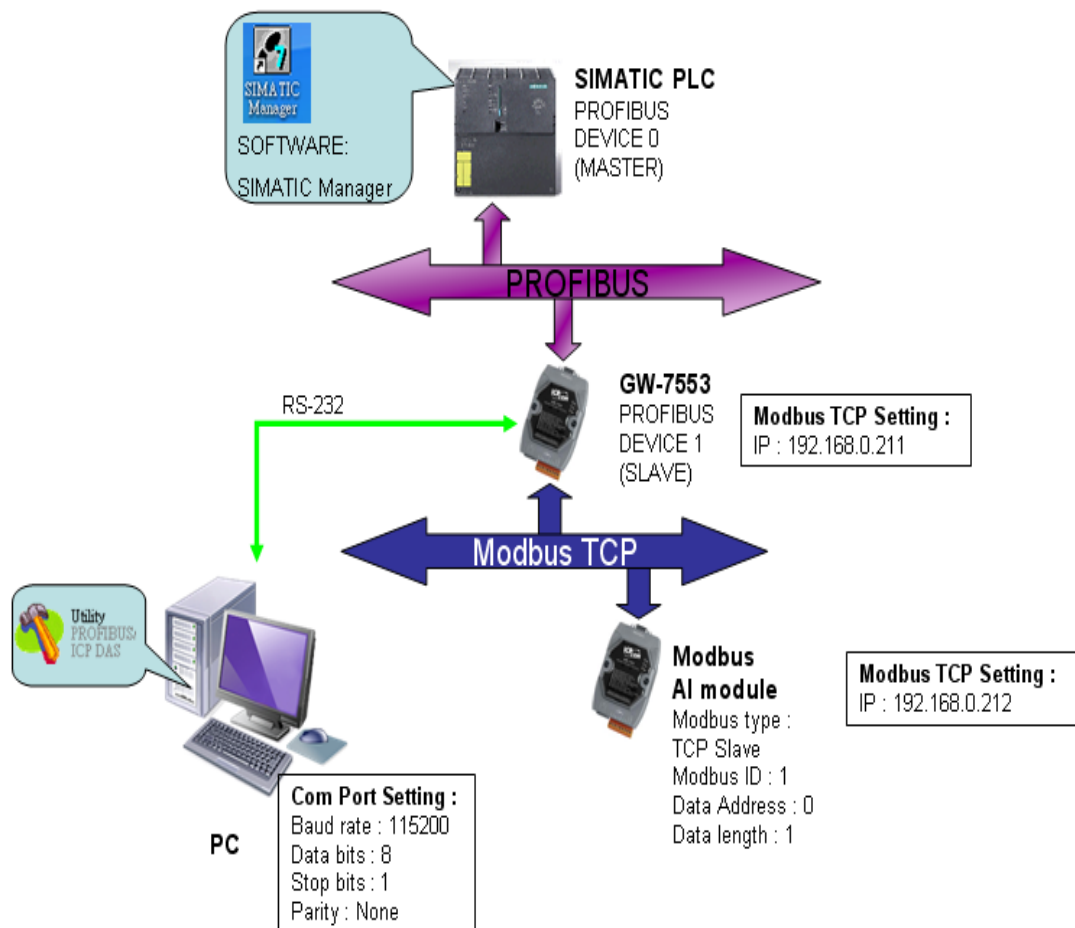


GW-7553 (Modbus TCP master) example for SIMATIC STEP 7

Example 1: PLC reads AI module data from GW-7553.

Read a Modbus TCP AI module (PROFIBUS Slave & Modbus TCP Master)

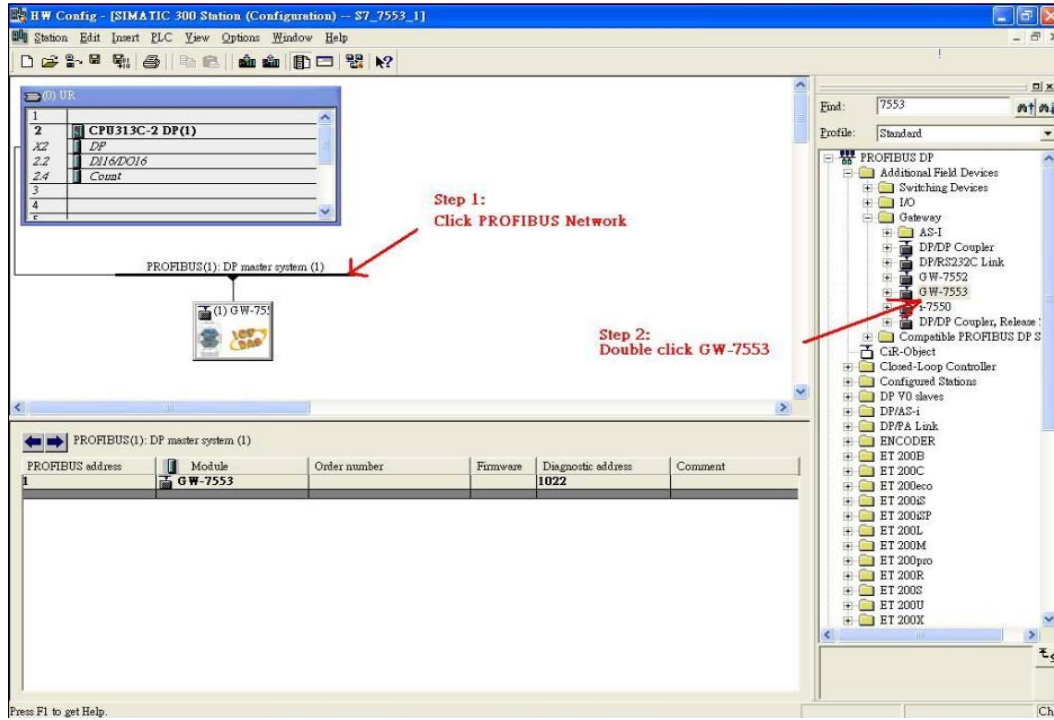


“Follow the below steps to establish the system!”

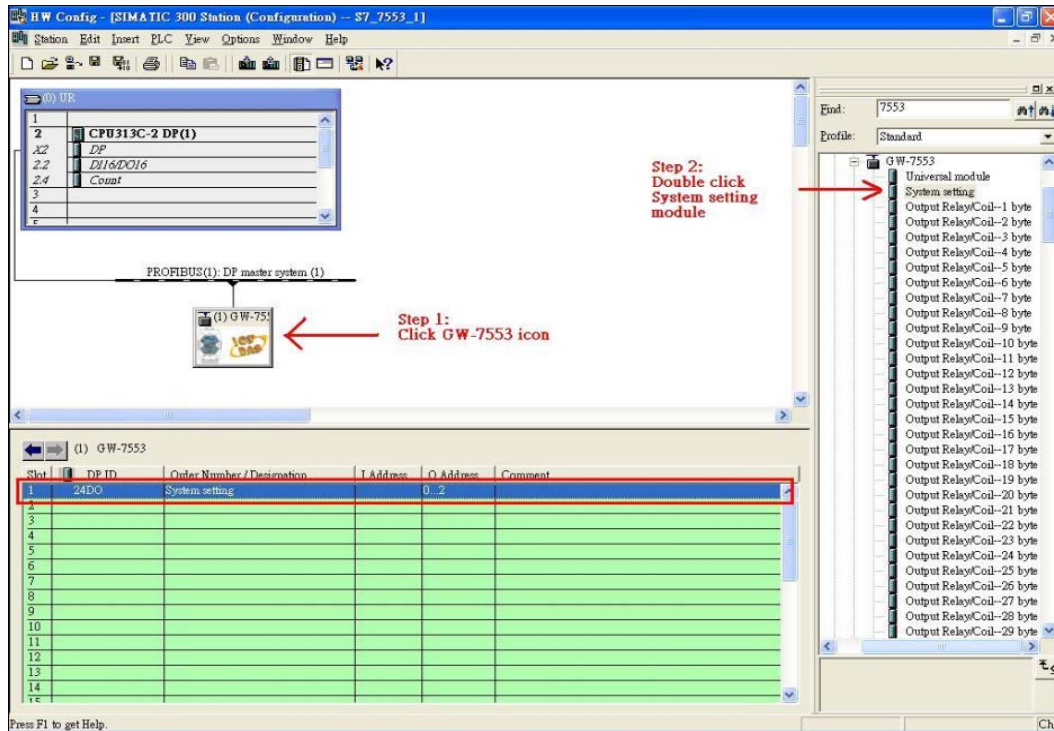
SIMATIC STEP7 Configuration:

Step 1: Set the GW-7553 modules

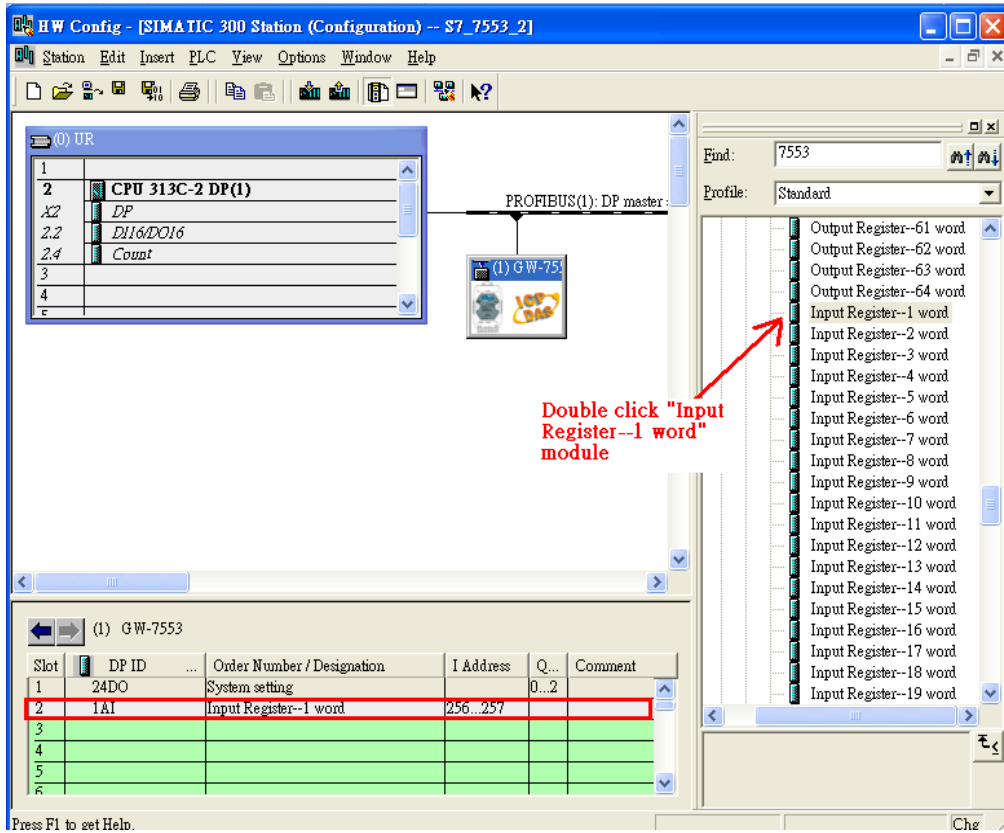
1. Add a GW-7553 module



2. Add a System module

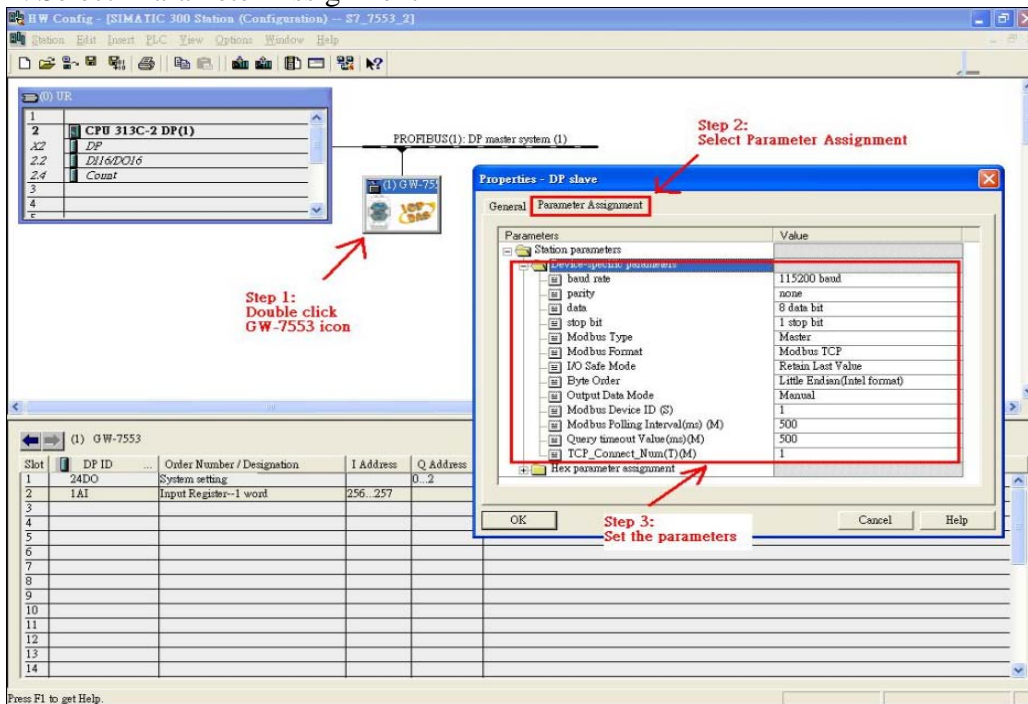


3. Add a "Input Register—1 word" module



Step 2: Set the parameters of the GW-7553

1. Double click GW-7553 icon
2. Select "Parameter Assignment"



3. Set common parameters of the GW-7553

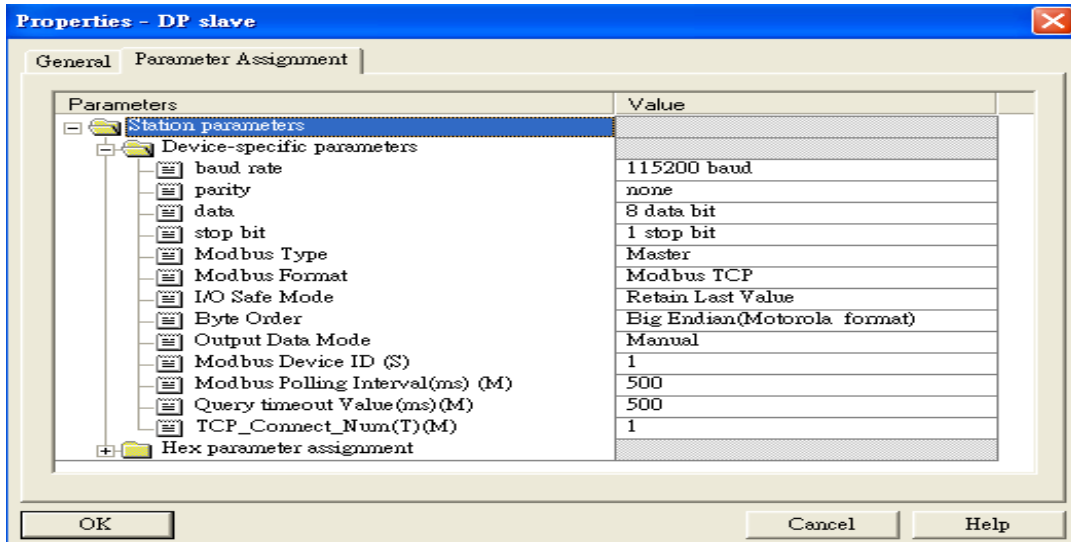
Common parameters →

Baud rate: 115200; Parity: none; Data: 8 data bit; Stop bit: 1 stop bit; Modbus type: **Master**

Modbus Format: **Modbus TCP**; I/O Safe Mode: Retain Last Value; Byte Order: **Big Endian**

Output Data Mode: Manual; Modbus Device ID (S): 1; Modbus Polling Interval(ms) (M): 500

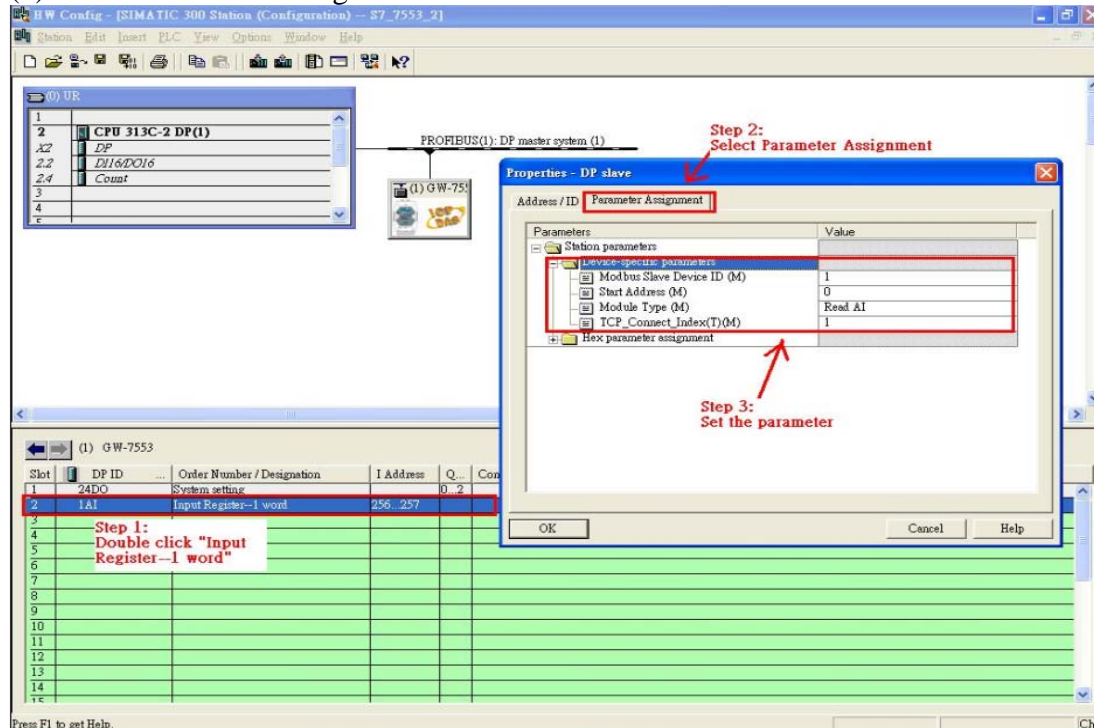
Query timeout value(ms)(M): 500; TCP_connect_Num(T)(M): 1



4. Set module parameters of the GW-7553

(1) Double click "input register—1 word" module

(2) Select "Parameter Assignment"



5. Set "input register—1 word" module parameters

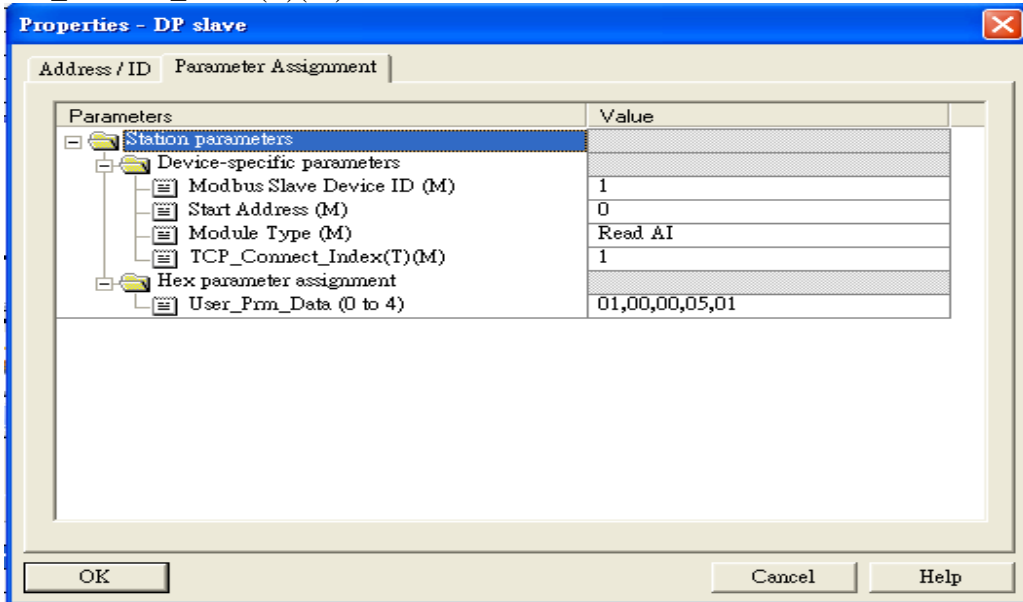
Module parameters →

Modbus Slave Device ID: 1

Slave Address: 0 (Protocol address (base 0))

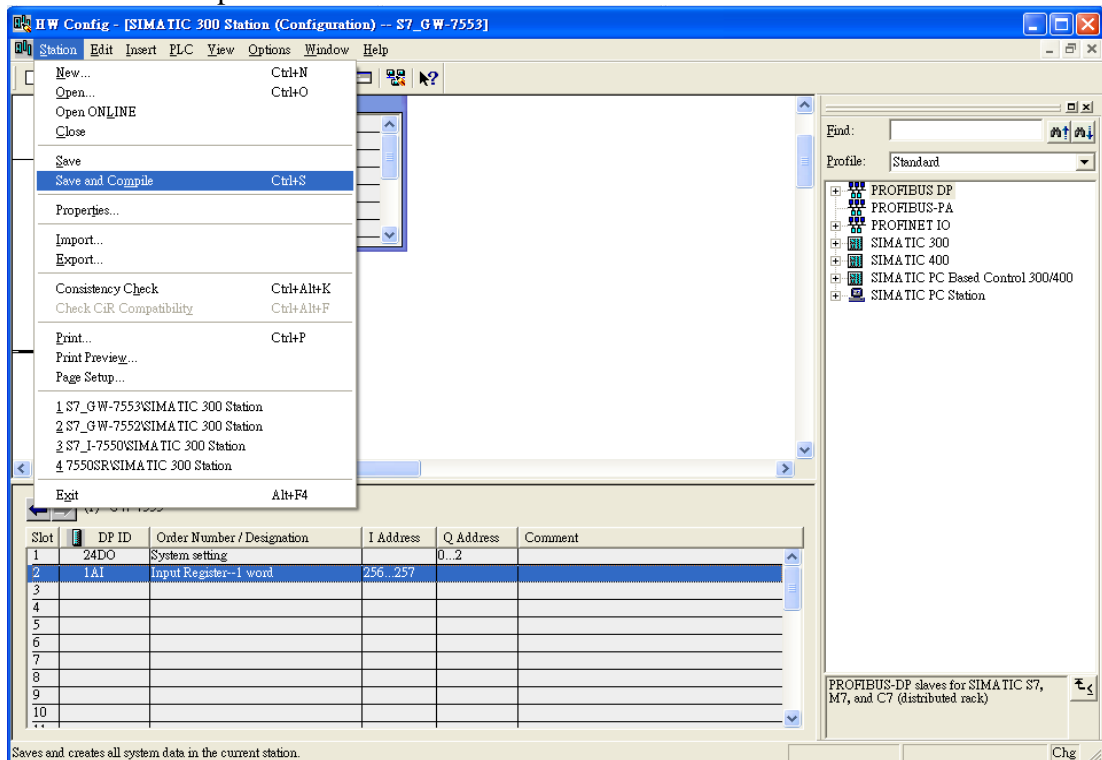
Module Type: Read AI

TCP_Connect_Index(T)(M): 1

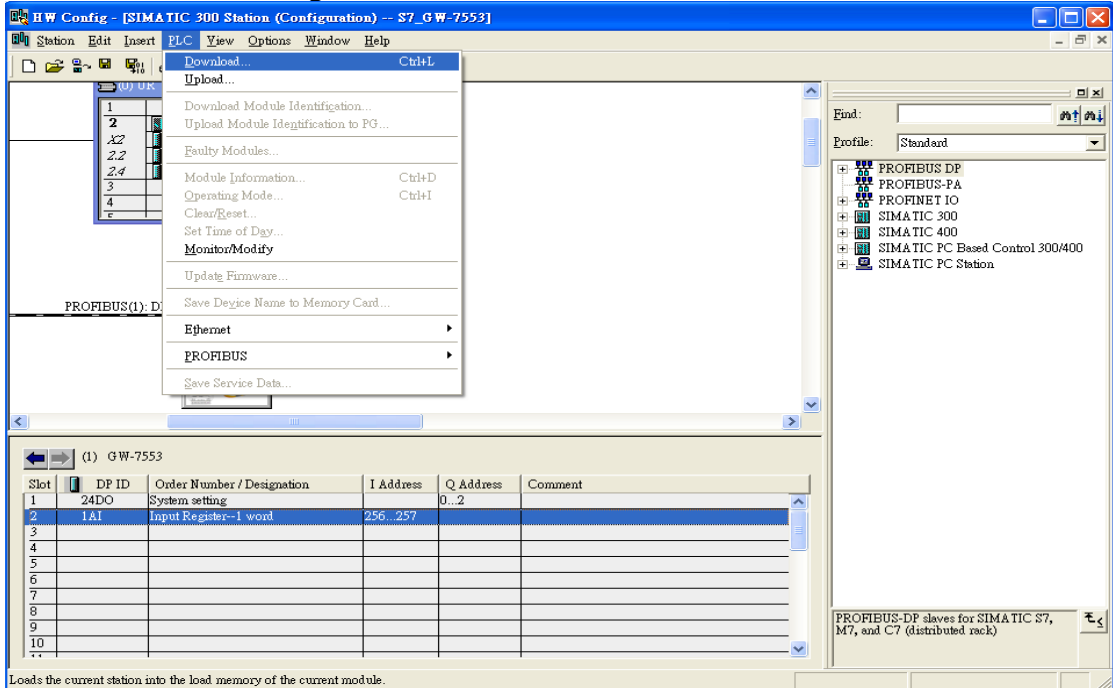


Step 3: Download the HW settings into SIMATIC PLC

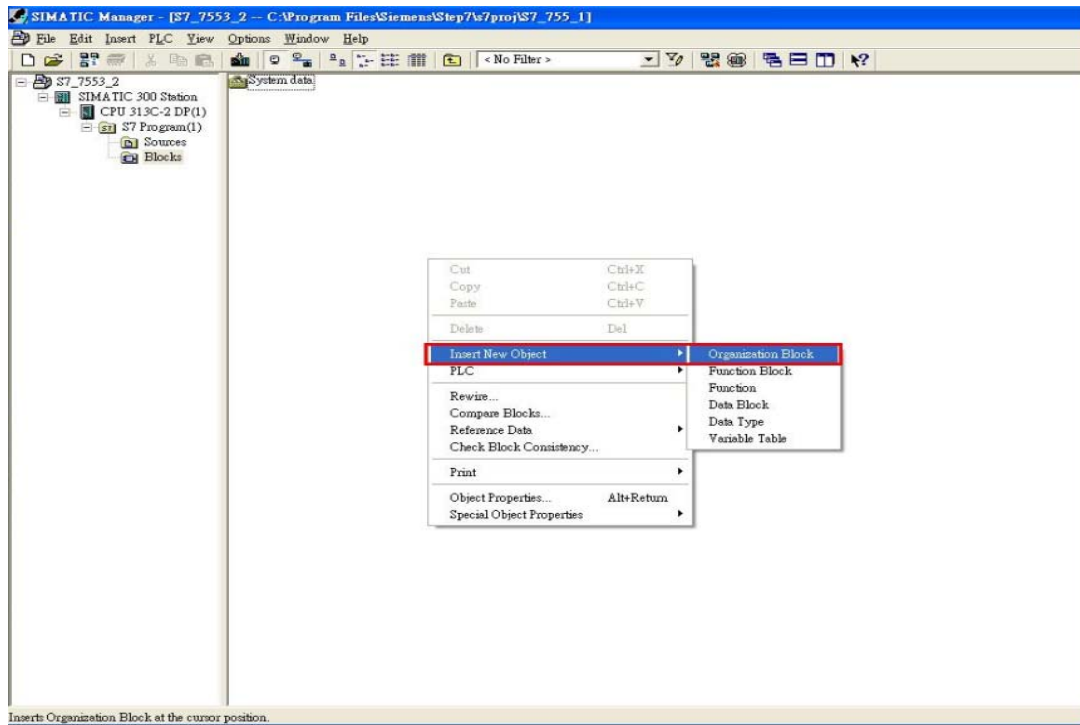
1. Save and Compile

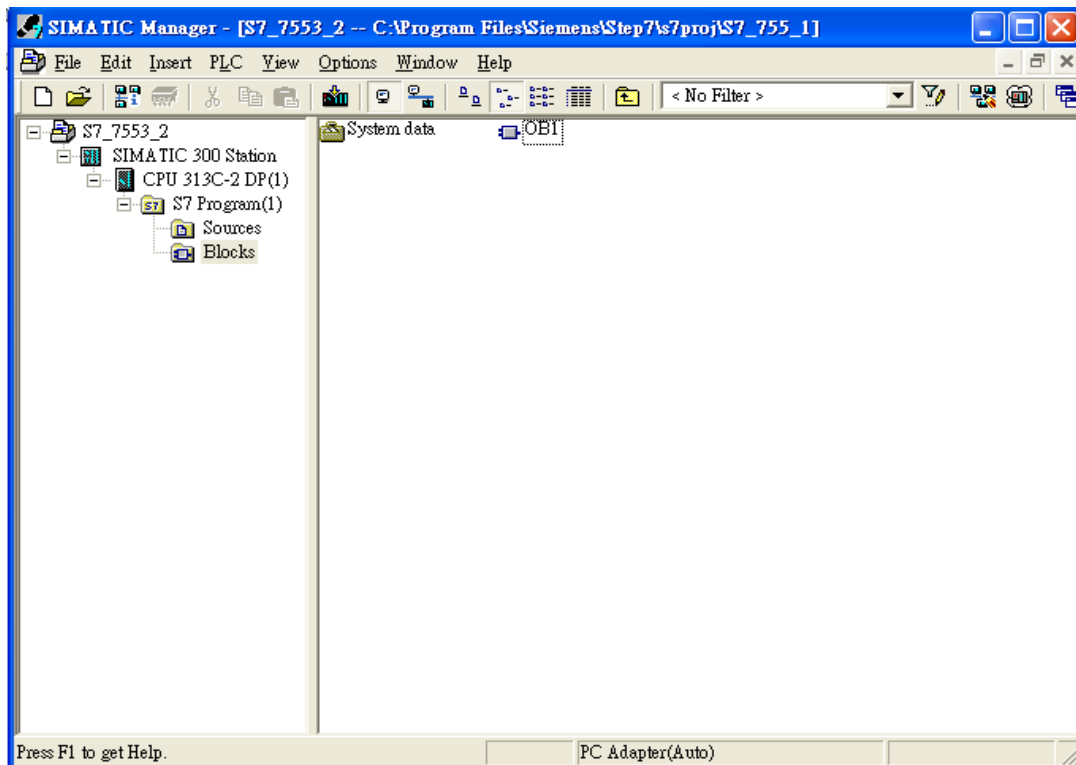
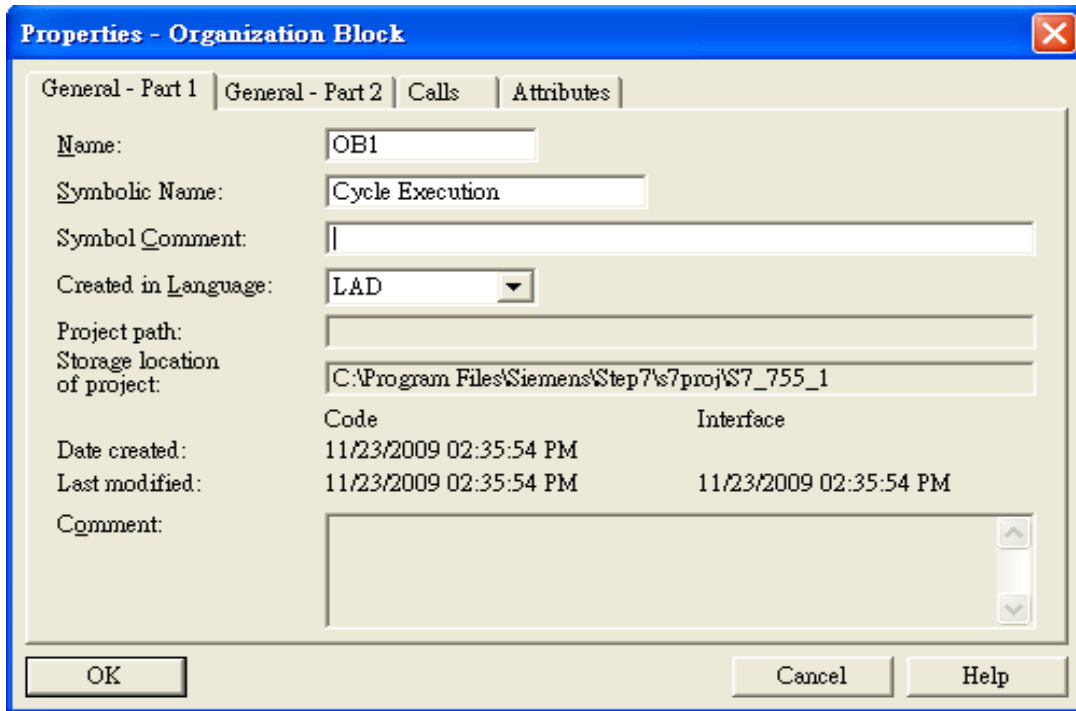


2. Download HW setting into STEP7



Step 4: Insert a new Organization Block (OB1)





Step 5: Edit OB1

Contents Of: 'Environment\Interface\TEMP'

Name	Data Type	Address	Comment
AIValue	Word	20.0	
End	Bool	22.0	

OB1 : "Main Program Sweep (Cycle)"

Network 1: Read AI

```

    MOVE  PIW256, #AIValue
  
```

Hardware Configuration Table:

Slot	DP ID	Order Number / Designation	I-Address	Q-Address	Comment
1	24DO	System setting		0.0	
2	1AI	Input Register=1 word	256.257		
3					

Step 6: download the settings into SIMATIC PLC

Download

- Select Online CPU...
- Establish Connection to Configured CPU
- CPU Messages...
- Display Force Values Cntl+Alt+F
- Monitor/Modify Variables
- Module Information... Cntl+D
- Operating Mode... Cntl+I
- Clear/Reset...
- Set Time of Day...

Contents Of: 'Environment\Interface\TEMP'

Name	Data Type	Address	Comment
PREV_CYCLE	Int	6.0	Cycle
MIN_CYCLE	Int	8.0	Minimu
MAX_CYCLE	Int	10.0	Maximu
DATE_TIME	Date_And_Time	12.0	Date a
	Word	20.0	
	Bool	22.0	

OB1 : "Main Program Sweep (CYCLE)"

Network 1: Title:

```

    MOVE  PIW256, #AIValue
  
```

Loads the current block to the PLC.

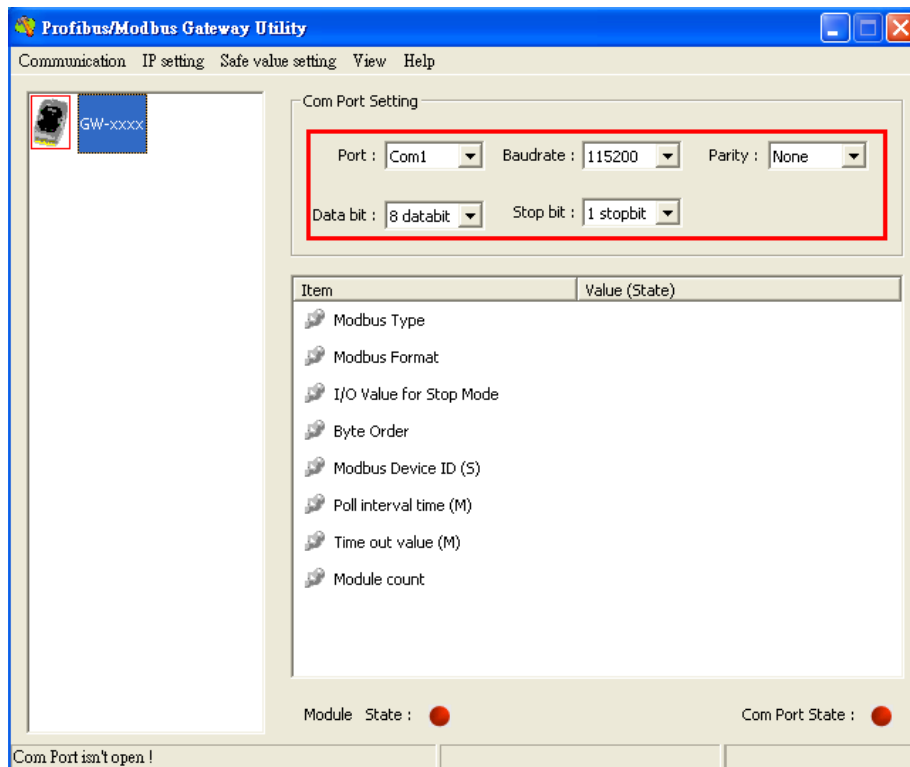
offline | Abs < 5.2 | Nw 1 | Insert | Chg

Step 7: Make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at setting mode.

