GW-7553 (Modbus TCP master)

example for SIMATIC STEP 7

Example 1:Reads DO module data from GW-7553(Modbus FC01).

Example 2: Reads DI module data from GW-7553(Modbus FC02).

Example 3: Reads AO module data from GW-7553(Modbus FC03).

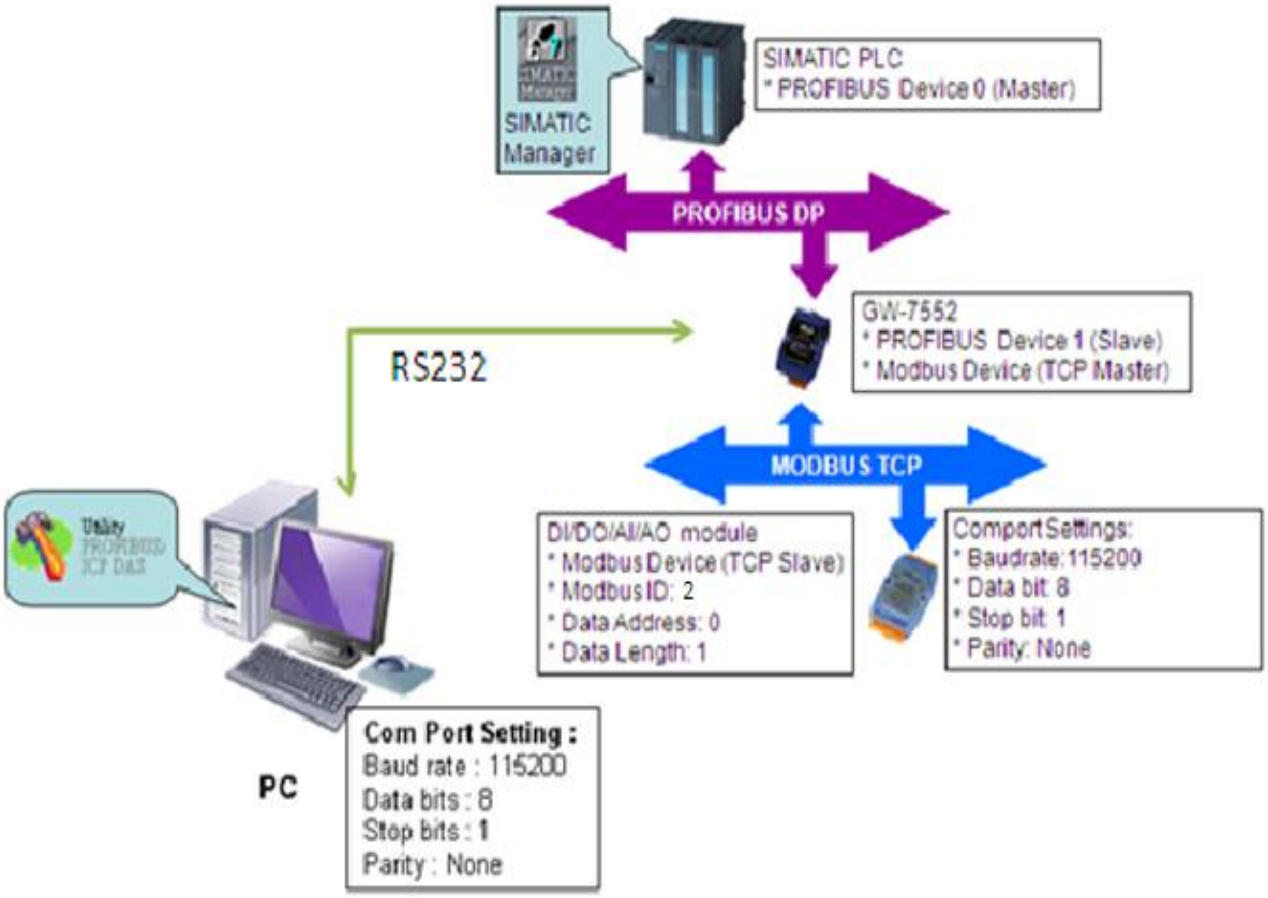
Example 4: Reads AI module data from GW-7553(Modbus FC04).

Example 5: Writes DO module data from GW-7553(Modbus FC05,15).

Example 6: Writes AO module data from GW-7553(Modbus FC06,16).

Example 1: PLC reads DO module data from GW-7553. (Modbus FC01)

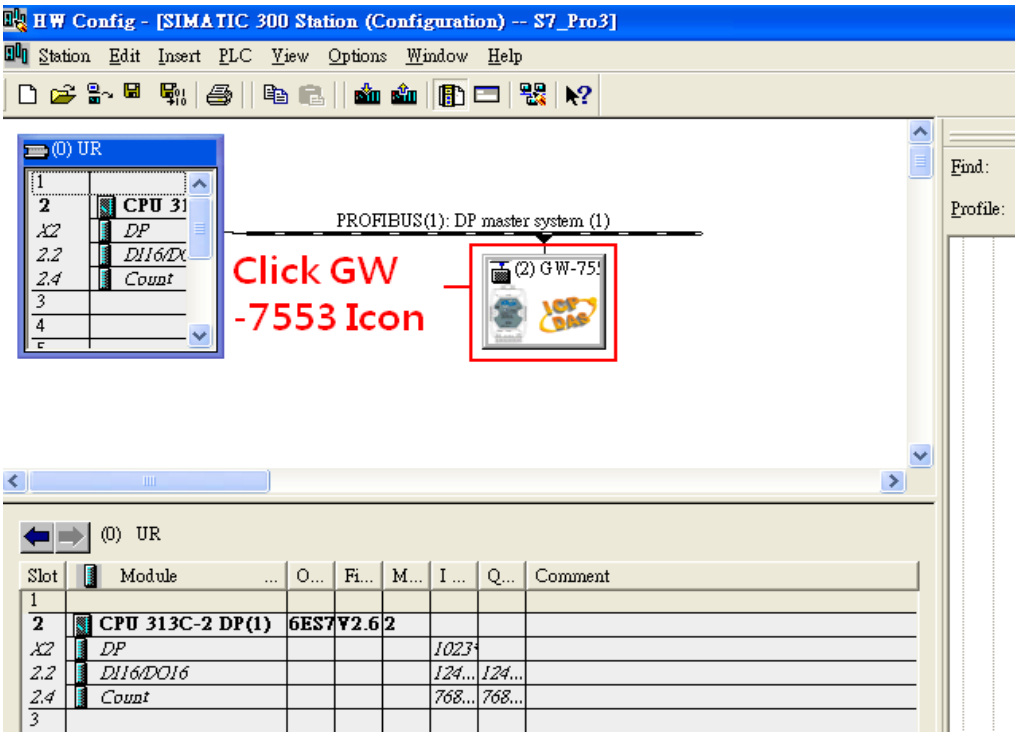
Read a Modbus TCP DO module (PROFIBUS Slave & Modbus TCP/Master)



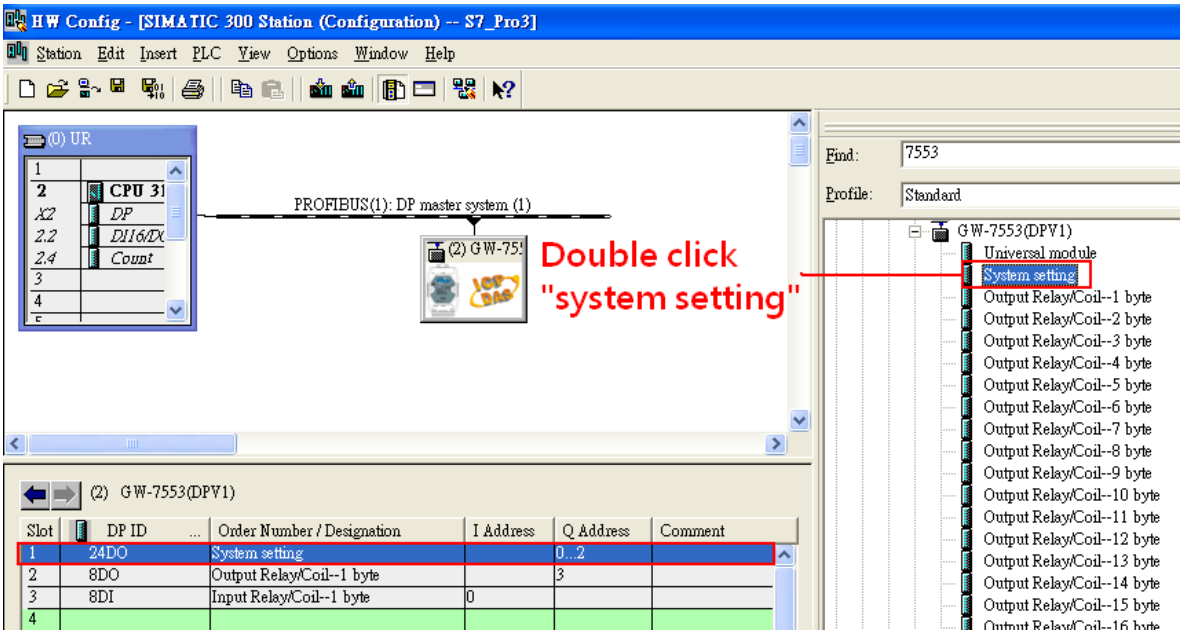
SIMATIC STEP7 Configuration:

Step 1: Setup the GW-7553 module

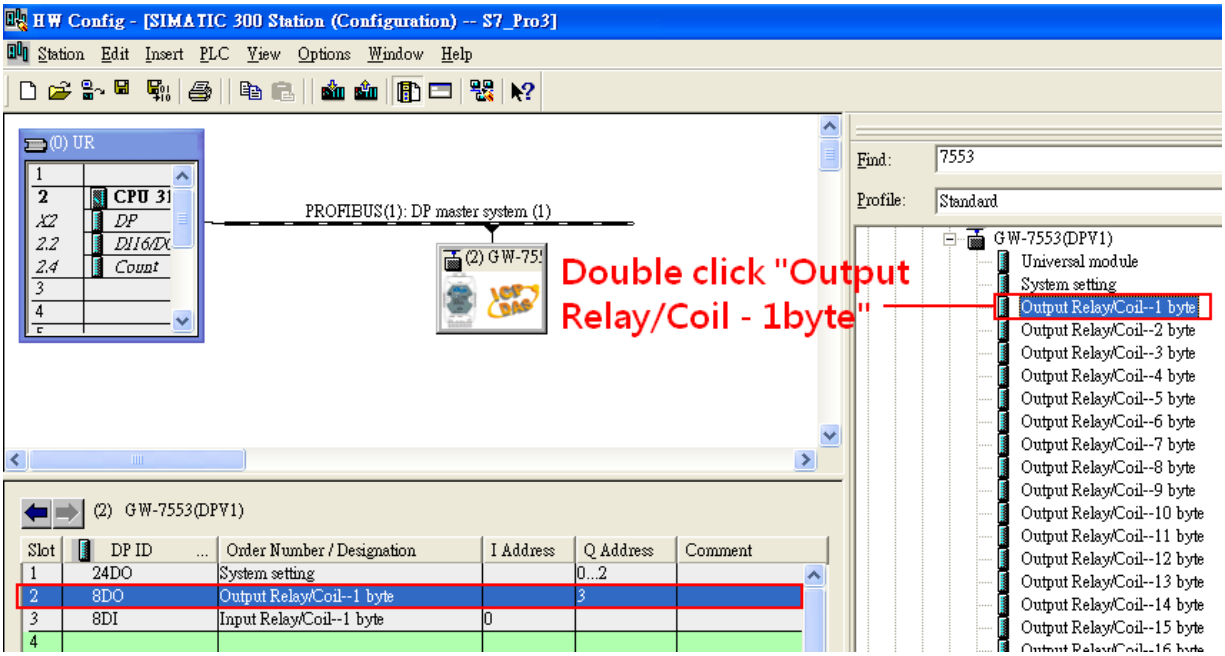
1. Select GW-7553 module

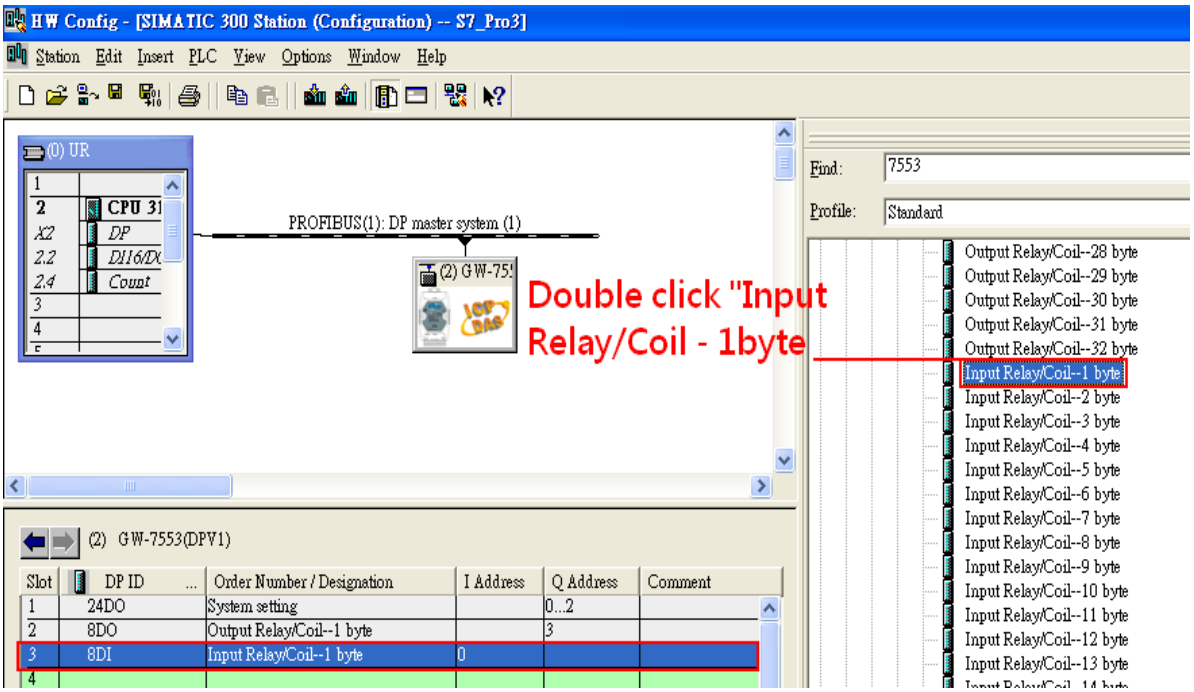


2. Add a System setting module



3. Add “Output Relay/Coil – 1 byte” and “Input Relay/Coil – 1byte”

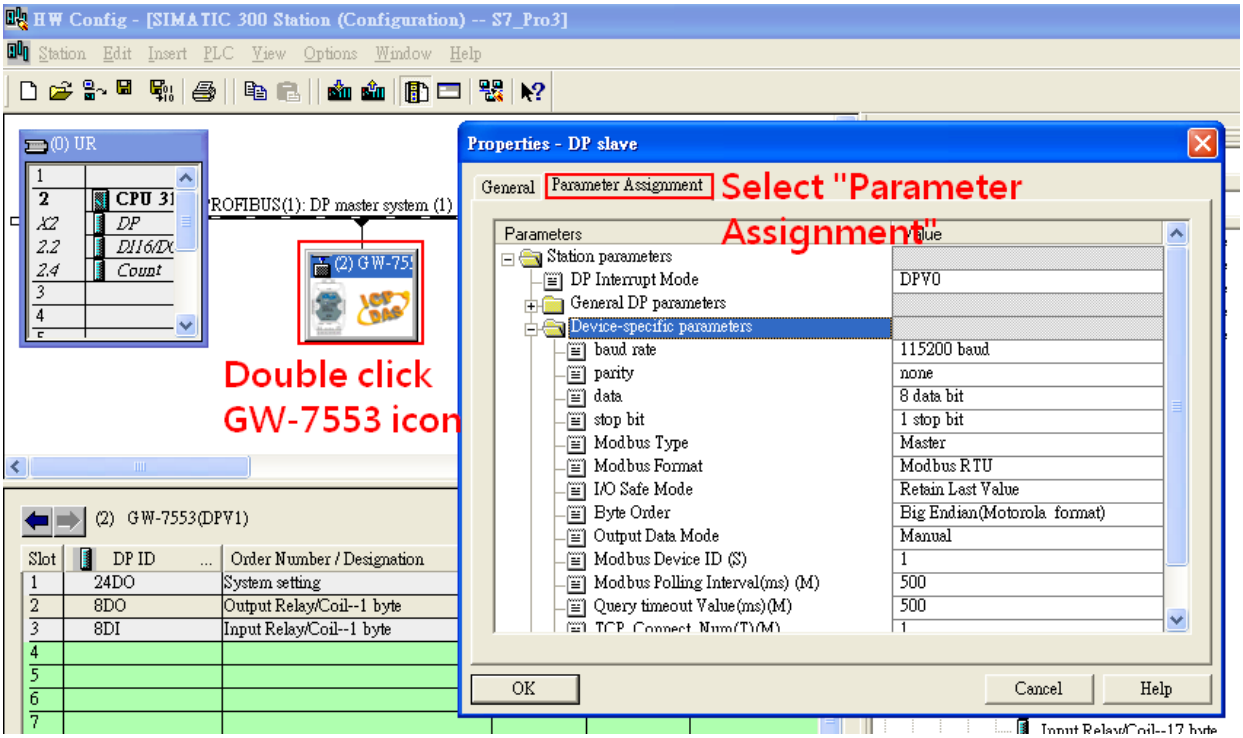




Step 2: Setup the parameters of the GW-7553

1. Double click GW-7553 icon

2. Select “Parameter Assignment”

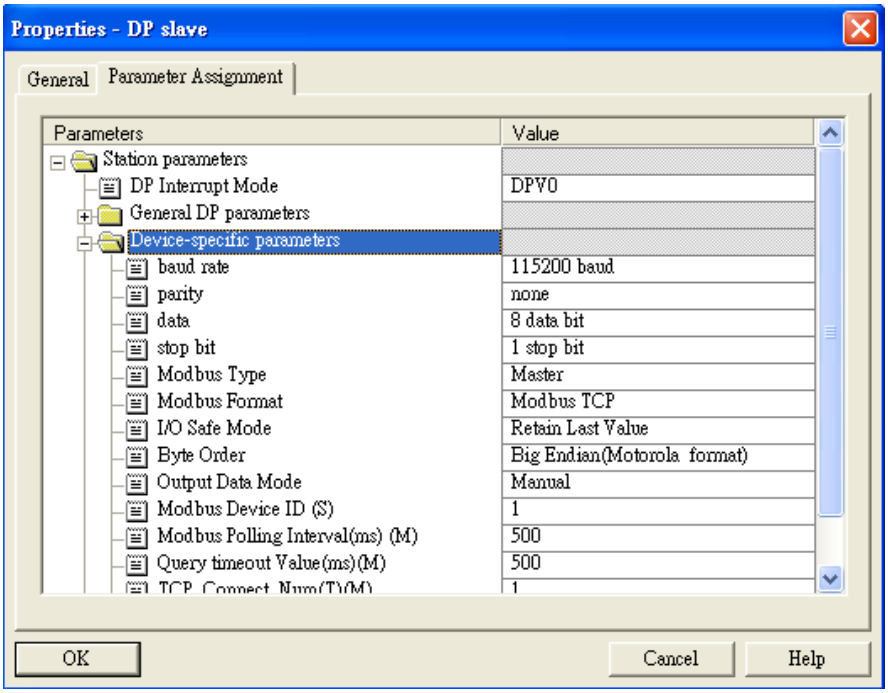


3. Set common parameters of the GW-7553

Common parameters➔

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

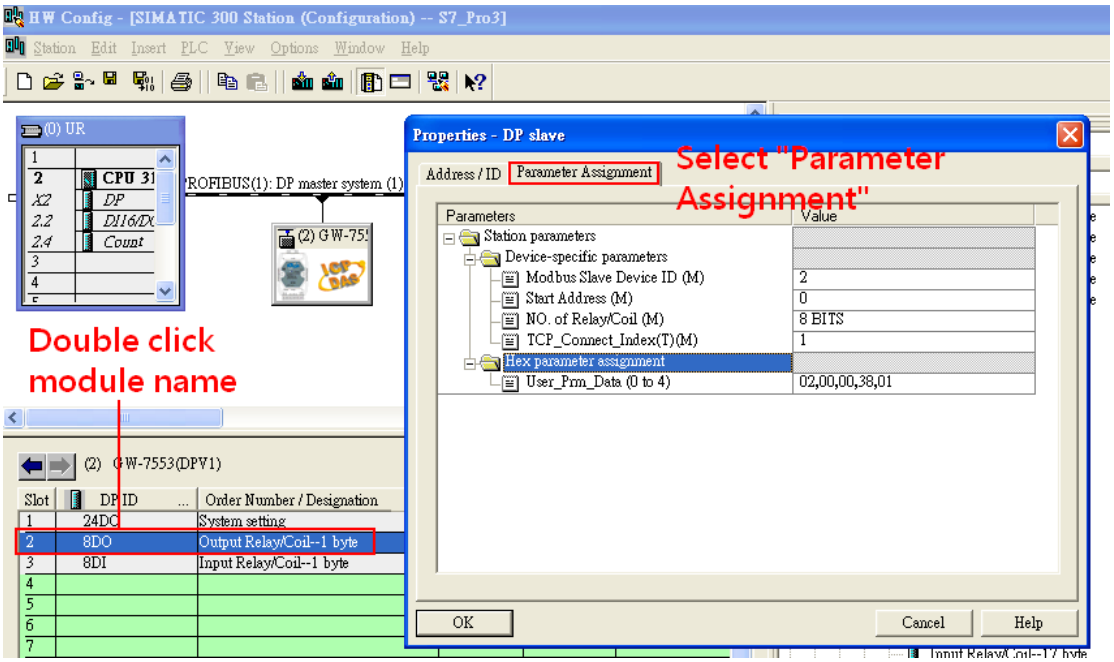
Modbus Format: Modbus TCP; Byte Order: Big Endian



4. Set module parameters of the GW-7553

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

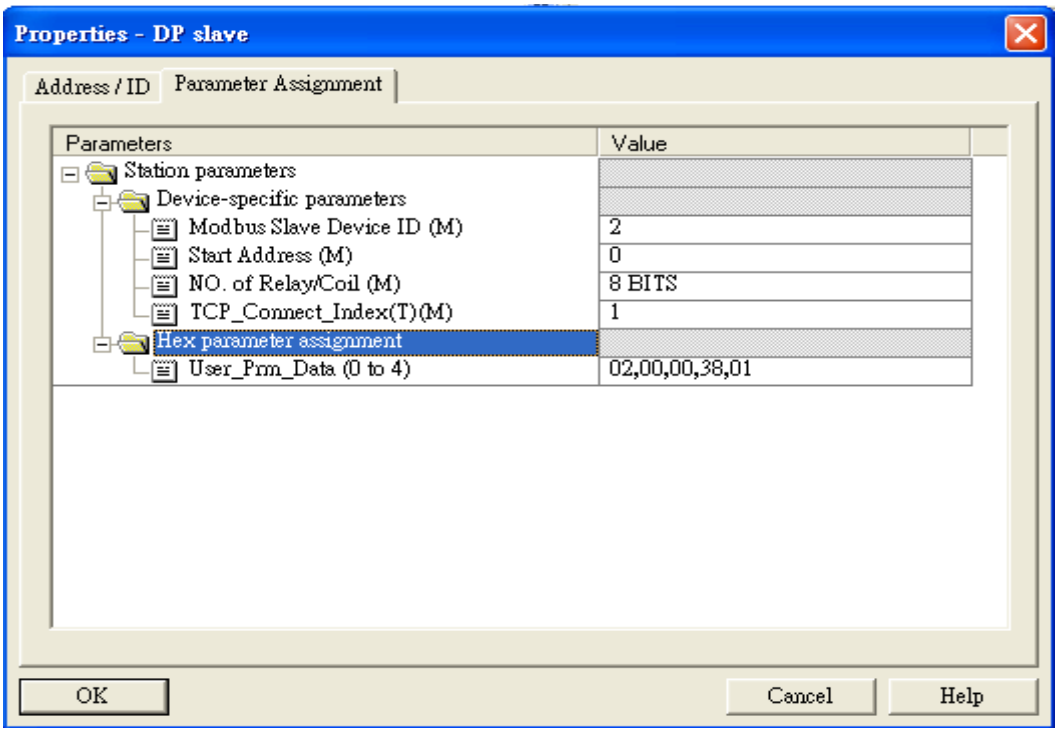
(2)Select “Parameter Assignment”



5. Setup “Output Relay/Coil – 1 byte” module parameter

Module parameters➔

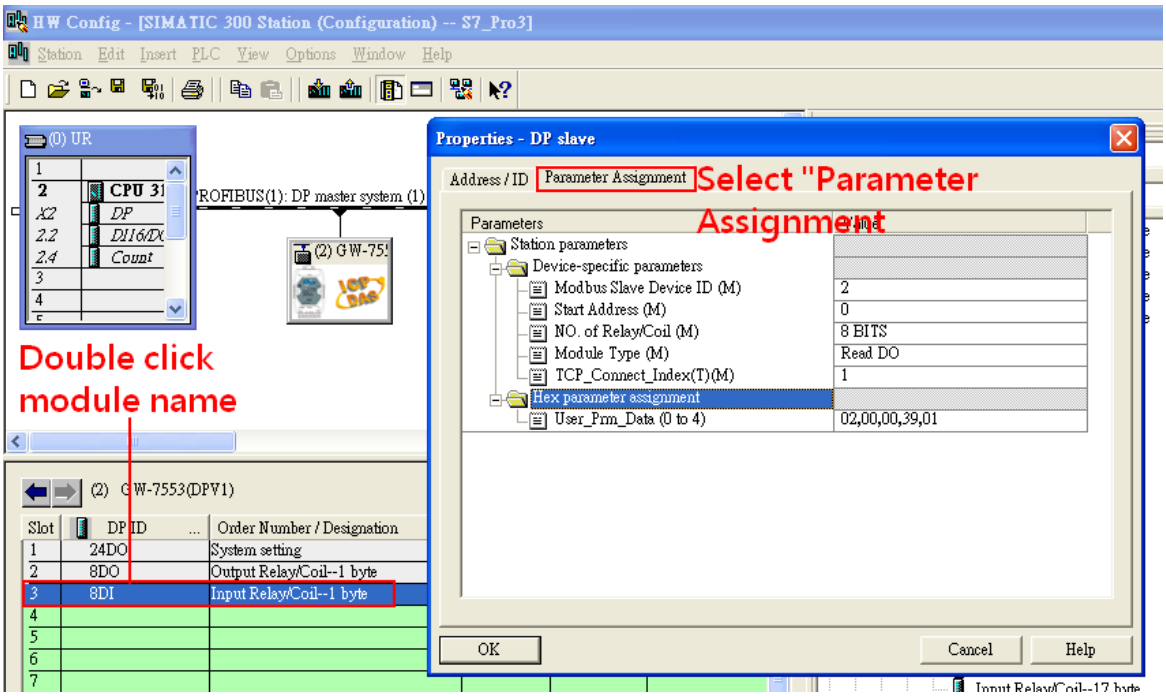
Modbus Slave Device ID: 2; Slave Address: 0 (Protocol address (base 0))



6. Set module parameters of the GW-7553

(1)Double click “Input Relay/Coil – 1 byte” module

(2)Select “Parameter Assignment”

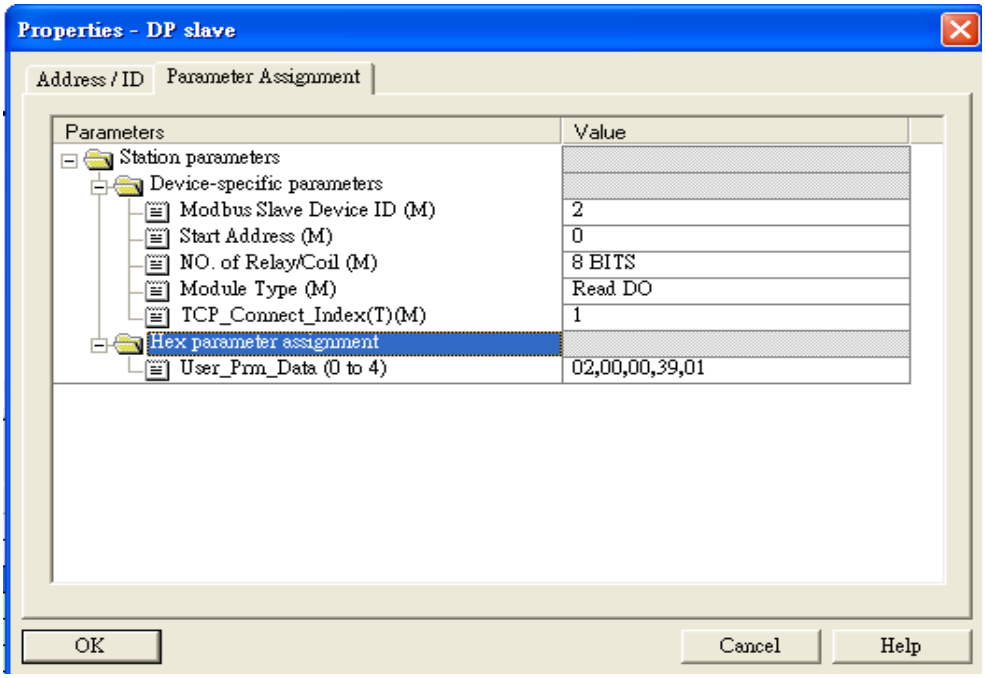


7. Setup “Input Relay/Coil – 1 byte” module parameter

Module parameters➔

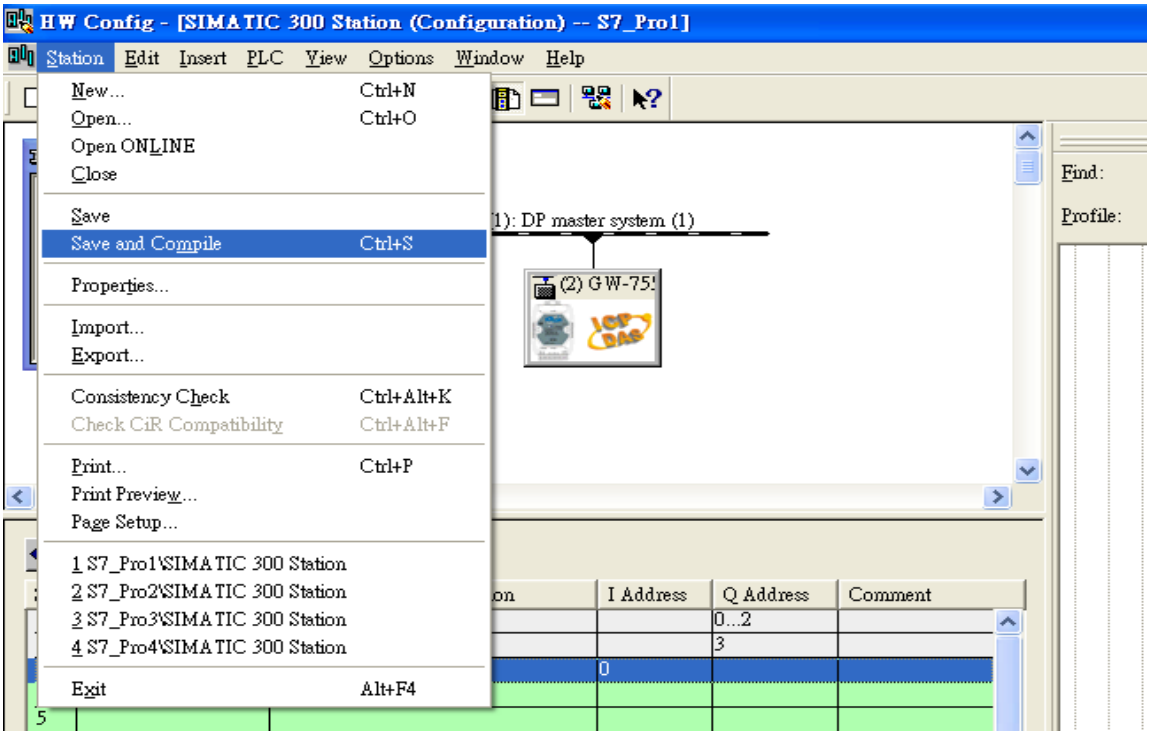
Modbus Slave Device ID: 2; Slave Address: 0 (Protocol address (base 0))

Module Type: Read DO, click ok.

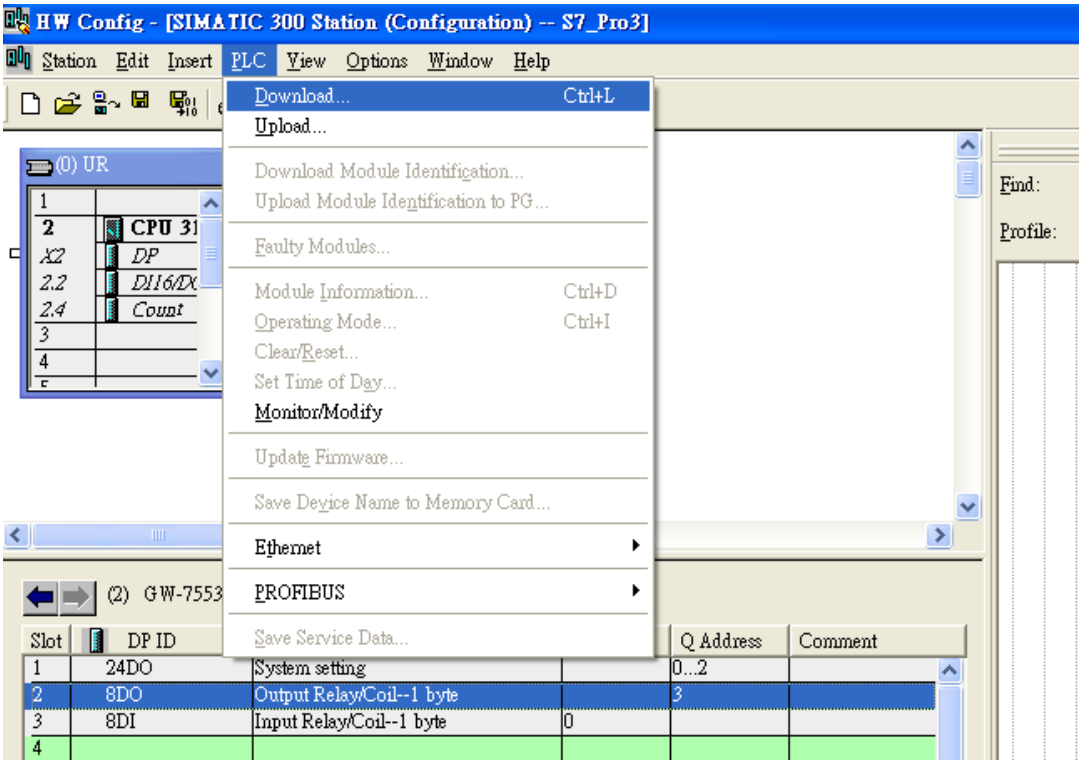


Step 3: Download the HW settings into SIMATIC PLC

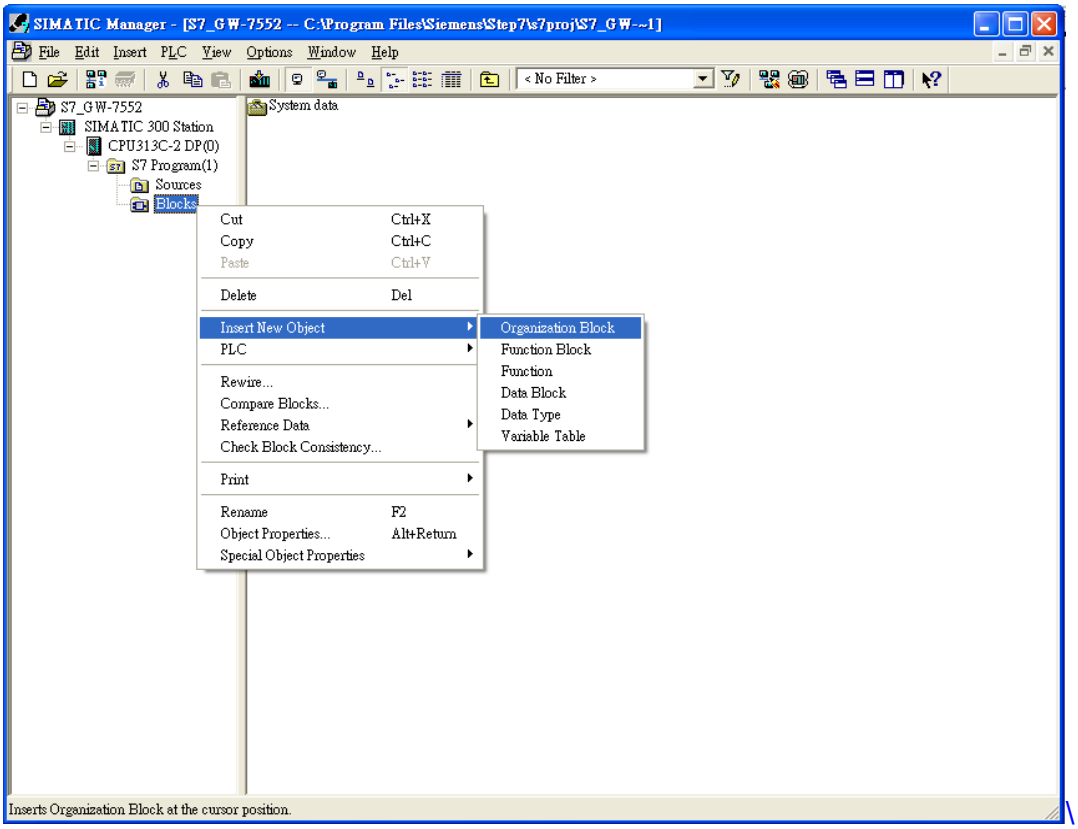
1. Save and Compile

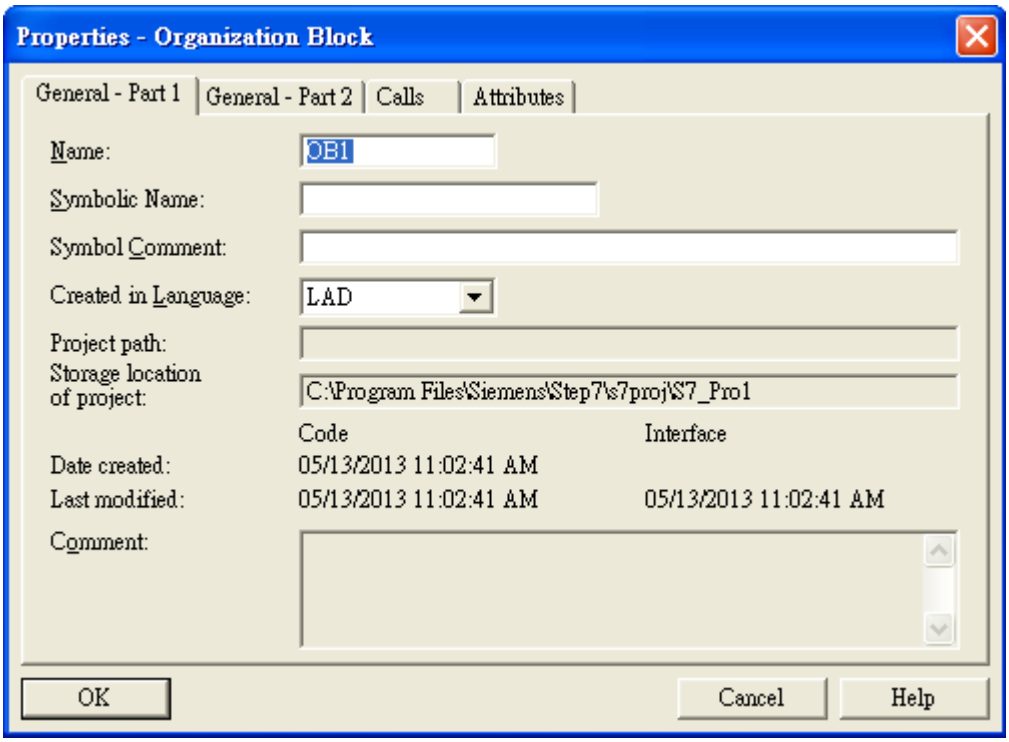


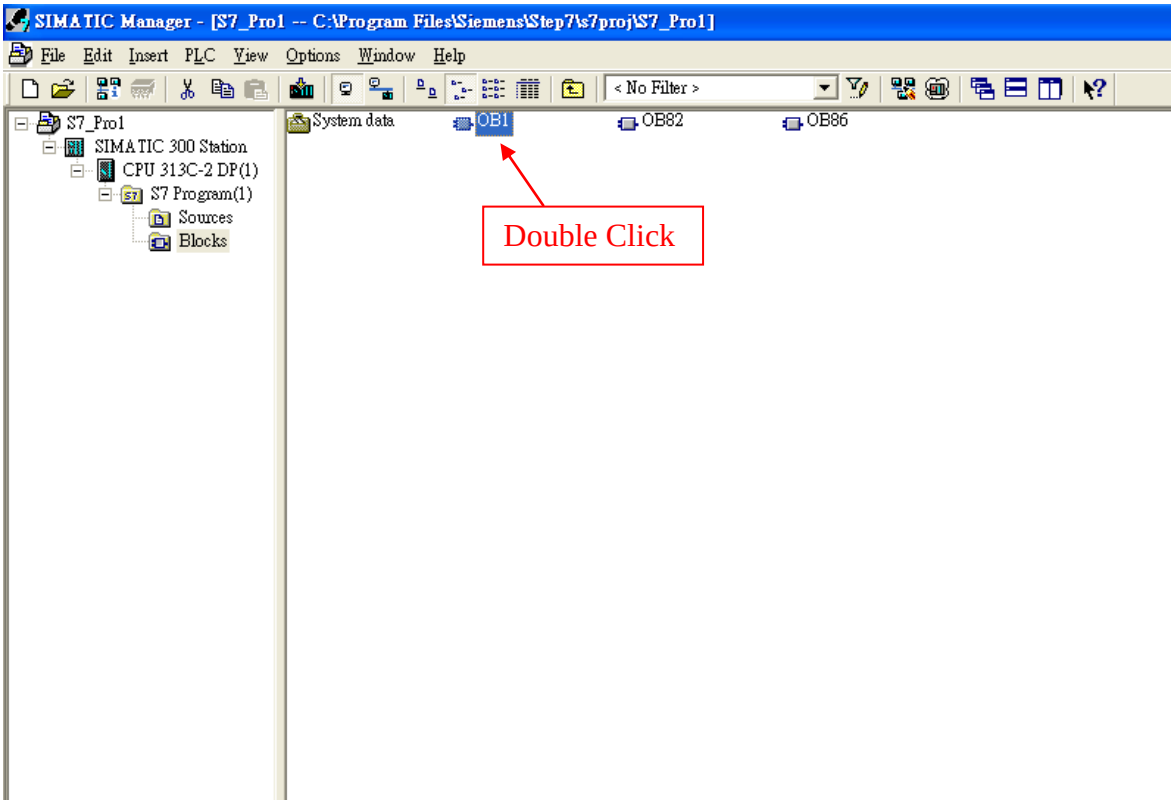
2. HW settings into SIMATIC PLC



Step 4: Insert a new Organization Block (OB1,OB82,OB86)







Step 5: Edit OB1

Variables used in the example LD Program:

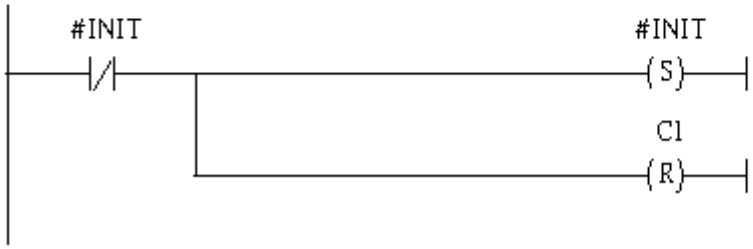
Name	Data Type	Address	Comment
END	Bool	20.0	
INIT	Bool	20.1	
Tri	Int	22.0	
DIValue	Byte	24.0	

OB1 : "Main Program Sweep (Cycle)"

PROFIBUS Slave
Modbus Master

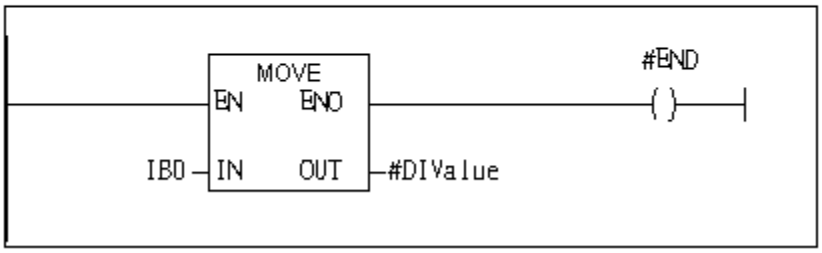
Network 1 : Reset Counter(C1)

Reset Counter (C1)



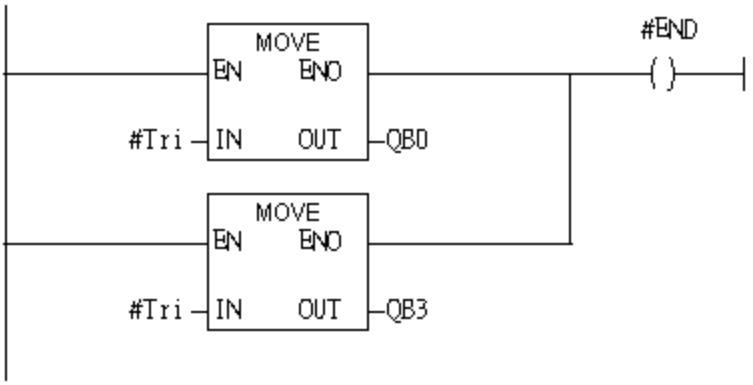
Network 2: Title:

Comment:



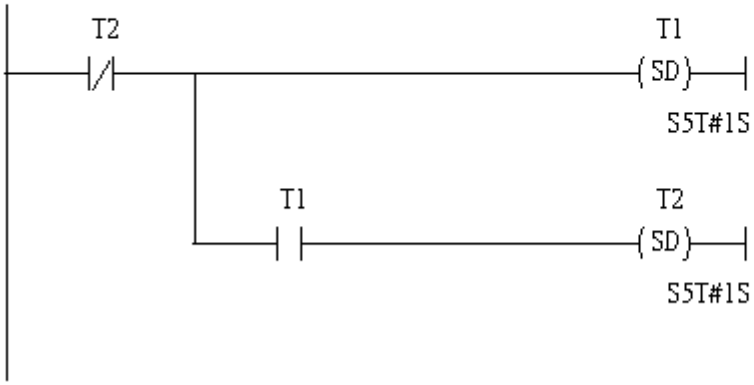
Network 3: QB0 add "1" then PLC will send QW3 out.

