

VERANO

G L O B A L

Air handling unit with heat recovery **freshAIR+ VST / VSH/ VSE**

User manual



The manual should be kept close to the device

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1. Introduction

We would like to thank you for your trust and for purchasing the Air handling unit with heat recovery produced by VERANO. For years, we have been making every effort to ensure that, thanks to high durability and quality, our products meet all your expectations.

1.1. General information

Air handling unit with heat recovery, further referred to as a recuperator, is an integral part of the mechanical ventilation system of a building or a residential and commercial premises. An installation equipped with a VERANO recuperator should be operated 24 hours a day without interruption.

This manual is a source of information for the installer and user, so please read it carefully before starting the installation and first start-up of the device. During installation and maintenance work, as well as during operation of the device, observe the recommendations contained in this manual.

In any correspondence with the manufacturer or distributor, please provide the type, order number and date shown on the nameplate of the device.

VS series recuperators have been designed for use in attics or in technical rooms of single-family and multi-family buildings. The casing made of extruded polypropylene (EPP) with a thickness of 40 mm ensures optimal thermal and acoustic insulation. Recuperators are equipped with a two-stage filtration system, a PTC preheater, a temperature, hybrid or enthalpy heat exchanger and an optional secondary heater or cooler. The applied constant flow system facilitates the adjustment of the installation and guarantees a constant air flow, regardless of weather conditions or the degree of filter contamination, and is a standard equipment of the freshAIR+ series air handling units.

Together with the recuperator, they receive a controller panel that clearly provides access to all available functions and settings. It enables remote control of the control panel operation using a web application available in a web browser or an application for tablets and smartphones available for Android and iOS systems.

The product was created as part of the research project "New generation recuperators - development of a group of innovative products" under the Intelligent Development Operational Program 2014-2020, Measure 1.1. - Submeasure 1.1.1. financed by the National Center for Research and Development.

1.2. Nameplate

The recuperator nameplate is located on the upper part of the controller casing.

1.3. Symbols

The following symbols are used in the manual:



Beware of the danger



The symbol indicates useful information and tips.



Air handling unit

freshAIR+ VWT 450 L+

VERANO GLOBAL Sp. z o. o.
ul. Vetterów 7a, 20-277 Lublin
tel.: +48 81 44-08-330
Order no. : **number**
Serial no. : **number**
serwis.rekuperatory@v-k.pl
www.veranoconnector.co.uk



Year of production:	2020
Rated voltage:	230 V AC
Overcurrent breaker:	~50 Hz
Max. power consumption with the anti-freeze system:	16 A
Protection:	1850 W
Insulation class:	IP 40
Max. available static pressure:	I
Max. air stream:	400 Pa
Nominal air stream:	450 m ³ /h
Pre-filtrer:	315 m ³ /h
Fine filter:	ePM10 (75%)
	EPM1 (55%)

2. Safety

2.1. Responsibility

VS series recuperators are designed and manufactured for use in balanced supply and exhaust ventilation systems. Using the devices for other purposes is considered as use contrary to the intended use. The appliance must not be connected to cooker hoods.

The manufacturer is not responsible for damage to the recuperator or injuries caused by using it contrary to its intended use.

The air handling unit is intended solely for indoor operation. The required value of the ambient temperature of the device is in the range from + 5 ° C to + 40 ° C, relative humidity up to 70%.

2.2. Protection of the environment and disposal

The high quality of products as well as the economy and ecology of production, operation and disposal are for Verano Global Sp. z o. o. equal goals. We strictly adhere to environmental standards and regulations.

Taking care of the environment, we optimize production methods by reducing the amount of waste and using materials that can be completely recycled.

Factory packaging:

The packaging used for storage and delivery is suitable for later use. The packaging, along with the purchased device, becomes the property of the user. therefore, disposal is the responsibility of the user or installer who is responsible for delivering and installing the product.

Waste equipment:

After the service life of the product has expired, it should not be disposed of with other municipal waste.

Pursuant to the regulations in force, improper disposal may lead to the imposition of administrative penalties.

Out of concern for the natural environment, please recycle the device responsibly at the end of its life. The device components contain materials that must be sorted and recycled or disposed of. Component access methods are described in this manual.

Take materials and components such as compressors, fans, circulation pumps and printed circuit boards to a waste disposal facility or dealer that provides disposal services.

2.3. Safety rules

Before starting any works related to the assembly or operation of the recuperator, please read this manual. For the safety and comfort of users, installation, assembly and service works should be carried out by a qualified installer in accordance with applicable regulations, accepted principles of engineering practice and this manual.

The devices are intended for use in single-family houses, single apartments and buildings of similar purpose. Alternative applications of the device should be consulted with the manufacturer before purchase.

The manufacturer is not liable for any damage resulting from failure to comply with safety requirements and recommendations or unauthorized modification of the device without the consent of the manufacturer.

2.4. Safe use

Electrical connections, maintenance and servicing of the device should be performed only by qualified installers in accordance with the manufacturer's instructions and the applicable safety rules. Before starting any service works, make sure that the heating elements have cooled down and that the device has been disconnected from the power supply and secured against accidental start-up.

Due to the possibility of sharp and cutting edges, during maintenance and service work be careful and use protective work clothing and protection required by the provisions of Occupational Health and Safety.

It is forbidden to:

- connecting the device to a power supply other than that indicated on the label,
- operation of an unearthed device,
- powering the device with an extension cord or a power distributor,
- powering the device by an electrical installation not prepared in accordance with this manual,
- starting the device before the end of the assembly work,
- use of the device or installation connected with the device in an aggressive or potentially explosive environment,
- modify the device without the prior consent of the manufacturer,
- operation of the device by people who have not been trained or read the manual, including children,
- using the device for drying the construction site,
- wkładania ciał obcych, w tym części ciała, przez króćce przyłączeniowe do wnętrza urządzenia,
- inserting foreign objects, including body parts, through the connection stubs into the interior of the device.

The operation of the device should be stopped when:

- there will be damage to the casing, including connection nozzles,
- there is any visible or audible damage to the device,
- fluid appears on the electrical parts or connectors,
- a foreign body gets into the installation.

Before removing the foreign body, as in the case of service work, make sure that the heating elements have cooled down and that the device has been disconnected from the power supply and secured against accidental start-up. In the event of damage, immediately shut down the installation and call the service in order to replace the damaged elements.

ATTENTION! The device should be started only after connecting the ventilation ducts. Starting the device without connecting the channels creates a risk of injury from moving parts.

3. Product information

3.1. Device description

The standard equipment of the freshAIR + VS series air handling unit with heat recovery includes the following elements:

- the casing made of foamed polypropylene provides excellent thermal and acoustic insulation of the device, additionally reinforced with a structure made of powder-coated steel sheet. The casing is 100% recyclable.
- counter-current heat exchanger allowing for the recovery of sensible heat (temperature exchanger) or total heat (enthalpy and hybrid heat exchangers),
- fans with EC motors with high efficiency and low energy consumption, with the possibility of smooth adjustment of the flow.
- built-in Constant Flow function, which ensures a constant amount of air flow, regardless of the degree of dirtiness of the filters or other temporary resistance disturbing the operation of the installation. The equalization of the supply and exhaust air streams ensures the highest efficiency of heat recovery.
- PTC pre-heater, which is characterized by a stable, modular structure, low flow resistance and uniform heating of the air stream. The temperature sensor allows to reduce energy consumption and protects against overheating of the air handling unit.
- built-in automatic bypass, which in the summer period allows the intake air flow to bypass the heat recovery system, thanks

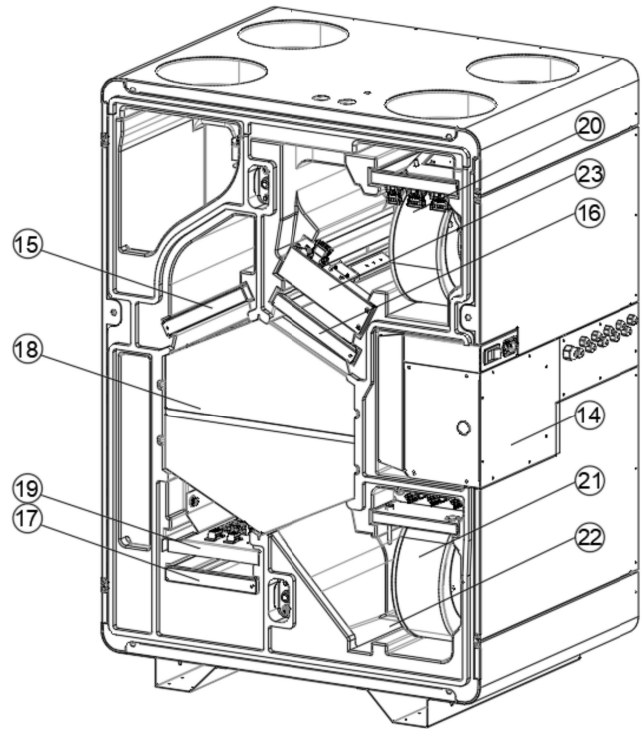
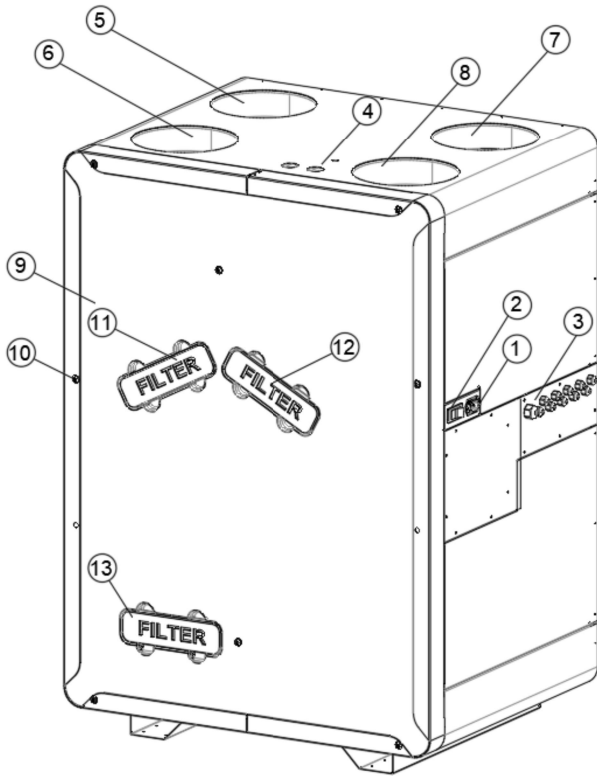
to which the temperature in the building will be reduced without the use of air conditioning.

