

Q

# **XPANEL**

XPANEL,SIMENS S7-1200 통신을 하고싶습니다. 설정 방법을 알려주세요?

A SIMENS S7-1200 시리즈부터 SIMENS 설정 프로그램이 TIA Portal 로 변경 되어 기존 Simetic 설정 방법과 상이하여 혼돈하는 경우가 많습니다. 아래를 참고하여 설정하시면 도움됩니다.

#### [PLC 설정 자료]

1. TIA Portal 프로그램 실행



1) 새프로젝트 만들기

프로그램 실행시 아래의 화면이 표시되고 START → Create new project 작성 → Create 클 릭 발생.

					Totally Integrated Automation PORTAL
Start			Create new project		
	ţ,Î	Open existing project	Project name: Path:	Project3 C:Users\devlopQ\Documents\Automation	
		<ul> <li>Create new project</li> <li>Migrate project</li> </ul>	Author: Comment:	devlopQ	<u>^</u>
	<b>R</b>	Close project			Create
		Welcome Tour			
Online & Diagnostics	1	First steps			

Graating		
	The project The project C:lUsers\devlopQ\Documents\Automation\TEST\TE being created. Please wait.	ST.ap13 is
		Cancel



2. Device&Network 설정

			Totally Inte
Start 🏻		First steps	
Devices &	Open existing project     Create new project     Minrate project	Project: "TEST" was opened successfully. Please select the next step: Start	
Motion & technology	Close project	Devices & Configure a device	
Visualization	<ul> <li>Welcome Tour</li> <li>First steps</li> </ul>	PLC programming Write PLC program	
	Installed software	Motion & technology     Configure technology objects       Visualization     Image: Configure an HMI screen	
	🚱 User interface language		
		Project view     Open the project view	

Add new device 작성
 연결하고자 하는 Controlers 구성
 S7-1200 PLC 의 해당되는 PLC CPU 등록 구성

	Add new device	
Show all devices Add new device	Device name:	
Configure networks	Controllers Controllers HM	Device:
💮 Help		

2) 펌웨어 및 CPU 모델명을 꼭 확인 후 해당 모듈 등록



Add new device			
Controllers	<ul> <li>Controllers</li> <li>SIMATIC S7-1200</li> <li>CPU</li> <li>CPU 1211C AC/DC/Rly</li> <li>CPU 1211C DC/DC/DC</li> <li>CPU 1212C AC/DC/Rly</li> <li>CPU 1212C DC/DC/Rly</li> <li>CPU 1212C DC/DC/Rly</li> <li>CPU 1212C DC/DC/Rly</li> <li>CPU 1212C DC/DC/Rly</li> <li>CPU 1214C AC/DC/Rly</li> <li>GES7 214-18E30-0XB0</li> <li>GES7 214-18E30-0XB0</li> <li>GES7 214-18E30-0XB0</li> <li>GES7 214-18G40-0XB0</li> <li>GES7 214-18G40-0XB0</li> <li>CPU 1214C DC/DC/Rly</li> <li>CPU 1214C DC/DC/Rly</li> <li>CPU 1215C DC/DC/Rly</li> <li>CPU 1215C DC/DC/Rly</li> <li>CPU 1215C DC/DC/Rly</li> <li>CPU 1215C DC/DC/Rly</li> <li>CPU 1214FC DC/DC/DC</li> <li>CPU 1214FC DC/DC/DC</li> <li>CPU 1214FC DC/DC/Rly</li> <li>CPU 1215FC DC/DC/Rly</li> <li>Device Proxy</li> </ul>	Device:       Image: Imag	
<	111	l >	

## 3) Creat 등록시 아래의 화면이 표시 됩니다.

M Siemens - C:Users/devlopQ/Documents/Automation/TEST/TEST						
Project Edit View Insert Online Options Tools Window Help						
📑 🎦 🔜 Save project 🚊 💥 🗐 🕋 🗙 🖷	PORTAL					
Project tree 🔲 🖣	TEST > PLC_1 [CPU 1214C AC/DC/Rly] _ T X Hardware cata	alog 🗊 🗉 🕨				
Devices	🖉 Topology view 👗 Network view 👔 Device view Options					
	At PLC_1 Device overview					
		dwa				
▼ 🗋 TEST	Mooule Cearch					
🗧 📑 Add new device						
5 📥 Devices & networks		log				
PLC_1 [CPU 1214C AC/DC/Riy]	1 2 3 4 5 6 7 8 9	ards				
Opline & disgnostics	DI1 ) Communic	cations boards				
Program blocks	Al 2_1 > 🖬 Battery bor	oards 0				
Technology objects	▶ <b>i</b> Di	물				
External source files		le t				
PLC tags		00				
PLC data types		S				
Watch and force tables		-				
Online backups	Properties info i Diagnostics					
🕨 🔀 Traces	General (1) Cross-references Compile	cations modules				
Device proxy data	C A G Show all messages	Jy modules 6				
Program info						
Text lists	1 Path Description Go to 2 From Warnings Time	2				
Local modules	- retri - Beenpeen - Beenpeen - Brenz	- F				
Common data		arie				
✓ Details view		<sup>co</sup>				
Name						
Device configuration						
😵 Online & diagnostics 📃						
Program blocks						
Technology objects						
External source files 🗸 🗸	< Information	n				

- 3. PLC ip 설정 및 Rack 등록 확인
  - 1) 등록된 PLC → Device Configuration 클릭



Properties 의 Project information >>Name,Author 를 등록한다(Rack:0,Slot:1)

▼ TEST	<b>C</b>			Module				
🚔 Add new device	<b>Q</b> <sup>*</sup>	** FIG 1						
Devices & networks			1 1007					
PLC_1 [CPU 1214C AC/DC/Rly]	<		> 100%					
Device configuration	PLC_1 [CPU 1214C AC/DC	'RIy]	Roperties	🤽 Info 👔 🖫 Diagnostics 👘 💷 🔽				
Q Online & diagnostics	General IO tags	System constants Text	s					
🕨 🔙 Program blocks								
Technology objects	General	Project information						
External source files	Cotales information							
🕨 🚂 PLC tags	Catalog mormation							
PLC data types	- pposition & Mainten		Name: PLC_1					
Watch and force tables	PROFINE I Interface [X1]		Author: devlopQ					
🕨 🙀 Online backups	General	c	omment:					
🕨 🔄 Traces	Ethernet addresses							
Device proxy data	lime synchronization							
Program info	Operating mode							
Text lists	<ul> <li>Advanced options</li> </ul>	-						
Local modules	Web server access		Slot: 1					
🕨 🙀 Common data 🗸 🗸	Hardware identifier		Rack: 0					
➤ Details view	DI 14/DQ 10							
	▶ AI 2							
	<ul> <li>High speed counters (HSC)</li> </ul>							

2) PROFINET interface>> Ethernet address >> IP protocol ip 등록한다

General     IO tags     System constants     Texts <ul> <li>General</li> <li>Project information</li> <li>Catalog information</li> <li>Identification &amp; Mainten</li> <li>PROFENET interface [X1]</li> <li>Set IP address in the project</li> </ul>	🖳 Properties 🛛 🚺 Info 🕦 Diagnostics	
General     Project information     Catalog information     Identification & Mainten      PROFINET interface [X1]     Set IP address in the project	constants Texts	
Catalog information IP protocol Identification & Mainten    PROFINET interface [X1]    Set IP address in the project	Add new subnet	^
	IP protocol Set IP address in the project	
General     IP address:     172.30.30.200       Ethernet addresses     Subnet mask:     255.255.0	IP address: 172 . 30 . 30 . 200 Subnet mask: 255 . 255 . 0	≡
Imme synchronization     Imme synchronization       Operating mode     Use router       Advanced options     Router address:       Web server access     IP address is set directly at the device	Use router Router address: 0 . 0 . 0 . 0 IP address is set directly at the device	

3) Properties >>Web server 내 General\_Protection 에서 Full access(No protection)

TEST     Add new device     Devices & networks     Vin PLC_1 (CPU 1214C AC/DC/Rly)     Device configuration	Rack_0	103 10	2 101		2 3	4	5 6	7	8 9		Module
Online & diagnostics     Program blocks	PLC_1 [CPU 1214C AC/I	DC/Rly]						🖳 Prope	erties 🚺 Inf	o 🛛 🖁 🖁 Diagnost	ics 🛛 🗆 🗸
Technology objects	General IO tags	Syst	tem consta	ants Texts							
External source files	Advanced options	^	Drotocti	00							^
PLC tags	Web server access		FIOLECLI								
PLC data types	Hardware identifier		Protec	ction							
Watch and force tables	DI 14/DQ 10										
Online backups	AI 2		Select	t the access level for the PLC.							
🕨 🔀 Traces	<ul> <li>High speed counters (HS</li> </ul>	C)									
Device proxy data	Pulse generators (PTO/PW)	M)		Access level			Access		Access permi		
Program info	Startup					нмі	Read	Write	Password		
Text lists	Cycle		(	Full access (no protection)		~	<ul> <li>V</li> </ul>	<ul> <li>V</li> </ul>	~		
Local modules	Communication load	_		Read access		~	<ul> <li>Image: A second s</li></ul>			-	
🕨 🙀 Common data 🗸 🗸	System and clock memo	ry ,		HMI access		<ul> <li>Image: A second s</li></ul>					
✓ Details view	Web server	=		No access (complete protect	on)						
	Time of day										
Name	Protection										
Add new device	Configuration control		Full ac	ccess (no protection):							
🛔 Devices & networks 🔤	Connection resources		TIA Po	rtal users and HMI applications	will have acce	ess to all fun	ctions.				
	Overview of addresses		No pa	issword is required.							
🙀 Common data		~									
Documentation settings 🗸	< 11	>									*

- Hmi access 로 접속하여도 관계없음
  - 4) Genernal\_Protection >> Connection Mechanisms || Permit access with Put/Get



