

# Beckhoff TwinCAT PLC - Free Tag Names

## (Ethernet)

Supported Series:

CX8000, CX90x0, CX1010, CP62xx, CX5010, CP62xx, CX1020, CX2020, CPxxxx, C6920, CX2030, CPxxxx, CP6930, CX2040, C65xx, C69xx.

Website: <http://infosys.beckhoff.com/>

## HMI Settings:

Parameters	Recommended	Options	Notes
<b>PLC type</b>	Beckhoff TwinCAT PLC - Free Tag Names (Ethernet)		
<b>PLC I/F</b>	Ethernet		
<b>Port no.</b>	48898		
<b>PLC sta. no.</b>	No need to set station no.		

<b>Online simulator</b>	YES	<b>EasyAccess 2.0</b>	NO
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## Support Device Type:

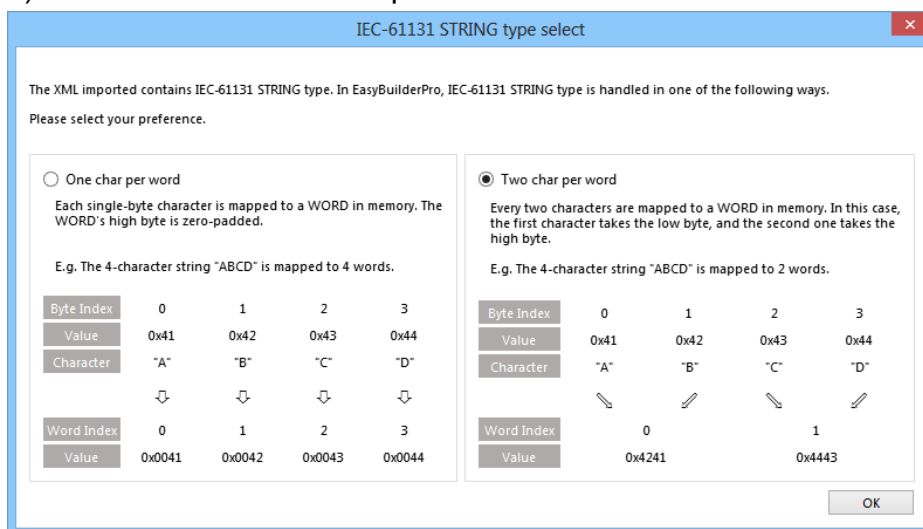
Data Type	EasyBuilder data format	Memo
Bool	bit	
Word	16-bit BCD, Hex, Binary, Unsigned	16-bit
Int	16-bit BCD, Hex, Binary, Signed	16-bit
UInt	16-bit BCD, Hex, Binary, Unsigned	16-bit
DWord	32-bit BCD, Hex, Binary, Unsigned	32-bit
DInt	32-bit BCD, Hex, Binary, Signed	32-bit
Real	32-bit Float	32-bit
UDInt	32-bit BCD, Hex, Binary, Unsigned	32-bit
LInt	64-bit Signed	64-bit
ULInt	64-bit Unsigned	64-bit
LWord	64-bit Unsigned	64-bit
Double	64-bit Float	64-bit
String	ASCII input and ASCII display	Max length: 256

Data Type	EasyBuilder data format	Memo
WString	ASCII input and ASCII display	*Note1

**Note1:** Support WString in EasyBuilderPro V6.08.02 and later versions

**Note2:** EasyBuilder Pro V6.03.02 or later supports 64 bits data type, but please note that the address limit range is 48 bits in maximum.

**Note3:** When importing, there are two modes of one/two char per word to choose from. When importing one char per word, choose Unicode data format for ASCII objects, and choose UTF-8 (Default) data format for two char per word.

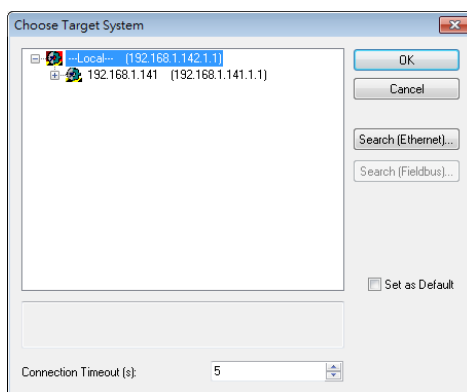


## TwinCAT 2 PLC Settings:

To connect Beckhoff devices, HMI's information must be registered to PLC first. The following steps describe how to register HMI's information into Beckhoff devices.

