

Teknikermanual

INSTALLATION

OPERATION & CONTROL

Extract air filter, article No: Q4871
Supply air filter, article No: Q4872



	Page		
Installation & Adjustment			
Safety and Security	3	Fault safe mode	
Receipt of Delivery	3	Activate ECO2 Cooling	
Installation	3	Temp Diff.	
Mounting	3	Temperature Conditions for Forcing	
Condensate Drain	3	Screen view at boosting and ECO	
The Duct System	3	Fan Curve At ECO/ECO2	
Outdoor Air and Exhaust Air	3	7.7 Heater Battery	23
Installation of Duct System	3	Electric Heating	
Silencing	3	No heating	
Placing of Temperature Sensors	4	Water Heating	
Insulation	4	Anti-Freeze Function	
Air diffusers	4	7.8 DEFROSTING	24
Transmitted air between rooms	4	Defrosting	
Open Fireplace	4	Stopping the unit	
Kitchen flue	4	7.9 Freeze protection of Heat Exchanger	25
Power connection	4	General Information	
Connection of external options	5	Method	
Circuit Diagram	6	Limit	
Description of terminal blocks	7	Setpoint	
Connection electric heating	8	Present Values	
Connection of fire function	9	7.10 Bypass	26
Connection of stairwell unit	10	7.11 Cooling recovery	26
Connection options	11	7.12 Night Cooling	27
Fireplace Button		7.13 Forced Cooling	28
ULS, KAVK, CP Heat Etc.		7.14 Timer	28
Modbus, Remote Panels, Internet		7.15 KAVK (Condensation Boiler)	28
		7.16 Fire function	29
		Fire input	
		Fire damper function	
		Exercising fire damper	
		Fire indication	
		7.17 I/O Configuration	30
		Analog Inputs	
		Digital Inputs	
		Timer	
		Priority Order	
		Fan Type Configuration	
		Stove mode	
		Digital Outputs	
		Inverting Digital Outputs	
		Analog Outputs	
		7.18 Modbus	33
		7.19 TCP/IP	33
		7.20 EXOline address	33
		7.21 Remote Panel	34
		Enable Remote Panel	
		Setpoint adjustment	
		7.22 Setpoint Adjustment TG-R4	34
		7.23 Activate Exhaust fan	34
		7.24 Filter Timer	34
		7.25 Cloudigo	34
		7.26 Save Settings	35
		7.27 User Menu	35
		7.28 Zones	35
		7.29 Change Alarm Class	36
		Default Setting Parameters	37
Operation & Control			
7. Configuration	14		
7.1 Control Function	16		
Control Functions			
Cascade Control System			
Setpoint Adjustment			
Several Room Sensors			
7.2 Demand Control	17		
7.3 Fan Configuration	18		
Fan Control			
Setting Fan Speeds			
Fan Speed Night Cooling			
Fan Delay			
7.4 Temperature control	19		
Function of The Controllers			
Setting the Controllers			
What Are P And I			
7.5 PID output	20		
Heating, Bypass, Cooling			
Pre-heater			
Duct Heater			
VAV			
7.6 ECO/ECO2	21		
ECO-mode			
ECO2-mode			
ECO Adjustment			



Safety and Security

Please read this manual carefully. Pay special attention to the safety text marked with the exclamation mark above.

If you use and operate your ventilation unit correctly, you will have long and good use of it. You get a superior indoor climate, while saving energy through a high recovery rate. Remember to save the operating instructions that must be passed on if the unit is transferred to another person.

Receipt of Delivery

Check that the number of packages matches the consignment note and that there is no transport damage. The ventilation unit must be stored indoors.



If possible, the unit should be kept lying down to minimize the risk of personal injury in case of overturning. Pay special attention to this if children are nearby.

Installation

Work performed by the layman can impair the performance of the ventilation unit and result in injury to person or property. Incorrectly adjusted units will not achieve the desired benefits such as adequate air quality and maximized energy savings.

The unit is heavy. Edges and corners that you do not usually come in contact with can be sharp. Use gloves when moving the unit.



Keep an eye on children. An unassembled unit can easily tip over under abnormal loads.

Mounting

The ventilation unit is mounted upright in the utility room, laundry room or the like. The unit is designed to stand in frost-free space, which is extra important when using condensate drains.

Ensure that there is a stable and level surface on the installation site. If the unit is placed on wooden floors or other moisture-sensitive materials, the unit must be placed on a water-resistant substrate to prevent marks and moisture damage if possible. leakage or condensation.

It is an advantage if the unit can be placed at least 10 mm away from the wall. This is to minimize the risk of muffler noise. We recommend that the walls of surrounding rooms also be soundproofed. These precautions should be maintained despite the fact that Temovex units are generally very quiet. The unit is equipped with adjustable rubber feet and well balanced fans, to avoid vibration.

The unit should be installed in such a way that it is easy to access for maintenance and inspection. Make sure the doors at the front can be fully opened. The unit must be placed so that it cannot

be flushed with water during operation. As an option, the unit can be provided with protection that allows the installation to withstand IP class X5.

Condensate Drain

The unit is equipped with a condensation drain at the bottom of the unit. This should be connected to a drain or routed to a floor well. Make sure that the condensation line is placed far enough down in the floor well, otherwise it can draw cold air from it. The condensation line does not need to be fitted with a water trap. The condensate drain has to be connected when the unit is installed. If the unit is equipped with condensation boiler (KAVK) no external connection is needed.



The Duct System

Ducts and duct details should be made of an age-resistant material that is also easy to clean inside. For shorter adaptations between, for example a roof hood and the duct system, a flexible duct called "Drasuten" can advantageously be used.

Tumble dryers and drying cabinets must not be connected directly to the duct system. Pull breaks shall be used.

Outdoor Air And Exhaust Air

The outdoor air intake, YGAV, is conveniently located on the units north or east side, a bit up from the ground to avoid ground-level contamination (see the R1's instructions for more detailed recommendations). The outdoor air intake should be located at a distance from flue ducts, exhaust from central vacuum cleaners etc.

Exhaust air should be vented over roofs via roof hood, VHS. In some cases, combidone, KD, or combi hood, VHS combi, can be used.

Installation Of Duct System

Ducts and duct details are fitted in accordance with the instructions given by the duct supplier, normally using 3 pop rivets or special assembly screws at each joint. If duct details with rubber seals are used, no additional joint sealing is required.

Silencing

Silencers dimensioned for the installation should be fitted both for the supply air and exhaust air, either directly onto the Temovex unit, or to the duct system as close to the unit as possible. Under certain conditions, silencers on the outdoor air duct as well as extract air duct may be necessary.

Placing of Temperature Sensor

The four duct sensors are color-marked at both ends as follow:

Outdoor air = blue

Supply = red

Extract = green

Exhaust = yellow

At delivery, all temperature sensors are electrically connected to the control system. The extract and exhaust air sensors are also pre-mounted in the AHU's respective air ducts.

The outdoor air and supply air sensors must be mounted during installation in respective duct.

The supply air sensor should be placed in the supply air duct, at least 0,6 m from the heater to avoid direct heat radiation, and after the first bend if possible, where the temperature is more homogeneous.

The outdoor air sensor should be placed as far from the unit as possible (as far as the cable allow).

Remember to seal the holes carefully.

If the unit is equipped with a water battery, the anti-freeze sensor is also pre-mounted and connected.

If a room sensor is used, it should be placed approx. 1,8 m above the floor in the living room, preferably on an interior wall.

Insulation

Outdoor air and extract air ducts in heated spaces must be insulated against condensation along their entire length, using an insulation sleeve minimum PE30. The diffusion barriers are sealed with ventilation tape.

Supply and exhaust air ducts in warm rooms do not need to be insulated against condensation, however, heat insulation may be appropriate. Decided on a case by case basis.

If the supply and exhaust air ducts are placed in cold or unheated spaces, they shall be heat insulated. If insulation mat is used, a total thickness of at least 120 mm should be achieved. The insulation should be shared in two layers with overlapping joints.

If placement in loose wool, the cover layer over the ducts should be at least 150 mm.

Air Diffusers

Supply air diffusers are usually mounted, in the wall or ceiling, in rooms where people spend much time, such as bedrooms and living room.

The exhaust air devices are usually placed, in the wall or ceiling, in so-called. "Moisture and odor spaces". For example WC, bath, laundry etc.

The devices should be placed where they can easily be demounted for cleaning, service or inspection of the duct system.

Transmitted Air Between Rooms

To facilitate air circulation within the home, the air must be given the opportunity to move from room with supply air to room with extract air.

Use doors with upper air gap or threshold-free doors (min. 70 cm² free area/exhaust air diffuser).

Alternatively, wall mounted air transfer grilles can be used.

Open Fireplace

Most modern fireplaces and the like have a separate outdoor air connection which provides the combustion chamber with combustion air. If this is not available/possible, a separate outdoor air diffuser needs to be fitted. The stove consumes between 150-300 m³/h.

To make it easier to start the stove (ignition, the fireplace door is open), the Temovex unit can be equipped with the option "stove function".

Kitchen flue

The cooker fan shall be mounted with a separate fire insulated spiro duct. The exhaust air is led through a roof hood, VHS. Connection between the cooker hood/kitchen fan and the kitchen flue is made with approved KF hose and 2 quick-release clamps, SBF.

Power connection

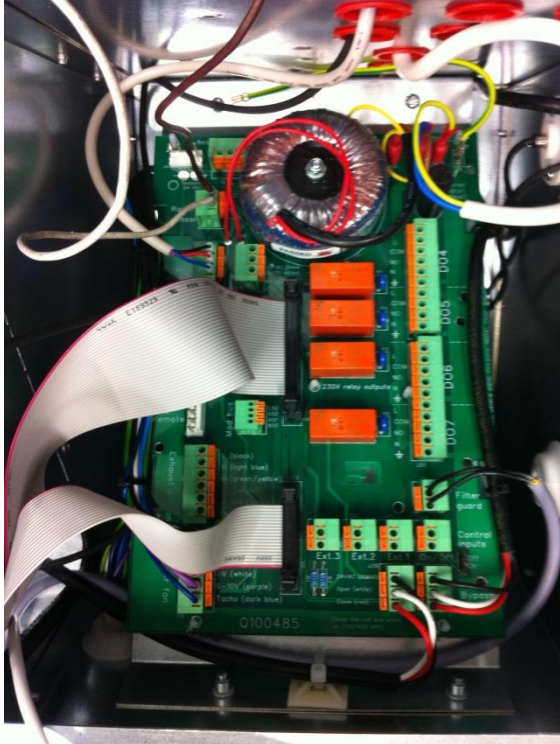
Connect the AHU with the provided plug to an earthed socket

(se technical data page 12-13).

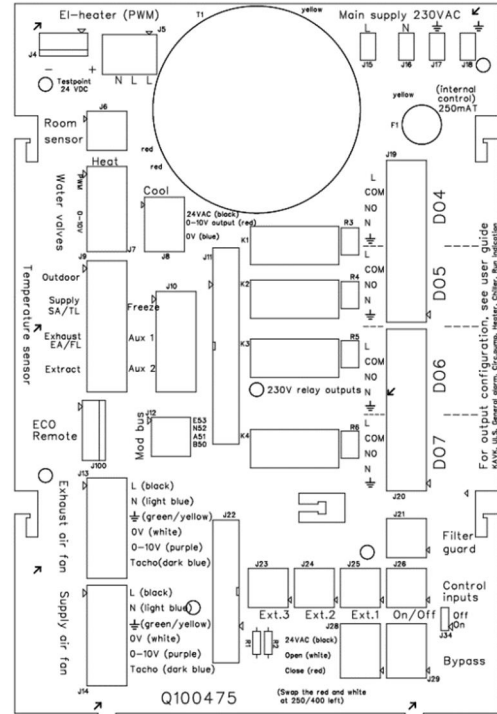
Connection at the top of the unit.

Connection of external options.

All connections are made on the circuit board located behind the control panel. Unscrew the cover on which the control panel is located to access the circuit board. All connection terminals are numbered, and a description of resp. terminal is found on page 8. In most cases, the electrical signal and cable color are also indicated on the circuit board.

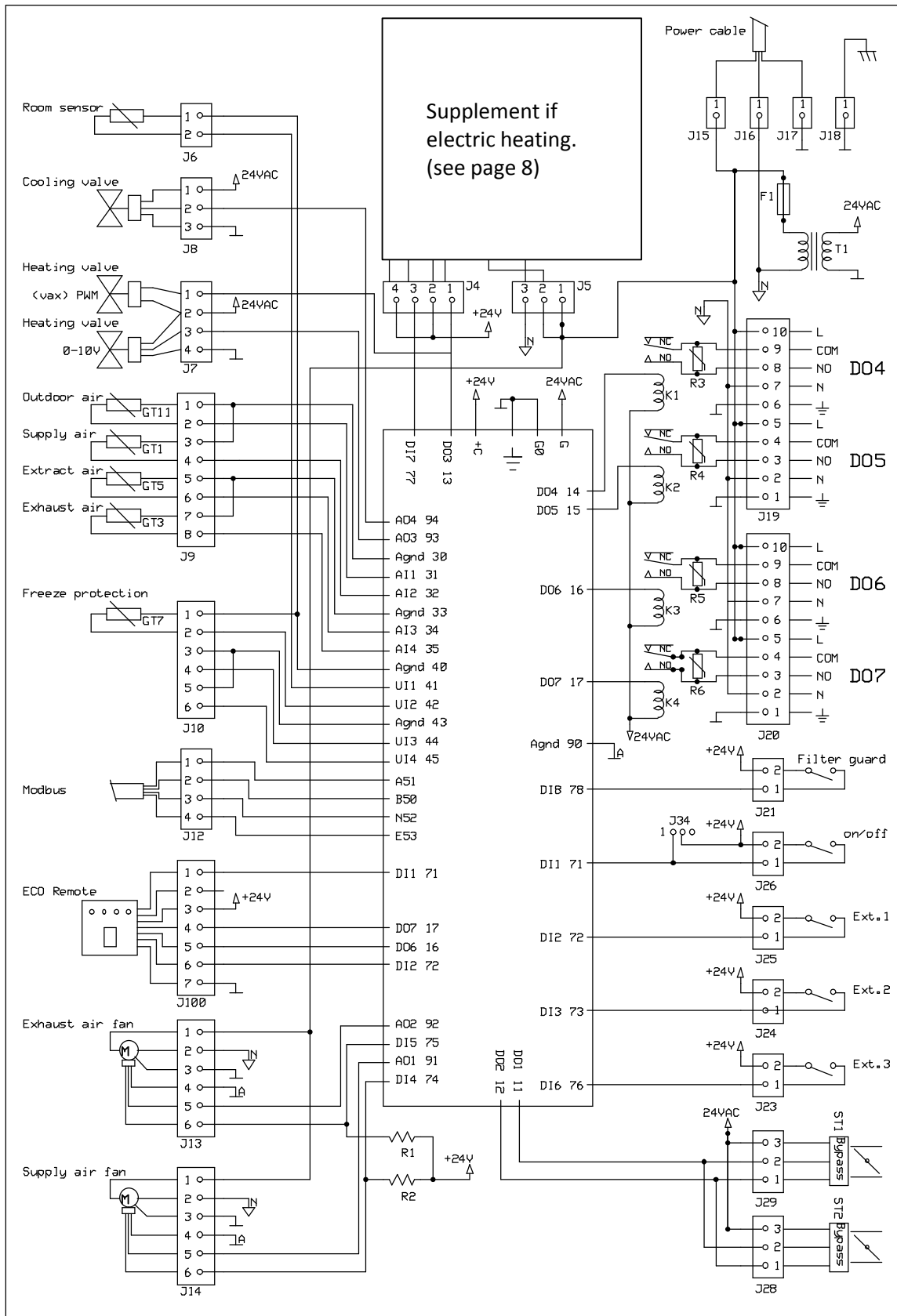


Circuit board for connection of external functions.



Bottom card text print.

Circuit Diagram



Description of terminal blocks

General

Joining of circuits is made on the bottom circuit board. To access the circuit board, remove the DUC (see previous page).

Texts on the circuit board show where to connect what. All terminals have a Jxx No. and a small triangle on pin 1.

When in the following text for example J26/1,2 is stated, it means that the function should be connected to terminal J26, pin 1 and 2.

Where appropriate, the signal is marked on the board.

Room sensor (Terminal J6/1,2)

If room sensor is to be used, keep in mind that room control must be selected in the configuration of the system.

This is done by a qualified installer.

External cooling (Terminal J8/1,2,3)

The system also has ability to handle an external water-cooling battery, e.g. natural cooling from boreholes.

The cooling battery is controlled via an external valve (0 - 10 V).

Reheater water (Terminal J7)

Two alternatives is possible, so called wax-actuator (controlled by PWM-signal) or motor-actuator (0-10V signal).

PWM-signal (J7/2,3). Pin 2 brown cable, Pin 3 blue cable.

0-10V-signal (J7/3,4,5)

(The cable may already be connected upon delivery)

Temperature sensors (Terminal J9)

Temperature sensors (PT1000) for **outdoor air**, **supply air**, **extract air** and **exhaust air** are already connected at delivery.

Freeze protection (Terminal J10/1,2)

In order to prevent freezing of the water battery in the case of water heating, a freeze protection sensor (temperature sensor) is placed on the return line from the water battery.

Modbus (Terminal J12)

Terminal for possible modbus communication.

ECO Remote (Terminal J100)

Terminal for connecting a remote control (optional) with among other things alarm indication and a switch for ECO mode.

NOTE! When using ECO Remote, DO6 must be configured for Normal flow, DO7 for Sum alarms and DI2 to ECO.

Fans (Terminal J13 and J14)

Connection terminals for the fans. These are already connected at delivery.

By-pass motor 1 (Terminal J28)

Connection terminal for the by-pass motor 1. The cable is already connected at delivery.

By-pass motor 2 (Terminal J29)

Connection terminal for the by-pass motor 2. The cable is already connected at delivery.

Ext.1, Ext.2 and Ext.3 (Terminals J23 to J25/1,2)

There is, as an option, the possibility to connect three external switches which at closing change the fan speeds according to the choices made during configuration. Appropriate flows are preset but can be changed by a qualified installer via the control panel.

For available choices see section "Operation & Control".

Start/stop (Terminal J26/1,2)

An external switch for "Start/stop" can be connected. The switch does not make the unit powerless. It just makes the AHU stop running. If this function is used, the jumper J34 should be moved to mode OFF.

Filter guard (Terminal J21)

A pressure switch that measures the pressure drop across the filter is connected here. When the pressure drop becomes too great, it is time to change the filter.

Relay outputs (Terminals J19, J20)

The system has 4 identical relay outputs which can be configured to various functions. The configuration in the circuit diagram above is just one example, others is possible. To see which options are available, please turn to chapter "Operation & control".

A condensation boiler (KAVK), if any, is already connected at delivery.

Mains voltage (Terminals J15, J16, J17)

230VAC, 50Hz

Chassis (Terminal J18)

Ground connection of chassis.

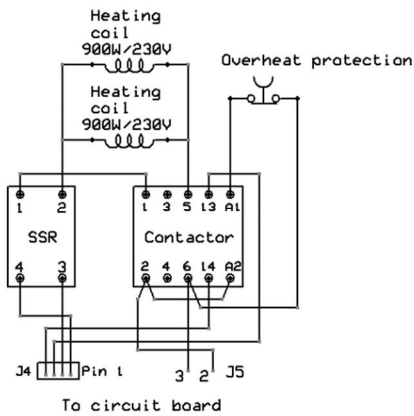
Electric heater, power supply (Terminal J5/2,3)

Pin 2 phase, pin 3 neutral (blue).

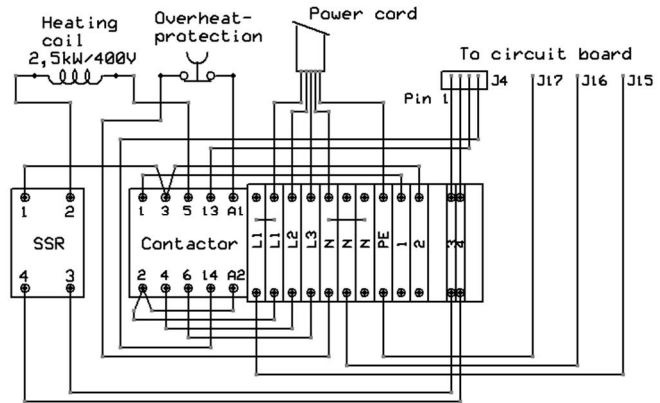
Electric heater, control signals (Terminal J4)

Connection electric heating

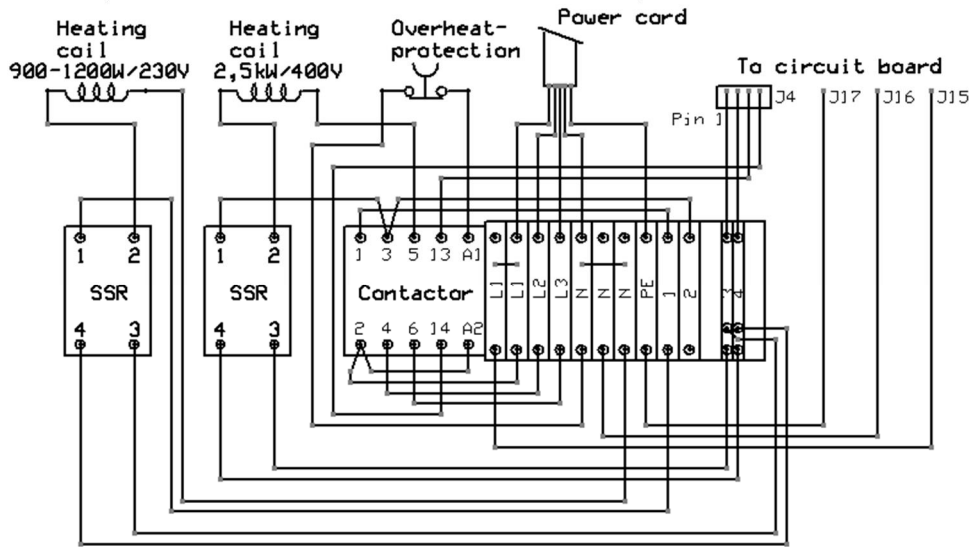
Circuit diagram supplement electric heating.



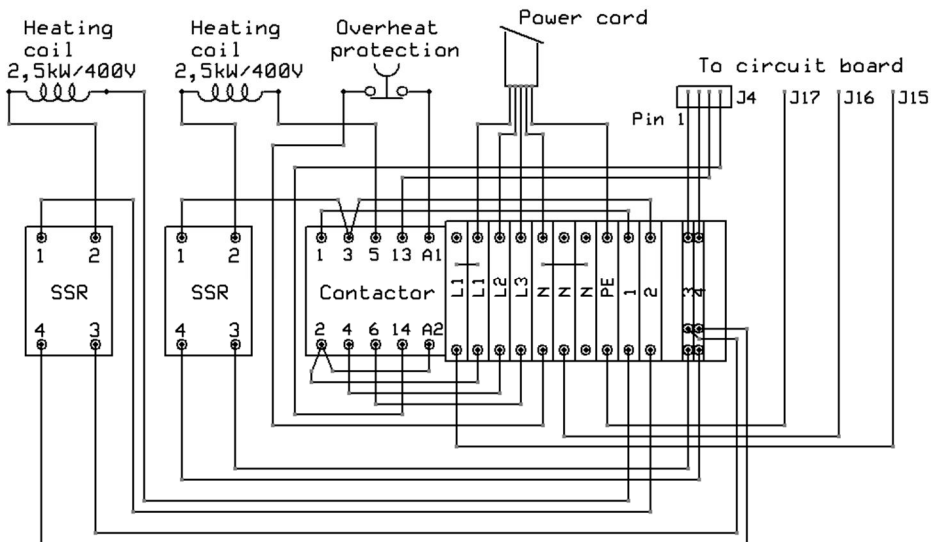
RT700 1-phase 900-1800W



RT700/1000 3-phase 2,5kW

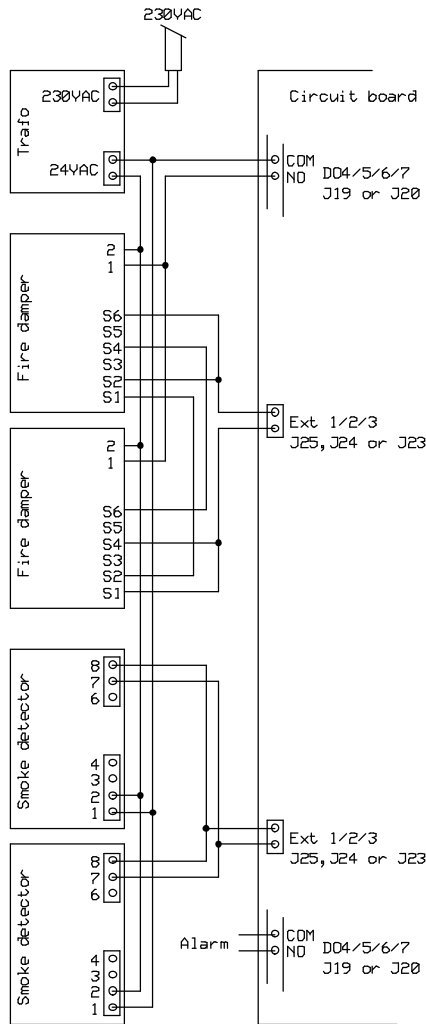


RT700/1000 3-phase 3,4 - 3,7kW

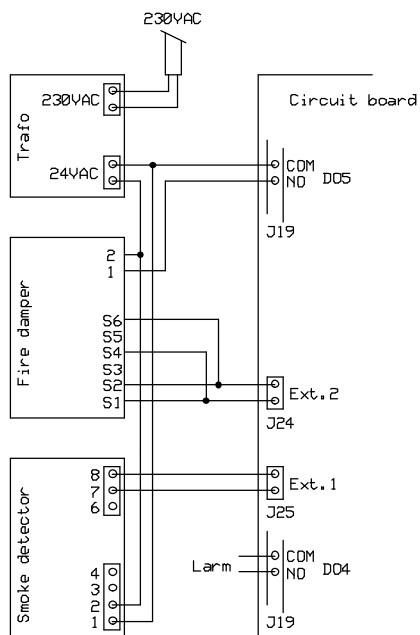


RT700/1000-unit 3-phase 5kW

Connection of fire damper and smoke detector



General connection with several units



Example with 1 unit of each

Power supply

The damper motor and the smoke detector are powered with 24VAC by an external transformer.

Damper motor

The damper motor is controlled via any of the relay outputs (DO4, 5, 6 or 7) on the circuit card. Which output you choose does not matter as long as the equivalent configuration of the control panel is made. See pages 40-41.

The damper motor has built-in limit switches and should be connected to any of the circuit card's digital inputs (Ext. 1, 2 or 3). See this page's diagram. Which output you choose does not matter as long as the equivalent configuration of the control panel is made. See pages 40-41.

The top diagram shows how more than one fire damper is connected. Maximum is 5 dampers.

Smoke detector

The smoke detector's output is connected to any of the circuit board's digital inputs (Ext. 1, 2 or 3). See this page's diagram. Which output you choose does not matter as long as the equivalent configuration of the control panel is made. See pages 40-41.

The top diagram shows how more than one smoke detector is connected. Maximum is 5 detectors.

Example

The bottom diagram shows the connection of one fire damper and one smoke detector.

In this example, we have chosen DO5 for the control of the fire damper and external input 2 for the damper's limit switches.

External input 1 has been used for the smoke detector.

DO4 has been chosen for the alarm output.

How to configure, see pages 40-41.

Function

Fire alarm

If the smoke detector is activated by smoke or fire, there is a signal at the alarm output, at the same time as the fire dampers change position.

Fire damper

Fire dampers are normally configured to open in case of fire, but may be configured to close instead.

Exercising the fire damper

Exercise of the fire dampers can be configured. The interval between exercises is adjustable. To enable this function, the fire dampers are fitted with limit switches. When an exercise is carried out, the system checks that the dampers reach their limits and that the limit switches are working. If not, a signal at the alarm output is activated.

The controller may be configured to stop the fans in connection with the exercise.

Connection of stairwell unit

What is meant by stairwell units?

REC's stairwell unit is an FTX unit located in the stairwell that serves up to 8 apartments. In multi-dwelling buildings (both new construction and ROT) with 2-4 floors, we can get FTX in a simple and cost-effective way without major intervention in the property. Examples of placement can be cleaning scrubber or storage (see type example below).

Example of standard installation:

The ventilation unit is a REC Temovex 700/1000S-EC-RS (counterflow exchanger) complete with control, constant supply air control and fire function. The unit has the optional EVBV (water reheater).

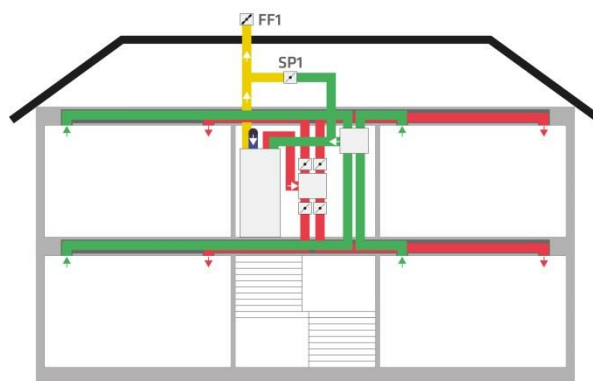
Outdoor air via grille in outer wall. The extract air normally passes through the unit / heat exchanger. The duct system from the apartments, both supply and extract air, is connected to the unit via collection ducts. When fire smoke is indicated in the extract air stems, a damper opens, and the air goes via a by-pass duct outside the unit. The fire gas fan on the roof, alternatively in the evacuation duct, evacuates fire smoke and prevents the spread between fire cells. On the supply air duct, backflow protection is installed to prevent fire gases from being pushed back into the apartments.

Read more about principle execution A and B below.

Principle implementation A

RT700/1000S-EC-RS-BFLF-BRAND

The unit's extract air fan has been removed and replaced by a fire gas fan (FF1) on the roof. When the fire indicator is triggered, the unit's fans stop, the bypass damper SP1 opens and the flue gas ceiling fan FF1 (300 ° C for 1 hour) forces out the smoke. Exercise of SP1 and control (0-10V) of the fire gas fan takes place from the unit.



Addition to version A - purchased separately

~ Fire gas fan (ceiling)

0-10V controlled, 300 ° C for 1 hour. Ex. RDM from Gebhardt,

SEF from Exhausto or equivalent.

~ Back flow protection

Ex. BASIC from Hagab, EKO-BSV from Ekovent or equivalent.

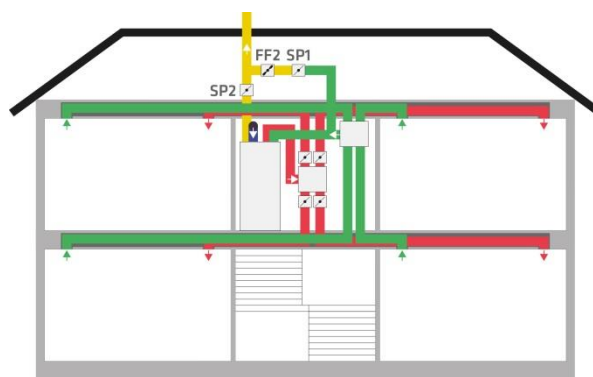
~ Bypass damper

24 V supplied 2-position with return.

Principle implementation B

RT700/1000S-EC-RS-BRAND

During normal operation, the unit ventilates with built-in EC fans (supply and extract air). SP1 is normally closed and SP2 is normally open. When the fire indicator is triggered, the unit's fans stop. SP2 closes, SP1 opens and fire gas fan in duct FF2 (300 ° C for 1 hour) forces out the smoke. Exercise of SP1, SP2 and start signal of the fire gas fan takes place from the unit.



Addition to version B - purchased separately

~ Axial fan fire gas

300 ° C for 1 hour. Unit leaves start signal 24 V at fire. Ex. LCS from Gebhardt.

~ Back flow protection

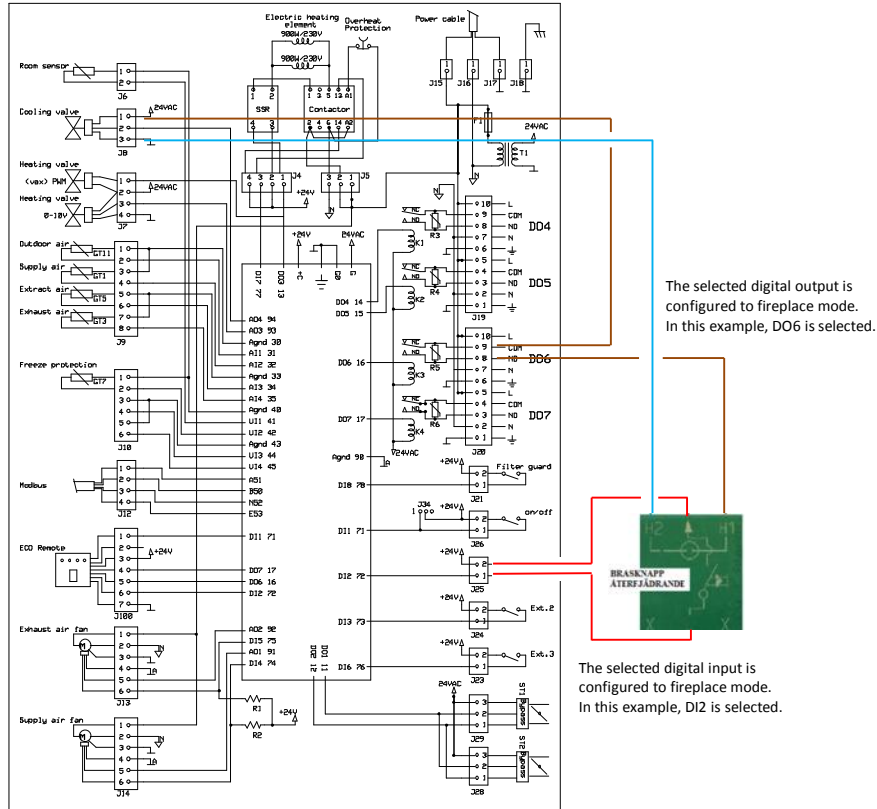
Ex. BASIC from Hagab, EKO-BSV from Ekovent or equivalent.

~ Bypass damper

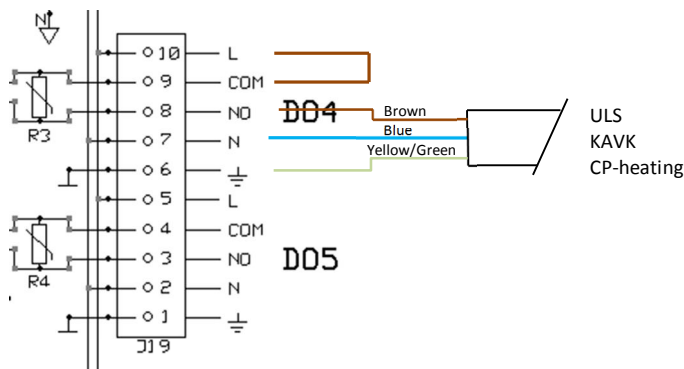
24 V supplied 2-position with return.

Connection Options

Connection of Fireplace Button (24V)



Connection of ULS, KAVK, CP-heating etc. (230V)

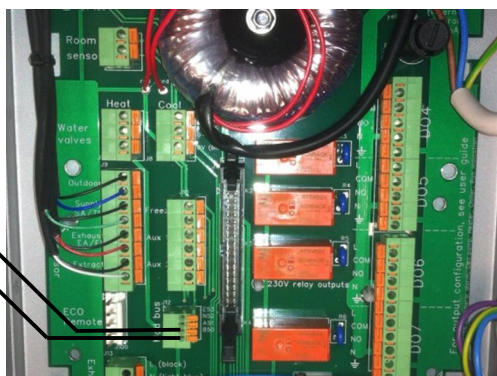


Connection according to above, on any output DO4-DO7 and selected output configure to selected function.

Connection Modbus

Connect Modbus on Terminal J12 pin 3 and 4.

Modbus
A
B

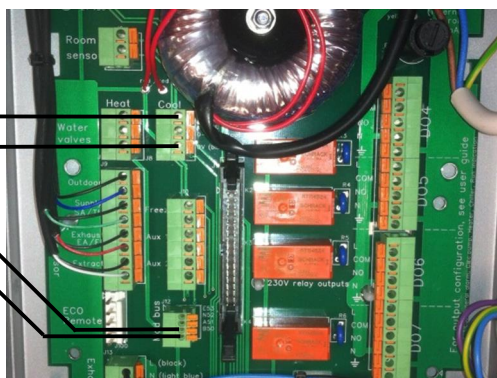
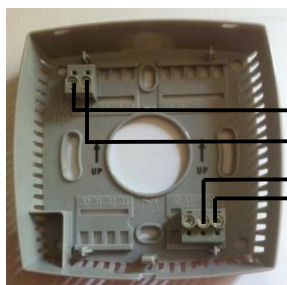


Connection Remote Panel Ę With Display

You cannot have both Modbus and remote panel. To connect a remote panel with a display, Modbus communication must be deactivated. Contact REC.

Remote panel with display can be connected according to below.

Remote Panel	PCB
10	J8/1
11	J8/3
42	J12/3
43	J12/4

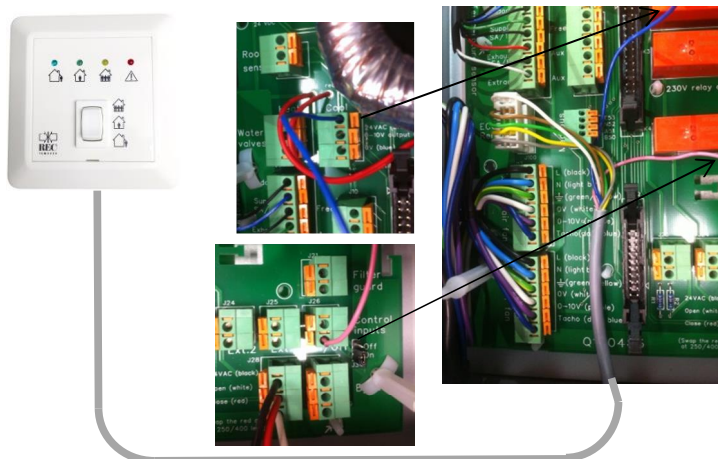


Connection Remote panel Ę 3-position

Connect the socket to terminal J100 (ECO Remote).
Connect blue cable to terminal J8/1 (24VAC).
Connect pink cable to terminal J26/1.

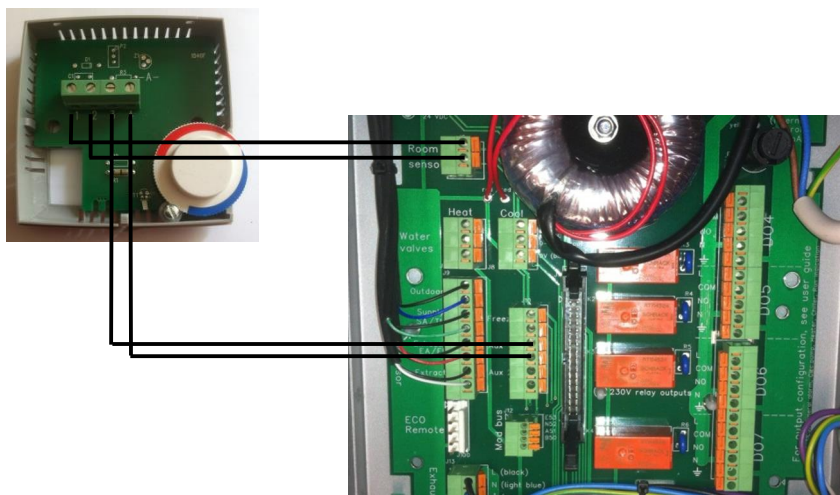
Please note! The OBS! Konfigureringen av in och utgångar skall, för att displayen skall fungera, vara enl. följande:

DO6 - Normal DO7 - Alarm
DI1 - ECO DI2 - Forc



Connection Remote panel Ę Easy (TG-R4)

Remote - panel	PCB
1	J6/1
2	J6/2
3	J10/3
4	J10/4



Connection Internet (Cloudigo)

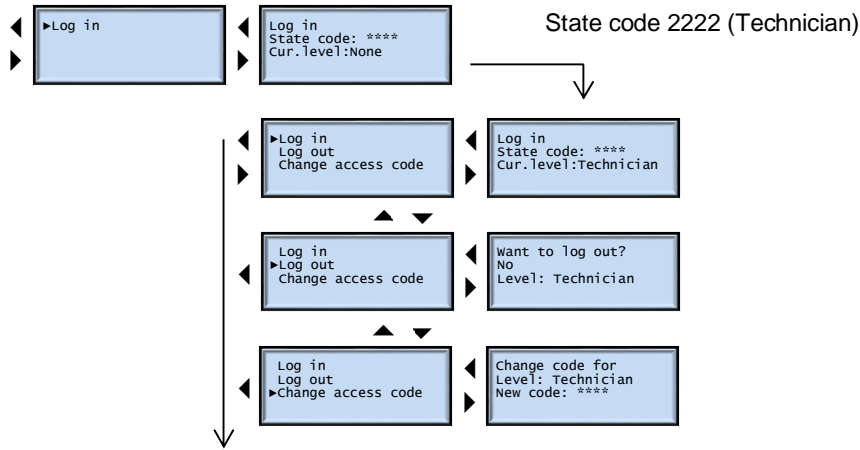


Connect an internet cable to DUC as on picture.
 Pull out the cable through a suitable lead-through on the top of the unit.
 Look further under "Operation & Control" section 7.21.

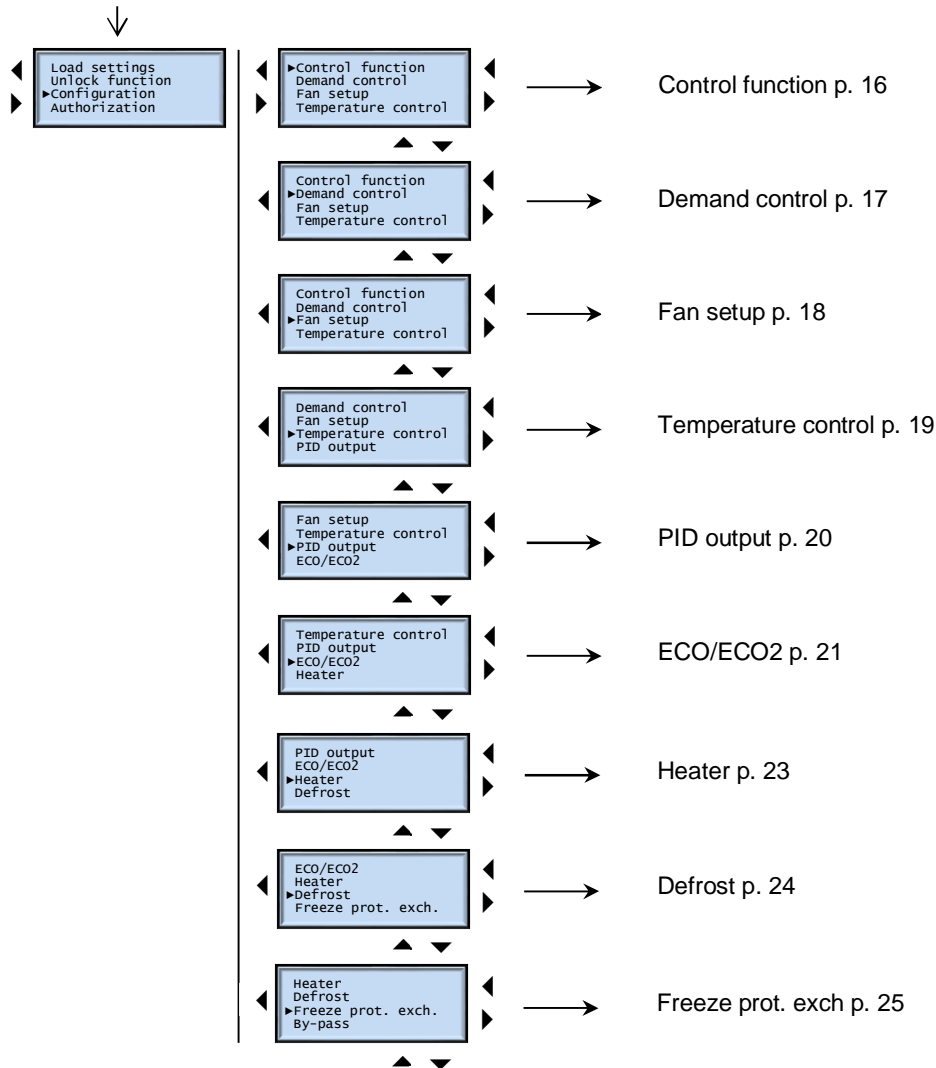
For introductory information see User manual!

7. Configuration

Begin at Authorization and log on as Technician.

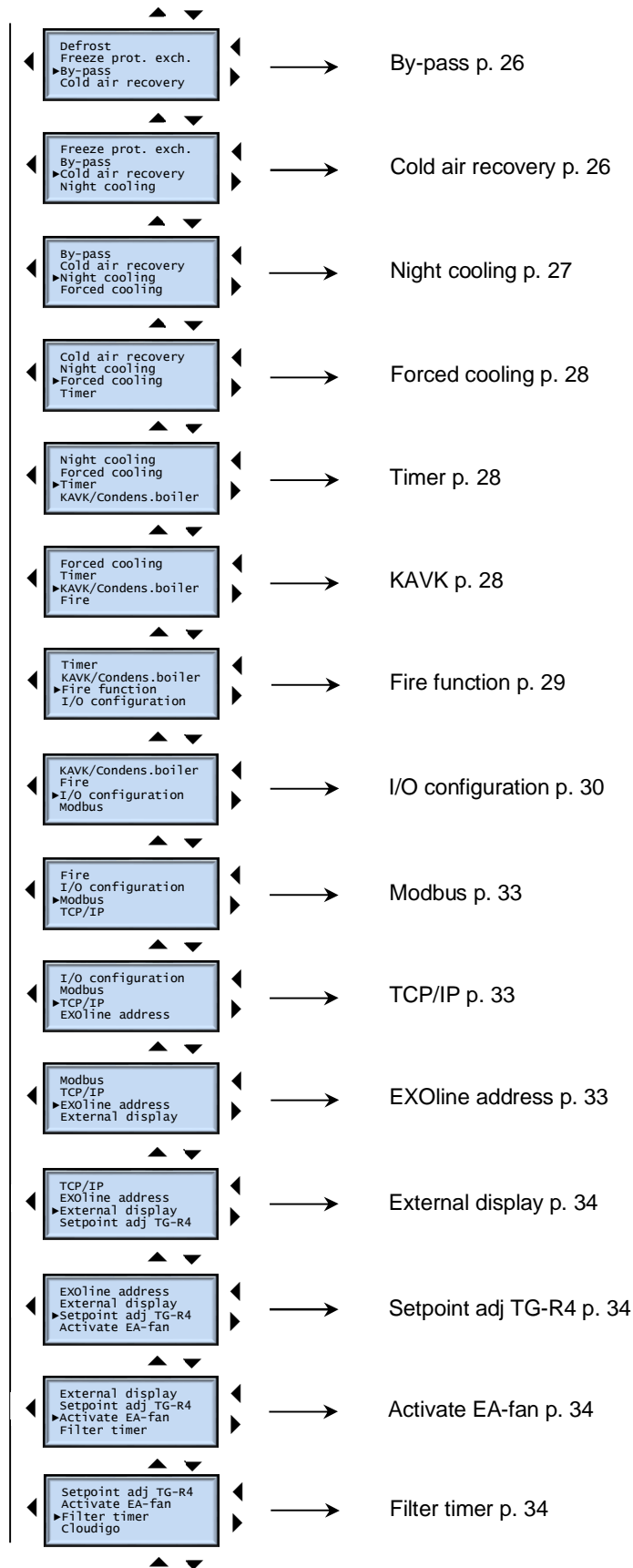


Then choose configuration



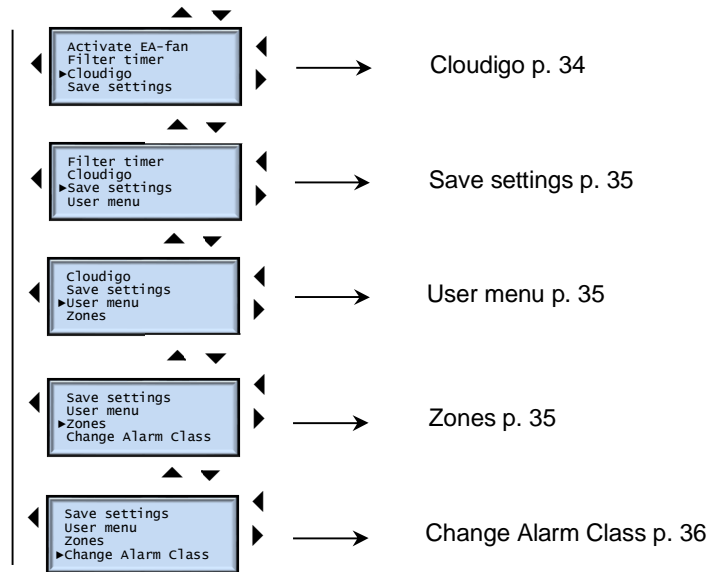
Continues next page.

Continued from previous page.



Continues next page.

Continued from previous page.



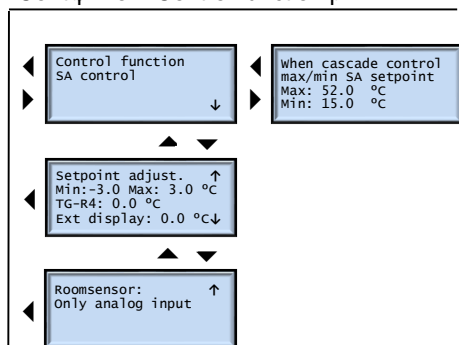
7.1 Control function

Control functions

Selectable features:

- SA control: The temperature is regulated by the SA sensor only.
- ODT comp. SA control: The temperature is regulated as a function of the SA sensor and OD sensor.
- Casc. Room control: The temperature is regulated as a function of the room sensor and SA sensor.
- Casc. EA control: The temperature is regulated as a function of the EA sensor and SA sensor.

Contol. from Control function p. 14



Cascade control

This function is only active when cascade room control and cascade exhaust air control is used. The rooms desired set point is set on the room sensor if room control and on the EA sensor if EA control. The system calculates a new supply air (SA) set point based on the control error. In the extreme case (if large control error) this could be very high (or low), which could generate too cold or hot supply air, which could feel uncomfortable. It is possible to limit the SA set point both up and down. Setting range for both min and max is 0-150°C. Default settings are max 52°C, min 15 °C

Set point adjust

The menu "Set point adjust" is used together with room sensor with set point adjust included, like Remote panel . Easy (TG-R4). Here you can set the setting range for the setpoint value adjustment. With the knob in center position (0 adjustment), the setpoint on the main display is the one that applies. For setpoint adjustment to work, the function must be activated at the factory. The setting range for min and max is ± 10 degrees. The default setting is ± 3°C. Current adjustment can be seen in the display on any of the following lines.



Remote panel - Easy

Several room sensors

If there is more than one room sensor, where one is connected to the analog input (an ordinary simple standard sensor or e.g. remote panel - Simple (TG-R4)) and the other is a serial remote panel with built-in sensor connected to port 1 or 2, it is possible to choose from where the actual value should be taken. This menu is only displayed if room control is used

Selectable options: Analog input only, Remote panel only or Average value.



Remote panel . With display

7.2 Demand Control

Demand control means that the fans regulate between normal flow and forced flow due to temperature, CO2 or humidity or a combination thereof. The extract air sensor is used as the temperature sensor. CO2 and humidity sensors are connected to an analog input 0-10V. If you choose a combination of sensors, it is the regulator that wants the highest fan speed that "wins".

Setting range:

Temperature: 0-50 °C

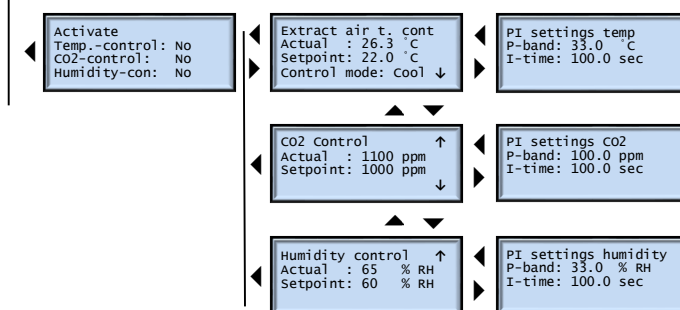
CO2: 0-2000 ppm

Humidity: 0-100% RH

If temperature control is selected, it is possible to choose if the demand control shall be connected to heating or cooling.

NOTE! Check that supply air and exhaust air setpoints do not contradict each other. Normally you choose a supply air setpoint that is a few degrees below what you want as room temperature. Demand setpoint should be the desired temperature in the room.

Contpl. from Demand Control p. 14

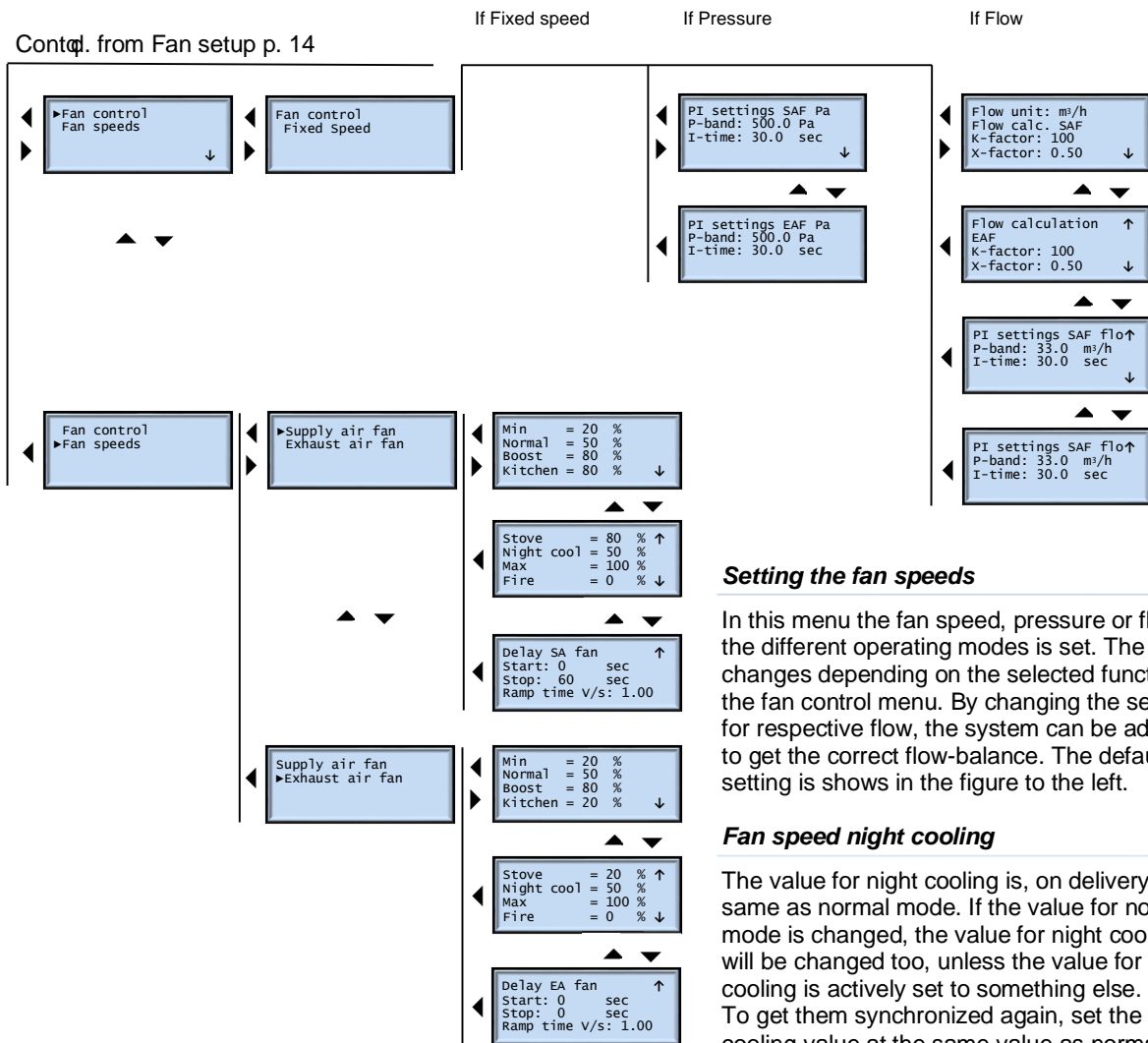


7.3 Fan setup

Fan control

Selectable features:

- Fixed Speed: The fan is running with a fixed %-value of the maximum speed.
- Pressure: The fan is regulated by the pressure in the duct. NOTE! Pressure sensor is connected to the analog input and the corresponding input is configured for this. P and I parameters can be adjusted for optimal function.
- Flow: The fan is regulated by the flow in the duct. Unit for the flow can be selected m³/h or l/s Note! The K and X factors for the fan must be specified. P and I parameters can be adjusted for optimal function.



Setting the fan speeds

In this menu the fan speed, pressure or flow for the different operating modes is set. The unit changes depending on the selected function in the fan control menu. By changing the setting for respective flow, the system can be adjusted to get the correct flow-balance. The default setting is shows in the figure to the left.

Fan speed night cooling

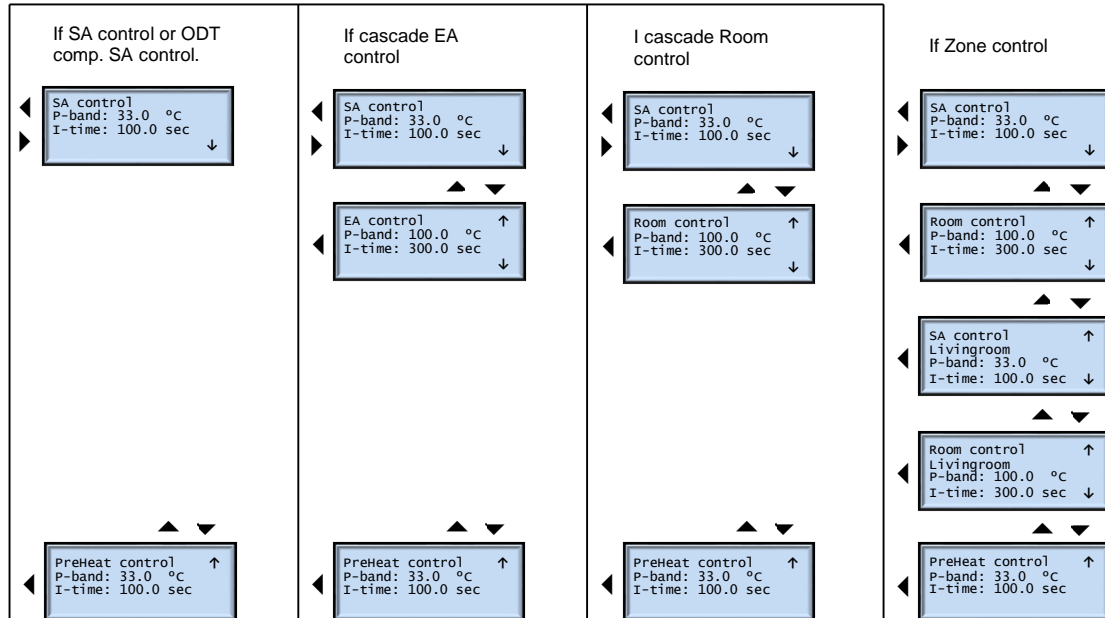
The value for night cooling is, on delivery, the same as normal mode. If the value for normal mode is changed, the value for night cooling will be changed too, unless the value for night cooling is actively set to something else. To get them synchronized again, set the night cooling value at the same value as normal mode.

Fan delay

It is also possible to set a start and stop delay for each fan, and a ramp time.
 Settable values for start and stop is 0-3600 sec.
 Settable values for the ramp time is 0-100V/sec.

7.4 Temperature control

Contø. from Temperature control p. 14



The menu Preheat control is only visible if preheat is activated

Controllers function

The supply air regulator is indirectly operating, i.e. the output value increases with decreasing temperature. The controller is a PI controller with adjustable P-band and I-time.

In the first case, the temperature at the supply air sensor will be kept constant at the set point.

In cases 2 and 3, the supply air temperature is regulated as part of a cascade control together with exhaust air / room controller. A deviation in room temperature against the set point value generates a displacement of the supply air regulators working point so that the deviation is eliminated.

Setting the controllers

The control parameters could be adjusted if needed. The default settings of the SA controller are 33 and 100 respectively, which in most cases is ok. (It is the same SA controller in all four cases above. An adjustment will follow automatically if one changes to another control function.)

The default setting of the EA controller and room controller (which in fact is the same controller) is 100 and 300 respectively.

Warning! A faulty setting could make the system work very badly.

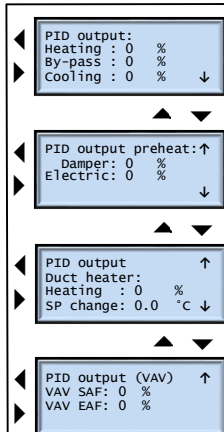
What is P and I?

P-band is the temperature change needed to move the actuator from closed to fully open. A small P-band (= large gain) causes an unstable system. A small temperature change on the sensor generates maximum heat and provides large overshoots. A large P-band (low gain) on the other hand provides smaller overshoots but will take longer before the correct value is reached.

Including an integrator (I-value) in the control loop will provide smaller overshoots. The gain decreases the closer the set point comes.

7.5 PID output

Contol. from PID output p. 14



PID output (Heating, Bypass, Cooling)

Here the output from the SA controller is displayed, divided between the three outputs cooling, bypass and heating. The output from the SA controller 0-100% is divided between the outputs as follow.

Controller output (PID-output)	Cooling	By-pass	Heating
0 - 32%	100 . 0%	100%	0%
32 - 64%	0%	100 . 0%	0%
64 - 66%	0%	0%	0%
66 - 100%	0%	0%	0 - 100%

PID output preheat

This menu is only visible if the preheat function is activated.

PID output Duct heater

This menu is only visible if the zone function is activated.

The line "Heating" shows the actual output value from the duct heater. When this has reached 100% and the temperature in the living room still has not reached its setpoint, the bedrooms set point value is shifted (gradually), which causes the units built-in heater to increase so that the setpoint in the living room gets reached. The actual set point adjust is shown on the last line in this menu.

PID output (VAV)

This menu is only visible if VAV (pressure or flow control under fan speeds) is selected.

7.6 ECO/ECO2

ECO-mode

- ECO can be used together with all control functions.
- ECO saves energy when nobody is at home. The fans go down to minimum flow.
- ECO means that the fans, when they go on min. flow, increase speed up to normal flow, to carry more heat or cool if min. flow cannot hold the set point.
- ECO-boosting together with cooling works even without cooler. The AHU takes cold air through the bypass only and will cool as far as possible.
- ECO-mode can be activated in different ways, either by a manual switch connected to a digital input or automatically according to a time schedule. ECO can also be activated manually in the mode menu.

ECO2-mode

- ECO2 is used only together with EA and room -control.
- ECO2 means that the fans increase the speed more than with ECO alone. They increase all the way to boost-flow, to carry more heat or cool if actual flow cannot hold the set point.
- ECO2-boosting together with cooling, works even without cooler. The AHU takes cold air through the bypass only and will cool the room as far as possible.
- ECO2 works just as well in ECO mode (when nobody home), as it does when you are at home and the unit is running at normal flow.
- ECO2-boosting together with cooling can be turned off, if you want boosting together with heating only.

ECO-adjusting

- ECO-adjusting is only active with EA- and room-control.
- ECO-adjusting needs ECO to be activated.
- ECO-adjusting indicates a temperature range where heat and cool is inactive. E.g. with ECO-adjust 2 °C and a set temp of 20 °C, the heat and cool will be inactive between 18 °C and 22 °C.

Safe mode

- To make it possible to heat/cool with air, it is necessary that enough heat/cool is available through the heater/cooler.
- Safe mode is an extra protection function that blocks the boosting, in the event of lack of heating / cooling media. The aim is to bring as little unwanted cooling / heating to the apartment as possible during a possible unit failure, but still have some ventilation. The fans regulate down towards minimum flow, pending the return of heating / cooling media. It is a continuous regulation, which means that if there is not enough heat/cool, the fans speed up only as much as the heat/cool allows to give a positive heat/cool supplement.
- In the absence of heating media, the unit gives the alarm **Warning low supply air temp** when the fan speed has been at min flow as standard for at least 5 min. The time is adjustable (see menu at the bottom). The alarm is acknowledged and returns automatically as soon as the heat has returned. No alarm is given in the absence of cold.

- Safe mode is only active in exhaust and room control and if ECO and / or ECO2 are installed at the factory. The setting menus for this are displayed only if ECO and / or ECO2 are installed.

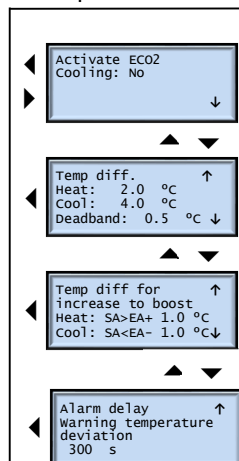
Activate ECO2 cooling.

To use ECO2 cooling, change No to Yes.

Temp diff.

In this menu, you set how fast the fans shall increase to boost flow. There is a deadband, before the fans start to increase at all. I.e. this is how much the actual temperature may differ from the set point before the fans start to increase the flow. The same deadband applies to both heat and cold. Setting range deadband: 0,0-1,0 °C in steps of 0,1.

Contd. from ECO/ECO2 p.14



The value for heat and resp. cooling means how many degrees further, in addition to the deadband, which the actual value is allowed to deviate before the fans must have reached forced flow. The fans advance proportionally to the temperature deviation within the range specified. Setting range temp diff.: 0.0-10.0°C in steps of 0.1.

Temp. diff. for increase to boost

Here you specify how much warmer (or colder) the supply air must be to allow boosting. Example: with a setting for heat 1 degree, the fans will start to regulate towards minimum flow when the supply air temperature is one degree above the exhaust air, and then reach min flow when supply air and exhaust air temperature are equal. The temperature value is set as 0-10 degrees in steps of 0,1 degree.

The table below specifies how the fans regulate in different conditions.

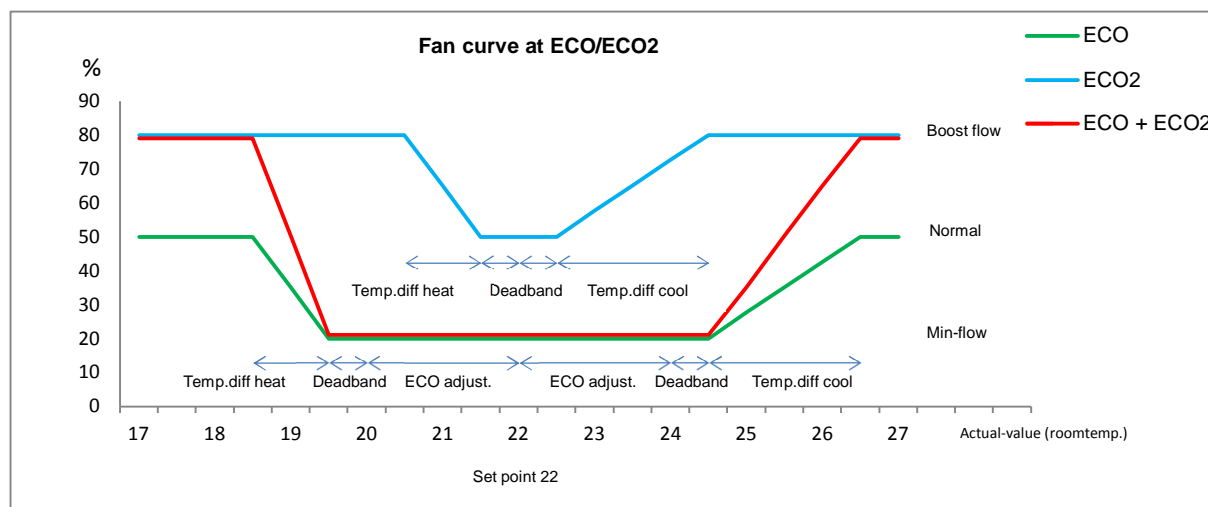
ECO Factory setting	ECO2 Factory setting	ECO-mode	Heating requirement	Cooling requirement
-	-	-	Normal	Normal
Yes	-	-	Normal	Normal
Yes	-	Yes	Min → Normal	Min → Normal
-	Yes	-	Normal → Boost	Normal → Boost if ECO2 cooling is activated
Yes	Yes	-	Normal → Boost	Normal → Boost if ECO2 cooling is activated
Yes	Yes	Yes	Min → Boost	Min → Normal and → Boost if ECO2 cooling is activated

Screen view at boosting and ECO.

At fan speed between min and normal: ECO.
 At fan speed normal: Normal.
 At fan speed between normal and boost: ECO2.

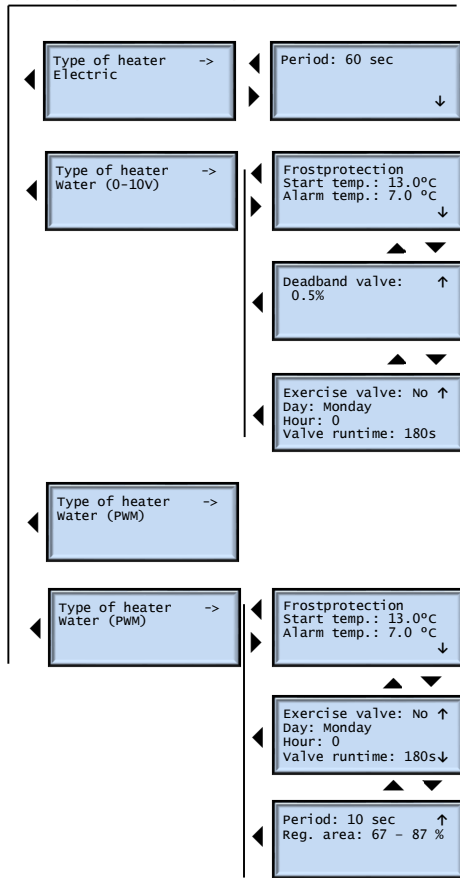
Example of fan curve at ECO, ECO2 and ECO+ECO2.

NOTE! ECO is only permitted when nobody is at home.
 With no ECO-functions activated the fans work at normal flow all the time.
 The following values have been used in the example below.
 ECO adjust: 2,0°C
 Deadband: 0,5°C
 Temp diff. heating: 1,0°C
 Temp diff. cooling: 2,0°C
 ECO2 cooling activated



7.7 Heater

Contd. from Heater p. 14



Electric heater.

Choose type of reheater. Default is electric. A period between 0 and 600 seconds can be set.

Example: At a heat level of 50% and a period of 60 seconds, the heater will connect for 30 seconds and disconnect for 30 seconds and so on.

The electric heater signal is sent out at both the digital output DO3 (PWM) and the analog output AO3 (0-10V).

Water heater.

Another option is water heater. It is possible to choose between different actuators 0-10V or PWM. PWM is to be used together with so called wax-actuator with on/off signal. They will be controlled proportionally with a PWM-signal.

No heater.

If no heater is installed, choose this option.

Freeze protection control.

Water heating entails a risk that the water may freeze if the hot water supply fails. Therefore, the AHU is equipped with a freeze protection sensor and a freeze protection controller.

The water temperature is measured close to the water heater with a freeze protection sensor (PT1000) clamped on the return pipe and then isolated.

There is a freeze protection control 0-100% according to a linear scale, between start value and alarm temperature plus 1 degree. The heat level will be whichever is the higher of the normal temperature controllers value and that of the freeze protection controller.

At set alarm temperature a freeze protection alarm is

generated and both fans will be stopped, outdoor air damper (ULS) and bypass will close. The heat valve will still be open and the circulation pump for heat continues to run.

The alarm can be acknowledged whatever freeze protection temperature, and the alarm output will then return. To get the AHU running again, the freeze protection temperature needs to be $\bar{\text{ set alarm temp + 2,5 degrees}}$.

Sensor error.

If there is a fault in the freeze protection sensor, this generates a freeze protection alarm and a sensor error alarm and both fans stop, outdoor air damper and bypass will close. The heat valve will open to its maximum and the circulation pump for heat will continue to run.

Special case.

If the AHU is in manual heating, no freeze protection control will be made of the heating. Instead the manual value will be valid all the way down to the set alarm temperature. When reaching alarm temperature both fans stop, outdoor air damper and bypass will close, the heat valve will open to its maximum and the circulation pump for heat will start. This will happen even if some of these are set in manual mode. Stop delay for the fans is ignored if the stop is due to freeze protection alarm and/or freeze protection sensor alarm.

Setting freeze protection control.

The start temperature (the temperature of the freeze protection sensor when the control starts) is set in the setup menu (see above).

Setting range: +13 °C to +50 °C. Default: 13 °C.

The alarm temperature (the temperature when the alarm activates) will automatically be changed to 6 °C lower than start temp. The default setting 13 °C for start temp. will automatically give the alarm temp 7 °C.

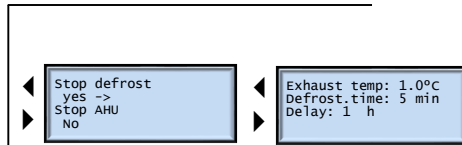
Deadband valve means that the step response from the controller must be over a set %-value of max. control voltage to give a change of the signal to the valve. Example: at deadband 0,5% the step response must be $5\% \times 10V = 0,5V$. Setting range: 0-50%. Default: 0,5%

Exercise of valve.

It is possible to exercise the valve so that it does not get stuck if it is in the same place for a long time. This happens once a week at the set time. The valve opens fully for set time and then closes for an equally long time, then returns to current control value.

7.8 Defrosting

Contol. from Defrost p. 14

**Stop defrost.**

Stop defrosting starts when the exhaust air has been below a certain temperature for a longer time. Defrosting is going on for a few minutes. Default values is in the menu box above.

What happens during the defrost is that the bypass opens completely, the supply air fan stops, and the extract air fan goes to normal flow. In addition, in case of electric heating, the heat is switched off, but in the case of water heating the heat is switched on too fully.

If the exhaust air temperature has not risen above the limit value with the stop defrost, the alarm "Defrost Failed" is activated. This is to pay attention to the user that the defrost sequence has not been enough to defrost the exchanger. Defrosting time may then be slightly extended.

Even if the alarm is not acknowledged, the unit returns to normal mode at the same time as a new defrost sequence starts. To remove the alarm, it must be acknowledged.

Stop AHU.

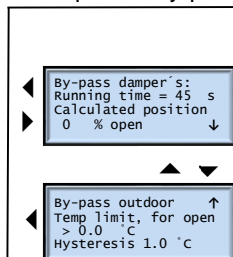
If this function is activated, the unit stops if the stop defrost fails. When the alarm is acknowledged, the unit restarts.

7.9 Freeze protection heat exchanger

Not used on this unit!

7.10 Bypass

Contol. from By-pass p. 15



Bypass damper run time interval

In our different aggregate models, the bypass damper takes different time to go from open to closed position.

Here, the total run time is stated from open to closed or vice versa. The system can then easily set the desired degree of opening.

The menu also shows the calculated current opening in percent.

Bypass limit for opening

The default setting is that the bypass damper cannot open if minus degrees when it comes to the temperature control. If you want to change this, set at what outdoor temperature, bypass will be allowed to open if necessary. There is also an adjustable hysteresis, to prevent the bypass from open and close all times, if the temperature is around 0 degrees (default setting).

However, there are circumstances that do not take this limit into account, for example:

- Bypass opens by the function "hand/auto".
- Freeze protection is active.
- Stop defrosting in progress.

7.11 Cooling recovery

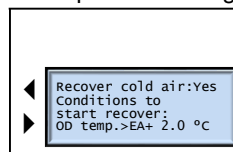
If cooling is required, the heat exchanger can use the cool air that is already in the house to cool warm incoming air. If cooling recovery is activated and extract air temperature is a set number of degrees lower than the outdoor temperature, cool indoor air will be recovered.

Activating and configuring

Cooling recovery can be changed, Yes/No, and is by default activated (Yes).

The temperature offset, for cooling recovery can be changed 0-20 °C in steps of 0,1 °C and is by default set at 2.0°C.

Contol. from Cooling recovery p. 15



How it works

The bypass is affected by the relationship between outdoor air and extract air. See how the bypass damper is regulating in the table below.

Requirement	Cool	Cool	Heat	Heat
OD air	>EA+2	<EA+2	>EA+2	<EA+2
Bypass	Regulates towards closed to cold exchange the cooler inside air.	Regulates towards open to cool with the colder outside air.	Regulates towards open to heat with the warmer outside air.	Regulates towards closed to heat exchange the warmer inside air.

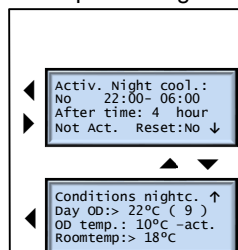
7.12 Night cooling

Night cooling means that at night during the warmer season, cold outdoor air is taken directly into the house to cool down the house and buffer for the warm day ahead.

Night cooling is recommended if warming with air, like EA or room control. But it is also possible to use together with supply air control, as the AHU switches to EA control when night cooling (including after time) is active. This works on conditions that the normal heating equipment has been turned off.

Settings for the night cooling is available in the setup menu below.

Contol. from Night cooling p. 15



Activating night cooling.

The activation is changeable (Yes/No) and is by default inactive (No). When night cooling is activated its by default active between 22:00 and 6:00 in the morning. The time range is changeable in steps of 1-minute day and night.

An extended running time (after time) can be set, settable 0-24 h in steps of 1 hour. The heat is off during the part of the extended running time that is within the night cooling activating time. The remaining time the heat is controlled with the room temperature set in the menu "conditions night cooling" as set point. (This to save the newly acquired cool air). If the extended running time would encroach on next day's activating time, night cooling will

have priority. If the conditions for night cooling no longer are fulfilled within the activating time, the extended running time will start at this point. If the conditions should be fulfilled again before the activating time ends, night cooling will start again, and the extended running time resets itself.

The last row in the menu shows if the activating time is active or not. It is also possible to reset an ongoing extended running time. (If the extended running time is set to 0 hour the time will in reality be 1 min, which makes it easy to test the functions).

During the time night cooling is active boost cooling is disabled. (See chapter ECO including safe mode). Default 22:00 to 06:00. Even if night cooling has ended because the conditions no longer are fulfilled, boost cooling is disabled during the time stated.

In the standard case the fans will run at the same speed (normal speed) all night long (22:00-06:00). In the morning boosting is allowed but still with a low set point (18 degrees) until the extended running time (4 h) has ended, which will be at 10:00h.

Conditions night cooling.

In this setup menu you configure the temperature conditions for night cooling to be active.

Day OD+ shows that the average value of the OD temperature between 9:00 . 16:00 must be higher than set value. Setting range 0-30 °C in steps of 1 °C. Default 22 °C. The value within parenthesis shows actual average value. The value resets at 9:00 h and a new value is calculated during the day. The value within parenthesis is updated every hour. Current OD temperature must be above a set value and below current room temperature (if EA control, the EA sensor). Setting range 0-30 °C in steps of 1 °C. Default 10 °C.

Room temperature must be above set value. Setting range 10-30 °C in steps of 1 °C. Default 18 °C.

Any set point adjustments will not affect this value.

Fan values for night cooling.

There are also special fan speeds connected to the night cooling. See chapter Fan speeds+.

How it works.

If all conditions for night cooling are fulfilled the following will happen.

Bypass is open max. Heat and cool is off.

The fans change speed according to the settings for night cooling.

Night cooling is displayed in the panel as long as it really is active (all conditions are fulfilled).

If any of the conditions no longer are fulfilled, the extended running time will start and next the AHU will return to normal mode.

7.13 Forced cooling

In supply air regulation, heating is normally handled by another system. The temperature of the supply air is regulated according to the supply setpoint, which is normally a few degrees below the set point for the primary heating system. When using forced cooling, a set value for this is set on the unit. The cooling value setpoint must be one or several degrees above the normal setpoint for the primary heating system.

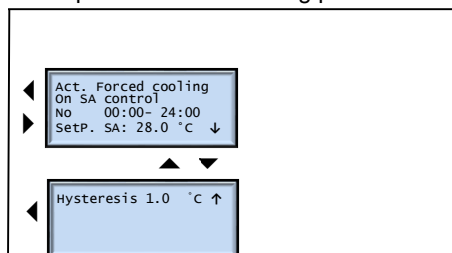
If the temperature of the extract air rises above the forced cooling setpoint, the unit switches to extract air control and adjusts to the forced cooling setpoint, but only with the help of cooling (no heat is activated). If ECO2 cooling is activated it also forces to cool according to normal ECO2 routines.

There is an adjustable hysteresis and when the temperature eventually drops below the set point minus the hysteresis, the unit switches back to supply air control and adjusts to the supply air setpoint both by means of heat and bypass.

The function can be activated Yes / No. Preset No. By activating the function, the cold is blocked during supply air regulation and thus only becomes active when the unit switches to extract air control.

A time window can be specified if needed. Preset all day. Setpoint can be set 10-40 degrees. Preset 28 degrees.

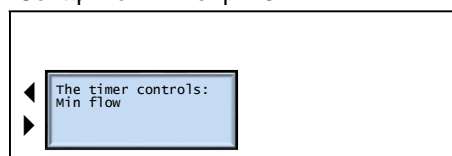
Contol. from Forced cooling p. 15



7.14 Timer

In this setup menu you configure what the timer should do.

Contol. from Timer p. 15



Default is Min flow, which means the AHU will go to min flow during the periods set in the menu timer schedule.

Normally used as an %away mode+if there are periods every week when nobody is at home

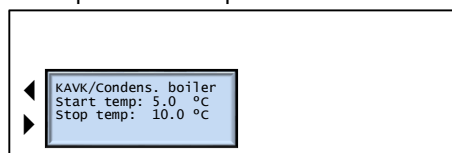
The timer could for example instead be used to stop or boost the AHU according to a schedule.

7.15 KAVK (Condensation boiler)

If there is no floor drain available close to the AHU, a KAVK is a good solution. KAVK is an electric heater that starts when there is a risk of condensation. The water vaporizes and is ventilated out through the extract air pipe.

This menu is only displayed if KAVK is configured to any digital output.

Contol. from KAVK p. 15



The outdoor temperature when the KAVK shall start could be set in the menu, as well as the stop temperature. The start temperature should normally be lower than the stop temperature, which will make a so-called hysteresis between start and stop. If start and stop is the same, it could make the relay toggle all the time if the outdoor temperature happens to be the set value. If stop temperature is set lower than start temperature, the start temp will have priority as both start and stop temp.

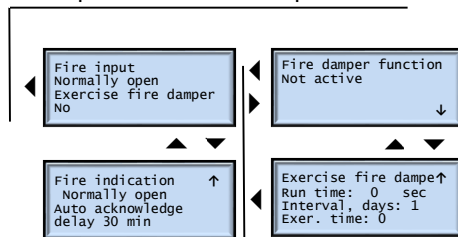
Default settings are start 5.0°C and stop 10.0°C. Setting range for both start and stop is 0-30°C.

7.16 Fire function

This function is used to adjust the fans in the event of a fire so that they evacuate fire gases and to adjust the fire damper to the appropriate positions.

This menu is only displayed if Brand is activated at the factory.

Contd. from Fire function p. 15



Fire input

The fire input can be configured:

- Normally open (default)
- Normally closed

This means that if you have configured normally open and get a closure (alarm), the unit is put in fire mode and the alarm output is activated.

You can choose if you want the fire dampers to be exercised (tested). If you want them to be exercised, you also have the

choice of whether the unit should stop or not during the exercise.

Selectable options:

- No (default)
- Yes don't stop AHU
- Yes stops AHU

Fire damper function

Fire damper function can be configured:

- Not active (default)
- FDs normally closed
- FDs normally open

Exercise fire damper

To ensure that the fire dampers really work in the event of a fire, the dampers can be exercised (tested) at regular intervals. The exercise interval is adjustable. To make this function possible, the fire dampers are equipped with limit switches. During fire damper exercise, it will be checked that the dampers reach their end positions and that the end position switches work. If not, an alarm is activated.

The running time (0-600 sec) for the dampers can be set. This is the maximum time that is allowed to take for the damper to go from one end position to the other.

The number of days (1-30) between the exercises can also be set. In addition, what time of day (0-23) the exercise should take place. If you set it to 0, the exercise takes place at midnight.

Fire indication

There is also a special function to possibly reduce the number of false alarms if you have problems with that. The function sorts out alarms that are due to temporary smoke for some reason.

If it should be a real fire alarm, it is required that the smoke detector indicates smoke and that the extract air filter is clogged (by soot) to a certain limit (the pressure drop increased across the filter). This must then also take place within a certain adjustable time.

Example:

If you set the time to 15 minutes, the following applies:

When smoke is detected, a B-alarm (Fire indication) is activated, a timer starts, and the fans go to normal flow.

When the timer has expired (15min), the alarm is automatically acknowledged, and the smoke detector is reset by temporarily interrupt the power to the detector.

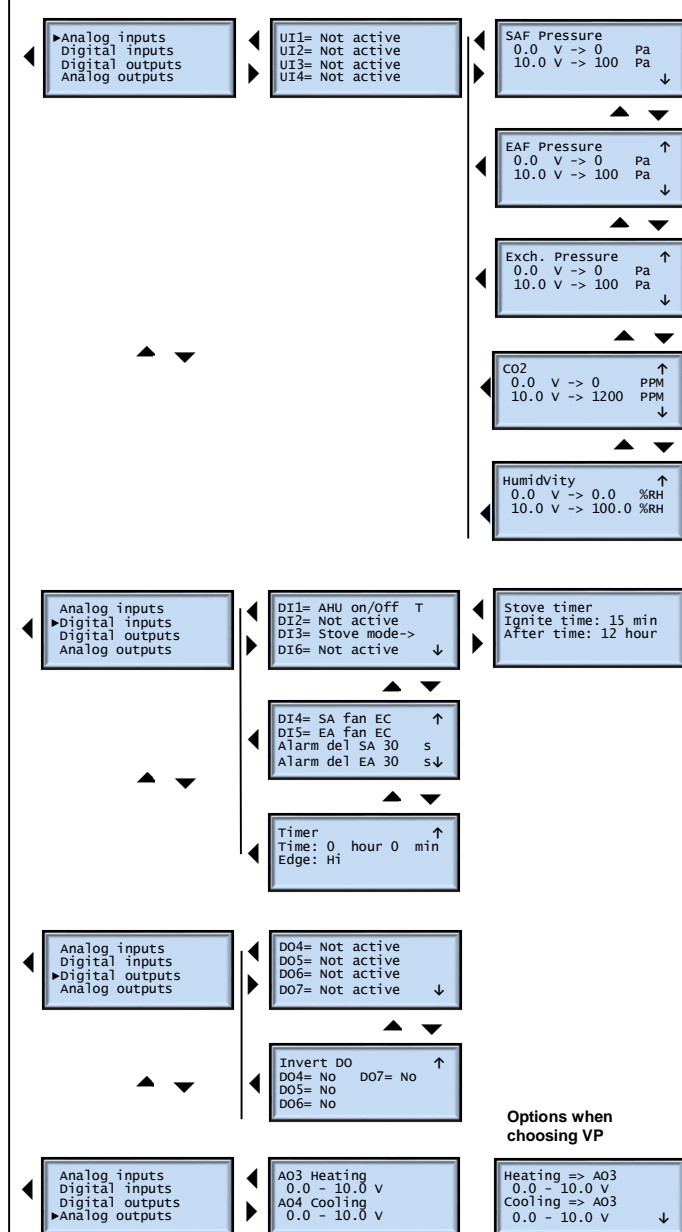
If more smoke is detected when the timer is running (15min) nothing changes, (the smoke detector is already activated). The alarm is acknowledged when the timer has expired. The fans run in normal flow for another 15 minutes (same time as the first timer). All this time, in other words 30 minutes from the first smoke, the filter guard is monitored. If the filter becomes clogged within this time, the fire function is activated, fans and dampers go into fire mode.

If new smoke is detected after acknowledgment of the alarm (say after 16 minutes after the first smoke) the timer is restarted (the fans are then already running at normal flow).

To activate the function, configure one of the digital inputs to $\frac{1}{2}$ Filter fire+ (Filter Guard Fire). Then "Fire indication" appears as a new window in the fire menu. To be able to reset the smoke detector, this is connected to a digital output and which is configured as "Smoke det.".

7.17 I/O configuration

Contø. from I/O configuration p. 15



Analog inputs

Possibility to select function for respective. input UI1, UI2, UI3 and UI4
Selectable standard features:

- Not active
- Room sensor (automatically selected on UI1 if room control, see section 7.1)
- Frost protection sensor (automatically selected on UI2 if water heating, see section 7.6)
- TG-R4 (automatically selected on UI3 if TG-R4 remote panel, see section 7.18)
- Duct heater sensor (automatically selected on UI4 if zone heating, see section 7.25)

- Option temp 1
 - Option temp 2
 - Option temp 3
 - Option temp 4
 - Temp after exchanger
- (if any of the following 3 options are selected, the corresponding pressure range setting menu will also be displayed)

- SAF Pressure
- EAF Pressure
- Exch. Pressure
- CO2
- RH%

Digital inputs

If needed, select the function for each. input DI1, DI2, DI3 and DI6

- Selectable standard features:
- Not active

- Min. flow
- Boost flow
- Max. flow
- AHU On/Off
- Normal

Selectable options (assuming the corresponding function is configured from the factory)

- Kitchen Mode
- ECO

- Stove mode
- Fire input
- Fire damper

Timer

A timer could be connected to any of the inputs if a T is activated at any of the rows. There is only one timer. All functions except Not active, Fire damper, Fire alarm and Stove mode can have timer connected.

Connection of timer to desired function

When you have gone through the rows and selected functions for the inputs, the cursor will make one more loop and there is a possibility to put a T against any of the rows. Use arrow up and down to connect the timer to a specific row. A **T** will light up at the row. To remove the **T** use up or down arrows. After acknowledging with OK the timer will be connected to that specific input. To move the timer to another row, it is necessary to first remove the T from the present row. If you try to configure the timer to a row and the timer already is connected to another row, the first T will light up when pushing the up or down arrow, but it disappears after you have passed through all rows.

Timer configuration

The timer can be set from 0 to 24 hours and 59 min in steps of 1 min.

You can select of high or low start signal. The timer is edge triggered.

When the input is triggered, the timer will start, and current function is active until the timer stops.

If you want to reset the timer in advance, you do this by triggering the input again.

Priority for the timer is equal with other functions below.

Priority.

No.1 has highest priority.

1. AHU On/Off regardless of which input it is configured.
2. Fire alarm and Fire damper regardless of which inputs they are configured.
3. Any of other functions linked to DI6
4. Any of other functions linked to DI3
5. Any of other functions linked to DI2
6. Any of other functions linked to DI1
7. Timer (regardless of what is linked to the timer)

Configuring fan type

At DI4 and 5 configures type of fans in the unit, EC (default) or AC. (Different type of feedback signal). Those are normally configured at the factory and should not be changed.

Selectable alternatives:

DI4: SA fan EC or SA fan AC.

DI5: EA fan EC, EA fan AC or Not active.

It is possible to disconnect the feedback signal from the EA fan to avoid alarm if an external EA fan without feedback signal is used.

The alarm delay is adjustable and normally set to 30 seconds

Stove mode

The Stove mode function must be enabled at the factory for Stove mode to work.

Stove mode means reduced exhaust air and increased supply air during the first time after ignition of the stove.

This also means that the cooling is blocked so you do not directly cool the comfortable stove heat.

Configure any of the inputs DI1, DI2, DI3 or DI6 to Stove mode. When Stove mode is selected, an arrow to the right is displayed. That means a new menu is available to the right.

Configuring stove timer

Two different times are set at the stove timer.

The startup time 0-30 min in steps of 1 min. During this time the fans will run at the speed set for stove (see setup for fan speeds chapter 7.4).

The cooldown time 0-24 hours in steps of 1 hour

During both the startup time and the cooldown time, bypass does not open, and cooling is blocked.

Start of stove timer

A momentary switch (which is included when ordering the stove function) is connected to the selected input according to above. When you press the switch, the stove function starts, and the timer starts to count down. To cancel the function, push the switch again. Both startup time and cooldown time resets then.

Visual indication

Stove can be activated on any output (see digital outputs below) and an appropriate indicator lamp can be connected to the output. The relay toggles during the startup time 5s on and 5s off. During the cooldown period the relay is constant on.

The display shows "Stove mode" during the startup time and during the cooldown period it toggles between "Normal" and "Stove cooldown".

Using stove together with EA-control or room control

In order to reduce the risk of blowing cold air from the ventilation system in connection with the stove heating, the system ensures that during both the startup time and the cooldown time, the supply air temperature is at least equal to the set point.

Connection of Fireplace Button.

See page 8.

Digital outputs

If needed, choose function for outputs DO4, DO5, DO6 and DO7.

Selectable standard features:

- Not active
- KAVK (condensation boiler)
- ULS (outdoor air damper)
- Sum alarms
- CP Heater
- Normal flow
- Section Hatch
- Sum alarm A
- Sum alarm B
- Sum alarm C

More selectable options (the functions must be configured from factory).

- CP chiller
- Fire damper
- Stove

Selectable option (DO4 is automatically selected for this option, see section 7.7)

- PWM preheat

Selectable option (DO5 is automatically selected for this option, see section 7.24)

- PWM duct heat

Inverting digital outputs

In some cases, it may be preferred that the alarm relay turns on immediately when the unit gets power, and instead switch off if there is an alarm.

This will generate an alarm if there is an interruption in the power supply.

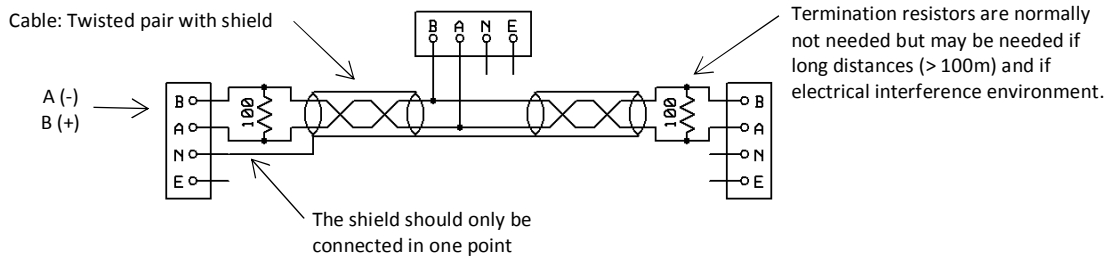
In this menu one or more outputs can be inverted.

Analog outputs

If the valves do not have a 0-10V input (default), then there are free choices 0.0-10.0V or vice versa 10.0-0.0 in steps of 0.1V.

7.18 Modbus

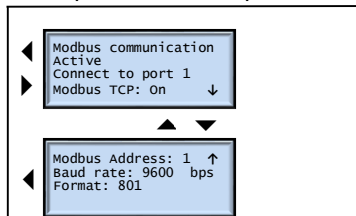
Connection



As an alternative, Modbus is also available via the TCP / IP port!

Parameter settings

Contol. from Modbus p. 15



Modbus is activated by default on port 1, but if a remote panel is to be used, modbus must be deactivated.

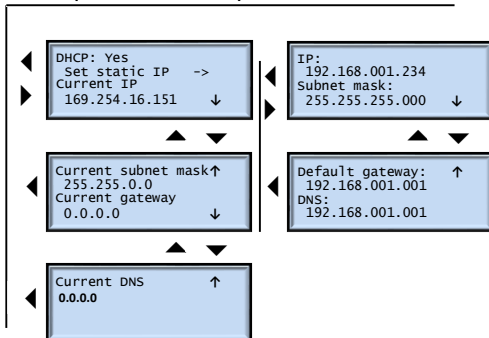
Modbus via TCP is normally on but should be deactivated if you use a "public network" in cases where you connect the duc to the internet. This is to prevent outsiders from being able to read from the duc.

- Address.
- Baud rate: 150, 300, 600, 1200, 2400, 4900, 9600 or 19200 bps
- Format: 801, 8N2, 8E2, 802, 8N1, 8E1. (No. of bits: 8), (Parity: Odd, None, Even), (Stopbits: 1 eller 2).

Complete Modbus list can be obtained on request to REC.

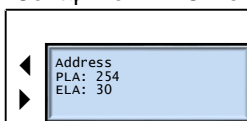
7.19 Modbus

Contol. from TCP/IP p. 15



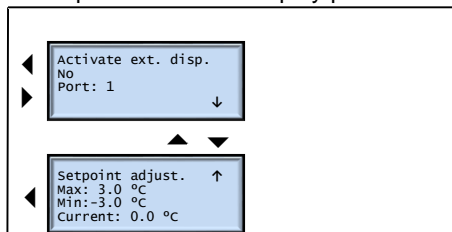
7.20 EXOline address

Contol. from EXOline address p. 15



7.21 Remote panel

Contol. from External display p. 15



Activate external display

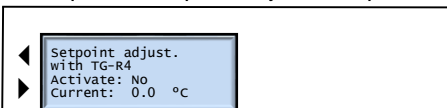
There is only 1 port and it is configured to Modbus by default. Thus, you cannot have both Modbus and a remote panel. If a remote panel is ordered at the same time as the AHU, the configuration is done for remote panel at the factory. When ordering a remote panel as supplement later, the Modbus must be deactivated. Contact REC for help with this.

Set point adjust

Here it is possible to set limits for the set point adjust. Default is ± 3 °C

7.22 Set point adjust. TG-R4

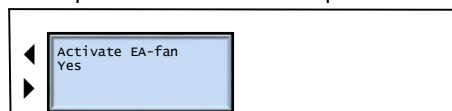
Contol. from Setpoint adj. TG-R4 p. 15



Change No to Yes to activate TG-R4. When TG-R4 is activated, the current setting is displayed on the bottom line.

7.23 Activate EA-fan

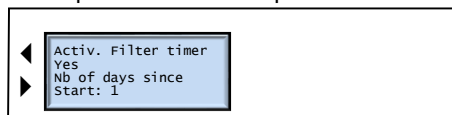
Contol. from Activate EA-fan p. 15



Change to No if the unit has no extract air fan.

7.24 Filter timer

Contol. from Filter timer p. 15

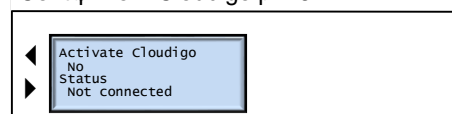


Make a change to No if the unit have a pressure sensor over the filter.

If you would like to change the time to next filter change, is it possible to adjust the number of days since the timer started.

7.25 Cloudigo

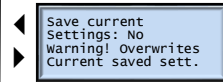
Contol. from Cloudigo p. 16



Cloudigo is a system that allows to view and change parameters via the Internet. The system requires a subscription. Contact your supplier for more information!

7.26 Save settings

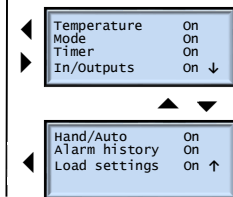
Contøl. from Save settings p. 16



Here you save all current settings. Earlier saved settings will be lost. All settings are saved except date and time. On page 33 you will find a list of all data saved and what the default setting is.

7.27 User menu

Contøl. from User menu p. 16



Use this menu to select which items that should be visible for the user. All items that are visible as default are selectable, except %Authorization+. Default is that all are visible.

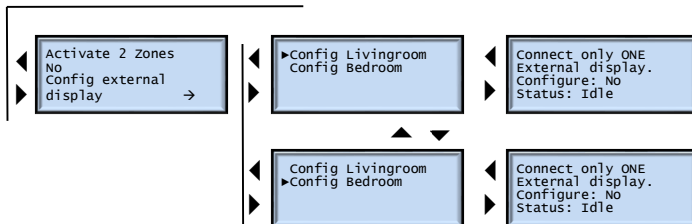
7.28 Zones

The unit's standard heater heats the bedrooms, as well as pre-heats the living room. The temperature in the living room is raised slightly more than the bedroom temperature via a duct heater, which is also controlled by the AHU. The temperature in the living room are controlled via a remote panel with display. The temperature in the bedrooms can be controlled either via remote panel with display or via room sensor with setpoint adjustment (TG-R4). The set value in the living room is the highest priority. The temperature in the bedroom can be set to the same value as the living room or lower. If room sensors with setpoint adjustment (TG-R4) are used and the adjustment wheel is set in center position, the temperature in the bedroom will be equal with the setpoint for the bedroom. From there, the temperature can be raised or lowered as required within the set adjustment limits. The setpoint setting for the bedrooms that are higher than for the living room are ignored in the program and the value of the living room also applies to the bedrooms.

The AHU's normal supply air regulator will control the temperature in the bedrooms according to their setpoint, using the built-in heater and the by-pass damper. Another regulator, by means of an external duct heater, regulates the living room temperature against its setpoint. If the setpoint in the living room cannot be reached even though the duct heater is at 100%, then the temperature in the bedroom is adjusted so that the set point in the living room is reached (with the duct heater still at 100%).

If the living room setpoint cannot be maintained despite full heat on both the built-in heater and the duct heater, will ECO2 (if activated) boost the fans as usual.

Contøl. from Zones p. 16



Activate 2 zones.

Change "No" to "Yes" to open up for 2 zone control.

Configure external display.

Since two remote panels will be connected on the same port, these must be configured as bedroom display and living room display. Plug in one remote panel at a time to

configure. When the configuration is complete, "Idle" changes to "Config ok". When both are configured, you connect both in parallel to the port.

Temperature menus.

When zones are activated, other temperature menus are displayed, see point 1. of the User Manual. There is one menu for bedroom settings and one for living room settings. Each zone also has its own ECO adjustment.

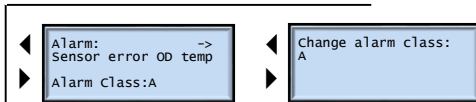
7.29 Change alarm class

In this menu you can change the alarm class for the different alarms.

The alarms are divided into three different classes A, B and C alarms. The cause for A-alarms must be fixed and then acknowledged before it disappears. B alarms have the same function as A alarms but are classified as slightly less important. C-alarms are internal alarms and automatically returns when the cause of the alarm disappears. C alarms are used e.g. to notify the user that the unit is in manual mode etc. In addition, inactive alarms may occur. E.g. as default, filter alarms are inactive. Instead, filter alarms are displayed in the display but still activate relay output if configured.

Inactivation means that the alarm is not visible, but the action is done automatically anyway, e.g. it would stop the unit etc.

Contol. Change alarm class p. 16



Menu example when changing alarm class.

Press OK in the first menu. Scroll with the up / down arrow to the alarm to be changed. Press OK when the current alarm is found. The current alarm class for the current alarm is now displayed. (NOTE: The current alarm class is only displayed when OK have been pressed). Press the right arrow and change to new alarm class.

Tip: If you change an alarm from A or B to C, the alarm will be automatically acknowledged when the cause has disappeared.

Below is a list of possible alarms, broken down by default.

A-alarm	B-alarm	C-alarm	Inactive
Sensor error OD temp Sensor error SA temp Sensor error EA temp Sensor error EXTtemp Sensor error RM temp Sensor error FRPtemp Sensor error TG-R4 Sensor error duct heater Sensor error after exch.temp Freeze P alarm El.heat. overheated Filter guard DI8 Fire damper alarm Fire alarm Int. Battery failure (CR2032) Defrost failed A	Defrost failed B Fire indication Smoke detector error	SA controller man. SA fan manual EA fan manual Heater manual Preheat damper manual Hatch manual Preheat electric manual Duct heater manual By-pass manual Chiller manual ULS manual KAVK manual P1-heating manual P1-cooling manual Warning low supply temp Autocalibration not finished Supply fan failure Exhaust fan failure Supply air temp low limit	Filter alarm

Default setting parameters

Technician Parameters

Parameter	Default setting	Parameter	Default setting
Control function	SA control	Deadband valve	0,5 %
Min/Max SA set point	52 15	Exercise valve	No, Monday, 0, 180sec
Set point adjust	-3 +3	Period	10 sec
Room sensor	Only analog input	Reg. Area	67-87%
Demand control	Activate No, No, No	Stop defrost	Yes
Temp.-control	Setpoint: 22.0, Mode: Cool	Stop AHU	No
PI settings temp.	P-band: 33_C, I-time: 100sec	Defrost	1.0_C 5 min 1h
CO2 control	Setpoint: 1000 ppm	Freeze prot. method	Temperature.
PI settings CO2	P-band:100ppm, I-time:100sec	Type of freeze prot.	Bypass damper
Humidity-control	Setpoint: 60 %RH	Electric preheat	OD temp: <-20,0 Period: 60s
PI settings humidity	P-band: 33%RH, I-time: 100sec	Limit	OD temp. -12.0 - 5.0_C Hysteresis 3.0_C
Fan control	Fixed speed	Set point Exhaust temp	2.0_C
PI settings SAF Pa	P-band: 500 Pa, I-time: 30 sec	Bypass damper running time	33 sec
PI settings EAF Pa	P-band: 500 Pa, I-time: 30 sec	Bypass outdoor temp limit	>0.0_C, Hysteresis 1.0_C
Flow unit	m³/h	Cold air recovery	Yes, 2.0
Flow calc. SAF	K-factor:100, X-factor:0,50	Night cooling	No 22-06 4
Flow calculation EAF	K-factor:100, X-factor:0,50	Conditions night cooling	22, 10, 18
PI settings SAF flow	P-band:33 m³/h, I-time:30 sec	Forced cooling	No, 00:00-24:00, 28, Hysteresis 1.0 °C
PI settings EAF flow	P-band:33 m³/h, I-time:30 sec	Timer	Min flow
Fan speeds supply air (fixed)	20,50,80,80,80,50,100,0 %	KAVK	5, 10
Fan speeds exhaust air (fixed)	20,50,80,20,20,50,100,100 %	I/O configuration/ Analog inputs	Not active, Not active, Not active, Not active
Fan speeds supply air (pressure)	20,50,80,80,80,50,100,0 Pa	I/O configuration/ Digital inputs	Not active, Not active, Not active, Not active, SA fan AC, EA fan AC
Fan speeds exhaust air (pressure)	20,50,80,20,20,50,100,100 Pa	Alarm delay	30, 30
Fan speeds supply air (flow)	20,150,80,80,80,50,100,0 m³/h	Timer	0,0, Hi
Fan speeds exhaust air (flow)	20,150,80,20,20,50,100,100 m³/h	I/O configuration/Digital outputs	Not active, Not active, Not active, Sum alarms
Delay SA fan	0, 60, 1	Invert DO	No, No, No, No, No
Delay EA fan	0, 0, 1	I/O configuration/Analog out	0-10V, 0-10V, 0-10V
Temperature control SA	P-band: 33_C I-time: 100 sec	Modbus	Active, Modbus TCP:På 1, 9600, 801
Temperature control Room	P-band: 100_C I-time: 300 sec	Activate ext. display	No, 2
Temperature control EA	P-band: 100_C I-time: 300 sec	Setpoint adjust.	3 -3
Temperature control Preheat	P-band: 33_C I-time: 100 sec	Setpoint adjust. with TG-R4	No
Activate ECO2 cooling	No	Activate EA-fan	Yes
Temp. diff.	2.0, 4.0, 0.5	Activate Filter timer	Yes
Temp diff. for increase to boost	1.0, 1.0	Activate Cloudigo	No
Alarm delay. Warning temperature deviation	300 sec	Save settings	No
Type of heater	Electric, period: 60 sec	User menu	On, On, On, On, On, On, On
Frost protection	Start temp.: 13.0_C	Activate 2 zones	No

Factory parameters (if you wish to change contact REC!)

Parameter	Default setting	Parameter	Default setting
Function Cooling	No	Function ECO2	No
Function Kitchen	Yes	On room- and return air-regulation. Max setpoint	28.0
Function Stove	No	Minimum limit supply temp.	5.0
Function ECO	No		

REC 21-07-02 (pgm. ver. 2.4-1-00)

Notes:

Notes:



REC Indovent AB reserves the right to make alterations to specification and construction without prior notification.



REC Indovent AB

Box 37, SE-431 21 Mölndal, Sweden
Visiting address: Kärragatan 2

Tel: +46 31 67 55 00

Fax: +46 31 87 58 45

www.rec-indovent.se

Certified according to ISO 9001/14001