

Haiwell A8 Intelligent PLC

Intelligent A8 Instructions



Edit History

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I. Product Introduction

1. Main Functions

Haiwell A8 Intelligent PLC is a compact, small-sized integrated IoT PLC that combines PLC, HMI, IoT gateway, multifunctional RTU and data penetration DTU in one device. It can be easily managed through mobile app and Haiwell cloud website.

As an industrial automation monitoring/management device operating on embedded system software (specifically Haiwell Configuration Project), it enables real-time monitoring of industrial sites by accessing A8 operation interfaces via mobile app or Haiwell cloud website. It also communicates with various industrial control devices, aggregates data and uploads them to the cloud for further data applications.

2. Functional Characteristics

- **Ultimate Integration:** Supports all functions of PLC and Intelligent Gateway, ushering PLCs into the intelligent connectivity era.
- **Mobile as HMI Screen:** Download HMI configuration projects for direct local access via mobile devices, supporting QR code-based instant access.
- **LAN Interconnectivity:** Plug-and-play connectivity with phones, tablets, PCs, TVs, cameras, and HMIs in local networks.
- **IoT Capabilities:** Seamless internet-based connections with phones, tablets, PCs, TVs, cameras, and HMIs.
- **Remote Access:** Revolutionizes traditional Web SCADA solutions with zero reconfiguration and WYSIWYG visualization; supports asynchronous/synchronous multi-user monitoring.
- **Data Security:** Enables data transmission/storage to designated servers with flexible local or public network deployment.
- **Open Interfaces:** Compatible with MQTT, OPC UA, HTTP, TCP protocols for seamless ERP/MES/third-party system integration.
- **UI Embedding:** Direct integration of third-party software, apps, and mini-programs into project interfaces for instant remote control.
- **Mobile Barcode Scanner:** Transform smartphones into extended PLC peripherals, replacing traditional scanners for mobile data entry.
- **Digital Dashboard:** Achieve smart factory visualization via Haiwell TVBOX networking for data display and centralized equipment monitoring.

II. Product Specifications

1. Product List

Model	Storage	Max Number of Expansions	I/O Interface	LAN	COM	WIFI	Wireless Network	Satellite Positioning	Dimension (mm) W*H*D
A8	4G+512M	15	8 DI	1	1	Yes	/	/	40*95*69
A8-E	4G+512M	15	8 DI	1	1	Yes	Global 4G	/	
A8-GP	4G+512M	15	8 DI	1	1	/	China 4G	Yes	

2. Product Specifications

Model		A8	A8-E	A8-GP
Software	Programming Management Software	Haiwell Happy PLC Programming Software, Haiwell Cloud SCADA		
Hardware	Storage	Flash 4GB, RAM 512MB		
	Serial Port	1-Channel Isolated RS485 Communication Port		
	Ethernet	1-Port 10/100Base-T Ethernet Port		
	Hardware System Reset	Yes		
	Operation Switch (PLC)	Yes		
	I/O Port	8-Channel Optically Isolated Digital Input (DI)		
	SIM Card Interface	/	One self-ejecting Micro SIM card port	
Function	4G Capability	/	Global 4G	Built in e-SIM (China 4G)
	Satellite Positioning	/		Yes
	WIFI Function	Yes		/
	RTC	Built in real-time clock		
Power	Input Power Supply	24VDC±20%		
	Power Consumption	<8W		
	Power Protection	With surge protection		
	Withstand Voltage	500V AC		
	Insulation impedance	Exceed 50MΩ @500VDC		
Environment	Environmental Temperature and Humidity	Operating Temperature: -10°C ~ +60°C, Storage Temperature: -20°C ~ +70°C, Humidity: 10% ~ 90% RH, No Condensation		
	Vibration Resistance	10~25 Hz (X.Y and Z axis 2G/30 minutes)		

	Impact Resistance	15G, continuous 11ms, (X, Y, Z three axis direction 6 times each)
	Cooling Method	Natural wind cooling
Shape	Dimensions	40mm*95mm*69mm (W*H*D)
	Shell Material	Engineering plastic ABC+PC (flame retardant requirements: 94V0, in line with ROHS requirements)

3. PLC Partial Performance Specifications

Classifications	Performance Specification
Program Control Method	Periodic Cyclic scan method
Input/Output (I/O) Control Method	Refresh once per scan cycle, support to refresh order immediately (host and expansion modules)
Instruction Processing Speed	0.05μs/basic instruction
Programming Language	LD (ladder diagram) +FBD (function block diagram) +IL (instruction table)
Program Capacity	48K
Storage Method	Flash ROM is permanently stored without a backup battery
Communication Protocol	Modbus RTU/ASCII protocol, free communication protocol, Haiwellbus high-speed communication protocol, baud rate 1200~115200bps
Hardware Scalability	15 expansion modules can be expanded
Floating-Point Arithmetic Instruction	Provides floating point operations for data up to 32 bits, integer/floating point conversion operations
Password Protection	Three levels of password protection are available (project file password, PLC hardware password, separate block password) to prevent unauthorized program uploads.

4. Indicator Light Descriptions

● **PWR:** Power indicator, green.

Steady on – Power supply normal; Off – Power supply abnormal.

● **RUN:** Operation indicator, green.

Steady on – PLC unit is in operation; Off – PLC unit is in stopped state.

● **COM:** Communication indicator, green.

Blinking – Communicating (blinking frequency corresponds to communication speed); Off – No communication.

● **ERR:** Error indicator, red.

Steady on – Hardware failure; Blinking – Software fault; Off – Normal operation.

Note: Users should take corresponding actions based on the error indicator's status. For detailed

handling procedures, refer to the table below:

Reference Handling Method	Information Category	ERR Indicator Status
Normal Operation	No error	Off
Normal (Prompts Locked Data Alert)	Components with locked data in PLC unit	Red blinking: 0.2s on / 0.8s off
Modify PLC Hardware Configuration	Software setting error (user program executable)	Red blinking: 0.2s on / 0.8s off
Check parallel bus modules (RTC Battery Check; Expansion Module Power Check)	Inter-module communication error (faulty modules auto-disabled, user program executable)	Red blinking: 0.8s on / 0.2s off
Reflash Firmware or Modify Users Program	Firmware/user program error (user program blocked)	Red blinking: 0.5s on / 0.5s off
Return for Factory Repair	Hardware failure (user program blocked)	Red steady on

5. Switching Input (DI) Specifications

Classifications	Switch Value Input DI
Input Signal	No voltage contact or NPN/PNP
Action Driver	ON: more than 3.5mA, OFF: less than 1.5mA
Input Resistance	About 4.3K Ω
Input Maximum Current	10mA
Response Time	The default value is 6.4ms. The value ranges from 0.8ms to 51.2ms
Way of Isolation	Individual photoelectric isolation per channel
Input Indication	When the LED is lighting, it means ON. When the LED is off, it means OFF.
Power Input	PLC host internal power supply: DC Power (SINK or SOURCE) 5.3mA @ 24VDC

III. Product Description

1. Product Appearance



Figure1 A8 Stereoscopic Display

2. Product Size

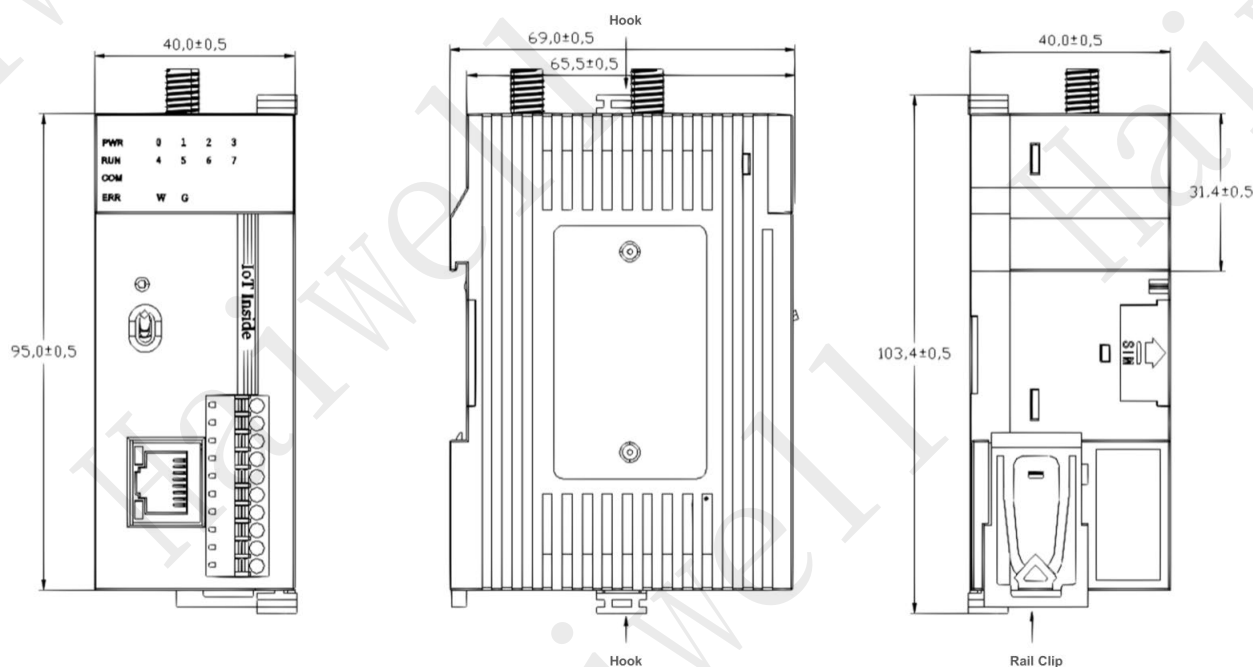


Figure2 Three-view Dimensions of A8

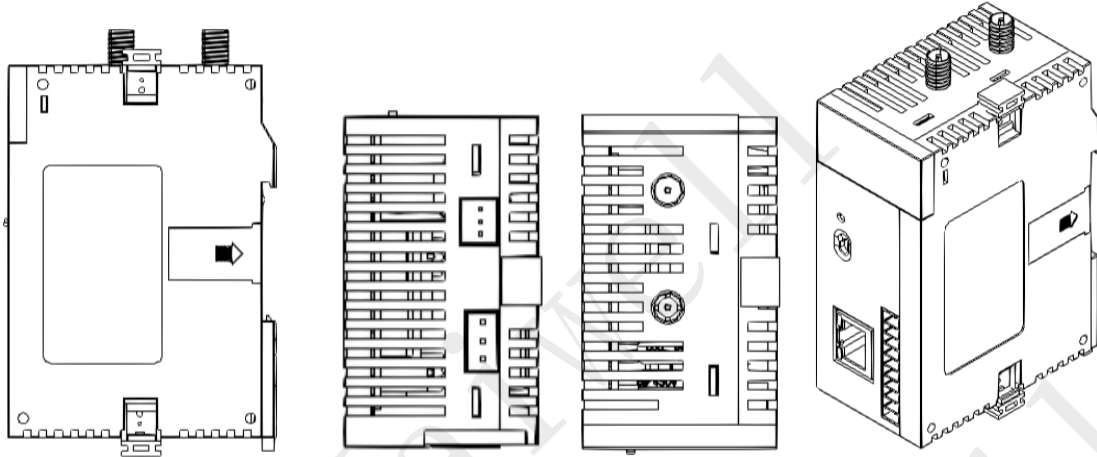
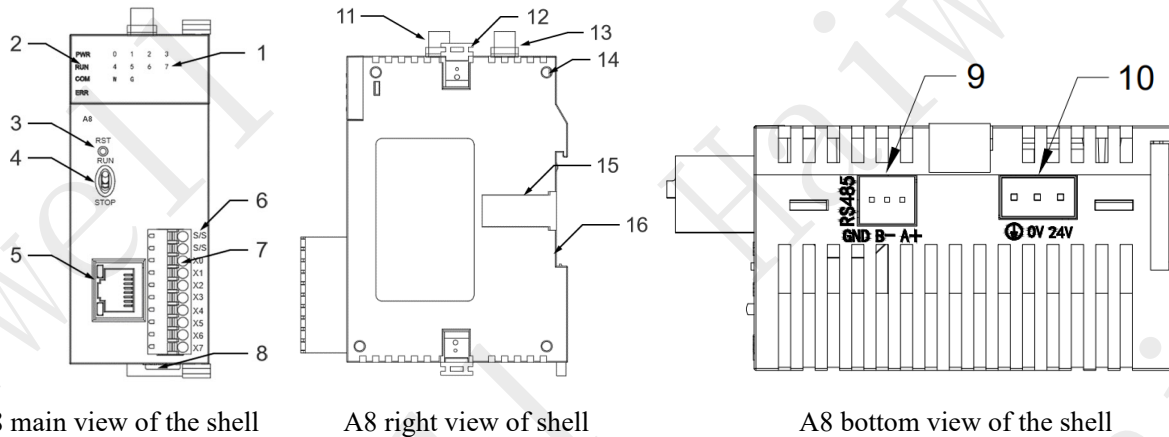


Figure3 Other CAD Drawings of A8

3. Product Interface Description

3.1 Interface Schematic Diagram



A8 main view of the shell

A8 right view of shell

A8 bottom view of the shell

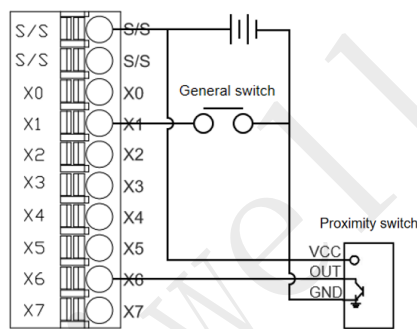
1. Input point channel light and WIFI (W) , 4G (G) communication light	9. RS485 wire terminal
2. PWR Power indicator, RUN indicator, COM communication indicator, ERR error indicator	10. DC24V power supply terminal
3. Reset button	11. 4G antenna interface
4. Running switch	12. Module hook
5. Ethernet port	13. WIFI antenna interface
6. Terminal definition	14. Module location hole
7. Removable wire terminal	15. Expansion port
8. Guideway bayonet	16. 35mm DIN rail

3.2 A8 Device DI Port

Haiwell A8 built-in 8 photoelectric isolation digital point input, can be connected to external switching contact, support source type and sink type input, as shown below:

Model No.	I/O Configuration
A8	8-way optical isolation digital point input

Wiring Diagram:



Input

Figure5 Schematic Diagram of Input Wiring

IV. Installation and Use of A8

1. Hardware Installation

Step 1: Assemble the standard 35mm guide rail.

Step 2: After placing the gateway on the guide rail, pull the white snap fastener to the fully tightened position.

Step 3: According to the markings on the device, connect the 24VDC power supply. Check if the panel indicator light PWR is properly illuminated.

Notes:

- ① The installation direction must comply with the instructions in this manual. Connect the wires strictly according to the markings on the terminals. Otherwise, it may cause product malfunction or damage.
- ② The product and other components at the bottom must be kept with sufficient space to avoid equipment damage due to poor heat dissipation.

2. Antenna Installation

Haiwell Intelligent PLC comes with standard WIFI or satellite positioning functions, and an optional 4G function. To achieve the best signal strength, please extend the antenna outside the control cabinet. The gateway is recommended to be installed on the topmost track of the cabinet. After the antenna is extended from the gateway, be sure to avoid the power supply cable trough. Then, lead the antenna out through the opening on the top of the cabinet via the cable trough, as shown in the following figure:

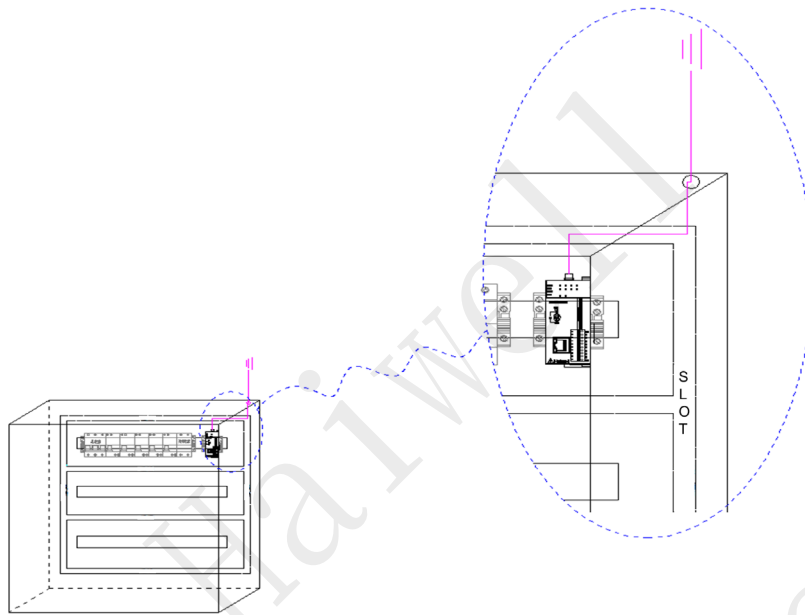


Figure 6 Schematic Diagram of A8 Antenna Installation

V. Supporting Software

Haiwell A8 needs to be used in conjunction with Haiwell SCADA editing software and Haiwell Happy PLC programming software. Please download them from the download center of Haiwell's official website en.haiwell.com.

Haiwell Cloud Service can be used by visiting the Haiwell Cloud website <http://ecloud.haiwell.com>. It is recommended to download the Haiwell Cloud APP on your mobile phone.

Download Haiwell Cloud APP (Haiwell Cloud):

Log in to the Haiwell Cloud website to download;

Download directly by scanning the QR code below;

For IOS terminals, search for "Haiwell Cloud" in the Apple App Store to download.



VI. PLC Software Usage Instructions

1. PLC Online Connection

1.1 Serial Port Online Connection

Step 1: Use a USB-to-485 cable to connect A8 (RS485 communication port) to the computer;

Step 2: Open the Haiwell Happy PLC programming software, click on PLC in the menu bar, and select PLC Online Connection, or directly click on the PLC Online Connection icon in the toolbar;

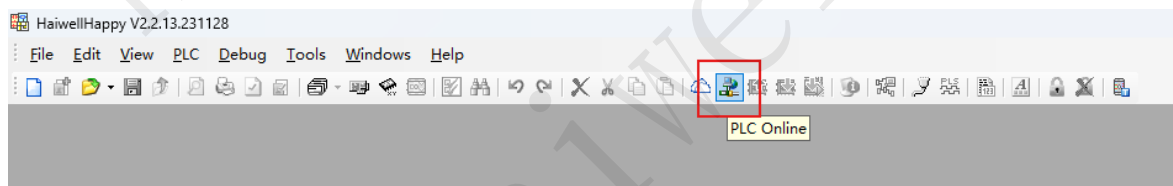


Figure7 PLC Online Connection

Step 3: In the online window, select the corresponding COM port to connect, the factory default baud rate and data format is 19200 N,8,2 RTU. You are advised to select "Click Search" to click search stand-

alone.

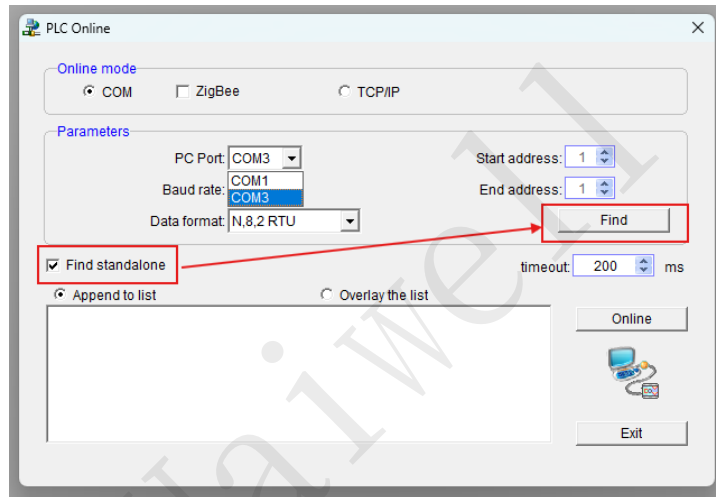


Figure8 Serial Port Connection

Step 4: After the connection is successful, the current online A8 will appear in the connection window. Click Exit to download the A8 program and other operations.

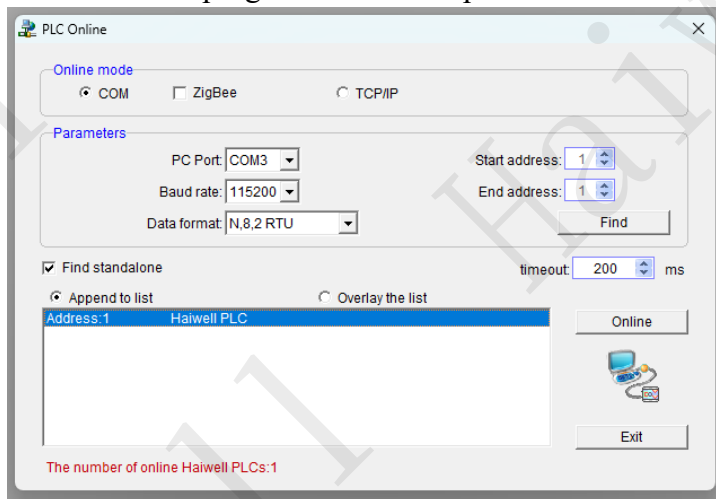


Figure9 Online Success

1.2 Ethernet Connection

Step 1: Connect one end of the network cable to the Ethernet port of the PLC and the other end to the LAN port of the switch or router.

Step 2: Change the IP address of the computer to the same network segment as A8. The default IP address of A8 is 192.168.1.112.

Step 3: Open the online window, enter the corresponding IP address, and then click **【Online】**. After the connection is successful, the current online A8 appears in the connection window. Click Exit to download the A8 program and other operations.

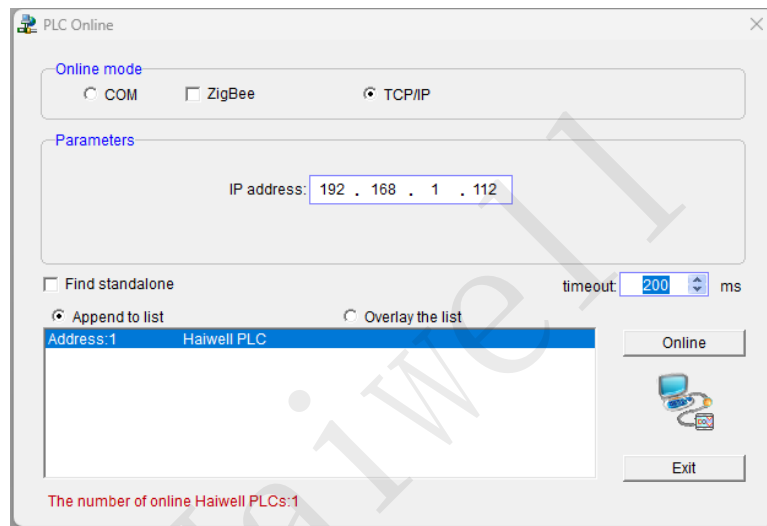


Figure10 Ethernet Online

2. Upload/Download the Project

2.1 Select Device Model

Step 1: Open Haiwell Happy PLC programming software, click **【File】**, click establish new program project;

Step 2: Select PLC series in the new program project pop-up window, select Smartlink PLC;

Step 3: Select the CPU type, select A8, click **【OK】** ;

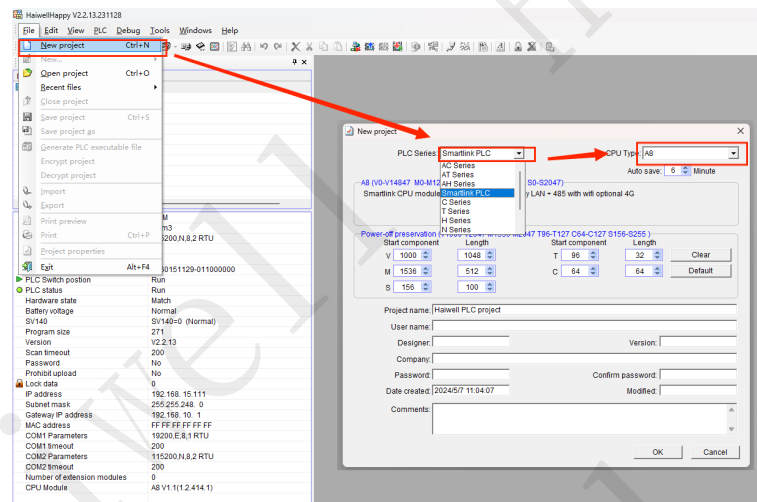


Figure11 Create Project

2.2 Download Project

Step 1: Click PLC in the menu bar, select to download PLC program, or click directly the **【PLC program download】** button in the toolbar;

Step 2: Click **【Download】** in the download program window.

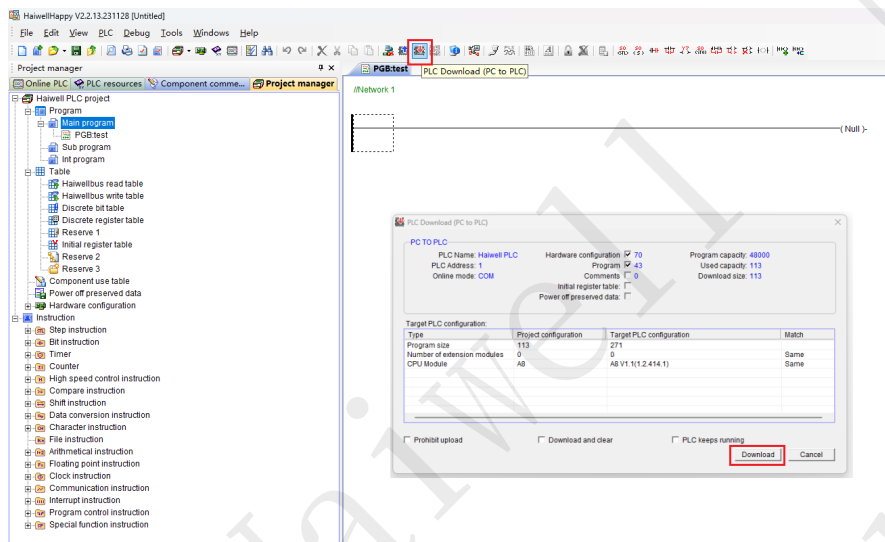


Figure12 Download Program

2.3 Upload Project

Step 1: Click PLC in the menu bar, select PLC program upload, or click directly the **【PLC program upload】** button in the toolbar;

Step 2: Click **【Upload】** in the upload program window.

Note: If the "Do not Upload" option is checked when you download the project, this program cannot be uploaded.

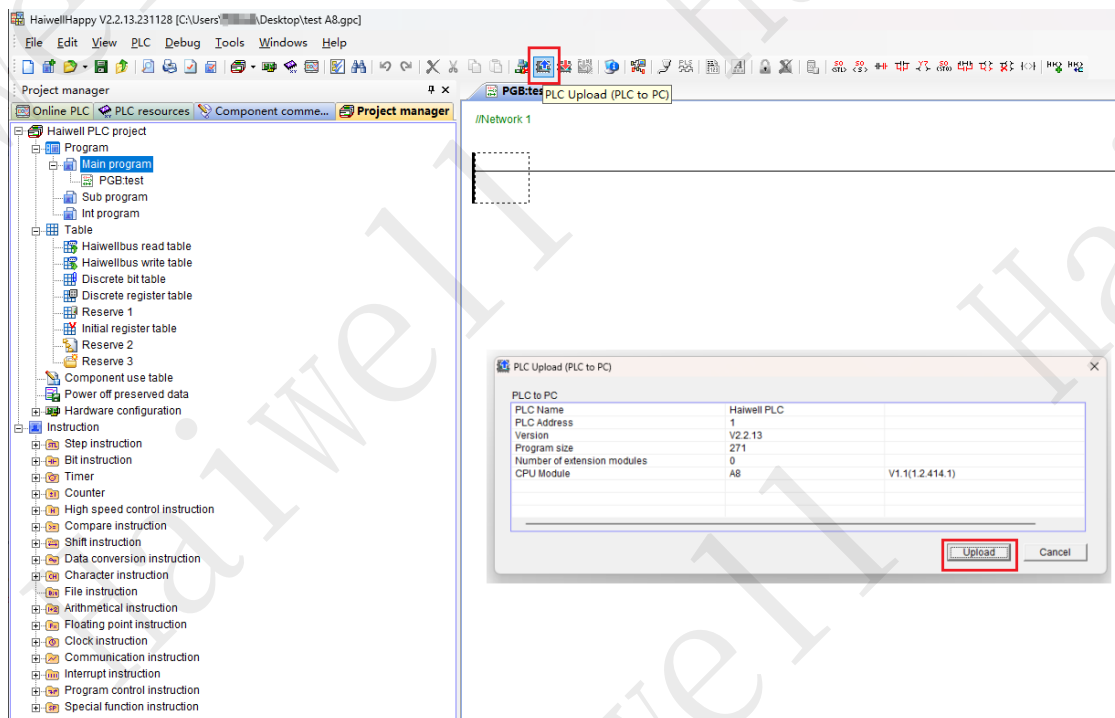


Figure13 Uploading Program

3. Update Firmware

Step 1: Use the serial port RS485 to connect.

Note: The A8 can only be updated with firmware through the RS485 communication port.

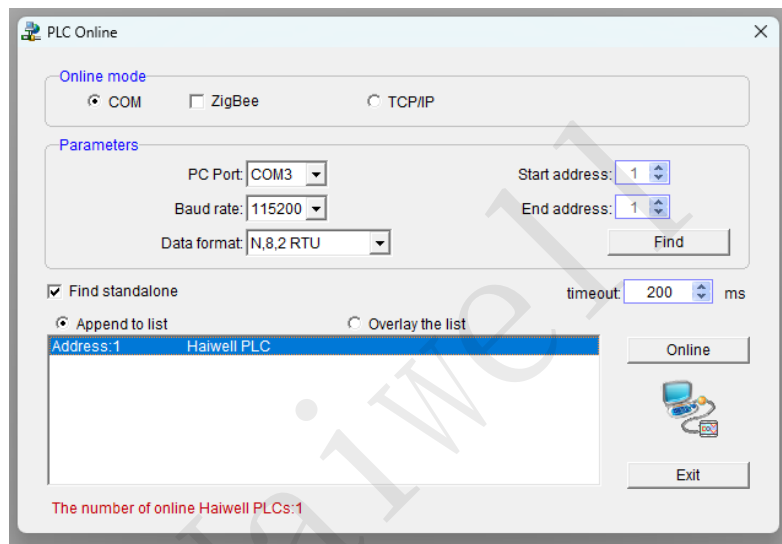


Figure14 Serial Port Connection

Step 2: Click on **【PLC】** in the menu bar and select **【PLC Firmware Upgrade】**. In the firmware upgrade pop-up window, open the update package file, select the corresponding firmware update package, and then click **【Upgrade】**.

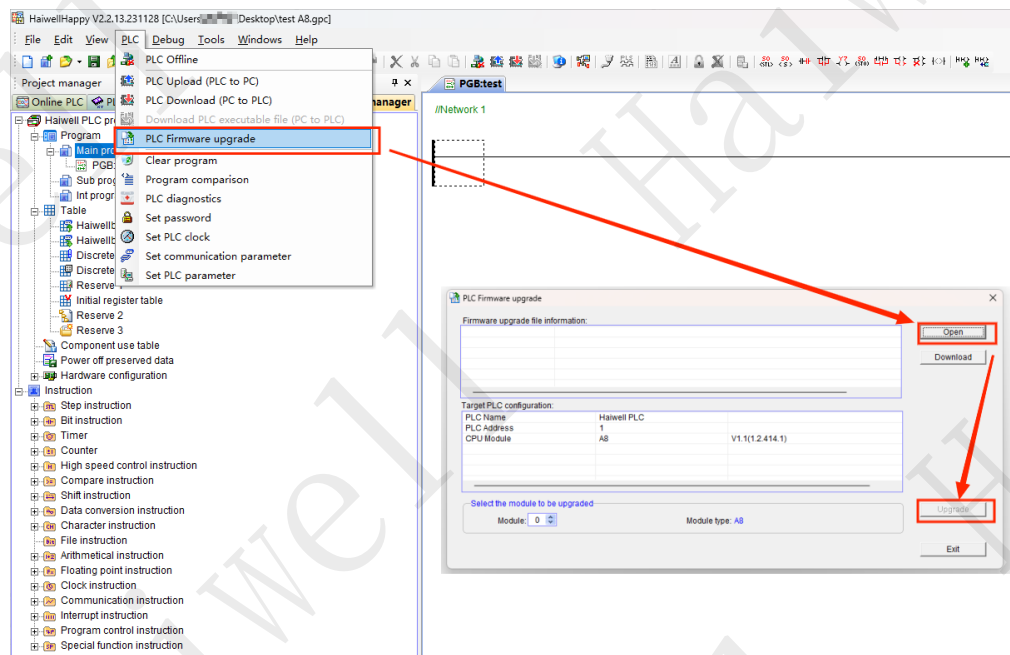


Figure15 Firmware Upgrade

VII. A8 Intelligent Function Operation and Usage

1. Connection and Access

1.1 Binding Without Power on by Scanning the Code

The A8 supports device binding via QR code scanning without powering on. After logging into the Haiwell Cloud APP with your account, scan the QR code on the left side label of the A8 to send a binding request. Once the A8 is powered on and connected to the network, navigate to **【Background Settings】** - **【Cloud Settings】** to approve the device binding request.

Step 1: Open the Haiwell Cloud APP and log in to your account.

Step 2: Click the QR Code Scanner icon  in the top-left corner.

Step 3: Scan the QR code on the left side label of the A8 with your phone to access the binding request interface.

Step 4: Click "Confirm" to bind the device.

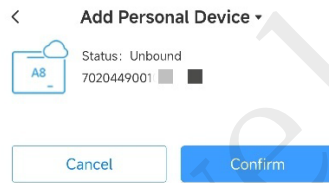


Figure16 Scan the QR Code on the Side of A8

Step 5: Users can edit the device name, review mechanism, and device location (A8 requires an internet connection).

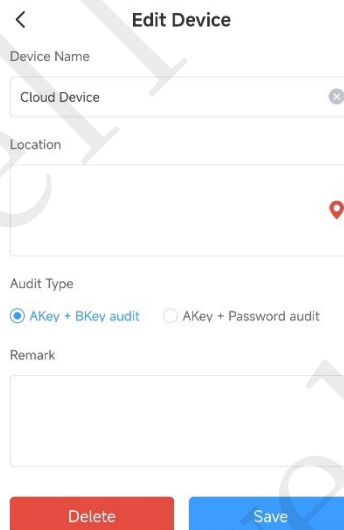


Figure17 Editing Device

Step 6: Once the editing is completed, the APP will automatically redirect to the device detail interface, which is as follows:

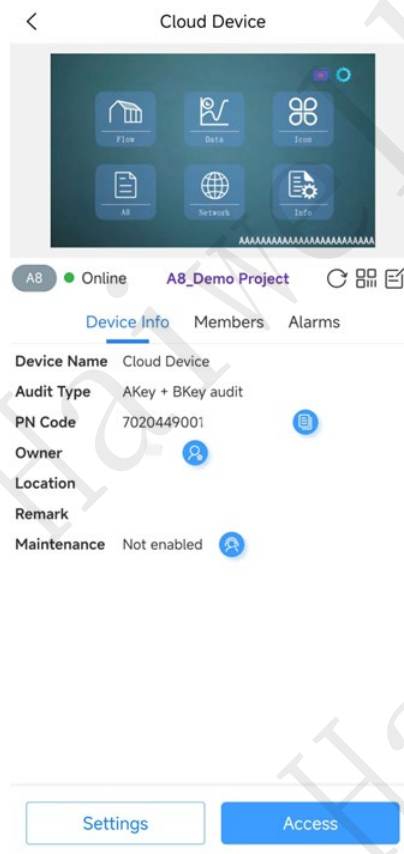


Figure18 Detailed Interface of A8

1.2 Connect to Hotspot to Access A8

Step 1: Turn on the WIFI on your mobile phone and search for the hotspot of A8 (at the left label of A8, the P/N code is) For example: The P/N code is 7107907500170127132, then the hotspot name is BOX-710790-27132.

Note: Since A8-GP does not support WIFI, it cannot be accessed by connecting to the hotspot. You need to use a computer network cable to connect A8 for access. Please refer to: [1.3 Directly Connect Computer to A8 with Network Cable](#).



Figure19 Mobile Phone Connected to A8 Hotspot Via WIFI

Step 2: Open the Haiwell Cloud APP, click on Local Devices, refresh the device list, and then click

on the corresponding device to access it.



Figure20 Local Device of Mobile APP

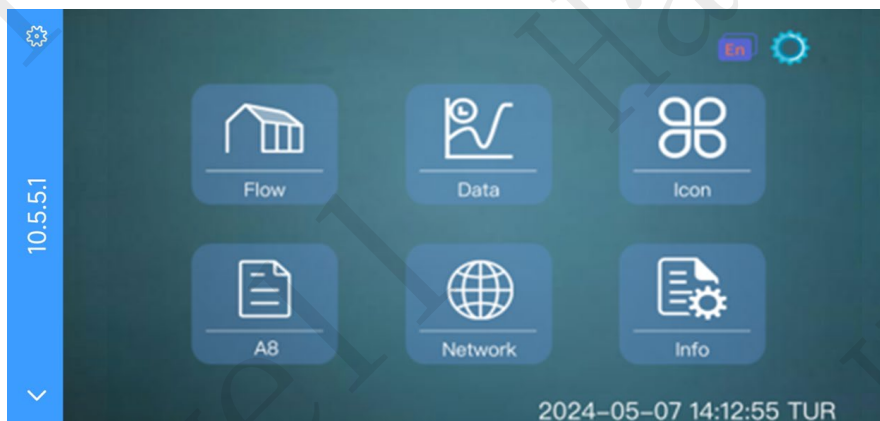


Figure21 A8 Operating Screen

Special Case: If the local device list is empty, click  Enter hotspot IP: 10.5.5.1 and then click "Connect Now" to access the A8 screen.

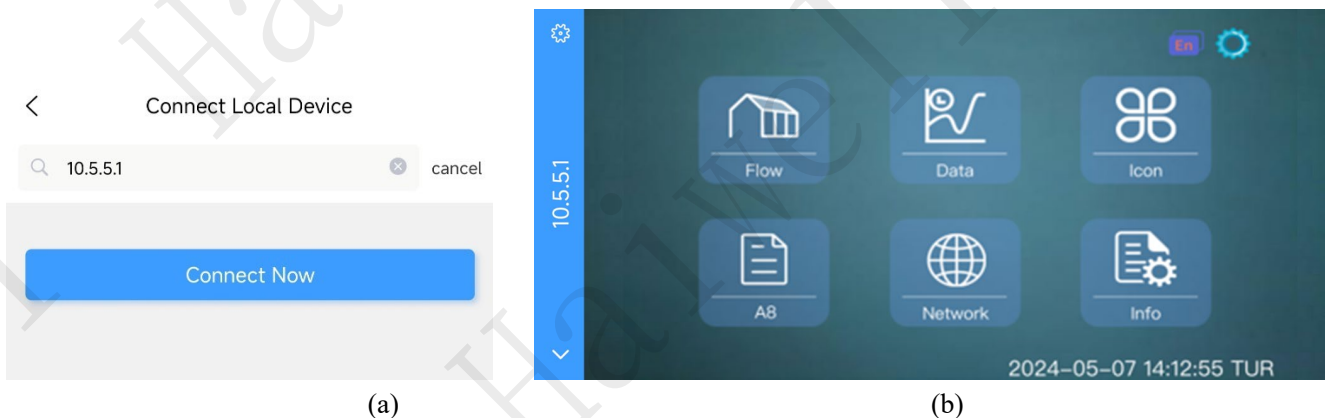


Figure22 Local Device Search for Hotspots

1.3 Directly Connect Computer to A8 with Network Cable

Users can connect their computers to A8 with a network cable to access and control A8.

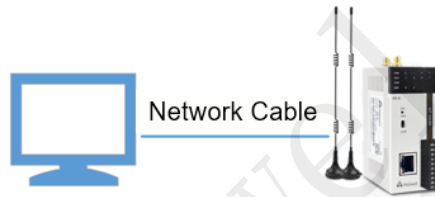


Figure 23 Schematic Diagram of A8 Directly Connected to Computer

The default IP address of A8 is **192.168.1.112**. Users need to set the IP address of their computer's network card to be in the same network segment as A8.

Step 1: Open "Control Panel" and select "Network and Sharing Center".

Step 2: In the "Network and Sharing Center" window, click on "Change adapter settings" on the left side.

Step 3: In the "Change adapter settings" window, you can see a list of all network adapters on your computer.

Step 4: Double-click on the local connection of your computer's network card, then click on "Internet Protocol Version 4 (IPv4)". Here you can view the IP parameters of your PC: IP address **192.168.1.31**, subnet mask **255.255.255.0**, default gateway **192.168.1.1**. Set the IP parameters of your computer to be in the same network segment as A8.

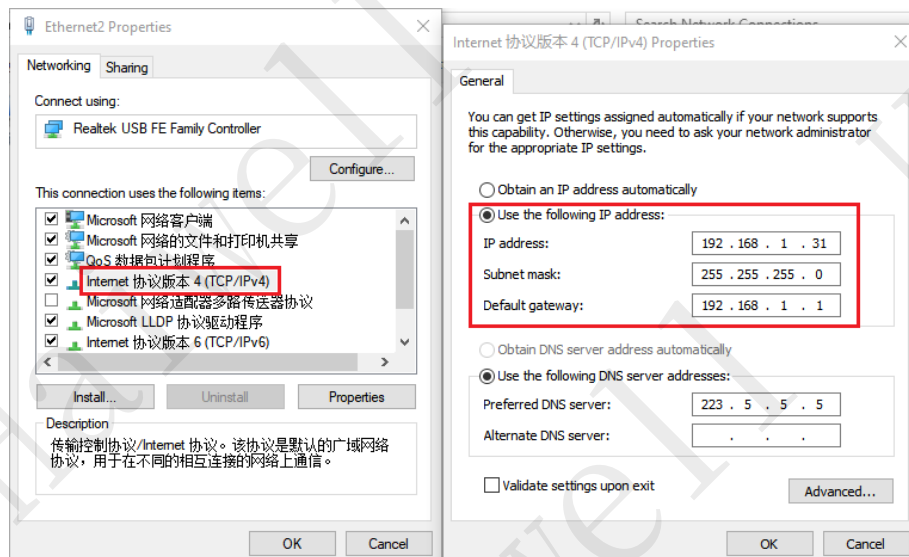


Figure 24 Modifying the Ethernet Segment of a Computer

In a local area network (LAN), you can also access A8 through a web browser. The prerequisite is that the computer and A8 must be in the same LAN and on the same network segment. Enter the device's IP address in the browser to access it; enter the device IP + /setting (example: 192.168.11.123/setting) to enter the background settings interface.

For example, if A8's IP is 192.168.130.4 and the computer's Ethernet IP is 192.168.130.155, both are already in the same LAN.

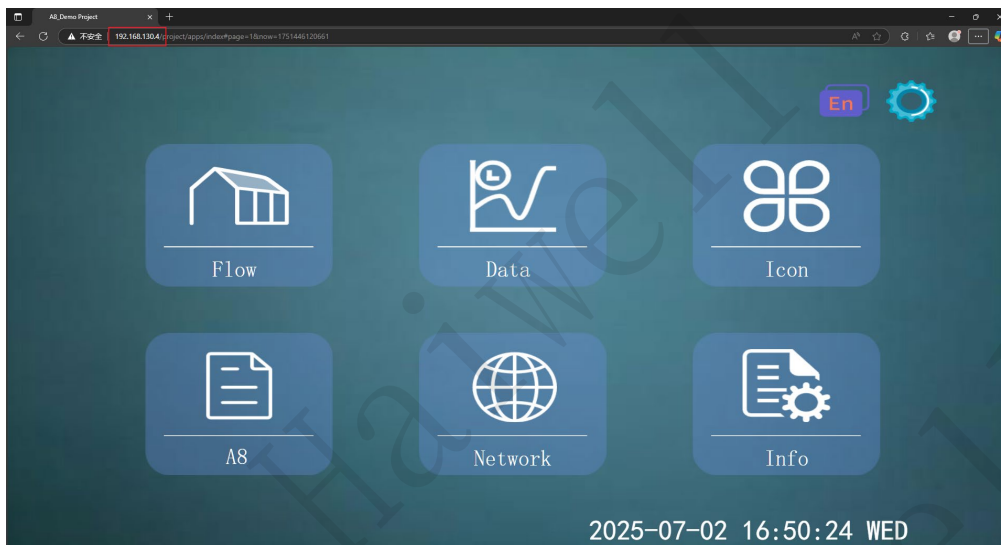


Figure25 Local Access and Operation Interface of the Computer Browser



Figure26 Local Access Background Settings in Computer Browser

2. Background Settings

Users can configure the basic functions and parameters of the A8 through the background. The following is an introduction to some of the important configurations.

2.1 Settings

(1) Settings

① Set Terminal Name

Enter the A8 background settings interface, click on **【Settings】**, in the **【Local Settings】** interface, user can see **【Terminal Name】**, click **【Set】**, enter the new terminal name, and press the Enter key on the keyboard. Terminal Name: Device Name.

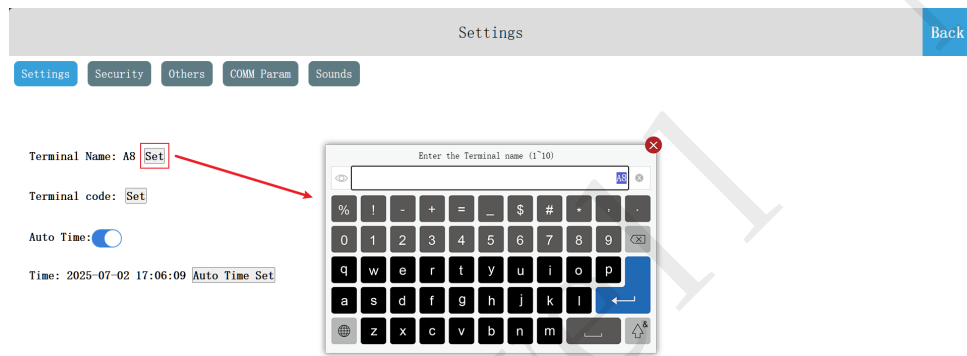


Figure27 Set Terminal Name

Note: The length of the terminal name should be 1 to 10 characters.

② Set Terminal Number

Enter the A8 background settings interface, click on **【Settings】**. In the **【Local Settings】** interface, you can see **【Terminal Number】**. Click **【Set】**, enter the new terminal number, and press the Enter key on the keyboard. Terminal Number: The number of the device.

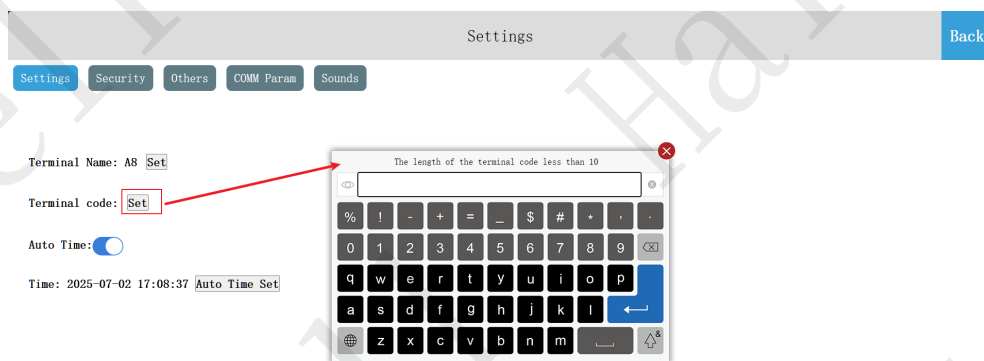


Figure28 Set Terminal Number

Note: The length of the terminal number is 0 to 10 digits.

③ Set Network Time Synchronization

Enter the A8 background settings interface, click on **【Settings】**, and in the **【Local Settings】** interface, turn on network time synchronization. Then click on the automatic time synchronization settings, and the current time will automatically correspond to the network time.

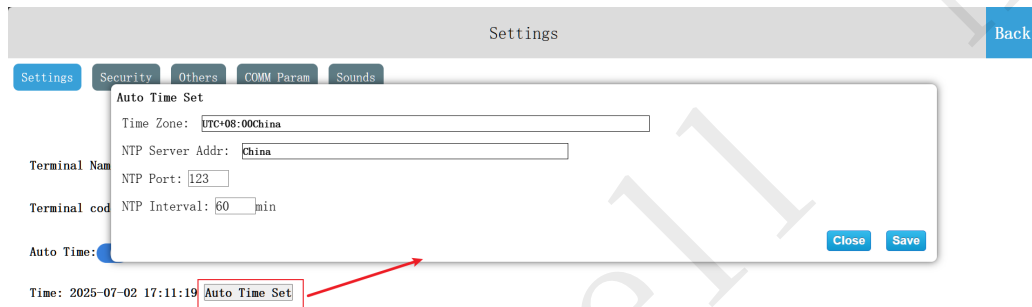


Figure29 Setting Network Time Synchronization 1

Enter the A8 background settings interface, click on **【Settings】**, in the **【Local Settings】** interface, turn off the network time synchronization, then click on change time. You can manually input and set the time. After inputting, click on **【OK】**. Clicking on **【Cancel】** will not save the just entered time.



Figure30 Setting Network Time Synchronization 2

(2) Security Settings

① Download Project Password

Enter the A8 background settings interface, click **【Settings】**, and in the **【Security Settings】** interface, turn on the **【Download Project Password】** function. Set the A8 download project password. After the setting is successful, users need to verify the password when downloading projects or updating firmware; otherwise, they cannot perform the relevant operations.

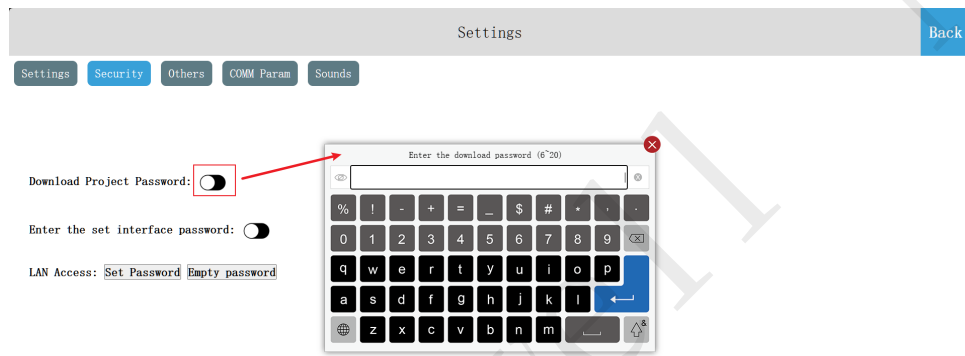


Figure31 Downloading Project Password

Note: The downloading project password should be set carefully. Once forgotten, the factory settings need to be restored to reset it.

② Background Password

Adding a password verification for entering the background can prevent security risks and economic losses caused by unauthorized personnel's accidental operations. The specific steps are as follows:

Step 1: Enter the A8 background settings interface and click on **【Settings】** ;

Step 2: In the **【Security Settings】** interface, enable the **【Background Password】** function;

Step 3: Set the background password. After the setting is successful, users need to verify the password when entering the background settings.

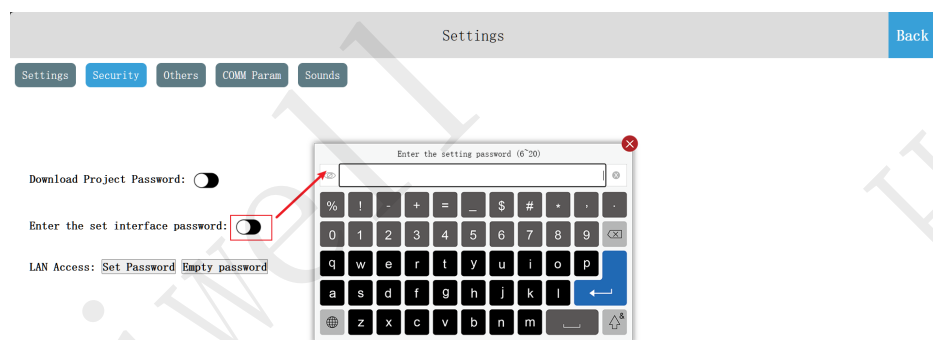


Figure32 Enter the Background Password

Note: Setting the password to enter the background needs to be set prudently. Once you forget the password, you need to contact Haiwell technology support to clear it.

③ Local Area Network Access Password

Enter the A8 background settings interface, click **【Settings】**, and in the **【Security Settings】** interface. By default, the local area network access is enabled. Users can set it as needed. Click on **【Set Password】**, input the password to be set, press Enter, input the password just entered again, press Enter, and the local area network access password just set will be saved. If users want to access this device through local area

network browser, local mobile device access, TVBOX local access, they must input the correct local area network access password.

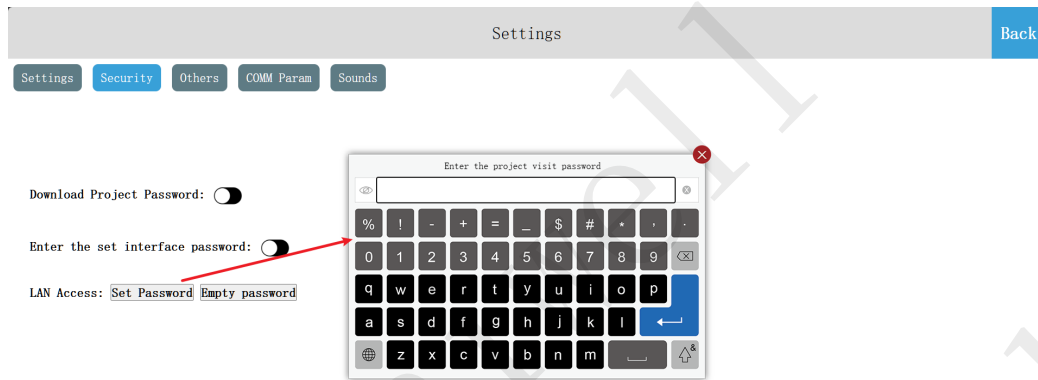


Figure33 Set LAN Access Password

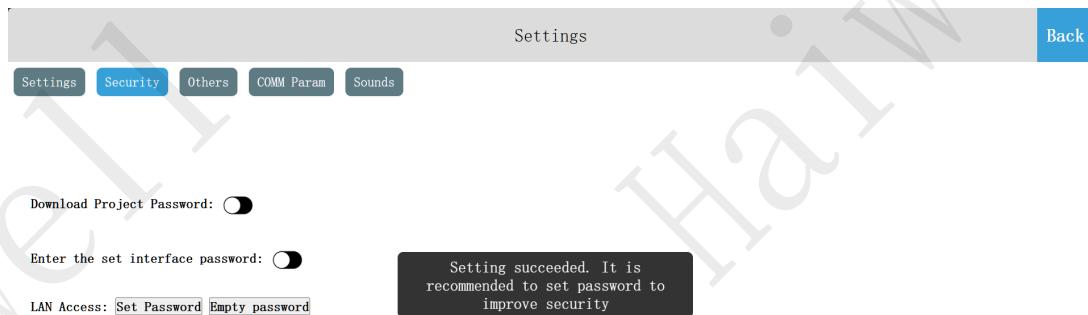


Figure34 Clear LAN Access Password

(3) Other Settings

① Set the Frequency of Cloud Online Detection

Enter the A8 background setting interface, click on【Settings】, switch to the【Other Settings】interface, click on 【Set】 on 【Set the Frequency of Cloud Online Detection】 , and select the cloud online detection frequency we need.

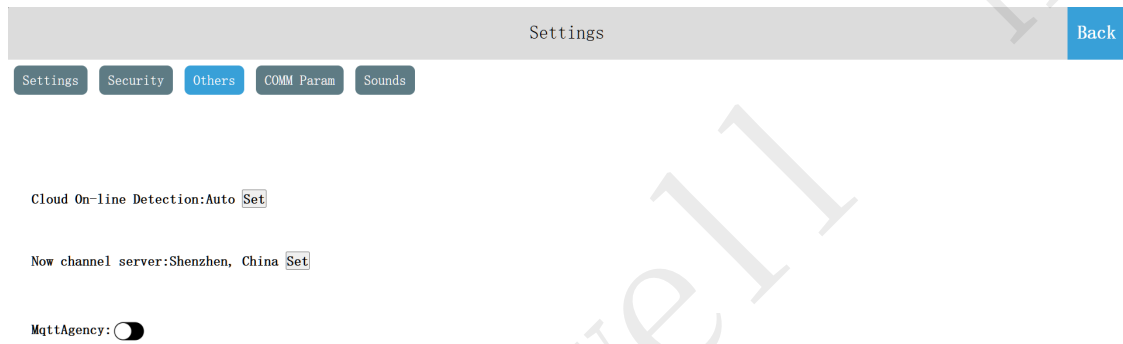


Figure35 Other Settings

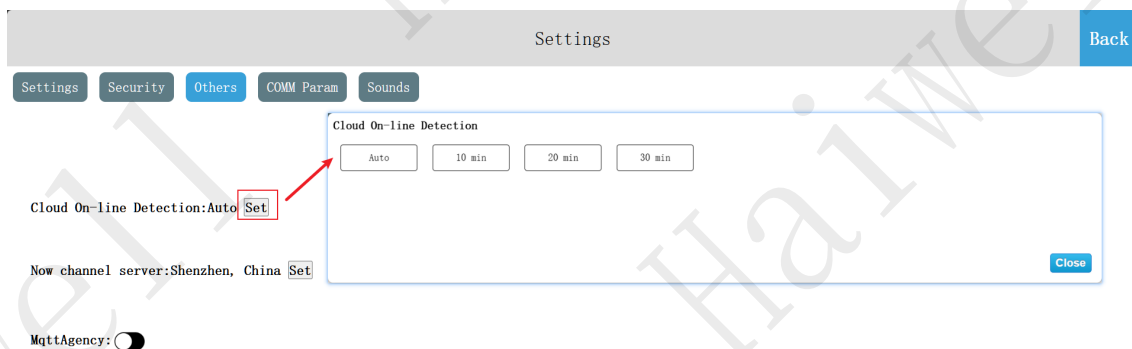


Figure36 Online Detection Frequency of Device Cloud

② Set up Server Channels

Enter the A8 background setting interface, click on **Settings**, switch to the **Other Settings** interface, click on **Set** on "Current Server Channel", users can choose the required cloud server address in the pop-up window. When the selection is completed, the current server channel will be displayed as the selected server. Click on **Auto**, the system will automatically select the relatively closer cloud server address according to the IP address. Click on **Close**, then the window can be saved and closed.



Figure37 Current Channel Server



Figure38 Channel Server Selection

③ MQTT Broker

Clicking on MQTT Broker allows you to enable or disable the MQTT Broker. When enabled, A8 will act as a small MQTT server, with the server address being the Ethernet or WIFI IP address of the device. For detailed usage of MQTT, please refer to the MQTT User Manual. The MQTT Broker is disabled by default and will remain enabled until manually disabled.

Devices within the local network, such as BOX/HMI, can report to the device with the MQTT Broker enabled, facilitating data interaction. In Haiwell SCADA Cloud Configuration Software, the specific configuration for reporting is as follows: Create a new project → Add a data reporting server → Add an MQTT server → Enter the reporting IP (the IP address of the device with MQTT enabled) and click Confirm; Add a data group → Select remote reporting via MQTT → Add a group identifier → Configure the recording method → Add channel variables.

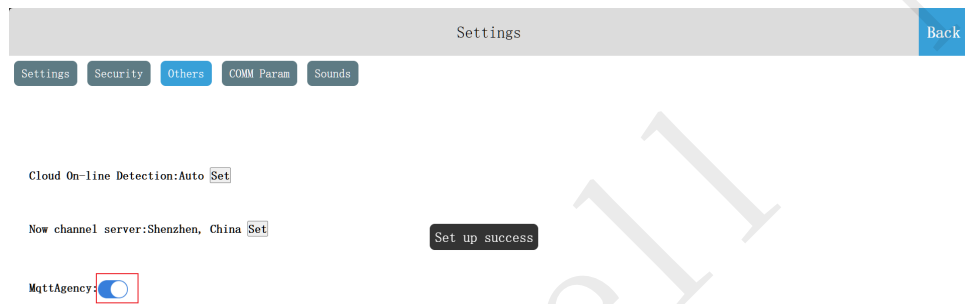


Figure39 MQTT Broker

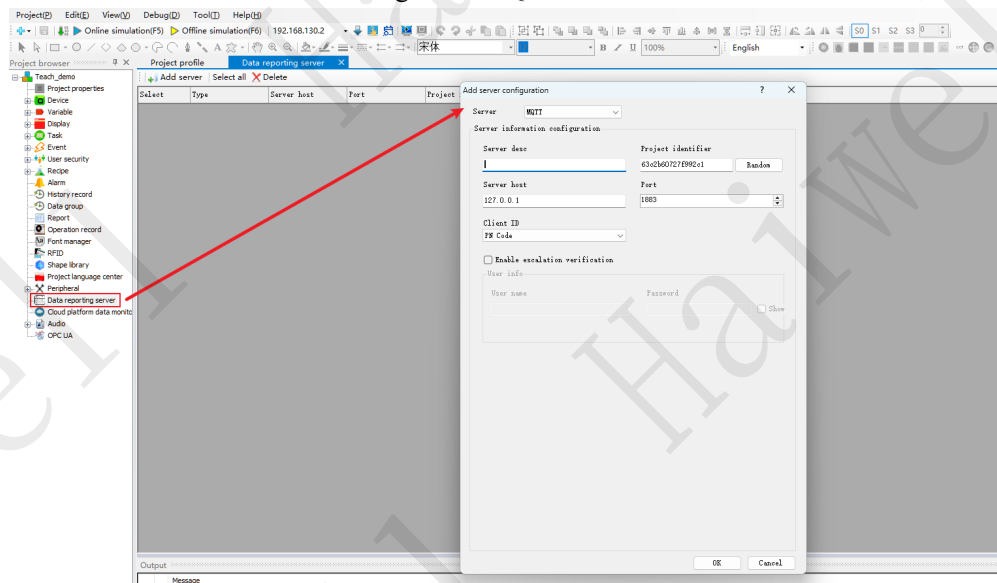


Figure40 Add Report to MQTT Server

(4) Communication Parameters

Users can modify the communication parameter information of A8 on this page.

① A8 Address

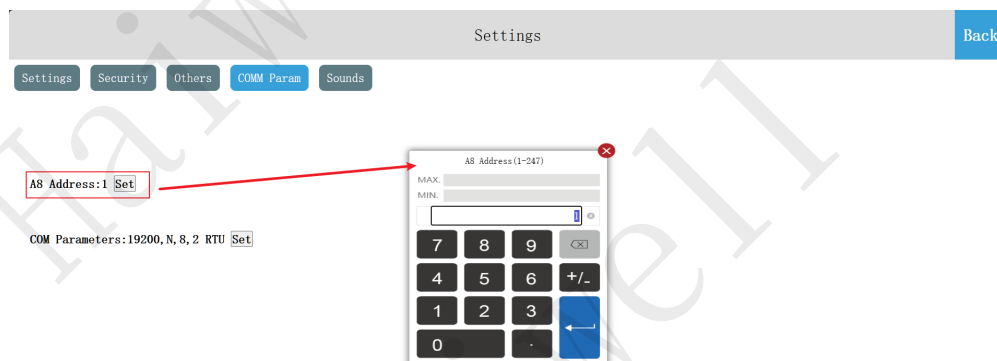


Figure41 Station Number Address

② COM Parameters

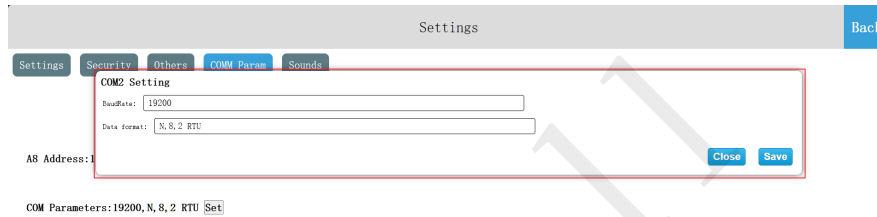


Figure42 COM2 Parameter Settings

(5) Sound Settings

Users can enable the "Buzzer Switch" as per their requirements.

① Buzzer Switch

Enter the background setting interface of A8, click on **【Settings】**, switch to the **【Sound Settings】** interface, and turn on the "Buzzer Switch". When operating the A8, the device will give sound feedback of "beep".

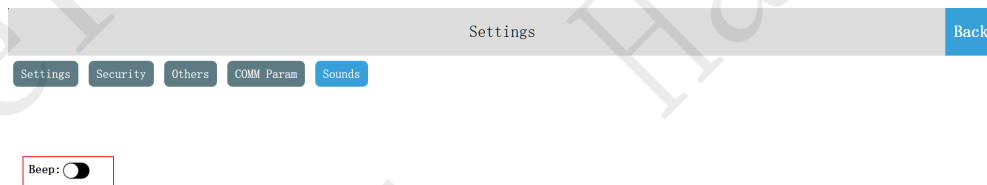


Figure43 Beeper Switch

2.2 System Information

(1) Restart the Device

The user enters the background settings interface of A8, clicks on **【System Information】**, selects **【Restart the Device】**, and then the A8 device can be restarted.

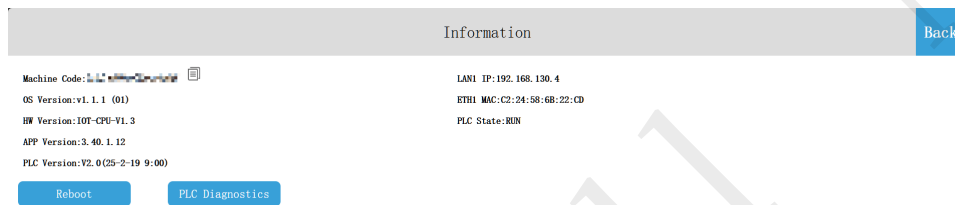


Figure44 Restart the Device

(2) PLC Diagnosis

Users can view the diagnostic information of the PLC directly on this page without connecting to the PLC.

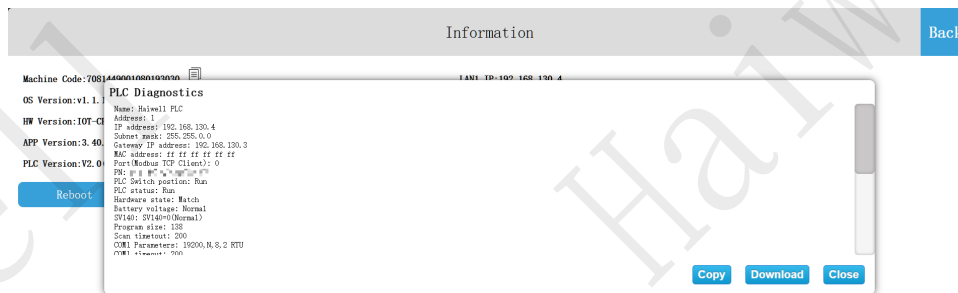


Figure45 PLC Diagnosis

2.3 Network Settings

The A8 supports multiple network connection methods, including Ethernet, WIFI, and 4G. Through different networking methods, the A8 connects to the Internet, enabling remote access, remote operation, and remote Penetration.

(1) Ethernet Settings

Go to the A8 background Settings screen, tap **【Network】** to enter the Ethernet Settings screen, and turn on "Network switch". The network type includes DHCP and Static IP.

① Dynamic State IP

Network type selection **【DHCP】**, Click **【Save】**, The device automatically obtains it IP.

② Static IP

Network type selection **【Static IP】**, Enter the correct IP address、Subnet mask code、Default gateway and DNS, Click **【Save】**, After verification, A8 Devices can be connected to the network via Ethernet.

Figure46 Ethernet Settings

(2) WIFI Settings

Click on **WIFI** to enter the WIFI settings interface, which supports connecting to the network via WIFI. In the WIFI settings interface, turn on the WIFI switch, select the target WIFI account, enter the correct WIFI password, and after verification is successful, you can connect to the WIFI network. After successful connection, a green tick"✔" will be displayed.

Figure47 Successful Connection to WIFI

After a successful connection, you can see the gray "i". Click the "i" icon to set the IP address, subnet mask, default gateway, and DNS statically or dynamically. After the settings are completed, click **Save** to set the IP address information of the WIFI. Click "Ignore this network" to disconnect from this WIFI. If you need to use this WIFI again, you need to re-enter the password to connect.

