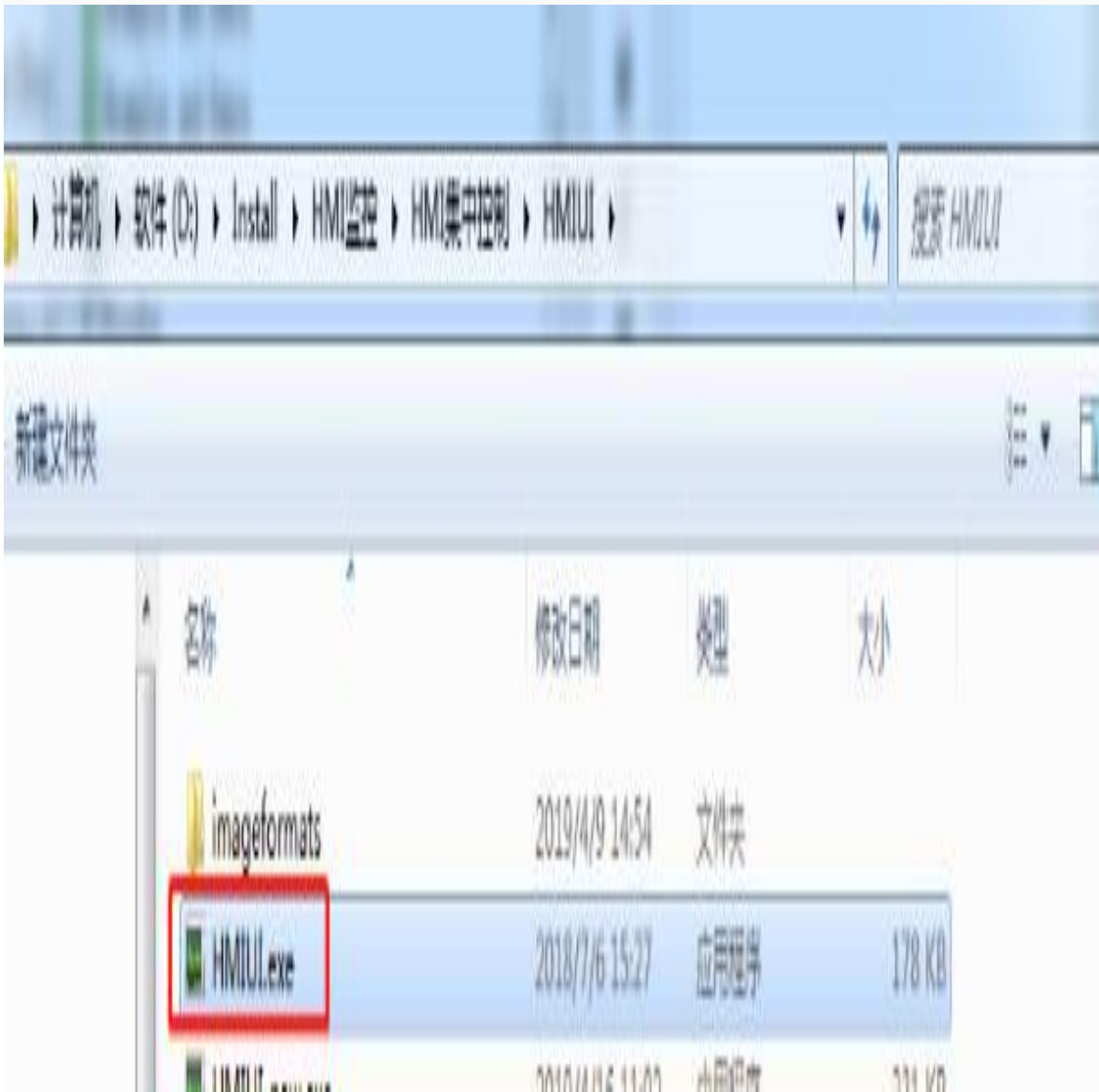
Select "Allow to run another program".



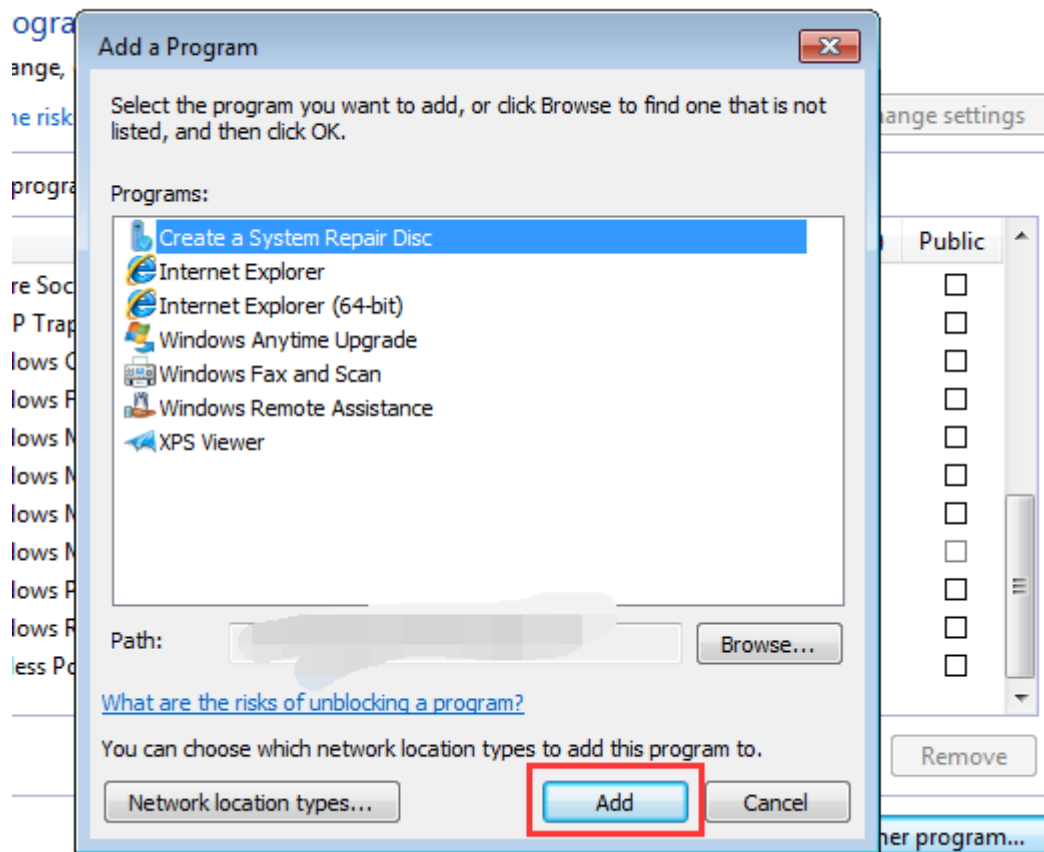
Select "browse" in the pop-up dialog box.



