User manual

PC-DMIS Q-DAS Converter

Version: 6.2020.227

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HEXAGON
MANUFACTURING INTELLIGENCE

Table of Contents

1. Information about this document

This document applies to version 2024.1 of the PC-DMIS Q-DAS Converter.

1.1. Document history

Version	Date	Author(s)	Modifications / Remarks
1	31.05.2024	SR	Description of Tracefield Configurator and other additions

2. General information

2.1. User Manual

The aim of this manual is to support you in dealing with the software “PC-DMIS - Q-DAS Converter” (referred to below as “Q-DAS Converter”).

We have tried to describe all options of this software as best as possible and in a way that is understandable. However, we ask for your understanding that all features may possibly not be described. This may be due among other things to technical innovations, new options or similar influences.

We point out by way of precaution that this manual cannot replace training. Should you be interested in a course in this respect, we look forward to hearing from you. You can find the corresponding data at the end of this text.

Even after careful checking, errors in this user manual cannot be ruled out.For this reason, we reserve the right to make typographical errors and mistakes.

Irrespective of this, we are thankful for suggestions, tips and proposals for improvements resulting from daily dealings with the software “Q-DAS Converter”.

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

2.2. Notes on using this user 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 found in 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: How to use the software, Section: Configuration of the converter, Point: Setup.

  In general, the last term will link to the needed information (in the example above: Item: Setup).

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

  If there is no link to the original text in a text passage that was jumped to, you can jump to the source text with the key combination "Alt" + "⇦" (To-Left).

- Used symbols

This symbol is an indication to read the corresponding text very carefully.

2.3. Software objectives

This software has been specially designed to allow generation of Q-DAS ASCII data under the software PC-DMIS™ software package, Version 2020 MR2 or higher.

This converter allows manual conversion (OFFLINE) after the measurement is completed or automatic conversion during runtime (ONLINE). It can be started by an external command from the measuring routine during its execution.

2.4. Software requirements

The software may only be installed on a **64-bit computer** with **Windows 10 or higher** and a **compatible version of PC-DMIS**. For compatibility notes please refer to the document " EN PCDQDAS Konverter Installation.pdf" in the section: "Compatibility of PC-DMIS with PC-DMIS Q-DAS Converter" (link to the document: ftp://ftp.hexmet.de/PC-DMIS/PC-DMIS_Q-DAS_Converter/PC-DMIS_Q-DAS_Converter_Version_6/Docs/). No software tests have been performed under other operating systems. If this software is installed under other operating systems, no guarantee can be given for the full functionality of the software.

In addition, the **.NET Framework version 4.7.2** or higher is required on the PC.

The tests of compatibility of the data generated with qs-STAT® were conducted with version qs-STAT® Version 11. However, in accordance with Q-DAS®, the format may also be used for older versions.

The relevant PC-DMIS™ version must be installed on the same computer in order to be able to use the converter.

2.5. Software license agreement

The use of the software is subject to acceptance of all provisions contained in the software license agreement. For details, refer to the document "EN_EULA.pdf", which you will find in the same folder in which the user manual is located.

2.6. Other information

Software maintenance will be subject to a software maintenance contract entered into in conjunction with the PC-DMIS license.

Please observe the terms and conditions of the license agreement that appears during the installation.

3. How to use the software

3.1. Language setting

The software is available in the following languages:

- English
- German
- French
- Italian
- Czech
- Spanish
- Portuguese
- Hungarian
- Slovenian

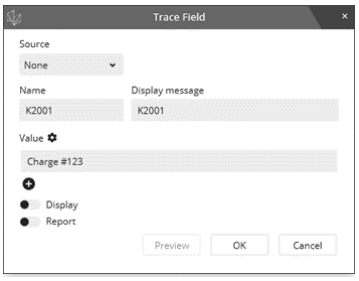
Please contact your supplier if you need a different language.

The language can be selected using the File ➝ Language menu option. Also the axes names are defined in conjunction with the language setting (applies to axes names that are compatible with version 1).

3.2. Creating the measuring routine in PC-DMIS™

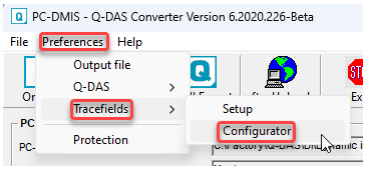
- Create your measurement routine as usual through the PC-DMIS™ Software. Please note the following if you are creating dimensions for evaluation:
  The output option must be set to “STATS” or “BOTH”. Only then will converter include dimensions in the statistical evaluation.
- If a dimension is not marked while the data is imported into the converter, it will be characterized by the attribute 255 or 256 in the Q-DAS file. This means that the dimension will not be included for statistical evaluation.
- Depending on the startup argument of the converter (/i or /a) the export will start automatically or must be confirmed again in the main converter window. See also chapter: Setup, section: Conversion from the PC-DMIS™ measuring routine, point: Possible arguments in the measurement routine of this manual. This is most important if you wish to add events to dimensions.
- K-fields can be prompted through trace field commands in PC-DMIS (see "Trace fields" below). Trace fields are added in PC-DMIS with the “Paste ➝ Statistics command ➝ Trace field option”. The K-field to be prompted is entered into the “Name” field. As default, “No Display” is set in the options. There are several ways to fill the created trace field with content now.

  Use a comment to recall settings. An input command is used to pass them to the trace field. Another option is to use assignments.



3.2.1. Trace fields

- Tracefild Configurator



After starting the Q-DAS Converter (see below), the "Tracefield configurator" dialog box is opened with the menu option "Settings" ➝ "Tracefields" ➝ "Configurator".

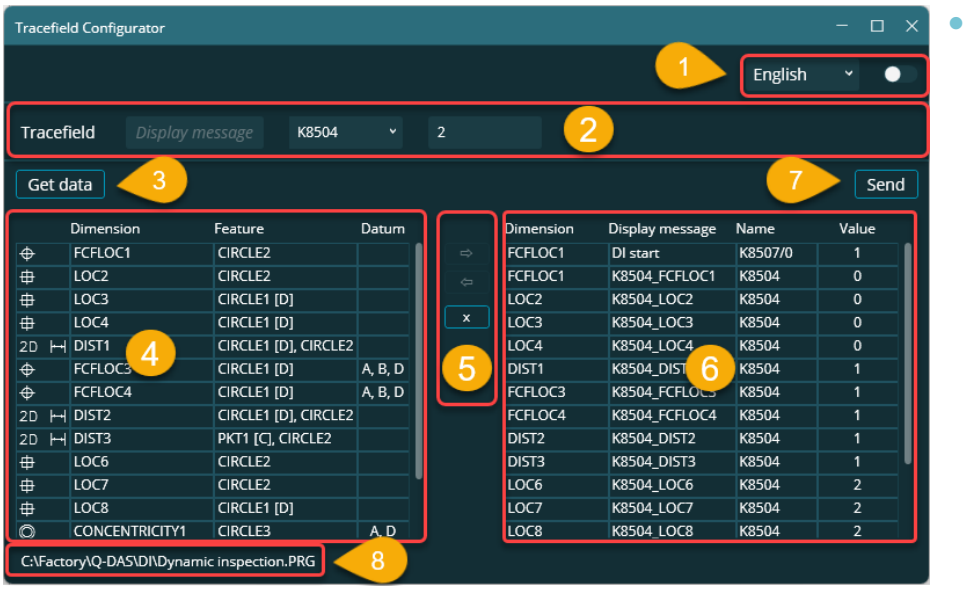
This dialog box is preferably used to insert the trace fields required for dynamic measurement into the measurement routine.

Only the functionality of the " Tracefield configurator " dialog box is described below.

The dynamic measurement procedure requires separate training and is not covered by these user manual. If you are interested in a training course, please contact you local Hexagon support.

A PC-DMIS version 2024.1 or higher is required for dynamic measurement.

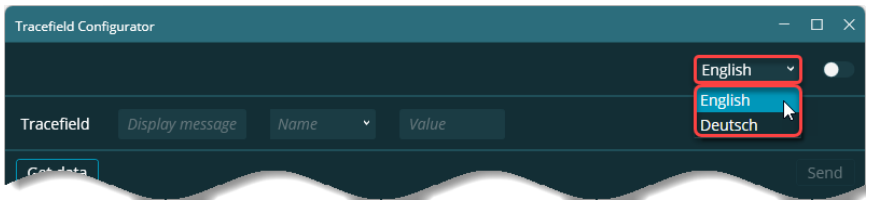
- User interface



1. Customize language and design (light / dark)
2. Definition of the values for the trace fields (display text / name / value)
3. Reading data from the measurement routine
4. Data that was read in
5. Preparing trace fields for sending
6. Trace fields that are to be sent to the measurement routine
7. Send trace fields to the measurement routine
8. Path and name of the measurement routine

- Change language

  To change the language, click on the corresponding button to open a context menu from which the desired language can be selected.



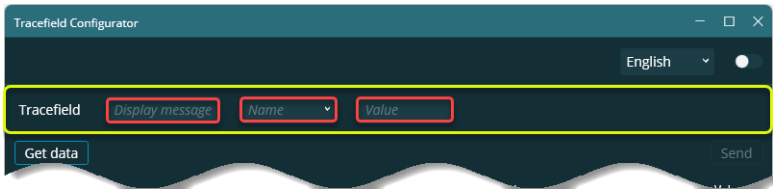
  After selecting the language, the dialog box is closed and restarted in the selected language. If data was read in before closing, this process must be carried out again.

- Change design

  The user interface can be displayed in "Dark" or "Light". To do this, click on the slider (to the right of the language) and select the desired design.

- Area: Tracefield

  The data that is transferred to the trace field in the measurement routine is defined in this area.



  - Display message

    An additional text can be entered in this input field (e.g. as an explanation of the selected K field). This text is used in the measurement routine in the trace field for "Display message".

    If nothing is entered in this input field (remains empty), the output in the trace field is in this format:

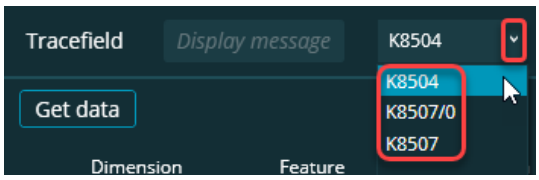
    {value from "Name"[see below]}_{name dimension}

    If “K8507/0” is selected, this K field is used without the dimension name.

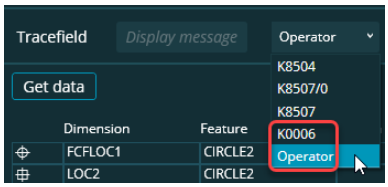
    The text can be changed later in the table for the output (see below).

  - Name

    Click on the "⌄" symbol on the right to open a drop-down list from which the desired K-field can be selected. After installing or starting the trace field configurator, the K-fields "K8504", "K8507/0" and "K8507" are available.



Any character strings can be defined. To do this, click in the input field and enter the desired value. This value remains selectable in the drop-down list until the "Tracefield configurator" dialog box is closed and restarted.



The value selected here is used in the measurement routine in the trace field under "Name".

- Value

  Any character string can be defined. To do this, click in the input field and enter the desired value. This can be changed before sending to the measurement routine (see below) and is used in the measurement routine in the trace field under "Value".

  If "K8504" is selected, the value is automatically set for the trace field regardless of the value defined here, but can still be edited in the table for the trace fields (see below).

The values defined above are used for the trace fields in the measurement routine as described in "Transfer of data to the measurement routine" (below).

- "Get data" button

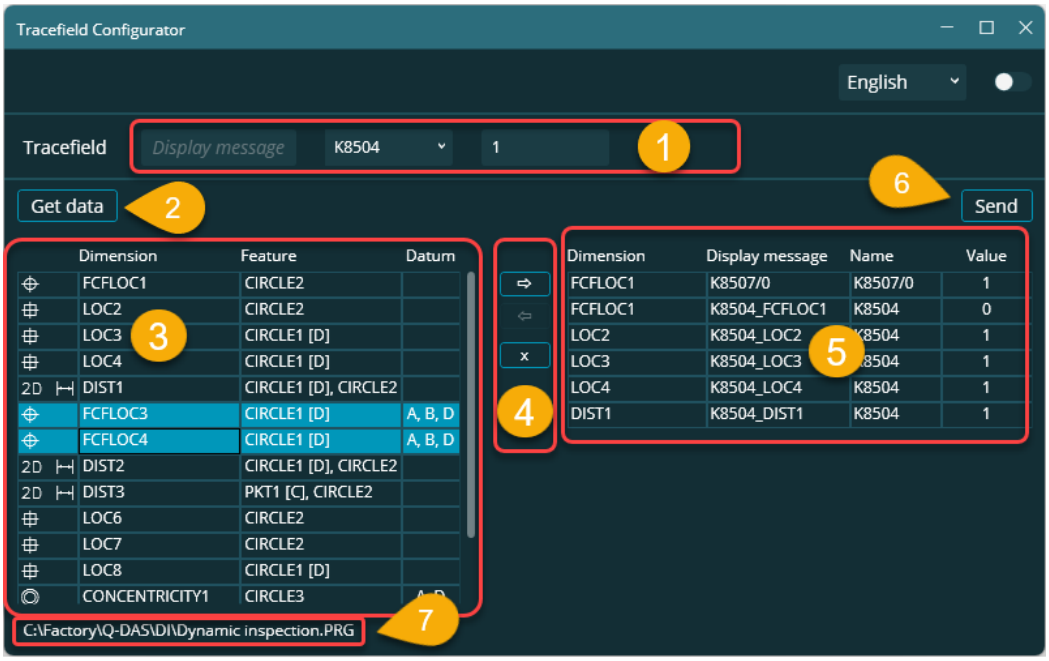
  Click on this button to read the data from the measurement routine opened in PC-DMIS. These are displayed in a table below the button (see also "1. Read in data" below).

- “Send” button

  Clicking on this button generates the trace fields with the values defined in the table below the button in the measurement routine (see also "6. Write trace fields into the measurement routine" below).

- Create trace field(s)

  The individual points in the screenshot are intended to represent the usual sequence for creating the trace fields and are described individually below.



1. Read in data

   The data is read from the measurement routine opened in PC-DMIS by clicking on the "Get data" button. This data is displayed below the button and can be selected for the trace fields (see 3.). The path and name of the measurement routine are displayed in the footer (see 7.).

2. Define values

   The data that is transferred to the trace field is defined in the "Trace field" area. The procedure for this is described under "Area: Tracefield" (above).

3. Selection of data

   All imported data (see 1.) is listed in the table. Click on a row to select this data record.

   As usual in Windows, individual rows can be selected by pressing and holding the "⇧" key and clicking with the mouse and a block (or several blocks) can be selected by pressing the "CTRL" key and clicking with the mouse.

   Alternatively, press and hold the mouse button and move the mouse over several rows. These rows are highlighted.

   The data from the selected rows can now be selected for the trace field. To do this, click on the "⇨" button (see 4.). This data is transferred to the right-hand table with the values from the "Tracefield" area (see 2. and 5.).

   If no value is defined for “Value” in the “Tracefield” area (see above), no data can be transferred to the right-hand table (see 4.).

4. Transfer of the selected data

   If at least one row with (new) data is selected in the right-hand table, the symbols “⇨” and “x” are available.

   Click on the “⇨” button to copy the data from the selected rows from the left-hand table to the right-hand table (see 5.). The data from the right-hand table is written to the measurement routine as a trace field using “Send” (see 7.).

   Under the following conditions, no data can be copied to the right-hand table (“⇨” button not available):

   - nothing is selected for “Name” in the "Area: Tracefield“
   - both tables contain a data record with identical names in the “Dimension” column

     and

   - the value in the Area: Tracefield for “Name” is identical to the value in the right-hand table in the “Name” column

   If at least one data record is selected in the right-hand table, it can be removed using the “⇦” button.

   The “x” button removes all data records from the right-hand table.

5. Data for the trace fields

   All data records that have been copied for the trace fields (see 4.) are displayed in the right-hand table.

   In the “Dimension” column, the value from the “Dimension” column from the left-hand table is displayed and in the “Name” column the value from the Area: Tracefield for “Name” (see above). Neither value can be changed.

   In the “Display message” column, the text entered in the “Display message” at Area: Tracefield (see above) is displayed. If nothing is entered there, the display will be in this format:

   {value from “Name”[see above]}_{name dimension}

   This value can be changed by double-clicking in this input field.

   The value that was selected or entered in the Area: Tracefield for “Value” (see above) is displayed in the “Value” column. This value can be changed by double-clicking in this input field.

   The values from the columns are used for the trace fields as described in “Transfer of data to the measurement routine” (see below).

