How to send data at SIMATIC STEP 7 ?

Voltage Output : Example 1

Current Output : Example 2

Example 1 : PLC sends voltage(9v) from PROFI-5024

<u>1. Architecture</u>



"Follow the below steps to establish the system!"

2.SIMATIC STEP7 Configuration:

Step 1: Double Click "SIMATIC Manager" icon to open "SIMATIC Manager"



Step 2: Open "New Project Wizard "

🖉 SIMATIC Manager		
<u>File</u> PLC <u>V</u> iew Options <u>W</u> indow <u>H</u> elp		
<u>N</u> ew	Ctrl+N	
New Project' Wizard		
Open	Ctrl+O	
S7 Memory Cerd		•
Memory Card Eile		•
Delete		
Reorganize		
Manage		
Arc <u>h</u> ive		
Retrie <u>v</u> e		
Page Setup		
1 S7_Pro2 (Project) C:\\Siemens\Step7\s7proj\S7_Pro2		
2 S7_Pro1 (Project) C:\\Siemens\Step7\s7proj\S7_Pro1		
Exit	Alt+F4	
		-
Creates a new project step-by-step with the help of a wizard.		1

Step 3: Set up Project

a. Click"Next"



b. Select CPU type then click "Next"

STEP 7 Wizard: "New Pro	ject"		×
Which CPU are you us	ing in your project?		2(4)
CP <u>U</u> :	CPU Type CPU312C CPU312 CPU313C CPU313C-2 DP CPU313C-2 P4P CPU314 CPU314C-2 DP	Order No 6ES7 312 5BD00-0AB0 6ES7 312-1AD10-0AB0 6ES7 313-5BE00-0AB0 6ES7 313-6CE00-0AB0 6ES7 313-6CE00-0AB0 6ES7 314-1AE04-0AB0 6ES7 314-6CF00-0AB0 6ES7 314-6CF00-0AB0	
<u>C</u> PU name: MPI <u>a</u> dduess:	CPU313C-2 DF(1) 2 • 32 KB v DI16/DC 3 channe	rock memony; 0.1ms/1000 instructio 016 integrated; 3 pulse outputs (2.5 els counting and measuring increm Previ	e <u>w</u> >>
< <u>B</u> ack <u>N</u> ext >	Finish	Cancel	Help

c. Select Blocks and Language for Selected Blocks then click "Next"

STEP 7 Wizard: "New Project"						
📑 Which blocks do you was	nt to add?		3(4)			
Bloc <u>k</u> s:	Block Name OB1 OB10 OB11 OB12 OB13	Symbolic Name Cycle Execution Time of Day Interrupt Time of Day Interrupt Time of Day Interrupt Time of Day Interrupt	0 1 2 3			
	☐ Select <u>A</u> ll		Help on QB			
F	Language for Selec	ted Blocks				
	CSIL	s Lad	C <u>F</u> BD			
Create with gource files			Previe <u>w</u> >>			
< <u>B</u> ack <u>N</u> ext >	Finish	Cancel	Help			

d. Set project name then click"Finish"

STEP 7 Wizard: "New Project"							
🔄 What do you want to	call y our project?		4(4)				
Project name: Existing projects:	\$7_Pro3 \$7_Pro1 \$7_Pro2						
Check your new project in the preview. Click "Finish" to create the project with the displayed structure.							
			Previe <u>w</u> >>				
< Back Next	Finish	Cancel	Help				

Step 4: Double click "Hardware" to open "HW Config"

SIMATIC Manager - [S7_Pro3 C:\Program H	iles\Siemens	Step7\s7proj\\$7	_Pro3]			
🔁 File Edit Insert PLC View Options Window	<u>H</u> elp				-	۵ ×
🗋 🗅 😅 🔡 🛲 🕺 X 🖻 🛍 🕍 🔍 🏪 🕴		🚺 🔁 🛛 < No I	Filter >	- 🏏	뿮 (0 🖬
E- B S7_Pro3	CPU31	3C-2 DP(1)				
SIMATIC 300 Station						
□ S7 Program(1)						
Sources						
Blocks						
Press F1 to get Help.						

