

*GW-7662 (Modbus RTU Slave)*  
*How to Communicate with Modbus master?*  
*Example for SIMATIC TIA portal*

- Preceding Operation
- Example 1: Modbus master read/write DO from/to PLC
- Example 2: Modbus master read/write AO from/to PLC
- Example 3: Modbus master read DI data from PLC
- Example 4: Modbus master read AI data from PLC



- ✓ Check wire connection between GW-7662 & Modbus devices.

[How to check the wire connection?](#)

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

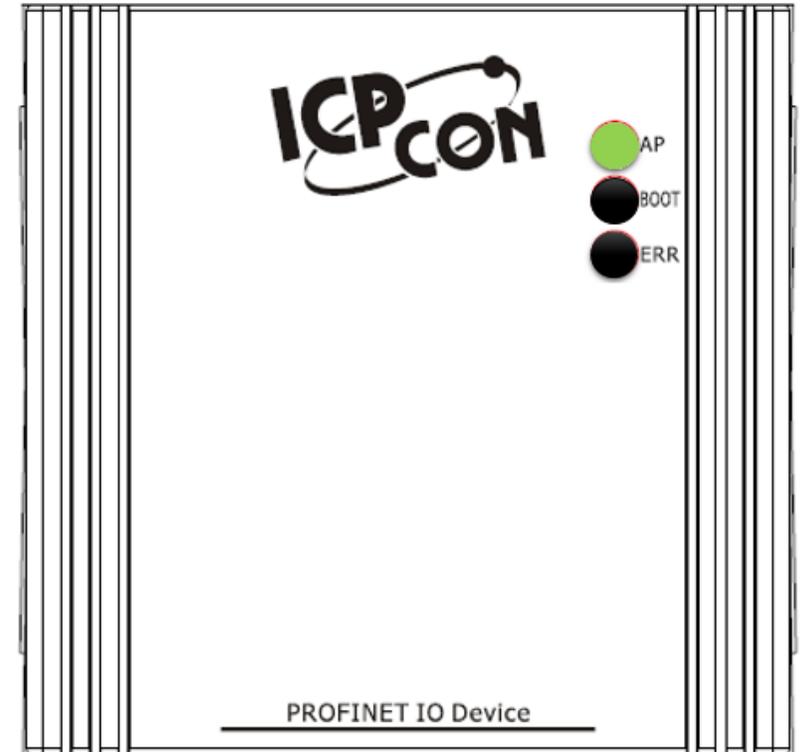
[How to configure GW-7662 in SIMATIC TIA portal?](#)

- ✓ Download PFN\_Tool utility.

[PFN\\_Tool](#)

- ✓ Download Modbus RTU master utility.

[MBRTU tool](#)

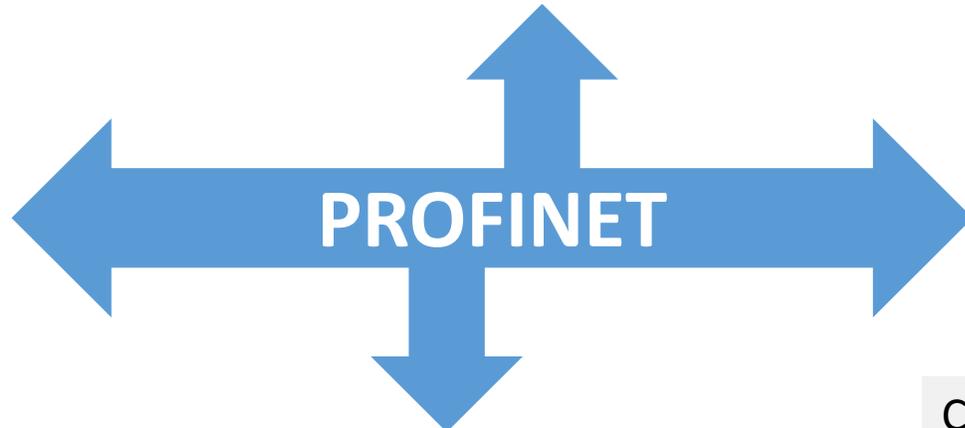
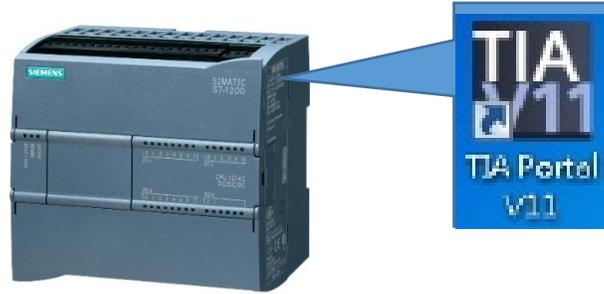


# Modbus master read/write 16-channel DO from/to PLC



**SIMATIC S7-1200**

PROFINET IO Controller  
(Master)

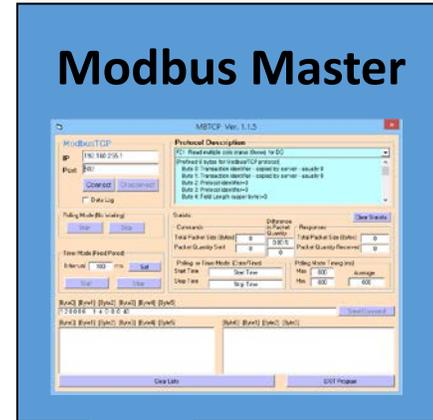


**GW-7662**



Comport Setting:

115200, n, 8, 1



PROFINET IO device  
(Slave)

**Modbus RTU Slave (DO)**

- Modbus ID:2
- Data Address: 00001~00016
- Data Length: 2



PFN\_Tool (Version 1.30)

Network Devices : IP: 192.168.77.88 MAC: B8-6B-23-14-E5-76 (Intel(R) Ethernet Connection)

**1 Search Module**

Type	Name	IP	Mask	Gateway
GW-7662				
SIMATIC-PC				
S7-PC				
SIMATIC-PC				

**2 Double Click**

**3 Press 「Advanced Settings」 button**

Device Advanced Configuration

Device Information  
Device Type : GW-7662  
Firmware Version : V1.0

Options  
Load File Save File Download Settings Upload Settings

Modbus Settings Modbus Test Diagnostic Msg. Communication Log Information

Parameters  
Modbus Format : RTU Byte Order : Little Endian(Intel) Polling Interval (ms) : 500  
Modbus Type : Master I/O Safe Mode : Last Value Query Timeout (ms) : 500  
Baudrate : 115200  
Line Control : n, 8, 1 Modbus Device ID (dec) : 1 (1~247)

Request Command  
Function Code : FC1 Read multiple coils status (0xxxx) for DO Add  
Modbus ID (dec) : 1 (1~247) PROFINET Info.  
Start Address (dec) : 0 (0~65535) Total Input (Byte) : 8 Modify  
Count (dec) : 1 (1~1024 Bits) Total Output (Byte) : 8 Delete  
 Change Word Order (AABB CCDD -> CCDD AABB) System used: 8 Bytes

ID	FC	Start Addr.	Count	Word order	PFN Input Addr.(Byte)	PFN Output Addr.(Byte)
----	----	-------------	-------	------------	-----------------------	------------------------

Suggested Module : RSW:0 Input:32Byte Output:32Byte

# Modbus master read and write 16-channel DO to PLC



Device Advanced Configuration

Device Information  
Device Type : GW-7662  
Firmware Version : V1.0

Options  
Load File Save File Download Settings **Upload Settings**

Modbus Settings Modbus Test Diagnostic Msg. Communication Log Information

Parameters

Modbus Format : RTU Byte Order : Little Endian(Intel) Polling Interval (ms) : 500  
Modbus Type : Slave I/O Safe Mode : Last Value Query Timeout (ms) : 500  
Baudrate : 115200  
Line Control : n, 8, 1 Modbus Device ID (dec) : 2 (1~247)

Request Command

Slave Type : DO (Output Relay/Coil) Add  
Count (dec) : 16 (1~4032 Bits) PROFINET Info.  
Total Input (Byte) : 10 Modify  
Total Output (Byte) : 8 Delete  
 Change Word Order (AABB CCDD -> CCDD AABB) System used: 8 Bytes

	ID	FC	Mapping Table	Count	Word order	PFN Input Addr.(Byte)	PFN Output Addr.(Byte)
▶ 1	2	DO	00001~00016	16	No	8~9	N/A

Suggested Module : RSW:0 Input:32Byte Output:32Byte

1. Set Modbus settings

2. Add Modbus Slave Type

3. Upload



The first input 8 bytes and output 8 bytes are allocated for system. (1~8)  
The 9<sup>th</sup> byte to the 32<sup>th</sup> byte are allocated for Modbus. (9~32)

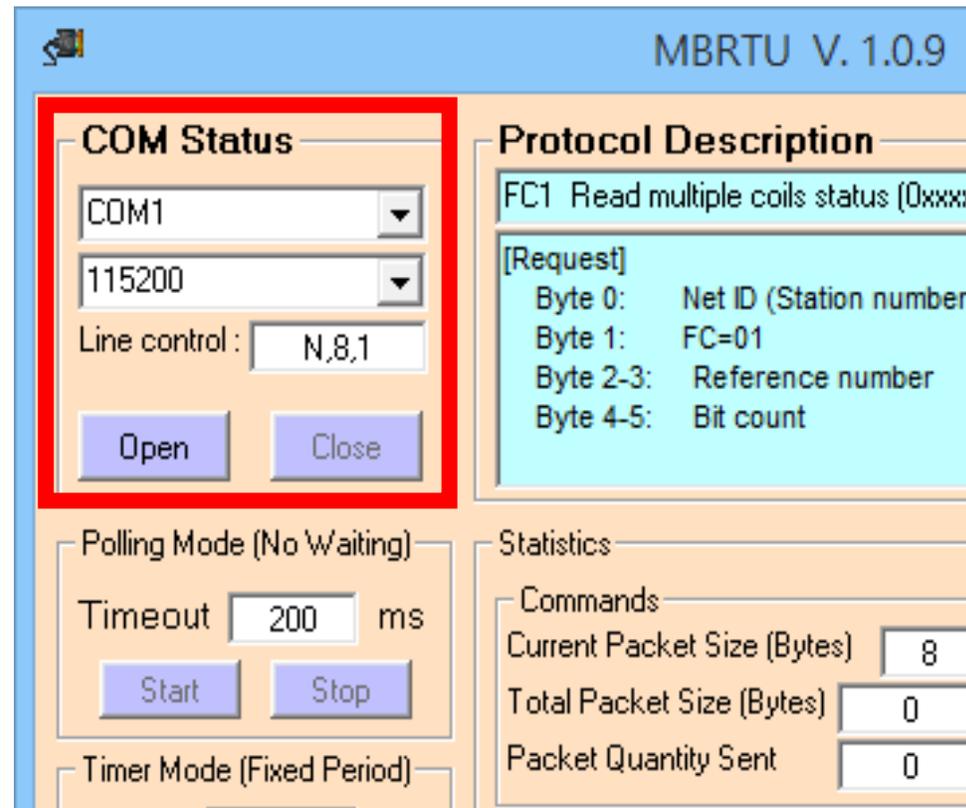
Device overview							
...	Module	Rack	Slot	I address	Q address	Type	Order no.
	GW-7662	0	0			GW-7662 2-Port De...	GW-7662
	Internal	0	0 X1			GW-7662	
	RSW:0 Input:32Byte Output:32Byte_1	0	1	1...32	1...32	RSW:0 Input:32Byte...	

	...	Address	Display format	Monitor value	M
1		%IB9	Hex	16#00	
2		%IB10	Hex	16#00	
3		%I9.0	Bool	FALSE	
4		%I9.1	Bool	FALSE	
5		%I9.2	Bool	FALSE	
6		%I9.3	Bool	FALSE	
7		%I9.4	Bool	FALSE	
8		%I9.5	Bool	FALSE	
9		%I9.6	Bool	FALSE	
10		%I9.7	Bool	FALSE	
11		%I10.0	Bool	FALSE	
12		%I10.1	Bool	FALSE	
13		%I10.2	Bool	FALSE	
14		%I10.3	Bool	FALSE	
15		%I10.4	Bool	FALSE	
16		%I10.5	Bool	FALSE	
17		%I10.6	Bool	FALSE	
18		%I10.7	Bool	FALSE	

IB9 => used to receive DO 1~8 from Modbus master  
IB10 => used to receive DO 9~16 from Modbus master  
I9.0~7 => used to receive DO 1~8 from Modbus master  
I10.0~7 => used to receive DO 9~16 from Modbus master



Confirm GW-7662's COM port setting is the same with Modbus master tool





Send Modbus command (FC 0F) to change DO status(0xAA, 0x55)

The screenshot shows the MBRTU V. 1.0.9 COM1 interface. The 'COM Status' section shows 'COM1' selected. The 'Protocol Description' section shows 'FC15 Force multiple coils (0xxxx) for DO'. The 'Request' section shows the following details:

- Byte 0: Net ID (Station number)
- Byte 1: FC=0F (hex)
- Byte 2-3: Reference number
- Byte 4-5: Bit count
- Byte 6: Byte count (B=(bit count + 7)/8)

The 'Statistics' section shows the following data:

Commands		Difference in Packet Quantity	Responses	
Current Packet Size (Bytes)	Total Packet Size (Bytes)		Current Packet Size (Bytes)	Total Packet Size (Bytes)
8	33	2	8	
Packet Quantity Sent	3	Packet Quantity Received	1	

The 'Command' section shows the command '02 0F 00 00 00 10 02 AA 55' entered in the 'Command' field. The 'Send Command' button is highlighted. The 'Responses' section shows the response '02 0F 00 00 00 10 54 34' in the 'Responses' field.

1. Send DO Data  
0xAA => for DO 1~8  
0x55 => for DO 9~16

2. Receive Resp.



PLC will receives DO status(0xAA, 0x55) at PLC address IB9, IB10

	<b>i</b>	...	Address	Display format	Monitor value	Modify value
1			%IB9	Hex	16#AA	
2			%IB10	Hex	16#55	
3			%I9.0	Bool	<input type="checkbox"/> FALSE	
4			%I9.1	Bool	<input checked="" type="checkbox"/> TRUE	
5			%I9.2	Bool	<input type="checkbox"/> FALSE	
6			%I9.3	Bool	<input checked="" type="checkbox"/> TRUE	
7			%I9.4	Bool	<input type="checkbox"/> FALSE	
8			%I9.5	Bool	<input checked="" type="checkbox"/> TRUE	
9			%I9.6	Bool	<input type="checkbox"/> FALSE	
10			%I9.7	Bool	<input checked="" type="checkbox"/> TRUE	
11			%I10.0	Bool	<input checked="" type="checkbox"/> TRUE	
12			%I10.1	Bool	<input type="checkbox"/> FALSE	
13			%I10.2	Bool	<input checked="" type="checkbox"/> TRUE	
14			%I10.3	Bool	<input type="checkbox"/> FALSE	
15			%I10.4	Bool	<input checked="" type="checkbox"/> TRUE	
16			%I10.5	Bool	<input type="checkbox"/> FALSE	
17			%I10.6	Bool	<input checked="" type="checkbox"/> TRUE	
18			%I10.7	Bool	<input type="checkbox"/> FALSE	



Send Modbus command (FC 05) to change DO status  
Set DO ch-5 (Modbus address: 00005): ON

The screenshot shows the MBRTU V. 1.0.9 COM1 software interface. The 'COM Status' section shows 'COM1' selected with 'Line control: N,8,1'. The 'Protocol Description' section shows 'FC5 Write single coil (0xxxx) for DO' with a request breakdown: Byte 0: Net ID (Station number), Byte 1: FC=05, Byte 2-3: Reference number, Byte 4: =FF to turn ON coil, =00 to turn OFF coil, Byte 5: =00. The 'Statistics' section shows 'Commands' with 'Current Packet Size (Bytes): 8', 'Total Packet Size (Bytes): 111', and 'Packet Quantity Sent: 11'. The 'Responses' section shows 'Current Packet Size (Bytes): 8', 'Total Packet Size (Bytes): 64', and 'Packet Quantity Received: 8'. The 'Command' field contains '02 05 00 04 FF 00' and the 'Send Command' button is highlighted. The 'Responses' list shows '02 05 00 04 FF 00 CD C8'.

