

User manual and Installation Guide



InoVent AHU-200-700

I Read this first!

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Disposing of the parts of the controller:

INFORMATION FOR USERS ON THE CORRECT HANDLING OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

Disposal must be in accordance with European Union directives and the related national legislation.

1.1 Reading instructions

The following symbols are used to draw the reader's attention to different warning levels.



Important information



Danger!! General danger



Danger!! High voltage! Danger of electrical current or voltage

1.2 User manual



Before installation the user should be thoroughly familiarized with this user manual, especially with purposes, installation, settings and operation.

Special care should be taken when installing and connecting external equipment (sensor, high voltage etc.) and handling the PCB's correctly according to protection against ESD



Installation of the electronics/parts must be performed by authorized personnel only. All warranties are excluded in case installation is performed by unauthorized personnel or in case the spare parts have not been correctly installed.

2 Functions of the Air Handling Unit Controller

The Air Handling Unit controller is designed for domestic and smaller industrial ventilation systems. Heat recovery can be either passive or active using a heat pump. Air heater can be added to either pre-heat or after-heating the inlet air.

The air handling unit can also be extended with hot tap water production using a heat pump taking energy from the exhaust air.

Depending on the complexity and size of the ventilation system the following functionality is available:

- Ventilation control
- Temperature control
- Heat recovery – via rotor heat exchanger
- Air heater – after-heater
- Defrosting
- User functions
- Week program
- External heat source control
- Filter monitoring via pressure-drop measurement (optional)

2.1 Ventilation control

2.1.1 Start-up

Unit with outputs for air dampers can be configured for a delayed start of the ventilation fans. This gives the air dampers time to be fully opened before pressure builds up. Via a menu the ventilation start delay can be adjusted. Inlet starts another 1 minute after the exhaust fan has started.

If low winter ventilation is activated, the unit will always start up at the selected winter low step the first 2 minutes.

2.1.2 Ventilation based on humidity and CO₂ level

A humidity sensor (included) and a CO₂ level sensor (optional) can be connected to the unit controller. The controller will adjust ventilation based on the desired settings in the Air quality menu.

The installer configures the humidity levels where ventilation should change speed either up or down.

NOTE! REMOVE THE DUST CAP FROM THE SENSOR AFTER THE UNIT WAS INSTALLED!!!

In the same menu the settings for ensuring a comfortable CO₂ level can be configured. There are two CO₂ levels, a normal level and a high level where the ventilation speed will be increased.

Both sensors have 3 minutes settling time after start from ventilation step Off. Average = 24 hours average. RH (high) = Average + 10%; RH (low) = average + 3%

2.2 Temperature control

2.2.1 Low room temperature alarm

This function ensures the room temperature is not getting too cold. If the room temperature is getting below the room low-temperature limit, the inlet speed is reduced 1 step. After 5 minutes the speed is reduced again until temperature can be maintained.

If the room temperature cannot be maintained, the fans are stopped, and a Low Room Temp warning is set.

An external room temperature sensor is mounted.

The function can be disabled by setting the Room low limit to off in the Room control menu.

2.2.2 Summer/Winter operation

The controller can automatically switch between summer and winter operation based on the outdoor temperature. After each shift, the unit stays here for 15 min before another shift is allowed.

The difference between summer/winter operations is the minimum temperature of the inlet air and that the bypass damper is normally not opened in wintertime.

2.2.3 Control sensor

The controller can use different controlling sensors. Supply: The inlet temperature sensor is used; there is no room temperature control. Extract: The extract temperature sensor is used.

2.3 Air heater (after-heater)

The air heater (or after heater) heats up the air after the air has passed the heat exchanger. It must be enabled and configured in the Air heater menu.

The heater can be None or Electrical.

The electrical heater has a 0 – 10V analogue output and the heater relay is turned on when the heater is needed.

2.4 Defrosting

Defrosting is done for 6 minutes every hour. During defrost, the supply fan is stopped, the exhaust fan is running at MIN speed, the air heater is off and rotor speed is normal.

- Mode 1 is for low humidity and starts at -20°C
- Mode 2 is for normal humidity and starts at -15°C
- Mode 3 is for high humidity and starts at -10°C

After defrosting, the air heater is first started when fans are up and running

2.5 User selection functions

Activating the User function digital input can trigger different functions.

The air handling unit will perform this operation during the selected period and overriding the other user settings including week program settings.

Function	Duration	Supply air level	Exhaust fan level
None	No action	-	-
Fan boost	Input active	MAX	MAX
Supply air (increase supply air)	15 min – 8h	Off, MIN, NORM, MAX	NORM
Extract air (increase extract air)	15 min – 8h	NORM	Off, MIN, NORM, MAX
Extern alarm	15 min – 8h	Off, MIN, NORM, MAX	

2.6 Cooker hood function

There is a separate digital input for the operation together with a turned-on cooker hood extractor.

Function	Duration	Supply air level	Exhaust fan level
None	No action	-	-
Cooker hood	Input active	0-100%	0-100%

2.7 Rotor control

The rotor heat exchanger is always started some minutes before the heater. This ensures the rotor is first started when the rotor alone is insufficient.

2.8 Party mode

The user can activate a party mode. It is used for increased ventilation with many people in the ventilated area. Fan speed is set to MAX, the user can set it to MIN or NORM afterwards.

The existing set point is used. The user can change the set point during active party mode.

Party mode is automatically stopped when the party timeout period is over. Default timeout is 4 hours, it can be changed after the activation. Party timeout menu is hidden when party mode is off.

2.9 Away mode

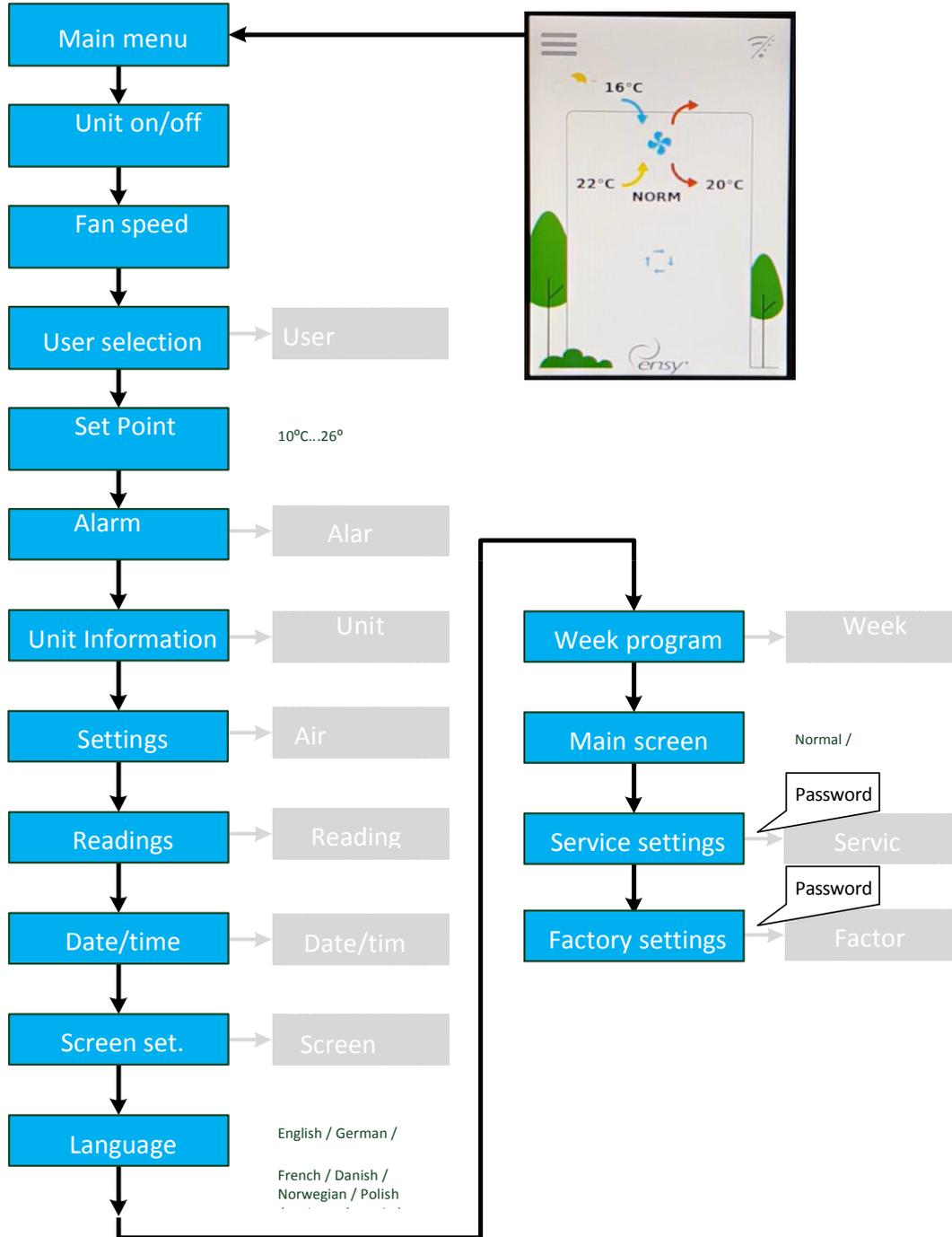
The away mode is for periods with low ventilation needs like away on holiday etc.

At activation, fan speed is set to MIN and set point to 15°C. Both fan speed and set point can be changed afterwards. The Away mode must be turned off manually.

Fan speed and set point returns to the settings when the away mode was started.

3. Menu system

3.1 Overview of the menu system



Pressing the menu button will open several screens and menus. Press to go back to previous menu.

Press and buttons to scroll up and down in the menus

If the alarm icon, is visible, pressing it will open the alarm menu

3.2 Main menu



The main screen is the default menu. The display returns to this screen after some minutes without user interaction.

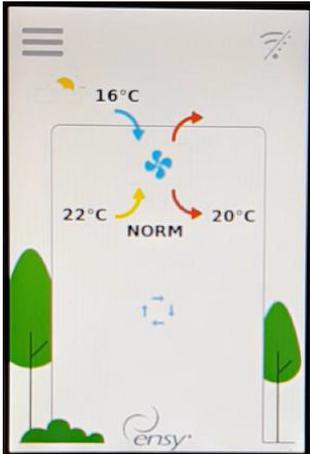
It shows the actual temperature, measured relative humidity and actual fan speed.

A week program and an alarm are active on this example pressing the  button or the temperature will open the temperature set point menu

Show the measured humidity

The fan speed can be adjusted by pressing the  button or the speed

The user can select if the main menu should show a house



Touch the inlet arrow to set the desired temperature

3.3 Possible icons in the menu headline



Press the menu button to access the sub-menus



A week-program is active



One or more alarms are active

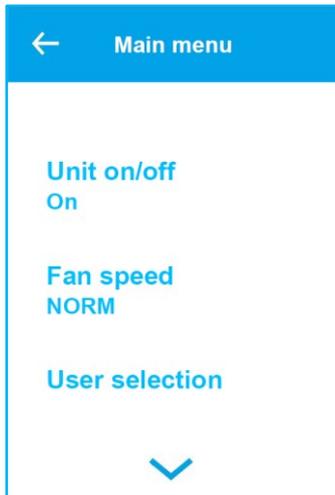


The air handling unit is turned off



Wi-Fi connection is not connected

4. User settings menu

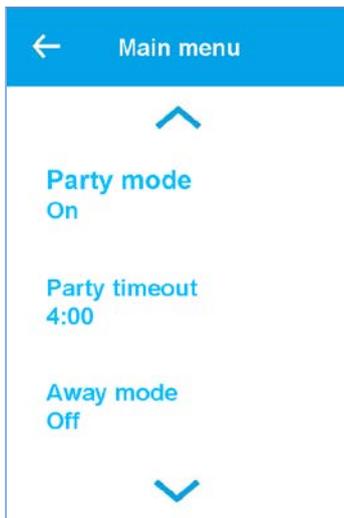


This is the user level of the menu system

Show run-mode
Touch to start and stop of the unit, On / Off

Show fan speed.
Touch to adjust fan speed; Off, MIN, NORM, MAX

Sub-menu with setup for different user configurable inputs



Turn Party mode on/off.
Increased fan speed for many people
Range: Off, On; default Off
Time out of Party mode. Only visible if Party mode is On.
Range 1 – 24 hours; default 4 hours

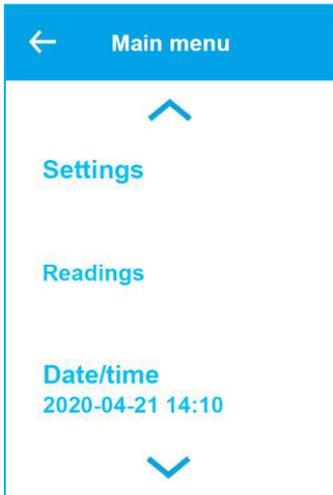
Turn Away mode on/off.
Reduced fan speed, MIN and lower set point 15°C
Range On, Off; default off



Show actual set point
Touch to adjust set point; range 10°C – 26°C

List, number of active alarms.
Open the alarm sub menu if there is an active alarm Sub-

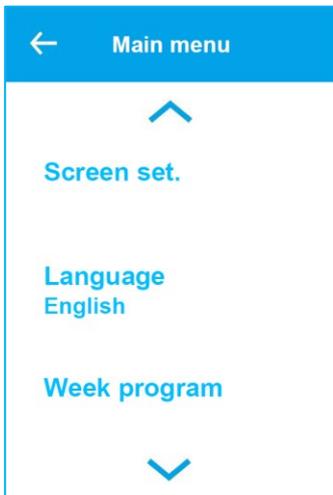
menu with software versions for the unit



Sub-menu with more user-settings

Sub-menu with temperatures and other operation data

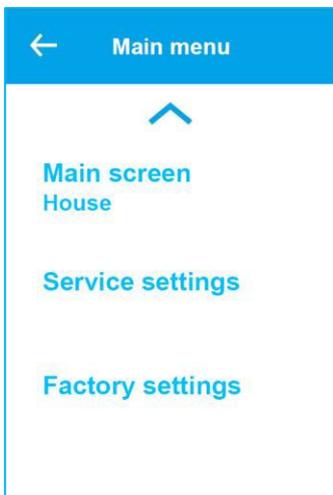
Show and adjust date and time in a sub-menu



Adjust backlight levels in active and idle mode

Adjust display language.
Select between English, German, French, Danish, Norwegian, Polish, Italian, Dutch and Lithuanian

Week program sub-menu. Lists if a program is active

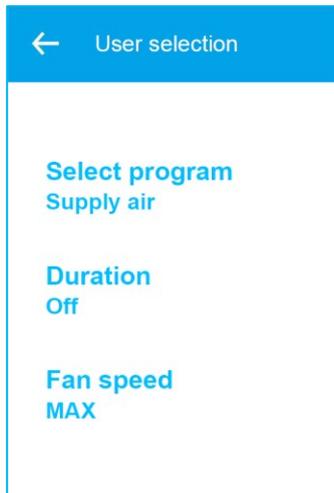


Switch between normal main menu and house main menu

Sub-menu with service settings. Password protected. Password is 5

Sub-menu with service settings. Password protected. Password is 50

4.1 User selection sub-menu



The unit has a digital input which can trigger a user- configurable function, i. e. an increased fan speed when guests are coming. The input overrides the normal operation

Select program: None, Fan boost, Supply air, Extract air, Extern alarm. Default None

Menu only visible if a duration after activation can be set. Else function is active when digital input is active.

Range Off: Until input is released; 15 min to 8 hours Menu visible for some programs.

Set the fan speed to use when digital input is active

Range Off, MIN, NORM, MAX

4.2 Alarm handling menus



Sub-menu with warnings and critical alarms for the air handling unit.

Critical alarms will stop the unit. The unit may continue operation with a warning.

If the alarm icon is red  it is a critical alarm and the air handling unit will stop.

Touch to open a more detailed description

If the alarm icon is yellow  it is a warning and the air handling unit may continue to operate

Touch to open a more detailed description

If the alarm icon is grey, , it is an inactive warning or critical alarm. The alarm may have to be acknowledged to start the unit again.

Touch to open a more detailed description



Detailed description of a warning or critical alarm

Date/time the alarm came active

Touch Clear alarm to clear the alarm. If the alarm number starts with small letters, c/w, the alarm can be cleared Alarm number, severity and description

Trouble shooting information for the alarm/warning



List the software versions in the controller and display of the air handling unit

Controller software version

Display software version

MAC address of the Wi-Fi radio

4.3 Settings for the air handling unit



Sub-menu for configuration of the cooker hood function. The air handling unit will help push the steam towards the cooker hood

Set the temperature were the air handling unit switches to summer mode Range 5°C.. 30°C; default 17°C

Set the minimum air inlet temperature in summer mode Range 5°C.. 50°C; default 10°C



Set the minimum air inlet temperature in winter mode Range 5°C .. 50°C; default 15°C

Set the maximum air inlet temperature in summer mode Range 5°C .. 50°C; default 30°C

Set the maximum air inlet temperature in winter mode Range 5°C .. 50°C; default 40°C



Sub-menu for cooling recovery

Maximum rotor exchange speed Range 0% . 100%; default 100%

4.3.1 Cooker hood function



The air handling unit has a digital input for the cooker hood.

When the signal is active, the Supply and Extract fan speeds are set to the specified speeds in 0-100%

Duration of the fan speeds after signal has disappeared. Range 00:00 (only run when active signal);

1 min .. 1 hour 30 min; default 0 min

Supply fan speed during active cooker hood signal Range 0 – 100%; default 100%

Extract fan speed during active cooker hood signal Range 0 – 100%; default 100%

4.3.2 Cooling recovery function



Cooling recovery is used when the intake air temperature is higher than the room temperature to keep the rooms cool.

