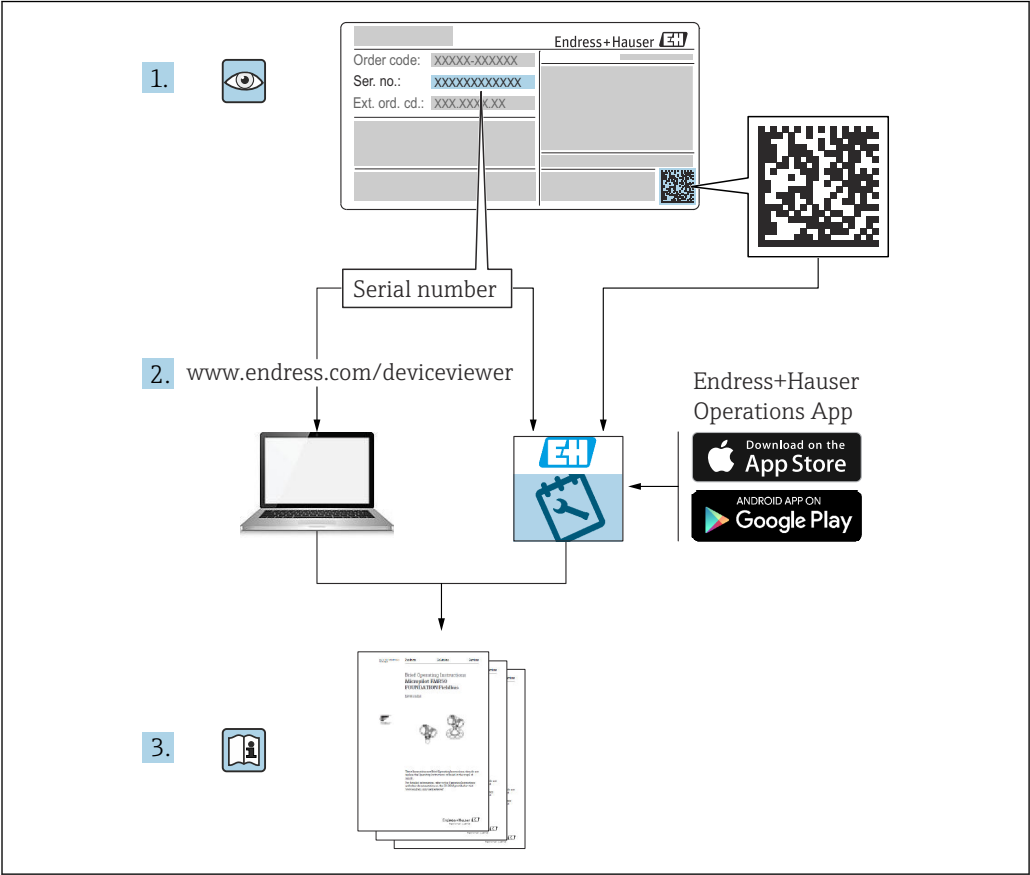


Operating Instructions **Memobase Pro CZL81**

Software for measurement, calibration and sensor data management





A0023555

Table of contents

1	About this document	4	8.4	Save report	46
1.1	Document function	4	8.5	Exporting report	47
1.2	Warnings	4	8.6	Data export	47
1.3	Symbols used	4	8.7	Using the report preview	48
2	Basic safety instructions	5	9	Technical data	49
2.1	Requirements for the personnel	5	9.1	Input	49
2.2	Intended use	5	9.2	Measured variables	49
2.3	Workplace safety	5	9.3	Output	49
2.4	Operational safety	6	9.4	Energy supply	49
2.5	Product security	6	9.5	Performance characteristics	51
2.6	Safety instructions for electrical equipment in hazardous areas	6	9.6	Environment	51
3	Product description	7	9.7	Mechanical construction	52
3.1	Software function	7	9.8	Certificates and approvals	52
4	Installation	9	9.9	Ordering information	52
4.1	System requirements	9	10	Accessories	54
4.2	Accessing the software	9	10.1	Measuring cables	54
4.3	Software installation	9	10.2	Standard solutions	54
4.4	Activating the software	13	10.3	Sensors	54
4.5	Offline activation	14			
4.6	Updating the license	17			
4.7	Renewing subscription with online activation	18			
4.8	Returning a license with online activation	18			
4.9	Updating the software	20			
5	Software functions	21			
5.1	Live list	21			
5.2	Sample management	22			
5.3	Reference buffer solution management	22			
5.4	Measured value display	22			
5.5	Calibration	23			
5.6	Sensors	25			
5.7	Diagnostic messages	26			
6	Measurement	27			
6.1	pH measurement	27			
6.2	Oxygen measurement	29			
6.3	Conductivity measurement	31			
7	Calibration	34			
7.1	pH calibration	34			
7.2	Oxygen calibration	37			
7.3	Conductivity calibration	41			
8	Report / Export	45			
8.1	Measurement history	45			
8.2	Generating report	45			
8.3	Checking report contents	46			

1 About this document

1.1 Document function

These Operating Instructions contain all the information that is required in various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.

1.2 Warnings

Structure of information	Meaning
 DANGER Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ► Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation will result in a fatal or serious injury.
 WARNING Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ► Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation can result in a fatal or serious injury.
 CAUTION Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ► Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
 NOTICE Cause/situation If necessary, Consequences of non-compliance (if applicable) ► Action/note	This symbol alerts you to situations which may result in damage to property.

1.3 Symbols used

Symbol	Meaning
	Additional information, tips
	Permitted or recommended
	Not permitted or not recommended
	Reference to device documentation
	Reference to page
	Reference to graphic
	Result of a step

2 Basic safety instructions

2.1 Requirements for the personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

 Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Intended use

Memobase Pro CZL81 is a software package for measuring, calibrating and managing sensors with Memosens technology. The software facilitates centralized database management and supports calibrations, adjustment and management of sensor data in a laboratory environment.

The software is designed for use in the following applications:

- Laboratories
- Process-oriented benchtop applications in non-hazardous areas

 Memobase Pro CZL81 does not replace a process transmitter as there is no communication with a higher-level control system.

MemoLink acts as the Memosens/USB interface converter for the Memobase Pro CZL81 software. MemoLink supports Memosens sensors with Ex approval and without Ex approval. Recommended areas of application are preferably laboratory applications for calibrations and functional testing.

Use of the device for any purpose other than that described poses a threat to the safety of people and of the entire measuring system, and is therefore not permitted. The manufacturer is not liable for harm caused by improper or unintended use.

2.3 Workplace safety

As the user, you are responsible for complying with the following safety conditions:

- Installation guidelines
- Local standards and regulations
- Regulations for explosion protection

2.4 Operational safety

Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products, and protect them against unintentional operation.
4. Label damaged products as defective.

During operation:

- If faults cannot be rectified:
products must be taken out of service and protected against unintentional operation.

2.5 Product security

2.5.1 IT security

Our warranty is valid only if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the device and associated data transfer, must be implemented by the operators themselves in line with their security standards.

2.6 Safety instructions for electrical equipment in hazardous areas

- The MemoLink unit must never be used in hazardous areas! It is not designed as a field device for installation in industrial environments.
- The MemoLink, which is approved in accordance with EC type-examination certificate BVS 12 ATEX 079 X, ensures that the "intrinsic safety" type of protection of the Memosens measuring cable and the Memosens sensor is not compromised during calibration and functional testing.
- The computer, USB cable, MemoLink, Memosens measuring cable and Memosens sensor must be located outside the hazardous area during calibration and functional testing.
- Memosens cables with Memosens sensors may be connected to the Memosens interface of the Memolink.
- The internal electronics of the Ex-approved MemoLink Memosens/USB interface converter allow for the connection of both Ex-approved and non-Ex-approved passive Memosens measuring cables equipped with Memosens sensors. The connection of non-Ex-approved Memosens sensors does not interfere with the intrinsic safety of Ex-approved Memosens sensors connected at a later stage.
- Information on the applicable standards, directives and other regulations can be found in the EU Declaration of Conformity and the relevant certificates.
- MemoLink may only be connected to the USB interface of a commercially available computer.

 When using Ex-approved cables with non-Ex-approved sensors, these cables can still be used with Ex-approved sensors on the Memobase Pro.

3 Product description

3.1 Software function

Memobase Pro CZL81 is a software that provides centralized measurement, calibration and sensor data management for sensors with Memosens technology.

It allows end-to-end documentation of data relevant to the sensor and measuring point, e.g.:

- Calibration history including information on the reference buffer solutions used
- Sensor utilization data such as total operating hours, operating hours under extreme process conditions
- Fully traceable documentation for sensors
- Digital sample management

The Liquiline Mobile CML18 multiparameter handheld measuring instrument and the MemoLink sensor terminal box transmit the data in purely digital form so that no measured data is falsified. The data is transferred from the sensor to Memobase Pro CZL81. The measuring signal is converted to digital data in the sensor. Therefore, the Liquiline Mobile CML18 multiparameter handheld measuring instrument, the MemoLink sensor terminal box, cable and PC software do not affect the measured values.

3.1.1 User roles

The following user roles are available:

	IT administrator (administrator rights for the computer)	Normal user
Registration for the trial period		x
Updating the user settings		x
Connecting/disconnecting transmitters and sensors		x
Actions in the live list (search, filter, etc.)		x
Updating the settings in the live list		x
Updating the display settings of transmitters and sensors		x
Creating/updating a sample		x
Performing a sample measurement		x
Updating the measurement settings		x
Creating/updating a reference buffer solution		x
Performing a sensor calibration and adjustment		x
Creating basic reports		x
Updating advanced sensor settings (deactivation/reactivation)		x
Displaying historical calibration results		x
Updating advanced measurement settings		x
Updating calibration settings		x
(Updating the Liquiline Mobile CML18 firmware)		x
Creating advanced and user-defined reports		x
Displaying the diagnostic function		x
Displaying license information		x
Displaying user settings		x
Displaying the sample list		x
Displaying the measurement list		x
Displaying reports		x
Exporting/saving reports		x
Installing/uninstalling/updating the application	x	
Activating the license – upgrading/downgrading the license	x	
Renewing the license	x	

Regardless of the user role, Memobase Pro CZL81 automatically detects the Windows user currently logged in, stores this information in the database, and displays it within the application to ensure that there is a unique association between operations and data.

4 Installation

 For information on the installation and electrical connection of the Liquiline Mobile CML18 multi-parameter handheld measuring instrument, please refer to the Operating Instructions BA02002C (Liquiline Mobile CML18).

 Information on how to install the MemoLink sensor terminal boxes and perform the electrical connection is provided in Operating Instructions BA01134C (MemoLink).

4.1 System requirements

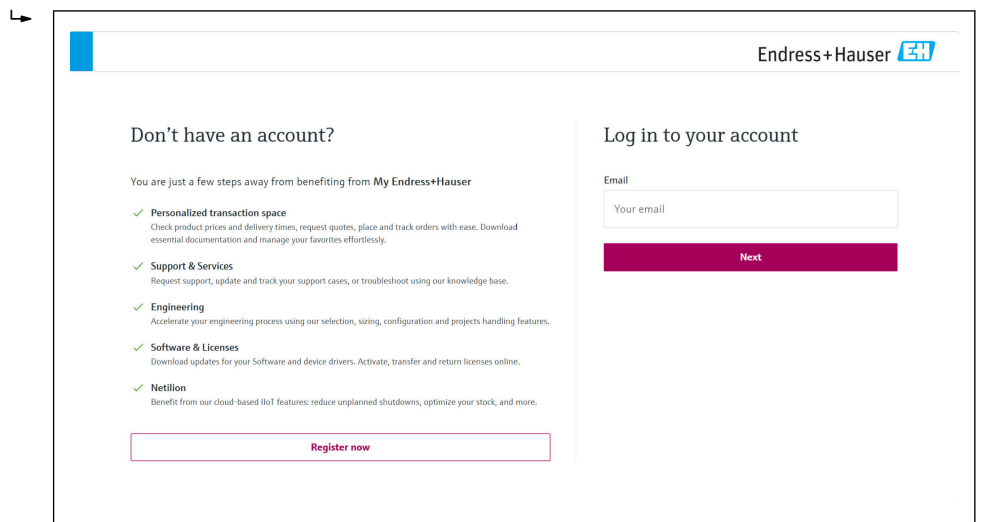
System requirements for installation and use of Memobase Pro CZL81:

Operating system	- At least Windows 10 LTSC 1809 (64 bits) - Windows 11 (64 bits)
Monitor	At least 1280×1024 pixels, also suitable for touchscreen
Processor	Minimum clock speed of 1 GHz
Free hard disk memory	At least 4 GB for the program and database
RAM	4 GB
USB	At least one type A USB interface
	At least USB 3.0

4.2 Accessing the software

After successfully ordering, you will receive an e-mail with a link to the Endress+Hauser software portal. There you can either log in or, if you do not have an account yet, register.

1. Log in to the Endress+Hauser software portal.

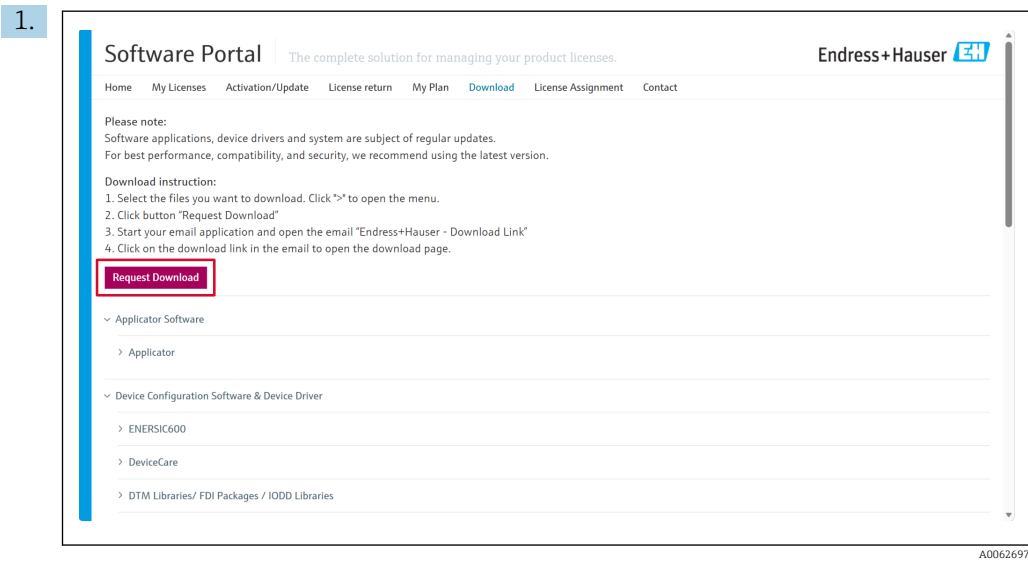


2. Log in or, if you do not have an account yet, register.

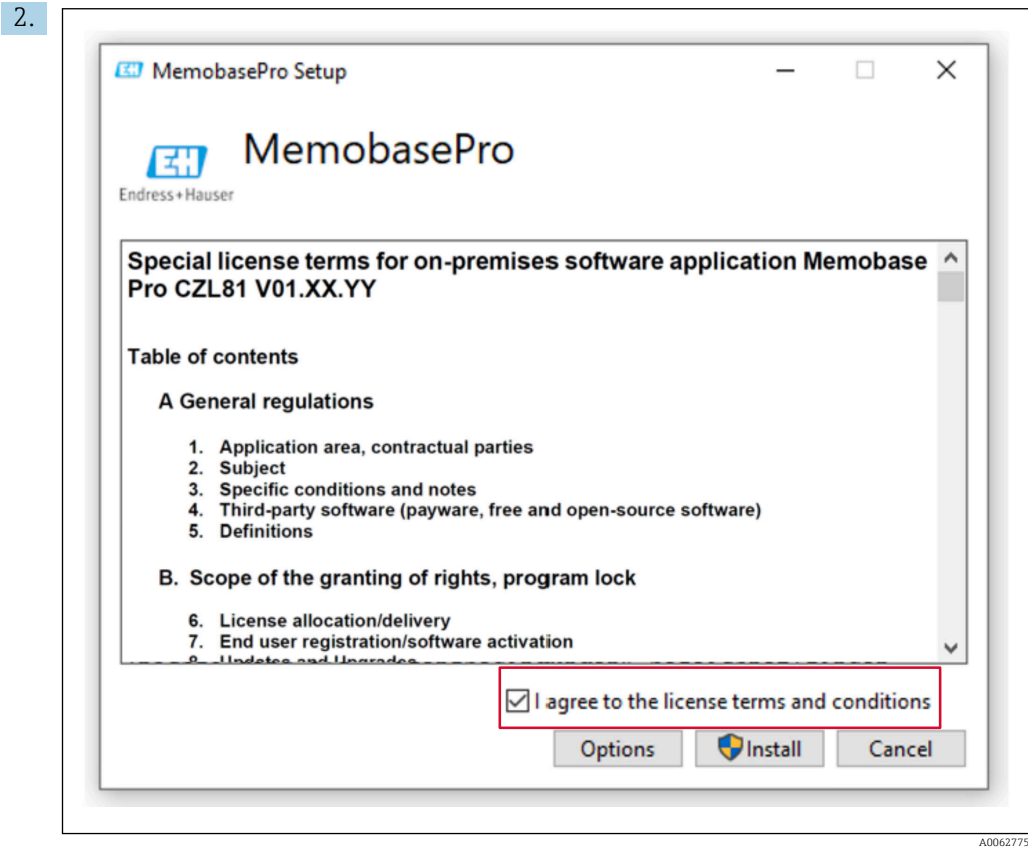
4.3 Software installation

4.3.1 Installing Memobase Pro CZL81 and the Memobase Pro CZL81 license manager

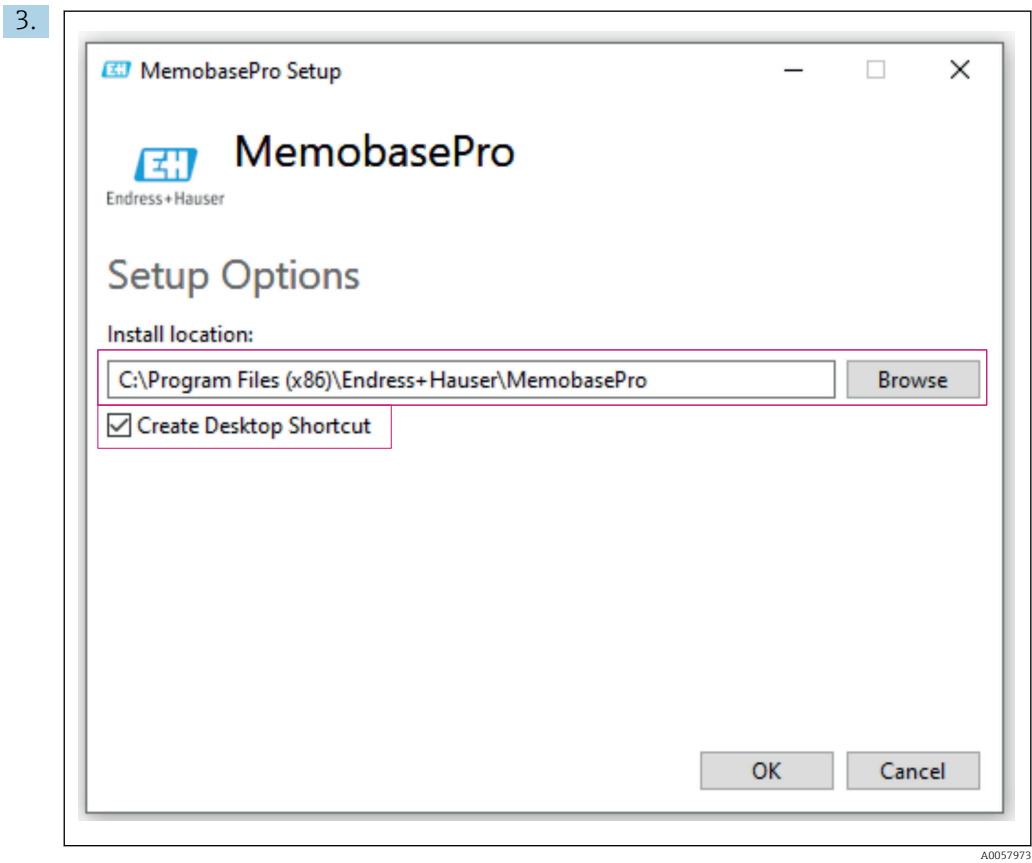
Requirement: Administrator rights are required for installation.



Open the download area and follow the download instructions.

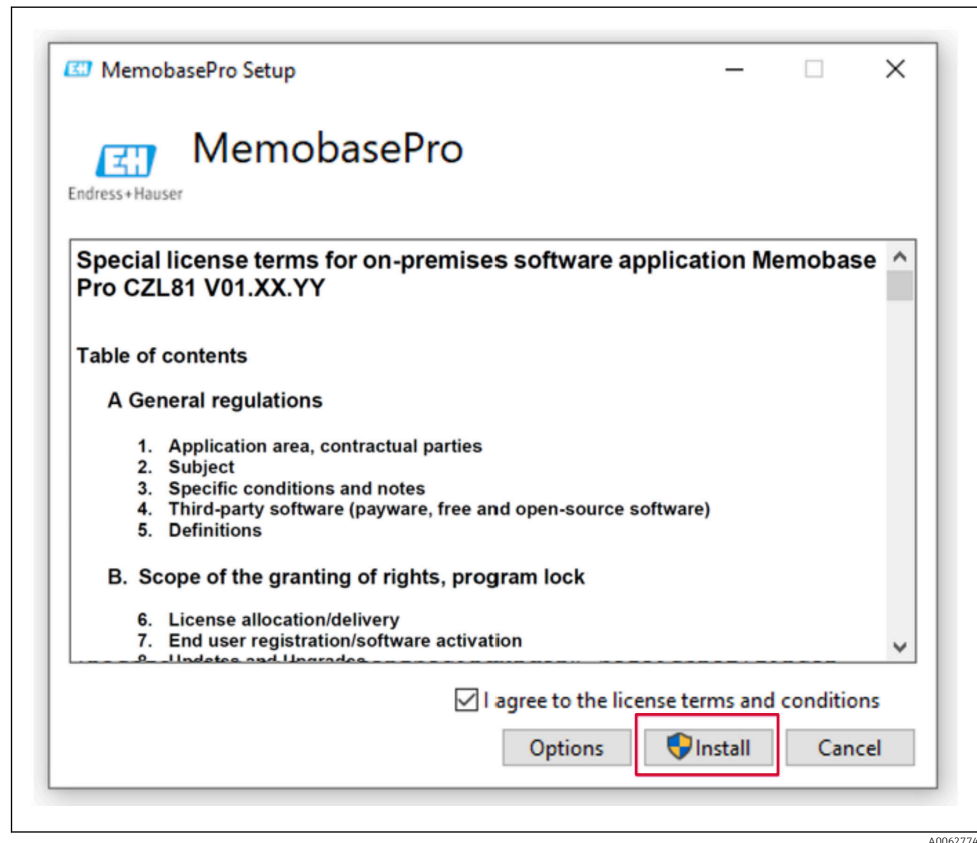


Read and confirm the license information.



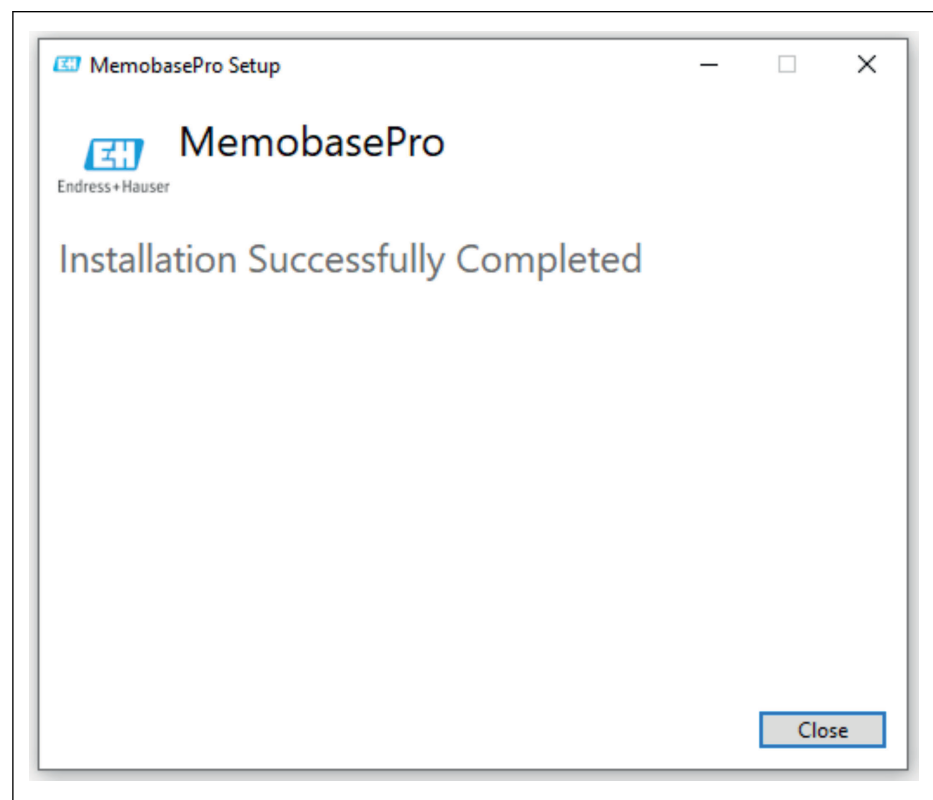
Define the storage location under Options, create a shortcut if necessary, and then confirm with OK.

4.



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Install Memobase Pro CZL81 by clicking the Install button.



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Memobase Pro CZL81 and the Memobase Pro CZL81 license manager have been installed successfully.

4.4 Activating the software

4.4.1 Trial subscription (grace period)

After installation, the full range of software functions is available to the user. The user can use the application free of charge for the first 60 days as part of a trial subscription. After the 60 days, a paid subscription must be obtained from Endress+Hauser.

4.4.2 Online activation

1.

The screenshot shows the 'Endress+Hauser License Manager' window. The title bar says 'Endress+Hauser License Manager'. The main header has 'License Manager' and 'Endress+Hauser' logo. Below the header are tabs: 'Overview', 'Activate', 'Return', 'Update'. The 'Activate' tab is selected. The main content area is titled 'Online Activation'. It contains a 'Product Key' field with a dropdown arrow, a 'Software Portal Login' section with 'Email' and 'Password' fields, and a 'Register' button. Below the 'Register' button is a 'Forgot password?' link. The 'Activate' button is highlighted with a red box. The footer says 'Copyright © Endress+Hauser 2024'.

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Enter the license key, e-mail address and password (Endress+Hauser Software Portal) in the license manager.

2.

This screenshot is identical to the previous one, showing the 'Online Activation' page. The 'Activate' button is highlighted with a red box.

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Click on Activate.

➤ The Memobase Pro CZL81 license has been successfully activated.

4.5 Offline activation

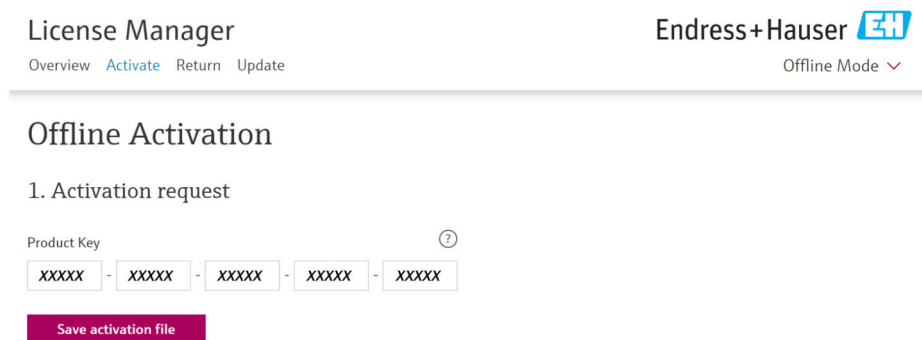
Offline activation is used if the computer with the software installed does not have Internet access.

The software is activated via the Memobase Pro CZL81 license manager in conjunction with the Endress+Hauser Software Portal.

4.5.1 Creating an activation request (offline computer)

The activation request is a file with the license information of the offline computer required for the offline activation of Memobase Pro CZL81.

1. Switch to offline mode.
- 2.



The screenshot shows the 'License Manager' application window. The title bar includes 'License Manager' and 'Endress+Hauser' with a logo. Below the title bar are tabs: 'Overview', 'Activate', 'Return', and 'Update'. The 'Activate' tab is selected. In the top right corner, it says 'Offline Mode' with a dropdown arrow. The main content area is titled 'Offline Activation' and contains a section '1. Activation request'. Below this, there is a 'Product Key' label and a form with five input fields, each containing 'XXXXX' and separated by hyphens. A help icon (?) is to the right of the first field. Below the form is a red button labeled 'Save activation file'.

 1 *Entering the license key*

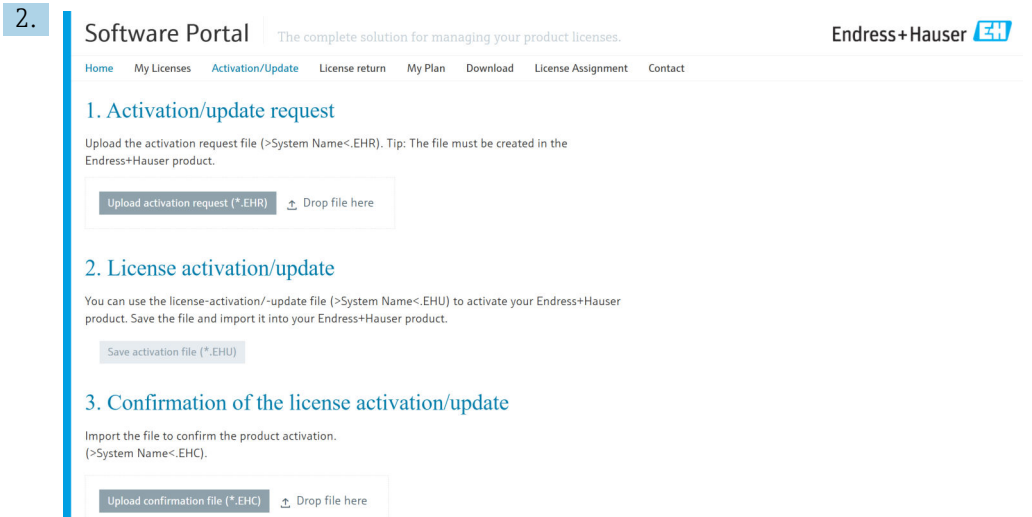
Enter the license key.

3. Click Save activation file to confirm.
4. Save the activation request as a file (EHR file).
5. Save the EHR file on a USB storage medium.

4.5.2 Creating a license activation file (online computer)

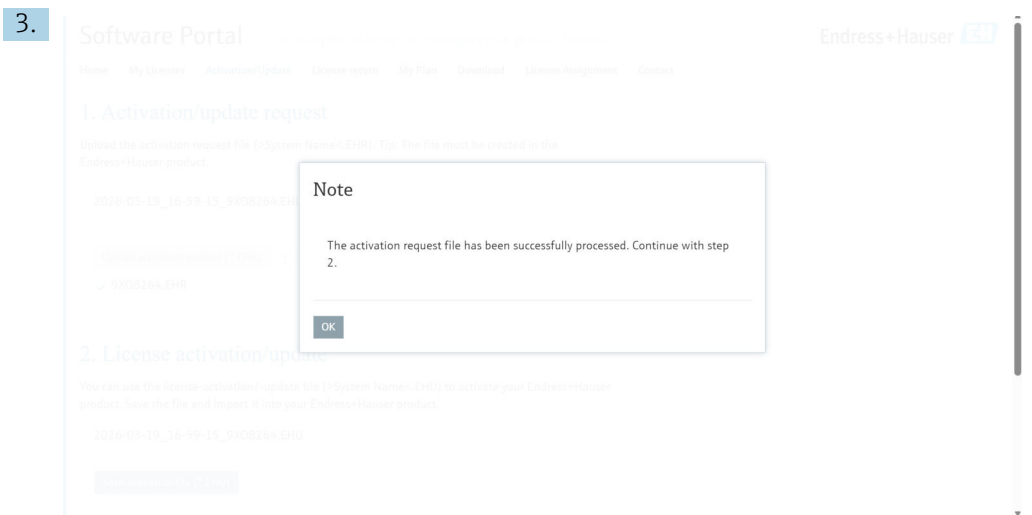
The license activation file is generated on a computer with Internet access and is required for the offline activation of Memobase Pro CZL81.

1. Log into the Endress+Hauser Software Portal.



2 Software Portal

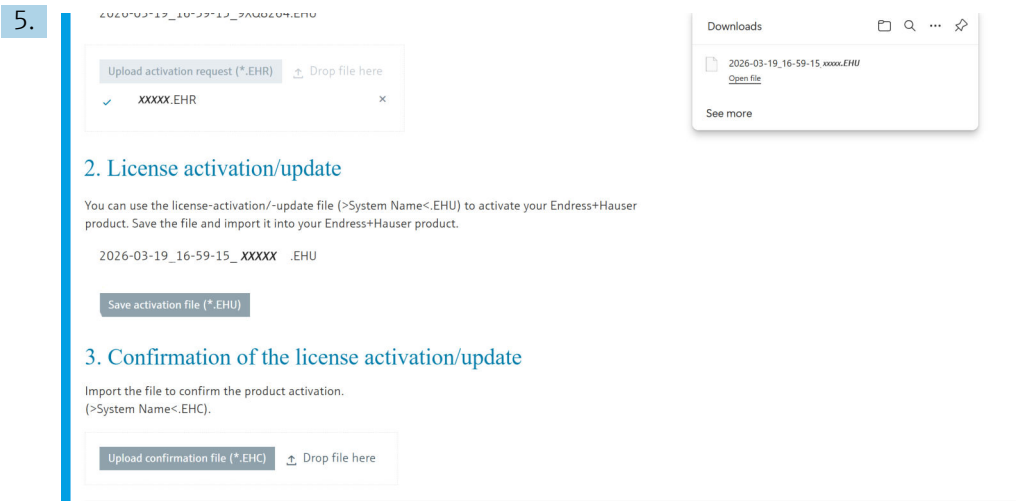
Open the Activation/Update menu.



3 EHR file successfully uploaded

Upload activation request (EHR file).

4. Create the license activation file after the request is processed.



4 Importing the license activation file (EHU file)

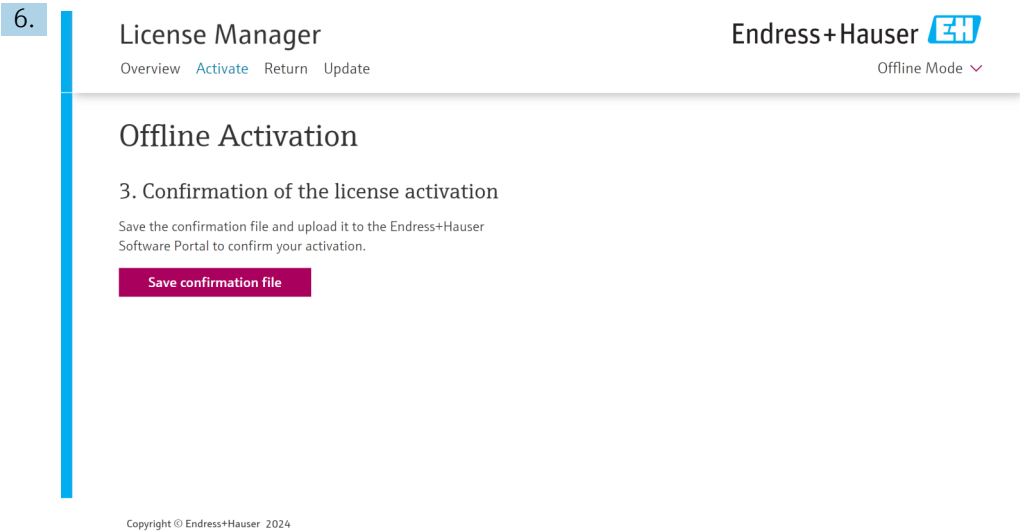
Save the license activation file as an EHU file.

6. Save the EHU file onto the USB storage medium.

4.5.3 Activating the license (offline computer)

Offline activation can be carried out by a user with administrator rights on the offline computer. This requires a license activation file (EHU file) that has been generated beforehand.

1. Connect the USB storage medium.
2. Open the Memobase Pro CZL81 license manager.
3. Resume offline activation.
4. Import the license activation file (EHU file).
5. Create a confirmation file (EHC file).