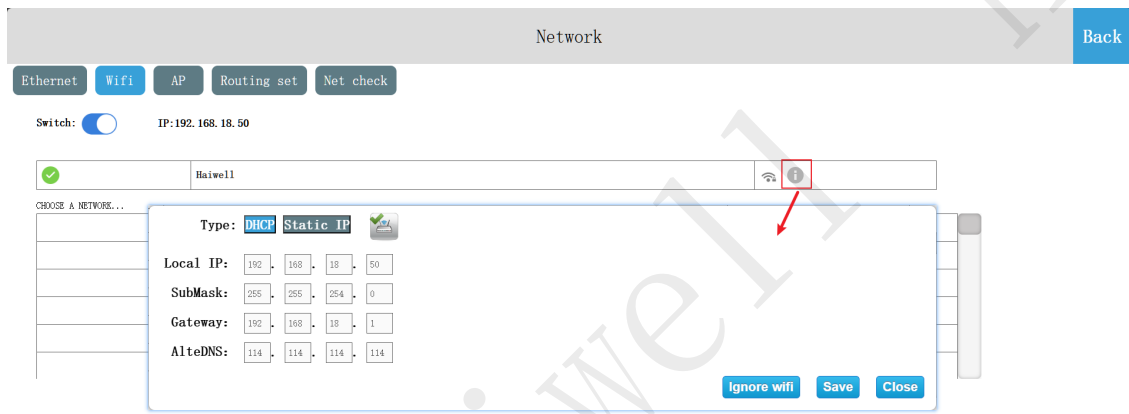


Figure48 WIFI Network Information

Note: ①A8 needs to be connected to a WIFI antenna; otherwise, the signal strength will be weak, and it won't be able to connect to WIFI or search for it. ②WIFI can only search for the AP frequency band of 2.4GHz, and 5GHz cannot be searched. If you use a mobile phone to open a WIFI hotspot, please pay attention to setting the hotspot frequency band.

(3) Personal Hotspot Settings

Click on **AP** to enter the Personal Hotspot interface. A8 can also share a Wi-Fi hotspot with other users. Turn on the Personal Hotspot switch, set the hotspot name and password, and you can share a Wi-Fi hotspot with other users.

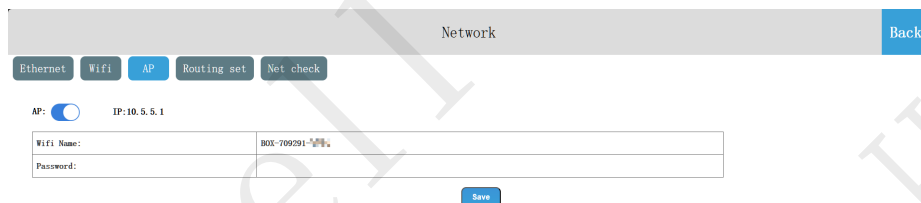


Figure49 A8 Personal Hotspot

To set the hotspot name, click on "Hotspot Name", and a hotspot name input box will pop up. Enter the hotspot name, press **Enter**, and finally click **Save** to save the added hotspot name information.

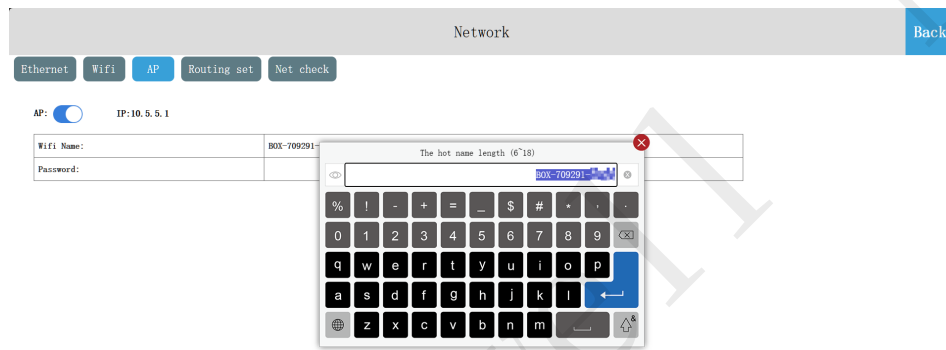


Figure50 A8 Personal Hotspot Name

Set a password, Click on "Password", The password input box is displayed, Click on the top left corner of the input box You can switch between plain-text and ciphertext passwords. Enter password, Click 【Enter】 , Finally click 【Save】 , You can save the added password information.

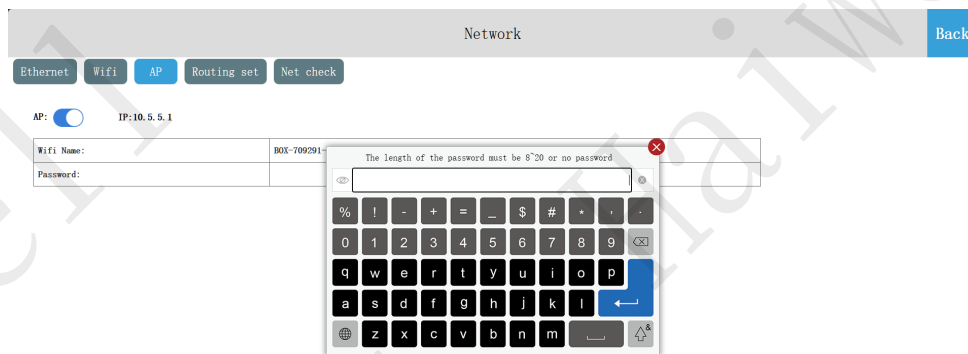


Figure51 A8 Personal Hotspot Password

A8 The Ex-factory default WIFI password is empty.

Note: The hotspot name contains 6 to 18 characters, The password can be empty or contains 8 to 20 characters. Out of range, Click Enter, Enter the name of hotspot, The password will not be displayed in the appropriate location, and pop-up prompt.

(4) 4G Settings

Click on 【4G】 to enter the 4G configuration interface. The device is externally connected to a SIM card. Users can identify or obtain relevant information about the device and its SIM card through three codes: IMEI (International Mobile Equipment Identity), IMSI (International Mobile Subscriber Identity), and ICCID (Integrated Circuit Card Identifier).

① Disabled 4G

Turn off the 4G switch, a prompt "Closing..." pops up, and only the IMEI code is displayed. At this time, the device is not connected to the 4G network.

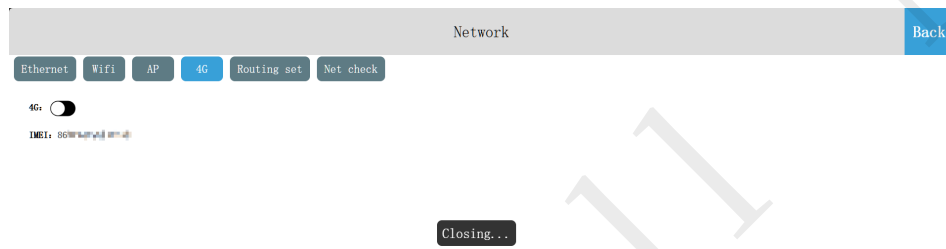


Figure52 Disable 4G Function

② Enable 4G

Turn on the 4G switch. At this point, the device can access the 4G network. A pop-up window will display the IMSI (International Mobile Subscriber Identity) and ICCID (Integrated Circuit Card Identifier) as well as the signal strength. At this point, the device can access the 4G network.

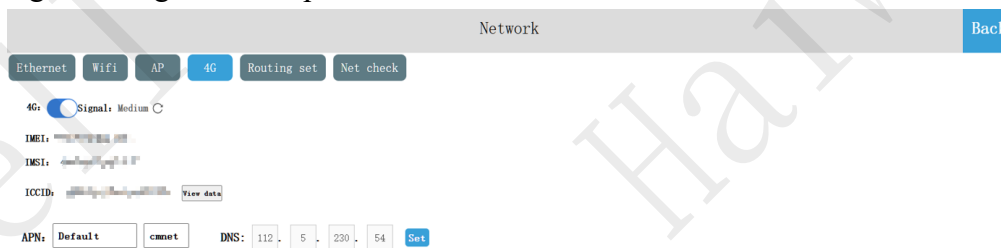


Figure53 Enable 4G

APN Settings: Click on the "Default" option for APN, and you can choose between "Default" and "Custom" methods. If you select "Custom", you can modify the APN (Access Point Name), username, password, and dial-up number according to your needs.

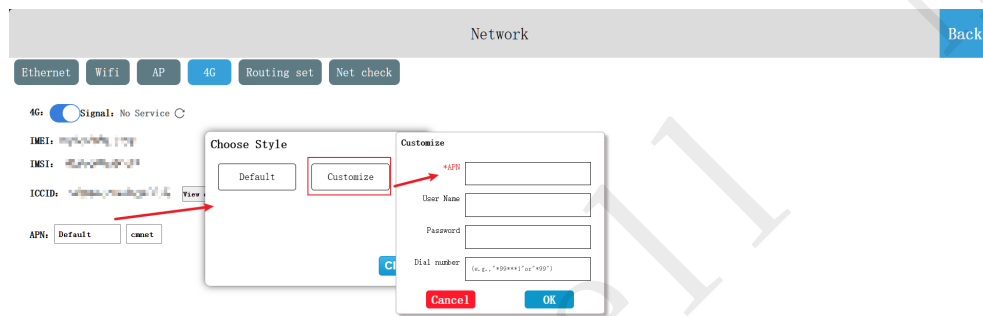


Figure54 APN Settings

DNS Settings: Users can set the 4G DNS function to configure DNS by themselves, solving the problem of 4G network being unable to be used due to the probabilistic abnormality of automatically obtained DNS.

Click on the **【Set】** at the DNS section to pop up the DNS configuration window. Users can choose the DNS server allocation method. Selecting the static DNS server allocation method allows for custom modifications.



Figure55 DNS Settings

After setting the DNS server address, click **【Save】** to save the DNS server address.



Figure56 DNS Settings Successful

Note: When the signal strength is displayed as "No Service", DNS information will not be shown.



Figure57 Service Less State

(5) Route Configuration

The router configuration not only supports the device to access the Internet through three modes: "LAN", "WIFI", and "4G", achieving "device Internet access", but also supports sharing through LAN or directly creating a hotspot to provide network connections to the outside, realizing "providing network to the outside".

Route configuration includes: 【Route mode is not enabled】 \ 【Wireless access point mode】 \ 【4G routing mode】 \ 【Relay mode】 \ 【Client mode】 \ 【4G client mode】 , The default is 【Route Mode is not enabled】 .

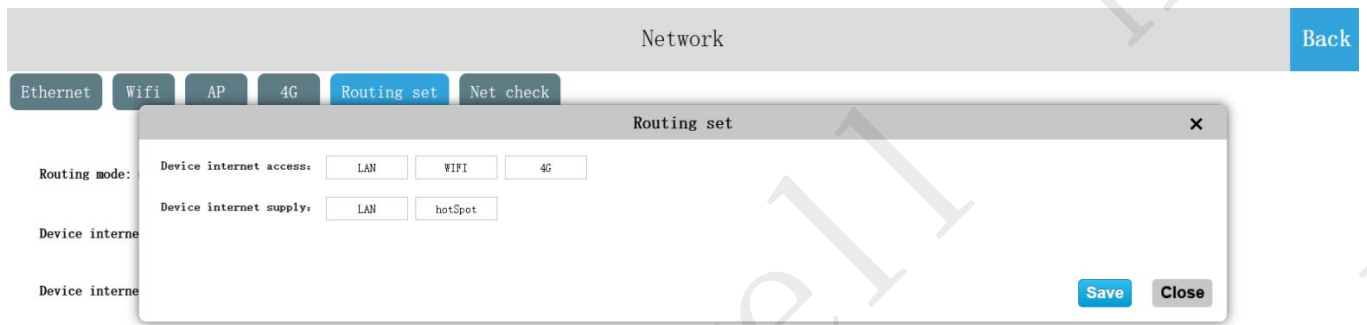


Figure58 Routing Mode Settings Interface

The comparison between routing modes and network types is as follows:

\	The Routing Mode is not Enabled (Routing Switch)	Wireless Access Point Mode	4G Routing Mode	Relay Mode	Client Mode	4G Client Mode
Ethernet	LAN/External network	LAN/External network	LAN	LAN	No support	No support
WIFI	LAN/External network	No support	No support	Connect to Internet	Connect to Internet	No support
Personal Hotspot	LAN	LAN/External network	LAN/External network	LAN/External network	No support	No support
4G	Outer net	No support	External network	No support	No support	External network
Network Provision	Ethernet/WIFI/4G	Ethernet	4G	WIFI	WIFI	4G

① The Routing Mode Disabled

The A8 background Settings screen is displayed, Click **【Network Settings】**, The route configuration page is displayed, Click **【Settings】**, Click **【Route Mode not enabled】**, The message "This mode will only close routes is displayed, do not perform other operations, confirm to disable the routing mode. Click **【OK】**, That is the routing mode is disabled.

“Route Not Enabled” mode, only close the routing function of the current Ethernet, WIFI, and 4G. In this mode, the hotspot only supports the local area network (LAN) and does not support the Internet. The function settings of Ethernet, WIIF, and 4G remain unchanged.



Figure59 The Routing Mode Disabled

② Wireless Access Point Mode

Enter the A8 background Settings screen, click **【Network Settings】**, enter the route configuration

screen, click **【Settings】**, click **【Wireless Access Point Mode】**, the pop-up message "This mode will turn off 4G and WIFI, are you sure to switch to this mode?", Click **【OK】**, that is, set to wireless access point mode.

In Wireless Access Point mode, only the wired network provides the network. Other devices can connect to the personal hotspot of the device to access the LAN and the external network.

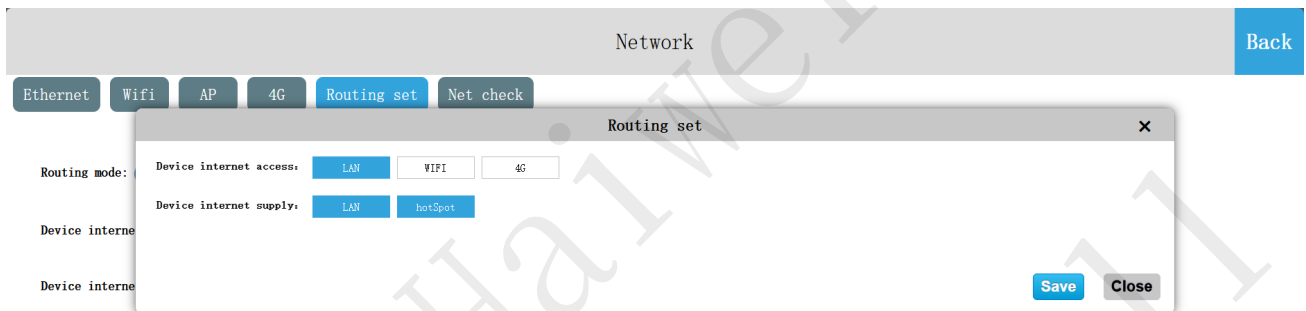


Figure60 Wireless Access Point Mode

③ 4G Routing Mode

Enter the A8 background setting interface, click **【Network Settings】**, enter the route configuration interface, click **【Settings】**, click **【4G routing mode】**, the pop-up message "This mode will turn off WIFI, are you sure to switch to this mode?", Click **【OK】**, that is, set to 4G routing mode. In 4G routing mode, only 4G provides the network for the device. Other devices can connect to the personal hotspot of the device to access the LAN and the Internet. The wired network in this mode supports only LAN networks.

④ Repeater Mode

Enter the A8 background settings screen, click **【Network Settings】**, enter the route configuration screen, click **【Settings】**, click **【trunk mode】**, the pop-up message "This mode will turn off 4G, are you sure to switch to this mode?" Click **【OK】**, that is, set the trunk mode.

In "relay" mode, only the WIFI connected hotspot provides the network. First, connect to a hotspot that can access the Internet, and then provide a network for other devices through the personal hotspot of the device, supporting the local area network and the external network. The wired network in this mode supports only LAN networks.

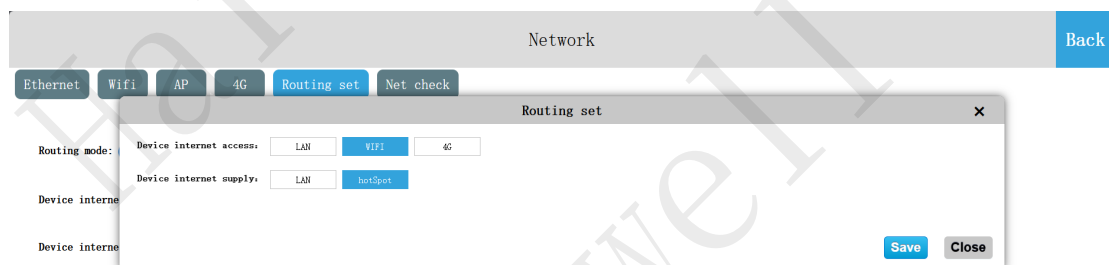


Figure61 Repeater Mode

⑤ Client Mode

Enter the A8 background Settings screen, click **【Network Settings】**, enter the route configuration screen, click **【Settings】**, click **【Client mode】**, the pop-up message "This mode needs to turn off the personal hotspot and 4G, are you sure to switch to this mode?", Click **【OK】**, that is, set to the client mode.

In the "client" mode, the network is provided by the WIFI connected hotspot, and the A8 is correspond to a router, and the A8 connects to the wired network, and then connects to the device through the cable to provide the network for the device. The personal hotspot function is not supported in this mode.

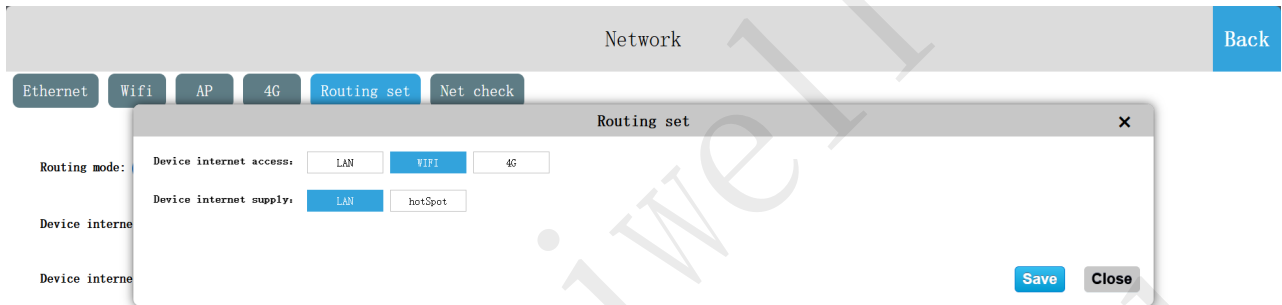


Figure62 Client Mode

(6) Network Diagnosis

① External Network Access

To use network diagnostics, click on the URL , Select a web address to access. If a message is returned, then means device is connected to the network.

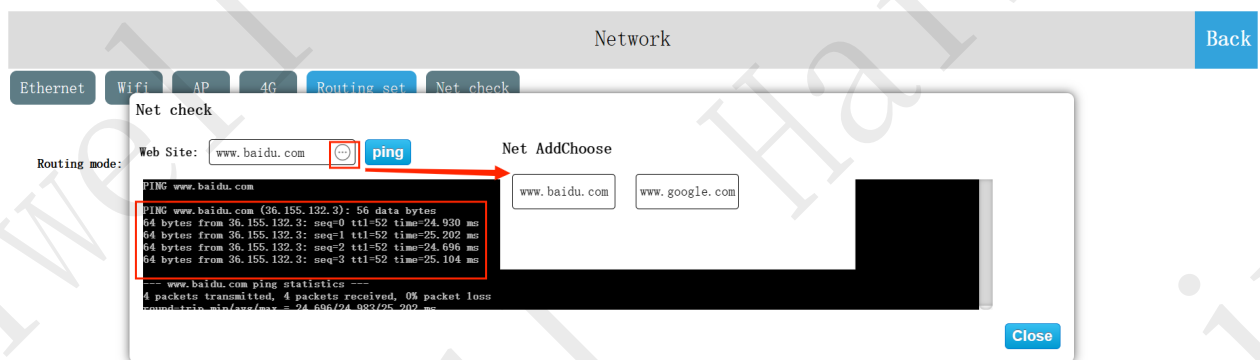


Figure63 External Network Access

② LAN Access

Use network diagnosis, click on the website, enter the corresponding IP address of the device you want to visit, if the information is returned, then the access is successful.



Figure64 LAN Access

2.4 Cloud Settings

Cloud settings are mainly used to bind devices as personal or enterprise devices, facilitating users' remote monitoring or centralized management. The prerequisite for using this function is to ensure that the device can access the Internet normally. If the device is not connected to the network, please refer to the [2.3 Network Settings](#) first and configure the device's network.

(1) Mobile Phone Cloud APP/ WeChat Applet Download

① APP

Scan the QR code to obtain it directly



Figure65 Download the QR Code of Haiwell Cloud APP

② WeChat Mini Program

Search Xiamen Haiwell on WeChat official account, click Send Message, select Hotspot - applet in the chat box, and you can directly enter Haiwell APP.

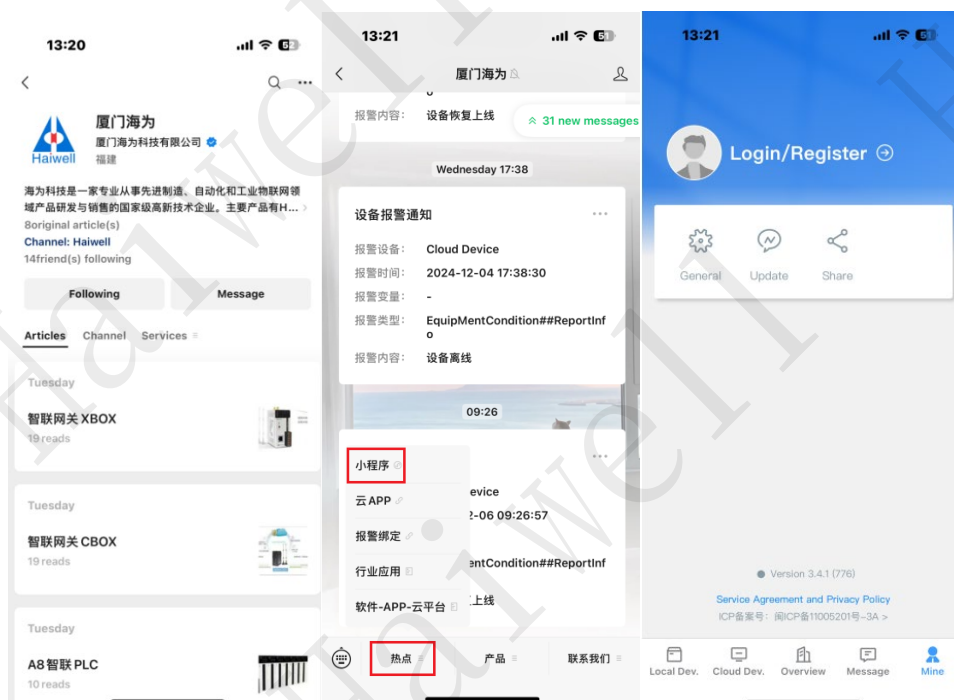


Figure66 Download the QR Code of Haiwell Cloud APP

Note: The WeChat mini program does not have a local device and requires downloading the Haiwell

APP.