Turn the cooling recovery mode On or Off Default Off

Activate cooling recovery when the intake air temperature is 2°C or 3°C higher than the room temperature.

Range 2°C or 3°C

4.4 Readings sub-menu



The menus contain readings for the sensors and outputs

Measured relative humidity

Supply air temperature

Extract air temperature



Air temperature at the air heater

Fresh air temperature

Exhaust air temperature (after the rotor heat exchanger)



Supply fan speed in percentage

Extract fan speed in percentage

Air heater percentage



Speed of rotor heat exchanger

Pressure difference over the inlet air filter Used for filter clogging monitoring (optional)

4.5 Date/time sub-menu

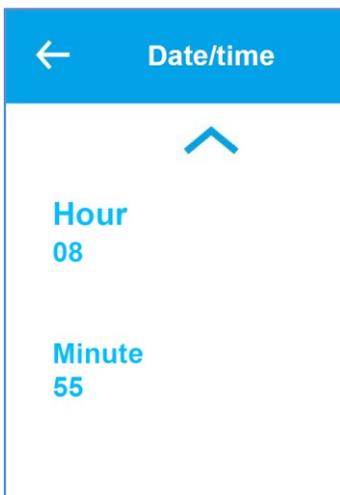


The controller has a built-in real time clock used for alarm logging

Set the year

Set the month

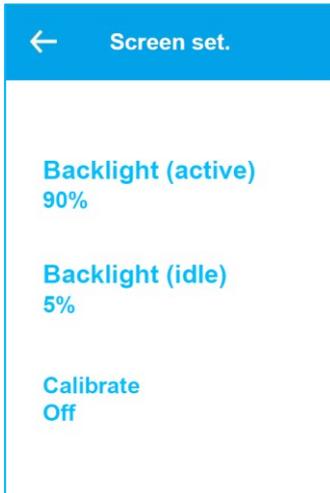
Set the day of month



Set the hour (24h)

Set the minutes

4.6 Screen settings



Set the backlight level when the display is active – being used

Set the backlight level in idle mode

Calibrate the touch panel only if the display responds unaligned with finger touches!

Please note it must be done carefully as the display may else become impossible to use!

4.7 Week program



The week program is used to program different fan speeds in up to 6 periods per day and 3 different week programs, i. e. a normal week, holiday, a week with shift-working hours

Select program 1, 2 or 3

Sub menu with program 1, 2 or 3 to edit

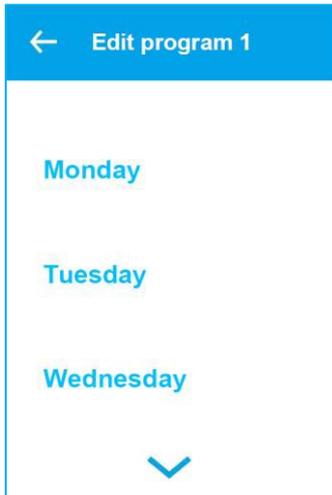
Reset selected program 1, 2, or 3 to default factory settings. The user will get a warning before applying the reset



Touch Program 1 to edit program 1 in sub-menus

Touch Program 2 to edit program 2 in sub-menus

Touch Program 3 to edit program 3 in sub-menus

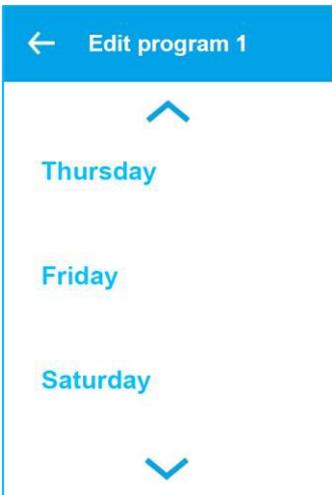


Every weekday can have its own 6 different profiles, typically weekends are different

Touch to edit settings for Monday

Touch to edit settings for Tuesday

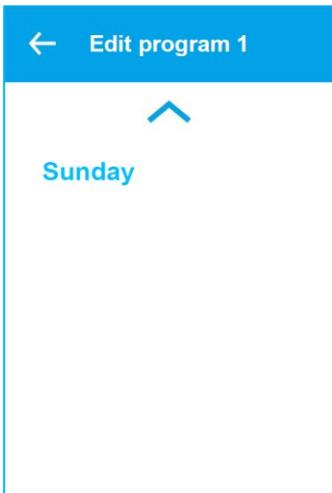
Touch to edit settings for Wednesday



Touch to edit settings for Thursday

Touch to edit settings for Friday

Touch to edit settings for Saturday



Touch to edit settings for Sunday



Every function or profile has its own 3 settings: Start time, set point and fan speed. When start time is reached, the set point is set to the entered value and fan speed to the setting

Overview of function 1 on Monday
Touch to edit this function / profile

Overview of function 2 on Monday
Touch to edit this function / profile

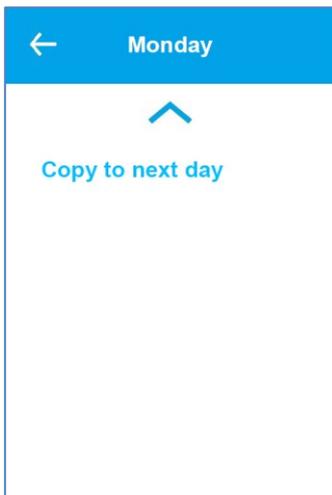
Overview of function 3 on Monday
Touch to edit this function / profile



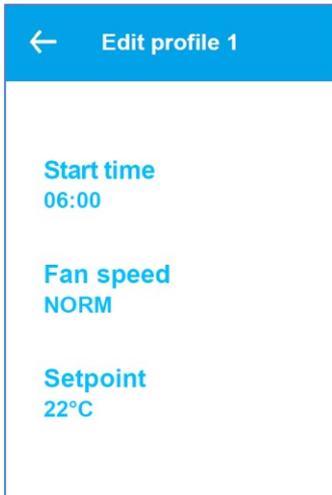
Overview of function 4 on Monday
Touch to edit this function / profile

Overview of function 5 on Monday
Touch to edit this function / profile Off means the function is not active

Overview of function 6 on Monday
Touch to edit this function / profile Off means the function is not active



Touch to copy all 6 functions setting for the day, here Monday, to the next day. Used if the next day should have the same settings



Every function / profile of the day has its own settings

Start time of the profile in 15 minutes interval
Range 00:15 to 23:45. 00:00 equals Off and means no function

Fan speed
Range Off, MIN, NORM, MAX
Level is hidden if Start time is Off

Desired temperature. Overwrites the main menu setting
Range 10°C to 26°C
Temperature is hidden if Start time is Off



Reset a program to default settings

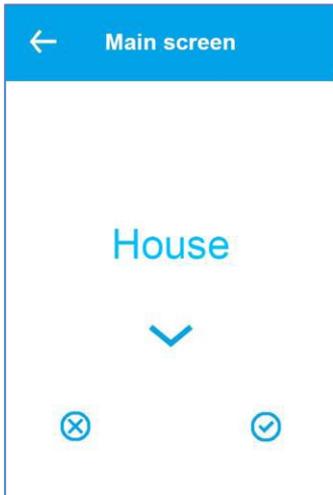
Touch to reset program 1

Touch to reset program 2

Touch to reset program 3



Security question if you want to reset all settings in the program to default values



Select if the main screen should be the house or the normal view with lines

Accept or cancel

4.8 Service settings



Service settings are for the service technician and are password protected.

The default service password is 5

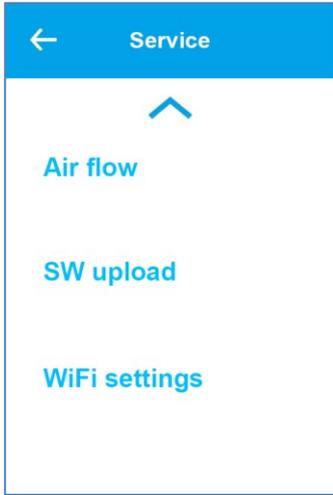
Accept change with  or decline with 



Sub-menu with air handling settings

Sub-menu with calibration option of temperature sensors

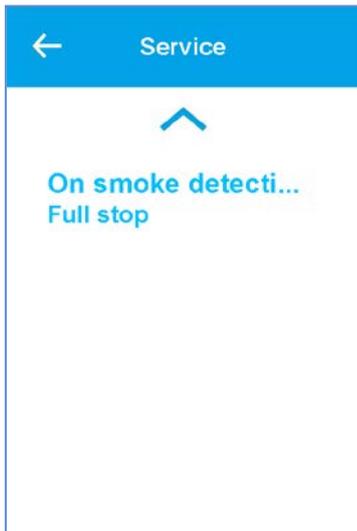
Different counters for the air handling unit



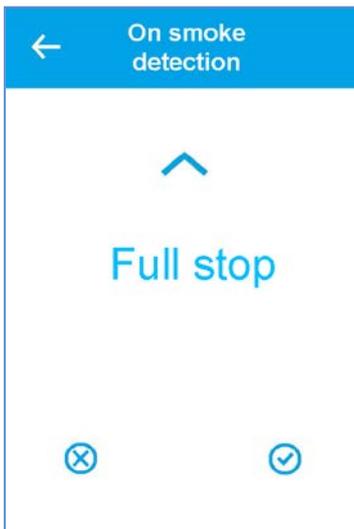
Sub-menu with air flow filter monitoring via pressure measurement

Sub-menu to start a software update of the controller and display in the air handling unit

Sub-menu with Wi-Fi settings



Sub-menu with different handling in case of smoke See below



Configure action if the smoke input becomes active. Range: Full stop, Boost and Stop Supply fan Default Full stop

Accept change with  or decline with 

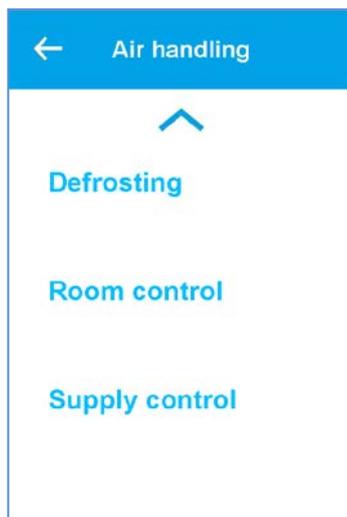
4.8.1 Air handling menu



Air exchange sub-menu

Air quality sub-menu

Air heater sub-menu

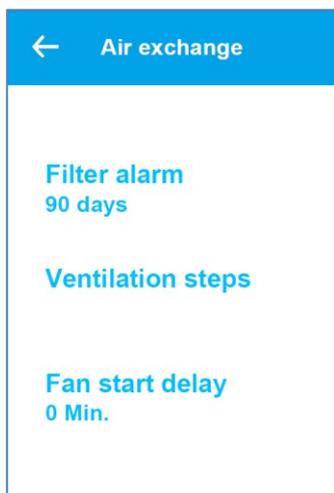


Defrosting sub-menu

Room control sub-menu

Inlet control sub-menu

4.8.2 Air exchange menu



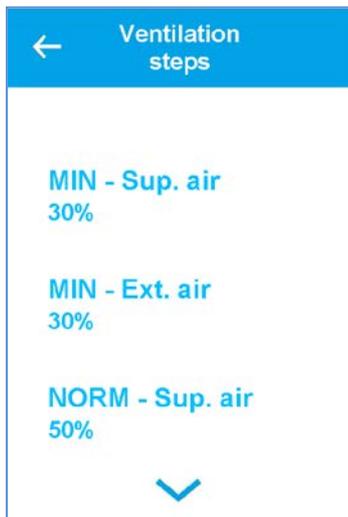
Set filter alarm method or timer setting
Range Pressure, 30, 90, 180, 360 days; default 180 days

Sub-menu with percentage fan speed per step

Start delay of fans after start of the unit
Range 0 – 4 minutes; default 0 min



Set filter alarm method or timer setting
Range Pressure, 30, 90, 180, 360 days; default 180 days
Pressure measures pressure drop over the inlet filter



Level MIN – supply air fan speed
Range 30% .. NORM-1% setting; default 30%

Level MIN – exhaust air fan speed
Range 30% .. NORM-1% setting; default 30%

Level NORM – supply air fan speed Range
MIN+1% .. 79%; default 50%



Level NORM – exhaust air fan speed Range
MIN+1% .. 79%; default 50%

Level MAX – supply air fan speed
Range 80% .. 100%; default 80%

Level MAX – exhaust air fan speed
Range 80% .. 100%; default 80%

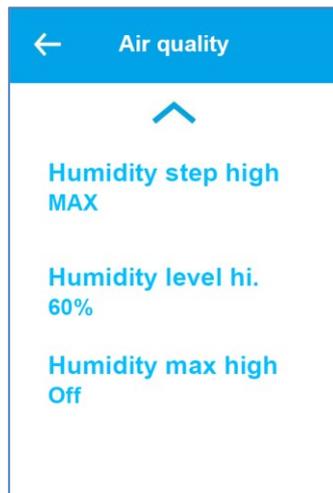
4.8.3 Air quality menus



Fan speed setting at high humidity limit Range MIN, NORM, MAX; default MAX

High humidity level when to increase fan speed Off, 40%RH to 95%RH; default 60%RH

Off means function disabled
Max time to run fan at the high level Range Off, 1 min to 120 min; default Off
Off means no time limit



Settings for handling the air quality

Sensor control mode. Humidity and CO₂. Range Off, Humidity, Humidity + CO₂
Default Humidity + CO₂

Fan speed setting at low humidity limit Range MIN, NORM, MAX; default MIN

Low humidity level when to reduce fan speed Off, 20%RH to 50%RH; default 40%RH
Off means function disabled

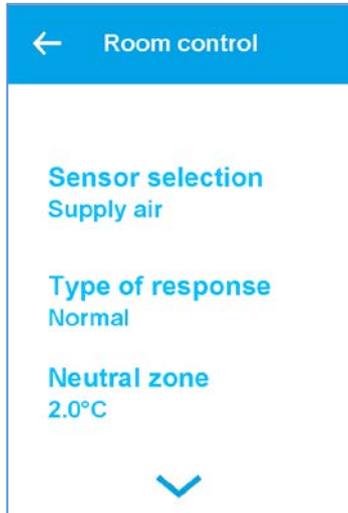
4.8.4 Defrosting menu



Defrost is done 6 min every hour by stopping supply fan and air heater. Exhaust fan set 30% and rotor at normal speed. Condition to start defrosting are the 3 modes.
Mode 1 at -20°C, Mode 2 at -15°C, Mode 3 at -10°C

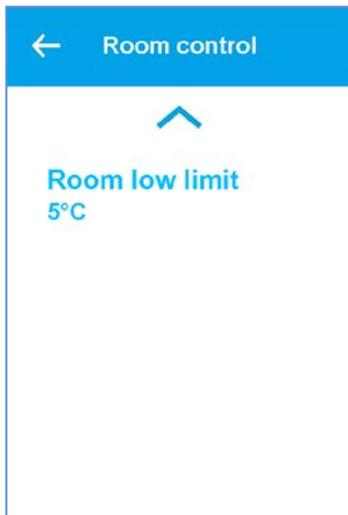
Select defrost mode
Range Off, Mode 1, Mode 2, Mode 3

4.8.5 Room temperature control



Settings for the room temperature control

The controlling sensor is either the extract air or supply air temperature sensor
 Range Extract air, Supply air; default Extract air Select reaction speed to a temperature change. Range: Slow, Normal, Fast, User.
 Default Normal
 User defined neutral zone ($2 = \pm 1$). Used to extend the passive operation range around the setpoint
 Range 0°C to 10°C. Default 2°C



Enable low room temperature action and alarm. Inlet fan speed may be reduced step by step to avoid sub-cooling of the house.
 Range Off, 1°C to 20°C. Default 5°C

4.8.6 Supply temperature control



Inlet temperature controller gain Range 0%/° to 30 %/°
 Default 7%/°
 Supply temperature controller integration time. If set to zero, only P-control will be active.
 Range 0 sec to 600 sec; default 120 sec
 Inlet temperature controller neutral zone ($2 = \pm 1$ °C) Range 0°C to 10°C
 Default 0.5°C

4.8.7 Temperature sensor calibration



Menu for calibrating / offsetting the temperature sensors

Adjust the AT Inlet temperature sensor Range -5.0° .. +5.0°; default 0.0°

Adjust the EAT Exhaust temperature sensor Range -5.0° .. +5.0°; default 0.0°

Adjust the OET Air heater temperature sensor Range -5.0° .. +5.0°; default 0.0°



Adjust the AVK Rotor temperature sensor Range -5.0° .. +5.0°; default 0.0°

Adjust the UTE Intake temperature sensor Range -5.0° .. +5.0°; default 0.0°

4.8.8 Counters



Show some operation counters for the unit

List the total operation hours

Operation hours since last power up

Number of seconds in this state of operation

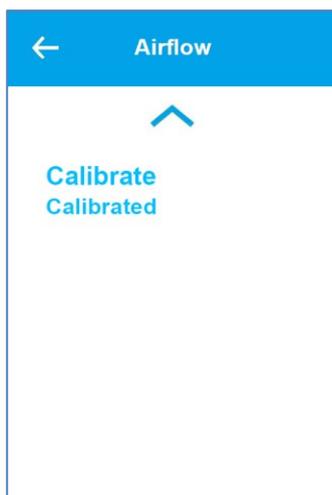
4.8.9 Airflow menu



Settings for the air flow pressure sensor for the filter monitoring.
 If the pressure drop at a fan speed is above the level for the specified time, a warning of clogged filter is issued
 Turn use of the airflow pressure sensor on or off
 Range On, Off; default Off
 If set to Off, the following menus are hidden
 Maximum allowed pressure drop limit at MIN fan speed
 Range 0 .. 2000 Pa; default 19 Pa
 Maximum allowed pressure drop limit at NORM fan speed
 Range 0 .. 2000 Pa; default 62 Pa

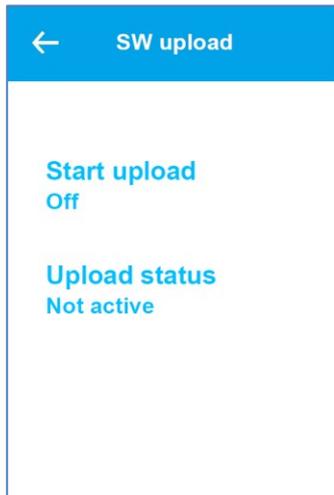


Maximum allowed pressure drop limit at MAX fan speed
 Range 0 .. 2000 Pa; default 180 Pa
 Time delay with pressure drop above limit before a warning is issued
 Range 0min .. 1092 min; default 5 min
 Show actual pressure drop



Start calibrating process of the air flow pressure sensor
 Range No, Yes; default No. Shows status if activated The fans should be stopped during calibration!

4.8.10 Software update menu



It is possible to update the software in the air handling unit through the USB port on the display.

The new software and a USB cable must be available A X-modem capable software tool must be used

Activate the software update process. Range No, Yes; default No
Once activated, the menu cannot be closed until completion! Duration up to 15 min

Shows status of the upload process.
If active, more menus will show with more detailed information for the operator

4.8.11 Wi-Fi Connection



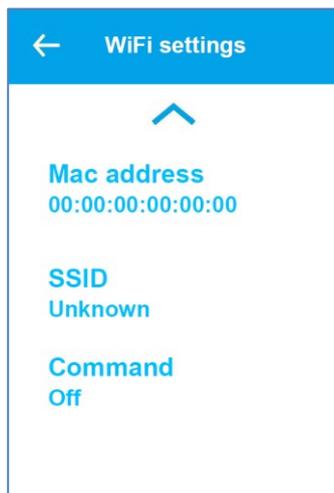
The Wi-Fi connection can be used for an app to remotely control and monitor the air handling unit.

See separate document for this Turn

Wi-Fi radio on or Off

Status if the cloud connection is active
Menu is only visible if Wi-Fi is turned on

IP address of the unit
Menu is only visible if Wi-Fi is turned on



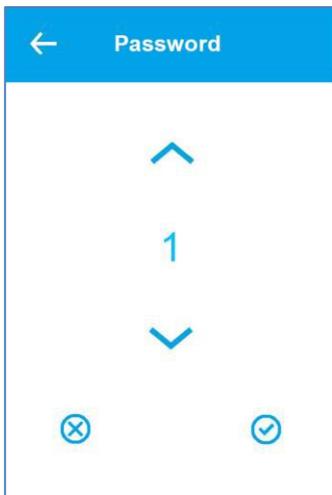
Mac address of the unit
Menu is only visible if Wi-Fi is turned on

SSID of the connected Wi-Fi
Menu is only visible if Wi-Fi is turned on

Commands for the Wi-Fi connection.
On boarding: Activate Bluetooth radio for the app (5 min)
Factory reset: Reset all setting to factory settings
Off: No action

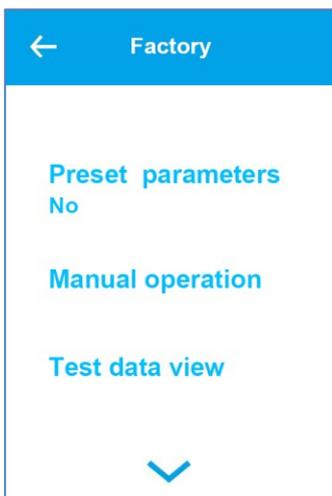
Note: Bluetooth is used for the on-boarding process with the app. Bluetooth is only active the first 5 minutes after power-on for safety reasons!

5. Factory menus

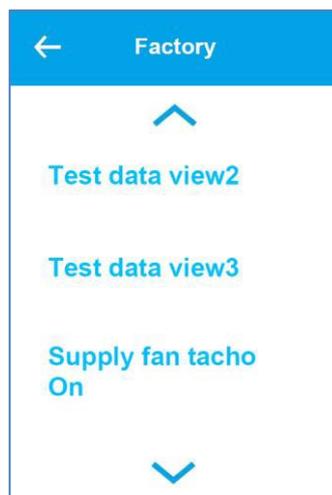


The factory menus are password protected. They are only to be used for service purposes
Password is 50 for the factory menu

Enter the password, 50



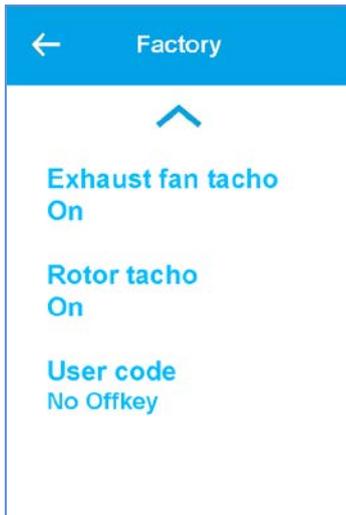
Menu only visible if unit is stopped Preset the controller with new settings
Range Off, Factory (settings), Backup, Restore; default Off Menu only visible if unit is stopped
Sub-menu for controlling manual operation
Sub-menu with data from the controller



Sub-menu with data from the controller

Sub-menu with data from the controller

Configure if the tachometer signal in the supply fan is connected Range On, Off; default Off



Configure if the tacho signal in the extract fan is connected Range On, Off; default On

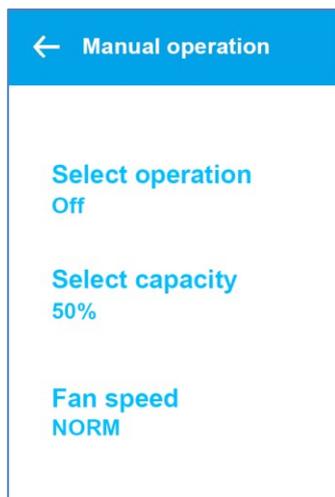
Configure if the tacho signal in the rotor heat exchanger is connected

Range On, Off; default Off

User code sets if the user can stop the unit. Default the user cannot stop the unit = No OffKey.

Range No Offkey, Open; default No OffKey

5.1.1 Manual mode operation



Set the air handling unit in manual mode for trouble shooting purposes

The relay output and analogue output is activated

Select manual mode

Range Off, Supply air, Exhaust air, Heating, Rotor; default Off

Analogue output value for capacity Range 0% .. 100%; default 50%

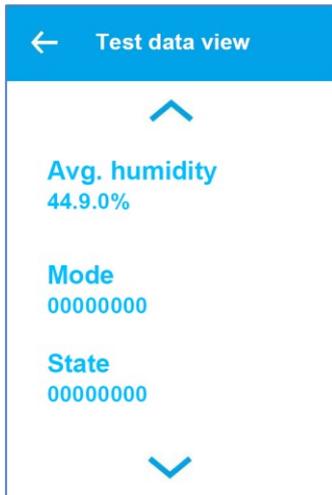
Fan speed during testing

Range MIN, NORM, MAX; default NORM

5.1.2 Data views

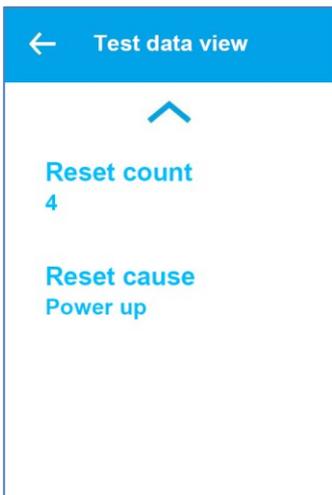


Values from the controller



Mode of the software

State of the software

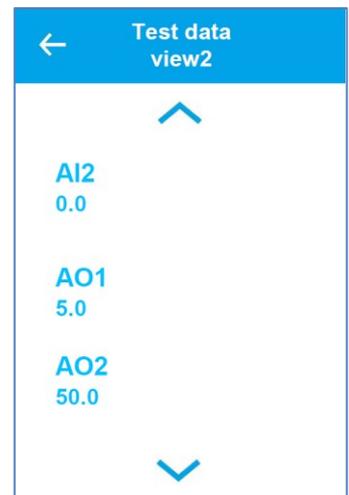


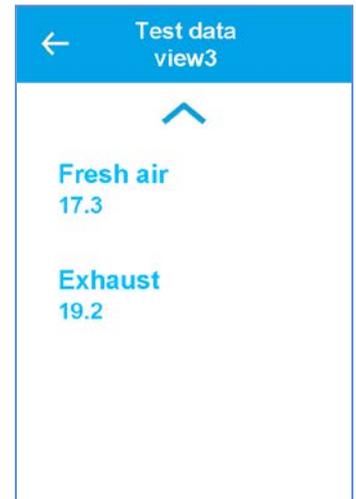
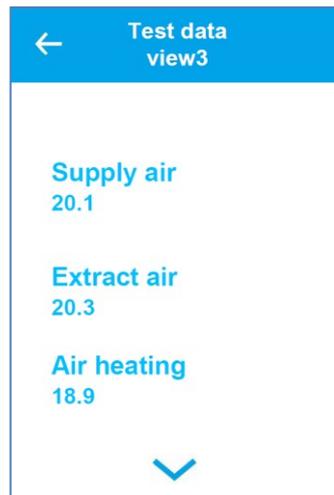
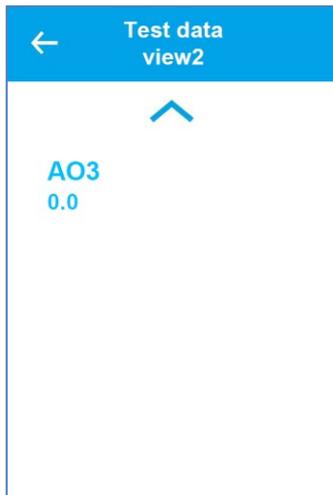
Number of resets

Last reset cause



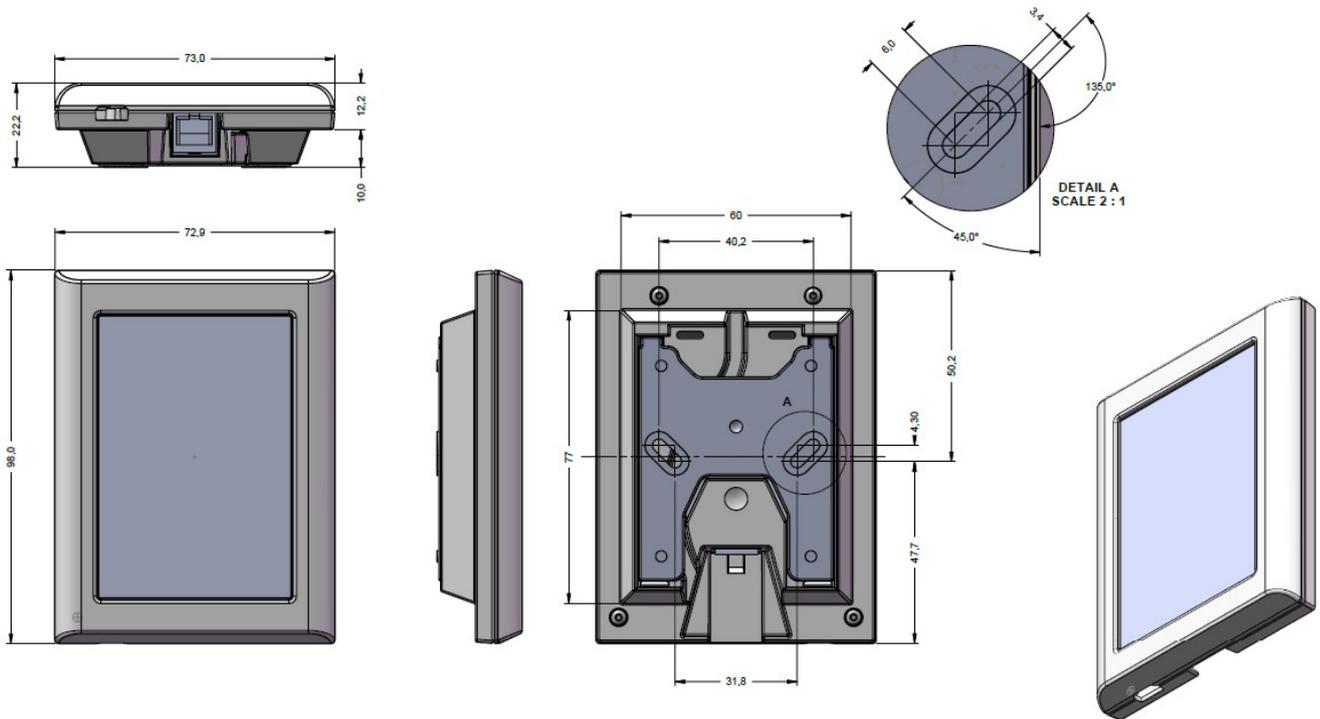
Show the digital inputs DIN1,2,3,4 – rest unused DIN1,2 NO; DIN3,4 NC
Active relays = 1





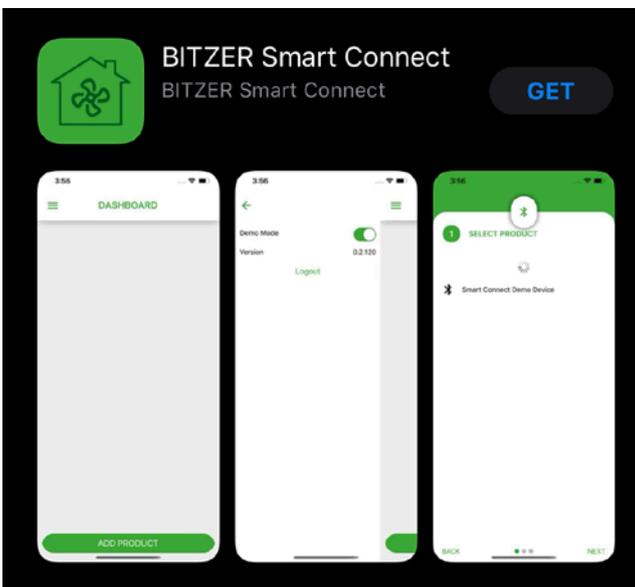
6. Drawings

6.1 Display Dimensions

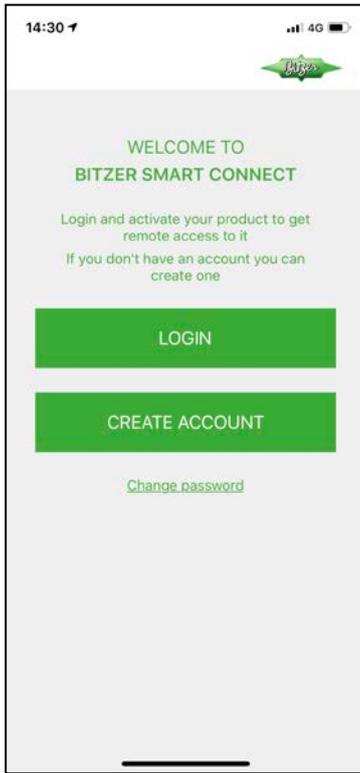


7. Network (Wi Fi connection)

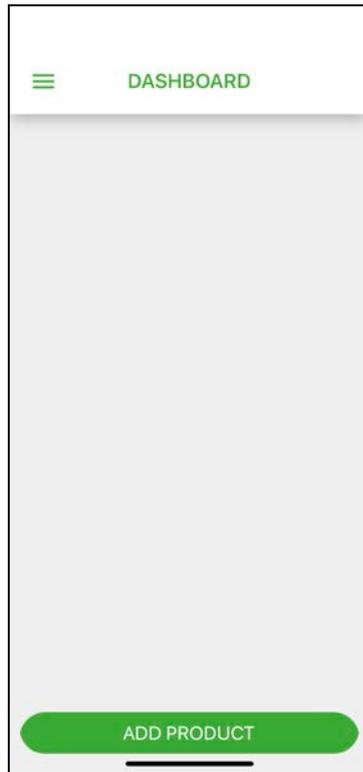
1. Download Bitzer Smart Connect app from Google play or App Store



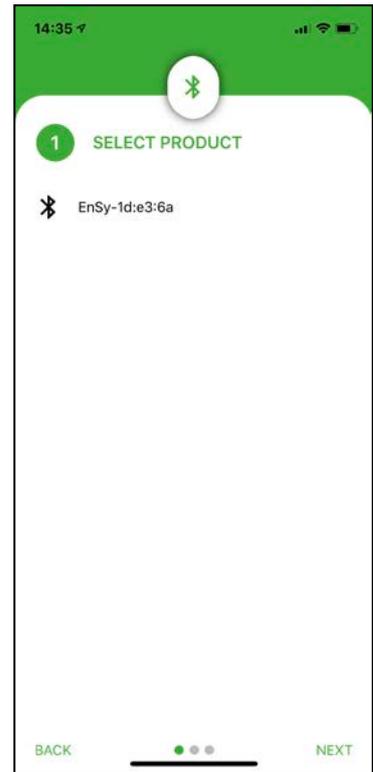
2. Create account:



3. After login, ADD PRODUCT:



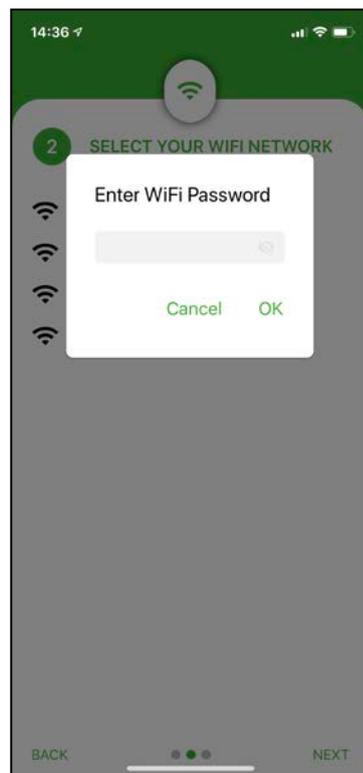
4. Select Product:



5. Select Wi-Fi Network:



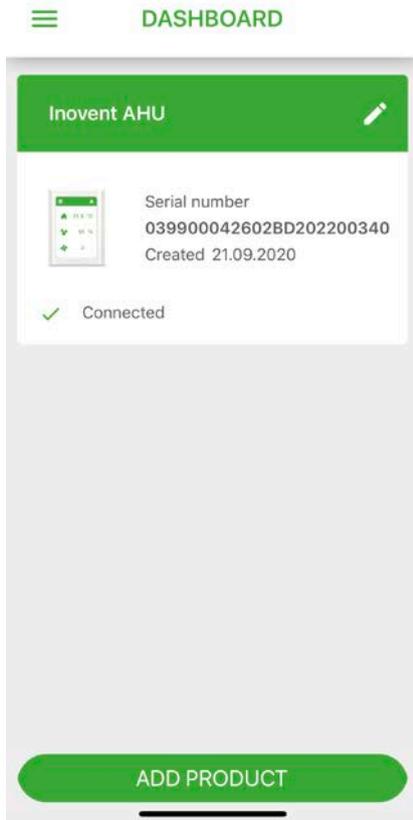
6. Enter Wi Fi Password:



7. Name your EnSy unit:



8. After all steps are done the unit is connected to the internet:



9. Ensy® app allows users to remote control their AHU's and set temperature, fans speed or party mode on the unit. Read the temperatures that are at the location of the unit. Together with this we will use the data from the unit to improve our services, products and service.

