# SOFTWARE INSTRUCTIONS

CTS602 HMI BY NILAN


## Compact P2 / Compact P2 Polar

Gateway

Version 1.20 - 01.05.2024
S24 Compact P2 GB

NILAN®
OUTSTANDING INDOOR CLIMATE

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# App option

## Product description

### Nilan User App

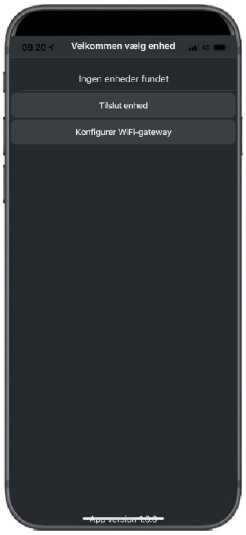
This App can control those of Nilan's ventilation units and heat pumps that have a CTS400 or a CTS602 control system. If the unit does not include a Gateway, you will have to purchase one as an accessory. You connect the Gateway to the Modbus input of the unit. When you enter settings from the App, it may take a few seconds before the changes are registered by the unit.

The communication from the App to the Gateway takes place via a secure cloud connection. This allows you to access the Nilan unit from anywhere in the world as long as you have internet connection.

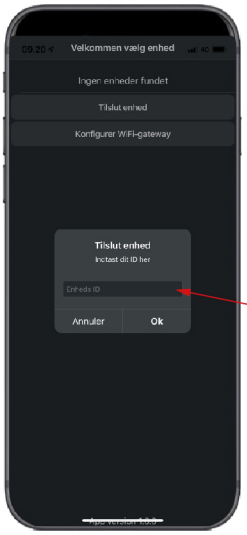
## Configuration

### Download Nilan User App

You can download Nilan User App from Google Play or App Store. **Before you can use the app, you will need a Nilan Gateway. You also need to have it connected up as indicated in the present instructions under Installation instructions.**




Find the app and open it. Press "Attach unit".



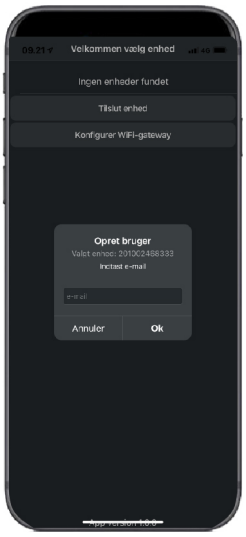


Then, key in the ID number printed on top of the Gateway.

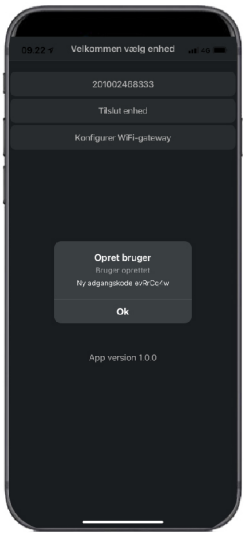
**ATTENTION**

The Nilan Gateway must be connected up to the ventilation unit before you can use the app.

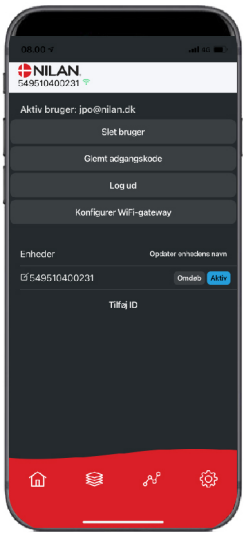
# Create user on the App




Create user by keying in the email address that you want to attach to the gateway/unit.




Press "OK". You have now been set up as a user.

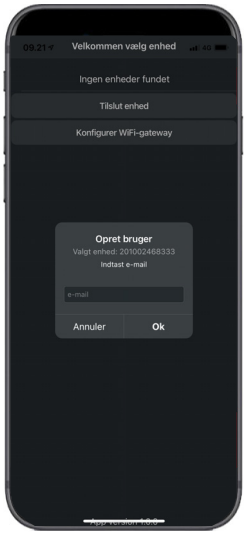



It is now possible to delete the user, to get a new access code via email, or to log out.

**ATTENTION**

If you move out of the dwelling, remember to delete the profile so that a new user can be created for the unit.

# Set up multiple users for the App

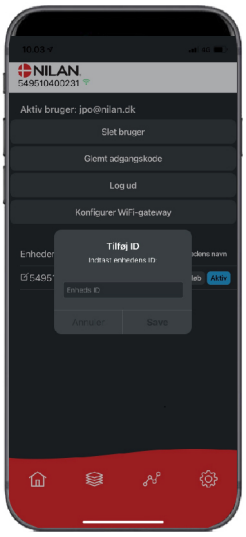



You can attach multiple users to the App.

Set up multiple user for the same Gateway/unit, e.g. access for husband and wife.

You do this by attaching Gateway ID, and key in email address and password connected to the Gateway.

## Add more units/Gateways to the App




You can attach several units/Gateways to the App.

Before connecting more units to the App, you must log out and log in again with the existing username and password.

Under settings, press add ID, and key in the Gateway number and the email address of the user.

# Nilan User App

## Introduction

The following instructions are general and apply to all Nilan ventilation units. Some of the shown functions and settings may therefore not exist on your ventilation unit. The user settings that are applicable to exactly your ventilation unit will more or less correspond to those displayed in the Nilan User APP on your phone.

If you require a detailed description of individual functions and settings, you can download the software instructions for your ventilation unit from our website.

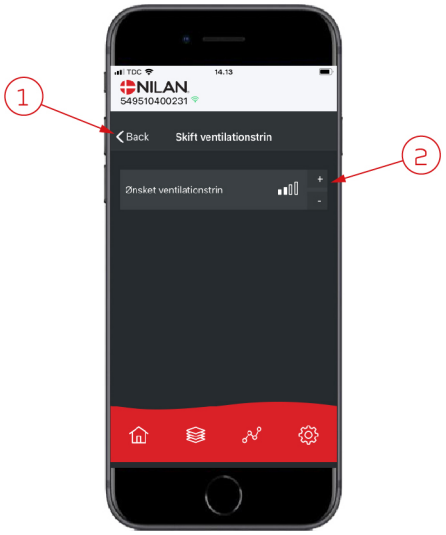
## Explanation of main screen items


1. On the main screen under the Nilan logo, you will see the number of the connected Gateway.
   Under settings, you can name the ventilation unit e.g. Home or Holiday home. The name will then be displayed instead.
   If you have more than one ventilation unit connected to the APP, you will be able to see to which unit the shown data apply.
   Next to the number is a WiFi icon that is green when there is connection to the unit, and red if the connection is interrupted.
2. Here you can see the items that are relevant to your ventilation unit. If there are too many items to fit the screen simultaneously, the rest will be below the displayed items. You can access these by using your finger to scroll up.
   If you press one of the items on the screen briefly, a settings menu will appear.
3. Shortcut key to return to main screen.
4. If you press this icon, you will see a list of all current and relevant data.
5. If you press this icon, you will get to a page where you can see a trend curve for relevant data.
6. Pressing this icon will take you to settings where you will be able to add more ventilation units.
7. The alarm icon will be displayed if an alarm is triggered on the unit. By pressing the icon, you will get an outline of the most recent alarms.
   If more ventilation units are connected to the same APP, you will have to go into settings and select unit in order to see to which unit the alarm applies.

## Temperature

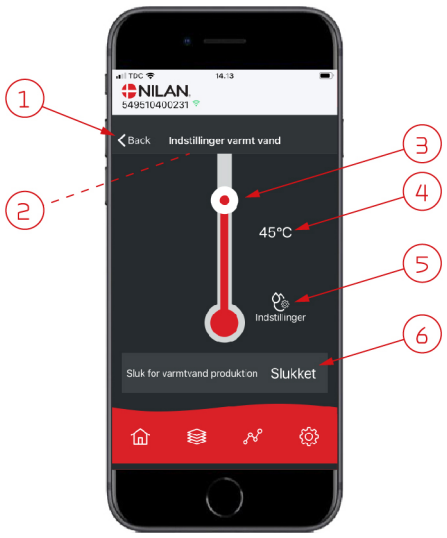

1. Press "back" to return to the previous page.
2. You can set the room temperature by scrolling up or down with your finger on the icon. When the ventilation unit is operating in heating mode, the thermometer is red. In cooling mode it is blue, and during neutral operation orange.
3. The icon for heating settings may be displayed if you have installed an after-heating element. Press this icon to access heating settings.
4. Here you can see the current room temperature.
5. Here you can see the desired room temperature.
6. The cooling icon will be displayed if the unit has active cooling via a heat pump. Press this icon to access the cooling settings.
7. If you scroll up the items with your finger, a menu appears where you can select from the options AUTO, HEAT and COOL.

## Ventilation

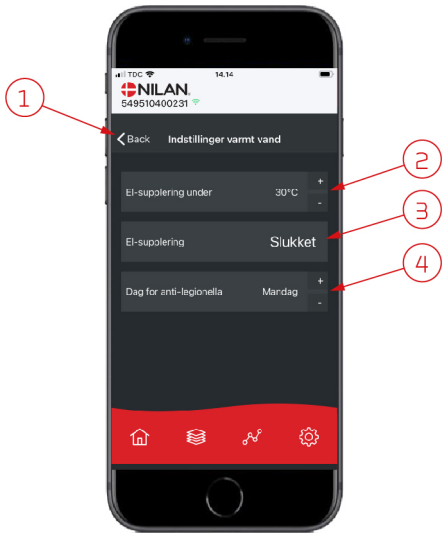



1. Press "back" to return to the previous page.
2. Here you can set the fan speed level you want. The fan speed level that you have selected may differ from the one displayed on the main screen. This is because the unit is able to override the set fan speed level, e.g. at high/low humidity.