Project tree I KEST > PLC_1 (CPU 1214C AC/DC/Rly)     Devices     Image: Constraints     TEST     PLC_1 (CPU 1214C AC/DC/Rly)     Image: Constraints     Image: Cons
Devices     Image: Conception Bocks     Image: Conceptio
Module <
TEST Add new device Provide 8 networks Provide 9 networks Provide
<ul> <li>TEST</li> <li>Add new device</li> <li>Device configuration</li> <li>Quinte &amp; diagnostics</li> <li>Reck_0</li> <li< td=""></li<></ul>
Add new device   Devices a networks   Proc. 1 (CPU 1214C AC/DC/R)   Planck_0   Planck_0 <td< td=""></td<>
Bevice: 8 networks     Device: 8 networks     Connection mechanisms     Starup
<ul> <li>In PC_1 (CPU 1214C ACD/CRV)</li> <li>Device configuration</li> <li>Online &amp; diagnostics</li> <li>Forgram blocks</li> <li>Forgram blocks</li></ul>
Projece configuration     Online datagnostics     Online backups     Advanced options
Wonline & disgnostics       PLC 1 [CPU 1244C ACADC/Rky]       Properties       Info       Diagnostics       Info         Service group blocks       Factorial (D tags       System constants       Texts         Service deptions       Advanced options       Methods       Factorial (D tags       System constants       Texts         Service deptions       Advanced options       Methods       Factorial (D tags       System constants       Texts         Service deptions       Methods       Factorial (D tags       System constants       Texts         Service deptions       Methods       Factorial (D tags       Factorial (D tags       Factorial (D tags)         Service deptions       Methods       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)         Service deptions       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)         Service deptions       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)         Service deptions       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)         Service deptions       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)       Factorial (D tags)         Service deptions       Factoria
<ul> <li></li></ul>
> ign technology objects     Centerning of days     > feets       > ign technology objects     > Advanced options     > ient of days       > ign technology objects     > Advanced options     > ient of days       > ign technology objects     > Advanced options     > ient of days       > ign technology objects     > Hold variable     > ient of days       > ign technology objects     > Hardware identifier       > ign technology objects     > Advanced options       > ign option backups     > Advanced options       > ign option provide and the provide provide provide and the provide provide and the provide provide and the provide provide provide and the provide provid
> Gip External source files     > Advanced options     >       > Gip FLC tags     Web server access     +       > Cip FLC tags     Web server access     +       > Watch and force tables     > D1 14DQ 10     +       > Watch and force tables     > D1 14DQ 10     +       > Gip Tubes     > Al 2     +       > Gip Tubes     > High speed counters (HSC)     +       > Gip Tevrice proxy data     > Pulse generators (PTO/PWM)     -       Bip Togram info     Startup     Corle
Image: Big
Image: Constraint of the constr
> (a) Watch and force tables     > D1 fallQ 10     Connection mechanisms       > (a) Online backups     > A1 2       > (b) Tatces     > High speed counters (HSC)       > (b) Tatces     > Pulse generators (PTO/PFWM)       > (b) Program info     Startup       > (b) Program info     Concel
All 2     A
Cartaces     Fight Speed Counter's (FSC)     Fight Speed Counter's (FSC)     Permit access with PUTIGET communication from remote partner (FLC, HM, OPC,)     Provement of Starup     Program info     Starup     Corte
Bevice proxydata     Pruise generators (PICIPWW)      Beogram info     Startup     Corle
Bit Program info Startup
E lext lists
b La Local modules Communication load
Common data System and clock memory
Details view     Web server
The second secon
lime of day
Value Protection
Device & network
BIC 1 Onimetan resources
Common data

communication from remote partner(PLC,HMI,OPC,..)를 클릭한다.

- 3번 항목과 4번항목은 꼭 등록하여야 통신이 정상적으로 됩니다.
- 4, Online 준비

1	Project tree 🛛 🔳 📢	EST → PLC_1 [CPU 1214C AC/DC/RIy]	_ # =×
	Devices	🛃 Topology view 🔒 Network view	Device view
	🖻 🖸 🖸 🖸 🔤	🕈 (PLC_1 🔍 🖽 🖾 🗒 🖽 🔍 ±	evice overview
Devices & networks	▲ TEST     ▲ Add new device     ▲ Devices & networks     ↓ PLC_1 [CPU 1214C AC/DC/RM]     ↓ Common data     ★ Common data     ★ Devinence & recourses	103         102         101         1         2         3         4         5         6         7         8         9           Rack_0         mm         xmmx         xmmx         100%         V         V         V           LC_1         [CPU 1214C AC/DC/Riy]         V         V         V         V         V         V	Module
	✓ ☐ Online access	General IO tags System constants Texts	
	Display/hide interfaces     Display/hide FE Family Controller	Advanced options     Web server access	<sup>^</sup>
	PC Adapter [MPI]	Hardware identifier Protection	
	PC internal [Local]	D1 14 l0Q 10 Select the access level for the PLC	
	PLCSIM 57-1200/57-1500 [PN/IE] REP	High speed counters (HSC)	
	TeleService [Automatic protocol d.]	Pulse generators (PTO/PWM) Access Javal Access Acces Access Acces	
	Card Reader/USB memory	Startup HMI Read Write Password	
		Cycle   Full access (no protection)	
		Communication load Read access	
	< III >	HMI access	
	Details view	User interface languages Time of day	
	Name	Protection	
	Add new device	Configuration control Full access (no protection):	
	Devices & networks	Connection resources TA Portal users and HM applications will have access to all functions.	
	PLC_1	Overview of addresses	
	Common data		

1) Project Tree 화면의 Online Access 카테고리로 이동합니다.