Step 5: Install PROFI-5000 GSD File

ftp://ftp.icpdas.com/pub/cd/fieldbus_cd/profibus/remote%20io/profi-5000/gsd/



b. Select the directory of PROFI-5017's GSD file(ipds0c47.gsd) and click "OK"

Install GSD Files		×
Install GSD Files:	from the directory 認覺資料夾 Select a directory containing GSD files	<u>B</u> rowse
File Release ipdsOc47.gsd	◆ 本機磁碟 (C:) ● ● Borst Automation ● ● cygwin ● ● Documents and Settings ● ● Intel ● ● Multimedia Files ● ● PROFI-5000 ● ● Program Files ● ● TC ● ● WCH.CN	
Install	確定 取消	
Close		Help

c. Click "Install"

Install GSD Files	×
Install GSD Files: from the directory	
C:\PROFI-5000\GSD	<u>B</u> rowse
File Release Version Languages	
ipdsUc47.gsd Default	
PROFI-5000	
Install Show Log Select <u>All</u> Deselect All	
Close	Help

d. Click "OK"

Install GSD Files	×
Install GSD Files: from the directory	
C.\PROFI-5000\GSD	Browse
File Release Version Languages ipdsDc47.gsd Default	
Install GSD File (13:4986) Installation was completed successfully. OK	
PROFI-5000	
Install Show Log Select <u>All</u> Deselect All	
Close	Help

Step 6: Setup the PROFI-5024 module

a. Select PROFI-5000 module

腾 HW Config - [SIMATIC 300 Station (Configuration) \$7_Pro1]			
🕅 Station Edit Insert PLC <u>V</u> iew Options <u>W</u> indow <u>H</u> elp			- 8 ×
D 😅 🐎 🔍 🧌 🚳 🗈 🏙 🏜 👔 🗖 😫 👷			
	^		
	= 1	Find: 5000	n† ni
2 CPU 313C-2 DP(1) x2 DP	1	Profile: Standard	-
22 23/4 Comat 3		Additional Field Devices Additional Field Devices Additional Field Devices I/O Additional Field Devices I/O I/O	() () ()
F			Chg //

b. Add a "PROFI-5024 module"



Step 7: Setup the parameters of the PROFI-5024

Use the default setting

Step 8: Download the HW settings into SIMATIC PLC

a. Save and Compile

민	HW Config - [SIMATIC 300 Station (Configuration)	\$7_Pro1]					
30	Station Edit Insert PLC View Option	ns <u>W</u> indow <u>H</u>	elp					_ & ×
] [<u>N</u> ew Open	Ctrl+N Ctrl+O	₩ №?					
	Open ONLINE	041.0				^	:	
	Close						<u>Find</u> : 5000	mt mi
			BUS(1): DP mas	ster system (1)	_		Profile: Standard	-
	Save and Co <u>m</u> pile	Ctrl+S						
	Properties			077			📄 🧰 Additional Field D	Devices
	Import			OFI			🕀 🧰 Switching Dev	vices
	Export		DP-NOF	M				
		Chitaball					🕀 🧰 ET200S	
	Consistency Cneck Check CiR Compatibility	Ctrl+Alt+F						300
		0.1.2					I Unive	rsal module
	Print	Ctrl+P					PROF	I-5017(C)
	Page Setup						PROF	7-5024
						V	PROF	1-5041
<	1 S7_PRODSIMATIC 300 Station 2 GMT7552 NEW1/SIMATIC 300 Station						PROF	1-5050
	3 Rewinder test/Rewinder						PROF	T-5051
	4 Bird/SIMATIC 300 Station		1	1.0.111	1	- 1	PROF	4-5052 π-5053
		á lta FA	I Address	Q Address 256 263	Comment		PROF	1-5055
	2	111(114					PROF	1-5060 7 5067
	· · ·							1-2007 (550₽¥1)
							🕀 🛄 Gateway	
							🗄 💼 Compatible Pl	ROFIBUS DP Slaves