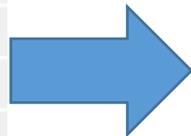
1. Send query cmd

2. Receive Resp.



PLC will receives DO status at PLC address I9.4(ch-5)

	i	...	Address	Display format	Monitor value	Modify value
1			%IB9	Hex	16#AA	
2			%IB10	Hex	16#55	
3			%I9.0	Bool	<input type="checkbox"/> FALSE	
4			%I9.1	Bool	<input checked="" type="checkbox"/> TRUE	
5			%I9.2	Bool	<input type="checkbox"/> FALSE	
6			%I9.3	Bool	<input checked="" type="checkbox"/> TRUE	
7			%I9.4	Bool	<input type="checkbox"/> FALSE	
8			%I9.5	Bool	<input checked="" type="checkbox"/> TRUE	
9			%I9.6	Bool	<input type="checkbox"/> FALSE	
10			%I9.7	Bool	<input checked="" type="checkbox"/> TRUE	
11			%I10.0	Bool	<input checked="" type="checkbox"/> TRUE	
12			%I10.1	Bool	<input type="checkbox"/> FALSE	
13			%I10.2	Bool	<input checked="" type="checkbox"/> TRUE	
14			%I10.3	Bool	<input type="checkbox"/> FALSE	
15			%I10.4	Bool	<input checked="" type="checkbox"/> TRUE	
16			%I10.5	Bool	<input type="checkbox"/> FALSE	
17			%I10.6	Bool	<input checked="" type="checkbox"/> TRUE	
18			%I10.7	Bool	<input type="checkbox"/> FALSE	



	i	...	Address	Display format	Monitor value	Modify value
1			%IB9	Hex	16#BA	
2			%IB10	Hex	16#55	
3			%I9.0	Bool	<input type="checkbox"/> FALSE	
4			%I9.1	Bool	<input checked="" type="checkbox"/> TRUE	
5			%I9.2	Bool	<input type="checkbox"/> FALSE	
6			%I9.3	Bool	<input checked="" type="checkbox"/> TRUE	
7			%I9.4	Bool	<input checked="" type="checkbox"/> TRUE	
8			%I9.5	Bool	<input checked="" type="checkbox"/> TRUE	
9			%I9.6	Bool	<input type="checkbox"/> FALSE	
10			%I9.7	Bool	<input checked="" type="checkbox"/> TRUE	
11			%I10.0	Bool	<input checked="" type="checkbox"/> TRUE	
12			%I10.1	Bool	<input type="checkbox"/> FALSE	
13			%I10.2	Bool	<input checked="" type="checkbox"/> TRUE	
14			%I10.3	Bool	<input type="checkbox"/> FALSE	
15			%I10.4	Bool	<input checked="" type="checkbox"/> TRUE	
16			%I10.5	Bool	<input type="checkbox"/> FALSE	
17			%I10.6	Bool	<input checked="" type="checkbox"/> TRUE	
18			%I10.7	Bool	<input type="checkbox"/> FALSE	



## Send Modbus command (FC 01) to read DO status

The screenshot shows the MBRTU V. 1.0.9 COM1 software interface. The 'COM Status' section shows 'COM1' selected. The 'Protocol Description' section shows 'FC1 Read multiple coils status (0xxxx) for DO'. The 'Statistics' section shows 'Commands' and 'Responses' data. The 'Command' field contains '02 01 00 00 00 10'. The 'Responses' field contains '02 01 02 BA 55 4E A3'. The 'Send Command' button is highlighted.

Section	Field	Value
COM Status	COM1	COM1
	115200	115200
	Line control	N,8,1
Protocol Description	Byte 0	Net ID (Station number)
	Byte 1	FC=01
	Byte 2-3	Reference number
	Byte 4-5	Bit count
Statistics - Commands	Current Packet Size (Bytes)	8
	Total Packet Size (Bytes)	119
	Packet Quantity Sent	12
	Difference in Packet Quantity	3
Statistics - Responses	Current Packet Size (Bytes)	7
	Total Packet Size (Bytes)	71
	Packet Quantity Received	9
Command	Command	02 01 00 00 00 10
	Send Command	Send Command
Responses	Commands	02 01 00 00 00 10 3D F5
	Responses	02 01 02 BA 55 4E A3

1. Send query cmd

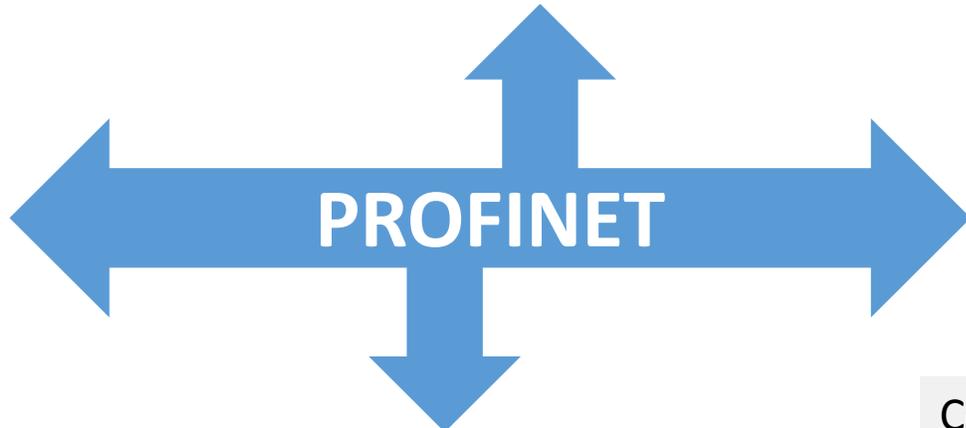
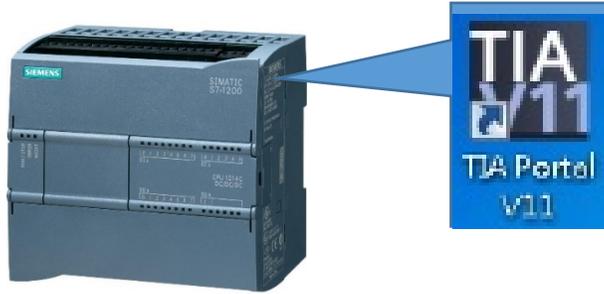
2. Receive DO data  
0xBA => for DO 1~8  
0x55 => for DO 9~16

# Modbus master read/write 3-channel AO from/to PLC



**SIMATIC S7-1200**

PROFINET IO Controller  
(Master)

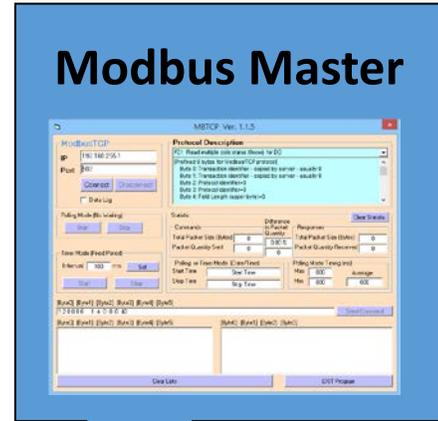


**GW-7662**



Comport Setting:

115200, n, 8, 1



**PROFINET IO device  
(Slave)**

- Modbus RTU Slave (AO)**
- Modbus ID:4
  - Data Address: 40001~40003
  - Data Length: 3

# Modbus master read/write 3-channel AO from/to PLC



PFN\_Tool (Version 1.30)

Network Devices : IP: 192.168.77.88 MAC: B8-6B-23-14-E5-76 (Intel(R) Ethernet Connection)

**1 Search Module**

Type	Name	IP	Mask	Gateway
GW-7662				
SIMATIC-PC				
S7-PC				
SIMATIC-PC				

**2 Double Click**

**3 Press 「Advanced Settings」 button**

Device Advanced Configuration

Device Information  
Device Type : GW-7662  
Firmware Version : V1.0

Options  
Load File Save File Download Settings Upload Settings

Modbus Settings Modbus Test Diagnostic Msg. Communication Log Information

Parameters  
Modbus Format : RTU Byte Order : Little Endian(Intel) Polling Interval (ms) : 500  
Modbus Type : Master I/O Safe Mode : Last Value Query Timeout (ms) : 500  
Baudrate : 115200  
Line Control : n, 8, 1 Modbus Device ID (dec) : 1 (1~247)

