Connection Guide

S7-1200 Firmware V4.0 Connection Guide

Compatible with EB Pro V5.00.02 or later versions

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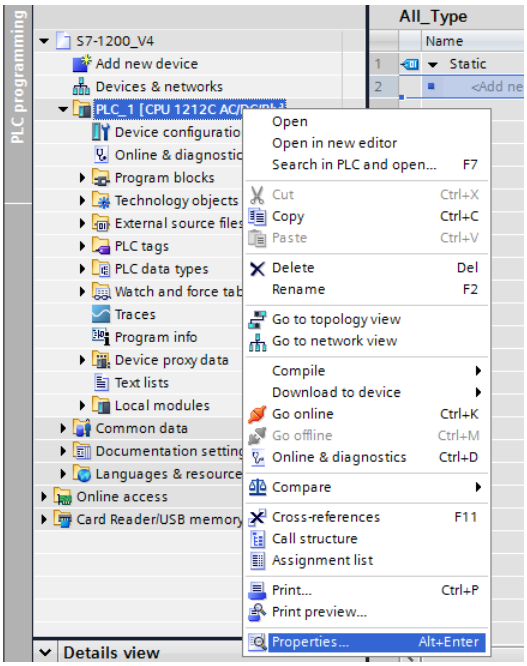
1. Preparation

S7-1200 FW4.0 driver supports importing the tags in external files. The following steps show the way to build the needed Tag file. (To communicate with Siemens S7-1200 FW4.0 device by using EasyBuilder8000, please see Chapter 4 in this manual.)

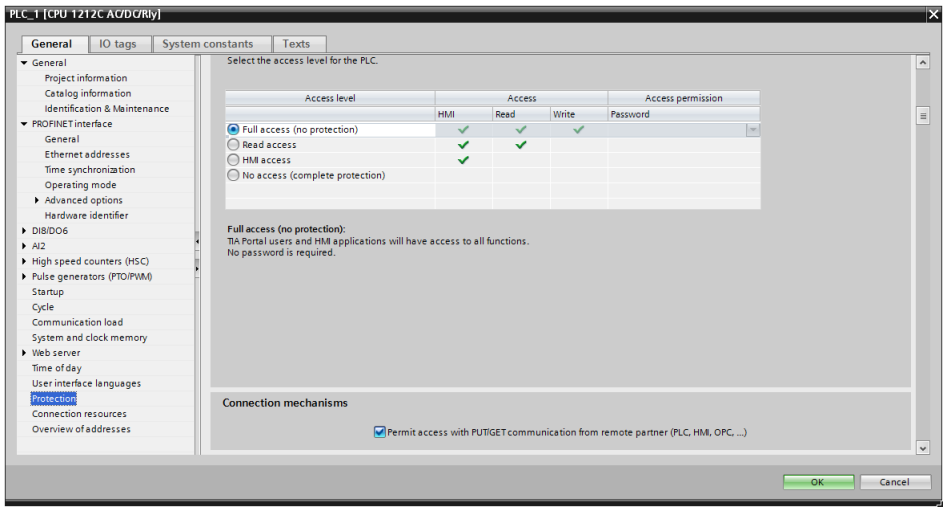
Please note that all changes made in TIA Portal software, including option change and Tag modification, will only take effect after re-download PLC program to PLC.

Connecting HMI with PLC

1. Point to the PLC project and click the right mouse button, and then click [Properties].



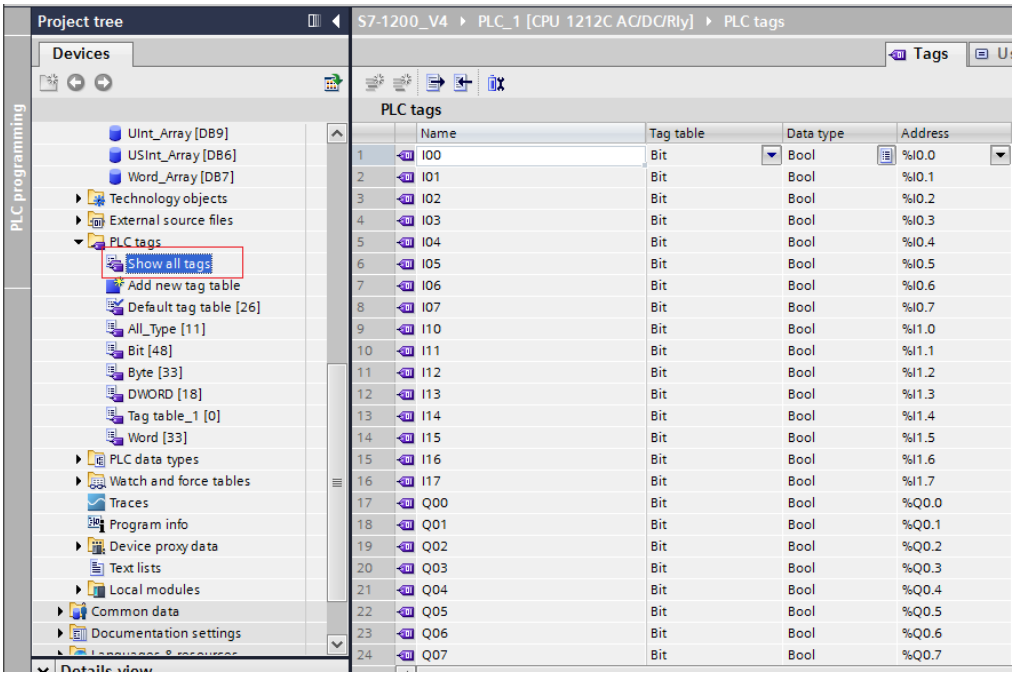
2. Select [Protection] and select [Permit access with PUT/GET communication from remote partner (PLC, HMI, OPC,…)] check box.



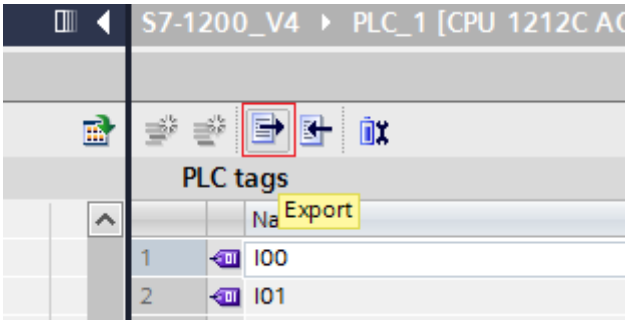
Exporting PLC Tags

This section explains how to export PLC Tags (I, Q, M Tags).

1. As shown in the following figure, select [Show all tags] under PLC tags.



2. Click [Export] icon to export the address tags.

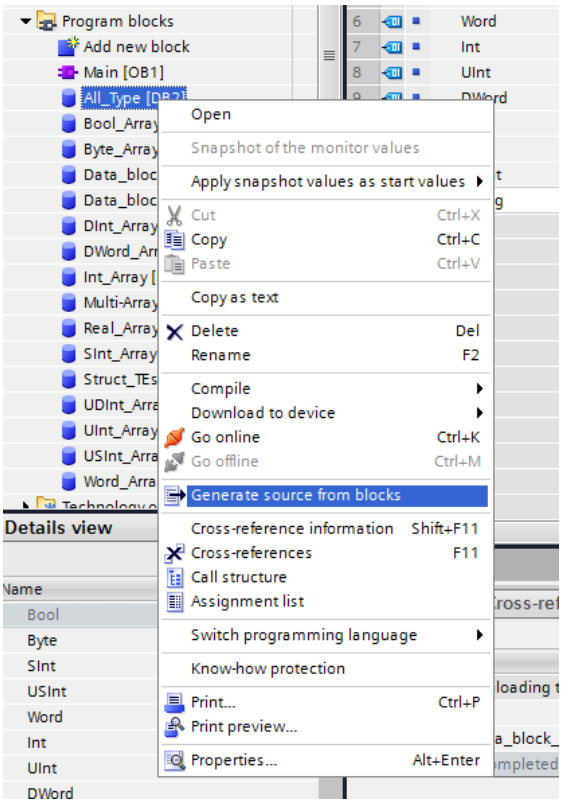


3. Designate the directory to save the tags and click [OK].

Exporting Data Block (DB)

This section explains how to export the tags in proper format from a Data Block to facilitate communication.

1. Point to the DB and click the right mouse button, and then click [Generate source from blocks]. Enter the file name and then save the file. A *.scl or *.db file will be generated.



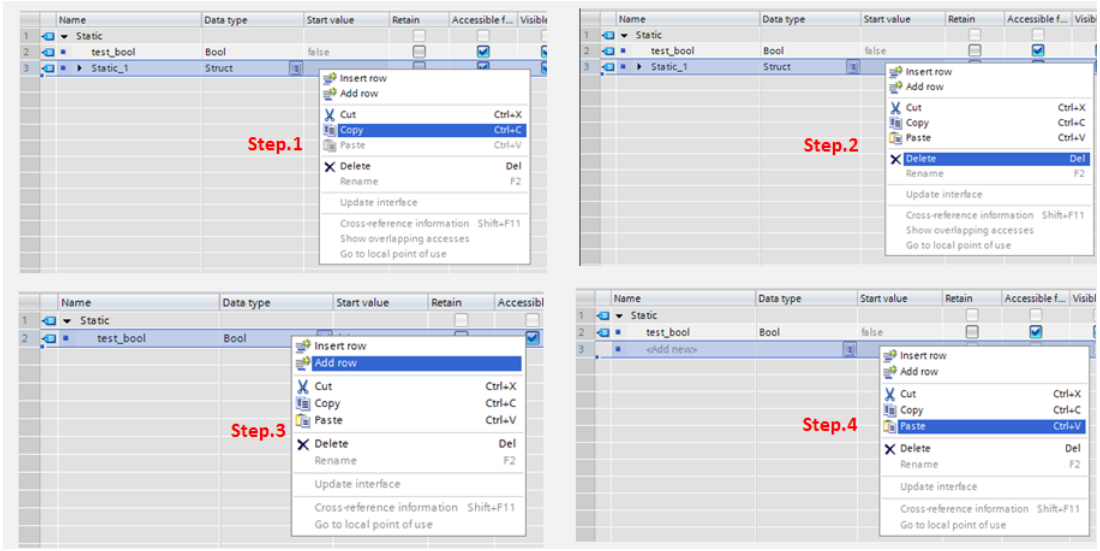
2. If the DB contains data type Struct, it is important to follow the steps below to communicate correctly.

