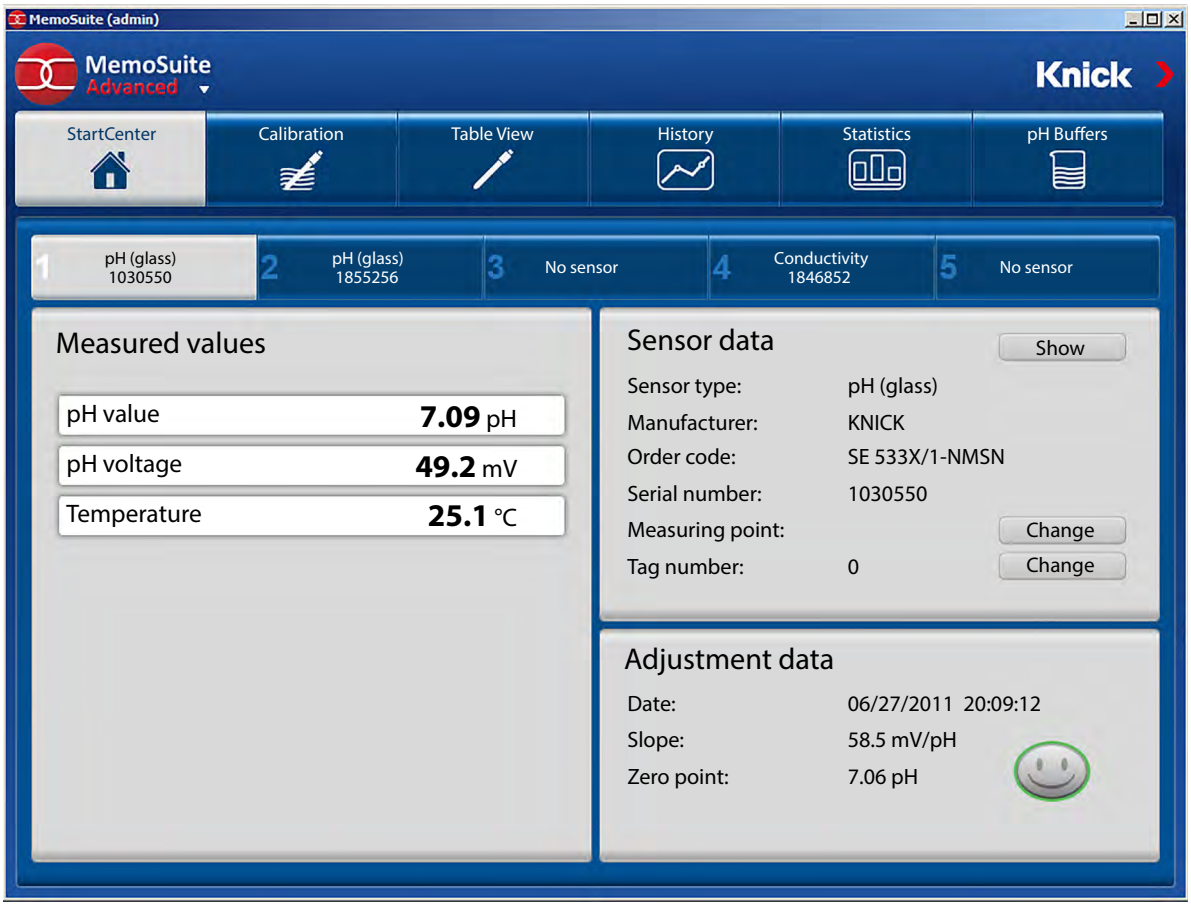
The Art of Measuring. Knick

English

MemoSuite® Advanced

Software for Memosens® Sensors

Plug-and-Play Data and Sensor Management



Valid from MemoSuite Version 2.1.0

Latest Product Information: www.knick.de

Table of Contents

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Overview of Functions
"MemoSuite Advanced" is a PC software for calibrating and managing Memosens sensors.
The sensors are connected via "MemoLink" and a USB port.
Up to 10 MemoLinks can be connected. Using active USB hubs is possible. MemoSuite shows the measured signals and the adjustment data. The software provides a database and enables a wide range of maintenance and diagnostics applications.

Process Variables
The software supports Memosens sensors for measuring pH values, oxygen, conductivity, ORP and temperature.

Calibration
A multitude of established calibration methods can be used for calibrating/adjusting the sensors. For calibrating pH sensors, the software provides tables for the following buffer sets (buffer catalog): Ciba, DIN 19267, Hach, Hamilton, Knick, Mettler Toledo, NIST standard, NIST technical, Reagecon, WTW. You can compile buffer sets from the buffer catalog or also specify your own buffers. If several pH sensors are connected via MemoLinks, the Multi-Calimatic feature allows simultaneous calibration.

Documentation
Calibration/adjustment data and operating times under extreme conditions, for example, are recorded completely. This is done in accordance with regulatory requirements such as the FDA's 21 CFR Part 11. The data can be output as a calibration report (several templates are already included) or as dataset in Excel format.

MemoSuite Database for Predictive Maintenance
Recording the sensor data over their entire service life supports the long-term planning of maintenance and replacement.
The sensor parameters are displayed in a fully configurable table. Database entries can be sorted, filtered or grouped for comparison purposes or for detecting differences (deviations) between certain parameters. Statistics and calibration data can be represented graphically.

Starting the Software

System Requirements (Minimum)

Hardware
- CPU: 1 GHz Pentium or comparable processor
- RAM: 512 MB
- Graphic card: 1024 x 768 true color (32-bit)
- USB 2.0
- Hard disk: 700 MB

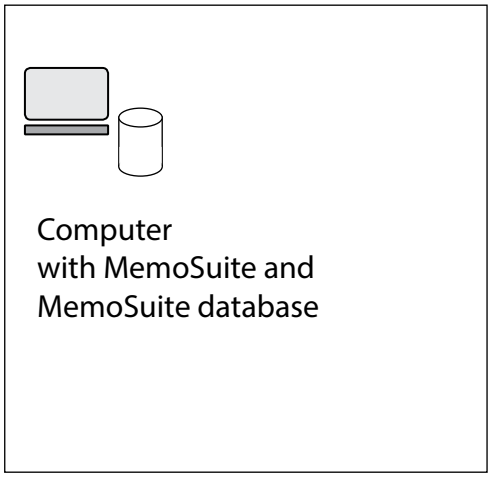
Operating system:
- Windows 7*/8/10 (32bit or 64bit version)
- Microsoft .Net Framework 4.6 (already included in Windows 10)

*) If you have a computer with Windows 7, first make sure that Microsoft .Net Framework 4.6 is installed before you start the Paraly installation (free download from microsoft.com).

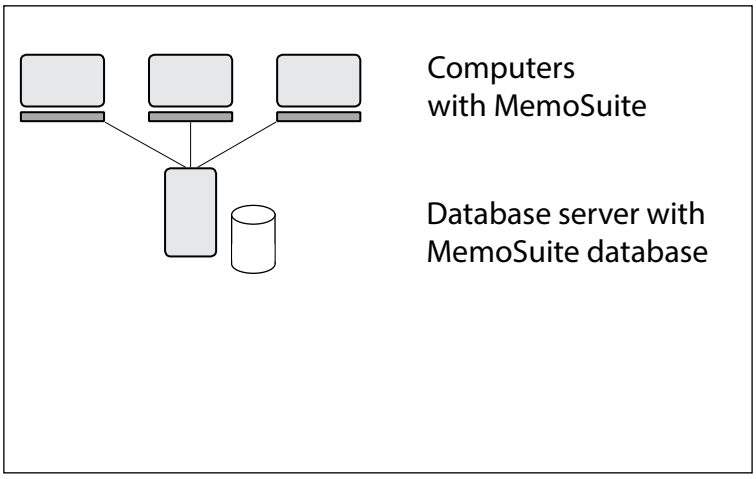
Installing the Software

You can install MemoSuite Advanced either as single-user system or as distributed system.

MemoSuite as Single-User System



MemoSuite as Distributed System



In both cases, log on to your PC as Windows Administrator and insert the MemoSuite installation CD into the drive. If setup does not start automatically, please run ***MemoSuiteSetup.exe*** from the CD.

Follow the instructions of the installation program until the step "Custom Setup".

Select

1. "MemoSuite User Interface" for distributed installation on the computer
2. "MemoSuite Database" for distributed installation on the database server
3. both functions for a single-user installation.

Complete the installation.

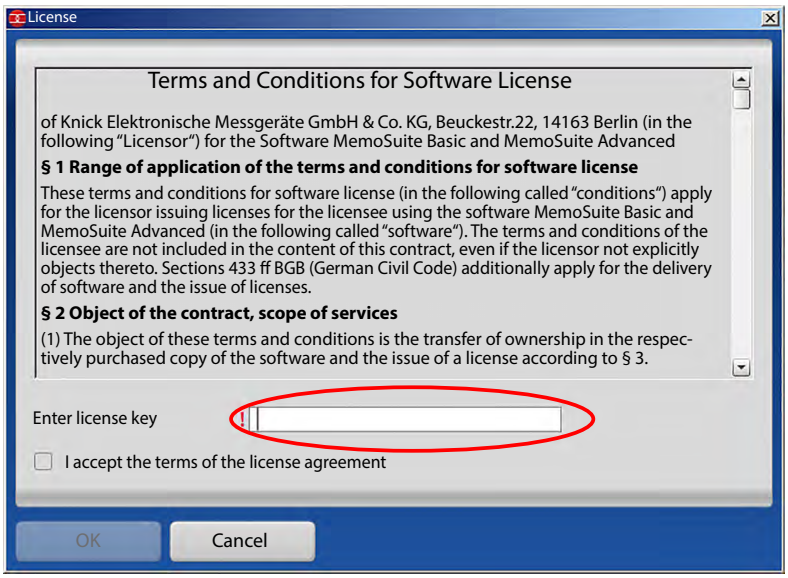
Please note: A PDF viewer (e.g. Adobe Reader) is required to display calibration reports.
If you have not installed a PDF viewer yet, you can install it at any time.

Starting the Software

Please note: With a distributed MemoSuite system, MemoSuite verifies compatibility with the data model on the database server when the program starts. When you update the software, you must update MemoSuite on the computers and on the database server. If you are planning to update the software, please take into acount that you cannot work with MemoSuite as long as there are different MemoSuite versions on the database servers and the computers.

Initial Start-Up of the Software

License Key
After installation of MemoSuite, you will be prompted to enter a license key. The license key is included on the package of the CD-ROM.
An incorrect entry is signaled by an exclamation point.



Database Address
When you have a distributed MemoSuite system, you must specify the address of the database server before your first login. For that purpose, you must run MemoSuite as administrator. Then, open the database settings in the login dialog and enter the network name or IP address of the database server. Test the database connection and click **OK** to confirm the settings.
See page 25 for more information on database management.
Please note:
If you also want to use the database address on other computers, you can distribute the settings you have just made by copying the ***MemoSuite.exe.config*** file from the MemoSuite program directory to the same location on another computer. The program directory is created during MemoSuite installation. A typical example is:
C:\Programs\Knick\MemoSuite\

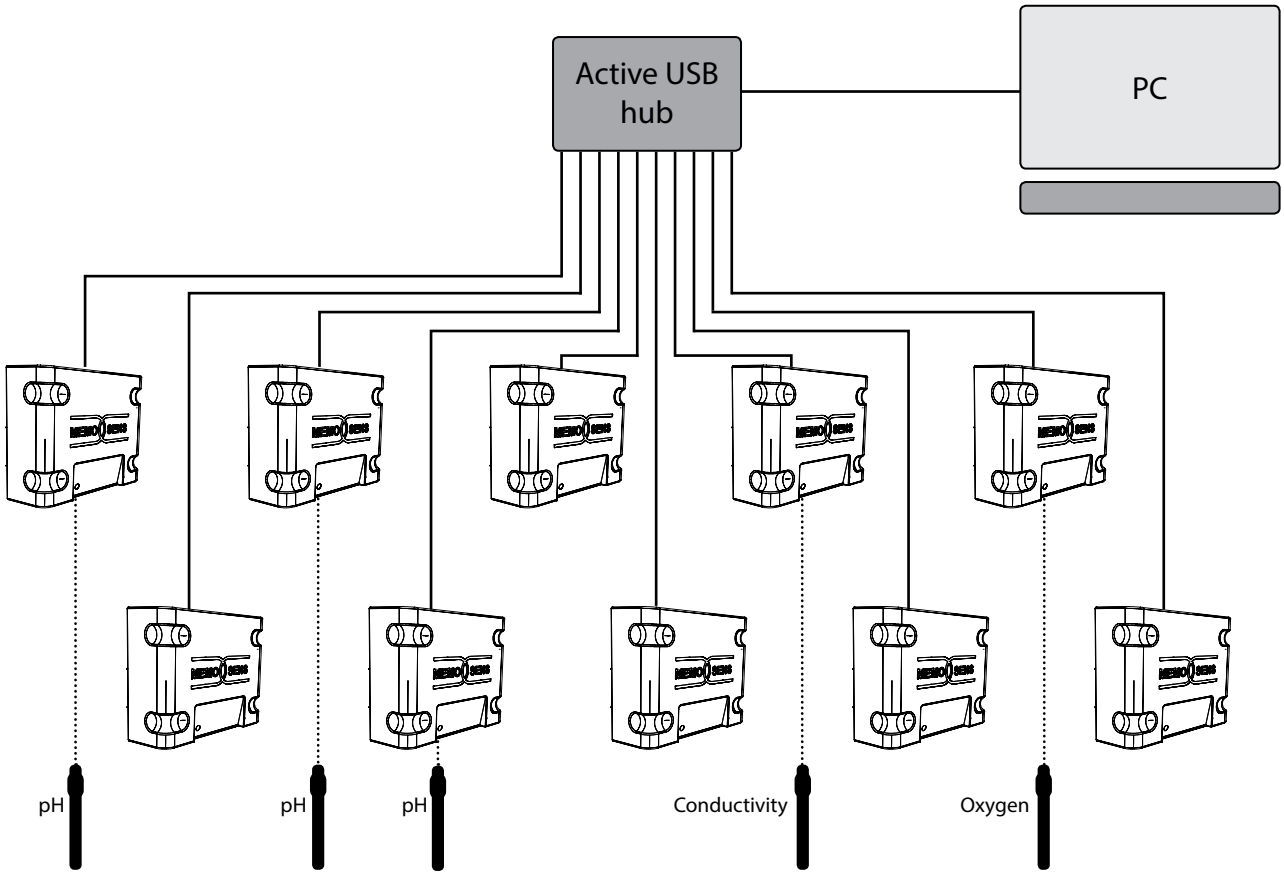
Login
Please use the following settings when you log in to MemoSuite for the first time:
- **User name**: admin
- **Password:** No password required.

For reasons of safety, you should then assign a password.

