

9872 2719827 / 2719872398
928 234 345 344 471872397
0187309 445 4 Q-DBM 55 487
M-QIS DASHBOARD 27198 128
23239 DESTRA 8 12346 6598
VIDARA 77272 63826 984981
81 4981 PROCELLA 985245 23
59 SOLARA.MP 49814981 98
QS-STAT 49983 24654 212 456
7487 2983740 9872 Q-QIS 982
73984702987 M-QIS ENGINE 70
9283 120 38 485 0 22546 6561



Q-DAS ASCII Transferformat

V12 / 2015 English

STATISTICS DRIVES SUCCESS

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Preface

The Q-DAS[®] products *procella*[®] and qs-STAT[®] are based on the Q-DAS[®] ASCII transfer format. This format has established itself as an industry standard. Certain instances demand compliance with this data format from suppliers of measurement systems and manufacturers of SPC systems.

The advantages of a companywide uniform data format are clear. Measurement data from different measurement systems can be combined easily and smoothly. A uniform data format facilitates standardized data storage and the evaluation of measured values. This is a requirement to be able to compare results company-wide. No data conversion is required. The number of mistakes is reduced accordingly. This particularly applies when the manufacturer gets a certificate of the Q-DAS[®] data format.

This documentation describes the structure and specifications of the established Q-DAS[®] ASCII transfer format. You may find further details and an up-to-date version of the data format manual on the Q-DAS[®] website.

Note:

Despite all our efforts, errors can never be completely eliminated; therefore we are grateful for notification of such errors.

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1 Introduction

1.1 ASCII Transfer Format Features

The ASCII transfer format

- provides a simple transparent structure (pure ASCII, variable)
- is flexible (new contents are easily defined and integrated)
- is space-saving (it is not necessary to store unnecessary information, values may be saved in a convenient version)
- easily copied and compressed (all information may be saved in one file)

1.2 Structure

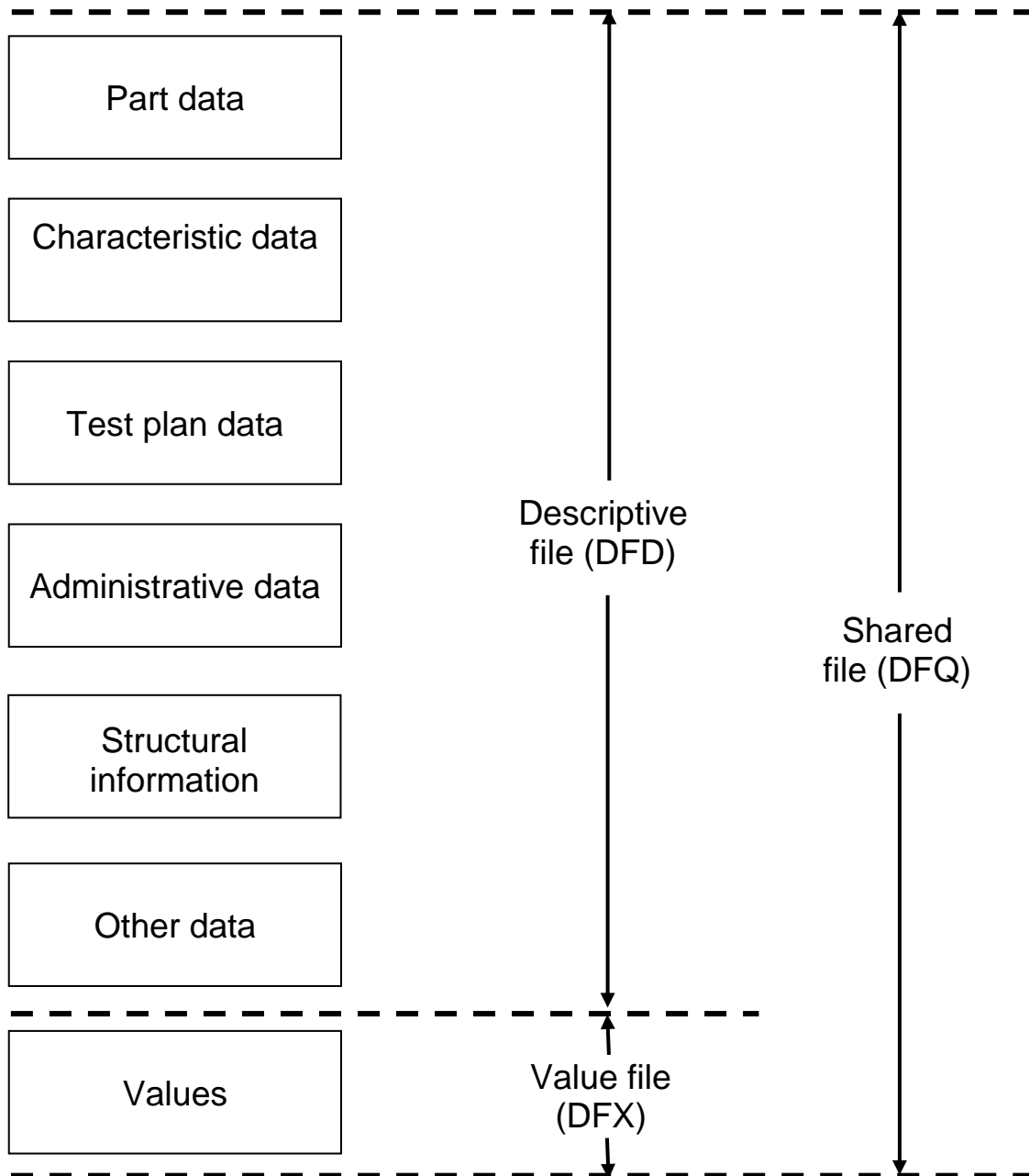
The data format consists of 2 different types of data -

- descriptive data and
- value data

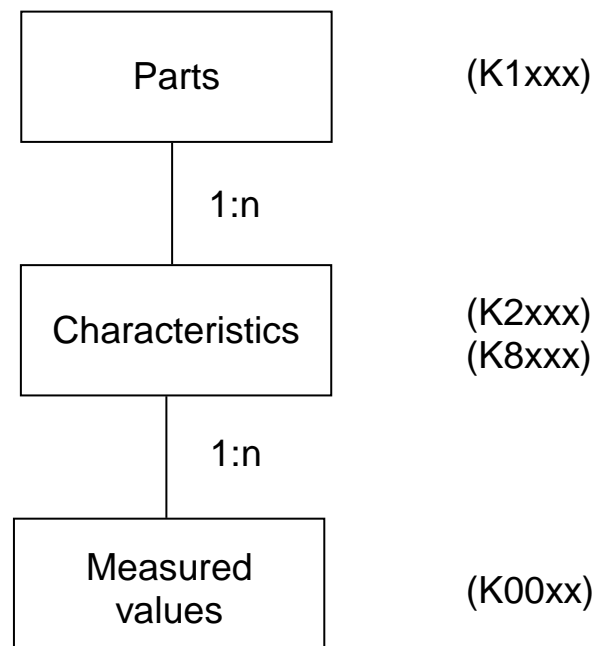
Contained either in 2 separate files or in one file they both share. All 3 files have the same file name but with different file extensions. The file extensions are as follows:

- shared file: *.DFQ
- value file: *.DFX
- descriptive file: *.DFD

File structure:

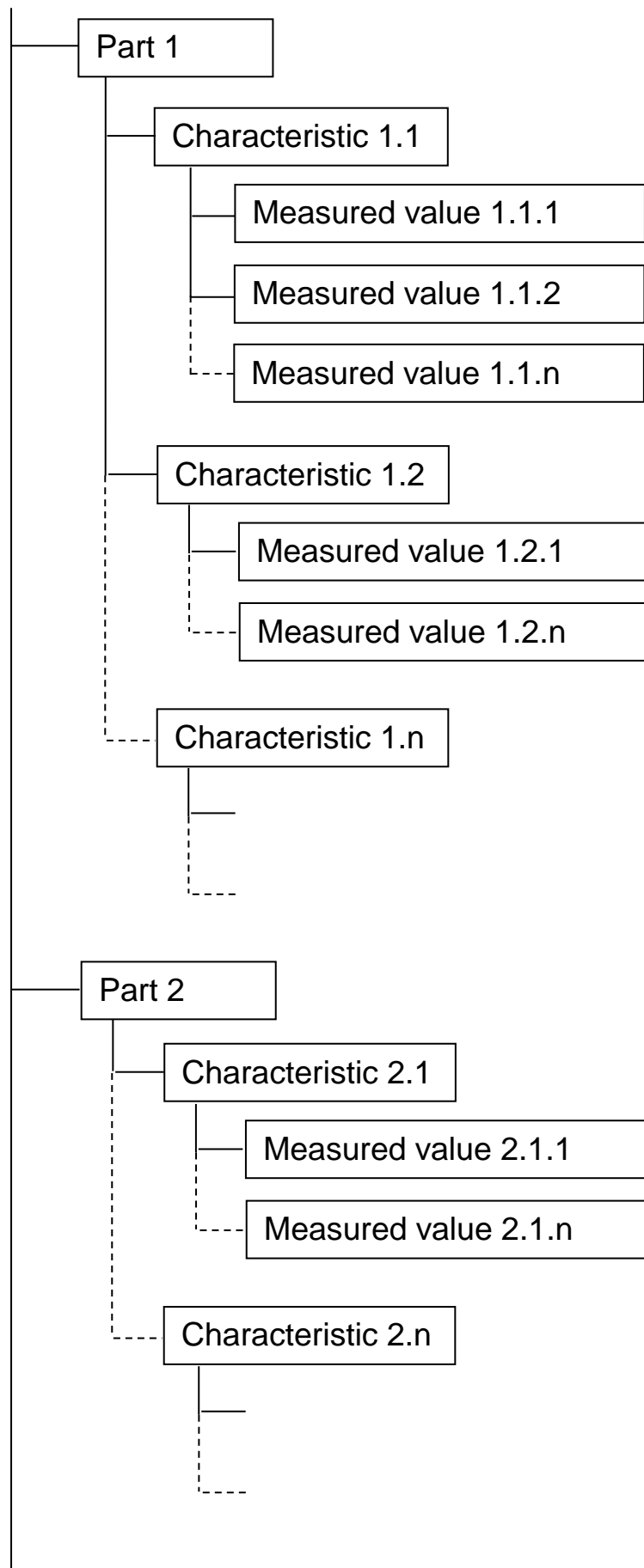


Data model:



Kxxxx: Key for the characteristic definition of an element

Example (tree structure):



2 Descriptive portion

2.1 Key Fields

All descriptive portion starts with a **Key field (K-field)** ensuring the correct allocation of contents.

The appendix provides a detailed overview of the supported fields together with information regarding field type and the maximum length of the field contents. The currently valid list is published on the Q-DAS® website.

The fields are structured as follows:

K0001	...	K0999	Description of value formats /measured values
K1000	...	K1999	Part data
K2000	...	K2999	Characteristic data
K3000	...	K3999	Test plan data
K4000	...	K4999	Administrative data
K5000	...	K5999	Structural information
K6000	...	K7999	Reserved
K8000	...	K8999	QCC
K9000	...	K9999	Additional data
K10000	...	K32000	Reserved

General notation regulations:

- Key number and field contents are separated by a space.
- One field is written per line.
- As line-end identification, apply the combination of <CR> and <LF> (hexadecimal \$0D \$0A), (decimal #13 #10).

Mandatory fields:

The following fields must be included in the data format for a clear identification of data sets.

- K0100 Total number of characteristics in the file
- K1001 Part number
- K1002 Part description
- K2001 Characteristic number
- K2002 Characteristic description

2.2 Structure of Descriptive portion

The descriptive portion starts with a header for the data with regard to the complete file. Part and characteristic data follows, sorted according to parts. This leads to the following pattern (for n-parts in the file).

Header	
Data of part 1	
	Part data of part 1
	Characteristic data of part 1
	:
	:
Data for part n	
	Part data of part n
	Characteristic data of part n
Test plan data	
Administrative data	
Structural information	
Additional data	

If a part has no characteristics, characteristic data are replaced by control key K0999. This is necessary to identify the data of that part.

For efficient file handling, we recommend saving the keys in ascending sequence.

2.2.1 Header

Include the total number of characteristics in the first line of the file's header (characteristics of all parts concerned). If a key for part data shows up, the header is considered finished.

Use key K0100 for this record; this is a mandatory requirement.

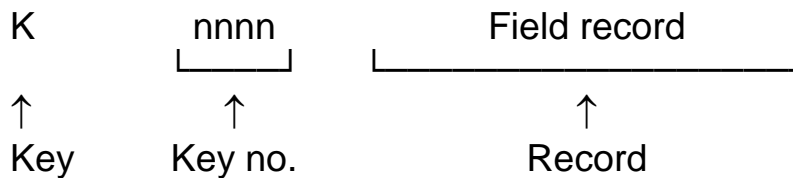
Example:

K0100 2 {Total number of characteristics in the file}

2.2.2 Part Data (K1xxx)

The part data of a part is included in a block prior to the corresponding characteristic data. This data is based on the following pattern:

Field structure for part data



Example:

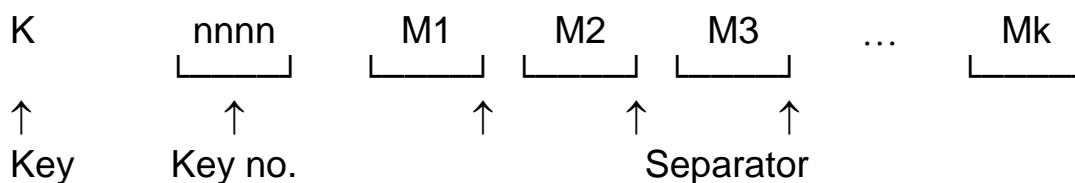
K1001 T4711	{Part number}
K1002 Screw	{Part description}
K1052 Q-DAS GmbH	{Customer}

2.2.3 Characteristic Data (K2xxx)

The characteristic data of a part is given after the corresponding part data. The data of one field may be written in one line or in several lines for various characteristics. Stick to the following structure:

Field structure for characteristic data

Version 1:



The ASCII character \$0F (Alt 015, „ α “) is used as a **separator** between the different records of characteristics.

Version 2:

K	<u>nnnn</u>	<u>/ mm</u>	<u>Record for characteristic mm</u>
↑	↑	↑	
Key	Key no.	Characteristic no.	
		if mm = 0 ⇒ record valid for all characteristics	

The following regulations apply:

- Numeric characteristic numbers
- Ascending sequence of K-fields within a block for one characteristic
- If multiple entries of one characteristic are recorded in one line (version 1 - no indication of characteristic description), the record must be entered consecutively for the characteristics and you have to insert a corresponding number of separators into the spaces.
- However, separators at the end are not necessary (**except for line-end identification**).
- You may overwrite records by using versions 1 and 2.
- If the value "0" is recorded as a characteristic number (mm), this record will apply to all characteristics.

If equal key fields are used for the characteristics in one set of data, the last record loaded is used until you overwrite it.

Example:

K2001 M1-D∅M2-L	{Characteristic number of characteristics 1/2}
K2002 Diameter∅Length	{Characteristic description of characteristics 1/2}
K2101/1 20	{Nominal characteristic 1}
K2110/1 19.6	{Lower specification limit MM 1}
K2111/1 20.4	{Upper specification limit MM 1}
K2142/0 mm	{Unit (/0 = valid for all characteristics)}
K2101/2 50	{Nominal characteristic 2}
K2110/2 49.5	{Lower specification limit MM 2}
K2111/2 50.5	{Upper specification limit MM 2}

2.2.4 Test Plan Data (K3xxx)

Test plan data currently contain data fields for the initial sample report.

2.2.5 Administrative Data (K4xxx)

2.2.5.1 Catalogues

Some K-fields refer to catalogue records. It is possible to manage catalogues in a separate catalogue file or to integrate them into the descriptive portion.

Catalogue entries consist of at least 2 fields (number, description, obsolete/former and others where applicable). Catalogue records may be located at any position. The catalogues will be extended by this record each time a catalogue record is loaded.

Sub-catalogues (= groupings) may be created within a catalogue, i.e. you may combine records from an overall catalogue into groups. You can use it e.g. to make parts of the overall catalogue accessible to certain users or inaccessible to others. These sub-catalogues may be saved to certain characteristics. Now you may create sub-catalogues for the "Event", "Process Parameter", "Cavity", "Machine", "Gage", "Operator" and "Ordinal Classes" additional data fields and for K0061, K0062 and K0063.

Structure:

The grouping slightly changes the meaning of the format key/no. (Kxxxx/y). **The number following the slash (/y) no longer references the characteristic number in terms of catalogue fields**, but receives a special meaning depending on the key.

- Kxxx0 / y z
List of sub-catalogues
z: Name of the sub-catalogue (= name of the group),
y: Sub-catalogue number
- Kxxx1 / y z
Allocation catalogue record <-> sub-catalogue
z: Catalogue record key
y: Sub-catalogue number (see Kxxx0)

- Kxxx2 / y z
 1. Catalogue record component
 - z: Field record, i.e. event number, operator number
 - y: Catalogue record key (s. Kxxx1)

- Kxxx3 / y z
 2. Catalogue record component
 - z: Field record, i.e. event text, operator number
 - y: Catalogue record key (s. Kxxx1)

Catalogue fields

A list of individually definable catalogues may be found in the appendix.

Example of a customer catalogue:

Table of catalogue entries:

Key /x	Customer number K4002	Customer name K4003
1	4711	Smithson Inc.
2	4712	Johnson Corp.
3	4713	Example Inc.

Syntax in the data format:

K4000/0 Customer catalogue	{Name of the customer catalogue}
K4002/1 4711	{Customer no. of the 1. catalogue record}
K4003/1 Smithson Inc.	{Customer name of the 1. cat. record}
K4002/2 4712	{Customer no. of the 2. catalogue record}
K4003/2 Johnson Corp.	{Customer name of the 2. cat. record}
K4002/3 4713	{Customer no. of the 3. catalogue record}
K4003/3 Example Inc.	{Customer name of the 3. cat. record}

Each catalogue entry consists of K4002 (customer number) and K4003 (customer name) field pair which are each identified by a unique number (/x). This number helps to identify catalogue entries clearly.

Example of an event catalogue:

Table list of records in the complete catalogue:

Key /x	Event number K4222	Event text K4223
1	E1001	Tool breakage
2	E1002	Tool wear
3	E1003	Operator change
4	E1004	Pressure increase

Allocation if main catalogue refers to sub-catalogues:

Sub-catalogue /x	Main cat. record K4221	Remark
1	1	Allocation "E1001" to Sub-cat. 1
1	2	Allocation "E1002" to Sub-cat. 1
2	3	Allocation "E1003" to Sub-cat. 2
2	4	Allocation "E1004" to Sub-cat. 2

Syntax in the data format:

K4220/0 Events – Main {Name of the complete catalogue (/0)}
 catalogue
 K4222/1 E1001 {Event no. of the 1. cat. record}
 K4223/1 Tool breakage {Text of the 1. catalogue record}
 K4222/2 E1002 {Event no. of the 2. cat. record}
 K4223/2 Tool wear {Text of the 2. catalogue record}
 K4222/3 E1003 {Event no. of the 3. cat. record}
 K4223/3 Operator change {Text of the 3. catalogue record}
 K4222/4 E1004 {Event no. of the 4. cat. record}
 K4223/4 Pressure increase {Text of the 4. catalogue record}

K4220/1 Event sub-catalogue 1 {Name of the first sub-cat. (/1)}
 K4220/2 Event sub-catalogue 2 {Name of the second sub-cat. (/2)}

K4221/1 1 {Allocation of the first and second cat.
 K4221/1 2 record to the sub-catalogue 1 (/1)}

K4221/2 3 {Allocation of the third and fourth cat.
 K4221/2 4 record to the sub-catalogue 1 (/1)}

Special Case Process Parameter Catalogue:

Table of process parameters:

Key /x	Number K4242	Name K4243	Abbreviation K4244
1	PP1001	Flow	m ³ /h
2	PP1002	Switch cooling	SK
3	PP1003	Process parameter 3	PP3
4	PP1004	Process parameter 4	PP4

Table of process parameter values:

Key /x	Number K4245	Name K4246
1	D1	Minimum
2	D2	Normal
3	D3	Maximum
4	SK1	On
5	SK2	Off
6	SK3	Automatic
:	:	:

Allocation of process parameter values to process parameters (PP):

PP /x	PP-Value K4249	Remark
1	1	Allocation of "D1" to "PP1001"
1	2	Allocation of "D2" to "PP1001"
1	3	Allocation of "D3" to "PP1001"
2	4	Allocation of "SK1" to "PP1002"
2	5	Allocation of "SK2" to "PP1002"
2	6	Allocation of "SK3" to "PP1002"
:	:	:

Syntax in the data format:

K4240/0 Process parameter cat.	{Name of the (main) catalogue}
K4242/1 PP1001	{No. of the 1. Process parameter}
K4243/1 Flow	{Text of the 1. Process parameter}
K4244/1 m ³ /h	{Abbrev. 1. Process parameter}
K4242/2 PP1002	{No. of the 2. Process parameter}
K4243/2 Switch cooling	{Text of the 2. Process parameter}
K4244/2 SK	{Abbrev. 2. Process parameter}
K4242/3 PP1003	{No. of the 3. Process parameter}
K4243/3 Process parameter 3	{Text of the 3. Process parameter}
K4244/3 PP3	{Abbrev. 3. Process parameter}
K4242/4 PP1004	{No. of the 4. Process parameter}
K4243/4 Process parameter 4	{Text of the 4. Process parameter}
K4244/4 PP4	{Abbrev. 4. Process parameter}
K4245/1 D1	{No. of 1. Process parameter value}
K4246/1 Minimum	{Text of 1. PP-Value}
K4245/2 D2	{No. of 2. Process parameter value}
K4246/2 Normal	{Text of 2. PP-Value}
K4245/3 D3	{No. of 3. Process parameter value}
K4246/3 Maximum	{Text of 3. PP-Value}
K4245/4 SK1	{No. of 4. Process parameter value}
K4246/4 On	{Text of 4. PP-Value}
K4245/5 SK2	{No. of 5. Process parameter value}
K4246/5 Off	{Text of 5. PP-Value}
K4245/6 SK3	{No. of 6. Process parameter value}
K4246/6 Automatic	{Text of 6. PP-Value}
:	
K4249/1 1	{Allocation of the process parameter values "D1", "D2" and "D3" to 1.
K4249/1 2	Process parameter "PP1001"}
K4249/1 3	
K4249/2 4	{Allocation of the process parameter values "SK1", "SK2" and "SK3" to 2.
K4249/2 5	Process parameter "PP1002"}
K4249/2 6	
:	

2.2.5.2 Sub-catalogues

The access to sub-catalogues allows users to select their records from a subset of the main catalogue. Only the records available for this characteristic are displayed. In order to do so, you need to write the number of the sub-catalogue for the respective additional data field on the characteristic level:

Currently, sub-catalogues for the following additional data are available:

Additional data field	K-field for the allocation of sub-catalogues
Event (K0005)	K2060
Process parameter (K0011)	K2061
Cavity (K0007)	K2062
Machine (K0010)	K2063
Gage ((K0012)	K2064
Operator (K0008)	K2065
K0061	K2066
K0062	K2067
K0063	K2068

For the recording of measured values you use the same procedure:

Value field	K-field for the allocation of sub-catalogues
Ordinal classes	K2019

Example of a machine catalogue:

K4060/0 Machine catalogue	{Name of the machine catalogue}
K4062/1 M001	{Machine no. of the 1 st cat. record}
K4063/1 Machine 1	{Machine descr. of the 1 st cat. record}
K4062/2 M002	{Machine no. of the 2 nd cat. record}
K4063/2 Machine 2	{Machine descr. of the 2 nd cat. record}
K4062/3 M003	{Machine no. of the 3 rd cat. record}
K4063/3 Machine 3	{Machine descr. of the 3 rd cat. record}
K4062/4 M004	{Machine no. of the 4 th cat. record}
K4063/4 Machine 4	{Machine descr. of the 4 th cat. record}
K4062/5 M005	{Machine no. of the 5 th cat. record}
K4063/5 Machine 5	{Machine descr. of the 5 th cat. record}

Sub-catalogues are created in order to reduce the number of displayed catalogue records to a minimum:

Machine sub-catalogue:

K4060/1 Mach_Sub-1	{Name of the machine sub-catalogue 1 }
K4061/1 1	{Allocation of the 1 st cat. record to the sub-catalogue 1 (/1)}
K4061/1 3	{Allocation of the 3 rd cat. record to the sub-catalogue 1 (/1)}
K4060/2 Mach_Sub-2	{Name of the machine sub-catalogue 2 }
K4061/1 1	{Allocation of the 1 st catalogue record to the sub-catalogue 1 (/1)}
K4061/1 4	{Allocation of the 4 th cat. record to the sub-catalogue 1 (/1)}
K4060/3 Mach_Sub-3	{Name of the machine sub-catalogue 3 }
K4061/1 2	{Allocation of the 2 nd cat. record to the sub-catalogue 1 (/1)}
K4061/1 5	{Allocation of the 5 th cat. record to the sub-catalogue 1 (/1)}

The example also shows that a catalogue record (here: the first catalogue record) can be listed in several sub-catalogues.

The characteristic definitions (K2xxx) include the allocation of the sub-catalogue to the desired characteristics. For example, characteristics 1 and 2 are allocated to machine catalogue 1, characteristics 3 and 4 are allocated to machine catalogue 2.