b. HW settings into SIMATIC PLC

📙 H W Config - [SIMA]	TIC 300 Station (Configuration)	S7_Pro	1]				
💵 <u>S</u> tation <u>E</u> dit Insert	DIC <u>View Options Window U</u>	l ,					
🗅 🚅 🔓 🖬 🖏	Download	Ctrl+L					
	<u>Opioai</u>				~		
(0) UR	Download Module Identifi <u>c</u> ation Upload Module Ide <u>n</u> tification to PG					<u>F</u> ind: 5000	
2 CPU 3130 X2 DP	Faulty Modules		— ster system (1)	_		Profile: Stand	ard
2.2 D116D016 2.4 Count 3 4 5 6 7	Module Information Operating Mode Clear/ <u>R</u> eset Set Time of D <u>a</u> y <u>Monitor/Modify</u> Updat <u>e</u> Firmware	Ctrl+D Ctrl+I	OFI				IS DP ional Field Devices witching Devices D ET200M ET200S I/O PROFI-5000
	Save De <u>v</u> ice Name to Memory Card	t	_				PROFI-5017(C)
	Ethernet		•				PROFI-5024
10	PROFIBUS		•		~		PROFI-5041
	<u>S</u> ave Service Data		-		2		PROFI-5050
(2) PROFI-500	0		_				PROFI-5051
Slot DP ID	Order Number / Designation	I Addre	SS Q Address	Comment			PROFI-5053
2	11011 2024		2507205				PROFI-5060
							PROFI-5067

Step 9: Edit OB1

a. Double click "OB1"



b. Program

OB1 : "Main Program Sweep (Cycle)"

Comment:

Network 1: Send Voltage



Step 10: Download the settings into SIMATIC PLC

🔣 LAD/STL/FBD -	[OB1 "Cycle Exect	ition" S7_P	ro1\SIMATIC 300
➡ <u>File E</u> dit Insert	P <u>L</u> C <u>D</u> ebug <u>V</u> iew <u>C</u>	ptions <u>W</u> indo	w <u>H</u> elp
🗅 🚅 🔓 🔒 🔮	Do <u>w</u> nload		Ctrl+L
	Select Online CPU Establish Connection t	o Configured C	PU
New network	CPU M <u>e</u> ssages <u>D</u> isplay Force Values <u>M</u> onitor/Modify Varia	bles	Ctrl+Alt+F
± € Converter	Mod <u>u</u> le Information		Ctrl+D
🕂 📴 DB call	Operating Mode		Ctrl+I
🕀 🔂 Jumps	<u>C</u> lear/Reset		
🛨 🛨 Integer functio	Set Time of Day		H
H is rioating-point	161.		

Step 11: Make sure the RUN LED of the PROFI-5024 is ON.



Now the setting procedure has been finished and the user can send voltage of channel 0 ~ channel 3 at address PQW256 ~ PQW 262

OB1 : "Main Program Sweep (Cycle)"





Example 2:PLC sends current(10mA) of channel 0 from PROFI-5024

<u>1. Architecture</u>



"Follow the below steps to establish the system!"

2.SIMATIC STEP7 Configuration:

Step 1: Double Click "SIMATIC Manager" icon to open "SIMATIC Manager"



Step 2: Open "New Project Wizard "

SIMATIC Manager			
<u>File</u> PLC <u>V</u> iew Options <u>W</u> indow <u>H</u> elp			
<u>N</u> ew	Ctrl+N	_	
New Project' Wizard			
Open	Ctrl+O		
S7 Memory Card		٠	
Memory Card Eile		<u>.</u>	
Delete			
Reorganize			
Manage			
Archive			
Retrie <u>v</u> e			
Page Setup			
1 S7_Pro2 (Project) C:\\Siemens\Step7\s7proj\S7_Pro2			
2 S7_Pro1 (Project) C:\\Siemens\Step7\s7proj\S7_Pro1			
Exit	Alt+F4		
Creates a new project step-by-step with the help of a wizard.			

