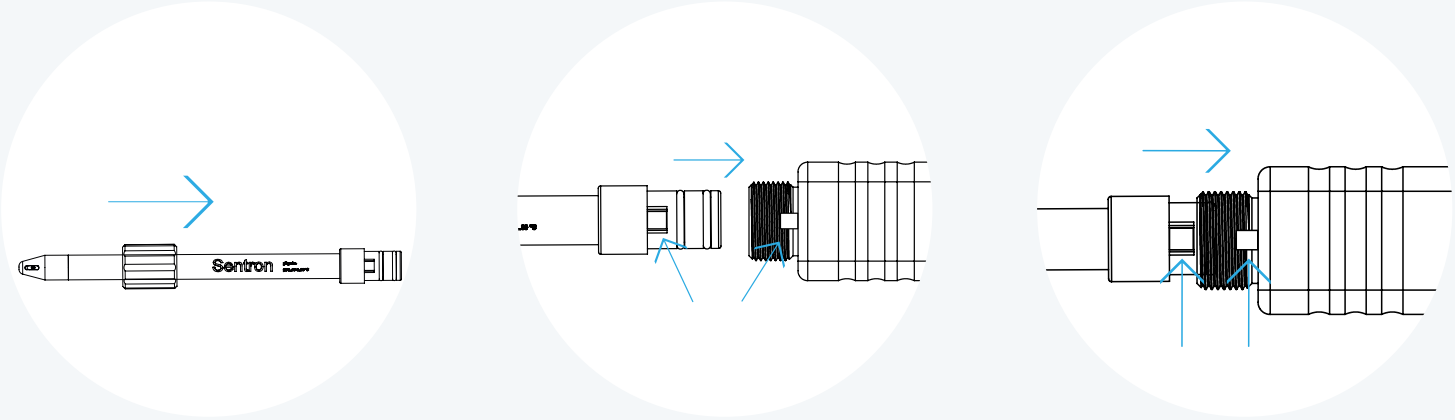
# Plug and screw the probe parts together




Step 1 Step 2 Step 3

Step 4 Step 5

Note that the sensor part and the transmitter have a mark that helps you to complete your probe successfully.

Step 1
- Put the ring on the replaceable sensor part.

Step 2
- Align the replaceable sensor part and transmitter.

Step 3 and step 4
- Plug the replaceable sensor part completely into the transmitter, as far as possible. Both black O-rings at the sensor part should fit nicely into the transmitter.

Step 5
- Screw the ring to fasten it.

After attaching the replaceable sensor part, do not detach it during the complete experiment (including calibration).

# Remove residues

When any residues are left at the sensor or diaphragm of the probe, these must be removed prior to use. Follow the instructions as described in this manual under 'Clean' and 'Store'.

# Download the app

- Take the mobile device and enable the internet.
- Search for the Sentron app in the Store (red icon with white Sentron).
- Install and open the Sentron app on your mobile device.
- Provide 'access to the location of this device'. We recommend choosing the option 'while using the app' for Android and Harmony OS devices and 'always' for iOS devices.
- Make sure that the device settings enable automatic download of new releases. Otherwise check frequently for new releases yourself. We are improving the Sentron app on regular basis.

