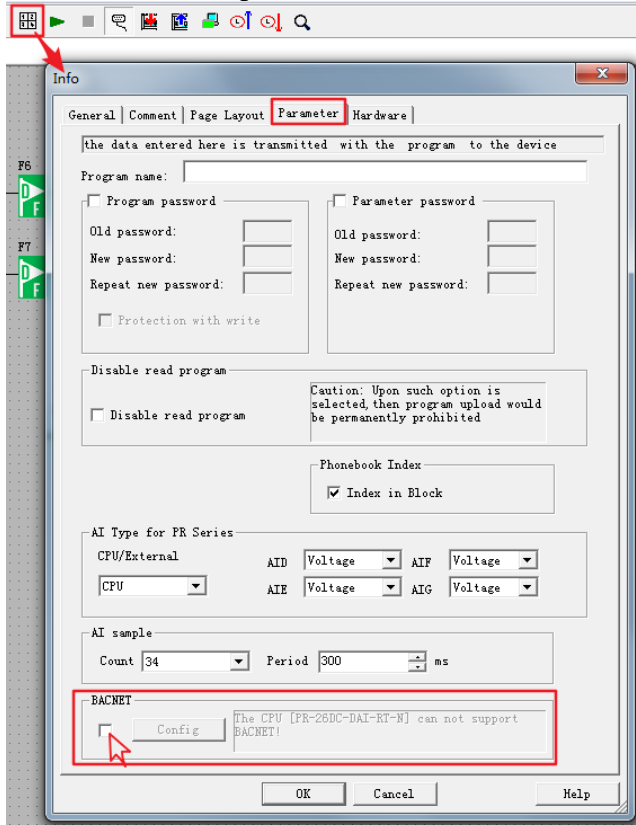# Rievtech PLC BACnet IP parameter configuration method and usage examples

NOTE:
(1)Ethernet PLC with firmware version number >=V1.57 supports BACnet.
(2) Only xLogic with version number >=V3.4.3.7 supports BACnet.
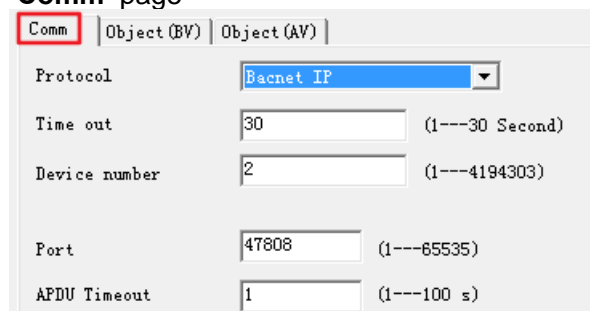
1. Set PLC BACnet IP

Open the BACnet configuration window, as shown in the figure below:

Select the check box, the 'Config' button becomes available, then click this button, the configuration window pops up, as shown in the figure below. Divided into 3 pages: 'Comm', 'Object(BV)' and 'Object(AV)', the following three pages are introduced respectively.
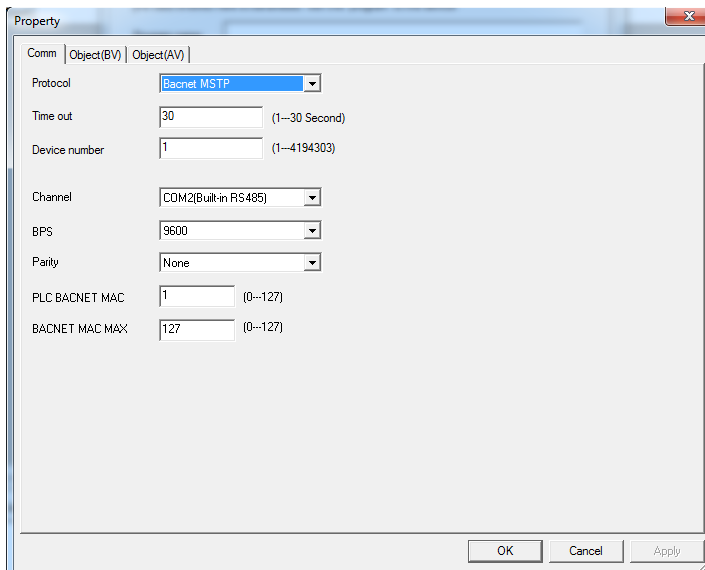
'Comm' page

'Protocol'

Select BACnet protocol, there are 2 options: 'Bacnet MSTP' for RS485 communication and 'Bacnet IP' for Ethernet communication. Here select 'Bacnet IP'.

'Time out'

A value from 1 -- 30 (Second) can be set.

'Device number'

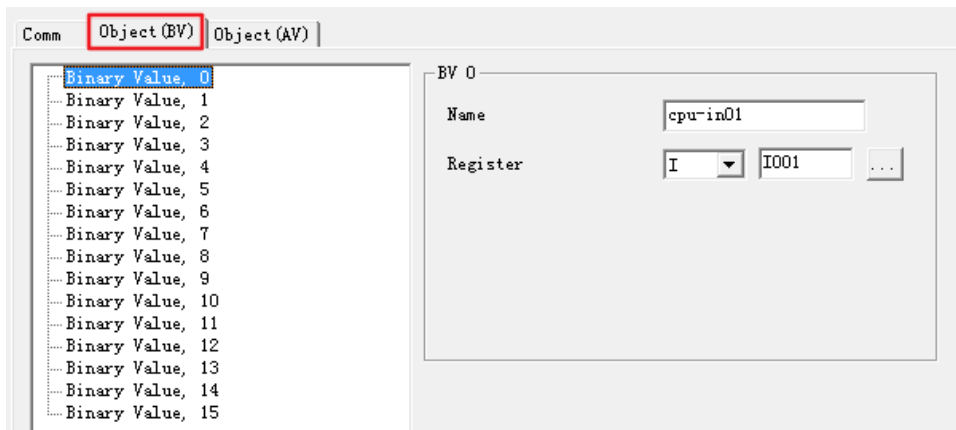A value from 1 to 41943303 can be set, and its uniqueness needs to be guaranteed.

