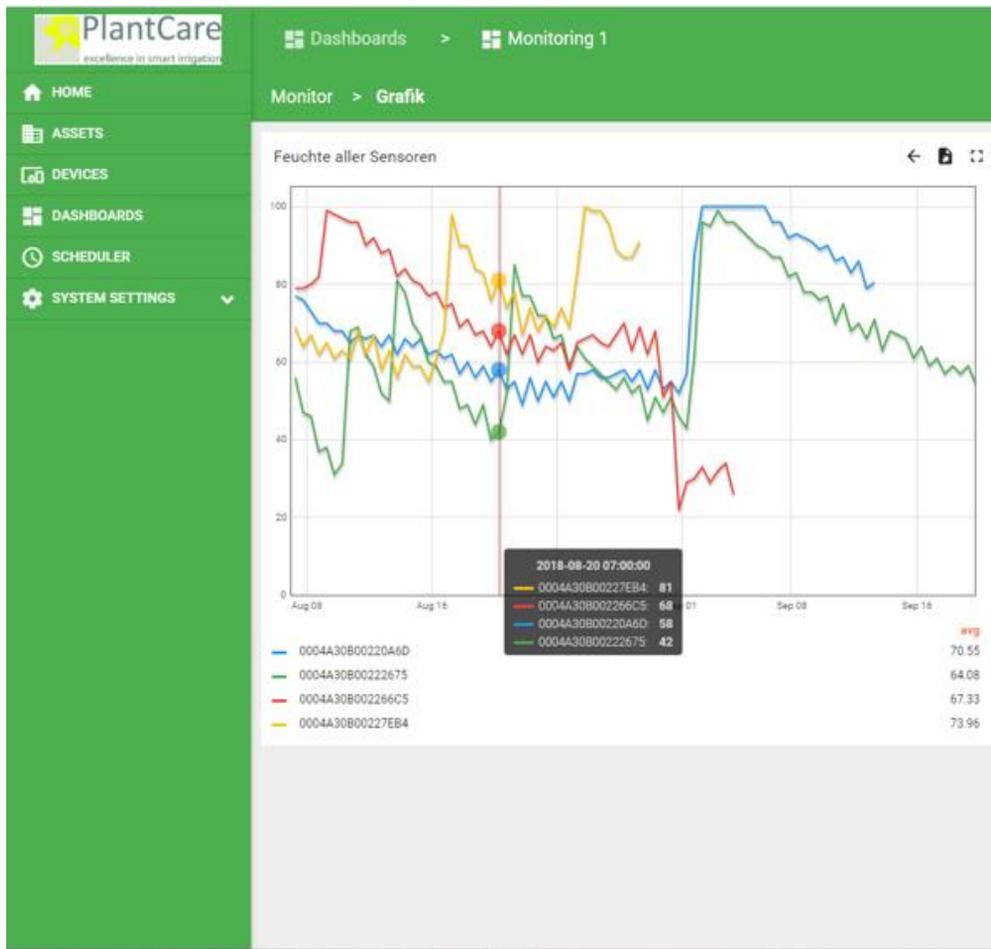


# The PlantCare Dashboard for IoT Soilmoisture Sensors



## 1. Introduction

The PlantCare Dashboard is the access portal to the measurement data collected by the PlantCare IoT sensors. It allows the user to display the measurement data, as well as the entry of thresholds, etc. It presents the measured data obtained - soil moisture and soil temperature - in a clear form and thus allows a quick and easy analysis of the data.

The dashboard can be displayed on PCs, tablets or Smartphones and can also be used by Apple devices.

### 1.2 Access Conditions

The measurement data are stored on a server in such a way that only those persons have access to it who can log into the system with a registered user name and a password. Each owner of a PlantCare IoT sensor is assigned a username and password upon delivery. The username is usually the user's email address.

The password can be changed at any time. If several sensors are purchased, then all these sensors are registered to the buyer and numbered from 1 to xx. The number consists of a user-specific identifier and the serial number:

yy-001 to yy-xxx

In addition, each sensor has a one-to-one so-called Device EOI number, which is also retained when the sensor is e.g. would be resold to another user.

### 1.3 Login

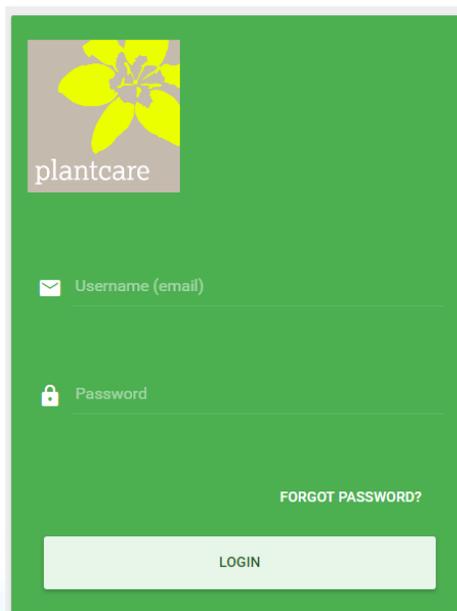
To log into the system, select the following Internet address:

**iot.plantcare.ch**

The mask for logging in appears:

After entering the username and password and confirming by LOGIN you get to the custom dashboard. If the sensors have not yet delivered data, then no data are visible.

If measurement data already exist on the server, a table appears (see page 2).



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Dashboard > Monitoring 1

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Hier werden alle Sensoren angezeigt die bei Entity Gruppe gewählt wurden sind.

Letzte Werte

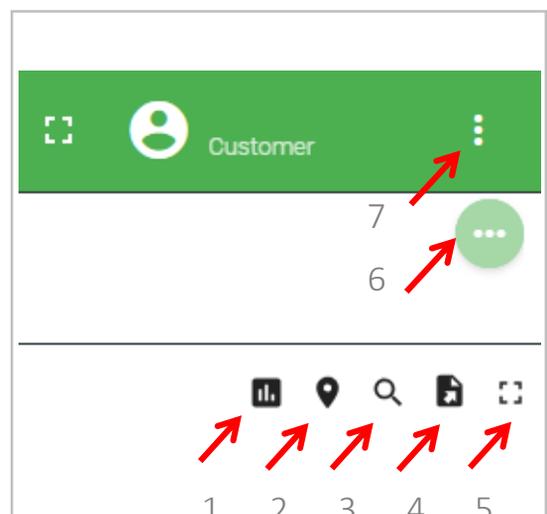
Sensor	Feuchte %	Temp °C	Zeit	Batterie V	Ort	Messzyklus Min	Fw_version	dev_id	Sensor
gh-001	8	20.5	17.9.2018, 10:58:37	2.4	Feld	10	3.22	0004A30800217394	gh-001
gh-002	37	19.0	17.9.2018, 10:54:34	2.4	Feld	10	3.22	0004A30800212072	gh-002
gh-003	83	18.9	17.9.2018, 10:55:36	2.3	Feld	10	3.22	0004A30800213C61	gh-003
gh-004	69	19.8	17.9.2018, 11:00:43	2.4	Feld	10	3.22	0004A30800215360	gh-004
gh-005	86	19.4	17.9.2018, 10:58:55	2.4	Feld	10	3.22	0004A30800215637	gh-005

Drücken Sie auf eine Zeile um die Details anzuzeigen.

In the example shown, 5 sensors and their corresponding data are listed. The columns are labeled. In addition to the soil moisture and soil temperature, the time of the last measurement and also the remaining battery voltage can be seen. In addition, as will be explained below, each sensor may be given an additional name, e.g. contains the position where he was placed. In addition, the measuring cycle and the version of the firmware loaded in the sensor as well as the already mentioned device EOI number are recorded.

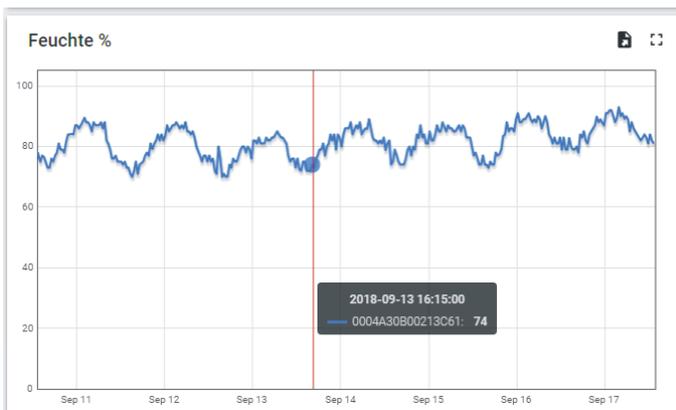
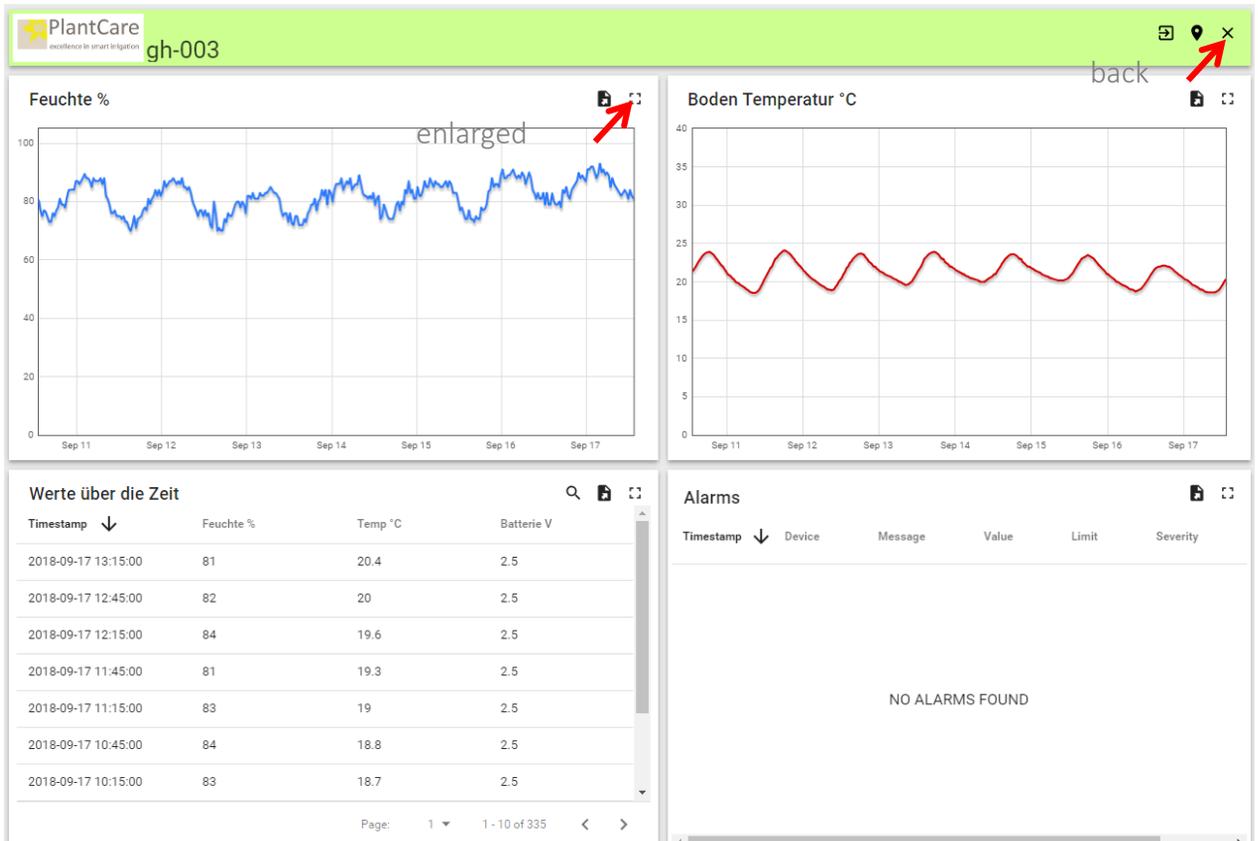
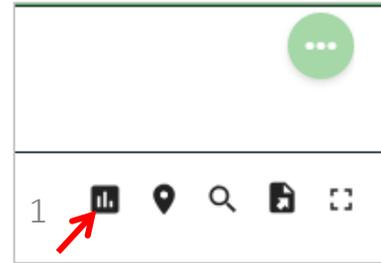
The symbols denote the following functions:

1. Graphic: If you click on this symbol, the measured data are displayed in the form of curves
2. If geo-data (longitude and latitude) are available for the sensors and have been entered in the system (see later), the position of the sensors will be shown on a map.
3. Search function
4. By clicking this symbol, the data can be transferred to the EXCEL.
5. When clicked, the graphic is enlarged to the maximum format.
6. When selecting symbol 6, the time period of the selected data can be set (see below).
7. Log-out



## 2. Graphics

If you select a single sensor from the table and click on the corresponding line, the soil moisture and the soil temperature are automatically displayed graphically. In addition, the measured values of the selected sensor are listed in chronological order. In addition, any alarm message that has occurred will be displayed.

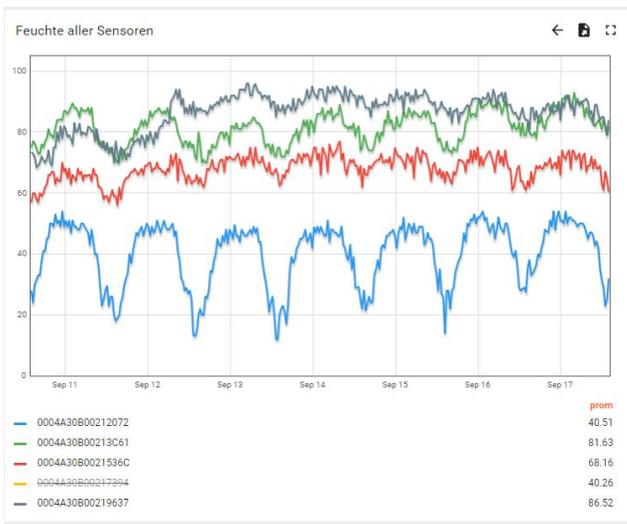
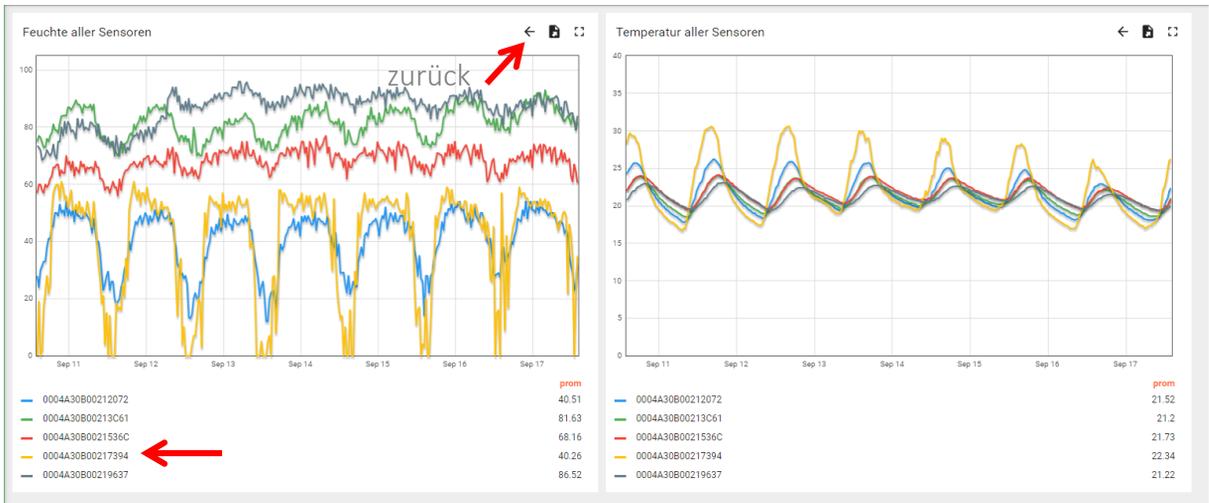


If you click on the large display icon, the curve is displayed in a straight line enlarged. If you move the cursor over the graphic, you can read off the measured value at any time position.

This is also the case with the temperature curve.



If you want to display the curve of all sensors at the same time, then you have to click on the symbol of the graphic on the opening table.

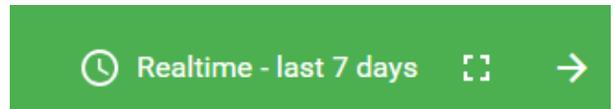


If you want to remove one or more sensors from the graphic, click on the list below underneath those that you do not want to look at anymore. In the example opposite, the yellow sensor was removed from the moisture display. If you click on this sensor again, then its curve appears again in the graph.

As shown time period is factory set 7 days. If you want to extend or shorten this time period, then you have to select function # 6.

If you click on this symbol,  the right message appears.

If you click on the clock, then a whole range of different settings are offered.



1: Displays the time period for displaying the data set in the factory (7 days)

2: Displays the data aggregation version. Here, the averaging is factory selected.

3: Shows over which period of time the mean value is formed

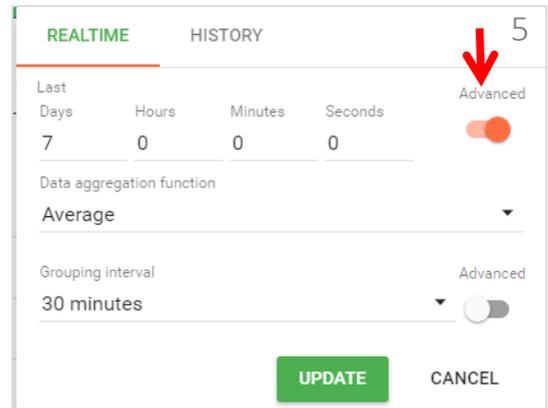
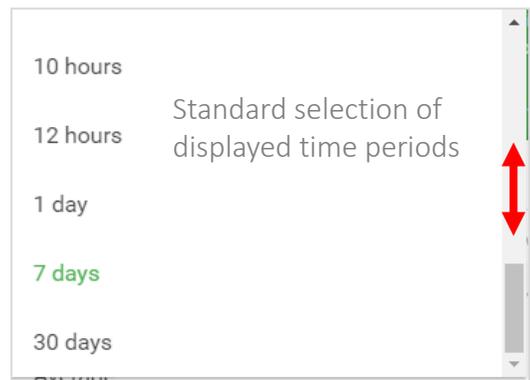
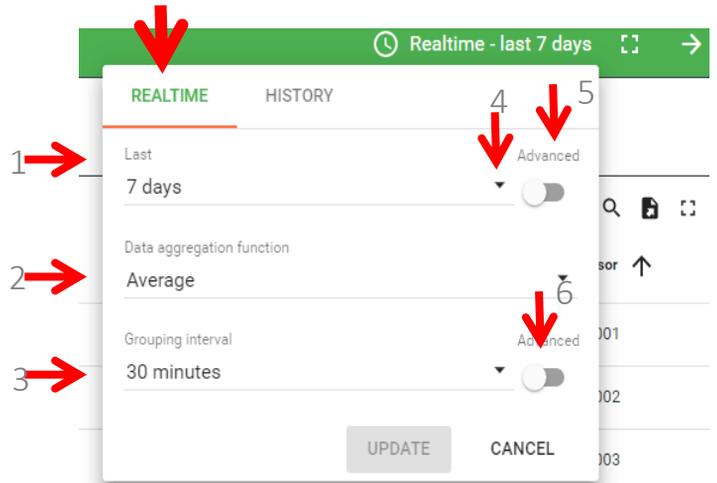
4: Use this arrow to select the standard variants. You can choose from 1 sec up to 30 days.

5: Use this arrow to set arbitrary variants.

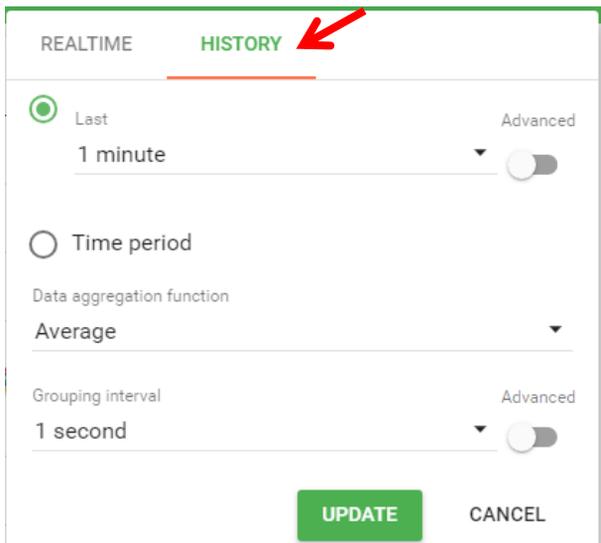
If you choose Advanced (5) then you can define arbitrary time periods.

After each new entry, UPDATE must be clicked to save the setting.

This advanced function is also available for the grouping interval.



If instead of REAL TIME ,HISTORY is selected, then any time intervals can be selected (from-to).



### 3. Setting parameters

The dashboard also allows the storage of specific parameters for a sensor. These include:

- Lower limit for soil moisture
- Lower limit for the soil temperature
- Upper limit for the soil temperature
- A description of the location in which the sensor is located (for example: maize No. 7)
- The input of the geo data where the sensor is located (latitude and longitude)
- Enter the email addresses to be sent to the alarm messages.

If one of the limits is exceeded, the user receives a corresponding alarm e-mail.

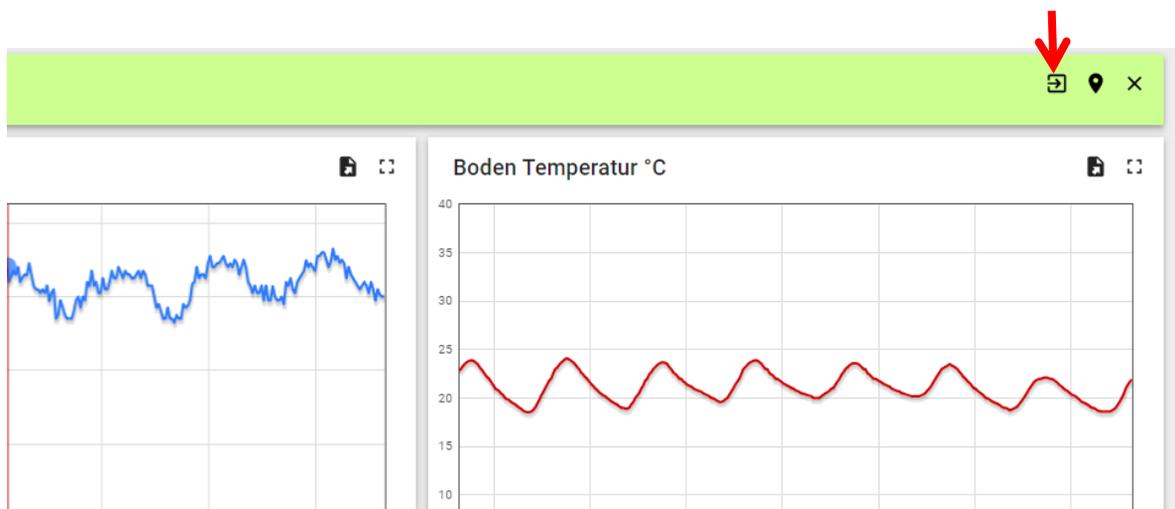
Certain values are already fixed in the system:

- The minimum permissible battery voltage
- The measuring cycle
- The calibration values

This feature is a significant advantage over other monitoring systems, because it is an active system that sends push information whenever the user needs to intervene. The constant monitoring of the measurement data is eliminated and thus also the workload and the associated stress decreases.

In addition, the humidity and temperature limits are shown in the graphics, which also facilitates a quick analysis of the situation.

The input mask for the customer-specific parameters can be reached by clicking on the symbol marked with an arrow in the graphic representation of a sensor.



## Input mask for sensor parameters

PlantCare <small>excellence in smart irrigation</small> gh-003		E-Mail	
Feuchtigkeit		E-Mail für	
Feuchtegrenze unten	-999 %		
Temperatur		Sensor Atributte	
Temp.grenze oben	999 °C	Version	2.22
Temp.grenze unten	-999 °C	Messzyklus	10 Min.
Position		Kalibrierungswert Min.	69
Ortbeschreibung	Feld	Kalibrierungswert Max.	19
GPS-Breite	0		
GPS-Länge	0		

The input mask is broken down into humidity, temperature, position, email and sensor attributes.

An entry can be made in each field that shows a pencil symbol. If you do not want the humidity and temperature to include a value for the alarm, then you have to enter either +999 for upper limits or -999 for lower limits.

If you click, for example with the humidity limit at the bottom of the pen, an input mask appears in which the value 999 can simply be overwritten. Click on SAVE to accept the value. The same applies to the temperature inputs.

In the graph, the border is shown as a gray line, so you can quickly see any shortfall of the limits.

On the one hand, a location description or the insertion depth can be entered at the position, this also appears in the table and thus facilitates the assignment of the measurement data.

You can also enter the latitude and longitude of the position. These numbers can best be determined using Google Maps. Move the cursor to the point where the sensor was placed and press the right mouse button. You choose from the menu "What is here?" So the coordinates are displayed. The numbers must have 6 decimal places. In Europe, the GPS latitude is between 40 and 50 °, the length between 6 and 10 °.

The following figure shows an example with 2 sensors.

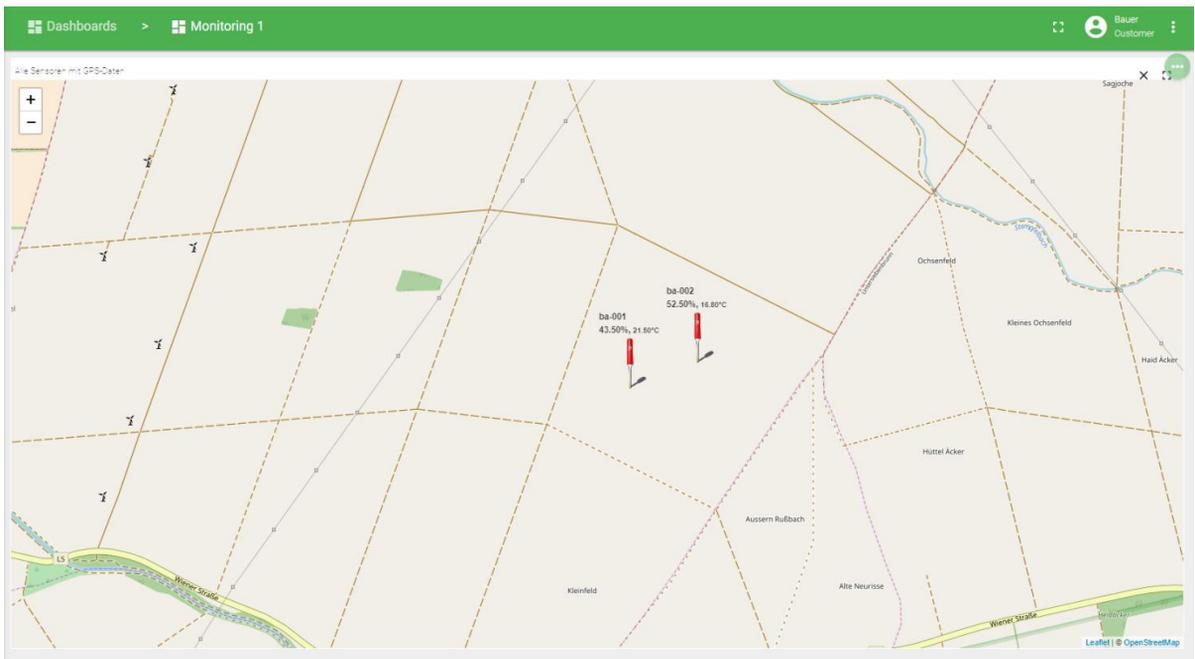
### Feuchtegrenze unten

Neuer Wert\*

-999

ABBRECHEN SPEICHERN





The map shows the position of the sensors (as entered) as well as the last measured data.

Among the previous functions are more, in the form of alarm messages. Especially important is the early warning when the batteries have to be replaced. In addition, a message comes when a sensor cable, e.g. is bitten through by animals.