   Step. 1 Copy the whole Struct data

   Step. 2 Delete the data

   Step. 3 Add a new row

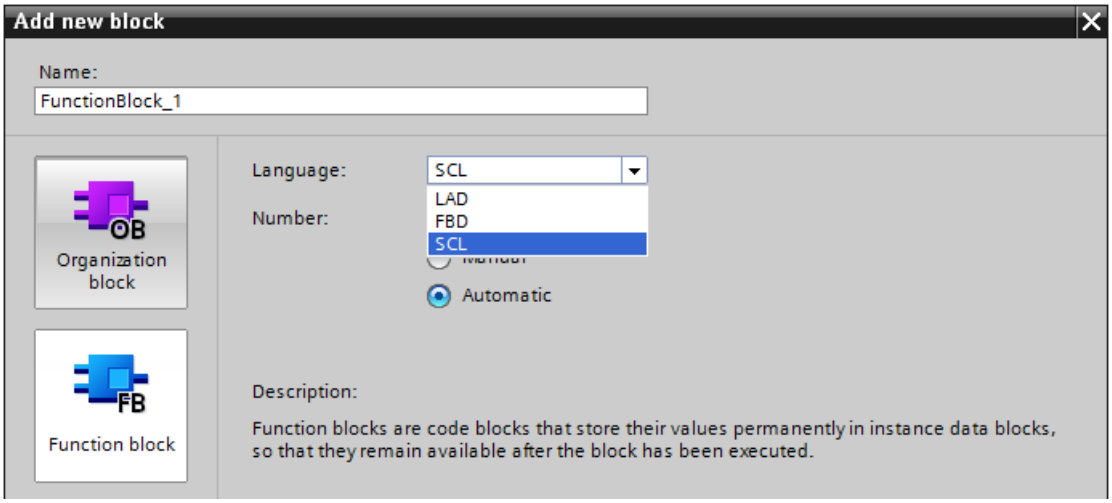
   Step. 4 Paste the copied data



3. When using data type Struct, please note that:
   - At least one member that is not Struct must exist in the DB; otherwise, the Struct data will not be able to be imported to EasyBuilder.
   - Multidimensional array of Struct and nested structure are not supported.

Function Block (FB)

The Language field has three options: LAD, FBD, and SCL. To export a *.scl file, please select SCL. If LAD and FBD are used in the PLC project, please map the LAD and FBD tags to SCL tags.



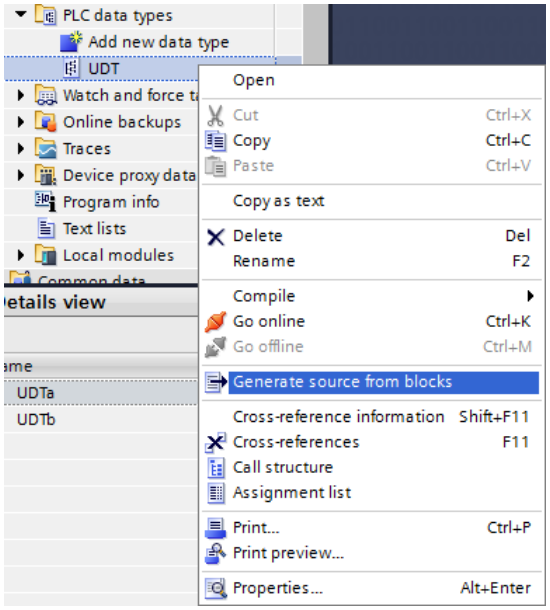
Click the right mouse button in the created Function Block and select [Generate source from blocks]. Enter the file name and save the file. A *.scl file will be generated.

Technology Object

The *.scl file for configuring Technology Object is built in the installation file. You can find the file in the installation directory, Data Type folder.

PLC Data Types

1. Point to [PLC data types] and click the right mouse button, and then click [Generate source from blocks]. Enter the file name and then save the file. A *.udt file will be generated.