# Domestic hot water



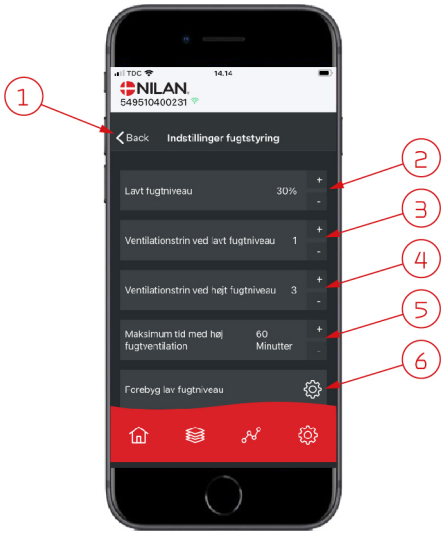

1. Press "back" to return to the previous page.
2. If you scroll down with your finger, you can read off the current temperature of the hot water.
3. You can set the domestic hot water by scrolling up or down with your finger on the icon. It is indicated under the thermometer when the unit is producing domestic hot water. The colour inside the thermometer changes in accordance with the temperature. A temperature >40°C is red, 30-40°C is orange, and <30°C is blue. Then you can see whether there is enough hot water for a bath.
4. Here you can see the current setting of the hot water temperature.
5. Press this icon to access more settings.
6. Press here to deactivate the production of hot water. You can reactivate the hot water production by using your finger to scroll up the thermometer and select the desired water temperature.



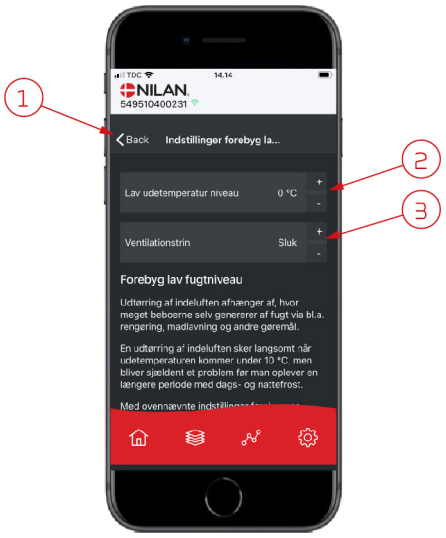

The settings icon (5) gives you access to settings related to supplementary electric heating and anti-legionella measures.

1. Press "back" to return to the previous page.
2. Here you can choose at what temperature the supplementary electric heating should be activated in order to help heat the domestic hot water.
3. Here you can deactivate the supplementary electric heating.
4. Here you can turn off the anti-legionella treatment. You can also set a particular day during the week for anti-legionella treatment.

## Air humidity

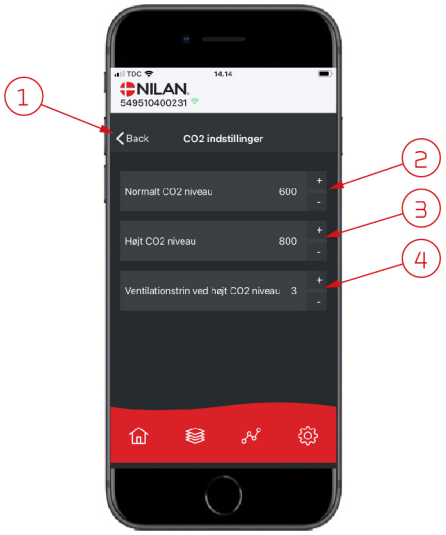



1. Press "back" to return to the previous page.
2. Here you can set the value for low level of humidity between 15- 45%.
3. Here you can set the fan speed level for low humidity between level 1 - 3. You can also deactivate the function.
4. Here you can set the fan speed level for high humidity between level 2 - 4. You can also deactivate the function.
5. Here you can set the maximum time at high humidity.
6. Press this icon to access more settings.



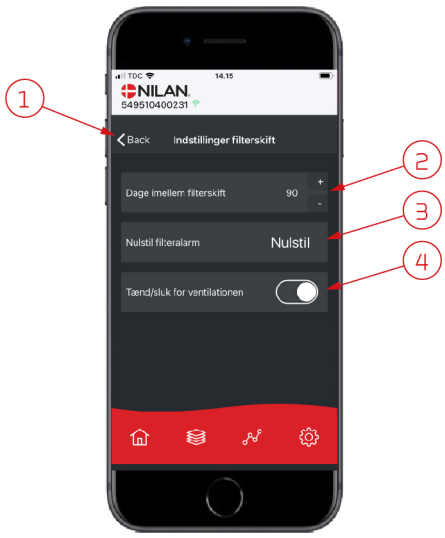

1. Press "back" to return to the previous page.
2. Here you can set the temperature to prevent low outdoor temperature between -20 - +10°.
3. Here you can set the fan speed level to prevent low humidity between level 1-3. You can also deactivate the function.

## $CO_2$ settings




1. Press "back" to return to the previous page.
2. Here you can set the value for normal $CO_2$level between 400 - 700.
3. Here you can set the value for high $CO_2$level between 650 - 2500.
4. Here you can set the fan speed level between level 2 - 4. You can also deactivate the function.

## Filter replacement




1. Press "back" to return to the previous page.
2. Here you can set the amount of days between filter replacements.
3. Here you can reset the alarm for filter replacement.
4. Here you can turn off the ventilation unit before filter replacement and turn the unit on again afterwards.

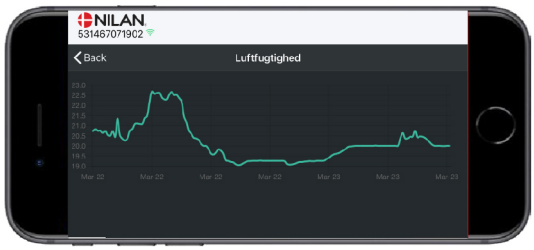
**ATTENTION**

Remember never to leave the unit off for a long period of time as condensate water may form in the unit and duct system and subsequently cause damage.

## Show data


You can read off current operational data for the ventilation unit. This will allow you to check that the unit operates satisfactorily and to identify the cause of potential alarms.

## Trend curve




It is possible to see a Trend curve on various parameters - depending on which ventilation unit you have.

# Installation

## Settings

### Ventilation

**How to set the unit.**
This list is intended for the installer to get an overview of what settings to use in consultation with the user or the builder.

| Functions | | Settings |
|---|---|---|
| Days between filter changes | | Days: |
| Which ventilation level is set for basic ventilation | | Level: |
| Is low ventilation at low outdoor temperature desired? | Yes/No | Level:<br>At °C: |
| Is low ventilations at low humidity desired? | Yes/No | Level: |
| Level low humidity | | %: |
| Is high ventilation at high humidity desired? | Yes/No | Level: |
| Maximum time with high ventilation at high humidity | | Minutes: |
| Desired room temperature | | °C: |
| Should active cooling be activated | Yes/No | Offset cooling °C: |
| Is high ventilation level at cooling desired? | Yes/No | Level: |
| Is a cooker hood connected to the ventilation system | Yes/No | Level: |

### Domestic hot water

**How to set the domestic hot water.**

| Functions | | Settings |
|---|---|---|
| What is the desired hot water temperature | | °C: |
| Should the electrical supplement be used and at what temperature | Yes/No | °C: |
| Max. temperature for scalding protection * | | °C: |
| Should the unit run automatic legionella treatment | Yes/No | Day: |
| Bypass offset activated for domestic hot water | Yes/No | °C: |

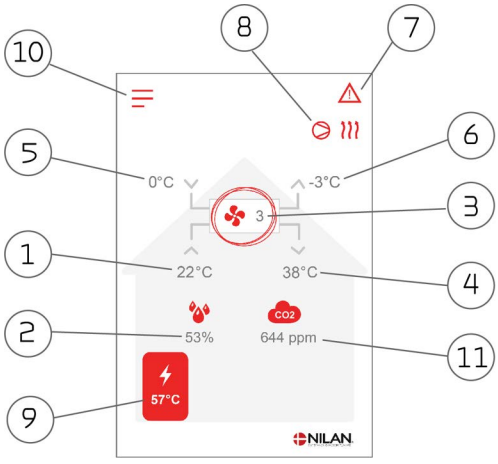
* If a safety valve with scald protection is installed, the temperature can be set > 65 °C, without risk of scalding.

# Software

## Functions in the control panel

### Main screen items

The main screen of the HMI panel shows the information and the settings options that a user mostly requires.




1. Shows the current room temperature in the house, measured via the extract air
2. Shows the current air humidity level measured in the extract air
3. Shows the current fan speed level
4. Shows the current supply air temperature
5. Shows the current outdoor temperature measured via the outdoor air intake
6. Shows the current discharge air temperature
7. Shows the menu icons listed below
8. Shows the operation icons listed below
9. Show hot water temperature
10. Access to the settings menu which contains more settings options
11. Show the current $CO_2$ level (if the sensor is installed)

**Menu icons**

**Stop icon**
Indicates that the unit is off.

**User selection icon**
Indicates that the user selection function is active.

**Week program icon**
Indicates that the week program function is active.

**Alarm icon**
Is displayed during alarms or warnings.

**Operation icons**

**Compressor icon**
Indicates that the compressor is active.

**Heating icon**
Indicates that the unit is heating up the supply air via the compressor or the after-heating element.

**Cooling icon**
Indicates that the unit is cooling the supply air via the compressor.

**Domestic hot water icon**
Appears when the unit produces hot water. Lightning is displayed when the supplemental electric heating is active.

**De-icing icon**
Appears when the heat pump defrosts.

## Main screen settings options

The settings options which the user needs in daily life can all be controlled from the main screen of the panel.

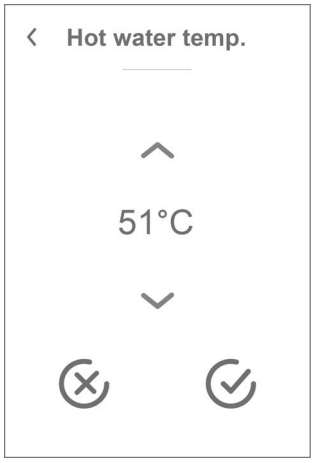

If you press current fan speed level, the set fan speed level will be displayed.