6. Write trace fields into the measurement routine

   Click on the “Send” button to write the data from the right-hand table as a trace field to the open measurement routine. The path and name of the measurement routine can be seen in the footer (see 7.) and the table is emptied.

   The trace field is always written to the measurement routine with “DISPLAY=NO” and “REPORT=NO”.

   If a trace field with an identical name (from the column: Name) already exists, it will not be written twice into the measurement routine. If the values for this trace field have been changed, they will be updated.

7. opened measurement routine

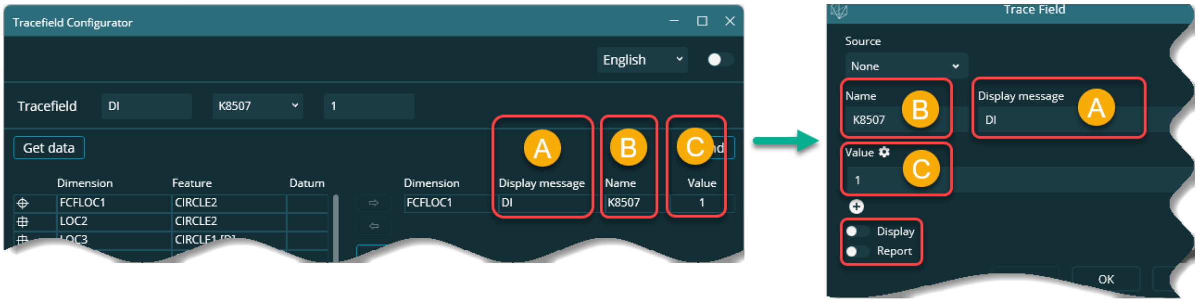
   After clicking on the “Get data” button (see 2.), the path and name of the measurement routine from which the data was read is displayed in the footer. The trace fields are written to this measurement routine after clicking on the “Send” button.

- Transfer of data to the measurement routine

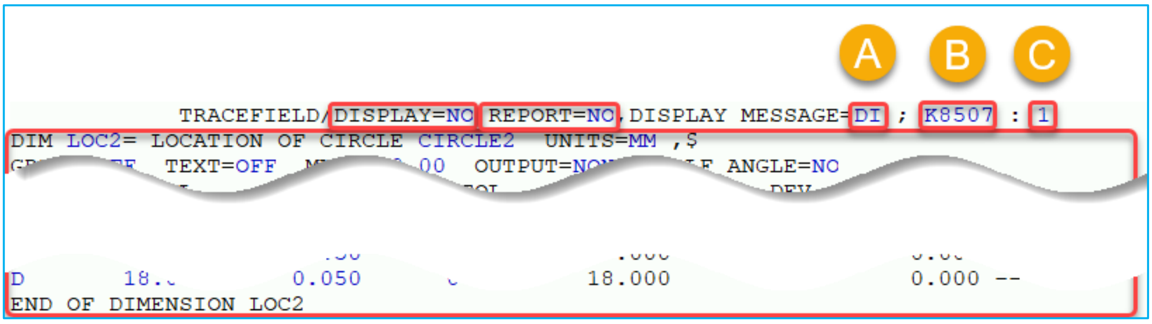
  After clicking on the “Send” button, each trace field is generated in the measurement routine as follows:

  - The trace field is created before the dimension
  - If there are comments or movement commands (e.g.: movement at clearplane) before the trace field, the trace field is created before these commands
  - The trace field is always created with “DISPLAY=NO” and “REPORT=NO”
  - The value from the “Display message” column is used in the trace field for “Display message”
  - The value from the “Name” column is used in the trace field for “Name”
  - The value from the “Value” column is used in the trace field for “Value”

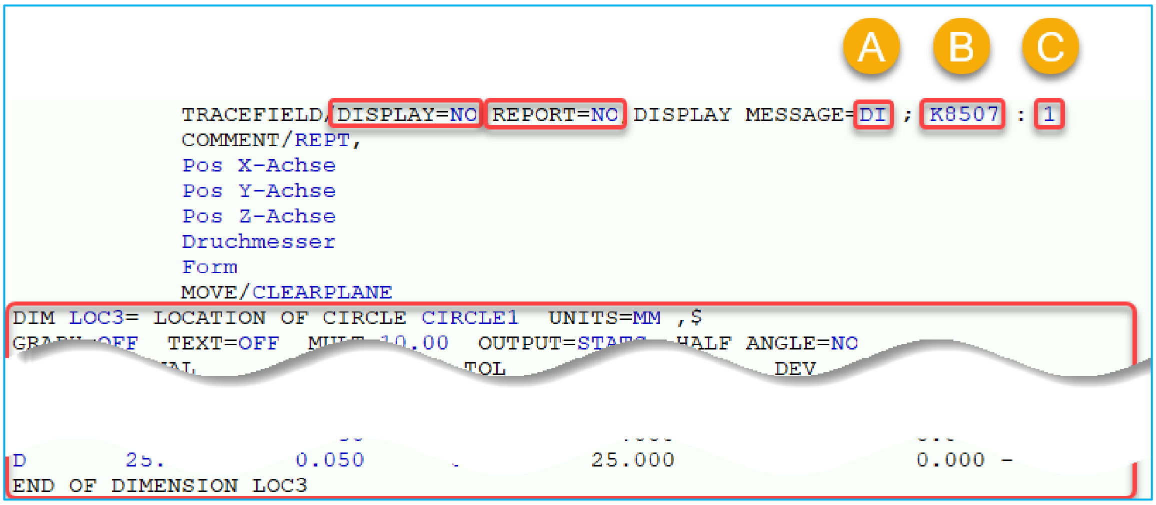
- Examples



- In the measurement routine (no commands between trace field and dimension):



- In the measurement routine (commands between trace field and dimension):



- Further information on the trace fields

  /0: If this parameter is entered in the K-field (e.g.: K2005/0...), the value defined for this K-field is used for all subsequent evaluations.

  Length: field length, no. of characters
  Type: A = Alphanumerical, any string
  F = Floating point number
  I = Number only, integer
  S= Special coding

  The following K-fields are supported by trace fields:

Key	/0	Field name	Length	Type	Catalog based	Customer description	DFD DFX	Remark
Value / Additional data								
K0005	X	Events	255	A			DFX	
K0006		Batch number	14	A				"#" must precede value
K0007		Cavity number	5	I	X			
K0008		Inspector name	10	I	X			
K0009		Text	255	A				
K0010		Machine number	5	I	X			
K0012		Gage number	5	I	X			
K0014		Part ID	40	A				
K0015		Purpose of the inspection	5	I	Defined field contents			
K0016		Production code	30	A				
K0017		Tool number	30	A				
K0021		No. of errors	5	I				
K0053		Order	20	A				
K0054			30	A				
K0055			30	A				
K0056			30	A				
K0057			30	A				
K0058			30	A				
K0059			30	A				
K0060			30	A				
K0061		Reason for check	10	I				
K0062			10	I				
K0063			10	I				
K0080		Subgroup ID	64	A				
K0081		Value position in subgroup	5	I				
Part data								
K1001		Part number	30	A			DFD	
K1002		Part description	80	A				

Key	/0	Field name	Length	Type	Catalog based	Customer description	DFD DFX	Remark
K1003		Part description short	20	A				
K1004		Part update status	20	A				
K1005		Product	40	A				
K1007		Part number Abbreviation	20	A				
K1008		Part type	20	A				
K1009		Part code	20	A				
K1014		Part ID	20	A				
K1021		Manufacturer number	20	A				
K1022		Manufacturer name	80	A				
K1031		Material number	20	A				
K1032		Material description	40	A				
K1041		Drawing number	30	A				
K1042		Drawing Amendment	20	A				
K1043		Drawing Index	40	A				
K1048		CAD Drawing file name	80	A				
K1052		Contractor name	40	A				
K1053		Order	40	A				
K1061		Client Number Text	20	A				
K1062		Client Description	40	A				
K1071		Supplier Number Text	20	A				
K1072		Supplier Description	40	A				
K1081		Machine Number Text	24	A				
K1082		Machine Description	40	A				
K1083		Machine number	10	I				
K1085		Machine location	40	A				
K1086		Work Cycle Operation	40	A				
K1087		Operation Description	40	A				
K1100		Plant Sector	40	A				
K1101		Department	40	A				
K1102		Workshop	40	A				
K1103		Cost centre	40	A				
K1104		Shift	20	A				
K1110		Order number	20	A				
K1111		Goods received number	20	A				
K1112		Cube	20	A				
K1113		Location	20	A				
K1114		Device	40	A				
K1201		Test facility Number Text	24	A				
K1202		Test Facility Description	40	A				

Key	/0	Field name	Length	Type	Catalog based	Customer description	DFD DFX	Remark
K1203		Reason for test	80	A				"MSA" value for study measurements
K1206		Test location	40	A				
K1209		Inspection type	20	A				
K1210		Measurement type	5	I				
K1221		Inspector name text	20	A				
K1222		Inspector name	40	A				
K1231		Measurement program number	20	A				
K1232		Measurement program version	20	A				
K1301		Client	5	I				
K1302		Test batch	40	A				
K1303		Plant name	40	A				
K1311		Production order	40	A				
K1341		Test plan number text	20	A				
K1342		Test Plan Name	40	A				
K1343		Test Plan Development Date	20	D				
K1344		Test Plan Developer	40	A				
K1800		User field description 1	255	A				
K1801		User field type 1	1	A				
K1802		User field content 1	255	A				
K1812		User field content 2	255	A				
K1822		User field content 3	255	A				
K1832		User field content 4	255	A				
K1842		User field content 5	255	A				
K1852		User field content 6	255	A				
K1860		User field description 7	50	A				
K1862		User field content 7	255	A				
K1900		Remark	255	A				
Dimensional data								
K2001		Characteristic Number	20	A			DFD	
K2002		Characteristic Description	80	A				
K2003		Characteristic Abbreviation	20	A				
K2004	X	Characteristic type	1	I	Defined field contents			
K2005	X	Characteristic class	1	I	Modules AS/PC/PV Defined field contents			
K2006	X	Control item	1	I	Defined field contents			

Key	/0	Field name	Length	Type	Catalog based	Customer description	DFD DFX	Remark
K2007	X	Control Type	1	I	Defined field contents			
K2009		Measured quantity	3	I				Defined field contents Identifier for the type of the characteristic (e.g. Len., Form, Position etc.)
K2015	X	Tool wear type (Trend)	1	I	Defined field contents			
K2016	X	100% Measurement	3	I				
K2091		Characteristic index	20	A				
K2092		Characteristic text	50	A				
K2093	X	Processing status	80	A				only for all characteristics
K2095	X	Element Code	40	A				only for all characteristics
K2096	X	Element Index	20	A				only for all characteristics
K2097	X	Element Text	50	A				only for all characteristics
K2100		Target Value	22	F				
K2114		Lower Scrap Limit	22	F				
K2115		Upper Scrap Limit	22	F				
K2202		Evaluation Type	3	I				no MSA support
K2203		Car body mode	1	I	0=off 1=on			only for all characteristics
K2205		Number of parts	5	I				no MSA support
K2216		Master Serial Number	20	A				only for all characteristics
K2220		Number of Operators	5	I				no MSA support
K2221		Number of Trials	5	I				no MSA support
K2222		No. of Reference Measurements	5	I				no MSA support
K2311	X	Production Type Text (Operation)	20	A				only for all characteristics
K2320		Contract number	20	A				only for all characteristics
K2401	X	Gage number	40	A				only for all characteristics
K2402		Gage description	80	A				only for all characteristics
K2415		Gage serial number	20	A				
K2434	X	Process capability establishment	1	I	Yes=1 / No=0			only for all characteristics
K2802	X	User field contents 1	255	A				
K2812	X	User field contents 2	255	A				
K2822	X	User field contents 3	255	A				
K2832	X	User field contents 4	255	A				
K2842	X	User field contents 5	255	A				
K2852	X	User field contents 6	255	A				
K2862	X	User field contents 7	255	A				
K2872	X	User field contents 8	255	A				
K2882	X	User field contents 9	255	A				
K2892	X	User field contents 10	255	A				

Key	/0	Field name	Length	Type	Catalog based	Customer description	DFD DFX	Remark
K2900	X	Remark	255	A				
K2901	X	Test Conditions	80	A				
K3107	X	Tool number	20	A				
K8006		Lower alarm limit	22	F				
K8007		Upper alarm limit	22	F				
K8010		Chart Type and additional attributes	---	S				defined field contents
K8011		Central Position	22	F				
K8012		Lower Control Limit LCL	22	F				
K8013		Upper Control Limit UCL	22	F				
K8110		Chart Type and additional attributes	---	S				defined field contents
K8111		Central Position	22	F				
K8112		Lower Control limit LCL	22	F				
K8113		Upper Control Limit UCL	22	F				
K8500		Subgroup size	5	I				only for all characteristics
K8501		Subgroup type	3	I	Defined Field contents			only for all characteristics
K8504		Subgroup frequency	5	I				
K8507	X	Step size Skip-Lot	1	I				
Additional Trace fields								Only “0” or “1” allowed
FileName		String for file name	255	A				
FirstPart		Reworked Part	1	I	0 or 1			

If PC-DMIS contains several evaluations (e.g. axes) in one feature, the values for **K2005**, **K2006**, **K2007** and **K2015** can be assigned to them. For this purpose, a trace field is inserted in the measurement routine before the feature. The values for the evaluations are entered one after the other, separated by commas. The values are used in the order in which they are listed after the K field (illustrated by the colors in the example below).

Example (for **K2006**):

```
            TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2006 ; K2006 : 1,10,14,2
DIM LAGE1= LOCATION OF CIRCLE KREIS2  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS       DEV     OUTTOL
X      33.258      0.100     -0.100     33.258     0.000      0.000 ----#----
Y      70.258      0.100     -0.100     70.258     0.000      0.000 ----#----
Z       0.000      0.010     -0.010      0.000     0.000      0.000 ----#----
D      10.000      0.100     -0.100     10.000     0.000      0.000 ----#----
END OF DIMENSION LAGE1
```

In the example above, the K-field **2006** is assigned the value 1 for X, the value 10 for Y, the value 14 for Z, and the value 2 for D in the Q-DAS file.

If fewer values are defined in the trace field than there are evaluations in the feature, default values are used for the remaining evaluations (for which no values were defined) or the K-field is not output, depending on the K-field used.

Example (for **K2006**):

```
            TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2006 ; K2006 : 1,10
DIM LAGE1= LOCATION OF CIRCLE KREIS2  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS       DEV     OUTTOL
X      33.258      0.100     -0.100     33.258     0.000      0.000 ----#----
Y      70.258      0.100     -0.100     70.258     0.000      0.000 ----#----
Z       0.000      0.010     -0.010      0.000     0.000      0.000 ----#----
D      10.000      0.100     -0.100     10.000     0.000      0.000 ----#----
END OF DIMENSION LAGE1
```

In the example above, the value 1 is assigned to the K-field **2006** for X and the value 10 for Y in the Q-DAS file. **K2006** for Z and D is not output in the file.

The values for **K2114** and **K2115** can also be defined by means of a trace field. The values are entered one after the other, separated by ":" and "|". The position of the trace field in the measurement routine is freely selectable. In the example below, this is illustrated by inserting the trace field after the feature "Position1" in the masurement routine. The values are used in the order in which they are listed after the K-field (illustrated in the example below by the colors).

Example (for **K2114**):

```
DIM LAGE1= LOCATION OF CIRCLE KREIS2  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS       DEV     OUTTOL
X      33.258      0.100     -0.100     33.258     0.000      0.000 ----#----
Y      70.258      0.100     -0.100     70.258     0.000      0.000 ----#----
Z       0.000      0.010     -0.010      0.000     0.000      0.000 ----#----
D      10.000      0.100     -0.100     10.000     0.000      0.000 ----#----
END OF DIMENSION LAGE1
            TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2114 ; K2114 : LAGE1.X:-0.08|LAGE1.Y:-0.09|LAGE1.Z:-0.095|LAGE1.D:-0.075
```

In the example above, the K-field **2114** is assigned the value -0.08 for X, the value -0.09 for Y, the value -0.095 for Z, and the value -0.075 for D in the Q-DAS file.

If fewer values are defined in the trace field than there are evaluations in the feature, the K fields are not output for the remaining evaluations (for which no values were defined).

Example (for **K2114**):

```
DIM LAGE1= LOCATION OF CIRCLE KREIS2  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS        DEV     OUTTOL
X      33.258      0.100     -0.100     33.258      0.000      0.000 ----#----
Y      70.258      0.100     -0.100     70.258      0.000      0.000 ----#----
Z       0.000      0.010     -0.010      0.000      0.000      0.000 ----#----
D      10.000      0.100     -0.100     10.000      0.000      0.000 ----#----
END OF DIMENSION LAGE1
           TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2114 ; K2114 : LAGE1.X:-0.08|LAGE1.Y:-0.09
```

In the example above, the K-field **2114** for X is assigned the value -0.08 and for Y the value -0.09 in the Q-DAS file. **K2114** for Z and D is not output in the file.

The values for **K2001**, **K2002**, **K2003**, **K2091**, **K2092** can also be defined by means of a trace field. Depending on the selected notation (see examples below), the position of the trace field before the feature can be freely selected or the trace field must be directly before the feature in the measurement routine. The values are used in the order in which they are listed after the K-field (illustrated by the colors in the examples below).

The following notations are supported:

- Position freely selectable (at example **K2091**), separation by ":" and "|".

  The values are entered one after the other, separated by ":" and "|". The position of the trace field before the feature can be freely selected (for example at the beginning of the measurement routine). The values are used in the order in which they are listed after the K-field (illustrated in the example below by the colors).

```
TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2091 ; K2091 : LAGE1.X:Index X|LAGE1.Y:Index Y|LAGE1.Z:Index Z|LAGE1.D:Index D

DIM LAGE1= LOCATION OF CIRCLE KREIS2  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS        DEV     OUTTOL
X      33.258      0.100     -0.100     33.258      0.000      0.000 ----#----
Y      70.258      0.100     -0.100     70.258      0.000      0.000 ----#----
Z       0.000      0.010     -0.010      0.000      0.000      0.000 ----#----
D      10.000      0.100     -0.100     10.000      0.000      0.000 ----#----
END OF DIMENSION LAGE1
```

  In the example above, K-field **2091** is assigned "Index X" for X, "Index Y" for Y, "Index Z" for Z, and "Index D" for D in the Q-DAS file.

- Position before the feature (on example **K2091**), separated by "|".

  The values are entered one after the other, separated by "|". The trace field must be placed before the feature. The values are used in the order in which they are listed after the K field (illustrated by the colors in the example below).

```
           TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2091 ; K2091 : X=Index X|Y=Index Y|Z=Index Z|D=Index D
DIM LAGE1= LOCATION OF CIRCLE KREIS2  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS        DEV     OUTTOL
X      33.258      0.100     -0.100     33.258      0.000      0.000 ----#----
Y      70.258      0.100     -0.100     70.258      0.000      0.000 ----#----
Z       0.000      0.010     -0.010      0.000      0.000      0.000 ----#----
D      10.000      0.100     -0.100     10.000      0.000      0.000 ----#----
END OF DIMENSION LAGE1
```

  In the example above, K-field 2091 is assigned "Index X" for X, "Index Y" for Y, "Index Z" for Z, and "Index D" for D in the Q-DAS file.

- Position before the characteristic (on example **K2091**), separated by comma

  The values are entered one after the other, separated by commas. The trace field must be placed before the feature. The values are used in the order in which they are listed after the K-field (illustrated by the colors in the example below).

```
           TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2091 ; K2091 : Index X,Index Y,Index Z,Index D
DIM LAGE1= LOCATION OF CIRCLE KREIS2  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS        DEV     OUTTOL
X      33.258      0.100     -0.100     33.258      0.000      0.000 ----#----
Y      70.258      0.100     -0.100     70.258      0.000      0.000 ----#----
Z       0.000      0.010     -0.010      0.000      0.000      0.000 ----#----
D      10.000      0.100     -0.100     10.000      0.000      0.000 ----#----
END OF DIMENSION LAGE1
```

  In the example above, K field **2091** is assigned "Index X" for X, "Index Y" for Y, "Index Z" for Z, and "Index D" for D in the Q-DAS file.

  If fewer values are defined in the trace field than there are evaluations, default values are used for the remaining evaluations (for which no values have been defined) or the K-field is not output, depending on the K-field used (see "Example (for 2006)" above).

The values for **K2116** and **K2117** can also be defined by means of a trace field, which must be placed before the feature. Both K-fields are entered in the trace field one after the other, separated by an underscore. The percentage value for the acceptance limit is then entered.

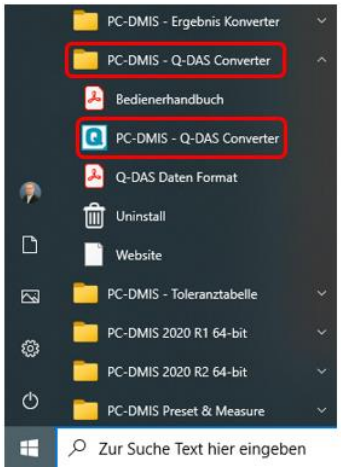
Example:

```
           TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2116_K2117 ; K2116_K2117 : 70
DIM LAGE1= LOCATION OF CIRCLE KREIS2  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS        DEV     OUTTOL
X      33.258      0.100     -0.100     33.258      0.000      0.000 ----#----
Y      70.258      0.100     -0.100     70.258      0.000      0.000 ----#----
Z       0.000      0.010     -0.010      0.000      0.000      0.000 ----#----
D      10.000      0.100     -0.100     10.000      0.000      0.000 ----#----
END OF DIMENSION LAGE1
```

In the Q-DAS file, the value corrected by the factor entered above (in the example above 70%) is output.

3.3. Launching the PC-DMIS – Q-DAS Converter software

You can launch the software by using a program group in the Windows start menu folder.

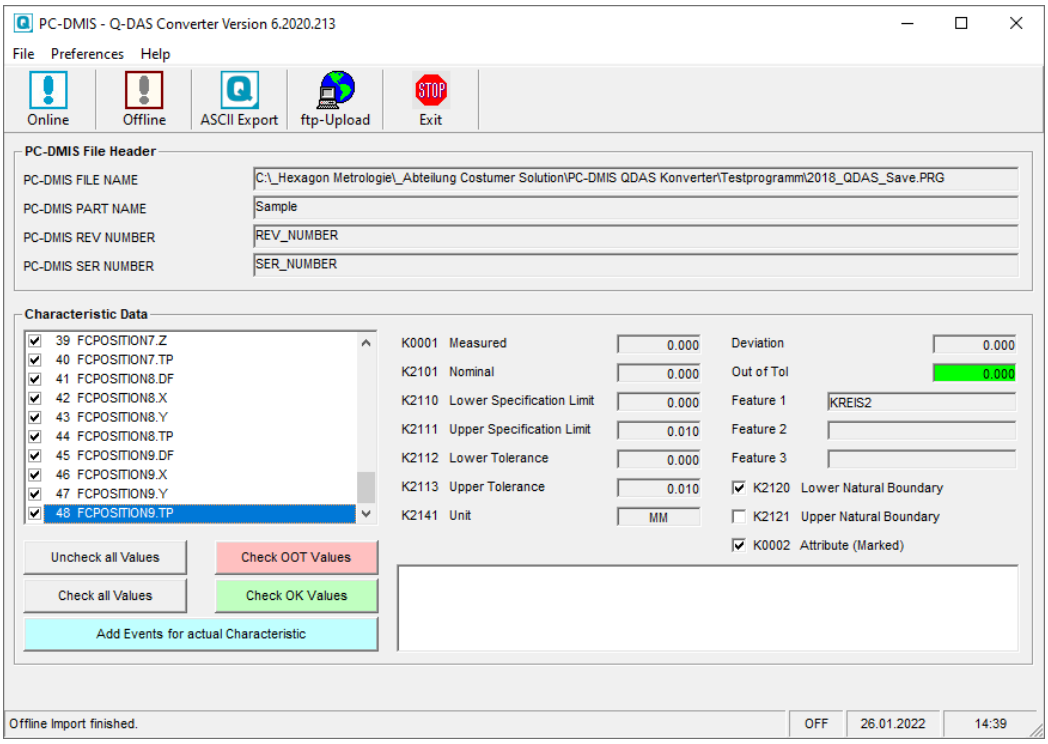


3.4. Configuration of the converter

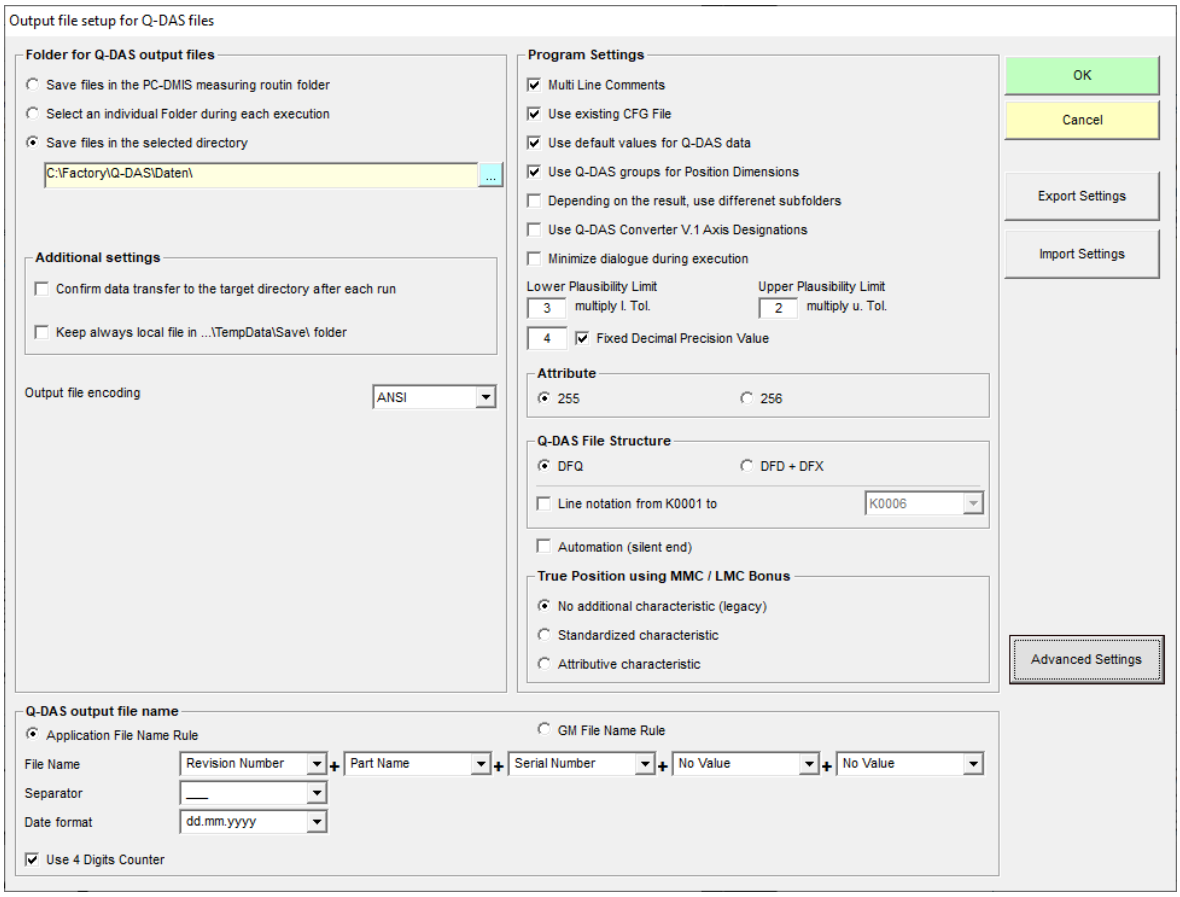
In order to adapt the converter to the respective environmental conditions and requirements, carefully go through all dialogs in the “Preferences” menu before using the software.

3.5. User interface of the PC-DMIS – Q-DAS Converter software

The user interface allows the operator to check all measured values before output.



3.5.1. Preferences

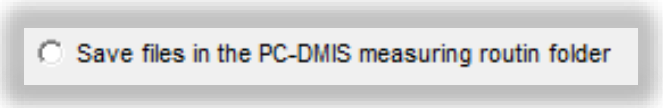


In this dialog you can choose the directory to which your Q-DAS® files are to be saved.

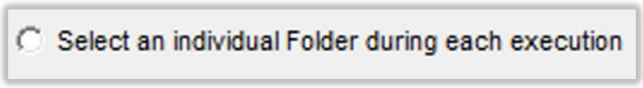
The following options are available:

File path for Q-DAS ASCII files Folder for Q-DAS output files

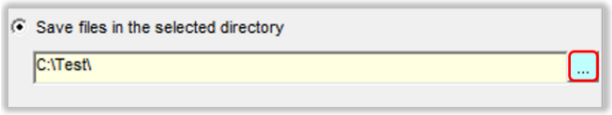
- Save files in the PC-DMIS measuring routin folder
  By check marking this option the software will save the Q-DAS® files in the same folder as the PC-DMIS™ measuring routine.



- Select an individual Folder during each execution
  This option allows the selection of an individual folder. The operator will then be prompted in the main converter window to select a folder.



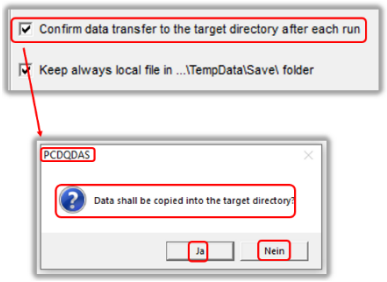
- Save files in the selected directory
  By clicking on the "..." icon, a directory can be selected which will be used as default directory for all Q-DAS® files.



  It is possible to define the target directory in the respective measuring routine. The procedure used for this is described in the point: "Set individual target directory from the measuring routine".

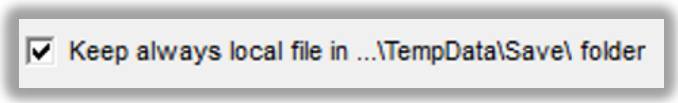
- Confirm data transfer to the target directory after each run

  If the checkbox is activated, the "PCDQDAS" window appears before the data transfer to the specified directory (see above) with the message: "Should the data be copied to the target directory?". If this is confirmed with "Yes", the window is closed and the data is transferred. If the message is confirmed with "No", the window is closed and no data is transferred.



- Keep always local file in …\Temp\Data\Save folder

  The checkbox "Keep always local file in …\Temp\Data\Save folder", allows to create a backup copy of the ASCII file on the local computer. This is done after a successful copy to the target directory.



- Output file encoding

  The character encoding is defined. To do this, click on the "▾" icon to open the drop-down list and select the desired entry.

  The following formats are supported for the output file and trace fields:

  - ANSI
  - UTF-8
  - UTF-16 LE
  - UTF-16 BE

Q-DAS output file name

You can define the file name convention to be used for Q-DAS ASCII files in the “Q-DAS ASCII File Name” section.

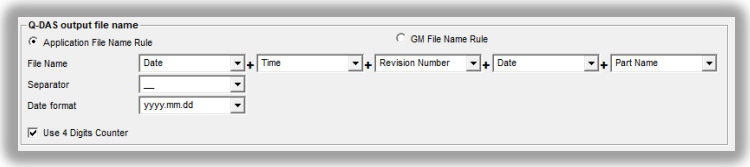
Part Name, Revision Number and Serial Number are the values which are available in the header of the measuring routine.

The string from the trace field Trace’FileName’ is read in from the measuring routine.

Date and time are based on the system time during the file conversion. A date format can also be freely defined. To do this, click in the selection field and enter the desired format (e.g.: yyyy.MM.dd). The format defined here is not entered in the drop-down list, but is also available after a restart. If the date format is changed using the drop-down list, the freely defined format must be entered again.

The selected separator will be inserted between each of the selected values.

If you don’t want to use date and time, you will have to use the 4 digits counter. Otherwise there is a risk that the converter will overwrite the previously created files. This does not apply if the line notation is used. Then it is automatically appended to the existing file.



The “GM file name rules” option uses the following file name format:

{string from Trace Field “FileName”}_ MMDDhhmmss

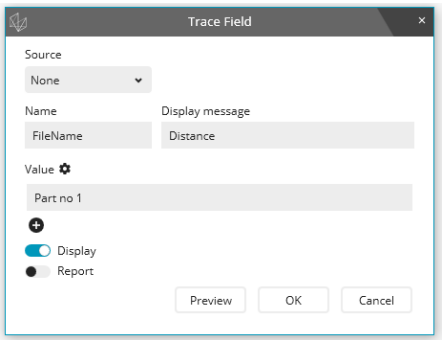
DD: Day

MM: Month

hh: Hour

mm: Minute

ss: Second



Program Settings

Use the “Program Settings” section to configure the software in the best way for your application.

- Multi Line Comments

  Comments can be used to add explanations for each dimension (so-called “characteristics” in Q-DAS). Each comment is associated to a specific dimension. Some rules must be observed in the PC-DMIS™ measuring routine to achieve this effect.