2. If the DB contains PLC data types, it is important to follow the steps below to communicate correctly.

   Step. 1 Copy the whole PLC data type

   Step. 2 Delete PLC data type

   Step. 3 Add a new row

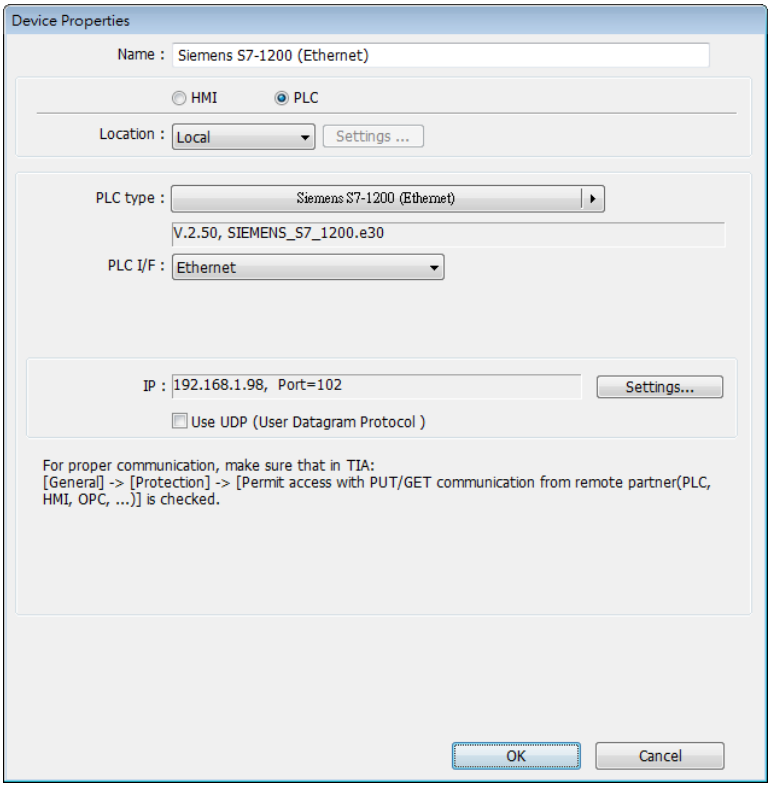
   Step. 4 Paste the copied data

2. Software Configuration

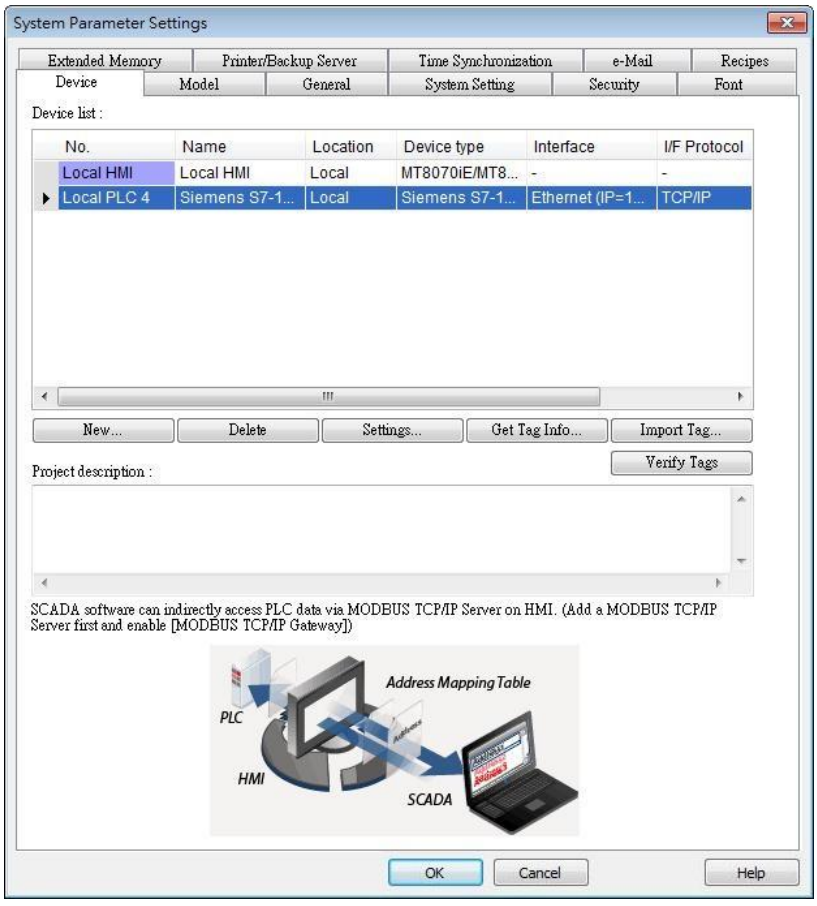
This chapter explains how to import Siemens S7-1200 Firmware V4.0 file and use PLC tags in EasyBuilder.

EasyBuilder Configuration

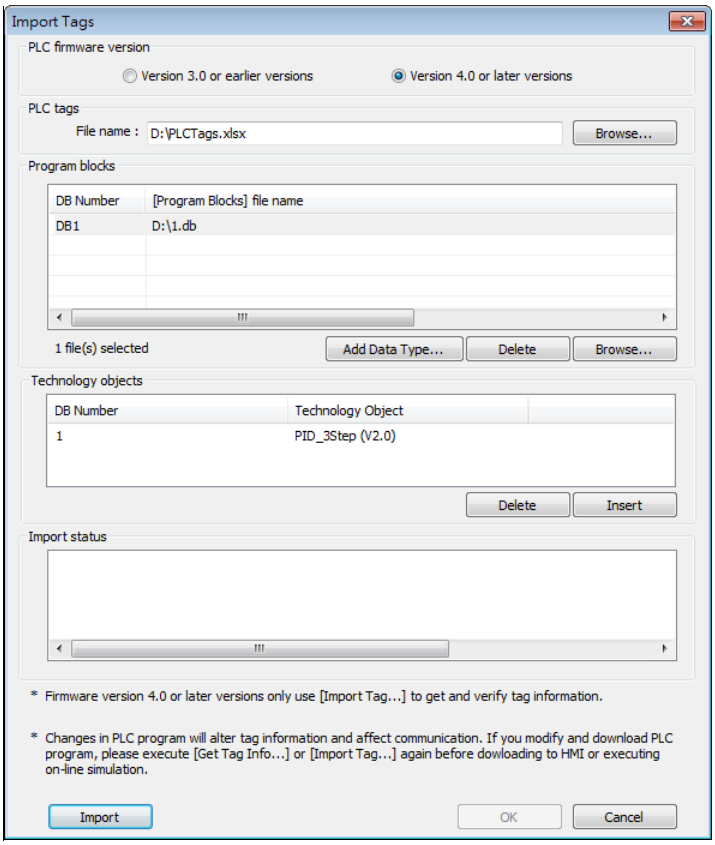
1. Launch EasyBuilder, and set the IP address.



