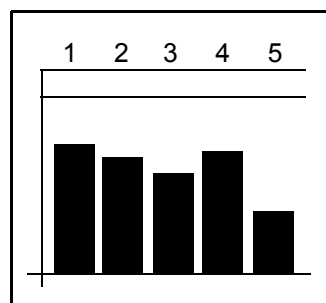


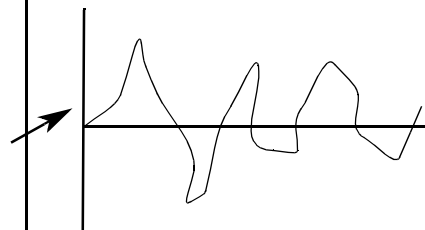
UMESS

Option 22 Converting UMESS Measurement Protocols

CNC program	
...	
...	
...	
*****	N-POINT TERM
1	CTEXT
MES(0)=1	EXCALL ADR
INPUT START	IF
CIRC MACRO	PCM
RESULT NAME	CTEXT
PLANE CODE NO.	ASSIGN TEXT
PROBE NO.	ASSIGNMENT
OUTER=0/INNER=1	ASSIGNMENT
NV X-COORDINATE	ASSIGNMENT
NV Y-COORDINATE	ASSIGNMENT
NV Z-COORDINATE	ASSIGNMENT
NV D-DIAMETER	ASSIGNMENT
START VALUE I-POS	ASSIGNMENT
END VALUE I-POS	ASSIGNMENT
DIST: I-POS/PRB	ASSIGNMENT
START ANGLE	ASSIGNMENT
END ANGLE	ASSIGNMENT
NO OF PRB PTS	ASSIGNMENT
INTERSECTION HEIGHT	ASSIGNMENT
NV-SELECTION	ASSIGN.TEXT
NV X-IDF	ASSIGN.TEXT
NV Y-IDF	ASSIGN.TEXT
NV Z-IDF	ASSIGN.TEXT
NV D-IDF	ASSIGN.TEXT
LT D	ASSIGNMENT



Statistical evaluation
of the measurement data



Operating Instructions



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Document type: . . . Operating Instructions
Version: 8.x
Date: 05/01
Order No.: 61212-1230102

Preface

It is here assumed that the user is familiar with the coordinate measuring machine and its components. Please keep all printed materials delivered with the measuring machine ready to hand at all times.

Principles in this operating manual

Before starting to work with this manual, the user has to familiarize himself with the applied principles.

In the following, you will find information on the used font types, signs and symbols.

Typographic principles

The font types and font schemes used in this manual have the following meaning:

- **bold face**
 - Dialog element on the screen
Example: „... the button **<TERMIN>**”
 - Term
Example: "During calculation the location of a **measuring element** in relation to a **reference element** is determined."
 - File and directory names
Example: **/home/zeiss/UB**
- *italic*
 - Highlighted text of which the content is very important
Example: "Click with the *right* mouse button"
 - Cross reference
Example: "....., see also ➤ „*Conversion sequence*” on page 2-3"
- Courier
Program code, file contents
- **Courier bold face**
Text in dialog windows and protocols

Signs and symbols

Special signs and symbols are used in this manual.

Symbols for warnings and information



Danger!

In this case, special care is called for. The warning triangle indicates risk of injury. Non-observance of this warning may cause personal injury.



Attention!

This symbol warns against situations which may lead to loss of data, measuring errors, errors in the measuring run, collisions or damage to the machine and workpiece.



The **Note** symbol is shown next to important text and helpful additional information.

Overview of chapters

This manual describes the function, operation and application possibilities of the measuring program UMESS Opt. 22.

The following subjects are described:

- *„Introduction“ on page 1-1*
- *„Functional Sequence“ on page 2-1*
- *„QDAS.CONFIG Configuration File“ on page 3-1*
- *„QDAS Information Part of Measurement Record“ on page 4-1*
- *„Feature Filter Function“ on page 5-1*
- *„Characteristic Features of Measuring System Analysis: Technique 2“ on page 6-1*
- *„File Management on UNIX Page“ on page 7-1*
- *„Appendix A: Key Fields and Their Designations in "Q-DAS Format"" on page 10-2*

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Chapter

1

Introduction

This chapter contains:

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General

The **QDASCONV** program is used to convert results from UMESS measuring runs to the QDAS data transfer format.

This makes it possible to generate statistical evaluations with the **qs-STAT® 3.1** program package.

The data transfer format is an ASCII format which in this case consists of 2 files with the same name but different extensions:

- Description file ***.DFD**
- Value file ***.DFX**

The file names are taken from a previously defined column of the record header.

These files are created or updated immediately following a measurement. They are thus available for immediate evaluation and/or automatic transmission to a master or evaluation computer.

Description file

The description file contains part-specific and feature-specific data which describe the workpiece and its individual features. The informational content corresponding to this data can be taken from the record header, the measurement record, or a configuration file.

Each time the **QDASCONV** program is started a check is made to determine whether the DFD file already exists. If no DFD file is found, a new one will be created which will then remain valid for all subsequent measurements.

Changes such as adding features and retrospectively entering information which was not known during the measurement can be performed in the **qs-STAT®** program in a data acquisition module especially provided for that purpose. If the edited description file is again made available to the measuring machine computer, **QDASCONV** also recognizes newly added features.

All description data begin in the DFD file with a key field that ensures correct allocation of the contents:

Key scheme

0... 999	Description of value formats
1000... 1999	Part data
2000... 2999	Feature data
3000... 3999	Test plan data

Example

K1001 Motor block

K = Key

1001 = 4-digit key number, here parts no.

Motor block = informational contents

For more details on the data format, see:

Q-DAS® Manual of Data Formats

Value File

The actual dimensions from the measurements are stored in the value file along with a dimension validity code and the date of creation in a separate data record for each measurement.

Additional data, e.g. the batch number, operator and machine number, can be stored in supplementary data records for each measuring run as required.

The order of the features within a data record always depends on the order of the first measurement when the description file is created.

If, in comparison with the first measurement, features are missing due to focusing of the CNC run or a change in the **QDASCONV**-specific filter, the actual value will be assigned a value of zero and the measurement will be marked invalid by a code.

Chapter

2

Functional Sequence

This chapter contains:

Prerequisites in UMESS.	2-2
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Prerequisites in UMESS

The record header of the measuring run must contain a column that **clearly** identifies the workpiece (see configuration file). This alphanumeric text is then used to generate the file name. Lower-case letters are automatically converted to capital letters and spaces or slashes are replaced by underlines.

The characters * , . () ? : ; are not allowed in a name. The "-" characters must not be used for the first letter of a name.

Since the features in **qs-STAT®** are identified by the name assigned to them in UMESS, always make sure that all of the names used within a measurement record are unambiguous.

The measurement record must be saved at the end of the CNC run by entering **<DI 1684>**. The file name is freely selectable within the usual limits of UMESS conventions.

The name **MPROT_____B** is set as the default value in the program. The record is saved to the directory **/users/zeiss/CZ_MES_UF** or **/home/zeiss/UF**.

Then the actual conversion program **QDASCONV** is started via shell script **QDASCONV.SH** with **<DI 1686>**.

The preceding shell script is used to copy the preset options from a configuration file and forward them to the conversion program. Following conversion, the resulting files can then be forwarded to a master or evaluation computer as required.

The configuration file **QDAS.CONFIG** must be located in the "home directory" of the corresponding user. With a normal UMESS configuration, that would be the directory **/users/zeiss/udir** or **/home/zeiss/udir**.