(2) Haiwell Cloud APP/WeChat Mini Program Scan Code to Bind QR Code

Enter the A8 background settings interface, click on 'Cloud Settings', turn on the cloud switch, and a QR code and machine code will pop up. If the cloud status shows offline, please check if the A8 has successfully connected to the external network.



Figure67 Binding Cloud Settings QR Code

Log in to the Haiwell Cloud APP on your mobile phone, enter the local device interface, click the button  in the upper left corner of the main interface, and then click on the dropdown menu to scan. Scan the QR code to add the device. A confirmation binding prompt box pops up on the device, click **【Confirm】**, the device is successfully added, and the user can remotely access the device.

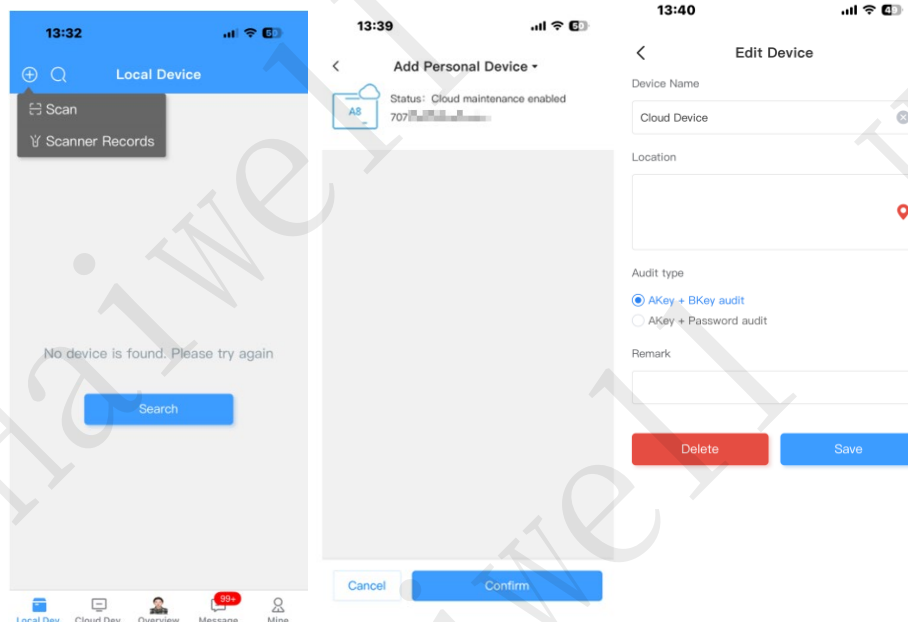


Figure68 Binding Device to Mobile APP



Figure69 Cloud Settings Interface for the First Binding of the Device - Confirm Binding

(3) Remote Monitoring and Control

Open the Haiwell Cloud app on your phone and enter the cloud device; Find the corresponding device and click on **【Access】** in the bottom right corner to remotely access the device. If the current project allows remote operation, users can control the device remotely through their mobile phone.

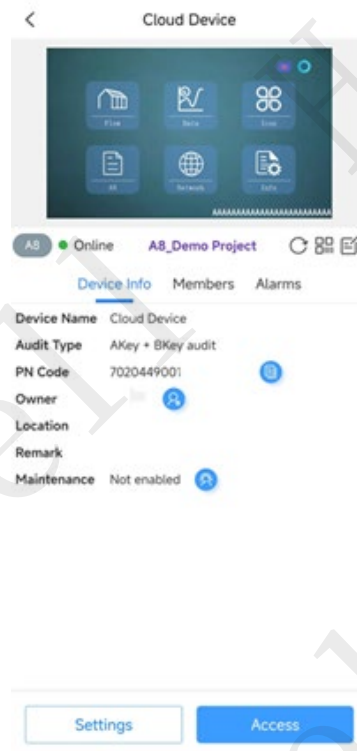


Figure70 Remote Access to A8 Screen Via APP

VIII. Configuration SCADA Project

1. Project Establishment

This paper takes a new project as an example to realize A8 and Siemens 200smart Ethernet communication, and can achieve local access and remote access to A8 screen control PLC.

1.1 Add New Project

Step 1: Open the Haiwell Cloud Configuration SCADA software and click "New Project" on the configuration software start page.

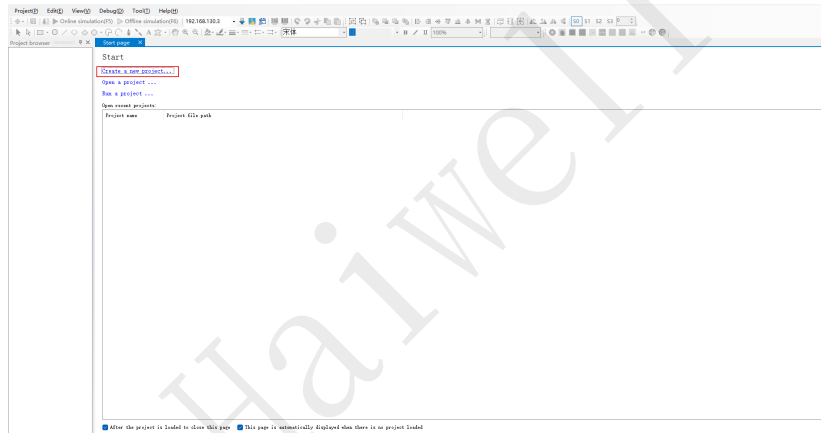


Figure71 New Project

Step 2: Click "Create a new project" and the project property window will pop up, the project name can be customized, and the corresponding operation platform can be selected. A8 is taken as an example here, and Haiwell A8 (the model ending number -E is a common operation platform) can be selected, and the screen resolution of the device used can be seen after selection. You can select an Angle as required. If the Angle is not set, the default value is 0°. Select LAN access to use the LAN access function, you can use the Haiwell Cloud APP/ computer browser /TVBOX to access the LAN, the password can be set to empty, that is, you do not need to enter the password to access, and finally click "OK".

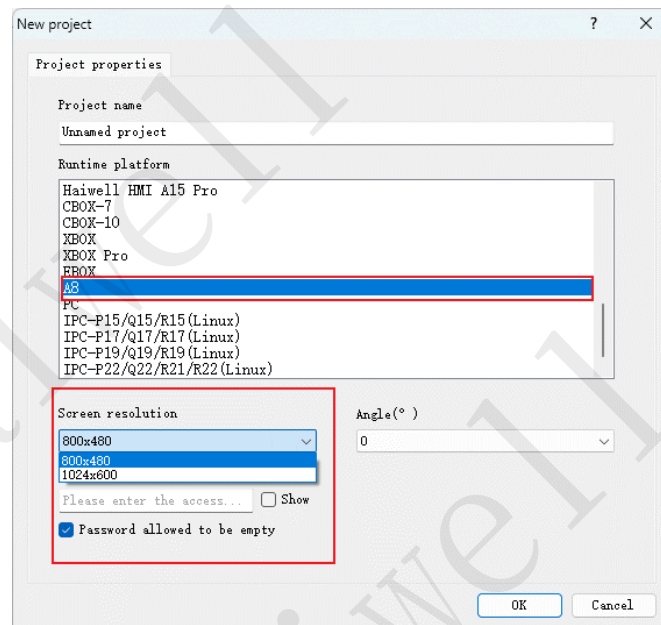


Figure72 Selecting a Running Platform

1.2 Add New Device

Step 1: Right-click Ethernet in Project Browser and choose "Add Device". Click OK.

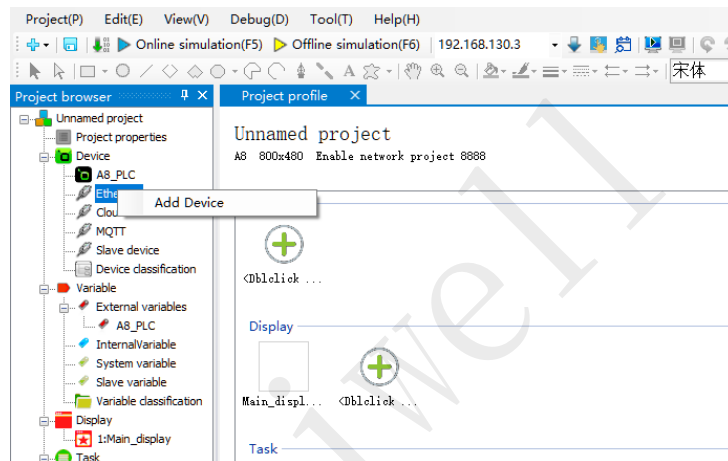


Figure73 Adding a Device

Step 2: Select Ethernet (TCP/IP) for the device interface, select the device on the left to find the corresponding Siemens model, and enter the IP address of Siemens PLC in the device properties.

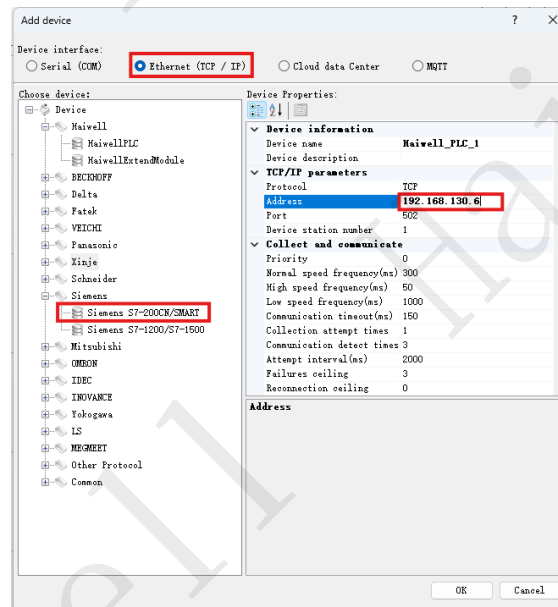


Figure74 Setting Device Communication Parameters

1.3 Add the New Variables

After you click OK, a prompt box will pop up asking you whether to define variables for the device immediately. Select Yes to add a Q0.0 and VW0.0 respectively.

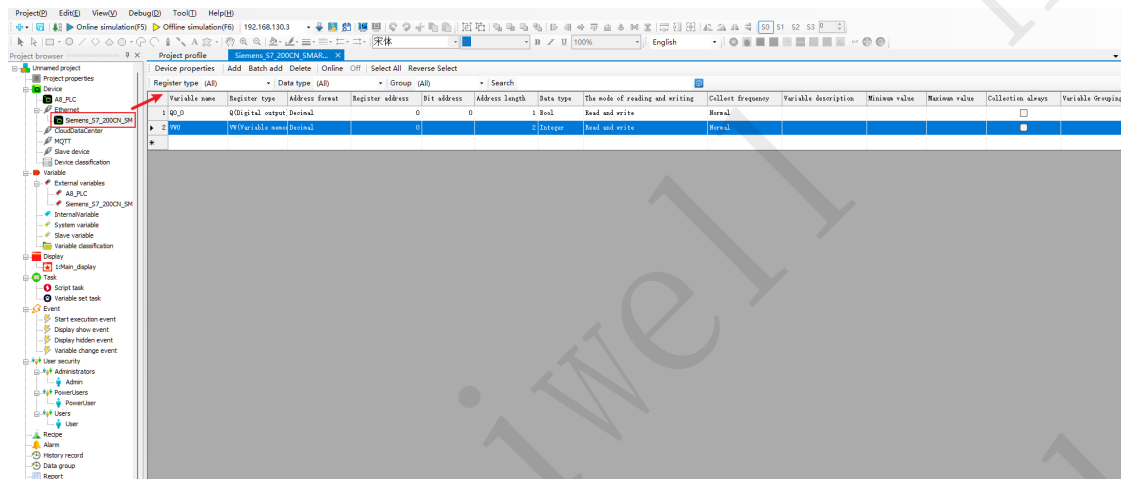


Figure75 Create New Variable

1.4 Edit Screen

Project browser select the main screen, in the right of the library - function components, drag "Bit Settings" and "numerical display input" to the screen, double-click the meta binding variable.

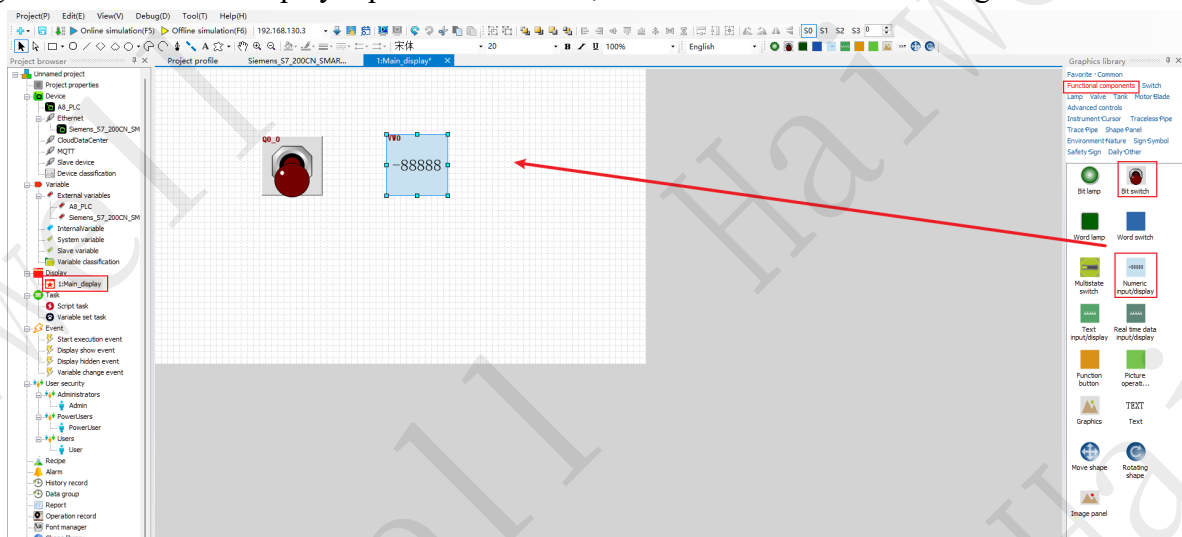
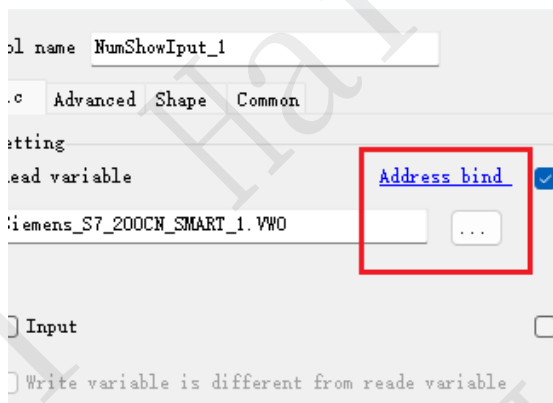
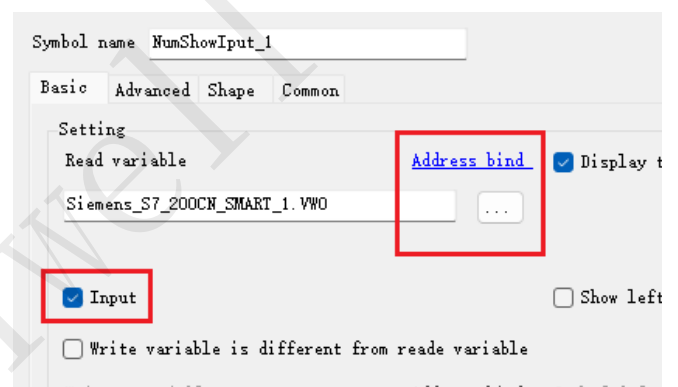


Figure76 Edit Screen

If users need to write the VW value to the PLC, you need to select Input in the value display input attribute, otherwise only read-only attribute.



(a)



(b)

Figure77 Meta Binding Variable

1.5 Debugging and Running

The developed and edited project can be run and debugged through "online simulation" and "offline simulation".

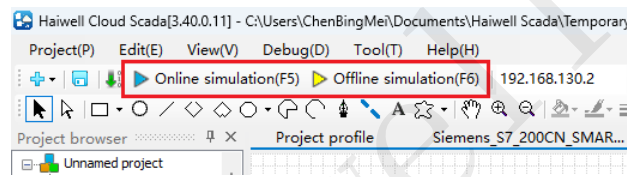


Figure78 Simulation and Debugging

(1) Online Simulation and Offline Simulation Differences

Online Simulation: take the port on the computer as the port of the A8 screen, communicate with the PLC, etc., for simulation and debugging.

Offline Simulation: that is, it does not communicate with the actual PLC, but only simulates the screen of the simulation operation.

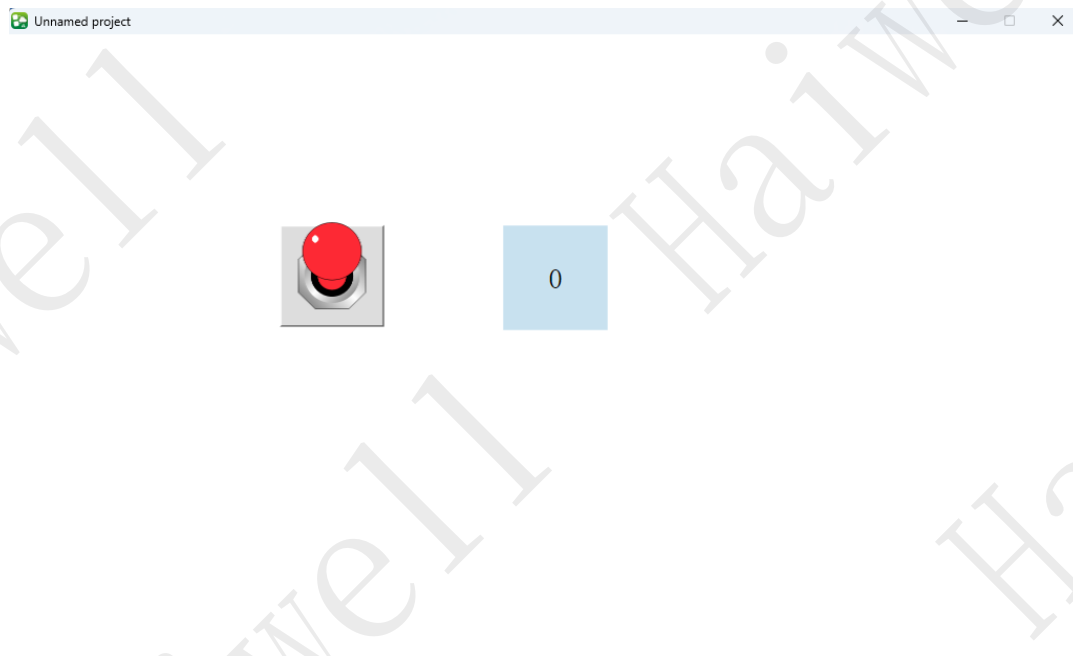


Figure79 Online/Offline Simulation Screen

2. Device Management Tool

Open the configuration design terminal  on the computer, click the device management tool icon in the menu bar to enter the device management tool; Or click

【Programs】, expand the installation file 【Haiwell Scada】, and click 【Haiwell Cloud HMI Manager】 to enter the device management tool.



Supports effective A8 control using local and cloud management.

2.1 Local Management

In local management, you can select and manage devices based on the IP addresses of devices on the LAN.

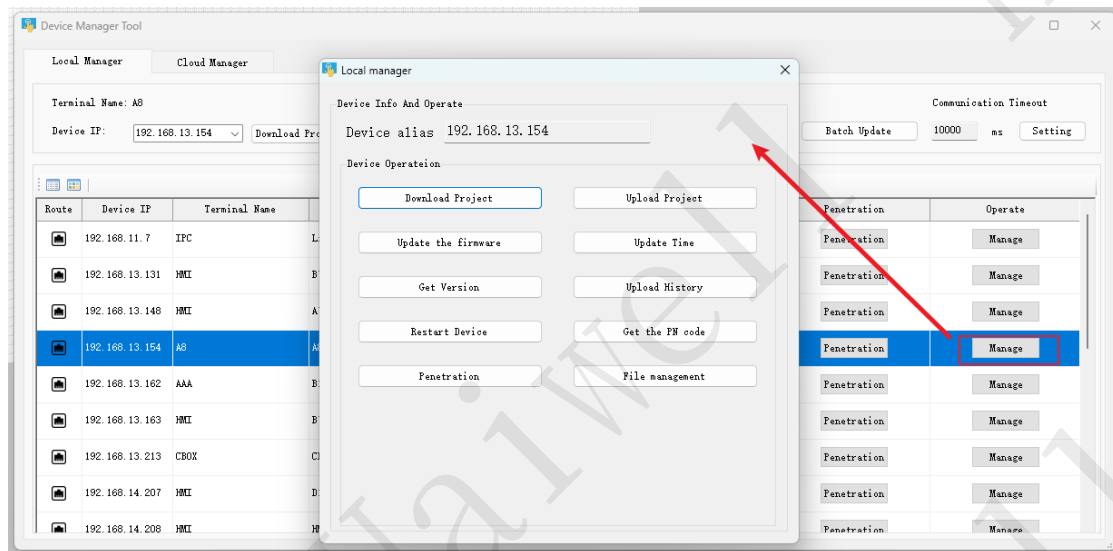


Figure80 Local Manager

2.2 Cloud Management

In cloud management, users can log in by mobile phone or email. Device administrators and owners can manage current devices, but common users do not have device management rights. Users can log in to the device Manager by entering the correct account and password. After login, users can select a specific device and perform management operations.

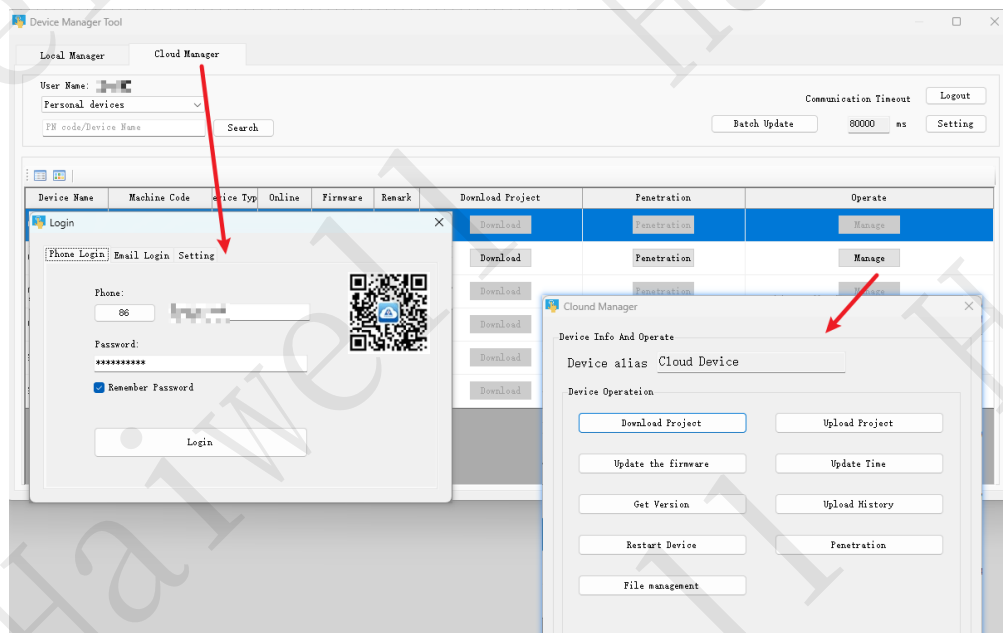


Figure81 Cloud Manager

3. Project Download

3.1 Local Download

Step 1: Go to the Device management tool. You can choose to use local management or cloud management, find the corresponding A8, and click "Download Project".