Please use the following settings when you log in to MemoSuite after an update:
- **User name:** Your user name or admin
- **Password:** Your previous password

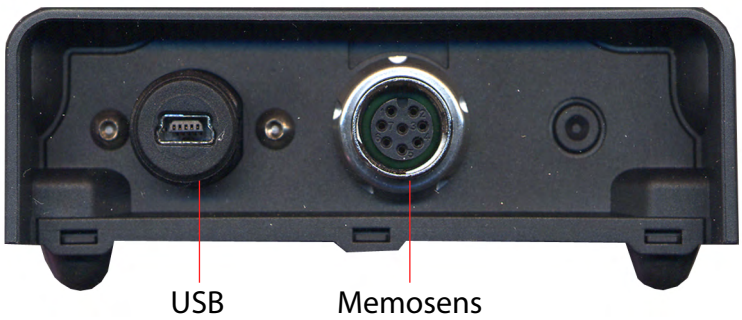
MemoLink – the Interface to the Sensor

Up to 10 MemoLinks can be connected to the computer via USB cable. We recommend using an active USB hub to keep the cables tidy. This hub ensures sufficient power supply to the Memo-Links. The Memosens sensors are connected using Memosens cables with M12 plugs (accessory).



Any desired Memosens sensors can be connected to the MemoLink devices. You can also use mixed sensors for different measuring tasks (pH, conductivity, oxygen etc.).

The MemoLink measures 97 x 78 x 38 mm. Thanks to its non-slip rubber feet, it can be conveniently placed on a laboratory bench. The ZU 0881 accessory allows wall or post mounting.



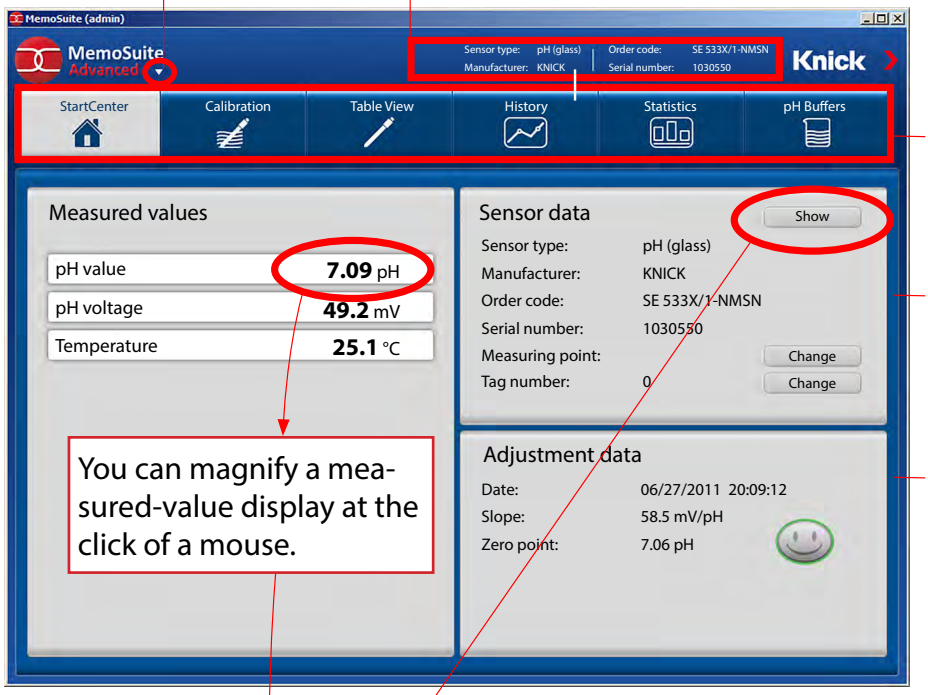
Software Functions

StartCenter

The software automatically identifies the Memosens sensors connected via the MemoLink USB interface. The parameters supplied by the connected sensor are shown in the "StartCenter". The following screen is shown when only one MemoLink is connected.

Settings and Specifications

Connected sensor:
Sensor type, manufacturer, order code and serial number



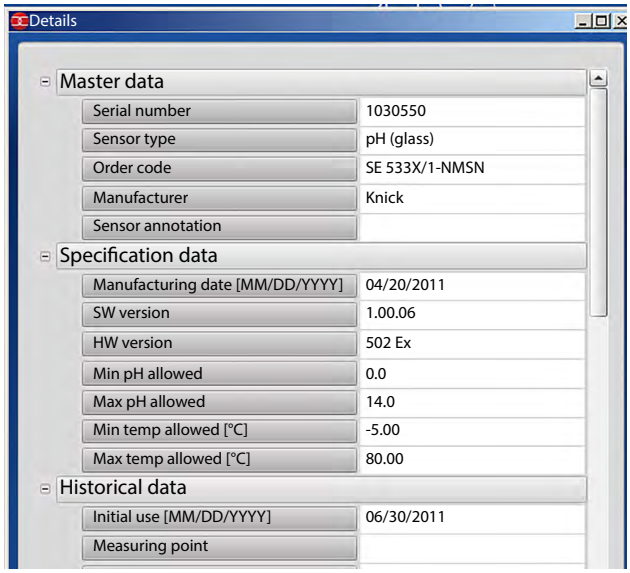
You can magnify a measured-value display at the click of a mouse.

Function Selection
The selected function is highlighted.

Connected sensor:
Sensor type, manufacturer, order code and serial number, point of measurement and tag number

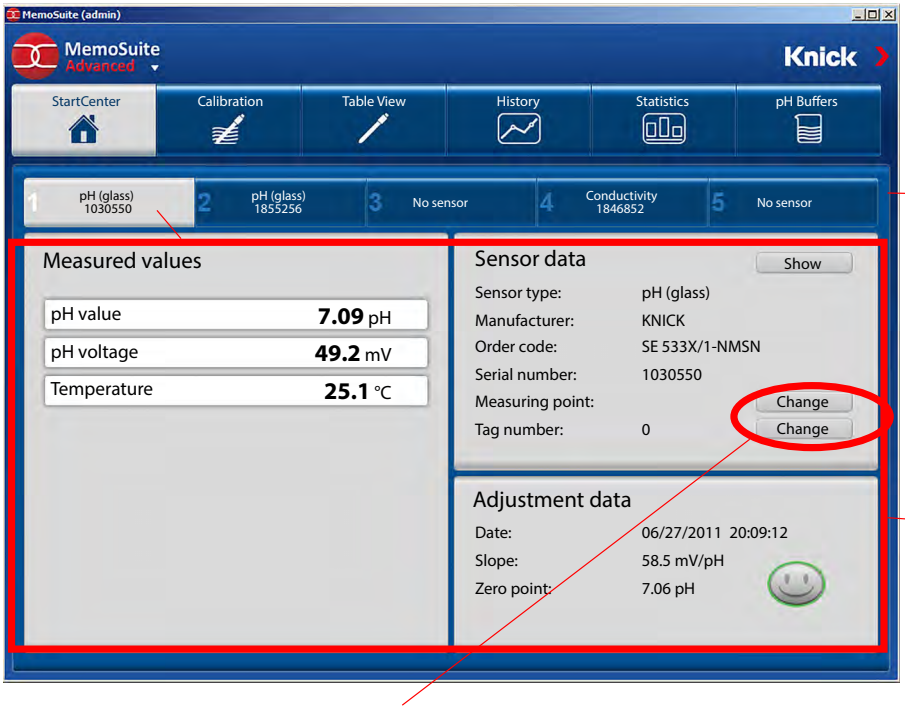
Last adjustment

"Show" sensor data:
Shows all data stored in the sensor.

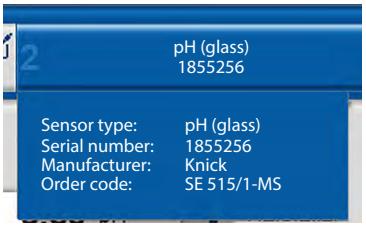


Selecting a MemoLink

When several MemoLinks are connected, the screen shows an additional row of buttons. Each button is assigned to one MemoLink. This assignment can be changed (see "Managing MemoLinks", page 37).



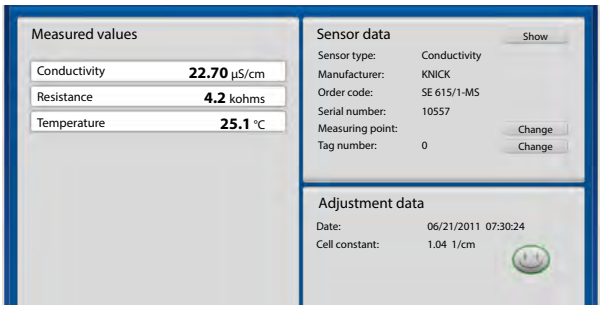
Place the mouse pointer on the button to display the sensor type, manufacturer, order code and serial number.



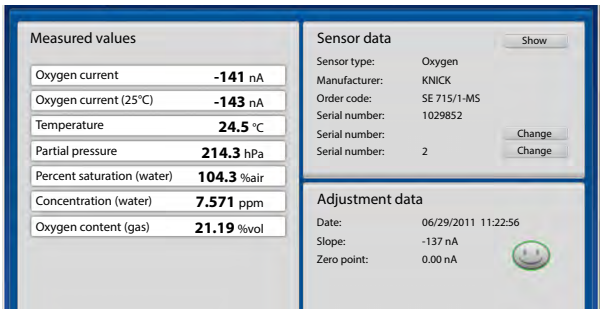
The parameters shown here apply to the sensor connected to the active MemoLink (highlighted button).

"Change" the point of measurement / tag number:
The specifications will be changed in the sensor and in the database.

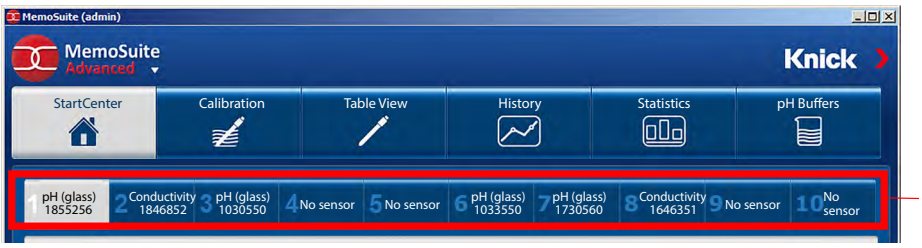
The displayed parameters change according to the selected Memolink and the connected sensor.



Conductivity sensor



Oxygen sensor



Up to 10 MemoLinks can be connected.

Calibration

A multitude of established calibration methods can be used for adjusting or calibrating the sensors.

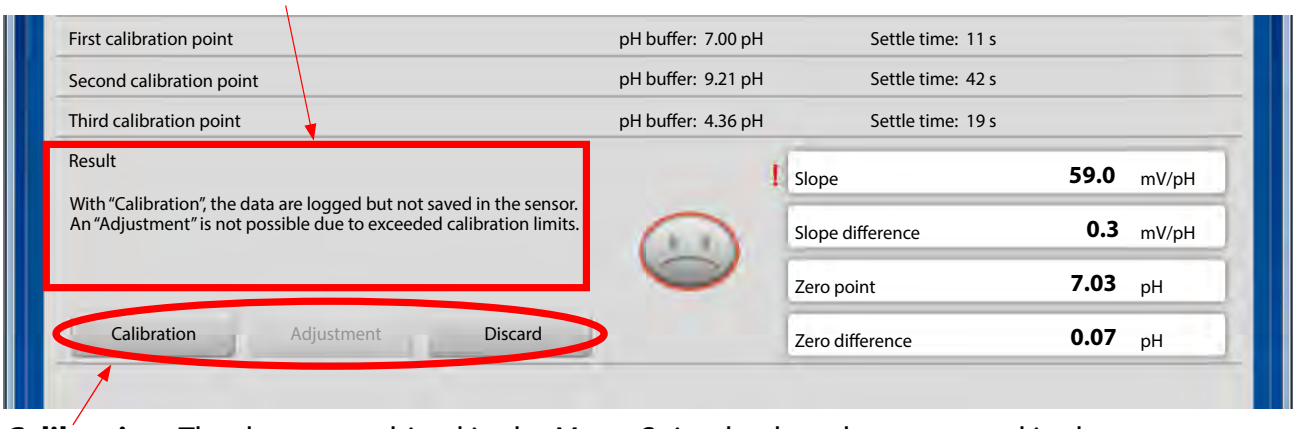
Available Calibration Methods

Process variable	Available calibration methods
pH	GMP Automatic (“Calimatic”) Data entry Reference calibration Manual calibration
Oxygen	GMP slope in air Data entry Slope in air Zero point
Conductivity	Data entry Reference calibration Automatic in solution
ORP	Data calibration (entering an ORP delta value) Manual calibration (correcting or entering the electrode voltage)

After you have selected a calibration method, MemoSuite will take you step by step through the calibration process. At the end of each calibration, the resulting calibration values (e.g. zero point, slope, cell constant) will be evaluated and the corresponding Sensoface icon will be displayed (friendly, neutral, sad smiley). If the calibration values lie within the permitted range, the “Adjustment” button is enabled. Click it to save the values in the sensor.

User Support during Calibration with MemoSuite

When errors are recognized during calibration, the software indicates the critical parameter (red exclamation point). It informs on the result and does not allow an adjustment:



Calibration: The data are archived in the MemoSuite database but not saved in the sensor.
Adjustment: The data are archived in the MemoSuite database and saved in the sensor.

Example: Calibrating a pH Sensor Using “Calimatic”

Automatic calibration (“Calimatic”) automatically retrieves the temperature-corrected buffer value from the stored tables after the respective buffer set has been specified. It can be used for the following types of calibration:

One-point calibration
With one-point calibration, the zero point of the pH sensor is checked and corrected by an adjustment if required. The calibration solution can be a pH buffer if its pH value is known from a reference measurement. In many cases, this type of calibration is sufficient, particularly when the sensor slope does not change or changes only slightly.

Two-point calibration
Two-point calibration is recommended where high demands are placed on accuracy. Here, you have to use two different pH buffer solutions which should encompass the pH value of the process (bracketing procedure). As a result, the zero and slope values of the sensor are determined and saved in the sensor if an adjustment is required.

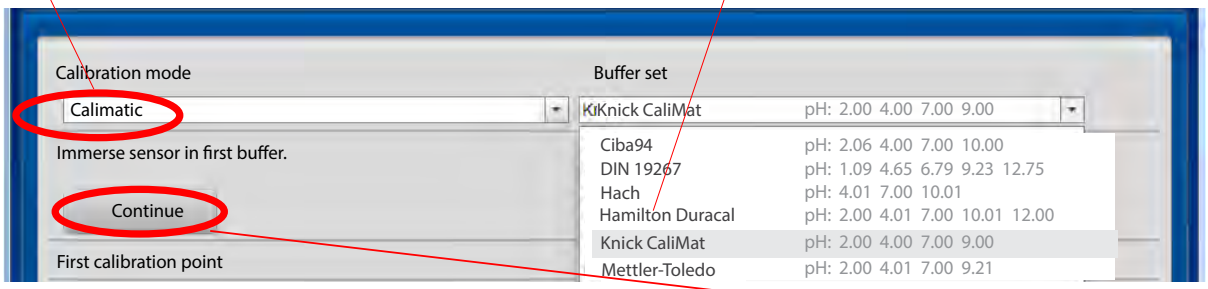
Three-point calibration
If you want to measure pH values over a very wide range, you can calibrate the sensor using three different buffer solutions which cover a broad range of pH values. Zero and slope of the sensor are calculated using a line of best fit (linear regression) and are saved in the sensor if an adjustment is required.

Selecting calibration buffers for automatic calibration: See page 26.

Example for a Two-Point Calibration:

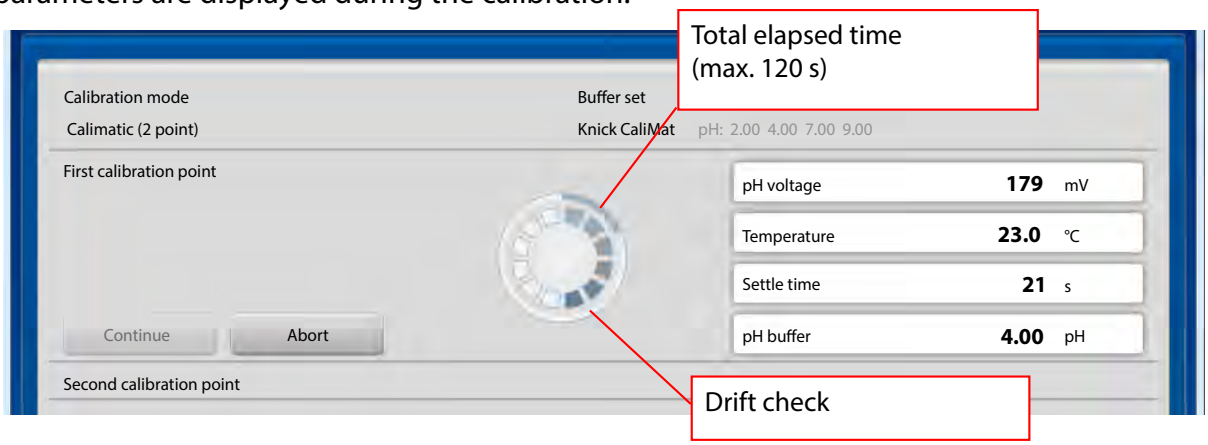
1 Select calibration mode

2 Select buffer set



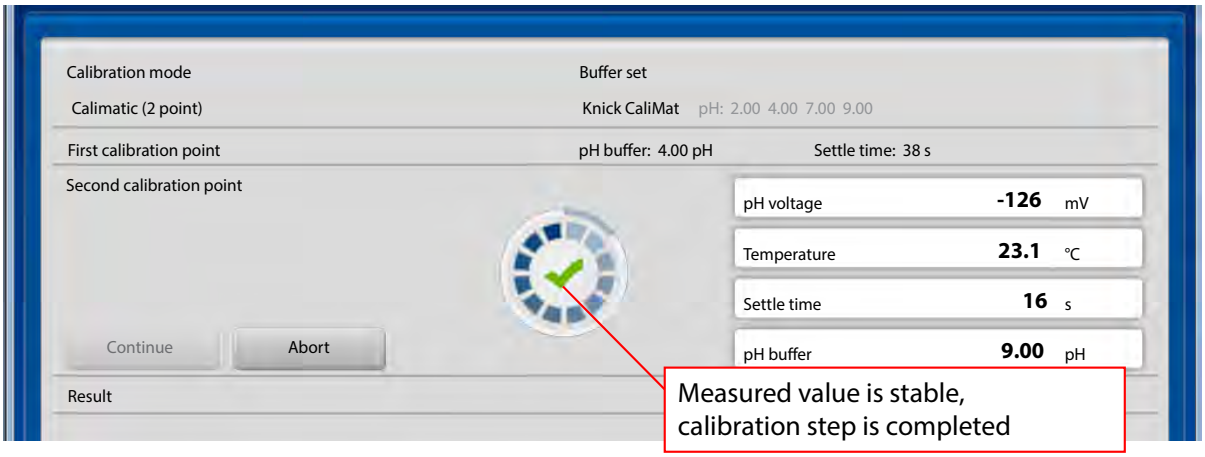
3 Immerse sensor in first buffer. Select “Continue” to start calibration.

4 **First calibration point**
The value of the buffer solution is automatically measured. The currently measured parameters are displayed during the calibration:



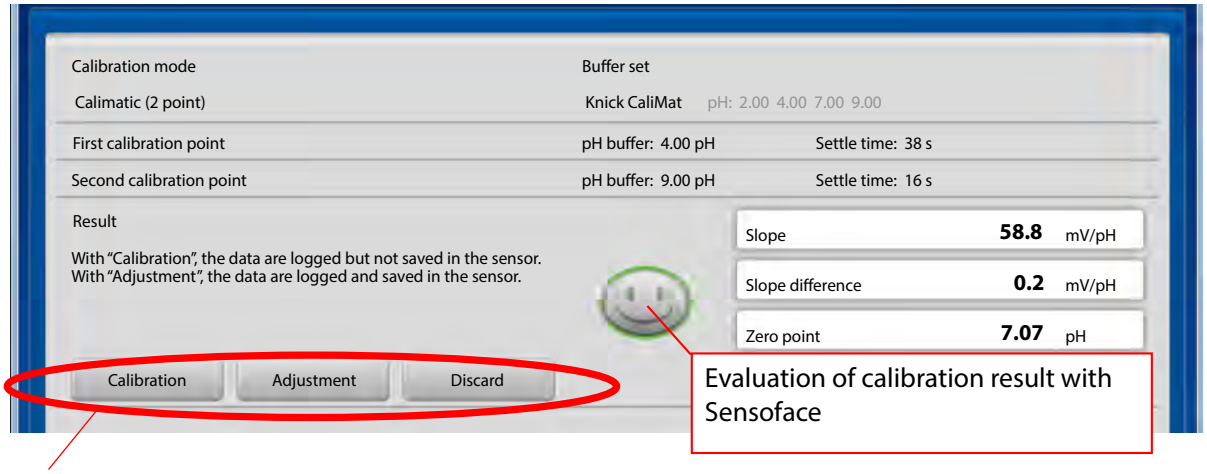
5 Second calibration point

When prompted to do so, immerse the sensor in the second buffer.
Select "Continue" to proceed with the calibration.



6 Result of calibration

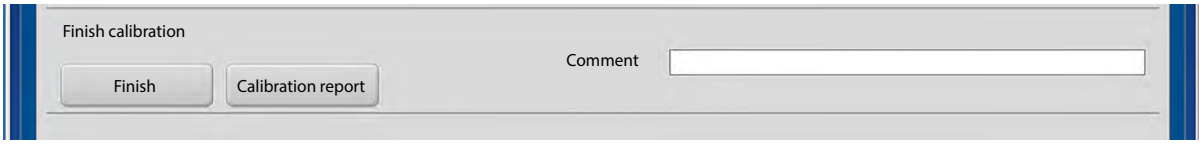
The values determined for zero point and slope are displayed.



Calibration: The data are archived in the MemoSuite database but not saved in the sensor.
Adjustment: The data are archived in the MemoSuite database and saved in the sensor.

7 Finishing calibration

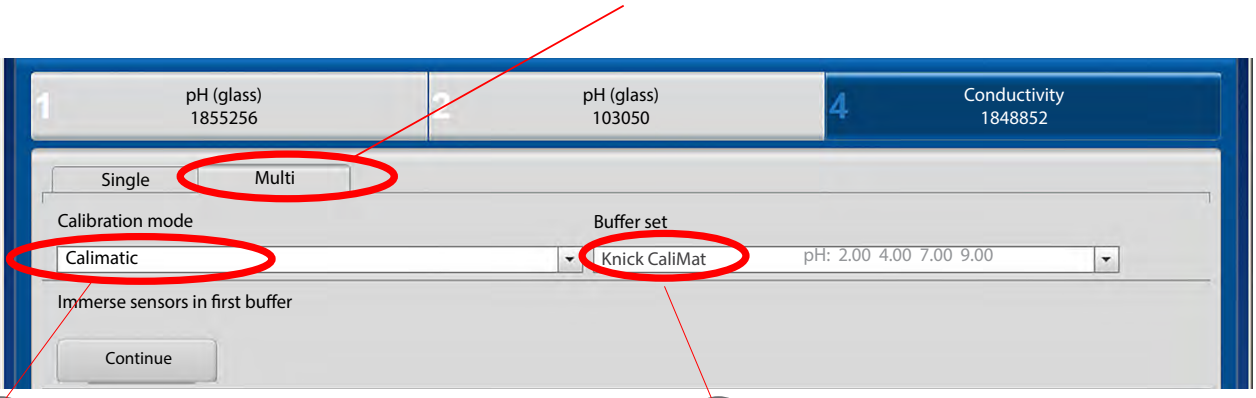
You can enter comments (e.g. lot number of used buffer) in the "Comment" field.



Select "Finish" to complete the calibration process. In addition, you can create a calibration report (see page 18 for details).

Example for a Two-Point Calibration:

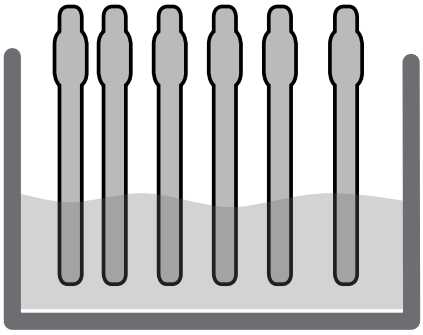
When several MemoLinks with pH sensors are connected, Calimatic can be run simultaneously for all connected sensors. Select the "Multi" tab to highlight all connected pH sensors.



1 Select calibration mode

2 Select buffer set

3 Immerse all sensors simultaneously in the first buffer. Select "Continue" to start calibration.

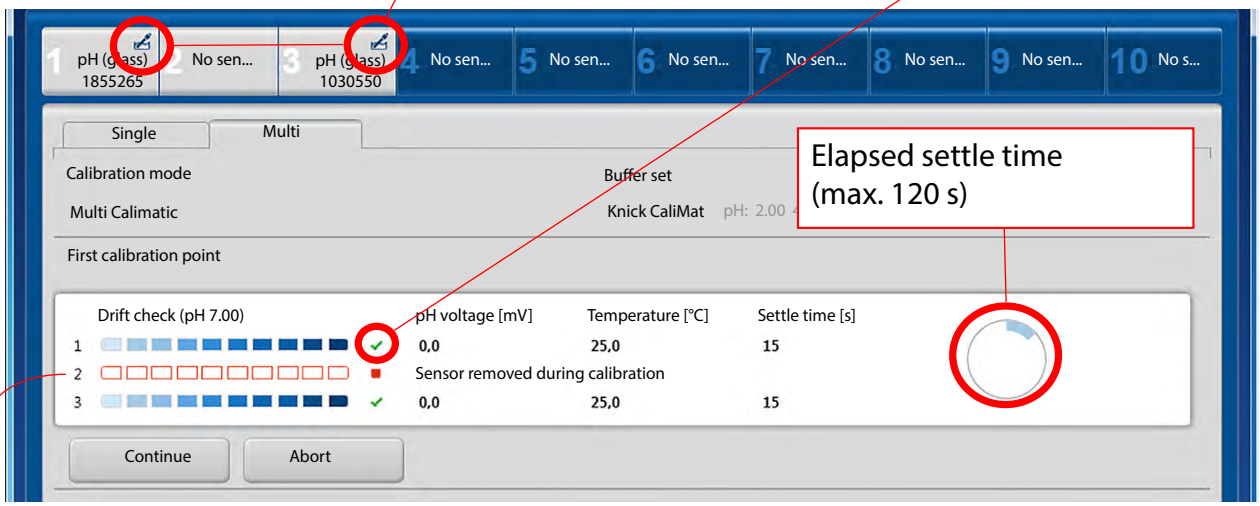


4 **First calibration point**

The value of the buffer solution is automatically measured. The currently measured parameters are displayed during the calibration:

These icons indicate that calibration is in progress. A blinking icon means that user intervention is required. The icons are also visible when you select another functional area.

Wait after each calibration step until the measured values of all sensors have stabilized.



When a sensor has been removed during calibration or was identified as defective (e.g. drift check failed), this sensor is excluded from calibration. Calibration continues for the remaining sensors.

5 **Second calibration point**

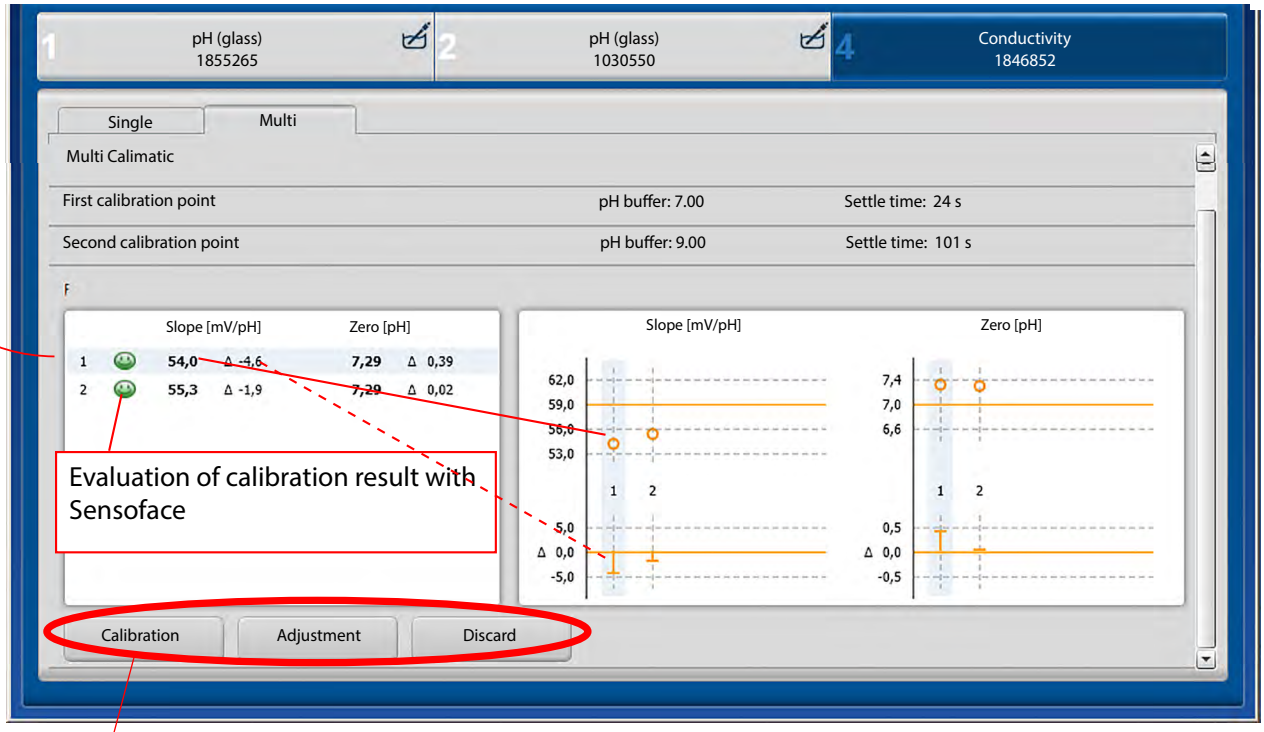
When prompted to do so, immerse the sensors in the second buffer.
Select "Continue" to proceed with the calibration.

Calibrating Several pH Sensors

When all calibration steps have been executed, the results are clearly presented in a table and as a diagram. When you move the mouse pointer over a value, all corresponding values are highlighted in gray.

6 Calibration result

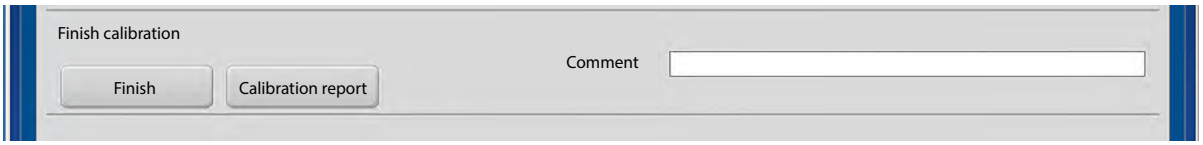
The table values shown in **bold** are absolute values.
They are shown in the upper section of the corresponding diagram.
Table values preceded by Δ are the differences to the previous calibration.
They are shown in the lower section of the corresponding diagram.



Calibration: The data are archived in the MemoSuite database but not saved in the sensor.
Adjustment: The data are archived in the MemoSuite database and saved in the sensor.

7 Finishing calibration

You can enter comments (e.g. lot number of used buffer) in the "Comment" field.



Select "Finish" to complete the calibration process. In addition, you can create a calibration report (see page 18 for details).

Table View: The MemoSuite Database

MemoSuite provides a database for archiving the most important sensor parameters.
The parameters are logged when:

- connecting sensors to MemoSuite,
- calibrating
- importing MemoLogs from Portavo devices with MemoLog function.

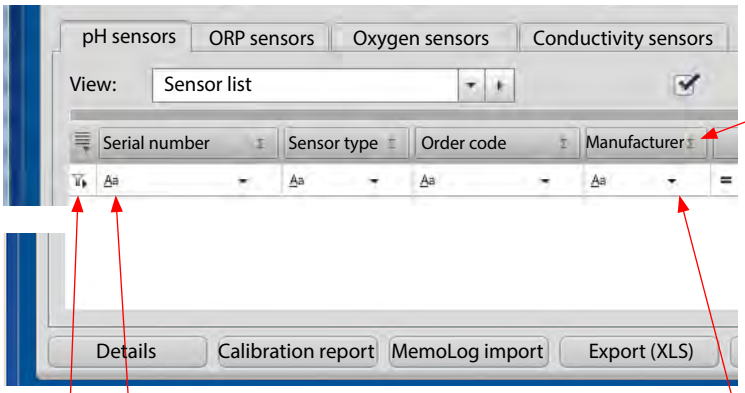
The archived sensor data are shown in the table view. The table view offers versatile possibilities for adaptation and management.

Sorting

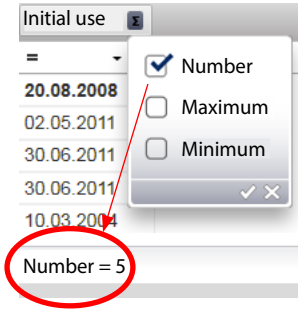
- Clicking on a column header changes the sort direction of the table entries (ascending/descending).
- By clicking with the [Ctrl] key held down you can select multiple columns for sorting.

Filtering

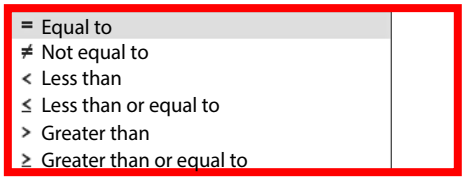
The filter line is located below the column headers. Here, you can filter each column by individual values. You can also hide table rows.



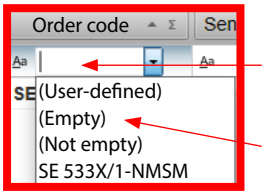
The sigma sign allows determining the number of parameters, maximum or minimum. The result is shown at the end of the column:



By clicking this icon you can filter by field-dependent comparison operators, here for example:



By clicking this icon you can select the comparison value:



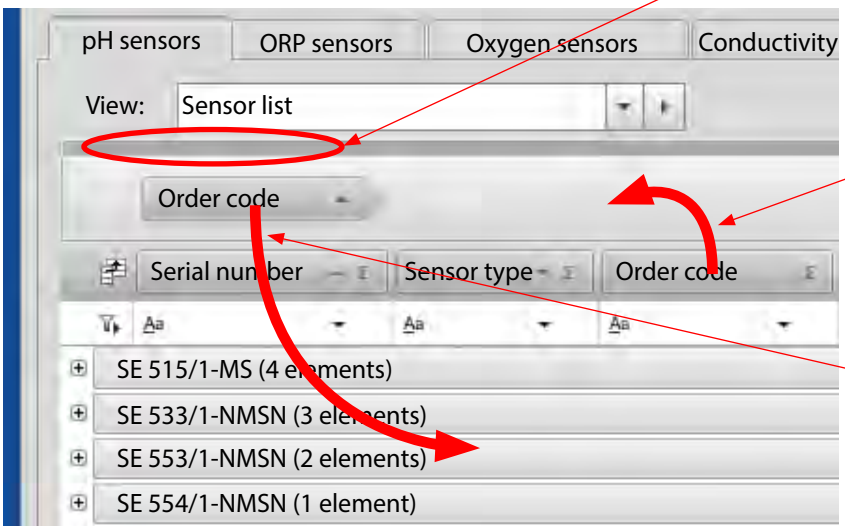
Free input

Suggestions from MemoSuite

By clicking here you can disable all applied filters – an icon indicates whether the filter is disabled or enabled:
little right arrow: filter disabled,
little cross: filter enabled.

Table View: Grouping

Grouping
Drag the header of the column you want to group on and drop it onto the opened grouping pane. To undo a grouping, open the grouping pane and drag the column header out of the pane.



1 To open/close the grouping pane, click on the grouping bar.

2 To group:
drag the column header onto the grouping pane.

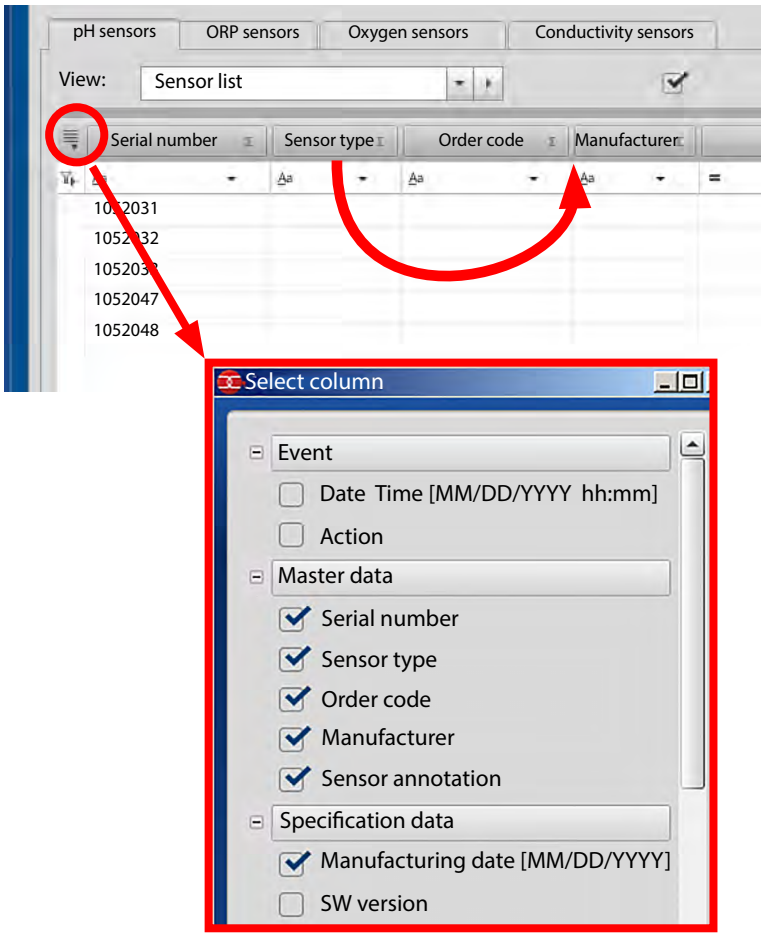
3 To ungroup:
drag the group symbol into the table range.

Please note when using pH ISFET sensors:
The following columns are hidden in the preset table view for pH sensors (View: Calibrations):

- ISFET zero
- ISFET zero delta
- ISFET zero evaluation
- Permissible ISFET zero

When you use pH ISFET sensors, you can unhide these columns using “Select column”.

Table View: Arranging the Columns, Printout, Saving



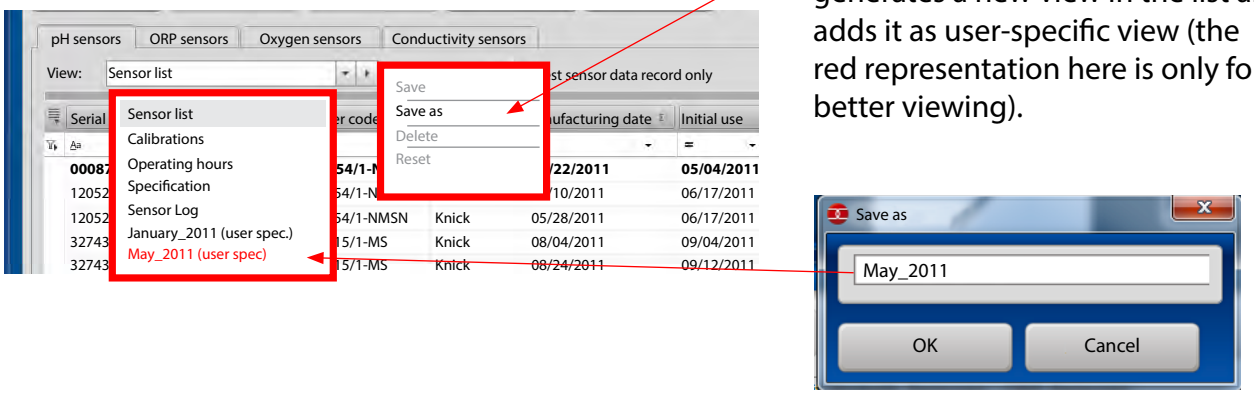
Arranging Columns
Drag and drop the column header to the desired position.

Showing and Hiding Table Columns
Use the column selector dialog to show or hide columns.

Printing the Table View
In MemoSuite you can make a simple printout of the tables shown in table view. The printout contains a 1:1 representation of all table values just as they can be seen in MemoSuite. The settings for table filter, sorting, grouping etc. also affect the printout.

Please note:
The printer named "MemoSuite-Printer" only serves for the generation of calibration reports as PDF file. It cannot be used for direct printout of table views.

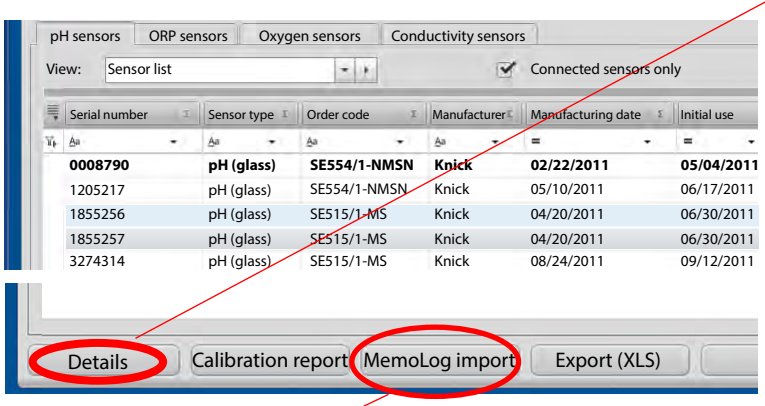
Saving the Table View
Save the table view that you have generated under its own name so you can use it again any time you want. You can also output the table view as Excel file or directly print it.



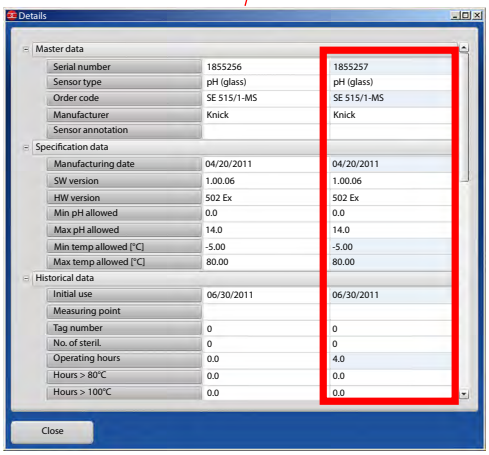
Save as
generates a new view in the list and adds it as user-specific view (the red representation here is only for better viewing).

Table View: Comparing Values, MemoLog Import

Detail View: Comparing Data



"Details" opens a window with the complete specifications of one or more sensors (lines) which have been marked in the table. If you have selected several sensors, you can compare the data. Differences are highlighted in blue. The sensor data record that has been selected first is shown in the first column. It is the basis for comparison.



MemoLog Import

MemoLog import allows importing MemoLog data from portable Portavo meters with MemoLog function (see Portavo user manual). This function must have been activated in the device.
MemoLogs contain data stored from Memosens sensors, e.g. calibration and load data.

Proceed as follows:

1. Connect the device to the computer via USB.
2. Click the MemoLog Import button to start the data transfer.
3. When several devices are connected, select the desired device (identified by the serial number).
4. Confirm that you want to import the data. MemoSuite makes sure that no double entries are created, for example by repeated import.
5. Finally, you can delete MemoLog entries in the Portavo.

Please note: Calibrations imported from MemoLog DO NOT include the additional information which is recorded when calibrating using MemoSuite, such as the buffer sets used and information on the operator who has performed the calibration.

Calibration Report

You can create a calibration report in PDF format at the end of a calibration run, but this can also be done at any later time using the table view. Form and contents of the generated calibration reports are determined by templates which are saved as RTF documents (Microsoft Word Rich Text Format) in the Templates management.
See page 32 for further information on how to create individual calibration reports.