Step 3: Set up Project

a. Click"Next"



b. Select CPU type then click "Next"

STEP 7 Wizard: "New Proj	ect"		
Which CPU are you using	ng in your project?		2(4)
CPU: CPU name:	CPU Type CPU312C CPU312C CPU313C CPU313C-2 DP CPU313C-2 DP CPU314C-2 DP	Order No 6ES7 312 5BD00-0AB0 6ES7 312 5BD00-0AB0 6ES7 312-1AD10-0AB0 6ES7 313-5BE00-0AB0 6ES7 313-6CE00-0AB0 6ES7 313-6BE00-0AB0 6ES7 313-6BE00-0AB0 6ES7 314-1AE04-0AB0 6ES7 314-1AE04-0AB0 6ES7 314-6CF00-0AB0 6ES7 314-6CF00-0AB0	
MPI <u>a</u> dduess:	2 J 32 KB w Dii6/DC 3 channe	ouk memouy; 0.1ms/1000 instruction 16 integrated; 3 pulse outputs (2.5) Is counting and measuring increme Previe	ns; cHz); ntsl
< Back <u>N</u> ext >	Finish	Cancel H	lelp

c. Select Blocks and Language for Selected Blocks then click "Next"

STEP 7 Wizard: "New Proje	ct"				
🕞 Which blocks do you was	nt to add?		3(4)		
Bloo <u>k</u> s:	Block Name OB1 OB10 OB10 OB11 OB12 OB13	Symbolic Name Cycle Execution Time of Day Interrupt Time of Day Interrupt Time of Day Interrupt Time of Day Interrupt	0 1 2 3		
∏ Select <u>All</u> Help on <u>O</u> B					
	Language for Selec	€ LAD	⊂ <u>F</u> BD		
Create with gource files			Previe <u>w</u> >>		
< <u>B</u> ack (<u>N</u> ext >		Cancel	Help		

d. Set project name then click"Finish"

STEP 7 Wizard: "New P	roject"					
🔄 What do you want to	call y our project?		4(4)			
Project name: Existing projects:	\$7_Pro3 \$7_Pro1 \$7_Pro2					
Check your new project in the preview. Click "Finish" to create the project with the displayed structure.						
			Previe <u>w</u> >>			
< Back Next	Finish	Cancel	Help			

Step 4: Double click "Hardware" to open "HW Config"

SIMATIC Manager - [S7_Pro3 C:\Program Files\Siemens\Step7\s7proj\S7_Pro3]	
📴 File Edit Insert PLC View Options Window Help	- 8 ×
🗋 🍅 🚼 🛲 🕺 🖻 💼 🧰 😨 🏪 🏝 📴 陆 🏢 💼 < No Filter >	🏹 器 🎟 着
E By S7_Pro3 CPU313C-2 DP(1)	
- BI SIMATIC 300 Station	
⊡-⊊] \$7 Program(1)	
Discuss Reals	
Press F1 to get Help.	

Step 5: Install PROFI-5000 GSD File

ftp://ftp.icpdas.com/pub/cd/fieldbus_cd/profibus/remote%20io/profi-5000/gsd/



f. Select the directory of PROFI-5017's GSD file(ipds0c47.gsd) and click "OK"

Install GSD Files		×
Install GSD Files:	from the directory 瀏覽資料夾 Select a directory containing GSD files	<u>B</u> rowse
File Release ipdsOc47.gsd	◆本機磁碟 (C:) ● ● 本機磁碟 (C:) ● ● Borst Automation ● ● cygwin ● ● Documents and Settings ● ● Intel ● ● Multimedia Files ● ● PROFI-5000 ● ● Program Files ● ● TC ● ● WCH.CN	
Install	確定 取消	
Close		Help

g. Click "Install"

Install GSD Files	×
Install GSD Files:	
C:\PROFI-5000\GSD	Browse
File Release Version Languages	
ipdsUc47.gsd Default	
PROFI-5000	
Install Chang Long Select 611 Deselect 611	
Tuztan Zuom Fod Zerect Will Deserect Will	
Close	Help

h. Click "OK"

Install GSD Files	×
Install GSD Files: from the directory	
C.\PROFI-5000\GSD	<u>B</u> rowse
File Release Version Languages ipdsOc47.gsd Default	
Install GSD File (13:4986) Installation was completed successfully. OK	
PROFI-5000	
Install Show Log Select <u>All</u> Deselect All	
Close	Help

