

# User manual

CTS 602 by Nilan



VPL 28

Version: 10.00, 13-04-2015  
Software-version: 2.30

 **NILAN**<sup>®</sup>  
OUTSTANDING INDOOR CLIMATE

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## Introduction



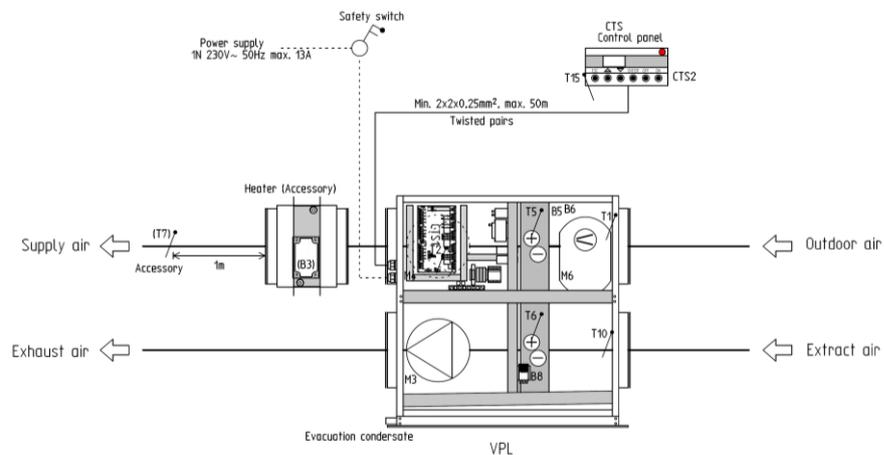
Please control that the following documents have been delivered together with the unit:

- Directions for assembly and use
- CTS 602 directions (this document)
- Electrical chart

The purpose of this manual is to clearly show the menus and possibilities of the CTS 602 control. This manual may describe functions that are not accessible in your unit.

**PLEASE NOTE:** If the system is damaged in any way, it must be inspected and repaired by licensed personnel.

## Review of the thermometer sensors



**Figure 1: Thermometer sensors**

### Explanation for figure 1:

T1- is the thermometer sensor for the fresh air and should be placed at the north side of the building.

T2 - is the thermometer sensor for the inlet air at the fan (without heating surface).

T5 - shows the temperature of the condenser.

T6 - shows the temperature of the evaporator.

T7 - is the thermometer sensor for the inlet air after a heating surface.

T10 - is the thermometer sensor for the exhaust air in a room (accessory).

T15 - is the thermometer sensor in the CTS 602 panel.

The temperature of the sensors can be read in the “Show data” menu.

## CTS 602 panel



### Use of the CTS 600 panel :

- press **ESC** to go one step back in the menu
- press **▼▲** to move up or down in a menu or to adjust an activated menu
- press **ENTER** to activate a menu
- press **ENTER** to confirm a menu
- press **OFF** to turn off the unit
- press **ON** to turn the unit on

**Figure 2: CTS 602 panel**

The following is indicated by the light-emitting diode at the front of the CTS 602 panel:

Constant yellow light: the compressor is in operation

Flashing yellow: the unit is in alarm condition

The panel can show 2 lines of text with each 8 characters.

The upper line shows a guiding text.

The bottom line shows the matching values to the guiding text.

The text in the display in “on” as long as there is power to the unit and will not turn off even though the unit is set to “off” or has not been operated for a longer period of time.

### How to use the menu:

It is possible to adjust a value or a function by finding the matching menu via ▲ or ▼.

To activate the desired menu press **ENTER**.

To adjust the settings of the value press **ENTER** until the value flashes.

The adjustment can now be done via ▲▼.

To save the chosen value press **ENTER**.

It is advisable to have the panel and/or the review of the menus near by during the reading of the menus.

If none of the press buttons are activated for one minute the control will automatically return to the main menu.

If you are in the middle of the programming when the control returns to the main menu all data will be saved if they previously are saved by pressing **ENTER**. It is always possible to return to the programming to continue.

## Review of the menus

### Menus in the CTS 602 control

The control will have the main menu as starting point, (the menu in the full-drawn frame). From here it is possible to go through the other menus via ▲▼.

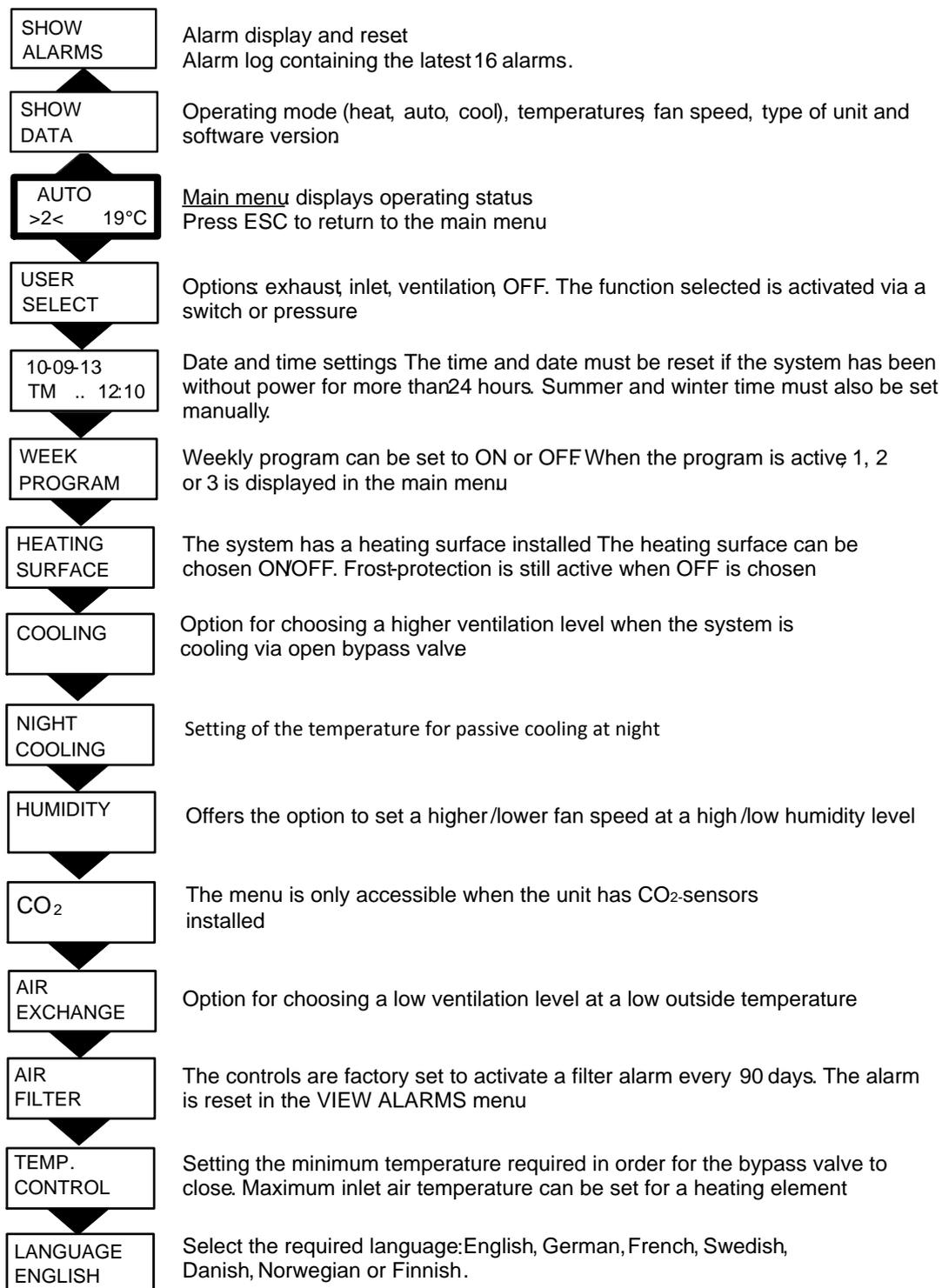
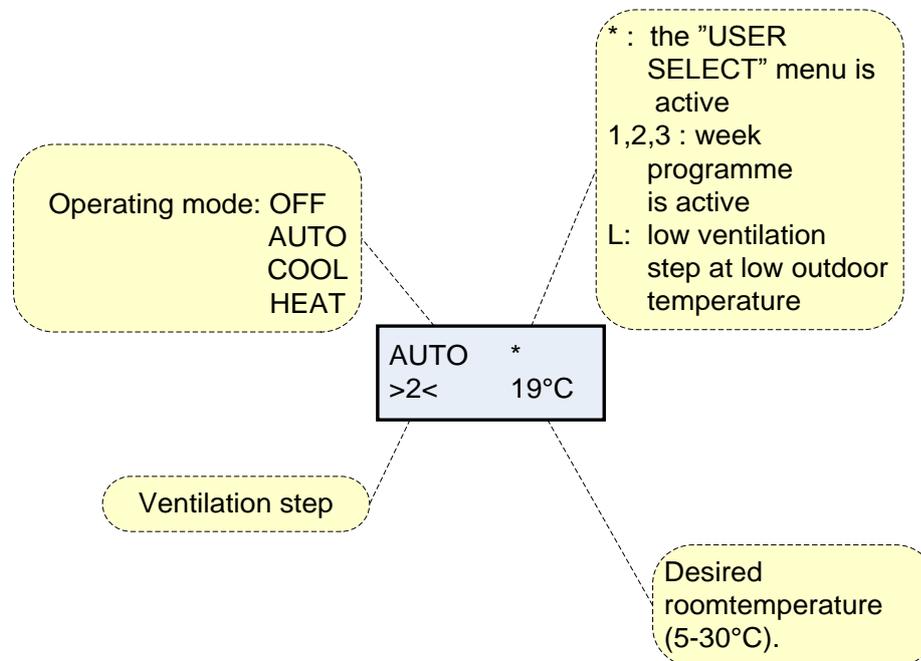


Figure 3: Menu headlines

## Operating mode

The main menu shows 3 different values: operating mode, ventilation step and temperature. Those values indicate the state of the unit and are selected by the user.

The main menu is automatically shown 15 seconds after the unit is electrically connected and is now ready to be set.



**Figure 4: Main menu**

Desired room temperature can be adjusted by pressing **ENTER** once. The number at °C flashes and the value can be set via ▲▼. The desired value must be approved by pressing **ENTER** once.

The operating mode can be adjusted by pressing **ENTER** twice. The actual mode is flashing and can be set via ▲▼ and approved by pressing **ENTER** once. In "AUTO"-mode the bypass-draught control is automatically opened or closed according to the temperature setting.

The ventilation step can be adjusted by pressing **ENTER** three times. The actual ventilation step is flashing and can be set via ▲▼ and approved by pressing **ENTER** once.

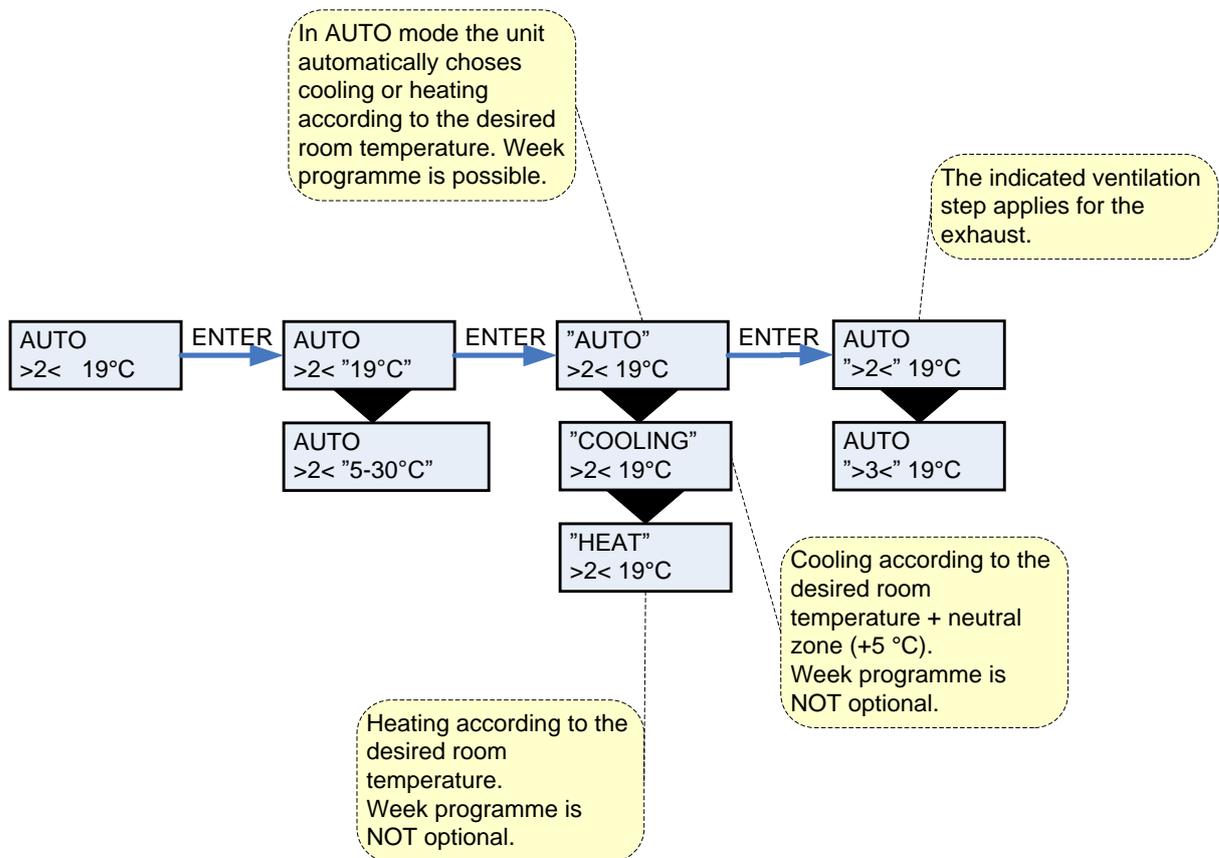
## Main menu

The main menu is automatically shown 15 seconds after the unit is electrically connected.

” ” indicates that the menu point flashes and can be set to another value.

**Use of the CTS 600 panel :**

- press **ESC** to go one step back in the menu
- press **▼▲** to move up or down in a menu or to adjust an activated menu
- press **ENTER** to activate a menu
- press **ENTER** to confirm a menu
- press **OFF** to turn off the unit
- press **ON** to turn the unit on



**Figure 5: Headlines in the "Main menu"**

## Show alarms

If the unit is in a state of alarm the yellow light-emitting diode on the front of the CTS 602 panel will flash.

The "Show alarms" menu indicates the type of alarm and the time of the alarm. This is also the menu where the alarm should be reset.

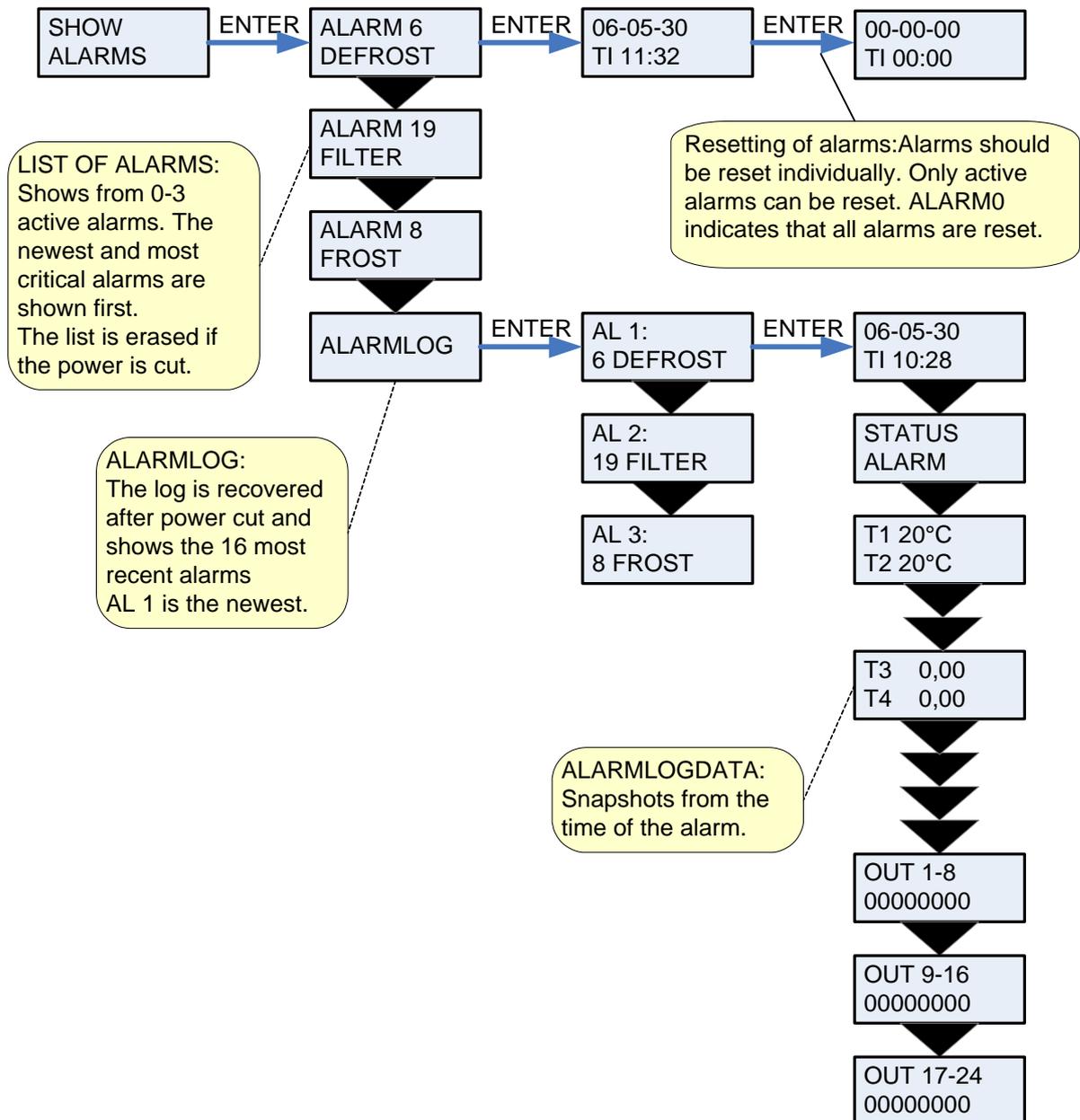


Figure 6: The "Show alarms" menu

Alarm codes are given because of a fault situation or when it is important to inform the user.

