Siemens S7-300 MPI

Supported Series: Siemens S7-300 series PLC
Website: http://www.siemens.com/entry/cc/en/

HMI Setting:

Parameters	Recommende	Options	Notes
PLC type	SIEMENS S7-300 MPI		
PLC I/F	RS-485 2W		
Baud rate	187.5K	19200,187.5K	*Note
Data bits	8		
Parity	Even		
Stop bits	1		
PLC sta. no.	2	2 ~ 31	

*Note: MPI 19200bps does not support the following models: MT8071iP2, MT8102iP, MT6102iQ, TK6071iP, TK6071iQ, TK8071iP, TK8072iP

Online simulator	NO	**Extend address mode**	Yes
Broadcast command	NO		

Device Address:

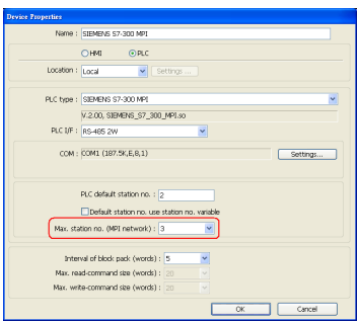
Bit/Word	Device type	Format	Range	Memo
B	I	DDDDo	0 ~ 40957	Input (I)
B	Q	DDDDo	0 ~ 40957	Output (O)
B	M	DDDDo	0 ~ 40957	Bit Memory
B	DBnBit	FFFFFDDDDo	0 ~ 6553599997	Data Register Bit
B	DBxBit	FFFFFDDDDDo	0 ~ 10700655327	
B	DB1Bit ~ DB99Bit	DDDDDo	0 ~ 655357	Data Register Bit
W	IW	DDDD	0 ~ 4095	Input (I)
W	QW	DDDD	0 ~ 4095	Output (O)
Byte	MB	DDDD	0 ~ 4095	Bit Memory Byte
W	MW	DDDD	0 ~ 4095	Bit Memory
DW	MD	DDDD	0 ~ 4094	
Byte	DBBn	FFFFFDDDD	0 ~ 655359999	Data Register
Byte	DBBx	FFFFFDDDDD	0 ~ 1070065535	

Bit/Word	Device type	Format	Range	Memo
W	DBn	FFFFFDDDD	0 ~ 655359999	Data Register (must be even)
W	DBx	FFFFFDDDDD	0 ~ 1070065535	
DW	DBDn	FFFFFDDDD	0 ~ 655359999	Data Register Double Word (must be even)
DW	DBDx	FFFFFDDDDD	0 ~ 1070065535	
W	DBn_String	FFFFFDDDD	0 ~ 655359999	
W	DBx_String	FFFFFDDDDD	0 ~ 1070065535	
W	DBn_String1	FFFFFDDDD	0 ~ 655359999	
W	DBx_String1	FFFFFDDDDD	0 ~ 1070065535	
DW	DBDn_String	FFFFFDDDD	0 ~ 655359999	
DW	DBDx_String	FFFFFDDDDD	0 ~ 1070065535	
W	DB1 ~ DB99	DDDDD	0 ~ 65535	Data Register (must be even)
W	T	DDDDD	0 ~ 65535	
W	C	DDDDD	0 ~ 65535	

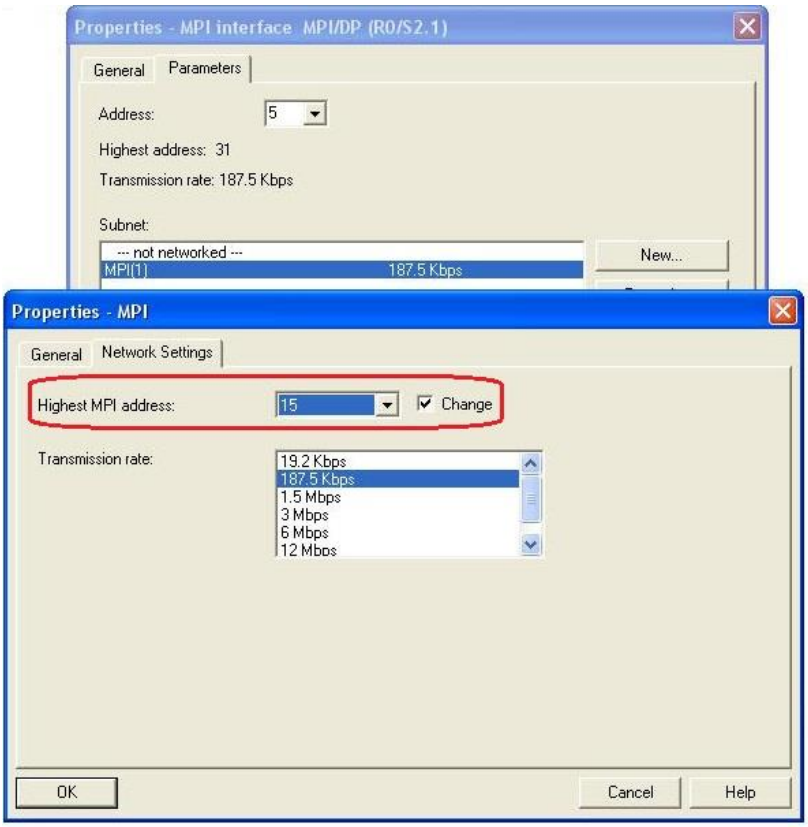
- Double word and floating point value must use DBDn device type.

Multi-HMIs-Multi-PLCs Communication Setting:

For SIEMENS S7-300 MPI driver in Multi-HMIs-Multi-PLCs communication, [Max. station no. (MPI network)] parameter must be correctly set. This setting is relevant to the station no. of the devices, as shown, two HMI (station no. 0, 1) and two PLC (station no. 2, 3) are in MPI network, Max. Station No. should be set to 3.



For the effectiveness of communication, users may set PLC device in STEP 7 as shown below. In Properties MPI / Network Settings, set Highest MPI address to the number closest to the actual device station number.



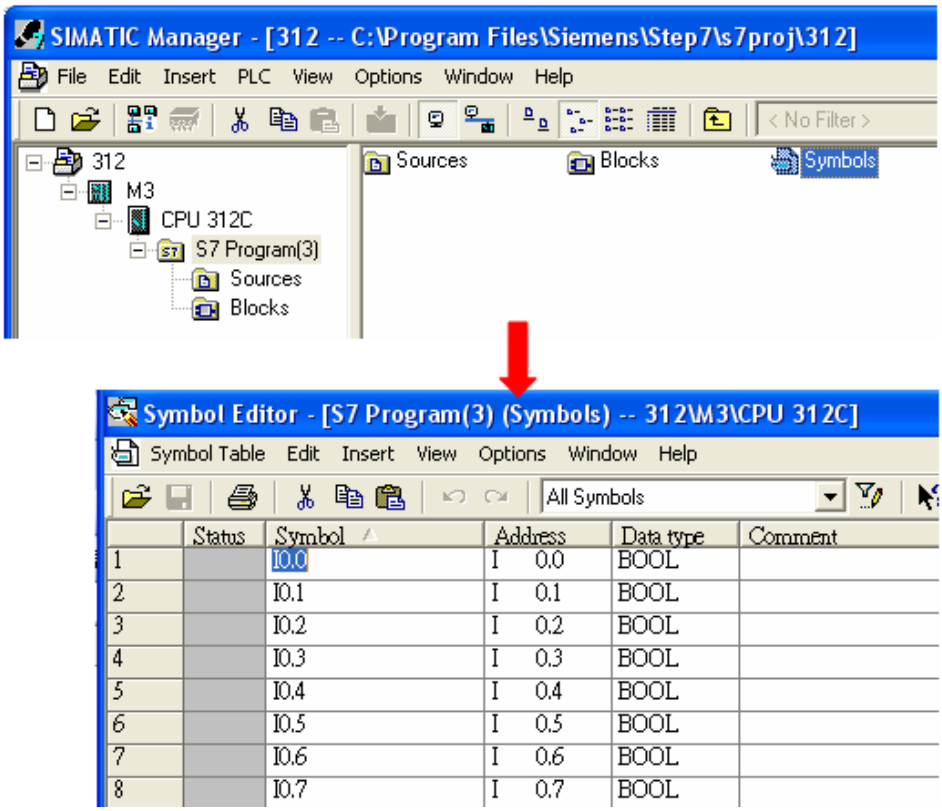
- HMI sta. no. can not be the same as PLC sta. no.
- Highly recommended that the device station numbers start from 0 sequentially and correctly set [Max. station no. (MPI network)].

How to Import Tag:

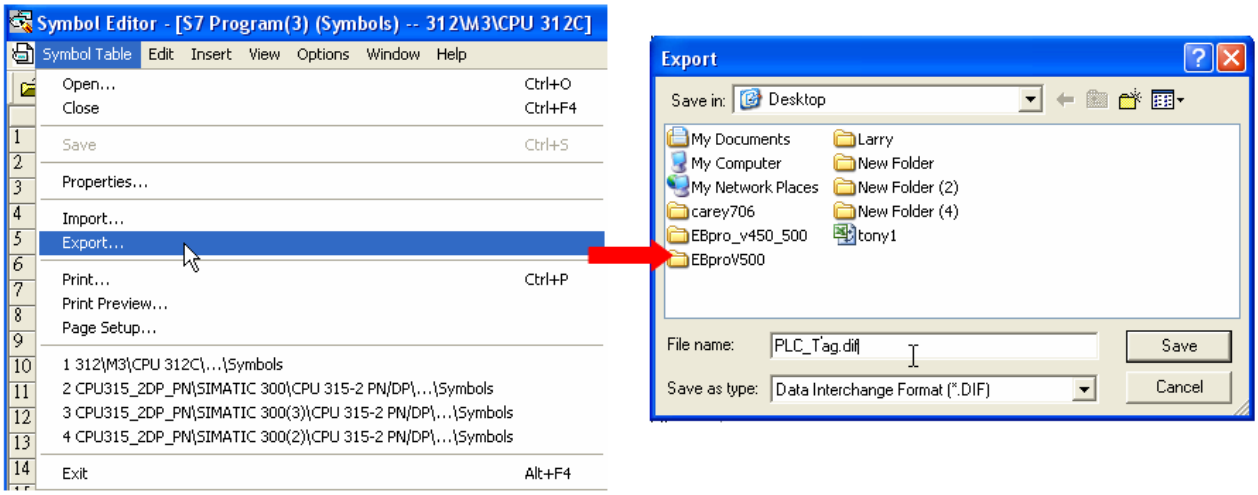
SIEMENS STEP 7 program allows building files of user-defined tag (***.dif** file and ***.AWL** file), and import these files in EasyBuilder8000/EasyBuilderPro -> System Parameter Settings. The following describes how to build and import these two types of files.

1. Building *.dif File

a、 In “Symbols” create user-defined tag.

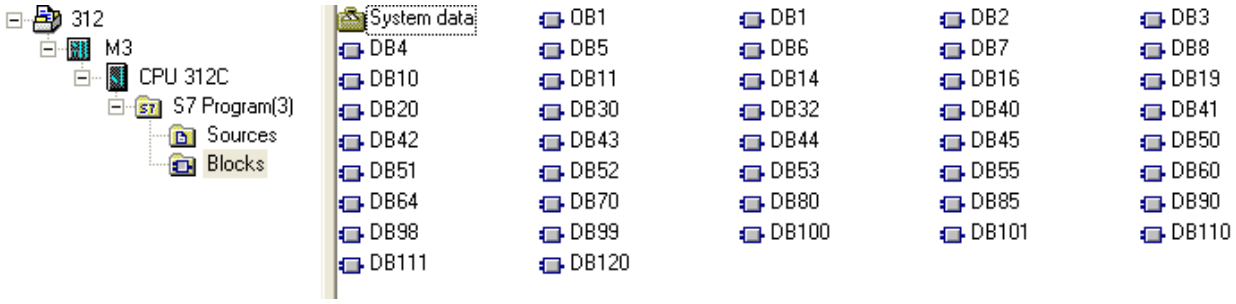


b、 Click **Export** to export the edited file and click **Save**.

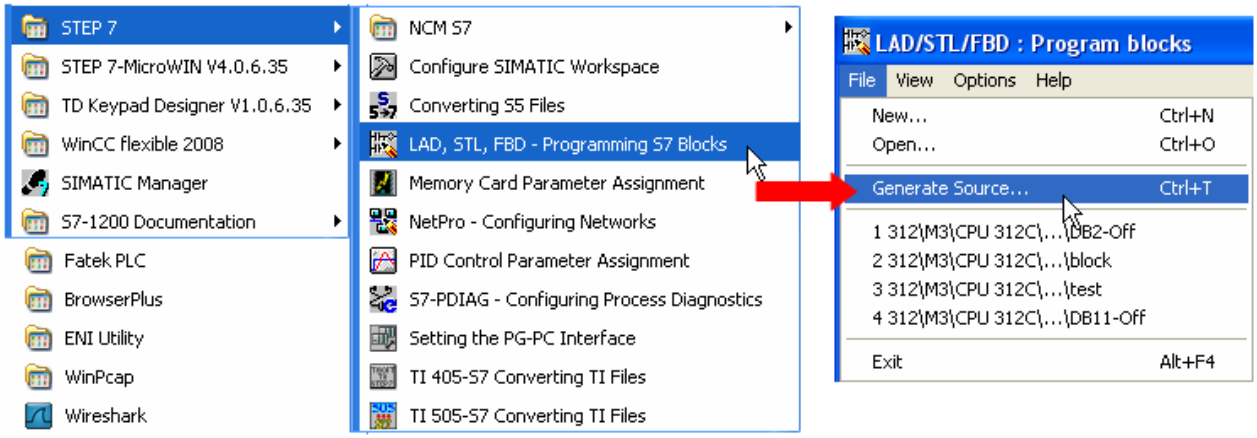


2. Building *.AWF File

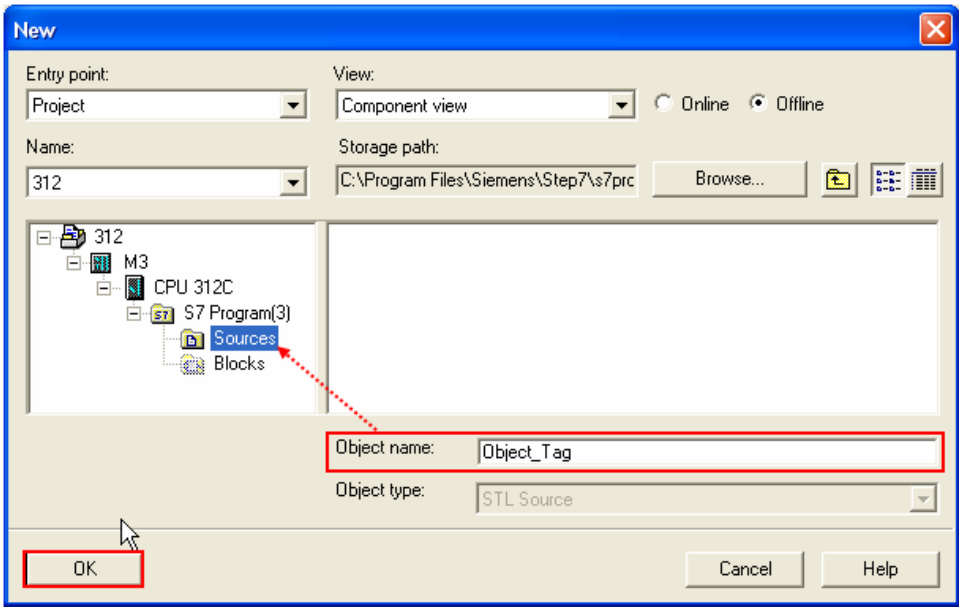
a、 In **Blocks** create items as shown below:



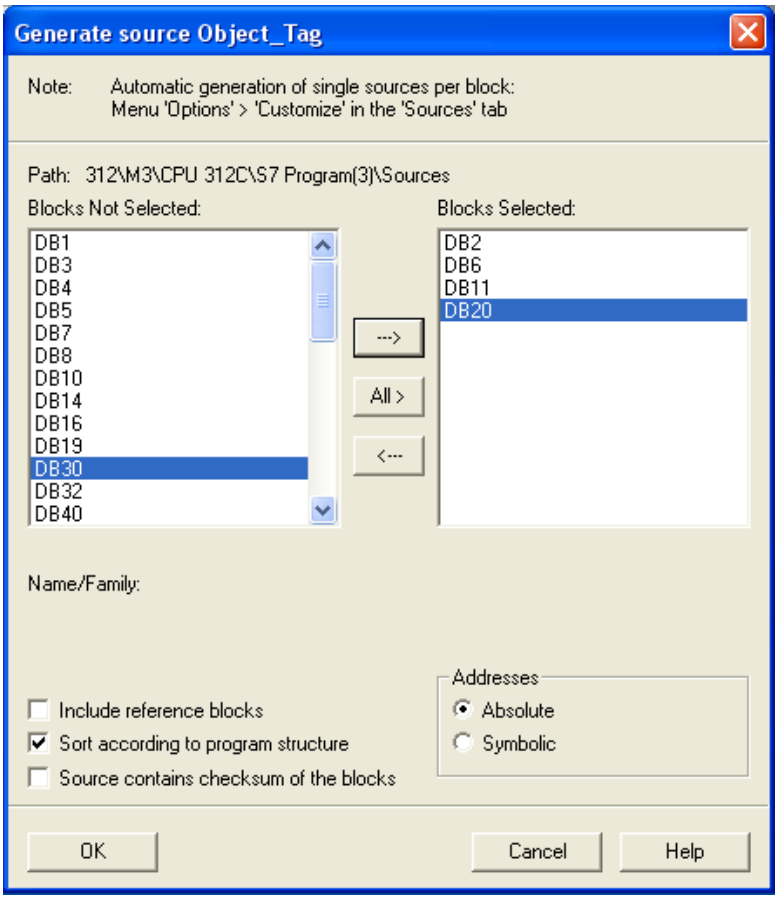
b、 Open **LAD/STL, FBD – Programming S7 Blocks**, click **File** -> **Generate Source.**



