GW-7663 (Modbus TCP Client) How to Communicate with Modbus server? Example for SIMATIC TIA portal

- **Preceding Operation**
- **Example 1:Reads and Writes DO data**
- **Example 2:Reads DI data**
- **Example 3:Reads and Writes AO data**
- **Example 4:Reads AI data**

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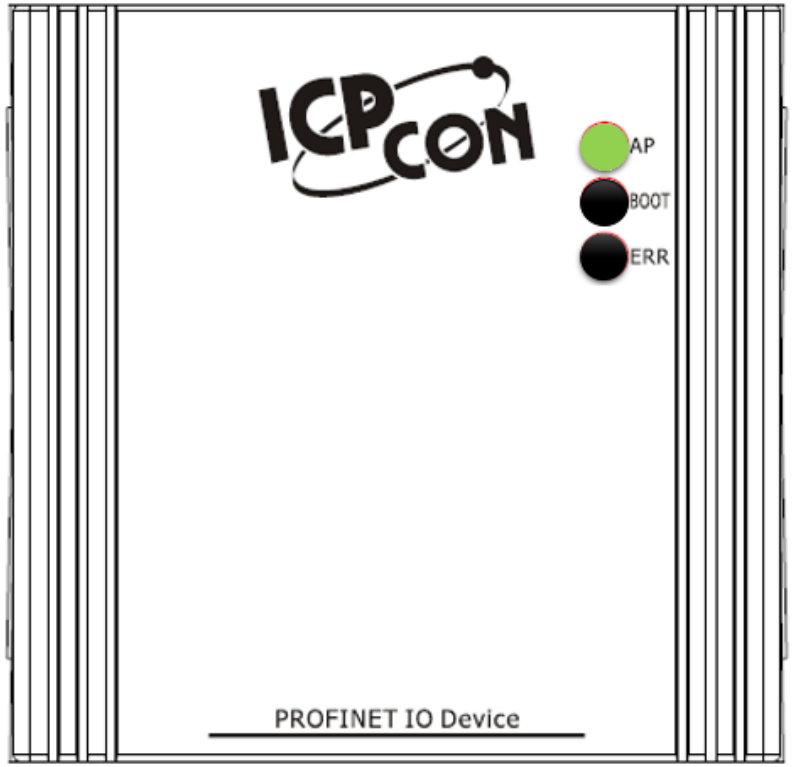
Preceding Operation

✓Communication with PLC (LED => AP:ON, BOOT:OFF, ERR:OFF).

How to configure GW-7663 in SIMATIC TIA portal?

✓ Download PFN_Tool utility from FTP side

PFN_Tool

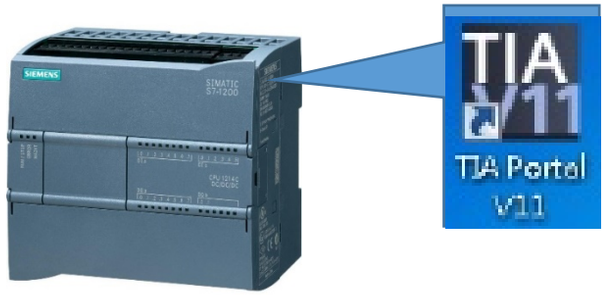


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Read and Write 16-channel DO

SIMATIC S7-1200

PROFINET IO Controller
(Master)



PROFINET

GW-7663



Modbus TCP



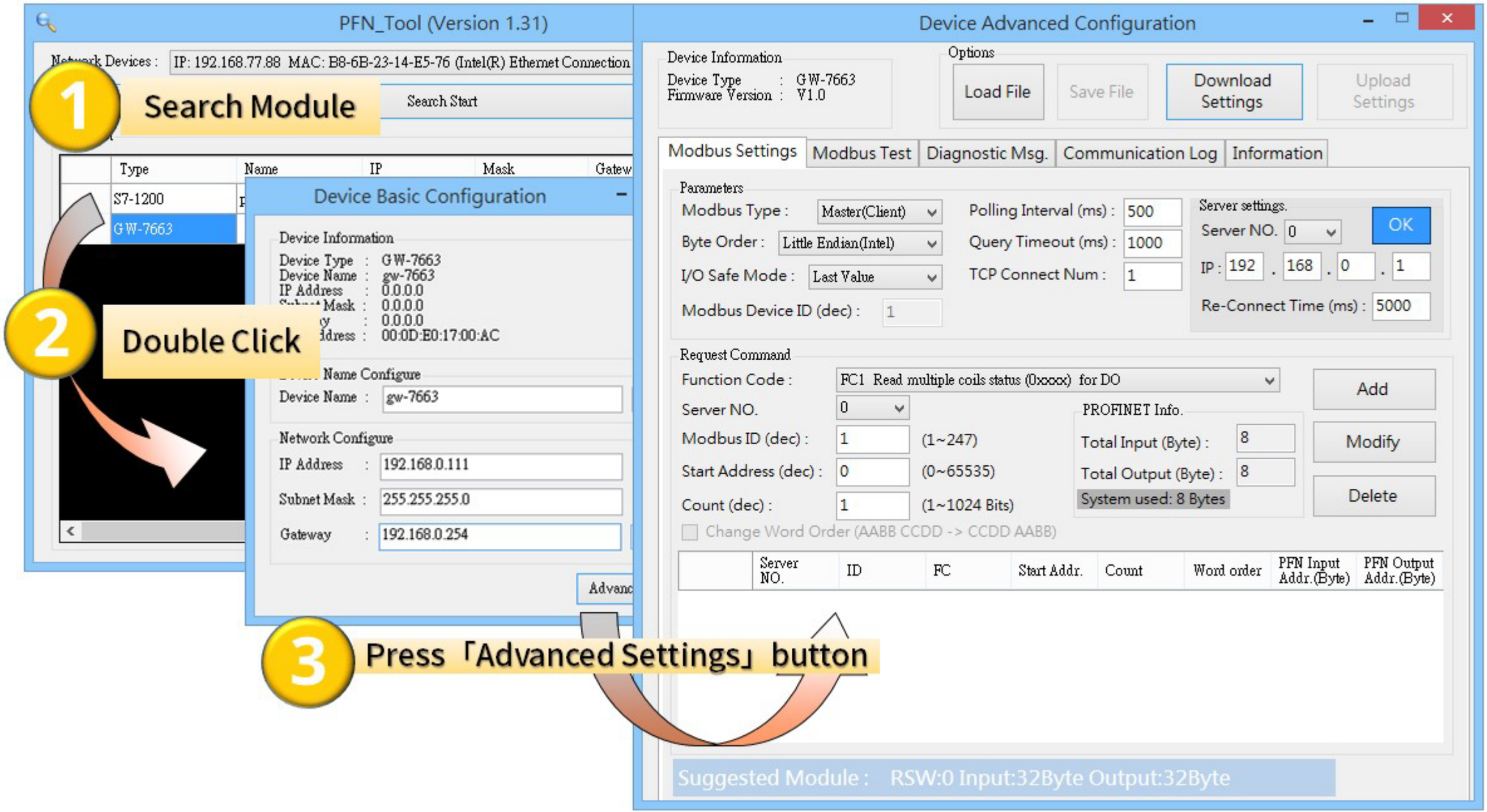
DO module (TCP server)

- **IP: 192.168.77.88**
- **Modbus ID: 2**
- **Data Address: 00001~00016**
- **Data Length: 2**

PROFINET IO device (Slave)	Modbus TCP Client

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Read and Write 16-channel DO

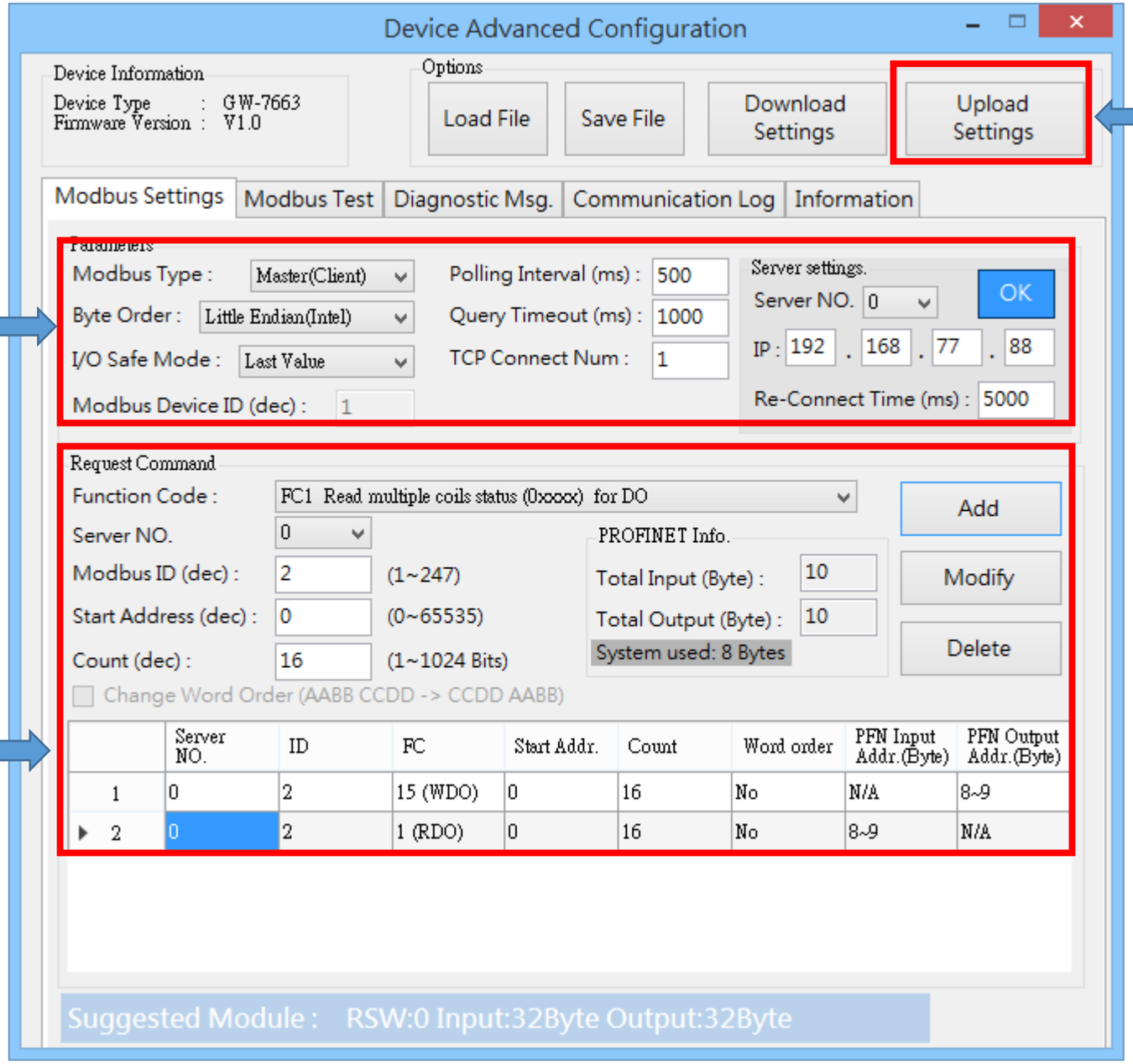


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Read and Write 16-channel DO

1. Set Modbus settings

2. Add Modbus Command

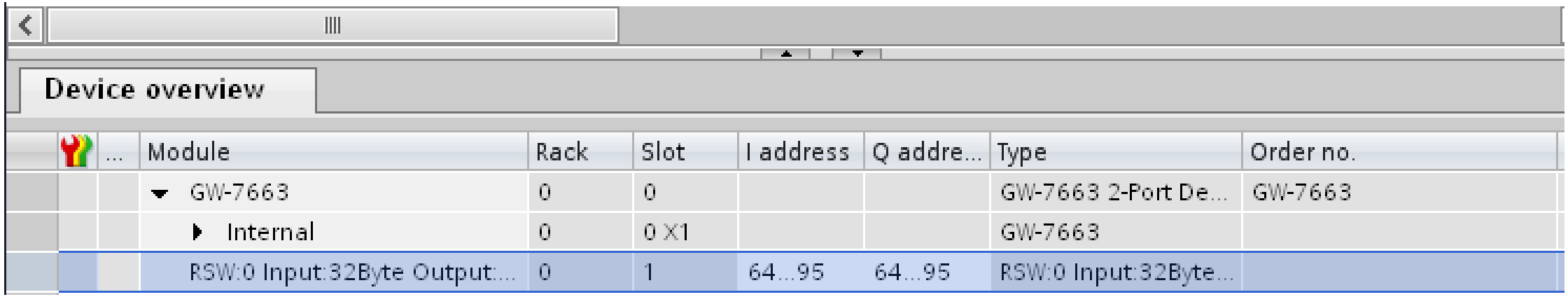


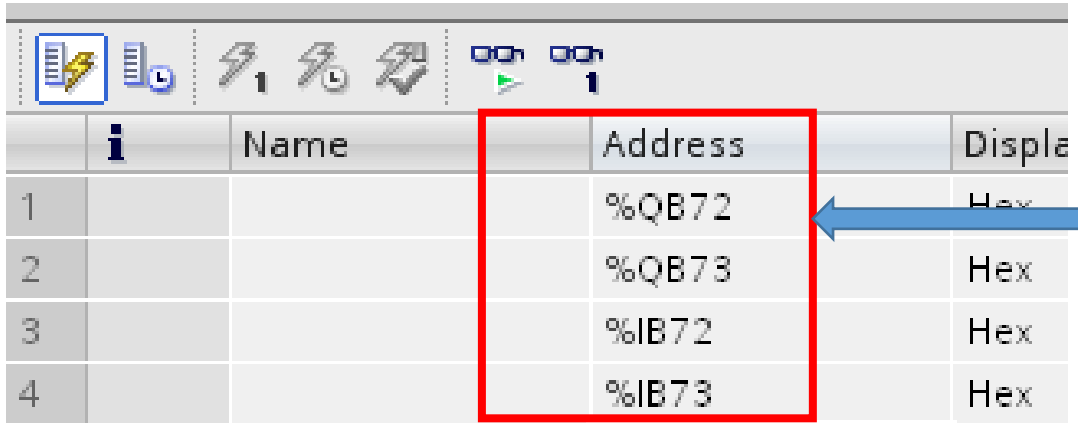
3. Upload

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Read and Write 16-channel DO

The first input 8 bytes and output 8 bytes are allocated for system. (64~71)
The 9th byte to the 32th byte are allocated for Modbus. (72~95)





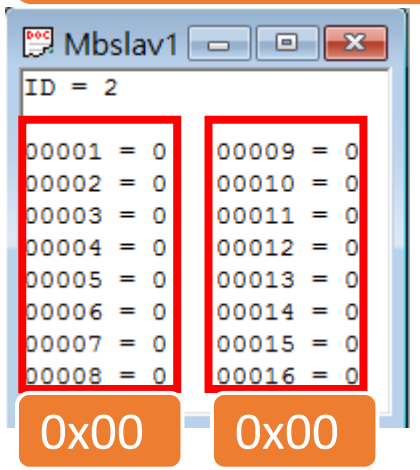
QB72 => used to write DO 1~8
QB73 => used to write DO 9~16

IB72 => used to read DO 1~8
IB73 => used to read DO 9~16

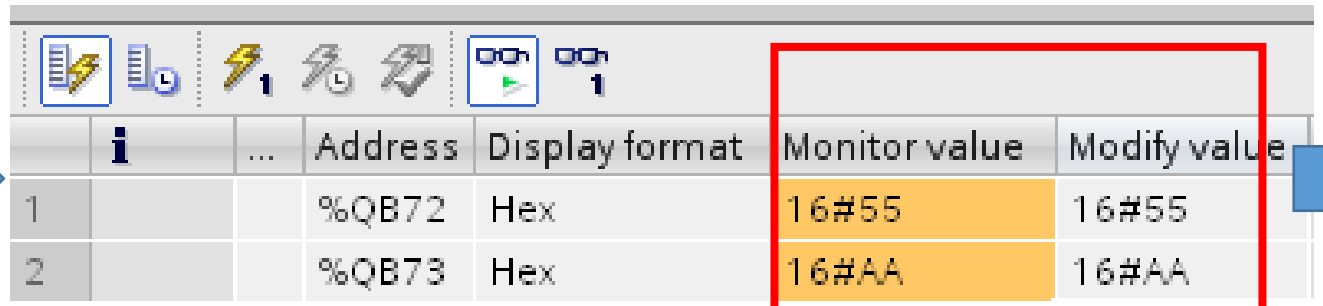
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Read and Write 16-channel DO

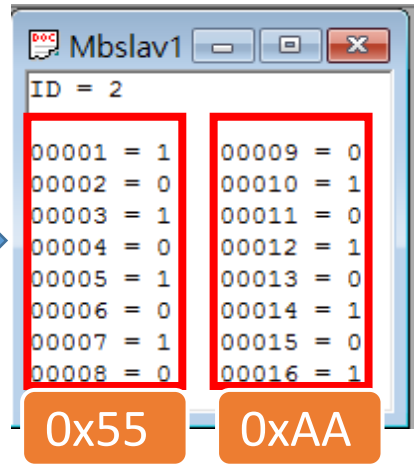
Original DO value



PLC Write 0x55 to DO 1~8
PLC Write 0xAA to DO 9~16

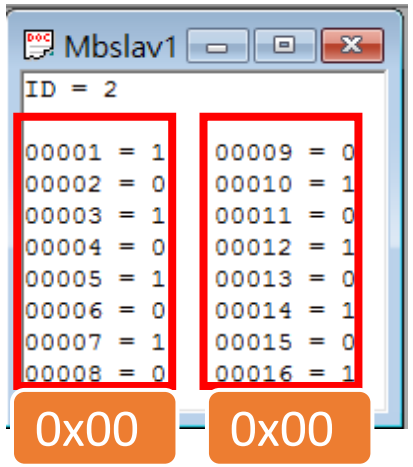


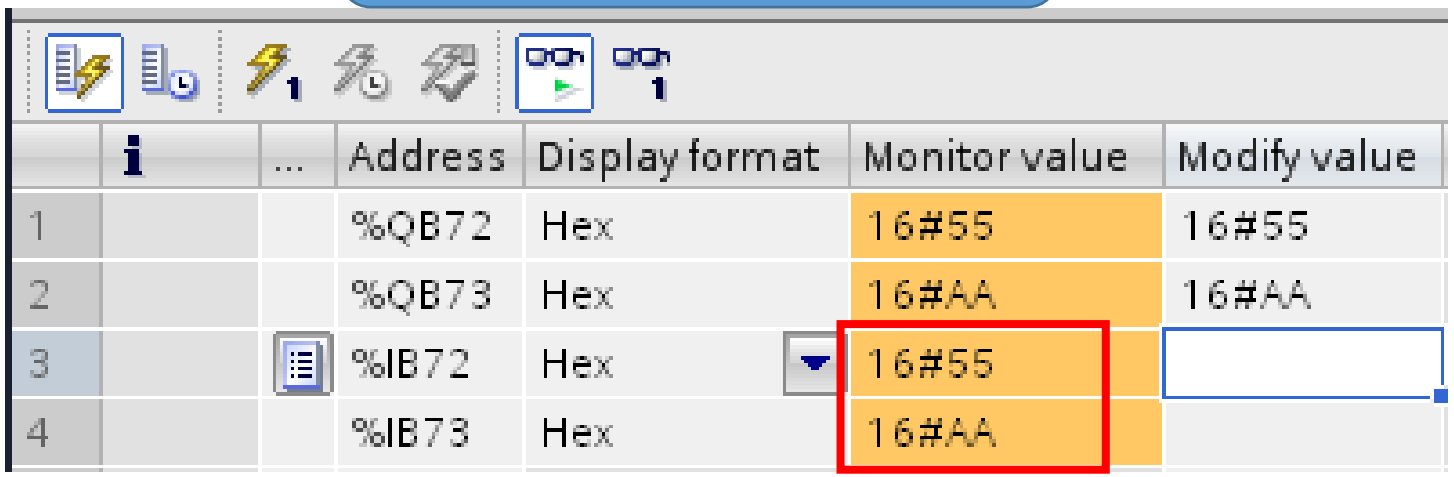
	i	...	Address	Display format	Monitor value	Modify value
1			%QB72	Hex	16#55	16#55
2			%QB73	Hex	16#AA	16#AA



Read and Write 16-channel DO

PLC Read 0x55 from DO 1~8
PLC Read 0xAA from DO 9~16



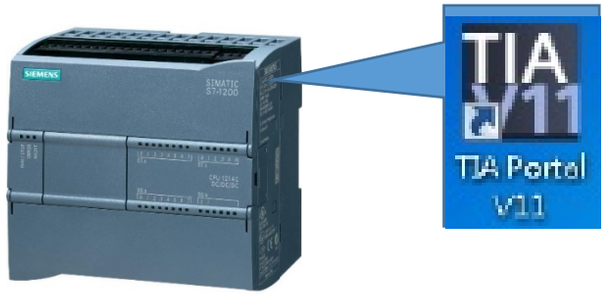


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Read 14-channel DI

SIMATIC S7-1200

PROFINET IO Controller
(Master)



