# DRIVER DOCUMENTATION Beckhoff TCAdsDII FOR WINDOWS 9X/NT 4.0/2000 BECKHTC32.EXE

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# **2** HARDWARE

# 2.1 <u>Connection</u>

The communication from zenOn to Beckhoff is done with the TCAdsDII.

# 2.2 Software installation

### 2.2.1 PC

- a) Beckhoff TCAdsDll setup has to be installed on the PC
- b) Copy driver BeckhTC32.EXE to the current zenOn directory, if it does not exist there.

# 2.2.2 CE

The file TcAdsDllCe.dll and the configuration file ,default.bec' is required for communication with TwinCAT. They have to be in the same directory as the driver file (driver for CE: BeckhTc32.dll)

# 2.3 <u>zenOn.ini entries</u>

 [BECKHOFF]
 SIMUL=0
 0....Hardware mode
 1....Simulation mode

# 2.4 Definition of a driver in zenOn

See online help "Process data model and variable definition"

# 2.5 Limitations

none

#### 2.6 Bus address

Do not change!



# **3 DRIVER CONFIGURATION**

# 3.1 <u>General</u>

		· · · · · · · · · · · · · · · · · · ·	<u>⊃</u> κ
<b>7</b>		<u>C</u> a	ancel
Driver:			
Hardware	•		
🔽 Keep PV Updatelist in Mema			
🔽 Updatetime Global			
<u>G</u> lobal Updatetime ms:			
1000			
Priority-			
the second s	ms		
and the second	ms		
higher: 300	ms		
highest: 100	ms		

# 3.2 <u>Configuration file</u>

Configuration	×
Configuration         General       Configuration file         Default bec	



### 3.2.1 Configuration file

Here the name and the path of the configuration file (\*.bec) must be entered. This file is needed for the driver communication.

# 3.3 Beckhoff-Settings

eral Configuration file Beckhoff-Settings Browse		
<b>2</b>		
Timeout: <b>50000</b> ms		<u>C</u> ancel
Selected Runtime system:		
Port: 801 \ NetID: 192.52.109.125.1.1		
Runtime systems:		
Port NetID 801 192.52.109.125.1.1		
801 192.52.109.125.1.1		
	New	
	Edit	
	Delete	
NI-File: W:\zenOnProjekte\Workspace\BECKHOFFSP2\BECKHOFF	]	
direct access via variable name (only on local Computer)		

#### 3.3.1 Timeout

Here the timeout in milliseconds must be entered. If a communication error with the TwinCAT PLC occurs (e.g. the PLC does not respond), the communication is interrupted after that time and the driver status is set to *invalid*.

#### 3.3.2 Selected Runtime System

Here the currently selected Run-Time System is displayed. The selected Run-Time System is needed for the next dialog "Browse". From this Run-Time System the variables are read, that then can be transferred to zenOn (see 3.4 "Browse").

#### 3.3.3 Runtime Systems

This list displays all defined Run-Time Systems (port and NetID). With a doubleclick on a defined Run-Time System it is set as active Run-Time System and entered in the Box "Selected Run-Time System". Activating is also possible with the button "Apply" (after having selected the desired Run-Time System). A new Run-Time system can be added with pressing the button "New" and entering the necessary data in the following dialog.



Runtime-sy	stem	×
		OK
Port:	801	Cancel
NetID:	192 52 109 125 1	1

A defined RTS can be edited with selecting the desired RTS and then pressing the button "Edit"; then edit the data in the following dialog.

#### 3.3.4 INI file

Here the path and the name of the INI files can be entered, where the defined Run-Time Systems are saved.

#### 3.3.5 Direct access via variable name (only on local computer)

If this checkbox is activated, variables are addressed by their name, offset is unused. This option ist only available for variables of a local TwinCAT PLC, on the same PC.