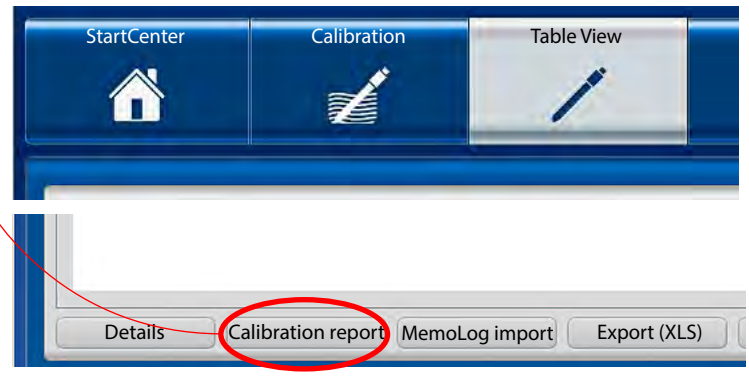
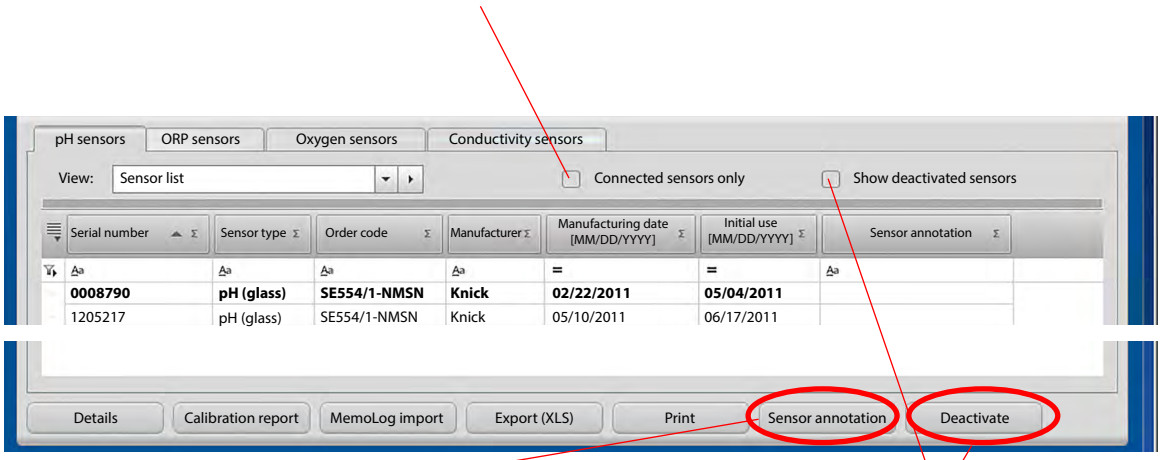


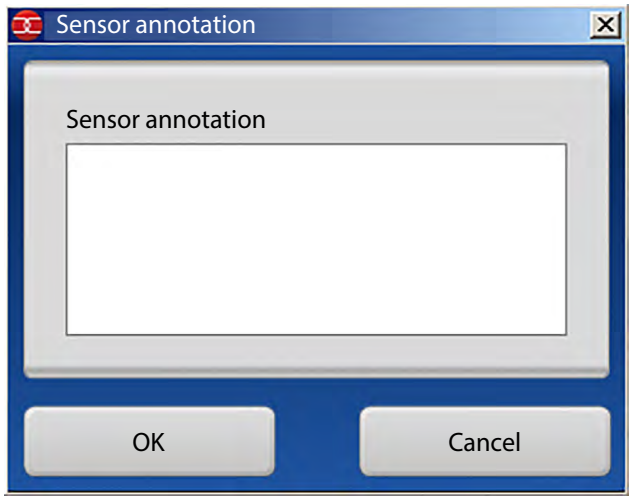
Table View: (De)Activating the Sensor, Sensor Annotation

MemoSuite stores the data of all sensors ever connected via MemoLink in the database.

With this box checked, only the data of the currently connected sensors will be shown in the table.



Sensor Annotation
This function allows entering additional information about a sensor.

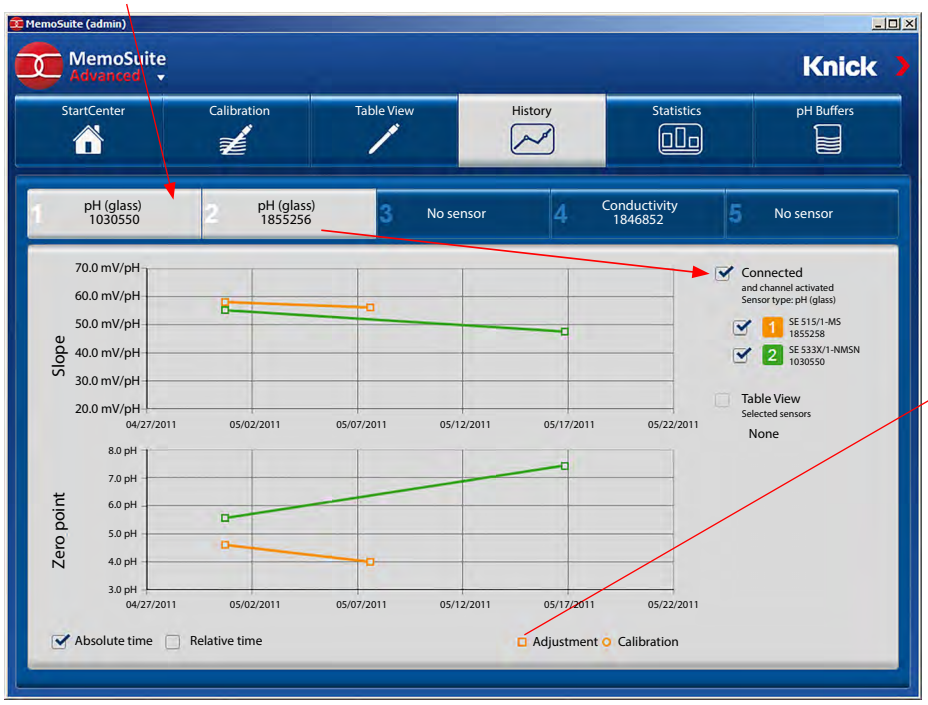


Deactivating/Activating Sensors
MemoSuite allows hiding sensor data that are no longer needed. To do so, select the respective sensors in the table view and click "Deactivate".

Please note: When you deactivate a sensor, the sensor data remain in the database and can be re-activated at any time. To do so, check the "Show deactivated sensors" box, select the respective sensors and click on the "Activate" button.

History (at the Example of pH Sensors)

The "History" menu shows – according to your selection – the parameters of the currently connected sensors or of the sensors selected in the "Table View" menu. The sensors are grouped according to type in the MemoLink selection and in the sensor selection list (to the right of the history graph).



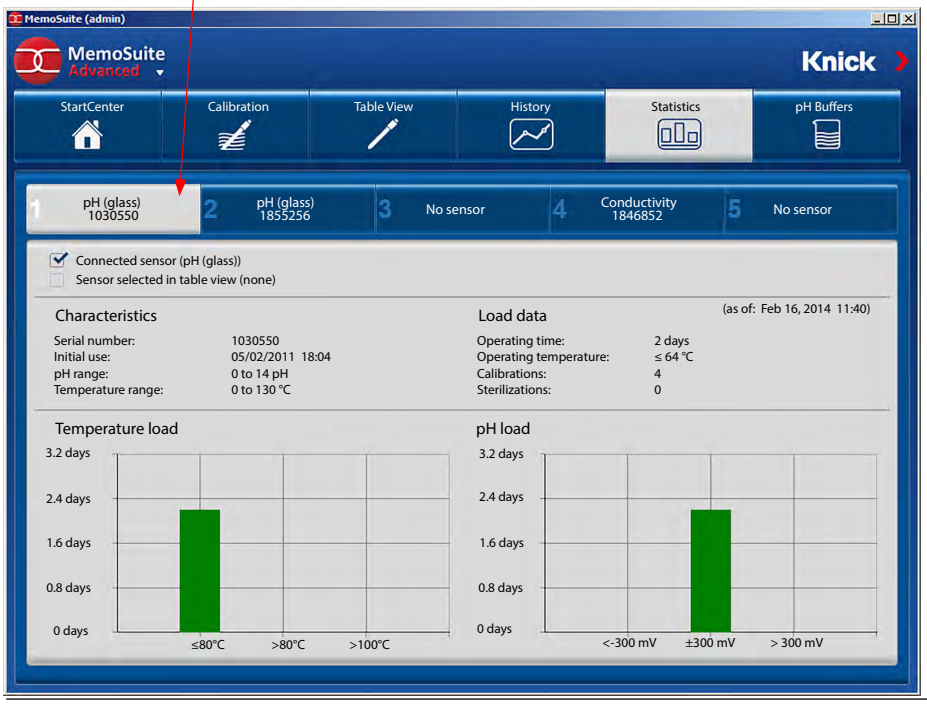
Legend
Different presentation for calibration and adjustment (In this example, the parameters determined by calibration have been saved in the sensor as an adjustment.)

Absolute Time / Relative Time

You decide how the parameters are to be displayed: related to the actual date ("absolute") or to the time elapsed since the initial use ("relative").

Statistics (at the Example of pH Sensors)

The "Statistics" menu shows – according to your selection – the parameters of the currently connected sensor or of the sensors selected in the "Table View" menu.

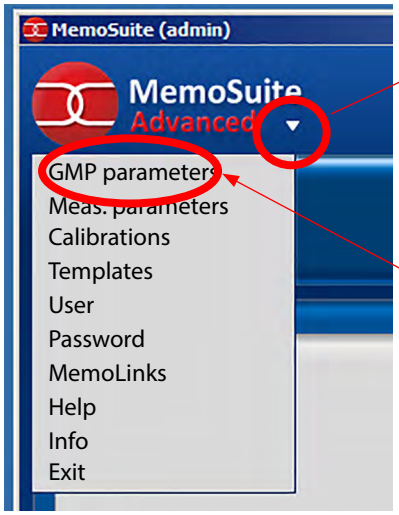


GMP Calibration

Manufacturing pharmaceutical products requires maximum accuracy for the acquisition of measured values. Failure effects must be eliminated as far as possible by calibrations / adjustments.

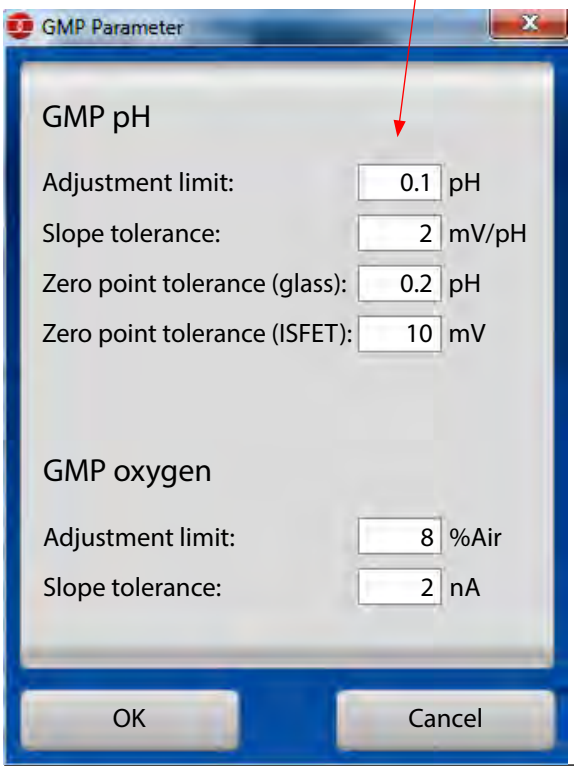
Procedure
Limits (tolerances) can be specified for the parameters determined during a calibration. If after several calibrations the zero point or slope values lie outside the specified tolerances, this indicates that the sensor drift is inadmissibly high. A message will be generated and the sensor should be replaced.

If the parameters lie within the specified tolerances, no adjustment will be made.
This allows tracking the sensor parameters before and after a batch and thus ensuring consistent QM documentation of the production process.



1 Open the menu for the basic settings (triangle below MemoSuite logo)

2 Select "GMP parameters" --- Specify the required parameters.



GMP Calibration: Calibration Report File

When a calibration is finished, a calibration report is automatically saved in csv data exchange format so that the report can be transmitted to a higher-level system.

File Path and File Name
Depending on the language configured for the Windows operating system, the calibration report file is saved in one of the following directories:

Windows XP:
English: C:\Documents and Settings\All Users\Application Data\MemoSuite
German: C:\Dokumente und Einstellungen\All Users\Anwendungsdaten\MemoSuite

Windows 7/8:
All languages: C:\ProgramData\MemoSuite
Please note that these directories are hidden Windows directories which are only displayed in Windows Explorer when "Hide protected operating system files" has been disabled in the Folder Options.

The name of the calibration report file is built up as follows:
<sensor name>_<serial number>.csv
If the sensor name contains characters which are not allowed in a file name (e.g.: /:*?<>), these are omitted.

Example:
After GMP calibration of a sensor named SE 554/1-NMSN with serial number 9380116, the calibration report file SE 5541-NMSN_9380116.csv will be generated.

NOTICE
Each time a sensor is calibrated, the previous calibration report file will be overwritten. Therefore, you should transfer the calibration report to the higher-level system shortly after the calibration.

Build-Up of the Calibration Report File
Each line in the csv file corresponds exactly to one entry in the calibration report. It contains two values separated by semicolon: the type ID of the entry and its content.

Example:

Calibration report (csv file)	Meaning
105; SE 554/1-NMSN	Sensor name = SE 554/1-NMSN
106; 9380116	Serial number = 9380116
117; -114	Buffer 1 Electrode voltage = -114 mV
118; 22, 9500122070313	Buffer 1 Temperature = 22.95... °C
119; 43	Buffer 1 Settle time = 43 s
...	...

