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

System Architecture: GW-7553 is a PROFIBUS slave and Modbus slave device.



Directory

Example 1:Receives AO data from Modbus master.

Example 2: Rceives DO data from Modbus master.

Example 3: Rereshes DI data to Modbus master.

Example 4: Rereshes AI data to Modbus master.

Example 1: PLC receives AO data from Modbus master.

SIMATIC STEP 7 Edit

1. HW Config. – configure GW-7553 (ex: System setting module x1, Input Register—2 word module x1)



2. HW Config – Parameter assignment (ex: Com port settings, Modbus type: Slave, Modbus format: TCP, Byte Order: Big Endian). Confirm the GW-7553's Com Port setting is the same with MBTCP tool (ex: baud rate-115200, data bits-8, stop bits-1, parity-none). About the MBTCP tool, please refer to the "Communication test" in the below.

🙀 H 🗑 Config - [SIMATIC 300 Station (Configuration) S7_	Pro2]						
💵 Station Edit Insert PLC View Options Window Help							
DOUDIC CIICK	(1)	Properties - DP slave	Find: 7553 Profile: Standard Contrast Desiration 41 A				
		General Farameter Assignment Parameters Gamma DP Interrupt Mode General DP parameters	Value				
(I) GW-75530P71)		Pevice-specific parameters Peu baud rate Pe parity Pei data	115200 baud none 8 data bit				
Slot DP ID Order Number / Designation I A 1 24DO System setting 2. 2 2.1 > System setting 03 3 2AI Input Register-2 word 256. 4 6 7 7	ddress Q . 0259	E stop bit E stop bit E Modbus Type E Modbus Format E I/O Safe Mode E Byte Order E Otyput Data Mode E Modbus Poling Interval(ms) (M) E Query timeout Value(ms)(M)	I stop bit Slave Modbus TCP Retain Last Value Big Endian(Motorols formst) Manual I 500 500				
9 9 10 11		OK	Cancel Help W				

3. Save and Compile

민	L H	W Cor	ufig -	[SIM/	TIC	300 St	ation (Co	onfig	urati	on)	S7_Pro1]					
0	0 💵	ation	<u>E</u> dit	Insert	PLC	<u>V</u> iew	<u>O</u> ptions	<u>W</u> in	dow	<u>H</u> elp						
		<u>N</u> ew Open					Ctrl+N Ctrl+O				₩?					1
	2 [Open <u>C</u> lose	on <u>l</u> i	NE												<u>F</u> ind:
		<u>Save</u> Save :	and C	ompile			Ctrl+S		naste:	r system	(1)					Profile:
		Prope	rties						75!							
	[Impo: Expo	rt rt						2							
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<		<u>P</u> rint. Print I	 Previe	w			Ctrl+P								~	
		Page 3	Setup.													
		<u>1</u> \$7_ <u>2</u> \$7_ <u>3</u> \$7_	Pro1V Pro3V Pro2V	SIMATI) SIMATI) SIMATI)	C 300 ; C 300 ; C 300 ;	Station Station Station			on		I Address	Q Ad 02	dress	Comment	~	
		<u>4</u> \$7_	Pro4V	SIMATI	C 300 ;	Station					256259					
	1	Exit			_		Alt+F4					-				
	•	Page: <u>1</u> S7_ <u>2</u> S7_ <u>3</u> S7_ <u>4</u> S7_ Exit	Setup Pro1V Pro3V Pro2V Pro4V	 SIMATI SIMATI SIMATI SIMATI	C 300 ; C 300 ; C 300 ; C 300 ;	Station Station Station Station	Alt+F4		on		I Address 256259	Q Ada 02	dress	Comment	^	

4. Download setting into STEP 7

🖳 H W Config - [SIMA]	TIC 300 Station (Configuration) -	- \$7_Pro1]				
🔟 Station <u>E</u> dit Insert	<u>PLC V</u> iew <u>O</u> ptions <u>W</u> indow <u>H</u> elp	1				
D 🗃 🔓 🖬 🖏	Download	Ctrl+L				
(0) UR 1 2 X2 DP	Download Module Identification Upload Module Identification to PG <u>F</u> aulty Modules				<u>F</u> ind: <u>P</u> rofile:	7553 Stand
2.2 DI16/DX 2.4 Count 3 4 □	Module Information Operating Mode Clear/ <u>R</u> eset Set Time of D <u>ay</u> <u>M</u> onitor/Modify	Ctrl+D Ctrl+I				B
	Updat <u>e</u> Firmware					
	Save De <u>v</u> ice Name to Memory Card			~		
<	Ethernet	•		>		
(2) G₩-7553	PROFIBUS	•				
Slot DP ID	Save Service Data		Q Address	Comment		

5.Insert a new Organization Block	(OB1,OB82,OB86)
-----------------------------------	-----------------

SIMATIC Manager - [S7_G W-7552 C:\Program Files\Siemens\Step7\s7proj\S7_G W-~1]	
🔁 File Edit Insert PLC View Options Window Help	- 9
D 😂 🔡 🛲 3. 🛍 🖻 🏫 💁 😳 🏣 🏥 💼 <no falter=""> 🔽 🍞 🞇 🍘 🖷 🖽 📢</no>	
Image: ST_GW-7552 Image: ST_GW-7552 Image: ST_ATIC 300 Station Image: ST_Program(1) Image: ST_Program(1) Ima	
Paste Ctrl+∀	
Delete Del	
Insert New Object	
PLC Function Block	
Rewire Function Compare Blocks Data Block Reference Data Data Type Check Block Consistency Variable Table	
Print	
Rename F2 Object Properties Alt+Return Special Object Properties	
Inserts Organization Block at the cursor position.	//

Properties - Organization Block					
General - Part 1 General	- Part 2 Calls Attributes				
<u>N</u> ame:	0B1				
Symbolic Name:					
Symbol <u>C</u> omment:					
Created in <u>L</u> anguage:	LAD				
Project path:					
Storage location of project:	C:\Program Files\Siemens\Step7\s7proj\S7_Pro1				
Data created :	Code Interface				
Last modified:	05/15/2013 09:44:33 AM 05/15/2013 09:44:33 AM				
C <u>o</u> mment:		T			
OK	Cancel Help				

SIMATIC Manager - [S7_Pro1	1 C:\Program Files\Siemens\Step7\s7proj\S7_Pro1]	
🎒 File Edit Insert PLC Yiew	<u>Options Window H</u> elp	
🗅 😅 🎛 🛲 👗 🖻 💼	🚵 😨 🚰 º º 👔 📰 🔃 🚺 < No Filter >	- V 20 - E - D 8?
ST_Pro1 SIMA TIC 300 Station CPU 313C-2 DP(1) Sources Sources Blocks	System data	OB86

6.S7 program edit

Variables used in the example LD Program:

Ca	Contents Of: 'Environment\Interface\TEMP'							
— 🗉 OB1_SCAN_1 🔥	Name	Data Type	Address	Comment	~			
- 🖻 OB1_PRIORITY	🗉 OB1_OB_NUMBR	Byte	3.0	1 (Organization block 1, OB1)	_			
- 🖼 OB1_OB_NUMBR	🕲 OB1_RESERVED_1	Byte	4.0	Reserved for system				
DB1_RESERVED_1	1 OB1_RESERVED_2	Byte	5.0	Reserved for system				
-B OB1_RESERVED_2	OB1_PREV_CYCLE	Int	6.0	Cycle time of previous OB1 scan (milliseconds)				
-B OB1_MIN_CYCLE	🕲 OB1_MIN_CYCLE	Int	8.0	Minimum cycle time of OB1 (milliseconds)				
- 🖼 OB1_MAX_CYCLE 🚪	🕲 OB1_MAX_CYCLE	Int	10.0	Maximum cycle time of OB1 (milliseconds)	=			
- 🖼 OB1_DATE_TIME	🕲 OB1_DATE_TIME	Date_And_Time	12.0	Date and time OB1 started				
- 13 100	🗉 END	Bool	20.0					
	TEMPO	Word	22.0					
	TEMP1	Word	24.0		~			

Network 1: PLC read AO value



~

7. S7 program download

File Edit Insert PIC De	abug View Options Window	Help					- 7 ×
	oad	Ctrl+L		Heel III III O		al	
	Online CPU					rr I	
Retabli	sh Connection to Configured CPU	r)f: 'Environme	nt\Interface\TE	MP'		
CPULM	Aessa oes		2	Data T	ype Ad	dress C	omme: 📥
New network Display	v Force Values	Ctrl+Alt+F	EV_CLASS	Byte	0.0) в	its O
E Gomparator Monito	or/Modify Variables		SCAN_1	Byte	1.0) 1	(Col
Converter		0.1.0	PRIORITY	Byte	2.1	J P	rlorl
Counter	e Information	Chill	OB_NUMBR	Byte	3.6	1	(Org
DB call Operat	ing Mode Pomt	CHIH	RESERVED_1	Byte	4.6	JR	eserv
The set Tix	ne of Day		RESERVED_2	Byte	5.6	JR	eserv
Floating-point fct.	DOL DOL	L	PREV_CYCLE	Int	6.L		ycle
E Move	OB1_DATE_TI		_MIN_CYCLE	Int	8.1	, <u> </u>	inimu 🥪
E MOVE	< <u> </u>] 3	> <					>
Program control							~
Shirtkotate	OB1 : "Main Program	Sweep (Cyc	le)"				
🗄 👩 Timers	Connent:						
😟 📻 Word logic	competite.						
FB blocks							
SEB blocks	Network 1: PLC read	AO value					
SFC blocks	Modbus start address	:0				~	
Multiple instances	word count : 2						
🗄 📲 Libraries						~	
				- Think			
	MO	VE	ť	#END			
	EN EN	ENO -		()			
			ion				
	F10250 - 110		iro				
	MC	IVE					
Assign a Value T	EN	ENO					
	PIW258 - IN	OUT #TEM	IP1				
Program E≘ Call st.							~
x							
1							
	2: Info / 3: Cross-refer	ences A	4: Address info.	λ 5: Modify λ	6: Diagnostics 入	7: Compariso	n /
Loads the current block to the PLC.			offline	Abs < 5.2	Insert	Chg	

Setup IP of GW-7553 with Utility (the user can download the latest Utility at

ftp://ftp.icpdas.com/pub/cd/fieldbus_cd/profibus/gateway/gw-7553/utilities/

1. Before the connection, please make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at setting mode.





2. Set the Com Port Setting of the Utility

🍓 Profibus/Modbus Gateway Uti	lity	
Communication IP setting Safe valu	ne setting View Help	
GW-7553	Com Port Setting Port : Com1 Baudrate : 115200 Pa Data bit : 8 databit Stop bit : 1 stopbit	rity : None
	Item Value (State)	
	P Modbus Type	
	🥔 Modbus Format	
	🌮 I/O Value for Stop Mode	
	🥔 Byte Order	
	🥔 Output Data Mode	
	P Modbus Device ID (S)	
	Poll interval time (M)	
	🎾 Time out value (M)	
	P Module count	
	☞ Tcp connect num (T)(M)	
	Module State : 🔴	Com Port State : 🔴
Com Port isn't open !		

3.Click connect.

🏘 Profibus/Modbus Gateway Util	ity	🛛
Communication IP setting Safe value	setting View Help	
Connect Disconnect	Com Port Setting	
Exit	Port : Com1 💌 Baudrate : 115200 💌 Pa	arity : None 💌
	Data bit : 8 databit 💌 Stop bit : 1 stopbit 💌	
	Item Value (State)	
	🎾 Modbus Type	
	🎾 Modbus Format	
	🎾 I/O Value for Stop Mode	
	🥔 Byte Order	
	🥔 Output Data Mode	
	ℬ Modbus Device ID (5)	
	₽ Poll interval time (M)	
	🎾 Time out value (M)	
	🥔 Module count	
	P Tcp connect num (T)(M)	
	Module State: 🔴	Com Port State : 🔴
Com Port isn't open !		

4. Connection success

🁋 Profibus/Modbus Gateway Util	lity	
Communication IP setting Safe valu	e setting View Help	
GW-7553	Com Port Setting Port : Com1 Baudrate Data bit : 8 databit Stop bit	: 115200 ▼ Parity : None ▼ : 1 stopbit ▼
	Item	Value (State)
	🎾 Modbus Type	Slave
	🎾 Modbus Format	тср
	🎾 I/O Value for Stop Mode	Retain Last Value
	🔊 Byte Order	Big Endian (Motorola format)
	🔎 Output Data Mode	Manual
	🎾 Modbus Device ID (S)	1
	🎾 Poll interval time (M)	500ms
	🎾 Time out value (M)	500ms
	🎾 Module count	2
	🎾 Tcp connect num (T)(M)	1
	Module State: 🌑	Com Port State : 🕚
Module is connected	Receive file name e	nor

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

🁋 Profibus/Modbus Gateway Utili	ity	
Communication IP setting Safe value	setting View Help	
GW-755 GW-755 Load from file	om Port Setting	
	Port : Com1 🚽 Baudrate	: 115200 💌 Parity: None 💌
Module 1	Data bit : 8 databit 💌 Stop bit	: 1 stopbit 💌
	Item	Value (State)
	P Modbus Type	Slave
	🎾 Modbus Format	тср
	🎾 I/O Value for Stop Mode	Retain Last Value
	🎾 Byte Order	Big Endian (Motorola format)
	🎾 Output Data Mode	Manual
	🎾 Modbus Device ID (S)	1
	🎾 Poll interval time (M)	500ms
	🎾 Time out value (M)	500ms
	🎾 Module count	2
	🎾 Tcp connect num (T)(M)	1
	Module State: 🔵	Com Port State : 🔴
Module is connected	Receive file name e	nor

6. Set the IP of the Modbus TCP Slave and click "Save to Device" button

to	save	the	settings.
----	------	-----	-----------

IP Setting		
Local IP Setting		
IP 192 . 168 . 255 . 2		
MASK: 255 . 255 . 0 . 0		
GATEWAY 192 . 168 . 0 . 1		
step1. Set	IP of Modbus TCI	D
P(1): 192 . 168 . 0 . 123	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(2): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(3): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(4): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(5): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(6): 192.168.0.100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(7): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(8): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
	step2. Save the	setting
	to GW-7553	Save to File Save to Device

7.Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.



Communication test

1. Confirm the GW-7553's Com Port setting is the same with Modbus Master tool (ex: MBTCP, you can download MBTCP from http://ftp.icpdas.com.tw/pub/cd/8000cd/napdos/modbus_utility/)

2. Send command 01 10 00 00 00 02 04 F9 F9 F9 F9 write two byte AO

3. Response value 01 10 00 00 00 02

MBTCP Ver. 1.1.4	2
- ModbusTCP	Protocol Description
ID 192.168.255.2	FC16 Write multiple registers (4xxxx) for A0
Dett 502	Byte 0: Net ID (Station number)
Put. Joe	Byte 2-3: Reference number
Connect Disconnect	Byte 4-5: VVord count Byte 6: Byte count (B=2 x word count)
🔲 Data Log	Byte 7-(B+6): Register values
Polling Mode (no wait)	Statistic Clear Statistic
Start Stop	Command Quantity Response
	Total Packet bytes 102 Difference Total Packet bytes 72
Timer mode (fixed period)	Packet Quantity sent 6 Packet Quantity received 6
	Polling or Timer mode (Date/Time) Polling Mode Timing (ms)
Interval 100 ms Set	Start time Start Time Max 0 Average
Start Stop	Stop time Stop Time Min 1000 000
[Rute0] [Rute1] [Rute2] [Rute3] [Rute4] [Ru	
1 20006 1 10 0 0 24 9 9 9 9 9	.esj
[Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [By	te5] [Byte6] [Byte7] [Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byte5]
01 02 00 00 00 06> 01 10 00 00 00 02 04	F9 F
01 02 00 00 00 06> 01 10 00 00 00 02 04	79 F9 F9 F9 F9 01 02 00 00 00 00 00 00 00 00 00 00 00 00
01 02 00 00 00 06> 01 10 00 00 00 02 04 01 02 00 00 00 06> 01 10 00 00 00 02 04	² 9 F9 F9 F9 F9 01 02 00 00 00 06> 01 10 00 00 02 F9 F9 F9 F9 01 02 00 00 06> <u>01 10 00 00 02</u>
01 02 00 00 00 06> 01 10 00 00 00 02 04	² 9 F9 F9 F9 F9 01 02 00 00 00 06> 01 10 00 00 00 02
Clear	Lists EXIT Program

4. PLC will receives the "AO Value (0xF9, 0xF9, 0xF9, 0xF9)" at PLC address PIW256, PIW257, PIW258, PIW259

OB1	:	"Main	Program	Sweep	(Cycle)"
	•	1.1.2.2.2.2.2		P.cep	(0)010/

Comment:	
Network 1: Title:	_
Comment:	



Example 2: PLC receives DO data from Modbus master.

