Operation Instructions EN

# Sense RT / QX

# CONTROL

## INITIAL COMMISSIONING

After connecting the unit , the display lights up and the data is loaded. Once it has fully loaded, the unit is ready for start-up. The remote control has a touch-screen – the unit is controlledtouching the symbols on the screen.

### Start-up:

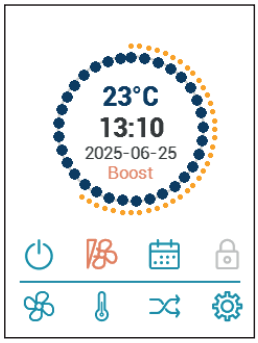

The unit is launched by pushing the circle symbol

## INFORMATION ICONS


- Turn the unit ON/OFF
- BOOST mode activation
- Unit´s time switch
- Password lock
- Ventilation mode settings
- Required temperature settings
- Detailed informationof ventilation status
- Settings
- Display of current temperature, ventilation rate, CO2 comcentration, ventilation mode and date

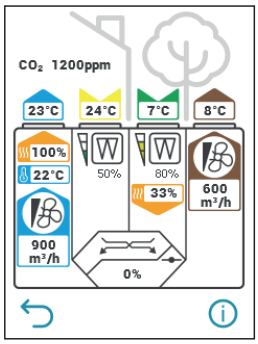

- Night cooling
- Occupancy mode active
- Time mode active
- Heater cooling in progres

## BOOST MODE




The BOOST mode is activated by touching symbol
BOOST regime is displayed in ventilantion mode area

## INFORMATION ON THE VENTILATION STATUS




This screen shows the status of the unit and the values of the sensors:

- Current air flow of both fans
- Inlet and exhaust air temperature
- Performance of the electric preheating and reheating
- Value of the connected air quality sensor

Back

Information about unit type

## UNIT SETTINGS


Date and time

Display settings

Language settings

App pairing

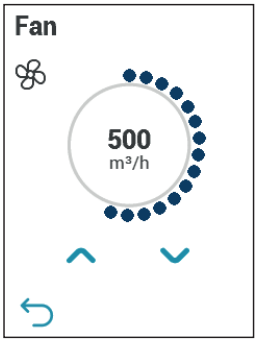
QR code with contact details and technical sheet download link

Unit´s service setting

Back

Back to main screen

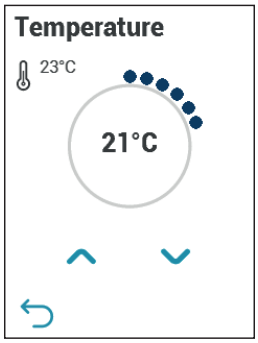
## VENTILATION LEVEL SETTINGS




Increasing or reducing airflow

Display of required airflow

## REQUIRED TEMPERATURE SETTINGS

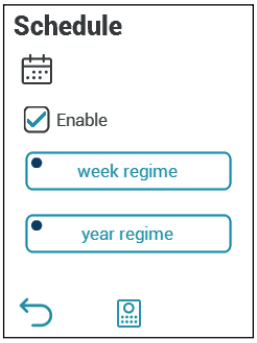



Information about the current temperature (according selected sensor)

Display of required temperature

Reducing or increasing required temperature in the range from +15°C to +45°C

## UNIT‘S TIME SWITCH

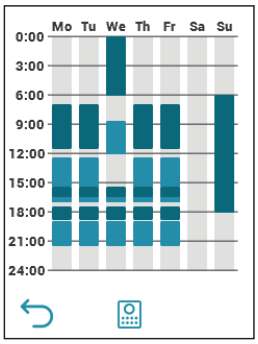



Actiavtion / deactivation of time switch

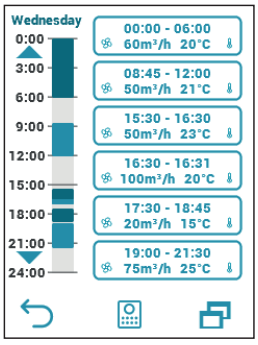
Week regime

Year regime

### WEEK MODE



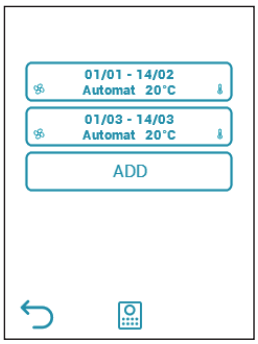

Touch a day to set ventilation modes



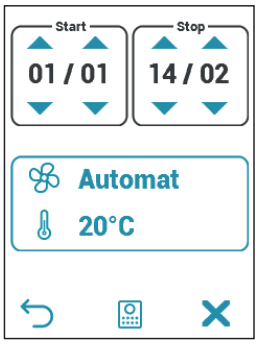

Touch to set individual intervals of ventilation (time ON/OFF, vent. mode, vent. level, temperature)

Touch for copying time interval

## YEAR MODE




Add a time mode




In manual mode it is possible to set the desired temperature and fan power.
In automatic mode only the desired temperature may be set. Fan power is driven using AQS.

Start Beginning of time interval (Day/Month)

Stop End of time interval (Day/Month)

Values setting

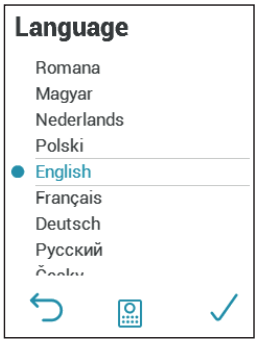
Delete time interval

- When the time interval ends, the unit goes into stand-by mode.

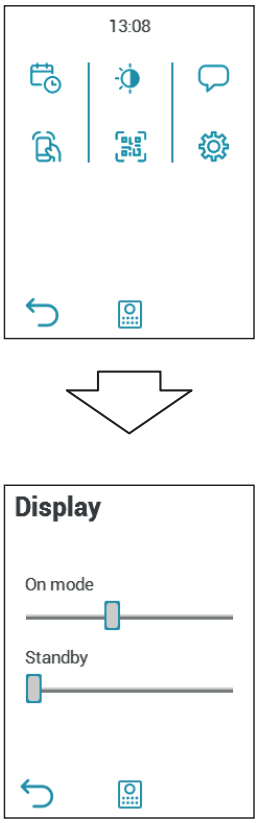
## LANGUAGE SETTINGS


Select language menu

Confirm language selection



## DISPLAY SETTINGS

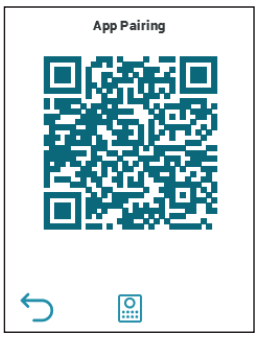



- Display brightness in active mode
- Display brightness in Standby mode

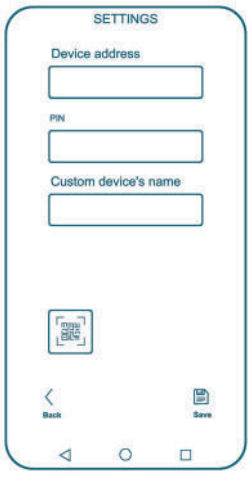
# APP


Pairing mobile device with unit using QR code

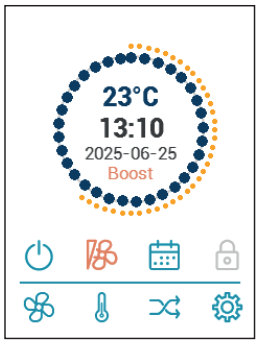
The IP address and PIN of the unit can be entered manually or by using a QR code for quick pairing of the unit.



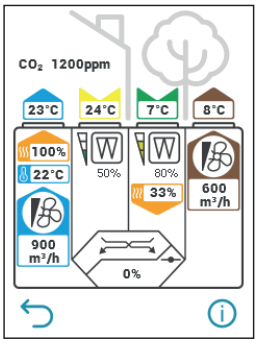

Pairing smart device with the unit using QR code



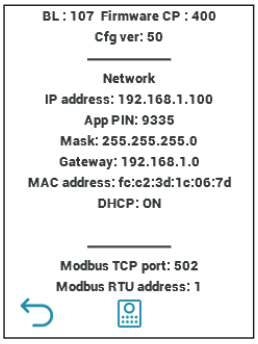

After scanning QR code from the controller press “Save” for saving the unit to the app.




Smart device manual pairing with the unit




Select information menu

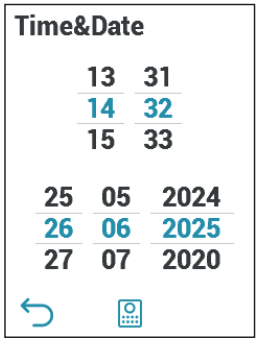



Scroll down to the Network section


- Enter the IP address from controller
- Enter the PIN from the controller
- Name the unit

After entering all the information from the controller press “Save” for saving the unit to the app.

## TIME AND DATE SETTINGS

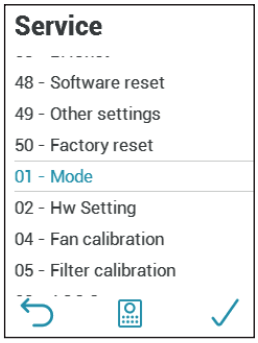



Scroll up and down on the numbers to set the date and time

## SERVICE MENU

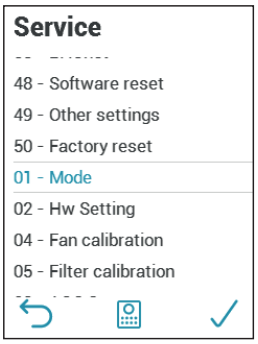
This MENU is intended primarily for service technicians or users who have experience with HVAC units. Changes in this MENU can lead to improper operation of the unit. If you are uncertain, first contact your supplier for more information.

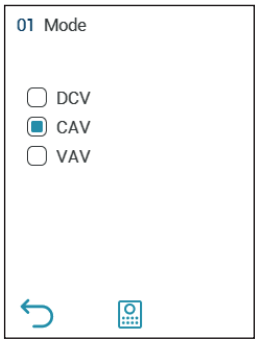

Enter code **1616** to access the service MENU




Scroll up/down to select menu then tap on selected menu

## 01 Mode




**Select required ventilation mode**

**DCV** - Ventilation according to the requirements of the air quality sensor (AQS)

- Unit ventilates at the air quality sensor (AQS) requirements, e.g. CO2, RH (sensor control signal must range from 0-10V).

**CAV** - manual ventilation mode

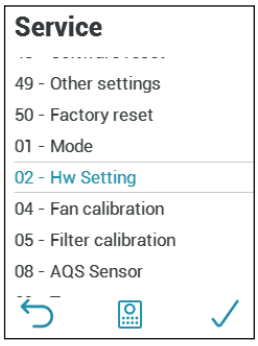
- Unit ventilates at the selected power independent of the AQS

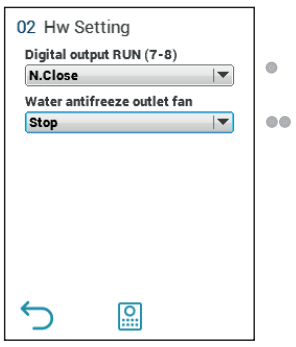
**VAV** - variable air volume - constant pressure in the supply duct

- The unit changes the flow rate to the total opening or closing of VAV dampers in the supply ducts (done in the case of ventilation multiple zones with individual requirements for ventilation intensity - each zone is equipped with inlet control VAV flap = separate independent control circuit)

**The Software reset (menu 48) must be performed to save the changes**

## 02 HW Settings

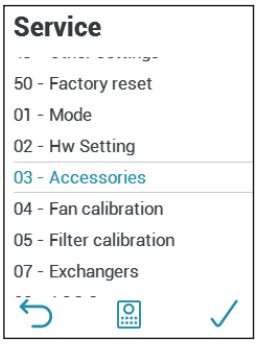


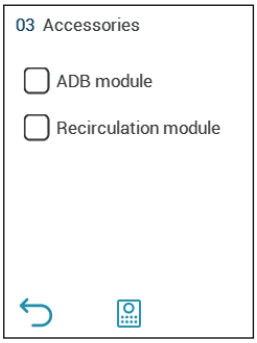




In this menu you can set the logic of using the RUN contact and the logic of antifreeze protection

- RUN contact settings
  This menu lets you select the logic using with the RUN output. Imput (7-8) - The logic of the connected RUN contact can be set as follows: as N. close (normally closed) or N. Open (normally open)
- Setting the logics of the behaviour of the exhaust fan during active antifreeze protection

## 03 Accessories



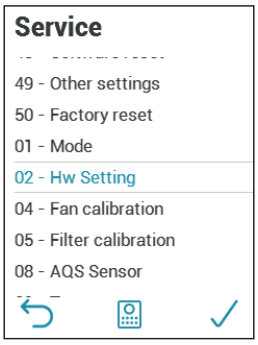

Select optional accessories

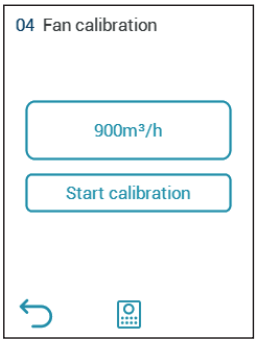
**ADB module**
Used for cooling the exhaust air and subsequent cold recovery. When using ADB module is necessary to connect the sensor INT-0, which senses temperature before ADB module (exhaust from the interiour)

**Recirculation module**
After enabling the Recirculation Module, the Recirculation menu is available in the service menu, where you can set the Recirculation Module mode (CO2 2000ppm, CO2 1100, Temperature)

**The Software reset (menu 48) must be performed to save the changes**

## 04 Fan calibration

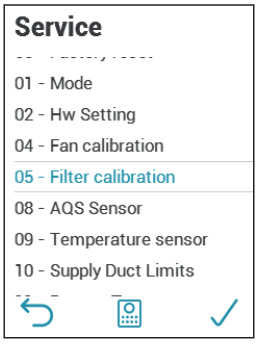


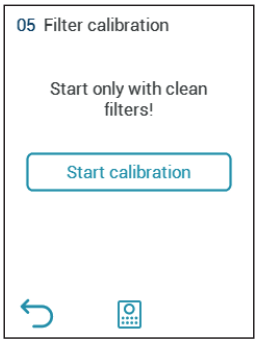




The calibration takes several minutes. Do not disconnect the unit, wait until it's completed. During the calibration the unit determines the maximum pressure loss, when the fan runs at full rate.

**READ CAREFULLY!** The unit will not work properly if, during calibration, the distribution network is not complete, the flaps or valves are not closed, etc.

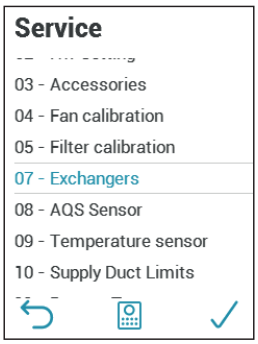
## 05 Filter calibration

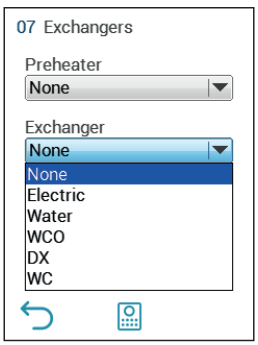



Filter calibration has to be carried out during the first commissioning and after a filter class change.

## 07 Exchangers



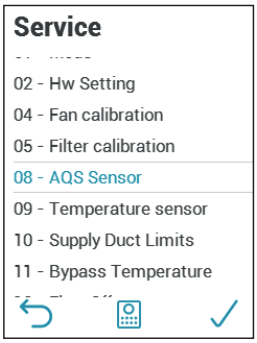

This menu serves to set the second (additional) preheater or post heater.

**Preheating:**
None
Electric
Water

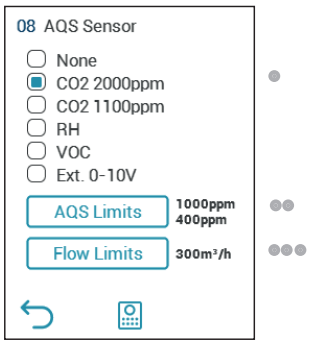
**Postheater:**
None
Electric
Water
WCO
DX

**The Software reset (menu 48) must be performed to save the changes**

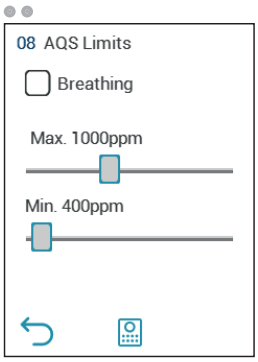
# 08 AQS Sensor




**AQS = Air Quality Sensor**



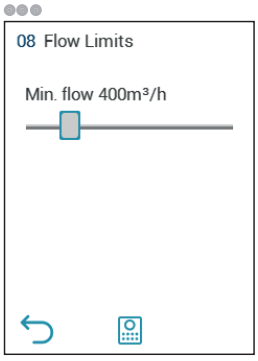

- Select air quality sensor
- Set the limit of the selected air quality sensor
- Required limits flow setting



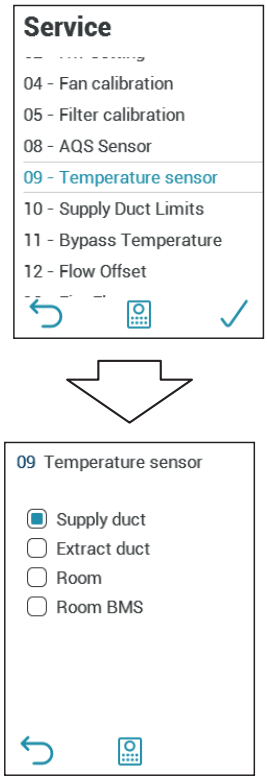

**BREATHING**

with the breathing mode enabled, the unit shuts down after reaching the minimum concentration and then inhales every 15 minutes for 2 minutes at minimum fan power. If the concentration exceeds the maximum value, ventilation is reactivated. If the max. Limit is not exceeded, the unit switches off again until the next inhalation.

**The Software reset (menu 48) must be performed to save the changes**



## 09 Temperature sensor




A temperature sensor can be selected to control the air temperature. The values from the selected sensor will be used for temperature control and will be displayed on the main controller screen.

**The Software reset (menu 48) must be performed to save the changes**

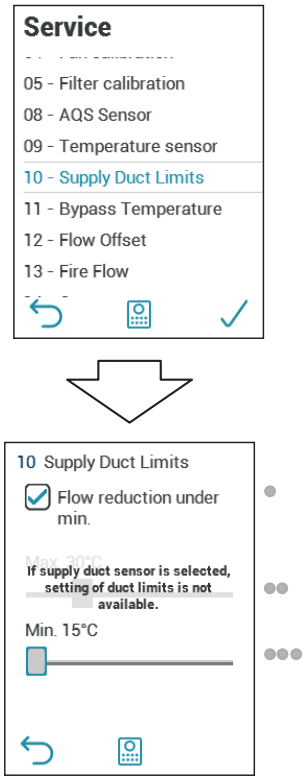
**Supply duct:**
The unit will be controlled by the supply air temperature sensor to the object. Suitable for installations where the same supply air temperature is required to the rooms and in individual rooms is further adjusted as required. There is no local overheating. Suitable for multi-zone ventilation. The unit will respond quickly to temperature changes at this setting. ATTENTION: With this setting, the MAX and MIN channel limit values cannot be defined. The maximum limit in the channel is the desired temperature. The minimum temperature is set to 15 ° C. (for its adjustment it is possible to go to the sensor of the outlet channel, adjust the limit and change the sensor to the supply - the MIN value will be respected according to the settings).

**Extract duct:**
The unit will be controlled by the extract air temperature sensor from the object. Suitable for installations where it is necessary to monitor the average exhaust air temperature and adjust the supply air temperature to achieve comfort in the building. Suitable for mono-zone ventilation where supply air affects one room. The unit will respond more slowly to the temperature change at this setting. The supply air temperature is between the minimum and maximum supply air temperature.

**Room:**
The unit will follow the temperature sensor installed in the room. Suitable for installations where it is necessary to monitor the local room temperature and adjust the supply air temperature to achieve room comfort. Suitable for monozone ventilation, where the supply air affects one space. The supply air temperature is between the minimum and maximum supply air temperature. According to the setting in the menu 10 - SUPPLY DUCT LIMITS.

**Room BMS:**
Temperature information provided by the building management system

## 10 Supply Duct Limits

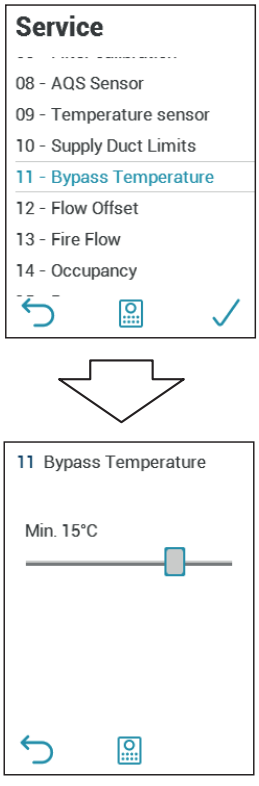



- ● Enable or disable the ventilation level reduction if canal minimum is not reached (enabled by default)
- ●● Set maximum canal temperature range of +25 °C to +45°C.
- ●●● Set minimum canal temperature range of +15 °C to +20°C.

Due to possible condensation on the surface of the ventilation ductwork, it is recommended to leave enabled the reduction of flow if canal minimum is not reached.

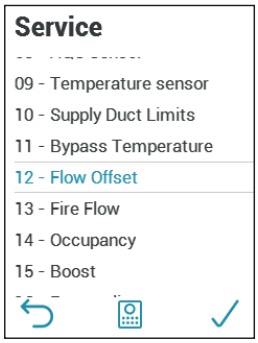
**Selecting the sensor Supply duct (Menu 9) deactivates the maximum temperature limit.**

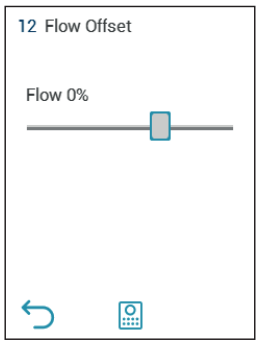
## 11 Bypass Temperature




Setting of minimum outdoor temperature from which the bypass opening is allowed (range 0-20°C)

## 12 Flow Offset

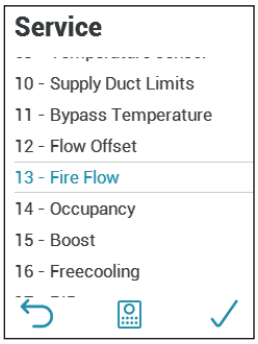


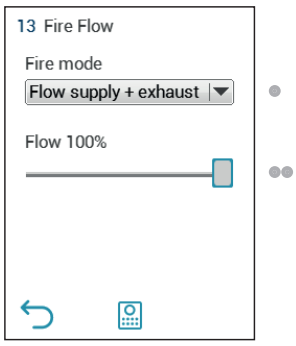




**Setting underpressure or overpressure**

0% - equal pressure, positive value - overpressure, negative value - underpressure

## 13 Fire Flow



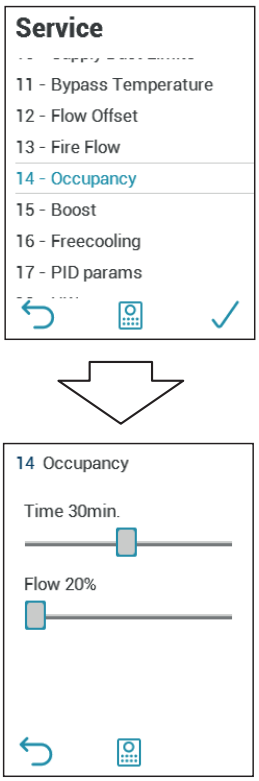

**Settings for how the unit in this mode should maintain:**

- **Without flow** - both motors deactivated
  **Flow intake + exhaust** - both motors activated
  **Intake only flow** - only the motor for the intake branch will be activated
  **Exhaust only flow** - only the motor for the exhaust branch will be activated

- Setting the airflow when the FIRE contact opens (input terminals 15/16)

**FIRE VENTILATION input has highest priority (it deactivates all other modes, including anti-frost protection).**

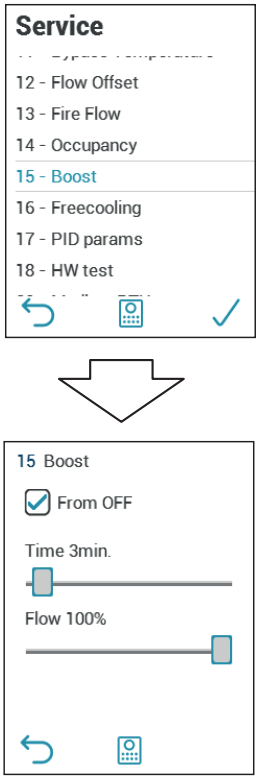
## 14 Occupancy




The NIGHT VENTILATION and PERSONS PRESENT modes cannot be used at the same time. ONLY one of these modes may be selected in the HW SETTINGS menu.

- Setting the time interval after which the mode will be active after PIR sensor activation (input at terminals 15/16). Range 1 - 60 minutes
- Setting the required flow range of 20% to 50%

## 15 Boost



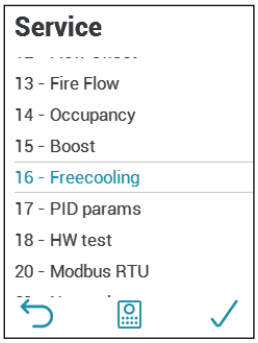

Boost can be activated with the button connected to the input 13/14, or with the Boost button (Fig. Boost) on main screen

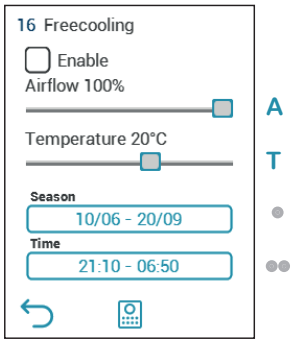
Enabling BOOST mode activation from Standby state of the unit. Activation can be achieved solely using an external button. The unit is automatically engaged at the set time and power after activating the button.
Deactivation is possible from the control display panel or after the time for BOOST mode!

**CAUTION: After this mode is over, the unit does not switch back into Standby mode but will remain active. The unit will work at the value set prior to its transition into Standby mode.**

- Enable / Disable BOOST mode activation from STANDBY mode
- Setting the time interval for which the mode will be active after the BOOST contact is activated
- Setting the required airflow

## 16 Night ventilation



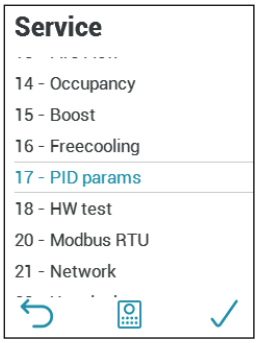

NIGHT VENTILATION is evaluated even if the unit is in Standby mode (at the selected date and time the unit activates and evaluates where night ventilation can be activated - Prefreecooling)

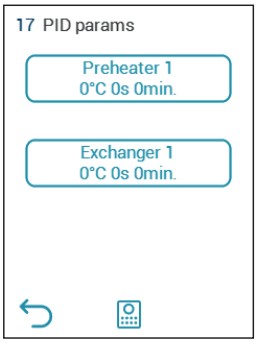
NIGHT VENTILATION mode is suitable for night ventilation in summer. If the mode is enabled and all selected conditions are metthis results in the complete opening of the bypass for directing cooler air into the structure (recuperation does not take place).

**NIGHT VENTILATION does not replace an air conditioning unit. The primary purpose of the unit is to ventilate, not to cool.**

- ☑ Enabling NIGHT VENTILATION mode
- **A** Setting the required flow range of 50% to 100%.
- **T** Setting desired temperature (measurement on Exhaust Channel sensor). Range of +12°C to +25°C.
- ● Date (for evaluating the activation of NIGHT VENTILATION)
- ●● Setting the time (for evaluating the activation of NIGHT VENTILATION)

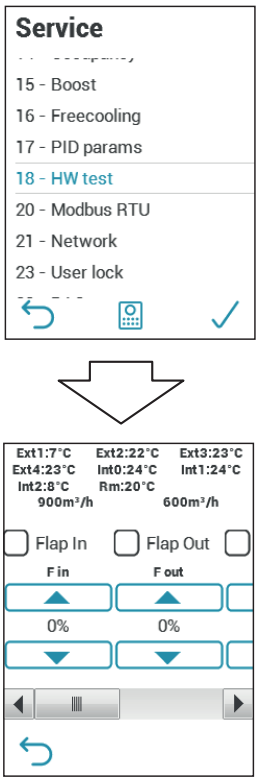
## 17 PID parameters




Setting the regulation characteristics If regulation is variable or inconsistent. This setting may be carried out solely following consultation with the manufacturer.

# 18 HW test

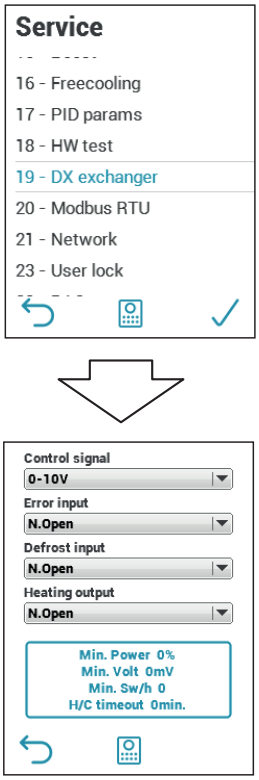


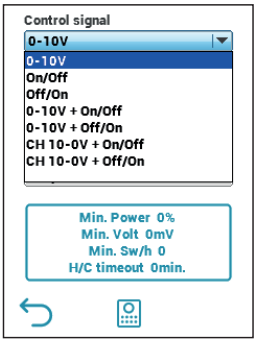

The HW TEST menu is used to test all the connected components and accessories. These parameters are not saved.

**F in** - Intake fan speed configuration
**F out** - Exhaust fan speed configuration
**Pre 1** - Electric preheating power configuration
(intake fan automatically activated)
**H1** - Output signal control for post electrict or water heater
**By** - Bypass setting (0% bypass closed, 100% bypass open)
**Flap In** - Control signal for servo of inlet FLAP (supply duct)
☑ - FLAP open ☐ - Flap closed
**Flap Out** - Control signal for servo of outlet FLAP (extract duct)
☑ - FLAP open ☐ - Flap closed

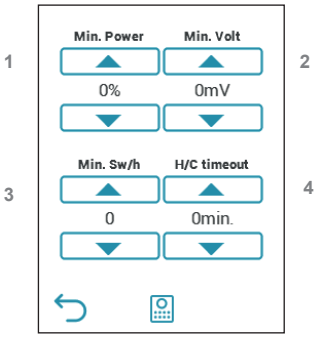
**Ext1** - Intake air temperature sensor (fresh air supply)
**Ext2** - Temperature sensor located in the supply duct behind the recuperator in front of the post-heater
**Ext3** - Air intake temperature sensor (inlet to room)
**Int1** - Exhaust air temperature sensor (exhaust before core)
**Int2** - Anti-freeze sensor of the heat exchanger
(exhaust behind core)
**W1** - Temperature of supply water (only for water coil)
**W2** - Temperature of return water (only for water coil)

# 19 DX exchanger



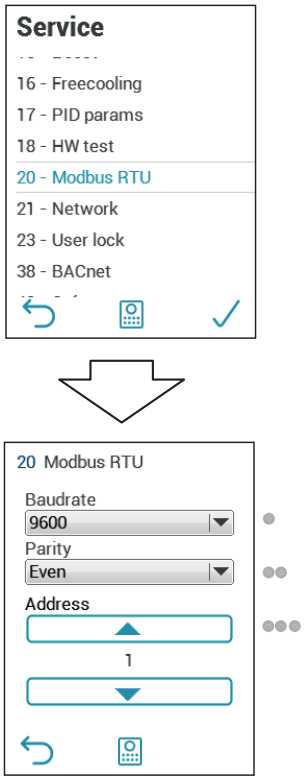




**Control signal options:**
**0-10V** - 0-10V signal control
**On/Off** - On/Off switching
**Off/On** - Off/On switching
**0-10V + On/Off** - On/Off switching + 0-10V signal control
**0-10V + Off/On** - Off/On switching + 0-10V signal control
**CH 10-0V + On/Off** - On/Off switching + 0-10V signal control cooling, heating 10-0V
**CH 10-0V Off/On** - Off/On switching + 0-10V signal control cooling, heating 10-0V




1. Min. power for switching the heat pump
2. Upper output limit 0-10V of HEATER/COOLER output for requirement state of 0% capacity of the condensing unit, default = 1V
3. Max. number of activations of the condensing unit in ON/OFF mode per hour, range 3 - 60, default = 6
4. HEAT/COOL delay in output switching, range 1 - 20 minutes, default 3 = minutes

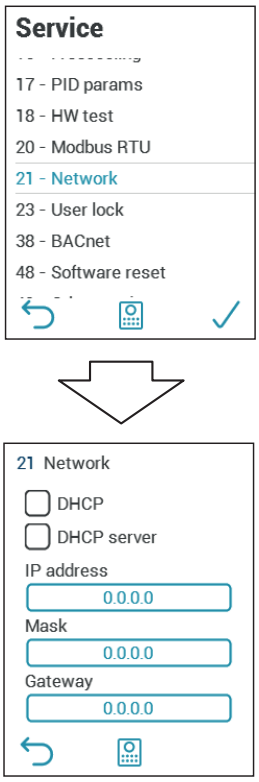
## 20 Modbus RTU




The MODBUS menu is used to set the Modbus communication.

- Setting the speed at wich data is transmitted over Modbus
- Setting Modbus parity
- Setting identifies devices

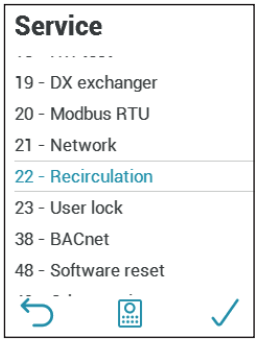
## 21 Network

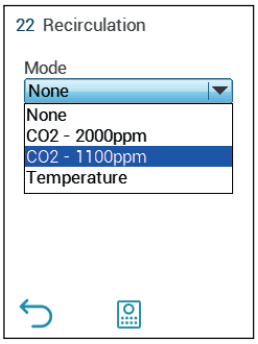



The NETWORK menu serves for setting the network communications of the unit (TCP Modbus).

**The Software reset (menu 48) must be performed to save the changes.**

## 22 Recirculation



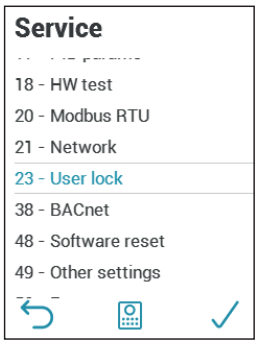

Recirculation in mode

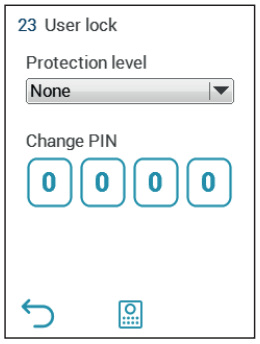
**CO2:** for recirculation in CO2 mode, the CO2 limit value must be set. At concentrations lower than the CO2 limit, the recirculation damper controls a continuous 0-10V signal to maintain the set concentration limit.

**Temperature:** If the temperature exceeds the set limit, the recirculation function is activated

**The Software reset (menu 48) must be performed to save the changes.**

## 23 User lock




- User security level

  Several security levels can be chosen for possible password-free operation:

  **Activate/Deactivate** - Enables activation and deactivation of the unit without password

  **Activate/Deactivate, Temperature, Flow** - Enables activation and deactivation of the unit, setting required temperature, and ventilation power without password

  **Temperature, Flow** - Enables setting the desired temperature and ventilation power without password

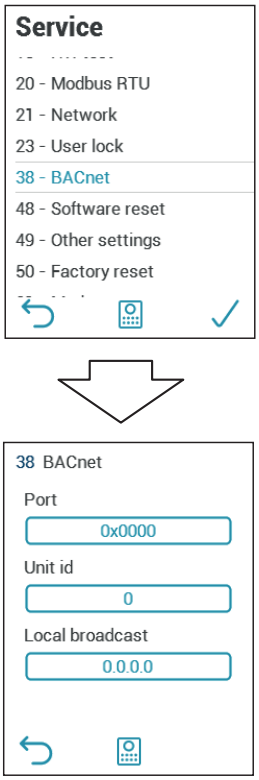
  **Full** - Does not enable any settings without entering password

  **User mode** - Enables the unit to be operated per the following screen

- Numeric password to unlock

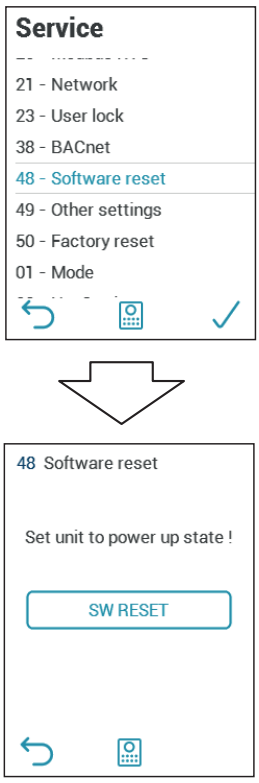
  After entering the password, the unit can be fully operated and set

## 38 BACnet




The BACnet menu is used to set the unit's network communication (ModBus TCP).

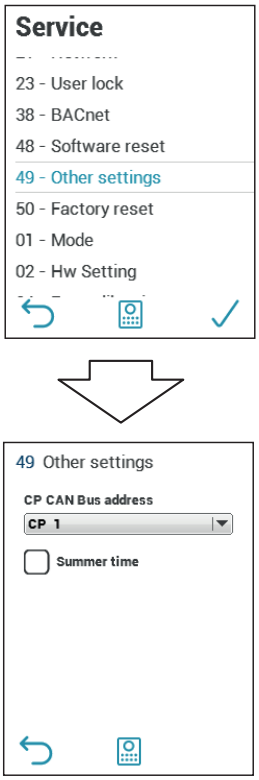
## 48 Software reset




The power supply must be reset after setting the AQS sensor, changing the temperature sensors or network settings.

After completing the settings or changes, it is recommended to reset the device.

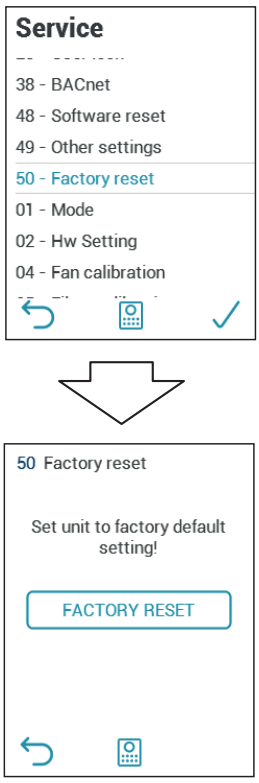
## 49 Other settings




- **Controller address - only if two controllers connected. This setting is saved in each controller separately. CP1 -** Address 1, **CP2 -** Address 2

- Summer time enabled/disabled

## 50 Factory reset

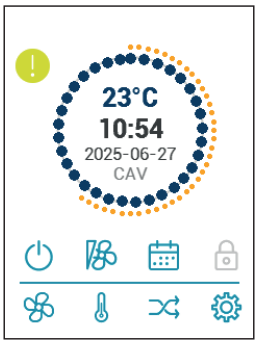


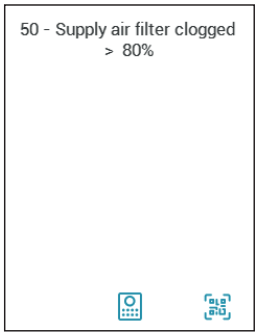

Pressing FACTORY RESET resets the unit to its factory settings

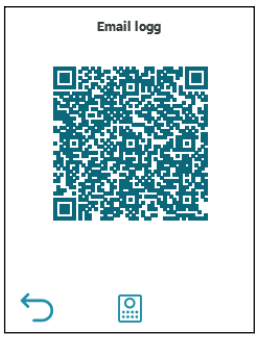
does not change
- the configuration AQS
- ventilation mode
- HW settings
- temperature settings
- Modbus settings

# MAINTENANCE

## Filter change




Filter clogging indicator is located on the control display pane

The clogging of the filters is automatically assessed. The unit will automatically recognize that a new filter has been installed.

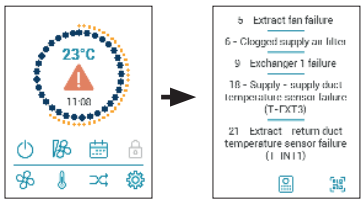
**ATTENTION!**
**In case that filters will not be replaced properly, functionality of the unit may be reduced the preheater can overheat and ventilator can be damaged.**

Scan the QR code to send your question to the support team.

Scan the QR code to send your question to the support team.

# ? TROUBLESHOOTING

The unit error is indicated with a red exclamation mark in the middle of the control display
Pressing the exclamation mark shows the information on the error, see table below.




| Reports on the display | Unit's behavior | Likely problem | SOLUTION |
|---|---|---|---|
| 1 – Exchanger 1 overheated | Unit is working | Preheated electric exchanger or damaged sensor | Check that the air is flowing freely through the unit, that the electric exchanger cools down sufficiently, or that the safety thermostat of the el. reheating isn't damaged. |
| 3 – Overheated preheating | Unit is working | Preheated electric preheater or damaged sensor | Check that the air is flowing freely through the unit, that the electric exchanger cools down sufficiently, or that the safety thermostat of the el. reheating isn't damaged. |
| 4 – Supply fan error | Unit is not working | Overheated fan or defect on thermal contact of inlet fan | Determine the cause of the overheating: defective bearing, short-circuit... |
| 5 – Exhaust fan error | Unit is not working | Overheated fan or defect on thermal contact of inlet fan | Determine the cause of the overheating: defective bearing, short-circuit... |
| 6 – Inlet filter clogged | Unit is working | Check clogged filter | If the filter has been replaced or if it does not need to be replaced, reset the filter clogging |
| 7 – Exhaust filter clogged | Unit is working | Check clogged filter | If the filter has been replaced or if it does not need to be replaced, reset the filter clogging |
| 12 – CO2 sensor failure | Unit is working | Defective air quality sensor | Control the air quality sensor and its connection to the unit |
| 16 – Inlet – External temperature sensor failure (T-EXT1) | Unit is working | Temperature sensor failure | Check that the sensor is correctly connected to the electronics or test it measuring its resistance |
| 17 – Inlet – Failure of the temperature sensor behind the exchanger (T-EXT2) | Unit is working | Temperature sensor failure | Check that the sensor is correctly connected to the electronics or test it measuring its resistance |
| 18 – Inlet – Temperature sensor failure in the supply canal (T-EXT3) | Unit is working | Temperature sensor failure | Check that the sensor is correctly connected to the electronics or test it measuring its resistance |
| 21 – Exhaust – Temperature sensor failure in the exhaust canal (T-INT1) | Unit is working | Temperature sensor failure | Check that the sensor is correctly connected to the electronics or test it measuring its resistance |
| 22 – Exhaust – Failure of the temperature sensor of the exchanger's anti-freeze protection (T-INT2) | Unit is working | Temperature sensor failure | Check that the sensor is correctly connected to the electronics or test it measuring its resistance |
| 23 - Temperature sensor failure of the exchanger's water supply (T_WATER_IN) | Unit is not working | Temperature sensor failure | Check that the sensor is correctly connected to the electronics or test it measuring its resistance |
| 24 - Failure in the return water sensor of exchanger (T_WATER_OUT) | Unit is not working | Temperature sensor failure | Check that the sensor is correctly connected to the electronics or test it measuring its resistance |
| 25 – Room temperature sensor failure (T_Room) | Unit is working | Temperature sensor failure | Check that the sensor is correctly connected to the electronics or test it measuring its resistance |
| 70 - Anti-freeze protection of the water heat exchanger | Unit is ventilating | The anti-freeze protection of the water heat exchanger is active | The automatic protection of the water exchanger has been activated in order to prevent damages due to low air temperature. This is an autonomous function and will be terminated once the risk of frost disappears. |
| 73 - WCO detects temperature of the water supply (cold / hot) | Unit is ventilating | The unit controls the temperature of the liquid in the exchanger | The automatic process that assess the water temperature in the exchanger to activate the next steps is in progress |
| 74 – Flow reduction, minimum temperature in the canal not reached | Limited operation of the unit | The minimum temperature in the canal was not reached | The temperature of the inlet and exhaust air is too low. Risk of undercooling of the building or condensation in the ventilation ductwork Possible failure of temperature sensor T-EXT3 |
| Condensation fault | Unit is working | High level of condensate in the unit | Check if the sink is connected to the outlet of the condensate tank, the condition of the connection, and whether the sink is full of water.<br>Check the flow of the pipes and whether the position of the unit allows runoff. |
| The unit ventilates insufficiently or is noisy | Unit is working | Clogged filter or ductwork. | Check the filters and whether the ductwork is not clogged |

# CONCLUSION

Once the it has been installed, read carefully the safe operation manual of the unit. That manual includes examples of possible problems and recommended solutions. In case of any requests or inquiries, contact our sales or technical department.

Systemair Production AB

Industrivägen 3

SE-739 30 Skinnskatteberg

+46 222 440 00

mailbox@systemair.com
www.systemair.com



Document in original language 30.06.2025