Precise measurement. Reliable qualification.

Precision measurement technology and services for cleanrooms. From Testo.

Sustained norm-compliant conditions

Unique services for your cleanrooms

In order to guarantee and maintain the purity of cleanrooms, you need exact measurements: With instrumentation and services from Testo. They help you not only with the reliable qualification of your cleanroom for demanding production and laboratory conditions. They also ensure you the long-term security of a constant cleanroom environment according to your requirements and in compliance with the valid norms.

All OK: According to DIN ISO 14644
Testo offers you a norm-compliant measuring instrument portfolio for the most demanding requirements in ventilation and air conditioning in cleanrooms. You can be sure of having your critical processes in production or laboratories clean and under control at all times.

Air conditioning and ventilation:
Exactly under control
Whether qualification or re-qualification: Testo measuring instruments and services for cleanrooms make sure that your air quality complies with the norm within the prescribed time intervals.

With Testo's high-precision measuring instruments, you can monitor temperature, air humidity, differential pressure and air flow velocity. Thus, with Testo you can keep a close eye on all critical data relating to your cleanroom at all times. Our precision measurement technology is supplied with calibration protocols, and as a full-service supplier for qualification, validation and GxP-compliant calibration in the area of cleanroom compliance, Testo Industrial Services provides you with optimum support in your quality assurance measures.

Your benefits from Testo's cleanroom services

- User-optimized instruments free up your working time thanks to efficient and guided measurement programs, convenient data management and straightforward digital documentation.
- You increase process security thanks to reliable measurements with a high level of accuracy.
- Necessary measurements can be reliably carried out with optimally tailored measuring instruments.
- User-optimized instruments save working time thanks to efficient and simple measurement procedures.
- Tailor-made services for the qualification of your cleanrooms as well as measuring instrument calibration fulfil all your wishes.

DIN ISO 14644-3:2005 Cleanrooms and Clean Zones – Part 3: Test Methods

Cleanrooms and their ancillary clean areas ensure regulation of airborne contamination to degrees which are suited to the implementation of contamination-sensitive activities. The products and processes which benefit from the regulation of airborne contamination include those in the aeronautics and spaceflight, microelectronics, pharmaceutical, medical technology, health and food industries. This part of ISO 14644 presents test procedures which can be used to characterize cleanrooms, as they are described and set down in other parts of ISO 14644.

Critical processes demand
precise measurement technology

Overview of important measurements

In order to operate your cleanrooms in compliance with the norms, basic measurements must be carried out precisely and reliably with calibrated measuring instruments. Because in the end, it is not only about complying with the norm, but also about the first-class quality of your products and processes.

When it comes down to it, you depend on precision in application. With measuring instruments from Testo.

1 Temperature and humidity testing

According to DIN EN ISO 14644-3, the ability of the ventilation system of a cleanroom to maintain the air temperature and air humidity (given as relative humidity) within the limit values necessary for the application must be tested. In addition to this, the light intensity and sound level in the cleanroom can be measured. The demands made of the measuring instrument are specified in DIN EN ISO 7726, and require, for example, a measurement uncertainty of max. ± 2 %RH in a humidity measuring instrument.

2 Differential pressure measurement of rooms and filters

According to DIN EN ISO 14644-3, the minimum positive pressure of the cleanroom in relation to the surroundings (5 to 20 Pa) must be measured, in order to ensure that particles are prevented from entering the cleanroom. In order to determine the degree of contamination of the filter, its differential pressure must also be measured. The measuring instrument must have a measuring range of 0 to 50 Pa, a resolution of 0.5 Pa and a measurement uncertainty of max. ± 5 %.

3 Air flow testing and air exchange rate

For the air flow test according to DIN EN ISO 14644-3, the air flow velocity in cleanrooms with low-turbulence flow and with turbulent mixed flow must be determined. The total volume flow rate can be used to determine the air exchange rate in a system with turbulent mixed flow. The individual requirements for hot wire anemometers, vane anemometers and volume flow hoods are defined in DIN EN ISO 14644-3.

4 Measurement in a laminar flow cabinet

DIN EN 12469 demands the testing of air volume flow and ventilation ratio. Anemometers with suitable measuring ranges and sensitivities are required in order to conduct measurements of air flow velocity also at low velocities. Air entry flow through the HEPA filter, the illumination and the noise level should also be measured.

5 Precision measuring technology for laboratories and cleanrooms

Carrying out test measurements of all key climatic parameters in critical processes in laboratories and cleanrooms requires the utmost precision as well as resilient equipment. The testo 400 and testo 440 multifunction measuring instruments are ideal for this. Both measuring instruments can be combined with a variety of different high-precision probes, including an intelligent calibration concept with zero-error adjustment option.

The right instrument for every measurement

1 Temperature, humidity, Lux, sound

testo 400 universal IAQ instrument

Measure, analyze and document all climate-related parameters with just one universal multifunctional instrument.

- Intuitive measuring menus for standard-compliant IAQ measurements
- Large selection of high-precision probes, whether fixed cable or wireless via Bluetooth
- Compatible with testo 420 for measurements at large air inlets and outlets
- Intelligent probe calibration concept

EUR XXX.XX
Order no. 0560 0400

High-precision humidity/temperature probe (digital), fixed cable, for testo 400/440

Extremely high-precision measurement with an accuracy of ±0.6% RH

- For a safe climate in the cleanroom
- Transmission of readings via Bluetooth to the measuring instrument from up to 20 m away
- Exceptionally practical: Start and stop the measurement and save the readings via a button on the probe
- Universal handle compatible with all probe heads

EUR XXX.XX
Order no. 0636 9772

Lux probe (digital) for measuring illuminance (for testo 400/440)

Assessment according to the V-lambda curve for all common light sources

- Measuring range: 0 to 100,000 lux
- - Standard-compliant accuracy according to DIN EN 13032-1 and Class C according to DIN 5032-7

EUR XXX.XX
Order no. 0635 0551

testo 816-1 – Sound level meter

Precision sound level measurement as per IEC 61672-1 Class 2 and ANSI S1.4 Type 2

- Stores up to 31,000 readings
- Incl. analysis software

EUR XXX.XX
Order no. 0563 8170

2 Differential pressure

testo 420 – Differential pressure measuring instrument

For precise differential pressure measurement on filters up to 1.2 hPa

- Handy instrument featuring a large display and user-friendly menu navigation
- Automatic zeroing ensures higher accuracy at low pressures.

EUR XXX.XX
Order no. 0560 0420

testo 400 universal IAQ instrument

Multifunctional instrument with built-in differential pressure sensor

- High-precision, location-independent, built-in differential pressure sensor for filter monitoring and cleanroom monitoring
- Measuring range -100 to +200 hPa
- Accuracy ±(0.3 Pa + 1 % of measured value) ±1 digit (0 to 25 hPa) / ±(0.1 hPa + 1.5 % of measured value) ±1 digit (25.001 to 200 hPa)

EUR XXX.XX
Order no. 0560 0400

testo 521-3 – Differential pressure measuring instrument (up to 2.5 hPa)

With high accuracy of up to ±0.5 Pa

- Ideal for differential pressure measurements in cleanrooms, thanks to high accuracy and resolution
- Direct zeroing of the display values of pressure probes

EUR XXX.XX
Order no. 0560 5213

testo 512 – Differential pressure measuring instrument for 0 to 20 hPa

Ideal for differential pressure measurement on filters

- 8 pressure units to choose from: kPa, hPa, Pa, mmH_2O, mmHg, psi, inch H_2O, inch Hg

EUR XXX.XX
Order no. 0560 5127

3 Air flow testing, air exchange rate

testo 420 – Volume flow hood

Exceptionally high measuring accuracy at swirl outlets thanks to the volume flow straightener

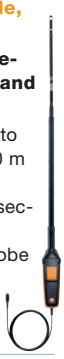
- Precise measurement of volume flow up to 3,500 m³/h, even in turbulent flows
- 2.9 kg lightweight, quick set-up
- App integration: Create and send reports straight away on site

EUR XXX.XX
Order no. 0563 4200

Hot wire probe (digital) including temperature and humidity sensor, fixed cable, for testo 400/440

Four functions in one probe: measurement of flow, temperature, humidity and absolute pressure

- Transmission of readings via Bluetooth to the measuring instrument from up to 20 m away
- Convenient measurement in any cross-section with scaled telescope (up to 1 m)
- Universal handle compatible with all probe heads



EUR XXX.XX
Order no. 0635 1572

High-precision vane probe (Ø 100 mm, digital), including temperature sensor, fixed cable, for testo 400/440

Measure flow velocity and volume flow

- Detects the smallest flow velocities from 0.1 m/s, therefore ideal for laminar flow measurements
- Measuring range 0.1 to 15 m/s, accuracy ±(0.1 m/s + 1.5 % of measured value)
- Universal handle compatible with all probe heads

EUR XXX.XX
Order no. 0635 9372

Replacement flow hood 915 x 915 mm (for testo 420)

EUR XXX.XX
Order no. 0554 4203

Replacement flow hood 305 x 1220 mm (for testo 420)

EUR XXX.XX
Order no. 0554 4201

Replacement flow hood 360 x 360 mm (for testo 420)

EUR XXX.XX
Order no. 0554 4200

Standard-compliant measuring instrument portfolio for air conditioning and ventilation in cleanrooms. Thanks to more than 60 years of expertise in research and development, we can provide highly specialized solutions.

4 Laminar flow cabinets and other applications

Fume cupboard probe (digital), fixed cable

High-precision measurement of flow velocity, volume flow and air temperature

- Clearly structured measuring menu for standard-compliant measurements
- Automatic absolute pressure compensation for high-precision measurement results
- Hot wire probe with a short response time

EUR XXX.XX
Order no. 0635 1052

High-precision vane probe (Ø 100 mm, digital), including temperature sensor, fixed cable, for testo 400/440

Measure flow velocity and volume flow

- Detects the smallest flow velocities from 0.1 m/s, therefore ideal for laminar flow measurements
- Measuring range 0.1 - 15 m/s, Accuracy ±(0.1 m/s + 1.5 % of measured value)
- Universal handle compatible with all probe heads

EUR XXX.XX
Order no. 0635 9372

Air flow velocity matrix with telescope

For measuring air flow at large air supply outlets with laminar flow

- On extractor hoods, HEPA filters, laminar flow cabinets in cleanrooms etc.
- For use with a differential pressure measuring instrument

EUR XXX.XX
Order no. 0699 70771

5 Multifunctional IAQ measuring instruments

testo 400 universal IAQ instrument

Measure, analyze and document all climate-related parameters in cleanrooms with just one universal multifunctional instrument

- Intuitive measuring menus for standard-compliant IAQ measurements
- Large selection of high-precision probes, whether fixed cable or wireless via Bluetooth
- Compatible with testo 420 for measurements at large air inlets and outlets
- Complete data management of all measurement and customer data for analysis and documentation
- Intelligent probe calibration concept
- Data synchronization with DataControl PC software for further analysis and documentation

EUR XXX.XX
Order no. 0560 0400

testo 440 IAQ measuring instrument

Measure and analyze the most important climate-related parameters in cleanrooms with just one compact multifunctional instrument

- Clearly structured measuring menus for standard-compliant IAQ measurements
- Large selection of high-precision probes, whether wireless via Bluetooth or fixed cable
- Intelligent probe calibration concept
- Internal data storage and USB port for data export

EUR XXX.XX
Order no. 0560 4401

Other air velocity & IAQ measuring instruments

testo 635-2 – Temperature and humidity measuring instrument

EUR XXX.XX
Order no. 0563 6352

testo 176 H1 – Data logger for temperature and humidity

EUR XXX.XX
Order no. 0572 1765

testo 175 H1 – Data logger for temperature and humidity

EUR XXX.XX
Order no. 0572 1754

testo 608 H1 – Thermohygrometer

EUR XXX.XX
Order no. 0560 6081

All-in-one solution for smooth processes and convenient documentation:

Environmental monitoring system **testo Saveris Pharma.**

testo Saveris Pharma is used in medical, bio-technical, chemical and pharmaceutical laboratories and cleanrooms. Our customers depend on the system in order to monitor important environmental parameters, maintain high quality standards and ensure traceability.
testo Saveris Pharma is an integrated system consisting of sensors, software and services for seamless recording and documentation of all audit-relevant IAQ parameters, compliant with GxP and 21 CFR Part 11.
For more information, please go to https://www.testo.com/de-DE/solution/testo-saveris-pharma

Be sure. testo

Full service for your cleanroom

Services for secure ambient conditions

Not only does Testo offer a comprehensive range of high-precision measuring instruments. As a full-service supplier for qualification, validation and GxP-compliant calibration in the area of cleanroom compliance, Testo Industrial Services also provides you with optimum support for your quality assurance measures: whether this involves the training of your staff, managing the entire process of calibrating your test equipment or the qualification and re-qualification of your cleanrooms.

Services for your cleanroom qualification

- First qualification and re-qualification of cleanrooms and ventilation systems
- Conceptual planning and implementation of all qualification tests according to DIN EN ISO 14644 and VDI 2083
- Implementation of risk management for cleanroom areas and ventilation systems according to ICH Q9
- Testing and qualification of laminar flow cabinets, isolators and other clean air technology plants
- Individual and GxP-compliant documentation packages adapted to your needs
- Microbiological monitoring

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