  Whether a comment is considered or not by converter depends on the type of comment and its position in the measuring routine.

  - The comment must be of the report type.
  - The comment must directly precede the dimension.
  - Multi-line comments may contain up to 20 lines. If more than 20 lines are used, they will be ignored.

  Depending on the status of the “Multi-line comments” checkbox, multi-line comments will be interpreted differently.

  Please see the following two examples for a more detailed explanation:

  Example 1:

```
            Comment for X-Axis
            Comment for Y-Axis
            Comment for Z-Axis
            MOVE/CLEARPLANE
DIM LOC1= LOCATION OF CIRCLE CIR1  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NO
AX    NOMINAL       +TOL       -TOL       MEAS        DEV      OUTTOL
X     19.50000    0.05000   -0.05000   19.50000    0.00000    0.00000 ----#----
Y     30.00000    0.05000   -0.05000   30.00000    0.00000    0.00000 ----#----
Z      0.00000    0.05000   -0.05000    0.00000    0.00000    0.00000 ----#----
END OF DIMENSION LOC1
```

  This comment will not be used, because the MOVE/CLEARPLANE command was placed between the comment and the dimension.

  Example 2:

```
            COMMENT/REPT,
            Comment for X-Axis
            Comment for Y-Axis
            Comment for Z-Axis
DIM LOC1= LOCATION OF CIRCLE CIR1  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NO
AX    NOMINAL       +TOL       -TOL       MEAS        DEV      OUTTOL
X     19.50000    0.05000   -0.05000   19.50000    0.00000    0.00000 ----#----
Y     30.00000    0.05000   -0.05000   30.00000    0.00000    0.00000 ----#----
Z      0.00000    0.05000   -0.05000    0.00000    0.00000    0.00000 ----#----
END OF DIMENSION LOC1
```

  This comment will be used because there is no command between the comment and the dimension.

  Note: Only “Trace field” and “Display Precision” commands can be placed between the comment and the dimension.

If “Multi-line comments” is enabled, you will get the following result:

Dimension	Comment
1.X	Comment for X-Axis
1.Y	Comment for Y-Axis
1.Z	Comment for Z-Axis
1.D	Comment for D-Axis

If “Multi-line comments” is disabled, the same command will be interpreted as follows:

Dimension	Comment
1.X	Comment for X-Axis / Comment for Y-Axis / Comment for Z-Axis / Comment for D-Axis
1.Y	Comment for X-Axis / Comment for Y-Axis / Comment for Z-Axis / Comment for D-Axis
1.Z	Comment for X-Axis / Comment for Y-Axis / Comment for Z-Axis / Comment for D-Axis
1.D	Comment for X-Axis / Comment for Y-Axis / Comment for Z-Axis / Comment for D-Axis

Note: Comments are assigned to K field 2900

- Use existing CFG File
  If this function is enabled, the converter will search for saved settings for the additional Q-DAS data, depending on the measuring routine name. Part name and part amendment status are used for the identification of the measuring routine.
- Use default values for Q-DAS data
  If this function is enabled, all measuring routines will use the same settings for the additional Q-DAS® data. However, the default values have to be saved once. The entry Q-DAS® Data dialog box is used for this setting.
- Use Q-DAS Position Calculation for Position Dimensions
  If this function is enabled, the converter will use the Q-DAS® fields **K2008**, **K2030** und **K2031** for position dimensions. If this structure is used, ordinates are assigned to their respective positions. The position value is calculated by qs-STAT®. However, this measuring routine allows only for a maximum of two ordinates for the positional calculations.
- Depending on the result, use different subfolders
  If this function is enabled, the converter will create the following subfolder in the destination directory:
  - FirstParts
  - PartOK
  - PartOOT

  Results from parts which are being measured for the first time will be saved in the FirstParts subfolder (regardless of the result). The files in this folder will be used for process analyses.

  Converter will save a copy of the Q-DAS® file in the PartOK subfolder if all values are within tolerance. This should be the group of finished parts (for delivery).

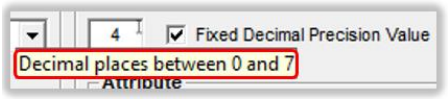
A copy of the Q-DAS® files will be saved in the PartOOT subfolder, if one or more values are out of tolerance. The files will be a source of information for rectification work, if required.

If a part is measured a second time, it must be marked as a reworked part. The Additional Q-DAS® Data dialog box is used for these settings. The data will not be saved in the FirstParts subfolder, because reworked parts are not allowed to influence the process evaluation. As an alternative to the dialog, a tracefield with the name "FirstPart" and the value 0 or 1 can also be used.

- PC-DMIS™ - Q-DAS Converter V. 1 Axis Designations
  This function must be enabled, if the K-fields **K2001** and **K2002** (characteristic number and characteristic name) have to use compatible values for Converter version 1. In this case you have also to select the appropriate language in the File – Language menu. The difference is that the current software adopts the axis designations from PC-DMIS™ whereas the old converter version assigned names to the respective axes.
- Minimize dialogue during execution
  By enabling this function, the converter window is minimized during the ONLINE process.
- Lower and upper plausibility limit
  A factor is entered here. This factor, the tolerance values and the nominal value are used to calculate the value for **K2130** and **K2131**:
  K2130 = Nominal value + lower tolerance * lower factor
  K2131 = Nominal value + upper tolerance * upper factor

Note: The default value is “0”.

- Fixed Decimal Precision Value
  This function is only available if the checkbox at "K2022 (Decimal Places)" is activated under "Preferences" ➔ "Advanced settings".



If the checkbox is activated, the entered value is transferred to the K field **K2022**. The values 0 to 7 are possible. If the mouse pointer is moved over the input field, a corresponding tooltip appears.

If the checkbox is deactivated, the display accuracy set in PC-DMIS is transferred to the K field **K2022**.

Regardless of the number of decimal places defined here, the measuremend values are always output with 7 decimal places.

- Attribute
  The attribute in the Q-DAS® format is used to declare measurement values as valid or invalid. The converter will assign attributes depending on the marker status in the PC-DMIS™ regardless of settings in the measuring routine (marked: Valid (0); not marked: Invalid (255 or 256)). Please refer to your Q-DAS® documentation for further details on the difference between value 255 and 256.
- Q-DAS File structure
  The converter can create Q-DAS ASCII files in the following formats:
  - DFQ
  - DFD and DFX

Important: If you want to use Q-DAS Monitoring Software, DFD and DFX formats must be enabled.

- Using line notation from K0001 to
  - Checkbox activated:

    A drop-down list is available in the area on the right. This is used to specify which K fields are output in line notation. Minimum is K0001 to K0006. Maximum is K0001 to K00012. All other K-fields are output in K-field notation.

    If "DFQ" is selected in the "Q-DAS file structure" area (see above), the DFX - portion of the selected K-fields is output as a line in the file.

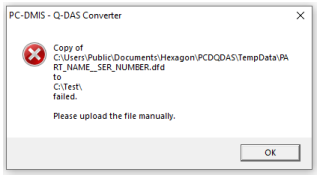
    If "DFD and DFX" is selected in the "Q-DAS File Structure" area, the output of the selected K-fields in the DFX file is done in lines.

    If settings are selected in the "Q-DAS Output File Name" area (see above) that result in identical file names, an additional line is added with each output.
  - Checkbox deactivated:

    If "DFQ" is selected in the "Q-DAS File Structure" area (see above), the DFX - portion in the file is output in K-field notation.

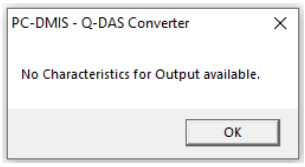
    If "DFD and DFX" is selected in the "Q-DAS file structure" area, the output in the DFX file is in K-field notation.

    If settings are selected in the "Q-DAS Output File Name" area (see above) that result in identical file names, a message appears stating that the corresponding file(s) must be copied manually.



- Automation (silent end)

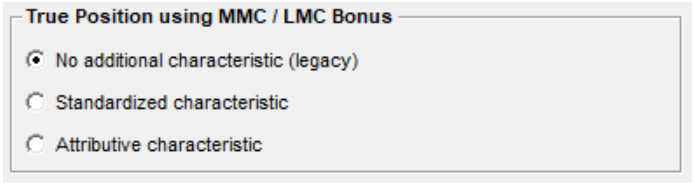
  If the measuring routine contains evaluations that are not recorded by the Q-DAS converter, the following message appears before closing:



  The Q-DAS converter will not be closed until the message has been confirmed with "OK".

  Since this would disturb the process in an automatic cell, the note is ignored by activating the checkbox and the Q-DAS Converter is closed.

True Position using MMC / LMC Bonus



- No additional characteristic (legacy)

  No new feature will be created with the default setting.

- Standardized characteristic

  In this case, a total tolerance will be calculated from the sum of the position tolerance and the bonus tolerance.

  Example: 0.06901 = 0.06000 + 0.00901. Even when the measured value of 0.06100 is higher than the tolerance of 0.06000, the measurement is OK because of the total tolerance of 0.06901.

POS1	MM	⌖ Ø0.06 Ⓜ B			DEFAULT		ISO 1101
Feature	AX	NOMINAL	+TOL	-TOL	MEAS	DEV	BONUS
	X	0.00000			0.03008	0.03008	
CYL2	Y	0.00000			-0.00504	-0.00504	
(START PT)	TP	0.00000	0.06000	0.00000	0.06100	0.06100	0.00901

  With this setting, an additional characteristic with the extension **SM** and the unit **NORM** (**K2142**) is created instead of the main characteristic Position (e.g. POS1). In addition, the **K2113** (upper dimension) will get the fixed value of 1, which corresponds to 100% of the calculated total tolerance.

  The **K2005** (characteristic class) of the main characteristic gets the lowest level 0 (unimportant) in this case. The Standardized characteristic, however, gets the higher level from the setting for K2005 (see chapter: Advanced Settings, section: K-Field settings). If the checkbox **Use default value for K2005** is deactivated in the advanced settings, the standardized characteristic gets the default value **3**.

  In all cases, when the **Standardized feature** is set, the **K2005** values will overwrite all other settings (standard, Tracefield, operator value). Thus, the SM has the highest priority as far as the **K2005** notation is concerned, followed by the **K2005** Tracefield, operator input, and finally the value in the advanced settings.

```
K2991/4 POS1.TP
K2001/4 POS1.TP
K2002/4 POS1.TP.CYL2
K2003/4 CYL2
K2005/4 0
K2008/4 2
K2009/4 109
K2030/4 1
K2022/4 5
K2101/4 0.00000
K2110/4 0
K2111/4 0.06
K2112/4 0.00000
K2113/4 0.06000
K2142/4 MM
K2991/5 POS1.TP.SM
K2001/5 POS1.TP.SM
K2002/5 POS1.TP.SM.CYL2
K2003/5 CYL2
K2005/5 3
K2031/5 1
K2101/5 0.00000
K2112/5 0.00000
K2113/5 1.00000
K2142/5 NORM
```

Standardized characteristic

  An additional **standardized characteristic** is only used by the position features.

Ok

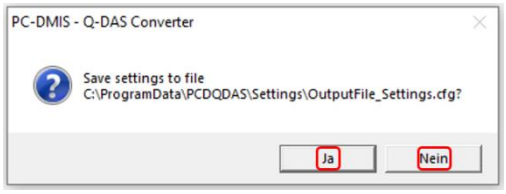
Clicking the "OK" button saves the settings and closes the dialog.

Cancel

Clicking the "Cancel" button closes the dialog without saving the values.

Export Settings

Clicking the "Export settings" button opens the following note:

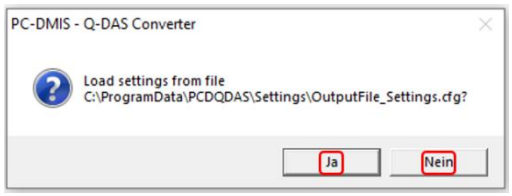


By clicking the "OK" button, the settings are saved in the folder: "C:\ProgramData\PCDQDAS\Settings" in the file: "OutputFile_Settings.cfg" and the dialog is closed. The file can be used to configure a second computer or if you need to work with several different configurations.

Clicking the "No" button closes the dialog without saving the settings.

Import Settings

Clicking the "Export settings" button opens the following note:



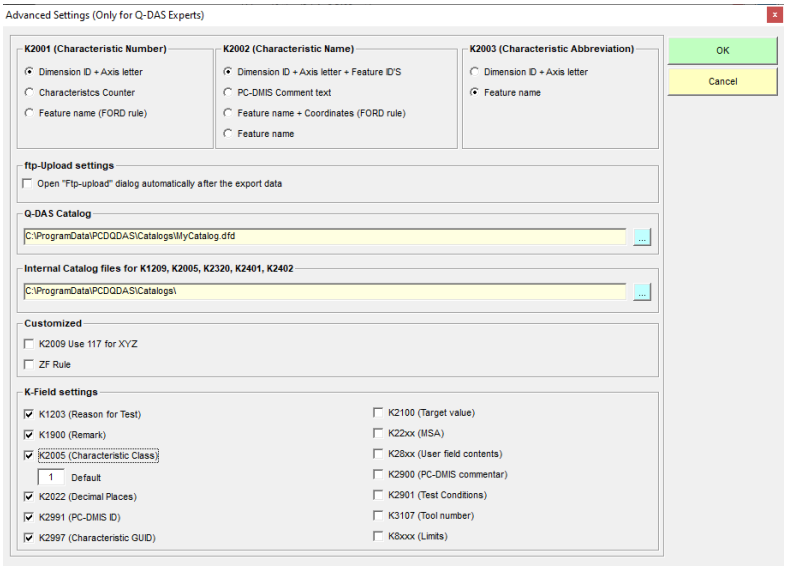
By clicking the "OK" button, the settings saved under "Export settings" (see above) are restored and the dialog is closed.

Clicking the "No" button closes the dialog without restoring the settings.

3.5.2. Advanced Settings

Opens a dialog with the aid of which you can configure the software for your qs-STAT package.

Please always contact your statistical expert before changing these settings.



The radio buttons at **K2201 (Characteristic Number), K2002 (Characteristic Name)** and **K2003 (Characteristic Abbreviation)** determine how the values for the K fields are output. If the mouse pointer is moved over the text of a radio button, a tooltip appears with a corresponding example.

K2001 (Characteristic Number)

- Dimension ID + Axis letter **LOC1.X**

```
DIM LOC1= LOCATION OF CIRCLE CIR2
GRAPH=OFF  TEXT=OFF  MULT=10.00  OU
AX    NOMINAL       +TOL       -TOL
X      0.00000    0.05000   -0.0500
```

- Characteristics Counter **4**
- Feature name (FORD rule) **A123BCA0Z987**

```
DIM LOC2= LOCATION OF CIRCLE A123BCA0Z987  UNITS=MM
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF
AX    NOMINAL       +TOL       -TOL       MEAS
X      0.00000    0.05000   -0.05000    0.00000
```

K2002 (Characteristic Name)

- Dimension ID + Axis letter + Feature ID's **LOC1.X.CIR2**
- PC-DMIS Comment text **Comment 1**

```
            COMMENT/REPT,
            Comment 1
DIM LOC1= LOCATION OF CIRCLE CIR2
GRAPH=OFF  TEXT=OFF  MULT=10.00  OU
AX    NOMINAL       +TOL       -TOL
```

- Feature name + Coordinates (FORD rule) **A123BCA0Z987.Z**
- Feature name **CIR2**

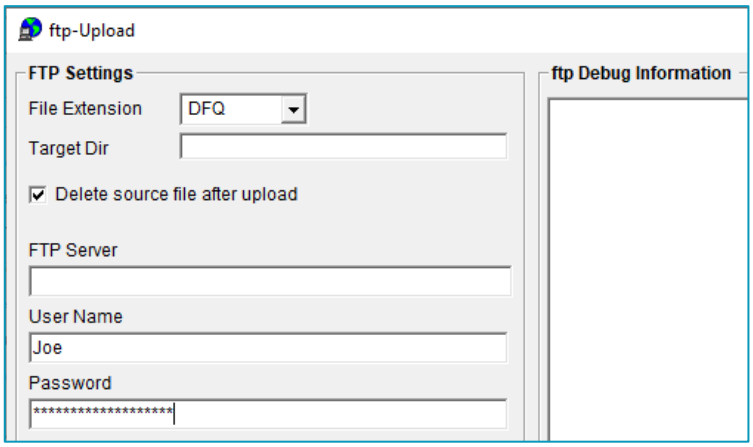
K2002 (Characteristic Name) (PC-DMIS examples see above)

- Dimension ID + Axis letter **LOC1.X**
- Feature name **CIR2**

ftp-Upload settings

- Open “Ftp-upload” dialog automatically after export data

  If the checkbox is activated, the operator is shown the upload settings window after exporting the data. Here the FTP server can be configured and the Q-DAS file can be uploaded to the server.