You can change the fan speed level by using the up-and-down arrows followed by the confirm icon (bottom right) or the cancel icon (bottom left).

There may be a difference between set fan speed level and the actual fan speed level as the control system will override the set level, for instance, at high/low air humidity or during cooker hood operation.


If you press current room temperature, the set room temperature will be displayed.

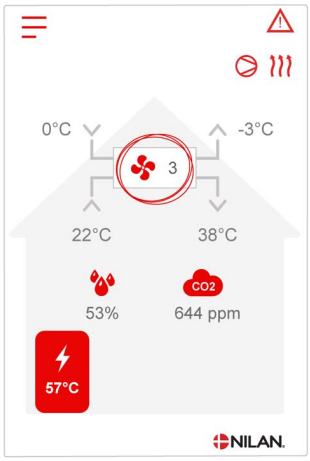
You can change the room temperature by using the up-and-down arrows followed by the confirm icon (bottom right) or the cancel icon (bottom left).




If you press the current hot water temperature, the set hot water temperature will be displayed.

You can change the hot water temperature by using the up-and-down arrows followed by the confirm icon (bottom right) or the cancel icon (bottom left).

## Warning and alarms




If the ventilation unit is faulty or an error occurs, there will be either a warning or an alarm. The icon will appear in the top right hand corner in the menu bar.


If you press the symbol, a brief description of the warning or the alarm will be displayed.

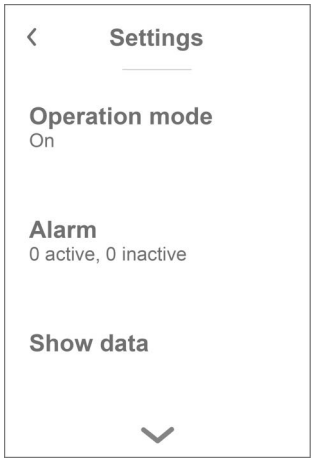
As soon as the problem is solved the big C- or W-letter will change to a small c- or w-letter.

You will find more detailed descriptions in the "Alarm List" section of this document.


When the problem has been solved, you can reset the warning or alarm by pressing "Clear Alarm".

## Settings menu overview

The settings menu is constructed to make it easy to navigate through.



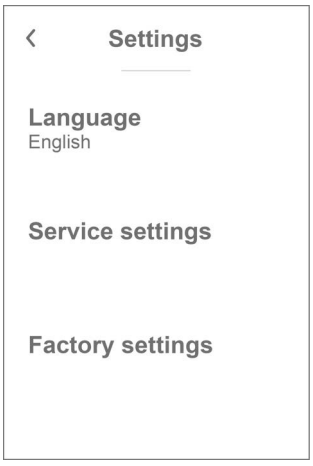

You navigate through the settings menu by pressing the arrow below or above.

If you want to access a menu, tap the text for that menu and it will open.

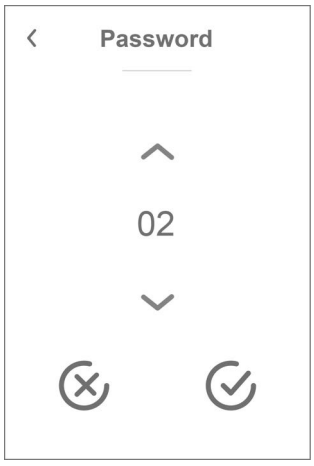
## Installer access

Settings menus consist of 3 levels.

1. User level - Settings the user can access and customize.
2. Service level - Settings that the installer needs to access in order to set the ventilation unit in relation to individual installation. It requires expertise knowledge to select these settings. If the settings are not correct, the ventilation unit may not operate properly and it may consume more energy than necessary. The unit may even get damaged.
3. Factory level - Only Nilan has access.




The Service menu is located at the bottom of the User settings. Tap the down arrow several times to get there.




A password is required to access the Service menu.

You can set the password by using the up-or-down arrows followed by the confirm icon (bottom right).

# Start-up settings

## Language

The default language for the ventilation unit is Danish. You can change the texts to other languages in the settings menu.

> Language (DK - Sprog)

| | | |
|---|---|---|
| > Dansk | Description: | Select the language you want on the panel. |

## Date/time

It is important to set date and time correctly. It makes it easier to trace potential faults when an error is being reported. When logging data, it is important to be able to follow the history. You set the time in the settings menu.

**> Date/time**

| | | |
|---|---|---|
| > Year | Description: | Press "Year" on the panel and select the current year. |
| > Month | Description: | Press "Month" on the panel and select the current month. |
| > Day | Description: | Press "Day" on the panel and select the current day of the week. |
| > Hour | Description: | Press "Hour" on the panel and select the current hour of the day. |
| > Minute | Description: | Press "Minute" on the panel and select the current minute. |

# Ventilation settings

## Turn on the ventilation unit

When you turn on the ventilation unit, the control panel will light up, but all functions are off. This is to prevent errors from occurring when you turn on the unit.

When the ventilation unit is off, this icon is displayed on the main screen of the control panel at the top righthand corner.

ATTENTION
Before touching the electrical installations, the power supply must be disconnected.

ATTENTION
It is important that the ventilation unit is not turned off for lengthy periods of time, as this may cause problems with condensate water in the duct system.

You activate the functions of the ventilation unit in the settings menu under the menu item "Operation".

### > Unit on/off

| | | |
|---|---|---|
| > Unit on/off | Settings:<br>Standard setting:<br>Description: | Off / On<br>Off<br>The ventilation unit is off when it is delivered in order to prevent errors from occurring during connection.<br><br>This is also where you turn off the ventilation unit when filters need replacing or a service inspection is to be carried out. |

## Operation mode

You can set the unit to operate in "Auto", "Heating" or "Cooling" mode.

ATTENTION
The "Heating" and "Cooling" functions override the week program. If a week program has been activated, the mode will automatically shift to "Auto" when the week program next changes.

### > Operation mode

| | | |
|---|---|---|
| > Operation mode | Settings:<br>Standard setting:<br>Description: | Auto / Cooling / Heating<br>Auto<br>**Auto:**The unit operates in accordance with the selected values.<br>Cooling: The unit operates in accordance with the selected values. However, cooling is possible in winter mode if the requirements for cooling are present.<br>Heating: The unit operates in accordance with the selected values, but the bypass damper cannot open and active cooling cannot be activated even if the requirements for cooling are present. |

# Alarm

You can read off warnings and alarms under the "Alarm" menu item. This is also where you reset them once the problem has been solved.

If an alarm or a warning is active, the alarm icon will be displayed in the upper righthand corner of the control panel.

## > Alarm

| | | |
|---|---|---|
| > Alarm number and name | Description: | When you press the alarm, the following information will be displayed:<br>• Alarm ID number<br>• Type of alarm<br>• Critical alarm or warning<br>(The alarm list will inform you of how to proceed.) |

ATTENTION

Until the problem has been solved, the alarm or warning will remain active. As soon as the problem is solved the big C- or W-letter will change to a small c- or w-letter. When the problem has been solved, you will be able to reset the alarm or warning by pressing "Clear alarm".

## Show data

You can read off current operating data for the ventilation unit. This will allow you to check that the unit operates satisfactorily and to identify the cause of potential alarms.

### > Show data

| | | |
|---|---|---|
| > Operating state | Description: | Shows in which operating setting the ventilation unit is running. |
| > Bypass | Description: | Shows whether the bypass damper is open or closed. |
| > Anode | Description: | Shows whether the anode is in working order. If faulty, it must be replaced. |
| > Temperatures | Description: | Temperature sensor and measured temperature overview |
| > T1 Outdoor air | Description: | Shows the outdoor temperature before the pre-heating element. |
| > T2 Supply air | Description: | Shows the supply air temperature if an after-heating element has not been installed. |
| > T4 Discharge | Description: | Shows the discharge air temperature in the exchanger. |
| > T5 Condenser | Description: | Shows the condenser temperature. |
| > T6 Evaporator | Description: | Shows the evaporator temperature/discharge air temperature. |
| > T7 Supply air | Description: | Shows the supply air temperature if an after-heating element has been installed. |
| > T10 Extract air | Description: | Shows the current room temperature measured in the extract air. |
| > T11 Top hot water | Description: | Shows the current temperature at the top of the hot water tank. Controls the supplemental electric heating. |
| > T12 Bottom hot water | Description: | Shows the current temperature at the bottom of the hot water tank. Controls the heat pump. |
| > Air Humidity | Description: | Shows the current humidity level in the dwelling. |
| > $CO_2$ level | Description: | Shows the current $CO_2$ level in the dwelling (only if installed). |
| > Supply air fan | Description: | Shows the current fan speed level of the supply air fan. |
| > Extract air fan | Description: | Shows the current fan speed level of the extract air fan. |
| > Compressor | Description: | Shows whether the compressor is in operation |
| > Unit information | Description: | Press for further information about the ventilation unit. |
| > Unit type | Description: | Shows what type of ventilation unit it is. |
| > Software version | Description: | Shows the software version of the ventilation unit. |
| > Panel software | Description: | Shows the software version of the control panel. |

## Week programs

You can program the ventilation unit to run in accordance with specific settings at fixed times during the day and week via a week program.

On the main screen of the control panel, in the top right corner, the Week program icon will be displayed when active.

### > Week program

| | | |
|---|---|---|
| > Select program | Settings:<br>Standard setting:<br>Description: | De-activated / Program 1 / Program2 / Program 3<br>De-activated<br>The control allows you to set 3 programs for different situations e.g.:<br>• Normal operation<br>• Holliday operation |
| > Edit program | Description: | The selected Week program is now active and can be edited. |
| > Monday | Settings: | Here weekday is selected. |
| >Function 1 | Settings: | Here you select the function you want to edit. |
| > Start time | Settings:<br>Standard setting:<br>Description: | Hours and minutes<br>6:00<br>Set the time for the program to start. The program will run with the set values until the next change in the Week program. |
| > Ventilation level | Settings:<br>Standard setting:<br>Description: | De-activated / Level 1 / Level 2 / Level 3 / Level 4<br>Level 3<br>Select the desired fan speed level here. |
| > Room temperature | Settings:<br>Standard setting:<br>Description: | 5 – 40 °C<br>22 °C<br>Set the desired room temperature here. |
| > Copy for next day | Description: | Once the values for the Monday program have been set, it is possible to copy these to the next day. |
| **The same settings are made for all functions.** | | |
| > Reset program | Settings: | You can reset the program by selecting the "Approve" icon. |

## Domestic hot water

Settings for hot water production have been set at the factory, but it may be necessary to adjust them to match the user´s needs.

### > Domestic hot water

| | | |
|---|---|---|
| > El. supl. heater** | Settings:<br>Standard setting:<br>Description: | De-activated / 5 – 85 °C<br>30 °C<br>De-activated: The supplemental electric heating is de-activated by the user.<br>5 - 85 °C: Indicates below which temperature (T11) the supplemental electric heating should help with heating of the domestic hot water. |
| > Hot water temp. | Settings:<br>Standard setting:<br>Description: | De-activated / 5 – 60 °C<br>45 °C<br>Off: The hot water production is switched off by the user.<br>5 - 60 °C: Indicates below which temperature (T12) the compressor should produce hot water. |
| > Day for legionella* | Settings:<br><br>Standard setting:<br>Description: | De-activated / Monday / Tuesday / Wednesday / Thursday / Friday / Saturday / Sunday<br>De-activated<br>Here it is stated whether the unit should run a weekly legionella treatment. |
| > Legionella stop temp. | Settings:<br>Standard setting:<br>Description: | 50 – 70 °C<br>63 °C<br>The temperature of the legionella treatment |

*If a weekday is chosen, the legionella function will start at 1:00 at night and heat the domestic hot water to 63 °C.
**The function will only work if the supplemental electric heating is activated.

## Heating element

You will only have this menu item if an electrical after-heating element or a water after-heating element has been installed, and if it has been activated in "Service settings".

ATTENTION

An after-heating element is not included as standard. However, you can order it as an additional extra, and it can also be retrofitted.

If you want to be able to control the supply air temperature, you will need to install an after-heating element. This allows you to control the supply air temperature irrespective of the outdoor temperature. The after-heating element can also contribute towards the heating of the dwelling.

### > Heating element

| | | |
|---|---|---|
| > Activate | Settings:<br>Standard setting:<br>Description: | Off / On<br>Off<br>The user can turn the after-heating element on and off here. |

# Cooling

The unit can cool the dwelling via bypass-cooling and/or active cooling via the heat pump. For the unit to switch to cooling mode it must operate in summer mode, or you must activate cooling in "Operating function".

**Bypass cooling:**
If the room temperature, measured in the extract air, is higher than the cooling setpoint -2 ºC and the outdoor temperature is below the room temperature, the bypass will open and commence bypass cooling.

The bypass will close again once the room temperature reaches the desired level +1 ºC

If the outdoor temperature exceeds the room temperature and cooling becomes necessary, the bypass will not open. However, the unit will start cooling recovery via the heat exchanger where the outdoor air is cooled by the extract air.

**Active cooling:**
If the room temperature (measured in the extract air) is higher than the desired room temperature + the cooling setpoint, the compressor will start up and begin active cooling of the supply air. The compressor will stop when the room temperature falls below the cooling setpoint -1ºC.

## > Cooling

| | | |
|---|---|---|
| > Cooling setpoint | Settings:<br><br>Standard setting:<br>Description: | De-activated / Setpoint+1 / Setpoint+2 / Setpoint+3 / Setpoint+4 / Setpoint+5 / Setpoint+7 Setpoint+10 °C<br>De-activated<br>De-activated: Active cooling is deactivated.<br>Set point + X ºC: Indicates when active cooling is to start. The set point for desired room temperature is selected on the front of the panel. |
| > Vent. at cooling | Settings:<br>Standard setting:<br>Description: | De-activated / Level 2 / Level 3 / Level 4<br>De-activated<br>De-activated: The fan speed level does not change when the unit switches to cooling mode.<br>Level 2-4: Select the fan speed level you want the unit to switch to when in cooling mode. This happens already at bypass cooling. |
| > Priority | Settings:<br>Standard setting:<br>Description: | Water / Inlet<br>Water<br>This indicates whether the cooling function is to have a higher priority than production of domestic hot water*. |

*When domestic hot water is needed, the heat pump prioritises producing domestic hot water and does not run cooling. However, it opens the bypass damper if cooling is required.
If cooling is to have a higher priority than hot water, the unit will cool the supply air and store the heat in the hot water tank during that period. The domestic hot water will be heated, but not as quickly as usual in hot water production.

## Humidity control

The primary purpose of ventilation is to extract humidity from the house so it does not damage the building, and to achieve a good indoor climate.

This is rectified by an integrated humidity control system that maintains good, relative air humidity. When the average air humidity in the house falls below a set level (default set at 30%), ventilation may be reduced. It will typically only be for a short period of time. This will help avoid further reduction of the air humidity in the house.

The humidity control system also has a function that allows increased ventilation, should the air humidity increase, for instance when having a bath. The risk of mould growth in the bathroom is reduced, and the bathroom mirror will rarely steam up.

The humidity control system follows the average air humidity level measured over the previous 24 hours. In this way the system automatically adapts to summer and winter conditions.

### > Humidity control

| | | |
|---|---|---|
| > Vent.low humidity | Settings:<br>Standard setting:<br>Description: | De-activated / Level 1 / Level 2 / Level 3<br>Level 1<br>When the current humidity drops below the low humidity level, the ventilation unit switches to the set ventilation level. |
| > Low humidity level | Settings:<br>Standard setting:<br>Description: | 15 – 45%<br>30%<br>When current humidity below this value falls, the ventilation level set above is activated. |
| > Vent.high humidity | Settings:<br>Standard setting:<br>Description: | De-activated / Level 2 / Level 3 / Level 4<br>Level 3<br>At high humidity levels, for instance when having a bath, the unit changes to the set fan speed level. |
| > Max time hi.humidity | Settings:<br>Standard setting:<br>Description: | De-activated / 1 - 180 min.<br>60 min.<br>The function "Max time high humidity" stops when actual humidity falls below 3% above the average air humidity.<br><br>If "Max time high humidity" expires, then the operation of high humidity stops. The current humidity measured at the stop time becomes the new reference point/average.<br><br>The system often uses this function in the summer, when the temperature outside is warm and the humidity is high. |

# $CO_2$ Control

This menu is only displayed if a $CO_2$-sensor has been installed, and the function has been chosen under Service settings.

ATTENTION

A $CO_2$ sensor is not a standard part of all ventilation units, but may be purchased as an accessory.

If the number of people using a building varies considerably, controlling ventilation through the $CO_2$ level in the extract air may be a good solution. This function is often used in offices and schools where use varies greatly during the day and during the week.

## > CO2 control

| | | |
|---|---|---|
| > Vent.high CO2 | Settings:<br>Standard setting:<br>Description: | De-activated / Level 2 / Level 3 / Level 4 /<br>Level 3<br>Here you set the fan speed level at which the unit is to operate at high $CO_2$ level. |
| > High CO2 level | Settings:<br>Standard setting:<br>Description: | 650 – 2500 ppm<br>800 ppm<br>Here you set the $CO_2$ level at which the unit is to switch to high fan speed level. |
| > Normal CO2 level | Settings:<br>Standard setting:<br>Description: | 400 – 750 ppm<br>600 ppm<br>Here you set the $CO_2$ level at which the unit is to switch to normal fan speed level. |

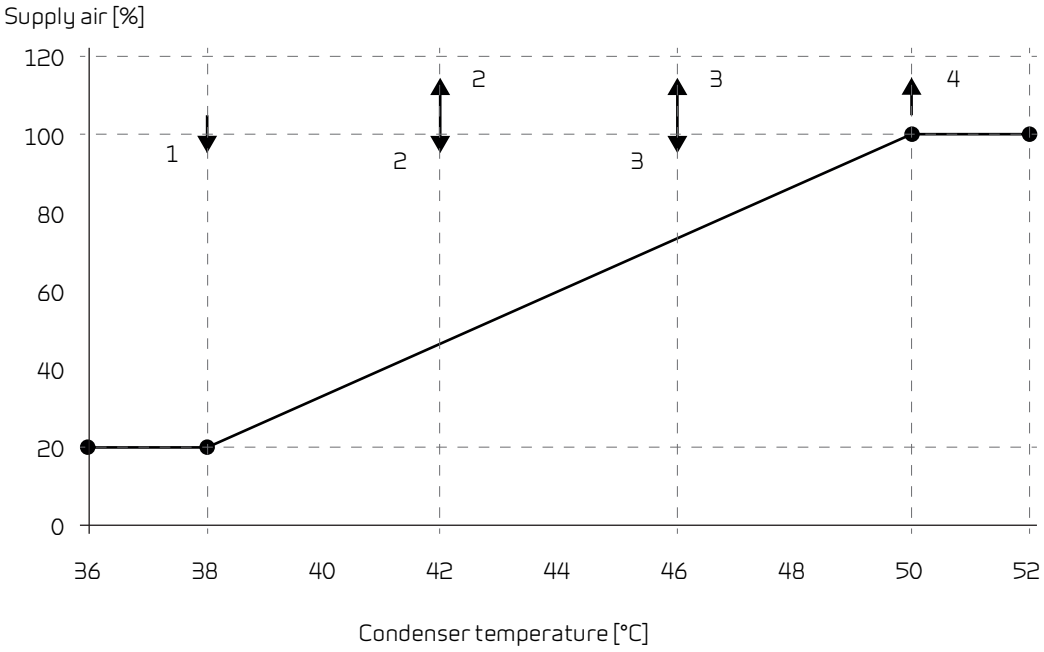
# Air exchange

You can prevent low humidity in the dwelling by reducing ventilation at low outdoor temperatures. This function is useful for instance in countries with regular frost or at high altitudes in the mountains where the outdoor air is very dry.

## > Air exchange

| | | |
|---|---|---|
| > Ventilation type | Settings:<br>Standard setting:<br>Description: | Water / Comfort / Energy<br>Comfort<br>Water: Here, the supply air fan stops operating as long as domestic water heating is required.<br>Energy: Here, operation is energy-optimised.<br>Comfort: Here, the air exchange is always balanced. |
| > Comfort | Description: | You have selected comfort where the fan speed level for supply air and extract air is always the same. |
| > Low temp. cpr. start | Settings:<br>Standard setting:<br>Description: | -1 – -15 °C / De-activated / 1 – 15 °C<br>De-activated<br>Here you indicate whether the heat pump is to start up at low outdoor temperatures, even if heating is not required. |
| > Winter low vent. | Settings:<br>Standard setting:<br>Description: | De-activated / Level 1 / Level 2 / Level 3<br>De-activated<br>Here you specify at what fan speed level you want the ventilation unit to operate at low outdoor temperatures. |
| > Temp. winter low | Settings:<br>Standard setting:<br>Description: | -20 – 10 °C<br>0 °C<br>Here you specify at which outdoor temperature you want the "Winter low vent." function to be activated. |
| > Water | Description: | You have selected Water, which means that the supply air fan stops operating as long as domestic water heating is required. If the unit is in cooling mode, the supply air will not stop. |
| > Low temp. cpr. start | Settings:<br>Standard setting:<br>Description: | -1 – -15 °C / De-activated / 1 – 15 °C<br>De-activated<br>Here you indicate whether the heat pump is to start up at low outdoor temperatures, even if heating is not required.<br>Off means that the function is deactivated. |
| > Energy | Description: | You have selected Energy, which ensures energy-optimised operation through regulation of the supply air volume against the set temperature curve. |
| > Low temp. curve | Settings:<br>Standard setting:<br>Description: | 15 – 46 °C<br>35°C<br>With curve control, the supply air will always be consistent as it is regulated with a fan speed level up or down.<br>Min. curve is level 1. |
| > High temp. curve | Settings:<br>Standard setting:<br>Description: | 39 – 60 °C<br>50 °C<br>With curve control, the supply air will always be consistent as it is regulated with a fan speed level up or down.<br>Max. curve is level 4. |
| > Low temp. cpr. start | Settings:<br>Standard setting:<br>Description: | -1 – -15 °C / De-activated / 1 – 15 °C<br>De-activated<br>Here you indicate whether the heat pump is to start up at low outdoor temperatures, even if heating is not required. |

**Condenser curve control**




## Filter alarm

ATTENTION

It is important to change the filters regularly and when needed. Dirty filters reduce the efficiency of the ventilation unit and result in a poorer indoor climate and higher power consumption.

From factory, the filter alarm has been set to signal filter replacement every 90 days. You can set the timer to fit the level of pollution in the area where the ventilation unit has been installed.

If someone in the household has pollen allergies, it is recommended that you install a pollen filter in the outdoor air intake.

### > Filter alarm

| | | |
|---|---|---|
| > Days to change | Settings:<br>Standard setting:<br>Description: | De-activated /30 / 60 / 90 / 180 / 360<br>90 days<br>The number of days between filter changes can be set as required. |

# Temperature regulation

If you have not installed an after-heating element, use the settings to control the bypass damper.

It is necessary to install an after-heating element if you want to control the supply air temperature and for it to contribute towards the heating of the dwelling. An after-heating element allows you to control the supply air temperature, regardless of the outdoor temperature.

You can install an external electrical or water after-heating element in the supply air duct.

ATTENTION

During periods when heating is not required in the dwelling, the supply air temperature may fall below the minimum temperature.

## > Temp. regulation

| | | |
|---|---|---|
| > Min. supply summer | Settings:<br>Standard setting:<br>Description: | 5 – 35°C<br>14 °C<br>Here you set the supply air temperature that you want the ventilation unit to be able to provide, as a minimum, during summer, when the unit is in heating mode. |
| > Min. supply winter | Settings:<br>Standard setting:<br>Description: | 5 – 35°C<br>16 °C<br>Here you set the supply air temperature that you want the ventilation unit to be able to provide, as a minimum, during winter, when the unit is in heating mode. |
| > Max. supply summer | Settings:<br>Standard setting:<br>Description: | 16 – 50°C<br>35 °C<br>Here you set the supply air temperature that you want the ventilation unit to be able to provide, as a maximum, when heating is required.<br><br>NB: This option is only shown if an after-heating element has been installed and activated. |
| > Max. supply winter | Settings:<br>Standard setting:<br>Description: | 16 – 50 °C<br>35°C<br>Here you set the supply air temperature that you want the unit to be able to provide, as a maximum, during winter.<br><br>NB: This option is only shown if an after-heating element has been installed and activated. |
| > Summer/vinter shift | Settings:<br>Standard setting:<br>Description: | 5 – 30 °C<br>12 °C<br>Here you set the temperature for the shift between summer and winter operation.<br>• If the outdoor temperature is higher, the unit will operate in summer mode<br>• If the outdoor temperature is lower, the unit will operate in winter mode |

# Service settings

## Password

Password for access to service settings: 2

WARNING

Service settings are intended for qualified installers with knowledge of the workings of the ventilation unit. They can identify the appropriate settings for the ventilation unit.

If a user alters these settings, the ventilation unit will no longer operate to its full potential. It may result in higher energy consumption, and errors may occur and cause damage to the ventilation unit.

## User selection program

The controller provides access to 2 user selection programs:

- User selection 1
- User selection 2 (Appears only when PCB board is installed)

NB! User selection 2 has higher priority than user selection 1.

A user selection program enables you to use special settings that override the standard operating settings in the main menu.
The user selection program is activated via an external signal.

The following are examples of situations when user selection functions are used..

| | |
|---|---|
| Cooker hood (User selection 2) | If you choose to run the cooker hood via the ventilation unit, the cooker hood will release a potential-free signal to the ventilation unit when you switch it on. When this happens, the ventilation unit increases the air volume to the set level so that enough air is drawn through the cooker hood. |
| Fireplace | Normally, ventilation is balanced with slightly negative pressure in the dwelling so that dampness is not pressed into the building components. This, however, is a disadvantage if you light a fire in your fireplace/ wood-burning stove as the smoke will then enter the dwelling instead of being drawn out through the chimney.<br><br>When lighting a fire in the fireplace/wood-burning stove, you can activate the user function with a potential-free contact that ensures positive pressure in the dwelling. Smoke is then drawn out of the chimney as intended. |
| Extended operation | If the ventilation unit is used in an office or a school where ventilation is reduced outside opening hours, it may be necessary to increase ventilation temporarily if the building is used in the evening for, for instance, meetings.<br><br>In that case you can have a potential-free contact that is activated, causing ventilation to increase, for example for an hour, before operation ceases again. |

On the front of the control panel in the upper right corner, the user selection icon appears when this function is active.

# User selection 1

## > User selection 1

| | | |
|---|---|---|
| > Select program | Settings:<br><br>Standard setting:<br>Description: | None / Extended / Supply air / Extract air / Ext. offset / Ventilate<br>Extended<br>Here you select the program you wish to run. |
| > Extended | Description: | Settings if Expanded is chosen. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated/ 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |
| > Room temperature | Settings:<br>Standard setting:<br>Description: | 5 – 30 °C<br>23 °C<br>Set the desired room temperature. |
| > Supply air | Description: | Settings if Supply air is chosen. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated/ 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |
| > Extract air | Description: | Settings if Extract air is chosen. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated/ 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |
| > Ext. offset | Description: | Settings if you select Ext. offset.<br><br>An expanding time is chosen and an offset for external space heating. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated / 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Offset temp. control | Settings:<br>Standard setting:<br>Description: | -10 – 10 °C<br>0 °C<br>With this setting, the setpoint for the space heating changed. |
| > Ventilate | Description: | Settings if Ventilate is chosen. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated/ 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |

# User selection 2

## > User selection 2

| | | |
|---|---|---|
| > Select program | Settings:<br><br>Standard setting:<br>Description: | None / Extended / Supply air / Extract air / Ext. offset / Ventilate / Cookerhood<br>None<br>Here you select the program you wish to run. |
| > Extended | Description: | Settings if Extended is chosen. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated / 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |
| > Room temperature | Settings:<br>Standard setting:<br>Description: | 5 – 30 °C<br>23 °C<br>Set the desired room temperature. |
| > Supply air | Description: | Settings if Supply air is chosen. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated / 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |
| > Extract air | Description: | Settings if Extract air is chosen. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated/ 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |
| > Ext. offset | Description: | Settings if you select Ext. offset.<br><br>An expanding time is chosen and an offset for external space heating. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated / 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Offset temp. reg. | Settings:<br>Standard setting:<br>Description: | -10 – 10 °C<br>0 °C<br>With this setting, the setpoint for the space heating changed. |
| > Ventilate | Description: | Settings if Ventilate is chosen. |
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated/ 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |
| > Cooker hood | Description: | Settings if cooker hood is chosen. |

| | | |
|---|---|---|
| > Duration | Settings:<br>Standard setting:<br>Description: | De-activated / 15 – 480 min.<br>De-activated<br>Time is set with 15 minute intervals.<br>Select for how long the program is to continue after the external signal has ceased. |
| > Fan speed level | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4 / De-activated<br>Level 4<br>Select the desired fan speed level. |

## Domestic hot water

Settings for hot water production have been set at the factory, but it may be necessary to adjust them to match the users needs.

### > Domestic hot water

| | | |
|---|---|---|
| > El. supl. heater | Settings:<br>Standard setting:<br>Description: | Activated / De-activated<br>De-activated<br>Here the supplementary electric heating can be activated or de-activated. |
| > Scalding protec. | Settings:<br>Standard setting:<br>Description: | 60 – 80 ºC<br>65 ºC<br>When the unit is in heating or cooling mode, heat will simultaneously be deposited in the hot water tank.<br><br>To prevent the hot water from getting too hot and scalding the user, a limit of 65ºC has been inserted. When the temperature in the hot water tank reaches 65 ° C, cooling or heating the supply air stops.<br><br>NB! If a scalding valve is connected to the bottom of the hot water tank, the setting can be changed up to 80ºC. In this way, the capacity for cooling and heating of the supply air is increased. |
| > Bypass offset | Settings:<br>Standard setting:<br>Description: | De-activated/ 1 - 30 °C<br>De-activated<br>De-activated: The compressor produces hot water according the desired setpoint.<br>1 - 30 °C: If there is a cooling or heating requirement, the compressor will stop producing hot water with the set value below the desired DHW temperature* |

* It may be a good idea to use the bypass offset function if the unit needs to heat or cool the home via the supply air.

Ex:
- Set the desired hot water temperature to 51 ° C (to avoid legionella)
- Set the Bypass offset at 6 °C

When the domestic hot water, measured at T12, exceeds 45 °C (51-6), the unit will switch from hot water production to heating or cooling the supply air. In heating and cooling operation, the compressor will set off heat in the hot water tank and the hot water to achieve a higher temperature. In heating mode, the temperature in the hot water tank can reach a temperature of approx. 62 ° C, and in cooling operation up to 80 °C. However, it will take longer to achieve these temperatures than at full hot water production.

If there is no need for heating or cooling of the supply air, the unit will heat the domestic hot water to the desired hot water temperature, in this example 51 ° C.

## Heating element

Here, the control of the after heating element is activated and set, if installed.

### > Heating element

| | | |
|---|---|---|
| > After heating element | Settings:<br>Standard setting:<br>Description: | El-heating / Water heating / None<br>None<br>Here you specify what kind of after heating element is installed. |
| > El heating | Description: | The electrical after-heating element has been chosen |
| > Delay | Settings:<br>Standard setting:<br>Description: | 0 – 60 min.<br>0 min.<br>This shows the amount of minutes before the after-heating element is released once heating is required. |
| > Regulation | Settings:<br>Standard setting:<br>Description: | 0/5/10V / 0-10V / Period<br>0-10V<br>Here the regulation mode is set:<br>0/5/10V: 3 step regulation<br>0-10V: Stepless regulation<br>Period: On/Off in 1 min. |
| > Water heating | Description: | The water after-heating element has been chosen |
| > Delay | Settings:<br>Standard setting:<br>Description: | 0 – 60 min.<br>0 min.<br>This shows the amount of minutes before the after-heating element is released once heating is required. |
| > Regulation | Settings:<br>Standard setting:<br>Description: | 0/5/10V / 0-10V / Period<br>0-10V<br>Here the regulation mode is set:<br>0/5/10V: 3 step regulation<br>0-10V: Stepless regulation<br>Period: On/Off in 1 min. |

## Air quality

All Nilan domestic ventilation units come as standard with a humidity sensor installed. It is possible to purchase a $CO_2$ sensor which is activated in this menu.

### > Air quality

| | | |
|---|---|---|
| > Function | Settings:<br>Standard setting:<br>Description: | Hum+CO2 / Humidity / De-activated<br>Hum+CO2<br>Here you can choose from off / humidity sensor and / or $CO_2$ sensors. |

# Air exchange

It is easy and quick to balance the airflows with Nilan CTS602 control. All fan speed levels can be set infinitely between 20 and 100%, different for extract air and supply air.

### > Air exchange

| | | |
|---|---|---|
| > Min. level sup. air | Settings:<br>Standard setting:<br>Description: | De-activated / Level 1 / Level 2 / Level 3 / Level 4<br>De-activated<br>You can set a minimum fan speed level for supply air. |
| > Min. level exh. air | Settings:<br>Standard setting:<br>Description: | Level 1 / Level 2 / Level 3 / Level 4<br>1<br>You can set a minimum fan speed level for extract air. |
| > Max. level exh. air | Settings:<br>Standard setting:<br>Description: | Level 3 / Level 4<br>Level 4<br>You can set a maximum fan speed level for extract air. |
| > Level 1 - Sup. air | Settings:<br>Standard setting:<br>Description: | 20 – 100%<br>23%<br>Here the fan speed level is set for step 1 - supply air. |
| > Level 2 - Sup. air | Settings:<br>Standard setting:<br>Description: | 20 – 100%<br>40%<br>Here the fan speed level is set for step 2 - supply air. |
| > Level 3 - Sup. air | Settings:<br>Standard setting:<br>Description: | 20 – 100%<br>65%<br>Here the fan speed level is set for step 3 - supply air. |
| > Level 4 - Sup. air | Settings:<br>Standard setting:<br>Description: | 20 – 100%<br>100%<br>Here the fan speed level is set for step 4 - supply air.. |
| > Level 1 - Exh. air | Settings:<br>Standard setting:<br>Description: | 20 – 100%<br>25%<br>Here the fan speed level is set for step 1 - extract air. |
| > Level 2 - Exh. air | Settings:<br>Standard setting:<br>Description: | 20 – 100%<br>45%<br>Here the fan speed level is set for step 2 - extract air. |
| > Level 3 - Exh. air | Settings:<br>Standard setting:<br>Description: | 20 – 100%<br>70%<br>Here the fan speed level is set for step 3 - extract air. |
| > Level 4 - Exh. air | Settings:<br>Standard setting:<br>Description: | 20 – 100%<br>100%<br>Here the fan speed level is set for step 4 - extract air. |

**Nilan recommends the following settings for each fan speed level:**
Level 1: "Holiday ventilation" - is used when you are away on holiday, but also for "Humidity low" and "Ventilation at low outdoor temperature"
Level 2: "Basic ventilation" - is used as standard operation
Level 3: "Guest ventilation" - is used when you have guests, but also for "High humidity level"
Level 4: "Party ventilation" - is used when many people are gathered in the dwelling, but also for "Cooker hood function"

# Pre-heating / cooling

Here you activate and set the controls of the after-heating element if it has been installed.

### > Pre-heat / cool

| | | |
|---|---|---|
| >Type | Settings:<br>Default setting:<br>Description: | None / EHD / BAH<br>None<br>EHD damper (Geothermal pipe) and BAH (Geothermal heating-element) are used for pre-heating or pre-cooling outdoor air.<br><br>EHD/BAH pre-cooling can only be activated when the room temperature for opening the bypass is reached and ventilation is activated.<br><br>EHD/BAH pre-heating can only be activated when ventilation is activated. |
| >EHD | Description: | If you select EHD damper, the supplied outdoor air can be cooled or heated before being led in, depending on the season:<br><br>1. During winter the outdoor air is heated by the ground.<br>2. During summer the outdoor air is cooled by the ground.<br>3. During autumn and spring it is not always the most suitable solution to lead the outdoor air through a geothermal pipe. The outdoor air should instead be led in directly through a roof stack. |
| >Stabilization time | Settings:<br>Default setting:<br>Description: | 0 - 10 min<br>5 min<br>When the control system has to choose between geothermal pipes and roof stacks, the temperature is measured using each solution. In order to identify the<br>correct temperature, it needs to operate for a while. The control system then selects the best solution. |
| >Holding time | Settings:<br>Default setting:<br>Description: | 0 - 24 hours<br>6 hours<br>The EHD damper switches between geothermal pipe and roof stack. When one has been selected, this choice remains fixed for the retention time. |
| >BAH | Description: | BAH: If you select BAH (Geothermal pre-heating element), the supplied outdoor air can be cooled or heated via a pre-heating element, depending on the season:<br><br>1. During winter the function of the pre-heating element is to offer frost protection. It heats the outdoor air and prevents the unit from icing up.<br>2. During summer it can cool the outdoor air so cool air can be led into the dwelling. |
| >Stabilization time | Settings:<br>Default setting:<br>Description: | 0 - 10 min<br>5 min<br>When the control system has to choose between geothermal pipe/pre-heating element and roof stack, the temperature is measured using each solution. In order to identify the correct temperature, it needs to operate for a while. The control system then selects the best solution. |
| >Holding time | Settings:<br>Default setting:<br>Description: | 0 - 24 hours<br>6 hours<br>BAH switches between geothermal pipe/pre-heating element and roof stack. When one has been selected, this choice remains fixed for the retention time. |

# De-icing

All ventilation units that have a heat exchanger with a high heat recovery will, during periods of high frost, be able to experience the formation of ice in the heat exchanger. The defrost function will try to de-frost the ice that forms in the heat exchanger so that normal operation can continue.

It is possible to prevent ice formation in the heat exchanger with a frost protecting pre-heating element. In this way continuous operation is achieved without cold supply air.

It is recommended to install a frost protection pre-heating element in areas with a lot of frost during winter time.

**Compact P Polar og Compact S Polar**
Compact P Polar and Compact S Polar have a built-in antifreeze preheating element installed at the factory. The built-in pre-heating element is controlled by Nilan´s unique CCDI System (Condition Controlled De-ice System)*, which ensures a very low energy consumption at frost protection.
If the unit is delivered as a Polar version the function "T4 start de-icing" has been De-activated from factory.

## > De-icing

| | | |
|---|---|---|
| > Time between de-icing | Settings:<br>Standard setting:<br>Description: | 15 - 720 minutes<br>30 minutes<br>Indicates the minimum time between each de-icing process. |
| > T4 start de-icing | Settings:<br>Standard setting:<br>Description: | De-activated/ 1 - 5 °C<br>3 °C<br>Here, the temperature in the counter-flow heat exchanger (T4) indicates that the unit must defrost the exchanger.<br>De-activated has to be selected if a pre-heating element is installed. |
| >T6 start de-icing | Settings:<br>Standard setting:<br>Description: | -10 – 0 °C<br>-2 °C<br>Indicates at which evaporator temperature (T6) the heat pump is to de-ice. |
| > T4/T6 stop de-icing | Settings:<br>Standard setting:<br>Description: | 2 – 12 °C<br>6 °C<br>Here you select at which discharge air temperature (T6) or at which exchanger temperature (T4) the de-icing function is to stop. |
| > T6 min. de-icing | Settings:<br>Standard setting:<br>Description: | 10 – 120 sec.<br>60 sec.<br>Indicates at which minimum time (T6) de-icing should run. Recommended 60 sec. |
| > Comp. max de-icing | Settings:<br>Standard setting:<br>Description: | 2 – 60 minutes<br>10 minutes<br>Indicates the maximum time for de-icing the evaporator.<br>If de-icing has not been completed within the set time, an alarm will be displayed and the unit will stop. |
| > T4 max. time de-icing | Settings:<br>Standard setting:<br>Description: | 5 – 60 minutes<br>25 minutes<br>Indicates the maximum time allowed for de-icing the counter-flow heat exchanger.<br>If de-icing has not been completed within the set time, an alarm will be displayed and the unit will stop. |

*** CCDI-System**
Ordinary antifreeze pre-heating elements are controlled by the outside temperature, and ensure that no outdoor air below 0 °C enters the unit. That means, the pre-heating element heats the outdoor air for many hours without it actually being necessary.

Nilan CCDI-System measures the temperature in the part of the heat exchanger where ice forms, and only starts the pre-heating element when the temperature in the heat exchanger falls below 2 °C, and regulates stepless.

Ice formation in the heat exchanger is not only conditioned by the outside air temperature, but to a large extent also by the temperature and humidity in the exhaust air. With the Nilan CCDI-System the pre-heating element will typically only be activated at an outdoor temperature below -2 °C and i many cases at an even lower temperature. In this way, the pre-heating element will run for a very limited number of hours per year, compared to a normal pre-heating element.

# Temperature regulation

**Room sensor**
The controlling sensor

**Room low temperature**
You can set a minimum room temperature at which the ventilation unit is to stop (Room low temperature).

This is a safety function that can be useful, for instance if you are not at home and the heat supply gets disconnected. If that happens, the dwelling will no longer be heated and the room temperature will fall. To prevent the ventilation unit from cooling the dwelling even further, you can set it to stop at a minimum room temperature.

**Offset ext. heating**
If you have installed an expansion PCB, the ventilation unit can control an external heat supply by blocking or releasing external heating.

In this way the ventilation unit and the heat supply work in union to control the heating of the dwelling. When the dwelling does not require heating or the ventilation unit is operating in cooling mode, you can block the external heat supply.

## > Temp. regulation

| | | |
|---|---|---|
| > Room sensor | Standard setting: | T10 Extract air |
| > Select heat source | Settings:<br>Standard setting:<br>Description: | De-activated / HP / HP +Afterheat<br>HP (heat pump)<br>Here you can disconnect the heat pump if you do not want to use it for heating. The ventilation unit will still be able to run active cooling at the heat pump when De-activated has been selected. |
| > Room low temp. | Settings:<br>Standard setting:<br>Description: | De-activated / 1 – 20 °C<br>De-activated<br>Here you specify whether the ventilation unit should stop at low room temperature and at what temperature. |
| > Offset ext. heating | Settings:<br>Standard setting:<br>Description: | -5 – 5 °C<br>-1 °C<br>Here you specify the offset temperature at which the external heat supply is to be released or blocked.<br>The temperature setting is deducted from or added to the regulatory deadband for the setpoint. |

# Supply air control

ATTENTION
The parameters in Supply air control should only be adjusted by persons with knowledge of control technology.

## > Supply air control

| | | |
|---|---|---|
| > Gain PI regulation | Settings:<br>Standard setting:<br>Description: | 0 – 30%/°<br>7%/°<br>This option is only shown if an after-heating element has been installed and activated. |
| > Integration time | Settings:<br>Standard setting:<br>Description: | 0 – 600 sec.<br>120 sec<br>This option is only shown if an after-heating element has been installed and activated. |
| > Neutral zone | Settings:<br>Standard setting:<br>Description: | 0 – 10,0 °C<br>2 °C<br>This option is only shown if an after-heating element has been installed and activated. |
| > Temperature ramp. | Settings:<br>Standard setting:<br>Description: | De-activated / 0.01 – 1.00°C/s<br>0.10 °C/s<br>This option is only shown if an after-heating element has been installed and activated. |
| > Capacity ramp. | Settings:<br>Standard setting:<br>Description: | De-activated /0.10 – 10.0%/s<br>0.5%/s<br>This option is only shown if an after-heating element has been installed and activated. |
| > Restart time | Settings:<br>Standard setting:<br>Description: | 0 - 60 min<br>6 min<br>Here you set the minimum time (in minutes) that the compressor has to have stopped before it restarts. |

# Room temperature control

In this menu item it is possible to adjust the control of the ventilation units after heating element.

ATTENTION

The paramets in Room temperatur control should only be adjusted by persons with knowledge of control technology.

## > Room temp. contr

| | | |
|---|---|---|
| > Type of response | Settings:<br>Standard setting:<br>Description: | Slow / Normal / Fast / User<br>Normal<br>This option is only shown if an after-heating element has been installed and activated. |
| > Slow / Normal / Fast | Description: | Here you set the speed at which the heating control should adjust up or down. |
| > User | Description: | A user-specific setting is made here. |
| >Gain PI regulering | Settings:<br>Standard setting: | 0,0 - 10,0 %/°<br>6 %/° |
| >Integration time | Settings:<br>Standard setting: | 0 - 60 min<br>6 min |
| >Neutral zone | Settings:<br>Standard setting: | 0,2 - 10,0 °C<br>2,0 °C |
| > Neutral zone | Settings:<br>Standard setting:<br>Description: | 0,2 – 10,0 °C<br>2 °C<br>Here you set the offset temperature at which the shift between bypass and after-heating should be activated. |

# Smart Grid

Smart Grid gives you the opportunity to benefit economically, as it regulates the heat pump power consumption in accordance with the varying prices of electricity day and night. Smart Grid can receive an external signal from e.g. a solar panel control system or another control system that registers your electricity requirement and determine in which operating setting the unit should run

**Smart Grid Compact P, P2, P EK, P2 EK & S - Domestic hot water**
The Smart Grid function regulates the heat pump in the unit when it produces domestic hot water. Electricity is then used to heat domestic hot water via the heat pump when the price of electricity is low. When the price it high, the heating of the water is reduced.

**Smart Grid Compact P, P2, P EK, P2 EK & S - Central heating**
The Smart Grid function regulates the heat pump in the unit, when it is used for heating the dwelling via the central heating system. Electricity is then used for central heating when the price of electricity is low. It will stop heating when the price is high.

ATTENTION - Central heating = Warm supply air via the heat pump and also the electric boiler, if the unit has one of these.

ATTENTION - The ventilation will always be operating regardless of which operating setting you have selected for the Smart Grid.

Smart Grid has four operating settings:

| Operating Setting | Status | Description |
|---|---|---|
| 1. The heat pump is turned off | A: Closed<br>B: Open | The heat pump is disconnected. |
| 2. Normal operation | A: Open<br>B: Open | The heat pump produces domestic hot water in accordance with the set values. |
| 3. Low electricity price | A: Open<br>B: Closed | During these time periods when the price of electricity is low, it is possible to increase the production of domestic hot water. |
| 4. Overcapacity of electricity | A: Closed<br>B: Closed | There is an overcapacity of electricity and the price of electricity is low. You should therefore produce domestic hot water and central heating.<br>ATTENTION! This operating setting is only used in Germany, where Smart Grid originated. |

## > Smart Grid

| Operating Setting | Status | Description |
|---|---|---|
| > Smart Grid activation | Settings:<br>Default setting:<br>Description: | Deactivated / Activated<br>Deactivated<br>Here you activate Smart Grid for Compact P, P2 & S. |
| > Activated | Description: | If you select Activated, the settings for Smart grid for Domestic hot water and Central heating can be activated. |
| > Domestic hot water | | |
| > Electric supplemental heater | Settings:<br>Default setting:<br>Description: | Deactivated / Activated<br>Deactivated<br>Here you select whether supplemental electric heating should be activated when domestic hot water is produced during periods with cheap electricity.<br><br>A: Open B: Closed |
| > Hotwater temperatur add. | Settings:<br>Default setting:<br>Description: | 0 - 10 °C<br>0 °C<br>Here you specify how much the temperature in the hot water tank should increase during periods with cheap electricity.<br><br>A: Open B: Closed |
| > Central heating | | |

| | | |
|---|---|---|
| > Electric supplemental heater | Settings:<br>Default setting:<br>Description: | Deactivated / Activated<br>Deactivated<br>Here you select whether the electric boiler should be activated when central heating is produced during periods with cheap electricity.<br><br>Only works if the unit is a model Compact P EK<br><br>A: Open B: Closed |
| > Central temperatur add. | Settings:<br>Default setting:<br>Description: | 0 - 10 °C<br>0 °C<br>Central heating production.<br>Here you specify how much the room temperature should increase during periods with cheap electricity.<br><br>A: Open B: Closed |
| > Central overcap add. | Settings:<br>Default setting:<br>Description: | 0 - 10 °C<br>1 °C<br>Production of domestic hot water and central heating.<br>Here you specify how much the domestic hot water temperature and the room temperature should increase during periods with an overcapacity in electricity. Supplemental electric heating in the hot water tank and the electric boiler is activated.<br><br>A: Open B: Closed |

## Restart function

Here you set how the ventilation unit should act in case of fire detection and when testing via external fire control.

### > Restart

| | | |
|---|---|---|
| > Restart function | Settings:<br>Standard setting:<br>Description: | De-activated / HP/LP / Fire<br>De-activated<br>Here you set what the ventilation unit should do when fire input is activated.<br><br>De-activated: Used when connecting to a fire thermostat. For fire detection, the user must acknowledge the alarm before restarting the ventilation unit.<br><br>HP / LP: High pressure alarm /Low pressure alarm. Restarts automatically.<br><br>Fire: Used when connecting to external fire control. In case of fire detection, the unit is stopped. When the external fire alarm system is connected again, the alarm is self-acknowledged and the ventilation unit starts up again automatically. |

## Save/ restore settings

You can restore the factory settings. The function also allows you to save current settings and restore them at a later date.

ATTENTION

Before restoring factory settings or previously saved settings, we recommend that you note down the fan settings to save you balancing the ventilation unit again.

### > Save / restore settings

| | | |
|---|---|---|
| > Save / restore settings | Settings:<br>Standard settings:<br>Description: | De-activated / Factory / Backup / Restore<br>De-activated<br>Factory: Restores factory settings<br>Backup: Saves current settings<br>Restore: Restore saves current settings |

## Manual test

In this menu you can manually test a range of functions of the ventilation unit.

### > Manual test

| | | |
|---|---|---|
| > Test function | Settings:<br><br>Standard setting:<br>Description: | De-activated / De-icing / Supply air / Extract / Vent. + compr. / Vent.+ heat. / Water heat.<br>De-activated<br>It is possible to check some of the functions of the ventilation unit. |
| > De-activated | Description: | Manual test is deactivated (normal operating mode) |
| > De-icing | Description: | The de-icing function starts |
| > Supply air | Description: | Only the supply air fan is on |
| > Extract air | Description: | Only the extract air fan is on |
| > Vent.+ compr. | Description: | Testing ventilation and compressor. |
| > Vent. + heating | Description: | Testing the after-heating element, if one has been installed. During the test a 50% signal is sent to the heating element. |
| > Water heat. | Description: | Manual test of the supplemental electric heating in the hot water tank. |

## Modbus address

The control in NIlan ventilation units has an open Modbus communication, which allows the ventilation unit to be controlled with e.g. an external CTS controller.

The CTS602 control communicates Modbus RS485, and the complete Modbus protocol can be downloaded from the Nilan website.

### > Modbus adress

| | | |
|---|---|---|
| > Modbus address | Settings:<br>Standard setting:<br>Description: | 1 – 247<br>30<br>The Modbus address for the ventilation unit is entered here. |

# Data log interval

Data can be logged at intervals of 1-120 minutes.

- A choice has been made to log temperatures in whole degrees Celsius in order to minimize logfile sizes.
- The status of digital inputs and outputs have been combined in two joint log variables, "Din" and "Dout".
- Alarms are always logged at the time they are viewed.

Note! Only installers can download the log file, as an LMT program is required, which can be downloaded on NilanNet.

### > Data log interval

| | | |
|---|---|---|
| > Data log interval | Settings:<br>Standard setting:<br>Description: | 1 – 120 min. / De-activated<br>10 min.<br>If "De-activated" is selected, logging will only contain events and alarms. |

**Data logging**
In order to data log you need the XML file "Devicelog.xml", which is a decoding specification required by the LMT PC program. The file can be downloaded from NilanNet under the menu item "After Sales/Software".

- Enter the file in the "..\Database" directory under the current LMT project.
- You can then retrieve the log from the control system via the menu "Device - Devicelog download".
- The log is shown in LMT in both tabular and graphic form.
- You can export the log file to Microsoft Excel format.

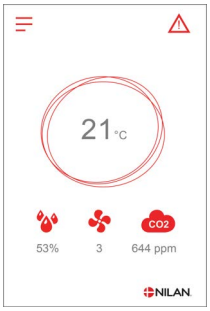
ATTENTION
Alarms are still logged if "Data logging" is off.

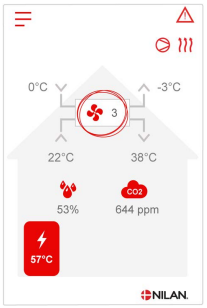
# Main screen

You can choose from 2 different images for the main screen in the user panel.

### > Main screen

| | | |
|---|---|---|
| > Main screen | Settings:<br>Standard setting:<br>Description: | Normal / House<br>House<br>Both options allow access to set the ventilation unit via the main screen. |



## Screen settings

It is possible to set the backlight in the control panel as well as calibrate it in case it comes out of focus.

### > Screen set

| | | |
|---|---|---|
| > Backlight (active) | Settings:<br>Standard setting:<br>Description: | 3 – 100 %<br>100 %<br>Here you set the backlight when in active function. |
| > Backlight (idle) | Settings:<br>Standard setting:<br>Description: | 0 – 100 %<br>2 %<br>Here you set the backlight when not in active function. |
| > Calibrate | Settings:<br>Standard setting:<br>Description: | Off / On<br>Off<br>If you select "On", it is possible to calibrate the screen by pressing the point as it gradually moves.<br><br>A dot appears that you must press each time it moves. |

## RH sensor

### > RH sensor

| | | |
|---|---|---|
| > RH sensor | Settings:<br>Standard setting:<br>Description: | Lodam (square) / SHT3x (round)<br>SHT3x (round) (set at the factory)<br>Here you choose the type of humidity sensor which is mounted.<br>Default: Lodam (square) |

# Alarm list

## Compact

The following list applies to Compact ventilation units with the CTS602 control. The events are divided into the following categories:

 Warning — Operation continues, but an incident has occurred that should be kept in mind.

 Alarm — Operation is partially or completely stopped as it is a critical fault that needs immediate attention.

| ID | Type | Display text | Description / cause | Troubleshooting |
|---|---|---|---|---|
| 1 |  | Hardware error | Error in the hardware of the control system. | Note alarm and reset it.<br>If the alarm does not disappear contact service. |
| 2 |  | Alarm timeout | A warning alarm has become a critical alarm. | Note alarm and reset it.<br>If the alarm does not disappear contact service. |
| 3 |  | Fire alarm activated | The ventilation unit is stopped due to the fire thermostat being activated. | If there is no fire, check the connection to the fire thermostat.<br>If okay, contact service. |
| 4 |  | Pressure switch | The high-pressure switch in the refrigeration circuit has been triggered, possibly due to:<br>• Extremely warm outdoor air supply<br>• Clogged filter<br>• Broken fan | Check for faults and reset the alarm.<br>Contact service if you cannot reset the alarm or if alarms often occur. |
| 6 |  | Error in de-icing the heat pump | The de-icing time has been exceeded.<br>The exchanger or the heat pump has failed to de-ice within the maximum time.<br>This may be due to the unit being exposed to very low outdoor temperatures. | Contact service if resetting the alarm does not help.<br>Register the current operating temperatures from the Show data menu in order to ease the service process. |
| 10 |  | Overheating of electrical after-heating | The electrical heating element has overheated. Lack of airflow due to, for instance, blocked filters, blocked air intake or defect supply air fan. | Make sure that air is blown into the house.<br>Make sure the filters are clean.<br>Check that the outdoor air intakes is not blocked.<br>Reset alarm.<br>Contact service if the above does not solve the problem. |
| 11 |  | Low flow over the electrical heating element | Lack of airflow in supply air. | See alarm code 10. |
| 13 |  | High temperature electricity supplementary heating HW. | The temperature for the electricity supplement in the hot water tank has been too high. | The over-heating fuse located behind the lower door is to be re-engaged. In case of repeated alarms contact service. |
| 15 |  | The room temperature is too low | When the room temperature is below 10°C, the unit will stop in order to prevent further cooling of the house. This may, for instance, be during a period when the house is unoccupied and the heating system is off. | Heat up the house and reset the alarm. |
| 16 |  | Software error | Fault in the ventilation unit software | Contact service. |
| 17 |  | Watchdog warning | Fault in the ventilation unit software | Contact service. |

| | | | | |
|---|---|---|---|---|
| 18 |  | Content of database changed | Parts of the program setting have been lost.<br>This may be due to a prolonged power cut or a lightning strike.<br>The unit will continue to operate with standard settings. | Reset alarm.<br>Contact service if the unit does not operate to your satisfaction/ as before, as some subprogrames may have been lost. (Sub-program is only available for service). |
| 19 |  | Change filter | The filter monitor has been set at X amount of days for check-up/change of filter. | Clean/change filter.<br>Reset alarm. |
| 20 |  | Errors in legionella treatment | Legionella treatment has not been performed within the time limit or number of trials. | In case of repeated alarms contact service. |
| 21 |  | Check date and time | Is displayed during power cuts. | Set the date and time.<br>Reset alarm. |
| 22 |  | Error supply air temperature | The desired heating of the supply air is not possible.<br>(applies only with after heating element) | Set a lower supply air temperature.<br>Reset alarm. |
| 23 |  | Domestic hot water temperature error | Domestic hot water heating not possible. | Contact service. |
| 27-58 |  | Error on the temperature sensor | One of the temperature sensors has either short circuited, been disconnected or is defective. | Register which sensor, Tx, is faulty and contact service. |
| 70 |  | Anode Error | The hot water tank anode is either torn or not connected properly. | Contact service. |
| 71 |  | Error de-icing heat exchanger | Max. de-icing time exceeded for counter-flow heat exchanger.<br>This may be due to the unit being exposed to very low temperatures. | If resetting the alarm does not help, contact service. Register the current operating temperatures from the "SHOW DATA" menu in order to ease the service process. |
| 72 |  | Abnormal low evaporator temperature | Abnormal evaporator temperature (T6) is due to insufficient air flow. | Change filters, check outdoor air intake is not stopped.<br>In case of constant fault contact service. |
| 73 |  | High pressure alarm | The airflow over the surfaces is too low | Make sure that air is blown into the house.<br>Make sure the filters are clean.<br>Check that the outdoor air intake is not blocked.<br>Reset alarm.<br>Contact service if the above does not solve the problem. |
| 74 |  | Low pressure alarm | The airflow over the surfaces in cooling mode is too low. | Make sure that air is blown into the house.<br>Make sure the filters are clean.<br>Check that the outdoor air intake is not blocked.<br>Reset alarm.<br>Contact service if the above does not solve the problem. |
| 91 |  | Missing expansion PCB | Expansion PCB is missing. | Contact service. |
| 92 |  | Backup error | Error writing or reading installer settings | Contact service. |
| 96 |  | Error in damper test | Damper (open / closed) not fulfilled. | Reset alarm.<br>If it does not help contact service. |
| 102 |  | Manual | Is displayed during test of functions in Manual test | The warning disappears when the "Manual test" function is de-activated |

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