- two-stage filtration system of the supply air: the ePM10 pre-filter (60%) allows for the sifting of coarse-grained dust floating in the air, and the ePM1 fine filter (55%) filters the tiniest dust with a diameter smaller than 1 µm: viruses, bacteria, nanoparticles and soot.
- UV lamps for air disinfection
- plugs in the casing for quick inspection and replacement of filters
- controller with a control panel that provides access to all functions and settings of recuperators, which additionally enables remote control via a web application, available in a web browser or an application for Android and iOS.

Depending on the model, the heat recovery unit can be equipped with:

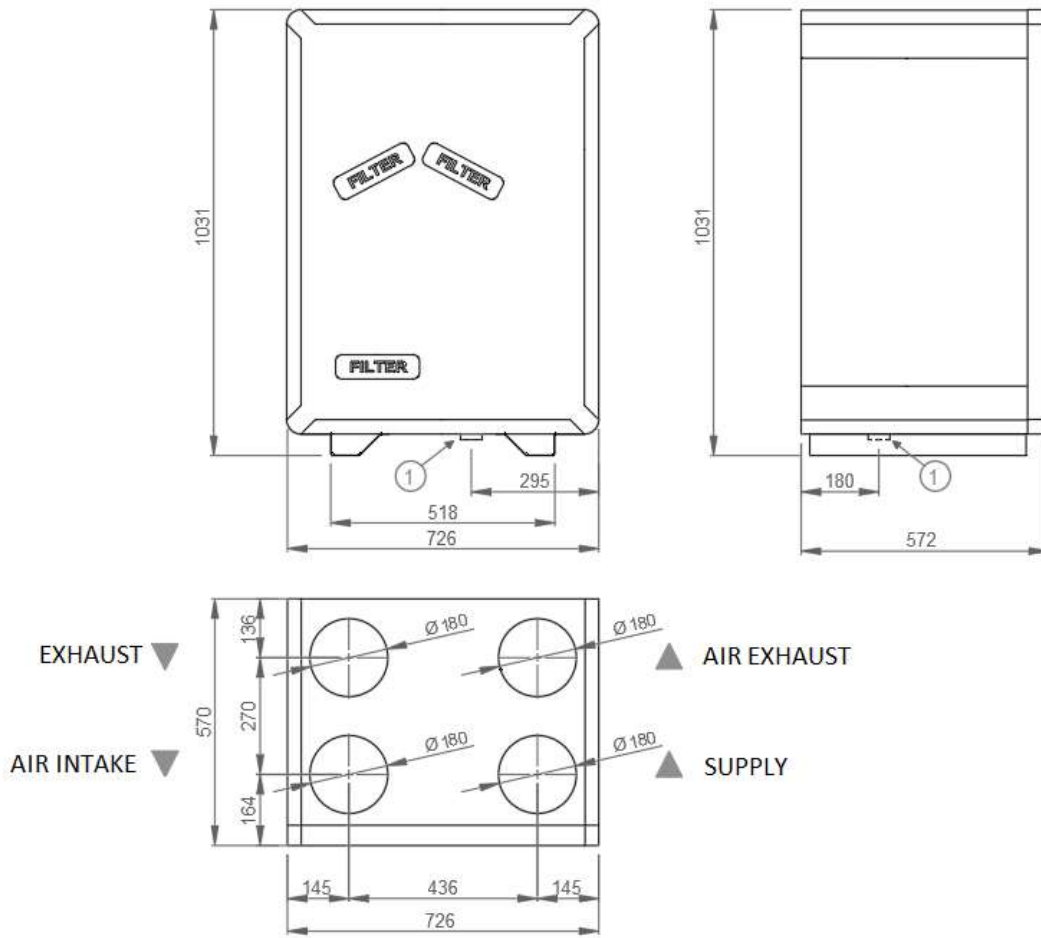
- reheater or cooler with condensate pump.
- the secondary heater can be powered by the central heating system medium and installation of chilled water is required to supply the cooler
- a relative humidity sensor
- a relative humidity sensor and a wall-mounted sensor for carbon dioxide concentration or air quality

3.2. Product overview



- [1] Power cord socket
- [2] Device switch
- [3] Cable glands for external equipment and AHU controller
- [4] Space for heater installation cables (option)
- [5] Connection of the exhaust air from the rooms d=180 mm
- [6] Fresh air connection from the intake d=180 mm
- [7] Connection of the air directed to the ejector d=180 mm
- [8] Connection of supply air to rooms d=180 mm
- [9] Service cover
- [10] M8 screws (x4) securing the service cover
- [11] Exhaust air filter plug
- [12] Supply air fine filter plug
- [13] Supply air pre-filter plug
- [14] AHU controller housing
- [15] Exhaust air filter
- [16] Supply air fine filter
- [17] Supply air pre-filter
- [18] Heat exchanger and bypass
- [19] PTC pre-heater
- [20] Supply air fan module with a set of connectors
- [21] Extract air fan module with a set of connectors
- [22] Drip tray and condensate drain

3.3. Product dimensions



3.4. Technical data and available variants of the device

The table below lists the models of VS series heat recovery units depending on the equipment version:

Secondary, Water Heat Exchanger	Exchanger and connection side		
	Temperature	Enthalpy	Hybrid
Central control according to demand, monochrome display			
Shortage	VST 400	VSE 250	VSH 400
Heater	VST 400 H	VSE 250 H	VSH 400 H
Central control according to demand, color display			
Shortage	VST 400 +	VSE 250 +	VSH 400 +
Heater	VST 400 H+	VSE 250 H+	VSH 400 H+
Local control according to demand (DCV)			
Shortage	VST 400 DCV	VSE 250 DCV	VSH 400 DCV
Heater	VST 400 H DCV	VSE 250 H DCV	VSH 400 H DCV

FreshAIR + air handling units are available with a temperature, enthalpy and hybrid exchanger. The enthalpy and hybrid exchanger allows for the recovery of moisture from the removed air stream, protecting users against dry air in the winter.

Parameter	freshAIR+ VST 400	freshAIR+ VSE 250	freshAIR+ VSH 400	Unit
Exchanger type	TEMPERATURE	ENTHALPY	HYBRID	
Air stream				
maximum	400	250	400	[m ³ /h]
nominal	280	175	280	[m ³ /h]
minimum	90	90	90	[m ³ /h]
External pressure (for the nominal air stream)	150	250	200	[Pa]
Temperature efficiency of heat recovery				
for the nominal air stream	88	80	85	[%]
for the minimum air stream	93	86	92	[%]
Energy class				
Central control according to demand	A	A	A	
Local control according	A	A	A	
Power consumption				
for the maximum air stream at the external pressure of 100 Pa	271	81	253	[W]
for the nominal air stream at the external pressure of 50 Pa	122	52	115	[W]
Maximum sound power level (LWA)	52	49	52	[dB(A)]
Built-in PTC electric heater		1,5		[kW]
Rated voltage		230		[V]
Width		726		[mm]
Height		1031		[mm]
Depth		572		[mm]
Diameter of connection nozzles		180		[mm]
Condensate nozzle diameter		GZ 1 ¼"		[mm]
Filter class		ePM10 (60%), ePM1 (55%)		
Filters dimensions	ePM10 (60%) – 175x480x18 mm, ePM1 (55%) – 175x480x18 mm			

3.5. Transport and storage

In order to avoid transport damage, the VS recuperator is delivered on a factory pallet in a cardboard box, which protects the device. The recuperator should be transported by a forklift or other transport device. During transport, avoid shocks and impacts that may damage the device.

The device should be stored in a dry, heated room at a temperature ranging from +5 ° C to +30 ° C and relative humidity up to 60%. The recommended maximum storage time for the air handling unit is 12 months. After delivery, the device should be inspected for possible transport and storage damage. Before starting the assembly work, check the completeness and correctness of the delivery. In the case of devices subject to long storage periods, it is recommended to check:

- operation of fan bearings,
- the condition of the insulation of electric wires,
- the condition of the device casing,
- moisture inside the device,
- the presence of foreign bodies inside the device housing.

It is forbidden to lift the device by holding the connection stubs.

3.6. Working conditions

The device should be installed in a room where it will be possible to work all year round at a temperature of +5 ° C to +40 ° C. Relative air humidity in the room must not exceed 70%.

Regardless of the method of installation, the device must be level and equipped with a condensate drain.

The ventilation ducts connected with the AHU must have their own support elements and their weight cannot be carried by the device.

3.7. The scope of basic supplies

Before starting the installation, check that the delivered device is complete and undamaged.

The standard scope of delivery includes the following items:

- VS series recuperator and
 - Filter set (2x ePM10 60% filter, 1x ePM1 55% fine filter)
 - UV lamps (2 pcs.)
- Controller touch panel
- A set of documents including:
 - user manual
 - installer manual
 - energy label
 - warranty card
 - service card
 - commissioning protocol

3.8. Available accessories:

The following items can be an optional scope of delivery:

- A set of brackets for mounting the device on a wall

- A set of brackets for mounting the device to the ceiling
- Console for mounting the device on the floor
- Nipple with a seal \varnothing 200 mm (4 pcs.)
- Filter set (3 pcs.)

4. Components used in AHUs

4.1. Heat exchanger

The heat exchanger is the central element of the air handling unit, which enables heat recovery from the exhaust air to the supply air. Classically used temperature exchangers (VST unit) allow for the recovery of sensible heat, which depends solely on the temperature difference between the balanced air streams.

Hybrid (VSH) and enthalpy exchangers (VSE), thanks to a special membrane, also allow for moisture recovery.

Hybrid and enthalpy exchangers differ in the degree of moisture recovery from the removed air.

Moisture recovery has double benefits:

- total heat recovery (including energy contained in water vapor),
- humidification of air supplied to rooms in winter.

Blowing dry air into the rooms reduces comfort (coughing, feeling dry in the throat, irritation of the eyes) and causes dust to rise in the rooms.