2) Online access 카테고리에서 연결되는 네트웍 장비를 클릭한다.





3) 연결된 Lan 카드를 우측 마우스 클릭 후 ProPerties 클릭

Siemens - C:\Users\devlopQ\Documents\Aut	omation\TEST P
Project Edit View Insert Online Options	Tools Window Help Totally Integrated Automation
Project tree 🔲 📢	TEST → PLC_1 [CPU 1214C AC/DC/RIy]
Devices	🖶 Topology view 🛛 🚯 Network view 🚺 Device view
TEST     Add new device     Devices & networks     Displayhide interfaces     Displayhide interfaces	Image:
Portal view     Dverview	▲ PLC_1 It is a searching for devices completed for int
🕂 🙆 🚞 🙆 🐺	· [** 1049 - [** 10 영국 《 A 2017-01-26



4) 연결된 장비간 ip 및 Subnet Mask 등을 확인

Realtek PCIe FE Family Controller				×
General Configurations	Configurations			
	Local settings			
	Connection: MAC address:	98 - 83 - 89 - 22 - 8F - 6F		
	DHCP active : APIPA active :			
	IP address: Subnet mask:	172.30.10.163       255.255.0.0		
	DNS addresses:	168.126.63.1		
	DHCP addresses:			
		Change <u>s</u> ettings	ок	<u>C</u> ancel

4. Online 연결

1) Project Tree 화면으로 이동 후 PLC 디바이스 카테고리에서 Online & diagnostics 에서 Online access 화면에서 Type of the PG/PC Interface PN/IE 선택

Ma Siemens - C:lusersideviopQiDocumentsviu	itomation\TEST\TEST		_ <b>_</b> X
Project Edit View Insert Online Options	Tools Window Help		Totally Integrated Automation
Broiget trac			
	TEST V PLC_T [CP0 1214C A	ODONIY)	
Devices			Options
2 BOO	Online access Diagnostics	Online access	
Add new device	General Diagnostic status	Status	No online connection
Image: Contract of the set	Diagnostics buffer Cycle time Memory PROFINET interface [X1] Ethernet address Ports Functions	Offine	ash LED
Complete data types     Complete data types     Complete data types     Complete data force tables     Complete data data     Complete data     Complete data		Online access Type of the PG/PC interface: Please select PC/PC interface: Please select PC/PC interface: Please select	v Cycle time No online connection
Program info     Text lists     Im Cocal modules     Gommon data     Details view		Connection to interface/subhet: 1st gateway: Device address:	
Name		Ø Goonline	
			>
		Roperties Linfo	Diagnostics
Portal view     Overview	h PLC_1 U Online &	dia	1 Project-specific IP addresses have been
🗧 🤌 🚞 🚊 💷	🔤 🚻 🛷		▲ ▶ 10 명 4 A 2017-01-26



2) PG/PC Interface 에서 연결되는 Lan 카드 선택

M Siemens - C:\Users\devlopQ\Documents\Au	tomation\TEST\TEST			_ • X
Project Edit View Insert Online Options	Tools Window Help		т	otally Integrated Automation
📑 🎦 🔚 Save project 📑 🐰 🗉 🛱 🗙 🎽	ን ± (ቶ ± 🖥 🗓 🗓 😫 🕼	🖡 Go online 🖉 Go offline 🛛 🛔 📭 🧏 📃 🛄		PORTAL
Project tree 🔲 🖣	TEST → PLC_1 [CPU 1214C A	UDC/Rly]	_ # = ×	Online tools 🛛 🗊 🕨 🕨
Devices				Options
Devices	Online access Diagnostics General Diagnostic status Diagnostics buffer Cycle time Memory PROFINET interface [X1] Ethermet address Ports Functions	Online access Status Offline Offline Offline Offline Conline access Type of the PG/PC interface: PG/PC interface: Plane PG/PC interface: Plane P	Flash LED	Options     Online control <ul> <li>CPU operator panel</li> <li>No online connection</li> <li>Cycle time</li> <li>No online connection</li> <li>No online connection</li> <li>No online connection</li> <li>Second Second Sec</li></ul>
Details view     Name		Goonlin Goonlin Coonlin Coonlin Coonlin Coonline	e :	2
4 Decta Luciano III Outration				7 Wentory
Portar view	Contine &	Ia	1 Project-sp	ecific IP addresses have been
				▲ ▶ 🛍 🕅 예 A 2017-01-26

