

Trust is good. Certainty is better.

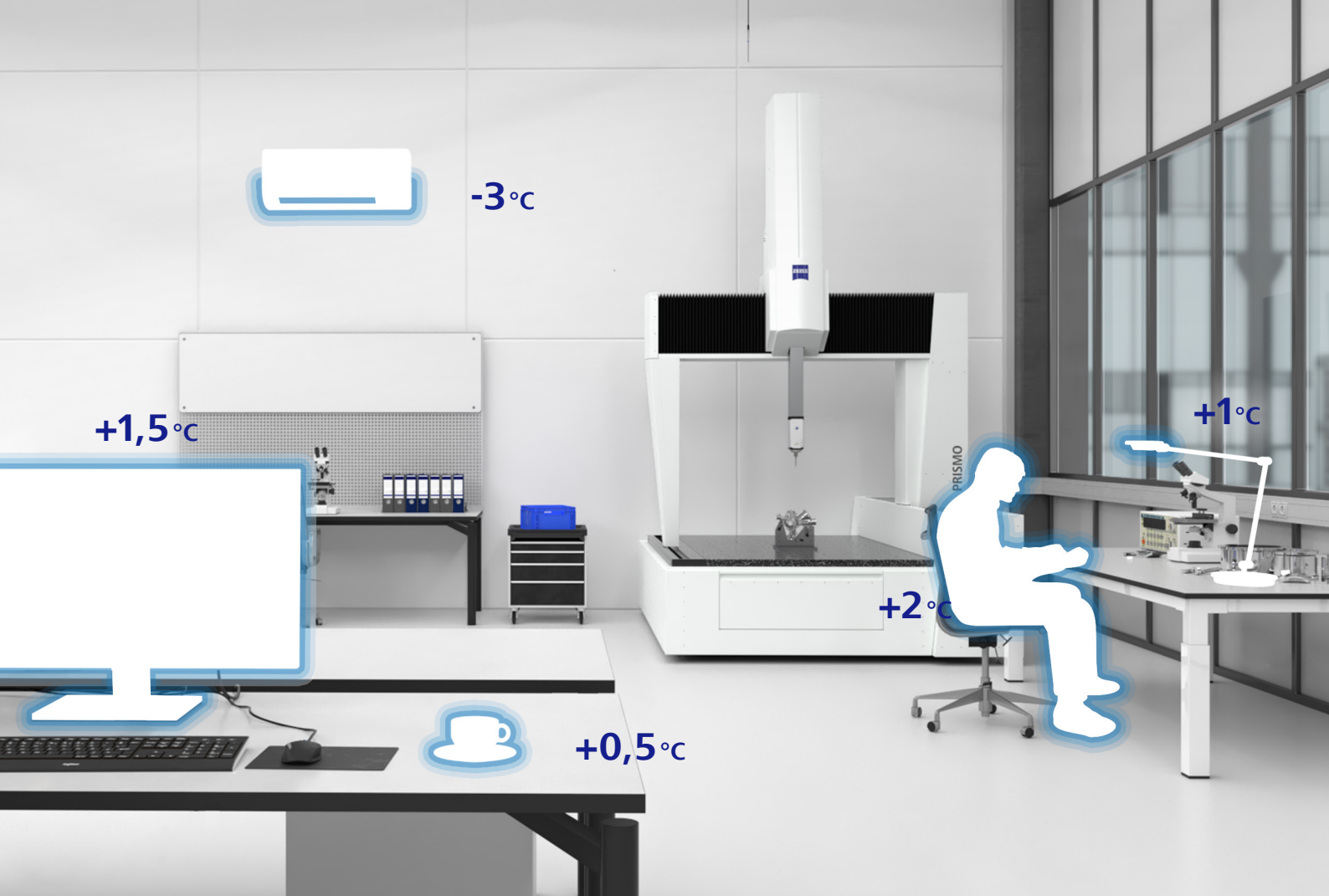


ZEISS TEMPAR

zeiss.com/metrology/tempar



Seeing beyond



Coordinate measuring machines provide highly accurate and precise results - but only if temperature, temperature gradient and humidity are within the limits specified by the manufacturer. Operators should not rely on air conditioning or their gut feeling.

The required temperature in the measuring room is usually 20°C. Changes in temperature cause materials to expand or contract. The more precisely a coordinate measuring machine works, the more significant temperature influences become. In order to ensure the temporal and spatial temperature consistency, a sophisticated air-conditioning system is necessary. However, due to the inertia of the systems, limits can be exceeded despite all calculations.

