

User manual

CTS 602 by Nilan



Comfort 250 Top

Comfort 300 *

Comfort 300 Top

Comfort CT300

Comfort 450

Comfort 600

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

*Item no 7113F /7113HF

 **NILAN**[®]
OUTSTANDING INDOOR CLIMATE

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Introduction



Please check that the following documents have been supplied with the unit:

- Installation instructions
- Operating instructions for CTS 602 controls (this manual)
- Wiring diagram

The purpose of this manual is to provide a clear and concise description of the CTS 600 menus and their possible settings.

The manual may contain functions and facilities which are not available on your system.

Unless otherwise stated in the titles, the descriptions apply to all systems listed on page 4.

When the display “shows” cooling”, the temperature of the inlet air is the same as the outside temperature, and heat recovery is thus not performed.

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

The system is delivered ready for use.

The factory settings are suitable for most user requirements and it should therefore not be necessary to change any settings other than those found in the main menu.

The main menu is described on pages 8 and 9.

System types

The controls are designed for use with the following systems.
The figure below describes the possibilities offered by the various models.

No.	Type	Heat recovery	Heating surface, water	Heating surface, electrical	Frost-protection of heating surface	Cooling via by-pass damper	Defrosting
1	COMFORT 250 TOP	X	X	X	X	X	X
2	COMFORT 300	X	X	X	X	X	X
3	COMFORT CT300	X	X	X	X	X	X
4	COMFORT 300 TOP	X	X	X	X	X	X
5	COMFORT 450	X	X	X	X	X	X
6	COMFORT 600	X	X	X	X	X	X

Figure 1: System types

Temperature sensor overview

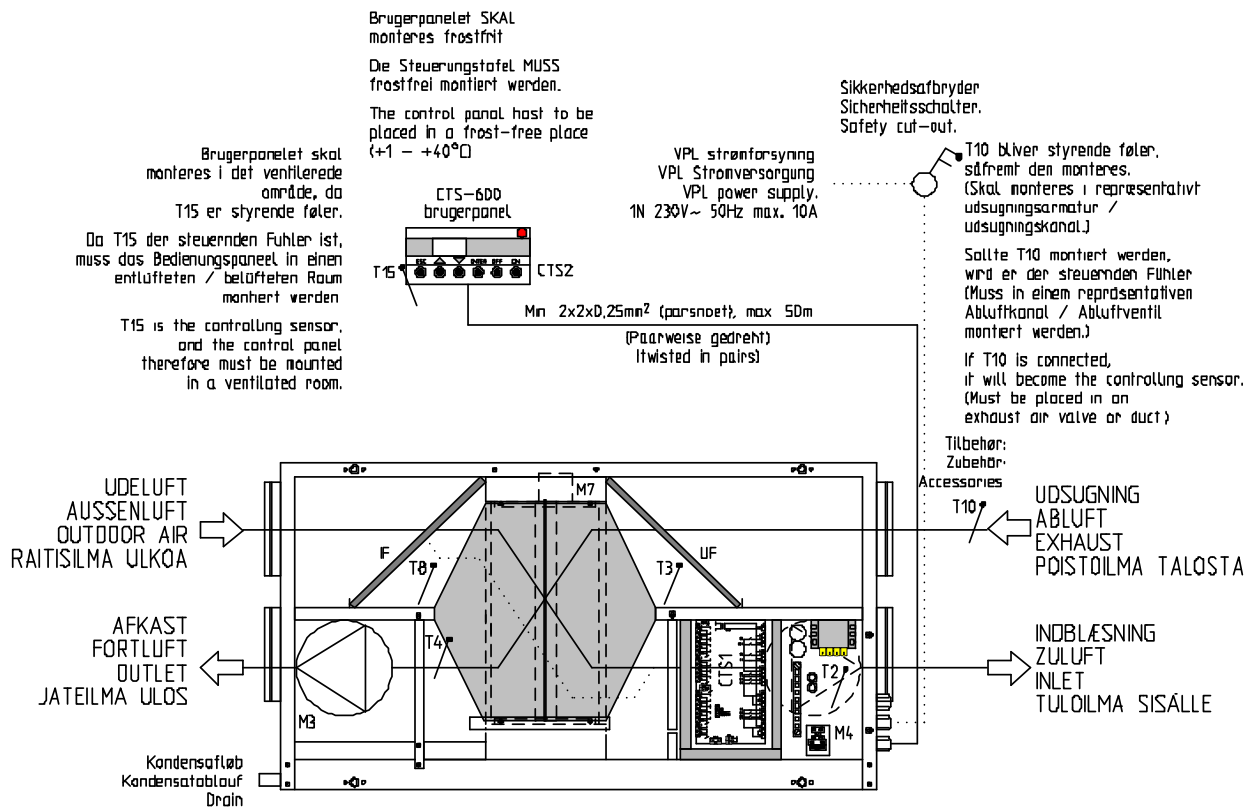


Figure 2: Diagram illustrating sensor location for Comfort 250-600

Key to sensors described in figure 2:

- T2 is the temperature sensor at the inlet ventilator (without heating surface).
- T3 is the temperature sensor in the exhaust at the intake.
- T4 is the temperature sensor in the outlet.
- T7 is the temperature sensor in the inlet after the heating surface.
- T8 is the temperature sensor in the outdoor air at the intake.
- T9 is the temperature sensor of the heating surface.
- T10 is the temperature sensor in the exhaust (accessory).
- T15 is the temperature sensor located inside the CTS 602 control panel.

The temperature currently recorded by the various sensors can be seen in the VIEW DATA menu.

Control panel



On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

Figure 3: CTS 602 control panel

The yellow LED on the front of the control panel indicates the following:

Constantly lit: compressor in operation

Flashes: system in alarm condition

The control panel can display 2 lines of text, each containing 8 characters.

The upper line consists of explanatory text.

The lower line contains the setting or settings associated with the parameter described by the explanatory text.

The text shown on the display remains "lit" as long as the system is connected to the power supply. It will thus remain lit even if the system is turned off or if the control panel has not been operated for some length of time.

Using the menus

To change a setting or function, the relevant menu must first be accessed by pressing ▲ or ▼.

To activate the required menu, press **ENTER**.

To change the setting of the required parameter, press and hold **ENTER** until the value flashes.

The setting can then be changed to the required value using ▲▼.

To save the new setting, press **ENTER**.

When reading the following menu descriptions, it is a good idea to have access to the control panel or menu overview.

If no buttons are pressed for one minute, the controls automatically return to the main menu.

If the controls return to the main menu during system configuration, any new data will be automatically stored if they have been saved by pressing **ENTER**. It is always possible to continue configuring the system by returning to the point reached.

Menu overview

Menus

CTS 602 controls have 13 menus (if used for a system with cooling).

Usually, the main menu will be displayed on the control panel (i.e. the menu in the bold box in the overview below). From here, it is possible to scroll through all the other menus using ▲▼.

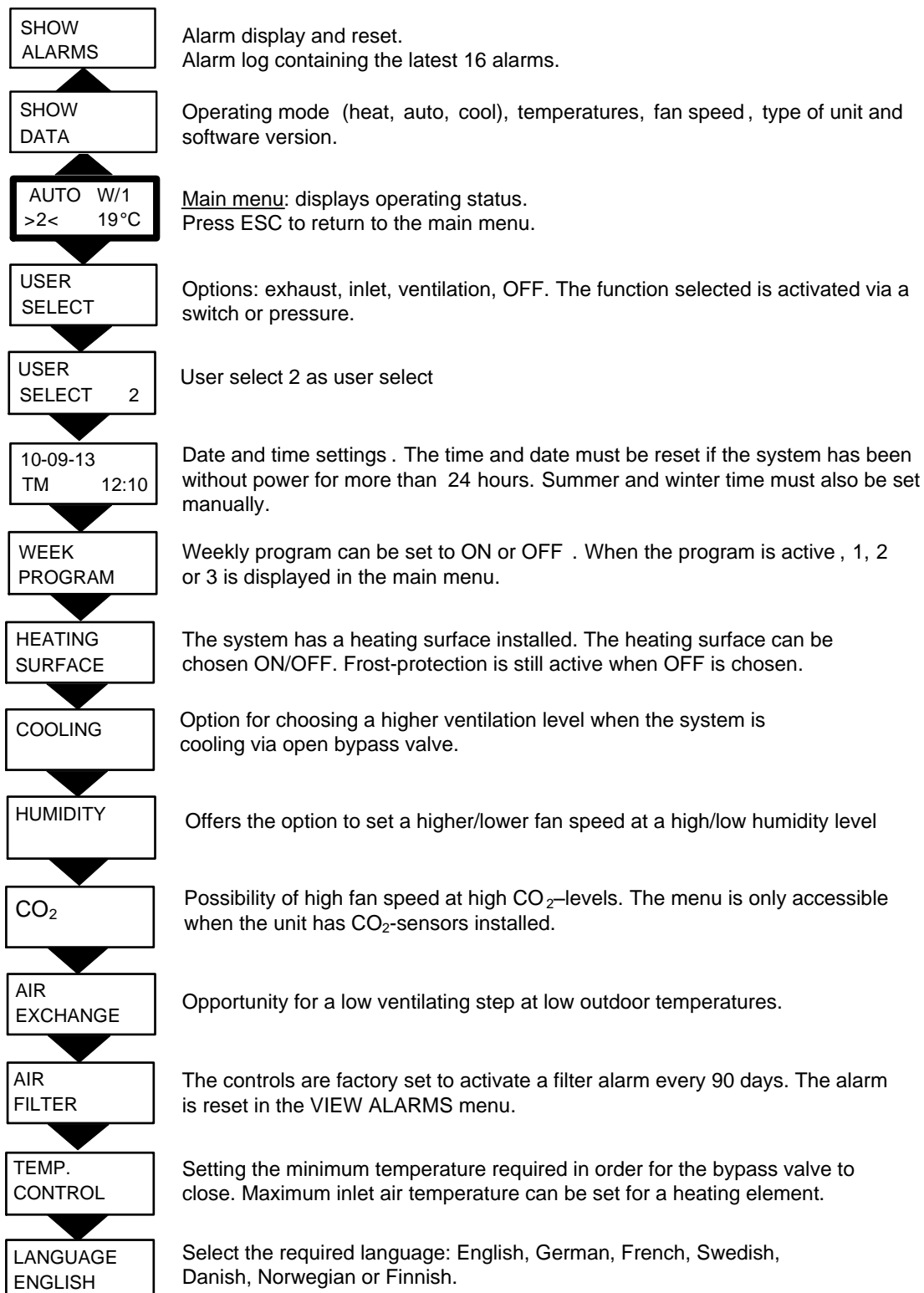


Figure 4: Menu overview

Operating status

Three parameters are shown in the main menu: operating mode, ventilation step and temperature. These parameters determine operating status and are set by the user.

The main menu is shown on the display approx. 15 seconds after power has been connected, allowing users to select the required settings.

By pressing ESC one or more times you will automatically return to the main menu.