Request Command  
Function Code : FC1 Read multiple coils status (0xxxx) for DO Add  
Modbus ID (dec) : 1 (1~247) PROFINET Info.  
Start Address (dec) : 0 (0~65535) Total Input (Byte) : 8 Modify  
Count (dec) : 1 (1~1024 Bits) Total Output (Byte) : 8 Delete  
 Change Word Order (AABB CCDD -> CCDD AABB) System used: 8 Bytes

ID	FC	Start Addr.	Count	Word order	PFN Input Addr.(Byte)	PFN Output Addr.(Byte)
----	----	-------------	-------	------------	-----------------------	------------------------

Suggested Module : RSW:0 Input:32Byte Output:32Byte

# Modbus master read/write 3-channel AO from/to PLC



Device Advanced Configuration

Device Information  
Device Type : GW-7662  
Firmware Version : V1.0

Options  
Load File Save File Download Settings **Upload Settings**

Modbus Settings Modbus Test Diagnostic Msg. Communication Log Information

Parameters

Modbus Format : RTU Byte Order : Little Endian(Intel) Polling Interval (ms) : 500  
Modbus Type : Slave I/O Safe Mode : Last Value Query Timeout (ms) : 500  
Baudrate : 115200  
Line Control : n, 8, 1 Modbus Device ID (dec) : 4 (1~247)

Request Command

Slave Type : AO (Output/Holding Register) Add  
Count (dec) : 3 (1~252 Words) PROFINET Info. Modify  
Total Input (Byte) : 14  
Total Output (Byte) : 8  
 Change Word Order (AABB CCDD -> CCDD AABB) System used: 8 Bytes Delete

	ID	FC	Mapping Table	Count	Word order	PFN Input Addr.(Byte)	PFN Output Addr.(Byte)
▶ 1	4	AO	40001~40003	3	No	8~13	N/A

Suggested Module : RSW:0 Input:32Byte Output:32Byte

1. Set Modbus settings

2. Add Modbus Slave Type

3. Upload

# Modbus master read/write 3-channel AO from/to PLC



The first input 8 bytes and output 8 bytes are allocated for system. (1~8)  
The 9<sup>th</sup> byte to the 32<sup>th</sup> byte are allocated for Modbus. (9~32)

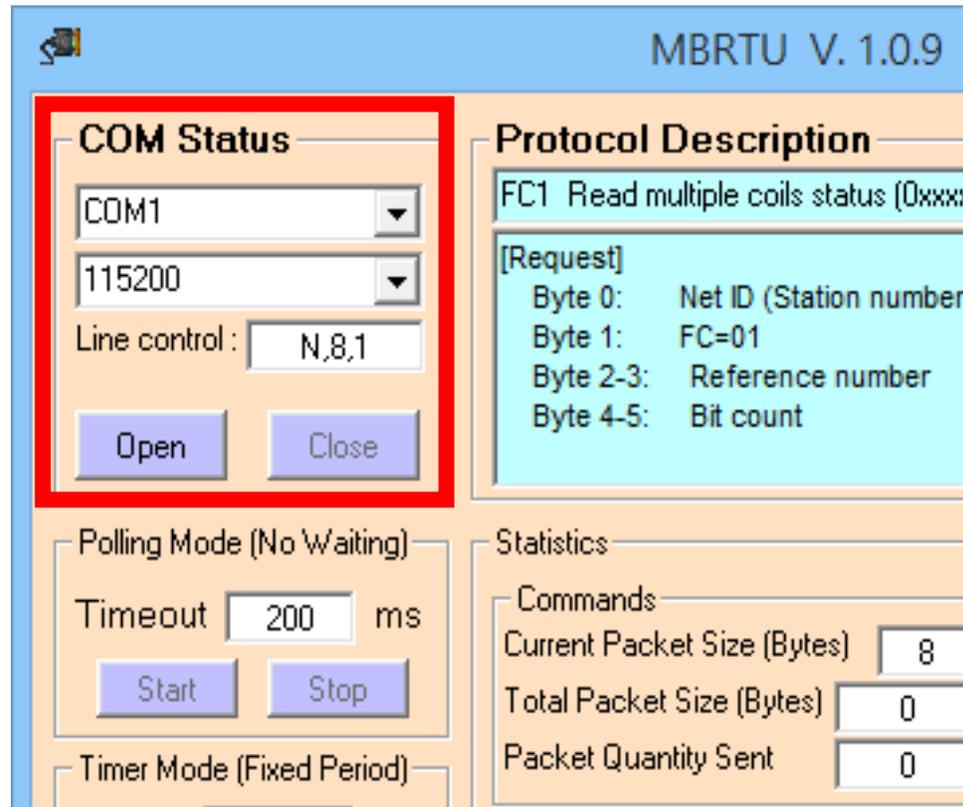
Device overview							
...	Module	Rack	Slot	I address	Q address	Type	Order no.
	▼ GW-7662	0	0			GW-7662 2-Port De...	GW-7662
	▶ Internal	0	0 X1			GW-7662	
	RSW:0 Input:32Byte Output:32Byte_1	0	1	1...32	1...32	RSW:0 Input:32Byte...	

...	Address	Display format	Monitor va
1	%IW9	Hex	16#0000
2	%IW11	Hex	16#0000
3	%IW13	Hex	16#0000

IW9 => used to receive AO 1 from Modbus master  
IW11 => used to receive AO 2 from Modbus master  
IW13 => used to receive AO 3 from Modbus master



Confirm GW-7662's COM port setting is the same with Modbus master tool





Send Modbus command (FC 10) to change AO status(0x1122, 0x3344, 0x5566)

The screenshot shows the MBRTU V. 1.0.9 COM1 software interface. The 'Protocol Description' section is set to 'FC16 Write multiple registers (4xxxx) for AO'. The 'Request' section shows the following details:

- Byte 0: Net ID (Station number)
- Byte 1: FC=10 (hex)
- Byte 2-3: Reference number
- Byte 4-5: Word count
- Byte 6: Byte count (B=2 x word count)

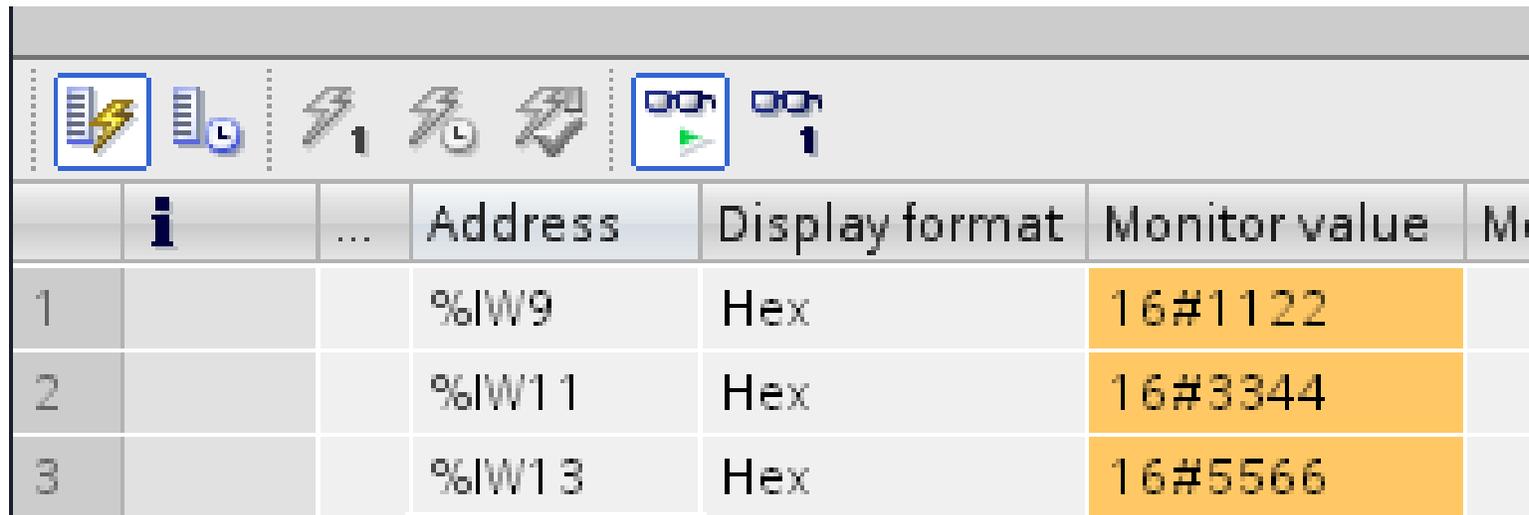
The 'Command' field contains the hex string: 04 10 00 00 00 03 06 11 22 33 44 55 66. The 'Send Command' button is highlighted with a red box. Below the command field, the 'Commands' list shows the transmitted packet: 04 10 00 00 00 03 06 11 22 33 44 55 66 E1 E8. The 'Responses' list shows the received packet: 04 10 00 00 00 03 80 5D. A red box highlights the response data.

1. Send AO Data  
0x1122 => for AO 1  
0x3344 => for AO 2  
0x5566 => for AO 3

2. Receive Resp.



PLC will receives AO status(0x1122, 0x3344, 0x5566) at PLC address IW9, IW11, IW13



	<b>i</b>	...	Address	Display format	Monitor value	Mo
1			%IW9	Hex	16#1122	
2			%IW11	Hex	16#3344	
3			%IW13	Hex	16#5566	



Send Modbus command (FC 06) to change AO status  
Set AO ch-2 (Modbus address: 40002): 0xABCD

The screenshot shows the MBRTU V. 1.0.9 COM1 software interface. The 'COM Status' section shows 'COM1' selected. The 'Protocol Description' section shows 'FC6 Write single register (4xxxx) for AO'. The 'Command' field contains '04 06 00 01 AB CD'. The 'Responses' field contains '04 06 00 01 AB CD 66 FA'. The 'Statistics' section shows 'Commands' and 'Responses' counts.

Statistics	Value
Commands	
Current Packet Size (Bytes)	8
Total Packet Size (Bytes)	155
Packet Quantity Sent	15
Responses	
Current Packet Size (Bytes)	8
Total Packet Size (Bytes)	95
Packet Quantity Received	12

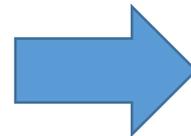
1. Send query cmd

2. Receive Resp.



PLC will receives AO status(0xABCD) at PLC address IW11

	<b>i</b>	...	Address	Display format	Monitor value	Mo
1			%IW9	Hex	16#1122	
2			%IW11	Hex	16#3344	
3			%IW13	Hex	16#5566	



	<b>i</b>	...	Address	Display format	Monitor value	Mo
1			%IW9	Hex	16#1122	
2			%IW11	Hex	16#ABCD	
3			%IW13	Hex	16#5566	



## Send Modbus command (FC 03) to read AO status

The screenshot shows the MBRTU V. 1.0.9 COM1 interface. The 'Protocol Description' section shows 'FC3 Read multiple registers (4xxxx) for AO'. The 'Request' section shows the following details:

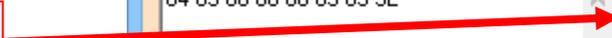
- Byte 0: Net ID (Station number)
- Byte 1: FC=03
- Byte 2-3: Reference number
- Byte 4-5: Word count

The 'Command' field contains the hex string: 04 03 00 00 00 03. The 'Send Command' button is highlighted with a red box. The 'Responses' section shows the received data: 04 03 06 11 22 AB CD 55 66 EB C2. The 'Commands' section shows the command: 04 03 00 00 00 03 05 9E.

1. Send query cmd



2. Receive AO data  
0x1122 => for AO 1  
0xABCD => for AO 2  
0x5566 => for AO 3

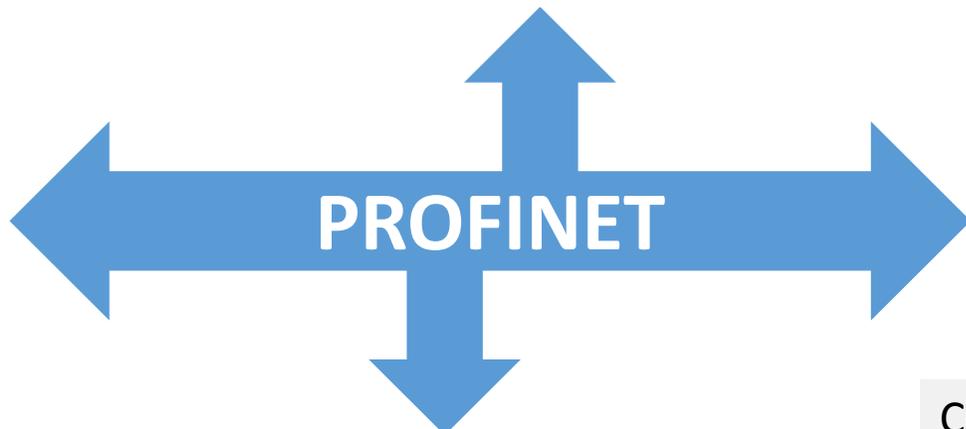
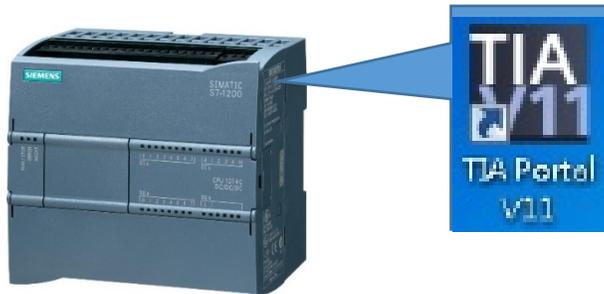


# Modbus master read 14-channel DI from PLC



**SIMATIC S7-1200**

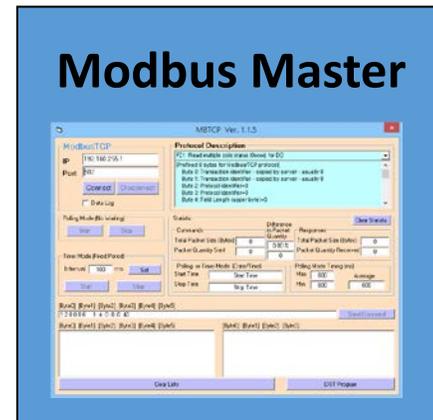
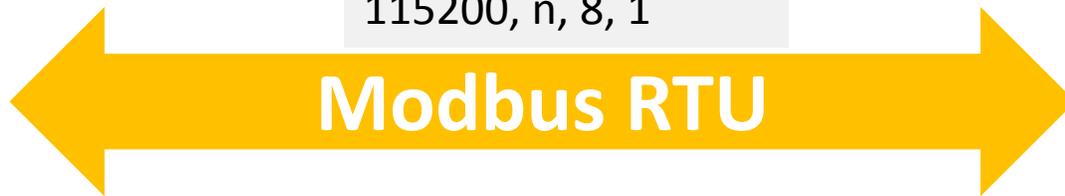
**PROFINET IO Controller  
(Master)**



**GW-7662**



Comport Setting:  
115200, n, 8, 1



<b>PROFINET IO device (Slave)</b>	<b>Modbus RTU Slave (DI)</b>
	<ul style="list-style-type: none"><li>• Modbus ID:3</li><li>• Data Address: 10001~10014</li><li>• Data Length: 2</li></ul>

# Modbus master read 14-channel DI from PLC



PFN\_Tool (Version 1.30)

Network Devices : IP: 192.168.77.88 MAC: B8-6B-23-14-E5-76 (Intel(R) Ethernet Connection)

**1 Search Module** Search Start

Type	Name	IP	Mask	Gateway
GW-7662				
SIMATIC-PC	ic			
S7-PC	ic			
SIMATIC-PC	r			

**2 Double Click**

**Device Basic Configuration**

Device Information

Device Type : GW-7662  
Device Name : gw-7662  
IP Address : 0.0.0.0  
Subnet Mask : 0.0.0.0  
Gateway : 0.0.0.0  
MAC Address : 12:34:56:78:9A:BC

Name Configure

Device Name : gw-7662

Network Configure

IP Address : 192.168.0.111  
Subnet Mask : 255.255.255.0  
Gateway : 192.168.0.254

Advanced

Device Advanced Configuration

Device Information

Device Type : GW-7662  
Firmware Version : V1.0

Options

Load File Save File Download Settings Upload Settings

Modbus Settings Modbus Test Diagnostic Msg. Communication Log Information

Parameters

Modbus Format : RTU Byte Order : Little Endian(Intel) Polling Interval (ms) : 500  
Modbus Type : Master I/O Safe Mode : Last Value Query Timeout (ms) : 500  
Baudrate : 115200  
Line Control : n, 8, 1 Modbus Device ID (dec) : 1 (1~247)

Request Command

Function Code : FC1 Read multiple coils status (0xxxx) for DO Add  
Modbus ID (dec) : 1 (1~247) PROFINET Info.  
Start Address (dec) : 0 (0~65535) Total Input (Byte) : 8 Modify  
Count (dec) : 1 (1~1024 Bits) Total Output (Byte) : 8 Delete  
 Change Word Order (AABB CCDD -> CCDD AABB) System used: 8 Bytes

ID	FC	Start Addr.	Count	Word order	PFN Input Addr.(Byte)	PFN Output Addr.(Byte)
----	----	-------------	-------	------------	-----------------------	------------------------

**3 Press 「Advanced Settings」 button**

Suggested Module : RSW:0 Input:32Byte Output:32Byte

# Modbus master read 14-channel DI from PLC



Device Advanced Configuration

Device Information  
Device Type : GW-7662  
Firmware Version : V1.0

Options  
Load File Save File Download Settings **Upload Settings**

Modbus Settings Modbus Test Diagnostic Msg. Communication Log Information

Parameters

Modbus Format : RTU Byte Order : Little Endian(Intel) Polling Interval (ms) : 500  
Modbus Type : Slave I/O Safe Mode : Last Value Query Timeout (ms) : 500  
Baudrate : 115200  
Line Control : n, 8, 1 Modbus Device ID (dec) : 3 (1~247)

Request Command

Slave Type : DI (Input Relay/Coil) Add  
Count (dec) : 14 (1~4032 Bits) PROFINET Info.  
Total Input (Byte) : 8 Modify  
Total Output (Byte) : 10  
 Change Word Order (AABB CCDD -> CCDD AABB) System used: 8 Bytes Delete

	ID	FC	Mapping Table	Count	Word order	PFN Input Addr.(Byte)	PFN Output Addr.(Byte)
▶ 1	3	DI	10001~10014	14	No	N/A	8~9

Suggested Module : RSW:0 Input:32Byte Output:32Byte

1. Set Modbus settings

2. Add Modbus Slave Type

3. Upload



The first input 8 bytes and output 8 bytes are allocated for system. (1~8)  
The 9<sup>th</sup> byte to the 32<sup>th</sup> byte are allocated for Modbus. (9~32)

Device overview							
...	Module	Rack	Slot	I address	Q address	Type	Order no.
	▼ GW-7662	0	0			GW-7662 2-Port De...	GW-7662
	▶ Internal	0	0 X1			GW-7662	
	RSW:0 Input:32Byte Output:32Byte_1	0	1	1...32	1...32	RSW:0 Input:32Byte...	

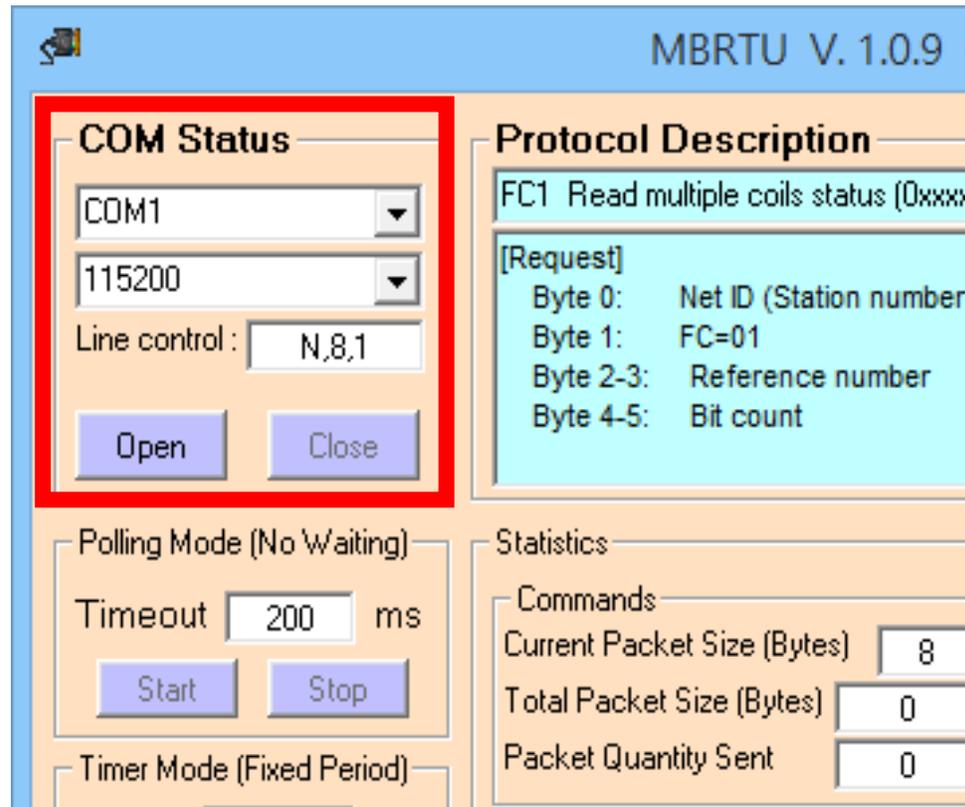
...	Address	Display format	Monitor value	Modify
1	%QB9	Hex	16#00	
2	%QB10	Hex	16#00	
3	%Q9.0	Bool	FALSE	
4	%Q9.1	Bool	FALSE	
5	%Q9.2	Bool	FALSE	
6	%Q9.3	Bool	FALSE	
7	%Q9.4	Bool	FALSE	
8	%Q9.5	Bool	FALSE	
9	%Q9.6	Bool	FALSE	
10	%Q9.7	Bool	FALSE	
11	%Q10.0	Bool	FALSE	
12	%Q10.1	Bool	FALSE	
13	%Q10.2	Bool	FALSE	
14	%Q10.3	Bool	FALSE	
15	%Q10.4	Bool	FALSE	
16	%Q10.5	Bool	FALSE	

QB9 => used to refresh DI 1~8  
QB10 => used to refresh DI 9~14

Q9.0~7 => used to refresh DI 1~8  
Q10.0~5 => used to refresh DI 9~14



Confirm GW-7662's COM port setting is the same with Modbus master tool





Send Modbus command (FC 02) to read DI status

The screenshot shows the MBRTU V. 1.0.9 COM1 software interface. The 'COM Status' section shows 'COM1' selected. The 'Protocol Description' section shows 'FC3 Read multiple registers (4xxxx) for AO'. The 'Statistics' section shows 'Commands' and 'Responses' data. The 'Command' field contains '03 02 00 00 00 0E' and the 'Send Command' button is highlighted. The 'Responses' field contains '03 02 02 00 00 C0 78'. The 'Include CRC' checkbox is checked.

Field	Value
COM1	COM1
Line control	N,8,1
Timeout	200 ms
Interval	50 ms
Current Packet Size (Bytes)	8
Total Packet Size (Bytes)	235
Packet Quantity Sent	25
Difference in Packet Quantity	4
Current Packet Size (Bytes)	7
Total Packet Size (Bytes)	198
Packet Quantity Received	21
Max	000
Average	000
Min	100

Command: 03 02 00 00 00 0E

Responses: 03 02 02 00 00 C0 78

1. Send query cmd

2. Receive DI data  
0x00 => for DI 1~8  
0x00 => for DI 9~14



Modify QB9, QB10 to 0xAA, 0x15

	i	...	Address	Display format	Monitor value	Modify value
1			%QB9	Hex	16#AA	16#AA
2			%QB10	Hex	16#15	16#15
3			%Q9.0	Bool	<input type="checkbox"/> FALSE	
4			%Q9.1	Bool	<input checked="" type="checkbox"/> TRUE	
5			%Q9.2	Bool	<input type="checkbox"/> FALSE	
6			%Q9.3	Bool	<input checked="" type="checkbox"/> TRUE	
7			%Q9.4	Bool	<input type="checkbox"/> FALSE	
8			%Q9.5	Bool	<input checked="" type="checkbox"/> TRUE	
9			%Q9.6	Bool	<input type="checkbox"/> FALSE	
10			%Q9.7	Bool	<input checked="" type="checkbox"/> TRUE	
11			%Q10.0	Bool	<input checked="" type="checkbox"/> TRUE	
12			%Q10.1	Bool	<input type="checkbox"/> FALSE	
13			%Q10.2	Bool	<input checked="" type="checkbox"/> TRUE	
14			%Q10.3	Bool	<input type="checkbox"/> FALSE	
15			%Q10.4	Bool	<input checked="" type="checkbox"/> TRUE	
16			%Q10.5	Bool	<input type="checkbox"/> FALSE	



Send Modbus command (FC 02) to read DI status again

The screenshot shows the MBRTU V. 1.0.9 COM1 software interface. The 'Protocol Description' section shows 'FC3 Read multiple registers (4xxxx) for AO'. The 'Request' section shows: Byte 0: Net ID (Station number), Byte 1: FC=03, Byte 2-3: Reference number, Byte 4-5: Word count. The 'Statistics' section shows: Commands: Current Packet Size (Bytes) 8, Total Packet Size (Bytes) 259, Packet Quantity Sent 28; Responses: Current Packet Size (Bytes) 7, Total Packet Size (Bytes) 219, Packet Quantity Received 24. The 'Command' field contains '03 02 00 00 00 0E' and the 'Send Command' button is highlighted. The 'Responses' section shows: '03 02 02 00 00 00 70' and '03 02 02 AA 15 7F 17'. The 'Send Command' button and the response data are highlighted with red boxes.

1. Send query cmd

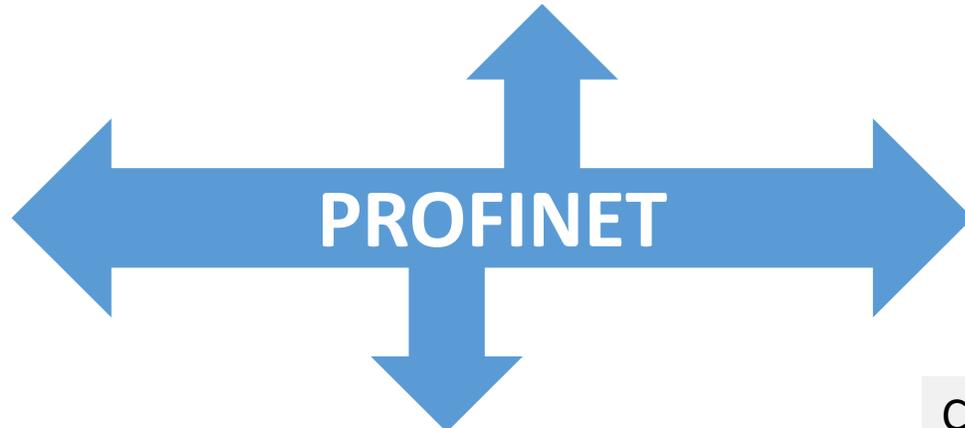
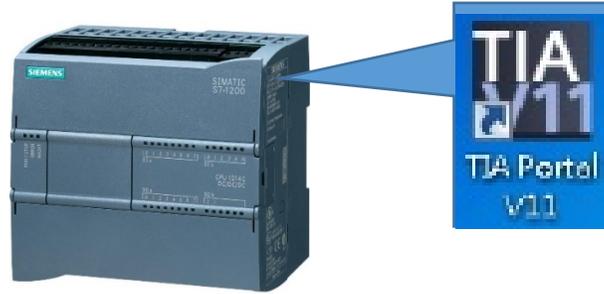
2. Receive DI data  
0xAA => for DI 1~8  
0x15 => for DI 9~14

# Modbus master read 4-channel AI from PLC



**SIMATIC S7-1200**

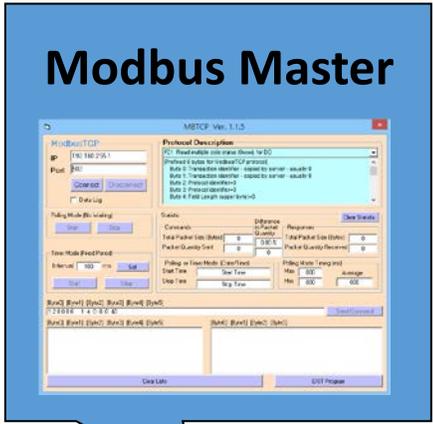
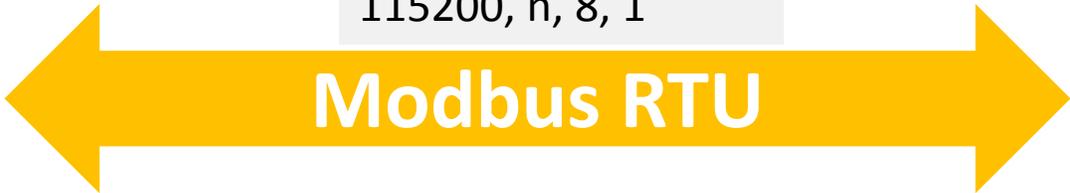
PROFINET IO Controller  
(Master)



**GW-7662**



Comport Setting:  
115200, n, 8, 1



**PROFINET IO device  
(Slave)**

- Modbus RTU Slave (AI)**
- Modbus ID:5
  - Data Address: 30001~30004
  - Data Length: 4

# Modbus master read 4-channel AI from PLC



PFN\_Tool (Version 1.30)

Network Devices : IP: 192.168.77.88 MAC: B8-6B-23-14-E5-76 (Intel(R) Ethernet Connection)

**1 Search Module** Search Start

Type	Name	IP	Mask	Gateway
GW-7662				
SIMATIC-PC	ic			
S7-PC	ic			
SIMATIC-PC	r			

**2 Double Click**

**3 Press 「Advanced Settings」 button**

Device Information

Device Type : GW-7662  
Firmware Version : V1.0

Options

Load File Save File Download Settings Upload Settings

Modbus Settings Modbus Test Diagnostic Msg. Communication Log Information

Parameters

Modbus Format : RTU Byte Order : Little Endian(Intel) Polling Interval (ms) : 500  
Modbus Type : Master I/O Safe Mode : Last Value Query Timeout (ms) : 500  
Baudrate : 115200  
Line Control : n, 8, 1 Modbus Device ID (dec) : 1 (1~247)

Request Command

Function Code : FC1 Read multiple coils status (0xxxx) for DO Add  
Modbus ID (dec) : 1 (1~247) PROFINET Info.  
Start Address (dec) : 0 (0~65535) Total Input (Byte) : 8 Modify  
Count (dec) : 1 (1~1024 Bits) Total Output (Byte) : 8 Delete  
 Change Word Order (AABB CCDD -> CCDD AABB) System used: 8 Bytes

ID	FC	Start Addr.	Count	Word order	PFN Input Addr.(Byte)	PFN Output Addr.(Byte)
----	----	-------------	-------	------------	-----------------------	------------------------

Suggested Module : RSW:0 Input:32Byte Output:32Byte

# Modbus master read 4-channel AI from PLC



Device Advanced Configuration

Device Information  
Device Type : GW-7662  
Firmware Version : V1.0

Options  
Load File Save File Download Settings **Upload Settings**

Modbus Settings Modbus Test Diagnostic Msg. Communication Log Information

Parameters

Modbus Format : RTU Byte Order : Little Endian(Intel) Polling Interval (ms) : 500  
Modbus Type : Slave I/O Safe Mode : Last Value Query Timeout (ms) : 500  
Baudrate : 115200  
Line Control : n, 8, 1 Modbus Device ID (dec) : 5 (1~247)

Request Command

Slave Type : AI (Input Register) Add  
Count (dec) : 4 (1~252 Words) PROFINET Info.  
Total Input (Byte) : 8 Modify  
Total Output (Byte) : 16 Delete  
 Change Word Order (AABB CCDD -> CCDD AABB) System used: 8 Bytes

	ID	FC	Mapping Table	Count	Word order	PFN Input Addr.(Byte)	PFN Output Addr.(Byte)
▶ 1	5	AI	30001~30004	4	No	N/A	8~15

Suggested Module : RSW:0 Input:32Byte Output:32Byte

1. Set Modbus settings

2. Add Modbus Slave Type

3. Upload

# Modbus master read 4-channel AI from PLC



The first input 8 bytes and output 8 bytes are allocated for system. (1~8)  
The 9<sup>th</sup> byte to the 32<sup>th</sup> byte are allocated for Modbus. (9~32)

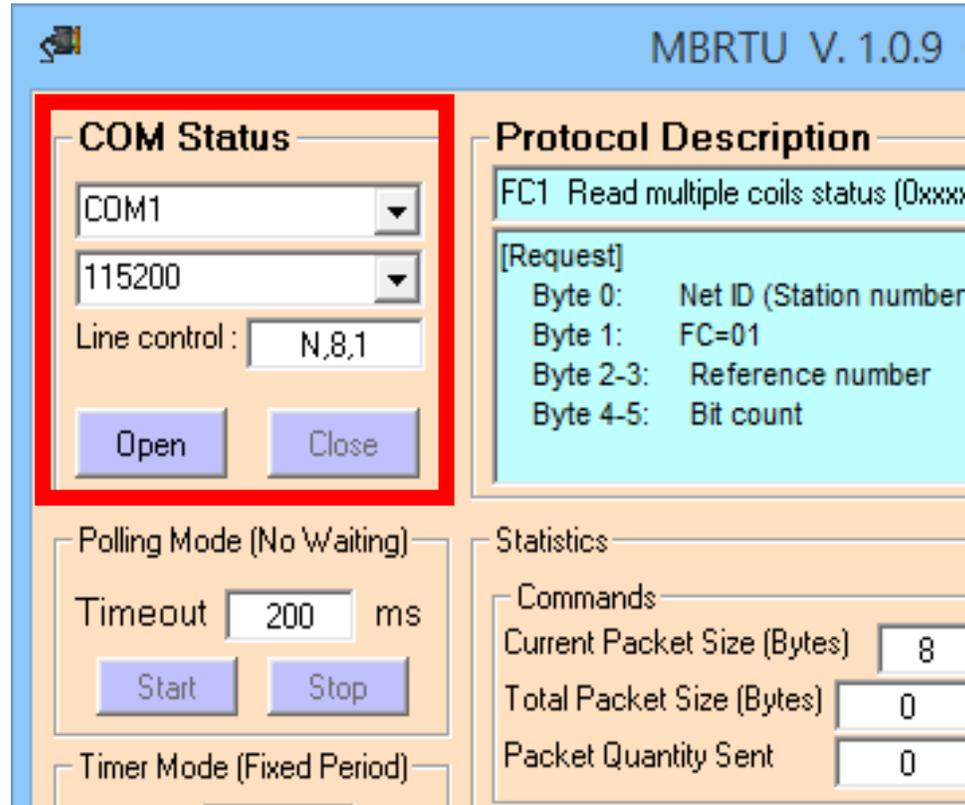
Device overview							
...	Module	Rack	Slot	I address	Q address	Type	Order no.
	▼ GW-7662	0	0			GW-7662 2-Port De...	GW-7662
	▶ Internal	0	0 X1			GW-7662	
	RSW:0 Input:32Byte Output:32Byte_1	0	1	1...32	1...32	RSW:0 Input:32Byte...	

...	Address	Display format	Monitor value	Modify
1	%QW9	Hex	16#0000	
2	%QW11	Hex	16#0000	
3	%QW13	Hex	16#0000	
4	%QW15	Hex	16#0000	

QW9 => used to refresh AI 1  
QW11 => used to refresh AI 2  
QW13 => used to refresh AI 3  
QW15 => used to refresh AI 4



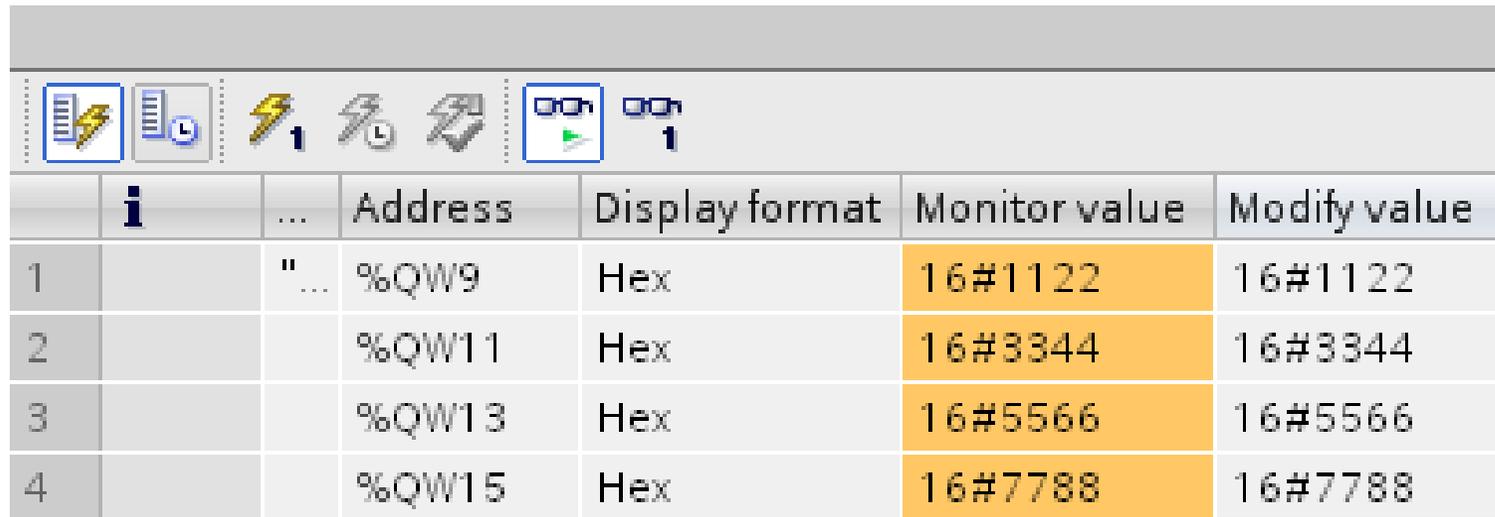
Confirm GW-7662's COM port setting is the same with Modbus master tool







Modify QW9, QW11, QW13, QW15 to 0x1122, 0x3344, 0x5566, 0x7788



The screenshot shows a software interface for configuring a Modbus master. At the top, there is a toolbar with several icons: a lightning bolt, a document with a lightning bolt, a lightning bolt with a '1', a lightning bolt with a '0', a lightning bolt with a '1', and a lightning bolt with a '0'. Below the toolbar is a table with 7 columns: an information icon 'i', an ellipsis '...', 'Address', 'Display format', 'Monitor value', and 'Modify value'. The table contains 4 rows of data, each representing a channel to be modified. The 'Monitor value' and 'Modify value' columns for all rows are highlighted in orange.

	<b>i</b>	...	Address	Display format	Monitor value	Modify value
1		"...	%QW9	Hex	16#1122	16#1122
2			%QW11	Hex	16#3344	16#3344
3			%QW13	Hex	16#5566	16#5566
4			%QW15	Hex	16#7788	16#7788



Send Modbus command (FC 04) to read AI status again

The screenshot shows the MBRTU V. 1.0.9 COM1 software interface. The 'Protocol Description' section shows 'FC4 Read multiple input registers (3xxxx) for AI'. The 'Request' section shows the following details:

- Byte 0: Net ID (Station number)
- Byte 1: FC=04
- Byte 2-3: Reference number
- Byte 4-5: Word count

The 'Command' field contains the hex string: 05 04 00 00 00 04. The 'Send Command' button is highlighted with a red box. The 'Responses' section shows the following hex string: 05 04 08 11 22 33 44 55 66 77 88 D0 76. This response is also highlighted with a red box. The 'Statistics' section shows the following data:

Commands		Difference in Packet Quantity	Responses	
Current Packet Size (Bytes)	Total Packet Size (Bytes)		Current Packet Size (Bytes)	Total Packet Size (Bytes)
8	227	4	13	191
Packet Quantity Sent	24		Packet Quantity Received	20

1. Send query cmd

2. Receive AI data  
0x1122 => for AI 1  
0x3344 => for AI 2  
0x5566 => for AI 3  
0x7788 => for AI 4