

Comparative measurement relative humidity

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Provider of the comparative measurement

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1 Program

A comparative measurement is carried out for the measured variable relative humidity. A humidity sensor with measuring device is sent as the calibration item. The calibration item must be calibrated in accordance with guideline DKD-R 5-8:2019 sequence B.

1.1 Confidentiality

The participants undertake to maintain confidentiality about the information and results obtained as part of the comparative measurement. Any subcontractors involved are contractually bound to the same confidentiality.

All participants are named in the technical protocol and final report, but the results are only presented in anonymised form.

1.2 Schedule / Procedure

Planned start: August 2024

The comparative measurement takes place in a ring, with intermediate tests being carried out in the pilot laboratory.

Each participant has two calendar weeks to carry out the calibration and forward the calibration items. If this is not possible, the coordinator must be informed, if possible even before the start of the ring comparison.

The participants are responsible for **insured and immediate forwarding** of the calibration items to the next participant or to Testo Industrial Services.

2 Realisation

2.1 Calibration item

Designation	Humidity sensor	Measuring device
Type	HC2A-SH	HP32
Manufacturer	Red Rednic	Rotronic
Serial no.	20577794	5211597
Accessories:	Extension cable	

The calibration item must be calibrated in the measuring chain with the extension cable.



Figure 1: Calibration item: Humidity sensor with measuring device

2.2 Procedure and measuring points

Determine the **deviation of the relative humidity** at the measuring points specified below.

If technically possible, use sequence B1, otherwise B2. This must be stated on the calibration certificate.

Measuring points	Measuring condition
10 % rH, 50 % rH, 90 % rH	10 °C
10 % rH, 50 % rH, 90 % rH	23 °C
10 % rH, 50 % rH, 90 % rH	70 °C

2.3 Assigned values

The assigned reference values are determined using the weighted average of all participant results from the accredited calibration laboratories.

The mathematical basis for determining the reference value and its measurement uncertainty is based on the publication by Cox. An analysis for outliers is carried out in advance.

In addition, a characterisation test in accordance with DKD-R 5-8:2019 procedure A is carried out by the pilot laboratory before the start. As well as monitoring the stability of the calibration item over the period of the comparison measurement. If necessary, this is considered in the evaluation as a transfer uncertainty contribution.

2.4 Evaluation

The results are evaluated using the E_n value for the assigned value. A satisfactory result is achieved if $|E_n| \leq 1.0$.

3 Participation

3.1 Participants

This comparative measurement is aimed at all calibration laboratories that have or are seeking an accreditation for the specified measurand.

3.2 Registration procedure

If interested, the laboratory will be sent an offer with the participation fees. Participation is considered binding as soon as the offer has been accepted and the order confirmation has been sent to the laboratory.

The registration deadline is enclosed with the offer.

Note: A minimum number of 8 participants is required for the organisation of this ring comparison.

4 Further information

At the end of the comparative measurement, a draft of the final report is sent to the participants to review the results and their performance evaluation.

It is planned to present the results in anonymised form to the DKD Technical Committee.