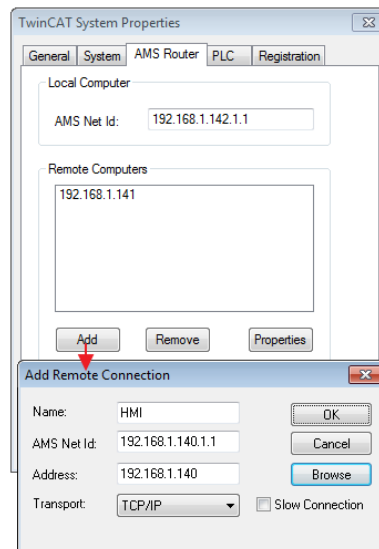
### Step1.

Open TwinCat System Manager. Select [Actions] menu, and then select [Choose Target System]. Select the device you are connecting.



**Step2.**

Open TwinCAT System Control. Go to [AMS Router] tab, click [Add] to add HMI information. Please add the HMI information as below.



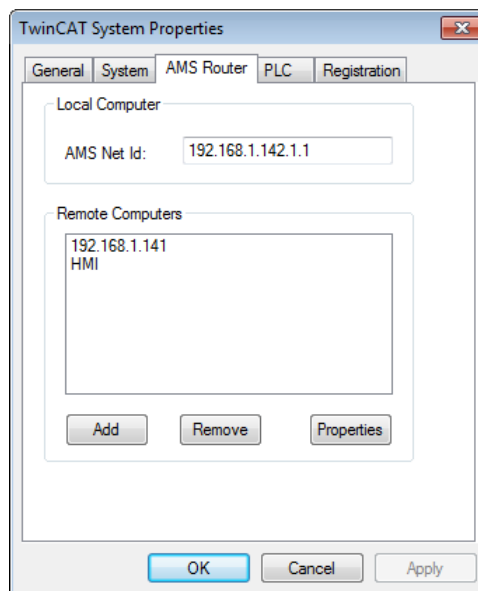
Name: A user-defined name

AMS Net ID: HMI's IP address + ".1.1"

Address: HMI's IP address

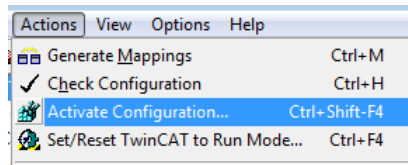
**Step3.**

If added successfully, you will see a new item in Remote Computers. Click [Apply] to apply the configuration.



#### Step4.

Open TwinCAT System Manager again. Select [Actions] menu, and then select [Activate Configuration] to apply the new settings.

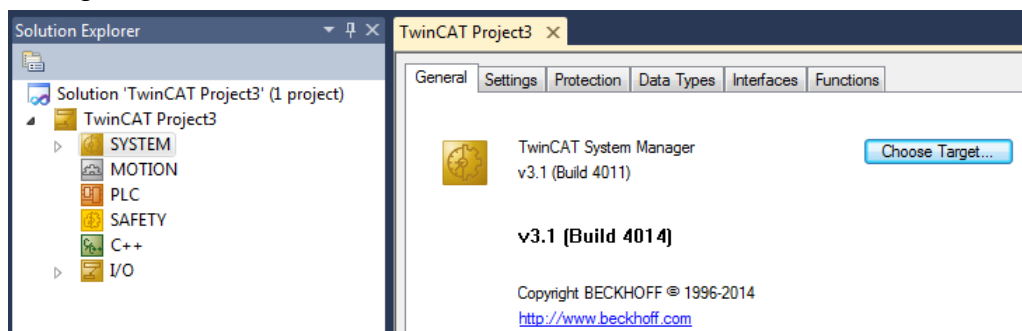


## TwinCAT 3 PLC Settings:

To connect Beckhoff devices, HMI's information must be registered to PLC first. The following steps describe how to register HMI's information into Beckhoff devices.