Ensy® app is available to download for iPhone and iPad on Apple App Store and for Android devices on Google Play.

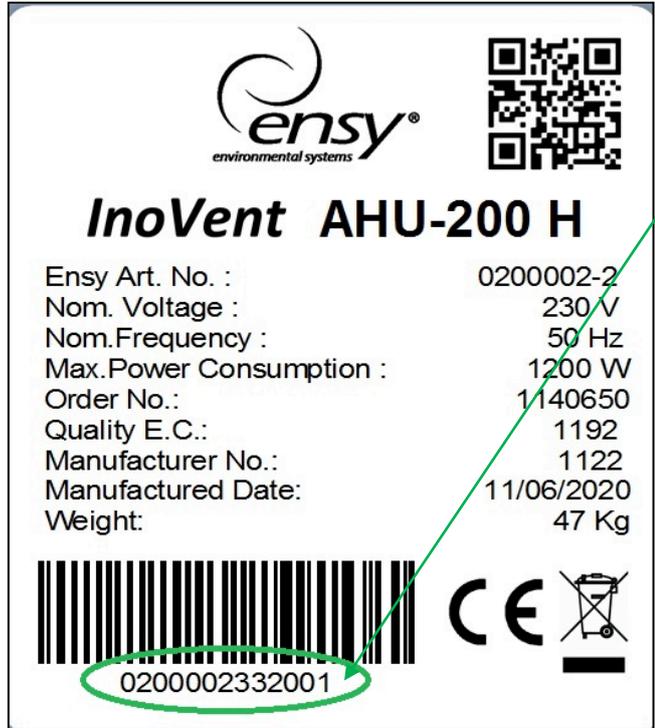
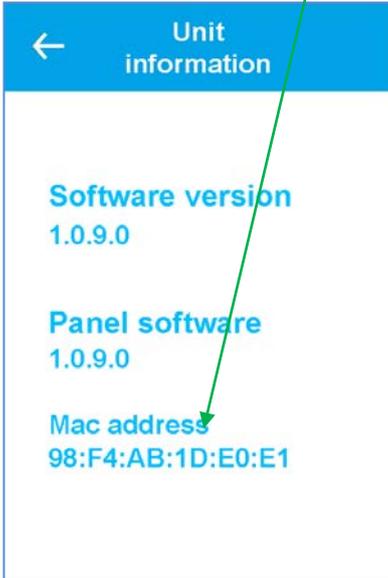


10. Setting the ENSY® app

On your first installation please fill in the information (MAC and UNIT NO) in ENSY® app.

MAC address

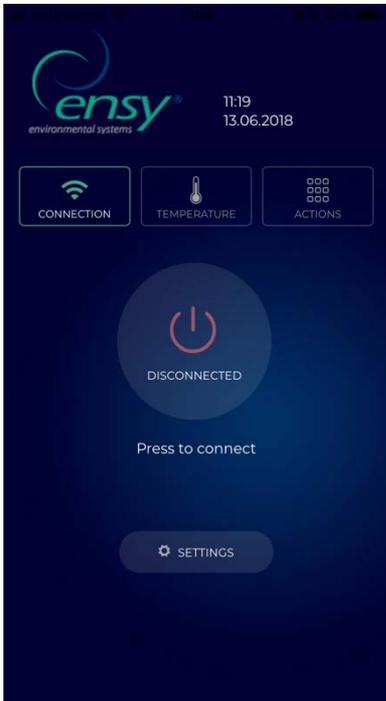
To obtain MAC address, please go to Menu – Unit Information:



UNIT NO

UNIT NO you get by opening your unit and inside you will find a similar label and write the similar number marked, on your label.

NOTE! The format of the unit number is 0200002.33.20.01



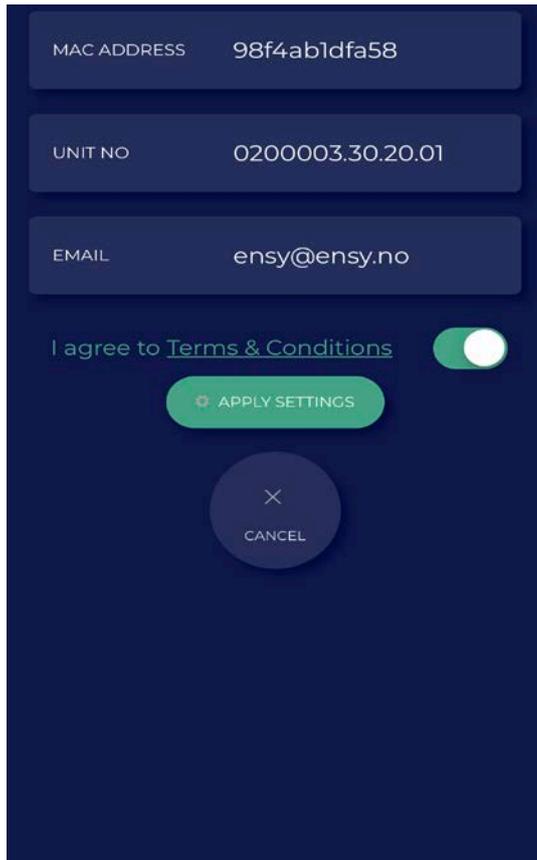
Open ENSY® app on your device after you have installed from scanning the QR codes from above or searching thru Apple Store or Google Play Store. The first page will show that you are not connected to your unit, so the proper information should be filled in the settings page.

Press the setting button, the menu will open so you can fill in the information needed.

Fill in the information from the label glued on the unit or gather the information like described above.

NOTE! You need to fill in MAC and UNIT NO mandatory, email is optional.

MAC ADDRESS is written with SMALL letters!

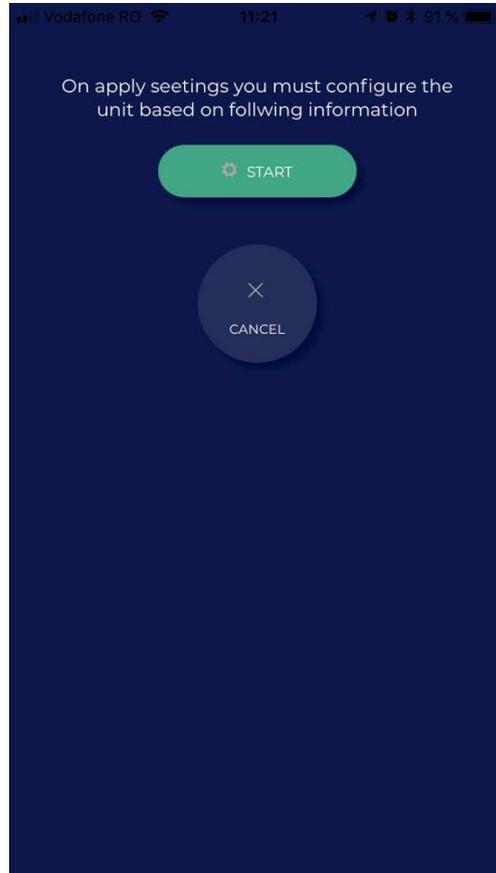


After you filled in the information check the box to accept our Terms and Conditions, that can be found on our website www.ensy.no.

Click, apply settings, if the information is correct you will be sent to the verification page. If the information is not valid please check it again.

NOTE! After this step you need to be physically in front of the control panel of your AHU.

After validating your settings this page will open on your device, now a verification process will start to confirm that the unit you want to connect to is in your location.

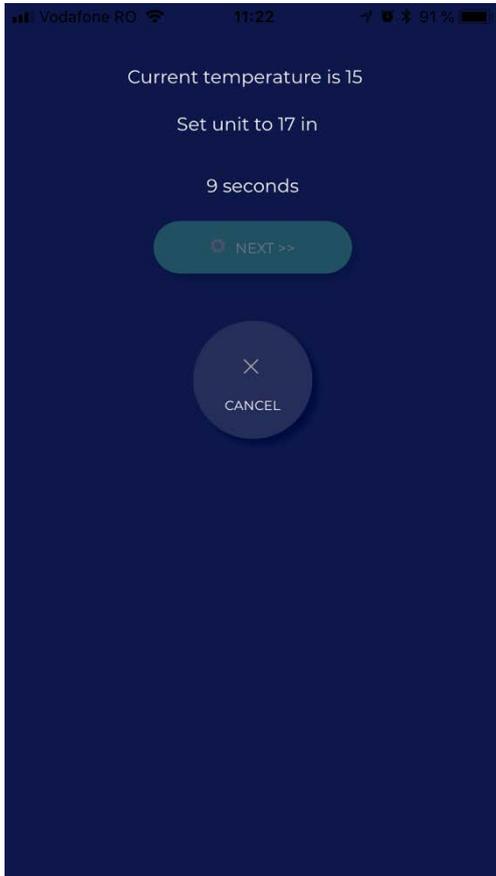


NOTE! Before you press START you need to be physically in front of the control panel of your AHU.

Please follow the instructions when you get on next pages!

If you don't do it in the allocated time (10 sec) you need to start the process again until you do it correctly.

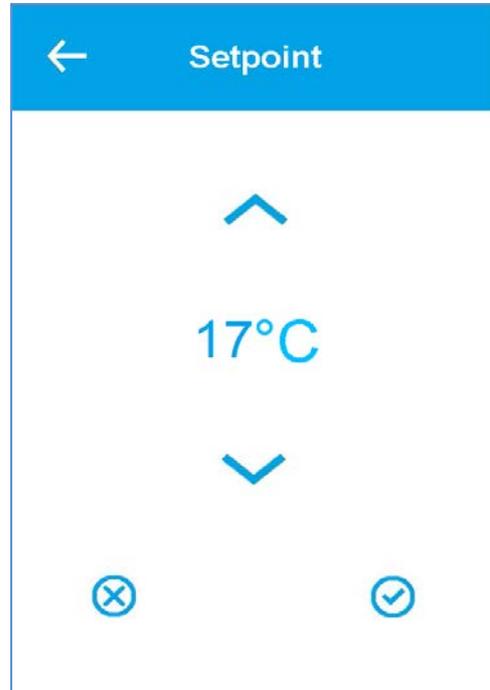
After START it will show you a page where it will show the actual temperature set on your AHU and what temperature you need to set, to go forward.



Actual temperature set on AHU.

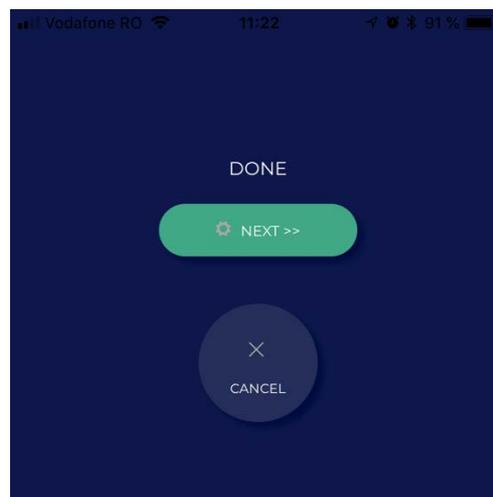


This will give you the possibility to change the temperature value in less than **10 seconds** by pressing ^ or v depending on your case. Accept the new set point value.



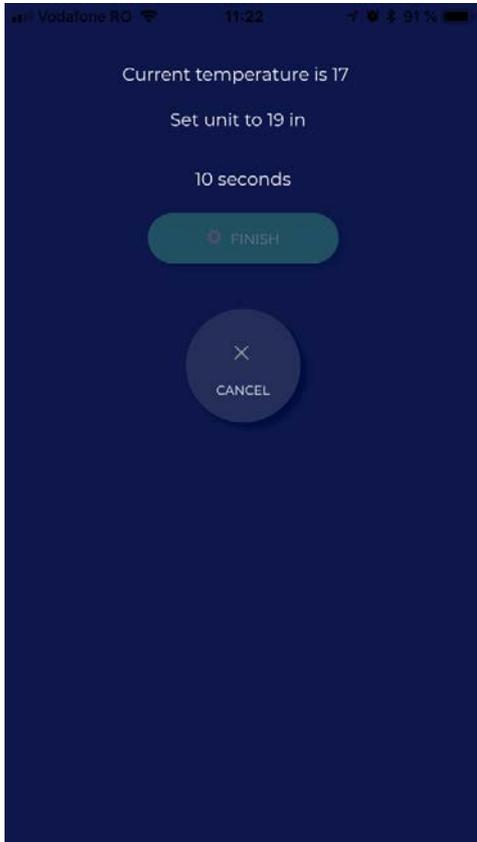
Select and accept the temperature asked by the ENSY® app and leave it like that until all 10 seconds passed away.

When you did this in the allocated time you will get validation.

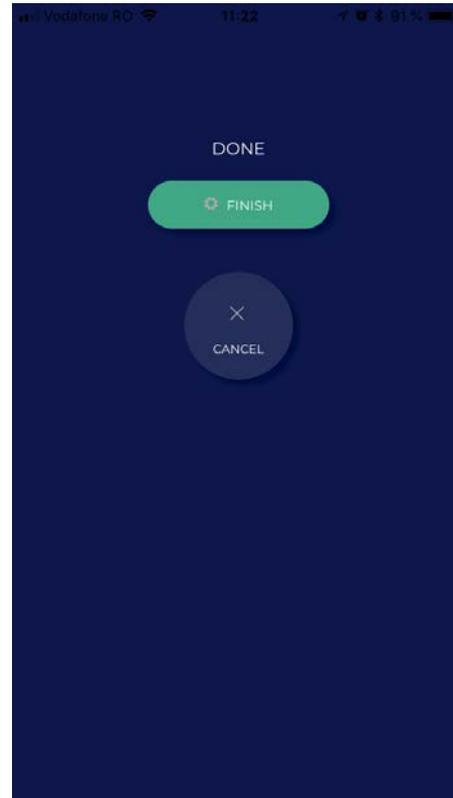


Press NEXT and repeat the process.

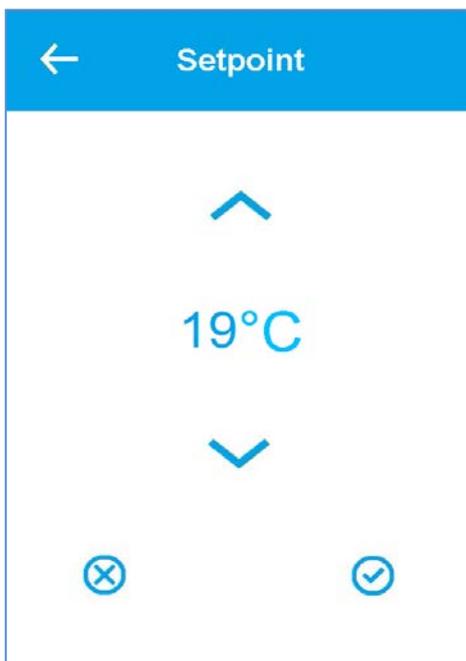
You will be asked to change again the temperature. It will show the actual temperature set on your AHU and what temperature you need to set, to go forward.



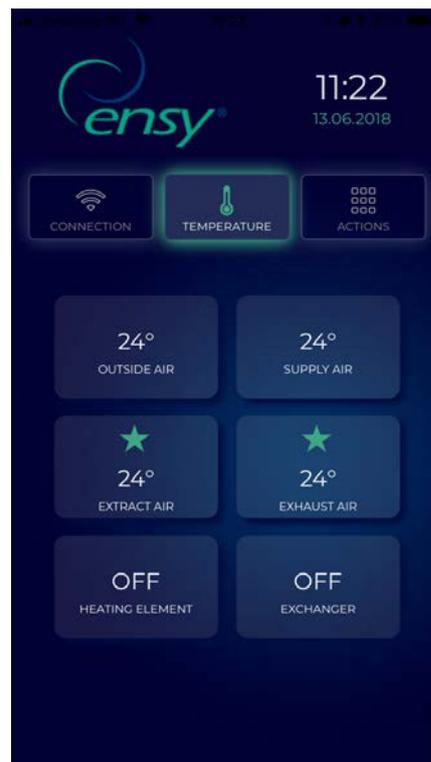
When you did this in the allocated time you will get validation and finish the process.



Select and accept the temperature asked by the ENSY® app and leave it like that until all 10 seconds passed away



After you finish the configuration it will open the TEMPERATURE menu on the ENSY® app.

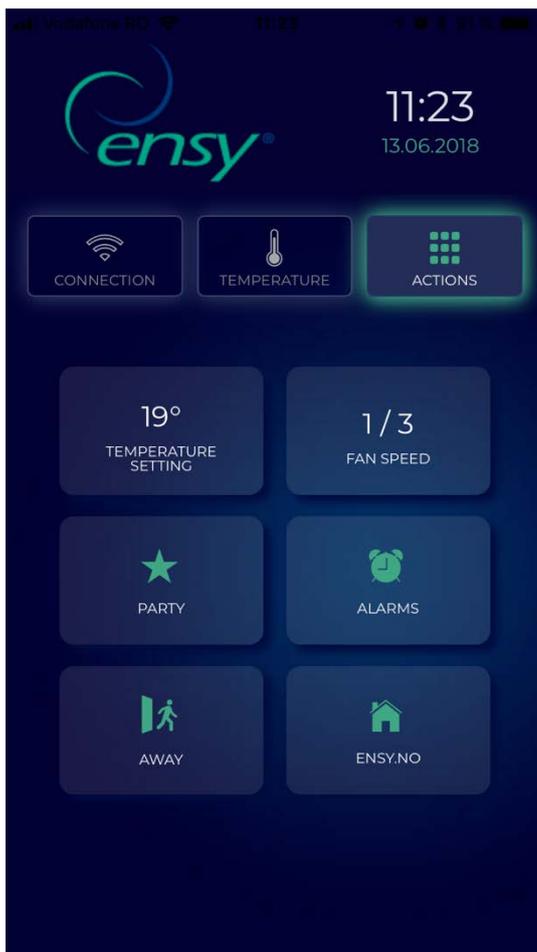


Here you will be able to read the temperatures inside the unit and when the heating element and rotating exchanger are active.

Values shown:

- Outside Air – in Celsius degrees
- Supply Air – in Celsius degrees
- Extract Air – in Celsius degrees
- Exhaust Air – in Celsius degrees
- Heating Element – ON/OFF
- Rotating Exchanger – ON/OFF

The 3rd tab in the ENSY® app is the ACTION menu.



Here you will be able to read and modify settings on the unit like you can do on the normal control panel.

Values shown and values:

- Temp setting – 10-26 degrees (change the value of the desired temperature)
- Fan speed – 1-3 (Min / Norm / Max)
- Party – Start / Stop (this activates the timer inside the unit, you can change the values by reading the user manual of the AHU unit)
- Alarms – You can read alarms on the unit.

When the clock is green there ARE NO alarms on the unit. When the clock is red there ARE alarm/alarms on the unit.

- Away – Start / Stop (when active this will put the AHU unit in minimum settings, fan speed 1/Min and temperature 15°)
- Ensy.no – will redirect you to our website.

8. Alarm system and trouble shooting

The unit controller is equipped with a failure and alarm diagnoses system.

There are three alarm levels: Info, Warning and Critical. They all activate the alarm icon in the upper right corner of the main menu.

An info message is just for information and does not affect operation; yellow alarm icon

A warning does not stop the unit but affects its temperature control precision; orange alarm icon. A critical alarm will make the unit stop and show a red alarm icon on the main menu.

If the first letter is in uppercase, Ixxx, Wxxx or Cxxx the alarm is still standing and cannot be acknowledged until the problem is solved.

If the first letter is lower case, ixxx, wxxx or cxxx the alarm situation is not active anymore and the alarm or warning can be acknowledged by Clean alarm button.

8.1 Alarm list

Code	Display Text	Type	Part of air handling unit	Description
0	None	None	System	No alarm
1	Hardware	Critical	System	Electrical failure in the controller Check supply and other alarms first. Replace controller.
2	Timeout	Critical	System	A warning has become Critical
3	Fire	Critical	Air Flow	Fire thermostat signals fire
6	Defrost	Info	Defrost	Defrost timeout
7	Frost	Critical	Air Temperature	Units without heating surface temperature sensor: - Air heater: Water frost protection thermostat active
8	Frost	Critical	Air Temperature	Units with heating surface temperature sensor: - Air heater: Water frost protection thermostat active
10	Overheat	Info	Air Heat	Electrical air heater over heated Temperature > Tmax
11	Airflow	Info	Air Heat	Electrical air heater too low air flow
14	Sensor	Critical	Air Temperature	The selected control sensor is defect
15	Room low	Critical	Air Flow	Room temperature below low setting. Low room temperature protection with reduced ventilation is insufficient.
16	Software	Info	System	Program initialising or main loop has created a problem. Power-off and power-on the controller. If this doesn't help the controller may need to be replaced.
17	Watchdog	Info	System	Program failure. The controller resets itself. Power-off and power-on the controller. If this doesn't help the controller may need to be replaced.
18	Config	Info	System	After a software update some settings have changed, please check settings.
19	Filter	Info	Air Flow	Filter needs replacement. Triggered by pressure difference or timer.
21	Power	Info	System	The power was away for longer time than the battery-backup time for the real time clock. Set the time and date of the controller.

Code	Display Text	Type	Part of air handling unit	Description
31	Extract Air	Critical	System	Temperature sensor extract air short circuit
32	Extract Air	Critical	System	Temperature sensor extract air open connection
39	Supply air	Critical	System	Temperature sensor supply air short circuit
40	Supply air	Critical	System	Temperature sensor supply air open connection
41	Outdoor air	Critical	System	Temperature sensor fresh air short circuit
42	Outdoor air	Critical	System	Temperature sensor fresh air open connection
43	Heater sensor	Critical	System	Temperature sensor after heater short circuit
44	Heater sensor	Critical	System	Temperature sensor after heater open connection
45	Rotor disconnected	Critical	System	Temperature sensor rotor (exhaust) short circuit
46	Rotor disconnected	Critical	System	Temperature sensor rotor (exhaust) open connection
74	Fan_Extract	Critical	Fan	Missing tacho signal from extract fan
75	Fan_Supply	Critical	Fan	Missing tacho signal from supply fan
76	Rotor Exchanger	Critical	Rotor	Missing tacho signal from rotor exchanger
92	Preset	Info	System	Error during write or read of the pre-set settings. Power-off -> power-on the controller and try again. Replace controller if needed

9. AHU wall mounted

(Pictures shows AHU wall mounted)



To open the front hatch you will find a handle for the quarter turn latches.

To open the locks, turn the handle toward the center of the unit.

Left latch



Right latch



To close, after putting the hatch back on place, turn the latches the opposite way. You may use some pressure towards the hatch to close it.



Be careful that the door can "be stuck" in the sealing on the hatch.
For easier loosening of the hatch, release it first in one corner at the top.



To operate this product people should have necessary skills, or under the supervision of a qualified person.
Children should be told not to play with the appliance.



Before any access into the electrical connections boxes, power must be disconnected by pulling out the plug from the socket.



It is only allowed for authorized persons to enter into the electrical connection boxes. The position of the connection boxes may be different from model to model.

If any electrical components are damaged, they must be replaced by the manufacturer, dealer or a qualified person in order to avoid dangerous situations.



9.1 Replacing the filter.

The filters should be replaced every 6. 9. or 12. months.

Or by the alarm from the pressure sensor*.

Should be extracted without use of any tools.



To guarantee optimal properties of the ventilation unit, use the original filters from EnSy. The use of spurious filters will limit the warranty on the product.

Ensy art number for filter set is:

011460850-2

SET FILTRE ENSY AHU 200 + 300 B. F7: 120x280x94

011460862-2

SET FILTRE ENSY AHU 350 BV/BH + 400 BV/BH. F7: 165x370x94

011460876-2

SET FILTRE ENSY AHU 700 BV/1- BH/1. F7: 165x479x94

* pressure sensor is an optional feature – to order use:

Ensy art. 370222-2 SINGLE DIFFERENTIAL PRESSURE TRANSDUCER



9.2 Cleaning the fans.

This must be done by a qualified person.

Before removing fans the main power must be disconnected by pulling out the main supply plug from the socket, or fans to be programmed to position “AV” or “OFF”

Disconnect the 3-pole plugs.

Depending on the AHU model the fans can be pulled out of the ventilation unit with or without the need for any tools. If tools are necessary, uncrew the stopper brackets that hold the fans in position.

NOTE! Remember to put the stoppers back after work is done.

Clean with mild soap and water

9.3 Maintenance and cleaning of rotary heat exchanger.

This must be done by a qualified person.

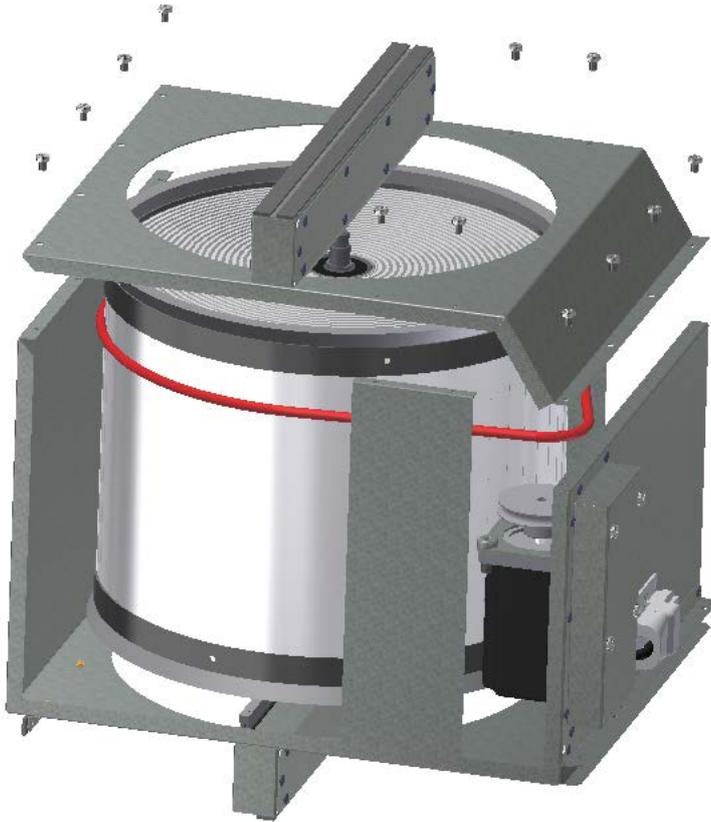
Disconnect the 5-pole plug.

Can be pulled out of the ventilation unit without the need for any tools.



Rotor exchanger can easily be removed for cleaning, depending of AAHU model by unscrewing the 12 or 14 screws that holds it together.

Clean parts with mild soap and water.



Do not expose the rotor motor or connector to moisture/water.



The exchanger you also can clean with mild soap and water. Do not use ammonia containing detergent, as this will prey on and discolor aluminum in the rotary heat exchanger. Flush with hand shower and blow gently with compressed air.

Ensure that the screws are tightened sufficiently so that they do not come loose during operation.

Preferably use a screwdriver to tight the screws. If use of electrical screwdriver, make sure that you use low torque to prevent destroying the threads in the sheet metal parts.

To make sure that the drive belt can adjust itself into correct position you must rotate manually the exchanger some turns.

Then insert back into the ventilation unit. Be sure that rotor exchanger is properly inserted in all the guides inside the unit. If not, this can lead to vibration in the system and internal air leakage in the unit.

10. AHU 200 KV/KH

(Pictures shows AHU-200 KV SLIM)



Be careful that the door can "be stuck" in the sealing on the hatch.
For easier loosening of the hatch, release it first in one corner at the top.



To operate this product people should have necessary skills, or under the supervision of a qualified person.

Children should be told not to play with the appliance.

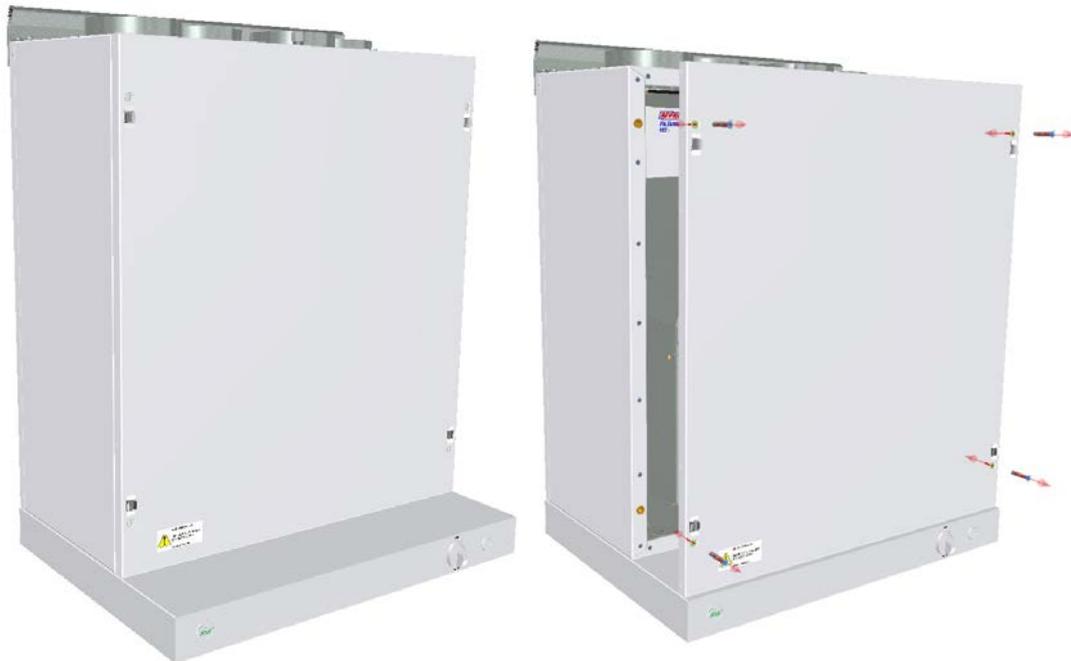


If you are going into the unit then first you have to remove any kitchen furniture front door, if so is mounted on front of unit.

On these pictures, you can see the ventilation unit with white coated cooker hood.

There are also variants with hoods in brushed stainless steel.

To open the front hatch you first have to untighten those 4 screws you find in each corner of the unit.



When hatch is mounted back on the unit, try to use almost same torque on all 4 screws.

Then put the kitchen furniture front door back on place.



Before any access into the electrical connections boxes, power must be disconnected by pulling out the plug from the socket.



Only authorized persons is allowed to enter into the electrical connection boxes.

If any electrical components are damaged, they must be replaced by the manufacturer, dealer or a qualified person in order to avoid dangerous situations.

10.1 Replacing the filters.

The filters should be replaced every 6. 9. or 12. months.

Or by the alarm from the pressure sensor*.

Should be extracted without use of any tools.



To guarantee optimal properties of the ventilation unit, use the original filters from EnSy. The use of spurious filters will limit the warranty on the product.

Ensy art number for filter set is:

011460850-2

SET FILTRE ENSY AHU 200 + 300 B. F7:

120x280x94

* pressure sensor is an optional feature – to order use:

Ensy art. 370222-2 SINGLE DIFFERENTIAL PRESSURE TRANSDUCER



10.2 Cleaning the fans.

This must be done by a qualified person.

Before removing fans the main power must be disconnected by pulling out the main supply plug from the socket, or fans to be programmed to position "AV" or "OFF"

Disconnect the 3-pole plugs.

Depending on the AHU model the fans can be pulled out of the ventilation unit with or without the need for any tools. If tools are necessary, uncrew the stopper brackets that hold the fans in position.

NOTE! Remember to put the stoppers back after work is done.

Clean with mild soap and water

10.3 Maintenance and cleaning of the rotary heat exchanger.

This must be done by a qualified person.

Disconnect the 5-pole plug.

Can be pulled out of the ventilation unit without the need for any tools.

NOTE! To not scratch the cooker hood so you should cover this before you pull out the rotary heat exchanger.

See page 5 for details for next steps.

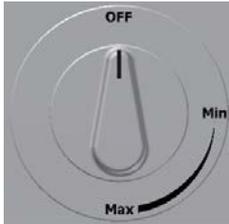


11. Operation of kitchen hood

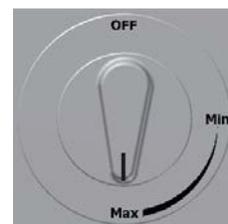
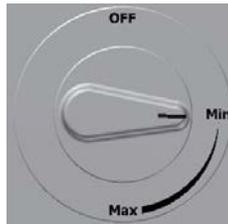
ON / OFF switch, for down lights.



Using the damper in a kitchen hood.



The switch has a spring retraction and will not work until it has passed "Min"



No function

Opens damper.
Timer activated

Max time on timer
60 min

11.1 Replacing the LED and transformer on the cooker hood

Turn off the power before replacing the down light.

If the light is not working then you must replace the entire light socket and transformer. To replace user must first remove the four blanking plugs and then loosen screws to release the entire cover.

Compress the spring with fingers more easily sliding light socket out through cover.

