

# *iView HMI* (& Siemens S7-1200) PLC Connection Tutorial



HMI solutions you can view



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# Introduction

This technical note is to explain how to connect the Siemens S7-1200 with IMO iView HMI. Users can set the communication setup in TCP/IP and it can connect Siemens S7-1200 with iView via an ethernet router.



### Note:

The Siemens PLC driver can not be used under Windows "On-Line Simulation". This driver is only used for the iView HMI hardware. The Siemens PLC driver timing is related to the CPU characteristics, which is why it is not possible to provide one suitable driver for on-line simulation on PC.



# PLC Setting

## A) S7-1200 first time link

A.1) Set Internet Protocol (TCP/IP) Properties to "Obtain an IP address automatically".

Local Area Connection Properties 🛛 😰 🔀	Internet Protocol (TCP/IP) Properties
Seneral Advanced	General Attemate Configuration
Connect using Beatesk.RTL8168Q(P)/8111C(P) PCI- Configure	You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
This connection uses the following items:	Obtain an IP address automatically
Client for Microsoft Networks	O Use the following IP address:
Read Printer Sharing for Microsoft Networks	IP address
Gos Packet Scheduler     winternet Protocol (TCP/IP)	Subnet mask:
hand Division Description	Default gateway
- Description	Obtain DNS server address automatically
Transmission Control Protocol/Internet Protocol. The default	Use the following DNS server addresses:
wide area network protocol that provides communication across diverse interconnected networks.	Preferred DNS server:
Show icon in notification area when connected	Alternate DNS server.
<ul> <li>Notify me when this connection has limited or no connectivity</li> </ul>	Advanced
OK Carcel	OK Cancel

A.2) Select the "Accessible devices" to find out the "MAC address".



Find MAC address, loading project tree when new product links for the first time. When the software finds the MAC address, please press "Show project tree" button.



A.3) Select "Online & diagnostics" and link with PLC by MAC address.



A.4) When you link with PLC by MAC address, assign the IP Address = 192.168.1.100; Sub Mask = 255.255.255.0.

Diagnostics     General	Assign IP address	
Diagnostics status Standard diagnostics Cycle time Memory Diagnostics buffer Functions Set time of day	MAC address: IP address: Subnet screen mask: Use router:	00 -1C -06 -00 -85 -28 192 -168 -1 -100 255 -255 -255 -0 192 -168 -1 -100
Assign IP address Reset to factory settings		Assign IP address

A.5) Make sure IP address assigning is successfully completed.

IP	-192.168	.1.100 CPUco		Propertie	es 🚹 Info	<b>Q</b> Diagnostics	-
G	ieneral	Compile	Cross-refere	ence			
1	Message						Date
0	Scanni	ng for devices st	tarted for interface	e Marvell Yukon 8	8E8071 PCI-E Gi	gabit Ethernet Contr	3/17/
0	Scanni	ng for devices co	ompleted for inter	rface Marvell Yuko	n 88E8071 PCI-	E Gigabit Ethernet C	3/17/
4	The IP a	ddress could no	ot be assigned.			?	3/17/
0	Scanni	ng for devices st	tarted for interface	e Marvell Yukon 8	8E8071 PCI-E G	gabit Ethernet Contr	3/17/
0	Scenni	ng for devices a	empleted for inter	da ca Manvall Yuko	8959071 PC	E Cigabit Ethernet C	3/17/
4	The par	ameters were t	ransferred succes	s fully.		?	3/17/
4		111					•



### A.6) Create new project.

Project tree		.JE8071 PCI-E Gigabit Eth	ernet Controller 🕨 IP-19	2.168.1.100	CPU common 🔔 🖬 🗮 🗙
Devices	1	Diagnostics     General     Diagnostics status	Assign IP addres	5	
Marvell Yuk G     Typ date     Typ date	eate a new proj Project name: Path: Author: Comment:	ect. Project7 C:IDocuments and SettingslUserTm5 UserTm55x	SxMMy Documents	VAC address: IP address: screen mask: er:	00 - 1C - 06 - 00 - 85 - 28 192 - 168 - 1 - 100 255 - 255 - 255 - 0 192 - 168 - 1 - 100 Assign IP address
			Create Cancel		,

## A.7) Select the correct PLC model.



A.8) Key-in the IP=192.168.1.100 and Subnet Mask=255.255.255.0

Project7>PLC_1						_ # 🛛 🗙
de non	-		100%	etwork view		Device view
\$7-1200 rack						-
		mitra				1
10	11					
	1 <sup>10</sup>					
10	° 📻					
				_		_
< III						
Device overview						
PROFINET interface		Tel Pro	perties	ti Info	v) Dia	anostics 💌
PROFINET interface		ig Pro	perties	1 Info	🖳 Dia	gnostics 🔻
PROFINET interface General	et address	ig Pro	perties	1 Info	🖳 Dia	gnostics 💌
PROFINET interface General General	et address	ig Pro	perties	1 Info	S. Dia	gnostics 🔻
PROFINET interface General Ethernet addresses Advanced Time synchronization	et address	s	operties	1 Info	y Dia	gnostics 🔻
PROFINET interface General Ethernet addresses Advanced Time synchronization	et address erface con	es	operties	NOE_1	S. Dia	gnostics 💌
PROFINET interface General Ethernet addresses Advanced Time synchronization	et address erface con	es	operties Subnet:	PHOTE_1	S Dia	gnostics 💌
PROFINET interface General Ethernet addresses Advanced Time synchronization	et address erface con	es	operties Subnet:	PHOE_1	y Dia	gnostics 💌
PROFINET interface General Ethernet addresses Advanced Time synchronization	et address erface con 'protocol	es	operties Subnet:	PHIL_1	9 Dia	gnostics



A.9) Download the setting data into PLC.



A.10) Select correct IP address and download.

ownload to de							
C	onfigured access n	odes of "PLC_1"					
D	evice	Device type	Туре		Address		
F	LC_1	CPU 1212C AC/D	TCPI	IP	192.168.1.100		
L.							
		PG/PC interface for load	ling:	Marvell Y	ukon 88E8071 P	0	
		Connection to sub	net:	local) TC	P/IP	-	
		1st gate	Nay:			Ŧ	
A	ccessible devices i	n target subnet:				Show all	accessible devic
D	evice	Device type	Type		Address	Taroe	t device
6	PUcommon	CPU 1212C ACID	TCP	IP	192.168.1.100	CPU	ommon
State Stat							
						Load	<u>R</u> efresh <u>C</u> ancel
						Load	<u>B</u> efresh Cancel
		Load preview  Check before loading				Load	<u>B</u> efresh <u>C</u> ancel
		Load preview Check before loading Status Info Target		Messege		Load	<u>R</u> efresh <u>C</u> ancel
		Load preview Check before loading Status Info Target 40 PLC_1		Message Ready for loa	ding.	Load	<u>R</u> efresh <u>C</u> ancel
		Load preview Check before loading Status Info Target 40 PLC_1		Message Ready for loa	ding.	Load	<u>R</u> efresh <u>C</u> ancel
		Load preview Check before loading Status Info Target 40 PLC_1		Message Ready for loa	ding.	Load	<u>R</u> efresh <u>C</u> ancel
		Load preview Check before loading Status Info Target 40 PLC_1		Message Ready for loa	ding.	Load	<u>R</u> efresh <u>C</u> ancel
		Load preview Check before loading Status info Target 40 PLC_1		Message Ready for loa	ding.	Loed	<u>B</u> efresh <u>C</u> ancel
		Load preview Check before loading Status info Target 40 PLC_1		Message Ready for loa	ding.	Loed	<u>B</u> efresh <u>C</u> ancel
		Load preview Check before loading Status info Target 40 PLC_1		Message Ready for loa	ding.	Loed	<u>B</u> efresh <u>C</u> ancel
		Load preview Check before loading Status info Target 40 PLC_1		Message Ready for Ioa	ding.	Loed	<u>B</u> efresh <u>C</u> ancel
		Load preview Check before loading Status info Target 40 PLC_1		Message Ready for Ioa	ding.	Loed	<u>B</u> efresh <u>C</u> ancel
		Load preview Check before loading Status info Target 40 PLC_1		Message Ready for loa	ding.	Loed	<u>B</u> efresh <u>C</u> ancel
		Load preview Check before loading Status info Target 40  PLC_1		Message Ready for loa	ding.	Loed	<u>R</u> efresh <u>C</u> ancel
		Load preview Check before loading Status Info Target 40 PLC_1		Message Ready for loa	ding.	Load	<u>B</u> efresh

×



## A.11) Go online.

Or	nline	Options	Tools	Window
ø	Go or	iline		
10	Go of	fline	h	5
8	Onlin	e & diagno	stics	Ctrl+D
	Start r	untime		
	Stop r	untime		
	Simul	ate runtime	e	
E	Down	load to dev	vice	Ctrl+L
	Exten	ded downle	oad to de	vice
	Hardy	vare detect	ion	
	Devic	e maintena	nce	•
47	Acces	sible device	es	
I.	Start (	CPU		
	Stop (	CPU		

## A.12) Recheck the linking status.





### B) If the S7-1200 PLC has IP address inside

B.1) Select the "Accessible devices" to check the "IP Address".