PROFINET

GW-7663



Modbus TCP

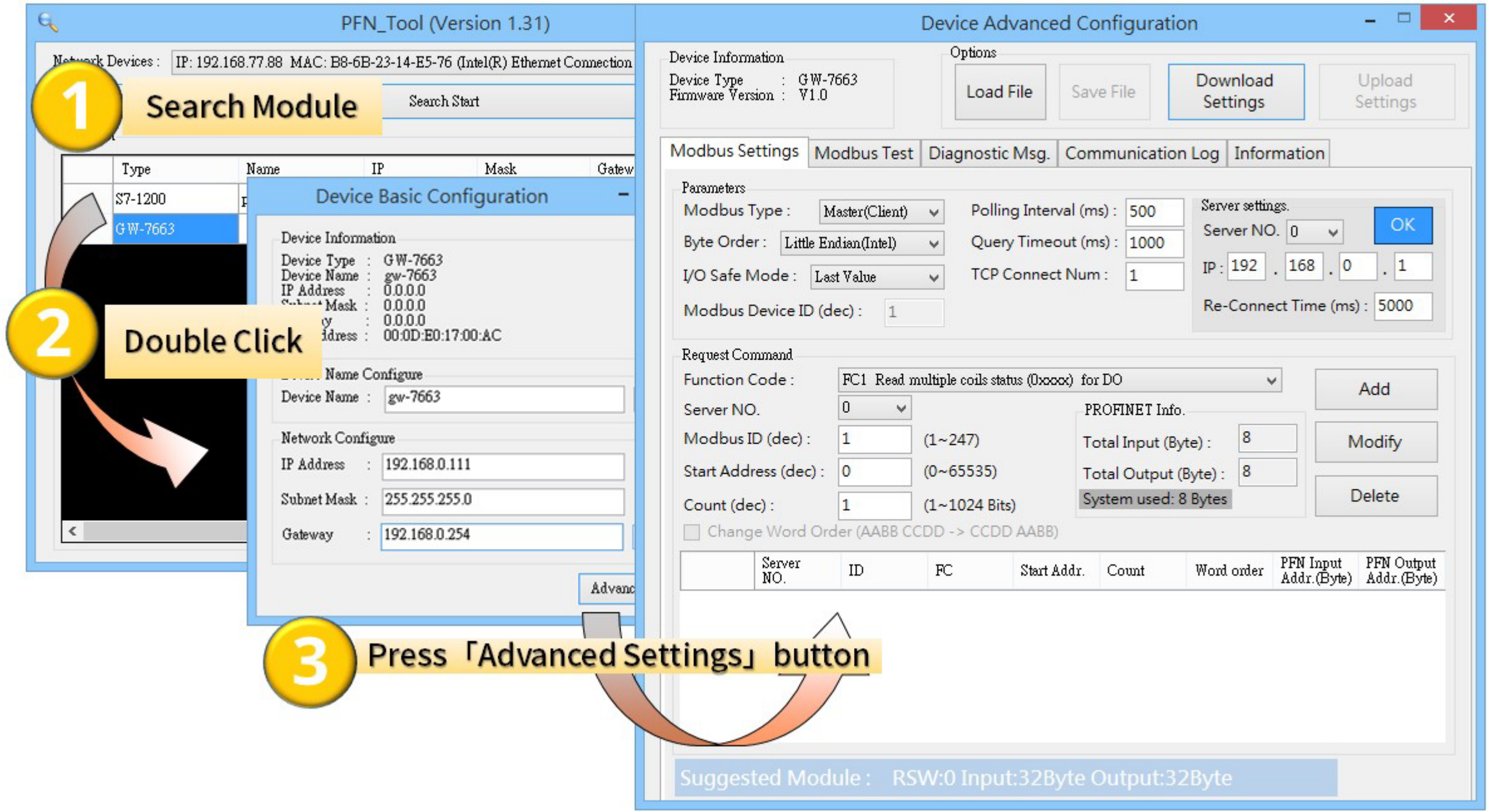
DI module (TCP server)
- **IP: 192.168.77.88**
- **Modbus ID: 3**
- **Data Address: 10001~10014**
- **Data Length: 2**



PROFINET IO device (Slave)	Modbus TCP Client

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Read 14-channel DI

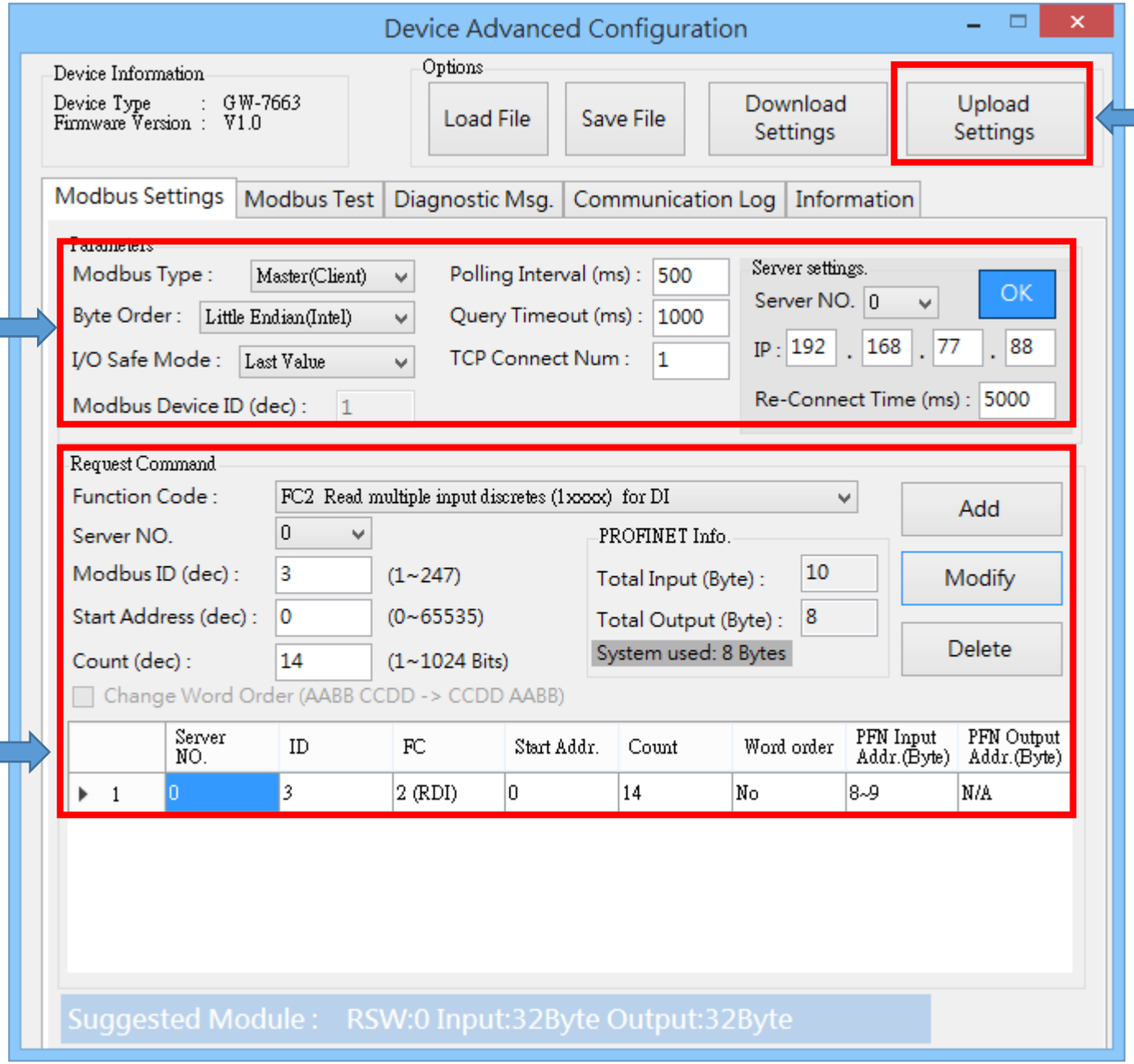


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Read 14-channel DI

1. Set Modbus settings

2. Add Modbus Command



3. Upload

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Read 14-channel DI

The first input 8 bytes and output 8 bytes are allocated for system. (64~71)
The 9th byte to the 32th byte are allocated for Modbus. (72~95)

Device overview

	Module	Rack	Slot	I address	Q addre...	Type	Order no.
	GW-7663	0	0			GW-7663 2-Port De...	GW-7663
	Internal	0	0 X1			GW-7663	
	RSW:0 Input:32Byte Output:...	0	1	64...95	64...95	RSW:0 Input:32Byte...	