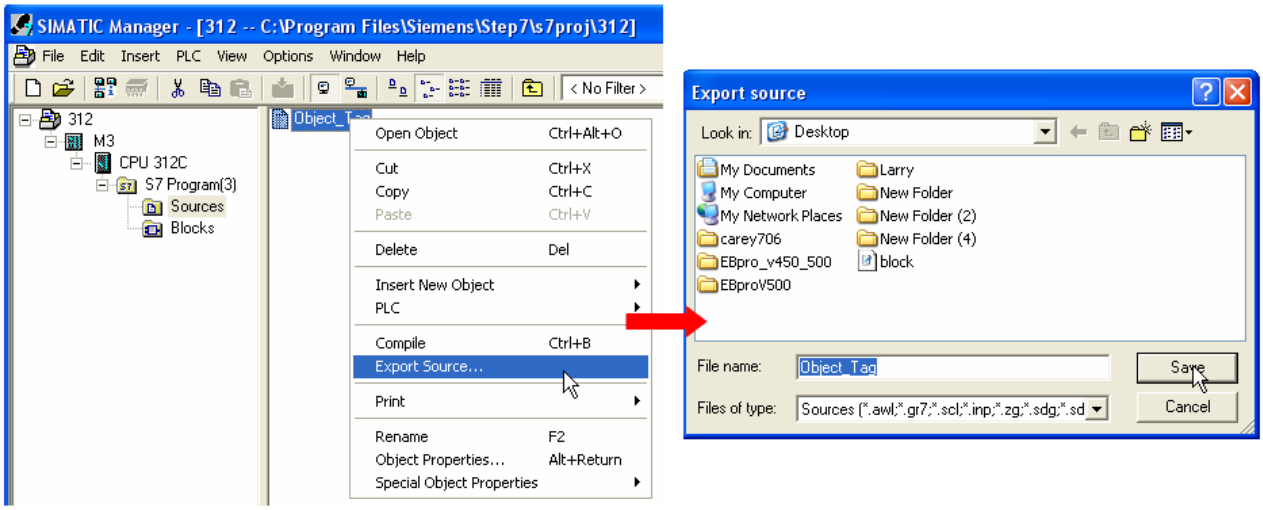
c、 Select **Sources** as storage path, specify the file name then click **OK**.



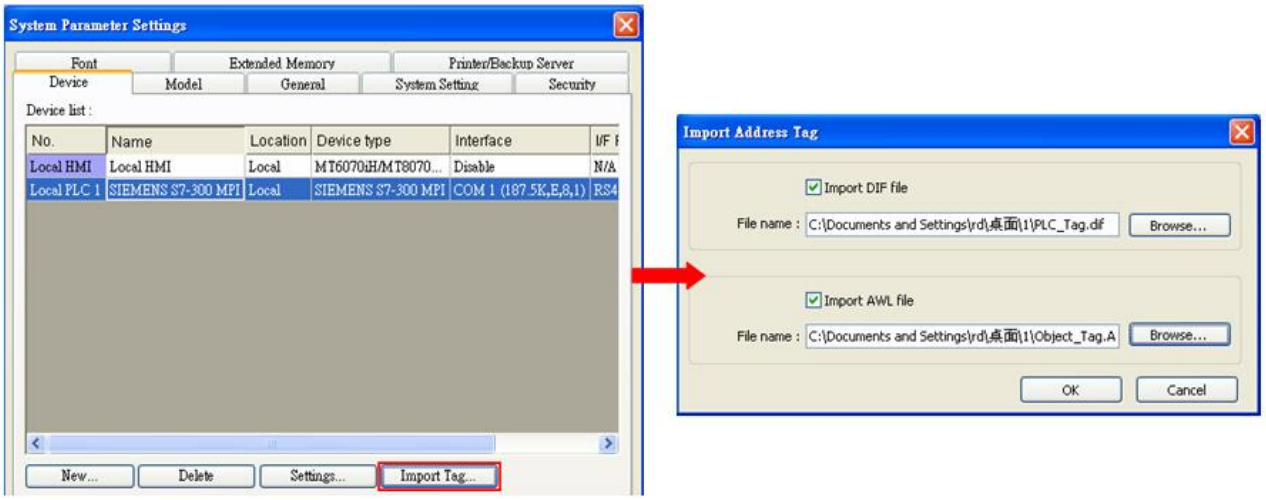
d、 Select the objects to be exported then click **OK**.



e、 Under **Sources** there will be names of the saved files, select **Export Source** to build ***.AWL** file.



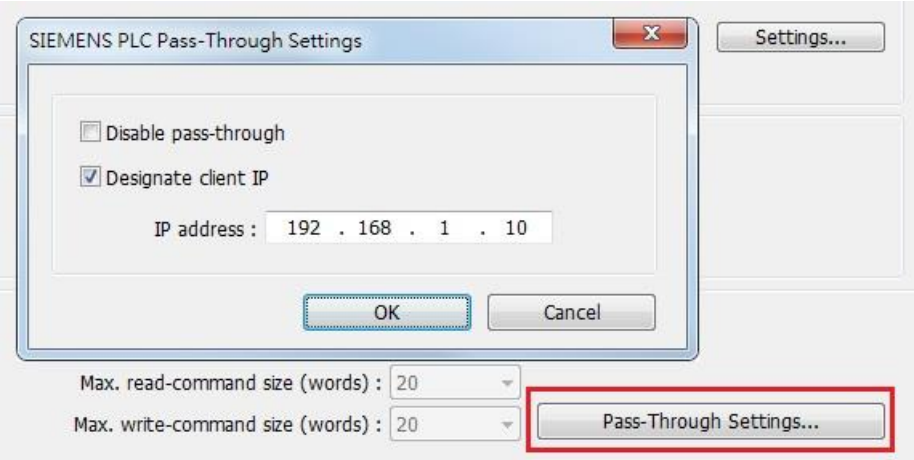
The generated *.dif and *.AWL files can be imported in EasyBuilder8000/EasyBuilderPro **System Parameter Settings**, by clicking **Import Tag**.



Tag information successfully imported.

Pass-Through Settings:

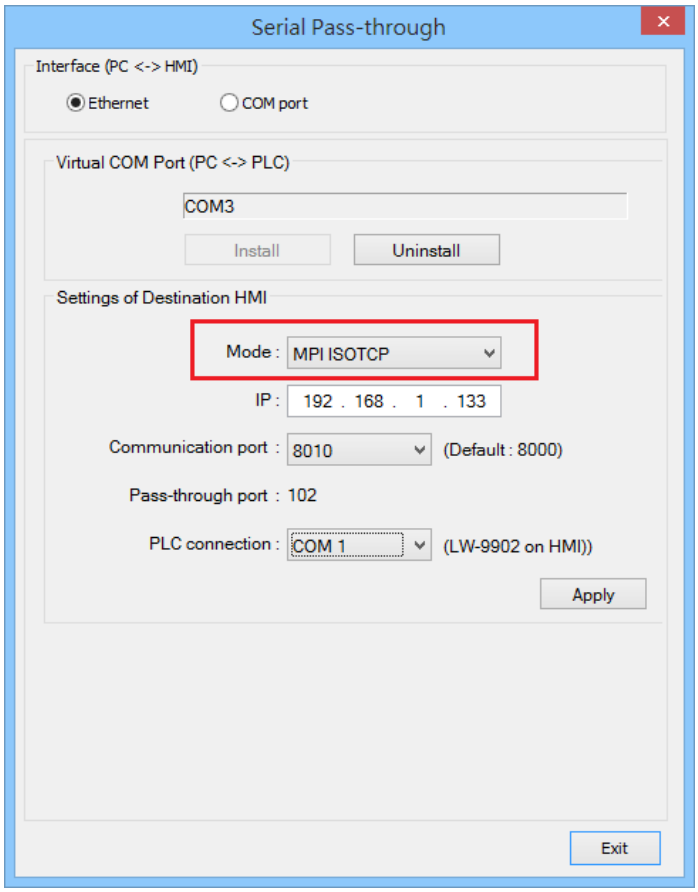
[Designate client IP]: In Pass-through mode designate the client IP address to connect HMI. The “client” usually refers to Siemens Step 7 application.



[Utility Manager Settings]:

Utility manager -> Serial Pass-through

Mode: MPI ISOTCP



Note: Only supports single-step monitoring address, continuous monitoring address function cannot be used in pass-through.

The following lists the system registers relevant to Siemens S7-200 PPI and Siemens S7-300 MPI Pass-through feature.

- [LW-10850: disable/enable (0 : disable, 1 : normal, 2 : IP limited) (siemens pass-through)]
- [LW-10851: destination COM port (siemens pass-through)]: Generally refers to the COM port connected with PLC.
- [LW-10852: destination PLC station no. (siemens pass-through)]
- [LW-10853: communication protocol (0 : invalid, 1 : PPI, 2 : MPI) (siemens pass-through)]
- [LW-10854 to LW-10857: IP of connecting client (siemens pass-through)]: Displays current client IP address connected with HMI.
- [LW-10858 to LW-10861: IP of designated client (siemens pass-through)]: If LW-10850 is set to 1, the system registers can be used to designate the client IP connected with HMI.
- [LW-10862: connection status (0 : ready, 1 : client connecting) (siemens pass-through)]
- [LW-10863: execution status (0 : normal, 1 : error) (siemens pass-through)]
- [LW-10864: the last error (siemens pass-through)]

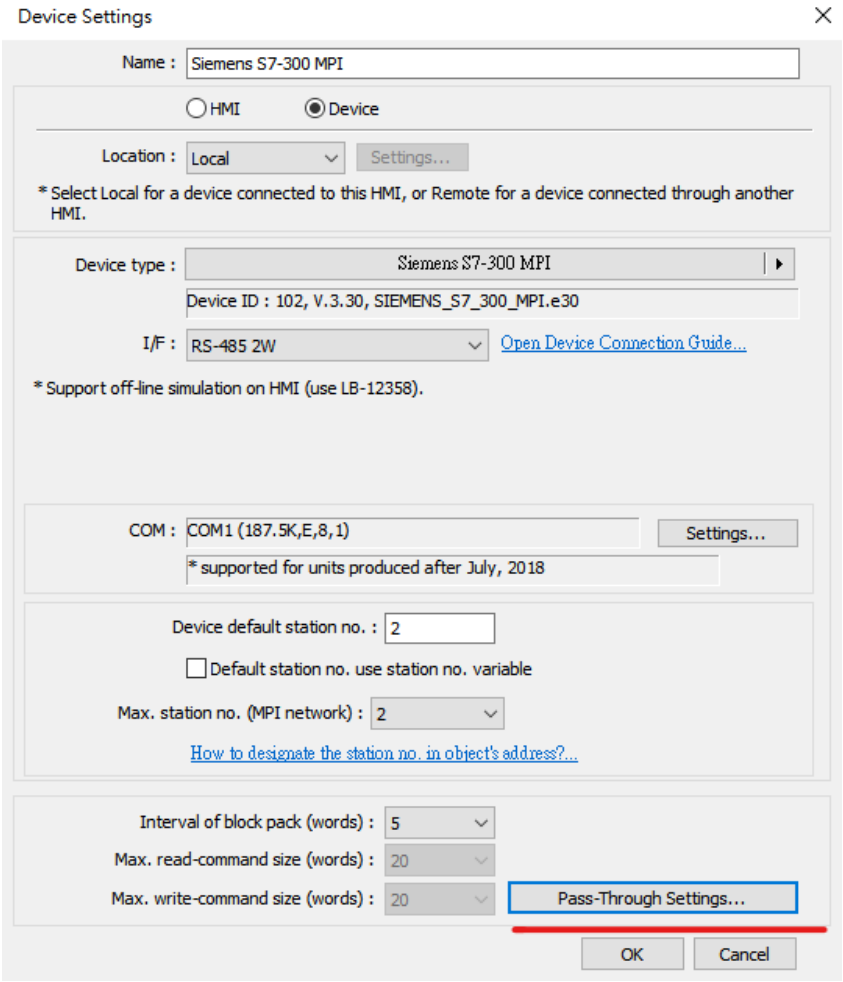
The following table lists the error codes, the description of each code, and the possible reason.

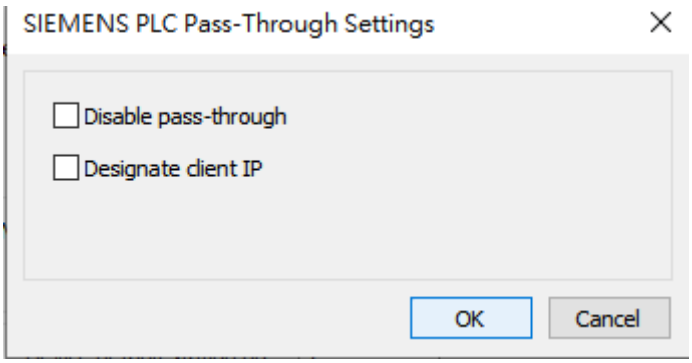
Error Code	Description	Possible Reason
0	Successfully executed	
1	Prohibit client from connecting HMI	HMI is already running pass-through and won't accept any request from other client.
2	Prohibit client from connecting HMI	When LW-10850 is set to 1, the client IP for connecting HMI is different from the IP specified in LW-10858 ~ LW-10861.
3	Invalid communication protocol	Invalid setting in LW-10853.
4	Invalid PLC station number	The PLC station number specified in LW-10852 does not exist.
5	Delayed communication	PLC connection failure.
6	Busy communication	PLC does not accept pass-through request, please confirm PLC settings.
7	Invalid pass-through request	Environment setup failure.

EasyAccess2.0 Network Pass-througth:

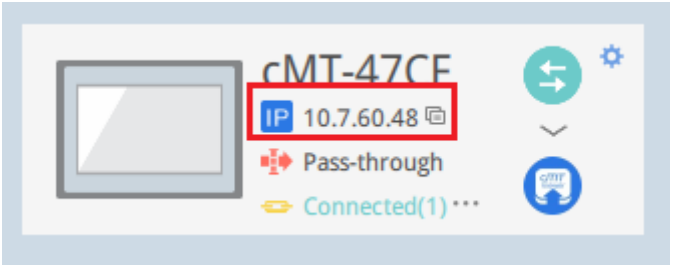
Obtain SubnetID using S7-300 MPI SubnetID Tool

Setp1: Create S7-300 MPI Project, the options in **[Pass-Through Settings]** are all set to **unchecked.** Download the project to the HMI and make sure it communicates well with the PLC.

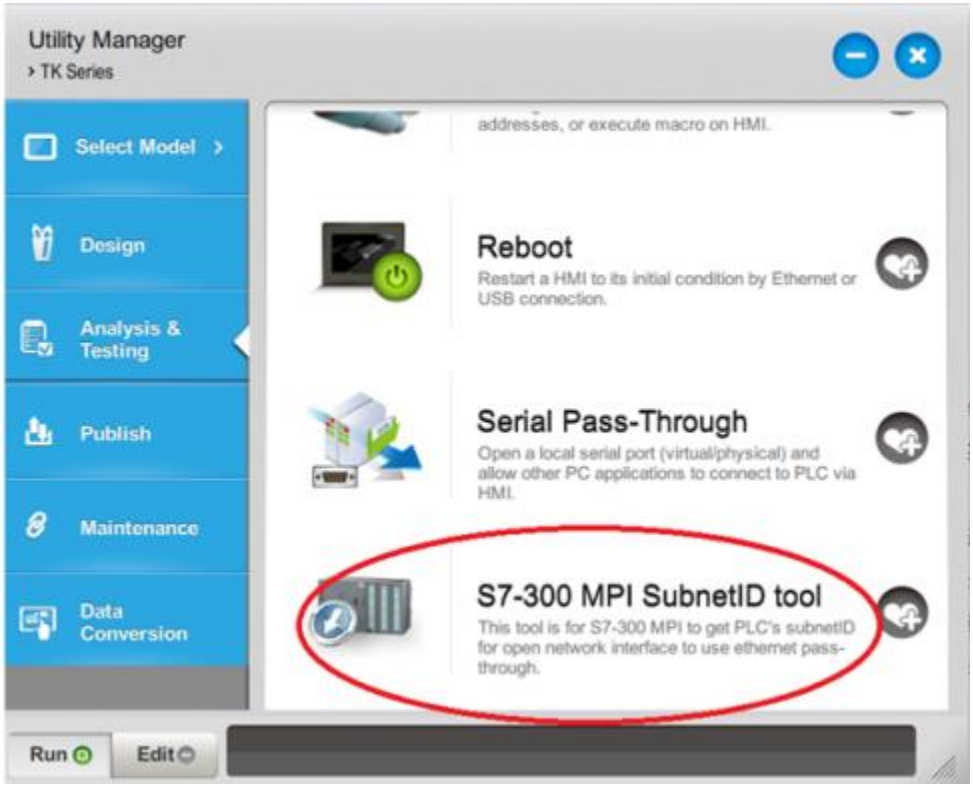




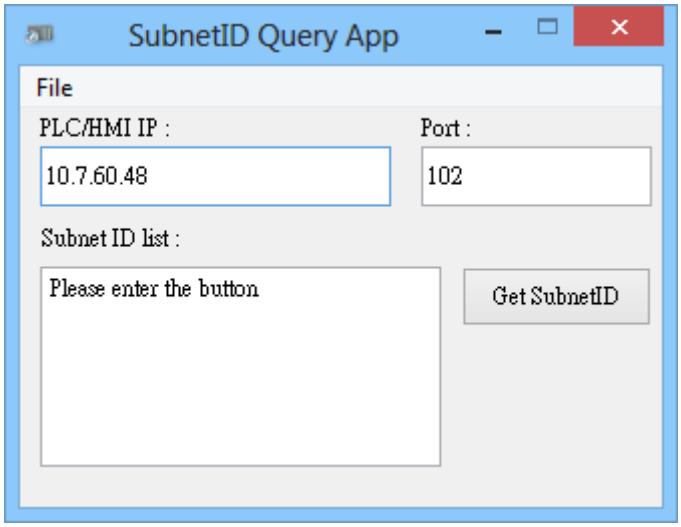
Step2: Open EasyAccess2.0, connect to the target HMI, and obtain the HMI IP.



Step3: Utility Manager -> S7-300 MPI SubnetID tool

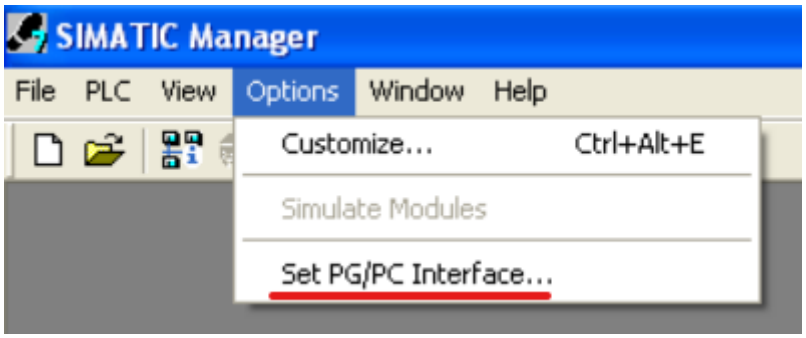


Step4: Set HMI IP and Port number,After setting, click the button **[Get SubnetID]**

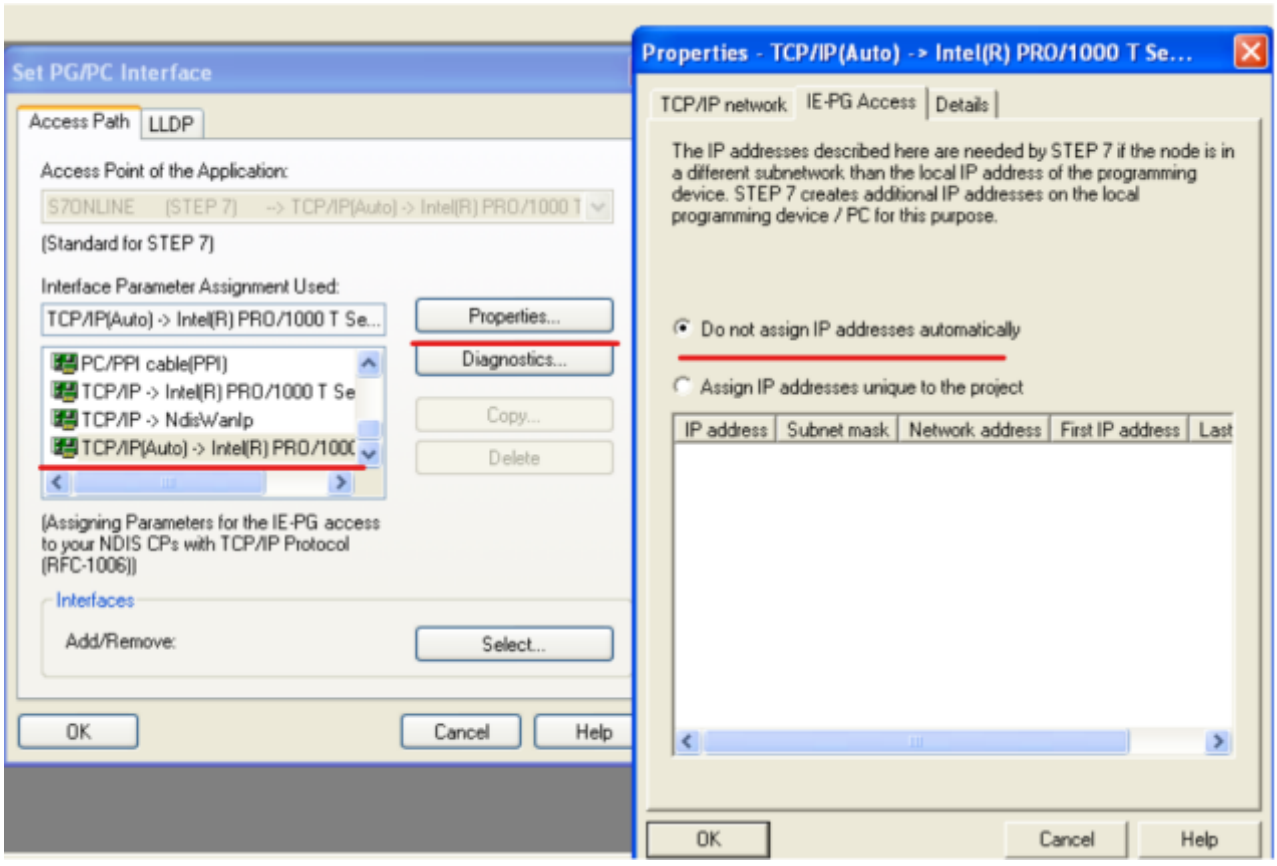


Siement Step7 Software Operation

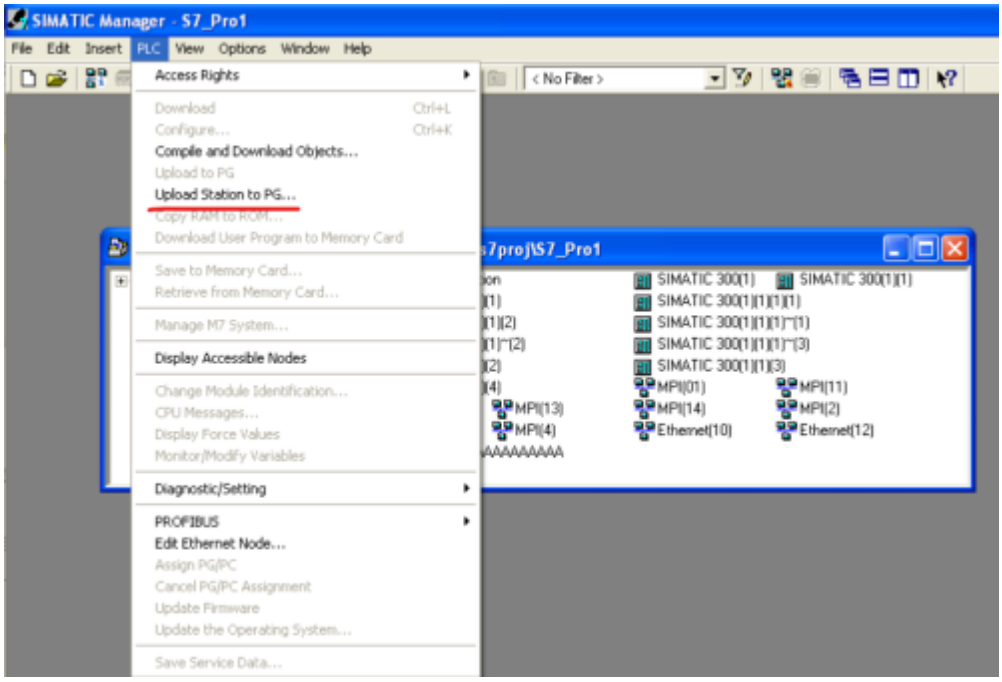
Step1: Enable **[Set PG/PC Interface]**



Step2: Interface: Select the network card used **[TCP/IP -> ...]**
And click Properties (to enter the interface on the right), make sure to check **[Do not assgin IP addresses automatically]**



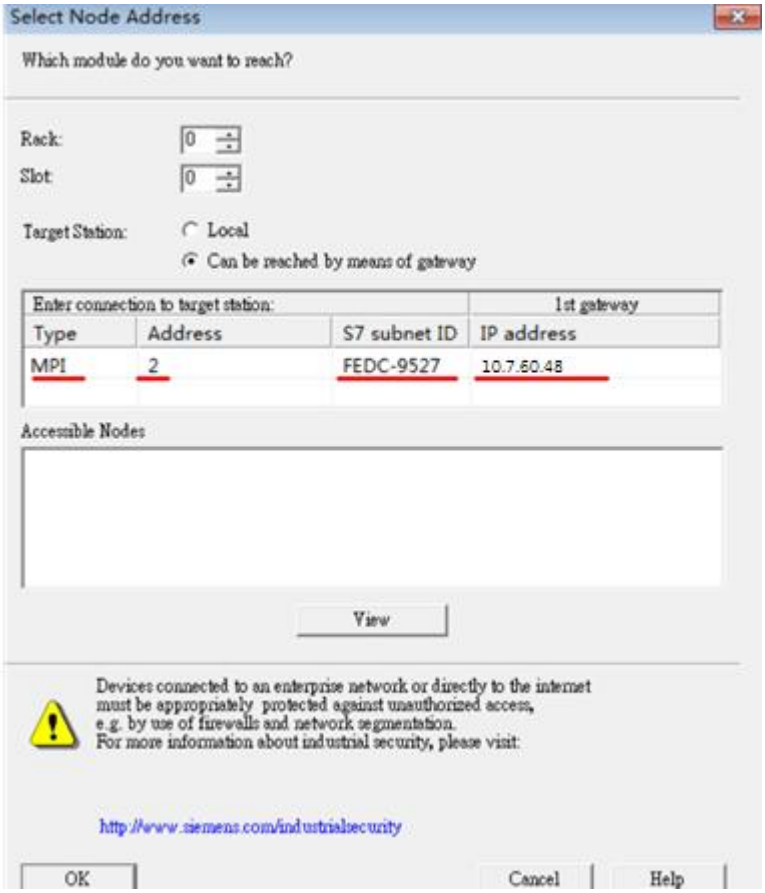
Step3: Open the project and click **[Upload Station to PG...]**



Step4: Select **[Can be reached by means of gateway]**

Fill in the fields in sequence **[MPI] [PLC station number] [S7 subnet ID] [IP address]**

Finally, directly click **[OK]** to start uploading the PLC project. If you click **[View]**, the PLC will not be found (as shown in the figure below).



Wiring Diagram:

RS-485 2W

The serial port pin assignments may vary between HMI models, please click the following link for more information.

HMI		PLC
Link		RS485 2W 9 D-Sub Male
Data-	⟷	8 Data-
Data+	⟷	3 Data+
GND	⟷	5 GND