SIEMENS AG.

SIMETIC S7 Series

MPI with PC adapter Driver

Compatible version OS

XDesignerPlus Over 4.0.0.0

Over 4.0

CONTENTS

Thank you for using M2I's "Touch Operation Panel(M2I TOP) Series". Please read out this manual and make sure to learn connection method and process of TOP – External device"

1. System configuration Page 2

It explains device for connection, setup of, cable and structural system.

Please choose proper system referring to this point.

2. Selecting TOP model and

external devices

Select TOP model and external device..

3. Example of system settings Page 4

It explains setup example for communication connection between the device and external terminal.

Select example according to the system you choose in "1. System structure"

4. Communication settings details Page 7

It explains the way of configuring TOP communication.

If external setup is changed, make sure to have same setup of TOP with external device by referring to this chapter.

5. Cable diagram

Page 10

Explains cable specifications required for access.

Select proper cable specifications according to the system you chose in "1. System configuration".

6. Support address

Page 11

Check available addresses to communicate with external devices referring to this chapter. 1 / 14

Dama 2

Page 3



1. System configuration

TOP와 "SIEMENS AG. - System structure of SIMETIC S7 Series MPI with PC adaptor" is as follows.

Series	СРИ	Link I/F	Method	System settings	Cable
SIMATIC S7-300	CPU312IFM CPU313 CPU314 CPU314IFM CPU315 CPU315-2 DP CPU316 CPU316-2 DP CPU318-2				
SIMATIC S7-400	CPU412-1 CPU412-2 DP CPU413-1 CPU413-2 DP CPU414-1 CPU414-2 DP CPU414-3 DP CPU416-1 CPU416-1 CPU416-3 DP CPU416-3 DP CPU417-4	MPI Port + PC adapter	RS-485 (2 wire)	<u>Setting Example 1</u> (<u>Page 4</u>)	<u>Cable Diagram 1</u> <u>(Page 10)</u>

■ Connection configuration

• 1:1 connection (TOP 1 vs. external device)





2. Selecting TOP model and external devices

Select the external devices to connect to TOP.

		HMI / PLC Uint
Series XTOP Series		Vendor SIEMENS AG.
Model XTOP15TX-SA&	SD	PLC Model SIMETIC S7 Series MPI with PC adaptor
		PLC
Vendor		Model
_S Industrial Systems	^	PROFIBUS DP Slave
MODBUS Organization		PROFIBUS DP Slave(EX Packet)
SIEMENS AG.		SIMETIC S7 Series 3964(R)/RK512
Rockwell Automation (AB)		SIMETIC S7 Series CPU ETHERNET(OP Communication)
GE Fanuc Automation		SIMETIC S7 Series ETHERNET(FETCH/WRITE)
PANASONIC Electric Works		SIMETIC S7 Series MPI Direct
YASKAWA Electric Corporation	E	SIMETIC S7 Series MPI with PC adaptor
YOKOGAWA Electric Corporati	0	SIMETIC S7-200 Series PPI
Schneider Electric Industries		
KDT Systems		
RS Automation(SAMSUNG)		
HITACHI IES	5.5	
FATEK Automation Corporation		
DELTA Electronics		
KOYO Electronic Industries		
VIGOR Electric Corporation		
Comfile Technology		
Dongbu(DASAROBOT)		
ROBOSTAR		
Bosch Rexroth AG		
S MECAPION (Metronix)		
LO MILOAFION (MELLONIX)		

Setting details		Contents					
TOP	Series	Select the name of a TOP series that is to be connected to PLC. Before downloading the settings, install the OS version specified in the table below accord TOP series.					
		Series	Version name				
		XTOP / HTOP	V4.0	-			
_	Name	Select the model name of TOP product.					
External device	Manufacturer	Select the manufacturer of external devices to be connected to TOP. Select SIEMENS AG.					
	PLC	Select the model series of external devices to be connected to TOP. Please choose SIMETIC S7 MPI(With PC Adapter). Please check, in the "1. System configuration", if the relevant external device is available to se					



system configuration.		system configuration.
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3. Example of system settings

The setup of communication interface between TOP and SIEMTIC S7 is recommended as below.

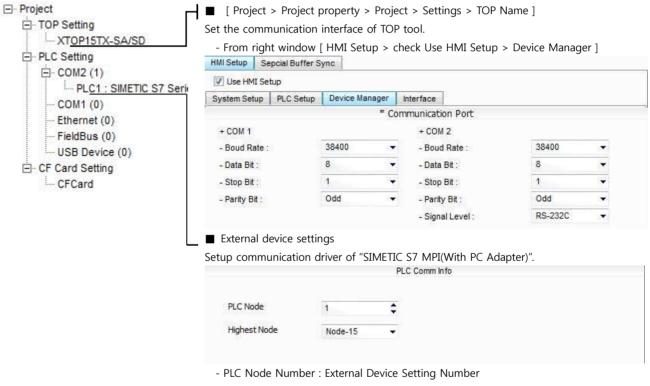
3.1 Example of settings 1

The system is set as below.

Details		ТОР	"SIMETIC S7 Series"	Remark
Serial level (port/channel)		RS-232C (COM2)	RS-232C	User settings
Address(PLC Addres	s)		1	User settings
Serial baud rate	[BPS]	3840	User settings	
Serial data bit	[Bit]	8	User settings	
Serial stop bit	[Bit]	1	User settings	
Serial parity bit	[Bit]	ODD	User settings	

((1) XDesignerPlus setup

After setting the below details in [Project > Project Settings], download the detailed settings using TOP tool.



- The Highest node : Input Highest Node Address.



(2) External device settings

Setup as below using SIEMTIC S7 Ladder Software STEP 7. Please refer the PLC user manual for more detailed information if you need.



Setup PLC node address lower than "Highest Node Address".

1. Create a new project in [New Project] at upper bar of main menu of [SIMETIC Manager].

2. Select menu [Insert] > [Station] > [1 SIMETIC 400 Station] or [2 SIMETIC 300 Station]. → Add CPU

3. Double click added "[SIMETIC 400(1)]" or [SIMETIC 300(1)] CPU > Relevant CPU [Hardware] → New [HW Config] window appears.

4. Open "[SIMATIC 400] > [RACK-400]" or "[SIMATIC 300] > [RACK-300]" at left tree window in [HW Config], select Base unit model, and register it using Drag & Drop to the right bottom.

5. Select [SIMATIC 400] > [PS-400] or [PS-300] and then appropriate power supply unit, and drag & drop it to the current Rack.

6. Select [SIMATIC 400] > [CPU-400] or [CPU-300] and then appropriate CPU unit and drag& drop it to the current Rack.

(If	[Properties] –	PROFIBUS	interface	DP]	windows a	ppears,	press	[Cancel]	to	finish	ı).
📑 HW	Config - [SIMATIC 300	D(1) (Configuration)) Newproje	ect]					[1
00 <u>S</u> ta	tion <u>E</u> dit <u>I</u> nsert <u>P</u> LC ⊻i	jew <u>O</u> ptions <u>W</u> indow	v <u>H</u> elp							- 5 >	<
	; 	🖌 🏜 🎒 🗖 🖓	🖁 💦								
			(0) UR							^	-
<u>F</u> ind:		Mt Mi 1	PS 307 1							_^	
Profile:	Standard	_ X	(2 DP	J-2 Dr							
	PROFIBUS DP	3									
	PROFIBUS-PA PROFINET IO	5	10								
	SIMATIC 300	6	I.							>	
÷.	🛅 CP-300										-
	🚞 CPU-300 🛅 FM-300		🔲 🔜 (0) UR		Lan		Lumi an	Le na como			
÷-	🔄 Gateway 🛅 IM-300		S 🚺 Module 1 11 PS 307 10		Order number 6ES7 307-1KA00-0AA0	Firmw	MPI address	I address	Q address	Co	
÷-	M7-EXTENSION		2 CPU 315 X2 DP	-2 DP	6ES7 315-2AF00-0A	BO	2	1023*			
	🚞 PS-300 🔄 🛐 PS 307 10A		3					1023*			
	– 🗍 PS 307 2A		4 5								
	🛄 PS 307 5A 🛅 RACK-300		6								
<u>,</u> ⊨ ≢ "	and M7-300 CPUs		7 8								
31-300	and Mr 500 Cr 05		9 10								
					1		-			<u> </u>	
Press F	1 to get Help,									Chg	1

7. Double click registered CPU name. \rightarrow A new relevant CPU [Properties] window appears.

8. Select [Interface] > [Properties] at [General] tap in [Properties] to popup [Properties - MPI interface CPU xxx-xxx] window.