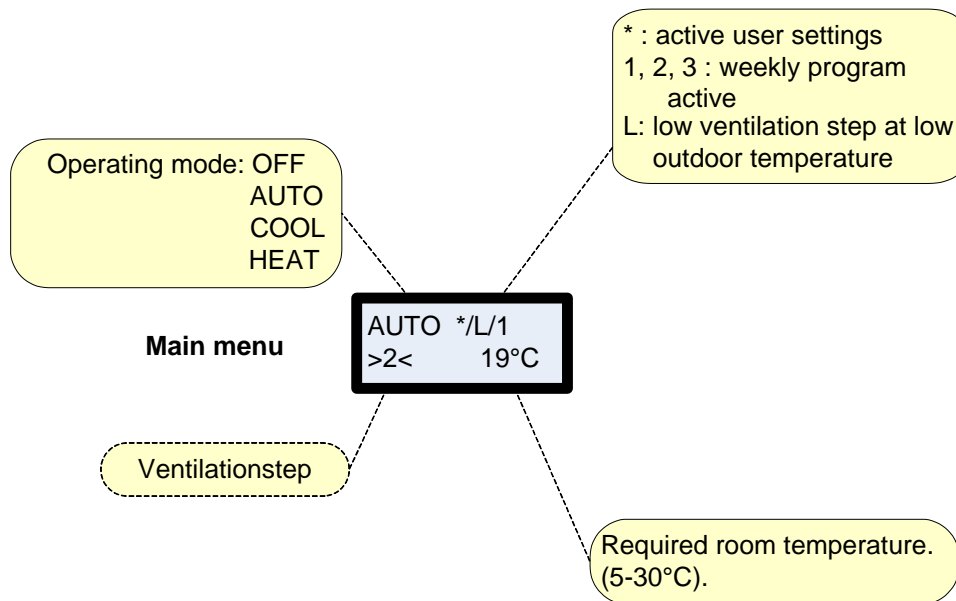


Figure 5: Main menu

The required room temperature can be set by pressing **ENTER** once. The number beside °C will begin to flash and the setting can then be changed using ▲▼. Finally, confirm the new setting by pressing **ENTER**.

As for systems without a post-heating element, the display shows the current room temperature.

Operating mode can be changed by pressing **ENTER** twice. The current mode will begin to flash, allowing it to be changed using ▲▼ and confirmed by pressing **ENTER**. When the system is set to “Auto”, the bypass valve opens and closes automatically, depending on the temperature setting. “Cooling” means that the bypass valve is open, and “Heating” means that it is closed.

Ventilation step can be changed by pressing **ENTER** three times. The current ventilation step will begin to flash, allowing it to be changed using ▲▼ and confirmed by pressing **ENTER**.

Main menu

The main menu is displayed approx. 15 seconds after the power has been connected. Options that flash are indicated by " ".

The options available on the main menu are shown in the figure below:

You will always return to the main menu if you press ESC one or more times.

On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

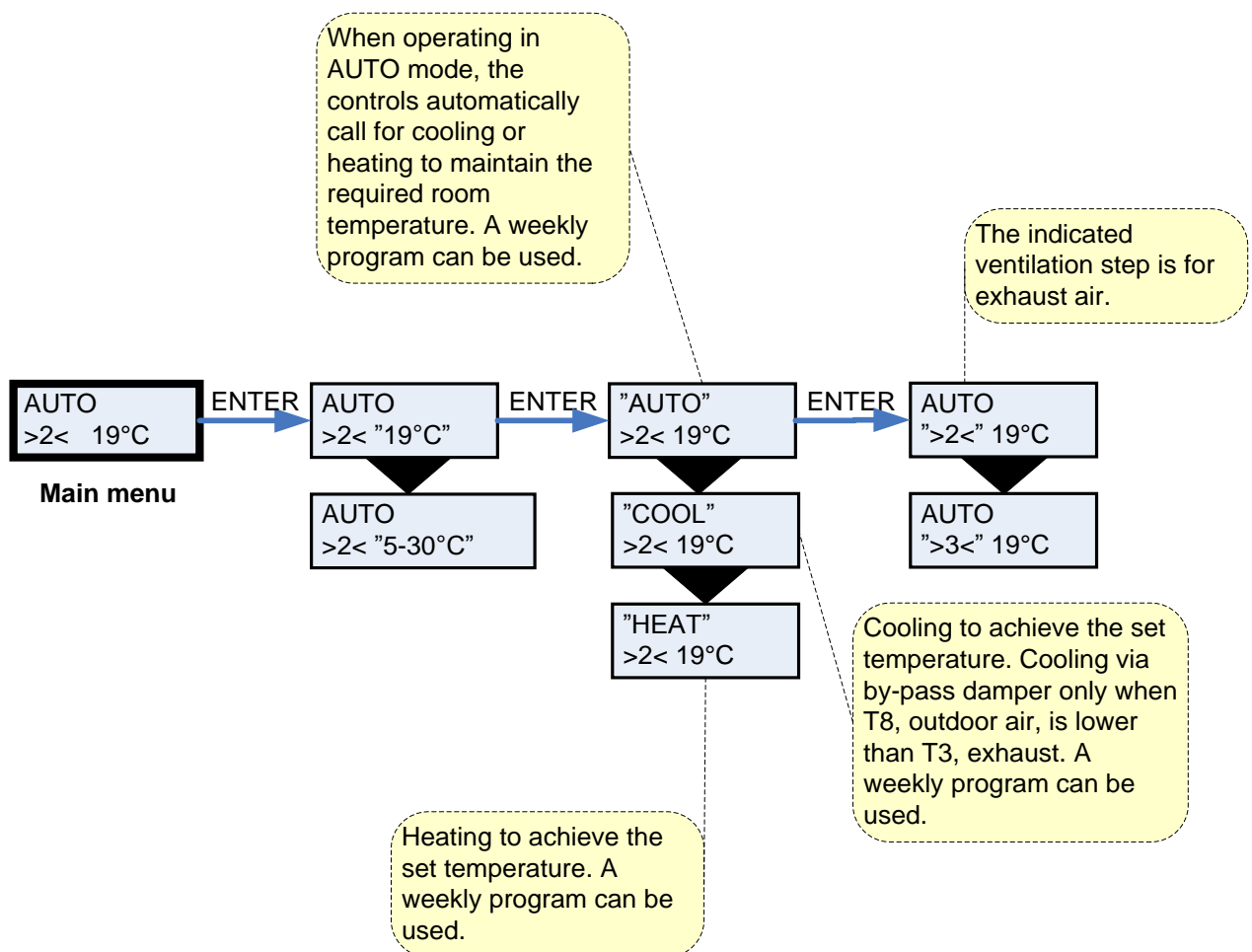


Figure 6: Main menu options

Show alarms

If an alarm condition occurs, the yellow LED on the CTS 602 control panel will begin to flash.

The SHOW ALARMS menu allows users to identify the alarm condition and the time at which it occurred. Alarms can also be reset in this menu.

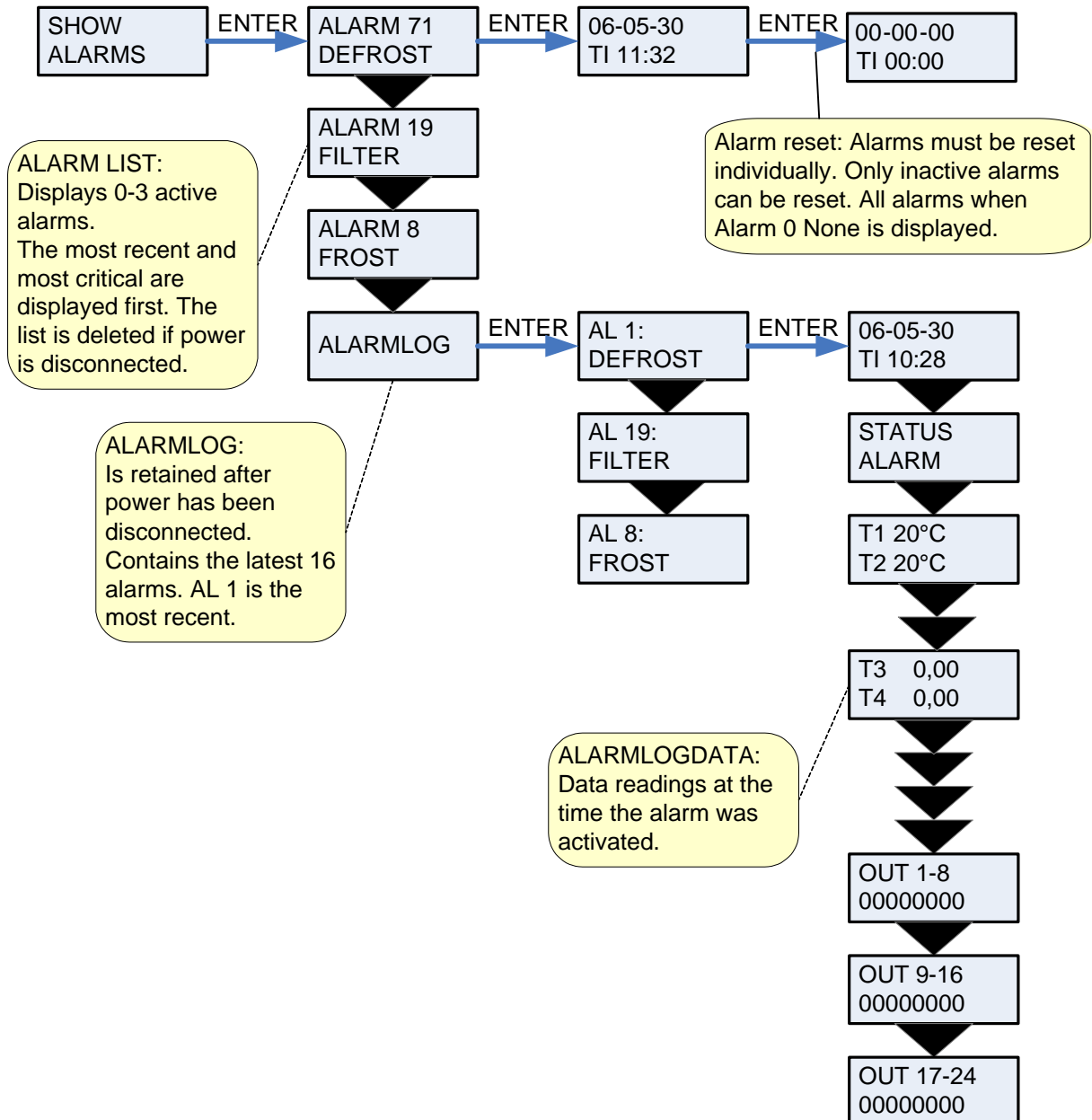


Figure 7: The "Show alarms" menu

Alarm codes are given for specific alarm situations or where users are to be provided with important information.

Alarms are grouped in the following categories:

- C Critical** Operation partially or totally discontinued as long as the alarm situation persists.
- W Warning** Situation will become critical if not remedied within a reasonable period of time.
- I Informative** Standard operation is not affected. The alarm is reset as soon as the user acknowledges it.