Key /x	Machine sub-catalogue K2063	Catalogue name
1	1	Mach_Sub-1
2	1	Mach_Sub-1
3	2	Mach_Sub-2
4	2	Mach_Sub-2
5	0	Machine catalogue
6	0	Machine catalogue

Syntax in the data format:

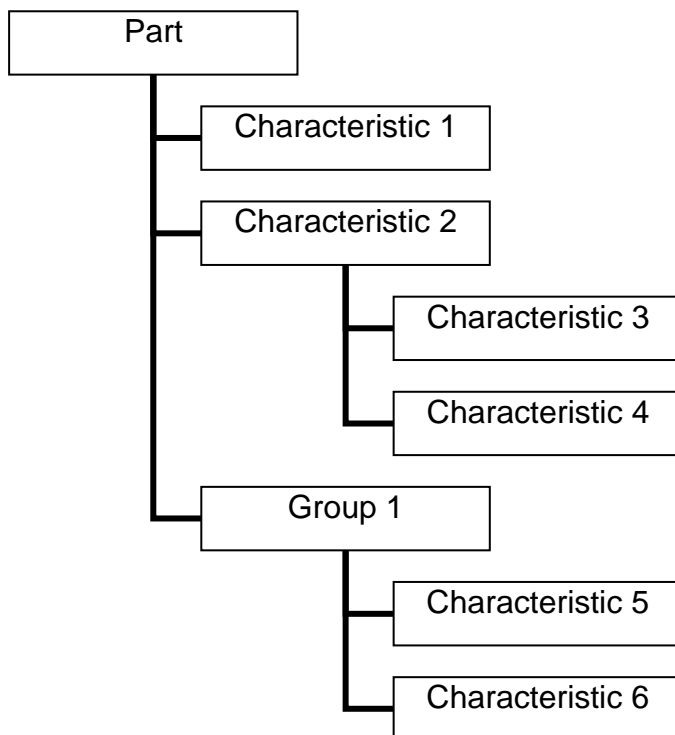
K2001/1 1	{Characteristic number characteristic 1}
K2002/1 Diameter 1	{Characteristic description characteristic 1}
K2063/1 1	{Sub-catalogue allocation characteristic 1}
K2001/2 2	{Characteristic number characteristic 2}
K2002/2 Diameter 2	{Characteristic description characteristic 2}
K2063/2 1	{Sub-catalogue allocation characteristic 2}
K2001/3 3	{Characteristic number characteristic 3}
K2002/3 Diameter 3	{Characteristic description characteristic 3}
K2063/3 2	{Sub-catalogue allocation characteristic 3}
K2001/4 4	{Characteristic number characteristic 4}
K2002/4 Diameter 4	{Characteristic description characteristic 4}
K2063/4 2	{Sub-catalogue allocation characteristic 4}
K2001/5 5	{Characteristic number characteristic 5}
K2002/5 Diameter 5	{Characteristic description characteristic 5}
K2063/5 0	{Sub-catalogue allocation characteristic 5}
K2001/6 6	{Characteristic number characteristic 6}
K2002/6 Diameter 6	{Characteristic description characteristic 6}
K2063/6 0	{Sub-catalogue allocation characteristic 6}

2.2.6 Structural Information (K5xxx)

In order to create a data hierarchy, you create groups containing subordinate elements. Groupings are relevant e.g. for positional tolerances, ELS or measurement uncertainty studies (support of K5xxx since qs-STAT millennium).

The grouped characteristics shall be written in the sequence corresponding to their group structure, i.e. the sequence is superordinate characteristic – subordinate characteristics. However, the natural sequence may also be changed by means of structural information.

2.2.6.1 Terminology



- Each record in the tree is called an **element**.
- Three types of elements are defined: **parts**, **characteristics** and **groups**.
- A **group** is an element which is neither part nor characteristic, contains subordinate elements and is a **logical group** exclusively.
- An element containing a subordinate element is referred to as a **node**.
- A node with the properties of a part is called **part group**.
- A node with the properties of a characteristic is referred to as a **characteristic group**.

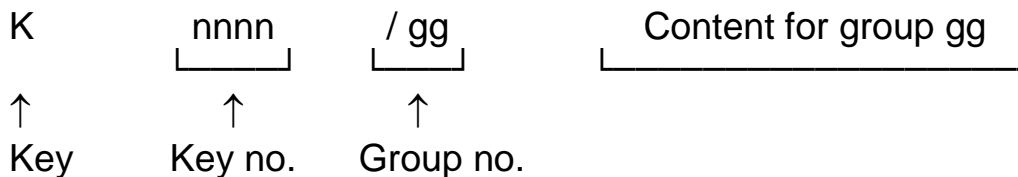
2.2.6.2 Logical Groups (Fields with Further Element Information)

Logical groups are elements that are neither parts nor characteristics. They receive own K-fields corresponding to the part and characteristic data (K5000 – K5099; see field list in appendix).

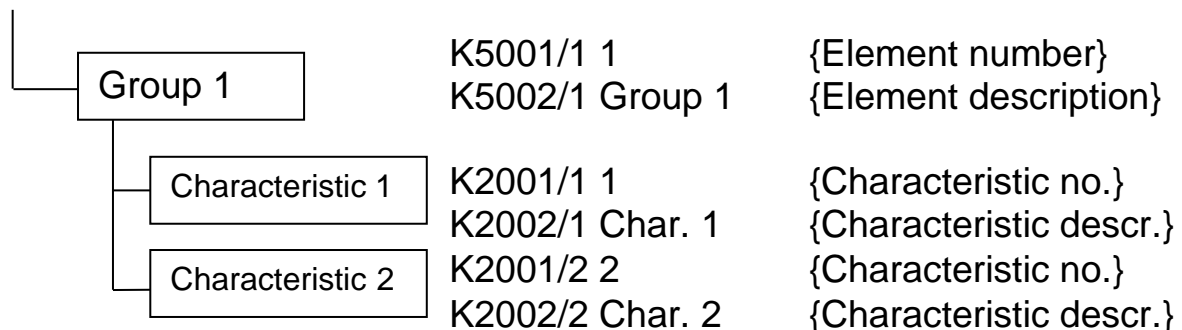
The descriptions of logical groups are normally written after all characteristic definitions; however, they may also be put in the respective position within the file.

Since logical groups are not characteristics, they do not affect K0100.

Structure of logical groups



Example



As a rule, all logical groups are written at the end of all characteristic descriptions.

2.2.6.3 Displaying the Structures in the Data Format

General rules:

- **The number following the slash (/k) no longer refers to the characteristic number but to the node number.**
- The node number is a consecutive numerical number.
- Flat hierarchies (part and x characteristics at the same level) do not require any additional structural information. You do not have to store structural information until more than two levels exist.
- You have to consider the desired sequence of elements when you allocate them.

Step 1: Defining nodes

The K511x fields determine the type of node. Every element to contain subordinate elements must be at least defined as a node.

K5111 -> Part group (node is a part)

K5112 -> Characteristic group (node is a characteristic)

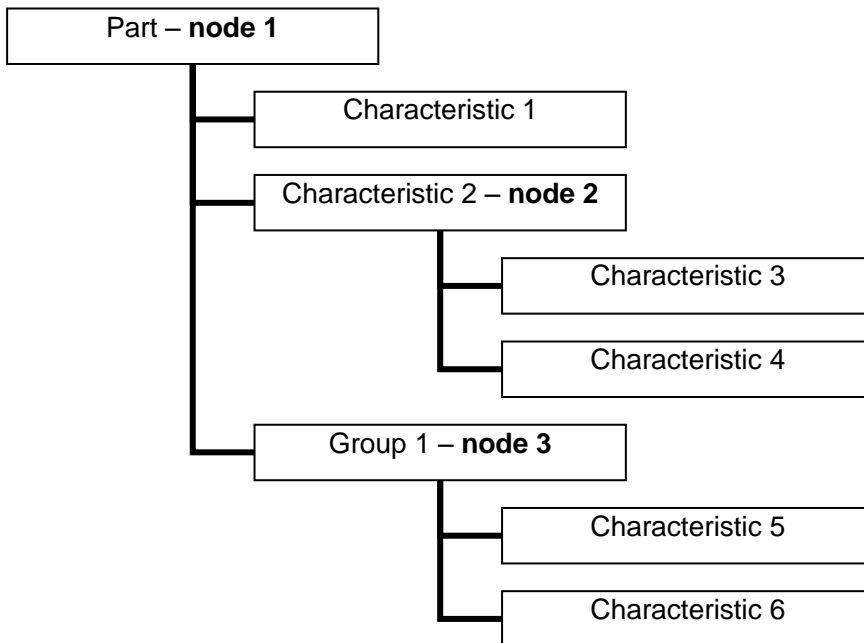
K5113 -> Group element (node is a group)

K	<u>511x</u>	<u>/ k</u>	<u>Mm</u>
↑	↑	↑	↑
Key	Key no.	Node no.	Num. part/characteristic/group number

Example 1a: Defining only required nodes

In the example displayed below, the part, characteristic 2 and group 1 are nodes including subordinate elements.

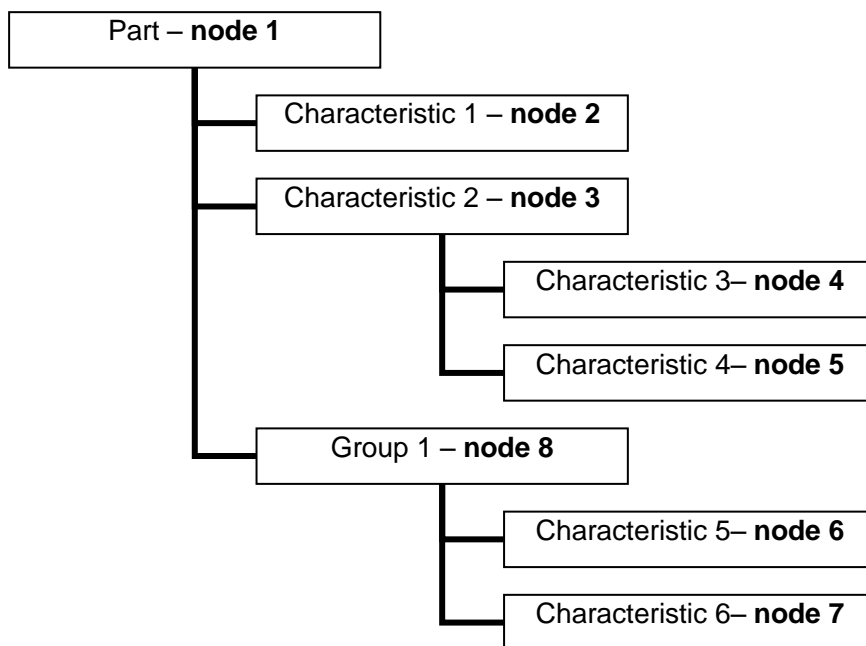
K5111/1 1	{Node 1 is part 1}
K5112/2 2	{Node 2 is characteristic 2}
K5113/3 1	{Node 3 is group 1}



Example 1b: Defining all elements as nodes

This is also the syntax of the qs-STAT software. To simplify matters, all available elements are numbered even if some elements are not needed in the following. Logical groups are normally written at the end of all characteristics. This is the reason why they are always the last nodes.

K5111/1 1	{Node 1 is part 1}
K5112/2 1	{Node 2 is characteristic 1}
K5112/3 2	{Node 3 is characteristic 2}
K5112/4 3	{Node 4 is characteristic 3}
K5112/5 4	{Node 5 is characteristic 4}
K5112/6 5	{Node 6 is characteristic 5}
K5112/7 6	{Node 7 is characteristic 6}
K5113/8 1	{Node 8 is group 1}



Step 2: Allocating elements to nodes

The K510x fields allocate elements to defined nodes (node K contains element Y). The elements are allocated top-down – in the desired sequence – to their nodes.

K5102 -> Characteristic is an element of the node (no further subordinate elements).

K5103 -> Node (each type of group containing subordinate characteristics) is an element of the node.

5102 records allocate **CHARACTERISTIC NUMBERS** to nodes.

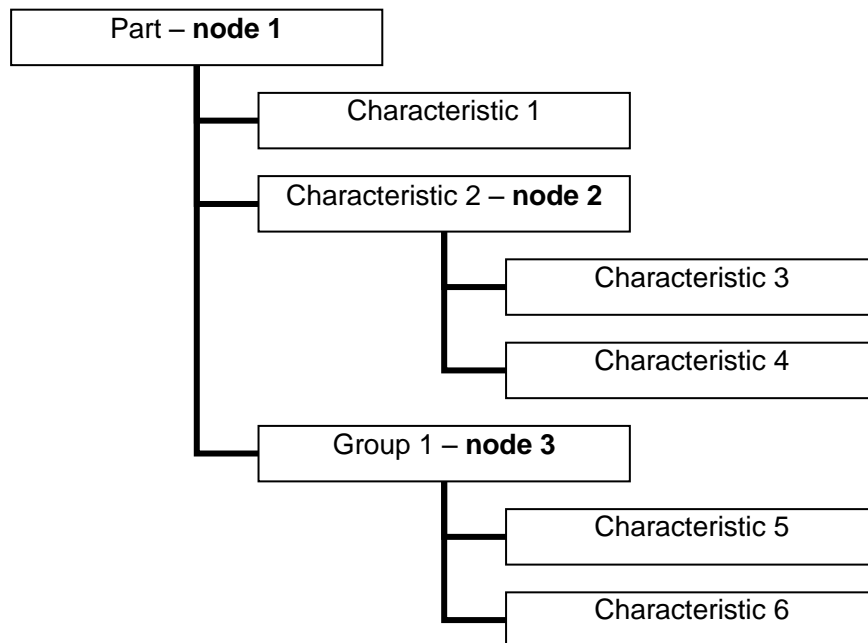
K	<u>5102</u>	<u>/ k</u>	Characteristic no. Y
↑	↑	↑	↑
Key	Key no.	Node no.	Num. characteristic number

5103 records allocate **NODES** to nodes.

K	<u>5103</u>	<u>/ k</u>	Node no. Y
↑	↑	↑	↑
Key	Key no.	Node no.	Num. node number

Example 2a: (based on the node definition of example 1a)**Repetition of the node definition:**

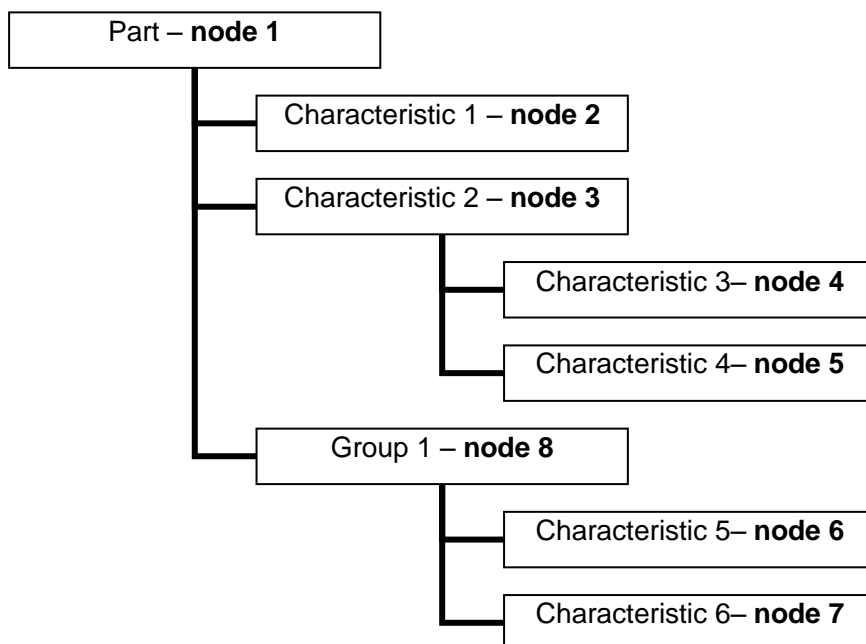
K5111/1 1 {Node 1 is part 1}
 K5112/2 2 {Node 2 is characteristic 2}
 K5113/3 1 {Node 3 is group 1}

**Allocation**

K5102/1 1 {Node 1 contains characteristic 1}
 K5103/1 2 {Node 1 contains node 2}
 K5102/2 3 {Node 2 contains characteristic 3}
 K5102/2 4 {Node 2 contains characteristic 4}
 K5103/1 3 {Node 1 contains node 3}
 K5102/3 5 {Node 3 contains characteristic 5}
 K5102/3 6 {Node 3 contains characteristic 6}

Example 2b: (based on the node definition of example 1b)**Repetition of the node definition:**

K5111/1 1	{Node 1 is part 1}
K5112/2 1	{Node 2 is characteristic 1}
K5112/3 2	{Node 3 is characteristic 2}
K5112/4 3	{Node 4 is characteristic 3}
K5112/5 4	{Node 5 is characteristic 4}
K5112/6 5	{Node 6 is characteristic 5}
K5112/7 6	{Node 7 is characteristic 6}
K5113/8 1	{Node 8 is group 1}

**Allocation**

K5102/1 1	{Node 1 contains characteristic 1}
K5103/1 3	{Node 1 contains node 3}
K5102/3 3	{Node 3 contains characteristic 3}
K5102/3 4	{Node 3 contains characteristic 4}
K5103/1 8	{Node 1 contains node 8}
K5102/8 5	{Node 3 contains characteristic 5}
K5102/8 6	{Node 3 contains characteristic 6}

2.2.7 Simple Grouping Using K2030/K2031

For simple groupings of characteristics you may also use the fields K2030 / K2031. However, it is required that all characteristics are available in exactly the same sequence as they shall appear later. You may not use these fields to display logical groups. In order to display logical groups you need to define subordinate characteristics and the superordinate characteristic by means of both K-fields.

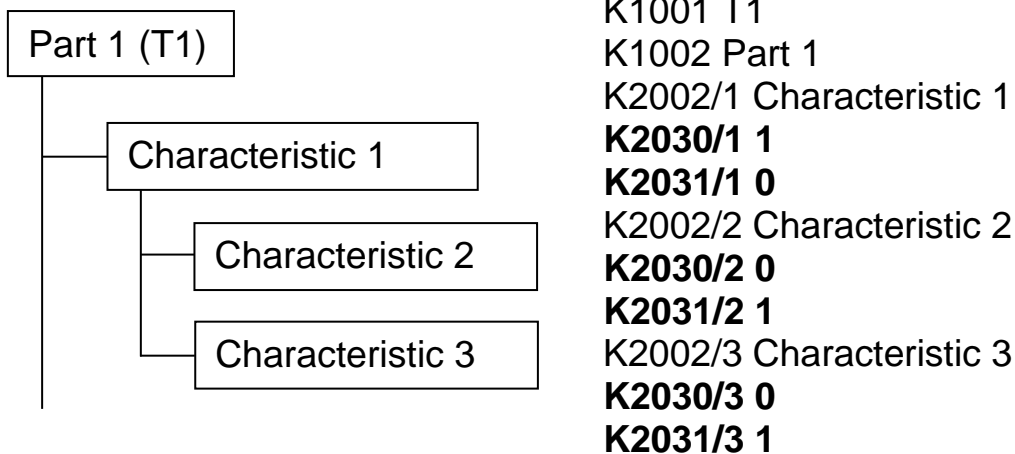
Superordinate characteristic:

K2030/x 1 → n
K2031/x 0

Subordinate characteristic/s:

K2030/x 0
K2031/x 1 → n

Example



2.2.8 Special Characteristic Groups

The structure using the K5xxx fields alone only created the characteristics group. Use the syntax of K2008 in the superordinate characteristic of a characteristic group to define certain types of groups, such as:

Value	Description
2	Positional tolerance
6	Error log sheet
8	Best fit Move group
9	Surface study
10	3D positional tolerance
11	AFNOR E60-181 max/min
12	MMC (hole)
13	MMC (shaft)
14	VDA 5 new

This leads to a special calculation function for this type of group referring to the superordinate characteristic.

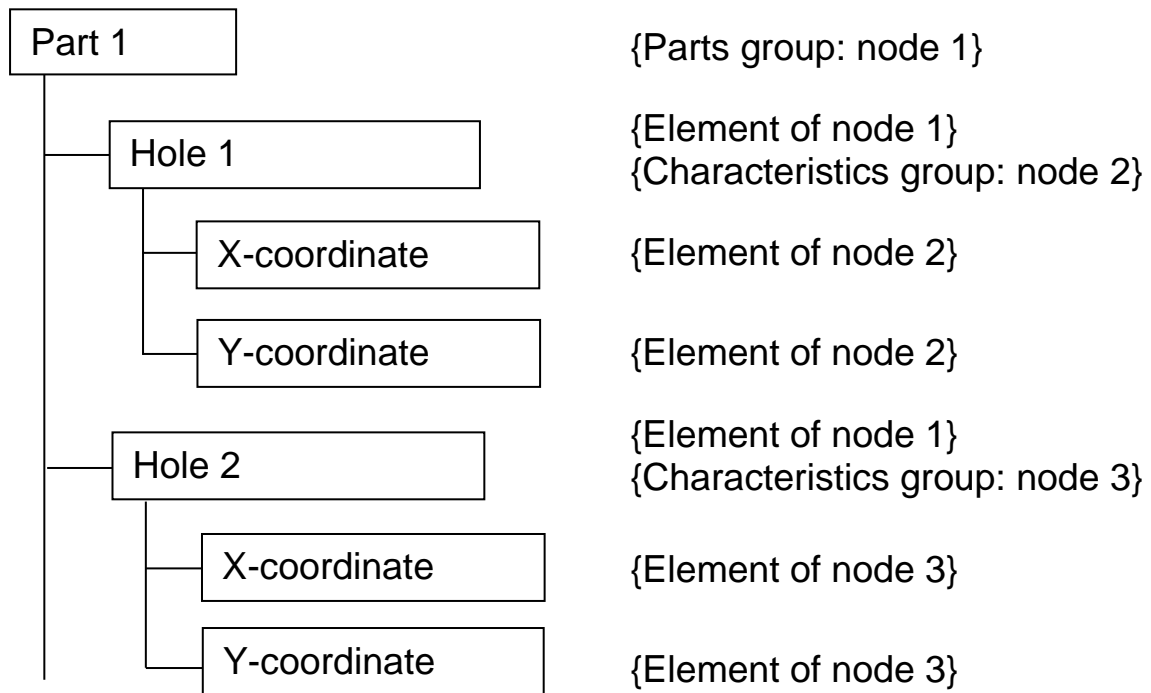
Explanation based on the example of the positional tolerance: The superordinate characteristic is calculated e.g. according to the probability ellipse, the calculation function for multivariate characteristics.

The characteristics are arranged hierarchically by using the grouping mechanisms (K5xxx) of the data format.

Note: Most of the groups require further fields and certain types of characteristics. This fact is explained in single case studies for all types of groups.

Positional tolerances example

In a tree structure, the example shows the data structure to be displayed. This is a data structure as it might occur in the evaluation of bore hole centres. The required K-fields are listed in the following.



List of field contents for the group information (K2008) according to characteristics:

K1002 Part 1

K2002/1 Hole 1

K2008/1 2

K2002/2 X-coordinate

K2002/3 Y-coordinate

K2002/4 Hole 2

K2008/4 2

K2002/5 X-coordinate

K2002/6 Y-coordinate

Description characteristics group 1

Positional tolerance group type

Description characteristics group 2

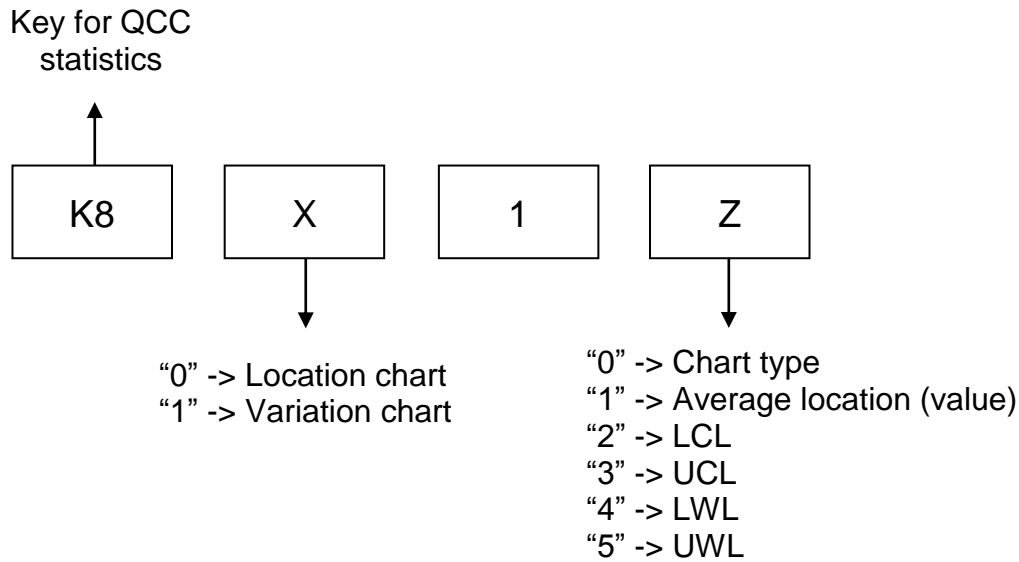
Positional tolerance group type

List of field contents for structural information:

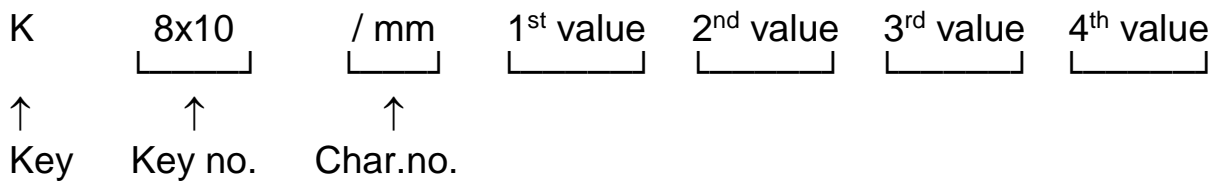
K5111/1 1	{Node 1 is part 1}
K5112/2 1	{Node 2 is characteristic 1 (hole 1)}
K5112/3 4	{Node 3 is characteristic 4 (hole 2)}
K5103/1 2	{Node 1 contains node 2 (characteristics group hole 1)}
K5103/1 3	{Node 1 contains node 3 (characteristics group hole 2)}
K5102/2 2	{Node 2 contains characteristic 2 (x-coordinate)}
K5102/2 3	{Node 2 contains characteristic 3 (y-coordinate)}
K5102/3 5	{Node 3 contains characteristic 5 (x-coordinate)}
K5102/3 6	{Node 3 contains characteristic 6 (y-coordinate)}

2.2.9 Quality Control Charts (K8xxx)

The key number for quality control charts (QCC) is structured as seen below:



The chart type field is structured as detailed below:



Remark: Missing additional attributes are added in the program by using default settings!!

2.2.9.1 Additional attributes for Location Charts (K80xx)

Location chart type (1st value)

	Acceptance chart	Shewhart			Pearson		
		99%	99,73%	User	99%	99,73%	User
Raw value	10	11	12	13	16	17	18
Median value	20	21	22	23	26	27	28
Average value	30	31	32	33	36	37	38

Additional attribute of variation estimator (**2nd value**):

- 1 → $\sigma[1] \leftarrow \sqrt{(\sum s^2/k)}$
- 2 → $\sigma[2] \leftarrow (\sum s/k)/a[n]$
- 3 → $\sigma[3] \leftarrow (\sum R/k)/d[n]$
- 4 → $\sigma[4] \leftarrow s[\text{tot}]$
- 6 → $\sigma[6] \leftarrow \text{Target value}$
- 7 → $\sigma[7] \leftarrow \text{Standard deviation of averages}$
- 8 → $\sigma[8] \leftarrow \text{Standard deviation of median values}$

Additional attribute of extended limits (**3rd value**):

- 0 → no extended limits
- 1 → lower/upper value of the variation range of the average is recorded
- 2 → variation range of the average from Analysis of Variance
- 3 → calculation over the total variation of the calculated values
- 4 → calculation over $X[\text{add}]$
- 5 → input of control limits

Additional attribute of Pearson calculation (**4th value**):

- 0 → no calculation according to Pearson
- 1 → variation, skewness and excess of the subgroup statistics are calculation from skewness and excess of the individual values
- 2 → calculation is carried out with the help of variation, skewness and excess of the subgroup statistics (subgroup averages or subgroup Median values). For Median value charts according to Pearson this is the only possibility that exists. For raw value charts according to Pearson, this is the only possibility that exists.

Additional attribute lower limit μ_{lo} of the extension range (**5th value**; only for location charts with extended control limits)

Additional attribute upper limit μ_{up} of the extension range (**6th value**; only for location charts with extended control limits)

Additional attribute error proportion P for acceptance charts (**7th Value**; only for acceptance charts)

Additional attribute $1-P(\alpha)$ interference probability for acceptance charts (**8th Value**; only for acceptance charts)

Additional attribute factor $1-\alpha$ for the expansion of the extension range (**9th Value**; only for location charts with extended limits)

Additional attribute estimator for μ (**10th Value**):

$$1 = \hat{\mu}_1; \quad 2 = \hat{\mu}_2; \quad 3 = \hat{\mu}_3; \quad 4 = \hat{\mu}_4$$

Additional attribute stability level (**11th Value**):

$$0 = \text{Level 0}; \quad 1 = \text{Level 1}; \quad 2 = \text{Level 2}$$

2.2.9.2 Additional Attribute for Variation Charts (K81xx)

Variation chart type (**1st value**)

	Shewhart			QS-9000 *		Pearson		
	99%	99,73%	User	$\pm 2,58 \sigma$	$\pm 3 \sigma$	99%	99,73%	User
S chart	51	52	53	54	55	56	57	58
R chart	61	62	63	64	65	66	67	68

* of the individual statistical distribution

Additional attribute of variation estimator (**2nd value**):

$$1 \rightarrow \sigma[1] \leftarrow \sqrt{(\sum s^2/k)}$$

$$2 \rightarrow \sigma[2] \leftarrow (\sum s/k)/a[n]$$

$$3 \rightarrow \sigma[3] \leftarrow (\sum R/k)/d[n]$$

$$4 \rightarrow \sigma[4] \leftarrow s[\text{ges}]$$

$$6 \rightarrow \sigma[6] \leftarrow \text{Target Value}$$

$$7 \rightarrow \sigma[7] \leftarrow \text{Standard deviation of the averages}$$

$$8 \rightarrow \sigma[8] \leftarrow \text{Standard deviation of the Median values}$$

Additional attribute stability level (**3rd Value**):

$$0 = \text{Level 0}; \quad 1 = \text{Level 1}; \quad 2 = \text{Level 2}$$

2.2.9.3 Charts for Attribute Characteristics (1st Value)

		Exact calculation			QS-9000*	
		99 %	99,73 %	User	$\pm 2,58 \sigma$	$\pm 3 \sigma$
Binomial Distribution	p chart	111	112	113	114	115
	x chart	121	122	123	-	-
	np chart	-	-	-	124	125
Poisson Distribution	u chart	211	212	213	-	-
	u chart	-	-	-	214	215
	x chart	221	222	223	-	-
	c chart	-	-	-	224	225

Examples:

Location chart:

K8010/1 32 4 0 0 {Average chart acc. to Shewhart (99,73%)/ $s_{(tot)}$ }
 K8011/1 130.03917 {Average location of the location chart }
 K8012/1 130.00221 {Lower control limit of the location chart }
 K8013/1 130.07614 {Upper control limit of the location chart }

Variation chart:

K8110/1 54 4 {s chart acc. to QS-9000 ($\pm 2,58 \sigma$)/ $s_{(tot)}$ }
 K8111/1 0.0312637 { Average location of the variation chart }
 K8112/1 0.0036891 { Lower control limit of the variation chart }
 K8113/1 0.0588383 { Upper control limit of the variation chart }

Example Location chart with extended limits:

Average chart according to Shewhart with a probability for non-conformance of 99.73% (1st value: 32); variation estimator σ_1 (2nd Value: 1); variance analytical determination of the extension of the control limits (3rd limit: 2); no calculation according to Pearson (4th value: 0); lower limit of the extension range (5th value: 19.9925); upper limit of the extension range (6th value: 20.0166); no additional attributes for acceptance chart (7th and 8th value: 0); factor for the expansion of the control limits 86.64% (9th value: 0.866386)

K8010/1 32 1 2 0 19.9925 20.0166 0 0 0.866386 {Chart type}
 K8011/1 20.004532 {Average location}
 K8012/1 19.979505051 {Lower control limit}

K8013/1 20.029558959

{Upper control limit }

Example Acceptance Location Chart:

Averages Acceptance Chart (1st value: 30); variation estimator σ_1 (2nd value: 1); no extended limits (3rd value: 0); no calculation according to Pearson (4th value: 0); no extension range (5th and 6th value: 0); parameter error proportion 5% (7th value: 0.05); interference probability of 90% (8th value: 0.9)

K8010/1 30 1 0 0 0 0 0.05 0.9

{Chart type}

K8011/1 130.075

{Average location}

K8012/1 129.969541

{Lower control limit }

K8013/1 130.180459

{Upper control limit }

2.2.10 Additional Data (K9xxx)

“Additional Data” were not supported at that time.

3 Value Portion

Apart from the actual measured value, the value record for a characteristic might consists of the following components:

- Measured value (variable, attribute)
- Attribute
- Date/time
- Batch number
- Events
- Nest number
- Operator
- Text
- Machine
- Gage
- Process parameter
- ...

Data can be written line by line in a defined order or by using the corresponding K-fields (K00xx; see field list in appendix). A combination of the two notations is also possible.

3.1 Structure of the Value Portion

3.1.1 Notation without the use of K-Fields

For the line-by-line notation, the first measured values of all characteristics and parts are recorded in the first line. The values of the second measurement follow in the second line etc. The characteristics are separated by separators (ASCII #15, "␣", Hex\$0F). When saving several parts, the sequence of the parts should be equal to that in the descriptive portion.

	Part 1			Part 2		
	Values characteristic 1	...	Values characteristic n	Values characteristic n+1	...	Values characteristic n+m
1 st Value						
2 nd Value						
:						
n th Value						

You can distinguish characteristic values based on different characteristic types (variable, attribute, ordinal). The allocation of the values - as values of a certain characteristic type - is carried out automatically based on the characteristic type (K2004) indicated in the characteristic description. Depending on the characteristic type, some of the values may consist of several records separated by separators (ASCII #20, "␣", Hex\$14).

3.1.1.1 Variable Measured Values

Values of variable characteristic type
Value

Example: 2 characteristics separated by a characteristic separator

19.8␣50.2 {first measured value
characteristic 1/2}

3.1.1.2 Attribute Measured values

In case of attribute characteristics, a combination of subgroup size (x 1000) and number of errors is written. The upper limit of writeable records is:

Highest writeable subgroup size: 2147483

Highest writeable number of errors: 999999

Values of attribute characteristics type	
Subgroup size (x 1000)¶¶Number of errors¶¶0¶¶	

Example: Subgroup size 25, number of errors 2:

25000¶2¶0 {first measured value
characteristic 1}

Example: Subgroup size 1 (individual storage), number of errors 1

1000¶1¶0 {first measured value
characteristic 1}

Example: Subgroup size 1 (individual storage), number of errors 0

1000¶0¶0 {first measured value
characteristic 1}

3.1.1.3 Ordinal / Nominal Measured Values

In case of ordinal / nominal characteristics, the catalogue record of the ordinal class catalogue is written as a measured value.

Values of ordinal/nominal characteristic type	
Key number of catalogue record	

Example: 2 characteristics separated by a characteristic separator, catalogue record number 7 for the first characteristic, catalogue record number 6 for the second characteristic.

7¶6 {first catalogue record characteristic
1/2}

3.1.1.4 Additional Data

The input of further additional information for values (attribute, time, events, batch number, etc.) is optional. If these components are recorded, you have to write them in a fixed sequence after the corresponding measured value and separate them by additional separators (ASCII #20, “¶”, Hex\$14). The **batch number must be indicated by character “#”**.

Ascending sequence of additional data:

Value
Value¶Attribute
Value¶Attribute¶Date/time
Value¶Attribute¶Date/time¶Events
Value¶Attribute¶Date/time¶Events¶Batch number...

Sequence:

- 1 Value,
- 2 Attribute,
- 3 Date/time,
- 4 Events,
- 5 Batch number,
- 6 Nest number,
- 7 Operator number,
- 8 Machine number,
- 9 Process parameter,
- 10 Gage number.

Further fields for additional information (optional) may be recorded as K-fields in the following line.

3.1.1.5 Scope of Validity

As a general rule, records in the file are valid (i.e. are taken over) until they are replaced by new records.

Exceptions are the fields

- Attribute
- Events
- Text
- Process parameter

Generally, these fields are never taken over from previous records.

If you do not enter any record, the fields are assigned to the value 0 automatically, i.e. Attribute = 0 (valid value) respectively Event = 0 (no event recorded).

In order to cancel the takeover of records, "0" must be entered in numerical fields. An exception is the batch number; here you enter the character "#".

The rule for the transfer of records as described here does not apply when K-fields are used in the notation of the additional data.

3.1.1.6 Summary of Separators

- Characteristic separator \$0F (hexadecimal) resp. #15 (decimal)
- Additional data separator \$14 (hexadecimal) resp. #20 (decimal)
- Line-end identification \$0D \$0A (hexadecimal), #13 #10 (decimal)
Combination of <CR><LF>

3.1.1.7 Example

The values of the 1st characteristic are recorded in the first column. Attribute, time/date, event, and batch number (marked with '#') are found in the columns 2-5, each divided by a separator for additional data fields (Hex\$14, Dec #20, "¶"). The second characteristic (and so on) follows; both characteristics are divided by a separator (Hex\$0F, Dec #15, "α"). Columns 2-5 are optional, i.e. they are not required. If these records are used, you have to follow the sequence strictly. The numerical values may also be written in decimal notation or exponential notation.

Note: Starting with measured value 1.54 (8th measured value), the batch number is no longer recorded, which is indicated by the "#" character.

<----- Characteristic 1 ----->					<--- Characteristic 2 --->
1	2	3	4	5	6
8.38¶	0¶	12.03.98/14:12:35 ¶	0 ¶	#16777 α	2.566
1.34¶	0¶	12.03.98/14:12:57 ¶	0 ¶	#16777 α	1.811
1.50¶	0¶	12.03.98/14:15:12 ¶	0 ¶	#16777 α	2.113
1.34¶	0¶	12.03.98/14:15:46 ¶	0 ¶	#16777 α	2.264
8.38¶	0¶	12.03.98/14:18:32 ¶	0 ¶	#16777 α	2.415
9.22¶	0¶	12.03.98/14:19:14 ¶	0 ¶	#16777 α	1.811
8.38¶	0¶	12.03.98/14:21:06 ¶	0 ¶	#16777 α	1.509
1.54¶	0¶	12.03.98/14:21:59 ¶	0 ¶	#	α 1.811
1.34¶	0¶	12.03.98/14:23:22 ¶	0		α 1.962
1.50¶	0¶	12.03.98/14:25:04 ¶	0		α 1.811
1.34¶	0¶	12.03.98/14:26:31 ¶	0		α 1.509

Note: Each line has to include the line-end identification.

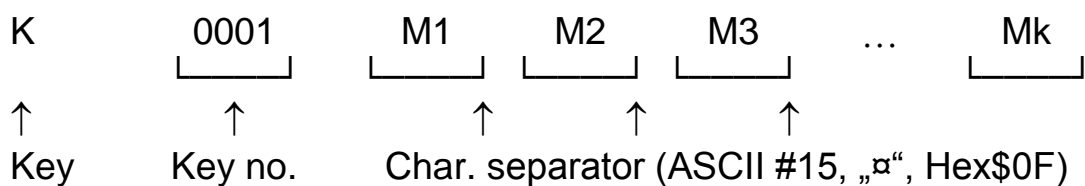
3.1.2 Notation using K-Fields

The same rules as given in the descriptive portion apply to the notation using K-fields.

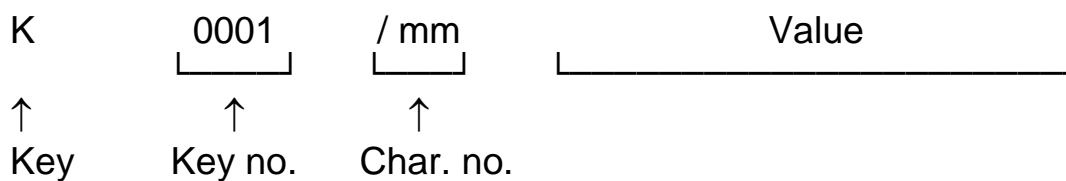
3.1.2.1 Measured values

The key number for values is K0001 (Field type: floating point number, maximum field length 22 bytes).

Version 1:



Version 2:

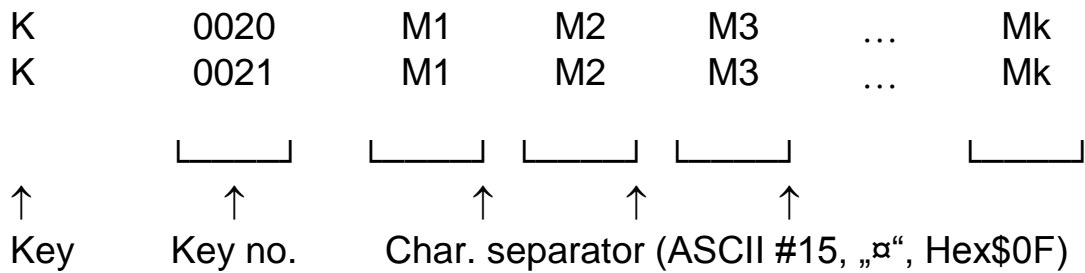
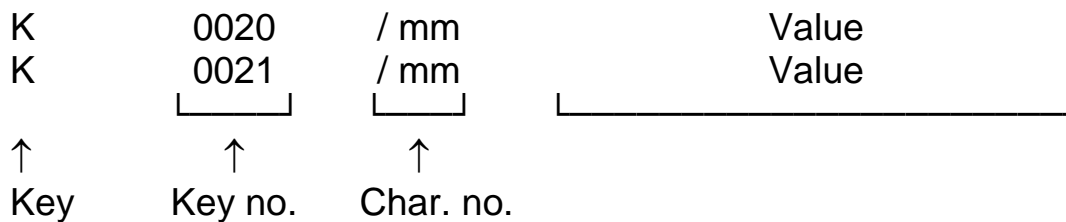


The notation K0001/0 (characteristics no. mm = 0) is not allowed!

3.1.2.2 Attribute measured values

The key numbers for attribute measured values are K0020 (subgroup size x 1000) and K0021 (number of defects).

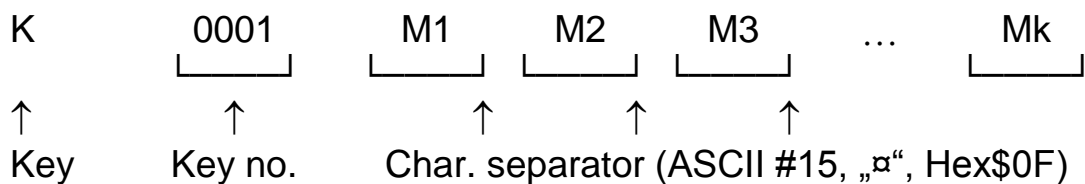
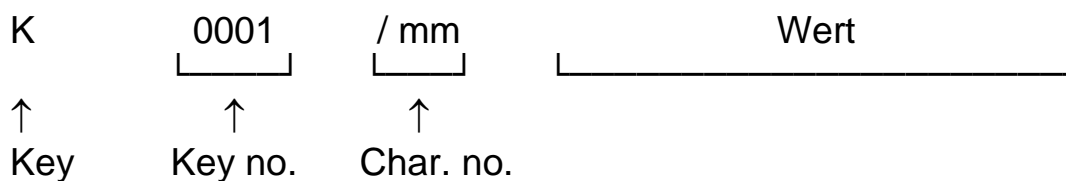
CAUTION: K0020 including K0021 replaces K0001 and is thus written in its place in the K-field sequence.

Version 1:**Version 2:**

The notation K0020/0 (characteristic no. mm = 0) is not permissible!
The notation K0021/0 (characteristic no. mm = 0) is not permissible!

3.1.2.3 Ordinal / nominal measured values

The key number for values is K0001 (field type: integer).

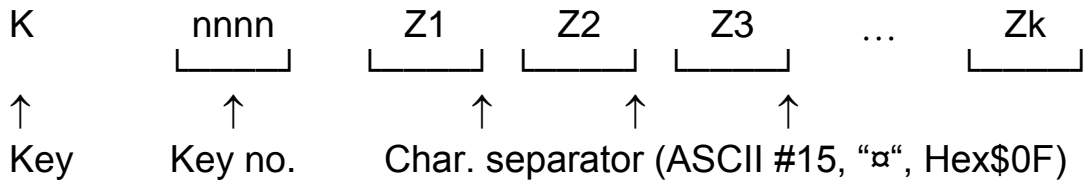
Version 1:**Version 2:**

The notation K0001/0 (characteristic no. mm = 0) is not permissible!

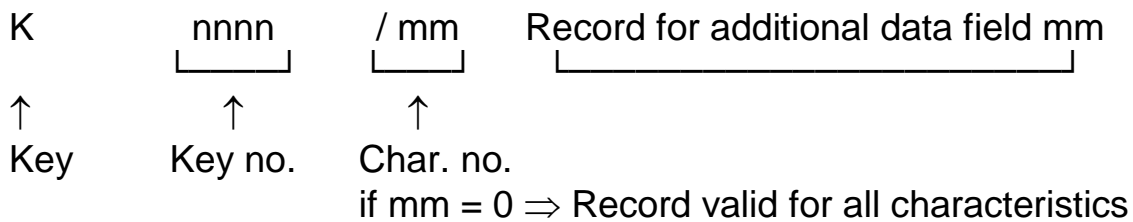
3.1.2.4 Additional Data

A summary of the supported additional data fields is given in the appendix (K00XX). The currently valid version is available for download on the Q-DAS® website.

Version 1:

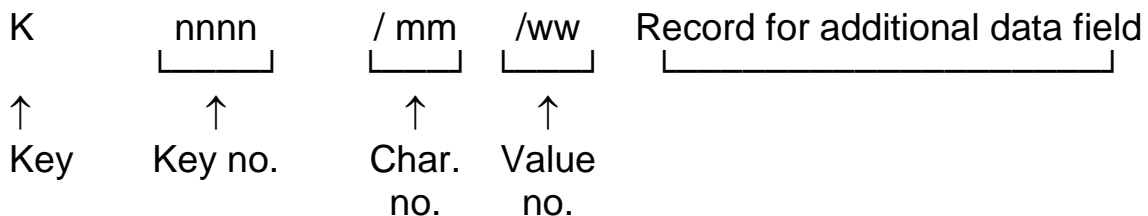


Version 2:



The additional data of versions 1 or 2 follow the corresponding measured values directly. If such a relation is not possible, then the additional data can be allocated specifically to certain values. In order to do this, the key number must be supplemented by the corresponding value number.

Version 3:



3.1.2.5 Rules for the Notation using K-fields

- Numerical characteristics/value number
- If several records for one characteristic are collected in one line (version 1: no recorded characteristic description), the records must

be written consecutively for the characteristics and spaces must be filled in with a corresponding number of separators.

- However, separators at the end are not necessary (**except for the line-end identification**)
- If the value “0” is recorded as characteristic number (mm), this record applies to all characteristics (except for K0001).
- The automated transfer of additional data in any following measurement does not take place, i.e. additional data have to be written separately per measurement.

Records can be overwritten by using versions 1, 2 and 3.

3.1.2.6 Examples

Version 1:

K0001 19.8	50.2	{first value characteristic 1/2}
K0004 17.06.01/13:08:34	17.06.01/...	{date/time characteristic 1/2}
K0006 Batch0815	Batch0815	{batch number characteristic 1/2}
K0001 20.1	49.8	{second value characteristic 1/2}
K0004 17.06.01/13:15:10	17.06.01/...	{date/time characteristic 1/2}
K0006 Batch0816	Batch0816	{batch number characteristic 1/2}
:		

Version 2:

K0001/1 19.8		{first value characteristic 1}
K0004/1 17.06.01/13:08:34		{date/time of measurement}
K0006/1 Batch0815		{batch number}
K0001/2 50.2		{first value characteristic 2}
K0004/2 17.06.01/13:08:56		{date/time of measurement}
K0006/2 Batch0815		{batch number}
K0001/1 20.1		{second value characteristic 1}
K0004/1 17.06.01/13:15:10		{date/time of measurement}
K0006/1 Batch0816		{batch number}
K0001/2 49.8		{second value characteristic 2}
K0004/2 17.06.01/13:15:43		{date/time of measurement}
K0006/2 Batch0816		{batch number}
:		

Version 3 (Additional Data):

K0001 19.8	50.2	{first value characteristic 1/2}
K0001 20.1	49.8	{second value characteristic 1/2}
K0006/0/1 Batch0815		{batch number. first value all char.}
K0006/0/2 Batch0816		{batch no. second value all char.}

Mixed Notation (with and without K-fields):

19.8	50.2	{first value characteristic 1/2}
K0006/0 Batch0815		{batch no. first value all char.}
20.1	49.8	{second value characteristic 1/2}
K0006/0 Batch0816		{batch no. second value all char.}

3.1.3 Additional Data Particulars

3.1.3.1 Attribute

The attribute table applies to key K0002 (attribute).

Attribute	Explanation
0	Value is valid.
1	In "Reliability Analysis" this attribute marks a "non-defective part".
2 - 128	Internally used attributes with values eliminated manually or through outlier tests.
255	While recording data in tables, an empty data field will be marked with this attribute.
256	Attribute of a value used only for filling the file structure.
280	Re-work carried out, value OK, numerical value proof through qualitative procedure.
290	Non-plausible value (recognized during measurement)
	For Post Process Measurements:
300	Measured value does not exist (synchronization of partial measurements)
301	Buffer value (moving subgroup size)
302	Re-start (moving subgroup size)
303	Correction (moving subgroup size)
304	Master measurement (calibration value with moving subgroup size)
	For Special Measurements:
400	Synchronization of partial measurements and differing subgroup sizes
401	Measurement for calibration purposes (gage calibration)
402	Setup measurement (setup/alignment of measuring device)
410	Release measurement (for measuring device tests)
411	Selection (extraordinary 100% measurement in case of stability violation in a subgroup)
420	Counter-check (repeat measurement) of the production facility

Example for the application of attribute 255

If not all the characteristics (MM) of one part are measured all the time and you want to keep the part allocation, **Attribute 255** must be allocated to the measurements that have not been carried out yet in order to fill in the data structure.

<-- MM1 -->		<-- MM2 -->		<-- MM3 -->		<-- MM4 -->		<-- MM5 -->	
1.34¶	0α	5.78¶	0α	9.44¶	0α	0.00¶	255α	0.00¶	255α
1.28¶	0α	5.31¶	0α	9.79¶	0α	0.00¶	255α	0.00¶	255α
1.41¶	0α	5.02¶	0α	9.12¶	0α	0.00¶	255α	0.00¶	255α
1.30¶	0α	5.55¶	0α	9.49¶	0α	0.00¶	255α	0.00¶	255α
1.36¶	0α	5.25¶	0α	9.44¶	0α	2.45¶	0α	4.67¶	0α
1.14¶	0α	5.09¶	0α	9.65¶	0α	2.22¶	0α	4.48¶	0α
1.33¶	0α	5.19¶	0α	9.59¶	0α	2.38¶	0α	4.55¶	0α
1.42¶	0α	5.33¶	0α	9.71¶	0α	2.31¶	0α	4.62¶	0α
0.00¶	255α	0.00¶	255α	0.00¶	255α	2.29¶	0α	4.65¶	0α
0.00¶	255α	0.00¶	255α	0.00¶	255α	2.27¶	0α	4.58¶	0α

The following tabular data structure will be the result. Every value line contains all characteristic values of one part. Missing measurements will be listed as an empty data field.

No.	MM1	MM2	MM3	MM4	MM5
1	1.34	5.78	9.44		
2	1.28	5.31	9.79		
3	1.41	5.02	9.12		
4	1.30	5.55	9.49		
5	1.36	5.25	9.44	2.45	4.67
6	1.14	5.09	9.65	2.22	4.48
7	1.33	5.19	9.59	2.38	4.55
8	1.42	5.33	9.71	2.31	4.62
9				2.29	4.65
10				2.27	4.58

Example for the application of attribute 256

If not all the characteristics (MM) of a part are measured all the time, **Attribute 256** must be allocated to missing measurements if the correct part allocation of the measured values is not required.