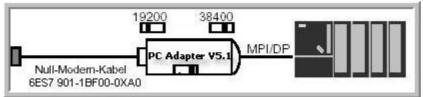
9. Setup MPI port station [Address] and [Transmission rate] as below at [Properties - MPI interface CPU xxx-xxx] window's [Parameter] tap. (Transmission speed change: Click [Properties] > [Properties] window [Network Settings] tap)

Properties - MPI interface CPU 315-2 DP (R0/S2)	Properties - MPI
General Parameters Address: 2 Highest address: 31 Transmission rate: 187,5 Kbps Subnet:	General Network Settings Highest MPI address: Iransmission rate: 19,2 Kbps 19,2 Kbps 10,2 Kbps
OK Cancel Help	OK
Details	Contents
Staion number	2
Transmission rate	187500bps

10. Click "OK" to save the setting information until now.



11. Connect PC - PLC after setting DIP Switch of PC adapter as below.



12. STEP 7 From Main Menu [Options] > [Set PG/PC Interface] > [PC Adapter] > set [Local Connection] Tap.

cess Path 1		
ess raul		1
ccess Point of the Application:		
70NLINE (STEP 7) -> PC	Adapter(MPI)	
Standard for STEP 7)		
terface Parameter Assignment Use	d:	
C Adapter(MPI)	Properties.	
ISO Ind, Ethernet -> Realtek RTL	815	
PC Adapter(Auto)		
PC Adapter(MPI)	Cop <u>v</u>	
PC Adapter(PROFIBUS)	Delete	
<u> </u>	<u>></u>	
'arameter assignment of your PC Japter for an MPI network) Interfaces		
Add/Remove:	Sele <u>c</u> t,	

Details	Contents
Connection to	COM1 (Serial Port that recognized the PC Adapter in STEP 7)
Transmission rate	38400

13. Save all the information by clicking "OK" and compile by selecting [Station] > [Save and Compile], and download setup details into PLC. (PLC Setup is up to this part.)

14. Please execute the communication check by connecting to TOP with the connecter that is connected to PC.



4. Communication settings details

Communication settings are available at XDesignerPlus or TOP main menu. Communication settings must be identical with the external devices.

4.1 XDesignerPlus settings details

Select [Project > Project property] to show the below window.

∃ Project	■ [Project > Project property > Project > Settings > TOP Name]									
TOP Setting	Set the commun	nication	interface of TC	P tool.						
XTOP15TX-SA/SD	- From right window [HMI Setup > check Use HMI Setup > Device Manager]									
PLC Setting										
⊡ COM2 (1)	V Use HMI Setup									
PLC1 : SIMETIC S7 Serie		LC Setup	Device Manager	Interface	1					
COM1 (0) Ethernet (0) FieldBus (0)	System Setup P	LC Setup			ion Port					
	+ COM 1	* Communication Port + COM 1 + COM 2								
			38400	-10 ^{- 2} 2 2 2 2 2 2	∥ ∠ d Rate :	38400				
USB Device (0)	- Boud Rate :		Constant of the second s	11 (Jan 1999)			100			
CF Card Setting	- Data Bit :		1.000	- Data		8				
····· CFCard	- Stop Bit :		1 .	- Stop		1	•			
	- Parity Bit :		Odd	- Parit	y Bit :	Odd				
				- Sign	al Level :	RS-232C	•			
		LC Setup	Device Manager	Interface	14					
	Use HMI Setup			100000 000						
	System Setup P	LC Setup	Device Manager (PLC1) SIMETIO	ing protocologic construction	MDI with DC ad-	antor				
	Time Out :	10	00 🗘 mse	с.						
	Wait before send	1: O	mse	с.						
	External device settings									
4	Setup communi	cation d	river of "SIMET	IC S7 MPI	(With PC Ada	pter)".				
				PLC Comm In						
	PLC Node		1	\$						
	PLC Node Highest Node			ŧ •						

Communication Interface Settings				
Details	Contents			
Signal level	External device – select serial communication method between TOPs. (COM1 supplies RS-232C only)			
Baud rate	External device – select serial communication speed between TOPs.			
Data bit	External device – select serial communication data bit between TOPs.			
Stop bit	External device – select serial communication stop bit between TOPs.			
Parity bit	External device – select serial communication parity bit check method between TOPs.			
Time out [x100 mSec]	Set up TOP's waiting time from external device at [0 - 5000] x 1mSec.			
Transmitting Delay Time [x10 mSec] Receiving Wait Time [x10	Set up TOP's waiting time between response receiving – next command request transmission from external device at [$0 - 5000$] x 1 mSec.			



