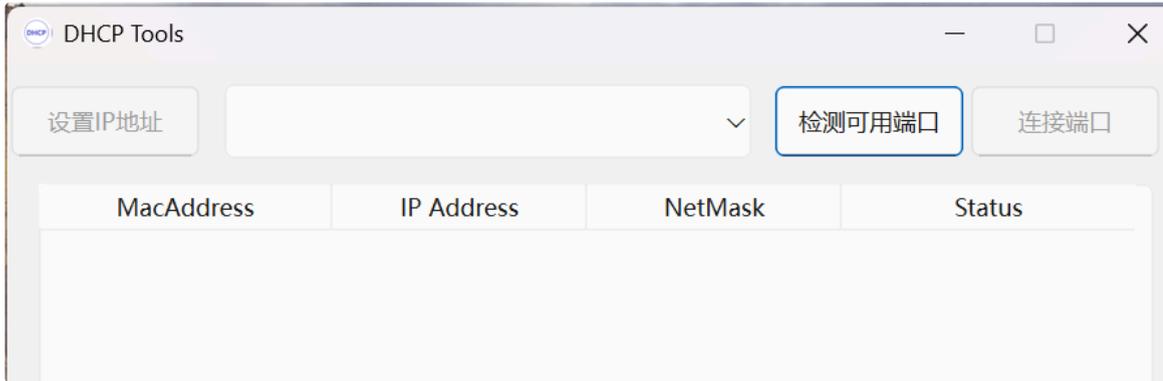


1. Set the IP Address of the Sentinel Modbus TCP IO–Link Master Module

Method 1: Using Sentinel “DhcpTool” IP Assignment Software

1) Download and install “DhcpTool V1.2” from the Sentinel official website (Windows 10 or later only), then open the software.



2) Connect the Sentinel Modbus TCP IO–Link Master module to the PC.

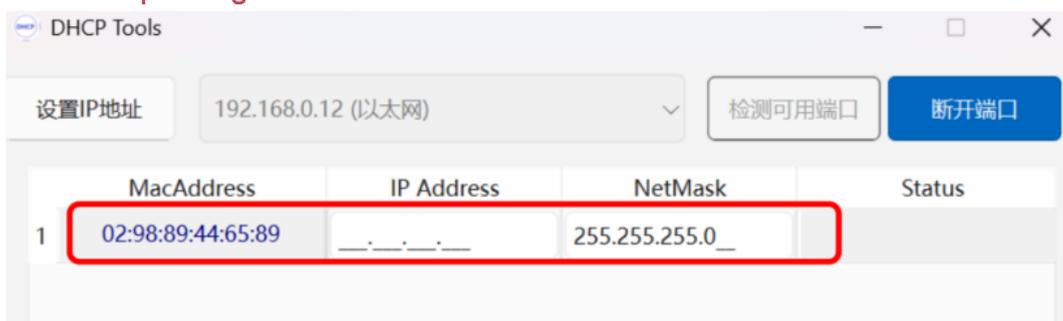
Set the module’s IP address DIP switches to “0xFF” (ADDR_H = F, ADDR_L = F on the right–side window; refer to the manual). This means:

- DHCP mode: after power–up, the module keeps waiting for an IP assignment.

After switching to 0xFF, 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 lower area will display the scanned Sentinel Modbus TCP IO–Link Master module(s), with the corresponding MAC address shown in front.



4) Enter the target IP address under “IP Address”, e.g. 192.168.0.20, then click “Set IP Address” (top–left).