Entries of the Calibration Report File for GMP Calibration

The following tables show the definitions of the calibration report IDs. The ID indicates to which calibration report entry the line in the csv file refers. The file type column shows the data type of the entry. This column is to be interpreted as follows:

ASCII:	Text
Float:	Number which may have decimal places
Integer:	Number which has no decimal places

Process Variable: pH

The following entries can appear in the calibration report after a 2-point GMP calibration:

ID	Type	Content (calibration and adjustment data)
1	ASCII	Manufacturing date of the sensor
105	ASCII	Sensor name
106	ASCII	Serial number
117	Float	Buffer 1: Electrode potential [mV]
118	Float	Temperature [°C]
119	Float	Settle time [s]
120	Float	Desired value (temperature-corrected) [pH]
121	Float	Actual value [pH]
124	Integer	Message: Limit exceeded (0=no, 1=yes)
126	Float	Buffer 2: Electrode potential [mV]
127	Float	Temperature [°C]
128	Float	Settle time [s]
129	Float	Desired value (temperature-corrected) [pH]
130	Float	Actual value [pH]
133	Integer	Message: Limit exceeded (0=no, 1=yes)
144	Float	New zero point: Value [pH]
145	Float	Deviation old zero point - new zero point [pH]
146	Integer	Message: Zero drift tolerance limit exceeded (0=no, 1=yes)
147	Integer	Message: Absolute zero limit exceeded (0=no, 1=yes)
149	Float	New slope: Value [mV/pH]
150	Float	Deviation old slope - new slope [mV/pH]
151	Integer	Message: Slope drift tolerance limit exceeded (0=no, 1=yes)
152	Integer	Message: Absolute slope limit exceeded (0=no, 1=yes)
153	Integer	Calibration successful (0=no, 1=yes)
154	Integer	Adjustment successful (0=no, 1=yes)
263	Integer	GMP cal successful (0=no, 1=yes)
156	Float	Zero point (active value) [pH]
157	Float	Slope (active value) [mV/pH]

The following entries can additionally appear in the calibration report after a 3-point GMP calibration:

ID	Type	Content (calibration and adjustment data)
135	Float	Buffer 3: Electrode potential [mV]
136	Float	Temperature [°C]
137	Float	Settle time [s]
138	Float	Desired value (temperature-corrected) [pH]
139	Float	Actual value [pH]
142	Integer	Message: Limit exceeded (0=no, 1=yes)

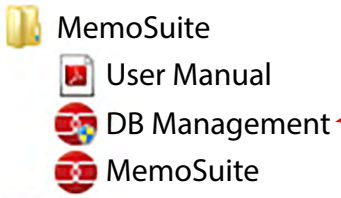
Process Variable: O_2

Possible contents of an O_2 GMP calibration report:

ID	Type	Content (calibration and adjustment data)
1	ASCII	Manufacturing date of the sensor
405	ASCII	Sensor name
406	ASCII	Serial number
417	Float	Calibration point: Sensor current [nA]
416	Float	Pressure [mbar]
418	Float	Temperature [°C]
419	Float	Settle time [s]
420	Float	Desired value (temperature-corrected) [%air]
421	Float	Actual value [%air]
424	Integer	Message: Limit exceeded (0=no, 1=yes)
449	Float	New slope: Value [nA]
450	Float	Deviation old slope - new slope [nA]
451	Integer	Message: Slope drift tolerance limit exceeded (0=no, 1=yes)
452	Integer	Message: Absolute slope limit exceeded (0=no, 1=yes)
453	Integer	Calibration successful (0=no, 1=yes)
454	Integer	Adjustment successful (0=no, 1=yes)
563	Integer	GMP cal successful (0=no, 1=yes)
544	Float	Zero point (active value) [nA]
547	Float	Slope (active value) [nA]

Managing the Database

You will find the user interface for managing the MemoSuite database in the Windows Start menu. Please note that PC administrator rights are required to run the program.



Database management allows:

- creating a backup of the database and, if required, using it to restore the database
- creating, updating or deleting further databases for MemoSuite

Creating a backup:

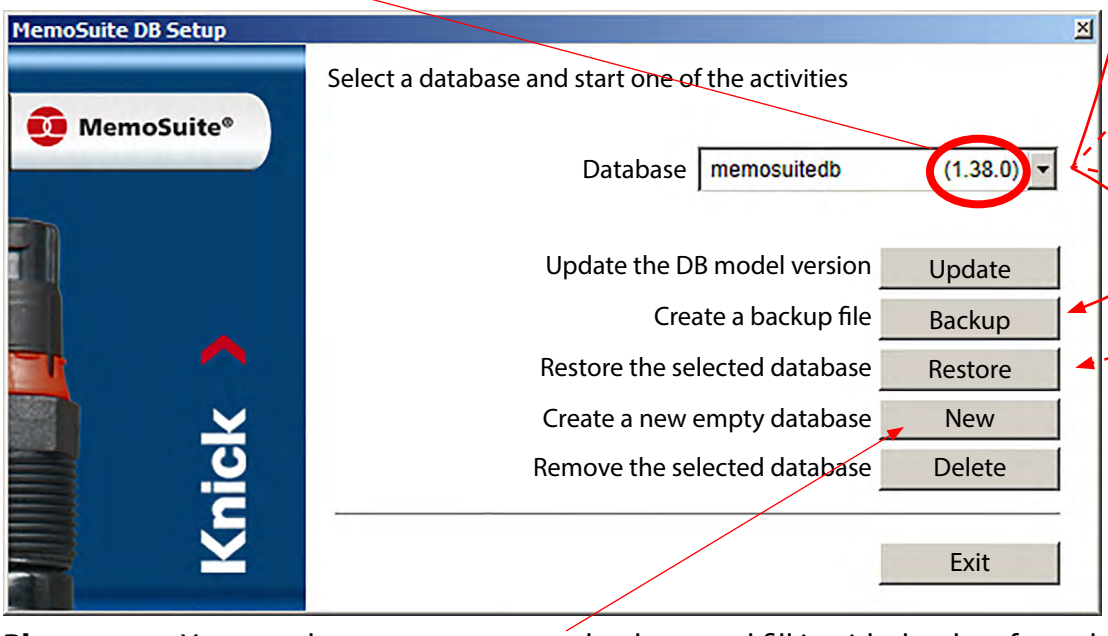
1. Select database.
2. Click "Backup" to save a backup file.

Restoring the database from a backup file:

3. Select the database that has to be restored.
4. Click "Restore" to select a backup file.

NOTICE: When you restore a database, all data will be overwritten. Confirm the corresponding safety prompt.

Version of database



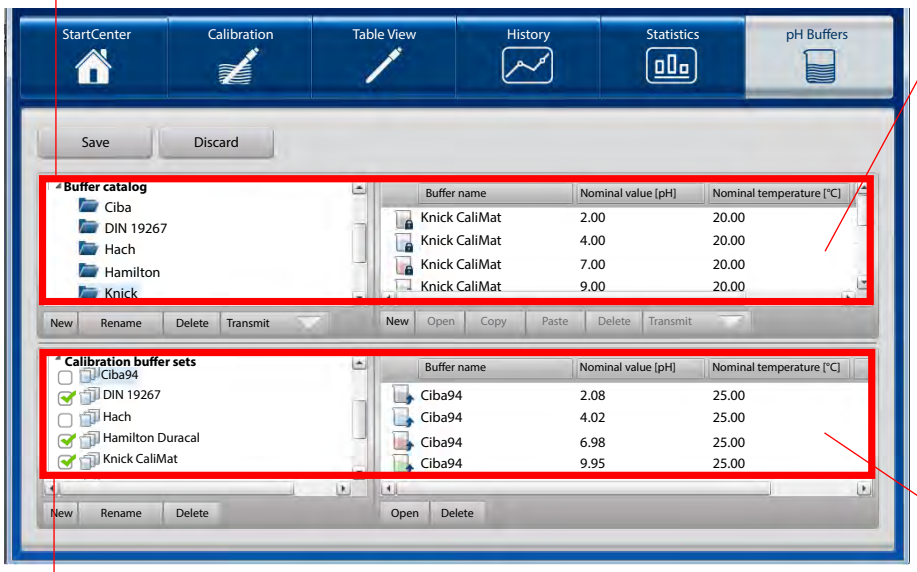
Please note: You can also create an empty database and fill it with the data from the backup file.

Calimatic (Automatic Calibration)

The automatic calibration (Calimatic, Multi Calimatic) automatically detects the respective buffer used from the specified calibration buffer set. It does not matter which buffer solution is taken first for calibration.

Selecting the Buffer Sets for Use with "Calimatic"

Buffer catalog



List of buffers as selected from the buffer catalog
(These are all buffers of this group – in some cases much more than are used in a calibration buffer set.)

Buffer solutions from a selected calibration buffer set

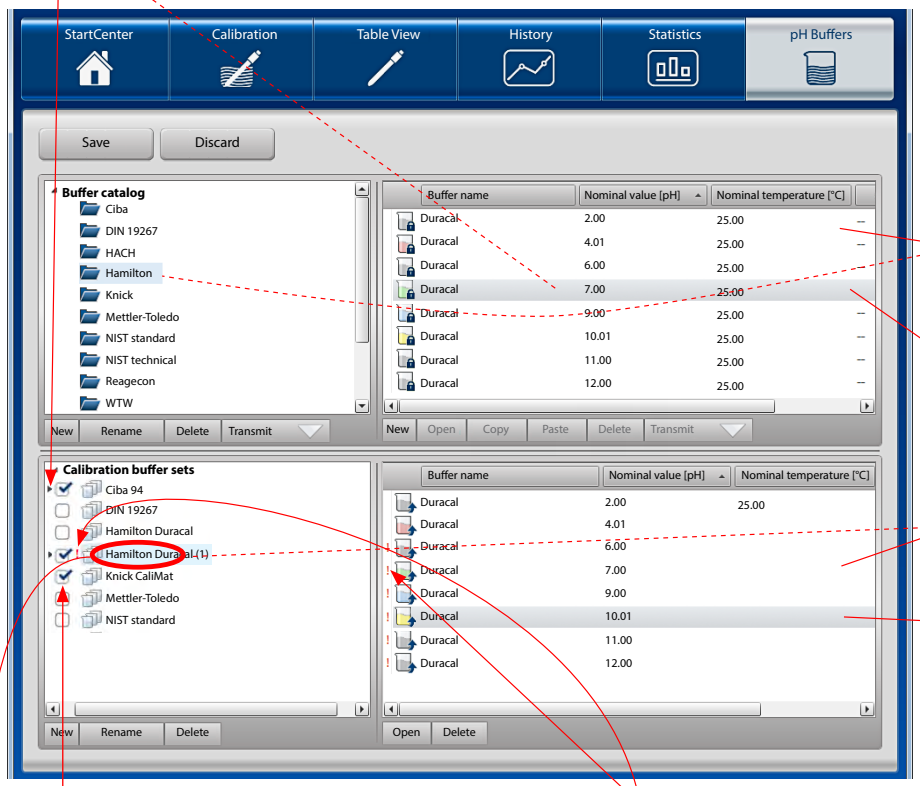
List of **calibration buffer sets** (editable)

pH Buffers: Buffer Management

The following illustration is intended to provide a first orientation. It provides information on icons used and shows the options available for customizing the view.

Buffer solutions are required for calibration. These can be either ready-to-use or customized. The "pH Buffers" menu is used to display, manage and configure buffer solutions, buffer groups and buffer sets required for calibrating pH sensors.

A triangle on the left of the buffer name marks a buffer set which contains a buffer solution selected in the buffer catalog.



Content of marked buffer group

Marked buffer

Content of marked calibration buffer set

Marked calibration buffer

A hook indicates that this buffer set can be selected for calibration.

Red exclamation points next to the name of a buffer set and several buffer solutions indicates that the buffer set contains solutions which differ by ≤ 1.5 pH units.

The consecutive number in brackets shown after the name of the buffer set (here "1") indicates that the list contains several buffer sets with the same name.

Meaning of the icons on the left of the buffer names:

Protected buffer – cannot be changed

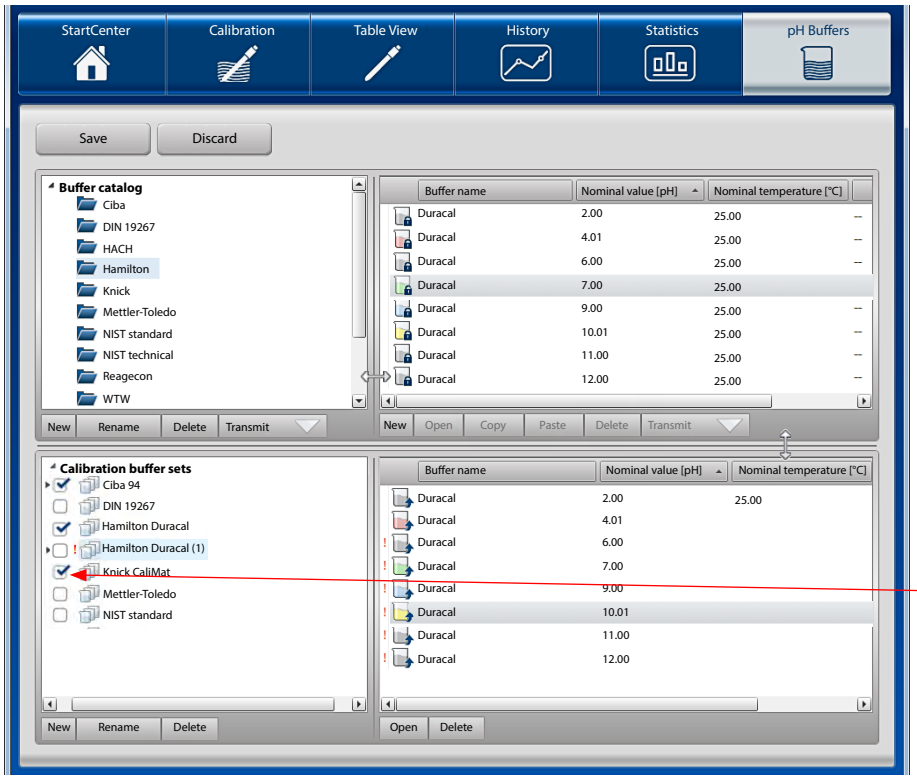
Editable buffer

Buffer from the buffer catalog which is used in the buffer set (link)

Please note: The values of the editable buffers can only be edited until they are used for a calibration. From then on, neither can the values be changed nor the buffer itself be deleted.

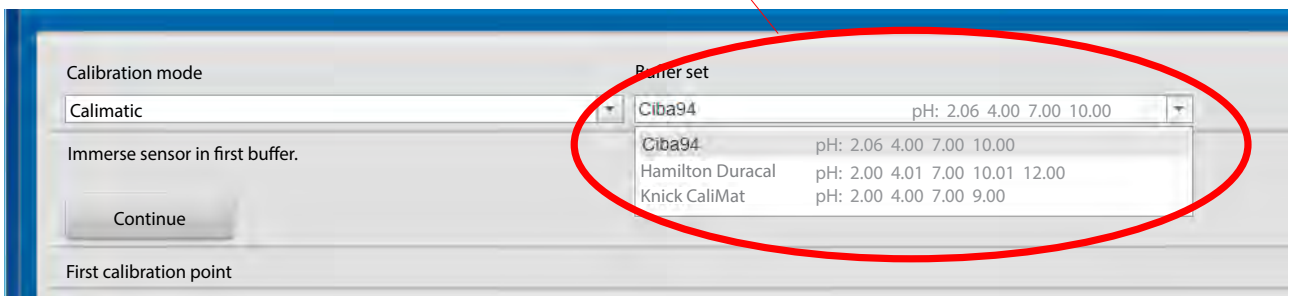
Selecting a Buffer Set for Calibration

In most of the practical applications, the predefined calibration buffer sets are sufficient for accomplishing the daily tasks. Set or remove the hook on the left of a calibration buffer set to select one or more buffer sets for calibration just as needed.



The hook indicates that this buffer set is available for calibration.