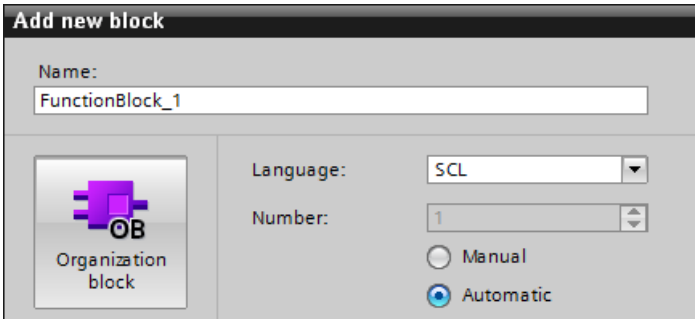
2. Click [Import Tag…] button.



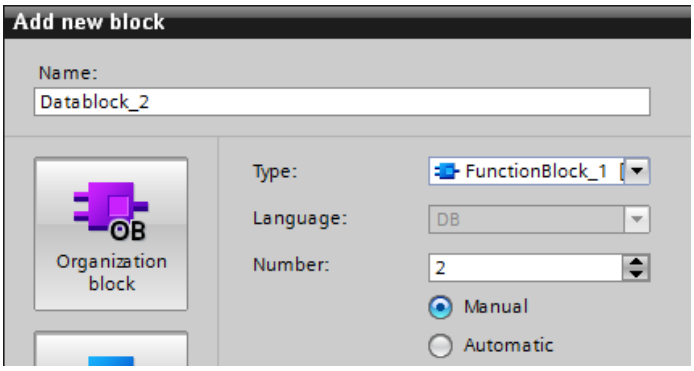
3. Select [Version 4.0 or later versions] for PLC firmware version.
4. Select the file to be imported. Please remember to change DB Number, and then click [Import] button. EasyBuilder will verify the tags one by one to check if the tags exist in PLC.



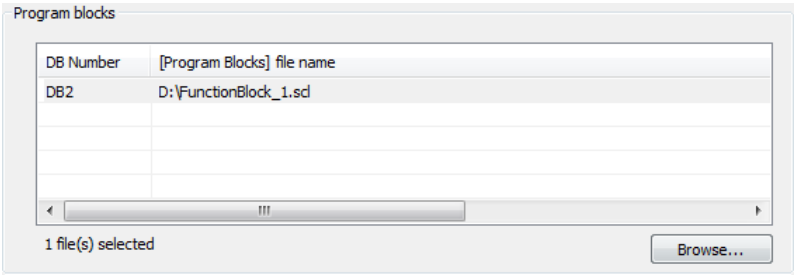
- PLC tags: The *.xlsx file that contains I, Q, M tag information.
- Program blocks: The *.scl, *.db of Data Blocks (DB) or Function Block (FB) files and PLC data types file.
  Click [Add Data Type…] to import the *.udt file of PLC data types.
  If the *.scl file contains Function Block (FB), please enter the correct [DB Number] to map to Data Block.
  For example, if there is a FunctionBlock_1 and the Number is 1.



And, if Function Block_1 is selected as Type for Data Block Number 2.

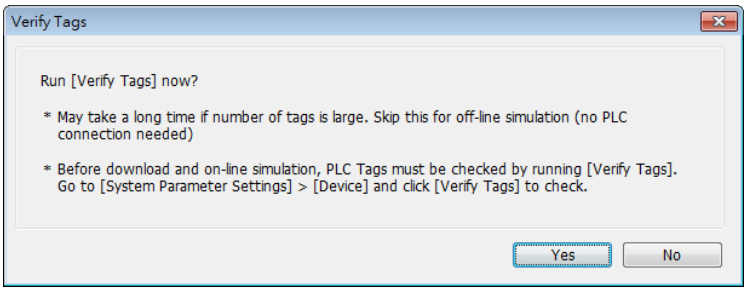


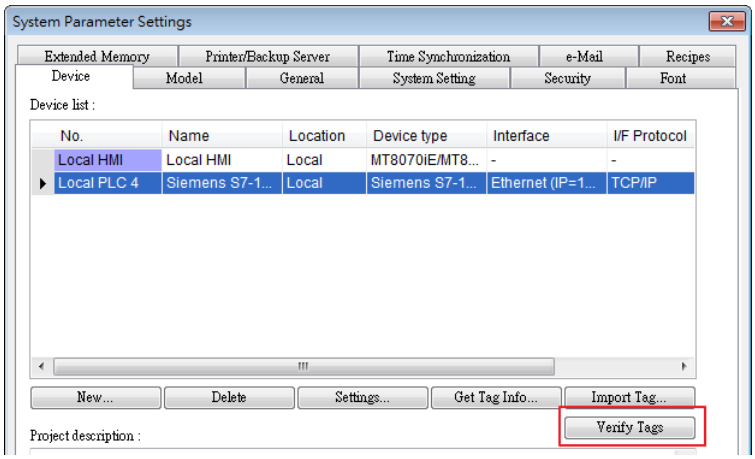
When importing the file to EasyBuilder, please set the DB Number to 2.



