

User manual

CTS 602 by Nilan



VP 18 Compact

Version: 5.01, 15-04-2011
Software-version: 2.11

 **NILAN**[®]
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. The directions can be used for all types of units described in figure 1 page 4.

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

GETTING STARTED

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 9+10.

Types of units

The control is made for the following ventilation units.

The figure below describes the possibilities offered by the various models

Warennummer	Typ	Heated air	High pressure protection	Compressor	De-icing	Domestic hot water production	Supplementary heating of domestic water from e.g. Solar panels	Free cooling (inlet air bypasses the exchanger)	Cooling via compressor	Possibility for heating surface	Equipped with humidity sensor
73123B	VP 18 Compact	X	X	X	X	X		X		X	
731214B	VP 18 Compact SUN	X	X	X	X	X	X	X		X	
73124B	VP 18 Compact COOL	X	X	X	X	X		X	X	X	
731244B	VP 18 Compact SUN COOL	X	X	X	X	X	X	X	X	X	
73123BF	VP 18 Compact F.Sensor	X	X	X	X	X		X		X	X
731214BF	VP 18 Compact SUN F.Sensor	X	X	X	X	X	X	X		X	X
73124BF	VP 18 Compact COOL F.Sensor	X	X	X	X	X		X	X	X	X
731244BF	VP 18 Compact SUN COOL F.Sensor	X	X	X	X	X	X	X	X	X	X

Figure 1: Types of units

Review of the thermometer sensors

Brugerpanelet skal monteres i det ventilerede område, da T15 er styringsføler.

Da T15 der styringsføler er, muss das Bedienungspaneel in einen entlüfteten / belüfteten Raum montiert werden.

T15 is the controlling sensor, and the control panel therefore must be mounted in a ventilated room.



Brugerpanelet SKAL monteres frostfrit.

Die Steuerungstafel MUSS frostfrit montiert werden.

The control panel has to be placed in a frost-free place. (+1 - +40°C)

Min. 2x2x0,25mm² (parviset), max. 50m
(Parweise gedreht)
(Twisted in pairs)

Kan monteres i et repræsentativt udsugningsanlæg i opholdsrum

Kann in einem repräsentativen absaug anlage in Aufenthaltsraum montiert werden

T10
Can be mounted in a representative suction valve in a living room

Strømforsyning.
Stromversorgung.
Power supply.
1N 230V~ 50Hz max. 13A

Sikkerhedsafbryder.
Sicherheitschalter.
Safety cut-out.

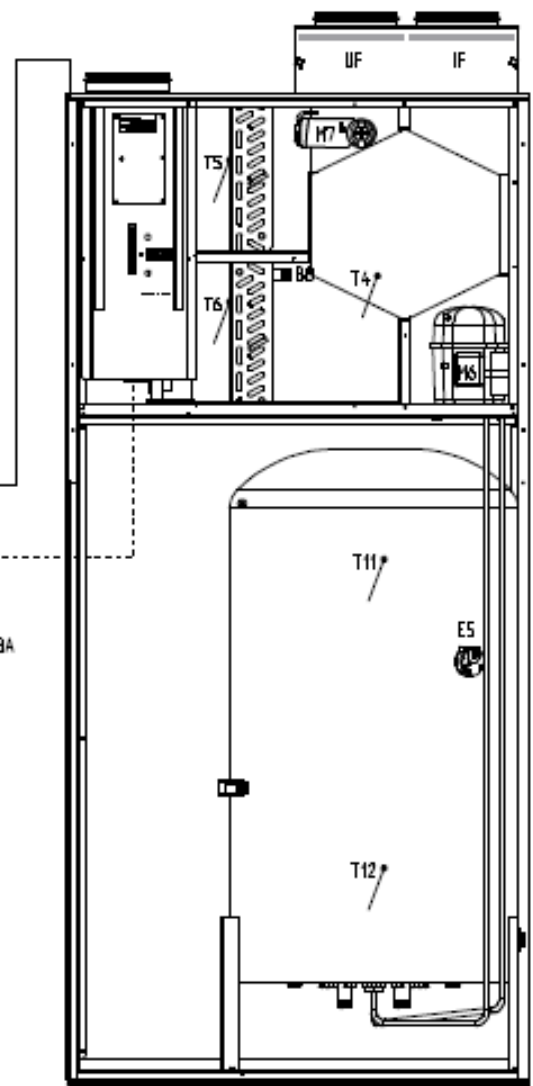


Figure 2: Thermometer sensors for VP 18 Compact

Explanation for figure 2:

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

T4 is the temperature in the counter flow heat exchanger

T5 shows the temperature of the condenser.

