

iO-GRID™

and SIEMENS PLC Modbus TCP Connection Operating Manual

Table of Contents

| | | |
|-----|---|----|
| 1. | Remote I/O Module System Configuration List | 3 |
| 1.1 | Product Description | 3 |
| 2. | Gateway Parameter Settings | 4 |
| 2.1 | i-Designer Program Setup | 4 |
| 3. | Siemens S7-1200 Connection Setup..... | 9 |
| 3.1 | Siemens S7-1200 hardware connection | 9 |
| 3.2 | Siemens S7-1200 IP Address and Connection Setup | 10 |

1. Remote I/O Module System Configuration List

| Part No. | Specification | Description |
|------------|---|-----------------|
| GFGW-RM01N | Modbus TCP-to-Modbus RTU/ASCII, 4 Ports | Gateway |
| GFMS-RM01S | Master Modbus RTU, 1 Port | Main Controller |
| GFDI-RM01N | Digital Input 16 Channel | Digital Input |
| GFDO-RM01N | Digital Output 16 Channel / 0.5A | Digital Output |
| GFPS-0202 | Power 24V / 48W | Power Supply |
| GFPS-0303 | Power 5V / 20W | Power Supply |

1.1 Product Description

- I. The gateway is used externally to connect with Siemens S7-1200's communication port (Modbus TCP).
- II. The main controller is in charge of the management and dynamic configuration of I/O parameters and so on.
- III. The power module is standard for remote I/Os and users can choose the model or brand of power module they prefer.

2. Gateway Parameter Settings

This section details how to connect a gateway to Siemens S7-1200. For detailed information regarding **iO-GRID^M**, please refer to the [iO-GRID^M-Series Product Manual](#)

2.1 i-Designer Program Setup

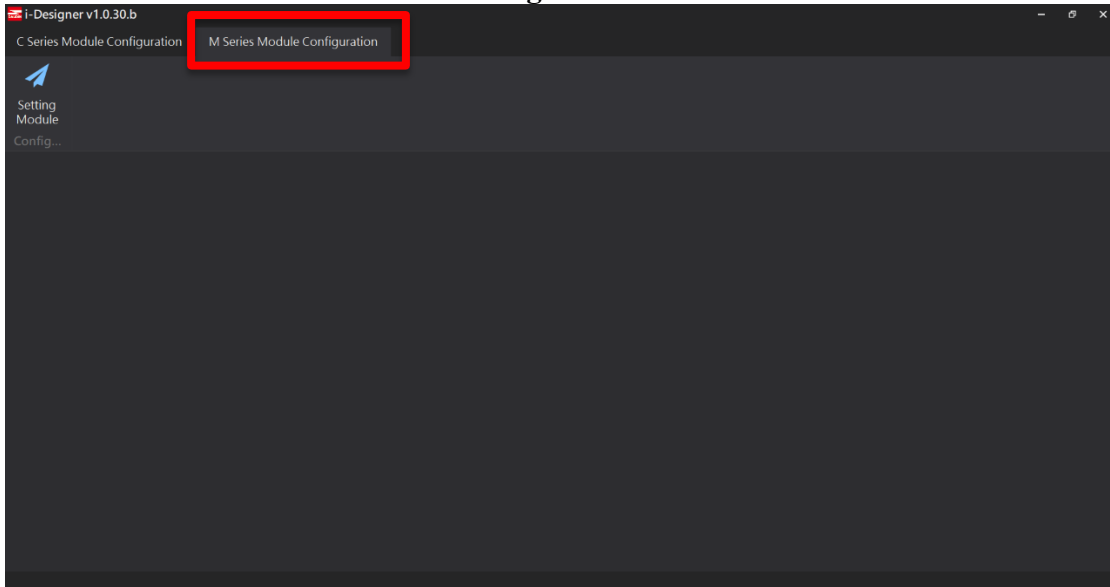
- I. Make sure that the module is powered and connected to the gateway module using an Ethernet cable



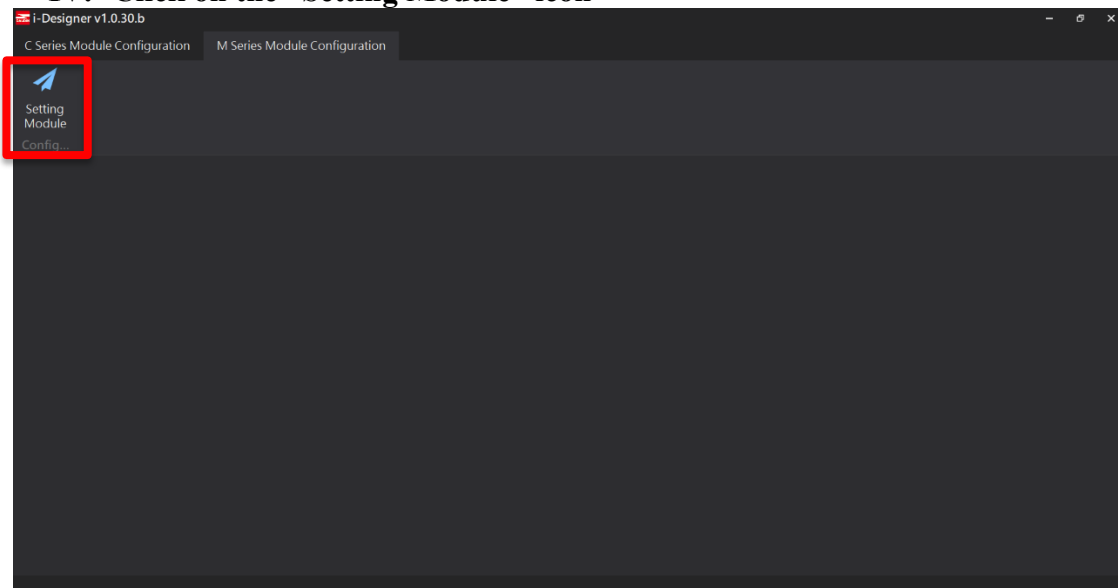
- II. Click to launch the software



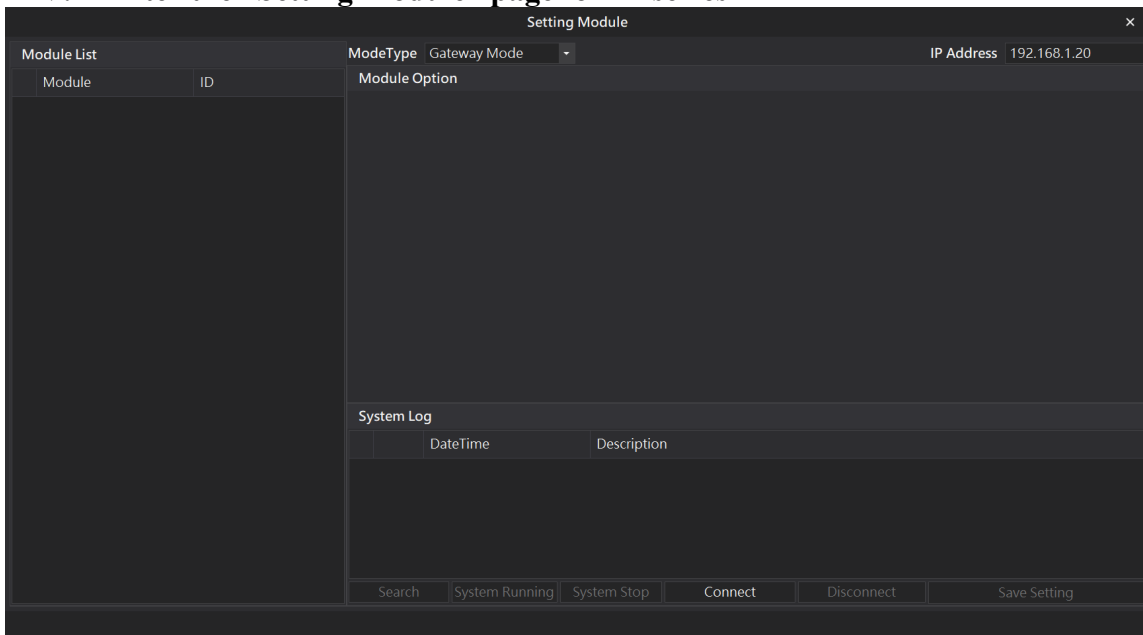
III. Select “M Series Module Configuration”