#### 3.4 Browse

LC-variable:										and an and a strength
Variable name	Data typ	and the second sec	and the second s	and the second second	et i	Comn	nent			Cancel
DDD.HUGO DDD.SEPP	DINT	4	16448 16448							State of the
MAIN. DEVDOWN	BOOL	4	16440	-						
MAIN. DEVINIT	BOOL		16448							
MAINDEVUP	BOOL	1	16448							
MAINDRILL	BOOL	1	16448	24						
MAINENGINE	BOOL	1	16448							
LIAINI INUT										
MAIN. INH	BOOL	1	16448	20					-	
MAIN. INIT Search for:	BOOL	1	16448 (variable na	1000				<u>B</u> rowse <u>A</u> dd		
Search for:			(variable na	ame)	NotD	Dart		 Add		
Search for: elected PLC-variables: Variable name	Length D	ata type	(variable na	ame) Offset	NetID 1925	Port				
Search for: elected PLC-variables: Variable name MAINDEVINIT	Length D	300L	(variable na Index 16448	offset	192.5	801		 Add Sav	ve	
Search for: elected PLC-variables: Variable name	Length D 1 1		(variable na	offset 26 19		and the second second second		 Add	ve	
Search for: elected PLC-variables: Variable name MAIN_DEVINIT TEST.LICHT	Length D 1 1 1	300L 300L	(variable na Index 16448 16448	offset 26 19 15	192.5 192.5	801 801		 <u>A</u> dd Sav <u>P</u> rope	ve	
Search for: elected PLC-variables: Variable name MAINDEVINIT TEST.LICHT TEST.SCHALTER1 TEST.SCHALTER2 TEST.SCHALTER2 TEST.SPULE1	Length D 1 1 1 1 1	300L 300L 300L 300L 300L 300L	(variable na Index 16448 16448 16448 16448 16448	ame) 0ffset 26 19 15 16 17	192.5 192.5 192.5 192.5 192.5	801 801 801 801 801 801		 Add Sav	ve	
Search for: elected PLC-variables: Variable name MAINDEVINIT TEST.LICHT TEST.SCHALTER1 TEST.SCHALTER2	Length D 1 1 1 1 1	300L 300L 300L 300L	(variable na Index 16448 16448 16448 16448 16448	Offset 26 19 15 16	192.5 192.5 192.5 192.5	801 801 801 801 801		 <u>A</u> dd Sav <u>P</u> rope	ve	

#### 3.4.1 PLC variables

In this list all variables defined in the soft-PLC are displayed.

#### 3.4.2 Browse

With pressing this button all variables are downloaded from the TwinCAT server and displayed in the window "PLC-Variables".



### 3.4.3 Add

The selected symbols in the list "PLC-Variables" are displayed in the list "Added PLC-Variables". Already existing entries are updated, if the symbols in the PLC have been changed since the last transfer. On adding the added symbols get an internal identification number, that is used as an address for creating the zenOn variables.

If symbols are deleted in the lower list and newly added then, they get a new identification number. zenOn variables already created with the original number have to be edited then!

#### 3.4.4 Added PLC-Variables

In this list all variables are displayed, that were transferred from the list "PLC-variables". In order to add a variable, click on it in the list "PLC-Varaible" and press the button "Add" then. Now the variable is transferred to the lower list. These variables can be added to the zenOn variables with the button "Selct" lateron.

#### 3.4.5 User defined

In order to define a variable by hand, click on the button "User-defined" and enter the variable data in the following dialog.

#### 3.4.6 Properties

Variable name: MAINDEVINIT	ОК
Length:	Cancel
Comment:	
ndex:	
Offset: 26	
AMS Net ID: 192.52.109.125.1.1	
Port: 801	
Data type:	
BOOL	

Single variable data can be edited with the button "Properties".

#### 3.4.7 Delete

To delete a variable simply click on the button "Delete" (after having selected the variable).

#### 3.4.8 Save

Before leaving the dialog the BEC file has to be saved. To do this simply press the button "Save" and the BEC file is saved.

