



HEXAGON

USER MANUAL

PC-DMIS – 3DCS KONVERTER **VERSION 1.XXXX.Y.Z**

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1. General

1.1. Introduction

The PC-DMIS 3DCS - Converter (in the following called "3DCS - Converter") represents an interface between PC-DMIS and the 3DCS Tolerance Simulation Software™. With the 3DCS - Converter it is possible to write measured values into a *.dev - file and to process them in the 3DCS Tolerance Simulation Software™.

Appropriate knowledge in the use of PC-DMIS and 3DCS Tolerance Simulation Software™ is necessary, but not the subject of this user manual.

The purpose of this user manual is to assist you in using the 3DCS converter.

We have tried to describe all possibilities of this software as best as possible and comprehensible. However, we ask for your understanding that possibly not all features are described. Reasons for this can be, among others, technical innovations, new options or similar influences.

As a precaution, we would like to point out that these operating instructions cannot replace a training course. Should you be interested in a training course in this respect, we would be pleased to hear from you. You will find the corresponding data at the end of this text.

Even after careful checking, it cannot be ruled out that these user manual are free of errors.

For this reason, we reserve the right to make errors or misprints.

Regardless of this, we are grateful for any suggestions, tips and proposals for improvement that arise from the daily use of the 3DCS - Converter.

If you need assistance, please contact your local Hexagon support.

1.2. Notes on the use of this user's manual

- Find terms or functions that are not listed in the table of contents

The terms used in this user manual for functions etc. are identical to those used in the software. If certain functions cannot be found via the table of contents, use the search function in the PDF. To do this, enter the desired term in the notation in which it is used in the user interface.

- Use Links

If text passages are related to other chapters, they are linked to each other. These links can be recognized by the underlined and blue colored text. Clicking on this text jumps to the corresponding passage.

In order to be able to find these passages in a printed operator's manual, the complete outline is preferably given.

Example:

Chapter: [Operation](#), section: [Deleting measurement results](#), point: [Delete 3DCS measurement from file](#).

In principle, the last term will lead to the desired information (in the example above: point: [Delete 3DCS measurement from file](#)).

The complete structure is not indicated if the linked passage is located in the immediate vicinity of the text (example: see [Example](#) above).

If the text passage to which you jumped does not contain a link to the original text, you can jump to the source text using the key combination "Alt" + "←" (To-Left).

- Used symbols



This symbol serves as a hint to read the corresponding text especially carefully.

1.3. Recommended qualification

- Installation of the software

The software should be installed by personnel who have the following knowledge and permissions:

- PC skills
 - Windows skills
 - Installation of Windows – programs
 - Extract compressed files
 - Changing access permissions in the File System and Registry
- Typical: Network administrators

- Using the software

Die Nutzung der Software sollte von Personal durchgeführt werden, welches über folgende Kenntnisse verfügt:

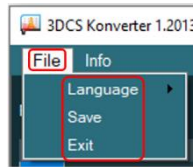
- PC basic skills
 - Windows basic skills
 - Short introduction to the software - e.g.: in-house
- Typical: Employees in production

3. Software License Agreement

It is a prerequisite for the use of the software that all the provisions contained in the software license agreement are accepted. For details, refer to the document "EN_EULA.pdf", which can be found in the folder where the user manual is also located.

4. Menu option "File"

The "File" menu includes "Language", "Save" and "Exit".



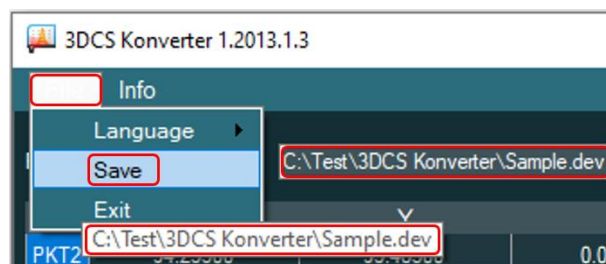
4.1. Language

By means of "File → Language" the desired language can be set.



4.2. Save

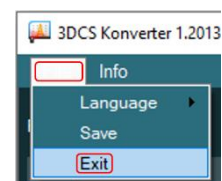
By means of "Save → file" a file with the name of the measuring routine and the extension *.dev is created in the directory in which the measuring routine is located. The complete path is displayed in the upper area in the "File name" text field. If the file name is longer than the text field, the window can be enlarged or maximized, as is usual under Windows. Alternatively, the mouse pointer can be moved to the "Save" item in the drop-down list, which will display a tooltip with the complete path.