3) 해당 Lan 카드의 Configuration 설정 확인

Project tree 🛛 🔳 🖣	TEST → PLC_1 [CPU 1214C AC/DC/Riy]	×
Devices	Realtek PCIe FE Family Controller	
TEST     Add new device     Devices & networks     PLC_1 (CPU 1214C ACDORN)     Device configuration     Vonine & diagnostics	General     Configurations       Industrial Ethernet     Industrial Ethernet       IE-PG access     Local settings       TCP/IP     Local settings	
Program blocks     Program	Connection: MAC address: 98 -83 -89 -22 -8F -6E DHCP active: APIPA active: IP address: 172 . 30 . 10 . 163 Subnet mask: 255 . 255 . 0 . 0 DNS addresses: 168.126.63.1	
Image: Second state       Image: Secon	DHCP addresses:	
Name	Change settings     OK     Sancei	



4) 아래	화면의 PLC 0	미지 클릭 후	∑ Sta	rt Search	n 클릭	
Go online			_			×
	Configured access nod	es of "PLC_1"				
	Device PLC_1	Device type CPU 1214C AC/D	Slot 1 X1	Type PN/IE	Address 172.30.30.200	Subnet
		Type of the PG/PC inte	face:	PN/IE		•
		PG/PC inte	face:	Realtek PC	le FE Family Controller	▼ 🖲
	Conn	ection to interface/su	bnet:	Direct at slo	t '1 X1'	
		1st gate	eway:			▼ 💎
	Compatible devices in	target subnet:			Show all compatib	le devices
	Device	Device type	Туре		Address	Target device
na	-	-	PN/IE		Access address	-
•						
-						
🔲 Flash LED						
						<u>Start search</u>
Online status information	:					
Display only error me	ssages					
					Go <u>o</u> nlii	ne <u>C</u> ancel

5) Search 완료 후 아래의 화면과 같이 Go online 연결된다.

	Configured acc	ess nodes of "PLC 1"					
	Device	Device type	Slot	Туре	Address	Subn	et
	PLC_1	CPU 1214C AC/D	1 X1	PN/IE	172.30.30.200		
		Type of the PG/PC inte	rface:	PN/IE			•
		PG/PC inte	rface:	Realtek PC	le FE Family Controller		- 🖲
		Connection to interface/su	ibnet:	Direct at slot	t'1 X1'		- 🖲
		1st gate	e wa y:				- 💎
	Compatible de	vices in target subnet:			Show all compatil	ble devices	
	Device	Device type	Туре		Address	Target de	vice
₽ ₽ ©1							
- Flash LED							
						<u>S</u> ta	rt searcl
niine status informatio	n: formation						[
Scan and information	on retrieval comple	eted.					
	essages						L
Display only error m	-						



Online 후 PLC 와 정상 연결 완료

	Project tree		TEST > PLC_1 [CPU 1214C AC	/DC/Rly]	_ = ×
	Devices				
tics	<b>00</b>		Online access Diagnostics	Online access	
gnos	▼ 🚺 TEST	•	Functions	Status	
Dia	Add new device				
8	Devices & networks			Online	na
Ĕ.	Device configuration	. •			
5	Online & diagnostics				at 1997
	Program blocks	0			
	Technology objects				Flash LED
	External source files				
	🕨 🚂 PLC tags				
	PLC data types				
	Watch and force tables			Online access	
	Online backups				
	Traces			Type of the PG/PC interface:	PN/IE
	Device proxy data			PG/PC interface:	Realtek PCIe FE Family Controller
	Program info			Connection to interface/subact	Direct at clot '1 V1'
	E less medules			connection to intenace/subnet.	
	Common data			1st gateway:	
	A Detaile siles	~		Device address:	172.30.30.200
	Details view				
					🚰 Go offline
	Name				
	Device configuration	^			
	😧 Online & diagnostics				
	Tashpalagyahiasts				
	External source files				Properties
	Con external source mes	~			

#### 5. DB 블록 등록

1) PLC CPU 디바이스 선택창에서 Program blocks 카테고리에서 Add New blocks 선택한다.





### 2) 블록 이름 및 블록 번호를 지정하고 "OK"클릭

A	ld new block				×
	Name:				
	test_2d				
		Type:	🧧 Global DB 🛛 💌		
	OB	Language:	DB		
	Organization	Number:	85		
	block		Manual		
			<ul> <li>Automatic</li> </ul>		
		Description	Ŭ		
	FB	Data blocks (DBs)	save program data		
	Function block	Data Dioteks (DD3)	save program data.		
	-				
	FC				
	Function				
	DB				
	Data block				
		More			
>	Additional inform	nation			
	Add new and open			ОК	Cancel
	spen				

