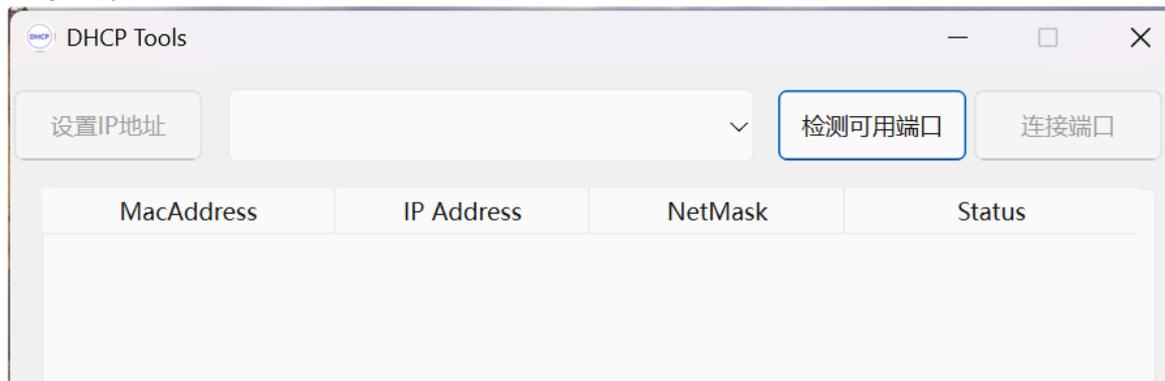


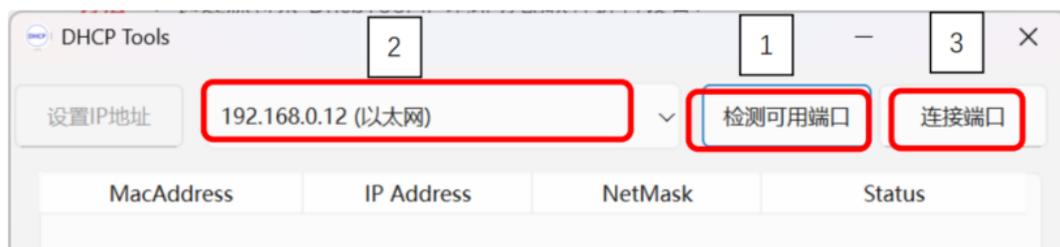
## 1. Set the IP address of the Sentinel Modbus/TCP IO-LINK Master Module

### Method 1: Set via Sentinel “DhcpTool” IP address assignment software

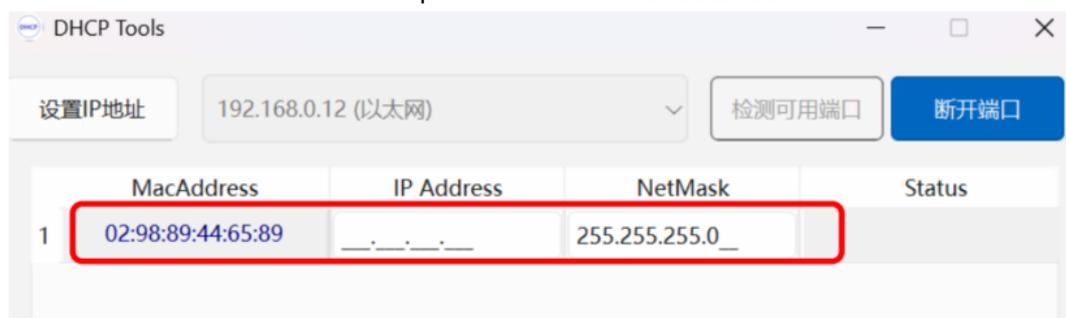
1) Download “DhcpTool V1.2” from the Sentinel official website and install it (Windows 10 or above only). Open the software.



2) Connect the Sentinel Modbus/TCP IO-LINK master module to the PC. Then set the module IP DIP switches to “0xFF” (on the right-side switch window: set ADDR\_H = F, ADDR\_L = F, refer to the manual). This means: “DHCP mode, keep waiting for IP assignment after power-on.” After setting the switches, power-cycle the module. At this time, the module BUS red LED will flash. Then click “Detect available ports” in the software, find the local port, and click “Connect Port.”



3) The scanned Sentinel Modbus/TCP IO-LINK master module will be displayed in the lower area. The information in front corresponds to the MAC address.

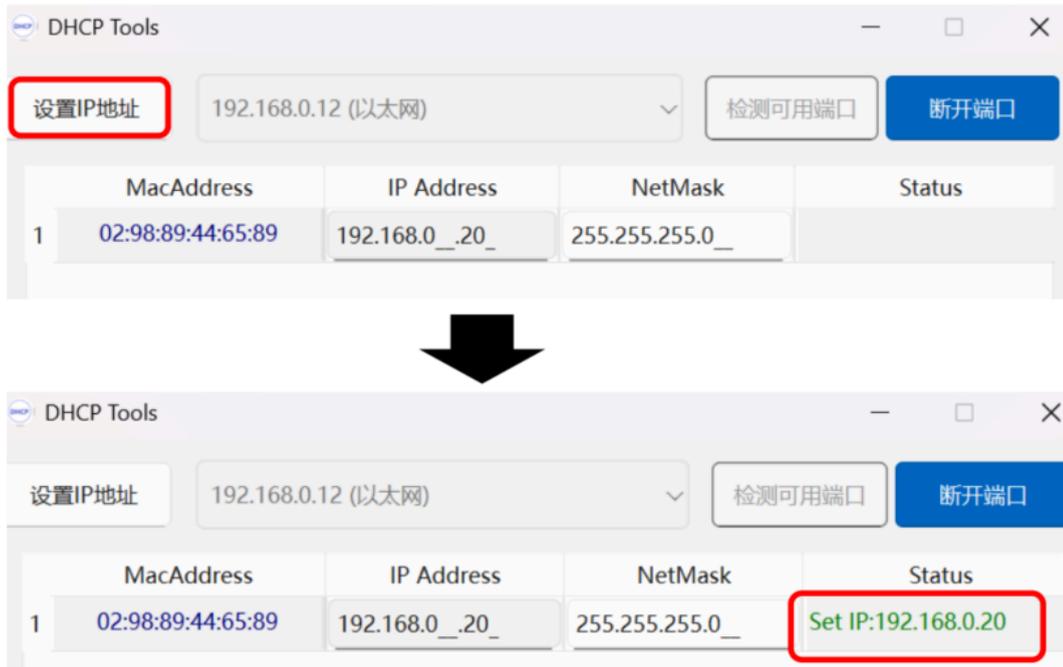


4) Enter the IP address under “IP Address”, e.g. 192.168.0.20, then click “Set IP Address” in the upper-left corner.

After the setting is successful, a green IP address will appear under “Status” behind the module, indicating the module IP address has been set. You may then close the software. After the IP is set, the module BUS red LED will stop flashing.

After configuration, you can set the DIP switches to:

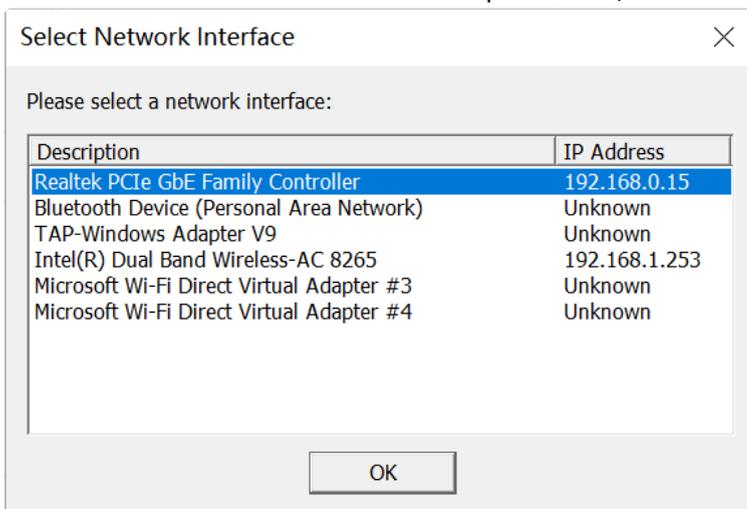
- **0x00: Run with the last IP assigned by DHCP.**  
After each power cycle, the module will use the previously assigned address (i.e. **192.168.0.20**).
- **0x01 – 0xFE:** The **first three octets** (network segment) follow the DHCP assignment, while the **4th octet** is determined by the DIP switch value.  
For example, if **ADDR\_H = 1** and **ADDR\_L = 4**, the module IP address will be **192.168.0.20** (example shown in the original text).



## Method 2: Set the IP address via third-party software

### 1) This example uses AB's "Bootp-DHCP Tool."

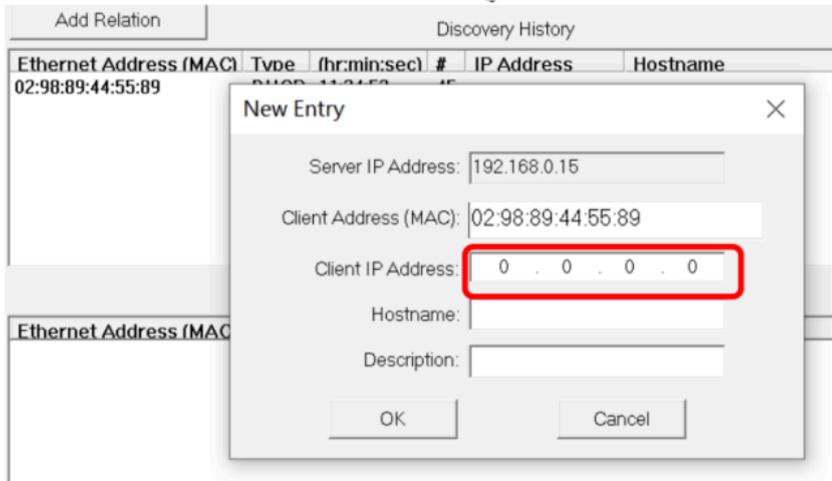
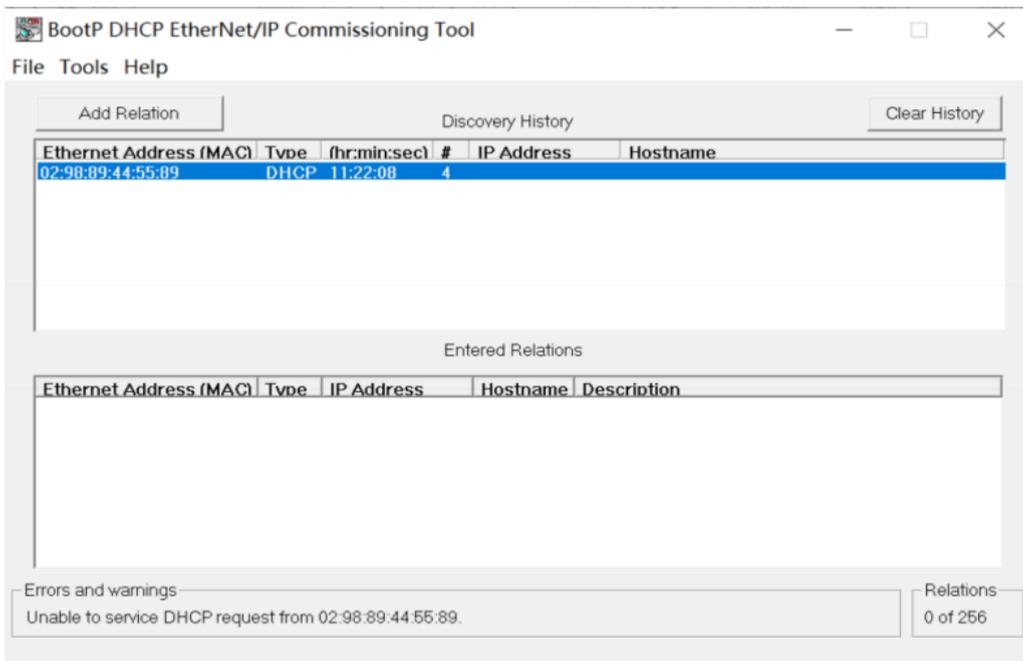
Before setting, first set the module DIP switches (right-side window **ADDR\_H**, **ADDR\_L**, refer to the manual) to **0xFF**, meaning: **"DHCP mode, keep waiting for IP assignment after power-on."** After setting, **power-cycle the module**. The module **BUS red LED will flash**. Open the software, select the correct local network adapter (NIC), and click **"OK."**



2) Double-click the scanned module, enter the IP address to be set (**the module IP must be in the same subnet as the PC IP**), then click **"OK."**

After the IP is set, the module **BUS red LED will stop flashing**. Then you can set the DIP switches to:

- **0x00**: Run with the last IP assigned by DHCP after each power cycle
- **0x01 – 0xFE**: First three octets follow DHCP; the 4th octet follows the DIP switch setting



**New Entry** [X]

Server IP Address: 192.168.0.15

Client Address (MAC): 02:98:89:44:55:89

Client IP Address: 192 . 168 . 0 . 10

Hostname:

Description:

OK Cancel



**BootP DHCP EtherNet/IP Commissioning Tool** [Min] [Max] [X]

File Tools Help

Add Relation Discovery History Clear History

Ethernet Address (MAC)	Type	(hr:min:sec)	#	IP Address	Hostname
02:98:89:44:55:89	DHCP	11:38:06	5	192.168.0.10	

Entered Relations

Ethernet Address (MAC)	Type	IP Address	Hostname	Description
02:98:89:44:55:89	DHCP	192.168.0.10		

Errors and warnings: Sent 192.168.0.10 to Ethernet address 02:98:89:44:55:89

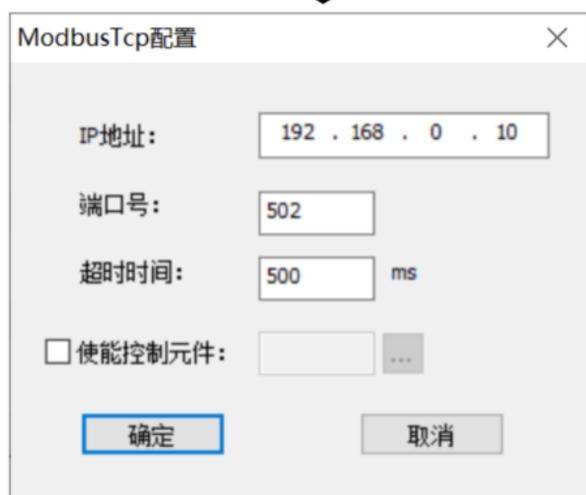
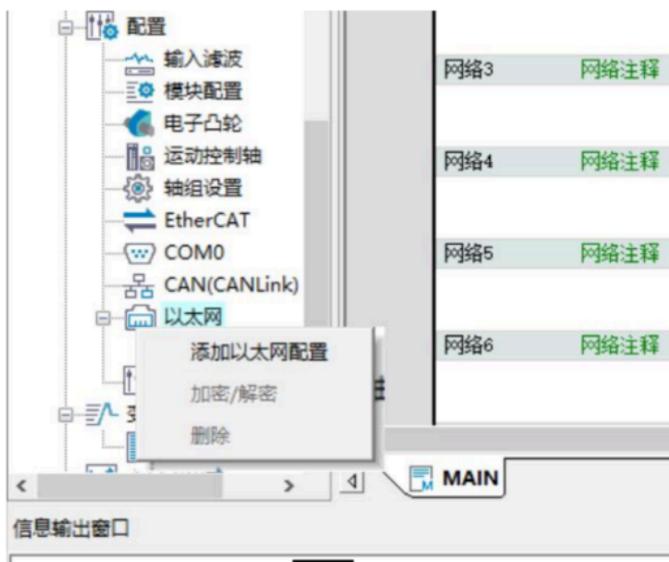
Relations: 1 of 256