<-- MM1 -->		<-- MM2 -->		<-- MM3 -->		<-- MM4 -->		<-- MM5 -->	
1.34¶	0ᄁ	5.78¶	0ᄁ	9.44¶	0ᄁ	0.00¶	256ᄁ	0.00¶	256ᄁ
1.28¶	0ᄁ	5.31¶	0ᄁ	9.79¶	0ᄁ	0.00¶	256ᄁ	0.00¶	256ᄁ
1.41¶	0ᄁ	5.02¶	0ᄁ	9.12¶	0ᄁ	0.00¶	256ᄁ	0.00¶	256ᄁ
1.30¶	0ᄁ	5.55¶	0ᄁ	9.49¶	0ᄁ	0.00¶	256ᄁ	0.00¶	256ᄁ
1.36¶	0ᄁ	5.25¶	0ᄁ	9.44¶	0ᄁ	2.45¶	0ᄁ	4.67¶	0ᄁ
1.14¶	0ᄁ	5.09¶	0ᄁ	9.65¶	0ᄁ	2.22¶	0ᄁ	4.48¶	0ᄁ
1.33¶	0ᄁ	5.19¶	0ᄁ	9.59¶	0ᄁ	2.38¶	0ᄁ	4.55¶	0ᄁ
1.42¶	0ᄁ	5.33¶	0ᄁ	9.71¶	0ᄁ	2.31¶	0ᄁ	4.62¶	0ᄁ
0.00¶	256ᄁ	0.00¶	256ᄁ	0.00¶	256ᄁ	2.29¶	0ᄁ	4.65¶	0ᄁ
0.00¶	256ᄁ	0.00¶	256ᄁ	0.00¶	256ᄁ	2.27¶	0ᄁ	4.58¶	0ᄁ

The following tabular data structure will be the result. This notation records measured values and inserts them in empty data fields, i.e. values listed in one line might be taken from measurements of different parts.

No.	MM1	MM2	MM3	MM4	MM5
1	1.34	5.78	9.44	2.45	4.67
2	1.28	5.31	9.79	2.22	4.48
3	1.41	5.02	9.12	2.38	4.55
4	1.30	5.55	9.49	2.31	4.62
5	1.36	5.25	9.44	2.29	4.65
6	1.14	5.09	9.65	2.27	4.58
7	1.33	5.19	9.59		
8	1.42	5.33	9.71		
9					
10					

3.1.3.2 Date/Time

Stick to the following format:

Date:

DD => Day
 MM => Month
 YY => Year (last two digits)
 YYYY => Year (four digits)

The name of the months are not used because of their dependence on language (i.e.: 17th June 1996).

Time:

HH => Hours
 MM => Minutes
 SS => Seconds

The following notations are permitted:

Date		Time	
Format	Example	Format	Example
DD.MM.YY	17.06.96	HH:MM:SS	15:20:25
DD.MM.YYYY	17.06.1996	H:M:S	5:3:6
MM/DD/YY	6/15/96	HH:MM	5:23
MM/DD/YYYY	1/30/1996	HH	5
YY-MM-DD	96-4-26	...	5:4:8am
YYY-MM-DD	1996-10-23		5:4:8pm
			5:4:8a
			5:4:8p

Date and time must be separated by a slash “/”.

For the output of date and time, the date must be listed before the time.

Example:

Notation without K-field:

¶07.05.1992/13:48:10

Notation with K-field:

K0004/1 07.05.1992/13:48:10

3.1.3.3 Events

If several events are written for one measured value, they are separated by commas.

Example:

Notation without K-field:

¶1,3,5

Notation with K-field:

K0005/1 1,3,5

The field contents refer to catalogue records, i.e. records 1, 3 and 5 refer to the first, third, and fifth event of the event (sub-)catalogue. The field K2060 defines at the characteristic level which catalogue (overall catalogue or one of the sub-catalogues) will be used as a reference.

Special cases are measures and causes. Even these events are written in K0005; however with an offset of 10000 and 20000 helping the software to distinguish these K-fields.

1-9999	Events
10000-19999	Measures
>20000	Causes

Measures and causes both have their own sub-catalogues but their internal number allocates them to the event sub-catalogues.

3.1.3.4 Process Parameter (K0011)

Process parameters consist of a process parameter number and a process parameter value. In case process parameters are written for one measured value, they are indicated by square brackets []. The records for a process parameter data set consisting of process parameter number and process parameter value are separated by spaces. Several process parameter data sets related to ONE measured value are separated by commas.

Example:

Notation without K-field:

¶[1 1,3 8,5 7]

Notation with K-field:

K0011/1 [1 1,3 8,5 7]

Three process parameters (number 1, 3 and 5) are recorded for the measured value:

process parameter value 1 is recorded for process parameter number 1

process parameter value 8 is recorded for process parameter number 3

process parameter value 7 is recorded for process parameter number 5

In this case, the records also refer to catalogues. K2061 defines at the characteristics level, which process parameter catalogue is used as a reference (overall catalogue or one of the sub-catalogues).

3.1.3.5 Subgroup ID / Value position in subgroup (K0080/K0081)

Since V10, measured values can provide clear information about their position within the subgroup.

K0080	Subgroup ident
K0081	Position of measured value within subgroup

These two fields are thus only provided for this special type of information.

K0080 is the clear subgroup identification which is the same for all measured values within the same subgroup.

K0081 is the position within the subgroup.

This information corresponds to the subgroup size (K8500) and type of subgroup (K8501).

4 Applications in Sample and Process Capability Analysis

The following typical applications illustrate the respective field contents and relations between the main K-fields. The applications for groups also include structural information as an example.

Italicized records are optional.

An example of minimum requirements:

	K2004	K2008 / K5xxx	K2110 / K2111	K2120 / K2121	K2019	K8500	K8501	K8503	
Variable	0		x	x		x	x		
Attributes	1					x	x	x	
Ordinals	3				x	x	x		
Nominals	4				x	x	x		
True position value	0	x				x	X		
Position: axis	0	x	x	x		x	x		
ELS	6	x				x	x	X	
Type error of	5	x				x	x	x	

X: variable setting
 Numerical values: fixed setting according to type

The possible contents for fields with a “defined field contents” remark are given in the appendix of this manual.

4.1 Variable Characteristics

K-Field	Content / Remark
K2004	0 = Characteristic type "variable" (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>
<i>K2009</i>	<i>Measured quantity (defined field contents)</i>
K2101	Nominal value / required in combination with K2112 / K2113
K2110	Alternative to K2112
K2111	Alternative to K2113
K2112	Alternative to K2110
K2113	Alternative to K2111
K2120	Lower limit type (defined field contents)
K2121	Upper limit type (defined field contents)
K8500	Subgroup size (for Process Capability Analysis)
K8501	Subgroup type / defined field contents (for Process Capability Analysis)

4.2 Attribute Characteristics

There are different notations for attribute characteristics (see Chapter 3, values portion).

K-Field	Content / Remark
K2004	1 = Characteristic type "attribute" (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>
<i>K2009</i>	<i>Measured quantity (defined field contents)</i>
K8500	Subgroup size (alternative K8505)
K8501	Subgroup type / defined field contents (only affects individual storage: K8503/x 2)
K8503	Subgroup type "attribute" (defined field contents)

Note about K8500 / K8505: Since version ME6 you have been able to replace field no. 8505 "Number of parts (ELS) by the subgroup size. Both can be used but the K8500 notation is preferable

If both K-fields are written in the data set, the general rule is that the last written record is the valid one.

Different examples displayed in the data format:

Constant subgroup size

K2002/1 Attribute charact.	{Characteristic description}
K2004/1 1	{Characteristic type attribute}
K8500/1 5	{Subgroup size 5}
K8503/1 1	{Subgroup type attribute constant}

Variable subgroup size

K2002/1 Attribute charact.	{Characteristic description}
K2004/1 1	{Characteristic type attribute}
K8500/1 5	{Subgroup size 5}
K8503/1 0	{Subgroup type attribute variable}

Individual storage

K2002/1 Attribute charact. .	{Characteristic description}
K2004/1 1	{Characteristic type attribute}
K8500/1 5	{Subgroup size 5}
K8501/1 1	{Subgroup size e.g. moving}
K8503/1 2	{Individual storage}

4.3 Ordinal Characteristics

K-Field	Content / Remark
K2004	3 = Characteristic type ordinal (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>
<i>K2009</i>	<i>Measured quantity (defined field contents)</i>
K2019	Ordinal classes catalogue
K8500	Subgroup size
K8501	Subgroup type / defined field contents

4.4 Nominal Characteristics

K-Field	Content / Remark
K2004	4 = Characteristic type nominal (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>

K2009	<i>Measured quantity (defined field contents)</i>
K2019	Ordinal classes catalogue
K8500	Subgroup size
K8501	Subgroup type / defined field contents

4.5 Positional Tolerances / 3D Positional Tolerances

In general, positional tolerances are always characteristics groupings consisting of variable characteristics. The 3D positional tolerance has been available since the release of V10 and can be applied in two different versions. The real 3D positional group includes the group type 3D positions and the normal positional tolerance is based on 3 axes. When you write 3D positions it is advisable to use the type of group designed for this purpose.

The superordinate position does not require any specification limits and measured values since it is calculated in qs-STAT automatically in the background. If there is not any measured value available, the value is 0 and thus attribute 256 is written in the field.

The coordinates are simple variable characteristics.

True Position:

K-Field	Content / Remark
K2004	0 = Characteristic type "variable" (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>
K2008	2 = Group type Positional Tolerance (defined field contents) 10 = Group type 3D-Positional Tolerance (defined field contents)
<i>K2009</i>	<i>109 = Measured quantity "Position" (defined field contents)</i>
K8500	Subgroup size (for Process Capability Analysis)
K8501	Subgroup type / defined field contents (for Process Capability Analysis)
	Downstream
K5xxx / K2030/31	Grouping

Coordinates:

K-Field	Content / Remark
K2004	0 = Characteristic type "variable" (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>

K2009	117 = Measured quantity "Coordinate" (defined field contents)
K2101	Nominal value / required in combination with K2112 / K2113
K2110	Alternative to K2112
K2111	Alternative to K2113
K2112	Alternative to K2110
K2113	Alternative to K2111
K8500	Subgroup size (for Process Capability Analysis)
K8501	Subgroup type / defined field contents (for Process Capability Analysis)
	Downstream
K5xxx / K2030/31	Grouping

Different examples displayed in the data format including a description of the structure:

K0100 4	Number of characteristics
K1002 Part	
K2002/1 3D position	{Description characteristics group}
K2004/1 0	
K2008/1 10	Group type 3D position
K2002/2 X-axis	Description of the first axis
K2004/2 0	
K2110/2 9,8	LSL first axis
K2111/2 10,2	USL first axis
K2002/3 Y-axis	Description second axis
K2004/3 0	
K2110/3 15,8	LSL second axis
K2111/3 16,2	USL second axis
K2002/4 Z-axis	Description third axis
K2004/4 0	
K2110/4 19,8	LSL third axis
K2111/4 20,2	USL third axis
K5111/1 1	Node 1 is part 1
K5112/2 1	Node 2 is characteristic 1
K5103/1 2	Node 1 contains node 2
K5102/2 2	Node 2 contains characteristic 2
K5102/2 3	Node 2 contains characteristic 3
K5102/2 4	Node 2 contains characteristic 4

4.6 Error Log Sheets

In case of error log sheets, it is important to consider that you do not have to enter the subgroup data of error types again (K8xxx), but the notation of measured values of the ELS and the types of errors is the same.

ELS:

K-Field	Content / Remark
K2004	6 = Characteristic type "ELS" (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>
K2008	6 = Group type "ELS" (defined field contents)
<i>K2009</i>	<i>Measured quantity (defined field contents)</i>
K8500	Subgroup size (alternative K8505)
K8501	Subgroup type / defined field contents (only affects individual storage: K8503/x 2)
K8503	Subgroup type "attribute" (defined field contents)
	Downstream
K5xxx / K2030/31	Grouping

Note on K8500 / K8505: Since version ME6 you may replace K8505 "Number parts (attribute)" by the respective subgroup size. Both notations are possible; however, K8500 is preferable.

In case you write both K-field in a data set, only the last written record applies.

Error types:

K-Field	Content / Remark
K2004	5 = Characteristic type "Error type" (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>
<i>K2009</i>	<i>Measured quantity (defined field contents)</i>
<i>K8500</i>	<i>Subgroup size / same as in ELS</i>
<i>K8501</i>	<i>Subgroup type / same as in ELS</i>
<i>K8503</i>	<i>Subgroup type "attribute" / same as in ELS</i>
	Downstream
K5xxx / K2030/31	Grouping

Notation in the data format including the description of the structure; example includes 3 types of error, subgroup size / type 2 / moving, individual storage

K0100 4	Number of characteristics
K1002 Part	
K2002/1 ELS	{Description of characteristic group}
K2004/1 6	
K2008/1 6	Group type ELS
K8500/1 2	Subgroup size 2
K8501/1 1	Subgroup size moving
K8503/1 2	Individual storage
K2002/2 Error type 1	Description of first error type
K2004/2 5	
K8500/2 2	Subgroup size 2
K8501/2 1	Subgroup size moving
K8503/2 2	Individual storage
K2002/3 Error type 2	Description second error type
K2004/3 5	
K8500/3 2	Subgroup size 2
K8501/3 1	Subgroup size moving
K8503/3 2	Individual storage
K2002/4 Error type 3	Description third error type
K2004/4 5	
K8500/4 2	Subgroup size 2
K8501/4 1	Subgroup size moving
K8503/4 2	Individual storage
K5111/1 1	Node 1 is part 1
K5112/2 1	Node 2 is characteristic 1
K5103/1 2	Node 1 contains node 2
K5102/2 2	Node 2 contains characteristic 2
K5102/2 3	Node 2 contains characteristic 3
K5102/2 4	Node 2 contains characteristic 4

4.7 Best Fit Move

Best-fit move groups include several subordinate positional tolerances and are thus some kind of nested characteristic group. Similar to positional tolerances, superordinate best-fit move characteristics do not contain any measured values. Wildcard character in the data format is the value 0 and attribute 256.

Superordinate BFM Group:

K-Field	Content / Remark
K2004	0 = Characteristic type "variable" (defined field contents)
<i>K2005</i>	<i>Characteristic class (defined field contents)</i>
K2008	8 = Group type "Superimposed group" (defined field contents)
<i>K2009</i>	<i>Measured quantity (defined field contents)</i>
	Downstream
K5xxx	Grouping

True position and coordinates:

As described in chapter 5 Positional Tolerances.

5 Applications in Measurement System Analysis

The following matrix serves the detailed identification of measurements taken in individual studies:

Measurement taken in the precision measuring room	Measurement taken by using a gage	Parameter description for repeated measurements
Reference (R_L)	Reference (R_G)	Reference L
Work piece (P_L)	Work piece (P_G)	Trial R

Number of different work pieces / references: Part N

This matrix indicates that work pieces and/or reference parts may be measured at different locations (in precision measuring room (L) or at the gage (G)). Descriptions for the combination from type of measured part and location R (reference) or P (part) as well as L (laboratory) and G (gage system) are used.

Note:

The matrix is standardized to show how different studies depend on one another. Displays in qs-STAT[®], individual standards or company guidelines might differ.

5.1 Features of Characteristic Data

Depending on the applied study, the following key fields must be filled in at the characteristic level. **Furthermore and depending on the used study, you might have to complete more and additional fields in order to be able to perform studies conforming certain specifications.**

Study	K2202	K2205	K2213	K2220	K2221	K2222
Type 1	1	-	X	1	1	X
Type 2	2	X	-	X	X	X
Type 3	3	X	-	1	X	X
Type 4	42	1	-	X	X	-
Type 5	51	1	-	X	X	-
CNOMO1	4	1	-	1	X	X
CNOMO2	5	X	-	1	X	X
Stability	93	-	-	1	X	-
Linearity	94	X	-	1	X	X
Short Range	92	X	-	X	1	-
GM Type 1A	81	X	-	-	-	1
Attribute	95	X	-	X	X	X
Kappa	96	X	-	X	X	X

X: variable setting
 - will be ignored
 Numbers: fixed setting according to GC type

The maximum or minimum values for fields with variable settings depend on different company guidelines and are not listed here.

As an alternative, it is possible to save measured values with or without using K-fields.

5.2 Features of Value Data

5.2.1 Notation using K-fields

Notation usage:

K00XX/CharacteristicNo/ValueNo/PartNo/TrialNo/Operator/Reference

For reference of the measured values and additional data in the GC matrices.


Study	K00xx
Type-1	CharNo/0/0/1/1/RefNo
Type-2	CharNo/0/Part/Trial/Oper.
Type-2 incl. Ref.	CharNo/0/Parts/Trial/Oper./RefNo
Type-3	CharNo/0/Part/Trial
Type-3 inc. Ref.	CharNo/0/Parts/Trial/1/RefNo
Type-4	CharNo/0/1/Trial/Oper.
Type-5	CharNo/0/1/Trial/Oper.
CNOMO1	CharNo/0/1/Trial/1/RefNo
CNOMO2	CharNo/0/Part/Trial/1/RefNo
Stability	CharNo/0/Part/Trial
Linearity	CharNo/0/Part/Trial/1/RefNo.
Short Range	CharNo/0/Parts/1/Oper.
GM Type-1A	CharNo/0/Parts/1/Oper./RefNo
Attribute	CharNo/0/Parts/Trial/Oper./RefNo
Kappa	CharNo/0/Parts/Trial/Oper./RefNo

Notation K0001/0/... (CharNo = 0) is not allowed !

5.2.1.1 Type-1 Study

Matrix

Measurement (R _G)
1
...
...
L


 L References

Data format settings

K-field	Description	
K2202	GC-Study	1
K2205	Number of parts	0
K2220	Number of operators	1
K2221	Number of trials	1
K2222	Number of reference measurements	L

Using K-fields at the value level:

K00xx/CharNo/0/0/1/1/RefNo

Example for Type-1 Study

Settings:

K2202	GC-Study	1
K2205	Number of parts	0
K2220	Number of operators	1
K2221	Number of trials	1
K2222	Number of reference measurements	10

Measured values

Measurement	Measured value
1	10.1
2	10.2
3	10.1
4	10.4
5	10.15
6	10.1
7	10.1
8	10.1
9	10.1
10	10.1

Storing values for characteristic no. X

K00xx/CharNo/0/0/1/1/RefNo

K0001/X/0/0/1/1/1	10.1	{ Reference 1 }
K0001/X/0/0/1/1/2	10.2	
K0001/X/0/0/1/1/3	10.1	
K0001/X/0/0/1/1/4	10.4	
K0001/X/0/0/1/1/5	10.15	
K0001/X/0/0/1/1/6	10.1	
K0001/X/0/0/1/1/7	10.1	
K0001/X/0/0/1/1/8	10.1	

..

5.2.1.2 Type-2 Study

Matrix

K Operators

	Operator 1 (P _G)			...	Operator K (P _G)		
Part No	Trial 1	...	Trial R	...	Trial 1	...	Trial R
1							
..							
..							
..							
n							

R Trials

N Parts

Settings

K2202	GC-Study	2
K2205	Number of parts	N
K2220	Number of operators	K
K2221	Number of trials	R
K2222	Number of reference measurements	0

Using K-fields at the value level:

K00xx/CharNo/0/Part/Trial/Oper

Example for Type-2 Study

Settings:

K2202	GC-Study	2
K2205	Number of parts	5
K2220	Number of operators	2
K2221	Number of trials	3
K2222	Number of reference measurements	0

Measured values

Part No	Operator 1			Operator 2		
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2	Trial 3
1	10.111	10.112	10.113	10.211	10.212	10.213
2	10.121	10.122	10.123	10.221	10.222	10.223
3	10.131	10.132	10.133	10.231	10.232	10.233
4	10.141	10.142	10.143	10.241	10.242	10.243
5	10.151	10.152	10.153	10.251	10.252	10.253

Storing values for characteristic no. X

K00xx/CharNo/0/Part/Trial/Oper

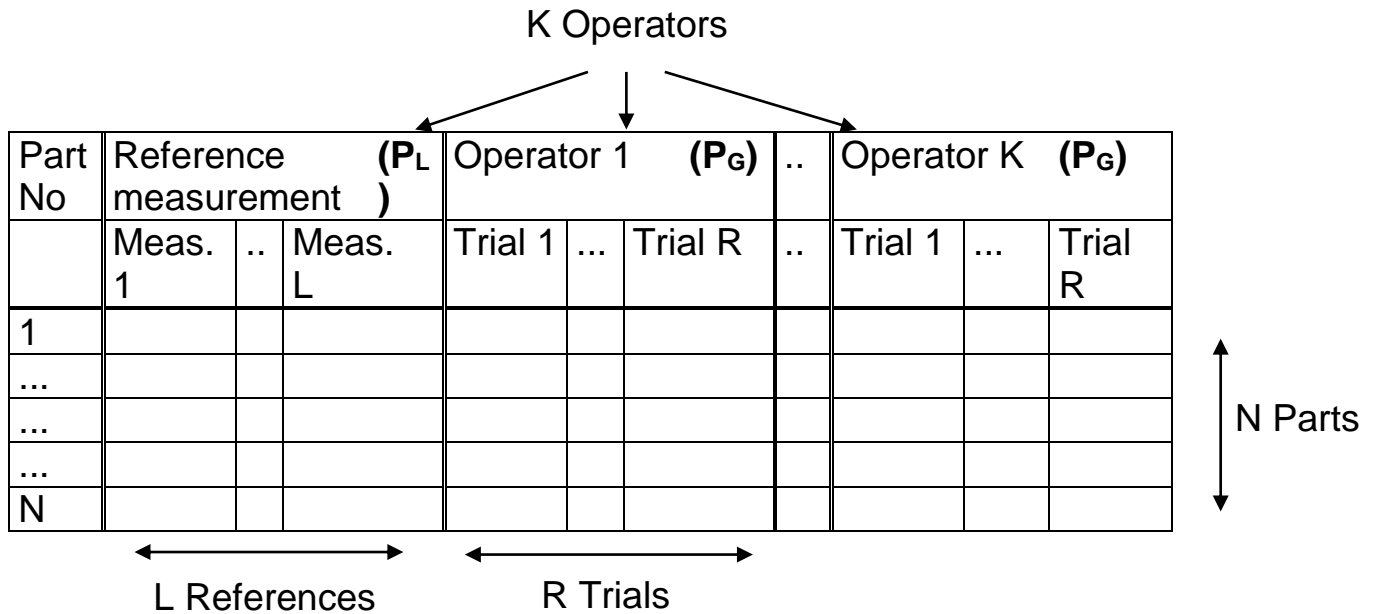
```

K0001/X/0/1/1/1 10.111    { Part=1, Trial = 1, Oper = 1}
K0001/X/0/2/1/1 10.121
K0001/X/0/3/1/1 10.131
K0001/X/0/4/1/1 10.141
K0001/X/0/5/1/1 10.151
K0001/X/0/1/2/1 10.112    { Part=1, Trial = 2, Oper = 1}
K0001/X/0/2/2/1 10.122
K0001/X/0/3/2/1 10.132
...
K0001/X/0/3/2/2 10.232    { Part=3, Trial = 2, Oper = 2}
....

```

5.2.1.3 Type-2 Study including reference values

Matrix



Settings:

K2202	GC-Study	2
K2205	Number of parts	N
K2220	Number of operators	K
K2221	Number of trials	R
K2222	Number of reference measurements	L

Using K-fields at the value level:

K00xx/CharNo/0/Parts/Trial/Oper/RefNo

Example for Type-2 Study including reference values

Settings:

K2202	GC-Study	2
K2205	Number of parts	5
K2220	Number of operators	2
K2221	Number of trials	2
K2222	Number of reference measurements	2

Measured values

Part No.	Ref. measurement		Operator 1		Operator 2	
	Meas. 1	Meas. 2	Trial 1	Trial 2	Trial 1	Trial 2
1	10.1111	10.1112	10.111	10.112	10.211	10.212
2	10.1211	10.1212	10.121	10.122	10.221	10.222
3	10.1311	10.1312	10.131	10.132	10.231	10.232
4	10.1411	10.1412	10.141	10.142	10.241	10.242
5	10.1511	10.1512	10.151	10.152	10.251	10.252

Storing values for characteristic no. X

K00xx/CharNo/0/Parts/Trial/Oper/RefNo

```

K0001/X/0/1/1/0/1  10.1111 { Part=1, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/2/1/0/1  10.1211 { Part=2, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/3/1/0/1  10.1311
K0001/X/0/4/1/0/1  10.1411
K0001/X/0/5/1/0/1  10.1511
K0001/X/0/1/1/0/2  10.1112 { Part=1, Trial = 1, Oper = 0, RefNo = 2}
....
K0001/X/0/1/1/1/0  10.111  { Part=1, Trial = 1, Oper = 1, RefNo = 0}
K0001/X/0/2/1/1/0  10.121
K0001/X/0/3/1/1/0  10.131
K0001/X/0/4/1/1/0  10.141
K0001/X/0/5/1/1/0  10.151
K0001/X/0/1/2/1/0  10.112  { Part=1, Trial = 2, Oper = 1, RefNo = 0}
K0001/X/0/2/2/1/0  10.122
K0001/X/0/3/2/1/0  10.132
...
K0001/X/0/3/2/2/0  10.232  { Part=3, Trial = 2, Oper = 2, RefNo = 0}
....

```

5.2.1.4 Type-3 Study

Matrix

Part No.	Trial 1 (P_G)	...	Trial R (P_G)
1			
..			
..			
..			
n			

← R Trials →

↑ N Parts ↓

Settings

K2202	GC-Study	3
K2205	Number of parts	N
K2220	Number of operators	1
K2221	Number of trials	R
K2222	Number of reference measurements	0

Using K-fields at the value level:

K00xx/CharNo/0/Part/Trial

Example for Type-3 Study

Settings:

K2202	GC-Study	3
K2205	Number of parts	5
K2220	Number of operators	1
K2221	Number of trials	3
K2222	Number of reference measurements	0

Measured values

Part No.	Trial 1	Trial 2	Trial 3
1	10.111	10.112	10.113
2	10.121	10.122	10.123
3	10.131	10.132	10.133
4	10.141	10.142	10.143
5	10.151	10.152	10.153

Storing values for characteristic no. X

K00xx/CharNo/0/Part/Trial

```

K0001/X/0/1/1  10.111    { Part=1, Trial = 1}
K0001/X/0/2/1  10.121
K0001/X/0/3/1  10.131
K0001/X/0/4/1  10.141
K0001/X/0/5/1  10.151
K0001/X/0/1/2  10.112    { Part=1, Trial = 2}
K0001/X/0/2/2  10.122
K0001/X/0/3/2  10.132

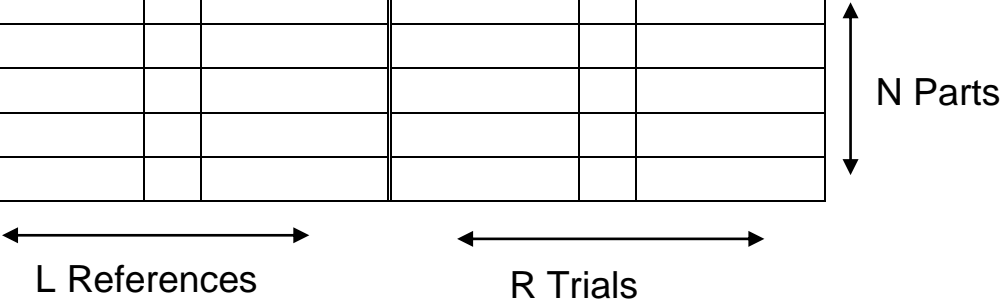
```

...