'Port'

The default is 47808.

'APDU Timeout'

A value from 1 -- 100s can be set, and the default value is 1.

'Object(BV)' page

16 digital objects can be set on this page, and an I, Q or F register can be assigned to each object.   Registers of type 'I' can only be read, not written.   Registers of type 'Q' and 'F' support read/write. But in the program in the PLC, the input pins of their blocks need to be suspended, so that the write operation can be successful.

First select 'Binary Value, 0' in the list on the left, set the name of the object on the right, and assign a register to it.   'Name' only allows up to 8 commonly used characters.

'Object(AV)' page
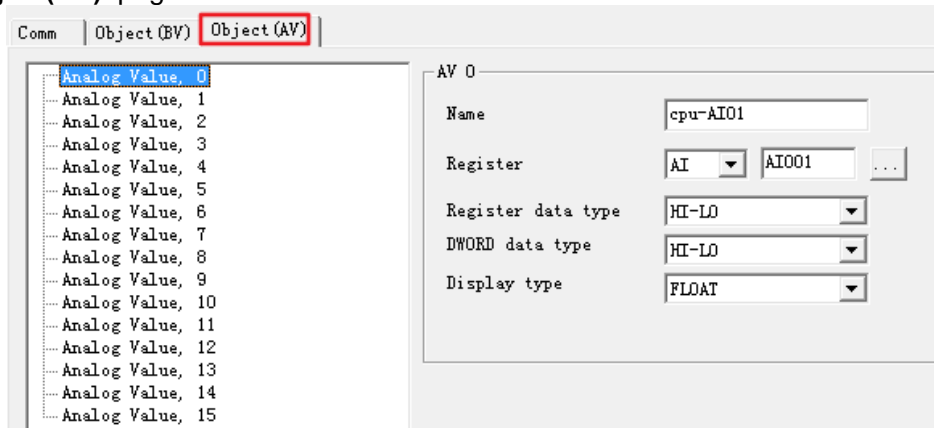
Similarly, 16 analog objects can be set on this page, and an AI, AQ, AF or VW register can be assigned to each object.   The 'AI' register can only read values, but cannot write values. AQ, AF and VW support read/write, and only when the input pins of these register blocks are floating, the write value operation can be successful.

The operation steps are the same as the BV page.

'Register data type'

The byte order when providing the value in register, you can choose 'HI-LO' and 'LO-HI' modes.

'DWORD data type'

The byte order of DWORD data, you can choose 'HI-LO' and 'LO-HI' modes.

'Display type'

Select the data format when displaying values, only support 'FLOAT'.

After configuring all the parameters, click the 'OK' button in the lower right corner, as shown in the figure below. Then download the BACnet settings to the PLC along with the xLogic program, and the settings will take effect after the PLC restarts.
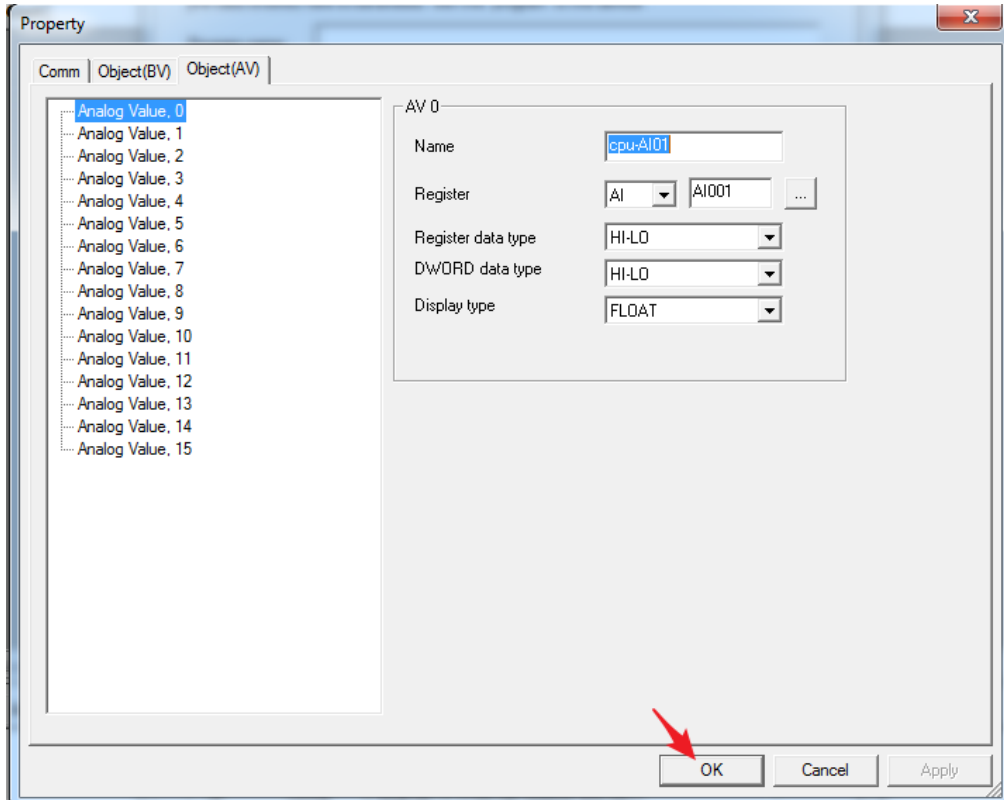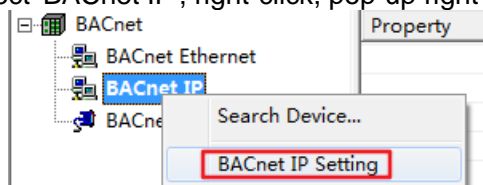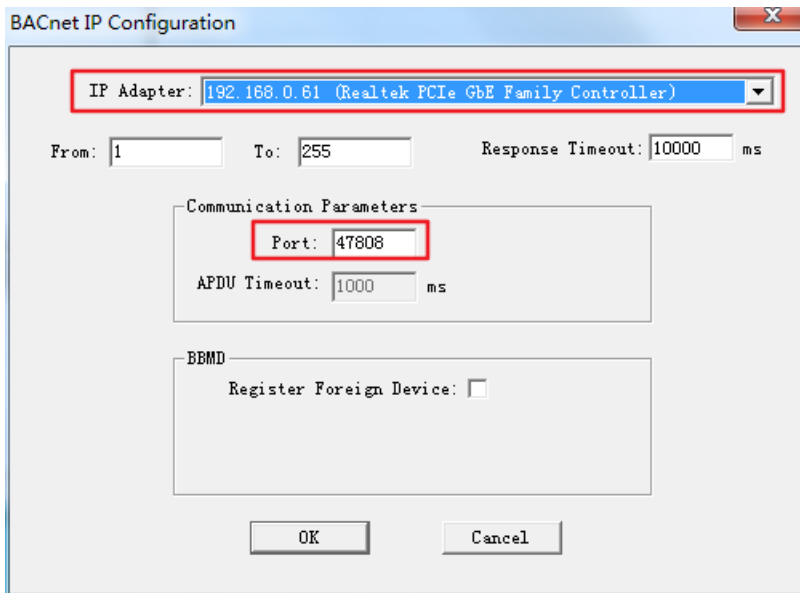
2. BACnetScan software reads and writes PLC registers

After completing the above PLC parameter settings, open the BACnetScan software (only for demonstration, you can use other software with the same function), as shown in the figure below:
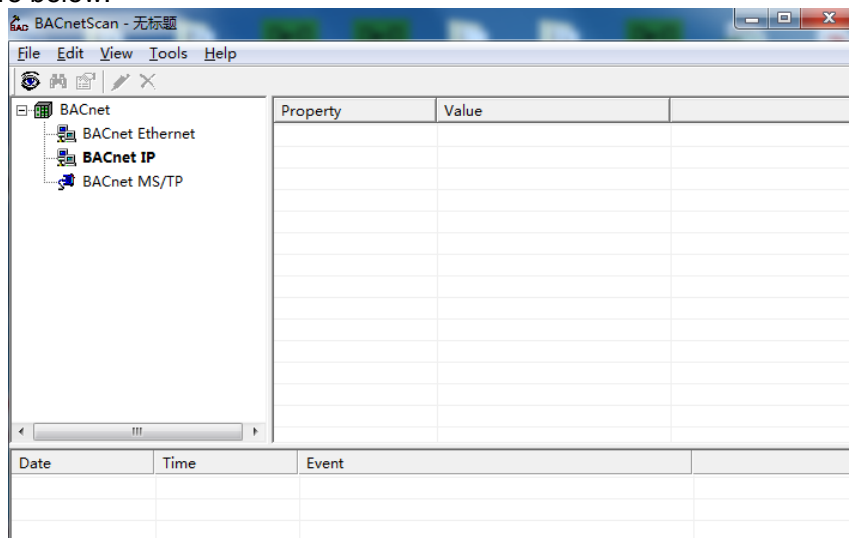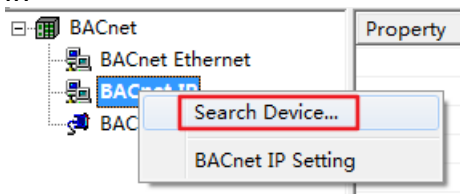

Select 'BACnet IP', right-click, pop-up right-click menu, select 'BACnet IP Setting'.

Select the physical network card of the PC, and keep the default value of 47808 for 'Port'. After setting, click the 'OK' button below.

Then select the 'Search Device...' option in the right-click menu, as shown in the figure below.
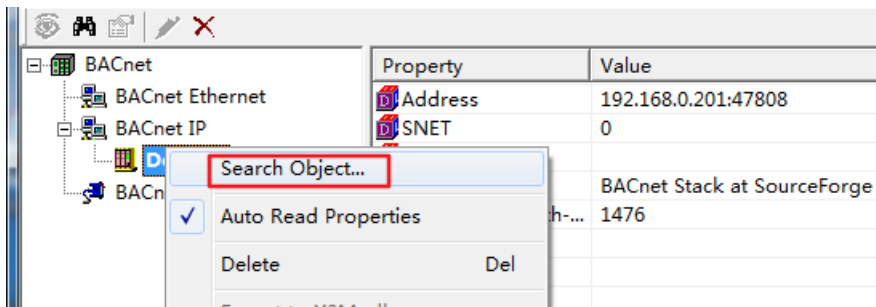

At this time, some prompts will be displayed in the prompt bar, and all found devices will be listed under the 'BACnet IP' option, as shown in the figure below, and the message bar will prompt 'BACnet IP'Device: 2'is found'. The IP of the PLC is 192.168 .0.201.
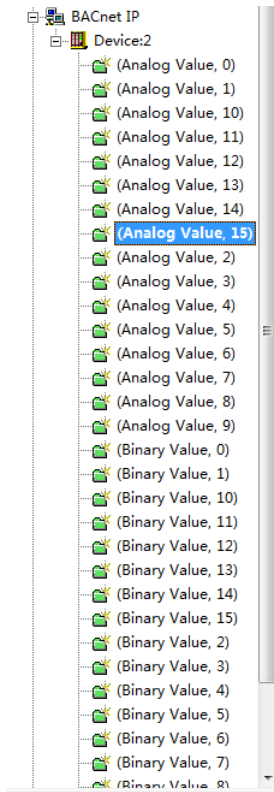

Select 'Device: 2', right-click, pop up the right-click menu, and select the 'Search Object' option.
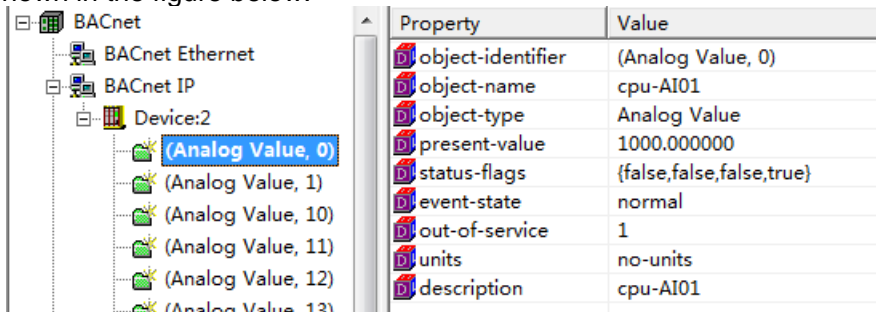
BACnetScan will list all the searched Objects under the Device: 2 option, as shown in the figure below:
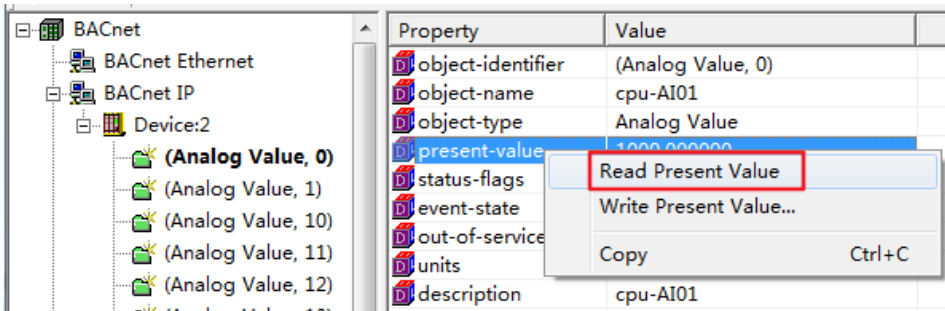

All 16 Binary Values and 16 Analog Values of the PLC will be listed, even if they are not used.

Both the name and value of 'Analog Value, 0' can be found in the property bar on the right, as shown in the figure below.


Select the 'present-value' attribute, right-click, and select the 'Read Present Value' option in the right-click menu to update the current value of PLC AI01.

Select the 'Write Present Value' option in the right-click menu to write the value of PLC AF1 as shown in the figure below:
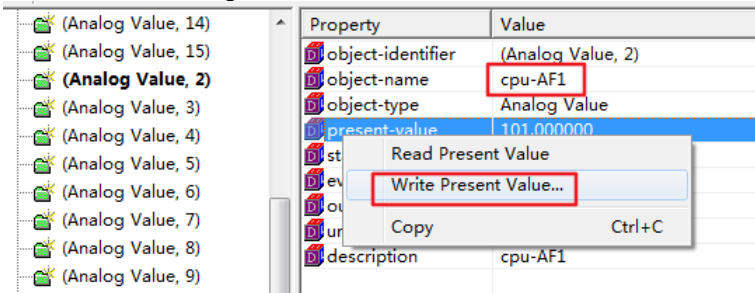
Enter a new value in the 'Value' of the pop-up window, and then click the 'Set' button to write the new value into AF1.
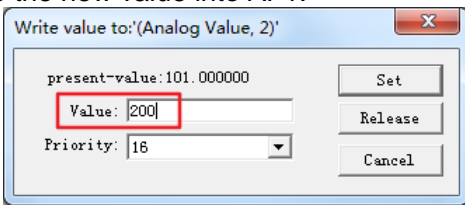

Write operations have priorities 1-16, with the minimum priority being 16.

After the writing is successful, the value of 'present-value' will change to a new value, and the information column will prompt 'Succeed to write 'present-value' property'.
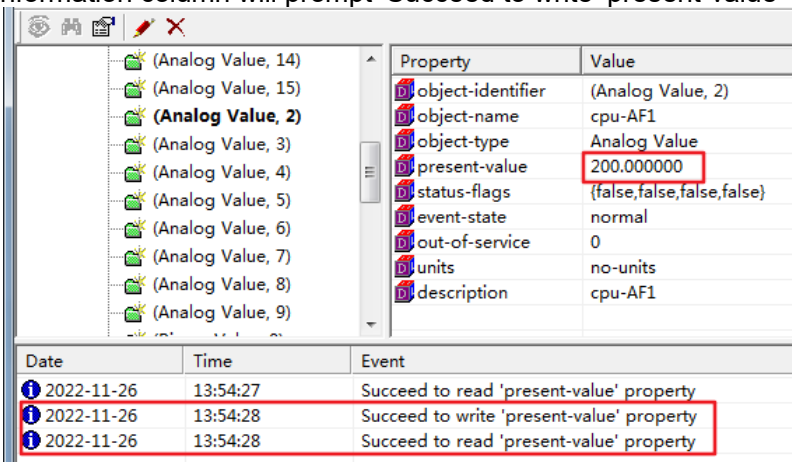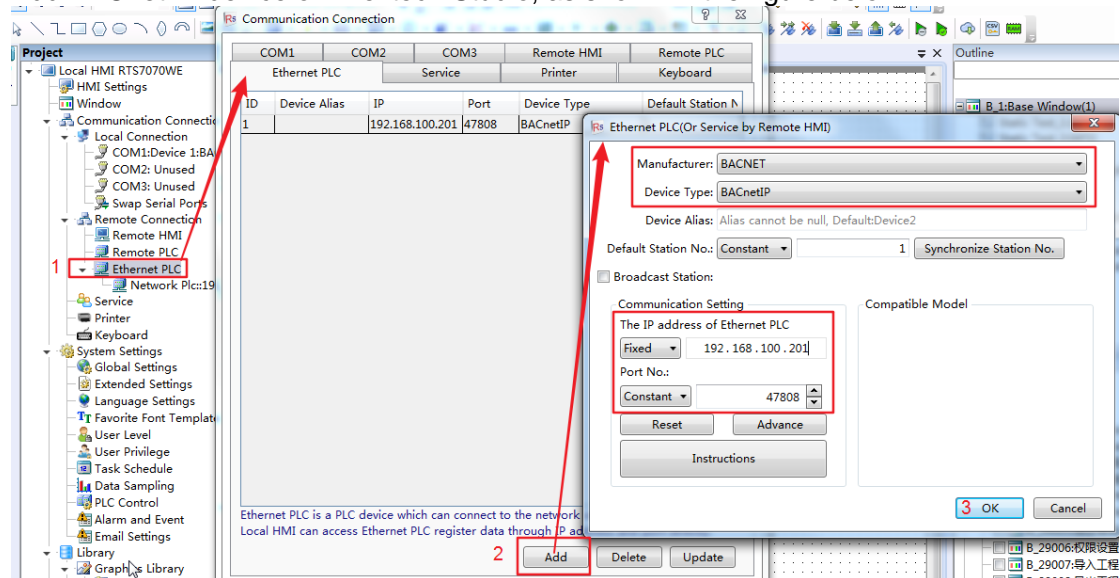

3. HMI communicates with PLC through BACnet IP protocol

(1) Add BACnet IP device

HMI and PLC are in a local area network, for example, the IP address of PLC is 192.168.0.201, and the IP address of HMI is 192.168.0.200.
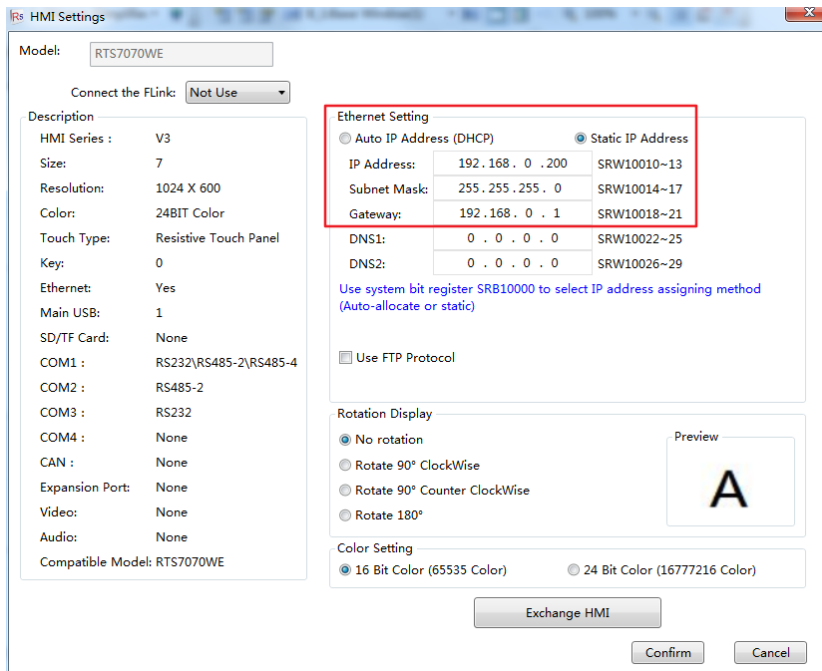
Add BACnet IP device on Rievtech Studio, as shown in the figure below.
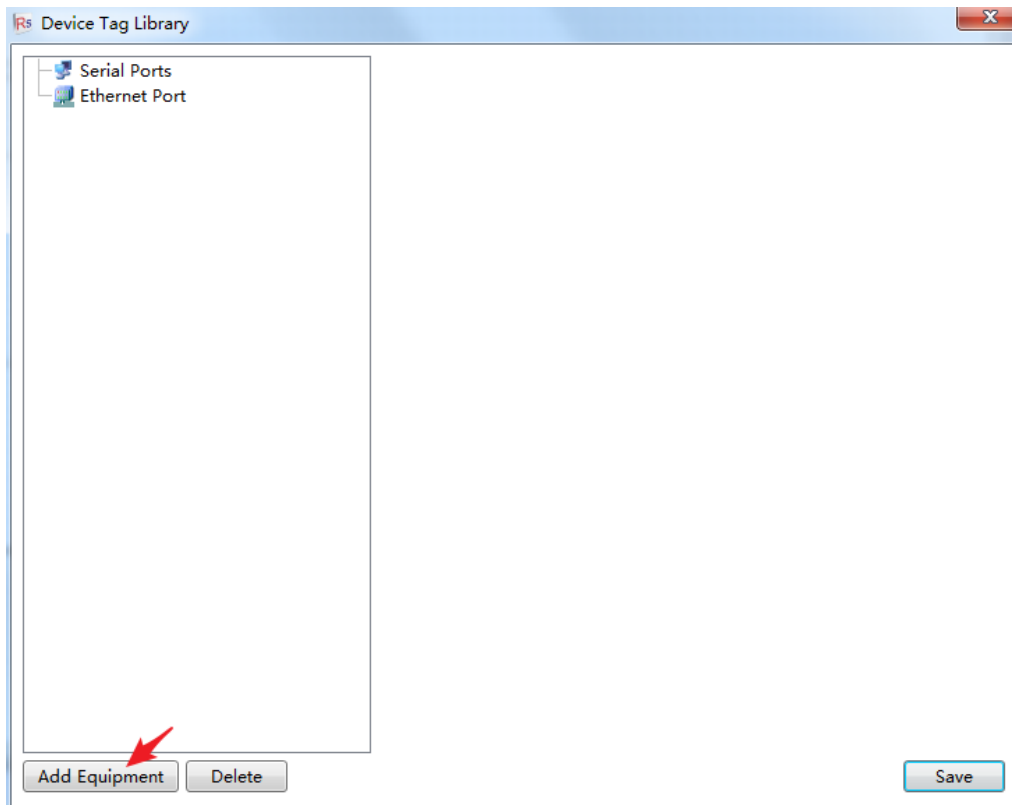

Double-click the 'Ethernet PLC' option, and click the 'Add' button in the pop-up window.
In the new window, select 'BACNET' for 'Manufacturer' and 'BACnetIP' for 'Device Type'.
Fill in the IP address of the PLC, and keep the value of Port as default.
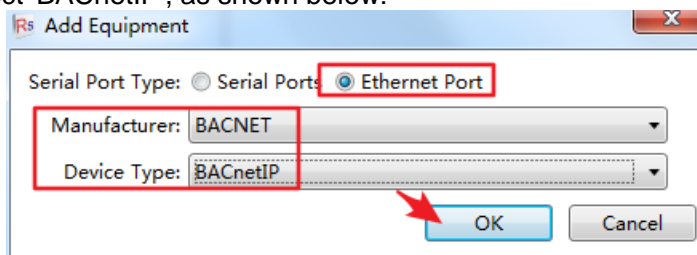Click the OK button.

(2) Add BACnetIP 'Device Tag Library'
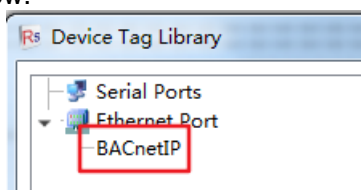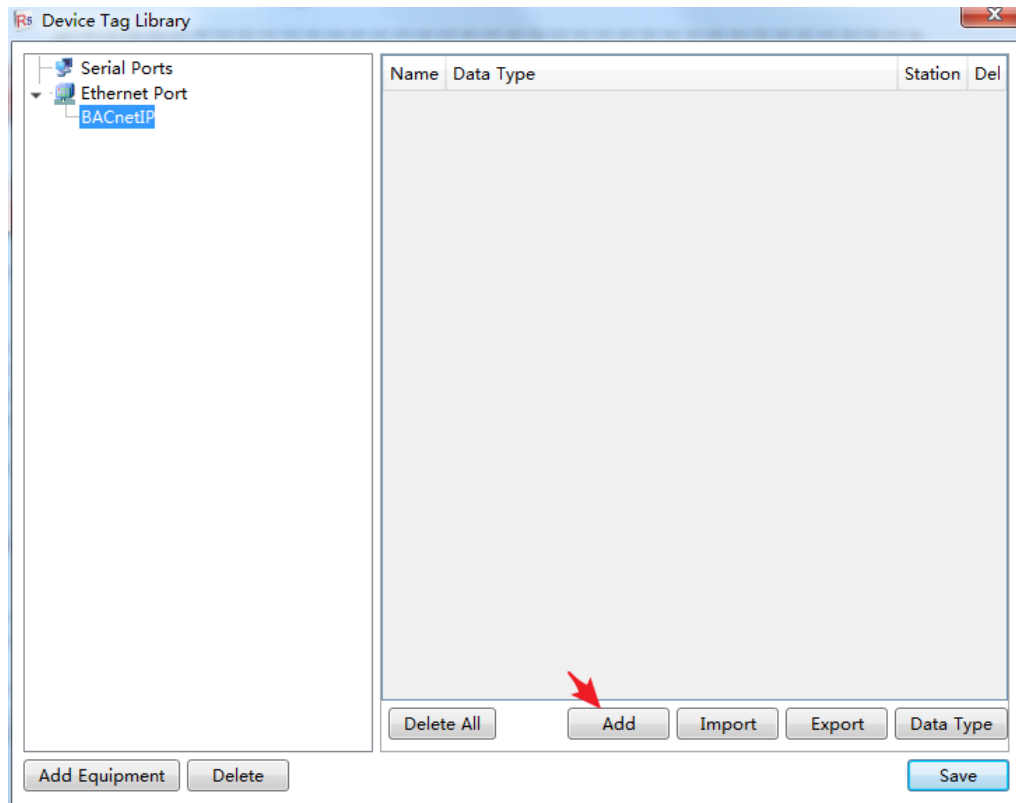Double click on 'Device Tag Library'