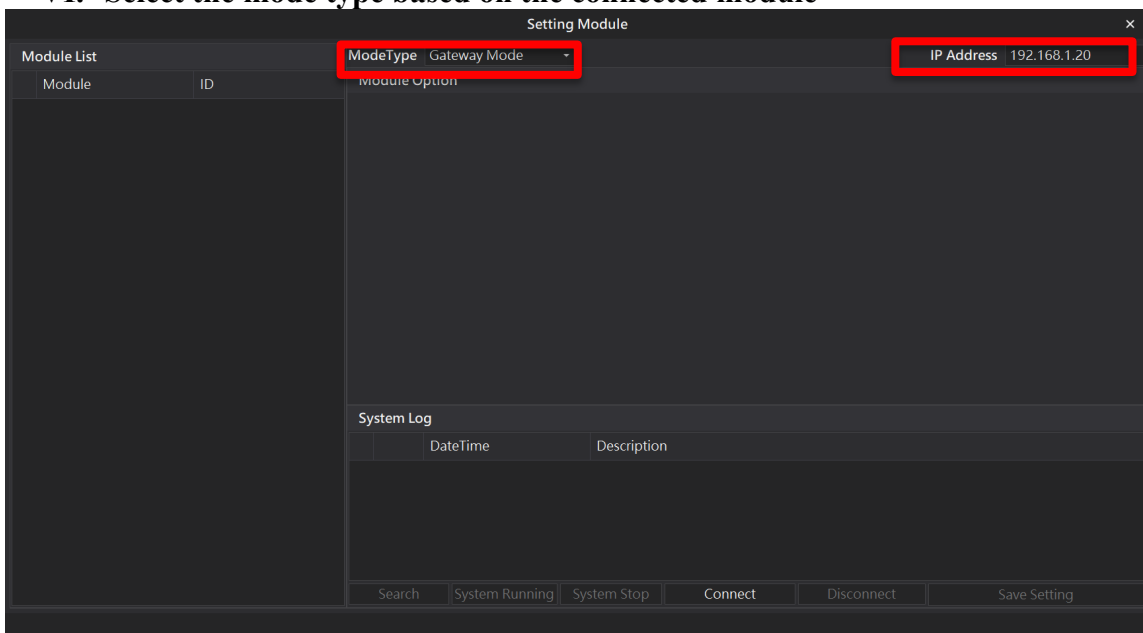
IV. Click on the “Setting Module” icon



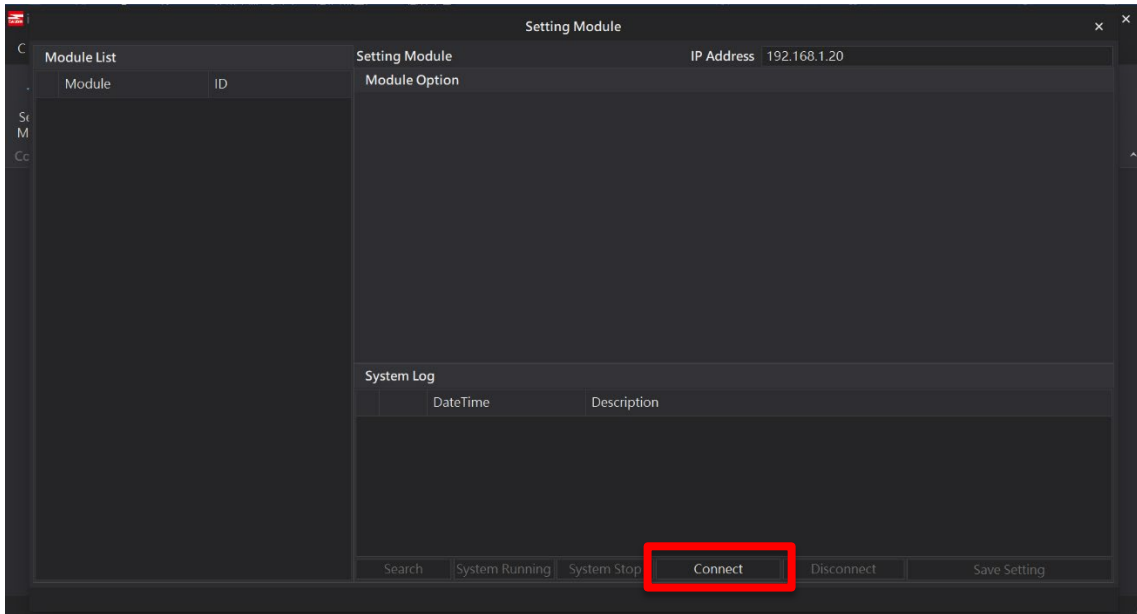
V. Enter the “Setting Module” page for M-series



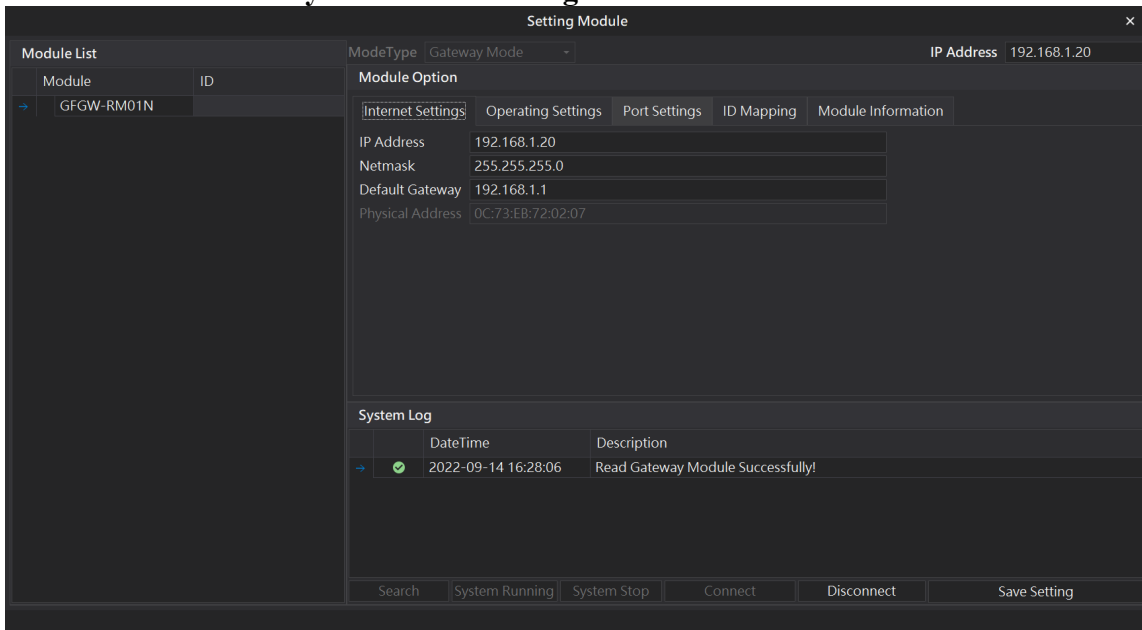
VI. Select the mode type based on the connected module