## 블록 지정 후 다음과 화면이 출력된다.

Devices       Image: Control of the contr		Project tree		TEST	PLC_1 [CPU 1214C	AC/DC/Rly] > Progra	m blocks 🔸 te	st_2d [DB85]					_∎∎×
Image: Second		Devices											
test_2d         *       TEST       •       Name       Data type       Start value       Retain       Accessible f       Visible in       Sepoint       Comment         *       Add new device       •			1	<b>1</b>	? 🗞 🛃 🕅 🗛 😣	661							
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M Add new device       Image: Constraint of the static         Devices & networks       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Constraint of the static       Image: Constraint of the static         Image: Co	Ē	🔻 🛅 TEST	•		Name	Data type	Start value	Retain	Accessible f	Visible in	Setpoint	Comment	
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B <ul> <li>In PLC_1 (200 12146 CADORNy)</li> <li>In Device configuration</li> <liin configuration<="" device="" li=""></liin></ul>	5	Devices & networks		2	Add new>								
Image: Device configuration   Image: Device confi		PLC_1 [CPU 1214C AC/DC/Rly]	<b>M</b>				-						
Voline & diagnostics     Program blocks     Progr	2	Device configuration	=										
• • • • • • • • • • • • • • • • • • •		🖳 Online & diagnostics											
Path Add new block   Path (D81)   Data_block,1 [D81]   test [D863]   test [D863]   Path Add new block		🔻 🔂 Program blocks	0										
Mein [OB1]   Data_block_1 [DB1]   Data_block_1 [DB1]   test [D63]   test [D63]   Technology objects   Techn		💕 Add new block											
Data_block_1 [DB1]     C       it test [DB63]     C		💶 Main [OB1]	0										
test[D863]       test_2d(D885)       Technology objects       Sig External source files		Data_block_1 [DB1]	0										
<pre>test_2d (D885)</pre>		👅 test [DB63]	0										
Carter and source files     Carter and source files     Carter and source files     Carter and source files     Carter and force tables     Carter and force tables		🥃 test_2d [DB85]	0										
Image: second		Technology objects											
Image: Capage     Image: Capage       Image: Capage     I		External source files											
Image: Contract types     Image: Contract types       Image: Contract types     Image: Contract types <t< td=""><td></td><td>PLC tags</td><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		PLC tags	0										
Image: Second		PLC data types											
▶ Real Online backups       ▶ Carrier Traces       ♥ Details view		Watch and force tables											
▶ Image: Traces     ▼       ▶ Details view     ■		Online backups											
Details view		🕨 🔀 Traces	*										
		✓ Details view	_										
Name		Name											
<				<				III					>



등록된 블록을 선택 후 Properties 를 선택한다

M Siemens - C:\Users\devlopQ\Doc Open	Switch programming language 🕨							_ <b>-</b> ×
Project Edit View Insert Onlin X Cut Ctrl+X	Roperties Alt+Enter		- 111				Totally Integra	ated Automation
Paste Ctrl+V								
Copy as text		locks ► test	_2d [D885]					
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🗧 📥 Devices & networks 😺 Go offline Ctrl+M								E E
PLC_1 [CPU 1214C AC/DC/F								Whole words o
Device configuration     Apply spanshot values as start values								Whole words c g
Unline & diagnostics								Match case
Program blocks     Generate source from blocks								Find in substru
Add new block Cross-reference information Shift+F11								Find in hidden
Main [OB1] Cross-references F11								Use wildcards
Data_block_1 [DB1 ] Call structure								Use regular ex
test [DB63]	_							=
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Portal view     Derview     PLC_1     Overview	ne & dia 🥃 test_2d					🗸 Conr	nected to PLC_1, add	ress IP=172.3 IIIIII
								오제 11:07
							- 🏱 🗓 😭	A 2017-01-26

블록의 General 항목의 Attributes 항목에서 "Optimized block access"를 클릭한다.

클릭 전에는 블록에 대한 Offset 처리가 안되나 등록 후 블록에 대한 offset 처리가 가능

test_2d [DB85]	×
General	
General Information Time stamps Compilation Protection Attributes Download with	Attributes
	OK Cancel

블록 등록 후 "ok"클릭



test_2d [DB85] General	×
General Information Time stamps Compilation Protection Attributes Download with	Attributes Optimized block access (0604:000402) X Change block access If you deactivate this attribute, the retain settings in the interface change. You may have to adapt and recompile the program. OK Cancel
	OK Cancel

#### 블록 컴파일 실시

먼저 해당 DB 를 클릭한다. DB 에 사용하고자 하는 Data type 을 등록한다.



등록된 블록에 대하여 Compile 을 실시한다.

- Software(only change)
- Software(rebuild all blocks)



- Software(reset memory reserve)