Test environments are as diverse as the requirements for the measurements. A perfectly air-conditioned room is not always available. In order to achieve precise and reliable results, especially under less than optimal conditions, clever solutions are required.

What can lead to errors?

- Heat sources like control cabinets or lighting systems
- Air conditioning outlet in the immediate vicinity of the measuring machine
- Body temperature: increase in temperature when contact is made and fluctuations depending on the number of people present
- Temperature of the parts before measurement
- Drafts through open windows and doors
- Computer
- Solar radiation

Security for your measuring environment.

With ZEISS TEMPOR, all-round monitoring of the measuring environment is child's play.

ZEISS TEMPOR creates a spatial temperature profile for you. This allows you to quickly and easily identify possible sources of error. The profile allows you to quickly identify whether, for example, the air conditioning outlet or an open window is responsible for the temperature exceeding the limit value.



Insight into the measuring environment

- ✓ Easy overview over the most important environmental information
- ✓ Detect weaknesses in the measuring environment
- ✓ Connectivity to other systems and global availability
- ✓ Knowledge build-up about environmental influences on your measuring process



Verifiable measurement process

- ✓ Documentation of environmental conditions according to VDI/VDE 2627
- ✓ Event logging of warnings and errors
- ✓ Checking stability of the environmental conditions
- ✓ Minimize complaints through certified environmental condition



Improvement of production processes

- ✓ Precise temperature information and high-quality measurements
- ✓ Detect errors and exclude negative influences on the measurement result
- ✓ Reduce rework and repeat measurements
- ✓ Long-term monitoring through value history and detection of long-term changes

How does ZEISS TEMPAR work?

A sensor network for highest accuracy.

The coordinate measuring machine is the focus of environmental monitoring. Therefore, the sensors are placed so that the entire area around the CMM is covered. In doing so, the sensors record various environmental parameters to provide an optimal overview of the room conditions.



TEMPAR® disc Sensors

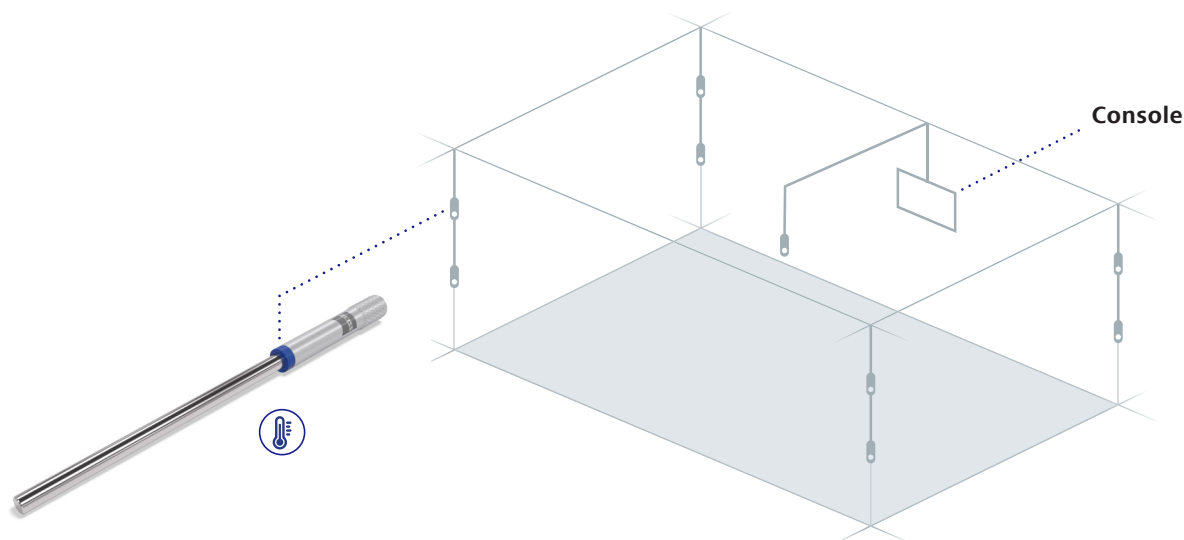
The easy-to-use TEMPAR® disc sensors give you a quick overview over the current environmental conditions. They can be moved freely in space to flexibly check all critical areas.

Temperature & Humidity Sensors

Finding the best location for a measuring machine is not easy. Many factors that are interfering with the result can easily be overlooked. Even if the test arrangement changes frequently, only limited space is available or the fixed installation of sensors is not possible, the

mobile temperature and humidity sensors with a measuring accuracy of 0.4 Kelvin offer an effective way to create optimal test conditions.

Just four sensors at a sufficient distance ensure complete spatial monitoring, and with the use of eight sensors a test room can be certified or approved. For this, position two TEMPAR® disc sensors at different heights in the corners of the room.



TEMPAR® Sensors

The demands on the accuracy of the sensors increase with the accuracy of the machine and the grade of the room. For this purpose, you can connect our TEMPAR® sensors, which are specially designed for the application, to the system device.

A standard sensor network consists of nine temperature sensors. Two sensors are mounted at different heights in the corners of each room. The ninth sensor is located in the middle if possible.

Temperature sensor

Within the network a temperature sensor is calibrated by a DAkkS certified laboratory. This sensor measures with an accuracy of 0.05 Kelvin, the others are factory calibrated and measure with an accuracy of 0.1 Kelvin. The temperature sensors of the precision model are individually calibrated to an accuracy of 0.025 Kelvin by a DAkkS certified laboratory.

Mounting

The sensors can be easily mounted with ceiling or wall brackets.

Temperature sensor precision

For a flexible use, mobile stands are available, which can be set up and disassembled quickly and easily.

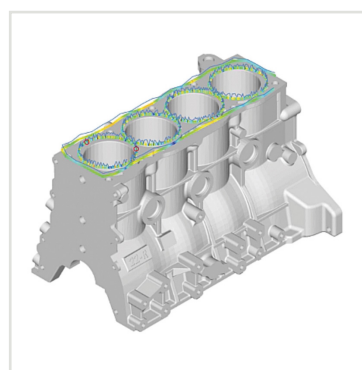
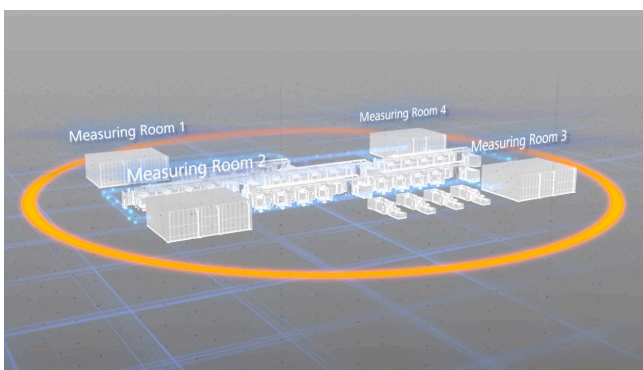
As an option, ZEISS TEMPAR offers the possibility of connecting additional sensors for recording room humidity, pressure and air flow.



Solar powered and wireless

Wireless sensors are no longer connected by cable but transmit their data to the console by radio. Even a power cable is no longer necessary, because the sensors are solar-powered. This makes the sensors particularly flexible and easy to install.





Monitoring of several measuring rooms

TEMPAR® is network-compatible and can be accessed via browser from anywhere. This allows several measuring rooms to be „placed next to each other“ and compared.

From measurement data to meaningful results

You can also link TEMPAR® with the ZEISS PiWeb software. This allows you to match your temperature values with the measurement results and thus easily prove that your measurement was performed correctly.

Many features, one goal.

Maintain an overview with ZEISS TEMPOR OS.

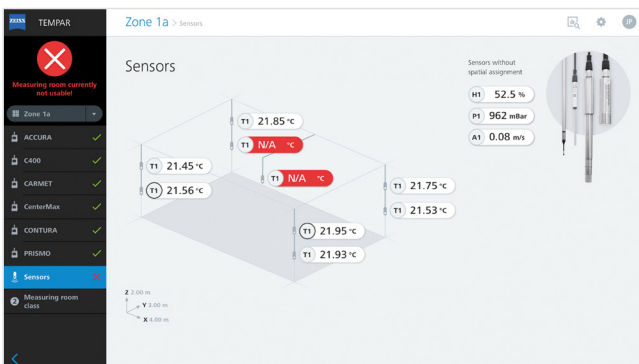
ZEISS TEMPOR OS can do much more than just a data logger. Because it does not just display a single temperature. Rather, the system records and logs all values relevant to precision without your involvement. If these get out of hand, a colored visualization of the deviation on the console and/or a signal light warns you. So you can be absolutely sure that your measurement results are reliable.

A range of functions guarantee an optimal test environment:

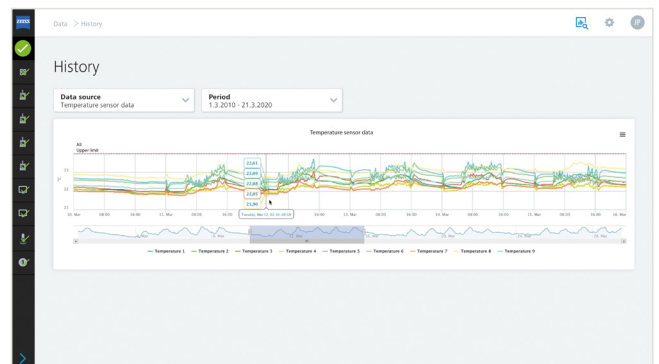
- Color highlighting warns as soon as a limit value is out of tolerance or a sensor no longer provides data
- All limit values/specifications are monitored machine-related, independent of the environment
- Thanks to the download function, the data can be further processed in other systems
- If a value rises above the permissible range, the measuring room class changes according to the classification
- Limit values are documented and exceedances are listed

Console

The central console (alternatively the LogicBox without screen) retrieves the data of all connected sensors - clearly displayed on the individually configurable dashboard. You can mount the console on the wall or place it on the measuring table.



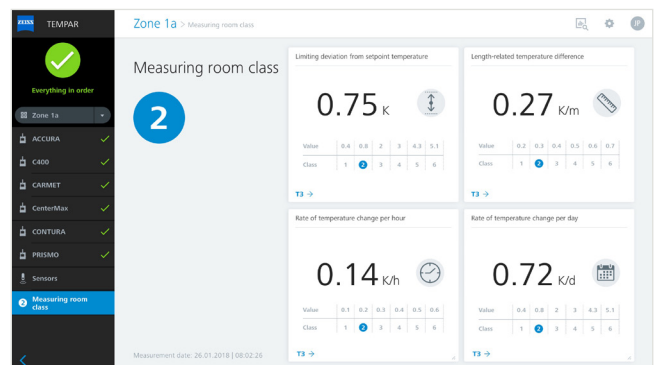
Schematic representation of the sensors in a measuring room



Data history within a selected time period



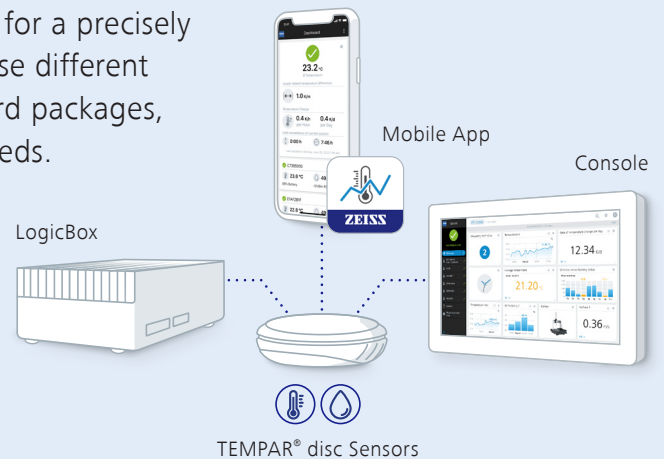
Detailed view of a machine



Display of the measuring room class

The right configuration for every application.

Measuring tasks are fulfilled in the most diverse environments. The quality of the room as well as the measuring systems and applications themselves require certain accuracies for a precisely fitting monitoring. The portfolio is adapted to these different applications. In addition to the predefined standard packages, the system can be individually adapted to your needs.



ZEISS TEMPAR go Packages

For an easy start

The handy TEMPAR® disc sensors from TEMPAR go can be moved freely in space and give you a quick overview over the current environmental conditions.

With Mobile App

Keep the live display of environmental conditions always at hand. With the free Mobile App **ZEISS TEMPAR go**.

- ✓ **2–4 disc Temperature & Humidity Sensors**
- ✓ **Mobile App**

Version

0,4 K

Transmission

Bluetooth Low Energy (BLE)



Application Live display of the ambient temperature at the workplace. Selection of a suitable installation site for a measuring machine.

With LogicBox

Get the full overview through long-term data recording and a verifiable quality of the measuring room to auditors.

- ✓ **8 disc Temperature & Humidity Sensors**
- ✓ **LogicBox**

Version

0,4 K

Transmission

Bluetooth Low Energy (BLE)

additional screen needed

Application Selection of a suitable installation site for a measuring machine. Compliance with the machine specification in confined spaces or production halls. Enables analysis from the workplace, through targeted testing during critical measurements.

With Console

View the recorded data at a glance on the dashboard and immediately identify problems with environmental conditions.

- ✓ **8 disc Temperature & Humidity Sensors**
- ✓ **Console**

Version

0,4 K

Transmission

Bluetooth Low Energy (BLE)

with touchscreen

Application Supports the user on site and ensures that the specifications are met before and during the measurement.

ZEISS TEMPAR customized

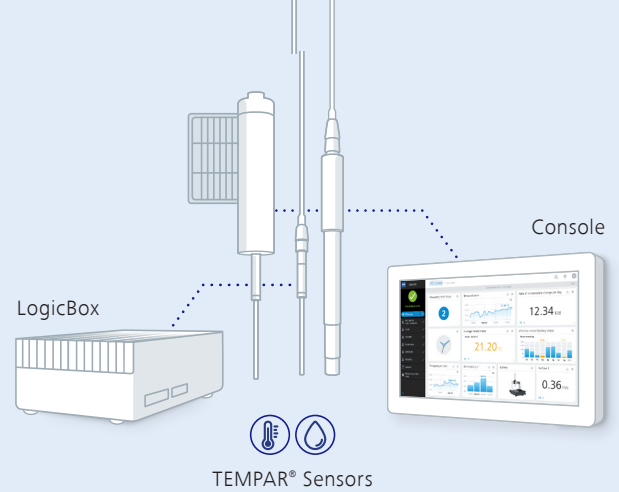
Individually configured for special room geometries.

As a standard, the ZEISS TEMPAR go- and ZEISS TEMPAR packages are designed for rectangular rooms of up to 10 x 5m. Contact us if you require an individual solution: accessories.metrology.de@zeiss.com.

ZEISS TEMPAR Packages

Flexible application with highest accuracy.

The requirements on the accuracy of the sensors increase with the accuracy of the machine and the grade of the room. For this purpose, you can connect our TEMPAR® sensors, which have been specially designed and calibrated for the application, to the system device - by cable or by radio. The packages can be easily expanded at any time.



Starter

If you want to get a feeling for the environmental conditions.

- ✓ **4 Temperature sensors**
- ✓ **LogicBox**

Application **Starter** Identification of measures to optimize easily accessible premises. Adherence to a certain measuring room class of a room.

Version

4x calibrated 0,1 K

additional screen needed

Transmission

by cable: 1x 10 m, 2x 5 m
wireless: radio components

Starter Wireless* Monitoring of the measurement environment for small rooms with crane.

Basic

Compliant to VDI/VDE 2627

The standard package offers the basis for your safety when it comes to environmental conditions.

- ✓ **9 Temperature sensors**
- ✓ **Humidity sensor**
- ✓ **Console**

Application **Basic** Permanent certification of a new measuring room. Compliance with the machine specifications in medium-sized, easily accessible rooms.

Version

1x DAkkS 0,05 K
8x calibrated 0,1 K

with touchscreen

Transmission

by cable: 2x 10 m, 3x 5 m,
2x 3 m, 1x 0,3 m
wireless: radio components

Basic Wireless* Monitoring of the measurement environment for medium sized rooms with crane.

Precision

Compliant to VDI/VDE 2627

The precision package - if you have higher demands on the accuracy of the temperature sensors.

- ✓ **9 Temperature sensors precision**
- ✓ **Humidity sensor**
- ✓ **Console**

Application **Precision** Ensuring a suitable environment for high-precision measuring machines.

Version

9x DAkkS 0,025 K

with touchscreen

Transmission

by cable: 2x 10 m, 3x 5 m,
2x 3 m, 1x 0,3 m
wireless: radio components

Precision Wireless* Permanent certification of a room for high-precision calibration of measurement normals.

Mobile

Compliant to VDI/VDE 2627

For flexible applications, because mounting on mobile stands frees you from fixed locations.

- ✓ **8 Temperature sensors**
- ✓ **Humidity sensor**
- ✓ **Console**
- ✓ **4 mobile sensor stands**

Application **Mobile** Adherence to the machine specification for separated parts of a production site.

Version

1x DAkkS 0,05 K
7x calibrated 0,1 K

with touchscreen

Transmission

by cable: 2x 10 m, 3x 5 m,
2x 3 m, 1x 1 m
wireless: radio components

Mobile Wireless* Checking the measurement environment within a production facility. Certification of different rooms consecutively.



***Every ZEISS TEMPAR package is also available as a wireless version.**

The solar-powered sensors operate wirelessly and are therefore particularly flexible in use and easy to install. And all this with the same functionalities and advantages as ZEISS TEMPAR.

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