In the pop-up window, select 'Ethernet Port', 'Manufacturer' select 'BACNET', 'Device Type' select 'BACnetIP', as shown below:
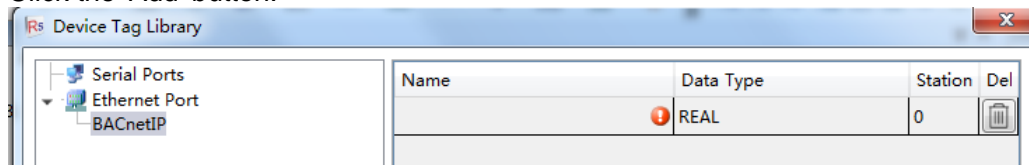

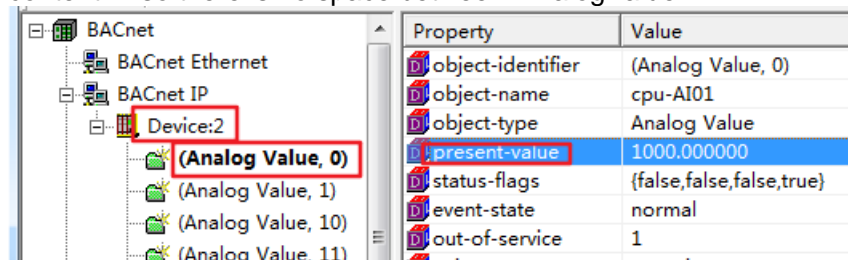A new 'BACnetIP' will be created under the 'Ethernet Port' option, as shown in the figure below.

Double-click 'BACnetIP', as shown below.

Click the 'Add' button.

'**Name**'： Enter "**Device-2 AnalogValue-0 present_value**". It should be noted that this name is composed of 3 parts in the figure below, and a space is added between each content. Also there is no space between 'AnalogValue'.

'**Data Type**'： Select 'REAL' for AV type data, and 'BOOL' for BV type data.

