Measurement data monitoring system: testo Saveris

Software:
testo Saveris Professional Edition V4.6 SP1

Instruction manual

Contents

1 About this document

- The instruction manual is an integral part of the testo Saveris measurement data monitoring system.
- Keep this documentation to hand so that you can refer to it when necessary.
- Please read this instruction manual through carefully and familiarize yourself with the product before putting it to use.
- Hand this instruction manual on to any subsequent users of the product.
- Pay particular attention to the safety instructions and warning advice in order to prevent injury and damage to the product.
- Please read this instruction manual through carefully and familiarize yourself with the product before putting it to use.

1.1 Symbols and writing standards

Display	Explanation
	Note: basic or further information.
1. ... 2. ...	Action: several steps, the sequence must be followed.
• …	List
> ...	Action: one step or optional step.
- ...	Result of an action.
✓ ...	Requirement
1 ... 2 ...	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

1.2 Warning notices

Always pay attention to any information marked with the following warning notices along with warning pictograms. Implement the specified precautionary measures!

⚠ DANGER

Life-threatening danger!

⚠ WARNING

Indicates possible serious injuries.

⚠ CAUTION

Indicates possible minor injuries.

ATTENTION

Indicates possible damage to equipment.

2 Safety and disposal

2.1 Safety

- Always operate the product properly, for its intended purpose and within the parameters specified in the technical data. Do not use any force.
- Never use the Saveris probes to measure on or near live parts.
- Only carry out maintenance and repair work on the components of the testo Saveris measurement data monitoring system that are described in the documentation. Follow the prescribed steps exactly when doing the work. Use only original spare parts from Testo.
- The use of the wireless module is subject to the regulations and stipulations of the respective country of use and, in each case, the module may only be used in countries for which a country certification has been granted. The user and every owner undertake to adhere to these regulations and prerequisites for use and acknowledge that the re-sale, export, import, etc. in particular in, to or from countries without wireless permits, is their responsibility.
- When selecting the mounting location, ensure that the permissible ambient and storage temperatures are adhered to.

At temperatures below 5°C, the (rechargeable) batteries will not charge; there is only a limited possibility of reliable system operation in this temperature range.

- Do not use the product if there are signs of damage to the housing.
- Do not commission the instrument if there are signs of damage on the housing.
- Dangers may also arise from objects being measured or the measuring environment. Always comply with the locally valid safety regulations when carrying out measurements.
- Do not store the product together with solvents.

2.2 Batteries

The batteries in the Saveris base, the Saveris Ethernet data loggers and the Saveris analog couplers are wearing parts which have to be replaced after approx. 2 years. If batteries are faulty, it is not possible to guarantee full operability of the GSM module. In the event of a power failure, data loss cannot be ruled out for all components. When a component's batteries are no longer fully functional, it triggers a **Defective battery** system alarm.

The batteries (order no. 0515 5021) should then be replaced immediately to ensure full functionality and data security.

3 Protecting the environment

- Dispose of faulty and spent batteries in accordance with the valid legal specifications.
- At the end of its useful life, deliver the product to the separate collection point for electric and electronic devices (observe local regulations) or return the product to Testo for disposal.
-  WEEE Reg. No. DE 75334352

4 Support

You can find up-to-date information on products, downloads and links to contact addresses for support queries on the Testo website at: www.testo.com.

5 Using the system

5.1 Fields of application

The testo Saveris measurement data monitoring system can be used anywhere where temperature and humidity-sensitive products are produced, stored or transported; for example in the food industry (cold rooms, deep freeze rooms and refrigerated/deep freeze transporters), in smaller food production companies, such as bakeries and butcher’s shops, or in the pharmaceutical industry (temperature-controlled cabinets, storage and transportation of drugs).

But the testo Saveris measurement data monitoring system can also be used in other industries for monitoring IAQ in buildings, as well as for quality assurance in store rooms for products in every phase of production.

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

The Saveris base with the SMS module may not be operated in environments where, for example, use of a mobile phone is prohibited.

Mobile monitoring is only available for countries with appropriate radio authorization of 868 MHz.

5.2 How it works

5.2.1 Measurement data monitoring for monitoring in the stationary area

The testo Saveris measurement data monitoring system enables ambient or process data for temperature and humidity in closed areas (production plants, warehouses) to be measured and saved. The values measured by the probes in the system are transmitted to the Saveris base, either wirelessly or via cable (Ethernet), by data loggers, which are also used as a buffer memory for the measurement data, and the values are then saved in the base. A connected computer transfers the measurement data of the Saveris base to permanent archiving in a database.

5.2.2 Measurement data monitoring for transport monitoring with radio data loggers (“mobile monitoring”)

The monitoring of ambient parameters during the transport of sensitive goods is done by radio data loggers which are fitted in the transport container (e.g. in a truck). If the transport container returns to the base, the readings recorded by the data logger are transmitted via extender (or also directly) to the Saveris base as soon as there is an adequate radio link. The Saveris cockpit unit can be used in the truck for direct checking of readings. If radio data loggers are registered in mobile zones, all the radio data loggers are in one radio cell on the same channel. The Saveris extenders work as external antennas of the Saveris base with a spatial distribution. All of these radio data loggers are registered on the Saveris base.

5.3 Exclusion of liability

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

The design of the testo Saveris measurement data monitoring system is not intended for the purpose of undertaking control and regulation tasks. In particular, the alarms are not to be seen as so-called critical alarms which are able to avert dangers to life and limb or damage to property.

Liability on the part of Testo SE & Co. KGaA for damages from this type of application is excluded.

6 Product description

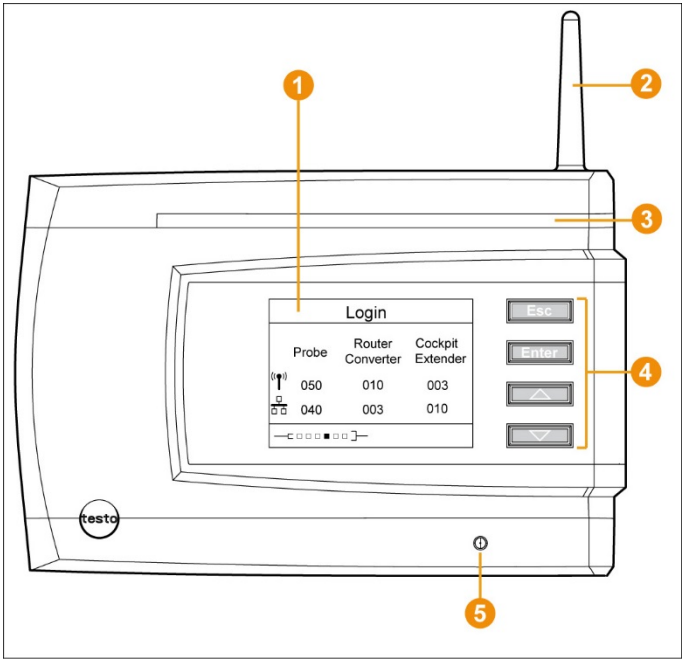
6.1 System overview

Component	Function
testo Saveris base	Readings are transmitted wirelessly or via an Ethernet connection to the Saveris base which then saves them. The data are then called up by a computer from the Saveris base and saved in a database.
Probes	Probes measure temperature, humidity and other parameters and supply their measurement data to data loggers. In the testo Saveris measurement data monitoring system, probes are either structurally integrated into the data loggers or can be mounted on these externally.
Radio data loggers for testo Saveris	Saveris radio data loggers record readings from probes and transmit these wirelessly via radio link.
Ethernet data loggers for testo Saveris	Saveris Ethernet data loggers record readings from probes and transmit these via Ethernet connection.

Component	Function
Wireless analog couplers Ethernet analog couplers and transmitters for testo Saveris	Saveris analog couplers enable the integration of additional measurement parameters into the testo Saveris measurement data monitoring system by incorporating all transmitters with standardized current/voltage interfaces. Transmitters record readings from data loggers and transmit these via an optional additional component (Ethernet module) by Ethernet connection.
testo Saveris router	The radio link can be improved or extended in poor structural conditions by using a Saveris router. Several Saveris routers are possible in the testo Saveris measurement data monitoring system. At the same time, the series connection of up to 3 routers (V 2.0 offers optimum flexibility in terms of wireless range.
testo Saveris converter	By connecting a Saveris converter to an Ethernet jack, the signal of a Saveris radio data logger can be converted into an Ethernet signal. This combines the flexible connection of the Saveris radio data logger with use of the existing Ethernet, even over long transmission paths.
testo Saveris extender	By connecting a Saveris extender to an Ethernet jack, the signal of a Saveris radio data logger, whether being used in a stationary or mobile mode, can be converted into an Ethernet signal. This combines the flexible connection of the Saveris radio data logger with use of the existing Ethernet, even over long transmission paths.
testo Saveris cockpit unit	The testo Saveris cockpit unit permits reading control of Saveris radio data loggers during transport operations. The testo Saveris cockpit unit enables drivers of the transport vehicles to keep an eye on the measurement data at all times and they are alerted if there are limit value violations.

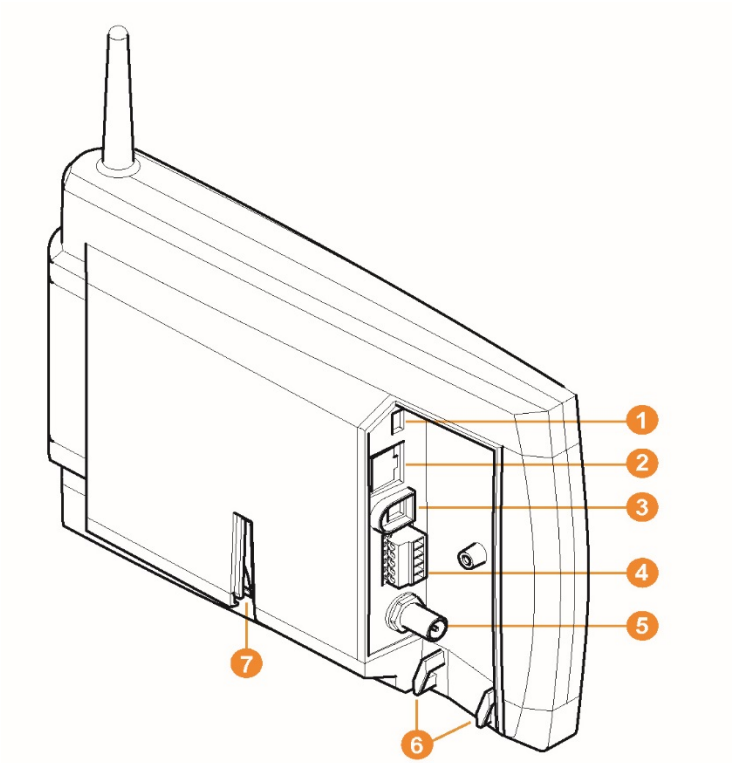
6.2 testo Saveris base

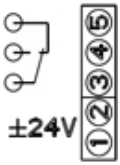
6.2.1 Front



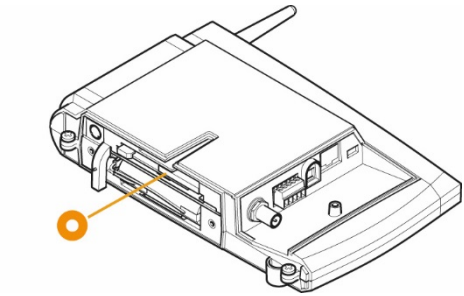
1	Display for the visualization of alarms and user guidance
2	Antenna
3	Warning LED
4	Keypad for operation of the Saveris base
5	LED for status display

6.2.2 Rear



1	USB cable connection
2	Network cable connection
3	Power supply connection via mains plug
4	Power supply connection via 24 V AC/DC and alarm relay 
5	Connection for external GSM antenna
6	Eyelets for strain relief
7	Guide for stand or wall bracket

6.2.3 Underside



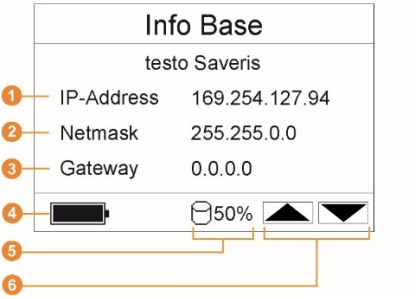
* Insertion slot for the SIM card

6.2.4 Control keys

Key	Explanation
[Esc]	Switches from the Login menu to the Info System menu. In the Info Base menu, briefly press [Esc] twice: shuts down the Saveris base press and hold down [Esc]: starts up the Saveris base
[Enter]	Starts the login status for the Saveris radio data loggers in the Info System menu.
[▲], [▼]	Navigation keys for changing the menus.

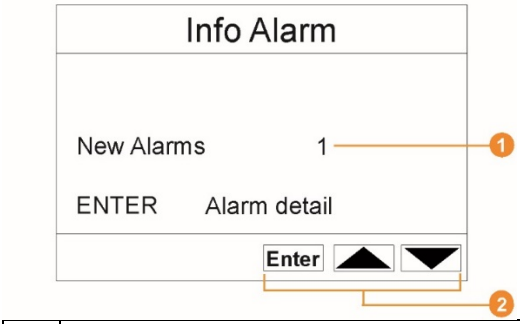
6.2.5 Displays

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** which is saved in the Saveris base. The netmask is the basic address of the network which the Saveris base is integrated into.
3	**Gateway** which 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 other protocol or data format is then performed by the gateway in each case.
4	Indicator for interrupted power supply. Indicator flashes when the Saveris base is being operated by batteries and the power supply has been interrupted.
5	Indicator that there is free capacity in the Saveris base's data memory.
6	Keys that are assigned functions in this menu.

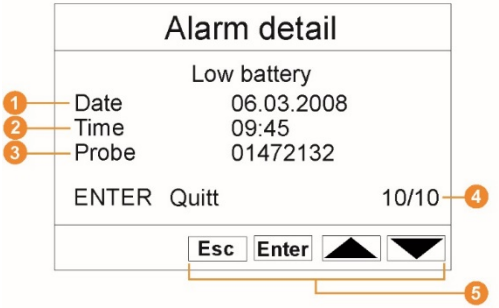
Info Alarm menu



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

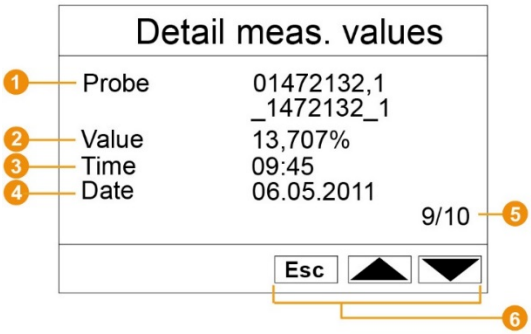
New alarms have to be checked and acknowledged at regular intervals. A large number (>100) of unacknowledged alarms will impair the system performance. The system automatically acknowledges unacknowledged alarms once these number 200 or more.

Alarm detail menu



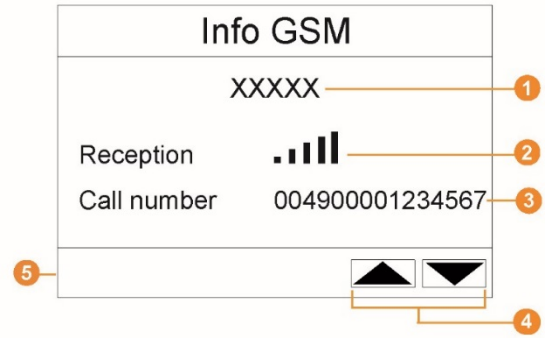
1	**Date** on which the alarm was triggered.
2	**Time** at which the alarm was triggered.
3	**Probe** for which the alarm was triggered.
4	Alarm number and total number of alarms.
5	Keys that are assigned functions in this menu.

Detail meas. values menu



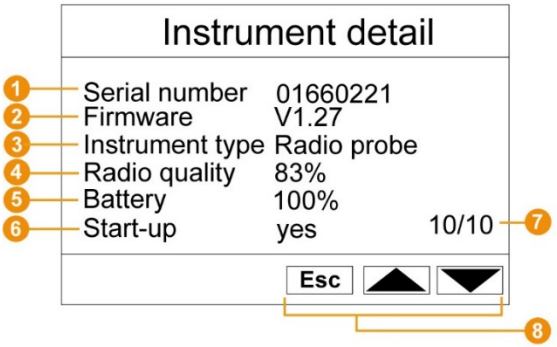
1	**Probe**: Radio data logger and channel for which the reading was transferred. The first number specifies the serial number with the channel and the second line the channel name in the system.
2	**Value**: Reading with associated unit.
3	**Time**: Time at which the reading was transferred.
4	**Date**: Date on which the reading was transferred.
5	Reading number and total number of readings.
6	Keys that are assigned functions in this menu.

Info GSM menu



1	Name of network operator.
2	**Reception**: Display of the reception quality.
3	**Call number**: Telephone number which is saved on the SIM card.
4	Keys that are assigned functions in this menu.
5	Version number of the internal GSM module.

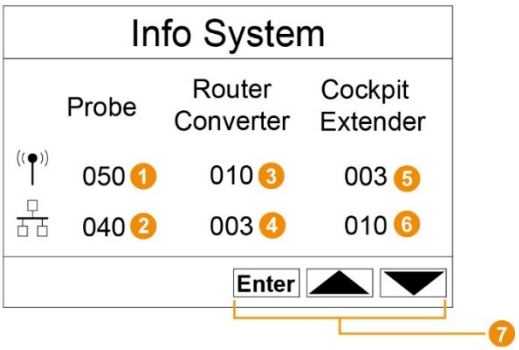
Instrument detail menu



1	**Serial number**: Serial number of the registered instrument.
2	**Firmware**: Firmware version of the registered instrument.
3	**Instrument type**: Type designation of the registered instrument.
4	**Radio quality**: Radio quality of the registered instrument (does not apply to Saveris Ethernet data loggers and Saveris extender).
5	**Battery**: Battery status of the instrument (does not apply to Saveris extender, Saveris converter and Saveris cockpit unit).

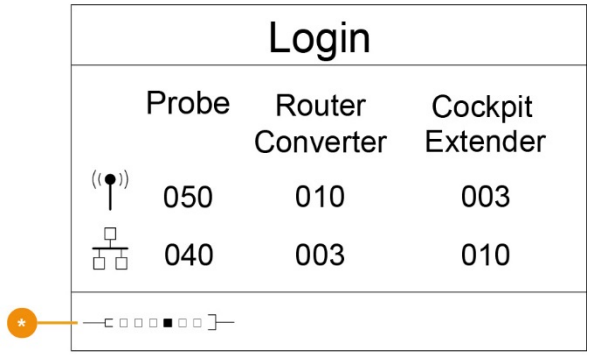
6	**Start-up**: Start-up indicates whether the instrument has been configured by the startup wizard.
7	Number of registered instruments.
8	Keys that are assigned functions in this menu.

Info System menu



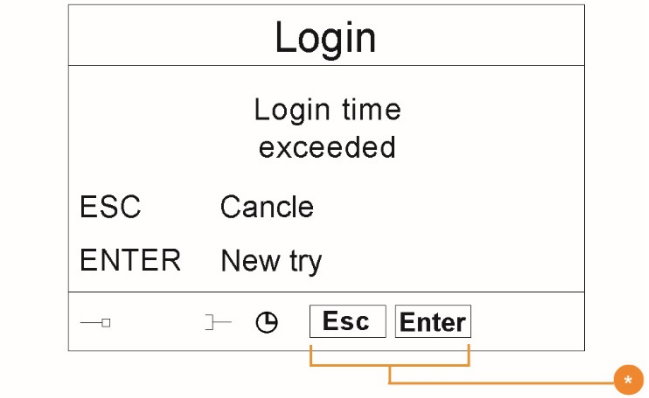
1	**Probe**: Number of registered Saveris radio data loggers.
2	**Probe**: Number of registered Saveris Ethernet data loggers.
3	**Router Converter**: Number of registered Saveris routers.
4	**Router Converter**: Number of registered Saveris converters.
5	**Cockpit Extender**: Number of registered Saveris cockpit units.
6	**Cockpit Extender**: Number of registered Saveris extenders.
7	Keys that are assigned functions in this menu.

Login 1/2 (Login) **menu**



*	Status display when registering data loggers.

Login 2/2 (Login) **menu**

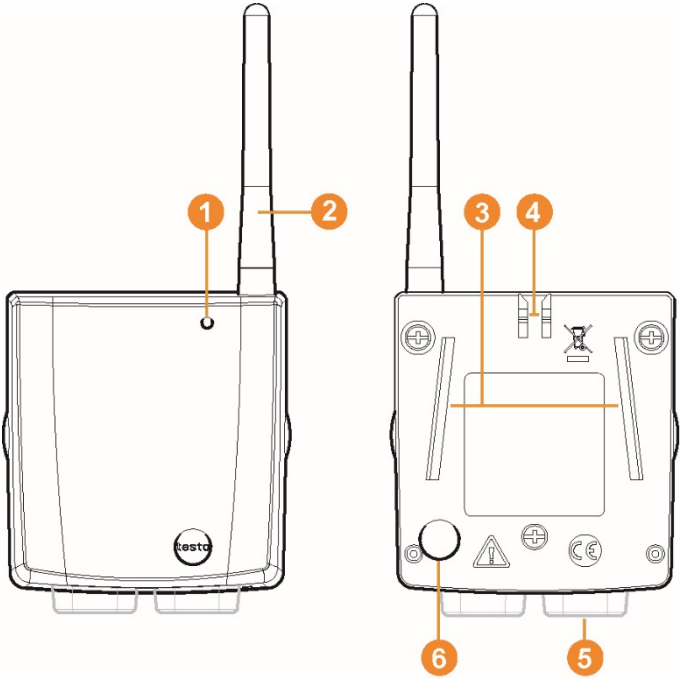


*	Keys that are assigned functions in this menu.
	Login time exceeded
	ESC Cancel
	ENTER New try

This display is shown if no registration signal has been received from a data logger within approx. 30 seconds.

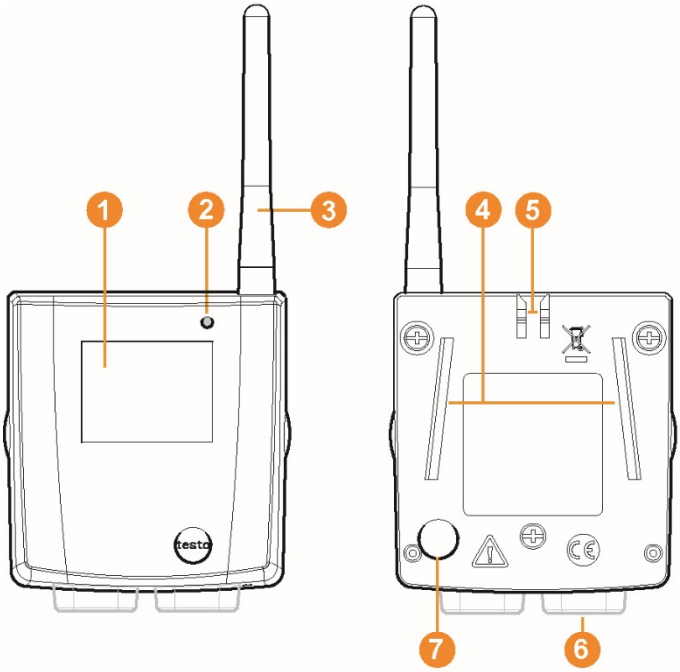
6.3 Radio data logger for testo Saveris

6.3.1 Saveris radio data logger without display



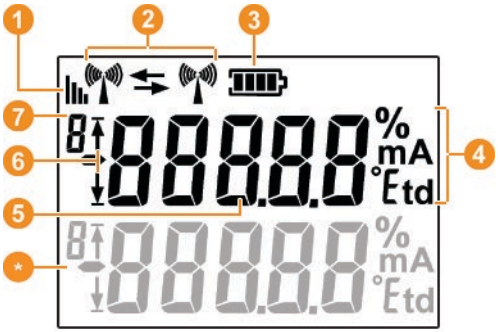
1	LED for status display.
2	Antenna for radio transmission of measurement data to the Saveris base.
3	Guide rails for the wall bracket.
4	Catch for the wall bracket.
5	Ports, depending on the type.
6	Connect key for registering the probe on the Saveris base and for a status request during operation.

6.3.2 Saveris radio data logger with display



1	Display for showing readings, battery and connection status, along with the field status 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 the type.
7	Connect key for registering the Saveris data logger on the Saveris base and for a status request during operation.

6.3.2.1 Displays



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

6.3.3 testo Saveris radio data logger LED status displays

Registering on the Saveris base

- Hold down the connect key on the rear of the data logger until the LED begins to flash orange.

Display	Explanation
Flashing orange	Attempt to establish the connection to the Saveris base.
Lit up green	Registration on the Saveris base was successful.
Lit up red	Registration on the Saveris base failed.

Status displays during operation

- Briefly press the connect key on the rear of the data logger once and the LED shows the status of the connection to the Saveris base.

Display	Explanation
Flashing 3 x green	There is a very good connection to the Saveris base.
Flashing 2 x green	There is a good connection to the Saveris base.
Flashing 1 x green	There is a borderline connection to the Saveris base.
Flashing 3 x red	Registration on the Saveris base failed.

6.4 testo Saveris 2 H2

6.4.1 Short description

Saveris WLAN data logger for WLAN integration. The product version with order number 0572 2035 01 is compatible with testo Saveris, but not with the testo Saveris 2 data logger system.

6.4.2 Display and control elements

6.4.2.1 Overview

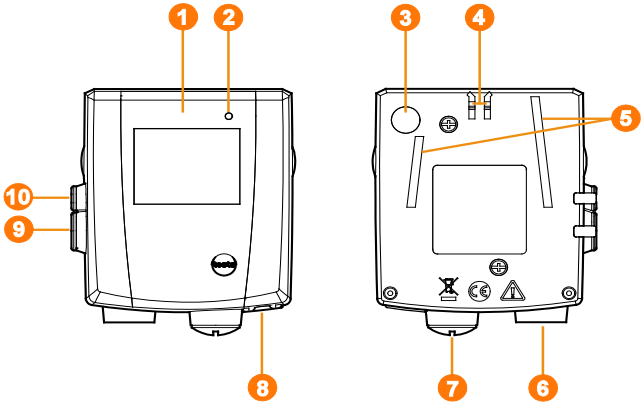
1 Display
2 Status LED:
- flashes red for an alarm,
- flashes green for communication
3 Control key, to start data transfer manually
4 Battery compartment (rear)
5 USB and probe ports (bottom, instrument-specific)

6.4.2.2 Display icons

Symbol	Description
	Battery capacity 75% to 100%
	Battery capacity 50% to 74%
	Battery capacity 25% to 49%
	Battery capacity 5% to 24%, icon flashes: Battery capacity < 5%
	External power supply (via USB port)
	WLAN signal strength 100%
	WLAN signal strength 75%
	WLAN signal strength 50%
	WLAN signal strength 25%
	There is a data connection to the Saveris base, icon flashes: data connection to testo Saveris is being established.

Symbol	Description
⚠	Alarm message
1	Measurement channel 1
2	Measurement channel 2
↑	Alarm status: upper limit value overshot
↓	Alarm status: lower limit value undershot

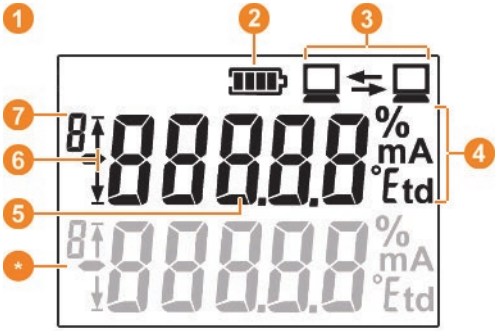
6.5 Ethernet data logger for testo Saveris



1	Display for showing readings and transmission information.
2	LED for status display.
3	Connect key.
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, M1.6 x 1.5 cable coupling.
8	Input for Ethernet interface
9	Input for service interface

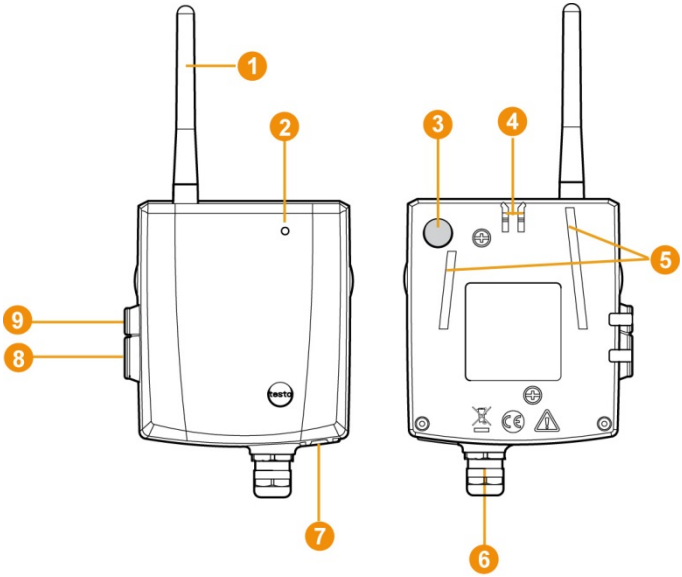
10	Input for power supply via mains unit.

Displays



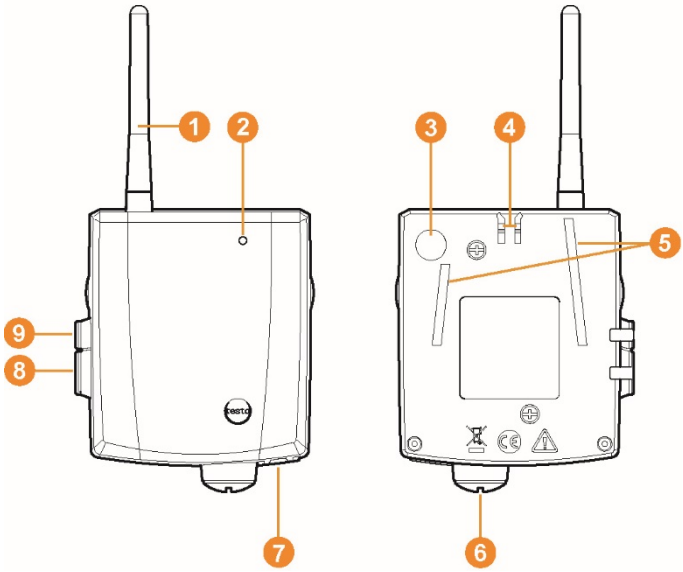
1	-
2	Status of batteries
3	Indicator as to whether a communication with the Saveris base is being carried out.
4	Unit of the reading: - % for humidity measurement - mA for current measurement - °Ctd or °Ftd for dewpoint measurement.
5	Reading.
6	Indication as to whether the reading has overshot the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

6.6 Saveris wireless analog coupler



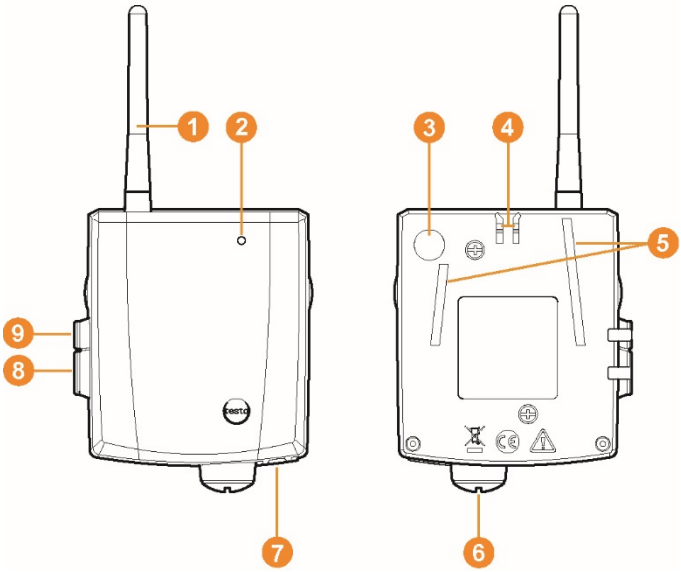
1	Only with wireless analog coupler U1: antenna for sending the measurement data.
2	LED for status display.
3	Connect key for registering the wireless analog coupler on the Saveris base and for a status request during operation.
4	Catch for the wall bracket.
5	Guide rails for the wall bracket.
6	Input for external 24 V AC/DC power supply, M1.6 x 1.5 cable coupling.
7	Only with Saveris Ethernet analog coupler U1E: Input for connecting the network cable.
8	Input for service interface
9	Input for power supply via mains unit

6.7 testo Saveris router



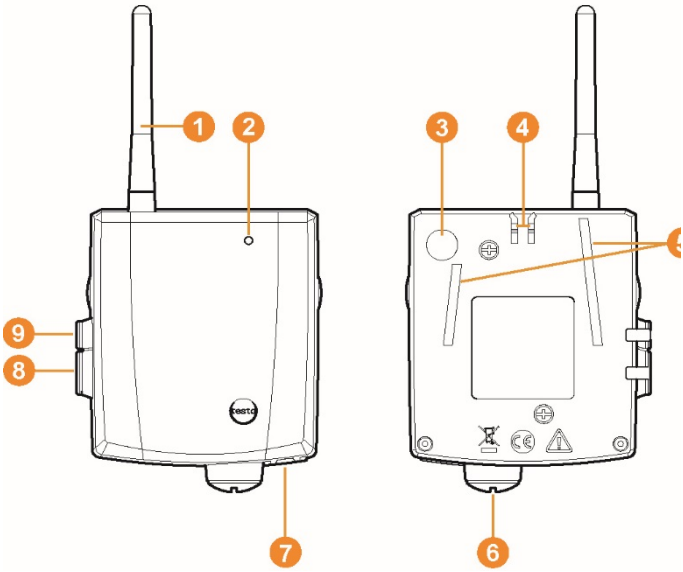
1	Antenna for radio transmission of the measurement data.
2	LED for status display.
3	Connect key for registering the Saveris router on the Saveris base and for a status request during operation.
4	Catch for the wall bracket.
5	Guide rails for the wall bracket.
6	Input for external 24 V AC/DC power supply, M1.6 x 1.5 cable coupling.
7	-
8	Input for service interface.
9	Input for power supply via mains unit

6.8 testo Saveris converter



1	Antenna for radio transmission of the measurement data.
2	LED for status display.
3	Connect key for registering the Saveris router on 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, M1.6 x 1.5 cable coupling.
7	Input for connecting the network cable (optional power supply via PoE).
8	Input for service interface
9	Input for power supply via mains unit

6.9 testo Saveris extender[1]

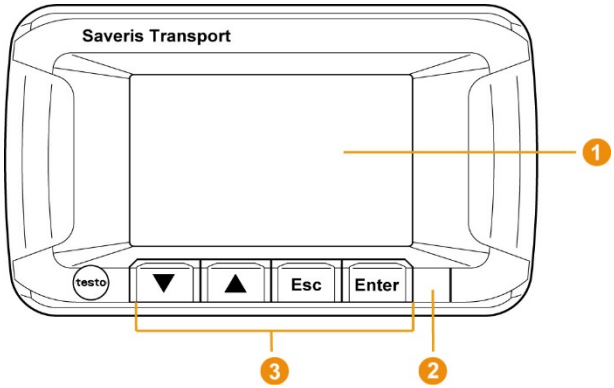


1	Antenna for radio transmission of the measurement data.
2	LED for status display.
3	Connect key to query the status during operation.
4	Catch for the wall bracket.
5	Guide rails for the wall bracket.
6	Input for external 24 V AC/DC power supply, M1.6 x 1.5 cable coupling.
7	Input for connecting the network cable (optional power supply via PoE).
8	Input for service interface
9	Input for power supply via mains unit

[1] Component is only permitted for mobile monitoring in all countries with a radio frequency of 868 MHz. Saveris extender cannot be operated via VPN.

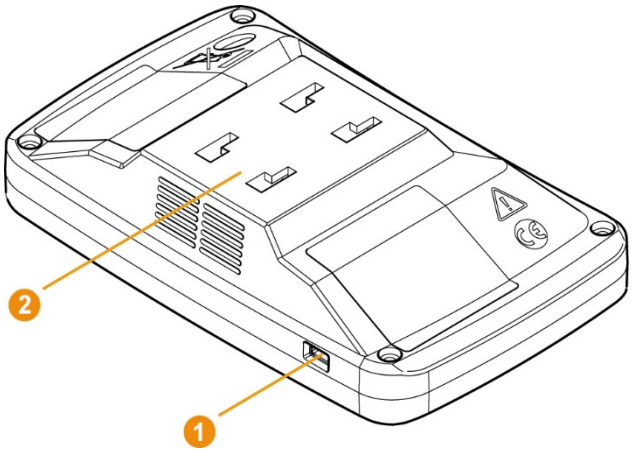
6.10 testo Saveris cockpit unit[2]

6.10.1 Front



1	Display for the visualization of alarms and user guidance
2	Warning LED and PC interface
3	Keypad for operating the Saveris cockpit unit

6.10.2 Rear



1	Mini USB cable connection
2	Guide for bracket

[2] Component is only permitted for mobile monitoring in all countries with a radio frequency of 868 MHz.

6.10.3 Control keys

Key	Explanation
[Enter]	Hold down **[Enter]** for 3 seconds: Switch on the Saveris cockpit unit. Starts the login status for the Saveris cockpit unit in the **Login** menu. Switch to the next menu level down. Confirm selected functions.
[Esc]	Saveris cockpit unit is not registered on the Saveris base: In the **Select language** menu, press **[Esc]** briefly once: Shut down the Saveris cockpit unit. Switch to the next menu level up. Saveris cockpit unit is registered on the Saveris base: Hold down **[Esc]** for 3 seconds: Shut down the Saveris cockpit unit.
[▲], [▼]	Navigation keys to switch menus or to select an option.

6.10.4 Displays

Icons

The following icons are displayed at the top right of all views

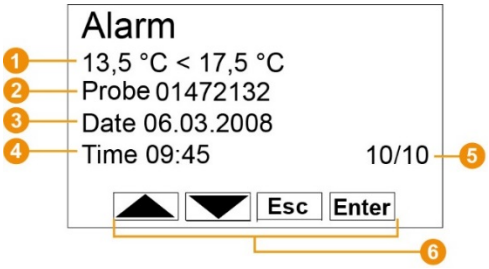
Display	Explanation
	Tour started.
	Data transfer is running between the following components: - Saveris cockpit unit and Saveris extender/Saveris base - Saveris data logger in the currently selected mobile zone and Saveris extender/Saveris base
!	Feedback informing the driver that a Saveris data logger of the selected tour contains measurement data that have not yet been transferred to the Saveris base. The symbol only appears after a second measuring cycle or 30 minutes.

Device settings menu

Sub-menus:

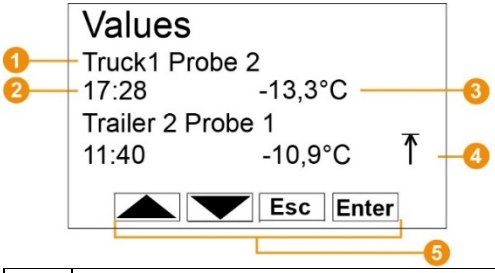
- Day/night settings
- Illumination
- Reading display settings
- Factory reset

Alarm menu



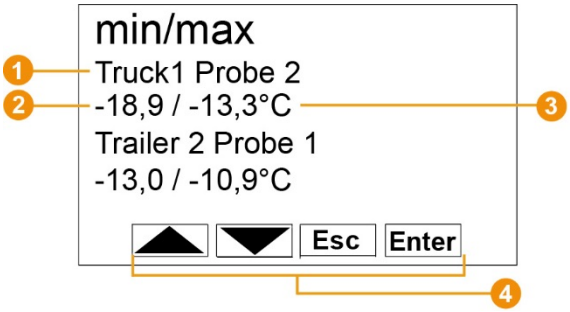
1	Description of why an alarm has been triggered.
2	**Channel name (Probe)**: Data logger which the alarm was triggered for.
3	**Date**: Date on which the alarm was triggered.
4	**Time**: Time at which the alarm was triggered.
5	Alarm number and total number of alarms.
6	Keys that are assigned functions in this menu.

Readings menu



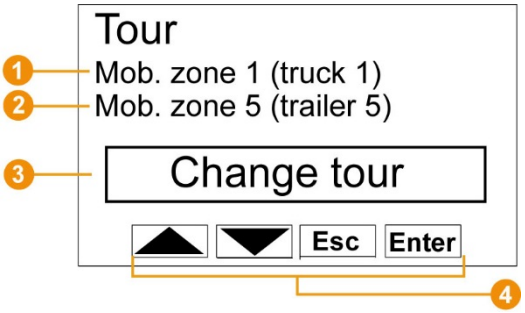
1	Data logger and associated mobile zone for which the reading was transferred.
2	Time at which the reading was transferred / date on which the reading was transferred (shown alternately in this row).
3	Reading with associated unit.
4	Indication of limit values being exceeded.
5	Keys that are assigned functions in this menu.

Min/Max **menu**



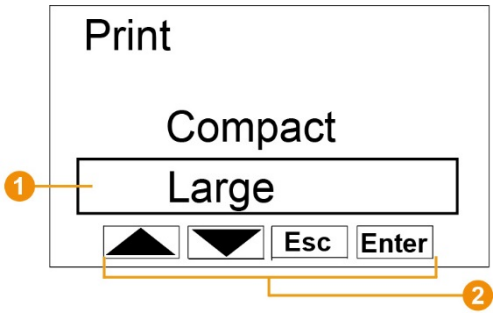
1	Data logger and associated mobile zone for which the reading was transferred.
2	Min. reading with associated unit.
3	Max. reading with associated unit
4	Keys that are assigned functions in this menu.

Tour settings (Tour)**menu**



1	Selection of the first mobile zone (with [▲], [▼]).
2	Selection of the second mobile zone (with [▲], [▼]).
3	Selection of the action: Change tour, Start tour, Stop tour (with [▲], [▼]).
4	Keys that are assigned functions in this menu.

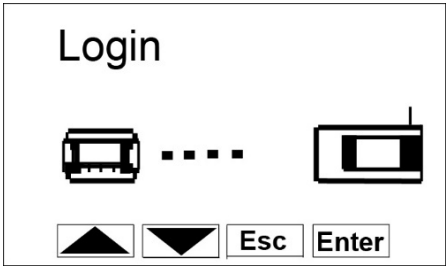
Print menu



1	Selection of the output type.
2	Keys that are assigned functions in this menu.

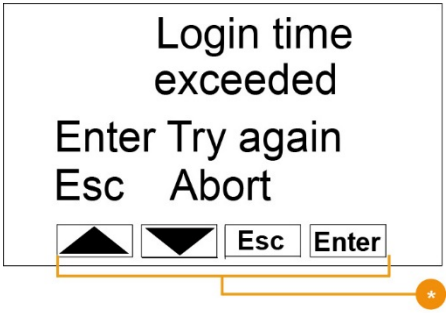
The print data can be sent via infrared to the Testo printer 0554 0549.

Login 1/2 menu



	Status display when the Saveris cockpit unit is registering on the Saveris base.

Login 2/2 menu



Login time exceeded

This display appears when the Saveris cockpit unit was unable to register on the Saveris base within approx. 30 seconds.

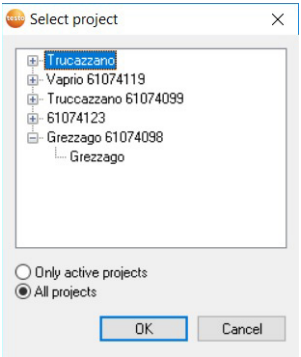
*	Keys that are assigned functions in this menu.
	Login time exceeded
	ESC Cancel
	ENTER New try

7 Using the product

7.1 Starting the Saveris software

1. Select **[Start]** | **All programs** | **Testo** | **Saveris**.

- The **Testo Saveris software** program window is opened with the **Select project** dialogue.



2. Select the

- **Only active project** option, if you need to open the data for an ongoing project
- **All projects** option, if you need to open the data for a finished project.

3. Select the project that is to be opened in the tree structure.
4. Confirm by clicking on **[OK]**.

- The **Testo Saveris software** program window is displayed with the selected data record in the foreground.

It can take a few minutes for the first readings to be displayed.

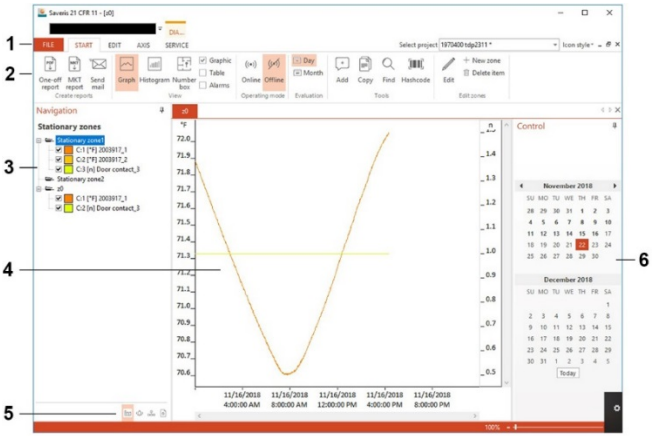
7.2 Use of testo Saveris software for monitoring in the stationary area

7.2.1 General

The following section deals with the functionality of the testo Saveris software which is relevant for measurement data monitoring in closed areas (production plants, warehouses).

7.2.2 User interface

In this section, you will find out how the user interface of the Saveris software is designed.



1	Menu bar	**4**	Display area The readings are represented in the display area as diagrams and tables, as well as the alarms received being listed. The data from several measurements series can be opened and you can switch between them via the tab
2	Menu functions	**5**	Navigation area
3	Data area The data area is used for measurement data management. You can create new groups of readings and copy the data from individual channels within the groups	**6**	Calendar and alarm acknowledgement In offline mode (see section 7.2.3.1 **Start** → **Start** | **Operating mode**), the calendar is displayed which allows fast navigation within the data records. Open data records in the display area by clicking on a certain day in the calendar or by marking a period of several days in the calendar with the mouse button held down. In the online mode, this area shows the alarm acknowledgement where you confirm the alarms received.

7.2.3 Menus and commands

In this section, you find out which menus and commands are available to you and what you can use these commands for.

7.2.3.1 Start

Start | Clipboard menu

Menu functions	Description
Copy	Copies the marked element onto the clipboard.

Start | Edit zones menu

Menu functions	Description
Edit zone	Changes the allocation of the channels to the marked zone.
New zone	Creates a new reading group.
Delete	Deletes the marked element.
Rename	Renames the marked zone.

Start | Create reports menu

Menu functions	Description
One-off report	Define report contents and create one-off report.
MKT report	Generates a retrospective MKT (Mean Kinetic Temperature) calculation as a pdf report for the selected zone. Reporting period, channels and activation energy can be selected.

Start | Operating mode menu

Menu functions	Description
Online	The measurement is performed at the same time, meaning that the data are automatically updated. No time period can be selected using the calendar in the online mode.

Menu functions	Description
Offline	The measurement is performed with a time delay, meaning that the data that are called up are not automatically updated. The data will not be called up by the base until you are actively working in the software, e.g. when changing the view or opening another group.

Start | Analysis menu

Menu functions	Description
Day	Shows the calendar for selecting the day, in order to call up the data for the corresponding day or for multiple days from the database.
Month	Shows the calendar for selecting the month, in order to call up the data of the corresponding month from the database.

Start | View menu

Menu functions	Description
Graphic	Shows the graphic display of the readings if the checkbox is activated.
Table	Shows the tabular display of the readings if the checkbox is activated.
Alarms	Shows the list of the triggered alarms if the checkbox is activated.
Diagram	Option for the graphic display. The readings are shown as a diagram.
Histogram	Option for the graphic display. The current reading is shown as a column.
Monitor	Option for the graphic display. The readings are shown in fields that you can position freely on a wallpaper.

Start | Notes **menu**

Menu functions	Description
Insert	Adds a free comment text to a desired channel at a point in time that can be selected. The note can be seen in the **Graphic** view as a yellow icon and as a red triangle in the table cell in the **Table** view. The entered comment text appears when you move the mouse over it. The comment can be edited and deleted via the context menu.

Start | Hash code menu

Menu functions	Description
Hash code	Display hash values of the readings.

Start | **Search** menu

Menu functions	Description
Search	Opens a search window in the **Data** and **System** navigation areas where you can search through zones and channels using a text word search.

7.2.3.2 Edit

Edit in the diagram view

The **Edit** menu (diagram) is only displayed if the diagram has been activated by clicking on the window.

Edit | Tools menu (diagram)

Menu functions	Description
Zoom in	Draw a rectangle in the diagram window to zoom in on the area covered. This function can also be used during a measurement in online mode. However, this means the extract shown always displays the current value. When you click on **[Original size]**, the diagram is once again displayed in its full size.

Menu functions	Description
Crosshairs	Crosshairs which can be used to follow the curve are shown by clicking on a point of a measurement curve. The date, time, reading number and reading are shown in the process.
Regression curve	Regression curves are an aid to enabling better evaluation of large, complex amounts of data. This involves "outliers" being suppressed and the actual course of the curve being reproduced using a theoretical, mathematical function. The regression curve is shown by clicking on a measurement curve. The regression coefficients are displayed in the status bar.
Limit values	Activate the checkbox to show the limit values in the diagram.

Edit | Font menu

Menu functions	Description
Font	Opens the selection list of available fonts.
Font size	Opens the selection list of available font sizes.

Edit | Curves menu (diagram)

Font	Opens the selection list of available fonts.
C:1, C:n	Legend for the diagram. Clicking on the entry of a curve opens the dialogue for the characteristics of the curve.

Edit in the table view

The **Edit** (table) menu is only displayed if the table has been activated by clicking on the window.

Edit | Formulae menu (table)

Menu functions	Description
New formula	Opens an input window for entering a new calculation formula.

Menu functions	Description
Edit formula	Allows an existing formula to be edited.
Delete formula	Deletes an existing formula.

Edit | Tools menu (table)

Menu functions	Description
Mark	Marks data over a definable time period or definable rows (index range).
Drop marking	Drops the marking.
Add rows (minimum, maximum, mean value)	Inserts a row at the end of the table with the corresponding value for the whole table.  The min, max and mean values cannot be determined via a time period/index range defined in 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 | Font menu

Menu functions	Description
Font	Opens the selection list of available fonts.
Font size	Opens the selection list of available font sizes.

Edit | Search menu (table)

Menu functions	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.

Edit in the monitor view

The **Edit** menu (monitor) is only displayed if the diagram window has been activated by clicking on the window.

Edit | Tools menu (monitor)

Menu functions	Description
Wallpaper	Opens the **Open** dialogue to select the wallpaper for the monitor. The following image formats can be added: .bmp, .jpg, .wmf, .ico and .gif.  The wallpaper must be stored locally on the PC.
Background colour	Opens the **Colour** dialogue to select the background colour for the number field.
Adjust | **Broadband**, **Formatfüllend**	Setting for adapting the wallpaper to the number field: • Broadband: the image size is adjusted to the width and/or height of the window and the image is centred in the window. The ratio of image height to image width is retained in this process. • Filling Frame: the image is expanded so that it fills the entire window.
Rearrange	Resets the arrangement of the number fields.
Edit wallpaper	The wallpaper can be edited with Microsoft® Paint.
Delete wallpaper	Deletes the currently displayed wallpaper.

Edit | Forms menu (monitor)

Menu functions	Description
Insert	Insert arrows and text fields.
Delete	Deletes a selected element.
Colour	Colour setting for a selected element.
Undo	Resets the latest changes.

You can adjust the number fields as required using the right mouse button. You can thus show or hide their frames or their transparency, for example.

You can move the fields and change their size with the left mouse button.

7.2.3.3 Axes

Axes | Axes menu

This menu allows you to configure the value and time axis.

Axes | Value axis menu

Menu function	Description
Division	Input of upper and lower limits and division setting (finer/coarser).

Axes | Time axis menu

Menu function	Description
Division	Division setting (finer/coarser).

7.2.3.4 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 terms of the protocol header, that is in terms of 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.

7.2.3.5 Service

Service | Service menu

This menu can be used to display the service data.

Menu function	Description
Display service data	Creates an *.html file with the service data. The software version number can be found under service data.

7.2.3.6 Select projects

The project data for all projects already created can be displayed using the selection menu without having to restart the software.

7.2.3.7 Style template

Selection of the colour scheme for the program window.

7.2.4 Analyzing measurement series

You can represent measurement series as a diagram or a table.

1 In the **Start** | **View** menu, mark the **Graphic** function if the data are to be displayed graphically and choose the form of display.

-
  - The measurement data can be shown as a **diagram**, **histogram** **number field**.
- Choose **Table** if the data are to be displayed in tabular form.

7.2.4.1 Diagram view

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

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

1 In the calendar, select the day or time period that needs to be evaluated.

2 In the tree structure of the data area, open the group that contains the data to be displayed.

▸ The data for the selected data is displayed.

2.1 If necessary, deactivate channels via the checkboxes for the display.

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

Zooming in

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

1 Click on **Edit** | **Tools** | **Zoom in**.

2 In the diagram, press and hold the left mouse button to highlight the area that needs to be enlarged.

If you click on **[Original size]**, the whole diagram is shown again.

Information on a reading (crosshairs)

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

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

2 In the diagram, click on the point for which the details need to be shown.

▸ A dialogue is displayed with the following information about the reading:

- date on which the reading was recorded,
- time at which the reading was recorded,
- number of the reading and
- reading.

You can move along the curve with the left mouse button pressed and held enabling you to see the detailed information for the readings.

To do this, it is not necessary to follow the course of the curve exactly; the crosshairs do this automatically when you move the mouse to the right or left.

Showing regression curve

Place a 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 needs to be shown.

▸ The regression curve is shown and its regression coefficients are displayed in the status bar.

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

Characteristics of a curve

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

1. Switch to the diagram view of the measurement series whose characteristics need to be displayed.
2. In the **Edit** | **Lines** menu, click on the entry of a curve whose characteristics need to be displayed.

▸ The **Characteristics of (curve name)** dialogue is opened.

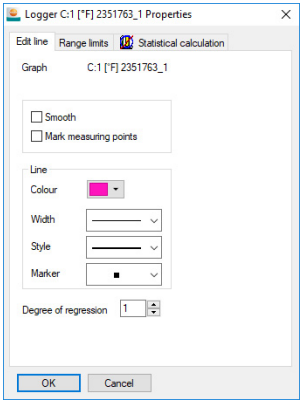
The following tabs are available in the dialogue:

- **Edit line** tab
- **Range limits** tab
- **Statistical computation** tab

Buttons of the dialogue

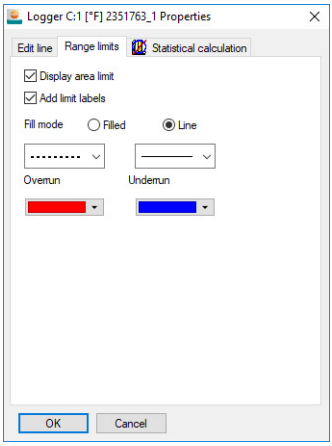
Button	Explanation
[OK]	Applies the changed settings. The dialogue is closed.
[Cancel]	Closes the dialogue without applying the changes.

Edit line **tab**



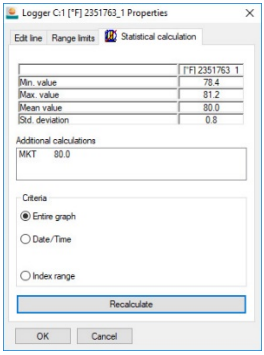
Name	Explanation
Smooth	The measuring points are connected by an interpolated curve; that is, the plot-points on the curve between two measuring points are estimated mathematically.
Mark measuring points	The individual measurement points are represented by a symbol. The value shown exactly corresponds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

Range limits **tab**



Name	Explanation
Display range limits	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 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 shown by horizontal lines.
Selection lists for line fill	Selection lists for line type and line thickness.
Overshot	Colour selection for filling the area above the upper limit value.
Undershot	Colour selection for filling the area below the lower limit value.

Statistical computation **tab**



Name	Explanation
Min. value	Smallest reading of the curve.
Max. value	Largest reading of the curve.
Mean value	Arithmetically-determined average reading.
Std. deviation	Measure of the scattering of the readings around the mean value.
Criteria	Setting display criteria: all, date/time and index range.
Recalculate	Recalculates the curve.

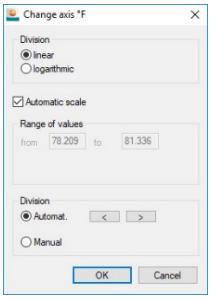
Settings for the axes in the diagram

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

Settings for the value axis

1. Double click on the required value axis in the diagram or use the right mouse button.

▸ The **Change axis [Unit of the readings]** dialogue is displayed.

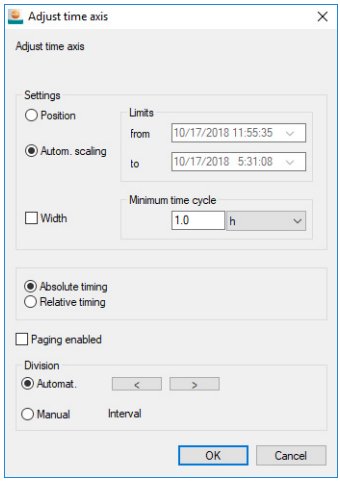


Name	Explanation
Division linear	Specification that the axes are divided in a linear manner.
Division logarithmic	Specification that the axes are divided logarithmically, meaning the division increments represent powers of ten.
[OK]	Applies the settings until other data are called up. The dialogue is closed.
[Cancel]	Closes the dialogue without applying any changes at all.
Automatic scale	Specification as to whether the program should perform scaling of the value axis.
Range of values from...to	Manual input of the value range when **Automatic scale** is disabled.
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 [<], [>] (when automatic division is enabled)	By clicking on **[<]** or **[>]**, make the axis division larger or smaller.
Interval (when manual division is enabled)	Manual entry of the grid.

Settings for the time axis

1 With the right mouse button, click on the time axis in the diagram.

▸ The **Adjust time axis** dialogue is displayed.



Name	Explanation
[OK]	Applies the settings until other data are called up. The dialogue is closed.
[Cancel]	Closes the dialogue without applying any changes at all.
Position	Shows a freely-definable extract of the diagram.
Automatic scaling...	Shows the entire diagram in the window.
Extract	Shows a firmly defined extract that can be moved over the time axis.
Limits from…to (when **Position** view is enabled)	Limits for the **Position** view.
Minimum time cycle (when **Extract** view is enabled)	Specification of which time period should at least be shown.
Selection list for the unit (when **Extract** view is enabled)	Unit of the time axis in the minimum time cycle: **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 then runs relative to this starting point.
Paging enabled	The function associated with this is not available in the Small Business Edition.
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 [<], [>] (when automatic division is enabled)	By clicking on **[<]** or **[>]**, make the axis division larger or smaller.
Interval (when manual division is enabled)	Manual entry of the grid.
Selection list for the unit (when manual division is enabled)	Unit of the time axis: **sec** (second) **min** (minute) **h** (hour) **d** (day).

7.2.4.2 Table view

The readings are listed in table form in this view.

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

1 In the calendar, select the day or time period that needs to 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 displayed.

3 If necessary, deactivate channels via the checkboxes for the display.

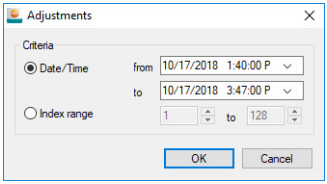
Marking readings

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

The min, max and mean values cannot be determined via a time period/index range defined in the table.

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

▸ A dialogue for determining the criteria is displayed.



2 Select the **Date/time** option if the readings for a specific time period need to be marked.

- ▸ The selection lists for determining the time period are enabled.
- Select **Index range** if the readings in specific table rows need to be marked.
  - ▸ The selection lists for determining the index range are enabled.

3 Determine time period or index range.

4 Click on **[OK]**.

▸ The dialogue is closed and the corresponding readings in the table are marked.

The selected readings can be copied and further edited using suitable software (e.g. with Microsoft® Excel®).

Dropping marking

1 Click on **Edit** | **Tools** | **Drop marking**.

▸ The marking of the readings is deleted.

Inserting extreme values or mean value into the table

Insert the minimum/maximum reading, along with the mean value over the whole table, at the end of the table.

1 Click on **Edit** | **Tools** | **Add rows** | **Minimum**, **Maximum** or **Mean value**.

▸ A row is added at the end of the table with the appropriate value over all the readings.

2 Repeat step 1 to insert another value into the table.

To remove a value from the table, click on the appropriate entry in the **Add rows** menu again.

Compressing tabular values

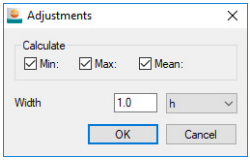
Compress the table to definable time intervals to make the table clearer when there are large amounts of data.

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 mean value can be shown for the respective time period.

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

▸ The dialogue for determining the options is opened.



2 Determine via the checkboxes whether the respective minimum reading (**Min**), maximum reading (**Max**) and/or mean value (**Mean**) needs to be calculated for the individual time spans.

At least one of these values must be activated to enable compression of the table to be carried out.

3 Enter the time span under **Extract** and determine its unit. Possible settings for the unit:
- **sec** (second)
- **min** (minute)
- **h** (hour)
- **d** (day).

4 Click on **[OK]**.

▸ The dialogue is closed and the table is shown in compressed format.

Determining largest reading

1 In the **Edit** | **Search** | **Maximum** menu, click on the curve for which the largest reading needs to be determined.

▸ The largest reading is displayed as marked in the table.

Adding Rows

1 In the **Edit** | **Tools** | **Add rows** menu, activate the selection that needs to be displayed in the extra rows.

▸ The additional rows are displayed in the table.

Compressing

Tabular values are displayed in compressed format. The limits for the compression range and the additional min, max and mean values are displayed.

1 Click in the **Edit** | **Tools** | **Compress** menu.

▸ A selection window is displayed.

2 Set calculation and extract and confirm with **OK**.

▸ The table display is reduced to the selected min, max and mean values and to the time period entered.

Dropping compression

Table compression is dropped again.

1 Click in the **Edit** | **Tools** | **Drop compression** menu.

▸ The table is again displayed with all the individual values.

Determining the smallest reading

1 In the **Edit** | **Search** | **Minimum** menu, click on the curve for which the smallest reading needs to be determined.

▸ The smallest reading is displayed as marked in the table.

7.2.4.3 Floorplan view

The readings are shown as number fields in this view. If you take advantage of the opportunity to insert a wallpaper, e.g. a floor plan of a building, you quickly achieve a spatial overview of the current ambient conditions.

✓ In the **Start** | **View** menu, the **Monitor** command is activated. You now have to select the data record that you wish to display.

1 In the calendar, select the day or time period that needs to be evaluated.

2 In the tree structure of the data range, open the zone that contains the data to be displayed.

▸ The monitor display for the selected data is shown.

3 If necessary, deactivate channels via the checkboxes for the display.

7.2.4.4 Histogram view

In this view, the readings are shown as a histogram, meaning the last reading of a channel is shown as a column

✓ In the **Start** | **View** menu, the **Histogram** command is activated. You now have to select the data record that you wish to display.

1 In the calendar, select the day or time period that needs to be evaluated.

2 In the tree structure of the data area, open the group that contains the data to be displayed.

▸ The histogram for the selected data is displayed.

3 If necessary, deactivate channels via the checkboxes for the display.

7.2.4.5 Archiving with automatic reports

A simple and reliable option for archiving your data is automatic reporting.

The reports are created by the software and saved on a daily, weekly or monthly basis at a specified location on the computer or a server; see also section 7.2.4.9 **Configuring automatic reports** for this.

The reports are saved as pdf files, so that they can easily be viewed or sent by email, without it being possible to change the data stock.

7.2.4.6 Generating an evaluation

You can print out measurement series or have reports on the data generated either automatically by the software at definable intervals or manually for the required time period.

7.2.4.7 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 needs to be created.

▸ The data for the day or time period are displayed as a diagram or table, depending on the setting.

2. In the **Start** | **View** menu
   - 2.1 Choose the **Diagram** command when the table view is activated, but the diagram view needs to be printed.
   - 2.2 Choose the **Table** command when the diagram view is activated, but the table view needs to be printed.
3. In the **Template** | **Template** menu, select the types of report header.

Via the **File** (Testo logo) | **Page view** command, open a preview of the report.

Use portrait format for printing a table, but landscape format is recommended for printing a diagram.

Specify the format via **File** | **Page setup...**

4. Select the **Print** command in the **File** menu.

▸ The **Print** dialogue is displayed for selection of the print options.

5. If necessary, change print options and click on **[OK]**.

▸ The report is printed.

7.2.4.8 Creating automatic reports

Use the **One-off report** function to generate 21 CFR 11-compliant printouts of any period of time.

1 Select **Stationary zones** main menu.

2 Mark required time period on the calendar.

3 In the **Start** tab under **Create reports**, click on **One-off report**.

▸ The pdf report contains:

- CFR-compliant cover sheet with hash code of the pdf report
- Graphic, measurement data table and alarms for the selected zone
- Audit trail of the time span specified in the calendar

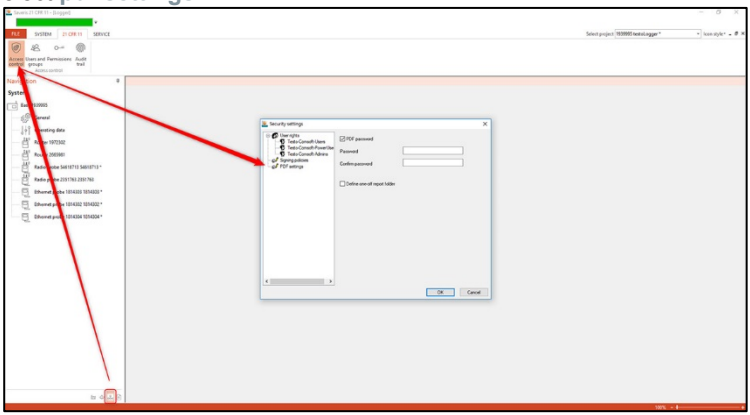
The pdf report can be saved as a pdf with a master password.

The master password is only requested when the report is opened with Adobe Acrobat. No request is made when opening with Adobe Reader.

✓ User is authorized for this.

1 In the **System** main menu, in the **CFR** tab, click the **Security settings** button.

2 Select **pdf settings**.

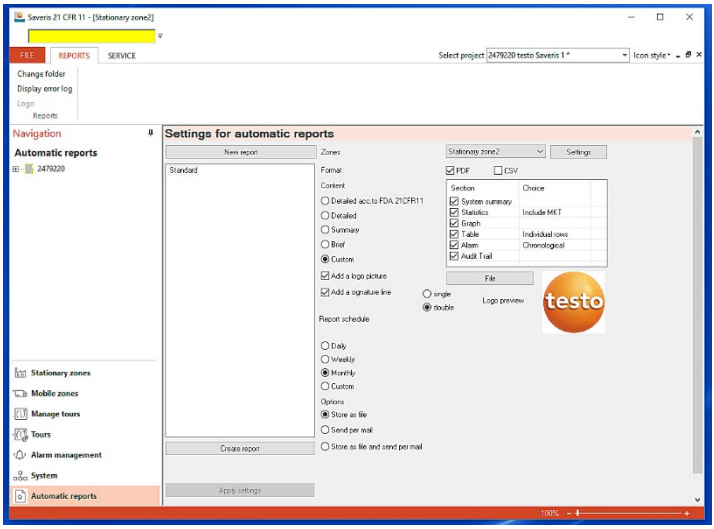


7.2.4.9 Configuring automatic reports

In the report settings, you can determine how automatic reporting should be done.

1 In the navigation area, click on **Automatic reports**.

▸ The **Settings for automatic reports** submenu is displayed in the data window.



Name	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 needs to be generated.
Format	pdf, csv
Content group box	When the option is enabled, the corresponding data sheet is attached to the report - **Detailed acc. to FDA 21CFR11** - **Summary** - **Brief** - **Custom** - **Add a logo picture** - **Add a signature line**

Name	Explanation
Report schedule	Specify whether the report is to be generated **daily**, **weekly, monthly** or at a **custom** time.  **Daily**: The report is generated daily at 1 a.m. **Weekly**: The report is generated every Sunday at 1 a.m. **Monthly**: The report is generated on the last day of the month at 1 a.m. **Custom**: A future time period can be set (start date/time, end date/time) for which a report is to be generated on a one-off basis. The report is generated after the time period has elapsed.
[Options]	Specification as to how the report is to be used: **Store as file**, **Send by email**, **Store as file and send by email**.  **Store as file**: The report is saved on the PC. **Send by email**: The report is sent to one or more email addresses. **Store as file and send by email**: The report is saved on the PC and sent to one or more email addresses.
Recipient input field	Input field for one or more email addresses of the employees to whom the report is to be sent. When there are several email addresses, please use “;” as a separator.
Address book	Addresses can be selected from the address book.
Apply settings	Saves the report configurations that have been carried out.