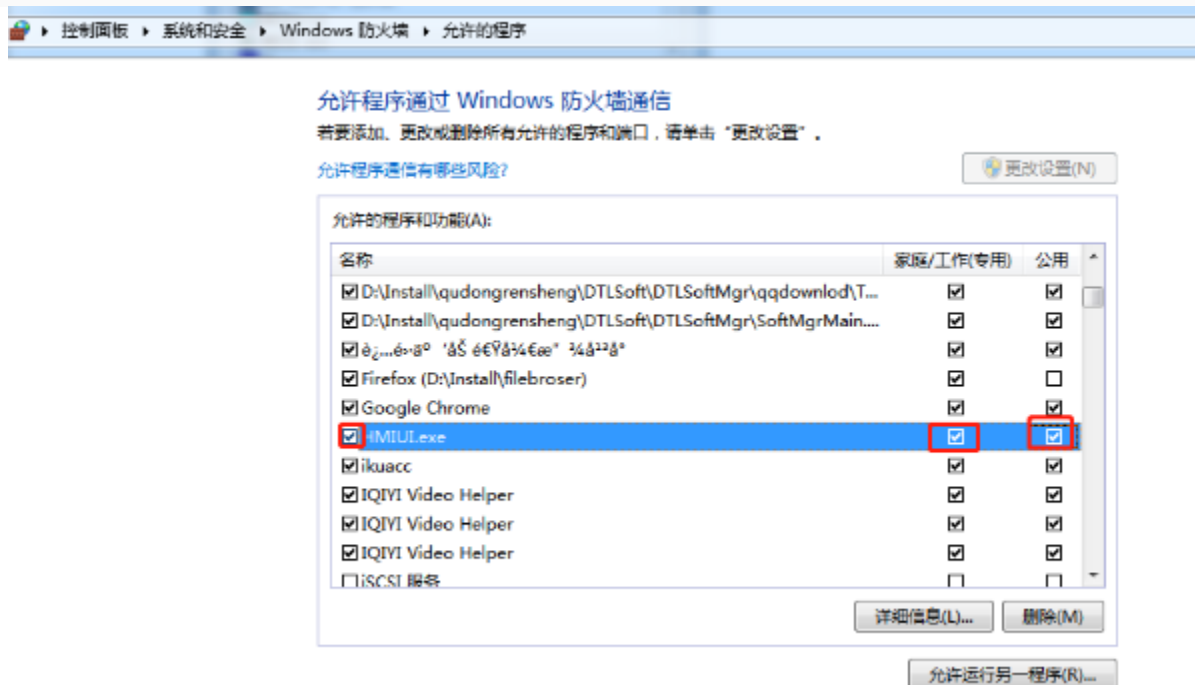
Locate the HMIUI.exe file in the HMIUI directory under the installation path of the monitoring software, and double-click HMIUI.exe.



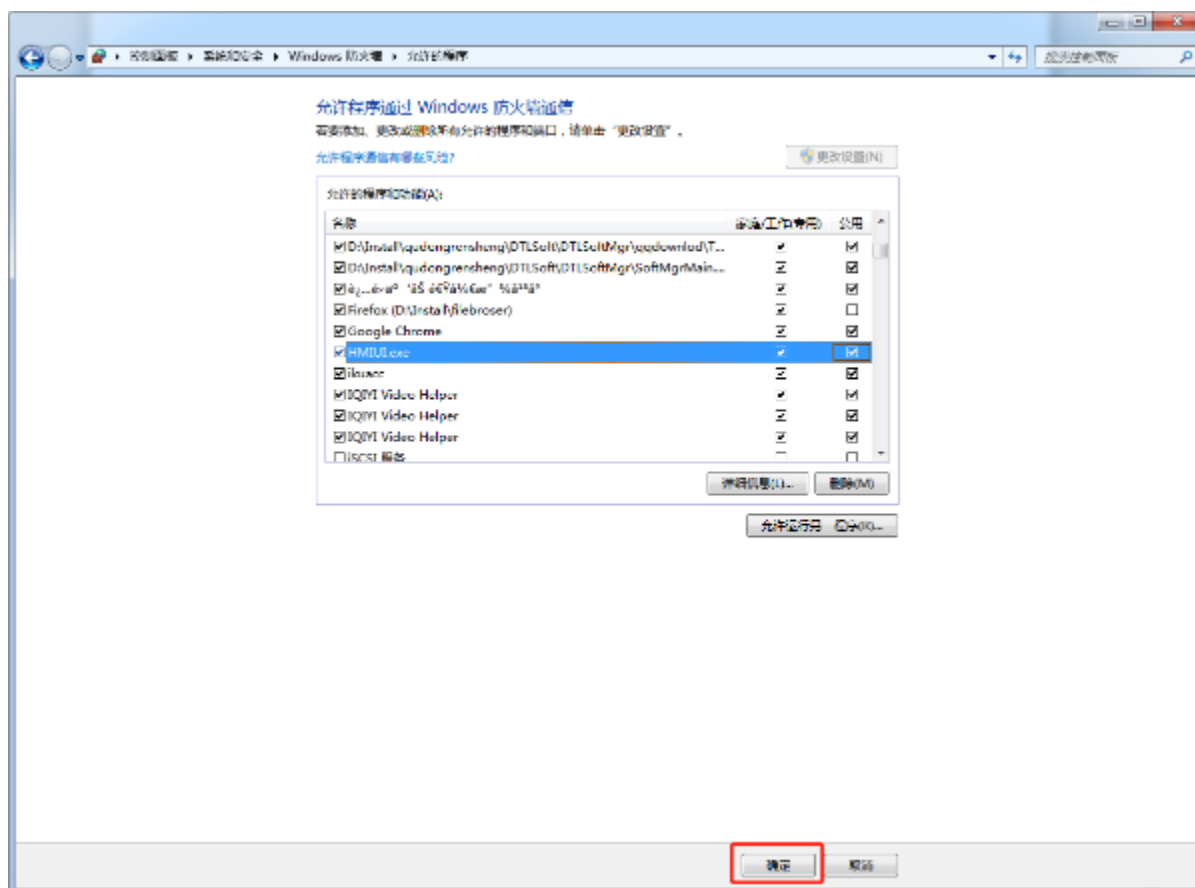
Select "add".



Check the corresponding options.



select "OK".



Remote access config

Introduction

In the traditional concept, it is rather Difficult and complicated to remotely connect HMI via Ethernet. Users not only need to consider the security issue, but also need to set up complex network parameters. In addition, subject to the stage of the network environment, users have to do everything possible to think of ways through all levels of routers and switches. And an independent IP could only correspond to one HMI in tradition sense of the remote control. The WECON remote access system will solve all of those problems.

The solution of WECON HMI remote access is "Everything is possible with one network, one HMI, one cable". No matter where the HMI is, users could easily remote access HMI through the network, to achieve exclude exceptions and resolve them in the first time. In local area network or remote Internet, users could make HMI connect to Ethernet by one cable without setting any parameters. All network settings could be set by WECON remote access system.

Set the IP of HMI

The screenshot shows the PIStudio software interface. The 'Project' menu is highlighted with a red circle '1'. The 'Project Settings' option is highlighted with a red circle '2'. The 'Project Settings' dialog box is open, with the 'HMI IP' tab selected, highlighted with a red circle '3'. The IP address is set to 192.168.1.66, the Sub mask is 255.255.255.0, and the Gateway is 192.168.1.1. The Remote access password is 888888 and the Server of HMI remote access is Server 1. A red circle '4' highlights the IP address field.

Use mobile phones, computers, tablets, etc., open a browser, enter the IP, you could access the project in the HMI screen.

- You are advised to use Chrome or Firefox. If you want to use Internet Explorer, use Internet Explorer 9 or later.

- 360, Sogou and other browsers need to use speed mode.
- Support the iphone's own browser, or install a latest UC browser.
- As long as the browser supports HTML5.

Access through the cloud

Access through the cloud platform, enter the machine code (the machine code of each HMI is independent) and model, then monitor the HMI remotely.

Access through V-NET (ig series)

Access through the V-NET, enter the machine code (the machine code of each HMI is independent) and the device password, bind the HMI, and monitor the HMI remotely.