Q-DAS Catalog

specifies the full file name for the catalog file to use.

Internal Catalog files for K1209, K2005, K2320, K2401, K2402

specifies the directory for additional catalog files.

- **K1209** Inspection type (inspection identifier)
- **K2005** Characteristic Class
- **K2320** Contract Number
- **K2401** Gage Number Text
- **K2402** Gage Description

Customized

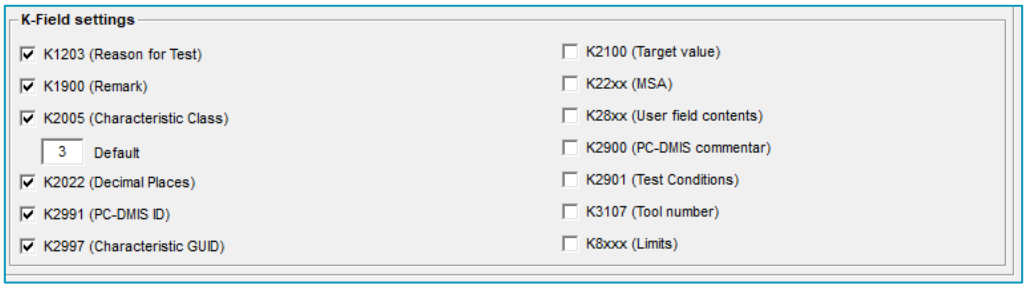
- K2009 Use 117 for XYZ

  If the checkbox is activated, the value "117" is output for K2009 for each axis. If the checkbox is deactivated, "120" is output for X, "121" for Y and "122" for Z. If the mouse pointer is moved over the checkbox or the text, a corresponding note appears.

- ZF Rule

  If the checkbox is activated, the output of the data does not quite meet the requirements of Q-DAS. If the mouse pointer is moved over the checkbox or the text, a corresponding note appears. This function is customer-specific and is not explained in detail.

K-Field settings



The checkbox **K1203 (Reason for Test)** is used to specify how the value for K1203 is to be output. The state of the checkbox under "Menu option "Preferences" → "Q-DAS"" →"K-fields" (see below) for "K1203 Reason for Test" must be taken into account.

- Checkbox "K1203 (Reason for Test)" and checkbox "Preferences" → "Q-DAS" → "K-fields" (K1203 Reason for Test) activated

  After reading in the data, a value for K1203 can be entered in the "Input Dialog for Q-DAS Data" window. This value is output. If no value is entered, the output for K1203 is "Standard Production".

- Checkbox " K1203 (Reason for Test)" activated and checkbox "Preferences" → "Q-DAS" → "K-fields" (K1203 Reason for Test) deactivated

  If a tracefield is available for K1203 in the measuring routine, the text entered is output at "Value". If no tracefield is available, the output for K1203 is "Standard Production".

- Checkbox " K1203 (Reason for Test)" deactivated

  Regardless of the state of the checkbox in "Preferences" → "Q-DAS" → "K-fields" (K1203 Reason for Test), K1203 is not output.

If the checkbox **K2005 (Characteristic Class)** is activated, the value specified in the field (default **3**) is always used for **K2005** if not otherwise specified (e.g. in a Tracefield of the measuring routine). In any case the value from a Tracefield for a characteristic would overwrite the set value.

Example: the axes **X** and **Y** for the feature LOC1 get the class **2** from the Tracefield (first axis = 2, second axis = 2) and axis **D** gets the preset value **3** from the K-field settings.

```
            TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2005 ; K2005 : 2,2
DIM LOC1= LOCATION OF CIRCLE CIR_1  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NC
AX    NOMINAL       +TOL       -TOL       MEAS        DEV        MAX        MIN
X     41.00000    0.05000   -0.05000   41.00000    0.00000   49.20000   34.36606 --#---
Y      0.00000    0.05000   -0.05000    0.00000    0.00000    7.79866   -7.79866 --#---
D     16.40000    0.05000   -0.05000   16.40000    0.00000   16.40000   16.40000 --#---
END OF DIMENSION LOC1
```

In the output file it would look like this:

```
K2001/5 LOC1.X
K2005/5 2
K2001/6 LOC1.Y
K2005/6 2
K2001/7 LOC1.D
K2005/7 3
```

If a number has been assigned in the Tracefield values for all axes (in this example three axes are evaluated for LOC1), all axes (here three) will receive the respective values from the Tracefield, which would overwrite the **K-field settings** value. **K2005** = 2 for X, Y and D in the following example:

```
TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=K2005 ; K2005 : 2,2,2
```

If the checkbox **K2005 (Characteristic Class)** is deactivated, then no **K2005** are assigned to the characteristics and will be written. Only if the Tracefield with the name **K2005** is present before a dimension in the measuring routine, the respective class is assigned to the feature (or to the axes) and will be written to the output file.

If the **K2005** checkbox at **Settings > Q-DAS > K-Fields > Settings for K-Fields** has been activated, the **K2005** will be written for all features, regardless of whether **K2005 (Characteristic Class)** is activated in the advanced settings. In this case, the characteristics get the **K2005** value (decimal) selected by the user from the **Input dialog for Q-DAS data**. Only if the Tracefield with the name **K2005** is present in the measuring routine before a dimension, the respective class from the Tracefield is assigned to the characteristic (or to the axes) and the value will be overwritten by the user.

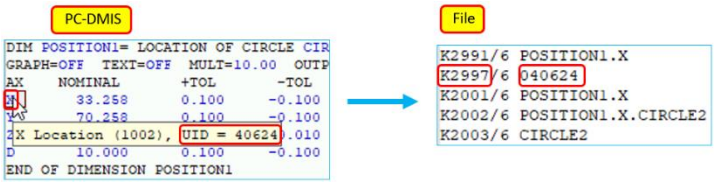
With the setting **Standardized characteristic** for **True Position using MMC / LMC Bonus** are other rules for the notation of the **K2005** fields.

If checkbox **K2022 (Decimal Places)** is activated, the number of decimal places is output with K field **2022** for each characteristic per axis. However, the measurement values are always output with 7 decimal places. If the checkbox is deactivated, the checkbox in the "Preferences" menu option in the "Program settings" area at "Fixed number of decimal places" is not available.

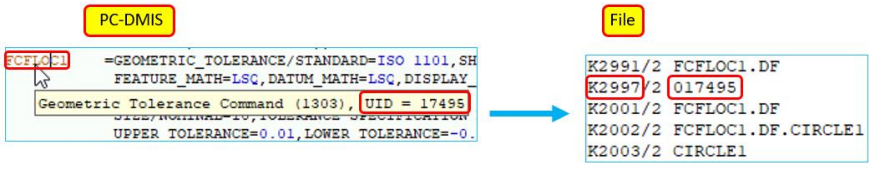
If checkbox **K2991 (PC-DMIS ID)** is activated, the PC-DMIS ID with the K field **2991** is output for each characteristic per axis.

If checkbox **K2997 (Characteristic GUID)** is activated, the Unique ID (UID) from PC-DMIS with the K field **2997** is output for each characteristic per axis. In PC-DMIS, the UID can be displayed by selecting "Change Pop-up Display" ➝ "Command information" in the editing window with the right mouse button.

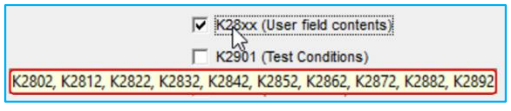
For dimensions where axes are evaluated (e.g.: position), the UID is output for each axis (in the screenshot: X).



For features without axes (shape and position), the UID of the feature name is output.

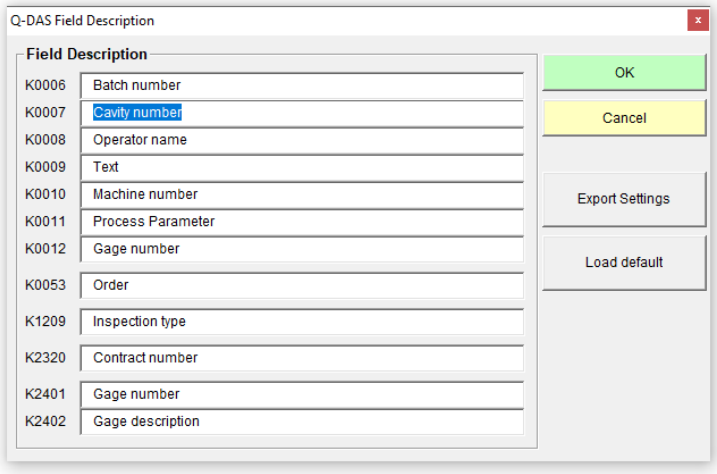


The checkboxes on the right side can be used to decide which additional K-fields are to be output. If this concerns several K-fields (to be recognized in the text by "x"), a tooltip with the relevant K-fields appears when the mouse pointer is moved over the text (in the example: K28xx (User field contents)).



3.6. Menu option "Preferences" ➝ "Q-DAS“

3.6.1. Field description



Depending on the customer specific application, Q-DAS® uses K-fields descriptions which differ from the standard data format. You can use this dialog to adopt some K-fields standard values to your user interface. This will not change or affect the data format.

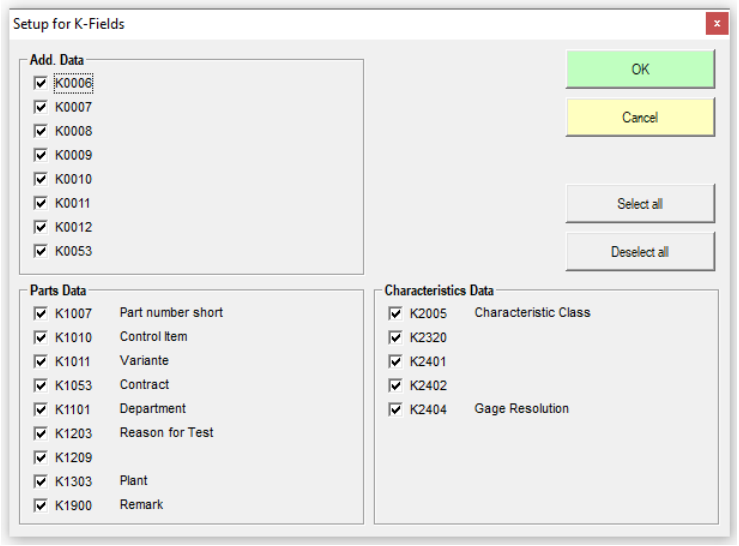
Note: After the first installation of the Q-DAS Converter these field names are in English. Changes may have an influence on the names in the dialog "Setup for K-Fields" (see "K-Fields" below).

The “Export Settings” button will save the current values in the QDAS_Settings.cfg file in the data folder of the software (C:\ProgramData\PCDQDAS\Settings).

The " Load default" button resets the current settings to the default English names.

The “OK” button closes the dialog.

3.6.2. K-fields



In this dialog you can set which K-fields are to be activated in the user interface.

Note: The designations selected in the "Q-DAS Field Description" dialog (see "Field description" above) partly influence the K-field designations used here.

All K-fields, which are set by means of trace fields in the measuring routine, must be deactivated.

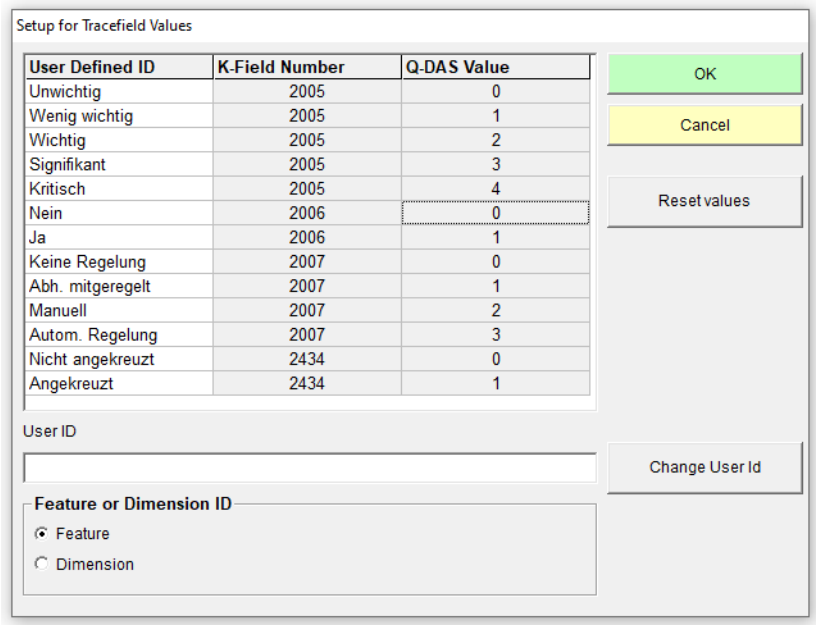
The “OK” button saves the current settings and closes the dialog.

The “Cancel” button closes the dialog without saving the settings.

“Select all” activates all checkboxes.

The “Deselect all” button unchecked all checkboxes.

3.7. Menu option "Preferences" ➝ "Tracefields“



In this dialog the names of the trace fields can be edited.

The prerequisite is that the "Feature name (FORD rule)" setting is not selected in the "**K2201 (Characteristic number)**" area under **Preferences > Output file > Advanced settings**. If this setting is selected, the designations cannot be changed.

In order to change the designation, the desired entry is selected in the column "User defined ID" by mouse click. This can be overwritten in the "User ID" field and accepted using the "Change User ID" button.

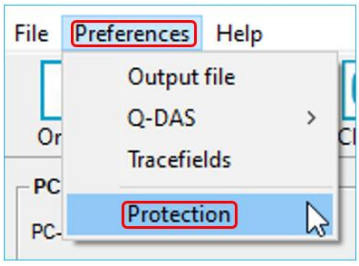
The "OK" button saves the current settings and closes the dialog.

The "Reset values" button can be used to reset changes that have been made. This also affects changes that have already been saved using "OK".

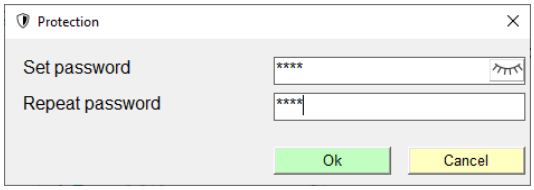
3.8. Menu option "Preferences" ➝ "Protection“

This function can be used to select between the operator mode and the administrator mode.

All functions are available in administrator mode.



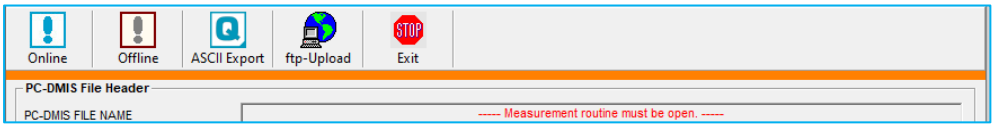
To activate the operator mode, the menu option "Protection" is clicked. In the following "Protection" window, the password is entered and repeated.



With the " " button the password is displayed in plain text.

After confirming with "OK", the functions "Output file", "Q-DAS" and "Trace fields" are no longer available in the "Preferences" menu option.

In the operator interface, an orange stripe signals the operator mode.



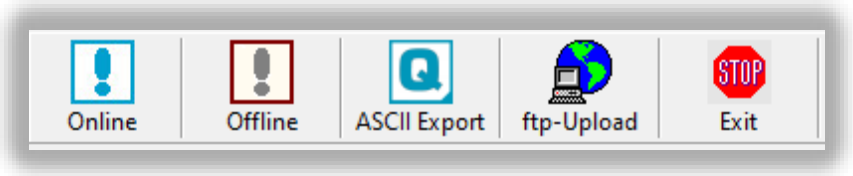
To activate the administrator mode, the menu option "Protection" must be clicked again, and the previously defined password must be entered in the following window.

If the Q-DAS converter is closed and restarted, the operator mode is active, regardless of whether it was canceled before closing.