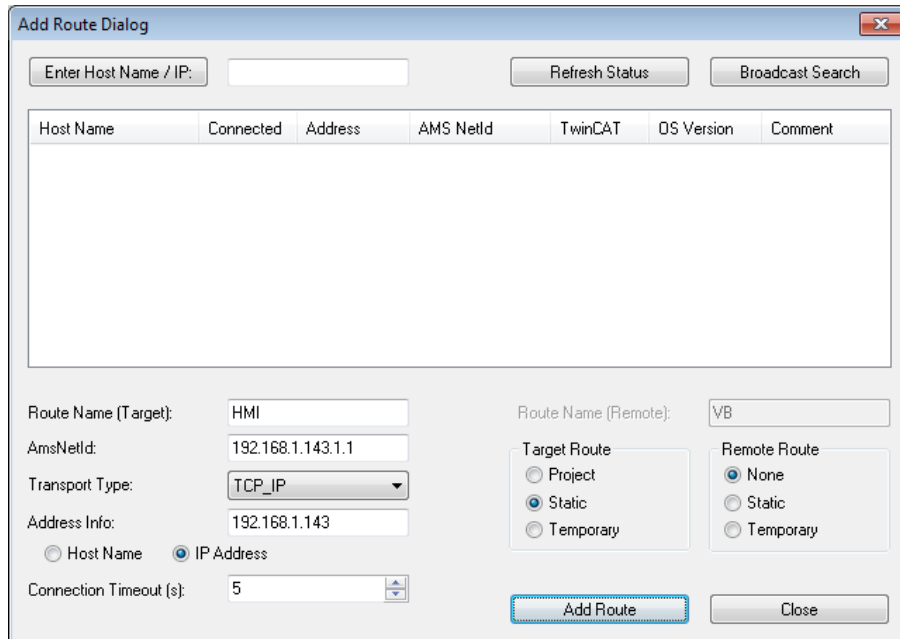
#### Step1.

Double click [SYSTEM], and then select [Choose Target System]. Select the device you are connecting.



## Step2.

Expand the SYSTEM layer, select [Routes]. Click [Add] to add HMI information as below.



The 'Add Route Dialog' box contains the following fields and controls:

- Enter Host Name / IP: [Text Field]
- Refresh Status [Button]
- Broadcast Search [Button]
- Table with columns: Host Name, Connected, Address, AMS NetId, TwinCAT, OS Version, Comment.
- Route Name (Target): [Text Field] (Value: HMI)
- AmsNetId: [Text Field] (Value: 192.168.1.143.1.1)
- Transport Type: [Dropdown Menu] (Value: TCP\_IP)
- Address Info: [Text Field] (Value: 192.168.1.143)
- Host Name ☐ IP Address ☒
- Connection Timeout (s): [Text Field] (Value: 5)
- Route Name (Remote): [Text Field] (Value: VB)
- Target Route:
  - ☐ Project
  - ☒ Static
  - ☐ Temporary
- Remote Route:
  - ☒ None
  - ☐ Static
  - ☐ Temporary
- Add Route [Button]
- Close [Button]

Name: A user-defined name

AMS Net ID: must be HMI's IP address + ".1.1"

Transport Type: TCP\_IP

Address: HMI's IP address

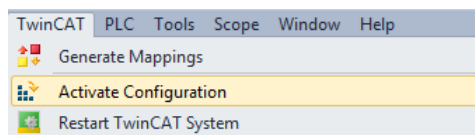
## Step3.

If added successfully, you will see a new item in Remote Computers. Click [Apply] to apply the configuration.

Current Routes				
Static Routes				
Route	AmsNetId	Address	Type	Comment
192.168.1.141	192.168.1.141.1.1	192.168.1.141	TCP_IP	
HMI	192.168.1.143.1.1	192.168.1.143	TCP_IP	

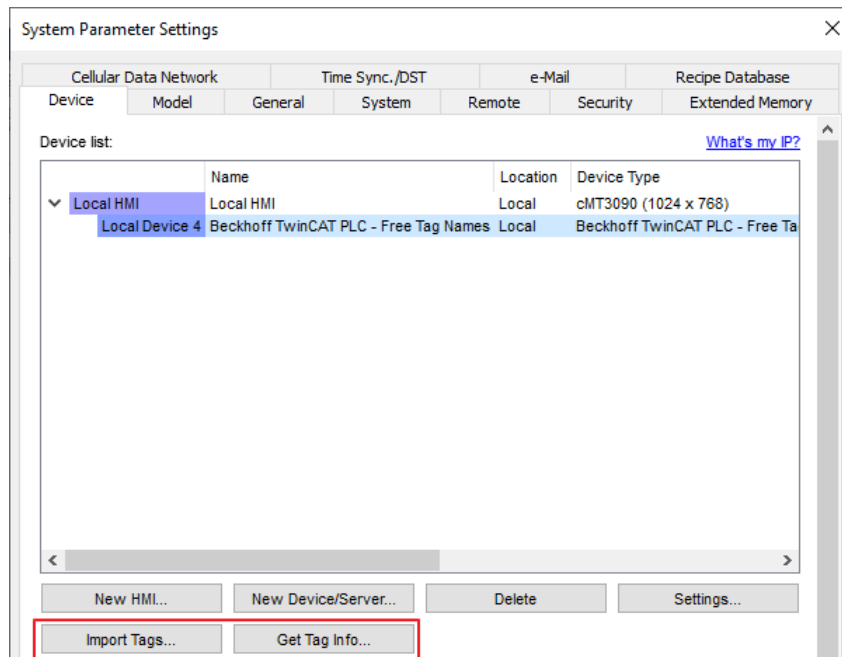
## Step4.