Alarm code	Category	Display text	Description/cause	Remedy
00	--	--	No alarm	
01	C	HARDWARE	Fault in controls hardware.	Reset controls. Contact service centre if fault persists.
02	C	TIMEOUT	Warning alarm (W) has become a critical alarm.	Make a note of the alarm and reset. Contact service centre if alarm persists.
03	C	FIRE	Fire detecting thermostat. Unit is stopped because the fire detecting thermostat has been activated.	If there has not been a fire please contact service.
07	C	FROST	1) Frost-protection of heating surface: the inlet air over the heating surface is too cold which can be caused because the by-pass damper is open. 2) The water from the central heating is too cold.	1) Close by-pass damper, activate heating surface and reset alarm. 2) Check that the heating supply for the heating surface is OK. Reset alarm when fault has been repaired.
08	C	FROST	One of the temperature sensors in the unit is short circuit or defect.	Note the sensor and contact service.
09	C	OVERTEMP	One of the temperature sensors in the unit is disconnected or defect.	Note the sensor and contact service.
10	C	OVERHEAT	Electrical heating surface has been overheated due to lack of airflow.	Check filters, air intake and ventilators. Reset alarm. Contact service centre if system fails to operate satisfactorily.
11	C	AIRFLOW	Lack of airflow in inlet. See alarm code 10.	See alarm code 10

Alarm code	Category	Display text	Description/cause	Remedy
15	W	ROOM LOW	If room temperature falls below 10°C, the system will stop operating in order to prevent further cooling. This could, for example, occur if the house is unoccupied and the heating system switched off.	Switch heating on and reset alarm.
16	I	SOFTWARE	Error in controls software.	Contact service centre.
17	I	WATCHDOG	Error in controls software.	Contact service centre.
18	I	SET	System configuration has been partially lost. Can be caused by prolonged lack of power or lightning. The system will continue to operate using standard settings.	Reset alarm. Configure weekly program as required. Contact service centre if system fails to operate satisfactorily or as it did before as subsettings may have been lost. (Such subsettings can only be accessed by a service technician.)
19	I	FILTER	The system is set to activate an alarm for filter inspection/replacement after a specific number of days (30, 90, 180 or 360 days). The default setting is 90 days.	Clean/replace filter. Reset alarm.
21	I	SET TIME	Occurs during power failure.	Check weekly program settings and reset if necessary. Reset alarm.
22	I	T AIR	The heating of the set temperature cannot be reached. Heating surface and system cannot lift the temperature to the required level.	Set a lower inlet temperature. Reset alarm
27-57	C	T _x SHORT	One of the temperature sensors connected to the system has short-circuited/is defective. Short-circuited sensor = +99°C	Make a note of which sensor (T _x) has short-circuited (e.g. T1 short) and contact service centre.
28-58	C	T _x OPEN	One of the temperature sensors connected to the system has been disconnected/is defective. Disconnected sensor = -40°C	Make a note of which sensor (T _x) has become disconnected (e.g. T1 discon) and contact service centre.
71	W	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 SHOW DATA.
91	I	OPTIO	Accessories circuit board	Contact service centre.
92	i	PRESET	Error by writing or input of the electrician's adjustments	Contact service centre.

Show data

Current operating data are displayed in the SHOW DATA menu.

The location of the various sensors is shown in figure 2 on page 5.

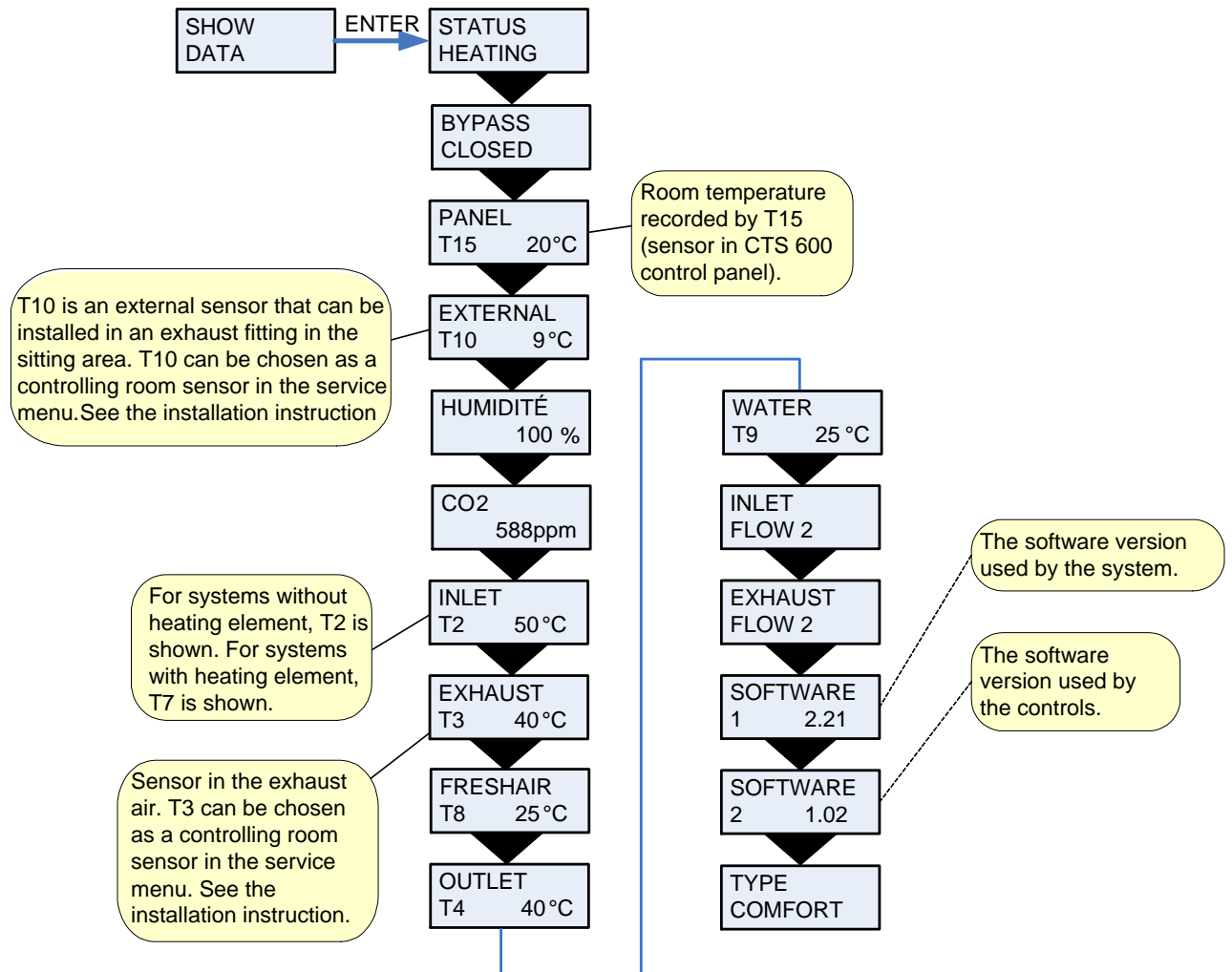


Figure 8: The "Show data" menu

User options

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.

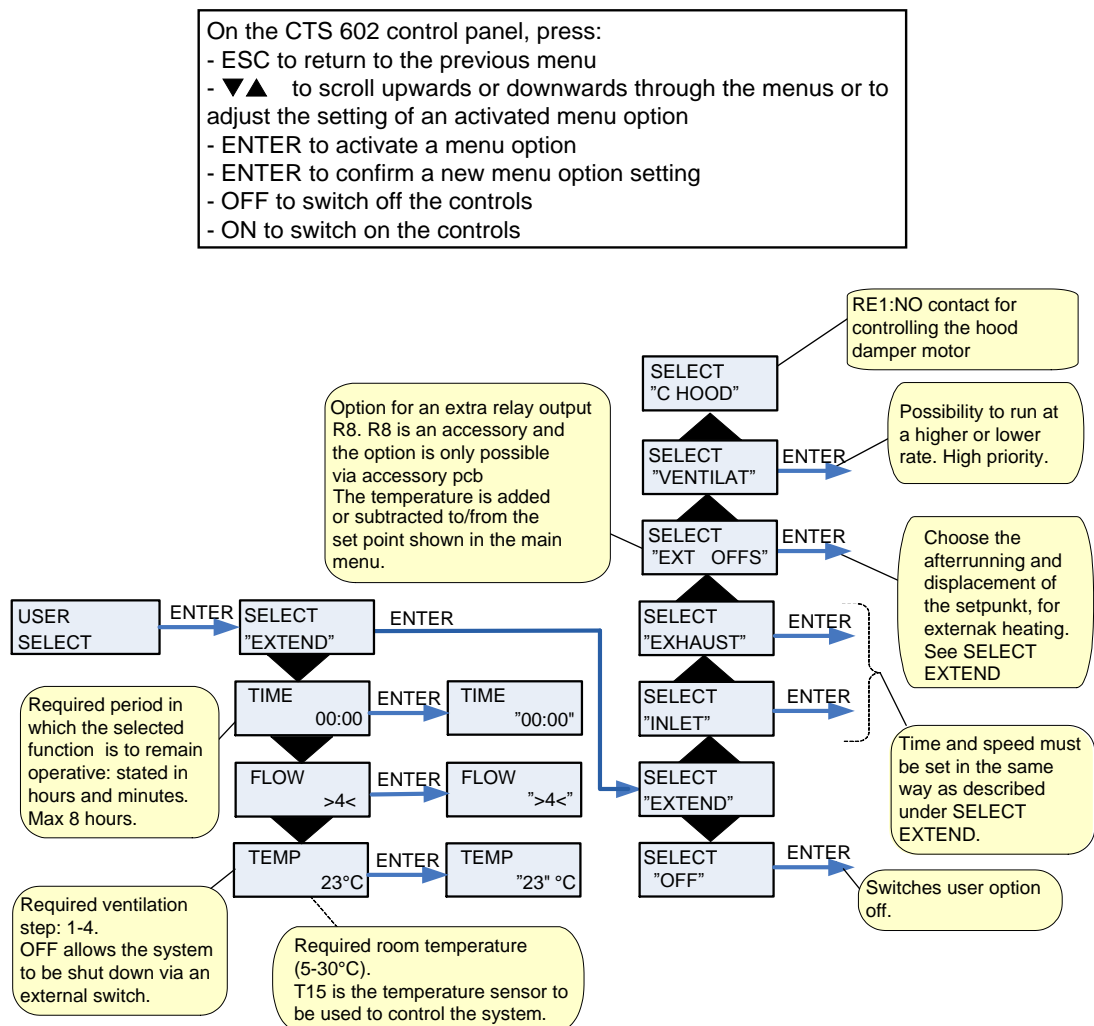


Figure 9: The "User select" menu

User select 2

User select 2 as user select. (Only if the option board is installed)