1 byte DO



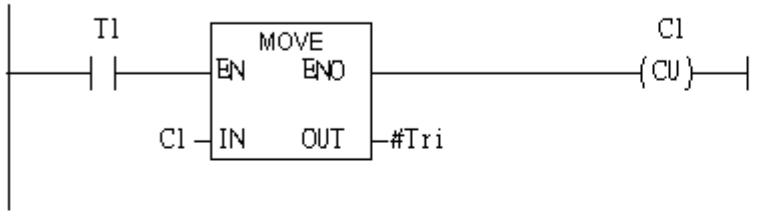
Network 4: Timer T1 & T2

Using T2 trigger T1



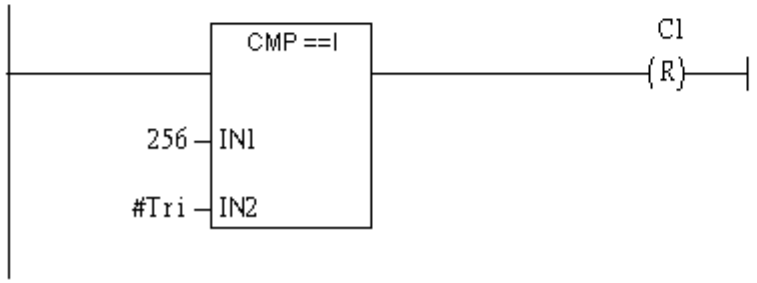
Network 5 : Counter C1

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

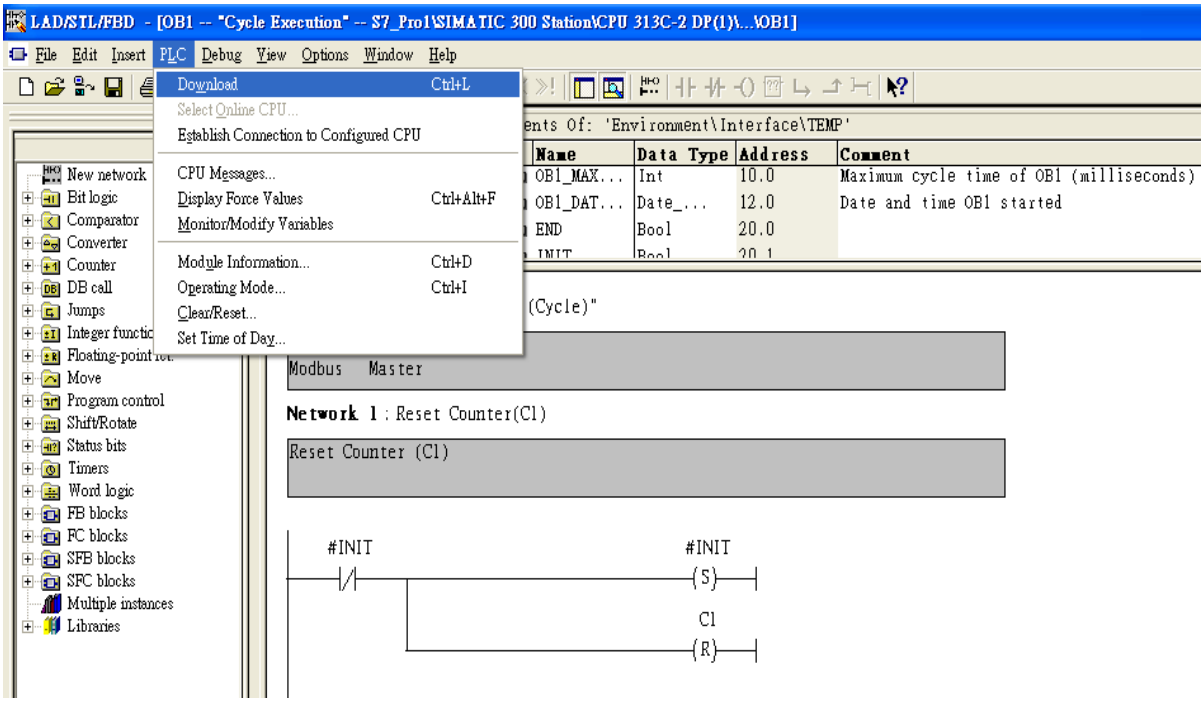


Network 6 : Compare Tri & 256

If Tri is equal to 256,C1 will reset



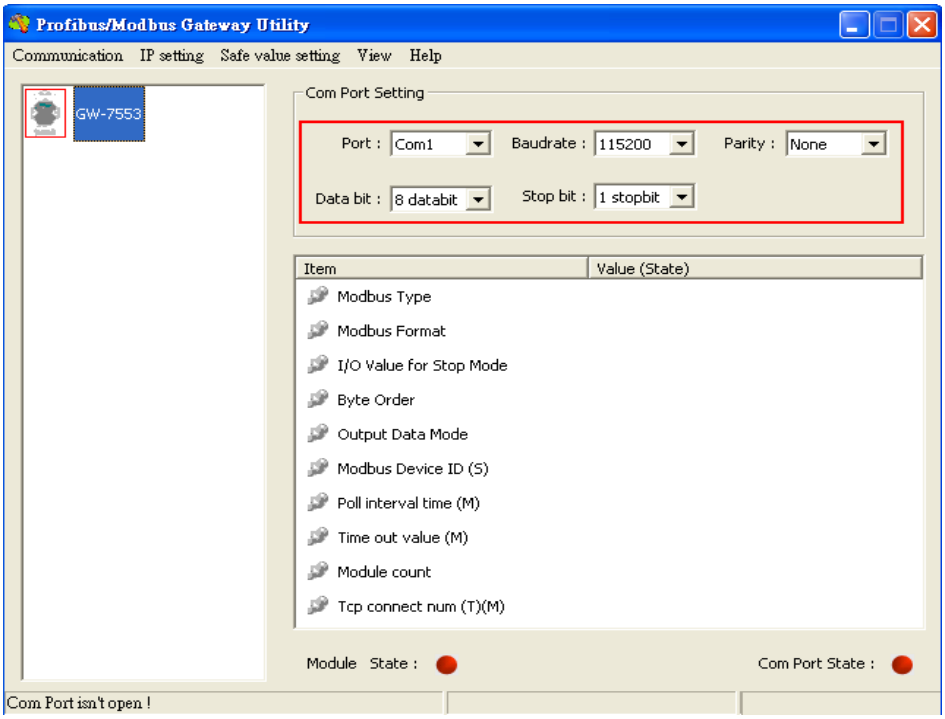
Step 6: Download the settings into SIMATIC PLC



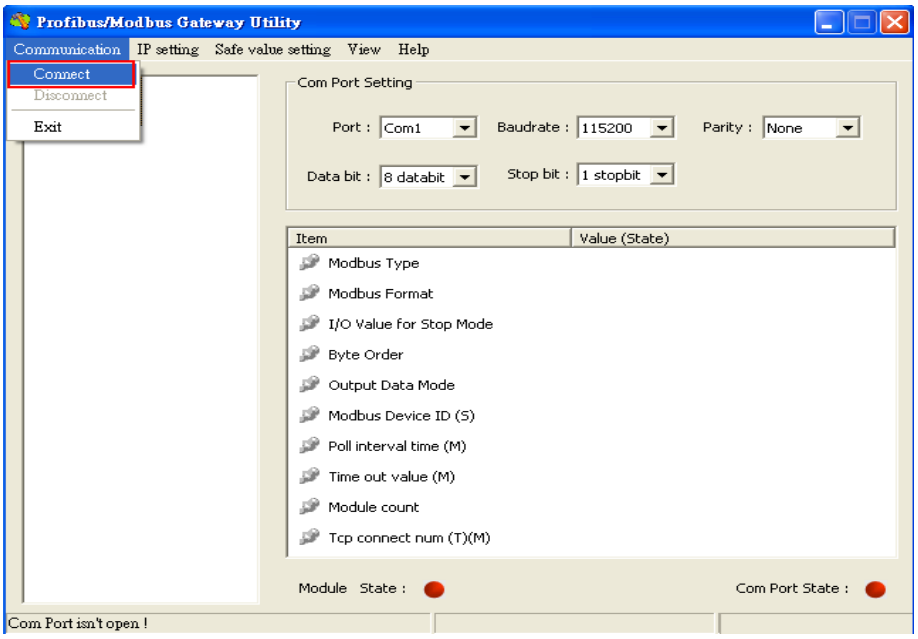
Step 7: Make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at Setting mode.

Step 8: Connect with GW-7553 and Utility

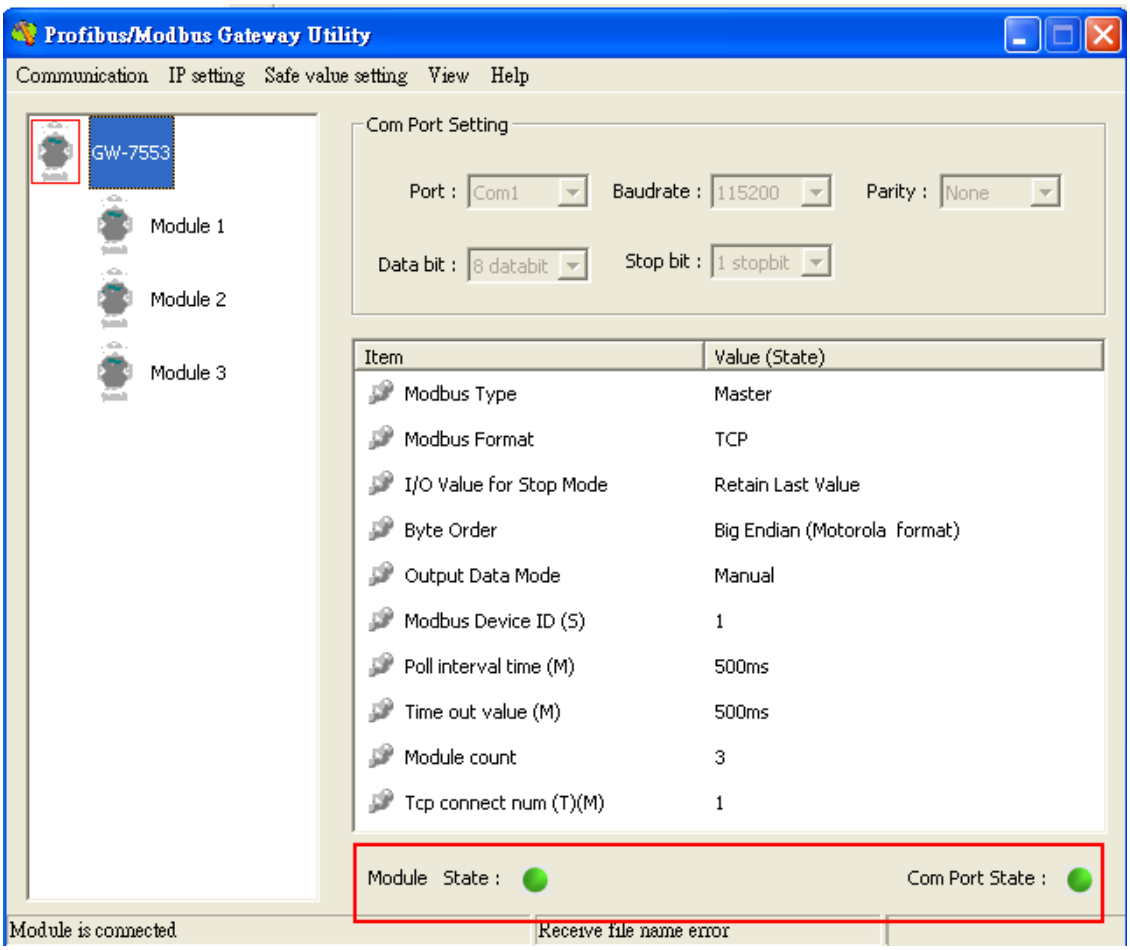
1. Set the Com Port Setting of the Utility



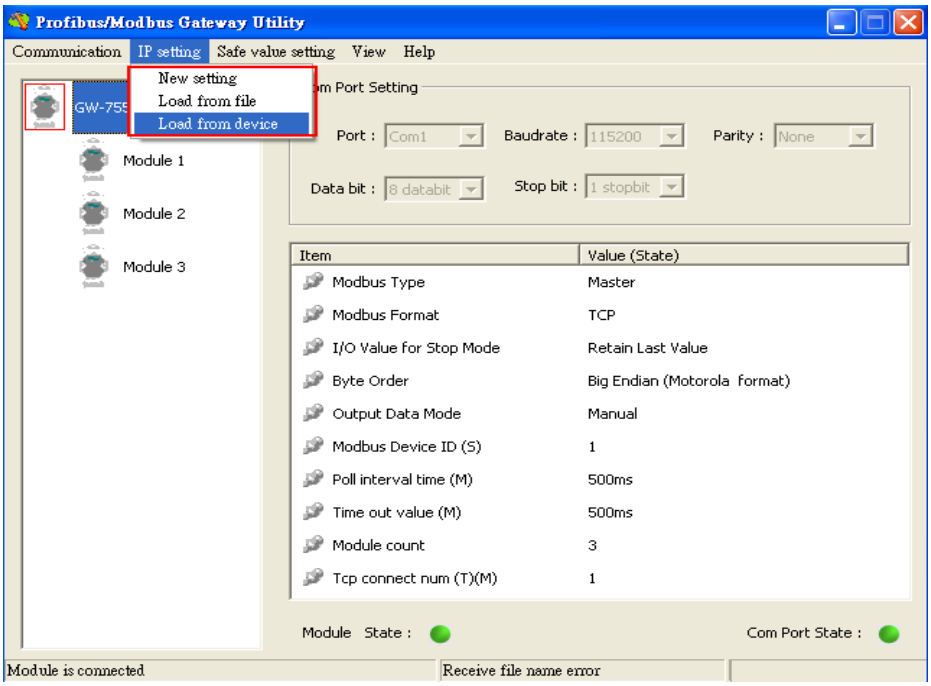
2.Click connect.



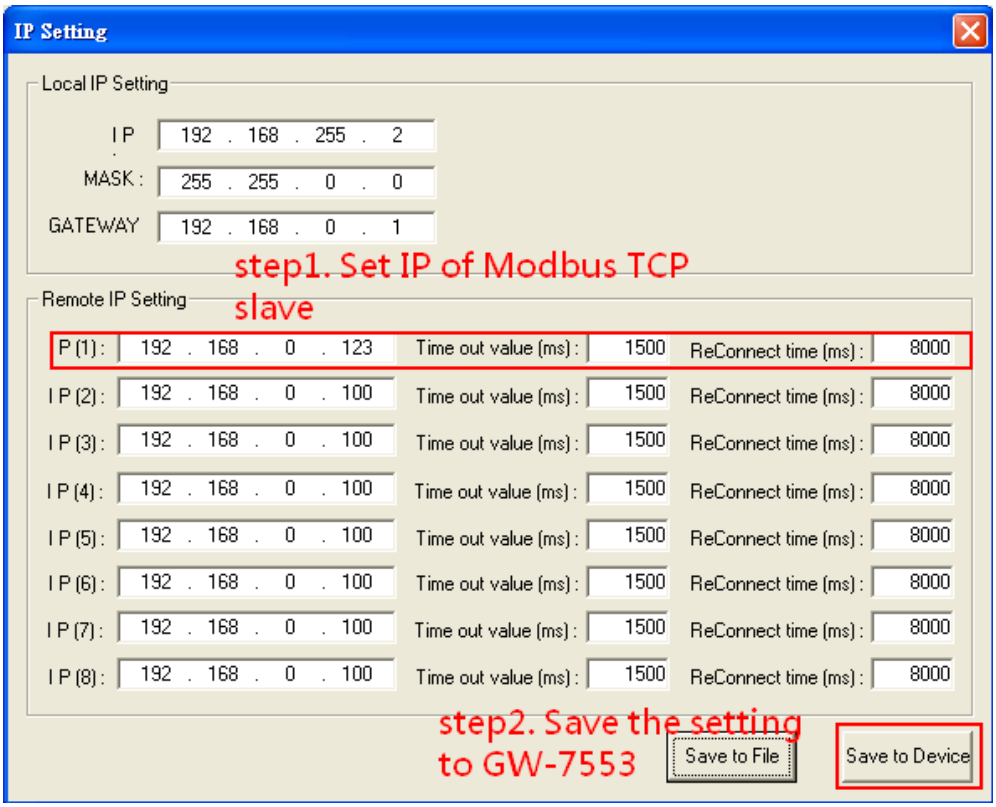
3. Connection success



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

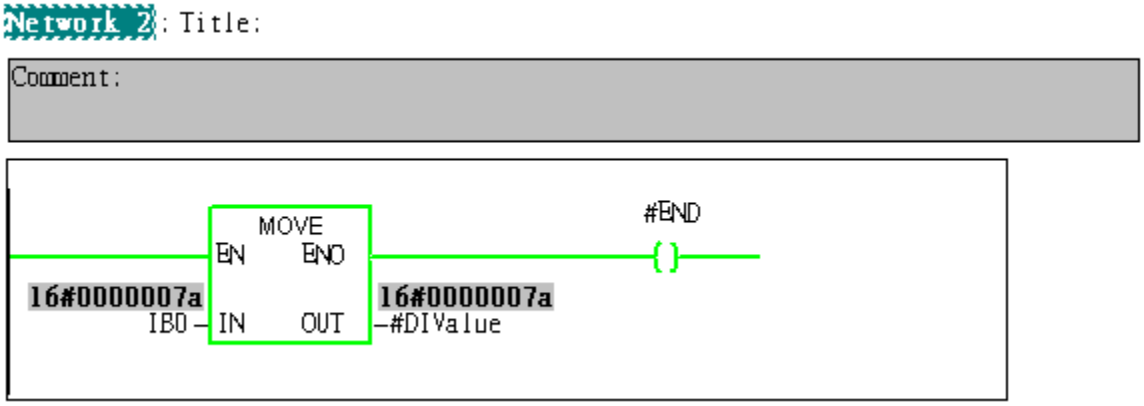


5. Set the IP of the Modbus TCP Slave and click “Save to Device” button to save the settings.



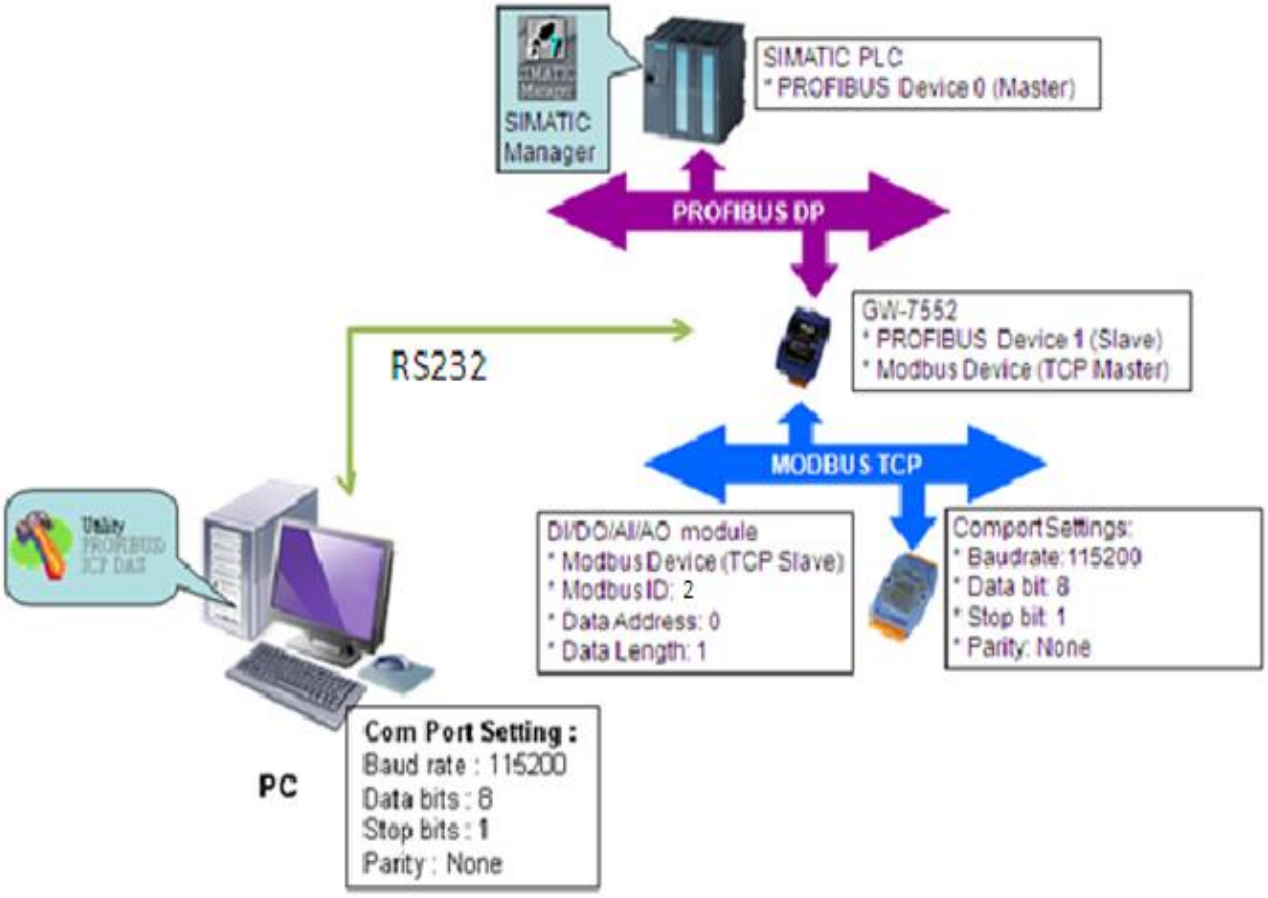
Step 9: Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.

Now the setting procedure has been finished and the user can read the data to the Modbus DO module at address IB0.



Example 2: PLC reads DI module data from GW-7553. (Modbus FC02)

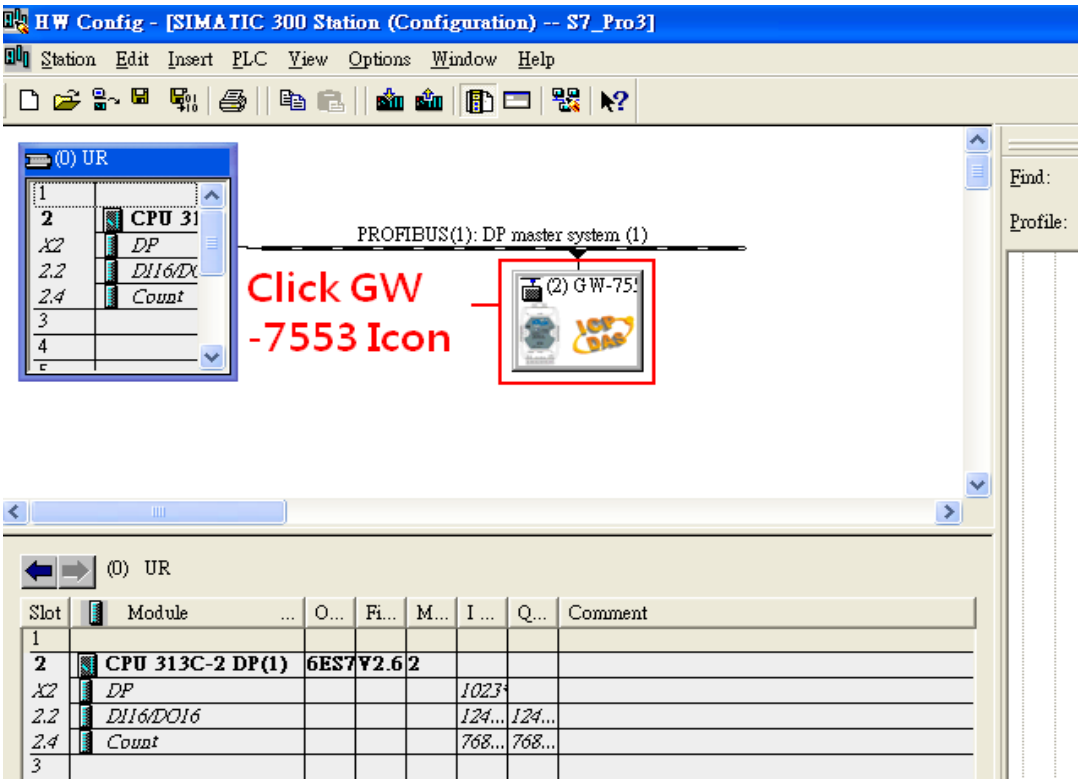
Read a Modbus TCP DI module (PROFIBUS Slave & Modbus TCP/Master)



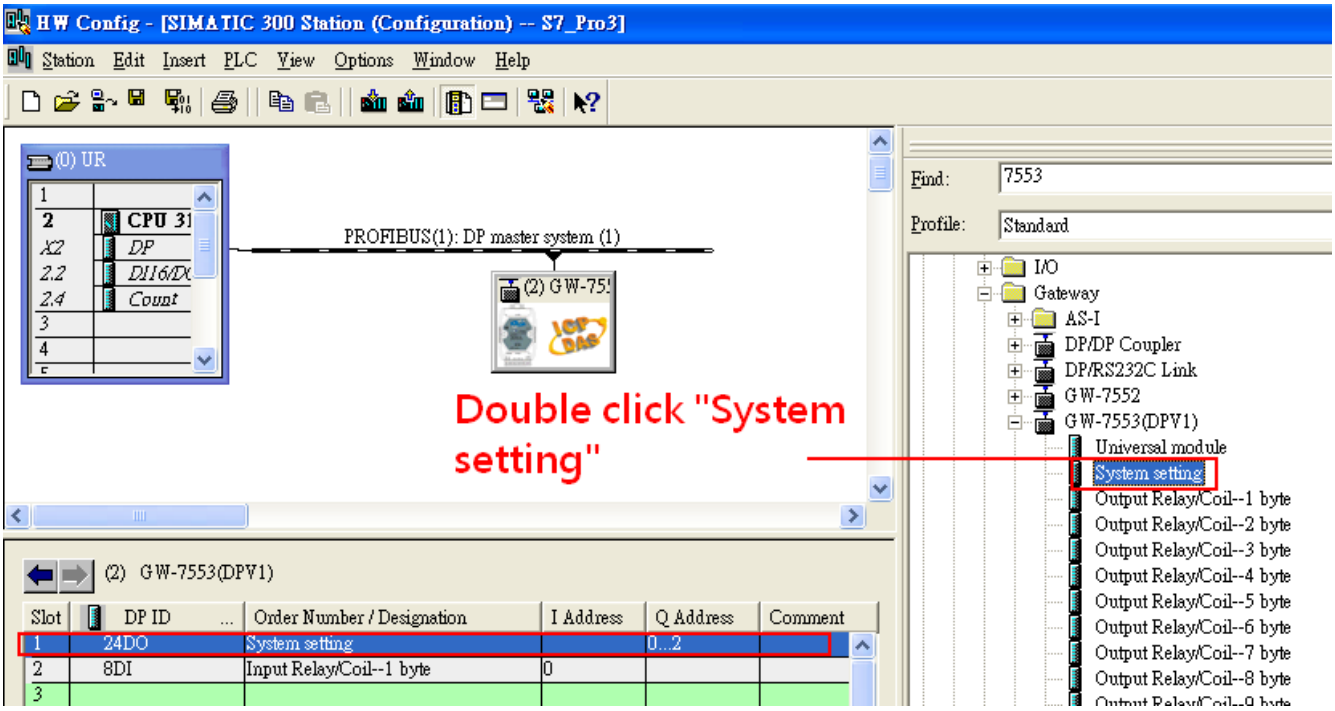
SIMATIC STEP7 Configuration:

Step 1: Setup the GW-7553 module

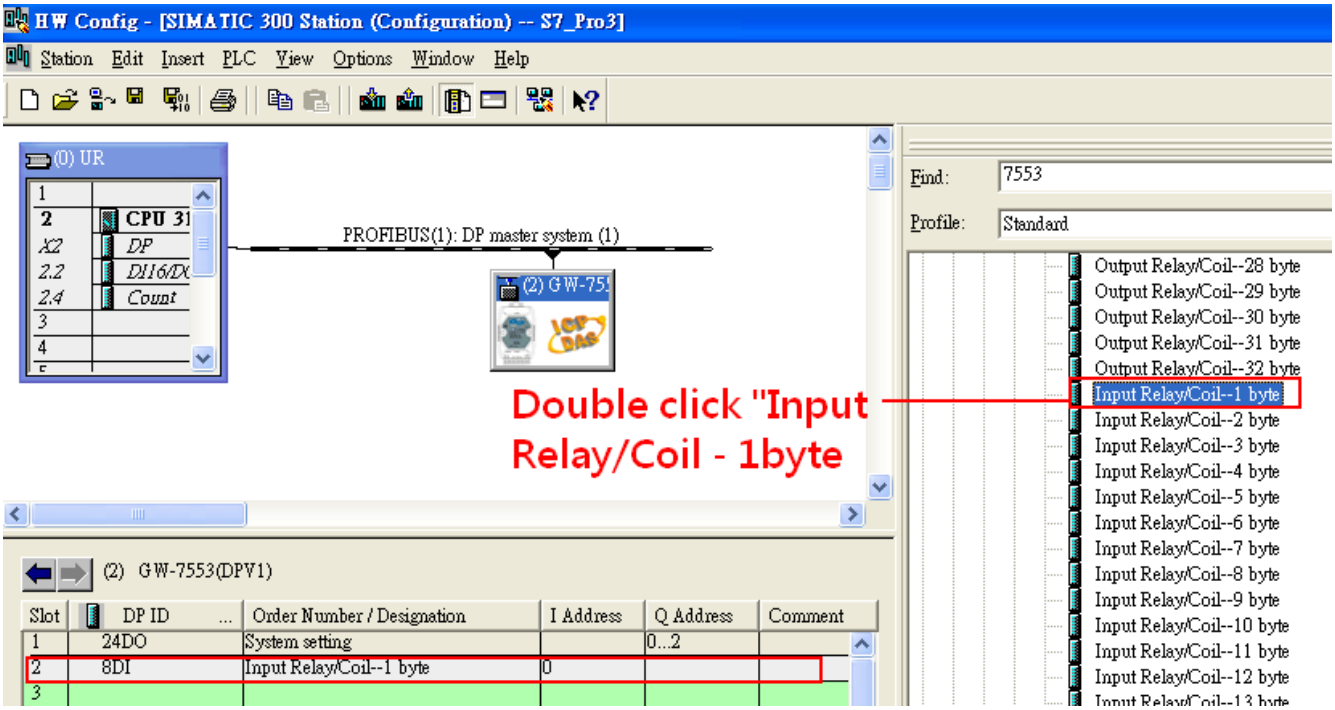
1. Select GW-7553 module



2. Add a System setting module



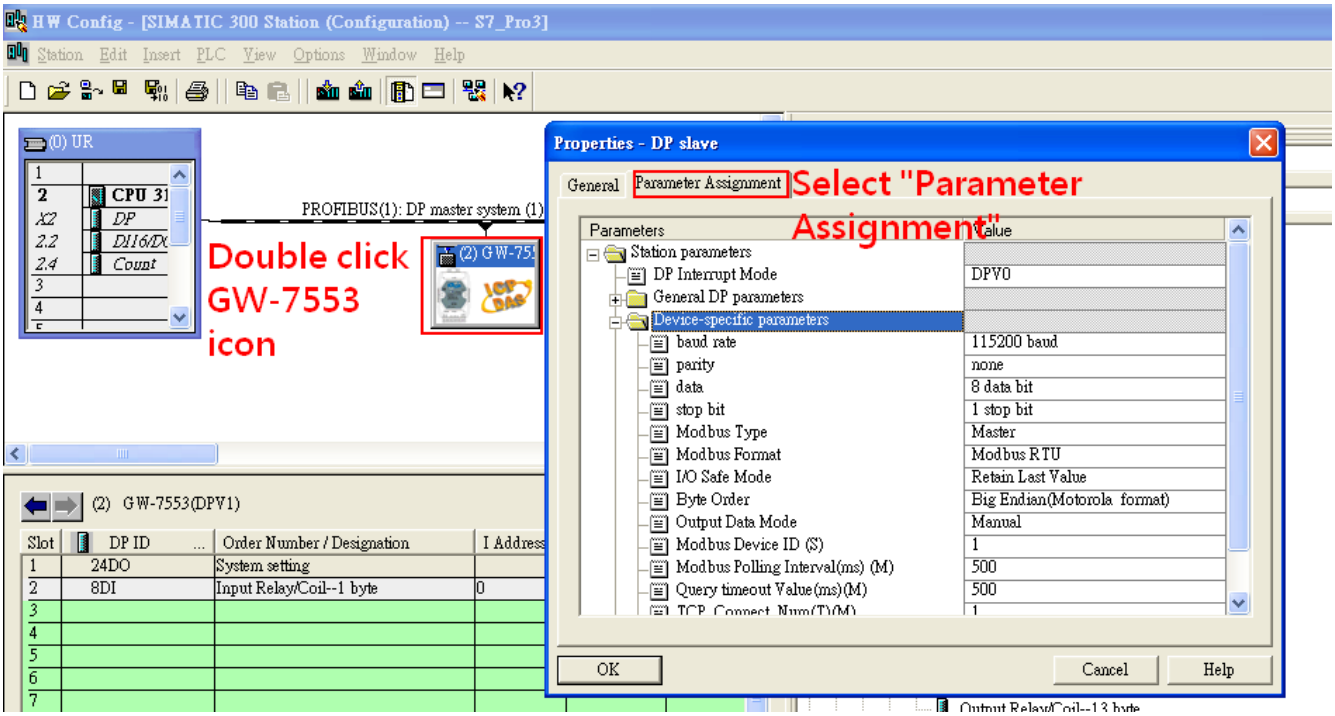
3. Add “Input Relay/Coil—1 byte” module



Step 2: Setup the parameters of the GW-7553

1. Double click GW-7553 icon

2. Select “Parameter Assignment”

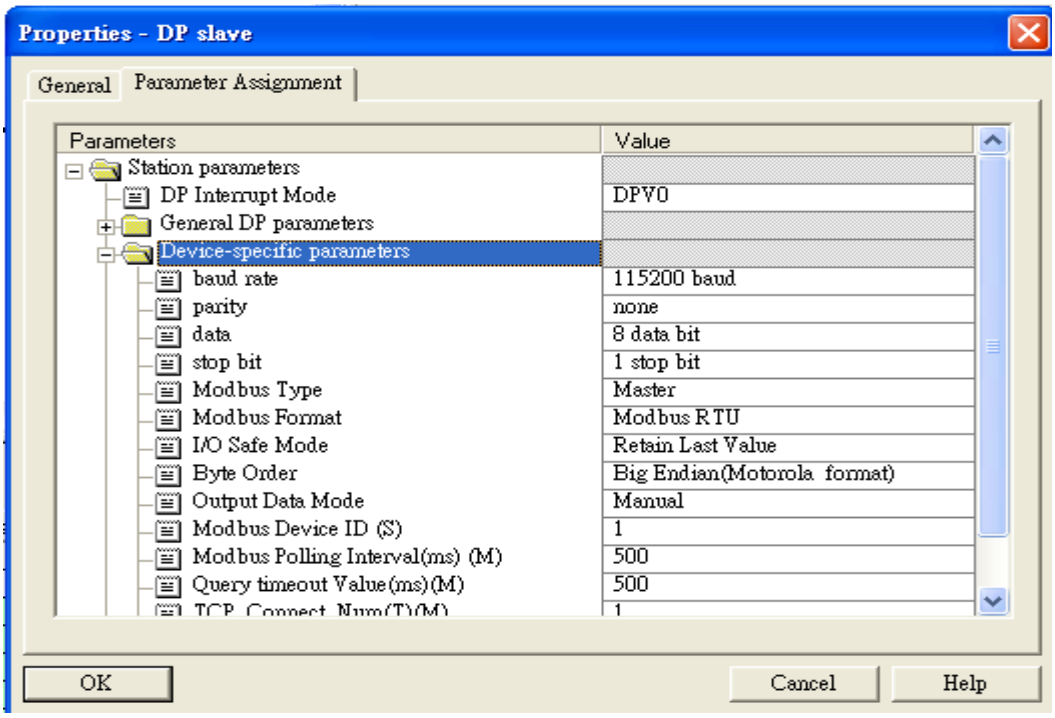


3. Set common parameters of the GW-7553

Common parameters➔

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

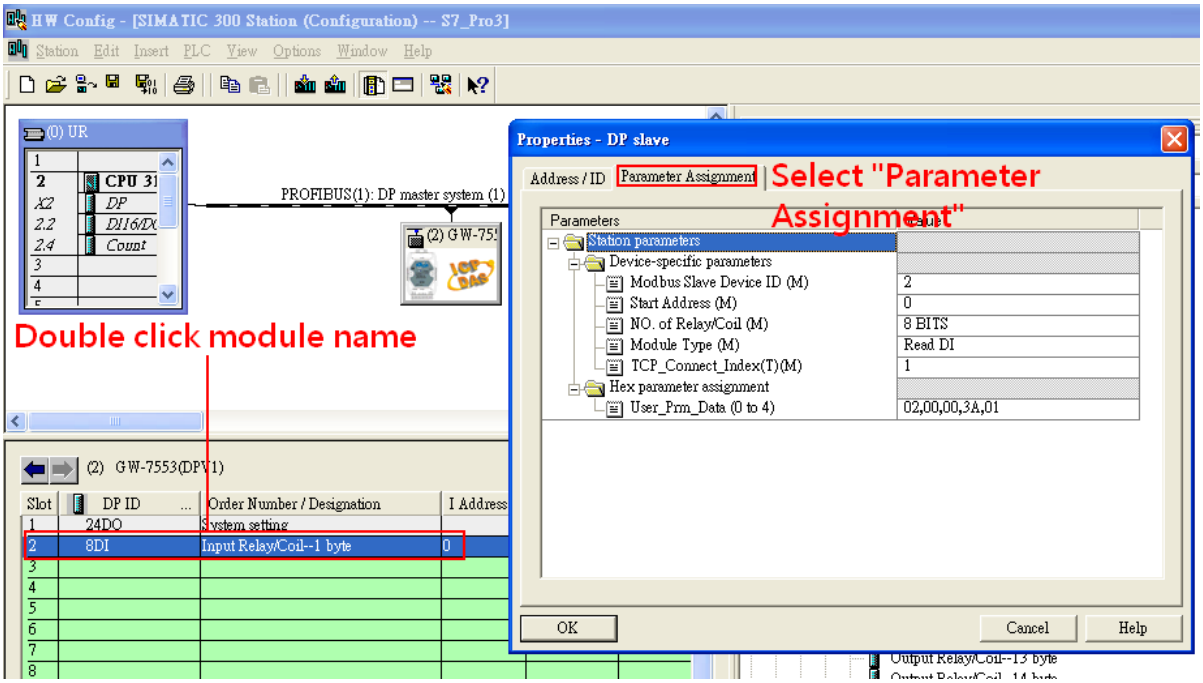
Modbus Format: Modbus TCP; Byte Order: Big Endian



4. Set module parameters of the GW-7553

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

(2)Select “Parameter Assignment”

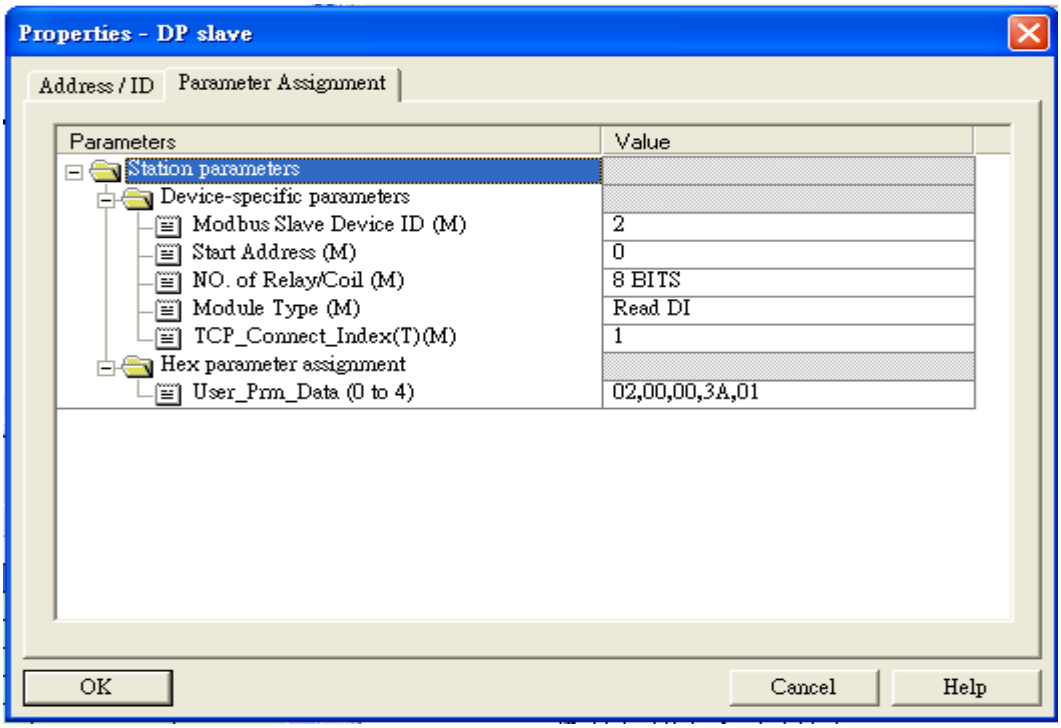


5. Setup “Input Relay/Coil—1 byte” module parameters

Module parameters➔

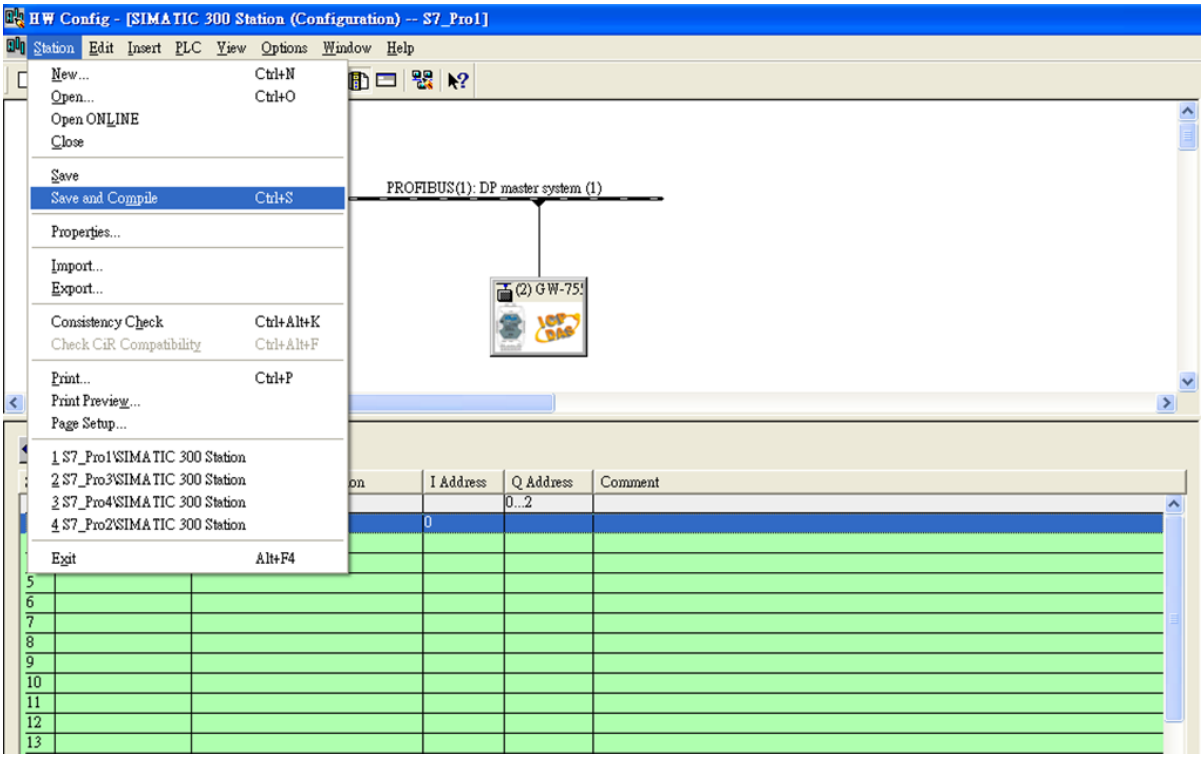
Modbus Slave Device ID: 2; Slave Address: 0 (Protocol address (base 0))

Module Type: Read DI, click ok.

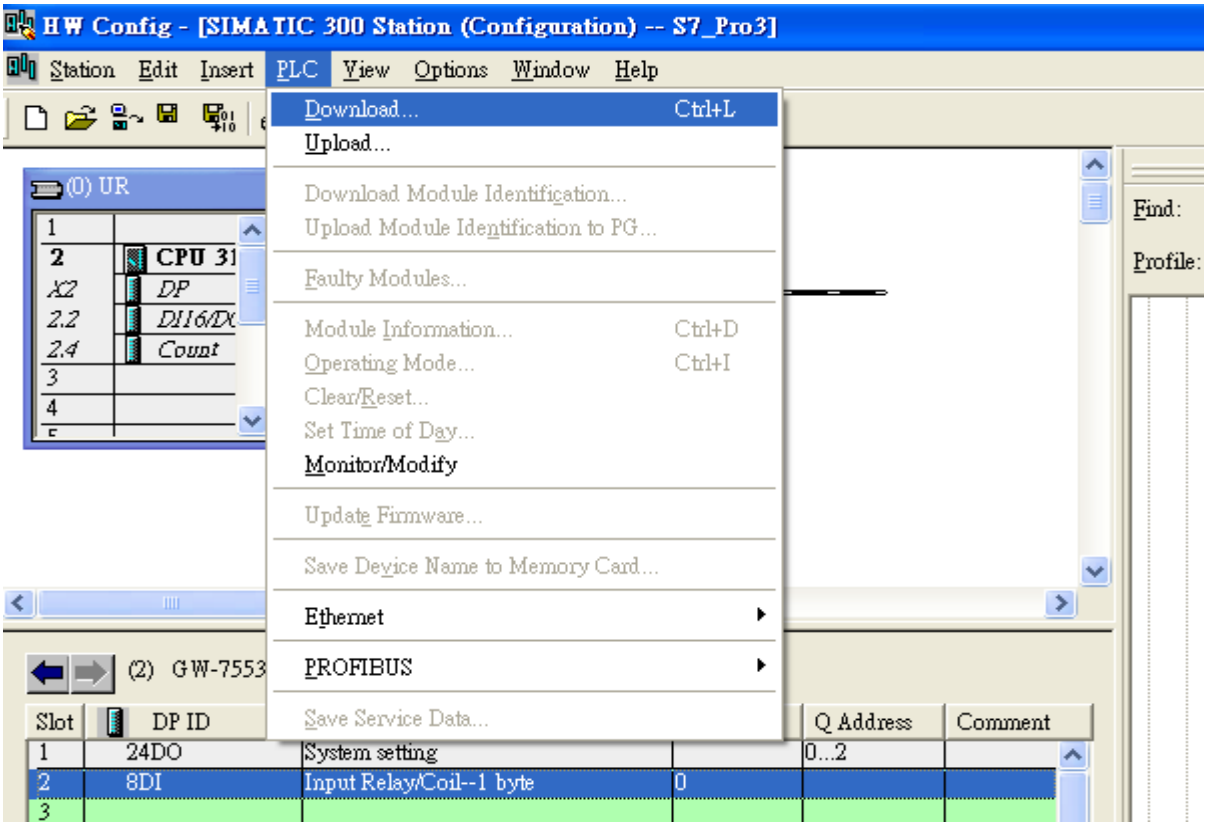


Step 3: Download the HW settings into SIMATIC PLC

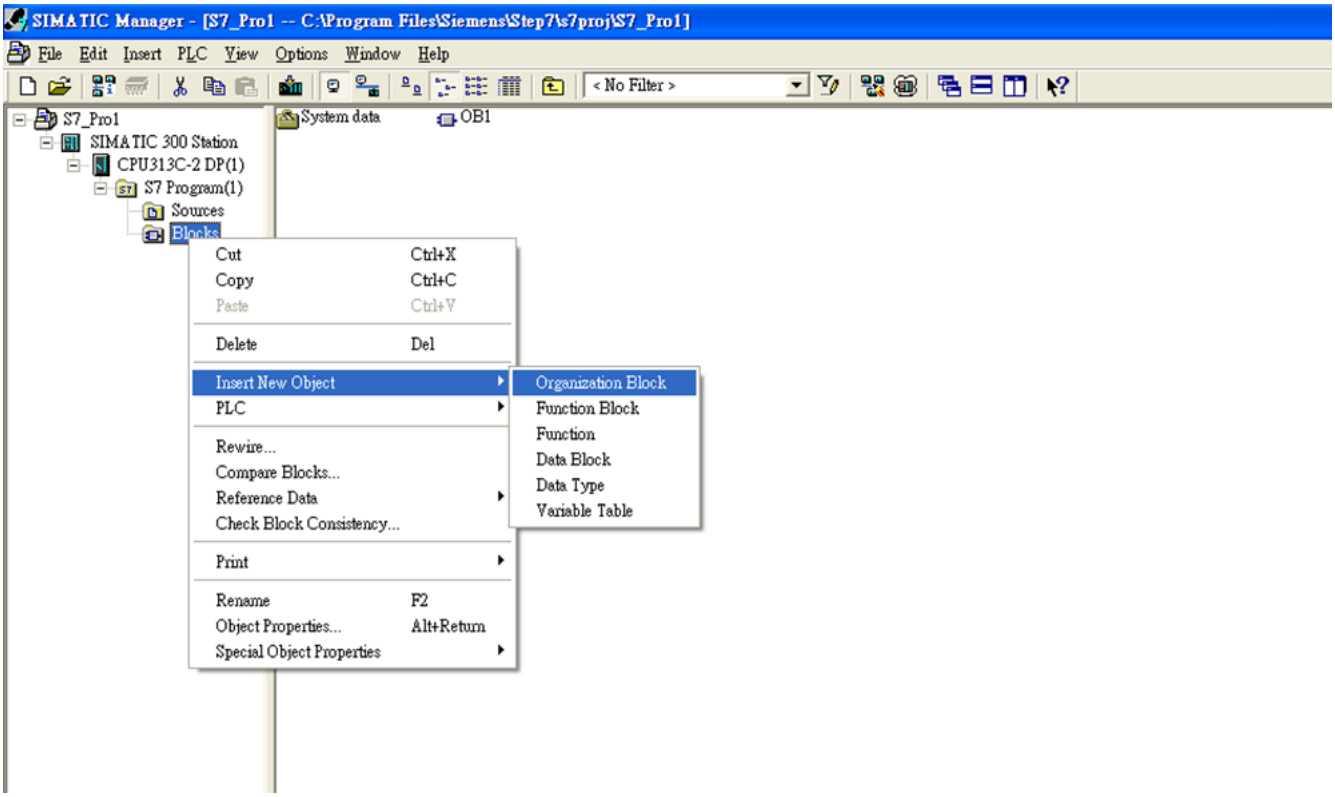
1. Save and Compile

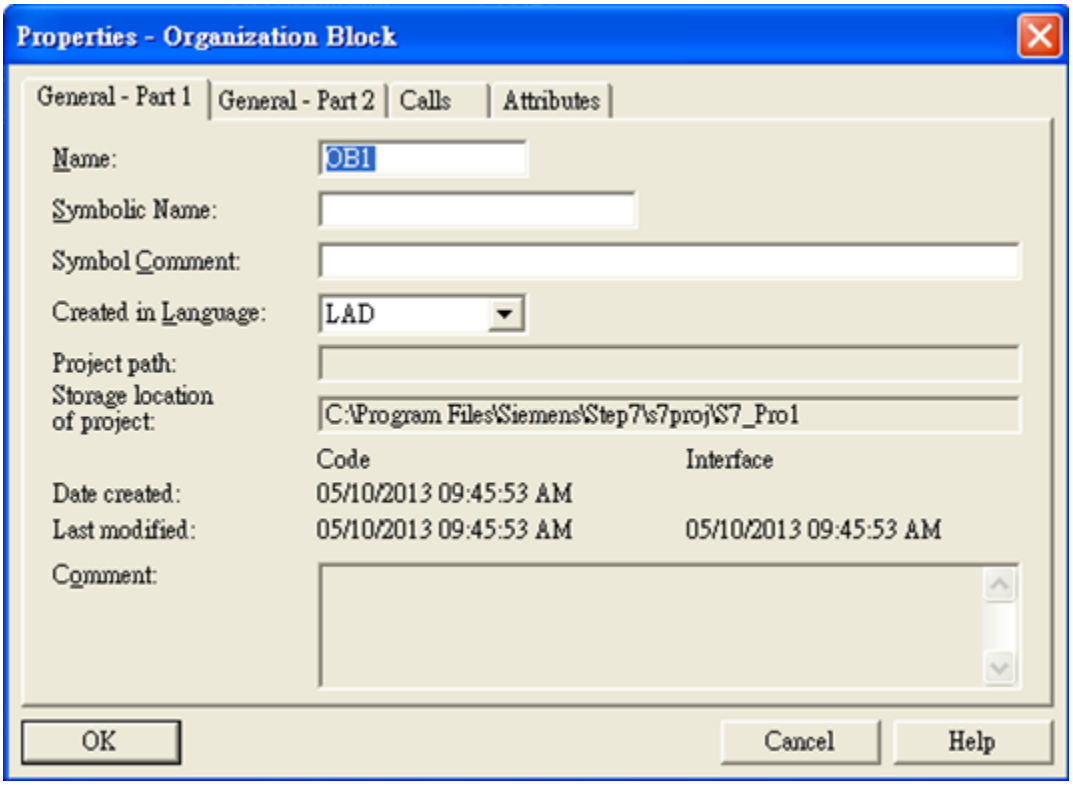


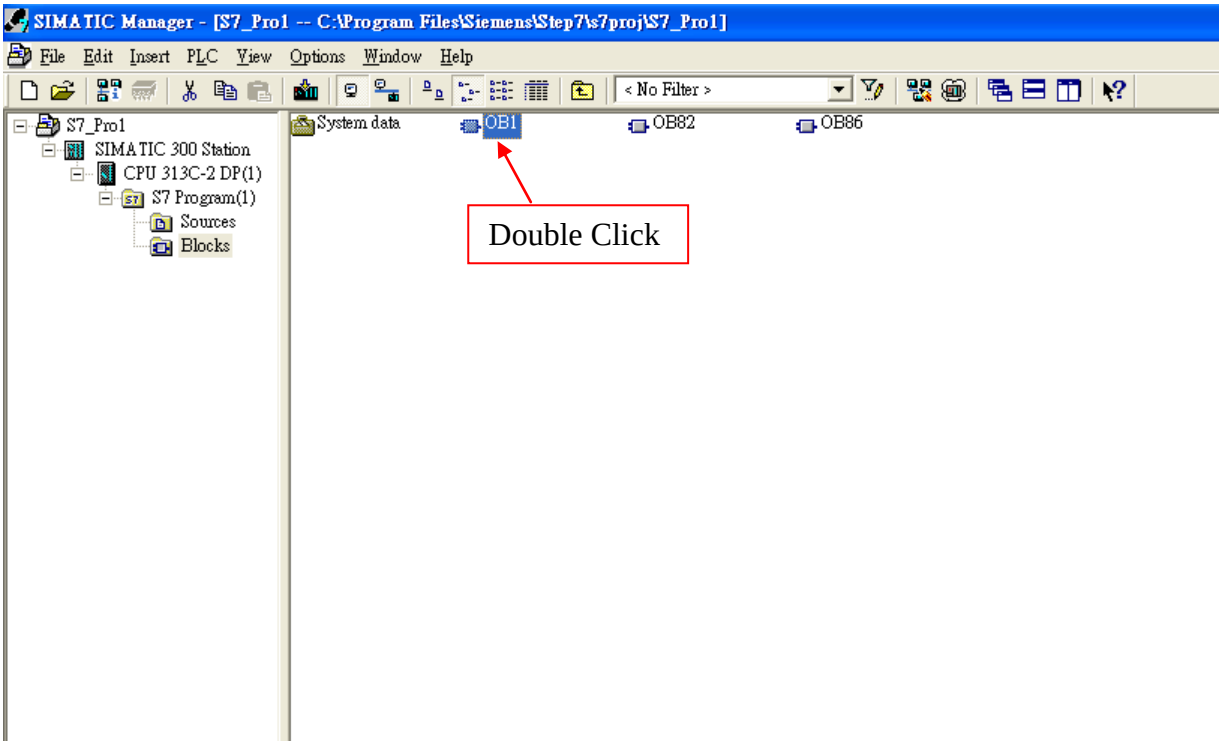
2. HW settings into SIMATIC PLC



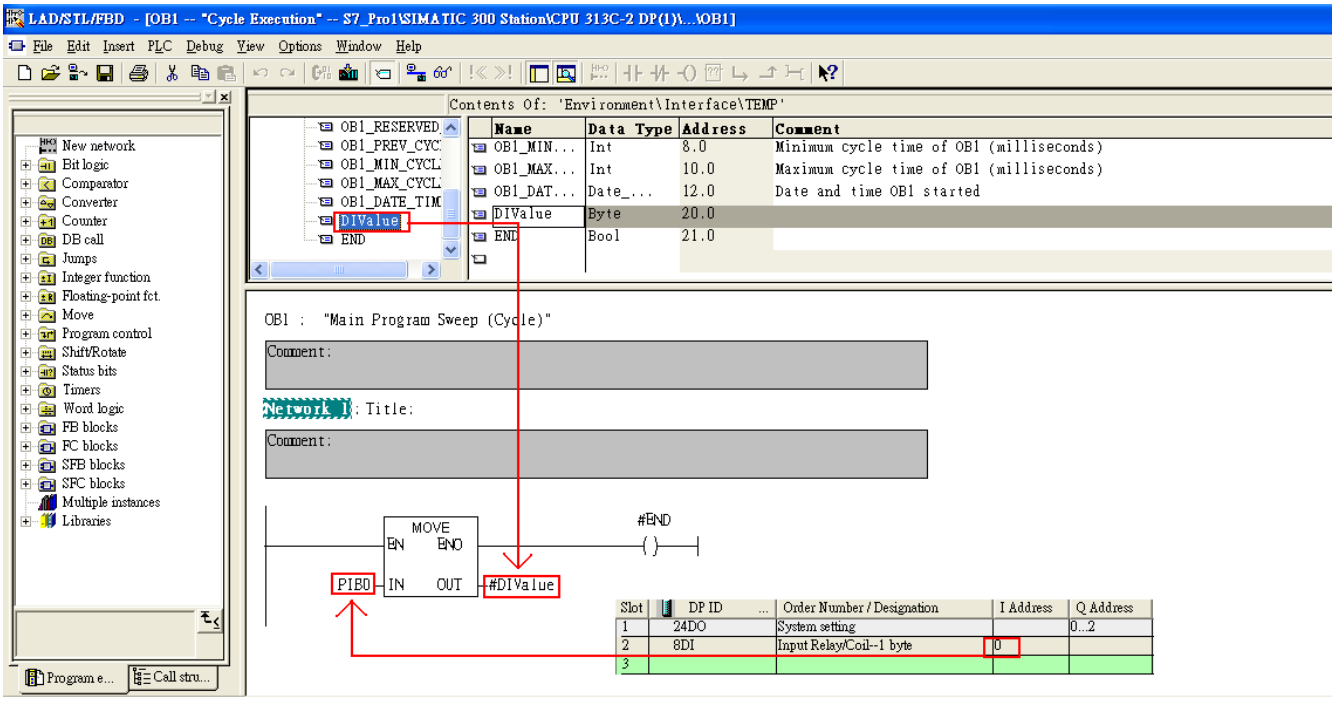
Step 4: Insert a new Organization Block (OB1,OB82,OB86)



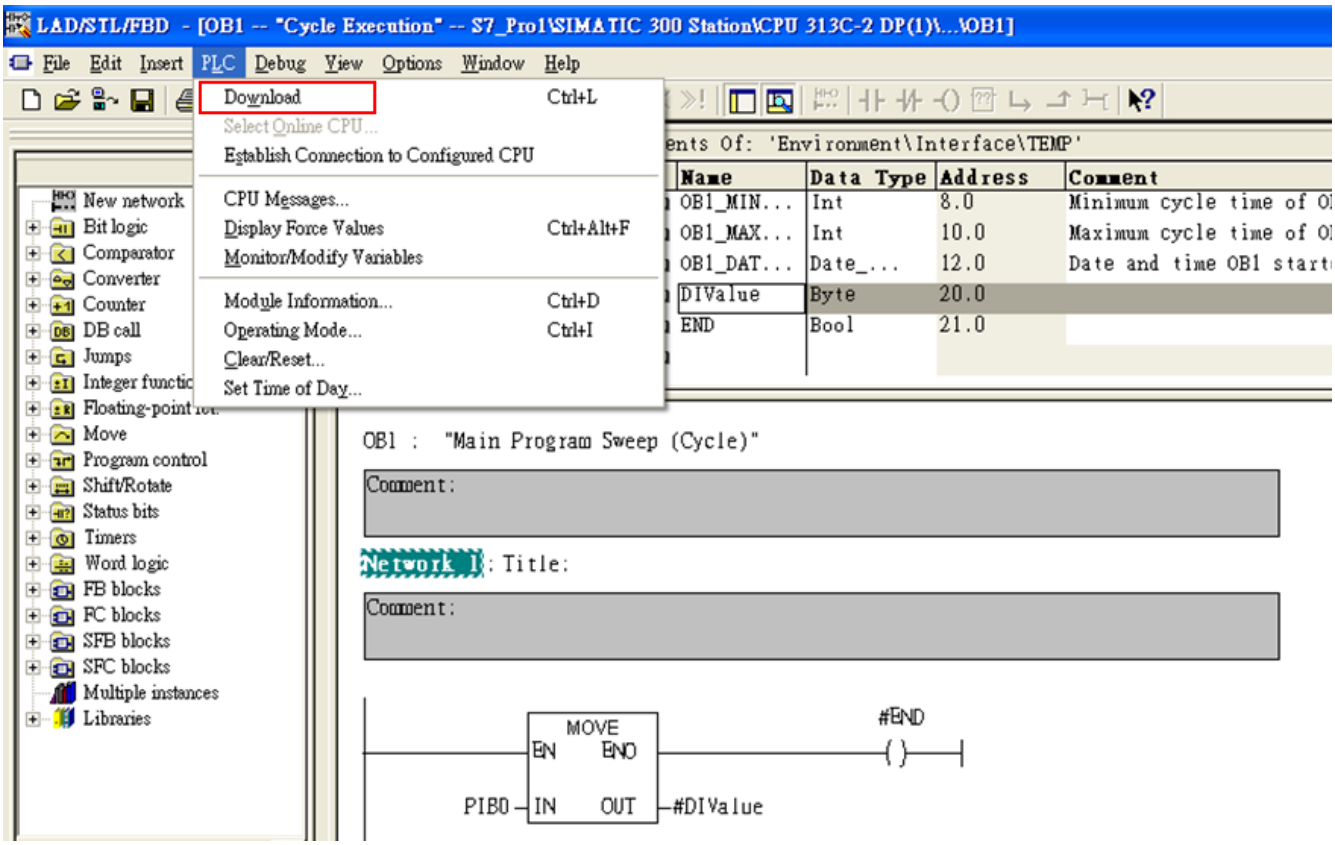

Properties - Organization Block
General - Part 1
General - Part 2
Calls
Attributes
Name:
OB1
Symbolic Name:
Symbol Comment:
Created in Language:
LAD
Project path:
Storage location of project:
C:\Program Files\Siemens\Step7\s7proj\S7_Pro1
Code
Interface
Date created:
05/10/2013 09:45:53 AM
Last modified:
05/10/2013 09:45:53 AM
05/10/2013 09:45:53 AM
Comment:
OK
Cancel
Help


SIMATIC Manager - [S7_Pro1 -- C:\Program Files\Siemens\Step7\s7proj\S7_Pro1]
File
Edit
Insert
PLC
View
Options
Window
Help
< No Filter >
S7_Pro1
SIMATIC 300 Station
CPU 313C-2 DP(1)
S7 Program(1)
Sources
Blocks
System data
OB1
OB82
OB86
Double Click

Step 5: Edit OB1



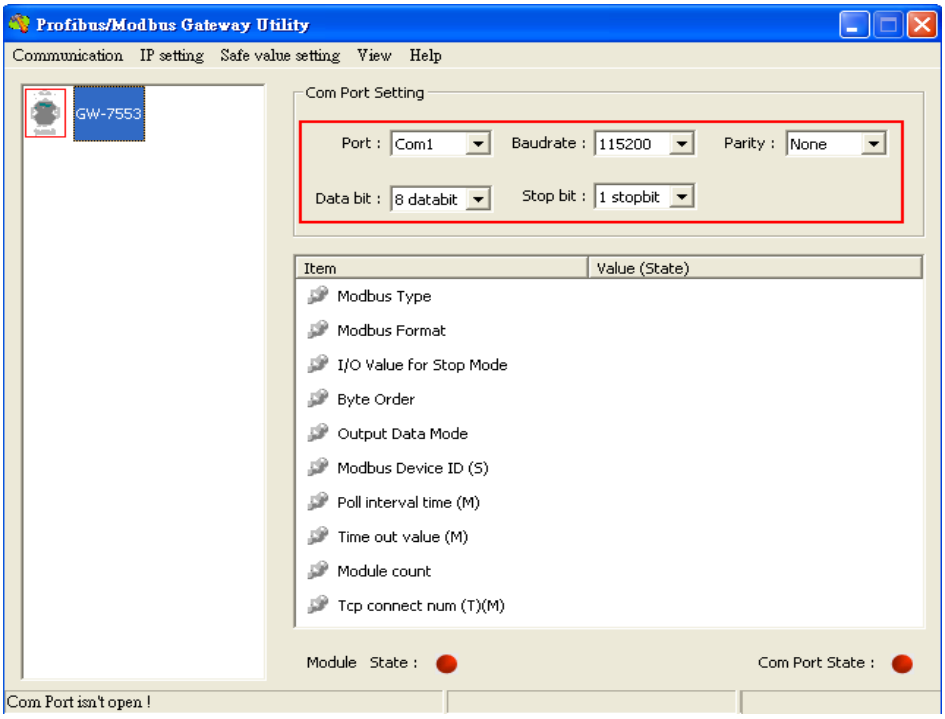
Step 6: Download the settings into SIMATIC PLC



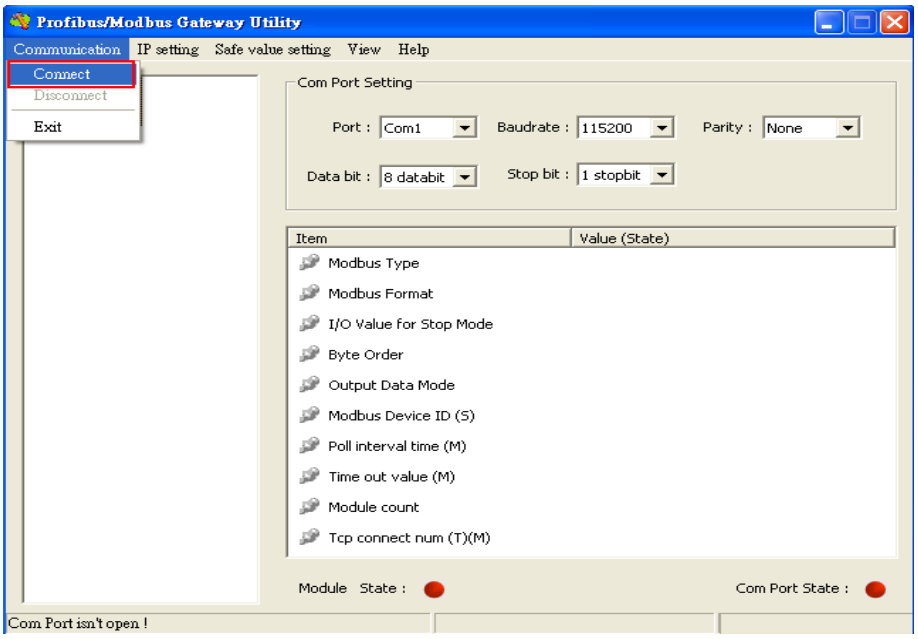
Step 7: Make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at Normal mode.

Step 8: Connect with GW-7553 and Utility

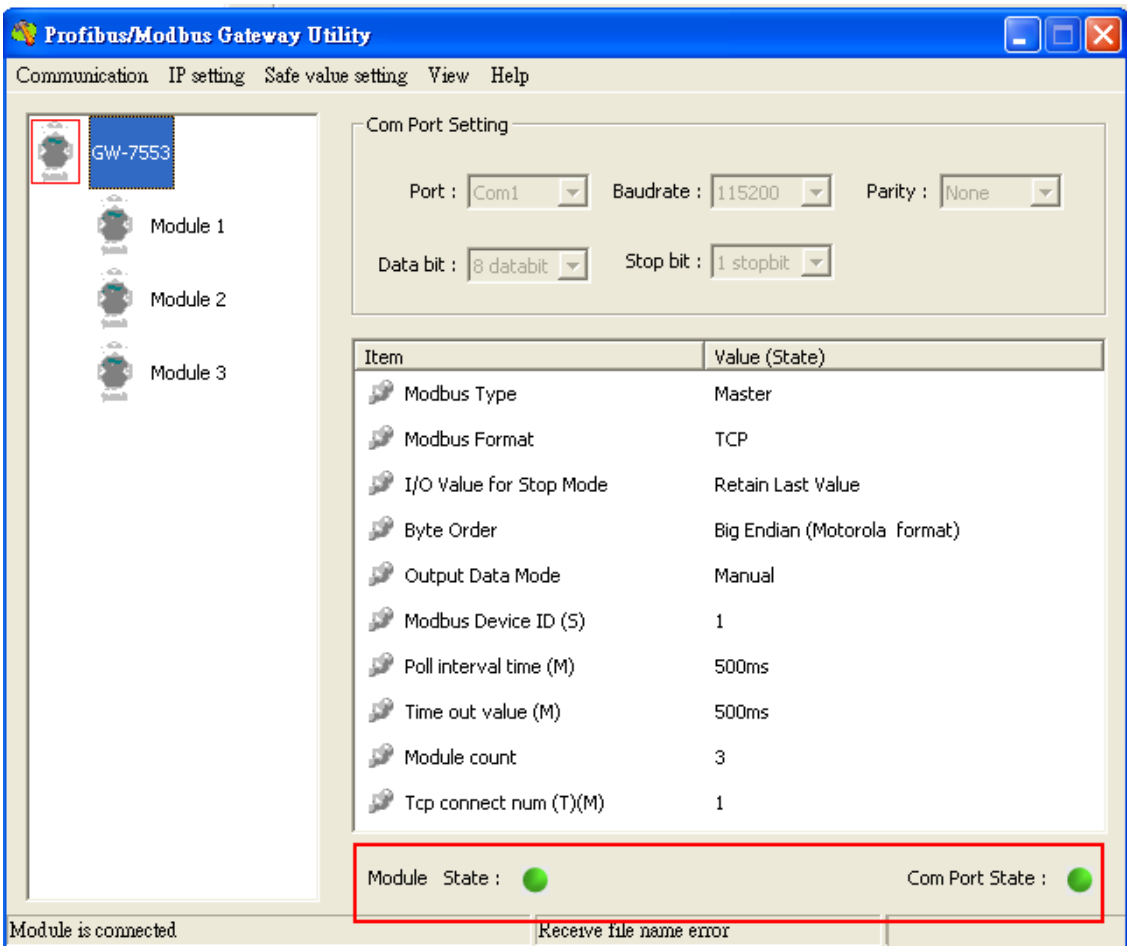
1. Set the Com Port Setting of the Utility



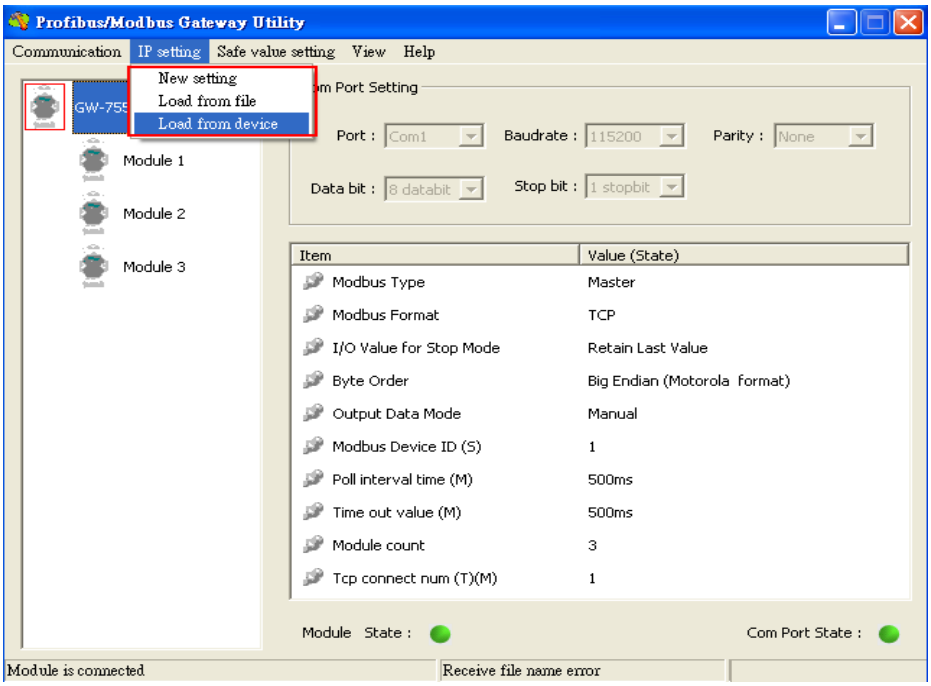
2.Click connect.



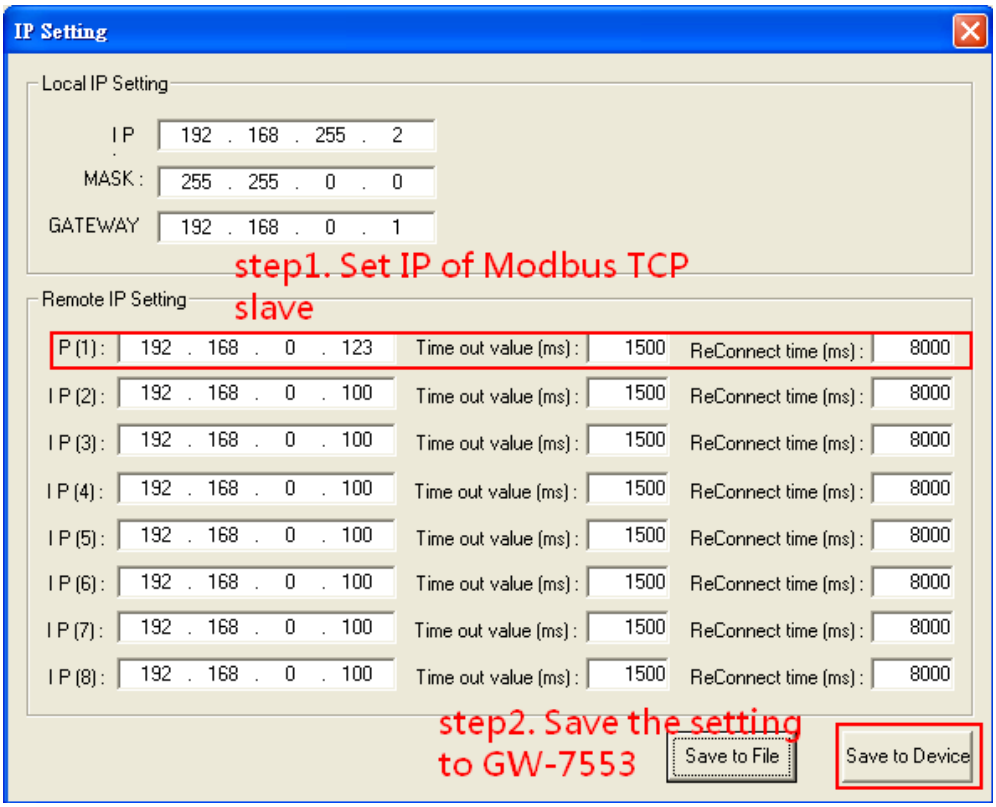
3. Connection success



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

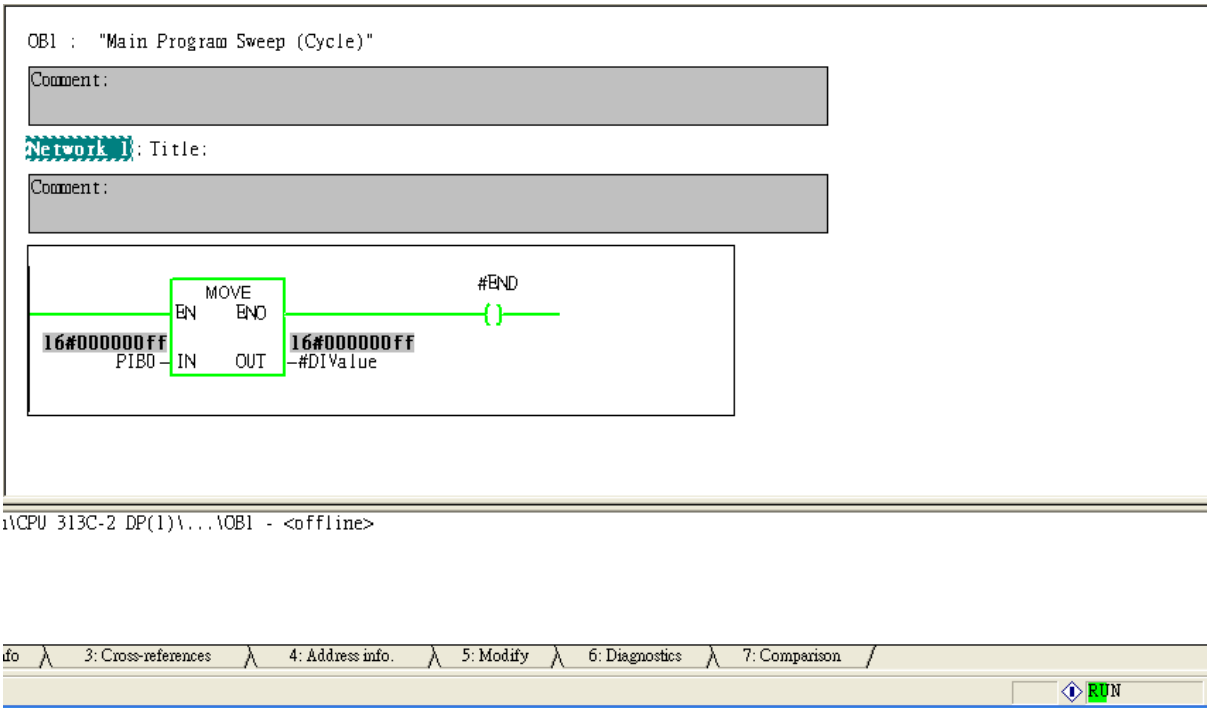


5. Set the IP of the Modbus TCP Slave and click “Save to Device” button to save the settings.



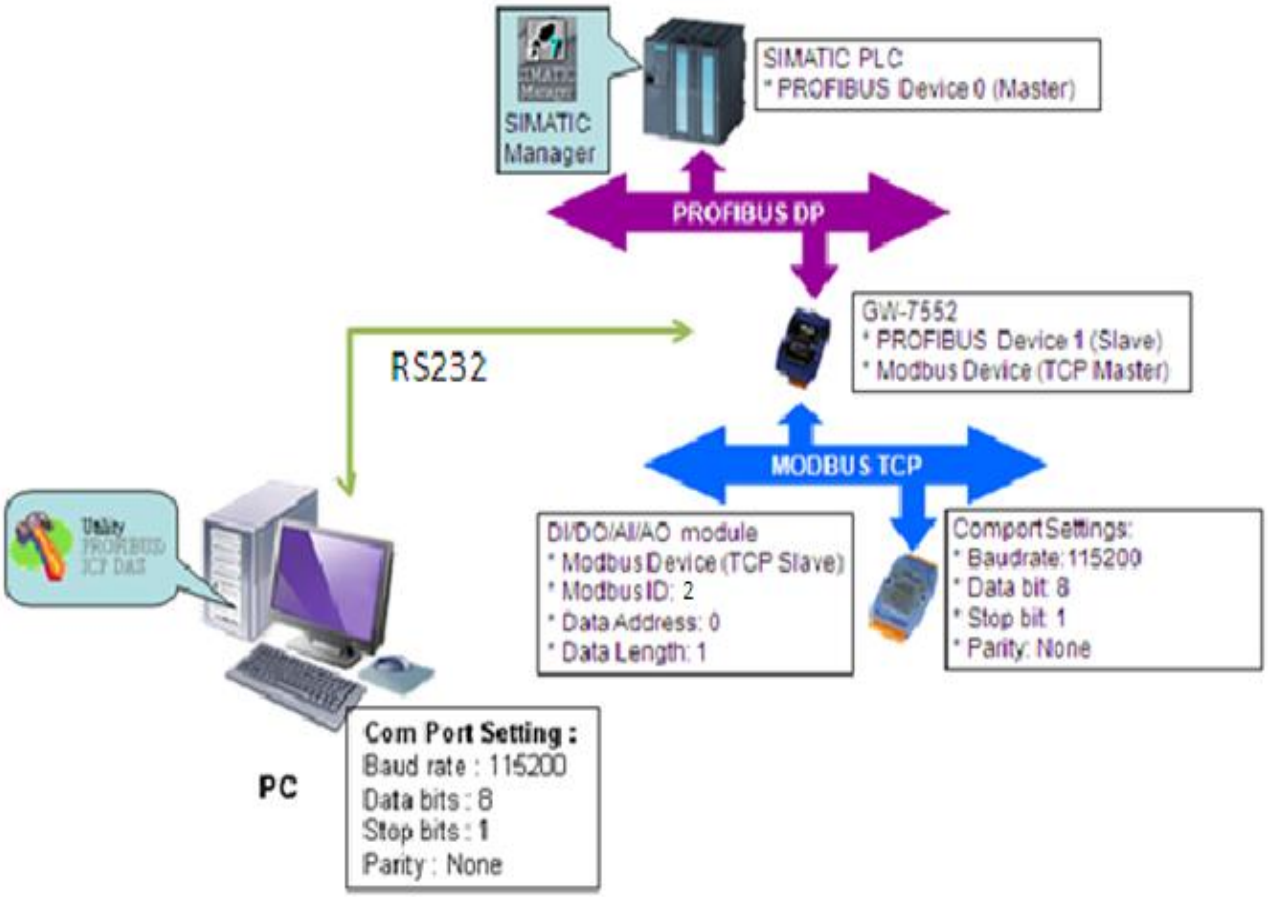
Step 9: Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.

Now the setting procedure has been finished and the user can read the data of the Modbus DI module at address PIB0.



Example 3: PLC reads AO module data from GW-7553. (Modbus FC03)

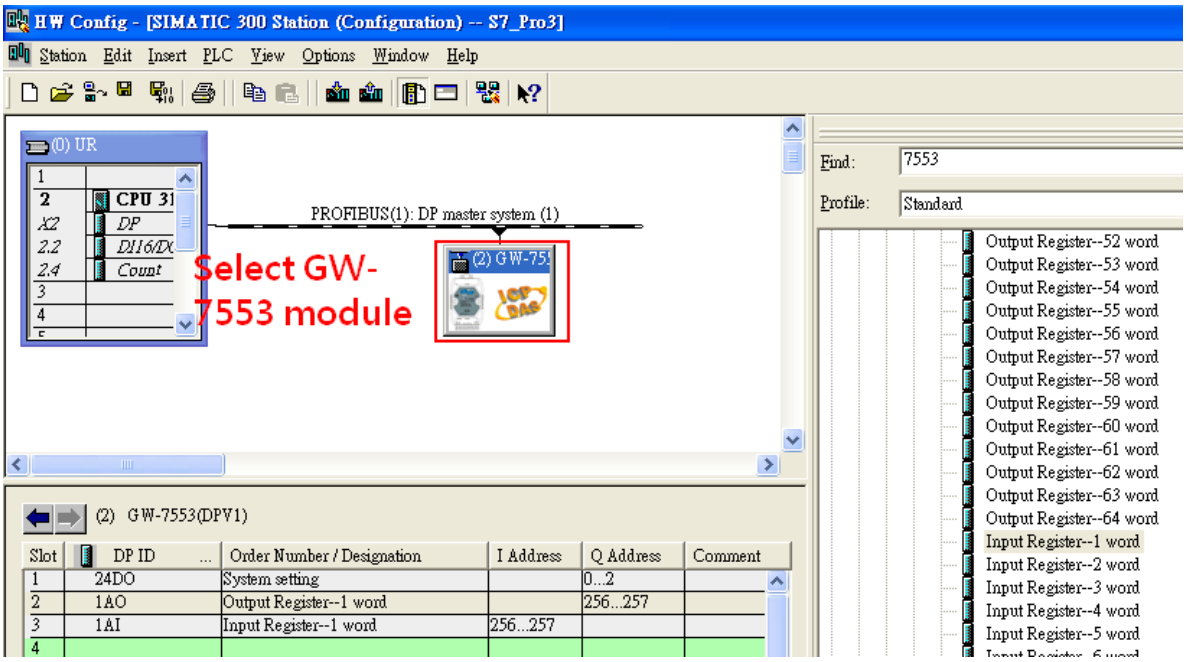
Read a Modbus TCP AO module (PROFIBUS Slave & Modbus TCP/Master)



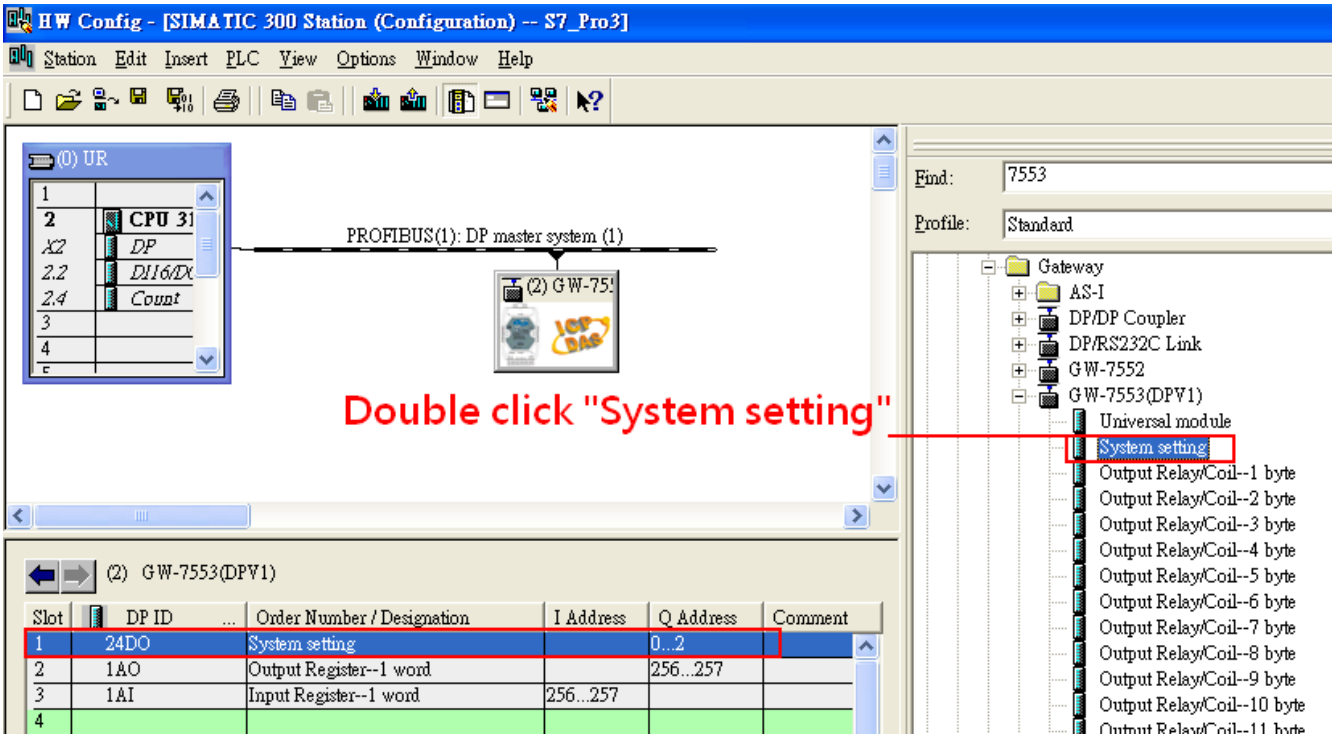
SIMATIC STEP7 Configuration:

Step 1: Setup the GW-7553 module

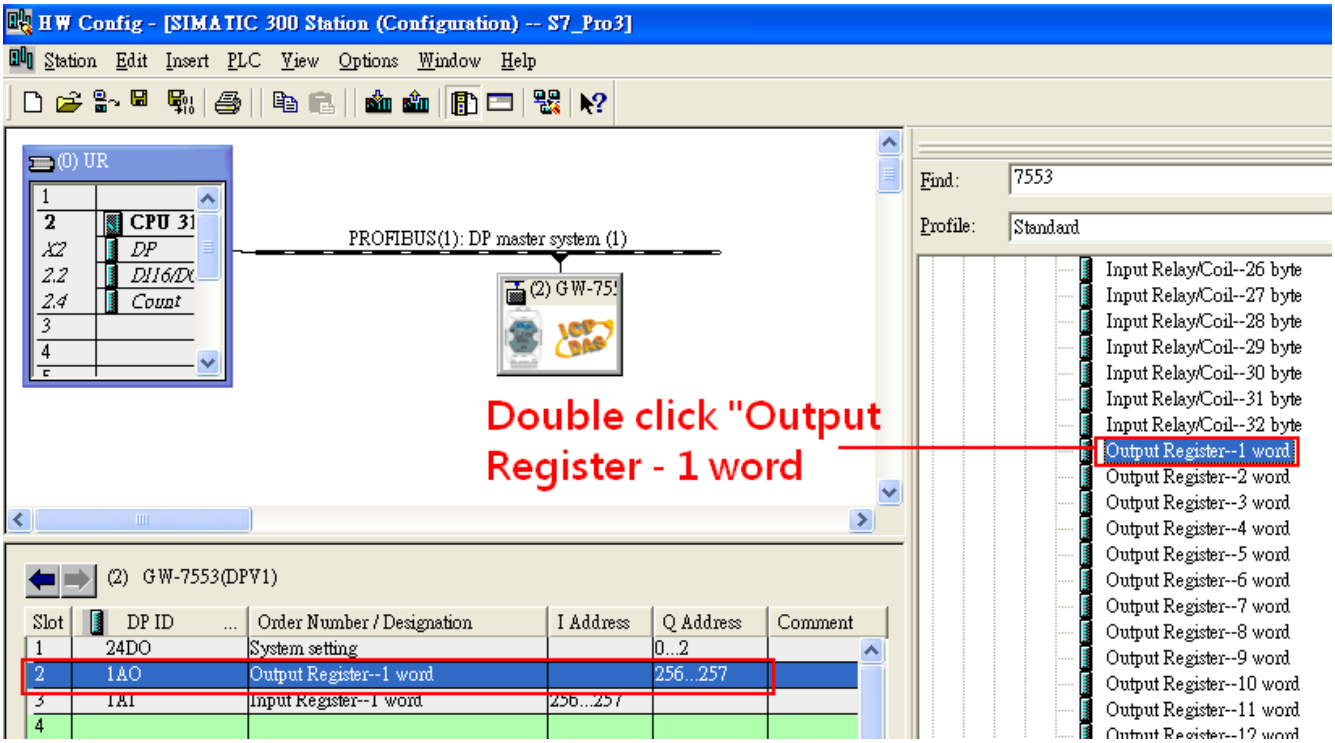
1. Select GW-7553 module

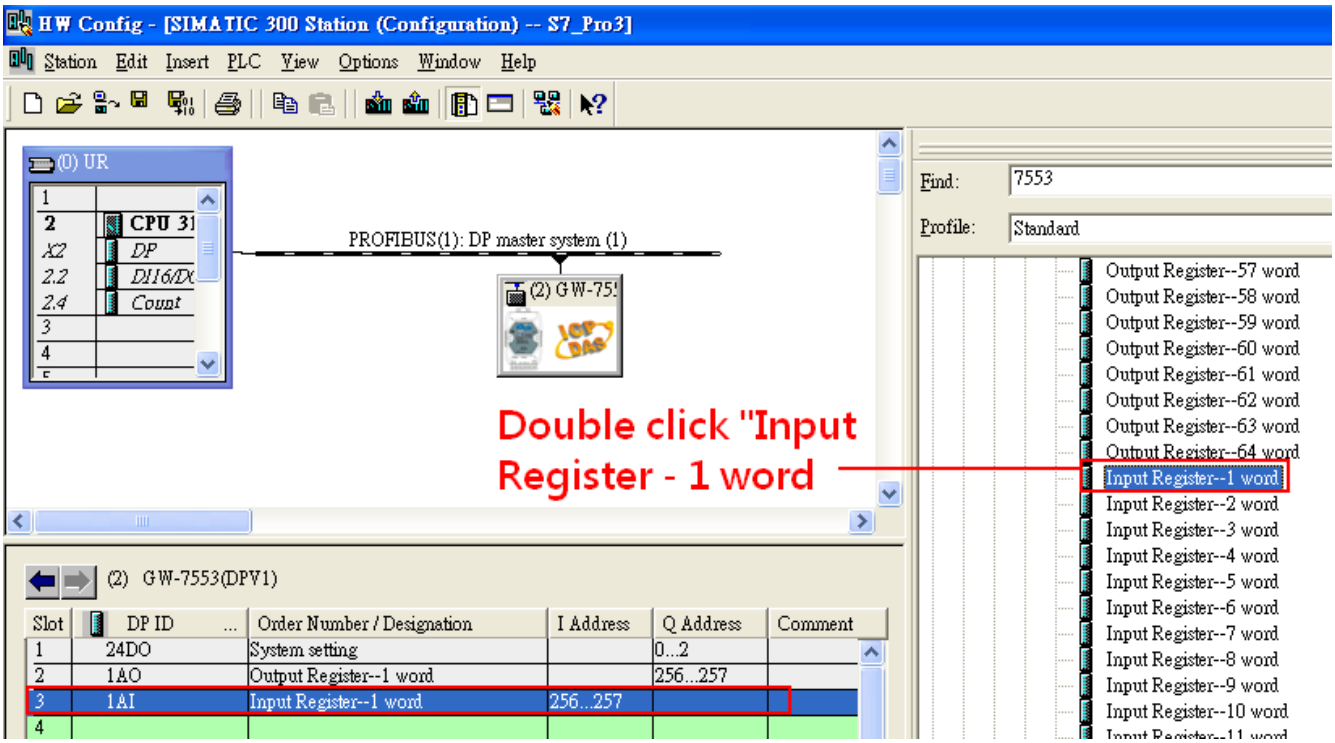


2. Add a System setting module



3. Add “Onput Register – 1 word” and “Input Register – 1 word”

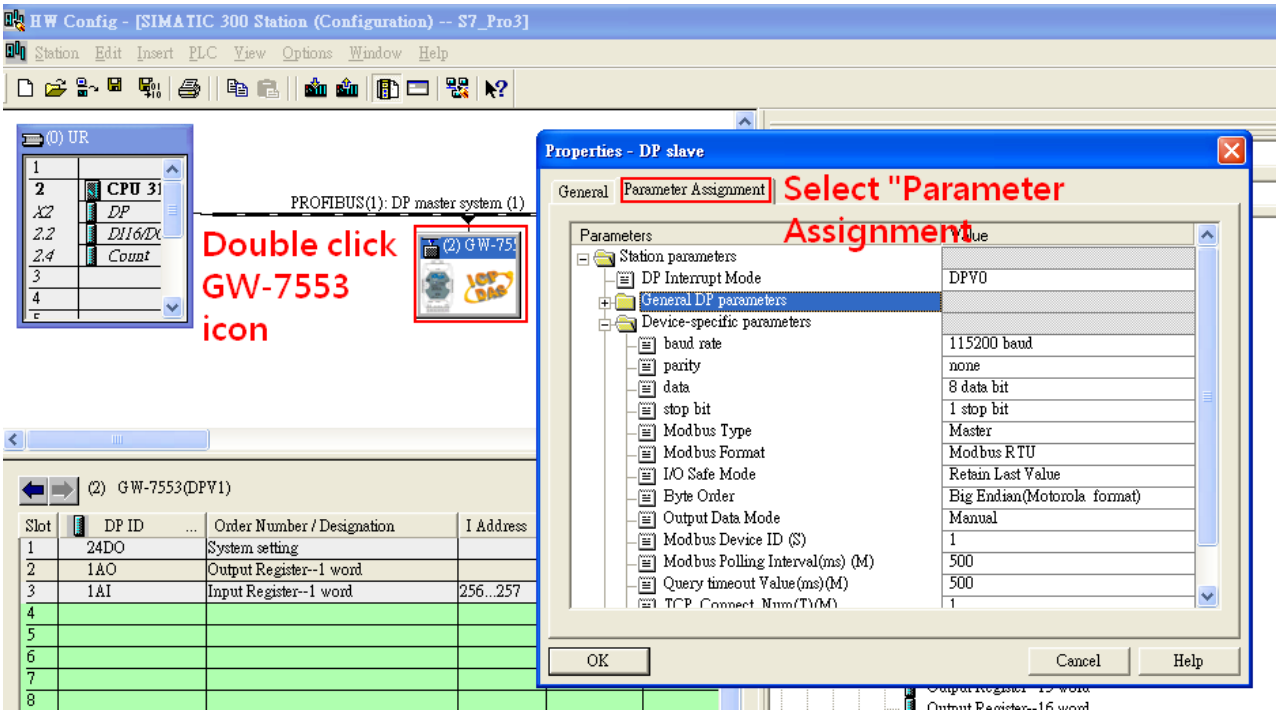




Step 2: Setup the parameters of the GW-7553

1. Double click GW-7553 icon

2. Select “Parameter Assignment”

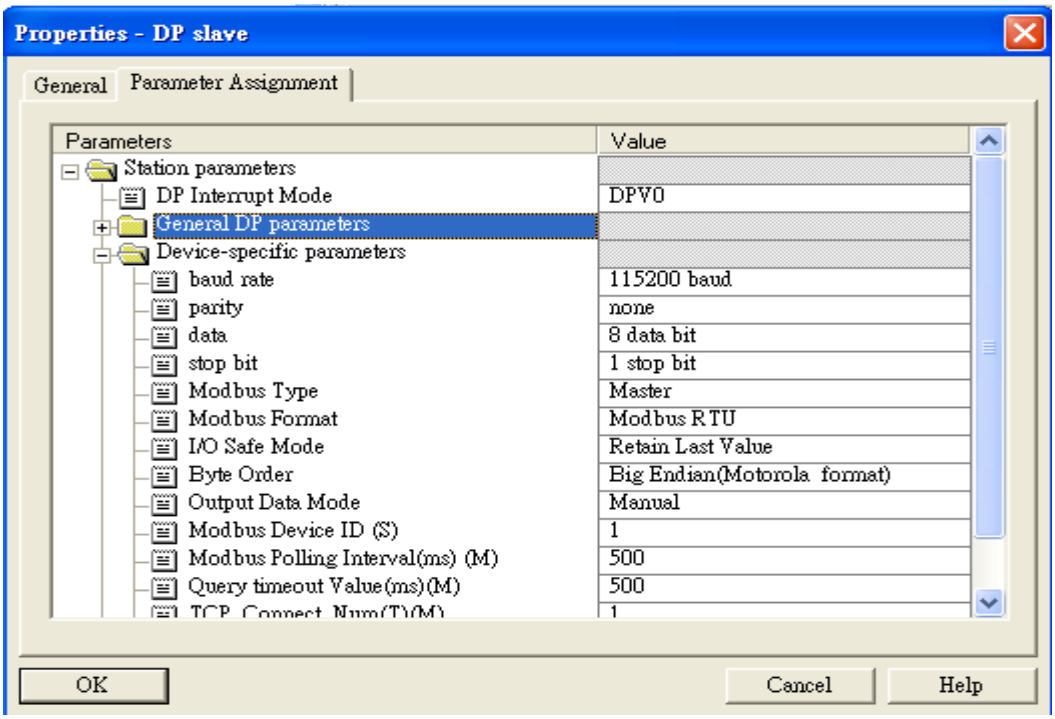


3. Set common parameters of the GW-7553

Common parameters➔

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

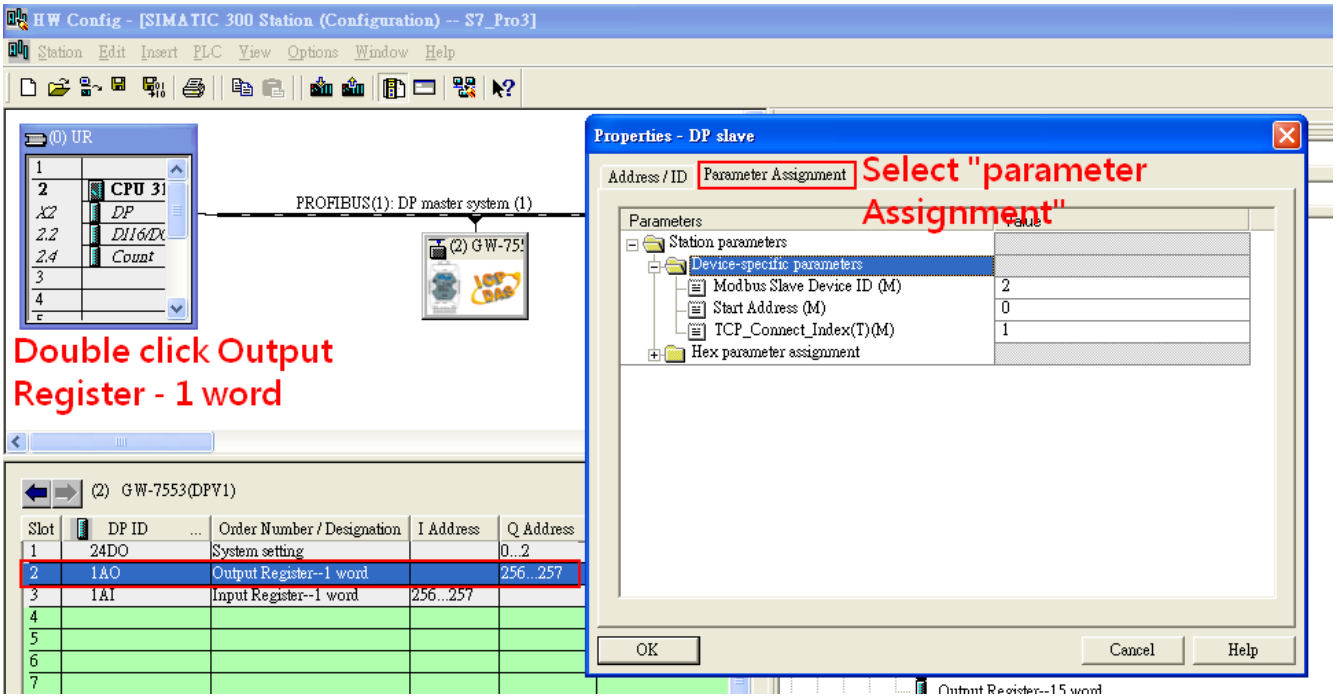
Modbus Format: Modbus TCP; Byte Order: Big Endian



4. Set module parameters of the GW-7553

(1)Double click “Output Register – 1 word” module

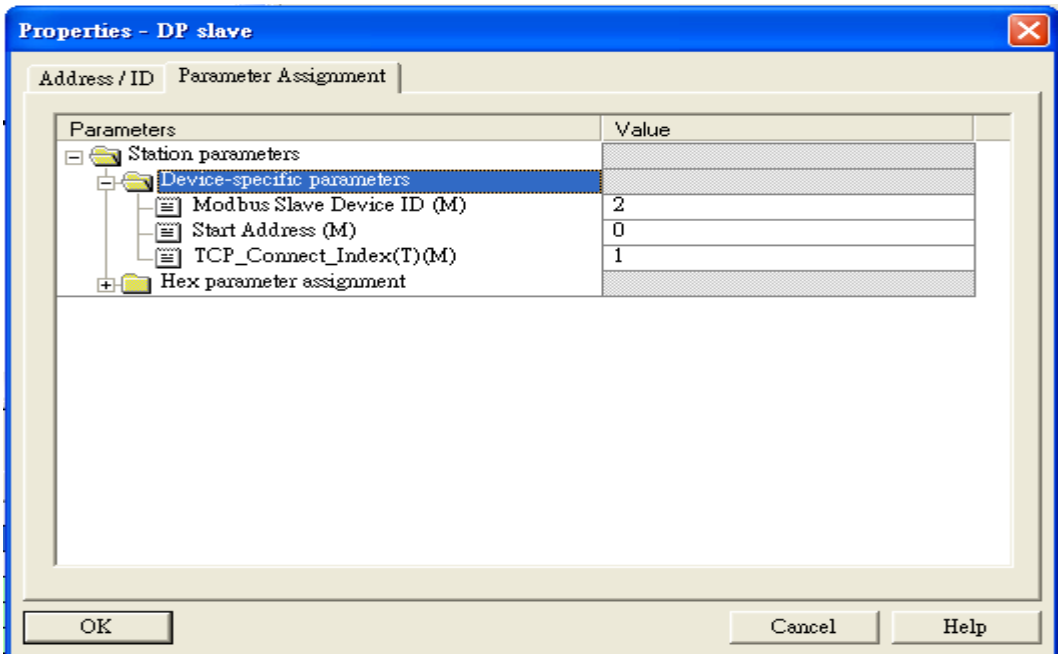
(2)Select “Parameter Assignment”



5. Setup “Output Register – 1 word” module parameters

Module parameters➔

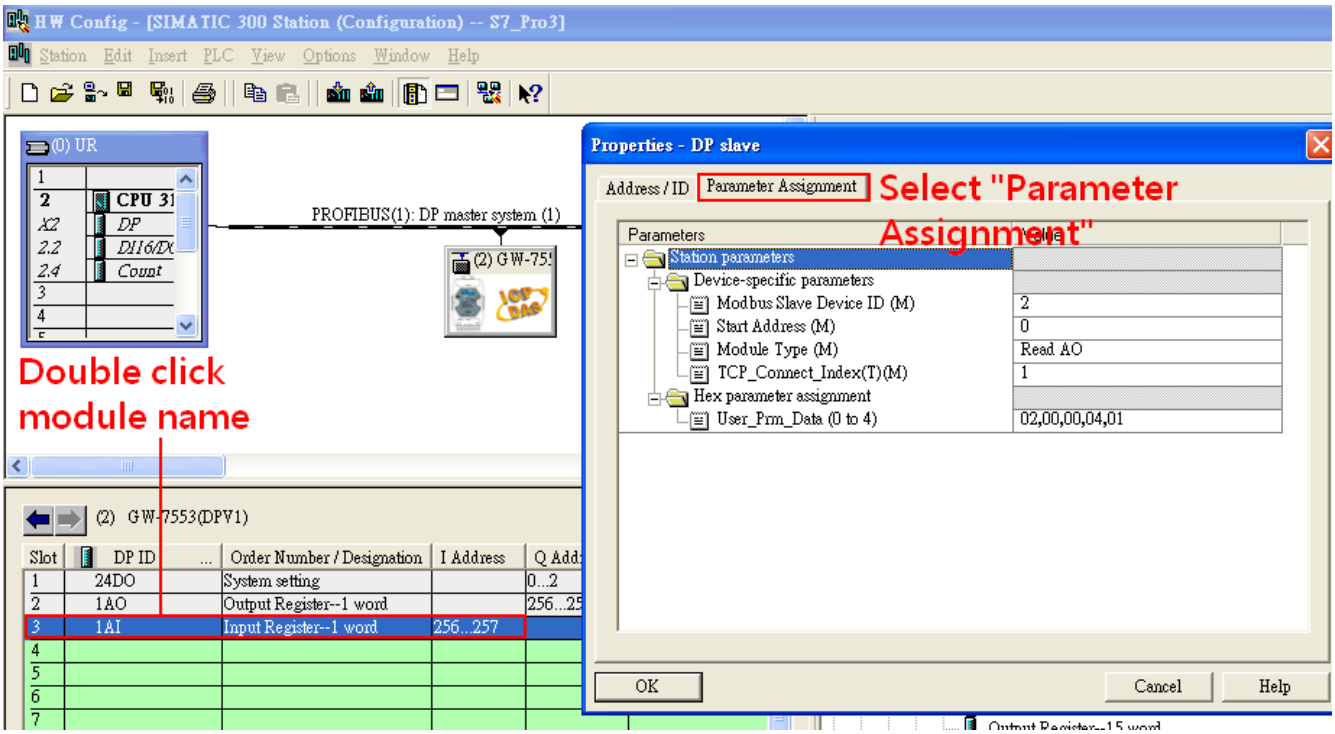
Modbus Slave Device ID: 2; Slave Address: 0 (Protocol address (base 0)), click ok.



6. Set module parameters of the GW-7553

(1)Double click “Intput Register – 1 word” module

(2)Select “Parameter Assignment”

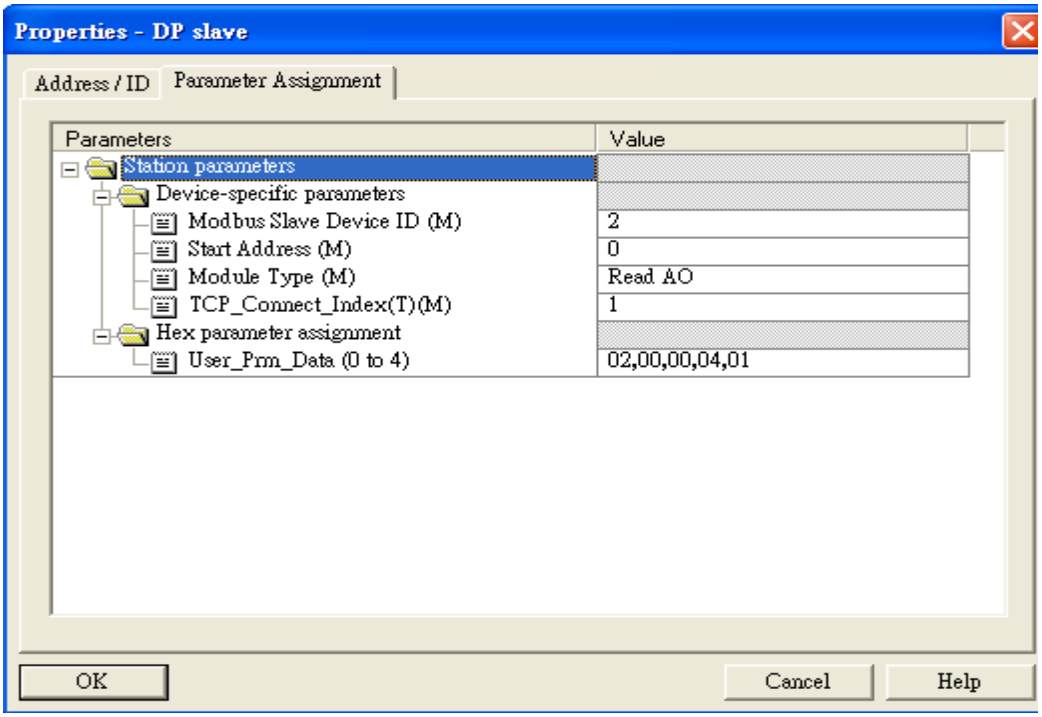


5. Setup “Input Register – 1 word” module parameters

Module parameters➔

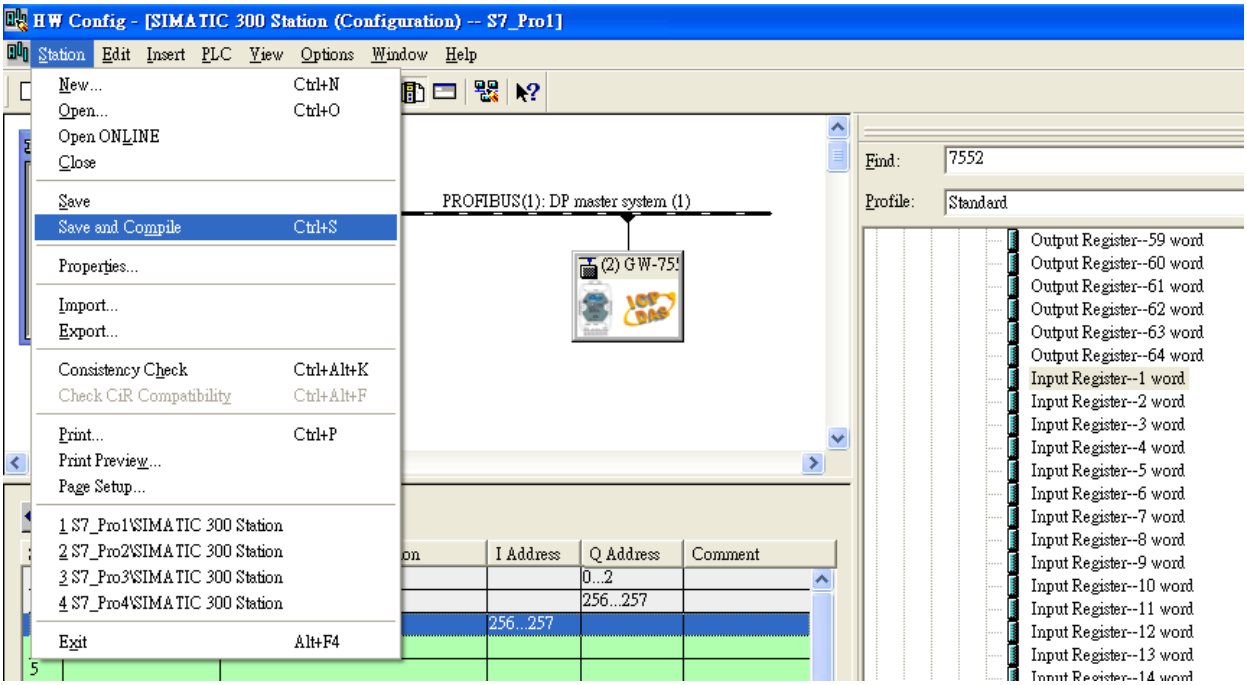
Modbus Slave Device ID: 2; Slave Address: 0 (Protocol address (base 0)), click ok.

Module Type: Read AO, click ok.

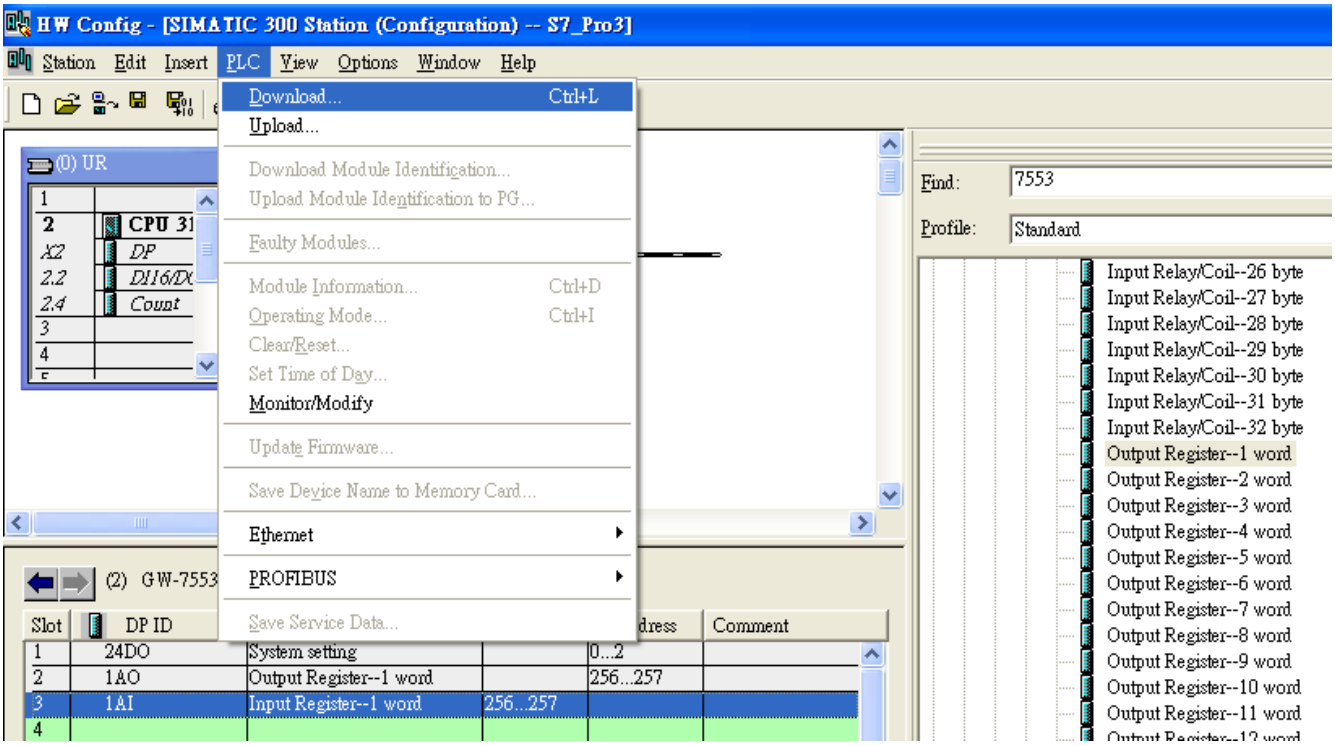


Step 3: Download the HW settings into SIMATIC PLC

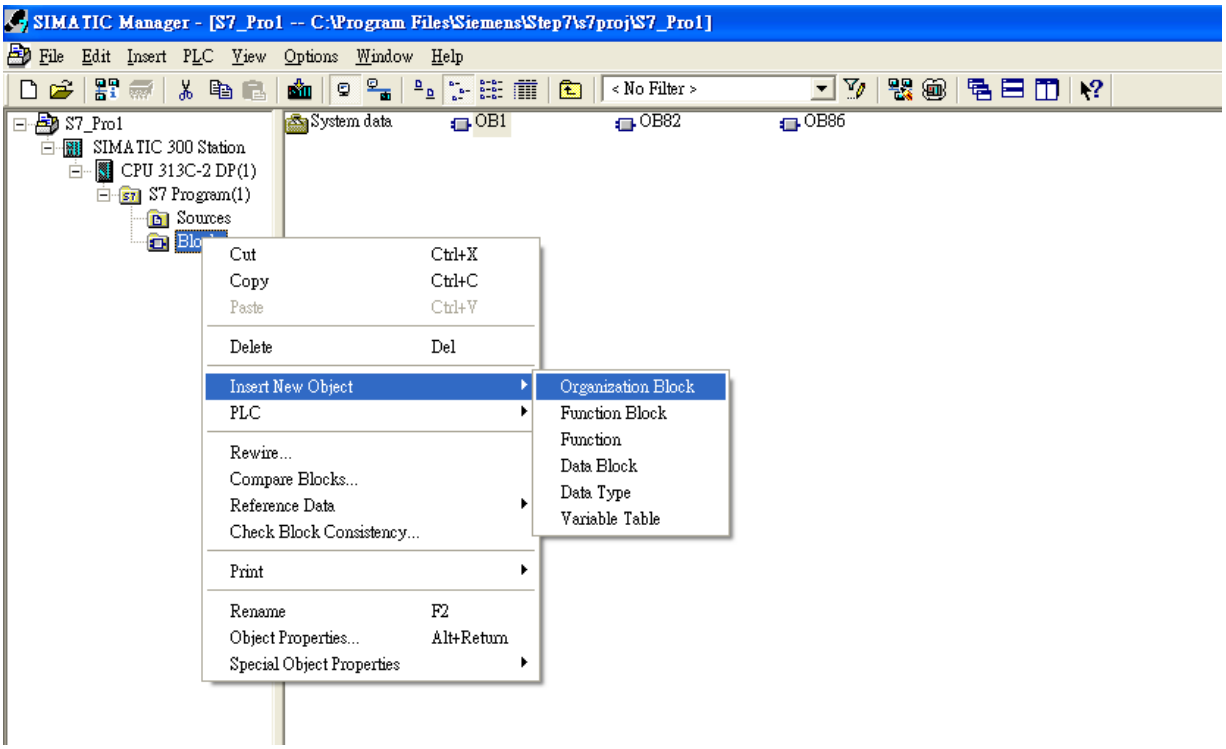
1. Save and Compile

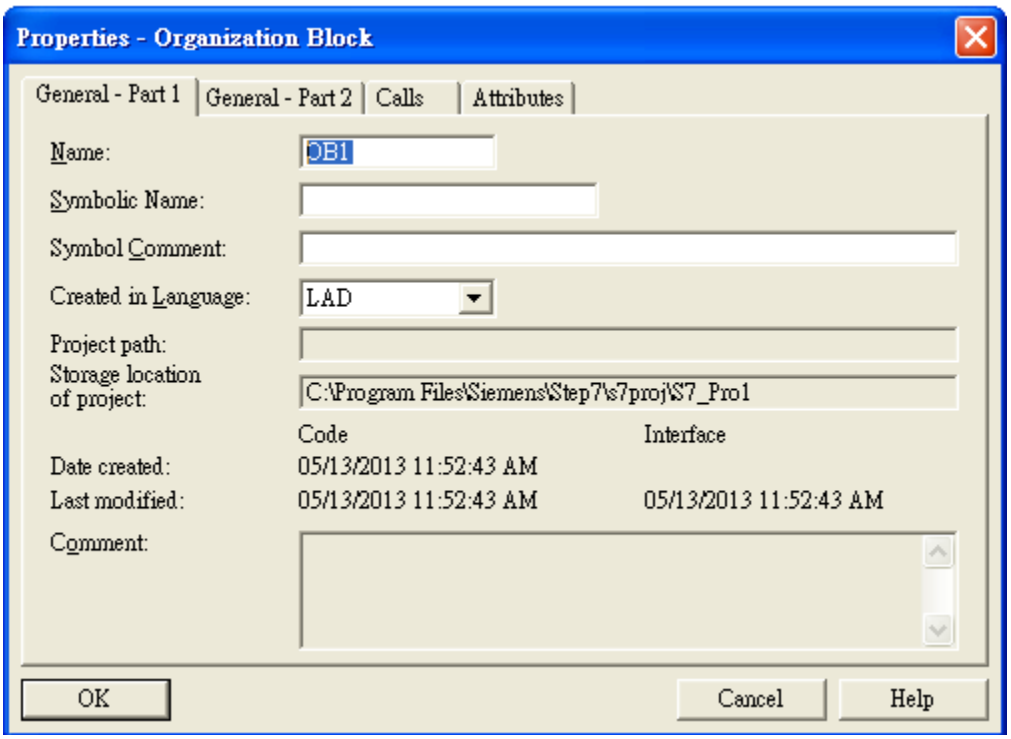


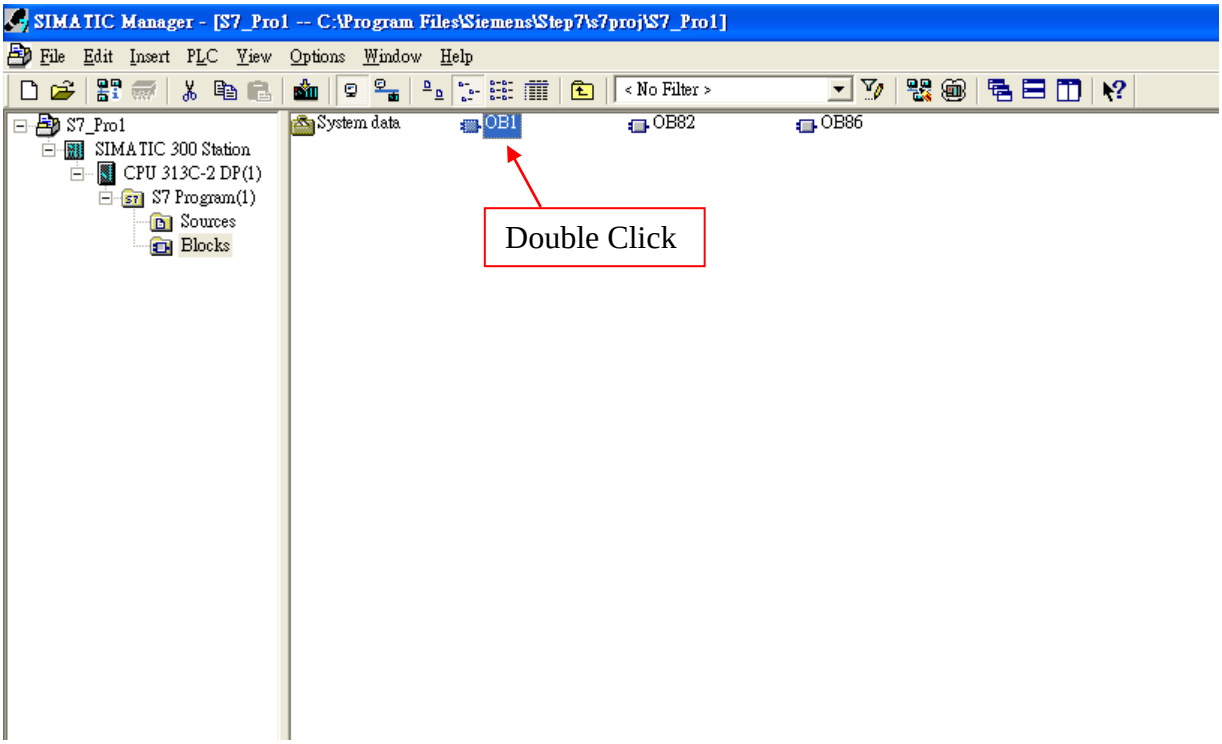
2. HW settings into SIMATIC PLC



Step 4: Insert a new Organization Block (OB1,OB82,OB86)



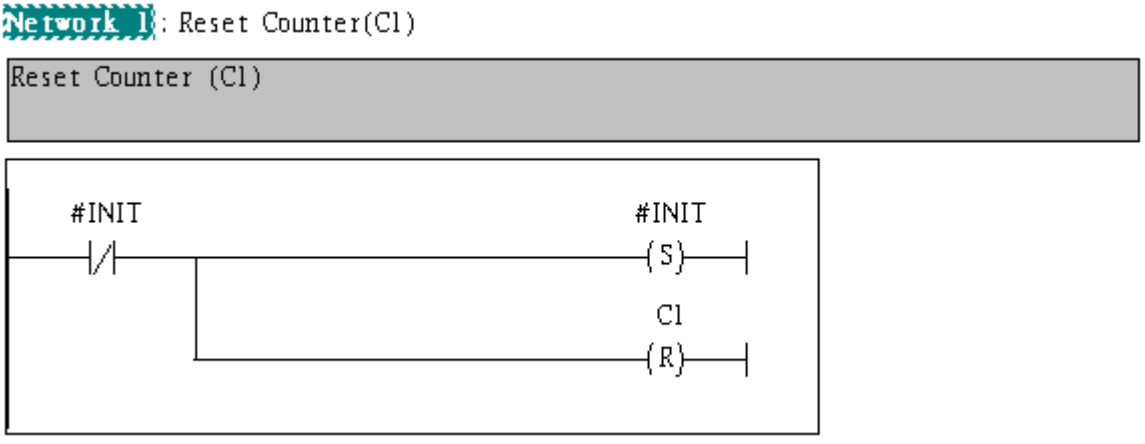




Step 5: Edit OB1

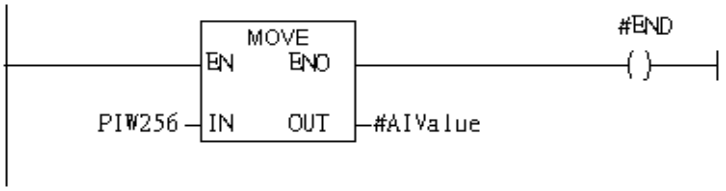
Variables used in the example LD Program:

	Name	Data Type	Address	Comment
	END	Bool	20.0	
	INIT	Bool	20.1	
	Tri	Int	22.0	
	AIValue	Word	24.0	



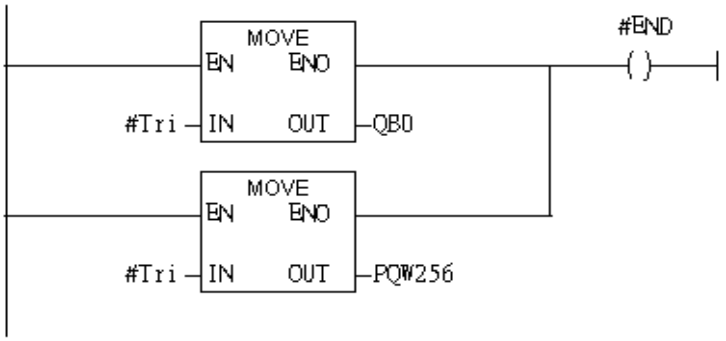
Network 2 : Title:

Comment:



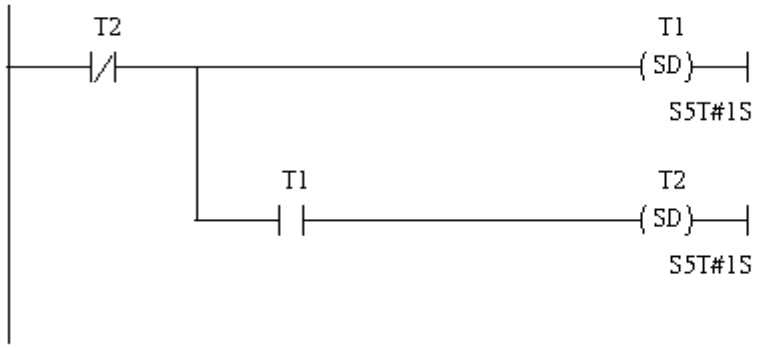
Network 3 : QB0 add "1" then PLC will send QW3 out.

1 word AO



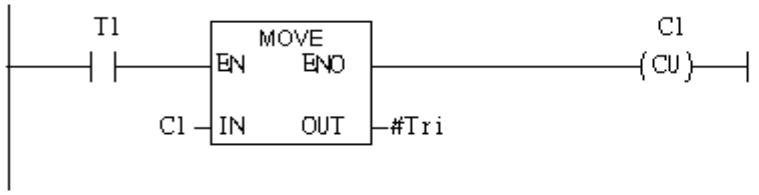
Network 4 : Timer T1 & T2

Using T2 trigger T1



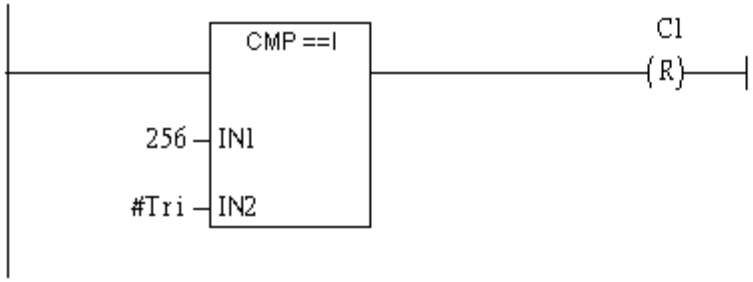
Network 5 : Counter C1

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

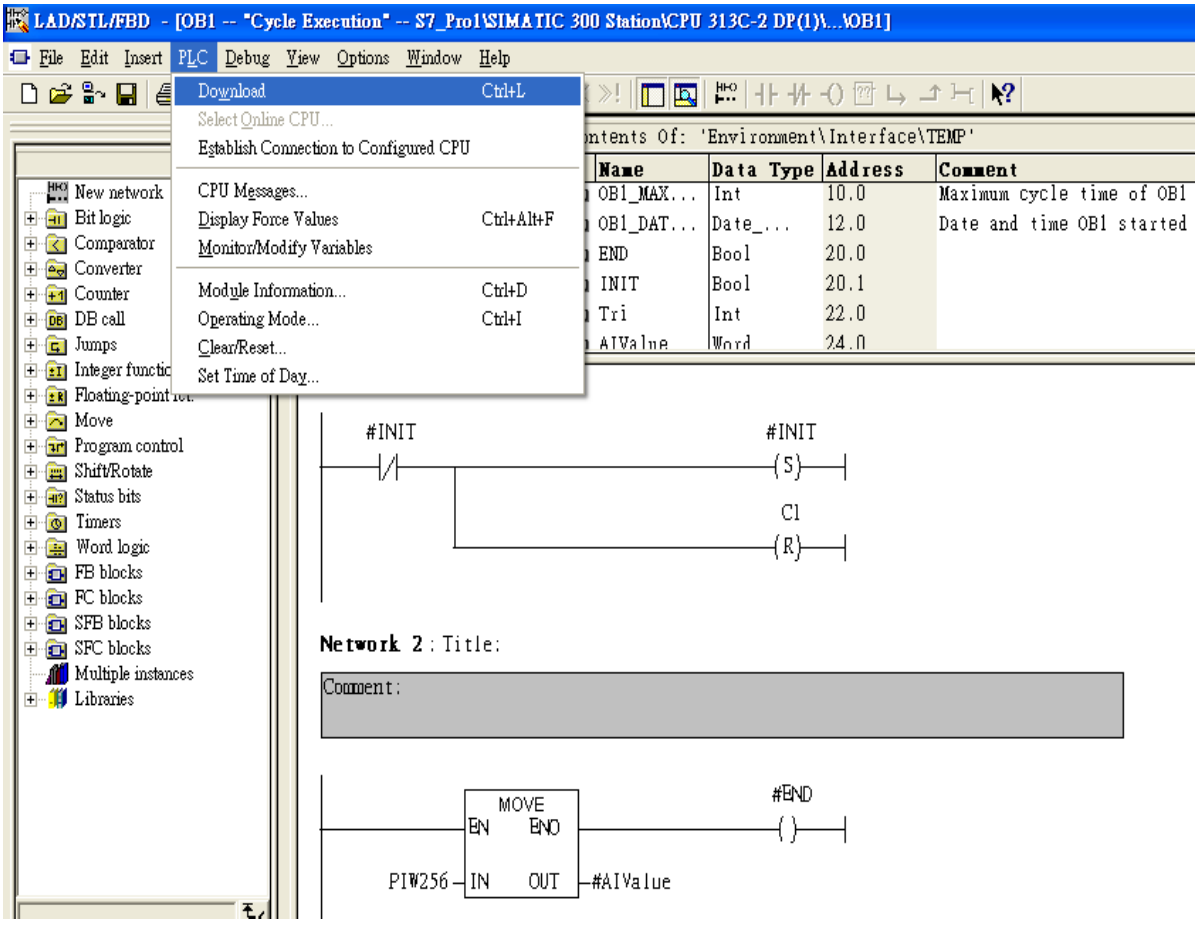


Network 6 : Compare Tri & 256

If Tri is equal to 256,C1 will reset



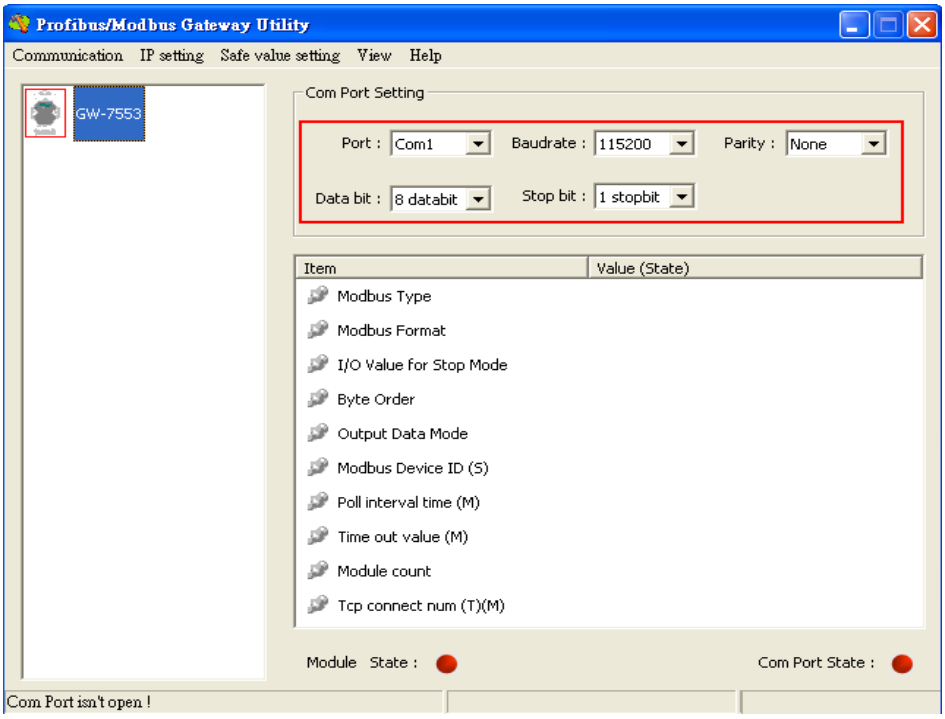
Step 6: Download the settings into SIMATIC PLC



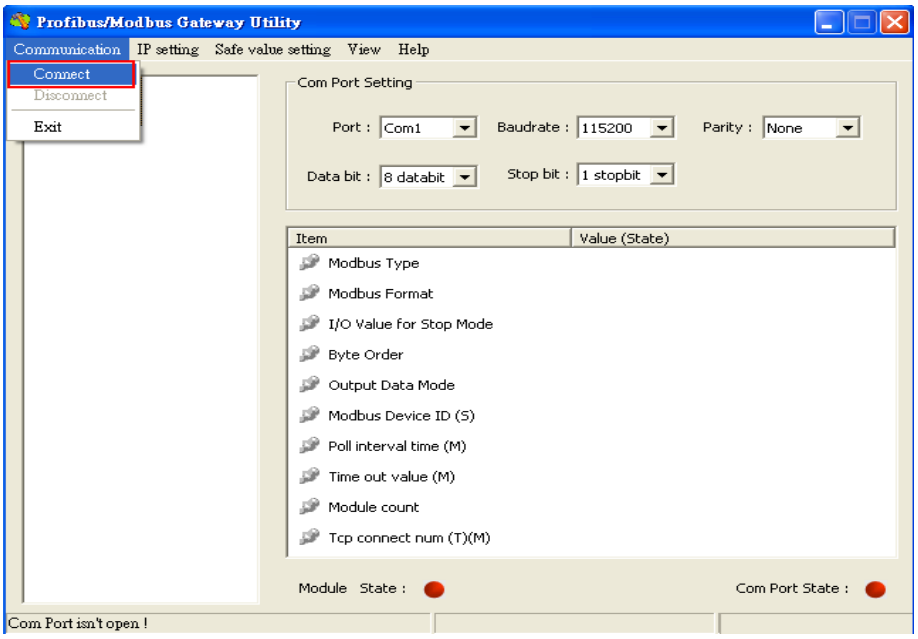
Step 7: Make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at Normal mode.