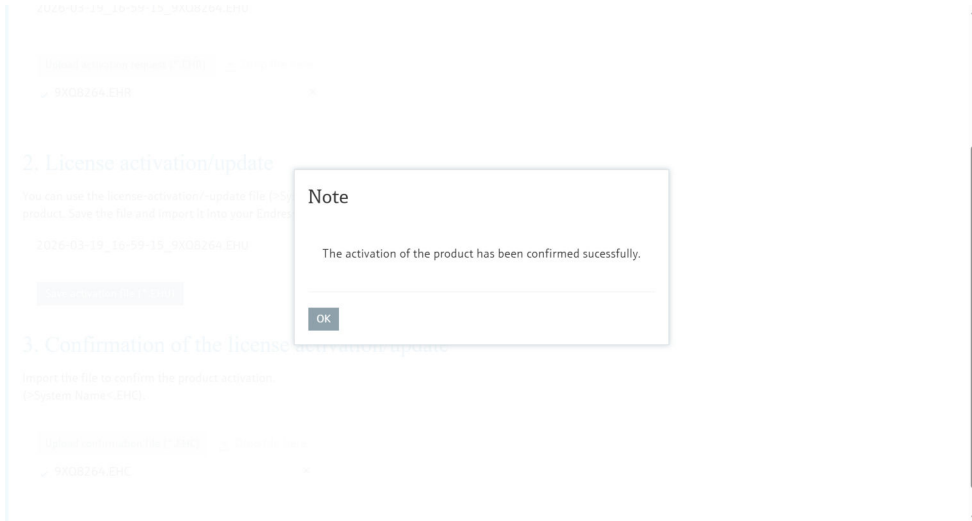
5 Saving the EHC file

Save the EHC file on the USB storage medium.

4.5.4 Confirming activation (online computer)

1. Log into the Endress+Hauser Software Portal.

- 2. Open the Activation/Update menu.
- 3. Upload the confirmation file (EHC file).
- 4.

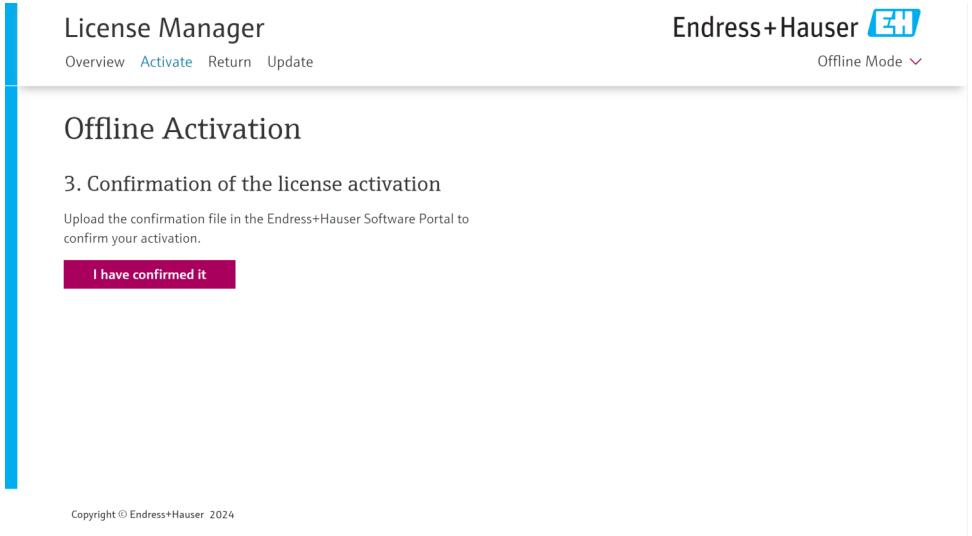


6 Confirming license activation

Wait for successful license activation to be confirmed.

4.5.5 Completing activation (offline computer)

- 1. Open the Memobase Pro CZL81 license manager.
- 2.



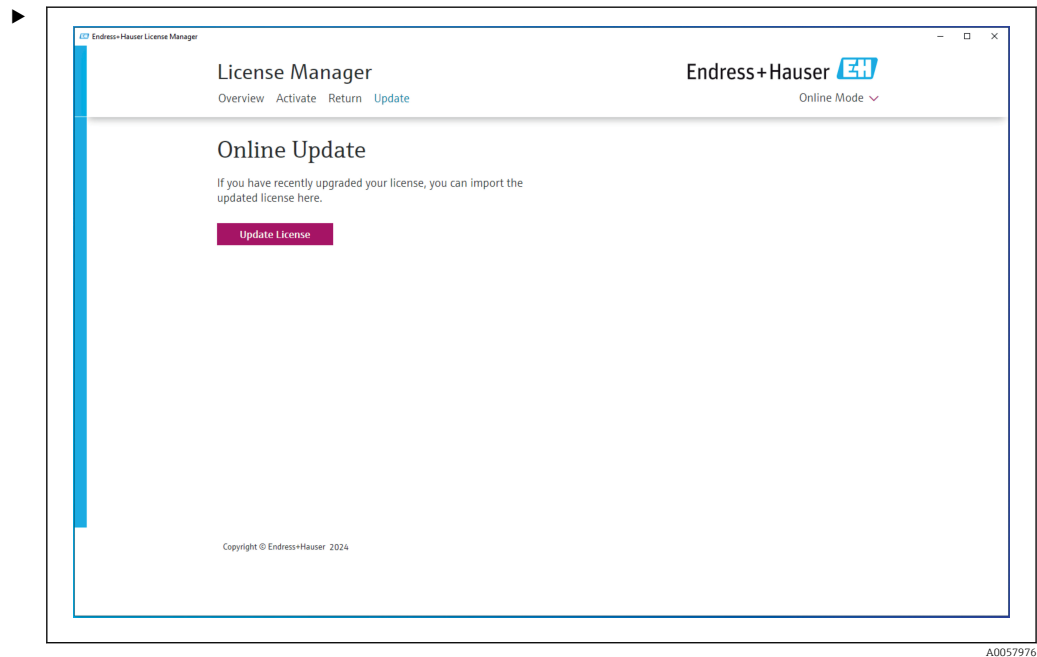
7 Confirming offline activation

Confirm completion of offline activation.

- 3. Check the license status
 - The software license has been successfully activated.

4.6 Updating the license

The Memobase Pro CZL81 license manager contains an update function to update the license. A Windows service is used to update the license and send notifications when new versions are available.



Follow the instructions in the license manager, see "Online update".

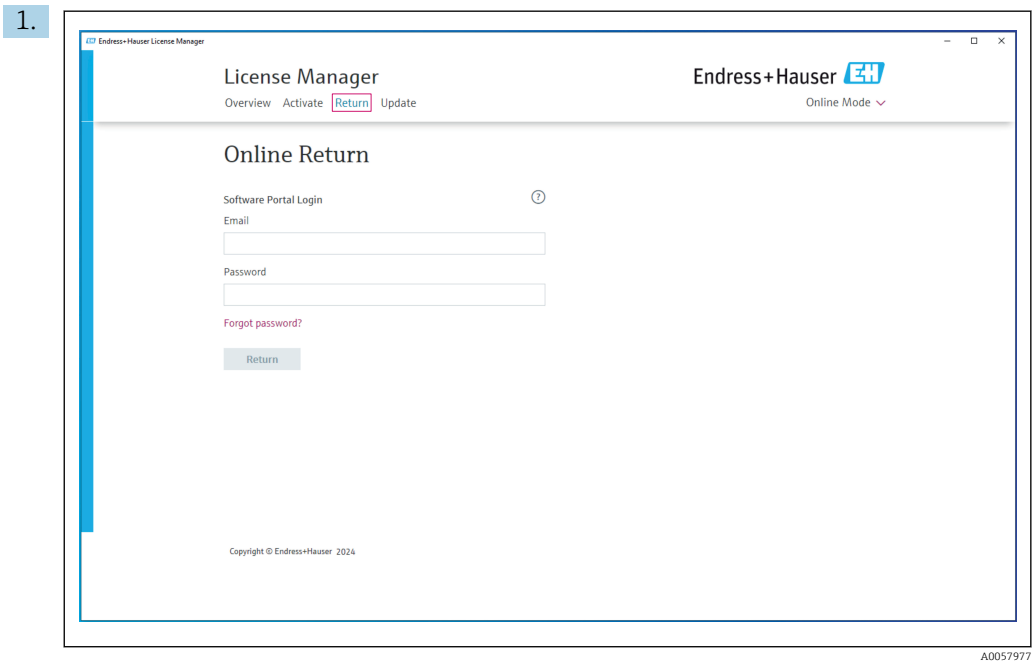
➡ Memobase Pro CZL81 has been successfully updated.

4.7 Renewing subscription with online activation

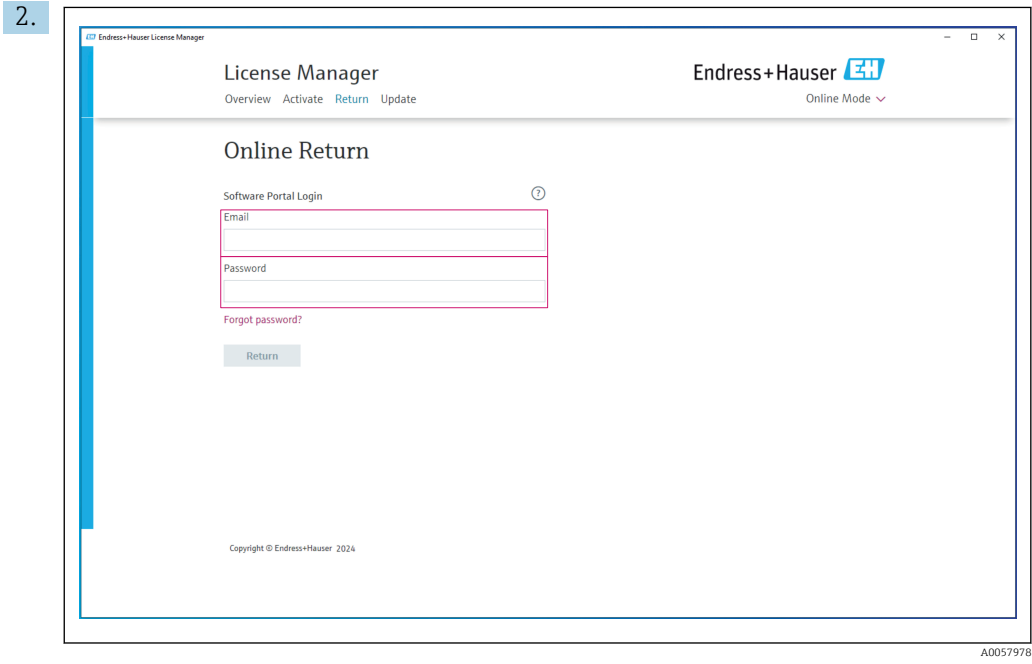
If the subscription with online activation for Memobase Pro CZL81 has not been canceled, it will automatically renew for a further 12 months after the initial 12-month term. The subscription can be canceled in the Endress+Hauser Software Portal. After renewing the subscription, the changed license information is transferred from the Endress+Hauser Software Portal to the local license manager and the Memobase Pro CZL81 software, provided the online activation option has been selected.

4.8 Returning a license with online activation

If you want to transfer your license to another hardware, for example due to a computer replacement, you must first return the license and then activate it on the new hardware.

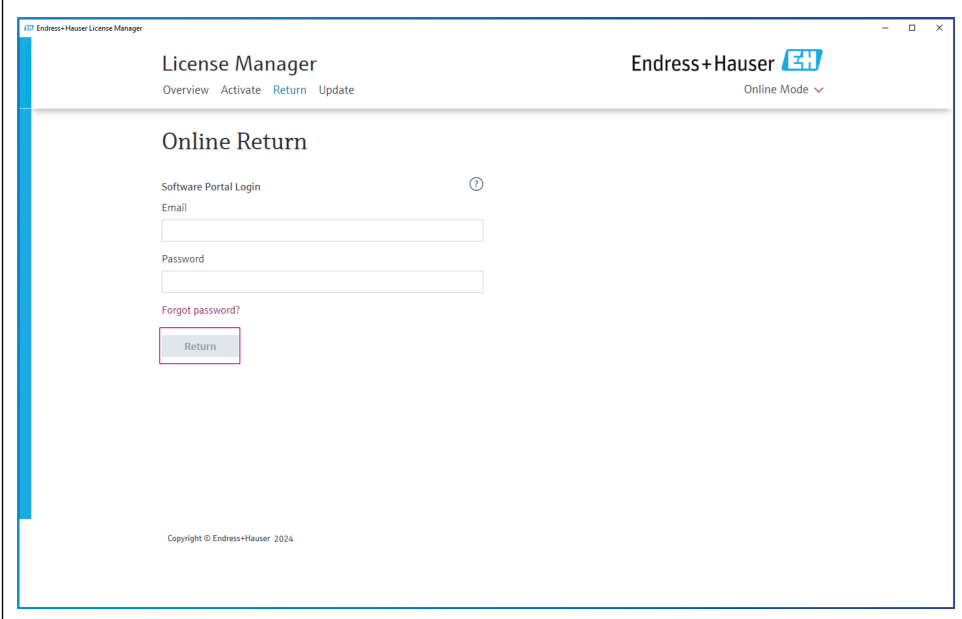


Open the "Return" tab.



Enter the e-mail address and password.

3.



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Click on Return.

↳ The Memobase Pro CZL81 license has been successfully returned.

To install the license on new hardware, follow the instructions in the "Activating the software" section.

4.9 Updating the software

Memobase Pro CZL81 shows available software updates via the Microsoft Windows notification system.

A notification is shown once an update is detected, irrespective of whether Memobase Pro CZL81 is active in the foreground.

The notification is displayed as follows:

- as a brief notification in the information area of the task bar (bottom right)
- as an entry in the Windows Notification Center

1. Open the Windows Notification Center
2. Select the time or notification icon in the task bar, or use the Windows + N key combination

The following functions are available in the Notification Center:

- View notifications
- Open update information
- Remove notifications

Additional information is available in the Microsoft documentation:

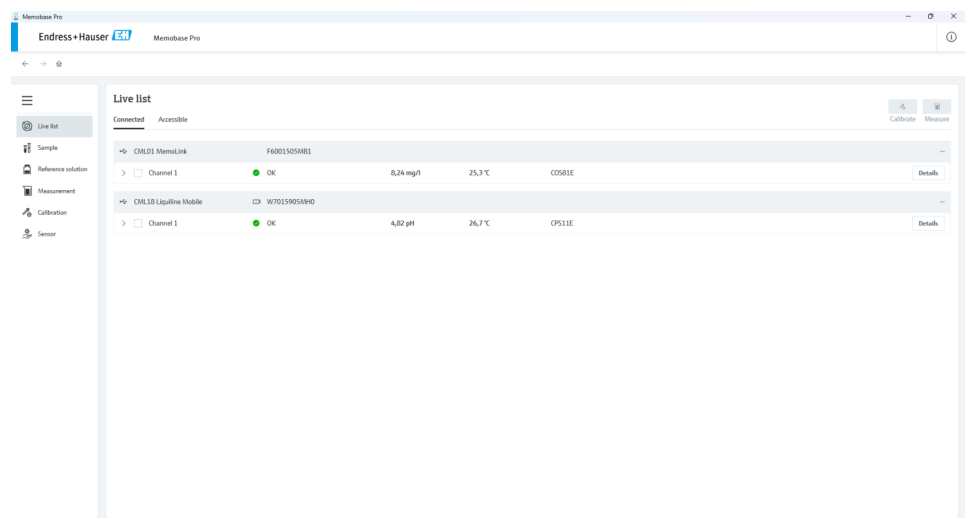
<https://support.microsoft.com>

5 Software functions

Memobase Pro CZL81 has five main functions, which are listed in the navigation bar on the left:

- Live list: Connection and management of Memosens sensors via MemoLink or Liquiline Mobile CML18
- Reference buffer solution management: Management of reference buffer solutions (testing equipment management)
- Sample management: Create, manage and document sample measurements
- Measure: Measurement including graph and description of sample
- Calibration: Completion of various calibration methods
- Sensors: Settings, administration, status and information

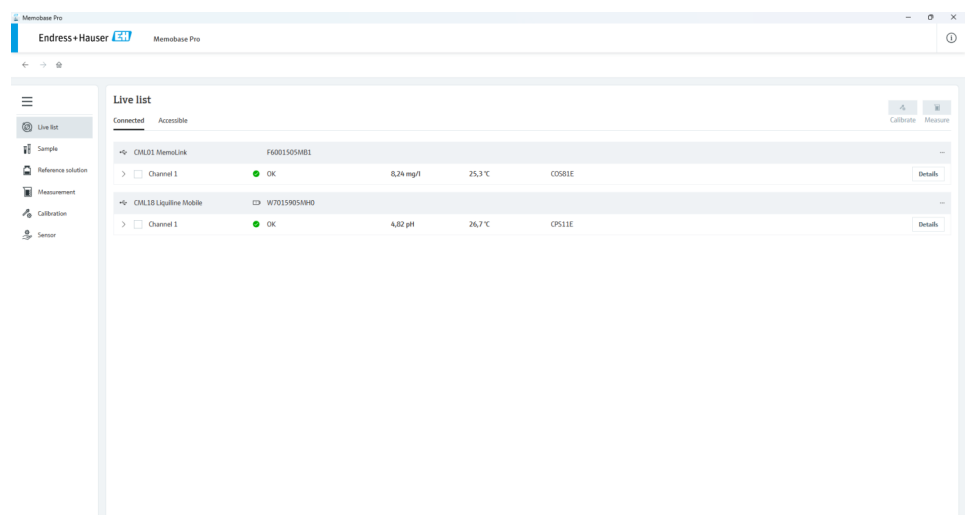
A separate tab is displayed at the top for each connected sensor. The tab displays the sensor type, order root, serial number and tag name.



8 Program structure

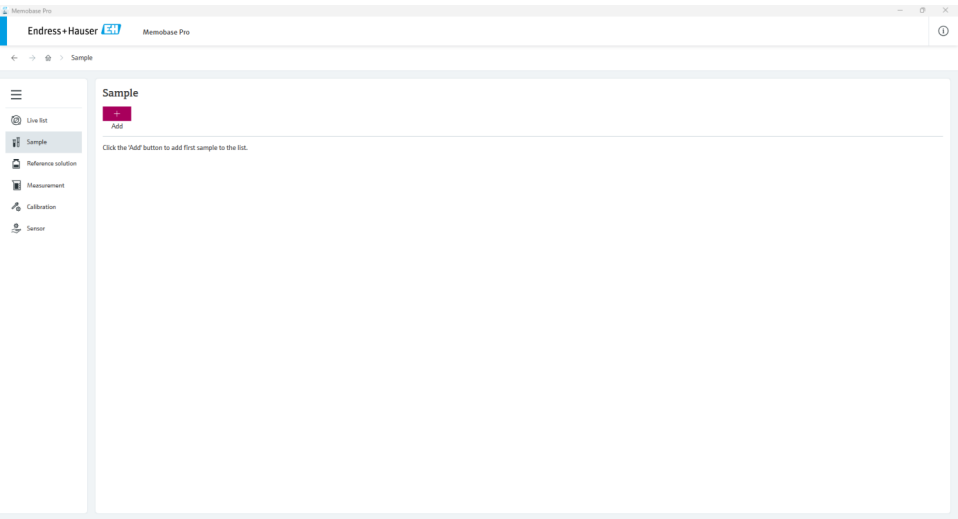
5.1 Live list

- Connection of up to 4 Memosens sensors via MemoLink and Liquiline Mobile CML18
- Display of the measured values and temperature values of Memosens sensors
- Display of expanded measurement information by expanding the connected tab



5.2 Sample management

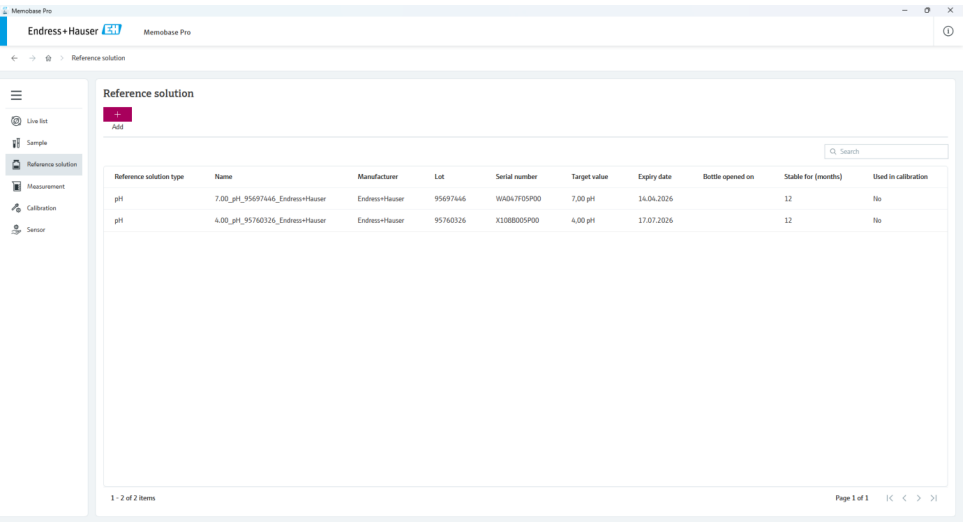
- Sample creation and management
- Unique assignment of measurements to samples
- Documentation of sample-related information



9 Sample management

5.3 Reference buffer solution management

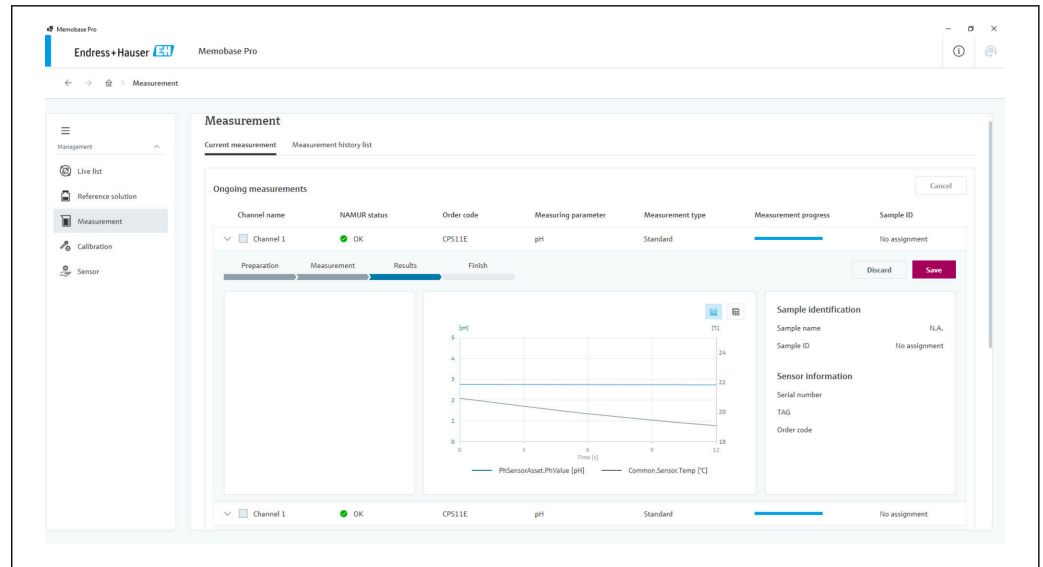
- Manual addition of reference buffer solutions (buffer solutions or standard solutions, for example)
- Reference buffer solution management: Set indicator if, for example, the buffer bottle has been opened
- Tracking the expiration date of the reference buffer solutions



10 Reference buffer solution management

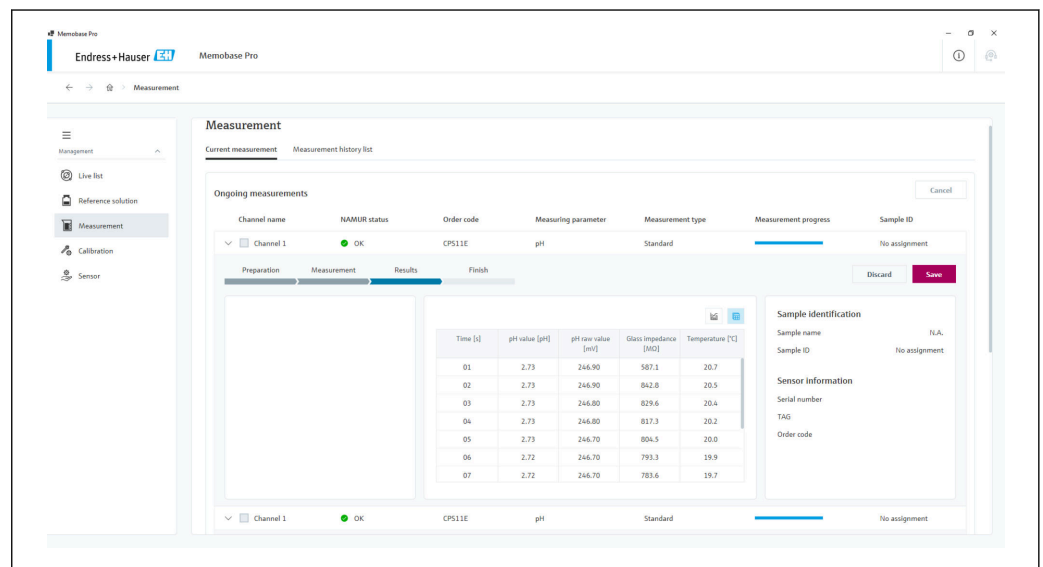
5.4 Measured value display

- Display of primary and secondary values both numerically and graphically
- Sample description for the verifiable assignment of a measurement
- Parallel measurement with a maximum of four connected Memosens sensors



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11 Ongoing measurement with graphic visualization

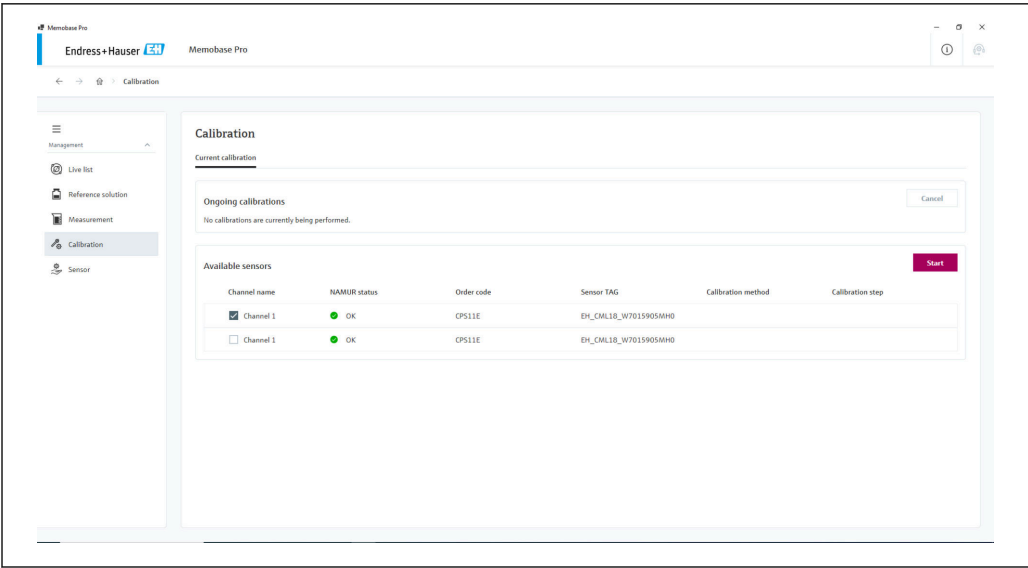


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12 Ongoing measurement with tabular visualization

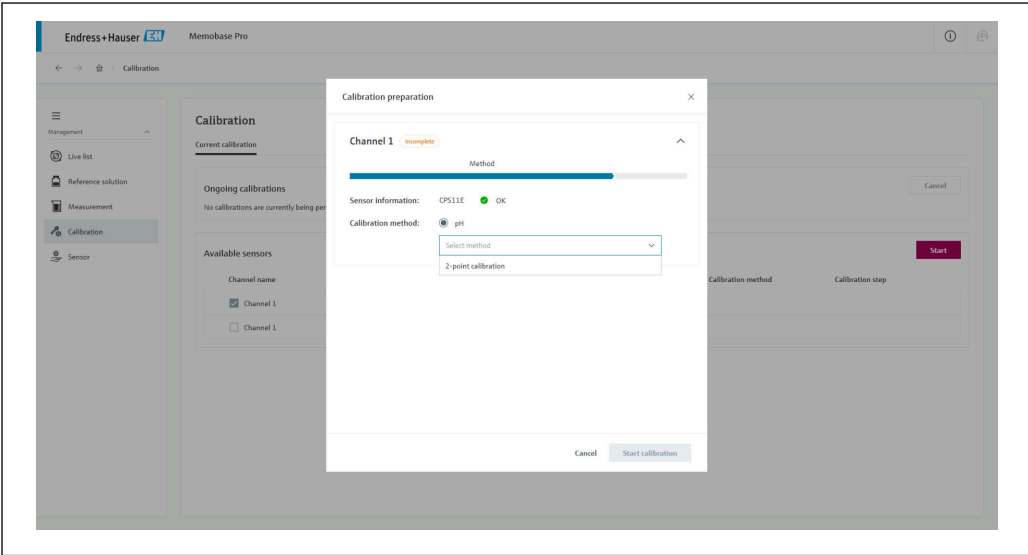
5.5 Calibration

- Guided step-by-step calibration with clear instructions
- Testing equipment management with preprogrammed values for the most common buffer solutions (pH) available on the market
- Specified stability criteria for different requirements
- Calibration methods for pH:
 - Two-point calibration and adjustment
 - Three-point calibration and adjustment
 - Sample calibration
- Distinction between calibration and adjustment: Calibration can only be saved and documented in Memobase Pro CZL81 following the calibration wizard. If a sensor adjustment is required, this can also be done upon reaching the end of the process in the wizard. In this case, the adjustment results are then written to the sensor.



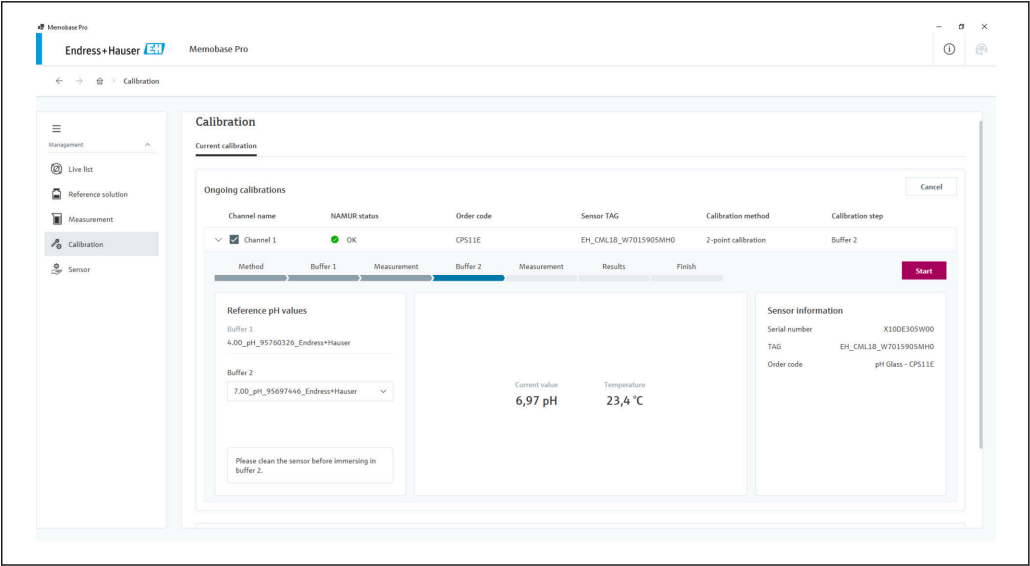
A0058556

13 Sensor selection



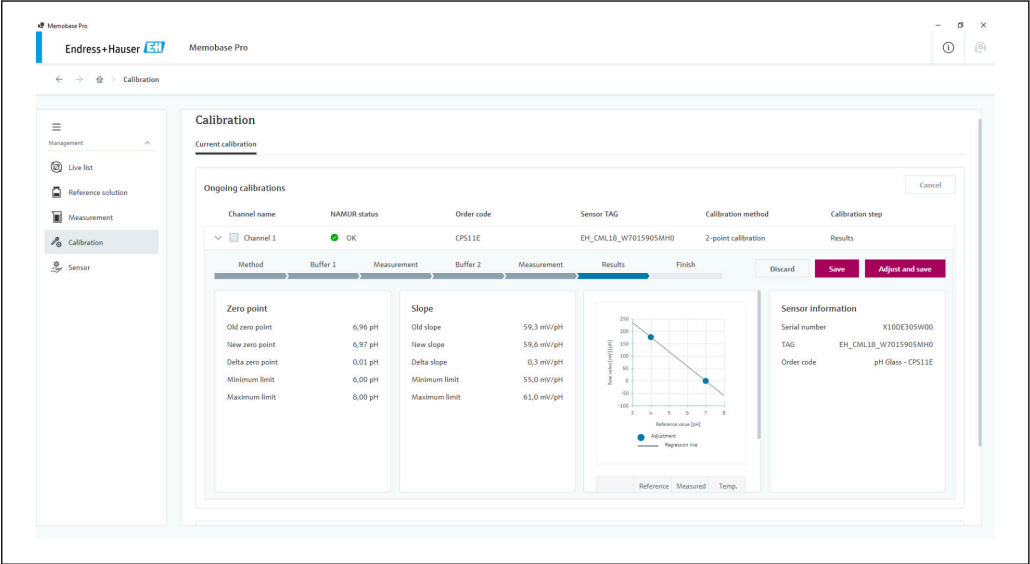
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14 Selection of the calibration method



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15 Two-point calibration

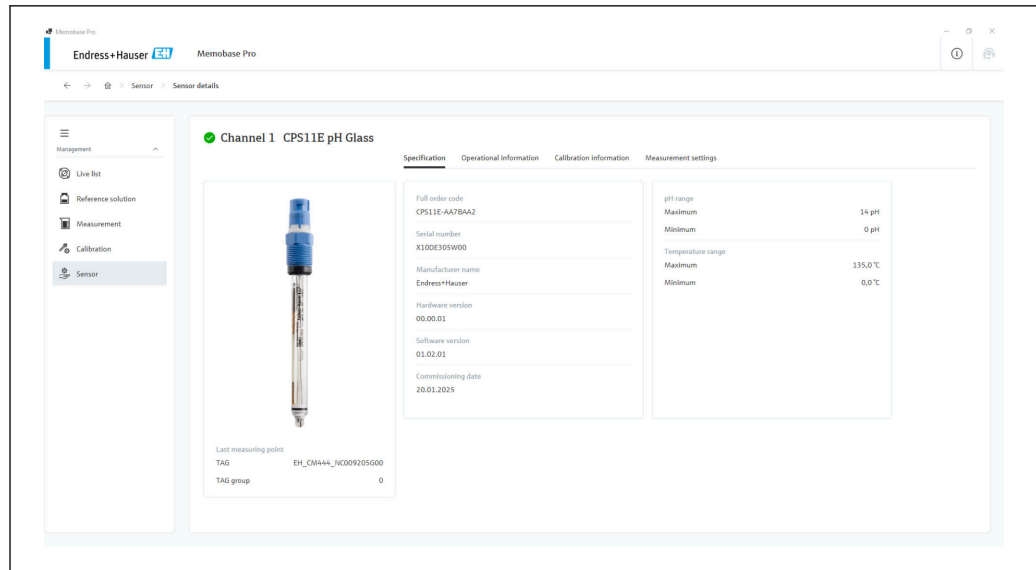


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16 Calibration results with regression graph

5.6 Sensors

- Specification: Documentation of the specifications and applications of the sensor.
- Operating information: Operating hours counter and other load indicators for evaluating the sensor condition.
- Calibration information: Time stamp of previous adjustments to document the entire calibration life cycle of the sensor.
- Measurement settings: Setting of the measuring time.



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17 Connected sensors

5.7 Diagnostic messages

Diagnostic message display according to the NAMUR classification:

- M (Maintenance required)
- F (Failure)
- C (Check function)
- S (Out of specification)

The classification is displayed in the status bar.

6 Measurement

The Memobase Pro CZL81 software processes measured data entirely in digital form. Digitalization takes place in the Memosens sensor. As a result, measured values remain unchanged and traceable. The process includes sensor connection, automatic sensor detection, parameter selection, the measurement process and data storage.

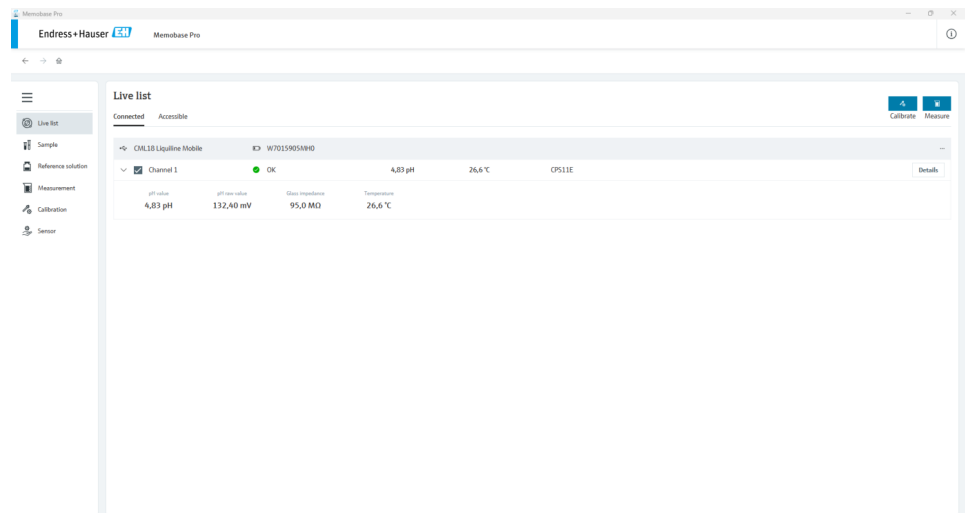
6.1 pH measurement

6.1.1 Connecting the sensor

1. Connect the pH sensor via MemoLink or Liquiline Mobile CML18.
2. Lock the plug.
3. Remove the sensor cap.
4. Check the LED indicator on the MemoLink.
5. Wait for sensor detection by Memobase Pro CZL81.

6.1.2 Sensor detection

After connection, Memobase Pro CZL81 detects the pH sensor automatically. The live list displays the sensor type, serial number, last calibration point, sensor status and the "pH" measurement parameter. The software activates all the functions that are needed for a pH measurement.



18 Sensor detection

6.1.3 Selecting the parameters

The Memobase Pro CZL81 software provides the appropriate measurement parameter. Additional settings can be adjusted depending on the sensor:

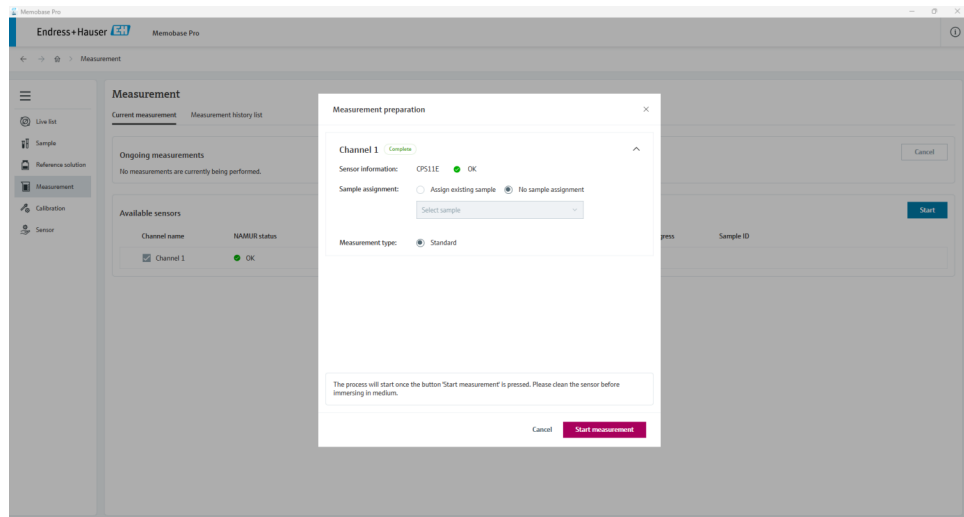
- Measurement duration
- Units of measurement for the primary measured value

Adapt the parameters according to the medium and measuring environment. The software uses the set values for a reliable and reproducible pH measurement.

6.1.4 Starting the pH measurement

1. Measurement/Channel1/Start.

2. Select start to start the pH measurement.
3. Observe the measured value display and check signal stability.
4. Check the temperature display as the software performs automatic compensation.
5. Monitor the measurement curve during an active measurement.
6. Wait for the Memobase Pro CZL81 to complete the measurement automatically.



 19 Starting the pH measurement

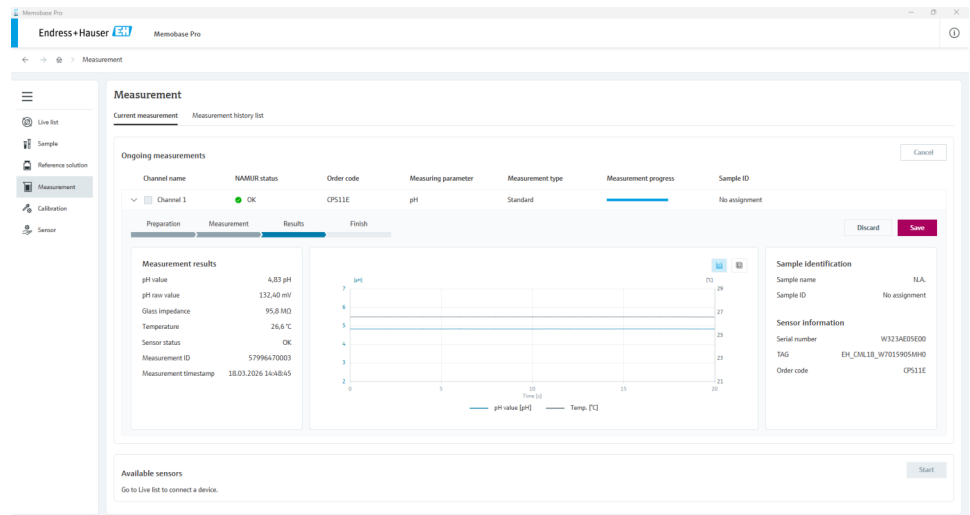
The software delivers stable, temperature-compensated pH values.

6.1.5 Saving measured values and assigning sample ID

There are two possible ways to proceed once pH measurement is complete.

Save the measured values

1. Select Save to store the measured values permanently.
2. Check the memory status in the status bar.
3. The software saves the timestamp, sensor serial number, calibration data, temperature, user and proof of stability.
4. Check the saved measurement in the results list.
5. If necessary, open the details and check the entries.



20 Saving the measured values

Applying measurement to sample

1. Open the sample selection screen and highlight the appropriate sample.
2. Then select 'Apply to sample' to assign the measurement.
3. Check the assignment status and compare the sample ID.
4. Refresh the sample view and verify that the assignment is complete.

6.2 Oxygen measurement

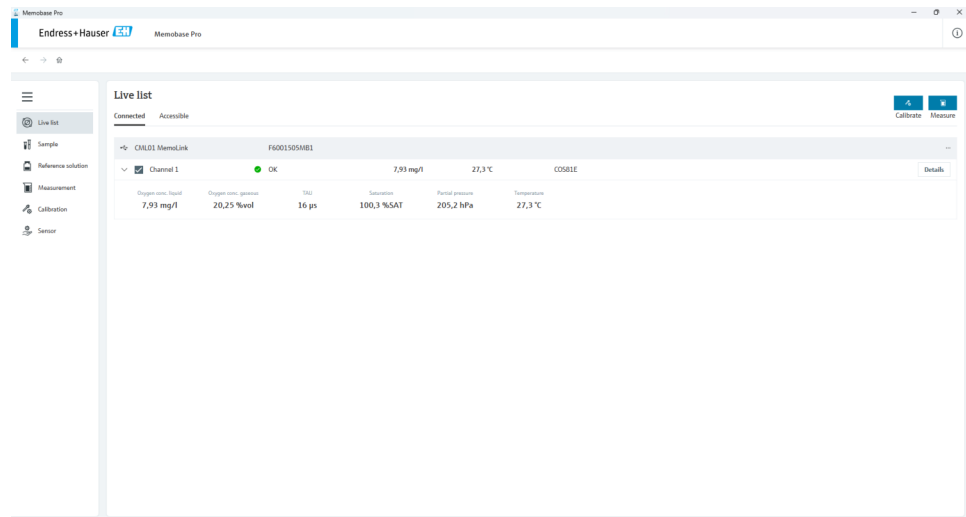
The Memobase Pro CZL81 software supports analysis of dissolved oxygen. Measurement is completely digital via Memosens oxygen sensors. The software provides all the relevant parameters and monitors stability, temperature and sensor status during the entire measurement process.

6.2.1 Connecting the sensor

1. Connect the oxygen sensor via MemoLink or Liquiline Mobile CML18.
2. Lock the plug.
3. Remove the sensor cap.
4. Check the LED indicator on the MemoLink.
5. Wait for sensor detection by Memobase Pro CZL81.

6.2.2 Sensor detection

Following connection, Memobase Pro CZL81 displays all sensor-related information in the live list. This includes sensor type, serial number, last calibration point, current status and the supported "oxygen" measurement parameter. The software assigns the sensor uniquely and activates the functions required for oxygen measurement.



21 Sensor detection

6.2.3 Selecting the parameters

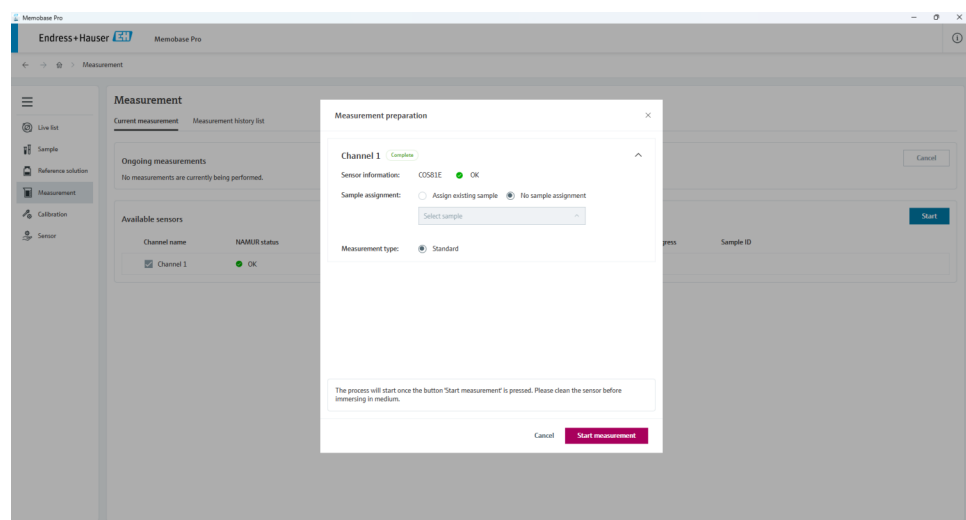
The Memobase Pro CZL81 software provides the appropriate measurement parameter. Additional settings can be adjusted depending on the sensor:

- Measurement duration
- Stability criteria
- Temperature compensation

Adjust the parameters to match the measurement procedure to the medium and environment. The software uses the set values for a reproducible and standardized oxygen measurement.

6.2.4 Starting oxygen measurement

1. Measurement/Channel1/Start.
2. Select Start to start the oxygen measurement.
3. Observe the measured value display and check signal stability.
4. Check the temperature display as the software performs automatic compensation.
5. Monitor the measurement curve during an active measurement.
6. Wait for the Memobase Pro CZL81 to complete the measurement automatically.



22 Starting oxygen measurement

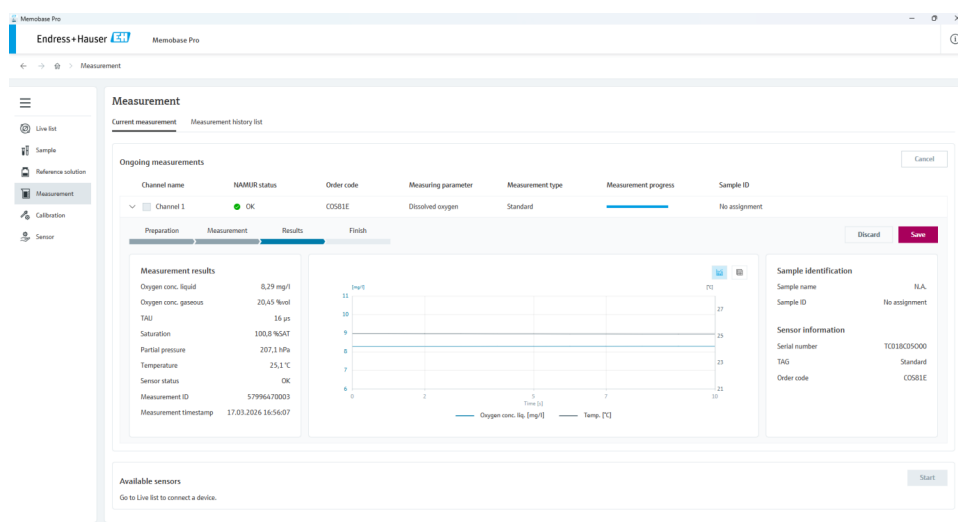
The software provides stable values for dissolved oxygen, including temperature and proof of stability.

6.2.5 Saving measured values and assigning sample ID

There are two possible ways to proceed once oxygen measurement is complete.

Save the measured values

1. Select Save to store the measured values permanently.
2. Check the memory status in the status bar.
3. The software saves the timestamp, sensor serial number, calibration data, temperature, user and proof of stability.
4. Check the saved measurement in the results list.
5. If necessary, open the details and check the entries.



 23 Saving the measured values

Applying measurement to sample

1. Open the sample selection screen and highlight the appropriate sample.
2. Then select 'Apply to sample' to assign the measurement.
3. Check the assignment status and compare the sample ID.
4. Refresh the sample view and verify that the assignment is complete.

6.3 Conductivity measurement

The Memobase Pro CZL81 software supports the digital measurement of conductivity with Memosens conductivity sensors. All measured values are measured in a stable, reproducible and fully traceable manner. The software provides the relevant parameters, as well as temperature and stability information.

6.3.1 Connecting the sensor

1. Connect the conductivity sensor via MemoLink or Liquiline Mobile CML18.
2. Lock the plug.
3. Remove the sensor cap.

4. Check the LED indicator on the MemoLink.
5. Wait for sensor detection by Memobase Pro CZL81.

6.3.2 Sensor detection

Following connection, Memobase Pro CZL81 detects the conductivity sensor automatically. The live list shows the sensor type, serial number, last calibration data record, sensor status and the "Conductivity" measurement parameter. The software thus provides all of the information required for conductivity measurement.

6.3.3 Selecting the parameters

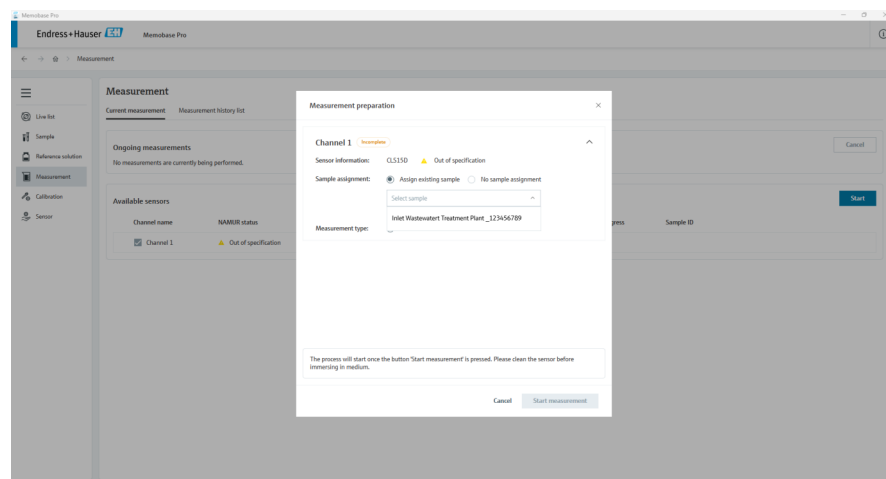
For conductivity measurement, Memobase Pro CZL81 provides specific settings, including:

- Measurement duration
- Stability criteria
- Temperature compensation

Adjust the parameters to match the measurement to the medium and environment. The software uses the set values for a precise and stable conductivity measurement.

6.3.4 Starting the conductivity measurement

1. Measurement/Channel1/Start.
2. Select start to start the conductivity measurement.
3. Observe the measured value display and check signal stability.
4. Check the temperature display as the software performs automatic compensation.
5. Monitor the measurement curve during an active measurement.
6. Wait for the Memobase Pro CZL81 to complete the measurement automatically.



24 Starting the conductivity measurement

The software delivers stable, temperature-compensated conductivity values.

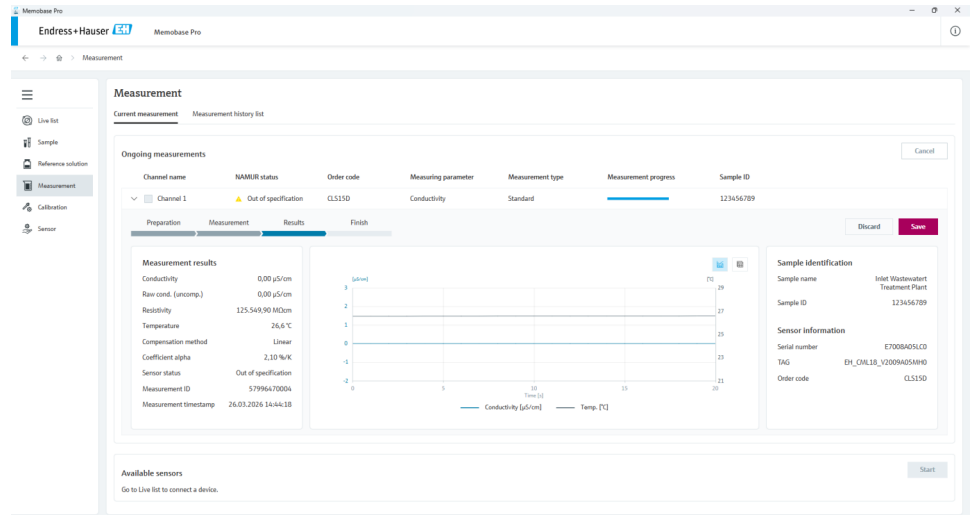
6.3.5 Saving the measured values or assigning a sample ID

There are two possible ways to proceed once measurement is complete.

Save the measured values

1. Select Save to store the measured values permanently.
2. Check the memory status in the status bar.

3. The software saves the timestamp, sensor serial number, calibration data, temperature, user and proof of stability.
4. Check the saved measurement in the results list.
5. If necessary, open the details and check the entries.



25 Saving the measured values

Assigning a measurement to a sample ID

1. Open the sample selection screen and highlight the appropriate sample.
2. Then select 'Apply to sample' to assign the measurement.
3. Check the assignment status and compare the sample ID.
4. Refresh the sample view and verify that the assignment is complete.