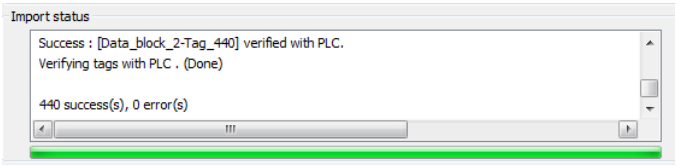
- Technology object: The file exists in EasyBuilder. Click the right mouse button, click [Insert], and then select the correct Object.

5. Clicking [Import] opens a “Verify Tags” dialog box. When the number of tags is large, it may take a longer time to import the tags. If you skip the verification step, before downloading the project to HMI, or do simulation, please go to [System Parameter Settings] » [Device list] and click [Verify Tags].

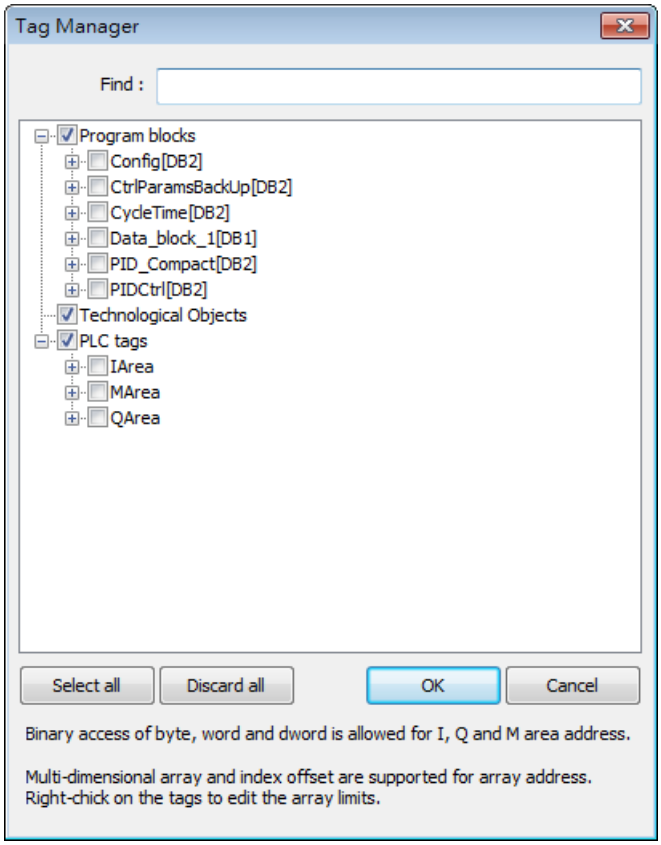




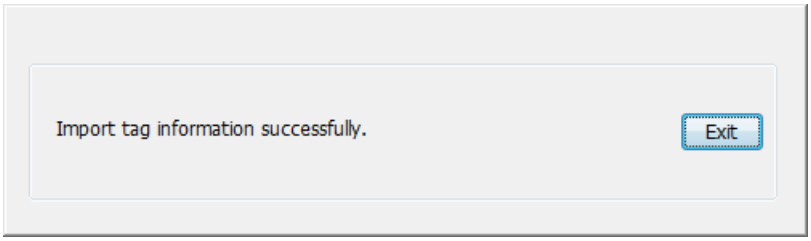
6. The result will be displayed in Import Status field. Click [OK] to leave.



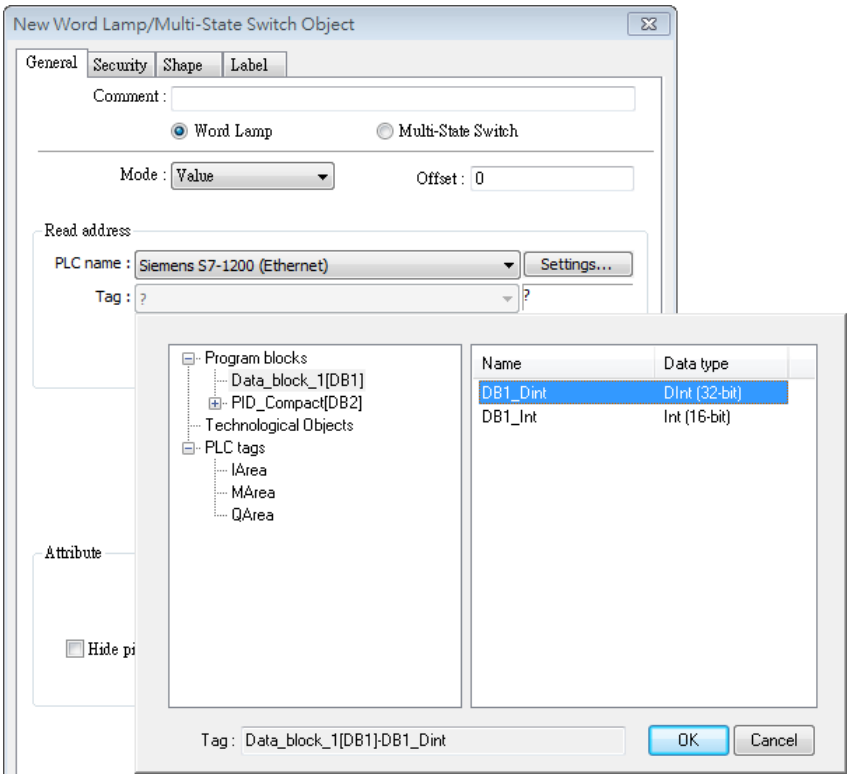
7. The successfully imported tags can be found in Tag Manager. You can select the needed tags from this list.



