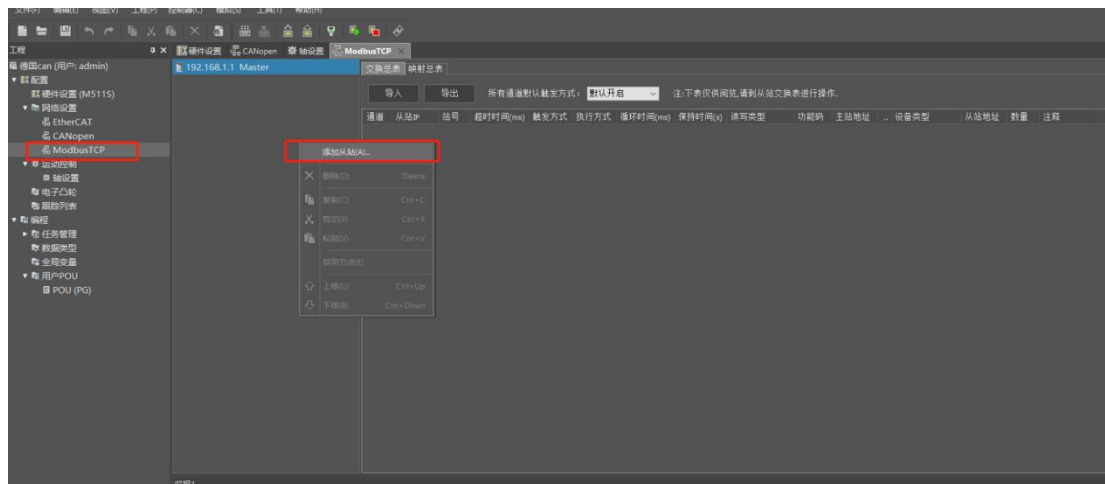# Communication part

Modbus TCP Master

1、Add slaves

Expand the device tree configuration, open the network settings by double-clicking MODBUSTCP, right-click in the blank area, and select "Add Slave".


2、Slave configuration

As shown below, enter the slave IP address and select the device type:
HCFA M-series Controller" corresponds to a target address that matches the M address;
Standard MODBUS Address" uses the target address in MODBUS address format.
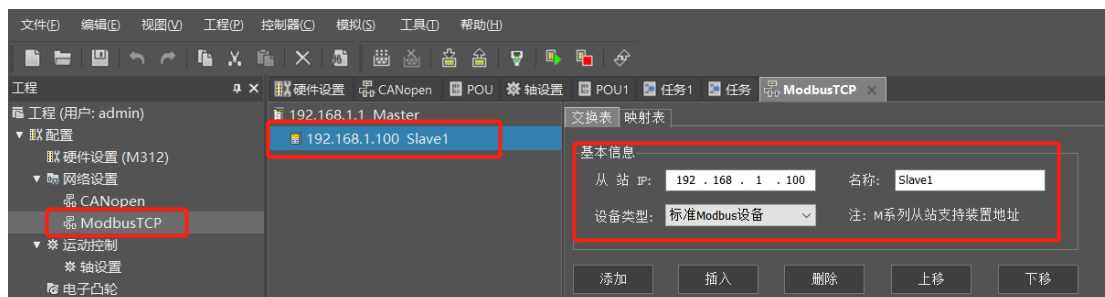
3、Add Channels