	Address	Display format	Monitor value
1	%IB72	Hex	16#00
2	%IB73	Hex	16#00
3	%I72.0	Bool	FALSE
4	%I72.1	Bool	FALSE
5	%I72.2	Bool	FALSE
6	%I72.3	Bool	
7	%I72.4	Bool	FALSE
8	%I72.5	Bool	FALSE
9	%I72.6	Bool	FALSE
10	%I72.7	Bool	FALSE
11	%I73.0	Bool	FALSE
12	%I73.1	Bool	FALSE
13	%I73.2	Bool	FALSE
14	%I73.3	Bool	FALSE
15	%I73.4	Bool	FALSE
16	%I73.5	Bool	FALSE

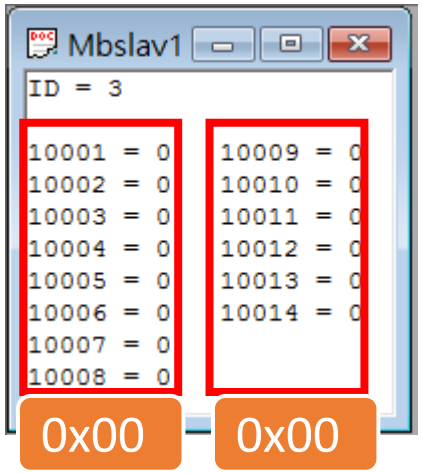
IB72 => used to read DI 1~8
IB73 => used to read DI 9~14

I72.0~I72.7 => used to read DI 1~8
I73.0~I73.5 => used to read DI 9~14

Read 14-channel DI

PLC Read 0x00 from DI 1~8
PLC Read 0x00 from DI 9~14

Original DI value

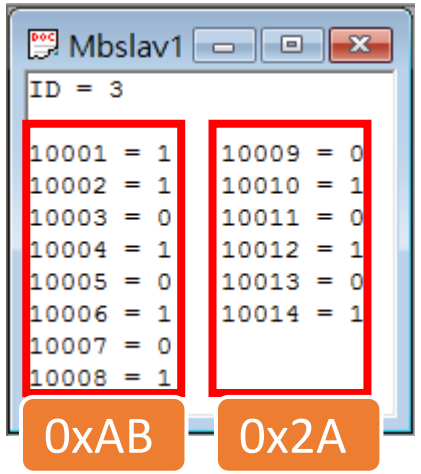


	i	...	Address	Display format	Monitor value
1			%IB72	Hex	16#00
2			%IB73	Hex	16#00
3			%I72.0	Bool	FALSE
4			%I72.1	Bool	FALSE
5			%I72.2	Bool	FALSE
6			%I72.3	Bool	FALSE
7			%I72.4	Bool	FALSE
8			%I72.5	Bool	FALSE
9			%I72.6	Bool	FALSE
10			%I72.7	Bool	FALSE
11			%I73.0	Bool	FALSE
12			%I73.1	Bool	FALSE
13			%I73.2	Bool	FALSE
14			%I73.3	Bool	FALSE
15			%I73.4	Bool	FALSE
16			%I73.5	Bool	FALSE

Read 14-channel DI

PLC Read 0xAB from DI 1~8
PLC Read 0x2A from DI 9~14

Change DI value



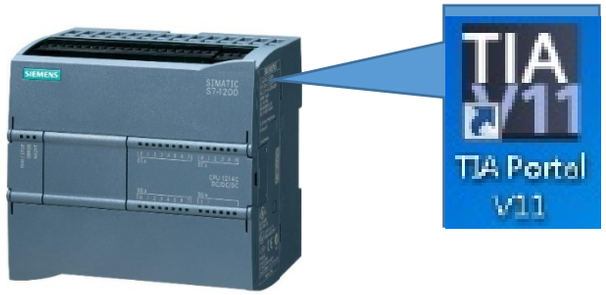
	i	...	Address	Display format	Monitor value
1			%IB72	Hex	16#AB
2			%IB73	Hex	16#2A
3			%I72.0	Bool	TRUE
4			%I72.1	Bool	TRUE
5			%I72.2	Bool	FALSE
6			%I72.3	Bool	TRUE
7			%I72.4	Bool	FALSE
8			%I72.5	Bool	TRUE
9			%I72.6	Bool	FALSE
10			%I72.7	Bool	TRUE
11			%I73.0	Bool	FALSE
12			%I73.1	Bool	TRUE
13			%I73.2	Bool	FALSE
14			%I73.3	Bool	TRUE
15			%I73.4	Bool	FALSE
16			%I73.5	Bool	TRUE

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Read and Write 3-channel AO

SIMATIC S7-1200

PROFINET IO Controller
(Master)



PROFINET

GW-7663



Modbus TCP



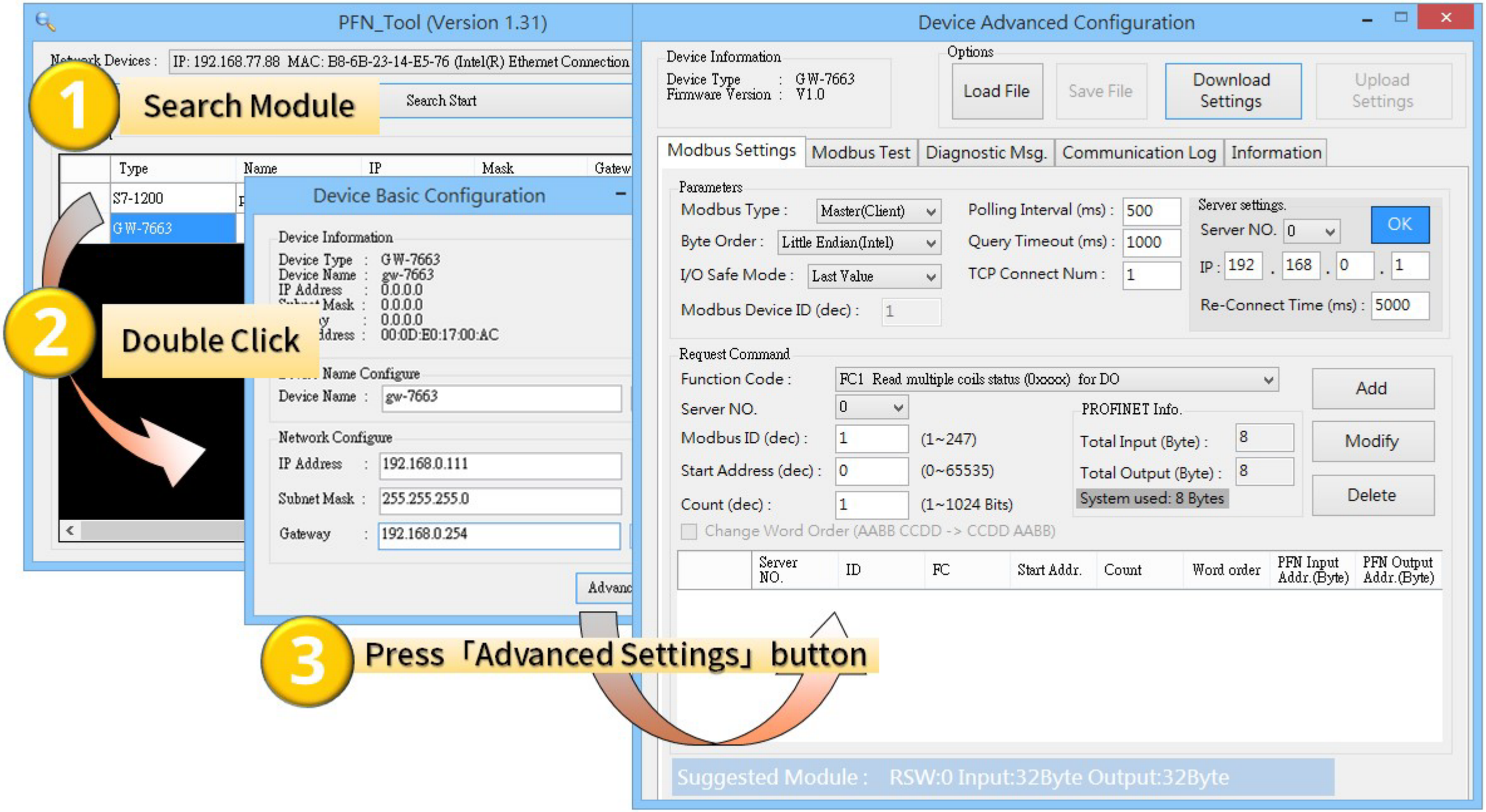
AO module (TCP server)

- **IP: 192.168.77.88**
- **Modbus ID: 4**
- **Data Address: 40001~40003**
- **Data Length: 3**

PROFINET IO device (Slave)	Modbus TCP Client

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Read and Write 3-channel AO

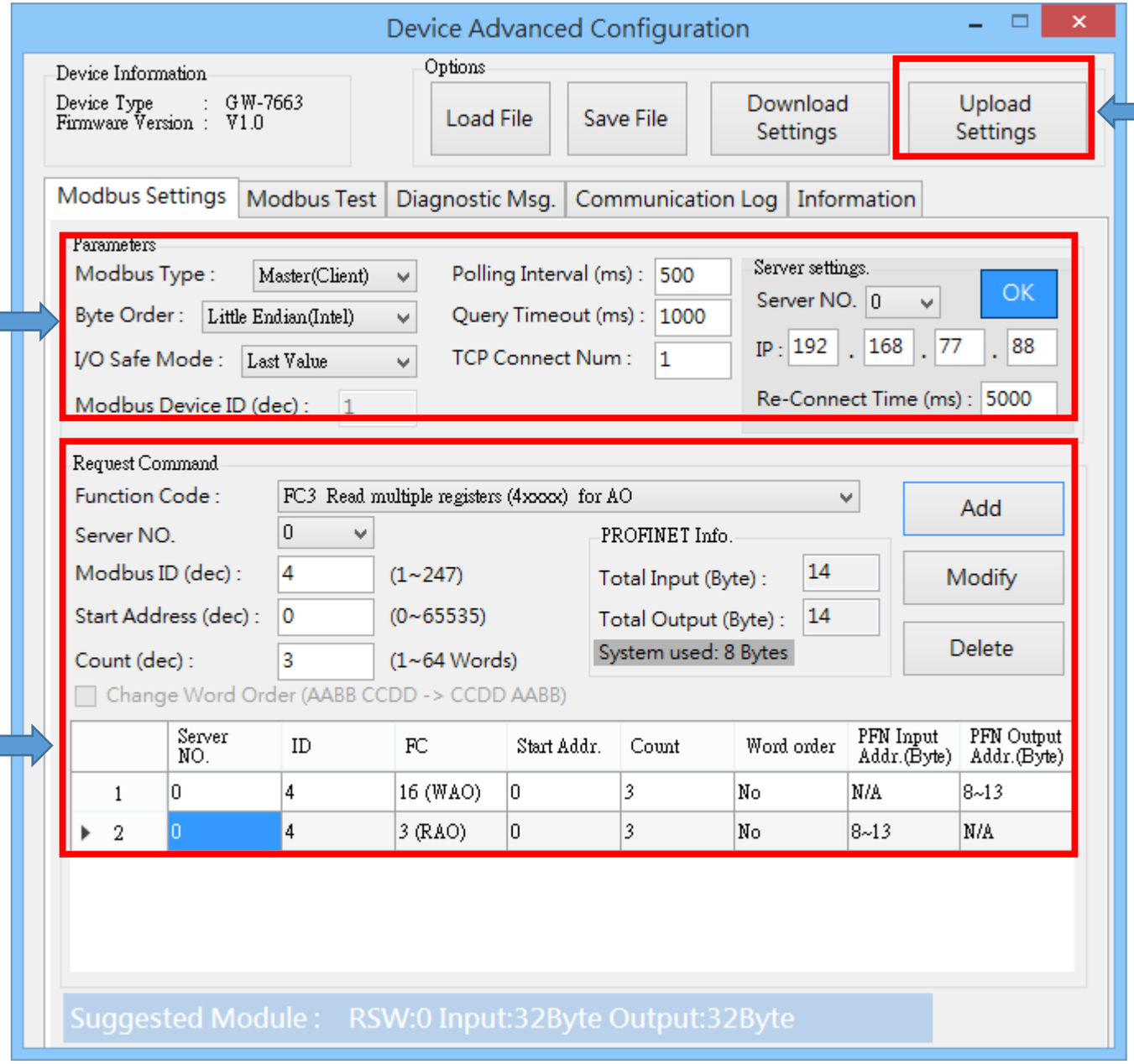


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Read and Write 3-channel AO

1. Set Modbus settings

2. Add Modbus Command

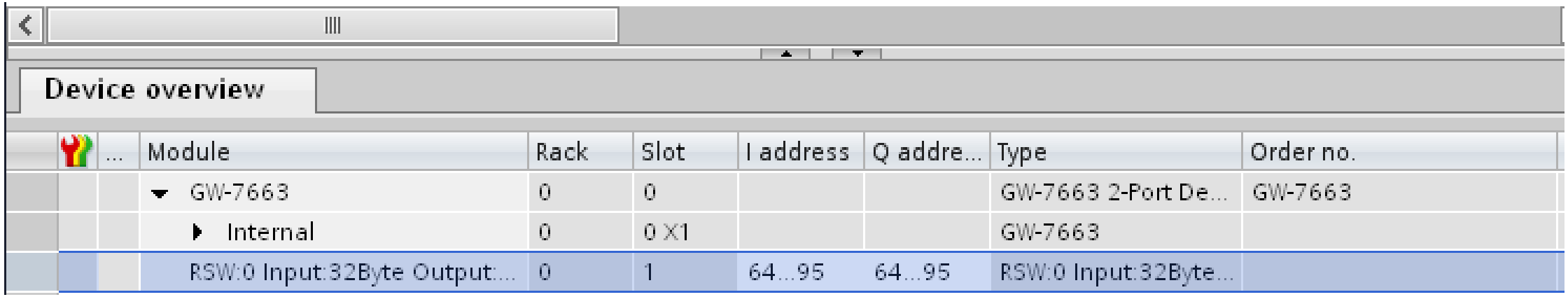


3. Upload

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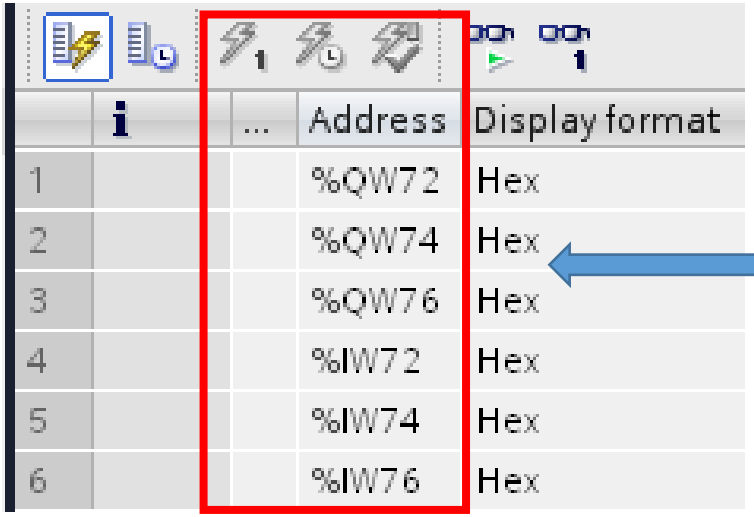
Read and Write 3-channel AO

The first input 8 bytes and output 8 bytes are allocated for system. (64~71)
The 9th byte to the 32th byte are allocated for Modbus. (72~95)



Device overview

	Module	Rack	Slot	I address	Q addre...	Type	Order no.
	GW-7663	0	0			GW-7663 2-Port De...	GW-7663
	Internal	0	0 X1			GW-7663	
	RSW:0 Input:32Byte Output:...	0	1	64...95	64...95	RSW:0 Input:32Byte...	



	Address	Display format
1	%QW72	Hex
2	%QW74	Hex
3	%QW76	Hex
4	%IW72	Hex
5	%IW74	Hex
6	%IW76	Hex

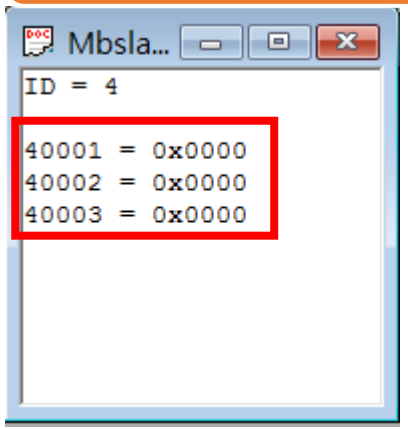
QW72 => used to write AO 1
QW74 => used to write AO 2
QW76 => used to write AO 3

IW72 => used to read AO 1
IW74 => used to read AO 2
IW76 => used to read AO 3

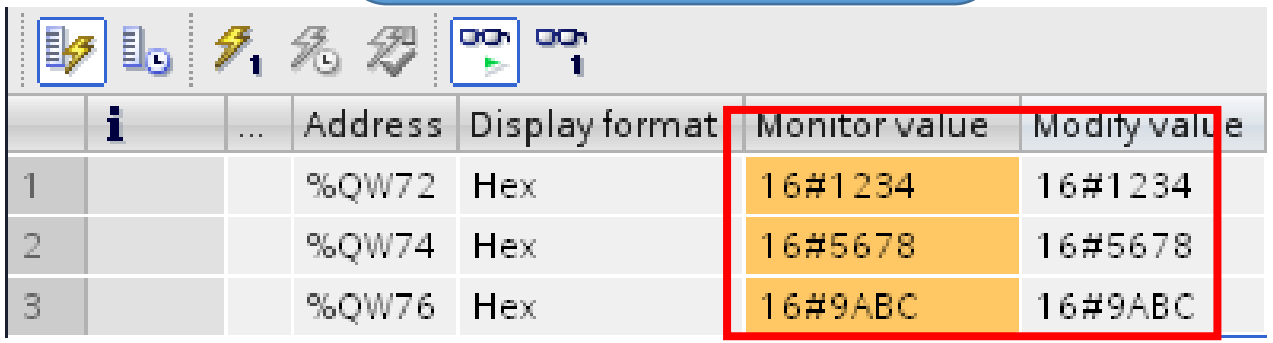
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Read and Write 3-channel AO

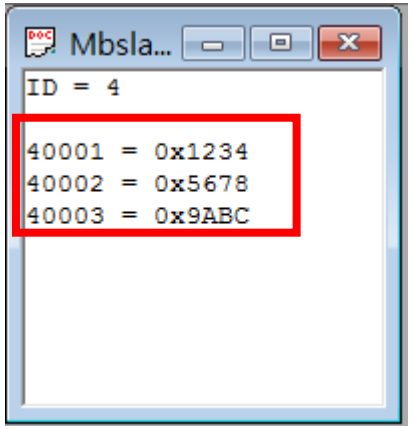
Original AO value



PLC Write 0x1234 to AO 1
PLC Write 0x5678 to AO 2
PLC Write 0x9ABC to AO 3



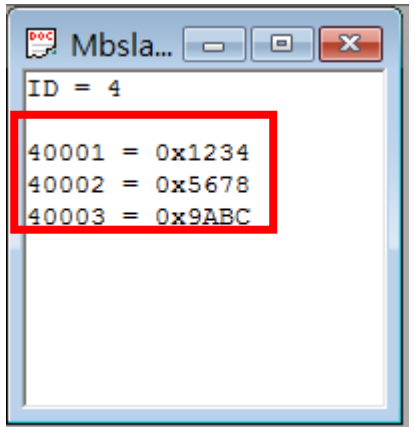
	i	...	Address	Display format	Monitor value	Modify value
1			%QW72	Hex	16#1234	16#1234
2			%QW74	Hex	16#5678	16#5678
3			%QW76	Hex	16#9ABC	16#9ABC



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Read and Write 3-channel AO

PLC Read 0x1234 from AO 1
PLC Read 0x5678 from AO 2
PLC Read 0x9ABC from AO 3



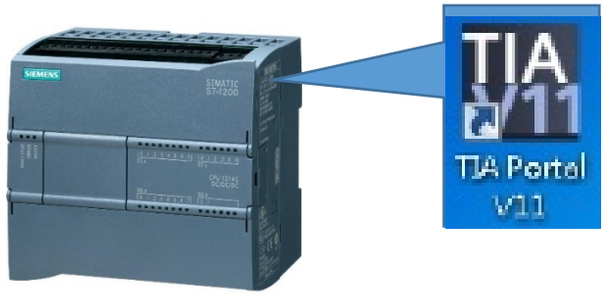
	i	...	Address	Display format	Monitor value	Modify value
1			%QW72	Hex	16#1234	16#1234
2			%QW74	Hex	16#5678	16#5678
3			%QW76	Hex	16#9ABC	16#9ABC
4			%IW72	Hex	16#1234	
5			%IW74	Hex	16#5678	
6			%IW76	Hex	16#9ABC	

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Read 4-channel AI

SIMATIC S7-1200

PROFINET IO Controller
(Master)



PROFINET

GW-7663



Modbus TCP



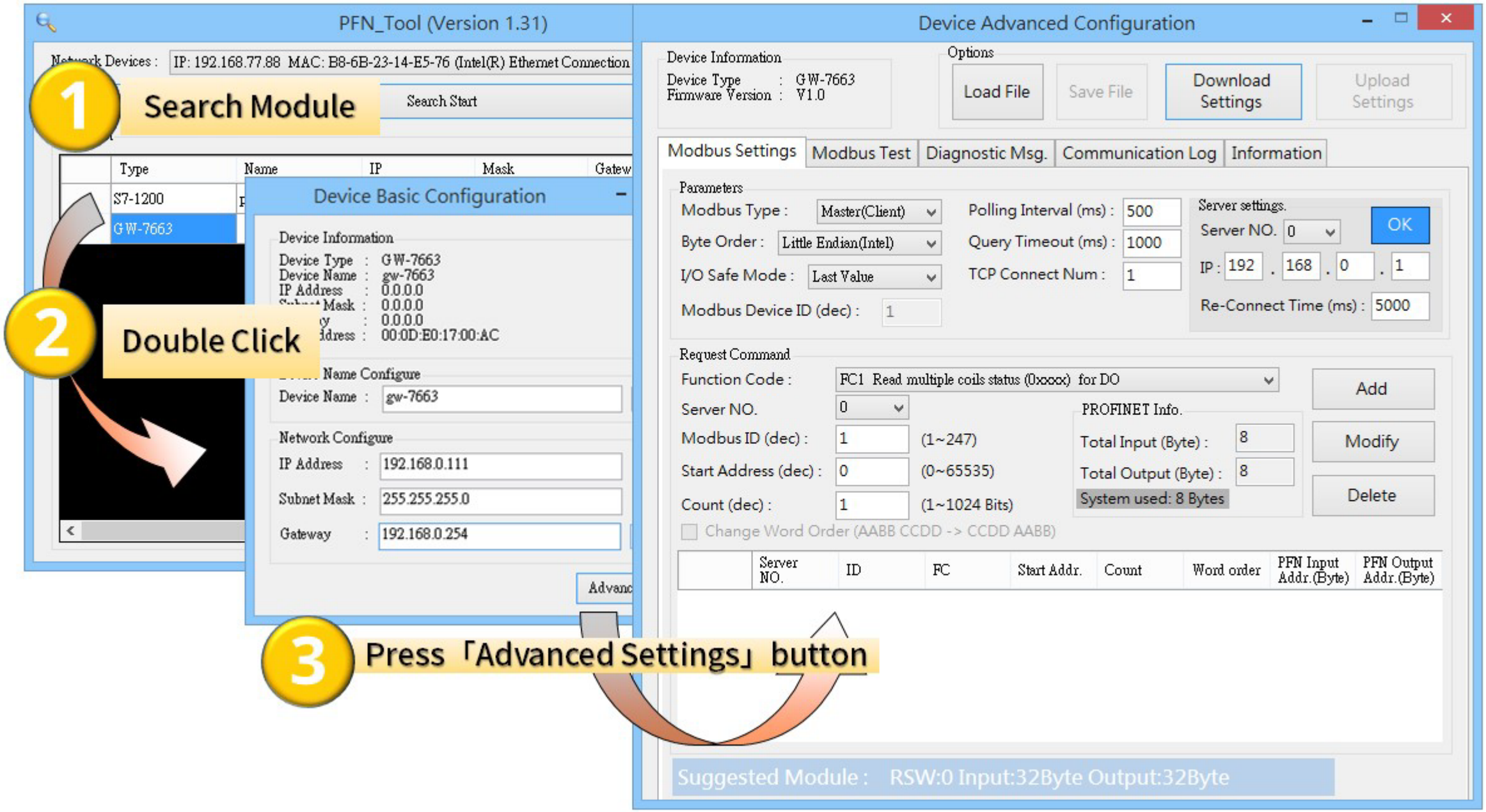
AI module (TCP server)

