GP Temperature Version 1.2

Expression 4: resistance (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: 273 K

Upper limit: 333 K

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 refType="gp_resistanceThermometer"

Calibration of resistance thermometers: …

usedMethod refType="gp_dinEn60751"

Coefficients: …
DIN EN 60751

measuringEquipments

measuringEquipment refType="basic_normalUsed"

Description Pt 100 resistance thermometer: …
Serial number, …

influenceConditions

influenceCondition refType="gp_current"

Measuring conditions: …
Current: 1 mA

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

results

result refType="gp_measuringResult1"

Measuring results

data refType="gp_table1"

refType_area1	basic_referenceValue		basic_measuredValue
	Reference value / K	Measured value/ Ω	Measured value/ Ω
refType_area2		basic_calibrationValue	
refType_area3			
	273.149	273.15	100.0220
	283.151	283.15	103.9329
	293.151	293.15	107.8300
	303.149	303.15	111.7130
	313.149	313.15	115.5841
	323.149	323.15	119.4422
	333.150	333.15	123.2880
	303.151	303.15	111.7131
	273.151	273.15	100.0224

result refType="gp_coefficients"

Coefficients according to Callendar van Dusen

R_0 / $\frac{\mathrm{kg \cdot m^2}}{\mathrm{s^3 \cdot A^2}}$	A / $\mathrm{K^{-1}}$	B / $\mathrm{K^{-2}}$
100.0225	0.0039155	-6.469E-07

measurementMetaData metaData refType="basic_conformity"

The conformity statement is made for class A Pt100 resistance sensors ...

Determination by „Kunde GmbH“

PASS