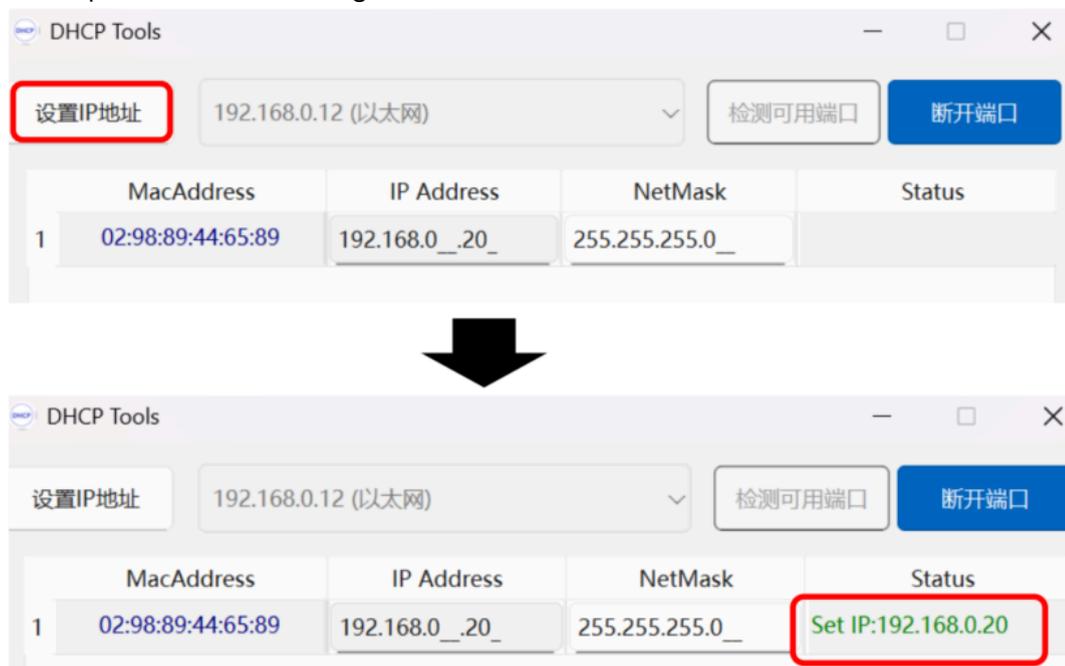
After the IP is successfully set, the Status column will show the IP address in green, indicating the IP configuration is completed. You may then close the software.

Once completed, the module **BUS red LED will stop flashing**.

After setting the IP, you may set the module DIP switches to:

- **0x00**: *Run using the last DHCP–assigned IP address*
Then after every power cycle, the module will keep using the previously assigned address (e.g., **192.168.0.20**).
- **0x01 – 0xFE**: *First three octets follow the DHCP–assigned network; the 4th octet is defined by the DIP value*

Example: set **ADDR_H = 1** and **ADDR_L = 4**, then the module IP becomes **192.168.0.20** (example shown in the original text).



Method 2: Using Third–Party IP Assignment Software

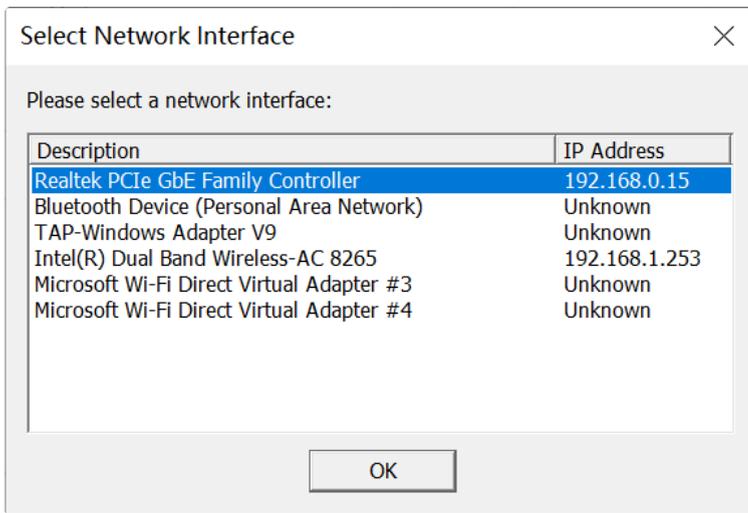
1) In this example, use Rockwell/Allen–Bradley “Bootp–DHCP Tool”.

Before configuration, set the module DIP switches (ADDR_H / ADDR_L) to **0xFF**, meaning:

- **DHCP mode**: after power–up, keep waiting for IP assignment.

After switching to 0xFF, **power–cycle the module**. The **BUS red LED will flash**.