## 2. Open AutoShop and create a new project



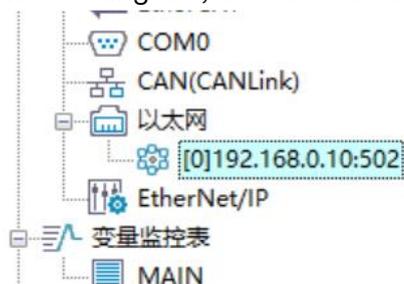
### 3. Add Ethernet configuration (Modbus/TCP)

Right-click **“Ethernet”** on the left panel and select **“Add Ethernet Configuration.”**  
In the pop-up dialog, enter the IO-LINK master IP address **192.168.0.10** and port **502**.



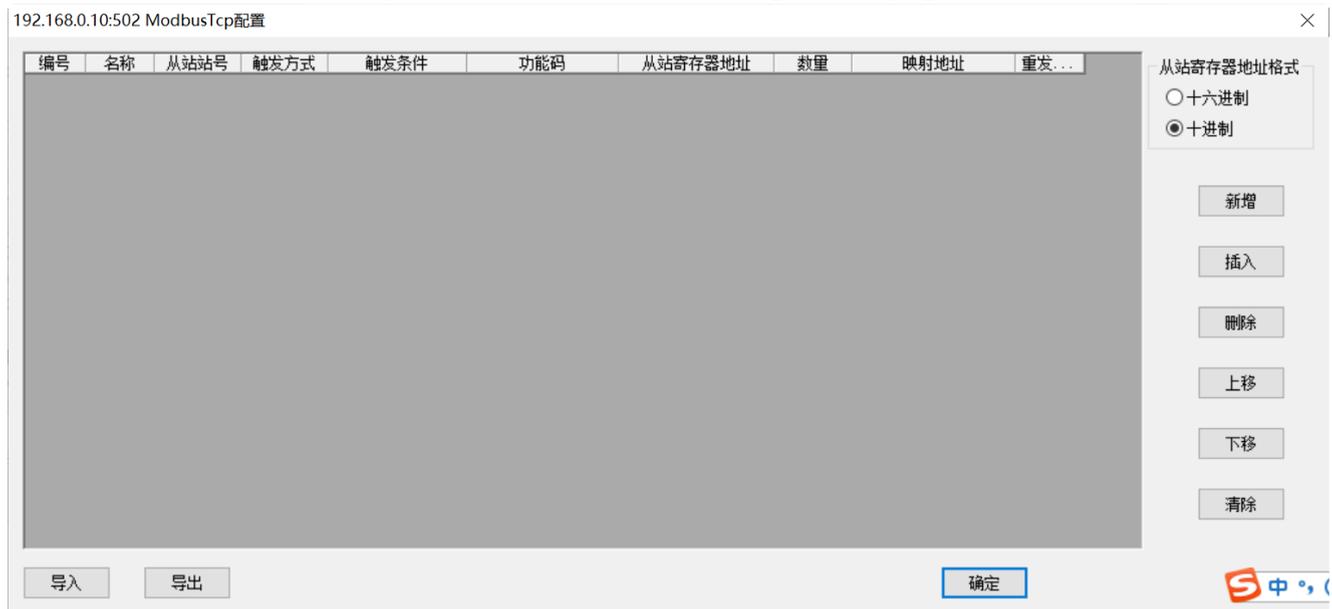
#### 4. Confirm the Modbus/TCP device is added

After clicking **OK**, a “ModbusTCP” device will be added under “Ethernet” on the left panel.



#### 5. Open the Modbus/TCP configuration page

Double-click the device to open the “ModbusTCP” configuration page.



## 6. Add mapping entries and configure function code / quantity / mapping address

Click “Add” to open the configuration options. Set the **Function Code**, **Quantity** (data length), and **Mapping Address** to the required values.

According to the Sentinel Modbus/TCP IO-Link master module manual:

- **Input occupies Word[0] – Word[132], total 133 words.**  
For “**Read Input Registers**”, the maximum length is **125**, so all input data cannot be read in a single transaction.
- **Output occupies Word[0] – Word[127], total 128 words.**  
For “**Write Registers**”, the maximum length is **123**, so all output data cannot be written in a single transaction.

Therefore, to fully read all inputs and write all outputs, you can configure two read operations and two write operations, where one handles the first part and the other handles the remaining part, for example:

- **No. 1:** Function code **04**, read **117 words** starting from **0**, mapping address **D100**.  
Then the **117 words starting at D100** correspond to all input data of the first 8 ports of the IO-LINK module.
- **No. 2:** Function code **04**, read **16 words** starting from **117**, mapping address **D300**.  
Then the **16 words starting at D300** correspond to the input data of **Port 8** of the IO-LINK module.
- **No. 3:** Function code **16**, write **112 words** starting from **0**, mapping address **D400**.  
Then the **112 words starting at D400** correspond to all output data of the first 8 ports of the IO-LINK module.
- **No. 4:** Function code **16**, read **16 words** starting from **112**, mapping address **D600**.  
Then the **16 words starting at D600** correspond to the output data of **Port 8** of the IO-LINK

module.

(For the detailed word/byte allocation of the module, refer to the appendix at the end of this document.)

192.168.0.10:502 ModbusTcp配置

编号	名称	从站站号	触发方式	触发条件	功能码	从站寄存器地址	数量	映射地址	重发...
1	slave	255	循环(ms)	10	读输入寄存器...	0	117	D100	1
2	slave	255	循环(ms)	10	读输入寄存器...	117	16	D300	1
3	slave	255	循环(ms)	10	写寄存器(16)	0	112	D400	1
4	slave	255	循环(ms)	10	写寄存器(16)	112	16	D600	1

**Note:** The communication mode supports “Cyclic” and “Trigger.”

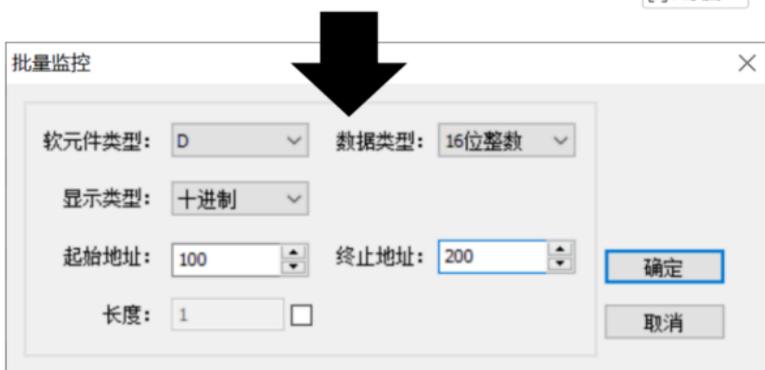
When using “Cyclic,” the “Trigger condition” is used to set the cycle time in ms. The configuration runs at the specified cycle. If the configured cycle time is shorter than the actual communication time required, the cycle will run according to the communication time.

For example, if the cycle is set to 10 ms, but the slave response requires 20 ms, the actual cycle time will be 20 ms.

## 7. Download, monitor, and batch-add variables

After clicking **OK**, download the program, click “**Monitor,**” then right-click in the information output window and select **Batch Add**.

In the pop-up dialog, select device type “**D**” and set the start address accordingly to monitor data in batch.



## 8. Example: D100 corresponds to the first input word of the IO-LINK master module

As shown below, **D100** corresponds to the **first input word** of the IO-LINK master module, representing the **IO-Link status and error status of the 8 ports**.