SIMATIC STEP 7 Edit

1. HW Config. – configure GW-7553 (ex: System setting module x1, Input Relay/Coil – 2 byte module



2. HW Config – Parameter assignment (ex: Com port settings, Modbus type: Slave, Modbus format: TCP, Byte Order: Big Endian). Confirm the GW-7553's Com Port setting is the same with MBTCP tool (ex: baud rate-115200, data bits-8, stop bits-1, parity-none). About the MBTCP tool, please refer to the "Communication test" in the below.

🖳 H W Config - [SIMATIC 300 Station (Configuration) S7_Pro2]		
👊 Station Edit Insert PLC Yiew Options <u>W</u> indow <u>H</u> elp		
D 🛩 🖫 🗣 🚔 📴 🖻 💼 🏜 🏙 🖪 🗖 器 🕺		
Double Click	Properties - DP slave General Parameter Assignment	
X2 DP 2.2 DI 1607X 2.4 Count 3 • 4 •	Parameters Value □ DF Interrupt Mode DPV0 □ General DP parameters ISSUE □ Device-specific parameters ISSUE □ Device-specific parameters ISSUE □ Device-specific parameters ISSUE □ Device-specific parameters ISSUE	
	Modbus TCP Modbus TCP Date Lost Mode	1
(1) GW-7553(DPV1)	E Dyte Order E Dyte Order E Dyte Order E Dyte Order E Ottout Data Mode Manual	լե լե
Slot 🚺 DP ID Order Number / Designation I Address	- Modbus Device ID (S)	 _
1 24DO System setting 0	Modbus Polling Interval(ms) (M) 500	l.
2 21> System setting 05		i ŀ
3 10D1 Input Ketay/CO12 Dyte 07		1
5 6 7	OK Cancel I	Help dl- dl- dl-

3. Save and Compile

oła e	IW Config - [SIMATIC 300 S	tation (Config	guration) \$7_Pro1]			
0 ⁰ 0	Station <u>E</u> dit Insert <u>P</u> LC <u>V</u> iew	∕ <u>O</u> ptions <u>W</u> i	ndow <u>H</u> elp			
] [<u>N</u> ew Open	Ctrl+N Ctrl+O	🗈 🗖 🚟 💦		1	
E	Open ON <u>L</u> INE <u>C</u> lose		IS(1): DP master system (1)		<u>F</u> ind:	
	Save				<u>P</u> rofile:	Standard
	Save and Co <u>m</u> pile	Ctrl+S			⊡ ₩ F	PROFIBUS DP
	Proper <u>t</u> ies					PROFIBUS-PA
	Import		(2) GW-75			SIMATIC 300
4	<u>E</u> xport		. 🕷 🎏			SIMATIC 400
	Consistency C <u>h</u> eck	Ctrl+Alt+K	Hannit		± - <u>₩</u> ≥	SIMATIC PC Based Contra SIMATIC PC Station
-	Check CiR Compatibility	Ctrl+Alt+F	_			
	<u>P</u> rint	Ctrl+P		~		
<	Print Previe <u>w</u> Pom Setur		>			
	rage setup					
	1 S7_Pro1\SIMATIC 300 Station	L				
Ē	3 S7 Pro3/SIMATIC 300 Station	L	02			
1	4 S7_Pro4\SIMATIC 300 Station	L	1			
•	E <u>x</u> it	Alt+F4				
5						

4. Download setting into STEP 7

🔩 H W Config - [SIMA I	IC 300 Station (Configuratio	n) \$7_Pro1]				
🛄 Station Edit Insert 1	<u>LC View Options Mindow</u>	<u>Holp</u>				
🗅 🚅 🔓 🖫 🙀	Download	Ctrl+L				
-	<u>Up</u> load			~		
(0) UR	Download Module Identification Upload Module Ide <u>n</u> tification to	 PG	(1)		<u>F</u> ind:	
2 CPU 31	Faulty Modules				Profile:	Standard
2.2 D116DX 2.4 Count 3 4 c	Module Information Operating Mode Clear/ <u>R</u> eset Set Time of D <u>a</u> y <u>M</u> onitor/Modify	Ctrl+D Ctrl+I	75.			ROFIBUS DP ROFIBUS-PA ROFINET IO MATIC 300 MATIC 400 MATIC PC Based Control MATIC PC Station
	Updat <u>e</u> Firmware					
	Save De <u>v</u> ice Name to Memory C	ard		~		
<	Ethernet	•	>			
(2) GW-7552	PROFIBUS	•				
Slot 🚺 DP ID	Save Service Data					
1 24D0 2 16DI 3	System setting 0 Input Relay/Coil2 byte 01)2		^		

5.Insert a new Organization Block (OB1,OB82,OB86)

SIMATIC Manager - [S'	87_6 ₩-7552 C.\Program Files\Siemens\Step7\s7proj\S7_6 ₩-~1]	
🞒 File Edit Insert PLC	<u>Y</u> iew Options <u>W</u> indow <u>H</u> elp	- 🗉 🗙
🗋 🖸 🚅 🏭 🛲 🐰 🗎	B 🗈 🏙 🧟 💁 P₂ 😳 🗄 🏢 💽 < No Filter > 🔽 🏏 🞇 🚳 階 🖃 🗰 😢	
SIMA TIC 300 Statis SIMA TIC 300 Statis General Structure State Sources	tion (P(0)) m(1) ss	
	Cut Cttl+X	
	Copy Ctrl+C	
	Paste Ctrl+V	
	Delete Del	
	Insert New Object Organization Block	
	PLC Function Block	
	Function	
	Compare Blocks Data Block	
	Reference Data Data Type Check Block Consistency	
	Print	
	Rename F2	
	Object Properties Alt+Return	
	Special Object Properties	
Inserts Organization Block at the	e cursor position.	//

Properties - Organization	n Block	×
General - Part 1 General	- Part 2 Calls Attributes	
<u>N</u> ame:	0B1	
Symbolic Name:		
Symbol <u>C</u> omment:		1
Created in <u>L</u> anguage:	LAD	
Project path:		
Storage location of project:	C:\Program Files\Siemens\Step7\s7proj\S7_Pro1	1
	Code Interface	
Date created :	05/15/2013 09:44:33 AM	
Last modified:	05/15/2013 09:44:33 AM 05/15/2013 09:44:33 AM	
C <u>o</u> mment:		
OK	Cancel Help	

SIMATIC Manager - [S7_Pro]	1 C:\Program Files\Siemens\Step7\s7proj\S7_Pro1]	
🎒 File Edit Insert PLC Yiew	Options <u>W</u> indow <u>H</u> elp	
🗅 📽 📲 🛲 👗 🖻 💼	🚵 😨 💁 🎭 🧽 🔠 🏦 主 🛛 < No Filter >	🗹 🎶 🞇 📾 🖷 🗖 📢
S7_Pro1 ST_Pro1 STMATIC 300 Station Gr S7 Program(1) Sources Blocks	System data	• OB86

6. S7 program edit

Variables used in the example LD Program:

	Name	Data T y pe	Address	Comment
1	OB1_DAT	Date	12.0	Date and time OB1 started
1	END	Bool	20.0	
1	temp1	Byte	21.0	
	temp2	Byte	22.0	
Ξ				

Network 1: Title:

Comment:



7. S7 program download



Setup IP of GW-7553 with Utility (the user can download the latest Utility at

ftp://ftp.icpdas.com/pub/cd/fieldbus_cd/profibus/gateway/gw-7553/utilities/

1. Before the connection, please make sure the RUN LED of the GW-7553 is on and the switch of the GW-7553 is at setting mode.





2. Set the Com Port Setting of the Utility

🍓 Profibus/Modbus Gateway Util	ity	
Communication IP setting Safe value	e setting View Help	
GW-7553	Com Port Setting Port : Com1 Baudrate : 115200 Pa Data bit : 8 databit Stop bit : 1 stopbit	rity: None 💌
	Item Value (State)	
	S Modbus Type	
	🎾 Modbus Format	
	🎾 I/O Value for Stop Mode	
	🥔 Byte Order	
	🎾 Output Data Mode	
	P Modbus Device ID (S)	
	🎾 Poll interval time (M)	
	🎾 Time out value (M)	
	🎾 Module count	
	P Tcp connect num (T)(M)	
	Module State: 🔴	Com Port State : 🔴
Com Port isn't open !		

3.Click connect.

👋 Profibus/Modbus Gateway Utility 📃 🗖 🔀						
Communication IP setting Safe value	e setting View Help					
Connect Disconnect	Com Port Setting					
Exit	Port : Com1 V Baudrate : 115200 V	Parity : None 💌				
	Data bit : 8 databit 💌 Stop bit : 1 stopbit 💌					
	Item Value (State)					
	🔊 Modbus Type					
	🌮 Modbus Format					
	🎾 I/O Value for Stop Mode					
	🥔 Byte Order					
	🌮 Output Data Mode					
	Modbus Device ID (5)					
	Poll interval time (M)					
	🎾 Time out value (M)					
	P Module count					
	P Tcp connect num (T)(M)					
	Module State: 🔴	Com Port State : 🔴				
Com Port isn't open !						

4. Connection success

🁋 Profibus/Modbus Gateway Util	lity			
Communication IP setting Safe valu	e setting View Help			
GW-7553	Com Port Setting Port : Com1 Baudrate Data bit : 8 databit Stop bit	: 115200 ▼ Parity : None ▼ : 1 stopbit ▼		
	Item	Value (State)		
	🎾 Modbus Type	Slave		
	🎾 Modbus Format	тср		
	🎾 I/O Value for Stop Mode	Retain Last Value		
	🔊 Byte Order	Big Endian (Motorola format)		
	🔎 Output Data Mode	Manual		
	🎾 Modbus Device ID (S)	1		
	🎾 Poll interval time (M)	500ms		
	🎾 Time out value (M)	500ms		
	🎾 Module count	2		
	🎾 Tcp connect num (T)(M)	1		
	Module State: 🌑	Com Port State : 🕚		
Module is connected	Receive file name e	nor		

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

🍓 Profibus/Modbus Gateway Util	ity			
Communication IP setting Safe value	setting View Help			
GW-755 Load from file	om Port Setting			
Loan Holli device	Port : Com1 🚽 Baudrate	: 115200 🔻 Parity : None 💌		
Module 1	Data bit : 8 databit 🛒 Stop bit	1 stopbit 💌		
1 mil	Item	Value (State)		
	Modbus Type	Slave		
	P Modbus Format	тср		
	🎾 I/O Value for Stop Mode	Retain Last Value		
	🥔 Byte Order	Big Endian (Motorola format)		
	🥔 Output Data Mode	Manual		
	🎾 Modbus Device ID (S)	1		
	🎾 Poll interval time (M)	500ms		
	🎾 Time out value (M)	500ms		
	🎾 Module count	2		
	🎾 Tcp connect num (T)(M)	1		
	Module State: 🔵	Com Port State : 🔴		
Module is connected	Receive file name e	nor		

6. Set the IP of the Modbus TCP Slave and click "Save to Device" button

to save the settings.

IP Setting							
Local IP Setting							
IP 192 . 168 . 255 . 2	2						
MASK: 255 . 255 . 0 . 0)						
GATEWAY 192 . 168 . 0 . 1	_						
step1. Set	IP of Modbus TCI	D					
Remote IP Setting slave							
P(1): 192 . 168 . 0 . 123	Time out value (ms) : 1500	ReConnect time (ms) : 8000					
IP(2): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000					
IP(3): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000					
IP(4): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000					
IP(5): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000					
IP(6): 192.168.0.100	Time out value (ms) : 1500	ReConnect time (ms) : 8000					
IP(7): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000					
IP(8): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000					
step2. Save the setting to GW-7553 Save to File Save to Device							

7.Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.



Communication test

1. Confirm the GW-7553's Com Port setting is the same with Modbus Master tool (ex: MBTCP, you can download MBTCP from http://ftp.icpdas.com.tw/pub/cd/8000cd/napdos/modbus_utility/)

2. Send command 01 0F 00 00 00 10 02 22 33 write two byte DO

3. Response value 01 0F 00 00 00 10

MBTCP Ver. 1.1.4		
-ModbusTCP	Protocol Description	
192 168 255 2	FC15 Force multiple coils (0xxxx) for D0	•
D 1 502	Byte 0: Net ID (Station number)	^
Port : 302	Byte 2-3: Reference number	
Connect Disconnect	Byte 4-5: Bit count Byte 5: Byte count (B=(bit count + 7)(8)	
Data Log	Byte 7-(B+6): Data to be written (least significant is first coll)	~
Polling Mode (no wait)	Statistic Clear Stati	istic 🕇
Start Stop	Command Quantity Response	
	Total Packet bytes 135 Difference Total Packet bytes 105	-11
Timer mode (fixed period)	Packet Quantity sent 9 0 Packet Quantity received 9	
	Polling or Timer mode (Date/Time) Polling Mode Timing (ms)	
Interval 100 ms Set	Start time Start Time Max 0 Average	_
Start Stop	Stop Time 1000 000	
[Rute()] [Rute()] [Rute()] [Rute()] [Rute()]	te51	
1 2 0 0 0 6 1 f 0 0 0 10 2 22 33	Send Comma	nd
[Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [By	yte5] [Byte6] [Byte7] [Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byte5]	
01 02 00 00 00 06> 01 0F 00 00 00 10 02	22 33 01 02 00 00 00 06> 01 0F 00 00 00 10	
01 02 00 00 00 06> 01 0F 00 00 00 10 02 01 02 00 00 00 06> 01 0F 00 00 00 10 02	22 33 01 02 00 00 00 06> 01 0F 00 00 00 10 22 33 01 02 00 00 06> 01 0F 00 00 00 10	
01 02 00 00 00 06> 01 0F 00 00 00 10 02 01 02 00 00 00 06> 01 0F 00 00 00 10 02	22 33 01 02 00 00 06 -> 01 0F 00 00 00 10 22 33 01 02 00 00 06 -> 01 0F 00 00 00 10	
01 02 00 00 00 06 -> 01 0F 00 00 00 10 02	22 33 01 02 00 00 00 06 -> 01 0F 00 00 00 10	
Charles Charles	EVIT Design	
Ulea	I LISTS EXIT Program	

- 4. PLC will receives the "DO Value (0x22, 0x33)" at PLC address IB6&IB7.
- OB1 : "Main Program Sweep (Cycle)"

Comment:

Network 1: Title:

Comment:



Example 3: PLC refreshes DI data to Modbus master.

SIMATIC STEP 7 Edit

1.HW Config. - configure GW-7553 (ex: System setting module x1, Output Relay/Coil-2 byte module



2. HW Config – Parameter assignment (ex: Com port settings, Modbus type: Slave, Modbus format: TCP, Byte Order: Big Endian). Confirm the GW-7553's Com Port setting is the same with MBTCP tool (ex: baud rate-115200, data bits-8, stop bits-1, parity-none). About the MBTCP tool, please refer to the "Communication test" in the below.



3. Save and Compile

🖳 HW Config - [SIMATIC 300 Station (Configuration) S7_Pro1]															
	100	Station	<u>E</u> dit	Insert	PLC	<u>V</u> iew	Options	<u>W</u> ind	low	<u>H</u> elp					
1	С	<u>N</u> ew.					Ctrl+N	i i	B D (3 8	3 №?				
Ē		Oper Oper	L ONU	ME			Ctrl+O	1						~	
	2	Clos	; ON <u>E</u> :	INE											Find:
								_							Profile
	Γ	Save	and C	ompile			Ctrl+S	-	aster	system	. (1)				
	ŀ	Prop	erties						751						
		Impo	art						-						
	L	Expo	rt												
		Cons	istency	v C <u>h</u> eck			Ctrl+Alt+H	<							
		Chec	k CiR	Compat	ibility		Ctrl+Alt+H	7							
		<u>P</u> rint					Ctrl+P							~	
<	۲.	Print	Previe a	<u>w</u>										>	
Γ		Page	Setup.					[
	-	<u>1</u> S7	Pro1V	SIMA TI	C 300	Station						1	1 -		
	Ē	<u>2</u> 87. 3 87.	Pro3V Pm2V	SIMA II SIMA TI	C 300	Station Station			on		I Address	Q Address	Commen	t	
		<u>4</u> S7.	Pro4V	SIMATI	C 300	Station		t				34			
		Exit					Alt+F4	-							
	5	5	_			_		_	-						

4. Download setting into STEP 7

	🧏 Н 🕅	Config -	[SIMA	TIC 300 Station (Configura	tion) S7_Prol]				
6	0 <mark>0 S</mark> tat	ion <u>E</u> dit	<u>I</u> nsert	<u>PLC View Options W</u> indov	/ <u>H</u> elp	_				
1		≩ 8 ~ ₪		<u>D</u> ownload	Ctrl+L					
Ē	_			<u>U</u> pload		T			^	
) UR	^	Download Module Identifi <u>c</u> ati Upload Module Ide <u>n</u> tification	on to PG			ĺ		<u>F</u> ind:
	2 X2		ν υ 3 1	Faulty Modules						Profile
	2.2 2.4 3 4 c		16/DX unt	Module Information Operating Mode Clear/ <u>R</u> eset Set Time of D <u>a</u> y <u>M</u> onitor/Modify	Ctrl+D Ctrl+I					
				Updat <u>e</u> Firmware						
				Save De <u>v</u> ice Name to Memory	/ Card			(~	
Ethernet								>	_	
	-) (2) G	W-7553	PROFIBUS						
	Slot	DP	ID	<u>S</u> ave Service Data			Q Address	Comment		
	1	24DO		System setting		_	02	~		
	2	16DO		Output Relay/Coil2 byte			34			
T	3									

SIMATIC Manager -	[S7_Pro1 C:\Program Fi	iles\Siemens\St	ep7\s7proj\\$7_Pro1]		
🎒 File Edit Insert PL(C <u>V</u> iew <u>O</u> ptions <u>W</u> indow	<u>H</u> elp			
🗅 🗃 📲 🛲 🕹	🖻 💼 📩 🔽 🗣	<u>0</u> <u>-a</u> <u>-a</u> <u>-a</u>	Ko Filter >	💽 🏹 💥 📾	🖷 🖃 🔟 🕴
S7_Pro1 SIMATIC 300 S Gru 313C-2 Gru 313C-2 Gru 313C-2 Gru 57 Prog	(tation 2 DP(1) ram(1) rces	tan OB1	← OB82	🔁 OB86	
	Cut	Ctrl+X	1		
	Сору	Ctrl+C			
	Paste	Ctrl+V			
	Delete	Del			
	Insert New Object	•	Organization Block		
	PLC	•	Function Block		
	Rewire Compare Blocks Reference Data Check Block Consistency	•	Function Data Block Data Type Variable Table		
	Print	•			
	Rename Object Properties Special Object Properties	F2 Alt+Return			

5.Insert a new Organization Block (OB1,OB82,OB86)

Properties - Organization Block							
General - Part 1 General	- Part 2 Calls Attributes						
<u>N</u> ame:	0B1						
Symbolic Name:							
Symbol <u>C</u> omment:							
Created in <u>L</u> anguage:	LAD						
Project path:							
Storage location of project:	C:\Program Files\Siemens\Step7\s7proj\S7_Pro1						
	Code Interface						
Date created:	05/15/2013 09:44:33 AM						
Last modified:	05/15/2013 09:44:33 AM 05/15/2013 09:44:33 AM						
C <u>o</u> mment:							
OK	Cancel Help						

SIMATIC Manager - [S7_Pro1 C:\Program Files\Siemens\Step7\s7proj\S7_Pro1]							
🞒 File Edit Insert PLC View	<u>Options Window H</u> elp						
🗅 🛩 🔡 🛲 👗 🛍 🖻	💼 😨 📲 🖭 🔃 🗰 Ko Filter >	- y 20 - 1 - 1 - 1					
S7_Pro1 SIMATIC 300 Station CPU 313C-2 DP(1) Sources Sources Blocks	System data	OB86					

6.S7 program edit

Variables used in the example LD Program:

	Name	Data T y pe	Address	Comment
1	OB1_MAX	Int	10.0	Maximum cycle time of OB1 (milliseconds)
	OB1_DAT	Date	12.0	Date and time OB1 started
1	END	Bool	20.0	
1	Init	Bool	20.1	
	tri	Int	22.0	
٦.				

Network 2: Initial Cl

Initial Cl



OB1 : "Main Program Sweep (Cycle)"

PROFIBUS slave Modbus slave

Network 1: QBD add "1" refresh DO value

2 byte l6 DO



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

Network 2 : Timer T1 & T2







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

Network 4 : Compare Tri with 256

If Tri is equal to 256 that will reset Cl.



7. S7 program download

+1+- +1• `	LAD	STL/FBD -	[0B1 "Cy	cle E	xecution"	S7_Pro	INSIMATIC 3	00 Station\CPU	313C-2 DP(1)	\\0B1]	
•	<u>F</u> ile	<u>E</u> dit <u>I</u> nsert	P <u>L</u> C <u>D</u> ebug	<u>V</u> iew	v <u>O</u> ptions	<u>W</u> indow	<u>H</u> elp				
Ľ) 🖻	🔓 🖬 🗧	Do <u>w</u> nload				Ctrl+L	(»! 🗖 🖪	₽₽	-0 🕾 🛏 -	1 H Y
_			Select <u>O</u> nli	ne CPU	J			intents Of '	Environment	\Interface\"	TRMP'
F			Establish C	onnect	ion to Confi	gured CPU		Nono	Data Trmo	Adapase	Corrort
	New network Hillogic Comparator Converter Hillogic Converter De DB call Jumps		CPU Messages Display Force Values <u>M</u> onitor/Modify Variables Module Information Operating Mode Clear/Reset			Ctrl+Alt+F Ctrl+D Ctrl+I	OB1_MAX OB1_MAX OB1_DAT END Init tri	Int Date Bool Bool Int	10.0 12.0 20.0 20.1 22.0	Maximum cycle time (Date and time OB1 s	
		Integer functio Floating-point Move Program contro Shift/Rotate Status bits Timers Word logic FB blocks FB blocks SFB blocks SFB blocks SFC blocks Multiple instan Libraries	Set Time o	f Day	OB1 : " Comment Network Comment #In	Main Pr : : : it	ogram Sweep :le:	(Cycle)"	#Init (S)		

Setup IP of GW-7553 with Utility (the user can download the latest Utility at http://ftp.icpdas.com/pub/cd/fieldbus_cd/profibus/gateway/gw-7553/utilities/ 1. Before the connection, please make sure the RUN LED of the GW-7553 is on and the

switch of the GW-7553 is at setting mode.





2. Set the Com Port Setting of the Utility



3.Click connect.



4. Connection success

🁋 Profibus/Modbus Gateway Utili	ty				
Communication IP setting Safe value	setting View Help				
GW-7553 Module 1	-Com Port Setting Port : Com1 ✔ Baudrate : Data bit : 8 databit ▼ Stop bit :	115200 V Parity : None V			
	Item	Value (State)			
	🎾 Modbus Type	Slave			
	🎾 Modbus Format	тср			
	🎾 I/O Value for Stop Mode	Retain Last Value			
	🥔 Byte Order	Big Endian (Motorola format)			
	🔎 Output Data Mode	Manual			
	🎾 Modbus Device ID (S)	1			
	🎾 Poll interval time (M)	500ms			
	🎾 Time out value (M)	500ms			
	🎾 Module count	2			
	🎾 Tcp connect num (T)(M)	1			
	Module State: 🌑	Com Port State : 🕒			
Module is connected	Receive file name er	TOT			

🁋 Profibus/Modbus Gateway Util	lity				
Communication IP setting Safe valu	e setting View Help				
GW-755 GW-755 Load from file	om Port Setting				
	Port : Com1 🚽 Baudrate	: 115200 💌 Parity : None 💌			
Module 1	Data bit : 8 databit 💌 Stop bit	: 1 stopbit 💌			
	Item	Value (State)			
	🦻 Modbus Type	Slave			
	🎾 Modbus Format	тср			
	🎾 I/O Value for Stop Mode	Retain Last Value			
	🎾 Byte Order	Big Endian (Motorola format)			
	🎾 Output Data Mode	Manual			
	🎾 Modbus Device ID (S)	1			
	🎾 Poll interval time (M)	500ms			
	🎾 Time out value (M)	500ms			
	🎾 Module count	2			
	🎾 Tcp connect num (T)(M)	1			
	Module State : 🔵	Com Port State : 🔵			
Module is connected	Receive file name	error			

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

6. Set the IP of the Modbus TCP Slave and click "Save to Device" button

to	save	the	settings.	

IP Setting		
CLocal IP Setting		
IP 192 . 168 . 255 . 2	_	
MASK: 255 . 255 . 0 . 0	_	
GATEWAY 192 . 168 . 0 . 1	_	
step1. Set I	P of Modbus TCF	
Remote IP Setting slave		
P(1): 192 . 168 . 0 . 123	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(2): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(3): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(4): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP (5): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(6): 192.168.0.100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(7): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(8): 192.168.0.100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
	step2. Save the to GW-7553	Save to File Save to Device

7.Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.



Communication test

1. Confirm the GW-7553's Com Port setting is the same with Modbus Master tool (ex: MBTCP, you can download MBTCP from http://ftp.icpdas.com.tw/pub/cd/8000cd/napdos/modbus/modbus_utility/)

MBTCP Ver. 1.1.4		
ModbusTCP IP: 192.168.255.2 Port: 502 Connect Disconnect T Data Log	Protocol Description FC2. Read multiple input discretes (1xxxx) for D Request] Byte 0: Net ID (Station number) Byte 1: FC-02 Byte 2-3: Reference number Byte 4-5: Bit count	
Polling Mode (no wait) Start Stop Timer mode (fixed period) Interval 100 ms Set Start Stop Stop Stop	Statistic Packet Command Quantity Total Packet bytes 72 Packet Quantity sent 6 Polling or Timer mode (Date/Time) Start Time Start Time Stop time Stop Time	Clear Statistic Response 66 Total Packet bytes 66 Packet Quantity received 6 Polling Mode Timing (ms) Average Max 0 Average Min 1000 000
[Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byte 1 2 0 0 0 6 1 2 0 0 0 10 [Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byte	25] 25] [Byte0] [Byte1] [Byte2] [B	yte3]
Clear I	ists	EXIT Program

2. Input command (" 01 02 00 00 00 10") in MBTCP and click <Send Command> button to send Modbus command: "01 02 00 00 00 10". We can get the DI value (0x6F, 0xDE) from the



MBTCP Ver. 1.1.4		X
ModbusTCP IP: 192.168.255.2 Port: 502 Connect Disconnect Data Log	Protocol Description FC2 Read multiple input discretes (1xxxx) for [Request] Byte 0: Net ID (Station number) Byte 1: FC=02 Byte 2-3: Reference number Byte 4-5: Bit count	ar DI
Polling Mode (no wait) Start Stop Timer mode (fixed period) Interval 100 ms Set Start Stop	Statistic Packet Command Quantit Total Packet bytes 144 Packet Quantity sent 12 O 0 Polling or Timer mode (Date/Time) Start time Start Time Stop time Stop Time	Clear Statistic y Response Total Packet bytes 132 Packet Quantity received 12 Polling Mode Timing (ms) Max 0 Min 1000 000
Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byt 1 2 0 0 1 2 0 0 1 [Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byt [D1 02 00 00 06 -> 01 02 00 00 10 01 02 00 00 06 -> 01 02 00 00 10 00 00 10 00 00 10 00 00 10 10 00 00 00 10 00 00 00 10 00 00 00 10 00 00 10 00 00 00 10 00 00 00 10 00 00 10 00 00 10 00 00 10 00 00 10 00 00 10 00 00 10 00 00	e5] (Byte0) [Byte1] [Byte2] 01 02 00 00 00 05 -> 0 01 02 00 00 00 05 -> 0	[Byte3] 1 02 02 6F DE 1 02 02 6F DE
Clear	Lists	EXIT Program

3. We change QB3 to 0xFE and QB4 to 0xDC, and then we can click <Send Command> button to read DI again at MBTCP and we will get the new DI value (0xFE, 0xDC) from the response message.

Comment:				
	MOUE	1	#end	
16*0000006	EN ENO	16#0000006	0	
10#0000000 #tri –	IN OUT	-QB0		
	MOVE EN ENO			
16#000000 fe 254 –	IN OUT	16#000000 fe QB3		
	MOVE EN ENO			
16#000000dc 220 -	IN OUT	16#000000dc QB4		
			1	

MBTCP Ver. 1.1.4	
ModbusTCP IP: 192.168.255.2 Port: 502 Connect Disconnect Data Log	Protocol Description FC2 Read multiple input discretes (1xxxx) for DI [Request] Byte 0: Net ID (Station number) Byte 1: FC=02 Byte 2-3: Reference number Byte 4-5: Bit count
Folling Mode (no wait) Start Stop Timer mode (fixed period) Interval 100 Start Stop	Statistic Clear Statistic Command Quantity Total Packet bytes 216 Packet Quantity sent 18 Polling or Timer mode (Date/Time) Polling Mode Timing (ms) Start time Start Time Stop time Stop Time
[Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byt 1 2 0 0 0 6 1 2 0 0 0 10 [Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byt 01 02 00 00 00 06> 01 02 00 00 00 10 01 02 00 00 00 6> 01 02 00 00 00 10 01 02 00 00 00 6> 01 02 00 00 00 10 01 02 00 00 00 6> 01 02 00 00 00 10 01 02 00 00 00 6> 01 02 00 00 00 10 01 02 00 00 00 6> 01 02 00 00 00 10 01 02 00 00 00 6> 01 02 00 00 00 10	e5] E5] [Byte0] [Byte1] [Byte2] [Byte3] 01 02 00 00 00 5> 01 02 02 FE DC 01 02 00 00 00 5> 01 02 02 FE DC 01 02 00 00 00 5> 01 02 02 FE DC 01 02 00 00 00 5> 01 02 02 FE DC 01 02 00 00 00 5> 01 02 02 FE DC 01 02 00 00 00 5> 01 02 02 FE DC 01 02 00 00 00 5> 01 02 02 FE DC
Clear	Lists EXII Program

Example 4: PLC refreshes AI data to Modbus master.

SIMATIC STEP 7 Edit

1.HW Config. – configure GW-7553 (ex: System setting module x1, Output Register—2 word module



2. HW Config – Parameter assignment (ex: Com port settings, Modbus type: Slave, Modbus format: TCP, Byte Order: Big Endian). Confirm the GW-7553's Com Port setting is the same with MBTCP tool (ex: baud rate-115200, data bits-8, stop bits-1, parity-none). About the MBTCP tool, please refer to the "Communication test" in the below.

und H ₩ Config - [SIMATIC 300 Station (Configuration) S7_Pro2]									
👊 <u>S</u> tation <u>E</u> dit Insert <u>P</u> LC <u>V</u> iew <u>Options W</u> indow <u>H</u>	elp								
D 😅 🔓 🗣 💱 🎒 🗎 🛍 💼 🚺 🗖	₩ № ?								
PROFIBUS(1): DP master	Properties - DP slave General Parameter Assignment								
X2 DP 2.2 DJ16DX 2.4 Count 3 4 c	Parameters Station parameters Station parameters Solution S	Value DPV0 115200 beud none 8 data bit 1 stop bit Slave							
Image: Constraint of the second sec	Modbus Format E I/O Safe Mode Byte Order E O Output Data Mode Byte Order E Modbus Device ID (\$) E Modbus Poling Interval(ma) (M) E Query timeout Value (ma)(M) E TCP. Connect Num(T)(M)	Modbus TCP Retain Last Value Big Endian(Motorola format) Manual 1 500 500 1							
6 7 8		Cancel Help							

3. Save and Compile

l	<u>1</u>	HW Config	- [SIMAT	IC 300 S	tation (Co	nfigu	ration) ·	- \$7_Pro1]					
	300	Station Edi	t <u>I</u> nsert <u>H</u>	<u>PLC V</u> iew	<u>O</u> ptions	<u>W</u> ind	ow <u>H</u> elj	p					
1	С	<u>N</u> ew			Ctrl+N	E	b 🗖	🔡 k?					
Γ		Open	INE	Ctrl+(- 1							
	Ξ	Close				- 1						Find:	7552
	1	<u>_</u> 10%										<u>1</u>	
	Ш.	Save									Profile:	Standar	
		Save and Co <u>m</u> pile 0			Ctrl+S	0	S(1): DP	master system (1)				
		Properties						-					
		Import					🚡 (2) G W-75	51					
	L	<u>E</u> xport			- 1		A 195	,					
	7	Considered Charles Charles			Ctable Alter	,							
		Consistent Check Cil	ry C <u>n</u> eck 2 Compatibi	ilita	Ctrl+Alt+F				_				
		CHECK CL	v compann	uu <u>v</u>	Cummin	_							
		<u>P</u> rint			Ctrl+P	- 1					~		
	<	Print Prev	ie <u>w</u>			- 1					>		
Γ		Page Setu;	Page Setup 1 S7_Pro1\SIMATIC 300 Station			[
I	4	<u>1</u> S7_Pro1			- 1								
I		<u>2</u> S7_Pro2	2 S7_Pro2\SIMATIC 300 Station			o	n	I Address	Q Address	Comment	1		
I	Γ	<u>3</u> S7_Pro3	3 S7_Pro3'SIMATIC 300 Station		1			02		~			
		<u>4</u> S7_Pro4	SIMATIC .	300 Station		- L			256259				
	•	Exit			Alt+F4	-					_		
	5	-				_							

4. Download setting into STEP 7

Image: Station Edit Insert PLC View Options Window Help Image: Station Edit Insert PLC View Options Window Help Image: Station Edit Insert PLC View Options Ctrl+L Image: Station Edit Insert PLC View Options Window Help Image: Station Edit Insert PLC View Options Ctrl+L Image: Station Edit Insert PLC View Options Window Help Image: Station Edit Insert PLC View Options Ctrl+L Image: Station Edit Insert PLC View Options Window Help		
Download Ctrl+L Upload		
Upload		
	~	
Download Module Identification		Find:
Upload Module Identification to PG		- D- 67
X^2 DP = Eaulty Modules		PION
2.2 DI16/DX Module Information Ctrl+D		
2.4 Count Operating Mode Ctrl+I		
Clear/Reset		
Set Time of Day		
MomonModuy		
Updat <u>e</u> Firmware		
Save De <u>v</u> ice Name to Memory Card	~	
Ethernet	>	
(2) GW-7553 PROFIBUS		
Slot DP ID Save Service Data Q Address Comme	ent	
1 24DO System setting 02	^	
2 ZAO Output Register2 word 256259	_	

5.Insert a new Organization Block (OB1,OB82,OB86)

SIMATIC Manager - [S	S7_G ₩-7552 C:\Program Files\Siemens\Step7\s7proj\S7_G ₩~~1]	
File Edit Insert PLC	<u>V</u> iew Options <u>W</u> indow <u>H</u> elp	_ 8 ×
□ 😅 ╊? ला 炎 🖻 ⊡- ∄) \$7_G₩-7552	E	₩?
SIMATIC 300 Stat - SI CPU313C-2 D - ST Program - Source	tion p(p) m(1) es	
	Cut Ctrl+X	
	Copy Cttl+C	
	Paste Ctrl+V	
	Delete Del	
	Insert New Object Organization Block	
	PLC Function Block	
	Rewire Function	
	Compare Blocks Data Type	
	Reference Data Check Block Consistency Variable Table	
	Print 🔸	
	Rename F2	
	Object Properties Alt+Return	
	Special Object Properties	
Inserts Organization Block at the	ne cursor position.	1

Properties - Organization	n Block	×
General - Part 1 General -	Part 2 Calls Attributes	
<u>N</u> ame:	081	
<u>S</u> ymbolic Name:		
Symbol <u>C</u> omment:		
Created in <u>L</u> anguage:	LAD	
Project path:		
Storage location of project:	C:\Program Files\Siemens\Step7\s7proj\S7_Pro1	
Data created :	Code Interface	
Last modified:	05/15/2013 09:44:33 AM 05/15/2013 09:44:33 AM	
C <u>o</u> mment:		
OK	Cancel Help	

SIMATIC Manager - [S7_Pro]	1 C:\Program Files\Siemens\Step7\s7proj\S7_Pro1]	
🞒 File Edit Insert PLC View	<u>Options Window H</u> elp	
🗅 🛩 🔡 🛲 👗 🖻 💼	💼 😨 💁 💁 🔭 📰 🔁 < No Filter >	J 📝 🞇 🎯 🖷 🗖 🕅
Image: Style styl	System data	€ OB86

6.S7 program edit

Variables used in the example LD Program:

	Name	Data T y pe	Address	Comment
1	OB1_DAT.	 Date	12.0	Date and time OB1 started
1	END	Bool	20.0	
1	Tri	Int	22.0	
1	Init	Bool	24.0	
٦				

Network 1 : Initial Cl





Network 2: QBD add "1" refresh AO value

2 word 2AO



Network 3: Timer T1 & T2



Network 4 : Tl trigger Cl

Counter(Cl) add "l" and Tri add "l" ,too.



If Tri is equal to 256 that will reset Cl.



7. S7 program download

職 LA I	D/STL/FBD -	[OB1 "Cyc	le Exe	cution"	S7_Pm	1\SIMATIC	300 Station/CPU	313C-2 DP(1)	\0B1]			
🔲 <u>F</u> ile	<u>E</u> dit <u>I</u> nsert	PLC Debug	<u>V</u> iew	<u>O</u> ptions	<u>W</u> indow	<u>H</u> elp						
	F 🔓 🖬 📔	Do <u>w</u> nload				Ctrl+L	[»! 🔲 🖪	₩•• - - - /-	-0 🕾 🛏	î ⊢[\?		
		Select Onlin Establish Co	e CPU mectio	n to Confi	sured CPII	ſ	ents Of: 'En	vironment\In	nterface\TEM	P'		
						·	Name	Data T y pe	Address	Comment		
	New network	CPU Messa	ges				1 OB1_DAT	Date	12.0	Date and	time OB1	sta
	Bit logic	Display For	ce Value	s		Ctrl+Alt+F	1 END	Bool	20.0			
	Comparator	<u>M</u> onitor/Mo	dify Va	riables			1 Tri	Int	22.0			
	Counter	Mod <u>ule</u> Info	ormation	ı		Ctrl+D	1 Init	Bool	24.0			
	DB call	Operating M	fode			Ctrl+I	3					
÷	Jumps	<u>C</u> lear/Reset.										
÷	Integer functic	Set Time of	Da <u>y</u>									
	Floating-point's Move Program contro Shift/Rotate Status bits Timers Word logic FB blocks FC blocks SFB blocks SFC blocks Multiple instan Libraries	ol ces		etwork	is equal 256 - #Tri -	mpare Tri w to 256 th CMP <=I IN1 IN2	an will reset	C1. C1 (R)-				

Setup IP of GW-7553 with Utility (the user can download the latest Utility at http://ftp.icpdas.com/pub/cd/fieldbus_cd/profibus/gateway/gw-7553/utilities/ 1. Before the connection, please make sure the RUN LED of the GW-7553 is on and the

switch of the GW-7553 is at setting mode.