下图以禾川 Q 系列控制器为例，输入从站 ip 地址（主从要在同一网段），点击添加，添

加通道，选择读写类型。填写本机主站寄存器映射地址与目标寄存器地址，【数量】对应起始地址长度，会在映射表中生成相应的映射变量，主站地址按需求使用，从站地址按照从站对应的标准 MODBUS 地址对应。The following diagram uses the HCFA Q-series controller as an example. Enter the slave station IP address (master and slave must be on the same network segment), click Add to add a channel, and select the read/write type. Enter the local master station register mapping address and the target register address. The [Quantity] corresponds to the starting address length and will generate the corresponding mapping variables in the mapping table. The master station address is used as needed, while the slave station address corresponds to the standard MODBUS address of the slave station.
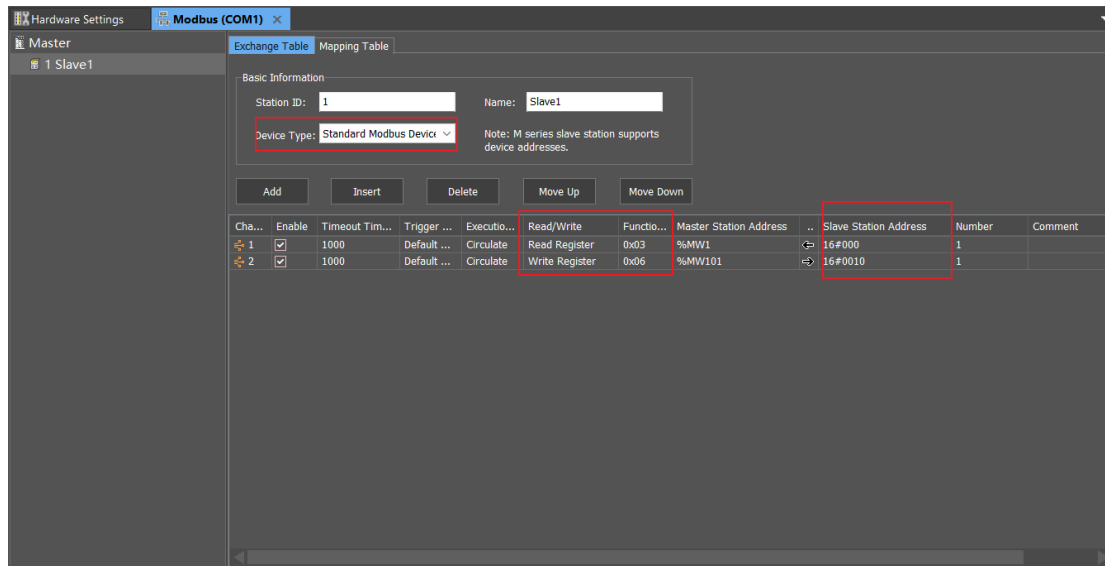
The standard Modbus address mapping for the Q controller is as follows:

- To write to the **MW address** of the Q controller, select the read/write type as 【Write Register】 or 【Read Register】. The function code can be set to the default. The standard Modbus address corresponds directly. For example:

   %MW0 → Slave address 16#0,

   %MW3 → Slave address 16#3.

- To write to the **QX address** of the Q controller, select the read/write type as 【Write Coil】. The standard Modbus address mapping is:

   %qxA.B = A * 8 + B, then convert to hexadecimal.

   For example: %qx1.2 = 1 * 8 + 2 = 16#A.

- To read from the **QX address** of the Q controller, select the read/write type as 【Read Coil】 and set the 【Function Code】 to 0x01. The standard Modbus address mapping is:

   %qxA.B = A * 8 + B, then convert to hexadecimal.

   For example: %qx1.2 = 1 * 8 + 2 = 16#A.

- To read from the iX address of the Q controller, select the read/write type as 【Read Coil】 and set the 【Function Code】 to the default. The standard Modbus address mapping is:

   %ixA.B = A * 8 + B, then convert to hexadecimal.