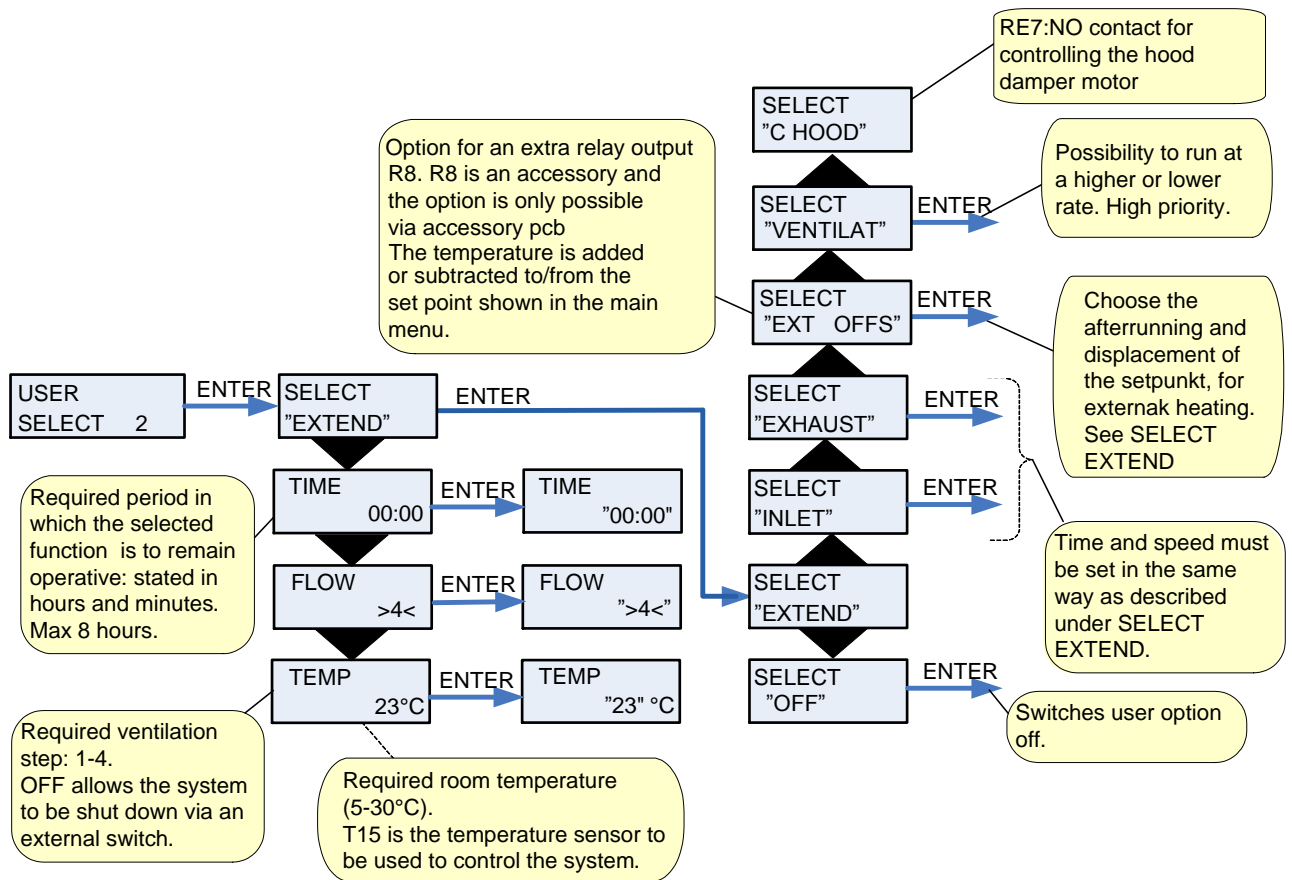


Figure 10: The "User select" menu

Date and time

The clock will continue to operate for at least 24 hours during power failure. If date and time settings are lost, the "Set time" alarm will be activated.

Remember to set summer and winter time manually.

Options that flash are indicated by " ".

On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

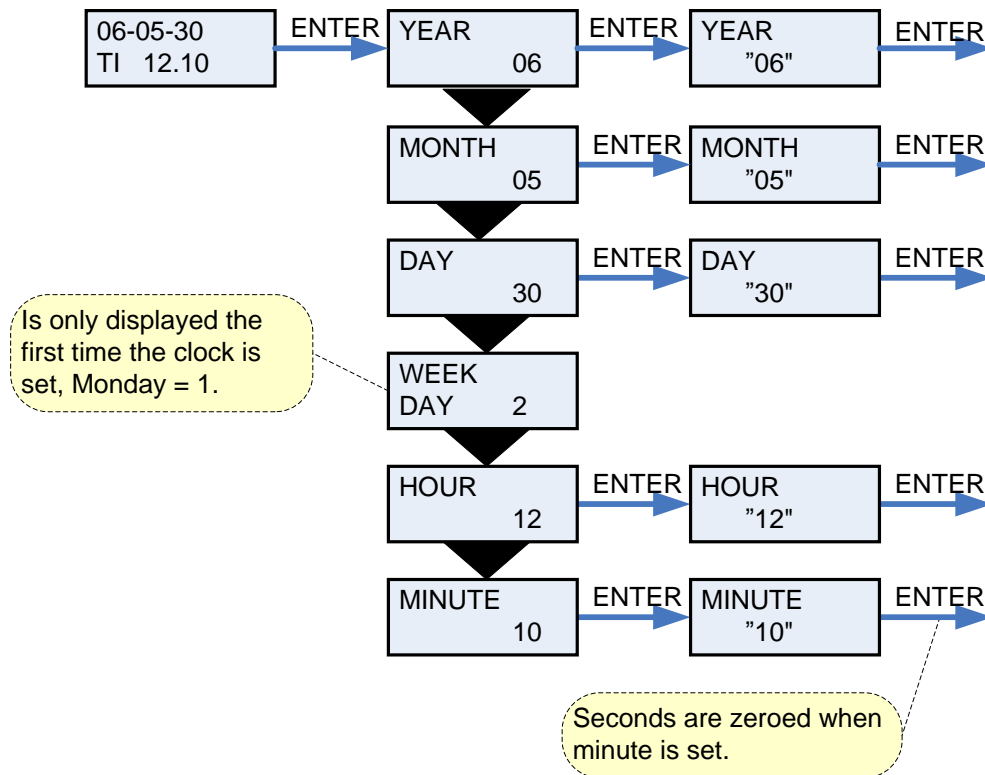


Figure 11: The "Date and time" menu

Weekly program

The controls offer a choice of 3 weekly programs.
The controls are factory set to OFF.

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.

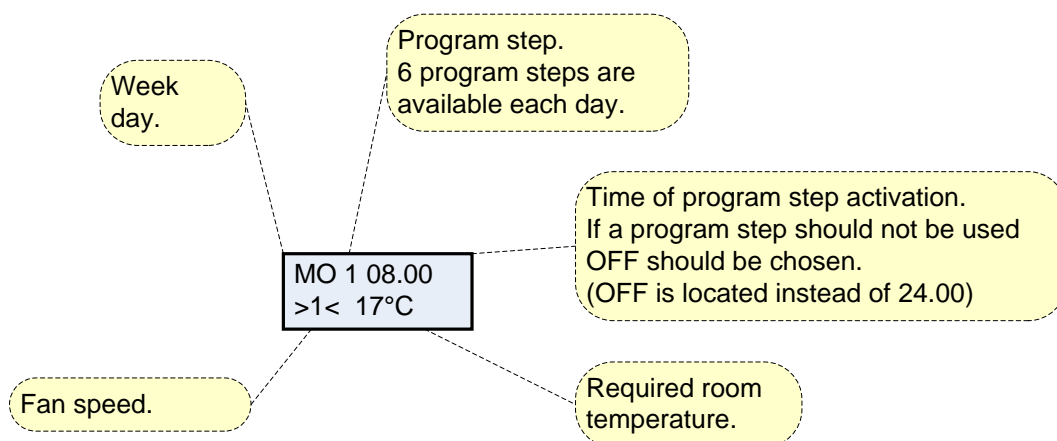
Options that flash are indicated by " ”".

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



On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

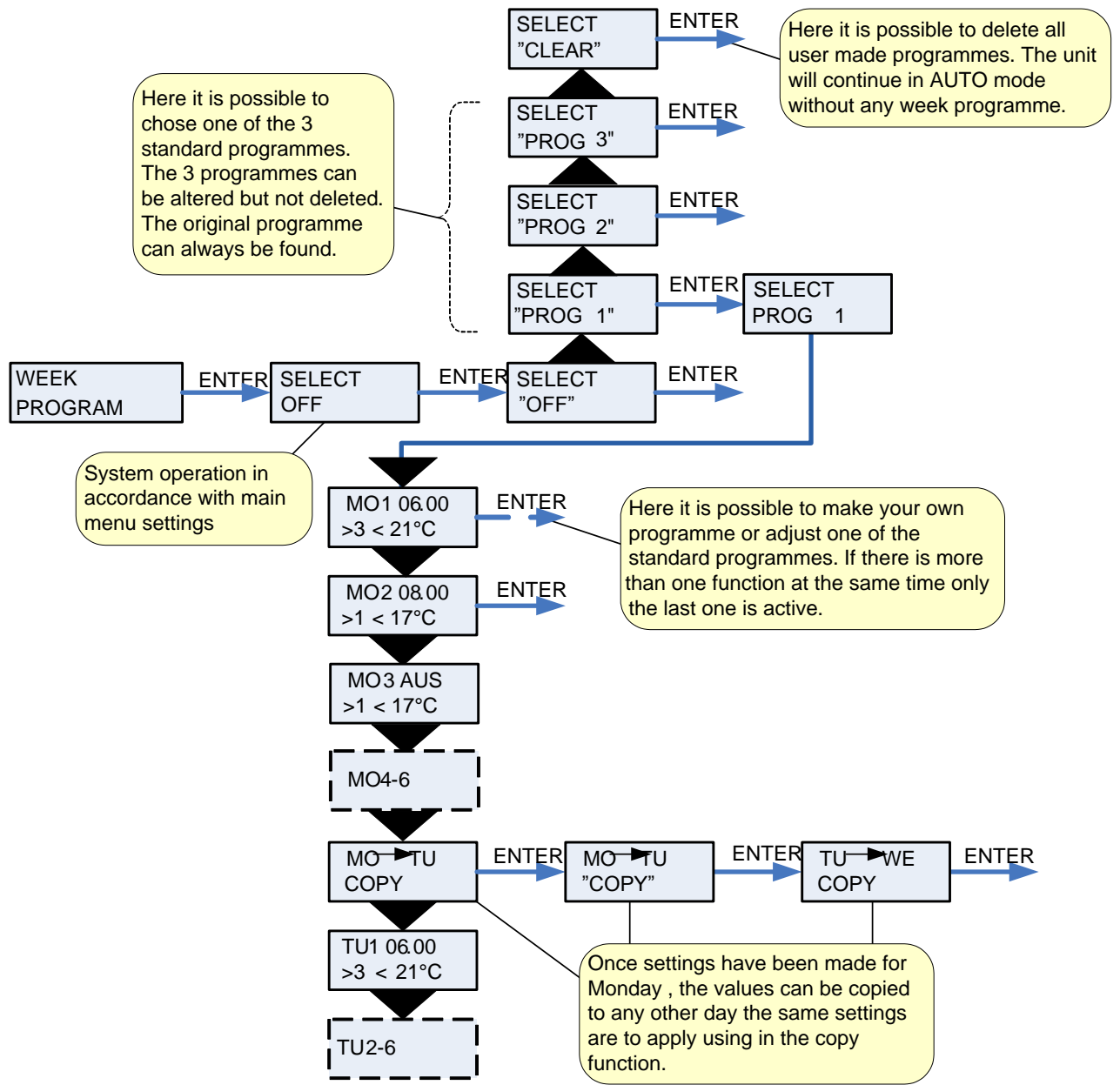


Figure 12: The “Week program” menu

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

Options that flash are indicated by " ".

