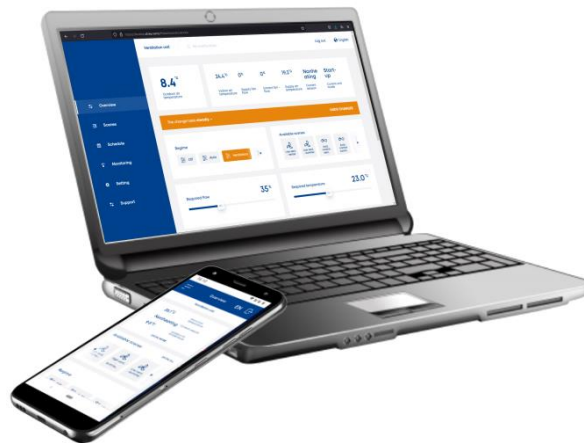


GUIDE ON CONTROLLING Mechanical ventilation with heat recovery units equipped with RD6 control system




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1 General information, glossary of terms

Sections of the manual

	General information, glossary of terms		Device control via built-in web site
	How to start		Connecting to the device via Cloud (RD6 Space)
	Device control		Troubleshooting

1.1 Document purpose

The document describes the usage and control of a ventilation unit equipped with the **RD6** control system.

1.2 Device purpose

Ventilation unit (here and after HVAC device – heating, ventilating, air-conditioning) is the technological device for achieving acceptable indoor air quality, mainly regarding the CO₂ concentration, humidity or another air pollution, by distributing an outdoor air to ventilated rooms with as low as possible energy loss. Therefore the HVAC device contains a part, which is called heat recovery core (HRC). The HRC allows to gain a heat energy from the extract air, which is drained away from the ventilated room and is replaced with the fresh air from the outdoors. The fresh air is warmed up by the heat energy from the extracted, which is the main feature of the device. The general feature is saving energy, while the room is ventilated.

1.3 Common usage and features

The HVAC device allows to adjust its performance according to the ventilated room demands. The range of the adjustment depends on the device's equipment:

1. Basic regimes setting



- Two of the basic regimes are OFF and VENTILATION – the device stops or the device ventilates the room.
- Other regimes are designed to meet special conditions or requirements, e.g. Disbalance regime helps to balance inappropriate pressure difference in ventilated rooms.
- Some of regimes are available only if the HVAC device is equipped with appropriate elements, e.g. the Circulation regime is available when the HVAC unit contains the circulation damper

2. Volume flow setting

Required power

50%



- The performance of the unit can be adjusted directly from the user interface, e.g. via the PC or controller.
- The volume flow can be optimized automatically according to the measured pollutant, e.g. CO2 concentration or humidity - it depends on the equipment of the HVAC unit.

3. Temperature setting



- The setting of the required temperature strictly depends on the HVAC type and its installed equipment, such as heaters, coolers.
- The HVAC device, which is equipped by heater or cooler, can affect the temperature of the supply air (the air which is driven to the ventilated room) according to the set temperature.
- There are two main functionalities which the HVAC device can fulfil:
 - a. When the HVAC device provides space heating or cooling the set temperature represents the required room temperature;
 - b. When the HVAC device provides ventilation the set temperature represents the target temperature of the supply air.

4. Ventilated **zone** setting

- The ventilation system can be equipped with group of dampers in the duct, which are designed for directing the supply air into demanded rooms.
- This directing of the supply air can be adjusted by the current demand from a PC or any controller or the ventilation zone can be chosen automatically according to a measured air quality
- The way of zone usage very depends on the all the ventilation system design and the design purpose.
- A common situation of the HVAC unit and the ventilation system is, that the duct system is not equipped with zone dampers; all the rooms are ventilated without special directing of the supply air.

1.4 Elementary and Legendary version of RD6

The RD6 control system can be delivered in two versions. Elementary version uses the main board aM-CE, it can offer common features requested from a ventilation unit. Legendary version uses the board aM-CL. Besides common features, Legendary version offers also advanced control features. You will find the comparison of the Elementary and Legendary version of RD6 in catalogue sheet of the selected DUPLEX ventilation unit.

1.5 Abbreviations used

Abbreviation	Description
RD6 (aM)	Control system of ventilation units
RD6 Sense	Controller, simplified version of HVAC unit control
RD6 Touch	Controller offering the same range of settings as the built-in website.
RD6 Space	Cloud environment for remote administration of ventilation unit.
RD6 Tool	Service application
HVAC unit	Ventilation unit with heat recovery
HVAC	Heating, ventilation and air conditioning – general abbreviation
T-ODA	Outdoor air temperature before heat recovery
T-SUP	Supply air temperature after heat recovery
T-IDA	Indoor air temperature before heat recovery

T-EHA	Temperature of air exhausted from the HVAC unit to the exterior
HS	Heating season
NHS	Non-heating season
CO2	CO2 sensor
VOC	Volatile organic compound sensor
Rh	Relative humidity sensor

2 How to start

Once the HVAC device is commissioned by approved technicians the user can adjust the behavior of the HVAC device and supporting features to fulfil the device intention.

2.1 Recommended steps

1. Open a web browser and establish connection to the DUPLEX unit:
 - a) Enter IP address of the unit when you connect to the unit directly from your computer or when you connect to the unit in local ethernet network. See Chapter 3.1.

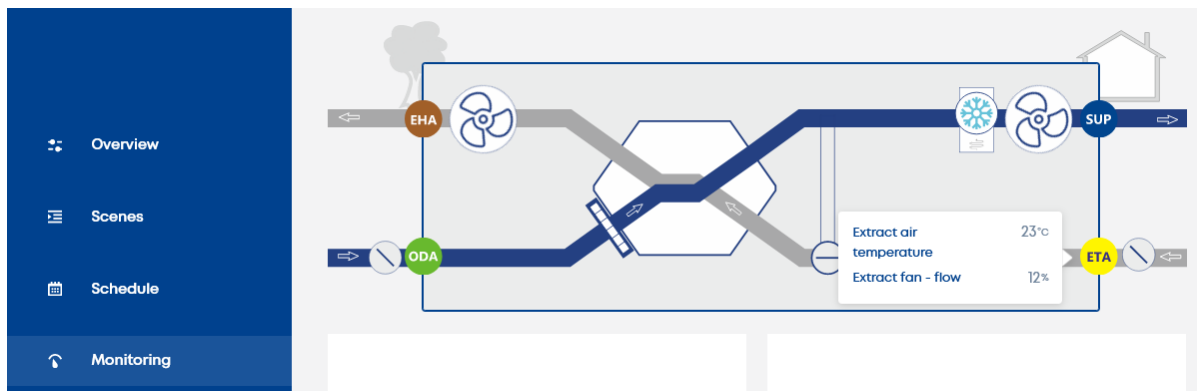
If you do not know the IP address of a new ventilation unit see Troubleshooting, Chapter 6.2.

Enter default user name and password, see Chapter 4.1.

- b) Connect to the unit in Cloud RD6 Space, [RD6.cloud](https://rd6.cloud). See Chapter 5
2. After using default login with the user „Admin“, it is highly recommended to change the admin password – see the Chapter 4.5
3. Adjust the access for other users. At least, create a user without administrator’s rights which will be used for standard operation (setting the ventilation process) – see Chapter 4.5.2
4. Check the list of default scenes and add new scenes, when necessary. The scenes are used for the automatic operation according to the schedule - see the Chapter 4.3
5. Adjust calendars for automatic operation – see the Chapter 4.4
6. Check and adjust content of the Overview menu - see the Chapter 4.2.4

2.2 Monitor menu

The monitor menu shows the current status of the HVAC device elements by the scheme chart:



To check the status of the elements (e.g. the values of the temperatures sensors) move the mouse pointer towards the desired elements, the pop-up hint will show the information.

3 Device control

The HVAC device provides the user with several ways of its control:

- Connected PC, resp. built-in web site
- The designed controllers for the HVAC unit – RD6 line controllers RD6 Sense and RD6 Touch
- Connected Smart phone, resp. built-in website
- Building management system (BMS), resp. communication protocol used by BMS for the whole building
- Switches and buttons
- Sensors of air quality, CO₂, VOC, Rh

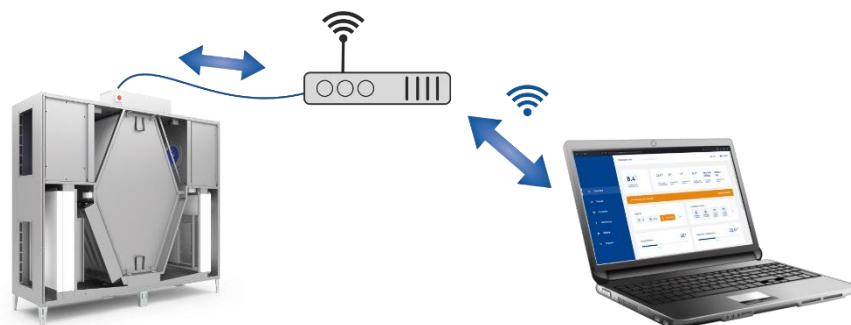
3.1 Built-in web control

The built-in web site can be accessed when HVAC device:

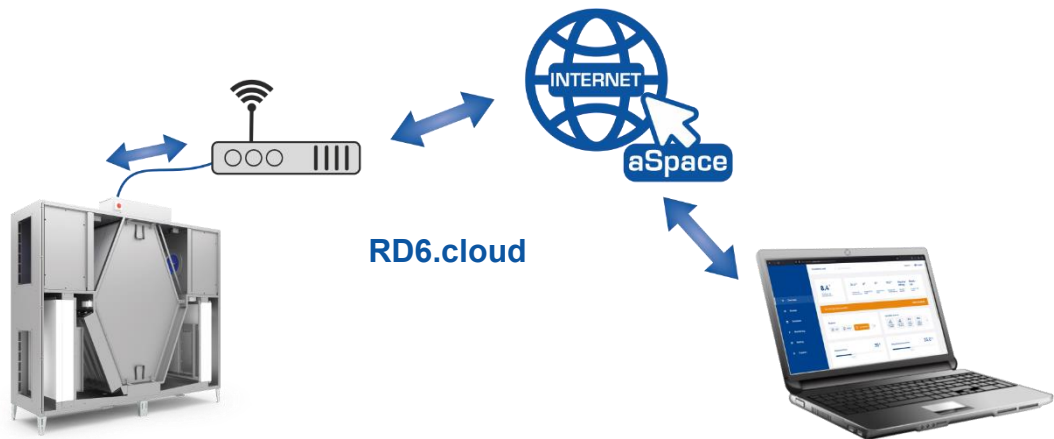
- a) Is connected to the PC with a single cable via the ETHERNET interface



- b) Is connected to a local Ethernet network and the PC is connected to the same network



- c) Is connected to a local Ethernet network with the Internet access and the PC uses the **RD6 Space** service for the communication through the cloud server (see the chapter 5)



- ! Ethernet connector RJ45 must not be connected to the Ethernet network operated with PoE (Power over Ethernet).

The web site provides the full user control including the examination of the HVAC status in the **Monitoring** menu.

Any way of computer connection to the unit is conditioned by the right setting of the network parameters – see Chapter 4.10.

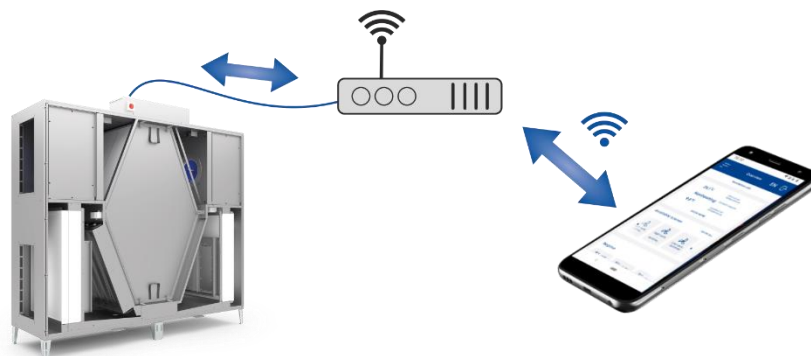
3.2 Smart phone control

The built-in website can also be opened on a smartphone web browser. The possibilities of controlling the device are identical with opening the built-in website from a PC.

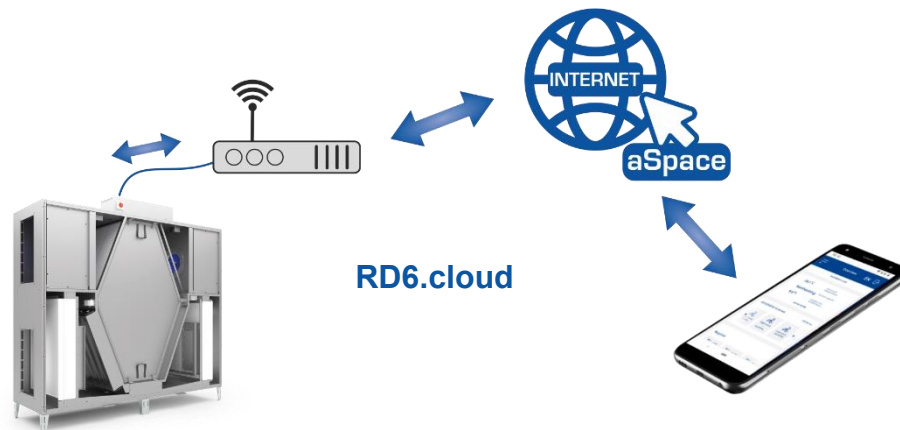
In case of web site usage on a Smartphone, the HVAC device must have appropriate setting of the network parameters – see Chapter 4.10.

Possible ways how a smartphone equipped with common internet browser may connect the HVAC device:

1. The HVAC device is connected to a local Ethernet network and the Smartphone is connected to the same network by a WIFI



- The HVAC device is connected to a local Ethernet network with the Internet access and the Smart phone uses the **RD6 Space** service for the communication through the cloud server (see Chapter 5).



- ! Ethernet connector RJ45 must not be connected to the Ethernet network operated with PoE (Power over Ethernet).

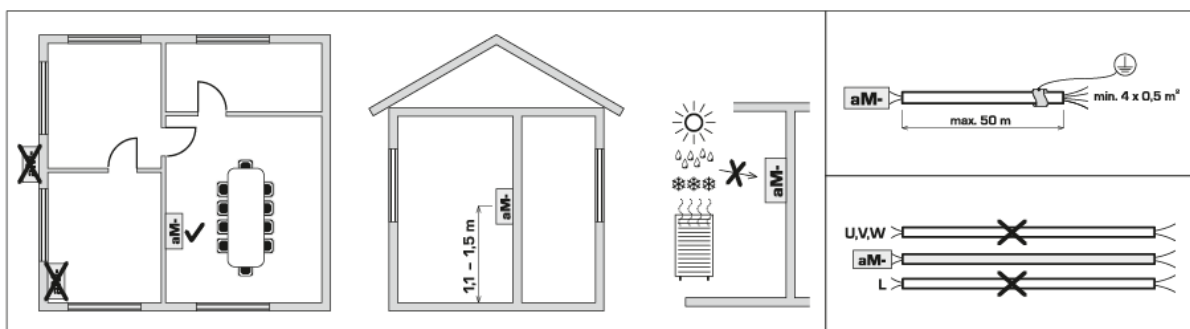
3.3 Controllers

RD6 control system comes with optional basic controller RD6 Sense and advanced controller RD6 Touch.

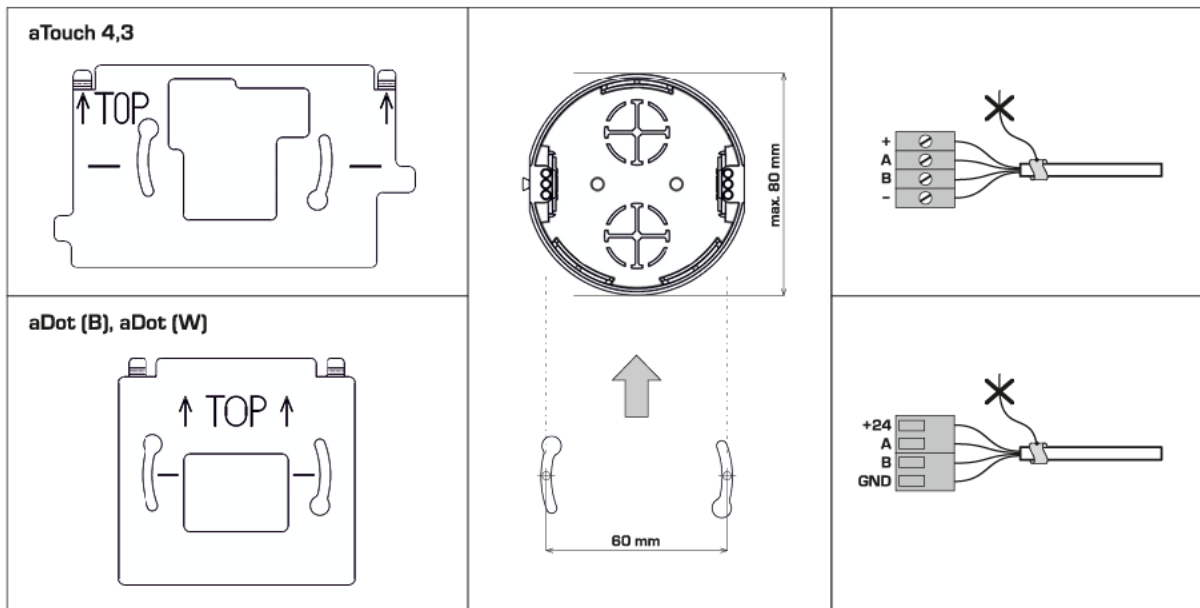
RD6 control system can automatically identify controllers RD6 Touch or RD6 Sense once they are connected to the main board. One controller RD6 Sense or RD6 Touch can be connected to the Elementary version of RD6 (control board aM-CE). Up to 5 controllers¹ can be connected to Legendary version of RD6 (control board aM-CL).

3.3.1 Controller installation

The **RD6 Touch** and **RD6 Sense** controllers are to be connected to the HVAC device by a dedicated wire with maximum recommended length 50m.



¹ The maximum number of controllers that can be connected depends on the number of items connected to the main board via bus.



3.3.2 RD6 Touch controller

The RD6 Touch controller provides the same range of setting as the built-in web site (see Chapter 4).



The screen of the controller can be locked by a 4 digit number. The lock can be set in user settings of the unit Web interface (Settings > Peripherals). The code protects the controller against a misuse or unwilling change of HVAC device parameters by an unauthorized person.

The controller is equipped with the temperature sensor for the indoor air temperature measurement. The controller features ingress protection IP20.




3.3.3 RD6 Sense controller



The RD6 Sense controller is the simplified appliance for the common control of the HVAC device – the range of the adjustable parameters according to the content of the chapter 1.3. All essential parameters for the HVAC device operation are available for the instant adjustment. The RD6 Sense provides setting of the following operation parameters:

- required flow
- required temperature
- required regime




The RD6 Sense controller also provides the indoor air temperature measurement. The controller features ingress protection IP20.


The RD6 Sense display consists of 2 lines where parameter values are shown. The current content of these 2 lines can be changed by the pressing of the  and  buttons. User will switch between the reading mode (information about parameters) and configuration mode (arrows up and down on the left side) by long-pressing the  button.



To display the FW version of the controller press the buttons  and  at the same time. The display will return to original screen after 20s.

The controller display is normally switches off. When any of the buttons touched, the display is lit on. The display goes back to the switched off status 30 s after the last button touch.

If the symbol  appears after the display lit on, the communication to the connected HVAC device is lost.


3.3.3.1 Displayed data

Long-press the  button to enter the reading mode (no arrows up and down are displayed).

By pressing the buttons  and  the display shows the following data – **status parameters**:



- Current regime
- Power of extract fan
- Power of supply fan
- Required air volume
 - The type of the displayed values depends on the HVAC device configuration
 - **Fan power in %** - When the fans are controlled directly without any measuring function, the displayed value refers to the current requirement for the volume flow
 - **Air volume in m³/h** – when the HVAC device works in the mode “**constant flow**”, the displayed values refer to the measured volume flow
 - **Fan power in %** - when the HVAC device works in the mode “**constant pressure**”, the displayed data refers to percentage value of the fans control voltage
 - **Fan power in %** - when the HVAC device works in the mode “**external control**”, the displayed data refers to percentage value of the fans control voltage
- Required temperature of the air, which is the target for the control (the indoor temperature T-IDA, or the supply air temperature T-SUP) - depends on the service setting and configuration of the HVAC device.
- The temperature of extracted air (T-ETA)

- The temperature of indoor air (T-IDA)
- The temperature of supply air (T-SUP)
- The temperature of exhausted air (T-EHA)
- The temperature of outdoor air (T-ODA)

 Temperature values are provided if the HVAC device measures this value. When a symbol “---” is displayed instead of any temperature, the value of the temperature is not accessible in the moment, e.g. the HVAC device is stopped so the temperature sensor for the supply air does not measure true temperature of the supply air, as the air is not distributed.

- Data from possibly connected sensors CO2 / Rh /VOC

Displayed symbols shows the status of the heating/cooling:

-  = heating is active
-  = cooling is active

3.3.3.2 LED function

The function of the LED depends on the display status – display is lit or it is switched off:

LED color	LED status	Meaning
Red	Switch on still	An alarm in the HVAC device is active
Green	Short single flash	Some of the button has been touched
	Switched on with short interruption (1,5 s : 0,1s)	The HVAC device ventilates or circulates




The red LED has the higher priority, when the red LED is switched on or blinking, the green is always off.

3.3.3.3 The temperature button

Allows to adjust required temperature.

Short-press the  button to enter the configuration mode. Arrows will appear on the display.

When the button is touched




- The upper line of the display shows the current value of the required temperature
- By touching the  or  buttons the value of the temperature is changed and the value is applied immediately
- The change of the value works the same way, as the value is changed on the web UI or RD6 Touch display with the duration **permanently**. The selection will be active until next requirement received e.g. from another controller, user web interface or weekly schedule.
- Long-press of the  button puts back the status parameters on the display.

3.3.3.4 The fan button

Allows to adjust required volume flow.

Short-press the  button to enter the configuration mode. Arrows will appear on the display.

When the button is touched




- The upper line of the display shows the current value of the required flow
- The units of the value depends on the HVAC device configuration (% or m³/h or normal/muffled)
- By touching the  or  buttons the value of the flow is changed and the value is applied immediately.
- The change of the value works the same way as if the value is changed on the web UI or RD6 Touch display with the duration **permanently** (i.e. until next requirement).
- Long-press of the  button puts back the status parameters on the display.

3.3.3.5 The regime button


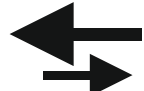





Allows to adjust required regime


Short-press the  button to enter the configuration mode. Arrows will appear on the display.

When the button is touched

- The upper line of the display shows the current operation regime
- By touching the  or  buttons the value of the regime is changed and the value is applied immediately
- The change of the value works in the same way, as the value is changed on the web UI or RD6 Touch display with the duration **permanently** (i.e. until next requirement).
- Long-press of the  button puts back the status parameters on the display

Regime symbols:

Symbol	Regime
OFF	OFF
AUTO	Auto
	Ventilation
	Disbalance
	Circulation
	Circulation + ventilation
	Ventilation MIX
	Night precooling
	Overpressure

 The offered range of the regimes may differ according to the HVAC device configuration. E.g. the HVAC device without the circulation damper does not offer regimes, which includes any type of circulation

3.3.3.6 The switch off button

The button invokes the OFF regime

When the button is touched:

- The OFF regime is applied permanently (until different request).

3.3.3.7 Arrows button and

- the touch buttons rolls displayed parameters, when the display shows the status of the HVAC device
- the buttons are used for adjusting the value of the chosen required parameter
 - **Short touch** – the value of the parameter changes for one step
 - Long touch (holding at least 1s) – the values increasing / decreasing continually until the button is released

3.3.3.8 The favorite scene button

The button allows to start the favorite scene.

The scene must be chosen by the parameter in the full user interface (the **Settings – Peripheries – Chosen controller**), see the Chapter 4.8.

Every RD6 Sense controller in the system can have a different favourite scene.

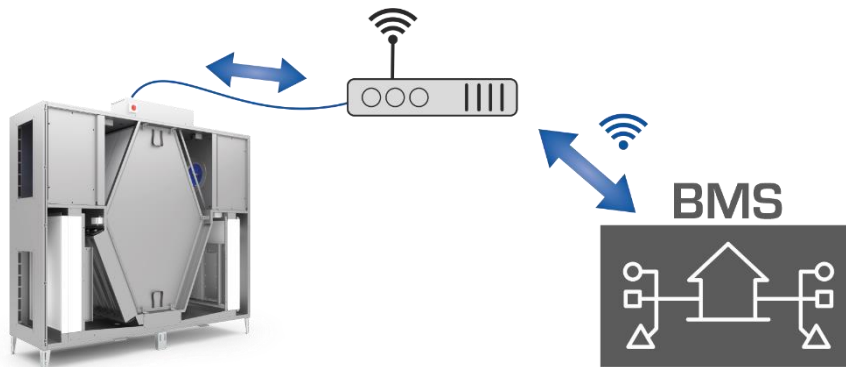
The default setting is: no scene is chosen, so the button has no effect to the HVAC device operation, until the favorite scene is dedicated

When the button is touched

- the favourite scene is activated permanently, i.e. until the next request.

3.4 BMS communication

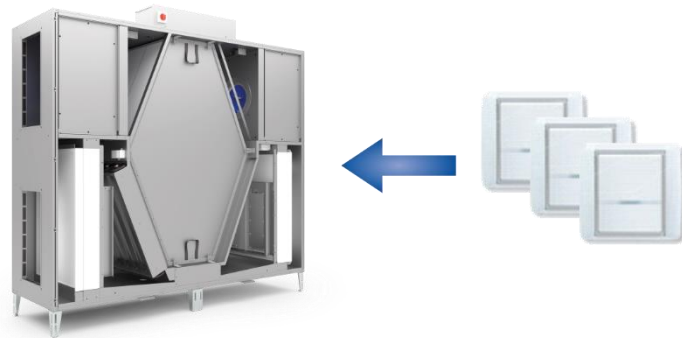
A HVAC device equipped with the RD6 control system allows the connection to a BMS (Building management system) to provide collective control with another technologies of the ventilated building.



The implementation of the control depends on the BMS features and the intended application. The RD6 provides the Modbus TCP protocol as standard feature for the BMS communication. Besides the Modbus TCP protocol, the RD6 can provide the BACNET protocol when it is applied before the HVAC device purchase. The BACNET protocol is an optional function. All the setting of the BMS communication should be done by an authorized technician during the commissioning of the HVAC device.

3.5 Switches and buttons

Switches or buttons can be connected to the HVAC device in order to change the operation parameters, e.g. push buttons installed in a bathroom can be used for raising the ventilation power. The usage of the switches and buttons must be discussed during the designing of the ventilation system; the RD6 control system allows to connect several push buttons or switches and its function can be optimized during the commissioning of the HVAC device.



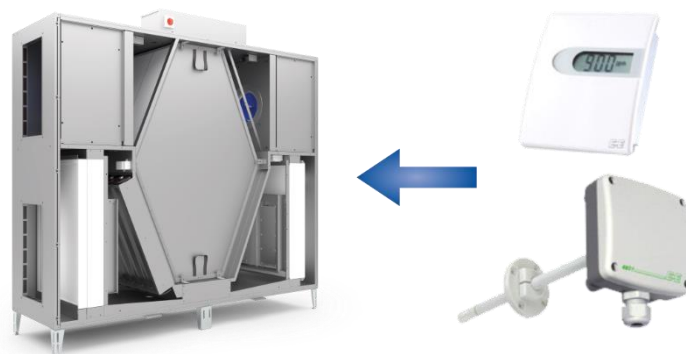
The switches and push buttons are used in the system as “triggers” of dedicated functions, which can be specified by the scenes settings – see the chapter 4.3

3.6 Air quality sensors

The RD6 control system allows to connect variety of air quality sensors for automatic adjustment of the volume flow.

Most common types of the sensors are:

- CO2 concentration sensors
- Relative humidity sensor rH
- Air quality sensors (VOC)



The usage of sensors in the control system is similar to the switches and buttons – the sensors are used as “triggers” of specified volume flow.

The usage of the sensors (triggers) are attached to scenes, which are described in the Chapter 4.3.

4 Device control via built-in web site

Built-in web site provides comprehensive and user-friendly way of the HVAC device control. Access to the unit is protected by a login process.

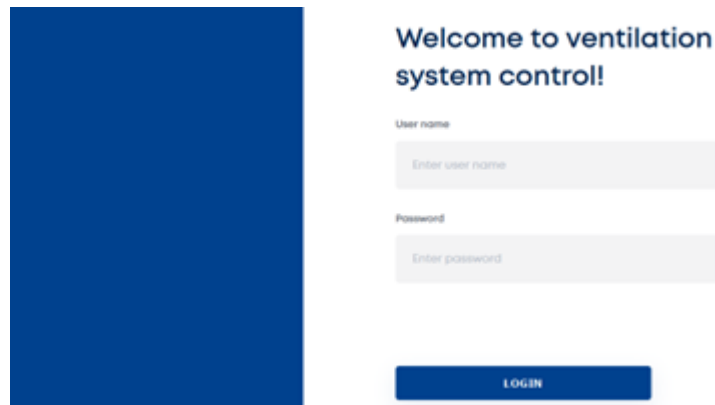
4.1 Login to the control system and user management

Follow these steps to connect to the HVAC device via the built-in web site:

1. Connect the unit to ethernet network or establish direct connection between the unit and your computer.

- ! Ethernet connector RJ45 must not be connected to the Ethernet network operated with PoE (Power over Ethernet).

2. Enter the IP address of the unit. If you do not know its IP address follow help in the Chapter 6.2.
3. Page with login form will display:



4. Fill in user name and password. The default user name/password is **admin / pass**.

4.2 Overview screen / common control

After the passing the login form the **Overview** screen is displayed:



Basic content of the screen:

1. Elements of the HVAC device status, e.g. temperatures
2. Elements for the HVAC device control (required temperature, required volume flow, etc.)
3. List of scenes for instant usage – activating predefined scenes changes the current required values according to the scene configuration.


4.2.1 Required regime

In order to make the HVAC device run, an appropriate operation **Regime** must be activated. The activated Regime is highlighted by the inverted colours.

List of regimes

Regime	Description
OFF	The operation of the HVAC device is stopped. All the outputs are in inactive status.
Auto	<p>The HVAC unit is stopped in the normal status.</p> <p>The status of the HVAC is automatically changed:</p> <ul style="list-style-type: none"> to ventilation status during the „ventilation interval“ – default setting is 10minutes ventilation / 50 minutes no operation. Input of control system is activated and its activation is tied to the change of the regime, e.g. switch to Ventilation regime. to circulation when the HVAC device is used for heating/cooling and the control is based on measuring indoor air temperature. (This function is available only if the HVAC device is equipped with the circulation damper).
Ventilation	<p>The HVAC device is running:</p> <ul style="list-style-type: none"> Both fans of the HVAC device are controlled to follow required volume flow Dampers in the duct are in the position for full ventilation All the elements, what are linked with the temperature influencing, are controlled to achieve target temperature
Night cooling	<p>The regime is useful for the moments when there is no demand for ventilation and if outdoor condition of the air allows to cool down the indoor room without turning any active cooling ON.</p> <p>The normal status of the HVAC is stopped. The status is changed to ventilation automatically, when the outside air temperature is by at least 5°C lower than the indoor air temperature and the required indoor temperature is lower than the current air temperature.</p> <p>The regime behaves in the described way during the Non-heating season only.</p>
Disbalance	<p>The HVAC device works the similar way as during the Ventilation regime. The difference form the ventilation is:</p> <p>The amount of the supply air and extract air is disbalanced according to the parameter „correction of the supply air“ which must be set by the technician during the HVAC device commissioning.</p>
Overpressure	<p>The HVAC device distributes only the supply air. During the Overpressure, the Supply fan M_{SUP} is controlled based on the requested power.</p> <ul style="list-style-type: none"> Heaters or coolers are controlled to achieve target temperature

Regimes according to type of unit

Circulation	<ul style="list-style-type: none"> The HVAC device circulates the air through the premises: The only 1 fan for circulation is running, The fan control follows the required volume flow The HVAC device does not exchange the air with outside environment Dampers for the ventilation are closed Heaters or coolers are controlled to achieve target temperature <p> The regime is available only if a circulation damper is contained by the HVAC device</p>
-------------	---

Circulation + ventilation	<p>The HVAC device partly ventilates and partly circulates defined amount of the air:</p> <ul style="list-style-type: none"> • Supply fan is controlled to keep total amount of the supply air (ventilation+ circulation) • Extract fan is controlled to achieve the amount of ventilation air • Circulation damper balances the amount of circulated air. <p>⚠ The regime is available only for devices RS5, RA5, RB5, RK5, RDH5 which are designed for hot-air heating and cooling; these HVAC devices are equipped by circulation damper.</p>
Ventilation Mix	<p>The HVAC unit partly ventilates and partly circulates the air. The rate of ventilation/circulation, i.e. the position of the circulation (mixing) damper, is adjusted by the way of circulation damper control. The way of the circulation damper control is set by a technician during the HVAC device commissioning according to the planned usage of the HVAC.</p> <ul style="list-style-type: none"> • Heaters or coolers are controlled to achieve target temperature <p>⚠ The regime is available only if a circulation damper is mounted in the HVAC device.</p>

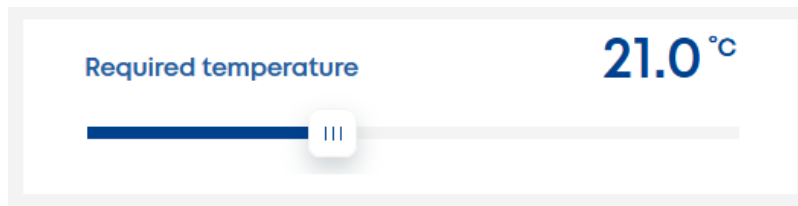
4.2.2 Required fan power



The required fan power parameter adjusts the target performance of the fans distributing the air. The range of settings depends on the way of fan control:

- 1) Direct control
 - the setting is done in %
 - 100% is the maximum power of the fan power
 - The HVAC unit does not measure real volume flow
- 2) Constant flow
 - The setting is done in m³/h (cubic meter per hour)
 - The adjustable range of the volume flow depends on the type and size of the HVAC device
 - The HVAC device measures real volume flow and controls the fan power according to the required value
- 3) Constant pressure
 - The setting provides only 2 values: standard / muffle
 - The type of the control is specially designed for specific duct system (a line of rooms with separated dampers for control)
 - The value **Standard**: the HVAC operates to the volume flow according to the design of the duct system – normal operation
 - The value **Muffle**: the value can be set, when the duct system does not need to be operated on full power, e.g. the night operation with lower volume flow reducing the noise.
- 4) External control
 - The parameter „required flow“ cannot be changed from the web site or controller
 - The value of the required flow is adjusted by an external device, e.g. by connection of some BMS technology.

4.2.3 Required temperature



The effect of the „required temperature“ setting depends on the chosen way of the temperature control. The way of the temperature control is adjusted by a technician during the commissioning process according to the planned usage of the HVAC device.

The activity of heaters or coolers and other elements, which can affect the air temperature, depends on the set season:

1) Heating season:

- The **higher** measured temperature in comparison with the required temperature is tolerated status.
- When the measured temperature is higher than the required temperature, then heaters are switched off or it reduces its activity.
- When the measured temperature drops under the required temperature, the installed heater is activated, or it raises its activity when it is already running.

2) Non heating season:

- The **lower** measured temperature in comparison with the required temperature is tolerated status.
- When the measured temperature is lower than the required temperature, then cooler is switched off or it reduces its activity.
- When the measured temperature rises above the required temperature, the installed cooler is activated, or it raises its activity when it is already running.

The ways of temperature control and the behavior:

1) The control for the supply air

- The HVAC units controls the temperature of the supply air directly.
- The value of the required temperature is the real target temperature of the supply air and all the elements affecting the air temperature are controlled to achieve it.
- The way of control is used when the HVAC device is designed for ventilation in general. The incoming air (the supply air) is not meant to compensate the heat loss or the heat gain of the building.
- The heater or cooler for this way of control are designed to compensate heat loss of the ventilation system only.

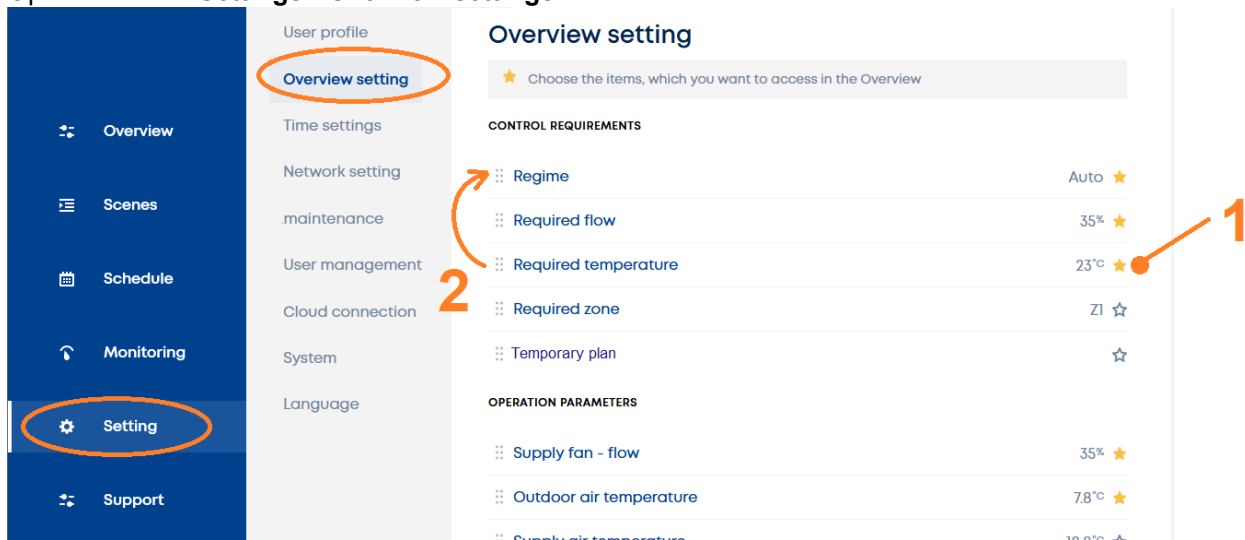
2) The control for the indoor air

- The HVAC units controls the temperature of the supply air in order to achieve required temperature in the room.
- The value of the required temperature is compared with the indoor air temperature:
 - i. Heating season
 - When the indoor temperature is lower than the required temperature, the temperature of the supply air is set to maximum allowed temperature, what brings enough energy into the room to heat it up to the required temperature. The supply air temperature can be about the 40°C – the exact value depends on the service setting of the unit.
 - ii. Non-heating season
 - When the indoor temperature is higher than the required temperature, the temperature of the supply air is set to minimum allowed temperature; that brings enough energy into the room to cool it down towards the required temperature. The supply air temperature can be about 10°C to 12°C lower than current indoor air temperature – the exact value depends on the service setting of the unit.

4.2.4 Overview content administration

The content of the overview screen can be adapted to user requirement. Except for the box with scene list, all the elements can be hidden and also their order can be changed.

Open the menu **Settings - Overview settings**:



1. The star symbol ★ indicates the visibility of the element in the Overview menu – set the visibility by clicking on the star symbol.
2. The order of the elements can be changed by the method „drag and drop“ using the symbol ☰.

The same setting can also be performed in the **Monitoring** menu. The feature is not available in the RD6 Touch controller: the menu Monitor displays only the HVAC device topology with information about the values of the elements.

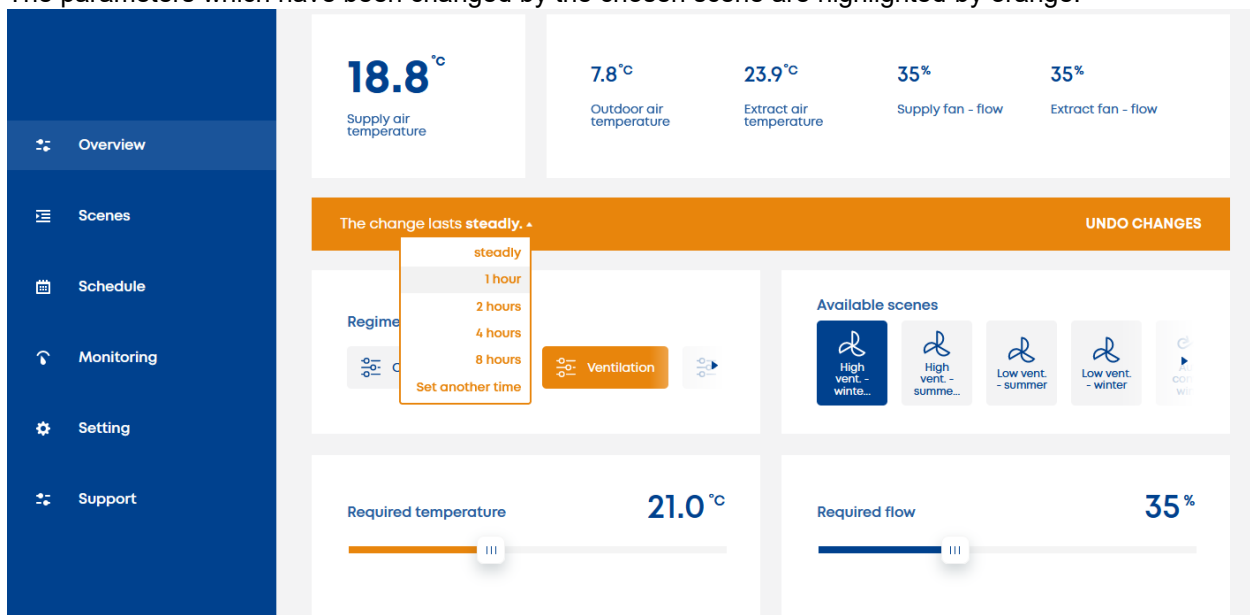
4.3 Scenes management and usage

The **Scene** is essential object for the setting of the HVAC device operation.

The scene may contain setting for every operational parameter (Required regime, required volume flow, etc.)

When the scene is chosen by clicking in the Overview menu, all the contained parameters are applied and the time of the scene duration is offered.


The parameters which have been changed by the chosen scene are highlighted by orange.

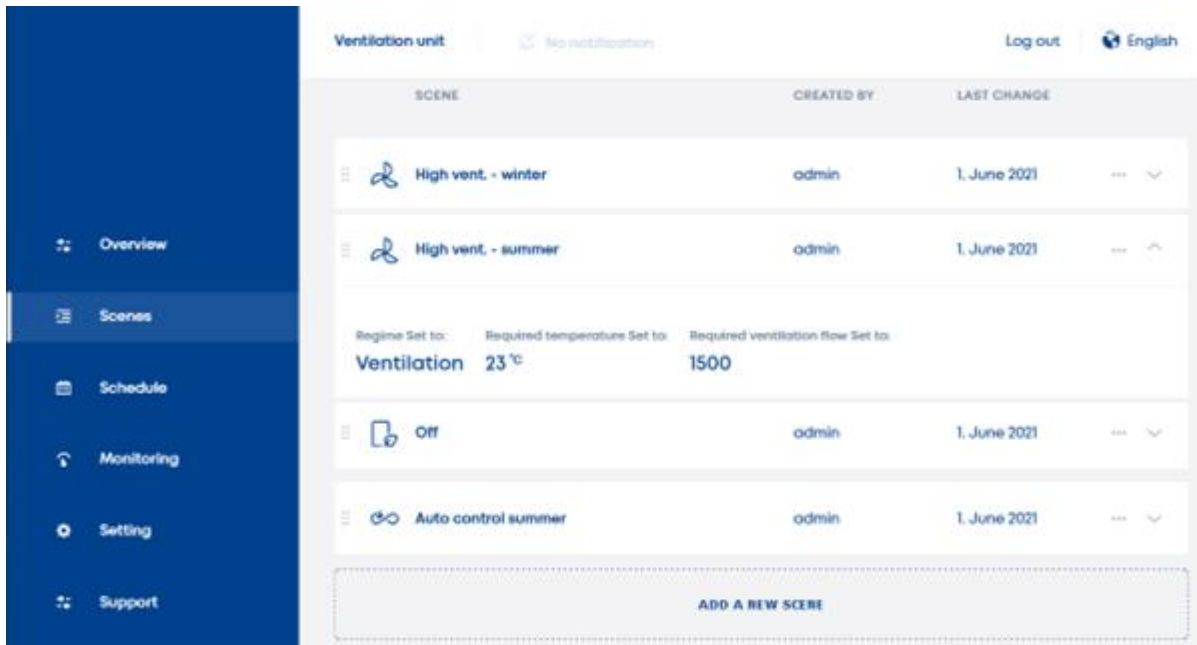


4.3.1 The scenes edit


A scene is a single ruling defining the HVAC behavior (required temperature, required volume flow, etc.). The menu Scenes provides the list of existing scenes.


The factory setting provides several typical scenes, which can be used for creating new scenes by their copying or it is possible to create a new scene.

By clicking on the  symbol the details of the chosen scene are displayed.




By clicking the ******* menu symbol, a menu with following action is displayed:

 **Launch the scene:** the choice allows the starting of the scene as the scene icon is clicked in the Overview menu;


 **Edit:** opens the modal window for the editing of the chosen scene;

 **Copy:** copies the chosen scene and invokes the editing of the scene copy;

 **Delete:** deletes the chosen scene.

Scene edit:

Scene icon



Scene title

High vent. - winter

SCENE PARAMETERS

Parameter	Operation	Value
Regime	Set to	Ventilation
Required temperature	Set to	21
Choose...	Set to	1000

ADD PARAMETER

Scene icon:

- every scene has its own icon, which can be chosen from the offered list of icons;
- the icon represents the scene on the web site and in the screen of the RD6 Touch controller.

Scene title:

- another identification of the edited scene at other places of the user interface, besides the icon
- Note: long title of the scene may cause difficulties with its display on variety of user interface places – the text could be cut shorter.

Scene parameters:

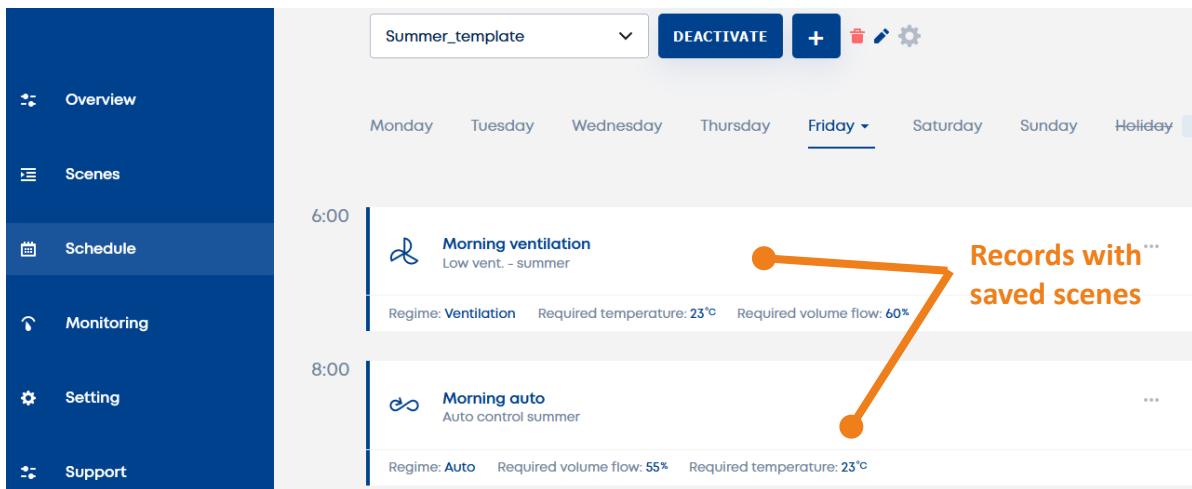
The setting of the scene content

- **Parameter:** the operation parameter, which is affected when the scene is activated
 - Required flow
 - Regime
 - Required temperature
 - Required zone (when the HVAC device provides zoning)
 - Function (when the HVAC device has defined functions by the service technician, e.g. CO2 concentration)
- **Operation:** the action which is performed when the scene is activated
 - *Set to:* the chosen parameter is set to the adjusted value;
 - *Reduce to:* if the origin value of the chosen parameter is higher, then the new value is reduced to the set value, otherwise no change is done;
 - *Raise to:* if the origin value of the chosen parameter is lower, then the new value is raised to the set value, otherwise no change is done;
 - List of function: if the parameter is “**Function**”, then this list box offers existing functions created by the service tool during the commissioning (e.g. CO2 sensor, kitchen switch, bathroom ventilation switch, etc.).
- **Value:** the setting of the chosen parameter’s value
 - the selection of values depends on the chosen parameter and on the HVAC device configuration;
 - in case of the parameter “Function”, the values are Disable/Enable.

4.4 Calendar settings – Weekly schedule

The calendar function provides automatic starting of preset scenes at a defined time according to the daily routine of the ventilated premises.

The calendar may contain various number of records. The record is the starting point of chosen scene.

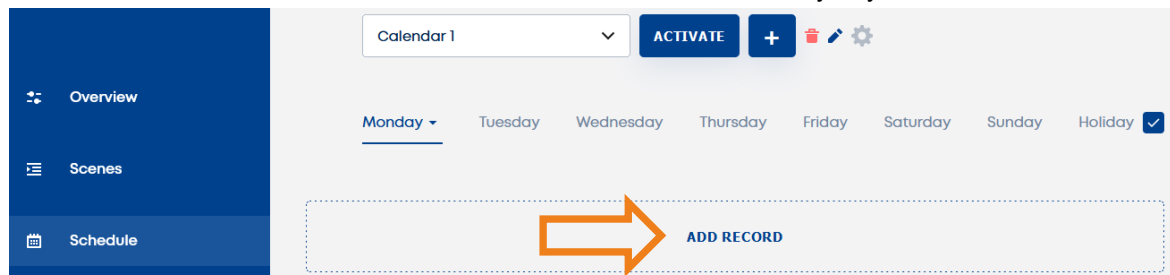


4.4.1 The day setting

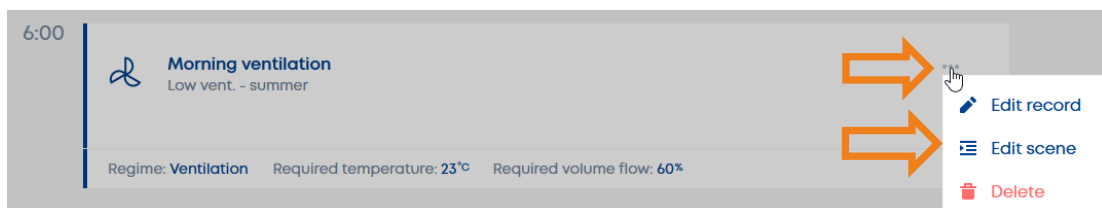
The calendar contains 7 days (Mo-Su) for making a day routine and 1 day extra; the Holiday. The usage of the Holiday is described in the Chapter 4.4.2.

Setting up the day:

1. **Add record** – when a new calendar is created, it has no record in any day of the calendar week



2. **Edit a record** – a new record or an existing record can be edited.



Every record is specified by:

- the title of the record
- the preset Scene to be started in the adjusted day time
- the time of the Scene start

Morning ventilation
×

Title

Morning ventilation

Chosen scene

Low vent. - summer
▼

Start time

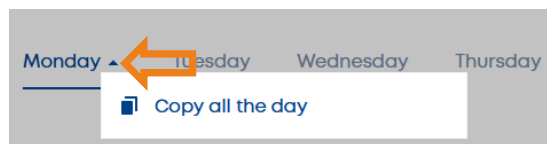
▲ ▲
06 : 00
▼ ▼

CANCEL

SAVE

3. Copy day

- By the clicking the symbol of the day local menu the option of copying the whole day is offered:



- The chosen day routine can be copied to other days of the same calendar or another calendar:

Copy
×

Target calendar

Summer_template
▼

Target days


- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday
- Holiday

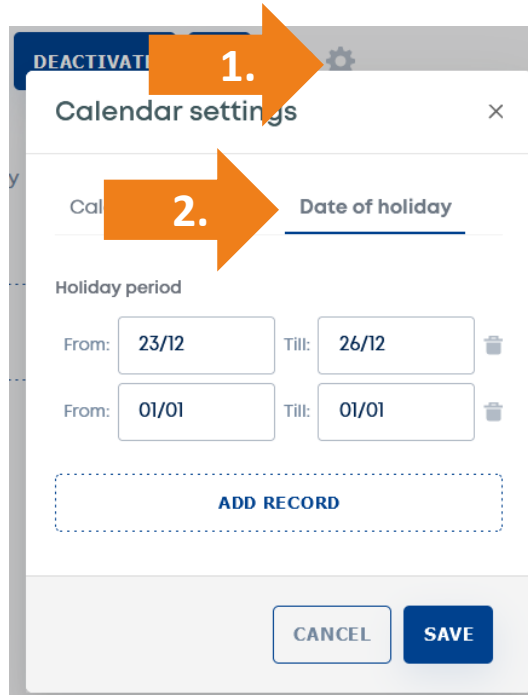
CANCEL

SAVE

4.4.2 Holidays usage

The purpose of the „Holiday“ in the calendar setting is the special setting for a different day routine, which does not depend on a specific day of the week, but on a specific date.

Holiday is allowed to be used in the active calendar by clicking on the checkbox . The starting of scenes is then performed according to the Holiday structure when the current date is the one of the adjusted dates from „Holidays table“: click on the „setting“ symbol of the schedule:



The Holiday can be set as a single day (e.g. Christmas Eve) or a period of days (e.g. school holidays)
Example of use:

1. A Holiday is allowed for the active calendar. When the current day is the 1st January, the day routine is performed according to the Holiday setting, no matter the week day (Monday, Tuesday or any other)
2. A Holiday is allowed for the active calendar. When the current day is the 24th December, the day routine is performed according to the holiday, as the current day is one of the adjusted Holiday period from the picture above.

4.4.3 Calendar switching

The system allows to create more calendars.

The calendar which should be activated can be chosen manually or automatically.


There are 2 options of automatic calendar activation:

1. According to the season – the calendar for the heating season and non-heating season (HS/NHS)

The screenshot shows a 'Calendars setting' dialog box with a close button (X) in the top right. It has two tabs: 'Calendars switching' (active) and 'Holidays'. Under 'Calendars switching mode', a dropdown menu is set to 'According to the HS/NHS' and is circled in orange. Below this, under 'CALENDAR CHOICE', there are two dropdown menus: 'Calendar for the Heating season' and 'Calendar for the Nonheating season', both set to 'Winter_template'. Two orange arrows point to these dropdowns. At the bottom, there are 'CANCEL' and 'SAVE' buttons.