7 Calibration

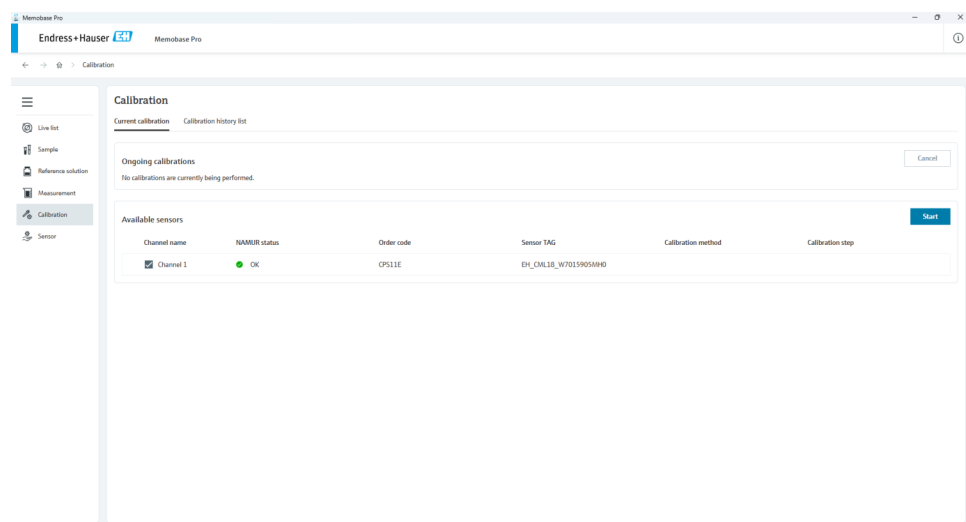
The Memobase Pro CZL81 software provides functions for the structured calibration of Memosens sensors. All calibration steps are processed digitally to ensure that the data recorded remain reproducible, stable and traceable. The software only shows the calibration methods that are suited to the connected sensor and supports the user in performing individual points.

7.1 pH calibration

The Memobase Pro CZL81 software provides a guided workflow for pH calibration. The process includes sensor selection, the method, preparation, measurement and completion. All steps are carried out digitally and documented in the calibration history.

7.1.1 Selecting the pH sensor

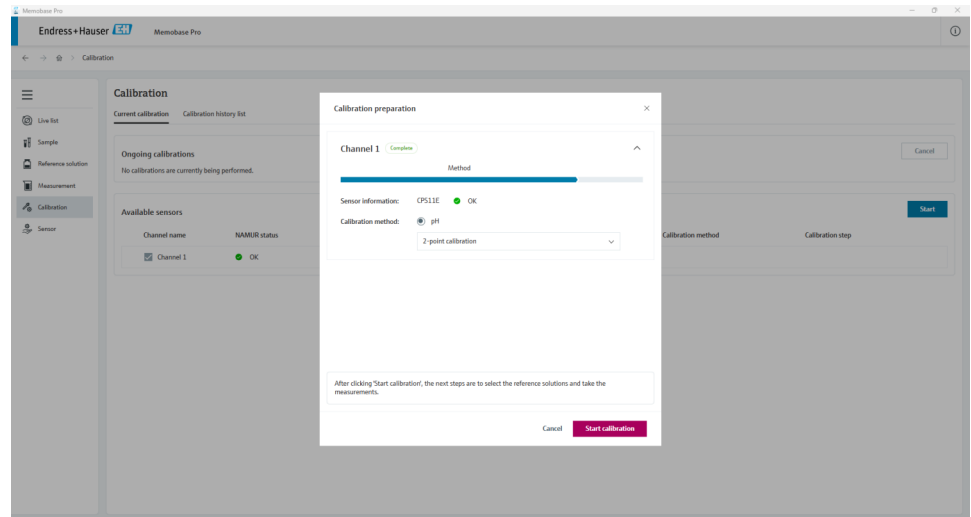
1. Open the Calibration menu.
2. Select the available pH sensor from the list. The sensor is displayed with the channel, NAMUR status, order code, sensor TAG and assigned calibration method.
3. Press Start to initiate calibration.



26 Selecting the pH sensor

7.1.2 Selecting the calibration method

1. Check the calibration preparation dialog.
2. Check the sensor information (order code, status, TAG).
3. Select the pH measurement parameter.
4. Select the calibration method (two-point or three-point calibration).
5. Select to start calibration.



27 Selecting the calibration method

7.1.3 Preliminaries

The software displays the current pH raw value, temperature and sensor condition.

i Clean the sensor before calibration to ensure that no residues affect the measurement result.

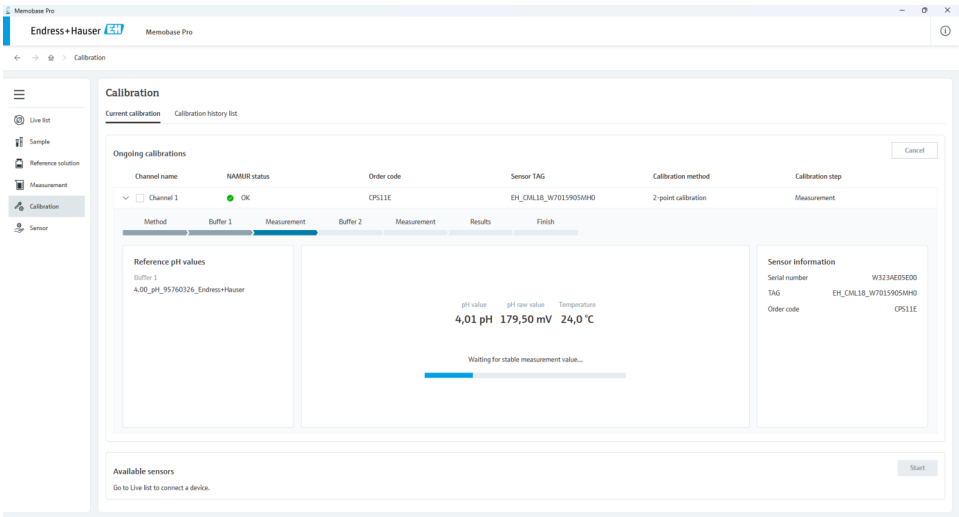
1. Prepare standard solution for the pH calibration.
2. Check sensor conditions (pressure, sensor status, temperature).
3. Immerse the sensor in the appropriate buffer solution.
4. Select start to switch to the measurement phase.

7.1.4 Measurement

During the measurement, the software shows:

- Current pH raw value
- Temperature
- Stability progress
- Sensor information

1. Wait until the stability indicator shows that the measurement is stable.
2. Wait for the measured value to be accepted automatically by Memobase Pro CZL81.
3. For a multipoint calibration, place the sensor in the next buffer solution and repeat the procedure.



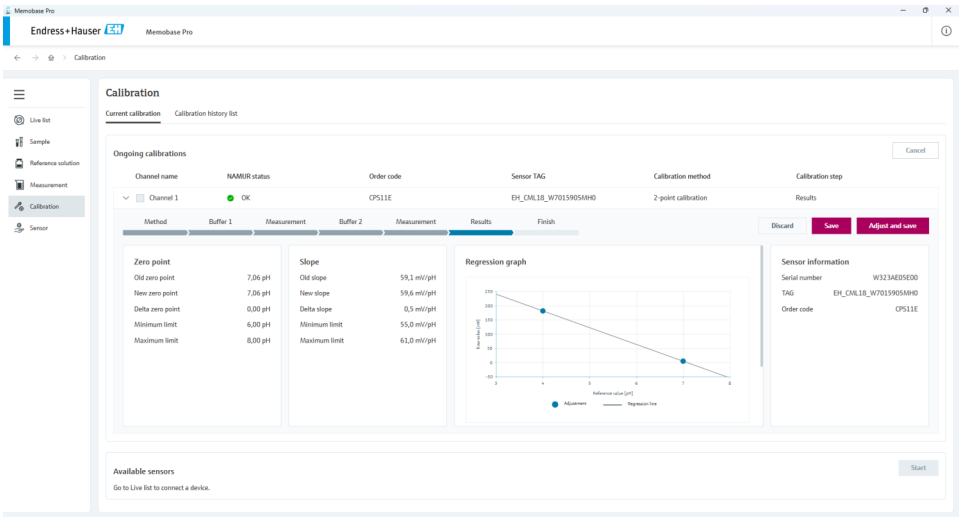
28 Measurement

7.1.5 Results

Once the measurement is complete, the calculated calibration results are shown:

- New signal value
- Previous signal value
- Temperature
- Buffer information

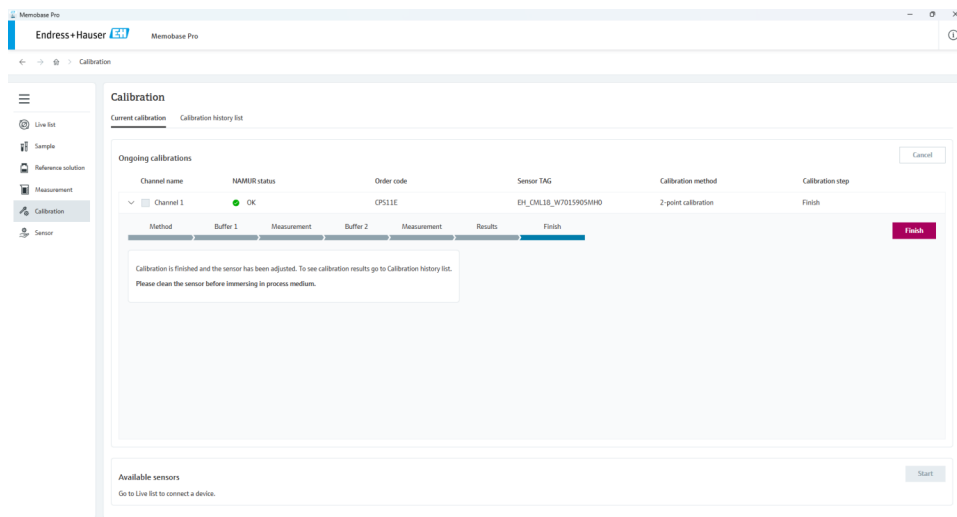
1. Compare and check values.
2. Complete the calibration by saving or adjusting and saving.
3. Alternatively, select 'Discard' to discard the calibration.



29 Results

7.1.6 Final steps

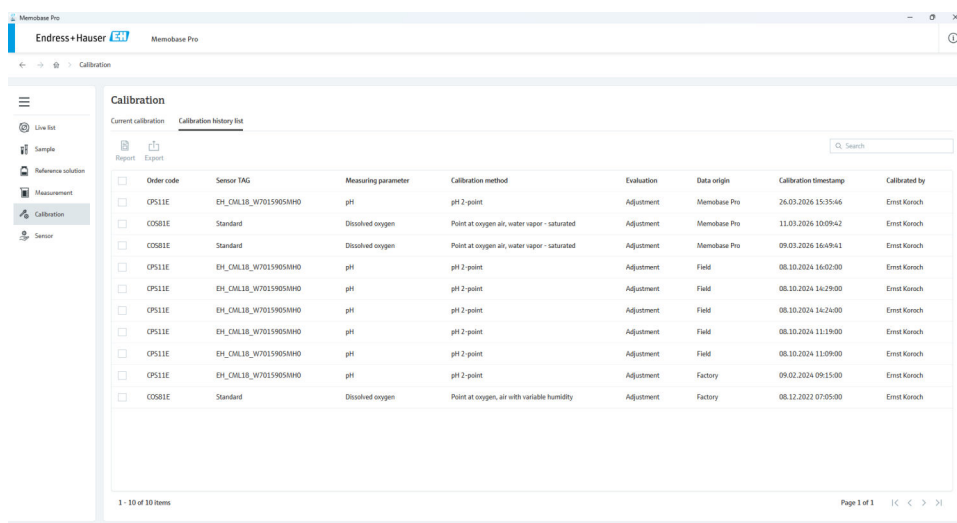
1. Read the software message: Calibration is complete and the sensor has been configured.
2. Select Finish to end the process.



30 Final steps

7.1.7 Checking the calibration history

1. Open the calibration history list tab.
2. Check the entry for the current calibration.
3. Sort or export entries if necessary.



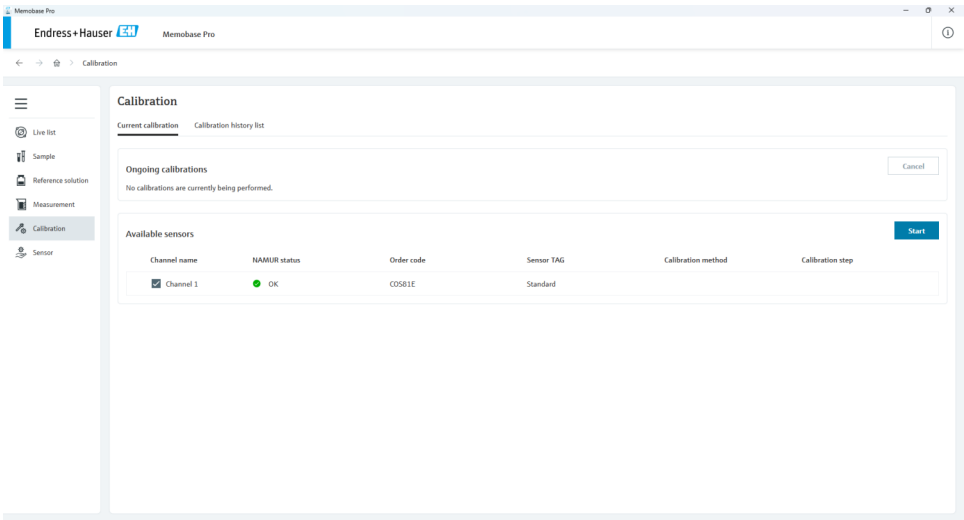
31 Calibration history

7.2 Oxygen calibration

The Memobase Pro CZL81 software provides a guided workflow for calibrating Memosens oxygen sensors. The process includes sensor connection, the method, the preparation, the measurement, the analysis and completion. All steps are carried out digitally and documented in the calibration history.

7.2.1 Selecting the oxygen sensor

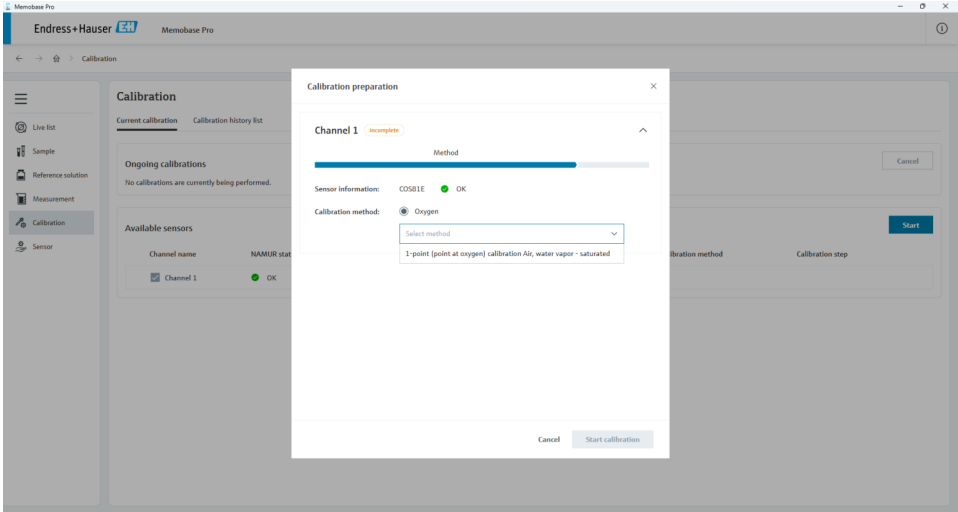
1. Open the calibration menu.
2. Select the available oxygen sensor from the list. The sensor is displayed with the channel, NAMUR status, order code, sensor TAG and assigned calibration method.
3. Press Start to initiate calibration.



32 Selecting the oxygen sensor

7.2.2 Selecting the calibration method

- 1. Check the calibration preparation dialog.
- 2. Check the sensor information (order code, status, TAG).
- 3. Select the oxygen measurement parameter.
- 4. Select the calibration method (e.g., one-point calibration (oxygen point) in air or at atmospheric pressure saturated with water vapor).
- 5. Select to start calibration.



33 Selecting the calibration method

7.2.3 Preliminaries

The sensor must be kept clean during calibration as contamination can affect the measurement result.

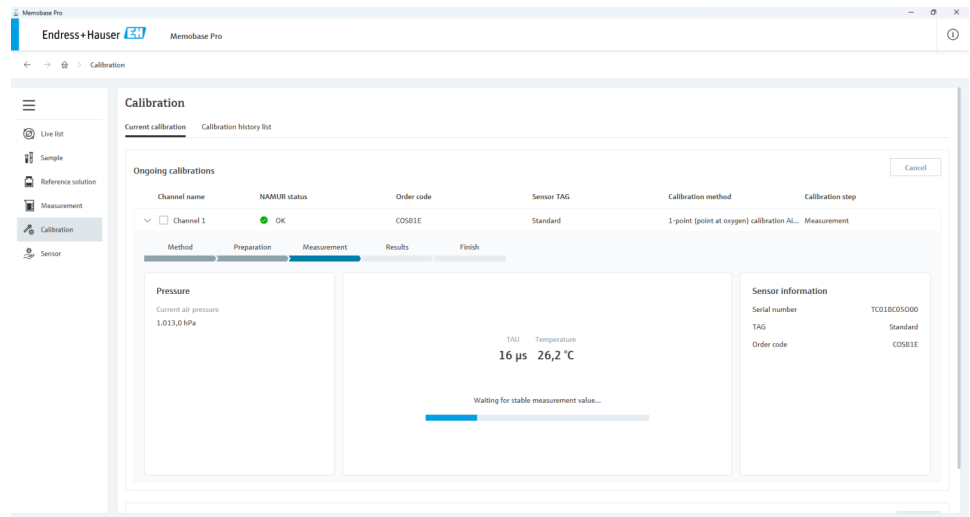
- 1. Check sensor conditions (pressure, sensor status, temperature).
- 2. Select start to switch to the measurement phase.

7.2.4 Measurement

During the measurement, the software shows:

- Current raw oxygen value (TAU)
- Temperature
- Stability progress
- Sensor information

1. Position the sensor in the ambient air.
2. Wait for measured value to stabilize.
3. Wait for the measured value to be accepted automatically by Memobase Pro CZL81.



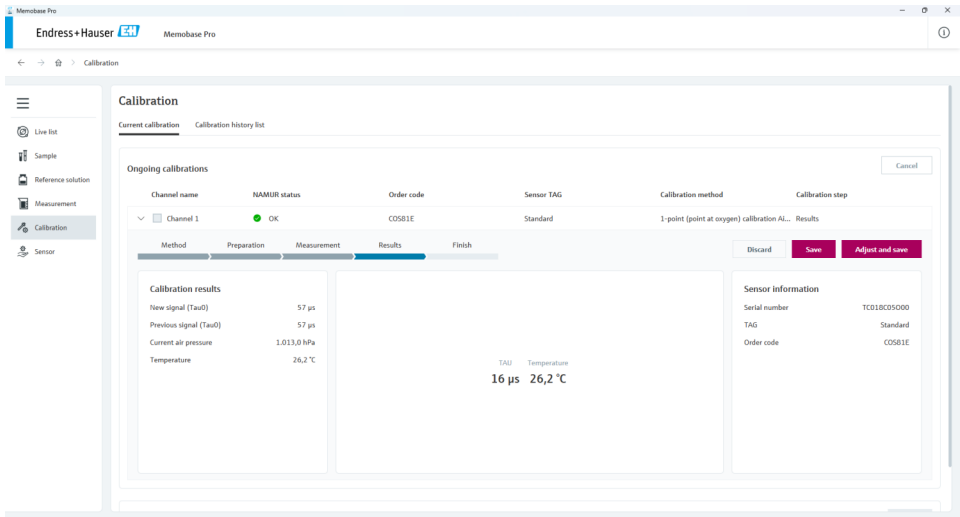
34 Measurement

7.2.5 Results

Once the measurement is complete, the calculated calibration results are shown:

- New signal value (TauU)
- Previous signal value
- Current atmospheric pressure
- Temperature

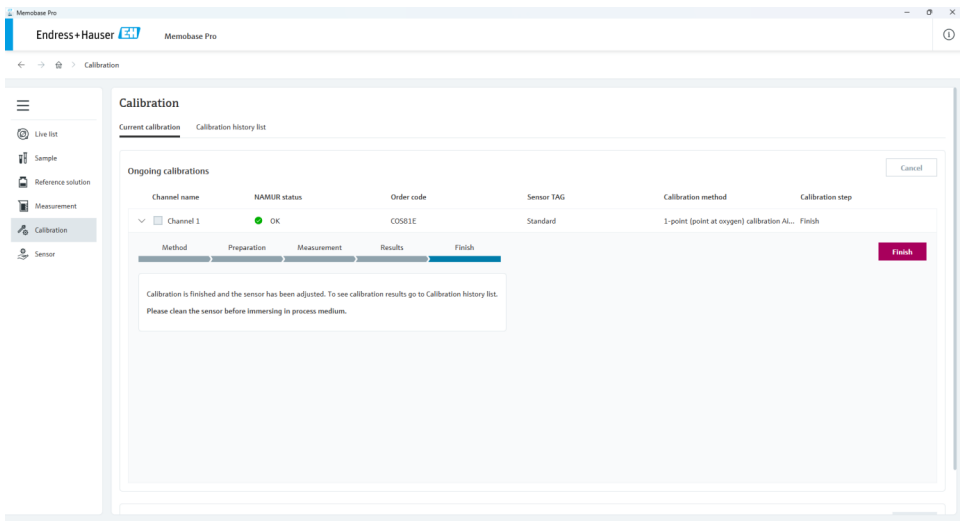
1. Compare and check values.
2. Complete the calibration by saving or adjusting and saving.
3. Alternatively, select 'Discard' to discard the calibration.



35 Results

7.2.6 Final steps

- 1. Read the software message: Calibration is complete and the sensor has been configured.
- 2. Select Finish to end the process.



36 Final steps

7.2.7 Checking the calibration history

- 1. Open the Calibration history list tab.
- 2. Check the entry for the current calibration.
- 3. Sort or export entries if necessary.

☐	Order code	Sensor TAG	Measuring parameter	Calibration method	Evaluation	Data origin	Calibration timestamp	Calibrated by
☐	CDS81E	Standard	Dissolved oxygen	Point at oxygen air, water vapor - saturated	Adjustment	Memobase Pro	11.03.2024 10:09:42	User
☐	CDS81E	Standard	Dissolved oxygen	Point at oxygen air, water vapor - saturated	Adjustment	Memobase Pro	09.03.2024 16:49:41	User
☐	CPS11E	EH_CML18_W7015905AH0	pH	pH 2-point	Adjustment	Field	08.10.2024 16:02:00	User
☐	CPS11E	EH_CML18_W7015905AH0	pH	pH 2-point	Adjustment	Field	08.10.2024 14:29:00	User
☐	CPS11E	EH_CML18_W7015905AH0	pH	pH 2-point	Adjustment	Field	08.10.2024 14:24:00	User
☐	CPS11E	EH_CML18_W7015905AH0	pH	pH 2-point	Adjustment	Field	08.10.2024 11:19:00	User
☐	CPS11E	EH_CML18_W7015905AH0	pH	pH 2-point	Adjustment	Field	08.10.2024 11:09:00	User
☐	CPS11E	EH_CML18_W7015905AH0	pH	pH 2-point	Adjustment	Factory	09.02.2024 09:15:00	User
☐	CDS81E	Standard	Dissolved oxygen	Point at oxygen, air with variable humidity	Adjustment	Factory	08.12.2022 07:05:00	User

37 Calibration history

 The calibration history shows all the calibration data stored in the Memosens sensor head, including data source („Data origin“) and calibrations performed at Endress +Hauser.

7.3 Conductivity calibration

The Memobase Pro CZL81 software provides a guided workflow for calibrating conductivity sensors. The software records all calibration data digitally and provides stable, reproducible results.

7.3.1 Selecting the conductivity sensor

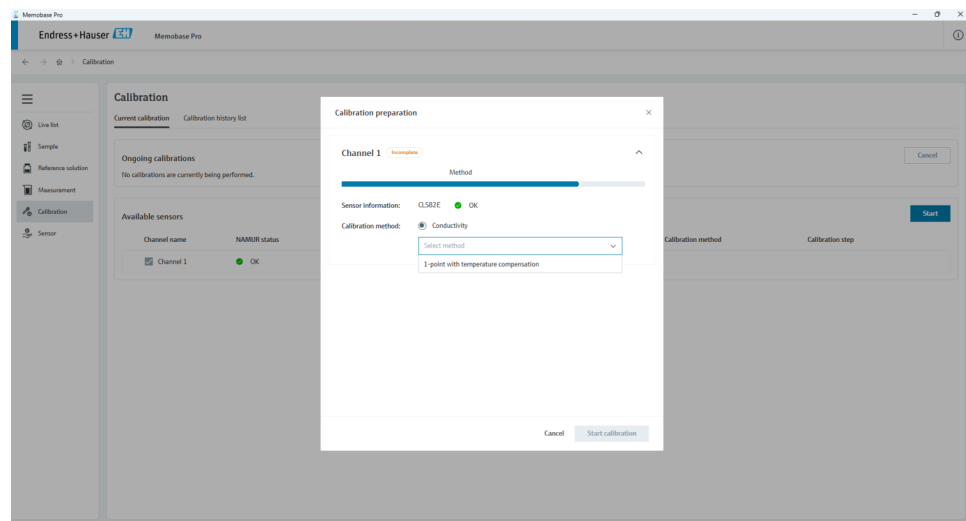
1. Open the calibration menu.
2. Select the available conductivity sensor from the list. The sensor is displayed with the channel, NAMUR status, order code, sensor TAG and assigned calibration method.
3. Press Start to initiate calibration.

Channel name	NAMUR status	Order code	Sensor TAG	Calibration method	Calibration step
Channel 1	OK	CLS8ZE	EH_OMAAA_1JC009505000		

38 Selecting the conductivity sensor

7.3.2 Selecting the calibration method

1. Check the calibration preparation dialog.
2. Check the sensor information (order code, status, TAG).
3. Select conductivity as the measurement parameter.
4. Select the calibration method (e.g., one-point calibration with temperature compensation).
5. Select to start calibration.



 39 Selecting the calibration method

7.3.3 Preliminaries

The software shows live values such as the conductivity signal, temperature and, if necessary, cell constant.

 Clean the sensor before calibration to ensure that no residues affect the measurement result.

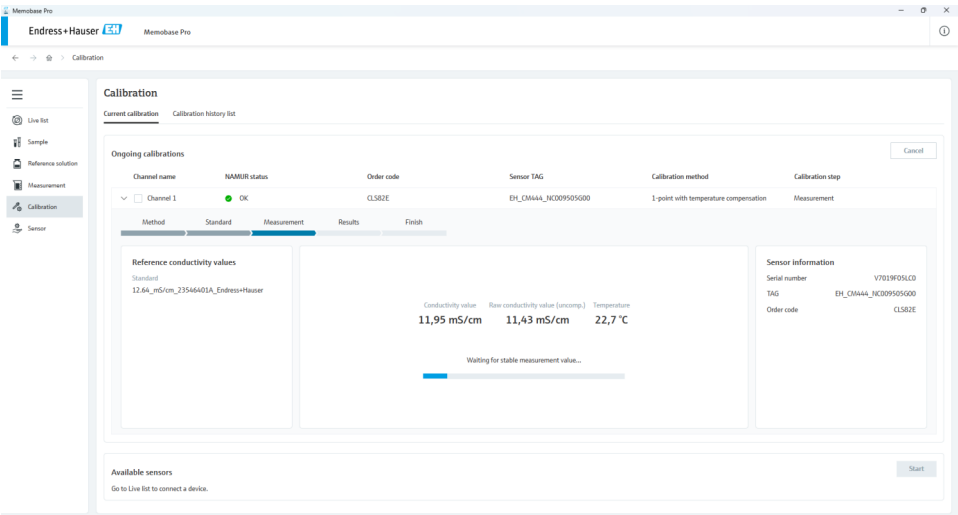
1. Prepare standard solution for the conductivity calibration.
2. Check sensor conditions (pressure, sensor status, temperature).
3. Immerse the sensor in standard solution.
4. Select start to switch to the measurement phase.

7.3.4 Measurement

During the measurement, the software shows:

- Current conductivity signal
- Temperature
- Stability progress
- Sensor information

1. Wait until the stability indicator shows that the measurement is stable.
2. Wait for the measured value to be accepted automatically by Memobase Pro CZL81.



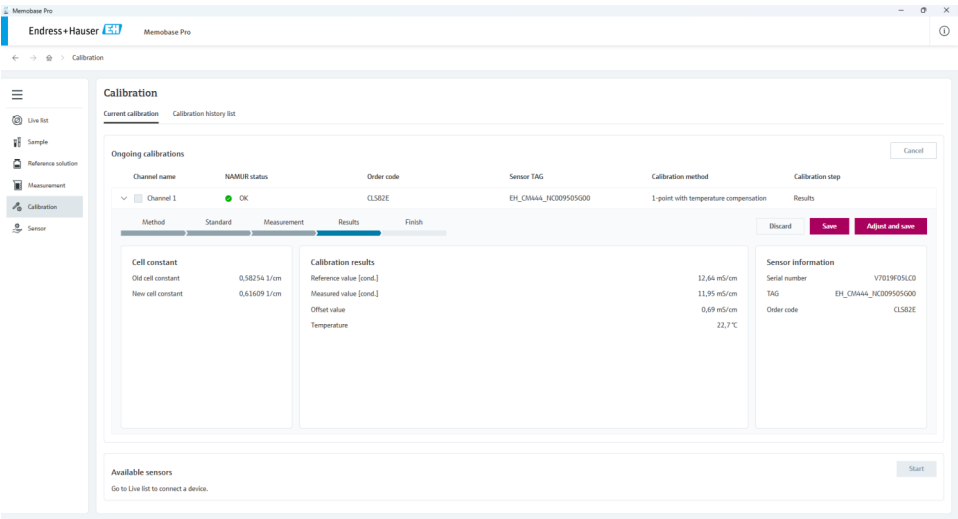
40 Measurement

7.3.5 Results

Once the measurement is complete, the calculated calibration results are shown:

- New conductivity value
- Previous signal value
- Temperature
- Calculated cell constant

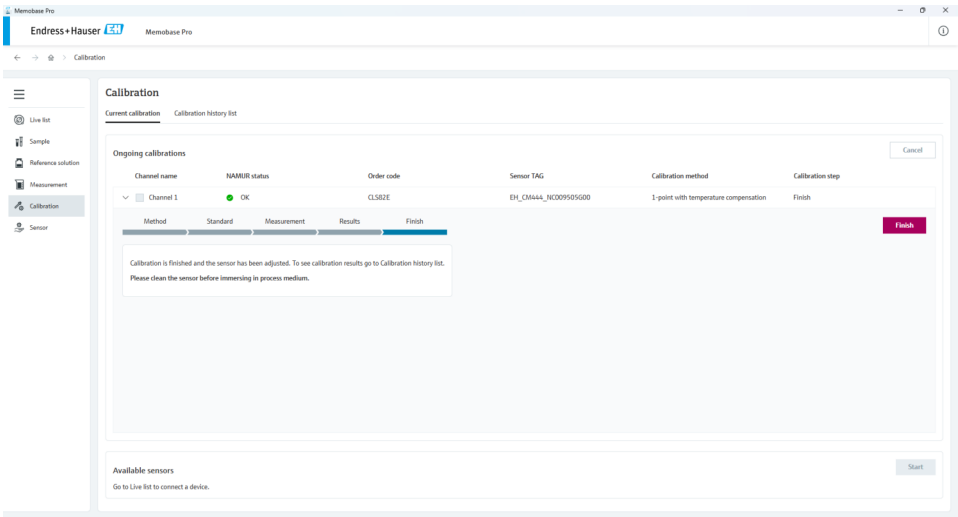
1. Compare and check values.
2. Complete the calibration by saving or adjusting and saving.
3. Alternatively, select 'Discard' to discard the calibration.



41 Results

7.3.6 Final steps

1. Read the software message: Calibration is complete and the sensor has been configured.
2. Select Finish to end the process.

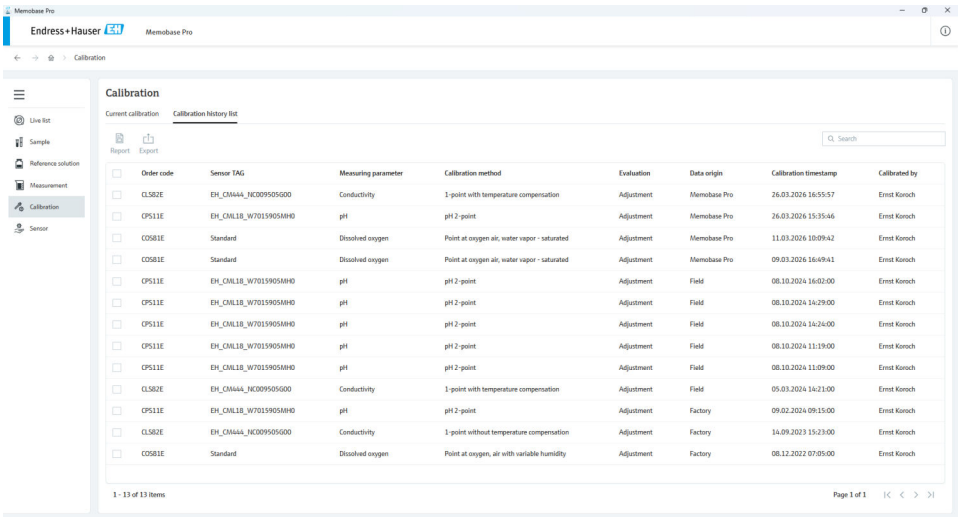


42 Final steps

7.3.7 Checking the calibration history

- 1. Open the Calibration history list tab.
- 2. Check the entry for the current calibration.
- 3. Sort or export entries if necessary.

The calibration history includes calibrations saved in Memobase Pro CZL81 and calibration data stored in the Memosens sensor. When the sensor is connected, the calibrations saved in the sensor are automatically accepted in Memobase Pro CZL81 and added in the calibration history.



43 Calibration history

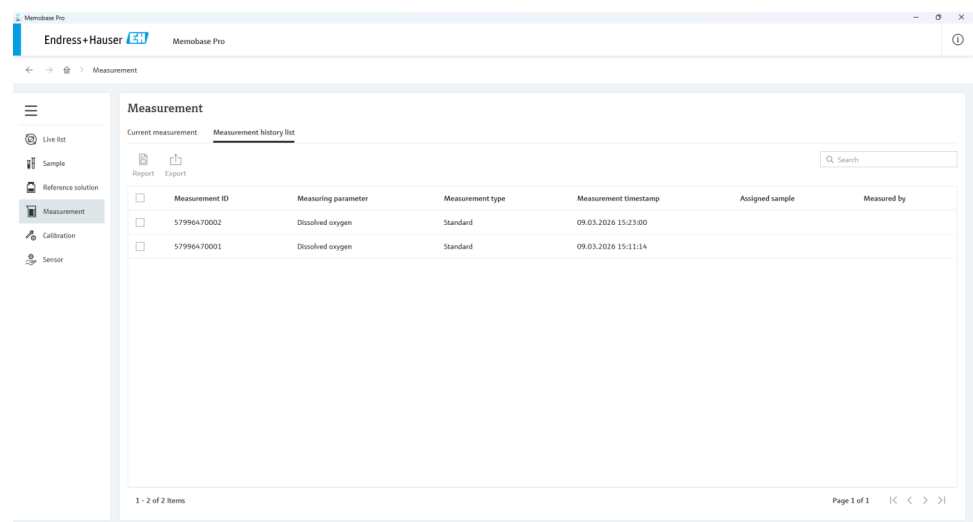
8 Report / Export

Memobase Pro CZL81 allows you to create, display and export measurement, calibration and sensor reports based on automatically merged measurement data. Reporting is limited to a single data entry, while the export function supports multiple selections.

8.1 Measurement history

The measurement history shows the measurement ID, measurement parameters, measurement type, timestamp, assigned sample and the user.

1. Open the Measurement menu.
2. Select the 'Measurement history list' tab.
3. Select the desired measurement from the list.



44 Measurement history

The measurement history shows the measurement ID, measurement parameters, measurement type, timestamp, assigned sample and the user.

8.2 Generating report

1. Select the marked measurement.
2. Select a report to open.

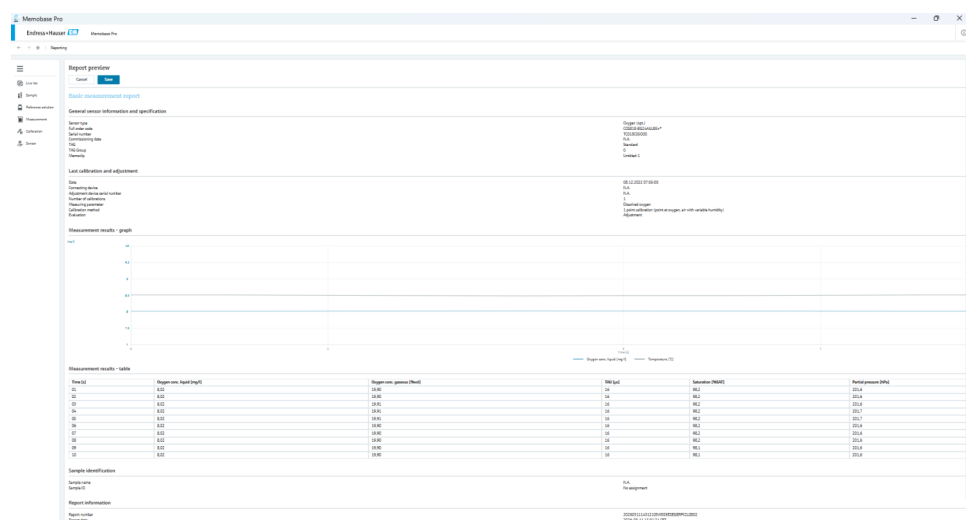
The software automatically generates a preview in the report preview window. All of the measurement information is displayed in sections in this preview.

Only one data record can be selected at a time when creating the report.

8.3 Checking report contents

The report contains the following sections:

- General sensor and measurement information
 - Sensor TAG
 - Order code
 - Measurement parameters
 - Measurement type
 - User
 - Timestamp
- Last calibration and adjustment data
 - Date and time
 - Calibration parameters
 - Evaluation / Adjustment
 - Data sources
- Measured value trend - Graph
 - Measurement curve
 - Temperature curve
 - Reference line
 - Axis labels
- Measured value table
 - Measured value
 - Temperature
 - Voltage values
 - Timestamp
- Sample information
 - Sample ID
 - Sample name
 - Location
 - Comments
- Conclusion and report data
 - Report generation date
 - Software version
 - User



45 Report contents

8.4 Save report

1. Select Save in the report preview to save the report.
2. Specify the storage location when the software opens a file selection dialog.

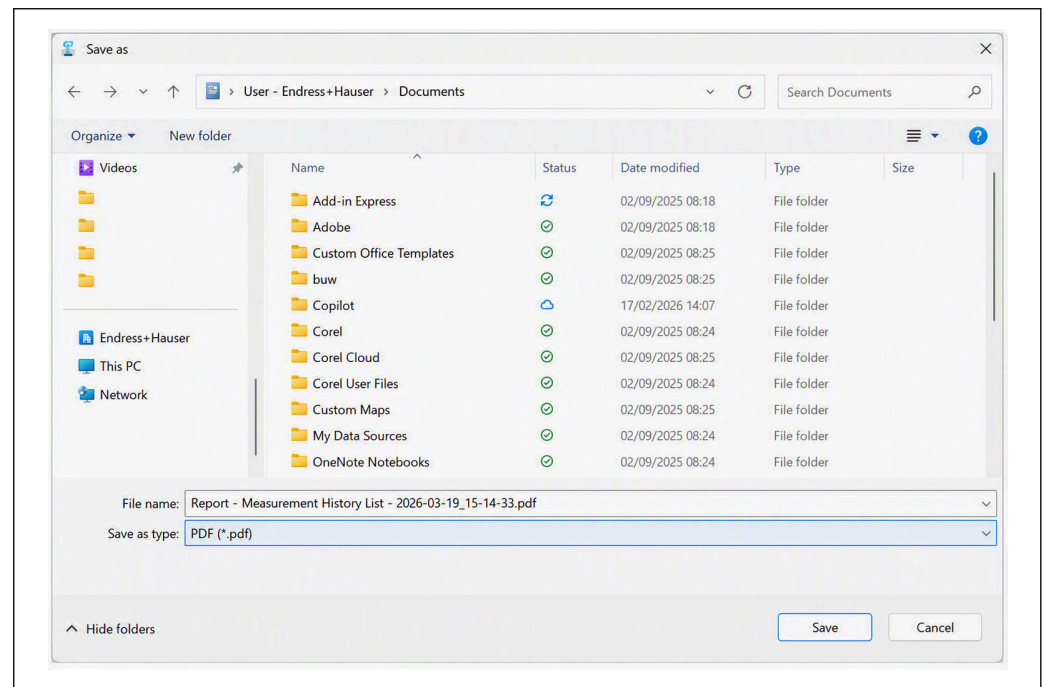
3. Close the report or select another measurement.

The report is stored in the intended application default location as standard.

8.5 Exporting report

The software provides an export function for data exchange or for archiving.

1. Open the Measurement menu.
2. Select the 'Measurement history list' tab.
3. Select the desired measurement from the list.
4. Select Export.
5. Select the desired export format (e.g., PDF, CSV).
6. Save the file.



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The export contains all the measured value tables, sensor information and sample specifications.

8.6 Data export

Memobase Pro CZL81 provides an export function for measurements, calibrations and sensors for the further processing and archiving of data.

1. Select the desired data record (measurement, calibration or sensor) from the list in questions.
2. Select Export.
3. Select the export format (e.g,.xlsx).
4. Specify the storage location and save the file.

The data export contains the associated measured values, calibration parameters and sensor information in tabular form.

8.7 Using the report preview

The report preview provides a quick overview of the report layout:

- Check the structure and for completeness.
- Check the graphs, tables and metadata.
- Verify assignments to samples or sensors.
- Check the measured values for plausibility.

The report can be regenerated at any time without repeating data acquisition.

9 Technical data

9.1 Input

9.1.1 Type of input

Memosens port : M12 socket

9.2 Measured variables

All pH/ORP sensors with inductive Memosens plug-in head can be connected.



For detailed information on “Measured variables”, see the Operating Instructions for the connected sensor.

9.3 Output

9.3.1 Output type

- USB port: USB 3.0
- USB class: HID

9.3.2 Output voltage

2.8 to 3.3 V

9.3.3 Output current

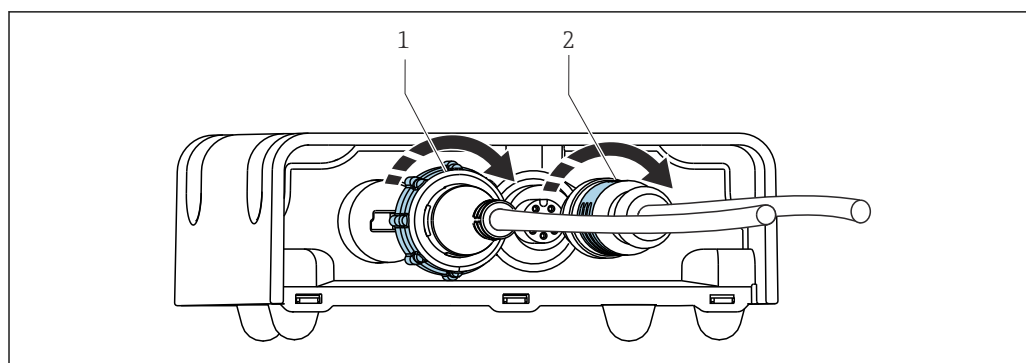
10 mA

9.4 Energy supply

9.4.1 Supply voltage

The PC supplies the sensor and the MemoLink sensor terminal box with power via the USB cable and enables bidirectional transmission of Memosens data. If a USB hub is used, it must have a power unit.

9.4.2 Connection



A0031653

- 1 Cable with mini USB plug
2 Cable with M12 plug

9.4.3 Power supply

- DC 5 V via USB
- Low power mode: max. 100 mA as per USB specification 2.0

9.4.4 Cable length

- USB cable: 2.0 m (6.6 ft)
- Memosens lab cable CYK20: $1\frac{5}{3.0}$ m ($4\frac{9}{9.8}$ ft) (depending on order version)
- Memosens process cable CYK10: 3 to 100 m (9.8 to 328.1 ft) (depending on order version)

9.5 Performance characteristics

9.5.1 Maximum measurement error



For detailed information on "Measured error", see the documentation for the connected sensor.

MemoLink only transmits data digitally so no measured data can be corrupted. The measuring signal is converted to digital data in the sensor, which means that the measured values are not affected by MemoLink, the cable or the software.

9.6 Environment

9.6.1 Ambient temperature

- MemoLink: -10 to 50 °C (14 to 122 °F)
- Memosens lab cable CYK20: -10 to 50 °C (14 to 122 °F)
- Memosens process cable CYK10: -25 to 135 °C (-13 to 277 °F)

9.6.2 Storage temperature

- MemoLink: -25 to 85 °C (-13 to 185 °F)
- Memosens lab cable CYK20: -10 to 50 °C (14 to 122 °F)
- Memosens process cable CYK10: -25 to 135 °C (-13 to 277 °F)

9.6.3 Relative humidity

Maximum 85 %, non-condensating

9.6.4 Degree of protection

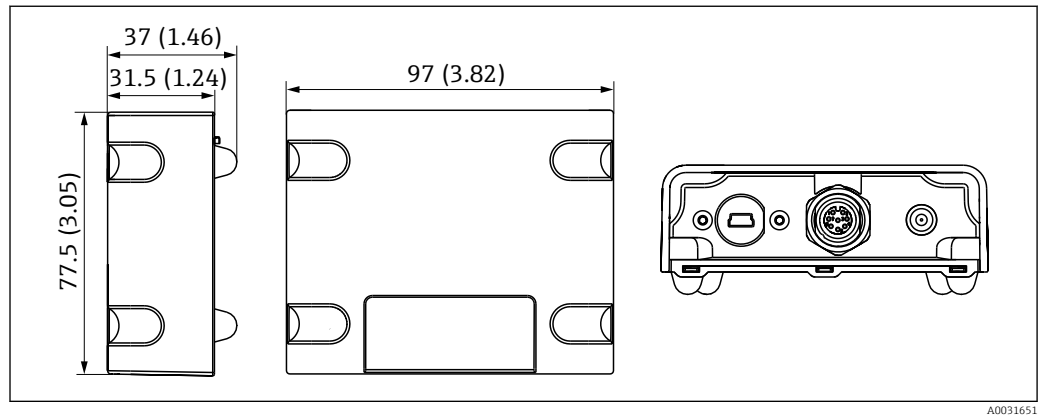
- MemoLink: IP 65 (mated, i.e. when cables are connected) in accordance with EN 60529 and Type 2 in accordance with UL
- CYK20 Memosens laboratory cable: IP 68
- CYK10 Memosens process cable: IP 68

9.6.5 Electromagnetic compatibility

Interference emission and interference immunity as per EN 61326-1:2006, Class B (Industrial)

9.7 Mechanical construction

9.7.1 Dimensions



46 Dimensions of MemoLink in mm (in)

i The MemoLink sensor terminal boxes can be stacked on top of one another. In such situations, the "Power / Data" LED is still easily visible.

9.7.2 Weight

0.24 kg (0.53 lb.) not including cable

9.7.3 Materials

- Housing: PBT
- Housing feet: EPDM

9.8 Certificates and approvals

9.8.1 Ex approval

- MemoLink: ATEX II (2) G [Ex ia Gb] II C
- EMC Directive 2004/108/EC

i The measuring point may be operated only in non-hazardous areas. Memosens sensors with and without Ex approval may be connected alternately to the Memosens interface. Connecting Memosens sensors without Ex approval does not affect the intrinsic safety of any Ex-rated Memosens sensors connected at a later stage.

Background: ATEX-certified instruments formally lose their approval as soon as they are connected to non-certified equipment. MemoLink has been developed and certified in a way that prevents this.

9.9 Ordering information

9.9.1 Product page

www.endress.com/czl81

9.9.2 Product Configurator

- 1. **Configure:** Click this button on the product page.
 - 2. Select **Extended selection**.
 - ↳ The Configurator opens in a separate window.
 - 3. Configure the device according to your requirements by selecting the desired option for each feature.
 - ↳ In this way, you receive a valid and complete order code for the device.
 - 4. **Accept:** Add the configured product to the shopping cart.
-  For many products, you also have the option of downloading CAD or 2D drawings of the selected product version.
- 5. **CAD:** Open this tab.
 - ↳ The drawing window is displayed. You have a choice between different views. You can download these in selectable formats.

9.9.3 License model and application packages

Memobase Pro CZL81 is only available as a single station license model with the multi-user option. The license for the Memobase Pro CZL81 application package can only be installed on one piece of hardware (e.g. laptop or PC). All users who can access the hardware have access to the installed Memobase Pro CZL81 software.

The functional range depends on the order configuration.

The following functional packages are available:

Application packages	Function range
Memobase Pro CZL81 Basic	Measure, calibrate, document
Memobase Pro CZL81 Plus ¹⁾	Function range of the "Memobase Pro CZL81 Basic" license and also: ■ Sensor management ■ Advanced diagnostics
Memobase Pro CZL81 Premium ²⁾	Function range of the "Memobase Pro CZL81 Plus" license and also: ■ Audit trail function ■ Function for digital signatures ■ Prediction models (based on laboratory + process data)

1) Available in the future
2) Available in the future

9.9.4 Trial subscription (grace period)

After installation, the full range of software functions is available to the user. The user can use the application free of charge for the first 60 days as part of a trial subscription. After the 60 days, a paid subscription must be obtained from Endress+Hauser.

10 Accessories

The following are the most important accessories available at the time this documentation was issued.

Listed accessories are technically compatible with the product in the instructions.

1. Application-specific restrictions of the product combination are possible.
Ensure conformity of the measuring point for the application. This is the responsibility of the operator of the measuring point.
2. Pay attention to the information in the instructions for all products, particularly the technical data.
3. For accessories not listed here, please contact your Service or Sales Center.

10.1 Measuring cables

Memosens laboratory cable CYK20

- For digital sensors with Memosens technology
- Product Configurator on the product page: www.endress.com/cyk20

Memosens data cable CYK10

- For digital sensors with Memosens technology
- Product Configurator on the product page: www.endress.com/cyk10



Technical Information TI00118C

Memosens data cable CYK11

- Extension cable for digital sensors with Memosens protocol
- Product Configurator on the product page: www.endress.com/cyk11



Technical Information TI00118C

10.2 Standard solutions

High-quality buffer solutions from Endress+Hauser - CPY20

The secondary buffer solutions have been referenced to primary reference material of the PTB (German Federal Physico-technical Institute) or to standard reference material of NIST (National Institute of Standards and Technology) according to DIN 19266 by a laboratory accredited by the DAkkS (German accreditation body) according to DIN 17025. Product Configurator on the product page: www.endress.com/cpy20

10.3 Sensors

10.3.1 Glass electrodes

Orbisint CPS11E

- pH sensor for process technology
- Optional SIL version for connecting to SIL transmitter
- With dirt-repellent PTFE junction
- Product Configurator on the product page: www.endress.com/cps11e

Memosens CPS31E

- pH electrode with gel-filled reference system with ceramic junction
- Product Configurator on the product page: www.endress.com/cps31e

Ceraliquid CPS41E

- pH electrode with ceramic junction and KCl liquid electrolyte
- Product Configurator on the product page: www.endress.com/cps41e

Ceragel CPS71E

- pH electrode with reference system including ion trap
- Product Configurator on the product page: www.endress.com/cps71e

Orbipore CPS91E

- pH electrode with hole junction for media with high dirt load
- Product Configurator on the product page: www.endress.com/cps91e

Orbipac CPF81D

- Compact pH sensor for installation or immersion operation
- In industrial water and wastewater
- Product Configurator on the product page: www.endress.com/cpf81e

10.3.2 pH ISFET sensors

Tophit CPS47E

- Sterilizable and autoclavable ISFET sensor for food and pharmaceuticals, process engineering
- Product Configurator on the product page: www.endress.com/cps47e

CPS77E

- Digital, sterilizable and autoclavable pH electrode for hygienic production processes with a bacteria-proof ceramic junction
- Product Configurator on the product page: www.endress.com/cps77e

CPS97E

- Digital pH electrodes with open junction for clogging media such as suspended particulate matter, dispersion, precipitation reaction
- Product Configurator on the product page: www.endress.com/cps97e

10.3.3 Oxygen sensors

Memosens COS22E

- Amperometric oxygen sensor
- For water and wastewater applications
- Product Configurator on the product page: www.endress.com/cos22e

Memosens COS51E

- Amperometric oxygen sensor
- For process and environmental influences
- Product Configurator on the product page: www.endress.com/cos51e

Memosens COS81E

- Optical oxygen sensor
- For hygienic and pharmaceutical applications
- Product Configurator on the product page: www.endress.com/cos81e

10.3.4 Conductivity sensors

Memosens CLS15E

- Contacting conductivity sensor
- For pure and ultrapure water applications
- Product Configurator on the product page: www.endress.com/cls15e

Memosens CLS16E

- Contacting conductivity sensor
- For hygienic applications
- Product Configurator on the product page: www.endress.com/cls16e

Memosens CLS21E

- Contacting conductivity sensor
- For standard applications in process and water
- Product Configurator on the product page: www.endress.com/cls21e

Memosens CLS82E

- Four-electrode sensor
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cls82e

10.3.5 Combined pH/ORP sensors**Memosens CPS12E**

- Combined pH/ORP sensor for process technology
- For standard applications in water and wastewater
- Product Configurator on the product page: www.endress.com/cps12e

Memosens CPS42E

- Combined pH/ORP sensor for process technology
- For chemical processes with stringent requirements
- Product Configurator on the product page: www.endress.com/cps42e

Memosens CPS16E

- Combined pH/ORP sensor for process technology
- With dirt-repellent PTFE junction
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cps16e

Memosens CPS76E

- Combined pH/ORP sensor for process technology
- For hygienic applications with quick reactions
- Product Configurator on the product page: www.endress.com/cps76e

Memosens CPS96E

- Combined pH/ORP sensor for process technology
- For biotechnological and pharmaceutical applications
- Product Configurator on the product page: www.endress.com/cps96e

Memosens CPS62E

- Combined pH/ORP sensor for process technology
- For hygienic and sterile applications
- Product Configurator on the product page: www.endress.com/cps62e

Memosens CPS72E

- Combined pH/ORP sensor for process technology
- For demanding chemical applications
- Product Configurator on the product page: www.endress.com/cps72e

Memosens CPS92E

- Combined pH/ORP sensor for process technology
- For hygienic applications with changing media
- Product Configurator on the product page: www.endress.com/cps92e

Memosens CPF82E

- Combined pH/ORP sensor for process technology
- For robust industrial applications
- Product Configurator on the product page: www.endress.com/cpf82e

CPL51E

- Digital Memosens 2.0 pH sensor for standard use in the laboratory and sample measurement in the field
- Robust pH sensor with plastic shaft
- Product Configurator on the product page: www.endress.com/cpl51e

CPL53E

- Digital Memosens 2.0 gel compact pH glass electrode for standard use in the laboratory
- Versatile pH sensor with very fast response time
- Product Configurator on the product page: www.endress.com/cpl53e

CPL57E

- Digital Memosens 2.0 gel compact pH glass electrode for laboratory and sample measurements
- Reference system with salt storage for drift-free measurement in low-conductivity media
- Product Configurator on the product page: www.endress.com/cpl57e

CPL59E

- Digital Memosens 2.0 gel compact pH glass electrode for laboratory and sample measurements
- Robust pH sensor with PTFE junction and ion trap
- Product Configurator on the product page: www.endress.com/cpl59e



www.addresses.endress.com