Wa	Siemens - C:\Users\devlopQ\D	ocuments \Automati	on\TEST\TEST										_ <b>•</b> ×
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	Devices												Options
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E.	Add new device		1 🕣 🔻	Static									Find:
5	Bevices & networks		2 📲	Static_1	UInt	·	0						Libi
5	PLC_1 [CPU 1214C AC/D	c/Rly] 🌃	3 =	<add new=""></add>									Whole words o
	Device configuration	n											Match case
	Online & diagnostic     Program blocks	s											Find in substra
	Add g	group											Find in bidden
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	Data_b	DIOCK/PLC data type	F7										Use wildcards
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	test_2d 💷 Copy		Ctrl+C										⊖ Whole docum
	Technolog		Ctri+v										From current r
	External so Com	pile pload to device	· ·	Software (only ch	anges)								O Salaction
	PLC tags Down	ad from device (softwa	re)	Software (reset m	emory reserve)								O selection
	Watch and S Go of	nline	Ctrl+K										Own
	🕨 🙀 Online bac 🌌 Go of	fline	Ctrl+M										O Up
	🕨 🔀 Traces 🛛 🛃 Snap	shot of the monitor val	ues										Fir
	✓ Details view Apply	rsnapshot values as st	art values 🕨										
	🖳 Start	simulation	Ctrl+Shift+X										Replace with:
	Name X <sup>2</sup> Cross	-references	F11										
	📑 Add new block 🔢 Call s	tructure											
	🔹 Main 🔠 Assig	nment list											✓ Languages &
	test_2d Swite	h programming langu	age 🕨										<u>^</u>
	Data_block_1     test	erties	Alt+Enter					Q. Prope	rties 🔃 Ir	ifo 🖁	Diagnostics		Editing language 🗸
	Portal view	Overview 🔥 PL	.C_1	😵 Online & dia	🛢 test_2d	_					Connec	ted to PLC_1, add	ress IP=172.3
E	l (2 🚞 🖻			<i>Ø</i> ) §	5							- P 10 9	오전 11:11 I A 2017-01-26

## 그리고 offset 모드를 등록하여 DB 영역을 등록할 수 있다.

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5	di Devic	es & networks		2		•	Static_1	UInt			0			<		
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H		evice configuration														
	<u>v</u> o	nline & diagnostics														
	🔻 🔂 Pr	ogram blocks	•													
_	- i i i i i i i i i i i i i i i i i i i	<sup>6</sup> Add new block		L.												
		Main [OB1]		L.												
		Data_block_1 [DB1]	0	L.												
		test [DB63]	0	L												
		test_2d [DB85]		L												
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프로젝트 다운로드 포트를 Load Preview 창에 stop Modules 설정을 No action 설정



VA	Siemens - C:\Users\devlopQ\Documents\Au	tomation	TEST	TEST				
Pro	oject Edit View Insert Online Options	; Tools	Wind	ow Help				Totally Integra
3	🕴 🎦 Save project 🚊 🐰 🗐 🖆 🗙 🕨	ງ± @ ±	-	🔃 🖍 🖳 🗛 💋 Go d	nline 🖉 Go offline 🔚 🖪 🖪 🛠 🚽 🔢			rotally integra
	Project tree		TEST	→ PLC_1 [CPU 1214C.	AC/DC/Rly] > Program blocks > test_2d [DB85]			_ <b>=</b> = X
	Devices	_						
	Devices							
	<b>00</b>	Load pre	view			×		=4
ing		l 🔼 o	heck	before loading				
mm	TEST						point	Comment
Jrai	Add new device	Status	!	Target	Message	Action		
je je		+₩	8	PLC_1	Loading will not be performed because preconditions are not met			
Ū.	Device configuration							
•	Q Online & diagnostics		4	<ul> <li>Different modules</li> </ul>	Differences between configured and target modules (online)			
	▼ Program blocks			<ul> <li>Stop modules</li> </ul>	The modules are stopped for downloading to dovise	Nesstion		
	💣 Add new block		-	<ul> <li>Stop modules</li> </ul>	the modules are stopped for downloading to device.	No action		
	🌗 Main [OB1]		8	<ul> <li>Password</li> </ul>	Password required.			
	Data_block_1 [DB1]		õ		Enter a password to gain full access to the module "PLC_1".	<enter password=""></enter>		
	test [DB63]		-					
	U test_2d [DB85]		0	Software	Download software to device	Consistent download		
	Technology objects							
	External source files		0	Text libraries	Download all alarm texts and text list texts	Consistent download		
	PLC data types							
	Watch and force tables							
	Online backups	<			11	>		
	🕨 🔯 Traces					Refresh		
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		1			Finish	Load Cancel		
	Name						6	
	🌁 Add new block	^						
	💁 Main	=			🔍 Propert	ies 🔄 🗓 Info 🤢 🗓 Diagi	nostics	; • • •
	test_2d		Ge	neral 👔 Cross-refer	ences Compile Syntax			
	Data_block_1							
	🥫 test	*	<b>w</b>  /	Show all messages				

Text Libraries 을 Consitent down load 설정을 통하여 Load 버튼이 활성화 되면 Load 실시한다.

Status	!	Target	Message	Action
τū	<u>~</u>	▼ PLC_1	Ready for loading.	
	▲	<ul> <li>Different modules</li> </ul>	Differences between configured and target modules (online)	
	0	Stop modules	The modules are stopped for downloading to device.	Stop all
	0	<ul> <li>Password</li> </ul>	Password required.	
	0		Enter a password to gain full access to the module "PLC_1".	***
	0	Software	Download software to device	Consistent download
	0	Text libraries	Download all alarm texts and text list texts	Consistent downloa
<				>