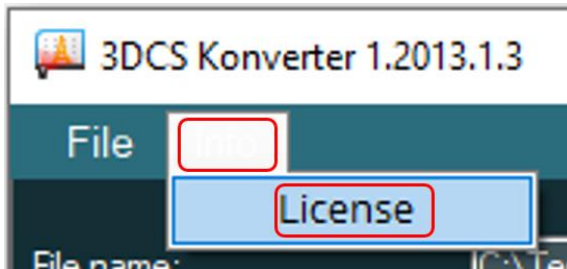
This function is identical to the "OK" button (see chapter: [Basics](#), section: [Values output](#), point: [Output Window](#) below). The content of the file is described in detail in chapter: [Basics](#).

4.3. Exit

The software is closed by means of "Exit". The *.dev - file (see "[Save](#)" above) is not created.



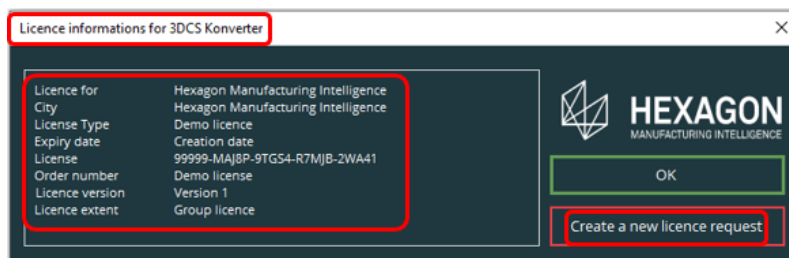
5. Menu option „Info“



5.1. License

With "License" you get information about your software license (e.g.: license type and expiry date) in the following window "License informations for 3DCS Konverter".

A new license request can be created using the "Create a new license request" button.



6. Basics

6.1. Functionality

The 3DCS converter is called at the end of the measuring routine with an external command. The external command must be set to "NO_DISPLAY, WAIT" (see also chapter: [Operation](#)).

All constructed features that are within the alignment named "3DCS" in the measurement routine are captured and output.

The results of these features are displayed and/or written to a *.dev file depending on the syntax used (parameters passed) (see section: [Output names of the Features](#) and [Values output](#) and chapter: [Operation](#)).



In order to fill an already created dev file with further results, the number and sequence of the constructed features must not be changed in the measuring routine. This either leads to an error message or assigns the deviations in the dev file to wrong features. If it is necessary to change the number or order of the constructed features, the dev file must be deleted, moved or a new file must be created (see chapter: [Operation](#)).

A description of the *.dev file can be found in the section: [Values output](#).

6.2. Output names of the Features

The name of the reference elements is used both in the output window and in the *.dev file.

This concerns elements constructed from a single reference element.

In the example:

The cast point "PNT11" is constructed from the measuring point "PNT5" and the cast point "PNT12" is constructed from the measuring point "PNT6". The points "PNT5" and "PNT6" are output (in this case in the output window - see section: [Values output](#), point: [Output window](#)).

PC-DMIS

```

PNT11 =FEAT/POINT, CARTESIAN, YES
        THEO/<141.23, 12.62, 0>, <0, 0, 1>
        ACTL/<141.239, 12.62, 0>, <0, 0, 1>
        CONSTR/POINT, CAST, PNT5
PNT12 =FEAT/POINT, CARTESIAN, NC
        THEO/<147.441, 0, -15.157>, <0, -1, 0>
        ACTL/<147.441, 0, -15.157>, <0, -1, 0>
        CONSTR/POINT, CAST, PNT6
    
```



Output window

ID	X	Y	Z
PNT2	94.25500	95.48300	0.00200
PNT3	141.43500	86.82600	0.00000
PNT4	178.01100	49.20600	0.00000
PNT5	141.23900	12.62000	0.00000
PNT6	147.44100	0.00000	-15.15700
	144.34000	6.31000	-7.58400

Constructed elements that consist of more than one element (e.g.: straight line or plane) are output without names.