2. According to the date - the calendar activation is performed when the set date matches the real date.

The screenshot shows a 'Calendars setting' dialog box with a close button (X) in the top right. It has two tabs: 'Calendars switching' (active) and 'Holidays'. Under 'Calendars switching mode', a dropdown menu is set to 'According to the dates' and is circled in orange, with an orange arrow pointing to it. Below this, under 'CALENDAR CHOICE', there is a table with two rows. The first row has a date field '28/03', a dropdown menu 'Summer template', and a trash icon. The second row has a date field '01/11', a dropdown menu 'Winter template', and a trash icon. Below the table is a dashed box containing the text 'ADD RECORD'. At the bottom, there are 'CANCEL' and 'SAVE' buttons. An orange arrow points to the table area.

 When no calendar is activated, the operation data can be still set by a user on the Overview screen with no limitation

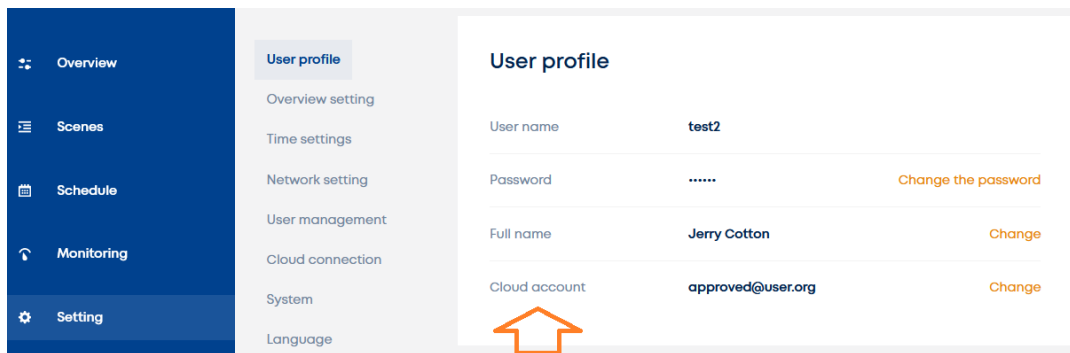
4.5 Users administration

The **Setting** menu provides 2 choices for the user setting:

- 1) User profile – the features of the logged in user
- 2) User management – administration of all users. The part is accessible only for user with administrator's rights

For default login details see Chapter 4.1.

4.5.1 User profile



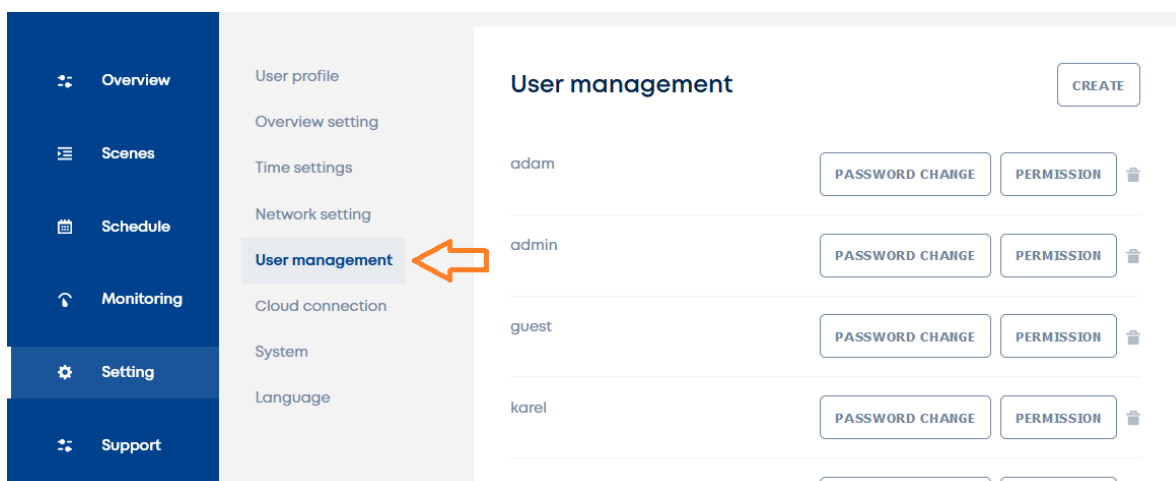
The setting in the User profile refers to the user currently logged in. The setting allows to set:

- Password
- Full name
- Cloud account – the email address, which is used for the remote access to the HVAC device.

The user cannot change the User name since it is used as the client identification in the system. The user name can be changed by another user with administrator rights.

4.5.2 User management

This area provides the list of users and rights of access for every user. The user rights can be edited by a user with administrators right only.



A user with the administrator rights is authorized to adjust the rights of other users and their password.

Create user
×

PERSONAL DATA	USER PERMISSIONS
<p>User name</p> <input style="width: 100%; padding: 5px;" type="text" value="John"/>	<p>Control <input checked="" type="checkbox"/></p>
<p>Cloud account</p> <input style="width: 100%; padding: 5px;" type="text" value="john.doe@atrea.cz"/>	<p>Scheduler <input checked="" type="checkbox"/></p>
<p>Full name</p> <input style="width: 100%; padding: 5px;" type="text" value="John Doe"/>	<p>Remote access <input checked="" type="checkbox"/></p>
<p>Password</p> <input style="width: 100%; padding: 5px;" type="password" value="12345678"/>	<p>Administrator <input checked="" type="checkbox"/></p>
<p>Enter the password again</p> <input style="width: 100%; padding: 5px;" type="password" value="12345678"/>	
<p>4-digit display code</p> <input style="width: 100%; padding: 5px;" type="text"/>	

Control:

Allows the user to change operation parameters (required regime, required flow, etc.) and choosing preset scenes to be started.

Scheduler:

Allows the user to perform the calendars setting.

Remote access:

Allows the user to access the HVAC device remotely through the RD6 Space service.

Administrator:

Allows the user to manage other users' rights, controller settings (Chapter 4.8) and the Support system setting (Chapter 4.9).

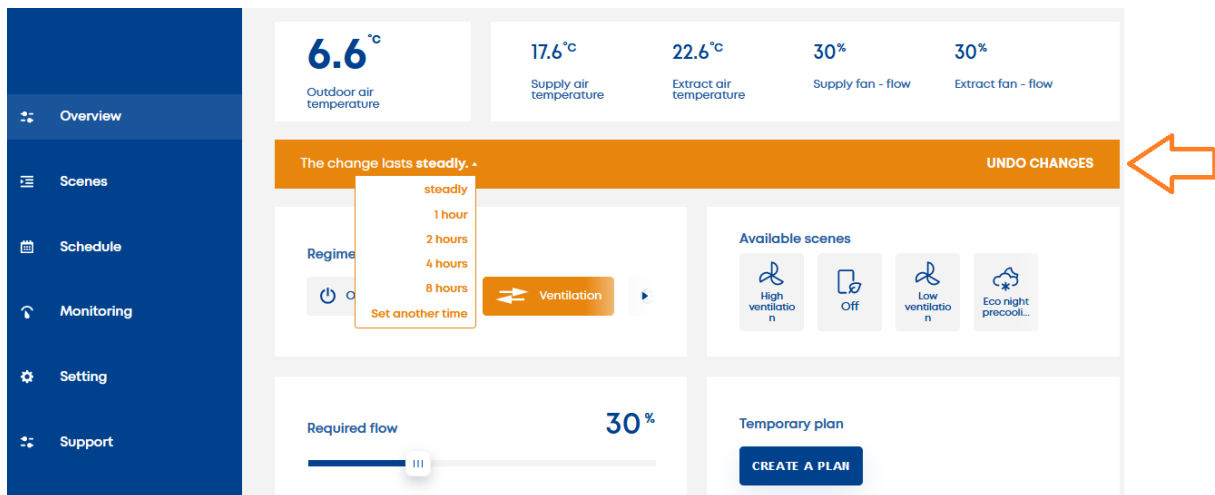
4-digit display code:

The 4 digit PIN is used for identification of the user, when any controller is dedicated to this user (see Chapter 4.8).

4.6 Home page of control system

Operation of the ventilation unit can follow the configured schedule (calendar). Operation parameters of the device are then changed automatically. Alternatively, the HVAC device can be controlled without any activated calendar.

When any operation parameter is changed, the UI offers an interval of a duration of the change made. The change of the operation parameter is announced by an orange stripe. The orange color also marks the changed operation parameter.



There is a menu accessible in the orange bar. It shows the duration of the change:

- 1, 2, 4, 8 hours or adjustable time of duration
- **Permanently** – when this option of duration is chosen, the set operation parameters lasts till it is changed by another event.

The events, which can change the value of the operation parameter are:

- setting of another value of the chosen parameter manually;
- changing the time period of the activated calendar;
- starting of a scene, which affects appropriate operating parameter (the scene can be started manually or by an automatic function).

Using manually started scenes:

When some of current values of operation parameters are affected by started scenes the invoked changes last till:

Case 1: no calendar is activated

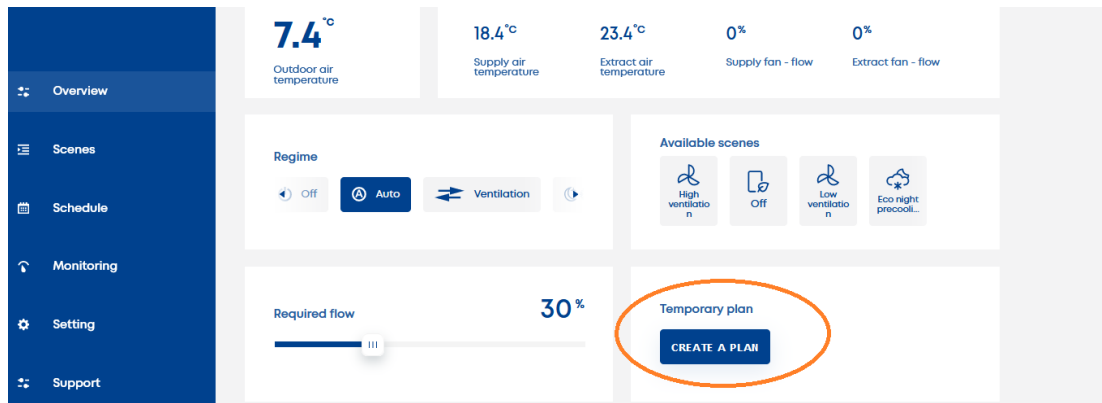
- the time of duration of the started scene expires;
- manual change of the parameter is done;
- manual start of another scene.

Case 2: one of the calendars is activated

- when the time of next record in the schedule comes (when the **steady** duration is chosen);
- the time of duration of the started scene expires (when the exact time of duration is specified);
- manual change of the parameter is done;
- another scene is started.

4.7 Temporary plan

When you need to adjust the HVAC device operation to a specific value for a specific interval without changing calendars or current manual process and the operation of the HVAC should get back to the origin values automatically, use the Temporary plan.



By pressing the **CREATE A PLAN** button, the following dialog is open

The 'Create temporary plan' dialog box contains the following fields and buttons:

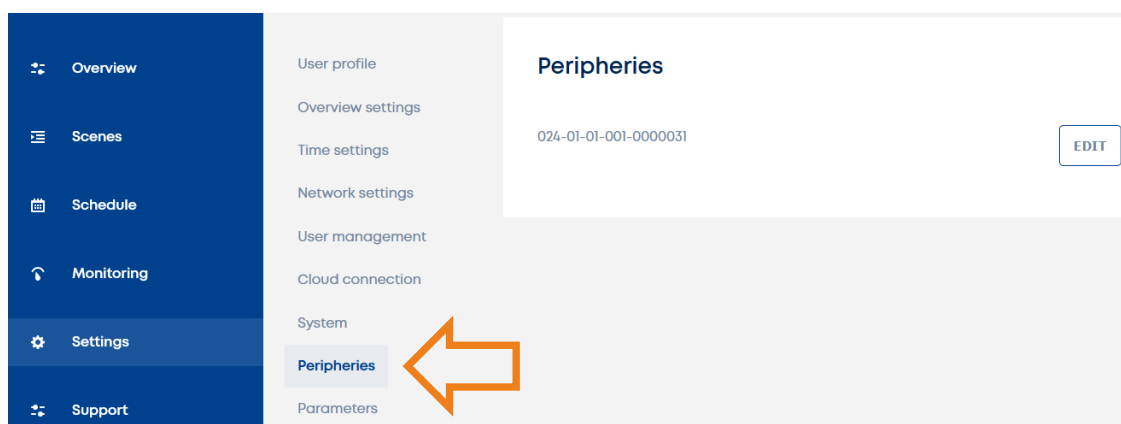
- Used scene: Choose... (dropdown menu)
- From: 18/11/2021 11:13 (text input)
- Till: 18/11/2021 12:13 (text input)
- CANCEL (button)
- SAVE (button)

By the setting the parameters and pressing the **SAVE** button, the plan is created. The chosen **scene** is started in the time and date according to the parameter **From** and expires at the time and date according to the parameter **Till**. The created plan is announced by the content of the Temporary plan box in the **Overview** page.



4.8 Controller configuration

The controllers, which are connected to the HVAC system and are included into the system topology, are listed in the menu „**Settings – Peripheries**“.



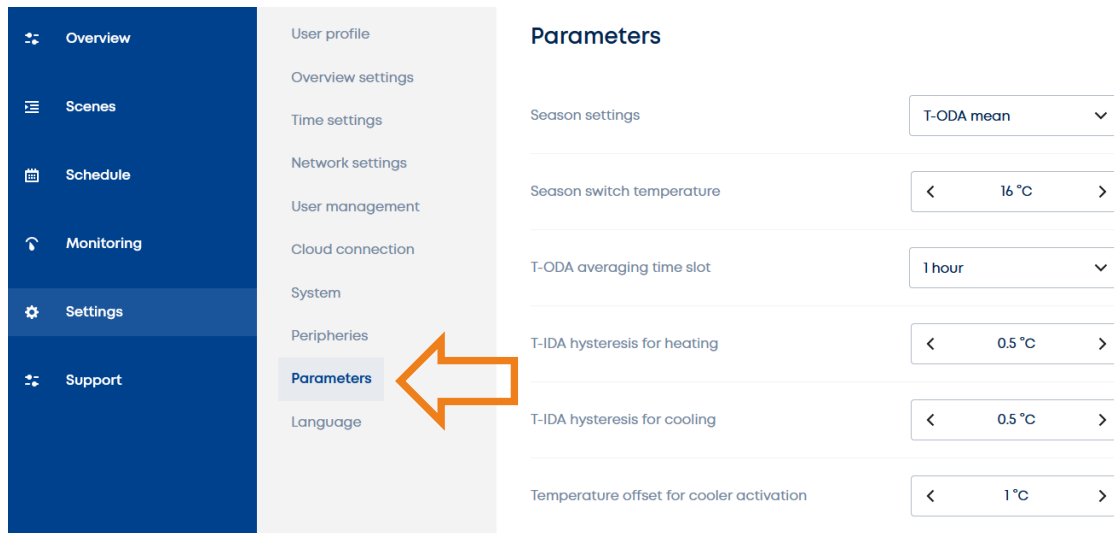
The controller name is editable parameter - the initial name of controller is assigned by the commissioning technician (who is approved to manage the service settings).

The menu **EDIT** offers following options:

- 1) for the **RD6 Sense** controller:
 - The **title** of the controller – the identification string which is used in the **Controllers** list
 - The **favorite scene** – the chosen scene from the list of preset scenes is activated when the ☆ button is pressed on the RD6 Sense controller. Every RD6 Sense connected to the system may have different favorite scene.
 - green **LED** operation – options are:
 - **always allowed** – the green LED on the RD6 Sense announces about the status all the time no matter the display of the RD6 Sense is ON or OFF
 - **display lit on only** - the green LED signalization is allowed only if the display of the RD6 Sense is lit.
- 2) for the **RD6 Touch** controller:
 - The **title** of the controller – the identification string which is used in the **Controllers** list
 - The **Linked user**
 - when no user is chosen from the list (**none**), the controller is not protected by any access PIN and all the parameters are available for editing;
 - when some user name is chosen by this parameter, the RD6 Touch controller allows the operations according to the chosen user's rights and also reflects the PIN setting. When the chosen user has no PIN set, the controller dedicated to this user is not protected by any PIN. If the PIN of the user is filled in, then the controller is protected by the PIN of the user.

4.9 Parameter configuration

The parameters (Settings > Parameters) are linked with the behavior of heating or cooling. Therefore, the group of settings is available only for the user with the administrator's rights.



The content of parameters:

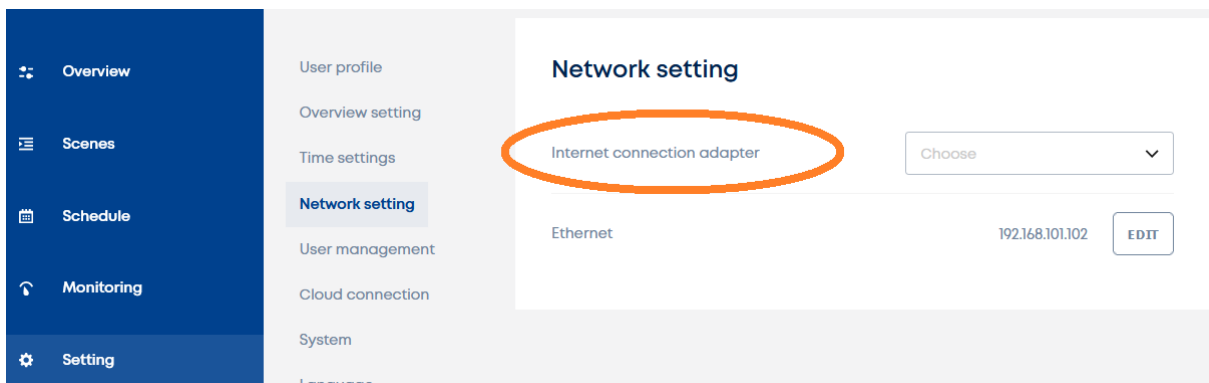
Parameter	Description
HS/NHS switching method	<p>The method of the switching heating /non-heating season. The parameter provides the fix setting to the chosen season or the function for automatic switching.</p> <p>Parameter values:</p> <ul style="list-style-type: none"> • HS - the heating season is active all the time, until the value is changed • NHS - the non- heating season is active all the time, until the value is changed • T-ODA mean – the HS/NHS switches automatically according to the mean T-ODA temperature: <ul style="list-style-type: none"> ○ $T_{ODA-mean} > HS/NHS \text{ switch temp.} + 0,5^{\circ}C$, the non-heating season is activated ○ $T_{ODA-mean} < HS/NHS \text{ switch temp.} - 0,5^{\circ}C$, the heating season is activated • T-ODA mean + gain– the HS/NHS switches automatically according to the mean T-ODA temperature and allows to keep NHS even when the T-ODA is lower: <ul style="list-style-type: none"> ○ $T_{ODA-mean} > HS/NHS \text{ switch temp.} + 0,5^{\circ}C$, the non-heating season is activated ○ $T_{ODA-mean} > 0^{\circ}C$ and $T-IDA > \text{Requested temp.} + 5^{\circ}C$ the non-heating season is still active ○ $T_{ODA-mean} < HS/NHS \text{ switch temp.} - 0,5^{\circ}C$ and $T-IDA < \text{Requested temp.} + 5^{\circ}C$, the heating season is activated
HS/NHS switch T-ODA	The value of the mean outdoor air temperature, which is used for the HS{NHW switching
T-ODA mean interval	The length of the time interval, which the mean T-ODA is calculated from
Current T-ODA mean	The value of the current mean outdoor air temperature.
T-IDA hysteresis - heating	The difference of the T-IDA temperature from the request, when the heating is started:

	<ul style="list-style-type: none"> • $T\text{-IDA} < \text{requested temperature} - \text{hysteresis}$, the heating is activated • $T\text{-IDA} > \text{requested temperature} + \text{hysteresis}$, the heating is stopped <p>The value is used only if the heating is controlled according to the indoor air temperature (T-IDA)</p>
T-IDA hysteresis - cooling	<p>The difference of the T-IDA temperature from the request, when the cooling is started:</p> <ul style="list-style-type: none"> • $T\text{-IDA} > \text{requested temperature} + \text{hysteresis}$, the cooling is activated • $T\text{-IDA} < \text{requested temperature} - \text{hysteresis}$, the cooling is stopped <p>The value is used only if the cooling is controlled according to the indoor air temperature (T-IDA)</p>
T-IDA offset for cooling	<p>The value of this parameter moves the start of the cooling to a higher value of the indoor air temperature:</p> <ul style="list-style-type: none"> • Cooling is activated when $T\text{-IDA} > \text{requested temperature} + \text{hysteresis} + \text{offset}$

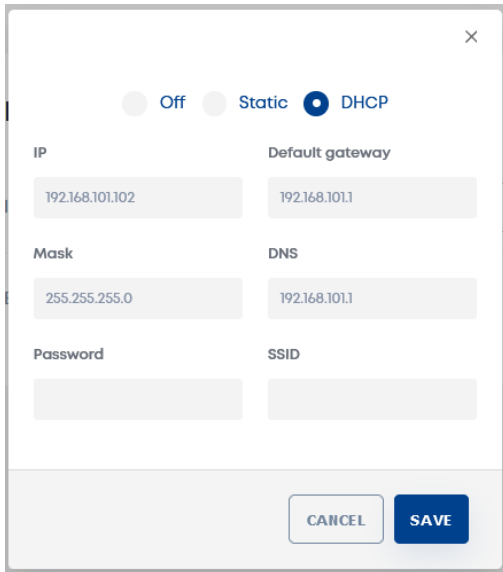
4.10 Network settings

The settings of the network contain a group of parameters necessary for the right communication of the HVAC device on the PC network.

The menu “**Settings – Network settings**” displays all the accessible network adapters in the system. Only one adapter can be chosen for the Internet communication.



The group of parameters for every adapter are:



- Setting the way of the adapter usage Off | Static | DHCP
- **IP** address of the adapter – manually set or obtained via the DHCP
- **Default gateway** – important for the internet communication
- **DNS** – essential for the remote communication with the HVAC device via the RD6 Space service
- **Password** and **SSID** – parameters for the setting of the network adapter working in the AP mode

5 Connecting to the device via Cloud (RD6 Space)

The HVAC device can be accessed remotely from whatever location on the internet.

The conditions for the remote access are:

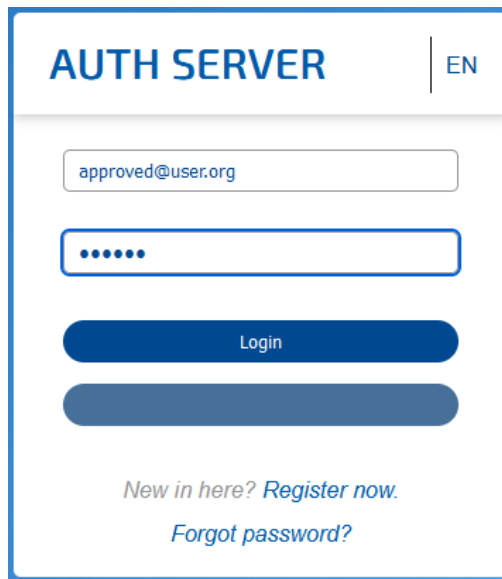
- The HVAC device is connected to the local PC network, where the internet is accessible;
- User who wants to use the remote connection must be in the list of users for the HVAC device, see Chapter 4.5.2
- the user's e-mail address must be real (Chapter 4.5.1)
- the user must have the right for the remote access (Chapter 4.5.2)
- The cloud communication must be allowed – the Chapter 5.2

5.1 Remote access step by step

You can access the unit using a web browser in PC, tablet or smartphone.

1. Open the URL: RD6.cloud
2. Use the e-mail address and access password of the user with the rights for remote access in the shown dialog.

If you come to the Cloud for the first time create an account by filling in the registration form.



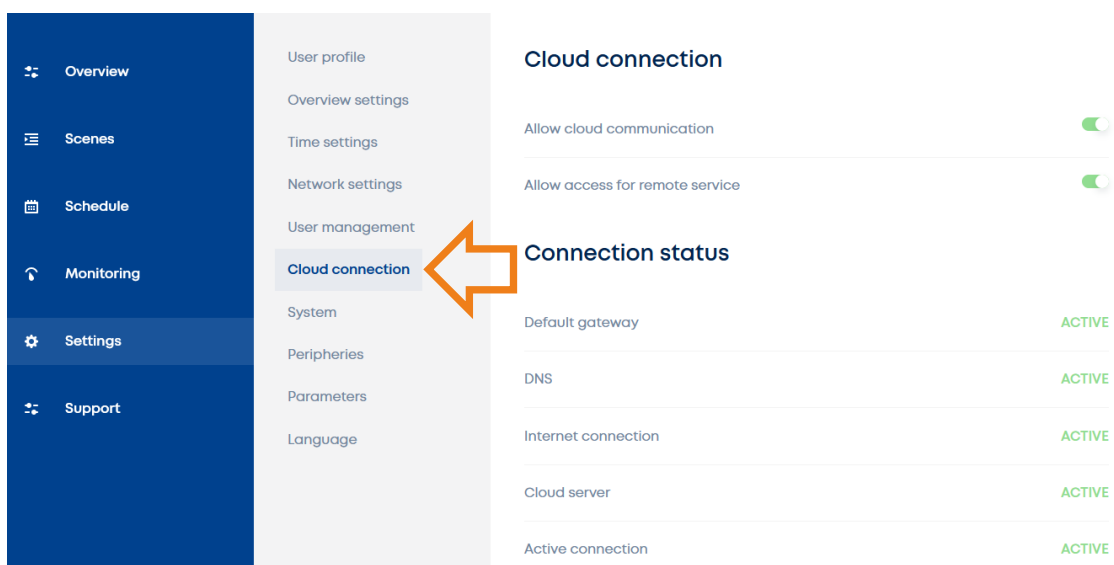
3. After successful login, the list of available HVAC devices for the user being logged in is offered. You will only see devices where your Cloud login email is already saved, i.e. you are added as a user of the unit, see Chapters 4.1 and 4.5.2.
4. Select the device to connect to. Once the connection is established you will see the same user interface as if you were connected via built-in website. See Chapter 4 for more information.

 The HVAC device in the list is identified by its title and its the production number. The device title is editable in the menu **“Settings – System – Device name”**.

5.2 Checking the connection

The status of connection to the „RD6 Space“ Cloud server can be examined by the local connection to the HVAC device.

See the menu **„Settings – Cloud connection“**:



Allow cloud communication:

- When the parameter is switched on, the HVAC device is accessible remotely by the approved user (see the Chapter 5.1).

Allow access to remote service:

- When the parameter is switched on, the HVAC device is accessible remotely for a service technician, who is approved to connect the HVAC device remotely.

Connection status:

The network monitor shows the status of accessible network service, which can help in case of malfunctioning remote access.

6 Troubleshooting

6.1 Possible faults and solutions

Fault	Identification	Possible cause	Solution
The unit cannot be started	<ul style="list-style-type: none"> • The unit remains idle after selecting the required power level 	<ul style="list-style-type: none"> • Power supply is not connected 	<ul style="list-style-type: none"> • Connect the unit to the power supply (switch on starting circuit breakers)
		<ul style="list-style-type: none"> • The unit's operation is blocked by the external input "enable operation" (e.g. by a fire damper) 	<ul style="list-style-type: none"> • Check or contact a service engineer
		<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Disconnect from the power supply and contact a service engineer
The unit supplies insufficient air volume	<ul style="list-style-type: none"> • The unit supplies significantly lower air volume 	<ul style="list-style-type: none"> • Clogged filters 	<ul style="list-style-type: none"> • Disconnect the unit from the power supply • Replace the filter mat or cassette • If in operation for over approx. 4 years, clean the heat recovery exchanger/s
		<ul style="list-style-type: none"> • A mechanical obstacle at fresh air intake or air supply outlets 	<ul style="list-style-type: none"> • Check whether fresh air intake or air supply outlets are not mechanically covered • Remove any obstacles • Check dampers for correct opening function – visually, listening
		<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Disconnect from the power supply and contact a service engineer
The unit is not heating or it is heating insufficiently	<ul style="list-style-type: none"> • After selecting required temperature the unit continues to supply cold air • Actual air temperature does not reach required values 	<ul style="list-style-type: none"> • Power supply is not connected to the electric heater 	<ul style="list-style-type: none"> • Connect the unit to the power supply (switch on starting circuit breakers)
		<ul style="list-style-type: none"> • Electric heater thermal protection response 	<ul style="list-style-type: none"> • Wait. If the fault does not disappear by itself after about 1 hour, press the RESET button on the electric heater • If even this does not troubleshoot the fault, or if it occurs frequently, contact a service engineer
		<ul style="list-style-type: none"> • Low max. power of the electric heater 	<ul style="list-style-type: none"> • Not a fault (incorrectly designed insufficient power)
		<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Disconnect from the power supply and contact a service engineer
	<ul style="list-style-type: none"> • After the air heater has been switched on the supplied air is still cold 	<ul style="list-style-type: none"> • Low max. power of the electric heater 	<ul style="list-style-type: none"> • Not a fault (incorrectly designed insufficient power)
		<ul style="list-style-type: none"> • Not found 	<ul style="list-style-type: none"> • Disconnect from the power supply and contact a service engineer
Water dripping from the unit	<ul style="list-style-type: none"> • When the unit is running, water droplets form between the door and frame 	<ul style="list-style-type: none"> • The condensate level sensor in the pan is incorrectly set 	<ul style="list-style-type: none"> • Disconnect from the power supply and contact a service engineer
		<ul style="list-style-type: none"> • The heating cell for condensate pan heating does not work 	<ul style="list-style-type: none"> • Disconnect from the power supply and contact a service engineer
		<ul style="list-style-type: none"> • Damaged seal (the issue may be accompanied by a whistling sound caused by air flowing through the opening) 	<ul style="list-style-type: none"> • Disconnect from the power supply and replace the seal

6.2 Unknown IP address of the unit

I do not know the IP address of the unit. How can I connect to the unit from web browser via built-in website?

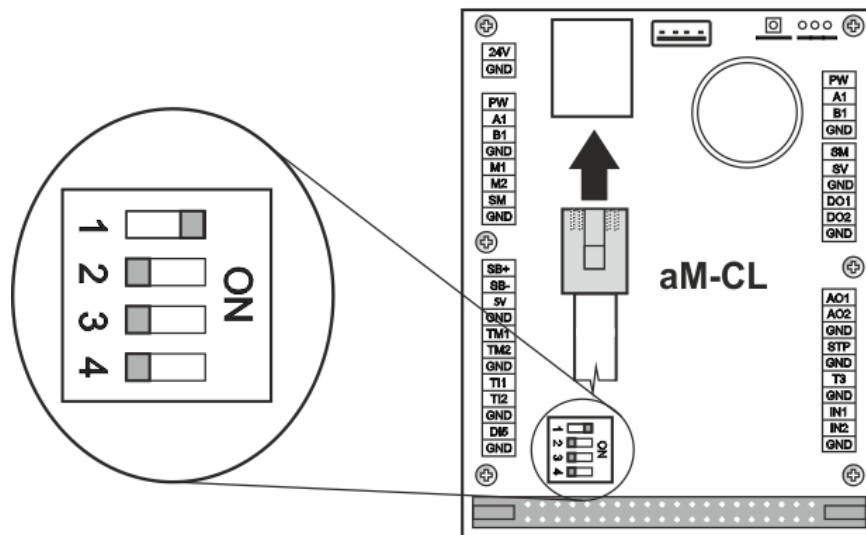
IP address of the unit will be configured during its connecting to the network. By default, DHCP configuration of IP address is selected. If the unit is connected to a router its IP address is assigned by the router. Contact the IT administrator to provide you the address.

If you do not use router you can establish local connection between the unit and your computer. Then you can configure static IP address of the unit.

- ! Please note that only technicians with corresponding electrical qualification are allowed to access the junction box of the unit. The unit powering must be OFF.



1. Switch the unit OFF and turn OFF its power supply;
2. Open the junction box;
3. Move the **DIP switch No.1** to ON. A second parallel IP address of the unit will appear, it will be set to **172.20.20.20** ;



4. Close the junction box and turn the unit ON;
5. Set up fixed IP address in the computer

Steps in Windows 10:

- a. Select **Settings > Network and internet > Ethernet > Change adaptor options**
 - b. Right-click on **Ethernet > Properties**
 - c. Select **Internet Protocol version 4 (TCP/IPv4)** and click on **Properties**
 - d. Select **Use the following IP address**
 - e. Set up IP address of computer for communication with the unit. The address of the computer must be in the range from 172.20.20.1 to 172.20.20.255 but not the address 172.20.20.20 already used by the unit.
6. Type the IP address of the unit **172.20.20.20** in Web browser. You will see login form;
 7. Enter user name and password. Connection to the unit will be established. See Chapter 4.1;
 8. Select **Settings > Network settings** to set up static IP address of the unit. See Chapter 4.10;
 9. Turn the unit OFF, turn OFF the power supply;
 10. Open the junction box and move the DIP switch No.1 to OFF;
 11. Close the junction box and turn the unit ON;
 12. Connect to the unit using the new IP address.