## Load 실시 후 PLC 로직 프로그램을 확인한다.

V13	Siemens - C:\Users\devlopQ\Documents\Automat	on\II	ESTATES	1								
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_	Project tree	Т	ST →	PLC 1 [CPU 1214C AC	DC/RIv] ▶ Program	1 blocks	→ test 2d [DE	851				_ 7 = X
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			test_	2d								
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	Devices & networks	2		Static_1	UInt	0.0	0			<b></b>		
	▼ 1 PLC_1 [CPU 1214C AC/DC/Rly]	3		<add new=""></add>								
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	test_2d		Gener	al Cross-reference	s Compile	Syntax			1		5	
						Syntax						
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	Devices														
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T.	▼ Th TEST	0	~		Na	me	Data ty	0e	Offset	Start value	Retain	Accessible f	Visible in	Setpoint	Comment
Ē	Add new device		1	1 4	an ▼	Static									
16	Devices & networks			2 -		Static 1	UInt	(m)	0.0	0					
ă	▼ 1 PLC_1 [CPU 1214C AC/DC/Rly]	<b>M</b>	E	3	۰.	<add new=""></add>					Ä				
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	Q Online & diagnostics		-E												
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	Hain [OB1]														
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	📒 test [DB63]	0													
	🥃 test_2d [DB85]	0													
	Technology objects		I.												
	External source files		I.												
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	test 2d									_				agnostics	
	Data block 1			G	enera	Cross-refere	ences	ompile	Syntax						
	test			0	<u> </u>	Show all message		-							
	<b>_</b>	_					-								



#### [XPANEL 설정 자료]

XPANEL Designer 설정

1. I/O 디바이스 설정

이스

2. Ethernet 선택 후 통신 포트 설정

통신 포트(S7-1200 의 경우 PG/FG 프로토콜 적용)-SIEMENS S7 Ethernet 등록 Ethernet 통신 설정

Ethernet 통신 설정				×
통신포트 스테이션	<u>4</u>			
				편집
디바이스 종류	SIEMENS S7	'Ethernet	$\sim$	삭 제
IP 어드레스				
통신방식		(€) TCP		스테이션 추가
네트워크 ID	0	(0 - 65535)		
Node ID	0	(0 - 65535)		저장
통신 Time Out	10 -	(x 100 msec)		닫기
재시도 횟수	3	(1~255)		
I Timeout 발생기	시 송신 프레일	¦ 초기화		
유동 IP 사용				
디바이스	종류 또는 통 데이터가 정	신방식 변경시 이미 등록된 스테이션의 확한지 확인하시기 바랍니다.		

통신방식:TCP 통신 Timeout :10 재시도 횟수:3 회 등록

스테이션 설정	×
스테이션 이름	5 록
스테이션 종류	S7 ~ 취소
네트워크 ID	
Node ID	0
Unit ID	0
IP 어드레스	172.30.30.200
소켓 포트 번호	102
옵션	
	- 통신에러 메시지 보인
XPANEL 소켓 포트 번호	

- 3. 스테이션 설정 화면
   네트워크 ID :1 번
   IP 어드레스:172.30.30.200(PLC 측 IP)
   소켓포트 번호:102
- 4. 데이터 베이스 설정

🔳 데이터베이스 [simens_test.dbx]							
<b>«</b>							
simens_test	이름	종류	디바이스	어드레스	초기값	부가기능	주석
	<b>↓</b> DB63	아날로그	S.ST	db63,0	0		
	+ DB63_2	아날로그	S.ST	db63,4	0		
	- DB1	아날로그	S.ST	db1,0	0		
]	<						>



데이터 베이스 등록 시 유의 사항 참조
 PLC 의 등록된 어드레스 방식과 상이하므로 아래의 내용 꼭 참조
 DB 영역에서 DBW,DBD 구분은 데이터베이스 등록의 고급 설정 데이터 유형을 따른다.

데이터베이스의 태그에 지정되는 어드레스 표기법은 아래와 같습니다.

TAG Type	Format	Example
Analog	[Symbol][DB Number,][Address]	DB1,1
Digital	[Symbol][DB Number,][Address].[Bit Number]	DB1,2.7

• DB Number, : 10진 정수(0..65535)에 연속하여 컴마 (,) 문자를 사용합니다. DB 영역의 어드레스 표기에서만 사용됩니다. 다른 영역 메모리의 경우에는 이 표기부분이 생략됩니다.

- Address: 10진 정수 (0..65535)
- Bit Number: 10진 정수 (0..7)

아래의 표에는 Xpanel이 참조할 수 있는 PLC 메모리 영역의 종류와 그 어드레스 표기 방법이 나열되어 있습니다.

Symbol	Description	Word Notation	Bit Notation	Туре	Access
PI	Peripheral Input	PI001	PI001.7	Analog/Digital	R/W
I.	Input	1002	1002.7	Analog/Digital	R/W
Q	Output	Q003	Q003.7	Analog/Digital	R/W
М	Memory	M004	M004.7	Analog/Digital	R/W
DB	Data Block	DB01,01	DB01,01.7	Analog/Digital	R/W
Т	Timer	T005	-	Analog	R
С	Counter	C006	-	Analog	R

<mark>타이머/카운터, T/C 영역을 참조하는 태그는 반드시 UBCD16</mark> 형식의 아날로그 태그이어야 합니다. 아래의 데이터베이스의 태그편집 창은 아날로그 태그의 형식을 지정하는 예를 보여 줍니다.