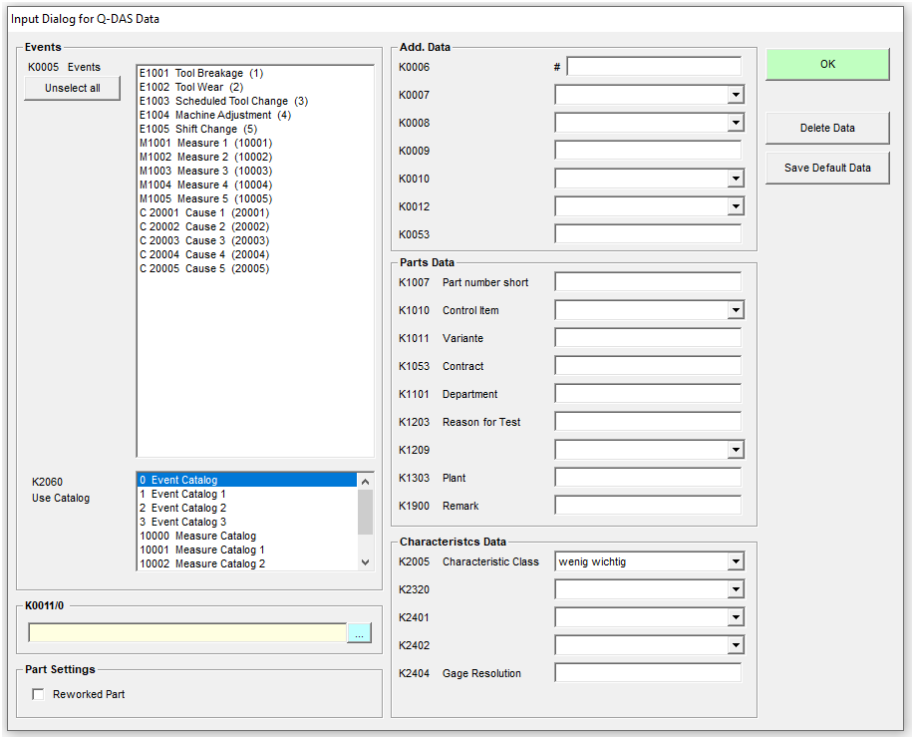
To deactivate the operator mode permanently, enter the correct password in the "Protection" window and activate the "Reset password" checkbox.

3.9. Offline conversion

Start the converter as described in point 3.3 (see above) after the execution of the measuring routine.



In order to start the offline conversion, click on the <Offline> button. After having received all values from the measuring routine, the converter will open the following dialog:



You can use this dialog to define the additional Q-DAS® data. All values which are defined here will be applied to all characteristics.

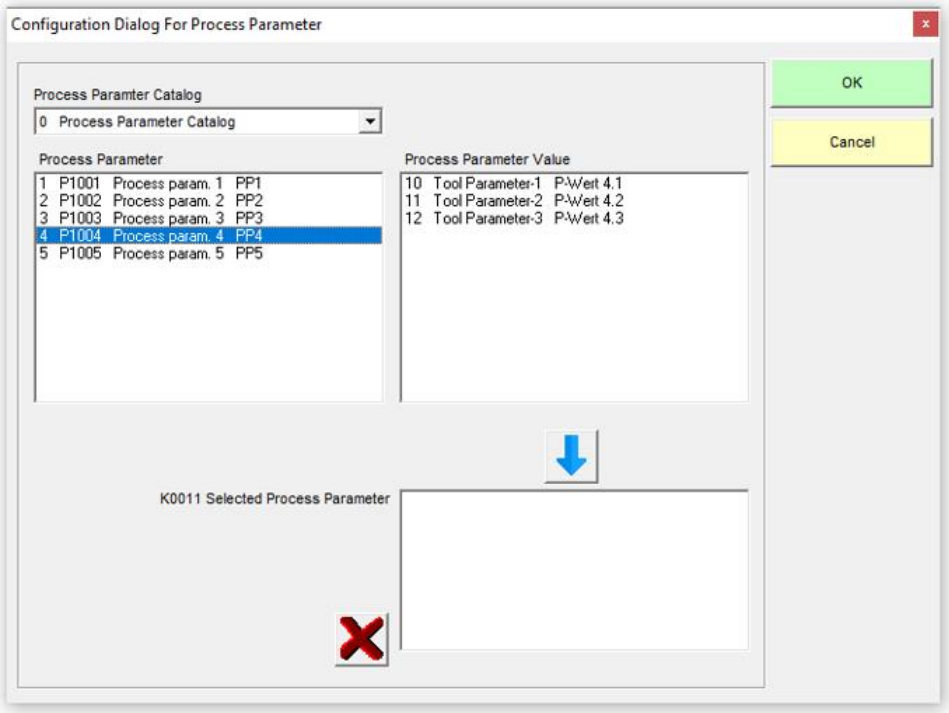
You can also mark a part as a reworked part in this dialog (Reworked part). This is only necessary if the “Depending on result, use different subfolders” function has been enabled in the Setup window.

This is only necessary if the "Depending on result, use different subfolders" function is activated in the "Preferences → Output file" menu option.Otherwise this option is disabled.

By means of a Tracefields with the name "FirstPart", the workpiece can also be identified as coming from the rework. Here, the values are 0 for reworked parts and 1 for parts which come directly from the production.

Note:

The process parameter will be configured in another dialog box. It will be opened by clicking on the [...] button to the right of the parameter.

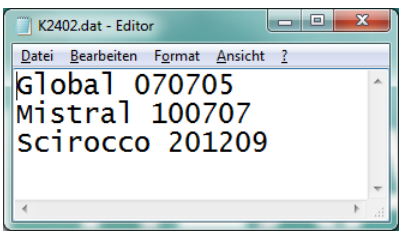


The first step in this dialog is to select the catalog that is used. Second, you select the process parameter. By doing so, all available process parameter values will be displayed. Select the desired value and add your selection with the "⬇" arrow button to the list of selected process parameters. Now select the next value. Use the" ✖" button to delete the complete list or only a selected value in the list.

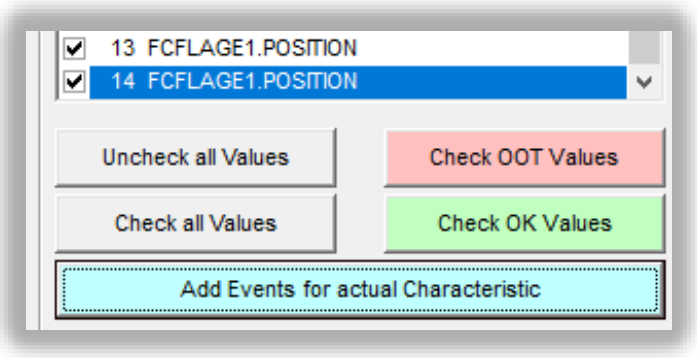
Use the Save Data for program button to save the current settings of this dialog for the current measuring routine. The converter can then provide these settings for the next measurement cycle with this measuring routine.

IMPORTANT: The customized Q-DAS Catalog file must be copied into the Catalogs subfolder in the installation folder of the software. The name of the Catalogs file must be MyCatalog.dfd.

Version 2.1.2 or higher includes a registry setting (CatalogPathName) that can indicate the path and file name of the catalog file. From version 2.3.1 onwards the destination directory for the local catalog files can be defined by using the "ValueFilePath" registry entry. The Catalogs subfolder can also be used to store valid values for the K-fields **K1209**, **K2320**, **K2401** und **K2402**. The respective files are named K1209.dat, K2320.dat, K2401.dat and K2402.dat. These files can be edited with a standard editor.



3.9.1. Check characteristics before export

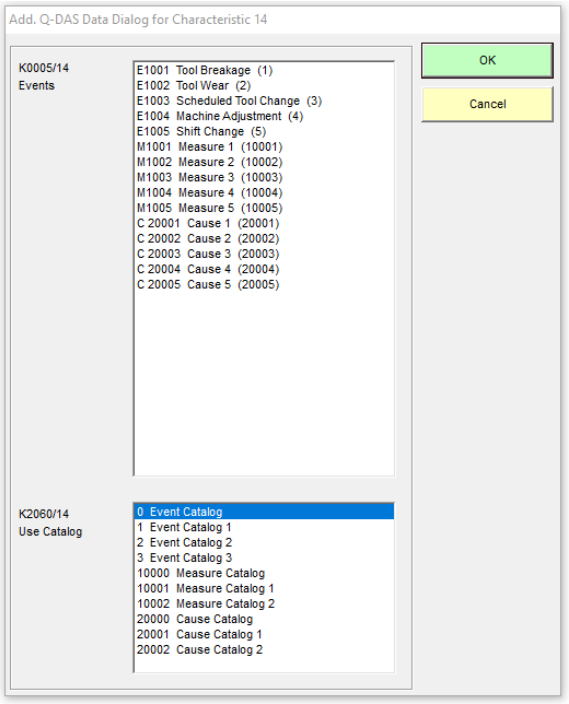


All characteristics are now displayed in the Characteristic data section. The characteristic currently displayed can be selected from the list. After importing, all characteristics are automatically check marked in the list. The same must be the case after the export into the Q-DAS® format.

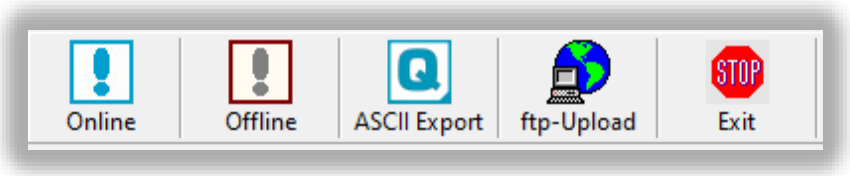
Before you export the data, you can check which values are within tolerance. The Uncheck all values, Check OOT values, Check all values and Check OK values are available for this test.

OOT = Out of tolerance
OK = In tolerance

You can use the Add events for actual Characteristic to open a dialog in which you can add events for the actual characteristic.

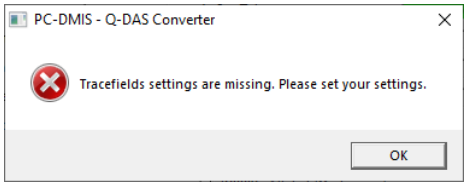


This “Used catalog” list is only a filter for the “Events” list. If you add an event to an individual characteristic, the catalog reference will always be set to the main catalog.



Now the Q-DAS ASCII data can be generated with the button "ASCII Export".

If settings are missing, the following note appears:



After confirming this message with "OK", the "Setup for Tracefield Values" window opens (see: Menu option "Preferences" → "Tracefields“ above). The settings can be checked in this window. After confirming with "OK", the Q-DAS ASCII data can be generated with the "ASCII Export" button.

3.10. Conversion from the PC-DMIS™ measuring routine

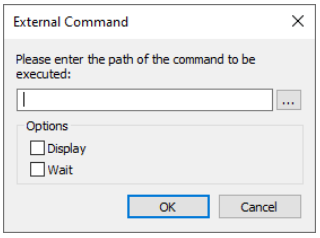
If you want to use the Online Conversion function, you need to start the converter before launching the measuring routine, but after having opened it.

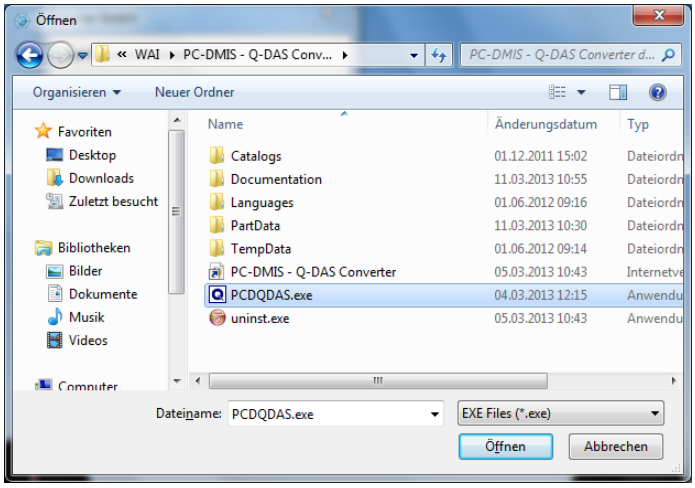
The Input dialog for additional Q-DAS data can be closed while your part is being executed.

When converting the data online, the software receives the data simultaneously with the execution of the PC-DMIS™ measuring routine. This saves a lot of time in comparison with offline conversion.

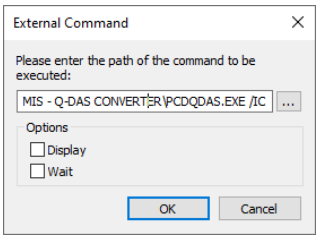
3.10.1. Online conversion from measuring routine

In order to start the online conversion from the respective measuring routine, add an external execution command at the top of your measuring routine.





PC-DMIS™ dialog boxes for external commands. Deactivate the checkboxes at "Display " and "Wait" to use the system optimally.



The complete command in the part measuring routine is as follows:

```
EXTERNALCOMMAND/NO_DISPLAY, NO_WAIT ; C:\Program Files (x86)\PC-DMIS - Q-DAS Converter\PCDQDAS.EXE /a
```

Please note that there must be a space between .exe and the /.

3.10.2. Possible arguments in the measurement routine

Parameter	Online/Offline	Description
A	Online	External call at the beginning of the measuring routine. Starts the conversion automatically. However, the export of the data must be confirmed manually (Input Dialog for Q-DAS Data), so that the operator can still add events to individual features after the data has been transferred to the converter.
I	Online	External call at the beginning of the measuring routine. For systems where no operator input is desired. The export of the data is carried out automatically. The " Input Dialog for Q-DAS Data " is opened until the data has been saved once for the corresponding measuring routine. Afterwards, the converter uses the saved settings for the respective measuring routine and the dialog is no longer displayed.
O	Offline	External call at the end of the measuring routine. Starts the conversion from a measuring routine after the measurement.
AC	Online	Like parameter A, but CeCreator is started after exporting the data.
IC	Online	Like parameter I, but CeCreator is started after exporting the data.
OC	Offline	Like parameter O, but CeCreator is started after exporting the data.
ACS	Online	Like parameter AC, but CeCreator is automatically closed if a configuration file created with CeCreator already exists for this measuring routine.
ICS	Online	Like parameter IC, but CeCreator is automatically closed if a configuration file created with CeCreator already exists for this measuring routine.
AA	Online	As parameter A, but after exporting the data the AUDI PBMS converter is started, the file is created and the converter is closed again.
IA	Online	Like parameter I, but after exporting the data the AUDI PBMS converter is started, the file is created and the converter is closed again.
OA	Offline	Like parameter O, but after exporting the data the AUDI PBMS converter is started, the file is created and the converter is closed again.

3.10.3. Set individual target directory from the measuring routine

A second parameter can be set. It will override the defined destination directory for the Q-DAS® ASCII files.

Example:

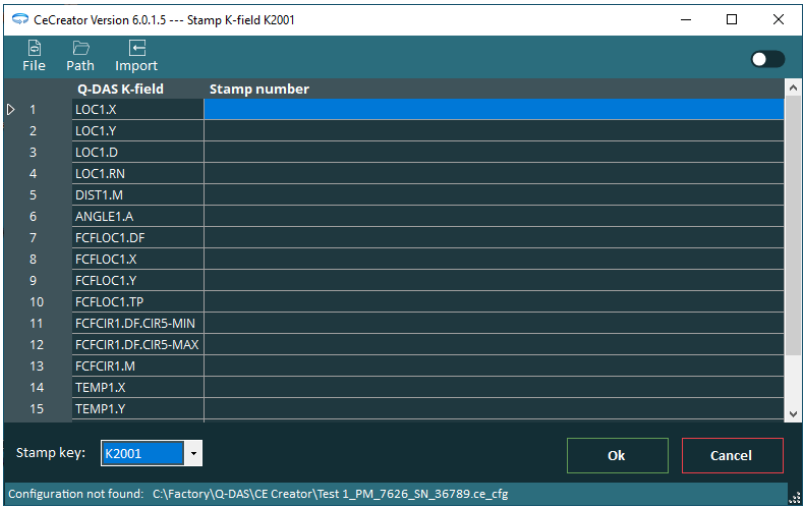
You want to write the Q-DAS ASCII files of the current measuring routine into the C:\QDAS_DATA folder. This folder doesn't correspond to the default converter settings.

The command in the measuring routine for this is as follows:

```
EXTERNALCOMMAND/NO_DISPLAY, NO_WAIT ; C:\PROGRAMME\PC-DMIS – Q-DAS CONVERTER\PCDQDAS.EXE /a /C:\QDAS_DATA
```

Always use a space followed by a slash (" /") to separate command line arguments. If possible, do not use blanks in the path name.

3.10.4. CeCreator



During the installation of the Q-DAS Converter, the CeCreator can also be installed by activating the corresponding checkbox. This tool can be used to change the values of the K-fields **K2001** or **K2002** for the result file.

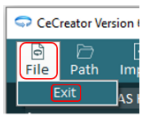
The settings in the Q-DAS converter under "Preferences" → "Advanced settings" in the areas "K2001 (Characteristic Number)" and "K2002 (Characteristic Name)" influence the display and output of the characteristics.

To ensure that CeCreator functions correctly, the settings in the Q-DAS converter must be selected so that a new Q-DAS file is created each time the measurement is run (e.g.: by activating the "Use 4 Digits Counter" checkbox - see above).

The user interface can be opened by manual start or start from the measurement routine (see: "Operation" below).

User interface:

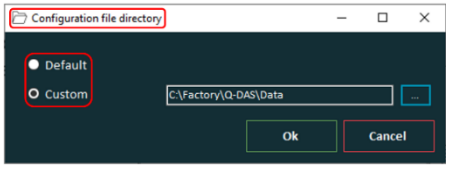
- Menu option "File"
  CeCreator can be closed by clicking on "Exit". Alternatively, this can be done by clicking on the " ✕ " symbol at the top right.



- Menu option “Path”

  If this menu option is selected, the "Configuration file directory" window opens.

  With the radio buttons "Default" or "Custom" the location of the configuration file (*.ce.cfg) can be defined.



  - Default

    The configuration file is saved in the folder where the measuring routine is located.

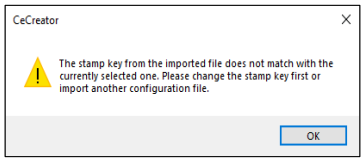
  - Custom

    By clicking on the "..." button on the right, you can define the directory in which the configuration file is to be stored.

- Menu option “Import”

  In order to avoid that with a new configuration file (see below: A new configuration file is created under the following conditions) all values in the column "Stamp number" (see below) have to be entered again, this function can be used to load an existing configuration file (see below: "OK" button) and edit it if necessary.

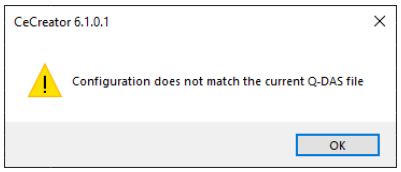
If a different K-field is selected under "Stamp Key" than in the imported file, the following note appears:



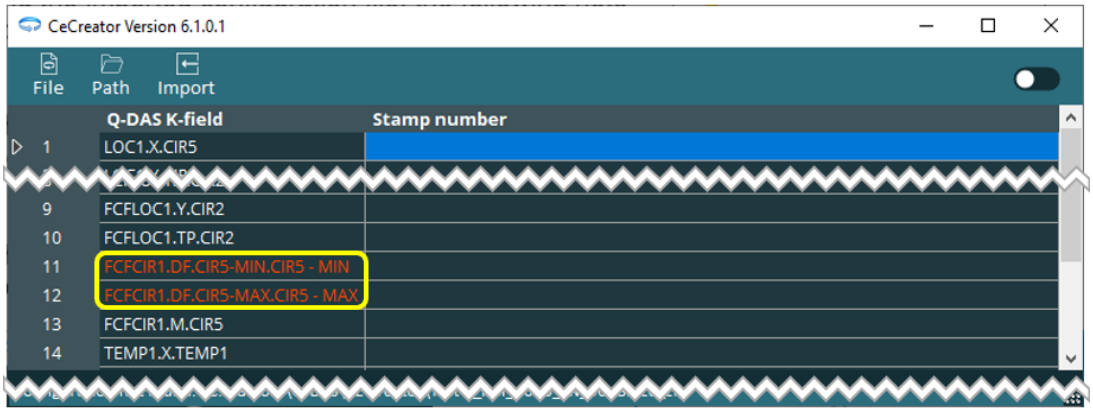
In this case, the key must be changed as described under “Select "Stamp key”” and the import must be repeated.

If the import was successful and the K-field under "Stamp key" is changed, all fields in the column "Stamp number" are cleared and have to be filled as described under “Column “Stamp number”” manually or by importing an existing configuration file.

If there are different characteristics in the Q-DAS file and the imported configuration file, the following note appears:



The characteristics that differ in the Q-DAS file from the characteristics in the configuration file are shown in red.



There are no values in the "Stamp number" column, but they can be entered as described below. Alternatively, the values can be assigned to the characteristics by repeatedly importing an existing configuration file.

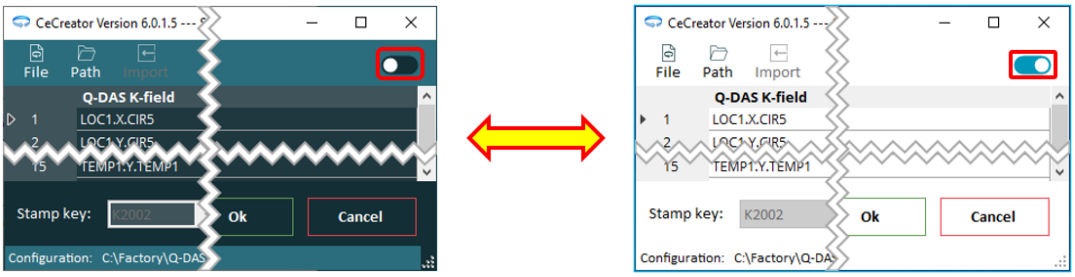
To create a new configuration file, a path must be selected under the menu option "Path" in which *no* file with the name of the new configuration file to be created exists. If a file with this name exists, it will *not* be overwritten.

By clicking on the "OK" button, the configuration file is created in the path shown in the footer at "Configuration" or "Configuration not found" with the name shown (provided that no file with an identical name exists - see above). The values for the selected K-field (see: Stamp key above) are written from the "Stamp number" column to the Q-DAS file and CeCreator is closed.

This menu option is not available if a matching configuration file already exists for the measurement routine opened in PC-DMIS (see: "OK" button below).

- Changing the view

  The user interface can be displayed "Dark" or "Light". To do this, click on the slider at the top right and select the desired design.



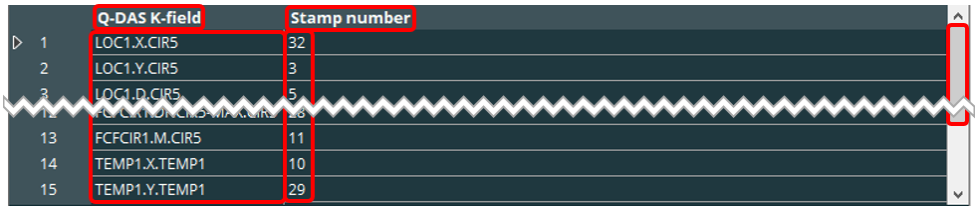
- Column “Q-DAS K-field”

  Depending on the selected K-field (see: Select "Stamp key” below), the characteristics present in the measurement routine will be displayed (see screenshot below). The values for these characteristics can be changed as described under Column “Stamp number”.

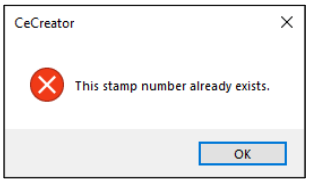
- Column “Stamp number”

  Individual values can be assigned to the characteristics displayed in the "Q-DAS K-field" column (see above). To do this, click in the corresponding line and enter the desired value.

  If there are more characteristics in the measurement routine than can be displayed, you can scroll up and down with the scroll bar (or mouse wheel) on the right.



If a stamp number is entered twice, the following note appears:

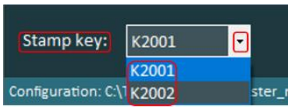


After confirming this message, the value is removed and must be changed or the line must be left empty.

If a configuration file for the measuring routine has already been created (see: "OK" button below), these values can no longer be changed.

- Select "Stamp key”

  Clicking on the "▾"icon opens a drop-down list from which the desired key can be selected.

  If a configuration file has already been created for the measuring routine (see: "OK" button below), these values can no longer be changed.

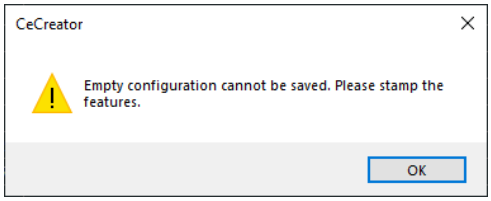
- “OK” button

  By clicking on this button, the values are accepted, the result file is generated and the user interface is closed (see also: "Operation" below).

  If not yet available, the configuration file is written into the path which was defined under the menu option "Path". If not yet available, the configuration file is written into the path which was defined under the menu option "Path". The name of this file is composed of the header data of the PC-DMIS measuring routine (each separated by "_"), followed by the extension ".ce.cfg". If the header data contains special characters that are not permitted as file names in Windows, these are converted to "_".

  If a file with an identical name exists in the path defined under menu option "Path", it will *not* be overwritten.

  If there are no values in the “Stamp number" column, saving is not possible and the following note appears:

- “Cancel” button

  This button closes the user interface without any further action.

Operation:

- Manual start

  Clicking on the "CeCreator.exe" will start the CeCreator. This file is located in the installation directory of the Q-DAS Converter in the folder "CeCreator" (default: C:\Program Files (x86)\PC-DMIS - Q-DAS Converter\CeCreator).

  CeCreator starts and only the menu options "File", "Path" and the drop-down list for selecting the K-field (see: "Select "Stamp key”" above) are available.

  With the menu option "File" and at "Select "Stamp key“" presettings for the start of the CeCreator can be made from the measurement routine.

- Start from the measurement routine

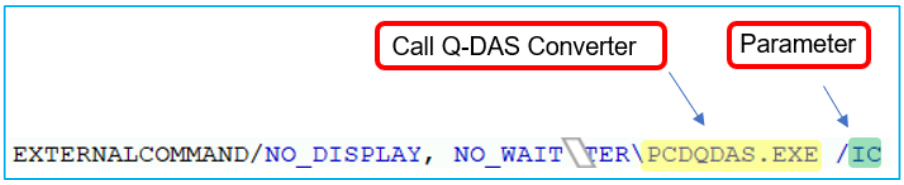
  The CeCreator can be started from the measurement routine by starting the Q-DAS converter with an external command and passing various parameters (see section: Possible arguments in the measurement routine above).

  CeCreator starts in the language selected in the Q-DAS Converter.

No configuration file present:

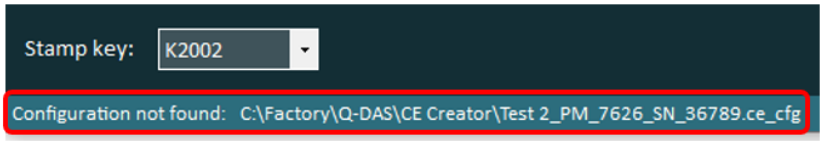
If there is no configuration file matching the measurement routine (see "'"OK" button" above and "A new configuration file is created under the following conditions" below), the CeCreator must be started with the "IC" parameter.

Example (external command shortened):



After the measurement is finished the CeCreator user interface opens.

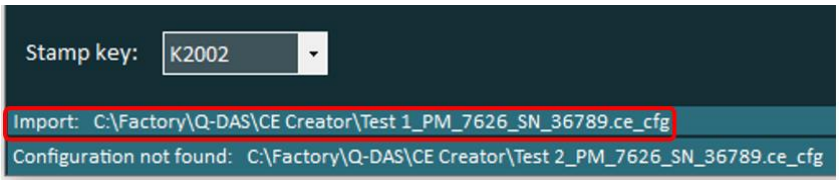
A note appears in the footer that the corresponding configuration file (path and name) was not found.



Subsequently, the corresponding settings can be made and the values assigned to the characteristics (see "User interface" above).

By clicking on the "OK" button, the configuration file is created in the displayed path with the displayed name. The values for the K-field selected in "Stamp key" are written from the "Stamp number" column to the Q-DAS file and CeCreator is closed.

To avoid having to assign values to all characteristics again, a configuration file can be imported using the "Import" menu option (see above). Path and name of the imported file are displayed in the footer in addition to the missing configuration file.



If different characteristics are present in the Q-DAS file and the imported configuration file, the notes in the "Import" option item must be taken into account.

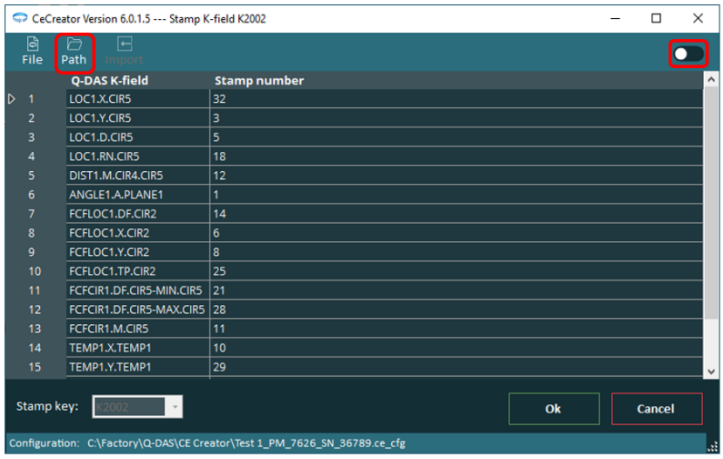
Subsequently, the corresponding settings can be made and the values assigned to the characteristics (see "User interface" above).

By clicking the "OK" button, the configuration file is created in the path shown in the footer at "Configuration not found:" with the displayed name.The values for the selected K-field (see: Stamp key above) are written from the "Stamp number" column to the Q-DAS file and the CeCreator is closed.

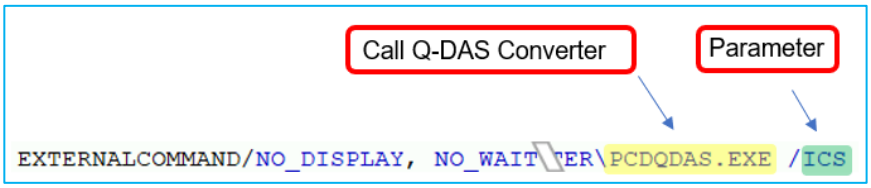
Configuration file present:

If a configuration file matching the measurement routine is available, the values in the "Stamp number" column are displayed accordingly.

Apart from changing the view and the path (see above in each case), no further changes can be made. The export of a configuration file is also not possible.

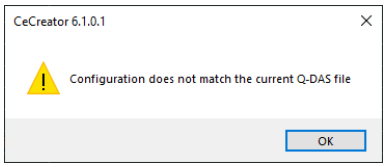


Since no more changes are possible, the call of the CeCreator in the measurement routine can be done with the parameter "ICS" in the future.

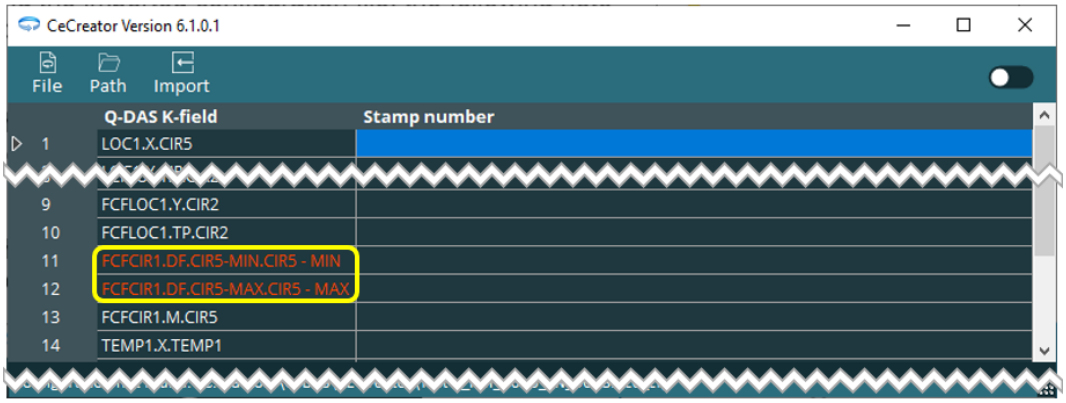


In this case, the values for the selected K-field (see: Stamp key above) are written from the "Stamp number" column to the Q-DAS file without opening the CeCreator user interface.

If there are different characteristics in the Q-DAS file and the imported configuration file, the following note appears:



The user interface is opened regardless of the "ICS" parameter. The characteristics that differ in the Q-DAS file from the characteristics in the configuration file are displayed in red.



The menu option "Import" is available and at Stamp key the dropdown list for the selection of the K-field is available.

There are no values in the "Stamp number" column, but they can be entered as described below.

There are no values in the "Stamp number" column, but they can be entered as described under "Column “Stamp number”" (see above).Alternatively, the values can be assigned to the characteristics by importing an existing configuration file.

To create a new configuration file, a path must be selected under the menu option "Path" in which *no* file with the name of the new configuration file to be created exists. If a file with this name exists, it will *not* be overwritten.

By clicking on the "OK" button, the configuration file is created in the path shown in the footer at "Configuration" with the name shown (provided that no file with an identical name exists - see above). The values for the selected K-field (see: Stamp key above) are written from the "Stamp number" column to the Q-DAS file and CeCreator is closed.

A new configuration file is created under the following conditions:

- A new configuration file is created under the following conditions:
- The header data in the PC-DMIS measuring routine has been changed.
- The name of the measuring routine was changed.
- A measuring routine was started without a configuration file being available.

3.10.5. PC-DMIS – Audi PBMS Converter

During the installation of the Q-DAS converter, the PC-DMIS - Audi PBMS converter can also be installed by activating the corresponding checkbox. This tool creates an additional Q-DAS file in which only the deviations (instead of measured values) are output

The Audi PBMS Converter can be called with various arguments from the measurement routine (see: Possible arguments in the measurement routine above). Alternatively, the "PCDMIS_AudiPBMS_Converter.exe" can be started in the installation folder (default: C:\Program Files (x86)\PC-DMIS - Q-DAS Converter\Audi PBMS Konverter).

User interface:

- Language:

  By clicking the "  " button, the language can be changed (German or English).

- Select file(s):

  By clicking Click on the "  " button to open the file manager. Then the Q-DAS file (dfq or dfd) can be selected.

  The usual Windows key combinations "Ctrl" and "⇧" can be used to select several individual files or a block of files.

  If several files are selected, the conversion (see "Convert file" below) is performed automatically and the PC-DMIS - Audi PBMS Converter is closed.

  If a single file is selected, the name is displayed in the "Q-DAS file:" field.

- Convert file:

  If a Q-DAS file (dfq or dfd) is selected, another Q-DAS file can be created by clicking the "  " button. The folder "AUDI_PBMS" is created in the directory of the original file. In this folder the file is saved with the name of the original file.

  If a *.dfd file was selected, the associated dfx file is also copied to this folder.

  In this dfq or dfd file, the nominal values (**K2101**) are output with "0". For the lower and upper specification limits (**K2110** and **K2111**) the values of the lower and upper allowance (**K2112** and **K2113**) are used. Only the deviations are output, not the measured values.

  If multiple files are selected (see "Select file(s)" above), the conversion will be done automatically (for dfd files, the respective dfx files are copied to the "AUDI_PBMS" folder).

  After the conversion, the PC-DMIS - Audi PBMS converter is closed.

4. List of supported Q-DAS® K-fields and their data origin

Key	Field name	PC-DMIS Header data	PC-DMIS Trace Field command	PCD comment command	Other PC-DMIS commands	PC-DMIS dimension command	Converter Input dialog	Converter created automatically
K0001	Measured value					X		
K0002	Attribute					Marker on/off		
K0004	Time							X
K0005	Event						X	
K0006	Batch number		X				X	
K0007	Cavity number		X				X	
K0008	Inspector name		X				X	
K0009	Text		X				X	
K0010	Machine number		X				X	
K0011	Process parameter						X	
K0012	Gage number		X				X	
K0014	Part ID		X					
K0015	Reason for test		X					
K0016	Production code		X					
K0017	Tool number		X					
K0020	Subgroup size							X
K0021	No. of errors		X (ATTRIBUT)					
K0053	Order		X				X	
K0054	K0054		X					
K0055	K0055		X					
K0056	K0056		X					
K0057	K0057		X					
K0058	K0058		X					
K0059	K0059		X					
K0060	K0060		X					
K0061	K0061		X					
K0062	K0062		X					
K0063	K0063		X					
K0080	Subgroup ID		X					
K0081	Value position in subgroup		X					
K0100	Total No. of characteristics in file							X
K1001	Part number	Serial No.	X					
K1002	Part Description	PART NAME	X					
K1003	Part Short Description		X					
K1004	Part Amendment status	VERSION NO.	X					
K1007	Part number Abbreviation		X				X	
K1005	Product		X					
K1008	Part type		X					
K1009	Part code		X					
K1010	Control item						X	
K1011	Variant						X	
K1014	Part ID		X					
K1021	Manufacturer number		X					
K1022	Manufacturer name		X					
K1031	Material number		X					
K1032	Material description		X					
K1041	Drawing number		X					
K1042	Drawing Amendment		X					
K1043	Drawing Index		X					
K1048	CAD Drawing file name		X					
K1052	Contractor name		X					
K1053	Order		X				X	
K1061	Client Number Text		X					
K1062	Client Description		X					
K1071	Supplier Number Text		X					
K1072	Supplier Description		X					
K1081	Machine Number Text		X					

Key	Field name	PC-DMIS Header data	PC-DMIS Trace Field command	PCD comment command	Other PC-DMIS commands	PC-DMIS dimension command	Converter Input dialog	Converter created automatically
K1082	Machine Description		X					
K1083	Machine number		X					
K1085	Machine location		X					
K1086	Work Cycle Operation		X					
K1087	Operation Description		X					
K1100	Plant Sector		X					
K1101	Department		X				X	
K1102	Workshop		X					
K1103	Cost centre		X					
K1104	Shift		X					
K1110	Order number		X					
K1111	Goods received number		X					
K1112	Cube		X					
K1201	Test Facility Number		X					
K1202	Test Facility Description		X					
K1203	Reason for test		X				X	
K1206	Test location		X					
K1209	Inspection type		X				X	
K1210	Measurement type		X					
K1221	Inspector name text		X					
K1222	Inspector name		X					
K1231	Measurement program number		X					
K1232	Measurement program version		X					
K1301	Client		X					
K1302	Test batch		X					
K1303	Plant		X				X	
K1311	Production order		X					
K1341	Test plan number text		X					
K1342	Test Plan Name		X					
K1343	Test Plan Development Date		X					
K1344	Test Plan Developer		X					
K1800	User field description 1		X					
K1801	User field type 1		X					
K1802	User field content 1		X					
K1812	User field content 2		X					
K1822	User field content 3		X					
K1832	User field content 4		X					
K1842	User field content 5		X					
K1852	User field content 6		X					
K1860	User field description 7		X					
K1862	User field content 7		X					
K1900	Remark		X				X	
K1997	Part GUID	GUID measuring routine (Smart Quality)						
K2001	Characteristic Number		X			X		Ser. No.*
K2002	Characteristic description		X	Type: Protocol**		X		
K2003	Characteristic Abbreviation					X		
K2004	Characteristic type		X					X
K2005	Characteristic class		X				X	
K2006	Control item		X					
K2007	Control Type		X					
K2008	Group type							X
K2009	Measured quantity		X			(X)		X
K2015	Tool wear type (Trend)		X					
K2016	100% Measurement		X					

Key	Field name	PC-DMIS Header data	PC-DMIS Trace Field command	PCD comment command	Other PC-DMIS commands	PC-DMIS dimension command	Converter Input dialog	Converter created automatically
K2022	Decimal places				Display precision or from PC-DMIS registry			
K2030	Group number							X
K2031	Group Element Number							X
K2060	Events catalog						always 0	
K2061	Process parameter catalog						always 0	
K2091	Characteristic Index		X					
K2092	Characteristic Text		X					
K2093	Processing Status		X					
K2095	Element Code		X					
K2096	Element Index		X					
K2097	Element Text		X					
K2100	Target Value		X					X
K2101	Nominal value					X		
K2110	Lower Specification Limit							X
K2111	Upper Specification Limit		X					X
K2112	Lower Allowance					X		
K2113	Upper Allowance					X		
K2114	Lower scrap limit		X					
K2115	Upper scrap limit		X					
K2116	Lower acceptance limit		X					X
K2117	Upper acceptance limit		X					X
K2120	Boundary type (lower)							X
K2121	Boundary type (upper)							X
K2130	Lower Plausibility Limit					X		
K2131	Upper Plausibility Limit					X		X
K2142	Unit					X		X
K2202	Evaluation Type							
K2203	Car body mode		X		POSITIVREPORTING			
K2205	Number of parts		X					
K2216	Master Serial Number		X					
K2220	Number of Operators		X					
K2221	Number of Trials		X					
K2222	No. of Reference Measurements		X					
K2311	Production Type Text (Operation)		X					
K2320	Contract Number		X				X	
K2401	Gage number		X				X	
K2402	Gage description		X				X	
K2404	Gage resolution						X	
K2415	Gage serial number		X					
K2434	Process capability establishment		X					
K2802	User field contents 1		X					
K2812	User field contents 2		X					
K2822	User field contents 3		X					
K2832	User field contents 4		X					
K2842	User field contents 5		X					
K2852	User field contents 6		X					
K2862	User field contents 7		X					
K2872	User field contents 8		X					
K2882	User field contents 9		X					
K2892	User field contents 10		X					
K2900	Remark		X	Type: Report				
K2901	Test Conditions		X					
K2997	PC-DMIS CMD Unique ID					X		

Key	Field name	PC-DMIS Header data	PC-DMIS Trace Field command	PCD comment command	Other PC-DMIS commands	PC-DMIS dimension command	Converter Input dialog	Converter created automatically
K3107	Tool number		X					
K8006	Lower alarm limit		X					
K8007	Upper alarm limit		X					
K8010	Chart Type and additional attributes		X					
K8011	Central Position		X					
K8012	Lower Control Limit LCL		X					
K8013	Upper Control Limit UCL		X					
K8110	Chart Type and additional attributes		X					
K8111	Central Position		X					
K8112	Lower Control limit LCL		X					
K8113	Upper Control Limit UCL		X					
K8500	Subgroup size		X					X
K8501	Subgroup type		X					X
K8503	stable subgroup size							X
K8504	Subgroup frequency		X					
K8507	Step size Skip-Lot		X					
* Function available only with registry entry: DimensionNumber = -1 (default value is 0) ** Function only available with registry entry: DimensionName = -1 (default value is 0)								

Total of supported K-fields: 180

5. List of supported characteristics in PC-DMIS™

- DIMENSION_A_LOCATION
- DIMENSION_D_LOCATION
- DIMENSION_FLATNESS_LOCATION
- DIMENSION_H_LOCATION
- DIMENSION_L_LOCATION
- DIMENSION_PA_LOCATION
- DIMENSION_PD_LOCATION
- DIMENSION_PR_LOCATION
- DIMENSION_R_LOCATION
- DIMENSION_ROUNDNESS_LOCATION
- DIMENSION_RS_LOCATION
- DIMENSION_RT_LOCATION
- DIMENSION_S_LOCATION
- DIMENSION_STRAIGHTNESS_LOCATION
- DIMENSION_T_LOCATION
- DIMENSION_X_LOCATION
- DIMENSION_Y_LOCATION
- DIMENSION_Z_LOCATION

- DIMENSION_TRUE_DIAM_LOCATION
- DIMENSION_TRUE_D1_LOCATION
- DIMENSION_TRUE_D2_LOCATION
- DIMENSION_TRUE_D3_LOCATION
- DIMENSION_TRUE_DD_LOCATION
- DIMENSION_TRUE_DF_LOCATION
- DIMENSION_TRUE_FLATNESS_LOCATION
- DIMENSION_TRUE_LD_LOCATION
- DIMENSION_TRUE_LF_LOCATION
- DIMENSION_TRUE_PA_LOCATION
- DIMENSION_TRUE_PR_LOCATION
- DIMENSION_TRUE_ROUNDNESS_LOCATION
- DIMENSION_TRUE_STRAIGHTNESS_LOCATION
- DIMENSION_TRUE_WD_LOCATION
- DIMENSION_TRUE_WF_LOCATION
- DIMENSION_TRUE_X_LOCATION

- DIMENSION_TRUE_Y_LOCATION
- DIMENSION_TRUE_Z_LOCATION

- DIMENSION_2D_ANGLE
- DIMENSION_2D_DISTANCE
- DIMENSION_3D_ANGLE
- DIMENSION_3D_DISTANCE
- DIMENSION_ANGULARITY
- DIMENSION_COAXIALITY
- DIMENSION_CONCENTRICITY
- DIMENSION_FLATNESS
- DIMENSION_KEYIN
- DIMENSION_PARALLELISM
- DIMENSION_PERPENDICULARITY
- DIMENSION_PROFILE
- DIMENSION_ROUNDNESS
- DIMENSION_RUNOUT
- DIMENSION_STRAIGHTNESS

- DIMENSION_SYMMETRY
- DIMENSION_PROFILE_LINE
- DIMENSION_PROFILE_SURFACE
- Geometrical Tolerances
- “Gage” features
- “Size” feature
- ESF Toolkit Features

6. Examples

How to use converter in a loop program:

```
PART NAME  : QDAS
REV NUMBER :
SER NUMBER :
STATS COUNT : 1

START       =ALIGNMENT/START,RECALL:USE_PART_SETUP,LIST=YES
             ALIGNMENT/END
             MODE/DCC
             LOADPROBE/WRIST
             TIP/T1A0B0, SHANKIJK=0, 0, 1, ANGLE=90
             FORMAT/TEXT,OPTIONS, ,HEADINGS,SYMBOLS, ;NOM,TOL,MEAS,DEV, , ,
$$ NC,
             ____________________________________________________________

             | Add an loop
             | Remark "Loop IDs"!!!
             ____________________________________________________________

V1          =LOOP/START,ID=YES,NUMBER=2,START=1,SKIP=,
               OFFSET:XAXIS=0,YAXIS=0,ZAXIS=0,ANGLE=0
  $$ NC,
               ____________________________________________________________

               | Start Q-DAS Converter
               ____________________________________________________________

               EXTERNALCOMMAND/NO_DISPLAY, NO_WAIT ; C:\PROGRAM FILES (X86)\PC-DMIS - Q-DAS CONVERTER\PCDQDAS.EXE /i
  $$ NC,
               ____________________________________________________________

               | Insert pause about 3 sec. in the Measuring Routine
               ____________________________________________________________

               COMMENT/OPER,NC,FULL SCREEN=NC,AUTO-CONTINUE=YES,TIME DELAY=3,OVC=NC,
               ____________________________________________________________

               | --- Please wait! ---
               ____________________________________________________________

PNT1           =FEAT/CONTACT/VECTOR POINT/DEFAULT,CARTESIAN
                THEO/<0,-41,0>,<0,0,1>
                ACTL/<0,-41,0>,<0,0,1>
                TARG/<0,-41,0>,<0,0,1>
                SHOW FEATURE PARAMETERS=NC
                SHOW CONTACT PARAMETERS=NC
  DIM LOC1= LOCATION OF POINT PNT1  UNITS=MM ,$
  GRAPH=OFF  TEXT=OFF  MULT=0.00  OUTPUT=BOTH  HALF ANGLE=NC
  AX     NOMINAL       +TOL       -TOL       MEAS        DEV
  X      0.00000    0.05000   -0.05000    0.00000    0.00000 ----#----
  Y    -41.00000    0.05000   -0.05000  -41.00000    0.00000 ----#----
  Z      0.00000    0.05000   -0.05000    0.00000    0.00000 ----#----
  END OF DIMENSION LOC1
  $$ NC,
               ____________________________________________________________

               | Insert Tracefield
               | Name = QDAS
               | Value = E (Close Converter)
               ____________________________________________________________

               TRACEFIELD/DISPLAY=NC,REPORT=NC,DISPLAY MESSAGE=QDAS ; QDAS : E
             LOOP/END
                             END OF MEASUREMENT FOR
```

Sample code for different acceptance limits in the measuring routine

```
TRACEFIELD/DISPLAY=NO,REPORT=NO,DISPLAY MESSAGE=K2116_K2117 ; K2116_K2117 : 70
DIM LOC2= LOCATION OF CIRCLE CIR1  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NO
AX     NOMINAL        +TOL        -TOL        MEAS         DEV
X      20.00000     0.05000    -0.05000    20.00000     0.00000 ----#----
Y      30.00000     0.05000    -0.05000    30.00000     0.00000 ----#----
D      16.40000     0.05000    -0.05000    16.40000     0.00000 ----#----
END OF DIMENSION LOC2
```

```
TRACEFIELD/DISPLAY=NO,REPORT=NO,DISPLAY MESSAGE=K2116_K2117 ; K2116_K2117 : 85
DIM LOC3= LOCATION OF SPHERE SPH1  UNITS=MM ,$
GRAPH=OFF  TEXT=OFF  MULT=10.00  OUTPUT=BOTH  HALF ANGLE=NO
AX     NOMINAL        +TOL        -TOL        MEAS         DEV
X      70.00000     0.05000    -0.05000    70.00000     0.00000 ----#----
Y      15.00000     0.05000    -0.05000    15.00000     0.00000 ----#----
Z      22.00000     0.05000    -0.05000    22.00000     0.00000 ----#----
D      16.40000     0.05000    -0.05000    16.40000     0.00000 ----#----
END OF DIMENSION LOC3
```

7. 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.