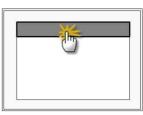
mSec]	
PLC address [0~65535]	Address of other device. Select between [0 - 65535].



4.2 TOP main menu setup item

- When a buzzer is on during the power reset, touch 1 spot at the upper LCD to move to "TOP Management Main" display.

- Set up driver interface at TOP according to below Step1 \rightarrow Step2 .	
(Press "TOP COM 2/1 setup" in Step 1 to change setup at Step 2 .)	



Step 1. [PLC setup] - Setup driver interface.

PLC setup						
PLC Address : 01 Communication Interface						
Timeout : 1000 [mSec]		Settings				
Delay time of transmission : 0 [mSec]						
TOP COM 2/1 : RS - 232C , 38400 , 8 , 1 , ODD						
ТФР СОМ 2/1 setup сфmmunicat	ion test					
Step 1-Reference.						
Details Contents						
PLC address [0~65535] Address of other device. Select between [0 - 65535].						
Timeout [x1 mSec]	Set up TOP's waiting time from external device at [0 - 5000] x 1n	nSec.				

Timeout [x1 msec]	Set up TOP's waiting time from external device at [0 - 5000] x imsec.
Delay time of transmission [Set up TOP's waiting time between response receiving – next command request transmission
x1 mSec]	from external device at [0 – 5000] x 1 mSec.
TOP COM 2/1	TOP's Interface setup to external device.

Step 2. [PLC setup] >[TOP COM2/COM1 setup] - Setup relevant port's serial parameter.

Port Settings	
* Serial communication	COM 1 Port
+ COM-1 Port	Communication Interface
- Baud rate : 38400 [BPS]	Settings
- Data bit : 8 [BIT]	
- Stop bit : 1 [BIT]	
- Parity Beat : ODD [BIT]	
- Signal level : RS – 232C	
+ COM-2 Port	COM-2 Port
- Baud rate : 38400 [BPS]	Communication Interface
- Data bit : 8 [BIT]	Settings
- Stop bit : 1 [BIT]	
- Parity Beat : ODD [BIT]	
- Signal level : RS – 232C	

Step 2-Reference.				
Details	Contents			
Baud rate External device – select serial communication speed between TOPs.				
Data bit	External device – select serial communication data bit between TOPs.			
Stop bit	External device – select serial communication stop bit between TOPs.			
Parity bit	External device – select serial communication parity bit check method between TOPs.			
Signal level	External device – select serial communication method between TOPs.			



4.3 Communication diagnosis

■ TOP - Confirming interface setting condition between external devices

- Move to Menu by clicking the top side of LCD screen as resetting the power of TOP.

- Confirms if Port [COM 2 or COM 1] setting that is willing to use in [Communication Settings] matches with the setting of external devices.

Diagnosis of error of communication status

- PLC Setup > TOP [COM 2 or COM 1] click "Communication Diagnosis" button.

- Diagnosis dialog box will pop up on the screen, you can judge by following information that are shown on box no. 3 section.

OK!	Communication setting succeeded
Time Out Error!	Communication setting error
	- Error in the setting situation of Cable and TOP / External device
	(reference : Communication Diagnosis sheet)

■ Communication Diagnosis Sheet

- Please refer to the information below if you have a problem between external devices and communication connection.

Designer Version			O.S Versio	n					
Details	Con	tents		•				Cor	firm
System configuration							ОК	NG	
	Nan com	ne of confront port that is municating						ОК	NG
	Syst	em Connection Method		1:1	-	L:N	N:1	ОК	NG
Connection Cable	Nan	ne of Cable						ОК	NG
PLC setup	Setu	up address				ОК	NG		
	Seri	al baud rate			ОК	NG			
	Seri	al data bit					[BIT]	ОК	NG
	Seri	al Stop bit					[BIT]	ОК	NG
	Seri	al parity bit					[BIT]	ОК	NG
	Assi	gned Address Limit						ОК	NG
TOP setup	Setu	ıp port		COM 1			COM 2	ОК	NG
	Nan	ne of Driver						ОК	NG
	Con	front Address	Proje	ect Property	Setup			ОК	NG
			Diagnosing Communication				ОК	NG	
	Seri	al baud rate					[BPS]	ОК	NG
	Seri	al data bit					[BIT]	ОК	NG
	Seri	al Stop bit					[BIT]	ОК	NG
	Seri	al parity bit					[BIT]	OK	NG