System Components

WECON PI8000 and advanced HMI with [-R], such as PI8070-R;

WECON Smart APP or WECON Cloud platform

User manual for WECON Smart and cloud platform download link

<https://drive.google.com/open?id=1hI8QI4vmJhAis2GFuCISChV9xGU0BxQ9>

FAQ

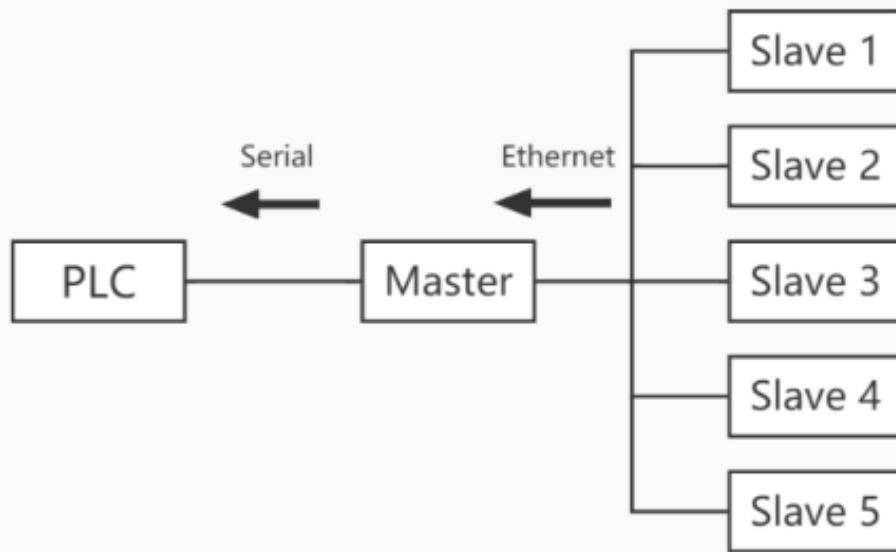
- What is the difference between the-R model and the normal model?
 - The-R model can be accessed directly and unrestricted. Normal models need to buy cloudmonitoring products before access. The number of monitoring normal model is limitedaccording to the customer's purchase of cloud monitor packages.
- How many customers could remote access HMI at the same time?
 - It supports max. 4 customers access HMI in the same time.

Mult-link

Introduction

The main principle of Multi-link is to use the method of Master&Slave to implement the One machine-Multiple screens by ethernet port. For example, one Master HMI connect to one Slave HMI, the Slave one can write or read value from PLC which is communicated with Master.

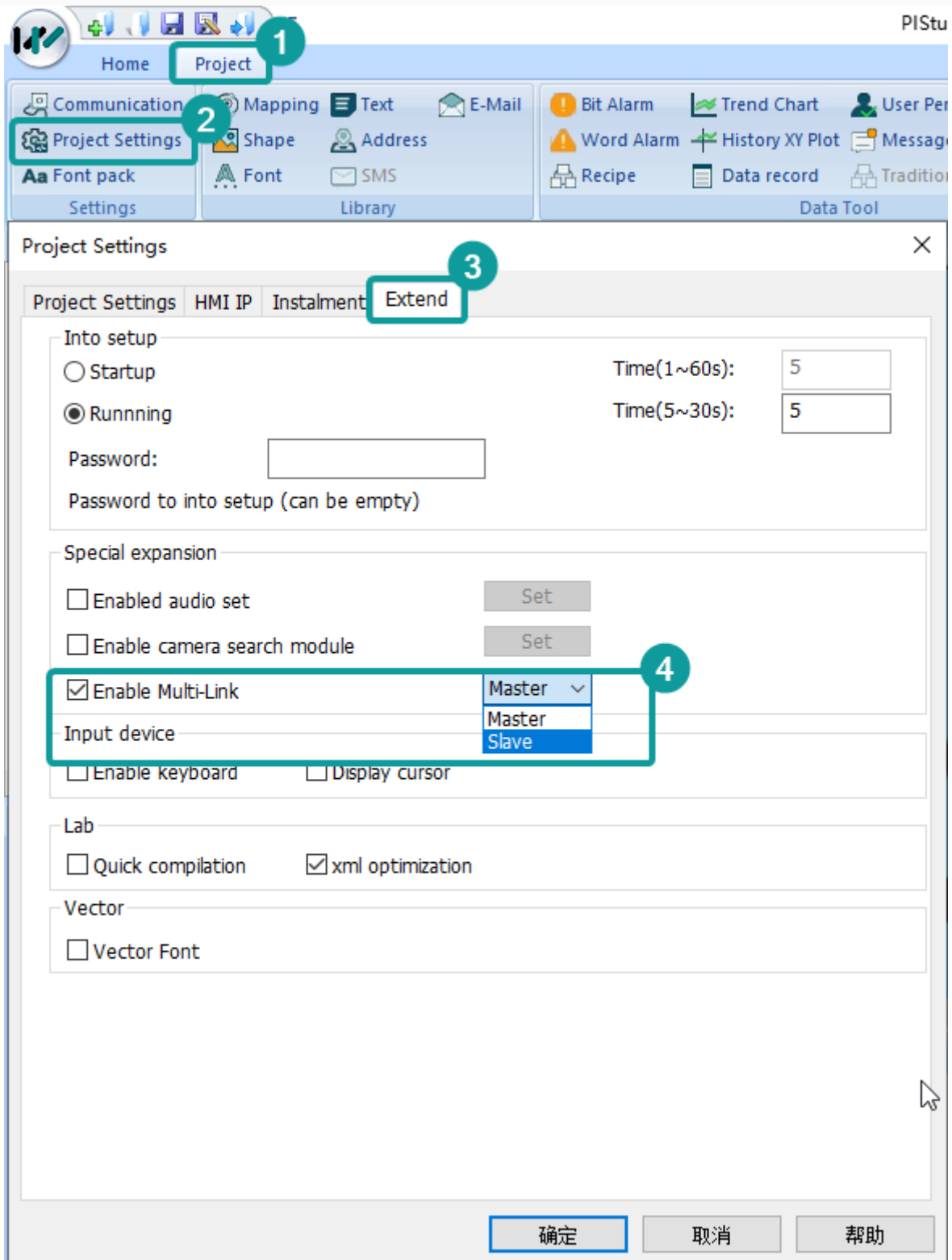
In Multi-link, there is only one Master, and all the other HMIs are Slaves. The Master HMI is the only one device communicate with PLC, and the data received from the PLC is transmitted to each slave through the host HMI(Master).



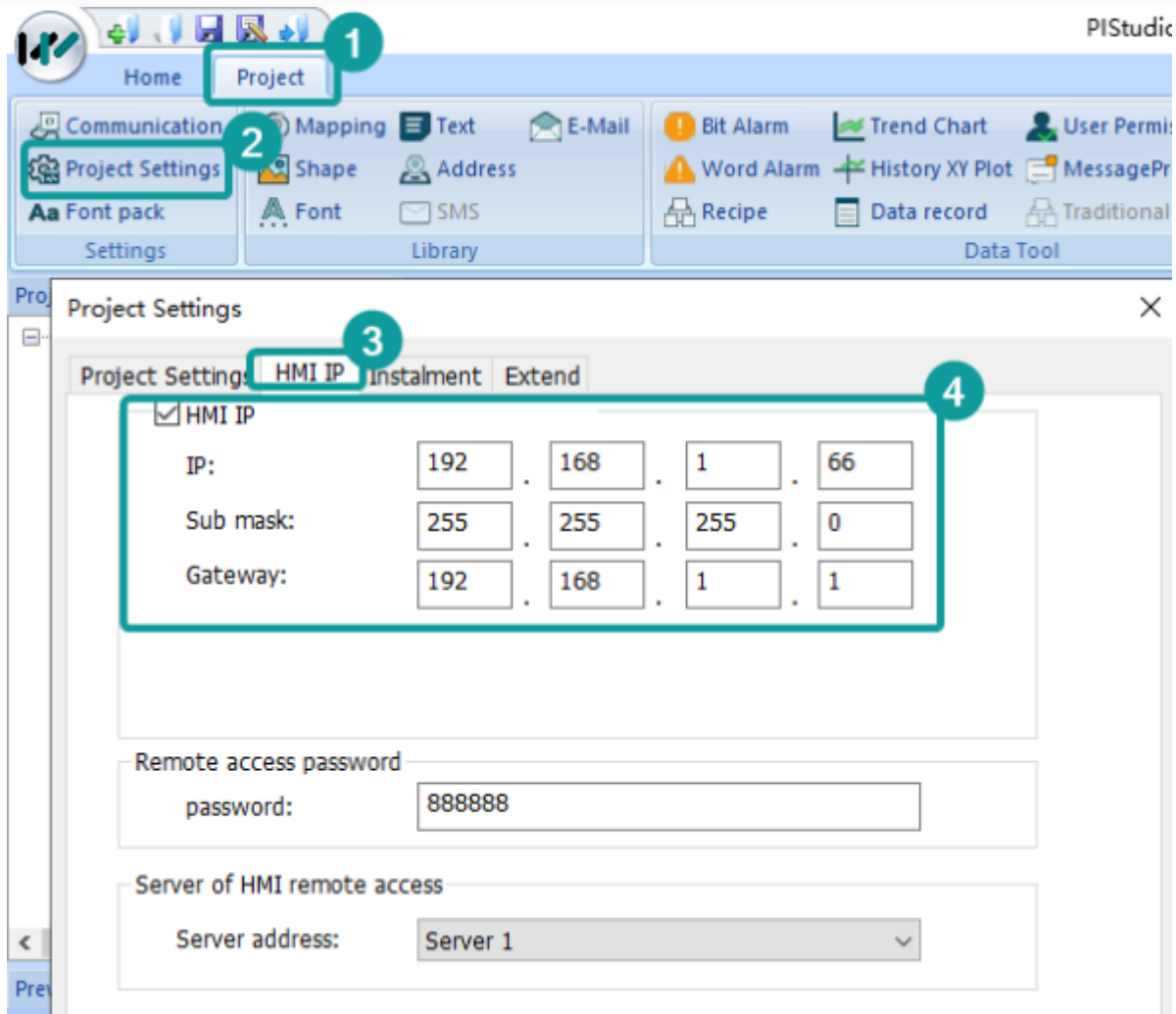
At present, the Multi-link is regarded as special function. So not any model HMI support it. Need the HMI come with the special machine code. The series support Multi-link function right now: General, HMI+, i Series. Multi link doesn't support the online simulation. PI3000/PI3000+/PI3000i series can only have one Slave when using this function, while PI8000/9000,PI8000+/PI9000+ series can use at most 5 Slaves.