8. After selecting the tags, click [OK], the following message will be shown.



9. The PLC tags can be selected when creating an object.



Import Error

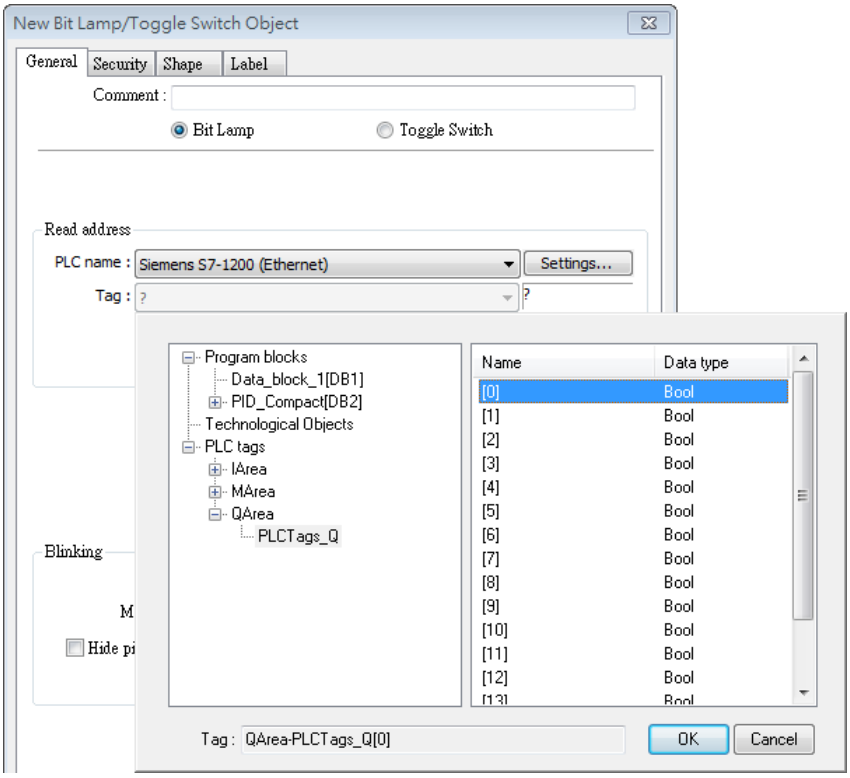
If an error occurs during import, the possible reason can be: The PLC type is not supported, or EasyBuilder cannot verify if the PLC tag information is correct. You can still use the imported tags in the project, but the communication with PLC may fail. Please check the following points:

- Is the DB Number correct?
- Does the PLC tag exist in the PLC project? It is recommended to export the tag again in PLC software.
- Is the PLC IP address correct?

Accessing Bits of I, Q, M Word Register

Apart from using Bool tags, the Bit object can be used to read or write boolean array in I, Q, M registers in Byte, Word, or DWord formats. Select a word register and then select the Bool tag.

As shown in the following figure, PLCTags_Q is in Word format, the Bool tags in this register can be selected.



3. Converting S7-1200/S7-1500 (absolute addressing) Driver

EasyBuilder supports changing PLC Model from Siemens S7-1200 (symbolic addressing) (Ethernet) to Siemens S7-1200/S7-1500 (absolute addressing) in the project. Go to [Edit] » [System Parameter Settings] » [Device] to change the model and then import *.scl / *.db file again.

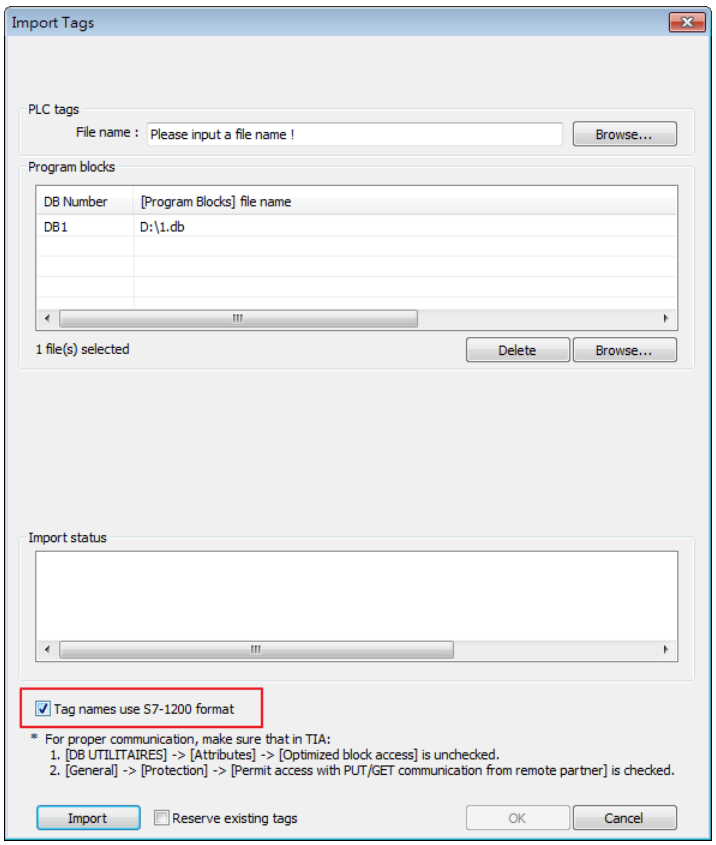
Please note that the following objects cannot be converted:

- PLC data types
- Technology Objects

Notes:

- To map the tags correctly between TIA Portal and EasyBuilder, please delete PLC data type tags in the DB of TIA Portal Project first, and then generate *.scl / *.db file.
- Symbolic Addressing and Absolute Addressing are two different naming systems in EasyBuilder. The system will use the naming system of Symbolic Addressing at the first import after changing PLC model, and then use Absolute Addressing for the later imports. This can cause compilation failure. To avoid compilation error,

from the second import of *.scl / *.db file, please select [Tag names use S7-1200 format].



4. Notes on Upgrading Project

Weintek designs the driver as close as possible with S7-1200 Firmware V3.X, therefore most of the features work in a similar way. However, when using the driver to communicate with S7-1200 Firmware V4.0, the following situation can happen.

- When importing the file, it takes a rather long time to verify. To avoid this, build a new DB, and copy the tag data into the new DB, by following the steps:
  - Step. 1 Copy the tags in the original Data Block.
  - Step. 2 Click [Add new block].
  - Step. 3 Paste the copied data.
- When importing the tag data in the Data Block to the project again, if choose only some of the Data Blocks to import, and the tags in the rest Data Blocks are reserved, then during import, EasyBuilder will ask whether to reserve the existing tags, please click [Yes].
- When compiling the file, a tag error occurs. Please see Chapter 5 in this manual to check if the data type is supported.
- PLC data types that contain initial values cannot be imported.

- Differences between V4 and V3/V2:

	V4	V3 & previous
Import Tag	Import the tags from *.xlsx / *.scl/*.db files. The PLC can be in off-line status.	Get the tags directly from PLC, so PLC must connect PC.
Data Type	Please see Chapter 4 in this manual to find the supported object.	All supported.
Function Block	Import from *.scl and specify the correct DB number.	Define "FunctionBlock.txt" file in the installation folder.

- EasyBuilder8000 does not support Siemens S7-1200 Firmware V4.0 and later versions. To communicate with Siemens S7-1200 Firmware V4.0 in EasyBuilder8000, please use Siemens S7-1500 driver. See the FAQ about how to use I Series model to communicate with S7-1200 Firmware V4.0.

5. Communication Data Types

Supported Data Types

S7-1200 data type	EasyBuilder data format	memo
Bool	bit	
Byte	16-bit BCD, Hex, Binary, Unsigned	8-bit
Char	USInt	
CREF	Struct	
Date	UInt	
Dint	32-bit BCD, Hex, Binary, Signed	32-bit
DTL	Struct	
DWord	32-bit BCD, Hex, Binary, Unsigned	32-bit
ErrorStruct	Struct	
IEC_COUNTER	Struct	
IEC_DCOUNTER	Struct	
IEC_SCOUNTER	Struct	
IEC_TIMER	Struct	

IEC_UCOUNTER	Struct	
IEC_UDCOUNTER	Struct	
IEC_USCOUNTER	Struct	
Int	16-bit BCD, Hex, Binary, Signed	16-bit
NERF	Struct	
SInt	16-bit BCD, Hex, Binary, Signed	8-bit
Struct	Bool, Byte, SINT, USInt, Word, Int, UInt, DWord, Dint, Real, UDInt	
Time	DWord	
Time_Of_Day	DWord	
Real	32-bit Float	32-bit
UDInt	32-bit BCD, Hex, Binary, Unsigned	32-bit
UInt	16-bit BCD, Hex, Binary, Unsigned	16-bit
USInt	16-bit BCD, Hex, Binary, Unsigned	8-bit
Word	16-bit BCD, Hex, Binary, Unsigned	16-bit
Array	Bool, Byte, SINT, USInt, Word, Int, UInt, DWord, Dint, Real, UDInt	Length=word Support up to 3 dimensional array

Not Supported Data Types

EasyBuidler does not support communication with the following V4 data types.

1. AOM_IDENT
2. CONN_ANY
3. CONN_OUC
4. CONN_PRG
5. DB_ANY
6. DB_WWW
7. EVENT_ANY
8. EVENT_ATT
9. EVENT_HWINT
10. HW_ANY
11. HW_DEVICE
12. HW_DPSLAVE
13. HW_HSC
14. HW_IEPORT
15. HW_INTERFACE
16. HW_IO
17. HW_IOSYSTEM
18. HW_PTO
19. HW_PWM
20. HW_SUBMODULE
21. LReal
22. OB_ANY
23. OB_ATT
24. OB_CYCLIC
25. OB_DELAY
26. OB_DIAG
27. OB_HWINT
28. OB_PCYCLE
29. OB_STARTUP
30. OB_TIMEERROR
31. OB_TOD
32. PIP
33. PORT
34. RTM
35. String
36. Array of PLC data types