T6 shows the temperature of the evaporator.

T7 shows the temperature of the inlet air after the electrical heating surface. (T2 is change to T7, by mounting Heating surface)

T10 shows the exhaust temperature.

T11 is the temperature at the top of the hot water tank.

T12 is the temperature at the bottom of the hot water tank.

T15 is the thermometer sensor in the CTS 602 panel.

All the temperatures are shown in the "Show data" menu.

E5 : Heating element 1,5kW

CTS 602 control panel



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 3: CTS 602 control 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.

Menu overview

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 ▲▼.

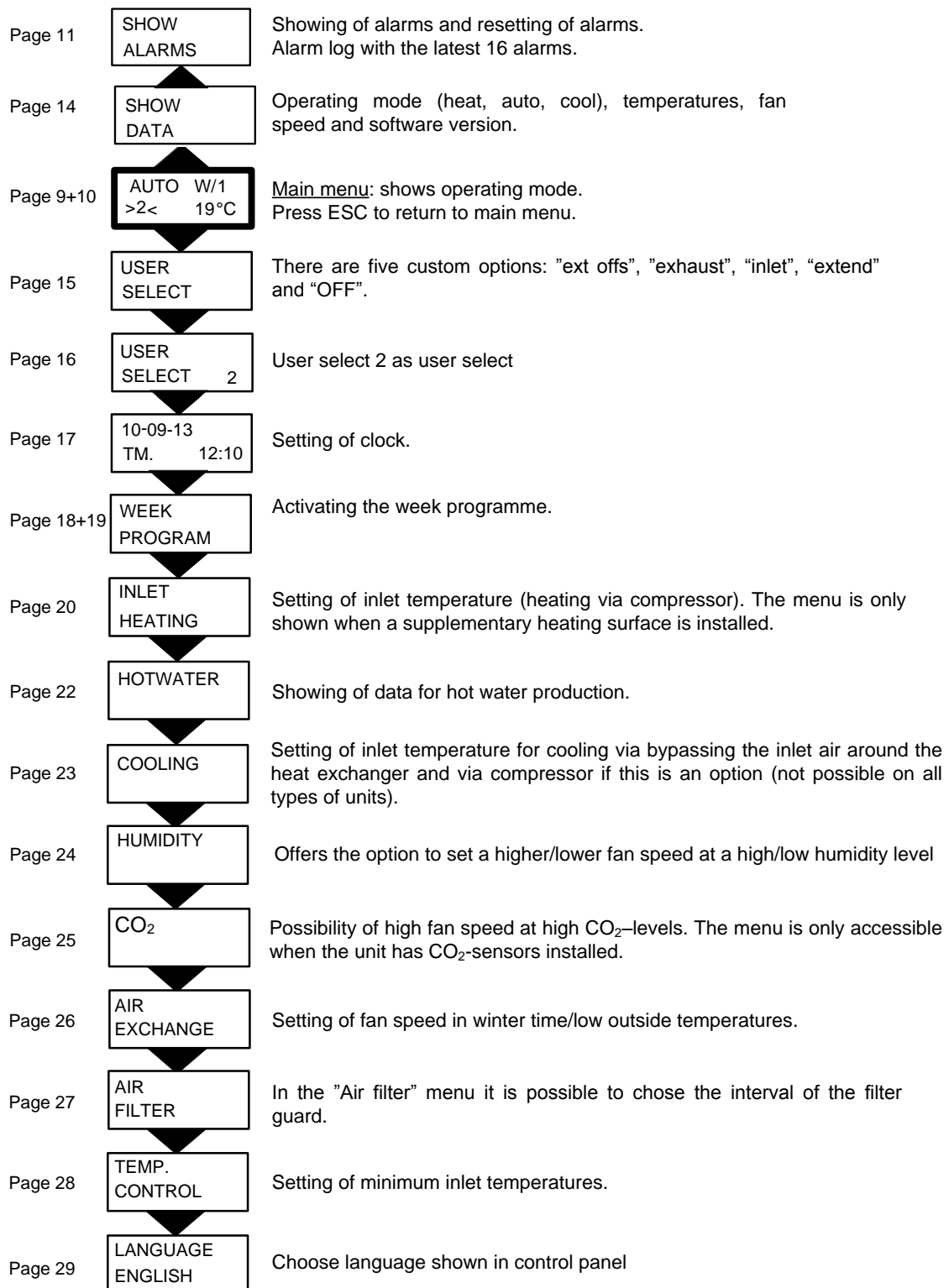


Figure 4: "Menu overview"

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.