4.2. Automatic Bypass

The bypass is an additional duct built into the recuperator, which allows the intake air stream to bypass the heat recovery system. In the transitional and winter period, the recuperator allows for the recovery of heat from the air removed from the rooms. In summer, when the outdoor air temperature in the evening and night hours is lower than that of indoor air, the heat recovery system may be bypassed. As a result, the air temperature in the building will be lowered without the use of air conditioning.

The bypass operation in VS units is regulated automatically, unless the User selects the option of manual control of the bypass flap. A detailed description is included in the controller manual

4.3. EC fans with Constant Flow

The fans used in the VS series AHUs are characterized by a built-in Constant Flow function, thanks to which the flow set by the user is maintained despite changes in pressure resistance in the installation caused by e.g. contamination of the air filters. Adjusting the air stream is based on the expected value - there is no need to determine the operating point based on the calculations for the ventilation system made.

Fans with EC motors have been matched to the air streams present in each of the recuperators, thanks to which their operating point is in the area of high efficiency. Combining them with a dedicated controller and various available sensors allowed to achieve the energy efficiency class for individual models at level A.

The used fans with EC motors are characterized by high efficiency and low energy consumption in the entire operating range. The modern, compact design allows to limit heat generation, reduce

- UV lamps (2 pcs.)
- Washbasin siphon with aeration
- Damper actuator with spring return
- Heating cable with a thermostat to heat the condensate drain

engine vibrations and extend the life of the device. The 0-10 V control signal enables smooth regulation of the fans.

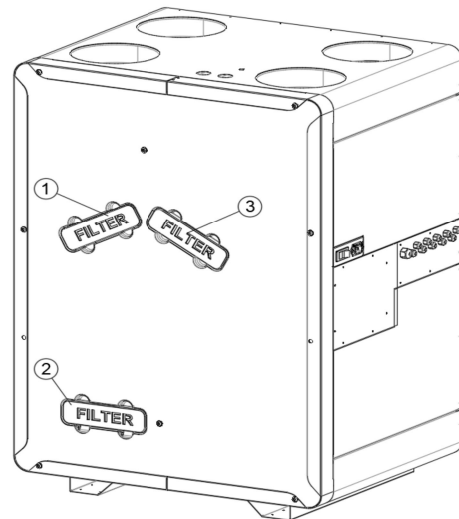
The equalization of the supply and exhaust air streams ensures the highest efficiency of heat recovery.

AHU flow rate adjustment is described in the chapter of the controller manual.

4.4. Air filters

VS series air handling units are equipped with three filters, including a two-stage supply air filtration system. The used pre-filter ePM10 (60%) allows for the sifting of coarse-grained dust floating in the air, and the ePM1 filter (55%) sifts the finest dust with a diameter smaller than 1 μ m: viruses, bacteria, nanoparticles, soot. Quick control and replacement of filters in VS series units is possible after removing the plugs in the side cover of the device. Filters used in VS series air handling units:

1. ePM10 extract air filter (60%)
2. ePM10 supply air pre-filter (60%)
3. Exhaust air fine filter



The filtration system has been developed and tested in cooperation with the Department of Indoor and Outdoor Air Quality of the University of Technology. The efficiency of air disinfection was determined at the level of min. 70% for three strains of bacteria (*Micrococcus luteus*, *Pseudomonas fluorescens*, *Bacillus subtilis*).

4.5. PTC pre-heater

Generally, when the outside air temperature drops below the freezing point, the condensate formed within the heat exchanger in the extract air chamber freezes up. The use of a preliminary heater protects the heat exchanger against freezing.

The device is equipped with a preliminary heater consisting of self-regulating PTC modules.

The pre-heater is installed after the supply air pre-filter, directly in front of the heat exchanger.

The heater has been secured with an additional temperature sensor to prevent overheating. The algorithm of the controller also allows to adjust the operation of the heater to the real heat demand, significantly reducing electricity consumption.

4.6. Casing made of expanded polypropylene

The recuperator housings are made of an injection-molded polypropylene foam, which is the structure of the individual components of the recuperator. The production process is subject to restrictive requirements and is carried out in accordance with the ISO IATF 16949 and ISO 9001 quality management system and the ISO 14001 environmental management system.

The housing material is 100% recyclable.

Matching parts, made with the use of injection molds, guarantee tightness unattainable by classic sheet metal housings, and the structure of the material ensures low weight of the device. It is also possible to make a recuperator with a casing completely covered with a steel sheet.

The use of 40 mm thick foamed polypropylene also provides excellent thermal and acoustic insulation of the device.

4.7. Condensate drain

The air handling unit has a factory-installed condensate drain with a 5/4 "thread. The drain should be connected with a siphon and a condensate drain system.

- It is recommended to use an aerated wash basin siphon

In the case of gravity installations, it is recommended to keep the line slope of at least 3%.

4.8. Built-in water reheater

As an option, the device can be factory-fitted with a water secondary heater with a copper - aluminum heat exchanger.

The heater should be connected to a central heating installation or a special technological heat installation using the set of valves with an actuator included in the set. The actuator should be connected to the AHU controller, which will ensure a comfortable air temperature for the user and protect the device from overheating.

The secondary water heater is designed to work in the water system. The heater must not be combined with direct expansion systems. The recommended factor is water treated for use in the central heating system.

In order to protect the water against freezing in winter, it is recommended to use a 30% propylene glycol-based admixture in the water system, dedicated to heating systems.

A description of the capacity, installation, service and maintenance work is described in a separate document that is included with the purchase of a secondary water heater. Built-in water air cooler

The device can optionally be factory equipped with a water cooler with a copper - aluminum heat exchanger.

The cooler should be connected to the chilled water system using the set of valves with an actuator included in the set. The actuator should be connected with the AHU controller, which will ensure

the comfortable air temperature and protect against overcooling of the supplied air.

The cooler is designed to work with chilled water as a refrigerant. It is forbidden to connect the cooler with direct expansion systems.

A description of the power, installation, service and maintenance work is described in a separate document that is included with the purchase of the water cooler.


4.9. AHU controller


The controller has been designed especially for VERANO freshAIR + recuperators. It clearly provides access to all functions and settings of VS series recuperators. It enables remote control of the AHU operation using a web application available in a web browser or an application for tablets and smartphones available for Android and iOS.


The controller also allows you to save data on the operation of the unit in real time - on the server. The data is used during service inspections and allows for quick detection of irregularities in the operation of the device. The controller is available in a version with a color VER-AHR WiFi touch panel or with a VER-AHM WiFi module (control of operation only via the application).

5. Operating the controller

5.1. User menu - structure

Device operation modes 
Tryb pracy centrali • Main mode: Pause, Mode 1...4 • Time mode: OFF, Out, Party, Airing • Summer / Winter: Auto, Summer, Winter, Ventilation • Fireplace No, Yes, Speed • Schedules: No, Yes
Summer / Winter mode • Auto, Summer, Winter, Ventilation • Winter Mode turn on • Temperature hysteresis of Summer Mode turn on
Operation modes settings • User modes settings 1...4 – Airing, Exhaust, Comfort temp. • Time mode settings – Airing: Duration, Speed – Party Duration, Comfort temp., Air supply, Exhaust – Out: Duration • Schedules settings – Time 1...5, – Monday ... Sunday; – Start, Stop; – Mode, Reset, Copy schedules • Leading control sensor – Supply air sensor, Exhausted air sensor, Panel sensor – Panel address

Constant operation settings / User modes settings 
Mode 1, Mode 2, Mode 3, Mode 4 Supply, Exhaust, Comfort temp.


Filters* 

Force filters replacement procedure

Filters replacement procedure completed?

Filters replacement procedure

- Supply air filter – class: Standard/G4/M5, Medium/M5/M6, Fine/F7/F8
- Exhaust air filter – class: Standard/G4/M5, Medium/M5/M6, Fine/F7/F8
- Is supply air filter replaced?
- Is exhaust air filter replaced?


GHE* 

GHE settings

- Auto, Open, Close
- Summer opening temp.,
- Winter opening temp.


Regeneration settings

- Max. GHE open time
- Regeneration duration
- Manual start

Bypass/Heat recovery* 

Open, Closed, Auto*

Minimum speed, Maximum speed, Auto

Burglar alarm system 

Alarm system support

Input logical state

- NC, NO

AHU reaction

- Turn off AHU, Extract, Supply

Airing function

- Yes, No

Airing settings

- Exhaust fan speed
- Supply fan speed
- Airing duration
- Periodic airing time
- Secondary heater work during airing

Exchanger cleaning*

Cleaning start hour

General settings 

Parental control

Screen saver settings

- On/Off screen saver
- Time till screen saver
- Screen saver backlight

Button sound

Default settings

Clock

Date

Brightness

Alarms sound

Language

Software update

ecoNET settings*

SSID

WiFi encryption type

Password

Alarms 

Service settings 

Information 

Turn on / off the controller 

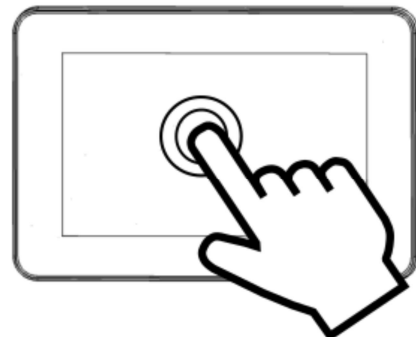


Individual items of the menu may not appear if there is no suitable sensor, devices, menu settings or the controller is turned on. These positions are marked with “*” symbol.

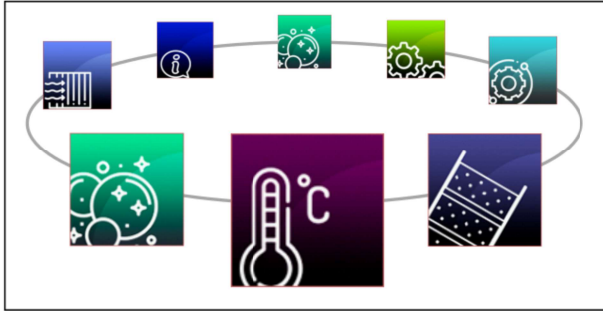
5.2. The controller control

Panel ecoTOUCH T4_RT:

A touch screen has been used to control the device.