VII. Click on “Connect”

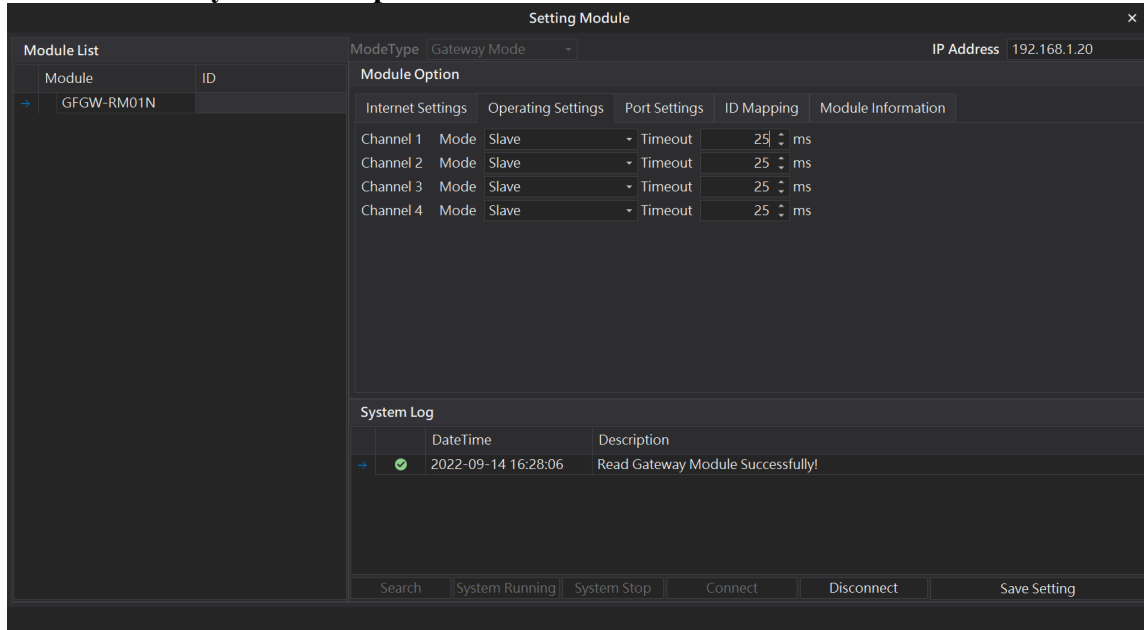


VIII. Gateway Module IP Settings



Note: The IP address must be in the same domain as the controller equipment

IX. Gateway Module Operational Modes



Setting Module [x]

Module List: Module | ID
 → GFGW-RM01N

ModeType: Gateway Mode | IP Address: 192.168.1.20

Module Option

| Channel | Mode | Operating Settings | Port Settings | ID Mapping | Module Information |
|-----------|------|--------------------|---------------|------------|--------------------|
| Channel 1 | Mode | Slave | Timeout | 25 ms | |
| Channel 2 | Mode | Slave | Timeout | 25 ms | |
| Channel 3 | Mode | Slave | Timeout | 25 ms | |
| Channel 4 | Mode | Slave | Timeout | 25 ms | |

System Log

| DateTime | Description |
|-------------------------|-----------------------------------|
| → ✓ 2022-09-14 16:28:06 | Read Gateway Module Successfully! |

Buttons: Search | System Running | System Stop | Connect | Disconnect | Save Setting

Note:

Set Group 1 as Slave and set the gateway to use the first set of RS485 port to connect to the main controller (GFMS-RM01N)

3. Siemens S7-1200 Connection Setup

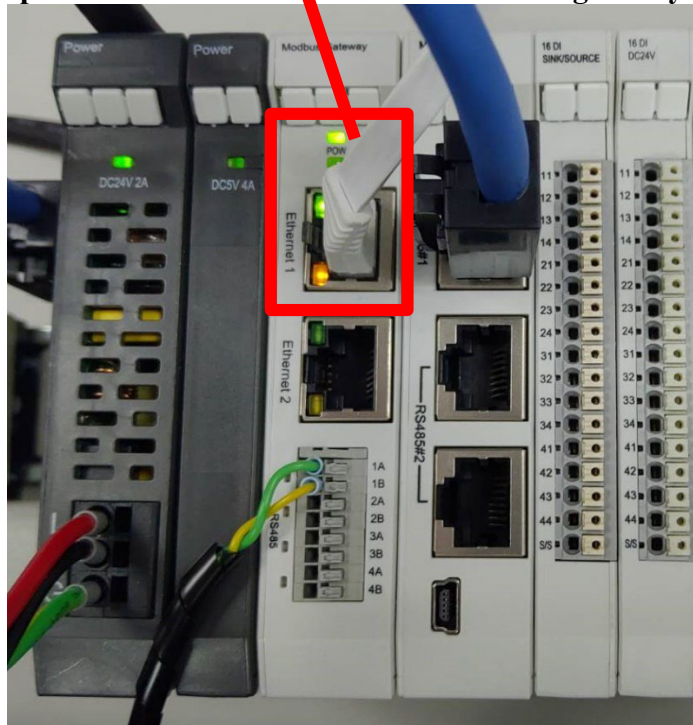
This chapter explains how to use the TIA Portal program to connect S7-1200 to a gateway and add a remote I/O module. For detailed information, please refer to the “*SIMATIC STEP 7*” section in the user’s manual

3.1 Siemens S7-1200 hardware connection

I. The connection port is at the bottom of the middle section of the machine

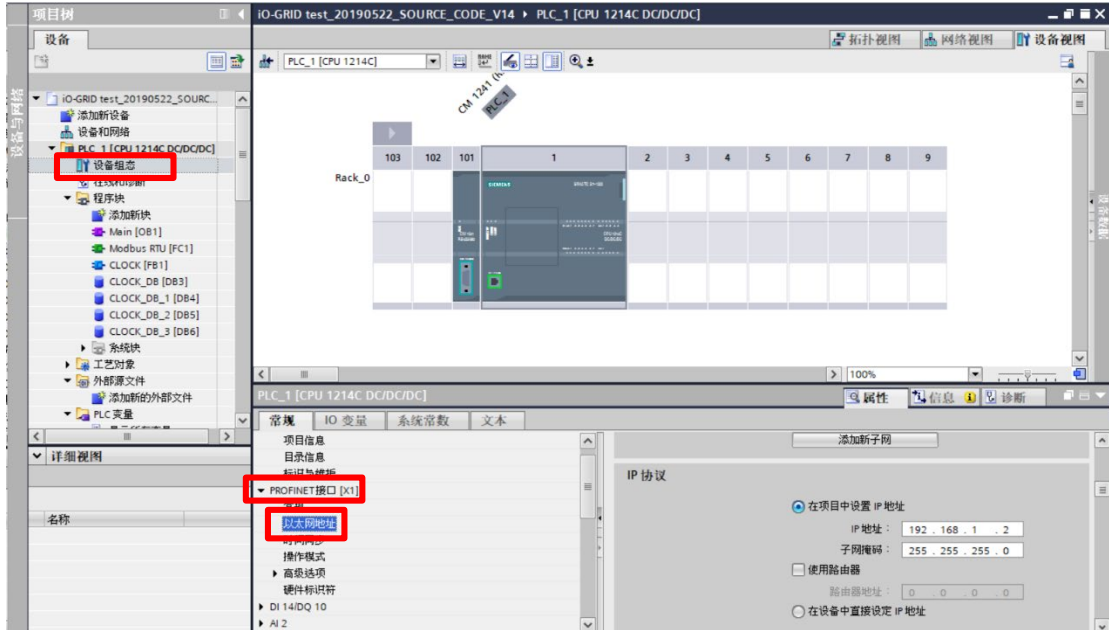


II. Connect the port at the bottom of the machine to the gateway’s port



3.2 Siemens S7-1200 IP Address and Connection Setup

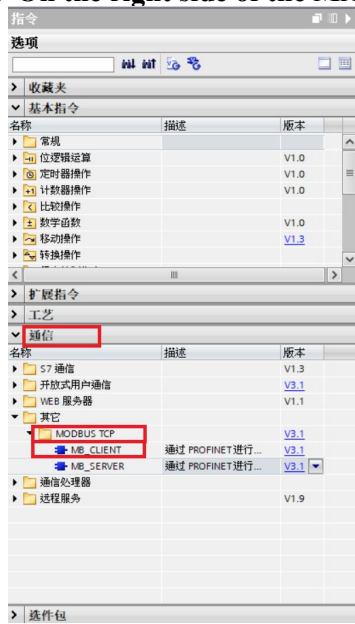
- I. Open the TIA Portal, click on “Device Configuration” and then the “PROFINET Port” menu