   For example: %ix1.2 = 1 * 8 + 2 = 16#A.
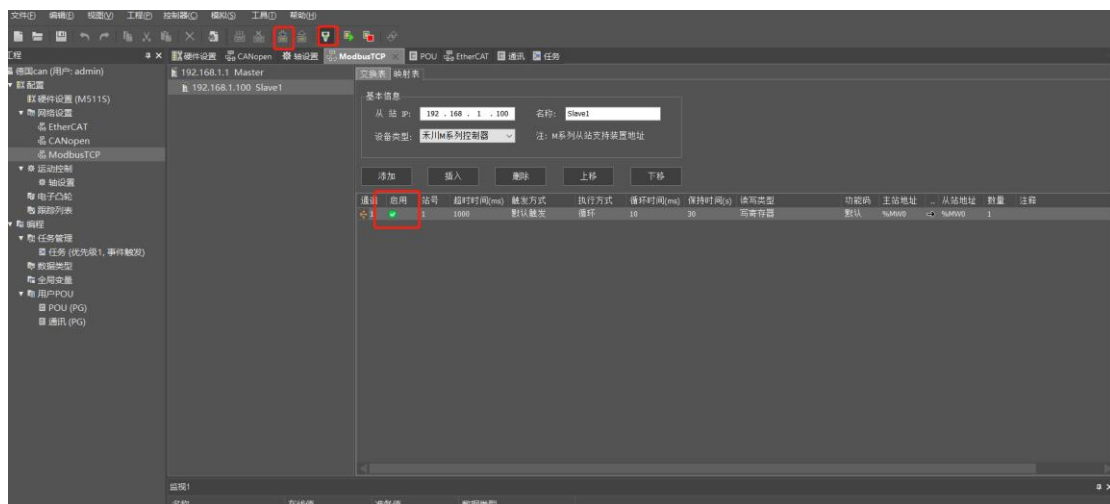
Variable Mapping

Double-click the slave station → Double-click the variable name corresponding to the channel to modify the mapped variable name. Logic operations can be performed on the variables in the program.
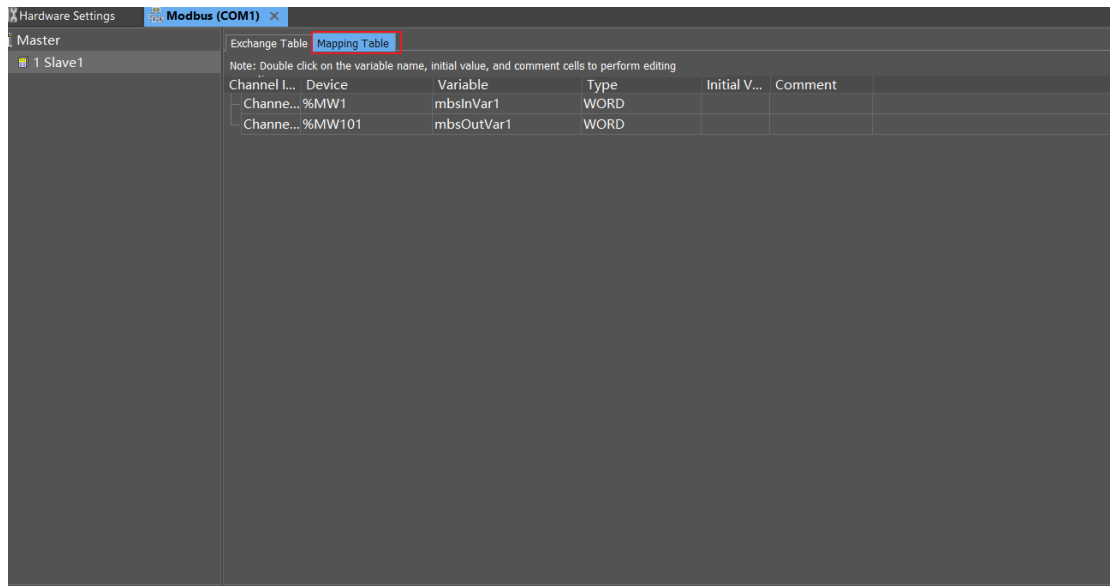

The communication status of the channel can be obtained through the ModbusTCP_GetLinkStatus instruction.。

4、Download

Download and log in online to view. Below, there is a green circle channel to enable.