Settings change is done using pie menu.





Selection and edit in the menu is done by pressing desired symbol on the screen. Grouped parameters from the selected menu are displayed on one screen. An example of such parameters grouping is shown in the figure below.






On-screen symbol meanings:


  - return to the previous menu or no acceptance of parameter setting.



 - fast return to the main screen from each menu level.


 - information about selected parameter.


 - main menu;

  - decrease or increase parameter value;

 - service menu;

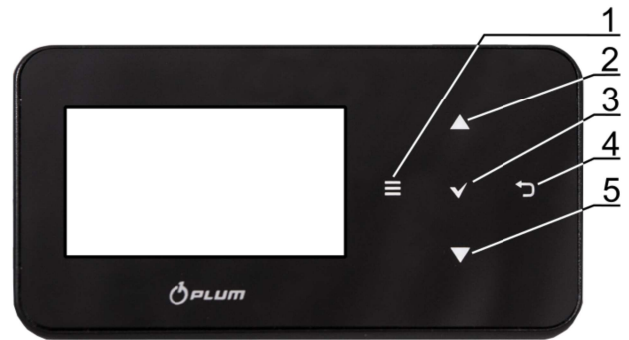
  - sliding list of parameters;

 - enter selected menu option or accept selected parameter setting.

 - decrease or increase value of the on-screen selected parameter.

The controller is operated using touch buttons, which allow selection of individual positions from the menu and parameters edit.

Panel simTOUCH2:



Description of buttons:

1. Entering the MENU.
2. Button for selecting a parameter from the list, increasing the value of the edited parameter and switching main screens.
3. ENTER - confirmation.
4. EXIT - exit.
5. Button for selecting a parameter from the list, decreasing the value of the edited parameter and switching between main screens.



5.3. Switching controller on and off

Panel ecoTOUCH T4_RT:

After switching on the controller recalls its status from the moment of switching it off. If the controller was not active before, it will start in the "Stand-by" mode. In this mode it displays the current date and time, outdoor temperature and information: "Ventilation system turned off". To start the controller, press anywhere on the screen, then the following message will appear: "Turn on the controller?".

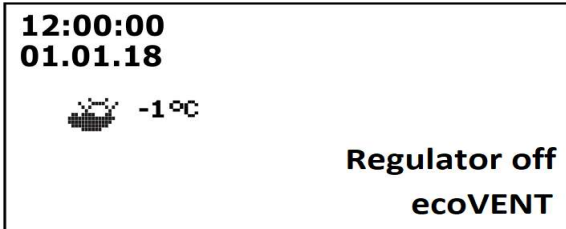




There is also another method of controller turn on or turn off. Press


the menu button, find and press the symbol  in the rotary menu. To turn off the controller, press the Menu button, then find and press the symbol  in the rotary menu.

Panel simTOUCH2:

After restarting, the regulator remembers the state in which it was before the moment of switching off. If the regulator has not operated before, it will start in the "standby" mode, in which the current time and date as well as the value of the external temperature are displayed with the information "Regulator off".



To start the regulator, touch the button , the message "Turn on the air handling unit?" will appear. Confirmation of the message with the button  will turn the regulator on again.

In order to switch off the regulator, touch the button  on any main screen and confirm deactivation of the regulator.

5.4. Main screens

Panel ecoTOUCH T4_RT:

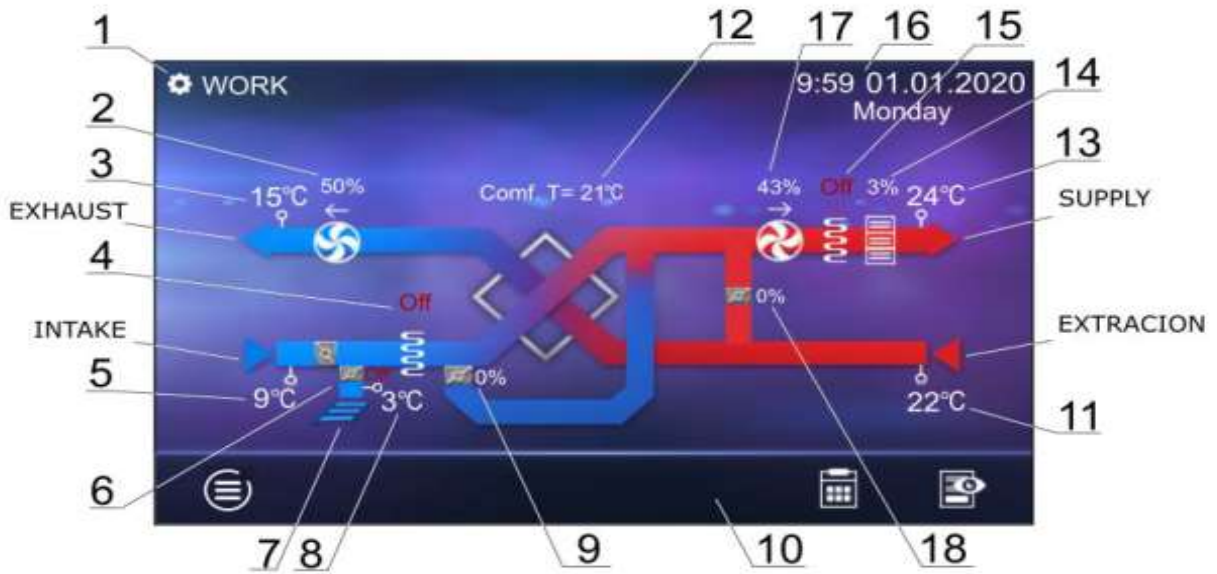
The controller has two main screens. First: with the displayed parameters and operation modes, with the function of editing and reading information; second: with automation scheme displayed. The view between these screens can be switched.



Main screen with options to read information and change selected parameters.

Legend:

1. Settings for main mode and user modes.
2. Additional mode selection.
3. Main menu access.
4. Information field, e.g.: active alarms - press to display a list of all current alarms.
5. Schedules settings.
6. Switching between main screens.
7. Basic information – press to display all available information about controller operation status.



Main screen with cross-flow exchanger.



Automation schemes presented on the main screen can be different depending on whether there are individual ventilation system devices connected to the controller e.g.: throttles, heaters, and values display are for information purposes only.

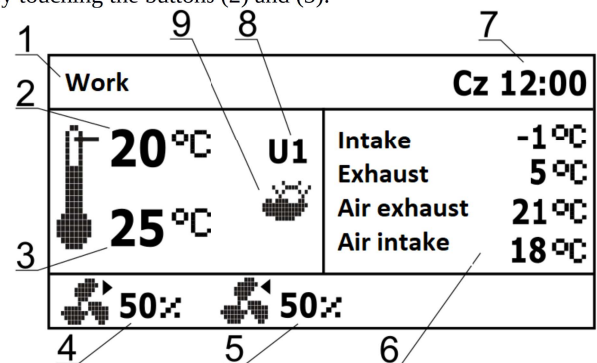
Legend:

1. Regulation modes: OPERATION, OPERATION-Heating, OPERATION-Cooling, DEFROSTING, PAUSE, Exchanger cleaning, Heater cooling, Airing.
2. Exhaust fan adjustment.
3. Exhaust temperature.
4. Operation of the primary heater (electric or water).
5. Intake temperature (outdoor temp.).
6. Ground heat exchanger throttle actuator position (GHE).
7. Ground heat exchanger (GHE).
8. GHE temperature.
9. Bypass throttle actuator position.
10. Information:
 - [R1], [R2] – exceeding the demand for adjustment change threshold;
 - [FAS] – signal from the Fire Control System;
 - [ECO] – signal from the burglar alarm system;
 - [TR1] – primary heater thermostat input
 - [TR2] -secondary heater thermostat input
11. Extracted air temperature.

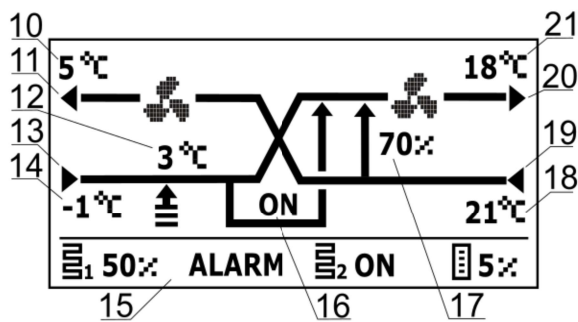
12. Comfort temperature (preset).
13. Supply air temperature.
14. Cooler work (Freon or water).
15. Working secondary heater (electrical or water).
16. Time and working day.
17. Air supply fan adjustment
18. Position of mixing chamber actuator.

Panel sim TOUCH2:

There are two main screens in the panel: an information screen with displayed values of basic parameters and a screen with displayed automation diagram. Switching between screens is done by touching the buttons (2) and (5).



Information screen.



Screen with cross-flow exchanger.

Legend:

1. Regulation modes: OPERATION, OPERATION - Heating, OPERATION - Cooling, DEFROST, STOP, Cleaning the exchanger, Draining the exchanger, Cooling the heater, Airing.
2. Comfort temperature (set).
3. Regulation master temperature.
4. Supply fan status with current control.
5. Extract fan status with current control.
6. Information field of measured temperatures.
7. Day of the week and time.
8. Operation modes: Standstill, Mode 1... 4 (U1... 4).
9. Information field:

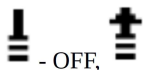


- Summer mode active;



- Winter mode active;

10. Exhaust temperature
11. Exhaust
12. GHE temperature and position of the GHE actuator:



- OFF,



- ON.

13. Intake
14. Intake temperature (external).
15. Information field:

ALARM – alarm signaling;



- primary heater operation;



- secondary heater operation;



- cooler work;

16. Bypass actuator position.
17. Mixer chamber actuator position.
18. Extract air temperature.
19. Exhaust.
20. Intake.
21. Supply air temperature.

5.5. Description of the controller's operation

5.5.1. Controller operation modes

The controller operation modes according to which ventilation is adjusted.