On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

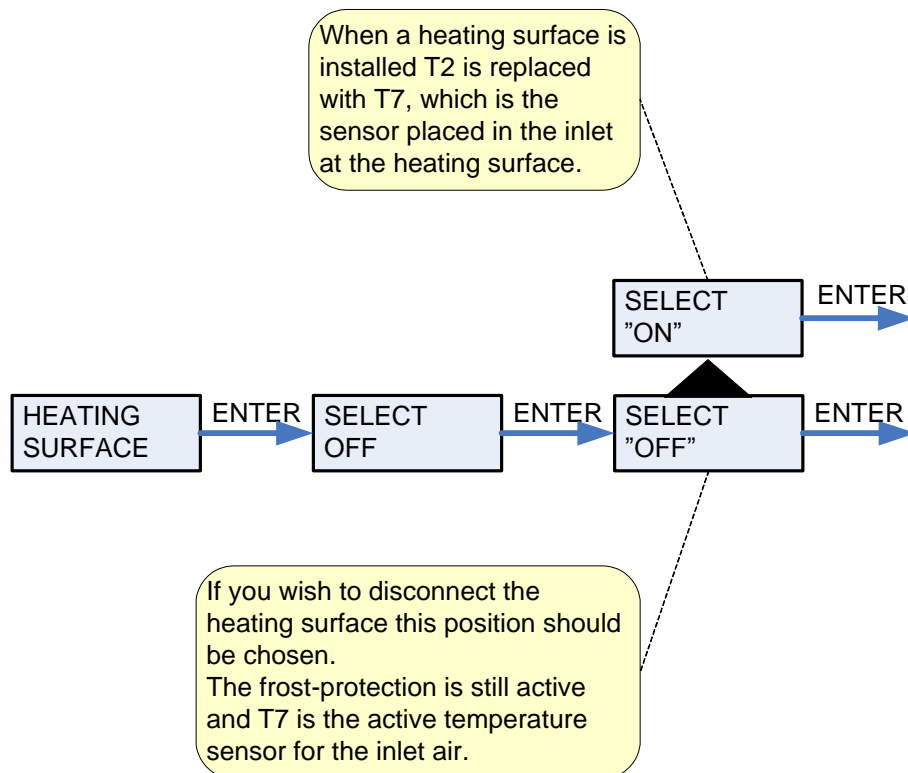


Figure 13: The "Heating surface" menu

Cooling

The Comfort range offers the ability to cool the air by opening a bypass damper. However, the system will still recover a minimum of heat when in bypass mode.

The menu COOLING allows you to set the system to automatically run at a higher/the highest ventilation level at high outside temperatures

Options that flash are indicated by " " .

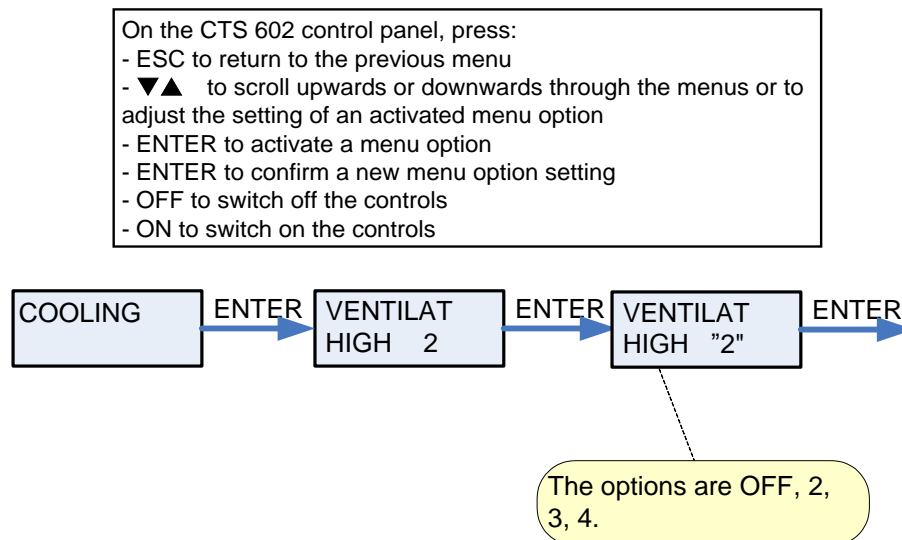


Figure 14: The "Cooling" menu

Humidity

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

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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.

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

On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

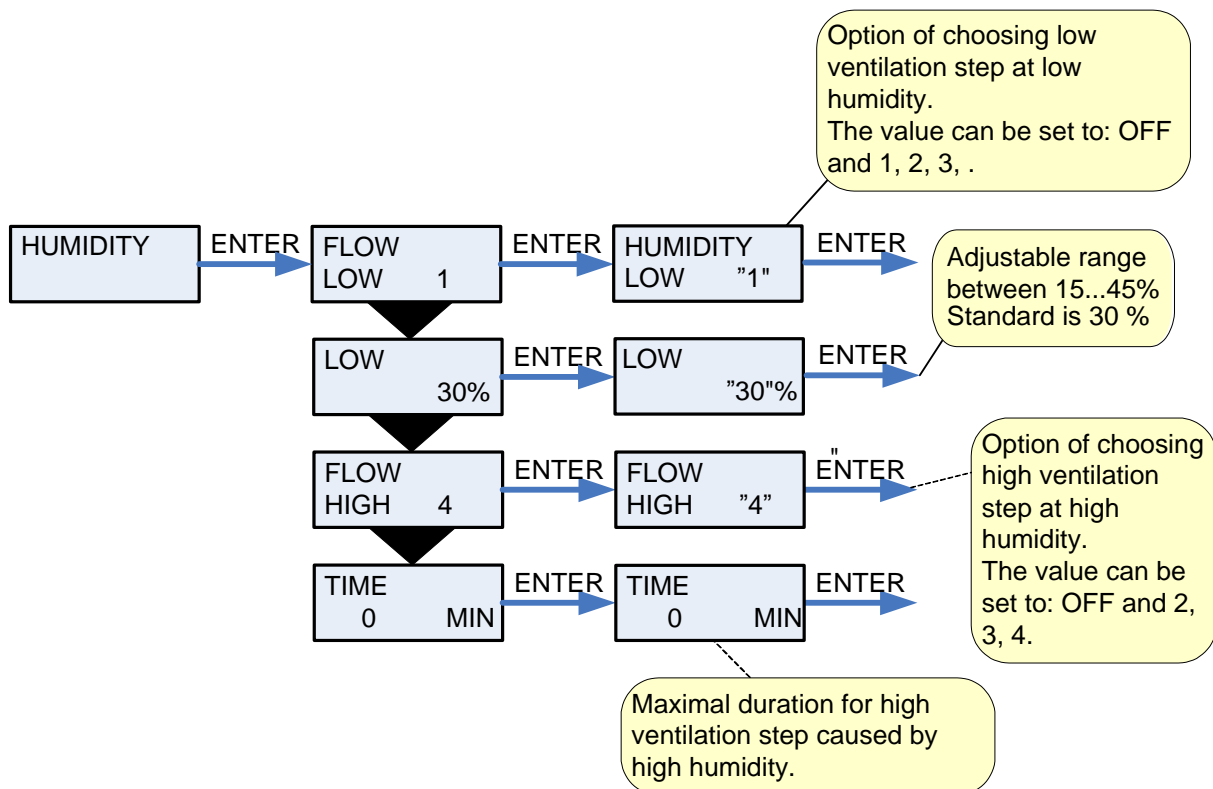


Figure 15: The " Humidity " menu

CO₂

In the "CO₂" menu it is possible to regulate the ventilation step in accordance with the CO₂ level.

CO₂-sensors are accessories and these sensors have to be installed in order for the unit to regulate in accordance with the CO₂-level.

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

On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

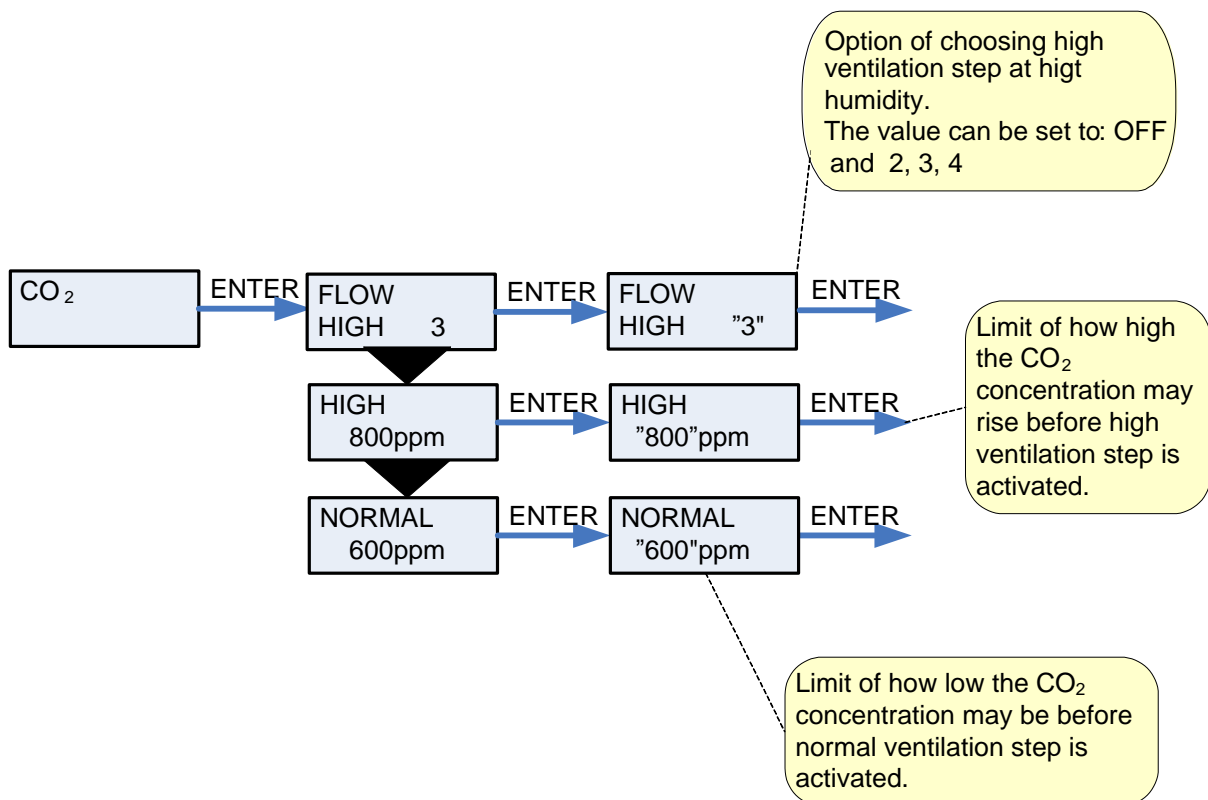


Figure 16: The "CO₂" menu

Air exchange

The menu AIR EXCHANGE gives the possibility of choosing a low ventilating step at low outdoor temperatures.

Options that flash are indicated by " ".

On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

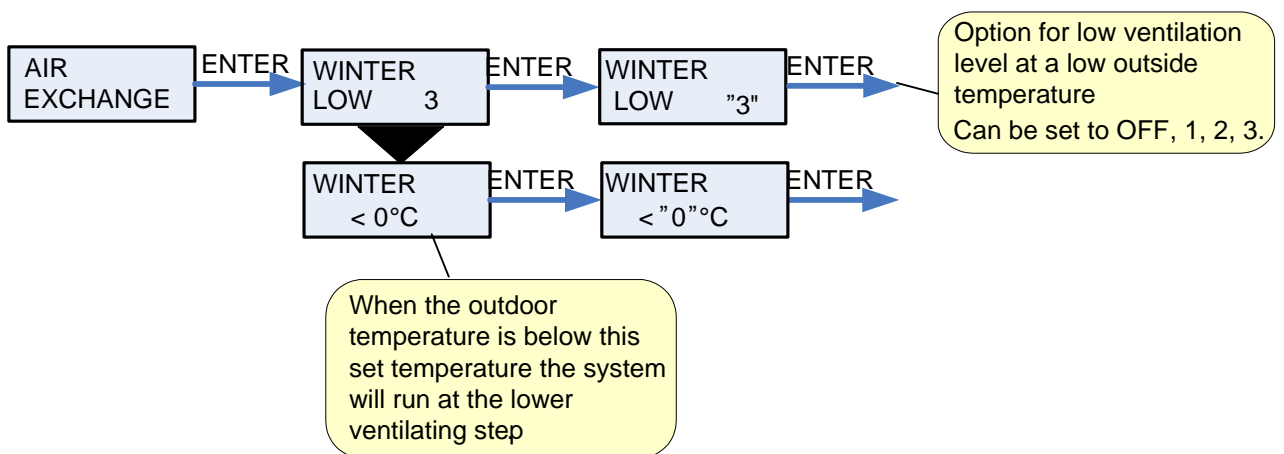


Figure 17: The "Air exchange" menu

Air filter

The AIR FILTER menu allows users to select the interval at which they wish the controls to activate a filter alarm, reminding them that it is time to check/replace the air filter.

The system contains two plate filters in the inlet and exhaust duct, respectively. These filters must be controlled at least 3 times a year and replaced as required. The filters are replaced by dismantling the front cover and removing the filters. Please note that the system must be turned off when replacing the filters.

It is possible to install an extra box with a pollen filter EU7 in the inlet duct.

The controls are factory set to activate the alarm at 90 day intervals.

A filter guard can be installed above the system's filters/pollen filters.

Options that flash are indicated by " " .

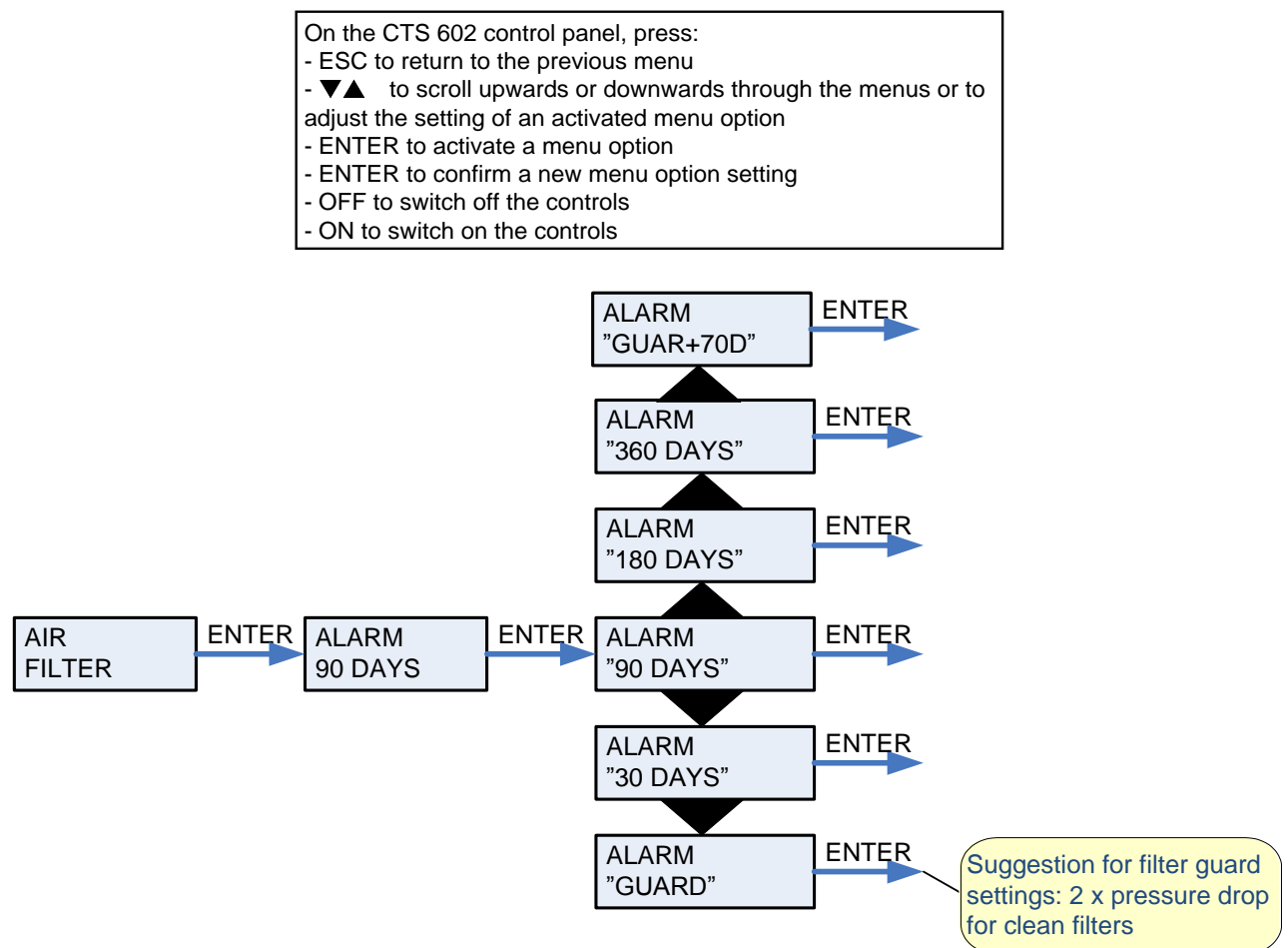


Figure 18: The "Air filter" menu

Temp. control

The TEMP. CONTROL menu allows active compressor cooling to be stopped at low outdoor temperatures.

Options that flash are indicated by " ".

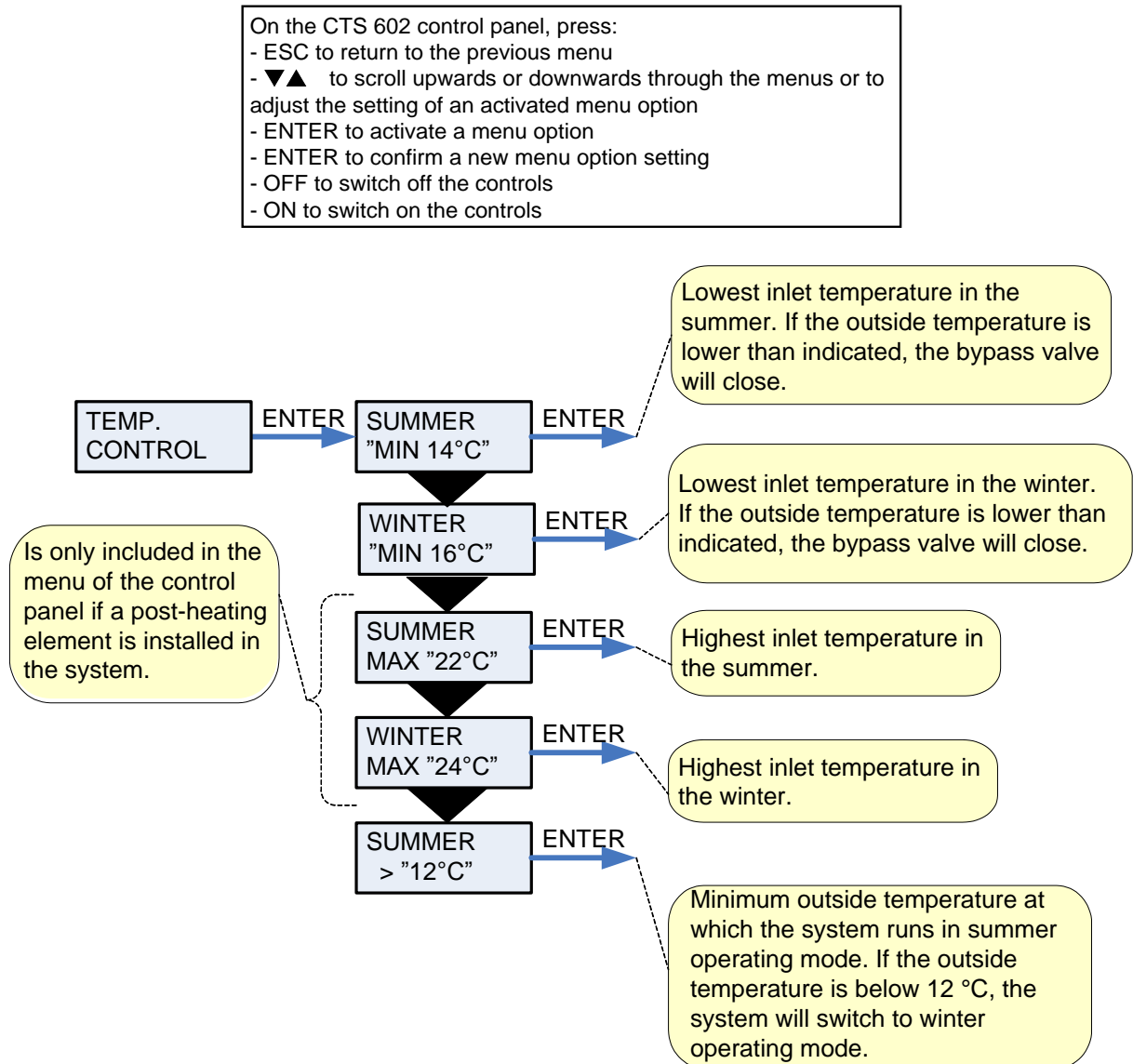


Figure 19: The "Temp. control" menu

Language

The language in which the displays are to be shown can be selected in this menu.

Options that flash are indicated by " ".

On the CTS 602 control panel, press:

- ESC to return to the previous menu
- ▼▲ to scroll upwards or downwards through the menus or to adjust the setting of an activated menu option
- ENTER to activate a menu option
- ENTER to confirm a new menu option setting
- OFF to switch off the controls
- ON to switch on the controls

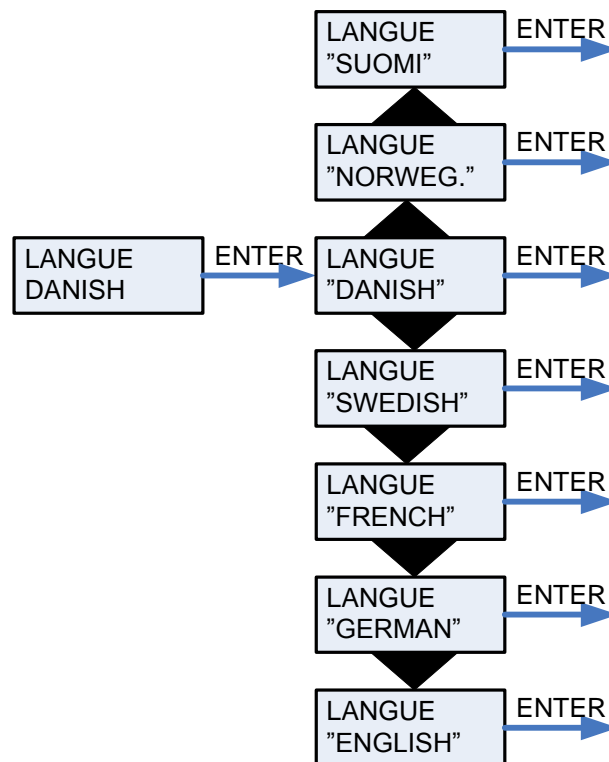


Figure 20: The "Language" menu

Filter change Comfort CT300

Outdoor- and extract air filters are placed behind the top lid on the front of the system. The filters are changed when needed (see section about accessories). CTS602 control has a time based filter monitor, which indicates filter change after a set time. Before filter change the system is turned off. Screws are loosened and the lid is removed. The filters can be removed without using tools.

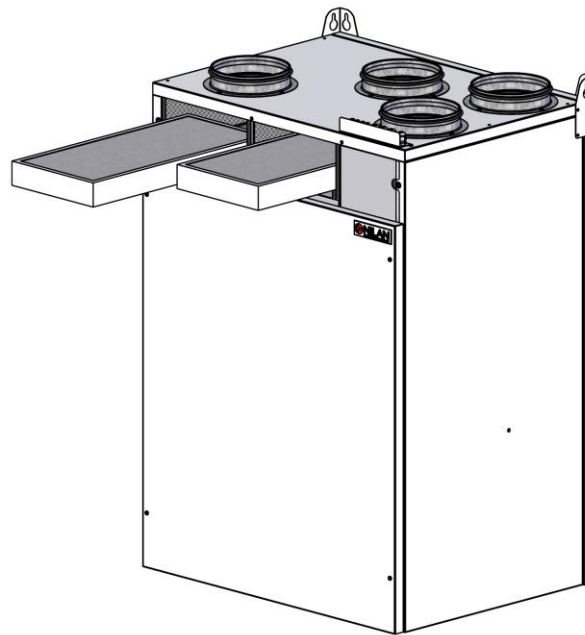
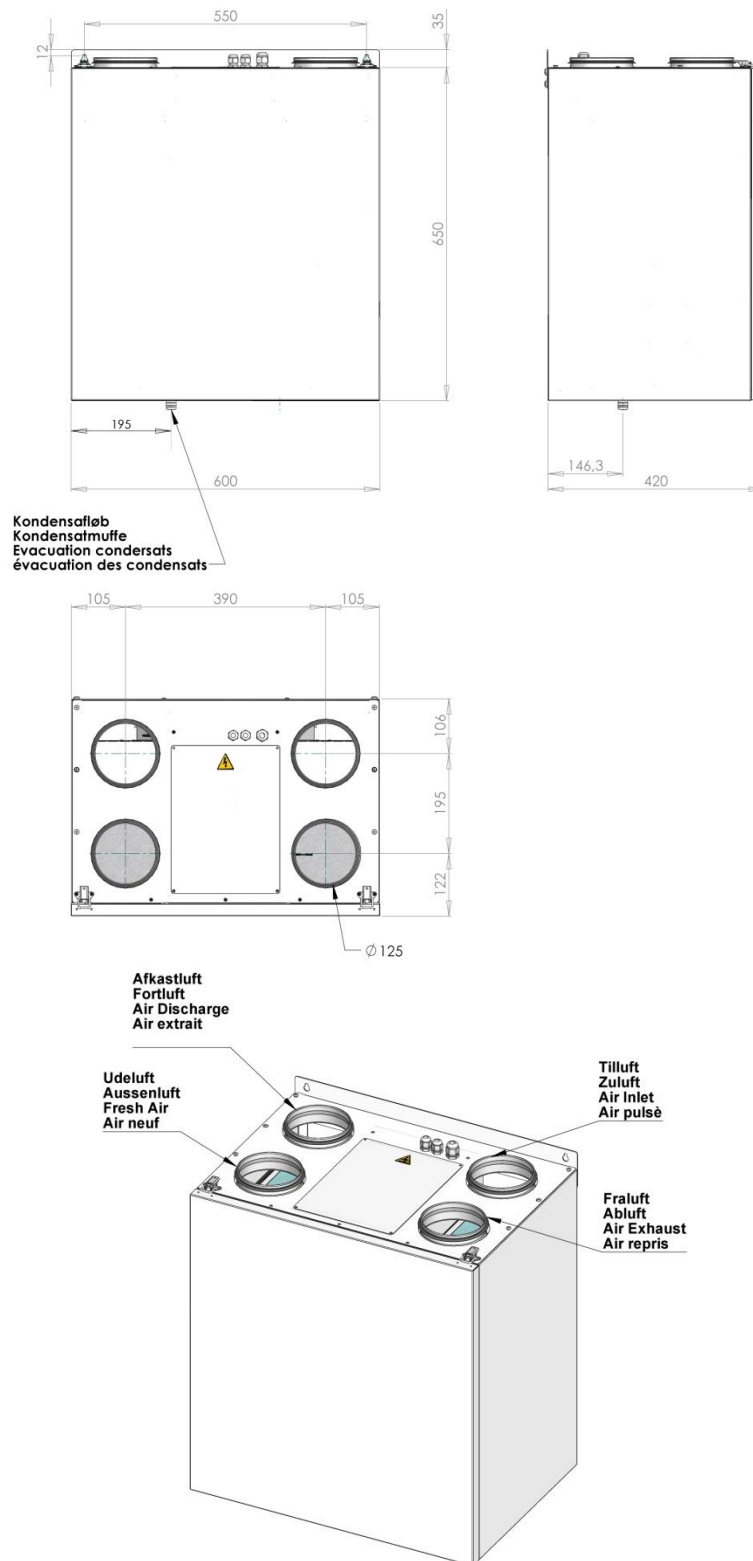
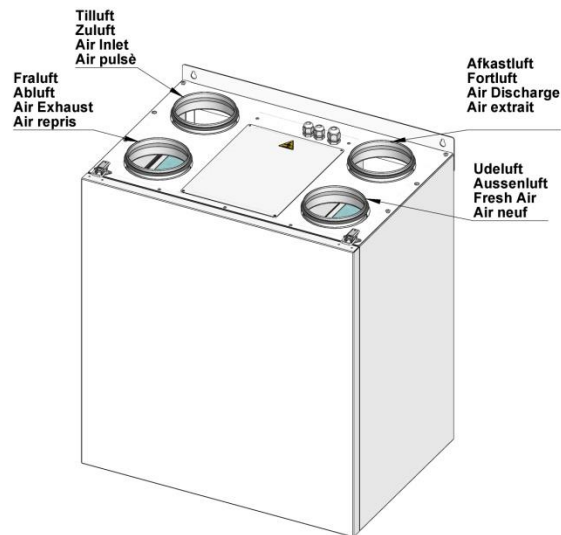
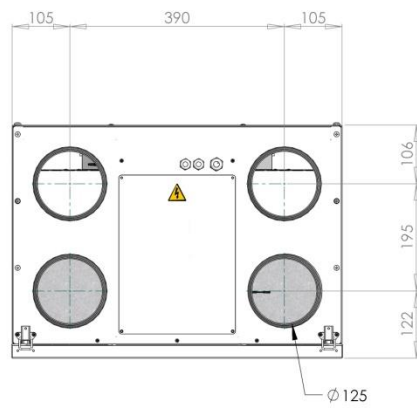
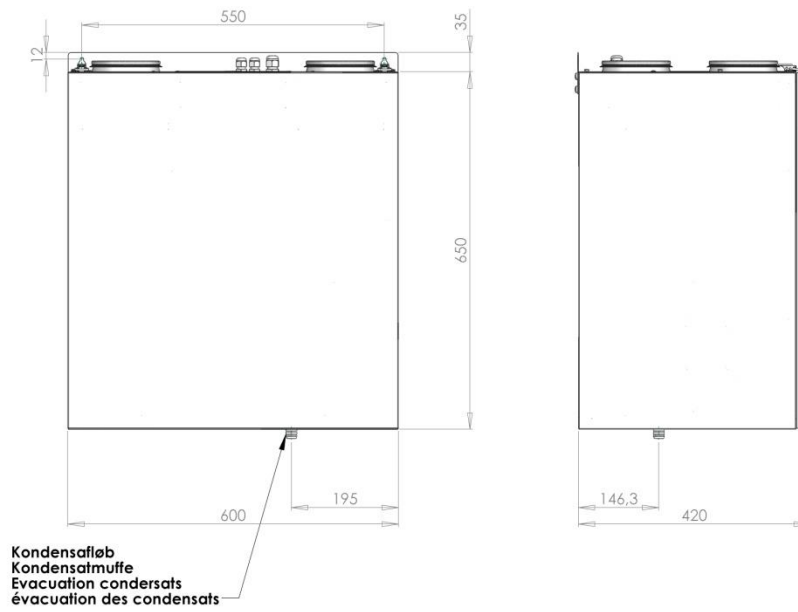