In the example:

The straight line "LIN2" is constructed from the measuring points "PNT5" and "PNT6". The output field remains empty.

PC-DMIS

```

PNT12 =FEAT/POINT, CARTESIAN, NO
THEO/<147.441, 0, -15.157>, <0, -1
ACTL/<147.441, 0, -15.157>, <0, -1
CONSTR/POINT, CAST, PNT6
LIN2 =FEAT/LINE, CARTESIAN, UNBOUNDED, :
THEO/<141.235, 12.65, 0>, <0.29999:
ACTL/<141.239, 12.62, -0.01>, <0.:
CONSTR/LINE, BF, 3D PNT5, PNT6,
OUTLIER_REMOVAL/OFF, 3
FILTER/OFF, WAVELENGTH=0
    
```



Output window

ID	X	Y	Z
PNT2	94.25500	95.48300	0.00200
PNT3	141.43500	86.82600	0.00000
PNT4	178.01100	49.20600	0.00000
PNT5	141.23900	12.62000	0.00000
PNT6	147.44100	0.00000	-15.15700
	144.34000	6.31000	-7.58400

6.3. Values output

- Output window

The output window can be opened in different ways. A detailed description of this can be found in the chapter: [Operation](#).

In the text field at "File name:" the path and name of the *.dev - file is displayed (see also chapter: menu point: [Menu option "File"](#), section: [Save](#)).

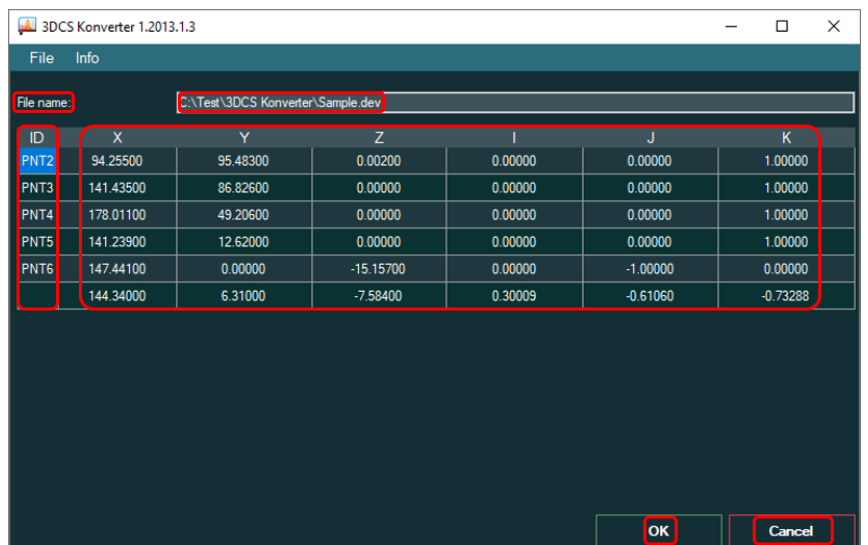
The element name is displayed in the "ID" column. This depends on the reference elements (see section: [Output names of the Features](#)).

The measurement results of the X, Y and Z coordinates and the I, J, K vectors are displayed in the respective column.

The displayed data refer to the measuring routine currently opened in PC-DMIS.

With "OK" the window is closed and the results are written into the corresponding *.dev - file.

By pressing "Cancel", the results are not transferred to the *.dev file.



ID	X	Y	Z	I	J	K
PNT2	94.25500	95.48300	0.00200	0.00000	0.00000	1.00000
PNT3	141.43500	86.82600	0.00000	0.00000	0.00000	1.00000
PNT4	178.01100	49.20600	0.00000	0.00000	0.00000	1.00000
PNT5	141.23900	12.62000	0.00000	0.00000	0.00000	1.00000
PNT6	147.44100	0.00000	-15.15700	0.00000	-1.00000	0.00000
	144.34000	6.31000	-7.58400	0.30009	-0.61060	-0.73288

- *.dev – file:

The file can be filled with data in different ways. A detailed description of this can be found in the chapter: [Operation](#).