元件名称	数据类型	显示格式	当前值	地址	注释
...					
D100	INT	二进制	2#1111111100000000	0X400640	
D101	INT	十进制	0	0X400650	
D102	INT	十进制	0	0X400660	
D103	INT	十进制	0	0X400670	

## Appendix

### 1) IO-LINK process data input (occupies 133 words)

Supports function code **F04 (Read Input Registers)**

Modbus引用编号 WORD	Modbus数据地址 WORD	IO-LINK字节 BYTE	描述																		
30001	0	Byte0	8位代表8个端口当前IO-LINK状态: 1正常通信, 0未通信 <table border="1"> <tr> <td>位</td> <td>7</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> <tr> <td>端口</td> <td>C8</td> <td>C7</td> <td>C6</td> <td>C5</td> <td>C4</td> <td>C3</td> <td>C2</td> <td>C1</td> </tr> </table>	位	7	6	5	4	3	2	1	0	端口	C8	C7	C6	C5	C4	C3	C2	C1
		位	7	6	5	4	3	2	1	0											
端口	C8	C7	C6	C5	C4	C3	C2	C1													
Byte1	8位代表8个端口IO-LINK断线记录: 1有过断线, 0未有过断线 <table border="1"> <tr> <td>位</td> <td>7</td> <td>6</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> </tr> <tr> <td>端口</td> <td>C8</td> <td>C7</td> <td>C6</td> <td>C5</td> <td>C4</td> <td>C3</td> <td>C2</td> <td>C1</td> </tr> </table>	位	7	6	5	4	3	2	1	0	端口	C8	C7	C6	C5	C4	C3	C2	C1		
位	7	6	5	4	3	2	1	0													
端口	C8	C7	C6	C5	C4	C3	C2	C1													
30002	1	Byte2	C1端口断线次数																		
		Byte3	C2端口断线次数																		
30003	2	Byte4	C3端口断线次数																		
		Byte5	C4端口断线次数																		
30004	3	Byte6	C5端口断线次数																		
		Byte7	C6端口断线次数																		
30005	4	Byte8	C7端口断线次数																		
		Byte9	C8端口断线次数																		
30006 - 30021	5 - 20	Byte10 - Byte41	C1端口过程输入数据 (32Byte)																		
30022 - 30037	21 - 36	Byte42 - Byte73	C2端口过程输入数据 (32Byte)																		
30038 - 30053	37 - 52	Byte74 - Byte105	C3端口过程输入数据 (32Byte)																		
30054 - 30069	53 - 68	Byte106 - Byte137	C4端口过程输入数据 (32Byte)																		
30070 - 30085	69 - 84	Byte138 - Byte169	C5端口过程输入数据 (32Byte)																		
30086 - 30101	85 - 100	Byte170 - Byte201	C6端口过程输入数据 (32Byte)																		
30102 - 30117	101 - 116	Byte202 - Byte233	C7端口过程输入数据 (32Byte)																		
30118 - 30133	117 - 132	Byte234 - Byte265	C8端口过程输入数据 (32Byte)																		

### 2) IO-LINK process data output (occupies 128 words)

Supports function codes **F03 (Read Holding Registers)**, **F16 (Write Holding Registers)**, **F23 (Read/Write Multiple Registers)**

Modbus引用编号 WORD	Modbus数据地址 WORD	IO-LINK字节 BYTE	描述
40001 - 40016	0 - 15	Byte0 - Byte31	C1端口过程输出数据 (32Byte)
40017 - 40032	16 - 31	Byte32 - Byte63	C2端口过程输出数据 (32Byte)
40033 - 40048	32 - 47	Byte64 - Byte95	C3端口过程输出数据 (32Byte)
40049 - 40064	48 - 63	Byte96 - Byte127	C4端口过程输出数据 (32Byte)
40065 - 40080	64 - 79	Byte128 - Byte159	C5端口过程输出数据 (32Byte)
40081 - 40096	80 - 95	Byte160 - Byte191	C6端口过程输出数据 (32Byte)
40097 - 40112	96 - 111	Byte192 - Byte223	C7端口过程输出数据 (32Byte)
40113 - 40128	112 - 127	Byte224 - Byte255	C8端口过程输出数据 (32Byte)

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If you want, I can also produce a **polished “user-manual style” English version** (more native technical writing, consistent terminology, and corrected wording like “IP Adderss” → “IP Address,” “word/byte” consistency, and clearer descriptions of Port 8 vs “first 8 ports”).