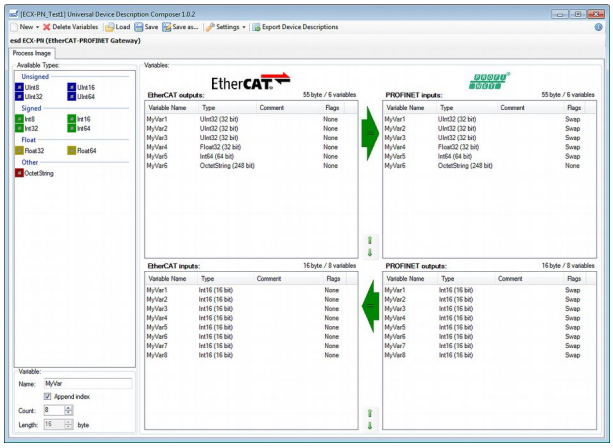
UDDC

Universal Device Description Composer



Software Manual

to Product P.4530.01

esd electronic system design gmbh
Vahrenwalder Str. 207 • 30165 Hannover • Germany
http://www.esd.eu
Phone: +49 (0) 511 3 72 98-0 • Fax: +49 (0) 511 3 72 98-68

N O T E

The information in this document has been carefully checked and is believed to be entirely reliable. **esd** makes no warranty of any kind with regard to the material in this document, and assumes no responsibility for any errors that may appear in this document. In particular descriptions and technical data specified in this document may not be constituted to be guaranteed product features in any legal sense.

esd reserves the right to make changes without notice to this, or any of its products, to improve reliability, performance or design.

esd electronic system design gmbh
Vahrenwalder Str. 207
30165 Hannover
Germany

Phone:	+49-511-372 98-0
Fax:	+49-511-372 98-68
E-Mail:	info@esd.eu
Internet:	www.esd.eu

Document file:	I:\Texte\Doku\MANUALS\PROGRAM\UDDC\Englisch\UDDC_Handbuch_en_11.odt
Date of print:	2016-03-29
Document type number:	DOC0800

Software version:	Version 1.0.2

Document History

The changes in the document listed below affect changes in the hardware as well as changes in the description of the facts, only.

Rev.	Chapter	Changes versus previous version	Date
1.1	-	First English software manual	2016-03-29

Technical details are subject to change without further notice.

Typographical Conventions

Throughout this design specification the following typographical conventions are used to distinguish technical terms.

Convention	Example
File and path names, or similar	***Setup.exe***
Source code, or similar	`open()`

INFORMATION
The following indicator is used to highlight noticeable descriptions.

INFORMATION
Notes to point out something important or useful.

Number Representation
All numbers in this document are base 10 unless designated otherwise. Hexadecimal numbers have a prefix of 0x, and binary numbers have a prefix of 0b. For example, 42 is represented as 0x2A in hexadecimal and 0b101010 in binary.

Abbreviation

Abbreviation	Term	Definition
DCF	Device Configuration File	
EDS	Electronic Data Sheet	Description file for CANopen devices
ESI	EtherCAT Slave Information	Description file for EtherCAT Slaves
GSD	General Station Description	Description file for PROFINET devices
GSDML	General Station Description Markup Language	Language of the GSD files (XML-based)
PDO	Process Data Object	
UDP	User Datagram Protocol	Connectionless protocol for the packet-oriented data transmission
XML	Extensible Markup Language	

Table of contents

1. Overview

1.1 Features of the UDDC

- Generation of device description files for esd gateway products
  - e.g. EtherCAT ESI or PROFINET GSD files

- Windows application with intuitive handling
  - Variables can be quickly created per „drag and drop“
  - Inconsistent settings are highlighted

1.2 System Requirements

Operating system	Microsoft Windows (32/64 Bit, XP or newer) with .NET Framework 2, Service Pack 2
Hard disc space	ca. 10 MB
Memory	Compliant with recommendation for the operating system used

1.3 Software Installation

To install the UDDC software start the installation program ***UDDC_X_X_X_Setup.exe*** which is included on the supplied CD-ROM. (***X*** according to the version of UDDC.)

INFORMATION
You need administrator rights to install the software!

1.4 Using UDDC

Basic procedure:

1. Select the device / Start new project
2. Create output variables and copy them to input side
3. Rename and commend variables according to your needs
4. Export the device description files

Subsequently, the generated device description files are imported into the software.