5. Cable diagram

5.1 Cable diagram 1

■ 1:1 Connection

(A) XTOP CO	DM 2 Port ((9 pin)					
XTOP COM2				PC Adaptor			
pin arangement * caution 1)	Name of Signal	Pin Number	Cable Connection	Pin Number	Name of Signal	pin arangement * caution 1)	
	CD	1		1	CD		
1 5	RD	2		2	RD	5 1	
	SD	3	<u>•</u>	3	SD	0	
	DTR	4		4	DTR		
6 9 Front View of	SG	5	•	5	SG	9 6 Front View of	
D-SUB 9 Pin male	DSR	6	•	6	DSR	MINI-DIN 9 Pin	
(Male, convex)	RTS	7	•	7	RTS	(female, concave)	
	CTS	8		8	CTS		
		9		9			

*Caution1) Pin arrangement is shown from connecting face in cable connection connecter.

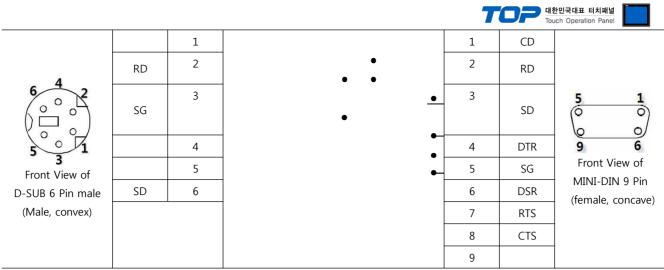
(B) XTOP COM 2 Port (15 pin)

XTOP COM2				PC Adaptor		
pin arangement *	Name	Pin	Cable Connection	Pin	Name	pin arangement *
caution 1)	of	Number		Number	of	caution 1)
	Signal				Signal	
	CD	1		1	CD	
	RD	2		2	RD	
1 8						5 1
Õ Õ	SD	3	•	3	SD	0 0
9 15	DTR	4		4	DTR	
Front View of	SG	5	•	5	SG	96 Front View of
D-SUB 15 Pin	DSR	6	•	6	DSR	MINI-DIN 9 Pin
male(Male convex)	RTS	7	-	7	RTS	(female, concave)
	CTS	8		8	CTS	
		9		9		

*Caution1) Pin arrangement is shown from connecting face in cable connection connecter.

(C) XTOP/ATOP COM 1	. Port (6 Pin)
(-)		

XTOP/ATOP	COM 1 Por	ť		PC Adaptor		
pin arangement * caution 1)	Name of Signal	Pin Number	Cable Connection	Pin Number	Name of Signal	pin arangement * caution 1)



*Caution1) Pin arrangement is shown from connecting face in cable connection connecter.



6. Support address

Devices that are usable with TOP is as below.

There might be difference in the range of device (address) by type / series of CPU module TOP series supports the maximum address range that external device series use Please refer each CPU module user manual carefully for devices that you desired to use to prevent not getting out of range.

	Bit a	ddress	Word a	address	32 bits	Remark
Input Relay	I00000.0 –	E00000.0 –	IW00000 –	EW00000 -		_
* caution1)	I00127.7	E00127.7	IW00126	EW00126		
Output Relay	Q00000.0	A00000.0 –	QW00000 –	AW00000 -		_
* caution2)	-	A00127.7	QW00126	AW00126		
	Q00127.7					
Data Block	DB000	DB00001 : DBX00000 -		1 : DBW00000 -	H/L	_
	DB65535 : DBX65533.7		DB6553	5 : DBW65532	*caution4caution5)	
Internal Memory	M00000.0 - M00511.7		MW00000 -	MW00000 - MW00510		_
Timer*caution3)	_		T00000 -	T00000 – T00255		Not
						writable
Counter*caution3)	-	_		C00000 - Z00000 -		Not
			C00255	Z00255		writable

*Caution1) Input Device (I,IW) might not be able to input read on the address of IW0 ~ IW2 because depends on the type of CPU, it becomes subordinate in the integrated I/O. Please refer to the PLC Manual.

*Caution2) Output Device (Q, QW, QD) can write value only in the Run Mode. Output value will be reset if it's STOP Mode.

*Caution3) Device Restricted to Read only

*Caution 4) Regarding on Word device, 32 but Data will be saved in the order of from High / Low, 16 bit each.

(Example) VW00000 (32bit data, 0x12345678) → VW00000(16bit, 0x1234) VW00002(16bit, 0x5678)

*Caution5) Checks "Word Swap" function when 32BIT address is being used.

Data Size 🔘 16bit 💿 32bit 📝 Word Sw	ар
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