The storage location for the reports was determined during the installation of the Saveris software.

The path specification is shown under the **Determine folder** field.

7.2.5 Managing zones

Once you have familiarized yourself with the menus of the Saveris software, you can turn to creating zones, for example to separate the data loggers according to location. You could perhaps combine data loggers that are located in storerooms into one zone and data loggers that are located in refrigerated rooms into another.

Changing or deleting zones during operation will affect subsequent generation of pdf reports. As these changes also apply retrospectively, old zone configuration data are overwritten.

If a pdf report is generated retrospectively from the past, only the most recent zone configuration is used for reporting. Without a database backup, complete traceability of the changed or deleted zones cannot be guaranteed.

Data loggers are assigned to zones in the startup wizard. They can be changed later via **Start** | **Edit**.

You can assign a maximum of 4 data loggers to one mobile zone and monitor a maximum of 2 mobile zones simultaneously in one tour.

7.2.5.1 Creating zones

1. In the navigation area, click on **Stationary zones** or **Mobile zones**.

▸ The available zones are displayed in the data area.

2. In the **Start** | **Edit zones** menu, select the **New zone** command.

▸ The **New zone** dialogue is displayed.

3. If required, deactivate a channel which is not needed.

At least one channel must be activated.

In mobile zones, all channels of a probe must be assigned to the same zone.

4 In the **Name** field, enter the name of the new zone.

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

5 Confirm entries with **[OK]**.

▸ The **New zone** dialogue is closed and the new zone is listed in the tree structure in the data area.

7.2.5.2 Changing zones

You can add channels to an existing zone. You can delete channels from a zone that you no longer require there. You can also change the name of the zone.

1 In the navigation area, click on **Stationary zones** or **Mobile zones**.

▸ The available zones are displayed in the data area.

2 In the tree structure of the data area, select the zone that needs to be changed.

3 In the **Start** | **Edit zones** menu, select the **Change zone** command.

▸ The **Change zone** window opens.

4 Click on the checkboxes in front of the channels that are to be added to the zone or deactivate them to remove the channel from the zone.

5 In the **Name** field, overwrite the zone name.

6 Confirm the input with **[OK]**.

7.2.5.3 Deleting zones

1 In the navigation area, click on **Stationary zones** or **Mobile zones**.

▸ The available zones are displayed in the data area.

2 In the tree structure, mark the zone that should be deleted.

3 In the **Start** | **Edit zones** menu, select the **Delete** command.

▸ After confirmation, the zone is deleted.

In the database, the zone is marked as deleted and disabled, but not deleted. A disabled zone is only visible in the time period in which it was active.

7.2.5.4 Assigning zones

You can limit zone access to certain users and user groups. Multiple selection is also possible.

Zones are visible to all users as standard.

✓ Users or user groups are created in the active directory.

1 In the navigation area click on **System**.

2 In the **System | Security** menu, select the **Authorizations** command.

▸ The **Authorizations** window opens.

3 Mark zone for which access needs to be limited.

4 Click on **[Search]**.

▸ The **Search** window opens where the users or user groups from the Active Directory are listed.

5 Mark users or user groups that should be given access to the selected zone.

6 Confirm the input with **[OK]**.

▸ The selected users are assigned to the relevant zone in the **Authorizations** window.

7 Click on **[OK]**.

7.2.6 Configuring alarms

Information on the alarm function

- The alarms occurring in the Saveris system are primarily used to notify the user in good time that problems have occurred which jeopardize the continuous availability of the data in the database. Generally, action is then required.
- Alarms indicate a one-off, but possibly also regular, malfunction. The aim must be to minimize the number of alarms that occur during operation and eliminate such alarms wherever possible. There may be a maximum of 200 outstanding unacknowledged alarms at any one time. An increasing number of unacknowledged alarms not only makes troubleshooting in serious cases more difficult, but also slows the system response during operation.

Alarms are configured in four steps:

1. Setting up Saveris base alarms
   The configuration of the system alarms allows you to determine the conditions under which the base triggers an alarm.
2. Set up alarm groups.
   The alarm groups allow you to determine for which probes and under what conditions an alarm is triggered for system alarms and for channel-related alarms.
3. Enter recipient.
   You must enter the recipients to be able to send alarm messages by SMS or email.
4. Define rules.
   The rules allow you to determine which employee should be notified if an alarm is triggered in a group and which employees receive a message if the alarm is not acknowledged.

Since the probes that monitor mobile units are not generally operated under target conditions (e.g. truck is not cooled during idle periods), limit values are only deemed to be relevant according to the tour blank. The Saveris base therefore only outputs system alarms for probes in mobile zones – violations of limit values are suppressed.

7.2.6.1 Setting up Saveris base alarms

No configuration changes are transferred to the probe/base until you have exited the **Alarm management** menu!
You should therefore exit the **Alarm management** menu after any changes.

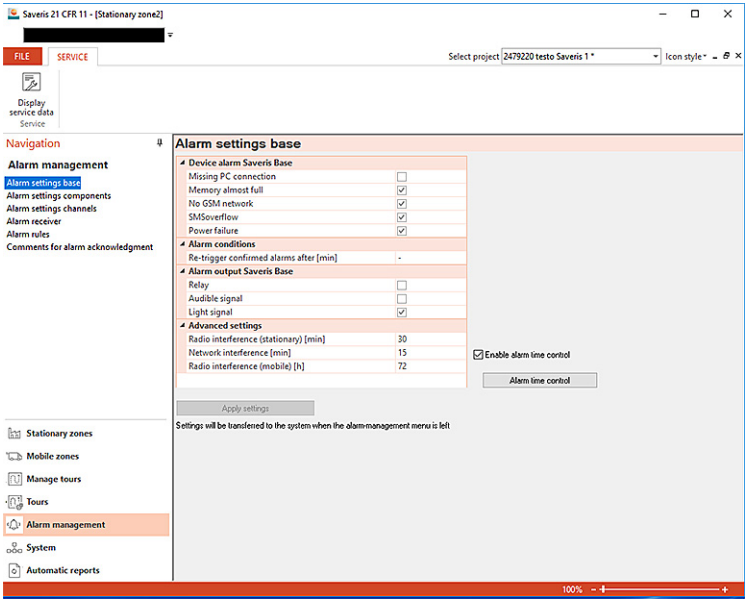
1 Click on **Alarm management** in the navigation area.

▸ The following submenus are displayed in the data area:

- **Alarm settings base**
- **Alarm settings component**
- **Alarm settings channel**
- **Alarm recipients**
- **Alarm rules**
- **Comments for acknowledging alarms**

2 Click on **Alarm settings base**.

▸ The alarm settings for the base are shown in the display area.



Display	Explanation
Device alarm Saveris Base	Setting options for the Saveris base alarms No PC connection: no response from the PC. **Memory almost full:** alarm when the Saveris base memory overflows. **No GSM Network:** alarm when there is no GSM connection. **SMS overflow:** alarm when an error occurs in SMS transmission. **Power failure:** alarm when the base power supply fails.
Alarm conditions	Re-trigger confirmed alarms after [min]: re-triggers alarms that have already been acknowledged following a specified duration.
Alarm output Saveris Base	Relays Audible signal Light signal
Advanced settings	No radio signal (stationary) [min] No signal from network components [min] No radio signal (mobile) [h]
Apply settings	Saves the alarm settings.
Enable alarm time control	Activates the configured time control.
Alarm time control	Opens a window for configuring the time control.

3 Setting up Saveris base alarm settings.

4 Click on **Apply settings**.

5 Exit Alarm management menu.

▸ Alarm settings are transferred to the instruments.

7.2.6.2 Setting up time control

All alarms across the entire system are paused/activated via time control.

1 Click on **Enable time control**.

▸ The **Alarm time control** button is activated.

2 Click on **Alarm time control**.

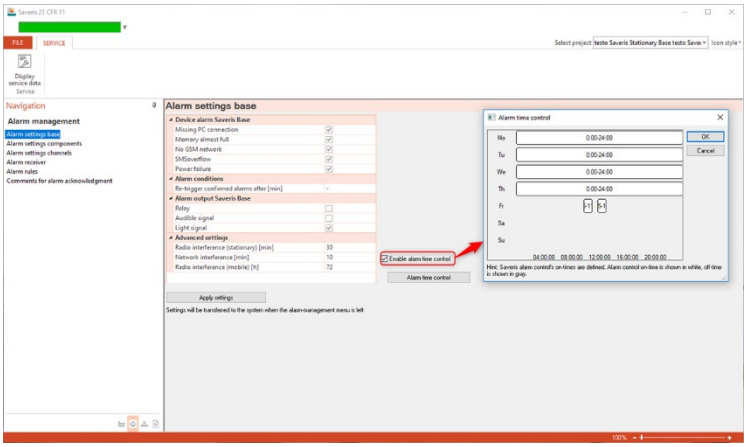
▸ An input window with a complete time control system is displayed. The time control is filled out from Monday to Sunday 0:00 – 24:00 ex-works.

3 Click on a time entry with the right mouse button and select **Delete**.

▸ The selected time entry is deleted.

4 Click on the blank time entry with the right mouse button and select **New**.

▸ An input window is displayed where you can enter the alarm ON times (from, to or all-day).



5 Click on **[OK]** to confirm the entry.

▸ The input window is closed and the modified times are displayed in the time control overview.

In order to create a second time entry for the same day, repeat step 4 and step 5.
Two time periods can be specified per day.

6 Confirm by clicking on **[OK]**.

▸ The input window is closed and the modifications to the time control are accepted.

7.2.6.3 Setting up alarm groups

Component alarms

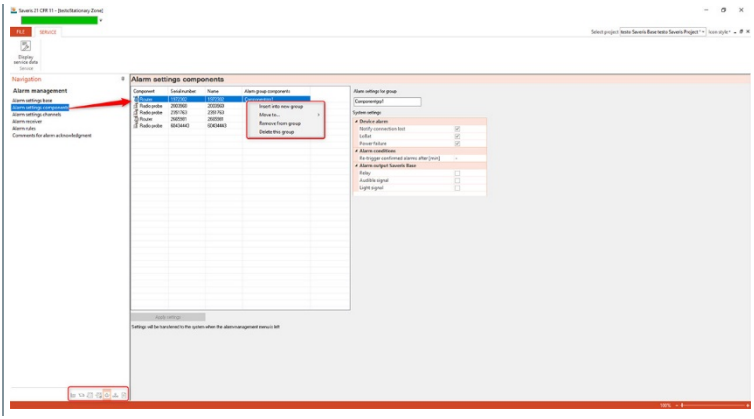
No configuration changes are transferred to the Saveris radio data logger/Saveris base until you have exited the **Alarm management** menu!
You should therefore exit the **Alarm management** menu after any changes.

1 Click on **Alarm management** in the navigation area.

▸ The following submenus are displayed in the data area:
- **Alarm settings base**
- **Alarm settings component**
- **Alarm settings channel**
- **Alarm recipients**
- **Alarm rules**
- **Comments for acknowledging alarms**

2 Click on **Alarm settings component**.

▸ The alarm settings for data loggers are shown in the display area.



Display	Explanation
Insert into new group	Creates a new alarm group.
Move to…	Move component/channel to another alarm group.
Remove from group	Removes the component/channel from the specified alarm group.
Delete this group	Deletes the entire alarm group.
Alarm setting components	List of the available components and their affiliation to the selected alarm group.
Alarm settings for groups	Enter the group name.
System settings	System alarms: alarm activation for notification when there are connection problems, LoBat and power failure Alarm conditions: trigger acknowledged alarms after [min] Alarm output Saveris base: settings for relays, audible signal and light signal.
[Apply settings]	Saves the alarm settings of an alarm group.

Create new group

1 Right-click on component, then click on **Insert into new group**.

▸ A new alarm group is created.

2 Overwrite the default names in **Group alarm settings**.

Move to…

1 Right-click on component, then click on **Move to ...**.

▸ A selection of available alarm groups is displayed.

2 Click on required alarm group.

▸ The component is assigned to the selected alarm group.

Remove from group

1 Right-click on component, then click on **[Remove from group]**.

▸ The component is removed from the assigned alarm group.

Delete group

1 Right-click on component, then click on **[Delete this group]**.

▸ The assigned alarm group is deleted, all components that were assigned to this group are now without an alarm group.

Channel alarms

No configuration changes are transferred to the Saveris data logger/Saveris base until you have exited the **Alarm management** menu!
You should therefore exit the **Alarm management** menu after any changes.

1 Click on **Alarm management** in the navigation area.

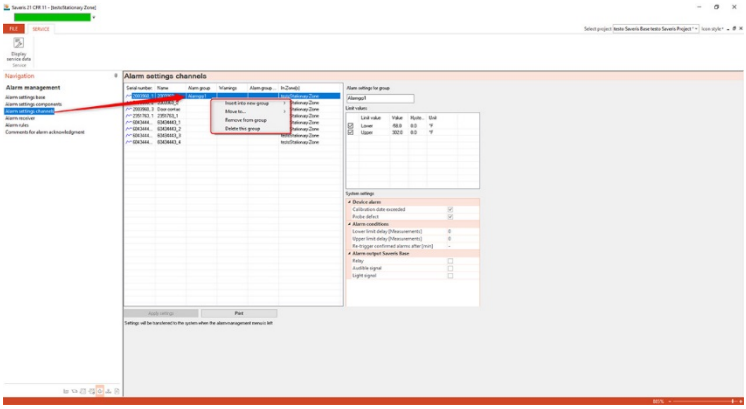
▸ The following submenus are displayed in the data area:

- **Alarm settings base**
- **Alarm settings component**
- **Alarm settings channel**
- **Alarm recipients**

- **Alarm rules**
- **Comments for acknowledging alarms**

2 Click on **Alarm settings channel**.

The alarm settings for Saveris data loggers are shown in the display area.



Name	Description
Insert into new group	Creates a new alarm group, with a distinction between alarm, warning and trend alarm group. A trend alarm is used to monitor temporal changes or the stability of measurement parameters. The change in the measurement parameter is determined over four measurement cycles and projected onto the change per hour. To this end, an alarm is useful unless the absolute value of the measurement parameter is supposed to be within specified limits, but rapid changes must be avoided.

Name	Description
[Move to]	Move component/channel to another alarm group.
Remove from group	Removes the component/channel from the specified alarm group.
Delete this group	Deletes the entire alarm group.
Alarm settings channels	List of the available channels and their affiliation to the selected alarm group.
Alarm settings for groups	Enter the group name.
System settings	Alarm conditions: settings for lower limit delay [measurements], upper limit delay [measurements] and trigger acknowledged alarms after [min] Alarm output Saveris base: settings for relays, audible signal and light signal.
[Apply settings]	Saves the alarm settings of an alarm group.
[Print]	Creates a file containing a summary of the alarm settings for Saveris probes and the Saveris base.

Create new group

1. Right-click on component, then click on **[Insert into new group]**.
   - A new alarm group is created.
2. Overwrite the default names in **Group alarm settings**.

Move to…

1. Right-click on component, then click on **[Move to …]**.
   - A selection of available alarm groups is displayed.
2. Click on required alarm group.
   - The component is assigned to the selected alarm group.

Remove from group

1 Right-click on component, then click on **[Remove from group]**.

▸ The component is removed from the assigned alarm group.

Delete group

1 Right-click on component, then click on **[Delete this group]**.

▸ The assigned alarm group is deleted, all components that were assigned to this group are now without an alarm group.

7.2.6.4 Creating recipient

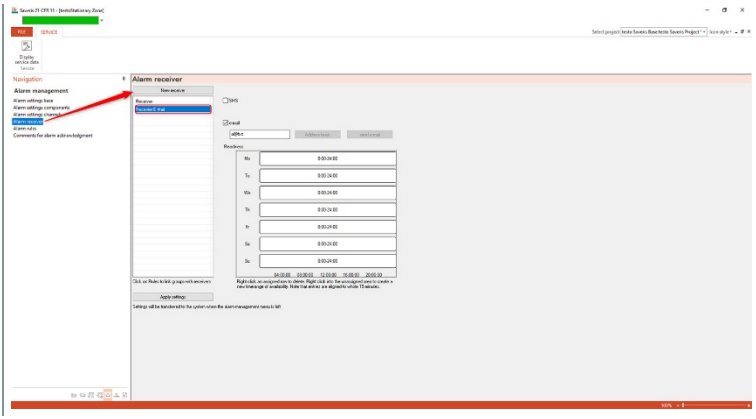
No configuration changes are transferred to the Saveris data logger/Saveris base until you have exited the **Alarm management** menu!
You should therefore exit the **Alarm management** menu after any changes.

1 Click on **Alarm management** in the navigation area.

▸ The following submenus are displayed in the data area:
- **Alarm settings base**
- **Alarm settings component**
- **Alarm settings channel**
- **Alarm recipients**
- **Alarm rules**
- **Comments for acknowledging alarms**

2 Click on **Alarm recipients**.

▸ The recipient data are displayed in the display area.



Name	Description
[New recipient]	Creates a new entry in the recipient list.
Recipient list	List of possible recipients. The telephone number in the recipient list comes from commissioning. You can replace the number with a recipient name by clicking on the number with the right mouse button and choosing the **Rename** command.
SMS / email checkboxes	Specification as to whether the alarm message should be sent by SMS or email.
Input field for SMS function	Number to which the SMS should be sent.
Input field for email function	Recipient's email address.

Name	Description
Readiness	Overview of the recipient's availability times.  Time entries are automatically rounded up/down to 1/4 hour. To change the availability time, you must delete the existing entry using the right mouse button and enter a new availability time.
[Apply settings]	Saves the alarm settings of an alarm group.

Create new recipient

1. Click on **[New recipient]**.

▸ A new entry with the same name is added to the recipient list.

 If no recipient was defined with clear text beforehand, the telephone number is used here for the recipient name as an alternative.

2. Click on the new entry in the recipient list with the right mouse button and change the designation.

Recipient's mobile phone data (optional)

1. Activate the **SMS** checkbox when the recipient needs to be informed via SMS in the event of an alarm.

▸ The Input field for the telephone number is displayed.

2. Enter the corresponding numbers.

 If an alarm chain is to be created from several recipients, the output targets (SMS or email) of the recipients must not be different within the respective alarm chain.

Entering recipient's email address (optional)

1. Activate the **Email** checkbox when the recipient needs to be informed via email in the event of an alarm.

▸ The Input field for the email address is displayed.

2 Enter the recipient's email address.

If an alarm chain is to be created from several recipients, the output targets (SMS or email) of the recipients must not be different within the respective alarm chain.

Transfer alarm settings

1 Exit "Alarm management" menu.

▸ Alarm settings are transferred to the instruments.

7.2.6.5 Creating alarm rule

No configuration changes are transferred to the Saveris probe/base until you have exited the **Alarm management** menu!
You should therefore exit the **Alarm management** menu after any changes.

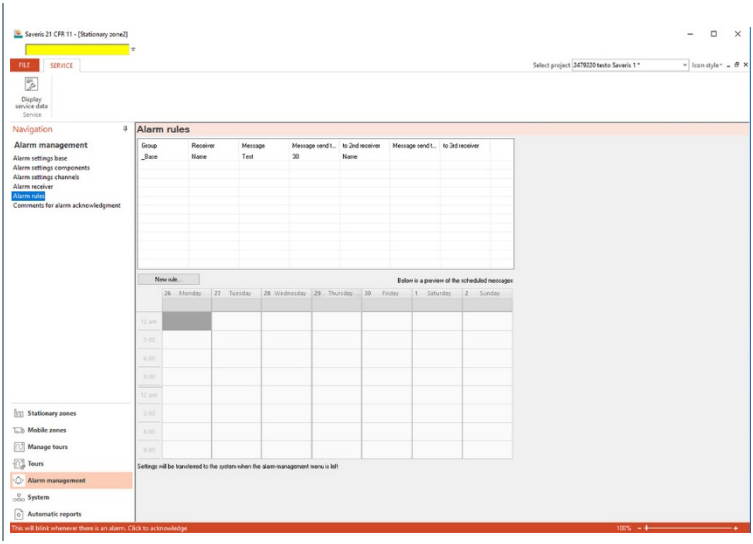
A prerequisite for creation of alarm rules is that the Saveris base alarm settings, the alarm groups of the Saveris probes and the recipients of the alarm messages have been entered.

1 Click on **Alarm management** in the navigation area.

▸ The following submenus are displayed in the data area:
- **Alarm settings base**
- **Alarm settings component**
- **Alarm settings channel**
- **Alarm recipients**
- **Alarm rules**
- **Comments for acknowledging alarms**

2 Click on **Alarm rules**.

▸ A list of the previously created alarm rules is shown in the display area.



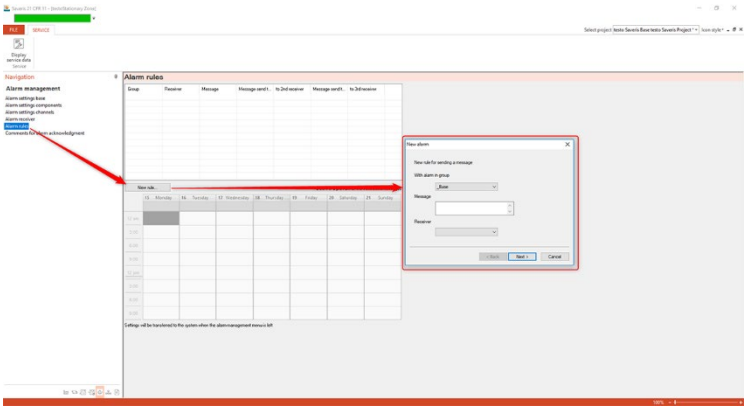
Name	Description
Group	Group for which the alarm rule applies.
Recipient	Recipient who is to receive the alarm message.
Message	Text of the alarm message.
Forward after	Time period after which the alarm message needs to be sent to another recipient if the first recipient does not acknowledge the alarm.
To 2nd recipient	Recipient who is to receive the forwarded alarm message if the first recipient does not acknowledge the alarm.
Forward after	Time period since the last dispatch after which the alarm message should be sent to another recipient if the alarm was not acknowledged. Recipient 3 receives alarm after (forwarding time from recipient 1 to 2 + forwarding time from recipient 2 to 3) minutes.

Name	Description
To 3rd recipient	Recipient who is to receive the forwarded alarm message if the alarm was not acknowledged.
[New rule…]	Starts the wizard for creating a new alarm rule.
Preview	Shows the configured scheduled messages.

Creating new rule

1 Click on **[New rule...]**.

▸ The wizard for creating a new rule is started.



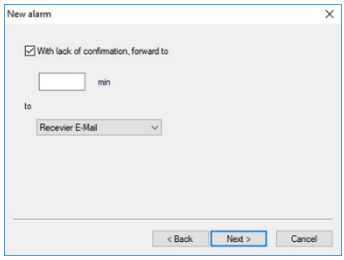
2 Specify group in the **With alarm in group** selection list for which the new alarm should apply.

3 Enter the alarm message text in the **Message** input field.

4 Determine the first recipient who is to receive the alarm message in the selection list of the same name.

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

▸ The dialogue for the forwarding function or for finishing the alarm rule is shown.



6 Either

6.1 click on **[Finish]**, when the alarm message does not need to be forwarded if the first recipient does not acknowledge the alarm **[Finish]** is only displayed if no forwarding is needed.

▸ The wizard is ended and the new rule is included in the list of alarm messages.

6.2 Or on the **With lack of acknowledgement, forward to** checkbox if the alarm message needs to be forwarded to another recipient.

▸ The **min** input field for specifying the time period after which the alarm message needs to be forwarded and the selection list for determining the next recipient is displayed.

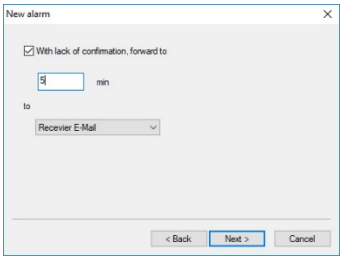
7 In the **min** field, enter the time period after which the alarm message needs to be forwarded. (Time between the alarm being received by recipient 1 and it being forwarded to recipient 2).

8 In the **to** selection list, specify the recipient who is to receive the alarm message.

The output targets (SMS or email) for recipient 1 and recipient 2 must not be different. For all recipients in an alarm chain, the same output target (all SMS or all email) must be set, otherwise the alarm chain will be interrupted.

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

▸ The dialogue for the forwarding function or for finishing the alarm rule is shown.



10 Either

10.1 click on **[Finish]**, when the alarm message does not need to be forwarded if the alarm is not acknowledged

▸ The wizard is ended and the new rule is included in the list of alarm messages.

10.2 Or on the **With lack of acknowledgement, forward to** checkbox if the alarm message needs to be forwarded to another recipient.

▸ The min input field for specifying the time period after which the alarm message needs to be forwarded and the selection list for determining the next recipient is displayed.

11 In the **min** field, enter the time period after which the alarm message needs to be forwarded. (Time between the alarm being sent to recipient 2 and it being forwarded to recipient 3).

12 In the **to** selection list, specify the recipient who is to receive the alarm message.

The output targets (SMS or email) for recipient 2 and recipient 3 must not be different. For all recipients in an alarm chain, the same output target (all SMS or all email) must be set, otherwise the alarm chain will be interrupted.

13 Click on **[Finish]**.

▸ The wizard is ended and the new rule is included in the list of alarm messages.

14 Exit "Alarm management" menu.

▸ Alarm settings are transferred to the instruments.

7.2.6.6 Alarm overview

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

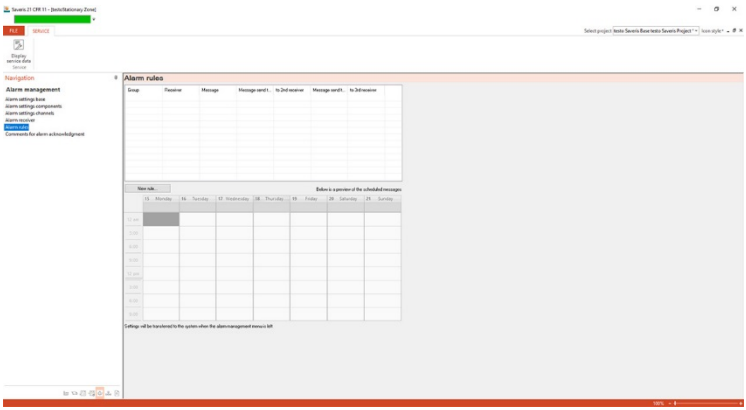
1 Click on **Alarm management** in the navigation area.

▸ The following submenus are displayed in the data area:

- **Alarm settings base**
- **Alarm settings component**
- **Alarm settings channel**
- **Alarm recipients**
- **Alarm rules**
- **Comments for acknowledging alarms**

2 Click on **Alarm rules**.

▸ The defined alarms are shown in the display area.



7.2.6.7 Comments for acknowledging alarms

You can create standardized acknowledgement comments, which are displayed in the acknowledgement window as a selection list.