2. Set the Com Port Setting of the Utility



3.Click connect.



4. Connection success

🍓 Profibus/Modbus Gateway Utili	ty	
Communication IP setting Safe value	setting View Help	
GW-7553 Module 1	-Com Port Setting Port : Com1 ▼ Baudrate : Data bit : 8 databit ▼ Stop bit :	115200 V Parity : None V
	Item	Value (State)
	🎾 Modbus Type	Slave
	🎾 Modbus Format	тср
	🎾 I/O Value for Stop Mode	Retain Last Value
	🥔 Byte Order	Big Endian (Motorola format)
	🎾 Output Data Mode	Manual
	🎾 Modbus Device ID (S)	1
	🎾 Poll interval time (M)	500ms
	🎾 Time out value (M)	500ms
	🎾 Module count	2
	🎾 Tcp connect num (T)(M)	1
	Module State: 🔴	Com Port State : 🌘
Module is connected	Receive file name er	nor

🍓 Profibus/Modbus Gateway Util	ity						
Communication IP setting Safe value	munication IP setting Safe value setting View Help						
GW-755 GW-755 Load from file Load from device	om Port Setting	Parthus Pare					
Module 1	Data bit : 8 databit 💌 Stop bit	: 11stopbit					
	Item	Value (State)					
	🎾 Modbus Type	Slave					
	🎾 Modbus Format	тср					
	🎾 I/O Value for Stop Mode	Retain Last Value					
	🥔 Byte Order	Big Endian (Motorola format)					
	🥔 Output Data Mode	Manual					
	🔎 Modbus Device ID (S)	1					
	🎾 Poll interval time (M)	500ms					
	🎾 Time out value (M)	500ms					
	🥔 Module count	2					
	🎾 Tcp connect num (T)(M)	1					
	Module State: 🔵	Com Port State : 🔴					
Module is connected	Receive file name e	mor					

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

6. Set the IP of the Modbus TCP Slave and click "Save to Device" button

to	save	the	settings.	

IP Setting		
CLocal IP Setting		
IP 192 . 168 . 255 . 2	_	
MASK: 255 . 255 . 0 . 0	_	
GATEWAY 192 . 168 . 0 . 1	_	
step1. Set I	P of Modbus TCF	
Remote IP Setting slave		
P(1): 192 . 168 . 0 . 123	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(2): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(3): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(4): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP (5): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(6): 192.168.0.100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(7): 192 . 168 . 0 . 100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
IP(8): 192.168.0.100	Time out value (ms) : 1500	ReConnect time (ms) : 8000
	step2. Save the to GW-7553	Save to File Save to Device

7.Set the switch of the GW-7553 to Normal Mode then reset the power of GW-7553.



Communication test

1. Confirm the GW-7553's Com Port setting is the same with Modbus Master tool (ex: MBTCP, you can download MBTCP from http://ftp.icpdas.com.tw/pub/cd/8000cd/napdos/modbus/modbus_utility/)

MBICP Ver. 1.1.4		
ModbusTCP IP: 192.168.255.2 Port: 502 Connect Disconnect	Protocol Description FC2 Read multiple input discretes (1xxxx) for [[Request] Byte 0: Net ID (Station number) Byte 1: FC-02 Byte 2-3: Reference number Byte 4-5: Bit count	
Data Log Polling Mode (no wait) Start Stop Timer mode (fixed period) Interval 100 ms Set Start Stop	Statistic Packet Command Quantity Total Packet bytes 72 Packet Quantity sent 6 Polling or Timer mode (Date/Time) Start Time Start Time Stop time Stop Time	Clear Statistic Response Total Packet bytes Packet Quantity received 6 Polling Mode Timing (ms) Max Max 0 Average Min 1000 000
[Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byte 1 2 0 0 0 6 1 2 0 0 0 1 0 [Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byte	5) (5) [Byte0] [Byte1] [Byte2] [E	Send Command
Clear L	ists	EXIT Program

2. Input command (" 01 04 00 00 00 02") in MBTCP and click <Send Command> button to send Modbus command: "01 04 00 00 00 02". We can get the AI value (0x006F, 0x00DE) from the response message.

· •		
MBTCP Ver. 1.1.4		
ModbusTCP IP: 192.168.255.2 Port: 502 Connect Disconnect	Protocol Description FC4 Read multiple input registers (3xxxx) f Byte 0: Net ID (Station number) Byte 1: FC=04 Byte 2-3: Reference number Byte 4-5: Word count	or Al
🔲 Data Log	[Response]	✓
Folling Mode (no wait) Start Stop Timer mode (fixed period) Interval 100 Ms Set Start Stop	Statistic Packet Command Quantity Total Packet bytes 60 Packet Quantity sent 5 Polling or Timer mode 0.01 Start Time Start Time Stop Time Stop Time	t Clear Statistic tity Response Total Packet bytes Packet Quantity received Polling Mode Timing (ms) Max O Average Min 1000 000
[Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byt 1 2 0 0 0 6 1 4 0 0 0 2	e5]	[Send Command]
[Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byt 01 02 00 00 06 → 01 04 00 00 02 01 02 00 00 06 → 01 04 00 00 02 01 02 00 00 06 → 01 04 00 00 02 01 02 00 00 06 → 01 04 00 00 02 01 02 00 00 06 → 01 04 00 00 02 01 02 00 00 06 → 01 04 00 00 02 01 02 00 00 06 → 01 04 00 00 02	e5] [Byte0] [Byte1] [Byte2 01 02 00 00 00 07> 01 02 00 00 00 07>	Byte3 01 04 04 00 6F 00 DE 01 04 04 00 6F 00 DE 01 04 04 00 6F 00 DE 01 04 04 00 6F 00 DE
Clear	Lists	EXIT Program

3. We change PQW256 to 0x00FE and PQW258 to 0x00DC, and then we can click <Send Command> button to read AI again at MBTCP and we will get the new AI value (0x00FE, 0x00DC) from the response message.

Network 2: QBD add "1" refresh AO value

2 word 2AO



MBTCP Ver. 1.1.4		X
ModbusTCP IP: 192.168.255.2 Port: 502 Connect Disconnect Data Log	Protocol Description FC4 Read multiple input registers (3xxxx) for A Byte 0: Net ID (Station number) Byte 1: FC=04 Byte 2-3: Reference number Byte 4-5: Word count [Response]	
Polling Mode (no wait) Start Stop Timer mode (fixed period) Interval 100 Start Stop	Statistic Packet Quantity Total Packet bytes 120 Packet Quantity sent 10 Polling or Timer mode (Date/Time) Start time Start Time Stop time Stop Time	Clear Statistic e Response Total Packet bytes 130 Packet Quantity received 10 Polling Mode Timing (ms) Max 0 Min 1000
[Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byt 1 2 0 0 0 6 1 4 0 0 0 2 [Byte0] [Byte1] [Byte2] [Byte3] [Byte4] [Byt 01 02 00 00 00 06 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02 01 02 00 00 00 6 -> 01 04 00 00 00 02	e5] e5] [Byte0] [Byte1] [Byte2] [01 02 00 00 00 07> 01 01 02 00 00 00 07> 01	Send Command Byte3] 04 04 00 FE 00 DC 04 04 00 FE 00 DC
Clear	Lists	EXIT Program