If the dialog is closed without saving, all changes are lost. So do not forget to save the changes!

# 3.4.9 Creating variables in the Editor



Variables are created with the allocation file.

	<u>0</u> K
Array	<u>C</u> ancel
Indizes: 1	Help
Name: Name Identification: TAG-Nr	⊂ ReMa ⊙ Limit
Alternate value:	Limit
	Name: Name Identification: TAG-Nr Alternate value: © LOW (0)

Symbol	Operand	Name	<u></u> K
300L 300L 300L	M _004.00 M _003.00 M _002.00	TEST.TASTER TEST.SPULE1 TEST.SCHALTER2	<u>C</u> ancel
300L 300L	M_001.00 M_005.00	TEST.SCHALTER1 TEST.LICHT	Help
			<u>S</u> earch

Pressing the button "Selection..." in the variable definition opens the allocation file. The variables have a fixed ID (offset) which should not be changes; otherwise incorrect connections can be displayed.



# 4 PROCESS VARIABLE DEFINITION

# 4.1 Objects for process variables in zenOn

Object	Read	Write	Comment
Configuration			
Bit marker	Y	Y	Address range (Offset) from 0 - 65535, bit 0 - 7
Byte marker	Y	Y	Address range (Offset) from 0 - 65535
Word marker	Y	Y	Address range (Offset) from 0 - 65535
Input bit	Y	Y	Address range (Offset) from 0 - 65535, bit 0 - 7
Input byte	Y	Y	Address range (Offset) from 0 - 65535
Input word	Y	Y	Address range (Offset) from 0 - 65535
Output bit	Y	Y	Address range (Offset) from 0 - 65535, bit 0 - 7
Output byte	Y	Y	Address range (Offset) from 0 - 65535
Output word	Y	Y	Address range (Offset) from 0 - 65535

# 4.2 Examples for all possible zenOn data types:

PLC	zenOn
IX 1.0	Input bit offset 1 bit 1
11	Input byte offset 1 low-order
MB 100	Byte marker offset 100 low-order
MX 100.0	Bit marker offset 100 bit 0
MW 100	Word marker offset 100
Q1	Output byte offset 1 low-order
QW 60000	Output word offset 60000
QX 1.1	Output bit offset 1 bit 1



# **5** COMMUNICATION PROBLEMS

### 5.1 Check list:

- Are the used datablocks correctly defined in the PLC?
- Are the files TcAdsDIICe.dll and the configuration file ,default.bec' copied to the CE device?
- Have you analyzed the errorfile (which errors did occur)?
- Send the project to <a href="mailto:support@copadata.at">support@copadata.at</a>.

#### 5.2 <u>Tools</u>

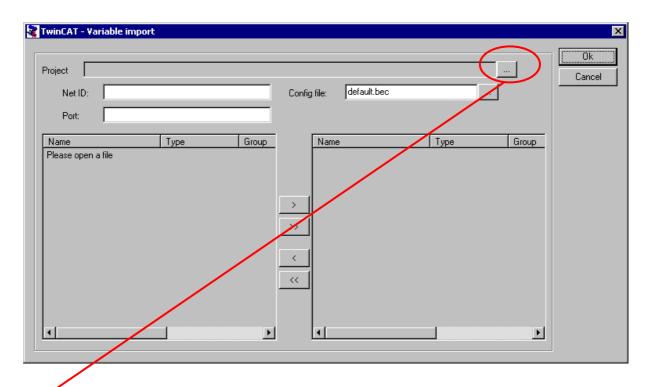
### 5.2.1 Import variable from TwinCAT project

💐 zen	On: VARIMPTEST - [Project inf	o]		
Eile	 Edit Pictures Tools Option y	<u>N</u> indow į	Help _ B ×	
<u>]] [</u>	<u>N</u> ew Insert projekt into workspace		Q Q   H   5	?
<u>ד</u>	Open workspace			
=	<u>S</u> ave workspace			
F	<u>⊂</u> lose Workspace		ре	Archives
R.	Standard configuration	•	andalone - (W:\zenOnPr	🚑 Archives
	Project configuration	•	andalone - (W:\zenOnPr	
	Print	•	andalone - (W:\zenOnPr andalone - (W:\diverses\	
	Export	•	andalone - (W:\zenOnPr	
	Import	•	<u>V</u> ariable •	from <u>D</u> BF - file
	Evit		<u>A</u> llocations	from SZ - project
	Exit			from <u>T</u> winCAT - project

Select a driver:



Select driver!	×
BECKH_32-BECKHOFF-TWINCAT	<u>0</u> K
	<u>C</u> ancel
	<u>H</u> elp



Click the [...] button to select a TwinCAT project .tpy file:

Öffnen		? ×
<u>S</u> uchen in:	🔄 Projekt	
FirstSteps		
See Prostinite		
Datei <u>n</u> ame:	Maschine.tpy	Ö <u>f</u> fnen
Datei <u>t</u> yp:	TwinCAT Files (*.tpy)	Abbrechen



roject W:\diverses	\beckh\Projekt\Maschine	e.tov				]	Ok
····· ,	.109.131.1.1		Config file:	default.bec			Cancel
NECID: 1102.02	.103.131.1.1		Coning nie:	Jaciadicace			
Port: 801							
Name	Туре	Grou 🔺	Na	ne	Туре	Group	
word	WORD	1644					
string	STRING(80)	1644					
_dword	DWORD	1644					
_sint	SINT	1644					
_dint	DINT	1644	1				
_float	REAL	1644	>				
_bool	BOOL	1644	>> 1				
_byte	BYTE	1644					
_uint	UINT	1644					
_time	TIME	1644	< 1				
_double	LREAL	1644					
.ausg	BOOL	1644	- << 1				
.engine	BOOL	1644					
.deviceUp	BOOL	1644					
.deviceDown	BOOL	1644					
.steps	BYTE	1644 👻					
•			•			•	

The Net ID and Port number are wrapped from the .tpy file. They can also been edited manually. The button [>] takes over all selected variables, the [>>] button takes over all variables from the TwinCAT project.

🙀 TwinCAT - Yariabl	e import					×
	rses\beckh\Projekt\Maschir 2.52.109.131.1.1 1		onfig file: default.bec			Ok Cancel
Name .ausg .engine .deviceUp .deviceDown .steps .count .devSpeed .switch	Type BOOL BOOL BOOL BYTE UINT TIME BOOL	Group 16448 164888 164888 164888 164888 16488 164888 164888 164888 1	float float bool byte uint time double	Type WORD STRING(80) DWORD SINT DINT REAL BOOL BYTE UINT TIME LREAL	Group 16448 16448 16448 16448 16448 16448 16448 16448 16448 16448 16448	

Take over the variables to zenOn by clicking the OK button.



uchen:	Variablen gesam ausgewählt		)1 <sub>s:</sub> unbegrenzt D1s: <mark>145</mark>	<u>V</u> erla:
Name	Adresse	Kennung	Modus	
_bool	M (0) 0007.00	BOOL		eckhT <u>H</u> ilfe
_byte	MB (0) 0008.00	BYTE		eckhT
_dint	ML (0) 0005.00	DINT		eckhT
_double	MFD (0) 0011.00	IREAL		eckhT
_dword	MDW (0) 0003.00	DWORD		eckhT
_float	MF (0) 0006.00	REAL		eckhT <u>N</u> eu.
_sint	MB (0) 0004.00	SINT		eckhT ———
_string	MS (0) 0002.63	STRING		eckhT Änden
_time	MDW (0) 0010.00	TIME		eckhT
_uint	MW (0) 0009.00	UINT		eckhT Lösch
_word	MW (0) 0001.00	WORD	SB	eckhT
				Kopier

Variables that are in the variable list before importing new variables are kept, if they don't have the same name as an imported one.



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