Open the software, select the correct network adapter on your PC, and click “OK.”



2) Double-click the scanned module, input the IP address to be assigned (must be in the same subnet as the PC IP), then click “OK.”

After successful configuration, the **BUS red LED will stop flashing.**

Then set the DIP switches to:

- **0x00**: run using the last DHCP-assigned IP address after power cycles
- **0x01 – 0xFE**: first three octets follow DHCP-assigned network; the 4th octet is defined by the DIP value

BootP DHCP EtherNet/IP Commissioning Tool

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	11:22:08	4		

Entered Relations

Ethernet Address (MAC)	Type	IP Address	Hostname	Description
------------------------	------	------------	----------	-------------

Errors and warnings

Unable to service DHCP request from 02:98:89:44:55:89.

Relations 0 of 256



Add Relation Discovery History

Ethernet Address (MAC)	Type	(hr:min:sec)	#	IP Address	Hostname
02:98:89:44:55:89	DHCP	11:22:08	4		

New Entry

Server IP Address: 192.168.0.15

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

Client IP Address: 0 . 0 . 0 . 0

Hostname:

Description:

OK Cancel



New Entry

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

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. Create a New Project in HoliSys “AutoThink”

Open HoliSys **AutoThink**, create a new project, select “**LE CPU**”, click “**Create**”. In the pop-up dialog, select “**LE5118**”, then click “**OK.**”

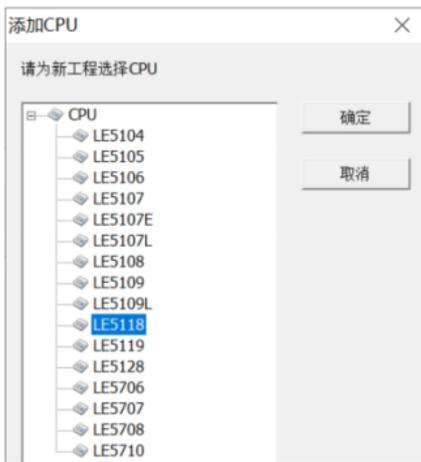
新建工程

工程 库 创建

工程名: MODBUSTCP

目标平台: LE CPU



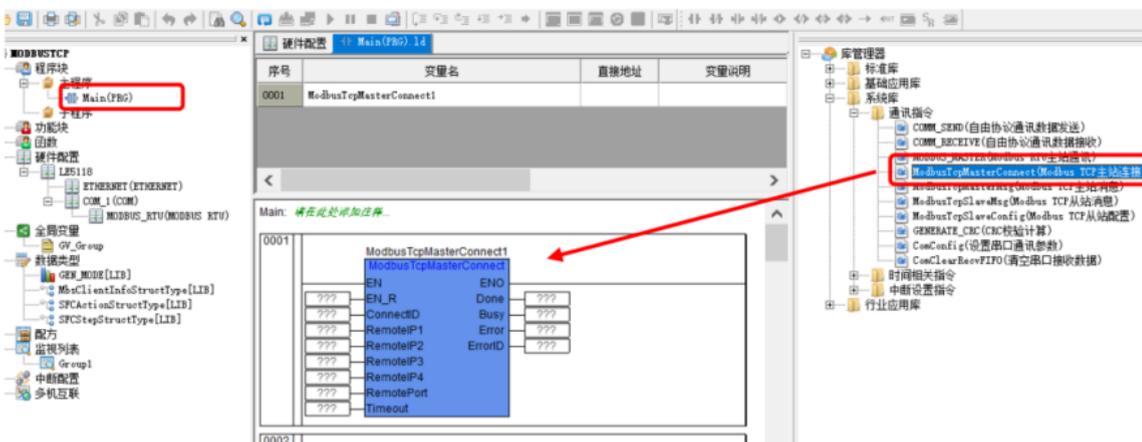


3. Add the Modbus TCP Master Connection Function Block

Double-click the main program “Main (PRG)”.

In the instruction library on the right, find “ModbusTcpMasterConnect (Modbus Tcp Master Connect)” and drag it into the program.