1 Click on **Alarm management** in the navigation area.

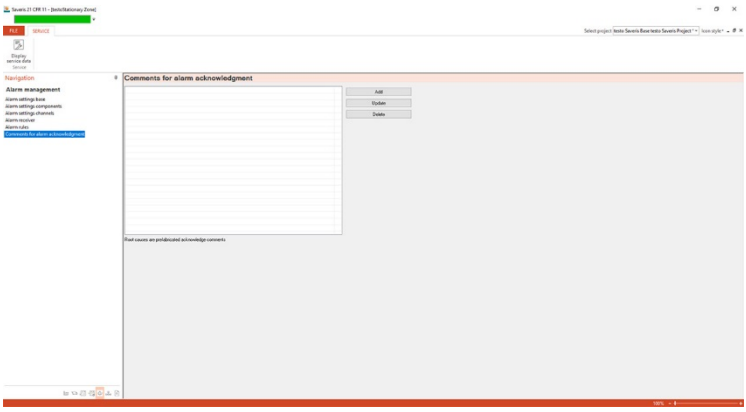
▸ The following submenus are displayed in the data area:

- **Alarm settings base**
- **Alarm settings component**
- **Alarm settings channel**

- **Alarm recipients**
- **Alarm rules**
- **Comments for acknowledging alarms**

2 Click on **Comments for acknowledging alarms**.

▶ The defined acknowledgement comments are shown in the display area.



3 **[Add]**: Create acknowledgement comment.
[Update]: Edit existing acknowledgement comment.
[Delete]: Delete existing acknowledgement comment.

7.3 Use of testo Saveris software for transport monitoring with radio data loggers (“mobile monitoring”)

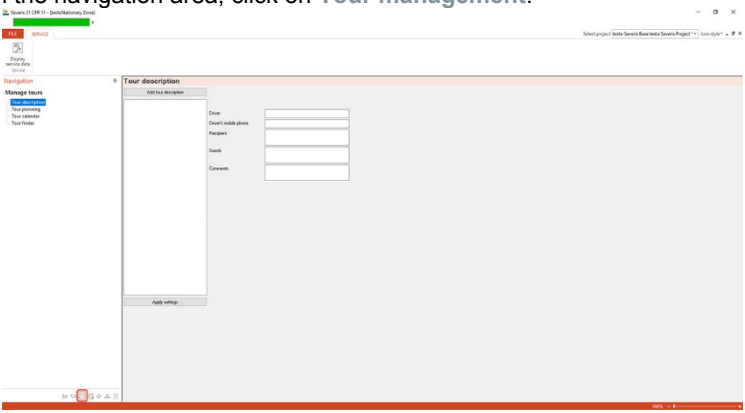
7.3.1 General

The following section deals with the relevant functionality of the testo Saveris software for measurement data monitoring in terms of transport monitoring using Saveris radio data loggers (“mobile monitoring”), see also section 5.2 **How it works**.

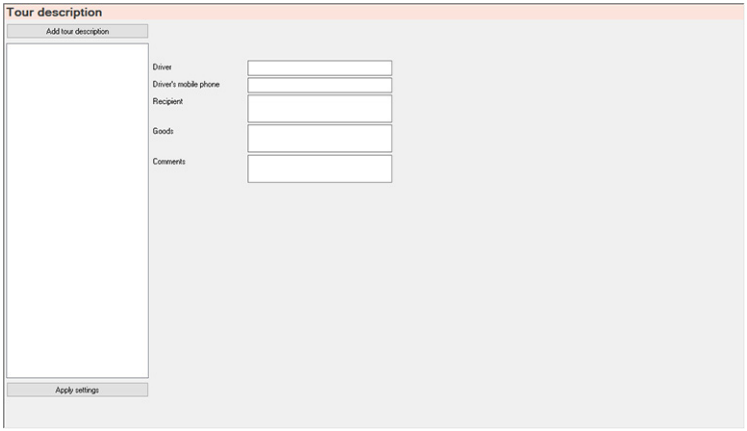
7.3.2 Setting up tours

7.3.2.1 Tour description

1 In the navigation area, click on **Tour management**.



▸ The **Tour description** dialogue is displayed in the data area.



2 Select **[New tour description]**.

3 Enter the name of the new tour description.

▸ The name appears in the tour calendar and in the Saveris cockpit unit.

4 Enter information.

5 Exit dialogue.

▸ Query appears asking whether information should be saved.

6 Click **[Yes]**.

▸ The tour description is saved and can be added to a tour during tour planning. The tour description is transferred to the Saveris cockpit unit and can be selected there.

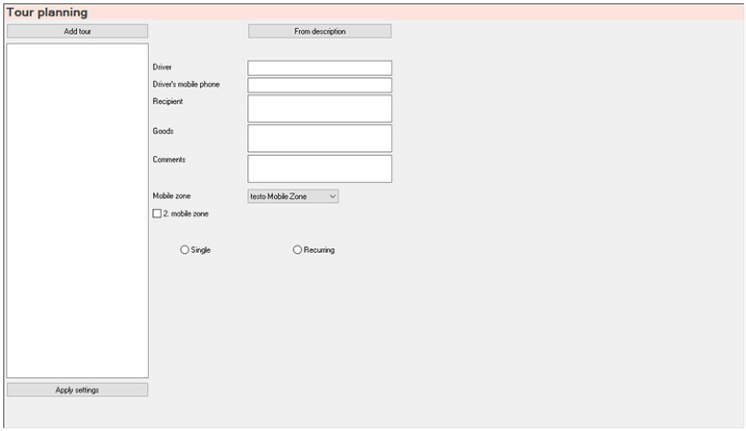
The Saveris cockpit unit can manage up to 100 tour descriptions.

7.3.2.2 Planning tours

This description only relates to tours that are planned for the future. The software is used to create a tour for this. This process is recommended if a Saveris cockpit unit is not used for tour entry.

1 In the navigation area, click on **Tour management**.

▸ The **Tour planning** dialogue is displayed in the data area.



2 Select **[Add tour description]**.

3 Enter the name of the new tour. The name appears in the tour calendar and in the Saveris cockpit unit.

4 Select mobile zones.

4.1 If required: add tour description.

5 Select time period during which the tour is to be carried out.

6 Exit dialogue.

▸ Query appears asking whether information should be saved.

7 Click **[Apply settings]**.

▸ The tour is saved and is displayed in the tour calendar as a planned tour.

Tours that have not yet taken place can only be changed in the **Tour management** navigation area.

7.3.2.3 Defining tours

This function is used to assign existing measurement data to tours at a later stage.

1 In the navigation area, click on **Mobile zone**.

2 Select **Tour definition**.

▸ The **Define tour** window is opened.

3 Define required tour. Via **[From tour description]** the additional information of an existing tour description can be included for this tour.

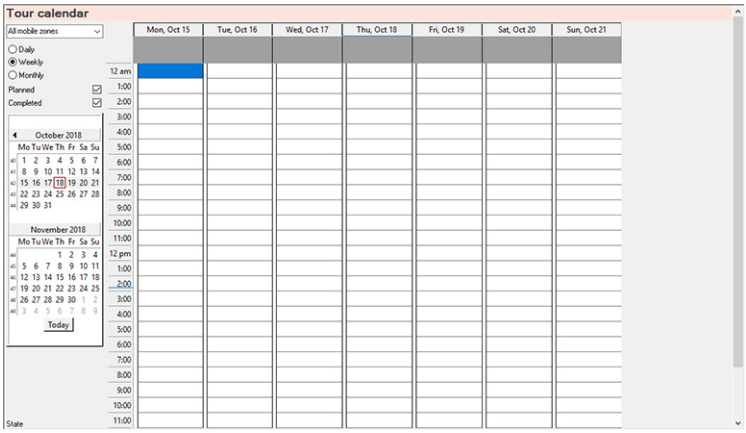
4 Confirm entries using **[Finish]**.

▸ Tour is saved and displayed in the tour calendar.

7.3.2.4 Displaying tours

1 In the navigation area, click on **Tour management**.

2 Select **Tour calendar**.

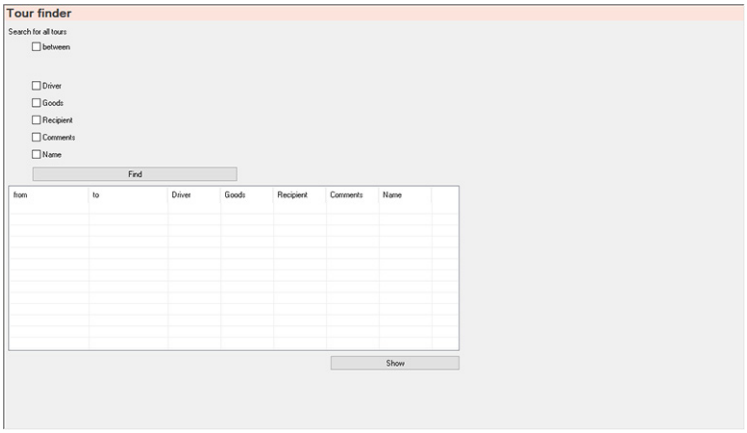


- Selection of the displayed mobile zone
- Adjustable filter options
- Calendar view
- Overview of the tours that have taken place and status of data transfer to the Saveris base:
  - Green: Data transfer complete
  - Yellow: Data transfer in progress
  - Red: Data transfer failed
- Planned tours are shown in white
- Tours that have taken place are shown in orange. Tour data can be displayed via the context menu in the **Tours** navigation area.

7.3.2.5 Searching for tours

1 In the navigation area, click on **Tour management**.

2 Select **Tour finder**.



3 Select or enter required search options.

When searching for tours within a time frame, the tour is considered as a whole. No result is shown if only one part of the tour is within the time frame specified in the search.

4 Click **[Find]**.

▸ Results are displayed.

5 Select required entry from the list of results.

6 Click **[Show]**.

▸ Selected tour data are displayed in the **Tour management** navigation area.

7.3.2.6 Changing tours

1 In the navigation area, click on **Tour management**.

2 Select **Change tour**.

▸ The **Define tour** window is opened.

3 Make required changes.

4 Click **[Next]** and **[Finish]**.

▸ Tour is changed.

8 Tips and assistance

8.1 Questions and answers

Question	Possible cause / solution
The Saveris converter does not transfer any data to the base.	The cable connection to the converter is faulty. • Remove the power supply and check whether the Ethernet cable is connected correctly. • Reconnect the power supply. The Saveris converter checks its configuration and if there is an error, it resets all values to the factory settings.
Saveris cockpit unit does not print.	The power supply to the Saveris cockpit unit has been interrupted. • Restore the power supply to the Saveris cockpit unit. • Restart printing.
Saveris cockpit unit printout is terminated.	The power supply to the Saveris cockpit unit has been interrupted. • Restore the power supply to the Saveris cockpit unit. • Restart printing.

8.2 Saveris base alarm messages

Alarm message	Possible cause / solution
L_CommUp L_CommApp	Error during USB or Ethernet initialization. - Disconnect all links to the Saveris base. - Reconnect all links. - Restart the Saveris base.

Alarm message	Possible cause / solution
L_GSM L_GSMMenu	Error during GSM modem initialization. - Check the GSM module's rechargeable battery power. - Restart the base.
L_RF2010Server, L_RF2010IO- L_RF2010MemPool, L_RF2010StreamRip L_UDPRF2010	Error during radio module initialization. Option 1 - Check in the startup wizard whether the extreme SMS gateway is enabled. - Reboot the Saveris base. If there are problems, please contact our support team. - Option 2 - Restart the base. If the problem persists, please contact our support team.
L_UIPrio L_DispDrvUI,	Error loading the UI/display. Reboot the base. - Restart the Saveris base.
L_MemoryMgmt	Error loading memory management. - Please contact our support team.
L_AlarmCtrl L_AlarmCfg	Error loading the alarm controller. - Please contact our support team.
L_FileSysChk L_FileSys L_AccelFileSys	Error loading the mass storage device. - Please contact our support team.
L_EventLog L_AlarmLog L_TourLog L_ErrorLog L_GsmStatLog	Error loading a log. - Please contact our support team.
L_RFTest2010	Error testing the radio module. - Please contact our support team.
L_BaseConf L_LowElement L_UppElement	Error loading basic functionality. - Please contact our support team.
L_Group L_TourCard	Error loading the basics for mobile zones. - Please contact our support team.

8.3 Accessories

Description	Order 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 (Energizer L91 photo lithium)	0515 0572
Spare rechargeable battery for Saveris base, Ethernet probe and analog coupler	0515 5021
100-200 V DC mains unit; 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 1748
Programming adapter (from mini-DIN to USB) for base, Ethernet probe, converter and extender for the configuration of IP addresses and for the adjustment of the radio and Ethernet probes.	0440 6723
Antenna with magnetic foot with 3 m cable for base with GSM module	0554 0524
Antenna with magnetic foot (quad band) for Saveris base with GSM module	0554 0525
Alarm module (visual & acoustic), can be connected to alarm relay, Ø 700 x 164 mm, 24 V AC/DC / 320 mA, steady red light, continuous tone: buzzer approx. 2.4 kHz	0572 9999 ID no. 0699 6111/1
Saveris protective housing for protection from high-pressure cleaning and impacts, IP 69 K, suitable for radio probes T1/T1D/T2/T2D/Pt/PtD/H4D	0572 0200
Testo fast printer with wireless infrared interface, 1 roll of thermal paper and 4 Mignon batteries for printing out readings on Saveris cockpit unit	0554 0549
testo Saveris SBE, including USB cable for connection of the Saveris base to the computer	0572 0180
testo Saveris PROF, including USB cable for connection of the Saveris base to the computer	0572 0181
Saveris adjustment	0572 0183
Saveris CFR, including PC-base Ethernet connection cable	0572 0182
ISO temperature calibration certificate; temperature probe; calibration points -8°C; 0°C; +40°C; per channel/instrument (suitable for Saveris T1/T2)	0520 0171

Description	Order no.
ISO temperature calibration certificate; temperature probe; calibration points -18°C, 0°C, +60°C; per channel/instrument (not suitable for Saveris T1/T2)	0520 0151
DAkkS[3] temperature calibration certificate; temperature probe; calibration points -20°C, 0°C, +60°C; per channel/instrument	0520 0261
ISO humidity calibration certificate; humidity probe; calibration points 11.3% RH and 75.3% RH at +25°C; per channel/instrument	0520 0076
DAkkS humidity calibration certificate; humidity probe; calibration points 11.3% RH and 75.3% RH at +25°C; per channel/instrument	0520 0246

[3] Successor organization of the DKD (German calibration service)

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