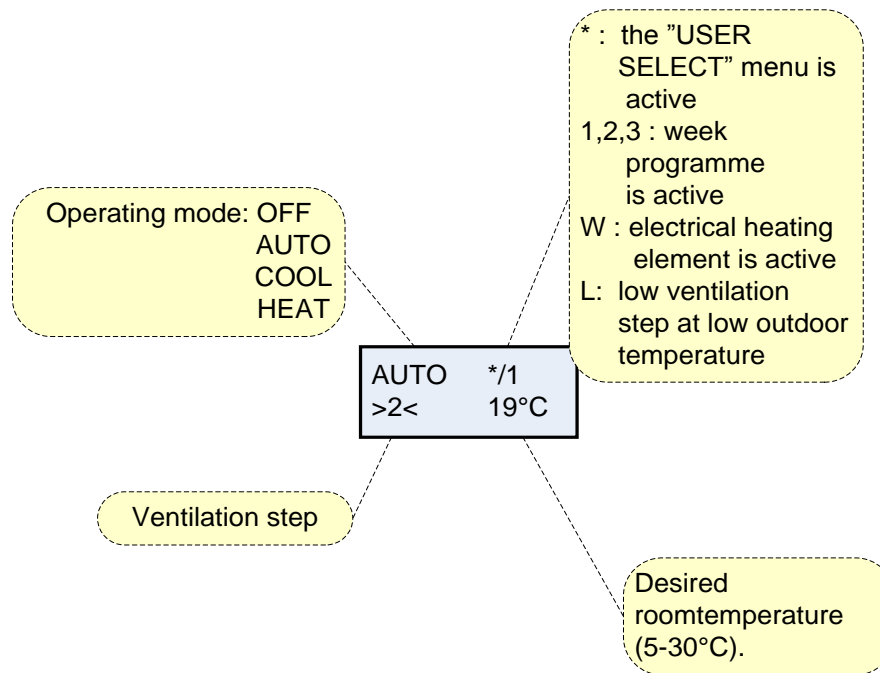


Figure 5: Main menu

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 and the unit automatically switches between cooling and heating. As regards cooling there is a neutral zone of 5 °C below room temperature before the unit actively cools via compressor. For further information see page 20.

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 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

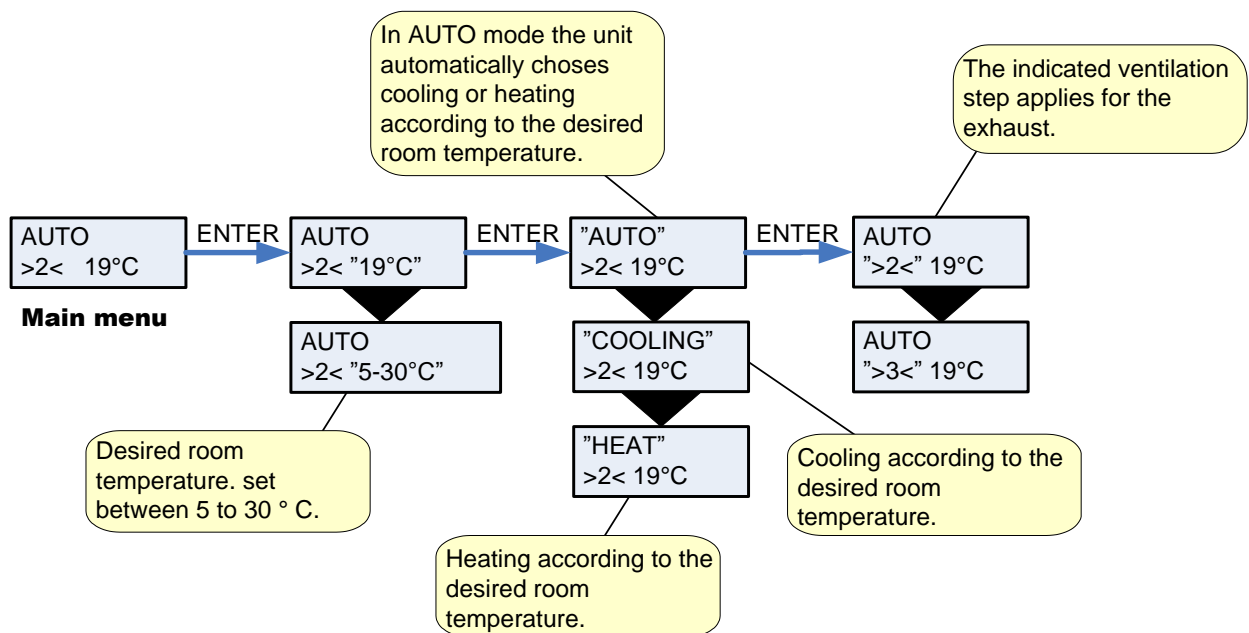


Figure 6: Headlines in the "Main menu"

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.

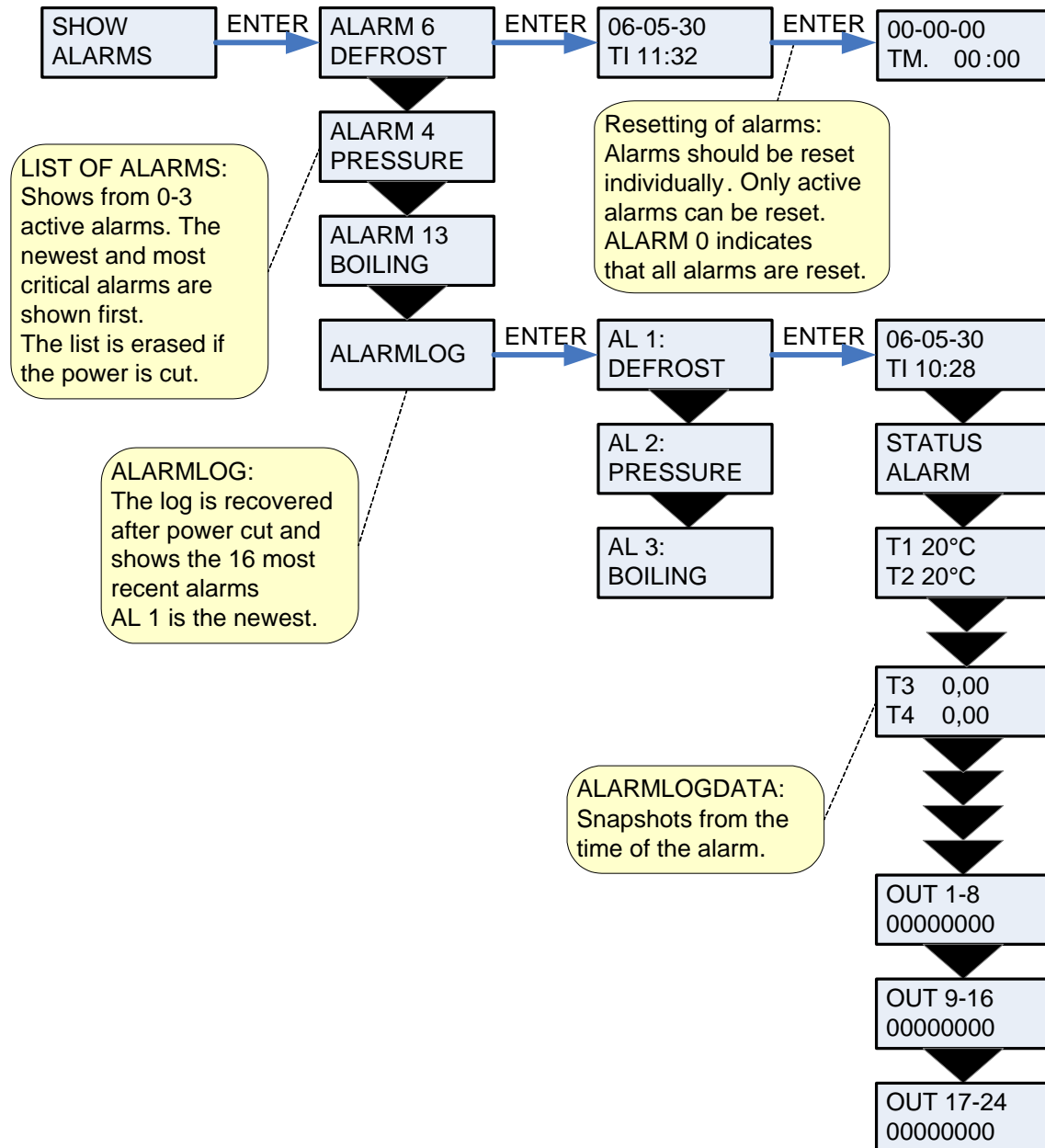


Figure 7: The "Show alarms" menu

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	C	HARDWARE	Error in control hardware	Contact service if reset does not help
02	C	TIMEOUT	Warning alarm W has become a critical alarm.	Note and reset the alarm. Contact service if alarm does not disappear.
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.
04	C	PRESSURE	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	C	DEFROST	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.
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	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	C	AIRFLOW	Lacking inlet airflow	See alarm code 10
13	C	BOILING	Boiling protection of the hot water	Contact service

Alarm code	Categori	Text of 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
20	I	LEGIONEL	Legionella temperature has not been reached within the time limit	Contact service
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.
23	I	T WATER	Warming up the hot water is not possible	Contact service.
24	I	T HEAT	Warming up the water for central heating is not possible.	Contact service.
27-57	K	T_x KURZ	One of the temperature sensor of the device is shorted or defective. Tx = +99 °C	Please note which sensor T _x , there is shorted, and contact the customer service.
28-58	K	T_x OFFEN	One of the temperature sensor of the device is disconnected or defect Tx= -40 °C	Please note which sensor T _x , there is interrupted, and contact the customer service.

Figure 8: The "Alarm Indicators" menu

Show data

The actual operation data can be read in the "Show data" menu. See review of thermometer sensors at page 5.

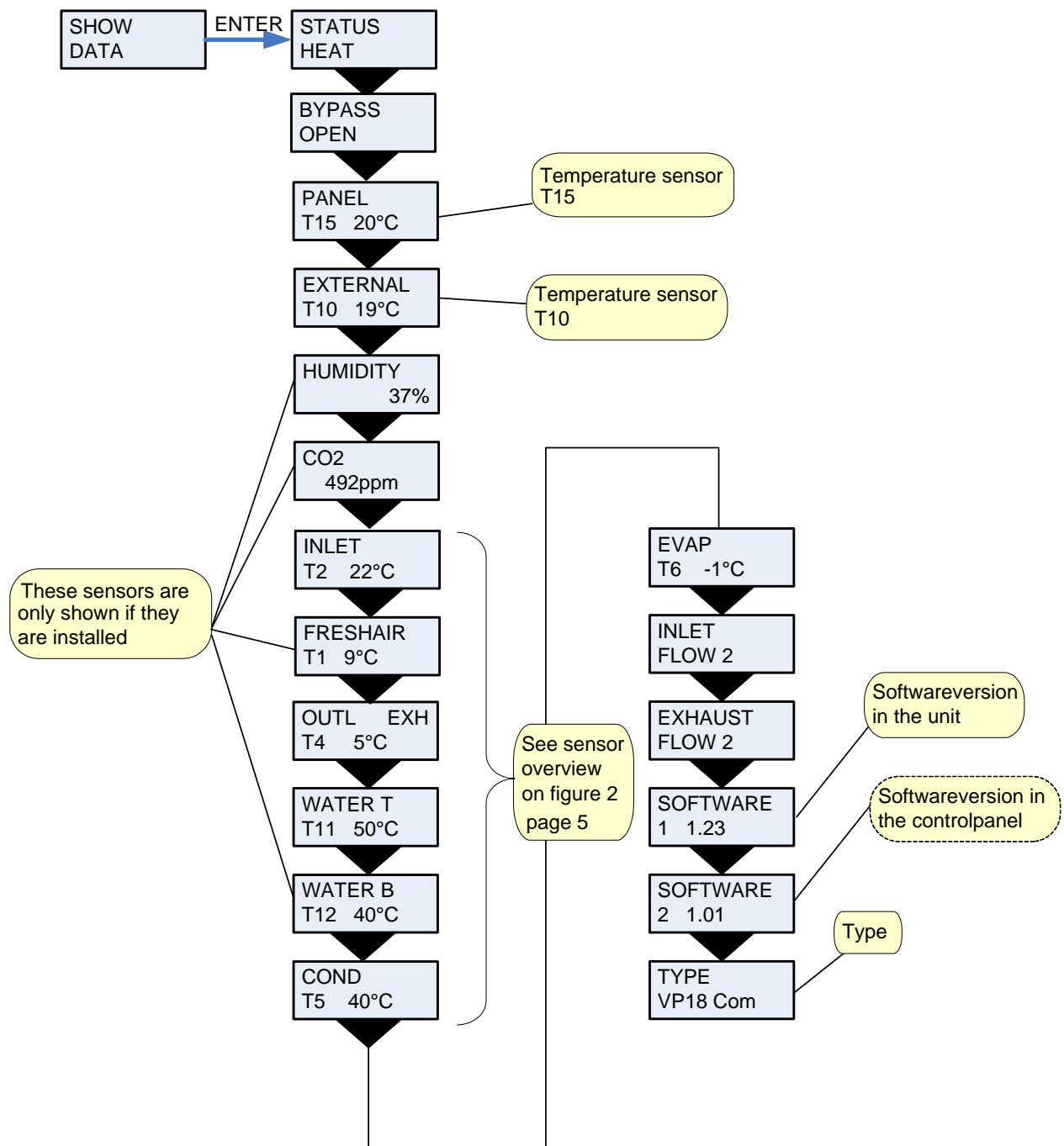


Figure 9: The "Show data" menu

User select

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

There are five custom options:

"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.

Blinking menu options are indicated by " ".