5.2.1.5 Type-3 Study including reference values

Matrix

Part No.	Reference measurement (P_L)			Work piece (P_G)		
	Measurement 1	...	Measurement L	Trial 1	...	Trial R
1						
...						
...						
...						
N						



Settings:

K2202	GC-Study	3
K2205	Number of parts	N
K2220	Number of operators	1
K2221	Number of trials	R
K2222	Number of reference measurements	L

Using K-fields at the value level:

K00xx/CharNo/0/Parts/Trial/Oper/RefNo

Example for Type-3 Study including reference values

Settings:

K2202	GC-Type	3
K2205	Number of parts	5
K2220	Number of operators	1
K2221	Number of trials	3
K2222	Number of reference measurements	2

Measured values

Part No.	Reference measurement		Trial 1	Trial 2	Trial 3
	Meas. 1	Meas. 2			
1	10.1111	10.1112	10.111	10.112	10.113
2	10.1211	10.1212	10.121	10.122	10.123
3	10.1311	10.1312	10.131	10.132	10.133
4	10.1411	10.1412	10.141	10.142	10.143
5	10.1511	10.1512	10.151	10.152	10.153

Storing values for characteristic no. X

K00xx/CharNo/0/Parts/Trial/Oper/RefNo

```

K0001/X/0/1/1/0/1  10.1111  { Part=1, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/2/1/0/1  10.1211  { Part=2, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/3/1/0/1  10.1311
K0001/X/0/4/1/0/1  10.1411
K0001/X/0/5/1/0/1  10.1511
K0001/X/0/1/1/0/2  10.1112  { Part=1, Trial = 1, Oper = 0, RefNo = 2}
....
K0001/X/0/1/1/1/0  10.111   { Part=1, Trial = 1, Oper = 1, RefNo = 0}
K0001/X/0/2/1/1/0  10.121
K0001/X/0/3/1/1/0  10.131
K0001/X/0/4/1/1/0  10.141
K0001/X/0/5/1/1/0  10.151

```


5.2.1.6 Type-4 Study

Matrix

	1 st repeat measurement (Operator 1)	...	K th repeat measurement (Operator K)
1			
...			
...			
...			
R			

←————— K Operators —————→

↑ R Trials ↓

Settings:

K2202	GC-Study	42
K2205	Number of parts	1
K2220	Number of operators	K
K2221	Number of trials	R
K2222	Number of reference measurements	0

Using K-fields at the value level:

K00xx/CharNo/0/1/Trial/Oper

Example for Type-4 Study

Settings:

K2202	GC-Study	42
K2205	Number of parts	1
K2220	Number of operators	2
K2221	Number of trials	5
K2222	Number of reference measurements	0

Measured values

	1 st repeat measurement (Operator 1)	2 nd repeat measurement (Operator 2)
(Trial) 1	10.111	10.112
(Trial) 2	10.121	10.122
(Trial) 3	10.131	10.132
(Trial) 4	10.141	10.142
(Trial) 5	10.151	10.152

Storing values for characteristic no. X

K00xx/CharNo/0/1/Trial/Oper

K0001/X/0/1/1/1 10.111 { Part=1, Trial = 1, Oper = 1 }
 K0001/X/0/1/2/1 10.121
 K0001/X/0/1/3/1 10.131
 K0001/X/0/1/4/1 10.141
 K0001/X/0/1/5/1 10.151
 K0001/X/0/1/1/2 10.112 { Part=1, Trial = 1, Oper = 2}
 K0001/X/0/1/2/2 10.122
 K0001/X/0/1/3/2 10.132

...

5.2.1.7 Type-5 Study

Matrix

	Master	Part
1		
...		
R		
...		
...		
K		

Settings:

K2202	GC-Study	51
K2205	Number of parts	1
K2220	Number of operators (Masters)	K
K2221	Number of trials	R
K2222	Number of reference measurements	0

Using K-fields at the value level:

K00xx/CharNo/0/1/Trial/Oper

Example for Type-5 Study

Settings:

K2202	GC-Study	51
K2205	Number of parts	1
K2220	Number of operators (masters)	5
K2221	Number of trials	2
K2222	Number of reference measurements	0

Measured values

	Master	Part
1	10.111	10.112
2	10.121	10.122
3	10.131	
4	10.141	
5	10.151	

Storing values for characteristic no. X

K00xx/CharNo/0/1/Trial/Oper

```

K0001/X/0/1/0/1 10.111    { Part=1, Trial = 0, Oper = 1}
K0001/X/0/1/0/2 10.121
K0001/X/0/1/0/3 10.131
K0001/X/0/1/0/4 10.141
K0001/X/0/1/0/5 10.151
K0001/X/0/1/1/0 10.112    { Part=1, Trial = 1, Oper = 0}
K0001/X/0/1/2/0 10.122

```

5.2.1.8 Complete CNOMO Study

The complete CNOMO study includes a

- repeated measurement of the setting master on the gage
- repeated measurement of a work piece on the gage
- measurement of several work pieces on the gage
- measurement of several work pieces in the precision measuring room

In order to illustrate this study in the data format, pairs of characteristics must be created. One of the characteristics in the pair must be called “CNOMO1” study and the second “CNOMO2” study.

The characteristic type “CNOMO1” study contains the data from the “preliminary phases” of the characteristic:

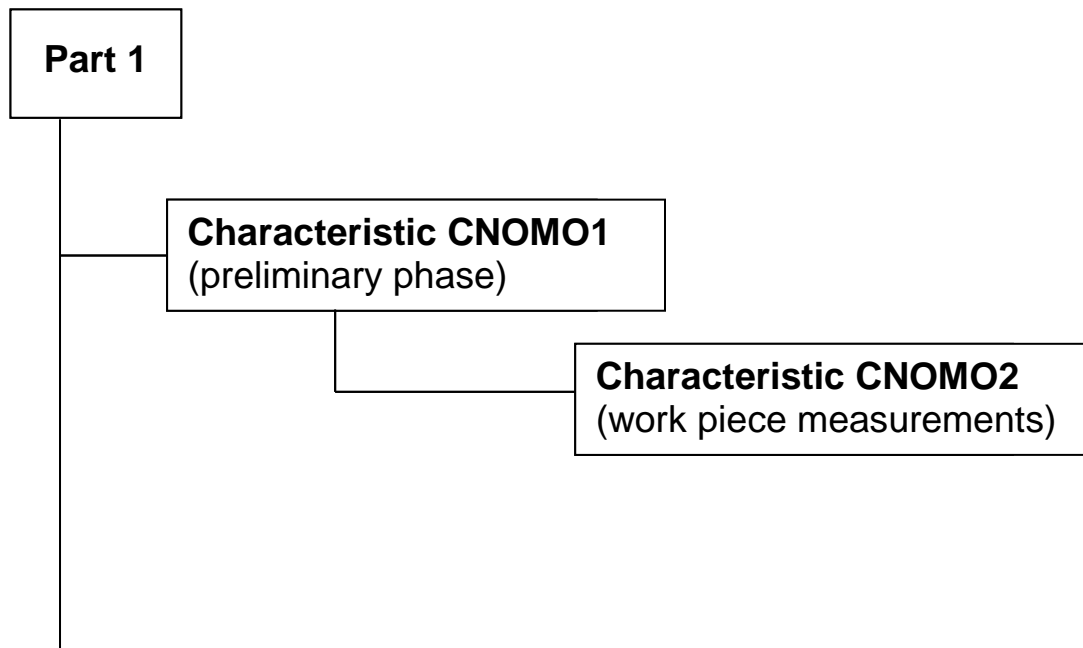
- repeated measurement of the setting master on the gage
- repeated measurement of a work piece on the gage

The characteristic type “CNOMO2” study contains the data of the work piece measurements of the characteristic:

- measurement of several work pieces on the gage
- measurement of several work pieces in the precision measuring room

Characteristics structure of a complete CNOMO study

The pairs of characteristics must be built hierarchically with the help of the data format's grouping mechanisms, so that the following characteristics structure will be created in the data format for a tested characteristic:



This structure must be repeated for every tested characteristic.

5.2.1.9 CNOMO 1

Matrix

Part	Master (R_G)			Work piece (P_G)		
	1	..	L	1	..	R
1 (=N)						

N (= 1) Parts

Settings:

K2202	GC-Study	4
K2205	Number of parts	1
K2220	Number of operators	1
K2221	Number of trials	R
K2222	Number of reference measurements	L

Using K-fields at the value level:

K00xx/CharNo/0/1/Trial/1/RefNo

Remark

The CNOMO 1 study contains the “preparatory phase” and includes

- the repeated measurement of the setting master
- the repeated measurement of a work piece on the gage.

The decisive fields for the identification of a characteristic as a CNOMO 1 study are listed above. In addition, the necessary reference figures and data for a characteristic definition must be recorded.

Example for a CNOMO 1 Study

Settings:

K2202	GC-Study	4
K2205	Number of parts	1
K2220	Number of operators	1
K2221	Number of trials	5
K2222	Number of reference measurements	2

Measured values

	Master		Work piece					
Part	1	2	1	2	3	4	5	
1	10.111	10.121	10.112	10.122	10.132	10.142	10.152	N (=1) Parts

Storing values for characteristic no. X

K00xx/CharNo/0/1/Trial/1/RefNo

K0001/X/0/1/0/1/1 10.111 { Part=1, Trial = 0, Oper = 1, RefNo = 1}
 K0001/X/0/1/0/1/2 10.121
 K0001/X/0/1/1/1/0 10.112 { Part=1, Trial = 1, Oper = 1, RefNo = 0}
 K0001/X/0/1/2/1/0 10.122
 K0001/X/0/1/3/1/0 10.132
 K0001/X/0/1/4/1/0 10.142
 K0001/X/0/1/5/1/0 10.152

5.2.1.10 CNOMO 2

Matrix

	Precision meas. (P _G) technique			Work piece measurements (P _G)		
Part	1	..	L	1	..	R
1						
..						
..						
..						
..						
N						

←—————→
←—————→

L References
R Trials

N Parts

Settings:

K2202	GC-Study	5
K2205	Number of parts	N
K2220	Number of operators	1
K2221	Number of trials	R
K2222	Number of reference measurements	L

Using K-fields at the value level:

K00xx/CharNo/0/Part/Trial/1/RefNo

Remark

The CNOMO 2 study contains the data of the work piece measurements of a certain characteristic:

- measurement of several work pieces on the gage
- measurement of several work pieces in the precision measuring room

The decisive fields for the identification of a characteristic as a CNOMO 2 study are listed above. In addition, the necessary reference figures and data for a characteristics definition must be recorded.

Example for a CNOMO 2 Study

Settings:

K2202	GC-Study	5
K2205	Number of parts	3
K2220	Number of operators	1
K2221	Number of trials	4
K2222	Number of reference measurements	2

Measured values

Part	Precision meas. technique		Work piece measurements			
	1	2	1	2	3	4
1	10.211	10.221	10.111	10.121	10.131	10.141
2	10.212	10.222	10.112	10.122	10.132	10.142
3	10.213	10.223	10.113	10.123	10.133	10.143

L References
R Trials

N Parts

Storing values for characteristic no. X

K00xx/CharNo/0/Part/Trial/1/RefNo

```

K0001/X/0/1/1/1/0  10.111 { Part=1, Trial = 1, Oper = 1, RefNo =0}
K0001/X/0/1/2/1/0  10.121
K0001/X/0/1/3/1/0  10.131
K0001/X/0/1/4/1/0  10.141
K0001/X/0/2/1/1/0  10.112 { Part=2, Trial = 1, Oper = 1, RefNo = 0}
K0001/X/0/2/2/1/0  10.122
K0001/X/0/2/3/1/0  10.132
K0001/X/0/2/4/1/0  10.142
...
K0001/X/0/1/0/1/1  10.211 { Part=1, Trial = 0, Oper = 1, RefNo = 1}
K0001/X/0/1/0/1/2  10.211
....

```

5.2.1.11 Stability

Matrix

Subgroup	1 st measurement	...	R measurement
1			
..			
..			
..			
..			
..			
M

← R Trials →

M Subgroups

Settings:

K2202	GC-Study	93
K2205	Number of parts	-
K2220	Number of operator	1
K2221	Number of trials	R
K2222	Number of reference measurements	0

The number of subgroups (M) is not predetermined.

Using K-fields at the value level:

K00xx/CharNo/0/Part/Trial

Example for a Stability Study

Settings:

K2202	GC-Study	93
K2205	Number of parts	-
K2220	Number of operators	1
K2221	Number of trials	2
K2222	Number of reference measurements	0

Measured values

Subgroup	1 st Trial	2 nd Trial
1	10.111	10.112
2	10.121	10.122
3	10.131	10.132
4	10.141	10.142
5	10.151	10.152
N

Storing values for characteristic no. X

K00xx/CharNo/0/Part/Trial

K0001/X/0/1/1	10.111	{ Part=1, Trial = 1}
K0001/X/0/2/1	10.121	{ Part=2, Trial = 1}
K0001/X/0/3/1	10.131	
K0001/X/0/4/1	10.141	
K0001/X/0/5/1	10.151	
K0001/X/0/1/2	10.112	{ Part=1, Trial = 2}
K0001/X/0/2/2	10.122	{ Part=2, Trial = 2}
K0001/X/0/3/2	10.132	

...

5.2.1.12 Linearity

Matrix

	Master Measurement (R _L)			Measurements using Gage (R _G)		
Part	1	...	L	1	...	R
1						
..						
..						
..						
..						
N						

←—————→
←—————→

L References R Trials

N Parts

Settings:

K2202	GC-Study	94
K2205	Number of parts	N
K2220	Number of operators	1
K2221	Number of trials	R
K2222	Number of reference measurements	L

Using K-fields at the value level:

K00xx/CharNo/0/Part/Trial/1/RefNo

Example for a Linearity Study

Settings:

K2202	GC-Study	94
K2205	Number of parts	3
K2220	Number of operators	1
K2221	Number of trials	4
K2222	Number of reference measurements	2

Measured values

Part	Master measurement		Work piece measurements			
	1	2	1	2	3	4
1	10.211	10.221	10.111	10.121	10.131	10.141
2	10.212	10.222	10.112	10.122	10.132	10.142
3	10.213	10.223	10.113	10.123	10.133	10.143

Storing values for characteristic no. X

K00xx/CharNo/0/Part/Trial/1/RefNo

```

K0001/X/0/1/1/1/0  10.111 { Part=1, Trial = 1, Oper = 1, RefNo =0}
K0001/X/0/1/2/1/0  10.121
K0001/X/0/1/3/1/0  10.131
K0001/X/0/1/4/1/0  10.141
K0001/X/0/2/1/1/0  10.112 { Part=2, Trial = 1, Oper = 1, RefNo = 0}
K0001/X/0/2/2/1/0  10.122
K0001/X/0/2/3/1/0  10.132
K0001/X/0/2/4/1/0  10.142
...
K0001/X/0/1/0/1/1  10.211 { Part=1, Trial = 0, Oper = 1, RefNo = 1}
K0001/X/0/1/0/1/2  10.221
....

```

5.2.1.13 Short Range

Matrix

Part No.	Operator 1 (P_G)	...	Operator K (P_G)
1			
..			
..			
...			
N			

←————— K Operators —————→

↑ N Parts ↓

Settings:

K2202	GC-Study	92
K2205	Number of parts	N
K2220	Number of operators	K
K2221	Number of trials	1
K2222	Number of reference measurements	0

Using K-fields at the value level:

K00xx/CharNo/0/Part/1/Oper

Example for Short Range Study

Settings:

K2202	GC-Study	92
K2205	Number of parts	5
K2220	Number of operators	2
K2221	Number of trials	1
K2222	Number of reference measurements	0

Measured values

Part No.	Operator 1	Operator 2
1	10.111	10.211
2	10.121	10.221
3	10.131	10.231
4	10.141	10.241
5	10.151	10.251

Storing values for characteristics no. X

K00xx/CharNo/0/Part/1/Oper

```

K0001/X/0/1/1/1 10.111    { Part=1, Trial = 1, Oper = 1}
K0001/X/0/2/1/1 10.121
K0001/X/0/3/1/1 10.131
K0001/X/0/4/1/1 10.141
K0001/X/0/5/1/1 10.151
K0001/X/0/1/1/2 10.211    { Part=1, Trial = 1, Oper = 2}
K0001/X/0/2/1/2 10.221    { Part=2, Trial = 1, Oper = 2}

```

....

5.2.1.14 GM Type-1A Study

Matrix

	Reference	Measurement (R_G)
1	1	1
2
...
N	N	N

↕ N Parts

Data format settings

K-field	Description	
K2202	GC-Type	81
K2205	Number of parts	N
K2220	Number of operators	1
K2221	Number of trials	1
K2222	Number of reference measurements	1

Using K-fields at the value level:

K00xx/CharNo/0/Part/1/1/RefNo

Example for GM Type-1A Study

Settings:

K2202	GC-Study	81
K2205	Number of parts	10
K2220	Number of operators	1
K2221	Number of trials	1
K2222	Number of reference measurements	1

Measured values

Measurement	Reference	Value
1	10.1111	10.1110
2	10.1211	10.1210
3	10.1311	10.1310
4	10.1411	10.1410
5	10.1511	10.1510
6	10.1611	10.1610
7	10.1711	10.1710
8	10.1811	10.1810
9	10.1911	10.1910
10	10.1011	10.1010

Storing values for characteristic no. X

K00xx/CharNo/0/Part/1/Oper/RefNo

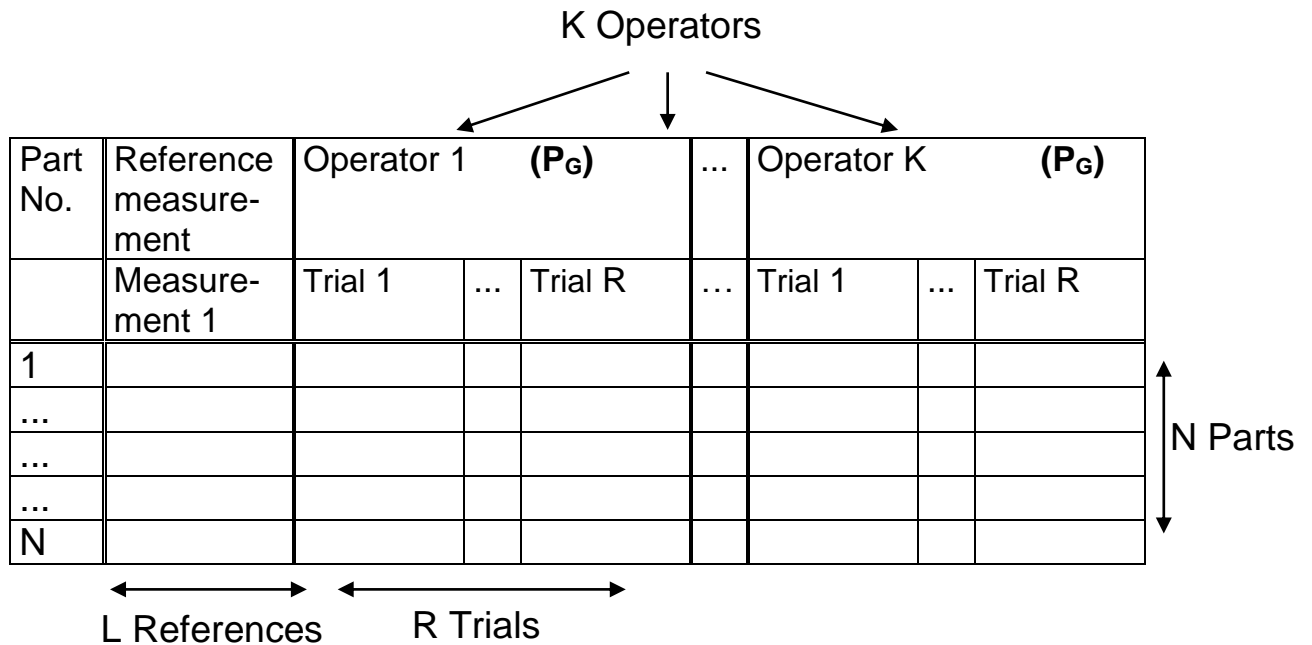
```

K0001/X/0/1/1/0/1  10.1111 { Part=1, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/2/1/0/1  10.1211
K0001/X/0/3/1/0/1  10.1311
K0001/X/0/4/1/0/1  10.1411
K0001/X/0/5/1/0/1  10.1511 { Part=5, Trial = 1, Oper = 0, RefNo = 1}
...
K0001/X/0/1/1/1/0  10.1110 { Part=1, Trial = 1, Oper = 1, RefNo = 0}
K0001/X/0/2/1/1/0  10.1210
K0001/X/0/3/1/1/0  10.1310 { Part=3, Trial = 1, Oper = 1, RefNo = 0}
...

```

5.2.1.15 Attribute GC Study

Matrix



Settings:

K2202	GC-Type	95
K2205	Number of parts	N
K2220	Number of operators	K
K2221	Number of trials per operator	R
K2222	Number of reference measurements	L

Using K-fields at the value level:

K00xx/CharNo/0/Parts/Trial/Oper/RefNo

Note:

The positive or negative test result will be indicated by the measured value 1 or 0 respectively when saving the file. The general notation is the same as the notation of a variable characteristic due to measured values that might be available.

Example for attribute GC Study

Settings:

K2202	GC-Study	95
K2205	Number of parts	5
K2220	Number of operators	2
K2221	Number of trial	2
K2222	Number of reference measurements	1

Measured values

Part No.	Reference measurement	Operator 1		Operator 2	
		Trial 1	Trial 2	Trial 1	Trial 2
	Meas. 1				
1	10.1111	+	+	+	+
2	10.1211	+	-	+	-
3	10.1311	-	+	-	+
4	10.1411	-	-	-	-
5	10.1511	-	+	+	+

Storing values for characteristic no. X

K00xx/CharNo/0/Parts/Trial/Oper/RefNo

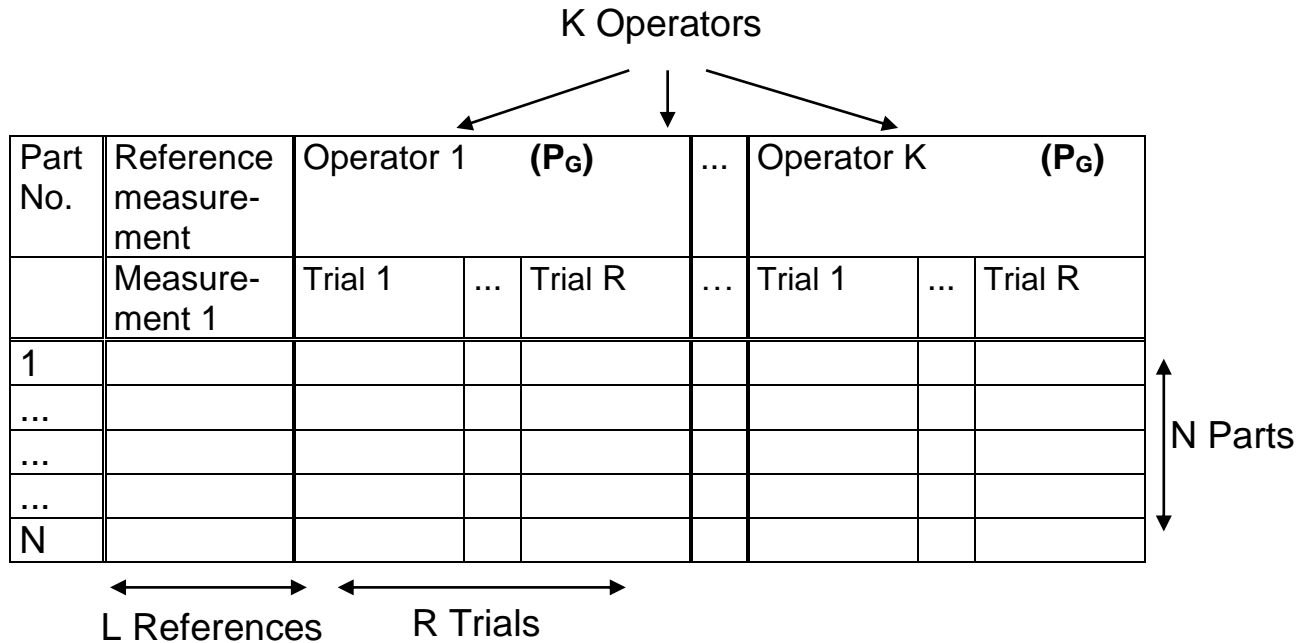
```

K0001/X/0/1/1/0/1  10.1111  { Part=1, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/2/1/0/1  10.1211  { Part=1, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/3/1/0/1  10.1311
K0001/X/0/4/1/0/1  10.1411
K0001/X/0/5/1/0/1  10.1511
...
K0001/X/0/1/1/1/0  1          { Part=1, Trial = 1, Oper = 1, RefNo = 0}
K0001/X/0/2/1/1/0  1
K0001/X/0/3/1/1/0  0
K0001/X/0/4/1/1/0  0
K0001/X/0/5/1/1/0  0
K0001/X/0/1/2/1/0  1          { Part=1, Trial = 2, Oper = 1, RefNo = 0}
K0001/X/0/2/2/1/0  0
K0001/X/0/3/2/1/0  1
...
K0001/X/0/3/2/2/0  1          { Part=3, Trial = 2, Oper = 2, RefNo = 0}
...

```

5.2.1.16 Ordinal/Nominal Study

Matrix



Settings:

K2202	GC-Type	96
K2205	Number of parts	N
K2220	Number of operators	K
K2221	Number of trials per operator	R
K2019	Ordinal Classes Catalogue	

Using K-fields at the value level:

K00xx/CharNo/0/Parts/Trial/Oper/RefNo

Note:

Compared to the notation of ordinal/nominal characteristics, measured values are also written as consecutive catalogue record numbers.

