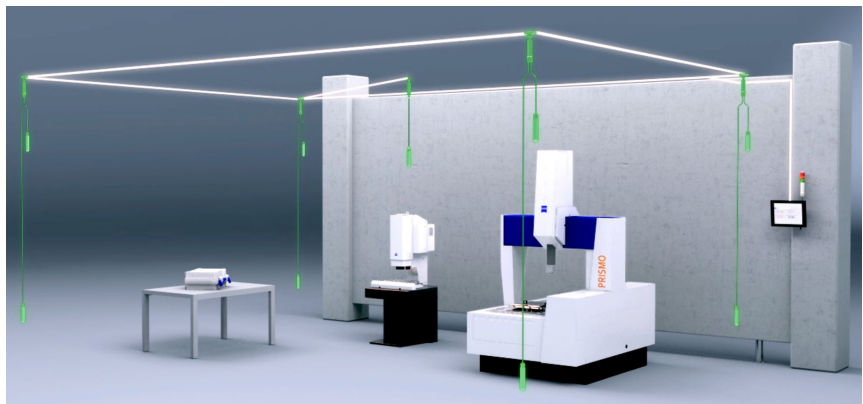


# Operating manual

TEMPAR console

Automatic temperature monitoring for  
coordinate measuring machines



Article no.: 626140-9149-831





## Product information

|              |                                                                                                                                                   |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Designation  | TEMPAR - Automatic temperature monitor<br>for coordinate measuring machines                                                                       |
| Product no.  | 626140-9149-831                                                                                                                                   |
| Manufacturer | Carl Zeiss 3D Automation GmbH<br>Carl-Zeiss-Straße 27<br>73431 Aalen<br>Germany<br><a href="http://www.probes.zeiss.com">www.probes.zeiss.com</a> |

## Document version

| Article no. Document | Version | Date       | Note  |
|----------------------|---------|------------|-------|
| 626140-9149-911      | 9.0     | 19.03.2019 | valid |
|                      |         |            |       |
|                      |         |            |       |

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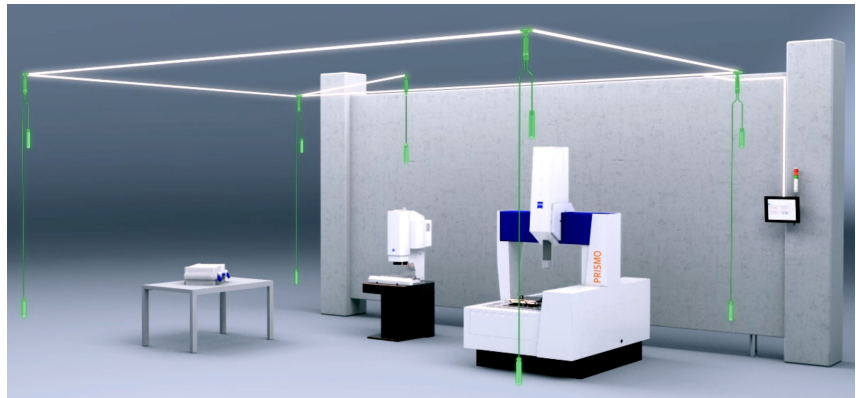
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## Abbreviations

The abbreviated terms in this document have the following meanings:

|       |                                     |
|-------|-------------------------------------|
| CMM   | Coordinate measuring machine        |
| DAkKS | German Accreditation Body           |
| DKD   | German Calibration Service          |
| DHCP  | Dynamic Host Configuration Protocol |

# 1 Product description



**Fig. 1:** Temperature monitor

The tasks of the "TEMPAR - Automatic Temperature Monitor" are:

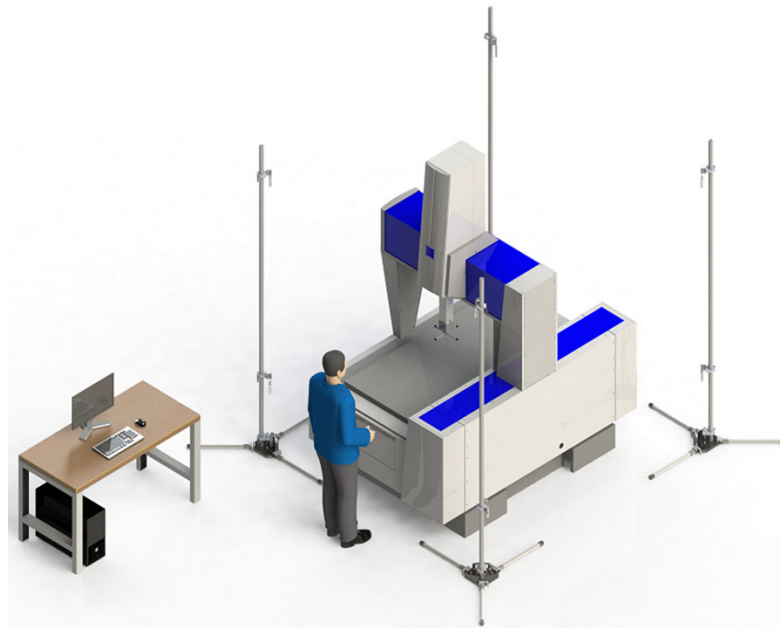
- To classify measuring rooms in accordance with VDI/VDE 2627.
- To monitor and trace compliance with the machine specification.

This is necessary to obtain correct measuring results in co-ordinate measurement systems. During calibration it must be possible to document that the temperature does not deviate from the temperature during measurement, as well as demonstrating that the measuring machines are operated within the limits specified by the manufacturer. Monitoring the temperatures of the workpiece and measuring room is not only useful from a technical standpoint, but also mandatory in terms of traceability requirements (e.g. ISO 10012-1, QS 9000, VDA 6.1, ISO TS 16949, FDA, HACCP/LMHV).

The VDI/VDE guideline 2627 requires at least nine temperature sensors for this task. These sensors are positioned at least 0.5m away from the walls in the measuring room - one sensor in the centre of the room and two sensors in each of the four corners of the room at two different heights. Additional temperature sensors can be added to these nine, which is particularly useful for larger measuring rooms.

Alongside the temperature, other physical quantities can also be measured.

The sensors can be attached to the ceiling or to the wall. Alternatively, they can also be erected with the mobile measuring stand.



**Fig. 2:** Temperature monitor with mobile measuring stand

The electronic sensor control saves the calibration data and adjustment values of the sensor and converts the measured value from analogue to digital. The console reads the measured value from the sensor and processes it.

The default configuration envisages 9 temperature sensors. However this can be supplemented with additional temperature sensors but also sensors for other physical quantities.

The display of measured values makes it quick and easy to see whether the environmental conditions lie within or outside of the valid range for the measurement. The console is operated via the touchscreen monitor. Alternative the system can be operated with any web-enabled terminal device.

Note that, while the TEMPAR system displays valid values for the measuring room, the conditions in the measuring range of the coordinate measuring machine and the workpiece temperature are not taken into account. These conditions must be recorded and evaluated separately.

The calibration requires that one of the temperature sensors is calibrated by a certified DAkkS laboratory. The other eight sensors are factory-calibrated, with the DAkkS-calibrated sensor serving as a reference. The optional sensors for air pressure, humidity and airflow can also be calibrated at the factory or by DAkkS. All sensors are shipped with a calibration certificate.

The TEMPAR console enables measured values from the sensors to be recorded, displayed and saved depending on the configuration level. It displays the history of the measured values and indicates when they exceed or fall below the limit values.

Article numbers are available for individual components and function modules (See chapter "5.1 Scope of supply and expansions")

## 2 Legal and safety

### 2.1 Warranty

---

Our General Terms and Conditions of Sale and Delivery always apply. These are available online at [www.probes.zeiss.com](http://www.probes.zeiss.com). No warranty or liability claims for personal injury or material damage can be accepted if they relate to one or more of the causes given below:

- Improper use of the product.
- Incorrect installation, startup, operation, maintenance or repair of the product.
- Failure to observe the instructions in this manual in regard to all service lifecycles of the product.
- Unauthorised structural modifications made to the product.
- Use of replacement parts which are not approved by the manufacturer.
- Situations due to the impact of foreign bodies and force majeure.

Parts subject to wear are excluded from the warranty.

### 2.2 Conformity

---

The listed articles (See chapter "5.1 Scopy of supply and expansions") correspond to the requirements of the directives and standards listed below due to their concept and design.

If any unauthorised changes are made to the product, this declaration of conformity will lose its validity.

Designation of the product: TEMPAR Automatic temperature monitoring for coordinate measuring machines

Product type: Automatic measurement of the ambient conditions of a measuring room with display and evaluation of the measured values using a console.

- EC directives and standards:
- EMC Directive (2014/30/EU)
  - Low Voltage Directive (2014/35/EU)
  - DIN EN 61010-1
- TEMPAR wireless:
- EN 300 220 V3.1.1
  - EN 301 489-1 V2.1.1
  - EN 61010-1:2010
  - FCC part 15C
  - FCC part 15B
  - IEC 62133

### **FCC warning:**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### **Radiation Exposure Statement:**

The product comply with the FCC portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

## 2.3 Intended use

---

The "TEMPAR - Automatic Temperature Monitor" is intended solely for the recording of measured values of interior spaces.

A feasible arrangement and number of sensor units must be selected. To comply with standards, nine temperature sensors must be installed in a measuring room so that they are at least 0.5m away from the walls/machine. One sensor is located in the centre of the space and the remaining eight sensors are installed in the corners of the room at two levels.

Technical specifications (See chapter "5 Technical data").

Proper usage also includes:

- Observing all notes in the manual.
- Maintenance of the calibration interval.

The following points must be complied when using TEMPAR wireless:

- Sensor units must not be exposed to heat or fire.
- Sensor units must not be exposed to mechanical impacts.
- If a battery leaks inside a sensor unit, do not allow the liquid to come into contact with the skin or get into the eyes. If the battery fluid touches the skin, wash the affected area with plenty of water and see a doctor.
- No other chargers should be used other than those provided with the devices specifically for their charging.
- Store sensor units in clean and dry conditions.

## 2.4 Misuse

---

All types of use that are not described under intended use, are considered reasonably foreseeable misuse (See chapter "2.3 Intended use"). Use of any other kind or outside of this scope is regarded as improper. The manufacturer cannot accept any liability for damage arising from such use.

The TEMPAR system is intended for use in closed, dry and oil-free spaces.

The sensors may not be installed directly next to an air conditioning system or on the ground. Doors and windows must be kept shut. Select practical positions that are representative of the room (also see VDI/VDE 2627).

Avoid having heat sources, such as lamps or heating pipes, near sensor units. Several people in a space can cause the ambient temperature and gradient values to increase. The measured values can also be affected by direct sunlight, windows, heating systems, draughts or season changes.

A soft, dry cloth should be used for cleaning. Avoid using fluids or aggressive cleaning agents.

Prevent shocks to or tensile forces acting on the sensor units when a sensor has to be moved to the side when manoeuvring machines, workpieces or similar objects in a room.

In particular, misuse refers to:

- Operating or maintenance to the system by unauthorised personnel.
- Use in rooms not permitted for the TEMPAR system.
- Changing or modifying the system without authorisation.
- Failure to comply with valid laws, regulations, safety instructions or the manual.

## 3 Operation

For set-up, settings and commissioning, see the TEMPAR installation instructions.

### 3.1 Switching on

---

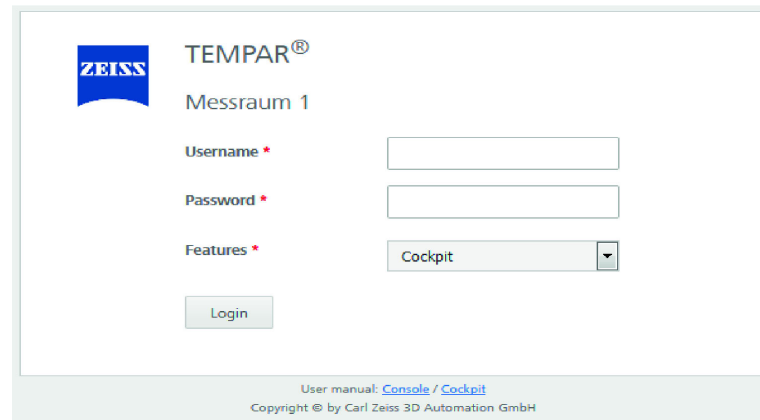
The TEMPAR system is always on and not switched off at the end of the work day. Sensors can also be replaced during ongoing operation. The calibration and sensor data are regularly read out.



**Fig. 3:** Button on the underside of the console

To switch on the system, press the pushbutton on the bottom of the console (see fig. 3). The system starts up by itself. The sensors must be correctly connected to the system via the sensor bus (see TEMPAR installation instructions).

There may not be any per-hour and per-day measured values present directly after switching the system on. They must first be collected for the corresponding time frame, before valid gradients can be displayed.



**Fig. 4:** Login screen

Once the system starts, a login window appears that allows you to access the system. The system recognises two users as standard.

**"Standard"** - The standard user has access to functions and settings.  
Password: iMeM1eF6Ah

**"Viewer"** - The viewer user can see information, but does not have the right to make changes.

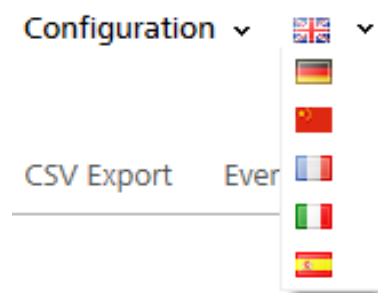
When accessing directly via the touchscreen, logging in without a password is possible by clicking on "Login as viewer" below the login window.

When accessing via the web browser, the password must always be entered for security reasons.

Password: viewer

Further users can be created and managed in the "Configuration > System > Network" menu (See chapter "3.2.11 "Configuration > System > User" menu").

All users can set the language of the console using the country flags on the top right:



**Fig. 5:** Selecting the language

The IP address and the console ID are shown under the login window (on left in the corner).

Bedienungsanleitung: [Konsole](#) | [Feedback](#) | [Beenden](#) | [Logout \(viewer\)](#)  
 Copyright © by Carl Zeiss 3D Automation GmbH

**Fig. 6:** Feedback - Shutdown - Logout

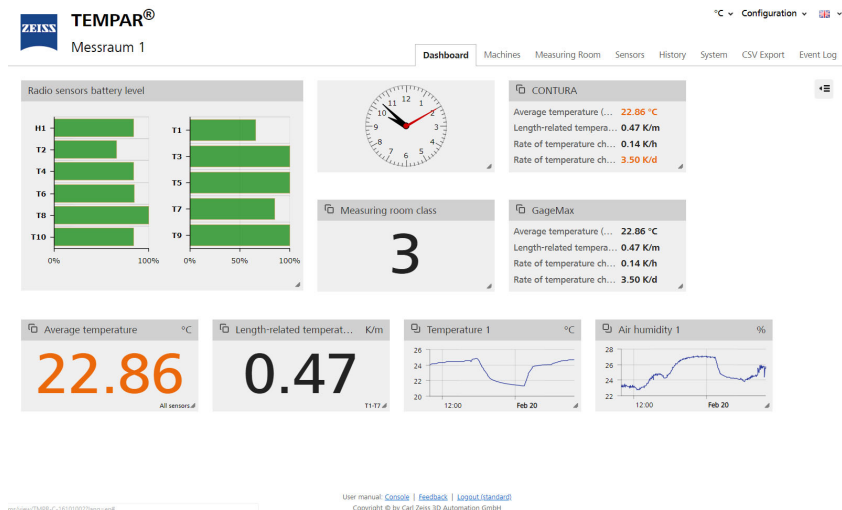
To be able to download the instructions, you must connect to the console via the network. Click "Console" to start downloading the instructions.

An email can be sent to the manufacturer via the "Feedback" button in the footer. "Shutdown" shuts down the console and the operating system. "Logout (user)" enables users to log out of the console so that another user can log in:

## 3.2 Operation as "Standard" user group

The console interface is used to monitor the measured values. Various information can be displayed and influenced by adjustable parameters. You can view different data by navigating between tabs.

### 3.2.1 "Dashboard" menu



**Fig. 7:** "Dashboard" menu

Information about the measuring room is displayed in the "Dashboard" tab by means of widgets. The dashboard user interface can be configured according to the user's requirements using widgets. The dashboard can be individually configured for each user.

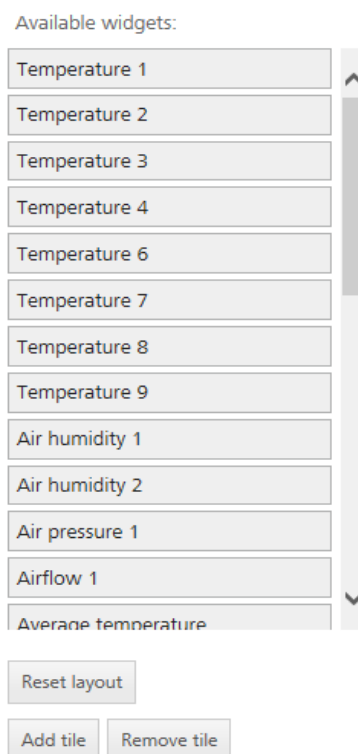


**Fig. 8:** Widget selection menu

The widget selection menu at top right accesses widget selection (fig. 9).

The following widgets are available:

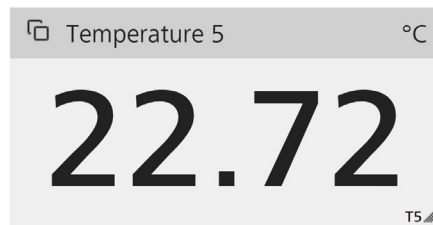
- Picture overview
- Limit deviation relative to the target temperature
- Air pressure
- Air humidity
- Rate of air humidity change per day
- Airflow
- Measuring room class
- Average temperature
- Length-related temperature difference
- Temperature 1, 2, 3, ...
- Rate of temperature change per hour
- Rate of temperature change per day
- Time
- Machine
- Battery level of sensors that are wirelessly connected



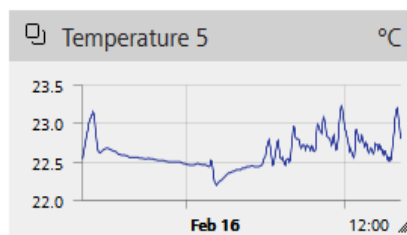
**Fig. 9:** Widget selection

The data of the selected measuring room is linked with the widgets. "Reset layout" arranges the widgets according to the default layout.

To incorporate a widget into the "Dashboard" menu, select the widget and drag and drop it onto an empty window. By default, the widget is displayed as a number, the value relates to the current status. The unit of the value (e.g. °C) is shown at the top right; the sensor (e.g. T5) that is supplying this value is shown at the bottom right. The window size can be increased or decreased using the triangle at the bottom right. With some widget types it is possible to select another view via the dark-grey area (top). For example, with a temperature widget it is possible to switch between the current value (fig. 9) and the chart view (fig. 10). The chart view relates to the previous 24 hours.



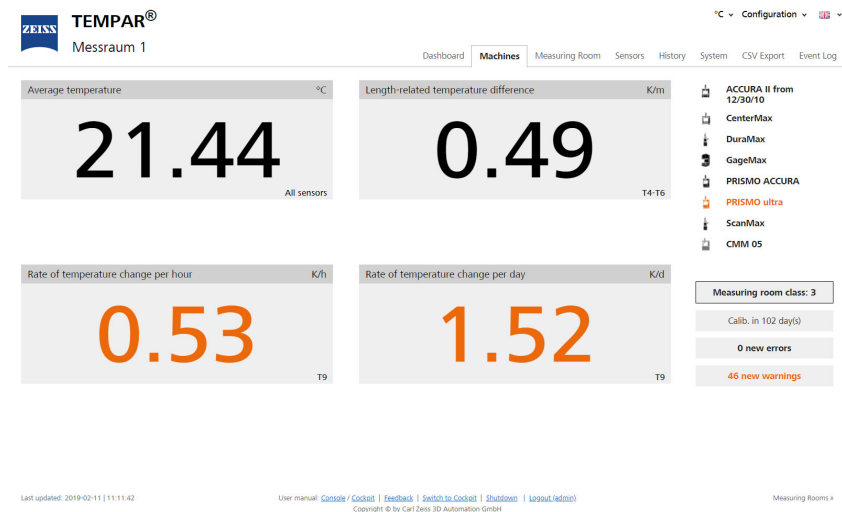
**Fig. 10:** Widget: Display of the current value of "Temperature 5"



**Fig. 11:** Widget: Display of the temperature history as a chart

To remove a widget from the window, select it and drag it to any vacant area.

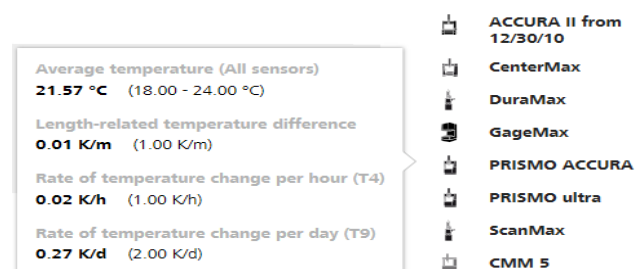
### 3.2.2 "Machines" menu



**Fig. 12:** "Machines" menu

The four tiles show the current measured values relevant for machine monitoring. Values lying within the active machine specification, are shown in black. Value that exceed one or more machine specifications are shown in orange.

The measuring machines listed on the right are configurable under "Configuration > Measuring Room > Machines". Upon selecting a machine description, data for the respective measuring machine are displayed.



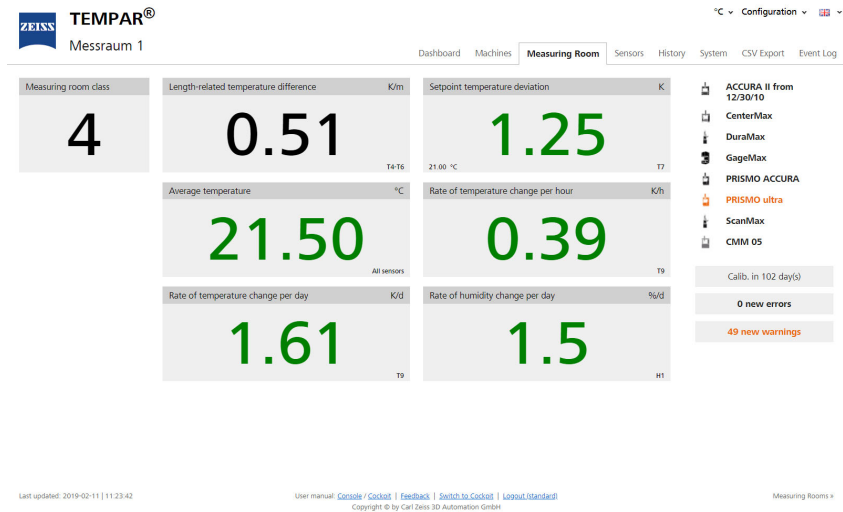
**Fig. 13:** Data of measuring machines via mouse-over effect

At the bottom right there are info buttons for:

- The actual calculated measuring room class
- The time until the next calibration in
- The number of unacknowledged errors
- The number of unacknowledged warnings

By clicking on the errors or warnings buttons, the "Event Log" menu is opened with the listed warnings and errors.

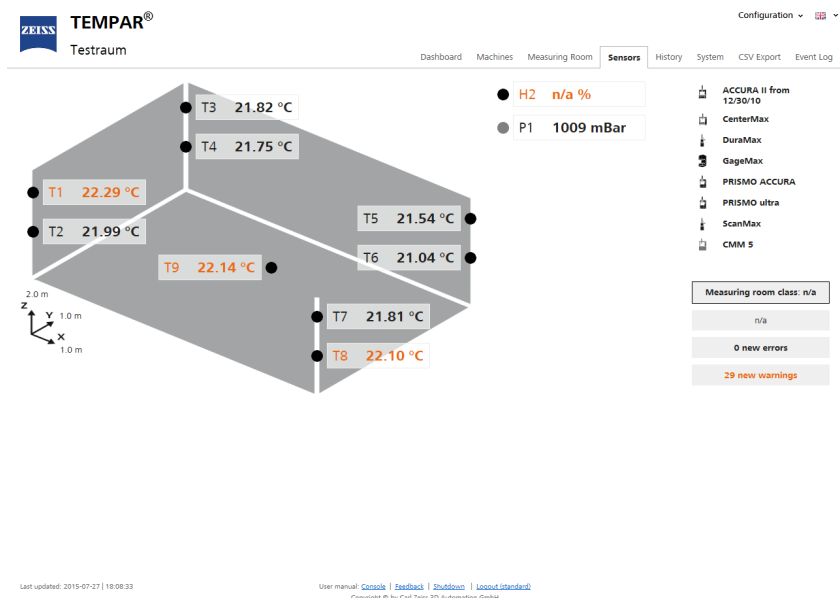
### 3.2.3 "Measuring Room" menu



**Fig. 14:** "Measuring Room" menu

The tiles in the "Measuring Room" menu show the current parameters that are required for calculating the measuring room quality class. The corresponding class is determined for each parameter. The associated limit values can be displayed by clicking the measured value. From these classes is derived the measuring room quality class for measuring rooms for dimension measurement technology (see also "Configuration/Measuring Room/Classification"). Values in black belong to the displayed measuring room quality class. Values in green comply with a better measuring room quality class.

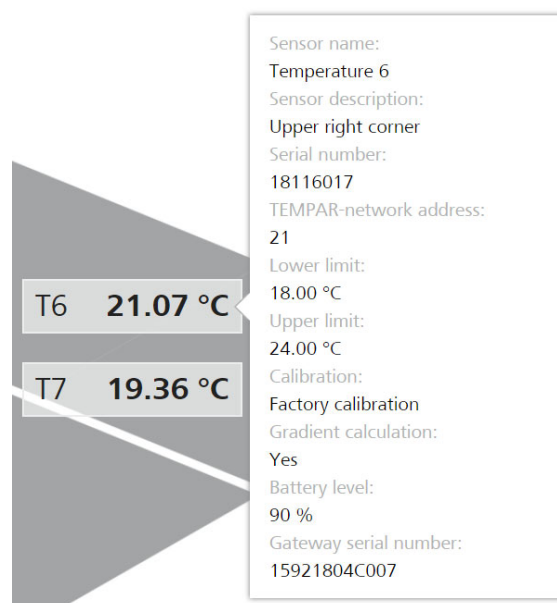
### 3.2.4 "Sensors" menu



**Fig. 15:** "Sensors" menu

This menu displays the measuring room and the sensors in a simplified way. Sensors with a DAKKS calibration have a black frame around the field with the measured value.

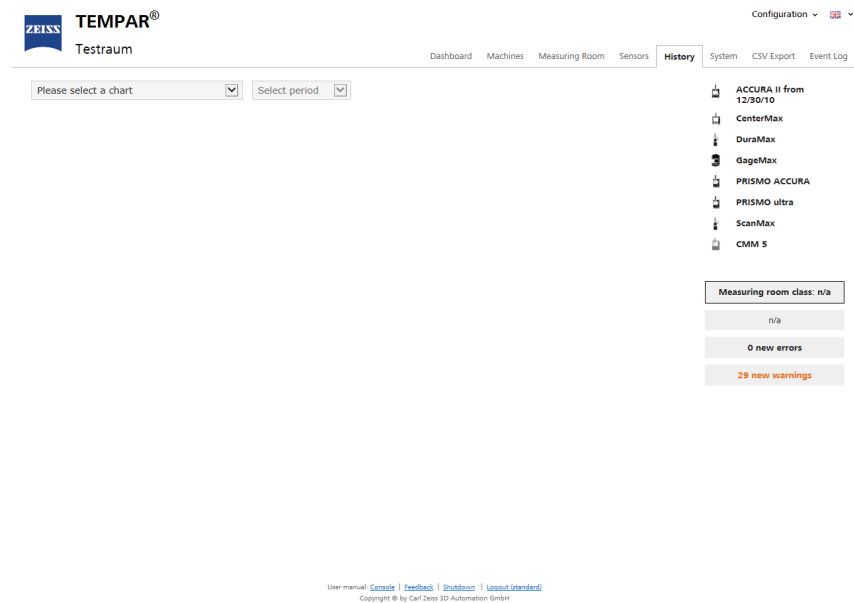
By hovering with the cursor or clicking on a value, you receive more information about a sensor. The sensor description and the limit values can be edited in the configuration. The other information is defined by the sensor or during commissioning.



**Fig. 16:** Additional information about the sensors

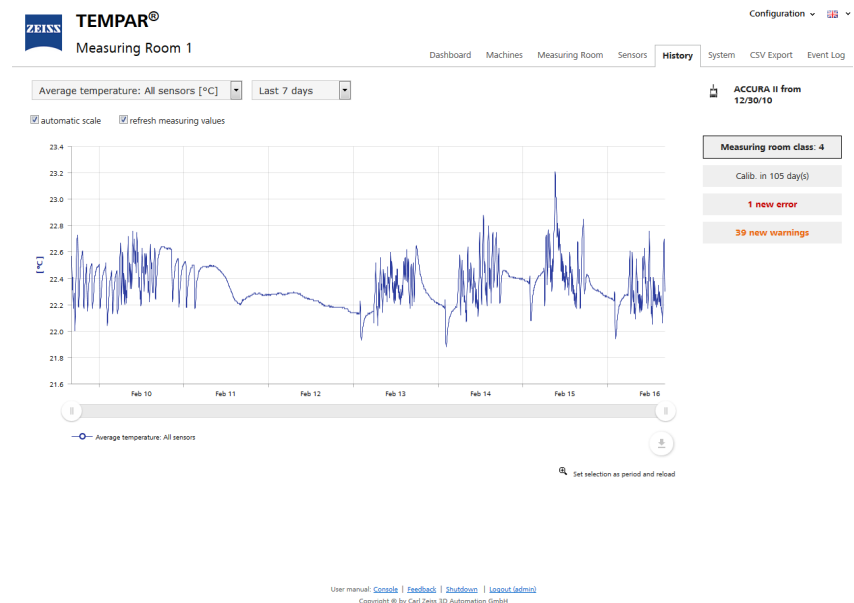
If changes have been made to the sensors or settings in the system, it can take a while for these to be fully incorporated in the calculations.

### 3.2.5 "History" menu



**Fig. 17:** "History" menu

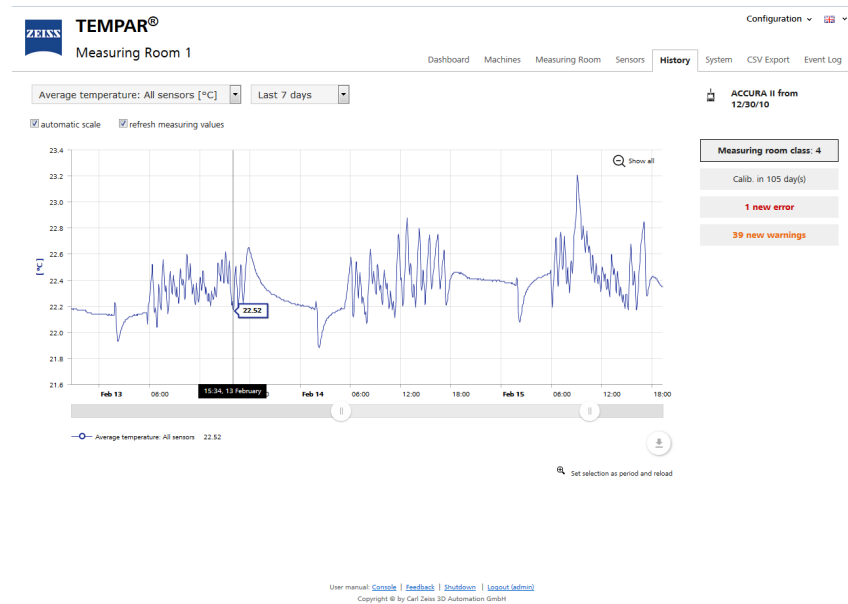
In the "History" menu, recorded measured values such as the temperature, gradient, barometric pressure or air humidity can be graphically displayed. For this, a value must be selected in the left drop-down menu. To the right, a predefined or freely definable period is selected. The two settings are used to generate a chart. Provided a selection has already been made, the values of the last selection are immediately displayed.



**Fig. 18:** History - chart

By touching a certain point or by moving over with the mouse, a vertical line is drawn over the chart. In doing so, a precise point in time with the respective measured values is displayed.

If the "Automatic Scaling" checkbox is activated, the view is automatically scaled in the Y-direction. Otherwise, the scale corresponding to the settings under "Configuration > Measuring Room > History" is displayed.



**Fig. 19:** Chart zoom function

If you hold down the left mouse button and at the same time move it over the chart or move the finger horizontally over a defined area, the area will be highlighted in grey. Upon letting go, the highlighted areas of the chart is shown magnified (zoom function). The area can be expanded or reduced using the bar below the chart. With the right button "Display all" you go back to the entire chart view according to the time interval specified above.

### 3.2.6 "System" menu

**TEMPAR®**  
Measuring Room 1

Configuration | Dashboard | Machines | Measuring Room | Sensors | History | **System** | CSV Export | Event Log

**DAkkS calibration**

| ID | Sensor description | Serial number | Test Value | Correction | Measurement Uncertainty | Date       | Test Laboratory |
|----|--------------------|---------------|------------|------------|-------------------------|------------|-----------------|
| T9 | n/a                | 000783        | 23.00 °C   | 0.00 K     | 0.05 K                  | 2014-02-18 | tmg             |

**Not calibrated**

| ID | Sensor description | Serial number | Test Value | Correction | Measurement Uncertainty | Date       | Test Laboratory |
|----|--------------------|---------------|------------|------------|-------------------------|------------|-----------------|
| T1 | n/a                | 000785        | 22.00 °C   | -0.01 K    | 0.10 K                  | 2014-02-20 | efm             |
| T2 | n/a                | 000785        | 22.00 °C   | -0.01 K    | 0.10 K                  | 2014-02-20 | efm             |
| T3 | n/a                | 000786        | 22.00 °C   | -0.02 K    | 0.10 K                  | 2014-02-20 | efm             |
| T4 | n/a                | 000786        | 22.00 °C   | -0.02 K    | 0.10 K                  | 2014-02-20 | efm             |
| T5 | n/a                | 000772        | 22.00 °C   | 0.00 K     | 0.10 K                  | 2014-02-20 | efm             |
| T6 | n/a                | 000772        | 22.00 °C   | 0.00 K     | 0.10 K                  | 2014-02-20 | efm             |
| T7 | n/a                | 000787        | 22.00 °C   | 0.00 K     | 0.10 K                  | 2014-02-20 | efm             |
| T8 | n/a                | 000787        | 22.00 °C   | 0.00 K     | 0.10 K                  | 2014-02-20 | efm             |

Measuring room class: 4  
Calib. in 105 day(s)  
0 new errors  
39 new warnings

ACCURA II from 12/30/10

User manual: [Console](#) | [Feedback](#) | [Buildsystem](#) | [Logout \(admin\)](#)  
Copyright © by Carl Zeiss 3D Automation GmbH

**Fig. 20:** "System" menu

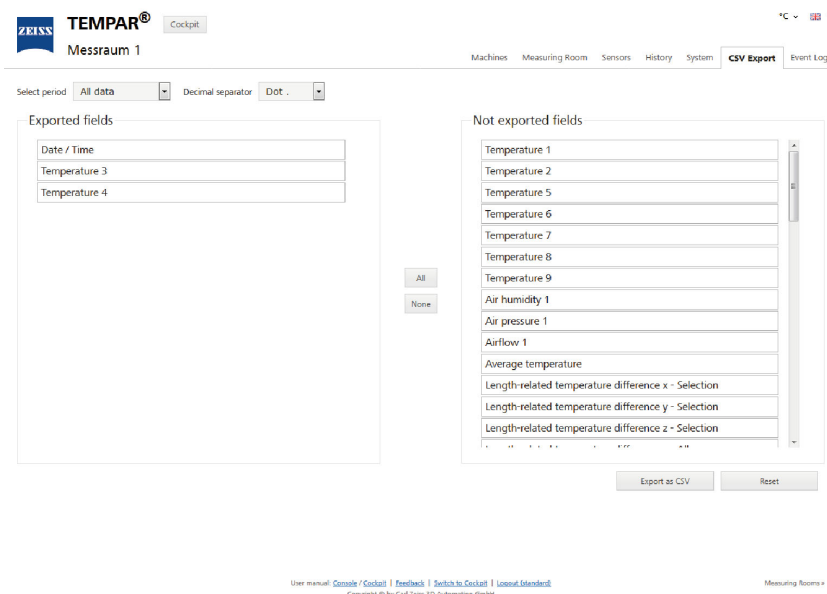
The sensor calibration data are displayed in the "System" menu. The sensors are displayed in different groups dependent on the calibration.