The format corresponds to that which can be processed with the 3DCS Tolerance Simulation Software™

Code:

- 30 Measurement routine unit
- 10 Name of the reference feature
(see section: [Output names of the Features](#))
- 11 First value =0 → Fixed value =1 → Fixed value =-1
- 12 First value =0 → Nominal value X → Nominal value Y → Nominal value Z
- 13 First value =0 → Vector I → Vector J → Vector K
- 20 Number of measurements → Deviation X → Y → Z of the measured values t the nominal values (measured value - nominal value = deviation).

Unit	30	MM					
Name	10	PNT2					
Fixed value	11	0	1	-1			
Nominal value	12	0	94.25000	95.48000	0.00000		
	13	0	0.00000	0.00000	1.00000		
Vecors	20	1	0.00500	0.00300	0.11500		
	20	2	0.00500	0.00300	-0.15200		
	20	3	0.00500	0.00300	0.12500		

Number of measurements Deviation of measured values from nominal values

7. Operation

For this chapter, the notes and descriptions in the section: [Functionality](#) must be observed.

7.1. Call with output window without parameters

If no parameter is specified in the external command when calling the 3DCS Converter, the 3DCS Converter will be started and the output window will be opened (see point: [Output window](#))

By confirming the "Ok" button, the *.dev file is created.

The directory in which the measuring routine is located is used as the storage location.

The name of the *.dev file corresponds to the name of the measuring routine. The values in the *.dev - file are described in section: [*.dev – file:](#).

The path and name of the *.dev file can be seen in the upper field of the output window (see section: [Output names of features](#) and [Values output](#)).

Example:

```
EXTERNALCOMMAND/NO_DISPLAY, WAIT ; C:\Program  
Files\Hexagon\3DCS Konverter\3DCS KONVERTER.EXE
```

7.2. Creating the *.dev file without output window

If a space followed by "|a " is entered in the external command after calling the 3DCS, the *.dev file is created without displaying the output window.



It is important that the vertical bar (keyboard input using "AltGr" and "<") is inserted before the "a".

The directory in which the measurement routine is located is used as the storage location.

The name of the *.dev file corresponds to the name of the measuring routine. The values in the *.dev - file are described in section: [*.dev – file:](#).

Example:

```
EXTERNALCOMMAND/NO_DISPLAY, WAIT ; C:\Program  
Files\Hexagon\3DCS Konverter\3DCS KONVERTER.EXE |a
```

7.3. Call with output window and with path specification of the *.dev - file

If the *.dev file is to be saved in a defined path, this must be inserted in the external command by means of a space followed by "|path" after calling the 3DCS converter.



It is important that the vertical bar (keyboard input using "AltGr" and "<") is inserted before the path.

The name of the *.dev file corresponds to the name of the measuring routine. The values in the *.dev - file are described in section: [*.dev – file:](#).

Example:

```
EXTERNALCOMMAND/NO_DISPLAY, WAIT ; C:\Program  
Files\Hexagon\3DCS Konverter\3DCS KONVERTER.EXE |C:\Test\3DCS  
Konverter\Results\
```

If the *.dev file is to have a defined name, this is added to the path specification without the ".dev" extension.

Example:

```
EXTERNALCOMMAND/NO_DISPLAY, WAIT ; C:\Program  
Files\Hexagon\3DCS Konverter\3DCS KONVERTER.EXE |C:\Test\3DCS  
Konverter\Results\Part1
```

In both cases the output window opens after calling the 3DCS converter (see section: [Output window](#)).

7.4. Call without output window and with path specification of the *.dev - file

If the *.dev file is to be saved in a defined path without displaying the output window, the path must be inserted after calling the 3DCS converter with a space followed by "|a" and another space followed by "|path".



It is important that the vertical line (keyboard input using "AltGr" + "<") is inserted before the "a" and the path specification in each case.

The name of the *.dev file corresponds to the name of the measuring routine. The values in the *.dev - file are described in section: [*.dev – file:](#).

Example:

```
EXTERNALCOMMAND/NO_DISPLAY, WAIT ; C:\Program  
Files\Hexagon\3DCS Konverter\3DCS KONVERTER.EXE |a |C:\Test\3DCS  
Konverter\Results\
```

If the *.dev file is to have a defined name, this is added to the path specification without the ".dev" extension.

