Библиотека СОК

komfovent

KOMBI

USER MANUAL

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CONTENT

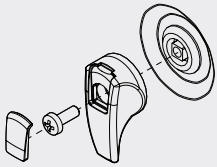
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1. INTRODUCTION

KOMBI – is a hybrid heating and ventilation unit for domestic hot water production, temperature control with underfloor heating / cooling systems and quality ventilation.

- **Make sure that the unit is installed in a designated location, all ducts, pipes and wires are connected before turning it on. Check for foreign objects, debris or tools inside the unit. Make sure that air filters are installed and condensate drainage is connected. In case of any doubts, contact your installer or "Komfovent" representative to make sure that the unit is operational.**
- **Before performing any work inside the unit, make sure that the device is stopped and unplugged.**
- **After stopping the unit, wait a few minutes for the fans to stop rotating, compressor to turn off and the heating devices to cool down before opening the door.**
- **This unit is not intended for use by people (including children) with limited physical, sensory or metal ability, or by people that do not have experience or knowledge of the equipment, unless it is done under supervision by a person responsible for their safety and following this instruction manual.**
- **Make sure that children do not get inside the unit or play with it without adult supervision. For additional safety, the plastic door handles can be removed. In this way, the doors of the unit can only be opened with a special key or by putting the handle back.**



This symbol indicates that this product may not be disposed of with your household waste as specified in the WEEE Directive (2002/96/EC) and national laws. This product should be handed over to a designated collection point or to an authorised collection site for recycling electrical and electronic equipment (EEE) waste. Improper handling of this type of waste could have a negative impact on the environment and human health due to potentially hazardous substances that are generally associated with electrical and electronic equipment. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste for further recycling, contact your city authorities, waste management organisations, approved WEEE scheme or your household waste disposal service.

KOMBI unit is composed of 3 parts: air handling unit, heat pump and hot water system. All systems can operate independently or in combination based on user's settings.

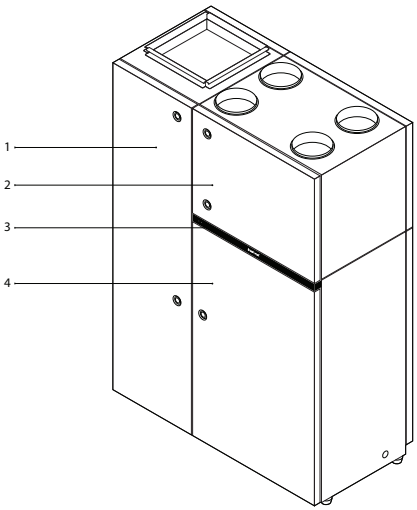


Fig. 1. KOMBI unit
1 – heat pump, 2 – air handling unit, 3 – indication bar, 4 – domestic hot water tank

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Heat pump effectively uses thermal energy from air to heat technical water that circulates in the underfloor heating system or to produce domestic hot water for washing and bathing. Desired indoor temperature is maintained by changing the temperature and flow rate of the water in underfloor circuits. Rooms can be additionally heated or cooled with a ventilation unit, which also uses technical water heated by the heat pump. Domestic hot water is stored in a special tank that prevents water from cooling down easily. This helps to save energy that would be used to reheat the water when it is needed.

An air handling unit removes indoor air containing carbon dioxide, various allergens or dust and replaces it with filtered fresh outdoor air. Heat exchanger installed in the ventilation unit extracts thermal energy from indoor air and transfers it to the supply air. If a heat exchanger alone is not capable of reaching a desired temperature, hot or cold water form the heat pump is additionally used.

2. KOMBI UNIT FUNCTIONS

You can create a comfortable home environment by adjusting indoor and hot water temperature, ventilation intensity and creating a weekly schedule. Various additional functions facilitate control of all processes and reduce electricity consumption. All these settings are preprogrammed but the user can make changes (see section "Settings").

2.1. Operation modes

Each operation mode automatically adjusts ventilation, underfloor heating and hot water production parameters. 8 operation modes are available:

- **Home** – select this mode when you are indoors. The unit will ventilate at medium intensity as well as maintain a comfortable indoor and hot water temperature.
- **Away** – select this mode when you are away. The unit will ventilate at lower intensity and maintain lower indoor and hot water temperature in order to save energy.
- **Quiet** – this mode reduces noise level by limiting compressor operation load and ventilation intensity. In quiet mode, the unit operates for the set duration and then returns to the previous operation mode. Time interval – from 1 min. to 300 min. In quiet mode, the unit will take longer to heat up hot domestic water and in cold winter it might not reach the desired room temperature.
- **Freshness** – select this mode when it is necessary to change the air in the premises quickly or when there are more people than usual. The unit increases ventilation intensity. In this mode, the unit operates for the set duration and then returns to the previous operation mode. Time interval – from 1 min. to 300 min.
- **Holidays** – use this mode when leaving for a longer period of time. The premises will be ventilated periodically in 30 min. cycles (several times a day) at the minimum intensity, the unit will maintain lower indoor and domestic hot water temperatures. Operation time is set from 1 to 90 days or for a specific date.
- **Override** – this mode activates the ventilation unit at the selected intensity to maintain selected indoor and domestic hot water temperature regardless of any other operation modes. This mode has the highest priority over other modes. In override mode, the unit operates for the set duration and then returns to the previous operation mode. Time interval – from 1 min. to 300 min. This mode can also be activated by an external device (switch, kitchen hood, motion sensor, etc.) by connecting it to the corresponding terminals in the control panel (see "Installation Manual").
- **Kitchen** – Recommended during cooking, when running the kitchen hood. This mode ensures the efficiency of the kitchen hood, as the air handling unit will increase the air flow to the premises and reduce volume of extracted air. In kitchen mode the ventilation unit operates for the set duration and then returns to the previous operation mode. Time interval – from 1 min. to 300 min. This mode can also be activated by an external device (switch, kitchen hood, motion sensor, etc.) by connecting it to the corresponding terminals in the control panel (see "Installation Manual").
- **Bath** – recommended choice when you want to fill a large bathtub with hot water or several family members plan to shower in a row. In this mode, hot water will be prepared much faster than usual since an electric water heater will be activated additionally. In Bath mode, the ventilation unit operates for the set duration and then returns to the previous operation mode. Time interval – from 1 min. to 300 min. This mode can also be activated by an external device (switch, kitchen hood, motion sensor, etc.) by connecting it to the corresponding terminals in the control panel (see "Installation Manual").

All operating mode parameters are pre-programmed, but the user can change these settings as required. Switching off individual units in different operation modes of the KOMBI unit is also possible (ventilation, domestic hot water preparation or underfloor heating system).

ECO mode

ECO – an energy saving mode intended for minimizing power consumption. The unit saves energy by turning of or limiting operation of electric heaters and reducing ventilation intensity. ECO mode is activated together with a currently active mode and adds energy saving features to it.

During ECO mode:

- Operation of electrical heaters can be blocked. Only a heat pump and ventilation unit will be used to heat premises and prepare domestic hot water.
- Cooling of ventilation air using a heat pump can be blocked.
- Make maximum use of outdoor air for cooling / heating of premises without the use of heat recovery, if the outdoor air temperature meets the set temperature limits.
- Hot water circulation can be blocked.[1]

All these parameters can be changed in ECO mode settings (see section "Settings").

[1] Hot water circulation is an optional function.

2.2. Indoor heating / cooling

KOMBI unit maintains indoor temperature by regulating the temperature of supplied air and water for the underfloor heating system. Indoor temperature is measured by a temperature sensor installed inside the air handling unit or a control panel. Also, the user can set the temperature of water circulating in the underfloor heating system directly, for example when temperature is regulated by room thermostats.

2.2.1. Setting heating and cooling seasons

The unit decides whether heating or cooling is required by the user selected or automatically set season. The following seasons can be set:

- **Winter** – the unit performs heating. Cooling mode is disabled. Air handling unit and underfloor heating system are used for heating.
- **Summer** – the unit performs cooling. Heating is disabled (except for domestic hot water production). Air handling unit and underfloor heating system is used for cooling.
- **Auto** – season is switched automatically depending on the outdoor air temperature (heating is turned on when the 72-hour average outdoor temperature falls below 15°C, cooling is turned on – when the 72-hour average temperature rises above 17°C).
  More information on how to set a cooling / heating seasons see in section "Settings".

2.2.2. Temperature of a heating / cooling system

Heat pump heats up or cools down water circulating in the underfloor circuits to a desired temperature.
During heating operation, water temperature is controlled according to:

- **Outdoor air temperature curve** – temperature of the water supplied to the underfloor heating circuit is controlled according to the outdoor air temperature. For example, the colder it is outside, the higher temperature water is supplied to the underfloor heating system. The user can set two points of the curve and link outdoor and water temperatures.
- **Constant** – the user sets temperature of water supplied to the underfloor heating system.

The circulation pump integrated in the unit distributes the prepared water throughout the underfloor heating system and adjusts the flow rate so that the desired room temperature is maintained as accurately and efficiently as possible.

Both underfloor circuits and ventilation unit or fan coils can be used for cooling. During cooling, the water temperature is maintained above the dew point temperature to prevent condensation and moisture build-up on the floor. The relative humidity of the rooms is measured with the controller or additionally connected sensors to determine the dew point temperature. The user can set the relative moisture or limit minimum water temperature as required.

More information about water temperature control methods or cooling parameters see in section "Settings".

2.2.3. Indoor temperature control

Water pump circulates technical water prepared by the heat pump according to actual heating / cooling demand. During ventilation, technical water prepared for temperature control is also supplied to the air handling unit. To ensure comfortable indoor temperature, the user can select a method for temperature control:

- **None** – indoor temperature is not measured. Temperature of water supplied to the underfloor system is controlled according to the temperature set by the user or an outdoor temperature curve. Temperature of the supplied air is the same as the temperature of extracted air.
  This method is most suitable in cases where separate thermostats with actuators are used to regulate water flow rate in certain zones.
- **Indoor** – room temperature is measured in the air handling unit (if the ventilation is used) at the extraction side. Temperature of the technical water circulating in the underfloor circuits is controlled on demand. Temperature of the air supplied by the AHU is maintained the same as the selected indoor temperature. If, after selecting the room temperature maintenance mode, you turn off the ventilation, the AHU will still start for a short time every hour to check the temperature of the air extracted from the rooms.
  Choose this method to maintain a stable and roughly uniform temperature in all rooms without separate room thermostats.
- **Panel** – room temperature is measured by a sensor integrated in the AHU control panel. Temperature of the technical water circulating in the underfloor circuits is controlled on demand. Temperature of the air supplied by the AHU is maintained the same as the selected indoor temperature. If the controller is broken or not connected, underfloor heating is controlled according to "None" mode.
  This method is recommended when the control panel is installed in the room where you spend most of your time and where comfortable temperature must be maintained. Temperature in other rooms can be controlled using thermostats and actuators.
  For information on how to select an indoor temperature control method see section "Settings".

2.3. Ventilation

Each ventilation mode has a preset ventilation intensity and desired air temperature, which can be changed by the user. In addition, the AHU has several additional functions that help save energy or select the optimal ventilation intensity.

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2.3.1. Air quality control function

Air quality control function activates ventilation only when necessary, i.e. when the air quality is poor. If the indoor air quality is good, the unit will ventilate at minimum speed or stop. Air quality in the premises may be controlled by impurity or humidity sensors connected to B8 and B9 terminals of the main board (see "Installation Instruction"). If two additional sensors are used, ventilation is controlled by the one that provides lower air quality measurements.

As air impurity and humidity control methods slightly differ, the air quality control function is divided into:

- **Impurity control**

  Impurity function is controlled via the following sensors:
  CO_2 – carbon dioxide concentration sensor [0...2000 ppm];
  VOC – air quality sensor [0...100 %].
  Type of connected sensors and range of ventilation intensity may be modified (see "Settings").

  Air impurity function automatically selects ventilation intensity in the range of 20–70%, based on air quality readings. If air pollution is within the user-defined limits, fans will operate at minimum speed; as level of pollution increases, the unit will increase ventilation speed and supply more fresh air to the premises. It is also possible to stop the unit when air pollution is low. For this purpose, change a minimum ventilation intensity limit to 0% (see "Settings"). Then the unit will turn on periodically (every 2 hours by default) to inspect the air quality, and will ventilate until pollution is reduced, if necessary.

- **Humidity control**

  "Humidity Control" function operates the same way as the "Impurity Control" function but instead of an air quality sensor another sensor connected to the control panel or integrated in the control panel is used.

Air quality control function is available only in "Home", "Away" and "Quiet" modes.

For more information on how to select or activate ventilation by air quality and change settings, see section "Settings".

2.3.2. Ventilation in cooling mode

In the "Home", "Away" and "Bath" operating modes, you can additionally select the function of automatic air flow regulation during cooling. This function will choose the optimal ventilation intensity and cooling power to cool the premises as efficiently as possible and to keep desired temperature stable, once it is reached.

2.4. Hot water production

KOMBI unit has an integrated domestic hot water tank. The water in the tank is heated by a heat pump according to the temperature set by the user. When this temperature is reached, the heat pump is switched off (except in cases when underfloor heating or heating of supplied air is necessary) and will not turn on until the water cools down. The user can set how many degrees the water in the tank must cool down before it needs to be heated again (see section "Settings").

If the capacity of the heat pump is not sufficient to reach the hot water temperature, electrical water heater may additionally be switched on. Avoid setting very high domestic water temperature, as this will increase energy consumption.

Domestic hot water production has priority over ventilation functions. When hot water production is needed, cooling operation is temporarily stopped and the power of the heat pump is directed to heating the water.

2.4.1. Hot water system disinfection

Regular thermal disinfection is necessary to avoid Legionella bacteria in the domestic hot water system. This function can be performed any time or at pre-set time intervals. During disinfection hot water is heated to a high temperature (factory setting – 65 °C). The user can change time intervals, water temperature and duration of disinfection (see section "Settings"). We recommend scheduling disinfection for times when no one's home or will not be using water (e.g., during night).

During hot water system disinfection very hot water circulates in the system, so do not use hot water or handle it with extreme caution while the function is running. Otherwise, you could injure yourself or others.

2.4.2. Hot water circulation[1]

In case of large domestic hot water systems (e.g., several bathrooms and sinks), we recommend using the hot water circulation system, so you will not have to wait for hot water to arrive. In this menu you will be able to specify the control of a circulating hot water pump. If this function is integrated in the device, then the additional water pump will circulate hot water in the system as soon as the heating of the water tank is activated or according to the schedule created by the user (see the section "Settings").

[1] Hot water circulation is an optional function.

3. UNIT CONTROL

The easiest way to turn on or off the KOMBI unit – press the button on the indicator bar of the unit. Hold the button for 5 seconds to turn on or turn off the unit. When turned on with this button, the unit will operate in the mode and use the settings that were last selected on the control panel.

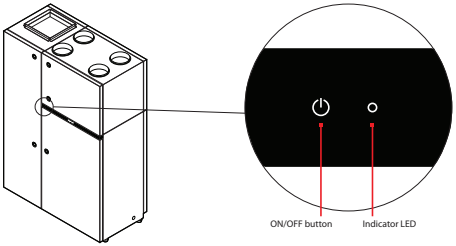
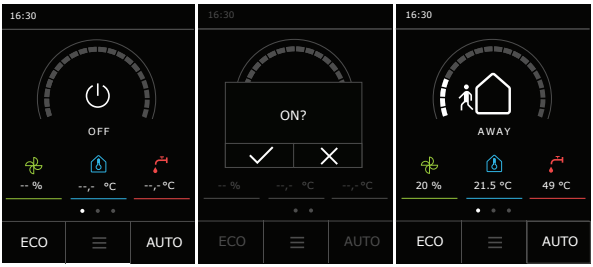


Fig. 2. Indicator bar

LED next to the button indicates the unit's status:

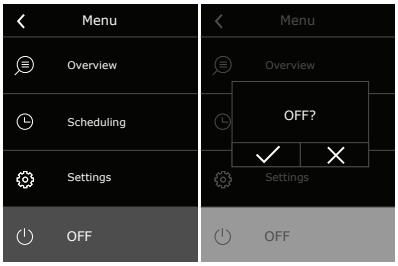
- Solid red – unit is turned off.
- Solid white – unit is in operation;
- Blinking red – error messages are displayed;
- flashing yellow – unit filters are dirty or a special service mode is activated (e.g. during repair or maintenance).

To turn on KOMBI unit with a control panel:
1. Press the ON/OFF button in the centre of the home screen.
2. Confirm the message that appears.
3. A symbol will appear in the centre of the home screen indicating an operating mode, which will start soon.



If you want your device to stop working regardless the schedule or scheduled functions, you can turn it off.

To turn off the device with a control panel:
1. Press "Menu" button at the bottom of the home screen.
2. Press the ON/OFF button at the bottom of the menu window.
3. Confirm the message that appears.
4. Press a return icon at the top of the window to return to the main screen.



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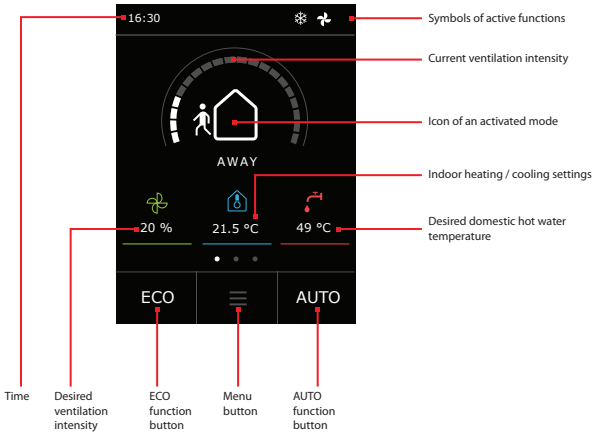
3.1. Control panel

KOMBI controller has a colour touchscreen, where many of the unit's functions and settings can be displayed and changed. If the unit is connected to the mains, the control panel will display the home screen or screen saver that you can switch off with a single tap. Touch-sensitive display reacts to soft taps, therefore, do not use any sharp tools (screwdrivers or pens), also do not apply excessive force as it may damage the display.

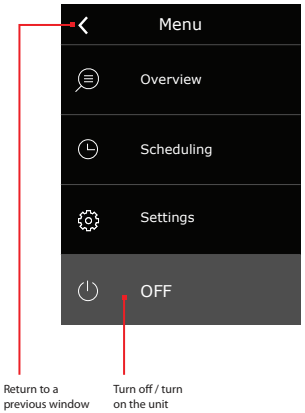
Screen saver



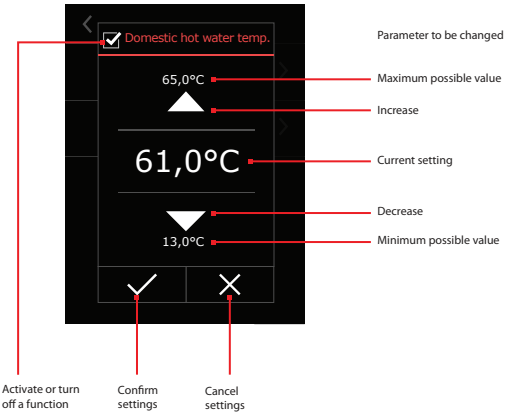
Main screen



Menu window



Parameter modification window



Main screen symbols


Desired ventilation intensity


Desired indoor air temperature for heating


Desired indoor air temperature for cooling


Desired indoor air quality


Desired domestic hot water temperature


Turn on / off cooling


Desired indoor relative humidity


Hot water curve correction


Desired domestic hot water temperature

Symbols of active functions


Heating active


Domestic hot water production


Disinfection is running


External contact is active


Cooling active


Fans are running


Active timer


Important messages available


Defrosting active


Electrical heater is running


Frost protection is running


Floor warm up active

Symbols in overview window and screen saver


Outdoor air temperature


Air quality


Supply water temperature


Heat pump fan


Supply air temperature


Relative humidity


Return water temperature


Supply air volume


Extracted air temperature


Temperature in control panel


Electrical heater


Extracted air volume


Exhaust air temperature


Relative humidity in control panel


Compressor


Air damper


Rotary heat exchanger


Hot water temperature


Circulation pump

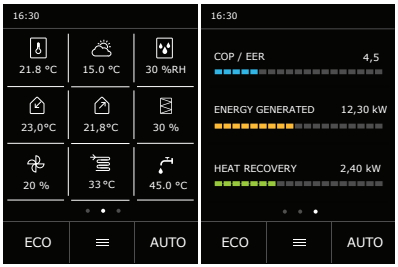
Filter contamination

Fig. 3. Control panel symbols

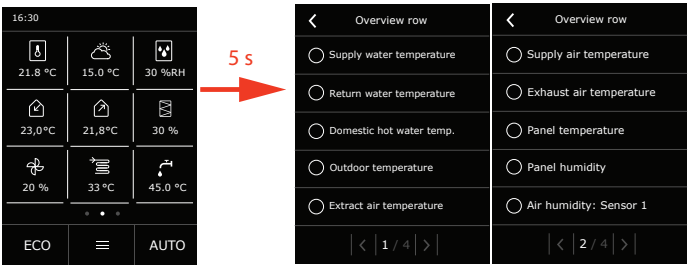
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3.2. Parameter overview

Swipe the main window to the side to access various parameter windows where you can monitor air and water temperatures, efficiency and energy consumption, and other data.



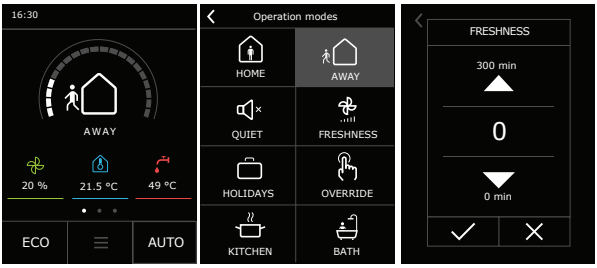
If you want to monitor other parameters that are not displayed in this window, press and hold for 5 seconds the parameter in place of which you want to see a different one. This will take you to a settings window where you could choose data to display (approx. 20 different parameters).



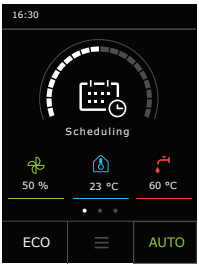
3.3. Selection of operation modes

Each operation mode automatically adjusts ventilation, underfloor heating and hot water production parameters. To activate a desired operation mode:

1. Press an icon indicating the current operation mode in the middle of the home screen.
2. Select and press a desired operation mode.
3. Operation modes “Home” and “Away” will activate immediately and will run continuously until another mode is activated.
4. After pressing “Quiet”, “Freshness”, “Holidays”, “Override”, “Kitchen” or “Bath” symbols you will be prompted to set duration for these modes (in minutes or days).
5. Press the return icon at the top of the screen to return to the home screen.
6. An icon for the selected operation mode appears in the middle of the home screen.



To activate ventilation by a **weekly schedule**:
1. Press "AUTO" button in the main window.
2. You will see a symbol for operation schedule in the middle of the screen.



More information on how to set a weekly schedule see in section "Scheduling window".

3.4. Selecting the desired parameters

To change or set a desired water or air temperature, ventilation intensity or air quality, press the corresponding symbol in the main window:



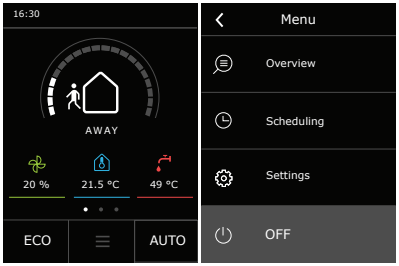
In this window you can temporarily disable individual part of the unit (ventilation, hot water production, underfloor heating) by unchecking the box next to the setting.

Symbols displayed in the main window (see Figure 3) depends on various device parameters, which can be changed in the "Settings" menu.

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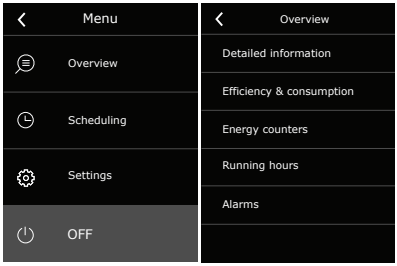
4. SETTINGS

You can adjust all device parameters, operating mode settings, desired temperatures and air volume on the control panel. To enter the controller menu, press menu button at the bottom of the main screen.



4.1. Overview window

In the OWERVIEW window you can monitor operation of KOMBI systems, current efficiency and energy consumption as well as find relevant error messages.



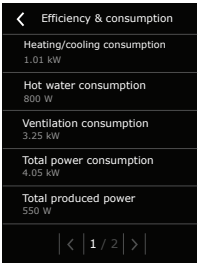
Detailed information

All the temperatures measured by the unit, data of the connected sensors, parameters of various systems of the unit and air filter contamination are displayed. Use arrows at the bottom of the window to go to the next window.



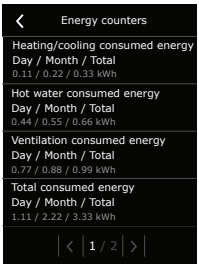
Efficiency & consumption

Here you will find current power of heaters / coolers, ventilation intensity, heat exchanger efficiency and current energy consumption.



Energy counters

Counters for heating/cooling and energy consumption are displayed here. Each meter calculates the energy produced, returned or consumed for a day, month or a whole period.



Running hours

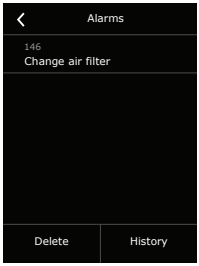
Information about running hours of compressor and electrical heater in various operation modes. Each meter calculates running times for a day, month or a whole period.



Alarms

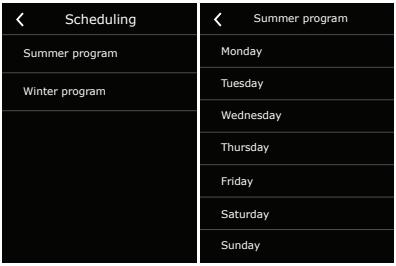
If an alarm appears during operation, you can read it, delete it or view the history of recent alarms in this window.

For more information and tips on messages see section “Troubleshooting”.



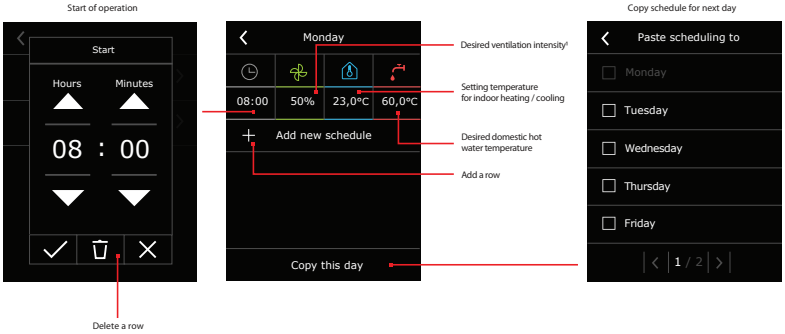
4.2. Scheduling window

Use this window to set up a weekly schedule. KOMBI unit uses two different weekly schedules – one for the heating and one for the cooling season. When you change the season (see “Setting heating and cooling seasons”), the weekly schedule changes automatically.



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Select a summer or winter program and select day of the week for a weekly schedule.

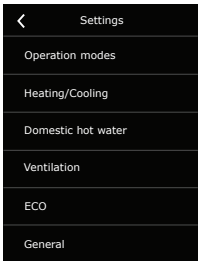


Press button "Add new event" and set the start time, desired ventilation intensity and temperatures. The unit will use these settings according to the schedule until the next event. If no other events are set, the unit will use the same mode for the entire week. If you want to set the same schedule for the whole week or several days, configure one day and press "Copy this day" at the bottom of the window.

To activate operation schedule, press AUTO button in the main window (see section "Selection of operation mode").

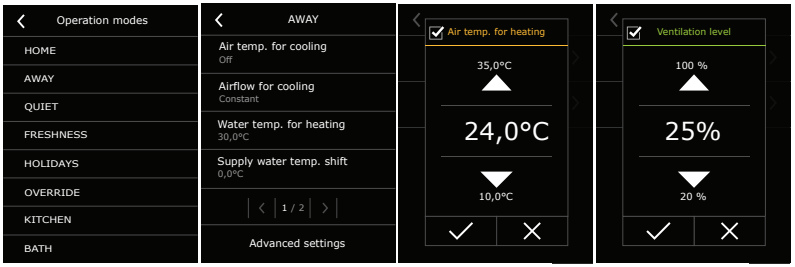
4.3. Settings

Most of the parameters are preset at the factory, but can be adjusted at the "Settings" menu item if necessary.