Start					
Devices & Networks	<b>1</b>	Show all devi	ces		
PLC Programmin	19 🆃	Chine status			
	. 🇊			X	
Online & Diagnostics	10	Accessible de	vices		
cessible devices		+			
cessible devices	Accessible device	PGIPC interfact	e to show access	ible devices for: 🛛 🗨 M	arvell Yukon 8868071 PCI _
cessible devices	Accessible device Device	PGIPC interfact s in target subnet: Device type	e to show access	ible devices for: L M	arvell Yukon 8868071 PCI
cessible devices	Accessible device Device FLC=1	PGIPC inserfact is in target subnet: Device type CPU 1212C ACIO	e to show access Type TCMP	Address	MAC address
cessible devices	Accessible device Device FCC1	PGIPC interfact s in target subnet: Device type CPU 1212C/ACID	e to show access Type TCHIP	ible devices for: M Address 192.168.1.100	arvell Yukon 8888071 PCI
	Accessible device Device FLC-1	PGIPC interfact is in target subnet: Device type GPU 12112C/ACID	Type	ible devices for: La M Address 192.168.1.100	anvell Yukon 8868071 PCI MAC address 00-1C/05-00-45-28
Cessible devices	Accessible device Device FLC_1	PGIPC interfact s in target subnet: Device type CPU 1212C ACID	e to show access Type TCN/P	Address	MAC address
Cessible devices	Accessible device Device FLC_1	PGIPC interfact is in target subnet: Device type CRU 1212C ACID	Type	Address	MAC address
ressible devices	Accessible device Device FLC_1	PGIPC interfact is in target subnet: Device type CRU 1212C ACID.	Type Tonia	ible devices for:  Address 192.168.1.100	ervell Yukon 8868071 PCI MAC address 0010/06/00/85-28

B.2) Create a new project.

Siemens					
Project Edit View	Insert Online C	ptions Tools Window Help X 🕞 🗄 🖪 🛃 🖉 Go onlin	e 🖉 Go offline 🕌 [		Totally Integra
Project tree		4JE8071 PCI-E Gigabit Eth	ernet Controller → IP=19	2.168.1.100	CPU common 🔔 🖬 🗮 🗙
	1	Diagnostics     General     Diagnostics status	\ssign IP addres	5	
Marvell Yul C Update Di IP-192. Microsoft T C Becadcom C D D D LAN D Vilvare Vir Vilvare Vir	reate a new proj Project name: Path: Author: Comment:	ect. Project7 C/Documents and Settings/UserTm5 UserTm55x	SxMy Documents	X tAC address: iP address: screen mask: er:	00 - 1C - 06 - 00 - 85 - 28 192 - 168 - 1 - 100 255 - 255 - 255 - 0 192 - 168 - 1 - 100 Assign IP address
SIMATIC Card F		▶ IP-192.168.1.100 CPUcon	Create Cancel	inties 🔁 In	fo y Diagnostics 🔻
✓ Details view		General Compile	Cross-reference		



## B.3) Select the correct PLC model.

Si	emens - Project7	Add new device	
P	roject Edit View Insert	Device name:	
	Project tree	PLC_1	
Online & Diagnostics	Devices Devices Project7 Add new device Devices & Networks Common data Canguages & Resourc SimATIC Card Reader	SIMATIC PLC	<ul> <li>PLC</li> <li>SIMATIC 57-1200</li> <li>CPU</li> <li>CPU 1211C</li> <li>CPU 1212C</li> <li>GES7 212-1AD30-0X80</li> <li>GES7 212-1BD30-0X80</li> <li>GES7 212-1HD30-0X80</li> <li>GES7 212-1HD30-0X80</li> <li>CPU 1214C</li> <li>Unspecific CPU 1200</li> </ul>

B.4) Download the setting data into PLC.

ert Online	Options Tools V	líndow Help I 💋 💋 Go online 🖉 Go offline 🛃 🚺 🚺	×  E	
iks C AC/DC/Rby] ources		1200 rack	Netwo 75	
8071 PCLE G	100			
Check bi atus Info 40 🔗	efore loading Target PLC_1	Message Ready for loading.		Action
Ad preview Check b tatus Info 40	efore loading Target PLC_1	Message Ready for loading.		Action