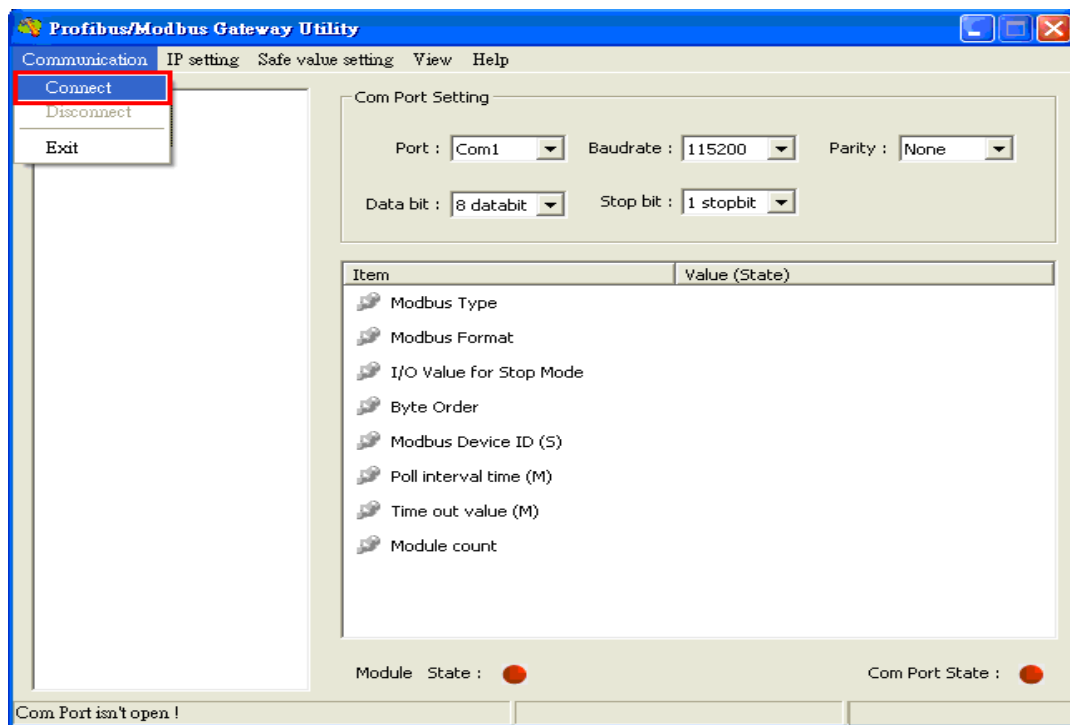


Step 8: Connect with GW-7553 and Utility

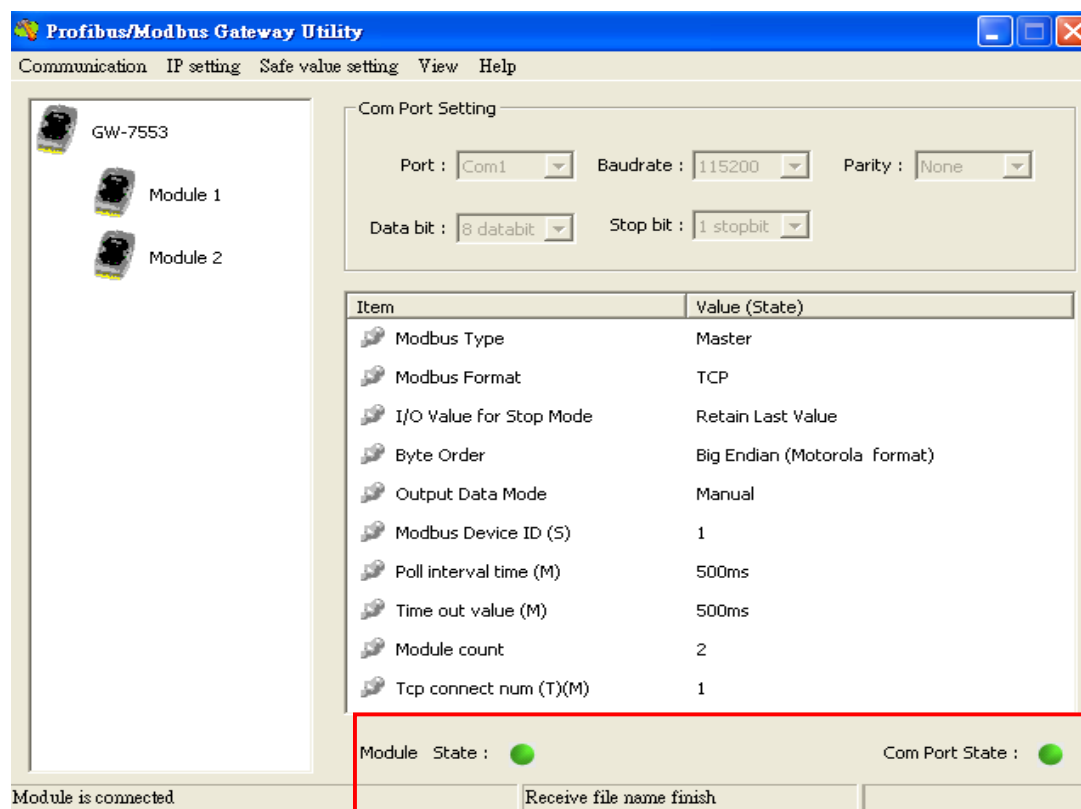
1. Set the Com Port Setting of the Utility



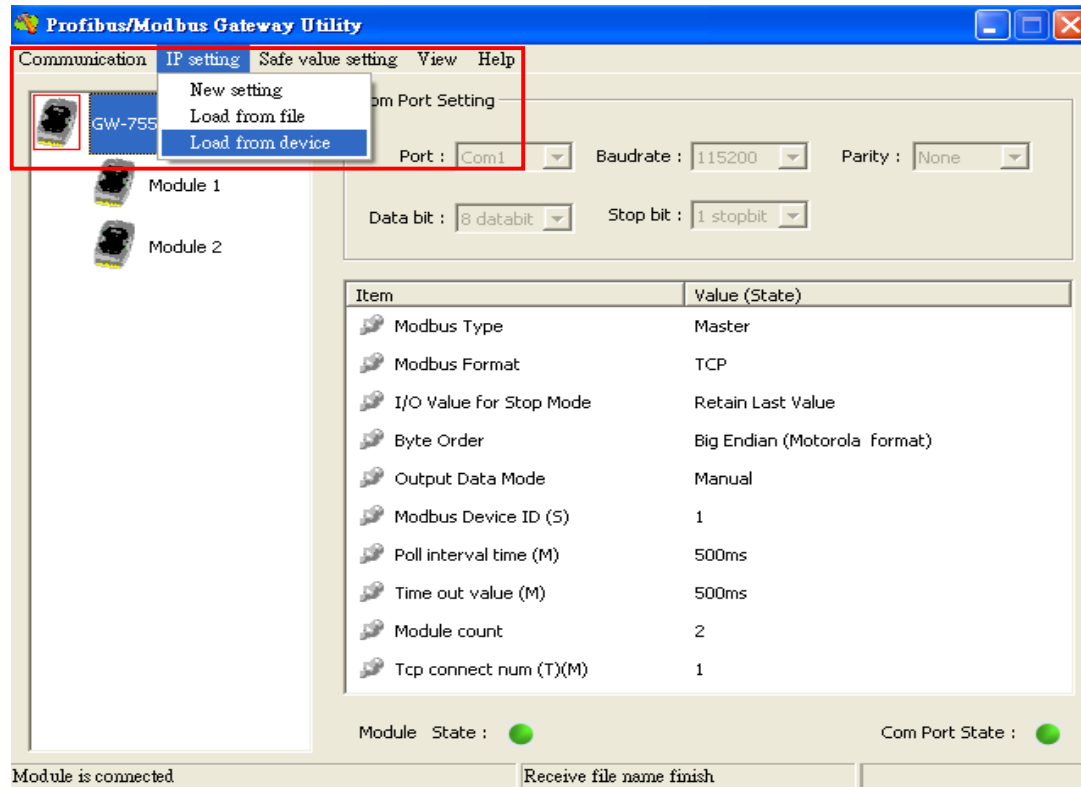
2. Click connect



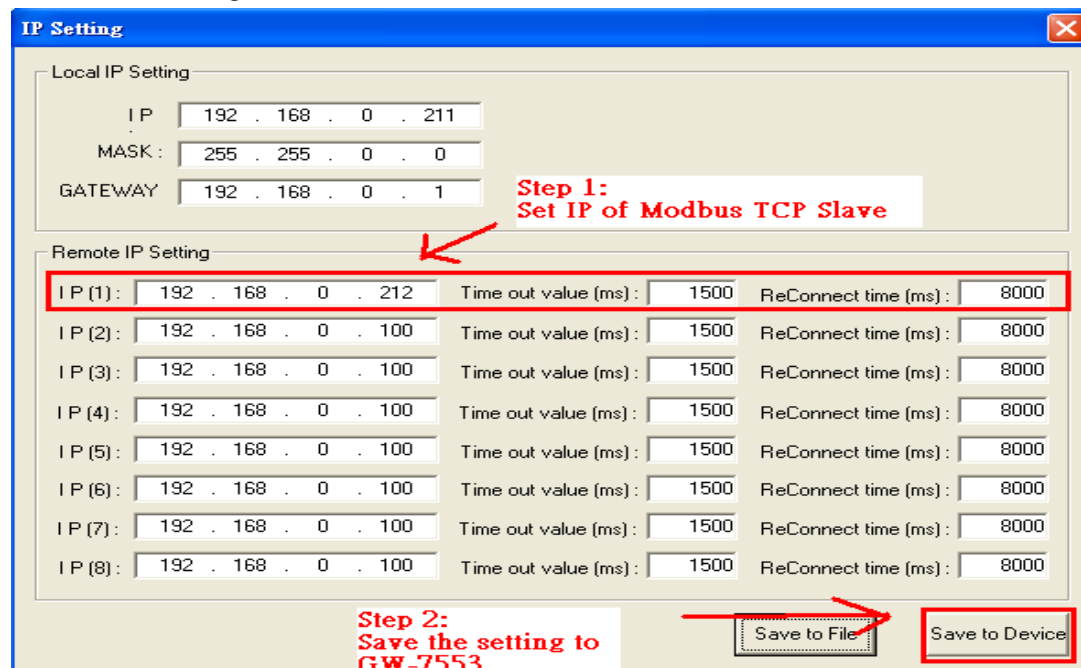
3. Connection success



4. Click IP setting→Load from device to show IP setting dialog



5. Set the IP of the Modbus TCP Slave and click “Save to Device” button to save the settings.



Step 9: Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.



Now the setting procedure has been finished and the user can read the data of the Modbus AI module at address PIW256.

The screenshot shows the SIMATIC Manager software interface. The title bar indicates the project is 'LAD/STL/FBD - [@OB1 -- S7_7553_2\SIMATIC 300 Station\CPU 313C-2 DP(1) ONLINE]'. The main window displays a ladder logic network for 'Network 1: Read AI'. The network contains a MOVE instruction with the following parameters:

Name	Data Type	Address	Comment
AIValue	Word	20.0	
End	Bool	22.0	

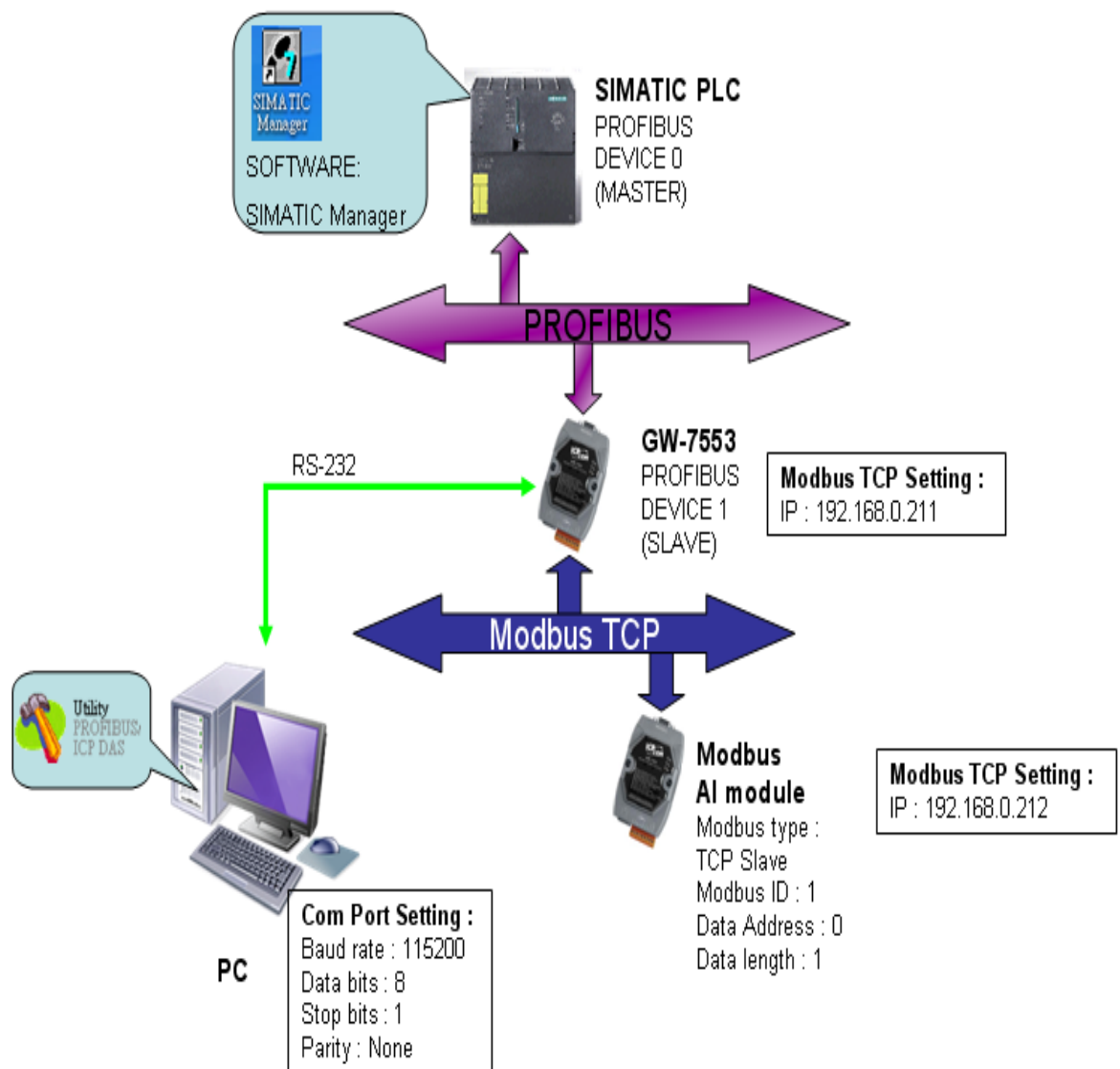
The ladder logic network shows a MOVE instruction with the following parameters:

- IN: 16#00002211 (PIW256)
- OUT: 16#00002211 (-#AIValue)
- EN: (Start of network)
- ENO: (End of network)
- #End: (End of program)

The status bar at the bottom shows the system is in 'RUN' mode.

Example 2: PLC writes DO module data to GW-7553.

Write a Modbus TCP DO module (**PROFIBUS Slave** & **Modbus TCP Master**)



SIMATIC STEP7 Configuration:

Step 1: Setup the GW-7553 module

1. Add a GW-7553 module

The screenshot shows the HW Config window for a SIMATIC 300 station. The rack configuration is as follows:

Slot	Module
1	CPU313C-2 DP(1)
2	DP
2.2	DI16/DO16
2.4	Count
3	
4	
5	
6	
7	
8	
9	

The GW-7553 module is shown in slot 5. The PROFIBUS(1) DP master system (1) is connected to the rack. The right-hand pane shows the module's configuration tree, including 24 output relays (Output Relay/Coil-1 to Output Relay/Coil-24).

Slot	Order Number / Designation	I Address	Q Address	Comment
1				
2				
3				
4				
5				
6				
7				
8				
9				

2. Add a System module

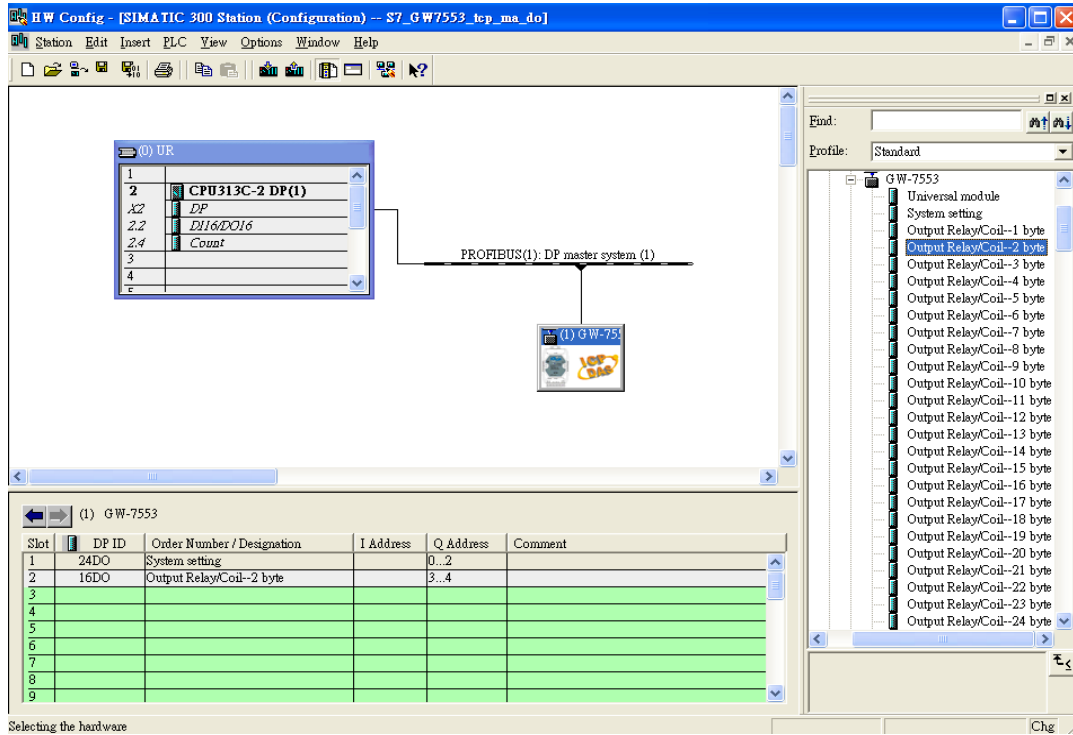
The screenshot shows the HW Config window after adding a System module to the GW-7553 module. The rack configuration remains the same as in the previous step.

Slot	Order Number / Designation	I Address	Q Address	Comment
1				
2				
3				
4				
5				
6				
7				
8				
9				

The right-hand pane shows the module's configuration tree, including 24 output relays (Output Relay/Coil-1 byte to Output Relay/Coil-24 byte).

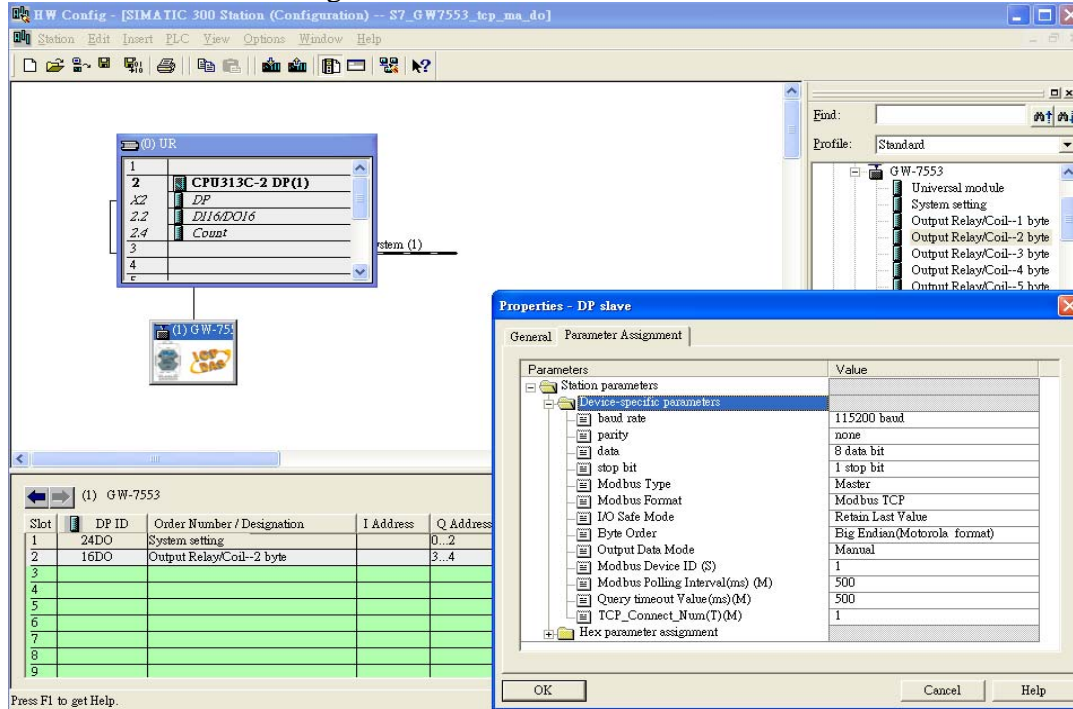
Slot	Order Number / Designation	I Address	Q Address	Comment
1				
2	24DSystem setting		0..2	
3				
4				
5				
6				
7				
8				
9				

3. Add “Output Relay/Coil—2 byte” module



Step 2: Set the parameters of the GW-7553

1. Double click GW-7553 icon
2. Select “Parameter Assignment”



3. Set common parameters of the GW-7553

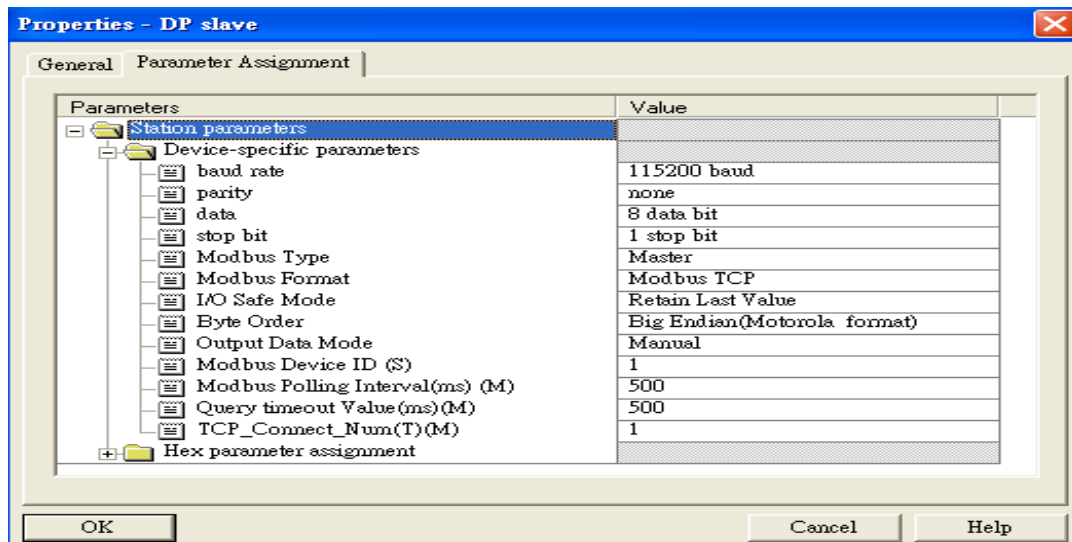
Common parameters →

Baud rate: 115200; Parity: none; Data: 8 data bit; Stop bit: 1 stop bit; Modbus type: **Master**

Modbus Format: **Modbus TCP**; I/O Safe Mode: Retain Last Value; Byte Order: **Big Endian**

Output Data Mode: Manual; Modbus Device ID (S): 1; Modbus Polling Interval(ms) (M): 500

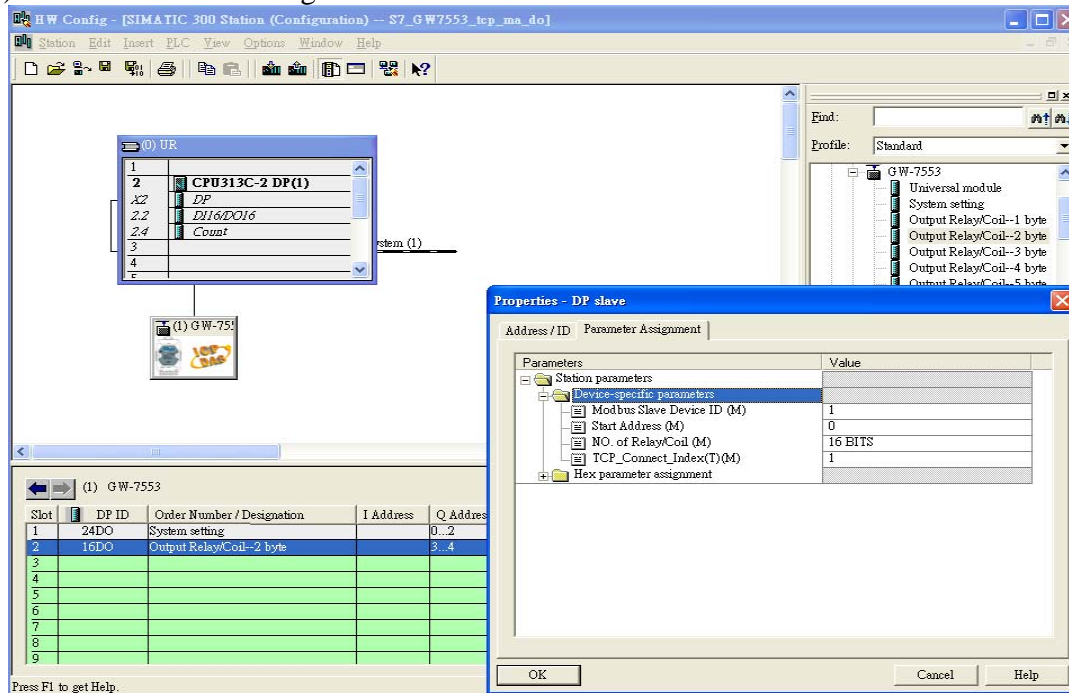
Query timeout value(ms)(M): 500; TCP_connect_Num(T)(M): 1



4. Set module parameters of the GW-7553

(1) Double click “Output Relay/Coil—2byte ” module

(2) Select “Parameter Assignment”



5. Setup "Output Relay/Coil—2byte " module parameters

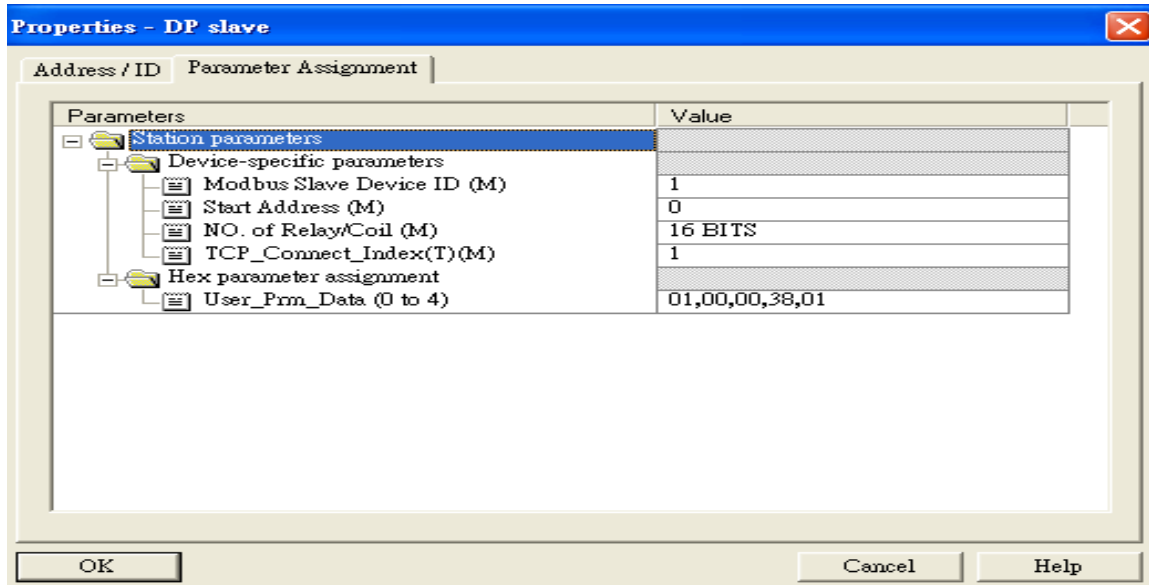
Module parameters→

Modbus Slave Device ID: 1

Slave Address: 0 (Protocol address (base 0))

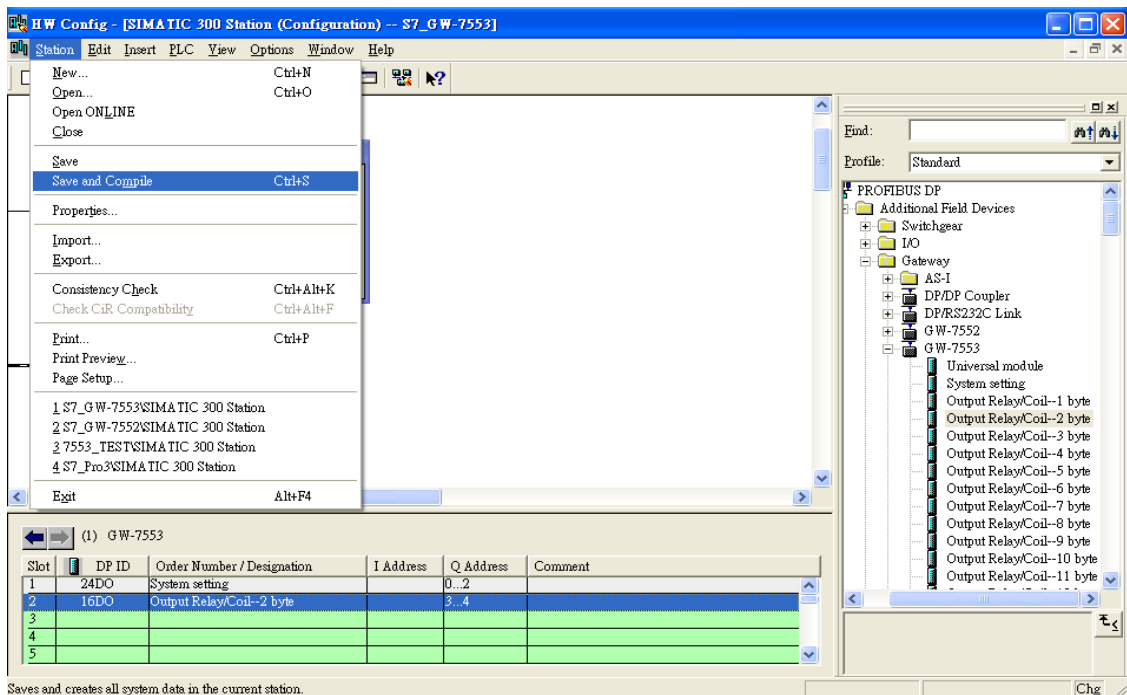
NO. of Relay/Coil(M):16 Bits

TCP_Connect_Index(T)(M): 1

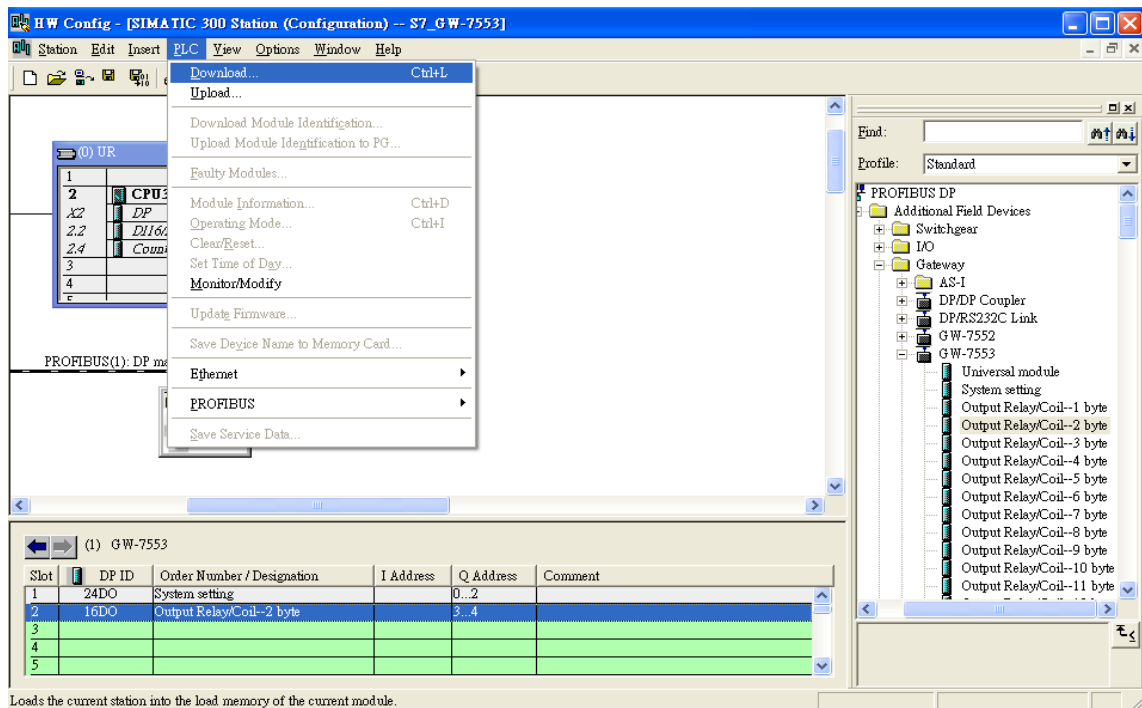


Step 3: Download the HW settings into SIMATIC PLC

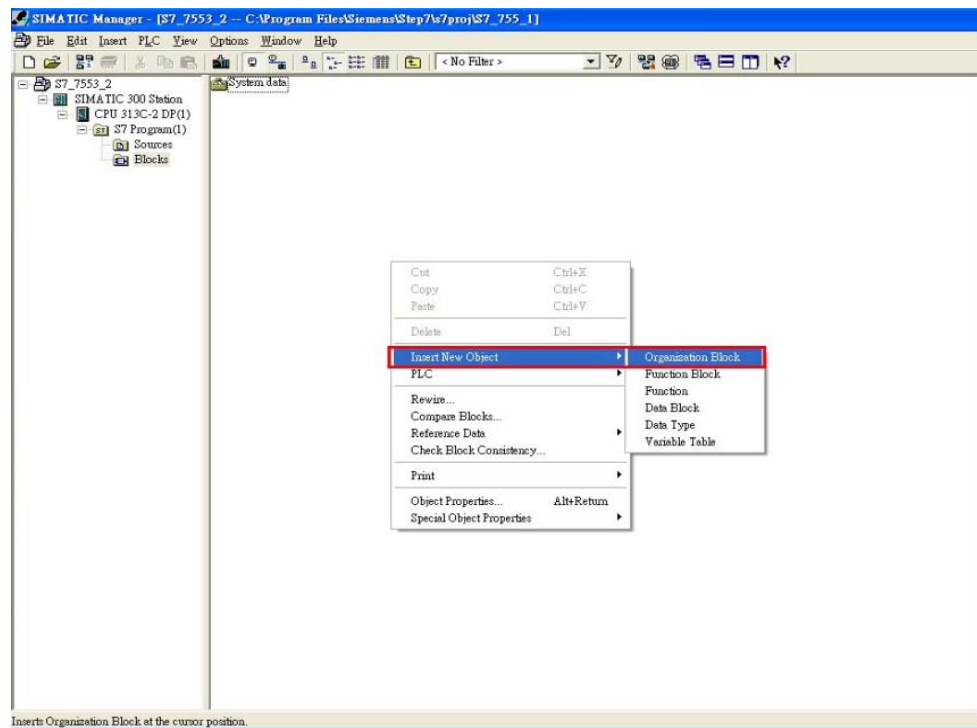
1. Save and Compile

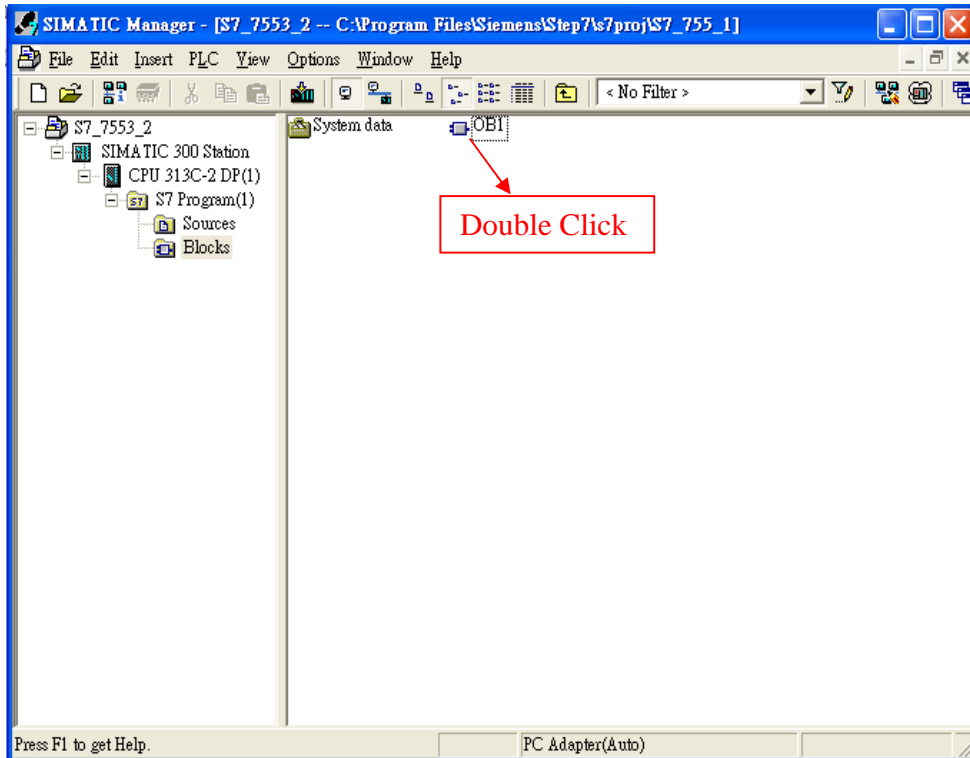
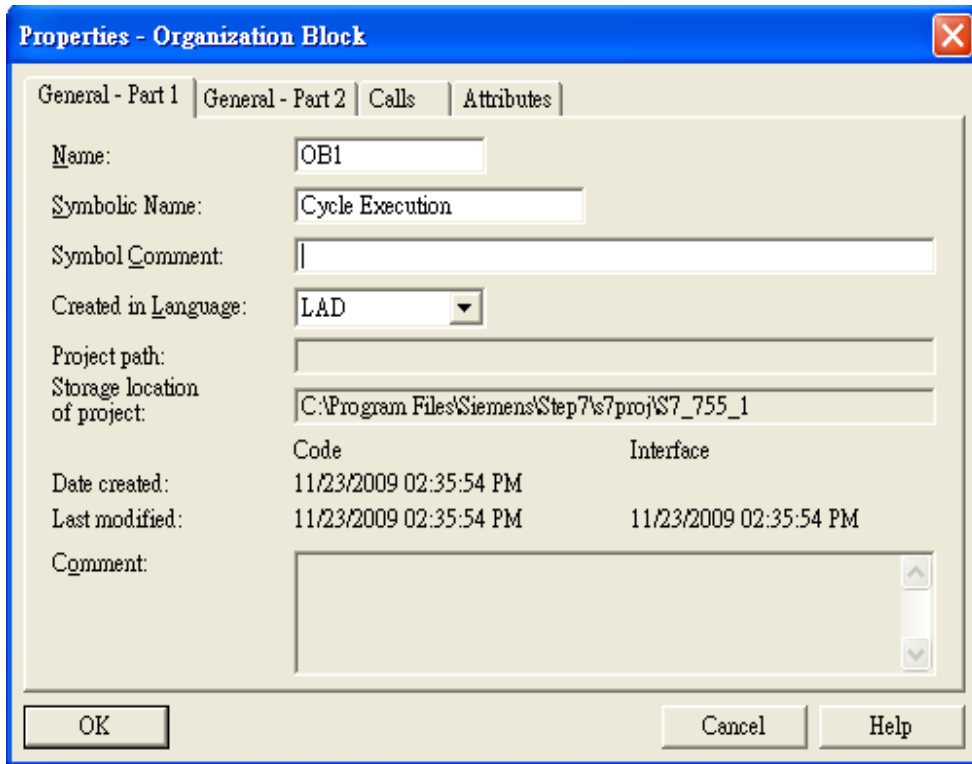


2. Download HW setting into STEP7



Step 4: Insert a new Organization Block (OB1)





Step 5: Edit OB1

Variables used in the example LD Program:

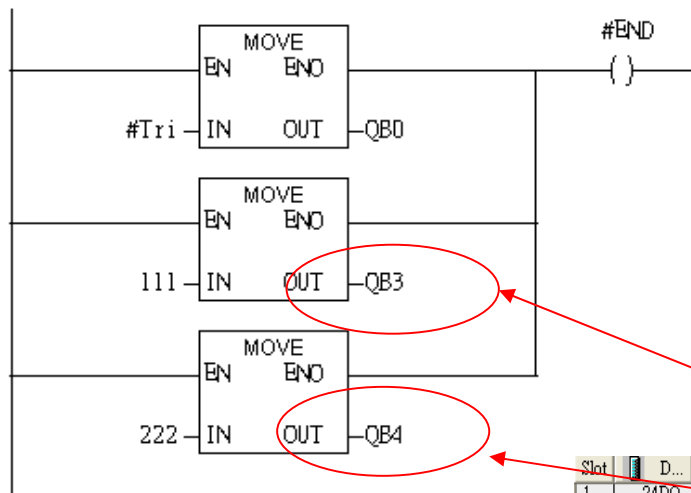
Contents Of: 'Environment\Interface\TEMP'				
	Name	Data Type	Address	Comment
OB1_PREV_CYCL	END	Bool	20.0	
OB1_MIN_CYCL	Tri	Int	22.0	
OB1_MAX_CYCL				
OB1_DATE_TYM				
END				

OB1 : "Main Program Sweep (Cycle)"

PROFIBUS slave
Modbus master

Network 1 : QB0 add "1: then PLC will send QB3 & QB4 out.

2 byte 16DO

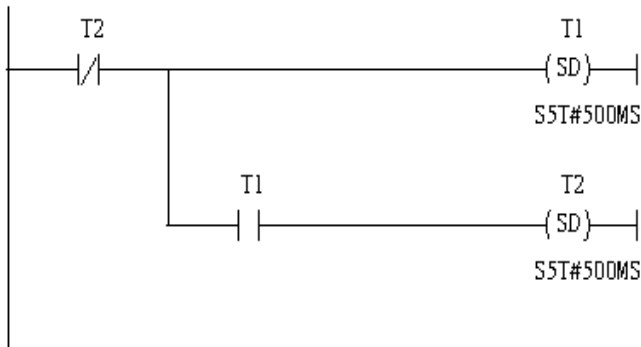


Slot	D...	Order Number / Designation	I Address	Q Address
1	24DO	System setting		0..2
2	16DO	Output Relay/Coil--2 byte		3..4
3				
4				
5				

Using T2 trigger T1. C1 and Tri will add 1 every 1s.

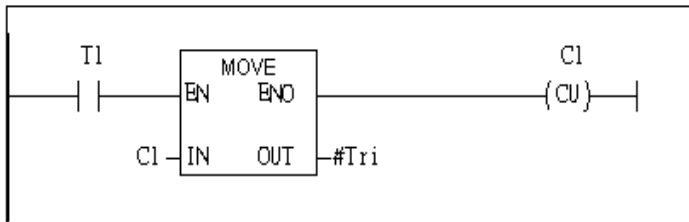
Network 2 : Timer T1 & T2

Using T2 trigger T1



Network 3 : Counter C1

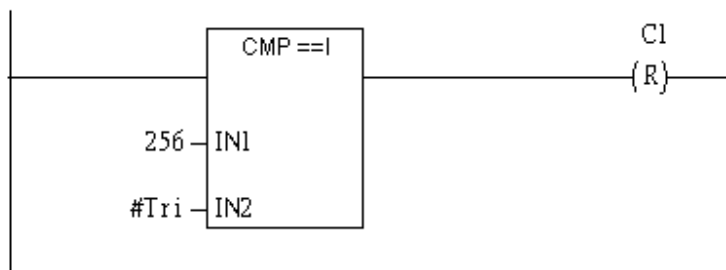
If counter(C1) add "1" and Tri will add "1" , too .



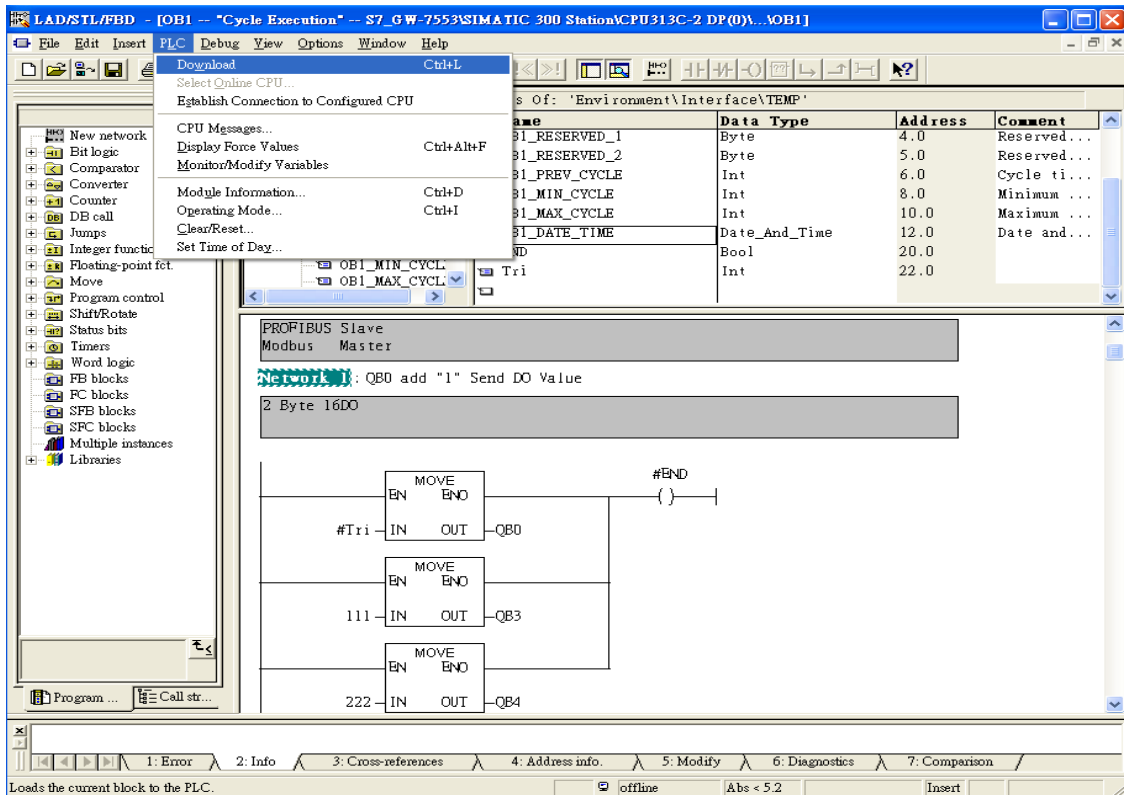
If Tri is equal to 256 then reset counter (C1)

Network 4 : Compare Tri & 256

If Tri is equal to 256 ,C1 will reset.