The name of the sensors, which can be specified under Configuration > Measuring room > Sensors, is shown under the sensor name column. (See chapter "3.2.18 "Configuration > Measuring Room > Sensors" menu")

For DAkkS-calibrated sensors, the value under "Correction" refers to the deviation from the standard temperature of the calibration laboratory. For the factory-calibrated sensors, the value represents the deviation from the DAkkS-calibrated sensors.

The "Test Laboratory" column shows the identification code of the test laboratory.

### 3.2.7 "CSV Export" menu



**Fig. 21:** "CSV Export" menu

In the "CSV Export" menu, freely selectable data can be exported as a CSV file. Data that should not be exported must be dragged into the right column ("Do not export"). Clicking on "Export as CSV" saves all the data of the left column ("Exported fields") to a CSV file.

If incorrect data was selected, the original arrangement can be restored by clicking "Reset".

If an export is made from the console, an empty USB stick must be connected beforehand. The system saves the file to the USB stick.

When exporting from e.g. a PC, the storage location can be freely selected.

Under Configuration > System > General > CSV Export, the decimal separating character (". " or ",") can be set as the decimal separator for the file to be exported.

### 3.2.8 "Event Log" menu

The screenshot shows the TEMPAR® interface for 'Messraum 1'. The 'Event Log' menu is active, displaying a table of unconfirmed log events. The table has columns: Date, Level, Type, Message, Info, Sensor, Value, Unit, Status, and Conf. The events listed are warnings related to temperature thresholds for various sensors and machines.

| Date                | Level   | Type                                  | Message                                                  | Info | Sensor | Value | Unit | Status | Conf. |
|---------------------|---------|---------------------------------------|----------------------------------------------------------|------|--------|-------|------|--------|-------|
| 2015-12-29 14:35:42 | Warning | Average temperature                   | Over threshold for machine: ACCURA II 9/12/8 to 12/24/10 |      | All    | 26.02 | 0    |        |       |
| 2015-12-29 14:02:42 | Warning | Sensor                                | Over threshold for sensor                                |      | T7     | 24.01 | 0    |        |       |
| 2015-12-29 13:48:42 | Warning | Sensor                                | Over threshold for sensor                                |      | T6     | 24.01 | 0    |        |       |
| 2015-12-29 13:43:42 | Warning | Sensor                                | Over threshold for sensor                                |      | T5     | 24.01 | 0    |        |       |
| 2015-12-28 16:32:31 | Warning | Rate of temperature change per hour   | Over threshold for machine: ACCURA II 9/12/8 to 12/24/10 |      | S6     | 1.01  | 0    |        |       |
| 2015-12-28 14:23:29 | Warning | Length-related temperature difference | Over threshold for machine: ACCURA II 9/12/8 to 12/24/10 |      | T5-T6  | 1.03  | 0    |        |       |
| 2015-12-28 14:05:29 | Warning | Sensor                                | Over threshold for sensor                                |      | T8     | 24.02 | 0    |        |       |
| 2015-12-28 14:05:29 | Warning | Rate of temperature change per hour   | Over threshold for machine: ACCURA II 9/12/8 to 12/24/10 |      | S7     | 1.04  | 0    |        |       |
| 2015-12-28 14:00:29 | Warning | Sensor                                | Over threshold for sensor                                |      | T7     | 24.04 | 0    |        |       |
| 2015-12-28 13:41:29 | Warning | Sensor                                | Over threshold for sensor                                |      | T6     | 24.01 | 0    |        |       |

**Fig. 22:** "Event Log" menu

System events are classified as warnings, errors and information.

- Information items are system messages
- Warnings are of informative nature, e.g. exceeding of limit values
- Errors indicate malfunctions

A targeted search of messages can be performed using the filter and search function.

### 3.2.9 "Configuration > System > General" menu

| ZEISS TEMPAR®                                                                                    |                                                                                            | °C Configuration |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------|
| General   Network   Users   Database   Maintenance   Backup   E-mail   External DB   Connections |                                                                                            |                  |
| Console ID:                                                                                      | 00:03:2a:2f:f5:5a                                                                          |                  |
| Console serial number:                                                                           | 0049704-001 ?                                                                              |                  |
| Measuring room name:                                                                             | Messraum 1 ?                                                                               |                  |
| Timezone:                                                                                        | Europe/Berlin ?                                                                            |                  |
| System Time (Europe/Berlin):                                                                     | 07:07                                                                                      |                  |
| System Date (Europe/Berlin):                                                                     | 2019-03-07                                                                                 |                  |
| Web GUI version:                                                                                 | 3.3.0                                                                                      |                  |
| Firmware version:                                                                                | 3.1.26                                                                                     |                  |
| Temperature scale:                                                                               | Celsius                                                                                    |                  |
| License:                                                                                         | LSXLS1CRUdITBQRIMgUOHtVUEIEIFU1NBR0UL50LQpYX... ? <span>Read license from USB drive</span> |                  |
| Valid until:                                                                                     | unlimited                                                                                  |                  |
| Radio frequency band:                                                                            | No frequency band selected!                                                                |                  |
| Interval measuring data (s):                                                                     | 60                                                                                         |                  |
| Interval GUI update (s):                                                                         | 30                                                                                         |                  |
| Interval reading radio sensors (s):                                                              | 30                                                                                         |                  |
| Auto-login on startup:                                                                           | No ?                                                                                       |                  |
| CSV export decimal separator:                                                                    | Dot                                                                                        |                  |

[User manual](#) | [Console / Cockpit](#) | [Feedback](#) | [Switch to Cockpit](#) | [Logout Standard](#)  
 Copyright © by Carl Zeiss 3D Automation GmbH

Configuration » System

**Fig. 23:** "General" menu

Via the "Configuration" menu at the top right, the "System" sub-menu, which is subdivided into several tabs, can be accessed. You can return to the standard view by clicking on the ZEISS logo.

The "General" tab displays general information and allows settings to be made.

Under "Timezone" you can set the time zone valid for your location. The corresponding system time and date are displayed.

The current time and date can be loaded from an NTP time server. (See chapter "3.2.10 "Configuration > System > Network" menu")

Under "Temperature scale" you can select whether values are displayed in "Fahrenheit" or "Celsius".

If a new license is to be entered under "License", there are two options available: You can either copy the license key directly into the web interface from a PC, for example, or you can connect a USB stick containing the license file to the console and click on the "Read license from USB drive" button.

The frequency of storage of measuring data in the database is specified under "Interval measuring data (ms)". The update frequency of the GUI and the measuring data is set under "Interval GUI update (ms)". Under "Interval reading radio sensor(s)" a minimum interval of 30 seconds should be allowed for to increase the operating time of the sensor units.

Under "Auto-login on startup" it is specified whether the Viewer user should be automatically logged in after startup.

Whether a decimal point or decimal comma is used as the decimal separator is specified under "CSV export decimal separator".

### 3.2.10 "Configuration > System > Network" menu

The screenshot displays the 'Network' configuration page of the ZEISS TEMPAR® software. The page has a top navigation bar with tabs: General, Network (selected), Password, Database, Maintenance, Backup, E-mail, External DB, and Connections. The main content area contains the following settings:

- Use DHCP:** A checkbox that is currently unchecked.
- IP address:** 10.197.72.80 ?
- Subnet Mask:** 255.255.255.0 ?
- Gateway:** 10.197.72.1 ?
- Nameserver:** 10.197.77.32 ?  
10.197.77.34 ?  
[Click to edit](#)
- NTP time server:** 54.97.98.3 ?

Below the settings is a button labeled 'Apply network settings to the operating system'. Under this button, the 'Active settings' are listed: IP: 185.34.185.44 and Console ID: 52.54.00-c8-84-bf. At the bottom of the page, there is a footer with links for 'User manual', 'Console', 'Feedback', 'Download', and 'Support/Upgrade', along with a copyright notice for Carl Zeiss 3D Automation GmbH.

**Fig. 24:** "Network" menu

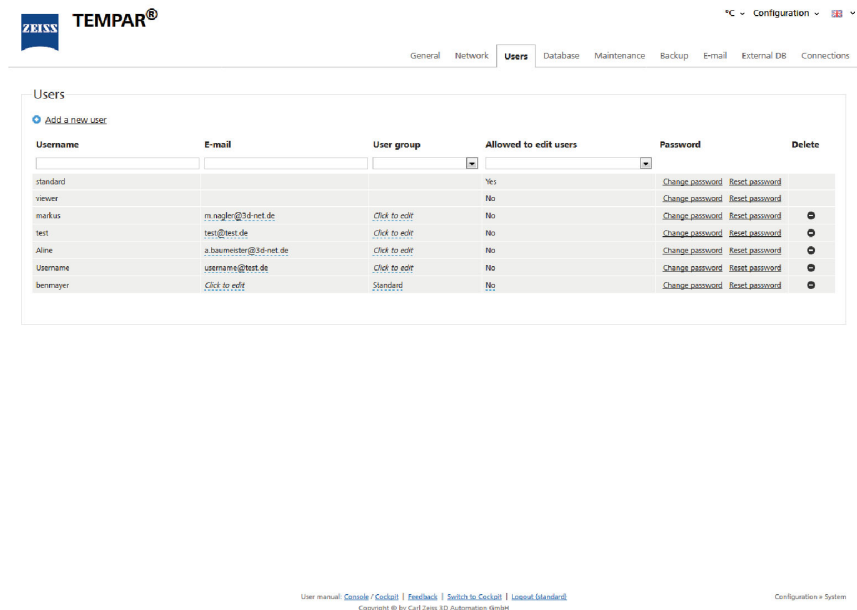
In the "Network" tab, settings can be configured to address the console in the network. If you have any questions about the specification of network settings, please contact your responsible IT administrator.

Under "NTP time server", a time server can be specified for time synchronisation.

The current network settings are displayed under the "Apply network settings to the operating system" button. This is useful if the "Use DHCP" setting is checked. After changing the settings, activate the button "Apply network settings to the operating system".

If the network connection is to be made via a proxy server, this can be configured by selecting the option "Use HTTP(S) Proxy Server".

### 3.2.11 "Configuration > System > User" menu



**Fig. 25:** "User" menu

New users can be added and existing users administered via the "Users" tab.

Additional users are added under "Add a new user". The following settings are necessary for this:

- User name: the name must be unique and can only be assigned once.
- E-mail: is required if the user is to receive email messages (only with Cockpit).
- User group: governs the rights of the user. They are identical with those of previously defined users (see 3.1).
- May change users: requires standard user group and allows the user themselves to create or modify other users. If this option is not activated, then only the individual user can be edited.

Users

● Add a new user

Username \*

E-mail

Password \*

Repeat password

Set default password ?

User group: Viewer

Allowed to edit users: No

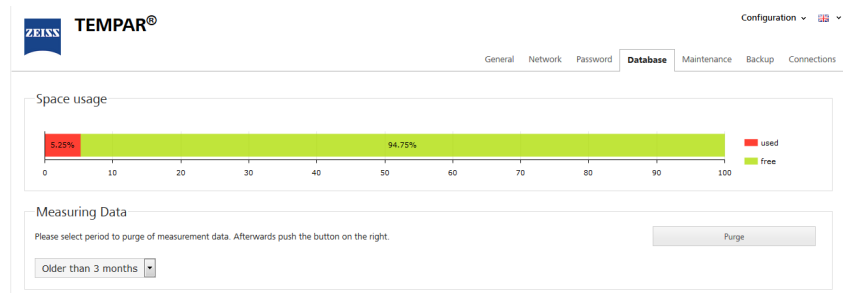
Add

**Fig. 26:** Creating a user

If the logged in user is allowed to edit other users, the editable fields are underlined.

The password can be changed or reset. The password must be at least eight characters in length and contain at least one upper and lower case letter, as well as one digit. Enter the new password and then click "Save". It is reset to the default password for the particular user group via "Reset password".

### 3.2.12 "Configuration > System > Database" menu

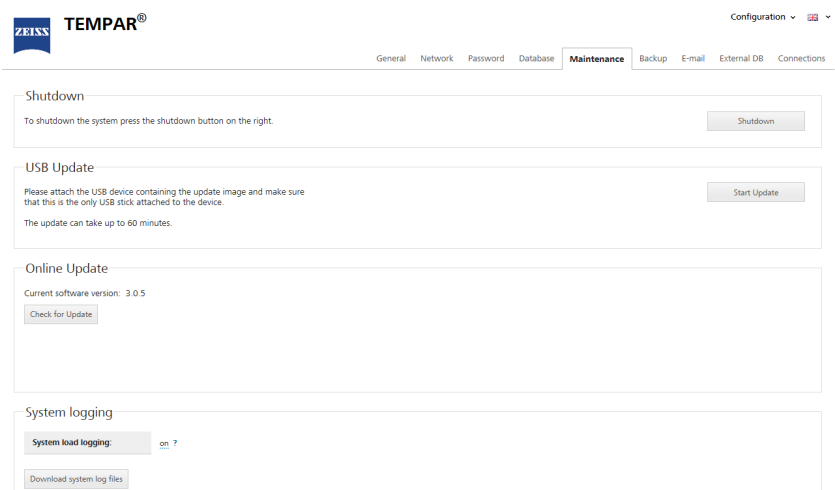


**Fig. 27:** "Database" menu

"Database" graphically shows the amount of space the system still has available.

To purge measuring data, select the desired time period and click on "Purge".

### 3.2.13 "Configuration > System > Maintenance" menu



**Fig. 28:** "Maintenance" menu

The "Maintenance" tab contains the following functions:

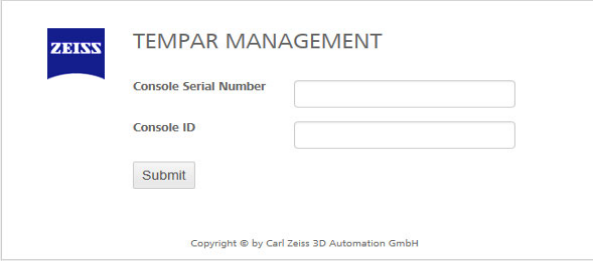
- Shut the system down using the "Shutdown" button
- Perform a "USB Update" via the "Start Update" button
- Perform "Online update"
- Switch logging of system characteristics on / off under "System load logging:".

### USB Update:

Updates can be downloaded via the following options from any workstation so that they can subsequently be transferred to the console using a USB stick.

<https://updates.tempar.net/>

A login window appears.



The image shows a web-based login form for 'TEMPAR MANAGEMENT'. On the left is the Zeiss logo. To its right, the text 'TEMPAR MANAGEMENT' is displayed. Below this, there are two input fields: 'Console Serial Number' and 'Console ID'. A 'Submit' button is located below the 'Console ID' field. At the bottom of the form, a small copyright notice reads 'Copyright © by Carl Zeiss 3D Automation GmbH'.

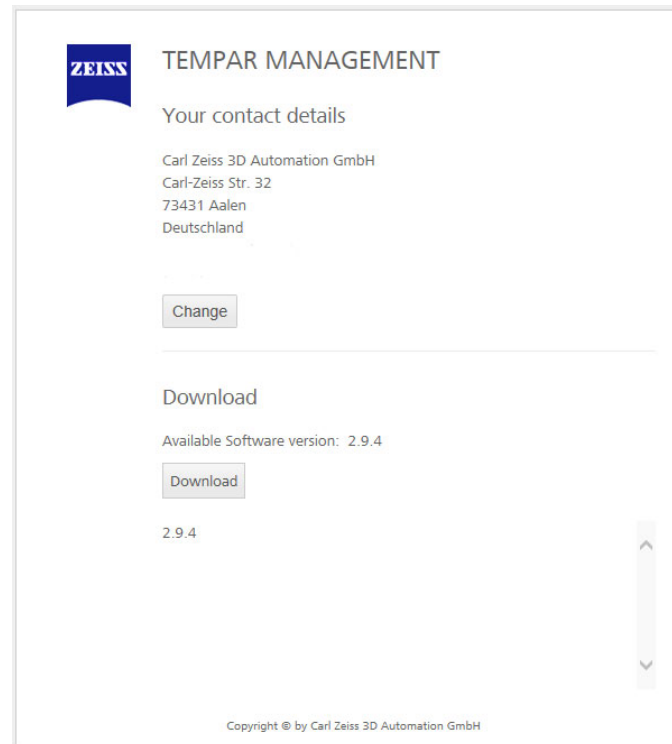
**Fig. 29:** TEMPAR Update login

The following data is required for login. The data can be taken from "Configuration > System > General" menu. (See chapter "3.2.9 "Configuration > System > General" menu") For example:

**Console Serial Number:**    TMPR-C-12345678

**Console ID:**                    00:aa:11:bb:22:cc

Click "Download" to download the current TEMPAR version.



**Fig. 30:** TEMPAR Update download

After completion of the download, copy the update file to a USB stick (at least 4 GB). The downloaded file may not be renamed. Then plug the USB stick into a USB port of the TEMPAR system and start the update process via the "Start update" button.

**Online update:**

To perform an online update the console must have internet access. Query for new updates via the "Check for Update" button. Download the new update via the "Start download to console" button. The update process must be started after the download finishes.

### 3.2.14 "Configuration > System > Backup" menu

**TEMPAR®** Cockpit

General Network Users Database Maintenance **Backup** E-mail External DB Connections

**Backup to USB stick**

Please attach a completely empty USB stick with at least 16 GB capacity to the console and make sure that this is the only USB stick attached to the device.  
The backup may take up to 30 minutes.

Start Backup  
Start Restore

**Backup to Network Share**

Network share active: ☐

Windows PC IP Address:

Windows shared folder name:

Username:

Password:

User manual: [Console](#) / [Cockpit](#) / [Feedback](#) / [Switch to Cockpit](#) / [Logout / Memberlist](#)

Copyright © by Carl Zeiss Jena Automation GmbH

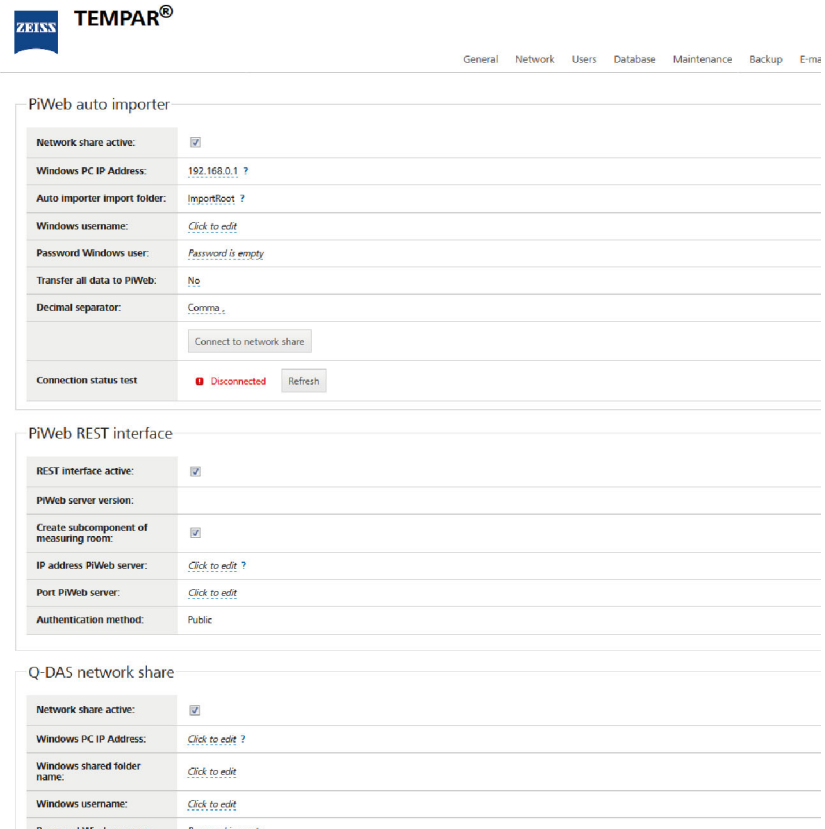
Configurations > System

**Fig. 31:** "Backup" menu

The current system is backed up using the "Start Backup" button. For this, a USB stick with a minimum size of 16 GB must be connected to the console. The USB stick should be empty, as otherwise any data on the stick will be overwritten.

Alternatively a backup can be stored to a shared network resource (Network Share) which can be accessed from the TEMPAR console. To do so first create a folder on a Windows system and enable for network (shared) access. Then enter the corresponding information in the area "Backup to Network Share". Click "Connect to network share" to create the connection. To start the backup click on "Start network backup".

### 3.2.15 "Configuration > System > External DB" menu



**ZEISS TEMPAR®**

General Network Users Database Maintenance Backup Ema

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**PiWeb auto importer**

|                                          |                                                                         |
|------------------------------------------|-------------------------------------------------------------------------|
| Network share active:                    | <input checked="" type="checkbox"/>                                     |
| Windows PC IP Address:                   | 192.168.0.1 ?                                                           |
| Auto importer import folder:             | Importfloor ?                                                           |
| Windows username:                        | <a href="#">Click to edit</a>                                           |
| Password Windows user:                   | Password is empty                                                       |
| Transfer all data to PiWeb:              | No                                                                      |
| Decimal separator:                       | Comma ,                                                                 |
| <a href="#">Connect to network share</a> |                                                                         |
| Connection status test                   | <span style="color: red;">❌</span> Disconnected <a href="#">Refresh</a> |

---

**PiWeb REST interface**

|                                        |                                     |
|----------------------------------------|-------------------------------------|
| REST interface active:                 | <input checked="" type="checkbox"/> |
| PiWeb server version:                  |                                     |
| Create subcomponent of measuring room: | <input checked="" type="checkbox"/> |
| IP address PiWeb server:               | <a href="#">Click to edit ?</a>     |
| Port PiWeb server:                     | <a href="#">Click to edit</a>       |
| Authentication method:                 | Public                              |

---

**Q-DAS network share**

|                             |                                     |
|-----------------------------|-------------------------------------|
| Network share active:       | <input checked="" type="checkbox"/> |
| Windows PC IP Address:      | <a href="#">Click to edit ?</a>     |
| Windows shared folder name: | <a href="#">Click to edit</a>       |
| Windows username:           | <a href="#">Click to edit</a>       |
| Windows password:           | <a href="#">Click to edit</a>       |

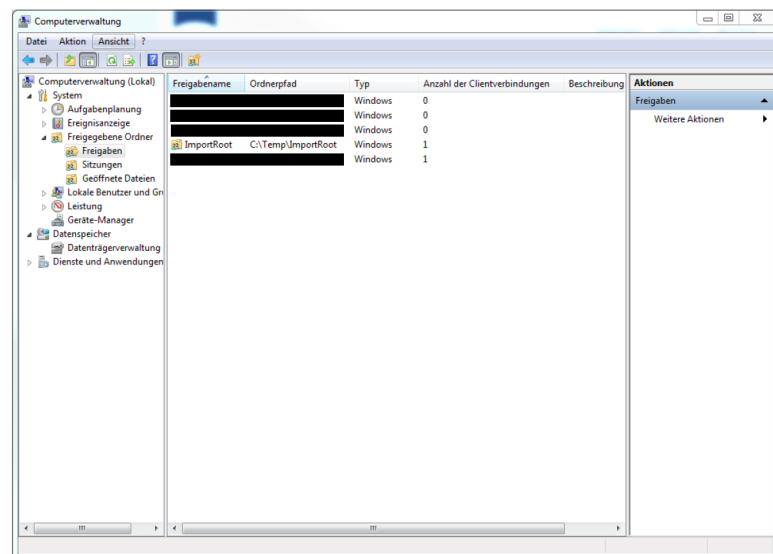
**Fig. 32:** "External DB" menu

The TEMPAR system can be linked to PiWeb in the "External DB" step. There are two possibilities for linking to PiWeb. The first possibility is a data exchange by transferring the file to a network share and an import into PiWeb using PiWeb auto importer. The second possibility is direct communication with the PiWeb server via a REST interface.

### PiWeb Auto Importer:

PiWeb network share must be used in combination with the PiWeb auto importer. Follow the following steps to create the connection between TEMPAP and PiWeb:

- Ensure that the PiWeb PC can be reached from the TEMPAP system via the network. If a firewall exists between the PiWeb PC and the TEMPAP system, it must be ensured that the necessary ports are open (amongst others Port 445).
- Create a folder on the PiWeb PC or select an existing folder, e.g. C:\Temp\ImportRoot.
- Enable access to this folder for all users (alternatively only for those users that have access to the PiWeb PC). After the folder has been enabled, this must be checked under Control Panel/Administrative Tools/Computer Management/Shared Folders/Shares (alternatively via Start/Run/ enter "compmgmt.msc" and press OK).



**Fig. 33:** Windows enable

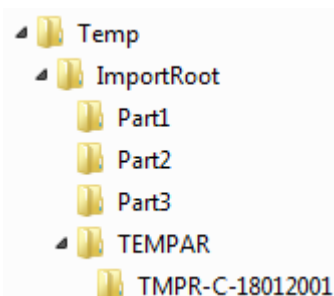
- Check "Network share active" on the TEMPAP user interface.
- Enter the IP address of the PC on which the enabled folder was created (e.g. 192.168.0.1).
- Enter the name of the folder that was enabled. Do not enter a file path here, rather just the folder name. The folder name entered here must match that in the Computer Management of the PiWeb PC. However, you can create subfolders in the enabled folder, the path of which, relating to the enabled folder, is entered here.

PiWeb auto importer

|                                          |                                     |
|------------------------------------------|-------------------------------------|
| Network share active:                    | <input checked="" type="checkbox"/> |
| Windows PC IP Address:                   | 192.168.0.1 ?                       |
| Auto importer import folder:             | ImportRoot ?                        |
| Windows username:                        | <a href="#">Click to edit</a>       |
| Password Windows user:                   | <a href="#">Password is empty</a>   |
| Transfer all data to PiWeb:              | No                                  |
| Decimal separator:                       | Comma ,                             |
| <a href="#">Connect to network share</a> |                                     |

**Fig. 34:** Auto Importer

- Enter the Windows user who has access to the PiWeb PC / enabled folder.
- Enter the password of the Windows user.
- Set decimal separators appropriately for PiWeb, so that PiWeb Auto Importer can correctly interpret the zcsv files.
- Click on "Connect to network share".
- The enable folder must be configured in the PiWeb auto importer so that files can be imported from there into PiWeb.
- PiWeb Auto Importer: In the folder structure, set "Inspection plan parts as subfolders" so that the TEMPOR data are not created in the root of PiWeb.
- After starting of the import by the PiWeb Auto Importer, the complete part structure of PiWeb is created in the specified folder.



**Fig. 35:** Folder structure (example)

- Then the "TEMPOR" folder and its subfolder, which is automatically created by TEMPOR, must still be manually created in the PiWeb Planner as components and subcomponents.

- The files with the measured values are created in the enabled folder according to the "Interval measuring data (ms)" (See chapter "3.2 Operation as "Standard" user group") in the enabled folder. Naming takes place according to the following template:  
"PiWebData\_YYYYMMDD-hhmmss\_<Seriennummer Konsole/  
Messzone>\_ABCD.zcsv".
- The PiWeb Auto Importer reads the measuring data files automatically according to the set test interval from the specified folder. Subsequently, these files are deleted or moved to the folder for import backup.

To export all data from the TEMPAS system, activate "Transfer all data to PiWeb". Consequently all data are sequentially exported in large zcsv files. Dependent on the number of data sets, this can take several hours.

#### **PiWeb REST interface:**

For direct communication with the PiWeb server, it must be ensured that TEMPAS can reach the PiWeb PC/PiWeb server via the network. If a firewall exists between the PiWeb PC and the TEMPAS system, it must be ensured that the port that was configured in PiWeb server is open (e.g. port 8080). To establish the connection, the necessary information must be entered in the "PiWeb REST interface". Run the connection status test if there are connection problems. If a sub-folder is to be created in PiWeb for the corresponding console / cockpit, this can be set under "Create subcomponent of measuring room".

The PiWeb REST interface can be used with a PiWeb servers of version  $\geq 6.2$ .

To do so, follow the following steps:

- Activate PiWeb REST interface on the PiWeb server.
- Select Activate PiWeb REST interface.
- Enter the IP address of the PiWeb server.
- Enter the port of the PiWeb server (default: 8080).
- If TEMPAS is successfully connected to the PiWeb server, then after a short time the PiWeb server version must be displayed in TEMPAS (if necessary, the TEMPAS page must be reloaded, e.g. by switching between tabs).
- After a brief period, data are created in the PiWeb database.

**Q-DAS network share:**

To export TEMPAS data to a Q-DAS system, proceed as follows:

- Ensure that the Q-DAS PC can be reached from the TEMPAS system via the network. If a firewall exists between the Q-DAS PC and the TEMPAS system, it must be ensured that the necessary ports are open.
- Create a folder on the Q-DAS PC or select an existing folder. After the folder has been enabled, this must be checked under Control Panel/Administrative Tools/Computer Management/Shared Folders/Shares (alternatively via Start/Run/ enter "compmgmt.msc" and press OK).
- Enable access to this folder for all users (alternatively only for those users that have access to the Q-DAS PC).
- Activate connection to network share.
- Enter the Windows user who has access to the Q-DAS PC / enabled folder.
- Enter the password of the Windows user.
- Enter the IP address of the PC on which the enabled folder was created (e.g. 192.168.0.1).
- The files with the measured values are created in the enabled folder according to the "Interval measuring data (ms)" (See chapter "3.2 Operation as "Standard" user group") in the enabled folder. Naming takes place according to the following template:  
 "Q-DAS\_<Seriennummer  
 Konsole/Messzone>\_YYYYMMDD-hhmmss.DFQ".

### 3.2.16 "Configuration > System > Connections" menu

The screenshot shows the TEMPAR configuration web interface. At the top, there's a navigation bar with the TEMPAR logo and a 'Configuration' dropdown menu. Below this, a horizontal menu contains 'General', 'Network', 'Password', 'Database', 'Maintenance', 'Backup', 'E-mail', 'External DB', and 'Connections' (which is highlighted). The main content area is divided into three sections:

- Cockpit:** Contains a 'Cockpit connection' dropdown set to 'Disable connection to cockpit', a 'Cockpit IP' text field, an 'API password' text field with a toggle for visibility, a 'Save' button, and a 'Test connection' button (disabled, showing 'n/a').
- Management Interface:** Contains a 'Management Interface IP' text field with the value '185.34.186.24', a 'Reset to default IP' button, and a 'Save' button.
- Active Directory:** Contains a table with settings:
 

|                             |                                     |
|-----------------------------|-------------------------------------|
| Enable Active Directory:    | <input checked="" type="checkbox"/> |
| Active Directory domain:    | TEST ?                              |
| Domain Controller hostname: | <a href="#">Click to edit ?</a>     |
| Machine account name:       | <a href="#">Click to edit ?</a>     |
| User:                       | <a href="#">Click to edit ?</a>     |
| Password:                   | ***** ?                             |

 Below the table are 'Connect to Active Directory' and 'Disconnect from Active Directory' buttons. At the bottom of this section is a 'Connection status test' area showing a red 'Disconnected' status and a 'Refresh' button.

At the very bottom, there is a footer with links for 'User manual', 'Console', 'Feedback', 'Downloads', and 'Legal disclaimer', along with a copyright notice for Carl Zeiss 3D Automation GmbH.

**Fig. 36:** "Connections" step

A connection to a TEMPAR cockpit can be made under "**Cockpit**".

- Enter the IP address of the TEMPAR cockpit with which the connection is to be made, under "Cockpit IP".
- Enter the API password of the TEMPAR cockpit with which the connection is to be made, under "API password". The API Password can be read off in the TEMPAR cockpit under Configuration > Cockpit > Linked Consoles > Consoles > API.
- Press the "Save" key.
- Press "Test connection" to determine whether connection to the cockpit is possible.

A connection from a client cockpit to a master cockpit is also possible. If TEMPAR systems that are connected to the client cockpit are also connected to the master cockpit, then each of the TEMPAR systems of the client cockpit must be created again on the master cockpit (see TEMPAR cockpit operating instructions).

There is normally no need to make any settings in the "**Management Interface**" area unless you are instructed to do so by a ZEISS employee. Clicking on "Test connection" causes a test to be performed on whether the Management Interface can be reached with the current settings. If this is the case, online updates can also be used.

The logging in of TEMPAR to an active directory server can be configured in the area "**Active Directory**". After entry of the connection data, click on "Connect to Active Directory". If necessary a "Connection status test" can be performed. Please note that to function reliably, "Active Directory" requires an NTP time server (see Operating manual, Network chapter).

### 3.2.17 "Configuration > Measuring Room > Machines" menu

The screenshot shows the TEMPAR console interface. At the top, the 'Configuration' menu is open, and the 'Machines' tab is selected. Below this, the 'Measuring Room' section shows the name 'Testraum ?' and a 'Choose signal device' dropdown set to 'No signal device'. The 'Machines' table lists various machines with their ambient temperature, temperature difference, and change rates. Each machine has a 'Reset' button and 'OK' and 'Warning' status indicators.

| Machines                                                              | Ambient temperature |           | Temperature diff. Length-related (K/m) | Temperature change |               | Default Values | Logo | Warning |
|-----------------------------------------------------------------------|---------------------|-----------|----------------------------------------|--------------------|---------------|----------------|------|---------|
|                                                                       | Min. (°C)           | Max. (°C) |                                        | Per hour (K/h)     | Per day (K/d) |                |      |         |
| <input checked="" type="checkbox"/> ACCURA II 9/12/8 to 12/24/10      | 20.2                | 26.0      | 1.0                                    | 1.0                | 2.0           | Reset          | OK   | Warning |
| <input checked="" type="checkbox"/> ACCURA II from 12/30/10           | 18.0                | 22.0      | 1.0                                    | 1.0                | 2.0           | Yes            | OK   | Warning |
| <input checked="" type="checkbox"/> ACCURA II HTG 9/12/08 to 12/24/10 | 15.0                | 30.0      | 1.0                                    | 2.0                | 5.0           | Yes            | OK   | Warning |
| <input type="checkbox"/> C400                                         | 21.0                | 23.0      | 1.0                                    | 1.0                | 2.0           | Reset          | OK   | Warning |
| <input type="checkbox"/> C700                                         | 17.0                | 23.0      | 1.0                                    | 1.0                | 2.0           | Yes            | OK   | Warning |
| <input type="checkbox"/> CARMET                                       | 16.0                | 24.0      | 0.5                                    | 1.5                | 3.0           | Yes            | OK   | Warning |
| <input type="checkbox"/> CARMET II                                    | 16.0                | 24.0      | 1.0                                    | 1.5                | 3.0           | Yes            | OK   | Warning |
| <input checked="" type="checkbox"/> CenterMax                         | 15.0                | 35.0      | 2.0                                    | 2.0                | 8.0           | Yes            | OK   | Warning |

**Fig. 37:** "Machines" menu

Via the "Configuration" menu on the top right, the sub-menu "Measuring Room" can be accessed and this is subdivided into several tabs. The "Machines" tab contains the following information.

The name of the local measuring room is displayed in the "**Measuring Room**" area. The name "Measuring Room 1" is activated by a click and can be renamed.

If signal devices are connected to the console, they can be selected and activated or deactivated. Signal devices are automatically detected on the sensor bus and listed under "Choose signal device". To activate a signal device, select it and confirm.

In the "**Machines**" area, up to ten test and measuring machines can be selected that are to be monitored from the console. The specification values can be set for each machine. In addition to the Carl ZEISS machines listed, ten freely configurable entries are available (CMM 1 to CMM 10).

Clicking the "Reset" button restores the original values.

Images can be uploaded for each machine in the "Logo" column. These images are displayed as the machine logo in the main tabs. If only one image is uploaded for the machine, it is shown framed in orange in a warning.

### 3.2.18 "Configuration > Measuring Room > Sensors" menu

ZEISS TEMPAR®

°C Configuration

Machines **Sensors** Calibration Tolerance Values History Classification Event Log

Sensor net configuration

Temperature sensors  
No sensors available

Measuring cube selection

Sensors

| ID | Sensor name           | Active                              | Gradient...                         | Assigned hardware sensors                                                                                                                                                                                                                                                                     |
|----|-----------------------|-------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| H1 | Air humidity 1 (%)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |
| P1 | Air pressure 1 (mBar) | <input type="checkbox"/>            |                                     |                                                                                                                                                                                                                                                                                               |
| A1 | Airflow 1 (m/s)       | <input type="checkbox"/>            |                                     |                                                                                                                                                                                                                                                                                               |
| T1 | Temperature 1 (°C)    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <p><b>Temperature</b></p> <p>Serial number: 18056117</p> <p>TEMPAR-network address: 1</p> <p>Sensor description: Click to edit</p> <p>STATUS: Connected <input checked="" type="checkbox"/></p> <p>Sensor connected</p> <p>Battery level: 90 %</p> <p>Gateway serial number: 15921804C007</p> |
| T2 | Temperature 2 (°C)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |
| T3 | Temperature 3 (°C)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |
| T4 | Temperature 4 (°C)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |
| T5 | Temperature 5 (°C)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |
| T6 | Temperature 6 (°C)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |
| T7 | Temperature 7 (°C)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |
| T8 | Temperature 8 (°C)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |
| T9 | Temperature 9 (°C)    | <input type="checkbox"/>            | <input type="checkbox"/>            |                                                                                                                                                                                                                                                                                               |

Hardware sensors

No dissociated sensors found.

Create network data source

Start TEMPAR-network scan

Max. TEMPAR-network address: 31

Radio sensor pairing

At least one gateway is available, which supports the connection of radio sensors. Switch on a radio unit and start the pairing to connect the radio sensors to the system.

Radio sensor gateway

Serial number: 15921804C007

Sensor network address: 11

Gateway connected

Start pairing

Reset

Temporal gradient configuration

Calculation method:

Time constants

Temperature sensors (s):

User manual: [General](#) | [Hardware](#) | [Installation](#) | [Network](#) | [Safety](#)

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Configuration > Measuring Room

Fig. 38: "Sensors" menu

In the step "**Sensors**", the sensors of a console or measuring zone can be selected, shifted, activated or deactivated.

A measuring zone is the area that is monitored using spatially arranged and grouped sensors.

- Temperature sensors can be selected by clicking in the area "**Sensor net configuration**" and then moved to another position in the room. The change is displayed in parallel to this in the "Measuring cube selection" area. The dimensions of the room can be entered in metres (m) by clicking on "X", "Y" or "Z".

- All measuring zones and assigned sensors are displayed in the area "**Measuring cube selection**". The currently selected measuring zone is displayed in green. By selecting another measuring zone, its configuration is displayed in the area "Sensor net configuration" and changes can be made.

The grey highlighted area in "Measuring cube selection" marks the local measuring room. This measuring cube is monitored from the console. All sensors outside the local cube are recorded, but not however monitored. They are used to define measuring zones in a cockpit. By selecting a cube (which is not a local measuring cube) and then clicking on the button "Define as local cube", this cube becomes the local measuring cube.

- In the "**Sensors**" area, sensors from the Hardware sensors area can be assigned a sensor name (e.g. T1). The measured values recorded by the sensor are then saved and displayed under this name. Such an assignment should only take place in exceptional cases, e.g. during a recalibration.
- Each sensor is represented as a tile and can be deleted via the top right minus sign.
- Sensors can be selected or deselected in the column "**Gradient calculation**". Deselected sensors are ignored in the calculation of key quantities (e.g. mean temperature, measuring room class, etc.). This option influences machine monitoring, but not measuring room monitoring.
- All sensors connected to the sensor network are listed in the column "**Assigned hardware sensors**". Sensors that are connected using wireless components, must first be coupled to the system as described in chapter 1.7 of the installation instructions. Each sensor is displayed as a tile that contains the following information:
  - Display: Sensor reachable or not reachable.  
Sensors that cannot be reached can be deleted by clicking the top right minus sign.
  - Sensor serial number
  - Sensor network address

- Identification number of the sensor in the sensor network
- Sensor description: Editable sensor description (e.g. Sensor top door)
- DAkkS-calibrated (the information is saved in the sensor and automatically transferred)
- Serial number of the gateway with which the corresponding sensor unit has been paired (only when using TEMP PAR wireless).
- The TEMP PAR system is searched for connected components via **"Sensor network scan"**. If connected components are not listed, increase the maximum network address.
- Clicking on **"Automatic sensor assignment"** causes the sensor with the serial number to be assigned to the next free sensor name by increasing number. All connected sensors can be easily assigned in this way.
- The area **"Radio sensor pairing"** can only be seen if the TEMP PAR wireless gateway is present. Here, the gateway settings and pairing of the sensor units with the gateway is undertaken. The following is displayed for each connected gateway:
  - Gateway serial number
  - Start of pairing mode
- The type of measured value determination can be selected in the area **"Temporal gradient configuration"**.
 

Gliding window: The highest and lowest measured value in a time window are used in the calculation.

Fixed interval measuring points: Only the current measured values and the measured values recorded at the beginning of the interval are used in the calculation.
- A time delay can be set in the area **"Time constants"** after which a temperature change in the sensor is indicated. In this way a time constant can be set in the sensors, that corresponds to a measuring or testing instrument (e.g. coordinate measuring machine 25 minutes = 1500 seconds). If for example a time constant of 1500 seconds is set, a temperature change of 1 K would only cause a change to the measuring result of 1 K after 1500 seconds.

### 3.2.19 "Configuration > Measuring Room > Calibration" menu

ZEISS TEMPAR®

Configuration ▾

Machines Sensors **Calibration** Tolerance Values History Classification Event Log

|                              |                                     |
|------------------------------|-------------------------------------|
| Sensor calibration:          | <input checked="" type="checkbox"/> |
| Calibration interval:        | 365 days ?                          |
| Calibration days to warning: | 30 days ?                           |
| Calibration days to alert:   | 5 days ?                            |
| Last calibration:            | n/a                                 |
| Next calibration:            | n/a                                 |

User manual: [Console](#) | [Feedback](#) | [Troubleshooting](#) | [Logout/Standard](#)

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Configuration > Measuring Room

**Fig. 39:** "Calibration" menu

The calibration data shown here refers to the calibration date saved in the sensors.

The number of days until the next calibration can be entered under "Calibration interval". The number of days until the next calibration of sensors is shown on the gradient, measuring room, sensor, history and system page.

Also the number of days before the calibration runs out at which point a warning and an alarm are issued can be specified here.

### 3.2.20 "Configuration > Measuring Room > Tolerance Values" menu

ZEISS TEMPAR®

Configuration > Measuring Room > Tolerance Values

Machines Sensors Calibration **Tolerance Values** History Classification Event Log

Temperature (°C)

|             |      |
|-------------|------|
| Lower limit | 19.0 |
| Upper limit | 22.0 |

Humidity (%)

|             |      |
|-------------|------|
| Lower limit | 30.0 |
| Upper limit | 60.0 |

Pressure (mBar)

|             |      |
|-------------|------|
| Lower limit | 900  |
| Upper limit | 1050 |

Airflow (m/s)

|             |     |
|-------------|-----|
| Lower limit | 0.1 |
| Upper limit | 1.0 |

User manual | [Console](#) | [Feedback](#) | [Shut down](#) | [Logout/Standby](#)

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Configuration > Measuring Room

**Fig. 40:** "Tolerance Values" menu

For the values temperature, air humidity, air pressure and airflow the respective upper and lower limits can be entered here. If these tolerance values are exceeded or undershot, the font colour of the displayed values changes from black to orange and a warning is generated and displayed in the EventLog.

### 3.2.21 "Configuration > Measuring Room > History" menu

ZEISS TEMPAR®

Configuration > Measuring Room > History

Machines Sensors Calibration Tolerance Values History Classification Event Log

Chart

Maximum data count per chart: 5000

Left value-axis Temperature (°C)

|             |      |
|-------------|------|
| Lower limit | 20.0 |
| Upper limit | 24.0 |

Left value-axis Humidity (%)

|             |      |
|-------------|------|
| Lower limit | 20.0 |
| Upper limit | 60.0 |

Left value-axis Pressure (mBar)

|             |     |
|-------------|-----|
| Lower limit | 850 |
| Upper limit | 1   |

Left value-axis Airflow (m/s)

|             |     |
|-------------|-----|
| Lower limit | 0.0 |
| Upper limit | 1.3 |

User manual: [Console](#) | [Feedback](#) | [Shutdown](#) | [Logout \(standard\)](#)

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Configuration > Measuring Room

**Fig. 41:** "History" menu

Here, the Y-axis sections of the charts in the main "History" tab are set for chart, temperature, air humidity, air pressure and air flow. The Y-axis sections or all other charts are fixed or can be defined automatically by the system using "Automatic Scaling".



### 3.2.23 "Configuration > Measuring Room > Event Log" menu

**ZEISS TEMPAR®** Configuration

Machines Sensors Calibration Tolerance Values History Classification **Event Log**

**General**

Event Log: ☐ on

Show errors in Event Log: ☐ Yes

**Delete log events**

From: 7 March 2019 Delete

To: 7 March 2019

**User rights configuration**

Allow viewer user to confirm log events: ☐ Yes ?

Allow viewer user to delete log events: ☐ Yes ?

**Log events confirmation**

Sensor warning log events need confirmation: ☐ Yes

Gradient warning log events need confirmation: ☐ Yes

| Machines                               | Gradient warning log events need confirmation if machine is affected |
|----------------------------------------|----------------------------------------------------------------------|
| ACCURA II 9/12/8 to 12/24/10           | Yes                                                                  |
| ACCURA II from 12/30/10                | Yes                                                                  |
| ACCURA II HTG 9/12/08 to 12/24/10      | Yes                                                                  |
| C400                                   | Yes                                                                  |
| C700                                   | Yes                                                                  |
| CARMET                                 | Yes                                                                  |
| CARMET II                              | Yes                                                                  |
| CenterMax                              | Yes                                                                  |
| CenterMax Navigator                    | Yes                                                                  |
| CenterMax Navigator 5-ACC from 04/2006 | Yes                                                                  |
| CenterMax Navigator 5-ACC from 06/2006 | Yes                                                                  |
| CenterMax Navigator ultra              | Yes                                                                  |
| CMM 01                                 | Yes                                                                  |

**System defined reasons**

ID Reason

- 1 Handover error
- 2 Handling error
- 3 Window open
- 4 Door open

**User defined reasons**

ID Reason Delete

No reasons defined

**Add event log reason**

Add

User manual Console / Cockpit | Feedback | Switch to Cockpit | Logout/Logout  
Copyright © by Carl Zeiss SMT Automation GmbH Configuration > Measuring Room

**Fig. 43:** "Event Log" menu

The "Event Log" tab is divided into six areas:

- General
- Delete log entries
- User rights configuration
- Log events confirmation
- System defined reasons
- User defined reasons
- Add event log reason

#### General

"Event Log" can be switched on and off here.

#### Delete log entries

Existing log entries can be deleted in this area. Select the period for this and click the "Delete" button.

**User rights configuration**

This area is used for setting and managing the user rights of the viewer.

**Log events confirmation**

This is where it is specified whether sensor and gradient log entries must be displayed and confirmed or not.

- |     |                                                                                                                                                                                                           |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes | Log entries are displayed and must be confirmed.                                                                                                                                                          |
| No  | Log entries are generated but not displayed and need not be confirmed.<br>The generated log entries can be listed under<br>"Configuration/Event Log" with the selection "Display<br>options/Display all". |

If gradient warning "Yes" was selected, the selection for each individual machine can be made in the Machines window.

**System defined reasons**

Here, you can see set reasons for event logs that are always available.

- Hardware error
- Handling error
- Window open
- Door open

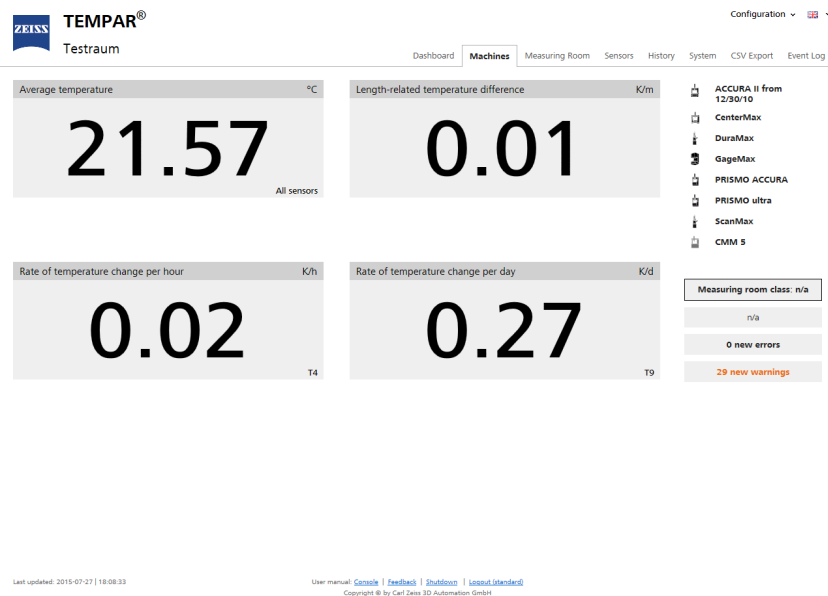
**User defined reasons**

User defined reasons can be viewed, edited or deleted here.

**Add event log reason**

Your own reasons can be entered and added here. Afterwards, they can be found under "User-defined reasons".

### 3.3 Operation as "Viewer" user



**Fig. 44:** Standard view as "Viewer" user

For the "Viewer" user or "Viewer" user group, the scope of the console is limited so that settings cannot be configured. Consequently the "Configuration" menu item is not available. The console only shows values and information.

The description of the existing views can be taken from the Operation as "Standard" user section.

### 3.4 Switching off

To switch the console off, use the "Shutdown" button at the bottom of the console, which causes the console to switch off automatically. This button is only displayed for operation via the touchscreen. For security reasons, the "End" button is not displayed for the "Viewer" user/user group.

Alternatively the console can also be switched off by pressing the "On/Off button" (See chapter "3.1 Switching on").

**Note:**

The console must be switched off and disconnected from the power source for installation or maintenance work.

## 4 Maintenance

### 4.1 Calibration cycle

---

The temperature sensor calibration cycle must be followed. The recommended service life for the calibrated temperature sensors is one year. After a calibration cycle ends, the temperature sensors should be removed and replaced with newly calibrated ones:

1. Deactivate sensor in Configuration > Measuring Room > Sensors.
2. Unscrew the sensor or the sensor electronics from the sensor network.
3. Place the removed temperature sensors individually in shock-proof packaging and send them back to the manufacturer for calibration.
4. Screw the newly calibrated sensors into the sensor network.
5. Activate sensor in Configuration > Measuring Room > Sensors.

The removed temperature sensors can be sent back to the manufacturer for re-calibration. Calibration takes approximately three to six weeks dependent on the sensor type (plus shipping time). Alternatively the calibration-exchange service can be used (See chapter "5.1 Supply of supply and expansions"). In this way, you receive a newly calibrated sensor network sent to you before the calibration elapses. All sensors can be replaced and consequently the measuring process can be recommenced within a very short time period. Then the sensors with the lapsed calibration must be sent back to Carl Zeiss 3D Automation.

Contact:

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### 4.2 Maintenance

---

The system does not require any maintenance.

### 4.3 Spare parts

---

(See chapter "5.1 Supply of supply and expansions").

## 4.4 Disposal and recycling

---

Disassembly and disposal must only be carried out by specialist personnel from the manufacturer or owner, observing the relevant accident prevention regulations. When disposing of the system or its components, different elements must be disposed of separately in accordance with relevant national and regional waste disposal regulations.

## 5 Technical data

| Condition                                    | Value                                                                                                                                                                                                                         |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight single temperature sensor             | approx. 25 g                                                                                                                                                                                                                  |
| Weight single air humidity sensor            | approx. 160 g                                                                                                                                                                                                                 |
| Weight single barometric pressure sensor     | approx. 115 g                                                                                                                                                                                                                 |
| Weight single airflow sensor                 | approx. 220 g                                                                                                                                                                                                                 |
| Weight of sensor unit                        | approx. 550 g                                                                                                                                                                                                                 |
| Mains voltage                                | 100 - 230 V AC                                                                                                                                                                                                                |
| Electrical power                             | approx. 35 W                                                                                                                                                                                                                  |
| Supply voltage for sensor network            | 12 V DC                                                                                                                                                                                                                       |
| Sensor bus power consumption                 | max. 6 W                                                                                                                                                                                                                      |
| Ambient temperature                          | +5°C to +40°C                                                                                                                                                                                                                 |
| Air humidity                                 | 30 - 80% (non-condensing)                                                                                                                                                                                                     |
| Distance between wall and temperature sensor | at least 0.5 m                                                                                                                                                                                                                |
| Room walls and ceiling                       | The composition of walls and the ceiling must be sufficient for being able to fasten the TEMPAR system. Fastening materials like cable ducts, screws and plugs must be selected by the operator depending on the composition. |

**TEMPAR wireless**

| Condition                                  | Value                                                                |
|--------------------------------------------|----------------------------------------------------------------------|
| Measuring interval                         | Dependent on the settings on the TEMPAR console, at least 30 seconds |
| Service life                               | With lighting of at least 300 Lux:<br>> 10 years                     |
| Battery type                               | LiFePO (lithium iron phosphate)                                      |
| Number of loading cycles                   | 3000                                                                 |
| Maximum number of sensor units per gateway | 50                                                                   |
| Maximum number of sensors per sensor unit  | 2                                                                    |
| Storage temperature                        | -20°C to +45°C                                                       |
| Operating temperature                      | 0°C to +45°C                                                         |
| Weight                                     | Gateway: 110 g<br>Sensor unit: 550 g                                 |
| Dimensions                                 | Gateway: 100 x 85 x 34 mm<br>Sensor unit: 218,5 x 120 x 52 mm        |
| Max. range in the open                     | 30 m                                                                 |
| Transmission signal                        | Radio 868.3 MHz (Europe);<br>915,0 MHz (USA)                         |

## 5.1 Scopy of supply and expansions

| <b>Cloud Cockpit</b>   |                                       |
|------------------------|---------------------------------------|
| <b>626140-9149-891</b> | <b>TEMPAR access Cloud Cockpit</b>    |
| Item no.               | Designation                           |
| 626140-9149-891        | TEMPAR access Cloud Cockpit 1 month   |
| 626140-9149-892        | TEMPAR access Cloud Cockpit 3 months  |
| 626140-9149-893        | TEMPAR access Cloud Cockpit 6 months  |
| 626140-9149-894        | TEMPAR access Cloud Cockpit 12 months |
| 626140-9149-895        | TEMPAR access Cloud Cockpit 24 months |

| <b>Components</b> |                                                              |
|-------------------|--------------------------------------------------------------|
| Item no.          | Designation                                                  |
| 626140-9140-205   | TEMPAR Logic Box                                             |
| 626140-9140-213   | TEMPAR console                                               |
| 626140-9140-214   | TEMPAR console cockpit                                       |
| 626140-9140-062   | Signal device set for TEMPAR console v3                      |
| 626140-9141-042   | TEMPAR single temperature sensor, DAkKS calibrated           |
| 626140-9141-043   | TEMPAR single temperature sensor, factory calibrated         |
| 626140-9141-052   | TEMPAR precision single temperature sensor, DAkKS calibrated |
| 626140-9142-012   | TEMPAR single air humidity sensor, DAkKS calibrated          |
| 626140-9142-013   | TEMPAR single air humidity sensor, factory calibrated        |
| 626140-9142-022   | TEMPAR single airflow sensor, DAkKS calibrated               |
| 626140-9142-023   | TEMPAR single airflow sensor, factory calibrated             |
| 626140-9143-012   | TEMPAR single barometric pressure sensor, DAkKS calibrated   |
| 626140-9143-013   | TEMPAR single barometric pressure sensor, factory calibrated |
| 626140-9140-067   | TEMPAR wall bracket for console                              |
| 626140-9140-078   | TEMPAR mobile stand extension 0.5 m                          |
| 626140-9140-075   | Mobile stands                                                |

**Components**

| Item no.        | Designation                         |
|-----------------|-------------------------------------|
| 626140-9140-107 | TEMPAR sensor bus M12 for 2 sensors |
| 626140-9140-098 | Adapter cable Modbus - USB          |

**Accessories for cable-connected systems**

| Item no.        | Designation                                     |
|-----------------|-------------------------------------------------|
| 626140-9140-137 | TEMPAR ceiling bracket for 1 sensor             |
| 626140-9140-138 | TEMPAR ceiling bracket for 2 sensors            |
| 626140-9140-152 | TEMPAR wall bracket for sensors                 |
| 626140-9140-135 | TEMPAR universal holder for temperature sensors |
| 626140-9140-136 | TEMPAR universal holder for sensors             |
| 626140-9140-145 | TEMPAR clamp for 1 temperature sensor           |
| 626140-9140-146 | TEMPAR clamp for 1 sensor (not temperature)     |
| 626140-9140-905 | TEMPAR flight case for standard packages        |
| 626140-9140-906 | TEMPAR flight case for 2 mobile stands          |
| 626140-9147-103 | Network cable - 3.0m                            |
| 626140-9147-105 | Network cable - 5.0m                            |
| 626140-9147-110 | Network cable - 10m                             |
| 626140-9149-003 | Sensor bus cable M12 - 0.3m                     |
| 626140-9149-004 | Sensor bus cable M12 - 0.3m, plenum rated (CMP) |
| 626140-9149-012 | Sensor bus cable M12 - 1.0 m, PVC               |
| 626140-9149-011 | Sensor bus cable M12 - 1.0m, plenum rated (CMP) |
| 626140-9149-030 | Sensor bus cable M12 - 3.0m                     |
| 626140-9149-031 | Sensor bus cable M12 - 3.0m, plenum rated (CMP) |
| 626140-9149-050 | Sensor bus cable M12 - 5.0m                     |
| 626140-9149-051 | Sensor bus cable M12 - 5.0m, plenum rated (CMP) |
| 626140-9149-100 | Sensor bus cable M12 - 10m                      |
| 626140-9149-101 | Sensor bus cable M12 - 10m, plenum rated (CMP)  |

**TEMPAR wireless components**

| Item no.        | Designation                                  |
|-----------------|----------------------------------------------|
| 626140-9149-300 | TEMPAR wireless gateway, EU                  |
| 626140-9149-301 | TEMPAR wireless gateway, USA                 |
| 626140-9149-330 | TEMPAR wireless sensor unit, EU              |
| 626140-9149-331 | TEMPAR wireless sensor unit, USA             |
| 626140-9149-340 | Micro-USB charger                            |
| 626140-9140-160 | Wall bracket 150 mm                          |
| 626140-9140-161 | Wall bracket 500 mm                          |
| 626140-9140-162 | Ceiling bracket for solid ceiling            |
| 626140-9140-163 | Ceiling bracket, add-on for panelled ceiling |
| 626140-9140-164 | Clamping bracket for sensor unit             |

**Services**

| Item no.        | Designation                                       |
|-----------------|---------------------------------------------------|
| 626140-8141-042 | Recalibration temperature sensor, DAkKS           |
| 626140-8141-043 | Recalibration temperature sensor, factory         |
| 626140-8141-052 | Recalibration precision temperature sensor, DAkKS |
| 626140-8142-002 | Recalibration humidity sensor, DAkKS - old        |
| 626140-8142-003 | Recalibration humidity sensor, factory - alt      |
| 626140-8143-002 | Recalibration air pressure sensor, DAkKS - old    |
| 626140-8143-003 | Recalibration air pressure sensor, factory - alt  |
| 626140-8142-012 | Recalibration humidity sensor, DAkKS              |
| 626140-8142-013 | Recalibration humidity sensor, factory            |
| 626140-8143-012 | Recalibration air pressure sensor, DAkKS          |
| 626140-8143-013 | Recalibration air pressure sensor, factory        |
| 626140-8142-022 | Recalibration air flow, DAkKS                     |
| 626140-8142-023 | Recalibration air flow, factory                   |

**Services**

| Item no.        | Designation                                                      |
|-----------------|------------------------------------------------------------------|
| 626140-8141-155 | Calibration exchange service temperature sensor, DAkkS           |
| 626140-8141-156 | Calibration exchange service temperature sensor, factory         |
| 626140-8141-157 | Calibration exchange service precision temperature sensor, DAkkS |
| 626140-8142-101 | Calibration exchange service humidity sensor, DAkkS              |
| 626140-8142-102 | Calibration exchange service humidity sensor, factory            |
| 626140-8143-101 | Calibration exchange service air pressure sensor, DAkkS - old    |
| 626140-8143-102 | Calibration exchange service air pressure sensor, factory - alt  |
| 626140-8142-103 | Calibration exchange service humidity sensor, DAkkS              |
| 626140-8142-104 | Calibration exchange service humidity sensor, factory            |
| 626140-8143-103 | Calibration exchange service air pressure sensor, DAkkS          |
| 626140-8143-104 | Calibration exchange service air pressure sensor, factory        |
| 626140-8142-115 | Calibration exchange service airflow sensor, DAkkS               |
| 626140-8142-116 | Calibration exchange service airflow sensor, factory             |

**Spare parts**

| Item no.        | Designation                         |
|-----------------|-------------------------------------|
| 626140-9140-086 | TEMPAR connection set for console   |
| 626140-9149-910 | TEMPAR cockpit documentation        |
| 626140-9149-911 | TEMPAR documentation                |
| 626140-9149-912 | TEMPAR logic documentation          |
| 626140-9140-093 | TEMPAR sensor bus terminal resistor |