'**Station**'： If there is a priority option, fill in 16 here.
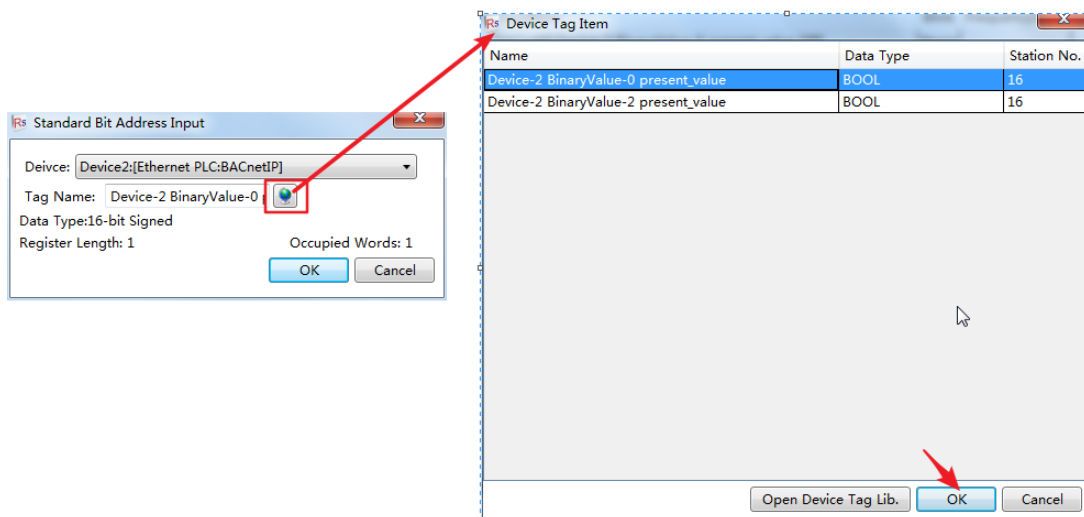
After adding, as shown below:
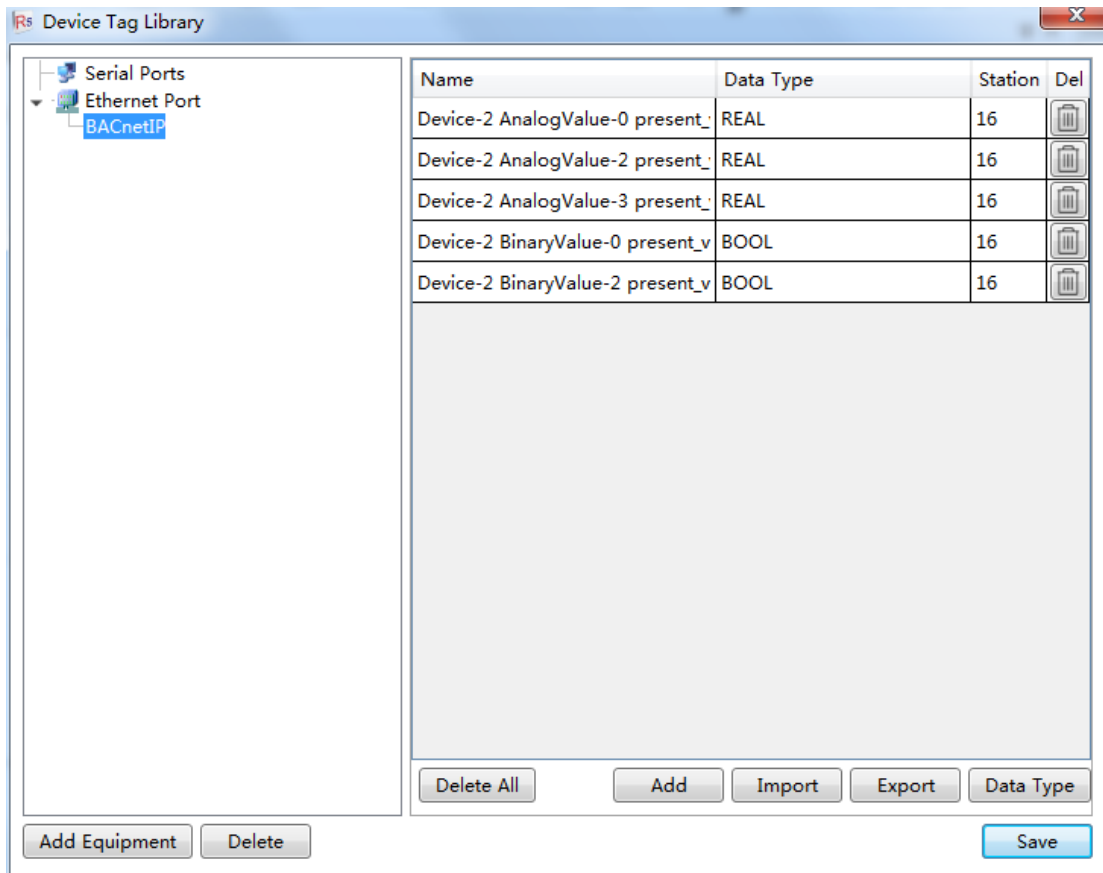
Click the 'Save' button to save the settings.
In addition, the configuration can be exported to a file in CSV format, and a file in CSV format can also be imported.
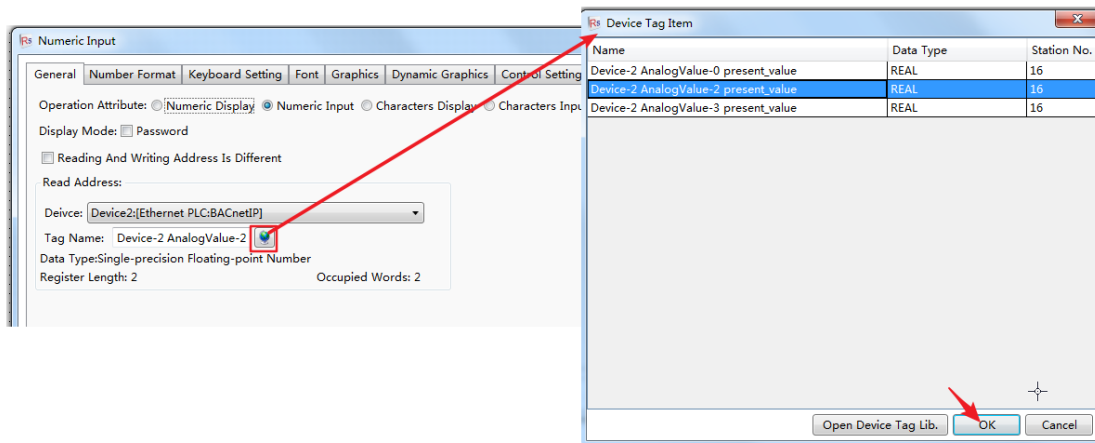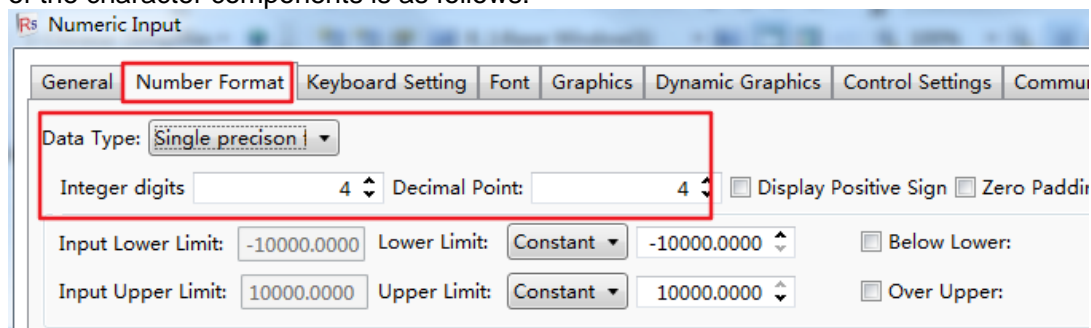
(3) Add components

Bit element

Select a tag and click the 'OK' button.

Word element

Select a tag and click the 'OK' button.

In addition, it should be noted that the values are all in 'float' format, so the display format of the character components is as follows:

After adding the components, download the program to the HMI, and observe whether there are communication timeouts, communication errors and other prompts.