The alarms are divided into the following categories:

- C Critical** Operation is partly or completely stopped as long as the alarm is active.
- W Warning** These types of alarms will become critical if the problem is not solved quickly.
- I Informative** Normal operation is not affected. Alarm disappears when it is reset.

Alarm code	Categori	Text in display	Description/ cause	How to remedy alarms
00	--	--	No alarms	
01	<b>C</b>	<b>HARDWARE</b>	Error in control hardware	Contact service if reset does not help
02	<b>C</b>	<b>TIMEOUT</b>	Warning alarm W has become a critical alarm.	Note and reset the alarm. Contact service if alarm does not disappear.
03	<b>C</b>	<b>FIRE</b>	Fire detecting thermostat. Unit is stopped because the fire detecting thermostat has been activated.	If there has not been a fire please contact service.
04	<b>C</b>	<b>PRESSURE</b>	High or low pressure switch in the cooling circuit has been triggered, probably caused by: High pressure: Extreme hot Cloaked filter Defective fan Low pressure: Extreme cold Unit might have lost coolant Cloaked filter Defective fan	Check for errors and reset alarms. If you are unable to reset the alarm or if the alarm occurs often please contact service.
06	<b>C</b>	<b>DEFROST</b>	The unit is defrosting. The frost protection of the heat recovery system is insufficient and the unit will stop. This can be caused by extreme low outdoor temperatures	Contact service if reset does not help. Note the actual sensor temperatures from the menu "Show data" to help service.
07	<b>C</b>	<b>FROST</b>	The water from the central heating is too cold.	Check that the heating supply for the heating surface is OK. Reset alarm when fault has been repaired.
08	<b>C</b>	<b>FROST</b>	One of the temperature sensors in the unit is short circuit or defect.	Note the sensor and contact service.
10	<b>C</b>	<b>OVERHEAT</b>	The electrical heating element is overheated. Lack of airflow due to cloaked filters, cloaked air intake or defect inlet fan.	Check if air flows into the house. Check filter and air intake. Reset alarm. Contact service if the above does not help.
11	<b>C</b>	<b>AIRFLOW</b>	Lacking inlet airflow	See alarm code 10
12	<b>C</b>	<b>TERMO</b>	Relay is triggered ventilation. This may be due to defects in the fan or low voltage	Contact service

Alarm code	Categori	Text in display	Description/ cause	How to remedy alarms
15	W	ROOM LOW	When room temperature drops below 10°C the unit will stop in order to protect the house from further cooling down. The function is useful when the house is not occupied and the main heating has stopped.	Heat up the house and reset the alarm
16	I	SOFTWARE	Error in software	Contact service
17	I	WATCHDOG	Error in software	Contact service
18	I	CONFIG	Parts of the programming are lost and can be caused by a longer period of power failure or lightning. The unit will keep on operating on standard programming.	Reset alarm Re-programme the week programme. Contact service if the unit does not operate as before. Supplementary programs can be lost. Only service can access the supplementary programs and menus.
19	I	FILTER	The filter guard is set to give alarm when a pre-set period of time has occurred	Clean /replace filter and reset alarm
21	I	POWER	Occurs if power has been cut off for a longer period of time	The week programme should be checked and adjusted if necessary. Reset alarm.
22	I	T AIR	The pre-set temperature of the inlet air cannot be reached	Set a lower air inlet temperature and reset alarm.
27-57	C	T <sub>x</sub> KURZ	One of the temperature sensor of the device is shorted or defective. Tx = +99 °C	Please note which sensor T <sub>x</sub> , there is shorted, and contact the customer service.
28-58	C	T <sub>x</sub> OFFEN	One of the temperature sensor of the device is disconnected or defect Tx= -40 ° C	Please note which sensor T <sub>x</sub> , there is interrupted, and contact the customer service.
71	I	DFR EXCH	The maximum defrosting time for the counter flow heat exchanger has been exceeded. This could be due to the fact that the system has been exposed to very low temperatures.	Contact our after sales department if resetting the alarm does not help. If possible, inform the after sales department of the current working temperature from the menu VIS DATA (SHOW DATA).
72	I	EVAP LOW	Abnormally low evaporator temperature	Check supply air valve
92	I	PRESET	Error by writing or input of the electrician's adjustments	Contact service.

## Show data

The actual operation data can be read in the "Show data" menu.

See review of thermometer sensors at page 5.

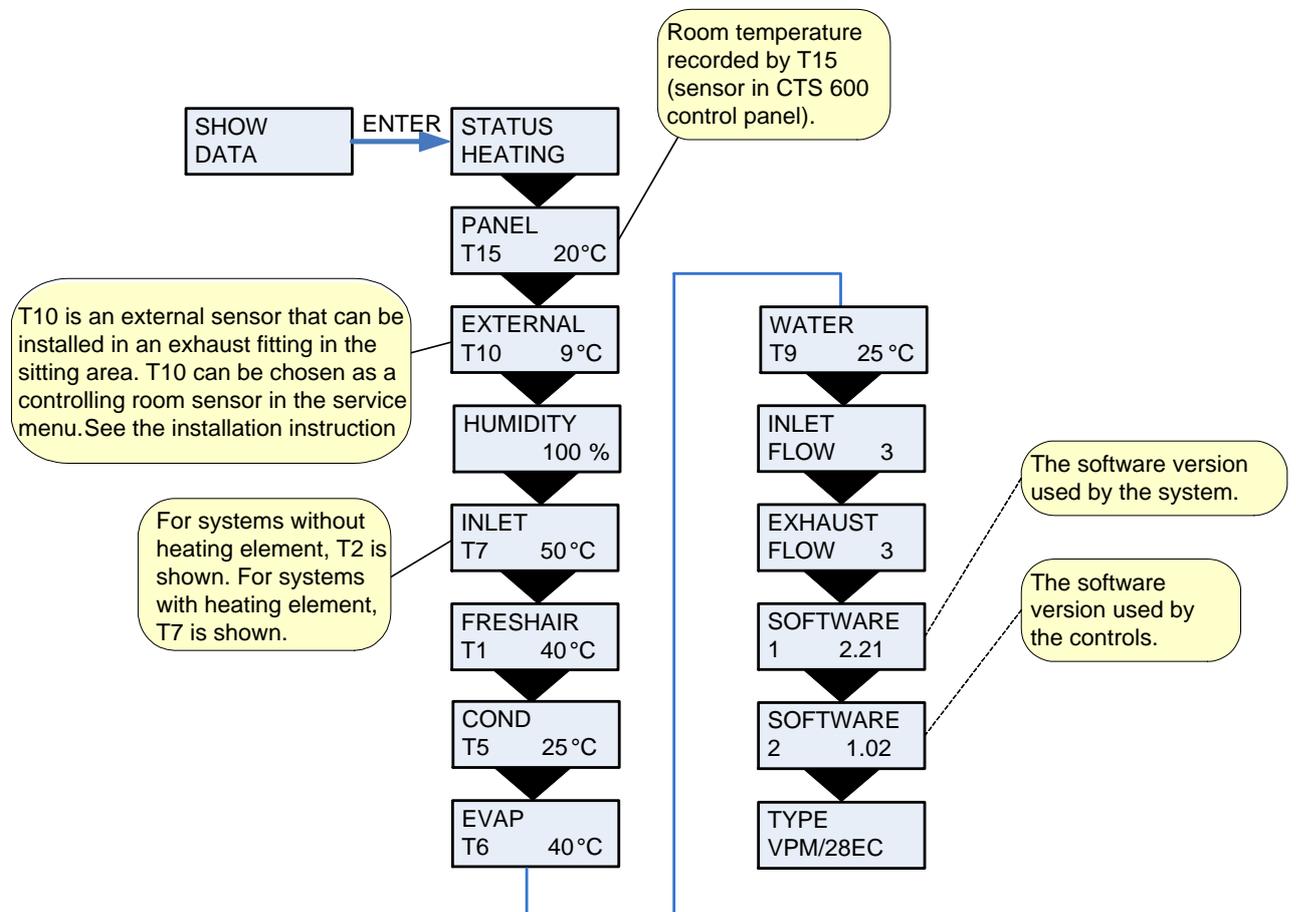


Figure 7: The "Show data" menu

## User select

The menu CUSTOM OPTIONS overrides the operating mode of the main menu by activating an external switch.

"VENTILAT": There is a possibility here to run with a higher or lower speed on the air exhaust and air inlet for a limited amount of time. The external pressure will activate the function. The function has high priority.

"exhaust" and "inlet": These two options increase or reduce the velocity of the exhaust or inlet air respectively for a limited period of time. The remaining functions of the operating mode remain unaltered. An external switch activates the timer function.

Another external switch ensures that the fans remain at the desired ventilation level until the switch is turned off.

"extend": This option controls the velocity of the exhaust and inlet air and can be used to change the temperature of the inlet air for a limited period of time. An external switch activates the timer function.

"OFF": Deactivates the external switch.

"ext offs": Provides the possibility of choosing an afterflow time and changing the set point in external rooms.

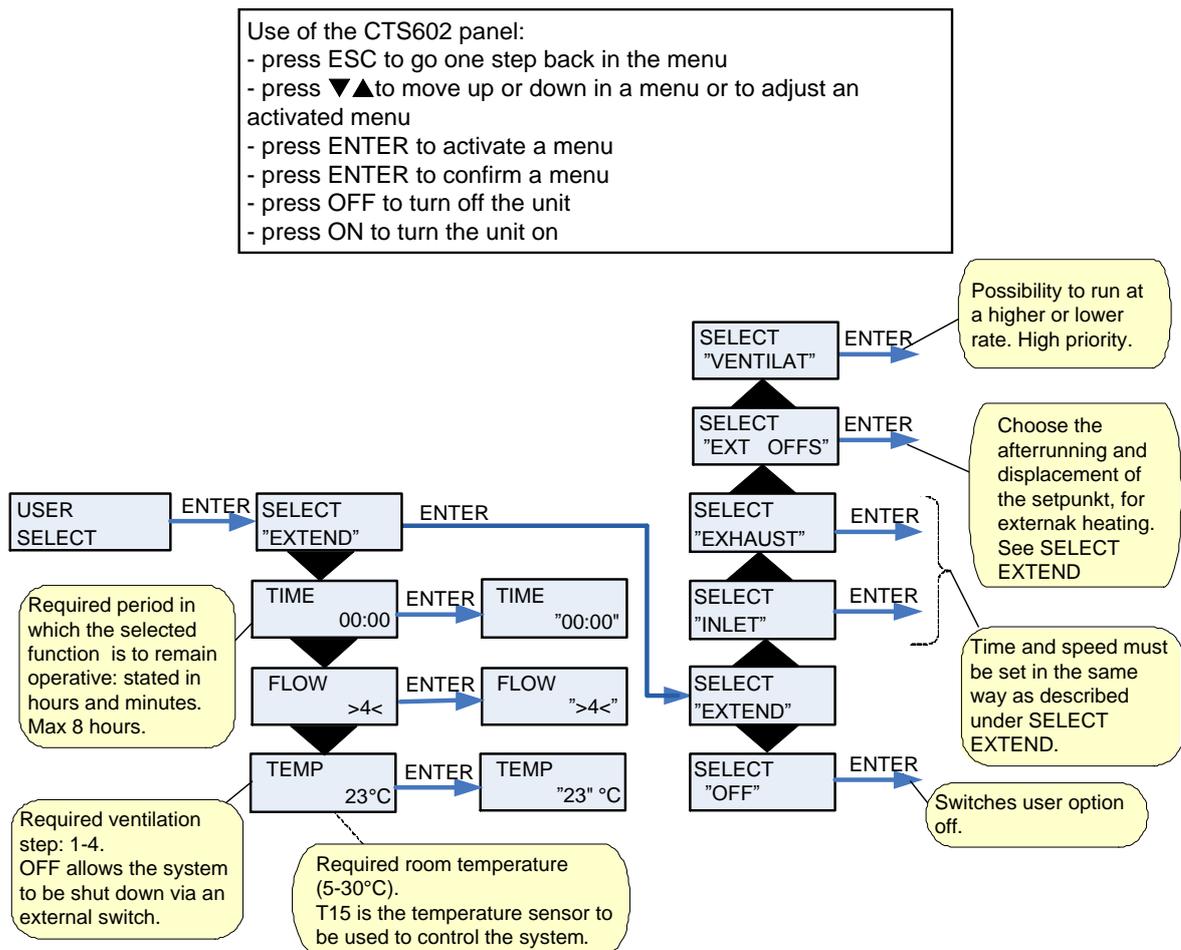


Figure 8: The "User select" menu

## User select 2

User select 2 as user select

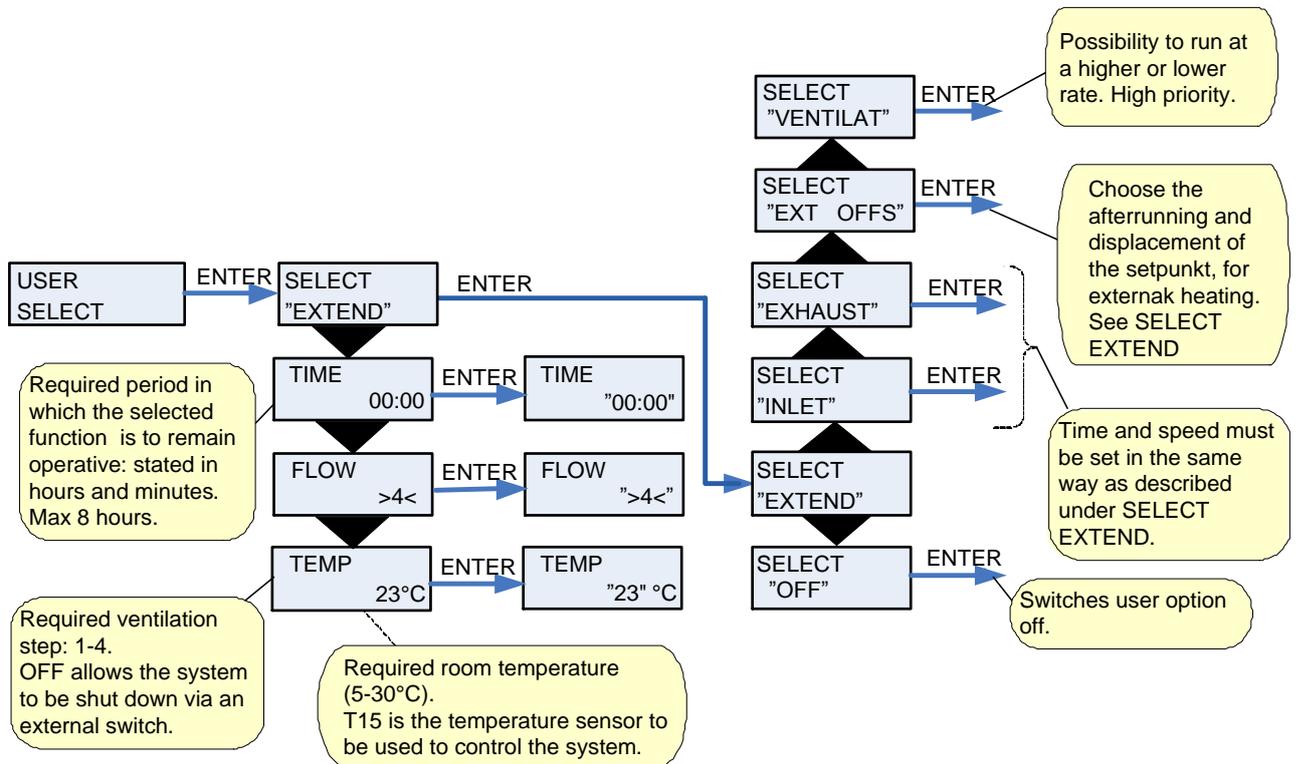


Figure 9: The "User select 2" menu

## Setting of clock

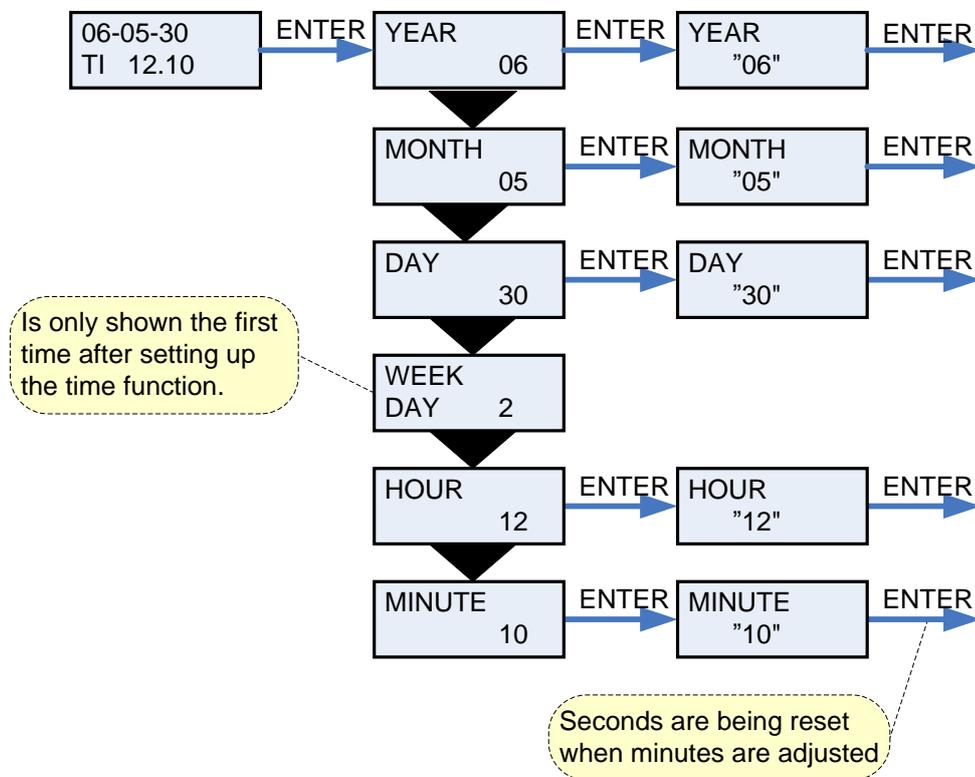
In case of power cut the clock will function for at least 24 hours. If the time function is lost there will be a alarm.

Changing to daylight saving time has to be done manually.

” ” indicates that the menu point flashes and can be set to another value.

**Use of the CTS 600 panel :**

- press **ESC** to go one step back in the menu
- press **▼▲** to move up or down in a menu or to adjust an activated menu
- press **ENTER** to activate a menu
- press **ENTER** to confirm a menu
- press **OFF** to turn off the unit
- press **ON** to turn the unit on



**Figure 10: Setting of clock**

## Week programme

The unit is equipped with 3 standardized week programmes. See page 17. Anlægget er fra fabrikken indstillet til program 1.

In addition to these programmes it is possible to programme your own week programme which can be one of the standard programmes with minor alterations.

” ” indicates that the menu point flashes and can be set to another value.

**Use of the CTS 600 panel :**

- press ESC to go one step back in the menu
- press ▼▲to move up or down in a menu or to adjust an activated menu
- press ENTER to activate a menu
- press ENTER to confirm a menu
- press OFF to turn off the unit
- press ON to turn the unit on

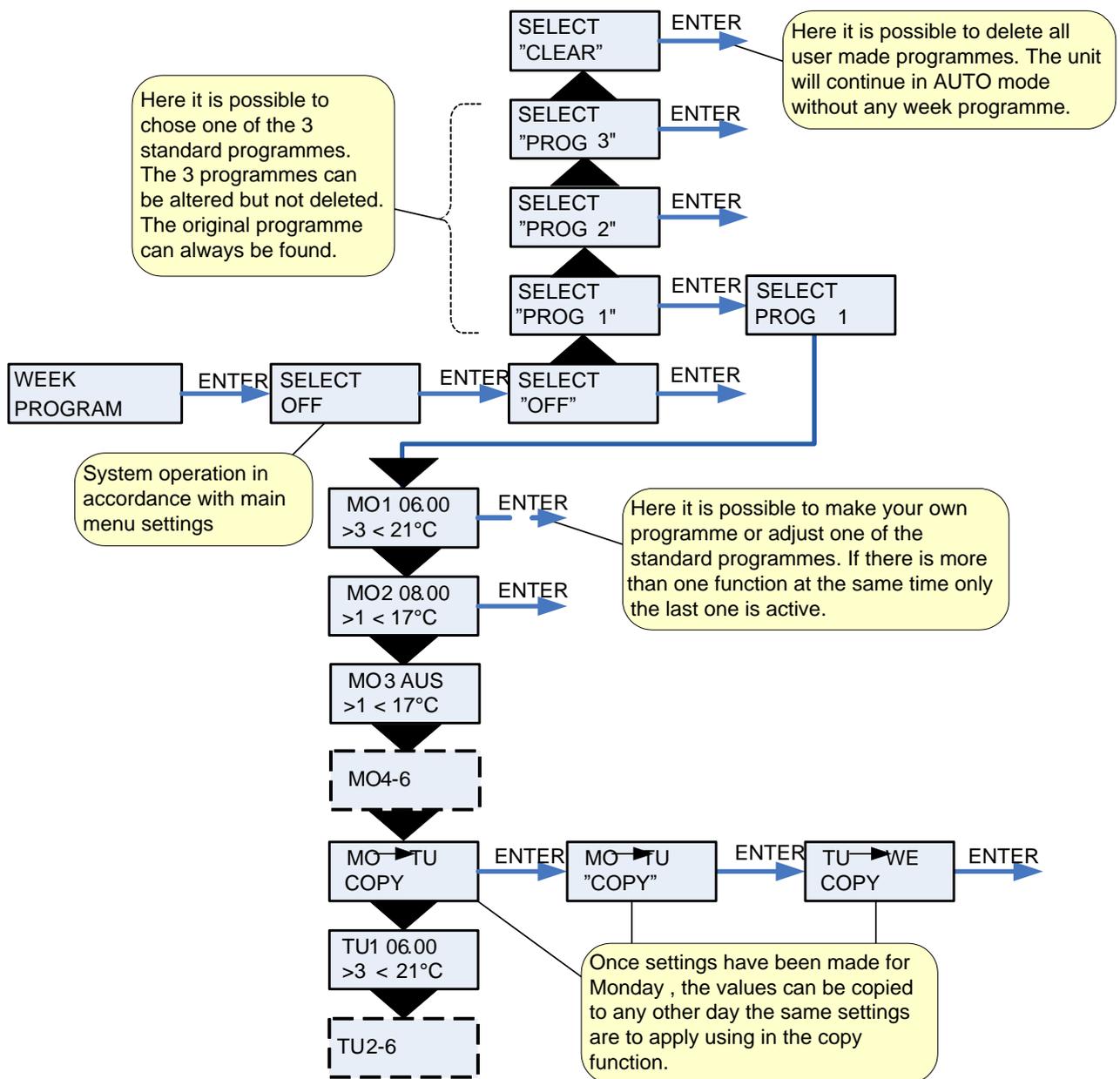


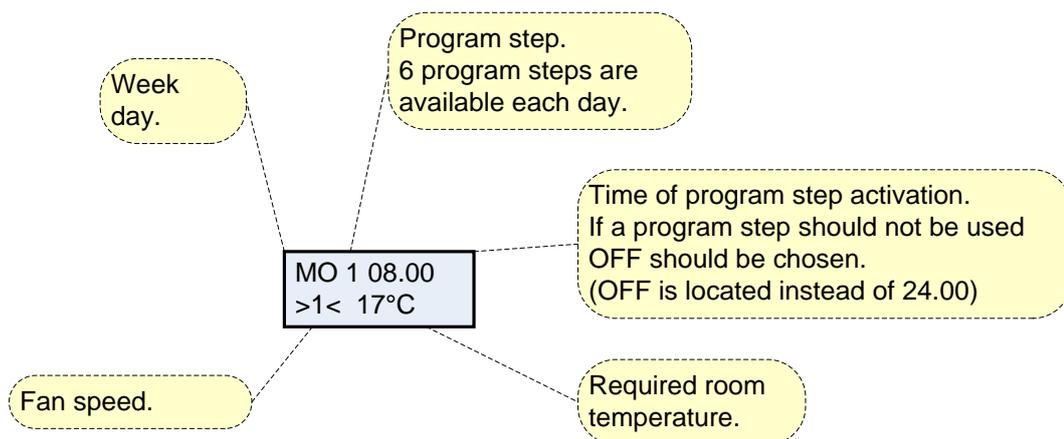
Figure 11: The "Week program" menu

## Factory settings for the 3 weekly programs:

Program 1 is suitable for the working family  
 Program 2 is suitable for the non-working family  
 Program 3 is suitable for offices

Program	Week day	Function	Time	Ventilation	Temperature
Program 1	Monday - Friday	1	6.00	3	21
		2	8.00	1	21
		3	15.00	3	21
		4	22.00	1	21
	Saturday - Sunday	1	8.00	3	21
		2	23.00	1	21
Program 2	Monday - Sunday	1	8.00	3	21
		2	23.00	1	21
Program 3	Monday - Friday	1	7.00	3	21
		2	16.00	OFF	21

### Weekly program settings



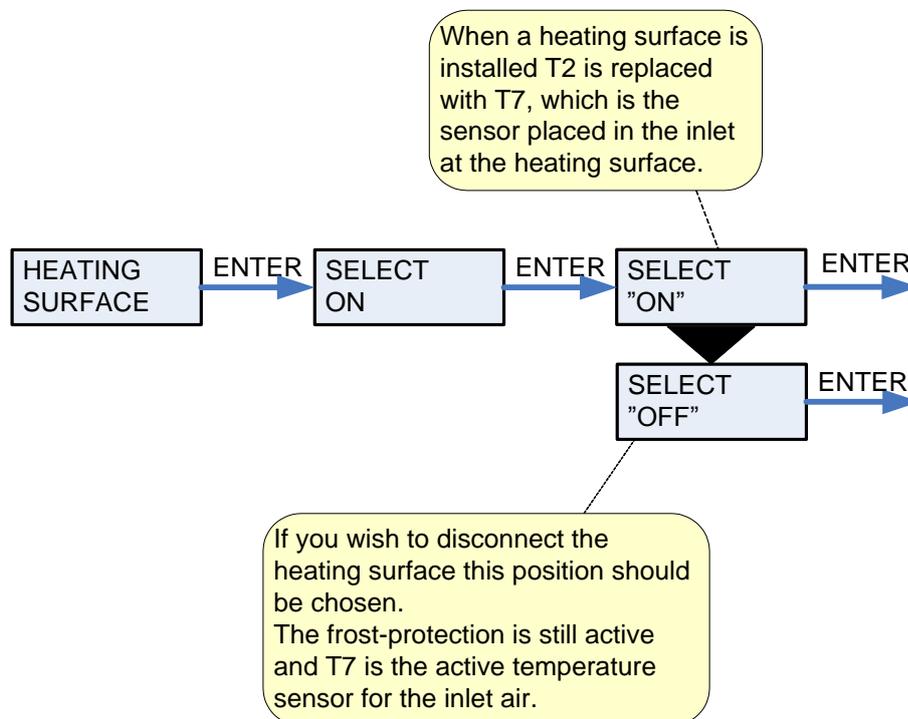
## Heating surface

The menu HEATING SURFACE is only accessible when the system has a heating surface installed and when the control has been set up to a heating surface in the SERVICE MENU.

” ” indicates that the menu point flashes and can be set to another value.

Use of the CTS 600 panel :

- press ESC to go one step back in the menu
- press ▼▲ to move up or down in a menu or to adjust an activated menu
- press ENTER to activate a menu
- press ENTER to confirm a menu
- press OFF to turn off the unit
- press ON to turn the unit on



**Figure 12: The "Heating surface" menu**

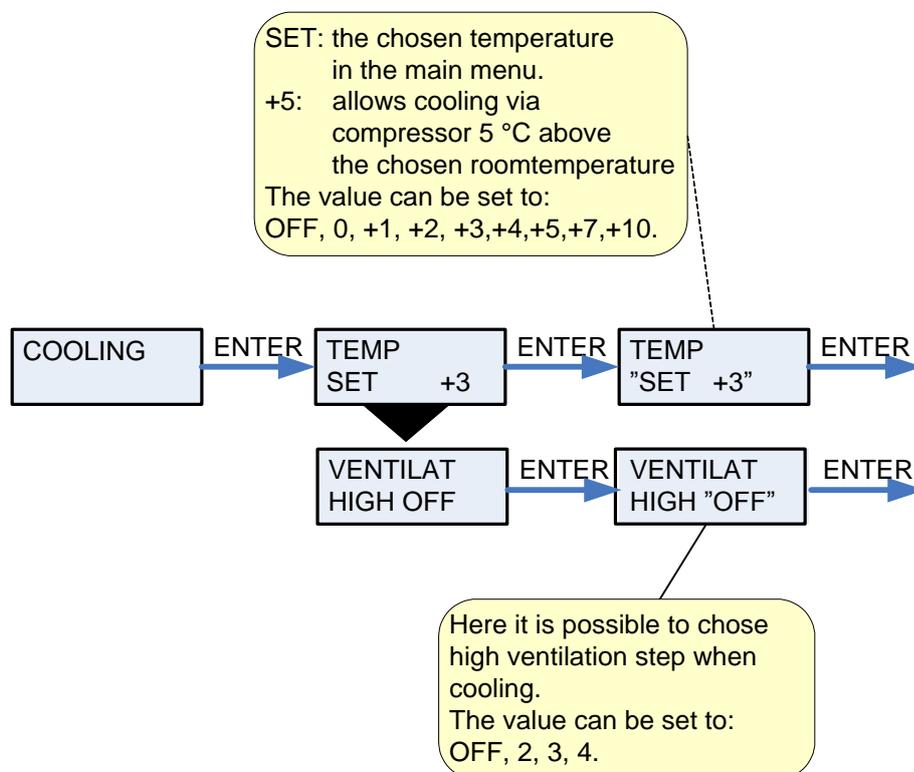
## Cooling

The "Cooling" menu enables you to choose at which temperature cooling should be activated according to the room temperature.

" " indicates that the menu point flashes and can be set to another value.

**Use of the CTS 600 panel :**

- press **ESC** to go one step back in the menu
- press **▼▲** to move up or down in a menu or to adjust an activated menu
- press **ENTER** to activate a menu
- press **ENTER** to confirm a menu
- press **OFF** to turn off the unit
- press **ON** to turn the unit on



**Figure 13: The "Cooling" menu**

Example : Desired room temperature in main menu = 21°C  
 Cooling set = 5°C  
 Starting of compressor, cooling = 26°C

## Night Cooling

The NIGHT COOLING menu makes it possible to select passive night cooling, provided that the outdoor temperature on the day before has exceeded the day temperature limit set in the NIGHT COOLING menu for at least one hour.

During the night cooling period, the compressor cooling is suspended and the room setpoint is lowered to the temperature set in the NIGHT COOLING menu.

The limit set for the minimum intake temperature is not observed during night cooling, but the system may run compressor heating if the room temperature falls below the night cooling setpoint.

No special account is taken of whether the room temperature is above or below the outdoor temperature, i.e. whether a cooling effect from the outdoor air can actually be achieved.

When the night cooling period is over, the system will run as normal again, with compressor heating and cooling according to the normal setpoint.

Outdoor temperature as requirement NIGHT COOLING

New ROOM SET for NIGHT COOLING

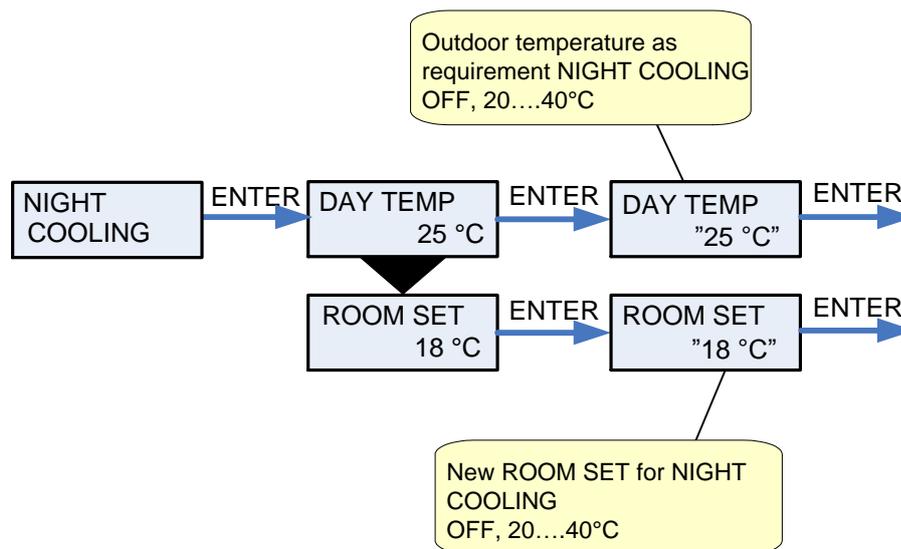


Figure 14: The "Night Cooling" menu

## Humidity

In the "Humidity" menu it is possible to regulate the ventilation step in accordance with the humidity level.

Low ventilation step is only active in wintertime and at humidity levels below 30%.

High step is activated by a change from 10-5% of average RH from 40-80% over the last 24 hours  
 High ventilation step is deactivated when humidity drops 3% or more compared to the average humidity level the last 24 hours.

It can last up to 3 minutes before high/low ventilation step is stabilized.

If there is a need for heat the "low humidity" is not activated.

" " indicates that the menu point flashes and can be set to another value.

Use of the CTS602 panel:

- press ESC to go one step back in the menu
- press ▼▲ to move up or down in a menu or to adjust an activated menu
- press ENTER to activate a menu
- press ENTER to confirm a menu
- press OFF to turn off the unit
- press ON to turn the unit on

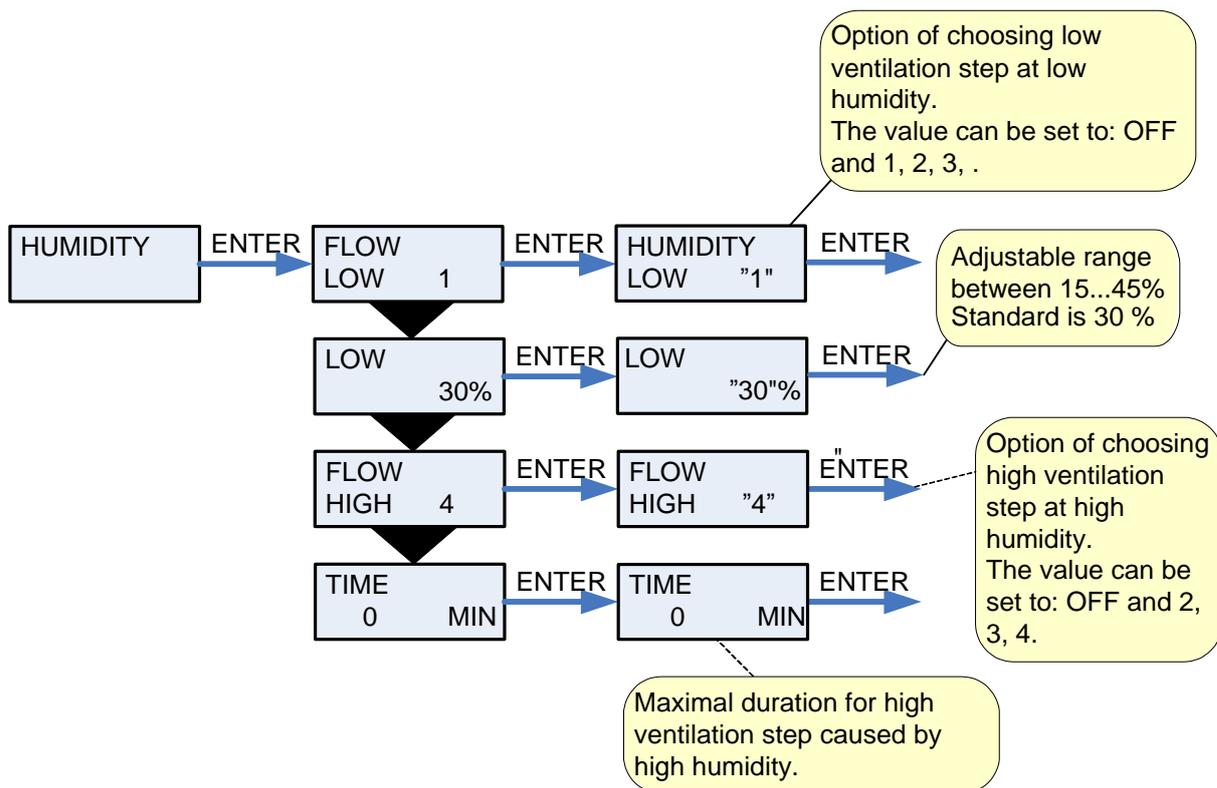


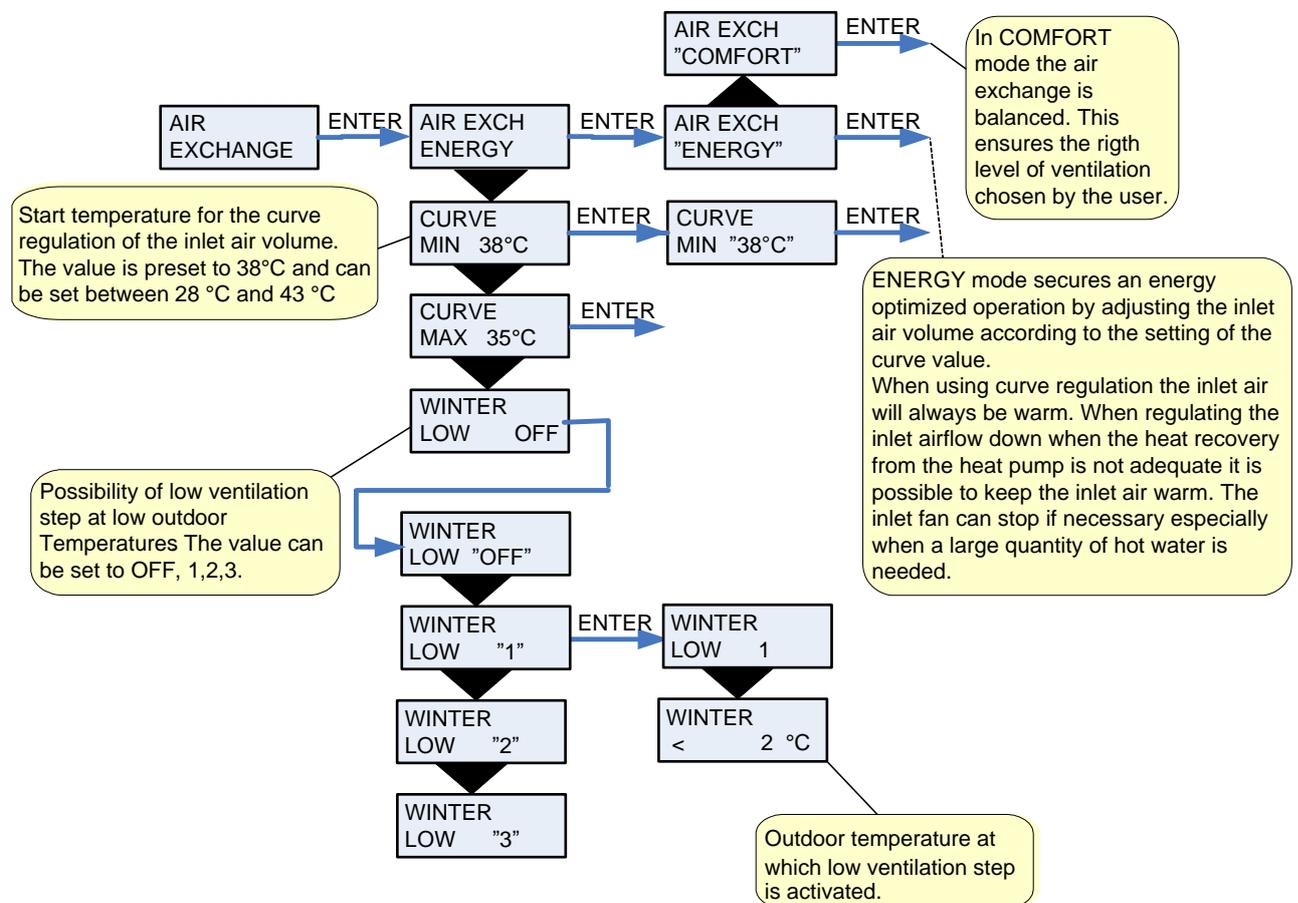
Figure 15: The "Humidity" menu

## Air exchange

In the "Air exchange" menu it is possible to choose between 2 different types of ventilation depending on your individual demand.

" " indicates that the menu point flashes and can be set to another value.

- Use of the CTS 600 panel :**
- press **ESC** to go one step back in the menu
  - press **▼▲** to move up or down in a menu or to adjust an activated menu
  - press **ENTER** to activate a menu
  - press **ENTER** to confirm a menu
  - press **OFF** to turn off the unit
  - press **ON** to turn the unit on



**Figure 16: The "Air exchange" menu**

## Air filter

In the "Air filter" menu it is possible to choose the interval of the filter guard.

The unit is factory configured to provide emergency with 90 days interval. It is then possible to change this range if necessary.

" " indicates that the menu point flashes and can be set to another value.

Use of the CTS 600 panel :

- press ESC to go one step back in the menu
- press ▼▲to move up or down in a menu or to adjust an activated menu
- press ENTER to activate a menu
- press ENTER to confirm a menu
- press OFF to turn off the unit
- press ON to turn the unit on

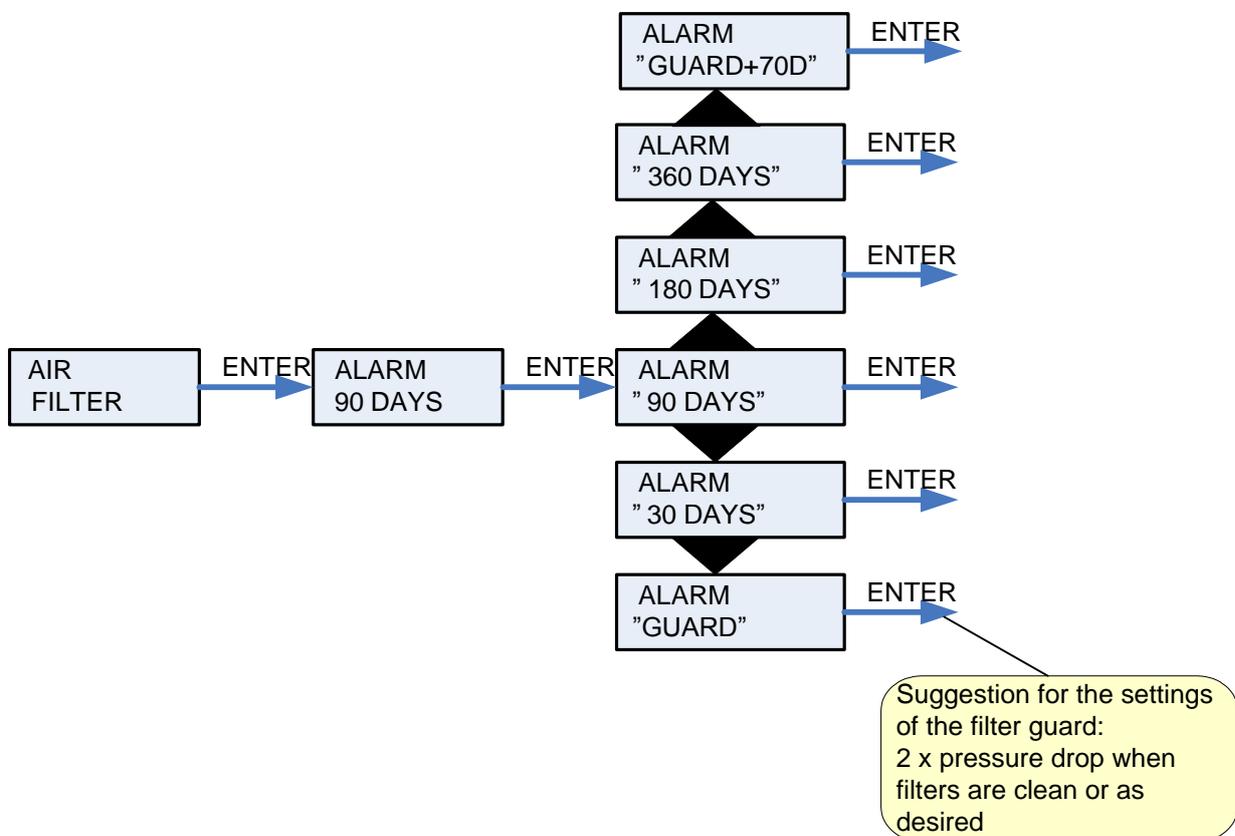


Figure 17: The "Air filter" menu

## Temp. control

In the "Temp. control" menu it is possible to set the highest and lowest inlet temperature.

" " indicates that the menu point flashes and can be set to another value.

**Use of the CTS 600 panel :**

- press ESC to go one step back in the menu
- press ▼▲to move up or down in a menu or to adjust an activated menu
- press ENTER to activate a menu
- press ENTER to confirm a menu
- press OFF to turn off the unit
- press ON to turn the unit on

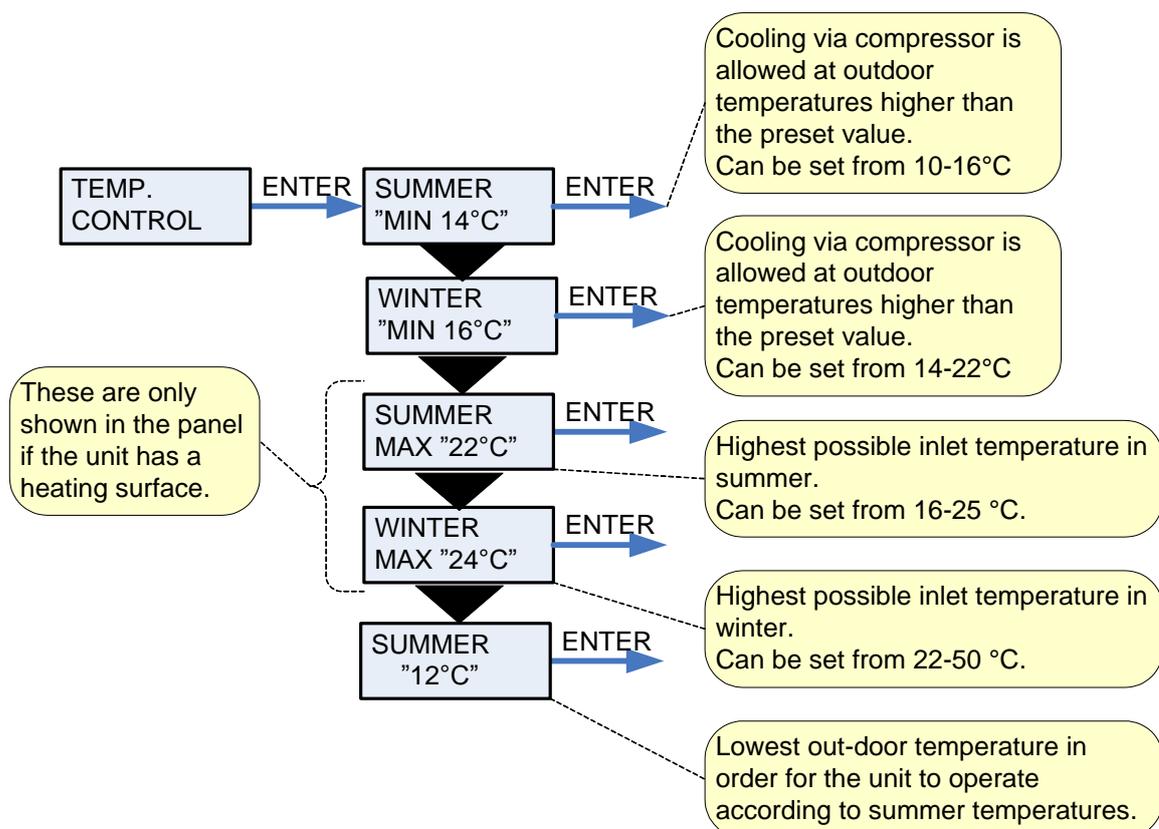


Figure 18: The "Temp. control" menu

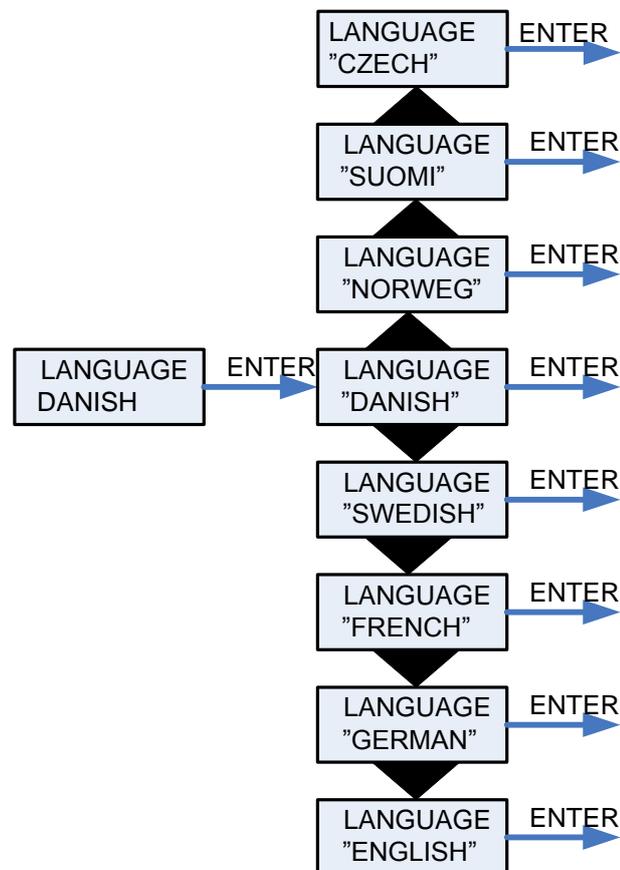
## Setting of language

In this menu you set which language to be used in the CTS 602 panel.

” ” indicates that the menu point flashes and can be set to another value.

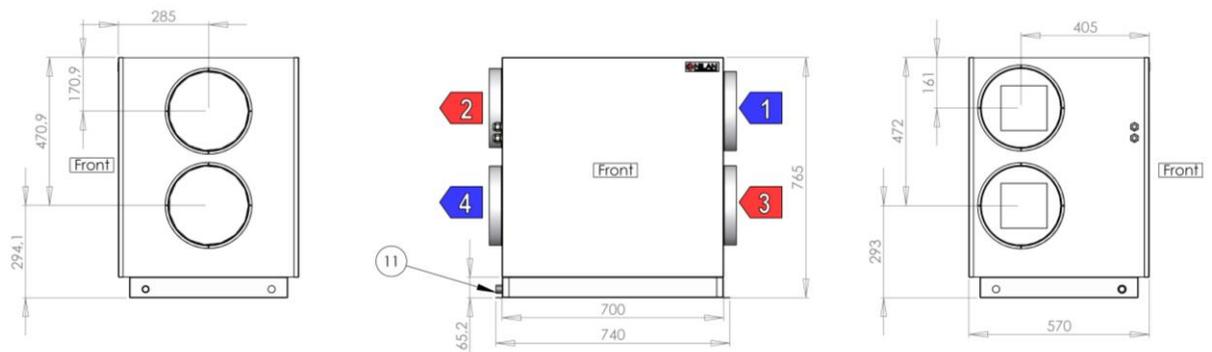
**Use of the CTS 600 panel :**

- press **ESC** to go one step back in the menu
- press **▼▲** to move up or down in a menu or to adjust an activated menu
- press **ENTER** to activate a menu
- press **ENTER** to confirm a menu
- press **OFF** to turn off the unit
- press **ON** to turn the unit on



**Figure 19: The "Language" menu**

## System dimensions



**Figure 20: System dimensions**

- 1: Udeluft, Fresh Air, Aussenluft, Air neuf
- 2: Tilluft, Air Inlet, Zuluft, Air pulse
- 3: Fraluft, Air Exhaust, Abluft, Air repris
- 4: Afkastluft, Air Discharge, Fortluft, Air extrait
- 11: Kondens afløb, Evacuation condensats, Kondensatmuffe, Vacuation des condensats

## Accessories/spare parts

<b>VPL 28</b>			
Filter types	Designation	Qty.	Nilan item no.
Duct filter	Ø250mm	1	85063

<b>Heating surface, water</b>		
Unit	Qty.	Nilan item no.
VPL 28	1	768983Z

<b>Heating surface, electrical</b>		
Unit	Qty.	Nilan item no.
VPL 28	1	764231

<b>Filter FU</b>				
Unit	Filterclass	Designation	Qty.	Nilan item no.
FU28H	G4	Pladefilter (1 sæt)	1	3932

<b>Heating cable for condensation outlet (frost protection)</b>		
System	System type	Nilan Item no.
VPL 28	Heating cable	2172