# SIEMENS AG. **SIMETIC S7-200 Series PPI Driver**

#### Compatible version OS

Over 4.0



**XDesignerPlus** Over 4.0.0.0

## **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"

#### Page 2 **1.** System configuration

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..

#### Page 4 **3.** Example of system settings

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"

#### Page 6 **4.** Communication settings details

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 9

Explains cable specifications required for access.

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

### **6.** Support address

### Page 10

Check available addresses to communicate with external devices 1 / 12 referring to this chapter.

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## 1. System configuration

The system configuration of TOP and "SIEMENS AG. - SIMETIC S7-200 PPI" is as below.

Series	CPU	Comm.	Method	System settings	Cable
SIMETIC S7-200	CPU214 CPU215 CPU216 CPU221 CPU222 CPU224 CPU226	CPU Integrated Port 0/1	RS-485 ( 2 wire )	<u>Setting Example 1</u> ( Page 4)	<u>Cable Diagram 1</u> ( Page 9 )

### ■ 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.

	HML ( PL C L lint
Series XTOP Series Model XTOP15TX-SA/SI	Vendor         SIEMENS AG.           D         PLC Model         SIMETIC S7-200 Series PPI
	PLC
Vendor	Model
M2I Corporation MITSUBISHI Electric Corporation OMRON Industrial Automation LS Industrial Systems MODBUS Organization SIEMENS AG. Rockwell Automation (AB) GE Fanuc Automation (AB) GE Fanuc Automation PANASONIC Electric Works YASKAWA Electric Corporation YOKOGAWA Electric Corporation YOKOGAWA Electric Corporatio Schneider Electric Industries KDT Systems RS Automation(SAMSUNG) HITACHI IES FATEK Automation Corporation DELTA Electronics KOYO Electronic Industries VIGOR Electric Corporation Comfile Technology Dongbu(DASAROBOT) ROBOSTAR	<ul> <li>PROFIBUS DP Slave</li> <li>PROFIBUS DP Slave(EX Packet)</li> <li>SIMETIC S7 Series 3964(R)/RK512</li> <li>SIMETIC S7 Series CPU ETHERNET(OP Communication)</li> <li>SIMETIC S7 Series ETHERNET(FETCH/WRITE)</li> <li>SIMETIC S7 Series MPI Direct</li> <li>SIMETIC S7 Series MPI with PC adaptor</li> <li>SIMETIC S7-200 Series PPI</li> </ul>

Setting details		Contents				
ТОР	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 according to		
		TOP series.				
		Series	Series Version name			
		XTOP / HTOP V4.0				
	Name	Select the model name of TOP p	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 select "SIMETIC S7-200 Series PPI".				
		Please check, in the "1. System configuration", if the relevant external device is available to set a				
		system configuration.				





## 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 S7-200 Series"	Remark
Serial level (port/channel)		RS-485 ( 2 wire, COM2 )	RS-485 ( PORT 1 )	User settings
Address(PLC Address)		1	2	User settings
Serial baud rate	[BPS]	187500		User settings
Serial data bit	[Bit]	8		Fixed Value
Serial stop bit	[Bit]	1		Fixed Value
Serial parity bit	[Bit]	Eve	n	Fixed Value

### (1) XDesignerPlus setup

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

⊡- Project	Project	> Project	property > Proj	ject > Se	ettings > TOP N	lame ]	
─ TOP Setting	Set the comr	nunication	interface of TO	P tool	5	-	
TOP15TX-SA/SD	Set the com						
PLC Setting	- From rigr	it window	[ HIMI Setup >	спеск О	se HMI Setup >	<ul> <li>Device Manage</li> </ul>	rj
⊟ COM2 (1)	HMI Setup Setup	epcial Buffer S	ync				
PLC1 : SIMETIC S7-200	🔽 Use HMI Se	tup					
COM1 (0)	System Setup	PLC Setup	Device Manager	Interfac	e		
Ethernet (0)			* (	Communic	cation Port		
FieldBus (0)	+ COM 1			+ 0	COM 2		
USB Device (0)	- Boud Rate		187500	- B	loud Rate :	187500	
E CF Card Setting	- Data Bit :		8	• - D	ata Bit :	8	
CrCard	- Stop Bit :		1	- s	itop Bit :	1	
	- Parity Bit :		Even	- P	arity Bit :	Even	
				- S	iignal Level :	RS-485(2)	
	External d	evice settir	ngs				
	Setup comm	unication d	river of "SIMET	IC S7-20	00 Series PPI".		
				PLC Com	nm Info		
	MPI_NODE		2	\$			
	LOCAL_NO	DE	1	•			
	PROTOCO	L	BLOCK		•		
	- MPI NOD	E : Node N	Sumber of S7-2	200			
	- LOCAL N	ODF · Nod	e Number of T	OP			
				<b>.</b> .			

- PROTOCOL : Select the protocol method for TOP to approach S7-200.



#### (2) External device settings

After executing the details below from S7-200 series ladder software "STEP 7 Micro/WIN 32", Download through "File > Download". Please refer the PLC user manual for more detailed information if you need.



Please do not use the same node address in the same network.

- PLC CPU type setting
- 1. Select [Type] menu after right click on [PLC] from the left project window.
- 2. Click "OK" after selecting type of PLC which is connected with [PLC Type] window.

**3.** Connect "PORTO of PLC" with PC through "PC/PPI cable"(S7-200 ladder cable). Double click [Double-Click to Refresh] from [Communication] Dialog box in the Project.

**4.** As [Search for Addresses] Dialog box comes out, automatically search the PLC. When search is over, dialog box will be automatically disappear and searched result of PLC information will be indicated on the left side, click "OK".

Address		
Local:	1	Address: 1
Remote:	2	CPU 226 REL 01.02
PLC Type:	CPU 226 REL 01.02	Address: 2, 19.2 kbps
		to Refresh
Update PLC type in pro	oject	
Network Parameters		
Interface:	PC/PPI cable(COM 3)	
Protocol:	PPI	
Mode:	11-bit	
Highest Station (HSA):	31	
C Supports multiple mas	ters	
ransmission Rate		
Baud Rate:	19.2 kbps	
Search all baud rates		

5. Set the information of "PORT 1" as below in the [Communication Ports] from [System Block] dialog box in the Project.

System Block Communication Ports Retentive Ranges Password Output Tables Defaults Ports Port 0 Port 1 Port	Communication Ports Communication Port settings allov	you to adjust the communication parameters that STEP 7-Micro/WIN will use to communicate to a given PLC.
Input Filters       Port 0       Port 1       (range 1 126)         Background Time       EM Configurations       11       12       (range 1 126)         Configure LED       Highest Address: 31       31       (range 1 126)         Increase Memory       Baud Rate: 19,2 kbps        187.5 kbps        (range 0 8)         Gap Update Factor: 10       10       (range 1 100)	System Block  Communication Ports  Retentive Ranges  Password  Output Tables	Communication Ports Defaults
	Input Filters Pulse Catch Bits Background Time EM Configurations Configura LED Increase Memory	Port 0 PLC Address: 2 Highest Address: 31 Baud Rate: 19,2 kbps Retry Count: 3 Gap Update Factor: 10 Configuration parameters must be downloaded before they take effect

6. Download setting information to PLC.



## 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 > Proj	ect property > Proje	ect > Settings > TOP N	ame ]	
TOP Setting	Set the communicat	tion interface of TOP	p tool.		
XT <u>OP15TX-SA/SD</u> ⊡PLC Setting	- From right wind	ow, [ HMI Setup > c	check Use HMI Setup >	<ul> <li>Device Manager</li> </ul>	.]
	V Lise HMI Setup				
	System Setup PLC S	etup Device Manager	Interface		
- Ethernet (0)		* Co	mmunication Port		
USB Device (0)	+ COM 1 - Boud Rate :	187500 👻	+ COM 2 - Boud Rate :	187500	
E CF Card Setting	- Data Bit :	8 👻	- Data Bit :	8	
····· CFCard	- Stop Bit :	1 +	- Stop Bit :	1	•
	- Parity Bit :	Even 👻	- Parity Bit :	Even	
			- Signal Level :	RS-485(2)	
	System Setup PLC S	etup Device Manager (PLC1) SIM	Interface IETIC S7-200 Series PPI		
	Time Out :	(PLC1) SIM	IETIC S7-200 Series PPI		
	Wait before send :	0 🗘 msec.			
	External device s	ettings			
_	Setup communication	on driver of "SIEMTIC	C S7 MPI Direct".		
			PLC Comm Info		
	MPI_NODE	2	Ì		
	LOCAL_NODE	1 +			
	PROTOCOL	BLOCK	*		

### ■ 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	Set up TOP's waiting time between response receiving – next command request transmission from
mSec]	external device at [ 0 – 5000 ] x 1 mSec.
Receiving Wait Time [ x10	



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 <b>Step1</b> $\rightarrow$ <b>Step2</b> .	
(Press "TOP COM 2/1 setup" in <b>Step 1</b> to change setup at <b>Step 2</b> .)	



