



—
your partner
in sensor
technology.

+ ISO 9001 Calibration Services



+ ISO 9001 Calibration Services for Your Measuring Instruments

An ISO 9001 calibration certificate documents the comparative measurement of a measuring instrument against high-quality reference devices. The comparison is performed in accordance with internal procedures that comply with quality management system according to ISO 9001 standard and provide information on the specimen's measuring accuracy. The reference devices are traceable to national standards, however, the calibration process is not accredited. Therefore, an ISO 9001 calibration is neither traceable nor internationally comparable.

An ISO 9001 certificate is recommended in applications where it is necessary to verify that the accuracy of the measuring instrument matches the original specifications on certain points, but traceability to international standards is not required by current regulations.

E+E Elektronik calibration laboratory is manufacturer independent and offers multi-brand ISO 9001 calibration service.

The calibration laboratory at E+E Elektronik headquarters in Engerwitzdorf (Austria), offers ISO 9001 calibration service for the following measurands:

| **Air Velocity** | **Humidity** | **Temperature**
| **Dew Point** | **Pressure**



Upon request, on-site ISO 9001 calibration service is also available for the following measurands:

| **Humidity**
| **Temperature**

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+ Air Velocity



Air velocity sensors are calibrated in a homogeneous, reproducible airflow in wind tunnel. The reference device is traceable to international standards. Comparative measurement is performed according to internal procedures that meet the requirements of ISO 9001 quality standards. The air velocity calibration is performed in air at ambient temperature. Only air velocity sensors manufactured by E+E can be calibrated. For air velocity ISO 9001 calibration, it is not possible to calibrate the temperature and report the value on the certificate.

Scope of ISO 9001 Air Velocity Calibration

Calibration	Calibration objects	Measurement conditions	Air velocity calibration range:
ISO 9001 (in-house)	EE650, EE660, EE680, EE75, AVS701 (non-E+E devices not allowed)	Ambient temperature range (25 ±3) °C (77 ±5.4) °F	0...40 m/s (0...8,000 ft/min)

+ Dew Point



The reference devices used for dew point (Td) calibration are traceable to national standards. Comparative measurement is performed according to internal procedures that meet the requirements of ISO 9001 quality standards. ISO 9001 dew point calibrations are performed in air at ambient temperature. Two dew point calibration ranges are available: low Td using a dew point reference device and normal Td in a humidity generator reference device.

Scope of ISO 9001 Dew Point Calibration

Calibration	Calibration objects*	Measurement conditions	Dew Point calibration range
ISO 9001 (in-house, low Td range)	Dew point sensors (e.g. EE355, ...)	Ambient temperature range (25 ±3) °C (77 ±5.4) °F	-60...-20 °C Td (-76...-4 °F Td)
ISO 9001 (in-house, normal Td range)	Dew point sensors (e.g. EE354, EE310)	Ambient temperature range (25 ±3) °C (77 ±5.4) °F	-10...+23 °C Td (14...73 °F Td)

* Pre-validation of the device by the E+E laboratory is required (see section „ISO 9001 Calibration Procedure“)

+Humidity



The humidity (RH) reference device is an E+E Elektronik high-end portable humidity generator, traceable to international standards. It can accommodate humidity probes, sensors and small data loggers. Comparative measurement is performed according to internal procedures that meet the requirements of ISO 9001 quality standards. ISO 9001 humidity calibrations are performed in air at ambient temperature. On-site ISO 9001 humidity calibration service is available upon request.

Scope of ISO 9001 Humidity Calibration

Calibration	Calibration objects*	Measurement conditions	Humidity calibration range
ISO 9001 (in-house)	Humidity sensors (e.g.: EE310, HTP501...)	Ambient temperature range (25 ±3) °C (77 ±5.4) °F	10...90 % RH
ISO 9001 (on-site)	Humidity sensors (e.g. EE310, HTP501)	Ambient temperature range (25 ±3) °C (77 ±5.4) °F	10...90 % RH

* Pre-validation of the device by the E+E laboratory is required (see section „ISO 9001 Calibration Procedure“)

+Pressure



The calibration laboratory performs relative and differential pressure calibrations in a low-pressure range, max ±10,000 Pa (± 100 hPa, ±0.1 bar). The reference devices are traceable to national standards. Comparative measurements are performed according to internal procedures that meet the requirements of ISO 9001 quality standards.

Scope of ISO 9001 Pressure Calibration

Calibration	Calibration objects*	Measurement conditions	Pressure calibration range
ISO 9001 (in-house)	Relative pressure sensors	Ambient temperature range (25 ±3) °C (77 ±5.4) °F	0...1,000 Pa 0...10,000 Pa
ISO 9001 (in-house)	Differential pressure sensors (e.g. EE600, EE610)	Ambient temperature range (25 ±3) °C (77 ±5.4) °F	-1,000...1,000 Pa -10,000...10,000 Pa

* Pre-validation of the device by the E+E laboratory is required (see section „ISO 9001 Calibration Procedure“)

+Temperature



Temperature measuring instruments are calibrated using reference devices such as dry block calibrators (contact temperature type) which are traceable to international standards. An on-site ISO 9001 temperature calibration service is available upon request.

Scope of ISO 9001 Temperature Calibration

Calibration	Calibration objects*	Measurement conditions	Temperature calibration range
ISO 9001 (in-house)	Temperature sensors (e.g. EE431, EE074...)	Comparison measurement in dry block calibrator	-40...420 °C (-40...788 °F)
ISO 9001 (on-site)	Temperature sensors (e.g. EE431, EE074...)	Comparison measurement in dry block calibrator	-40...420 °C (-40...788 °F)

* Pre-validation of the device by the E+E laboratory is required (see section „ISO 9001 Calibration Procedure“)

+ISO 9001 Calibration Procedure

For E+E Elektronik devices

- Before requesting a quotation or shipping the device to be calibrated (the specimen) to E+E Elektronik, the calibration laboratory must evaluate the sensor to ensure that calibration can be performed. For example, EE260, EE310-T1 (wall mount) are not compatible with the reference devices used for ISO 9001 calibration.
- The calibration order must specify the calibration points along with the desired accuracy (within which no corrective actions are taken).
- Upon receipt, the specimen undergoes a quick functional check to verify that the device works properly and there are no visibly damaged parts. In case of visible defects or failure to power on,
- the customer is contacted to decide how to proceed.
- Initial calibration is performed on the indicated points and calibration results are documented in the “as found” certificate.
- If the values are within the specified tolerances, the certificate is printed on paper and sent back to the customer with the sensor.
- If the specimen is defective or out of specification, E+E Elektronik sends a quotation to the customer for repair or adjustment.
- Once the sample has been repaired and adjusted, it is calibrated a second time, and the results are documented in the “as left” certificate.
- Both certificates – “as found” and “as left” – are printed on paper and sent with the sensor to the customer.

+ ISO 9001 Calibration Procedure

For non E+E Elektronik devices

- Before requesting a quotation or shipping the device to be calibrated (the specimen) to E+E Elektronik, the calibration laboratory must evaluate the sensor to ensure that calibration can be performed (e.g., if the probe diameter or sensor size/length is not compatible with the reference devices used for ISO 9001 calibration).
- If the specimen is equipped with a non-standard interface for E+E Elektronik (analog output current/voltage or digital interface with Modbus RTU/TCP protocol), the customer must provide the software required to read the values (with license if required) and the interface cable to connect the device to a PC.
- The customer must also specify whether the sensor can be adjusted. If yes, the customer must provide the necessary software (with license if required) and the interface cable to connect the device to a PC.
- The calibration order must specify the calibration points and the desired accuracy (within which no corrective actions are taken).
- Upon receipt, the specimen undergoes a quick functional test to verify that the device works properly and there are no visibly damaged parts. In case of visible defects or failure to power on, the customer is contacted to decide how to proceed.
- Initial calibration is performed on the indicated points, and the results are documented in the “as found” certificate.
- If the values are within the specified tolerances, the certificate is printed on paper and sent back to the customer with the sensor.
- If the specimen is out of specification, E+E Elektronik sends a quotation to customer for adjustment.
- Once the specimen has been adjusted, it is calibrated a second time, and the results are documented in the “as left” certificate.
- Both certificates – “as found” and “as left” – are printed on paper and sent with the sensor to the customer.



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+ E+E Elektronik - Your Partner in Sensor Technology

E+E Elektronik GmbH, with headquarters in Engerwitzdorf, Austria, has been established in 1979 and is part of Dr. Johannes Heidenhain GmbH group.

Diverse.

E+E Elektronik is a leading manufacturer of sensors and transmitters for a wide range of physical quantities and applications. Data loggers, hand-held meters as well as calibration systems and services round up the product portfolio.

Reliable.

Best quality made in Austria, high accuracy and outstanding long-term stability, together with advanced understanding of customer specific requirements are the main competitive advantages of E+E Elektronik.

Versatile.

Measuring devices from E+E Elektronik are used all over the world in most diverse industries such as building automation, meteorology, agriculture, food, pharmaceutical, process control or automotive.