Step 8: Connect with GW-7553 and Utility

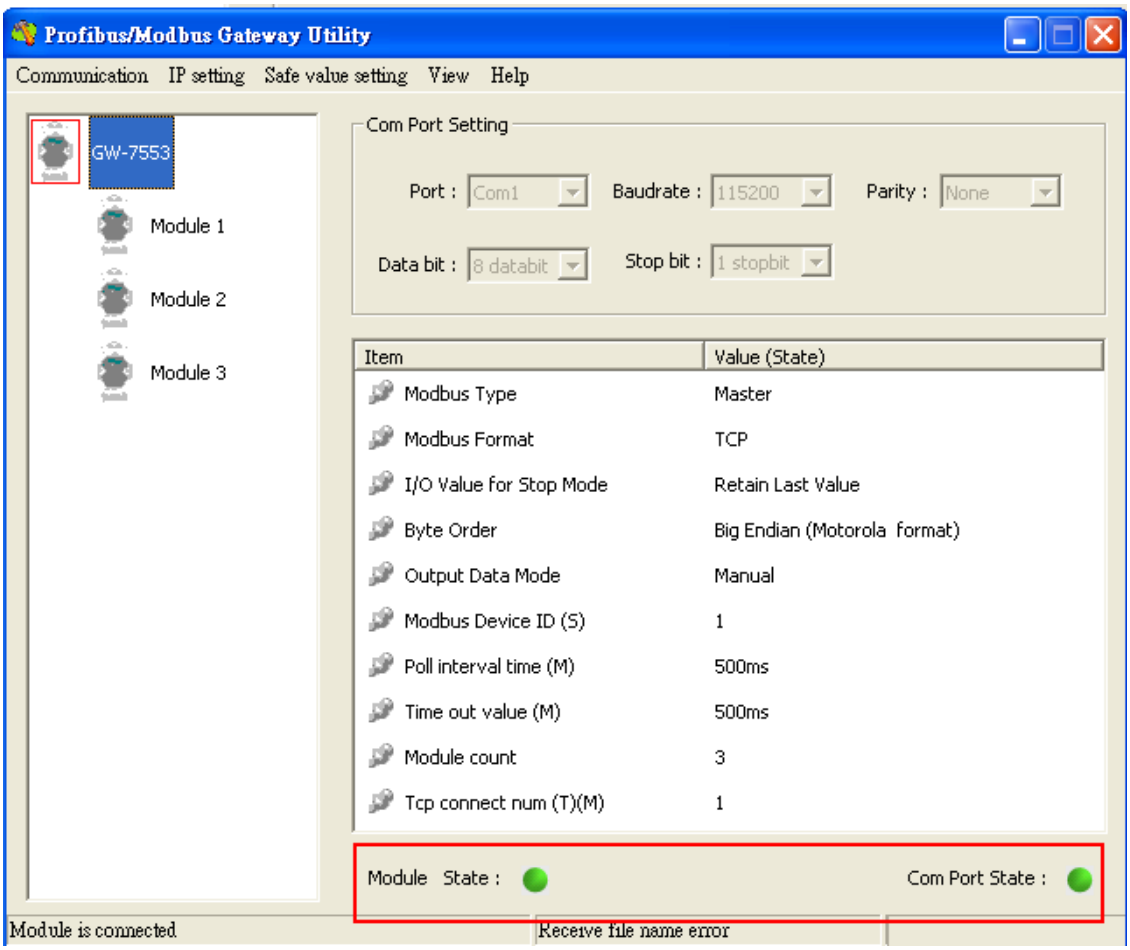
1. Set the Com Port Setting of the Utility



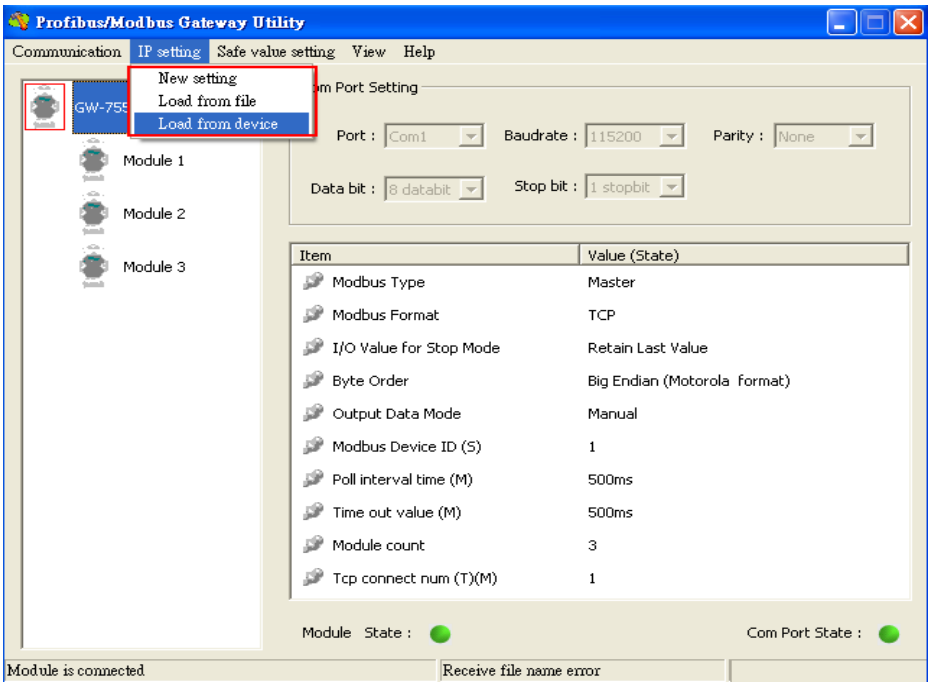
2.Click connect.



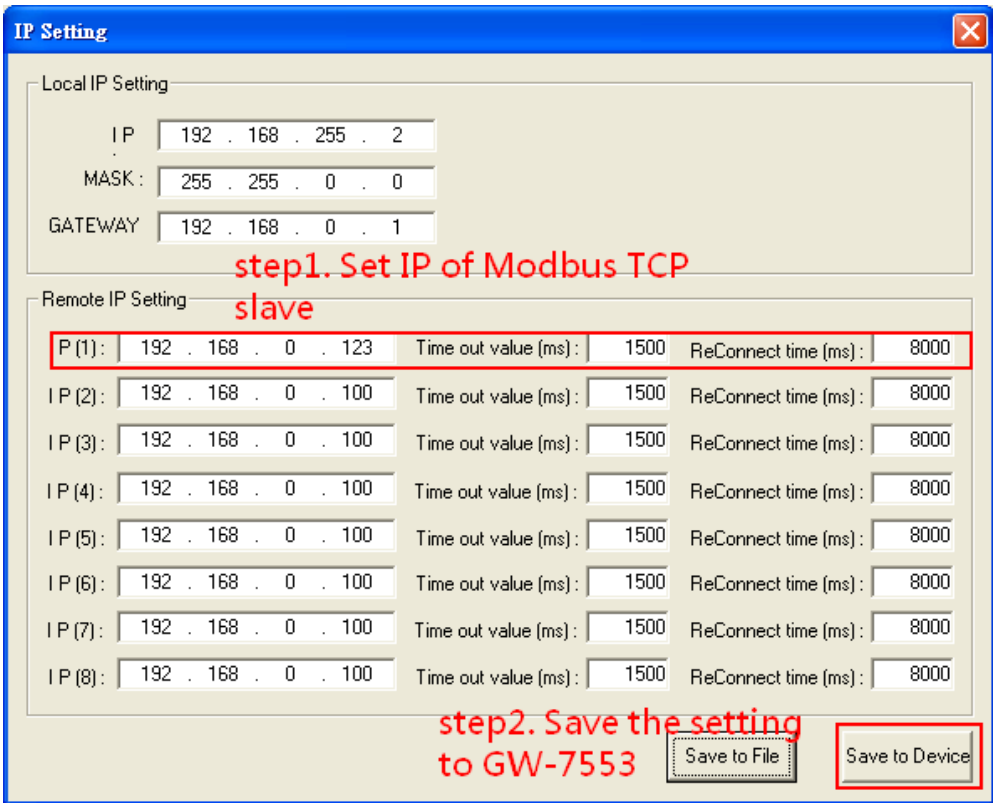
3. Connection success



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

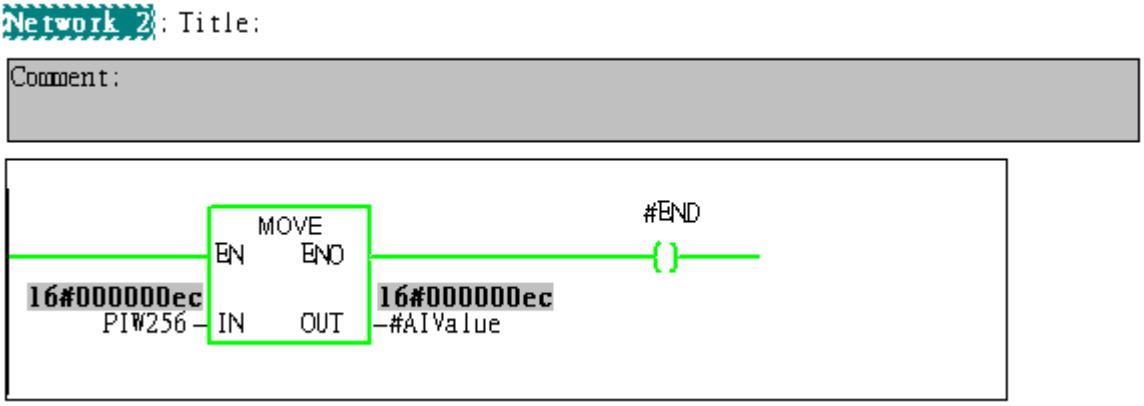


5. Set the IP of the Modbus TCP Slave and click “Save to Device” button to save the settings.



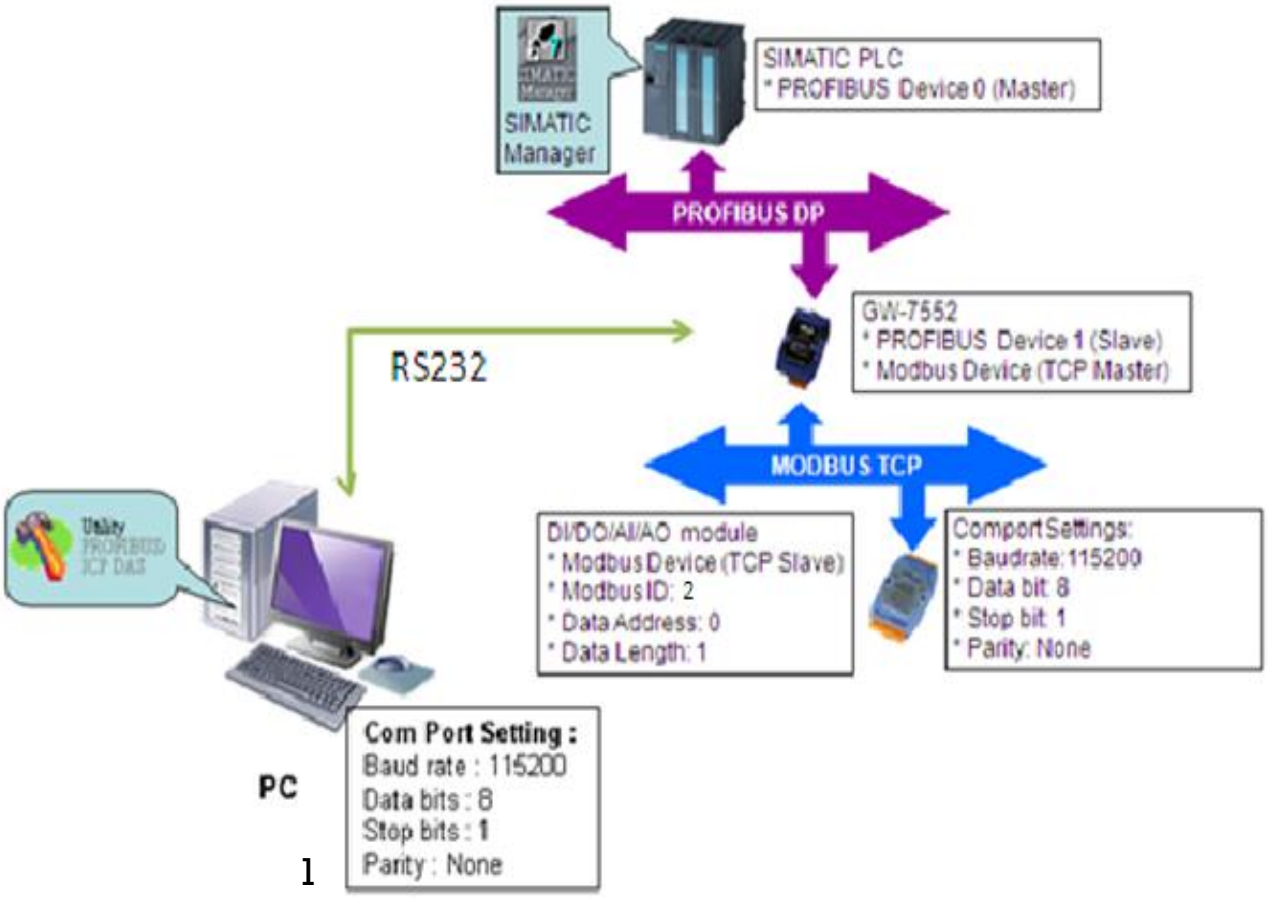
Step 9: Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.

Now the setting procedure has been finished and the user can write the data to the Modbus AO module at address PIW256.



Example 4: PLC reads AI module data from GW-7553. (Modbus FC04)

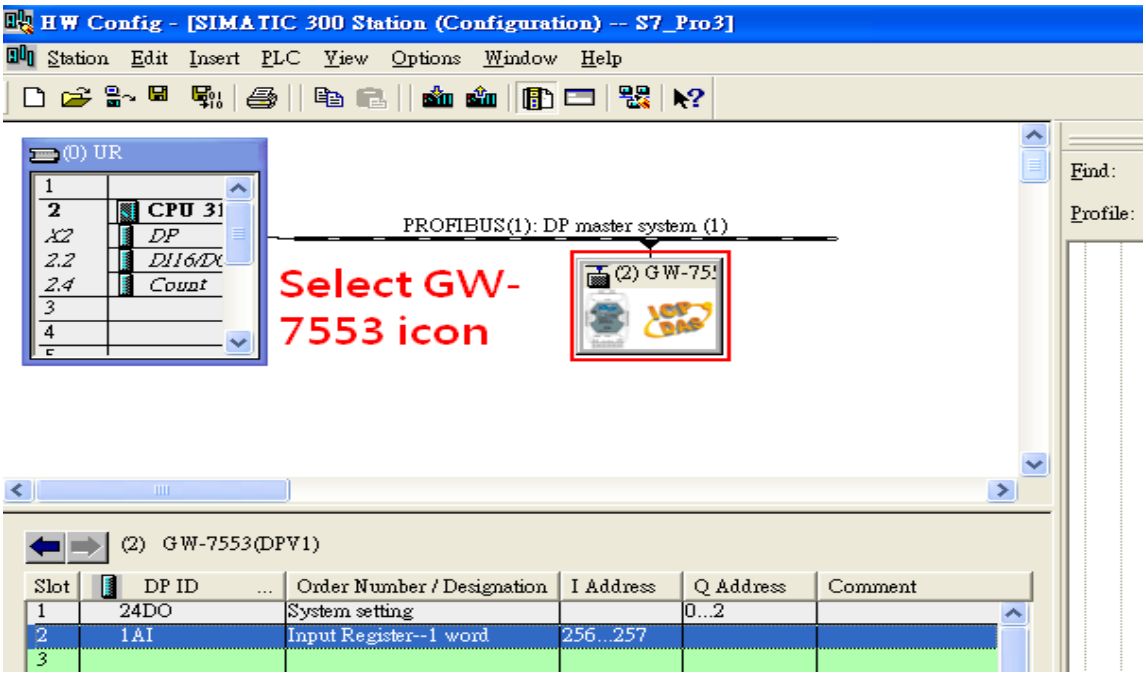
Read a Modbus TCP AI module (PROFIBUS Slave & Modbus TCP/Master)



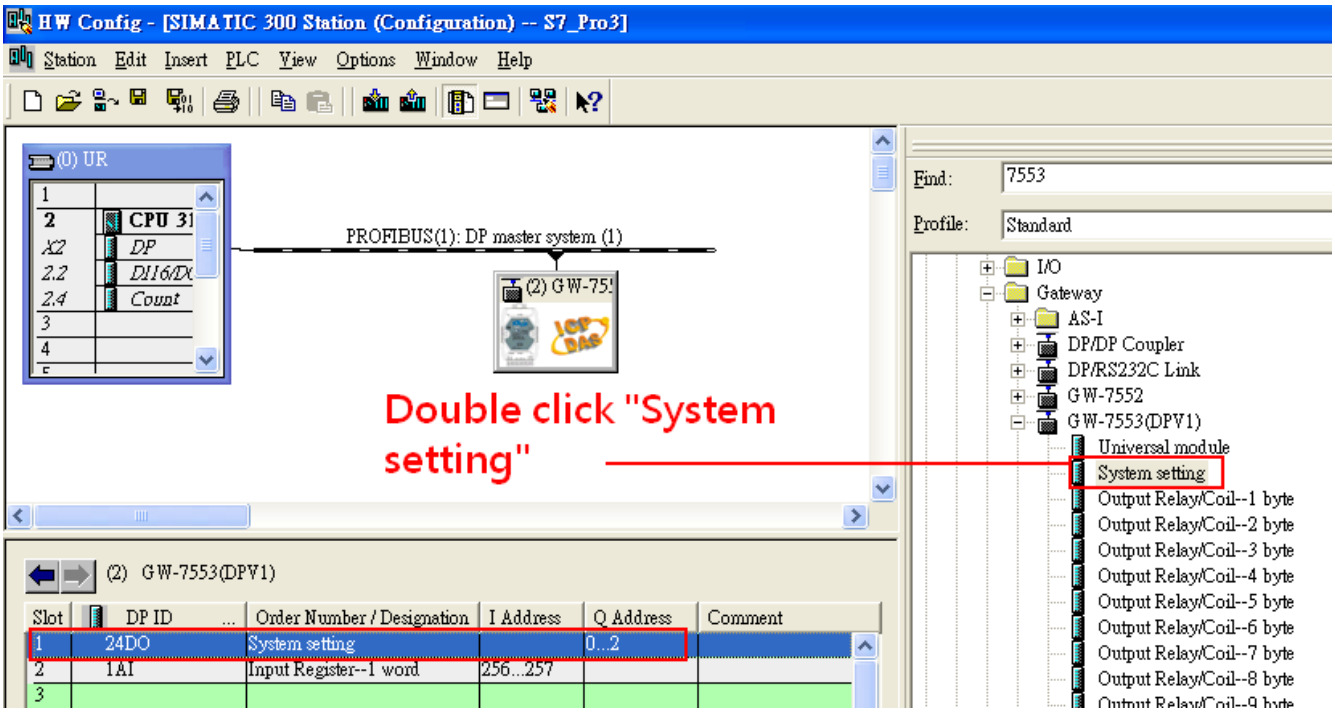
SIMATIC STEP7 Configuration:

Step 1: Setup the GW-7553 module

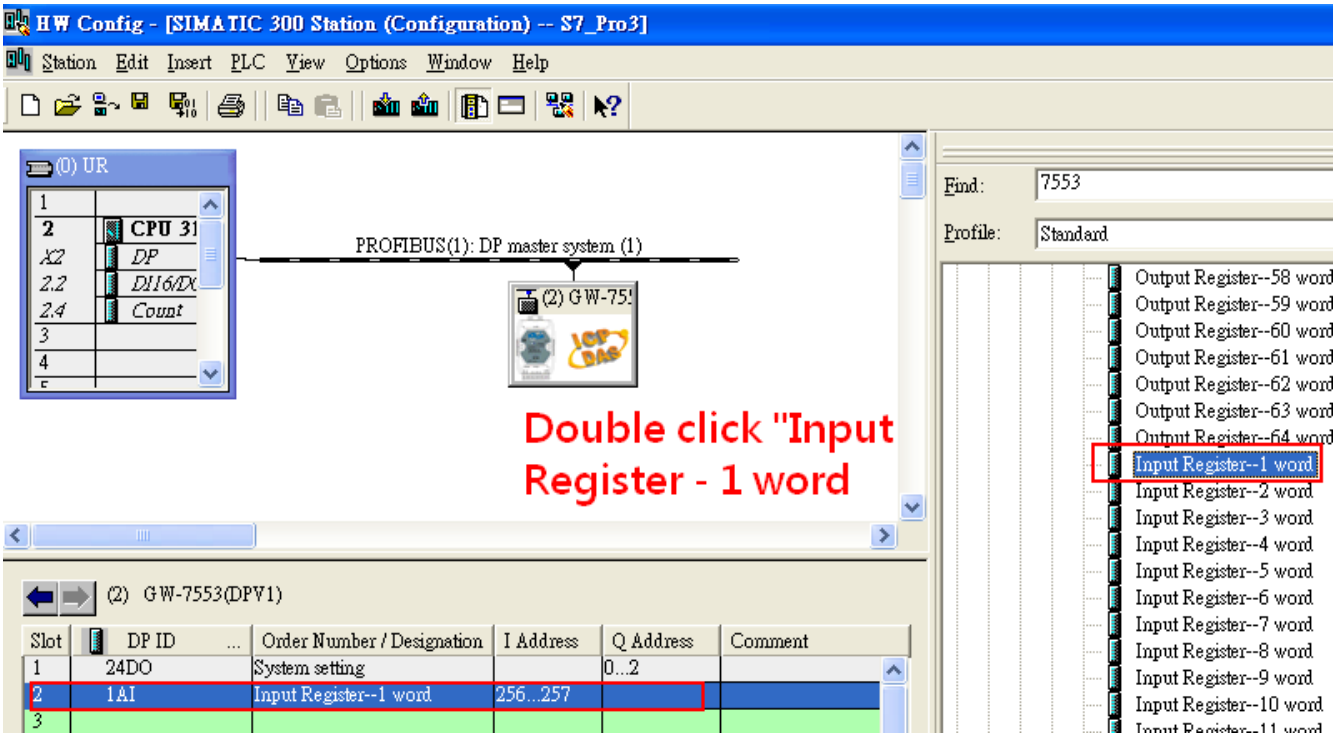
1. Select GW-7553 module



2. Add a System setting module



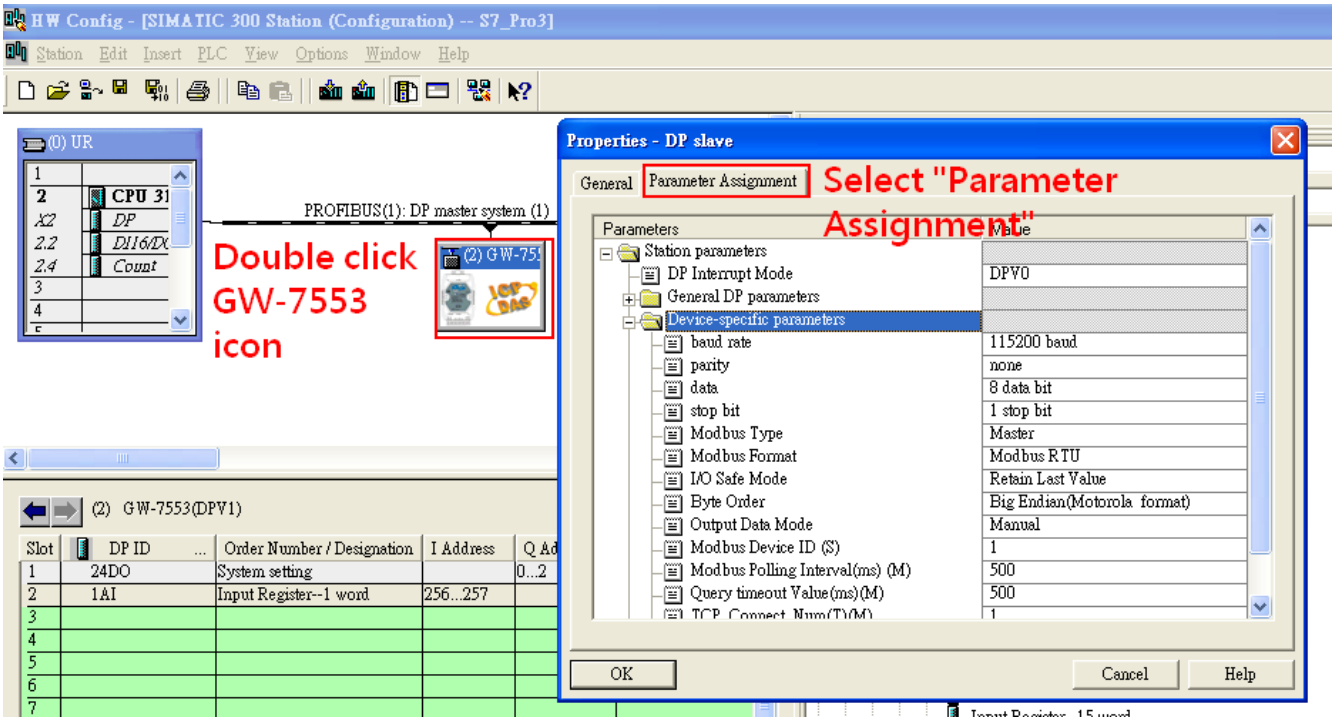
3. Add “Input Register—1 word” module



Step 2: Setup the parameters of the GW-7553

1. Double click GW-7553 icon

2. Select “Parameter Assignment”

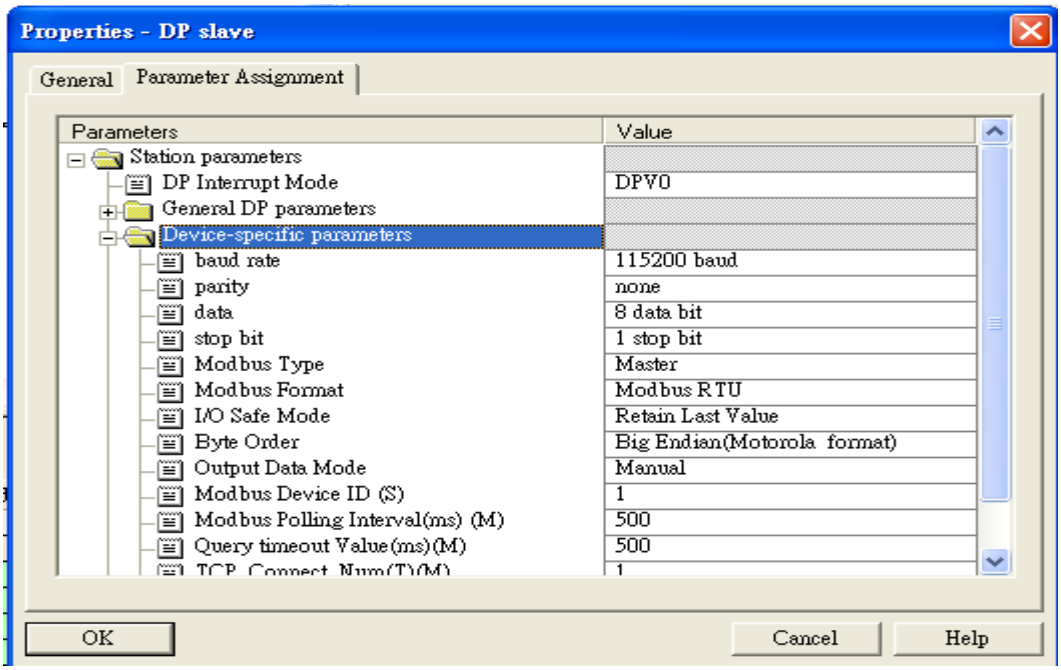


3. Set common parameters of the GW-7553

Common parameters➔

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

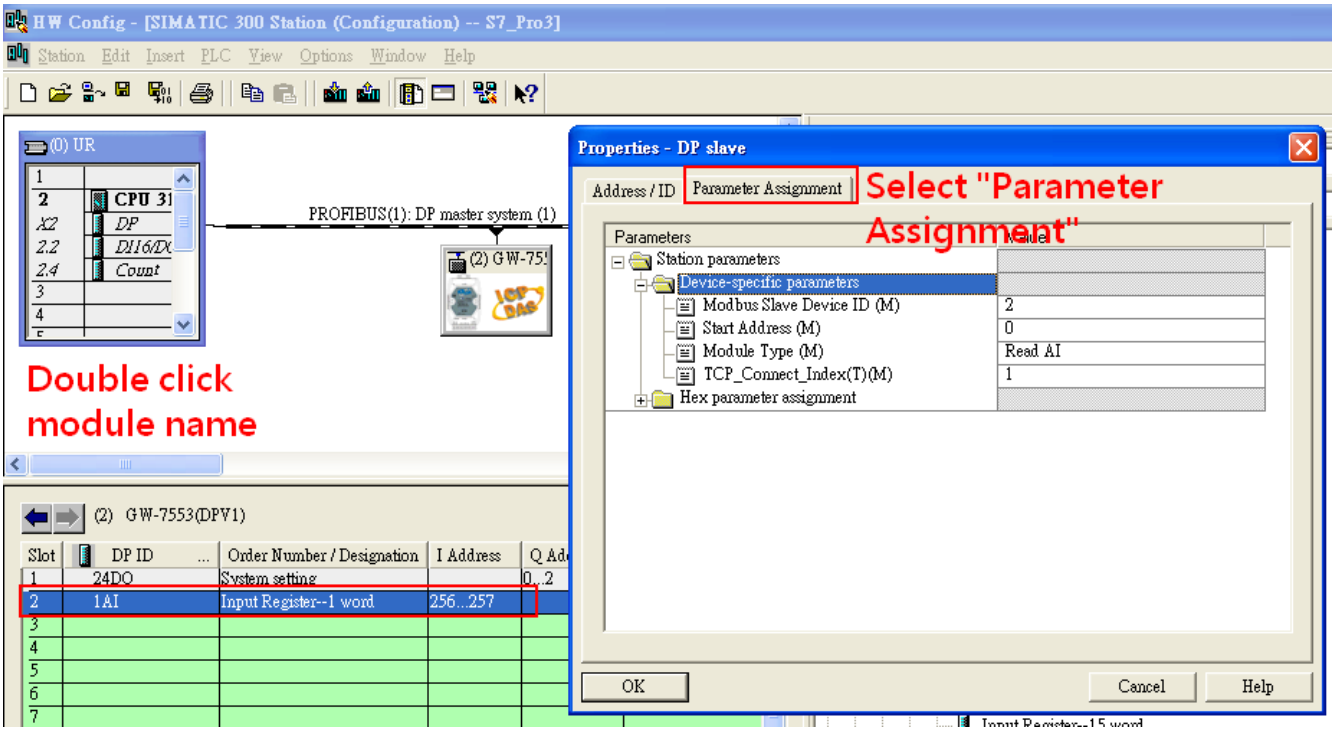
Modbus Format: Modbus TCP; Byte Order: Big Endian



4. Set module parameters of the GW-7553

(1)Double click “input register—1 word” module

(2)Select “Parameter Assignment”

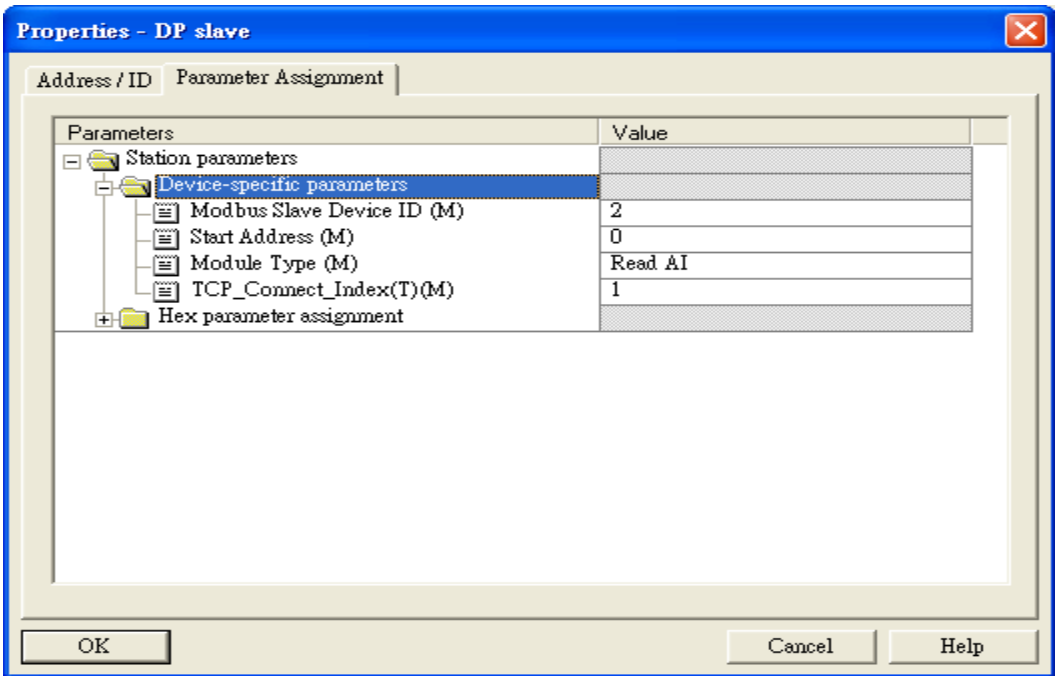


5. Setup “input register—1 word” module parameters

Module parameters➔

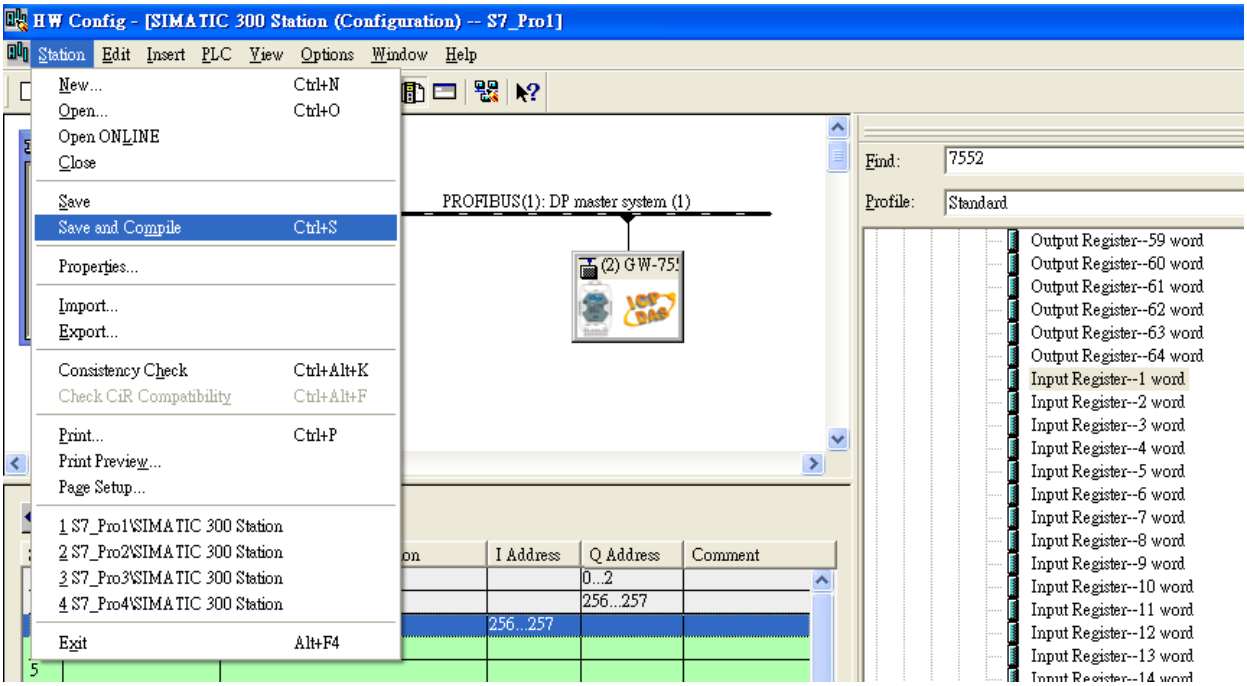
Modbus Slave Device ID: 1; Slave Address: 0 (Protocol address (base 0))

Module Type: Read AI, click ok.

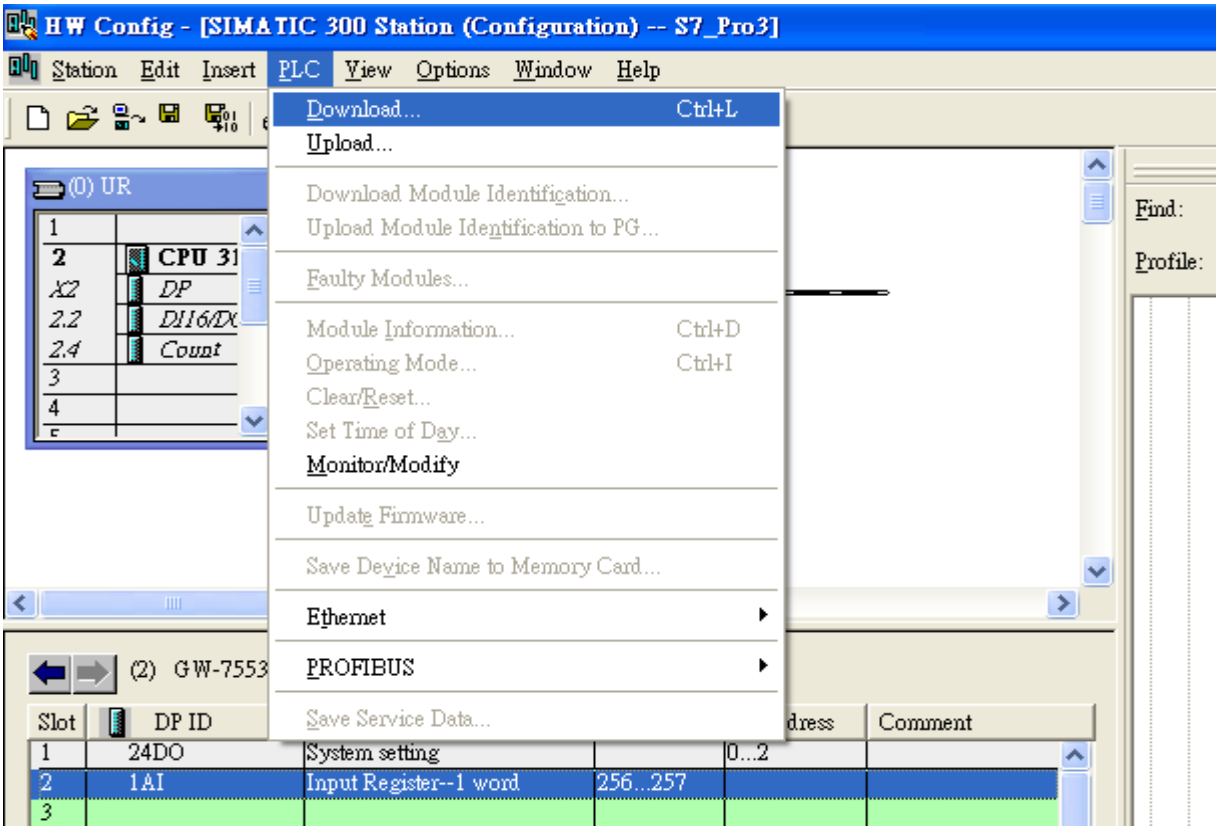


Step 3: Download the HW settings into SIMATIC PLC

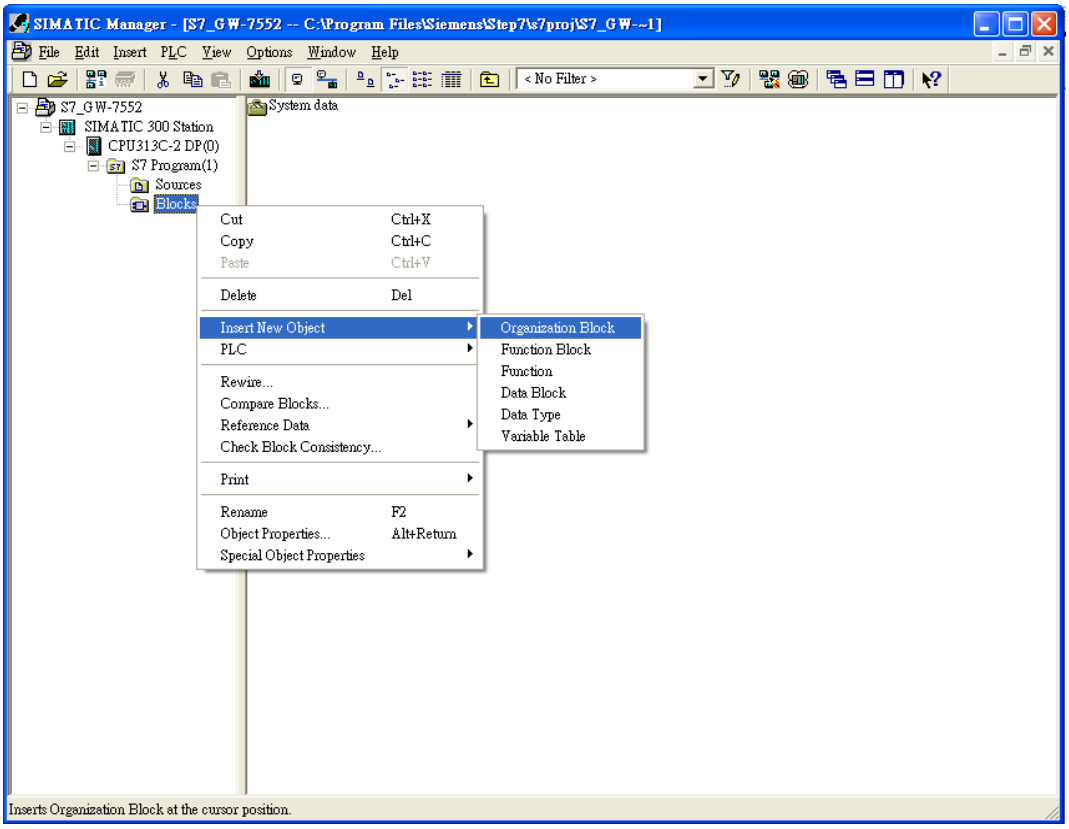
1. Save and Compile

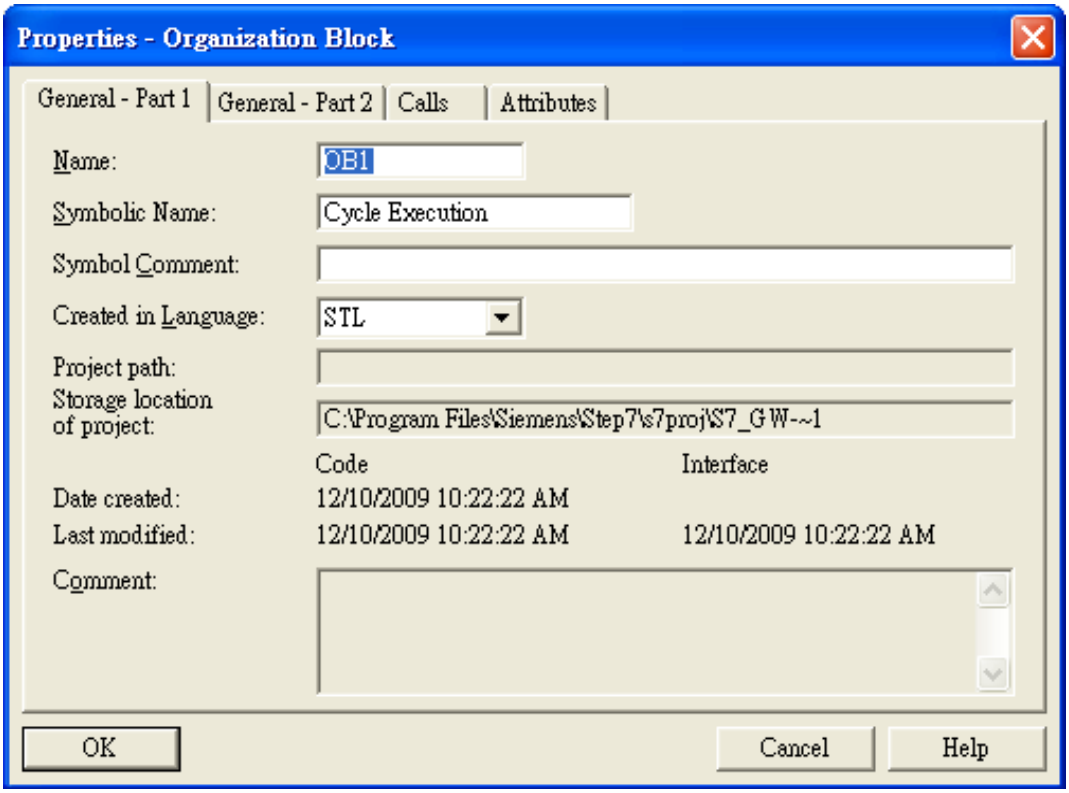


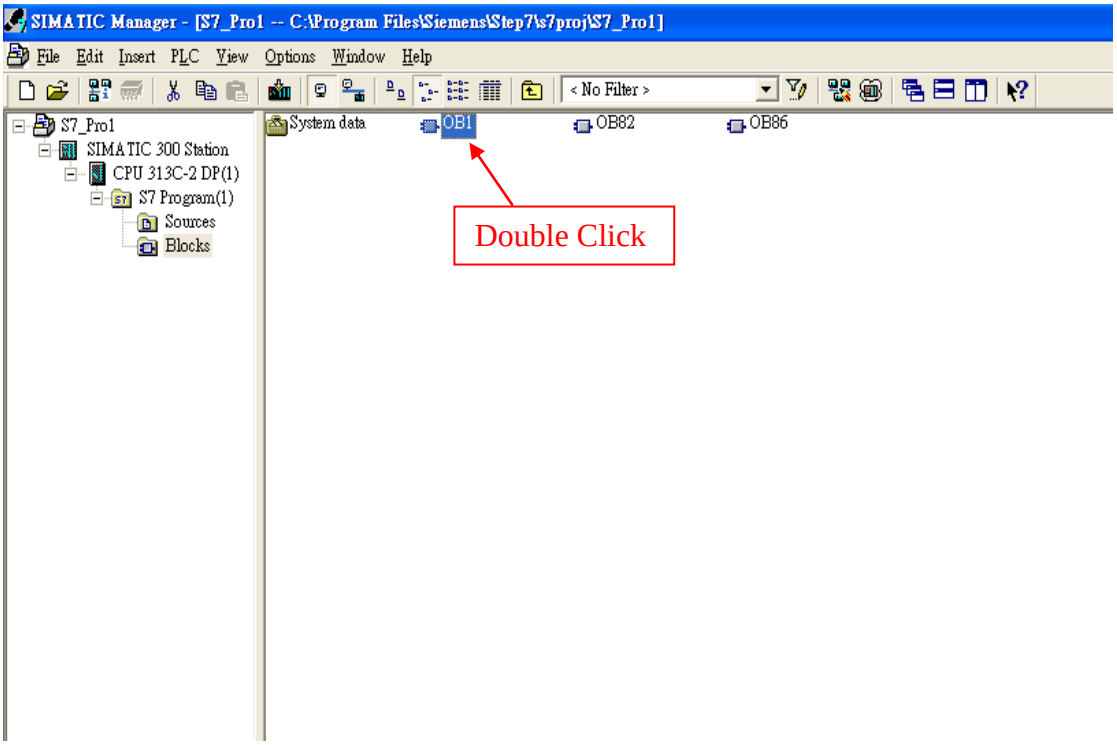
2. HW settings into SIMATIC PLC



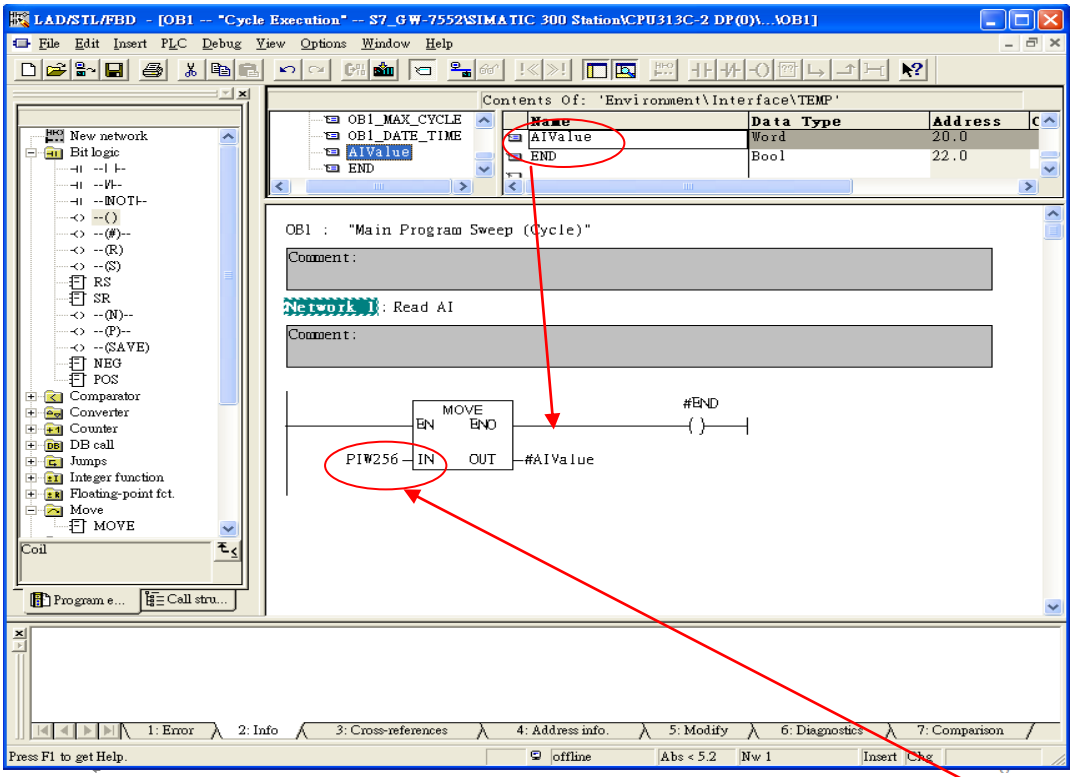
Step 4: Insert a new Organization Block (OB1,OB82,OB86)

