

Beckhoff TwinCAT PLC - Free Tag Names

(Ethernet)

Supported Series:

CX8000,CX90x0,CX1010,CP62xx,CX5010,CP62xx,CX1020,CX2020,CPxxxx,C6920,CX2 030,CPxxxx,CP6930,CX2040,C65xx,C69xx. Website: <u>http://infosys.beckhoff.com/</u>

HMI Settings:

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

Online simulator	YES	EasyAccess 2.0	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

		PLC Connection Guide
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.

One char per woo Each single-byte ch WORD's high byte E.g. The 4-character Byte Index 0	rd aracter is mapped is zero-padded. r string "ABCD" is 1	I to a WORD ir mapped to 4 w	n memory. The vords.	Two char p Every two cha the first chara high byte.E.g. The 4-cha	er word racters are m cter takes th racter string	napped to a W ne low byte, ar "ABCD" is maj	ORD in memo Id the second oped to 2 word	ry. In this case, one takes the ds.
Each single-byte ch WORD's high byte E.g. The 4-character Byte Index 0	aracter is mapped is zero-padded. r string "ABCD" is 1	I to a WORD ir mapped to 4 w	n memory. The vords.	Every two cha the first chara high byte. E.g. The 4-cha	racters are m cter takes th racter string	napped to a W ne low byte, ar 1 "ABCD" is maj	ORD in memo od the second opped to 2 word	ry. In this case, one takes the ds.
E.g. The 4-character	string "ABCD" is	mapped to 4 w	vords.	E.g. The 4-cha	racter string	"ABCD" is maj	pped to 2 word	ds.
Byte Index 0	1							
	-	2	3	Byte Index	0	1	2	3
Value 0x4.	1 0x42	0x43	0x44	Value	0x41	0x42	0x43	0x44
Character "A"	"В"	"C"	"D"	Character	"A"	"В"	"C"	"D"
¢	Ŷ	Ŷ	¢			1		1
Word Index 0	1	2	3	Word Index		0	:	1
Value 0x00	41 0x0042	0x0043	0x0044	Value	0x4	241	0x4	1443
								ОК

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.

TwinCAT System	n Properties	×
General Syste	m AMS Router PLC	Registration
- Local Comp	uter	
AMS Net lo	192.168.1.142.1	.1
Remote Con	nputers	
192.168.1	.141	
Add	Remove	Properties
Add Remote C	onnection	×
Name:	HMI	OK
AMS Net Id:	192.168.1.140.1.1	Cancel
Address:	192.168.1.140	Browse
Transport	TCP/IP -	Slow Connection

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.

TwinCAT System Properties	×
General System AMS Router PLC Registration	
Local Computer	
AMS Net Id: 192.168.1.142.1.1	
Remote Computers	
192.168.1.141 HMI	
Add Remove Properties	
OK Cancel Ap	ply



Step4.

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

Ac	tions	View	Options	Help			
68	Gene	rate <u>M</u> a	ppings			Ctrl+M	
1	C <u>h</u> ec	k Confi	guration			Ctrl+H	
Ŵ	Activ	ate Con	figuration.		Ctrl	+ Shift-F4	
Ø	Set/R	leset Tw	inCAT to R	lun Mo	de	Ctrl+F4	

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.

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

Add Route Dialog					×
Enter Host Name / IP:			Refresh Status	Bro	adcast Search
Host Name	Connected Address	AMS NetId	TwinCAT	OS Version	Comment
Boute Name (Target):	HMI		Boute Name (Bernol	te): VB	
AmsNetId:	192 168 1 143 1 1		- Target Boute	Bemo	te Boute
Transport Tupe:		1	Project	 No 	one
A LL L /		J	Static	🔘 St	atic
Address Info:	192.168.1.143		Temporary	🔘 Te	emporary
🖤 Host Name 🛛 🔘 IP	Address	1			
Connection Timeout (s):	5		Add Route		Close

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 R	outes	Static	Routes	Project Ro	utes	NetId Man	agen	nent		
Route			AmsNet	ld	Add	ress		Туре		Comment
192.16	8.1.14	1	192.168	8.1.141.1.1	192	168.1.141		TCP_IP	1	
HMI			192.168	3.1.143.1.1	192	168.1.143		TCP_IP		

Step4.

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

Twin	CAT	PLC	Tools	Scope	Window	Help	
1	Gene	erate M	appings				
i.>	Activ	/ate Co	nfigurat	ion			
柴	Resta	art Twir	nCAT Sy	stem			



How to Import Tags:

EasyBuilder supports two ways to import tags.

Cellul	ar Data Netwo	rk	TI I	me Sync./DST		e-M	ail		Recipe Dat	abase	
Device	Model	Ge	eneral	System	Rer	note	Security	y	Extende	d Memor	y
Device list	:								What's	s my IP?	
		Name				Location	Device	Туре			
✓ Loca	HMI	Local HN	11			Local	cMT309	0 (102	4 x 768)		
- L	ocal Device 4	Beckhof	f TwinCAT	PLC - Free Ta	g Names	Local	Beckho	ff Twin	CAT PLC -	Free Ta	
٢										>	

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 Tags		×			
Importer type	Туре				
Import Files (*.TPY;*.EXP;*.TcDUT;*.TcPOU;*.TcGVL) Import Files - TwinCAT2 (*.TPY)	Linear Hierarchical				
Import Files - TwinCAT3 (*.TPY) Import Files (*.CSV)	Hierarchical EBProTag				
<		>			
Multiple tag importers are available for this protocol.Please select the importer type appears.					
	OK Canc	el			



Import and select hierarchical way, support filter tag function.

Tag Manager			×
Select Configuration	Select Tags	Member Data Data Type Array Dimension String Length	MAIN
	Select All Discard All		OK

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 Tc2GvIVarNames attribute are not supported.

	{attribute 'To	:2GvlVarNames'}
2		
8	VAR_GLOBAL	Not Supported
	nVar: INT;	
5	END_VAR	
5		



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.



Wiring Diagram:

Ethernet cable:

