

SenBox

User manual

System information

SenBox: version 2.0

www.sendot.nl

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1. General

1.1. Product

Product	SenBox
Version	1
Software	2.17
Firmware	191010

1.1.1. Scope of delivery

- SenBox (one of the following three):
 - SenBox basic: connected to the local network *via* Ethernet cable and powered with an adapter
 - SenBox PoE: connected to the local network *via* Ethernet cable and powered *via* an Ethernet cable (Power over Ethernet, PoE)
 - SenBox 4G: including a 4G modem and powered with an adapter

1.1.2. Technical specifications

Specifications	Values		
	SenBox basic	SenBox PoE	SenBox 4G
Connectivity	6 USB ports		
Temperature range	0 – 40 °C		
Dimensions (l x w x h in mm)	271 x 170 x 61		
Weight (g)	2,5 kg		
Housing material	ABS and stainless steel		
Protection level	65		
Power supply	100 – 240 V, ~ 50/60 Hz, 0.5 A	802.3af PoE, 37 – 57 V DC, PSE class 2	100 – 240 V, ~ 50/60 Hz, 0.7 A
Network connection	10/100 Ethernet	10/100 Ethernet	4G

1.2. Warranty

This product has a warranty of two years on the mechanics and electronics.

1.3. Delivery conditions

This product is subject to the “GENERAL RESEARCH, ADVICE, SALES, DELIVERY AND PAYMENT CONDITIONS OF SENDOT RESEARCH BV (deposited with no. 62488295 bij KvK Haaglanden)”. It can be downloaded from www.sendot.nl.

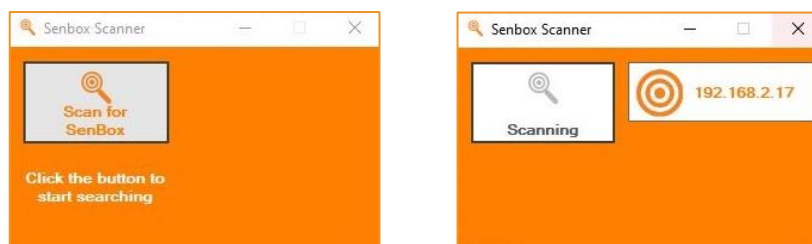
2. Installation

2.1. SenBox basic

1. Place or attach the SenBox nearby the measuring location and connect up to six sensors (not included) to the SenBox.
2. Connect the Ethernet cable to an network port.
3. Connect the adapter from the SenBox to a power source.
4. Download the SenBox Scanner (for Windows and Android) from our website sendot.nl or the [Google Play Store](https://play.google.com/store/apps/details?id=com.sendot.senboxscanner). This program searches for the IP address of the SenBox.

Note: When using an Android device, ensure that Wi-Fi is enabled and you are using the same network as the SenBox.

5. Install the SenBox Scanner on your PC.
6. Start the SenBox Scanner to search for the SenBox.



7. Click on the IP address (in this example 192.168.2.120) to open the login screen in your web browser. It is advisable to save this IP address in your bookmarks.

Note: Depending on your network setting, the IP address can change. In this case, a new search for the IP address will be necessary.

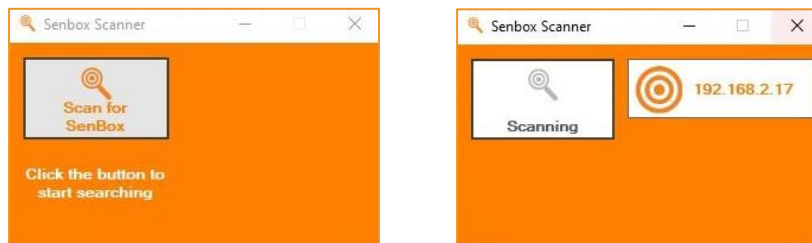
8. Now, you can log in. (For further information see chapter 3.)

2.2. SenBox PoE

1. Place or attach the SenBox nearby the measuring location and connect up to six sensors (not included) to the SenBox.
2. Connect the SenBox to a suitable router or switch *via* the Ethernet cable.
3. Download the SenBox Scanner (for Windows and Android) from our website sendot.nl or the [Google Play Store](https://play.google.com/store/apps/details?id=com.sendot.senboxscanner). This program searches for the IP address of the SenBox.

Note: When using an Android device, ensure that Wi-Fi is enabled and you are using the same network as the SenBox.

4. Install the SenBox Scanner on your PC.
5. Start SenBox Scanner to search for the SenBox.



6. Click on the IP address (in the example 192.168.2.120) to open the login screen in your web browser.
7. Now, you can log in. (For further information see chapter 3.)

2.3. SenBox 4G

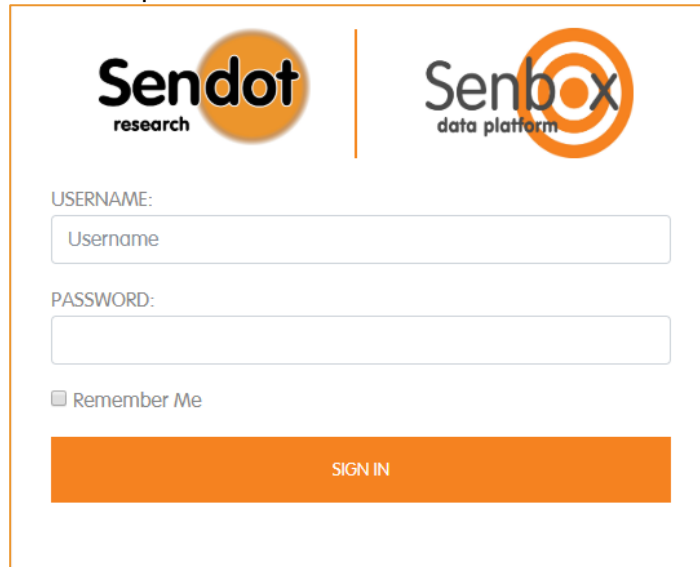
1. Place or attach the SenBox nearby the measuring location and connect up to six sensors (not included) to the SenBox.
2. Connect the adapters from the SenBox to a power source.
3. SenBox starts up and connects to the internet within 10 minutes.
4. Login at senbox.nl to view your data. We recommend to use Google Chrome as internet browser.
5. Now, you can log in with the login data provided by us. (For further information see chapter 3.)

3. Login

If the system is used for the first time, you can log in with the login data you can find on the box.

With this login data, you have admin rights and the ability to create other users and passwords.

When you open the SenBox web page, a login screen is displayed. Here, you or a user can log in with the username and password received from the administrator.



Sendot
research

Senbox
data platform

USERNAME:
Username

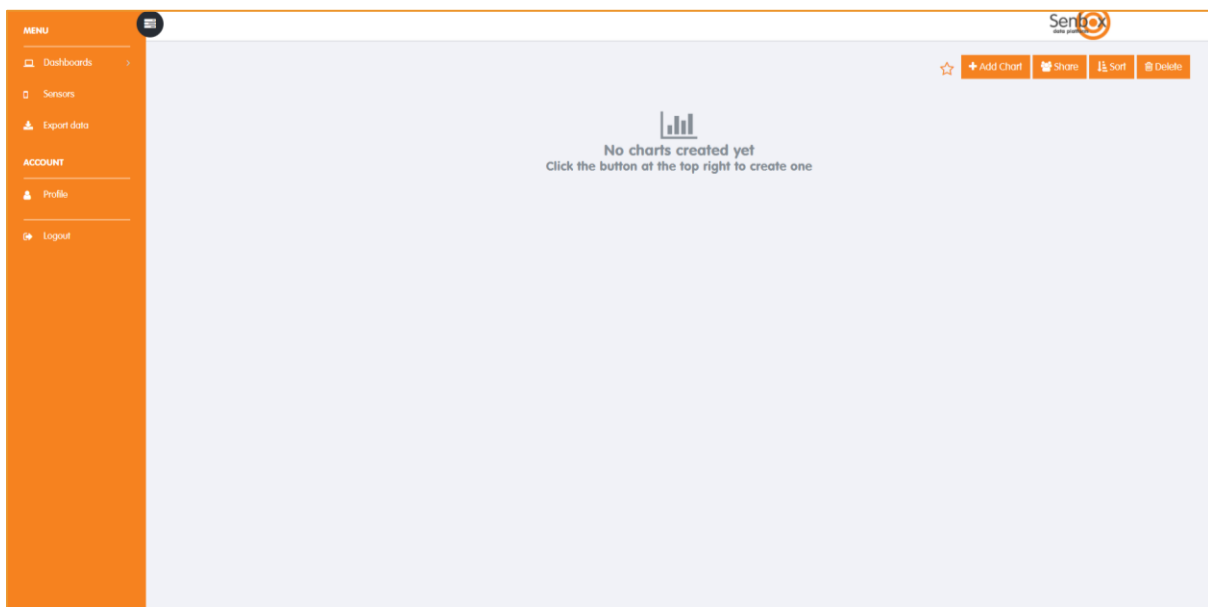
PASSWORD:

Remember Me

SIGN IN

4. Dashboard

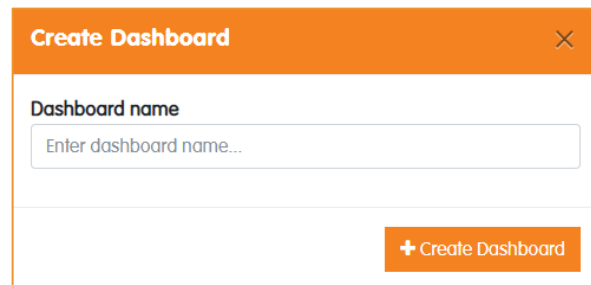
After your first successful login, the empty overview page will be visible. On the left side of the screen you will find the main menu. From here you can navigate to other sections to create



graphs and manage your profile. In the large grey area your own created graphs will be displayed. At you first log in, no charts/graphs are created yet.

4.1. Create a dashboard

To create a dashboard, click on Dashboards on the top left. A drop-down list will open. Here, all your created dashboards will be listed in future. Click on Add Dashboard to open the Create Dashboard window. Enter the name of the dashboard you want to create and click on Create Dashboard. Now, you see your empty dashboard and can find it in the drop-down list under Dashboards.



4.2. Create a chart

To create a chart within your dashboard, click on Add Chart on the top right corner of your dashboard. The following window will pop up. Within this window you can change:

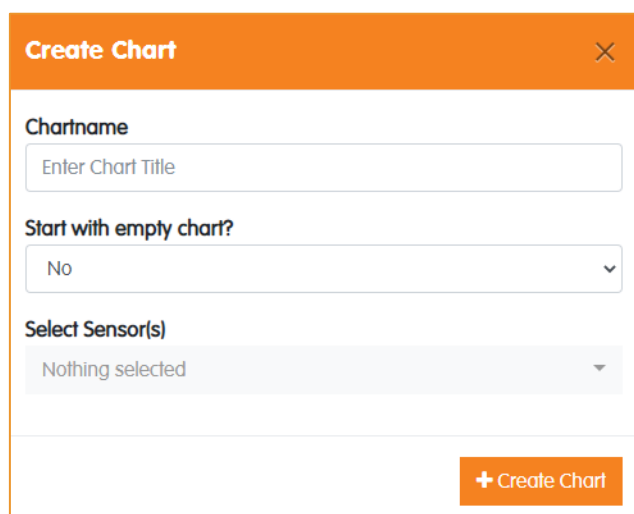
- **Chartname:** Fill out the name of the chart.

- **Start with empty chart?:**

No – The chart loaded from the collected data of the chosen sensor(s) will include all internally stored sensors.

Yes – The chart loaded does not include any internally stored data from your sensor(s).

- **Select Sensor(s):** Select one or multiple source sensors for your chart.



Click on **Create Chart** to confirm your settings and create the chart. Your chart is now visible on your dashboard. You can proceed to create further charts within your dashboard as above described.

Remark: You can assign the same name to more than one graph. This might lead to confusion. Therefore, choose the naming for your charts carefully.

4.3. Share your dashboard

4.4. Sort the graphs within your dashboard

You can sort your graph within your dashboard in any order you prefer. Click on Sort and a window with a list of all included charts will open. Now, drag and drop the charts into the order you prefer. Confirm your changes by clicking on **Save**.

4.5. Delete the dashboard

In case you want to delete your complete dashboard, click on Delete. A window will open, where you will be asked, if you really want to delete your dashboard. Click on OK to proceed or Cancel to abort the deletion.

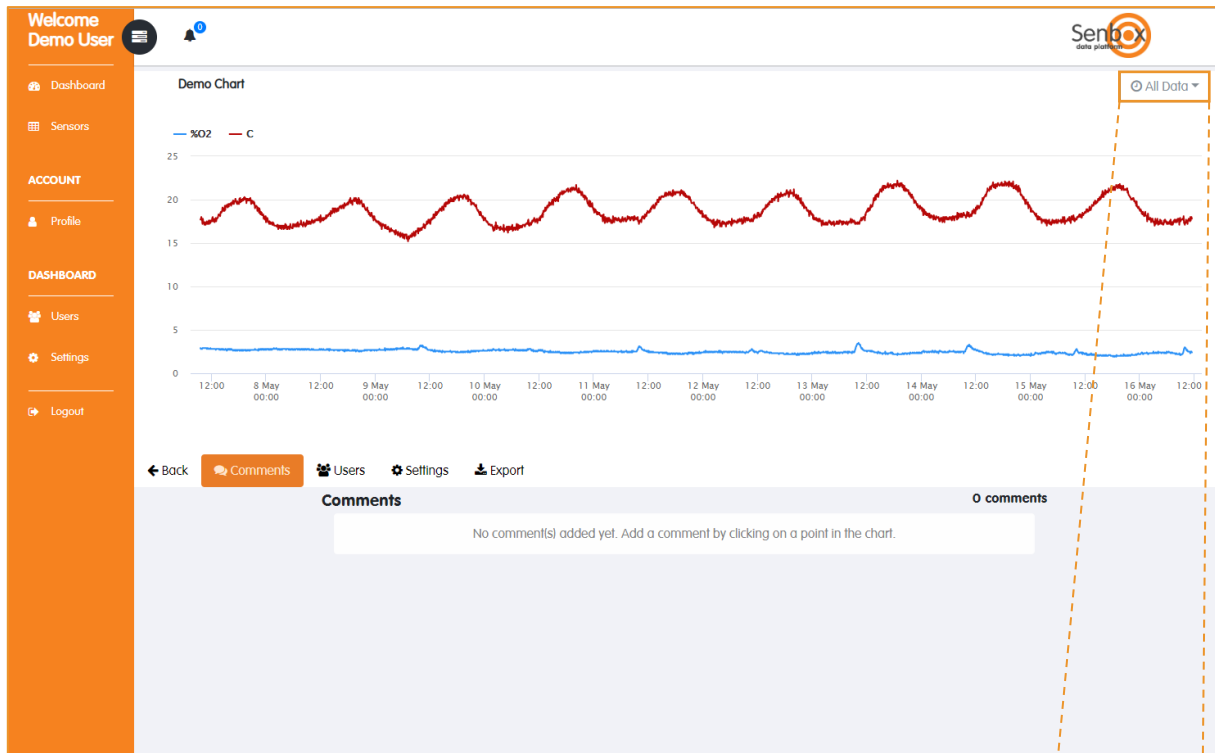
4.6. Choose your favourable dashboard

Whenever you login on your SenBox, the first page will be empty. In case you have a favourable dashboard, you can choose this one to be shown whenever you login on your SenBox. Therefore, enter your desired dashboard by clicking on Dashboard and choosing it. On the top right you see an empty star. By clicking on this star this dashboard, will be shown after logging in on your SenBox. A filled star indicates your favoured dashboard.

You can unselect it when you click on the star once more. The star will be empty again. You can choose another dashboard as your favourite at any time, but only one dashboard can be chosen. Therefore, prior chosen favourite dashboards will be deselected automatically by choosing a new one.

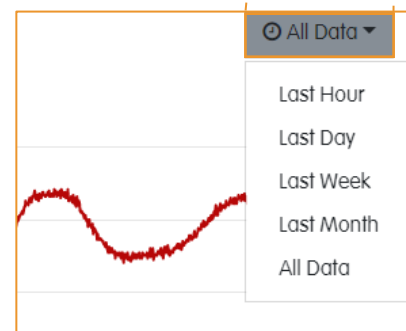
5. Chart screen

The chart you have created will automatically appear in the dashboard. Enlarge a single chart by clicking on it. Only the selected chart will now be visible on the screen, as shown in the following display.



At the top right of the chart, the time period for displaying the data can be chosen. Additionally, it is possible to zoom in at any position of the chart by clicking and dragging.

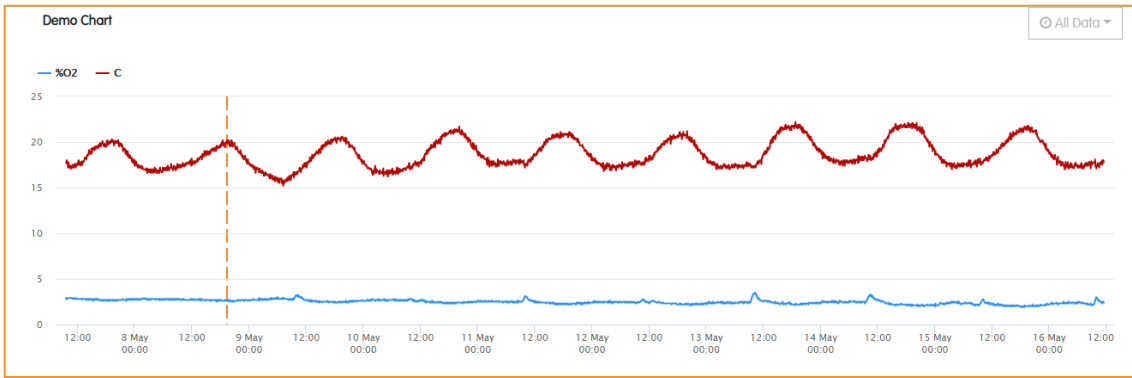
At the bottom of the chart, you see additional functionalities that can be changed. Those functionalities will be described during the following chapter.



5.1. Comments

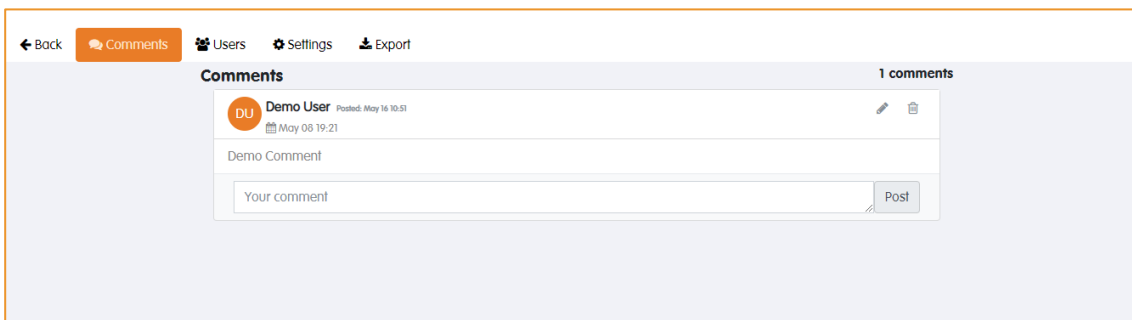
In this window, a user is able to see and adapt comments that have been added to the chart. To add a comment, click on the desired position in the chart. Add your comment and click on [Post comment]. Subsequently, an orange dashed vertical line will be visible in the graph.

The 'Add a comment' dialog box has an orange header with a close button. Below the header is a text input field labeled 'Insert Comment:' with the placeholder text 'Your comment'. At the bottom right of the dialog is an orange button with a speech bubble icon and the text 'Post comment'.



This comment is now visible below the chart. The comment window includes information on the user who posted, the date and time where the comment was posted and where it belongs to in the chart. Here, every user can reply to a comment. Only the poster itself is able to adapt or delete a comment at any time. When deleting a comment, all replies will be deleted as well.

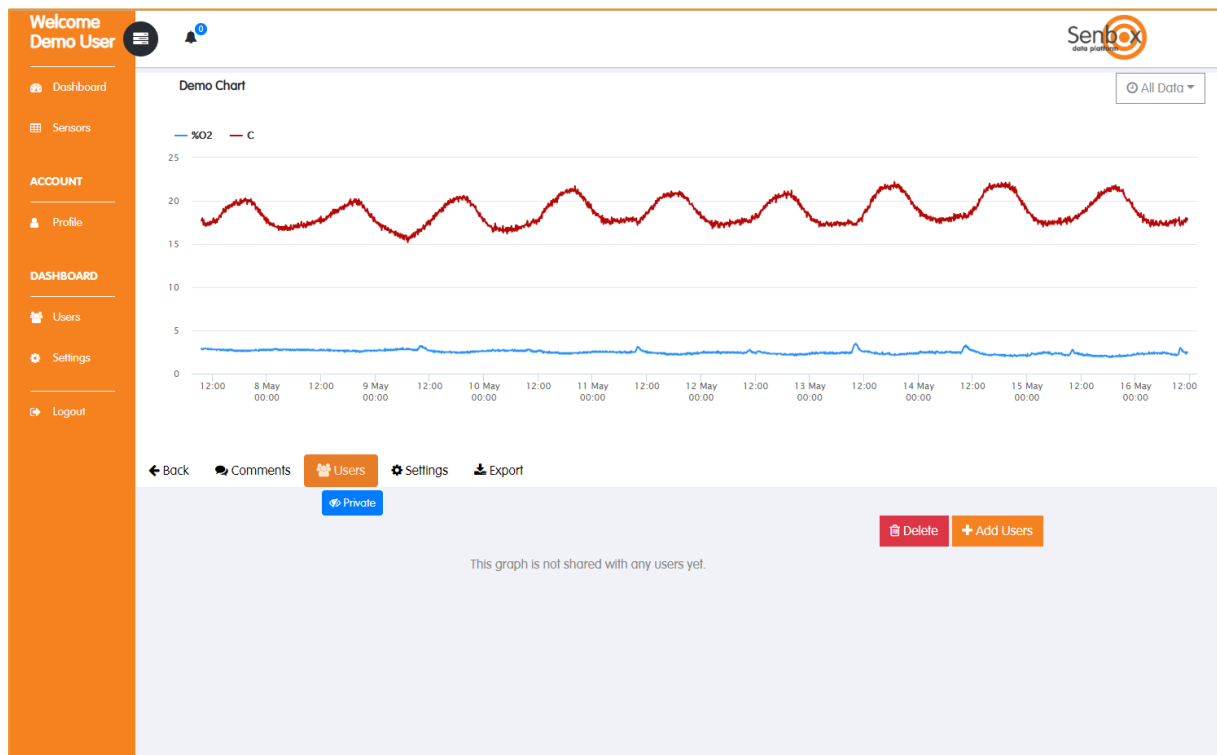
When clicking on the dashed line the “Add a comment” window will pop up again showing the posted comment. Here, it is also possible to adapt the comment, but not to delete it.



Note: Comments are only visible for single graphs, not on the main dashboard.

5.2. Users

In the [Users] section below the graph, you see whether it is a private or public graph. You can change the status by clicking on the blue button. If your graph is [Private], a list of people who are able to see the graph is displayed. You can add people by clicking on [Add Users] or delete people by selecting the specific user and then click on [Delete].



5.3. Chart settings

When clicking the [Settings] tab, you can change the main settings of the graph such as name, historical data and source sensors. When you want to delete the graph, you can do this here as well. When you delete the graph you will not delete the underlying data.

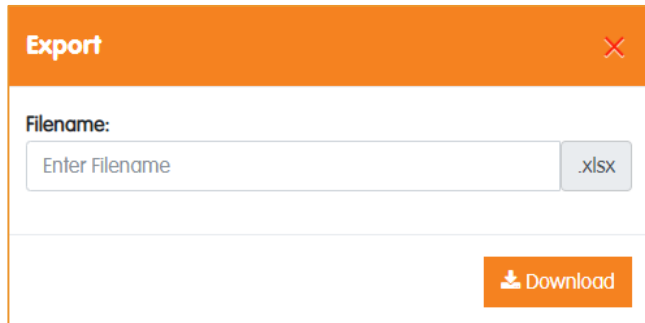
The 'Settings' dialog box contains the following fields and options:

- Chartname:** A text input field containing 'Demo Chart'.
- Show old data from sensor(s):** A dropdown menu currently set to 'Yes'.
- Selected Sensor(s):** A dropdown menu currently set to 'Oxygen + Temp.'.
- Buttons:** 'Save changes' (orange) and 'Delete chart' (red).

5.4. Export

Here, you can export the raw data of a graph. Fill in a filename and click on [Download] to generate the export file. An excel file will be generated that contains the data from the chart.

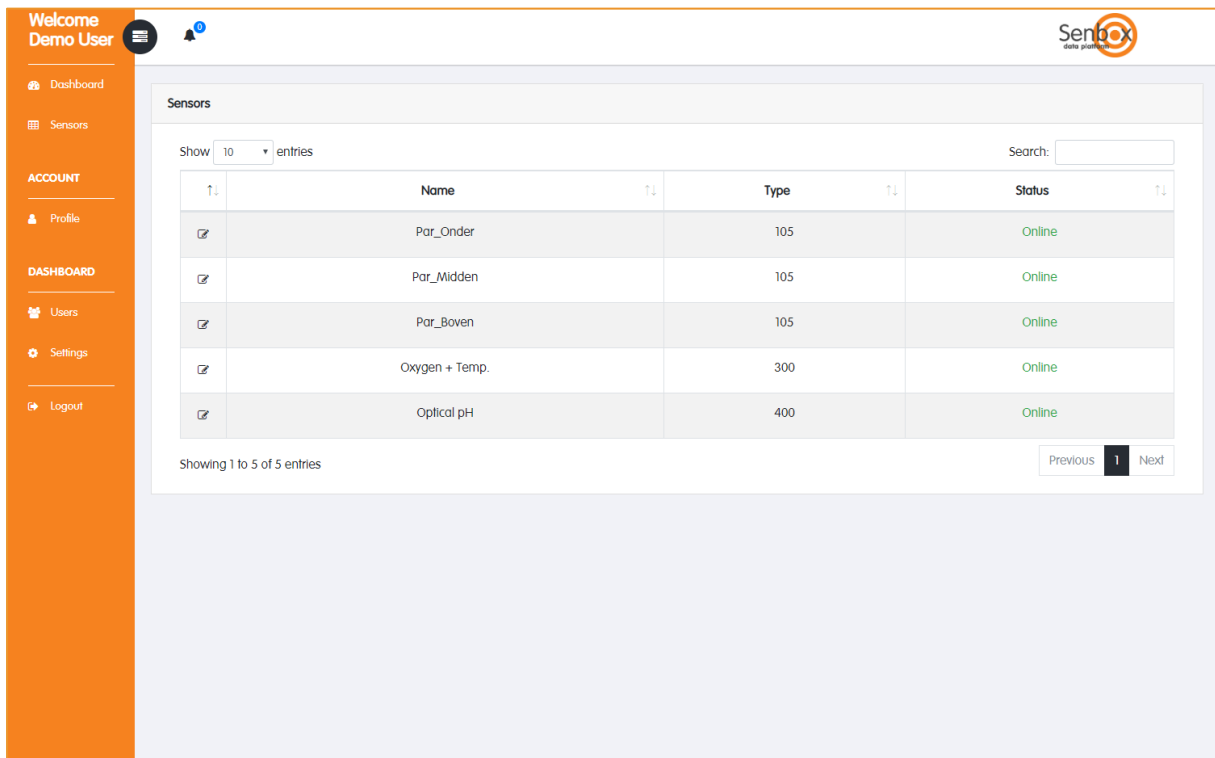
Remark: Only the selected timeframe for the chart will be exported. When you select [Last Hour] (see chapter 5), you will generate an excel file containing the data from the last hour.



The image shows a modal dialog box titled "Export" with an orange header and a close button (X) in the top right corner. Below the header, there is a "Filename:" label followed by a text input field containing the placeholder "Enter Filename" and a ".xlsx" button to its right. At the bottom right of the dialog, there is a prominent orange "Download" button with a download icon.


6. Sensors

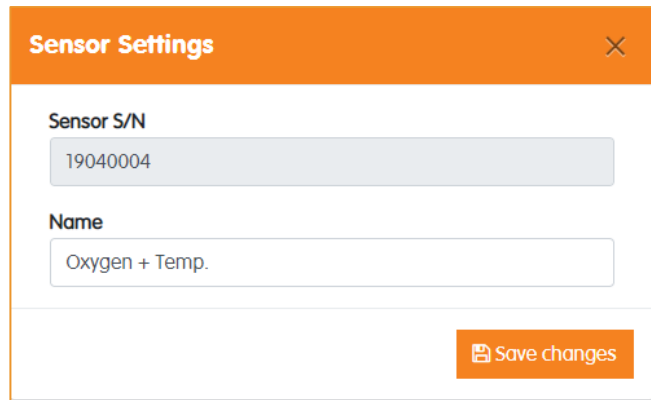
Within this menu, it is possible to see all connected sensors.



The image displays a web application interface for managing sensors. On the left is an orange sidebar with navigation options: "Welcome Demo User", "Dashboard", "Sensors", "ACCOUNT" (with "Profile"), "DASHBOARD" (with "Users", "Settings", "Logout"). The main content area is titled "Sensors" and features a table with columns for Name, Type, and Status. The table lists five sensors, all with a status of "Online". Below the table, it indicates "Showing 1 to 5 of 5 entries" and includes "Previous" and "Next" navigation buttons.

	Name	Type	Status
<input checked="" type="checkbox"/>	Par_Order	105	Online
<input checked="" type="checkbox"/>	Par_Midden	105	Online
<input checked="" type="checkbox"/>	Par_Boven	105	Online
<input checked="" type="checkbox"/>	Oxygen + Temp.	300	Online
<input checked="" type="checkbox"/>	Optical pH	400	Online

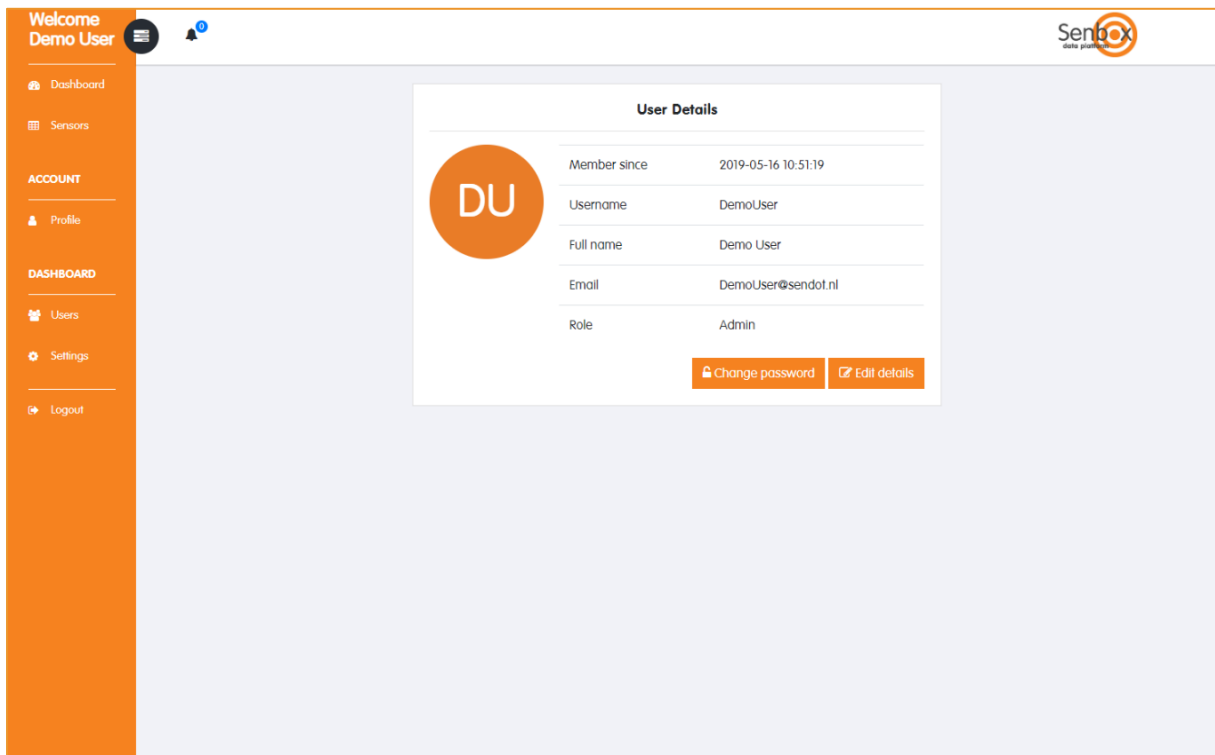
To change sensor settings click on the edit symbol [] in the first column. Now, it is possible to see the serial number of the selected sensor and the chosen sensor name. The sensor name can here be changed.



The image shows a 'Sensor Settings' dialog box with an orange header and a close button (X) in the top right corner. It contains two input fields: 'Sensor S/N' with the value '19040004' and 'Name' with the value 'Oxygen + Temp.'. At the bottom right, there is an orange button labeled 'Save changes' with a floppy disk icon.

7. Profile

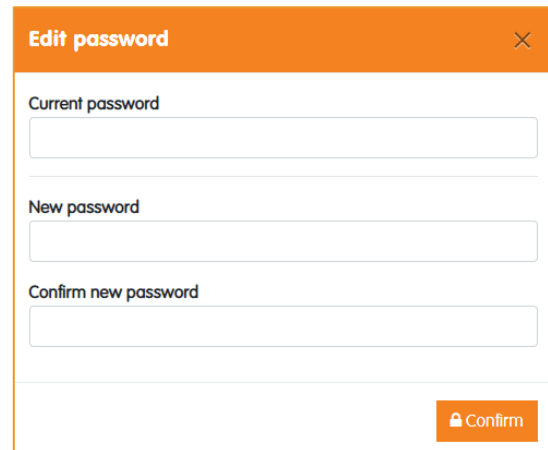
Within this menu every user can see and change his/her own account settings.



The image shows a user profile page. On the left is an orange sidebar with navigation links: 'Welcome Demo User', 'Dashboard', 'Sensors', 'ACCOUNT' (with 'Profile' selected), 'DASHBOARD', 'Users', 'Settings', and 'Logout'. The main content area features a 'User Details' card with a circular profile picture containing 'DU'. The details include: Member since (2019-05-16 10:51:19), Username (DemoUser), Full name (Demo User), Email (DemoUser@sendot.nl), and Role (Admin). At the bottom of the card are two buttons: 'Change password' and 'Edit details'. The top right of the page shows the 'Sendot' logo.

7.1. Change user password

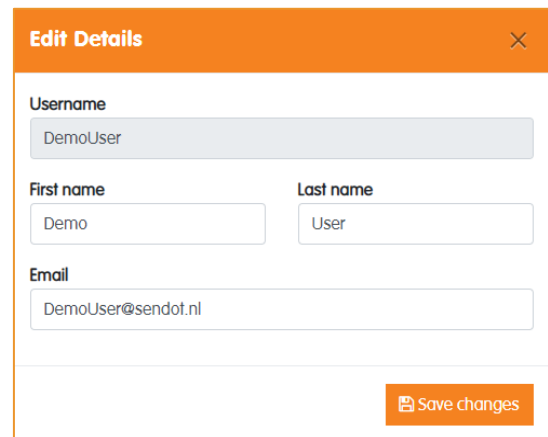
To change your password, click on [Change password]. Enter your current password and then your new password twice. Click on [Confirm] to save the changes.



The 'Edit password' dialog box features an orange header with the title 'Edit password' and a close button (X). It contains three text input fields: 'Current password', 'New password', and 'Confirm new password'. A 'Confirm' button with a lock icon is located at the bottom right.

7.2. Edit user details

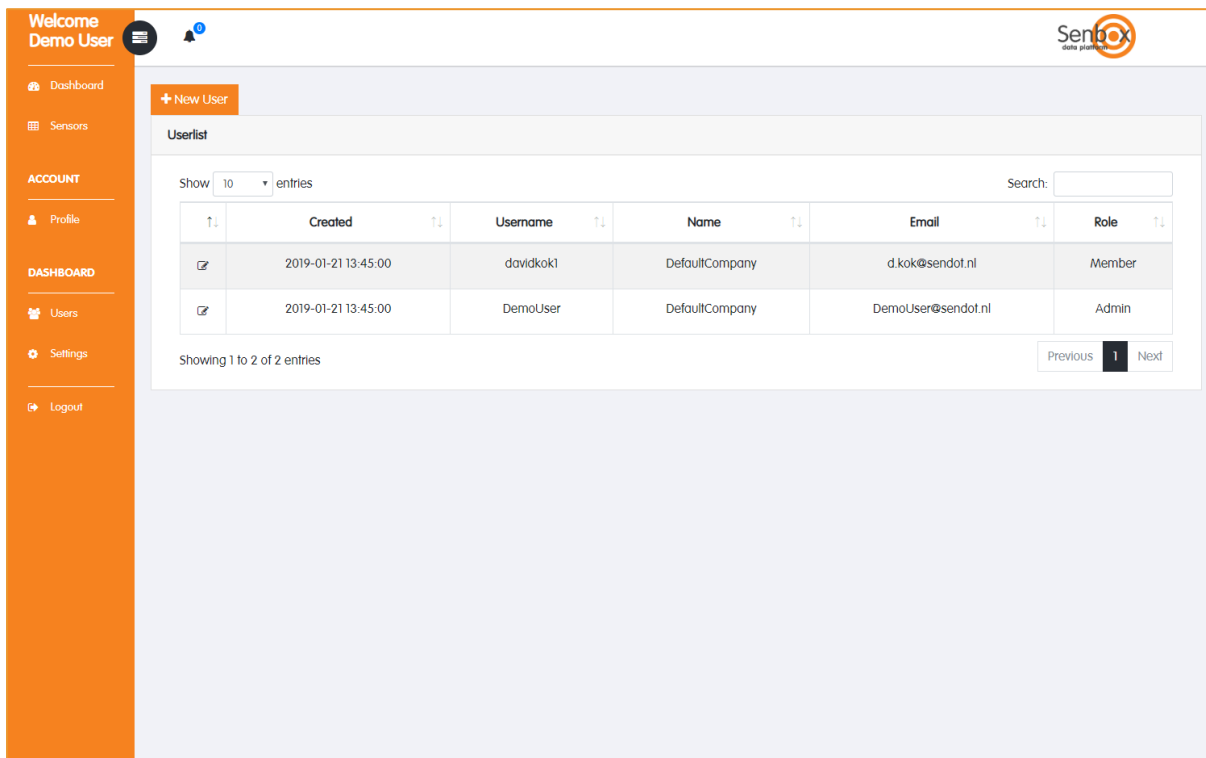
To change your personal details, click on [Edit details]. Here you can change main account details such as name and e-mail address.



The 'Edit Details' dialog box has an orange header with the title 'Edit Details' and a close button (X). It includes four text input fields: 'Username' (containing 'DemoUser'), 'First name' (containing 'Demo'), 'Last name' (containing 'User'), and 'Email' (containing 'DemoUser@sendot.nl'). A 'Save changes' button with a floppy disk icon is positioned at the bottom right.

8. Users

In the [Users] menu the administrator can view and manage all users that are active in the system. You can edit user settings, add and remove new users.



The screenshot displays the 'Users' management page in the Sendot application. The page features a sidebar on the left with navigation options: Dashboard, Sensors, ACCOUNT (Profile), and DASHBOARD (Users, Settings, Logout). The main content area is titled 'Userlist' and includes a '+ New User' button. Below the button is a search bar and a table with the following data:

	Created	Username	Name	Email	Role
<input type="checkbox"/>	2019-01-21 13:45:00	davidkok1	DefaultCompany	d.kok@sendot.nl	Member
<input type="checkbox"/>	2019-01-21 13:45:00	DemoUser	DefaultCompany	DemoUser@sendot.nl	Admin

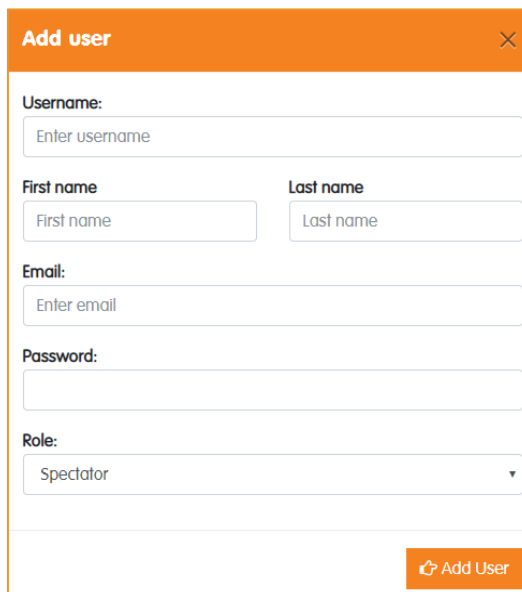
At the bottom of the table, it indicates 'Showing 1 to 2 of 2 entries' and provides navigation links for 'Previous', '1', and 'Next'.

Remark: Only an administrator is able to make changes within this menu. If a user wants to change his/her own settings, this can be done within the [Profile] menu (see chapter 7).

8.1. Add new user

To create a new user, click on [New User]. You will see the following screen. Here, you can fill out all data for a new user.


Note: When you generate a new user, no automatic mail is sent to the e-mail address of the user. You will have to transfer their credentials yourself.



The 'Add user' form is displayed in a modal window. It contains the following fields:

- Username:** A text input field with the placeholder 'Enter username'.
- First name:** A text input field with the placeholder 'First name'.
- Last name:** A text input field with the placeholder 'Last name'.
- Email:** A text input field with the placeholder 'Enter email'.
- Password:** A text input field.
- Role:** A dropdown menu currently showing 'Spectator'.
- Add User:** An orange button with a plus icon and the text 'Add User'.

8.2. Edit user

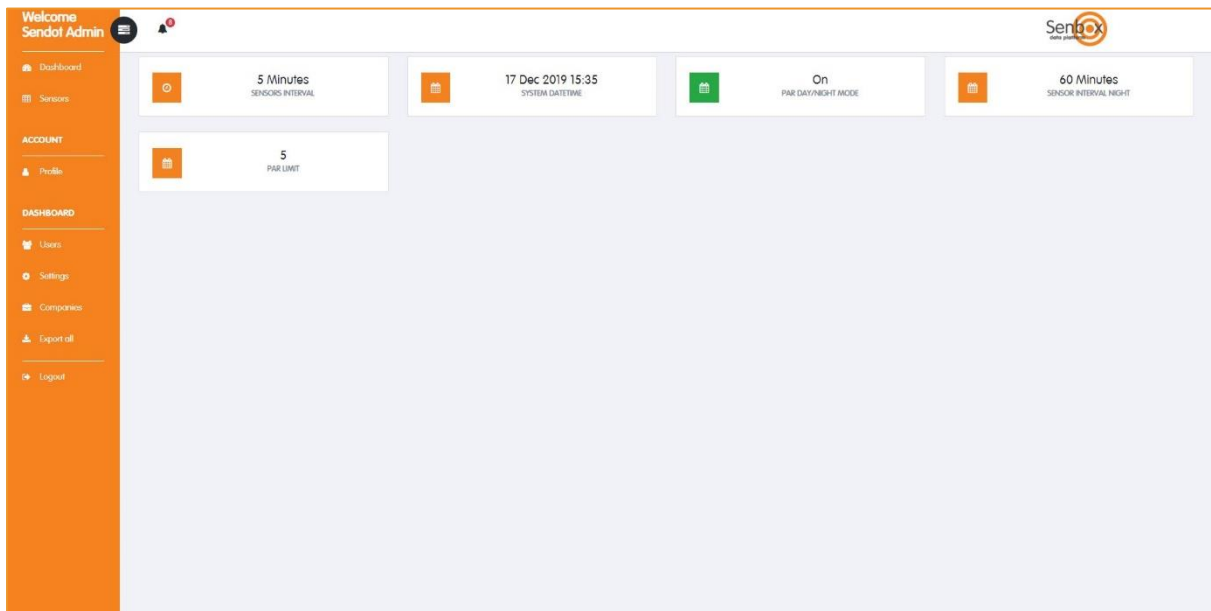
Click the edit symbol [] to open this menu and change the user settings: user role and password.

Note: These changes can only be done by an administrator. A user can change his/her settings with the [Profile] menu (see chapter 7).



9. Settings


For detailed information about the SenBox system, click [Settings] in the left menu.



Here, every user can view all actual settings and make changes with respect to sample period, day night rhythms, etc.

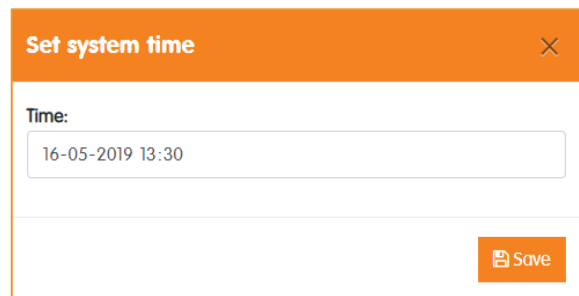
9.1. Sensors measurement interval

If you click on [SENSOR INTERVAL], you can set the measurement interval for the sensors.



9.2. Set system date & time

By clicking on [SYSTEM DATE TIME], you can manually change date and time.



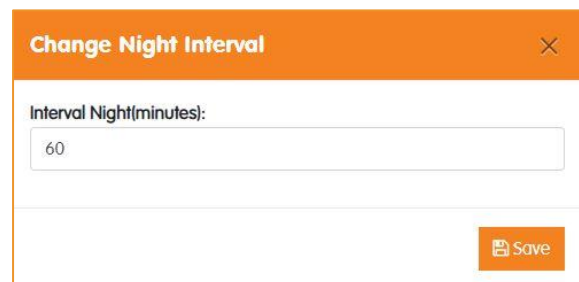
9.3. PAR day/night mode

By clicking on [PAR DAY/NIGHT MODE], you can turn the day/night mode on or off. When this mode is turned on, the interval time during the night can be set independently from the general sensor interval. This affects only the attached FluoMini Eff% + PAR sensors and is based on the PAR measurement. If the measured PAR value is lower or equal than a set limit (see chapter 9.5), the interval time will be changed to a set value (see chapter 9.4).

9.4. Sensor interval night

If you click on [SENSOR INTERVAL NIGHT], you can change the interval time for the measurements during the night.

Note: Short measurement intervals are often not necessary and have a rather negative effect for some plants. A measurement interval of 60 min. during the night should be sufficient for most of the plants.



9.5. PAR limit

If you click on [PAR LIMIT], you can set a limit for the PAR measurement to switch to the set night interval (see chapter 9.4). If the measured PAR value is equal or lower than this set value, the FluoMini Eff% + PAR sensor(s) will switch to the set night interval. Once, the PAR is above this limit, the sensor(s) will switch back to the set sensor interval (see chapter 9.1).