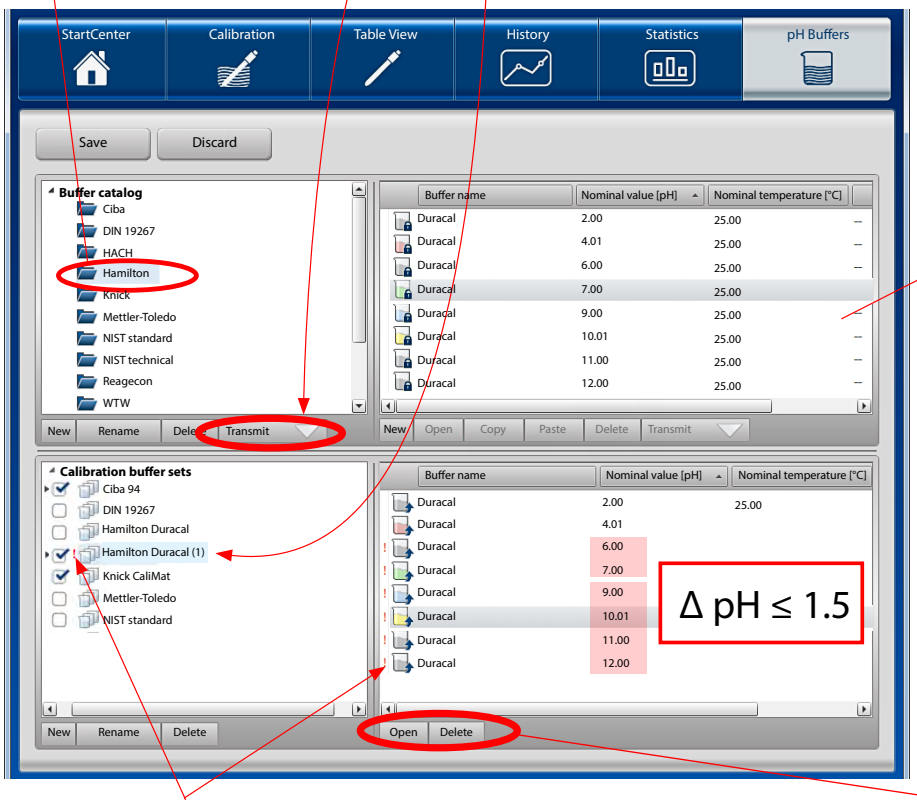
Only the calibration buffer sets selected here are available for calibration and appear in the "Buffer set" section of the "Calibration" menu (see also page 10 et seq.).



Assigning a Buffer Group as Calibration Buffer Set

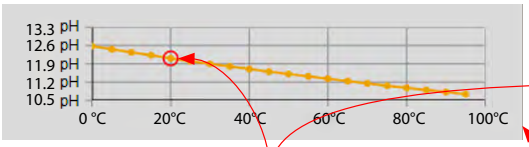
1 Select a buffer group from the buffer catalog

2 Click on the **Transmit arrow** below the buffer catalog to take over the selected buffer set with all buffer solutions provided by this supplier. If the "Calibration buffer sets" window already contains a buffer set with the same name, the added buffer set is given a consecutive number (here "(1)").

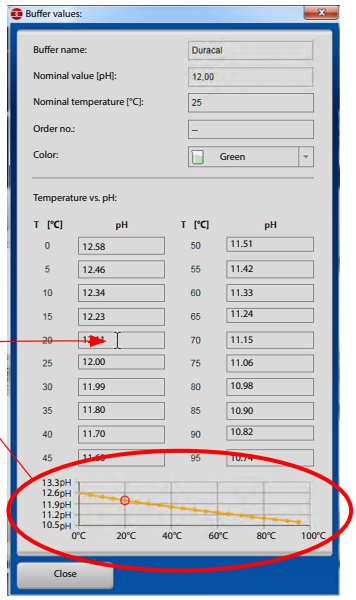


Buffers of the selected buffer group in the buffer catalog (All buffers of this group are displayed – in some cases much more than can be used in a calibration buffer set.)

An exclamation point indicates that the buffer set is defective (Δ pH ≤ 1.5). To fix this, you can either remove the complete buffer set or individual buffer solutions by clicking the **Delete** button.



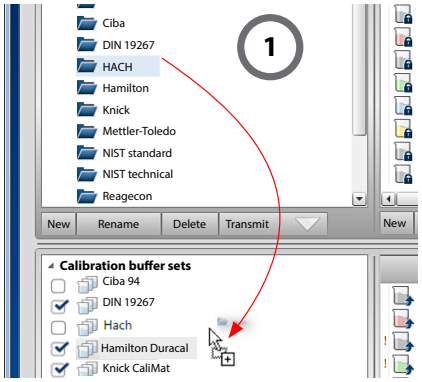
Buffer Characteristic
The red circle indicates the value where the cursor is.



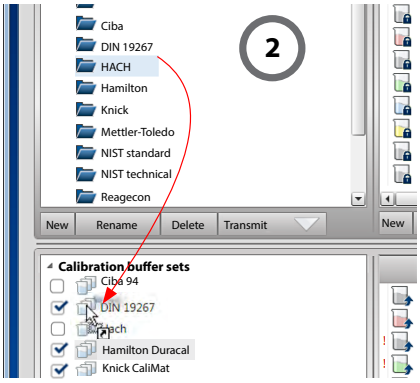
Click **Open** to display the parameters of the selected buffer:
Buffer name
Nominal value [pH]
Nominal temperature [°C]
Order code
Color of buffer
Temperature-corrected pH buffer values (Δ T= 5 °C)

Click **Delete** to remove the selected buffer.
It will then not be available in this calibration buffer set.

You can also assign a buffer group as calibration buffer set by drag and drop.
There are two possibilities to do so.



Adding a Buffer Group to the List of Calibration Buffer Sets
Drag the buffer group from the catalog and drop it in the empty section of the "Calibration buffer sets" window.
This corresponds to the "Transmit" function as described on page 29.

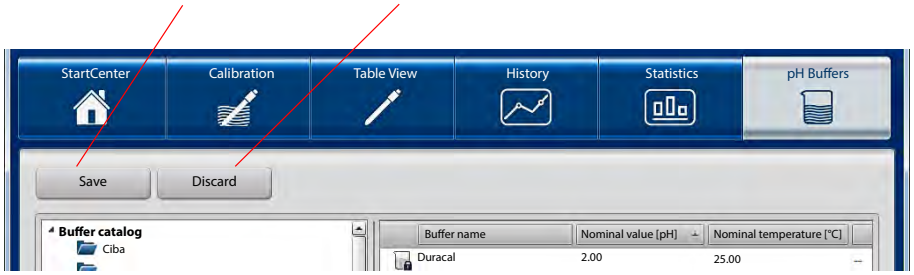


Adding the Content of one Buffer Group to a Calibration Buffer Set
Drag the buffer group from the catalog and drop it on an existing calibration buffer set.
This adds the buffers of the dragged and dropped group to the buffers of the targeted calibration buffer set.

Please note: The operations described above cannot be performed the other way round.

Clicking **Save** saves all changes to the database.

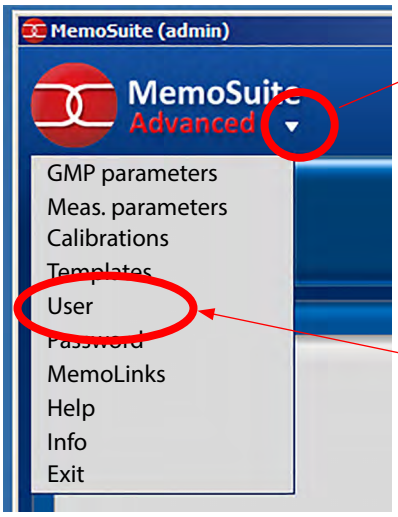
Clicking **Discard** resets all unsaved changes.



User Management, Password

MemoSuite provides a well-arranged and safe user management. Passwords can be assigned to the different users and access rights can be selected using the predefined "Administrator" and "Standard" profiles.

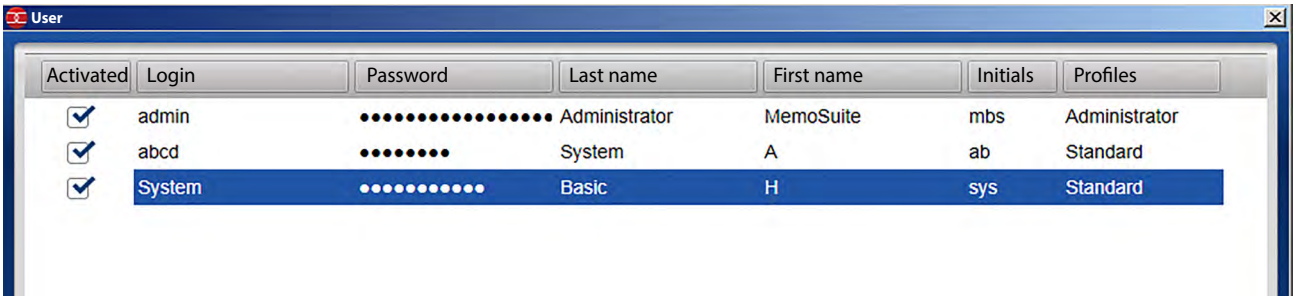
Opening the User Management Menu for Password Assignment



1 Open the menu for the basic settings (triangle below MemoSuite logo)

2 Select "User" to manage the user list, assign passwords* and grant access rights:

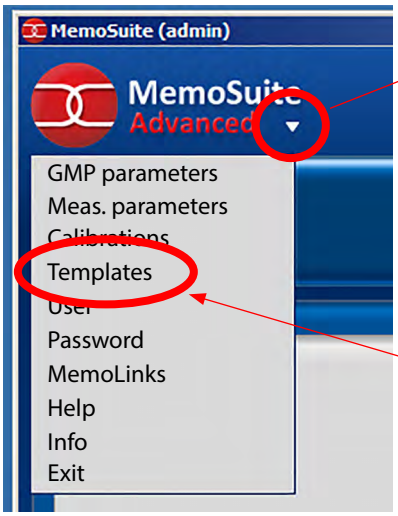
* The password can be edited by the currently logged in user.



User management with name, password and initials allows

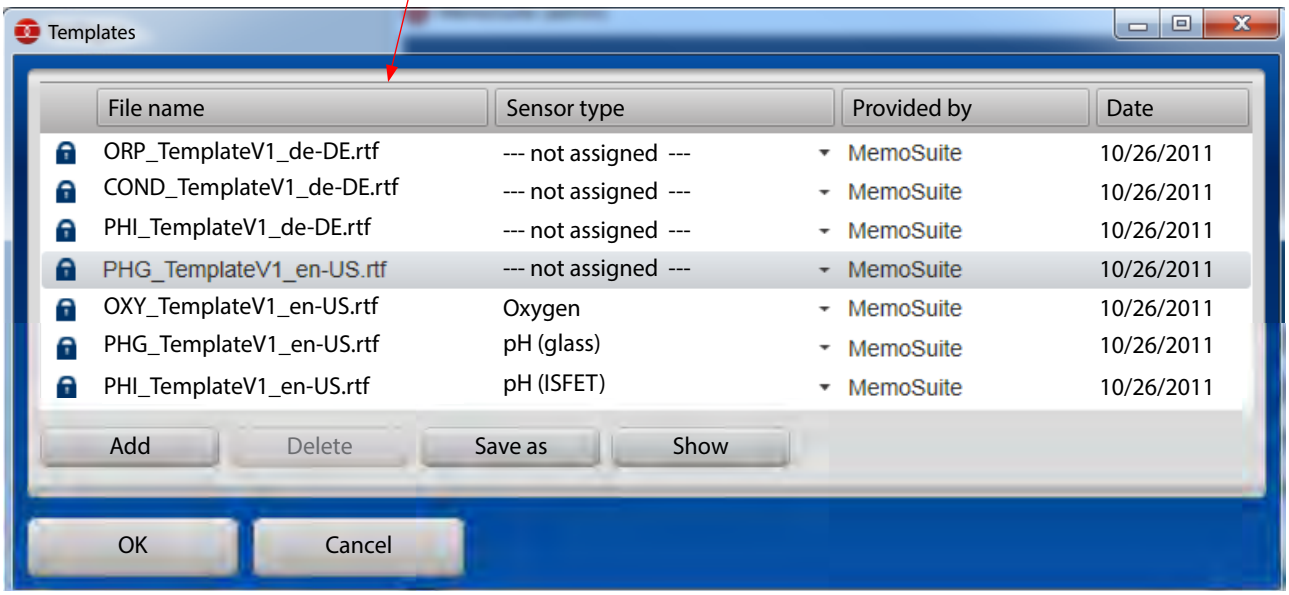
- deleting user profiles as long as no data have been saved to the database (such as when performing a calibration)
- adding user profiles
- enabling or disabling user profiles (blocking access)
- assigning a password (can later be changed by the user)

Calibration Reports



1 Open the menu for the basic settings (triangle below MemoSuite logo).

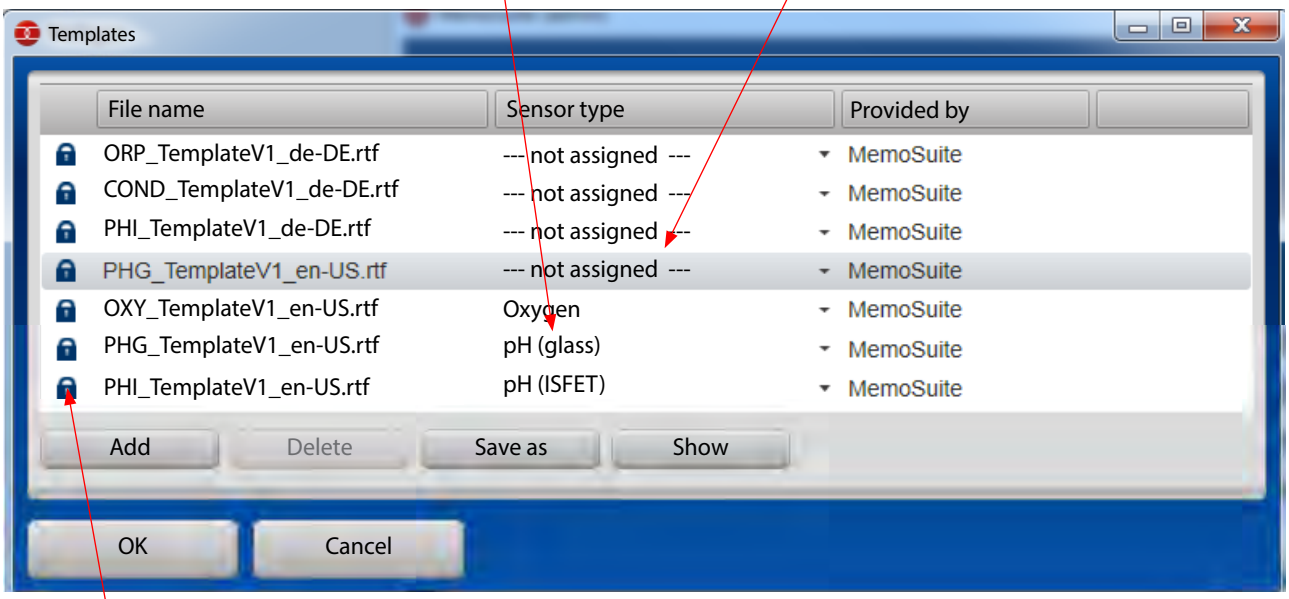
2 Select "Templates": The templates available for calibration reports will be shown:



The templates management allows

- activating pre-defined templates in another language
- adding your own templates to MemoSuite

The templates stored in MemoSuite are assigned to the different sensor types.
If you want to use another template, first select sensor type "-- not assigned --" for the currently used template and then select the correct sensor type for the new template.



Templates marked with the "lock" icon can neither be deleted nor edited.

See page 35 for how to create your own calibration templates based on the included templates.

Calibration Reports, Pre-Installed Templates

Typical template for a calibration report that can be used as quality certificate. When printing the document, the "text placeholders" in the template will be replaced by the actual values.
(See Appendix from page 38 onwards for an overview of text placeholders.)

MemoSuite®
Advanced

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Calibration Report

<<en-US>>

The form fields contain "text place-holders" which will be replaced by the corresponding calibration values when the calibration report is generated.

Sensor (calibration item):	--SensorType--
Manufacturer:	--Manufacturer--
Type:	--OrderCode--
Serial no.:	--SerialNumber--
Date of initial use	--FirstUsage--
Date of calibration:	--CalDateTime--
Calibration mode:	--CalMethod--
Number of measuring points:	--Points--
Test system:	--MMSVersion--
Calibration standards	Puffer --Buf1Name-- --Buf1NomVal-- (--Buf1NomTempC-- °C) Puffer --Buf2Name-- --Buf2NomVal-- (--Buf2NomTempC-- °C) Puffer --Buf3Name-- --Buf3NomVal-- (--Buf3NomTempC-- °C)

Measuring point	Nom. buffer value [pH]	Desired value [pH]	Actual value [pH]	Electrode voltage [mV]	Temperature [°C]
1	--Buf1NomVal--	--Ref1PH--	--Buf1PH--	--Buf1Volt--	--Buf1TempC--
2	--Buf2NomVal--	--Ref2PH--	--Buf2PH--	--Buf2Volt--	--Buf2TempC--
3	--Buf3NomVal--	--Ref3PH--	--Buf3PH--	--Buf3Volt--	--Buf3TempC--

Zero point:	--Zero-- pH		
Slope:	--Slope-- mV/pH		
Calibration result	--CStat--	Adjustment performed[1]:	--Adjusted--

1) After a calibration the values for zero and slope are stored in the sensor.

Operator
--FirstName-- --LastName-- (--Signum--)

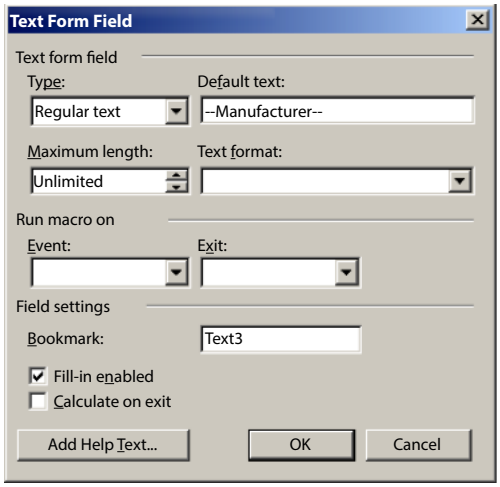
Calibration Reports, Creating Individual Templates

In addition to the templates pre-installed in MemoSuite, you can also create customized templates, for example to adjust header / footer, text formatting or positioning of the calibration values.

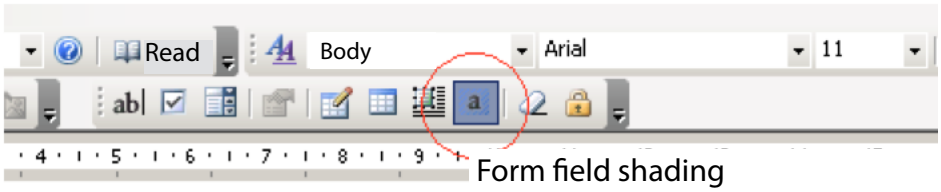
To deploy a custom template, proceed as follows:

1. Save a template from the Templates management to your hard disk (see "Calibration Reports" on page 32).
2. Open this template in Microsoft Office Word.
   Please note: Microsoft WordPad cannot be used for this purpose because it does not support all elements used in the calibration templates.
3. Edit the template as required. Please note that the contents of the form fields are "text placeholders" which will be replaced by the corresponding calibration values when the calibration report is generated. Text placeholders begin and end with "- -".
   When you enter a text placeholder, it is absolutely essential that you type the name correctly and without interruption (if you copy and paste, you might take over invisible control characters).
   You find an overview of all possible key words in the Appendix from page 38 onwards.

   Please note:
   To make sure that the placeholders can be correctly saved in the RTF file, always edit the placeholders in the "Text Form Field Options" dialog, which is opened by double-click.



4. Make sure that ***form field shading*** is enabled.



Form field shading

5. First save the edited template to your hard disk. Then open the MemoSuite Templates management and click "Add" to import it.
6. Now you can assign the correct sensor type to the imported template.
7. As a check, create a new calibration report for an existing calibration in ***Table View >> View: Calibrations***.

Restrictions Due to the use of RTF:

- Background images are not supported for the calibration reports.
- You cannot use the Header/Footer menu as available in Word for creating headers or footers. You must reproduce them using standard elements.
- MemoSuite uses settings for DIN A4 paper format with fixed margins:
  Top, bottom and right: 0.6 cm
  Left: 2.5 cm

Be sure to use these settings also in your templates. If not, the generated calibration report would not be shown correctly.

Selecting the Language for Calibration Report Templates

When the calibration report is generated, the text placeholders contained in the template are replaced by

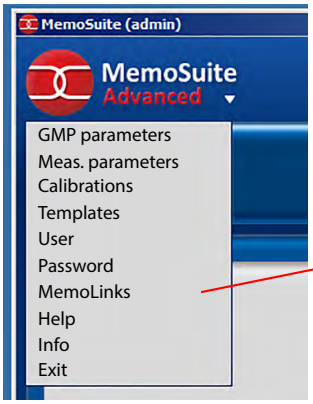
- numbers in country-specific format (decimal point or comma) and
- language-dependent texts.

You can select the corresponding language localization by inserting the ***language code*** before the first text placeholder. Valid codes are (case-sensitive):

Language code	Effect on presentation of text and numbers
<<de-DE>>	Texts in German number format: 1234,567
<<en-US>>	Texts in English (US) number format: 1234.567
<<fr-FR>>	Texts in French number format: 1234,567
<<pt-BR>>	Texts in Portuguese (BR) number format: 1234,567

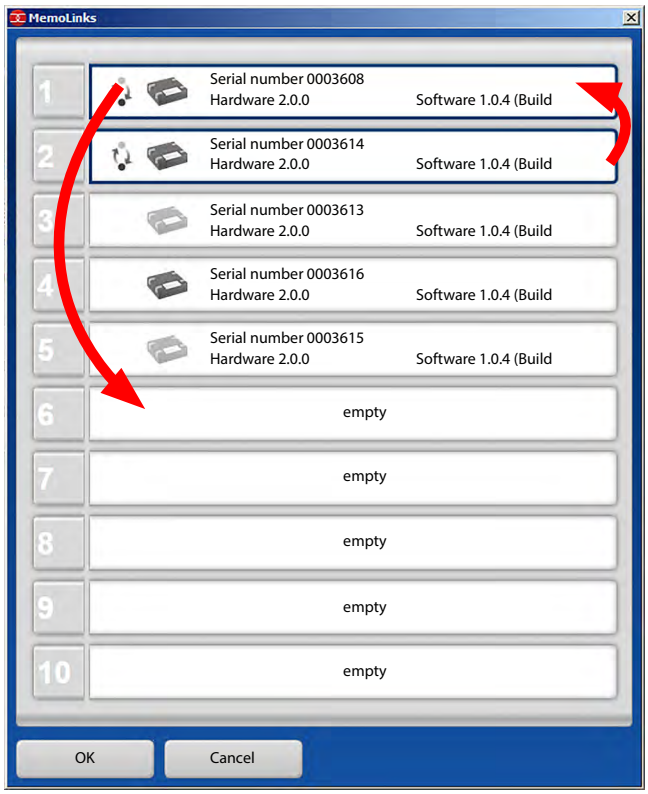
Without this language code, the language selected for MemoSuite by the current user will be applied. You can use language codes in different parts of the document, e.g. to create the first and second page of the calibration report in different languages.

Managing MemoLinks



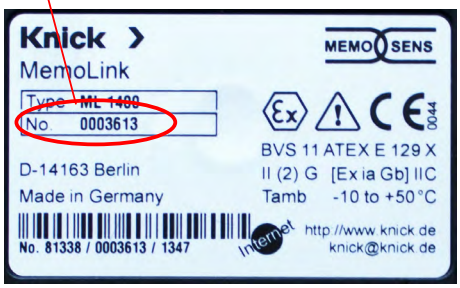
Select "MemoLinks" to start MemoLink management.

Please note: The MemoLinks window will only open after all MemoLinks have been identified. (This takes about 30 sec.)



The MemoLinks windows shows all connected MemoLinks with their respective serial numbers.

You find the serial number on the bottom of the MemoLink housing.



Assignment Algorithm

MemoLinks that have already been registered will be placed in their old positions, a new MemoLink will be assigned to the first unoccupied (empty) position.

When all positions are occupied, the new MemoLink will be assigned to the first occupied position without connected MemoLink after 30 s. MemoLinks that have been connected before but are not connected at the moment are grayed out.

You can move entries by drag and drop so that the serial numbers correspond to the actual sequence of connected MemoLinks.

Appendix: Text Placeholders for Calibration Reports

Sensor type	Text placeholder	Sample value	Meaning
All	--SensorType--	pH (glass)	Type of calibrated sensor
	--Manufacturer--	Knick	Shortened name of sensor manufacturer
	--OrderCode--	SE 515/1-MS	Order code
	--SerialNumber--	1027112	Serial number of calibrated sensor
	--FirstUsage--	03/07/2011	Date of initial use of the sensor (first connection to a transmitter such as Protos, Stratos Pro, MemoRail)
	--VerificationDate--	03/01/2011	Date of production test:
	--Comment--		Comment that has been entered at the end of a calibration or that has been edited later in the Table View
	--CalDateTime--	03/22/2011 15:00	Date and time of calibration
	--CalMethod--	Data entry	Type of calibration performed
	--CStat--	OK	Overall result of calibration
	--Adjusted--	Yes	Indication as to whether the calibration values have been saved in the sensor as adjustment
	--LastName--	Public	Last name of the operator who has performed the calibration
	--FirstName--	John Q.	First name of the operator who has performed the calibration
	--Signum--	adm	Identification of the operator who has performed the calibration
	--MMSVersion--	MemoSuite 1.1.0	MemoSuite version used for calibration
	--Points--	2	Number of measuring points during calibration

Appendix: Text Placeholders for Calibration Reports

Sensor type	Text placeholder	Sample value	Meaning
pH (glass) pH (ISFET)	--Buf1Name--	Knick	Name of selected pH buffer (1st point of measurement)
	--Buf1NomVal--	7.00	Nominal value of selected pH buffer (1st point of measurement)
	--Buf1NomTempC--	25	Nominal temperature of selected pH buffer in °C (1st point of measurement)
	--Buf1NomTempF--	77	Nominal temperature of selected pH buffer in °F (1st point of measurement)
	--Ref1PH--	6.98	Temperature-corrected value of pH buffer (1st point of measurement)
	--Buf1PH--	7.20	pH value measured at the sensor (1st point of measurement)
	--Buf1TempC--	23.5	Temperature at the sensor in °C (1st point of measurement)
	--Buf1TempF--	70.8	Temperature at the sensor in °F (1st point of measurement)
	--Buf1Volt--	-23	Electrode voltage measured at the sensor in mV (1st point of measurement)
	--Buf1Time--	13	Settle time in sec
	--ZStat--	OK	Value indicates whether the determined zero point lies within the absolute limits
	--ZLimitL--	5.7	Lower limit of pH value for evaluating the zero point
	--ZLimitH--	8.3	Upper limit of pH value for evaluating the zero point
pH (glass)	--SStat--	OK	Value indicates whether the determined slope lies within the absolute limits
	--SLimitL--	51.5	Lower limit for evaluating the determined slope
	--SLimitH--	61.5	Upper limit for evaluating the determined slope
	--Zero--	7.5	pH value of determined slope
	--Slope--	58	Determined slope of sensor in mV/pH
pH (ISFET)	--Offset--	-31.05	Adjusted ISFET zero offset in mV
	--Slope--	59	Determined slope of sensor in mV/pH
	--OStat--	OK	Value indicates whether the determined ISFET zero offset lies within the absolute limits
	--OLimitL--	-750	Lower limit for evaluating the ISFET zero offset in mV
	--OLimitL--	750	Upper limit for evaluating the ISFET zero offset in mV

Appendix: Text Placeholders for Calibration Reports

Sensor type	Text placeholder	Sample value	Meaning
Oxygen	--Humidity--	50	Relative humidity in %
	--Pressure--	1013	Barometric pressure in hPa
	--TempC--	23.5	Temperature in °C
	--TempF--	73	Temperature in °F
	--Meas1Curr--	-78	Oxygen current measured at sensor
	--Meas1Time--	95	Settle time in sec
	--ZStat--	OK	Value indicates whether the determined zero point lies within the absolute limits
	--ZLimitL--	-1.3	Lower limit for evaluating the zero point in nA
	--ZLimitH--	1.3	Upper limit for evaluating the zero point in nA
	--SStat--	OK	Value indicates whether the determined slope lies within the absolute limits
	--SLimitL--	-186.9	Lower limit for evaluating the determined slope in nA
	--SLimitH--	35.0	Upper limit for evaluating the determined slope in nA
	--Zero--	0	Determined zero point in nA
	--Slope--	-78	Determined slope in nA
Conductivity	--Solution--	KCl (0.01 mol/l)	Solution used for calibration
	--RefConductivity--	1411	Conductivity of solution in µS/cm
	--Conductance--	62500	Conductance measured in µS
	--TempC--	23.5	Temperature in °C
	--TempF--	73	Temperature in °F
	--Meas1Time--	95	Settle time in sec
	--SStat--	OK	Value indicates whether the determined cell constant lies within the absolute limits
	--SLimitL--	0.005	Lower limit for evaluating the determined cell constant in 1/cm
	--SLimitH--	20.01	Upper limit for evaluating the determined cell constant in 1/cm

Sensor type	Text placeholder	Sample value	Meaning
ORP	--BufferVolt--	210	Voltage (entered) for the used calibration standard in mV
	--MeasVolt--	200	Electrode voltage of the sensor, measured
	--Offset--	0.10	Determined offset of sensor in mV
	--OStat--	OK	Value indicates whether the determined offset lies within the absolute limits
	--OLimitL--	-700	Lower limit for evaluating the determined offset in mV
	--OLimitH--	700	Upper limit for evaluating the determined offset in mV

Index

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TA-271.001-KNE03 20170627