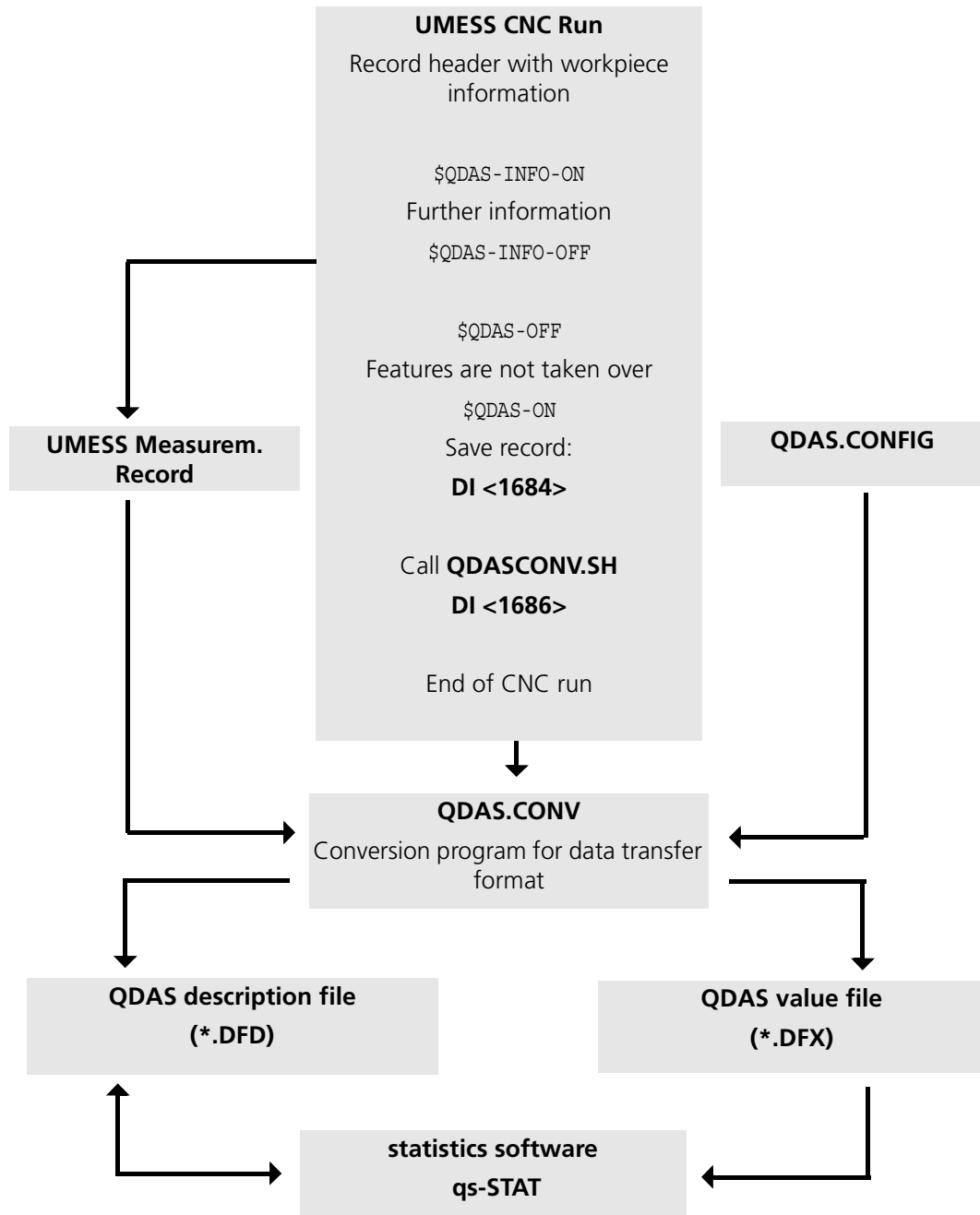
More details on this file will be provided in a subsequent chapter.

Special character101 \f
"Directions MT" \s
24__

<DI 1684> MPROT_____B

**<DI 1686> /users/zeiss/tool/qdasconv.sh or
/opt/zeiss/tool/qdasconv.sh**

Conversion sequence



Chapter 3

QDAS.CONFIG Configuration File

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Structure of the configuration file

As already mentioned, the configuration file must be located in the user's home directory. It will then initially be read in at the start of the program.

The file is subdivided into sections A to F, which contain information on the various individual configurations. These sections are separated by a boundary line, e.g.:

```
$A-----
```

All relevant lines must begin in the 1st column. Comment lines begin with a "#" in the first column. Comments are not allowed within a configuration line.

- Section A contains predefined program options.
- Sections B, C and D contain the key for the description file required by the customer, the value file with its definition and, if required, an instruction on how the contents are to be entered. Only the keys listed here are entered in the data transfer file.

The specified contents are valid for all workpieces. They can, however, be individually adapted for each part using the QDAS information part of the measurement record.

- Section E contains the additional data fields to be created in the value file.
- Section F contains a table with plaintext on the individual feature symbols. Since this section is of no great importance to the user, it will not be explained in detail here.

Configuration Section A - Program Options

All possible program options are listed in section A. They are isolated from the file by the above shell script and forwarded to the actual conversion program.

The options in **QDAS.CONFIG** represent a generally valid standard for the local machine. The value listed in the configuration file is overwritten by specifying an option in the command line.

Example

The standard option "- o 4" is to be overwritten by the option "- o 1" for a particular workpiece. In this case, the program must be invoked out of **<DI 1685>** with :

qdasconv.sh -o 1

Configuration file Section A

```
#####
# File : QDAS.CONFIG
#
# Configuration file for QDASCONV
#####
# Section A : Pre-assignment of program options
$A-----
# Column in record header with name of output file
-o 0
# Path and name of measurement record
-q /home/zeiss/UF/MPROT_____B
# Main path under which output files are created
-z /home/zeiss/qdas/
# Line in record header with workpiece name
-w 6
# Filter measurement record according to $QDAS_ON - $QDAS_OFF
(1=filter, 0=no filter) -f 1
# file names limited to 8 characters
-t 1
#Extend feature names to include symbol (0=no, 1=yes)
-e 0
# Accept data for the Prozella system (1=yes, 0=no)
-d 0
# Omit symbols with tolerance extensions for DIN items #(1=yes, 0=no)
-p 0
# Supplement to identification for symbols with tolerance extensions
# for DIN items(0=no, 1=yes)
-b 0
```

```
# Symbols to be rejected
-v X; Y; D; D1; D2
# Upload DFQ file on SAP-Server with appended serial number
# r /tmp/ftp
# DB-upload path - Demask this line when upload is done# # -u
/tmp/upload

# Activate creation of data file for remote SPC
# -S /tmp/spc

# Read in options from PCM parameter file

# -P

# Create files in upper case letters (upper case = 1) or
# lower case letters (lower case = 0)
-U 0

# Option Ford format (0=no, 1=yes)
-F 0

# Name of the file for the variable record header 2
# -VPK2
```

The number behind the option indicates the column of the record header from which the name of the files to be created must be taken (without extension).

Example

```
=====
MEASUREMENT RECORD      ZEISS  UMESS
Workpiece Name          CNC RUN
=====
DRAWING NO      | ORDER NO      | SUPPLIER/CUSTOMER | WORKING CYCLE
Column 1        | Column 2        | Column 3          | Column 4

OPERATOR        | DATE          | PART NO.          | MACHINE NO.    | STATION NO.
Column 5        | Column 6        | Column 7          | Column 8        | Column 9
=====
ADR| NAME/IDF |SY| ACTUAL |NOMINAL | U.TOL | L.TOL | DEV | MAG
=====
```

The program calculates the column positions from the " | " characters in the identification lines.

The line with the workpiece name is assessed as column 0.

As already mentioned, lower case letters are converted to capital letters and spaces are replaced by underlines.

If the `-t` option is used, all file names will be limited to a length of 8 characters.

NOTE

Make sure that the name of the output file is still unambiguous for all workpiece files (i.e. is not used for more than one workpiece) even when the above character replacements and limitation to 8 characters have been taken into account.

Option `-q` File Name of Measurement Record Dialog Window

Option `-q` indicates the path and file name under which the measurement record was stored with **<DI 1684>**.

This record is used for conversion.

Option `-m` measurement system analysis 2

see chapter 6

Option `-z` Path Name of Output Files

This option indicates the path under which the output file should be saved. At the same time, a subdirectory with the name designated under option `-o` is also created in this path. The two files ***.DFD** and ***.DFX** are created in this subdirectory.

Example

```

/home/qdas/           main directory (-z option)
...../part1/         Subdirectory (part identification)
...../part1.DFD       Description file
...../part1.DFX       Value file
...../part2/part2.DFD
...../part2.DFX
...../partn/partn.DFD
...../partn.DFX
    
```

Option **-w** Workpiece Name Line

The number behind option **-w** indicates the line of the record header where the workpiece name is located. The columns are then searched for in the following lines. This is necessary because text lines may also be located in front of the workpiece name.

This option is ineffective when using the variable record header 2 Chapter 3.1.14.

Option **-f** Activate Global Filter

The number behind option **-f** indicates whether the feature filter is switched on or off globally.

1 = on, **0** = off.

The feature filter is used to omit unimportant features and not to enter them in the description file. This function will be explained in a subsequent chapter.

Option **-t** Limit File Name to 8 Characters

Depending on the system configuration, it may be necessary to limit the file names of the ***.DFD** and ***.DFX** output files to 8 characters to ensure compatibility with the old DOS file system.

Option **-t** was introduced for this purpose.