Step 6: Setup the PROFI-5024 module

a. Select PROFI-5000 module

腾 HW Config - [SIMATIC 300 Station (Configuration) \$7_Pro1]			
🕅 Station Edit Insert PLC View Options Window Help			- 8 ×
D 😂 💱 📓 🐘 🎒 🐚 💼 📩 🎪 🏦 🌓 🗔 🞇 📢			
(D) 11D	^	N	
		Eind: 5000	m† mi
2 CPU 313C-2 DP(1) PROFIBUS(1): DP master system (1)		Profile: Standard	•
DP DP 2.2 DidBOI6 2.4 Count 3 Implement 4 Count 5 Implement 6 Implement 7 Implement Click PROFI-5000 ICON		PROFIBUS DP Additional Field Devices Switching Devices Io Io Io FizzooM FizzooM FizzooM FizzooM FizzooM FizzooM FizzooN FizzooN	<
P			Chg

b. Add a "PROFI-5024 module"



Step 7: Setup the parameters of the PROFI-5024

a. Double Click "PROFI-5024 module"

R HW Config - [SIMATIC 300 Station (Configuration) S7_Pro1]			
🕅 Station Edit Insert PLC View Options <u>W</u> indow <u>H</u> elp			_ 8 ×
D 😂 🐎 🖉 🎭 🎒 🗈 🗈 💼 🏜 🌓 🗁 器 😥			
	^		
		Find: 5000	m† mi
PROFIBUS(1): DP master system (1)		Profile: Standard	•
$\frac{\chi_2}{22}$ $\frac{D^2}{D(6DO)6}$ =		E W PROFIBUS DP	~
2.4 Count		Additional Field Devices	
3 (2) T KOM-		🕀 🦲 Switching Devices	
4 DP-NORM			
		ET200N	
		🖃 🚡 PROFI-5000	
		📕 Universal module	
		PROFI-5017(C)	
		PROFI-5024	
	~	PROFI-5041	
	>	PROFI-5050	
		PROFI-5051	
(2) PROFI-5000		PROFI-5052	
Slo T D Order Wander / Designation I hadress O hadress Comment		PROFI-5053	
1 4AO PROFI-5024 256263		PROFI-5055	
		PROFI-5060	
Double Click			
PROFI-5024		⊕ ⊕ Gateway	
Madula		🗄 🦲 Compatible PROFIBUS DP Slaves	
rioquie		CiR-Object	
		E Closed-Loop Controller	

b. Select "Parameter Assignment"

Data Format of CH0~CH3 : Engineer-unit format(mA)

Properties - DP slave		×
Address / ID Parameter Assignment		1
Parameters — — Tation parameters	Value	
Device-specific parameters		
CHO - AO - Data Format	Engineer-unit format(mA)	
I≕I ("HU - A() - Drag Finable	Knahle	
_ □ CH1 - AO - Data Format	Engineer-unit format(mA)	
E EI CH1 - AO - Diag Enable	Enable	
_≝ CH2 - AO - Data Format	Engineer-unit format(mA)	
E CH2 - AU - Diag Enable	Enable	
_≝ CH3 - AO - Data Format	Engineer-unit format(mA)	
E CH3 - AO - Diag Enable	Enable	
PROFI-5024[STOP] OUTP. VALUE	Retain Last Value	
- Substitute Value of AO-CHNO	0	
Substitute Value of AO-CHN1	0	
Substitute Value of AO-CHN2	0	
Substitute Value of AO-CHN3	0	
🕂 🧰 Hex parameter assignment		
	F	
OK	Cancel	Help