## B.5) Go Online.

Onlin	e	Options	Tools	Window
💋 Go	o on	line		k
IN GO	o of	fline		2
8 0	nlin	e & diagno	ostics	Ctrl+D
St	art r	untime		
St	op r	untime		
Si	mul	ate runtim	ne	•
	wn	load to de	evice	Ctrl+L
Ex	ten	ded down	load to d	device
Ha	rdv	vare detec	tion	
De	vic	e mainten	ance	•
17 Ac	ces	sible devi	ces	
St.	art (	CPU		
St	op (	CPU		

### B.6) Check link state is correct or not.





C) If your software is TIA Portal v13 or higher, please follow the following settings for communication:

) ± ( <sup>24</sup> ±	: 🙀 🗟 🛄 🌆 🚆 🥁 Go online 🖉 Go offline 🕌 🌆 🕼 🧩 🚍 🛄	
Proje	Installed software 🗙	_ # #×
1	© Siemens AG, 2008-2014	<b></b>
Dé	Installed software	
1 <b>C</b>	<ul> <li>Totally Integrated Automation Portal Version V13</li> <li>STEP 7 Professional Version V13</li> <li>WinCC Basic Version V13</li> </ul>	
	Detailed information about installed software	

C.1) Right click mouse in the "Data block" and choose to "Properties".





C.2) Uncheck the "Optimized block access" option.



C.3) The software will show a message window ask you, click "OK".

1	

C.4) Download settings to S7-1200.



# D) When the firmware version is v4.0 of the S7-1200, please follow these steps to set up of the "protection options" for the communication.:

Check the option of the "Connection mechanisms", such as in the red box on the picture below, then download the settings to the PLC again.



Regarding the detail setting information, please refer to "SIMATIC STEP 7 User Manual"



# **HMI** Setting

1) Select Siemens S7 PLC and setting the communication parameter.

ink Number:	1			
ink Name:	Link 1			
ink Type:	Direct Link (Ethernet)		~	
evice/Server:	Siemens AG	SIMATIC S7 (Ethemet)	×	
ink Port	Etherneti	~		

	•
General Parameter	
IP Address: 192.168.1.100	
Use Default Port	
Port: 102	
Use Default Rack and Slot Numbers	
Reck Number: 1	
Slot Number: 1	
Timeout Time: 0 🚖 (x 0.1 Sec.)	
Command Delay: 0 🚖 (x 0.1 Sec.)	
Retry Count: 0	



# PLC Device List

### Bit Devices:

Bit Device (SIMA	.TIC S7 (Ethernet))	_	×
Bit Device	Address Range	Block Address	Comment
DBm.DBXn.b DBXn.b In.b Mn.b Qn.b Vn.b	m: 1~2047; n: 0~65535; b: 0~7 n: 0~65535; b: 0~7	b=0 b=0 b=0 b=0 b=0	DBm.DBXn.b
<	III Close		>

Word Devices:

Word Device (SI	MATIC \$7 (Ethernet))	-	-	X
Word Device	Address Range	Size	Comment	
Cn	n: 0~65534	Word		
DBm.DBDn	m: 1~2047; n: 0~65532; n=4g	32 bits	DBm.DBDn	
DBm.DBWn	m: 1~2047; n: 0~65534; n=2q	Word	DBm.DBWn	
DBDn	n: 0~65532; n=4q	32 bits		
DBWn	n: 0~65534; n=2q	Word		
IDn	n: 0~65532; n=4q	32 bits		
lWn	n: 0~65534; n=2q	Word		
MDn	n: 0~65532; n=4q	32 bits		
MWn	n: 0~65534; n=2q	Word		
QDn	n: 0~65532; n=4q	32 bits		
QWn	n: 0~65534; n=2q	Word		
Tn	n: 0~65534	Word		
VDn	n: 0~65532; n=4q	32 bits		
VWn	n: 0~65534; n=2q	Word		
AlWn	n: 0~65535	Word		
AlQn	n: 0~65534; n=2q	32 bits		
AQWn	n: 0~65535	Word		
AQDn	n: 0~65534; n=2q	32 bits		
<				>
	Close			



# Cable Diagram



Normal CAT5 cable (Not crossover) can connect. Suggest using a hub between HMI and PLC (TCP/ IP) port.

HMI			S7-1200	
Ethernet Connector			Ether	rnet Connector
TX (+)	1	<>	1	RX (+)
TX (-)	2	← → →	2	RX (-)
RX (+)	3	→	3	TX (+)
	4		4	
	5		5	
RX (-)	6	→	6	TX (-)
	7		7	
	8		8	



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