

Required devices for the calibration of climatic chambers within the Calibration Expert Partner System (CEPS) of esz AG calibration & metrology

For the calibration of climatic chambers in the CEPS network, with the help of the software solution **calibration expert - climatic test chamber (CTC)**, certain requirements apply to both the performance of the calibrations and the test equipment used.

The testing process of the software solution CTC refers to the guideline DKD-R 5-7 (calibration of climatic chambers, method A - unloaded). esz AG has successfully validated typical measuring instruments, as listed below, which are applicable for the calibration of climatic chambers.

The data acquisition unit used for calibration will be controlled remotely by CTC. Therefore, an interface control has been developed for the devices listed below.

Furthermore, every measuring instrument used for calibration of climatic chambers with CTC needs an accredited calibration. If the measuring instrument has not been calibrated by esz AG, an additional fee will be charged due to the requirement of importing the calibration data into the database.

The following devices* (→ tech. minimum requirement) are supported for the calibration of climatic chambers within the CEPS network of esz AG:

**no purchase by esz AG*

■ **Standard - temperature:**

- Air temperature sensor: **Pt100 (recommended:** class DIN AA according to DIN EN IEC 60751:2023) 10x, one of which is blackened by esz AG (alternatively, a Teflon coating is also possible)
- logger: **Ahlborn ALMEMO 710** (usable for 10 sensors)
+ ALMEMO connectors (10x) for Pt100 (ZA9030FS2)

■ **Standard - humidity:**

- humidity sensor: e.g. Ahlborn FHAD 36R (depending on the temperature range!)
2x with ALMEMO D6 connector
- Psychrometer: **Ahlborn FPAD 36-3 with ALMEMO D6 connector** (as an alternative to the humidity sensors)
- logger: **Ahlborn ALMEMO 2590-2A or -4AS**

■ **Auxiliary equipment - thermo-hygro-barometer:**

- Data logger: Specification:
temperature ± 1 K, humidity ± 3 % r.H., atmospheric pressure ± 5 mbar
e.g. TFA Dostmann LOG220

■ **Tools:**

- USB data cable
ZA 1919 DKU (one required for each data logger)
- Cubic frame:
The useful volume of the climatic chamber to be calibrated has to be spanned by the arrangement of the measuring locations of the sensors. It is recommended to use a cubic frame, i.e., the reference sensors must be distributed spatially within the volume of the climate chamber at the corners of a cuboid. Alternatively, grid inserts existing in or inserted into the climate chamber can be used, to which the reference probes are attached during calibration.

Software requirements for the calibration of climatic chambers within the CEPS network of esz AG calibration & metrology:

- Windows 10 or higher
- .NET 6 or higher
- calibration expert PLUS
<https://update.esz-ag.de/cePLUS/setup.exe>
- Data acquisition unit, Ahlborn:
ALMEMO Control configuration software
<https://www.ahlborn.com/en/treiber/treiber-usb-datenkabel-za-1919>

Last updated 02/2025, for the latest information & software requirements please contact consulting@esz-ag.de