Step 8: Download the HW settings into SIMATIC PLC

a. Save and Compile

٩ų	HW Config - [SIMATIC 300 Station (Configuration)	\$7_Pro1]	
80	Station Edit Insert PLC View Optio:	ns <u>W</u> indow <u>H</u> e	lp	_ 8 ×
[<u>N</u> ew	Ctrl+N	88 №	
Ĺ.	Open	Ctrl+O		
5	Open ONLINE		Rivel 5000	
	m			bai bat
	<u>2</u>		Profile: Standard	•
	Save and Co <u>m</u> pile	Ctrl+S	PROFIBUS DP	~
	Properties		🚍 (2) PROFI-	
	Import			
	Export		DP-NORM	
	Consistency Check	Ctrl+Alt+K	• • • ET200S	
	Check CiR Compatibility	Ctrl+Alt+F		
		Chill	Universal module	
	Print Preview	Cultr		
	Page Setup		PROFI-5024	
_	1 97 De-1975 (A TIC 200 Station		₩ PROFI-5041	
<u><</u>	2 GW7552 NEW1/SIMATIC 300 Station		PROFI-5050	_
	3 Rewinder test/Rewinder		PROFI-5051	
	4 Bird/SIMATIC 300 Station		PROFI-5052	
		Alt+F4	256 263	
	Z	milit	PROFI-5060	
			■ ■ ROF-5067	
			🕀 🧰 Tateway	
			💼 📄 Compatible PROFIBUS DP Slaves	

b. HW settings into SIMATIC PLC

🔣 HW Config - [SIMA	TIC 300 Station (Configuration) -	- S7_Pro1]						
🛄 Station Edit Insert	N.C. Mine Ortical Mindow Halp		_					
🗅 🚅 🔓 🖫	Download	Ctrl+L						
1	<u>Opioai</u>				~			
(0) UR	Download Module Identification Upload Module Ide <u>n</u> tification to PG		the contract (1)			<u>F</u> ind: 5000)	
2 CPU 3130	Faulty Modules		ster system (1)	-		Profile: Stand	dard	
2.2 D116/D016 2.4 Count 3 4 5 6	Module Information Operating Mode Clear/ <u>R</u> eset Set Time of Day <u>Monitor/Modify</u>	Ctrl+D Ctrl+I	OFI			□-₩ PROFIB □ Addi □ 1 □ 1 □ 1 □ 1	PROFIBUS DP Additional Field Devices Switching Devices IO ET200M ET200S	
7	Updat <u>e</u> Firmware						1/O PROFI-5000	
	Save Device Name to Memory Card						Universal module	
	Ethernet	+					PROFI-5024	
	PROFIBUS	•			~		PROFI-5041	
	Save Service Data				2		PROFI-5050	
(2) PROFI-50	00						PROFI-5051	
Slot DP ID 1 4AO 2	Order Number / Designation PROFI-5024	I Address	Q Address 256263	Comment			PROFI-5053 PROFI-5055 PROFI-5060 PROFI-5060	
							PROFI-5007	

Step 9: Edit OB1

a. Double click "OB1"



b. Program

```
OB1 : "Main Program Sweep (Cycle)"
```

Comment:

Network 1: Send Voltage

Voltage (9v)



Step 10: Download the settings into SIMATIC PLC

🔣 LAD/STL/FE	3D - [OB1	"Су	cle Exe	cution"	S7_Pro	INSIMATIC	300
💶 <u>F</u> ile <u>E</u> dit <u>I</u>	nsert I	P <u>L</u> C	Debug	<u>V</u> iew	<u>O</u> ptions	<u>W</u> indow	<u>H</u> elp	
🗋 🚔 🔓 层	∉	Do	<u>w</u> nload				Ctrl+L	ĺ.
		Select Online CPU Establish Connection to Configured CPU						
Hand New net	work ator	CP <u>D</u> is <u>M</u> o	U M <u>e</u> ssa, play For nitor/Mo	Ctrl+Alt+F] ≩€			
transformer tran		Mod <u>u</u> le Information					Ctrl+D	Ē
H - CB DB call H - C Jumps		Operating Mode <u>C</u> lear/Reset					Ctri+I	
 Integer f Integer f Integer f 	unctic ·point n	Set	Time of	Day				┢

Step 11: Make sure the RUN LED of the PROFI-5024 is ON.



Now the setting procedure has been finished and the user can send current of channel 0 at address PQW256

OB1 : "Main Program Sweep (Cycle)"