PIStudio settings

Check to enable Multi-link, select the corresponding option. For example, if it is a slave HMI, select Slave.



Master IP address setting: Click "Project"→"Project settings"→"HMI IP", as below.



Slave project

In order to let the fonts in the Slave and the Master consistent with each others, so Slave project needs to add one screen that can set the IP address of Master HMI for connecting to the Master, on the original the Master project. If Master project has components that use other font styles, and Slave project If there is no component corresponding to Master project, then the default font style SimSun would be displayed when the Multi-link is enabled. To avoid the Slave device prompts communication timeout message, you can add HSW9 = 1 in the initial script of Slave device.

Address

Address	Address Description	Usage Method
HSW1100	The IP of Master HMI	IP address high endian 1

HSW1101		IP address high endian 2
HSW1102		IP address high endian 3
HSW1103		IP address high endian 4
HSW1104	Control the Slave to connect to the Master or not	1: Connect to Master 0: Disconnect

Notice

During the connection, if the Master is downloading program, there is a highly chances that the slave screen is abnormal, and the Gallery and imported pictures cannot be displayed.

After the download process of Master HMI is finished, Slave needs to be restarted to monitor normally.

- If the Master and Slave are operated on any screen, the screen also will follow the changes and synchronize for other side.
 - Using HSW12 = 1 on the Master, which can not affect each other.
- There is no momentary delay function for buttons.
- Multi-link version bit switch has no Min. holding time.
- PI3000 series can only have one Slave when using this function, while PI8000/9000 series can use this function at most 5 Slaves.
- Only supports Multi-link connection in the LAN network (local area network), or direct connection between Master and Slave.
- The Master and Slave projects must be consistent (mainly for keeping the font style used by the Master and Slave HMI consistent), and the Slave HMI always adds the configuration of the "Master IP address".
- After the special address is enabled, Slave will remotely monitor the interfaces from Master, and the source project will not be executed.

✎Note: Slave project only needs to ensure that there is "the HSW address of the Master HMI IP" and the font style used by the Master.

V-NET Access (PC Side)

Login interface

Enter the platform, as shown in Figure 1:

New users need to register first.

- The successfully registered account is the administrator account, which can bind the device and other operations.

- The user needs to remember the registered account and password, and able to log in simultaneously on the PC Client/APP.
- If the user forgets the password, he can click "Forgot Password" to reconfigure the password.

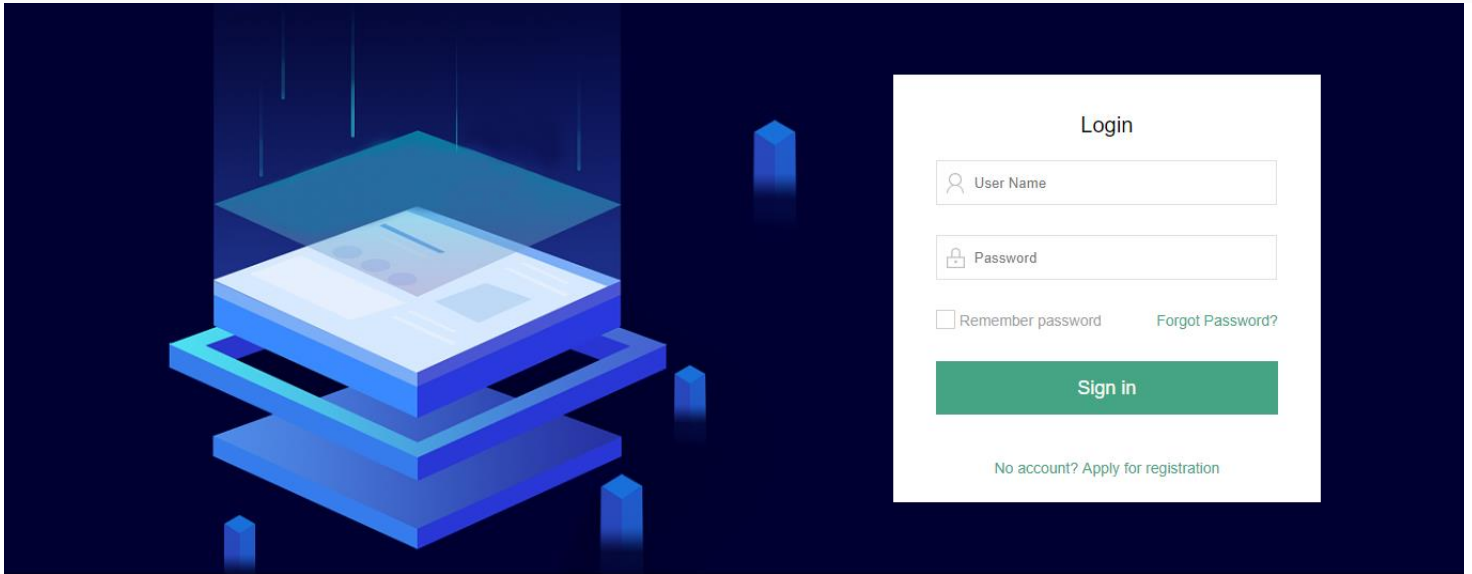


Figure 1

Enter the account and password, and then click the "Login" button.

After successfully logging in, enter the "V-NET" interface, as shown in Figure 2. Add the HMI information you want to access through the "+" in the lower left corner.

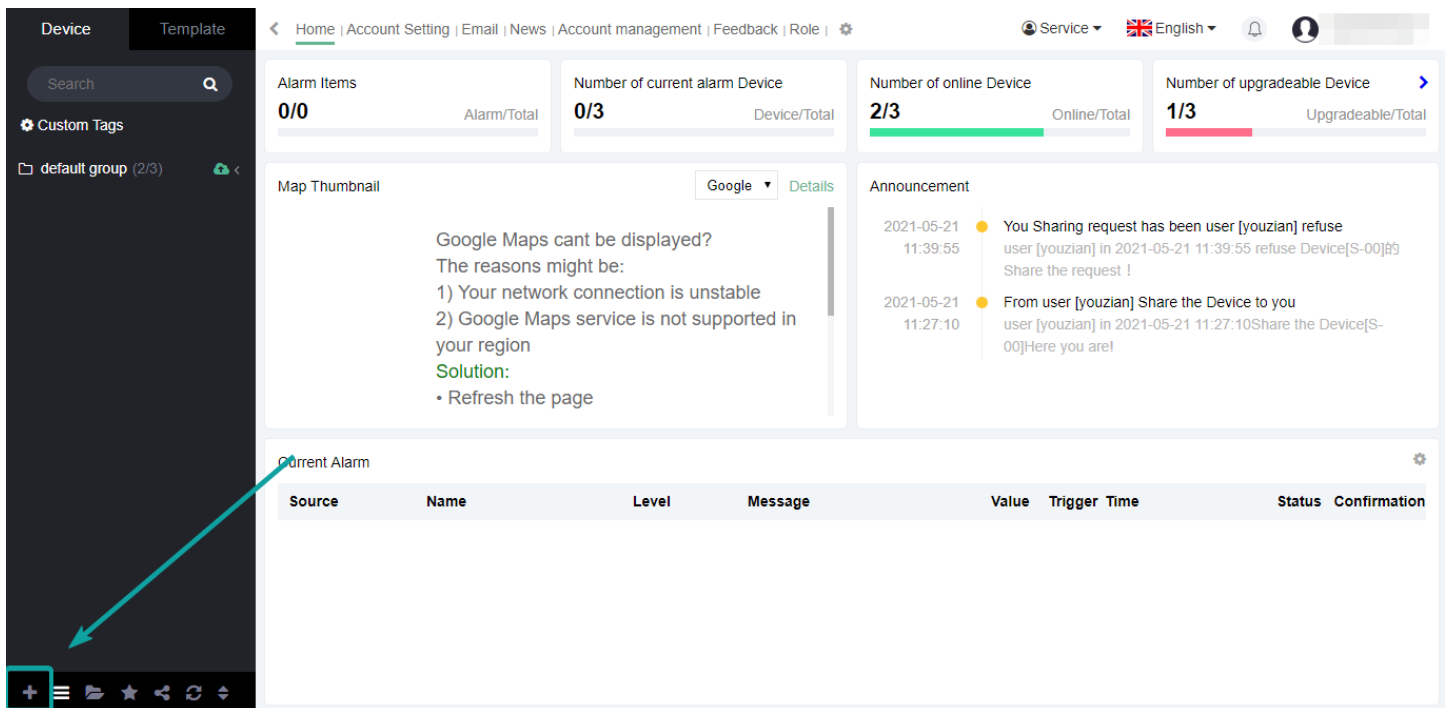


Figure 2

After the Add Device window pops up, enter the machine code and password of the device to add the device, as shown in Figure 3:

The screenshot shows a dialog box titled "Add Device" with a close button in the top right corner. The dialog contains the following fields and controls:

- Access Key:** A text input field containing the letter "U". To its right is a help icon (question mark).
- Buttons:** Two green buttons labeled "Import" and "Template" are positioned below the Access Key field.
- Password:** A text input field containing six dots, indicating a masked password.
- Remark:** A text input field containing the text "PI3102ig". To its right is a help icon (question mark).
- Group:** A dropdown menu with the selected option "Default group".
- Industry:** A dropdown menu with the selected option "Smart home".
- Bottom Buttons:** Two buttons at the bottom right: "Cancel" and "OK".

Figure 3

- **Device machine code:** Each HMI has a unique and independent machine code, which is used to identify every remote device. (When binding multiple devices at the same time, the device passwords must be the same. Only one machine code can be entered on one line. When entering multiple machine codes, use the "Enter" key to change the line. If the format is wrong, the binding operation will fail and error will occur). Method of obtain machine code:
 - PISudio → "Project" → "Tool" → "Download" → Copy the machine code.
 - Long press the upper right corner of HMI to enter the backstage, you can see "Machine Id" in "Machine Info".
 - Obtain the machine code from the backlabel of the device.
- **Device password:** Refers to the Cloud access password, the default is 6 digits 8 (888888). Please refer to the cloud configuration if you first time binding the device.
 - The length is 6 digits, English and special characters in English are allowed, spaces are not allowed, and cannot be empty.
- **Device alias:** Refers to the name recognition of device in the menu bar of V-NET.
 - Maximum 12 digits, except "._-+=}]", ".?,:;: "" "" 【】 —()...! these Special characters allowed others are limited to input, no spaces or blanks are allowed.

- If the device is successfully bound, click OK, and it would prompt message: The device is bound successfully!

Note: If you bind multiple machine codes in batch, the device alias will use the input device alias as the prefix, and the system will automatically add a suffix. Example: Default group (device alias)_1 (automatically added suffix).

V-NET module

Remote Monitoring

The remote monitoring module can display the project page of the current screen in real time, and can operate the project on the web page, and the control of the screen. As shown in Figure 4:

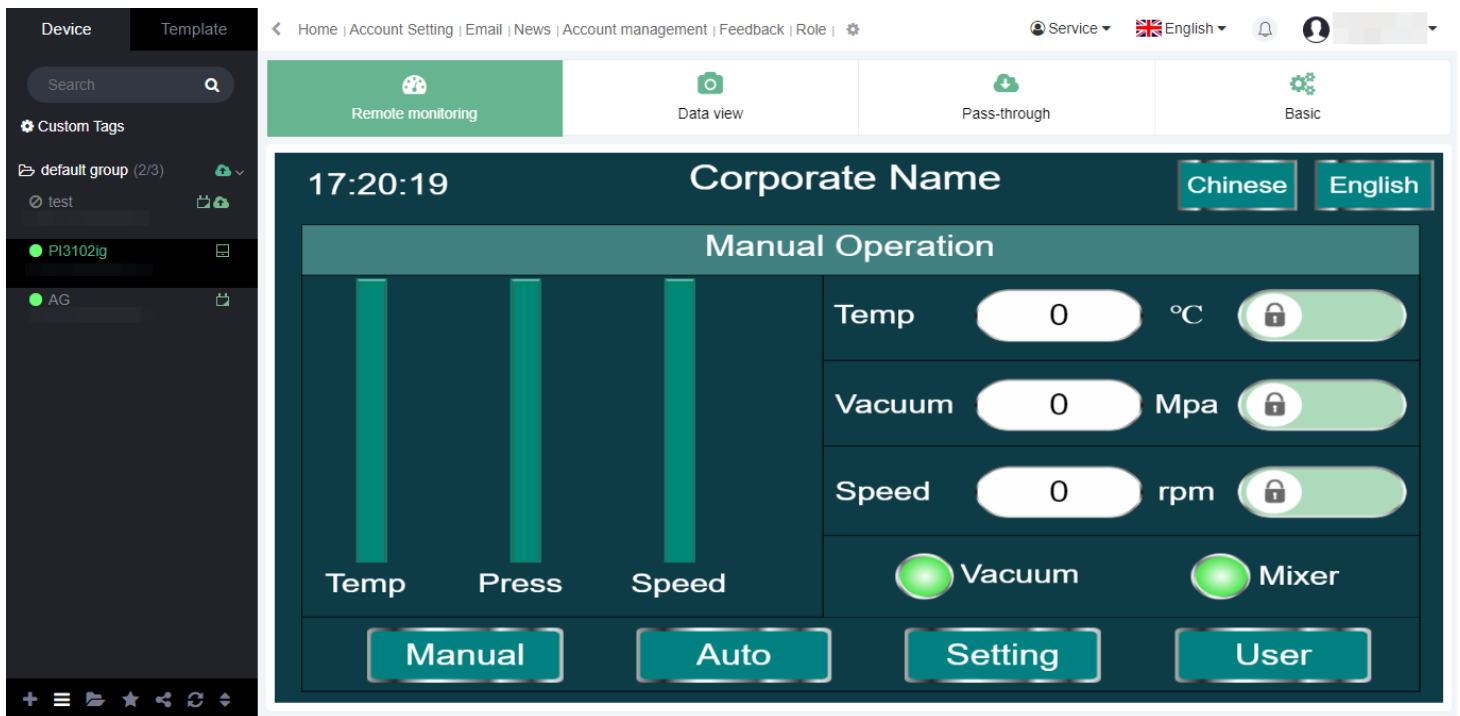


Figure 4

Data Viewing

The data viewing module is divided into Communication port, Collection point, Alarm configuration, Alarm records, Data Record configuration, Data Record, etc. As shown in Figure 5:

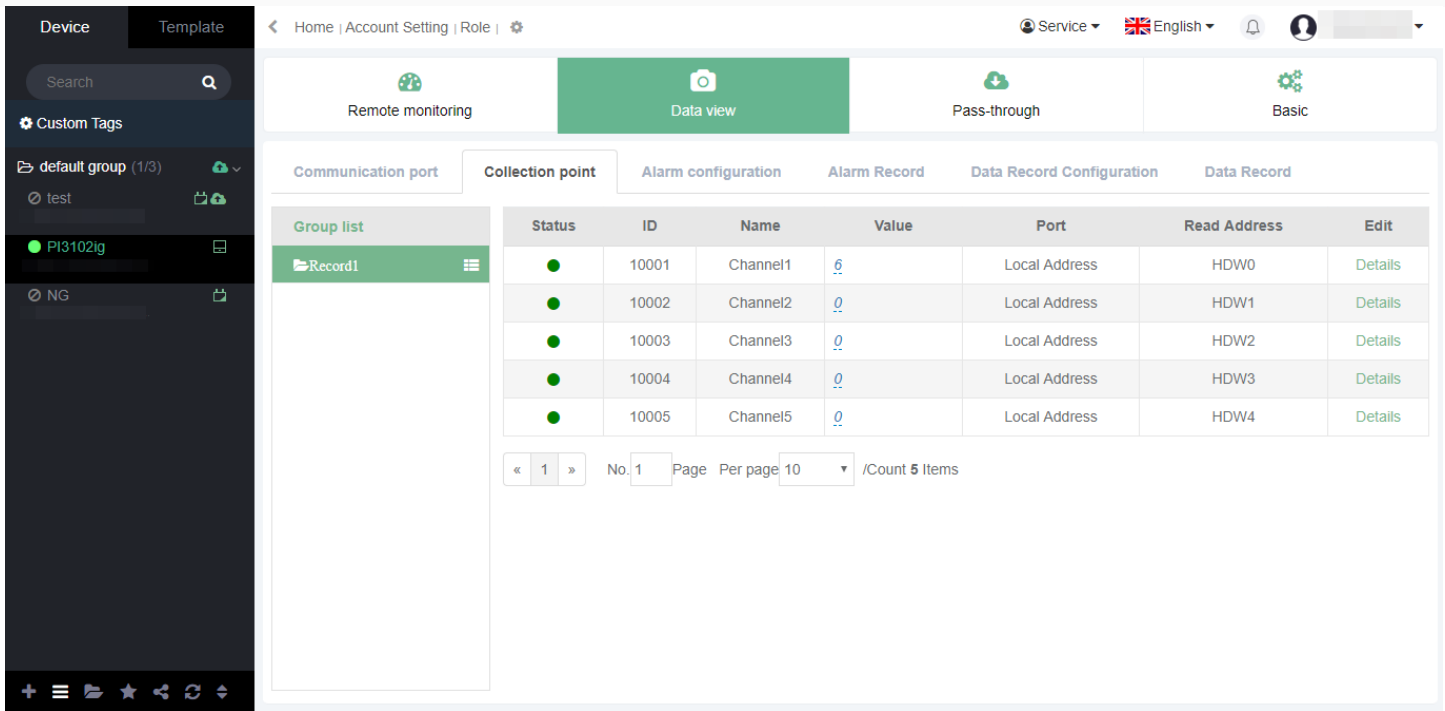


Figure 5

The parameter configuration is as follows:

- Communication port : The communication port information, includes connection method and protocol name, can only be viewed, and cannot be added or modified. This info comes from the settings from HMI.
- Collect point:Data monitoring module of the device. The collection point is the monitoring data, and its read-write, write-only, and read-only permissions also come from the Tags settings from HMI.
- Note: You cannot add or delete collection points here. The read & write permissions of the collection points in the HMI will directly restrict the modification of the read & write permissions of the collection points by V-NET.
- Alarm configuration: Alarm records of the device, monitoring points cannot be added, confirming the Alarm record and exporting data can be performed.
- Data Record configuration: Data Record is historical data of the device, monitoring points cannot be added, curve and list viewing method are supported, and data records can be exported.

Remote Download

This function allows application on the PC to download directly to PLC or HMI, as shown in Figure 6:

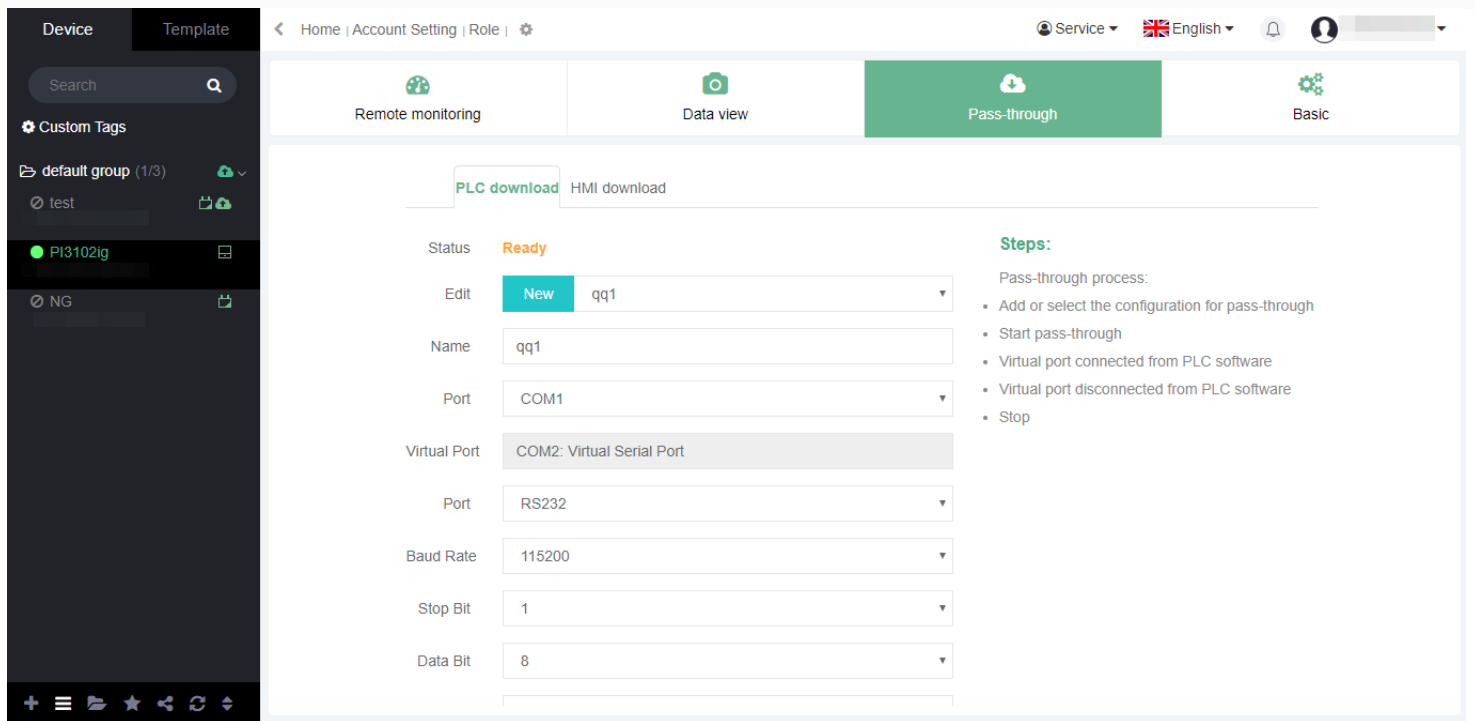


Figure 6

Note: The pass through function of remote download is temporarily unavailable on the web page, and it can be used normally in PC client. The configuration is as follows:

PLC download (only for Pass-through)

- Click the setting (gear icon) in the upper right corner of PC Client, and a dialog will pop up. The red area is the COM port configuration when the PLC pass-through downloads. As shown in Figure 7:

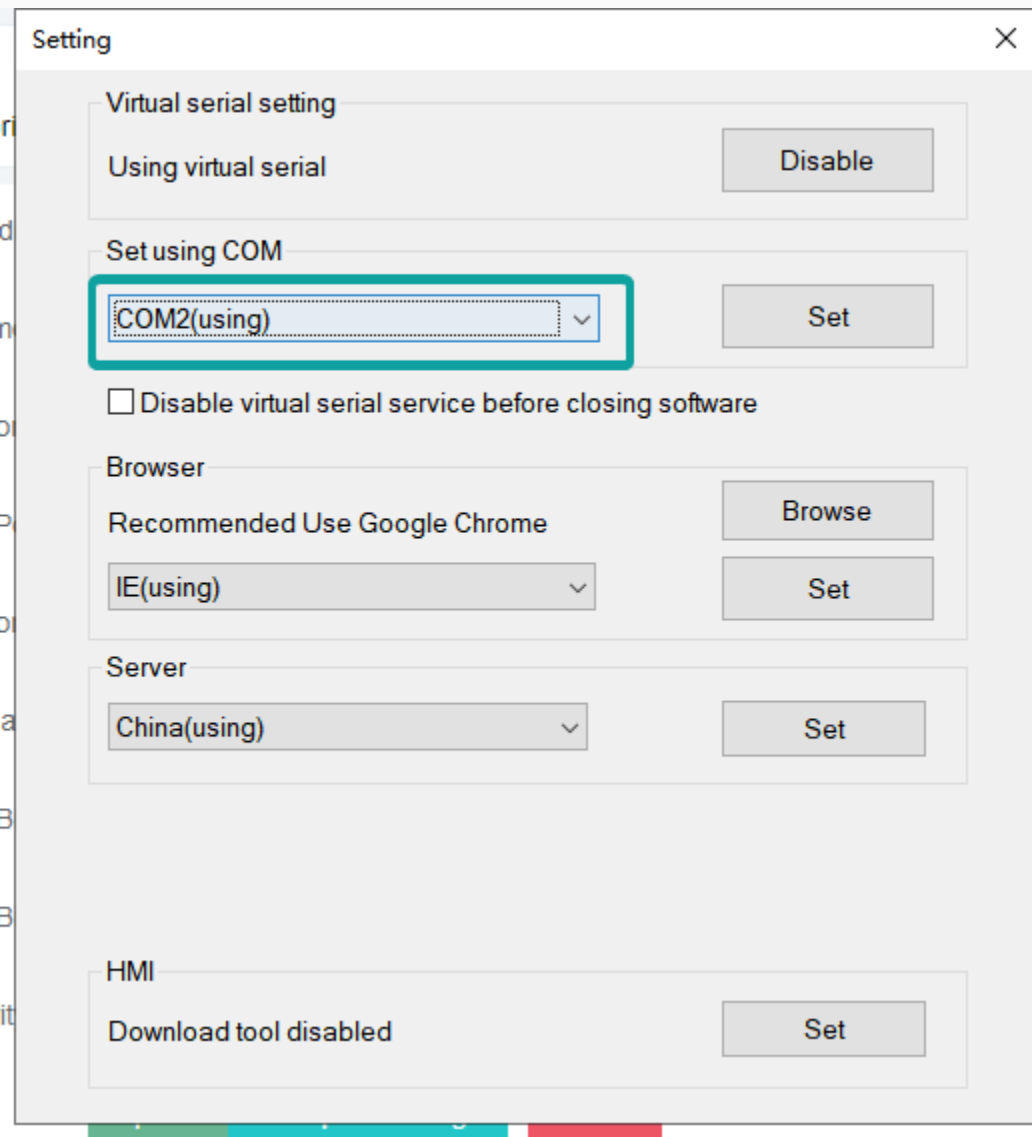


Figure 7

- After configuring the COM port, go to the remote downloaded, PLC download, to config the name, communication port, virtual serial port and other configurations as shown in Figure 6.

HMI Download (only for Pass-through)

- Click the setting (gear icon) button in the upper right corner of PC Client, and a dialog will pop up. The red area is the configuration of the HMI download tool. As shown in Figure 8:

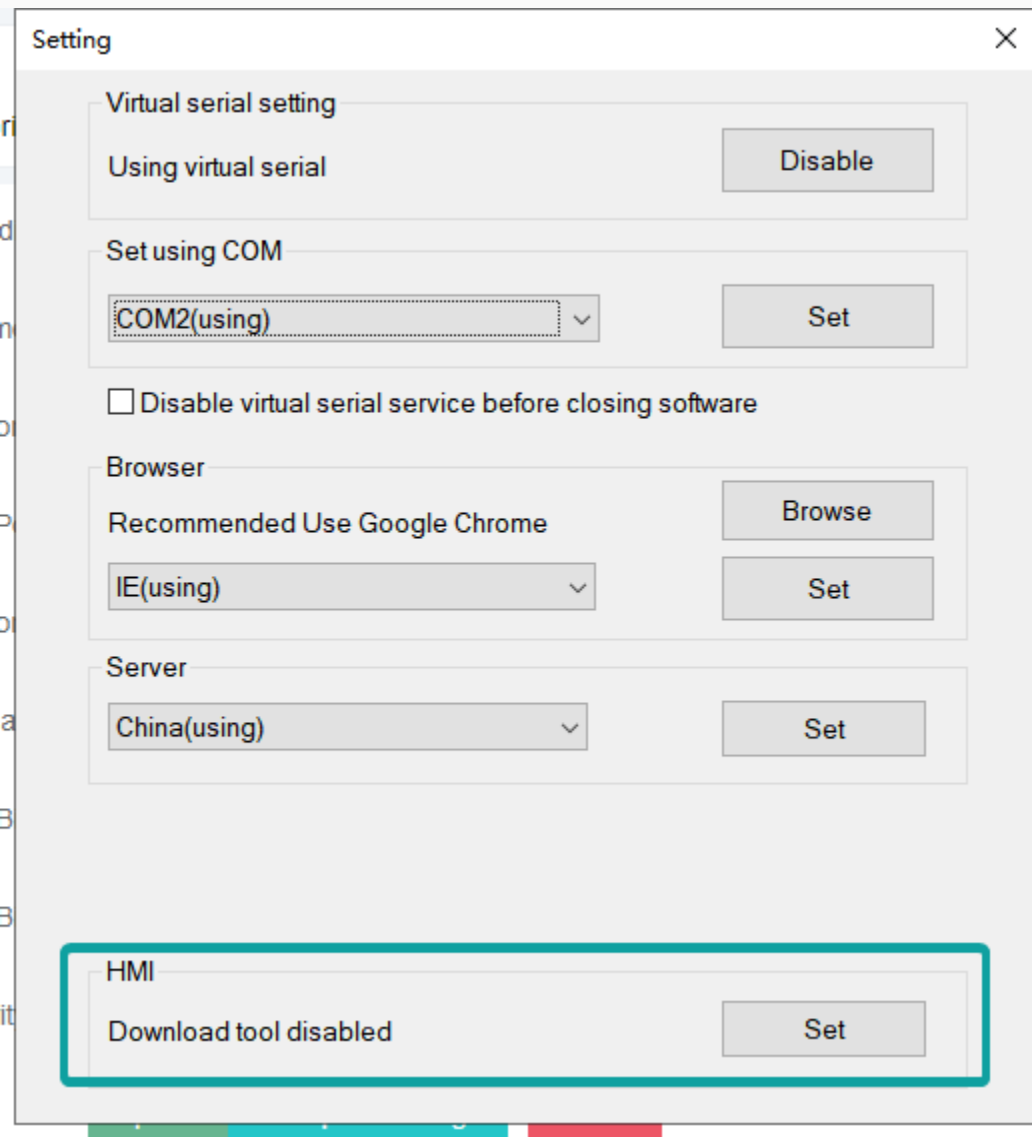


Figure 8

- Click the setting (gear icon) button, a dialog box will pop up, and automatically detect and find the PISStudio that has been installed in PC and conforms to the version, as shown in Figure 9:
 - Location: Display the installation path of the current PISStudio.
 - Version: Corresponding to the version of the current PISStudio.
 - Browse: Click to manually set the installation path of PISStudio.