Select [TwinCAT] menu, and then select [Activate Configuration] to apply the new settings.



## How to Import Tags:

EasyBuilder supports two ways to import tags.



### Get Tag Info

[Get Tag Info] could retrieve the tags directly from Beckhoff devices. Select the network adapter to access the Beckhoff devices.

### Import Tags

There are three formats for importing tags: **Linear**, **Hierarchical**, **EBproTag**

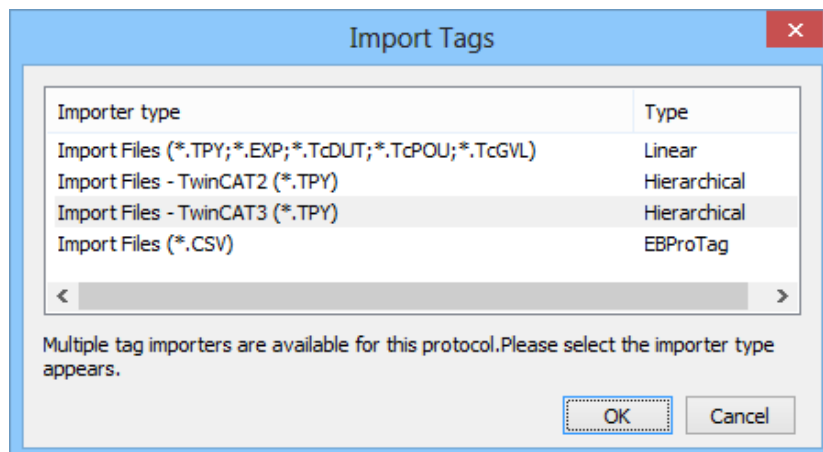
The files generated after compilation in TwinCAT2 and TwinCAT3 programming software can be directly imported to EasyBuilder. Supported file types:

TwinCAT2: .tpy and .EXP.

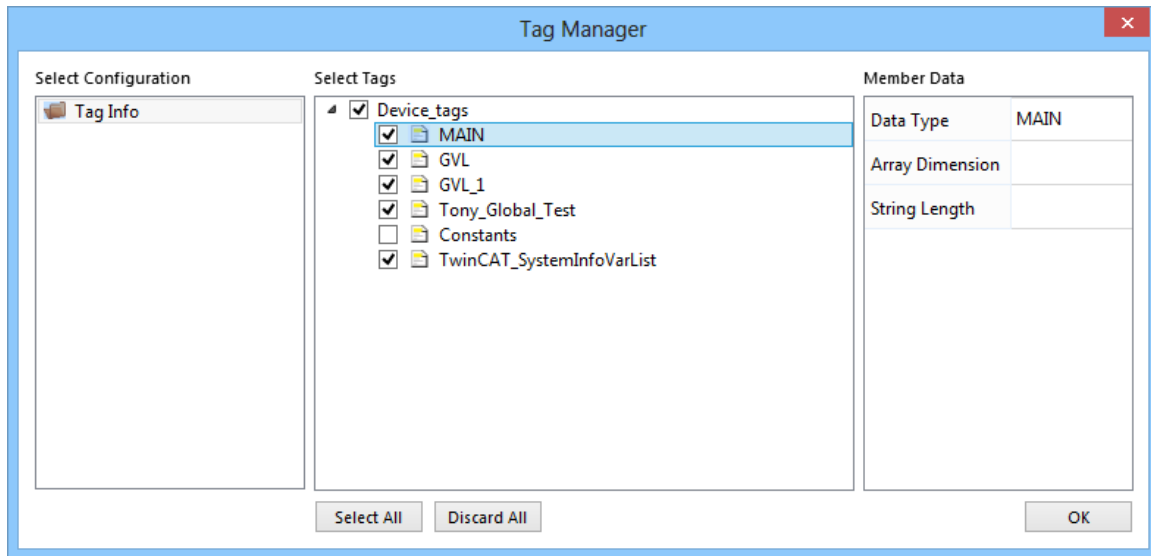
TwinCAT3: .TcDUT, .TcGVL, .TcPOU and .TPY.