4.3.1. Operation modes

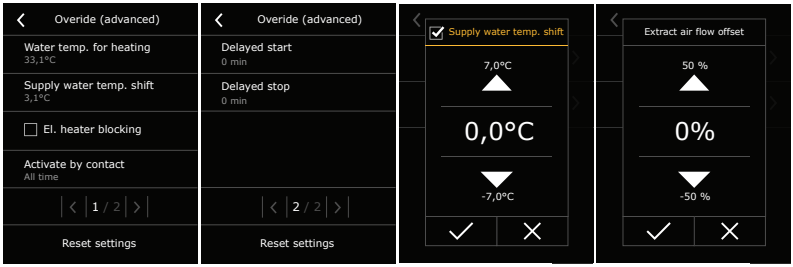
All operation modes have preset parameters for water and air temperature, ventilation intensity, etc. You can find all parameters in "Operation modes" menu item, but some of these parameters can be adjusted in the main window as well.



[1] If the „Air quality control" function is used, in here it will be possible to directly select the air quality or humidity level.

Select a desired operation mode and change necessary parameters. See “KOMBI unit functions” for more information about operation modes and recommendations for use of these modes.

If changing the main parameters of the mode is not enough, press button “Advanced settings” at the bottom of the window.

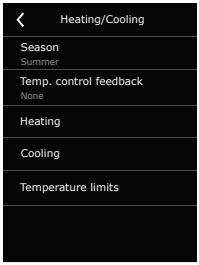


Advanced settings button are displayed only if advanced user level is activated (see “User interface”). Also, the advanced settings menu varies depending on the selected operating mode, i.e. some of the parameters may not be available in all modes.

- **Correction of supply water temperature** – here you can temporarily increase or decrease the temperature of the water circulating in the underfloor system without changing the basic heating or cooling parameters (see section “Heating / cooling”). Water temperature correction will be applied only in the corrected mode, in other modes the basic settings will be used.
- **Correction of extracted air volume** – general ventilation intensity is displayed in the main settings of the operation mode. If an unbalanced airflow is required indoors, here you can increase or decrease the speed of the extracted air fan compared to the supplied air.
- **Blocking of a heater** – disable the electrical heater for a specific operation mode. This will help to reduce energy consumption, however, it will take longer to heat up hot domestic water and during cold winter it might not reach the desired room temperature.
- **Activation by a contact**[1] – for modes that can be activated by an external contact, here you can choose in which cases the device should respond to an external contact: all the time, only if the unit is turned on or only if the unit is turned off.
- **Delayed start**[2] – here you can set a delayed start when an external contact is used for mode activation.
- **Delayed end**[3] **–** setting how long the mode will continue to operate after the external contact is switched off.
- **Limiting of the compressor**[4] **–** here you can limit the power of the compressor for a more quiet and energy saving operation. However, it will take longer to heat up hot domestic water and during cold winter it might not reach the desired room temperature.
- **Airflow for cooling**[5] – the function for automatic airflow regulation during cooling can be activated (See the section “Kombi unit functions”). If “Auto” is selected, the airflow and cooling power will be changed automatically to cool the rooms as efficiently as possible. The “Constant” setting will maintain a user selected constant fan speed.

4.3.2. Heating / cooling

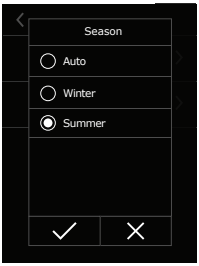
These settings are important for controlling the heat pump operation and water and room temperatures.



[1] Only in Override, Kitchen and Bath modes.
[2] Only in Override, Kitchen and Bath modes.
[3] Only in Override, Kitchen and Bath modes.
[4] Only in Quiet mode.
[5] Only in „Home“, „Away“ and „Bath“ modes.

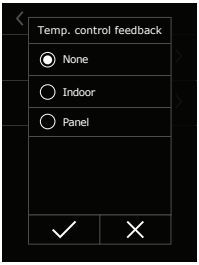
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Season



- **Auto** – season is switched automatically depending on the average outdoor temperature of the last 72 hours (heating is turned on when the outdoor temperature falls below 15°C, cooling is turned on – when the outdoor temperature rises above 17°C).
- **Winter** – the unit performs heating. Cooling mode is disabled. Air handling unit and underfloor heating system are used for heating.
- **Summer** – the unit performs cooling. Heating is disabled (except for domestic hot water production). Air handling unit and underfloor heating system is used for cooling.

Temperature feedback



- **None** – indoor temperature is not measured.
- **Indoor** – room temperature is measured in the ventilation device (if the ventilation is used) at the extraction side.
- **Panel** – a sensor integrated in the AHU control panel measure room temperature.

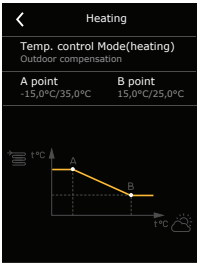
For more information about temperature control methods see section "KOMBI unit functions".

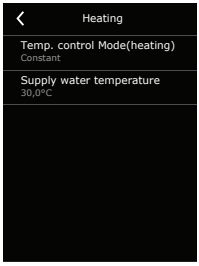
Heating

Here, the temperature of water supplied to the underfloor heating system or ventilation unit is selected. Prepared water will be used for heating the premises. Choose the temperature correctly, so that the rooms are not too cold.

The following temperature control modes are available:

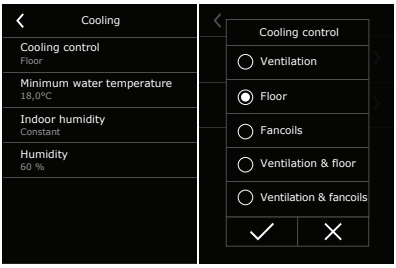
- **Outdoor temperature compensation** – water temperature is adjusted according to weather conditions using the user-set curve. Two points of the curve (A and B) are set – outdoor and prepared water temperature. For example, when the outside temperature drops, the temperature of water supplied to the underfloor heating system will automatically increase.
- **Constant** – constant temperature of the prepared water is maintained.





Cooling

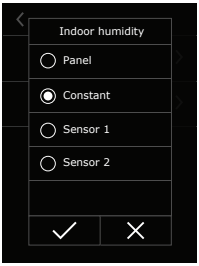
The unit can use ventilation unit, underfloor system or separately purchased fan coils for cooling the premises. When only AHU is used, the supply air temperature is automatically maintained according to the settings of the active mode. If cooling with underfloor system or fan coils is selected, you will be able to additionally specify the minimum water temperature during cooling. Choose the minimum water temperature so that the floor is not too cold to walk and condensation is prevented.



KOMBI unit has an integrated floor condensation prevention feature, therefore, in some cases the actual water temperature may be higher than the minimum set by the user.

For proper operation of the floor condensation prevention function, indoor air relative humidity is required:

- **Panel** – room humidity level is measured by a sensor integrated in the AHU control panel. When choosing this method make sure that the control panel is installed in the room where you spend most of your time and where there are no large changes in humidity levels.
- **Constant** – the user sets relative humidity value.
- **Sensor 1 / Sensor 2** – indoor humidity is measured with additional humidity sensor (see "Installation Manual").



Temperature limits

Here you can set temperature limits of the air supplied by the AHU. Ventilation intensity will be automatically reduced when the temperature of the supplied air does not reach the set minimum value (in winter) or exceeds the maximum value (in summer). If the temperature does not reach the set min./max. limit for a long time, the amount of air can be reduced to the minimum value (20%).



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4.3.3. Domestic hot water

Disinfection

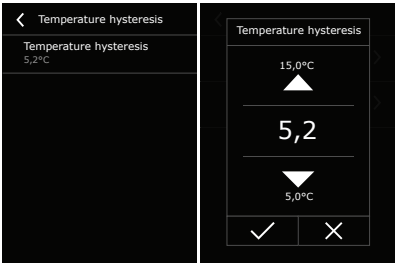
Here you can set parameters for domestic hot water system disinfection: temperature, duration, time and intervals.



During hot water system disinfection very hot water circulates in the system, so do not use hot water or handle it with extreme caution while the function is running. Otherwise, you could injure yourself or others.

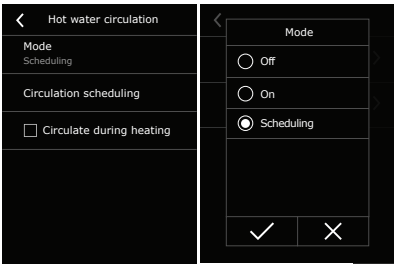
Temperature hysteresis

Select the temperature range that will be used for heating domestic hot water. Hysteresis determines how many degrees the temperature of the domestic hot water should drop compared to the desired temperature before the heat pump starts heating the water again. Low temperature hysteresis will keep the water hot for longer during frequent washes. High hysteresis will allow the water in the tank to cool down more, but this will help to save energy.



Hot water circulation[1]

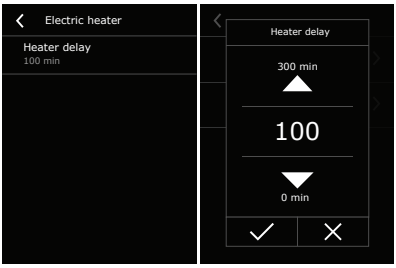
In case of large domestic hot water systems (e.g., several bathrooms and sinks), we recommend using the hot water circulation system, so you will not have to wait for hot water to arrive. In this menu you will be able to specify the control of a circulating hot water pump. It can be on at all times or run on a weekly schedule created by the user. You can also turn on water circulation during heating. In this case, the circulation pump will always turn on when the hot water in the tank is heated.



[1] Depending on the order.

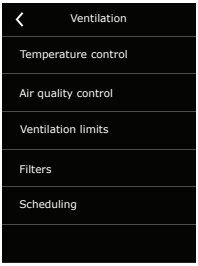
Electric heater

It is possible to adjust the delay of the electrical heater operation, during preparation of domestic water. If the requested hot water temperature is not reached only by the heat pump during this time, the electrical heater will be started. This delay can be adjusted according to expected hot water usage. For example, if all family members are planning to take a shower at a similar time, it is recommended to shorten the delay[1], so hot water will be prepared faster and the last person in the shower will still get an acceptable water temperature.



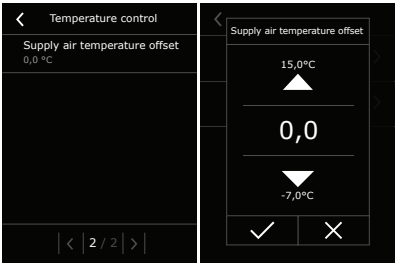
4.3.4. Ventilation

Here you will find the AHU settings.



Temperature control

The main temperature of the air supplied from the ventilation unit is maintained according to the room or control panel temperature settings (see "Indoor temperature control"). If you want the AHU to supply a higher or lower temperature air than the indoor air temperature, perform temperature correction.

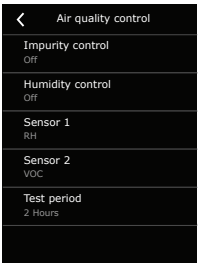


[1] Electrical heater delay is ignored, when Kombi unit operates in „Bath" mode.

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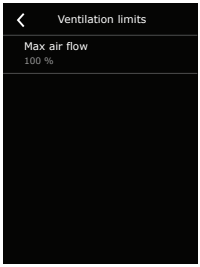
Air quality control

Here you can enable or disable ventilation intensity control by air or humidity sensors. Also, you can select the type of sensors. If, according to the ventilation mode settings, the unit will be stopped in case of good air quality, you can also set a check interval for the unit to turn on and check the indoor air quality.



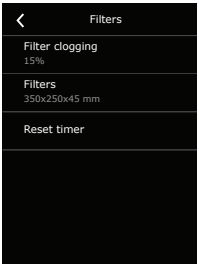
Ventilation limits

The maximum air volume is set to which all ventilation functions and modes are limited.



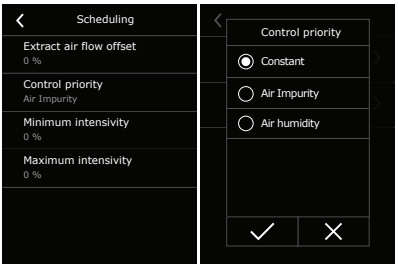
Filters

Filter contamination is displayed. When the contamination reaches 100%, a message will appear on the unit informing you to change the filters. After changing the filters and deleting the message, the filter timer is automatically reset. If you changed the filters ahead of time, i.e., before the message appeared, press button "Reset timer".



Scheduling

These parameters will be used when the device runs on a weekly schedule. You can specify how many percent faster or slower the extraction fan will run compared to the supply air fan. If you want to use the air quality or humidity control function in a weekly schedule, instead of constant airflow ventilation, select one of them in the "Control priority" setting and set min. and max. ventilation intensity for it.



4.3.5. ECO

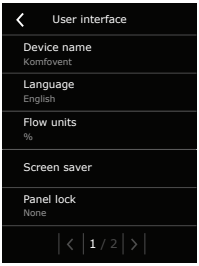
ECO – an energy saving mode intended for minimizing power consumption. Energy is saved by reducing ventilation intensity, turning off the electrical heater and cooling with a heat pump. If the Kombi unit has an integrated hot water circulation function[1], its operation can also be blocked. In this menu you can decide which saving functions to use when the unit runs in ECO mode.

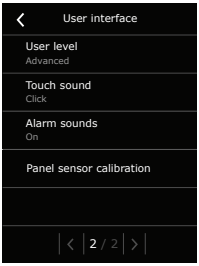


4.3.6. General settings

User interface – here you can change the language, time and other settings of the controller:

- **Language** – set a desired control panel language using arrows.
- **Flow units** – select units for air flow measurement.
- **Screen saver** – turn the screen saver on/off. Screen saver activates when a control panel is not used for longer than 1 min. You may select brightness of a screen saver, as well as settings and the order in which they are displayed. If a screen saver is deactivated, the control panel display turns off if not used for longer than 1 min. Tap a screen to wake-up.
- **Panel lock** – partial or full panel lock is available. Partial lock allows turning on/off an air handling unit and selecting desired ventilation mode but does not allow any ventilation settings to be changed. Full panel lock prevents the user from using the control panel. To unlock the panel you have to enter your four-digit PIN code. When the lock is on, the panel will lock every time the screen saver is activated.
- **User level** – two user levels are available: Basic and Advanced. With Advanced user level you will see more options in the "Operating Modes" menu (see "Operating Modes").
- **Touch sound** – you can turn on/off or change touch sounds.
- **Alarms sound** – you can turn on / off sounds of alarms.
- **Panel sensor calibration** – if the temperature / relative humidity measured by the controller does not match the values measured by other devices, adjust the accuracy of the controller's sensor in this menu. Measured temperature can be corrected by ± 5 °C, humidity – by ± 10 %.

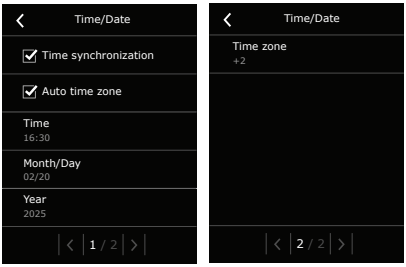




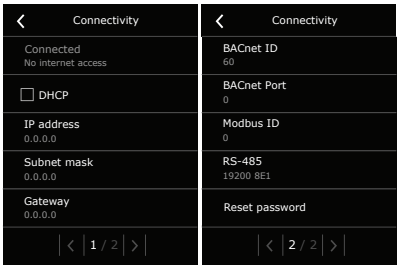
[1] Hot water circulation is an optional function.

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Time / Date – this is where you set the unit's time and date, used for weekly scheduling or other functions. When the unit is connected to the Internet, you can activate "Time synchronization" and "Auto time zone". These settings will ensure that the unit's internal clock is accurate and automatically switches to daylight saving time (summer time) when necessary.



Connectivity – you can configure your PC network settings for remote use via web browser: IP address and subnet mask. You may also change other network parameters, if necessary: Gateway and BACnet ID. DHCP option automatically assigns a free IP address in the local network (do not use this option if you connect your computer directly to the unit). Here you can also reset the user password which is used to log in to the "Komfovent Control" app for controlling your air handling unit via your mobile phone.



Remote control – settings needed to access the unit remotely.



- **Device owner** – the e-mail address of the user account (if the user has one) is displayed. By pressing this button, the user account can be removed from the system, for example, if the owner of the house changes.
- **Privacy agreement** – after pressing the button, you will see a QR code, that can be scanned with a smartphone. After reading the privacy policy it can be accepted or declined.

If you do not accept or decline the privacy policy, you cannot control the device with your smartphone or receive remote assistance from an authorized service representative.

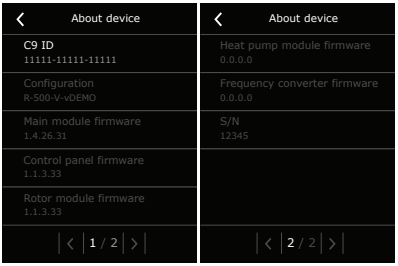
- **Remote assistance** – if the Kombi unit is connected to the Internet, remote access to it can be provided to service representatives or a maintenance company if necessary.



Remote access can be granted temporarily, for example only during the repair of the device or for permanent monitoring to the maintenance personnel.

Before activating the "Remote Assistance" function, contact the company maintaining the device or an authorized service representative. You will need to provide them with a generated access code, which will be used for the connection.

About device – here you can find information about the unit type, software version and serial number. Press the C9 ID line, to generate a QR code, which is required when connecting by phone through the Komfovent Control app.

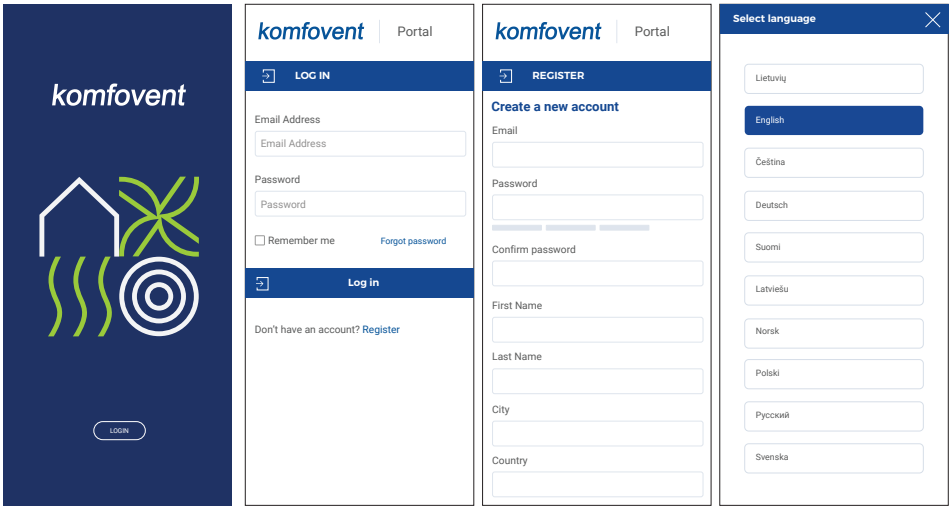


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5. CONTROL VIA SMARTPHONE AND THE INTERNET

5.1. Control via smartphone

To control the unit via a smartphone, the "Komfovent Control" app is required. Before using the app, you will need to create an account and sign in. This can be done by visiting the *control.komfovent.com* website or directly within the app.

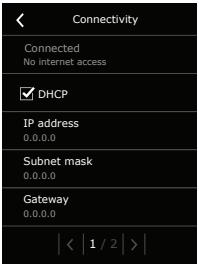


You will choose the app language when launching it for the first time. If needed, it can later be changed in the app settings.

Different languages can be used in the app and on the control panel.

5.1.1. Connecting to the unit using the "Komfovent Control" app

After connecting the unit to a network router with internet access, wait until the unit controller adapts to the local network. If you are using a control panel, you can check the connection status of the unit in the "Connectivity" window (see section "4.3.6. General settings") and view the assigned IP address:



If you do not have a control panel, after connecting the internet cable simply wait 3–5 minutes for the unit to synchronise with the network router.

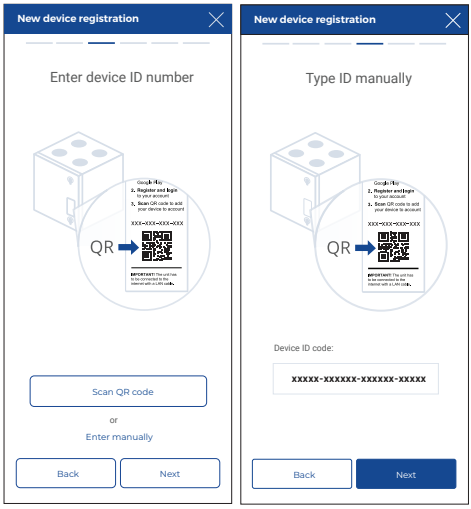
The "Komfovent Control" app may not function if the network router and/or firewall settings do not support the UDP data protocol.

On your smartphone (the phone must have internet access), open the “Komfovent Control” app. If you are the owner of the ventilation unit, the built-in wizard in the app will help you add your first unit.

To add a unit, you will need to scan a QR code, which can be found:

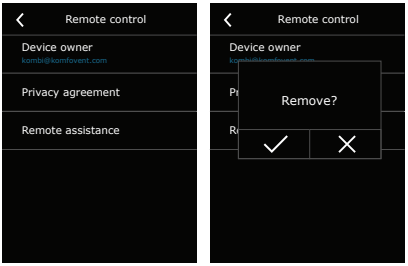
- on the unit door;
- on the main control board (see the “Installation manual”);
- on the control panel (see section “4.3.6. General settings”).

If, for any reason, the QR code cannot be scanned, the unit ID (indicated next to the QR code) can also be entered manually.



Only one owner of the same unit can be registered in the “Komfovent Control” app. If the unit has already been assigned to another “Komfovent” account, you will not be able to control it unless the owner shares its control from their account. If you want to connect to a ventilation unit whose control has been shared with you by the owner, simply skip the wizard.

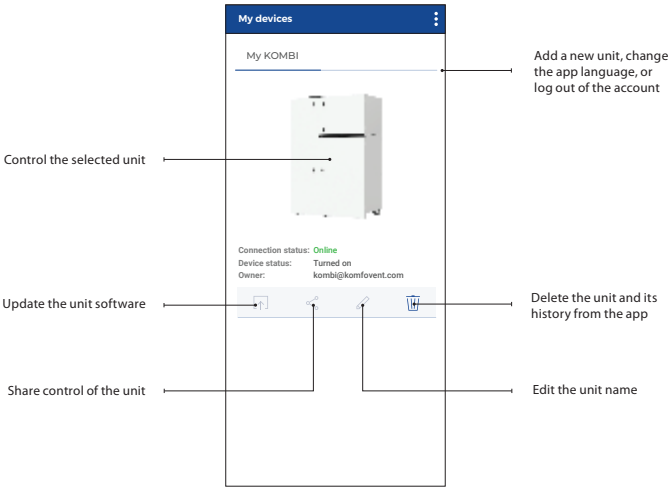
If the unit has been added to an account by an unknown person (e.g. an installer or a previous occupant of the same dwelling with a ventilation unit), their account can be removed from the unit via the control panel (see section “4.3.6. General settings”).



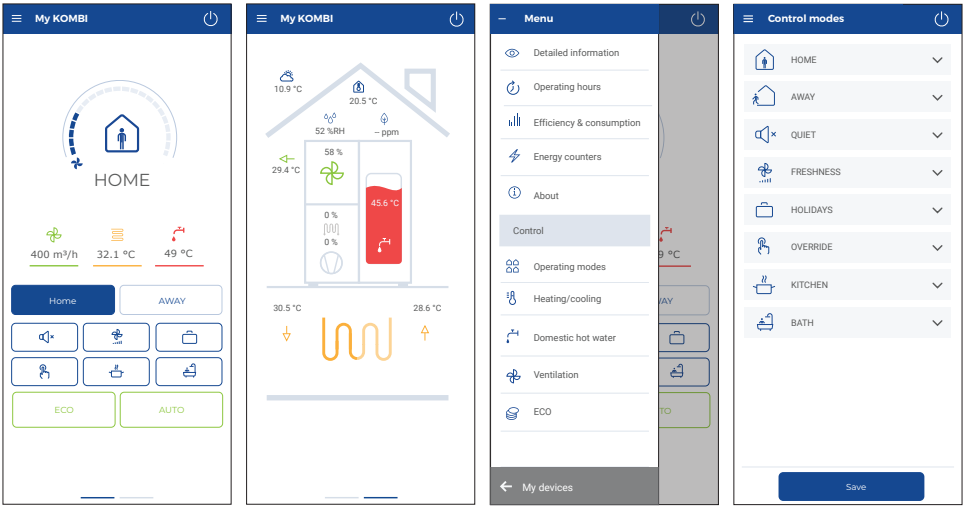
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5.1.2. Main functions of the "Komfovent Control" app

After launching the app, you will first see the list of units assigned to you. Here you can add more units, change the app language, delete a unit, or rename it. To access the unit control interface, tap its image in the list.



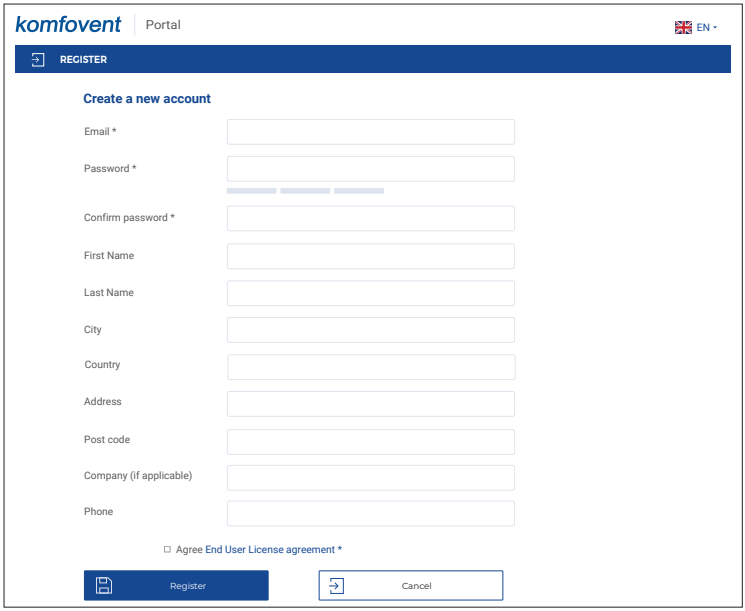
The app on a smartphone provides the user with the same unit control capabilities as when controlling it via a control panel or computer. Although the interface windows differ, the control modes, additional functions, and settings remain the same.



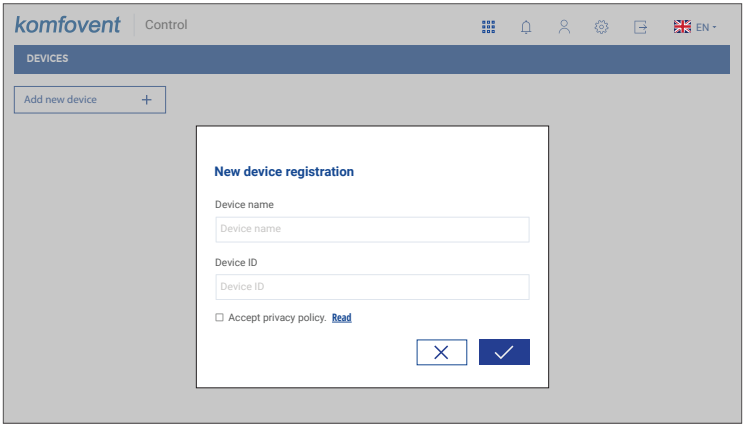
5.2. Internet control

The unit can be controlled via the Internet using a computer on the website control.komfovent.com or a smartphone with the "Komfovent Control" app. Before controlling the unit, you will need to create an account and register. This can be done by visiting the control.komfovent.com website or directly in the mobile application (see "Control via smartphone").

Register on the *control.komfovent.com* website by entering your account details:



If you have added your ventilation unit in the "Komfovent Control" mobile app or if the unit owner has shared control with you, you will see a list of units here. To add your first or an additional unit, click the "Add new unit" button and fill in the required details.

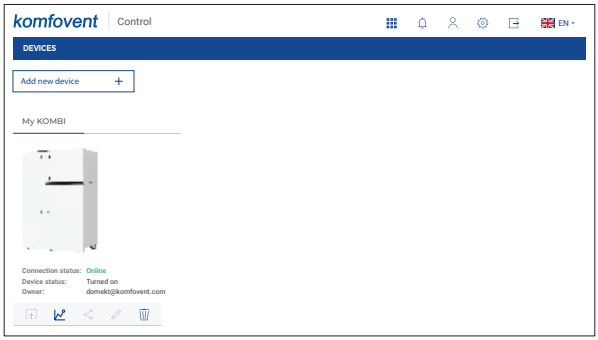


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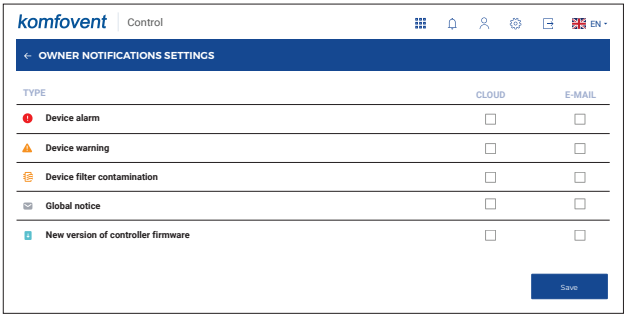
The unit ID can be found:

- next to the QR code on the unit door;
- on the main control board (see "Installation manual");
- on the control panel (see section "4.3.6. General settings").

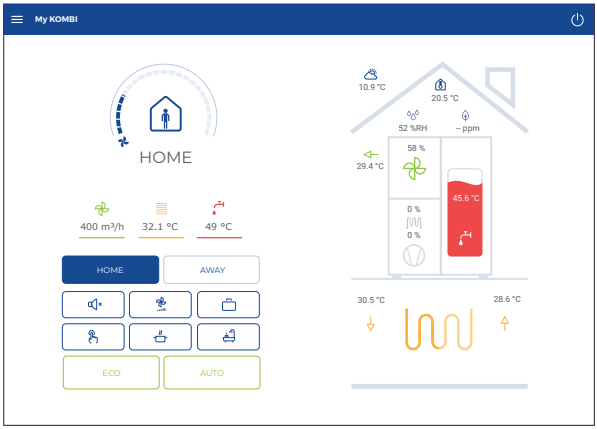
You will see all units you have added and those shared with you in the list. To control a unit, simply click on the image of the specific unit.



By clicking the settings button and selecting the "Owner notification settings" option, you can choose which unit notifications to display in the "Control" environment and which to receive by email.



The unit control environment is almost identical to the "Komfovent Control" app and provides the user with the same capabilities as controlling the unit via a control panel or smartphone.



6. TROUBLESHOOTING

Device automation continuously monitors the operation of various nodes and function algorithms. If something goes wrong, the device informs you with a message and an audible alarm from a control panel (alarm sound may be disabled). Messages are divided into critical alarms and notifications. Critical alarms occur when the device cannot continue operation without intervention of the user or an authorised service representative. Notifications are used to warn the user about possible faults or small discrepancies but they do not stop the device.

In case of a message, perform the following actions:

- Read the message and note its number displayed on screen (control panel or smartphone).
- Stop the unit. If heating/cooling devices were running at that time, after pressing the OFF button they will keep running for a few minutes until their temperature is stabilized.
- Once the unit stops, unplug it from the mains.
- Find tips in the "Message Table" by the message number.
- If possible, eliminate the cause. If a fault cannot be resolved, contact an authorized service representative.
- After troubleshooting, make sure no foreign objects, debris or tools are left inside the unit, and only then close the unit door.
- Connect the unit to the mains and delete all messages from the message window.
- If a fault is not resolved, depending on its nature, the device may not start at all or start and then stop after a while by displaying a message.



- **Before performing any work inside the unit, make sure that the device is stopped and unplugged.**
- **After stopping the unit, wait a few minutes for the fans to stop rotating and the heating devices to cool down before opening the door.**

Below is a list of messages, possible causes and recommended actions to resolve faults. These messages are displayed in the control panel or the mobile app.

Code	Message	Related systems	Possible cause	User's actions
1	Return water temperature low	Air handling unit	1. The set desired ventilation air temperature is too low. 2. Rotary heat exchanger not rotating. 3. Faulty water temperature sensor. 4. Risk of water freezing.	1. Set higher ventilation air temperature. 2. Check for foreign objects or debris preventing rotation of the rotor drum. Check if the rotor belt is not torn. 3. Contact authorised service. 4. Contact authorised service.
2	Low supply air temperature	Air handling unit	1. Heaters not working. 2. Rotary heat exchanger not rotating. 3. Faulty air temperature sensor.	1. Contact authorised service. 2. Check for foreign objects or debris preventing rotation of the rotor drum. Check if the rotor belt is not torn. 3. Contact authorised service.
3	High supply air temperature	Air handling unit	1. Integrated heaters malfunctioning. 2. Faulty air temperature sensor.	1. Contact authorised service. 2. Contact authorised service.
4–11	Air temperature sensor failure	Air handling unit	Temperature sensor(s) faulty or not connected.	Contact authorised service.
12–13	Water temperature sensor failure	Air handling unit	Not connected or faulty water temperature sensor.	Contact authorised service.
14–15	Air temperature sensor failure	Air handling unit	Temperature sensor(s) faulty or not connected.	Contact authorised service.
16	Internal fire alarm	Air handling unit	1. Internal temperature is above 50 °C 2. Faulty temperature sensor.	1. Locate and eliminate the heat source in the ductwork or unit. 2. Contact authorised service.
17	External fire alarm	Air handling unit	A fire alarm was received from the building fire system.	Once fire alarm is removed, the unit must be restarted using a control panel, computer or a smartphone.
18–24	Heat exchanger failure	Air handling unit	1. Rotary heat exchanger not rotating. 2. Electronic heat exchanger control board not working. 3. Faulty temperature sensor.	1. Check for foreign objects or debris preventing rotation of the rotor drum. Check if the rotor belt is not torn. 2. Contact authorised service. 3. Contact authorised service.
25–26	Air flow sensor failure	Air handling unit	Air flow sensor(s) faulty or not connected.	Contact authorised service.
28–29	Low air flow	Air handling unit	1. Contaminated air filters. 2. Excessive resistance of the air duct system. 3. Fan not working.	1. Check air filters and replace if needed. 2. Check air dampers, air inlet/exhaust openings, diffusers. 3. Contact authorised service.
30–33	Controller failure	Air handling unit	1. Too high or too low electrical input voltage. 2. Improperly connected or defective external devices (air quality sensors, dampers, etc.). 3. Faulty main electronics board.	1. Check the unit supply voltage or contact a qualified electrician. 2. Check connection of external devices or contact the representative of the installer. 3. Contact authorised service.
41–42	Water flow sensor fault	Heat pump	Water flow sensor(s) faulty or not connected.	Contact authorised service.
43–48	Pressure sensor failure	Heat pump	Pressure sensor(s) faulty or not connected.	Contact authorised service.

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Code	Message	Related systems	Possible cause	User's actions
49–54	Refrigerant temperature sensor failure	Heat pump	Refrigerant temperature sensor(s) faulty or not connected.	Contact authorised service.
55–78	Temperature sensor failure	Heat pump and hot water production system	Temperature sensor(s) faulty or not connected.	Contact authorised service.
79–80	System pressure error	Heat pump	1. Too much or not enough refrigerant in the system. 2. Heat pump is malfunctioning.	1. Contact authorised service. 2. Contact authorised service.
81	Electric heater overheat	Hot water preparation system	1. No water in the system. 2. Electric water heater faulty	1. Check if the unit is supplied with water from the building's system. 2. Contact authorised service.
82	Evaporator fan failure	Heat pump	Fan of the heat pump's heat exchanger is not working or is malfunctioning.	Check for foreign objects or debris blocking the fan rotation, or contact authorised service.
83	Evaporator pressure sensor failure	Heat pump	Not connected or faulty evaporator's pressure sensor.	Contact authorised service.
86	Compressor control error	Heat pump	Compressor or its frequency converter not working.	Check automatic circuit breakers or contact an authorized service representative.
87	Frequency converter internal failure	Heat pump	Compressor's frequency converter malfunctioning.	Check automatic circuit breakers or contact an authorized service representative.
88–90	System pressure error	Heat pump	1. System pressure outside the critical limits. 2. Faulty pressure sensor.	1. Contact authorised service. 2. Contact authorised service.
91–92	System temperature error	Heat pump and hot water production system	1. System temperature outside the critical limits. 2. Faulty temperature sensor.	1. Contact authorised service. 2. Contact authorised service.
94	Communication error	KOMBI unit	Faulty controller electronic or no connection between controller electronics.	Check automatic circuit breakers or contact an authorized service representative.
96	Low water flow	Heat pump and hot water production system	1. No water in the system. 2. Faulty circulation pump. 3. Water flow sensor fault	1. Check if the unit is supplied with water from the building's system. 2. Contact authorised service. 3. Contact authorised service.
99	Limited heating	Heat pump	The desired temperature cannot be reached because the operation of the electric heater is blocked in the operation modes (e.g., selected ECO mode).	Turn of blocking of the electrical heater, choose other operation mode or decrease the desired temperature.
102–103	Error of a frequency converter.	Heat pump	1. No communication with the heat pump compressor's frequency converter. 2. Compressor's frequency converter malfunctioning.	1. Check automatic circuit breakers. 2. Contact authorised service.
105	From envelope alarm	Heat pump	1. System pressure outside the critical limits. 2. Faulty pressure sensor.	1. Contact authorised service. 2. Contact authorised service.
106	Defrost low water flow	Heat pump	1. No water in the system. 2. Closed all heating circuits. 3. Faulty circulation pump. 4. Water flow sensor fault	1. Check if the unit is supplied with water from the building's system. 2. Check underfloor heating manifolds and shut-off valves. 3. Contact authorised service. 4. Contact authorised service.
107	Defrost fail	Heat pump	Automatic defrosting of the heat pump failed.	See other related messages.
108	Electric heater fail	Hot water preparation system	Electrical heater is not working or is malfunctioning.	Check automatic circuit breakers or contact an authorized service representative.
120	Overheat	Heat pump and hot water production system	Hot water temperature exceeds 80 °C.	Contact authorised service.
122	Low water flow	KOMBI unit	1. No water in the system. 2. Faulty circulation pump. 3. Water flow sensor fault	1. Check if the unit is supplied with water from the building's system. 2. Contact authorised service. 3. Contact authorised service.
131	Temperature sensor failure	Control panel	No signal from temperature sensors located in the control panel.	Check control panel wiring and cables. Replace the control panel, if needed.
132	Humidity sensor failure	Control panel	No signal from humidity sensors located in the control panel.	Check control panel wiring and cables. Replace the control panel, if needed.
133	Humidity sensor failure	Air handling unit	Faulty or disconnected air humidity sensor by which the unit is operating.	Check if the sensor is connected. Replace the sensor or specify that it is not used in the settings.
134	Impurity sensor failure	Air handling unit	Faulty or disconnected air quality sensor by which the unit is operating.	Check if the sensor is connected. Replace the sensor or specify that it is not used in the settings.

Code	Message	Related systems	Possible cause	User's actions
145	KOMBI module communication error	Heat pump and hot water production system	Faulty controller electronic or no connection between controller electronics.	Check automatic circuit breakers or contact an authorized service representative.
146	Change air filters	Ventilation unit and heat pump	Replacement of air filters is necessary (heat pump and unit).	Switch off the device and replace air filters. Delete the message after replacement.
147	Service mode	KOMBI unit	Temporary special operating mode that can only be activated by a service specialist.	If the unit has been previously repaired, contact the person who repaired the unit to determine if service mode can be disabled. Service mode is turned off by deleting a message.
151	Low heat exchanger efficiency	Air handling unit	1. Supply air volume exceeds the extracted air volume. 2. The unit door is not fully closed and mixes different air flows. 3. Air temperature sensor fault	1. If such air flow difference is not required, unify air flow settings. 2. Check that the unit door is pressed firmly and that gaskets are not worn out. 3. Contact authorised service.
152	Integrated control panel communication error	Indication bar	Electronics of the indication bar not functioning or without communication.	Contact authorised service.
153	Temperature sensor failure	Control panel	No signal from temperature sensors located in the control panel.	Check control panel wiring and cables. Replace the control panel, if needed.
154–158	Update failure	KOMBI unit	Failed software update.	Contact authorised service.
162	Freezing protection	Air handling unit	Frost protection activated due to low temperature.	Once the temperature rises, the function will turn off automatically. If this message appears during cooling season, contact authorised service.
163	Freezing protection	Heat pump and underfloor heating system	1. Water in the underfloor system is too cold (e.g., KOMBI unit is started during winter when the indoor temperature is below zero). 2. Closed all heating circuits. 3. Faulty circulation pump. 4. Water flow sensor fault	1. Temperature indoors during commissioning must be higher than + 5 °C. 2. Check underfloor heating manifolds and shut-off valves. 3. Contact authorised service. 4. Contact authorised service.
164	Low water setpont	Heat pump	The temperature of the premises can not be reached, due to the low water temperature setpoint.	Check heating and water temperature settings.
165	Freezing protection	Heat pump and hot water production system	Frost protection activated due to low temperature.	Once the temperature rises, the function will turn off automatically. If this message appears during cooling season, contact authorised service.
166	High delta pressure	Heat pump	1. Heat pump malfunctioning. 2. Faulty pressure sensor.	1. Contact authorised service. 2. Contact authorised service.
169	Defrost Timeout	KOMBI unit	Heat pump can not perform defrost automaticaly.	Contact authorised service
170	Boiler heating timeout	Hot water preparation system	1. A large amount of water used during heating of water in the tank. 2. Temperature sensor fault. 3. Faulty electric water heater.	1. No actions required. After some time, the water will be heated to the desired temperature. 2. Contact authorised service. 3. Check automatic circuit breakers of the electrical heater or contact an authorized service representative.
171	Disinfection timeout	Hot water preparation system	1. A large amount of water used during disinfection. 2. Temperature sensor fault. 3. Faulty electric water heater.	1. No actions required. After some time the disinfection will be repeated. 2. Contact authorised service. 3. Check automatic circuit breakers of the electrical heater or contact an authorized service representative.

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7. PERIODICAL MAINTENANCE

For proper operation of the KOMBI unit, it should be periodically inspected, the air filters replaced in due time and the interior of the unit cleaned. The user can perform some of the maintenance works, other works must be performed only by a qualified specialist.

- **This unit is not intended for use by people (including children) with limited physical, sensory or metal ability, or by people that do not have experience or knowledge of the equipment, unless it is done under supervision by a person responsible for their safety and following this instruction manual.**
- **Before performing any work inside the unit, make sure that the device is stopped and unplugged.**
- **After stopping the unit, wait a few minutes for the fans to stop rotating and the heating devices to cool down before opening the door.**
- **Use caution when performing works near internal or external heaters as their surfaces may be hot.**
- **Remove all foreign objects and tools from the unit.**
- **Use appropriate safety equipment (gloves, goggles).**
- **If you have washed or cleaned any of the components, wait for them to dry completely before starting the unit.**
- **The user can only perform visual inspections of the heat pump. Any mechanical/electrical works of the heat pump can be performed only by a qualified refrigeration systems' specialist or "Komfovent" representative.**
- **Do not unscrew any threaded connections or caps of the heat pump unit. Temperature of evaporating refrigerant is very low and causes severe frostbite in contact with skin. If you notice any discrepancies in the heat pump unit, contact a qualified refrigeration systems' specialist or "Komfovent" representative immediately.**

Task	Frequency	Performed by
Check filters and change if required	3 months	User
Change filters	6 months	User
Clean dust inside the unit	6 months	User
Check the rotor belt for wear inside the AHU	12 months	User
Replace the rotor belt	If required	Service representative
Check the rotor drum brushes for tightness and wear inside the AHU	12 months	Service representative
Check the AHU rotor drums for contamination with dust/other materials	6 months	User
Clean the rotor drum	If required	Service representative
Check fan operation and clean impellers	12 months	Service representative
Clean piping and siphon of the condensate drainage. Check if condensate easily flows from the unit.	12 months	User
Check for water leaks in places not intended for this purpose	6 months	User
Check integrated expansion vessels (leakage, pressure)	12 month	User or qualified plumber
Check tightness of the piping of heat pump and hot water preparation systems.	12 months	Service representative
Check the floor and domestic water system components connected to the KOMBI unit (manifolds, expansion vessels) according to the manufacturer's instructions.	12 months	User or qualified plumber

The internal and external surfaces of the unit can be cleaned with a vacuum cleaner and/or a damp cloth. When cleaning, prevent water from entering electrical components of the unit. Make sure all surfaces are completely dry before starting the unit.

7.1. Filter replacement

Check if filters are not damaged, torn or dampened. Filter replacement intervals depend on the environment as well as time of year, for example, during spring and summer filters may be contaminated with pollen, pubescence or insects, therefore replacement intervals are shorter. Replace filters if they are visibly dirty even though it is not time yet or differential pressure has not reached a critical limit yet. Contaminated filters increase pressure loss of the unit, reduce purification efficiency and increase electricity consumption of fans.

In the ventilation unit, the air flow goes to the side of the rotary heat exchanger, therefore, make sure that the filters are facing the right way (the direction of the air flow is indicated by a sticker on the filter frame).

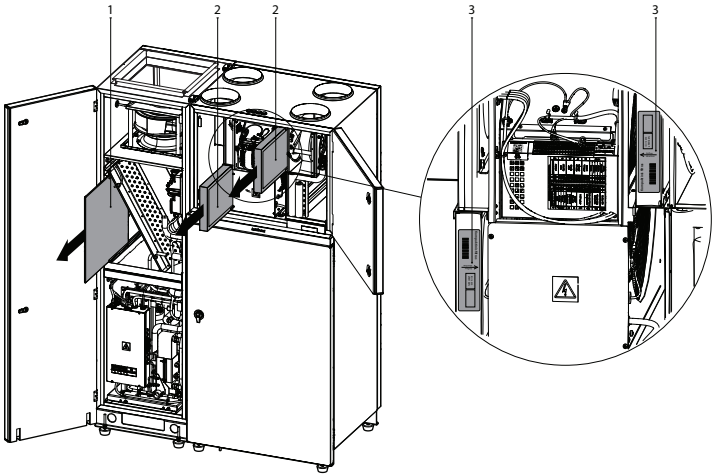


Fig. 4. Air filters
1 – heat pump air filter, 2 – AHU filters, 3 – information sticker indicating the air flow direction

Various modification are available, but images show only one access side, your device may look different from the one shown. Layout of filters and components is also presented in the "Installation manual".

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SERVICE AND SUPPORT

LITHUANIA
UAB KOMFOVENT
Phone: +370 5 200 8000
service@komfovent.com
www.komfovent.com

FINLAND
Komfovent Oy
Muuntotie 1 C1
FI-01 510 Vantaa, Finland
Phone: +358 20 730 6190
toimisto@komfovent.com
www.komfovent.com

GERMANY
Komfovent GmbH
Konrad-Zuse-Str. 2,
42551 Velbert, Deutschland
Phone: +49 0 2051 6051180
info@komfovent.de
www.komfovent.de

LATVIA
SIA Komfovent
Bukaišu iela 1, LV-1004 Riga, Latvia
Phone: +371 24 66 4433
info.lv@komfovent.com
www.komfovent.com

SWEDEN
Komfovent AB
Ögärdesvägen 12A
433 30 Partille, Sverige
Phone: +46 31 487 752
info_se@komfovent.com
www.komfovent.se

UNITED KINGDOM
Komfovent Ltd
Unit C1 The Waterfront
Newburn Riverside, Newcastle upon
Tyne NE15 8NZ, UK
Phone: 0191 429 4503
info_uk@komfovent.com
www.komfovent.com

PARTNERS

AT	J. PICHLER Gesellschaft m. b. H.	www.pichlerluft.at
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