It applies here that even though **1** = Limit file name to 8 characters, the path name according to the UNIX main directory retains its full length.

This option is set to a default value of **1**, the limitation comes into force without indicating the option.

Option **-e** Extend Feature Name to Include Symbol

A number of older CNC programs are designed so that they have the same feature name within an address. The option **-e** was introduced to enable customers to use such programs following minimal alteration with the help of a converter.

The entry **-e 1** in **QDAS.CONFIG** extends the feature name **qs-STAT®** by an underline and the feature symbol.

This option is not active by default.

Option -u Path Name for Upload to QDAS Database

If the created data is loaded into the **QDAS**-specific database, the selected data structure is not favorable for this purpose. The upload program utilizes only a single directory. On the other hand, the existing data structure is used to generate direct evaluations from **qs-STAT®**.

During an upload to the database, a program periodically searches for new files in a specified directory (via NFS!), loads them in the data base and then deletes them.

Convenient selection of the data to be evaluated from **qs-STAT®** and convenient uploads to the database can be achieved with option **-u**. The corresponding data is copied to the directory immediately after the CNC run.

Only the value file is subsequently deleted. The description file remains intact.

The **QDAS** converter first checks whether the files from the previous CNC run are present in the upload directory. This prevents data which have not yet been processed from being overwritten.

This procedure is advisable if the data link to **QDAS** is interrupted or the data cannot yet be retrieved because the time interval has been set too high. The newly created value record is appended to the value file as usual. As soon as the upload program has processed the existing data and deleted the files, a copy is again created following the next measuring run. This ensures complete data integrity.

Option **-u** is not activated by default.

Option -S Create File for Remote SPC

It may be necessary to operate an additional SPC system with data parallel to **qs-STAT** or a database upload. In order to prevent a collision with the upload function and obtain the normal value file for evaluation in **qs-STAT**, a temporary value file is created with the **-S** option during the last measuring run and copied to a new directory.

The behavior when the SPC system is not present is the same as described in point ➤ „Option -u Path Name for Upload to QDAS Database“ on page 3-7. This option is not activated by default.

Option -r FTP Upload

A further possibility of sending the data to a database server is upload by means of the REMCP script. The REMCP tool transfers the data by way of the File Transmission Protocol (FTP) to the QDAS server. The name of the transfer file is composed by 5 characters of the name and 3 characters of an appended serial number.

The behaviour in the event of FPT transfer errors is the same as that described in chapter 3.1.9.

This option is not activated by default.

Option -U Upper Case

Create file name in upper case and lower case letters.

This option is activated by default (capitalization)

Option -F Ford option

Identification by feature K2003.

This option is not activated by default.

Option -V variable record header 2

When the variable record header 2 (VRH 2) is used, the name of the record header file from the **/home/zeiss/UC** directory must be indicated with the option **"-V"**. The name is indicated without the prefix "VRH" and the end **"_B"**.

The method of counting when using the VRH 2 for the option **"-o"** and the format description **"P"** from chapter 3.2 begins with 1 and is consecutive for all pairs of curly brackets "{...}" .

This option is not activated by default.

Option -a Extension of a Name by an Address

This option enables you to add an address to a name. It is used in UMESS programs where no unique names are present. Its function can be toggled like a switch, i.e. can be activated or deactivated with the parameters 1 and 0.

Example: qdasconv.sh -a 1

The default setting of this option is 'off'. To activate it permanently, you must enter it in the '\$A' section of the configuration file. As always, it is still necessary to assign names since this option only represents an extension.

Section B - Part Data to be Generated

All the part data required by the customer in the description file must be specified in section B along with their key, length, type and - where applicable - content.

In general, the keys listed here in Sections B and C are not mandatory. They can be removed from the list at any time. It is also possible to add new keys at any time. The information is simply input by **QDASCONV** and filled with the specified contents as far as they are known.

Key values for part data and their names

K1001	Part number
K1002	Part name
K1003	Part short name
K1004	Revision status, part
K1005	Product
K1007	Part number, short name
K1040	Drawing, catalog
K1041	Drawing number text
K1042	Drawing modification
K1043	Drawing index
K1900	Remarks

A complete list of keys for part data and their meanings can be looked up in ➤ „Appendix A: Key Fields and Their Designations in "Q-DAS Format"" on page 10-2.

Example for section B:

```

$B-----
      K1001   30   A   P:1
      K1002   80   A   P:0
      K1003   20   A   P:4
      K1004   20   A   P:3
      K1005    5   I
      K1041   30   A   P:2
      K1042   20   A
      K1043   40   A
      K1083    5   I   P:7
      K1900  255   A   W:Zeiss measurement record motor block

```

Format Description

Column 1 - 5	Keyword for contents to be generated, e.g. K1001 Part number
Column 7 - 8	Length of contents (no. of ASCII characters)
Column 11	Type of contents A : Alphanumeric I : Numeric F : Floating-point numeric D : Date
Column 14	Code for removing contents P = Record header column, e.g.: P:8 means take from 8th column of record header W = direct value, e.g.: W: free text means that free text will be input to the field.

NOTE

The column numbers do not have to be exactly the same as specified above, except for columns 1-5 (Kxxx). Separation by a random number of spaces or tabulators is sufficient. However the first 4 columns must be present.

For the part data, columns from the record header which automatically differ for each workpiece can mainly be expected.

Section C – Constant Feature Data to be Generated

Part of the information required to describe features is neither known to the CMM operator nor obtainable from the measurement record.

Part of the data is, however, the same or constant for all features in connection with 3-D CMMs. They are therefore listed as such in the description file (Kxxxx/0). Data belonging to this category are listed in this section.

It is also not mandatory to specify values for the keys. These values can be edited in the windows provided for that purpose in the data acquisition module of the **qs-STAT®** program. They must be listed here in order to be entered in the description file.

Key Values and their Meaning for Fixed Feature Values

K2004	Feature type
K2005	Feature class
K2007	Control system
K2211	Method of distribution
K2212	Standard no. text: Reference standard
K2213	Standard name
K2214	Standard temperature
K2215	Standard number
K2220	Number operator
K2221	Number measurements
K2303	Dept./cost center
K2305	Machine number
K2306	Plant area
K2307	PTM number
K2342	Name of test plan
K2343	Test plan creation date
K2344	Test plan creator
K2401	Test equipment number text
K2402	Test equipment name
K2404	Test equipment resolution
K2405	Test equipment number
K2406	Test equipment manufacturer
K2407	SPC device number
K2408	SPC device name
K2409	SPC device type
K2410	Testing location

Example for Section C in QDAS.CONFIG (Excerpt)

\$C-----

```
K2004  1  I  W:0
K2005  1  I  W:3
K2007  1  I
K2010  2  I
K2011  4  I
K2013  22 F  W:0.0001
K2022  1  I  W:4
K2201  22 F
K2202  1  I
K2205  2  I  W:2
K2211  20 A  W:0815
K2212  40 A  W:ring gage
K2213  22 F
K2214  22 F
K2215  5  I  W:12345
K2220  2  I  W:2
K2221  2  I  W:3
K2303  40 A  W:I-VS/Kst: 923
K2305  5  I  W:12345
```


Section D – Feature Data to be Generated Directly from Measurement Record

Part of the feature data can be taken directly from the measurement record. The value information is omitted since these values are permanently programmed. The keys must be listed so that they can be included in the description file.

Key Values and their Meaning for Variable Feature Values

K2001	Feature number (UMESS column name)
K2002	Feature name (supplementary text from configuration file)
K2003	Short feature text (UMESS symbol)
K2100	Nominal value/target
K2101	Nominal
K2110	Lower limit
K2111	Upper limit
K2112	Lower deviation
K2113	Upper deviation
K2120	Type of lower limit
K2121	Type of upper limit
K2142	Unit name
K2151	Tolerance as text (tolerance width)

Section E - Supplementary Data Fields to be Created in Value File

In addition to the value file described in this chapter, further data can also be stored in separate data files for each measurement.

This data is valid only for the corresponding measuring run.

Key Values and Their Meaning for Supplementary Data Fields

K0005	Events
K0006	Charge number/ident number
K0007	Nest number/spindle number
K0008	Operator (number from catalog)
K0009	Text
K0010	Machine number (number from catalog)

This information may vary from one measuring run to another. For this reason it makes sense to use columns from the record header.

If these keys are specified in the configuration file, they affect only the first measuring run. They should be used only if the specifications apply to all measurements, e.g. if all workpieces come from a given machine.

To ensure that the corresponding data are saved for each measuring run, these keys must also be listed in the QDAS information part of the measurement record described in the next chapter.

Section F: Assignment of Unit and Supplementary Text to the Symbols of the Measurement Record

The unit and a supplementary text are stored here for every symbol that can possibly occur in the measurement record. The supplementary text is stored in the variable **K2002**.

Format: „Symbol“, „Unit“, „Supplementary text“

Example for Section F

X,mm, X coordinate
 Y,mm, Y coordinate
 Z,mm, Z coordinate
 D,mm, diameter
 R,mm, radius
 W1,deg., angle 1 (projected angle, rot. angle, polar angle)
 W2,deg., angle 2 (projected angle, tilt angle)
 WK,deg., cone angle
 V1,deg., angle in Swedish
 V2,deg., angle in Swedish
 VK,deg., angle in Swedish
 A1,deg., angle English
 A2,deg., angle English
 AC,deg., angle English
 AK,deg., ??????????????
 RD,mm, space diagonal; space point
 D1,mm, diameter 1 (ellipse value/torus)
 D2,mm, diameter 2 (ellipse value/torus)
 RP,mm, ??????????????
 X1,mm, projected X coordinate
 Y1,mm, projected Y coordinate
 Z1,mm, projected Z coordinate
 X2,mm, projected X coordinate
 Y2,mm, projected Y coordinate
 Z2,mm, projected Z coordinate
 tx,mm, form & position deviation
 ty,mm, form & position deviation
 tz,mm, form & position deviation
 tX,mm, form & position deviation MMC
 tY,mm, form & position deviation MMC
 tZ,mm, form & position deviation MMC
 td,mm, form & position deviation
 tD,mm, form & position deviation
 t,mm, form & position deviation
 tr,mm, form & position deviation
 tR,mm, form & position deviation
 tw,mm, form & position deviation
 tW,mm, form & position deviation
 ta,mm, form & position deviation

```
tA,mm, form & position deviation  
#  
# End of configuration file
```

Chapter

4

QDAS Information Part of Measurement Record

The information specifying the contents of the keys from the configuration file are valid for all workpieces and measuring runs. Furthermore, it is also possible to edit values depending on the measuring run.

For this purpose, codes between which the key values to be edited and their parameters are located are output as text lines in the measuring run:

```
$QDAS_INFO_ON  
K1001 P:2  
K1005 W:Motor block  
K0005 W:New charge  
K0006 P:10  
$QDAS_INFO_OFF
```

In contrast to the configuration file, the information for length and type of key are omitted here. They are already specified in **QDAS.CONFIG**.

If the keys in the information part refer to feature data, they will be taken over for all features. It is not possible to edit a key for a single feature.

Special character **101 \f "Directions MT" \s 18_**

NOTE

The keys indicated in the information part are previously specified with their length and type in the configuration file. No value input is therefore required. Multiple information parts may be specified within the measurement record.

Chapter

5

Feature Filter Function

This chapter contains:

Filter Function	5-2
Text Output	5-3
Takeover of the Measured Temperature	5-5

Filter Function

In order to help ensure the takeover of important features for the statistical evaluation of large measurement records, a filter is provided which can be used to exclude entire blocks of features.

This filter can be activated and deactivated by a text code in the record, e.g.:

`$QDAS_OFF`

causes all subsequent features to be ignored and

`$QDAS_ON`

re-activates the takeover of all following features.

In order to prevent mistaken exclusion of features, the filter function must first be globally activated with option `-f 1` in the configuration file. If the codes `QDAS_OFF` and `QDAS_ON` are included in the measurement record, all features will then be taken over as long as the filter is not activated. Conversely, the activated filter function can also be switched off by deactivating the option with `-f 0`.

If the filter function is globally activated, all features will initially be taken over at the beginning until the filter is deactivated with `$QDAS_OFF`.

If an information part exists within an `OFF / ON` section it will be ignored.

For large measurement records, it is advisable to switch off feature takeover at the beginning of a CNC run with `$QDAS_OFF`. At the end of the run, the takeover is switched back on with `$QDAS_ON` and all relevant features are recalled. This makes it easier to locate features in the measurement record if the evaluation is to be checked by **qs-STAT®**.

Text Output

Feature fields can be assigned via text output. This is done by specifying the respective field key with the pertaining value in front of the corresponding address in the measurement protocol. This value is assigned to all features of the corresponding addresses for which a statistic evaluation is planned. The assignment can be limited to one feature (symbol) if required.

Any values which already may have been assigned to K fields by other mechanisms will be overwritten (e.g. K2002, extended feature name).

The buffer is cleared following the end of the address and no further data are output prior to the next definition of the corresponding text outputs.

Rules

- The line must begin with a \$ sign
- The \$ sign is directly followed by the field name in the format:
"K2XXX,Y:Text"
 X denotes a number between 0 and 9
 Y stands for a symbol option, e.g. "X" or "td"
- Only fields within the range of K2001-K2999 are permissible.
- A symbol may optionally follow the field name. Its notation must agree with that of UMESS to enable proper allocation.
- A colon marks the beginning of the value to be accepted. Any spaces between the colon and the beginning of the text are removed.
- The length of text which can be transferred is limited to one line.

Examples:

- **"\$K2002: OP50 STAT03 L.H. ground surf.-bore 502"**
 The text **"OP 50..502"** is allocated to all features of the following address for the field **K2002**.
- **"\$K2002,D: OP50 STAT03 L:H: ground surf. - bore diam. 502"**
 The text **"OP 50..502"** is allocated to the diameter of the following address for the field **K2002**.

Remarks

- The K fields must be entered in configuration file QDAS.CONFIG in section \$D. If a reference is made to an undefined field in the measurement record, any output of this value will be suppressed.
- The correctness of the contents is not checked. This may have a negative effect e.g. if a text is allocated to a numeric field.
- The correspondingly defined values are transferred to the qs-STAT DFB file only for the initial conversion. If a DFD file already exists, these values will **no longer** be taken into account. If the values are nevertheless accepted, the corresponding DFD file must be deleted.
- A max. 50 definitions can be assigned per address. For reduction to individual features, one data record is counted per symbol.
- Characteristic features of language selection:
If the output is reduced to individual symbols, language change-over may yield varying results.
E.g. **"\$K2002,W1: Winkel Bohrung 406"** Following change-over to English, this text will **not** be printed in English.
- Characteristic features of K2002 and K2001
If values are entered for all features of fields K2001 or K2002, the symbol will automatically be appended to the value.

Extended Validity

UMESS sometimes generates addresses which can not be preceded by a text. In this case it is not possible to define a supplementary info. The deletion of information can be controlled using the following keywords:

`$QDAS_SET_INFO_GLOBAL`

`$QDAS_UNSET_INFO_GLOBAL`

The first keyword suppresses deletion of the following data specified. All previously set values are deleted.

The second keyword causes the following data to be deleted. All data subsequently defined have only local character and will automatically be deleted on completion of an address.

If fields K2001 and K2002 are set globally, the following additions are made to the field contents

- A symbol is appended.
- A three-place index is also appended.

The separator '_' is inserted in field K2002. Since the length of field K2001 is shorter, no separator is inserted there.

Takeover of the Measured Temperature

Description

If a keyword is used as a prefix, the measured temperature can be taken over before the value is output to the output file. If no additional information is defined, the value will be prepared for qs-STAT without a nominal size or tolerance.

The value "T" is preassigned as the symbol.

If no name is defined, a default value will be preassigned. If multiple temperature runs are measured, the index of the standard name will be incremented accordingly.

Definitions

The prerequisite for temperature output is definition of the keyword **"\$QDAS_ADD_TEMP"** immediately before output in the measurement record. No text lines or addresses may be output between the text output and the temperature output. The keyword must be placed directly at the beginning of the line. No leading spaces are allowed.

Additional Information

The keyword triggers the takeover of the immediately following temperature output. If multiple measurements are taken over, the keyword must be output in the measurement record prior to each output.

If an entry is made for the symbol T in configuration file **QDAS.CONF**, a supplementary text will also be generated for temperature name.

Chapter 6

Characteristic Features of Measuring System Analysis: Technique 2

This technique is used to determine the repeatability of a measuring system following any possible operator intervention (e.g. when clamping the workpiece).

Measurements of various serial parts are performed by different operators, each of whom performs several repeated measurements.

The data in the value file within **qs-STAT®** are processed in a different order than during normal measurements. The measurements are initially saved in the usual manner. At the end of the measurement series the conversion program is called up with an option which sets the correct value (K2202) in the description file. **qs-STAT®** starts a special evaluation for the measurement series.

Prerequisites

Key values

K2205	Number of parts
K2220	Number of operators and
K2221	Number of measurements per operator and part

The key values must be set either in the configuration file or in the information part according to the given measurement series. The following order must be maintained within the measurement series:

Operator 1	Part 1	Measurement 1
Operator 1	Part 1	Measurement 2
Operator 1	Part 1	Measurement n
Operator 1	Part 2	Measurement 1
Operator 1	Part 2	Measurement n
Operator 1	Part n	Measurement 1
Operator 1	Part n	Measurement n
Operator 2	Part 1	Measurement 1
Operator 2	Part 1	Measurement n
Operator 2	Part n	Measurement 1

etc.

On completion of the measurement series, the conversion program must be requested to convert key value K2202. This is done either from UMESS with **<DI 1685>** or from a terminal window:

qdasconf.sh -m 2_

Special character **101\f "Directions MT"\s 18__**

NOTE

It is advisable to edit the record header column with the part identification at the beginning of a measurement series so that a new description file is generated.

Chapter

File Management on UNIX Page

In order to make it possible for the operator to obtain an overview of existing files and simplify the copying of data to DOS-formatted diskettes or another directory, a small management routine on a UNIX page is available in shell script **qsfiles.sh**.

qs-STAT FILE MANAGEMENT								
<p style="text-align: center;">SELECT FUNCTION</p> <p>* Files for copying qs-STAT to MS-DOS diskette f1</p> <p>* Files for copying qs-STAT to NFS-directory f2</p> <p>* Delete value files f3</p> <p>* Delete parts f4</p> <p>* Output name list of all parts f5</p> <p>* Listing files to MS-DOS diskette or to NFS directory f7</p> <p>* Terminate program f8</p>								
CP/FLOP f1	CP/NFS f2	W-DEL f3	DELETE f4	QS-STAT	PARTS f5	f6	CP/LIST f7	TERMIN f8

The shell script can be called up via a menu or an icon, i.e. no knowledge of UNIX is required to operate it.

Chapter 8

Support of GON Records

This chapter contains:

Description of GON Record	8-2
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Support of GON Records

Description of GON Record

Starting with Revision 8.3, GON results will be transferred to qs-STAT using the suitable GON output certificate. The following rules must be observed here:

- Select Certificate 77 in GON.
- Use the gear wheel number as the workpiece name (K1001). This field is used as record header column 0 and overwrites any existing value in the UMESS record header.
- Always use the gearwheel number as the file name.
- Use the extended workpiece name (K1002) as the name. This field is used as record header column 1 and overwrites any existing value in the UMESS record header.
- "**GAP NO**", "**FLK NO**", "**SEC NO**" and "**SYM**" form the feature name.
- For features with tolerances but without a nominal size, the mean tolerance is defined as the nominal size.
- Zero-limited features are assigned "0" as the nominal size.
- Features without tolerances and nominal sizes are taken over without specification of these values.
- **MrK**, **MdK**, **MdR** and **MrKe** are taken over only if a nominal size is specified.

Definitions for GON Record

If the correct certificate is used, the keyword **\$GON_START** appears in the measurement record after the UMESS alignment. A UMESS record header must then follow. The GON results are taken over until the record header is completed by the keyword **\$GON_END**. Any subsequent measurements are then ignored or not taken over.

Additional Information

At present GON data are recognized and taken over only in German. The '**-e**' and '**-a**' options are not currently allowed in connection with a GON record.

Example of a GON Record

```

$GON-START                                P010510169R_B.TXT
=====
                                MEASUREMENT RECORD  GON

UMESS Test Run                            Manual Measurement
=====
DRAWING NO          | ORDER NO          | SUPPLIER/CUSTOMER | OPERATION
-----            | -----          | CARL ZEISS        | -----
OPERATOR            | DATE              | PART NO           |
bf                  | 27.9.2000         | 33
=====
Line : Results
GAP NO | FLK NO | SEC NO | SYM | ACT | NOM | L.TOL | U.TOL |
=====
Operator            bf
Date                27.9.2000
Gear data catalog   0
Gear      No. 181 Identification 181 TESTWHEEL Z=36 Mn=3 Reason  Status
Test QS-Stat                               Meas.  No  1  Date  27.9.2000
z    =   36  mn  =  3.000000  An  =  20.0000  Bo  =  20.0000  b  =  22.0000
          db  = 107.1728  df  = 105.9310  da  = 120.9310
          x   =   .0000  MdK = 121.5319  DK  =  5.0000  Lo  =  18.0007
          lf  =  19.0000  La  =  27.0000  L1  =  2.2000  L2  =  19.8000
          1    1    1    FB      .0443                      .0200
          fHB      .0341                      .0500          .0600
          ffB      .0312                      .1200
Certificate file P010510169R_B
$GON_END

```


Chapter 9

Measurement Records with STRATA Codes

This chapter contains:

General	9-2
Definitions	9-2

Measurement Records with Strata Codes

General

Names for Strata are treated like the supplementary information for field **K2001**, which is valid for all symbols. The name is here extended to include the corresponding symbol for each feature. The field **K2002** is then assigned the same value except that the '_' sign is inserted in front of the symbol.

The same features are valid as for the supplementary information. Features without a nominal size are ignored.

Definitions

- If a **Strata** identifier precedes the format **##:ABC**, this format will be taken over.
- Generic identifiers of form **##:<START>ABC** are also recognized and activate the global info. This is equivalent to the command **\$QDAS_SET_SET_INFO_GLOBAL**.
- The end of the global range is detected via the Strata code **##:<END>**, which is equivalent to the command **\$QDAS_UNSET_SET_INFO_GLOBAL** ist.

NOTE

UMESS names are overwritten due to the presence of Strata names.

Chapter

10

Appendix

This chapter contains:

Appendix A: Key Fields and Their Designations in "Q-DAS Format"	10-2
Appendix B: Feature Data and Their Origin.	10-14
Appendix C: Example for QDAS.CONFIG	10-17

Appendix A: Key Fields and Their Designations in "Q-DAS Format"

Legends

The field names are set forth according to key, field name, length, type and "F" for the mandatory entry fields of Ford (example). The following points explain the characteristics of the individual columns of the table.

Key:

- fields marked with (*) must appear in data format and serve to clearly identify the data records. If not observed, definite allocation to existing data records in databases is no longer ensured.
- Reference to catalog:Kxxx0
- If the key of a catalog is set in field Kxxx0, the following entries (Kxxx1-Kxxx9) are interpreted as catalog entries. Any data missing in the catalog are appended there.
- Fields for numbers:Kxxx1
- Fields for names:Kxxx2

Length:

- the bracketed numbers indicate the field length in bytes.

Type:

- The identifications I: (integer); W: (Word), F: (floating-point number), D: (date/time format) and A (alphanumeric) indicate the type of field, i.e. in these fields entered characters must correspond to the specified format.

F:

- Fields marked with x represent mandatory entry fields which are specific to the company. The following listing (table column) is to be considered as an example

The above-stated points relate to the chapters: "Part data", "Feature data" and "Supplementary Data Fields".

Value formats (K0000-K0999)

Key	Field Name	Length	Type	F		Revision
K0100*	Total No. of features in file	[5]	I			Ä,12.6.97
K0999	No. of features per part = 0	[5]	I			Ä,12.6.97

Appendix A: Key Fields and Their Designations in "Q-DAS Format"

The field K0100 (No. of features in the file) must be entered at the beginning of the file for efficient processing.

Part Data (K1000 - K11999)

Key	Field Name	Length	Type	F			Revision
K1001*	Part number	[30]	A	X			
K1002*	Part name	[80]	A	X			
K1003	Part abbreviation	[20]	A	X			
K1004	Part revision status	[20]	A				N,12.6.97
K1005	Product	[40]	A	X			N,12.6.97
K1007	Abbreviated part number	[20]	A	X			N, 3.7.97
K1010	Documentation mandatory 0: No, 1: Yes	[1]	I				
K1020	Manufacturer's catalog	[5]	I				
K1021	Manufacturer's number text	[20]	A				
K1022	Name of manufacturer	[80]	A				
K1023	Manufacturer's number	[5]	I				
K1030	Material catalog	[5]	I				
K1031	Material number	[20]	I				
K1032	Name of material	[40]	A				
K1033	Material number	[5]	I				Ä,12.6.97
K1040	Drawing catalog	[5]	I	X			
K1041	Drawing number text	[30]	A	X			Ä,12.6.97
K1042	Drawing revision	[20]	A	X			Ä,12.6.97
K1043	Drawing index	[40]	A	X			
K1044	Drawing number	[5]	I				

K1051	Customer number text	[20]	A				
K1052	Customer name	[40]	A				
K1053	Order	[40]	A				
K1054	Customer number	[5]	I				Ä,12.6.97
K1061	Customer number text	[20]	A				
K1062	Customer name	[40]	A				
K1063	Customer number	[5]	I				
K1071	Supplier number text	[20]	A				
K1072	Supplier name	[40]	A				
K1073	Supplier number	[5]	I				

Key	Field Name	Length	Type	F			Revision
K1081	Machine number text	[20]	A				N,12.6.97
K1082	Machine name	[40]	A				N,12.6.97
K1083	Machine number	[5]	I				N,12.6.97
K1085	Machine location	[40]	A				N,12.6.97
K1086	Working cycle	[40]	A				N,12.6.97
K1100	Plant area	[40]	A				N,12.6.97
K1101	Department	[40]	A				N,12.6.97
K1102	Workshop	[40]	A				N,26.11.97
K1201	Test setup number text	[20]	A				
K1202	Test setup name	[40]	A				
K1203	Reason for testing	[80]	A				
K1204	Start of test	[20]	D				Ä,12.6.97
K1205	End of test	[20]	D				Ä,12.6.97
K1206	Testing station	[40]	A				N,12.6.97
K1207	Test plan creator	[40]	A				N,12.6.97
K1208	Test setup number	[5]	I				N,12.6.97
K1900	Remarks	[255]	A	X			Ä,12.6.97

Feature Data (K2000 - K2999)

Classification for feature data:

2000-2199	Data for the evaluation/input control of a feature
2200-2299	Data for measuring system analysis
2300-2399	Descriptive data
2400-2499	Test planning data
2900-2999	Test fields
8000-8999	QRK

Key	Field Name	Length	Type	F			Revision
K2001*	Feature number: Alphanumeric feature number	[20]	A	X			
K2002*	Feature name	[80]	A	X			
K2003	Brief feature text	[20]	A	X			
K2004	Feature type: 0: variable, 1: attributive, 3: ordinal, 4: nominal	[1]	I	X			
K2005	Feature class Differentiation between: critical (4), significant (3), important (2), less important (1), unimportant (0)	[1]	I	X			
K2006	Documentation mandatory: Flag; 1: yes, 0: no	[1]	I				
K2007	Type of control: Flag: 0: No control, 1: Conditional control, 2: Manual, 3: automatic control	[1]	I	X			
K2008	Number of values in DB Value no. starting with which values should be written to database	[10]	I				
K2010	Type of inspection: Selected qs-STAT module: Random sample analysis, process analysis	[2]	I				
K2011	Method of distribution: Possibility for presetting (default) method of distribution	[4]	I	X			

Key	Field Name	Length	Type	F			Revision
K2012	Subsequent work/lower limit value: Flag: Differentiation of attributive features; Differentiation of faults according to: Out-of-tolerance 0: Upper limit val./lower limit val. or 1: Rework/reject	[1]	I				
K2013	Class width: Natural class width for variably classified features	[22]	F	X			
K2014	Number of ordinal classes: For ordinal features only, number of possible different expressions of value	[2]	I	X			
K2019	Ordinal class catalog: Reference to catalog for describing ordinal classes whose number is input in field K2014	[5]	I				
K2020	Automatic value recognition: Flag: Automatic recognition of allocation of input value to feature during input based on plausibility limits	[1]	I				
K2021	Logical string: Formula for calculating the values of a feature from the values of other features Example: m1+m2 (addition of two features)	[255]	A				
K2022	Decimal places: Number of decimal places in value input	[1]	I	X			
K2023	Type of transformation	[2]	I				
K2024	Transformation parameter a	[22]	F				
K2025	Transformation parameter b	[22]	F				
K2026	Transformation parameter c	[22]	F				
K2027	Transformation parameter d	[22]	F				
K2030	Group number/FSK number: Number of higher-order feature for grouping of features (general for all types of features) or FSK features (specifically for attributive features)	[5]	I	X			

Appendix A: Key Fields and Their Designations in "Q-DAS Format"

Key	Field Name	Length	Type	F			Revision
K2031	Group element number/FSK number for error type of an FSK: Subnumbering for lower-order features or number of error type for an FSK	[5]	I	X			
K2041	Type of acquisition: Flag: Selected acquisition type: Manual or via serial interface	[2]	I				
K2042	Number of acquisition device	[5]	I				
K2043	Name of acquisition device	[40]	A				
K2044	Acquisition device index	[5]	I				
K2045	Acquisition channel	[3]	I				
K2046	Acquisition subchannel	[3]	I				
K2047	Software request index	[1]	I				N, 12.6.97
K2051	Interface	[1]	I				
K2052	Baud rate	[6]	I				
K2053	IRQ number	[1]	I				
K2054	Parity	[1]	I				
K2055	Data bits	[2]	I				
K2056	Stop bits	[1]	I				
K2060	Event catalog (action code): Number of feature-related event catalog (selection of specific catalog entries from general catalog for events)	[5]	I	X			Ä, 12.6.97
K2061	Process parameter catalog: Number of feature-related process parameter catalog (selection of specific catalog entries from general catalog for process parameters)	[5]	I				
K2071	Addition constant: For linear transformation during value input according to the formula $Value = K2072 * entry + K2071$	[22]	F				
K2072	Multiplication factor:	[22]	F				
K2100	Nominal value/target value Targeted dimension	[22]	F	X			

Key	Field Name	Length	Type	F			Revision
K2101	Nominal: Dimension, nominal size used for calculating limiting values based on a tolerance input	[22]	F	X			
K2102	Pmax: For calculating Cpk values with attributive features $Cpk=(Pmax-P)/3*$	[22]	F				Ä, 12.6.97
K2110	Lower limit value	[22]	F	X			
K2111	Upper limit value	[22]	F	X			
K2112	Lower deviation	[22]	F	X			N, 12.6.97
K2113	Upper deviation	[22]	F	X			N, 12.6.97
K2114	Lower "scrap" limit	[22]	F				N, 12.6.97
K2115	Lower "scrap" limit	[22]	F				N, 12.6.97
K2120	Type of lower limit: 0: No limit, 1: Limit value, 2: Natural limit	[1]	I	X			
K2121	Type of upper limit: 0: No limit, 1: Limit value, 2: Natural limit	[1]	I	X			
K2130	Lower plausibility limit	[22]	F	X			
K2131	Upper plausibility limit	[22]	F	X			
K2141	Unit: Number of selected unit (e.g. from catalogs)	[5]	I	X			
K2142	Unit name	[40]	A	X			
K2151	Tolerance (as text)	[20]	A	X			
K2152	Calculated tolerance	[22]	F				N, 12.6.97
K2160	Lot size	[6]	I	X			

K2161	Reworking costs: Costs for parts to be reworked	[22]	F				
K2162	Costs for rejects	[22]	F				
K2163	Nonconformance costs	[22]	F				
K2200	Type of evaluation: Selected method of evaluation for test equipment capability	[2]	I				Omitted 12.6.97
K2201	Process control for module GC	[22]	F	X			

Appendix A: Key Fields and Their Designations in "Q-DAS Format"

Key	Field Name	Length	Type	F			Revision
K2202	Evaluation type: For module GC, 1: Type 1; 2: Type 2; 3: Type 3	[1]	I	X			
K2205	Number of parts	[2]	I	X			
K2211	Standard number text: Reference standard	[20]	A	X			
K2212	Standard name	[40]	A	X			
K2213	Standard actual value	[22]	F	X			
K2214	Standard temperature	[22]	F				
K2215	Standard number	[5]	I	X			
K2220	Number of operators	[2]	I	X			
K2221	Number of measurements: With type 1 study (measurements on standard, e.g. 50), With type 2 study (measurements per inspector and part, e.g. 2)	[2]	I	X			
K2225	Determined Cg value	[22]	F				N, 12.6.97
K2226	Determined Cgk value	[22]	F				N, 12.6.97
K2227	Deviation GC type 3-GC Type 1	[22]	F				N, 12.6.97
K2243	Drawing, file name	[80]	A				
K2244	Drawing, reference point X	[5]	I				N, 26.11.97
K2245	Drawing, reference point Y	[5]	I				N, 26.11.97
K2301	Machine number text	[20]	A	X			
K2302	Machine name	[40]	A	X			
K2303	Department/cost center	[40]	A	X			
K2304	Location	[40]	A	X			
K2305	Machine number	[5]	I	X			
K2306	Plant area	[40]	A	X			N, 3.7.97
K2307	PTM number	[40]	A	X			N, 3.7.97

K2311	Production type, text	[20]	A	X			
K2312	Production type, name	[40]	A	X			
K2313	Production type, number	[5]	I	X			
K2320	Job number	[20]	A				
K2321	Customer number text	[20]	A				
K2322	Customer name	[40]	A				
K2323	Customer number	[5]	I				

Key	Field Name	Length	Type	F			Revision
K2331	Workpiece number text	[20]	A				Ä, 12.6.97
K2332	Workpiece name	[40]	A				Ä, 12.6.97
K2333	Workpiece number	[5]	I	X			Ä, 12.6.97
K2341	Test plan number text	[20]	A				N, 3.7.97
K2342	Test plan name	[40]	A	X			N, 3.7.97
K2343	Test plan date of creation	[20]	D	X			N, 3.7.97
K2344	Test plan author	[40]	A	X			N, 3.7.97
K2401	Test equipment number text	[40]	A	X			Ä, 3.7.97
K2402	Test equipment name	[80]	A	X			
K2403	Test equipment group	[20]	A				
K2404	Test equipment resolution	[22]	F	X			
K2405	Test equipment number	[5]	I	X			
K2406	Test equipment manufacturer	[40]	A	X			N, 12.6.97
K2407	SPC device number	[20]	A	X			N, 3.7.97
K2408	SPC device name	[20]	A	X			N, 3.7.97
K2409	SPC device type	[20]	A	X			N, 3.7.97
K2410	Test location	[40]	A	X			
K2411	Start of test	[40]	D				
K2412	End of test	[40]	D				
K2421	Operator number text	[20]	A				
K2422	Operator name	[40]	A	X			
K2423	Operator number	[5]	I	X			
K2900	Remarks	[255]	A	X			Ä, 12.6.97
K2901	Test conditions: In test equipment capability storage of test conditions in text form	[80]	A				

K8006	Lower signal limit (position)	[22]	F				N, 12.6.97
K8007	Upper signal limit (position)	[22]	F				N, 12.6.97
K8010	Card type (pos.) see 2.5.5 1. Value: Card type 2. Value: Add. attribute dev. analyzer 3. Value: Additional attribute extended limits 4. Value: Additional attribute Pearson calculation		I	X			Ä, 12.6.97

Appendix A: Key Fields and Their Designations in "Q-DAS Format"

Key	Field Name	Length	Type	F			Revision
K8011	Central position (position)	[22]	F	X			Ä, 12.6.97
K8012	Lower contact limit (position)	[22]	F	X			Ä, 12.6.97
K8013	Upper contact limit (position)	[22]	F	X			Ä, 12.6.97
K8014	Lower warning limit (position)	[22]	F				Ä, 12.6.97
K8015	Upper warning limit (position)	[22]	F				Ä, 12.6.97
K8106	Lower signal limit (standard deviation)	[22]	F				N, 12.6.97
K8107	Upper signal limit (standard deviation)	[22]	F				N, 12.6.97
K8110	Card type (standard deviation) 1. Value: Card type 2. Value: Add. attribute dev. analyzer	[3]	I	X			Ä, 12.6.97
K8111	Middle position (standard deviation)	[22]	F	X			Ä, 12.6.97
K8112	Lower contact limit (standard dev.)	[22]	F	X			Ä, 12.6.97
K8113	Upper contact limit (standard dev.)	[22]	F	X			Ä, 12.6.97
K8114	Lower warning limit (standard dev.)	[22]	F				Ä, 12.6.97
K8115	Upper warning limit (standard dev.)	[22]	F				Ä, 12.6.97
K8500	Scope of random sample (total)	[5]	I	X			
K8501	Type of random sample: see 2.5.5.1 Designation for value acquisition: sliding/rolling for altered acquisition during machine start, 0: fixed; 1: sliding	[1]	I	X			
K8502	Sampling frequency Text specification of frequency	[40]	A	X			Ä, 12.6.97
K8503	Const. sampling scope with FSK (flag)	[1]	I	X			N, 12.6.97
K8504	Sampling frequency	[5]	I	X			N, 3.7.97
K8510	Cp value	[22]	F				

K8511	Cpk value	[22]	F				Ä, 12.6.97
K8520	Required Cp value	[22]	F	X			N, 12.6.97
K8521	Required Cpk value	[22]	F	X			N, 12.6.97
K8522	Fixed Cp value	[22]	F	X			N, 3.7.97
K8523	Fixed Cpk value	[22]	F	X			N, 3.7.97
K8600	Correction strategy	[1]	I	X			
K8610	Lower correction limit	[22]	F	X			
K8611	Upper correction limit	[22]	F	X			

Key	Field Name	Length	Type	F			Revision
K8612	Buffer size: Number of values that can be written to a buffer/shift register during a machine start	[2]	F	X			
K8613	Correction target value	[22]	F	X			

Supplementary data fields

Further fields can be saved for the values.

Key	Field Name	Length	Type	F
K0001*	Values	[22]	F	X
K0002	Attribute (see following table)	[5]	I	X
K0003	Flag: Bit 0=1 Start of random sample	[1]	I	X
K0004	Time/date (see chapter "Value file")	[8]	D	X
K0005	Events	[5]	I	X
K0006	Charge number/ident number	[14]	A	X
K0007	Nest number/spindle number	[5]	I	X
K0008	Operator	[5]	I	X
K0009	Text	[-]	A	X
K0010	Machine	[5]	I	
K0011	Process parameter	[5]	I	X
K0012	Test equipment	[5]	I	
K0013	Process parameter value	[5]	I	
K0020*	Sampling Size	[8]	I	X
K0021*	Number of errors	[8]	I	X
K0022*	Number <lower limit	[5]	I	X
K0023*	Number >lower limit	[5]	I	X
K0024	Rejects	[5]	I	X
K0025	Reworking	[5]	I	X
K0026	Error class	[5]	I	
K0053	Job number	[20]	A	

Appendix B: Feature Data and Their Origin

Legends

Key:	see Appendix A
Field name:	see Appendix A
Length:	see Appendix A
Type:	see Appendix A
Ford:	Mandatory specification of the Ford company
Getrag:	Mandatory specification of the Getrag company
Validity:	1 = varies from feature to feature n = valid for all nominal sizes

Information location

NM	= Nominal line
F	= Fixed
PRG	= from QDASCONV
K	= Configuration file
I	= Info part from measurement record
P	= Record header
B	= Calculated
Mp	= Measurement record, general
E	= Re-edit in qs-STAT

1. Data for Evaluation/Input Control of a Feature K 2000-K 2199

Key	Field Name	L.	Type	Ford	Getrag	Valid	Loc.
K2001	UMESS designation	20	A	X	X	1	NM
K2002	Additional text, e.g. diameter	80	A	X	X	1	Prg
K2003	Short text (symbol from UMESS)	20	A	X		1	NM
K2004	Type of feature	1	I	X	X	n	F=0
K2005	Class of feature	1	I	X		n	F=3
K2007	Type of control	1	I	X		n	E
K2010	Type of inspection	2	I		X	n	E

Key	Field Name	L.	Type	Ford	Getrag	Valid	Loc.
K2011	Type of distribution	4	I	?		n	E
K2013	Class width (CMM resolution)	22	F	?		n	K/Mp
K2022	Number of decimal places	1	I	X	X	n	K/Mp
K2030	Group number/FSK number	5	I	?		1	E
K2031	Group element number	5	I	?		1	E

K2060	Event catalog (action code)	5	I	?		1	E
K2100	Target value NM+(UTOL+LTOL)/2	22	F	X	X	1	B-NM
K2101	Nominal	22	F	X	X	1	NM
K2110	Lower limit NS + LTOL	22	F	X	X	1	B-NM
K2111	Upper limit NS + UTOL	22	F	X	X	1	B-NM
K2112	Lower tolerance LTOL	22	F	X	X	1	NM
K2113	Upper tolerance UTOL	22	F	X	X	1	NM
K2120	Type of lower limit	1	I	X	X	1	B-NM
K2121	Type of upper limit	1	I	X	X	1	B-NM
K2130	Lower plausibility limit	22	F	X		1	E
K2131	Upper plausibility limit	22	F	X		1	E
K2141	Number of unit from catalog	5	I	X		1	E
K2142	Unit designation (mm, degr.)	40	A	X	X	1	NM
K2151	Tolerance width ABS (UTOL-LTOL)	20	A	X		1	B-NM

2. Data for Measuring System Analysis K 2200 - K 2299

Key	Field Name	L.	Type	Ford	Getrag	Valid	Loc.
K2201	Process control for module GC	22	F	X		n	I
K2202	Evaluation type for module GC	1	I	X		n	I
K2205	Number of parts	2	I	X		n	B-Prg
K2211	Standard number text	20	A	X		n	I
K2212	Standard name	40	A	X		n	I
K2213	Standard actual value	22	F	X		1	I
K2214	Standard temperature	22	F	X		n	MP

Key	Field Name	L.	Type	Ford	Getrag	Valid	Loc.
K2115	Standard number	5	I	X		n	
K2200	Number of operators	2	I	X		n	B-Prg
K2221	Number measurements	1	I	X		1	B-Prg

3. Descriptive Data F 2300 - K 2399

Key	Field Name	L.	Type	Ford	Getrag	Valid	Loc.
K2301	Machine number text	20	A	X	X	1	P/I
K2302	Machine name	40	A	X	X	1	P/I
K2303	Department/cost center	40	A	X	X	n	K/I
K2305	Machine number	5	I	X		n	K/I
K2306	Plant area	40	A	X		n	K/I
K2307	PTM number	40	A	X		n	K/I
K2311	Type of production, text	20	A	X		1	E
K2312	Type of production, name	40	A	X	X	1	E
K2313	Type of production, number	5	I	X		1	E
K2342	Test plan name (WPC name)	40	A	X		n	P
K2343	Test plan date of creation	20	D	X		n	E/I
K2344	Test plan author	40	A	X		n	E/I

4. Data from Test Planning K 2400 - K 2499

Key	Field Name	L.	Type	Ford	Getrag	Valid	Loc.
K2401	Test equipment number text	40	A	X	X	n	E/I
K2402	Test equipment name	80	A	X		n	E/I
K2404	Test equipment resolution	22	F	X	X	n	E/I
K2405	Test equipment number	5	I	X		n	E/I
K2406	Test equipment manufacturer	40	A	X		n	E/I
K2407	SPC device number	20	A	X	X	n	E/I
K2408	SPC device name	20	A	X	X	n	E/I
K2409	SPC device type	20	A	X		n	E/I
K2410	Test location	40	A	X		n	E/I

Appendix C: Example for QDAS.CONFIG

```
#####
# File : QDAS.CONFIG
# Configuration file for QDASconv
#####
#Section A : Preassignment of program options

$A-----
# Column in record header with name for output file
-o 4

# Path and name of measurement record
-q /users/zeiss/CZ_MES_UF/MPROT_____B

# Main path under which output files are created
-z /home/qdas/

#Line in record header where workpiece name is located
-w 6

# Filter measuring record according to $QDAS_ON - $QDAS_OFF (1=with
filter, 2=w/o filter)
-f 1

#Limit name of description and values file to max. 8 characters
-t 1

#Extend feature names to include symbol (1=extend,0=do not extend)
-e 0

# Path for DB upload (To activate, remove #)
-u/tmp/upload

#Activate generation of data files for remote SPC
-S/tmp/spc

#Upload of DFQ file on SAP server with appended serial number
-r/tmp/ftp

#Create files in upper case letters (=1), or lower case letters (=0)
-U 0

#Option Ford format (1=yes, 0=no)
-F 0

#Variable record header file
-V VPK2

$B-----
#####
Section B : Part Data to be Generated (K1000 - K1099)
(see also QDAS data formats)
All of the data required by the customer are to be specified here.
#####
# Format : Column 1 - 5 = Key word for datum to be created
```

```

#Column 7-8    = Length

#Column 11     = Type : A = Alphanumeric

#I = Number

#F = Floating point number

#D = Date

#Column 14     = Code where the data can be taken from (optional) :

#P = From record header column, e.g.
#P:8
#(Workpiece name P:0)
#W = Direct from this file, e.g.
#W:Prismo7

#Column 15     = : Separator

#If column 14 is free, the data will either be taken from the
#Measurement record ($QDAS_INFO_ON - $QDAS_INFO_OFF),
#or re-edited in qs-STAT.

```

NOTE

Except for columns 1-5 (Kxxx), the columns specified above do not have to be observed exactly. Separation by random "." or tabulators is sufficient. However the first 4 columns must be present.

```

K1001 30 A P:1
K1002 80 A P:0
K1003 20 A P:4
K1004 20 A P:6
K1005 40 A P:0
K1007 20 A P:1
K1040 5 I
K1041 30 A P:1
K1042 20 A
K1043 40 A
K1083 5 I P:7
K1900 255 A W:UMESS measurement record

```

```

$C-----
#####
# Section C : Feature data to be generated which are identical for all
# features (see also QDAS data formats)
# All of the data required by the customer must be specified here.
# The format is the same as in section B
#####

```

```

K2004 1 I W:0
K2005 1 I W:3
K2007 1 I
K2010 2 I
K2011 4 I
K2013 22 F W:0.0001
K2022 1 I W:4
K2201 22 F
K2202 1 I
K2205 2 I W:2
K2211 20 A W:0815
K2212 40 A W:Ring gage
K2213 22 F
K2214 22 F
K2215 5 I W:12345
K2220 2 I W:2
K2221 2 I W:3
K2303 40 A W:I-VS/Kst: 923
K2305 5 I W:12345
K2306 40 A W:Zeiss Industrielle Messtechnik
K2307 40 A W:PTM#

```



```

K2342 40 A P:1
K2343 20 D W:21.03.1998
K2344 20 A W:U.N.KNOWN
K2401 40 A W:ring gage D=5000 mm
K2402 80 A W:Ring gage
K2013 22 F W:0,002
K2405 5 I W:67890
K2406 40 A W:Carl Zeiss Oberkochen
K2407 20 A W:12345678901234567890
K2408 20 A W:FC-900 VAST
K2409 20 A W:FC-VAST
K2410 40 A W:Precision metrology lab
K8500 5 I W:3

```

```

$D-----
#####
#Section D : Feature data to be generated which are specific for all
#features (see also QDAS data formats)
All of the data required by the customer must be specified here..
The format is the same as in section B.
No identification codes are defined for values.
The details are taken from the measurement record!
#####

```

```

K2001 20 A
K2002 80 A
K2003 20 A
K2030 5 I
K2031 5 I
K2060 5 I
K2100 22 F
K2101 22 F
K2110 22 F
K2111 22 F
K2112 22 F
K2113 22 F
K2120 1 I
K2121 1 I
K2130 22 F
K2131 22 F
K2141 5 I
K2142 40 A
K2151 20 A
K2213 22 F
K2301 20 A
K2302 40 A
K2311 20 A
K2312 40 A
K2313 5 I

```

```

$E-----
#####
#Section E : The additional data fields are to be generated in the
value file
All of the data required by the customer are to be specified here.
The format is the same as in section B.
#####

```

NOTE

Values in ascending order. Only record header columns are meaningful and permissible.

In order to obtain these values for every measuring run, they must be specified in **\$QDAS_INFO**. This entry applies only to the workpiece in general.

```

K0006 14 A P:2
K0007 5 I P:3
K0008 5 I P:5

```

```

$F-----
#####
#Section F : The unit and an additional text are stored here for each
symbol that might possibly occur in the measurement record.
The additional text is stored in the variable K2002.
# Format: "Symbol", "unit", "additional text"
The order is not significant.
#####
X,mm, X coordinate
Y,mm, Y coordinate
Z,mm, Z coordinate
D,mm, diameter
R,mm, radius
W1,degrees, angle 1 (projected angle, angle of rotation, polar angle)
W1,degrees, angle 2 (projected angle, angle of tilt)
WK,degrees, cone angle
V1,Deg, angle in Swedish
V2,Deg, angle in Swedish
VK,Deg, angle in Swedish
A1,Deg, angle in English
A2,Deg, angle in English
AC,Deg, angle in English
AK,Deg, ??????????????
RD,mm, space diagonal; space point
D1,mm, diameter 1 (ellipse/torus)
D2,mm, diameter 2 (ellipse/torus)
RP,mm, ??????????????

X1,mm, projected X coordinate
Y1,mm, projected Y coordinate
Z1,mm, projected Z coordinate
X2,mm, projected X coordinate
Y2,mm, projected Y coordinate
Z2,mm, projected Z coordinate

```

```
tx,mm, form/position deviation
ty,mm, form/position deviation
tz,mm, form/position deviation
tX,mm, form/position deviation MMC
tY,mm, form/position deviation MMC
tZ,mm, form/position deviation MMC
td,mm, form/position deviation
tD,mm, form/position deviation
t,mm, form/position deviation
tr,mm, form/position deviation
tR,mm, form/position deviation
tw,mm, form/position deviation
tW,mm, form/position deviation
ta,mm, form/position deviation
tA,mm, form/position deviation
#
# End of the configuration file
```


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