In chapter 3. the procedure is described in detail. The UDDC user interface is described in chapter 2.

2. User Interface (GUI)

Essentially the UDDC user interface consists of three areas:
- the toolbar (**1**), with various buttons
- the register *Process Image* (**2**), that contains a list of the available data types
- *Variables:* (**3**), the main part of the program window with the lists of the generated variables

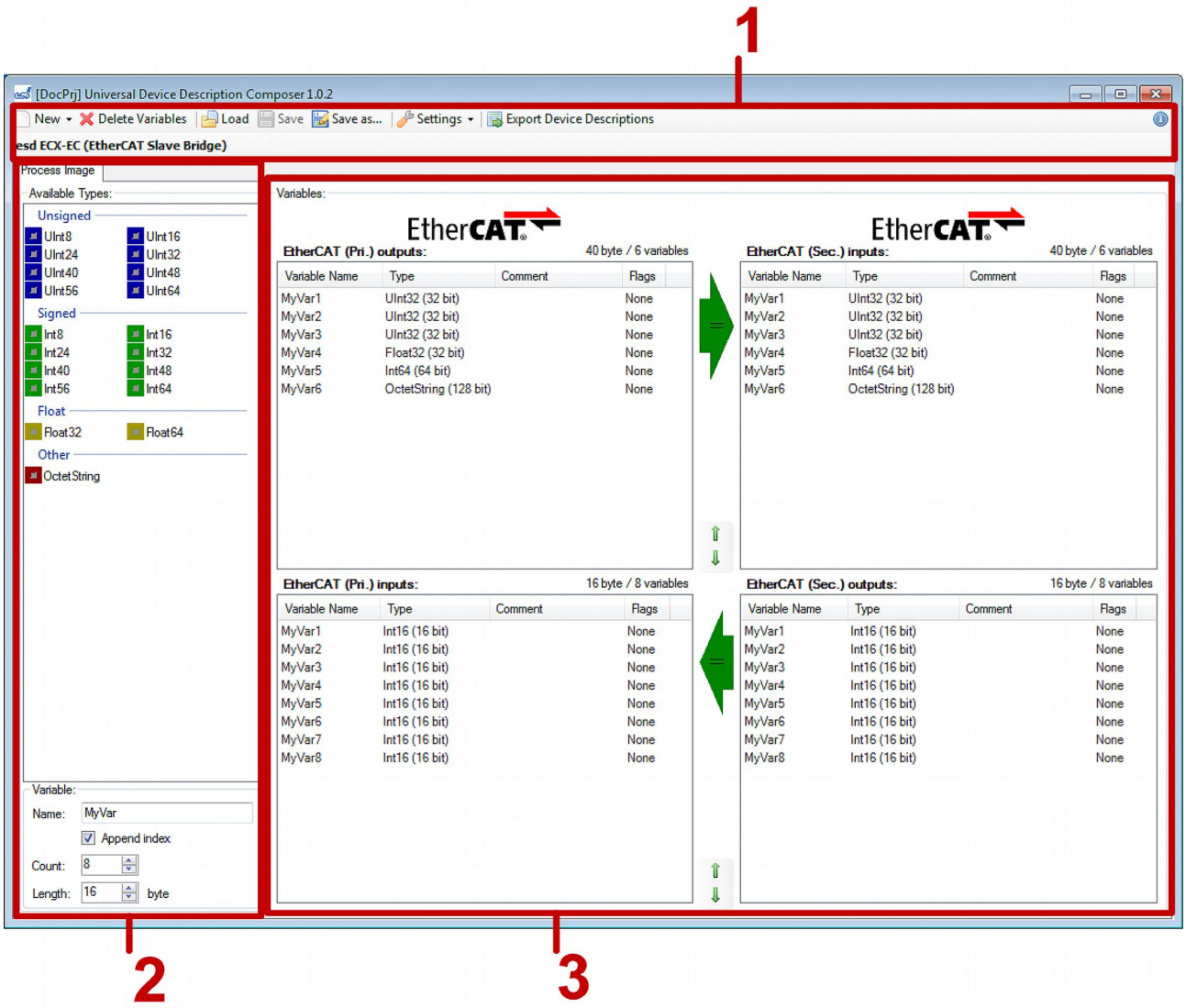


Figure 1: Program window of UDDC (example)

2.1 Toolbar

The toolbar (**1** in Figure 1) consists of two bars:
- The first bar contains the buttons with the functions described in the following table
- The second bar displays the name of the last configured device (e.g. esd ECX-EC).