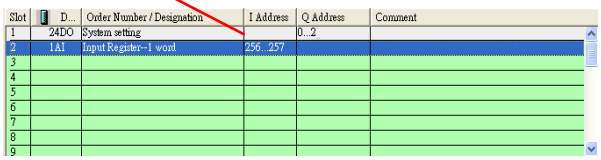



Properties - Organization Block
General - Part 1
General - Part 2
Calls
Attributes
Name:
OB1
Symbolic Name:
Cycle Execution
Symbol Comment:
Created in Language:
STL
Project path:
Storage location of project:
C:\Program Files\Siemens\Step7\s7proj\S7_GW~1
Code
Interface
Date created:
12/10/2009 10:22:22 AM
Last modified:
12/10/2009 10:22:22 AM
12/10/2009 10:22:22 AM
Comment:
OK
Cancel
Help

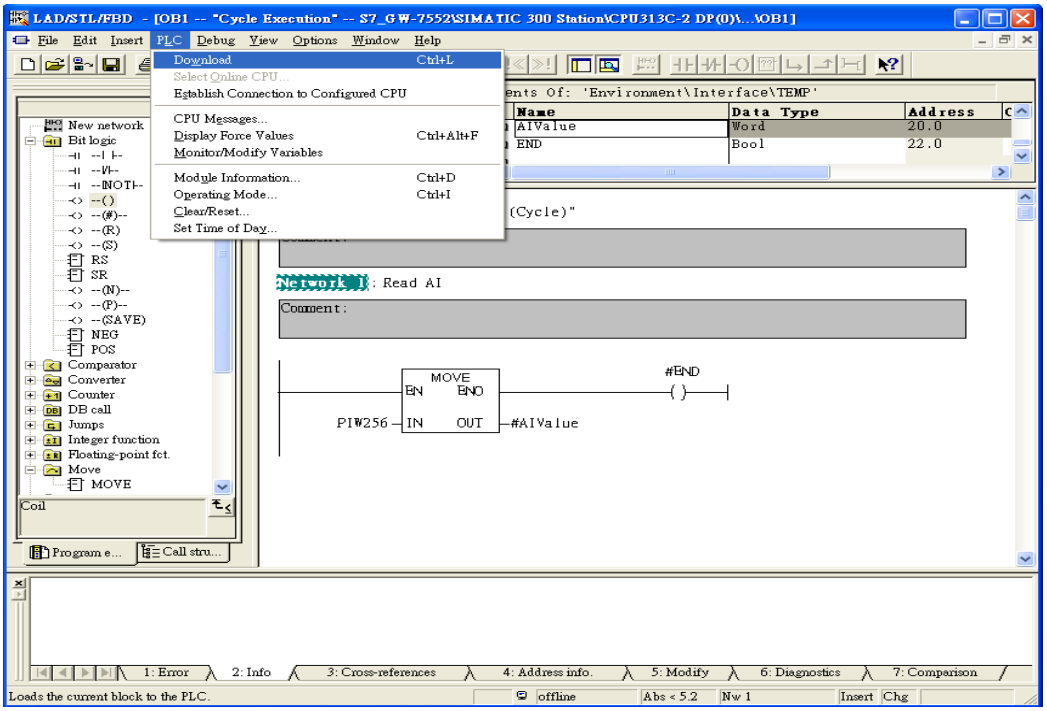

SIMATIC Manager - [S7_Pro1 -- C:\Program Files\Siemens\Step7\s7proj\S7_Pro1]
File
Edit
Insert
PLC
View
Options
Window
Help
< No Filter >
S7_Pro1
SIMATIC 300 Station
CPU 313C-2 DP(1)
S7 Program(1)
Sources
Blocks
System data
OB1
OB82
OB86
Double Click

Step 5: Edit OB1





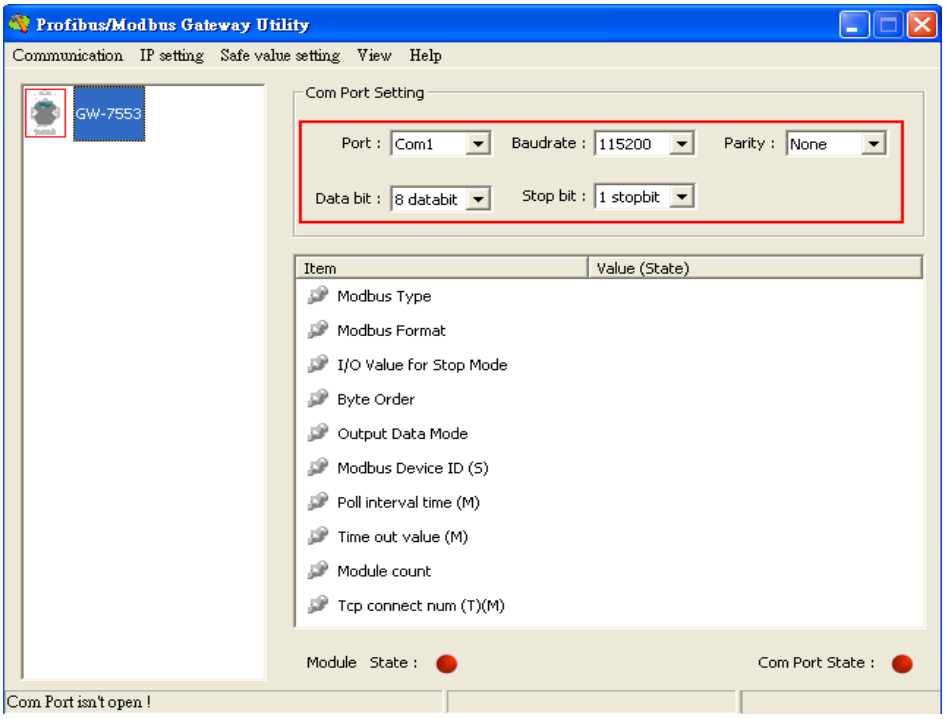
Step 6: Download the settings into SIMATIC PLC



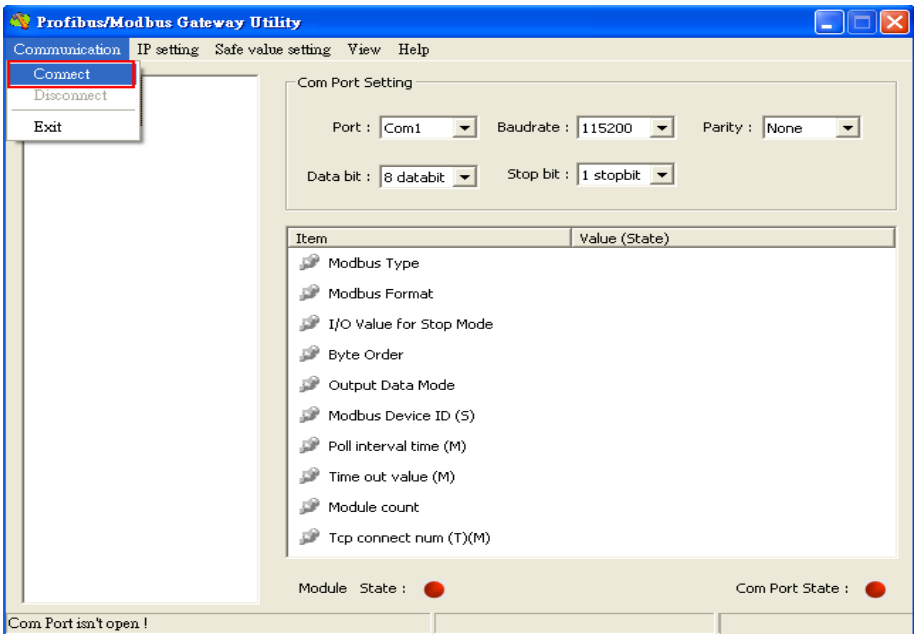
Step 7: Make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at Normal mode.

Step 8: Connect with GW-7553 and Utility

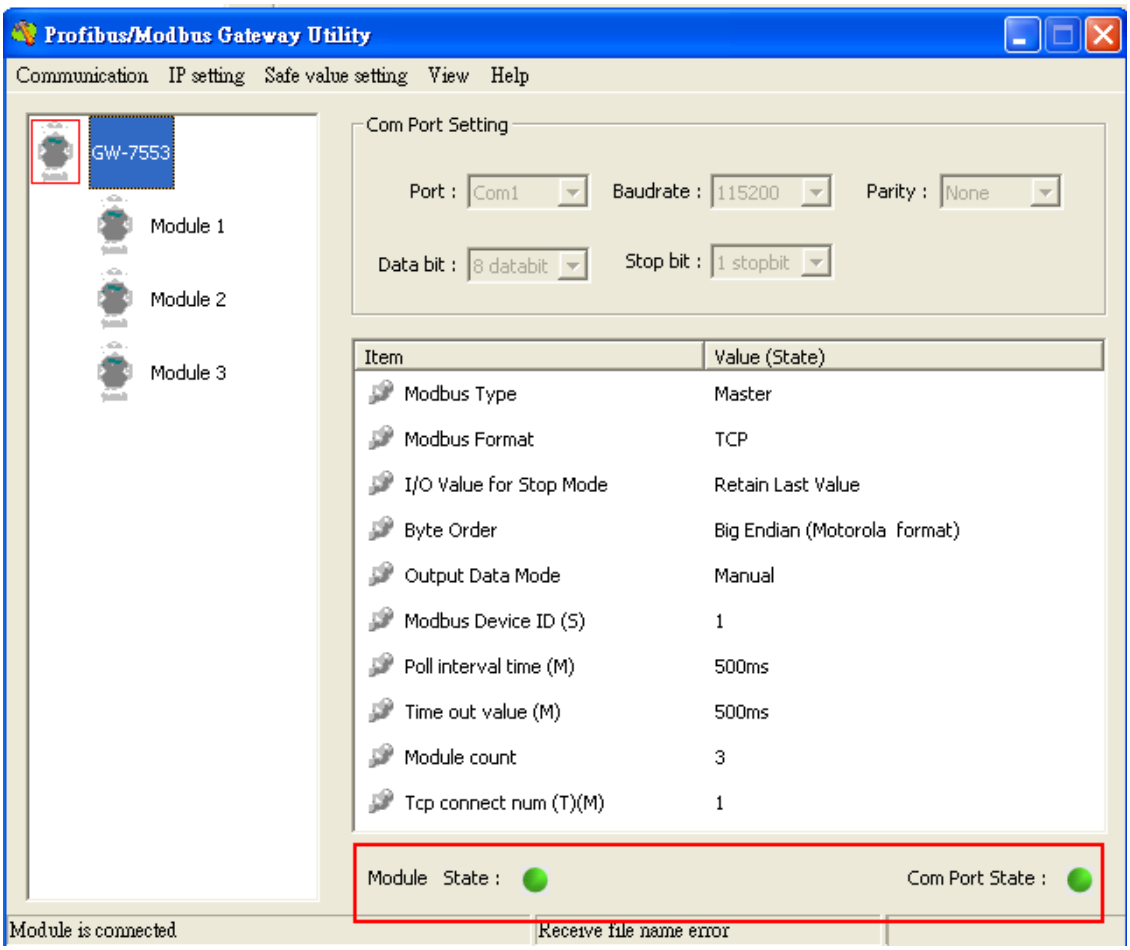
1. Set the Com Port Setting of the Utility



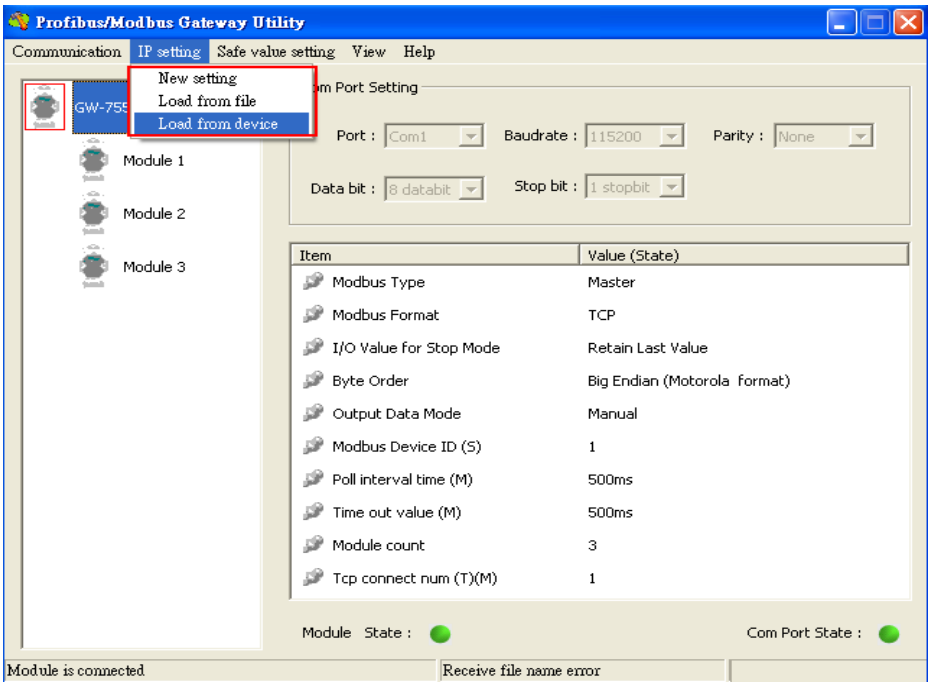
2.Click connect.



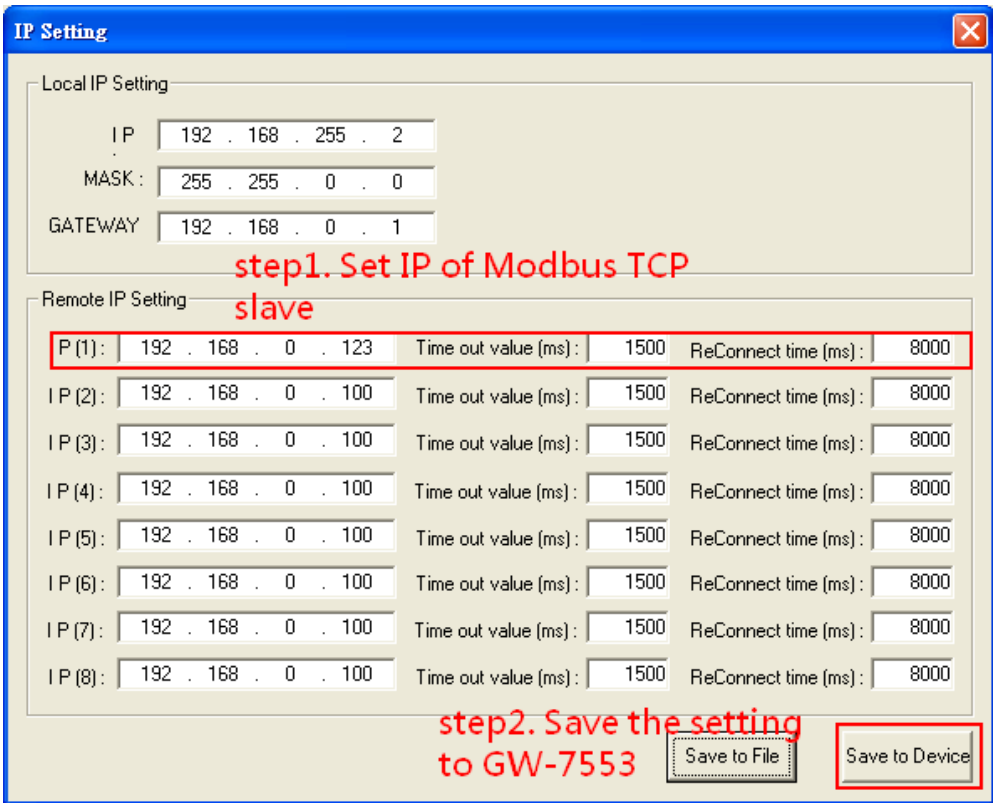
3. Connection success



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

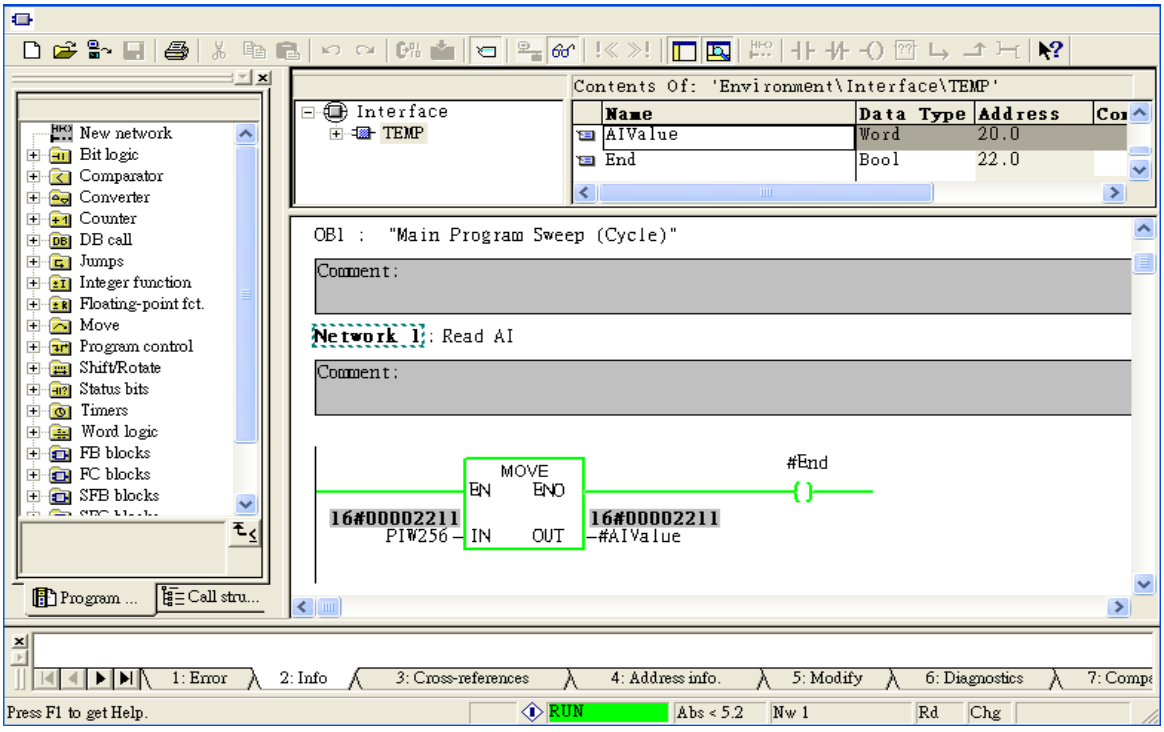


5. Set the IP of the Modbus TCP Slave and click “Save to Device” button to save the settings.



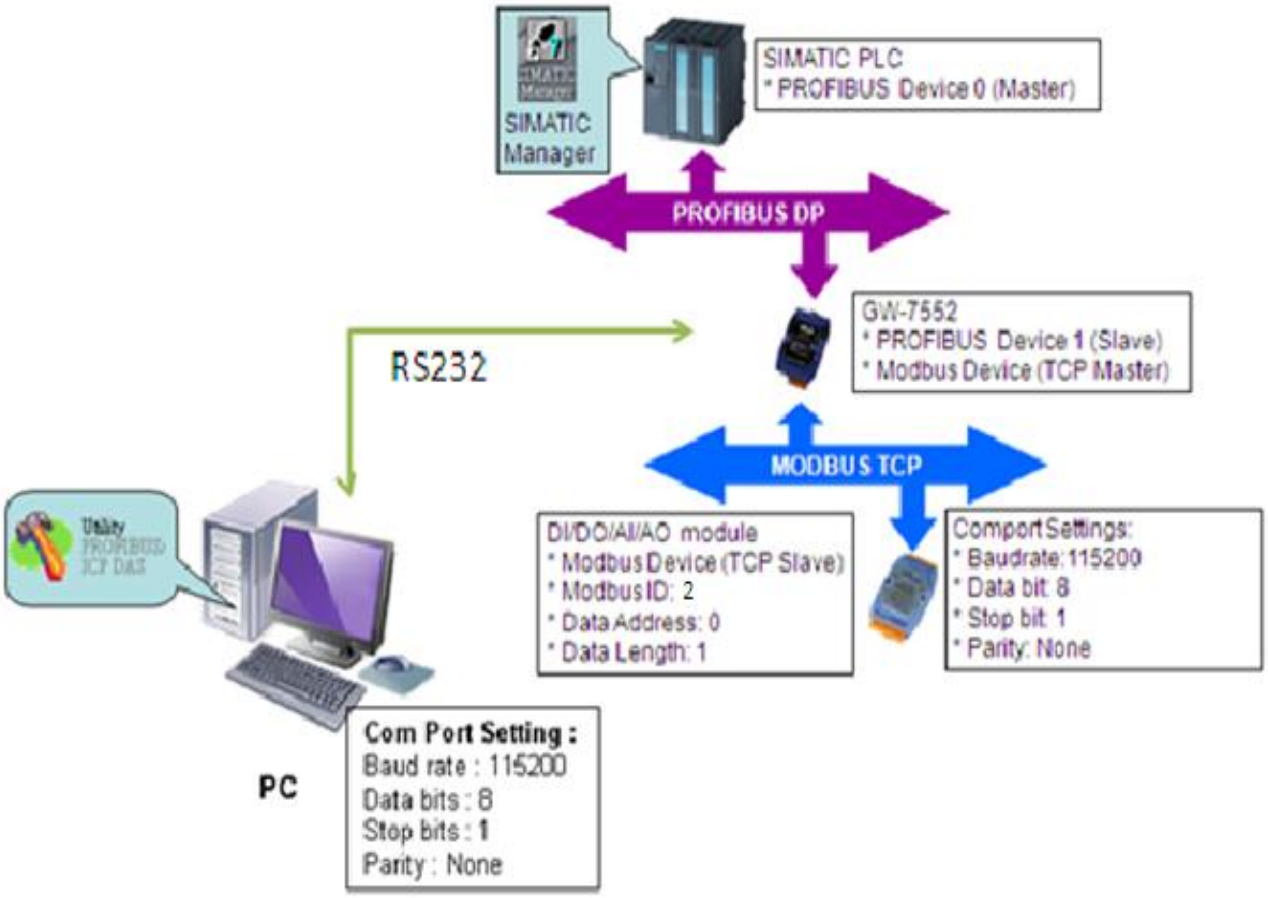
Step 9: Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.

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



Example 5: PLC writes DO module data to GW-7553.
(Modbus FC05, FC15)

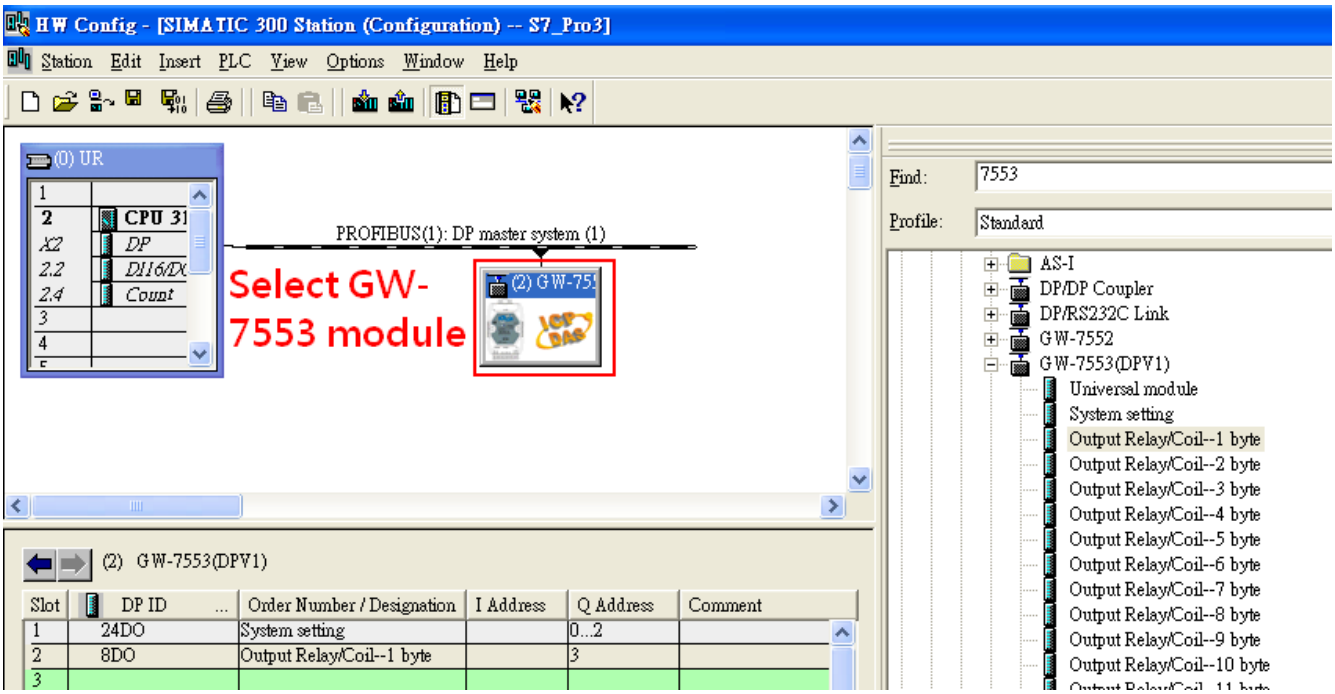
Write a Modbus TCP DO module (PROFIBUS Slave & Modbus TCP/Master)



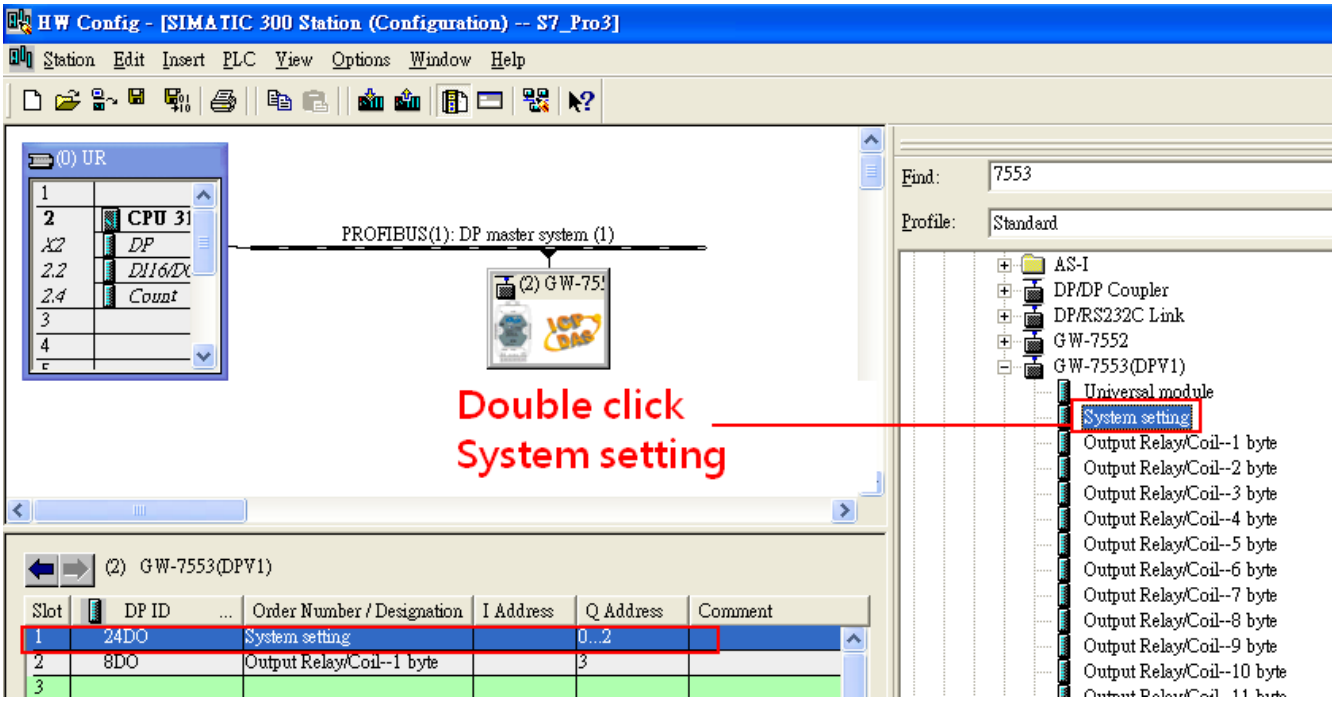
SIMATIC STEP7 Configuration:

Step 1: Setup the GW-7553 module

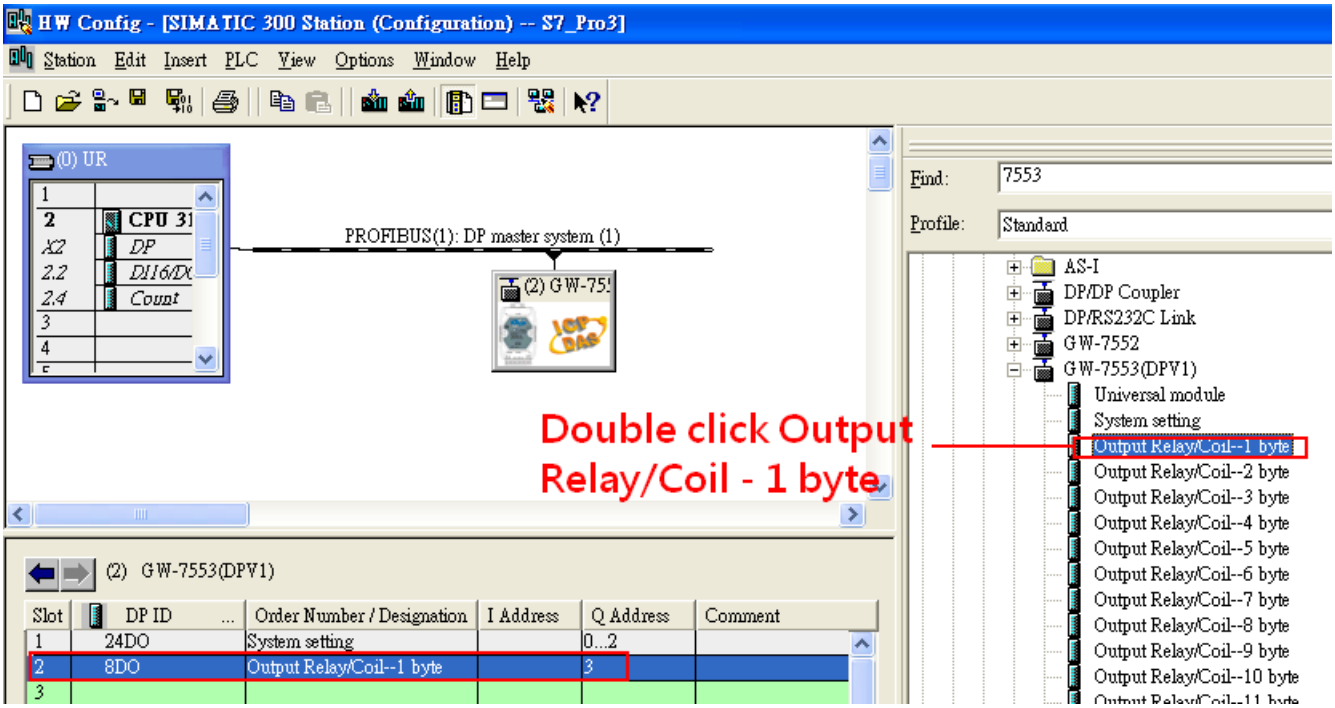
1. Select GW-7553 module



2. Add a System setting module



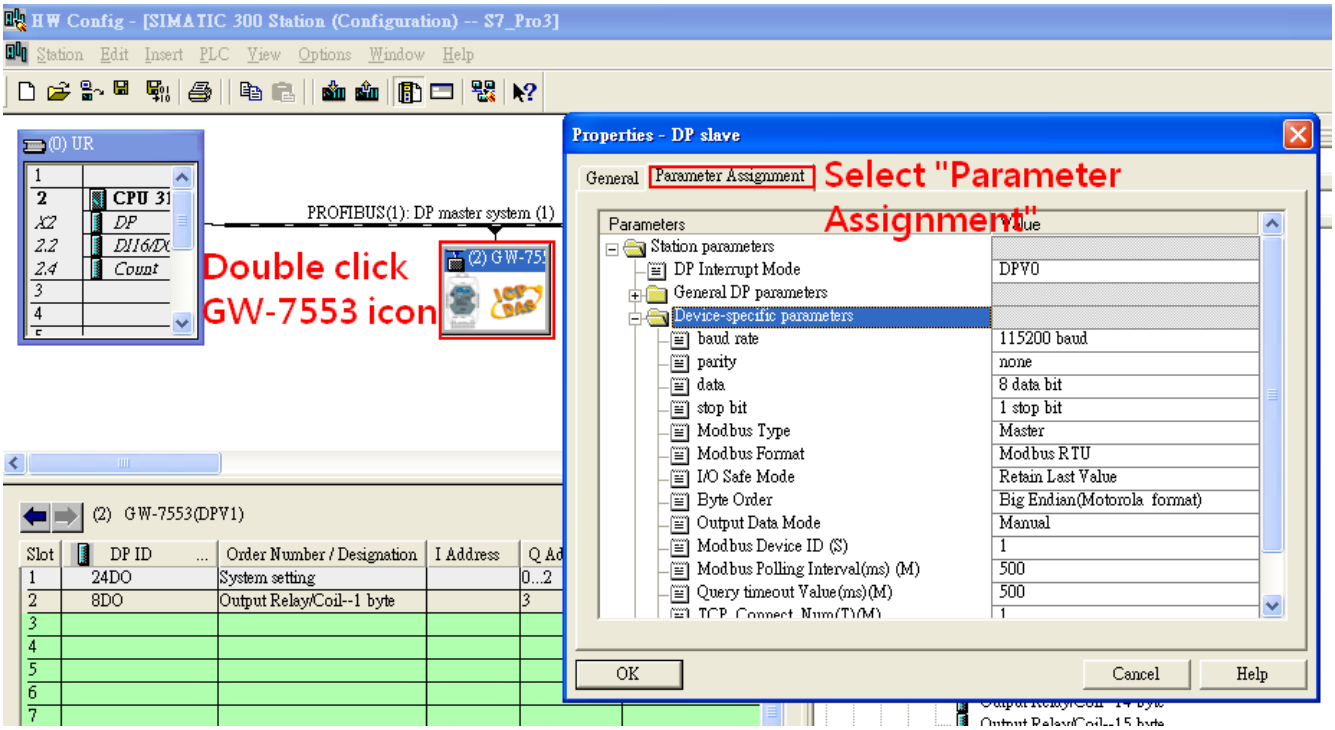
3. Add “Onput Relay/Coil—1 byte” module(For FC15,multiple coils, please select more than 1 byte module)



Step 2: Setup the parameters of the GW-7553

1. Double click GW-7553 icon

2. Select “Parameter Assignment”

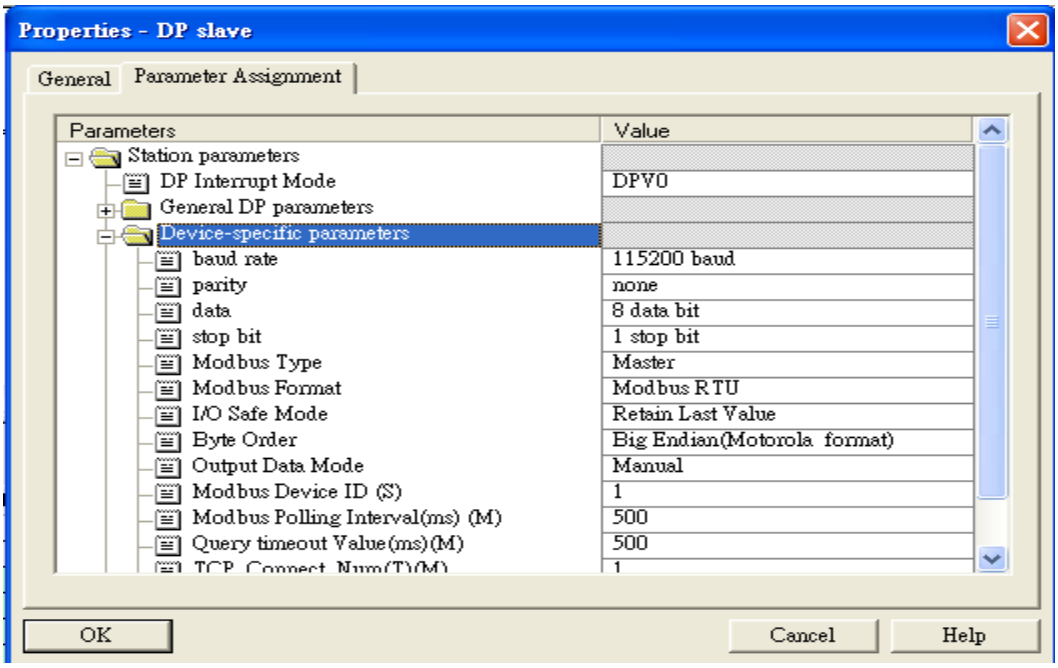


3. Set common parameters of the GW-7553

Common parameters➔

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

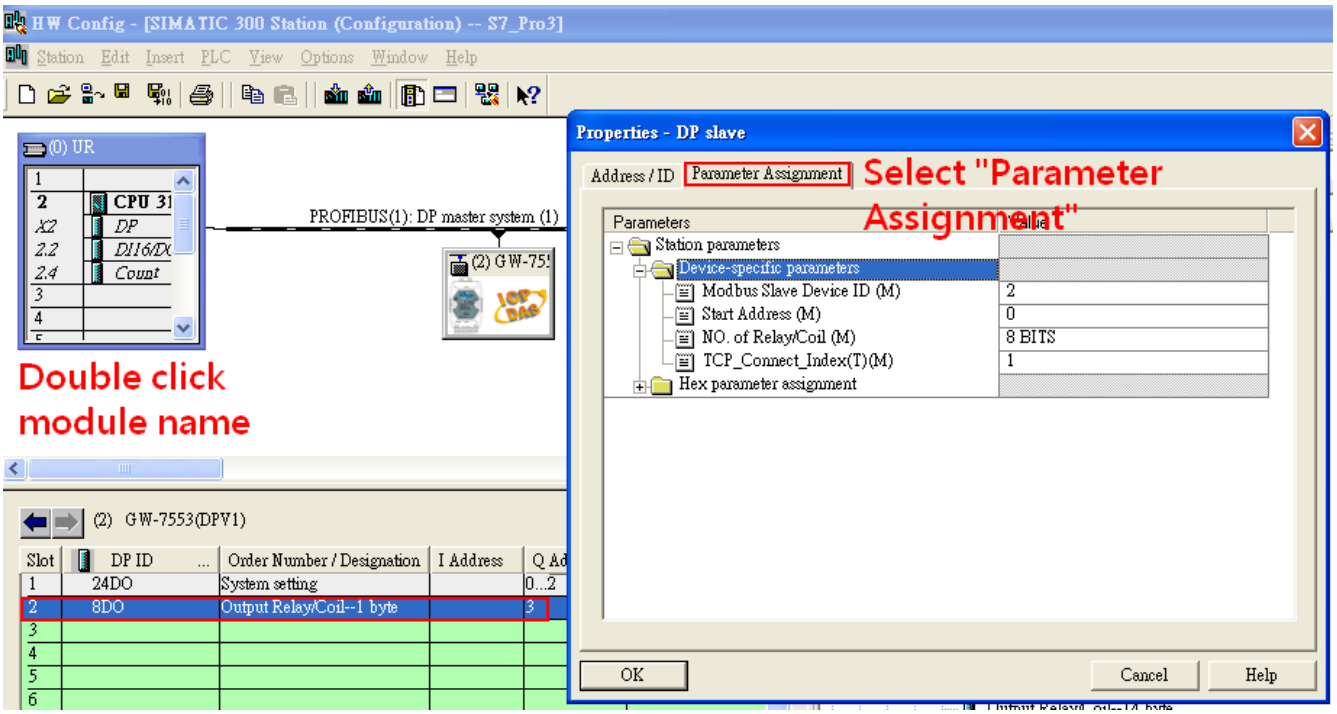
Modbus Format: Modbus TCP; Byte Order: Big Endian



4. Set module parameters of the GW-7553

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

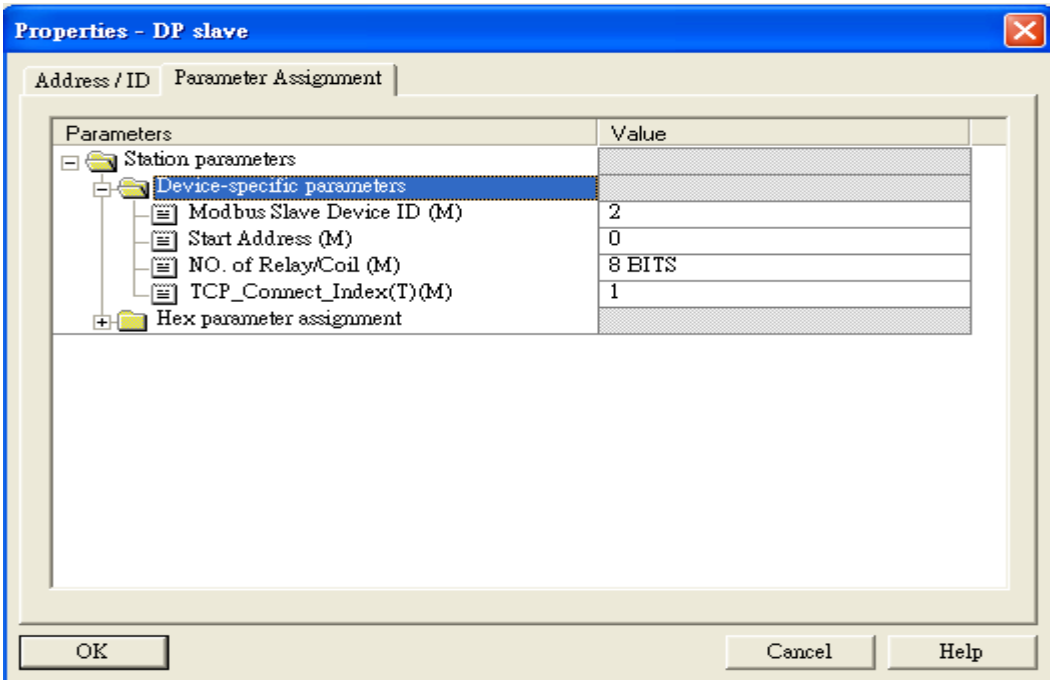
(2)Select “Parameter Assignment”



5. Setup “Output Relay/Coil—1 byte” module parameters

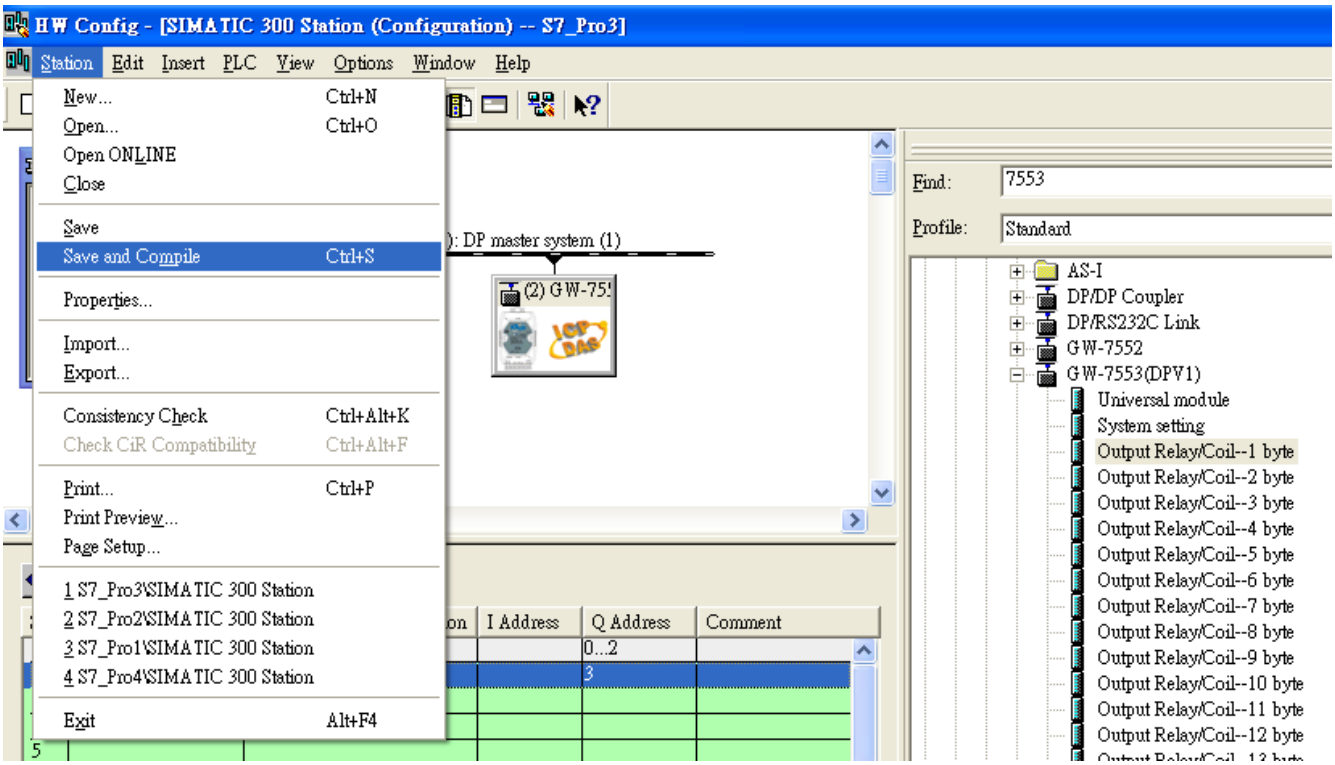
Module parameters➔

Modbus Slave Device ID: 2; Slave Address: 0 (Protocol address (base 0)), click ok.

