

Calibration of Hygrometers with Non-Saturated Solutions

i PLEASE NOTE

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General Information

Specimen

The device under test. A measuring device that undergoes calibration or adjustment.

Reference or Standard

The device that supplies the “true” value in the calibration or adjustment process. The reference should be traceable to national or international standards. This traceability is guaranteed via a calibration hierarchy. The humidity reference value can be supplied by a non-saturated salt solution or a humidity generator, for instance.

Calibration

Comparison of the specimen with the reference and statement on the deviation in the form of a calibration certificate. The specimen is not modified/adjusted during calibration.

Adjustment

Modification of the specimen to bring it in line with the reference.

The Humor 20 Humidity Calibrator generates the humidity reference value on a two-pressure reactor principle. It is highly accurate, very fast, independent from the ambient temperature and can run automatically multiple-point humidity calibrations. Humor 20 is appropriate for high-end calibration and adjustment of hygrometers with sensing probes Ø8...30 mm (0.31...1.18"), compact room sensors and data loggers. For humidity calibration with Humor 20 please refer:

- Datasheet at https://www.epluse.com/fileadmin/data/product/humor20/datasheet_Humor20.pdf.
- Manual at https://www.epluse.com/fileadmin/data/product/humor20/BA_Humor20_e.pdf.

The humidity calibration kit with salt solutions offers a simple, cost-effective way to calibrate and adjust hygrometers with sensing probes Ø10...12 mm (0.39...0.47").

The E+E saturated salt solutions come with an traceable calibration certificate and enable high calibration accuracy.

Datasheet: https://www.epluse.com/fileadmin/data/product/HumidityCalibrationSet/datasheet_humidity_calib_set_e.pdf.

Preparations for Calibration with Non-Saturated Salt Solutions

- The probe of the specimen as well as the calibration chamber must be clean and dry.
To clean a dirty probe please see “Cleaning Instructions for Humidity Sensors” at https://www.epluse.com/fileadmin/data/product/CleaningInstructions/BA_CleaningInstructions_e.pdf.
- A clogged or dirty filter cap must be replaced by an original new one before calibration. For the choice of filter caps see datasheet “Accessories” at https://www.epluse.com/fileadmin/data/product/accessories/datasheet_accessories.pdf.
- For an accurate calibration, it is of utmost importance that the probe to be calibrated, the calibration chamber and the salt solution have the same temperature (calibration temperature), which must remain constant during the entire calibration process.
- The best accuracy is achieved when the calibration temperature is 23 °C ±2 °C (73.4 °F ±3.6 °F). Ideally, calibration should be carried out in a temperature-controlled environment without draughts and without direct radiation from the sun.

49.9%RH at 23°C		S/Nr.: 20135001	
15°C	49.4%RH	24°C	50.0%RH
18°C	49.6%RH	25°C	50.1%RH
20°C	49.7%RH	26°C	50.1%RH
21°C	49.8%RH	28°C	50.3%RH
22°C	49.9%RH	30°C	50.4%RH

- Information on the reference humidity value provided by an E+E saturated salt solution at various temperatures can be found on the label inside the box containing each set of ampoules.
- Do not hold the calibration chamber by hand during the calibration. This can cause temperature variations and inaccurate calibration results.

NOTICE

Notice signals danger to objects or data. If the avoidance instructions are not observed, damage to property or data may occur.

The calibration chamber must remain in a stable, horizontal position during the entire calibration process. The salt solution must not come into contact with the sensing head (tip of the probe) of the specimen.

- First test the stability of the set-up by inserting the probe to be calibrated into the calibration chamber. In some cases, it is not sufficient to simply place the chamber on a table. For a stable setup, it may be necessary to mechanically secure the calibration chamber, the probe or both, e.g. for heavy, long probes or for wall-mounted/duct-mounted hygrometers with bulky enclosures.

Handling Instruction

1. Place/fix the calibration chamber in a horizontal position. Remove the cover and place a textile pad on the base of the chamber.



2. Select an ampoule with desired reference humidity, e.g. 35 %RH (HA010435), and gently shake and tap the glass to bring the liquid to the bottom part of the ampoule.



3. Press the tip of the ampoule back at the mark to break it open. Empty the content of the ampoule on the textile pad by lightly tapping the ampoule.



4. Insert the probe into the calibration chamber until it reaches the opposite side. The sensing head (tip of the probe) must not come into contact with the salt solution.

NOTICE

Do not remove the filter cap!



5. Place the cover onto the calibration chamber and close it tightly. The hygrometer is now ready for calibration or adjustment.



The following stabilisation times are recommended for both calibration and adjustment:

45 min. for 0, 5, 10, 20, 35, 50, 65 % RH.

60 min. for 80 %RH

120 min. for 95 %RH

For adjustment please see instructions in the operation manual of the specimen.

Dispose of the textile pad after each calibration point, rinse the calibration chamber with tap water and wipe it completely dry with a soft cloth.

For a multi-point humidity calibration, a complete calibration loop starting with a low humidity, e.g.

10 % → 35 % → 50 % → 80 % → 50 % → 35 % → 10 % is recommended.

Safety Instruction

The safety datasheet for the none-saturated salt solutions is available upon request.

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