Figure 21: Filter change

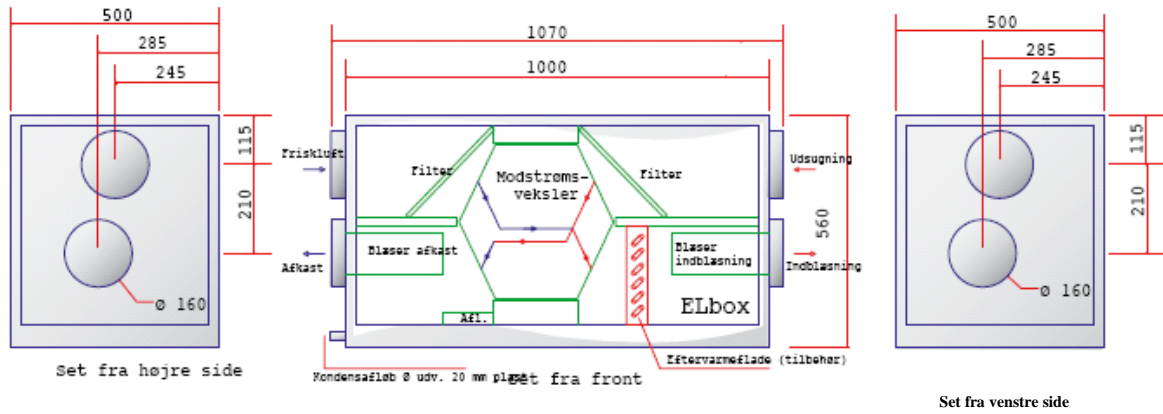
System dimensions



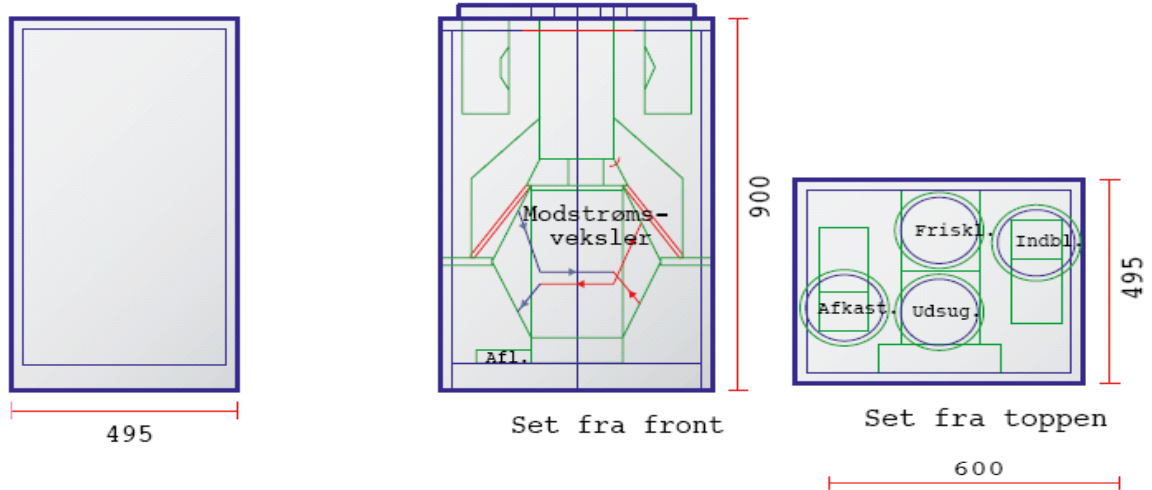
Comfort 250 Top right



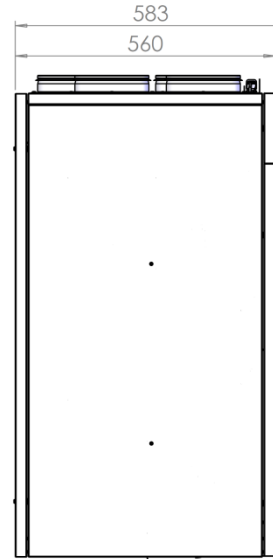
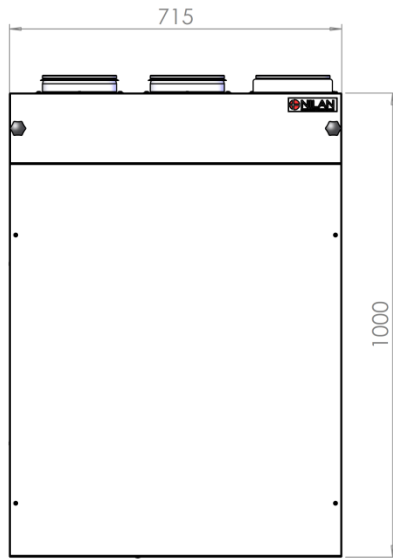
Comfort 250 Top left



Comfort 300

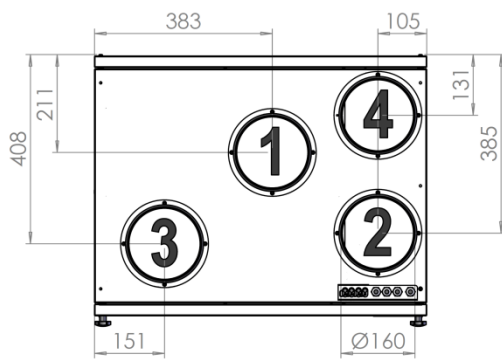


Comfort 300 Top

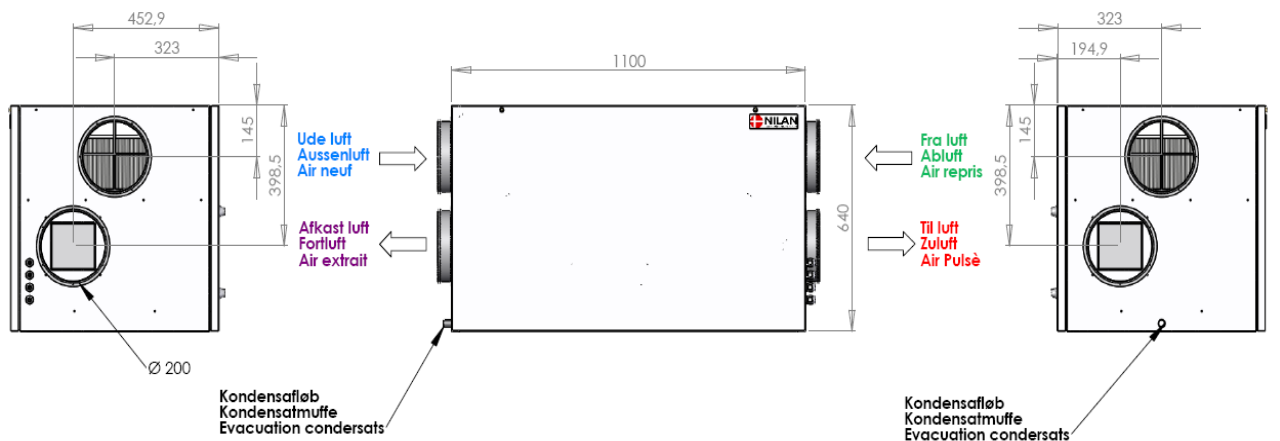


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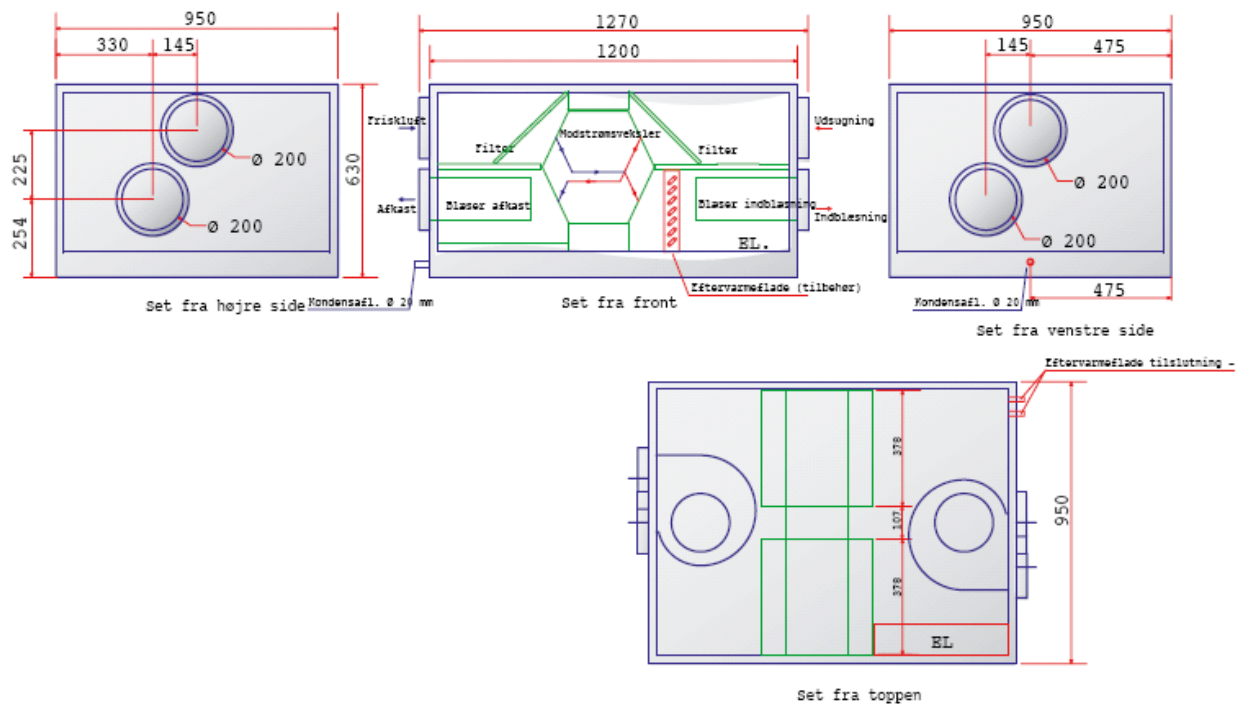
1. Udeluft
Aussenluft
Outdoor air
Air neuf
2. Tilluft
Zuluft
Supply air
Air pulsé
3. Fraluft
Abluft
Extract
Air repris
4. Afkastluft
Fortluft
Exhaust
Air extrait
5. Kondens afløb
Kondensatmuffe
Evacuation condensate
Vacuation des condensats



Comfort CT300



Comfort 450



Comfort 600

Accessories/spare parts

Filters			
Type	System type	Qty	Nilan item no.
Insulated pollen filter unit with F7 filter, for fitting in inlet duct (Ø160)		1	8527
Pollen filter F7		1	3915
Pollen filter for fitting	Comfort 300	1	3954
Pollen filter for fitting	Comfort CT300	1	3887
Pollen filter for fitting	Comfort 450	1	39541
Pollen filter for fitting	Comfort 600	1	3956
Filter G4 (1set = 2stk.)	Comfort 250 Top	1	39163
Filter G4 (1set = 2stk.)	Comfort 300	1	3916
Filter for fitting G4 (1set = 2stk.)	Comfort CT300	1	3885
Filter G4 (1set = 2stk.)	Comfort CT300	1	3939001
Filter G4 (1set = 2stk.)	Comfort 300 Top	1	39161
Filter G4 (1set = 2stk.)	Comfort 450	1	39165
Filter G4 (1set = 2stk.)	Comfort 600	1	39162

Heating surface for water incl. regulation		
System	Qty	Nilan item no.
Comfort 300	1	768913Z
Comfort 300 Top	1	768893Z
Comfort CT300	1	768893Z
Comfort 450	1	769062Z
Comfort 600	1	769063Z

Electrical heating surface (for fitting in inlet duct)			
System	Output	Qty	Nilan item no.
Comfort 300, 300 Top	0,9kW	1	764131
Comfort 600	6,0kW	1	764331

Spare parts/accessories		
Type	Qty	Nilan item no.
CTS 602, control PCB	1	239932
CTS 602, control panel, complete	1	2398
CTS 602, white control panel enclosure	1	2398HX
Filterguard excl. hose (3m item nr. 3049)	1	3635
Humidity sensor	1	23997
CO ₂ sensor	1	7134B13

Heating cable for condensation outlet (frost protection)		
System	Type	Nilan item no.
Comfort	Heating cable	2172