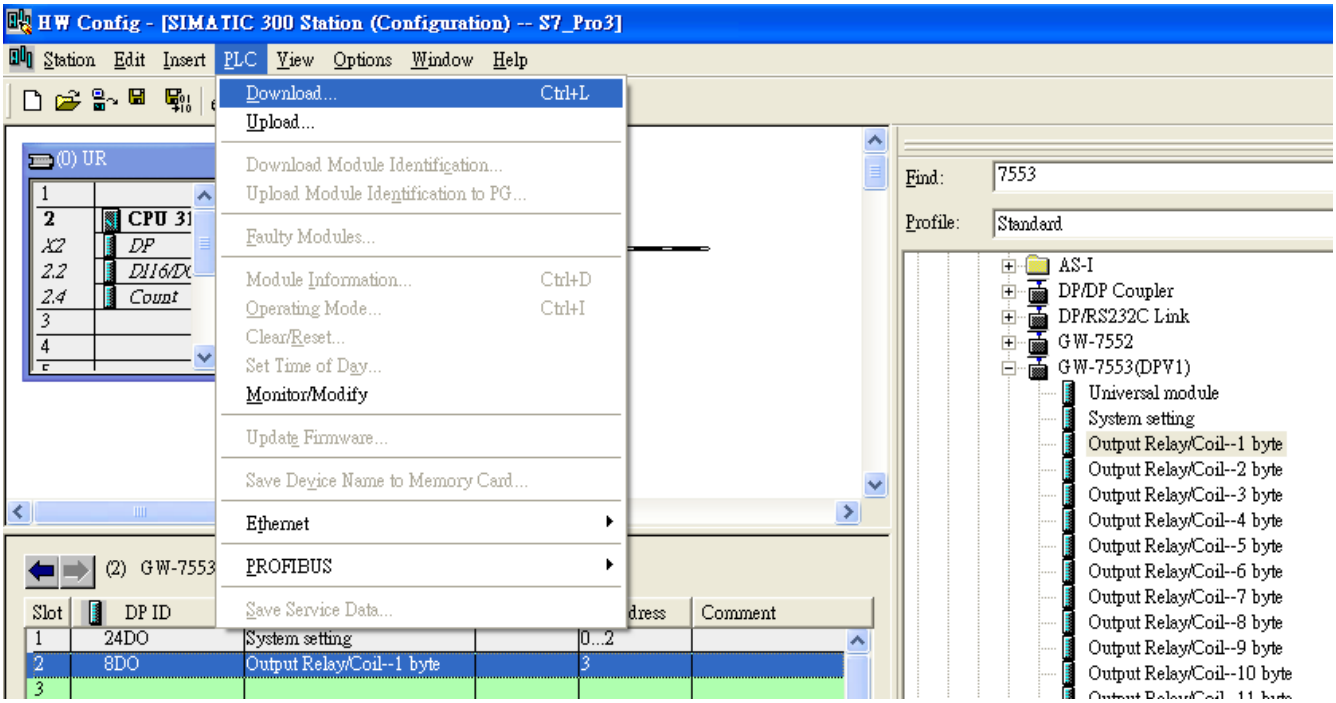


Step 3: Download the HW settings into SIMATIC PLC

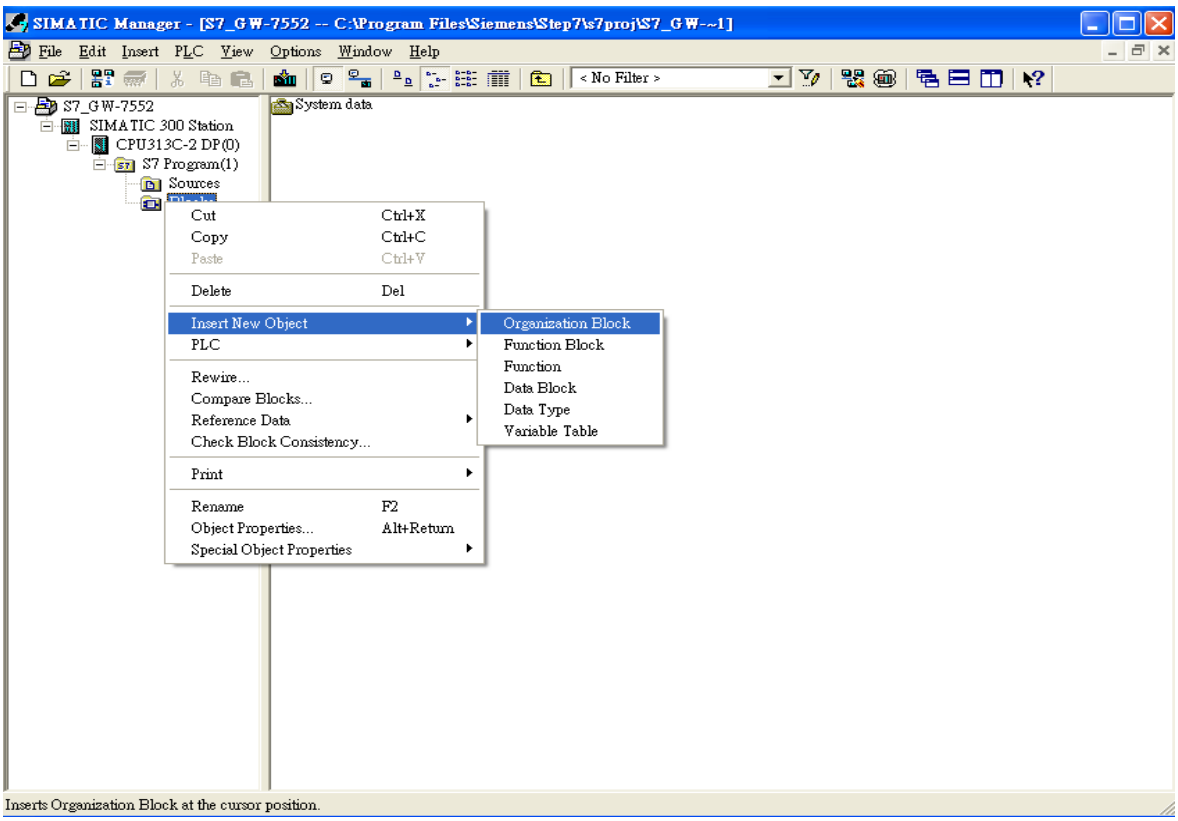
1. Save and Compile

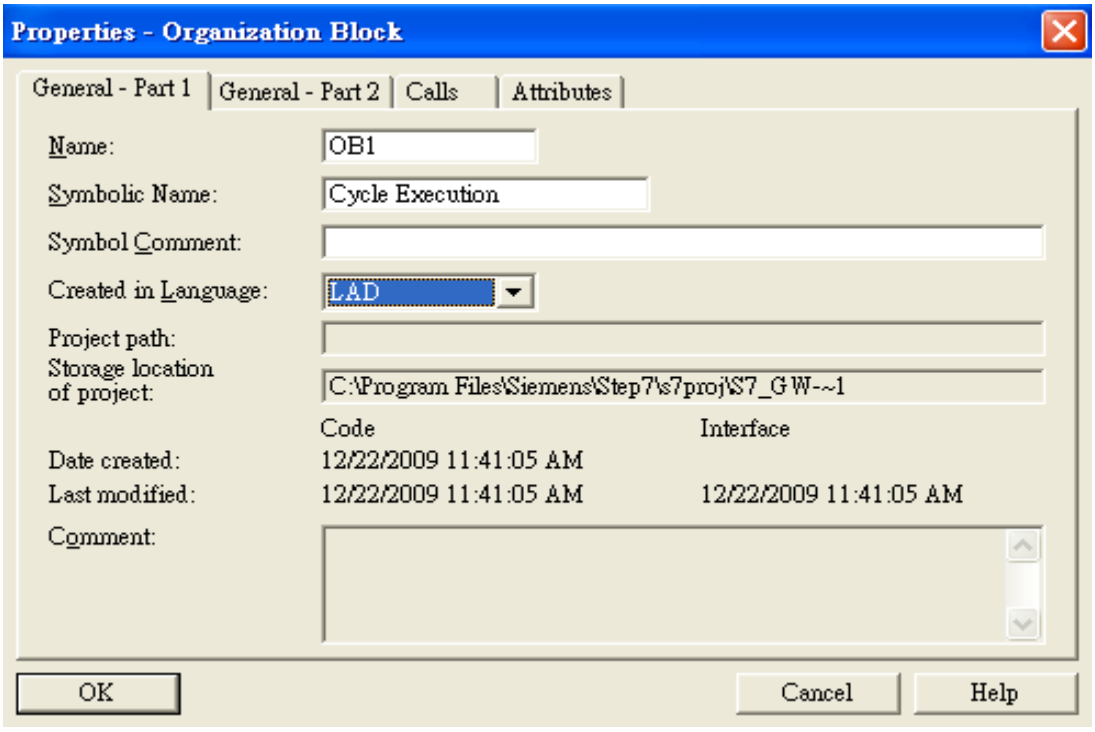


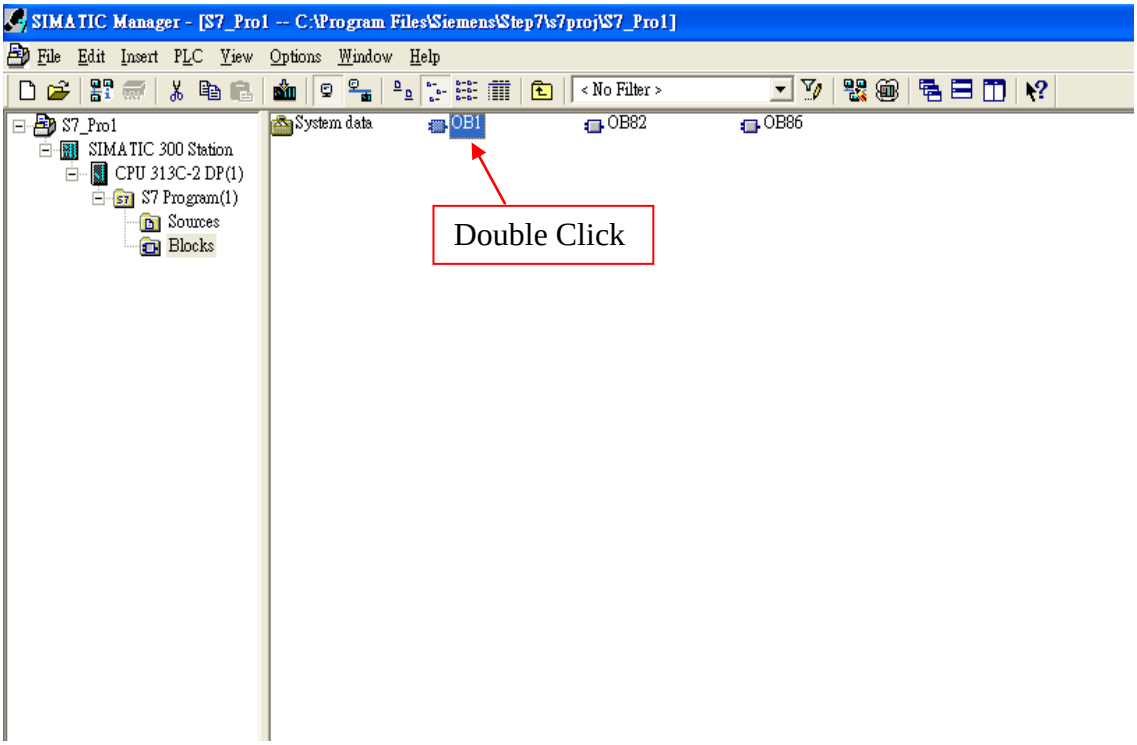
2. HW settings into SIMATIC PLC



Step 4: Insert a new Organization Block (OB1,OB82,OB86)




Properties - Organization Block
General - Part 1
General - Part 2
Calls
Attributes
Name:
OB1
Symbolic Name:
Cycle Execution
Symbol Comment:
Created in Language:
LAD
Project path:
Storage location of project:
C:\Program Files\Siemens\Step7\s7proj\S7_GW~1
Code
Interface
Date created:
12/22/2009 11:41:05 AM
Last modified:
12/22/2009 11:41:05 AM
12/22/2009 11:41:05 AM
Comment:
OK
Cancel
Help


SIMATIC Manager - [S7_Pro1 -- C:\Program Files\Siemens\Step7\s7proj\S7_Pro1]
File
Edit
Insert
PLC
View
Options
Window
Help
< No Filter >
S7_Pro1
SIMATIC 300 Station
CPU 313C-2 DP(1)
S7 Program(1)
Sources
Blocks
System data
OB1
OB82
OB86
Double Click

Step 5: Edit OB1

Variables used in the example LD Program:

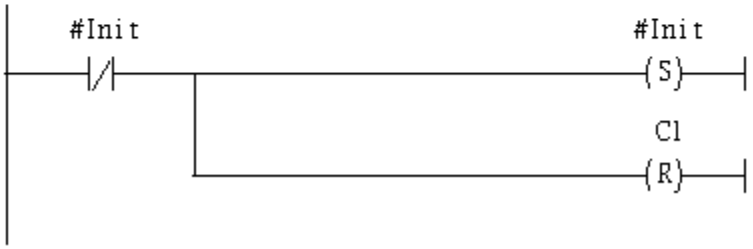
	Name	Data Type	Address	Comment
	OB1_DAT...	Date_...	12.0	Date and time OB1 started
	END	Bool	20.0	
	Init	Bool	20.1	
	Tri	Int	22.0	

OB1 : "Main Program Sweep (Cycle)"

Profibus Slave
Modbus Master

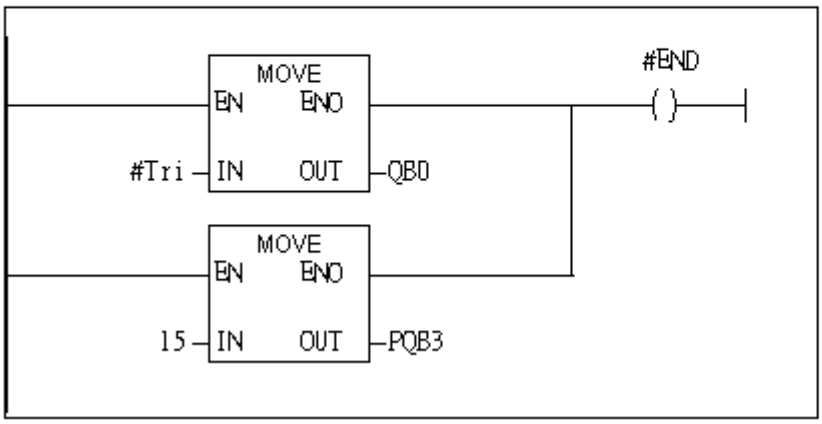
Network 1 : Title:

Comment:



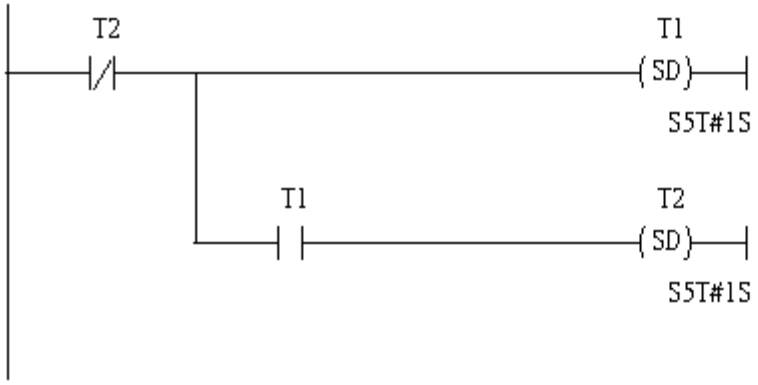
Network 2: Title:

Comment:



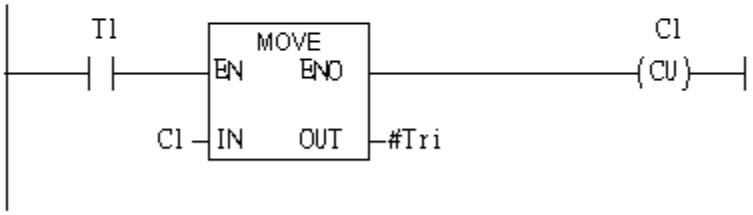
Network 3 : Title:

Comment:



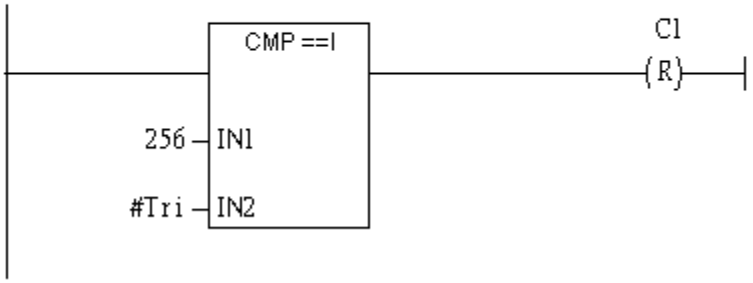
Network 4 : Title:

Comment:

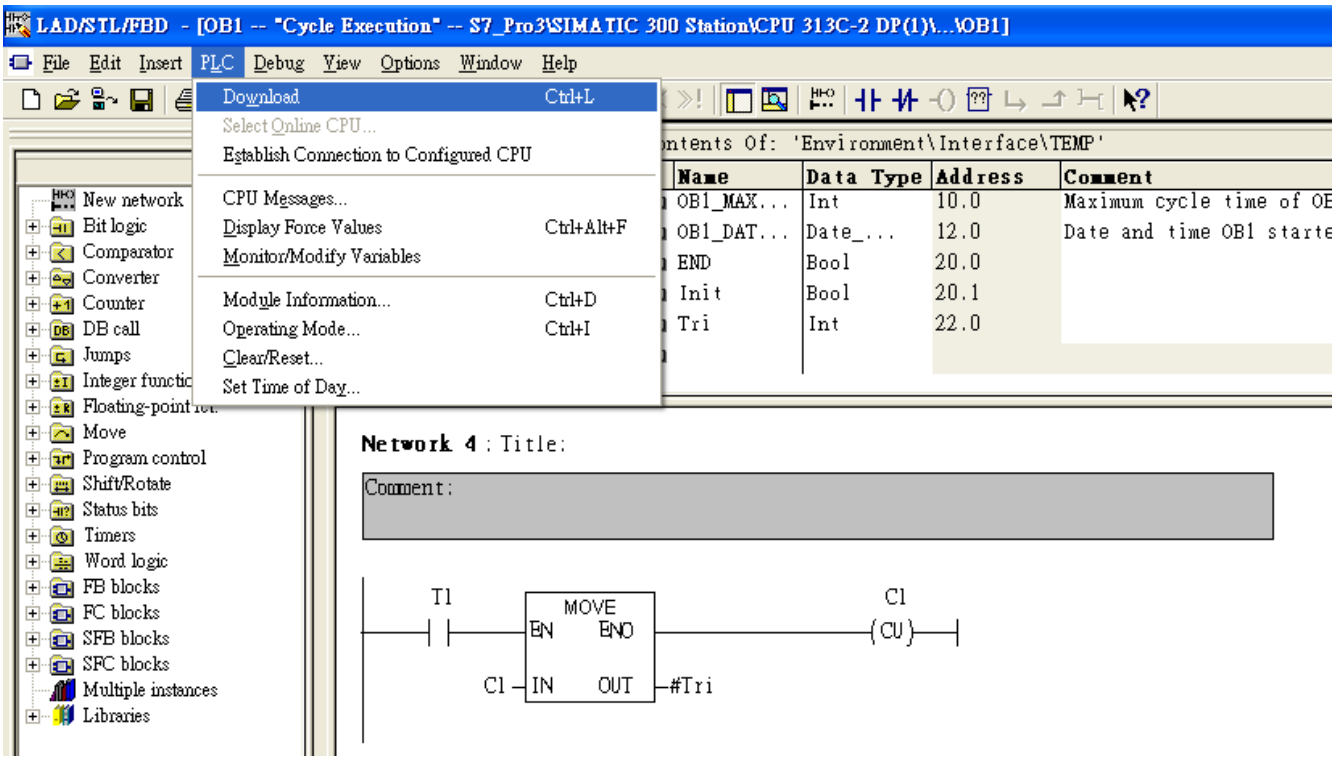


Network 5 : Title:

Comment:



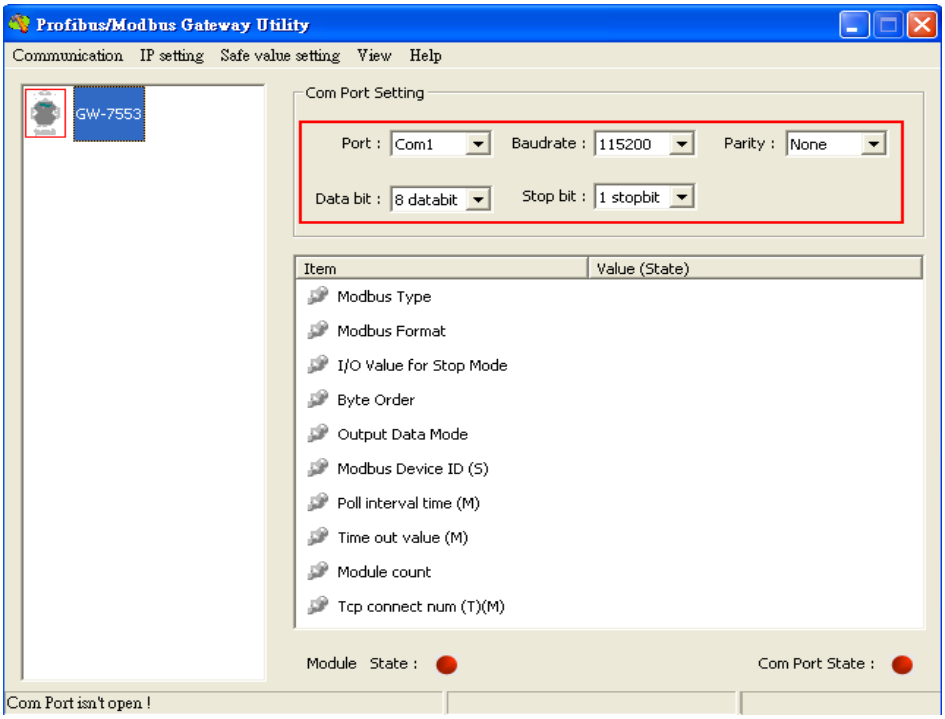
Step 6: Download the settings into SIMATIC PLC



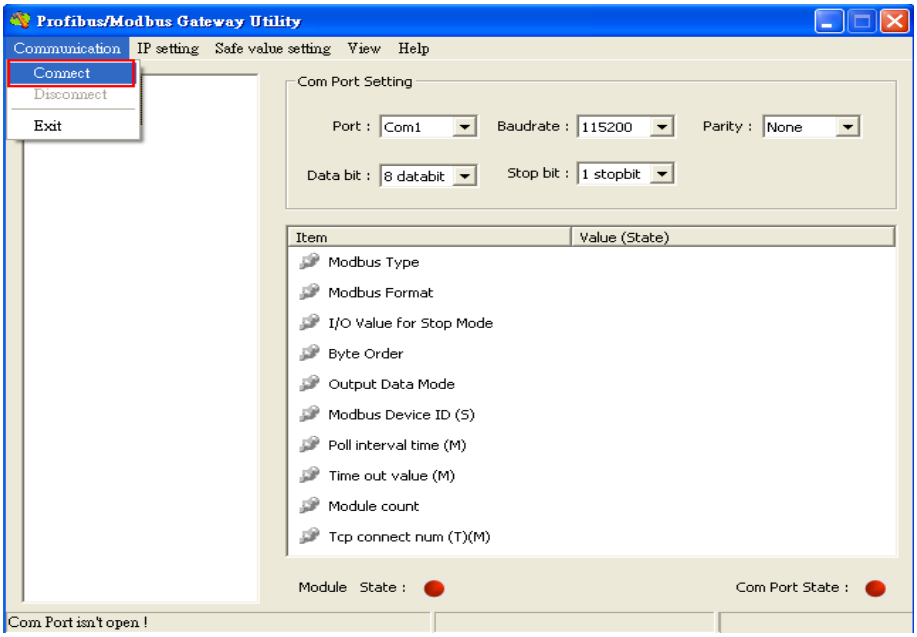
Step 7: Make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at Normal mode.

Step 8: Connect with GW-7553 and Utility

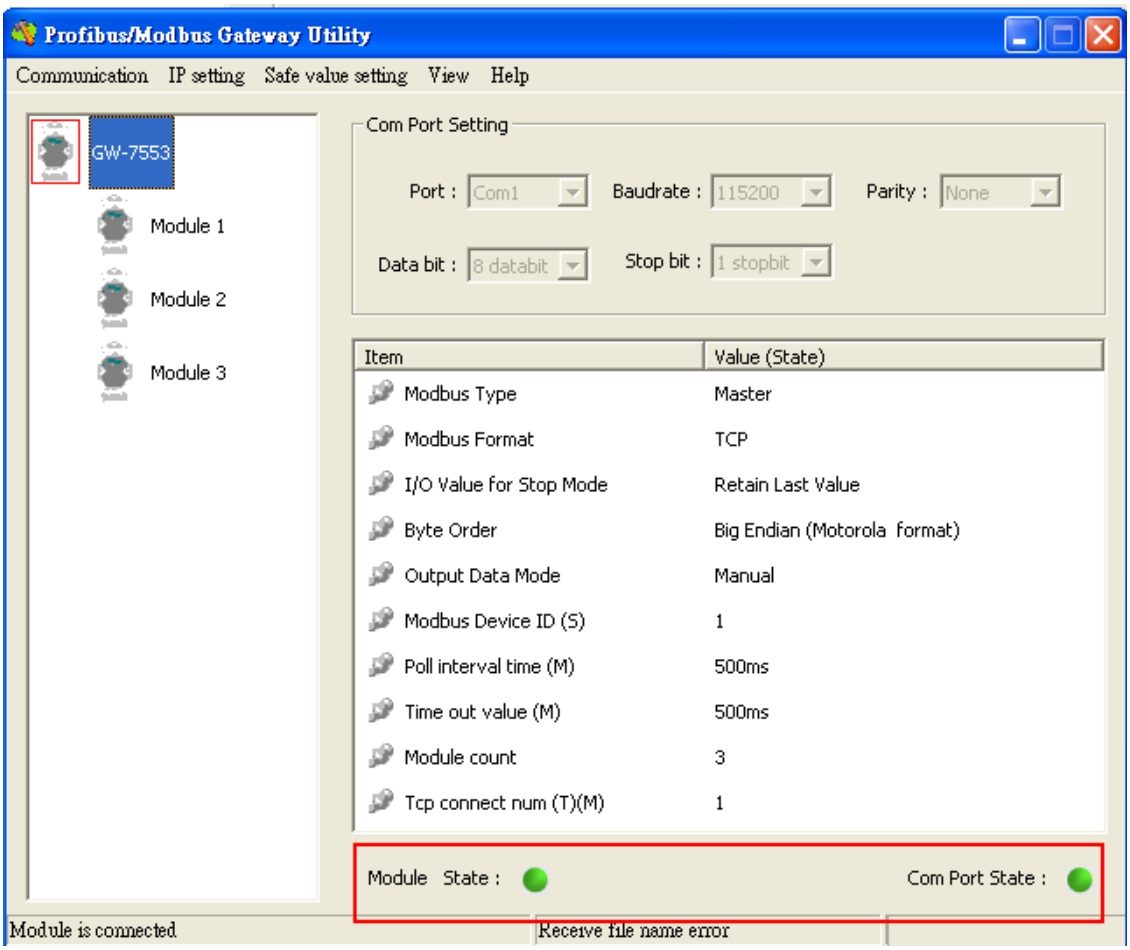
1. Set the Com Port Setting of the Utility



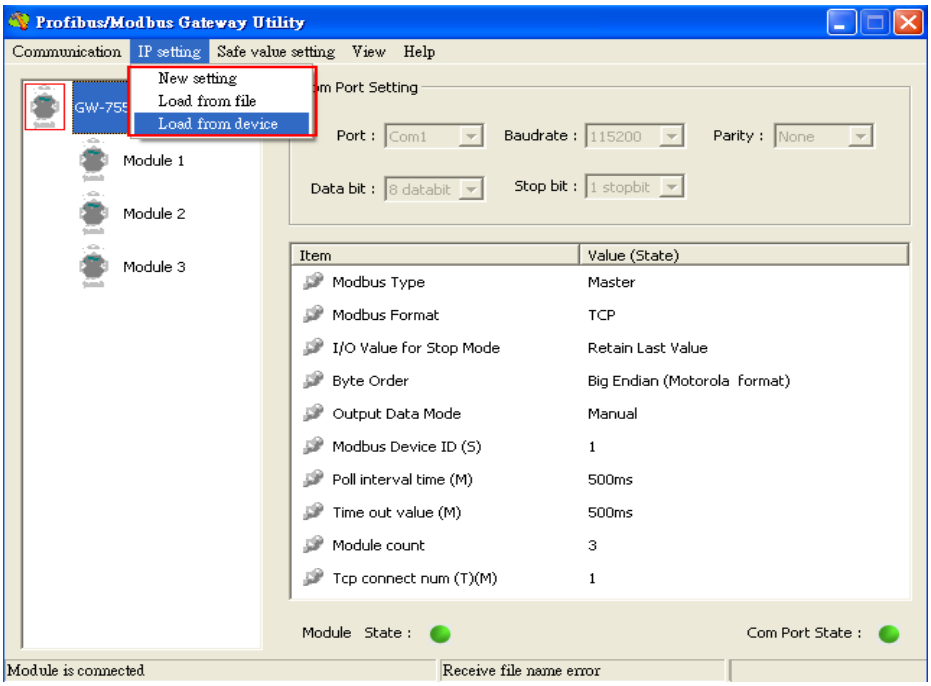
2.Click connect.



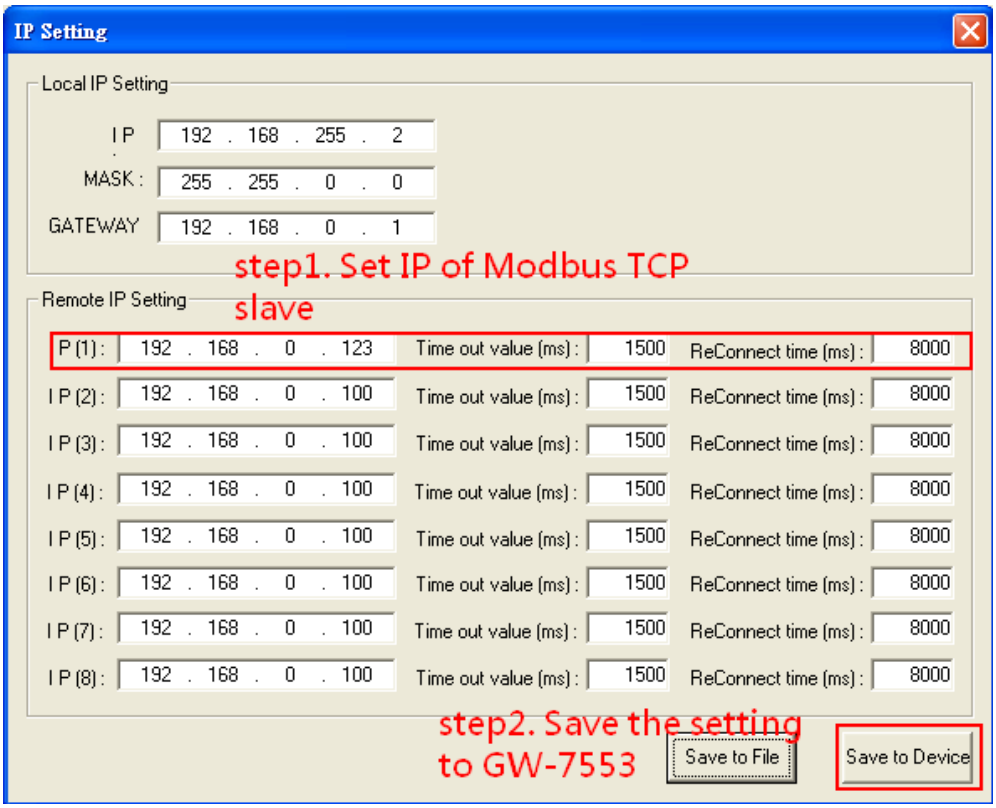
3. Connection success



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

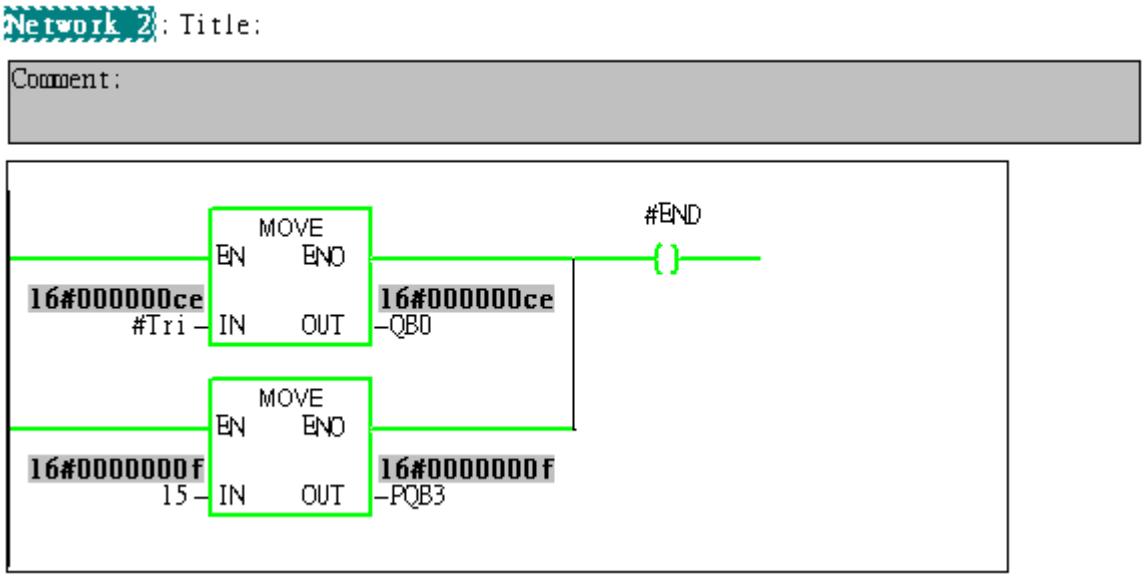


5. Set the IP of the Modbus TCP Slave and click “Save to Device” button to save the settings.



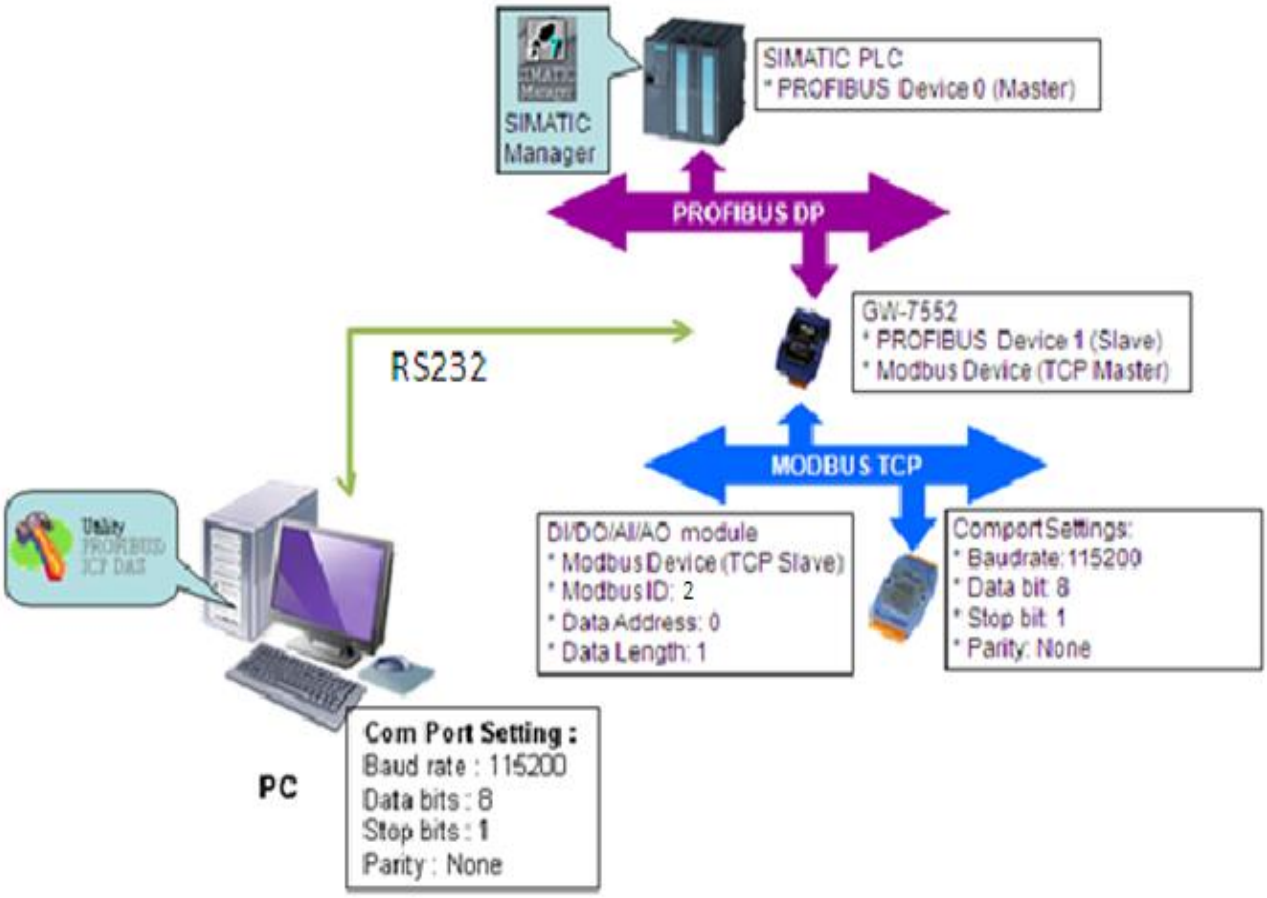
Step 9: Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.

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



Example 6: PLC writes AO module data to GW-7553.
(Modbus FC06, FC16)

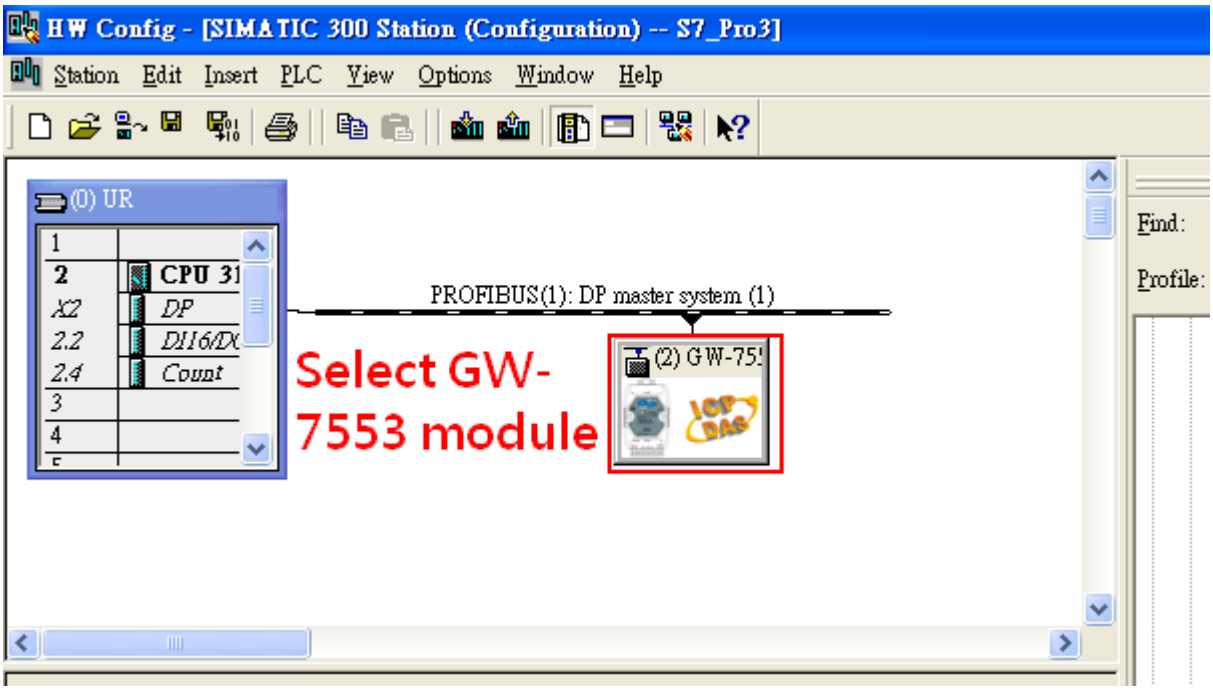
Write a Modbus TCP AO module (PROFIBUS Slave & Modbus TCP/Master)



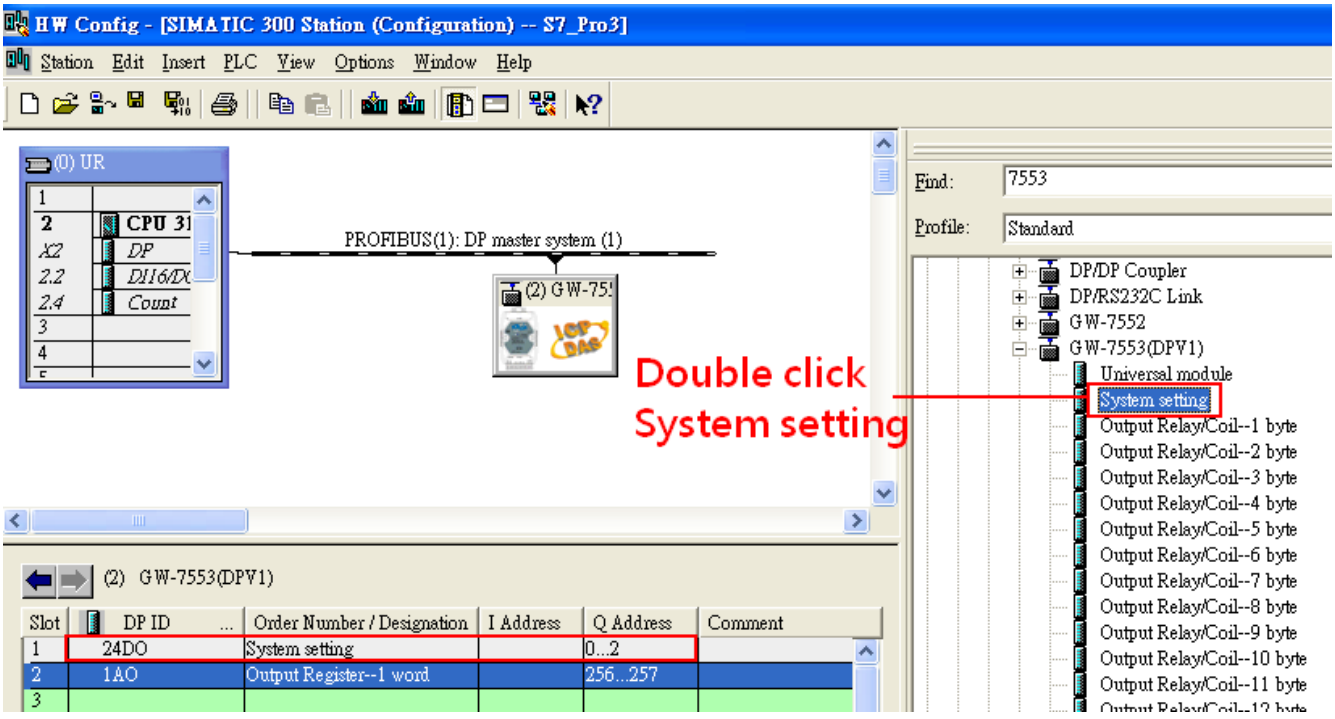
SIMATIC STEP7 Configuration:

Step 1: Setup the GW-7553 module

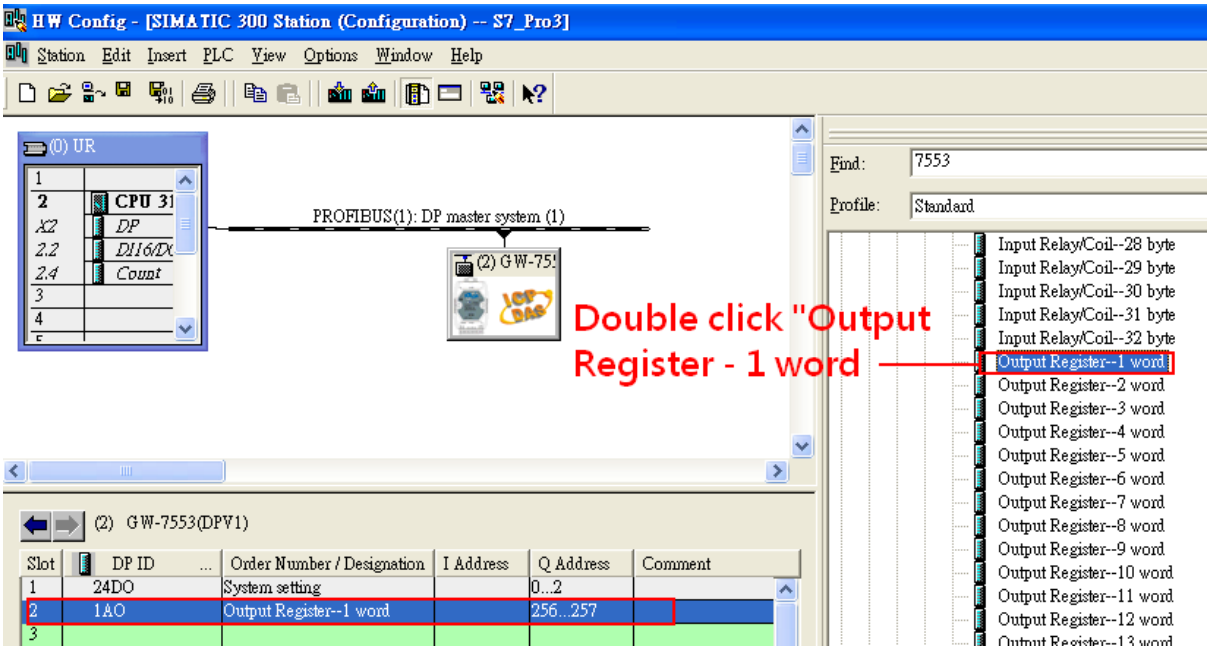
1. Select GW-7553 module



2. Add a System setting module



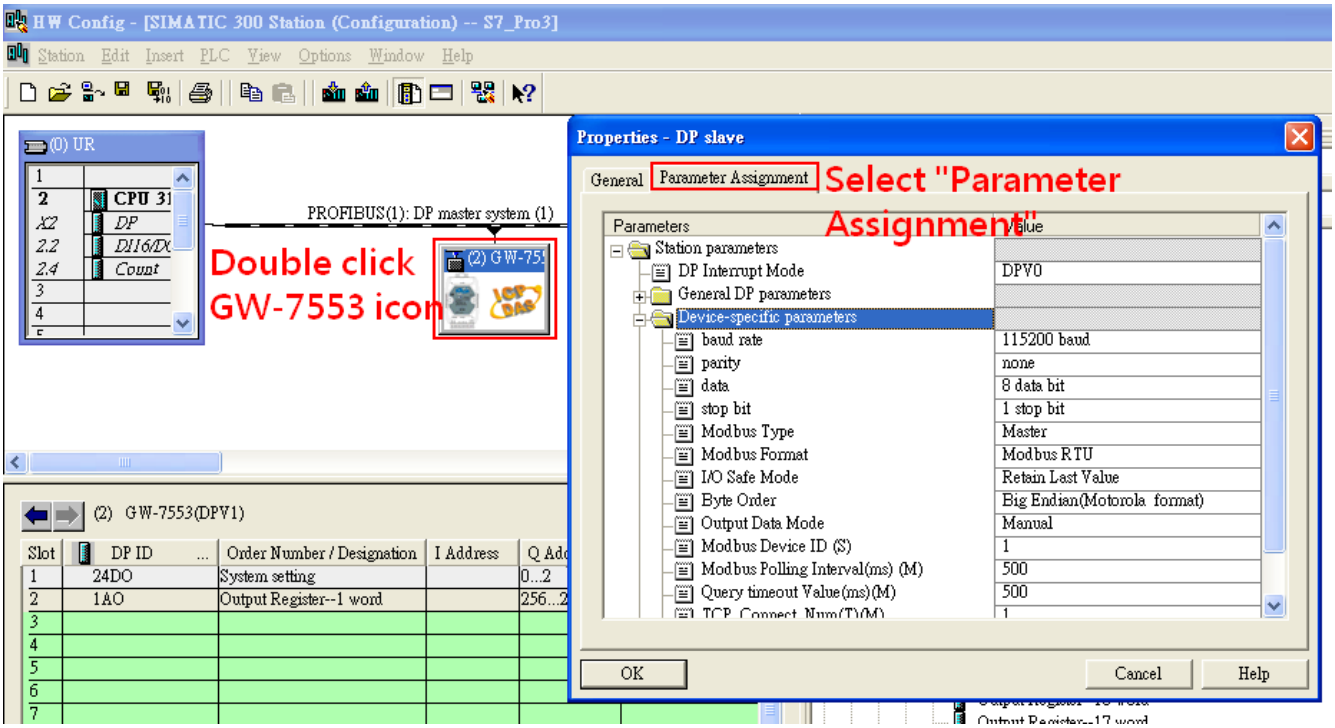
3. Add “Output Register—1word” module(For FC16,multiple registers, please select more than 1 word module)