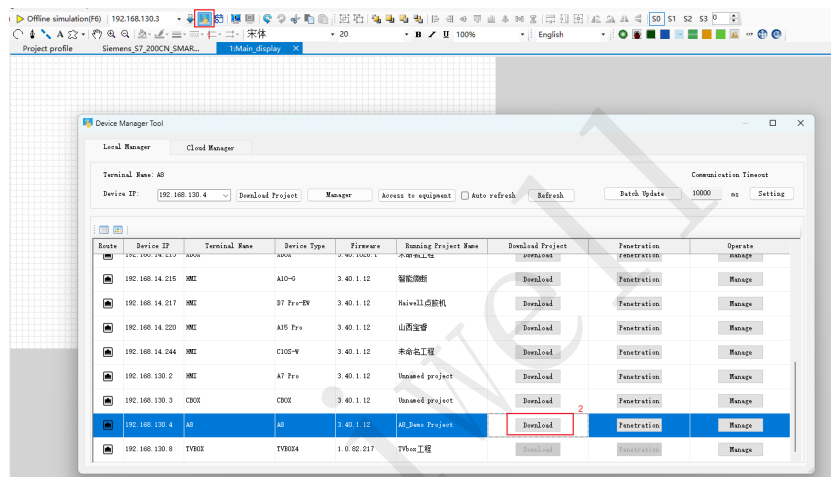


Figure82 Local Download Project

Step 2: In the confirmation download interface, you can choose whether to retain history and alarm records, whether to retain recipes, and whether to pack fonts for download according to your needs. You can check it by default and click "OK".

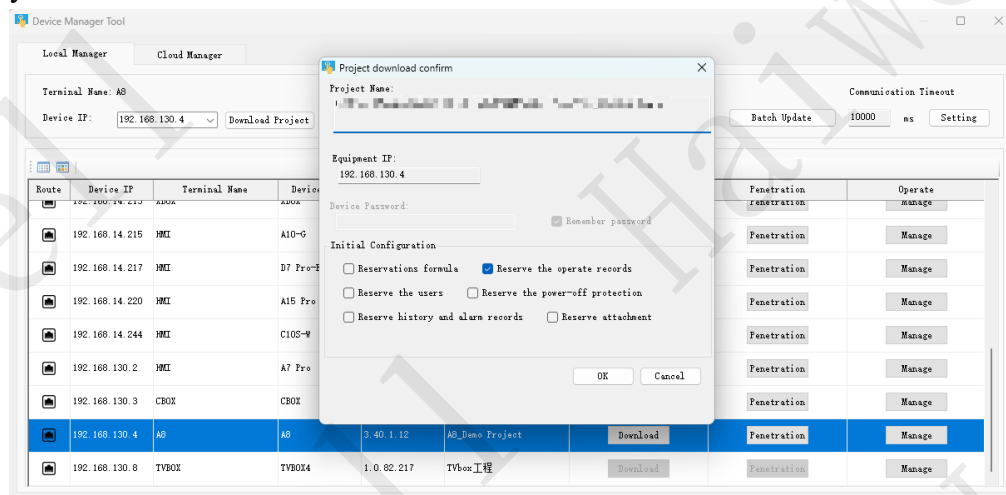


Figure83 Project Download Confirmation

Step 3: Wait until the message "Download success!" is displayed. Click "OK" to run the new project on the A8.

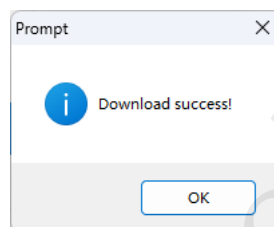


Figure84 Download Successfully

3.2 Remote Download

Step 1: To use cloud management, you need the A8 to connect to the Internet and the cloud is online. Log in to the cloud APP account and password, find the bound A8, and select Download Project.

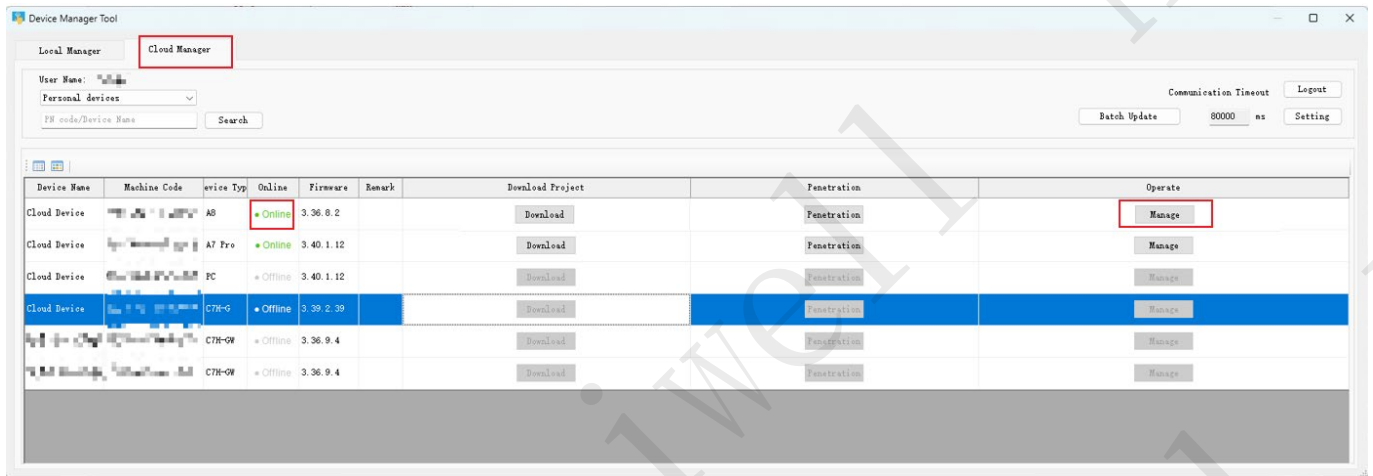


Figure85 Remote Download Project

Step 2: The follow-up is the same as the local download, and will not be summarized here.

4. Project Operation

After the project download is successful, wait for A8 restart, after the successful restart, the touch screen will automatically open the project start screen, the toggle bit is set to on, the value displays the input write value of 10, and you can observe the PLC monitoring to see that there is a successful write.

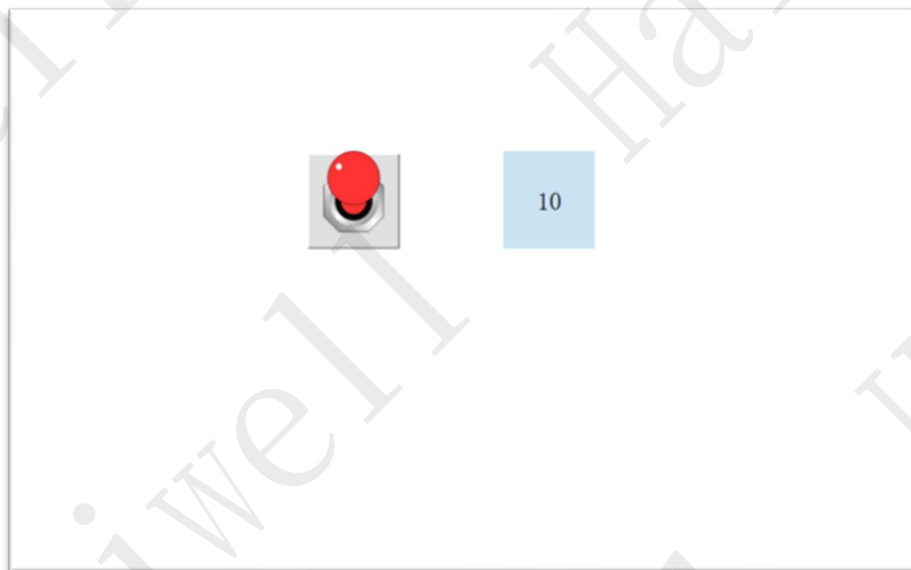


Figure86 A8 Running Screen

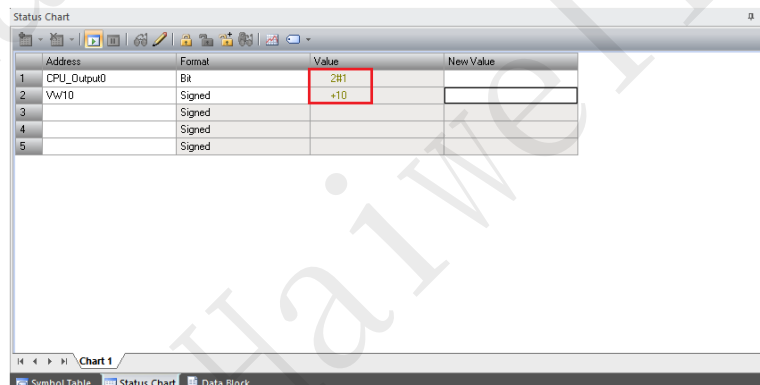


Figure87 PLC Real-time Monitoring

5. Local/Remote Access A8 Screen

5.1 PC Local/Remote Access

(1) PC Local Access

Method 1: Local management After downloading the project, check the project properties to run LAN access, you can enter the A8 IP address in the browser and press Enter to locally access the A8 screen (for example: 192.168.130.4).

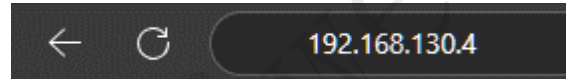


Figure88 Enter IP in the Browser

Method 2: Local management in the Device management tool Click Access Device. The browser is automatically displayed to access the device on the LAN.

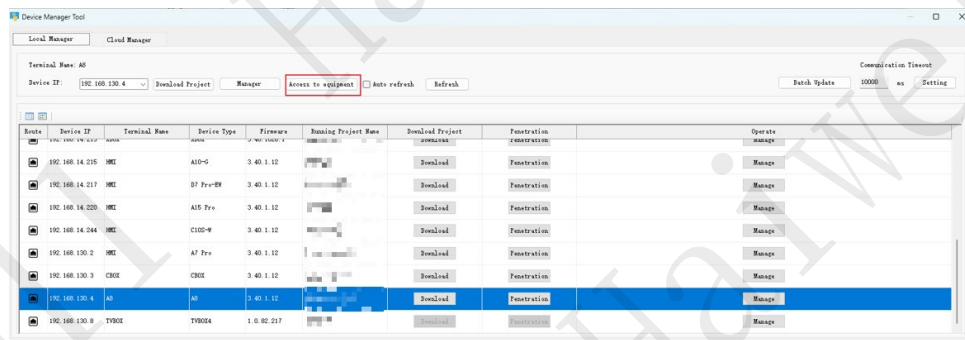


Figure89 Manage Access Devices Locally

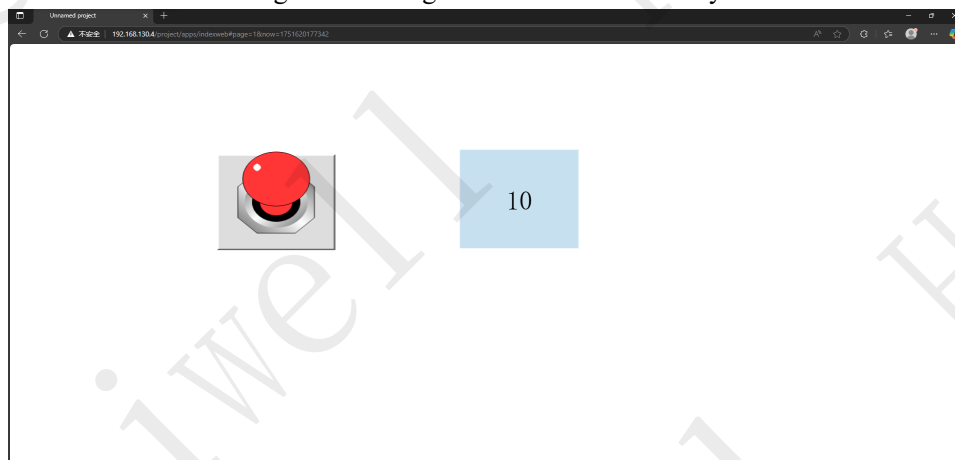


Figure90 Browser LAN Access

(2) PC Remote Access

Step 1: open the computer browser, type <https://ecloud.haiwell.com/> access to the Haiwell for IIoT at cloud platform, login password is selected to individual users into the platform.

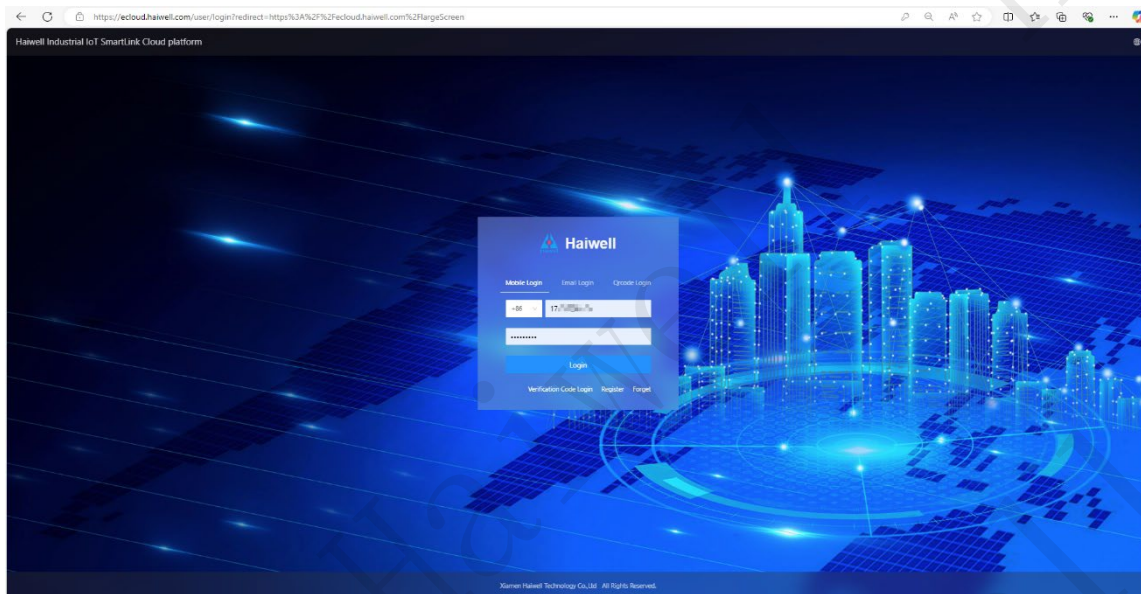


Figure 91 Log in Haiwell IIOT Intelligent Cloud Platform

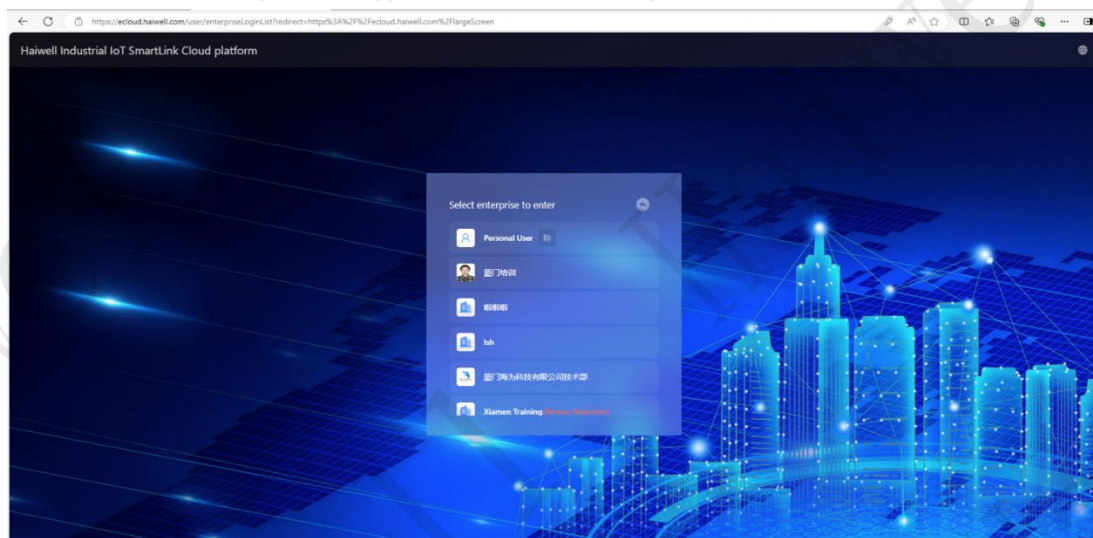


Figure 92 Select Individual User

Step 2: In the device list, select the corresponding A8 and click  Enter device details.

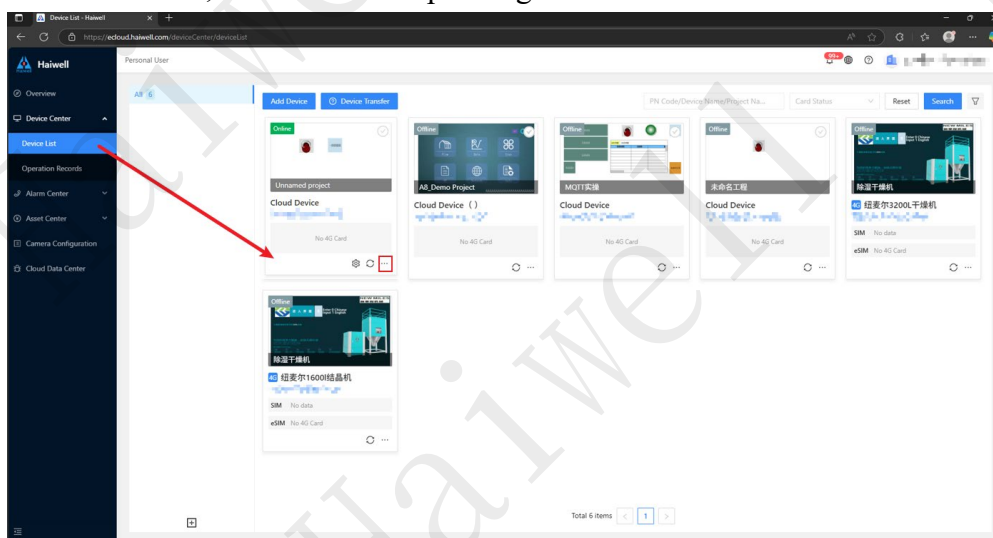


Figure 93 Enter Device Details

Step 3: Click "Access Program" in the device details to access the A8 screen remotely.



Open the Haiwell Cloud APP or WeChat Mini program on your mobile phone, log in to the cloud device with the account password, select the corresponding A8 device, and finally click "Direct access".

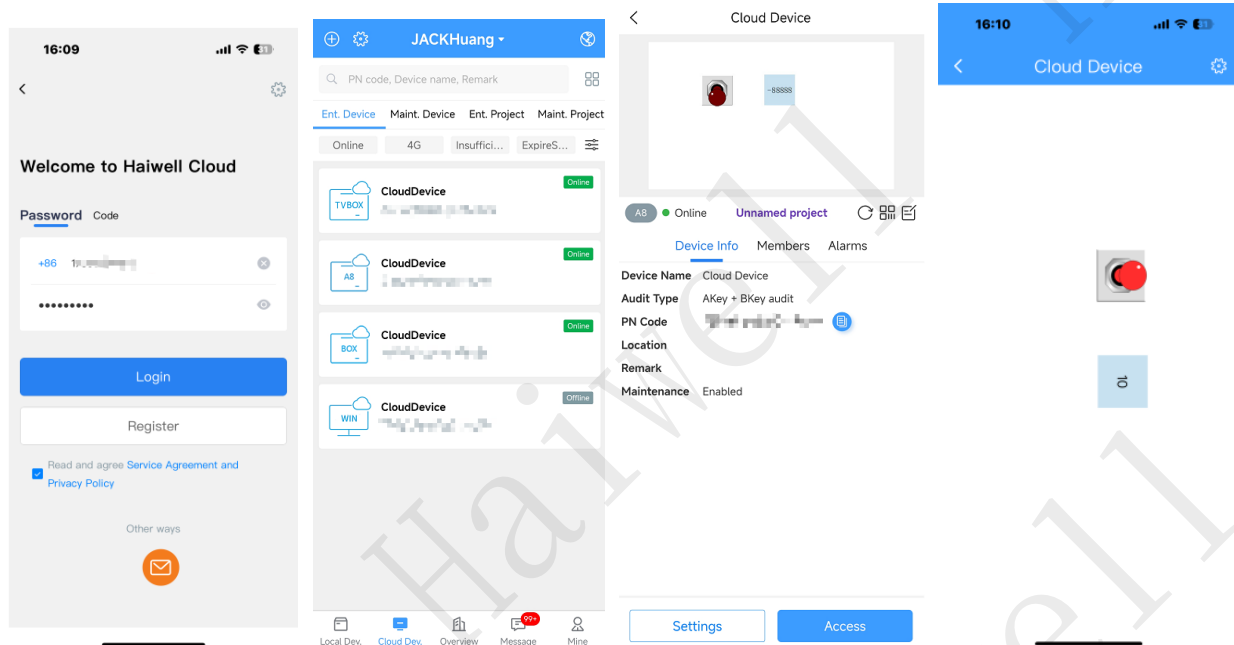


Figure96 Remote Access to A8 screen on Mobile Phone

IX. Remote Penetrate PLC

In this paper, Siemens 200 smart transparent transmission as an example, in the case of successful Ethernet communication between A8 and PLC, then perform the following steps to achieve the remote download of PLC function.