- OPERATION – the controller, using user settings, controls the ventilation to achieve the preset temperature in the room.
- OPERATION-Heating – the controller, disregarding low external temperature, seeks to keep preset temperature in the room; to achieve it first selects the source with the highest available air temperature, then depending on fulfilled conditions, starts secondary heater.
- OPERATION-Cooling - the controller, disregarding high external temperature, seeks to keep preset temperature in the room; to achieve it first selects the source with the lowest available air temperature, then depending on fulfilled conditions, starts the cooler.
- DEFROSTING – the controller prevents exchanger to freeze, by adjusting fans speed and starting primary heater or by opening bypass throttle.
- PAUSE – the controller stops ventilation system operation, only protection functions are operational.
- Exchanger cleaning - the controller activates the cleaning mode by switching fans to maximum power.
- Exchanger dehydration – controller starts exchanger dehydration function, while holding off fans operation.
- Heater cooling - the controller sustains air supply fan operation for a set time, to cool electric heaters.
- Airing - the controller turns on airing function.

5.5.2. Device operation modes

Settings regarding controller operation modes, according to which control will be performed, are in the menu:

Menu → Operation modes

The screen allowing setting of active controller functions is in the menu:

Menu → Operation modes → AHU operation modes

- *Main mode – AHU operation mode settings. Selecting Pause mode will stop ventilation system, only protection functions stay active. This mode can be applied to prevent unpleasant odors from the outside. It is possible to select one of modes Mode 1...4, settings of which can be defined by user.*

- *Time mode (Time operation mode) – turning on one of the additional AHU operation modes. Available settings:*

- Off: turn off active time mode.

- Out mode: holds on ventilation system operation, this mode can be applied e.g. for a period of leaving the room by user.

- Party mode: increases fans adjustment and amends preset temperature value, this mode can be applied e.g. during the presence of large number of people in the room.

- Airing mode: amends exhaust fan adjustment, while turning off air supply fan, this mode can be applied e.g. for fast air exchange in the room.

- Summer/Winter (Summer / Winter mode)
 - ventilation system control mechanism setting
 - Winter mode: blocks cooler and Bypass.
 - Auto mode: selection of active mechanism according to settings and external temperature
 - Ventilation: blocks cooler and heaters.
- Fireplace (Fireplace function support) – allows turning on fireplace function. If this function is ON, the control of exhausted air fan will be depending on supply air fan adjustment and preset difference in Speed parameter.
- Schedules – allows turning the controller on according to user defined schedules.

The screen allowing setting control mode is in the menu:

Menu → Operation modes → Summer/Winter

- Setting mode according to which the control will be performed. Similarly to **Summer/Winter** menu in **AHU operation mode menu**.
- *Winter mode turn on – outdoor temperature value below which, with auto mode active, winter mode will be turned on.*
- Hysteresis of summer mode on – hysteresis value of mode amendment, if auto mode is active and outdoor temperature increases above Winter mode turn on + Hysteresis of summer mode on the summer mode will be activated.

5.5.3. Settings of operating states

Settings related to operation modes, time modes and additional operating states of the controller, during which the control status of the ventilation system is changed for a specified period of time, can be found in the menu:

Menu → Operation modes → Work modes

- User modes settings – redirects to user
- modes settings, described in item *User modes*
- *Time modes settings – menu allows to define time modes settings, for Airing mode it is possible to set the duration time with Duration time parameter and adjusting exhaust fan with Speed parameter. For Party mode – duration with Duration time parameter, temperature preset with Comfort temp parameter, supply air fans adjustment with Supply air parameter and exhaust with Exhaust parameter. For Out mode it is possible to set its duration with Duration time parameter.*
- Schedules settings – redirects to schedules settings panel, described in item *Schedules*
- *Control leading sensor – setting, according to which sensor the preset temperature control is performed, available: Air control sensor, Exhaust sensor, Panel sensor (only ecoTOUCH panel).*
- Panel address – if leading sensor is set to panel sensor, then panel address, from which temperature value is read, must be set.

5.5.4. User modes

Menu allows individual setting, for each user mode 1...4, air supply speed (Air supply), exhaust speed (Exhaust) and preset temperature in Comfort temp. parameter.

5.5.5. Balanced ventilation function

The controller has balanced ventilation function that adjusts the flow of air and pressure in ventilation ducts. The function allows increasing the efficiency of heat recovery, immunizing the system against resistances e.g. due to air filter dirtying, exchanger resistances change due to humidity or dirt, starting air flow via ground heat exchanger.



The balanced ventilation function requires the connection of differential pressure sensors.

The function turn on and configuration is done in Installer menu.

5.5.6. GHE support

The controller supports ground heat exchanger (GHE) as a part of the ventilation system. The ground temperature is used here, which is more comfortable than outdoor air temperature for the most part of the year.



GHE support requires connection of additional temperature sensor.

The GHE settings parameter allows selection GHE operation mode:

- Close – the controller turn off glycol pump or closes the throttle cutting off the air flow via GHE.
- Open – the controller turn on glycol pump or opens the air throttle on the GHE canal.
- Auto - the controller turns on or off GHE depending on preset user settings, external temperature and GHE temperature. Turn on can be done in two modes: heating mode – winter turn on and in cooling mode – summer turn on. Winter turn on of GHE will be performed if outdoor temperature drops below Winter opening temp. and while GHE sensor temperature is higher than temperature on outdoor temperature sensor. Summer opening will be performed if outdoor temperature increases above Summer opening temp. and while GHE sensor temperature is lower than temperature on outdoor temperature sensor.



The outdoor temperature value is measured by a temperature sensor mounted on an intake.

In case of no GHE temperature sensor connected or its support is off in installer menu, the GHE control will depend on only from the outdoor temperature sensor readings.

Additional GHE control settings are in the menu:

Menu → GHE → Control settings

- *GHE max. opening time* – maximum duration of GHE throttle opening. After that time the GHE regeneration procedure will start.
- *GHE regeneration time* – duration of the GHE regeneration. During regeneration process the GHE throttle remains closed.
- *Manual start* – manual start of the regeneration without waiting for the fulfilment of the temperature and time condition.

5.5.7. Bypass support

The **Bypass** menu contains settings related to the bypass and allows selecting control type for the cross-flow exchanger bypass throttle. The throttle can be constantly open (Open parameter – no heat recovery and exchanger freezing risk), constantly closed (Close parameter) or in auto mode (Auto parameter), during which throttle will be open depending on fulfilment of open conditions. When bypass is open the inner rooms can be cooled to preset temperature using cooler air from the outside.

5.5.8. Burglar alarm system

After receiving signal of arming the burglar alarm system, the fans adjustment will be changed according to the following menu settings:

Menu → Burglar alarm system

- *Alarm system settings* – If the function is active, then after receiving signal from the burglar alarm system, the controller operation will be amended according to these settings.
- *Input logic state* – setting logical state of digital input: NC (normally closed) or NO (normally open).
- *AHU reaction* – setting the ventilation system reaction to received signal. If Turn off AHU is selected, then after receiving signal the device will be turned off. Otherwise, fans speed will be adjusted to the predefined settings with Exhaust and Supply parameters.
- *Airing* – turn on / off airing function, it works only with the burglar alarm system control mode on, and Turn off AHU option off.

The airing settings are in the following menu:

Menu → Burglar alarm system → Airing settings

- *Exhaust fan speed, Supply fan speed* – allow setting fans adjustment during airing.
- *Airing time* – parameter defining time, through which airing is performed.
- *Periodic airing time* – this parameter defines time periods between succeeding airing cycles.
- *Secondary heater work during airing* – turning on / off permission of secondary heater to work during airing.

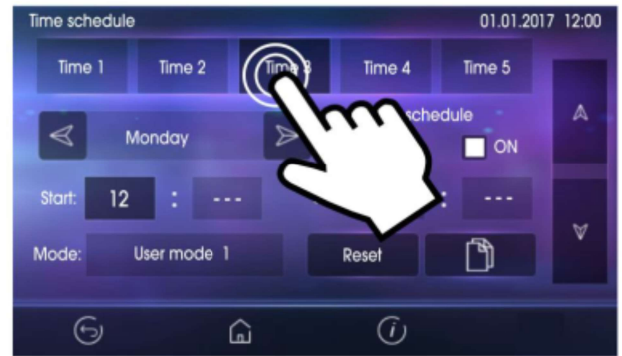
5.5.9. Schedules

The menu allows to set the schedules of the ventilation system work.



Programmed schedule is stored in internal memory and is not deleted during the power outage.

Panel ecoTOUCH T4_RT:



Schedules support can be turned on in two ways: via Schedules parameter, in the menu


Menu → Operation modes → AHU operation modes

or via Schedules parameter, in the menu:

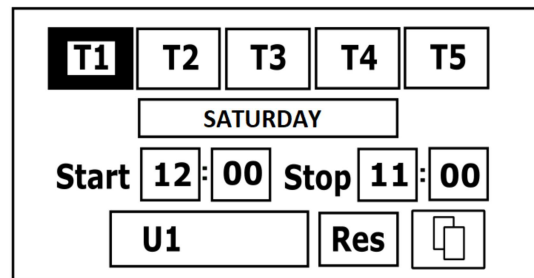
Menu → Operation modes → Work modes → Time schedule settings

In schedules menu: 5 time ranges of AHU work can be set for each day of the week (Time 1..5). For each range the duration time must be set (Start and Stop parameters: hours and minutes) and active work mode chosen (Mode parameter). If there is a time difference between ending of one range and beginning of another range, then during this time difference the controller will return to normally preset operation mode.



The  button allows to copy currently defined schedule to any day of the week.

Panel simTOUCH2:



The scheduling mechanism can be enabled using the Schedules parameter located in the menu:


Menu → Operation modes → AHU operation modes

In the schedule menu located at the location:

Menu → Operation modes → Work modes → Time schedule settings

In schedules menu: 5 time ranges of AHU work can be set for each day of the week (Time 1..5). For each range the duration time must be set (Start and Stop parameters: hours and minutes) and active work mode chosen (Mode parameter). If there is a time difference between ending of one range and beginning of another range, then during this time difference the controller will return to normally preset operation mode.



The  button allows to copy currently defined schedule to any day of the week.

5.5.10. Filters replacement procedure


The controller alarms a need to replace air filters by constant alarm on the screen.




Filters replacement can be done only with power supply disconnected from ventilation system.

Procedure in case of dirtying filters depends on how controller was configured by installer. If installer enabled filters exchange for



user, when alarm triggers press , button, to start **Filters replacement procedure** and this will stop ventilation system. After displaying of active procedure alarm disconnect the ventilation system from electrical supply and replace the filters. After connecting the supply enter the following menu:

Menu → **Filters** → **Filters replacement procedure**, where class of new filters has to be selected (parameters: Air supply filter – class, Exhaust filter – class), and also confirm filters replacement (with parameters: Was air supply filter replaced?, Was exhaust filter replaced?). After confirming filters replacement press , button, which allows return to Filters menu, and using Was filters replacement finished? parameter once again confirm finishing of filters replacement procedure, which erases alarms and allows further operation of ventilation system.

Filters can be also replaced before expiration of their exploitation period or before detecting their dirtying by the controller. To do so, enter the following menu:

Menu → **Filters** → **Force filters replacement procedure** and using Force filters replacement procedure manually start the replacement procedure.



If installer disabled filters replacement option for user, after triggering alarm of filters dirtying, call service.

5.5.11. Exchanger cleaning

The Cleaning start hour parameter allows setting the moment to start cleaning. The procedure will be started at the preset hour after reaching cleaning day.

5.5.12. General settings

The menu contains settings for user to set, related to general controller settings.

Panel ecoTOUCH T4_RT:

- Parental control – when turned on it blocks entering to the menu. Unlock by pressing the screen for 3 sec. (open padlock animation).
- Screen saver settings – setting Screen saver On / Off parameter to YES will dim or turn off the screen after set time. Time delay to start the screen saver is set with Time till screen

saver parameter. The backlight value during active screen saver mode is set with Screen saver backlight parameter

- Button sound – enable or disable the sound while pressing the touch screen.
- Default settings – restores the default settings of the panel and controller parameters to the customer.
- Clock – setting the hour. Changing time in any room panel will trigger time change in the controller.
- Date – setting the date. After entering the date a day of the week will be set automatically.
- Brightness – allows changing screen brightness.
- Alarms sound – enable or disable alarms sound.
- Language – language selection.
- Software update - software update of controller module and control panel. Description later in the manual.
- ecoNET settings – a WiFi network configuration in case of connecting ecoNET300 internet module to the controller. SSID – network identifier must be entered, WiFi security chosen and password for selected WiFi network entered. Further module configuration should be carried out in accordance with operation and maintenance documentation for ecoNET300.

Panel simTOUCH2:

- Button sound – enable or disable the sound while pressing the touch screen.
- Alarms sound – enable or disable alarms sound.
- Screensaver settings - the time to start blanking is set in Time on ext. screen. In the parameter Screensaver mode, you can select the operation mode of the screensaver as Off, On or Clock.
- ecoNET settings – a WiFi network configuration in case of connecting ecoNET300 internet module to the controller. SSID – network identifier must be entered.
- Address settings - setting an individual address of the panel for correct communication with the module, in case of connecting subsequent panels.
- Brightness – allows changing screen brightness
- Contrast - screen contrast.
- Language – language selection.
- Clock – setting the hour. Changing time in any room panel will trigger time change in the controller.
- Date – setting the date. After entering the date a day of the week will be set automatically.

5.5.13. Cooperation with differential pressure sensors

The controller cooperates with external differential pressure sensor ecoPRESS-01. The transmission between sensor and the controller is in RS485 standard. Connecting the sensor enables additional parameters in service menu of the controller allowing configuration of sensor support. Data reading and configuration is done via ecoVENT controller and configuration parameters are placed in Installer menu.

5.5.14. Internet module cooperation

The ecoNET300 internet module enables remote maintenance of controller operation via Wi-Fi or LAN network, using www.econet24.com service.



To control the controller via connected internet module, it is necessary to connect control panel to the controller.

Using computer, tablet or smartphone with web browser installed or convenient application for mobile devices ecoNET.apk and ecoNET.app. user can remotely monitor the controller and modify its working parameters. The application can be downloaded free of charge from QR code below.



Android

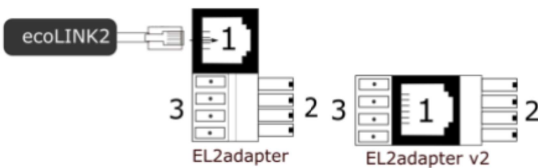
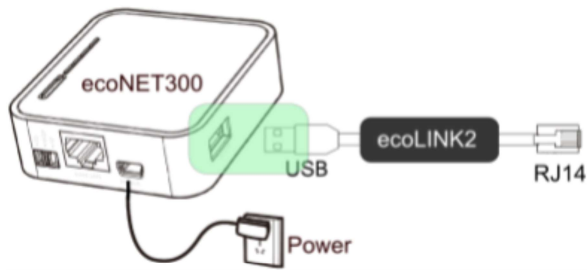


iOS

GENERAL INFORMATION

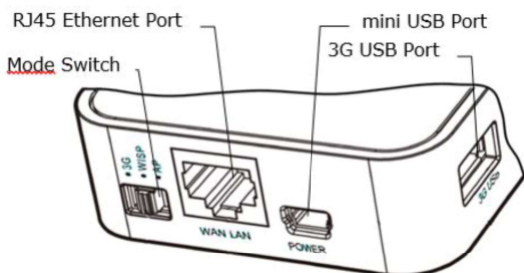
The module enables remote management (on-line) of the regulators' operation.

www.econet24.com

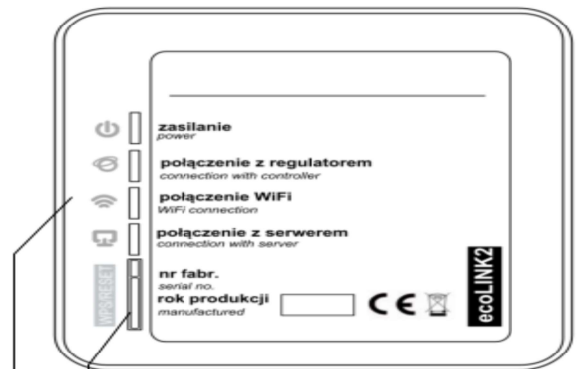
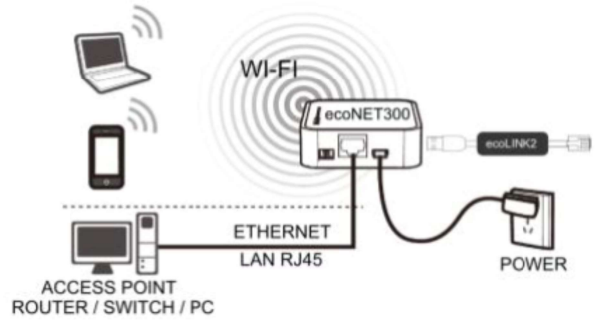


1- Socket for RJ14 ecoLINK2 interface, 2- A plug for controller module COM transmission socket, 3- Socket for a control panel plug (together with ecoSTER room panel).

CONNECTION WITH INTERNET NETWORK



Connect the power adapter plug to the [mini USB Port] socket. We connect [3G USB Port] with the ecoLINK2 interface. Connect the [RJ45 Ethernet Port] socket with an Ethernet cable, eg to a router (the socket does not have to be used in the case of access to the Wi-Fi network). The [Mode Switch] switch can be set to any position.




Deleting user name and password and restoring default settings. User: admin, password: admin. Works only in local version.

LED indicators of module operation condition.

LED	Condition	ecoNET300 operation condition
Power	● on	Power on
	○ off	Power off
Connection with a controller	● on	Active connection of the controller.
	○ off	No connection with boiler controller.
Connection with WiFi	● on	Connection to a programmed wireless network is on.
	○ off	No connection with wireless network.
Connection with a server	● on	Connection with ecoNET24.com external server is on.
	○ off	No connection for ecoNET24.com external server.

After the power is on, ecoNET300 requires app. 1 minute in order to load the operational system. Then, the module begins to work

and indicates its condition with LED indicators. In a connection between ecoNET300 module with a boiler controller is active, a  indicator lights up. New functions for managing ecoNET300 module are added to the main menu. EcoNET300 requires active DHCP server of Access Point (e.g. router) because manual IP assignment for ecoNET300 internet module is not supported. More information can be obtained from router configuration software or network administrator. In case of connection with a chosen Access Point via wireless network, user has to know the settings of WiFi network which the module will be connected to: network name (SSID), protection type, access password).

LOGGING INTO ecoNET ACCOUNT

In order to log in to the ecoNET account on the www.econet24.com server, you must provide your Login and Password.

FIRST LOGGING TO ecoNET

When logging in for the first time, you must first create a new account in the REGISTER tab, while the regulator must be powered on and properly connected to the module, and the module should be connected to the WiFi network and logged in to the server. From the ecoNET WiFi / Info tab in the main menu of the regulator, read and write down the UID number (the regulator's unique identification number):

MENU → Information → ecoNET WiFi

The read UID number should be entered in the REGISTER tab. If the system correctly verifies the UID number, the account registration form will be displayed. Fill in the form with the data of the regulator's user and enter the login password.

In a form field:

- Controller UID - is shown controller UID number. Correctness of the number UID is verified by the econet24 server.
- Regulator label – enter a name of your controller.
- Remote access to the controller by the service and the producer – enables to access and edit controller parameters via service and boiler manufacturer.
- Regulator installation address (Similar as user address) – Check this field if the controller address is the same as residential address.
- Enable sending alarm notices on e-mail) – In case an alert occurs, an alarm message including alarm contents will be sent. On previously entered e-mail address.


Obligatory fields: E-mail, Password, password (again), UID identifier of the controller.

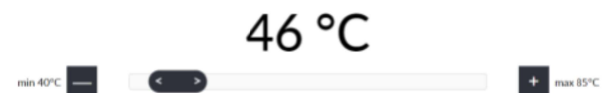
A WEBSITE FOR MANAGING OPERATION OF THE CONTROLLER

- Current data - Current readout of the boiler controller operation condition data and possibility of changing its parameters.
- Diagram - Graphical representation of hydraulic diagram of installation with current operation condition readout for its particular elements.
- User parameters - Detailed readout and modification of operation parameters of the boiler controller.

- Service parameters - Readout and modification of all parameters of the boiler controller and CH/HUW installation.
- Data history - Data archive of selected controller operation parameters. Tab available only in a service version.
- Alarms - List of boiler controller alarms.
- Schedule - regulator work schedule and temperature drops
- Device settings - Information concerning boiler controller and additional modules, possibility of changing address and service password.

The **Current data** tab shows the tiles with the values of the basic parameters of the regulator's operation. The parameter to be


modified is marked with the symbol . Just click on this tile and a value change window will appear, in which you can set a new parameter value using the slider and confirm with the Save button.




To exit the modification, without saving the new setting, click the


symbol .

The Scheme tab shows the scheme connecting the regulator with the installation, with the readout of sensor parameters at its

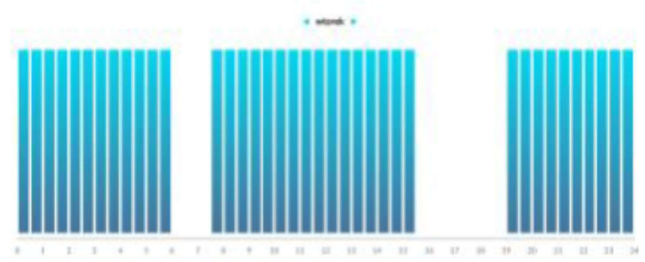
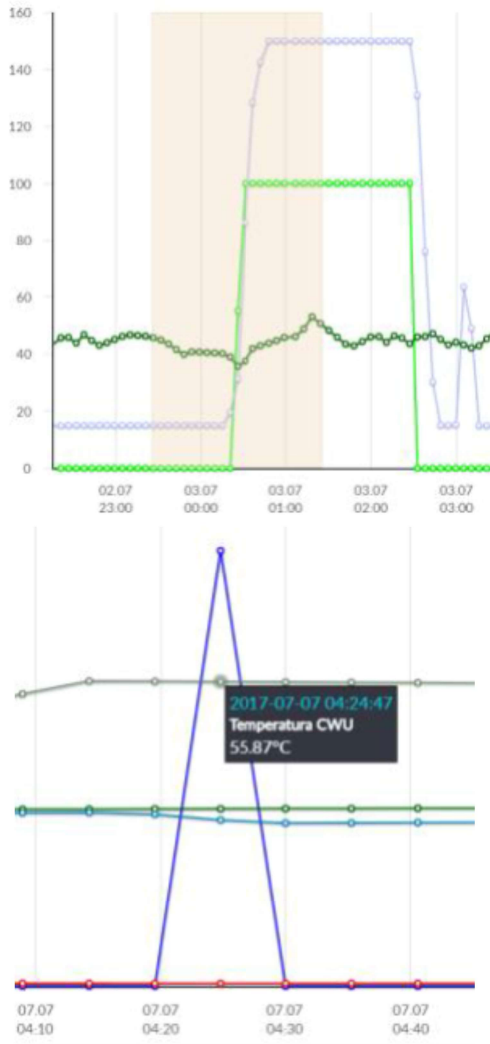
individual points. A parameter to be modified is indicated by .

. Click a tile and Modify value window will appear. Enter new value, e.g. Boiler temperature and confirm with save button. To exit the modification, without saving the new setting, click the

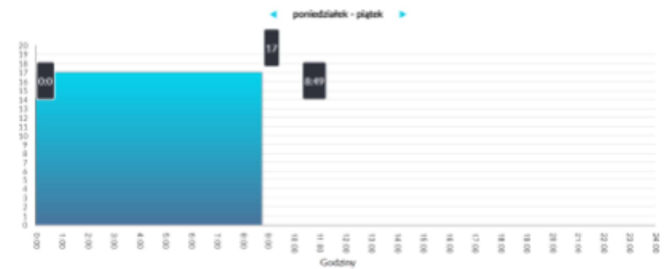
symbol . Basic parameters of controller operation are displayed in "User parameters" tab. These parameters are grouped and all can be modified by the user. Advanced parameters are displayed in the Service parameters tab and can only be modified after entering the password. All displayed parameters are grouped appropriately. Clicking on the name of the selected group of parameters will expand the list of available parameters. Parameters to be modified are marked with the symbol. To change, click on the selected parameter and then in the additional window that appears, set the new parameter value with the slider and confirm with the Save button. To exit the modification, without saving the new

setting, click the symbol .

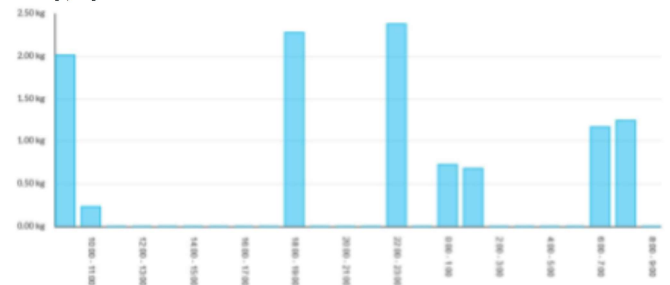
"Data history" tab, only in server version, enables to readout registered parameters concerning operation of the whole heating system in a selected time and present it in the form of a graph. Choose a time period for data readout by clicking From: or To: (select date and time in a calendar). Confirm with Done. Then, from the list below the graph, select the parameters that will be displayed on this graph. By marking the selected time area on the graph, you can "scale" this area to a more precise one. Additionally, clicking on the symbol causes that "nodes" are displayed on the chart. This is information about the time and value of a single data sample sent by the regulator to the econet24 website.



In the above example, on Tuesday, the preset temperature for the heating circuit is decreased by 10°C in the range from 6 a.m. until 7:30 a.m. and from 3:30 p.m. till 7:00 p.m. . In other intervals, the preset temperature will not be decreased.



In the Fuel consumption tab, you can read the fuel consumption in kg in detail from the graph in a daily (every 1h) or monthly (every 1 day) cycle.






The Device settings tab allows you to change the address of the controller installation, read the WiFi network parameters, read the controller program version and update the module software. The econet24 server periodically checks the availability of a new software version for the module. In the tab, it displays information about the new version of the program - just press Update. During the module firmware update, the module power supply must not be turned off, as this will damage it. When changing the WiFi network, press the Refresh button, then select the Network Name from the list, select the used Security Type from the list, eg WPA2, and enter the Password for the selected network. Any changes to the settings should be confirmed by selecting Save.

RESTORING THE DEFAULT USERNAME AND PASSWORD

Restoring the default username and password to: user - admin, password - admin can be done using the WPS / RESET button located next to the LEDs of the module housing.

- 1) During normal operation of the module, press and hold the WPS / RESET button for 10 seconds

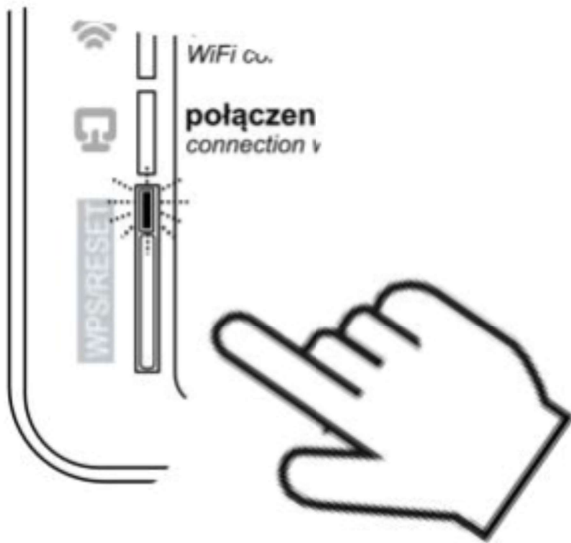
The return to the initial chart is done by pressing the icon . Data from the chart can be saved as a * .csv or * .png file after

pressing the icon . In the Alarms tab, you can view the list of registered alarms and other events sent to the server by the regulator. The list displays the type of alarm / event as well as the date and time of its occurrence. When logging in to the www.econet24.com server, all logs of alarm states from the beginning of the regulator's operation are displayed. Alarm messages can be sent to an e-mail, which enables the user to quickly intervene in order to restore the proper operation of the regulator. In the Schedule tab, the possibility to set time intervals has been introduced, according to the list after clicking the symbol .

For the available circulation from the list, activate the schedule by selecting On and enter the value of the reduction temperature in the Reduction field, eg 10°C. On the daily bar chart (24h), click on the appropriate bars (each bar corresponds to 30 minutes), which allows you to set an active reduction in the selected time period. After setting, choose Save. The set temperature reduction can be set separately for all days of the week.



2) After releasing the button, the LED diode next to the button should flash several times.



3) Wait about 2 minutes.

4) After this time, the module will restart automatically and will connect to the WiFi network.

5) Default username and password will be restored.

THE MOBILE APP

The mobile application allows remote access via smartphone only to the regulators equipped with the ecoNET300 module and cooperates with the www.econet24.com website, therefore, in order to use it, you must create an ecoNET account. The application for Android and iOS can be downloaded from the QR code below.



ecoNET.apk
Android



ecoNET.app
iOS

5.5.15. Alarms and prompts



Working in the emergency state is allowed only under your supervision until the arrival of the service and rectify the fault. If the user's supervision is not possible, the controller should be disconnected from the power supply.

Alarm	Possible cause	Due to an alarm	Display
Error supply air temperature sensor	The sensor is defective, or not properly connected or not configured	Signaling alarm, stopping ventilation system	Continually since the occurrence of the cause of the alarm, then the disappearance of the alarm.
Error temperature after exchanger			
Error exhaust temperature sensor			
Error outdoor temperature sensor			
Error extraction temperature sensor			
Error GHE temperature sensor			
Error leading temperature sensor	Leading sensor is damaged, falsely connected or not configured.	Signaling alarm, stopping ventilation system	Continually since the occurrence of the cause of the alarm, then the disappearance of the FAS alarm.
Active FAS alarm	FAS Alarm - ventilation system stopped due to external signal	Signaling alarm, procedure supporting FAS	Continually since the occurrence of the cause of the alarm, then the disappearance of the FAS alarm.
General inspection by manufacturer's service required	General inspection required contact manufacturer's service department	Signaling alarm, ALARM output active	Until entering new inspection date by the Installer
Filter dirty – operating period expired, contact service	Filter might be dirty – call service to replace filters.	Signaling alarm, no display of energy recovery	Until new inspection date is entered by the installer
Too high room supply air temp.	Detected too high room supply air temp.	Signaling alarm, ALARM output active, protection procedure against too high temperature started	Continually since the occurrence of the cause of the alarm
Too low room supply air temp.	Detected too low room supply air temp.	ALARM output active, protection procedure against too low temperature started	Continually since the occurrence of the cause of the alarm
Primary water heater thermostat operation noticed – soaking process started	Primary water heater thermostat operation signal noticed – soaking process started	Signaling alarm, ALARM output active, soaking procedure	Continually since the occurrence of the cause of the alarm
Secondary water heater thermostat operation noticed – soaking process started	Low temperature or signal from secondary water heater thermostat noticed - soaking procedure started	Signaling alarm, ALARM output active, soaking procedure	Continually since the occurrence of the cause of the alarm
Possible secondary heater overheat	Secondary electric heater thermostat trip noticed. Possible need of reset.	Signaling alarm, ALARM output active, soaking procedure	Continually since the occurrence of the cause of the alarm
Secondary heater overheat – 3x thermostat trip	High secondary electric heater temperature – triple thermostat trip. Too low air flow, heater thermostat may require alarm confirmation	Signaling alarm, ALARM output active, ventilation system operation stopped	Continually since the occurrence of the cause of the alarm
Periodic inspection approaches	Periodic inspection approaches – contact service	Signaling alarm, ALARM output active, ventilation system operation stopped	Continually since the occurrence of the cause of the alarm
Heaters thermostat operation noticed	Heaters thermostat operation noticed. Reset may be required.	Signaling alarm, ALARM output active, ventilation system operation stopped	Continually since the occurrence of the cause of the alarm
Heaters thermostat operation noticed three times – confirmation required	High temperature of electric heater - Heaters thermostat operation noticed three times. Too low airflow, heater thermostat may require alarm confirmation.	Signaling alarm, ALARM output active, ventilation system operation stopped	Continually since the occurrence of the cause of the alarm

Installer settings error. Possible erase of settings	Deletion or no settings acknowledgement in service menu	Signaling alarm, ALARM output active, ventilation system operation stopped	Continually since the occurrence of the cause of the alarm
Manufacturer settings error, possible settings deletion	Deletion or no settings acknowledgement in service menu	Signaling alarm, ALARM output active, ventilation system operation stopped	Continually since the occurrence of the cause of the alarm
Device locked – unauthorized start-up	Unauthorized device configuration attempt	Signaling alarm, stopping and blocking ventilation system	Continually since the occurrence of the cause of the alarm
No communication with the controller.	Possible damage to the transmission cable connecting the panel with the controller.	Signaling alarm, further work of the ventilation system.	Continually since the occurrence of the cause of the alarm
No communication with pressure/flow sensor for air supply	Communication error between controller and pressure/flow sensor for air supply duct. Possible damage or improper sensor connection.	Signaling alarm, further work of the ventilation system.	Continually since the occurrence of the cause of the alarm
No communication with pressure/flow sensor for exhaust	Communication error between controller and pressure/flow sensor for exhaust duct. Possible damage or improper sensor connection.	Signaling alarm, further work of the ventilation system.	Continually since the occurrence of the cause of the alarm
Air supply filter replacement deadline approaching	The air supply filter counter exceeded value preset with Filter replacement deadline alarm.	Signaling alarm	Continually since the occurrence of the cause of the alarm
Exhaust filter replacement deadline approaching	The exhaust filter counter exceeded value preset with Filter replacement deadline alarm.	Signaling alarm	Continually since the occurrence of the cause of the alarm
Air supply filter dirtying - turn off ventilation system and replace filter	Possible air supply filter dirtying – replace filter. Alarm available if filter replacement is available for user.	Signaling alarm, ALARM output active	Continually since the occurrence of the cause of the alarm. After alarm acceptance filter replacement procedure starts.
Exhaust filter dirtying - turn off ventilation system and replace filter	Possible exhaust filter dirtying – replace filter. Alarm available if filter replacement is available for user.	Signaling alarm, ALARM output active	Continually since the occurrence of the cause of the alarm. After alarm acceptance filter replacement procedure starts.
Air supply filter dirtying – call service	Possible air supply filter dirtying – call service for filter replacement.	Signaling alarm, ALARM output active	Continually since the occurrence of the cause of the alarm
Exhaust filter dirtying – call service	Possible exhaust filter dirtying – call service for filter replacement.	Signaling alarm, ALARM output active	Continually since the occurrence of the cause of the alarm
Filters replacement procedure	Alarm after overriding filters replacement procedure.	Signaling alarm, ventilation system operation stops.	Continually since the occurrence of the cause of the alarm
Emergency mode – filters worn out	Alarm in case of filters worn out and with ventilation system operational in emergency mode.	Signaling alarm, ALARM output active; if emergency mode is OFF then controller turns off	Continually since the occurrence of the cause of the alarm
Air supply fan operation confirmation error	Possible mechanical fan damage. Turn off ventilation system and contact service.	Signaling alarm, ALARM output active.	Continually since the occurrence of the cause of the alarm
Exhaust fan operation confirmation error	Possible mechanical fan damage. Turn off ventilation system and contact service	Signaling alarm, ALARM output active.	Continually since the occurrence of the cause of the alarm
Filters dirtying test – do not turn off the system	Starting filters dirtying test procedure.	Signaling alarm.	Continually since the occurrence of the cause of the alarm
Communication error with ecoPRESS 1 -4 sensor	Communication with one of ecoPRESS sensors lost (each sensor generates separate alarm).	Signaling alarm.	Continually since the occurrence of the cause of the alarm
ecoPRESS 1 – 4 sensor internal error	Connected ecoPRESS sensor has been damaged or improperly configured (each sensor generates separate alarm).	Signaling alarm.	Continually since the occurrence of the cause of the alarm

5.5.16. Cooperation with air parameters sensors

The controller has integrated software modules allowing cooperation of recuperation central with selected types of air parameters sensors: digital carbon dioxide level sensor (CO₂), analog carbon dioxide level sensor (CO₂) or analog humidity sensor.

Humidity and CO₂ level threshold sensors

Humidity and CO₂ level threshold sensors are made to constantly monitor concentration of carbon dioxide in the room. With the moment of exceeding a preset CO₂ value sensor contact output status changes. Controller responds on this status change by proper adjustment of fans speed: air supply and exhaust. It provides faster air exchange in the room, which results in lowering carbon dioxide concentration in the air. After stopping the signal from the sensor and passing the support time controller sets fans speed according with chosen operation mode.



Settings regarding support of digital sensor, fans speed override and support time are in the installer menu and should be adjusted during installation of ventilation system.

Analog CO2 level sensor

Analog CO2 level sensor is made to constantly monitor concentration of carbon dioxide in the room. If the sensor detects high CO2 concentration the controller will immediately override fans speed. It will provide faster air exchange in the room, which results in lowering carbon dioxide concentration in the air. However, if the sensor detects too low CO2 concentration, controller will immediately lower fans speed. It will provide lowering the amount of outdoor air intake, resulting in successive increase of CO2 concentration. When CO2 concentration in the air reaches nominal value the controller will get back to normal operation mode and set fans speeds according to currently selected operation mode.



Settings regarding operation of analog CO2 sensor are in installer menu and should be adjusted during installation of recuperation central.

Analog humidity sensor

Analog humidity sensor is made to constantly monitor concentration of water vapor in the room. If the sensor detects too high humidity level, controller will immediately override increase of fans speed. It will provide faster air exchange in the room resulting in fast humidity excess removal. However, if the sensor detects too low humidity, the controller will immediately override lowering fans speed. This will provide in lowering outdoor air intake resulting in increasing humidity. When humidity level reaches nominal value the controller will get back to normal operation mode and set fans speeds according to currently selected operation mode.



Settings regarding operation of analog humidity sensor are in installer menu and should be adjusted during installation of recuperation central.

6. Service and maintenance works



All service and maintenance works should be performed with the AHU turned off and disconnected from the power source.

6.1. Filter replacement

For the sake of comfort and hygiene, it is recommended to replace the set of filters in a period not longer than **90 days**. Due to air pollution, variable due to local geographic conditions, building conditions and changing weather conditions, it is recommended to

constantly inspect the filters and replace them depending on the real demand.

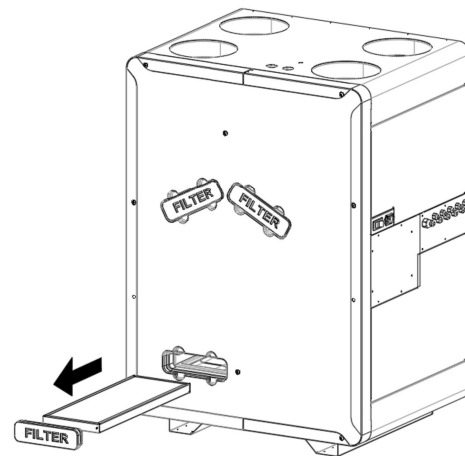
However, the condition of the filters should be checked on an ongoing basis and, if necessary, replaced more often. It is recommended to check the filters at least every **60 days**.

Filters intended for use in VS series AHUs:

- supply air pre-filter ePM10 (60%),
- supply air fine filter ePM1 (55%),
- ePM10 extract air filter (60%).

The use of filters with different dimensions, filtration classes or design other than the original ones may result in improper operation of the device. In order to ensure the proper operation of the device and the comfort of users, it is recommended to use original filters offered by the manufacturer.

It is forbidden to start and use the device without installed air filters.



In order to replace the filter:

1. Turn off the device and disconnect it from the power supply.
2. Remove the filter cap.
3. Remove the old filter and insert a new one.
4. Apply silicone spray to the filter cap, wait 5 minutes (optional).
5. Close the filter cap.
6. Repeat steps 1-5 for each filter.
7. Connect the device to the power supply, start it.
8. Restart the filter counter in the controller.

Used filters should be disposed of in accordance with local waste management regulations.

After starting the device, reset the air filter counter in the device controller in the Installer menu: Filter settings> force the filter replacement procedure.

7. Declarations and documents

7.1. Energy labels of devices according to Ecodesign (1253 (1254) / 2014)

VST 400

VSE 250

VSH 400