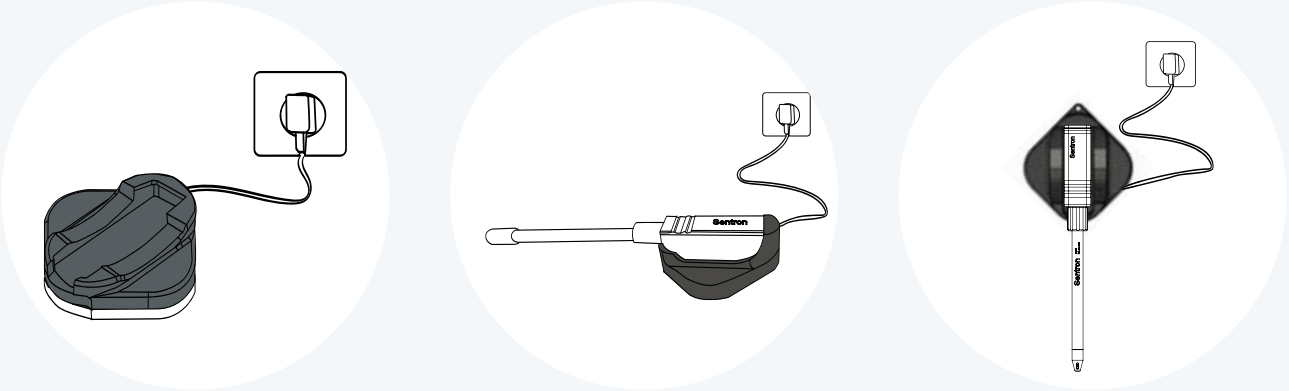
Download on the App Store

ANDROID APP ON Google play

EXPLORE IT ON AppGallery

Sentron

# Charge the probe



- Place the probe onto the adapter with the Sentron logo facing up. The red tiny light at the charger itself will turn blue when charging.
- It can take up to 30 seconds before the LED of the probe indicates the status.
  It shows calm red pulsating light when charging up to 80%.
  Above 80% it turns into a calm green pulsating light.
- To start, see this manual under ‘Get Started’.

# Connected devices

In the HOME menu, the overview of all connected probes is shown. At the bottom the other menu items are shown. Each of these menus are explained separately in this manual.

| | |
|---|---|
| Home | start screen with list of (dis)connected probes |
| Sample | for single measurements |
| Interval | for continuous measurements |
| History | to resume your data |
| Settings | to select advanced mode (amongst others the mV value is provided per probe additional to the pH value) |

# Start your measurements

Now you can start your pH measurements as described in this manual under 'Use'.

For more information on the connected probes, see the next paragraphs.

# Live parameter values

The values of the pH and temperature are the current values that refresh continuously.

The LED of the probe will flash green at each measurement. In between the measurement points the LED is off.

How to save any datapoints is described in this manual under 'Use'.

# Battery status of probes

In the app the battery status is shown as percentage per probe. When the battery of the probe falls below a critical value during use, the LED will show a red flash every 10 seconds (in between the datapoints) to warn you.

# Calibration

## Calibration status of probes

| | |
|---|---|
| Last calibration: (date and time) | The last pH calibration is still valid. The probe is ready for use.<br>• The date and time stamp of the last calibration are indicated.<br>• Depending on the number of calibration points, the number of decimals is adapted for the pH value.<br>• The calibration is stored in the app and is coupled to the serial number of the sensor part of the probe. This means that even when the sensor part is coupled to another transmitter, the calibration will remain. |
| Calibration required: pH  | The probe needs calibration because:<br>• There has not been any pH calibration, or<br>• The pH calibration is not valid anymore.<br>See this manual under 'Calibration'. |

See for more information on the calibration in this manual under 'Device settings'.

# pH calibration

Select the probe in the app, scroll down to the 'Calibration information'. Select 'New pH calibration' and follow the instructions.

During measurements both the sensor and the reference diaphragm must be in the buffer. When the calibration is successful, the remark at the probe in the app will change into 'Last calibration: (date and time).

The pH calibration can be done with a single point (1 buffer) or multipoint (2, 3 or 5 buffers). The more points are taken for calibration, the more accurate the pH reading is. The more difference in pH of the samples, the more points for calibration are recommended.

| | | |
|---|---|---|
| **1-point calibration** | **1 decimal accuracy** | **Recommended for quick pH measurements spanning 1 – 2 pH values.** |
| **2-point calibration** | **2 decimal accuracy** | **Recommended for accurate pH measurements spanning < 3 pH values and quick pH measurements spanning 3 – 6 pH values.** |
| **3-point calibration** | **2 decimal accuracy** | **Recommended for accurate pH measurements spanning 3 – 6 pH values and quick pH measurements spanning > 6 pH values.** |
| **5-point calibration** | **3 decimal accuracy** | **Recommended for accurate pH measurements spanning > 6 pH values.** |

When the calibration is successful, the slope between two points of the calibration is provided as percentage. Select the % to see which slope it refers to. Normal slope percentages should be between 105% and 95%. Slopes outside these values indicate that the measured pH may be less accurate. In that situation it is strongly advised to revitalize the probe or to replace the replaceable sensor part of the probe.

NB Per default, 24 hours after the last calibration the number of decimals is reduced to maximum 1 decimal. Perform a new multi-point calibration to resume the 2 or 3 decimal accuracy. This number of 24 hours can be adapted in the Settings.

The Sentron probes are Automatic Temperature Compensated (ATC) in the calibration procedure. The temperature sensor is close to the ISFET sensor in the tip of the probe (not visible). For the pH calibration the probe sensor temperature is taken for the calibration buffers temperature dependency.

## Temperature calibration

The temperature calibration in principle is not required.

However, when your procedure does require this, go to the menu Settings and activate 'Advanced mode'. Go back to HOME and select the probe. Scroll down to the 'Calibration information'. Select 'New temperature calibration' and follow the app.

By the temperature calibration the offset is calculated between the manually given temperature and the temperature reading of the probe itself. This offset temperature is mentioned in the 'Calibration information' of the probe.

# Add, disconnect or delete probes

### Add probe

If you want to connect more probes, you must add these here.
Select '+Add device' and follow the instructions as described in this manual under 'First use of the probe?'.

Up to 6 probes can be connected.

### Disconnect or delete probe

Swipe the probe to the left to disconnect or to delete that specific probe from the list of connected devices. The LED at the probe will be blue.

See also in this manual under 'Device settings'.

# Standby mode of probes

When the probe is not in use and no interval measurement is running, the probe will go into standby mode. The LED will turn off.

- To reactivate your probe, see the description in this manual under 'Activate your probe'.
- To reset your probe, see the description in this manual under 'Reset your probe'.

# Reset your probe 

To reset the probe, press the on/off sign on the head side of the probe for a few seconds until the purple LED turns off. The LED will either be green or blue:

- In case the probe is still connected to the app, the LED is green and ready to use.
- In case the app lost connection to the probe, the LED is blue. It must be reconnected via +Add device.

# Restart your probe 

For a full restart of the probe, hold the on/off sign on the head side of the probe for a few seconds more. The LED will turn white. Hold it until the white LED turns off. All connection information is deleted. Any calibration information remains.

# More probes and 1 mobile device

Up to 6 probes can be connected by the Sentron app to one mobile device.

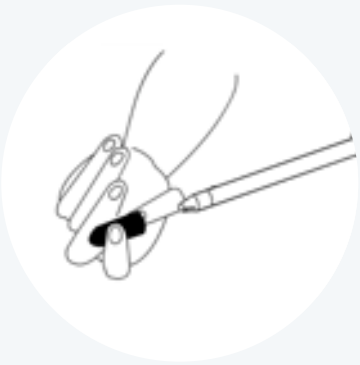
# More mobile devices and 1 probe

Each probe can be connected to one mobile device at the same time. When you want to use mobile device B instead of mobile device A from now on, you have two options.

Starting point: mobile device A has connection with the probe. The LED is green (or off). Mobile device B cannot find the probe; it keeps 'searching'.

1. Select the app and move it to the background of mobile device A.
   The connection between mobile device A and the probe will be lost.
   The LED is blue.
   NB this disconnection will not happen during an interval measurement with use of thresholds.
2. Select the probe in the app at mobile device A.
   Swipe the probe to the left and select the button for disconnection.
   The connection between mobile device A and the probe will be lost.
   The LED is blue.
   Mobile device B will find the probe now. See for connection the description in this manual under 'Add or delete probes' (+Add device).

# Rinse probe



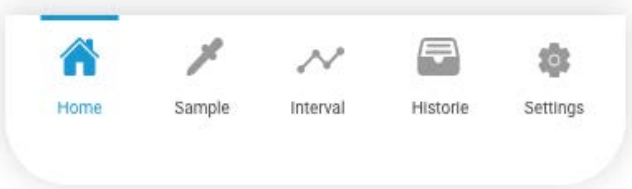
Step 1

Step 2

Step 3

Remove the protective cap from the probe tip (step 1). Keep the cap as it can be re-used later when storing the probe.
Always rinse the probe tip with demineralized water before use or when exchanging between samples or buffers (step 2). Remove any drops from the tip (step 3).
When the probe has been stored for longer periods of time, clean the probe as described in this manual under ‘Clean’.

# Select probe




In the app, select the probe that you want to use. The current parameter values will appear in a running graph. Select or deselect the parameter that you want to visualize in the graph by selecting the parameter just above the graph. The LED is flashing green. No data are saved at this moment.

Select:

- '+Take sample' to take a single measurement, or
- '+New interval' to start an interval of multiple measurements, respectively.

NB

- The details of the last calibration are provided. When it states 'calibration required', the probe would need to be calibrated to provide a good pH value. This is described in this manual under 'Calibration status of probes'.
- The number of decimals is dependent on the calibration procedure (the number of points taken for calibration). This is described in this manual under 'Calibration status of probes'.
- pH 16 means that the probe is not measuring pH. Most probably the tip is not in the (liquid) sample.

# Sample


A sample measurement is meant for taking measurements manually. Several datapoints can be taken for one sample. A sample measurement can be initiated in two ways:

| | |
|---|---|
| Sample | 1. Select the probe in the Home menu when you are using just one probe. Press 'Take sample' to take the first datapoint.<br><br>2. Select 'Sample' at the bottom menu of the app (see icon) when you want to use multiple probes simultaneously. Select the probes that you want to use for the sample measurement. Press 'Take sample' to take the first datapoint.<br><br>The LED is still flashing green and the pH value is still live.<br>Scroll down to see the information on the datapoint.<br>Select +Take reading to take another datapoint in this sample set. |

NB

- Always rinse the probe tip with demineralized water when changing between buffer and sample or between different samples.
- No information is saved automatically unless you save the sample set manually.

### Information

- Sample set name. Select 'Sample set name' or press the cross to change the name.
- Notes. Type your notes here.

### Datapoints

The information on the datapoint(s) (time stamp, pH value, temperature value, and the name of the probe) is listed. All datapoints belong to the same sample set.

- Per datapoint notes can be added: select the box in the datapoint.
- The datapoint can be deleted: select the dustbin icon.

## Save sample set

Select 'Save sample set' to save this sample with all its datapoints.

- Sample date. An overview is provided with the time stamp
- Number of datapoints.
- Information. Time, pH value, temperature and device name of all datapoints of this sample set. Notes can be added to the individual datapoints: select the box in the datapoint.
- The location of the mobile device that is used for the probe is indicated as a map.

NB At this point, the sample set cannot be opened anymore in the app to adapt datapoint notes or to add more datapoints.

## Export sample set

Select 'Export sample set' to export your data to a CSV file. Note that you require internet access for this last step.

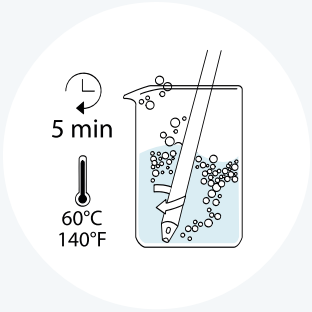
NB The export of data can also be done later on. See the description in this manual under 'History'.

### CSV file

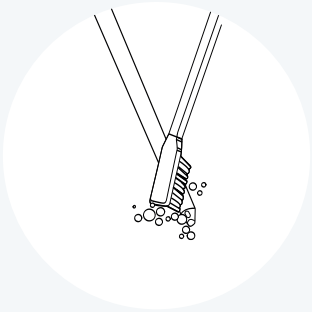
The CSV file contains the data: name of the probe and sample, timestamp of datapoints, temperature, mV, pH, what pH calibration buffers are used, slope and time stamp of pH calibration, datapoint notes, sample notes.

When appropiate: latitude / longitude (location permitted), temperature and time stamp of temperature calibration (NB 'Advanced mode' required).

# Clean




Step 1



Step 2


Step 3

Step 4

The appropriate cleaning frequency is dependent on the type of sample being measured. A good rule of thumb to use when sampling colored liquids is when the reference diaphragm is no longer white, the probe should be cleaned.
Both the surface of the sensor (the metallic spot at the probe's tip) and the diaphragm (the white surface on the probe tip) are to be cleaned.

### Step 1
- Place the probe in warm tap water (around 60°C / 140°F) with a mild detergent for 5 minutes. Stir periodically.

### Step 2
- Scrub the probe tip with the soft toothbrush in water with a mild detergent.

NB To prevent scratching of the sensor, always soak the probe thoroughly before brushing. Water temperature must not exceed 80°C / 180°F as this may damage the probe.
NB Proteins, fats and oils may be removed by scrubbing in a solution of Terg-A-Zyme (Alconox company), a pepsin solution or a similar product. Afterwards, rinse thoroughly with demineralized water.
NB Do not use hydrofluoric acid, acetone, MEK or similar agents.

### Step 3
- After scrubbing rinse with demineralized water.

### Step 4
- Remove any drops from the tip.

NB This procedure can be performed with the replaceable sensor part attached to the transmitter, as well as separate from the transmitter.

# Revitalize


Step 1 Step 2

This 'cold' KCl-dip will regenerate the reference system and the diaphragm.

Step 1
- Clean the probe as described in this manual under 'Clean'.

Step 2
- Make sure the probe is still warm (around 60°C / 140°F)
- Place the probe directly (without flushing it with demineralized water or cooling it down) in a saturated KCl-solution at room temperature.
- Leave it for 20 minutes.

Before using the probe, a new calibration has to be performed. See in this manual under 'pH calibration'.

# Revive

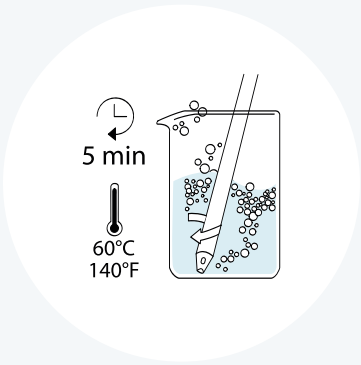
In case the probe has not been used for more than 3 months, a longer revitalization is recommended:

Step 1
- Follow the steps of the revitalization except for the last item in step 2: Leave it for 20 hours instead of the 20 minute 'cold' KCl-dip.

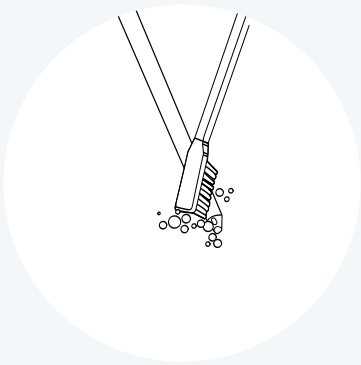
Step 2
- After that, flush off any crystals from the probe tip with demineralized water.

NB these procedures can be performed with the replaceable sensor part attached to the transmitter, as well as separate from the transmitter.

# Store for short time periods



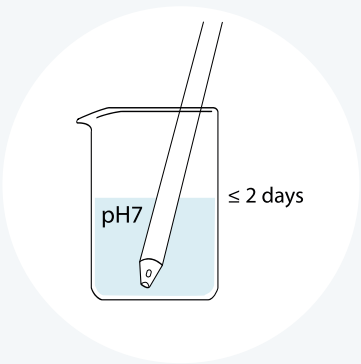

Step 1



Step 2


Step 3

Step 4




Step 5

For short time periods (≤ 2 days) probes can be best stored 'wet' in a beaker with pH7.

### Step 1and step 2

- Clean the probe as described in this manual under 'Clean'.

### Step 3

- Rinse thoroughly with demineralized water.

### Step 4

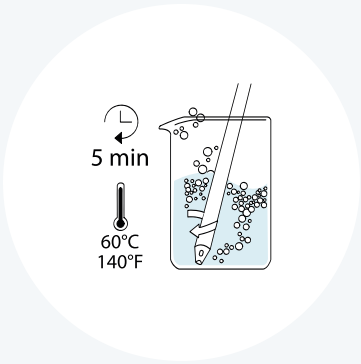
- Remove any drops from the tip.

### Step 5

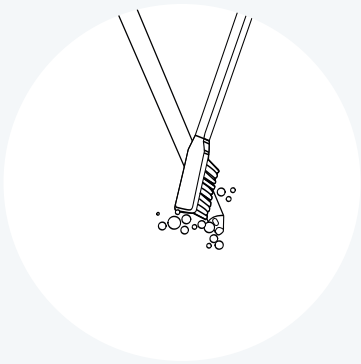
- Place it in a clean container with fresh pH7 buffer to prevent pollution of the probe directly after cleaning.

NB The replaceable sensor part can be stored attached to the transmitter, as well as separate from the transmitter.

# Store for longer time periods

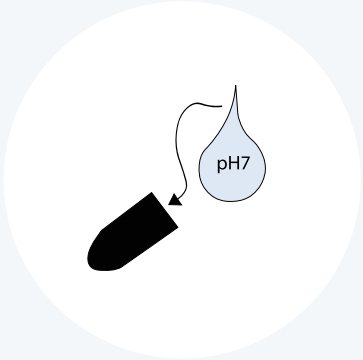



Step 1



Step 2


Step 3




Step 4

Step 5

For longer time periods (>2 days) the probe can be best stored 'dry' in the shipping box.

Step 1 and step 2
- **Clean the probe first as described in this manual under 'Clean'.**

Step 3
- **Rinse the probe in demineralized water. Do not dry the probe.**

Step 4
- **Place one drop of pH7 buffer in the protective cap.**

Step 5
- **Place the cap over the probe-tip.**
- **Store the probe in a safe place, free from mechanical stress.**

NB After a long term storage always revitalize the probe before using it again.

NB The replaceable sensor part can be stored attached to the transmitter, as well as separate from the transmitter.

NB Mind the storage conditions as mentioned in the specifications.

NB After long storage, reference gel may be observed as a viscous material on the tip of the probe. Some gel seepage from a new probe is normal and will not affect the lifetime or performance of the probe. Clean the probe as described in this manual under 'Clean'.