1. Modify the Computer Supply Network Segment

Open your computer Settings and click **【Change Adapter Options】**

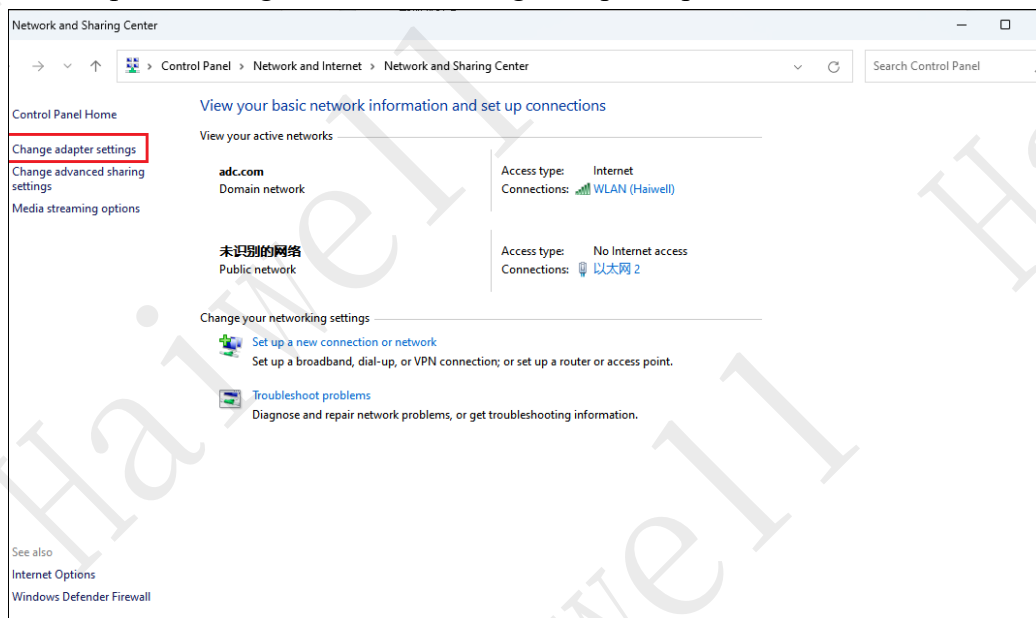


Figure97 Open Computer Settings

If the computer is supplied by Ethernet, check the Ethernet IP address segment to ensure that the Ethernet IP address segment is different from the PLC IP address segment. For example, if the IP address of the PLC is 192.168.130.6, then the IP address segment of the computer's Ethernet must be changed to an address other than 6.

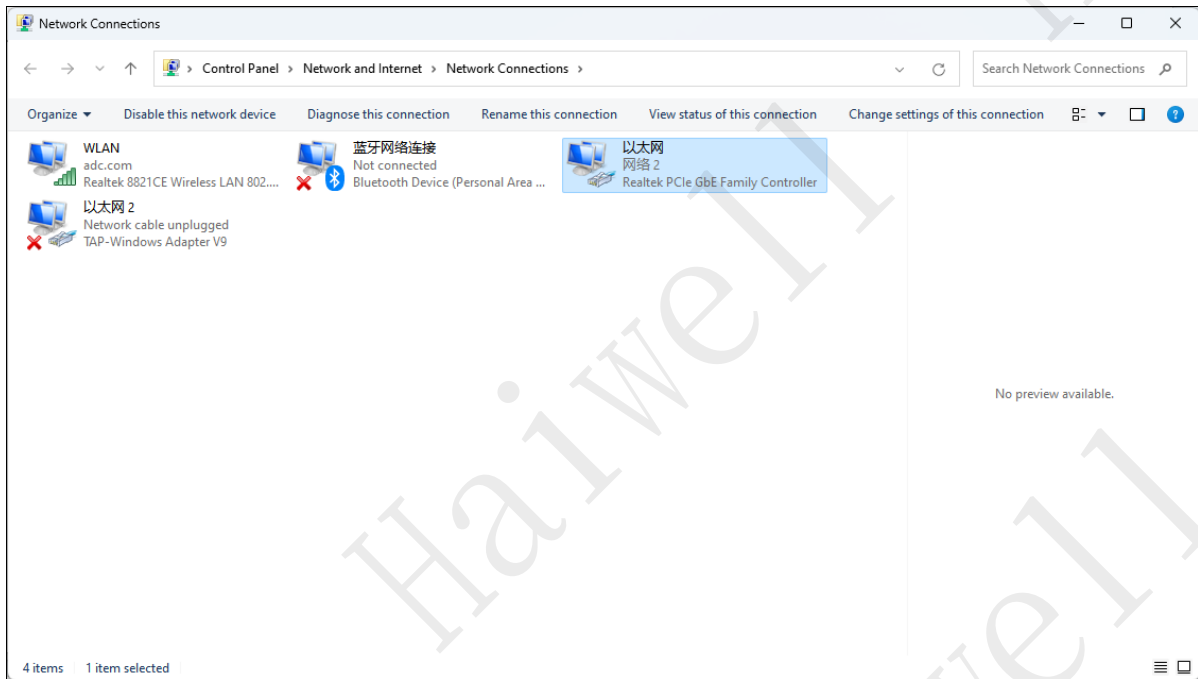


Figure98 Check the Supply Network Segment 1

2. Open the Device Management Tool

After the successful communication between A8 and Siemens 200 smart according to the previous project, open the configuration SCADA software - Tool - Device management tool, select Cloud Management, and carry out transparent transmission of the device.

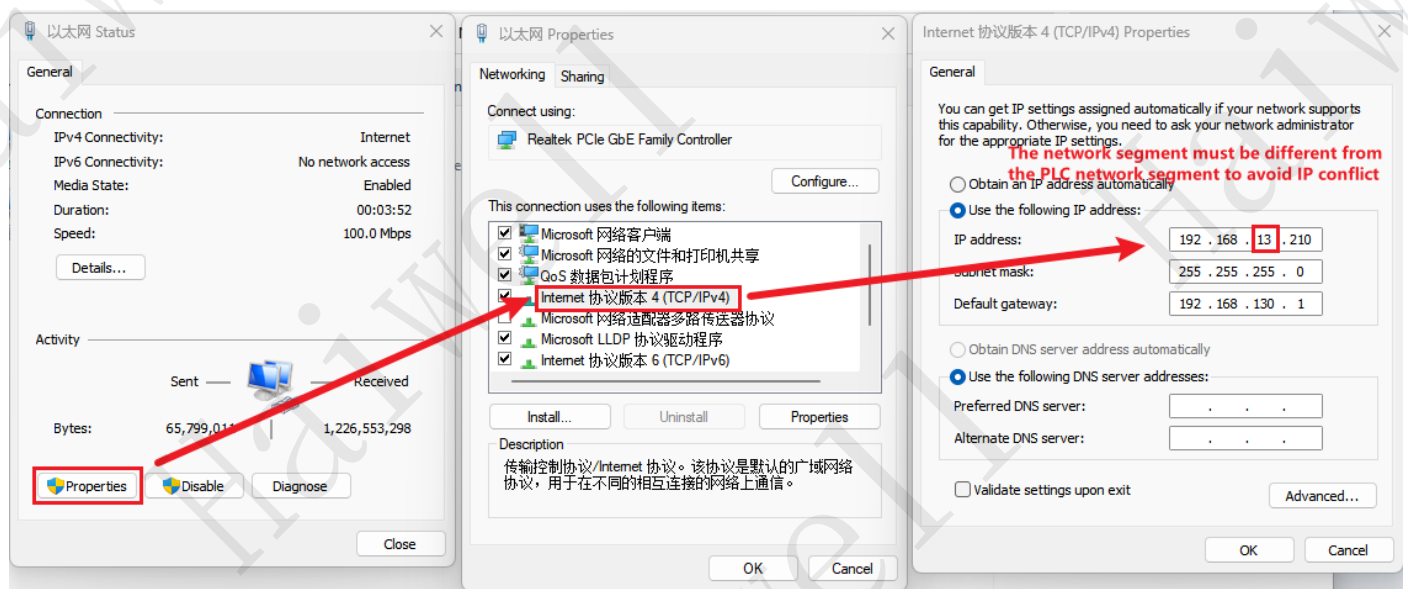


Figure99 Check the Supply Network Segment 2

Note: If the computer has WIFI function, the network mode can use WIFI first and then perform VPN transparent transmission operation.

3. Open the Device Management Tool

After the successful communication between A8 and Siemens 200 smart according to the previous

project, open the configuration SCADA software - Tool - Device management tool, select Cloud Management, and carry out transparent transmission of the device.

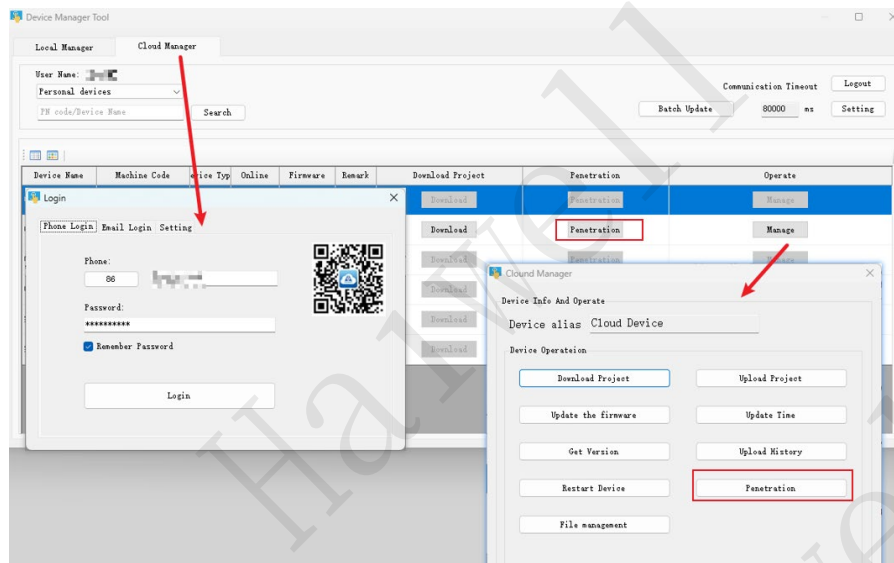


Figure100 Open the Device Management Tool

4. Connect Penetrating Devices

Please turn off the device's routing mode before penetration.

Use the device management tool - Cloud Management to perform VPN transparent transmission, log in to the cloud account, select the corresponding Intelligent device - and connect the device.

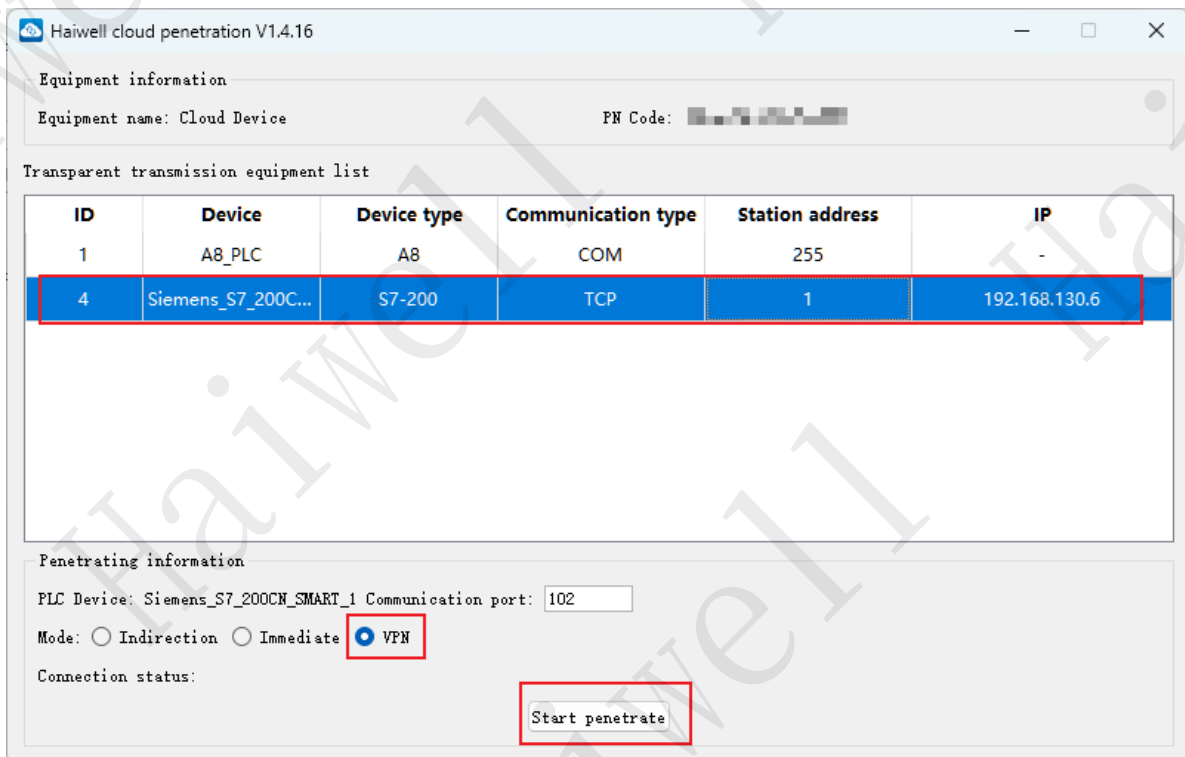


Figure101 VPN Connect the Transparent Device

After connecting the device - select the corresponding PLC, and the transparent transmission mode is the transit mode by default. In this paper, select VPN, click Start transparent transmission, and fill in the IP address to establish a virtual IP address through the A8's screen.

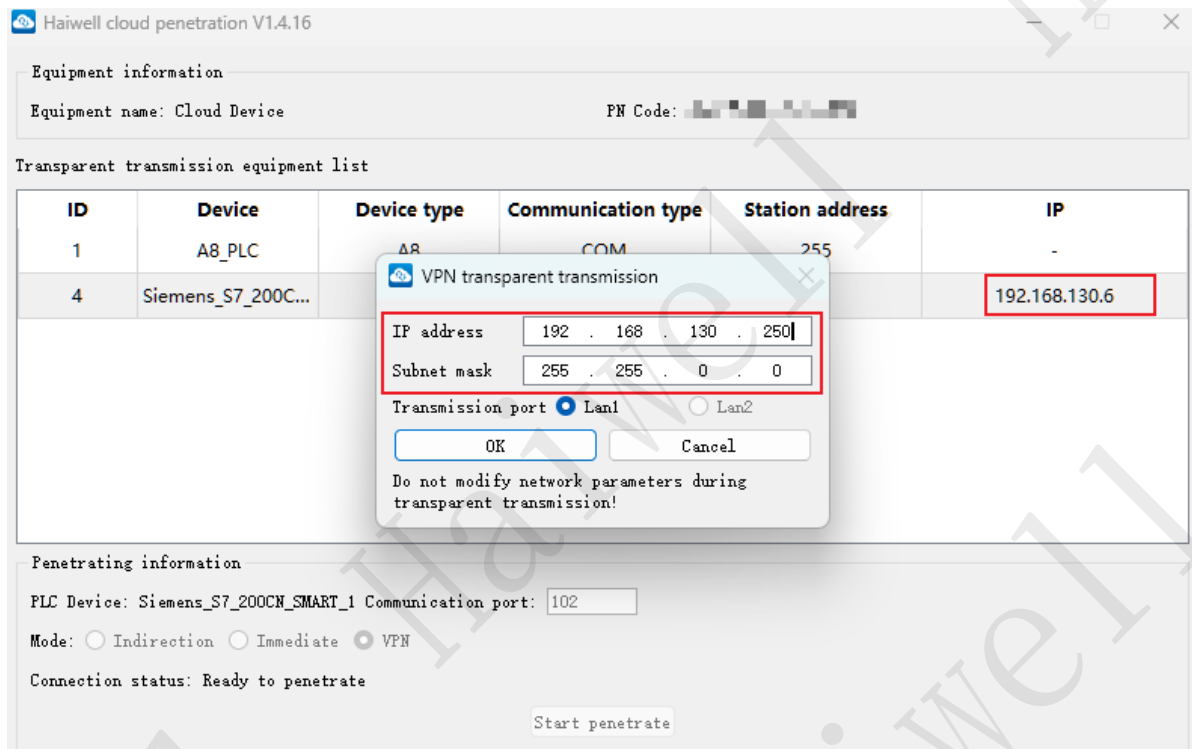


Figure102 VPN Transparent Transmission Fill Information

Note: Click after start pass through. The virtual IP address that needs to be set up here is not an IP address that is exactly the same as that of the PLC. The IP address is in the same network segment as the IP information of the PLC device that needs VPN transparent transmission, and there is no IP address conflict with the local area network where the PLC device is located. Subnet Mask Enter the subnet mask corresponding to the PLC IP address or 255.255.0.0, and click OK.

5. VPN Status Check

After the preceding operations are performed and transmission through is enabled, you need to check the VPN status. Open your computer Settings and click **【Change Adapter Options】**.

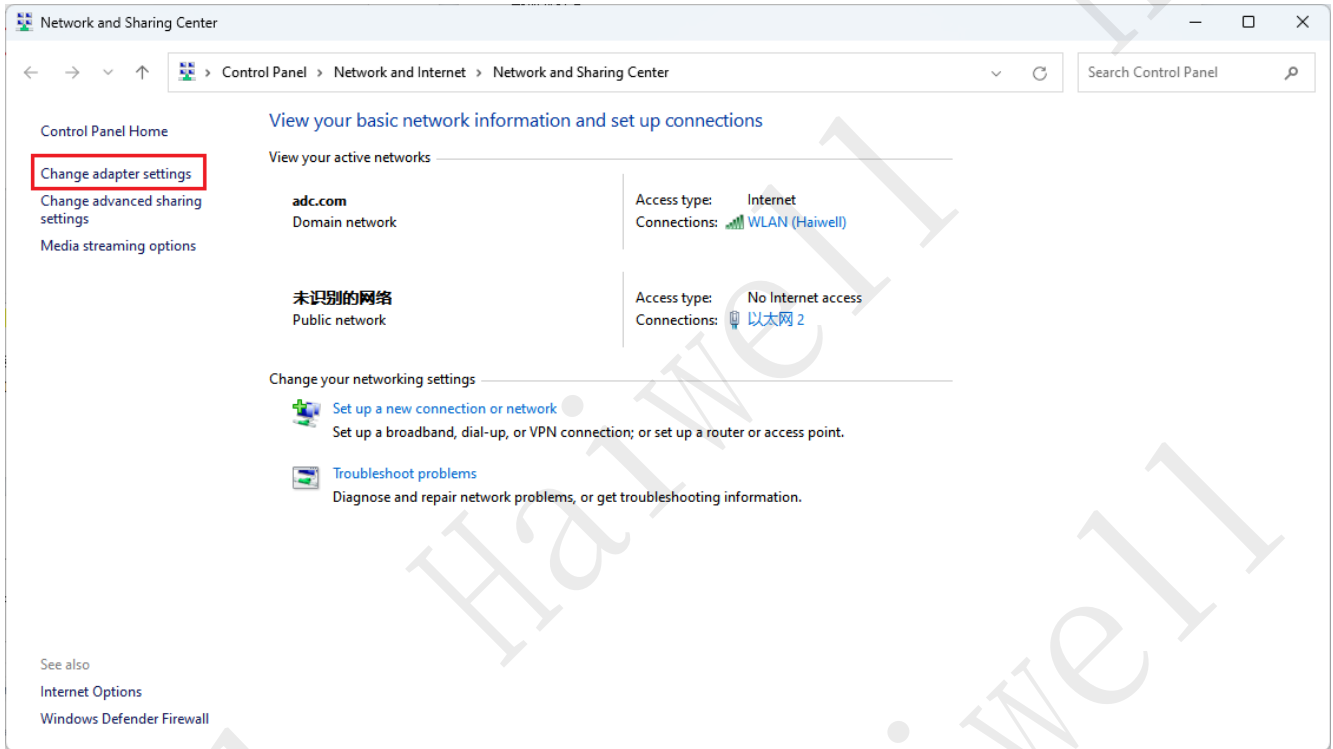


Figure103 Change Adapter Options

Locate the Ethernet (in this case, Ethernet 2) where the virtual network interface TAP-Windows Adapter V9 is located. Double-click the "Ethernet 2" interface.

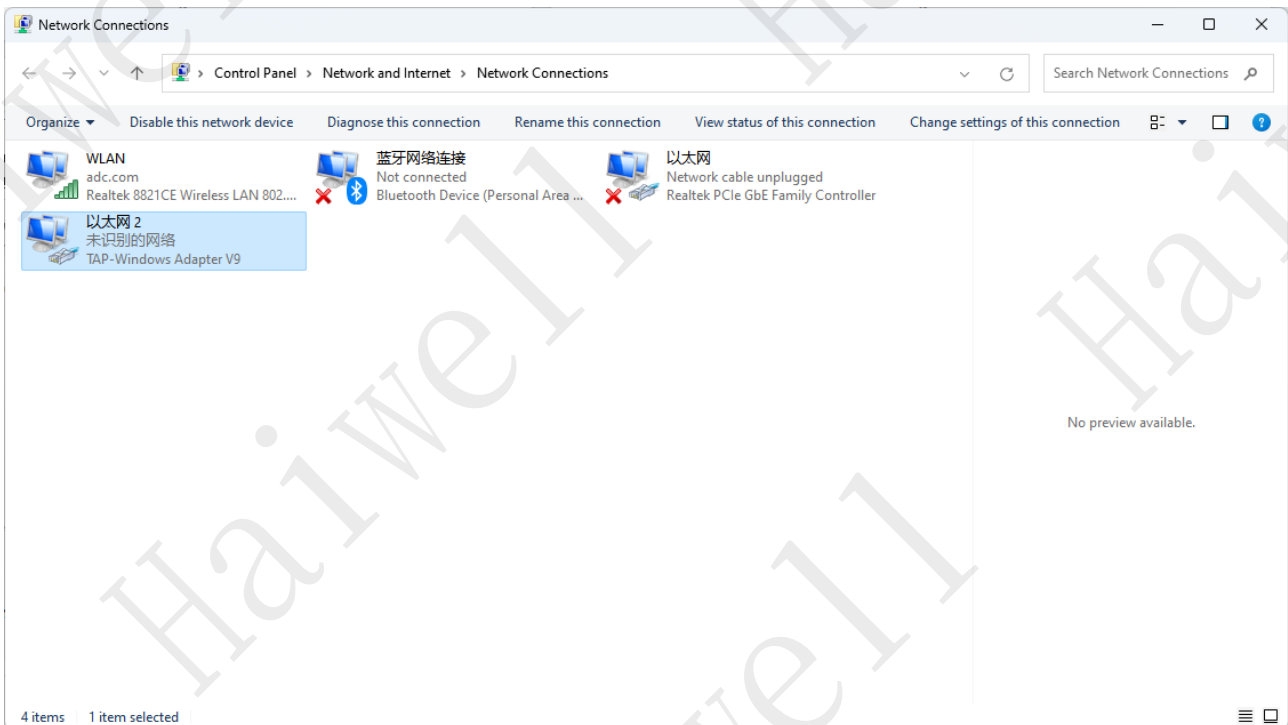


Figure104 Open the Virtual Network Card

Click **【Details】**, you can check the IPv4 address and IPv4 subnet mask information in the pop-up "Network Connection Details" page, and when the two are consistent with the VPN parameter Settings, you can start the transparent transmission PLC device.