Example:

```
EXTERNALCOMMAND/NO_DISPLAY, WAIT ; C:\Program  
Files\Hexagon\3DCS Konverter\3DCS KONVERTER.EXE |a |C:\Test\3DCS  
Konverter\Results\Part11
```

7.5. Calling the 3DCS Converter.exe

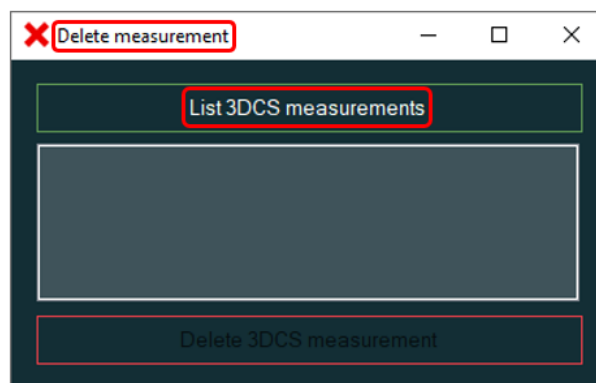
Besides the possibility to start the 3DCS Converter from the PC-DMIS measuring routine, the 3DCS Converter.exe can alternatively be started manually. To do this, click on the corresponding link on the desktop or in the Windows program start group.

The output window opens and shows the values of the current measuring routine opened in PC-DMIS. The window can be closed by means of "Cancel" (no further action) or "OK" (*.dev - file is generated - see chapter: [Basics](#), section: [Values output](#), point: [Output window](#)).

7.6. Deleting measurement results

During the installation of the 3DCS Converter the program "3DCS Delete Measurements" is installed in the subdirectory "DeleteMeasurements". With this tool it is possible to delete single or multiple measurement results from a created *.dev file.

To start the program, click the corresponding shortcut on the desktop or in the Windows program start group. The "Delete measurement" window opens with the "List 3DCS measurements" button.

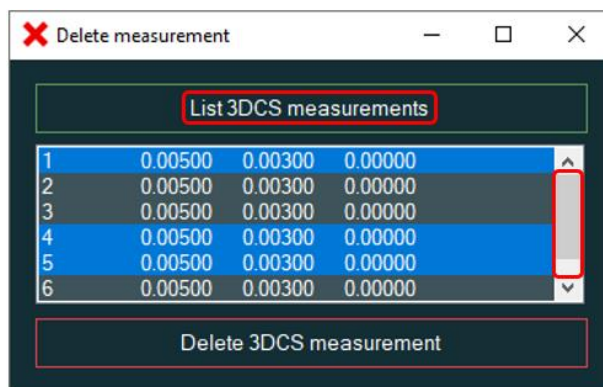


- List 3DCS measurements:

If the button "List 3DCS measurements" is clicked, the number and values of the measurements are displayed after selecting the corresponding file. Each line can be marked by mouse click.

If the file contains more lines than can be displayed, the bar on the right can be used to scroll up and down. Alternatively, the window can be enlarged or maximized, as is usual under Windows. In both cases, the markings are retained.

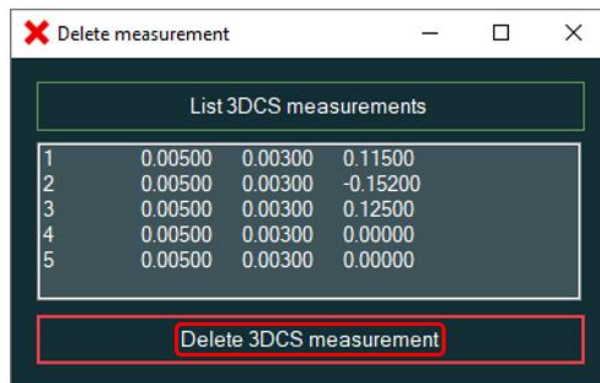
If an already marked line is clicked again, this entry is demarked.



- Delete 3DCS measurement from file

This button is only available if a file has been loaded using "[List 3DCS measurements](#)" (see above).

After selecting the measurements, pressing the "Delete 3DCS measurement" button will delete the corresponding measurement values from the file and update the numbers of the measurement.



The window remains open and further measurements can be removed.

8. About Hexagon

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Manufacturing Intelligence division provides solutions that utilise data from design and engineering, production and metrology to make manufacturing smarter. For more information, visit hexagonmi.com.

Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us [@HexagonAB](https://twitter.com/HexagonAB).