

# INSTALLATION INSTRUCTIONS

CTS602 BY NILAN



Comfort 252 / 302 Top / Polar (English)

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# Safety

## Power supply

 **CAUTION**  
Always disconnect mains electricity to the unit if a fault occurs which cannot be rectified via the control panel.

 **CAUTION**  
If a fault occurs on the electricity-conducting elements of the unit, always contact an authorised electrical installer to rectify the fault.

 **CAUTION**  
Always disconnect mains electricity to the unit before opening the doors, e.g. for installation, inspection, cleaning and filter change.

## Disposal

### Ventilation system



Nilan units mainly consist of recyclable materials. They should therefore not be disposed of with household refuse. Take them to your local recycling centre.

# General details

## Introduction

### General information prior to installation

The following documents are supplied with the unit:

- Installation instructions/Software instructions
- User manual
- Wiring diagram

The instructions can be downloaded from the Nilan website: <http://www.nilan.dk/da-dk/forside/download>

If you have further questions on unit installation after reading the instructions, contact your nearest Nilan distributor, who can be found on [www.nilan.dk/forhandlere](http://www.nilan.dk/forhandlere).

The purpose of these instructions is to give the installer advice on correct installation and maintenance of the unit.

The unit must be started up immediately after installation and connection to the duct system. In periods where the ventilation system is not in operation, humid air from the rooms may penetrate into the ducts and form a condensate. The condensate may leak out of the valves and damage furniture and floors. In addition, condensate may form inside the unit, damaging the unit's electronics and fans.

The unit is supplied fully tested and ready for operation.

## Final inspection

### Ventilation

#### How to set the ventilation

This list is made to give the installer an overview of the settings, which he has to make by consulting the user or builder

Function		Settings
Setting the filter change period outdoor air		Days:
Setting the filter change period extract air		Days:
Which ventilation level is set for basic ventilation		Level:
Is low ventilation at low outdoor temperature wanted	yes/no	Level: At °C:
Is low ventilation at low humidity wanted	yes/no	Level:
Is high ventilation at high humidity wanted	yes/no	Level:
Setting for maximum time high humidity		Min:
What is the wanted room temperature		°C:
Master sensor for room temperature		T3/TExt
Is high ventilation in cooling mode wanted	yes/no	Level:
Is a cooker-hood connected to the ventilation system	yes/no	Level:
Is the preheating-element activated (Polar version)	yes/no	

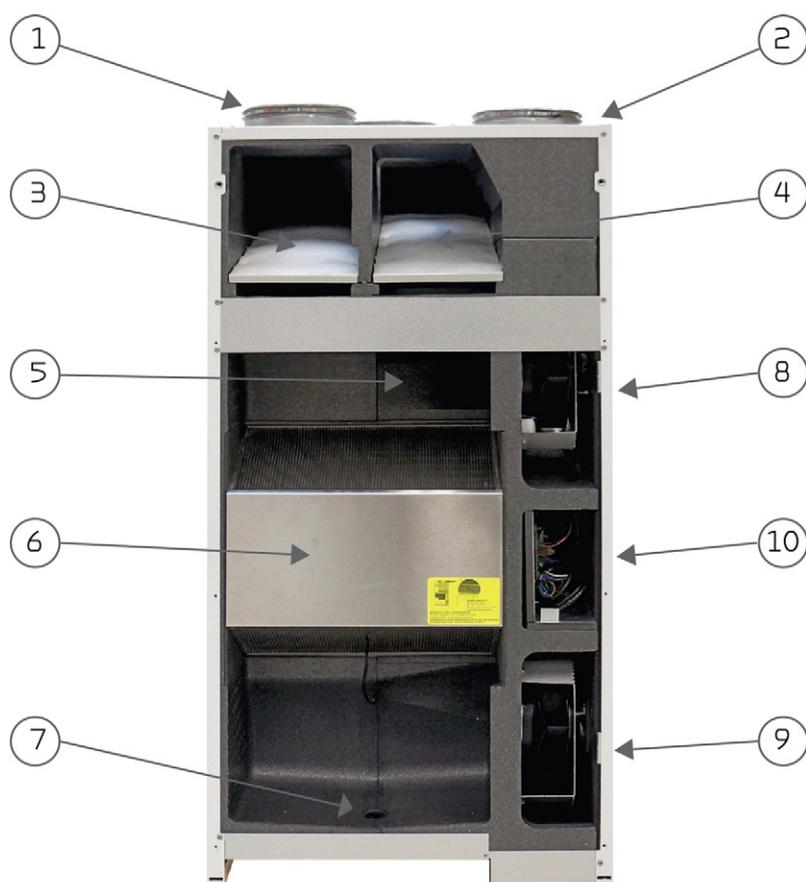
# Unit type

## Product description

Comfort 252 / 302 Top is a ventilation unit with heat recovery. The unit is designed for air flows up to 253/345 m<sup>3</sup>/h at 100 Pa external duct pressure.

The unit draws the humid, vitiated air out of the dwelling via the bathroom, WC, kitchen and utility room and introduces fresh outdoor air into habitable rooms such as living room, bedrooms and office. The cold outdoor air is heated up in the heat exchanger by the warm exhaust air.

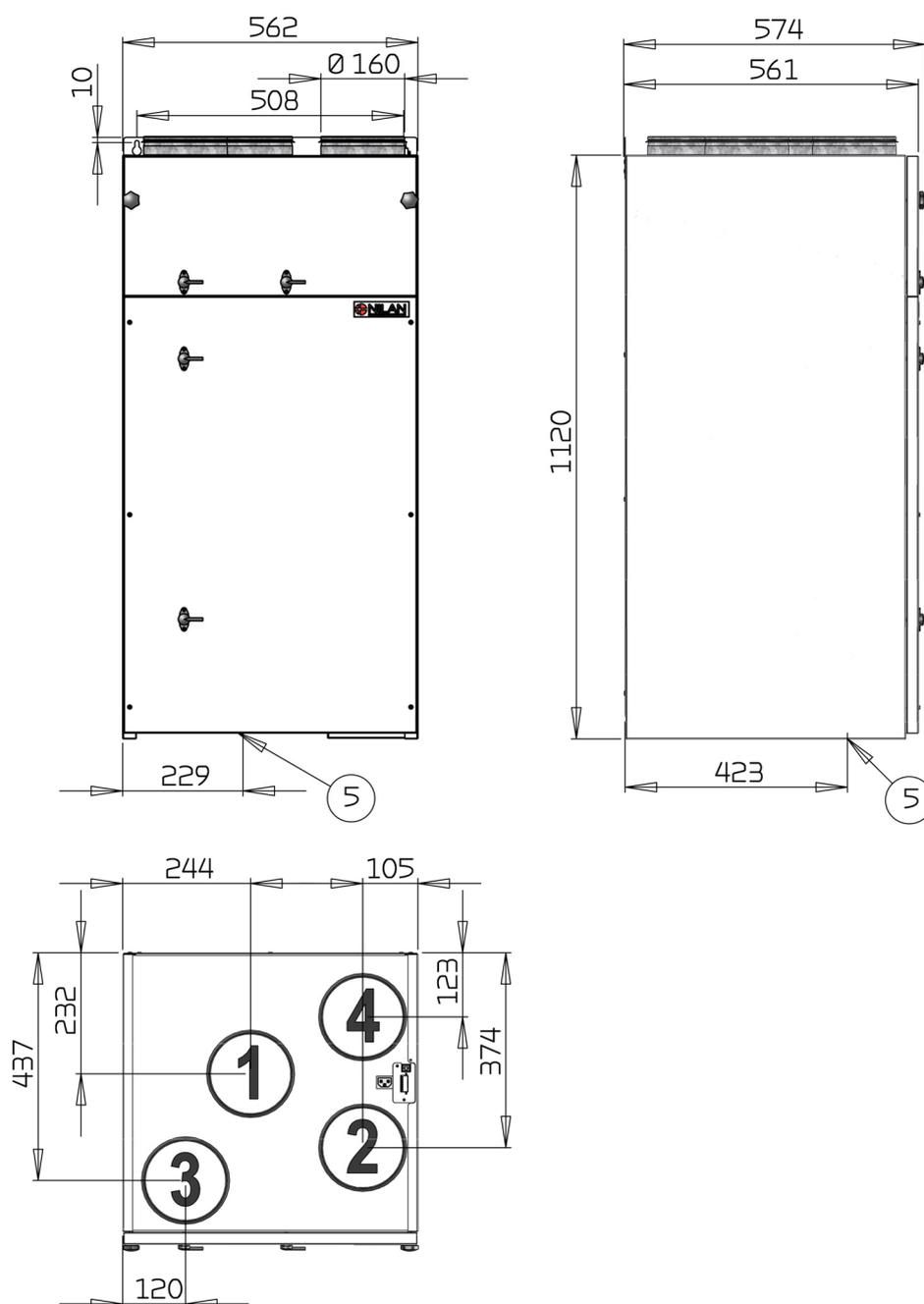
Comfort 252 / 302 Top is supplied as standard with a G4 filter in the outdoor air and extract air ducts. If it is wished to filter the outdoor air for pollen, an F7 filter can be purchased as an accessory and mounted subsequent.



1. Duct connections
2. Electrical connections
3. Extract air filter G4
4. Outdoor air filter G4 (F7 filter is fitted here)
5. Bypass damper
6. Counterflow heat exchanger
7. Condensate drain
8. Supply air fan (inlet air)
9. Extract air fan (outlet air)
10. Automatic control system

## Dimensional drawing

All dimensions are in mm.



### Connections:

1. Fresh air (outdoor air)
2. Supply air
3. Extract air
4. Discharge air
5. Condensate drain

# Accessories

## Electrical preheating element for frost protection



In longer periods of sub-zero temperatures, the high-efficiency counterflow heat exchanger will ice up. To avoid icing, it is recommended that an electrical preheating element is mounted.

The preheating element uses very little energy, but ensures efficient heat recovery without de-icing, thus achieving an overall saving in energy consumption.

## Adjustable water comfort heater



A water comfort heater can be used to increase supply air temperature to the desired level. It is fitted in the supply air duct and must be connected to the primary heat supply.

Supplied with a two-way regulating valve, temperature sensor and frost thermostat.

## Electric heating element



An electric heating element allows the supply air temperature to be raised to the desired level. Electric heating elements are supplied for mounting in the supply air duct, and are provided with the necessary sensors.

## EM box



With an EM box it is possible to divide the extract air between the kitchen and bathroom.

If the cooker hood is operating via the unit and is switched on, air extraction from the bathroom reduces slightly to allow sufficient air for the cooker hood to extract kitchen fumes.

The EM box has a metal filter which efficiently separates grease particles from the cooker hood air, thus protecting the unit.

## DBTU damper



If there is not enough space to fit an EM-box, Nilan offers a DTBU damper, which can be fitted between kitchen and bathroom. The damper functions precisely like the EM-box but requires longer cables.

## Pollen filter F7



The unit is supplied as standard with a G4 filter.

If persons in the dwelling suffer from a pollen allergy, there is an option for mounting a F7 pollen filter in the outdoor air inlet to minimise the pollen in the indoor air.

## Water trap



To ensure that the condensate can drain off freely, a water trap must be established.

The water trap must be regularly checked for water. In the summer season, where no condensation will occur, there is a risk of the water trap drying out. The Nilan water trap contains a ball which ceases to prevent "false" air intake into the unit, so that condensate can run freely out of the unit.

## Vibration absorbers



4 pc. of vibration absorbers are placed under the unit and secure an effective dimming of the vibrations of the unit against the surface.

## Flexible silencing



To facilitate later servicing of the unit, we recommend fitting a flexible connection between the unit and the duct system.

Nilan's sound damping flexi-hose gives good sound damping both to the duct system and to roof stacks.

## CO<sub>2</sub> sensor



Fitting a CO<sub>2</sub> sensor means the ventilation speed can be pre-programmed to run higher ventilation levels in the event of high CO<sub>2</sub> level in the extracted air. CO<sub>2</sub> levels can be programmed.

Installation of the CO<sub>2</sub> sensor must be ordered from the factory.

# Installation

## Mounted

### Placement of the unit



#### ATTENTION

When fitting the unit you should always take future service and maintenance in consideration.

It must be easy to replace the filters and if it must be possible to take out the heat exchanger, fan or other components.



#### ATTENTION

A minimum distance of 60 cm in front of the unit is recommended for workspace.



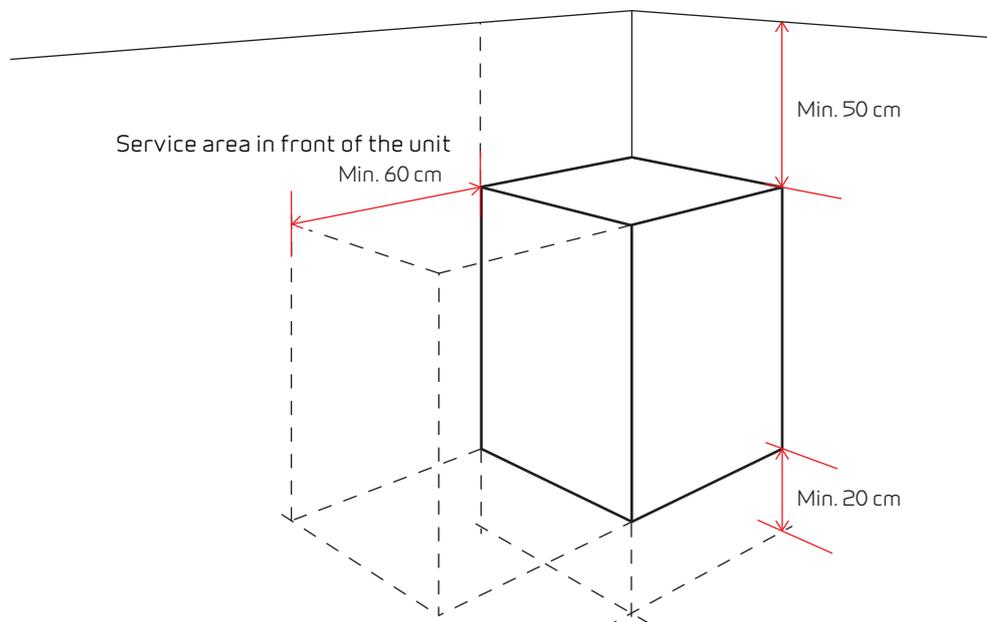
#### ATTENTION

The unit must be installed level for the sake of the condensate drain.

The unit is low-noise and low-vibration. However potential vibrations spreading from the unit to the individual building parts must be taken into account. To detach the system from the floor, we recommend that the system is placed on vibration absorbers. To other building parts and other fixtures there should be a distance of about 10 mm.

The unit can be installed both inside and outside the building envelope because it is isolated and meets the requirements for heat loss.

## Top unit



#### ATTENTION

If a cover is used to protect the unit, this must be easy to remove.

# Electrical Installation

## Electrical connections

### Safety

**ATTENTION**

All work must be carried out by qualified personnel and in accordance with applicable legislation and regulations.

**ATTENTION**

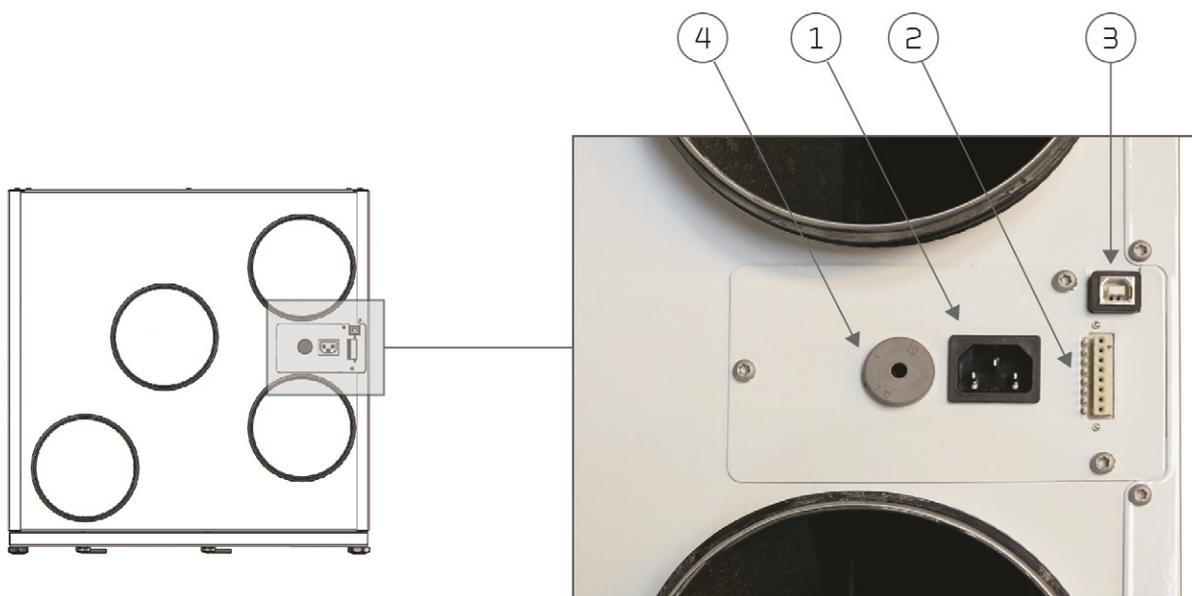
It is important that power is disconnected when working with the unit's electrical components.

It is important to check that cables have not been damaged or trapped during connection and use.

### Connection points

All connection points are on the top of the unit on the right side seen from the front.

1. Connecting 230V (remember earth wire)
2. Control panel connection
3. Connecting PC
4. Connection through bushing to external connections



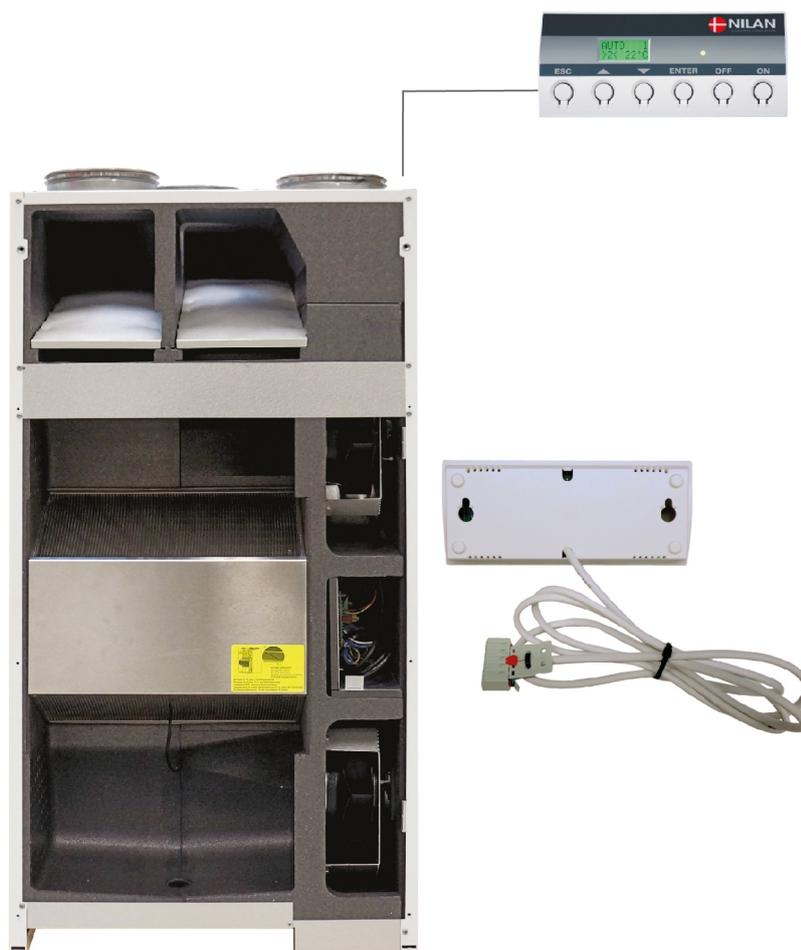
# Control panel

## CTS602 control panel

The control panel is supplied as standard with 1.5 m of cable. The panel is connected to the CTS602 control panel on the unit using twisted pair cable type 2x2x0.25 mm<sup>2</sup> (max. length 50 m).

The CTS602 panel should be located in a dry place protected from frost. Position panel 1.5 m above the floor and min. 0.5 m from any corner. Wherever possible, avoid installing the panel on an outer wall, as cold seepage can affect the panel sensor. Installation in areas with strong sunlight should also be avoided.

## Control panel connection



# Electrical connection, unit

## Supply



### CAUTION

Power supply including safety switch must be installed by a certified electrician.

It comes with a power cable for connection in socket. It is important for the unit to be bonded to earth.

## Unit



# Electrical connections accessories

## Connection to user option and modbus

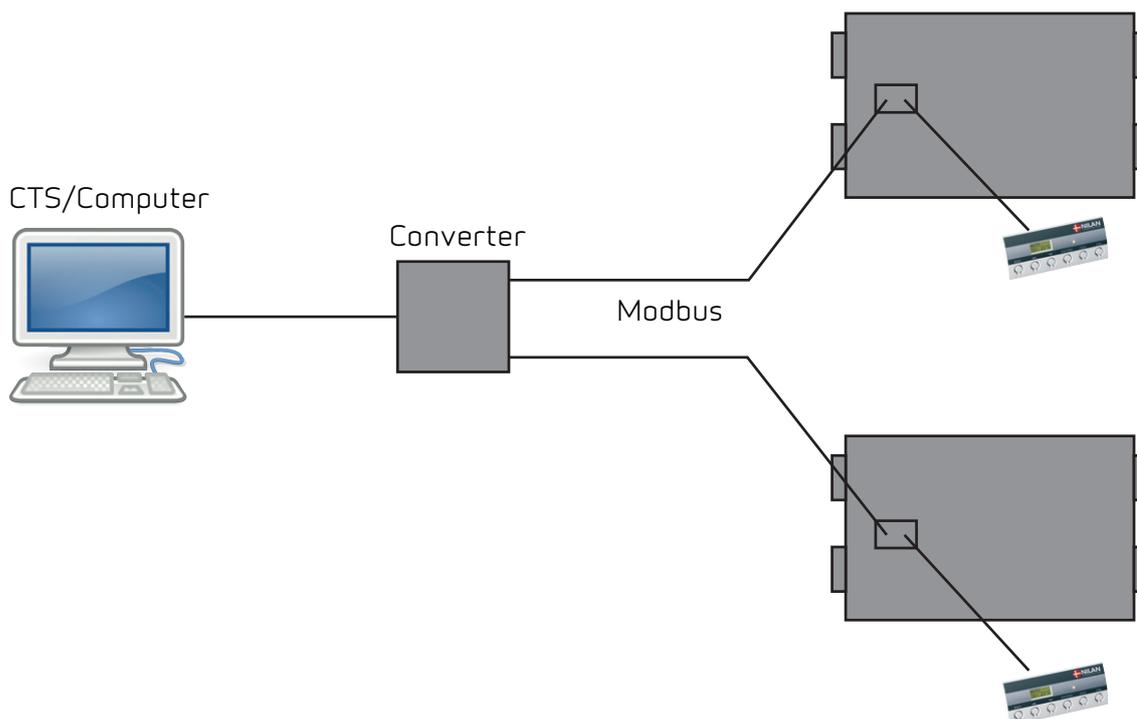
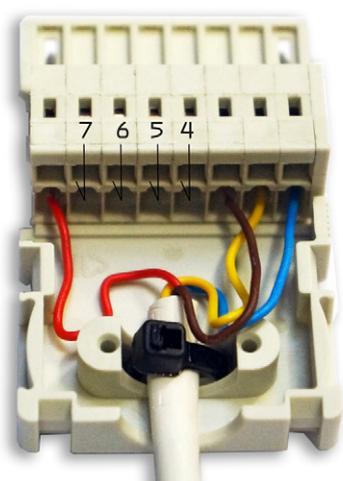
**User option:** Connection to the user option can be used for e.g. controlling an extractor damper motor via a potential-free contact. Connection is made in pins 4 and 5 in the control panel's 8 pole connector.

The user option can also be used for other functions, e.g. to create imbalance in supply and extraction ventilation.

**Modbus :** It is possible to communicate with the unit via modbus, which can be connected in pins 6 and 7 in the control panel's 8 pole connector.

Please refer to the user guide for setting up software etc.

Connect the plug to the unit at point 2: Control panel connection.



## External connections

If connecting external components, pass the cables through the built-in sleeve direct to the PCB.

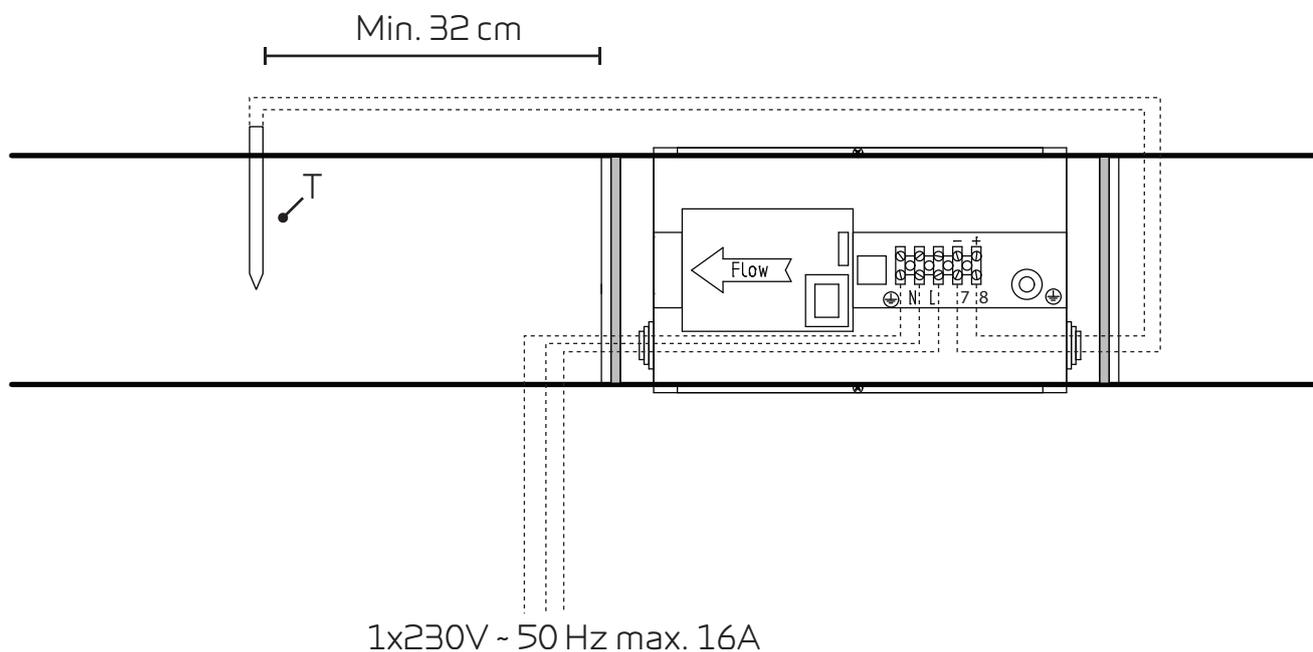
Cable entry via point 4. Connection through bushing to external connections



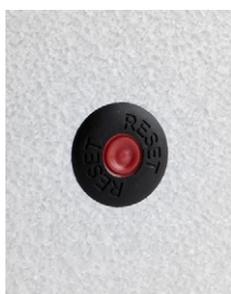
## External electrical preheating element

If the unit is the non-Polar version, an external preheating element can be purchased for retro-fitting.

The electric preheating element is mounted in the outdoor air duct before the unit with the necessary temperature sensor.



It is important that the sensor is placed at least 32 cm from the preheating element to achieve correct regulation.



The preheating element is fitted with a three-step safety system to prevent overheating.

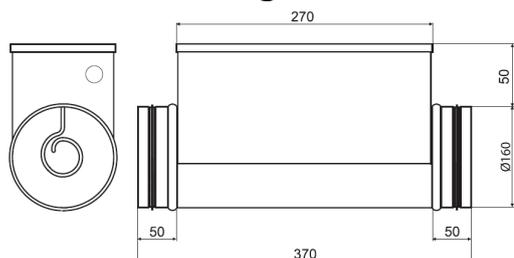
1. A thermostat regulates heat and ensures that the supply air temperature does not go below -1 °C
2. A max. thermostat switches off the preheating element if the temperature exceeds 50 °C
3. A manual safety thermostat can be used to switch off the preheating element if the temperature exceeds 100 °C



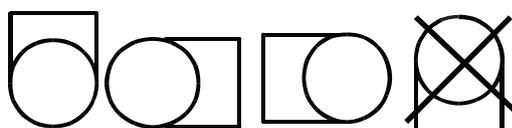
### ATTENTION

When mounting the electric preheating element, there must be a safety gap of minimum 15 cm from any flammable material. The heating element must be insulated with a fire retardant insulation material, but the cover on the connection box must not be insulated.

### Dimensional drawing:



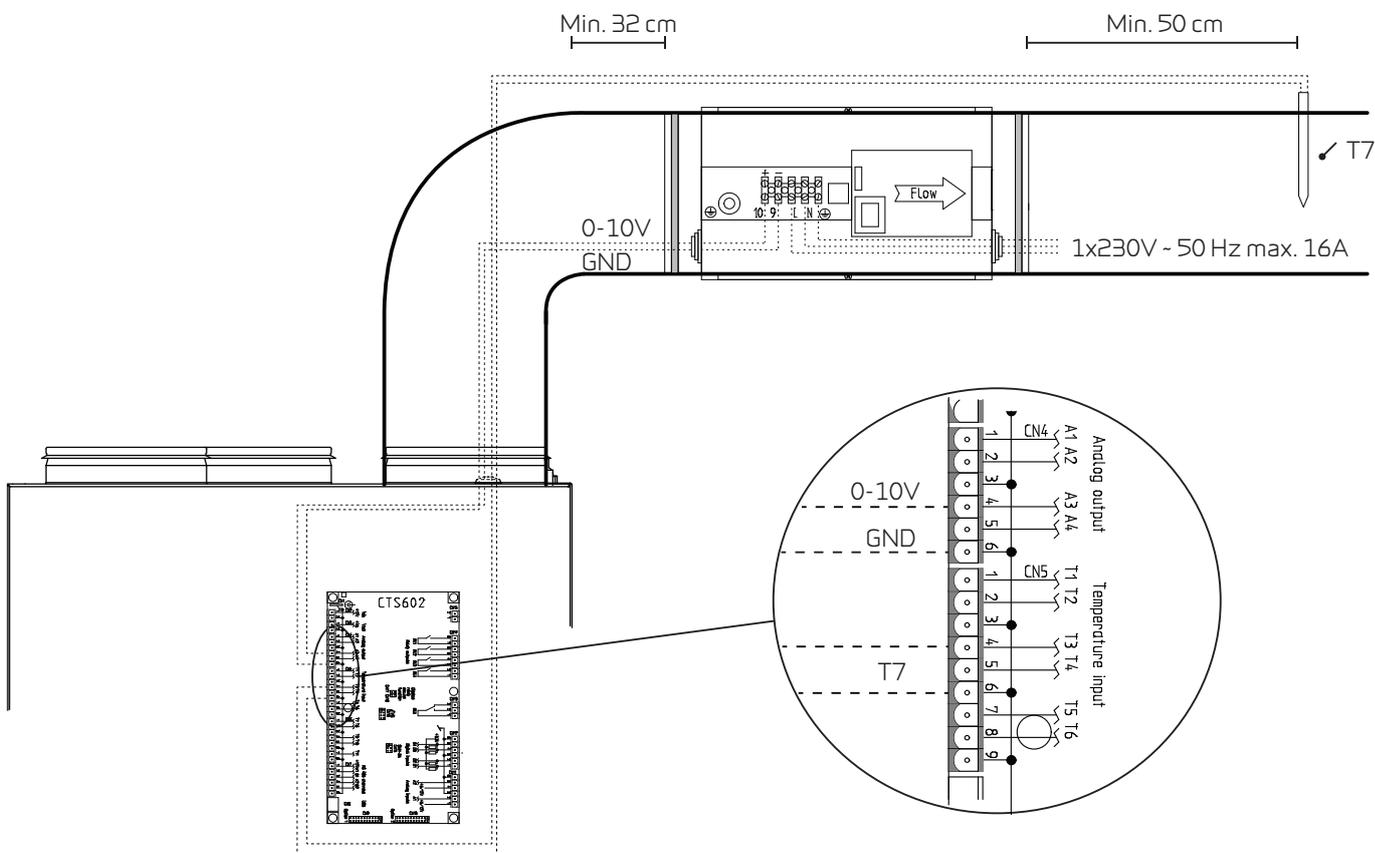
### Positioning options:



## Electrical comfort heater

For precision control of supply air temperature, a comfort heater is required.

A comfort heater can be bought for installation in the supply duct (intake). The sensor and connection to the control unit are supplied.



Wiring diagrams are included with the products.

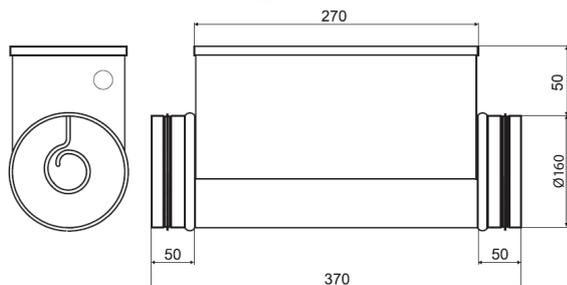
Cables are run along the duct and through bushings on the top of the unit down to the PCB, where they are connected according to the wiring diagram.



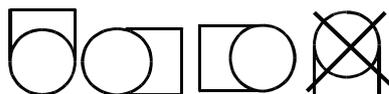
### ATTENTION

When fitting a comfort heater, ensure a safety gap of minimum 15 cm to any flammable material. Insulate the comfort heater with a fire-resistant insulation material. Do not insulate the connection box lid.

### Dimensional drawing:



### Positioning options:

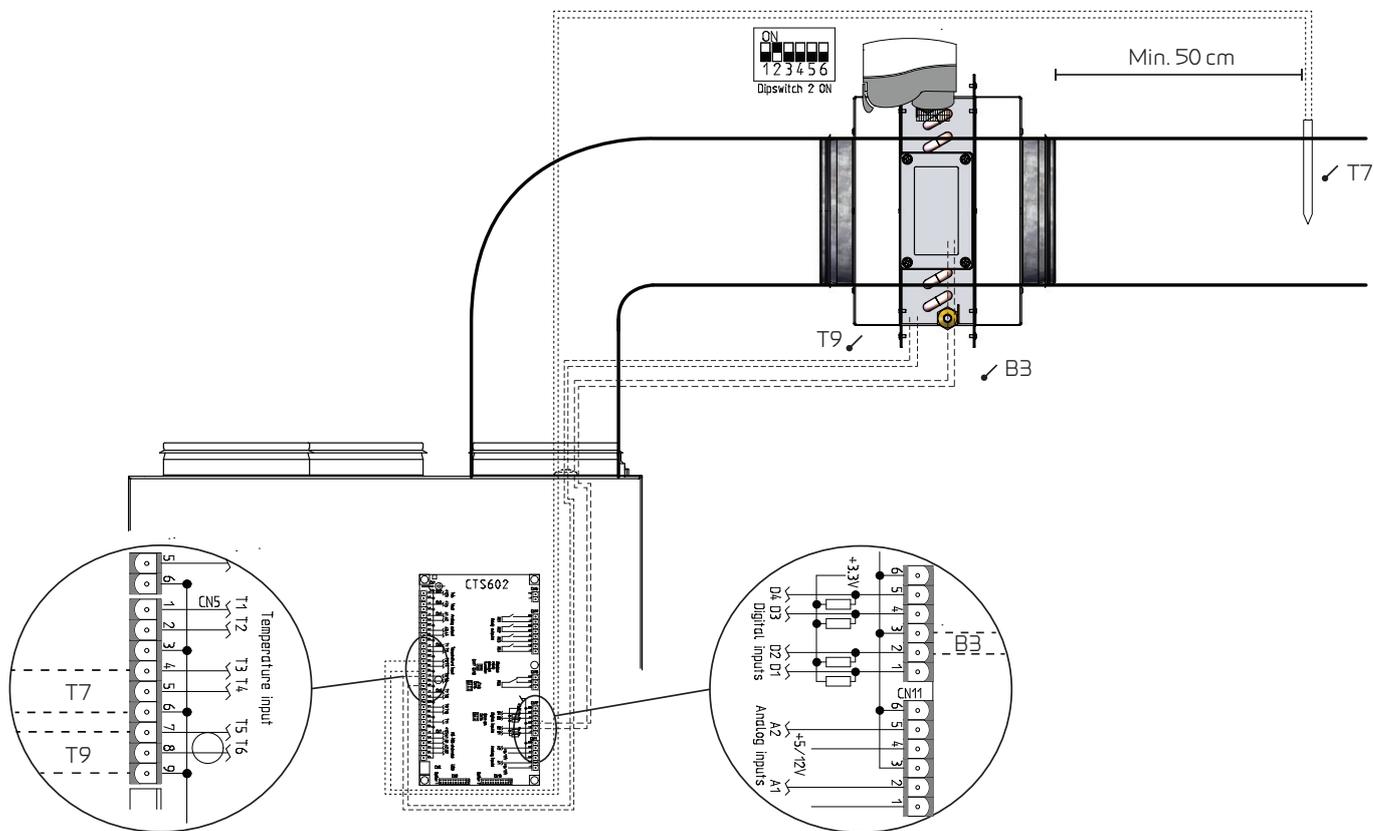


# Water comfort heater

For precision control of supply air temperature, a comfort heater is required.

A water heating element can be purchased for fitting in the supply air duct, and comes with the necessary sensor and connection to the unit.

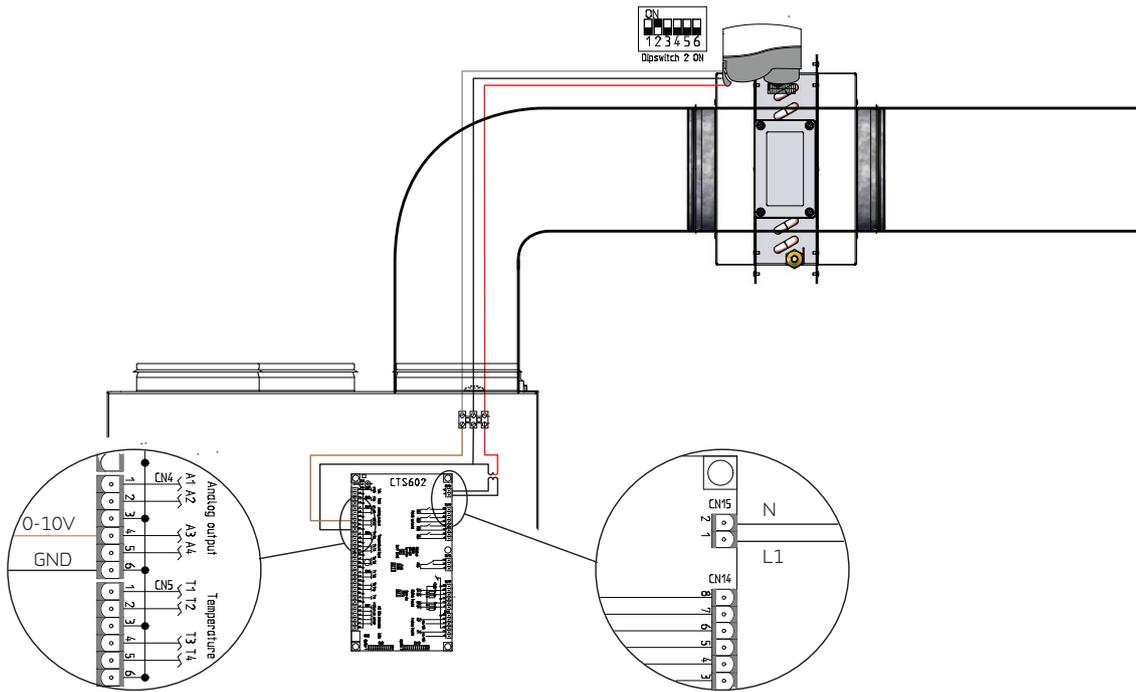
## Connecting sensors



T7: Temperature sensor - T9: Temperature sensor, comfort heater - B3: Frost protection

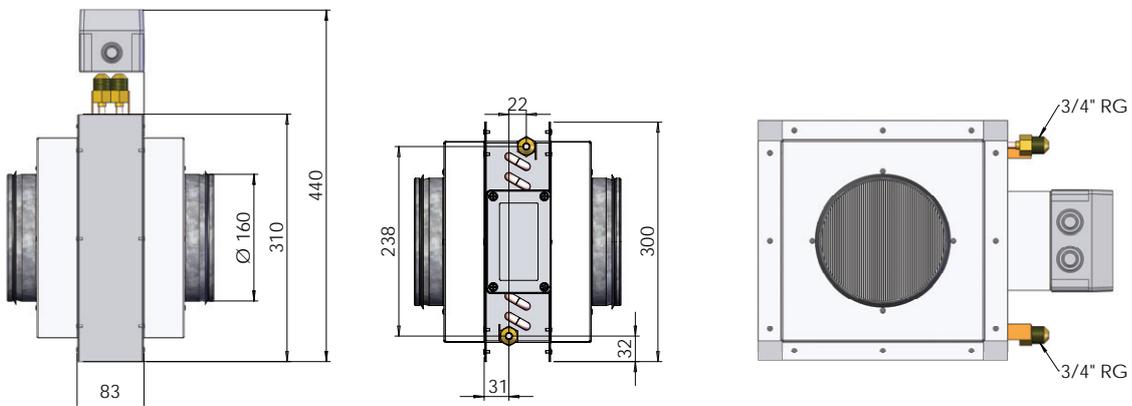
Cables are run along the duct and through bushings down to the PCB, where they are connected according to the wiring diagram.

Electrical connection of two-way valve



Cables are run along the duct and through bushings on the top of the unit down to the PCB, where they are connected according to the wiring diagram.

Dimensional drawing:



# Plumbing

## Condensation drain

### Important information

The unit is supplied with dia. 20 mm condensate drain (PVC, GF-fittings).



#### ATTENTION

A water trap **must** be established in the condensate drain in order to ensure that condensate can drain off.



#### ATTENTION

If the unit is assembled outside the climate screen, it is important to secure the condensate drain against icing with a heating cable. Frost protection of the unit is the installer's responsibility.

During operation, a underpressure of up to 500 Pa may develop in the drain, corresponding to 50 mm water column. This water trap must therefore be mounted as shown in order to prevent drying out and return flow.

The connection of the water trap must be air-tight, otherwise air will be let into the unit and condensate will remain in the unit. This could lead to water damage if the condensate overflows the condensate tray and from there out of the unit.

After mounting the water trap, its function is tested as follows (the unit must be connected to the duct system and the lid must be closed).

The condensation tray are filled with water and the unit is operated at the highest fan speed. Allow it to run for several minutes. Check that there is no water in the condensation tray when the test is finished.

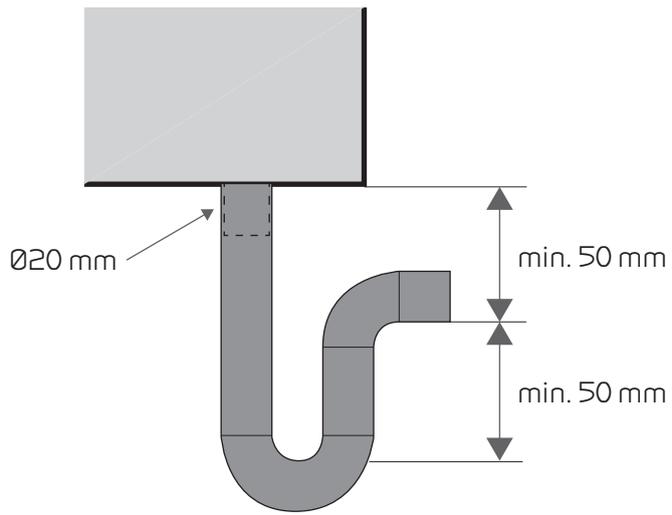
The water trap may dry out and thus prevent water escaping from the condensate tray, as air will be sucked into the unit. The water trap should therefore be checked at regular intervals, especially in the summer, and filled with water as necessary. Increasing the height of the water trap compared to the minimum requirements will minimize the need for refilling.



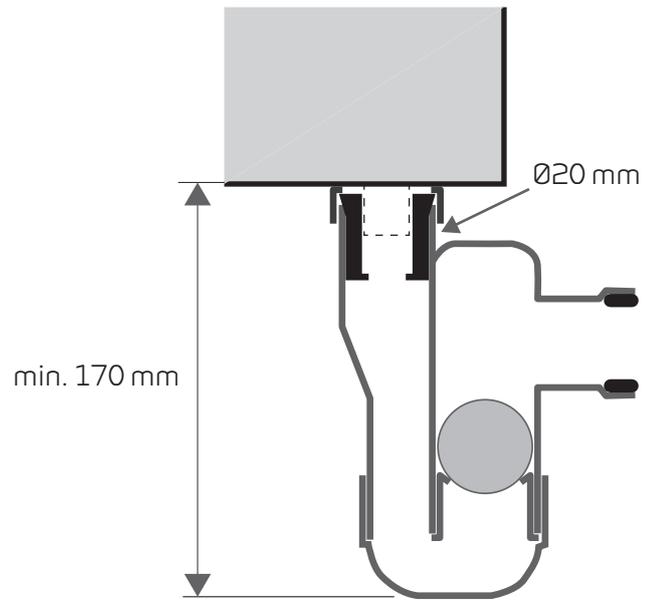
#### INFO

Nilan offers a water trap with a ball. The ball ensures that no air is sucked into the unit through the condensate drain if the water trap dries out. This ensures that water in the condensate tray can drain off and it makes it unnecessary to check the condensate drain so often.

### Connection bottom



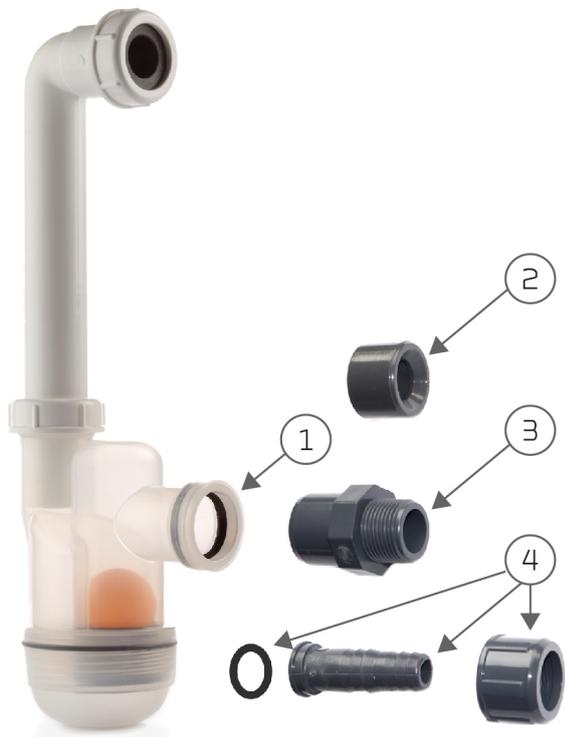
Connection of water trap generally



Connection of Nilan water trap with ball

# Plumbing connections for accessories

## Water lock with ball (option)



### Connections for Nilan water lock:

1. Water lock with Ø32 mm spout
2. Reduction spout to Ø20 mm
3. Reduction piece to ¾" RG
4. Reduction spout for ½" hose

## Hot water heater (accessory)



### CAUTION

Connection of the hot water heating element must be carried out by an authorised plumber.



### CAUTION

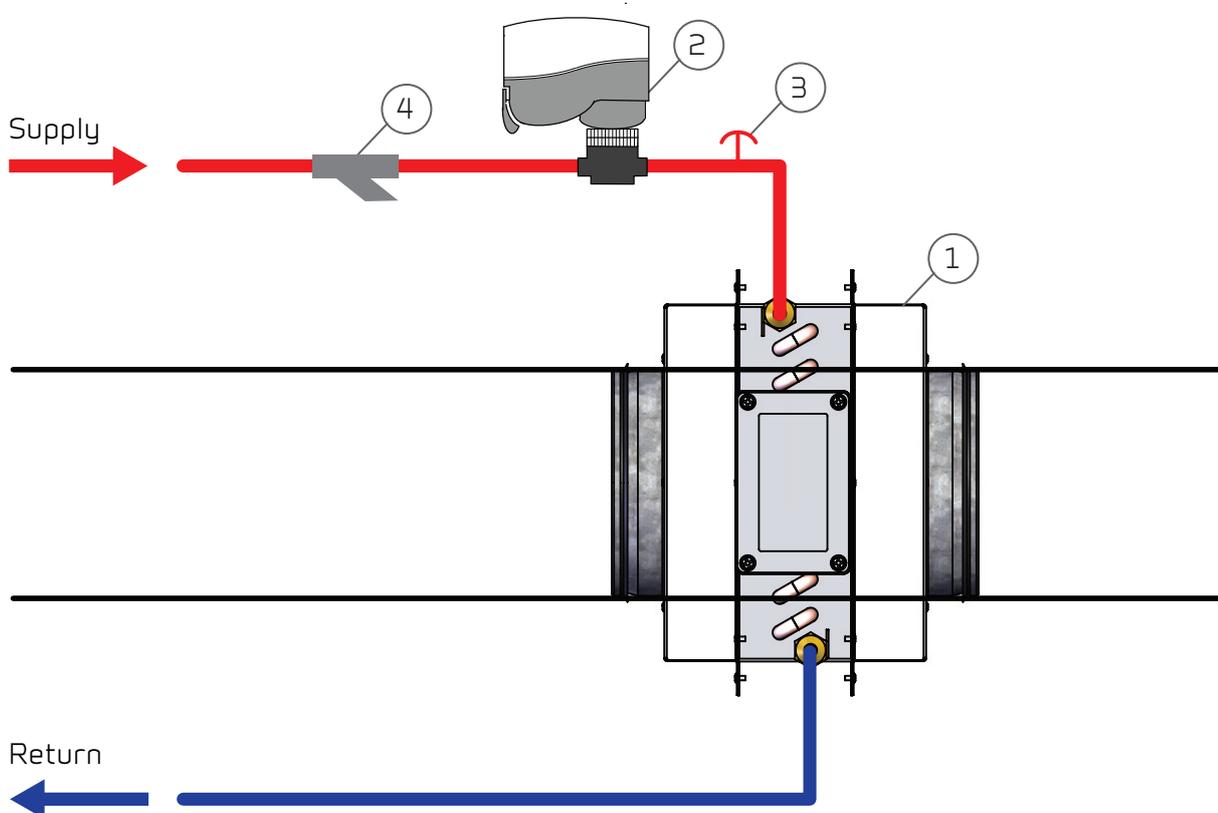
If the control unit is installed outdoors or external to the building, it must be protected against frost.

The heater is for duct connection, and cannot be integrated into the control unit.

The heater is supplied as an accessory and consists of: Heating element with temperature sensor T9 and frost thermostat B3, actuator, regulator valve and autotransformer.

Must be activated via the control system.

The system should be connected, bled and checked for leaks. The system can then be started. Check and clean the sediment trap after flushing the system appropriately.



1. Water heater
2. Actuator and regulation valve: Danfoss AME 140/24V 0-10V signal, 2-way valve VZ2 Kv0,4 (supplied by Nilan) Kvs-value MUST be checked compared to the supply.

Differential pressure: 0.1-0.6 bar

At a supply temperature of 60°C, a cooling effect of 20°C over the heater is calculated at maximum heat output.

3. Bleed valve (not supplied by Nilan)
4. Sediment trap (not supplied by Nilan)

**IMPORTANT, concerning Danfoss Actuator type AME 140:**

Mandatory procedure for refitting the actuator:

1. Disconnect from mains electricity. Remove actuator cover.
2. Disengage the gear by holding the button under the housing in while screwing the spindle upwards as far as it will go (counter-clockwise)
3. Fit actuator and reconnect mains electricity.
4. Switch DIP switch no. 1 to ON and then OFF.
5. Automatic calibration will run for up to 6 minutes. (The diode will flash during calibration before becoming constant).
6. Fit actuator cover.

# Ventilation installation

## Duct system

### Legislation

**ATTENTION**

All work must be carried out by qualified personnel and in accordance with applicable legislation and regulations.

### Ducts

There are two systems for transporting air round the building.

#### Spiral tubes

Spiral tubes are metal ducts which are cut to size with an angle grinder, screwed together with bends and manifolds and laid out in accordance with the working drawing. The duct pipes are typically laid at the rafter ends and fixed with perforated band or suspended with suspension band. Avoid unnecessary bends in the ducting.

To avoid noise transmission, where sound is transmitted from room to room, a sound damper must be mounted in each room.

The ducts must be insulated to avoid heat loss and condensation. In some cases this can be avoided if the ducts are led through the ordinary insulation or inside the climate screen.

#### NilAIR tubes

NilAIR tubes are a flexible system which is easy to mount. The tubes are easily cut to size with a hobby knife and laid according to the working drawing without use of bends and manifolds. A manifold box is installed after the unit and the tubes run from this out to the various rooms.

With NilAIR tubes it is unnecessary to mount sound dampers in each room, as there is no risk of noise transmission.

If the tubes are led outside the climate screen they must be insulated to avoid heat loss and condensation. This is easier than with spiral tubing, as NilAIR tubes are easier to lead through ordinary insulation.

NilAIR tubes are more flexible than spiral tubing and can therefore be laid in places where ordinary spiral tubing would be impossible.

### Unit

Nilan recommends mounting a flexible connection between the unit and the duct system.

This is to avoid oscillations from the unit being transmitted to the duct system, but also to ease future servicing where it is necessary to move the unit.

Nilan offers flexible silencing, which, apart from providing a flexible connection between the unit and the duct system, also dampen the passage of sound from the unit to the duct system.

Flexible silencing are insulated for condensation, but it may be necessary to insulate them further to meet local requirements for duct system insulation.

## Extract air

Exhaust valves are mounted in the moisture-generating rooms and strategically placed where they can extract the moisture air most effectively.

Moisture-generating rooms:

- Bathroom
- Toilet
- Kitchen
- Utility room

## Supply air

Supply air valves are mounted in habitable rooms and strategically positioned to give the minimum annoyance. For example, it is not recommended to mount incoming air valves over areas where people sit, as the air in some cases can be perceived as a draught.

Habitable rooms:

- Living room
- Kitchen-living room
- Bedroom
- Office

## Roof stack

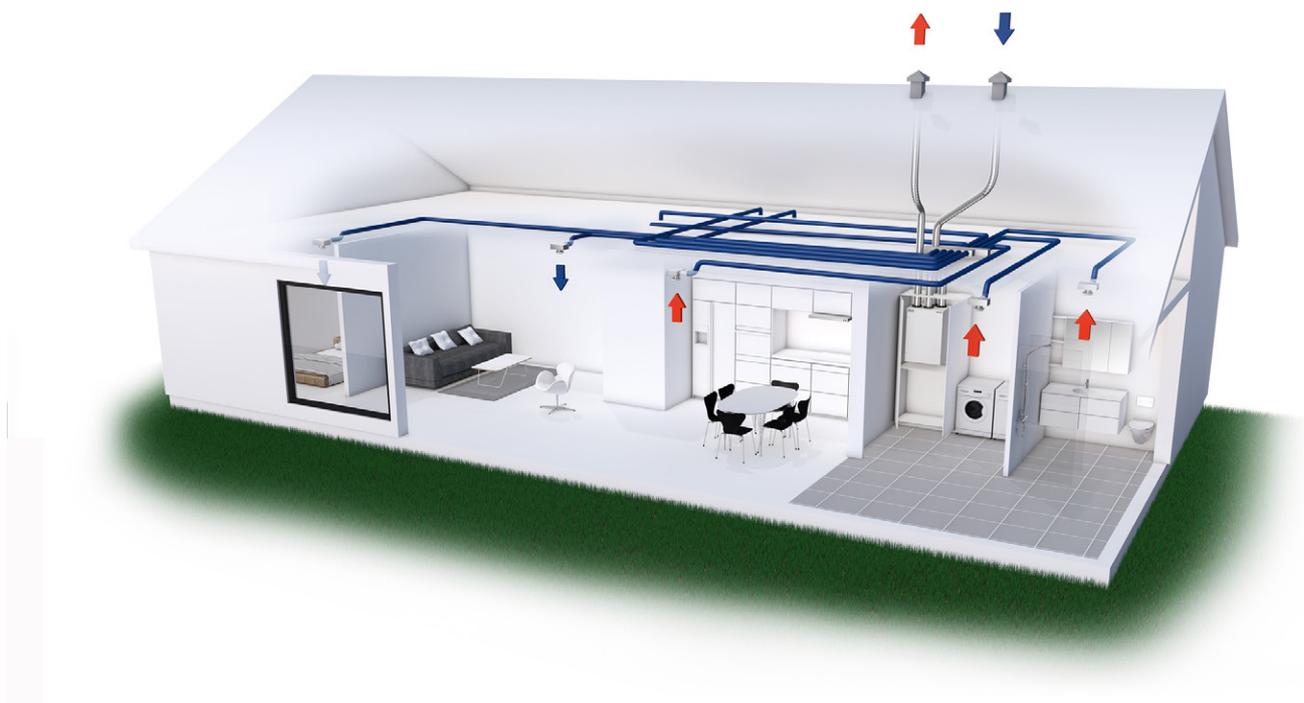
The roof inlet and outlet must be positioned and designed to limit pressure fluctuations in the ventilation system caused by wind impact, and also to prevent access by birds and other animals, and to ensure that the inlet and closed duct system are kept free of plant parts and foreign objects.

The air inlet must be located to minimise the risk of short-circuiting from the discharge air, having regard to the prevailing wind direction.

The air inlet should be placed a minimum of 0.5 m above the roof surface, but a minimum of 1 m over flat black roofs up to the underside of the inlet, to ensure that warm air is not drawn into the building in the summer. The air inlet should be located on the north or east sides of pitched roofs.

Sound damping should also be mounted between the unit and roof stacks to avoid noise annoyance to neighbours.

## Installation example



## Regulation

### Important information



#### ATTENTION

For the ventilation system to operate optimally, it is important that initial regulation is carried out correctly. We recommend having this done by experts.

It is important to measure the total supply (inlet) air and extract (outlet) air. The system must have a minimum vacuum, i.e. it must draw in more air out than in, to avoid humidity being pressed into the building construction.

### Balancing connectors

The unit has balancing connectors for measuring the supply air (inlet air) and extract air (outlet air) volumes.

The graph can be used for roughly setting the main air flow for dry operation without condensation precipitation.

On the extract air side (outlet air), the pressure drop  $dP_{3-4}$  [Pa] is measured between the connectors labelled 3 and 4. The air volume  $q_v$  [m<sup>3</sup>/h] is read off on the graph.

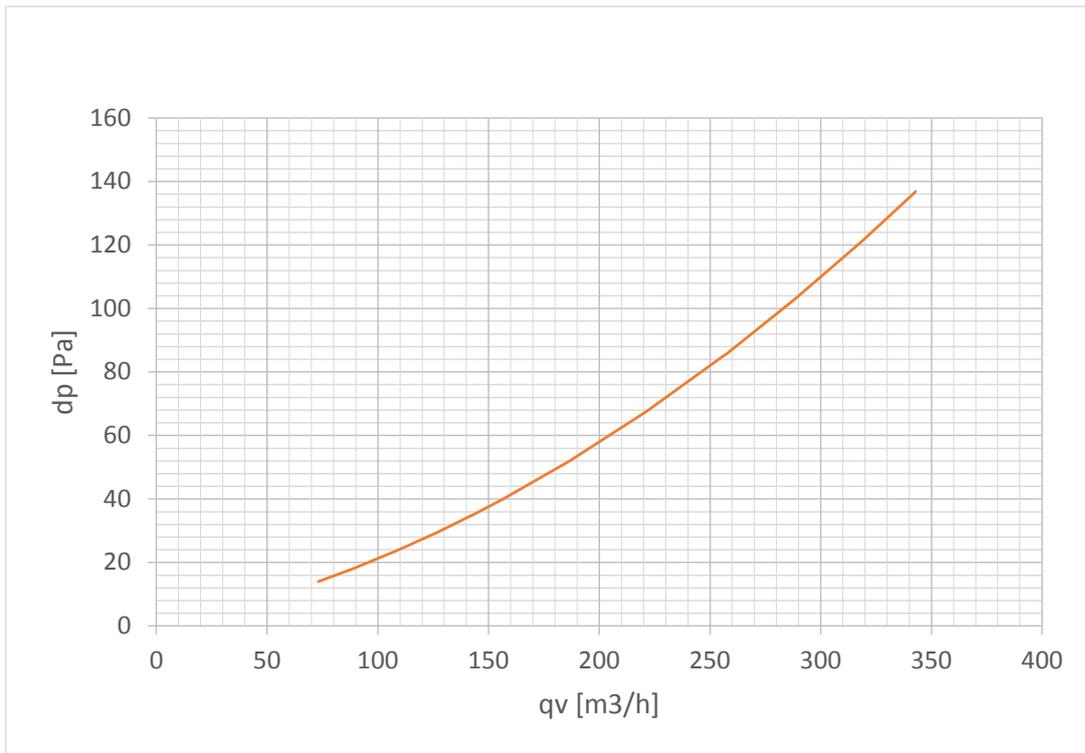
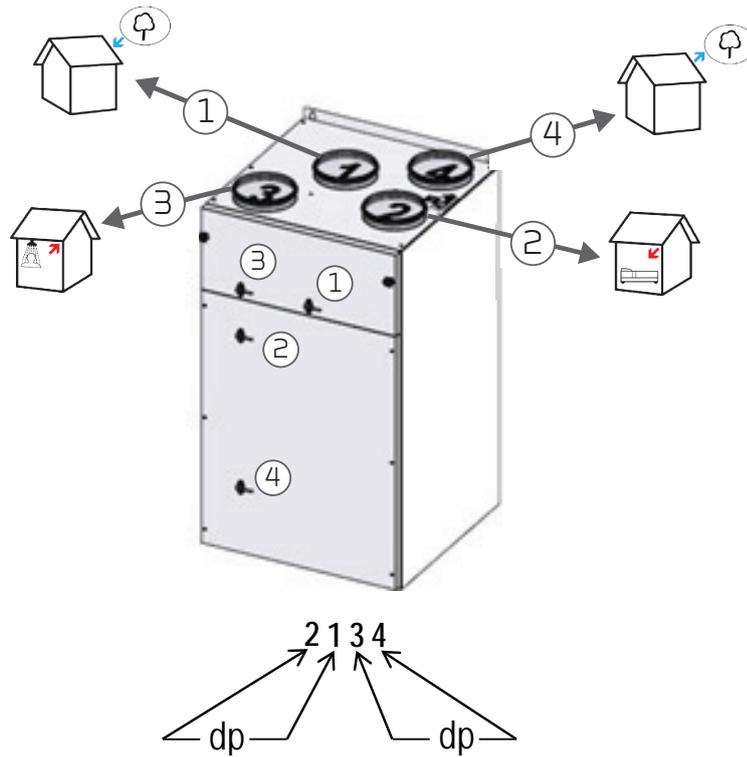
On the supply air side (inlet air), the pressure drop  $dP_{1-2}$  [Pa] is measured between the connectors labelled 1 and 2. The air volume  $q_v$  [m<sup>3</sup>/h] is read off on the graph.



#### ATTENTION

The capacity in the pressure drop diagram is based on a dry heat exchanger.

# Pressure drop diagram



# Software settings

## Control panel

### Functions



The CTS602 control panel offers the following functions:

1. **Light diode**

Constant yellow light:	The bypass damper is open
Flashing yellow light:	The unit is in alarm mode
2. **Text field**

Text is shown on 2 lines, each of 8 characters.  
 The upper line shows a help text.  
 The lower line shows the related setting values for the help text.
3. **ESC**

To go to the main menu
4. **▲**

To change the value
5. **▼**

To change the value
6. **ENTER**

To activate and save the chosen value
7. **OFF**

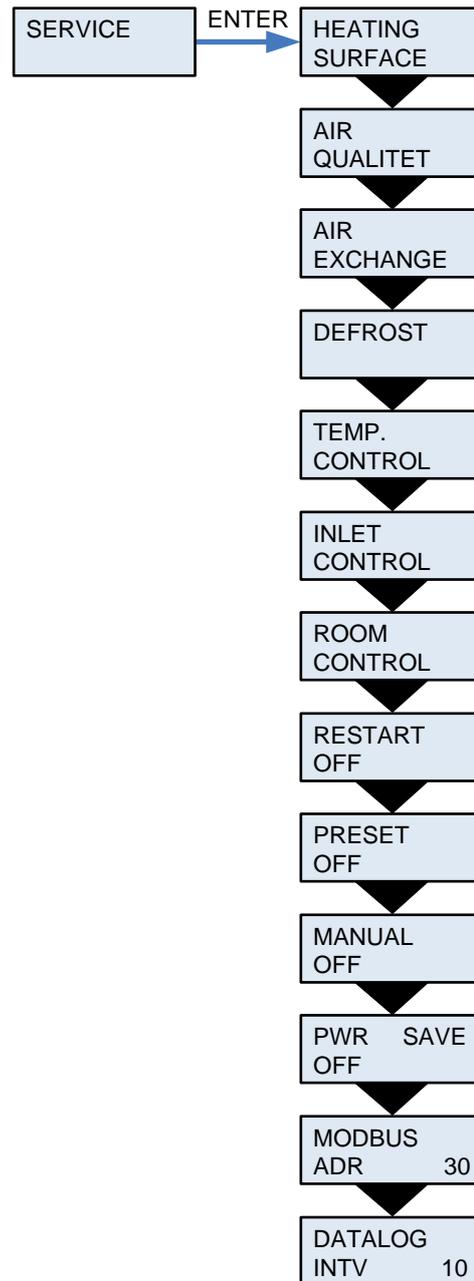
To switch off the unit
8. **ON**

To switch on the unit

If no button is pressed for a period of a minute, the control system will automatically return to the main menu.

If you are programming when the control system returns to the main menu, all data will be saved, but only if you previously have saved them by pressing **ENTER**. Flashing values and text will NOT be saved. It is always possible to go back to your programming and resume from where you left off.

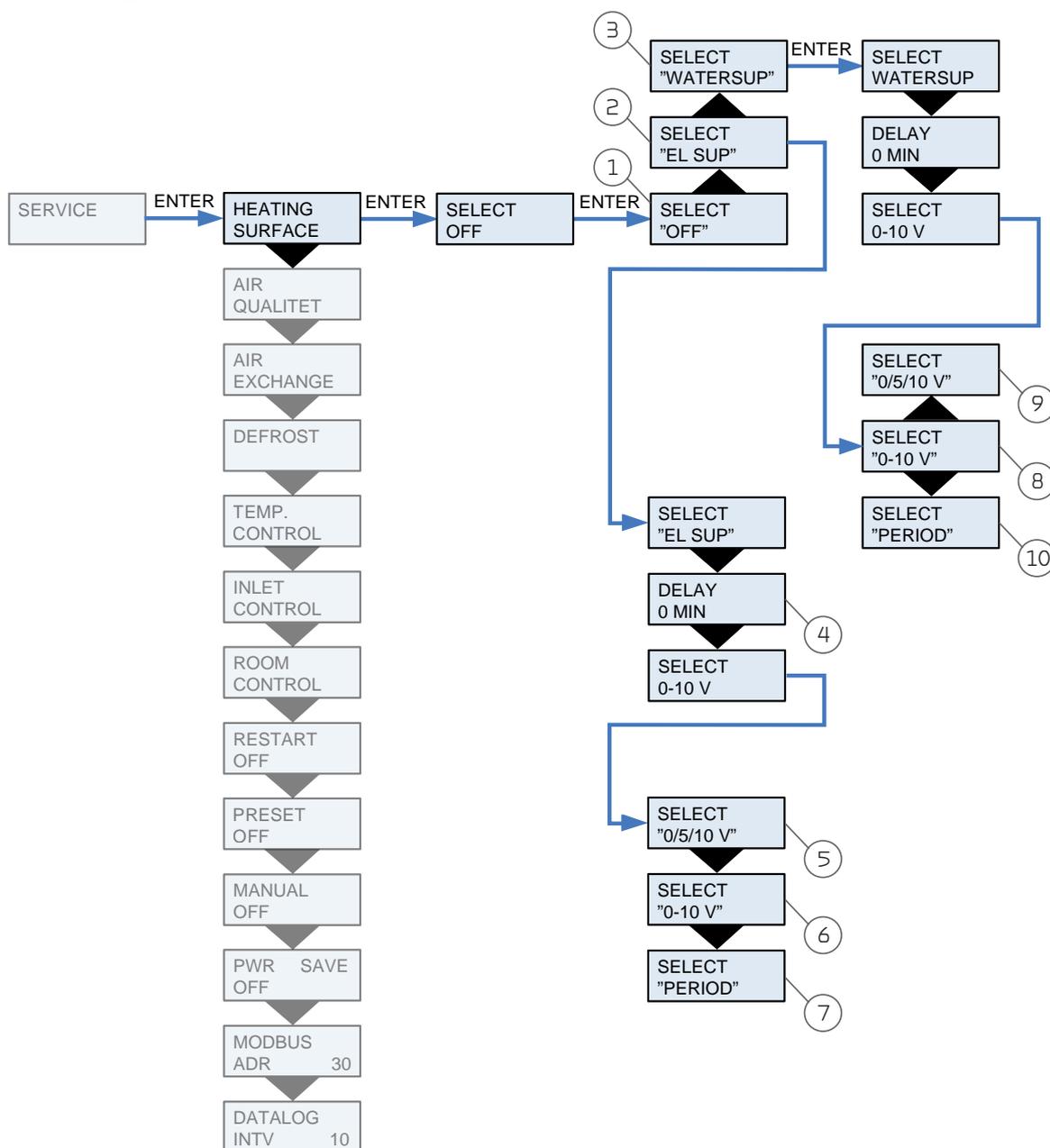
## Service menu



### Service menu main points

Hold ▼ and ENTER keys down together for 10 sec. The service menu will then be accessible. Press ▼ repeatedly until SERVICE appears on the display. Press ENTER to enter the service menu using the ▲▼keys.

## Heating element

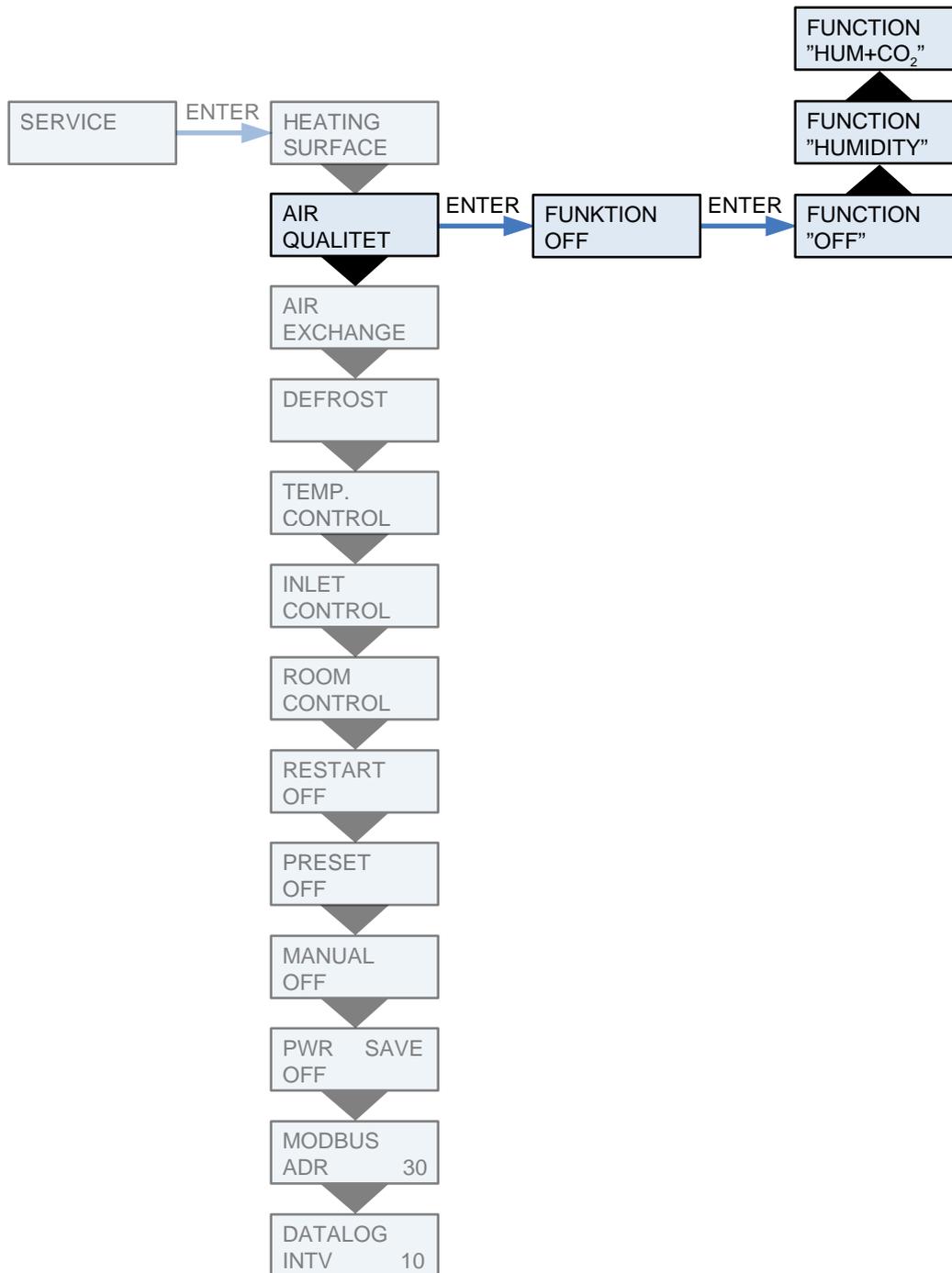


- |                       |  |
|-----------------------|--|
| 1. SELECT "OFF"       | Select "OFF" for units with no comfort heater.   |
| 2. SELECT "EL SUP"    | Select when installing an electric heater controlled via 0-10V signal.                                   |
| 3. SEECT "WATERSUP"   | Select when installing a water heater. Control via 0-10V signal.   |
| 4. DELAY 0 MIN        | Delay from startup of readers and heating requirement until the comfort heater is activated (0-60 min.). |
| 5. SELECT "0/5/10 V"  | Pulsing, 1 min. period.  |
| 6. SELECT "0-10 V"    | Stepless analogue.   |
| 7. SELECT "PERIOD"    | 10V ON/OFF 1 min. period.  |
| 8. SELECT "0-10 V"    | Stepless analogue.   |
| 9. SELECT "0/5/10 V"  | Pulsing, 1 min. period.  |
| 10. SELECT "0/5/10 V" | 10V ON/OFF 1 min. period.  |

A comfort heater can be retro-fitted. The heater must be activated via the CTS 602 service menu to work with the unit, and to activate frost protection of the heater.

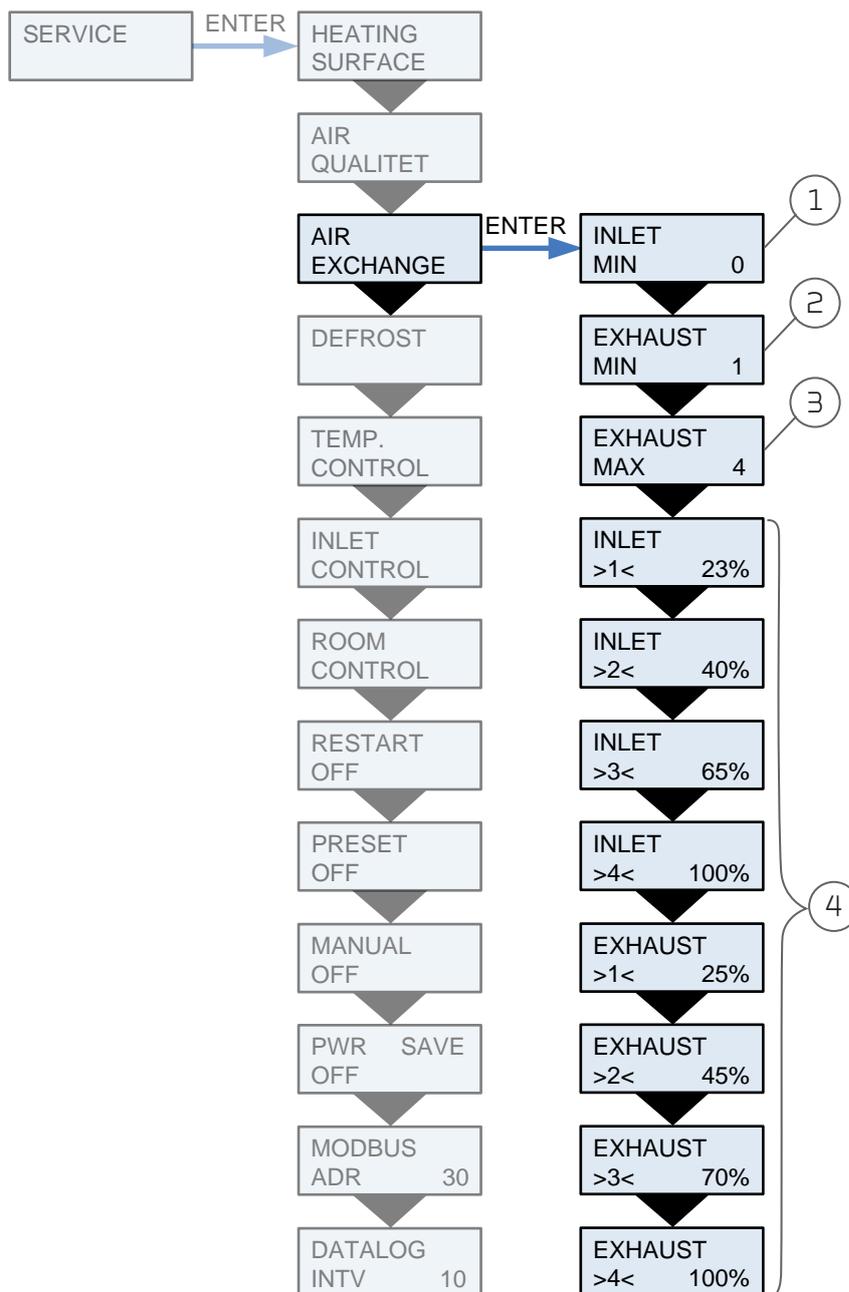
After an optional heater, are the T7 intake sensors.

# Air quality



The "AIR QUALITY" menu allows selection of humidity sensors and/or CO<sub>2</sub> sensors.

## Air changes

**1. INLET MIN 0**

The value indicates the minimum permissible fan speed for the inlet air/ supply air (0-2).

**2. EXHAUST MIN 1**

The value indicates the minimum permissible fan speed for the outlet air/ extract air (1-2).

**3. EXHAUST MAX 4**

The value indicates the minimum permissible fan speed for the exhaust / extract air (3-4).

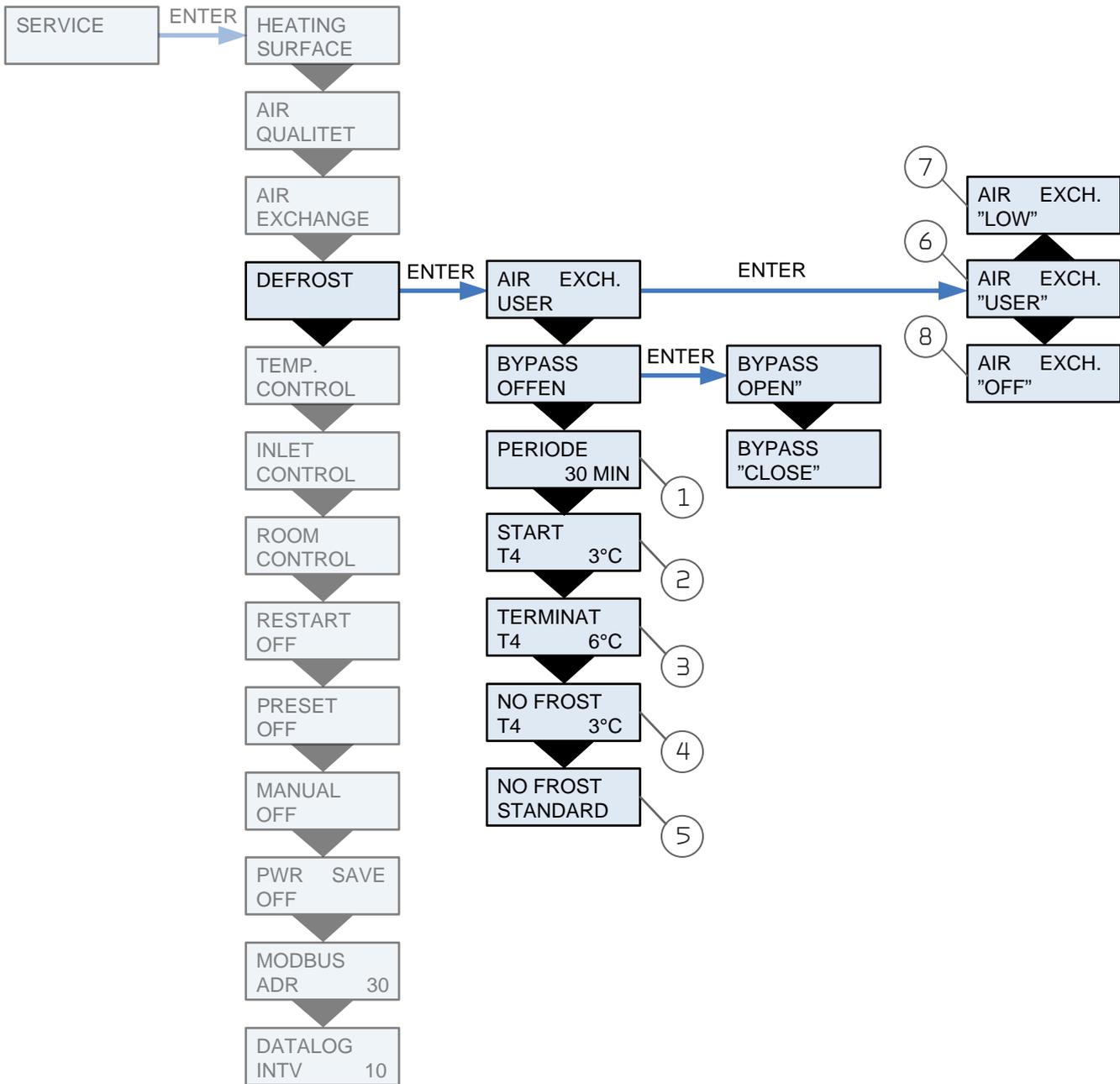
**4. INLET/EXHAUST**

Option for setting each fan speed as a percentage of the maximum fan output.

The menu "AIR EXCHANGES" allows the four fan speeds (airflow rates) in the unit to be freely adjusted. Supply air (inlet air) and extract air (outlet air) can be individually set for each fan speed.

A minimum fan speed can be set for the inlet air and both minimum and maximum speeds for the extract air.

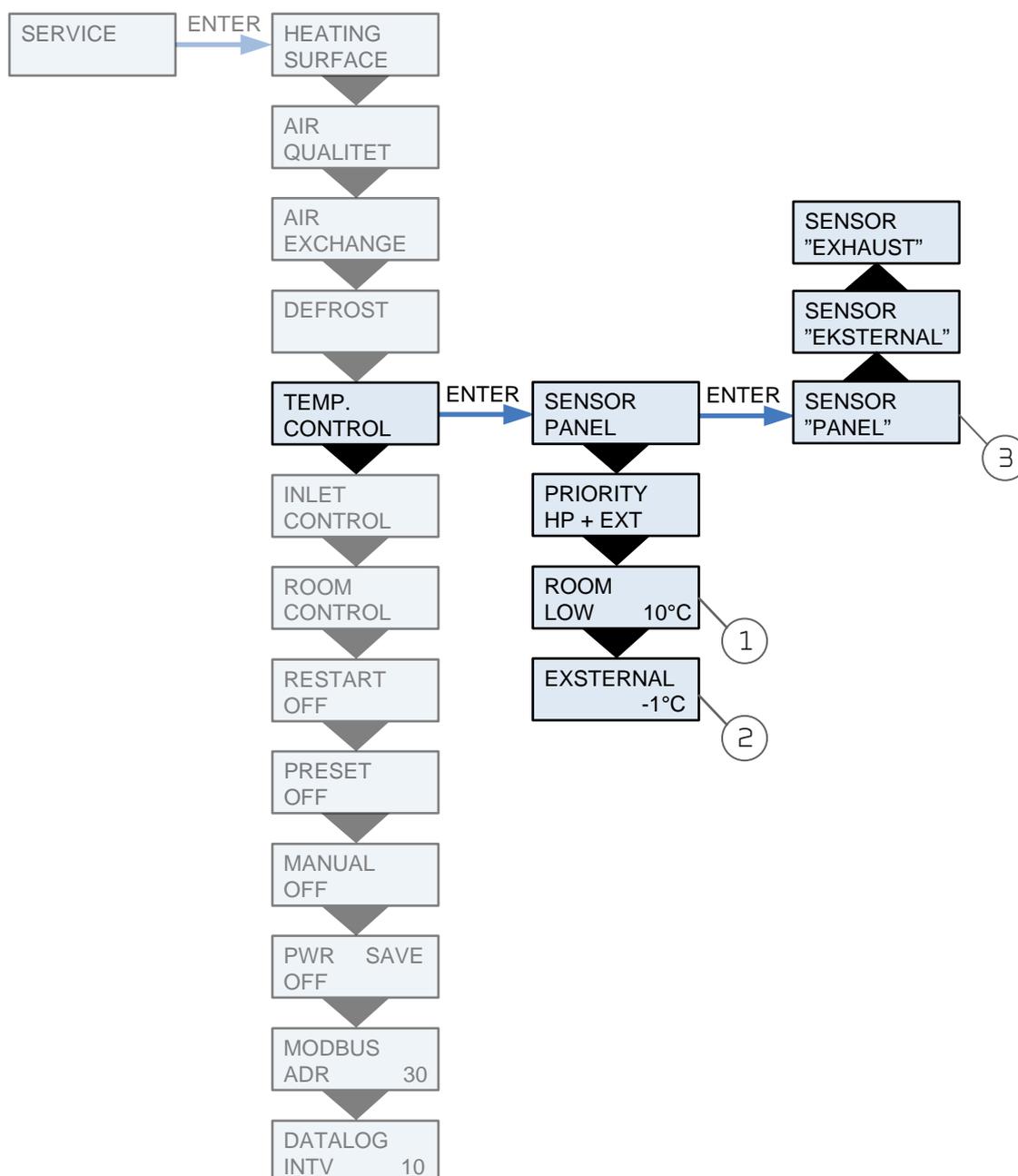
# Defroster



1. PERIOD 30 MIN  
The number of minutes of fixed time between 2defrosts. Can be set from 15 to 720 min.
2. START T4 3°C  
START T4 = OFF → Defrost disabled, use heater only and NO FROST T4 is active default 3°C (1-5).
3. TERMINAT T4 6°C  
Adjustable temperature for stopping defrosting measured on T4, discharge sensor.
4. NO-FROST T4 3°C  
If NO-FROST T4 = OFF → Use passive defrost only, and START T4 is set to default 3°C (1-5).
5. NO-FROST STANDARD  
Set to EXTRA is a preheater is retro-fitted.
6. AIR CH. "USER"  
User-defined intake during defrosting.
7. AIR CH. "LOW"  
Low level intake during defrosting fan performance.
8. AIR CH. "OFF"  
Intake stopped during defrosting.

The " DEFROST " menu allows setting unit behaviour for defrosting the counterflow heat exchanger.

## Temp. control



## 1. ROOM LOW 10°C

Stops the unit at this room temperature (20-1°C). "--" indicates that the function is inactive. (The setting "--" must be used if the panel is located in a cold room).

## 2. EXTERNAL -1°C

Option for extra room heating via relay output R8, if this is fitted. This is only possible on the additional PCB. The temperature is added to or subtracted from the set point.

## 3. SENSOR "PANEL"

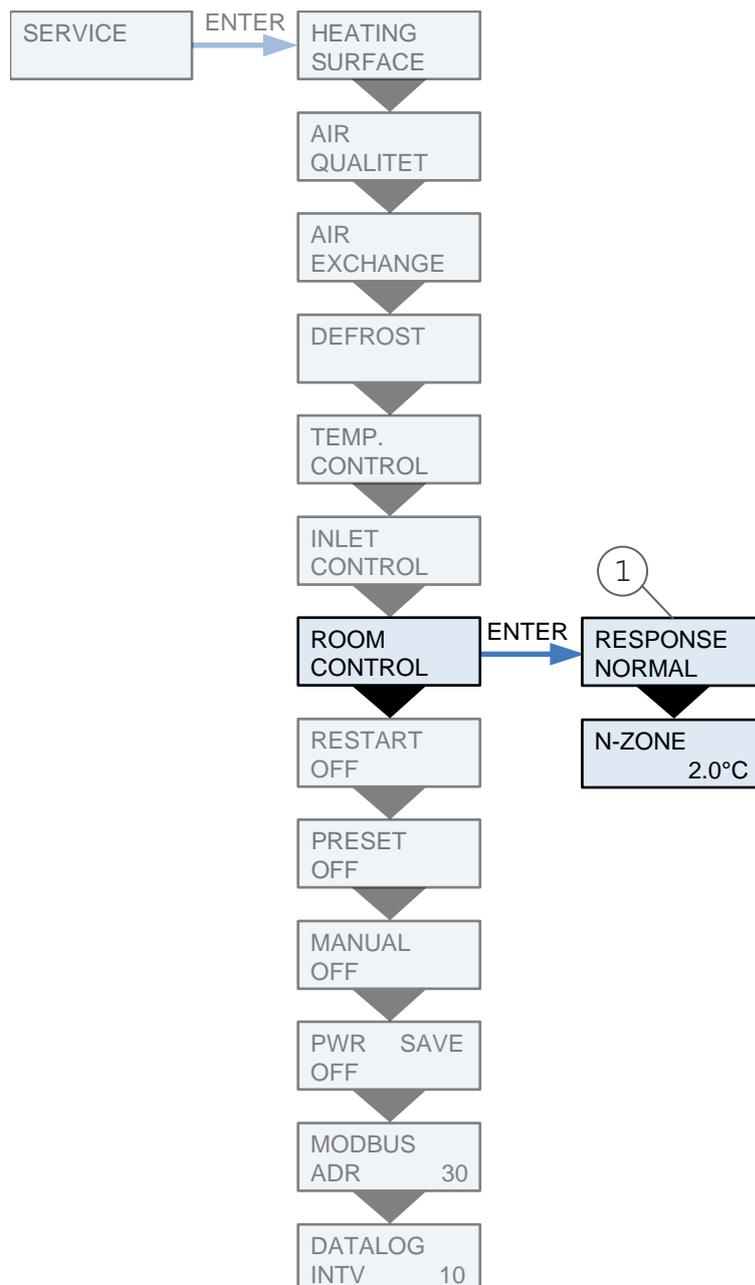
Indicates which sensor is to control the temperature: **ROOM:** T15 (Panel sensor)

**ROOM EXT:** T10: (to be mounted in representative extract fitting)

**EXHAUST:** T3 (Extract air).

The menu "TEMP CONTROL" allows selection of the operative temperature sensor in the unit. It is possible to set a minimum value for stopping the unit in order to prevent further cooling of the building if the primary heat supply fails.

## Room control



**1. RESPONSE NORMAL** The **RESPONSE** submenu is only available if the CTS control unit is set up for a heater.

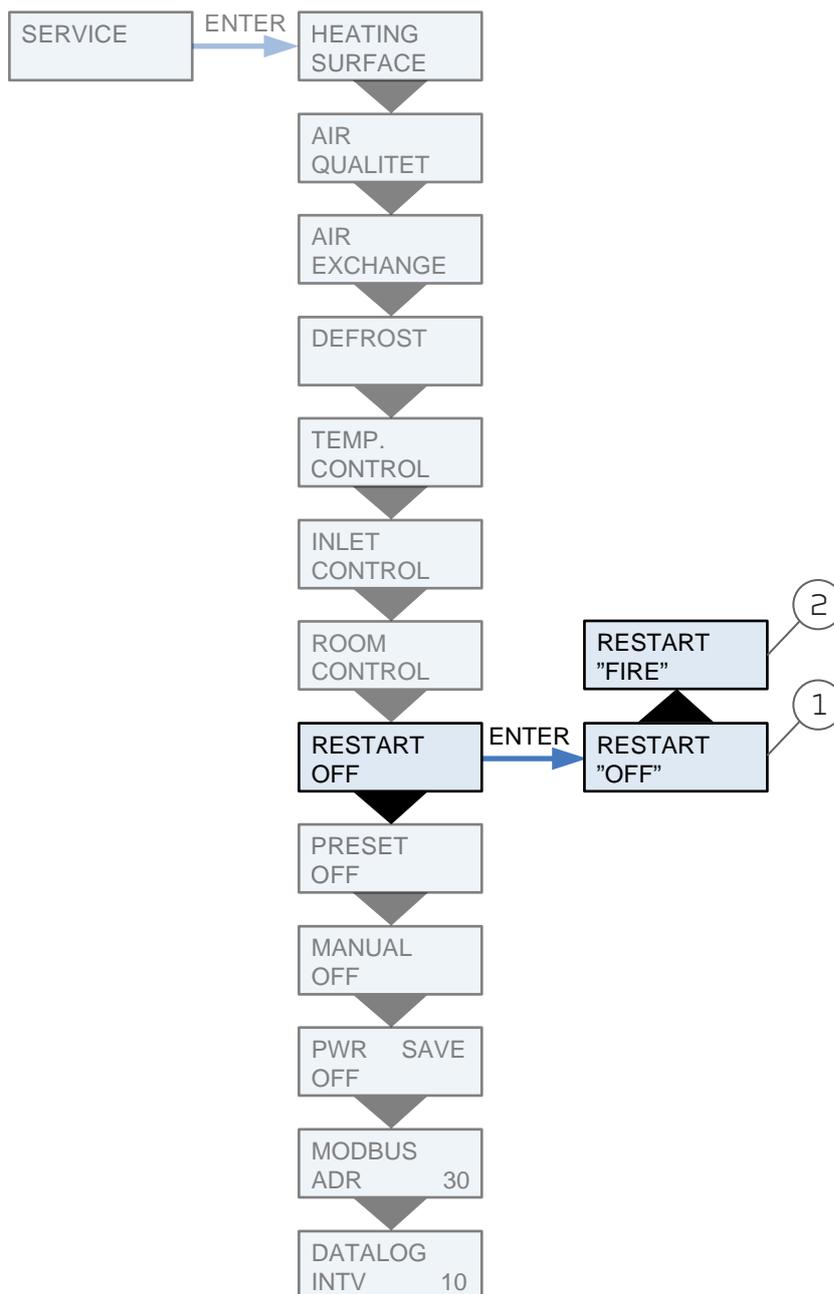
The "**ROOM CONTROL**" menu allows setting the regulator to control room temperature.



### ATTENTION

The parameters of the "**ROOM CONTROL**" menu should only be adjusted by personnel experienced in regulation techniques.

## Re-start



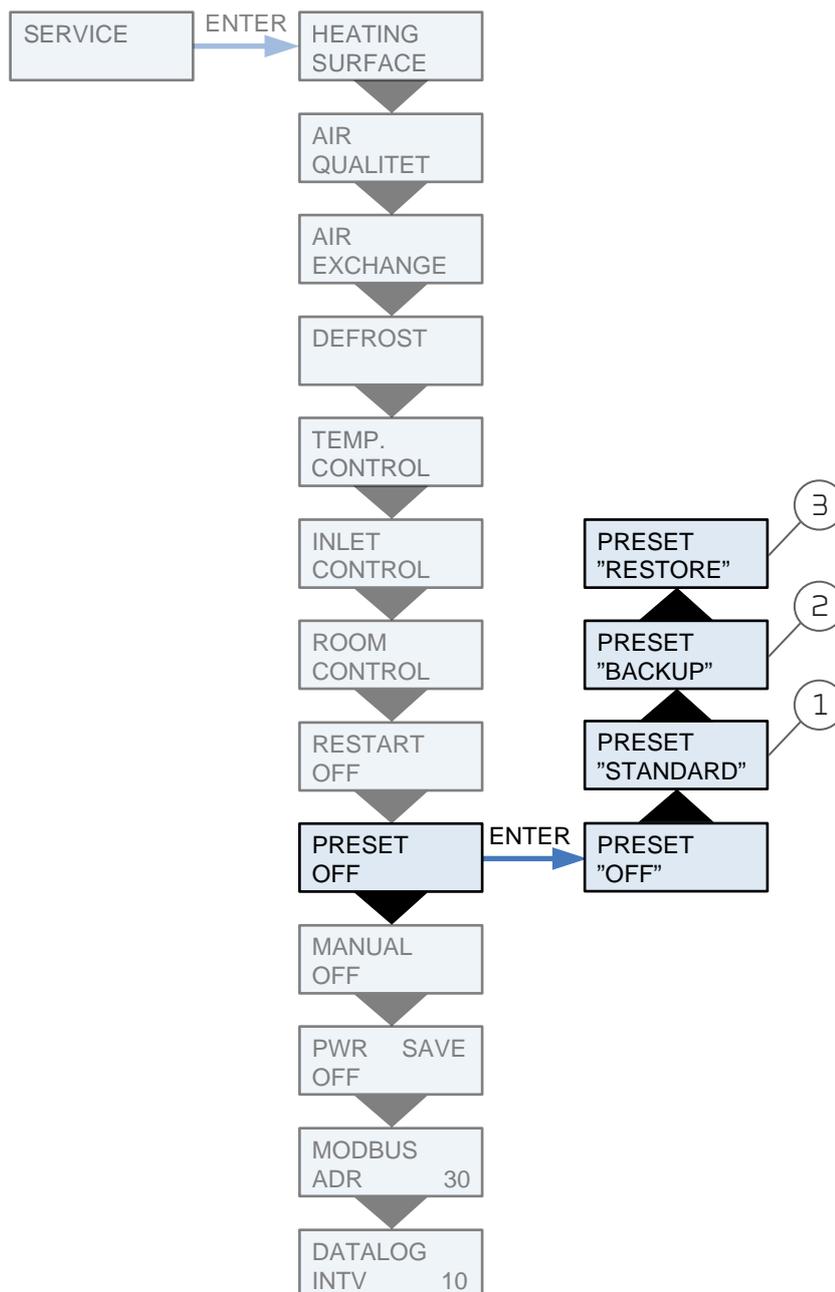
- 1. RESTART "OFF" States that the control unit should **not** be restarted automatically in the event of a high/low pressure alarm.
- 2. RESTART "FIRE" Fire: Automatic cancel when fire inlet is back to normal.

### Cancelling FIRE ALARM

Fire alarm (code 3) can be self-cancelling via selecting **SERVICE - RESTART** menu: [ OFF , FIRE].

Fire alarms can be cancelled automatically in the event of fire exercises/testing. The fire thermostat input must be returned to normal condition (closed contact) for cancellation.

# Reset



## 1. RESET "STANDARD"

When "STANDARD" is selected, all default settings are restored. If a heater is fitted, it must be reselected in the service menu. A water heater is NOT protected against frost before it is correctly fitted and selected in the service menu.

## 2. RESET "BACKUP"

The customer-specific settings will be saved.

## 3. RESET "RESTORE"

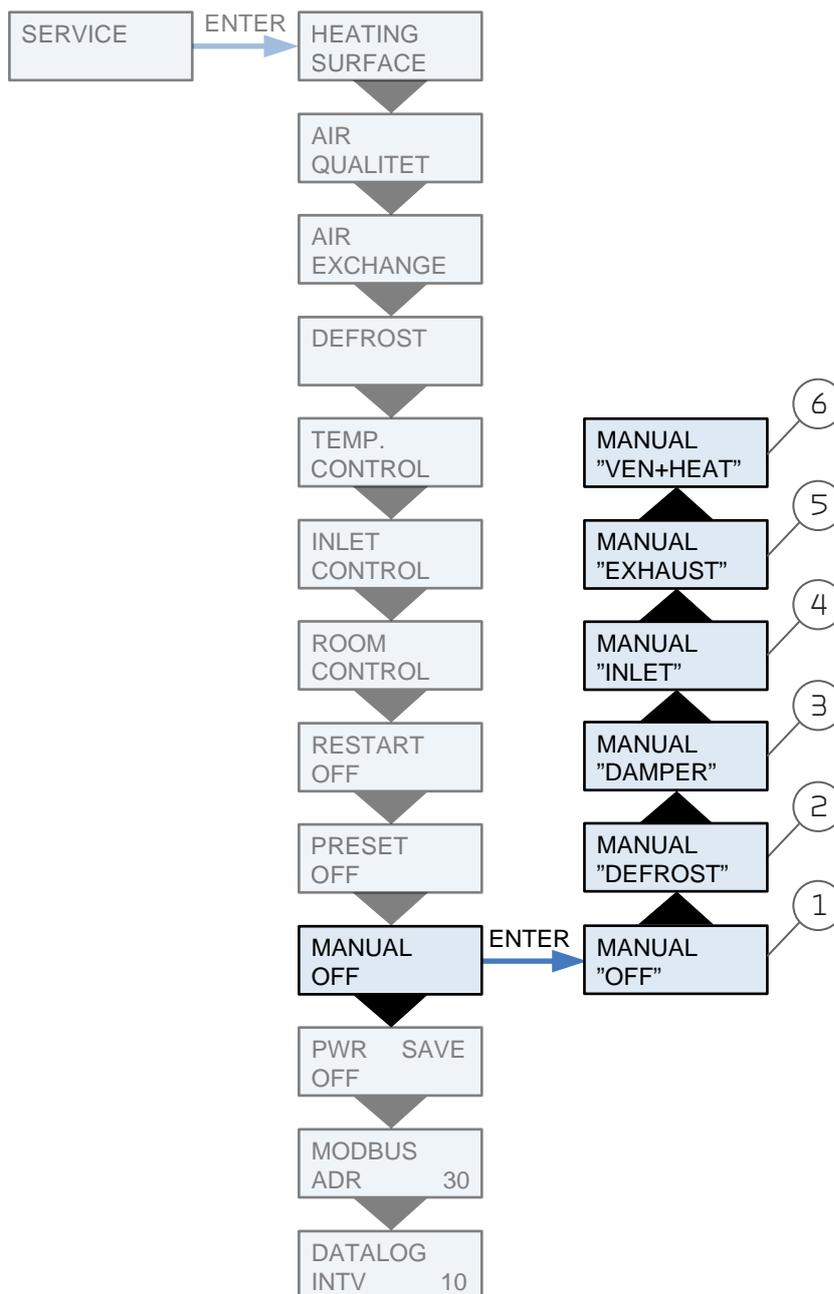
The customer-specific settings will be restored. The unit must then be started.

The "RESET" menu allows restoration of default settings.

The RESTORE menu allows re-entering of a copy of the unit's setup.

Hold down ESC+▲ for 5 seconds to bring up a new menu point RESTORE, accept/activate by pressing ENTER.

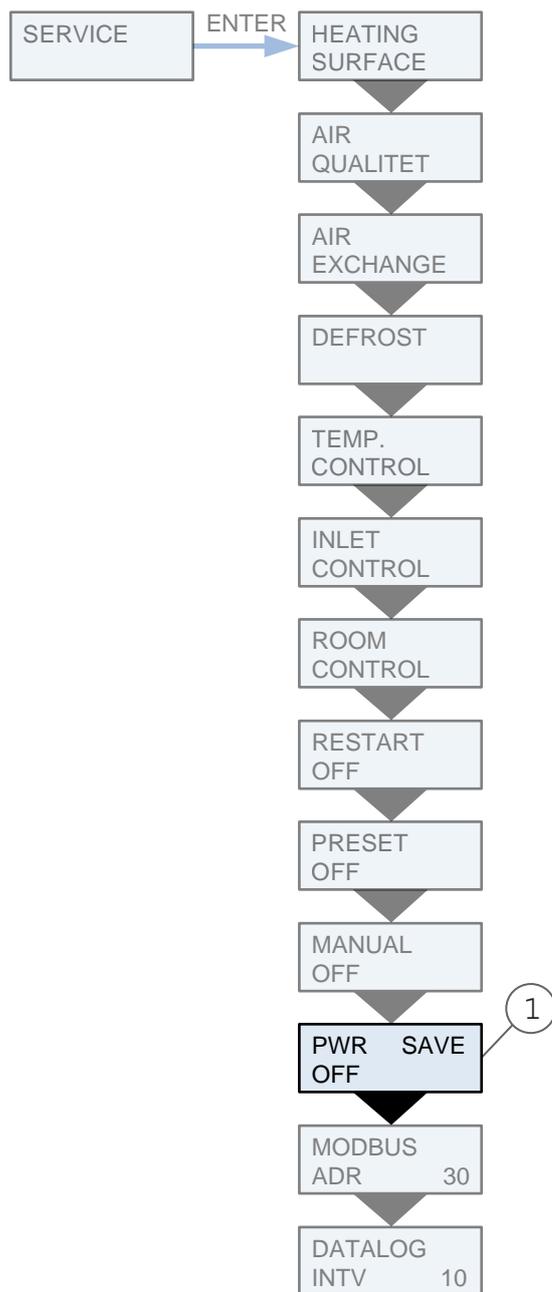
# Manual



- |                      |   |
|----------------------|---|
| 1. MANUAL "OFF"      | Manual test deactivated (normal status).                              |
| 2. MANUAL "DEFROST"  | Test of defrost function.   |
| 3. MANUAL "DAMPER"   | Test of Bypass damper.  |
| 4. MANUAL "INTAKE"   | Test of intake/supply air.  |
| 5. MANUAL "EXTRACT"  | Test of extracted/return air.   |
| 6. MANUAL "VEN+HEAT" | Test of ventilation and heating. 50% signal to heater during testing. |

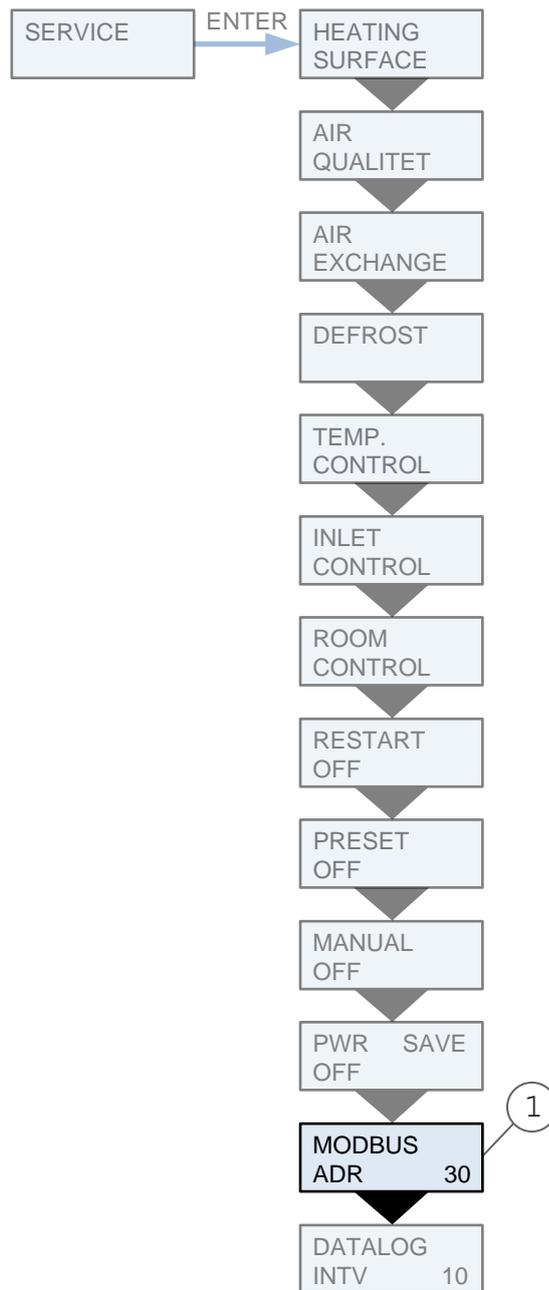
The "MANUAL" menu allows manual testing of the unit's functions.

# PWR save



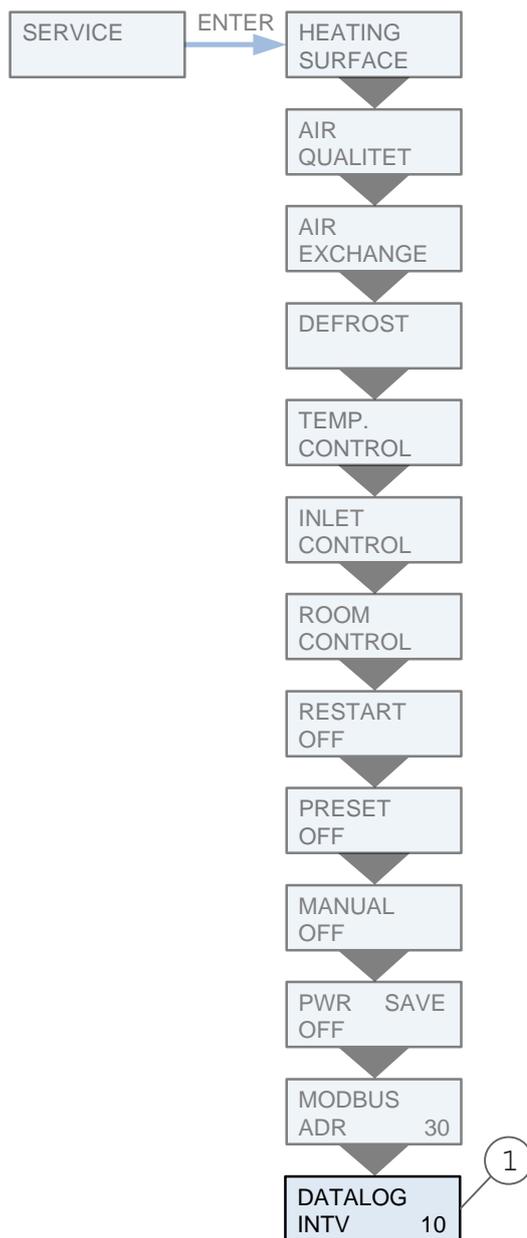
1. PWR SAVE OFF Activate power saving function. Mutual exclusion of comfort heater and deactivation of air damper. [ON, OFF].

## Modbus



1. MODBUS ADR 30 Modbus communication [1...247].

# Datalog



## 1. DATALOG INTV Datalog interval [1...120] mins.

The datalog interval is set via the menu **SERVICE - DATALOG INTV** to between 1 and 120 mins. If 0/OFF is selected, logging is not performed periodically but only in the case of events and alarms.

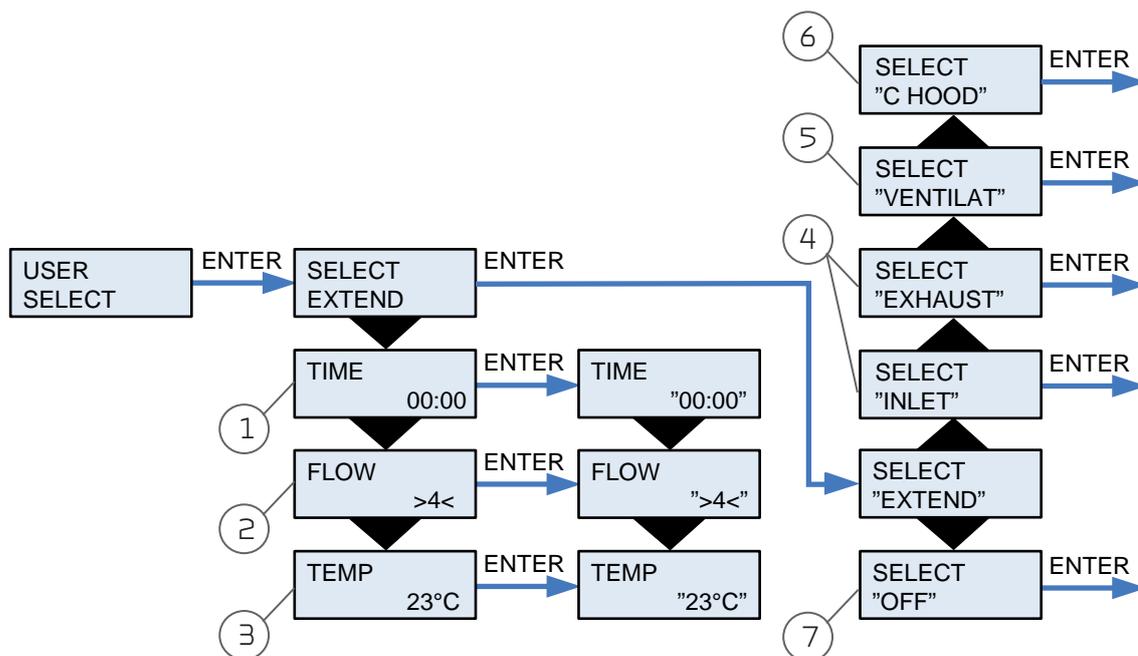
- A choice has been made to log temperatures in whole degrees Celsius, in order to minimise logfile sizes.
- The status of digital inputs and outputs has been combined in two joint log variables "Din" og "Dout".

## Datalogging

Datalog requires the XML file "**Devicelog.xml**", which is a decoding specification required by the LMT PC program. The file can be downloaded from NilanNet under the menu item After Sales/Software.

- The file is entered in the "..\Database" directory under the relevant LMT project
- The log can then be retrieved from the control system via the menu "Device - Devicelog download"
- The log is shown in LMT in both tabular and graphic form
- The logfile can be exported to Microsoft Excel format.

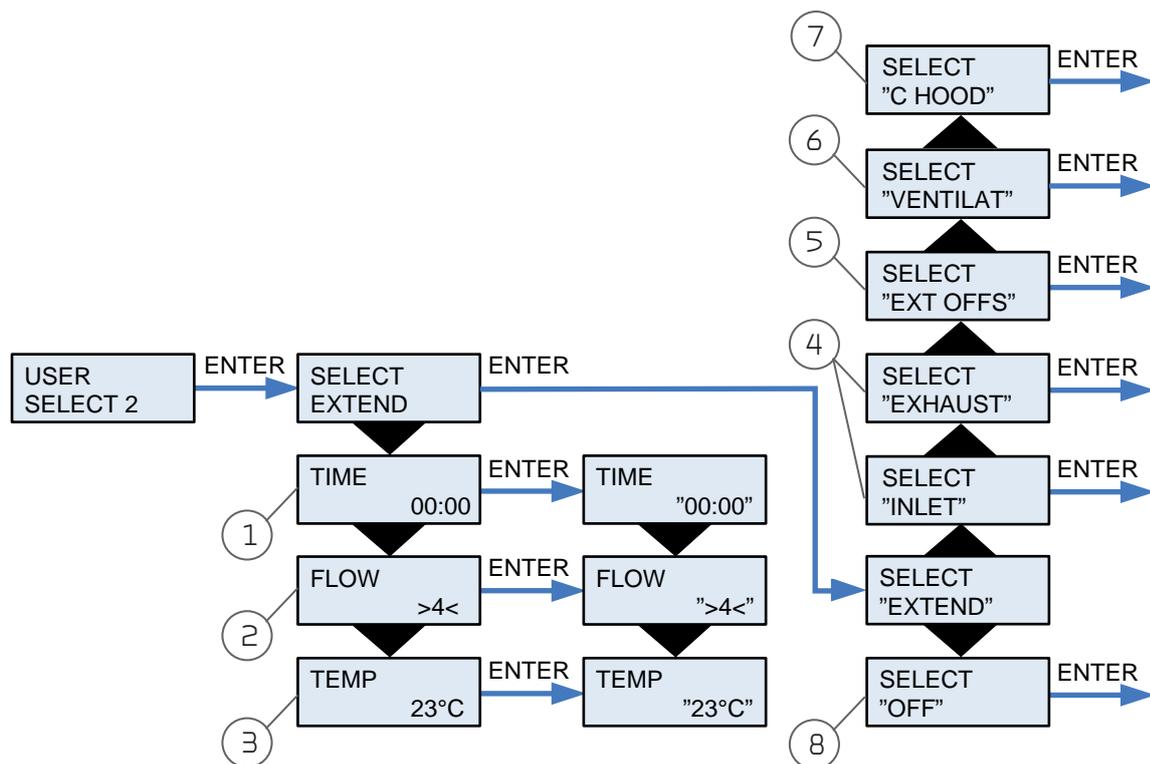
## User select



- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. TIME 00:00</li> <li>2. FLOW &lt;4&gt;</li> <li>3. TEMP 23°C</li> <li>4. SELECT "INTAKE" "EXHAUST"</li> <li>5. SELECT "VENTILAT"</li> <li>6. SELECT "C HOOD"</li> <li>7. SELECT "OFF"</li> </ol> | <p>Required period in which the selected function is to remain operative, started in hours and minutes. Max. 8 hours.</p> <p>Required ventilation level : 1-4. OFF allows the system to be shut down via an external switch.</p> <p>Required room temperature (5-30°C). Panel sensor T15 is the controlling sensor.</p> <p>Time and speed must be set in the same way, as described under <b>SELECT EXTEND</b>.</p> <p>Possibility to run a higher or lower speed. High priority.</p> <p>RE1: Close switch for controlling of hood damper motor.</p> <p>User selection deactivated.</p> |
|---|---|

The menu **USER SELECT** overrides the operating mode of the main menu by activating an external switch.

## User select 2



1. TIME 00:00

2. FLOW <4>

3. TEMP 23°C

4. SELECT "INTAKE" "EXHAUST"

5. SELECT "EX OFFS"

6. SELECT "VENTILAT"

7. SELECT "C HOOD"

8. SELECT "OFF"

Required period in which the selected function is to remain operative, started in hours and minutes. Max. 8 hours.

Required ventilation level : 1-4. OFF allows the system to be shut down via an external switch.

Required room temperature (5-30°C). Panel sensor T15 is the controlling sensor.

Time and speed must be set in the same way, as described under **SELECT EXTEND**.

Option for relay output R8, if fitted. Only possible on a supplementary PCB. The temperature is added or subtracted to/from the set point. Choose the afterrunning and displacement of the set point for external room heating. Selected in the same way as shown under **SELECT EXTEND**.

Possibility to run a higher or lower speed. High priority.

RE7: Close switch for controlling of hood damper motor.

User selection deactivated.

The USER SELECT 2 menu is used as USER SELECT . (only shown when option PCB is fitted)

## Alarm list

Alarm codes are given as a result of a fault or when important information should be provided to the user.

Alarms fall into the following categories:

**C Critical:** Running or partially stopped as long as the alarm is active.

**W Warning:** Becomes critical if the situation is not improved within a reasonable period.

**I Informative:** Normal operation not affected. The alarm will disappear when the user cancels it.

Alarm code	Category	Display text	Description/cause	Fault correction
0	--	--	No alarm	
1	C	HARDWARE	Fault in control system hardware	Contact service if cancellation does not help
2	C	TIMEOUT	Warning alarm (W) has become a critical alarm	Note alarm and reset. Contact service if alarm does not disappear
3	C	FIRE	Fire thermostat. Units stopped because fire thermostat is active	If there has been no fire, contact service
7	C	FROST	<ol style="list-style-type: none"> <li>1. Frost protection of heater: Intake air passing over heater is too cold. Can be due to bypass damper being open.</li> <li>2. District/central heating water too cold (e.g. oil-fired boiler stopped)</li> </ol>	<ol style="list-style-type: none"> <li>1. Close bypass damper, activate heater, reset alarm.</li> <li>2. Check heating supply to comfort heater is OK. Reset alarm when fault corrected.</li> </ol>
8	C	T <sub>x</sub> SHORT	One of the temperature sensors has short-circuited or is faulty	Note which sensor, T <sub>x</sub> , has short-circuited, e.g. T1 short and contact service
9	C	T <sub>x</sub> OPEN	One of the temperature sensors has been disrupted or is faulty	Note which sensor, T <sub>x</sub> , has been disrupted, e.g. T1 disrupt and contact service
10	C	OVERHEAT	Electrical heater overheated. Insufficient air flow due to e.g. blocked filters, blocked air intake or faulty intake fan	Check air is being blown into the home. Check filter and air intake. Reset alarm. Contact service if the above does not help
11	C	AIRFLOW	Insufficient airflow at intake. See alarm code 10.	See alarm code 10.
15	W	ROOM LOW	When the room temperature is under 10°C the unit will stop to avoid further cooling. This can be for a period when the house is unoccupied and the heating is switched off.	Heat up the house and reset alarm
16	I	SOFTWARE	Fault in control system program	Contact service
17	I	WATCHDOG	Fault in control system program	Contact service

Alarm code	Category	Display text	Description/cause	Fault correction
18	I	SET	Part of the program setup lost. Can be due to long-term power outage or lightning strike. The unit will continue to run on standard setup	Reset alarm. Program week program as required. Contact service if the unit is running unsatisfactorily or as before, as any sub-programs can be lost. (sub-programs are only accessible by service)
19	I	FILTER	Filter sensor set for X days for check/replacement of filter (30, 90, 180, 360 days). Standard setup is 90 days	Clean/replace filter. Reset alarm.
21	I	SET TIME	Occurs in the event of power outage	Week timer settings must be checked and set if required. Reset alarm.
22	I	T AIR	Target heating of intake air not possible (only applies if comfort heater fitted). Comfort heater and unit cannot raise the temperature to target.	Set lower target intake temperature. Reset alarm.
71	W	EXCH DEF	Max. defrosting time exceeded for counterflow exchanger. Can be because the unit has been exposed to low temperatures	Contact service if cancellation of alarm does not help. Note current operating temperatures from the SHOW DATA menu as an aid to service
91	I	OPT IO	Option PCB missing	Contact service
92		PRESET	Error when entering or loading installer's settings	Contact service



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