Example for ordinal/nominal GC Study

Settings:

K2202	GC-Study	96
K2205	Number of parts	5
K2220	Number of operators	2
K2221	Number of trial	2
K2222	Number of reference measurements	1
K2019	Ordinal classes catalogue	2

The example shows the short notation of an ordinal class catalogue. It should be used as a three-level sub-catalogue.

K4230/0 ordinal class catalogue

K4233/1 not OK

K4233/2 OK

K4233/3 rework

K4233/4 OK

K4233/5 very bad

K4233/6 bad

K4233/7 borderline

K4233/8 good

K4233/9 very good

K4230/2 3-level

K4231/2 1

K4231/2 3

K4231/2 4

Measured values as displayed in the values mask:

Part No.	Reference measurement	Operator 1		Operator 2	
		Meas 1	Meas 2	Meas 1	Meas 2
1	not OK	not OK	rework.	not OK	not OK
2	OK	OK	OK	OK	OK
3	not OK	OK	not OK	not OK	not OK
4	rework	rework.	not OK	rework.	rework.
5	OK	OK	OK	OK	not OK

Measured values with their correct notation:

Part No.	Reference measurement	Operator 1		Operator 2	
		Meas 1	Meas 2	Meas 1	Meas 2
1	1	1	3	1	1
2	4	4	4	4	4
3	1	4	1	1	1
4	3	3	1	3	3
5	4	4	4	4	1

Storing values for characteristic no. X

K00xx/CharNo/0/Parts/Trial/Oper/RefNo
--

```

K0001/X/0/1/1/0/1  10.1111  { Part=1, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/2/1/0/1  10.1211  { Part=1, Trial = 1, Oper = 0, RefNo = 1}
K0001/X/0/3/1/0/1  10.1311
K0001/X/0/4/1/0/1  10.1411
K0001/X/0/5/1/0/1  10.1511
...
K0001/X/0/1/1/1/0  1          { Part=1, Trial = 1, Oper = 1, RefNo = 0}
K0001/X/0/2/1/1/0  1
K0001/X/0/3/1/1/0  0
K0001/X/0/4/1/1/0  0
K0001/X/0/5/1/1/0  0
K0001/X/0/1/2/1/0  1          { Part=1, Trial = 2, Oper = 1, RefNo = 0}
K0001/X/0/2/2/1/0  0
K0001/X/0/3/2/1/0  1
...
K0001/X/0/3/2/2/0  1          { Part=3, Trial = 2, Oper = 2, RefNo = 0}
...

```


Stability

Part No.	Repetitions				
	1	2	3	4	5
1	→				
2	→				
3	→				
4	→				
5	→				
n	→				

Linearity

Rep.	Number of Parts				Number of Parts			
	Part 1	Part 2	Part 3	Part 4	Part 1	Part 2	Part 3	
Rep. 1	↘				→			
Rep. 2	↓	↘				→		
Rep. 3	↘				→			
Rep. 4	↓	↘				→		
Rep. n	↓	↘				→		

Short Range

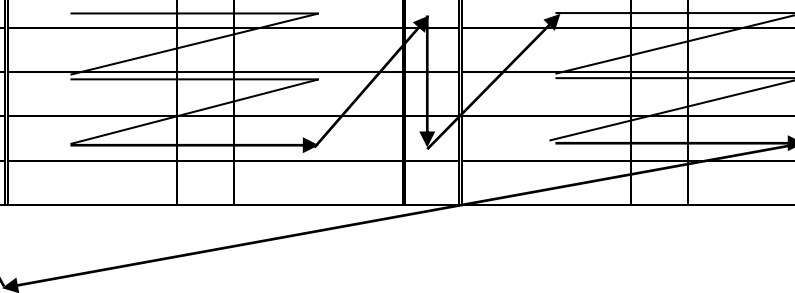
No. of parts	Operator 1	Operator 2	No. of Operators n
1	→		
2	→		
3	→		
4	→		
5	→		
n	→		

GM Type-1A Study

	Reference	Measurement (R _G)
1	1	1
2
...	...	→
N	N	N

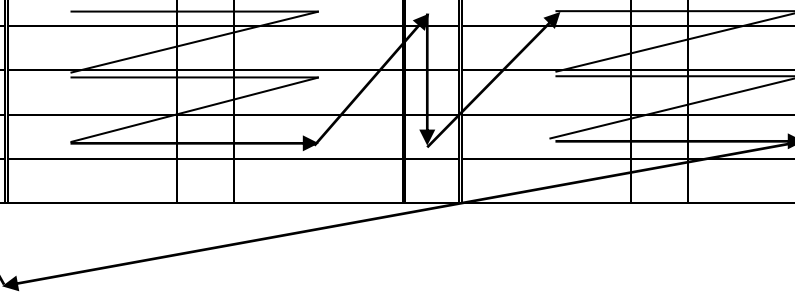
Attribute GC Study

Part No.	Reference measurement	Operator 1 (P _G)			...	Operator K (P _G)		
		Trial 1	...	Trial R		Trial 1	...	Trial R
1	Measurement 1	[Zigzag line]			[Zigzag line]	[Zigzag line]		
...		[Zigzag line]				[Zigzag line]		
...		[Zigzag line]				[Zigzag line]		
...		[Zigzag line]				[Zigzag line]		
N		[Zigzag line]				[Zigzag line]		



Ordinal/Nominal GC Study

Part No.	Reference measurement	Operator 1 (P _G)			...	Operator K (P _G)		
		Trial 1	...	Trial R		Trial 1	...	Trial R
1	Measurement 1	[Zigzag line]			[Zigzag line]	[Zigzag line]		
...		[Zigzag line]				[Zigzag line]		
...		[Zigzag line]				[Zigzag line]		
...		[Zigzag line]				[Zigzag line]		
N		[Zigzag line]				[Zigzag line]		



6 Writing modes

The text in curved brackets only explains the examples and should not be included in the actual data exchange format. In order to get a better overview, the K-fields are separated by blank lines into single blocks. These blank lines may be deleted.

6.1 DFQ Structure

The example describes the data of one part with three characteristics. All the data will be saved to a shared DFQ file.

Both versions of the notation were used in the descriptive portion, i.e. several characteristics in one line with corresponding characteristic separators and the extension of the key number by a numerical characteristics number as well.

The values also show mixed notations, i.e. with and without K-fields. Besides the measured values, additional data were also recorded. A value line is structured as follows:

Value¶	{Measured value of the first characteristic}
Attribute¶	{Attribute (0 = valid record) of the measured value}
Date/Time¶	{Date/Time of recording}
Event¶	{Events of the measurement (0 = no events)}
#Batchα	{Batch number}
Value¶	{Measured value of the second characteristic}
Attributeα	{Attribute (0 = valid reading) of the measured value}
SG size¶	{Subgroup size* of the third, attribute characteristic}
Error¶	{Number of errors within a subgroup}
0¶	{Fixed record}
0<CR><LF>	{Attribute (0 = valid record)}

* multiplied by 1000

K0100 3	{3 characteristics in the file}
K1001 08/15	{part number}
K1002 part 1	{part description}
K2004/0 0	{char. type "variable" for all characteristics}
K2005/0 4	{characteristics class "critical" for all chars.}
K2022/0 2	{number of decimal places for all chars.}
K2302/0 machine 1	{machine description for all chars.}
K2001 1.0#1.2#1.3	{characteristics no. for 3 characteristics}
K2101 10.00#1.00	{nominal value for M1+ M2}
K2110 9.95#0.98	{lower limit for M1+ M2}
K2111 10.05#1.02	{upper limit for M1 + M2}
K2142 cm#cm	{unit for M1 + M2}
K2001/1 1.1	{characteristics number for M1 overwritten}
K2002/1 length	{characteristics description M1}
K2311/1 turning	{production type M1}
K2402/1 calliper	{gage description M1}
K2002/2 diameter	{characteristics description M2}
K2022/2 3	{decimal places for M2 overwritten}
K2402/2 calliper	{gage description M2}
K2002/3 thread	{characteristics description M3}
K2004/3 1	{characteristics type "attribute" for M3 overwritten}
K2011/3 200	{distribution model Poisson distribution for M3}
K2311/3 cutting	{production type M3}
K2402/3 gage	{gage M3}
9.94#0#12.08.99/15:23:45#0#123#0.966#0#100000#1#0#0	
9.95#0#12.08.99/15:23:58#0#123#1.091#0#100000#2#0#0	
9.98#0#12.08.99/15:24:12#0#123#0.993#0#100000#3#0#0	
10.01#0#12.08.99/15:24:38#0#123#0.964#0#100000#1#0#0	
10.02#0#12.08.99/15:25:02#0#123#0.915#0#100000#1#0#0	
10.06#0#12.08.99/15:25:37#0#123#1.011#0#100000#2#0#0	
9.94#0#12.08.99/15:25:59#0#123#1.009#0#100000#1#0#0	
9.99#0#12.08.99/15:26:17#0#123#1.011#0#100000#2#0#0	
K0009/0 Any text could be recorded here and would be saved, in this case, together with the 8th value for all characteristics (/0)	
10.00#0#12.08.99/15:26:50#0#123#1.062#0#100000#2#0#0	
10.03#0#12.08.99/15:27:23#0#123#1.011#0#100000#1#0#0	
10.17#0#12.08.99/15:27:56#3#123#1.009#0#100000#1#0#0	

6.2 DFD/DFX Structure

6.2.1 DFD/DFX structure with fixed file name

The file name for the DFD and DFX file pair can be chosen individually and just have to meet the requirements of your operating system. In this case, the writing system appends new measurements to the value file (DFX) which keeps growing.

The same example, only in a shorter form, divided into two files (descriptive and value file) would appear as follows:

Description file (*.DFD)

K0100 3	{3 characteristics in the file}
K1001 08/15	{part no.}
K1002 part 1	{part description}
K2004/0 0	{characteristics type "variable" for all chars.}
K2005/0 4	{characteristics class "critical"}
K2022/0 2	{number of decimal places}
K2302/0 machine 1	{machine description}
K2001 1.0∅1.2∅1.3	
K2101 10.00∅1.00	
K2002 length∅diameter∅thread	
K2110 9.95∅0.98	
K2111 10.05∅1.02	
K2142 cm∅cm	
K2311 turning∅turning∅cutting	
K2402 caliper∅caliper∅gauge	
K2001/1 1.1	
K2022/2 3	{no. of decimal places for M2 overwritten}
K2004/3 1	{char. type "attribute" for M3 overwritten}
K2011/3 200	{distribution model Poisson distribution for M3}

Value file (*.DFX)

```

9.940012.08.99/15:23:4500#1230.96600100000011000
9.950012.08.99/15:23:5800#1230.10910010000002000
9.980012.08.99/15:24:1200#1230.9930010000003000
10.010012.08.99/15:24:3800#1230.96400100000011000
10.020012.08.99/15:25:0200#1230.91500100000011000
10.060012.08.99/15:25:3700#1230.10110010000002000
9.940012.08.99/15:25:5900#1230.100900100000011000
9.990012.08.99/15:26:1700#1230.10110010000002000
K0009/0 Any text could be recorded here and would be saved, in this
      case, together with the 8th value for all characteristics (/0)
10.000012.08.99/15:26:5000#1230.10620010000002000
10.030012.08.99/15:27:2300#1230.101100100000011000
10.170012.08.99/15:27:5603#1230.100900100000011000

```

6.2.2DFD/DFX structure with file name as a counter

Using this version, the complete file name either has a fixed length in form of a counter or consists of a prefix (with fixed length) and a counter (with fixed length).

File name = Prefix + Counter + File name extension

The prefix consists of arbitrary combinations of alphanumerical signs meeting the requirements of the operating system.

The counter must have a fixed length; you have to add zeros, if required.

Example

The file name consists of an 8-digit counter

```
00000001.dfd
00000001.dfx
00000002.dfx
00000003.dfx
00000004.dfx
      ...
00000101.dfd
00000101.dfx
00000102.dfx
00000103.dfx
00000104.dfx
      ...
```



Changes of the part and
characteristic data after
100 measurements

The file name consists of a 8-digit prefix („Shift01_“) and a 4-digit counter

```
Shift01_0001.dfd
Shift01_0001.dfx
Shift01_0002.dfx
Shift01_0003.dfx
Shift01_0004.dfx
      ...
Shift01_0101.dfd
Shift01_0101.dfx
Shift01_0102.dfx
Shift01_0103.dfx
Shift01_0104.dfx
      ...
```



Changes of the part and
characteristic data after
100 measurements

Using this version is recommended if the parameters of the measurement system and thus the part and characteristic data change often, or if measured value files shall be outsourced or deleted in order to keep the hard disc from reaching its maximum storage capacity in the running process.

A new DFD-file has to be written for each change in the part or characteristic data and you have to increase the counters of the DFD and DFX file.

New measurements are appended to the file with the highest counter, or a new value file with the next counter status is generated after reaching a certain number of measurements in this file (this can also mean one measurement per DFX file).

Using this version, you have to consider that files per part type are saved to a separate sub-directory for each part type so that the combination of path and file name is unique. The number of measurements per DFX-file is determined by the known rules.

Further options to generate file names

You can also you a “time stamp” instead of a counter to generate names in Q-DAS products. You add a time stamp to each file that is exact to the second. Its format is as follows.

YYYYMMDDHHMMSS.dfd
YYYYMMDDHHMMSS.dfx

Example

20150720214635.dfd
20150720214635.dfx
20150720214723.dfx
20150720214759.dfx
20150720214826.dfx

⋮

20150721081613.dfd
20150721081613.dfx
20150721081702.dfx
20150721081846.dfx
20150721081914.dfx

⋮



Changes of the part and
characteristic data on
2015/07/21 at 8:16 am

Q-DAS products do not have any problems with the “gaps” between the single measurements (the missing seconds) since the software loads the data in ascending order. However, depending on the length of the notation (and maybe the corresponding prefix), the reading system has to switch from numeric to alpha-numeric.

7 ASCII Transfer Format Certification

In order to avoid problems caused when files are created by third-party systems in the Q-DAS[®] ASCII transfer format, Q-DAS[®] offers the certification of the data format. This is a confirmation that the specifications of the transfer format are observed or adhered to and offers the necessary security to the measurement system manufacturer, as well as to the final customer.

Certification includes verification of the syntax (notation verification) and verification of the contents (verification of completeness and plausibility) of the supplied sample data files.

On request, the transfer format may be explained in detail within the framework of a workshop or individual consultations. The interested party will receive all necessary documentation and will implement the Q-DAS[®] mandatory fields, as well as, any other required data fields. After returning the certification documents, Q-DAS[®] will verify the created data sets. Deviations from specifications will be discussed and the files will be verified again after all errors have been corrected. Certificates are issued upon presentation of all the requirements.

Further information regarding the certification and a summary of the certified systems are provided at the Q-DAS[®] website.

8 Appendix

8.1 Key Field Listing

The following table lists the supported fields according to key, field description, length and type.

Note: The currently valid list of fields is published at the Q-DAS® website.

Key:

- The keys are structured according to the following pattern:
 - K00xx values/add. data
 - K1xxx part data
 - K2xxx characteristic data
 - K5xxx structure information
 - K8xxx quality control chart
- For explicit identification of the data sets the following fields **must** be included in the data format:
 - K0100 no. of characteristics
 - K1001 part no.
 - K1002 part description
 - K2001 characteristics no.
 - K2002 characteristics description

Length:

- The numbers in brackets indicate the field length (no. of characters)

Type:

- Identification characters
 - I3 = Integer (1 Byte)
 - I5 = Integer (2 Byte)
 - I10 = Integer (4 Byte)
 - F = Float
 - D = Date/Time format
 - A = Alpha numerical
 - S = special coding

Notes:

- Hints regarding field contents
- Module specific usage: AS (Sample Analysis), PC (Process Capability), GC (Measurement System Analysis), RB (Reliability Analysis), PV (procella)
- Column "DB" refers to the sued table in the Q-DAS - Database

Key	Field description	Length	Typ	DB	Remarks
K0001	Values	[22]	F		
K0002	attribute	[5]	I5		e.g. 0=valid, 255=empty data field etc.
K0004	Time/Date	[---]	D		
K0005	Events	[---]	S		Catalogue based
K0006	Batch number / Ident number	[14]	A		
K0007	Cavity number / Spindle number	[10]	I10		Catalogue based
K0008	Operator name	[10]	I10		Catalogue based
K0009	Text	[255]	A		
K0010	Machine number	[10]	I10		Catalogue based
K0011	Process parameter	[---]	S		Catalogue based
K0012	Gage number	[10]	I10		Catalogue based
K0014	Part Ident	[40]	A		
K0015	Reason for test	[5]	I5		Def. field contents
K0016	Production number	[30]	A		
K0017	Work piece fixture number	[30]	A		
K0020	Subgroup size	[5]	I5		Only for attribute checks
K0021	No. of errors	[5]	I5		Only for attribute checks
K0053	Order number	[20]	A		
K0054	K0054	[30]	A		Activate with UseK00xx=1 in the qsstat2000.ini
K0055	K0055	[30]	A		Activate with UseK00xx=1 in the qsstat2000.ini
K0056	K0056	[30]	A		Activate with UseK00xx=1 in the qsstat2000.ini

Key	Field description	Length	Typ	DB	Remarks
K0057	K0057	[30]	A		Activate with UseK00xx=1 in the qsstat2000.ini
K0058	K0058	[30]	A		Activate with UseK00xx=1 in the qsstat2000.ini
K0059	K0059	[30]	A		Activate with UseK00xx=1 in the qsstat2000.ini
K0060	K0060	[30]	A		Activate with UseK00xx=1 in the qsstat2000.ini
K0061	K0061	[10]	I10		Activate with UseK00xx=1 in the qsstat2000.ini
K0062	K0062	[10]	I10		Activate with UseK00xx=1 in the qsstat2000.ini
K0063	K0063	[10]	I10		Activate with UseK00xx=1 in the qsstat2000.ini
K0080	Subgroup ID	[64]	A		Activate with UseK00xx=1 in the qsstat2000.ini
K0081	Value position in subgroup	[5]	I5		Activate with UseK00xx=1 in the qsstat2000.ini
K0097	Values GUID				
K0100	Total number of characteristics in file	[5]	I5		
K0999	No. of characteristics per part = 0	[5]	I5		
K1001	Part number	[30]	A		
K1002	Part description	[80]	A		
K1003	Part abbreviation	[20]	A		
K1004	Part Amendment status	[20]	A		
K1005	Product	[40]	A		

Key	Field description	Length	Typ	DB	Remarks
K1007	Part number - short description	[20]	A		
K1008	Part type	[20]	A		
K1009	Part code	[20]	A		
K1010	Control item	[3]	I3		Defined field contents
K1011	Version	[20]	A		
K1012	ID number annex	[20]	A		
K1013	ID number index	[20]	A		
K1014	Part ident	[20]	A		
K1015	Type of test	[3]	I3		
K1016	Assembly part	[30]	A		N,26.8.02; Module ISR
K1017	Test plan status	[3]	I3		
K1020	Manufacturer Catalogue	[5]	I5		Catalogue-selection (see chapter 8.3)
K1021	Manufacturer Number Text	[20]	A		
K1022	Manufacturer Description	[80]	A		
K1023	Manufacturer Number	[10]	I10		change length in V10
K1030	Material Catalogue	[5]	I5		Catalogue-selection (see chapter 8.3)
K1031	Material Number Text	[20]	A		
K1032	Material Description	[80]	A		change length in V10
K1033	Material Number	[10]	I10		change length in V10
K1040	Drawing Catalogue	[5]	I5		Catalogue-selection (see chapter 8.3)
K1041	Drawing Number Text	[30]	A		
K1042	Drawing Amendment	[20]	A		
K1043	Drawing Index	[80]	A		change length in V10
K1044	Drawing Number	[10]	I10		change length in V10
K1045	Drawing validity date	[20]	A		
K1046	Drawing Description	[80]	A		change length in V10

Key	Field description	Length	Typ	DB	Remarks
K1047	Basic drawing number	[20]	A		
K1048	CAD Drawing file name	[80]	A		V10
K1050	Contractor catalogue	[5]	I5		Catalogue-selection (see chapter 8.3)
K1051	Contractor Number Text	[20]	A		
K1052	Contractor Description	[80]	A		change length in V10
K1053	Contract	[40]	A		or K0053
K1054	Contractor Number	[10]	I10		change length in V10
K1060	Customer Catalogue	[5]	I5		Catalogue-selection (see chapter 8.3)
K1061	Customer Number Text	[20]	A		
K1062	Customer Description	[40]	A		change length in V10
K1063	Customer Number	[5]	I5		change length in V10
K1070	Supplier Catalogue	[5]	I5		Catalogue-selection (see chapter 8.3)
K1071	Supplier Number Text	[20]	A		
K1072	Supplier Description	[40]	A		
K1073	Supplier Number	[5]	I5		change length in V10
K1080	Machine Catalogue	[5]	I5		Catalogue-selection (see chapter 8.3)
K1081	Machine Number Text	[24]	A		
K1082	Machine Description	[40]	A		
K1083	Machine Number	[5]	I5		change length in V10
K1085	Machine Location	[40]	A		
K1086	Work Cycle / Operation	[40]	A		
K1087	Work Cycle Description	[40]	A		
K1091	Line number	[20]	A		V10
K1092	Line description	[40]	A		V10
K1100	Area / Plant sector	[40]	A		

Key	Field description	Length	Typ	DB	Remarks
K1101	Department	[40]	A		
K1102	Workshop	[40]	A		
K1103	Cost centre	[40]	A		
K1104	Shift	[20]	A		
K1105	Division number	[20]	A		V10
K1106	Department number	[20]	A		V10
K1107	Workshop number	[20]	A		V10
K1108	Cost centre number	[20]	A		V10
K1110	Order number	[20]	A		
K1111	Goods received number	[20]	A		
K1112	Cube	[20]	A		V10
K1113	Location	[20]	A		V10
K1114	Device	[40]	A		V10
K1115	Production date	[40]	A		V10
K1201	Test Facility Number Text	[24]	A		
K1202	Test Facility Description	[40]	A		
K1203	Reason for Test	[80]	A		
K1204	Test Begin	[20]	D		
K1205	Test End	[20]	D		
K1206	Test Location	[40]	A		
K1207	Test Plan developer	[40]	A		V10
K1208	Test Facility Number	[5]	I5		change length in V10
K1209	Inspection type (inspection identifier)	[20]	A		
K1210	Measurement type	[5]	I5		change length in V10
K1211	Standard master number (Text)	[20]	A		change length in V10
K1212	Standard master description	[40]	A		
K1215	Standard master number	[5]	I5		change length in V10

Key	Field description	Length	Typ	DB	Remarks
K1221	Inspector number (Text)	[20]	A		
K1222	Inspector name	[40]	A		
K1223	Inspector number	[5]	I5		change length in V10
K1230	Gage room	[40]	A		
K1231	Measurement program number	[20]	A		
K1232	Measurement program version	[20]	A		
K1301	Client	[5]	I5		
K1302	Test batch	[40]	A		
K1303	Plant	[40]	A		
K1304	Plant number	[20]	A		V10
K1311	Production order	[40]	A		
K1341	Test Plan Number Text	[20]	A		
K1342	Test Plan Name	[40]	A		
K1343	Test Plan Creation Date	[20]	A		
K1344	Test Plan Creator	[40]	A		
K1350	Output report file	[50]	A		Module ISR change length in V10
K1800	user field description 1	[50]	A		
K1801	user field type 1	[1]	A		No selection field!
K1802	user field content 1	[255]	A		No selection field!
K1810	user field description 2	[50]	A		No selection field!
K1811	user field type 2	[1]	A		No selection field!
K1812	user field content 2	[255]	A		No selection field!
K1820	user field description 3	[50]	A		No selection field!
K1821	user field type 3	[1]	A		No selection field!
K1822	user field content 3	[255]	A		No selection field!
K1830	user field description 4	[50]	A		No selection field!
K1831	user field type 4	[1]	A		No selection field!

Key	Field description	Length	Typ	DB	Remarks
K1832	user field content 4	[255]	A		No selection field!
K1840	user field description 5	[50]	A		No selection field!
K1841	user field type 5	[1]	A		No selection field!
K1842	user field content 5	[255]	A		No selection field!
K1850	user field description 6	[50]	A		No selection field!
K1851	user field type 6	[1]	A		No selection field!
K1852	user field content 6	[255]	A		No selection field!
K1860	user field description 7	[50]	A		No selection field!
K1861	user field type 7	[1]	A		No selection field!
K1862	user field content 7	[255]	A		No selection field!
K1870	user field description 8	[50]	A		No selection field!
K1871	user field type 8	[1]	A		No selection field!
K1872	user field content 8	[255]	A		No selection field!
K1880	user field description 9	[50]	A		No selection field!
K1881	user field type 9	[1]	A		No selection field!
K1882	user field content 9	[255]	A		No selection field!
K1890	user field description 10	[50]	A		No selection field!
K1891	user field type 10	[1]	A		No selection field!
K1892	user field content 10	[255]	A		No selection field!
K1900	Remark	[255]	A		
K1997	Part GUID				N, ME 5
K1998	Internal qs-STAT configuration on the parts level (reserved)	[255]	A		
K2001	Characteristic Number	[20]	A		
K2002	Characteristic Description	[80]	A		
K2003	Characteristic Abbreviation	[20]	A		
K2004	Characteristic Type	[5]	I5		Defined field contents (e.g. variable, attribute, ELS etc.);

Key	Field description	Length	Typ	DB	Remarks
K2005	Characteristic Class	[5]	I5		Defined field contents
K2006	Control Item	[5]	I5		Defined field contents
K2007	Control Type	[5]	I5		Defined field contents
K2008	Group type	[5]	I5		Defined field contents
K2009	Measured quantity	[5]	I5		Defined field contents Identifier for the type of the characteristic (e.g. Length, Form, Position etc.)
K2011	Saved distribution	[5]	I5		Defined field contents
K2013	Natural Class width	[22]	F		natural class width for variable-classified charact.
K2015	Tool wear type (Trend)	[3]	I3		Defined field contents;
K2016	100% Measurement	[3]	I3		Defined field contents;
K2017	Alarm detection type	[3]	I3		New in V10 Defined field contents
K2018	Acceptance limit extended	[3]	I3		New in V10 Defined field contents
K2019	Ordinal Classes Catalogue	[5]	I5		
K2021	Logical Operation Formula	[255]	A		formula for calculation of values of a characteristic from values of other characteristics. Ex.: m1+m2 (addition of two charact.)
K2022	Decimal Places	[5]	I5		number of decimal places in value recording
K2023	Transformation Type	[3]	I3		
K2024	Transformation Parameter a	[22]	F		
K2025	Transformation Parameter b	[22]	F		
K2026	Transformation Parameter c	[22]	F		

Key	Field description	Length	Typ	DB	Remarks
K2027	Transformation Parameter d	[22]	F		
K2028	Natural distribution	[3]	I3		
K2030	Group Number / ELS-Number	[5]	I5		Only for simple groupings, otherwise see K5000
K2031	Group Element Number / ELS Number for error type of a ELS	[5]	I5		Only for simple groupings, otherwise see K5000
K2035	Calibration Date	[---]	D		
K2041	Recording Type	[3]	I3		flag: chosen recording type: manual or serial interface
K2042	Recording Device Number	[5]	I5		
K2043	Recording Device Name	[40]	A		
K2044	Recording Device Index	[5]	I5		
K2045	Recording Channel	[3]	I3		
K2046	Recording Sub-channel	[3]	I3		
K2047	Software Requirement Index	[3]	I3		
K2048	Takeover Channel	[3]	I3		
K2049	Channel Initialization-Index	[3]	I3		
K2051	Interface	[3]	I3		
K2052	Baud Rate	[5]	I5		
K2053	IRQ Number	[3]	I3		
K2054	Parity	[3]	I3		
K2055	Data bits	[3]	I3		
K2056	Stop bits	[3]	I3		
K2060	Events Catalogue (action code)	[5]	I5		
K2061	Process Parameter Catalogue	[5]	I5		
K2062	Cavity catalogue	[5]	I5	MZ	
K2063	Machine catalogue	[5]	I5	MZ	

Key	Field description	Length	Typ	DB	Remarks
K2064	Gage catalogue	[5]	I5	MZ	
K2065	Operator catalogue	[5]	I5	MZ	
K2066	Sub-catalogue K0061	[5]	I5	MZ	
K2067	Sub-catalogue K0062	[5]	I5	MZ	
K2068	Sub-catalogue K0063	[5]	I5	MZ	
K2071	Accumulating Constant	[22]	F		for linear transformation when entering values according to a formula value = K2072 * input + K2071
K2072	Multiplication factor	[22]	F		
K2073	Dimension of the calibration master	[22]	F		
K2074	Actual offset for calibration measurements	[22]	F		
K2075	Amplification factor for calibration measurements	[22]	F		
K2076	Calibration Date	[---]	D		
K2080	Characteristic status (activated, deactivated)	[5]	I		Defined field contents
K2091	Characteristic index	[20]	A		
K2092	Characteristic text	[50]	A		
K2093	Processing status	[80]	A		
K2095	Element Code	[40]	A		
K2096	Element Index	[20]	A		
K2097	Element Text	[50]	A		
K2098	Element address	[20]	A		
K2100	Target Value	[22]	F		objective measure; for attribute characteristics use target as absolute value (e.g. 0.001)

Key	Field description	Length	Typ	DB	Remarks
K2101	Nominal Value	[22]	F		drawing measure, nominal value will be referred to when calculating the specification limits from the entered allowance
K2102	Pmax	[22]	F		for Cpk values with attribute characteristics
K2103	Tolerance class	[2]	A		
K2104	Tolerance value	[3]	I3		
K2105	Parts OK at Censoring	[5]	I5		Module RB
K2110	Lower Specification Limit	[22]	F		
K2111	Upper Specification Limit	[22]	F		
K2112	Lower Allowance	[22]	F		
K2113	Upper Allowance	[22]	F		
K2114	Lower Scrap Limit	[22]	F		
K2115	Upper Scrap Limit	[22]	F		
K2116	Lower acceptance limit	[22]	F		V10
K2117	Upper acceptance limit	[22]	F		V10
K2120	Lower Limit type	[3]	I3		Defined field contents Natural boundary or limit
K2121	Upper Limit type	[3]	I3		Defined field contents Natural boundary or limit
K2130	Lower Plausibility Limit	[22]	F		
K2131	Upper Plausibility Limit	[22]	F		
K2135	Lower Class Limit	[22]	F		
K2136	Upper Class Limit	[22]	F		
K2137	Number of Classes	[3]	I3		

Key	Field description	Length	Typ	DB	Remarks
K2138	Classification source	[3]	I3		
K2139	Classification Model source	[3]	I3		
K2141	Unit	[5]	I5		number of selected unit (e.g. from catalogues)
K2142	Unit Description	[20]	A		Text
K2143	Unit relative axis	[20]	A		
K2144	Addition constant relative axis	[22]	F		
K2145	Multiplication factor relative axis	[22]	F		
K2146	Decimal places relative axis	[3]	I3		
K2151	Tolerance (as Text)	[20]	A		
K2152	Calculated Tolerance	[22]	F		
K2160	Batch size	[5]	I5		
K2161	Re-work cost	[22]	F		cost for parts to be re-worked
K2162	Rejects cost	[22]	F		
K2163	Error cost	[22]	F		
K2170	Censoring point in Time	[22]	F		Module RB
K2171	Extrapolation	[22]	F		Module RB
K2172	Permitted failure rate	[22]	F		Module RB
K2173	Failure free time	[22]	F		Module RB
K2174	Parts in the field	[3]	I3		
K2175	Conditions for frequency sums	[3]	I3	MZ	
K2176	Life distance after Eckel	[3]	I3	MZ	
K2177	Life time X1	[22]	F	MZ	
K2178	Life time X2	[22]	F	MZ	
K2180	Weibull Parameter b	[22]	F	MZ	

Key	Field description	Length	Typ	DB	Remarks
K2181	Weibull Parameter T	[22]	F	MZ	
K2182	Sum probability (B(x1))	[22]	F	MZ	
K2183	Sum probability (B(x2))	[22]	F	MZ	
K2185	Number of parts in the field (for Eckel method)	[10]	I10	MZ	
K2186	Usage time for parts in the field (for Eckel method)	[22]	F	MZ	
K2201	Process Variation	[22]	F		Module GC
K2202	Evaluation Type	[3]	I3		Defined field contents (e.g. Type 1, Type 2 etc. - see chapter 4.1)
K2205	Number of parts Number of standards	[5]	I5		Module GC VDA 5
K2206	Number of devices	[5]	I5	MZ	Modul GC / VDA5 new
K2207	Number of test intervals	[5]	I5	MZ	Modul GC / VDA5 new
K2210	Master Catalogue	[5]	I5		Catalogue-selection (see chapter 8.3) Module GC
K2211	Master Number Text:	[40]	A		
K2212	Master Description	[40]	A		
K2213	Master Actual Value	[22]	F		Module GC Type 1
K2214	Master Temperature	[22]	F		
K2215	Master Number	[5]	I5		
K2216	Master –Serial number	[20]	A		
K2217	Master Manufacturer	[80]	A		
K2220	Number of Operators	[5]	I5		Module GC
K2221	Number of Trials	[5]	I5		

Key	Field description	Length	Typ	DB	Remarks
K2222	No. of Reference Measurements	[5]	I5		Module GC
K2225	Determined Cg value	[22]	F		
K2226	Determined Cgk value	[22]	F		
K2227	Deviation GC Type 3 – GC Type 1	[22]	F		module GC CNOMO
K2228	Sg Type 1 - Stability	[22]	F		module GC Stability
K2243	Drawing file name	[80]	A		
K2244	Drawing Reference point X	[5]	I5		
K2245	Drawing Reference point Y	[5]	I5		
K2246	Drawing Reference point Z	[5]	I5		
K2261	Reference Part number	[40]	A		
K2262	Reference Part description	[40]	A		
K2263	Reference Part actual value	[22]	F		
K2264	Reference Part temperature	[22]	F		
K2265	Reference Part number (num)	[3]	I3		
K2266	Reference Part serial number	[40]	A		
K2281	Calibration Part Number middle	[40]	A		
K2282	Calibration Part Description middle	[40]	A		
K2283	Calibration Part actual value middle	[22]	F		
K2284	Calibration Part temperature middle	[22]	F		
K2285	Calibration Part number (num) middle	[3]	I3		
K2286	Calibration Part serial number middle	[40]	A		
K2301	Machine Number Text	[20]	A		
K2302	Machine Description	[40]	A		
K2303	Department / Cost centre	[40]	A		
K2304	Machine Location	[40]	A		

Key	Field description	Length	Typ	DB	Remarks
K2305	Machine Number	[5]	I5		
K2306	Area / Plant sector	[40]	A		
K2307	PTM Number	[40]	A		
K2311	Production Type Text (Operation)	[20]	A		
K2312	Production Type Description	[40]	A		
K2313	Production Type Number	[5]	I5		
K2320	Contract Number	[20]	A		
K2321	Contractor Number Text	[20]	A		
K2322	Contractor Name	[40]	A		
K2323	Contractor Number	[5]	I5		
K2331	Work piece Number Text	[20]	A		
K2332	Work piece Description	[40]	A		
K2333	Work piece Number	[5]	I5		
K2341	Test plan number Text	[20]	A		
K2342	Test plan name	[40]	A		
K2343	Test plan creation date	[20]	D		
K2344	Test plan creator	[40]	A		
K2401	Gage Number Text	[40]	A		
K2402	Gage Description	[40]	A		
K2403	Gage group	[20]	A		
K2404	Gage resolution	[22]	F		
K2405	Gage Number	[5]	I5		
K2406	Gage manufacturer	[40]	A		
K2407	SPC device number	[20]	A		
K2408	SPC device description	[40]	A		
K2409	SPC device type	[20]	A		
K2410	Test location	[40]	A		
K2411	Test Begin	[40]	D		

Key	Field description	Length	Typ	DB	Remarks
K2412	Test End	[40]	D		
K2413	Gage graphic	[80]	A		
K2415	Gage serial number	[20]	A		
K2416	Display device	[40]	A		
K2421	Operator Number Text	[20]	A		
K2422	Operator Name	[40]	A		
K2423	Operator Number	[5]	I5		
K2430	Sampling type	[5]	I5		Module ISR, defined field contents
K2432	Individual value output	[5]	I5		Module ISR, defined field contents
K2434	Proof of Process capability	[5]	I5		Module ISR, defined field contents
K2436	Test Frequency	[10]	A		Module ISR
K2438	Quantity Tested	[10]	A		Module ISR
K2440	Assembly Component	[40]	A		Module ISR
K2442	Assembly Component mass	[12]	A		Module ISR
K2444	Assembly Component material	[40]	A		Module ISR
K2446	Supplier's product description	[40]	A		Module ISR
K2448	Assembly Component manufacturer	[40]	A		Module ISR
K2501	Dimension attribute	[3]	I3		defined field contents
K2502	Tolerance display format	[3]	I3		defined field contents
K2503	Dimension type	[3]	I3		defined field contents
K2504	Drawing change status	[3]	I3		defined field contents
K2505	View description	[20]	A	MZ	
K2506	Sheet number	[3]	I3	MZ	
K2507	Drawing field character	[2]	A	MZ	
K2508	Drawing field number	[3]	I3	MZ	

Key	Field description	Length	Typ	DB	Remarks
K2509	Sheet description	[40]	A	MZ	
K2511	Reference 1	[20]	A	MZ	
K2512	Reference 2	[20]	A	MZ	
K2513	Reference 3	[20]	A	MZ	
K2514	Reference 4	[20]	A	MZ	
K2515	Reference 5	[20]	A	MZ	
K2516	Reference 6	[20]	A	MZ	
K2517	Reference 7	[20]	A	MZ	
K2518	Reference 8	[20]	A	MZ	
K2519	Reference 9	[20]	A	MZ	
K2520	Reference System	[20]	A	MZ	
K2521	Reference x direction	[22]	F	MZ	
K2522	Reference y direction	[22]	F	MZ	
K2523	Reference z direction	[22]	F	MZ	
K2524	CAD internal reference	[20]	A	MZ	
K2525	Rotation matrix	[255]	A	MZ	
K2526	CAD detail	[255]	A	MZ	
K2630	Calibration Uncertainty	[22]	F	MZ	
K2646	Component type	[10]	I10		defined field contents
K2654	VDA 5 Version	[3]	I3	MZ	
K2800	user field description 1	[50]	A		No selection field!
K2801	user field type 1	[1]	A		No selection field!
K2802	user field contents 1	[255]	A		No selection field!
K2810	user field description 2	[50]	A		No selection field!
K2811	user field type 2	[1]	A		No selection field!
K2812	user field contents 2	[255]	A		No selection field!
K2820	user field description 3	[50]	A		No selection field!
K2821	user field type 3	[1]	A		No selection field!

Key	Field description	Length	Typ	DB	Remarks
K2822	user field contents 3	[255]	A		No selection field!
K2830	user field description 4	[50]	A		No selection field!
K2831	user field type 4	[1]	A		No selection field!
K2832	user field contents 4	[255]	A		No selection field!
K2840	user field description 5	[50]	A		No selection field!
K2841	user field type 5	[1]	A		No selection field!
K2842	user field contents 5	[255]	A		No selection field!
K2850	user field description 6	[50]	A		No selection field!
K2851	user field type 6	[1]	A		No selection field!
K2852	user field contents 6	[255]	A		No selection field!
K2860	user field description 7	[50]	A		No selection field!
K2861	user field type 7	[1]	A		No selection field!
K2862	user field contents 7	[255]	A		No selection field!
K2870	user field description 8	[50]	A		No selection field!
K2871	user field type 8	[1]	A		No selection field!
K2872	user field contents 8	[255]	A		No selection field!
K2880	user field description 9	[50]	A		No selection field!
K2881	user field type 9	[1]	A		No selection field!
K2882	user field contents 9	[255]	A		No selection field!
K2890	user field description 10	[50]	A		No selection field!
K2891	user field type 10	[1]	A		No selection field!
K2892	user field contents 10	[255]	A		No selection field!
K2900	Remark	[255]	A		
K2901	Test Conditions	[80]	A		within Measurement System Analysis saving of test conditions in text form
K2997	Characteristic GUID				
K2998	internal qs-STAT configuration	[255]	A		

Key	Field description	Length	Typ	DB	Remarks
K2999	internal qs-STAT configuration	[10]	I10		
K3001	Test Report Number Supplier	[20]	A		Module ISR
K3002	Test Report Description Supplier	[30]	A		Module ISR
K3003	ID number supplier	[20]	A		Module ISR
K3004	Test Report Version Supplier	[20]	A		Module ISR
K3005	Test Report Issue (Supplier)	[20]	A		Module ISR
K3006	Supplier Reference	[20]	A		Module ISR
K3010	Supplier Number	[5]	I5		Module ISR
K3011	Supplier Number	[20]	A		Module ISR
K3020	Initial Sampling	[5]	I5		Module ISR; defined field contents
K3021	Subsequent sampling	[5]	I5		Module ISR; defined field contents
K3022	Other samples	[5]	I5		Module ISR; defined field contents
K3023	Other samples Text	[40]	A		Module ISR
K3025	Repeat Presentation Number	[20]	A		Module ISR
K3030	Installations (test types)	[30]	A		Module ISR; defined field contents
K3031	Other installations (test types)	[40]	A		Module ISR
K3035	Reason for sampling	[50]	A		Module ISR; defined field contents
K3036	other - please specify	[40]	A		Module ISR
K3037	Requested submission level	[5]	I5		Module ISR; defined field contents
K3040	Process capability	[5]	I5		Module ISR; defined field contents
K3050	Identification number supplier	[30]	A		Module ISR
K3052	Designation supplier	[50]	A		Module ISR
K3055	Drawing number supplier	[20]	A		Module ISR

Key	Field description	Length	Typ	DB	Remarks
K3056	Status supplier	[20]	A		Module ISR
K3057	Date supplier	--	D		Module ISR
K3058	Modification number supplier	[20]	A		Module ISR
K3070	Order number supplier	[30]	A		Module ISR
K3071	Call number supplier	[30]	A		Module ISR
K3077	Order date supplier	--	D		Module ISR
K3078	Call date supplier	--	D		Module ISR
K3080	Delivery order number supplier	[30]	A		Module ISR
K3087	Delivery order date supplier	--	D		Module ISR
K3100	Article number	[30]	A		Module ISR
K3101	Quantity supplied	[20]	A		Module ISR
K3102	Delivery unit	[20]	A		Module ISR
K3103	Number of samples	[20]	A		Module ISR
K3105	batch number	[20]	A		Module ISR
K3106	Cavity number	[20]	A		Module ISR
K3107	Tool number	[20]	A		Module ISR
K3108	Restricted Substances	[5]	I5		Module ISR; defined field contents
K3109	Plastic Parts	[5]	I5		Module ISR; defined field contents
K3110	Sample weight (supplier)	[20]	A		Module ISR
K3112	carried out	[30]	A		Module ISR; defined field contents
K3113	Application	[30]	A		Module ISR
K3115	Control item	[5]	I5		Module ISR; defined field contents
K3117	Checking Aid No.	[20]	A		Module ISR
K3118	Change Level (Checking Aid No.)	[20]	A		Module ISR
K3119	Date (Checking Aid No.)	--	D		Module ISR

Key	Field description	Length	Typ	DB	Remarks
K3150	Creator (supplier)	[5]	I5		Module ISR
K3160	Signature Creator	[30]	A		Module ISR
K3167	Date Creator Signature	--	D		Module ISR
K3180	Specification documents	[1000]	M		Module ISR
K3186	Production rate time base (hours)	[20]	A		Module ISR
K3187	Production rate / 8 hours	[20]	A		Module ISR
K3188	Mold / Cav. / Prod.	[20]	A		Module ISR
K3190	Remark supplier	[1000]	M		Module ISR
K3200	Production order number	[30]	A		Module ISR
K3210	Test order number	[30]	A		Module ISR
K3281	Remark functional test (supplier)	[1000]	M		Module ISR
K3282	Remark dimensional test (supplier)	[1000]	M		Module ISR
K3283	Remark material test (supplier)	[1000]	M		Module ISR
K3284	Remark Reliability study	[1000]	M		Module ISR
K3285	Remark Process capability study	[1000]	M		Module ISR
K3293	Remark appearance	[1000]	M		Module ISR
K3296	Remark Components	[1000]	M		Module ISR
K3298	Remark attribute test	[1000]	M		Module ISR
K3301	Test report number customer	[20]	A		Module ISR
K3302	Test report description customer	[30]	A		Module ISR
K3303	Identification number customer	[20]	A		Module ISR
K3304	Test report version customer	[20]	A		Module ISR
K3306	Reference customer	[20]	A		Module ISR
K3310	Customer number	[5]	I5		Module ISR
K3350	Classification number customer	[30]	A		Module ISR

Key	Field description	Length	Typ	DB	Remarks
K3352	Designation customer	[50]	A		Module ISR
K3355	Drawing number customer	[20]	A		Module ISR
K3356	Status customer	[20]	A		Module ISR
K3357	Date acceptance	--	D		Module ISR
K3358	Amendment number customer	[20]	A		Module ISR
K3372	Incoming goods number	[30]	A		Module ISR
K3379	Incoming goods date	--	D		Module ISR
K3380	Delivery note number customer	[20]	A		Module ISR
K3387	Delivery note date customer	--	D		Module ISR
K3390	Discharge location	[30]	A		Module ISR
K3404	Acceptance procedure	[30]	A		Module ISR
K3410	Sample weight customer	[20]	A		Module ISR
K3420	Overall decision	[5]	I5		Module ISR; defined field contents
K3421	Decision functional test	[5]	I5		Module ISR; defined field contents
K3422	Decision dimensional test	[5]	I5		Module ISR; defined field contents
K3423	Decision material test	[5]	I5		Module ISR; defined field contents
K3424	Decision Reliability	[5]	I5		Module ISR; defined field contents
K3425	Decision Process Capability	[5]	I5		Module ISR; defined field contents
K3433	Decision visual test	[5]	I5		Module ISR; defined field contents
K3436	Decision Components	[5]	I5		N,10.10.02; Module ISR; defined field contents
K3438	Decision attribute test	[5]	I5		Module ISR; defined field contents
K3439	other decision	[20]	A		Module ISR

Key	Field description	Length	Typ	DB	Remarks
K3440	The Results for	[20]	A		Module ISR; defined field contents
K3442	meet all drawing and specif. requmts.	[5]	I5		Module ISR; defined field contents
K3445	Deviation Permit Number	[50]	A		Module ISR
K3447	Date (Additional Engineering Changes)	--	D		Module ISR
K3450	Test Report Creator (Customer)	[50]	A		Module ISR
K3451	Name Customer	[20]	A		Module ISR
K3460	Signature Customer	[20]	A		Module ISR
K3467	Signature date customer	--	D		Module ISR
K3470	Buyer	[5]	I5		Module ISR
K3481	Conditions	[1000]	M		Module ISR
K3490	Remark Customer	[1000]	M		Module ISR
K3560	Name of inspection facility	[30]	A		Module ISR
K3561	Functional inspection facility	[30]	A		Module ISR
K3562	Dimensional inspection	[30]	A		Module ISR
K3563	Material inspection facility	[30]	A		Module ISR
K3564	(spare for:) Reliability, inspection facility	[30]	A		Module ISR
K3565	(spare for:) Visual test, inspection facility	[30]	A		Module ISR
K3566	(spare for:) Attribute test, inspection facility	[30]	A		Module ISR
K3569	(spare for:) Misc. test, inspection facility	[30]	A		Module ISR
K3581	Remark Functional Test (customer)	[1000]	M		Module ISR
K3582	Remark Dimensional Test (customer)	[1000]	M		Module ISR
K3583	Remark Material Test (customer)	[1000]	M		N,29.8.02; Module ISR

Key	Field description	Length	Typ	DB	Remarks
K3600	Test Report Type	[5]	I5		Module ISR
K3601	Test Report Name/Description	[30]	A		Module ISR
K3602	Input Mask File	[50]	A		Module ISR
K3610	Modified by	[50]	A		Module ISR
K3617	Modification Date	--	D		Module ISR
K3650	Processing Status of the Initial Sample	[3]	I3		N, ME5; Module ISR
K3701	Distribution List 1	[5]	I5		Module ISR; defined field contents
K3702	Distribution List 2	[5]	I5		Module ISR; defined field contents
K3703	Distribution List 3	[5]	I5		Module ISR; defined field contents
K3704	Distribution List 4	[5]	I5		Module ISR; defined field contents
K3705	Distribution List 5	[5]	I5		Module ISR; defined field contents
K3706	Distribution List 6	[5]	I5		Module ISR; defined field contents
K3707	Distribution List 7	[5]	I5		Module ISR; defined field contents
K3708	Distribution List 8	[5]	I5		Module ISR; defined field contents
K3709	Distribution List 9	[5]	I5		Module ISR; defined field contents
K3710	Distribution List 10	[5]	I5		Module ISR; defined field contents
K3711	Distribution List 11	[5]	I5		Module ISR; defined field contents
K3712	Distribution List 12	[5]	I5		Module ISR; defined field contents
K3713	Distribution List 13	[5]	I5		Module ISR; defined field contents

Key	Field description	Length	Typ	DB	Remarks
K3714	Distribution List 14	[5]	I5		Module ISR; defined field contents
K3750	Hazardous Material acc. to ChemG/GefStoffV?	[5]	I5		Module ISR; defined field contents
K3752	Build-up of hazardous material with proper handling?	[5]	I5		Module ISR; defined field contents
K3754	Dangerous Goods per Traffic Law	[5]	I5		Module ISR; defined field contents
K3756	Water Endangering Goods per Water Act	[5]	I5		Module ISR; defined field contents
K3757	Water Endangering Class	[20]	A		Module ISR
K3758	Quantity of Water Endangering Goods	[20]	A		Module ISR
K3760	Component with Biocides	[5]	I5		Module ISR; defined field contents
K3761	Biocides Level	[50]	A		Module ISR
K3763	Does disposal result in waste with EWC code?	[5]	I5		Module ISR; defined field contents
K3764	EWC code	[20]	A		Module ISR
K3780	Drawing name 2	[120]	A		New in V10
K3781	Drawing name 3	[120]	A		New in V10
K3782	Drawing name 4	[120]	A		New in V10
K5001	Group number (text)	[30]	A		For grouping of characteristics
K5002	Group description	[80]	A		For grouping of characteristics
K5003	Group short description	[20]	A		For grouping of characteristics
K5007	Group number-short description	[20]	A		
K5045	Sketch file name	[80]	A		
K5090	Remark	[255]	A		
K5098	internal qs-STAT configuration	[254]	A		

Key	Field description	Length	Typ	DB	Remarks
K5101	Part as part of a group	[5]	I5		For grouping of characteristics
K5102	Characteristic as part of a group	[5]	I5		For grouping of characteristics
K5103	Group as part of a group	[5]	I5		For grouping of characteristics
K5111	Parts group	[5]	I5		For grouping of characteristics
K5112	Characteristics group	[5]	I5		For grouping of characteristics
K5113	Group element	[5]	I5		For grouping of characteristics
K8006	Lower alarm limit (location)	[22]	F		
K8007	Upper alarm limit (location)	[22]	F		
K8010	Chart Type and additional attributes (location)	[---]	S		defined field contents
K8011	Central Position (location)	[22]	F		
K8012	Lower Control Limit LCL (location)	[22]	F		
K8013	Upper Control Limit UCL (location)	[22]	F		
K8014	Lower Warning Limit LWL (location)	[22]	F		
K8015	Upper Warning Limit UWL (location)	[22]	F		
K8106	Lower Alarm limit (variation)	[22]	F		
K8107	Upper Alarm limit (variation)	[22]	F		
K8110	Chart Type and additional attributes (variation)	[---]	S		defined field contents

Key	Field description	Length	Typ	DB	Remarks
K8111	Central Position (variation)	[22]	F		
K8112	Lower Control limit LCL (variation)	[22]	F		
K8113	Upper Control Limit UCL (variation)	[22]	F		
K8114	Lower Warning Limit LWL (variation)	[22]	F		
K8115	Upper Warning Limit UWL (variation)	[22]	F		
K8500	Subgroup size (total)	[5]	I5		-
K8501	Subgroup type	[3]	I3		Defined field contents (fixed, moving)
K8502	Subgroup frequency	[40]	A		text indication of frequency
K8503	stable subgroup size	[3]	I3		Defined field contents (only for attribute tests)
K8504	Subgroup frequency	[5]	I5		
K8505	Number of parts (attribute)	[5]	I5		Only for attribute tests - target; actual scope K0020
K8520	required Cpk value Capability ration limit in %	[22]	F		VDA 5
K8521	required Cp value	[22]	F		
K8522	fixed Cpk value	[22]	F		
K8523	fixed Cp value	[22]	F		
K8524	required CAM value	[22]	F		
K8525	Required non-critical Capability Index	[22]	F		
K8530	Process Stability	[5]	I5		Module ISR; defined field contents

Key	Field description	Length	Typ	DB	Remarks
K8531	Recorded Process Capability (Cp)	[22]	F		Module ISR
K8532	Recorded Process Capability (Cpk)	[22]	F		Module ISR
K8540	Evaluation	[5]	I5		Module ISR
K8600	Correction Strategy	[3]	I3		Valid for post-process measurement systems
K8610	Lower Correction Limit	[22]	F		Valid for post-process measurement systems
K8611	Upper Correction Limit	[22]	F		Valid for post-process measurement systems
K8612	Buffer size	[3]	I3		Valid for post-process measurement systems
K8613	Correction target value	[22]	F		Valid for post-process measurement systems

8.2 Fields with defined field contents

Note: You can even find the standards for the evaluation strategy of Measurement System Analysis (**K2202**) and quality control charts (**K8010/K8110**) in the corresponding sections of this manual.

For all fields that can be selected (**K2432, K2434, K3020, K3021, K3022, K3108, K3109, K3115, K3442, K3701-K3714, K3750, K3752, K3754, K3756, K3760, K3763**) usually the following field contents are determined:

Value	Description
0	not selected
1	selected

8.2.1 Reason for Test K0015

Value	Description
0	Continuous measurements
10	Special measurement
20	Audit measurement

8.2.2 Control Item K1010/K2006

Value	Description
0	No
1	Yes / DwsA part/characteristic
2	S part/characteristic
3	R part/characteristic
4	R&S part/characteristic
5	A part/characteristic
6	B part/characteristic
10	Special part/characteristic
11	Special part/characteristic BP 1
12	Special part/characteristic BP 2
13	Special part/characteristic BP 1 SPC
14	Special part/characteristic BP 2 SPC
15	R1
16	R2
17	1
18	2
19	3
20	4
22	Documentation required for safety reasons
23	Documentation required for certification
24	Relevant to production (no documentation required)
25	Relevant to manufacturing (no documentation required)
26	Special part/characteristic F
27	Special part/characteristic L/CoP
28	Special part/characteristic S

8.2.3 Study type K1015

Value	Description
1	Reliability Analysis
10	Sample Analysis
20	Process Capability Analysis
30	Measurement System Analysis
50	Analysis of Regression / Variance
60	Initial sample Report

8.2.4 Test plan status K1017

Value	Description
0	Spare
1	Locked
2	Completed
3	Evaluated

8.2.5 Characteristic Type K2004

Value	Description
0	variable
1	attribute
2	variable classified
3	Ordinal
4	nominal
5	error type
6	error log sheet

8.2.6 Characteristic Class K2005

Value	Description
0	unimportant
1	little important
2	important
3	significant
4	critical

8.2.7 Control Type K2007

Value	Description
0	no control
1	conditional control
2	manual
3	automatic control

8.2.8 Group Type K2008

Value	Description
0	No group / Coordinate
1	Logical group
2	Positional tolerance
5	Separation (according to additional data)
6	Error Log Sheet
8	BestFitMove group
9	Surface study
10	3D- Positional tolerance
11	AFNOR E60-181 max/min
12	MMC (Hole)
13	MMC (Shaft)
14	VDA 5 new

8.2.9 Measured quantity K2009

Value	Description	
0	Undefined	
100	straightness	
101	Flatness	
102	roundness	
103	cylindricity	
104	profile of a line	
105	profile of a surface	
106	angularity	
107	perpendicularity	
108	parallelism	
109	true position (value)	
110	concentricity	
111	symmetry	
112	runout	
113	total runout	
114	CompCoaxial	
115	CompPattern	
117	Coordinates	
118	Surface runout	
120	X coordinate	
121	Y coordinate	
122	Z coordinate	
125	Offset	Since 10/130823
132	Ovality	Since 10/130823
140	Appraisal number angle area	
145	Surface finish	
149	Excavation depth	
150	Max. profile height Rz	
151	Total profile height Rt	
152	deviation assessed prof. Ra	
153	Max. profile height Pt	
154	Profile height point Rk	
155	Red. height of centres	
156	Red. score depth	
157	Profile Wave depth Wt	
158	Maximum Wave depth	
159	Basic roughness depth	
160	Material proportion Pmr	

Value	Description	
161	Material proportion Mr1	
162	Material proportion Mr2	
170	Swirl depth	
171	Swirl angle	
172	Swirl pitch	
180	Average dominant waviness	
181	Max. dominant waviness	
182	Length of the dominant waviness	
190	Mean depth of roughness motifs	
191	Max. depth of profile irregularity	
192	Mean width of roughness motifs	
193	Material fraction Rmr	Since 10/130823
194	Material fraction tp	Since 10/130823
200	distance	
201	radius	
202	diameter	
203	angle	
204	ellipsis minor	
205	ellipsis major	
206	cone angle	
207	Inside diameter	Since 10/130823
208	Outside diameter	Since 10/130823
210	Spherical measuring rod	
211	Depth / height of tooth	
212	Tooth thickness at the reference cylinder	Since 10/130823
214	Deviation of tooth thickness (at the reference cylinder)	Since 10/130823
215	Variation in tooth thickness	Since 10/130823
216	Span distance (over k teeth or gaps)	Since 10/130823
220	Spring rate	
230	width	Since V11/150515
231	squareness	Since V11/150515
232	Diameter maximum	Since V11/150515
233	Diameter minimum	Since V11/150515
234	Diameter average	Since V11/150515
250	temperature [°C]	
251	temperature [F]	
255	pressure [bar]	
260	coating thickness	
270	volume	

Value	Description	
280	mass	
282	force	
285	hardness	
290	viscosity	
300	unbalance	
301	torque	
302	Tightening torque	
303	Additional torque	
310	2D note	Since 10/130823
311	3D note	Since 10/130823
320	Rotation angle	
350	Revolution speed	
360	Angle error	Since 10/130823
362	Profile error	Since 10/130823
364	Velocity error	Since 10/130823
370	Shape deviation	Since 10/130823
372	Form increase	Since 10/130823
380	Cam height	Since 10/130823
501	resistance	
502	capacity	
503	inductivity	
504	phase shift	
505	frequency	
506	Amperage	
507	voltage	
508	output	
509	field intensity	
601	Pitch	
602	Pitch error	
604	Cumulative pitch bias	
605	Cumulative pitch error	
606	Pitch fluctuation	Since 10/130823
607	Total pitch error	
608	Base pitch variation	Since 10/130823
609	Axial pitch variation	Since 10/130823
610	Tip diameter	Since 10/130823
612	Root diameter	Since 10/130823
617	Slot width at the reference cylinder	Since 10/130823
620	Line	
621	Formal line error	
630	tooth profile	

Value	Description	
631	Formal profile error	
632	Profile angle bias	
633	Profile wobble	
640	Tip relief	
641	Profile crowning	
642	Crowning	
643	Crowning height	
651	Flank line angle bias	
652	Flank line wobble	
660	Radial run-out bias	
661	Eccentricity	Since 10/130823
662	Wobble	
663	Coaxiality	
670	Two-flank working variation	Since 10/130823
671	Two-flank tooth-to-tooth radial composite deviation	Since 10/130823
672	Contact runout deviation	Since 10/130823
673	Diametrical two-ball dimension	Since 10/130823
674	Diametrical two-roll dimension	Since 10/130823
675	Radial one-ball dimension	Since 10/130823
676	Radial one-roll dimension	Since 10/130823
800	Time	
805	Number	Since 10/130823
820	Noise	
910	Leak rate	
950	Cleanliness of the component	Since 10/130823
955	Residual particle	Since 10/130823

8.2.10 Distribution Type K2011

Value	Description
1	normal distribution
2	log. normal distribution
4	root transformed normal distribution
11	folded normal distribution [0]
12	Raleigh distribution [0]
21	folded normal distribution [$<> 0$]
22	Raleigh distribution [$<> 0$]
30	Weibull distribution
91	Johnson transformation
92	mixed distribution
99	Pearson distribution system
100	binomial distribution
200	Poisson distribution

8.2.11 Tool Wear Type K2015

Value	Description
0	Undefined
1	Ascending
2	Descending

8.2.12 100% Measurement K2016

Value	Description
0	No
1	Yes

8.2.13 Alarm detection type K2017

Value	Description
0	Standard
1	Always identify alarms
2	Do not identify alarms

8.2.14 Acceptance limit extended K2018

Value	Description
0	No
1	Yes

8.2.15 Characteristics Status K2080

Value	Description
0	Activated
1	Deactivated
2	Exclude characteristic from input in procella/ Deactivated for the calculation for the new VDA5*
4	Exclude characteristic from Upload
8	Exclude measured values from upload
128	Exclude characteristic from scoring

You may write combinations by adding the single entries.

8.2.16 Type of Limit K2120/K2121

Value	Description
0	no limit
1	limit value
2	natural limit

8.2.17 Evaluation Type K2202

Wert	Description	Remark
1	Type 1	Single-characteristic calculation
2	Type 2	Single-characteristic calculation
3	Type 3	Single-characteristic calculation
4	Cnomo 1	Single-characteristic calculation
5	Cnomo 2	Single-characteristic calculation
42	Type 4	Single-characteristic calculation
51	Type 5	Single-characteristic calculation
72	GM Type 2	Single-characteristic calculation
73	GM Type 3	Single-characteristic calculation
81	GM Type 1A	Single-characteristic calculation
92	Short Range	Single-characteristic calculation
93	Stability	Single-characteristic calculation
94	Linearity	Single-characteristic calculation
95	Attribute	Single-characteristic calculation
52	Influence quantities incl. measured values	Only in VDA5 (new)
55	Influence quantity	Only in VDA5 (new)
98	Measuring system	Only in VDA5 (new)
99	Measurement process	Only in VDA5 (new)
100	Uncertainty analysis VDA/ISO	Only in VDA5 (new)
104	Repeatability on reference standard	Only in VDA5 (new)
108	Measured values of test parts	Only in VDA5 (new)

8.2.18 Study Types K2430, K3030 und K3440

The fields K3030 and K3440 may contain lists of the following values, which must be separated by commas.

A characteristic may be allocated to one study type only, field K2430 may contain one record only.

Value	Description
1	Functional study
2	Dimensional study
3	Material study
4	Reliability study
5	Process capability study
6	Process flow chart
7	Gage capability study
8	Gage list
9	EC data security sheet
10	Haptics
11	Acoustics
12	Scent
13	Appearance
14	Certificates
15	Design release
16	Material composition of purchase parts
17	Others
18	Material and functional test

8.2.19 Dimensional Attribute K2501

Value	Description
0	no record
1	basic dimension
2	test dimension

8.2.20 Tolerance Display Format K2502

Value	Description
0	nominal (10 H7)
1	limits (9,9-10,1)
2	plus minus (10 +/-0,1 upper dimension may differ from lower, i.e. 10 +0.2 – 0,1)
3	PlusMinusSymbol (upper and lower dimension equal, e.g. 10 +/- 0.1)

8.2.21 Dimensional Type K2503

Value	Description
0	undefined
1	drawing dimension
2	model dimension
3	reference dimension

8.2.22 Drawing Modification Status K2504

Value	Description
0	no modification (compared to last drawing)
1	modified characteristic (compared to last drawing)
2	new characteristic (compared to last drawing)
3	deleted characteristic

8.2.23 Reason for Sampling K3035

Field K3035 may contain a list of the following values, with the values separated by commas.

Value	Description
1	New part
2	Product change
3	Production relocation
4	Change in production procedures
5	Long-term suspension of production
6	New subcontractor
7	Product with DmbA
8	Production / Test plan created
9	FMEA carried out
10	Changed specification
11	Changed production conditions
12	Initial Submission
13	Tooling: Transfer, Replacement, Refurbishment or additional
14	Correction of Discrepancy
15	Change to Optional Construction or Material
16	Change in Part Processing
17	Other - please specify

8.2.24 Submission Level K3037

Value	Description
1	Level 1
2	Level 2
3	Level 3
4	Level 4
5	Level 5

8.2.25 Calculated Process Capability Type K3040

Value	Description
1	Expected process capability
2	Preliminary process capability
3	Process capability in the series

8.2.26 Executed Study K3112

Field K3112 may contain a list of the following values, which must be separated by commas.

Value	Description
1	Controlled drawings
2	Material test results
3	Control plan
4	Additional drawings / sketches
5	Certificates
6	Proof of process capability
7	Exact number of sample parts
8	Functional test results
9	Production procedure chart
10	Dimensional results
11	Product development authorization
12	Proof of gage capability
13	FMEA
14	Self-certifying supplier

8.2.27 Overall Decision and Decisions Regarding Individual Studies K3420-K3438

Value	Description
1	released
2	released with conditions imposed
3	rejected, new samples required
4	rejected, may be used up taking measures
5	rejected
6	other

8.2.28 Subgroup Type K8501

Value	Description
0	fixed
1	moving
2	Pseudo permanent

K8501 is to be used only along with K8500 (subgroup size).

8.2.29 Subgroup Type attribute K8503

Value	Description
0	variable
1	constant
2	Individual storage

8.2.30 Process stability K8530

Value	Description
1	stable
2	unstable

8.3 Catalogue Fields

The catalogues listed below may be defined individually by the user.

Key	Field Name	Length	Type	Remarks
K4000	Customer catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4001	Element allocation to the respective sub-catalogue	[5]	I5	
K4002	Customer number	[20]	A	
K4003	Customer name 1	[80]	A	
K4004	Customer name 2	[80]	A	
K4005	Customer department	[50]	A	
K4006	Customer plant	[50]	A	
K4007	Customer street	[50]	A	
K4008	Customer ZIP / City	[50]	A	
K4009	Customer country	[50]	A	
K4501	Identification of records which are out of use			0= in use, 1=out of use
K4502	Customer remark	[255]	A	New in V11
K4010	Manufacturer catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4011	Element allocation to the respective sub-catalogue	[5]	I5	
K4012	Manufacturer number	[20]	A	
K4013	Manufacturer name 1	[80]	A	
K4014	Manufacturer name 2	[80]	A	
K4015	Manufacturer department	[50]	A	
K4016	Manufacturer plant	[50]	A	
K4017	Manufacturer street	[50]	A	
K4018	Manufacturer ZIP / City	[50]	A	
K4019	Manufacturer country	[50]	A	
K4511	Identification of records which are out of use			0= in use, 1=out of use
K4512	Manufacturer remark	[255]	A	New in V11
K4020	Supplier catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4021	Element allocation to the respective sub-catalogue	[5]	I5	
K4022	Supplier number	[20]	A	
K4023	Supplier name	[80]	A	
K4024	Supplier name 2	[80]	A	

Key	Field Name	Length	Type	Remarks
K4025	Supplier department	[50]	A	
K4026	Supplier plant	[50]	A	
K4027	Supplier street	[50]	A	
K4028	Supplier ZIP / City	[50]	A	
K4029	Supplier country	[50]	A	
K4521	Identification of records which are out of use			0= in use, 1=out of use
K4522	Supplier remark	[255]	A	New in V11
K4030	Purchase order catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4031	Element allocation to the respective sub-catalogue	[5]	I5	
K4032	Purchase order number	[20]	A	
K4033	Purchase order name	[80]	A	
K4531	Identification of records which are out of use			0= in use, 1=out of use
K4532	Remark	[200]	A	New in V11
K4040	Material catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4041	Element allocation to the respective sub-catalogue	[5]	I5	
K4042	Material number	[20]	A	
K4043	Material name	[80]	A	
K4541	Identification of records which are out of use			0= in use, 1=out of use
K4542	Material remark	[255]	A	New in V11
K4050	Drawing catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4051	Element allocation to the respective sub-catalogue	[5]	I5	
K4052	Drawing number	[20]	A	
K4053	Drawing modification	[80]	A	
K4551	Identification of records which are out of use			0= in use, 1=out of use
K4552	Remark	[200]	A	New in V11
K4060	Machine catalogue (Name of the main-/sub-catalogue)	[80]	A	Applies to K-field K0010
K4061	Element allocation to the respective sub-catalogue	[5]	I5	
K4062	Machine number	[20]	A	
K4063	Machine name	[80]	A	
K4064	Sector	[50]	A	New in V11

Key	Field Name	Length	Type	Remarks
K4065	Department	[50]	A	New in V11
K4066	Operating seq. no.	[50]	A	New in V11
K4067	External reference no.	[50]	A	New in V11
K4561	Identification of records which are out of use			0= in use, 1=out of use
K4562	Remark	[200]	A	New in V11
K4070	Gage catalogue (Name of the main-/sub-catalogue)	[80]	A	Applies to K-field K0012
K4071	Element allocation to the respective sub-catalogue	[5]	I5	
K4072	Gage number	[20]	A	
K4073	Gage name	[80]	A	
K4074	Gage group	[20]	A	
K4075	Gage – last calibration date		D	
K4076	Gage – next calibration date		D	
K4077	IP address	[30]	A	New in V11
K4078	Location	[50]	A	New in V11
K4079	Computer model	[50]	A	New in V11
K4571	Identification of records which are out of use			0= in use, 1=out of use
K4572	Remark	[200]	A	New in V11
K4575	Program version	[30]	A	New in V11
K4576	Software	[50]	A	New in V11
K4080	Units catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4081	Element allocation to the respective sub-catalogue	[5]	I5	
K4082	Unit number	[20]	A	
K4083	Unit name	[80]	A	
K4581	Identification of records which are out of use			0= in use, 1=out of use
K4582	Remark		A	New in V11
K4090	Operator catalogue (Name of the main-/sub-catalogue)	[80]	A	Applies to K-field K0008
K4091	Element allocation to the respective sub-catalogue	[5]	I5	
K4092	Operator name 1	[20]	A	
K4093	Operator name 2	[80]	A	
K4094	Operator department	[50]	A	
K4095	Operator telephone number	[50]	A	
K4096	Operator fax number	[50]	A	
K4097	Operator e-mail address	[50]	A	

Key	Field Name	Length	Type	Remarks
K4098	Operator position	[30]	A	
K4099	Operator title	[15]	A	
K4591	Identification of records which are out of use			0= in use, 1=out of use
K4592	Remark	[200]	A	New in V11
K4100	Contractor catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4101	Element allocation to the respective sub-catalogue	[5]	I5	
K4102	Contractor number	[20]	A	
K4103	Contractor name	[80]	A	
K4601	Identification of records which are out of use			0= in use, 1=out of use
K4602	Remark			New in V11
K4110	Product catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4111	Element allocation to the respective sub-catalogue	[5]	I5	
K4112	Product number	[20]	A	
K4113	Product name	[80]	A	
K4611	Identification of records which are out of use			0= in use, 1=out of use
K4612	Remark	[200]	A	New in V11
K4120	Employee (staff) catalogue (Name of the main-/sub-catalogue)	[80]	A	
K4121	Element allocation to the respective sub-catalogue	[5]	I5	
K4122	Employee name 1	[20]	A	
K4123	Employee name 2	[80]	A	
K4124	Employee department	[50]	A	
K4125	Employee telephone number	[50]	A	
K4126	Employee fax number	[50]	A	
K4127	Employee e-mail address	[50]	A	
K4128	Employee position	[30]	A	
K4129	Employee title	[15]	A	
K4621	Identification of records which are out of use			0= in use, 1=out of use
K4622	Remark	[200]	A	New in V11
K4220	Event catalogue (name of main-/ sub-catalogue)	[80]	A	Applies to K-field K0005
K4221	Event catalogue element (allocation event <-> sub-catalogue)	[5]	I	

Key	Field Name	Length	Type	Remarks
K4222	Event number	[20]	A	
K4223	Event text	[80]	A	
K4721	Special Identification of records			0= in use 1=obsolete 2=Process intervention event 3=obsolete process intervention event
K4722	Remark	[200]	A	New in V11
K4230	Ordinal Classes Catalogue (name of main-/ sub-catalogue)	[50]	A	
K4231	Element allocation to the respective sub-catalogue	[5]	I	
K4232	Ordinal Class – number	[20]	A	
K4233	Ordinal Class – Description	[50]	A	
K4234	Ordinal Class – Evaluation	[20]	A	
K4235	Ordinal Class – Rank	[10]	I	
K4236	Ordinal Class – O.K./n.O.K.	[5]	I	
K4237	Ordinal Class – Validity	[5]	I	
K4731	Identification of records which are out of use			0= in use, 1=out of use
K4732	Remark	[200]	A	New in V11
K4240	Process parameter catalogue (name of main-/ sub-catalogue)	[80]	A	Applies to K-field K0011
K4241	Catalogue element (allocation process parameter <-> sub-catalogue)	[5]	I	
K4242	Process parameter number	[20]	A	
K4243	Process parameter name	[80]	A	
K4244	Process parameter short text	[20]	A	
K4245	Process parameter value - number	[20]	A	
K4246	Process parameter value – Text	[80]	A	
K4249	Allocation Process parameter <-> Process parameter values	[5]	I	
K4741	Identification of records which are out of use			0= in use, 1=out of use
K4742	Remark	[200]	A	New in V11
K4250	Cavity catalogue (Name of the main-/sub-catalogue)	[80]	A	Applies to K-field K0007
K4251	Element allocation to the respective sub-catalogue	[5]	I5	
K4252	Cavity number	[20]	A	
K4253	Cavity name	[80]	A	
K4751	Identification of records which are out of use			0= in use, 1=out of use
K4752	Remark	[200]	A	New in V11

Key	Field Name	Length	Type	Remarks
K4270	Catalogue K0061 (Name of the main-/sub-catalogue)	[80]	A	Applies to K-field K0061
K4271	Element allocation to the respective sub-catalogue	[5]	I	
K4272	K0061 – number	[20]	A	
K4273	K0061 – name	[80]	A	
K4771	Identification of records which are out of use			0= in use, 1=out of use
K4772	Remark	[200]	A	New in V11
K4280	Catalogue K0062 (Name of the main-/sub-catalogue)	[80]	A	Applies to K-field K0062
K4281	Element allocation to the respective sub-catalogue	[5]	I	
K4282	K0062 – number	[20]	A	
K4283	K0062 – name	[80]	A	
K4781	Identification of records which are out of use			0= in use, 1=out of use
K4782	Remark	[200]	A	New in V11
K4290	Catalogue K0063 (Name of the main-/sub-catalogue)	[80]	A	Applies to K-field K0063
K4291	Element allocation to the respective sub-catalogue	[5]	I	
K4292	K0063 – number	[20]	A	
K4293	K0063 – name	[80]	A	
K4791	Identification of records which are out of use			0= in use, 1=out of use
K4792	Remark	[200]	A	New in V11

9 Examples

The case studies listed here are complete examples that can be copied to a txt file. After changing the file extension to *.dfq, you may use them for your studies. Only as few information as necessary are written. Due to lack of space, the information is displayed in 2 columns and in a small font size.

9.1 Example „structural information“ A

K0100 6	K5112/2 2
K1002 Part	K5113/3 1
K2002/1 Characteristic 1	K5102/1 1
K2002/2 Characteristic 2	K5103/1 2
K2002/3 Characteristic 3	K5102/2 3
K2002/4 Characteristic 4	K5102/2 4
K2002/5 Characteristic 5	K5103/1 3
K2002/6 Characteristic 6	K5102/3 5
K5002/1 Group 1	K5102/3 6
K5111/1 1	

9.2 Example „ structural information “ B

K0100 6	K5112/4 3
K1002 Part	K5112/5 4
K2002/1 Characteristic 1	K5112/6 5
K2002/2 Characteristic 2	K5112/7 6
K2002/3 Characteristic 3	K5113/8 1
K2002/4 Characteristic 4	K5102/1 1
K2002/5 Characteristic 5	K5103/1 3
K2002/6 Characteristic 6	K5102/3 3
K5002/1 Group 1	K5102/3 4
K5111/1 1	K5103/1 8
K5112/2 1	K5102/8 5
K5112/3 2	K5102/8 6

9.3 Example 2030/2031

K0100 3	K2002/2 Characteristic 2
K1001 Part 2030_2031	K2030/2 0
	K2031/2 1
	K2002/3 Characteristic 3
K2002/1 Characteristic 1	K2030/3 0
K2030/1 1	K2031/3 1
K2031/1 0	

9.4 3D-positional tolerance

K0100 4	K2111/4 20,2
K1002 Teil	K5111/1 1
K2002/1 3D-Position	K5112/2 1
K2004/1 0	K5103/1 2
K2008/1 10	K5102/2 2
K2002/2 X-Achse	K5102/2 3
K2004/2 0	K5102/2 4
K2110/2 9,8	
K2111/2 10,2	K0001/1 0
K2002/3 Y-Achse	K0002/1 256
K2004/3 0	
K2110/3 15,8	K0001/2 10,023
K2111/3 16,2	K0001/3 15,986
K2002/4 Z-Achse	K0001/4 20,006
K2004/4 0	
K2110/4 19,8	

9.5 Example ELS including values

K0100 4	K5102/2 3
K1002 Teil	K5102/2 4
K2002/1 FSK	K0020/1 1000
K2004/1 6	K0021/1 2
K2008/1 6	K0020/2 1000
K8500/1 2	K0021/2 0
K8501/1 1	K0020/3 1000
K8503/1 2	K0021/3 1
K2002/2 Fehlerart 1	K0020/4 1000
K2004/2 5	K0021/4 1
K8500/2 2	
K8501/2 1	K0020/1 1000
K8503/2 2	K0021/1 1
K2002/3 Fehlerart 2	K0020/2 1000
K2004/3 5	K0021/2 0
K8500/3 2	K0020/3 1000
K8501/3 1	K0021/3 1
K8503/3 2	K0020/4 1000
K2002/4 Fehlerart 3	K0021/4 0
K2004/4 5	
K8500/4 2	K0020/1 1000
K8501/4 1	K0021/1 0
K8503/4 2	K0020/2 1000
	K0021/2 0
K5111/1 1	K0020/3 1000
K5112/2 1	K0021/3 0
	K0020/4 1000
K5103/1 2	K0021/4 0
K5102/2 2	

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