This function block is used to configure the LE5118/LE5119 module as a Modbus TCP Master to communicate with a Modbus TCP Slave. The Modbus TCP connection is established through this block.



4. Configure Parameters for ModbusTcpMasterConnect

Set parameters according to the description:

- **ConnectID** = 1
- **IP Address** = the IP of the Sentinel Modbus TCP IO-Link Master module, e.g. **192.168.0.10**
(In this example, LE5118 is connected to one Sentinel Modbus TCP IO-Link Master module.)
- **Slave Port** = 502
- **Timeout** = 1000 ms

输入参数	数据类型	功能描述	参数值说明	默认值
EN_R	BOOL	使能	1、上升沿时建立连接，发起连接请求后，修改输入参数不再生效 2、低电平复位，断开连接	FALSE
ConnectID	BYTE	Socket连接编号	支持10路连接，编号取值：1~10，组态时，取值不重复即可	0
RemoteIP1	BYTE	从站IP地址	地址最高位	0
RemoteIP2	BYTE	从站IP地址	\	0
RemoteIP3	BYTE	从站IP地址	\	0
RemoteIP4	BYTE	从站IP地址	地址最低位	0
RemotePort	WORD	从站端口号	根据从站设备端口号设置，取值范围：1~49151	0
Timeout	WORD	连接超时时间	连接等待超时后，不再发起连接，设置值≥50ms	0

硬件配置 Main(PRG) Ld

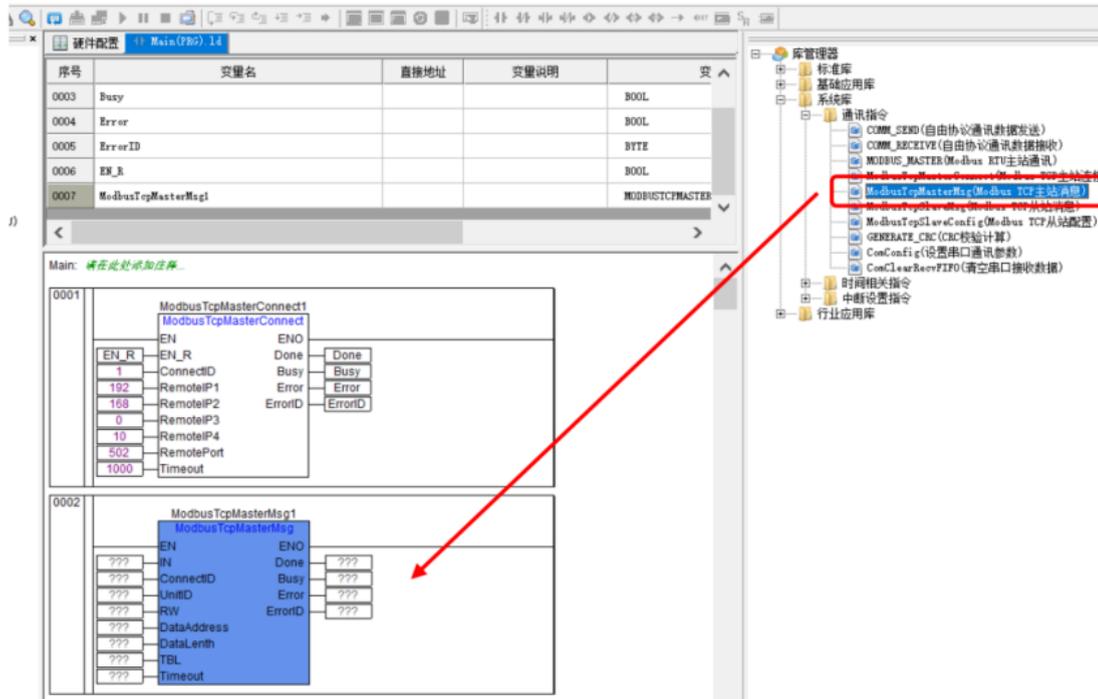
序号	变量名	直接地址	变量说明	变量类
0001	ModbusTcpMasterConnect1			MODBUSTCPMASTERCON
0002	Done			BOOL
0003	Busy			BOOL
0004	Error			BOOL
0005	ErrorID			BYTE
0006	EN_R			BOOL

Main: 请在此处添加注释...