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

PLC setup	PLC setup				
PLC Address : 00	Communication Interface				
Timeout : 1000 [mSec]		Settings			
Delay time of transmission : 0 [mSec]	1				
TOP COM 2/1 : RS - 485 , 187500 , 8 , 1 , EVEN					
TOP COM 2/1 setup communication 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 1mSec.			_		
Delay time of transmission [	Set up TOP's waiting time between response receiving – next c	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 : 187500 [BPS]	Settings				
- Data bit : 8 [BIT]					
- Stop bit : 1 [BIT]					
- Parity bit : EVEN [BIT]					
- Signal level : RS – 232C					
+ COM-2 Port	COM-2 Port				
- Baud rate : 187500 [BPS]	Communication Interface				
- Data bit : 8 [BIT]	Settings				
- Stop bit : 1 [BIT]					
- Parity bit : EVEN [BIT]					
- Signal level : RS – 485					

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!	DK! 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	Nam	ne of CPU					ОК	NG
	Nam com	ne of confront port that is municating					OK	NG
	Syste	em Connection Method	1:1	1:1	N	N:1	ОК	NG
Connection Cable	Nam	ne of Cable					ОК	NG
PLC setup	Setu	p address					ОК	NG
	Seria	al baud rate			[	[BPS]	ОК	NG
	Seria	al data bit			[	[BIT]	ОК	NG
	Seria	al Stop bit			[	[BIT]	ОК	NG
	Seria	al parity bit			[	[BIT]	ОК	NG
	Assi	gned Address Limit					ОК	NG
TOP setup	Setu	p port	COM 1			COM 2	ОК	NG
	Nam	ne of Driver					ОК	NG
	Con	front Address	Project Property	Setup			ОК	NG
			Diagnosing Com	nmunicati	on		ОК	NG
	Seria	al baud rate			[	[BPS]	ОК	NG
	Seria	al data bit			[	[BIT]	ОК	NG
	Serial Stop bit [BIT]				[BIT]	ОК	NG	
	Seria	al parity bit			[	[BIT]	OK	NG



### 5. Cable diagram

This Chapter is to introduce the Cable diagram for regular communication between TOP and relative devices. (The Cable diagram which are going to be introduced in this chapter might be different than what "SIEMENS AG." recommends.)

### 5.1 Cable diagram 1

### ■ 1 : 1 Connection

	(A) XTOP COM 2 Port (9 pin)							
TOP COM2				External device				
pin arangement * caution 1)		Name of Signal	Pin Number	Cable Connection	Pin Number	Name of Signal	pin arangement * caution 1)	
		RDA			1			
	•	-	2		2			
1	5 )+		3	•	3	TRX+	<b>1 5</b>	
6	↓	RDB	4		4			
6	9	SG	5		5	SG	6 9	
	lew of Pin male	SDA	6		6		Front View of D-SLIB 9 Pin male	
(Male, c	onvex)		7		7		(Male, convex)	
			8		8	TRX–		
		SDB	9		9			

1\*Caution1) Pin arrangement is shown from connecting face in cable connection connecter. $(2\sim9)$ 

(B) XTOP COM 2 Port (15 pin)							
XTOP COM2				External device			
pin arangement *	Name	ame Pin Cable Connection	Pin	Name	pin arangement *		
caution 1)	of	Number	cubic connection	Number	of	caution 1)	
	Signal				Signal		
	-	1		1			
				2			
				3	TRX+	<b>1 5</b>	
	-	10		4			
9 15	RDA	11	•	5	SG	6 9	
Front View of D-SLIB 15 Pin	RDB	12		6		D-SUB 9 Pin male	
male(Male convex)	SDA	13	•	7		(Male, convex)	
	SDB	14		8	TRX-		
	SG	15		9			

\*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.

Device	Bit address	Word address	Double Word address <sup>*C4*C5)</sup>	Property
Variables	V00000.0 - V05118.7	VW00000 - VW05118	VD00000 - VW05116	R/W
Input *caution1)	I00000.0 - I00015.7	IW00000 - IW00014	ID00000 - IW00012	R/W
Output *caution2)	Q00000.0 - Q00015.7	QW00000 - QW00014	QD00000 - QW00012	R/W
Internal Marker	M00000.0 - M00031.7	MW00000 - MW00030	MD00000 - MD00028	R/W
Timer *caution3)	-	T00000 - T00255	-	R
Counter <sup>*주3)</sup>	-	C00000 - C00255	-	R

R:read / W:write

\*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 Double word address is being used.

Data Size	16bit	32bit	🔽 Word Swap
			Sheering.