



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. The main area is divided into several sections:

- StartCenter** and **Calibration** tabs are visible at the top left.
- Measured values** section shows:
 - pH value: **6.29** pH
 - pH voltage: **49.2** mV
 - Temperature: **25.1** °C
- Sensor data** section shows:
 - Sensor type: pH (glass)
 - Manufacturer: Knick
 - Order code: SE 533X/1-NMSN
 - Serial number: 1030550
- Adjustment data** section shows:
 - Date: 07/27/2011 17:30:12
 - Slope: 58.5 mV/pH
 - Zero point: 7.06 pH

A smiley face icon is present next to the adjustment data.

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

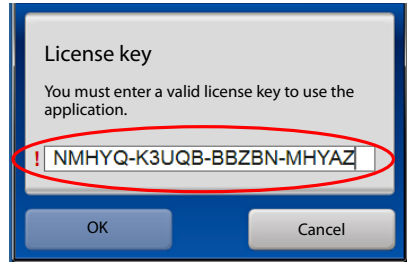
You must have administrator rights for the system where you plan to install the software. Installation should start automatically when the CD-ROM is inserted. If not, please start the MemoSuiteBasicSetup.exe file. Follow the instructions of the installation program.

Initial Start-up of the Software

License key

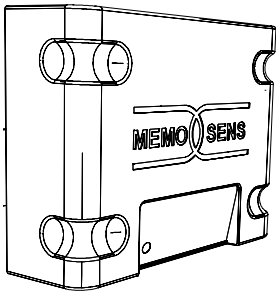
After installation of MemoSuite, you will be prompted to enter a license key. The license key is included on the package of the CD-ROM.

An incorrect entry is signaled by an exclamation point.

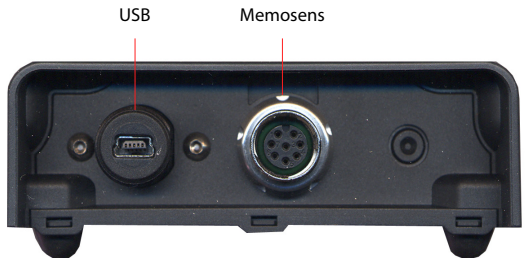


MemoLink – the Interface to the Sensor

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

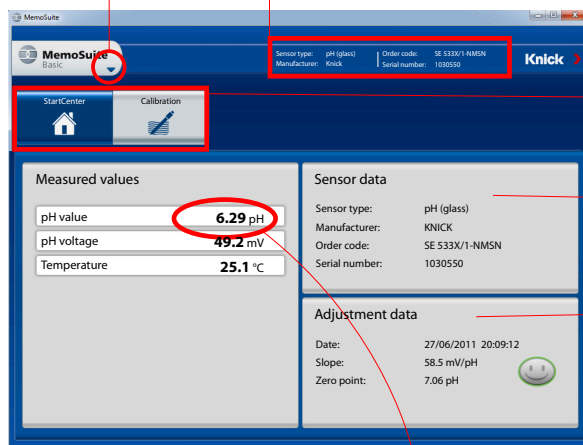
The software automatically identifies a connected Memosens sensor. The parameters currently supplied by the sensor are shown in the "Start-Center". Function selection and access to basic settings and specifications are provided at any time.

Settings menu

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

Connected sensor:

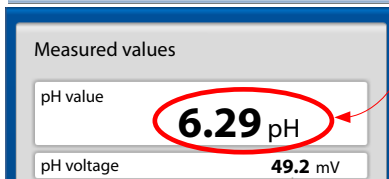
Sensor type, manufacturer, order code and serial number



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, Knick, Merck/Riedel, 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 the following data:

Calibration Point	pH buffer	Settle time
First calibration point	7.00 pH	11 s
Second calibration point	9.21 pH	42 s
Third calibration point	4.36 pH	19 s

Result:
An "Adjustment" is not possible due to exceeded calibration limits.

Calibration Results:

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

Buttons: Adjustment (disabled), Discard (disabled)

A red arrow points to the error message box, and a red exclamation point icon is visible next to the Slope result.

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

The screenshot shows a calibration interface with the following elements:

- Calibration mode:** A dropdown menu with 'Calimatic' selected and circled in red.
- Immerse sensor in first buffer:** A text label.
- Continue:** A button circled in red.
- First calibration point:** A dropdown menu with 'Knick' selected and circled in red.
- Second calibration point:** A dropdown menu with 'Mettler Toledo' selected.
- Buffer set:** A table listing various buffer sets and their pH values.

Buffer set	pH: 2.00	4.01	7.00	9.21	
Knick	2.00	4.00	7.00	9.00	
BDH	2.06	4.00	7.00	10.00	
Ciba94	1.09	4.65	6.79	9.23	12.75
DIN 19267	4.01	7.00	10.01		
Hach	2.00	4.01	7.00	10.01	12.00
Hamilton	2.00	4.01	7.00	9.21	
Knick	2.00	4.01	7.00	9.21	
Merkel Riedel	2.00	4.00	7.00	9.00	12.00
Mettler Toledo	2.00	4.01	7.00	9.21	

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:

Calibration mode	Calimatic	Buffer set	Knick	pH: 2.00 4.01 7.00 9.21
First calibration point		pH voltage	179	mV
		Temperature	23.0	°C
		Settle time	21	s
		pH buffers	4.01	pH

5 Second calibration point

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

Calibration mode	Calimatic	Buffer set	Knick	pH: 2.00 4.01 7.00 9.21
First calibration point		pH buffer: 4.01 pH	Settle time: 38 s	
Second calibration point				
		pH voltage	-126	mV
		Temperature	23.1	°C
		Settle time	16	s
		pH buffers	9.21	pH

6 Result of calibration

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

Calibration mode	Calimatic (2 point)	Buffer set	Knick	pH: 2.00 4.01 7.00 9.21
First calibration point		pH buffer: 4.01 pH	Settle time: 38 s	
Second calibration point		pH buffer: 9.21 pH	Settle time: 16 s	
Result				
With "Adjustment", the data are saved in the sensor.				
		Slope	58.8	mV/pH
		Slope difference	0.2	mV/pH
		Zero point	7.07	pH
		Zero point difference	0.01	pH

Isolation Amplifiers
Transmitters

Indicators

Process Analytics

Portable Meters

Laboratory Meters

Sensors

Fittings

Knick 

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