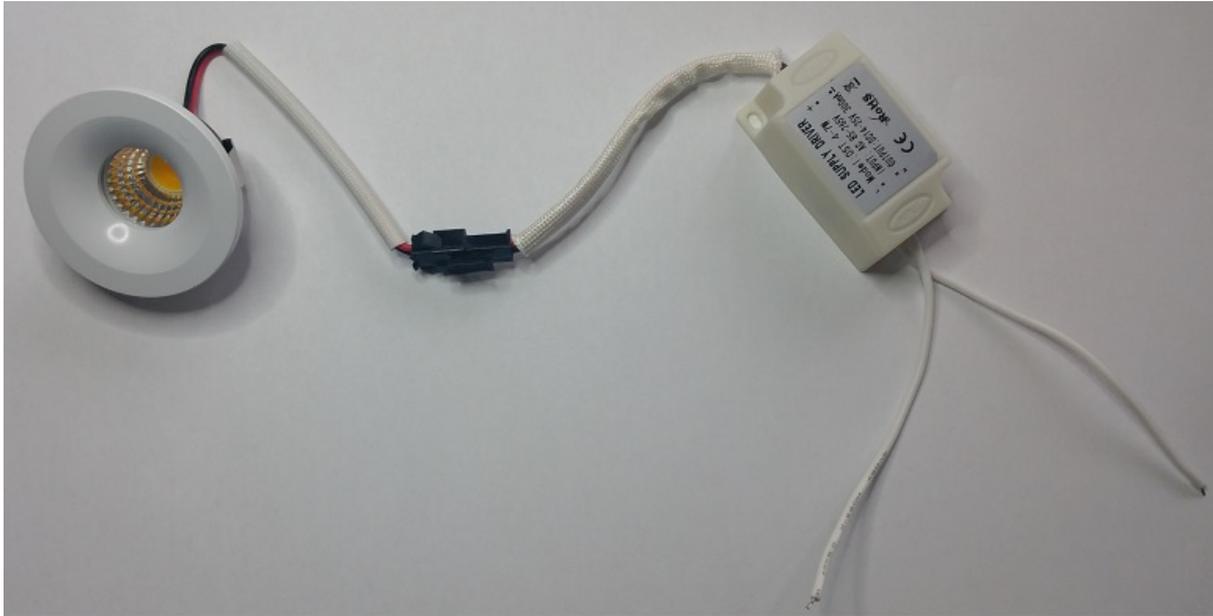
The plugs that are between light transformer can be pulled apart.



the
four
to
and



If faulty light then both downlight and transformer replaced with new parts.



Original LED light that is inserted from factory



Ensy art no:

260455-2 Down Light LED 5W with white socket and transformer

260456-2 Down light LED 5W with black socket and transformer

11.2 Replacement or washing the filter from the kitchen hood.

Release from the frame by pushing the lock to the middle of the filter and tilted down. The filter can be washed in soapy water. Must be completely dry before it is mounted in place again. If the filter material is damaged it must be ordered new original.



(Ensy art no: 270081-2)

12. AHU ceiling mounted

(Pictures shows AHU ceiling model)



To open the front hatch you will find a handle for the quarter turn latches.

To open the locks, turn the key toward the center of the unit.

Left latch



Right latch



To operate this product people should have necessary skills, or under the supervision of a qualified person.

Children should be told not to play with the appliance.



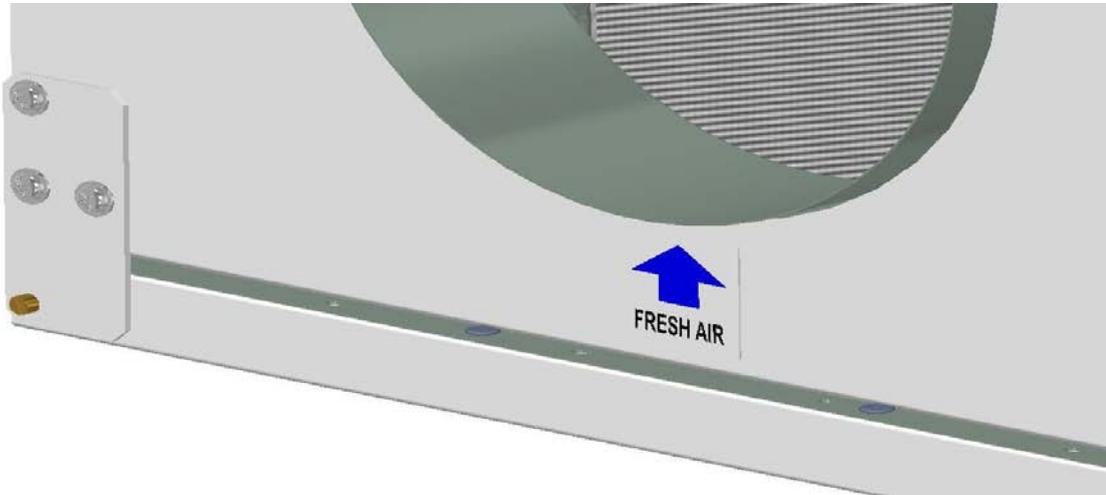
Before any access into the electrical connections boxes, power must be disconnected by pulling out the plug from the socket.

It is only allowed for authorized persons to enter into the electrical connection boxes.

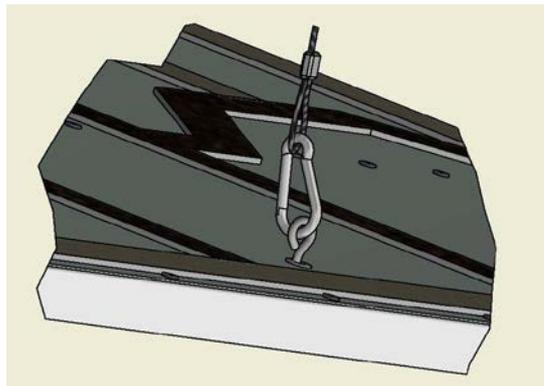
(Sketch shows AHU-300/400 HH)

If any electrical components are damaged, they must be replaced by the manufacturer, dealer or a qualified person in order to avoid dangerous situations.

The hatch has two hinges that holds it permanently to the housing. If the unit is placed high under a ceiling, then is mandatory to get help from another person to take down the hatch. It can be done by unscrewing 1 pcs of screw from the front hatch on one side and slide off from the other.

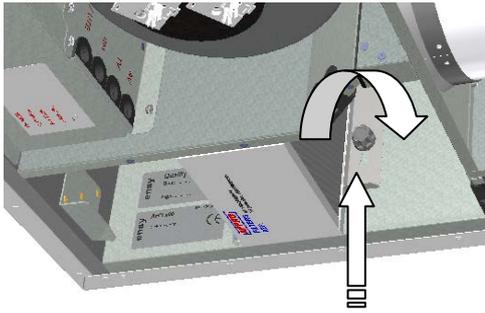


The safety wire can be removed from inside of the front hatch so that the hatch can be opened or removed. The safety wire must be reinstalled before the hatch closes.



To close, after putting the hatch back on place, turn the latches the opposite way. You may use some pressure towards the hatch to close it.





12.1 Replacing the filter.

The filters should be replaced every 6. 9. or 12 months.

Or by the alarm from the pressure sensor*.

Before the filters can be removed, you have to unscrew a little bit 2 screws for each locking bracket. Push the bracket away from you to release the filters.

Should than be extracted without use of any tools.



To guarantee optimal properties of the ventilation unit, use the original filters from EnSy. The use of spurious filters will limit the warranty on the product

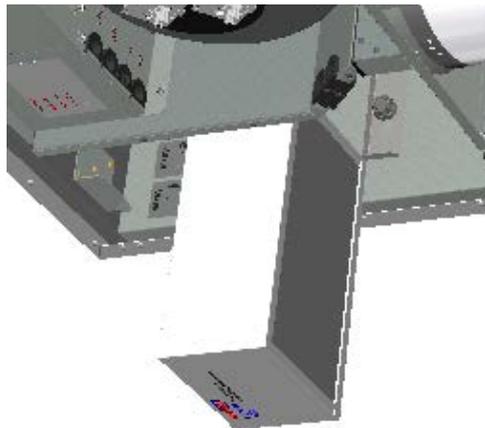
Ensy art number for filter set is:

011460860-2

FILTERSETT ENSY AHU 300 Himling. F7: 140x240x94.

011460864-2

FILTERSETT ENSY AHU 400 Himling. F7: 247x285x94

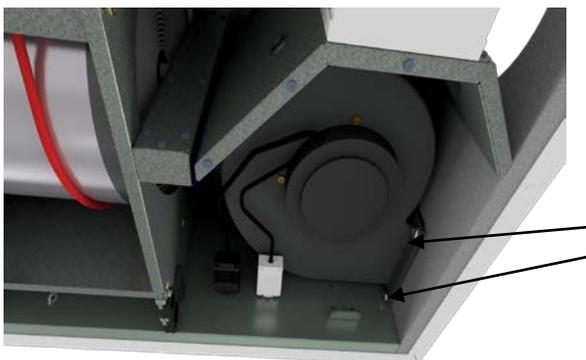


To insert a new filter you then first have to push the bracket away from yourself. Then put the filter in place and then pull the bracket against yourself and tighten the screws on the bracket.



* pressure sensor is an optional feature – to order use:

Ensy art. 370222-2 SINGLE DIFFERENTIAL PRESSURE TRANSDUCER



12.2 Cleaning the fans.

This must be done by a qualified person.

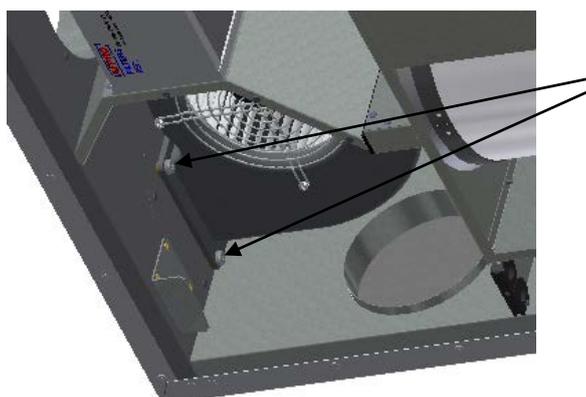
Before removing fans, the main power must be disconnected by pulling out the main supply plug from the socket, or fans to be programmed to position “AV” or “OFF”

Disconnect the 3-pole plugs.

Before you are able to remove the fans you first have to unscrew two screws for each fan that holds the fan in correct position.

The fans can then be pulled out of the ventilation unit with the need for any tools.

When the fan is placed back into the unit, then make sure the screws are tightened so that there is no danger that they loosen during operation. Clean with mild soap and water.

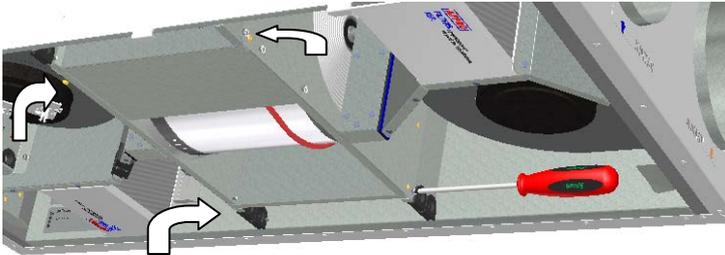


12.3 Maintenance and cleaning of rotary heat exchanger

This must be done by a qualified person.

If the unit is placed high under a ceiling, then it might be an advantage to get help from another person to hold the rotor exchanger in correct position until all four “safety” screws are loosened.

Disconnect the 5-poled plug, and then unscrew those four “safety” screws that are holding the rotor exchanger in place.

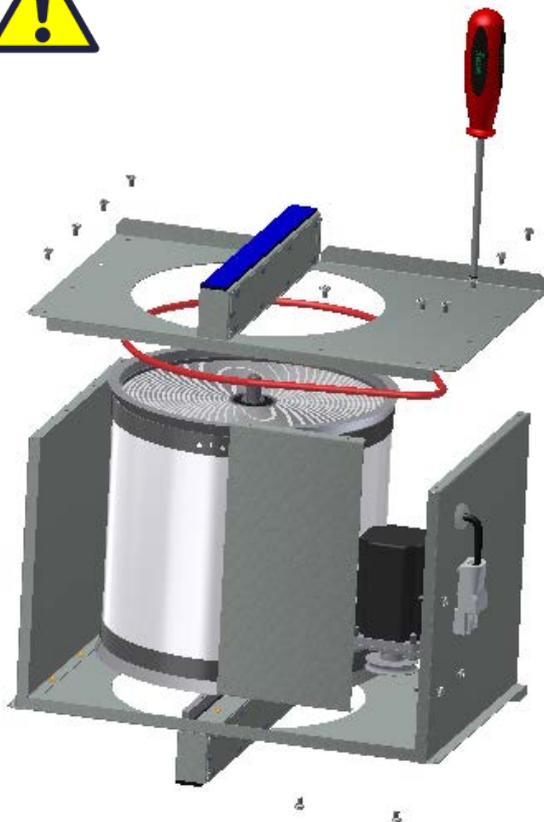


(Sketch shows AHU-300 HH, but the principle is the same for AHU-300 HV and AHU-400 HH/HV)



Can be pulled out of the ventilation unit without the need for any tools.
Rotor exchanger can easily be removed for cleaning by unscrewing 12 screws that hold it together.

Clean parts with mild soap and water.



Do not expose the rotor motor or connector to moisture/water.

The exchanger you also can clean with mild soap and water. Do not use ammonia-containing detergent, as this will prey on and discolor aluminum in rotary heat exchanger. Flushed with hand shower and blow gently clean with compressed air.



Ensure that all 12 screws are tightened sufficiently so that they do not come loose during operation.

Preferably use a screwdriver to tight the screws. If use of electrical screwdriver, make sure that you use low torque to prevent destroying the threads in the sheet metal parts.

To make sure that the drive belt can adjust itself into correct position you must rotate manually the exchanger some turns. Then insert back into the ventilation unit. Be sure that rotor exchanger is properly inserted in all the guides inside the unit. If not, this can lead to vibration in the system and internal air leakage in the unit. Make sure that all four “safety” screws are tightened so that there is no danger that they loosen during operation.

13. Mounting instructions.

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13.2.3 Duct cover

13.2.4 Dimensions and technical data

13.3. Connections

13.3.1 Electrical connections

13.3.2 Duct connections

13.4. Setting the airflow

13.5. Alarms

13.1. General

This guide is made to provide installation and user instructions regarding the correct installation of Ensy AHU.

Ensy AHU is designed for heat recovery with air volumes from 200 m³ / h of up to 700 m³ / h. The energy from the exhaust air is transferred to supply air through the rotary heat exchanger where the air streams pass each other without making contact.

The unit has a built in-heater for supplementary heating of supply air. Humidity sensor for forced ventilation is integrated into ventilation unit.

The unit can also connect additional equipment cooker hood over the stove, pulse switch for controlling the forced ventilation, for example, wet rooms or bathrooms, sensor for carbon management and switch management away / home function. Controls of these options are integrated into Ensy AHU.

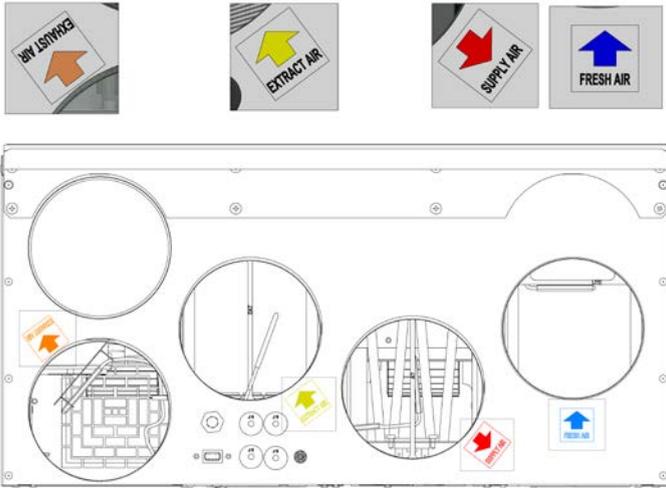
Ensy AHU is supplied in painted finish, tested and ready for operation. Installation, commissioning and tuning must be performed by authorized personnel.

13.2. Mounting

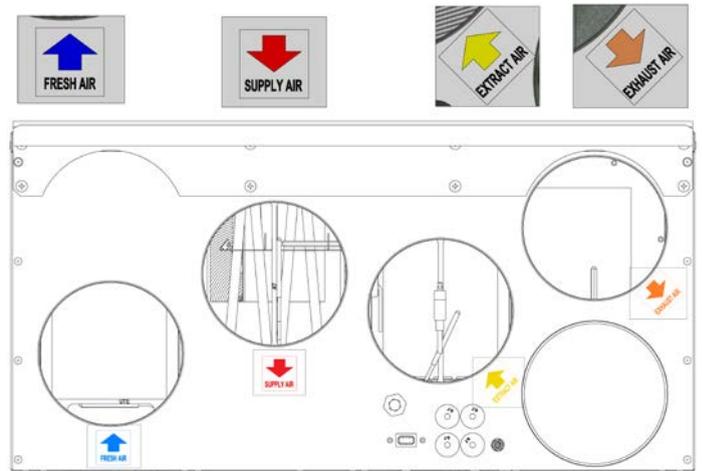
Together with the unit is delivered the following equipment:

1. Suspension bracket and stoppers
2. Wall Bracket with vibration dampening gasket
3. Self-adhesive vibration damping
4. Accessories bag containing the necessary screws
5. 1 pcs. plug for connecting the cooker hood.
6. Control panel

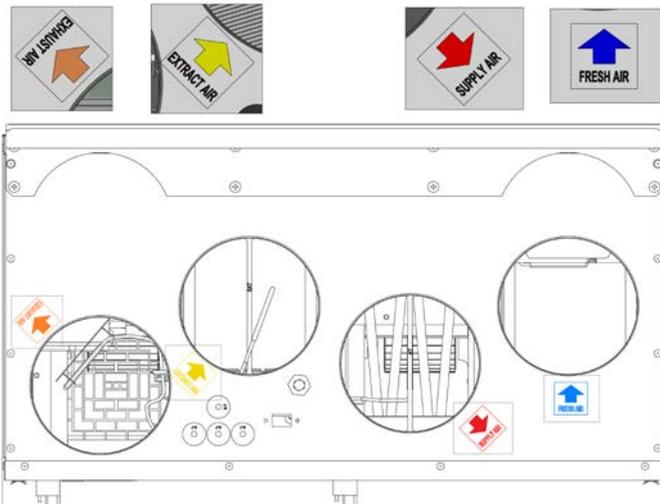
First, select how the unit should be mounted so that the piping system should be as easy as possible.



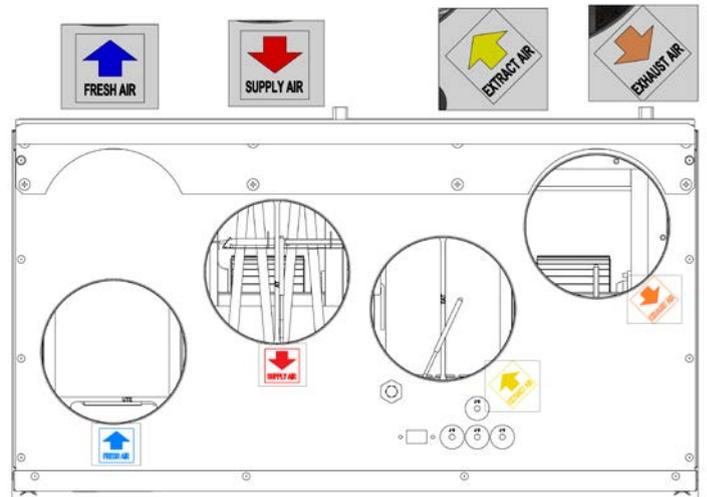
(Sketch over shows AHU-200 H/300 BH)



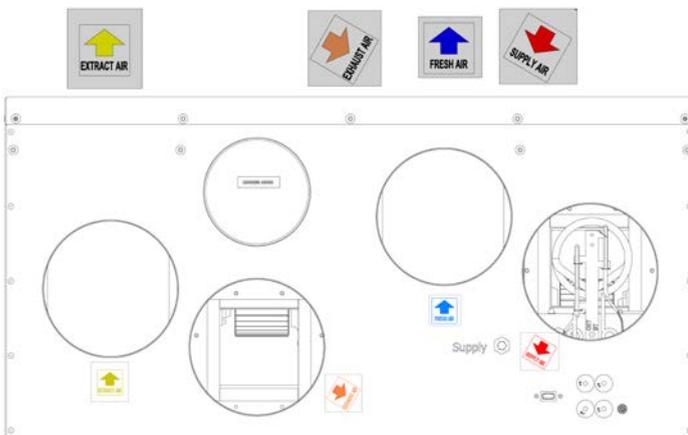
(Sketch over shows AHU-200 V/300 BV)



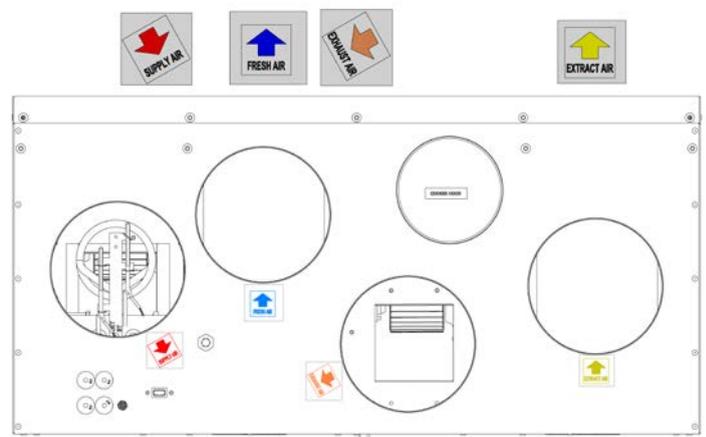
(Sketch over shows AHU-200 KH)



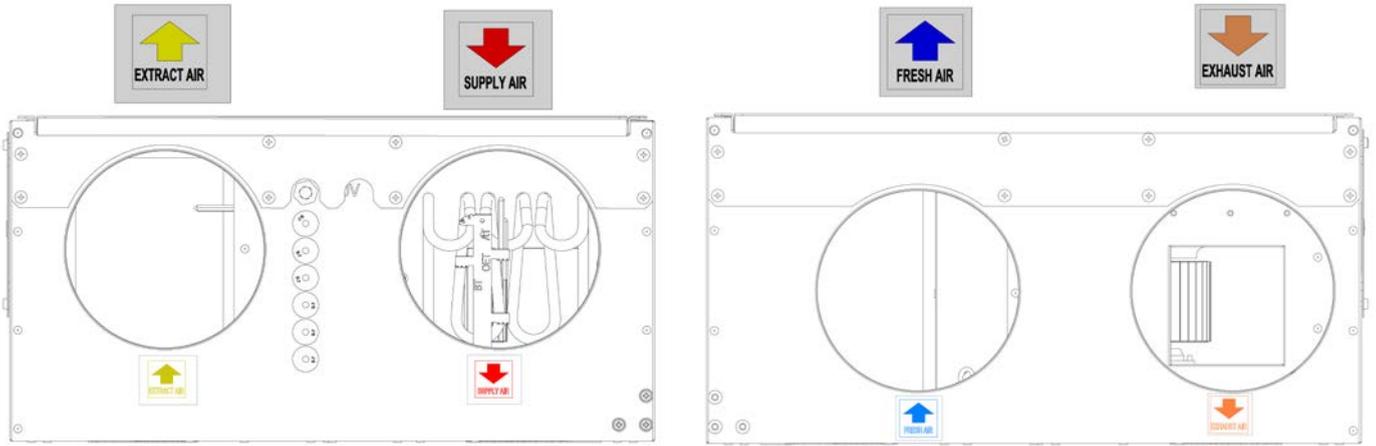
(Sketch over shows AHU-200 KV)



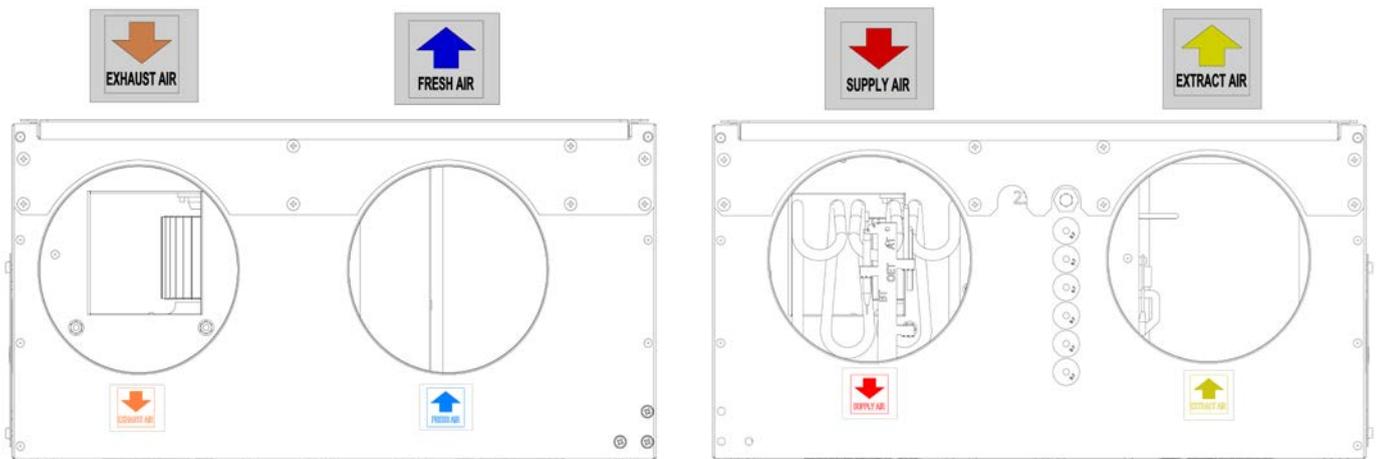
(Sketch over shows AHU-350/400/700 KH)



(Sketch over shows AHU-350/400/700 KV)



(Sketch over shows AHU-300/400 HH)



(Sketch over shows AHU-300/400 HV)

	English	Norwegian
	Supply Air	Tilluft
	Fresh Air	Friskluft
	Exhaust Air	Avtrekk
	Extract air	Avkast

13.2.1 Brackets and vibration gasket wall mounted



Suspension bracket screwed on top of the unit as shown.



Use 8 pcs M5 x 16mm, supplied with the unit.

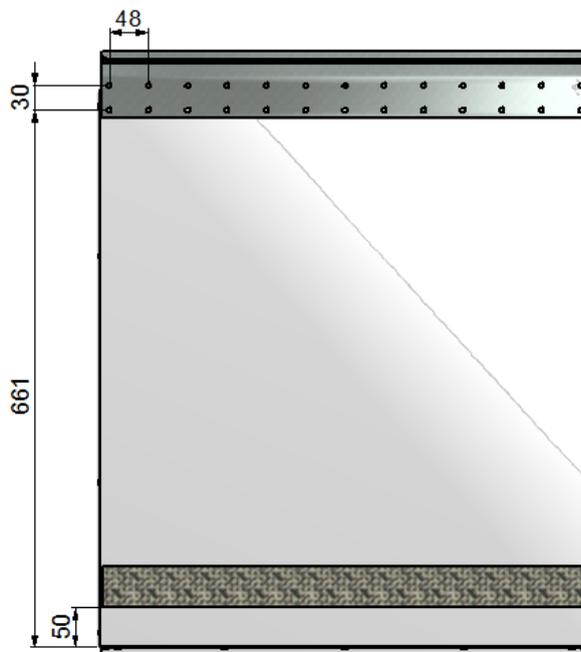
(Sketch over show AHU-200 V, but applies to all wall mounted units)

Mount the wall bracket with vibration gasket.



Make sure that the edge protection gasket is placed on the wall bracket.

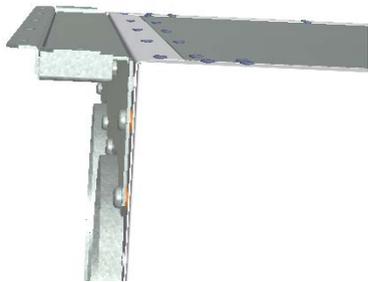
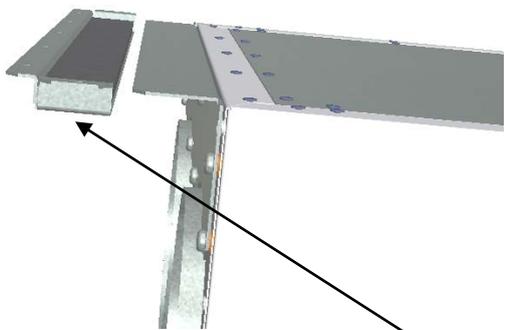
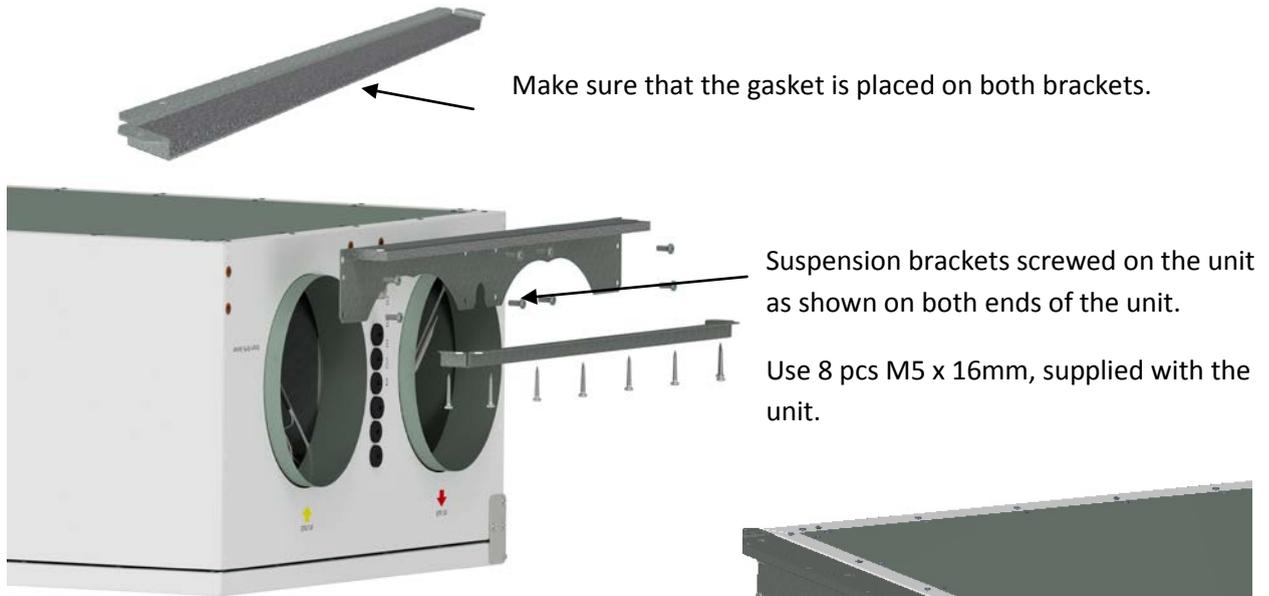
Be sure that the vibration gasket is intact.



Glue vibration gasket to the back of the unit, see illustration. Approx. 50mm from the bottom of the unit.

Lift the unit in place and ensure that there is no direct contact between unit and building construction.

Brackets and vibration gasket ceiling mounted

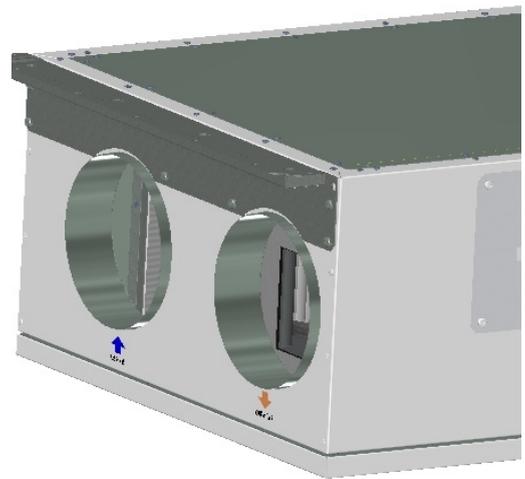


Attach one of the ceiling brackets in correct position in the roof.

Use 7 pcs wood screws 5 x 40mm, supplied with the unit, for each bracket

Then lift the unit and place the bracket on the unit between the gasket and roof.

Then lift up the unit in correct position and make sure there are no contact between parts on unit and building construction.



Then the second bracket can be placed in the other end of the unit.

13.2.2 Alternative placement on wall

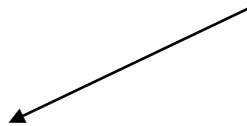
The unit can also be placed on a wall. You then need the use of a separate wall bracket. This does not follow the unit and has to be ordered separate. (Ensy Art no: 01008045-2)

To avoid vibration from the unit towards building constructions it here is important that there are placed 5 mm vibration damper on the back of the unit.



Two vibration gaskets screws for the extra bracket follow the extra bracket.

One of the gaskets is placed in top of the unit.

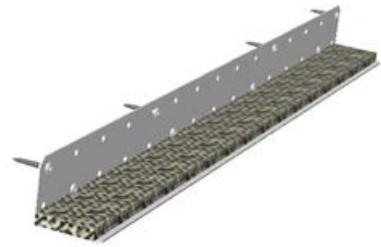


The other one you place approx. 60 mm from the button of the unit so that it do not will come in contact with the wall bracket.

Then first put those two brackets in each end of the unit as shown on page 16.

Then the wall bracket, with 10 mm gasket, is screwed to the wall where it is wanted.

Use 8 pcs wood screws 5 x 40mm.



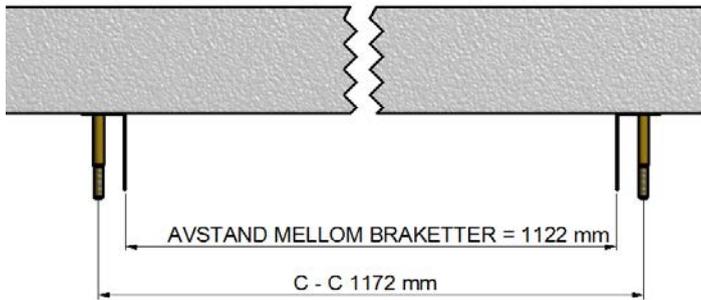
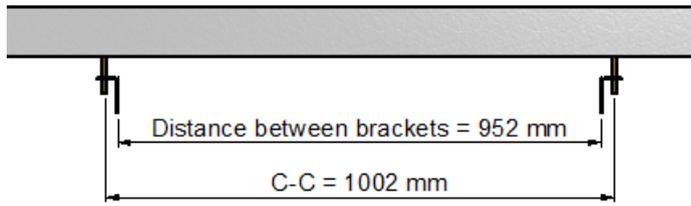
Then you can lift the unit and place it on the wall bracket. Then you use the brackets that follow the unit, one in each end. Use 7 pcs wood screws 5 x 40mm, supplied with the unit, for each bracket



Wall bracket

13.2.3 Placement under concrete ceiling

If the unit is to be mounted directly into concrete ceiling where there may be uneven or not level than it may be easiest to use expansion bolts fastened into the ceiling. That way, you can adjust with the nuts so that the unit is in level.



(On top dim. for AHU 300H and under dim for AHU 400H)

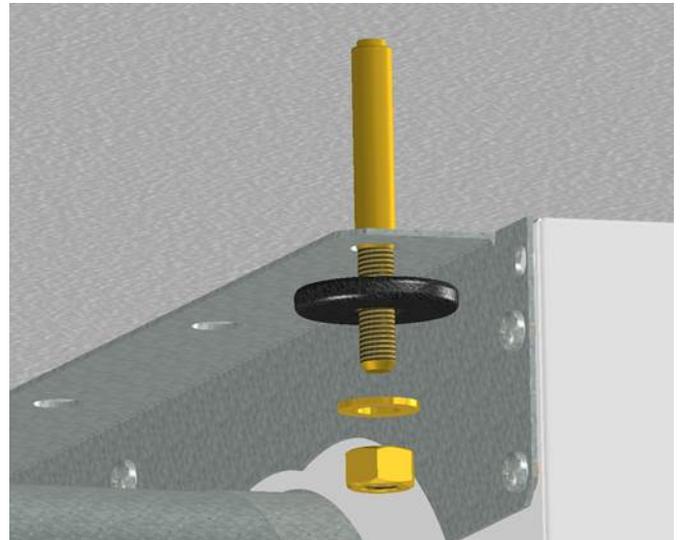
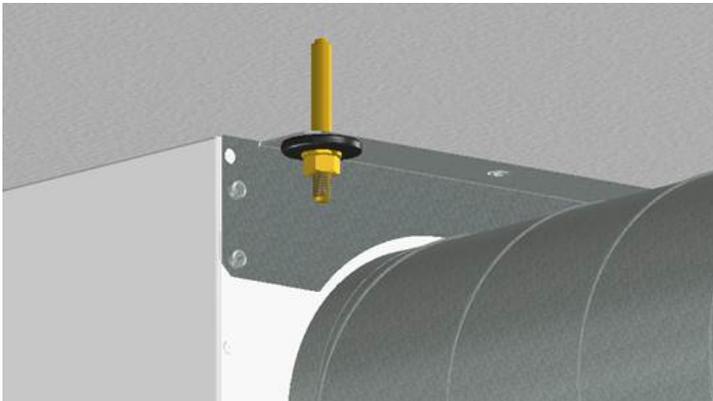
If so, then use the suspension brackets as jigs for the bolts so that the distance between brackets will be correct.

Use correct drill for use for the M10 mm expansion bolts.

If so, then use the suspension brackets as the bolts so that the distance between brackets will be correct.

Use correct drill for use of M10 mm expansion bolts.

Make sure the bolt is turned so hard that it can not loosen. The bolts are available in different lengths so select someone suitable for this purpose. Lift the unit into position. Use a rubber cushioning, 4-6 mm thick, between washers and mounting brackets.



13.2.4 Mounting of cooker hood



If kitchen exhaust hood is to be used together with the unit

If kitchen exhaust hood is to be connected into the top of the unit, you must remove the end cap in the top that is marked "COOKER HOOD"

(Sketch shows AHU-200 V)

13.2.5 Duct cover

If you want to use a duct cover to hide the pipes you will need the distance of 296 mm from the roof and down to the top of unit.

The duct cover has to be ordered separately from supplier.

(Art: 0100107-2) DUCT COVER AHU-200 V/H_KV/KH, WHITE COATED (ACCESSORIES)

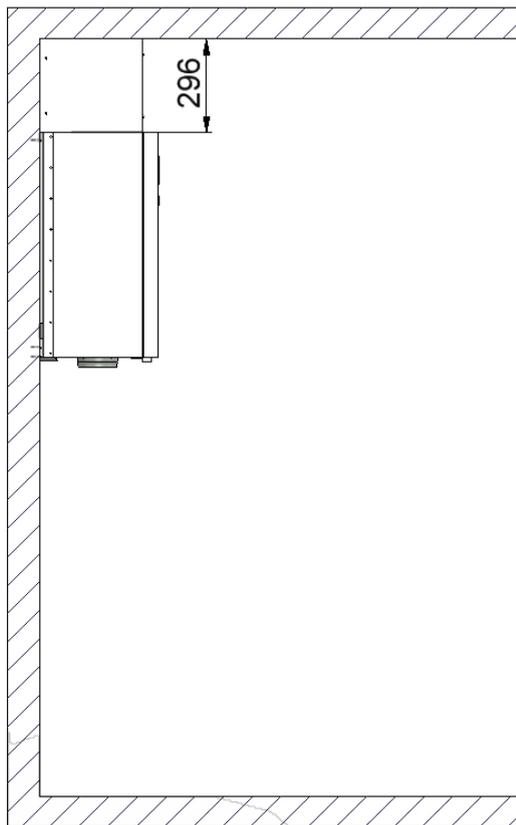
(Art: 0100207-2) DUCT COVER AHU-300 BV/BH, WHITE COATED (ACCESSORIES)

(Art: 0100307-2) DUCT COVER AHU-400 BV/BH, WHITE COATED (ACCESSORIES)

(Art: 0100407-2) DUCT COVER AHU-350 BV/BH, WHITE COATED (ACCESSORIES)

(Art: 0100507-2) DUCT COVER AHU-700 BV/BH, WHITE COATED (ACCESSORIES)

The instruction how to mount this duct cover you will find together with the duct cover.



13.2.6 Dimensions

Model	Length [mm]	Width [mm]	Depth [mm]	Duct size [mm]	Cooker Hood [mm]
AHU 200B	699	598	347	125	125
AHU 200K	748	600	326/481*	125	125
AHU 300B	715	700	362	125	125
AHU 300H	972/1066**	520	290	160	125
AHU 350B	715	755	452	160	125
AHU 400B	715	825	452	160	125
AHU 400H	1162/1240**	653	343	200	125
AHU 700B	790	1004	570	200	125

*Dimensions with and without cooker hood

**Dimensions with and without mounting brackets

***More dimensions can be found on each unit on www.ensy.no

13.2.7 Technical Data

	AHU200/300 H/V/BH/BV	AHU200 KH/KV	AHU 350/400 BH/BV	AHU 700 BH/BV	AHU 300 HH/HV	AHU 400 HH/HV
Power outlet phase/voltage	~1 / 230 (50Hz/VAC)	~1 / 230 (50Hz/VAC)	~1 / 230 (50Hz/VAC)	~1 / 230 (50Hz/VAC)	~1 / 230 (50Hz/VAC)	~1 / 230 (50Hz/VAC)
Maximum power unit [W]	1200	1200	1600	2230	1200	1900
Heating element Power [W]	800	800	1200	1200	800	2 X 750
Recommended fuses [A]	10	10	10	10	10	10
Control system	Integrated	Integrated	Integrated	Integrated	Integrated	Integrated
Filter Class Super pleat	F7 ePM1/55%	F7 ePM1/55%	F7 ePM1/55%	F7 ePM1/55%	F7 ePM1/55%	F7 ePM1/55%
IP class unit with closed front door	IP 4X	IP 4X	IP 4X	IP 4X	IP 4X	IP 4X
Thermal/sound insulation [mm]						
1.sidewall / back	25 / 40	25	40	40	40	40
2.front hatch	50 / 50	25	50	50	40	25
3.top and bottom	25 / 40	25	40	40	40	40
Weight, including brackets [kg]	47 / 54	52	61.5 / 64.5	101	49.5	62

SPECIFICATIONS:

- Rotary heat exchanger with heat recovery up to 85 % efficiency.
- Electric heating coil.
- High efficiency and low noise EC fans. Adjustable 30 to 100 % speed.
- Adjustable supply air temperature between 10 and 26°C.
- Acoustic and thermal-insulated housing.
- Touch Panel for the control of the unit supplied as standard.
- The unit is designed for optional connection of a cooker hood in top of the unit.

In top of the unit there is:

- Junction point of contact for connection of control panel.
- Junction point of contact for cooker hood. (KV)
- For extra functions, the connection will be made on the board thru the gaskets from the top

ACCESSORIES:

Duct Cover for the encapsulation piping in the top. (Art. no: 0100107-2)

Wireless pulse switch. (Art. no: 0100052-2)

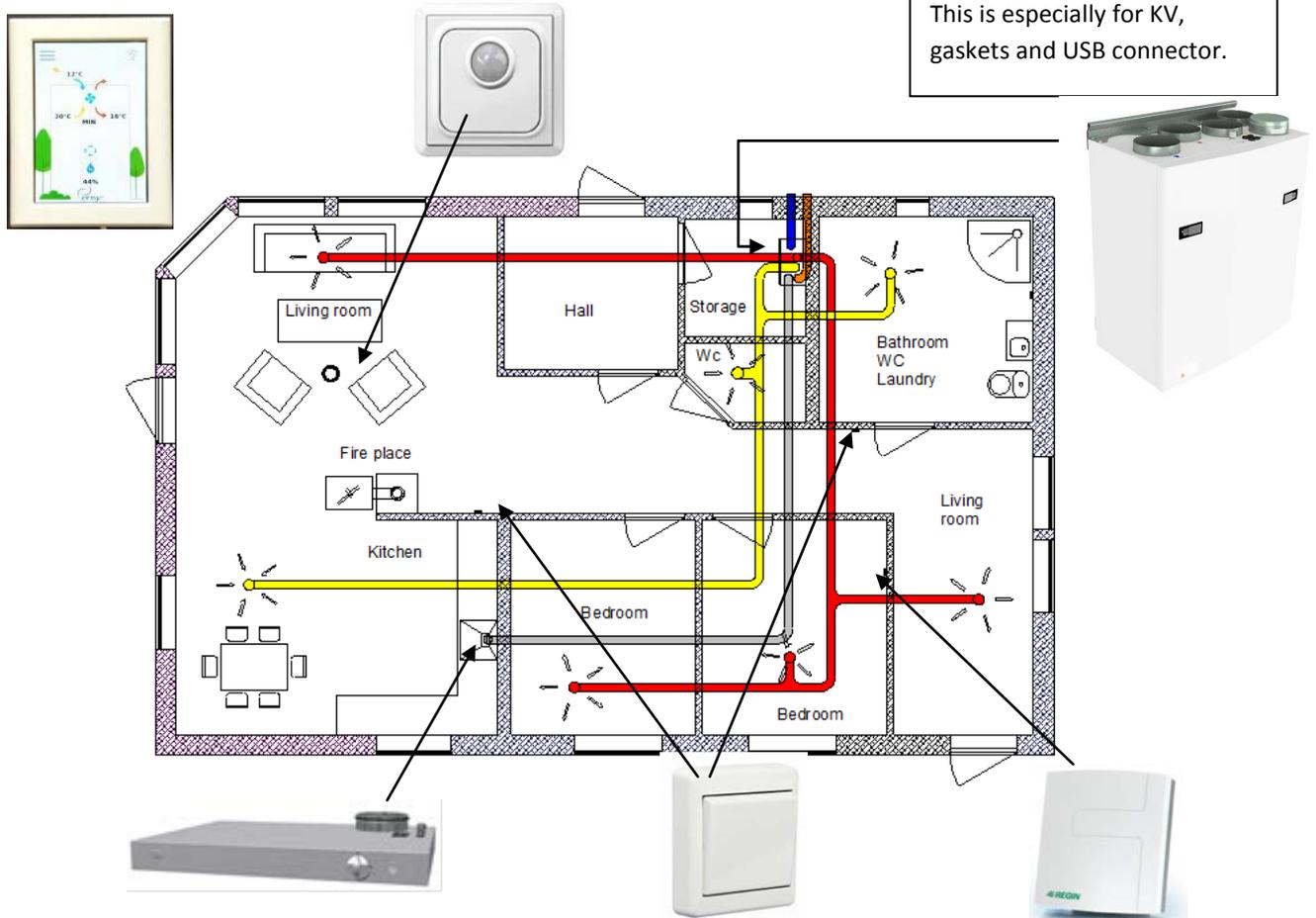
COOKER HOOD WHITE SLIM with LED Downlights (Art.no: 0101405-2)

COOKER HOOD Stainless steel SLIM with LED Downlights (Art.no:
0102405-2)



Demand controlled ventilation - adequate air quality

<p>Control panel:</p> <p>Control panel placed at a suitable place near the unit to do the monitoring and regulation of ventilation as simple as possible. Must not be placed in bathrooms or wet area.</p>	<p>Motion Detector:</p> <p>When installed in a living room, this will give the signal to the unit to increase speed to max airflow.</p>	<p>Humidity sensor:</p> <p>Humidity sensor for forced ventilation is integrated into ventilation unit.</p>	<p>Air handling units should be located in suitable rooms in central residence (utility / laundry room) to ensure easy access for service and filter change.</p> <p>If mounted in wet rooms or bathroom then the contact points must be sealed so that it can not penetrate water. This is especially for KV, gaskets and USB connector.</p>
---	--	---	--



<p>The unit is designed for connection of external kitchen hood.</p> <p>This is an alternative solution if there are problems with piping from cooker hood through the outer wall.</p>	<p>Stove / Fireplace / Bathroom</p> <p>Wireless control panel / pulse switch can be used to increase supply air by use of a stove.</p> <p>Mounted in a suitable location in relation to the unit. Can also be placed near the bathroom for easy operation by forced ventilation (max airflow)</p>	<p>CO² sensor:</p> <p>Can be installed in the living room and will give signal to the unit if the pollution level in the room is too high.</p>
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13.3. Connections

13.3.1 Connections of sensors / external functions

Plugs for connecting external sensors you find in the accessories bag supplied with the unit.

13.3.2 Duct connections

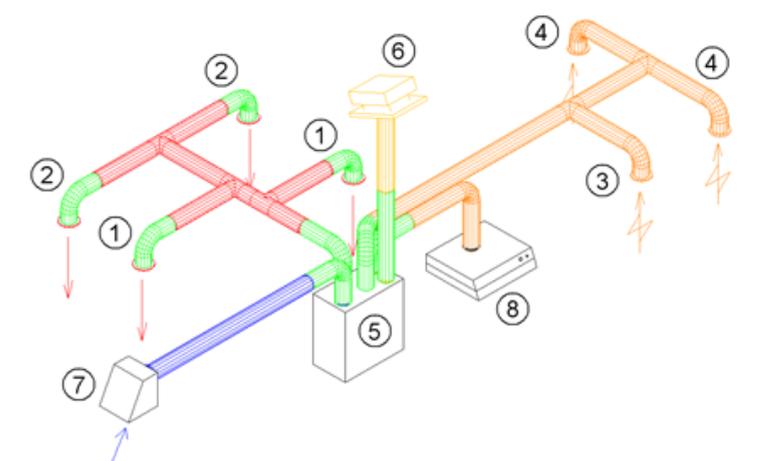
The unit is mounted preferably in for example laundry room, storage room, utility room, etc. Air duct from cooker hood can be connected to separate "bypass channel" in the top of the unit, marked "Cooker hood".

The choice of placement must be taken into account that the unit requires periodic maintenance. Be sure that it is possible to open / remove the unit inspection hatch, and that there is sufficient room to remove the main components. If the unit is mounted on the lightweight wall construction to the living room, for example bedroom / living room, recommended wall insulated / constructed so that the risk of sound transmission avoided.

Fresh air intake is to be placed primarily on the building's north and east and at a good distance from the exhaust openings for ventilation, central vacuum, Hoods and Vents, sewer vent, chimney or other contaminated source such as dust / exhaust from traffic etc. The return of the exhaust air should always be in good distance from fresh air intakes, close windows, etc

Sketch for piping when mounting the cooker hood to the top of the unit.

1. Supply air bedroom
2. Supply air living area
3. Extract kitchen
4. Extract bathroom / utility room
5. Ventilation unit
6. Roof cowl/ exhaust air
7. Fresh air / outdoor air inlet
8. Cooker hood



Instead of separate roof cowl for exhaust air and wall grid for fresh air there also can be used combi grids with inlet and outlet air are in the same box.

Air to and from the unit will be led through the ducts. Best durability and capabilities for cleaning will be achieved by using ducts in galvanized steel.

Short customizations (à 1 m length) with a flexible aluminum - ducts can be used for piping between the unit and roof cowl / wall grid.

In order to achieve effective, low energy consumption and proper airflow, the duct system designed with low air speeds and low pressure drop.

13.3.3 Sound reduction

To avoid disturbing noise from blowers in living area installation of sound-absorber (silencer) in the duct for supply and extract air recommended. (Length = 0.9 meters each section)

To prevent sound transmission between rooms via the duct system, and reduce any noise that occurs in the duct system, is also is recommended a silencer in front of each supply diffuser in the living area.

13.3.4 Flexible ducts.

Flexible ducts can be used for adjustments between the unit and roof cowl / fresh air inlet. Alternatively, the flexible silencers used (remember requirements for outdoor sound level).

13.3.5 Condensation/isolation

Isolation is necessary to safeguard thermal-, sonic- and fire considerations at the plant. Most often it is a combination of these are due to isolate.

Reasons for thermal insulation of ventilation ducts are:

- obtain good heat economy by limiting heat loss
- achieve a specific outlet temperature of the ventilation air.
- preventing condensation on either the inside or outside of the duct.

Heating costs reduced by preventing the heat supplied in ventilation air can be transferred to unheated surroundings.

If the ducts are positioned in a cold environment, such as in an attic, where the temperature is significantly lower than the ventilation air, there is a risk of condensation inside the ducts. This can be prevented by isolating the channel exterior. It can also be used insulation tubes (100 mm mineral wool) with plastic diffusion barrier pulled over the ducts. The same applies to insulation of pipings between the unit and diffusers, bringing the cooled air up to the rooms.

In areas with extremely low winter temperatures, additional insulation must be used. Total insulation thickness must be at least 100 mm.



14. Warranty

Warranty:

Ensy AHU unit has a warranty period according to the European directive 1999/44 CE, from the date of sale. For the warranty to be valid, the following documents received with the unit must be retained:

- **Warranty and User manual for Ensy® AHU-unit**
- **Service reports, you can download from: <http://ensy.no/en/service-and-maintenance/form-to-report-errors/>**

Both documents need to be complete and with all correct data.

Sale date: _____

The company has installed this unit:

Contact:

Phone:

E-mail:

15. Content

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