5. Add the Modbus TCP Master Message Function Block

In the instruction library on the right, find “**ModbusTcpMasterMsg (Modbus TCP Master Message)**” and drag it into the program.

This function block is used to configure communication parameters and communication data.



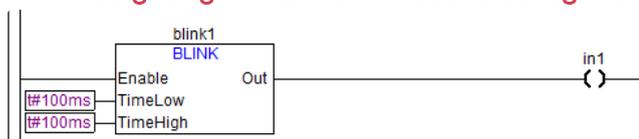
6. Configure Parameters (as per the diagram)

Configure the parameters according to the following parameter description figure.

输入参数	数据类型	功能描述	参数值说明	默认值
IN	BOOL	使能	上升沿使能，高电平有效，即每次使能必须保持高电平至指令执行结束（成功或失败）；若指令未执行完成之前使能引脚变为FALSE，则指令终止	0
ConnectID	BYTE	Socket连接编号	支持10路连接，编号取值：1~10。组态时，与ModbusTcpMasterConnect功能块的ConnectID值保持一致	
UnitID	BYTE	从站单元ID	取值：1~247、255	
RW	BOOL	读/写选择	0: 读取数据 1: 写入数据	0
DataAddress	DWORD	从站存放数据的地址	详见表DataAddress参数详细说明	1
DataLength	BYTE	数据长度	1~100，对于开入/开出为所需要传输的总比特数。对于模入/模出为所要传输的总通道数	1
TBL	WORD	主站存放数据的首字节地址	指向数据存放区的首字节地址 诸如200，表示存放地址为%MW200开始的一段空间。如果是读指令，读回的数据值存放到这个数据区中，例如3号从站3050地址的数据为1000，则%MW200存放1000。如果是写指令，要写出的数据值放到这个数据区中，例如向3号从站的3050地址写入500，则%MW200存放500	0
Timeout	WORD	主站请求响应超时（ms）	从启动接收过程开始计算，在规定的时间内没有接收到正确的从站应答帧，中止接收过程。最小时间为50 ms	0

7. IN Trigger Signal (Rising Edge Enable)

IN is rising-edge enabled and active at high level, so you can generate a pulse signal to the IN pin.



8. Read Input Data — First Segment

Set parameters as follows:

- **ConnectID** = 1 (must match the ConnectID of ModbusTcpMasterConnect)
- **UnitID** = 1
- **RW** = 0 (read)
- **DataAddress** = 300000

This indicates the input register area, corresponding to Modbus address **0000** (as described in the original guide).

- **DataLength:**

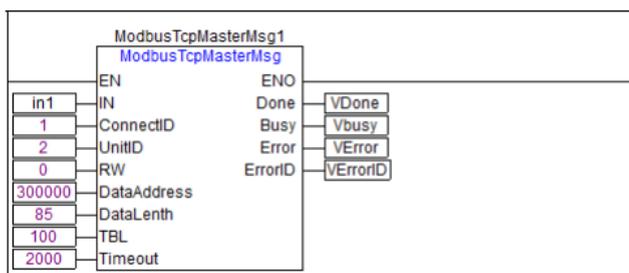
Refer to the Sentinel Modbus TCP IO-Link Master module manual (input word definition shown below).

Input data occupies **Word[0] – Word[132]**, total **133 words**.

Since **DataLength max = 100 words**, it cannot be read in one request and must be split into two reads. First segment reads **WORD[0] to WORD[84]** (inputs up to and including Port 5), so:

- **DataLength** = 85
- **TBL** = 100
- This means the master stores the received data starting from **%MW100**, spanning **85 words** (inputs for Port 1–5).
- **Timeout** = 2000 ms

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)																		



9. Read Input Data — Second Segment (Remaining Input Data)

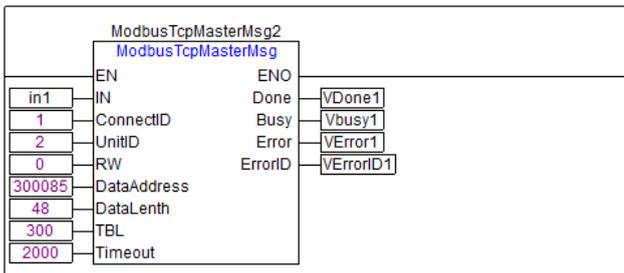
To read the remaining input data, drag another **ModbusTcpMasterMsg** block into the main program and assign a new variable name.