TPY files can be imported as linear or hierarchical

**TwinCAT2 does not support the conversion of global\_tag from Linear to Hierarchical.**

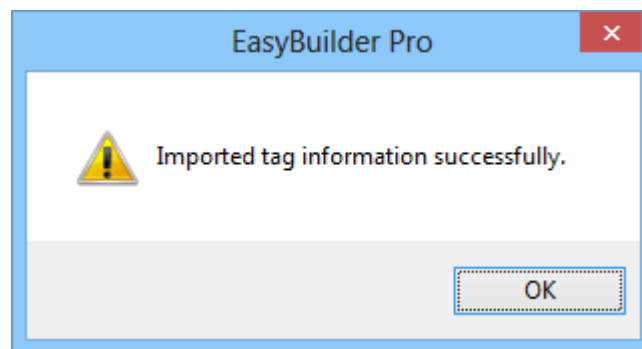


Import and select hierarchical way, support filter tag function.



Select PLC Software Version. Select the file type and then click [Import]. The invalid address types will be displayed in Error Status field.

The “Import successfully” message will be shown upon completion.



### Note

- Tag name can not include “.”.
- GVL files with Tc2GvlVarNames attribute are not supported.

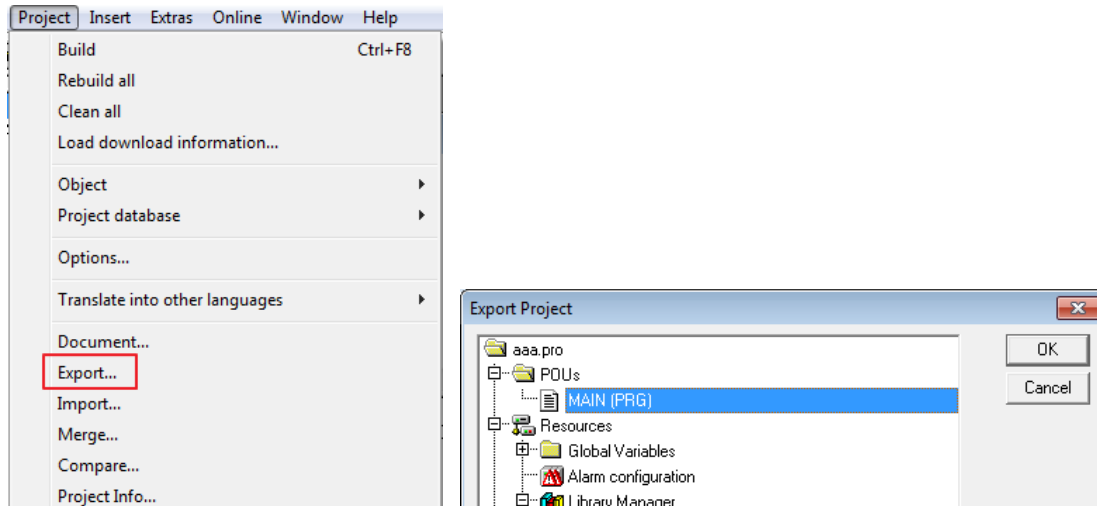
```

1 {attribute "Tc2GvlVarNames"}
2
3 VAR_GLOBAL
4   nVar:INT;
5 END_VAR
6

```

Not Supported

- Except for .EXP file of TwinCAT2, after the TwinCAT project is compiled, other file types are generated and placed in the same folder as the project. To generate .EXP files, please select [Project] » [Export], and then select the tag location to be exported.



- Only use linear type import to support array of array addresses.

```

ARY_OF_ARY_BOOL: ARRAY[0..2] OF ARRAY[0..3,0..1] OF BOOL;
ARY_OF_ARY_UINT: ARRAY[0..2,0..1] OF ARRAY[0..3] OF UINT;
ARY_OF_ARY_DWORD: ARRAY[0..2] OF ARRAY[0..3] OF DWORD;
ARY_OF_ARY_REAL: ARRAY[0..2] OF ARRAY[0..3] OF DUT2;
ARY_OF_ARY_STRING: ARRAY[0..2] OF ARRAY[0..3] OF STRING;
ARY_OF_ARY_3_INT: ARRAY[0..2] OF ARRAY[0..3] OF ARRAY[0..1] OF INT;
ARY_OF_ARY_4_INT: ARRAY[0..2] OF ARRAY[0..3] OF ARRAY[0..1,0..2] OF ARRAY[0..1] OF INT;

ARY_OF_ARY_BOOL[3][4,2] BOOL;
ARY_OF_ARY_UINT[3,2][4] UINT;
ARY_OF_ARY_DWORD[3][4] DWORD;
ARY_OF_ARY_REAL[3][4] DUT2;
ARY_OF_ARY_STRING[3][4] STRING;
ARY_OF_ARY_3_INT[3][4][2] INT;
ARY_OF_ARY_4_INT[3][4][2,3][2] INT;

```

## Wiring Diagram:

### Ethernet cable:

