GP Temperature Version 1.2

Expression 5: extensive (K → K)

Presentation of the different Good Practice (GP) expressions:

1. simplified   (K → K)
2. typical   (K → K)
3. typical_adjustment   (K → K)
4. resistance   (K → Ω)
5. extensive   (K → K)

The GP examples are formulated very generally and the numerical values given are arbitrary. The calibration laboratory must decide for itself whether all requirements for the representation of the calibration result are covered with these GP examples.

It cannot be deduced from the GP examples that they fulfil all requirements vis-à-vis third parties (e.g. to the needs of the customer). This must be agreed with the third party. In the same way, the creator of the DCC must ensure that the framework conditions given to him remain fulfilled.

Conformity statements are an essential part in factory calibrations. They generally do not occur in calibration certificates from national metrological state institutes. The DCC serves all representations of calibration results. Thus, the calibration laboratory must decide whether or not to include conformity statements. Therefore, conformity statements are optional in the DCC scheme.

Calibration certificates typically contain important text passages. Without these text passages, the certificate is of little or no significance. In this document, the text passages were deliberately omitted because the text passages are very individual and therefore cannot be reproduced here. The text passages reproduced in the XML files are also exemplary and must therefore be adapted by the user.

The page with the administrative data - with exception of the statements - is not dealt with here.

With the specifications 1, 2, 3 and 5, the temperature value on the calibration object is read during calibration. With specification 4 (resistance), the resistance of the calibration object is measured.

We would like to point out that the characteristics are intended to illustrate the variability of the GP temperature. Thus - depending on the calibration activity - the resistance can be measured on the calibration object or the temperature can be measured via an indicator. We see it as the task of the corresponding DKD technical committee to further develop this first draft for GP examples. The DCC team of PTB will be pleased to provide advice.

administrativeData

statements

statement

The results refer only to the object calibrated in this DCC. The measurement results are valid at the time of calibration. The applicant is responsible for arranging a recalibration in due time.
ISO/IEC 17025:2018-03   7.8.4.3

statement   refType="basic_validityRange"

Lower limit: 306 K

Upper limit: 593 K

statement   refType="basic_conformity"

The conformity statement is made on the basis of the customer's specifications. They are listed in the DCC.
Determination by "Customer GmbH"

PASS

statement   refType="basic_recalibration"

Date when the calibration item is to be recalibrated at the latest after specification by the customer: 1959-10-22

Determination by "Customer GmbH"

measurementResults   measurementResult

usedMethods

usedMethod   refType="basic_uncertainty"

Expanded measurement uncertainty **….**
GUM

usedMethod   refType="gp_temperatureSensor"

Calibration of temperature sensors: …
DKD-R 5-1:2018

usedMethod   id="gp_uM1"

Additional method 1…

usedMethod   id="gp_uM2"

Additional method 2…

usedMethod   id="uM_totalSampleTime"

Recording time of individual measurements: …

usedMethod   id="uM_numberOfSamples"

Number of single measurements: …

usedSoftware

software   id="uS_1"

Description software 1: …   Release; R1.3

software   id="uS_2"

Description software 2: …   Release; R4.0

measuringEquipments

measuringEquipment   id="mE_1"

Description Pt 100 resistance thermometer 1: …
Serial number, …

measuringEquipment   id="mE_2"

Description Pt 100 resistance thermometer 2: …
Analogue calibration certificate
Serial number; Reference to calibration certificate of the measuringEquipment

measuringEquipment   id="mE_3"

Description DAkkS - reference standard (PT25): …
DCC
Serial number; Reference to calibration certificate including unique hash value of measuringEquipment

influenceConditions

influenceCondition   refType="gp_immersionDepth"

Immersion depth: …
0.1 m

influenceCondition   **refType="basic_temperature"**

Ambient condition temperature: … 293 – 299 K

influenceCondition   **refType="basic_huminidyRelative"**

Ambient condition relative humidity: … 0.2 – 0.7

influenceCondition   **refType="basic_adjustment"**

<dcc:status>beforeAdjustment</dcc:status>

Adjustment

data refType="gp_table1"