Note: If you copy an existing ModbusTcpMasterMsg block, you **must** change the variable name.

The **IN** pin can still use **in1** as trigger because **multiple instructions do not need polling** (per the original note).

Parameter settings:

- **ConnectID / UnitID:** same as above
- **RW** = 0 (read)
- **DataAddress** = 300085
This means reading from the **6th port** onward (continuing from the first segment).
- **DataLength** = 48 words
(Read Ports 6, 7, 8; each port occupies 16 words → 3 × 16 = 48)
- **TBL** = 300
Store the data starting from **%MW300** for 48 words
- **Timeout** = 2000 ms



10. Output Data Mapping — Must Also Be Written in Two Segments

According to the output word definition (diagram below), outputs occupy **Word[0] — Word[127]**, total **128 words**, so it also cannot be written in one request and must be split into two writes.

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)

11. Write Output Data — Two ModbusTcpMasterMsg Blocks

Configure two **ModbusTcpMasterMsg** blocks as follows (still use **in1** to trigger **IN**):

Common settings:

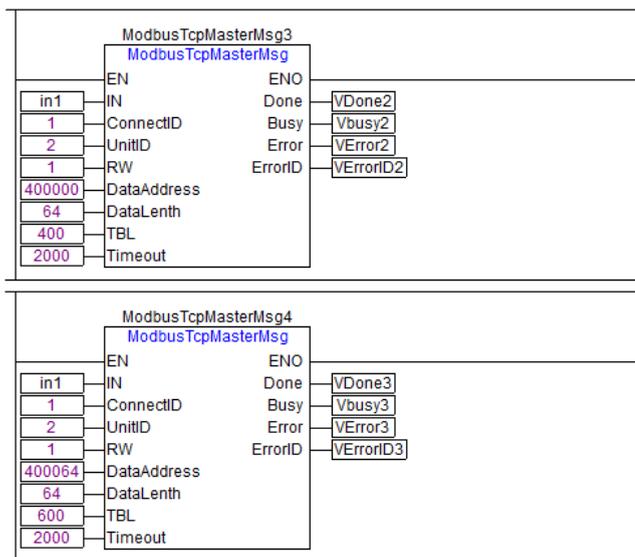
- **ConnectID / UnitID**: same as above
- **RW** = 1 (write)

Block 1 (write Ports 1–4 outputs):

- **DataAddress** = 400000
- **DataLength** = 64 words
- **TBL** = 400

Block 2 (write Ports 5–8 outputs):

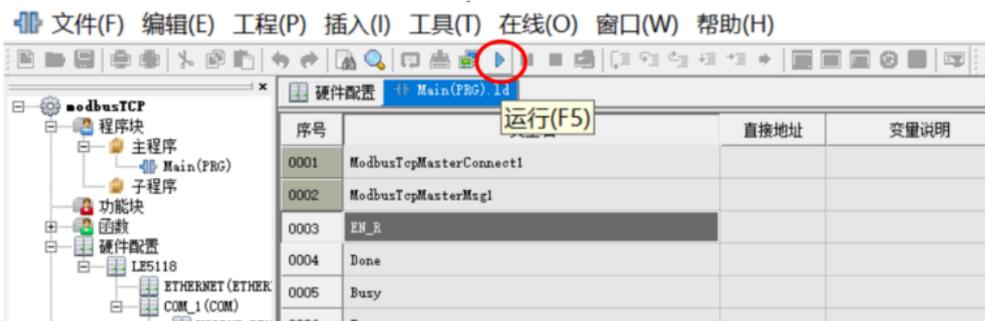
- **DataAddress** = 400064
- **DataLength** = 64 words
- **TBL** = 600



