MPI Adapter Manual

MPI Adapter is also called PC Adapter in this manual. It is used to realize translation from RS232 interface to RS485 interface and from RS232 to MPI (MultiPoint Interface) protocol, and used to connect the MPI port of S7-300 / 400 PLC to PC COM port (RS232).

MPI is a type of adapter with photoelectric isolation for industrial design. There is surge protection and the lightning protection circuit in RS232 port and RS485 port, can be safely plugged/unplugged when the power is still on, suitable for the full line of Siemens S7-300/400 PLC and other devices with MPI interface, especially suitable for the industrial field with much EMI interference, the protection measures within the circuit ensure the safe operation of the system..



1) **I**PI RS232 Cable,length is 3 m

Features and main technical parameters:

- ★ Power supply: supplied by the 24VDC from the MPI port of PLC, power consumption about 1W, built-in protection against over-current and surge events
- ★ Isolation voltage: 1000VDC (a special model capable of 3000VDC isolation is available as an option, please indicate when order)
- ★ RS232 port with surge protection, RS485 port with 500W lightning protection and over-current protection
- ★ Baud rate of RS232 port:19.2Kbps~115.2Kbps,standard baud rate adaptive
- ★ Baud rate of MPI port:187.5Kbps and 19.2Kbps adaptive

PLC1.ir

- \star Support communication between PLC and HMI.
- \star LED indicators show the status of power, connection and data transmission
- ★ Operating temperature: $-20 \sim 75^{\circ}$ C
- ★ Outline dimension: $103 \times 50 \times 26$ mm,total length contain RS232 cable is 3.5m

RS232 (DB9 Male)		
Pin.	Signal	Description
1	DCD	No use
2	RXD	RS232 Signal receive
3	TXD	RS232 Signal send
4	DTR	Short circuit with 6
5	GND	RS232 Signal Ground
6	DSR	Short circuit with 4
7	RTS	Sending Request
8	CTS	Clearing Request
9	RI	No use

(fale)	RS485 (DB9 Male)		
escription	Pin.	Signal	Description
	1	NC	No use
Signal receive	2	M24V	-24VDC
Signal send	3	В	RS485+
cuit with 6	4	RTSAS	Data receiving control

GND

NC

P24V

A

RTS PG

RS485 Signal Ground

Data sending control

No use

+24VDC

RS485-

5

6

7

8

9

Signal definition of the RS232 port and RS485 port of the adapter

Description of the LED indicators

Pilot lamp	On	Blinking	OFF
Power	Normal	Failure	Failure or No Connection
Active	Online	Sending data	Offline
Tx	Failure	Sending data	No sending data

Use the PC adapter with a PC: STEP7 software configuration

Enter the main interface of STEP7 software (SIMATIC Manager) ,Click "Set PG/PC Interface..." in "Options" to enter PG/PC setting interface.

- Double click "PC Adapter(MPI)" to enter RS232 and MPI interface parameters setting. This adapter doesn't support "PC Adapter (PROFIBUS)" option.
- 2、Click "Local Connection" option to set RS232 interface parameters, select the right COM port of PC which connected to MPI adapter(RS232), choose 19200bps or 38400bps as the baud rate of RS232, the MPI adapter will automatically match the baud rate selected.
- 3、 Click "MPI" option to set the parameters of MPI interface of adapter. You can set the

baud rate as 187.5Kbps or 19.2Kbps, and the adapter will automatically match to the baud rate of MPI port. Use default value for other parameters.

4、 Online testing of the communication: use MPI adapter to connect the MPI port of S7-300/400 PLC and RS232 port of PC, click the button in the red circle in main menu interface in following figure, if the data appears in the red box as the figure shows, it means that online test successful. So far, configuration has been completed. You can proceed the operation such as online, program upload, download, monitor and so on.

SINATIC Manager - Accessib	le Nodes					
<u>F</u> ile <u>E</u> dit <u>I</u> nsert P <u>L</u> C <u>V</u> iew <u>O</u> ptions	: <u>W</u> indow <u>H</u> elp					
	🗅 😂 📰 🚿 🔏 📾 📾 🗢 🗣 🏣 🏥 🏢 🔁 < No Filter > 💽 🍸					
B S7_Pro1_CPU312 C:\Prog	ram Files\Siem	ens\Step7\s7	p 🔳 🗖 🗙	1		
S7_Pro1_CPU312	rdware 🚺 CP	V312 (1)		1		
🗄 🔠 Accessible Nodes	IPI)					
- 뭡 Accessible Nodes	System data	OB1	🕞 OB10	~		
🖻 🔄 MPI = 2	🖽 0B20	SFB0	SFB1			
D Blocks	SFB2	E SFB3	SFB4			
	SFB5	SFB32	SFB52			
	SFB53	SFB54	SFC0			
	SFC1	SFC2	E SFC3			
	SFC4	SFC5	SFC6			
	SFC17	SFC18	SFC19			
	SFC20	SFC21	System :	Eunction		
	SFC23	SFC24	SFC28			
	SFC29	SFC30	SFC31			
	SFC32	SFC33	SFC34			
	SFC36	SFC37	SFC38			
	SFC39	SFC40	SFC41			
	SFC42	SFC43	SFC44			
	SFC46	SFC47	SFC49	~		

Use the PC adapter with Kinco® touch panel HMI

First of all, you need to select "Siemens S7-300/400 (PC Adapter)" from the PLC list when building the project. Then set as following:

- 1. HMI communication setting: 19200, 8, 2, odd(as following figure);Station No.:2.
- 2. PLC must be 187.5K.

3. You must set DB first, or register can not write (DB.DBX, DB.DBW, DB.DBD). The initial address of DBm.DBW and DBm.DBD must be even.

HEI Attribu	ite			X
HMI Print Sett	HMI Task Bar Print Setting Seri		MMI Extend Attribute Historic Event rial Fort O Setting Serial Port 1 Setting	
Туре	RS232	•	PLC Communication Time Out 1	
Baud Rate	19200	•	Protocol Time Out 1(ms) 0	
Data Bit	8	•	Protocol Time Out 2(ms) 3	
Parity	odd	•	Maxinterval of block pack(WORDS) 16	
Stop Bit	2	•	Maxinterval of block pack(BITS) 32	
Slave No.	0		Max block package size(WORDS) 32	
Siave Ivo.	0		Max block package size(BITS) 64	
Use Default Setting				
OK Cancel				

After finishing HMI setting, then set PLC parameters as following:

A) MPI transmission rate must be set 187.5k. If the MPI

transmission rate is 19.2k, you must change the rate to 187.5k via Siemens adapter (at the hardware attribute):

Properties - New subm	et IPI		
General Network Settings			
<u>H</u> ighest MPI address:	31 Change		
<u>T</u> ransmission rate:	19.2 Kops ▲ 187.5 Kbps ▲ 1.5 Mbps ■ 3 Mbps ● 6 Mbps ■ 12 Mbps ✔		
OK		Cancel	Help

B) MPI address must be 2.

Properties - CPU 3	315-2 DP - (RO/S2)	×	
Interrupts Diagnostics/Clo General St	Time-of-Day Interrupts Cy ck Protection artup Cycle/Clock Memory	vclic Interrupts Communication Retentive Memory	
Short (CPU 315-2 DP Work memory 128KB; O.1ms/1000 instruction connection (DP master or DP slave); mult: configuration up to 32 modules; Send and capability for direct data exchange, cons	ns; MPI+ DP i-tier receive stant bus cycle ♥	
Order No./	6ES7 315-2AG:0-0AB0 / V2.0		
<u>N</u> ame:	CPU315-2 DP(1)		
Interface Type: MPI Address: 2 Networked: Yes	P <u>r</u> operties		
Properties - T PT	interface CPN 315-2 DP (RO/S2)		
General Parameters <u>A</u> ddress: Highest address: 31 Transmission rate: 187.5 Kbps Select:			
not networked	107 5 1/1-2	<u>N</u> ew	
	TOT. 3 KBps	P <u>r</u> operties Delete	

C) After Setting, download project into PLC. Make sure the MPI port's transmission rate is 187.5k, and select" PC Adapter(MPI)" in "set PG/PC interface" menu, change the transmission rate to 187.5k, as following:

Set PG/PC Interface				
Access Path				
Access Point of the Application:				
STONLINE (STEP 7)>	Properties - PC Adapter(IPI)			
(Standard for STEP 7)	UPT Local Connection			
Interface <u>f</u> arameter Assignment PC Adapter(MPI)				
ISO Ind. Ethernet -> Intel(F Imper PC Adapter (Auto) Imper Adapter (MPI)	Connection to: COM1 Transmission rate: 19200			
PC Adapter (PROFIBUS)	Apply settings for all modules			
(Parameter assignment of your P(adapter for an MPI network) Interfaces Add/Remove:				
OK	OK Default Cancel Help			
·				
Properties - PC Adapter(IP	I) X			
MPI Local Connection				
☐ PG/PC is the <u>o</u> nly master on	the bus			
<u>A</u> ddress:				
Timeout: 30 s				
Network Parameters Transmission <u>r</u> ate:				
Highest station address: 31				
OK Default Car	Holp			

The communication of MPI adapter in long distance

Extend the RS485 port:

The cable length must be 600m or less in the 187.5Kbps, the 7 pin and 2 pin must connect with 24VDC power in the port of RS485, the 8 pin and 3 pin must connect with 120 terminal resistance. As following figure shows:



MPI RS232 Cable:

Connection method: Plug the end marked "PC Adapter" to the MPI PC Adapter

Plug the end marked "HMI/PC" to PC or HMI touch panel.

Cable Length: 3m.

Connection figure as following:

