

MemoSuite® Basic

Isolation Amplifiers
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

Knick >

Calibration Software for Memosens® Sensors

The screenshot displays the MemoSuite Basic software interface. At the top, there is a navigation bar with 'MemoSuite Basic' on the left and 'Knick >' on the right. Below the navigation bar, there are two main tabs: 'StartCenter' (with a house icon) and 'Calibration' (with a pencil icon). The 'Calibration' tab is active, showing a table of measured values and sensor data.

Measured values	
pH value	6.29 pH
pH voltage	49.2 mV
Temperature	25.1 °C

Sensor data	
Sensor type:	pH (glass)
Manufacturer:	Knick
Order code:	SE 533X/1-NMSN
Serial number:	1030550

Adjustment data	
Date:	10/27/2011 17:30:12
Slope:	58.5 mV/pH
Zero point:	7.06 pH

A smiley face icon is visible next to the zero point value.

MemoSuite Basic: Plug-and-Play Calibration Software for Memosens Sensors

Overview of Functions

“MemoSuite Basic” is an easy-to-use PC software for calibrating Memosens sensors. The sensors are connected via “MemoLink” and a USB port. MemoSuite shows the measured values and the data of the last adjustment.

Process variables

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

Starting the Software

System requirements

Hardware (minimum requirement)

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 XP (SP2 or later) or Windows 7 (32bit or 64bit Version)
(German, English)

Installing the Software

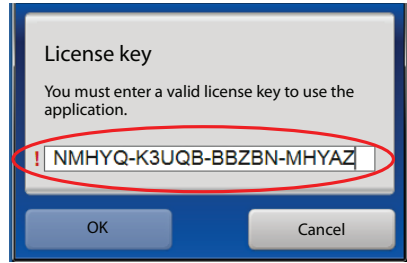
You must have administrator rights for the system where you plan to install the software. Installation should start automatically when the CD-ROM is inserted. If not, please start the MemoSuiteBasicSetup.exe file. Follow the instructions of the installation program.

Initial Start-up of the Software

License key

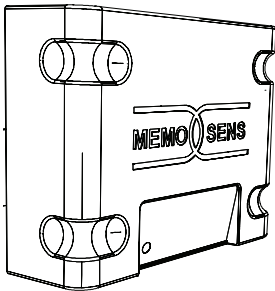
After installation of MemoSuite, you will be prompted to enter a license key. The license key is included on the package of the CD-ROM.

An incorrect entry is signaled by an exclamation point.

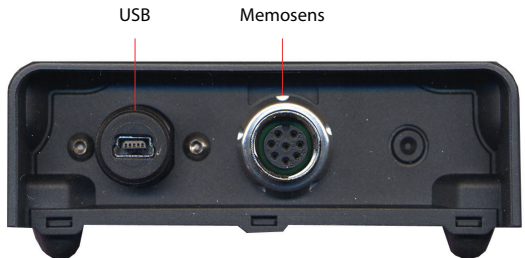


MemoLink – the Interface to the Sensor

The MemoLink is connected to the computer via USB cable, a separate power supply is not necessary. A Memosens cable with suitable M12 connector is required for connecting the Memosens sensor (accessory).



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 ZU0881 accessory allows wall or post mounting.



Software Functions

StartCenter

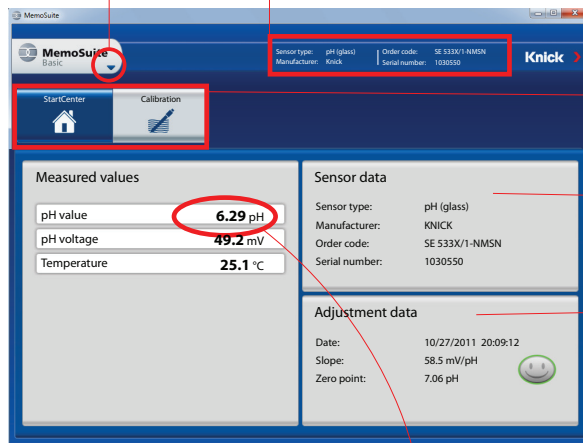
The software automatically identifies a connected Memosens sensor. The parameters currently supplied by the sensor are shown in the "Start-Center". Function selection and access to basic settings and specifications are provided at any time.

Settings menu

Measured parameters (°C / °F, pressure for O₂ measurement), language selection

Connected sensor:

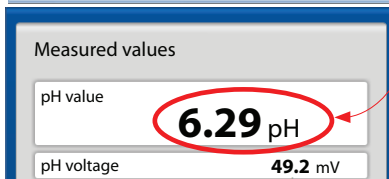
Sensor type, manufacturer, order code and serial number



Function selection
(The selected function is highlighted.)

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

Last adjustment



Display size of measured values:

When the cursor moves over a measured value, it changes to a magnifying glass, allowing to magnify the measured-value display at a mouse click.

The displayed parameters depend on the process variable.

Calibration

A multitude of established calibration methods can be used for adjusting the sensors. The following buffers are available for calibrating pH sensors: Ciba94, DIN 19267, Hach, Hamilton Duracal, Knick CaliMat, Mettler Toledo, NIST standard, NIST technical, Reagecon, WTW.

Available Calibration Methods

Process variable	Available calibration methods
pH	Automatic ("Calimatic") Data entry Reference calibration Manual calibration
Oxygen	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:

The screenshot displays the calibration interface with three calibration points. The third point is highlighted with a red box and a red arrow pointing to it. The error message reads: "Result: An 'Adjustment' is not possible due to exceeded calibration limits." To the right, a sad smiley icon is shown. Below the error message are two buttons: "Adjustment" and "Discard". On the right side of the interface, there is a table of calibration results:

Slope	59.0	mV/pH
Slope difference	0.3	mV/pH
Zero point	7.03	pH
Zero point difference	0.07	pH

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. One pH buffer is used as calibration solution. 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.

Example for a two-point calibration:

1 Select calibration mode

2 Select buffer set

Calibration mode	Buffer set
Calimatic	Knick CaliMat pH: 2,00 4,00 7,00 9,00
Immerse sensor in first buffer.	Ciba94 pH: 2,06 4,00 7,00 10,00
Continue	DIN 19267 pH: 1,09 4,65 6,79 9,23 12,75
First calibration point	Hach pH: 4,01 7,00 10,01
Second calibration point	Hamilton/Duracal pH: 2,00 4,01 7,00 10,01 12,00
	Knick CaliMat pH: 2,00 4,00 7,00 9,00
	Mettler roledio pH: 2,00 4,01 7,00 9,21
	NIST Standard pH: 1,680 4,008 6,865 9,185

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:

The screenshot shows the 'Calibration mode' screen. The 'Calimatic' mode is selected. The 'Buffer set' is 'Knick CalliMat' with a pH range of 2.00 to 9.00. The 'First calibration point' is being measured. A circular progress indicator shows approximately 25% completion. The measured values are: pH voltage: 179 mV, Temperature: 23.0 °C, Settle time: 21 s, and pH buffers: 4.00 pH. A callout box points to the progress indicator with the text 'Stability of measured value'. Another callout box points to the top right with the text 'Total elapsed time (max. 120 s)'. Buttons for 'Continue' and 'Abort' are visible.

Calibration mode	Calimatic	Buffer set	Knick CalliMat	pH: 2.00 4.00 7.00 9.00
First calibration point		pH voltage	179	mV
		Temperature	23.0	°C
		Settle time	21	s
		pH buffers	4.00	pH

5 Second calibration point

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

The screenshot shows the 'Calibration mode' screen for the second point. The 'Calimatic' mode is selected. The 'Buffer set' is 'Knick CalliMat' with a pH range of 2.00 to 9.00. The 'First calibration point' is 'pH buffer: 4.00 pH' and the 'Settle time' is 38 s. The 'Second calibration point' is being measured. A circular progress indicator shows approximately 75% completion with a green checkmark. The measured values are: pH voltage: -126 mV, Temperature: 23.1 °C, Settle time: 16 s, and pH buffers: 9.00 pH. A callout box points to the progress indicator with the text 'Measured value is stable, calibration step is completed'. Buttons for 'Continue' and 'Abort' are visible.

Calibration mode	Calimatic	Buffer set	Knick CalliMat	pH: 2.00 4.00 7.00 9.00
First calibration point	pH buffer: 4.00 pH	Settle time:	38 s	
Second calibration point		pH voltage	-126	mV
		Temperature	23.1	°C
		Settle time	16	s
		pH buffers	9.00	pH

6 Result of calibration

The values determined for zero point and slope are displayed. Click "Adjustment" to save the values in the sensor.

The screenshot shows the 'Calibration mode' screen displaying the final results. The 'Calimatic (2 point)' mode is selected. The 'Buffer set' is 'Knick CalliMat' with a pH range of 2.00 to 9.00. The 'First calibration point' is 'pH buffer: 4.00 pH' and the 'Settle time' is 38 s. The 'Second calibration point' is 'pH buffer: 9.00 pH' and the 'Settle time' is 16 s. The 'Result' section shows: Slope: 58.8 mV/pH, Slope difference: 0.2 mV/pH, Zero point: 7.07 pH, and Zero point difference: 0.01 pH. A callout box points to a smiley face icon with the text 'Evaluation of calibration result with Sensoface'. Buttons for 'Adjustment' and 'Discard' are visible.

Calibration mode	Calimatic (2 point)	Buffer set	Knick CalliMat	pH: 2.00 4.00 7.00 9.00
First calibration point	pH buffer: 4.00 pH	Settle time:	38 s	
Second calibration point	pH buffer: 9.00 pH	Settle time:	16 s	
Result		Slope	58.8	mV/pH
		Slope difference	0.2	mV/pH
		Zero point	7.07	pH
		Zero point difference	0.01	pH