

Functional description / User's manual

testo Saveris



Measurement data monitoring with testo Saveris Small Business Edition

Instruction manual





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2 Safety and the environment

2.1. About this document

Symbols and writing standards

Representation	Explanation
	Warning advice, risk level according to the signal word: Warning! Serious physical injury may occur. Caution! Slight physical injury or damage to the equipment may occur. > Implement the specified precautionary measures.
	Note: Basic or further information.
1. ...	Action: more steps, the sequence must be followed.
2. ...	
> ...	Action: a step or an optional step.
- ...	Result of an action.
 ...	Position numbers for the clarification of the relationship between text and picture.
 ...	
Menu	Elements of the instrument, the instrument display or the program interface.
[OK]	Control keys of the instrument or buttons of the program interface.
... ...	Functions/paths within a menu.
“...”	Example entries

Use

- > Familiarity with a PC as well as the Microsoft products, especially Microsoft Office 2007, is assumed in this documentation.
- > Please read this documentation through carefully and familiarize yourself with the product before putting it to use. Pay particular attention to the safety instructions and warning advice in order to prevent injuries and damage to the products.
- > Keep this document to hand so that you can refer to it when necessary.
- > Hand this documentation on to any subsequent users of the product.

2.2. Ensure safety

- > Carry out only the maintenance and repair work on the components of the testo Saveris system that is described in the documentation. Follow the prescribed steps exactly. Use only original spare parts from Testo.
- > Never use the Saveris probes to measure on or near live parts.
- > Only operate the product properly, for its intended purpose and within the parameters specified in the technical data. Do not use any force.
- > The output of the power supply for the Saveris probes, routers, converters and the Saveris base is restricted in accordance with EN 60950-1:2001. A manipulation of the power supply is not allowed in terms of the radio authorization.
- > The radio module is installed in the Saveris components such that the limit values for air and creepage distance is adhered to with regard to the standards. Changing the internal design of the components is not allowed.
- > When selecting the location, ensure that the permissible ambient and storage temperatures are adhered to:
 - Radio module: -35 to 50 °C
 - Components: -35 to 50 °C (operation);
-40 to 55 °C (storage).

2.3. Protecting the environment

- > Dispose of faulty rechargeable batteries/spent batteries in accordance with the valid legal specifications.
- > At the end of its useful life, send the product to the separate collection for electric and electronic devices (observe local regulations) or return the product to Testo for disposal.

3 Specifications

3.1. Use

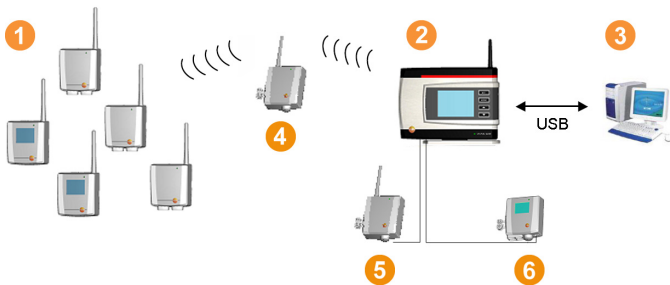
Areas of application

The testo Saveris measurement system can be used everywhere where temperature and humidity-sensitive products are produced and stored, for example in the food industry (cold rooms, deep freeze rooms and refrigeration chambers), in smaller companies in food production, as well as bakeries and butchers, or in the pharmaceuticals industry (temperature-controlled cabinet, storage of drugs).

But the measurement system can also be used in other industries for monitoring the building air conditioning as well as for quality assurance in store rooms for products in every phase of production.


i The testo Saveris measurement system is only used to monitor readings, not to control and regulate them.

How it works



The ambient or process data for the temperature and air humidity in closed rooms are measured and recorded using probes 1 with the measuring system. These readings are transmitted to the Saveris base 2 via radio, which then saves them. A router 4 can be used to optimize the radio in the event of difficult structural conditions. The data are called up from the Saveris base by a computer 3 and saved in a database.

Very long distances can be bridged by using a converter 5 that converts the radio signals of the probe or router and then

transmits these measurement data to the base via Ethernet cable. In addition the so-called Ethernet probes  can be connected to the base using an Ethernet cable.

With the testo Saveris software you thereby always have an overview of the development of the readings in the individual areas.

Exclusion of liability

The testo Saveris system was developed to consolidate a large amount of measurement data from spatially separated probes in the Saveris software, document it without interruption and issue alarms in the event of irregularities.

The testo Saveris system is not designed to undertake control and regulation tasks according to the regulations. Particularly the alarms are not to be perceived as so-called critical alarms with which the endangerment of life or limb or damage to equipment can be averted.

Liability on the part of Testo AG for damages from this type of application is excluded.

3.2. System requirements

Operating system

The software can be run on the following operating systems:

- Windows® 2000 SP4
- Windows® XP SP2
- Windows® Vista

Computer

For smooth work with the software, the following requirements should be met:

- Pentium processor of at least 800 MHz or equivalent
- 256 MB RAM
- 4.5 GB unused hard drive capacity with maximum size of the database
- CD-ROM or DVD-ROM drive
- USB 2.0 interface
- Microsoft® Internet Explorer 6.0 SP1 or higher
- Microsoft® Windows Installer 3.1 or higher
- MDAC 2.8 SP1 or higher
- .NET Framework 2.0 or higher

i If Windows® Installer 3.1, MDAC 2.8 SP1 and .NET Framework 2.0 are not present on the computer, these are installed with the Saveris software.

- Microsoft® Outlook

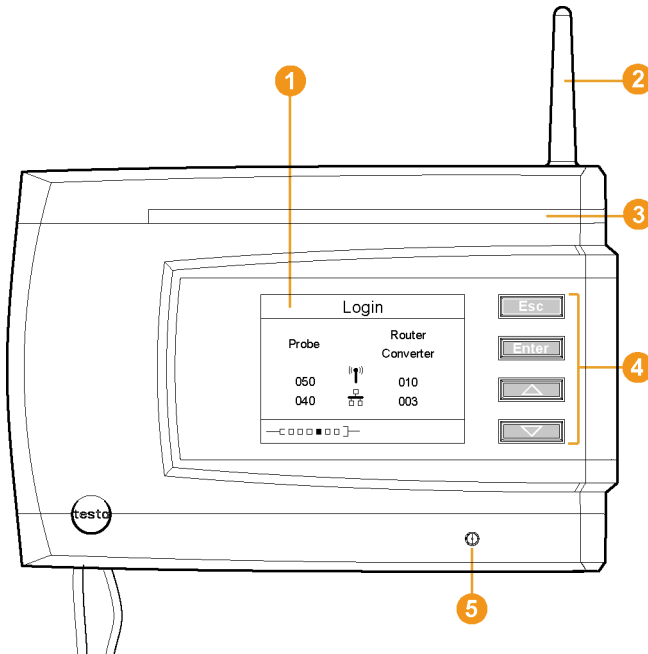
i If you use Lotus Notes, you must set up the adapter for the Exchange Server. If necessary, consult with your system administrator.

4 Product description

i As declared in the declaration of conformity, this product complies with Directive 2004/108/EC.

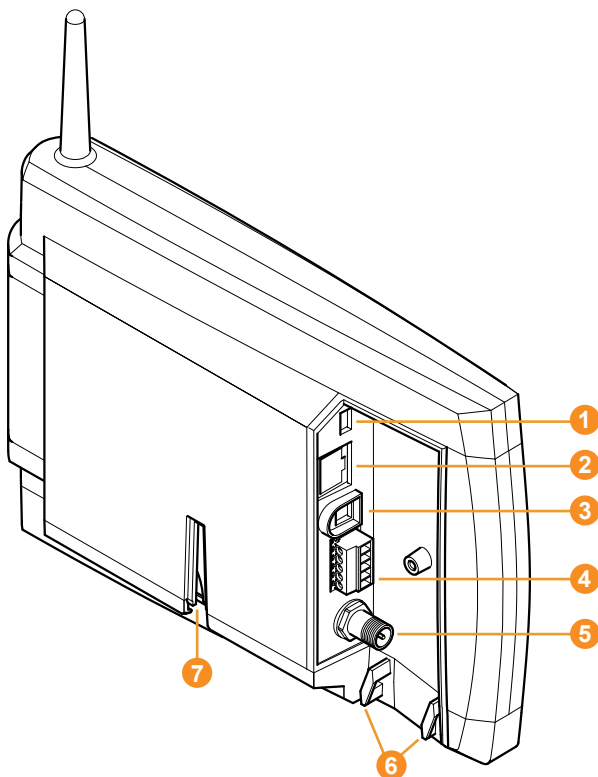
4.1. Saveris base

Front



- 1 Display for the visualization of the alarms and user guidance.
- 2 Antenna.
- 3 Warning LED
- 4 Keypad for operation of the Saveris base.
- 5 LED for status display.

Rear

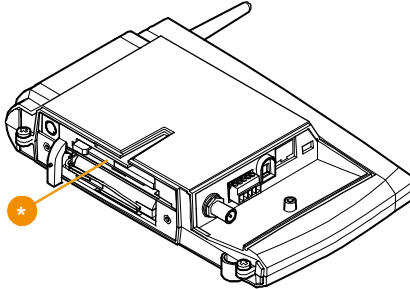


- 1 USB cable connection.
- 2 Network cable connection.
- 3 Connection of power supply via mains plug.
- 4 Connection of power supply via 24 V AC/DC and alarm relay.



- 5 Connection for external GSM antenna (only in combination with GSM module).
- 6 Eyelets for strain relief.
- 7 Guide for stand or wall bracket.

4.2. Saveris base GSM module (optional)



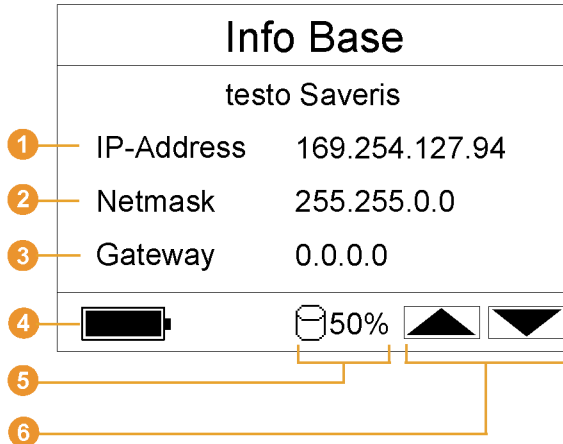
* Insertion slot for the SIM card.

4.2.1. Control keys

Key	Explanation
[Esc]	Switches from the Login menu to the Info System menu.
[Enter]	In the Info System menu starts up the login status for the probe.
[▲], [▼]	Navigation buttons for changing the menus.

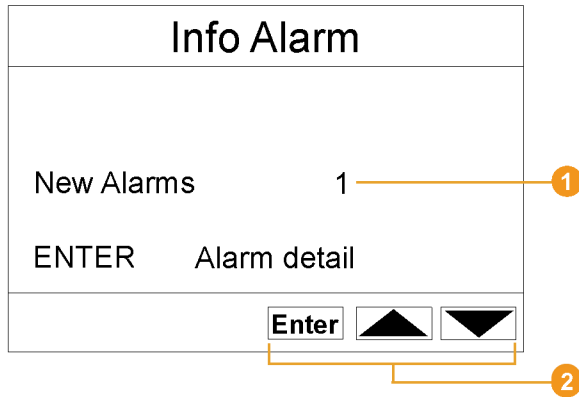
4.2.2. Displays

Info Base menu



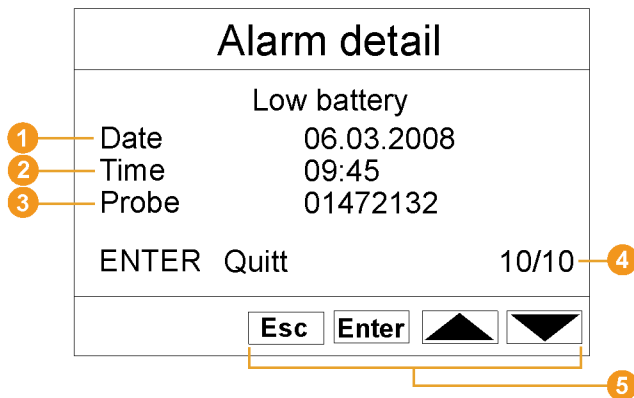
- 1 IP address of the Saveris base.
The IP address is the unique identification number of the Saveris base within the network.
- 2 Netmask that is saved in the Saveris base.
The netmask is the basic address of the network in which the Saveris base is integrated.
- 3 Address of the gateway that is saved in the Saveris base.
A gateway is a transfer point between networks that work with different protocols or data formats. A "translation" into the respective other protocol or data format is then performed by the gateway.
- 4 Fill level of the internal rechargeable battery in the event of power failure. The display is only shown with an interrupted power supply.
- 5 Fill level of the memory of the Saveris base.
- 6 Keys that are assigned functions in this menu.

Info Alarm menu



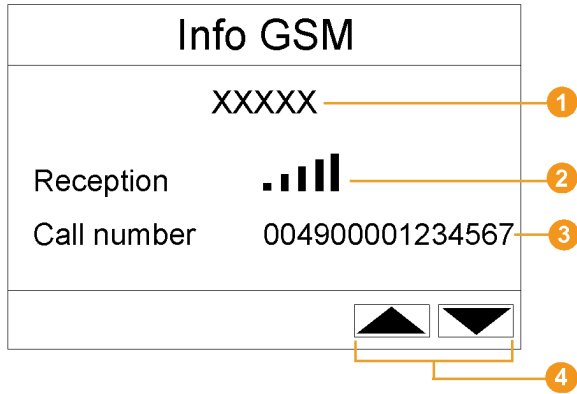
- ① Number of the newly triggered alarms.
- ② Keys that are assigned functions in this menu.

Alarm detail menu



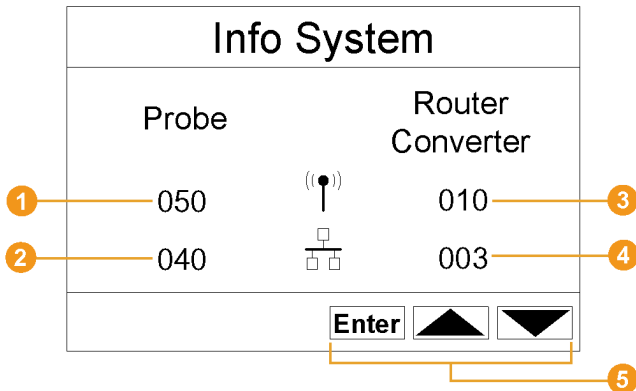
- ① Date on which the alarm was triggered.
- ② Time at which the alarm was triggered.
- ③ Probe for which the alarm was triggered.
- ④ Number of the alarm and total amount of alarms.
- ⑤ Keys that are assigned functions in this menu.

Info GSM menu

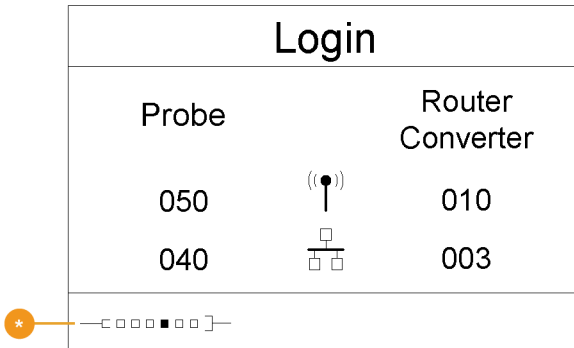


- 1 Name of the network operator.
- 2 Display of the reception quality.
- 3 Telephone number that is saved on the SIM card.
- 4 Keys that are assigned functions in this menu.

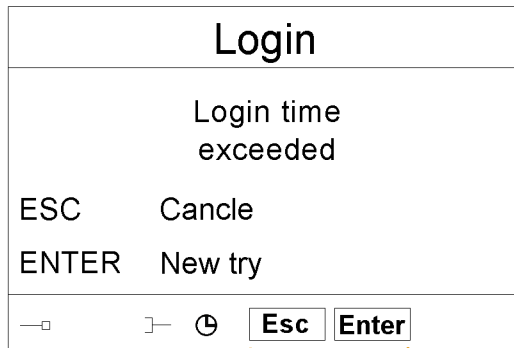
Info System menu



- 1 Number of connected radio probes.
- 2 Number of connected Ethernet probes.
- 3 Number of connected routers.
- 4 Number of connected converters.
- 5 Keys that are assigned functions in this menu.

Login 1/2 menu


- * Status display when probes are connected.

Login 2/2 menu


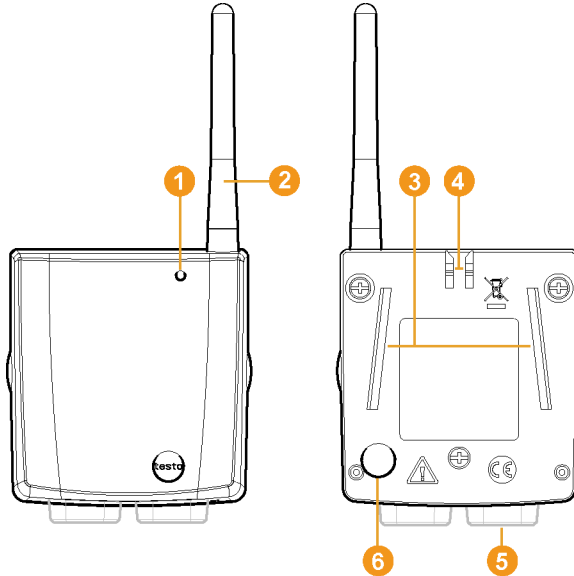
- * Keys that are assigned functions in this menu.



This display is shown if no login signal was received from a probe within approx. 30 seconds.

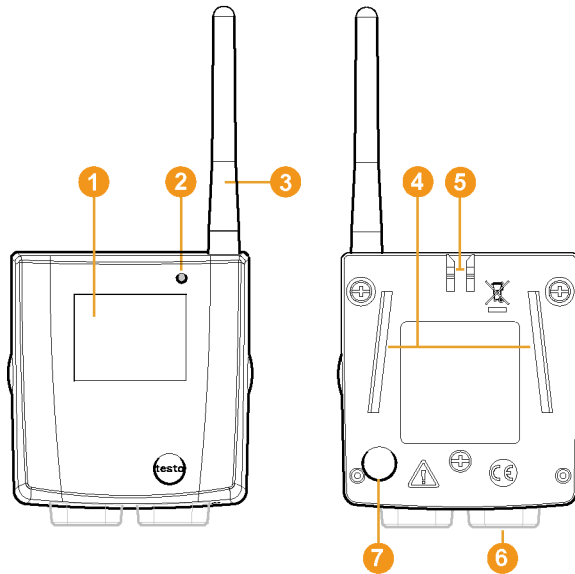
4.3. Save radio probe

4.3.1. Radio probe without display



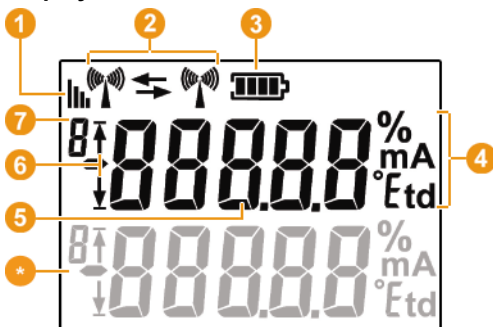
- 1 LED for status display.
- 2 Antenna for radio transmission of measurement data to the Saveris base.
- 3 Guide rails for the wall bracket.
- 4 Catch for the wall bracket.
- 5 Ports, depending on type.
- 6 Connect button for connecting the probe to the Saveris base and for a status request during operation.

4.3.2. Radio probe with display



- 1 Display for showing reading, battery and connection status as well as the field strength of the radio link.
- 2 LED for status display.
- 3 Antenna for radio transmission of measurement data to the Saveris base.
- 4 Guide rails for the wall bracket.
- 5 Catch for the wall bracket.
- 6 Ports, depending on type.
- 7 Connect button for connecting the probe to the Saveris base and for a status request during operation.

Displays



- 1 Quality of the radio link.
- 2 Indicator as to whether a communication with the Saveris base or a router or converter is performed.
- 3 Battery status.
- 4 Unit of the reading:
 - % for humidity measurement
 - mA for current measurement
 - °Ctd or °Ftd for dewpoint measurement.
- 5 Reading.
- 6 Indicator as to whether the reading has exceeded the upper (↑) limit value or undershot the lower (↓) limit value.
- 7 Number of the channel.
- * Display for a second sensor in the probe.

4.3.3. Meaning of the LED displays at the probes

Connecting to the Saveris base

Hold the connect button on the rear of the probe until the LED begins to flash orange.

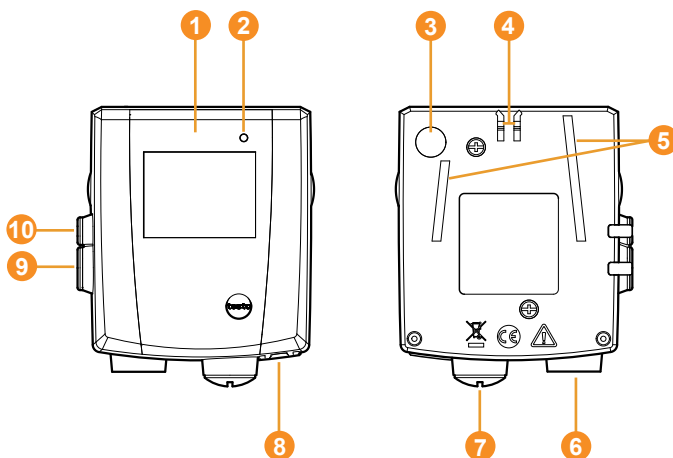
Representation	Explanation
Flashing orange	An attempt to establish the connection to the Saveris base.
Lit up green	The connection to the Saveris base was performed successfully.
Lit up red	The connection to the Saveris base failed.

Status displays during operation

Briefly press the connect button on the rear of the probe once and the LED shows the status of the connection to the Saveris base.

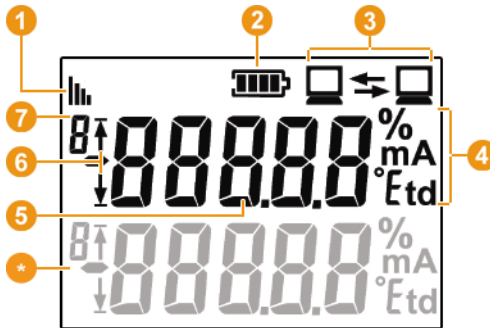
Representation	Explanation
Flashing 3 x green	A very good connection to the Saveris base exists.
Flashing 2 x green	A good connection to the Saveris base exists.
Flashing 1 x green	A borderline connection to the Saveris base exists.
Flashing 3 x red	No connection to the Saveris base exists.

4.4. Saveris Ethernet probes



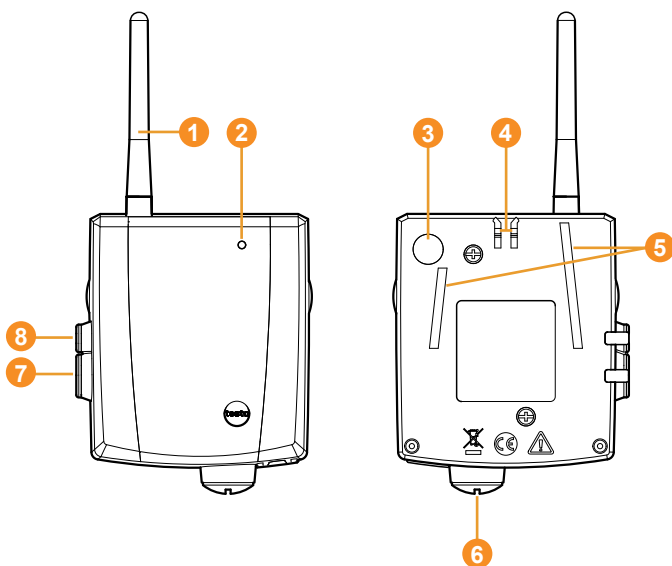
- ① Display for showing the reading and transmission information.
- ② LED for status display.
- ③ Connect button.
- ④ Catch for the wall bracket.
- ⑤ Guide rails for the wall bracket.
- ⑥ Input for external probes.
- ⑦ Input for external 24 V AC/DC power supply.
- ⑧ Input for Ethernet interface.
- ⑨ Input for service interface.
- ⑩ Input for power supply via mains unit.

Displays



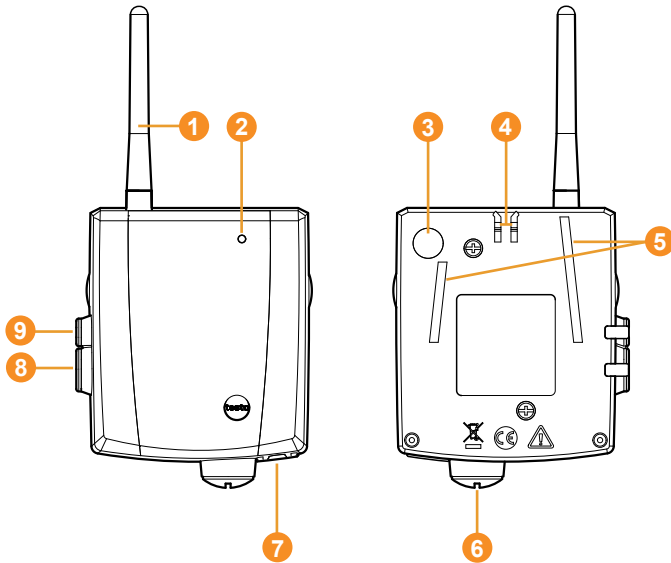
- 1 Quality of the connection.
- 2 Battery status.
- 3 Indicator as to whether a communication with the Saveris base is performed.
- 4 Unit of the reading:
 - % for humidity measurement
 - mA for current measurement
 - °Ctd or °Ftd for dewpoint measurement.
- 5 Reading.
- 6 Indicator as to whether the reading has exceeded the upper (↑) limit value or undershot the lower (↓) limit value.
- 7 Number of the channel.
- * Display for a second sensor in the probe.

4.5. Saveris router



- 1 Antenna for the radio transmission of the measurement data
- 2 LED for status display
- 3 Connect button for connecting the router to the Saveris base and for a status request during operation
- 4 Catch for the wall bracket
- 5 Guide rails for the wall bracket
- 6 Input for external 24 V AC/DC power supply.
- 7 Input for service interface
- 8 Input for power supply via mains unit

4.6. Saveris converter



- 1 Antenna for receiving the measurement data.
- 2 LED for status display.
- 3 Connect button for connecting the converter to the Saveris base and for a status request during operation.
- 4 Catch for the wall bracket.
- 5 Guide rails for the wall bracket.
- 6 Input for external 24 V AC/DC power supply.
- 7 Input for connecting the network cable.
- 8 Input for service interface.
- 9 Input for power supply via mains unit.

5 First steps

5.1. Checking the scope of delivery

If you have purchased a Saveris set, the following components are included in the delivery.

5.1.1. Set 1

The following components are included in the delivery of the first set:

- Product CD with testo Saveris software
- CD with instruction manual in PDF format as well as virtual installation description
- Printed brief instructions for commissioning
- Saveris Base without GSM module with wall bracket and stand
- Mains unit for the Saveris base
- 3 Saveris T1 NTC radio probes without display with wall bracket and batteries
- USB cable for the connection of the Saveris base to the computer.

5.1.2. Set 2

The following components are included in the delivery of the second set:

- Product CD with testo Saveris software
- CD with instruction manual in PDF format as well as virtual installation description
- Printed brief instructions for commissioning
- Saveris Base without GSM module with wall bracket and stand
- Mains unit for the Saveris base
- Router

- Mains unit for the router
- 5 Saveris T1D NTC radio probes with display and with wall bracket and batteries
- USB cable for the connection of the Saveris base to the computer.

5.1.3. Set 3

The following components are included in the delivery of the third set:

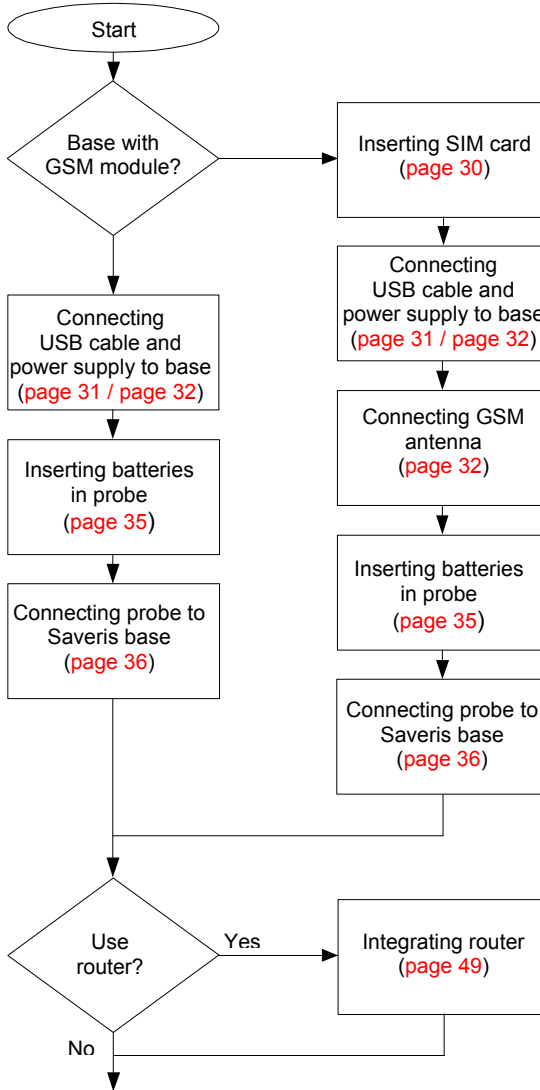
- Product CD with testo Saveris software
- CD with instruction manual in PDF format as well as virtual installation description
- Printed brief instructions for commissioning
- Saveris base with GSM module and wall bracket, stand and GSM antenna

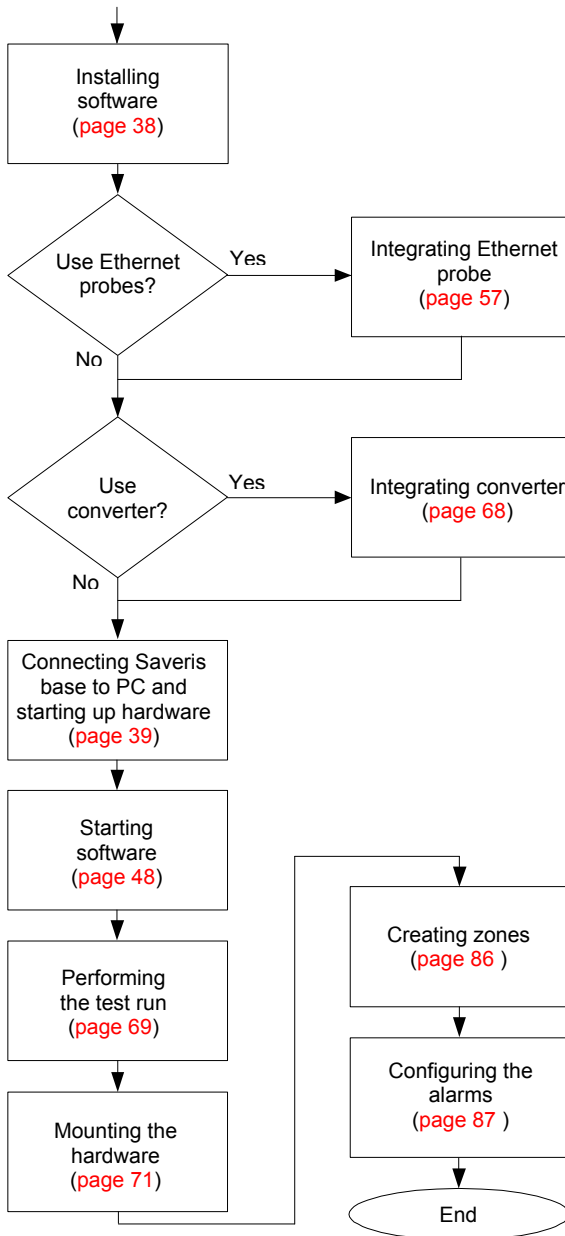
i The SIM card for sending SMS messages is not included in the delivery and must be purchased separately from a provider.

It is recommended that you use a contract card instead of a so-called prepaid card, as no alarm messages can be sent if you use up your credit.

- Mains unit for the Saveris base
- Router
- Mains unit for the router
- 5 Saveris T1D NTC radio probes with display and with wall bracket and batteries
- USB cable for the connection of the Saveris base to the computer.

5.2. Flowchart



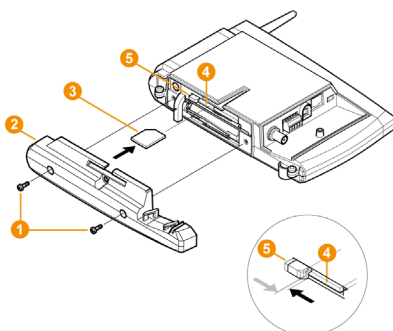


5.3. Inserting SIM card (optional)

With a Saveris base with integrated GSM module, you must insert the SIM card.

i The SIM card for sending SMS messages is not included in the delivery and must be purchased separately from a mobile phone provider.

It is recommended that you use a contract card instead of a so-called prepaid card, as no alarm messages can be sent if you use up your credit.

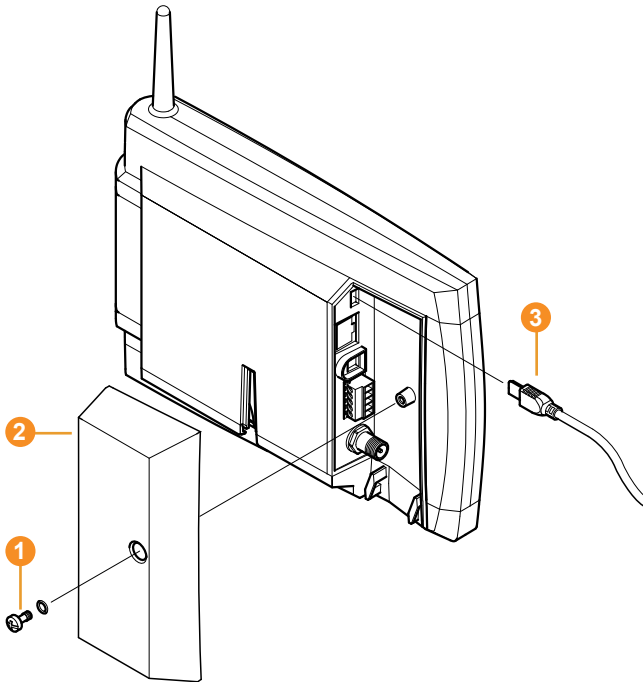


1. Loosen screw connection **1** and remove base plate **2** from the Saveris base.
2. Insert SIM card **3** in the card slot **4** as shown.

i When inserting, the SIM card **3** pushes the catch **5** to the side. If the card is inserted, a spring pushes the catch back and the SIM card is thus secured in the card slot.

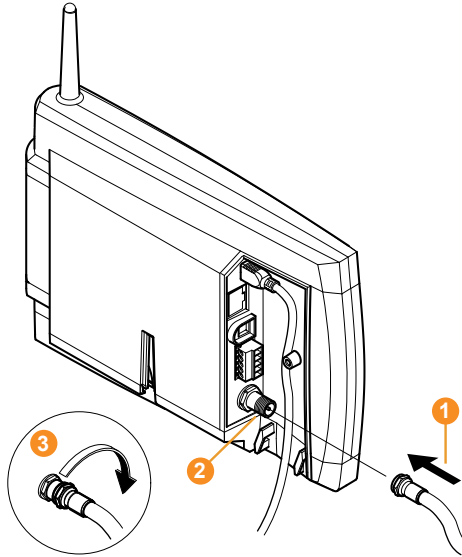
3. Place the base plate on the base and screw it down.

5.4. Connecting USB cable to the Saveris base



1. Loosen and remove **1** screw connection.
2. Remove cover **2** from Saveris Base.
3. Plug the USB cable **3** into the Saveris base.

5.5. Connecting GSM antenna (optional)

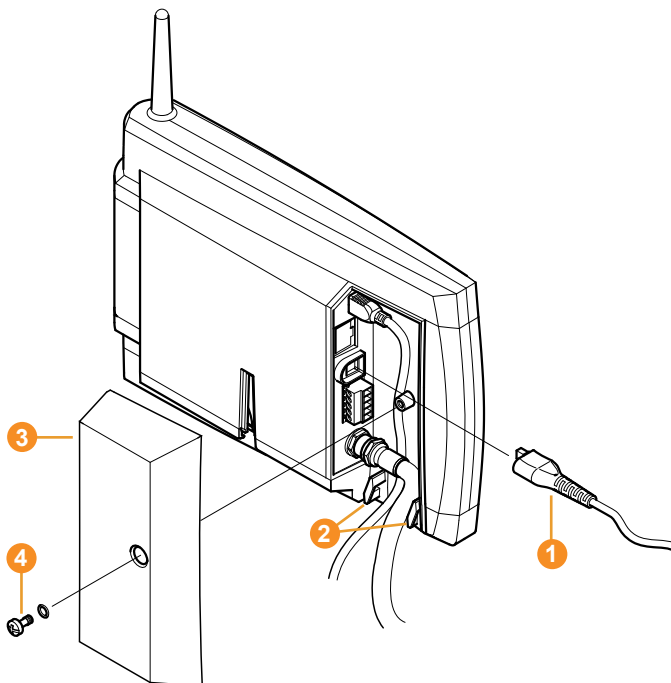


- > Place antenna cable **1** on the coaxial connection **2** and screw on **3**.

5.6. Connecting Saveris base with power supply

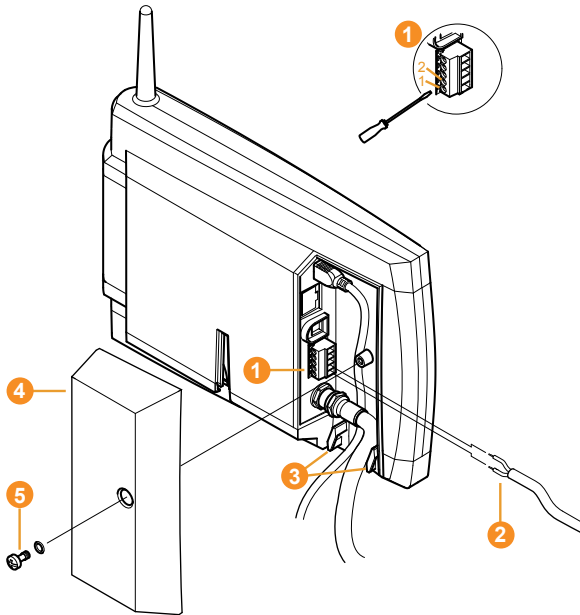
You can connect the Saveris base to the power supply via the included mains unit or via the 24 V AC/DC plug-in/screw terminal.

5.6.1. Power supply via mains unit



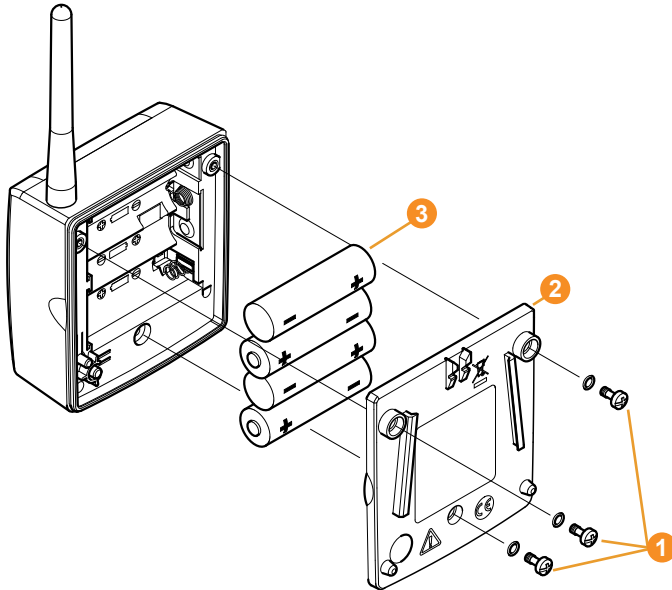
1. Connect mains cable **1** to the Saveris base.
2. Ensure that cabling cannot be pulled out using a cable tie at the eyelets for strain relief **2**.
3. Place the cover **3** on the Saveris base and screw it down **4**.
4. Connect mains plug to the power supply.
 - The Saveris base automatically switches on after selecting the language at the base and is ready for operation.

5.6.2. Power supply via plug-in/screw connection (optional)



1. Loosen clamping screws 1 no. 1 and no. 2.
 2. Insert cable 2 in the terminals as shown.
 3. Tighten clamping screws.
 4. Ensure that cabling cannot be pulled out using a cable tie at the eyelets for strain relief 3.
 5. Place the cover 4 on the Saveris base and screw it down 5.
- The Saveris base automatically switches on after selecting the language at the base and is ready for operation.

5.7. Inserting batteries in the probes



1. Loosen screws **1** on the rear of the probe.
2. Remove housing cover of probe **2**.
3. Insert batteries **3**.



Ensure that you insert the batteries correctly.

The correct polarity is illustrated in the respective battery compartment.

4. Place housing cover on probe housing.
5. Screw cover down close to the housing.



A control switch is located in the housing that is actuated through the cover. To do so, the cover must be screwed to the probe housing without a gap.

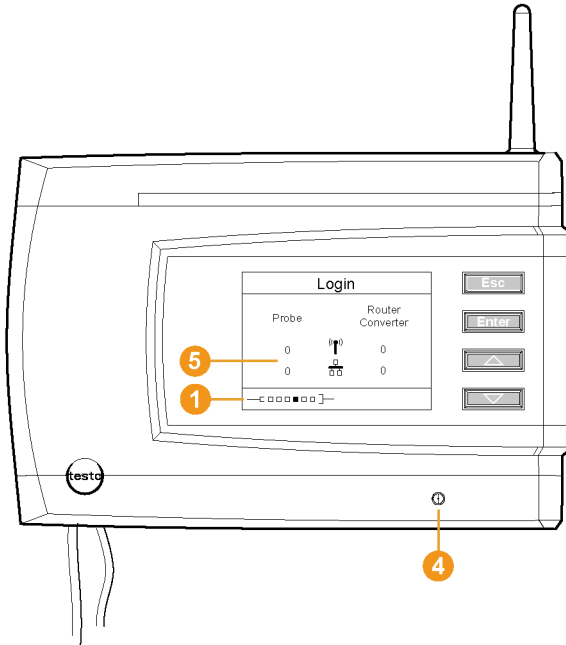
If the cover is not screwed on without a gap, the probe cannot be operated.

5.8. Connecting radio probe

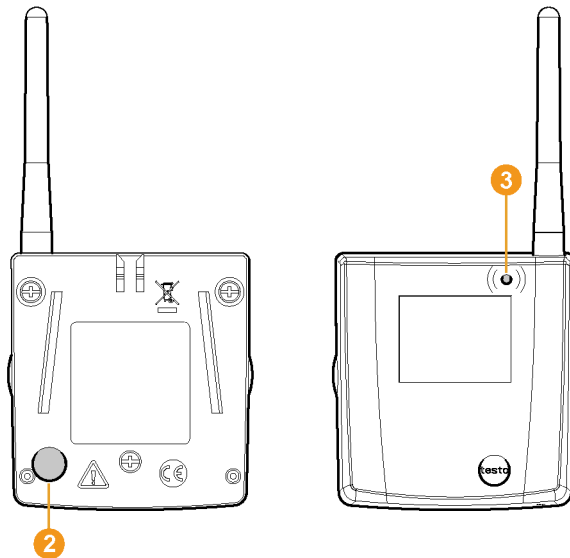
i You can connect a maximum of 15 probes to the Saveris base directly via radio.

In addition, you can operate 15 more probes at the Saveris Base per converter and 5 per router.

Note that a maximum of 254 channels can be processed by the Saveris software.



1. Change to the **Info System** menu at the Saveris base with the **[▼]** button.
 2. Press **[Enter]** to call up the **Login** function.
- The status bar **1** in the display shows that the Saveris base is ready for probe detection.



3. Hold down the connect key **2** on the rear of the probe until the LED **3** at the probe begins to flash orange.
- The LED **3** at the probe briefly turns green if this was detected by the Saveris base.

The LED at the Saveris base **4** briefly flashes green and a prompt appears in the display of the base for the connection of more probes or routers.

i Multiple probes cannot be connected at the Saveris base simultaneously. Multiple probes can only be connected one after the other.

4. At the Saveris base, press the
 - **[Esc]** key if no more components are to be connected.
 - A note on the required performance of the startup assistant is shown on the display for about ten seconds. Then the Saveris base changes to the **Info System** menu in which the number of connected components **5** is now shown.
 - Press **[Enter]** if further components are to be connected; see previous step.

5. Position the probes precisely at their measurement points to check the radio link.
6. Briefly press the connect key **2** on the rear of the probe.
If the LED **3** at the probe flashes
 - green, a radio link exists.
 - red, no radio link exists.

i If no radio link to the Saveris base exists even after a change of location of the probe, connect a router to the Saveris base; see Integrating Saveris router (optional), [page 52](#).

5.9. Installing Saveris software

i Administrator rights are required to install programs and drivers under Windows® 2000 SP4, XP and Vista.

1. Insert CD with Saveris software in the CD-ROM drive.

If the installation program does not start automatically, open Windows Explorer and start the **Setup.exe** file on the product CD.

i During the installation of the Saveris software the licence-free database system Microsoft SQL Server 2005 Express is installed – if this is not already present. The database is protected by the so-called "sa password", the password for the database administrator, to prevent unintended changes to the database.

If a software exists on the computer used that uses the SQL Server 2005 Express and a password was already set when this was installed, you then require this sa password to be able to perform the installation of the Saveris software.

2. Follow the directions of the installation wizard.

i The USB driver for the connection of the Saveris base is installed with the Saveris software.

If the Saveris base is not recognized as new hardware when connected to the computer, the USB driver must be manually installed.

5.10. Starting up hardware

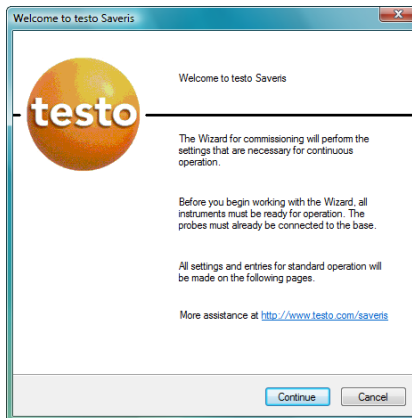
The following preconditions must be fulfilled for the startup of the hardware:

- the Saveris base is ready for operation,
- all probes are connected to the Saveris base and
- the Saveris software is installed on the computer.

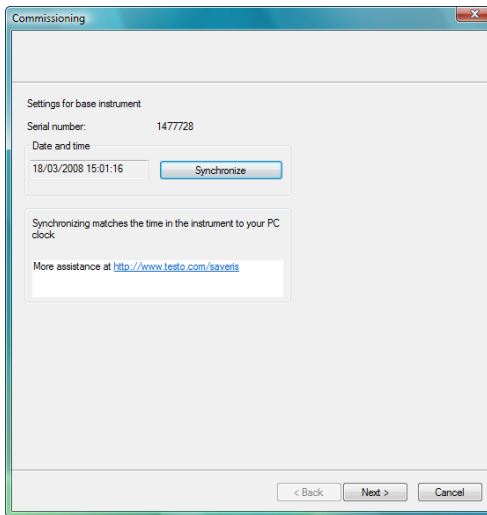
1. Connect the Saveris base to the computer via the USB cable.
- The startup assistant starts.



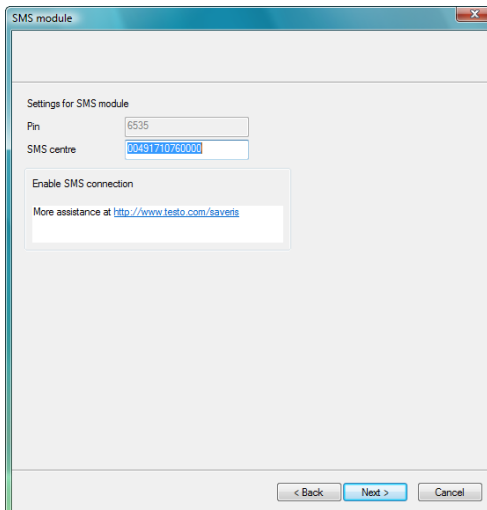
Under Windows 2000, you must manually call up the assistant using **Start | All Programs | Testo | Startup Assistant**.



2. Click on **[Continue >]**.
- The general system settings of the Saveris base are shown.



3. Click on **[Synchronize]** to apply the date and time from the operating system of the computer to the Saveris base.
 4. Click on **[Continue >]**.
 - If the Saveris base is equipped with a GSM module the dialogue for entering the basic settings for the SMS service is shown.
- If there is no GSM module continue with step 7.



- Enter the **PIN** and the number of the **SMS centre** in the fields of the same name.

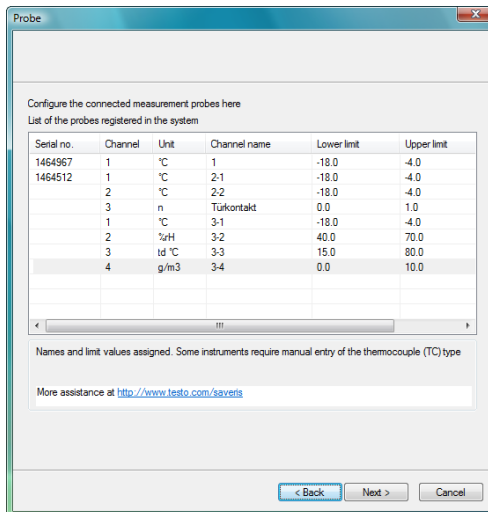
i You can find the PIN and the number of the SMS centre in the documents for your SIM card.

- The list of the probes registered in the Saveris base is shown.

i The fields of the **Channel name** column for probe designations are required fields. You must fill in these fields to be able to continue with the startup.

The **Lower limit** and **Upper limit** fields are already preassigned limit values, but you can adapt the limit values to your requirements.

The limit values determine as of which reading the Saveris base triggers an alarm.



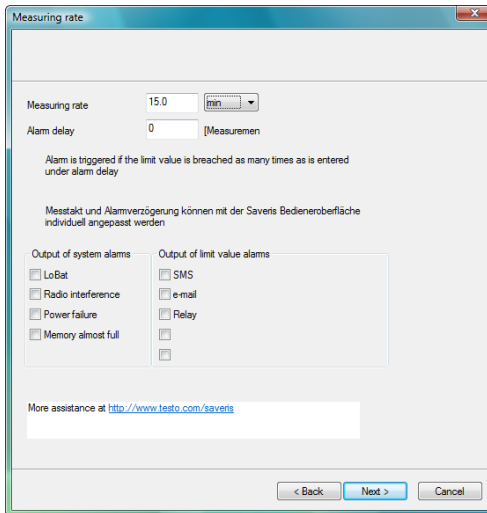
- Click in the **Channel name** field and enter the designation of the probe, e.g. "Room 1".

i Assign channel names that are not longer than 15 characters.

- > Click in the **Lower limit** field and change the lower limit value.

i If all probes are to have the same limit value, click on the column title with the right mouse button and then click on **Apply to all** in the context menu. This also applies for the upper limit value in the next step.

- > Click in the **Upper limit** field and change the upper limit value.
 - > Click in the **TC type** field and enter the type of thermocouple (Enter: **J**, **K**, **S** or **T**) if this information is required for the instrument.
 - > Perform step 5 and the following for all other probes until all required fields are filled.
7. Click on **[Continue >]**.
- The settings for measuring cycle, the alarm delay and the alarm issue are shown.



8. Enter **Measuring cycle** and determine its **Unit**.

i The measuring cycle determines in which intervals a new reading is saved in the Saveris base.

Possible settings for the unit:

- **sec** (second)
- **min** (minute)
- **h** (hour).

The smallest transfer rate for radio probes is one minute.

Later the settings can be changed for every probe separately in the software.

9. Determine **Alarm delay**.

i If you enter the value "5" for example, an alarm is not triggered by the Saveris base until the fifth time that the limit value is exceeded.

Later the settings can be changed for every probe separately in the software.

10. Determine the issue options for the limit value alarms.

Possible options:

- **SMS** (optional with Saveris base with GSM module)
 - **E-mail**
 - **Relay** of the Saveris base.
-

i The system alarms are above all used for pointing out irregularities in the measurement system. If no reaction follows the system alarms, uninterrupted data recording is not guaranteed.

If a system alarm is issued via **SMS** or **E-mail** time delays may occur.

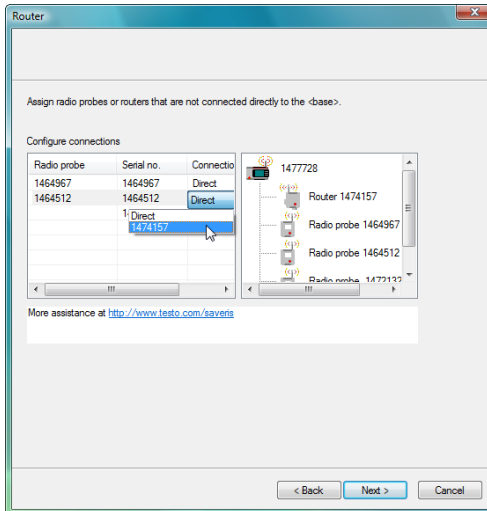
The notification function via **SMS** is only available if the Saveris base is equipped with a GSM module.

Later the settings can be changed for every probe separately in the software.

11. Click on **[Continue >]**.


- If a router is connected at the Saveris base the configuration of the connection type for the probes is shown.

If no router is connected continue with step 15.



12. Click in the **Connection type** cell of the probe which is to be assigned to a router.

- The cell is shown as a selection list.

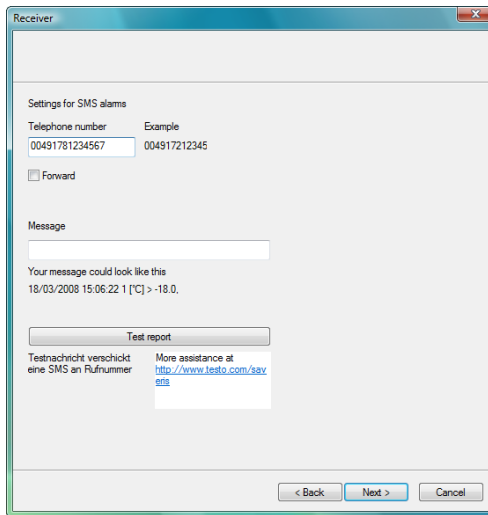
13. Open the selection list via the button  and select the router to which the probe is to be assigned.

14. Perform steps 12 and 13 for all remaining probes whose measurement data is to be transmitted to the Saveris base via a router.

15. Click on **[Continue >]**.

- If the Saveris base is equipped with a GSM module, the settings for the SMS alarms are shown.

If there is no GSM module continue with step 28.



16. Enter the **Telephone number** of the recipient of the alarm messages.
Enter with country code, network or area code and local number.
17. Activate **Forward** checkbox if the alarm message should be sent to a second recipient if recipient 1 does not respond.
 - The **min** list field and the **2nd telephone number** input field are shown.
18. Use the **min** list field to determine after what time span the alarm message should be forwarded if recipient 1 does not respond.
19. Enter the telephone number to which the alarm message should be forwarded in the **2nd telephone number** field.
Enter with country code, network or area code and local number.
20. Enter a text in the **Message** field that should be attached to the alarm message.

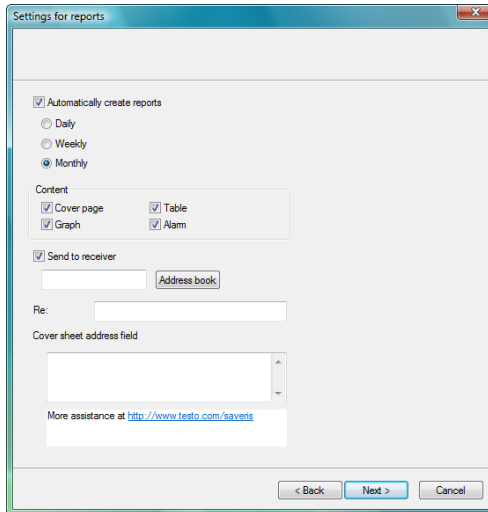


You can send a test report via the button of the same name to check whether all settings are correct.

21. Click on **[Continue >]**.

- The settings for the reporting are shown.

i These specifications are applied as the default setting for the reporting. You can change these settings or create new configurations for the reports at any time; see chapter "Report settings".



22. Deactivate **Automatically create reports** checkbox if this function should not be used.

- In this case, continue with step 20.

23. Determine the intervals in which the reports should be automatically created.

24. Determine which content the reports should include.

> Activate **Send to receiver** checkbox if reports should be sent by e-mail.

- The input fields for the e-mail address and the subject line as well as the **[Address book]** button are shown.

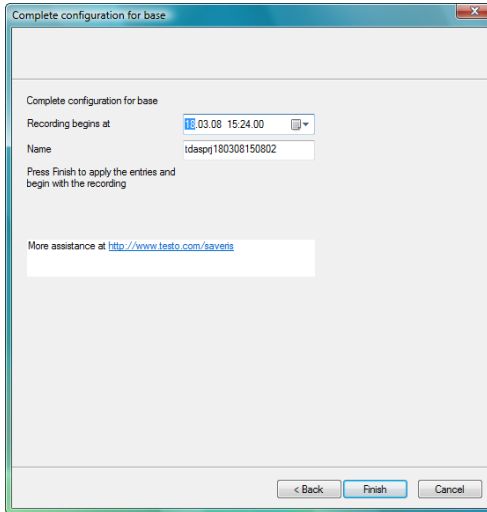
> Enter the e-mail address of the recipient in the input field or select the recipient from the Outlook contacts using the **[Address book]**.

> Enter text for the subject line of the e-mail.

25. Enter the address under **Cover sheet address field** that should be displayed on the top of the report.

26. Click on **[Continue >]**.

- The wizard is shown with the information on the start of measurement and the list of the registered probes.



27. Postpone the start of measurement, if necessary.

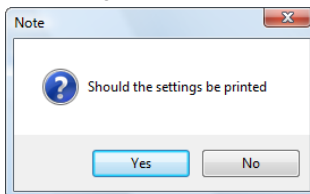
> Change the project name in the **Name** field.

i Consider a clear-cut name for the project that you will be able to easily associate later.

The project name cannot subsequently be changed.

28. Click on **[Finish]** to complete the startup of the hardware.

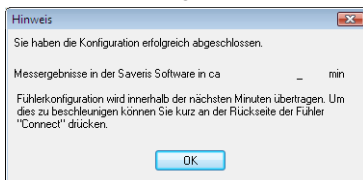
- A dialogue for displaying and printing the configuration settings is shown.



29. Click on

- **[Yes]** if the settings should be shown in the Internet browser and printed from there.
- **[No]** if the settings should not be shown.

The dialogue for the conclusion of the startup is shown.



30. Consecutively press the connect button on all probes to synchronize the probes.

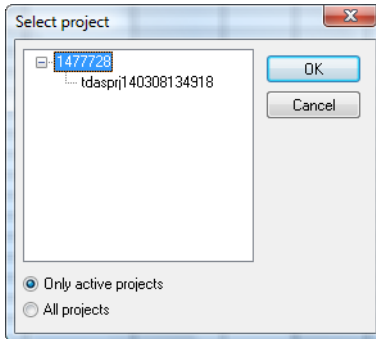
31. Close the dialogue with **[OK]**.

- The hardware is now ready for operation.

5.11. Starting Saveris software

i Ensure that the Saveris software is not already open, for example in multi-user operation under Windows® Vista.

1. Select **[Start] | All Programs | Testo | Saveris**.
- The **Testo Saveris software** program window is opened with the **Select project** dialogue.



i If the software will not start, check whether the **testo tdassvcs** service is started in the service management of the operating system and restart it, if needed.

2. Select the
 - **Only active projects** option if the data from a running project should be opened
 - **All projects** option if the data from a completed project should be opened.
3. Select the project that is to be opened in the tree structure.
4. Confirm with **[OK]**.
 - The **Testo Saveris software** program window is shown with the selected data record in the foreground.

5.12. Expand measuring system

In this chapter, you learn how to integrate the Saveris router, converter and Ethernet probes into the measuring system.

5.12.1. Integrating Saveris router (optional)

You can use a Saveris router to optimize the radio communication with poor structural conditions or to extend the transmission path. The router receives the signals of the radio probes and forwards them to the Saveris base.

i The measurement data of up to five radio probes can be transmitted per router to the Saveris base.

Multiple routers can be integrated in the measuring system but cannot be connected in series to cover extremely long transmission paths. In this case, a converter should be used; see "Integrating Saveris converter (optional)".

The integration of a router is performed in three steps:

1. Connect router to the power supply.
 2. Connect router to the Saveris base.
 3. Assign radio probes to the router.
-

i When positioning a router please note the following points:

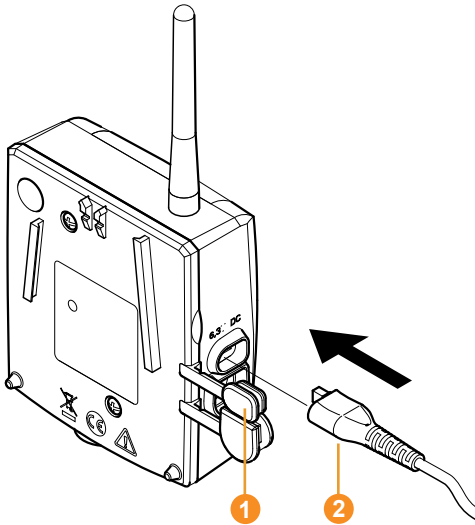
- When integrating several probes via a router, the probe with the weakest radio link determines the position of the router.

Mount the router in such a way that this probe has an ideal radio link.

- Probes and router should be mounted so that the antennas are aligned upwards.
- The radio link between probes and the router as well as the router and the Saveris base should not be strongly influenced by structural conditions (walls, shelves etc.).

Mount the router and probe so that "visual contact" exists with as many radio links as possible.

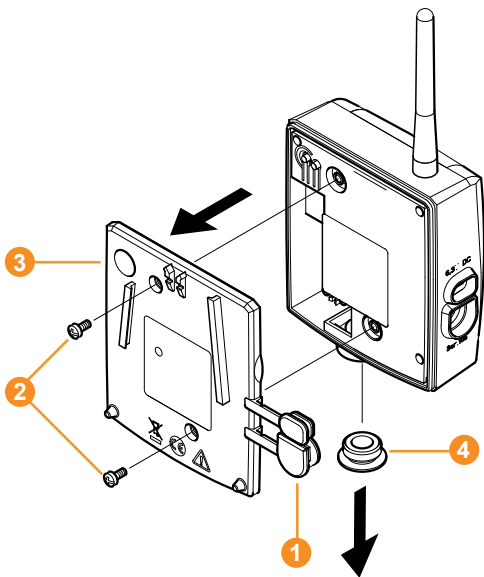
5.12.1.1. Connecting router with power supply (mains unit)



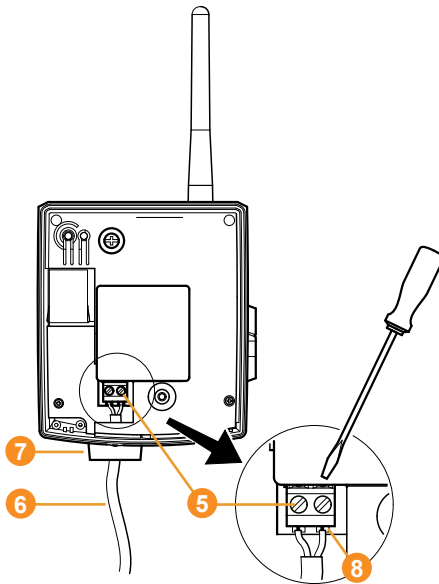
1. Open cover **1**.
2. Insert mains cable **2**.
3. Insert mains plug into a socket.

i The wall mounting of a router is performed in the same ways as for a probe; see "Mounting the probe on the wall".

5.12.1.2. Connecting router with power supply (AC/DC)



- 1 Remove protection caps ①.
2. Loosen screws ② on the rear of the router.
3. Remove housing cover of router ③.
4. Unscrew and remove cover cap of cable opening ④.

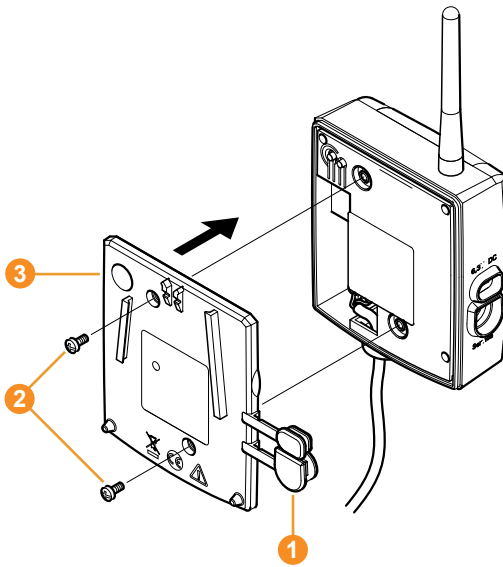


5. Loosen clamping screws 5.
6. Route cabling 6 through the cable opening 7 and insert in the terminals 8.



It is not necessary to note the polarity.

7. Tighten clamping screws.



8. Place housing cover **3** on the router.
9. Screw on housing cover **2**.
10. Insert protection caps **1**.

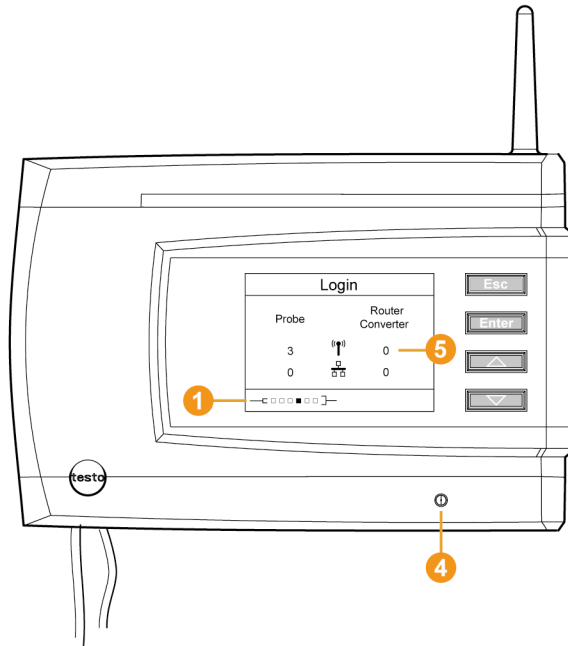
i The wall mounting of a router is performed in the same ways as for a probe; see "Mounting the probe on the wall".

5.12.1.3. Connecting router

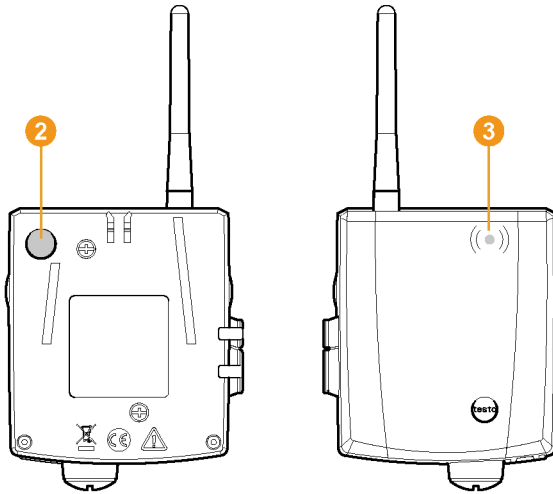


You can connect a maximum of 15 routers to the Saveris base.

Also note that connecting multiple routers in series is not possible.



1. Change to the **Info System** menu at the Saveris base with the **[▼]** button.
2. Press **[Enter]** to call up the **Login** function.
 - The status bar **1** in the display shows that the Saveris base is ready for router detection.



3. Hold down the connect key **2** on the rear of the router until the LED **3** at the router begins to flash orange.
 - The LED **3** at the router briefly turns green if this was detected by the Saveris base.

The LED at the Saveris base **4** briefly flashes green and a prompt appears in the display of the base for the connection of more probes or routers.

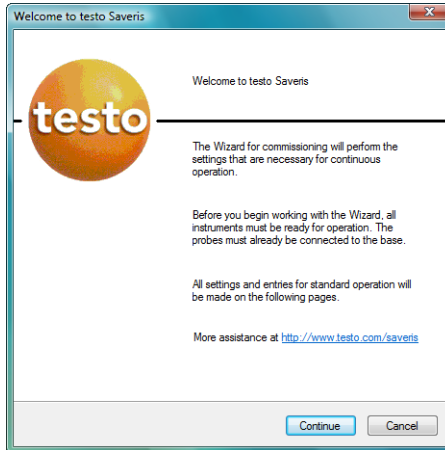
i Multiple routers cannot be connected at the Saveris base simultaneously. Multiple routers can only be connected one after the other.

4. At the Saveris base, press the
 - **[Esc]** key if no more components are to be connected.
 - A note on the required performance of the startup assistant is shown on the display for about ten seconds. Then the Saveris base changes to the **Info System** menu in which the number of connected components **5** is now shown.
 - Press **[Enter]** if further components are to be connected; see previous step.

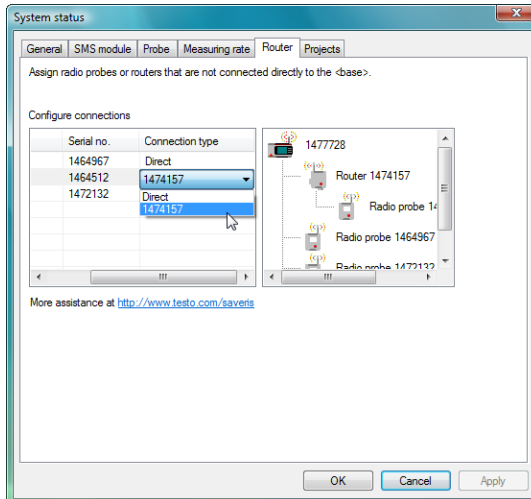
5.12.1.4. Assigning probes

i To assign a probe to a router, both must be connected in the Saveris base.

- Under **Start | All Programs | Testo** click on **Saveris Startup Assistant**.
 - The welcome dialogue of the startup assistant is shown.




- Click on **[Continue >]**.
 - The **System status** dialogue with the **General** tab is shown.



- Change to **Router** tab.

i The **Direct** connection type means that the probe is connected directly in the Saveris base or a converter.

4. Click in the **Connection type** cell of the probe which is to be assigned to a router.
 - The cell is shown as a selection list.
5. Open the selection list via the button  and select the router to which the probe is to be assigned.
6. Position the probe within the radio range of the base and briefly push the connect button on the rear of the probe once.
 - > Perform steps 4 to 6 for all remaining probes whose measurement data is to be transmitted to the Saveris base via a router.
7. Position the probes and router at their mounting locations to check the radio links.
8. Briefly press the connect key on the rear of the probe.
 - If the LED on the front of the probe flashes
 - green, a radio link to the router exists.
 - red, no radio link to the router exists.

9. Briefly press the connect key on the rear of the router.

If the LED on the front of the router flashes

- green, a radio link to the Saveris base exists.
- red, no radio link to the Saveris base exists.

i If no radio link exists after changing the location of the probe and/or router, introduce a converter; see "Integrating Saveris converter (optional)".

5.12.2. Integrating Saveris Ethernet probe (optional)

In addition to the Saveris radio probes, you can use probes that are connected to the Ethernet interface of the Saveris base. This also enables the data transfer from the probe to the base over long stretches if you do not wish to use a router or converter.

i You must enter the IP address of the Saveris base in the Ethernet probe using the separate parameterization software.

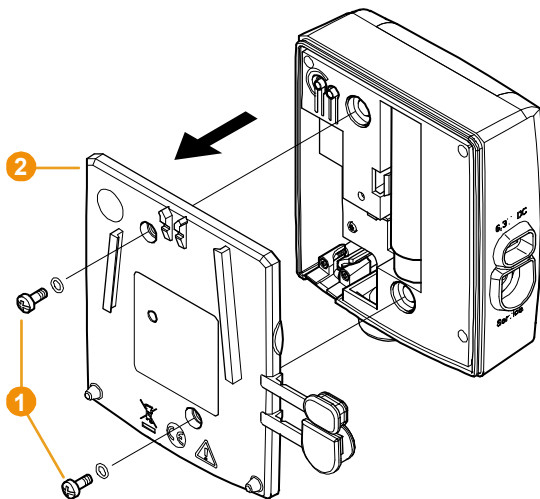
If your computer has the Dynamic Host Configuration Protocol (DHCP), its IP address is automatically assigned to the Ethernet probe. If this is not the case, you must automatically assign the IP address to the probe.

This chapter contains all required information for this.

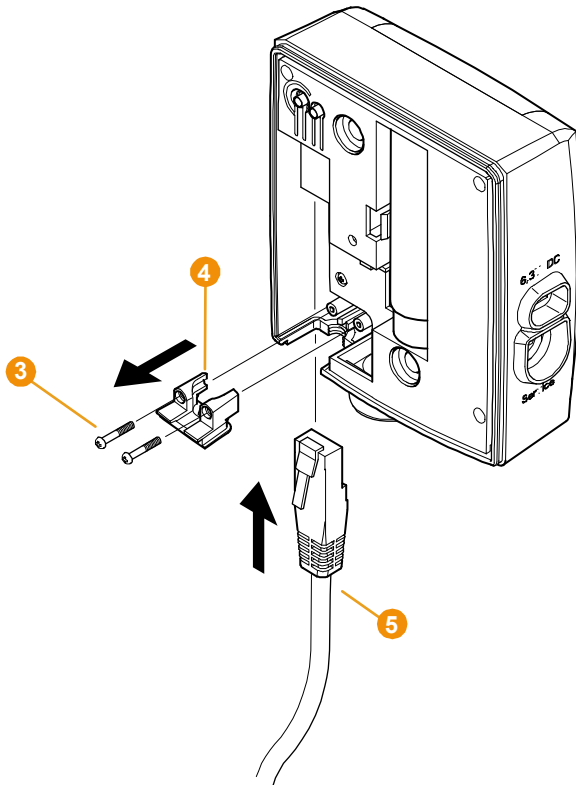
i You can connect several Ethernet probes to the Saveris base using a so-called switch. In this context, note that a maximum of 150 probes can be connected or 254 measurement channels recorded at the Saveris base.

5.12.2.1. Connecting the network cable.

i Use a network cable with a diameter between 5.8 mm and 6.8 mm to ensure the leaktightness of the probe housing.



1. Loosen screws **1** on the rear of the probe and remove the housing cover **2**.



2. Loosen screws **3** at the panel **4** for the network cable and remove panel.
3. Slide network cable **5** with the tongue pointing up into the Ethernet jack until it engages.

i If you wish to connect the Saveris Ethernet probe to the power supply via the 24 V AC/DC plug-in/screw terminal and not via the mains adapter, do not screw on the housing cover until after connecting the power supply.

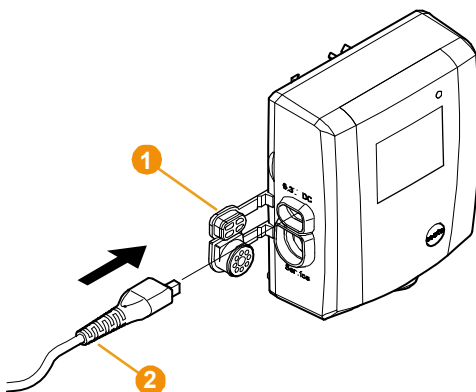
The connection for the power supply via plug-in/screw terminal is performed as with the Saveris router; see Connecting router with power supply (AC/DC), page 54.

4. Place the housing cover on the probe and screw it down.

i You can connect the probe to the network via a network hub or directly at the Saveris base via the Ethernet jack.

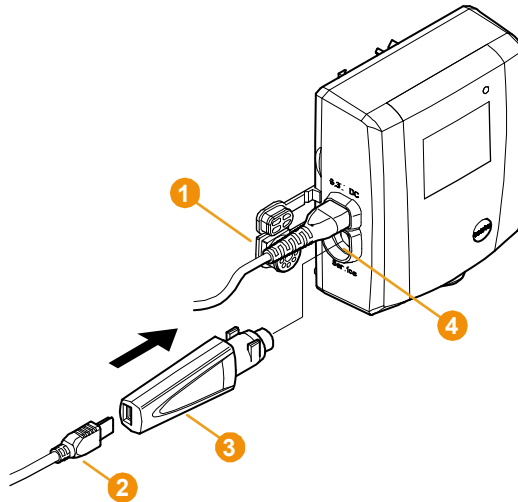
5.12.2.2. Connecting Ethernet probe with power supply (mains unit)

i The connection for the power supply via 24 V AC/DC plug-in/screw terminal is performed as with the Saveris router; see Connecting router with power supply (AC/DC), page 54.



1. Open the cover **1** for the power supply.
2. Insert mains cable **2**.
3. Insert mains plug into a socket.

5.12.2.3. Connecting USB cable and installing driver



1. Open the cover **1** of the service interface at the Ethernet probe.
2. Connect the USB cable **2** with the testo USB adapter **3** and insert in the service interface **4**.
3. Insert product CD with the testo Saveris software in the CD-ROM drive of the computer.
4. Connect the USB cable to the computer.
 - The wizard for the installation of the driver is started.
5. Follow the directions of the installation wizard.

5.12.2.4. Installing parameterization software

i Administrator rights are required to install programs and drivers under Windows® 2000 SP4, XP and Vista.

1. Insert CD with Saveris software in the CD-ROM drive.
 - > If applicable, cancel the installation program the starts up automatically.
2. Open Windows Explorer and mark the entry of the CD-ROM drive in which the Saveris product CD is located.
3. Open the **dbv4ethernet** folder and start the **Setup.exe** file.
4. Follow the directions of the installation wizard.
 - The software is ready to be used after restarting the computer.

5.12.2.5. Assigning connection data

You must now enter the connection settings for the Ethernet probes.

1. Open the assistant for entering the connection settings via **Start | All Programs | Testo | Ethernet device startup**.
 - The assistant is started with the welcome dialogue.



2. Click on **[Continue >]**.

- The dialogue

- **Address of the Saveris base** is shown if the computer has DHCP.

In this case, continue with step 4.

- **Instrument address allocation** is shown if an automatic allocation of the IP address via DHCP is not possible.

You must manually enter the connection data.



3. Enter **IP address**, **Netmask** and **Gateway**.

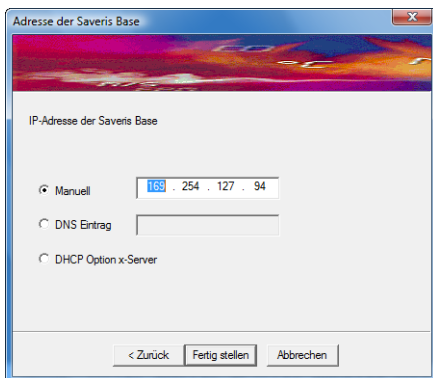


The first two blocks of the IP address must match those from the Saveris base. The last two blocks can be selected freely. However, the IP address may not yet be assigned.

The IP address, the netmask and the gateway can be read off at the Saveris base in the **Info Base** menu; also see chapter Displays, page 16.

4. Click on **[Continue >]**.

- The dialogue for the entry of the connection data for the base is shown.



5. Enter IP address of the Saveris base.

i The IP address can be read off at the Saveris base in the **Info Base** menu; also see chapter Displays, page 16.

6. Click on **[Finish]**.

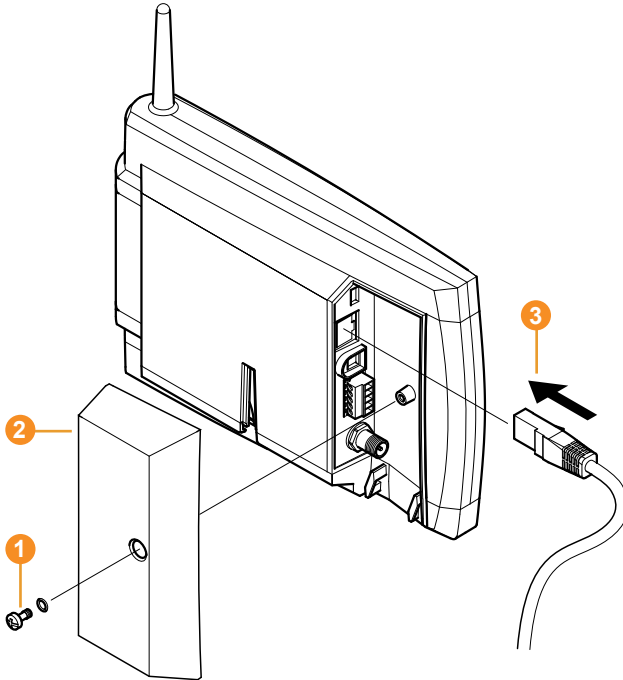
- The Ethernet probe is restarted, synchronized with the Saveris base and the number of connected Ethernet probes in the display of the base is increased by 1; see



Displays, page 16.

5.12.2.6. Connecting the network cable to the Saveris base

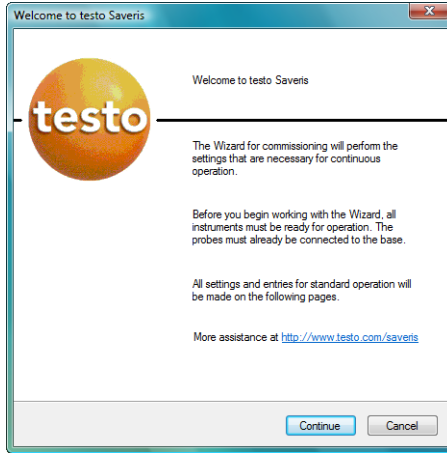
i You can integrate the Saveris base into a network via a network hub or connect the Ethernet probe directly via a network cable.



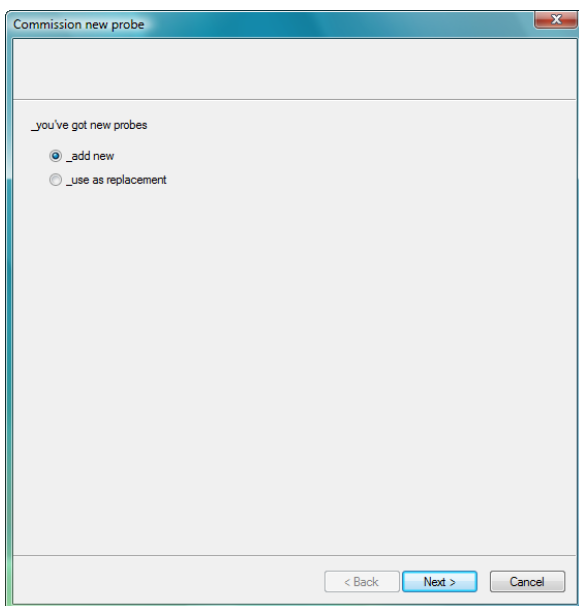
1. Loosen and remove **1** screw connection.
2. Remove cover **2** from Saveris Base.
3. Plug the network cable **3** into the Saveris base.

5.12.2.7. Starting up Ethernet probes

1. Open the assistant for starting up new hardware component via **Start | All Programs | Testo | Startup Assistant**.
 - The assistant is opened with the welcome screen.



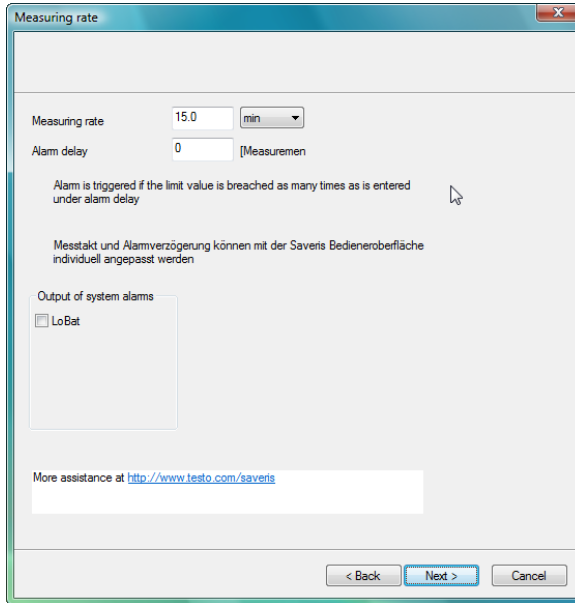
2. Click on **[Continue >]**.
 - The **Commission new probe** dialogue is shown.



3. Leave default setting and click on [Continue >].
 - The list of the probes newly registered in the Saveris base is shown.

5. Click on **[Continue >]**.

- The settings for measuring cycle, the alarm delay and the alarm issue are shown.



6. Enter the **Measuring cycle** and determine its **Unit**.

i The measuring cycle determines in which intervals a new reading is saved in the Saveris base.

Possible settings for the unit:

- **sec** (second)
- **min** (minute)
- **h** (hour).

7. Determine **Alarm delay**.

i If you enter the value "5" for example, an alarm is not triggered by the Saveris base until the fifth time that the limit value is exceeded.

8. Determine the issue options for the limit value alarms.

Possible options:

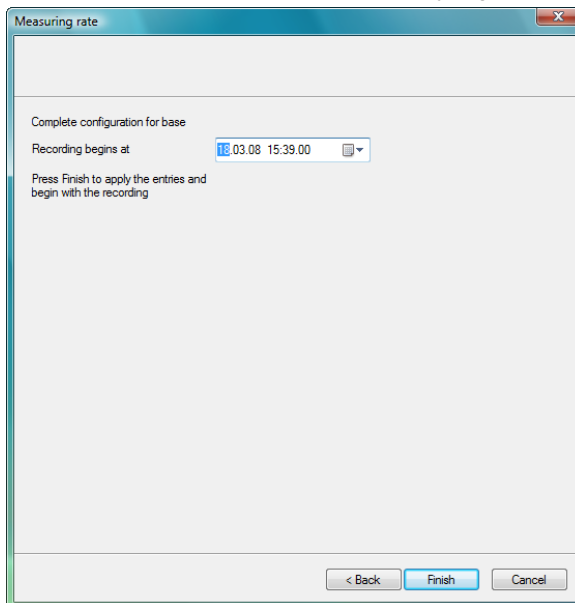
- **SMS** (optional with Saveris base with GSM module)
- **E-mail**
- **Relay** of the Saveris base.



The notification function via **SMS** is only available if the Saveris base is equipped with a GSM module.

9. Click on **[Continue >]**.

- The wizard is shown with the setting for the start of measurement and the list of the newly registered probes.



10. Postpone the start of measurement, if necessary.

11. Click on **[Finish]** to complete the startup of the hardware.

- A note on the successful configuration of the hardware is shown.

12. Press **[OK]** to confirm the note.

- The new hardware is now ready for operation.

5.12.3. Integrating Saveris converter (optional)

If the distance between the radio probe or router is too large for a radio transmission, you can integrate a Saveris converter into the measuring system. The converter is connected to the Saveris base by means of an Ethernet cable and converts the radio signals to Ethernet signals.

i The measurement data of up to 15 radio probes can be transmitted with the converter to the Saveris base.

You can connect several converters to the Saveris base using a so-called switch. In this context, note that a maximum of 150 probes can be connected or 254 measurement channels recorded at the Saveris base.

i The preparation for the commissioning of a converter is performed as with a Saveris Ethernet probe; see *Connecting the network cable.*, page 62 up to and including *Connecting the network cable to the Saveris base*, page 70.

Connecting probe to converter

i A probe that you wish to connect to the Saveris converter may not be registered at the Saveris base. If this is the case, you must log the probe out of the base before you can continue with the connection at the converter; see *Deleting components*, page 130.

1. Briefly press the connect button on the rear of the converter.
 - The LED at the converter lights green and the converter is ready for probe detection.
2. Press the connect key on the rear of the probe until the LED at the probe begins to flash orange.
 - The LED at the probe briefly turns green if this was detected by the Saveris converter.

The probe is connected at the converter and this transmits the measurement data of the probe to the Saveris base.

5.13. Performing the test run

i The test run must be performed to ensure proper operation of the measuring system.

5.13.1. Checking system availability

i Wait for the first connection between the Saveris base and the probes to check the system availability.

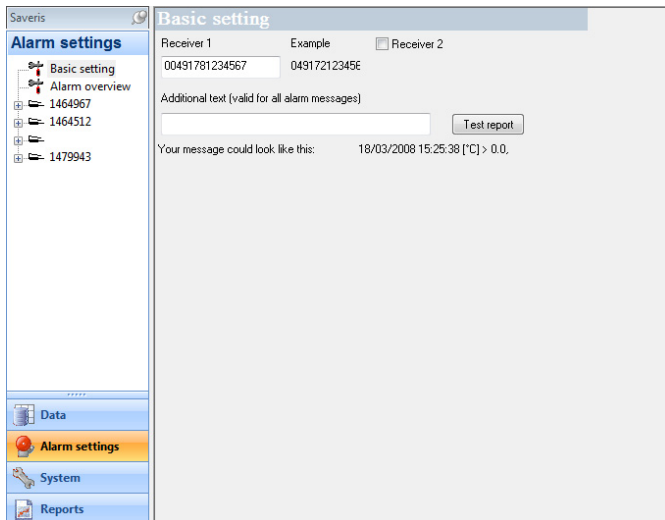
- > Click on **System** in the navigation area.
 - The following entries are shown in the tree structure in the data window:
 - **Base**
 - **Radio probe**
 - **Ethernet probe**
 - **Router**
 - **Converter.**
 - 1. Open the **Radio probe** entry.
 - The active channels of the probes connected in the system are shown.
 - 2 Click on a channel to open the settings and check the **Radio quality**.
 - > Repeat step 2 for all other probes.
-

i If no values have accumulated for a probe for a while, check whether a connection exists between the probe and the Saveris base by briefly pressing the connect button at the probe. The LED at the probe shows the connection status; also see "Meaning of the LED displays at the probes " for this.

5.13.2. Checking alarm chain

You can trigger an alarm and control the sending of the messages without having to bring about a real alarm situation.

- > Click on **Alarms** in the navigation area.
 - In the data window, the **Basic setting** and **Alarm overview** submenus as well as the probes connected in the Saveris base are shown.
1. Click on **Basic setting**.
 - The basic setting for the alarms is shown in the display range.



2. Click on the **[Test report]** button.
 - A test report is sent to the mobile phone number entered.

5.14. Mounting the hardware

i The notes in chapter "Ensure safety" must absolutely be observed when mounting the Saveris components.

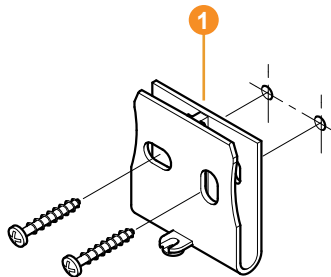
Do not mount the Saveris base and the probes at their locations until the measuring system functions as expected.

After mounting, perform another test run of the system; also see "Performing the test run".

5.14.1. Mounting the Saveris base on the wall

i When selecting the location for the Saveris base, please take into account that this must be positioned close enough to the computer used and a possible power supply in accordance with the cabling provided.

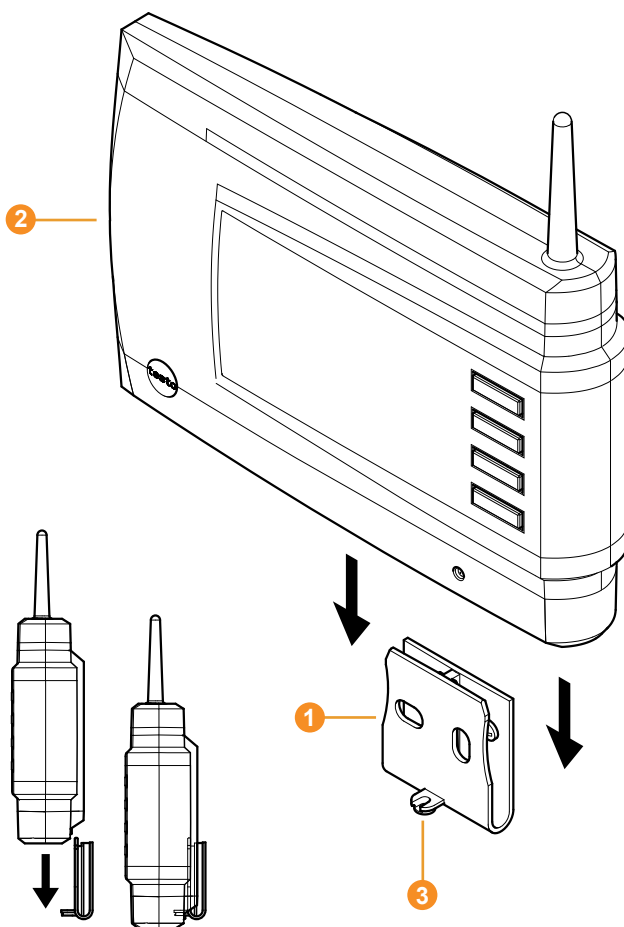
i The mounting materials (screws, anchor plugs etc.) are not included in the delivery.



1. Position wall bracket **1** at the desired location.
2. Using a pen, mark the locations for the fastening screws.

i The distance between the fastening screws is 25 mm.

3. Prepare the fastening location for the attachment in accordance with the material (e.g. drill hole, insert anchor plug).
4. Fasten wall bracket using appropriate screws.

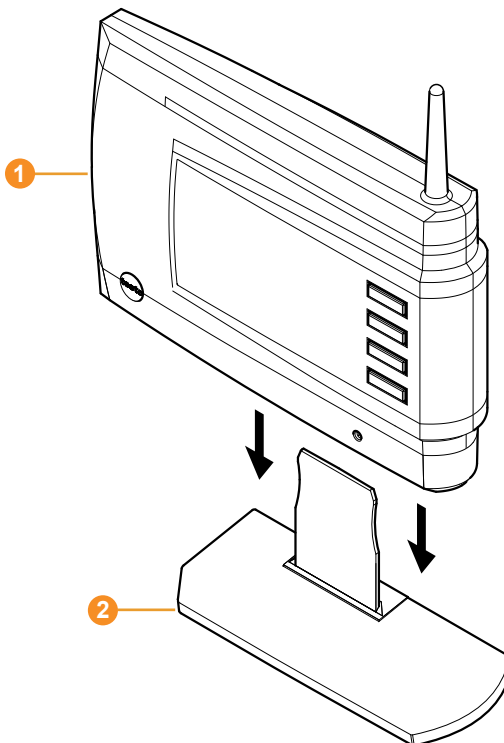


5. Place Saveris base **2** on the wall bracket **1** and secure with screw **3**.

5.14.2. Setting up Saveris base with stand

i When selecting the location for the Saveris base, take into account the following points:

- The Saveris base must stand on a level, non-slip surface.
- The Saveris base must be positioned close enough to the computer used and a possible power supply in accordance with the cabling provided.

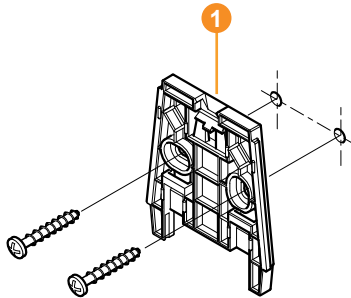


1. Place the Saveris base ① on the stand ②.
2. Set up the Saveris base at the desired location.

5.14.3. Mounting the probe on the wall

- i** When selecting the location, take into account the following points:
- The range of the probe may not be exceeded; see "Connecting radio probe" and "Performing the test run".
 - Attach the probe in such a way that the readings cannot be distorted, e.g. by exposure to direct sunlight

i The mounting materials (screws, anchor plugs etc.) are not included in the delivery.

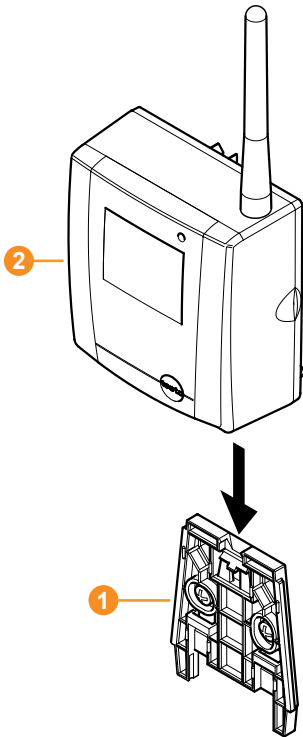


1. Position wall bracket **1** at the desired location.
2. Using a pen, mark the locations for the fastening screws.

i The distance between the fastening screws is 30 mm.

3. Prepare the fastening location for the attachment in accordance with the material (e.g. drill hole, insert anchor plug).
4. Fasten wall bracket using appropriate screws.

i The wall bracket must be screwed down with the smooth surface facing the wall.



5. Place probe **2** on the wall bracket **1** until it engages.



Please refer to "Removing probe from wall bracket" for removing the probe from the wall bracket.

5.14.4. Checking the measuring system again

> Perform another test run at the measuring system; see "

Performing the test run".

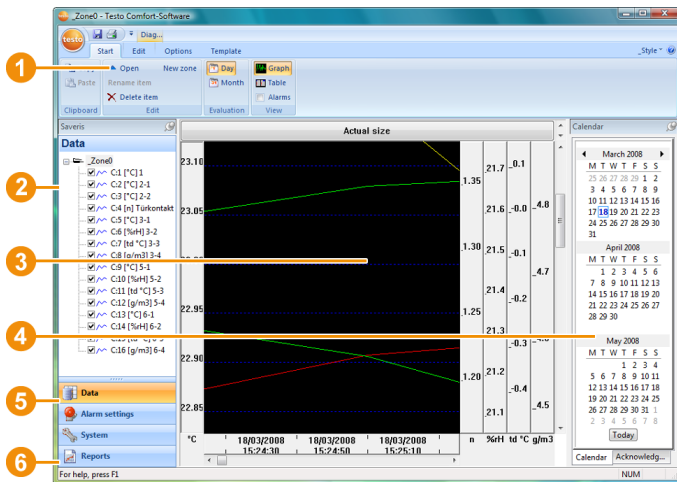
i After mounting the hardware, perform another check of the system to test the proper function of the measuring system.

You can thus recognize whether probes are located outside of the range of the Saveris base, where applicable, or the radio link is interfered with by structural conditions.

6 Using the product





6.1. User interface

In this chapter, you learn how the user interface of the Saveris software is designed.



1 Menu bar

Menu	Explanation
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Menu	Explanation
	<p>All functions that you require to open, close, save, delete and print.</p> <p>The recently used files are also available as a list for opening.</p> <p>Using this menu, the program can also be ended.</p> <hr/> <p>i With the Send command, you can send measurement results by e-mail. Microsoft Outlook must be installed on the computer for this.</p>
	Saves the current selection in a file.
	Prints the current view.
	Setting options for the menu bar.
Start	Functions for the clipboard, editing the measurement data records, the evaluation, the view and the font in the tables and diagrams.
Edit	Functions for evaluating the diagrams or tables and possible settings for the curves and axes in the diagram view.
Options	Setting options for the display of curves and the display of service data.
Templates	Selection of the report heads and editing functions for the templates.

2 Data range

The measurement data are managed in the data range. You can create new groups of readings and copy the data from individual channels within the groups.

3 Display range

In the display range, the readings are represented as diagrams and tables and the alarms received are listed.

4 Calendar and acknowledging alarms

The **Calendar** tab is used for fast navigation within the data records. Open the data records in the display range by clicking on a certain day in the calendar or marking a period of several days in the calendar with the mouse button pressed.

In the **Acknowledgement** tab, confirm the alarms received.

5 Navigation area

In the navigation area, change to

- the display of **Data** and
- the settings for the **Alarms**, the **System** and the **Reports**.

6 Status bar

Shows the status information for the software.

6.2. Menus and commands

In this chapter, you learn which menus and commands are available to you and what you can use these commands for.

Adding commands to the menu bar

i You can copy the commands from the **Start**, **Edit**, **Extras** and **Template** menus into the upper menu bar, the so-called **Quick Access Toolbar**. You thus always have fast access to the functions that you use frequently.

1. Click on the command that should be copied into the menu bar with the right mouse button.
2. Select the **Add to Quick Access Toolbar** command in the context menu.
 - The command is now shown in the menu bar but can also still be selected in the original menu.

Erasing commands from the menu bar

1. Click on the command that should be erased from the menu bar with the right mouse button.
2. Select the **Remove from Quick Access Toolbar** command in the context menu.
 - The command is removed from the menu bar.

6.2.1. Start

Start | Clipboard menu

Menu function	Description
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Menu function	Description
Copy	Copies the marked element onto the clipboard.
Paste	Pastes the contents of the clipboard at the current position.

Start | Edit menu

Menu function	Description
Open	Opens the marked element; e.g. the data from a group.
Rename	Renames the marked element.
Delete	Deletes the marked element.
New group	Creates a new reading group.

Start | Evaluation menu

Menu function	Description
Day	Shows the calendar for the selection of the day in order to call up the data from the corresponding day or days from the database.
Month	Shows the calendar for the selection of the month in order to call up the data from the corresponding month from the database.
Refresh	Refreshes the current view with the newest measurement data.

Start | View menu

Menu function	Description
Diagram	Changes to the presentation of the data in a diagram.
Table	Changes to the presentation of the data in a table.
Alarms	Opens or closes the alarm overview and acknowledgement.

6.2.2. Edit

Edit in the diagram view

The **Edit** (diagram) menu is only shown if the diagram is activated by clicking in the window.

Edit | Tools (diagram) menu

Menu function	Description
Zoom in	<p>Drag to form a rectangle in the diagram window to zoom in on the highlighted area.</p> <p>Click on [Original size] to display the diagram in its total size again.</p>
Crosshairs	<p>Crosshairs with which the curve can be followed are shown by clicking on a point of the measurement curve. The date, time, reading number and reading are shown in the process.</p>
Mark area	<p>You can determine an area that is to be calculated out or saved:</p> <p>The calculation area is determined by clicking on a curve. The area limits can be moved using the left mouse button and the whole area using the right mouse button.</p> <hr/> <p>i</p> <ul style="list-style-type: none"> • The extract is a time period. If you have determined an extract for a measurement protocol, all calculations are performed within these limits. Remove the extract markings with the Erase text command if you wish to calculate out the entire data sequence. • Area marking and calculation of mean value. If you have marked an area, the area borders, the arithmetic mean value and the minimum and maximum of the value pattern are shown in the status bar.

Menu function	Description
Regression curve	Regression curves are an aid for being better able to assess large, unclear amounts of data. In this process, "outliers" are suppressed and the actual course of the curve is reproduced using a theoretical, mathematical function. The regression curve is shown by clicking on a measurement curve. The regression coefficients are shown in the status bar.
Insert text	Text can be added to diagrams. The text frame can be moved to any position on the drawing area (click and hold the right mouse button on the upper horizontal frame border and move text frame).
Erase text	Erases a marked text frame.
Calculation	Opens the Statistical calculation dialogue for the entire data range of the selected reading curve.

Edit | Curves (diagram) menu

Menu function	Description
C:1, C:n	Legend for the diagram. Click on the entry of a curve and the dialogue for the characteristics of the curve is opened.

Edit | Value axis (diagram) menu

Menu function	Description
Upper limit range of values	Maximum of the shown range of values.
Lower limit range of values	Minimum of the shown range of values.
Grid	Scaling of the value axis.

Edit | Time axis (diagram) menu

Menu function	Description
Grid	Scaling of the time axis.

Edit in the table view

The **Edit** (table) menu is only shown if the table is activated by clicking in the window.

Edit | Tools (table) menu

Menu function	Description
Mark	Mark data over a definable time period or definable lines (index range).
Drop marking	Drops the marking.
Extra lines (minimum, maximum, mean value)	Inserts a row with the corresponding value for the overall table at the end of the table.
Compress	Compresses the table to definable intervals. Only the first and the last value are shown for the individual intervals. The other readings are hidden.
Drop compression	Drops the compression.

Edit | Find (table) menu

Menu function	Description
Minimum	Shows the smallest reading of the selected channel within the table.
Maximum	Shows the largest reading of the selected channel within the table.

6.2.3. Options

Extras | Management menu

Menu function	Description
Projects	Opens the dialogue for selecting a project.
Protocols	Opens a protocol file that you can send to Customer Service in the event of a problem.

Extras | Edit menu

Menu function	Description
Undo	Undo the last action.
Paste into a new file	Pastes the content on the clipboard in a new file.

Extras | Settings menu

Menu function	Description
Representation	Settings for the representation of the diagram.

Extras | Font menu

Menu function	Description
Font	Setting the font for the tables and diagrams.
Font size	Setting the font size for the tables and diagrams.



When selecting the font and font size, take into account the legibility of the diagrams and tables. Use sans-serif fonts such as Arial or Verdana.

Extras | Service menu

Menu function	Description
Display service data	<p>Creates a text file with the required information for Customer Service if servicing is required.</p> <p>i If the service data cannot be displayed under Windows® Vista, start the WordPad program and save, for example, an empty file of your choice in *.wri format. To do so, manually enter the file extension behind the file name.</p> <p>A link is thus formed between the file and the service data and WordPad.</p>

6.2.4. Template

Template | Template menu

Select a standard template in this menu into which the data that are to be saved or printed are integrated.

The templates differ in the protocol header, meaning in the company logo, the address field or the specification of statistical values.

Template | Edit menu

Menu function	Description
Edit template	Enables the editing of an existing template.
Create new template	Enables the creation of a new template.

6.2.5. Style

Selection of the colour scheme for the program window.

6.2.6. Help (?)

Display copyright, program information and version number.

6.3. Creating and deleting zones

After you have familiarized yourself with the menus of the Saveris software you can now turn to creating zones, for example to separate the probes according to location. You could perhaps combine probes that are located in store rooms into one zone and probes that are in cold rooms into another.

6.3.1. Creating zones

1. Click on **Data** in the navigation area.
 - The available zones are shown in the data range.
2. Select the **New zone** command in the **Start | Edit | Organizing** menu.
 - The **New zone** dialogue is shown.
3. If necessary, deactivate an unneeded channel.



At least one channel must be activated.

When you create a new zone, create a copy with one or more channels from the **Zone0** standard group.

4. In the field of the same name, enter the name of the new zone, e.g. "Store rooms".



Assign names for the zones that are not longer than 15 characters.

5. Confirm the entries with **[OK]**.
 - The **New zone** dialogue is closed and the new zone is listed in the tree structure in the data range.

6.3.2. Deleting zones



The **Zone0** standard group cannot be deleted.

1. Click on **Data** in the navigation area.
 - The available zones are shown in the data range.
2. Mark the zone that is to be deleted in the tree structure.
3. Select the **Erase** command in the **Start | Edit** menu.
 - The zone is deleted without a reference.

6.4. Configuring the alarms

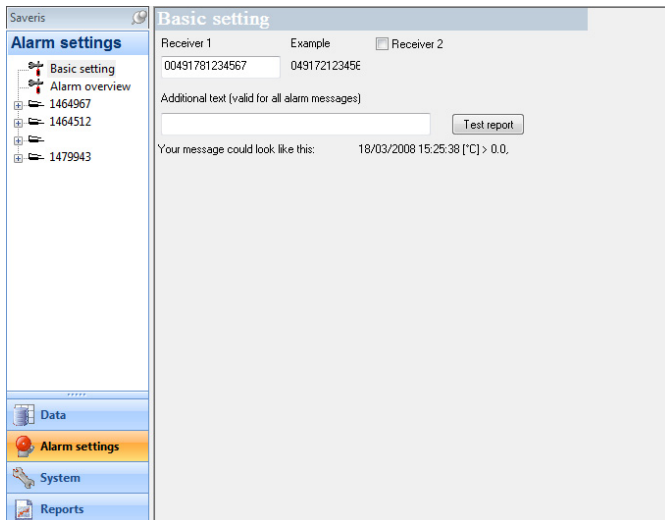
The testo Saveris measurement system differentiates between two types of alarm, which can be configured independent of one another:

- System alarms, meaning alarms that come from the Saveris base, the GSM modem or the relay at the Saveris base, and
- Probe alarms, which report a fault or that a limit value was exceeded at a probe.

6.4.1. Basic settings for the SMS messages

i The **Basic settings** submenu is only shown if the Saveris base is equipped with a GSM module.

1. Click on **Alarm settings** in the navigation area.
 - In the data window, the **Basic setting** and **Alarm overview** submenus as well as the probes connected in the Saveris base are shown.
2. Click on **Basic setting**.
 - The basic settings for the alarm messages via SMS are shown in the display range.



Designation

Description

Designation	Description
Receiver 1	<p>Telephone number of the employee who is to receive the alarm message. Enter with country code, network or area code and local number: 00491721234567.</p> <hr/> <p>i To acknowledge an alarm message, send the received message with the same text back to the mobile number of the Saveris base.</p>
Receiver 2	<p>Checkbox and input field for the telephone number of the employee who is to receive the alarm message if Receiver 1 cannot be reached. Enter with country code, network or area code and local number: 00491721234567.</p> <hr/> <p>i To acknowledge an alarm message, send the received message with the same text back to the mobile number of the Saveris base.</p>
Forward after ... min	If Receiver 1 does not react within this time span, the message is forwarded to Receiver 2 .
Additional text	Additional text that is attached to the alarm message.

i The system alarms are above all used for pointing out irregularities in the measurement system. If no reaction follows the system alarms, uninterrupted data recording is not guaranteed.

If a system alarm is issued via **SMS** or **E-mail** time delays may occur.

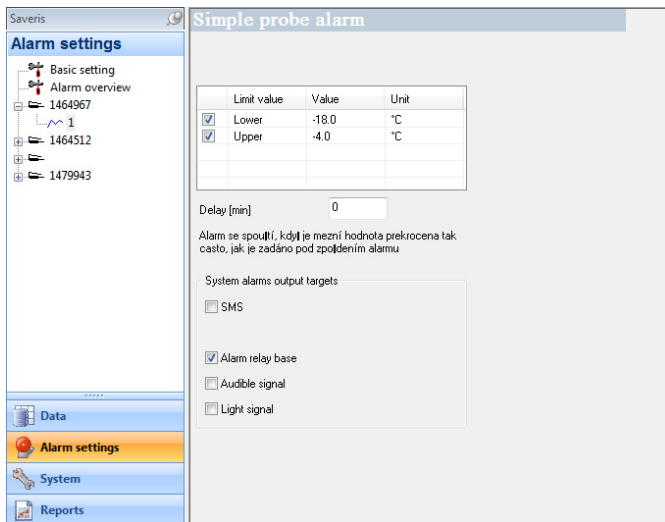
The notification function via **SMS** is only available if the Saveris base is equipped with a GSM module.

3. Perform the required settings.

When exiting the basic settings the settings are saved.

6.4.2. Configuring the probe alarm

1. Click on **Alarm settings** in the navigation area.
 - In the data window, the **Basic setting** and **Alarm overview** submenus as well as the probes connected in the Saveris base are shown.
2. In the tree structure open the probe entry and select the channel for which a specific alarm should be set up.
 - The channel-specific settings for the alarms are shown in the display range.



Limit values

Designation	Explanation
Checkbox	Option of whether an alarm should be triggered in the event of a breach of the limit value.
Limit value	Designation of the limit value.
Value	Specification of the limit value.
Unit	Unit of the limit value.

Alarm delay

Designation	Explanation
-------------	-------------

Designation	Explanation
Delay (min)	With a delay of how many measuring cycles should the alarm be triggered?

Output targets

Designation	Explanation
SMS, E-mail, Alarm relay base,	Determining in which form the probe alarms should be issued.

i The system alarms are above all used for pointing out irregularities in the measurement system. If no reaction follows the system alarms, uninterrupted data recording is not guaranteed.

If a system alarm is issued via **SMS** or **E-mail** time delays may occur.

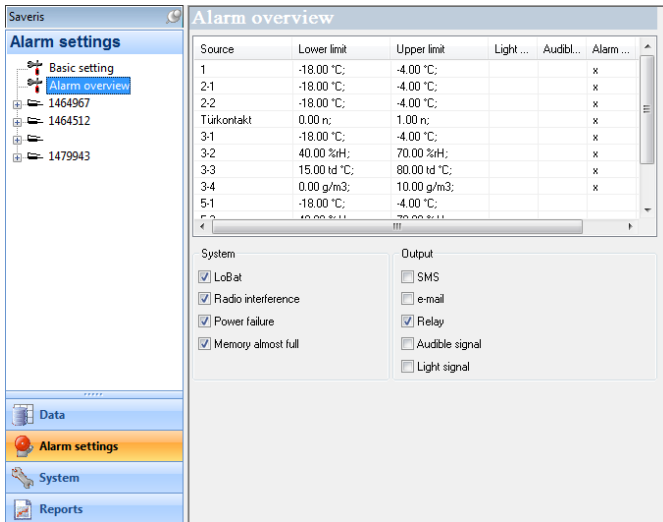
The notification function via **SMS** is only available if the Saveris base is equipped with a GSM module.

- > Make the required entries.
- When exiting the probe settings the changes are saved.

6.4.3. Alarm overview

In the alarm overview you will find a list of the probes with their specific alarm settings.

1. Click on **Alarm settings** in the navigation area.
 - In the data window, the **Basic setting** and **Alarm overview** submenus as well as the probes connected in the Saveris base are shown.
2. Click on **Alarm overview**.
 - The probes are listed with their specific settings in the display range.



Source	Lower limit	Upper limit	Light ...	Audibl...	Alarm ...
1	-18.00 °C;	-4.00 °C;			x
2-1	-18.00 °C;	-4.00 °C;			x
2-2	-18.00 °C;	-4.00 °C;			x
Türkontakt	0.00 n;	1.00 n;			x
3-1	-18.00 °C;	-4.00 °C;			x
3-2	40.00 %H;	70.00 %H;			x
3-3	15.00 td °C;	80.00 td °C;			x
3-4	0.00 g/m3;	10.00 g/m3;			x
5-1	-18.00 °C;	-4.00 °C;			

System

- LoBat
- Radio interference
- Power failure
- Memory almost full

Output

- SMS
- e-mail
- Relay
- Audible signal
- Light signal

Designation	Explanation
Source	Probes on which the limit value has been exceeded.
Lower limit	Lower limit value.
Upper limit	Upper limit value.
SMS, E-mail, Alarm relay base,	Specification as to whether the corresponding option is activated in the basic settings.
Active	Specification as to whether the alarm for the probe is activated under System Radio probe .

6.5. Analyzing series of measurements

You can represent series of measurements as a diagram or a table.

- > In the **Start | View** menu, select the
 - **Diagram** function if the data should be displayed graphically or
 - **Table** function if the data should be displayed as a table.

6.5.1. Diagram view

In this view, the readings are shown as line diagrams.

In the **Start | View** menu, the **Diagram** command is activated. Now you have to select the data record that you wish to display.

1. Select the day or time period in the calendar that should be evaluated.
 2. In the tree structure of the data range, open the group that contains the data to be displayed.
 - The diagram for the selected data is shown.
- > If necessary, deactivate channels via the checkboxes for the display.

i You can show or hide the gridlines for the corresponding axis by clicking on the time axis or the value axis.

6.5.1.1. Enlarging the view

Zoom in on a detail of the diagram to check the behavior of the readings within a specific time span, for example.

1. Click on **Edit | Tools | Zoom in**.
2. In the diagram, use the left mouse button, pressed and held, to highlight the area that should be shown enlarged.

i Click on **[Original size]** and the entire diagram is shown again.

6.5.1.2. Information on a reading (crosshairs)

If you move your crosshairs along a curve, you will quickly receive detailed information on the individual readings.

1. Click on **Edit | Tools | Crosshairs**.
2. In the diagram, click on the point for which the details should be shown.
 - A dialogue with the following information on the reading is shown:
 - date on which the reading was recorded,
 - time at which the reading was recorded,
 - number of the reading and
 - reading.

i You can move along the curve with the left mouse button pressed and held and thereby see the individual information for the readings.

In doing this, it is not necessary to exactly follow the course of the curve; the crosshairs does this automatically if you move the mouse to the right or left.

6.5.1.3. Marking the area

Mark an area of the diagram to show the statistical computation for a portion of the curve, for example.

1. Click on **Edit | Tools | Mark area**.
2. In the diagram, click in the area on the curve that is to be marked.
 - A border is shown that marks the area.

You can

- change the borders of the area by holding down the left mouse button and
- move the area to the left or right by pressing down the right mouse button within the area.

i The arithmetic mean for the selected area is shown as a horizontal line in the diagram.

In the status bar, the borders of the area, the mean and the minimum and maximum reading are shown.

- > Delete the marked area with the **Erase text** command.

6.5.1.4. Showing regression curve

Place the regression curve over the diagram to show the course that the measurement series tends to take.

1. Click on **Edit | Tools | Regression curve**.
2. Click on the reading curve for which the regression curve should be shown.
 - The regression curve is shown and displayed in the status bar of its regression coefficients.

i If you click on the curve again, the regression curve is hidden again.

6.5.1.5. Inserting text

Insert text in the diagram, for example to mark distinctive measurement points.

1. Click on **Edit | Tools | Insert text**.
 - A text field is inserted in the diagram.
2. Enter any text.
3. Drag text field to required position in the diagram with left mouse button pressed and held on the upper horizontal border of the field.

i The text length possible depends on the size of the text field. Enlarge the text field by dragging the vertical borders of the field or the lower horizontal border of the field with the left mouse button pressed and held.

i With one click of the right mouse button on the text field, you open the **Font** dialogue in which you can format the text.

When selecting the font, font size and colour, take into account the legibility of the text. Use sans-serif fonts such as Arial or Verdana as well as a text colour that is clearly visible against the background colour.

6.5.1.6. Erasing text

i You also delete a marked area from the diagram with the **Erase text** command.

1. Click on the text that is to be erased.
 - The text field is marked.
2. Click on **Edit | Tools | Erase text**.
 - The text field is deleted.

6.5.1.7. Characteristics of a curve

You can adapt the representation of a measurement series to your requirements. For example, you can change the line weight of a curve or the representation of the limit values in the diagram.

1. Change to the diagram view of the measurement series, the characteristics of which are to be displayed.
2. Click in the **Edit | Curves** menu on the entry of the curve, the characteristics of which are to be displayed.
 - The **Characteristics of (name of curve)** dialogue is opened.

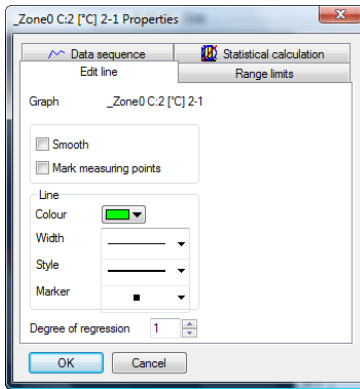
The following tabs are available in the dialogue:

- **Curve** tab
- **Range limits** tab
- **Data sequence** tab
- **Statistical computation** tab.

Buttons of the dialogue

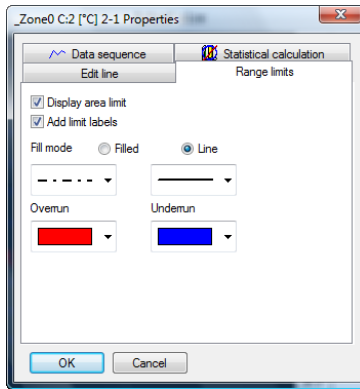
Button	Explanation
[OK]	Applies the changed settings. The dialogue is closed.
[Cancel]	Closes the dialogue without applying the changes.

Curve tab



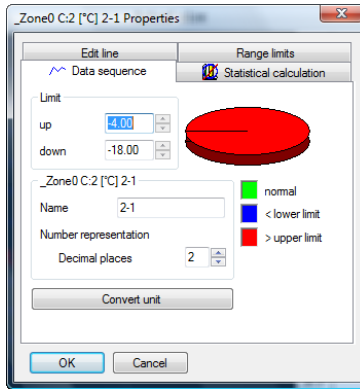
Designation	Explanation
Smooth	The measurement points are connected by an interpolated curve; the plot-points on the curve between two measurement points are estimated mathematically.
Mark measuring points	The individual measurement points are represented by a symbol. i The value shown only corresponds to the exact measured value at these points. The measurement points are connected with straight lines during the measurement. When the measurement is paused the curve can be smoothed.
Colour	Line colour of curve.
Width	Line weight of curve.
Style	Line pattern of curve.
Marker	Symbol for the measurement points.
Degree of regression	Possible values "0" to "7". The "0" degree represents a pure mean calculation, the "1" degree of regression the linear trend, a higher value helps in the event of curves with several extreme values.

Range limits tab



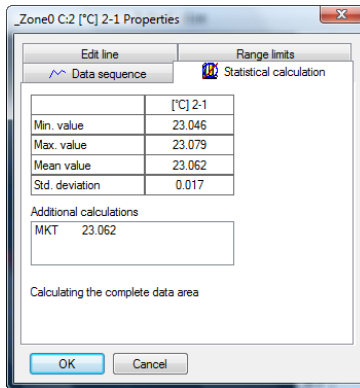
Designation	Explanation
Display area limit	Specification as to whether the limit values should be shown in the diagram.
Add limit labels	Specification as to whether the limit values should be labelled (Upper/Lower limit value: name of curve).
Area fill	Specification as to whether the areas outside of the limit values should be marked by means of an area fill.
Selection list for area fill	Selection of the fill.
Line fill	Specification as to whether the limit values should be marked by means of horizontal lines.
Selection lists for line fill	Selection lists for line type and line thickness.
Overshoot	Colour selection for the fill of the area above the upper limit value.
Undershoot	Colour selection for the fill of the area below the lower limit value.

Data sequence tab



Designation	Explanation
Upper limit values	Specification of the upper limit value.
Lower limit values	Specification of the lower limit value.
Name	Designation of curve.
Decimal places number representation	Number of the decimal places; e.g. for the data table. Possible values "0" to "6".
[Convert unit]	Opens a dialogue for converting the unit of the curve.
Pie chart	Graphical representation for the distribution of the readings: <ul style="list-style-type: none"> • green: readings that are within the limit values. • blue: readings that are below the lower limit value. • red: readings that are above the upper limit value.

Statistical computation tab



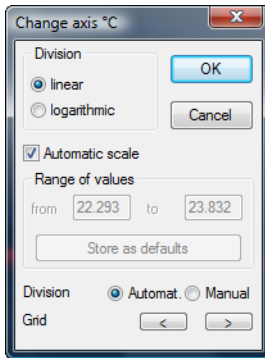
Designation	Explanation
Min. value	Smallest reading of the curve.
Max. value	Largest reading of the curve.
Mean value	Arithmetically-determined average value.
Std. deviation	Measure of the scattering of the readings around the average.
Calculating the complete data area	Specification that the given values are valid for the entire measurement curve.
Calculation in section area	<p>An alternative to Calculating the complete data area, if an area was marked.</p> <p>Specification that the given values are only valid for the selected area of the measurement curve.</p>

6.5.1.8. Settings for the axes in the diagram

Change the settings of the axes in the diagram to adapt the representation to your requirements.

Settings for the value axis

- > With the right mouse button, click on the desired value axis in the diagram.
- The **Change axis [unit of the readings]** dialogue is shown.

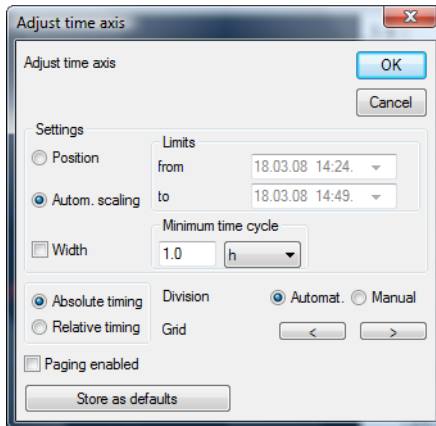


Designation	Explanation
Division linear	Specification that the axes are divided in a linear manner.
Division logarithmic	Specification that the axes are divided logarithmically, meaning the increments represent powers of ten.
[OK]	Applies the settings until other data are called up. The dialogue is closed.
[Cancel]	Closes the dialogue without applying any changes.
Automatic scale	Specification as to whether the program should perform the scaling of the value axis.
Range of values from ... to	Manual entry of the range of values if the Automatic scale is deactivated.
[Store as defaults]	Saves the current settings as the default setting.
Division Automat.	Specification that the program should perform the division of the axis.

Designation	Explanation
Division Manual	Specification that the division of the axis should be performed manually.
Grid [<], [>] (if automatic division is activated)	Decrease or increase the division of the axis by clicking on [<] or [>].
Interval (if manual division is activated)	Manual entry of the grid.

Settings for the time axis

- > With the right mouse button, click on the time axis in the diagram.
- The **Adjust time axis** dialogue is shown.



Designation	Explanation
[OK]	Applies the settings until other data are called up. The dialogue is closed.
[Cancel]	Closes the dialogue without applying any changes.
Position	Shows a freely-definable extract of the diagram.
Autom. scaling...	Shows the entire diagram in the window.
Extract	Shows a fixed, defined extract that can be moved over the time axis.

Designation	Explanation
Limits from ... to (if Position view is activated)	Limits for the Position view.
Minimum time cycle (if Extract view is activated)	Specification of which time period should at least be shown.
Selection list for the unit (if Extract view is activated)	Unit of the time axis in the minimum time cycle: <ul style="list-style-type: none"> • sec (second) • min (minute) • h (hour) • d (day).
Absolute	All times are the real times at which the readings were recorded.
Relative	Sets the starting time to 00:00; the time the runs relative to this starting point.
Paging enabled	The function associated with this is not available in the Small Business Edition.
[Store as defaults]	Saves the current settings as the default setting.
Division Automat.	Specification that the program should perform the division of the axis.
Division Manual	Specification that the division of the axis should be performed manually.
Grid [<], [>] (if automatic division is activated)	Decrease or increase the division of the axis by clicking on [<] or [>].
Interval (if manual division is activated)	Manual entry of the grid.
Selection list for the unit (if manual division is activated)	Unit of the time axis: <ul style="list-style-type: none"> • sec (second) • min (minute) • h (hour) • d (day).

6.5.2. Table view

The readings are listed in table form in this view.

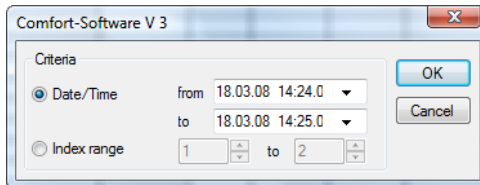
In the **Start | View** menu, the **Table** command is activated. Now you have to select the data record that you wish to display.

1. Select the day or time period in the calendar that should be evaluated.
2. In the tree structure of the data range, open the zone that contains the data to be displayed.
 - The table view of the selected data is shown.
- > If necessary, deactivate channels via the checkboxes for the display.

6.5.2.1. Marking readings

Mark specific readings to perform a statistical computation for part of the measurement series, for example.

1. Click on **Edit | Tools | Mark**.
 - A dialogue for determining the criteria is shown.



2. Select the
 - Select **Date/time** if the readings for a particular time period are to be marked.
 - The selection lists are enabled for the determination of the time period.
 - Select the **Index range** if the readings in particular rows in the table are to be marked.
 - The selection lists are enabled for the determination of the index range.
3. Determine time period or index range.
4. Click on **[OK]**.
 - The dialogue is closed and the corresponding readings are marked in the table.



You can also mark readings with the mouse, as you are familiar with from Office applications.

6.5.2.2. Dropping the marking

- > Click on **Edit | Tools | Drop marking**.
- The marking of the readings is deleted.

6.5.2.3. Inserting extreme values or mean in the table

Insert the minimum/maximum reading as well as the mean from the whole table at the end of the table.

1. Click on **Edit | Tools | Extra lines | Minimum, Maximum or Mean value**.
 - A row with the corresponding value for all readings is inserted at the end of the table.
- > Repeat step 1 to insert another value in the table.



To erase a value from the table again, click in the **Extra lines** menu again on the corresponding entry.

6.5.2.4. Compressing readings

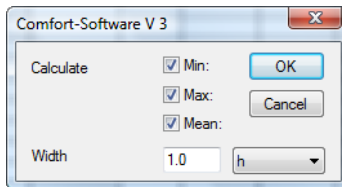
Compress the table to definable intervals to maintain the clarity of the table with large amounts of data.

Only the first and the last value are shown for the individual intervals. The other readings are hidden.

In addition, the minimum, maximum and/or average value can be shown for the respective time period.

1. Click on **Edit | Tools | Compress**.

- The dialogue for determining the options is opened.



> Use the checkboxes to determine whether the respective minimum reading (**Min**), maximum reading (**Max**) and/or average value (**Mean**) should be calculated for the individual time spans.



At least one of these values must be activated to be able to perform the compression of the table.

2. Enter the time span under **Extract** and determine its unit.

Possible settings for the unit:

- **sec** (second)
- **min** (minute)
- **h** (hour)
- **d** (day).

3. Click on **[OK]**.

- The dialogue is closed and the table is shown compressed.

6.5.2.5. Dropping compression

- > Click on **Edit | Tools | Drop compression**.
- The table is shown again in its uncompressed form.

6.5.2.6. Determining largest reading


- > In the **Edit | Find | Maximum** menu click on the curve for which the largest reading should be determined.
- The largest reading is shown marked in the table.


6.5.2.7. Determining the smallest reading

- > In the **Edit | Find | Minimum** menu click on the curve for which the smallest reading should be determined.
- The smallest reading is shown marked in the table.

6.6. Analyzing alarms

If system or probe alarms were triggered by the Saveris base, you can check the alarms and subsequently confirm (acknowledge) them.

i The  symbol in the display range of the task bar also you that an alarm was issued by the Saveris base, even with the software closed. If you move to the symbol with the mouse information is shown regarding the alarm.

If an alarm is not triggered, this is shown by the  symbol.

6.6.1. Checking alarms

- > In the diagram or table view under **Start | View** mark the **Alarms** option.
- The alarms received are shown in the **Overview** below the diagram or the table.

Source	Time	Condition	Status	Comment
1	18/03/2008 15:24:00	22.9 °C > -4.0 °C	On	
2-1	18/03/2008 15:24:00	23.0 °C > -4.0 °C	On	
2-2	18/03/2008 15:24:00	Probe defect	On	
3-1	18/03/2008 15:24:00	23.3 °C > -4.0 °C	On	
◀ ▶				

Designation

Explanation

Designation	Explanation
Source	Probes on which the breach of the limit value has occurred.
Time	Date and time at which the message is received.
Condition	Condition that was fulfilled so that the alarm was triggered; e.g. Limit value overrun .
Status	Date and time, when the alarm was triggered.
Comments	Any comments on the alarm.
Tel. number/name	Telephone number or recipient for the alarm message

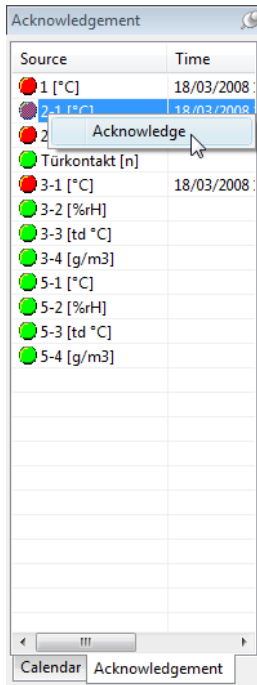
- > If needed, enter **Comments** on an alarm in the column of the same name.

6.6.2. Acknowledge the alarm

i If you acknowledge an alarm at the Saveris base, this is carried over into the software.

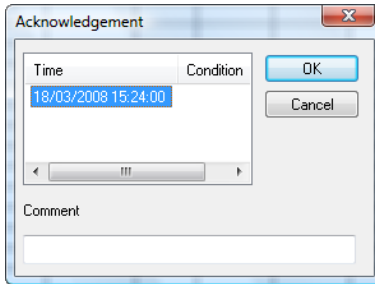
If you have received an alarm message by SMS, you can acknowledge the alarm by sending the received SMS with the same text back to the mobile number of the Saveris base.


- > Switch to the **Acknowledgement** tab in the calendar and acknowledgement section.
- The list of the registered channels is shown.



Designation	Explanation
Source	<p>Designation of the individual channels of the registered probes.</p> <ul style="list-style-type: none"> ● The channel delivers measurement data within the limit values. ● A limit value has been breached and the Saveris base has triggered an alarm.
Time	Date and time, when the alarm was triggered.
Condition	Condition that was fulfilled so that the alarm was triggered.

4. Click with the right mouse button on the alarm entry that is to be confirmed and select the Acknowledge command in the context menu.
 - The **Acknowledgement** dialogue is opened.



5. Mark the entry of the alarm that should be acknowledged.
 6. If needed, enter **Comments** on the alarm in the field of the same name and confirm the alarm with **[OK]**.
- The  symbol shows that the alarm was confirmed and the comments are carried over in the alarm list in the display range.

The confirmation of the alarm is transmitted to the Saveris base. As soon as the confirmation is received in the Saveris base, the alarm relay stops flashing and the alarm is deleted.

6.7. Creating evaluations

You can print out series of measurements or have reports on the data automatically created by the software in definable intervals.

6.7.1. Printing measurement data

Measurement data can be printed in diagram or table form.

1. Select the day or time period in the calendar for which the report should be created.
- The data for the day or the time period are shown as a diagram or table, depending on the setting.
 - > In the **Start | View** menu, select the
 - **Diagram** command if the table view is activated but the diagram view should be printed.
 - **Table** command if the diagram view is activated but the table view should be printed.

2. Select the type of report head in the **Template | Template** menu.

i Open the preview of the report using the **File** (Testo logo) | **Print preview** command.

Use portrait format for printing a table and landscape format for printing a diagram.

You can determine the format under **File | Page Setup....**

3. Select the **Print** command in the **File** menu.
 - The **Print** dialogue for selecting the printing options is shown.
4. Change printing options, if needed, and click on **[OK]**.
 - The report is printed.

i The report head contains the following information:

- title,
- number of pages,
- date,
- start and end time for a measurement (only for tables),
- specification of the extreme values and the mean value for every curve,
- number of channels and readings (only for tables),
- input options for "Conditions" and
- other comment lines.

6.7.2. Archiving with automatic reports

A simple and secure option for archiving your data is the automatic creation of reports.

The reports are created by the software and recorded on a daily, weekly or monthly basis at a specified location on the computer or a server; also see the chapter "Report settings" for this.

The reports are saved as PDF files so that they can easily be read or sent per e-mail but without being able to change the data stock.

6.8. Creating a new database (project)

i The licence-free database system Microsoft SQL Server 2005 Express is installed as standard with the testo Saveris software.

The Microsoft SQL Server 2005 Express can manage databases up to a size of 4 GB.

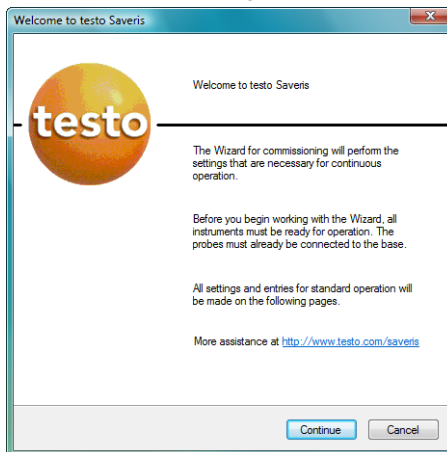
Before reaching the maximum capacity of the database, you receive a warning message from the Saveris software in good time in which you are made aware of the remaining life.

In this case, close the database by ending and saving the current project and create a new project, and thus a new database.

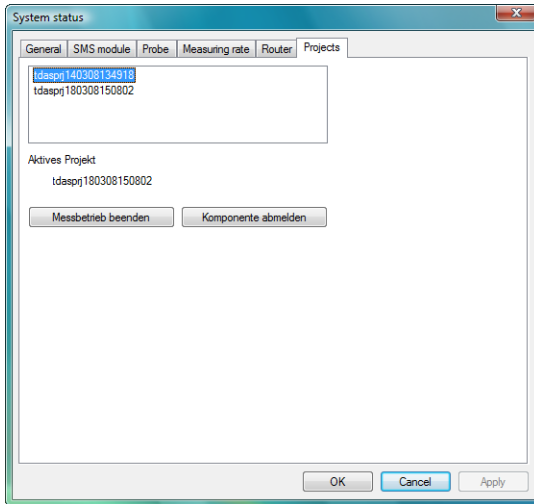
i The possible duration of the recording is primarily determined by the measuring rate with a constant number of channels.

If the Saveris base, for example, records the data from 20 channels with a measuring rate of 2 minutes, the database can save data for longer than ten years in this configuration.

1. Under **Start | All Programs | Testo** click on **Saveris Startup Assistant**.
- The welcome dialogue of the startup assistant is shown.



2. Click on **[Continue >]**.
- The **System status** dialogue with the **General** tab is shown.



3. Change to **Projects** tab.
4. Mark the project that is to be ended and click on **[End Measuring Mode]**.
- A notification is shown in which you must confirm the reset of Saveris base to the basic configuration.
5. Click on **[Yes]** to reset the Saveris base to the basic configuration.
- All components are deleted from the Saveris base and the project is closed in the Saveris software.

i To be able to start a new project, you must reconnect all components to the Saveris base and then start up the hardware again.

6.9. System settings

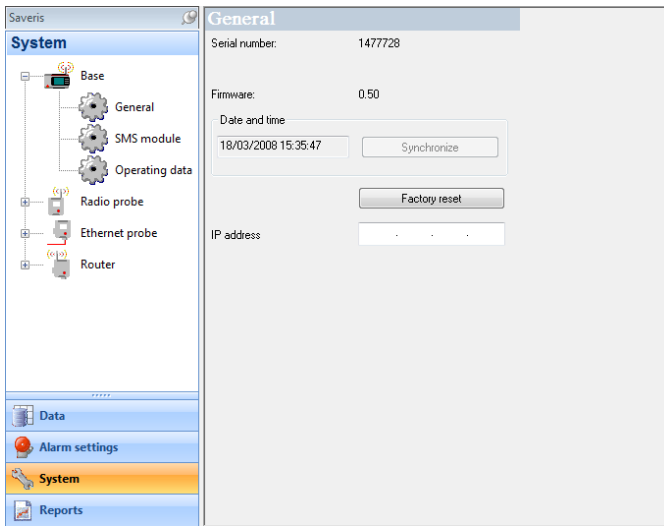
In this menu, determine the settings for the Saveris base, the radio probes and – if installed in the measuring system – the Ethernet probes, router and converter.

- > Click on **System** in the navigation area.
- The following entries are shown in the tree structure in the data range:
 - **Base** with the general settings of the Saveris base and the SMS module (if present) as well as the operating data of the probes.
 - **Radio probe** with the settings for the radio probes connected to the Saveris base.
 - **Ethernet probe** with the settings for the Ethernet probes attached to the Saveris base.
 - **Router** with the settings for the routers connected to the Saveris base.
 - **Converter** with the settings for the converters connected to the Saveris base.

6.9.1. General settings for the Saveris base

Using this menu item you can, for example, synchronize the date and time of the Saveris base with the values from the computer or change the IP address of the Saveris base.

1. Open the **Base** entry.
 - The submenu items **General**, **SMS module** and **Operating data** are shown under the entry.
2. Click on **General** to open the basic settings for the Saveris base.
 - The settings of the Saveris base are shown in the display range.



Designation	Explanation
Serial number	Serial number of the Saveris base.
Firmware	Version number of the instrument software in the Saveris base.
Date and time	Date and time of the Saveris base.
[Synchronize]	Date and time from the operating system are applied to the Saveris base.
IP address	IP address of the Saveris base.

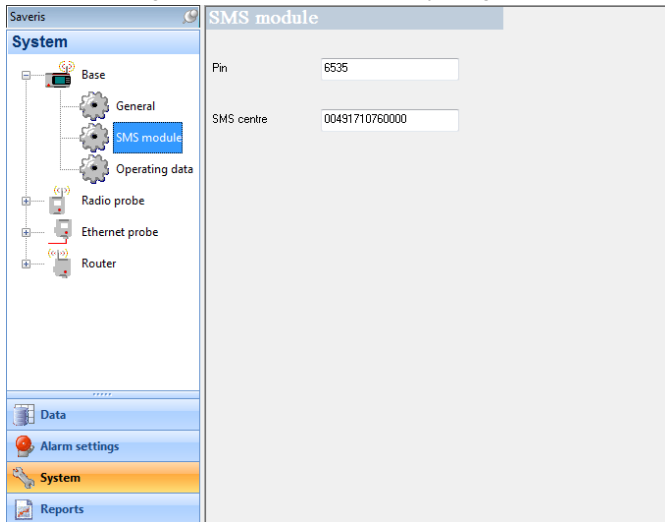
6.9.2. System settings for the GSM module

Using this menu item, you enter the data of the SIM card and can determine whether the alarm messages are to be sent again if the first attempt at sending them should fail.

i To be able to use the notification function via SMS you require a Saveris base with an integrated GSM module.

1. Open the **Base** entry.
 - The submenu items **General**, **SMS module** and **Operating data** are shown under the entry.
2. Click on **SMS module** to open the settings for sending the SMS messages.

- The settings are shown in the display range.

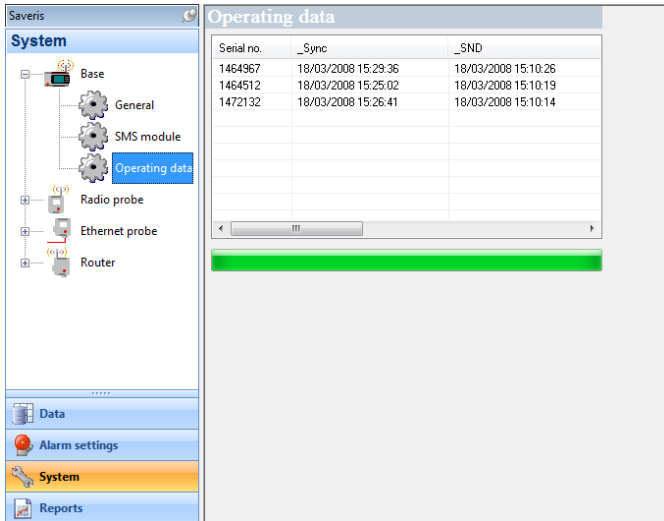


Designation	Explanation
PIN	PIN number of SIM card.
SMS centre	Number of the message centre.

6.9.3. Show operating data of the probes.

Using this menu item, you can check when the last data were received from a probe, for example, and the duration until the next readings can be expected.

1. Open the **Base** entry.
 - The submenu items **General**, **SMS module** and **Operating data** are shown under the entry.
2. Click on **Operating data** to look at the connection data.
 - The connection data are listed in the display range according to probe.



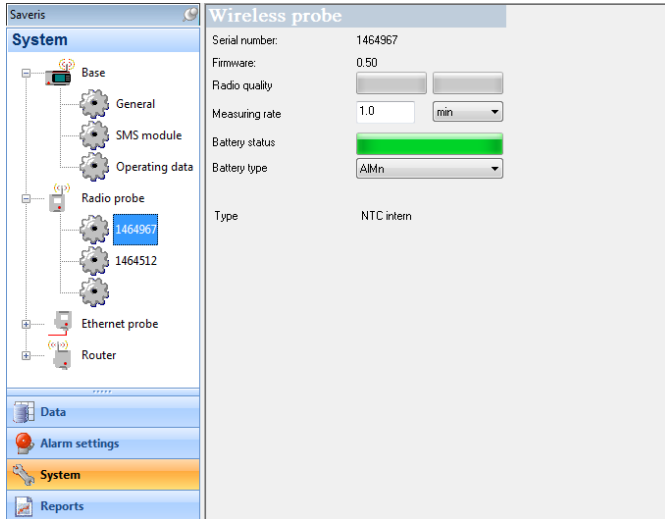
Designation	Explanation
Serial no.	Serial number of the probe
_Sync	Date and time of the last connection.
_SND	Date and time when the probe last sent data.
_RCV	Date and time when the probe last received data.
_next Sync	Date and time of the next planned connection establishment.
_Starttime	Date and time of the first measurement of the probe.
_Values within [min]	Duration in minutes until the probe delivers the next data.

6.9.4. Settings for the radio probe

Using this menu item you can, for example, check the battery status of the probe or the quality of the radio transmission.

1. Open the **Radio probe** entry.
 - The radio probes connected in the Saveris base are listed under the entry.

2. Click on one of the probe names to open the information on the probe.
 - The settings of the selected radio probe are shown in the display range.

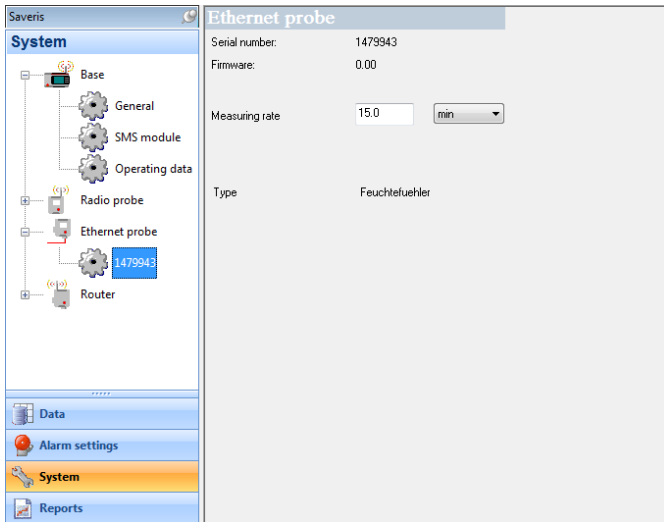


Designation	Explanation
Serial number	Serial number of the probe.
Firmware	Version number of the probe's instrument software.
Radio quality	Field strength of the last radio link to the Saveris base.
Meas. cycle	Interval in which the measurements should be performed.
Battery status	Charge level of the batteries in the probe.
Battery type	Selection list for specifying the battery type (AIMn or Energizer)
Type	Specification of the probe type.

6.9.5. Ethernet probes

Using this menu item, you can, for example, check the version of the instrument software or the IP address of an Ethernet probe.

1. Open the **Ethernet probe** entry.
 - The Ethernet probes connected to the Saveris base are shown under the entry.
2. Click on one of the probe names to open the information on the probe.
 - The settings of the selected probe are shown in the display range.



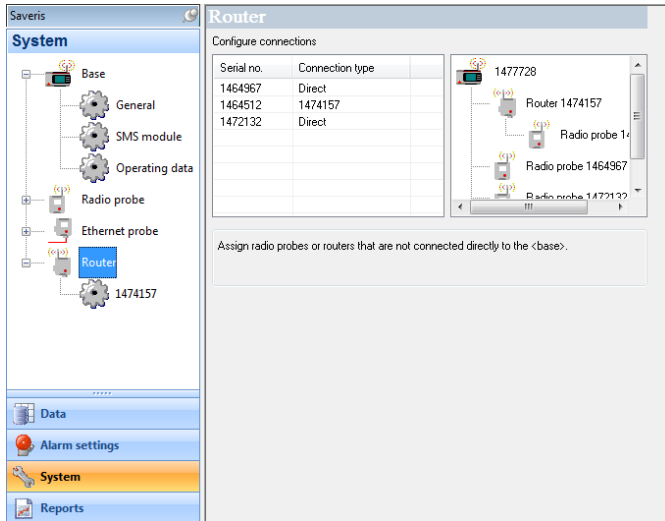
Designation	Explanation
Serial number	Serial number of the probe.
Firmware	Version number of the probe's instrument software.
IP address	IP address of the probe.
Meas. cycle	Interval in which the measurements should be performed.
Type	Specification of the probe type.

6.9.6. Router

Using this menu item, assign which radio probes should transfer their measurement data to the Saveris base via a router.

1. Open the **Router** entry.

- Under the entry the routers connected at the Saveris base are shown and the radio probes connected at the base are listed in the display range.



Designation	Explanation
Serial no.	Serial number of the radio probe.
Connection type	Specification as to whether the radio probe has a Direct connection to the Saveris base or if a router transmits the readings (display of the router serial number).

i The structure overview shows you which radio probes are directly connected to the Saveris base and which are integrated into the measuring system via a router.

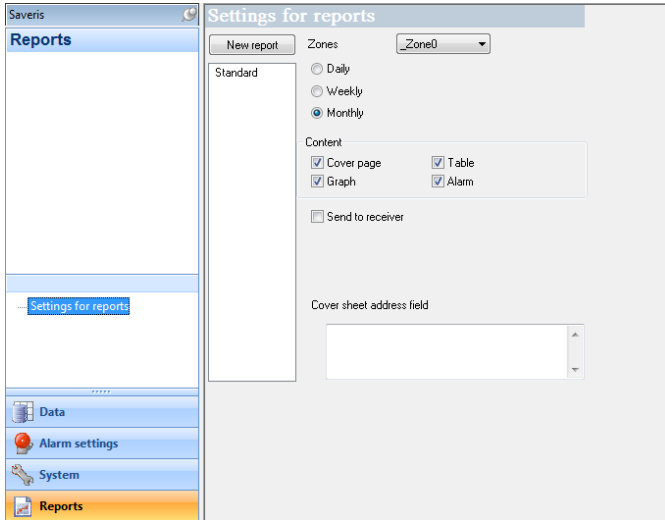
2. Click in the connection type cell of the probe which is to be assigned to a router.
 - The cell is shown as a selection list.

6.10. Report settings

In the report settings, you can determine how the automatic reporting should take place.

1. Click on **Reports** in the navigation area.

- The **Settings for reports** submenu is shown in the data window.
- 2. Click on **Settings for reports**.
- The report settings are shown in the display range.



Designation	Explanation
[New report]	Adds a new reporting task to the list.
List of the reporting tasks	List of the created reporting tasks.
Zones	Selection list of the group for which the report should be created.
Time of the creation	Specification as to whether the report should be created Daily , Weekly or Monthly . i Daily : The report is created daily at 12 a.m. Weekly : The report is created every Sunday at 12 a.m. Monthly : The report is created on the last day of the month at 12 a.m.
Content group field	With activated option the corresponding

Designation	Explanation
<ul style="list-style-type: none"> • Cover page • Graph • Table • Alarms 	data sheet is attached to the report.
Send to receiver option	Specification as to whether the report should be sent to an employee by e-mail. If the function is activated, the input fields for the recipient address and the subject line as well as the [Address book] button are shown.
Recipient input field	Input field for the e-mail address of the employee to whom the report is to be sent.
[Address book]	Opens the dialogue for the selection of the recipient from the Outlook contact list.
Subject	Input field for the subject line.
Data sheet address field	Input field for the address that should be shown on the pages of the report.



The storage location for the reports was determined during the installation of the Saveris software. Generally this is C:\Documents and Settings\All Users\Documents\Saveris Small Business Edition.

7 Maintaining the product

7.1. Replacement of components

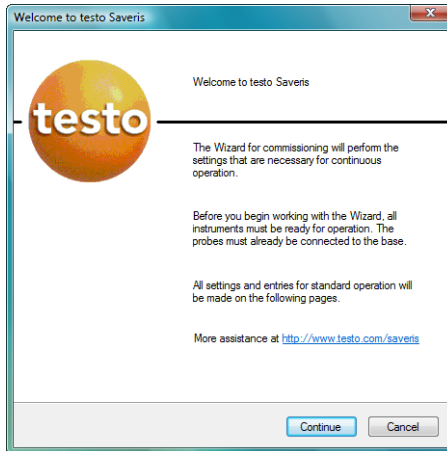
You can shut down a component – probe, converter or router – at any time because this is temporarily not in use or to replace it with a new component, for example, in the event of a defect.

i In the event of a replacement of the Saveris base, you must reinstall the software and set up the entire measurement system again.

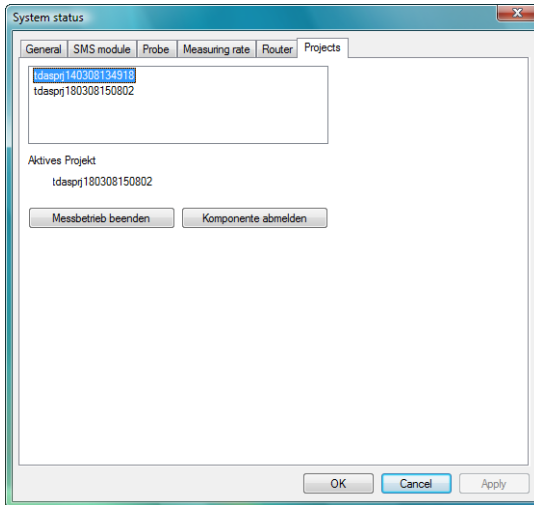
Remember to save the existing measurement data before reinstalling the software.

7.1.1. Deleting components

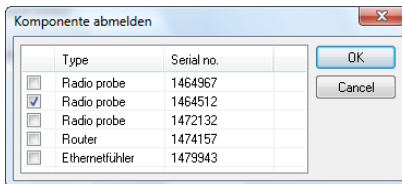
1. Under **Start | All Programs | Testo** click on **Saveris Startup Assistant**.
 - The welcome dialogue of the startup assistant is shown.



2. Click on **[Continue >]**.
 - The **System status** dialogue with the **General** tab is shown.



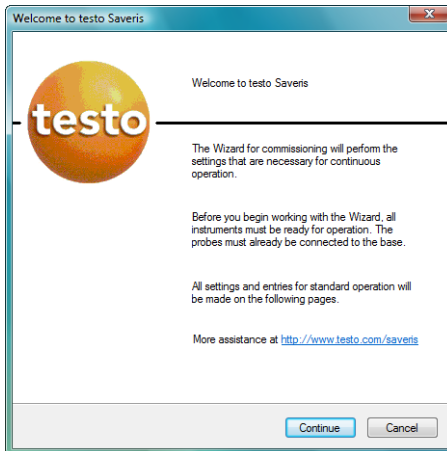
3. Change to **Projects** tab.
4. Click on **[Log out component]**.
 - The **Log out component** dialogue is shown.



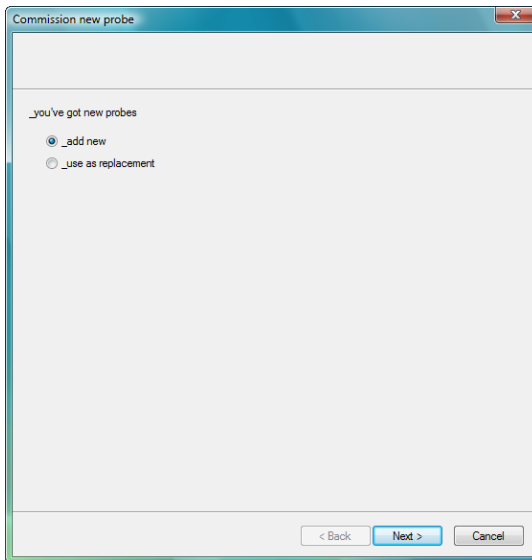
5. Activate the checkbox in front of the component that is to be logged out of the system.
 6. Click on **[OK]**.
 - A query to erase the components from the configuration is shown.
 7. Confirm the query with [Yes].
 - The component is deleted from the configuration.
- > After deleting a probe, briefly press the connect button on the rear of the probe so that the probe no longer attempts to send measurement data.

7.1.2. Adding components

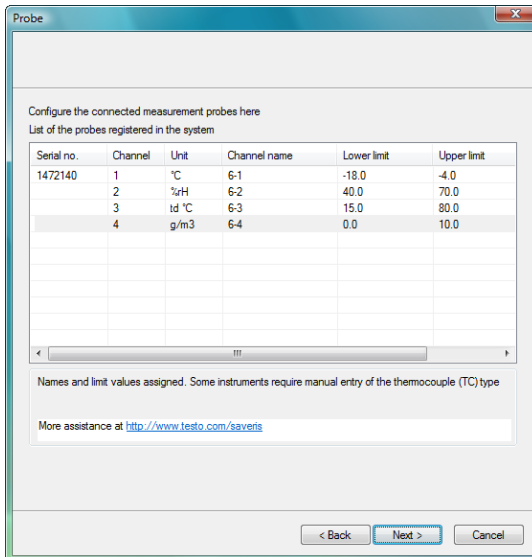
1. Connecting new probes at the Saveris base; see "Connecting radio probe".
2. Start up testo Saveris software.
 - The software recognizes that a new probe is located in the system and the wizard for the installation of a new component is started.



3. Click on **[Continue >]**.
 - The **Commission new probe** dialogue is shown.



4. Leave default setting and click on **[Continue >]**.
 - The list of the probes newly registered in the Saveris base is shown.



i The fields of the **Channel name** column for probe designations are required fields. You must fill in these fields to be able to continue with the startup.

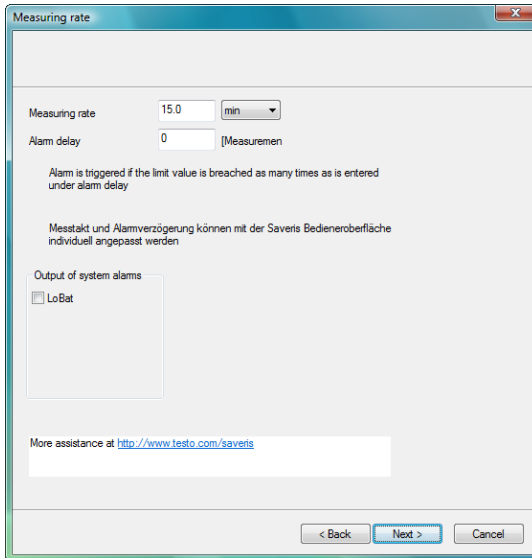
The **Lower limit** and **Upper limit** fields are already preassigned limit values, but you can adapt the limit values to your requirements.

The limit values determine as of which reading the Saveris base triggers an alarm.

5. Click in the **Channel name** field and enter the designation of the probe, e.g. "Room 4".
 - > Click in the **Lower limit** field and change the lower limit value.
-

i If all probes are to have the same limit value, click on the column title with the right mouse button and then click on **Apply to all** in the context menu. This also applies for the upper limit value in the next step.

- > Click in the **Upper limit** field and change the upper limit value.
 - > Click in the **TC type** field and enter the type of thermocouple if this information is required for the instrument.
 - > Perform step 4 and the following for all other new probes until all required fields are filled.
6. Click on **[Continue >]**.
 - The settings for measuring cycle, the alarm delay and the alarm issue are shown.



7. Enter the **Measuring cycle** and determine its **Unit**.

i The measuring cycle determines in which intervals a new reading is saved in the Saveris base.

Possible settings for the unit:

- **sec** (second)
- **min** (minute)
- **h** (hour).

The smallest transfer rate for radio probes is one minute.

8. Determine **Alarm delay**.

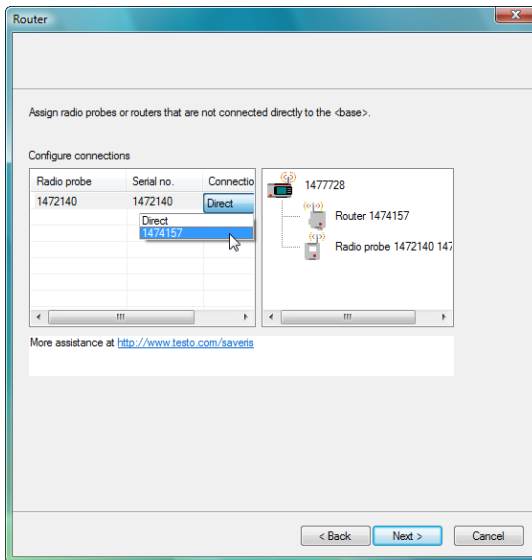
i If you enter the value "5" for example, an alarm is not triggered by the Saveris base until the fifth time that the limit value is exceeded.


9. Determine in which cases a system alarm should be triggered.

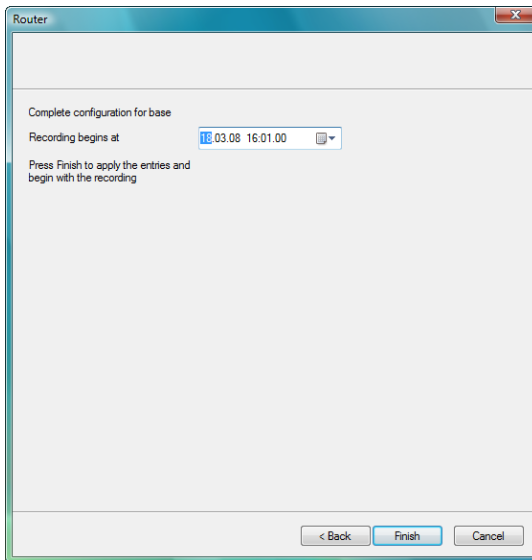
10. Click on **[Continue >]**.

- If a router is connected at the Saveris base the configuration of the connection type for the probes is shown.

If no router is connected continue with step 15.



11. Click in the **Connection type** cell of the probe which is to be assigned to a router.
 - The cell is shown as a selection list.
12. Open the selection list via the button  and select the router to which the probe is to be assigned.
13. Perform steps 11 and 12 for all remaining probes whose measurement data is to be transmitted to the Saveris base via a router.
14. Click on **[Continue >]**.
 - The wizard is shown with the setting for the start of measurement and the list of the newly registered probes.



15. Postpone the start of measurement, if necessary.
16. Click on **[Finish]** to complete the startup of the hardware.
 - A note on the successful configuration of the hardware is shown.
17. Press **[OK]** to confirm the note.
 - The new hardware is now ready for operation.

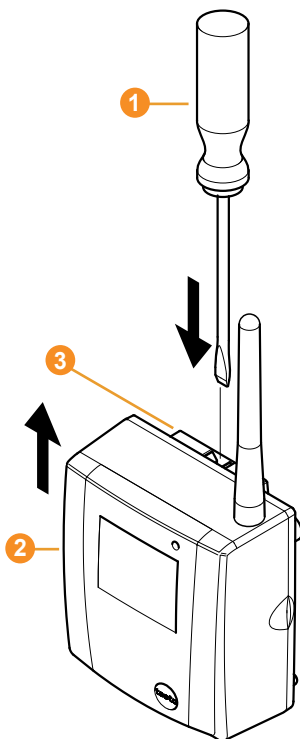
7.2. Calibration and adjustment

All testo Saveris probes are adjusted in the factory, which is confirmed by the corresponding adjustment report.

You can undertake other calibrations or adjustments on site. The separate Saveris adjustment software is available for this.

After successful adjustment, the current adjustment data is stored in the probe. At the same time, the adjustment software and the Saveris software accept this data so that the adjustment histories are available.

7.3. Removing probe from wall bracket



1. Using a narrow flat tip screwdriver ① release the probe ② from the wall bracket ③.
2. Remove probe from wall bracket towards top, as shown.

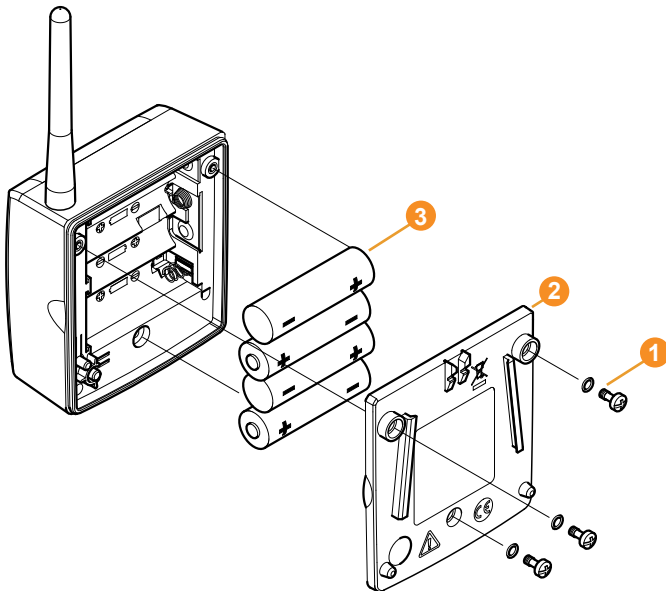
7.4. Changing batteries at probe



The batteries have a life of


- 3 years with standard AlMn batteries at +25 °C and
- 3 years with Energizer L91 Photo lithium batteries for freezer applications.

You can check the battery status of the probes via the Saveris software. To do so, select the probe that you wish to check under **System | Radio probe**. In the **Battery status** field, the current charge state is shown.



> Remove probe from the wall bracket; see "Removing probe from wall bracket".

1. Loosen screws **1** on the rear of the probe.
2. Remove housing cover of probe **2**.

3. Change batteries .



Ensure that you insert the batteries correctly.

The correct polarity is illustrated in the respective battery compartment.

4. Place housing cover on probe housing.

5. Screw cover down close to the housing.



A control switch is located in the housing that is actuated through the cover. To do so, the cover must be screwed to the probe housing without a gap.

If the control switch is not actuated through the cover, the probe cannot be operated.



Caution! Unintended residual discharge when disposing of old batteries.

- > Mask the poles of the old batteries in order to prevent an unintended residual discharge by means of short-circuits during disposal.
-

7.5. Technical data

7.5.1. Saveris base

Characteristic	Values
Memory	40,000 values per channel (total max. 10,160,000 values)
Dimensions	225 x 150 x 49 mm
Weight	approx. 1510 g
Protection class	IP42
Housing material	Die-cast zinc/plastic
Radio frequency	868 MHz/2.4 GHz
Power supply	6.3 V DC mains unit; alternatively via 24 V AC/DC plug-in/screw terminals, power consumption < 4 W.
Rech. batt.	Li-ion battery The rechargeable battery is used only for backing up data and for emergency SMS in the event of failure of the power supply, not for the power supply during operation.
Operating temperature	-10 to +50 °C
Storage temperature	-40 to +85 °C
Display	Graphical LCD display
Interfaces	USB, radio, Ethernet
Number of radio probes	max. 15 probes can be directly connected via radio interface, max. 150 total via radio/router/converter and Ethernet, max. 254 channels.
Alarm relay	max. 1 A, max. 30 W, max. 60/25 V DC/AC, NC or NO contact
GSM module	850/900/1800/1900 MHz
Installation	Table base and wall bracket included

7.5.2. Saveris radio probe

General

The technical data listed in the following table are valid for all Saveris radio probes. Special data for the individual probe types can be found in the following sections.

Characteristic	Values
Housing dimensions (W x H x D)	80 x 85 x 38 mm
Length of antenna	81 mm
Weight	approx. 240 g
Battery type	4 AA mignon batteries
Battery life	3 years at +25 °C 3 years with Energyzer L91 Photo lithium batteries for freezer applications
Housing material	Plastic
Radio frequency	868 MHz/2.4 GHz
Meas. cycle	Standard 15 min (can be set from 1 min up to 24 h)
Storage temperature	-40 to +55 °C
Display (optional)	2-line LCD; 7 segments with symbols
Transmission distance	approx. 300 m free field at 868 MHz, approx. 100 m free field at 2.4 GHz
Wall bracket	included

Saveris T1/T1D radio probe



Characteristic	Values
Probe type	NTC
Measuring range	-35 to +50 °C
Accuracy	±0.4 °C (-25 to +50 °C) ±0.8 °C (rest of measuring range)
Resolution	0.1 °C
Protection class	IP68
Conformity with standards	DIN EN 12830
Operating temperature	-35 to +50 °C

Saveris T2/T2D radio probe

Radio probe with external probe connection and internal NTC, door contact



Characteristic	Values
Probe type (internal)	NTC
Measuring range (internal)	-35 to +50 °C
Accuracy (internal)	±0.4 °C (-25 to +50 °C) ±0.8 °C (rest of measuring range)
Resolution (internal)	0.1 °C
Probe type (external)	NTC
Measuring range (external)	-50 to +150 °C
Accuracy (external)	±0.2 °C (-25 to +70 °C) ±0.4 °C (rest of measuring range)
Resolution (external)	0.1 °C
Connection	NTC via mini-DIN socket, door contact connection cable included in delivery (1.80 m)
Protection class	IP68 (with probe inserted or port sealed with rubber plug)
Conformity with standards	DIN EN 12830
Operating temperature	-35 to +50 °C

Saveris T3/T3D radio probe

2-channel radio probe with 2 external TC probe connections
(TC characteristics can be selected)



Characteristic	Values
Probe type	TC
Measuring range	
TC type J	-100 to +750 °C
TC type K	-195 to +1350 °C
TC type S	0 to +1760 °C
TC type T	-200 to +400 °C
Accuracy	±0.5 °C or 0.5 % of measured value
Resolution	0.1 °C/TC type S 1 °C
Connection	2 TCs via TC socket, max. difference in potential 2 V
Protection class	IP54 (with probe inserted or port sealed with rubber plug)
Operating temperature	-20 to +50 °C



The probe inputs are not isolated from one another.
Take this into account when using probes with non-isolated thermocouple.

Saveris Pt/PtD radio probe

Radio probe with an external Pt100 probe connection



Characteristic	Values
Probe type	Pt100
Measuring range	-200 to +600 °C
Accuracy	±0.1 °C (0 to +60 °C) ±0.2 °C (-100 to +200 °C) ±0.5 °C (rest of measuring range) at 25 °C
Resolution	0.01 °C
Connection	1 Pt100 via mini-DIN socket
Protection class	IP68 (with probe inserted or port sealed with rubber plug)
Operating temperature	-20 to +50 °C

Saveris H3/H3D radio probe

Humidity radio probe



Characteristic	Values	
Probe type	NTC	Humidity sensor
Measuring range	-20 to +50 °C	0 to 100 % RH
Accuracy	±0.5 °C	±3 % RH
Resolution	0.1 °C/0.1 °Ctd	0.1 %
Protection class	IP 42	
Operating temperature	-20 to +50 °C	

7.5.3. Saveris router



Characteristic	Values
Housing dimensions (W x H x D)	80 x 100 x 38 mm
Length of antenna	81 mm
Weight	approx. 180 g
Power supply	6.3 V DC mains unit; alternatively via 24 V AC/DC plug-in/screw terminals, power consumption < 5 W
Housing material	Plastic
Protection class	IP54
Operating temperature	-20 to +50 °C
Storage temperature	-40 to +85 °C
Interfaces	Radio
Number of radio probes	max. 5
Wall bracket	included

7.5.4. Saveris Ethernet probes

The technical data listed in the following table are valid for all Saveris Ethernet probes. Special data for the individual probe types can be found in the following sections.

Characteristic	Values
Housing dimensions (W x H x D)	85 x 100 x 38 mm
Power supply	6.3 V DC mains unit; alternatively via 24 V AC/DC plug-in/screw terminals
Buffer battery	Li-ion
Housing material	Plastic
Protection class	IP54
Meas. cycle	2 sec - 24 h
Operating temperature	-20 to +70 °C
Storage temperature	-40 to +85 °C
Display (optional)	2-line LCD; 7 segments with symbols
Wall bracket	included

Saveris PtE Ethernet probe

Ethernet probe with external Pt100 probe connection



Characteristic	Values
Probe type	Pt100
Measuring range	-200 to +600 °C
Accuracy	±0.1 °C (0 to +60 °C) ±0.2 °C (-100 to +200 °C) ±0.5 °C (rest of measuring range) at 25 °C
Resolution	0.01 °C
Connection	Mini-DIN service interface is accessible externally 1 Pt100 via mini-DIN socket
Weight	approx. 220 g

Saveris T4E Ethernet probe

4-channel Ethernet probe with 4 external TC probe connections



Characteristic	Values
Probe type	TC
Measuring range	
TC type S	0 to +1760 °C
TC type T	-200 to +400 °C
TC type J	-100 to +750 °C
TC type K	-195 to +1350 °C
Accuracy	±0.5 °C or 0.5 % of measured value
Resolution	0.1 °C/TC type S 1 °C
Connection	Mini-DIN service interface is accessible externally 4 TCs via TC socket max. difference in potential 50 V
Weight	approx. 220 g

i The technical data refer to the probe in a stable, stationary operating mode. To receive a stable measurement the probe must be in operation for one to two hours.

i The usage of isolate thermocouples is recommended for supplying the Ethernet probe. Otherwise discrepancies in readings of up to 0.6 °C may occur due to leakage currents.

H2E Ethernet probe

Humidity Ethernet probe, 2 %



Characteristic	Values	
Probe type	Humidity sensor	NTC
Measuring range	0 to 100 % RH*	-20 to +70 °C
Accuracy	±2 % RH < 90 % RH ±3 % RH > 90 % RH	±0.5 °C
Resolution	0.1 %/0.1 °Ctd	0.1 %
Connection	Mini-DIN service interface is accessible externally	
Weight	approx. 230 g	

* not for continuous high-humidity applications

H1E Ethernet probes

Humidity Ethernet probe, 1 %



Characteristic	Values	
Probe type	Humidity sensor	NTC
Measuring range	0 to 100 % RH*	-20 to +70 °C
Accuracy	$\pm(1 \% \text{ RH} + 0.7 \% \text{ of meas. value})$ < 90 % RH at 25 °C $\pm(1.4 \% \text{ RH} + 0.7 \% \text{ of meas. value})$ > 90 % RH at 25 °C	$\pm 0.2 \text{ }^\circ\text{C}$ (0 to +30 °C) $\pm 0.5 \text{ }^\circ\text{C}$ (rest of measuring range)
Resolution	0.1 %/0.1 °Ctd	0.1 %
Connection	Mini-DIN service interface is accessible externally	
Weight	approx. 230 g	

* not for continuous high-humidity applications

7.5.5. Saveris converter



Characteristic	Values
Housing dimensions (W x H x D)	80 x 100 x 35 mm
Length of antenna	81 mm
Weight	approx. 190 g
Power supply	6.3 V DC mains unit; alternatively via 24 V AC/DC plug-in/screw terminals, power consumption < 2 W
Housing material	Plastic
Protection class	IP54
Operating temperature	-20 to +50 °C
Storage temperature	-40 to +85 °C
Interfaces	Radio, Ethernet
Number of radio probes	max. 15
Wall bracket	included

8 Tips and assistance

8.1. Questions and answers

1. **After changing the batteries, I no longer receive values from my probe and the LED on the front does not light up.**
 - Check whether the housing cover is bolted down correctly.
 - Check the batteries with an appropriate measuring instrument and if necessary exchange these if they are not OK.
 - Briefly press the button on the rear of the probe and the LED must show the radio quality; see "

Meaning of the LED displays at the probes".

If this is not the case and the probe flashes red, the configuration of the probe is faulty. Reconnect the probe and reconfigure it.

2. Only the battery symbol and the symbol of the radio quality appear on the display of my probe.

The probe has not yet received a valid configuration.

Connect the probe to the base and execute the startup assistant.

3. Despite the proper connection of a probe, I do not receive readings after the probe was placed at its location.

Press the button on the rear of the probe. If the LED on the front flashes red, the probe is outside of the radio range.

- Install a router in the system and assign the probe to the router using the startup assistant (see "Integrating Saveris router (optional)") or
- Place the probe at a suitable location so that the probe is within the radio range.

4. A probe is too far away from the Saveris base. Even integrating a router was unsuccessful. Can I connect multiple routers in series to extend the radio range?

No, connecting multiple routers in series is not possible. To bridge the transmission path, you have the option of using a router and a converter and creating the connection from the converter to the Saveris base using an Ethernet cable.

5. Can the data transfer from the radio probes to the base be influenced by other instruments communicating by radio?

A disruption of the transfer by other radio subscribers that operate with the same radio frequency as the Saveris system is not impossible. However, routines were implemented in the Saveris system that prevent the loss of data. The data are transferred via an intelligent protocol that can head off faults or only transfers data when the radio frequency is free.

6. What must I take into account when placing the individual components?

The local conditions must be taken into account for the placement. The radio is obstructed by objects such as thick walls made of reinforced concrete, metal doors etc.

You can seek out suitable locations using a radio probe. Briefly press the button on the rear of the probe to show the current radio quality by means of the LED; see "

Meaning of the LED displays at the probes".

If you are outside of the range the LED lights up red. You can then create or optimize the transmission path with a router connected between the Saveris base and the probe.

Rough advanced planning using a floor plan of the building has proved itself worthwhile.

7. The Saveris base shows an incorrect date and an incorrect time. How can this be set?

You can synchronize the date and time when starting up the hardware or within the Saveris software, meaning applying the date and time from the operating system of the computer; see "Starting up hardware" and "General settings for the Saveris base".

The changeover between winter/summer time is made automatically.

8. How long may the USB cable between the base and the computer be?

The USB cable for connecting the Saveris base to the computer may be a maximum of 5 m.

9. Why is a bidirectional radio used with testo Saveris?

Only by using a bidirectional radio (i.e. probes and Saveris base are both transmitters and receivers) is it possible to ensure that the data communication between the participants can be performed without loss of data.

10. After the configuration of the probes and the base the software was started, but no probes or readings are shown.

For the initial start of the Saveris software after starting up the system, it takes approx. 15 to 60 minutes until the first readings from the system are entered in the database. The probes and their readings are only visible in the software when the data are present in the database.

11. The base was connected to a USB port of the computer but is not automatically recognized by this.

Download the current USB driver for the Saveris system from the Testo website (www.testo.com/saveris) and install the new driver.

The Saveris base may not be connected to the computer during the installation of the driver. After restarting the

computer, the Saveris base can be reconnected with the computer and should then be automatically recognized.

12. How can I change the language for the user guidance at the Saveris base?

Disconnect the mains plug of the Saveris base and wait about one minute. After connecting the mains plug, the base shows the language selection. Select the new language and press **[Enter]** at the Saveris base. The base starts up with the new language setting.

13. After commissioning a probe the reading is outside of the limit values, but no alarm was triggered by the Saveris base.

The readings that are recorded from the probe must have already been within the limit values for a breach of the limit values to be recognized by the Saveris base.

8.2. Accessories and spare parts

Description	Article no.
Spare batteries for radio probes (4 x AA alkali manganese mignon batteries)	0515 0414
Spare batteries for radio probes for operation below -10 °C (Energyzer L91 Photo lithium)	0515 0572
Mains unit 100 to 200 V DC; for Saveris base, router, converter, Ethernet probe	0554 1096
Mains unit (top-hat rail mounting) 90 to 240 VAC/24 VDC (2.5 A)	0554 1749
Mains unit (desktop instrument) 90 to 240 VAC/24 VDC (350 mA)	0554 1745
Antenna with magnetic base with 3 m cable for base with GSM module	0554 0524
Quad-band antenna	0554 0525
Alarm module (optical & acoustic), can be connected to alarm relay, Ø 700 x 164 mm, 24 V AC/DC/320 mA, steady on: red, steady tone: buzzer approx. 2.4 kHz	0629 6666

Description	Article no.
testo Saveris SBE software, incl. USB cable for connection of the Saveris base to the computer	0572 0180
testo Saveris PROF software, incl. USB cable for connection of the Saveris base to the computer	0572 0181
Saveris adjustment software	0572 0183
Measurement data view via Internet	on request
ISO temperature calibration certificate; temperature data logger; calibration points -18 °C, 0 °C, +60 °C; per channel/instrument	0520 0151
DKD temperature calibration certificate; temperature data logger; calibration points -20 °C, 0 °C, +60 °C; per channel/instrument	0520 0261
ISO humidity calibration certificate; humidity data logger; calibration points 11.3 % RH and 75.3 % RH at +25 °C; per channel/instrument	0520 0076
DKD humidity calibration certificate; humidity data logger; calibration points 11.3 % RH and 75.3 % RH at +25 °C; per channel/instrument	0520 0246



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Handling codes :

Document code:

0970 4020 en 01



Compliance Statement

USA

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.

Usually this is followed by the following 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.

Kanada

"Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device."

Usually this is followed by the following RSS caution:

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