- **IP: 192.168.77.88**
- **Modbus ID: 5**
- **Data Address: 30001~30004**
- **Data Length: 4**

PROFINET IO device (Slave)	Modbus TCP Client

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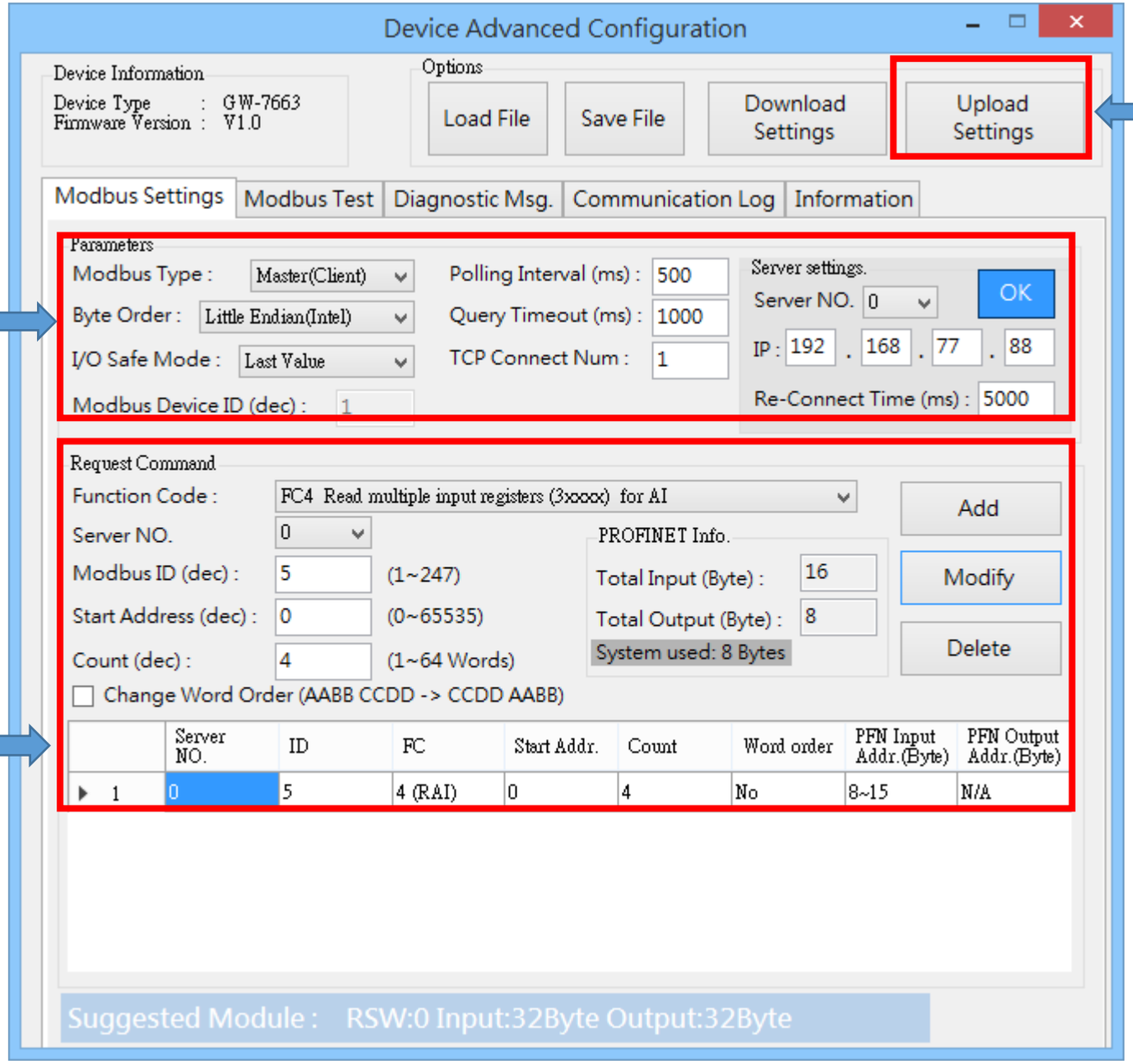
Read 4-channel AI



Read 4-channel AI

1. Set Modbus settings

2. Add Modbus Command



3. Upload

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Read 4-channel AI

The first input 8 bytes and output 8 bytes are allocated for system. (64~71)
The 9th byte to the 32th byte are allocated for Modbus. (72~95)

Device overview

	Module	Rack	Slot	I address	Q addre...	Type	Order no.
	GW-7663	0	0			GW-7663 2-Port De...	GW-7663
	Internal	0	0 X1			GW-7663	
	RSW:0 Input:32Byte Output:...	0	1	64...95	64...95	RSW:0 Input:32Byte...	

	Address	Display format	Monitor val
1	%IW72	Hex	16#0000
2	%IW74	Hex	16#0000
3	%IW76	Hex	16#0000
4	%IW78	Hex	16#0000

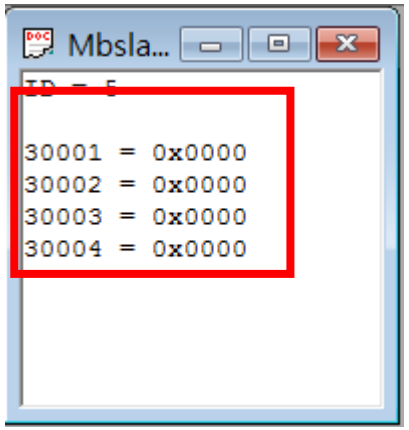
IW72 => used to read AI 1
IW74 => used to read AI 2
IW76 => used to read AI 3
IW78 => used to read AI 4

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Read 4-channel AI

PLC Read 0x0000 from AI 1
PLC Read 0x0000 from AI 2
PLC Read 0x0000 from AI 3
PLC Read 0x0000 from AI 4

Original AI value



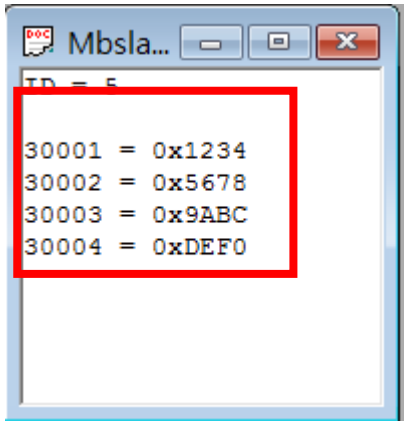
	i	...	Address	Display format	Monitor value
1			%IW72	Hex	16#0000
2			%IW74	Hex	16#0000
3			%IW76	Hex	16#0000
4			%IW78	Hex	16#0000

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Read 4-channel AI

PLC Read 0x1234 from AI 1
PLC Read 0x5678 from AI 2
PLC Read 0x9ABC from AI 3
PLC Read 0xDEF0 from AI 4

Change AI value



	i	...	Address	Display format	Monitor value
1			%IW72	Hex	16#1234
2			%IW74	Hex	16#5678
3			%IW76	Hex	16#9ABC
4			%IW78	Hex	16#DEF0

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