- II. Click on “Ethernet Address” and type in the IP address as the same as the gateway at 192.168.1.XXX

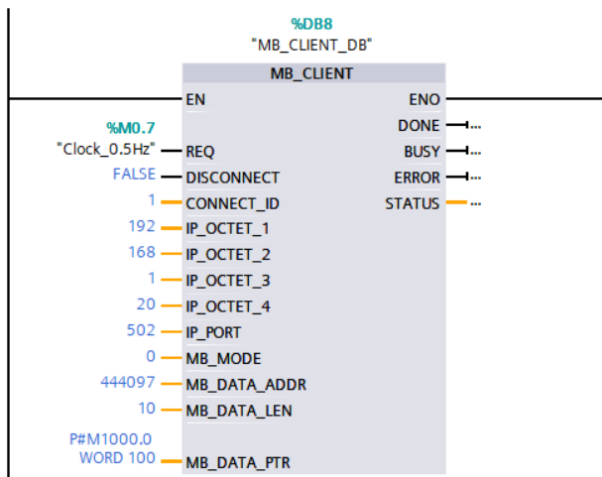


III. On the right side of the MAIN program, select “Commands”



- A. Click on the “Communication” menu
- B. Click on the “Others” menu
- C. Click on the “Modbus TCP” menu
- D. Click to add a new “MB_CLIENT”

IV. Reading of the communication register



Triggers “REQ” with rising edge

DISCONNECT: Set to "false"

IP_OCTET_1~4: IP of the device to be connected

IP_PORT set to “502”

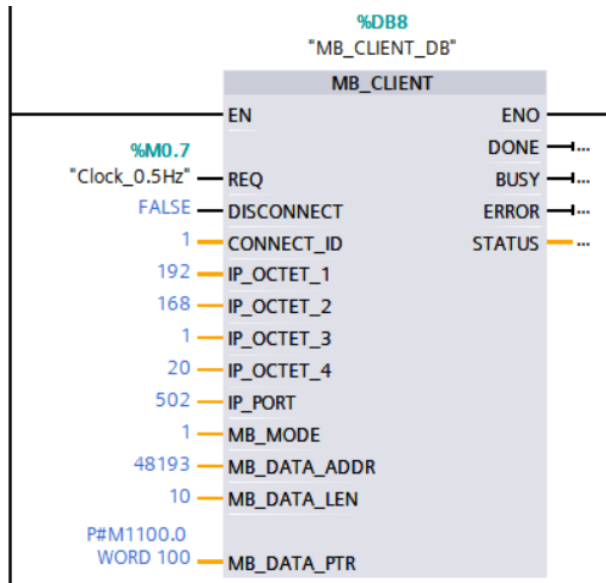
MB_MODE set to “0”

MB_DATA_ADDR set to “444097”

DATA_LEN set to “Data Length”

DATA_PTR set to CPU’s register address

V. Writing of the communication register



Triggers "REQ" with rising edge

DISCONNECT: Set to "false"

IP_OCTET_1~4: IP of the device to be connected

IP_PORT set to "502"

MB_MODE set to "1"

MB_DATA_ADDR set to "48193"

DATA_LEN set to "Data Length"

DATA_PTR set to CPU's register address

Notes:

※ iO-GRID[™]'s first GFDI-RM01N has the register address at 1000(HEX) converted to 4096(DEC)+1 and the starting address at 44097

※ iO-GRID[™]'s first GFDO-RM01N has the register address at 2000(HEX) converted to 8192(DEC)+1 and the starting address at 48193

※ For MODE settings, please refer to Siemens MB_MODE, MB_DATA_ADDR and DATA_LEN Parameters