Command buttons in the toolbar	Description
New	Shows a list of all supported devices and generates a new project for the chosen device.
Delete Variables	Deletes all variables on both interface sides of the gateway. (In principle this corresponds to *New* when choosing the same device)
Load	Loads an existing project file.
Save / *Save as...*	Saves the current project in a file. (*Save* only asks for the file name if it is not already created, *Save as...* always asks for a file name)
Settings	Opens a dialogue window to edit the project settings, for example project name and export directory.
Export Device Descriptions	Generates the device description files and stores them in the export directory.

2.2 Area *Process Image*

The main part of this area is the list *Available Types:*. It shows the types of variables and data, that can be used for the device. Under *Variable:* the options for inserting a new variable of the same type can be specified.

The list *Available Types:* contains integer numbers unsigned/signed, floating point numbers or others, as for example arrays. The list is therefore divided into *Unsigned*, *Signed*, *Float* and *Others*. The name of the data type contains the length in bit. If not, the type (e.g. *OctetString*) allows a variable length, that can be specified via *Length,* as described in the following section.

Under *Variable:* you can specify the following:

Field	Description
Name	Here the name of the variable can be entered, that will be assigned to the next inserted variable.
Append index	If a value higher than 1 is specified for *Number*, the specified number of variables can be inserted at once. If you activate this checkbox, a consecutive number is appended at the name of the new variables, as for example *Name1*, *Name2*, *Name3*, etc...
Number	Number of the new variables, that are generated when a variable of the chosen data type is copied per drag and drop into one of the lists of the variables.
Length	Length of the variables that are to be inserted, provided that it is freely selectable. (The maximum length is device-specific)

2.3 Area *Variables:*

This area shows the configured variables in four separate lists. Two lists are shown for every interface side of the gateway. The lists, one list for input and one for output direction of each interface, are arranged in columns.
On the left above each list the interface and the in/output direction of the variables contained in the list are displayed (for example: *EtherCAT (Pri.) outputs:*).

The large arrows in the centre indicate the copying direction inside of the device.
Inside of the arrow a symbol indicates whether the lengths of the variables are identical („=“) or different („≠“).

Additionally, the background colour indicates further differences:

- A light yellow background indicates that the lengths are identical but the types differ
- An intense yellow background indicates that lengths and types are different.

These vertical arrows can be used to move a selected variable up or down in its list.

List of Variables

The columns *Variable Name* and *Type* contain the variable name and type as selected in the area *Available Types* when inserted into the list.
In the column *comment* the name and the value of a variable can be edited by a double click on the entry.

The column *Flags* displays other, device-specific options of the variables.
Swap for example determines that the byte order of the variable is adapted when copied to the other side. It depends on the gateway type if this feature is supported.

A double click on a variable in the list opens the following context menu:

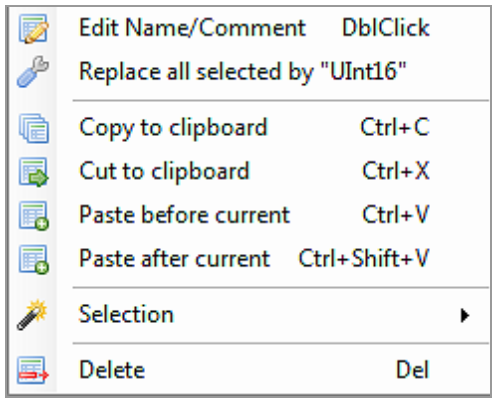


Figure 2: Context menu

Command	Description
Edit Name/Comment	Opens a dialogue window in which the name and the comment of the selected variable can be changed. (If more than one variables are selected, the optional name defined in *Available Types* – with appended index – can be set for them)
Replace all selected by "Type"	Replaces the data type of the selected variable with the type which is selected in the *Available Types* area.
Copy/Cut/Paste …	Allows inserting/copying of variables from or to the clipboard.
Selection	Influences which variables are marked.
Delete	Deletes the marked variables.

3. Usage

The basic procedure is already described in chapter 1.4 “Using UDDC”:

1. Select the device / start new project
2. Create output variables and copy them to input side
3. Rename and commend variables according to your needs
4. Export the device description files

These steps are described in detail in this chapter.

3.1 Select the Device / Start new Project

With a click on the *New* button in the toolbar a list of all installed gateways is shown. After the selection of the gateway the data types available in the process image are generated accordingly, the lists of the variables are empty.

3.2 Create Output Variables

Creating output variables is usually done per drag and drop. Therefore, at first the *Name* has to be defined in the area *Variable.* Then drag the required data type of the variable with the mouse into the list of the output variables.
If more than one variables of the same type are to be created, this can be specified with *Number* there as well. Then the action has not to be repeated unnecessarily. If you activate the checkbox *Append index* a consecutive number is appended at the end of the variable name.
If the required variable has a flexible length this has to be specified in the field *Length* before.

Instead of dragging also a double click on the type of the variable can be used. Then the new variable is inserted under the last selected/inserted variable in the list.

INFORMATION
Definition Output/Input:
Outputs are the values that can be written, inputs are read only – as seen from the application/controller

When all required output variables are generated, click on the large arrows in the centre of the program window to copy the output variables to the other side. As a result the appropriate input variables are automatically created.
This is not absolutely necessary, but recommended. If the lengths of input and output data differ, the data at the end of the longer data range remain unused. If the variables differ, they are highlighted with the following background colours when you click on them:

- Yellow: A variable corresponds to more than one variable on the other side
- Red: No suitable equivalent for the variable has been found on the other side

The first case may under certain circumstances be intended and has to be taken as note then.
The second case is always an error and access will be denied from the device or unpredictable values will be generated for this variables later.

3.3 Customize Variables

After all variables are generated, they can be renamed and you can optionally add a comment.
Double click or click with the right mouse button on the variable to open the dialogue window.
Via the context menu the name can also be changed for several variables simultaneously if the corresponding variables are selected. The name as defined in *Process Image* tab with an appended number is used then.

To change a variable you can use drag and drop as described for the insertion.
If the *Strg* key is pressed simultaneously, you can copy the variable.
If the *Alt* key is pressed simultaneously, you can move the variable to the end of the list instead of the mouse position.

Furthermore you can change the type of an existing variable:
Therefore mark the desired variables and select the new type in the *Process Image* tab then double click on the variable and chose *Replace all selected by* "Type" in the context menu.

3.4 Export Device Description File

Click on the button *Export Device Descriptions* in the toolbar to export the device description file. When exporting for the first time, the project settings are displayed. Here the export directory, into which the generated export files shall be written, has to be specified
After the export a short information window is displayed.

INFORMATION
The export of the device description file is a simple copying process. The generated files are stored in the export directory. (Already existing files are renamed)

The files have to be copied or imported manually into the corresponding directory. (EtherCAT Configurator, PROFINET Engineering Tool, etc.)

Gateway specific notes to the export

Gateway	Generated Files	Others
ECX-EC	Primary side: *ESD ECX-EC UDDC Pri.xml* Secondary side: *ESD ECX-EC UDDC Sec.xml*	EtherCAT- product code and revision no. can not be configured with the UDDC at the moment. Thus, if several different `.xml` files shall be imported into the EtherCAT Configurator manual changes are necessary: For the ECX-EC the product code (*#x00000007*) has to be changed to *#x0000000b*, for the ECX-EC-UDP to *#x0000000c*. With this EtherCAT product codes the EtherCAT revision no. can be set user-defined, to define various configurations as unambiguous EtherCAT slave. (Do not forget the EEPROM ESI of the Slave: It must also contain the modified product code and the revision no., as specified by you)
ECX-EC UDP	EtherCAT: *ESD ECX-EC.xml* UDP: *ECX-EC-UDPGW_ProcessImage.h*	

4. Order Information

Type	Properties	Order No.
UDDC	Universal Device Description Composer Software	P.4530.01

For detailed information about the driver availability for your special operating system, please contact our sales team.

Table 1: Order information

PDF Manuals
Manuals are available in English and usually in German as well. For availability of English manuals see table below.
Please download the manuals as PDF documents from our esd website www.esd.eu for free.

Manuals		Order No.
UDDC-ME	UDDC Software manual in English	P.4530.21

Table 2: Available manuals

Printed Manuals
If you need a printout of the manual additionally, please contact our sales team: sales@esd.eu for a quotation. Printed manuals may be ordered for a fee.