Start time	refType_area1	basic_referenceValue					
		Method No.	Software No.	Equipment No.	Reference value / K	Measuring time	Calibration value / K
	refType_area2	gp_uM*	gp_uS*	gp_mE*			basic_calibrationValue
	refType_area3						
1957-08-13T08:00Z		1	1	1	306.245	1957-08-13T08:15Z	306
1957-08-13T09:00Z		1	1	2	373.127	1957-08-13T09:15Z	373
1957-08-13T10:00Z		1	2	2	448.249	1957-08-13T10:15Z	448
1957-08-13T11:00Z		2	2	3	523.321	1957-08-13T11:15Z	523
1957-08-13T12:00Z		2	2	3	593.151	1957-08-13T12:15Z	593

Table continued …

refType_area1	basic_measuredValue		basic_measurementError					
	Measured value/ K	Measuring time	Measurement error / K	U (Measurement error) / K			Total measurement time / s	Number of measurements
refType_area2								
refType_area3								
	306.35	1957-08-13T08:25Z	0.105	0.89	2	0.95	normal	1262.38	60
	373.45	1957-08-13T09:25Z	0.323	0.89	2	0.95	normal	1255.78	60
	448.05	1957-08-13T10:25Z	-0.199	0.89	2	0.95	normal	1258.11	60
	523.05	1957-08-13T11:25Z	-0.271	0.89	2	0.95	normal	1260.56	60
	593.35	1957-08-13T12:25Z	0.199	0.89	2	0.95	normal	1264.45	60

Table continued …

refType_area1		basic_measurementError			
		Lower tolerance limit / K	Lower acceptance limit / K	Upper acceptance limit / K	Upper tolerance limit / K
refType_area2	basic_conformity				
refType_area3		basic_toleranceLimitLower	basic_ acceptanceLimitLower	basic_ acceptanceLimitUpper	basic_toleranceLimitUpper
	pass	-1.55	-0.75	0.75	1.55
	pass	-1.55	-0.75	0.75	1.55
	pass	-1.55	-0.75	0.75	1.55
	pass	-2.05	-0.90	0.90	2.05
	pass	-2.05	-0.90	0.90	2.05

results

result   **refType="gp_measuringResult1"**

Measuring results

data   refType="gp_table2"

Start time	refType_area1	Method No.	Software No.	Equipment No.	basic_referenceValue Reference value / K	Measuring time	Calibration value / K
	refType_area2 refType_area3	gp_uM*	gp_uS*	gp_mE*			basic_calibrationValue
1957-08-13T13:00Z		1	1	1	306.248	1957-08-13T13:15Z	306
1957-08-13T14:00Z		1	1	2	373.121	1957-08-13T14:15Z	373
1957-08-13T15:00Z		1	2	2	448.253	1957-08-13T15:15Z	448
1957-08-13T16:00Z		2	2	3	523.319	1957-08-13T16:15Z	523
1957-08-13T17:00Z		2	2	3	593.154	1957-08-13T17:15Z	593

Table continued …

refType_area1	basic_measuredValue Measured value/ K	Measuring time	basic_measurementError Measurement error / K	U (Measurement error) / K			Total measurement time / s	Number of measurements
refType_area2 refType_area3								
	306.32	1957-08-13T13:25Z	0.072	0.061	2	0.95 normal	1261.23	60
	373.21	1957-08-13T14:25Z	0.089	0.061	2	0.95 normal	1259.44	60
	448.36	1957-08-13T15:25Z	0.107	0.061	2	0.95 normal	1257.27	60
	523.31	1957-08-13T16:25Z	-0.009	0.061	2	0.95 normal	1260.87	60
	593.07	1957-08-13T17:25Z	-0.084	0.061	2	0.95 normal	1264.59	60

Table continued …

refType_area1		basic_measurementError Lower tolerance limit / K	Lower acceptance limit / K	Upper acceptance limit / K	Upper tolerance limit / K
refType_area2	basic_conformity				
refType_area3		basic_toleranceLimitLower	basic_ acceptanceLimitLower	basic_ acceptanceLimitUpper	basic_toleranceLimitUpper
	pass	-0.58	-0.23	0.23	0.58
	pass	-0.58	-0.23	0.23	0.58
	pass	-0.58	-0.23	0.23	0.58
	pass	-0.78	-0.30	0.30	0.78
	pass	-0.78	-0.30	0.30	0.78

measurementMetaData

metaData

declaration

Notes:

[1]: This is a typical procedure in the case of calibrating a temperature-sensor.

declaration