12. Define Monitoring Variables (Recommended)

You can define four variables: **P1, P2, P3, P4** as **array types**, corresponding to the four segments of input/output data, making it convenient for online monitoring.

p1	WORD100	ARRAY[0..84] OF WORD
p2	WORD300	ARRAY[0..47] OF WORD
p3	WORD400	ARRAY[0..63] OF WORD
p4	WORD600	ARRAY[0..63] OF WORD



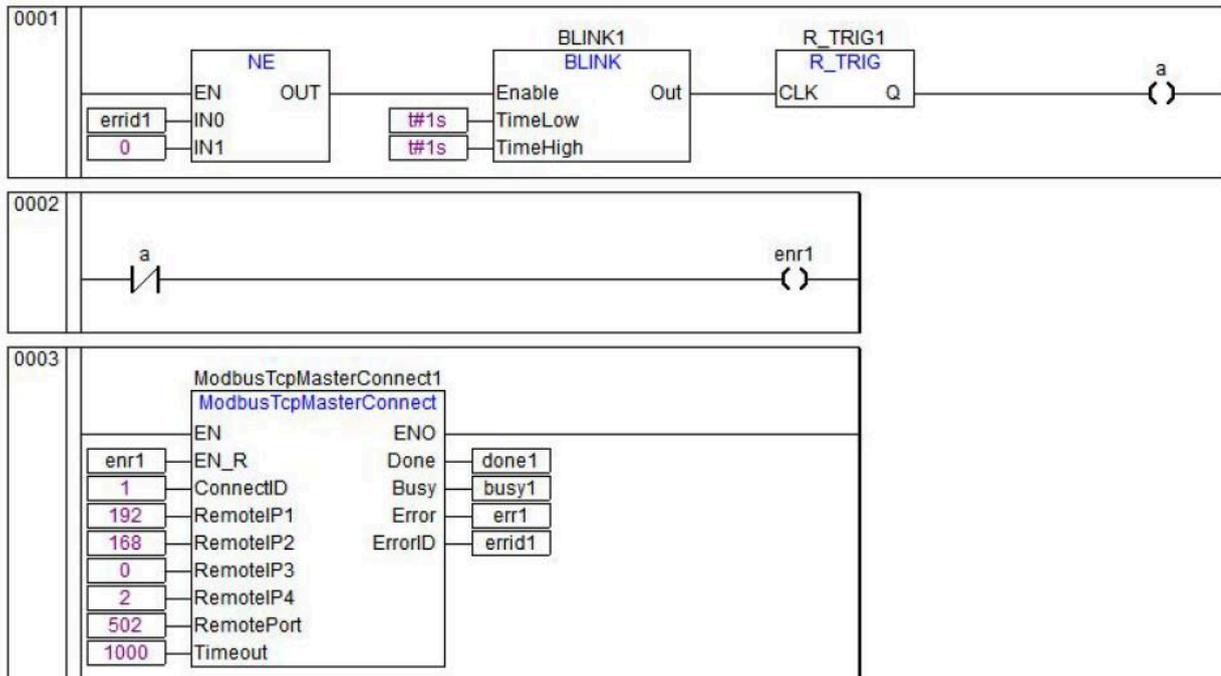
15. Important Notes: EN_R Trigger and Reconnection Mechanism

- The **EN_R** pin requires a **rising edge** to initiate the connection, and it must remain **high** to stay effective.
- **Timeout** is the timeout duration. If this time is exceeded, the master will stop initiating the connection.

To avoid communication interruption, a **reconnection mechanism** is required:

- When **ErrorID ≠ 0**, it indicates a communication fault.
- Enable a **2-second pulse signal**, and provide a **rising-edge signal to EN_R every 2 seconds** until the communication is re-established.

The following example is provided by HoliSys:



如你希望我把这份英文稿进一步“手册化”（统一术语、加标题层级、把 DIP/地址说明做成表格、增加 Notes/Warnings 样式、适配你们官网的排版模板），我也可以在你现有结构基础上直接做成可发布版本。