Flexible.

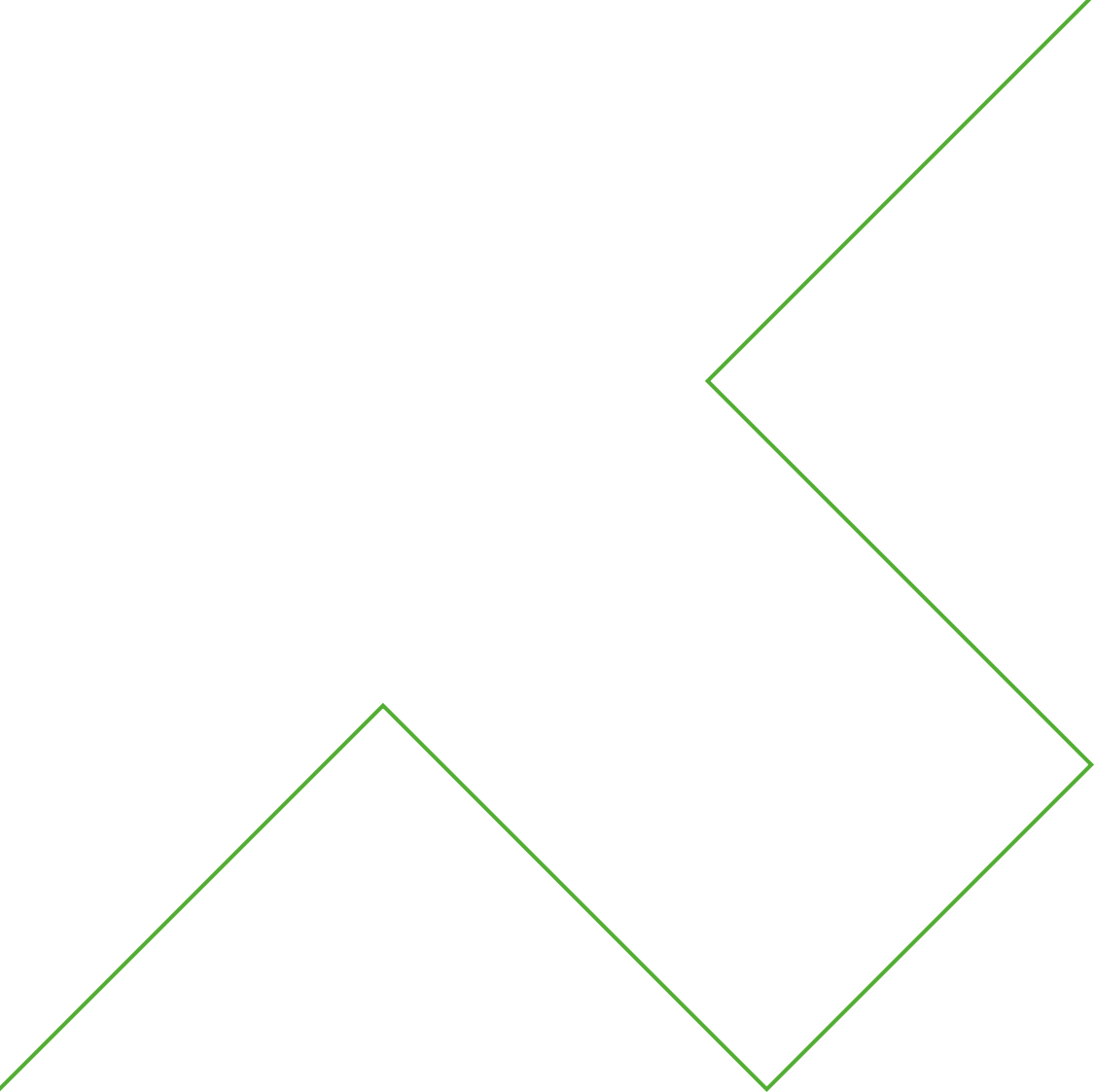
With in-house clean room sensor manufacturing, in-house design of state of the art electronics and highest competence in calibration, E+E Elektronik is the ideal partner for OEM customers.

Certified.

The E+E Elektronik quality assurance system is certified according to ISO 9001 and IATF 16949. The company also complies with the environmental standard ISO 14001. The in-house calibration laboratories are accredited according to DIN EN ISO/IEC 17025.

Global.

E+E Elektronik sales subsidiaries are located in China, Germany, France, Italy, Korea and the USA. Additionally, E+E Elektronik maintains a worldwide network of distribution partners.



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