Open the slave's "Mapping Table" to view the names of mapped variables. You can use these mapped variables in your program to modify device content values. For online debugging, enter values in the "Prepared Values" field. Right-click and select "Write" to transfer the value to the online value.
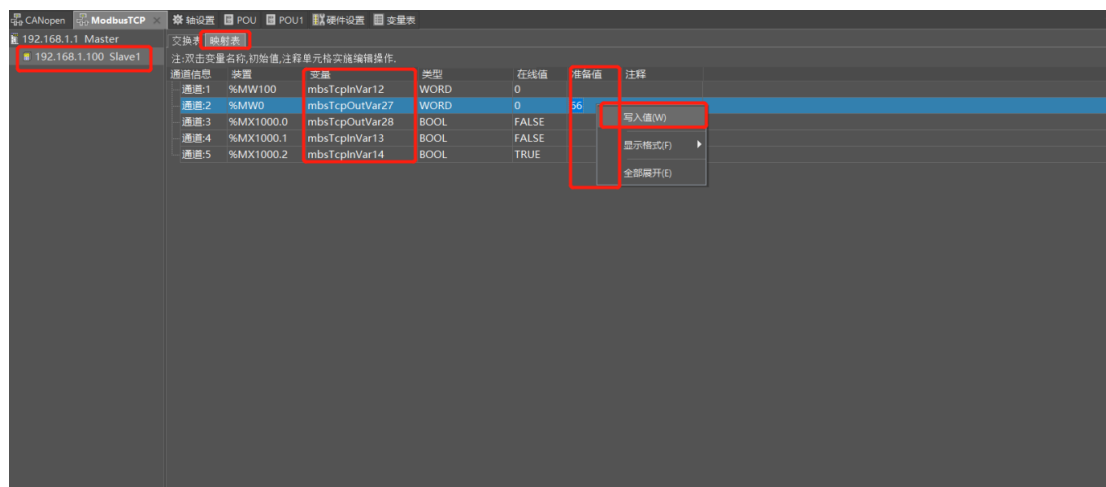

The relevant registers and coil values of the Hechuan Q-series controller at the slave station have been read and written.
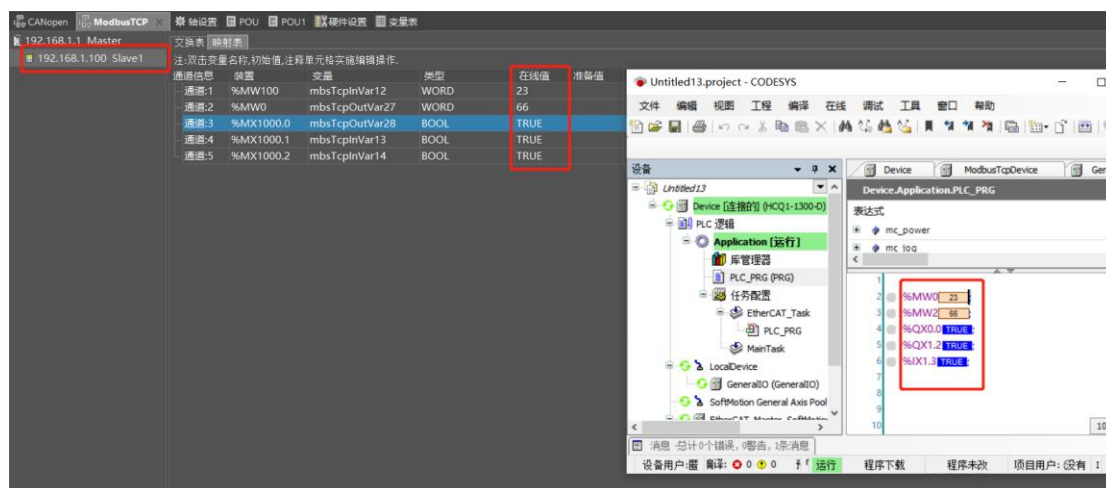