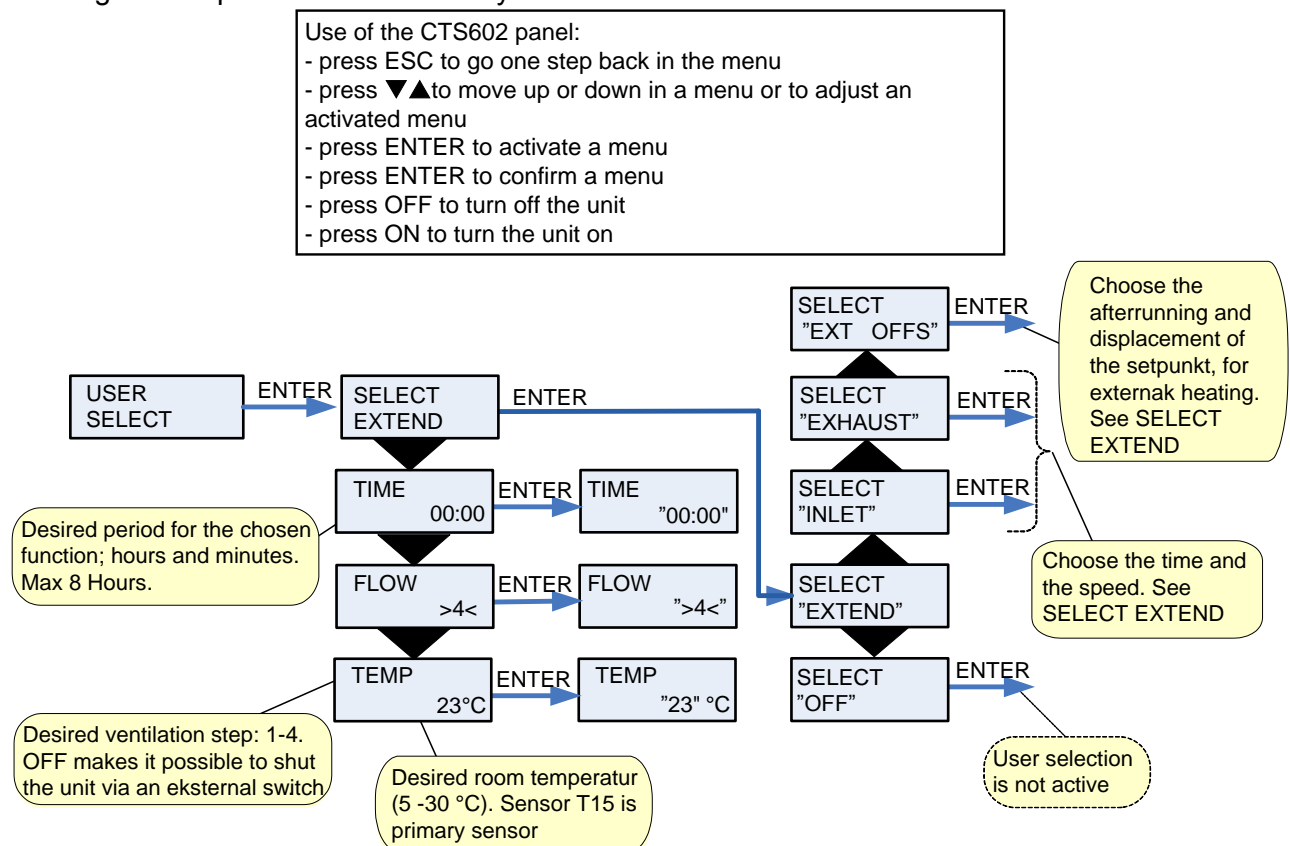


Figure 10: The "User select" menu

User select 2

User select 2 as user select

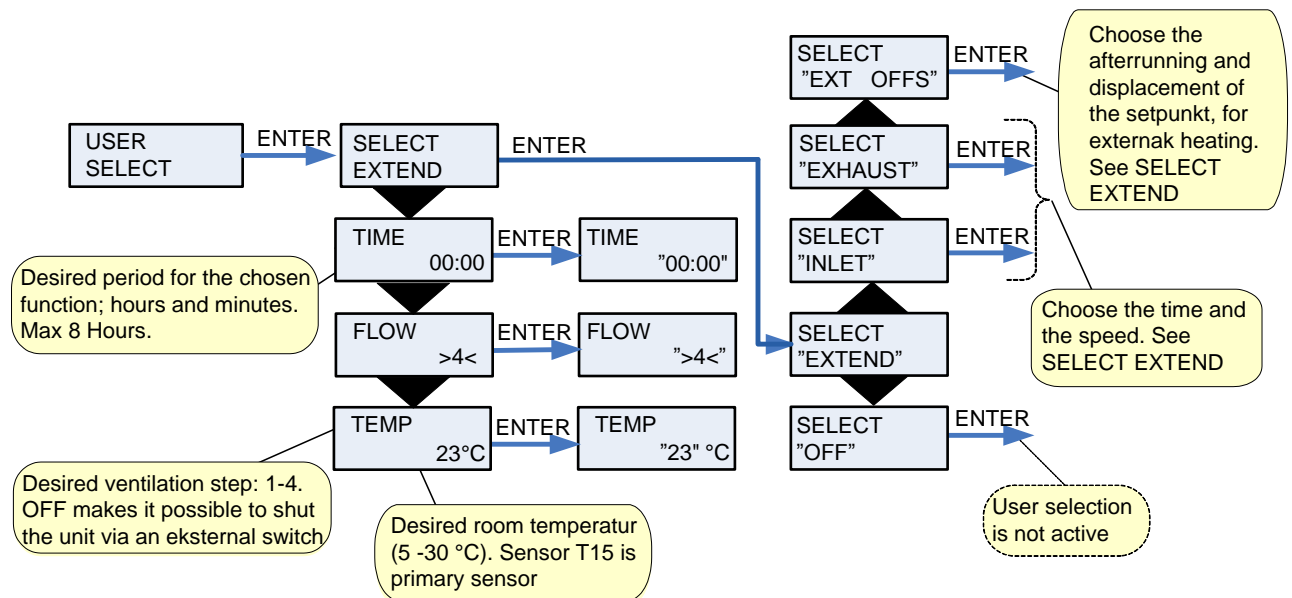


Figure 11: The "User select 2" menu

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 an 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 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

