

# EXcon+ User Manual

## FACILITY MANAGER PRO

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## 1. DOCUMENT CONVENTION

Commands and names that appear in the user interface, are written in bold typeface in this guide. Example: Activate the **Setpoint** button. Also, particularly important information is written in bold typeface.

## 2. WHERE TO FIND ADDITIONAL INFORMATION

You will always be able to find additional information on Exhausto's home page:  
<https://www.exhausto.dk/>

### 3. THE START SCREEN

#### 3.1 Login via direct cable connection

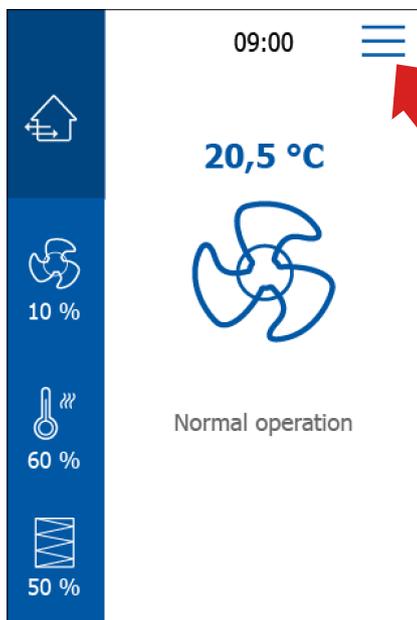
If your laptop is connected directly to the <sup>HMI</sup><sub>TCP/IP</sub> port on the controller, the IP-address is 10.200.2.100

#### 3.2 Login via the BMS TCP/IP port

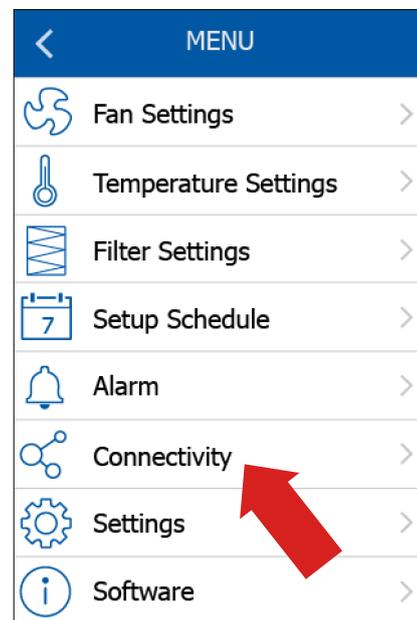
If you are using the <sup>BMS</sup><sub>TCP/IP</sub> port you will need to find the IP-address first. You will find the IP address in the AHU's touch panel named EXCON+HMI-TOUCH.

Follow these steps:

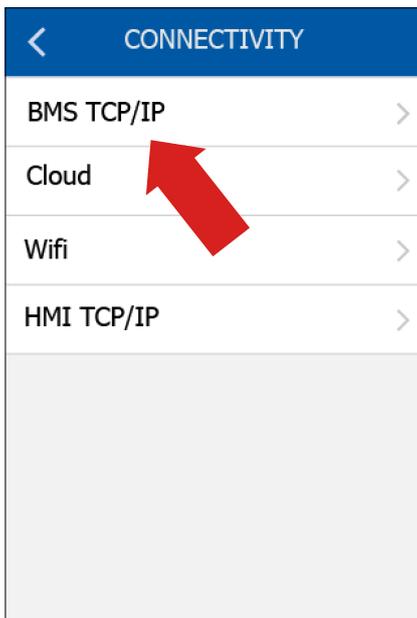
1) Click on the menu symbol (the three small horizontal lines) in the upper right corner of the HMI.



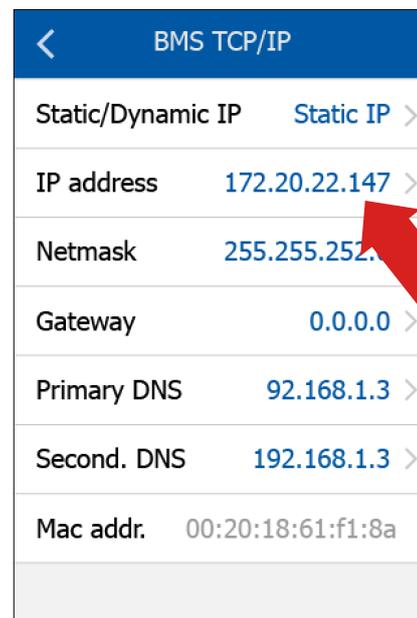
2. Press **Connectivity**.



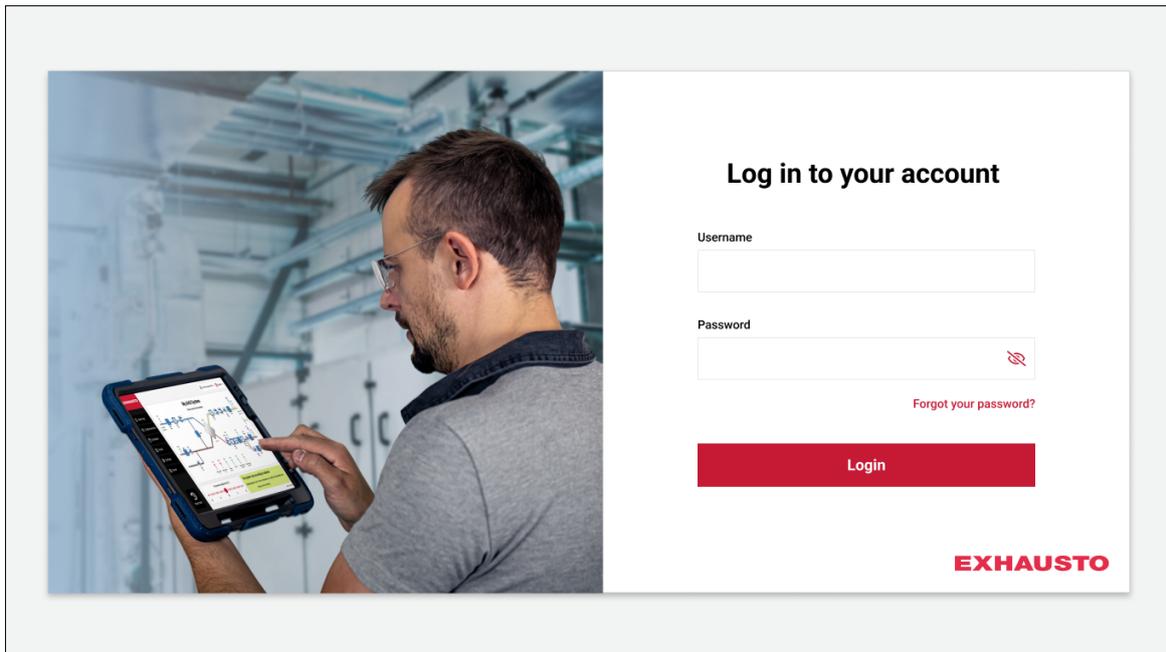
3. Click on BMS TCP/IP.



4. Then you will see the IP Address.



1. Enter the IP address in your internet browser. You will then be presented with the following screen:



Enter the following in the login screen:

Username: user

Password: 111111

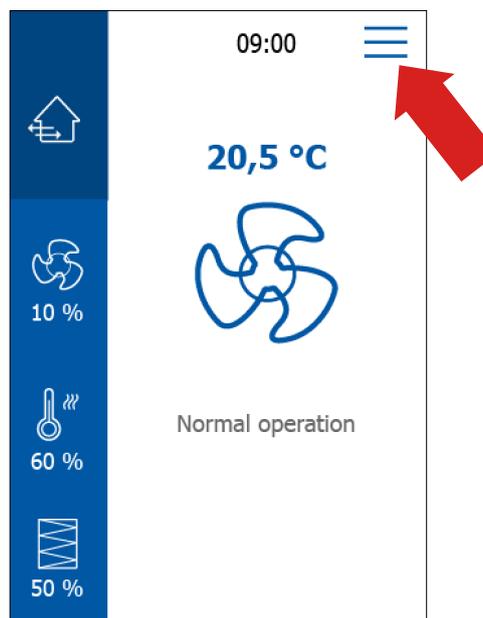
(Remember to change your password the first time you log in.)

Click on the **Login** button to go to the home screen.

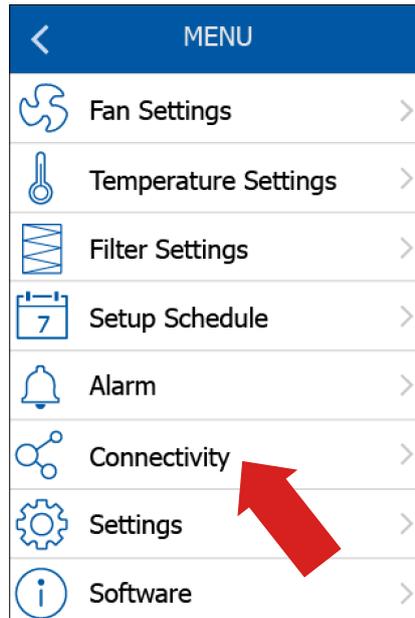
### 3.3 Login via Wifi

If you wish to establish a WiFi connection to the controller, you must first activate Wifi in the HMI. This is how you activate the WiFi settings:

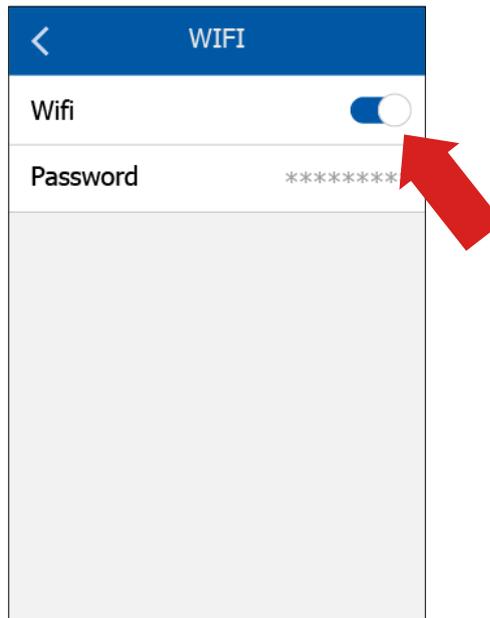
- 1) Activate the menu in the upper right corner of the HMI:



## 2) Press Connectivity

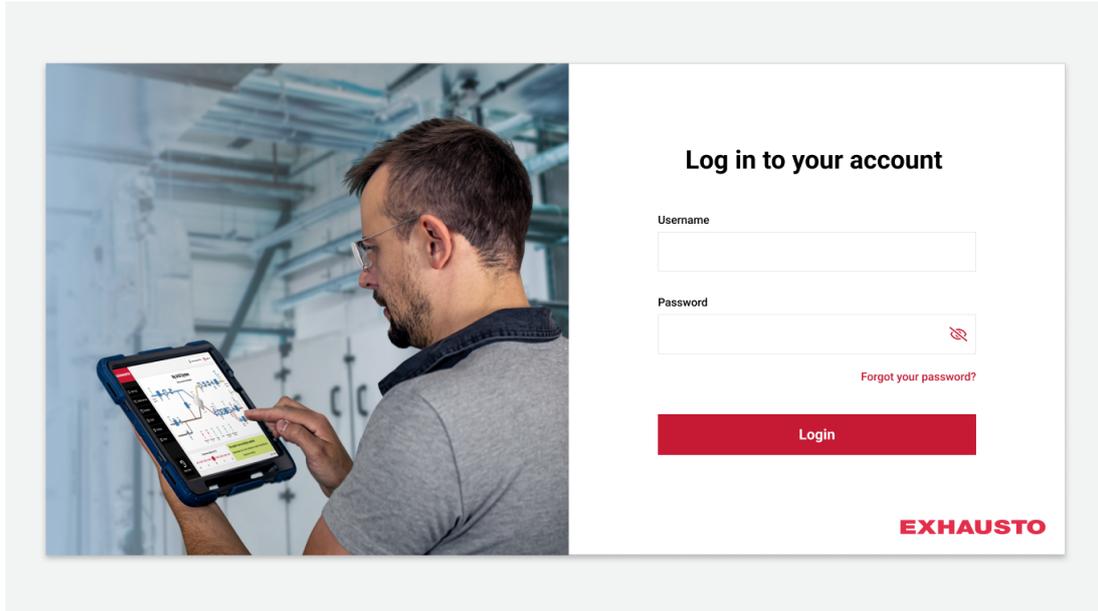


## 4) Activate Wifi



Having activated the WiFi network, you must connect to the WiFi network "EXcon+ – XY", where XY is the unit name for your particular HVAC unit.

5) Enter the IP address 10.200.3.1 in your login device. Then you will also see the login screen:

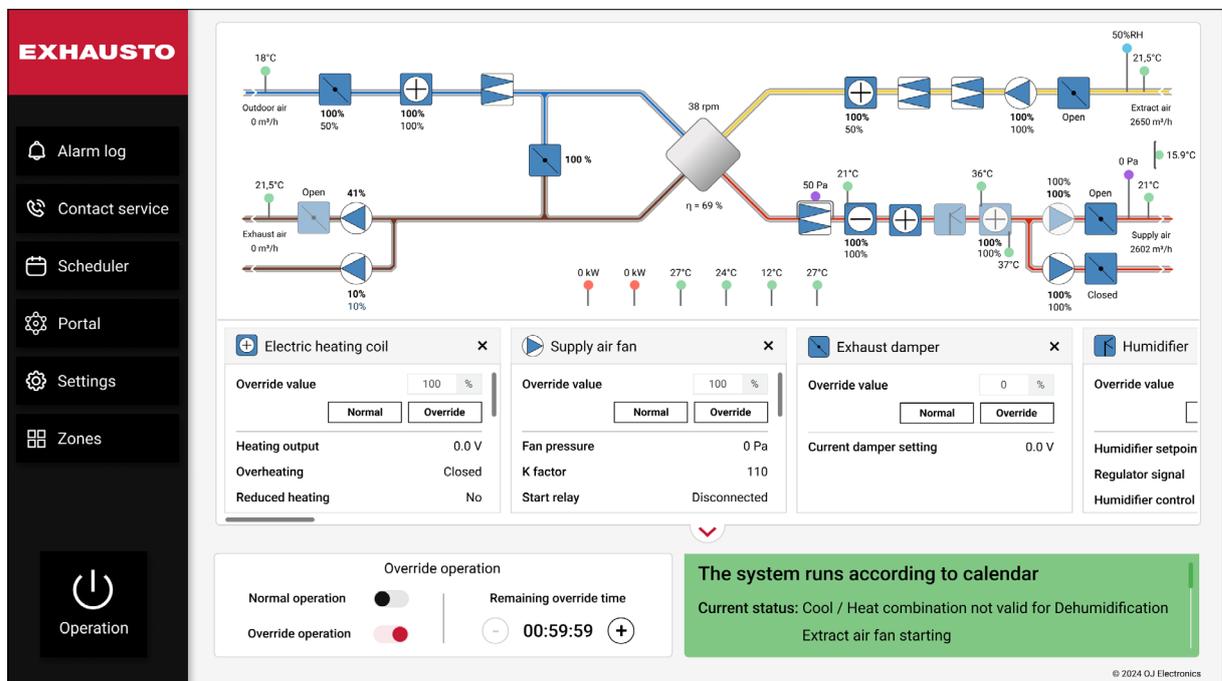


### 3.4 The Home screen

Log in to the EXcon+ controller's web interface as described above.

You will then be presented with the Home screen.

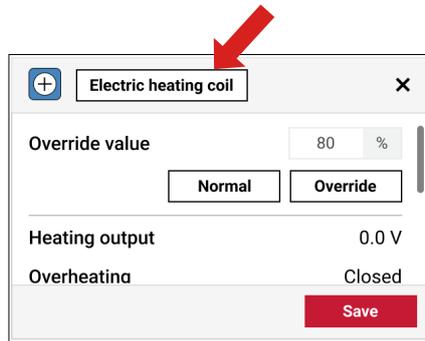
Here, you can click on any visible component in the main window: Filter, sensor, heat recovery unit, etc. You will notice that it is possible to click on several components and have data for each component neatly arranged in small windows, see below:



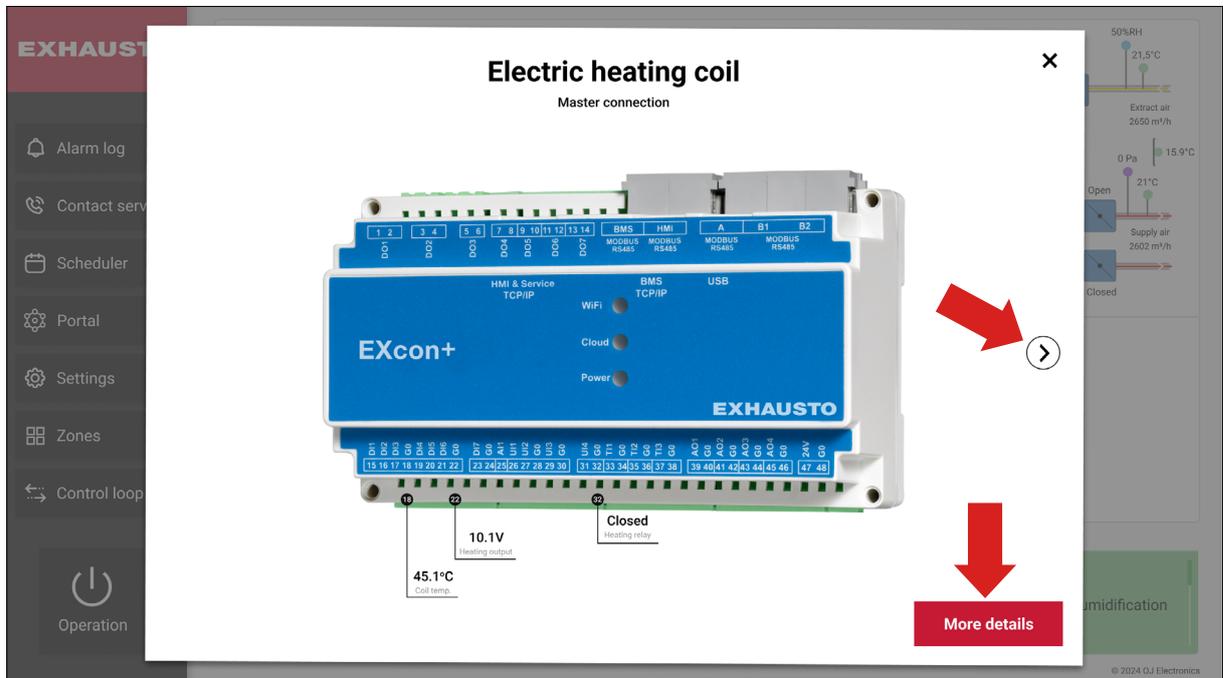
This ability is particularly useful if you need to monitor and compare data from various components. The visual status information and the detailed component data offer you the ability to perform a quick analysis of the system's performance. It is recommended to use this screen as the central information tool. Here, you immediately become aware of the system status. This enables you to quickly identify any required corrective actions.

### 3.5 How to get detailed component information

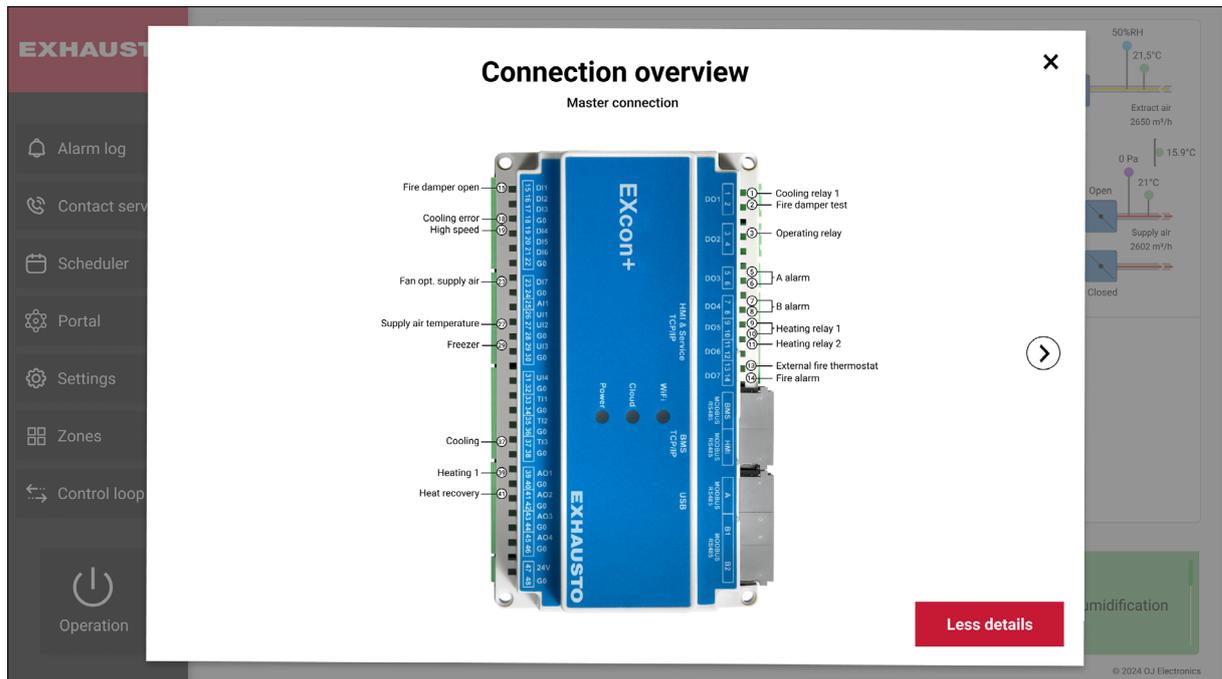
A small shadow beneath the heading of the dialog box indicates, that the heading is a button. See below. Then you can click on this heading to get further information.



For example, click on the Electrical heating coil heading, to see the following information:



This is the procedure you must follow to obtain detailed component information. If you click on the small arrow pointing to the right, you can browse through the system components. Here you can find basic information about pin out and signals. If you click on **More details**, you will see the following:



### 3.6 System status

At the bottom right on the Home screen, you see the current system status.

**The green colour** at the bottom of the screen indicates that there are no active alarms. Here you also have the information, that the system is running according to the calendar. This is because a calendar-based program has been configured for the air handling system. Your system is following this calendar.

**A yellow colour** at the bottom of the screen indicates that a B-alarm has been raised. Also, if a yellow colour appears in a component, it indicates that the component has an error and that it needs service. A B-alarm means that the system is running with reduced performance due to an error.

**A red colour** at the bottom of the screen indicates that an A-alarm has been raised. Also, if a red colour appears in a component, it indicates that the component has an error and that it needs service. An A-alarm means that the system has come to a stop due to an error. Service is required since some repair is necessary to bring the unit back into operation.

**A grey colour** at the bottom of the screen indicates that the AHU is in stop mode and there are no errors.

**Note:** The system may be displaying a green colour – even if it has stopped running. This is the case if the system is running according to calendar, but there is a period in the calendar where the system is set to pause operation. Note also, that a boost overwrites the current calendar setting. A boost however, will not alter the system status. So, no matter if the system status is green or yellow etc., a boost will not alter the status.

### 3.7 Adjusting the Temperature

At the bottom left on the Home screen, you can adjust the temperature if you want to fine-tune the temperature setpoint during cold or warm periods.

### 3.8 The Override Function

The purpose of the **Override** function is to give you a tool that can be used to test that the outputs work as intended. This is especially important during service and maintenance. With the **Override** function, you can check every component to make sure that it is working properly.

The screenshot displays the EXHAUSTO control interface. On the left is a navigation menu with options: Alarm log, Contact service, Scheduler, Portal, Settings, and Zones. The main area shows a schematic of the HVAC system with various components like Outdoor air, Exhaust air, Supply air, and Extract air fans, along with their respective flow rates and temperatures. Below the schematic are four override control panels for: Electric heating coil, Supply air fan, Exhaust damper, and Humidifier. Each panel includes an 'Override value' slider (set to 100%), a 'Normal' button, and an 'Override' button. The 'Supply air fan' panel also shows 'Fan pressure' (0 Pa), 'K factor' (110), and 'Start relay' (Disconnected). At the bottom, there is an 'Override operation' section with a toggle switch (set to 'Override operation'), a 'Remaining override time' timer (00:59:59), and a green status box indicating 'The system runs according to calendar' and 'Current status: Cool / Heat combination not valid for Dehumidification'.

#### When is the Override function available?

Override is possible in Stop. (Not Fans and dampers)

Override is possible in normal operation. (All components)

Override is not possible during transition from stop to normal operation. (Damper opening, Extract air fan starting).

Override is not possible during the transition from normal operation to stop. (Damper closing)

Override is not possible in Alarm Stop. (A-alarms)

Override is possible if B-alarms are active, both in stop and normal operation.

These steps explain how to override the speed of the Supply air fan. However, the same steps apply to all other components.

1. Click on the component you wish to manually override – in this case the Supply air fan.
2. Change control mode from Normal operation to Override operation by sliding the **Override operation** button to the right.
3. Now you can change the settings that you wish to change. You can do this for all clickable components. Notice, that you can both increase or decrease the override time as you see fit.

- When you have made the changes, you must click on **Override** for the new settings to be applied, see below.

The screenshot displays the EXHAUSTO control interface. On the left is a navigation menu with options: Alarm log, Contact service, Scheduler, Portal, Settings, and Zones. The main area shows a system diagram with various components and their status. Below the diagram are four control panels:

- Electric heating coil:** Override value is 100%. Buttons for Normal and Override are present. A red arrow points to the Override button. Other settings include Heating output (0.0 V), Overheating (Closed), and Reduced heating (No).
- Supply air fan:** Override value is 100%. Buttons for Normal and Override are present. Other settings include Fan pressure (0 Pa), K factor (110), and Start relay (Disconnected).
- Exhaust damper:** Override value is 0%. Buttons for Normal and Override are present. Other settings include Current damper setting (0.0 V).
- Humidifier:** Override value is blank. Other settings include Humidifier setpoint, Regulator signal, and Humidifier control.

At the bottom, there is an 'Override operation' section with a toggle switch for Normal operation (off) and Override operation (on), and a 'Remaining override time' counter set to 00:59:59. A green notification box states: 'The system runs according to calendar. Current status: Cool / Heat combination not valid for Dehumidification. Extract air fan starting.'

**Note:** Components with values that have been overwritten will be highlighted. You might often need to remember what you have changed, and the highlighted features will help you do so. In this way, you can easily revert several changes to their prior state. The **Override** state is either terminated when the set time has elapsed, or when you click on **Normal operation**.

#### 4. BOOST START

When you click on **Boost start**  in the lower left corner, you will see the following screen:

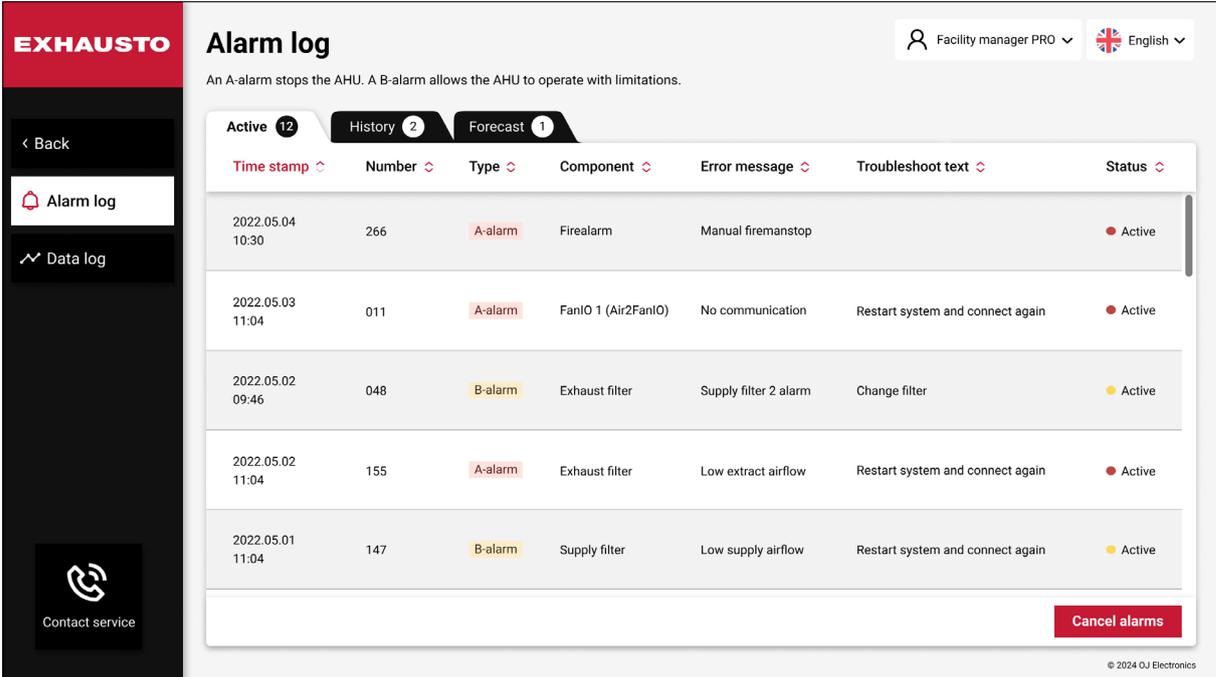
The 'Boost start' screen features two tabs: 'Quick start' and 'Manual start'. Under the 'Quick start' tab, there are three buttons for selecting a duration: '1 hour', '2 hours', and '4 hours'. To the right, a large circular timer displays '00:00:00' with the label 'Remaining boost duration'. Below the timer is a 'Stop' button. At the bottom center is a 'Confirm' button.

A boost is a way to increase the airflow and pressure, so you quickly achieve the desired temperature and air quality. Under the **Quick Start** tab (see above), you can run a boost for either 1, 2, or 4 hours. Once you have clicked on one of these buttons, a count-down timer is displayed on the right side of the screen. This timer tells you exactly how much time remains before the boost operation has finished.

If you click the **Manual** start tab, you can program the system to start and stop a boost at a specific date and time.

## 4.1 The Alarm log

The alarm log is basically a list of system errors. If you click on the bell icon  **Alarm log** to open the alarm log, you will see the following screen:



**EXHAUSTO Alarm log**

An A-alarm stops the AHU. A B-alarm allows the AHU to operate with limitations.

Facility manager PRO | English

Active 12 | History 2 | Forecast 1

Time stamp	Number	Type	Component	Error message	Troubleshoot text	Status
2022.05.04 10:30	266	A-alarm	Firealarm	Manual firemanstop		Active
2022.05.03 11:04	011	A-alarm	FanIO 1 (Air2FanIO)	No communication	Restart system and connect again	Active
2022.05.02 09:46	048	B-alarm	Exhaust filter	Supply filter 2 alarm	Change filter	Active
2022.05.02 11:04	155	A-alarm	Exhaust filter	Low extract airflow	Restart system and connect again	Active
2022.05.01 11:04	147	B-alarm	Supply filter	Low supply airflow	Restart system and connect again	Active

Cancel alarms

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At first, you will see all the active alarms.

Often, it is easier to find the information you need if you sort the alarm log. The alarm log can be sorted according to **Time stamp**, **Number**, **Type** (priority), **Component**, **Error message**, **Troubleshoot text**, or **Status**. Just click on the column headings to sort the errors the way you want.

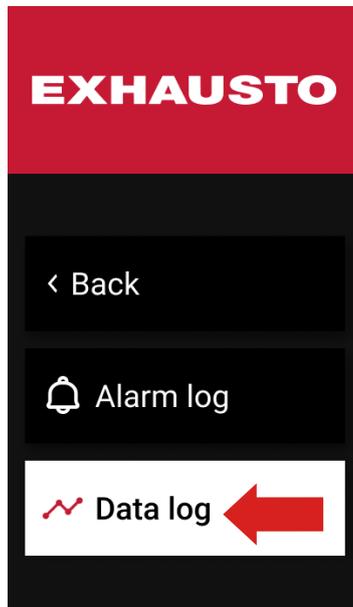
Note, that you can cancel the alarms by clicking the **Cancel alarms** button in the lower right corner.

Under the **History** tab, you will find the previous errors. Under the **Forecast** tab, you can see errors that the system has forecasted to occur within the next 5-30 minutes. When the time for the forecasted alarm has arrived, it will be transferred to the **Active** tab.

Also note: A complete alarm list with settings and corrective actions can be downloaded from the <https://www.exhausto.dk/>.

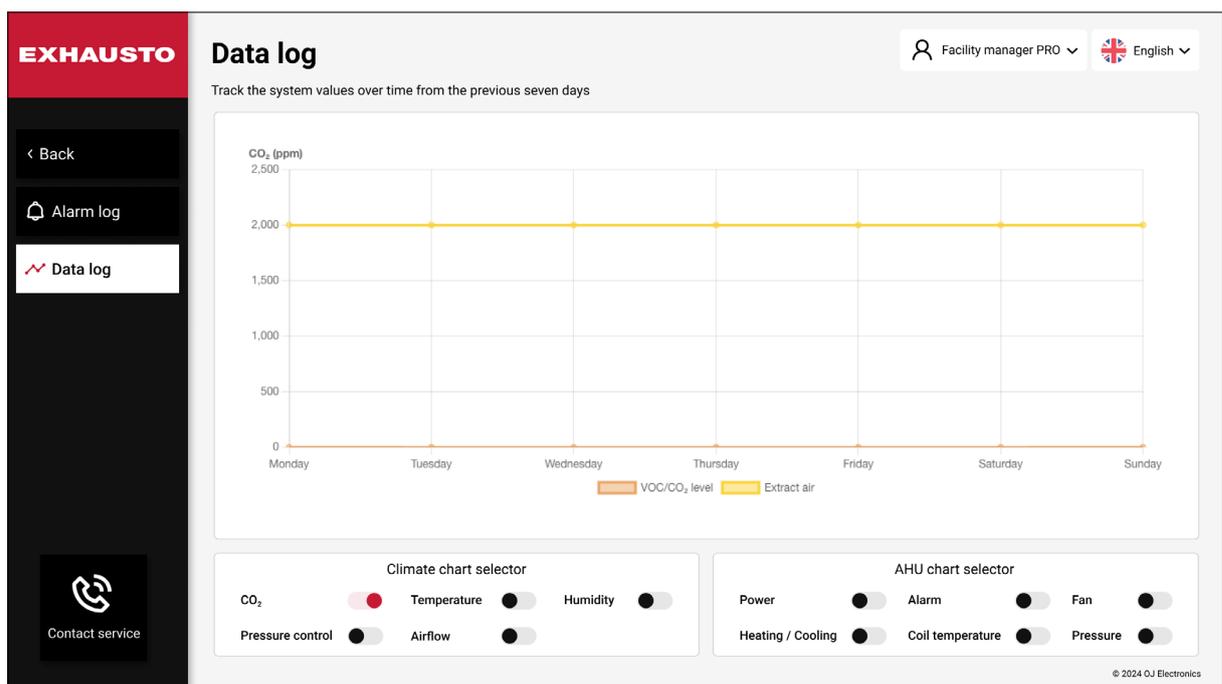
## 5. DATA LOG

You will find the **Data log** under the Alarm log, see below.



The **Data log** is a useful diagnostic tool that gives you a visual representation of selected climate and AHU parameters over time. You can choose between climate parameters (**Climate chart selector**) and other parameters (**AHU chart selector**). These parameters can be displayed over time in a chart.

Each chosen parameter will be displayed on the Y-axis, while the X-axis always represents time. With this tool, you can quickly find and analyse anomalies in the system's performance. It can help you debug the system and improve its performance in key areas. The Data log provides you with a valuable amount of runtime data that eases your job as a facility manager pro. For example, with the knowledge acquired from analysing the Data log, you can easier and earlier locate faulty or inaccurate system components that need replacement.

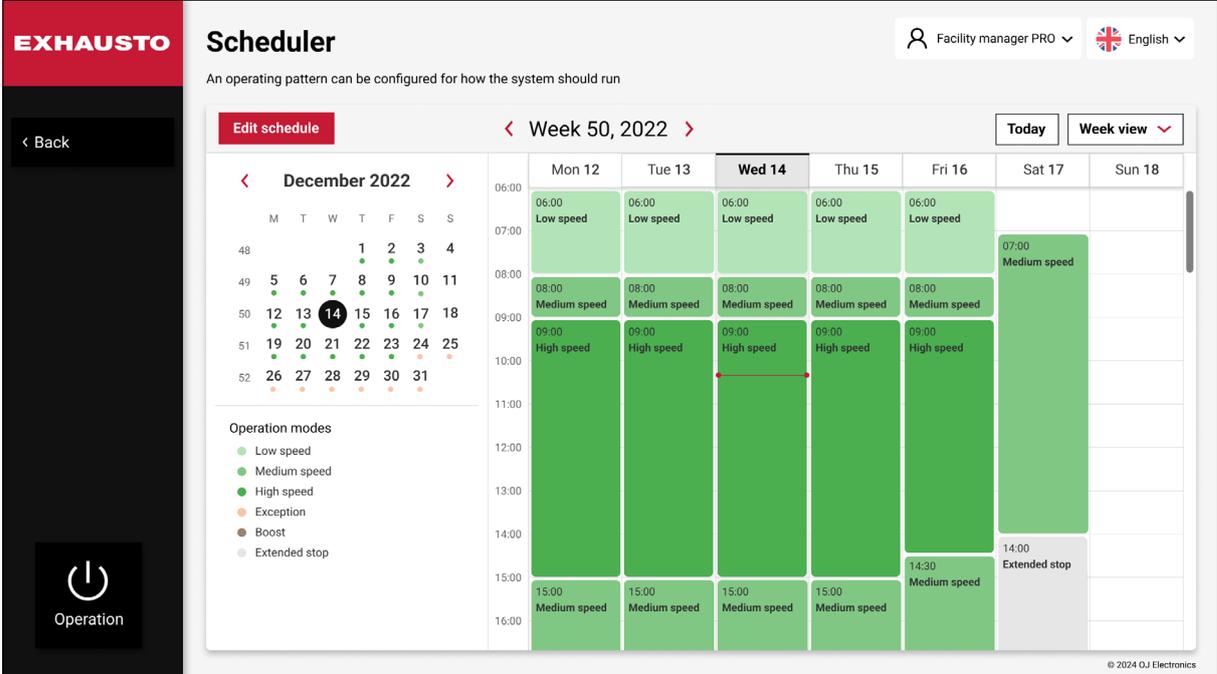


## 6. CONTACT SERVICE

Click on the phone symbol  **Contact service** to find information about how to contact service.

## 7. SCHEDULER

Click on the **Scheduler** icon to open the **Scheduler** planning tool:



**EXHAUSTO Scheduler**

Facility manager PRO | English

An operating pattern can be configured for how the system should run

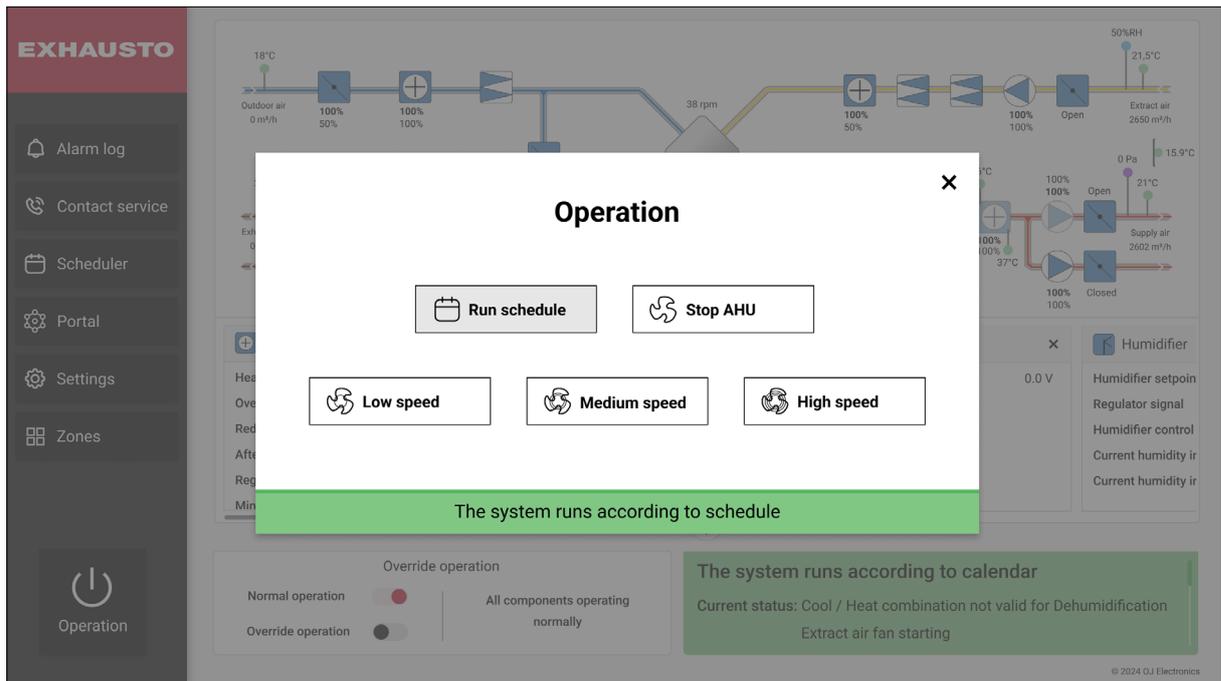
**Week 50, 2022**

	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16	Sat 17	Sun 18
06:00	Low speed						
07:00						07:00 Medium speed	
08:00	Medium speed						
09:00	High speed						
10:00							
11:00							
12:00							
13:00							
14:00						14:00 Extended stop	
15:00	Medium speed	Medium speed	Medium speed	Medium speed	14:30 Medium speed		
16:00							

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### 7.1 Operation

Click on the **Operation** button  to open the **Operation** window.

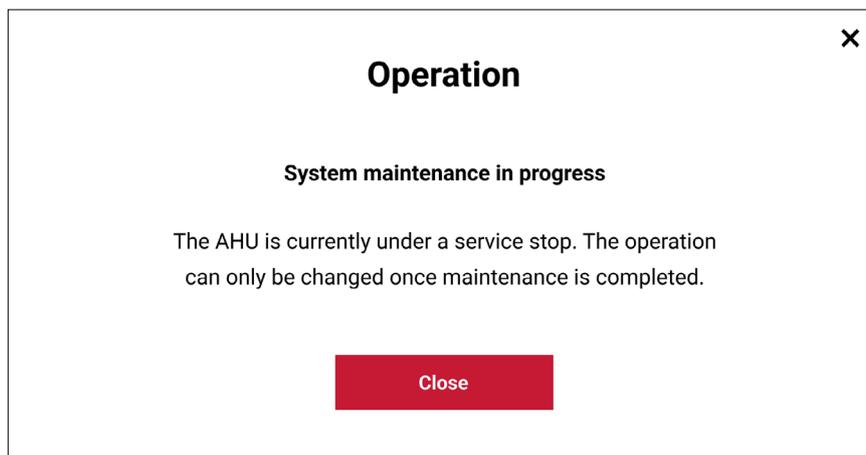


If you click on **Run Schedule**, the HVAC system will run according to schedule.

If you click on **Stop AHU**, the HVAC system will stop, no matter what you have programmed in Scheduler.

If you click on **Low speed**, **Medium speed**, or **High speed**, the system will run permanently on either low, medium, or high speed.

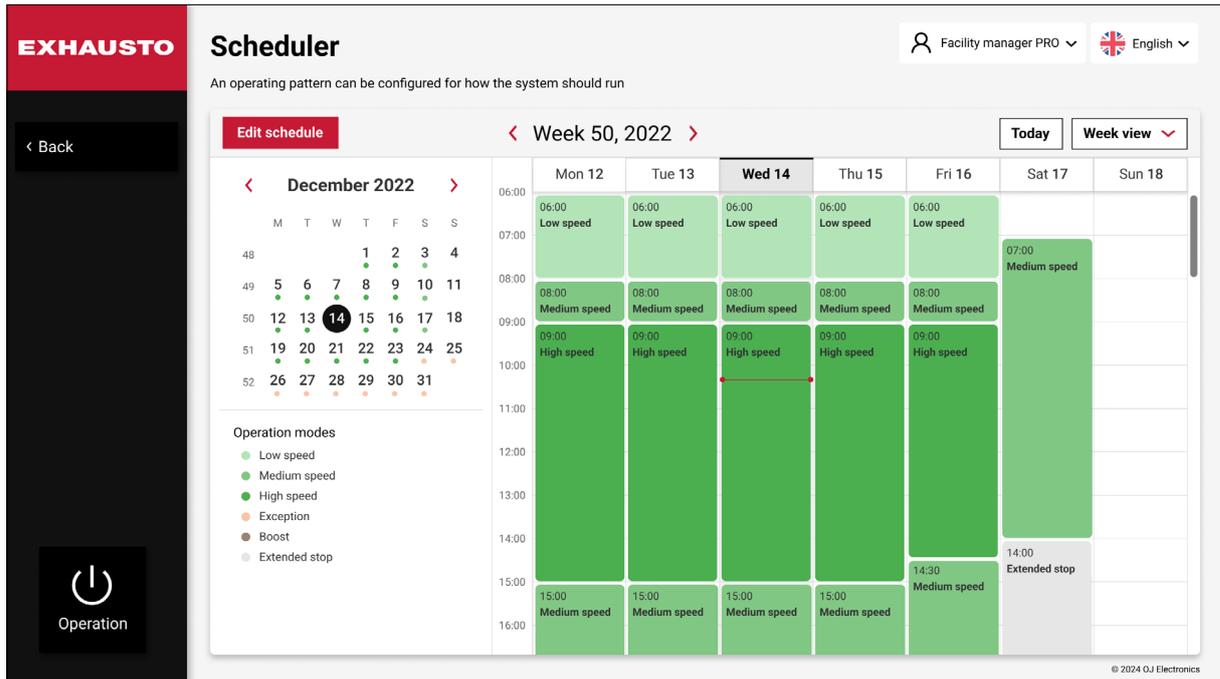
**Note:** If **Service stop** has been activated (see below), and you are using the web interface, you will not be able to change the operation. In this case, you can only see a text about the current status.



**Service stop** can only be activated/deactivated from the operation panel located on the Air Handling Unit, or if your login device has a cable connection to the AHU. Remote access will not be able to start the Air Handling Unit.

**OBS:** A service stop is not a safety stop. You still need to switch off the mains before accessing parts inside the Air Handling Unit.

When you close the **Operation** Window, you will return to the scheduler:



Here you can program the operation modes for the system on a daily, weekly, monthly, and yearly basis. In the example above, we have a school where all Mondays, Tuesdays, Wednesdays, and Thursdays are identical. All Fridays are also identical. Saturdays are alike, and Sundays are alike too.

Monday to Thursday:

Time	Activity
06:00	The school opens for cleaning and preparations with the system starting at low speed.
08:00	The first pupils arrive and the system switches to medium speed.
09:00	All pupils have arrived and the system switches to high speed.
15:00	The first pupils start leaving the building and the system switches to medium speed.
17:00	The system is stopped for the day.

Fridays:

06:00	The school opens for cleaning and preparations with the system starting at low speed.
08:00	The first pupils arrive and the system switches to medium speed.
09:00	All pupils have arrived and the system switches to high speed.
14:30	The first pupils start leaving the building and the system switches to medium speed.
17:00	The system is stopped for the day.

Saturdays:

07:00	The school's library is open, and the system starts up at medium speed.
14:00	The system is stopped for the day.

Sundays: The system is stopped during the entire day.

**Operation modes explained:**

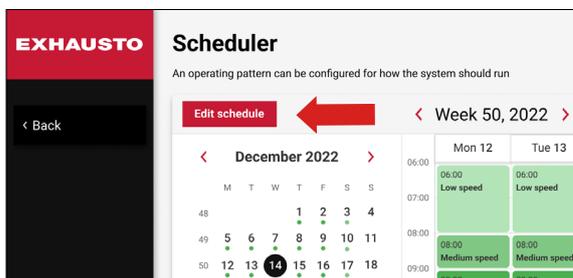
- **Low speed:**  
The system runs at the lowest air exchange setpoint and consumes the least amount of energy.
- **Medium speed:**  
The system runs at the medium air exchange setpoint, and it will also have a medium energy consumption.

- **High speed:**  
The system will run according to the highest air exchange setpoint, and it will secure the best air quality.
- **Exception:**  
Exceptions are periods (or days) when the system is not running the usual schedule. This can be holidays or special events.
- **Boost:**  
In Boost mode the system runs at high speed for a limited period to quickly achieve a noticeable improvement in air quality and temperature.
- **Extended stop:**  
Extended stop is an alternative to a complete stop. In Extended stop, the system can be activated under 3 circumstances:
  - 1) When summer night cooling is activated. Summer night cooling is a cooling mode that seeks to benefit from the lower night-time temperatures to obtain cooling while maintaining a low energy consumption.
  - 2) When a PIR (motion) sensor detects movements and initiates a system start.
  - 3) When Night heating is activated. Night heating is used to keep the building warm during the night if the ventilation system is the only heat source in the building.

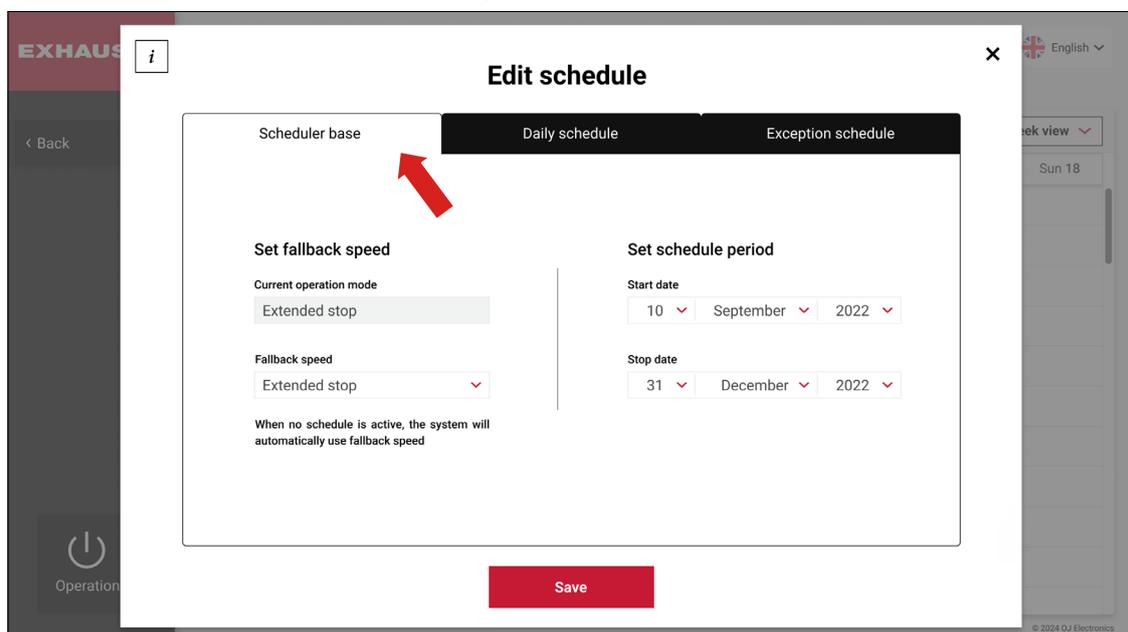
In the Scheduler, each operation mode has its own colour. By taking a glance at the colour of the time frames in the calendar, you immediately know what operation mode is active. By clicking on the **Week view** icon (in the upper right corner) it is possible to switch between three views: **Week view**, **Year view**, and **Exception view**.

If you click on **Today**, you will see the HVAC program for today. If you prefer to see the HVAC program for the whole week, then you must choose **Week view**.

## 7.2 Edit schedule



This is where you define the different periods and apply a suitable operation mode. When you click **Edit schedule**, you will see the following screen:



### 7.3 Scheduler base

If you click on **Scheduler base** (on the previous page) you will see 4 sections:

#### Current operation mode

Here, you see the current operation mode. In the above example, **Extended stop** has been activated.

#### Fallback speed

Fallback speed is the operation mode the system will run when nothing else has been programmed. As a facility manager pro, you can use this setting to define whether **Stop, Low speed, Medium speed, High speed, or Extended stop** shall be used as fallback speed.

#### Start date

On the right side of the Scheduler base, you can set the start date for the scheduled period.

#### Stop date

This is where you set the stop date for the scheduled period.

### 7.4 Daily schedule

The daily schedule is used to define the hourly event periods on a chosen weekday. It can have a maximum of 6 events per day.

**Note:** You can always click on the **i** button  in the upper left corner to get information relating to the current screen.

This screen is where you program the daily operations. You can add up to 6 different events for one day. In the example above, the system is being programmed to run Event 1 in Low speed from 06.00 to 08.00 o'clock. Event 2 goes from 08.00 until 09.00 where the system must run at medium speed, and so on. When you have finished programming the events for a day, you may either copy this daily calendar to other weekdays or to whole weeks.

**Tip:** Use the function **Copy Monday to Weekdays** if several weekdays are alike. Or use **Copy Monday to Whole week** if all days are alike. This will save you some time.

## 7.5 Exception schedule

Scheduler base
Daily schedule
Exception schedule

Exception 1

Exception 2

Exception 3

Exceptions method

Date ▼

Start date

01 ▼ January ▼ 2022 ▼

Weekday

Monday ▼

You can program 3 exceptions, that is, where the system is not running the usual schedule. If several exceptions affect the same time period, exception 1 will take priority over exception 2. Exception 2 will take priority over exception 3.

## 8. PORTAL

If you click the **Portal** button, you will gain access to an overview page where you can monitor all air handling units in the system.

Note, that the **Portal** button is only visible if other HVAC systems have been configured.

EXHAUSTO

Portal

Facility manager PRO ▼
English ▼

Monitor all Air Handling Unit in the local network

◀ Back

Status
Other websites

No. ⚙	Identity of AHU ⚙	Status ⚙	Setpoint (°C)	Current temp. (°C)	Current operation
5	<a href="#">Administration Building</a>	Alarm	21.1	0.0	Alarm stop
1	<a href="#">10.1.33.4</a>	No connection			
4	<a href="#">46.32.33.42</a>	No connection			
2	<a href="#">Novema testagg.</a>	OK	22.0	22.0	Manual low speed
3	<a href="#">Factory 1</a>	OK	20.0	0.0	Manual low speed

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If other EXcon+ AHUs in the local network have been configured, you can see if an alarm has been raised for these AHUs. You can also click directly on the link to these AHUs and go to these web pages to perform the monitoring or corrective actions.

## 8.1 The Status tab

If you have several AHUs in one building, all AHUs (together with various other information) will be listed here. Here you can see:

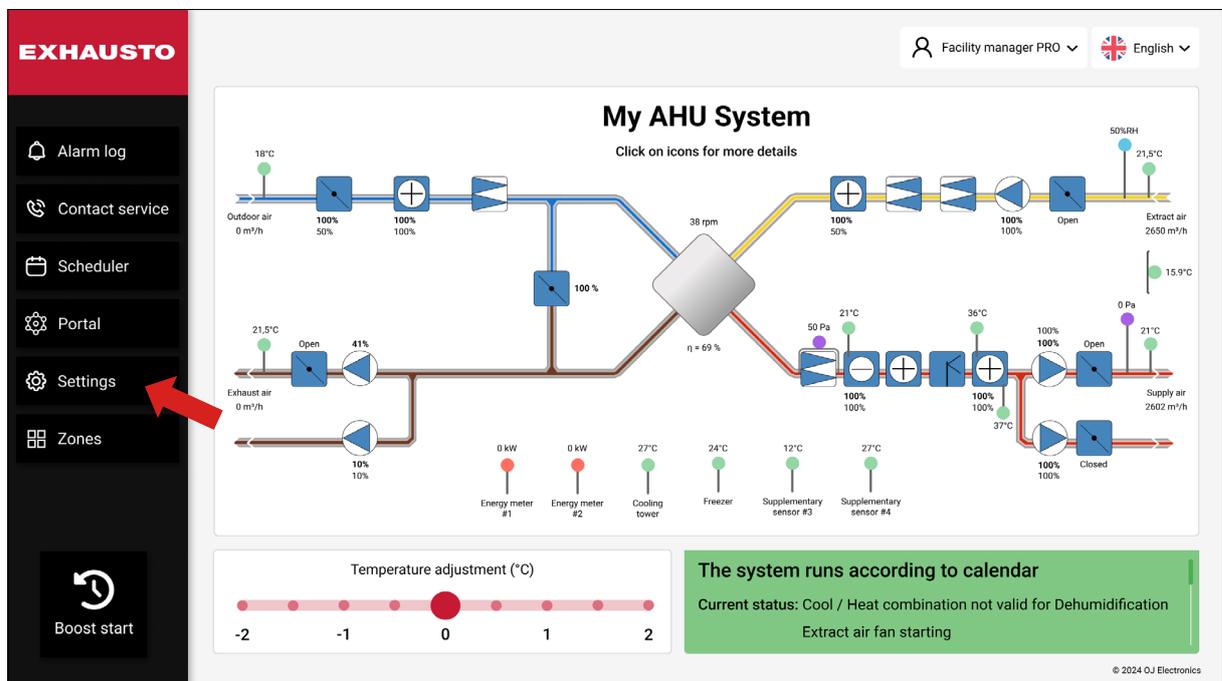
1. The name of the relevant AHU
2. The alarm status for the AHU
3. The AHU's temperature setpoint
4. The AHU's current temperature
5. The AHU's current operation mode

If you click on the names of the listed AHUs, you will go directly to their web pages.

## 8.2 Other websites screen

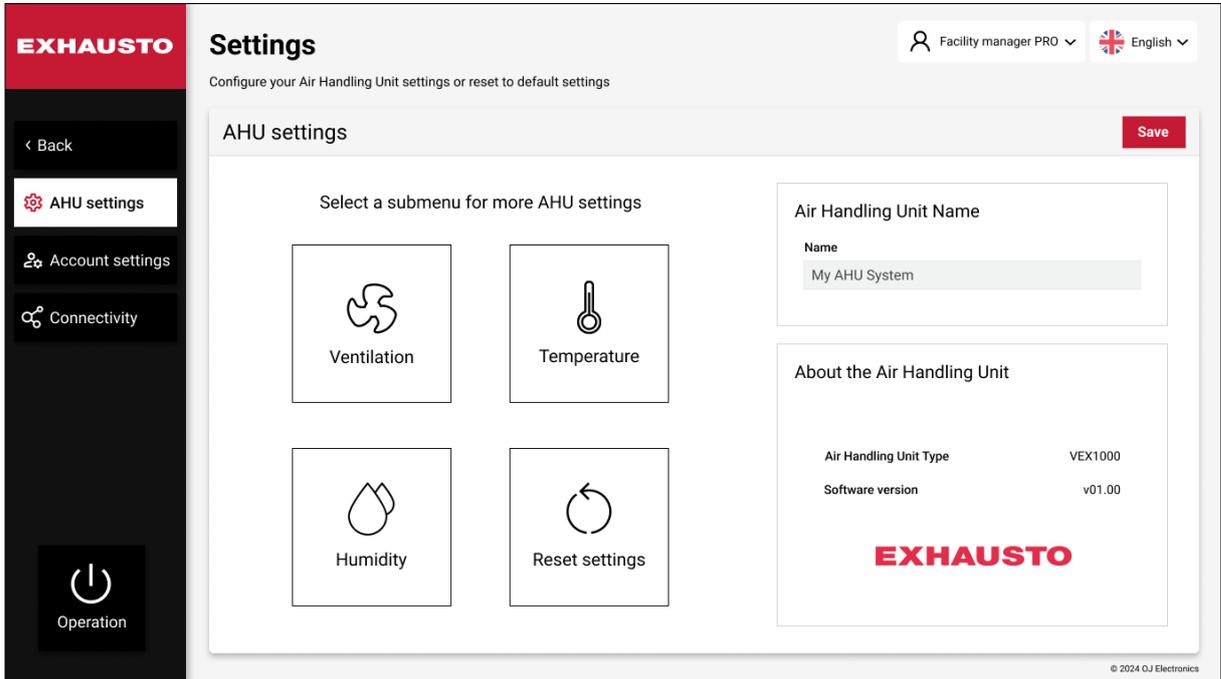
Here you may find links to relevant websites, which you can use as bookmarks for easy access to further information.

## 9. SETTINGS



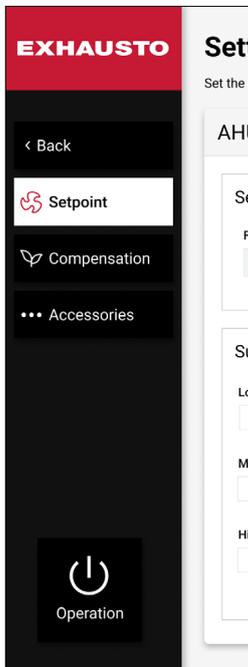
### 9.1 AHU Settings

Under **Settings**, you can gather much useful information and perform a wide range of adjustments. The **AHU Settings** section contains 4 main categories: **Ventilation**, **Temperature**, **Humidity**, and **Reset settings**.



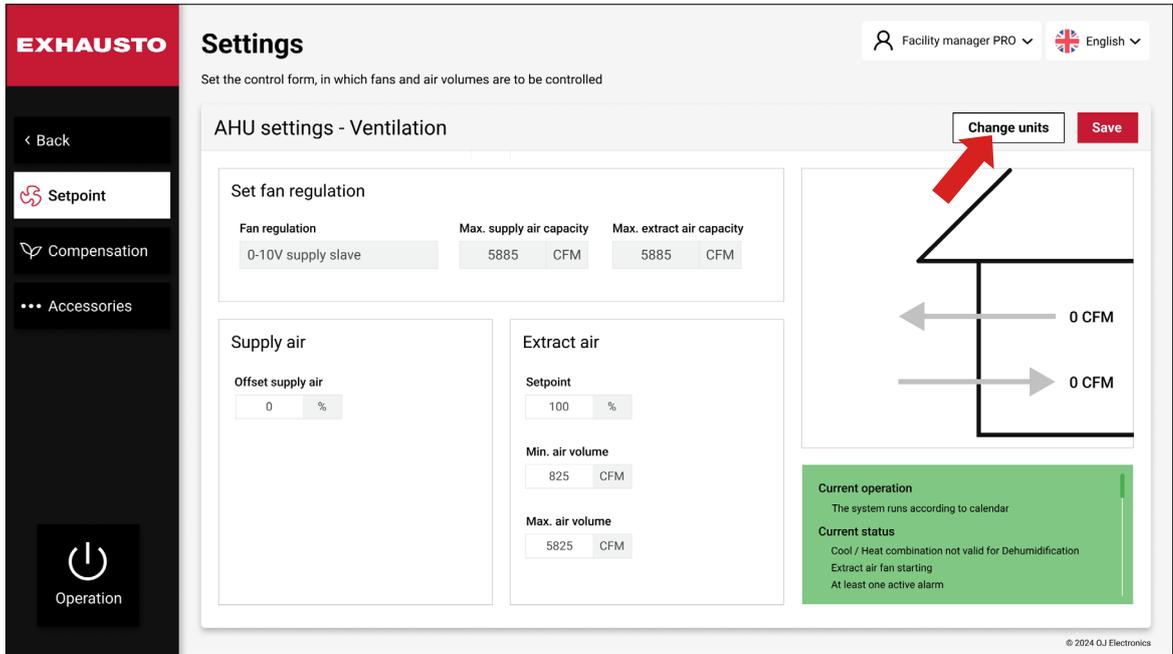
#### 9.1.1 Ventilation

When you enter the **Ventilation settings** section, you are presented with the **Setpoint** window as well as **Compensation** and **Accessories**. See below:



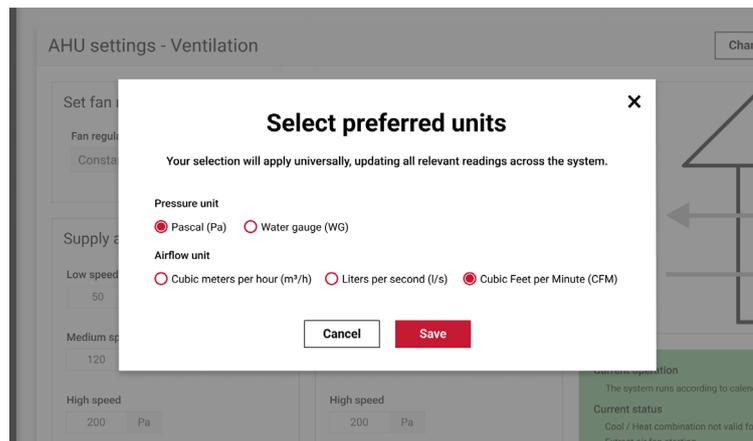
**9.1.1.1 Setpoint**

In the **Setpoint** window you can see which fan regulation method is active. The sketched house to the right illustrates the ventilated facility. You will notice that the “house” is a dynamic picture showing the present operating conditions for the ventilated facility. If **Constant pressure** is set as fan regulation method, the current supply and exhaust pressures inside the “house” will be shown in the pressure unit selected under **Pressure unit** (Pa or WG). You can change the pressure unit with the **Change units** button, see the red arrow below. Likewise, if **Constant air flow** is set as fan regulation method, the depicted airflow inside the “house” will be shown in the airflow unit, that you have selected under **Airflow unit** (m3/h, l/s, or CFM). You can also change the air flow unit with the **Change units** button, see below.



**Change units:**

Click on the Change units button if you wish to change the pressure and airflow units, see below:



**Airflow unit:**

Here you can select which unit shall be used when displaying the airflow: m3/h, l/s, or CFM (Info: CFM is an abbreviation for cubic feet per minute).

**Pressure unit:**

Pascal or WG (Inch water gauge)

**The Set fan regulation section:**

Constant pressure is the default fan regulation method in most HVAC systems. Below, you will find some background information about the supported fan regulation methods.

### 9.1.1.2 The fan regulation methods explained

#### Constant pressure

The Supply and Extract fan speeds are individually controlled to maintain duct air pressure according to the setpoints (Pa, WG). The duct pressure is maintained, even if Variable Air Volume (VAV) dampers have been installed in the ducts.

\* The Supply and Extract duct pressures shall be measured by pressure transmitters.

#### Constant airflow

The Supply and Extract fan speeds are individually controlled to maintain duct air volume according to the setpoints (m<sup>3</sup>/h, l/s, CFM). Increased internal pressure drops due to filter clogging are automatically compensated.

\* The Inlet cone pressure in both fans shall be measured by pressure transmitters.

#### Extract air slave

The Supply fan speed is controlled to maintain duct air pressure according to the setpoint (Pa, WG). The Extract fan speed is controlled to maintain the same Extract air volume as measured in the Supply air duct, with an optional offset of up to +/-50%. Balanced ventilation is maintained, even if Variable Air Volume (VAV) dampers have been installed in the supply duct, and none have been installed in the extract duct.

\* The Supply duct pressure shall be measured by a pressure transmitter.

\* The Inlet cone pressure in both fans shall be measured by pressure transmitters.

#### Supply air slave

The Extract fan speed is controlled to maintain duct air pressure according to the setpoint (Pa, WG). The Supply fan speed is controlled to maintain the same Supply air volume as measured in the Extract air duct with an optional offset of up to +/-50%. Balanced ventilation is maintained even if Variable Air Volume (VAV) dampers have been installed in the extract duct, and none have been installed in the supply duct.

\* The Extract duct pressure shall be measured by a pressure transmitter.

\* The Inlet cone pressure in both fans shall be measured by pressure transmitters.

#### Constant VOC/CO<sub>2</sub>

The Extract fan speed is controlled to maintain Extract air quality according to the setpoint (ppm). The air volume decreases to the minimum airflow setpoint in case of low VOC/CO<sub>2</sub>. The Supply fan speed is controlled to maintain the same Supply air volume as measured in the Extract air duct with an optional offset of up to +/-50%. Balanced ventilation is maintained at all operation points.

\* The Inlet cone pressure in both fans shall be measured by pressure transmitters.

\* The Extract duct or room Air Quality shall be measured by a VOC or CO<sub>2</sub> transmitter.

#### Mixing dampers

If your Air Handling Unit includes Mixing dampers, the VOC/CO<sub>2</sub> level is controlled by recirculation.

This reduces the heating/cooling energy consumption when the CO<sub>2</sub> levels are fine.

**Recirculation VOC/CO2**

The system must be configured with a VOC or CO2 sensor, either positioned in the room as a room sensor or in the extract duct as a duct sensor.

- \* If the CO2 concentration in the room rises, the recirculation damper is regulated in a modulated way (0 - 100%) towards the closed position. The Outdoor air damper is regulated towards 100% open – on the condition that the “Maximum outdoor air” setting has not been reached.
- \* If the CO2 level in the room falls, the recirculation damper is regulated in a modulated way (0 - 100%) towards the open position. The Outdoor air damper is regulated towards closed – on the condition that the “Minimum outdoor air” setting has not been reached.

**Fan optimizer**

The Supply and Extract fan speeds are individually controlled to maintain duct air volume according to the Fan optimizer 0-10V input signals. Increased internal pressure drops due to filter clogging are automatically compensated.

- \* The Inlet cone pressure in both fans shall be measured by pressure transmitters.
- \* The air volume setpoints shall be controlled by a 0-10V signal, for example from Belimo COU24-A-MP.

**Fan optimizer slave**

The Supply fan speed is controlled to maintain duct air volume according to the Fan optimizer 0-10V input signals. The Extract fan speed is controlled to maintain the same Extract air volume as measured in the Supply air duct with an optional offset of up to +/-50%. Balanced ventilation is maintained even if Variable Air Volume (VAV) dampers have been installed in the supply duct and none have been installed in the extract duct.

- \* The Inlet cone pressure in both fans shall be measured by pressure transmitters.
- \* The Supply air volume setpoint shall be controlled by a 0-10V signal, for example from Belimo COU24-A-MP.

**Green Zone**

The Supply and Extract fan speeds are individually controlled to maintain optimized duct air pressure according to setpoints from an OJ ZoneMaster in an advanced dual duct VAV system.

- \* The OJ ZoneMaster is a part of an OJ Electronics GreenZone system.
- \* Fan setpoints are communicated by Modbus RS485 between the EXcon+ and the OJ ZoneMaster.

**Green Zone slave**

The Supply fan speed is controlled to maintain optimized duct air pressure according to setpoint(s) from an OJ ZoneMaster in a VAV system. The Extract fan speed is controlled to maintain the same Extract air volume as measured in the Supply air duct with an optional offset of up to +/-50%. Balanced ventilation is maintained even if Variable Air Volume (VAV) dampers have been installed in the supply duct, and none have been installed in the extract duct.

- \* The Inlet cone pressure in both fans shall be measured by pressure transmitters.
- \* The OJ ZoneMaster is a part of an OJ Electronics GreenZone system.
- \* Fan setpoints are communicated by Modbus RS485 between the EXcon+ and the OJ-ZoneMaster.

**Constant motor speed**

The Supply and Extract fan speeds are individually controlled by fixed setpoints. Duct pressure and air volume are unregulated and depend on actual loads and internal pressure drops, for example in filters.

- \* No sensors are required.

**Dynamic pressure (Patented “courbe montante”)**

The Supply and Extract fan pressure setpoints are individually and dynamically adjusted depending on the air flow value in order to compensate for the duct pressure loss. The ductwork pressure loss curve is defined by Min. and Max. duct pressure settings and corresponding Min. and Max. Air flow settings. This avoids excessive duct pressure in VAV systems and saves energy.

Setpoint range: 0 - 5000 Pa depending on the pressure transmitter. 0 - 300.000 m<sup>3</sup>/h, l/s, CFM depending on the max. airflow settings.

The Inlet cone pressure in both fans must be measured by pressure transmitters.

**0-10V Exhaust slave**

The Supply fan speed is controlled to maintain duct air volume according to the 0-10V input signal within the set Air volume range. The Extract fan speed is controlled to maintain the same Extract air volume as measured in the Supply air duct with an optional offset of up to +/-50%. Balanced ventilation is maintained, even if Variable Air Volume (VAV) dampers are fitted in the supply duct, and none are in the extract duct.

- The Inlet cone pressure in both fans must be measured by pressure transmitters.
- The Supply air volume setpoint must be controlled by a 0-10V signal, for example from a potentiometer enabling the user to adjust the fan speed, a temperature transmitter increasing the fan speed at high temperatures, a CO<sub>2</sub> sensor increasing the fan speed at high CO<sub>2</sub> levels, or a VAV 0-10V output.

**0-10V Supply slave**

The Extract fan speed is controlled to maintain duct air volume according to the 0-10V input signal within the set Air volume range. The Supply fan speed is controlled to maintain the same Supply air volume as measured in the Extract air duct with an optional offset of up to +/-50%. Balanced ventilation is maintained, even if Variable Air Volume (VAV) dampers are fitted in the extract duct and none are in the supply duct.

- The Inlet cone pressure in both fans must be measured by pressure transmitters.
- The Supply air volume setpoint must be controlled by a 0-10V signal, for example from a potentiometer enabling the user to adjust the fan speed, a temperature transmitter increasing the fan speed at high temperatures, a CO<sub>2</sub> sensor increasing the fan speed at high CO<sub>2</sub> levels, or a VAV 0-10V output.

**Exhaust backup fan**

In the event of a malfunction of the Exhaust fan, the Exhaust backup fan starts up. In order to balance out the fan wear, the operation automatically alternates between the Exhaust fan and the Exhaust backup fan every 1st Tuesday of each month at 06:00 hours. Alarm signals must be available from the Exhaust fans.

- The Exhaust backup fan must be of the same type as the Exhaust fan.

**Supply backup fan**

In the event of a malfunction of the Supply fan, the Supply backup starts up. In order to balance out the fan wear, the operation automatically alternates between the Supply fan and the Supply backup fan every 1st Tuesday of each month at 06:00 hours.

- Alarm signals must be available from the Supply fans.
- The Supply backup fan must be of the same type as the Supply fan.

**Max. air capacity:**

Here you can see the maximum air volume your Air Handling Unit is designed for.

## The Supply air section

Both in the **Supply air** and in the **Extract air** section, you can define the **Low speed, Medium Speed, High speed, and Max. airflow**.

Note the dependency between the chosen **Fan regulation** method and the available options in the **Supply** and **Extract air** sections. If for example:

- \* **Fan regulation** is set to **Supply air slave**, the **Supply air** section displays the input field **Offset supply air**. Moreover, the **Extract air** section will then contain the **Low speed, Medium speed, and High speed** fields.

Also, if

- \* **Fan regulation** is set to **GreenZone slave**, the **Supply air** section contains the read-out field **Fan speed** showing the fan speed as a percentage. The **Extract air** section will then contain the input field **Offset extract air** with a percentage value.

Note: The dependencies will become visible if you browse through the fan regulation methods and view their effects on the displayed fields in the **Supply** and **Extract air** sections.

See above for a description of all fan regulation methods.

### 9.1.1.3 Compensation

The compensation function reduces the air exchange rate during periods with low outdoor air temperatures. The purpose of the compensation function is to reduce the amount of energy consumed by the ventilation system, when both the outside air temperature drops, and the absolute humidity in the outdoor air is low. The reduction in the intake of outdoor air means that less outdoor air needs to be heated and the lower intake of dry air also helps maintain the building's humidity levels. In the **Compensation** window shown below, you can define the relation between temperature drop and the reduction in the intake of outdoor air.

In the diagram on the right side of the picture below, the compensation is shown by means of a curve. It displays how the ventilation rate is reduced at low outdoor temperatures.

The screenshot shows the 'Settings' page for 'AHU settings - Ventilation'. The left sidebar contains navigation options: Back, Setpoint, Compensation (selected), and Accessories. The main content area is titled 'Set compensation of ventilation level depending on outside temperature'. It includes a 'Save' button in the top right.

**Set outdoor air temperature compensation of ventilation** (toggle is on):

Current compensation	0.0 %	Max. compensation	25 %
Outdoor air temperature	9.8 °C	Min. outdoor air temp.	-20.0 °C
		Max. outdoor air temp.	0.0 °C

**Supply air** (Current value): 0 Pa

**Extract air** (Current value): 0 Pa

**Graph:** The graph plots 'Ventilation rate' (y-axis, 75% to 100%) against 'Outdoor air temperature' (x-axis, -20.0 °C to 0.0 °C). The curve shows a constant 75% ventilation rate until -20.0 °C, then increases linearly to 100% at 0.0 °C, and remains constant at 100% for temperatures above 0.0 °C. A point is marked at 0% @ 9.8 °C.

**Current operation:** The system runs according to calendar.

**Current status:** Cool / Heat combination not valid for Dehumidification, Extract air fan starting, At least one active alarm.

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### 9.1.1.4 Accessories

The screenshot shows the 'Settings' page for 'AHU settings - Ventilation'. The left sidebar contains navigation options: Back, Setpoint, Compensation, and Accessories (selected). The main content area is titled 'Set additional control functions for ventilation'. It includes a 'Save' button in the top right.

**Set alarm relay function:**

Alarm relay	User relay
A-alarm	B-alarm

The digital output, configured for the User relay, follows B-alarms.

**Set run-on time on external high input:**

Run-on time: 0 minutes

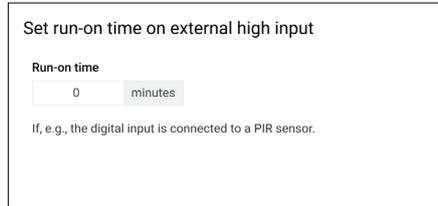
If, e.g., the digital input is connected to a PIR sensor.

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### The **Set alarm relay** function

The controller has two digital outputs that can be customized as an **Alarm relay** and a **User relay**. This window shows the current setting defining the conditions under which these relays operate. As a facility manager pro, you can change the User relay settings.

### The section **Set run-on time on external high input**



A PIR sensor (motion sensor) can automatically start or increase ventilation from the low speed to the high speed setpoint when there are people present.

\* A PIR sensor must be connected to the Air Handling Unit controller.

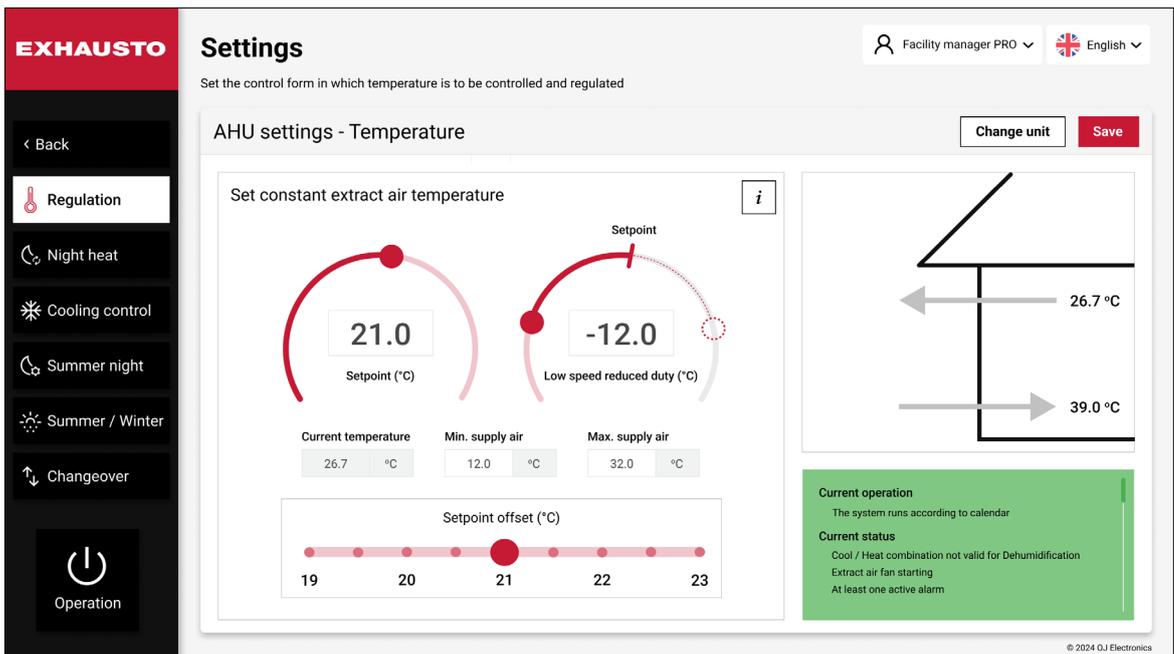
**Run-on time** is the period during which the Air Handling Unit operation stays at high speed after a trigger event from a PIR sensor ends. A passing person triggering the PIR sensor will start the Air Handling Unit for a short time. If the person returns within for example, 4 minutes, the Air Handling Unit will start again. Starting and stopping is prevented if the Run-on time is set to 5 minutes.

## 9.1.2 Temperature

### 9.1.2.1 Regulation

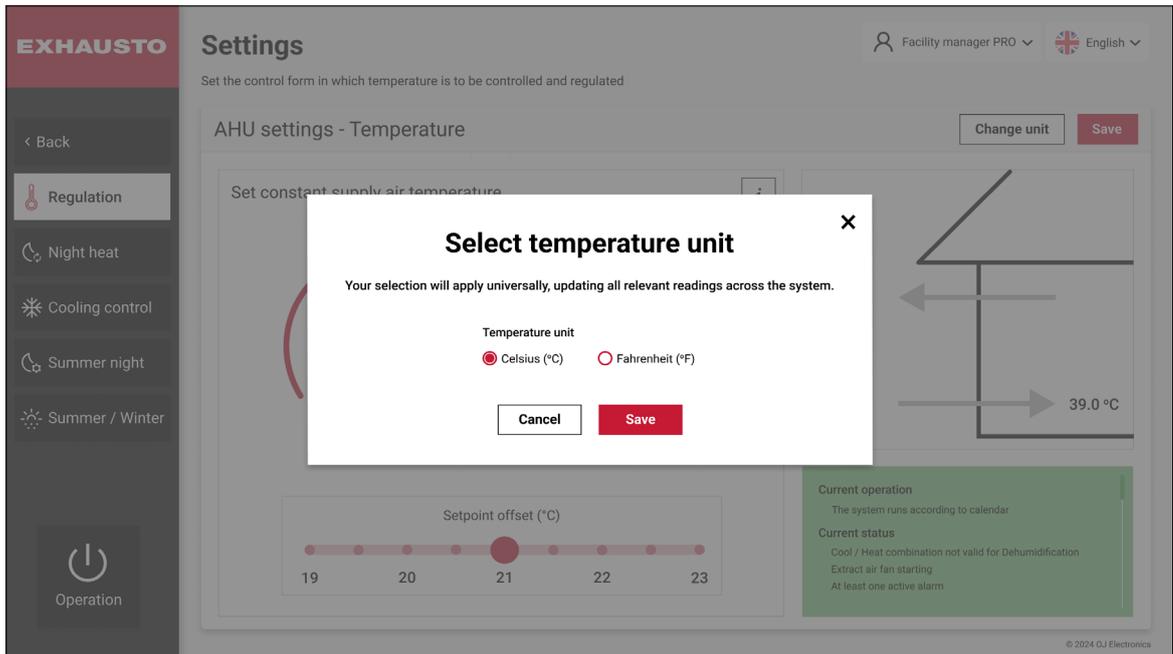
The temperature control settings are used to control and regulate a range of temperature-related parameters.

If an external temperature setpoint has not been configured, the following screen will be shown:



### Change unit

Click on the **Change unit** button if you wish to change the temperature unit from Celsius to Fahrenheit or vice versa, see below:

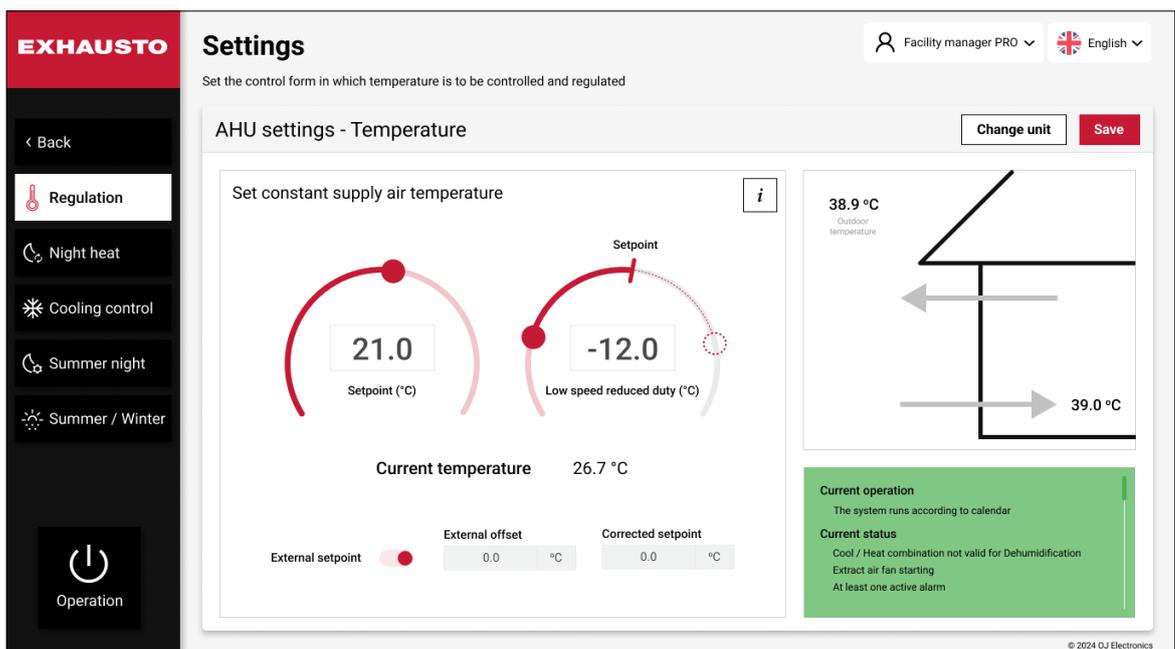


### Temperature settings

You need to know which **Temperature regulation** method must control the temperature settings. If for example, you choose **Constant extract air**, you have the options shown on the previous page.

In the middle of the screen, you can specify the temperature setpoint for the current temperature control mode.

If you have configured an external temperature setpoint, the following screen will be visible:



When activating the **External setpoint**, the **External offset** and **Corrected setpoint** become visible. The External offset is set by the small flywheel on the remote temperature control panel.

The **External outdoor air temperature sensor** is to be activated, if there is a physical external outdoor air temperature sensor installed in the HVAC system, and you want its temperature reading to be used.

### 9.1.2.2 Night heating

**EXHAUSTO** Settings

Secure room temperature when the AHU is in scheduler stop mode

Facility manager PRO English

Back

Regulation

**Night heat**

Cooling control

Summer night

Summer / Winter

Changeover

Operation

Change unit Save

Set night-time heating via recirculation

Current temperature: 38.9 °C Temperature setpoint: 21.0 °C

Start room temperature: 10.0 °C Stop room temperature: 20.0 °C Fan speed: Low speed

When the conditions for the start-up of the night heating sequence are fulfilled, the AHU starts with the recirculation damper fully opening. The recirculated air will be heated by the heating coil.

22.0 °C

39.0 °C

**Current operation**  
The system runs according to calendar

**Current status**  
Cool / Heat combination not valid for Dehumidification  
Extract air fan starting  
At least one active alarm

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Night heating is used to keep the building warm during the night if the ventilation system is the only heat source in the building.

The AHU starts, and the room air is recirculated. If the room temperature drops, the room air is also heated.

**Info:** During recirculation, the outdoor air damper and the exhaust air damper are closed. The supply air damper, the room air damper, and the recirculation damper are all open.

**Note:** The room temperature must be measured by a room temperature sensor.

In the **Night heat** window, you can set up the system to make use of recirculation heating. You must slide the round button by the arrow, to the right, to activate this function.

In the example above, recirculation is set to start, when the room temperature falls below 10 °C. Also, if the room temperature exceeds 20 °C, the recirculation function is no longer needed, and therefore, it will be deactivated.

### 9.1.2.3 Cooling Control

**EXHAUSTO Settings**  
Set cooling and heating conditions to control active cooling activation

Facility manager PRO English

← Back

Regulation

Night heat

**Cooling control**

Summer night

Summer / Winter

Changeover

Operation

**AHU settings - Temperature** Change unit Save

**Set fan regulation**

Current temperature: 15.9 °C

Cold recovery: Yes

Speed increase: 25 %

Current increase: 0 %

Forced cooling:

**Heat pump**

Outdoor temp. 4 stop: 14 °C

Outdoor temp. 3 stop: 16 °C

Outdoor temp. 2 stop: 18 °C

Outdoor temp. 1 stop: 20 °C

**DX cooling**

Outdoor temp. 1 stop: 24 °C

Min. supply air: 12.0 °C

Outdoor temp. 2 stop: 26 °C

Outdoor temp. 3 stop: 28 °C

Outdoor temp. 4 stop: 30 °C

Heat pump Compressor stops DX cooling

14 °C 16 °C 18 °C 20 °C 24 °C 26 °C 28 °C 30 °C

Outdoor air temperature

**Current operation**  
The system runs according to calendar

**Current status**  
Cool / Heat combination not valid for Dehumidification  
Extract air fan starting  
At least one active alarm

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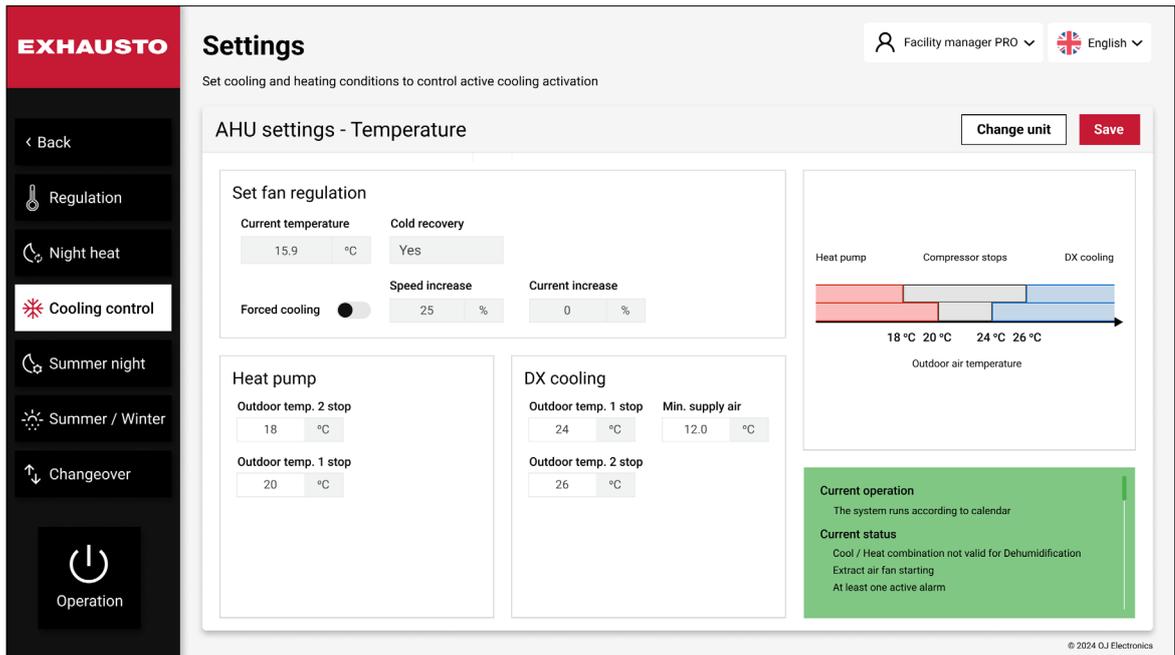
The overall purpose of the configuration options above is to obtain a desirable balance between energy consumption and room comfort.

Notice, that the dialog box above has a dynamic design: It varies depending on the number of compressors installed in the system. In the above configuration you have a system with a heat pump, 4 compressors and a DX cooling coil.

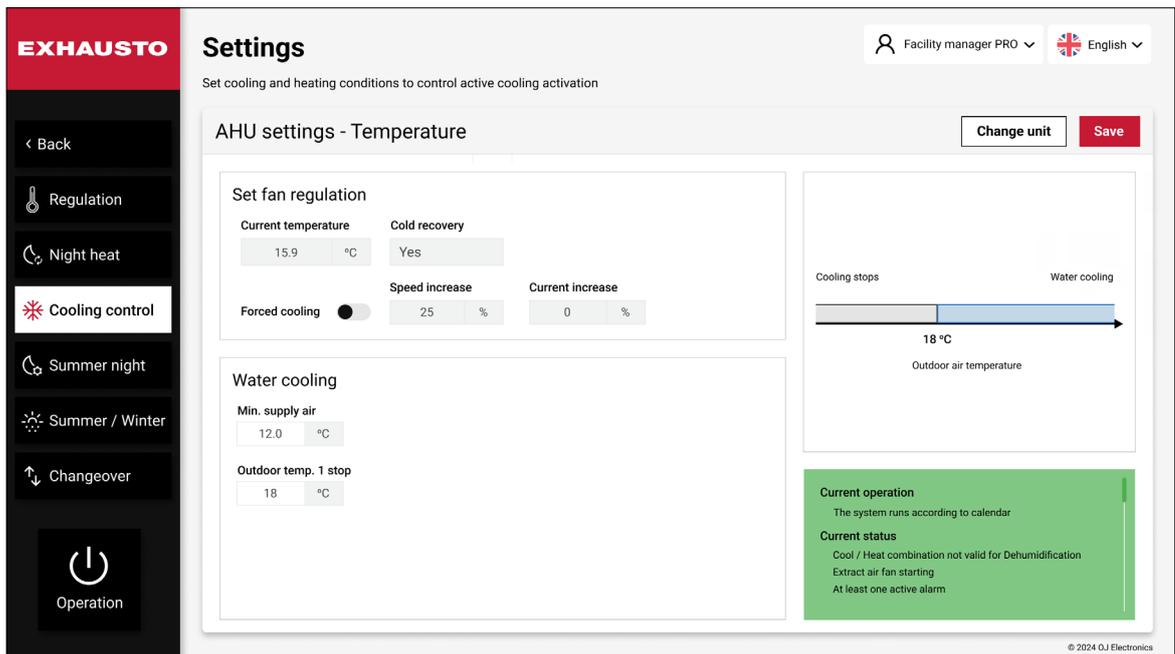
In the **Heat pump** and **DX cooling** sections, you can define outdoor temperature setpoints, that determine when the Heat pumps and cooling compressors will be activated. In the example shown, the first heat pump compressor starts when the outdoor air temperature falls below 20 °C. This is defined in the **Outdoor temp. 1. stop** box (see the arrows). The second compressor will be activated below 18 °C, that is when the outside temperature drops further. This is also visualized in the red, grey, and blue diagram on the right.

In the **DX cooling** section, the opposite takes place. The first DX cooling compressor will be activated when the outdoor temperature (**Outdoor temp. 1. stop**) exceeds 24 °C. The second compressor will be activated above 26 °C, and so on for the remaining 2 compressors. Notice, that not all compressors need to be active when the system is running.

If the HVAC system only comprises 2 compressors, the dialog box will look like this:



If a water-based cooling coil is integrated in the system, the dialog box will also change. Then it will look like this:



### Set fan regulation

#### Set fan regulation

<b>Current temperature</b>	<b>Cold recovery</b>	
15.9 °C	Yes <span style="color: red;">▼</span>	
<b>Forced cooling</b> <input checked="" type="checkbox"/>	<b>Speed increase</b>	<b>Current increase</b>
	25 %	25 %

In the **Set fan regulation** window shown above, the **Current temperature** is shown. Next to the **Current temperature**, you can see whether the heat exchanger will be used for cold recovery or not.

If you activate **Forced cooling** just below, the airflow will increase if cooling is active. This will allow more heat to be removed from the building. Here, you also see the **Current increase**, and you can set the **Speed increase** in percent.

### 9.1.2.4 Summer night

EXHAUSTO

Settings

Facility manager PRO English

Set the conditions in which the summer night function should be active

< Back  
 Regulation  
 Night heat  
 Cooling control  
Summer night  
 Summer / Winter  
 Changeover  

⏻  
 Operation

#### AHU settings - Temperature

Change unit Save

**Set summer night cooling**

Current room temp.	Min. supply air temp.	Setpoint supply air fan	Setpoint exhaust air fan
22.0 °C	10.0 °C	50 Pa	50 Pa

Heating countdown **60:00** When the heating countdown reaches zero, summer night cooling will not be activated. The countdown will reset to 60 minutes the next day at noon.

**Set summer night cooling conditions**

Min. room temperature	Max. room temperature	Min. outdoor temperature
20.0 °C	23.0 °C	12.0 °C

Start time: 23:00 Stop time: 06:00

Enable in low speed  Summer night cooling is allowed during Scheduler Extended stop and Low speed operation.

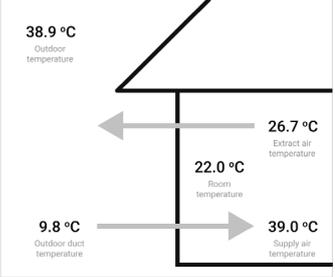
38.9 °C Outdoor duct temperature

26.7 °C Extract air temperature

22.0 °C Room temperature

9.8 °C Outdoor duct temperature

39.0 °C Supply air temperature



**Current operation**  
The system runs according to calendar

**Current status**  
Cool / Heat combination not valid for Dehumidification  
Extract air fan starting  
At least one active alarm

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#### Summer night cooling: Standard sensors

Cold outside air during the night is utilized for energy-effective cooling and increased comfort. Summer night cooling starts a 10-minute temperature test run once every night if the conditions are met.

\* Outdoor Air, Supply Air, and Extract Air temperatures shall be measured by duct temperature sensors (PT-1000).

#### Summer night cooling: Additional sensors

Cold outside air during the night is utilized for energy-effective cooling and increased comfort. Summer night cooling starts and restarts anytime during the night if the conditions are met.

- \* Supply Air temperatures shall be measured by duct temperature sensors.
- \* Outdoor Air shall be measured by a dedicated Outdoor temperature sensor outside the ducts.
- \* Room temperature shall be measured by a dedicated room temperature sensor outside the ducts.

**aldes** | **EXHAUSTO**

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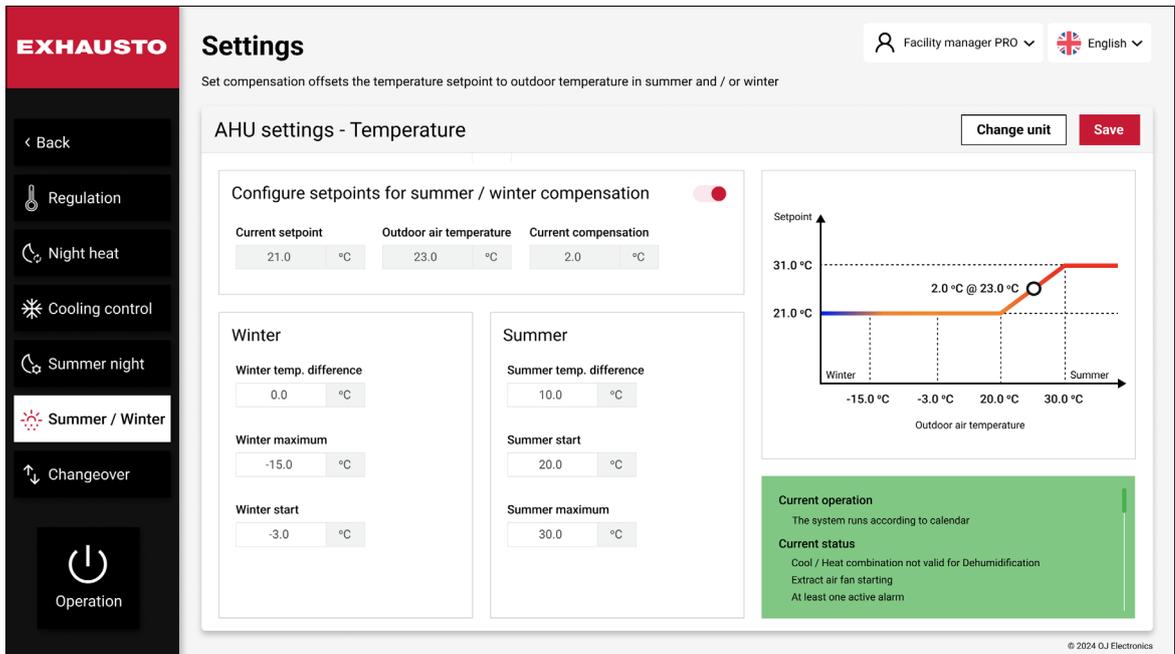
**The Summer night cooling only starts when:**

- \* **Schedule** is selected, AND the AHU is in the status **Stop** or **Low speed**.
- \* There was less than 60 minutes of heating demand between Summer night cooling Stop time and 12.00 noon, during the latest operation period.
- \* The room temperature is above the set **Max. room temperature**.
- \* The Outdoor temperature is a minimum of 2 °C below the Room/Extract temperature.
- \* The Outdoor temperature is above the set **Min. Outdoor temperature**.
- \* The set **Start time** has been passed.

**The Summer night cooling will stop when:**

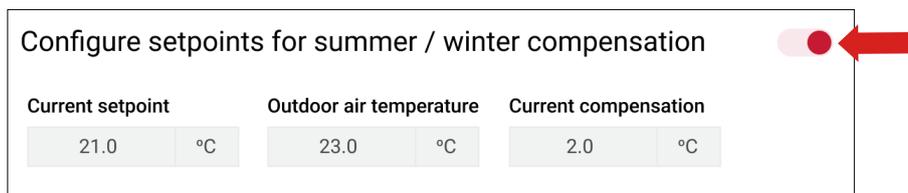
- \* Scheduler sets the AHU in the status **Low speed, Medium speed, or High speed**.
- \* The Operation mode is changed to Stop, **Low speed, Medium speed, or High speed**.
- \* The room temperature is below the set **Min. room temperature**.
- \* The Outdoor temperature is not below the Room/Extract temperature.
- \* The Outdoor temperature is below the set **Min. Outdoor temperature**.
- \* The set **Stop time** has been passed.
- \* The Supply Air temperature is below the set **Min. supply air temp.**

**9.1.2.5 Summer / Winter**



The Summer/Winter compensation adds an offset to the temperature setpoint depending on the current Outdoor temperature.

When clicking the **Configure setpoints for Summer / Winter compensation** button, it is possible to set temperature compensation parameters for summer and winter operations.



**Summer/winter compensation** can be activated when sliding the round button in the upper right corner to the right. When selected, temperature setpoint compensation offsets will be according to the settings in the **Summer** or **Winter** sections. The difference will be visually reflected in the diagram on the right.

Please note: The function is only available when one of the following temperature regulation methods is in use:

- Constant supply air
- Constant extract air
- Constant room

Note, that Summer / Winter compensation is not available when the temperature regulation method is:

- Supply air slave temperature

The **Winter** section

The temperature setpoint can be increased at low outdoor temperatures. This will help keep a comfortable room temperature if the building envelope has limited insulation.

**Winter temp. difference** – Here you define the maximum winter compensation offset you want to add to the setpoint.

**Winter start** – The outdoor temperature at which the winter compensation function is activated.

**Winter maximum** – This is the outdoor temperature at which the winter compensation level reaches maximum.

**The Summer section**

At high outdoor temperatures, the temperature setpoint can be increased or decreased. An increased temperature setpoint will reduce the risk of causing air conditioning colds and reduce energy spent on cooling.

A decreased temperature setpoint will help keep a comfortable room temperature if the building envelope has limited insulation.

**Summer temp. difference**

Here you define the maximum summer compensation offset, that you want to add to the setpoint. You can enter a positive or a negative value.

**Summer start** - The outdoor temperature at which the summer compensation function is activated.

**Summer maximum** – This is the outdoor temperature at which the summer compensation level reaches maximum.

### 9.1.2.6 Changeover

**EXHAUSTO** Settings

The function can provide ventilation in wintertime and partial or complete room cooling in the summertime

Facility manager PRO English

Change unit Save

Back

Regulation

Night heat

Cooling control

Summer night

Summer / Winter

Changeover

Operation

**AHU settings - Temperature**

Set changeover between summer / winter operation

Current setpoint 21.0 °C Outdoor air temperature 23.0 °C

Summer / Winter changeover  
Outdoor air temperature

The system switches between summer and winter operation based on outdoor air temperature.

Summer room temperature  
Summer start 25.0 °C  
Setpoint 31.0 °C

Winter supply temperature  
Winter start -3.0 °C  
Setpoint 21.0 °C

Setpoint

31.0 °C

21.0 °C

21.0 °C @ 31.0 °C

Winter Summer

-3.0 °C 25.0 °C

Outdoor air temperature

Current operation  
The system runs according to calendar

Current status  
Cool / Heat combination not valid for Dehumidification  
Extract air fan starting  
At least one active alarm

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Use the drop-down button **Summer / Winter changeover** (see the red arrow above) to control the switchover between summer and winter operation.

During the summer period, the temperature control loop is set to **Room temperature**, thus allowing the AHU to cool the room. In the winter period, the temperature control loop is set to **Supply Air temperature**, so the ventilation system works well in combination with radiators or floor heating. The changeover is done automatically according to the Outdoor temperature or calendar dates.

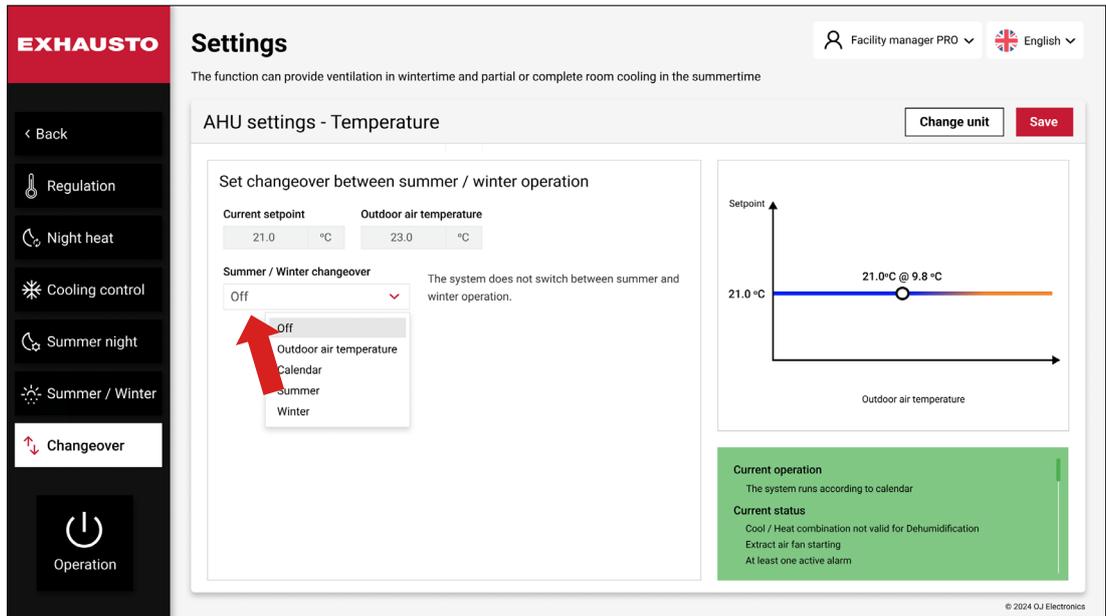
When activated, the switch between summer and winter operation can follow 4 different criteria:

- Outdoor air temperature
- Calendar
- Summer
- Winter

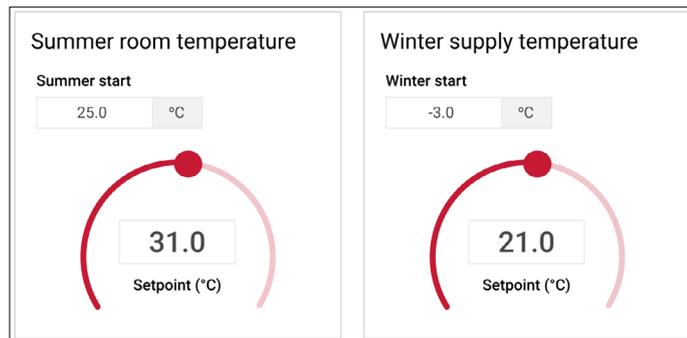
Note, that the function is only available if one of the following temperature control types is used:

- Constant extract temperature
- Constant room temperature

1. If you select **Off** on the **Summer / Winter changeover** dropdown list, there will be no switch between summer and winter operation.

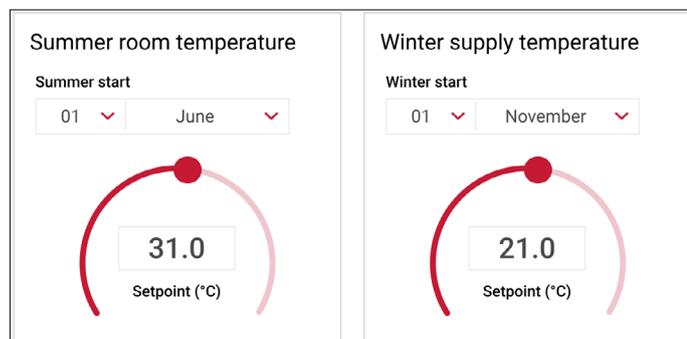


2. If you select **Outdoor air temperature** you will be presented with these options:



Here you can set the summer **Room temperature setpoint** and the **Summer start** outdoor temperature. In the illustrated example above, the control loop will switch to summer operation when the outdoor air temperature (**Summer start**) reaches 25°C. It will switch back to Winter operation when the outdoor air temperature (**Winter start**) falls to -3°C.

3. If you choose a calendar-based approach, the settings will look similar to this:



With a calendar-triggered changeover between summer and winter operation, you must choose a specific date for the changeover. In this case the outdoor air temperatures will have no influence on the timing for the changeover.

4. If you choose Summer or Winter operation, the system will run permanently according to the temperature setpoint defined under Summer or Winter.

## 9.1.3 Humidity

### 9.1.3.1 Humidification

**EXHAUSTO Settings**

The humidity and the air humidifier are controlled by the humidity sensor

Facility manager PRO English

**AHU settings - Humidity** Save

Set humidification

Humidification	Setpoint	Air humidity
Extract air	20.0 %RH	0.0 %RH

Air humidity alarm

Alarm limit for min. air humidity: 25.0 %RH

Alarm limit for max. air humidity: 70.0 %RH

Current operation: The system runs according to calendar

Current status: Cool / Heat combination not valid for Dehumidification, Extract air fan starting, At least one active alarm

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The humidifier is used to raise the moisture content of the supply air.

Supply air humidity can either be controlled by a supply setpoint or by an extract setpoint. In the example above, **Supply air** has been chosen.

#### Setpoint

Here, you can specify the setpoint (in relative humidity percentage) for the current humidification method (supply/extract).

#### Air humidity

Actual humidity reading for the selected control sensor.

The section **Air humidity alarm**

**Air humidity alarm**

Alarm limit for min. air humidity: 25.0 %RH

Alarm limit for max. air humidity: 70.0 %RH

Here you can activate **Air humidity alarms**. If this setting is active, you can define the alarm limits for minimum and maximum air humidity.

### 9.1.3.2 Dehumidification

The screenshot shows the EXHAUSTO Facility Manager Pro interface for dehumidification settings. The main panel is titled 'AHU settings - Humidity' and contains several control elements:

- Set dehumidification:** A toggle switch is currently turned off.
- Extract air regulation setpoint:** A numeric input field set to 70.0 %RH.
- Dew point section:**
  - Current dew point temperature: 0.0 °C
  - Calculated dew point temperature setpoint: 0.0 °C
- Diagram:** A schematic of a duct cross-section showing air flow from left to right. On the left, the temperature is 0.0 °C. On the right, the supply air conditions are 26.7 °C, 0.0 %RH, and 0.0 g/kg. The return air conditions are 38.3 °C, 0.0 %RH, and 0.0 g/kg.
- Current operation:** The system runs according to calendar.
- Current status:** Cool / Heat combination not valid for Dehumidification, Extract air fan starting, and At least one active alarm.

Info: This function is used to lower the relative humidity in the room or in the supply air duct.

#### Set dehumidification

This close-up shows the 'Set dehumidification' toggle switch. The slider is currently in the 'off' position. A red arrow points to the slider, indicating that it can be moved to the 'on' position to activate the function.

Slide the round button by the arrow to the side to activate or deactivate the dehumidification function.

#### Supply Air regulation setpoint

Here you can specify the setpoint (in relative humidity percentage) for the supply air.

#### Extract Air regulation setpoint

Here you can specify the setpoint (in relative humidity percentage) for the extract air.

Dehumidification is accomplished by controlling the power of the installed cooling element according to the calculated dew point temperature. The after-heating element ensures that the temperature in the supply air is maintained according to the temperature setpoint.

## Dew point

### Dew point

**Current dew point temperature**

0.0
°C

**Calculated dew point temperature setpoint**

0.0
°C

**Current dew point temperature:** Here, the current dew point temperature is shown.

**Calculated dew point temperature setpoint:** Here, the calculated dew point temperature setpoint is shown.

If no dew point temperature sensor is installed, you can instead adjust the cooling output power used for dehumidification.

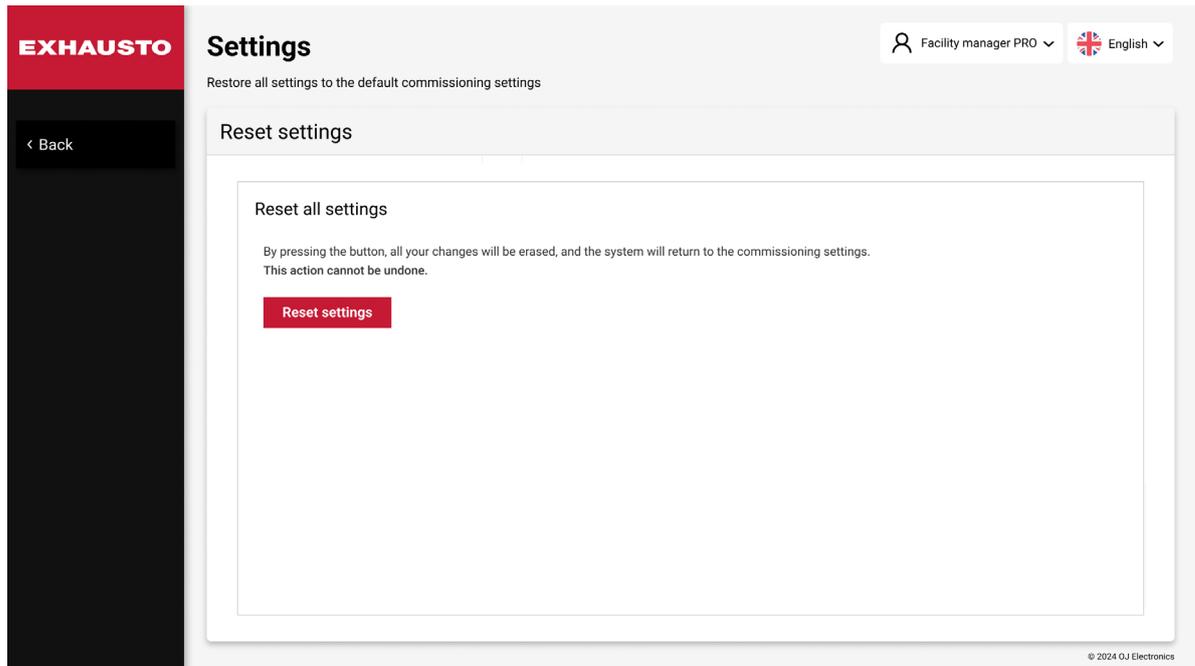
### 9.1.4 Reset settings

When the commissioning procedure is completed, the current settings will be saved in the AHU controller as a commissioning backup file. This will allow Facility manager pro users to reset all settings to the commissioning settings.

Click on **Settings** in the main menu to access the **Reset settings** dialog box, see below.

The screenshot displays the EXHAUSTO Settings interface. On the left, a dark sidebar contains navigation options: 'Back', 'AHU settings' (highlighted), 'Account settings', 'Connectivity', and 'Operation'. The main content area is titled 'Settings' and includes a subtitle 'Configure your Air Handling Unit settings or reset to default settings'. Below this, the 'AHU settings' section features a 'Save' button and a prompt to 'Select a submenu for more AHU settings'. A grid of four icons represents different settings: 'Ventilation', 'Temperature', 'Humidity', and 'Reset settings'. A red arrow points to the 'Reset settings' icon. To the right, the 'Air Handling Unit Name' is set to 'My AHU System'. The 'About the Air Handling Unit' section shows 'Air Handling Unit Type' as 'VEX1000' and 'Software version' as 'v01.00'. The EXHAUSTO logo is visible at the bottom right of the settings panel.

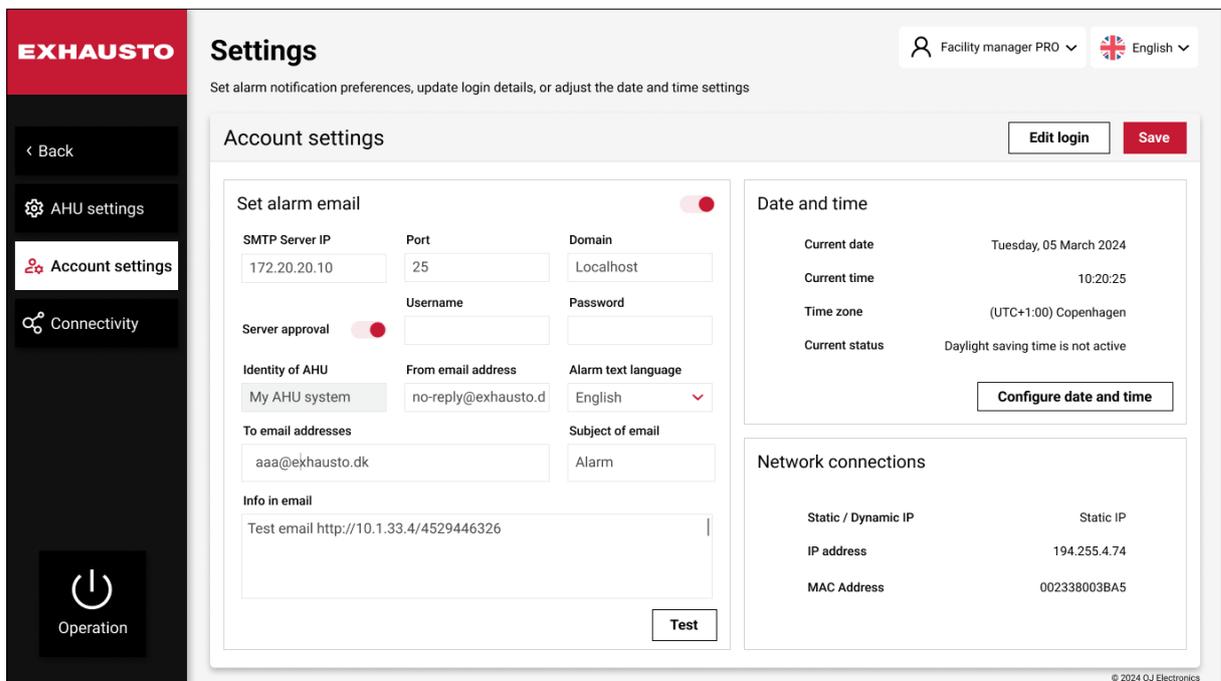
Having clicked on the **Reset settings** button, your screen will look like this:



Here, you can reset the controller to the commissioning settings.

## 9.2 Account settings

When you click on **Account settings** (under **Settings** in the main menu), you will see the following screen:



Here, you can configure both login, time and date, network, and email settings.

## 9.2.1 How to configure an email server

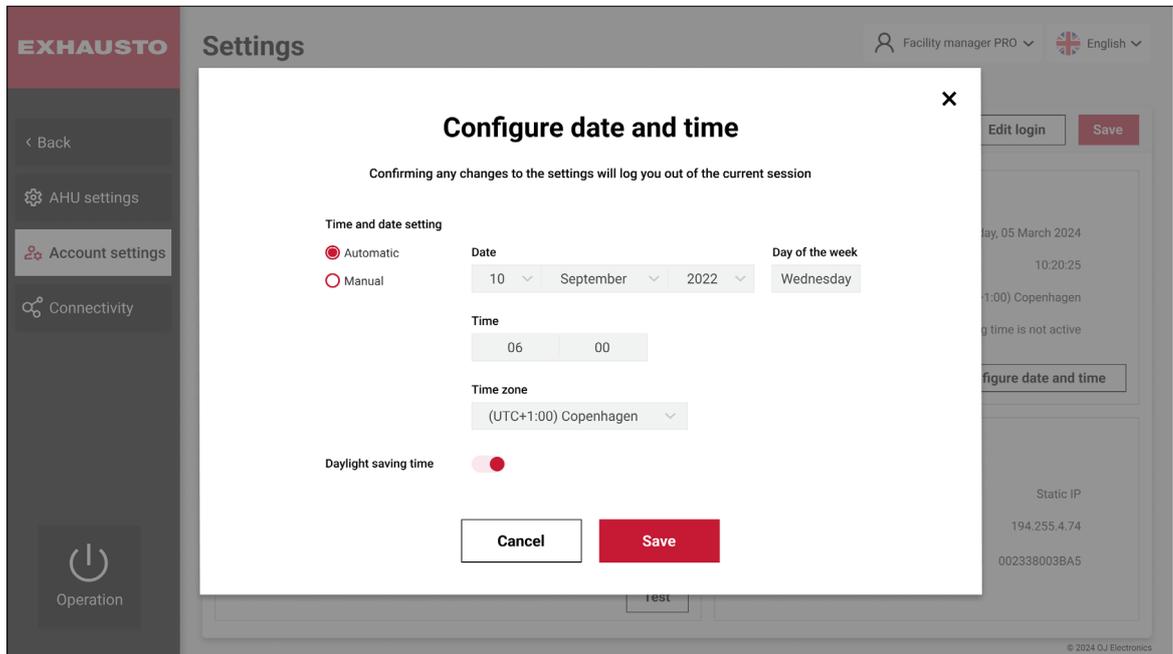
### 9.2.1.1 The Set alarm email section

As a facility manager pro you may need to configure an email server to activate the email notification system. This detailed setup is necessary to ensure that relevant and needed information is sent to the appropriate recipients when issues or alarms occur. Below, you will find information on how to perform this configuration.

Setting	How to configure this setting
Set alarm email	Activate this option for sending email alarms.
SMTP Server IP	Write the IP address of the network server SMTP service. The SMTP Server IP address must be a local server. Also, it must be on the same IP network as the EXcon+. No external SMTP Server can be used.
Port	Enter the port number for the email server.
Domain	Here you write the domain name of the EXcon+ controller (Localhost). No spaces are allowed in the name.
Server approval	Select server approval if the network SMPT server requires it.
Username	Here you write the username for the AHU under which this AHU is created on the SMTP server.
Password	Here you write the password that fits the username.
Identity of AHU	Here your AHU name is shown, for example, "My AHU system".
From email address	Fake email address for the EXcon+ controller. The address must be in standard format including @ + domain name (.dk).
Alarm text language	Select the language that is to be used in the alarm text field.
To email address	Here you type in the email addresses of the people who are to receive the alarm emails from this AHU.
Subject of email	Here you write the text for the subject field in the email that shall be sent from this AHU.
Info in email	Here you write an info text for the receiver. This must be a text that explains to the receiver how to take action when receiving alarms from this AHU.

### 9.2.1.2 How to set date and time

In this section, you can see the system's date and time. If you need to configure the date and time settings, you must click on the button **Configure date and time**. Here, you can choose between **Automatic** and **Manual** Time and Date settings. Also, you can adjust for **Daylight saving time** and configure the **Time zone**, see below.



### How to configure login for various users

Click on the **Edit Login** button under **Account settings**:

The screenshot shows the "Edit login" modal window with the following fields:

- Role:** Dropdown menu showing "Facility manager PRO".
- Username:** Text input field containing "manager\_pro".
- Password:** Password input field with masked characters "\*\*\*\*\*" and a visibility toggle icon.
- Repeat password:** Password input field with masked characters "\*\*\*\*\*" and a visibility toggle icon.
- Buttons:** "Cancel" and "Save" buttons at the bottom.

Here, you can change your username and password.

### Network connections

Here you are provided with basic information about the network, such as Static or Dynamic IP address, IP address, and MAC Address.

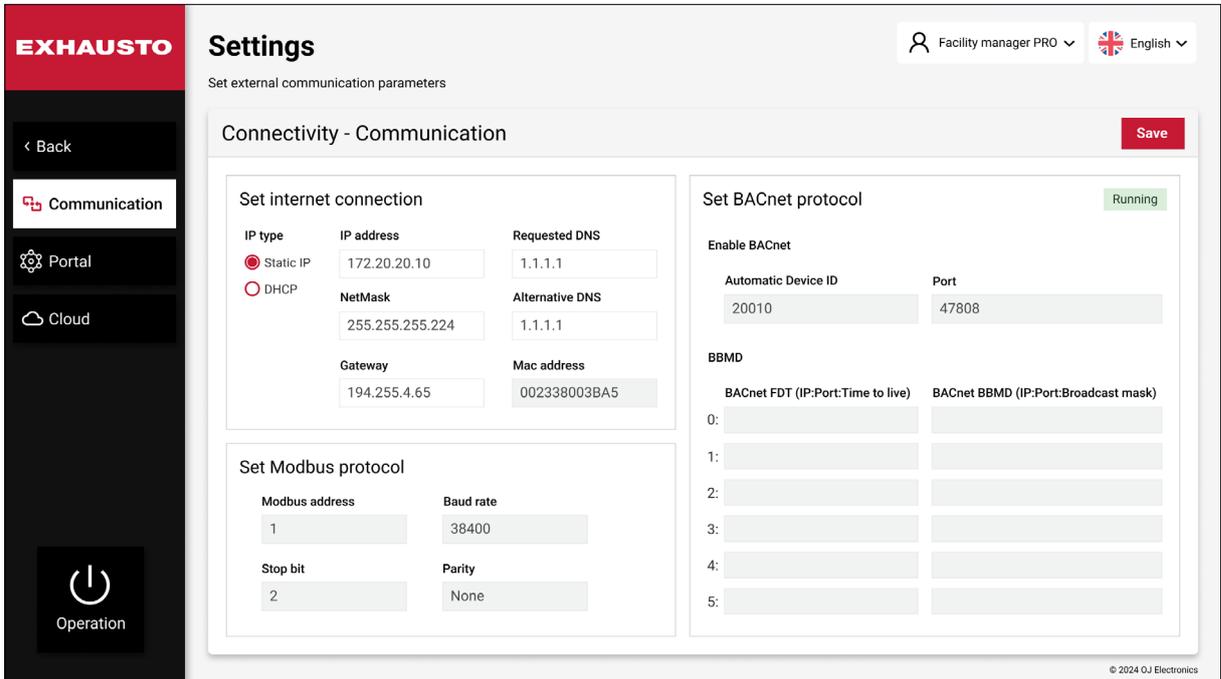
Note: This information is provided not only for your own ability to fix errors in the system but also for you to pass on to the IT department.

Remember to always click the **Save** button to save your changes.

If you click on **Connectivity** on the left side of the screen, you will see the screen in the next paragraph:

### 9.3 Connectivity

#### 9.3.1 Communication

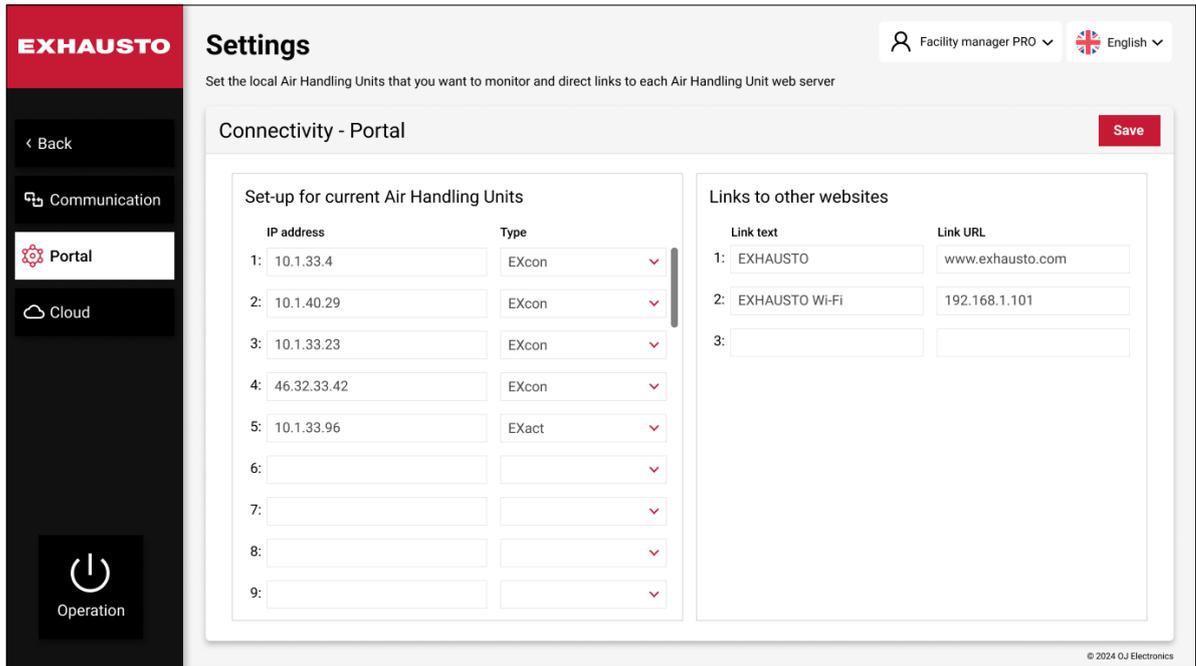


The Communication settings are important for establishing and maintaining an internet connection for your AHU. As a facility manager pro, you can choose between static and dynamic IP Address, and you can see the settings for Modbus and BACnet protocol. If you choose **DHCP** in the **Set internet connection** section, you will have an IP address assigned from the DHCP server on the local network. If you choose Static IP, you will have to specify these settings manually.

The Modbus settings in the lower left section are used for configuring the AHU’s Modbus RTU connection. These settings are used to configure how the AHU communicates with external devices or systems, such as a BMS. Note, that the Modbus address must be distinct in order to identify the AHU.

### 9.3.2 Portal

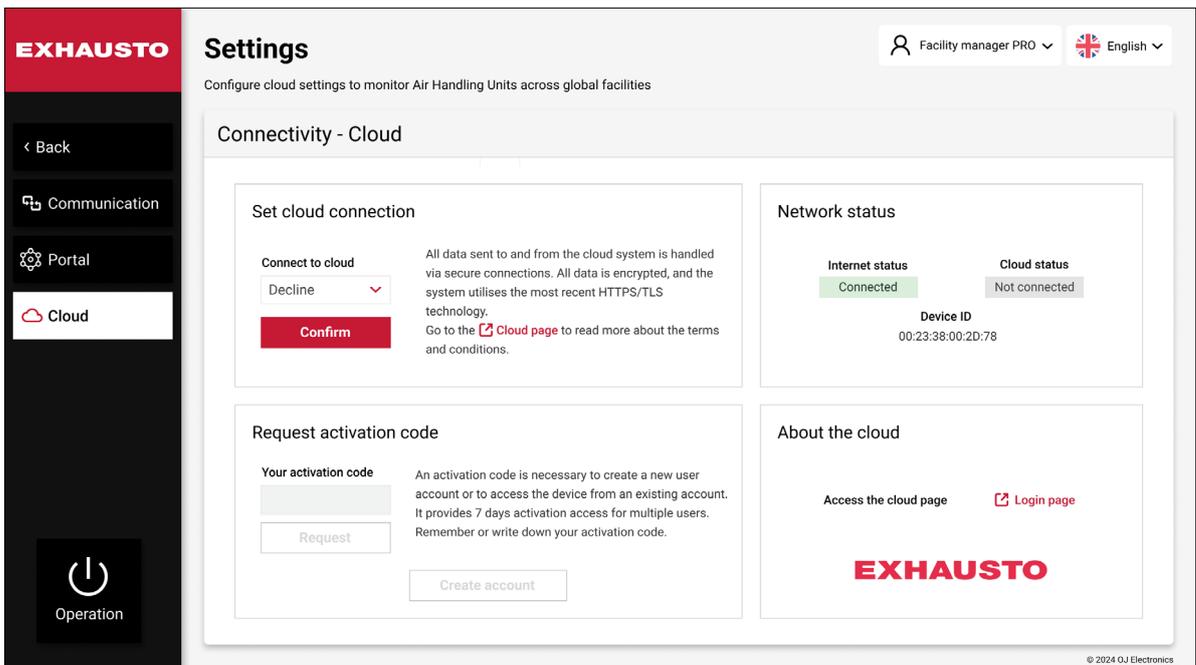
Go to **Settings, Connectivity** to find the **Portal** section.



Here you can set the IP addresses of the HVAC systems that you want displayed. Also, this is where you set up any links to relevant websites.

### 9.3.3 Cloud

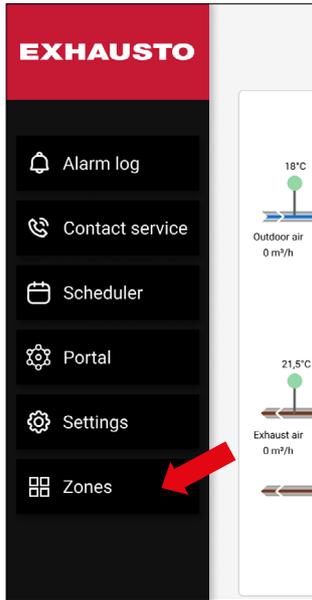
Go to **Settings, Connectivity** to find the **Cloud** section.



In this section, you will be asked to accept the terms and conditions. Also, this is where you ask for an activation code. Here you can see if the system has Cloud access, and you can directly reach the Cloud page.

## 10. ZONES

You will find the **Zones** section in the main menu, see below.



The EXcon+ system supports up to 4 individual zones (4 room controllers). The Zones section is only shown if one or more room controllers have been connected. If you click the **Zones** button in the lower-left corner of the main menu, you will see the following screen:

EXHAUSTO

Zones

Facility manager PRO English

View the settings for all configured zones

	Zone 1 <small>Your description</small>	Zone 2 <small>Your description</small>	Zone 3 <small>Your description</small>	Zone 4 <small>Your description</small>
<span>📄</span> RPT-20T Room panel				
Air Mode	Not active	Not active	Not active	Not active
Low air flow	20.0 %	20.0 %	20.0 %	20.0 %
High air flow	100 %	100 %	100 %	100 %
Override timeout	60 min	60 min	60 min	60 min
<span>🌡️</span> Room temperature				
Current	25.4 °C	26.4 °C	26.4 °C	26.4 °C
Setpoint	21.0 °C	21.0 °C	21.0 °C	21.0 °C
Actual setpoint	21.0 °C	21.0 °C	21.0 °C	21.0 °C
<span>💧</span> Supply air temperature				

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[www.exhausto.com](http://www.exhausto.com)