5、 Program Trigger

The master station is enabled by default. The activation method can be modified. When set to "Enable via Command," use the 'ModbusTCP_MasterRun' command to establish the slave connection. Use the "ModbusTCP_MasterStop" command to terminate the slave connection.
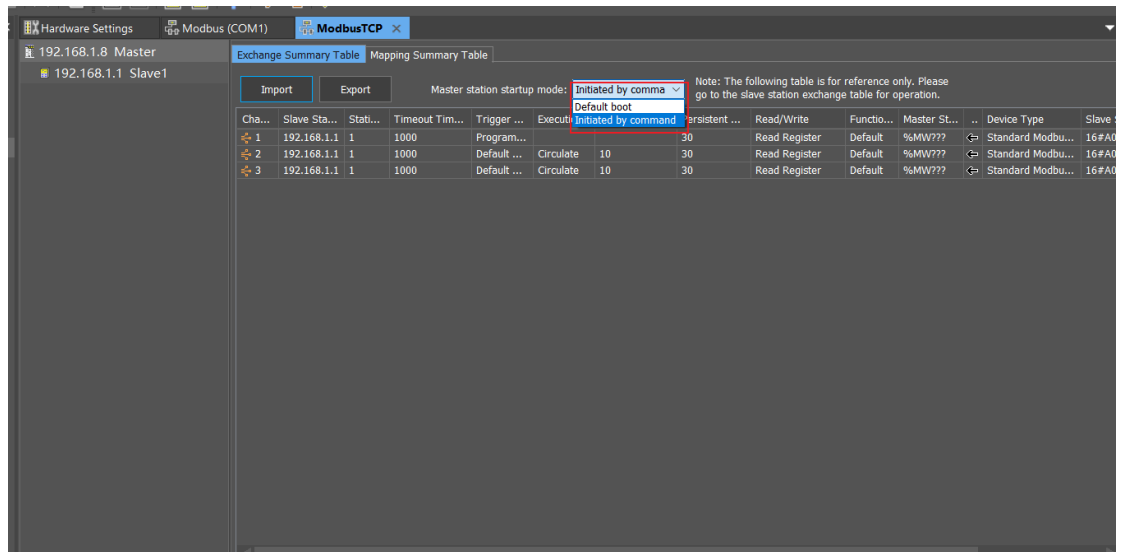
The program trigger mode for the channel is enabled by default. User can use "program-controlled triggering" to activate the channel via 'ModbusTCP_LinkRun' and deactivate it via "ModbusTCP_LinkStop".
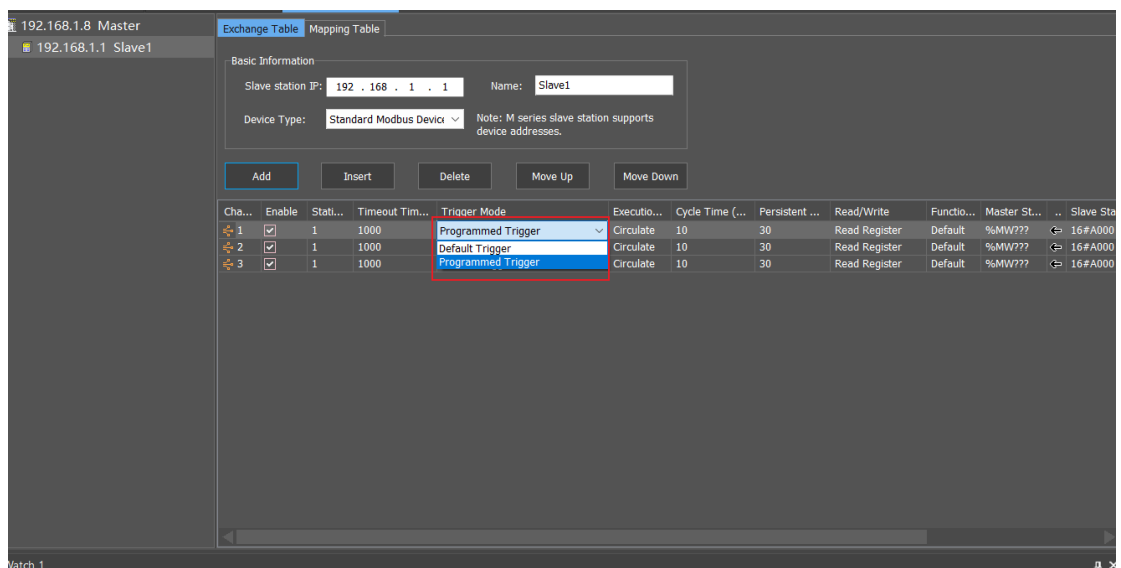

Serial modbus RTU master

1、Change the Master/Slave mode

Double-click Hardware Configuration, select Serial Port in the Device Configuration interface, choose "Master/Free Protocol" for the Master/Slave Mode, and the Modbus tab will appear under Network Settings.
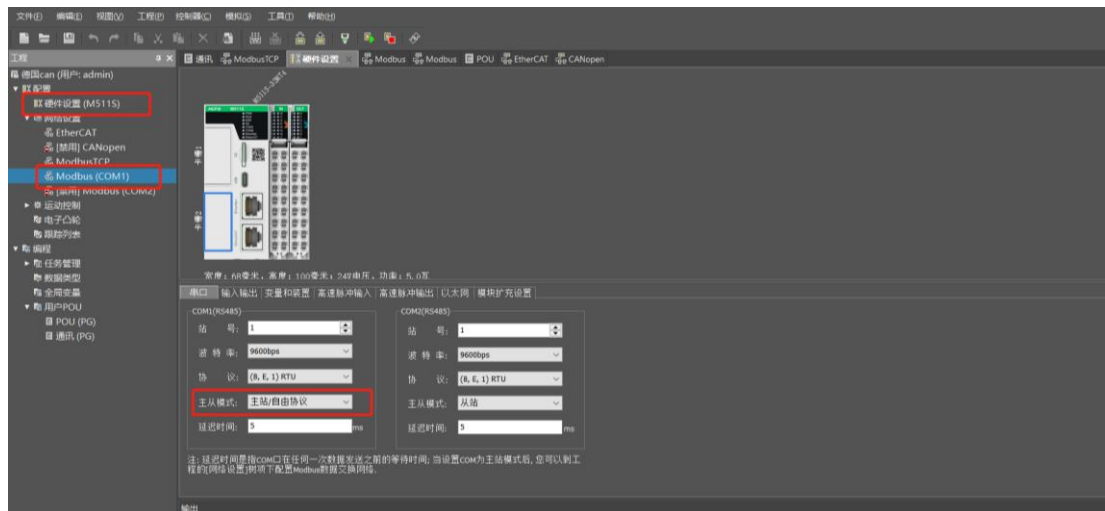
Expand Network Settings, double-click to open "MODBUS (COM1)", right-click on an empty area, and select "Add Slave".
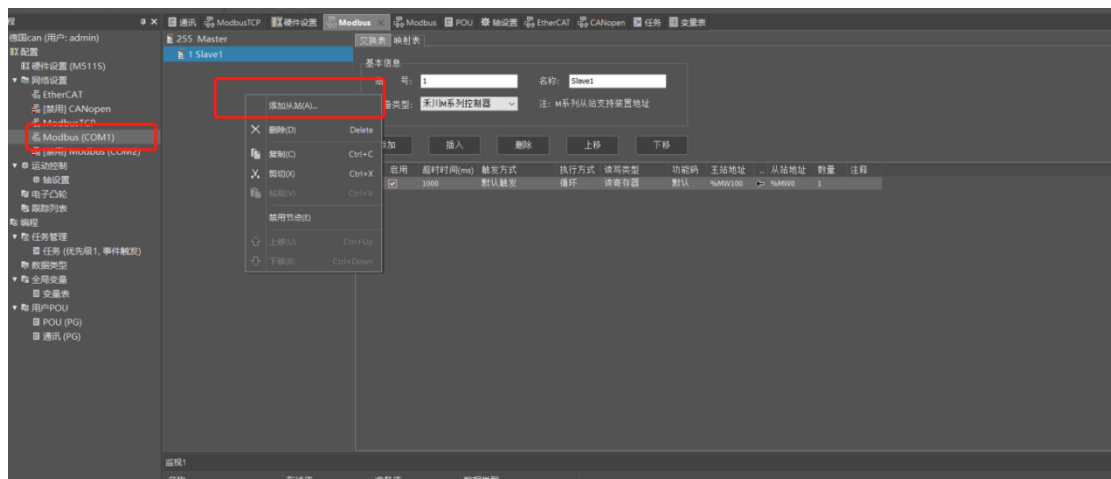

2、Slave configuration

As shown below, enter the corresponding slave station number, select the device type ("HCFA M-series Controller" corresponds to target addresses in M-address format; "Standard MODBUS Address" uses MODBUS address format for the target address), and click Add to add a slave channel.
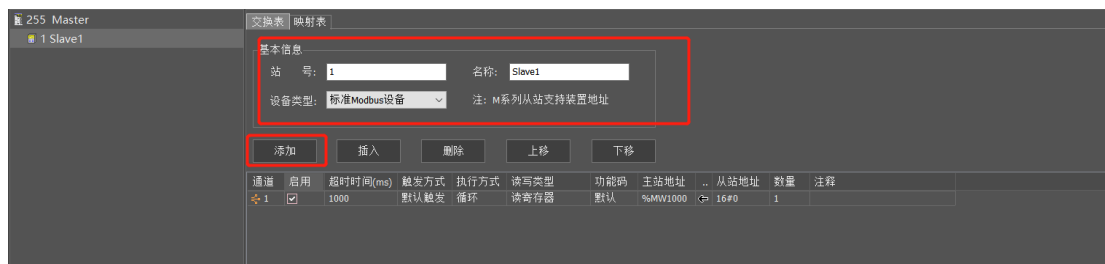
3、Channel configuration

"Use the default time for "Timeout". Select the appropriate "Read/Write Type" based on your requirements. Choose the corresponding address mapping for "Master Address" and "Slave Address", ensuring the quantities match.
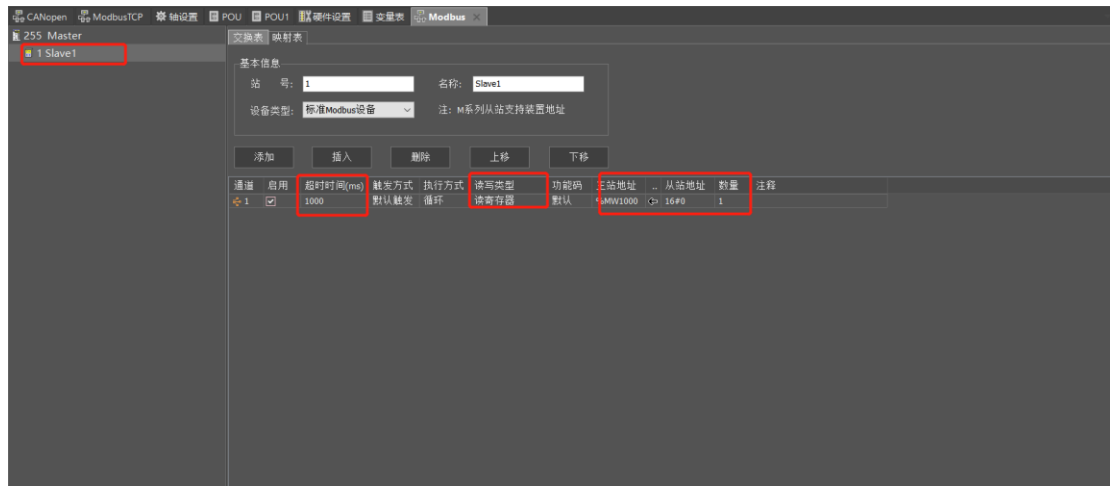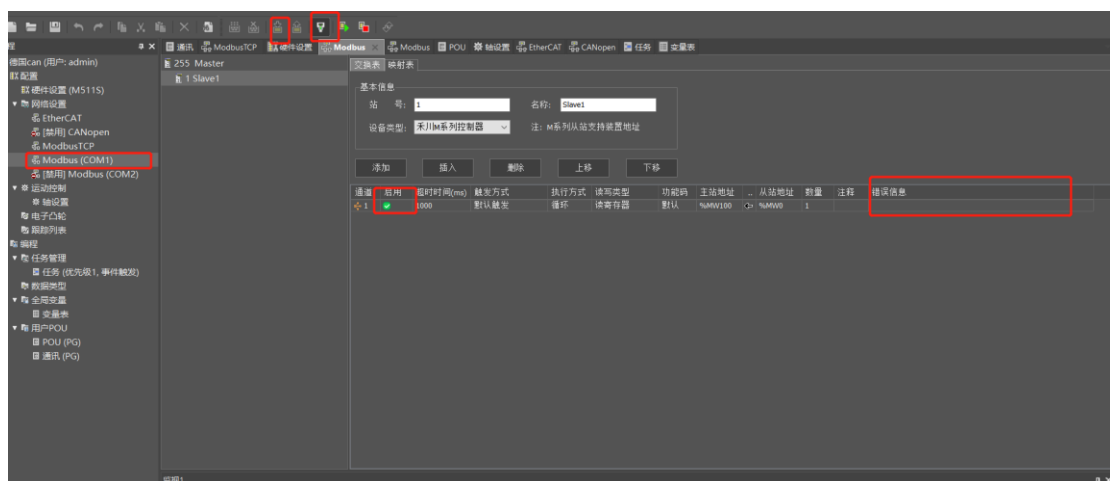

4、Download and

The following demonstrates communication with HCFA Q Controller:

The corresponding addresses match those for MODBUS TCP mentioned above; please refer to the address mapping in the preceding section.

Download the online login to view; if a green circle appears below and no error messages are displayed, communication is normal.

Write 88.to the HCFA Q controller address %mw0

%MW0 [88]

As shown below, the value 88 can be read from the exchange table and used for logical operations within the program via variable names.


The communication status of the channel can be obtained using the Modbus_GetLinkStatus command.

5、Initiated by command

The master is enabled by default. You can change the activation method. When "Enable via Command" is selected, use the 'ModbusTCP_MasterRun' command to establish the slave connection. You can also use the "Modbus_MasterStop" command to terminate the slave connection.
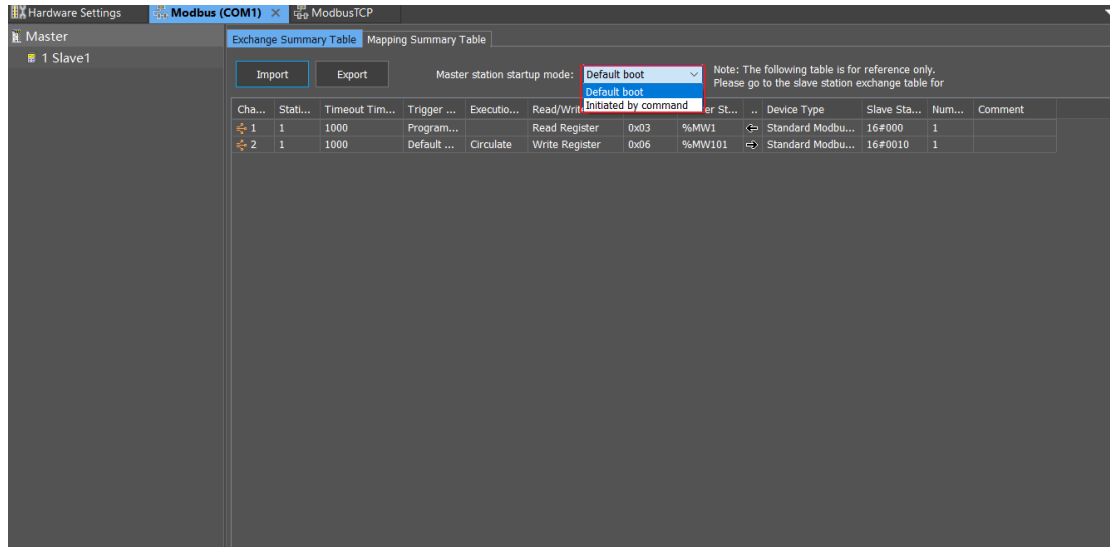
The program control mode for the channel is enabled by default. You can use "programmed triggering" to activate the channel via 'Modbus_LinkRun' and deactivate it via "Modbus_LinkStop".