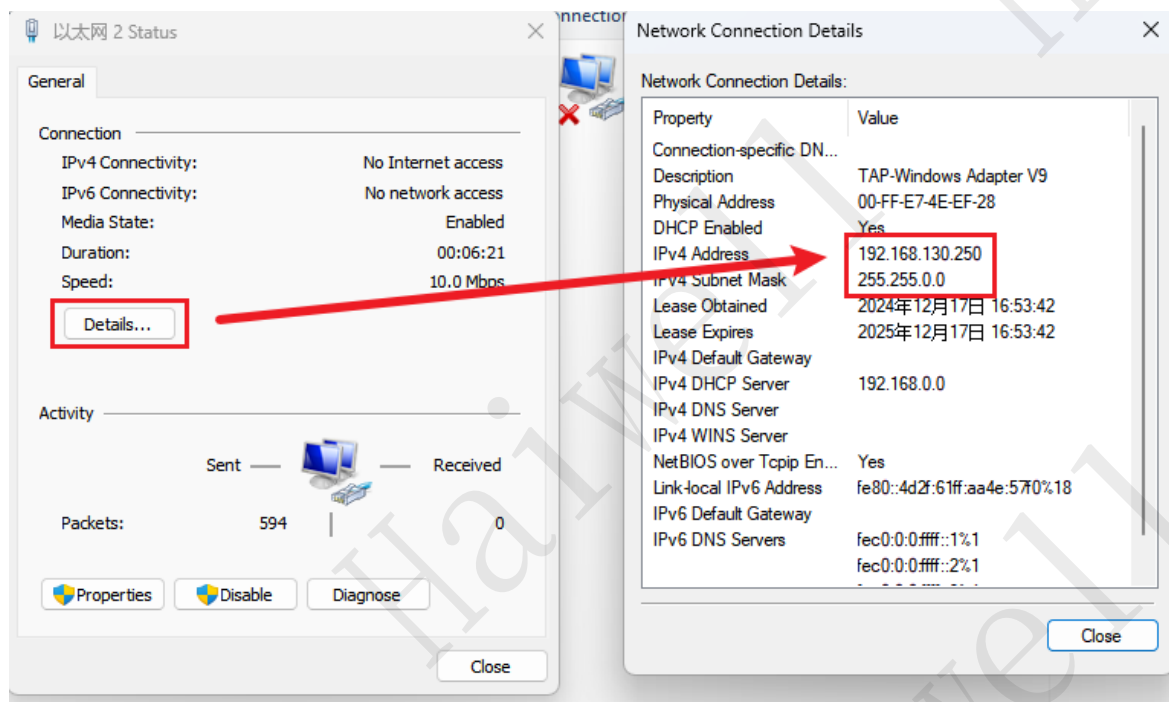


Figure105 Check the IP Address of the Virtual Network Card

Note: When the result of the query is: The generated TAP-Windows Adapter V9 network interface is connected to an unidentified network, and its right-click status is displayed - The IPv4 address and IPv4 subnet mask in the details are consistent with the VPN parameter Settings, you can start transparent transmission of PLC devices.

(The preceding method is used to query VPN status in windows 10. In windows 11, you only need to click Settings > Network and Internet > Advanced Network Settings to query related network information.)

6. Transparent Transmission PLC

Open the Siemens programming software and click to go online. In the dialog box that is displayed, select the TAP-Windows Adapter V9 network interface driver. Click Find CPU, you can appear online PLC, if there is no CPU can be added manually enter the PLC IP address.

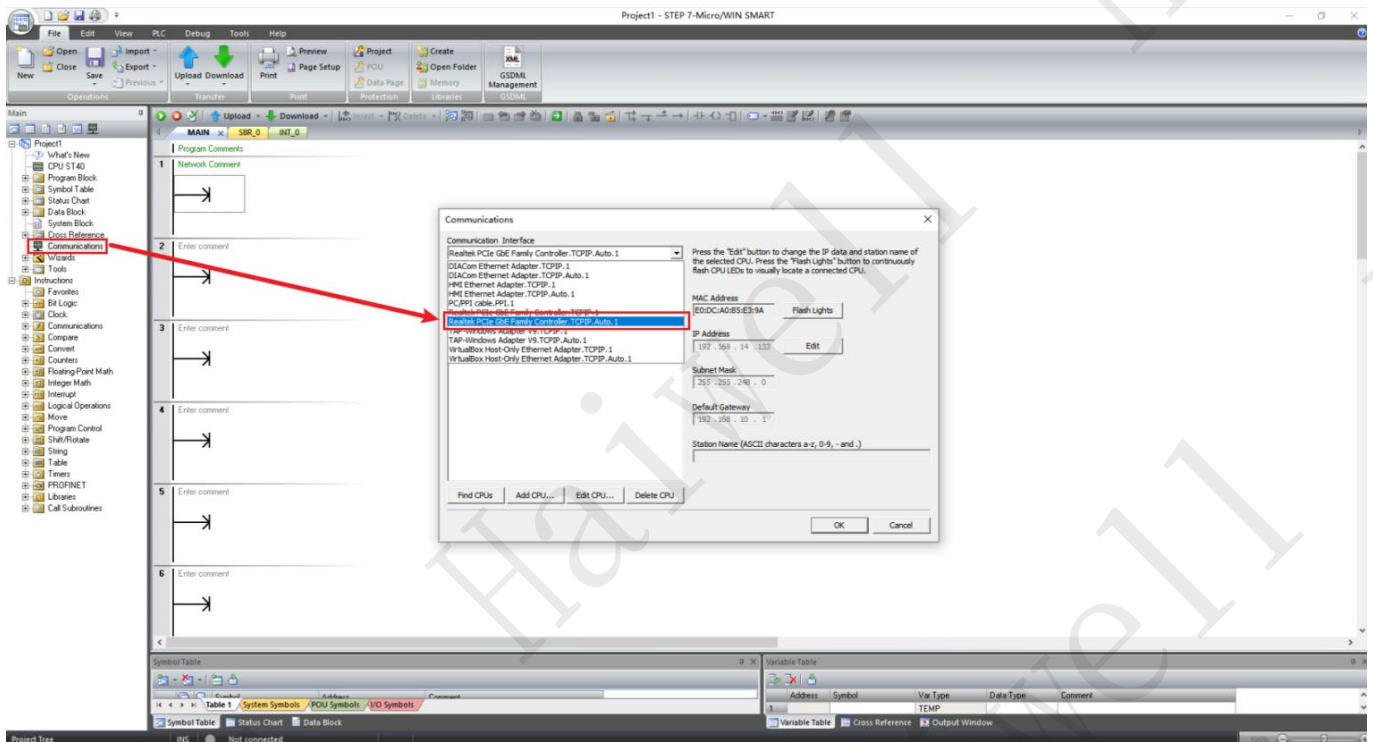


Figure106 Select the V9 Communication Interface

Select the IP device connected to the Siemens SMART PLC and double-click the corresponding IP to connect the PLC.

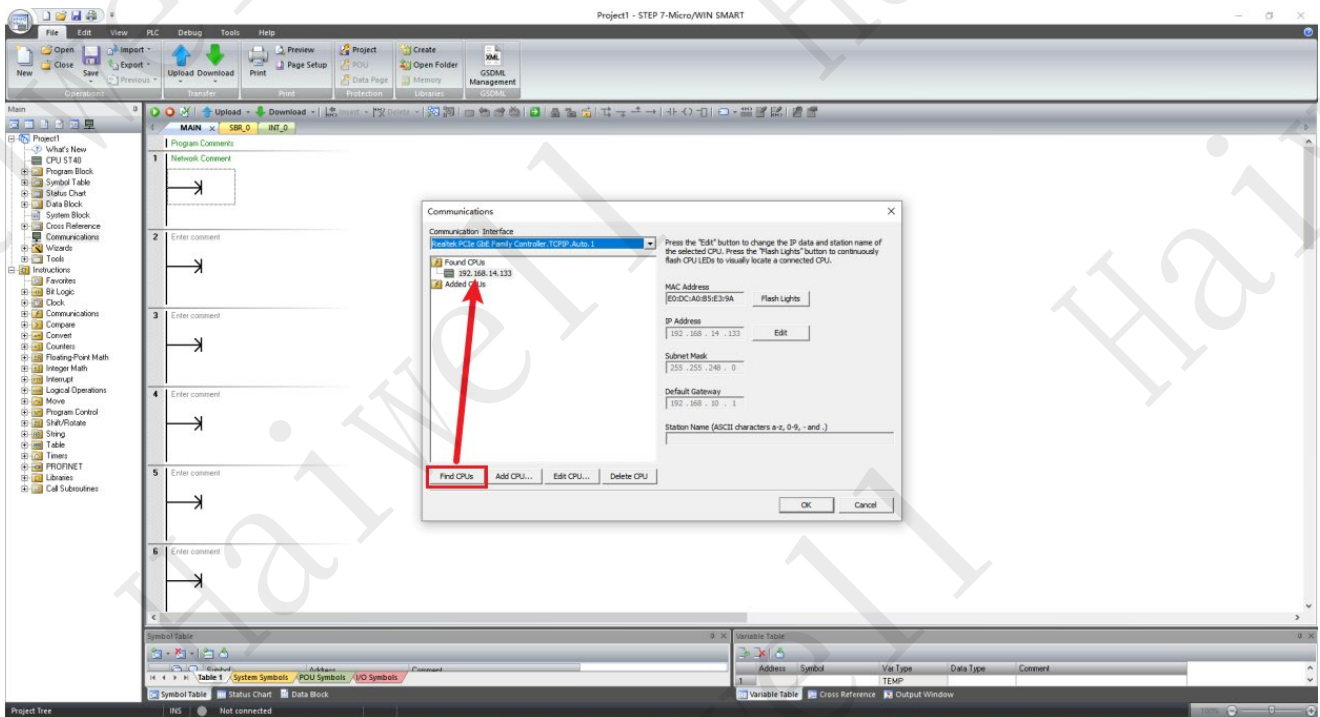


Figure107 Look Up CPU

After the connection is successful, you can see the connection status below, and you can download the PLC project.

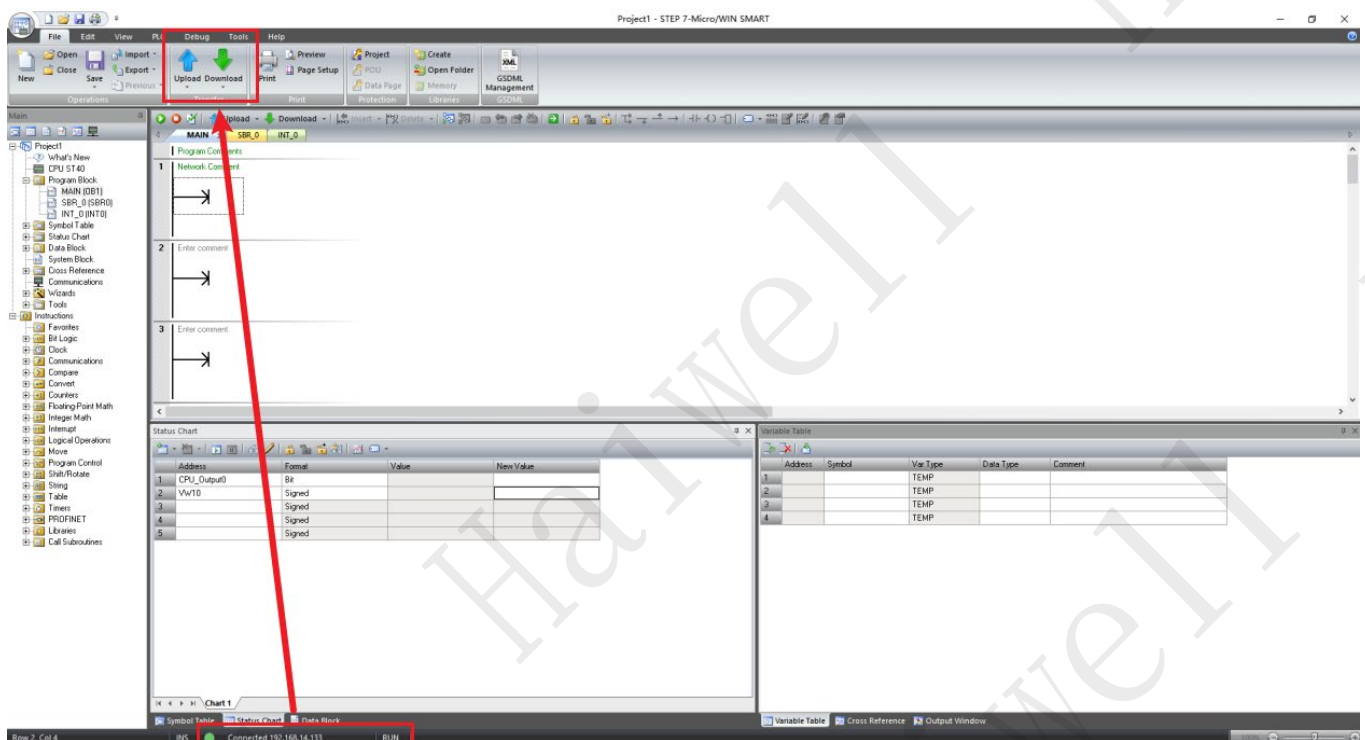


Figure108 Check Connection Status

Note: VPN transparent transmission support PLC and Haiwell products communication failure can also be normal transparent transmission;

VPN transparent transmission supports all PLC devices in the same LAN with transparent transmission set IP address parameters.

X. Factory Reset

During the use of the device, the factory reset function can be used to restore the A8 to its initial state. The operation method is as follows:

First, confirm that the RST button on A8 is functioning properly by clicking it and listening for a "beep" sound.

1. Restore Network Configuration

The network configuration and the password for entering the system settings interface will be restored to their initial states.

Steps1: Press the **【RST】** button briefly three times to enter the network configuration restore mode. Wait for the buzzer to emit a "beep" sound and the three lights to flash slowly. This indicates a successful restoration.

2. Factory Reset

The network configuration and the password for entering the system settings interface will be restored to their initial states; all system settings information will be restored to their initial states.

Steps 1: Press and hold the **【RST】** button for 5 seconds. The three lights will flash slowly, entering the factory reset network configuration mode. Release the **【RST】** button.

Steps 2: Within 3 seconds after releasing the **【RST】** button, press and hold the **【RST】** button for 3

seconds again. The three lights will flash quickly, entering the factory reset mode. Release the **【RST】** button. If the buzzer emits three "beep" sounds, the restoration is successful.

XI. Common Problem

1. What is the default IP address of A8?

The factory default IP address of A8 is 192.168.1.112. To modify the IP address, refer to the (1) [Ethernet Settings](#) for specific steps.

2. How to upload/download projects locally on A8?

Local Project Download:

- Ensure A8 and the computer are on the same local network and share the same subnet.
- Open the configuration software → Device Management Tool → Local Devices.
- Locate the target A8 device in the list and click Download Project.

Local Project Upload:

- Ensure A8 and the computer are on the same local network and share the same subnet.
- Open the configuration software → Device Management Tool → Local Devices.
- Locate the target A8 device in the list, select Manage to enter the local manager, and click Upload Project.

(Note: Project upload is disabled by default. To enable it, open the configuration software, go to Project → Project Properties → Security Settings, check "Allow Project Upload" and set an upload password.)

3. How to access A8's background settings?

3.1 Method 1: LAN Access

Computer:

Ensure the computer and A8 are on the same LAN and subnet. Enter [Device IP]/setting in the browser (e.g., 192.168.130.4/setting) to access the background settings.



Figure109 Browser-based LAN Access to Background Settings

Mobile:

Connect the mobile device to A8's built-in hotspot via WIFI. Open the Haiwell Cloud APP → Local Devices → locate the A8 device. If the device is not visible, manually enter the hotspot IP 10.5.5.1 in the top-left corner  of the Local Devices page, then click to enter the background settings.

4. Unstable or failed communication between A8 and Ethernet devices?

Communication Failure:

Step 1: Verify wiring connections. Use a multimeter to check pin alignment if necessary. Ensure communication parameters (COM port, station address, protocol type, baud rate, data format, etc.) match the configuration in the project.

Step 2: Test communication using a third-party tool (e.g., Modbus Poll). If unsuccessful, the device may use a non-standard Modbus protocol.

Unstable Communication:

Step 1: Adjust Communication Timeout (recommended: 1500ms) and Packet Length (recommended: 10).

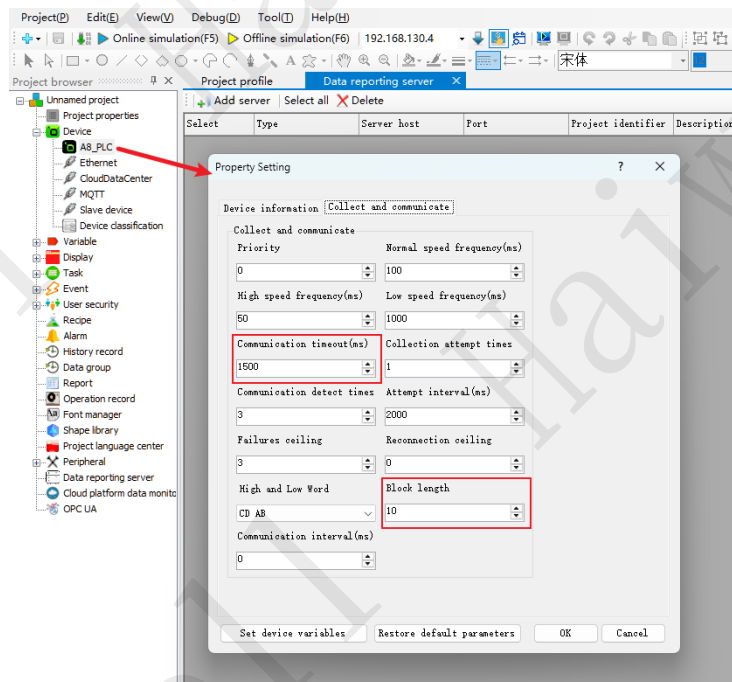


Figure110 Adjusting Communication Parameters

5. A8 reads incorrect values from devices (e.g., flow meters, energy meters)?

A8 defaults to CD AB byte order. Adjust the byte order in the configuration project to match the target device. Use tools like Modbus Poll to test different byte orders if unsure.

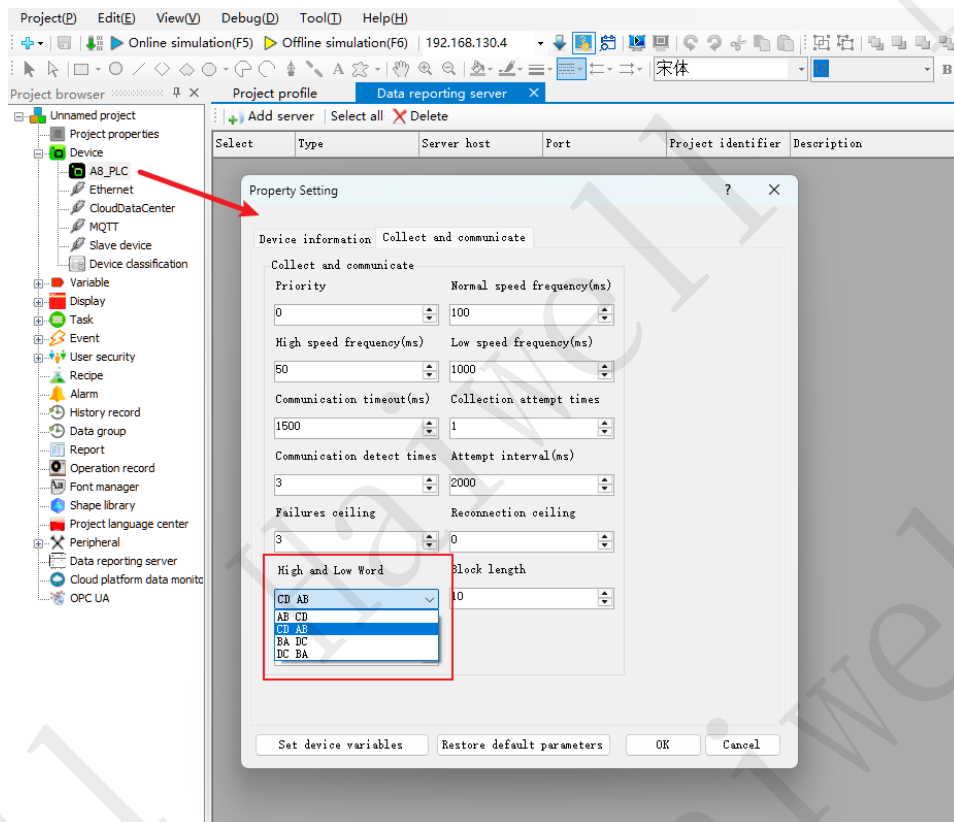


Figure111 Modifying Byte Order Settings

6. How to unbind the owner Akey in A8 cloud settings?

Owner Akey is accessible:

Mobile: Open the Haiwell Cloud APP/WeChat Mini Program → Cloud Devices → Select the device → Edit Device → Delete Device. (If other users are bound, remove them first.)

Computer: Log in to ecloud.haiwell.com → Device Center → Device List → Select the device → Delete Device.

7. A8 cloud status is offline. How to troubleshoot?

Step 1: Go to Background Settings → Network Diagnostics, ping cloud.haiwell.com to check server connectivity. If failed, resolve network issues.

Step 2: In Background Settings → Local Settings → Other Settings, switch the server channel (e.g., switch between Shenzhen/Qingdao servers).

Step 3: (4G networks): Disable/re-enable 4G or set DNS to 223.5.5.5.

8. No service after inserting a 4G SIM card into A8?

Step 1: Verify SIM card status (balance, internet access). For restricted SIMs, bind domain names (see appendix).

Step 2: Insert the SIM while A8 is powered off (chip side facing the pins).

Step 3: Enable 4G in Background Settings → Network Settings → 4G and check for signal/card details.

Step 4: Ping www.google.com or cloud.haiwell.com. If successful but still offline, switch server channels in Background Settings → Local Settings → Other Settings.

9. WIFI connection failed on A8?

Step 1: Ensure the Wi-Fi antenna is properly installed near the signal source.

Step 2: Use 2.4GHz Wi-Fi frequency.

Step 3: Avoid spaces or special characters in the SSID/password.

10. A8 VPN passthrough fails to connect to PLC?

Step 1: Ensure the computer and PLC are on different subnets. Change the computer's subnet or use Wi-Fi.

Step 2: Verify the virtual NIC IP settings in firewall/antivirus software.

Step 3: Uninstall the VPN tool via C:\Program Files\OpenVPN\Uninstall.exe, then reinstall it through the configuration software during passthrough setup.

Appendix

1. Self-shopping IoT network card binding domain name collection

Serial Number	Agreement	Wildcard Domain Name
1	UDP	time.windows.com
2	UDP	*.ntp.org.cn
3	TCP UDP HTTP HTTPS	*.tunnel.iotbus.net
4	HTTP HTTPS WS WSS	*.haiwell.com
5	TCP UDP MQTT	*.iotbus.net
6	TCP UDP MQTT	*.cloud.haiwell.com
7	TCP UDP	47.107.224.237
8	TCP UDP ICMP	223.5.5.5