Step 2: Setup the parameters of the GW-7553

1. Double click GW-7553 icon

2. Select “Parameter Assignment”

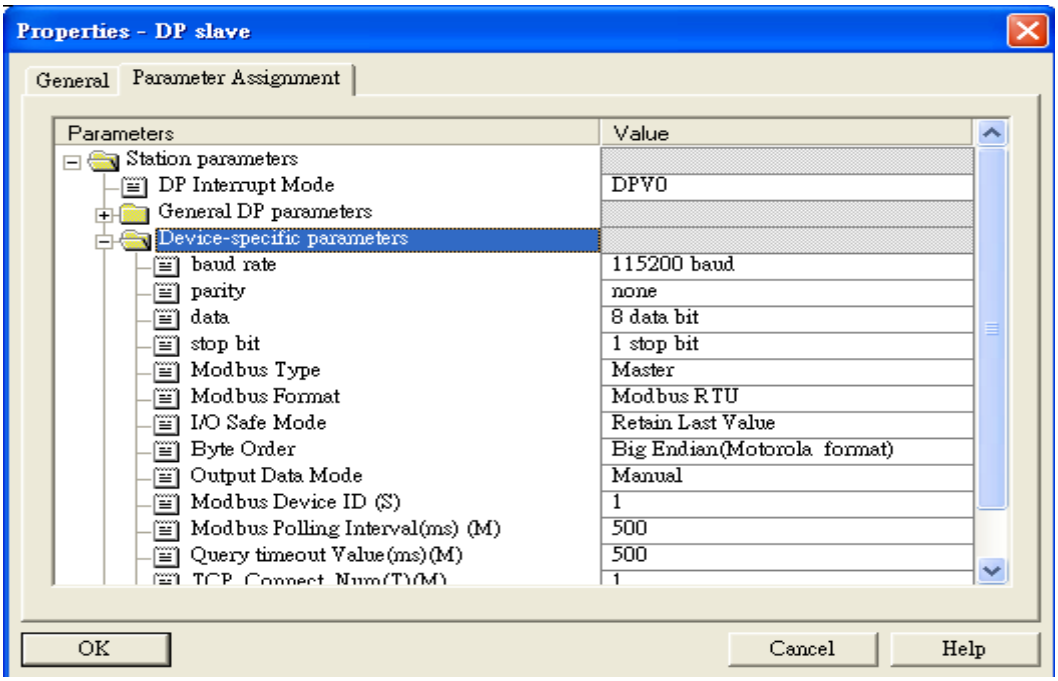


3. Set common parameters of the GW-7553

Common parameters➔

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

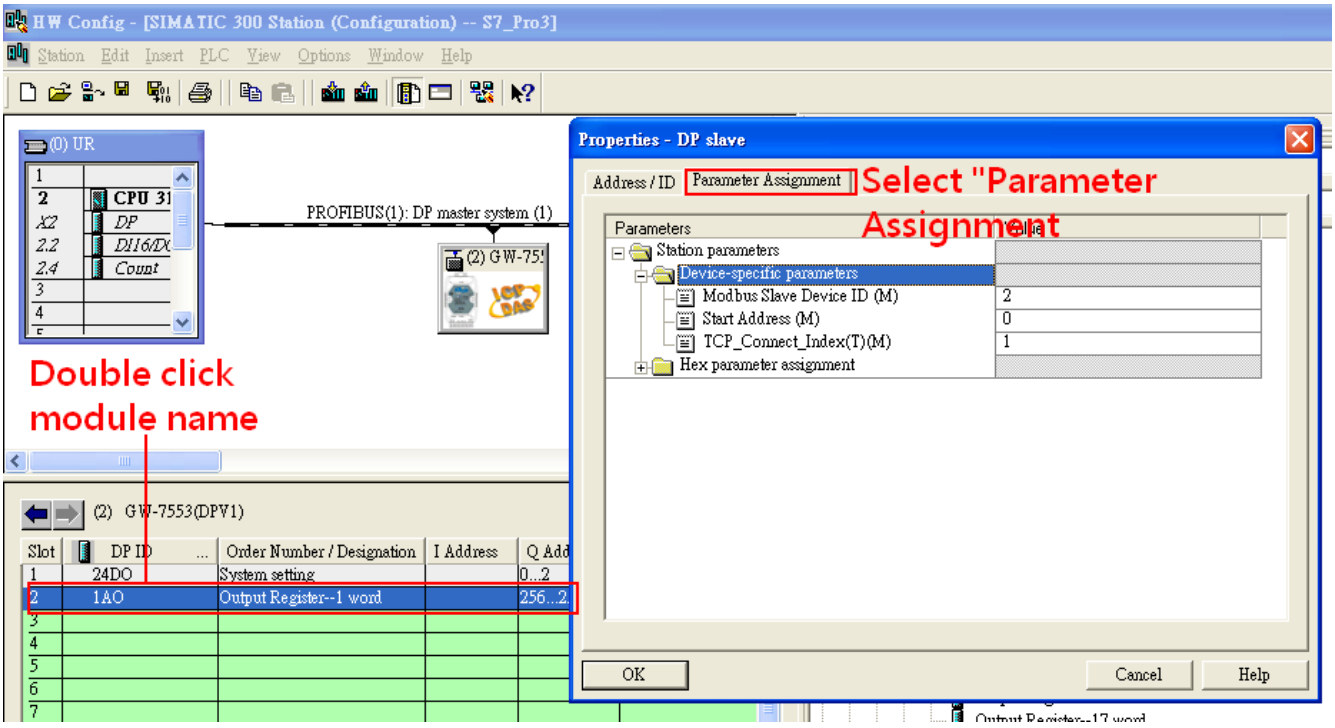
Modbus Format: Modbus TCP; Byte Order: Big Endian



4. Set module parameters of the GW-7553

(1)Double click “Output Register—1word” module

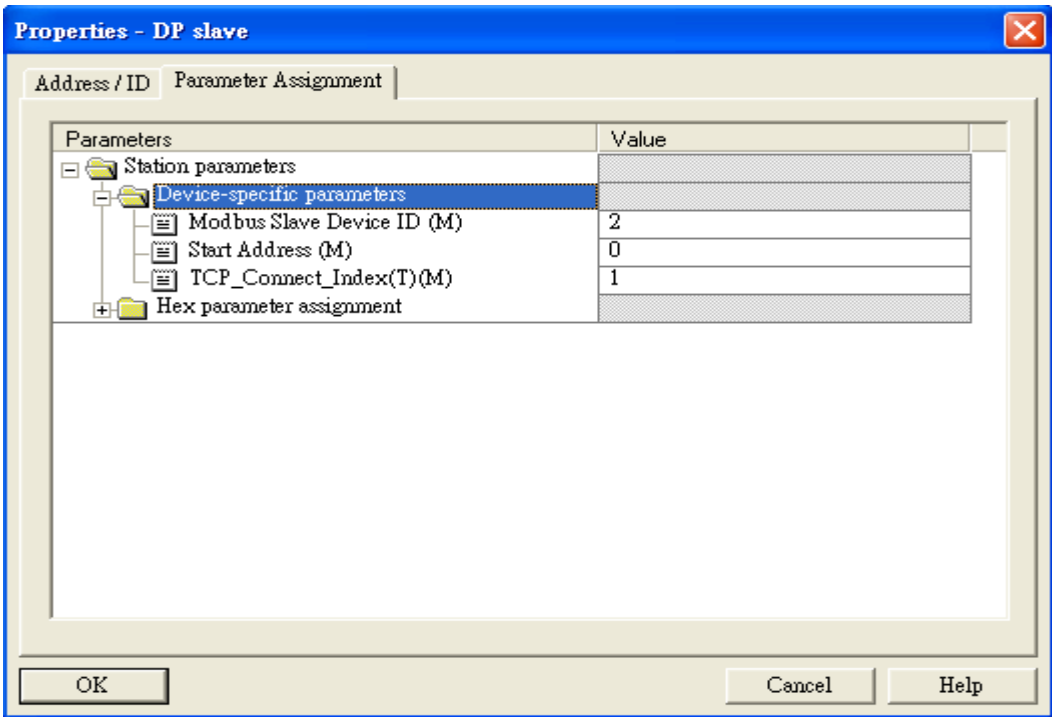
(2)Select “Parameter Assignment”



5. Setup “Output Register—1 word” module parameters

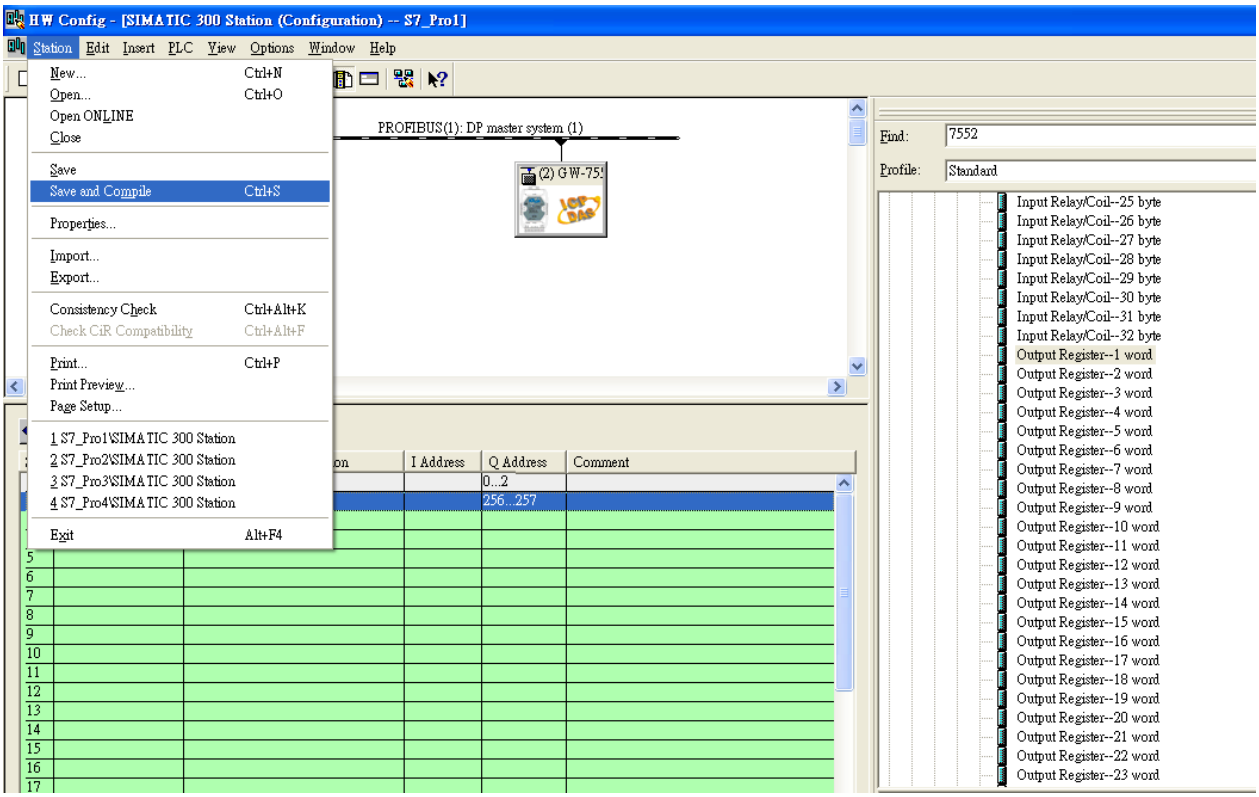
Module parameters➔

Modbus Slave Device ID: 2; Slave Address: 0 (Protocol address (base 0)), click ok.

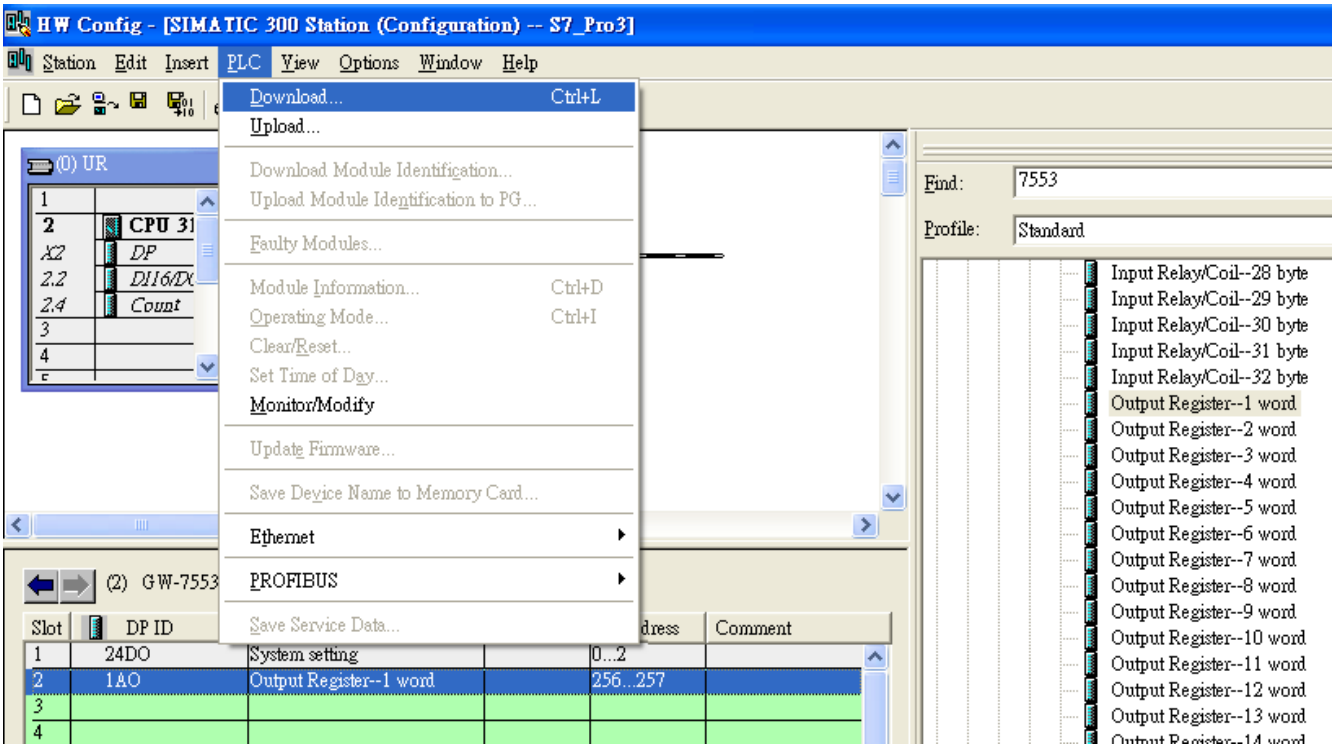


Step 3: Download the HW settings into SIMATIC PLC

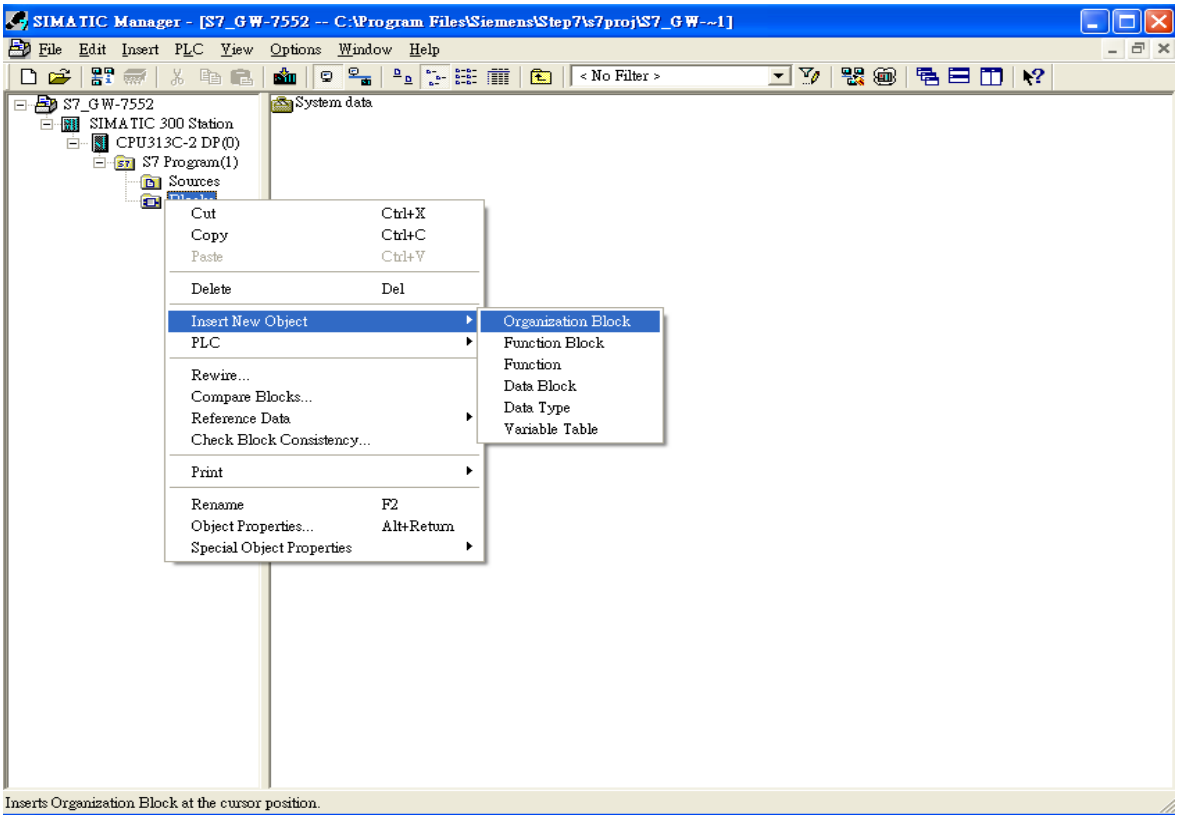
1. Save and Compile

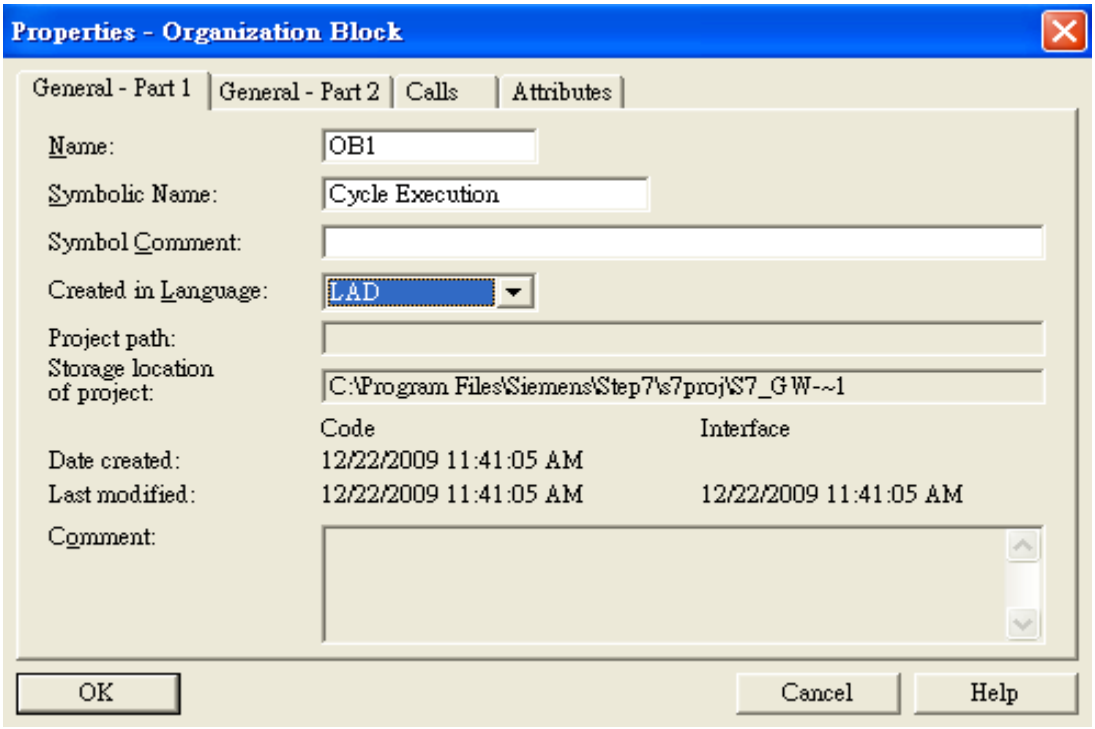


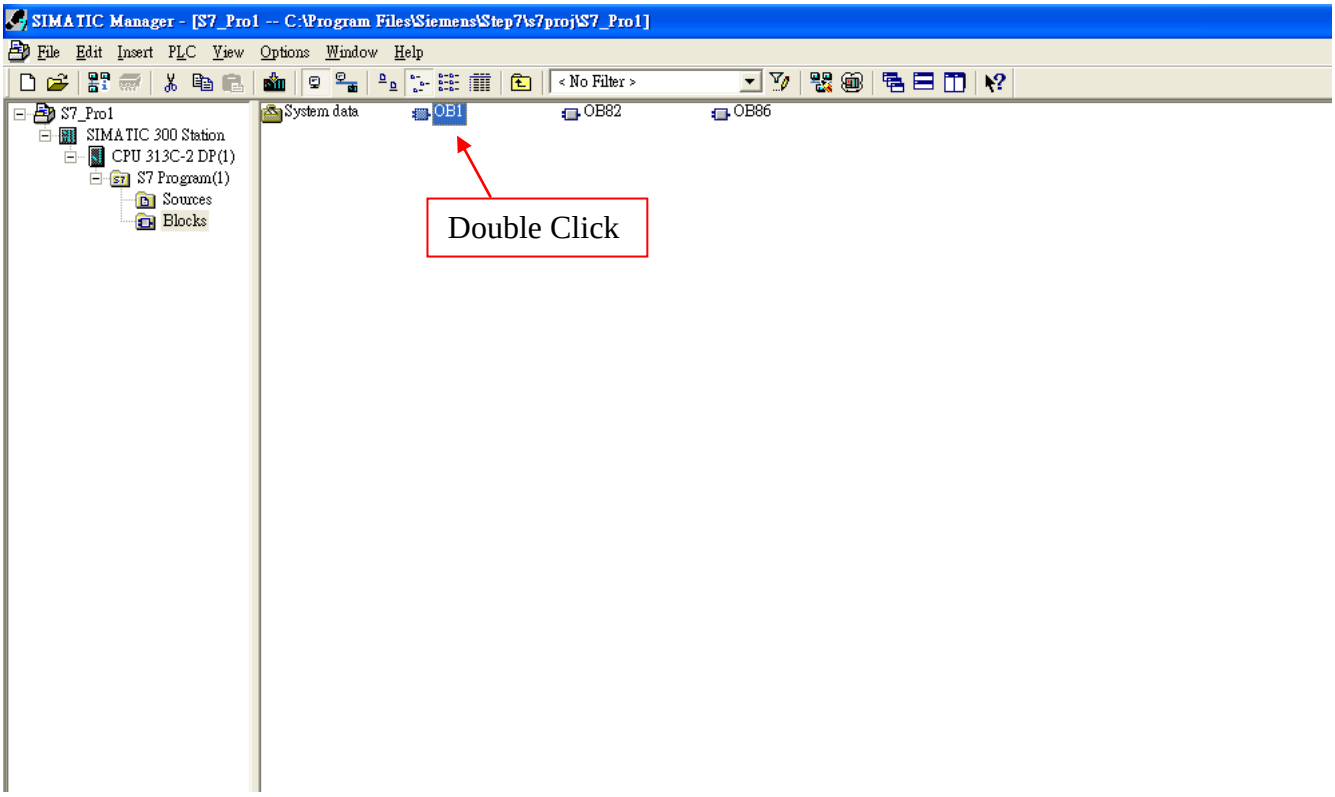
2. HW settings into SIMATIC PLC



Step 4: Insert a new Organization Block (OB1,OB82,OB86)




Properties - Organization Block
General - Part 1
General - Part 2
Calls
Attributes
Name:
OB1
Symbolic Name:
Cycle Execution
Symbol Comment:
Created in Language:
LAD
Project path:
Storage location of project:
C:\Program Files\Siemens\Step7\s7proj\S7_GW~1
Code
Interface
Date created:
12/22/2009 11:41:05 AM
Last modified:
12/22/2009 11:41:05 AM
12/22/2009 11:41:05 AM
Comment:
OK
Cancel
Help


SIMATIC Manager - [S7_Pro1 -- C:\Program Files\Siemens\Step7\s7proj\S7_Pro1]
File
Edit
Insert
PLC
View
Options
Window
Help
< No Filter >
S7_Pro1
SIMATIC 300 Station
CPU 313C-2 DP(1)
S7 Program(1)
Sources
Blocks
System data
OB1
OB82
OB86
Double Click

Step 5: Edit OB1

Variables used in the example LD Program:

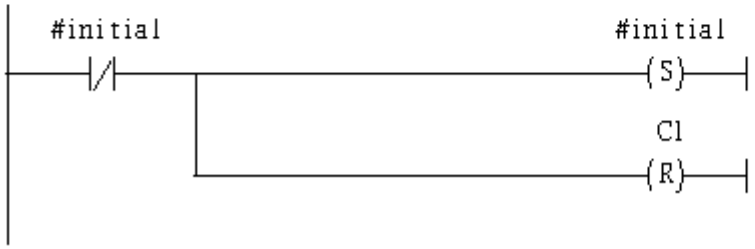
	Name	Data Type	Address	Comment
	OB1_MAX...	Int	10.0	Maximum cycle time of OB1 (milliseconds)
	OB1_DAT...	Date_...	12.0	Date and time OB1 started
	END	Bool	20.0	
	Tri	Int	22.0	
	initial	Bool	24.0	

OB1 : "Main Program Sweep (Cycle)"

PROFIBUS Slave
Modbus Master

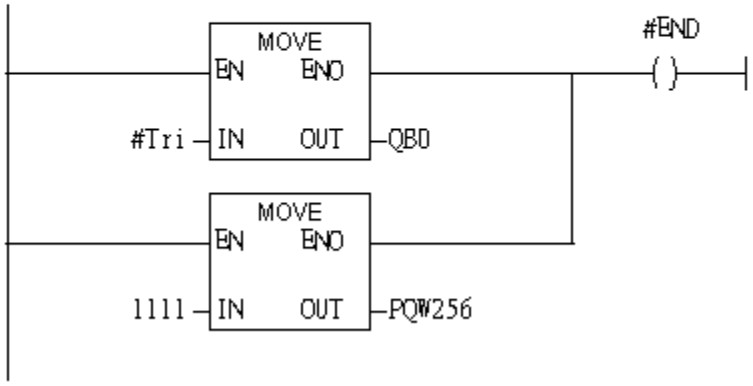
Network 1 : Reset Counter(C1)

Reset Counter(C1)



Network 2 : QB0 add "1" then PLC will send PQB256 out.

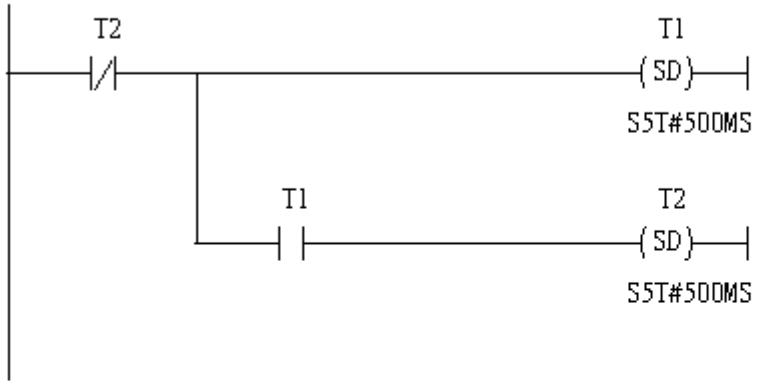
1 word 16AO



Using T2 trigger T1 If counter (C1) add 1 and Tri will add 1 every 1s.

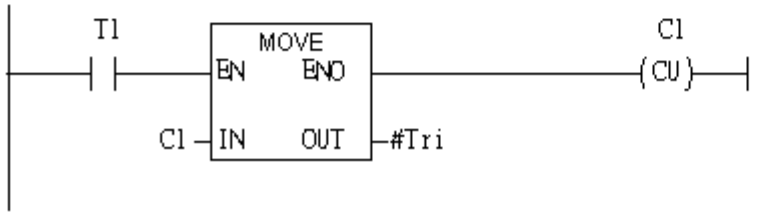
Network 3 : Timer T1 & T2

Using T2 trigger T1



Network 4 : Counter C1

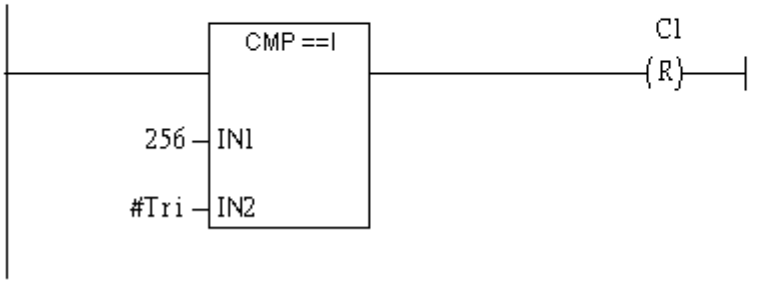
If counter(C1) add "1" and Tri will add "1" ,too.



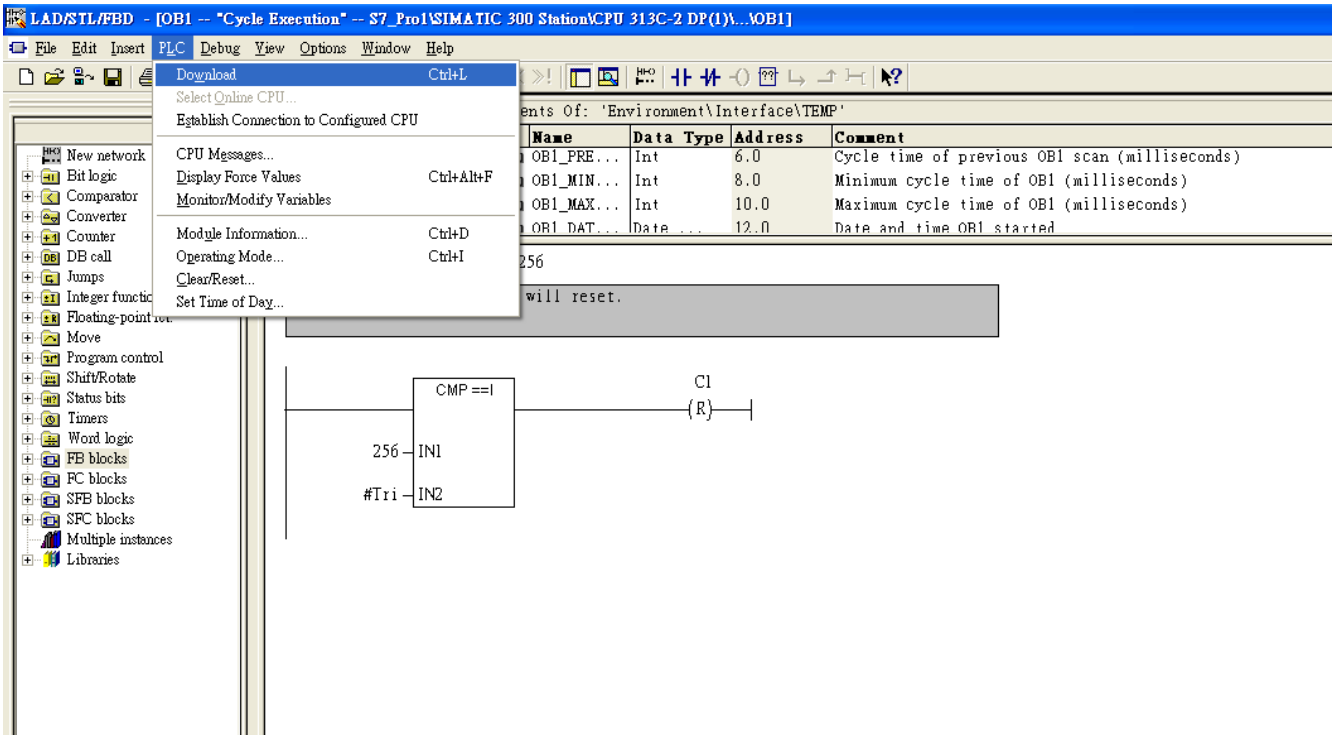
If Tri is equal to 256 then reset counter (C1).

Network 5 : Compare Tri & 256

If Tri is equal to 256 ,C1 will reset.



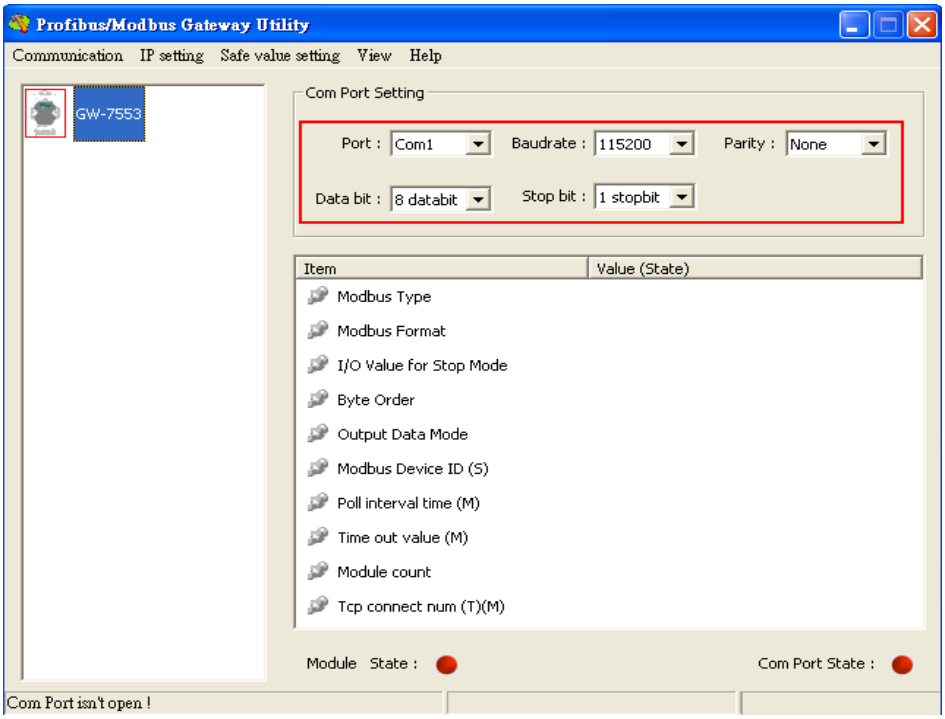
Step 6: Download the settings into SIMATIC PLC



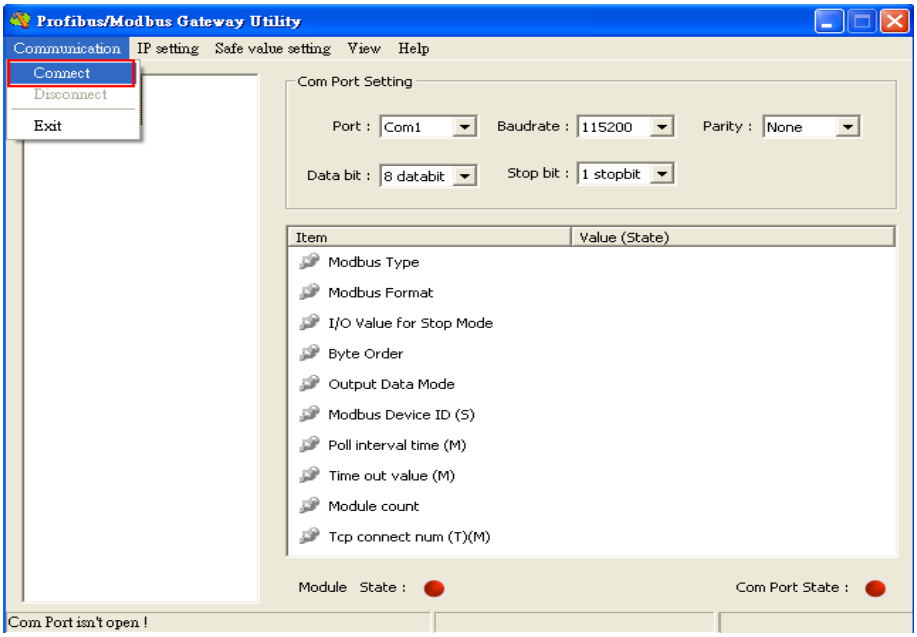
Step 7: Make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at Normal mode.

Step 8: Connect with GW-7553 and Utility

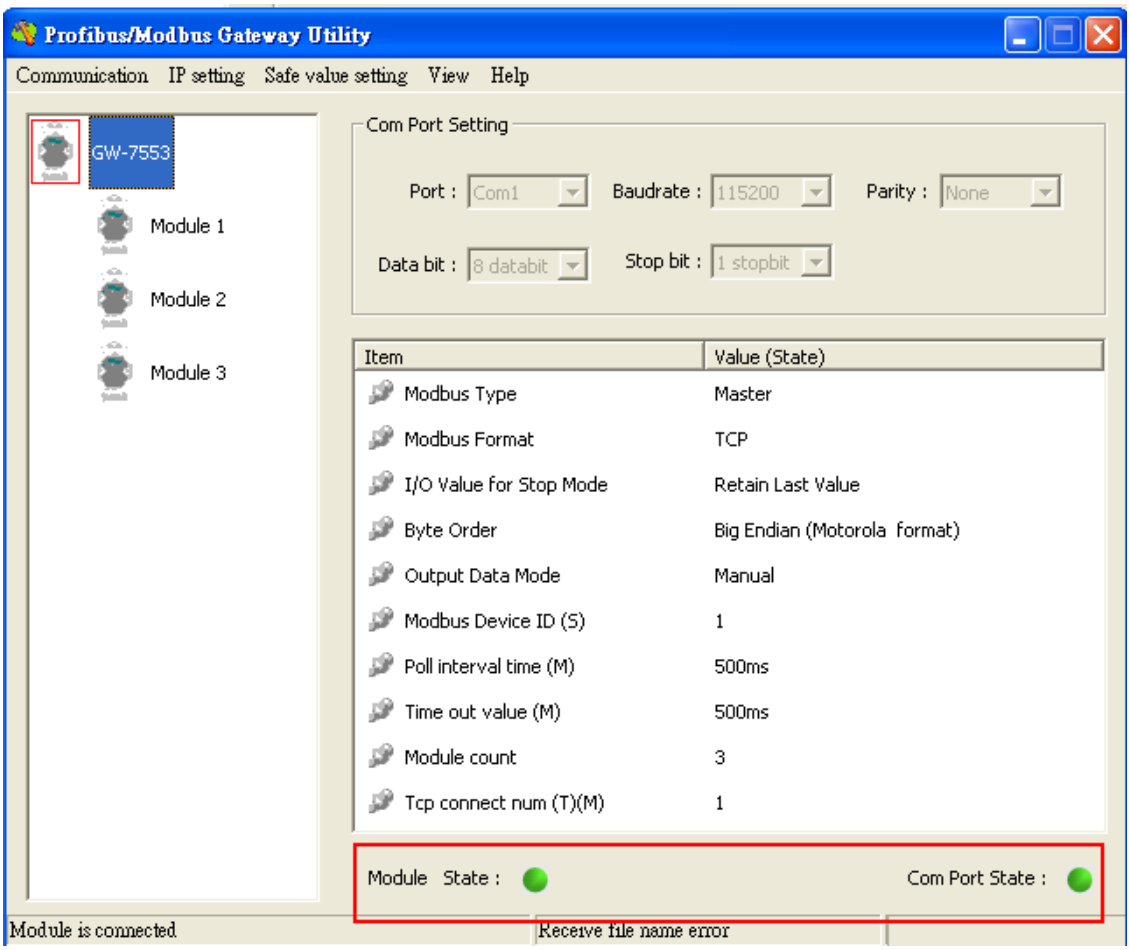
1. Set the Com Port Setting of the Utility



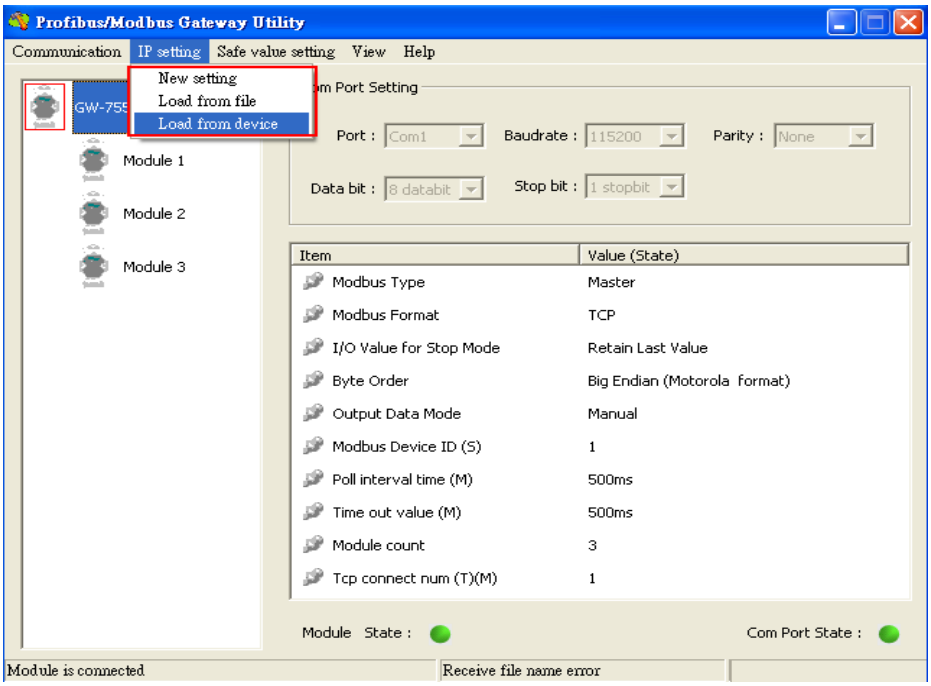
2.Click connect.



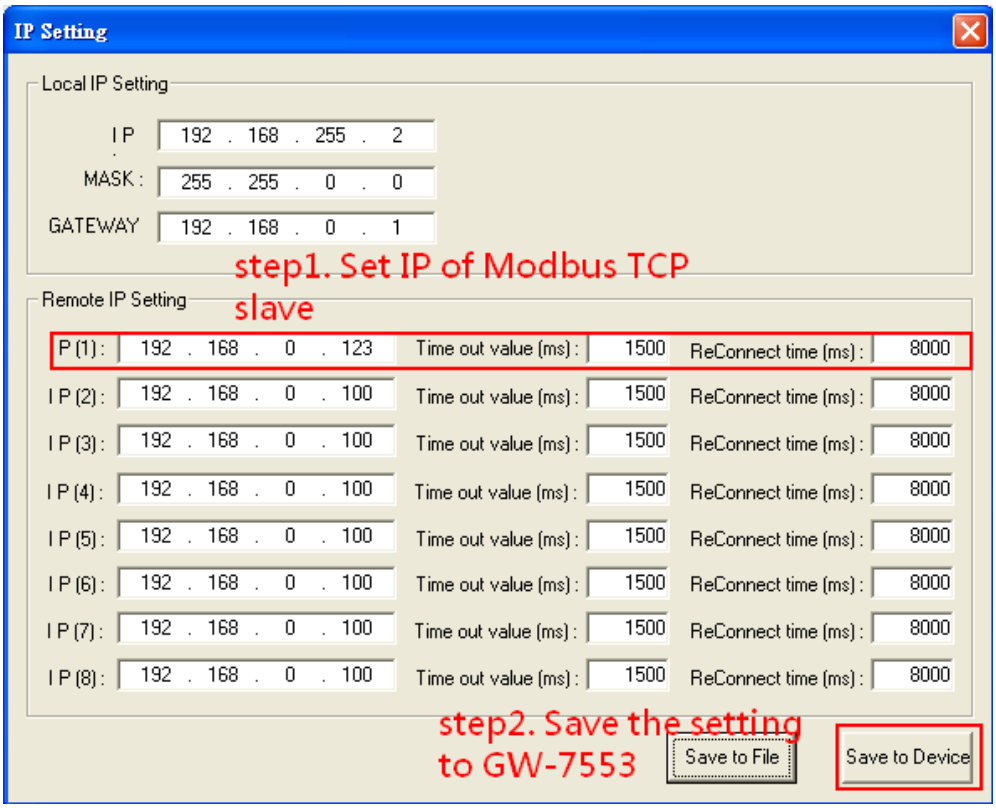
3. Connection success



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 AO module at address PQW256.