Step 6: Download the settings into SIMATIC PLC

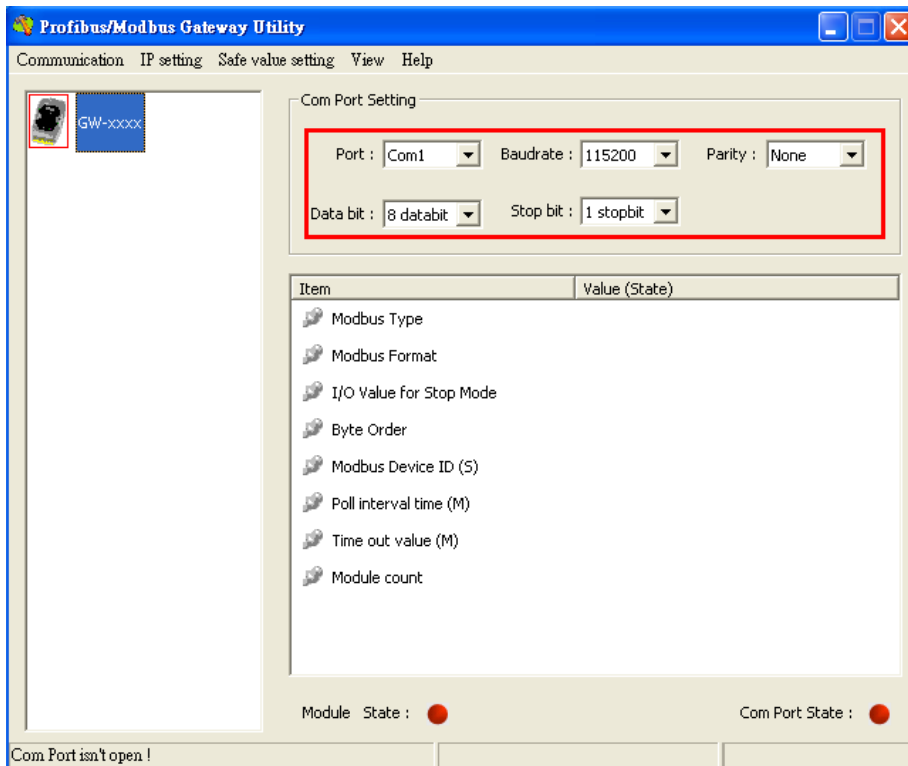


Step 7: Make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at setting mode.

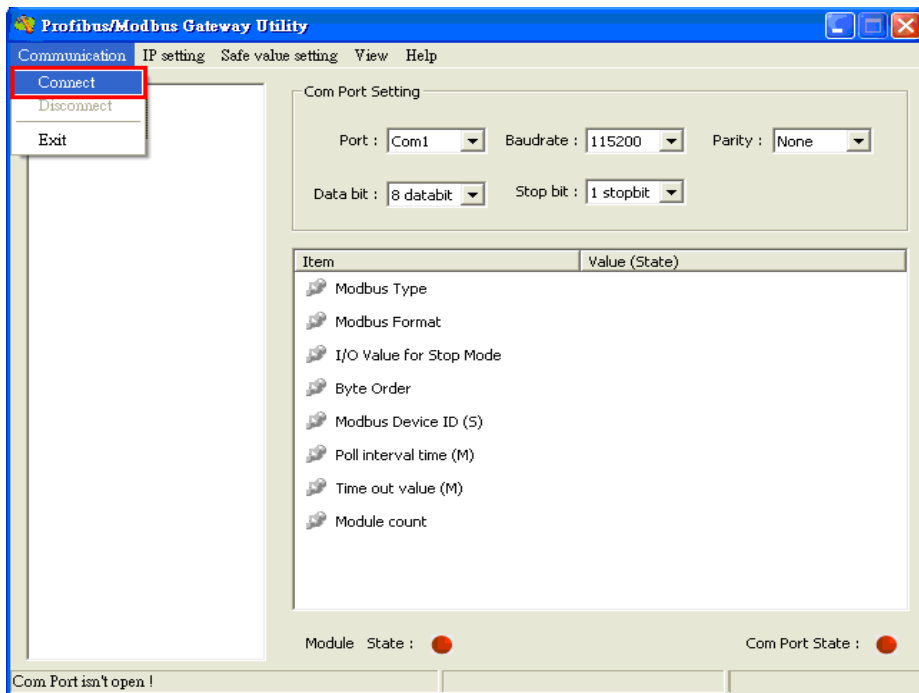


Step 8: Connect with GW-7553 and Utility

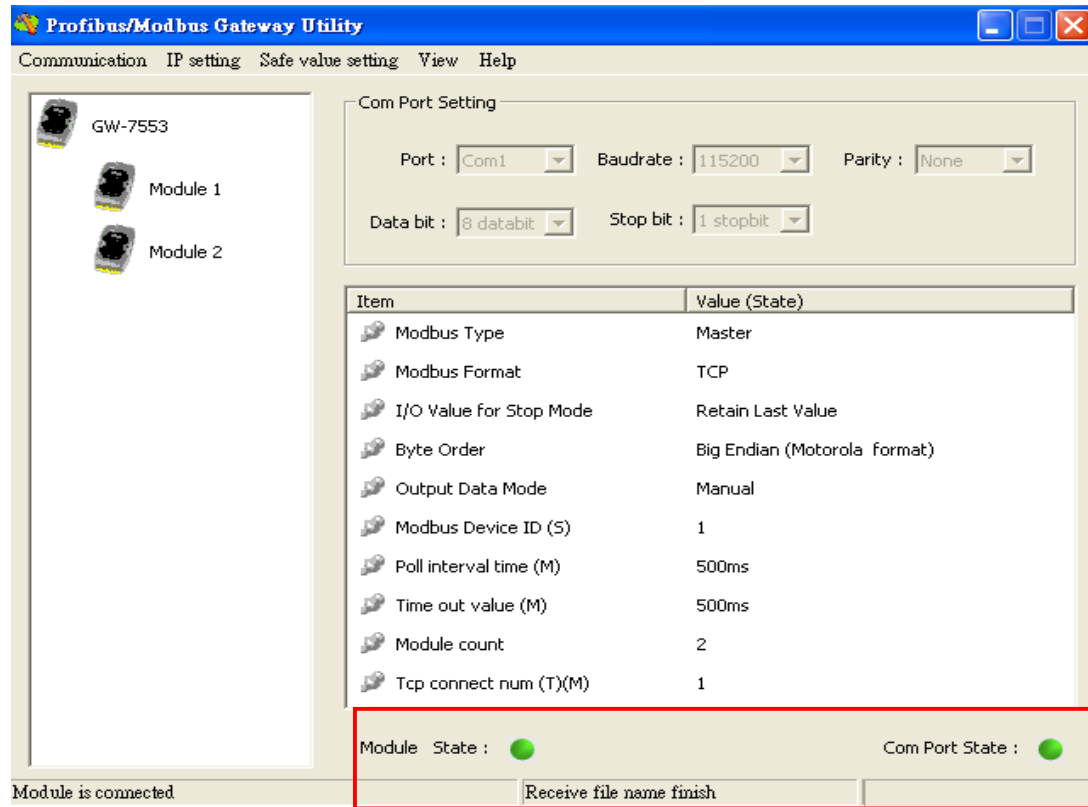
1. Set the Com Port Setting of the Utility



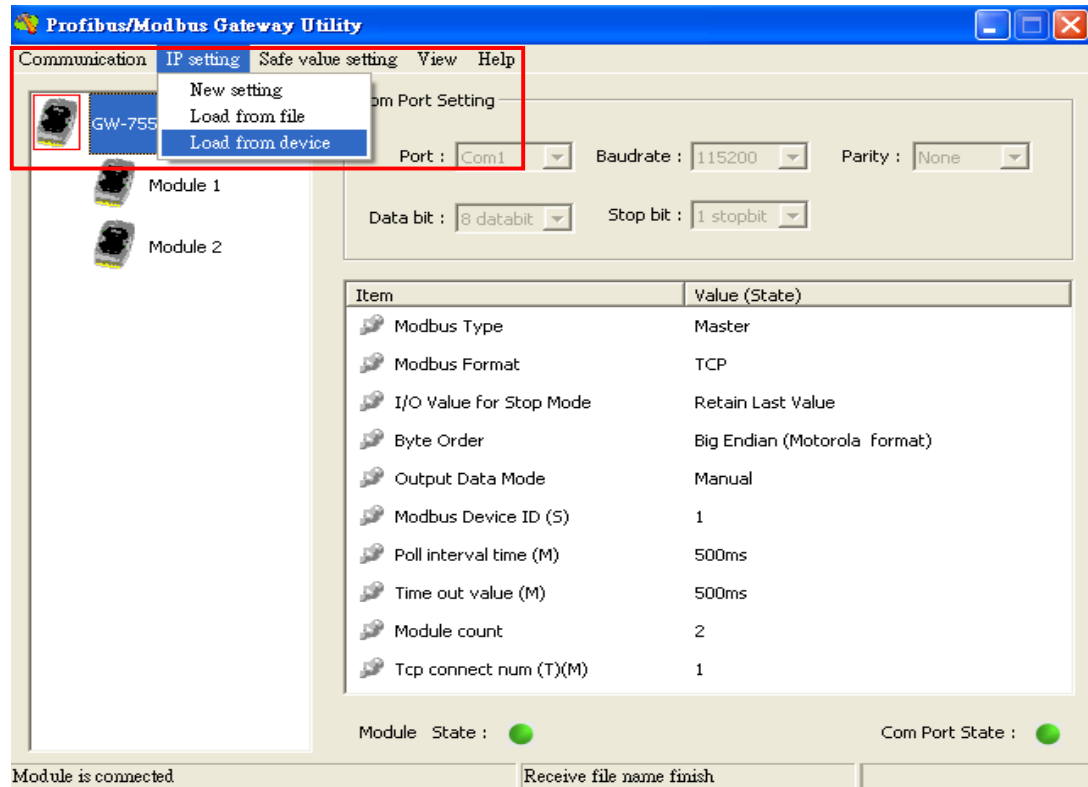
2. Click connect



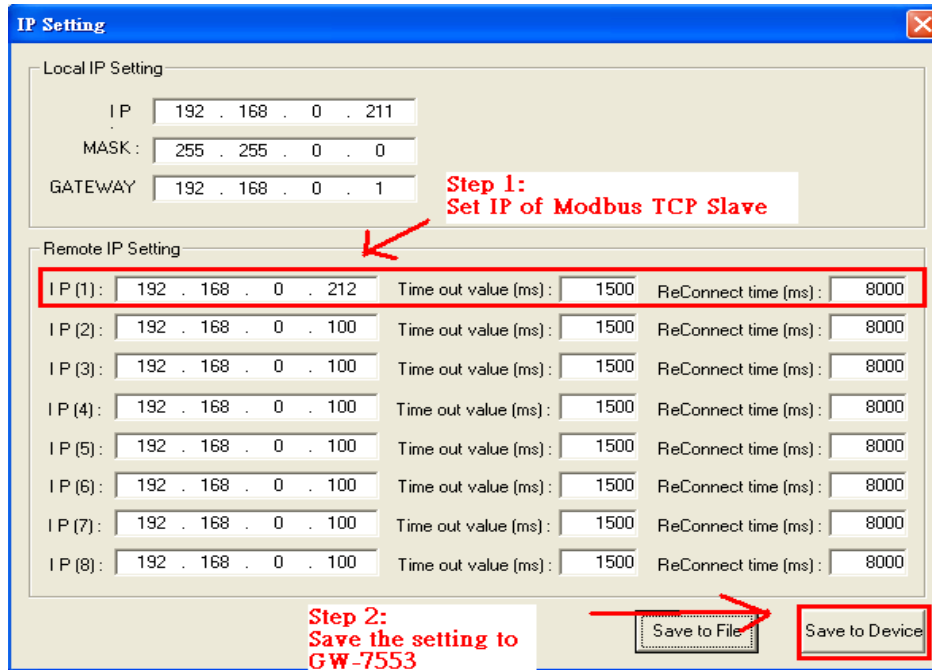
3. Connection success



4. Click IP setting→Load from device to show IP setting dialog



5. Set the IP of the Modbus TCP Slave and click “Save to Device” button to save the settings.



Step 9: Set the switch of the GW-7553 to normal mode then reset the power of GW-7553.



Now the setting procedure has been finished and the user can write the data to the Modbus DO module at address QB3 & QB4.

OB1 : "Main Program Sweep (Cycle)"

```
PROFIBUS slave
Modbus master
```

Network 1 : QB0 add "1": then PLC will send QB3 & QB4 out.

```
2 byte 16DO
```