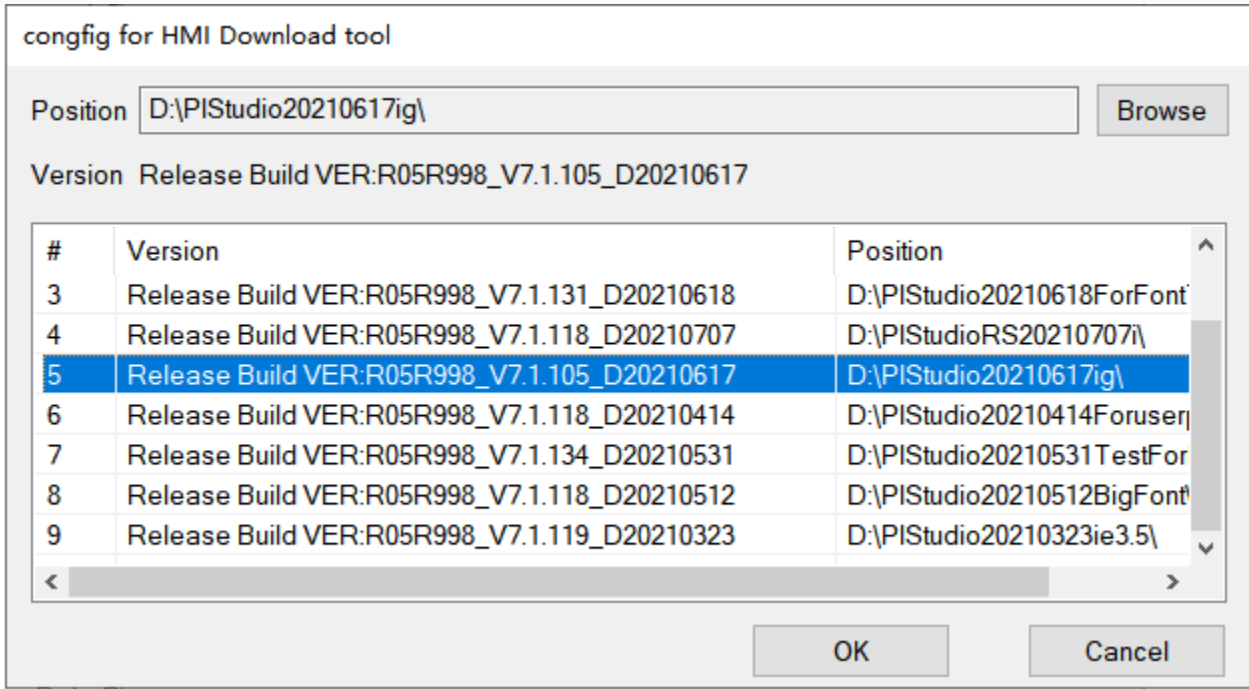


Figure 9

Basic

In the "Basic" sub-page of Basic, HMI name, record reserved selection, password, location and remarks, etc. As shown in Figure 10:

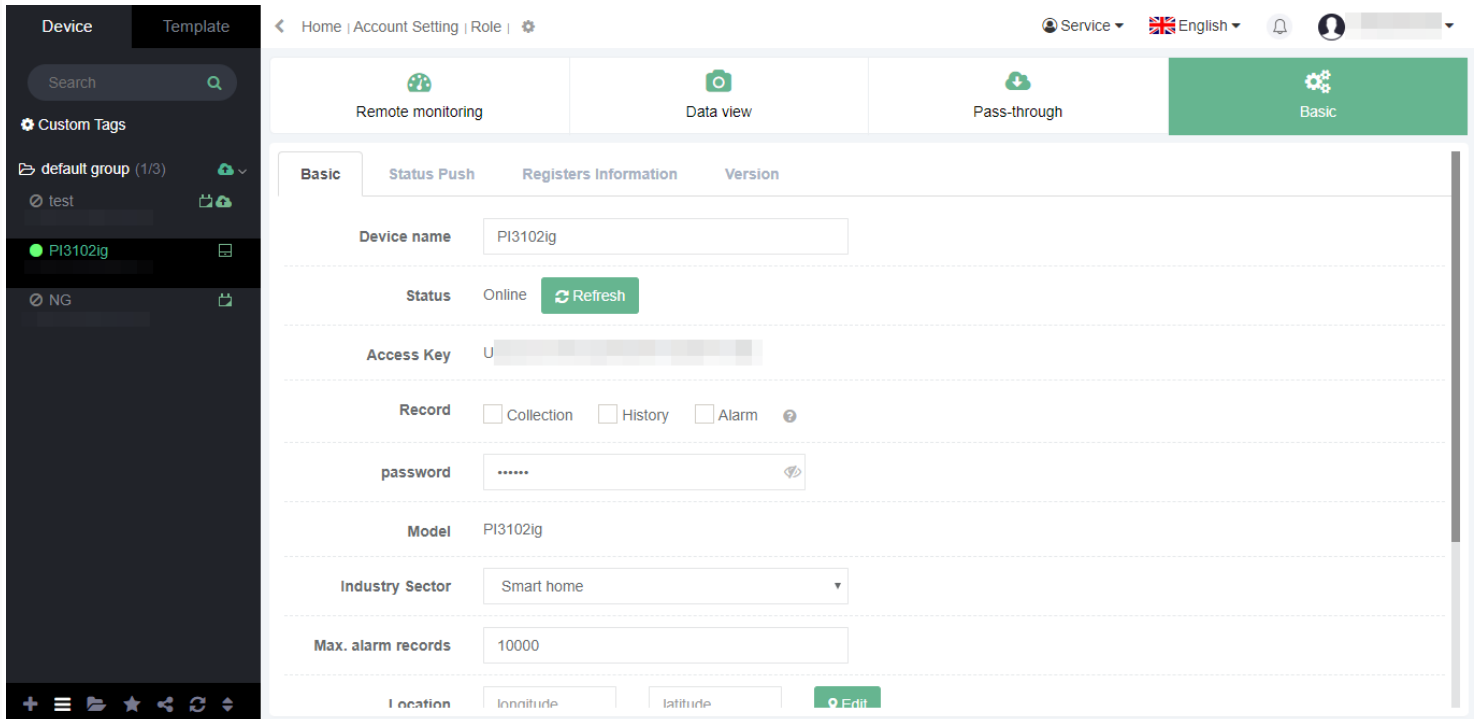


Figure 10

The device name is an alias of HMI, which is mainly used for easy distinction.

Online status: You can click the refresh button to refresh the online status of the HMI.

Machine code: Each HMI has a unique and independent machine code.

Record reserved: Checking the corresponding options will let HMI to suspend updating the corresponding configuration after downloading a new project.

Password: Refers to the cloud access password, the default is 6 digits 8 (888888); the cloud access password can be set and modified, the specific location is:

- V-NET → specified HMI → Basic → "password" → modify and save, as shown in Figure 10.
- "Project" → "Cloud" → "Basic" → "Password" → of PIStudio (only unbind HMI can be modified), see Cloud Configuration.

Maximum storage of Alarm data: The maximum number of alarm data saved, with a range of 1 to 50000.

Positioning:

- Use the device base station positioning to locate.
- Use manual positioning.

Note: After modifying the basic information of the device, you need to click Save below to save the modification successfully. If it is not saved successfully, please click Force Synchronization.