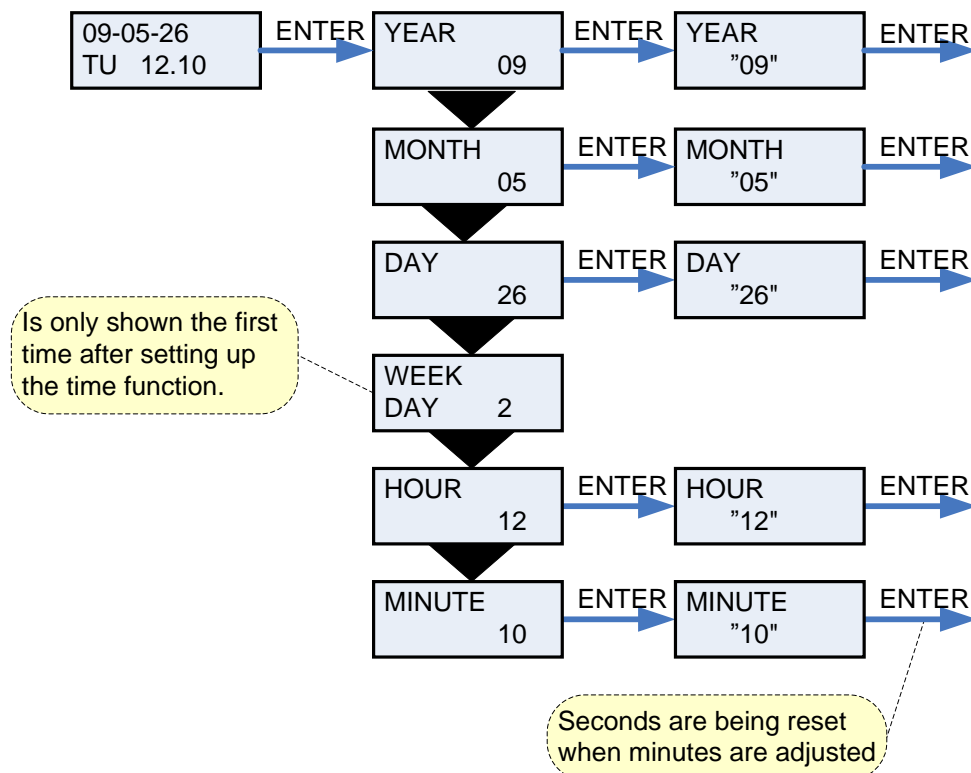


Figure 12: "Setting of clock"

Week programme

The unit is equipped with 3 standardized week programmes. See page 17.
The unit is set to programme 1 from the factory.

In addition to these programmes it is possible to program 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 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

Programmes	Weekday	Function	Time	Ventilation step	Temperature
Programme 1	Monday – Friday	1	6.00	3	21
		2	8.00	1	17
		3	15.00	3	21
		4	22.00	1	17
	Saturday – Sunday	1	8.00	3	21
		2	23.00	1	17
Programme 2	Monday – Sunday	1	8.00	3	21
		2	23.00	1	17
Programme 3	Monday – Friday	1	7.00	3	21
		2	16.00	OFF	21

Weekly program settings

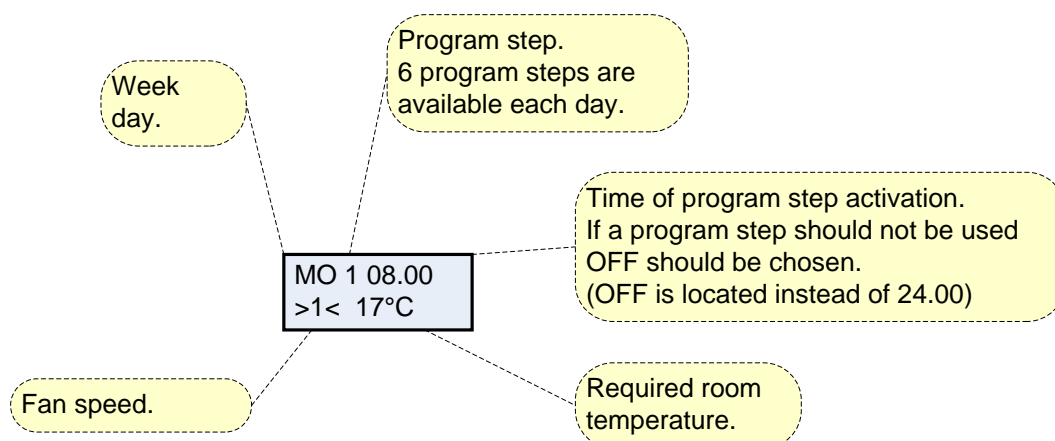


Figure 13: The Settings of "Week program"

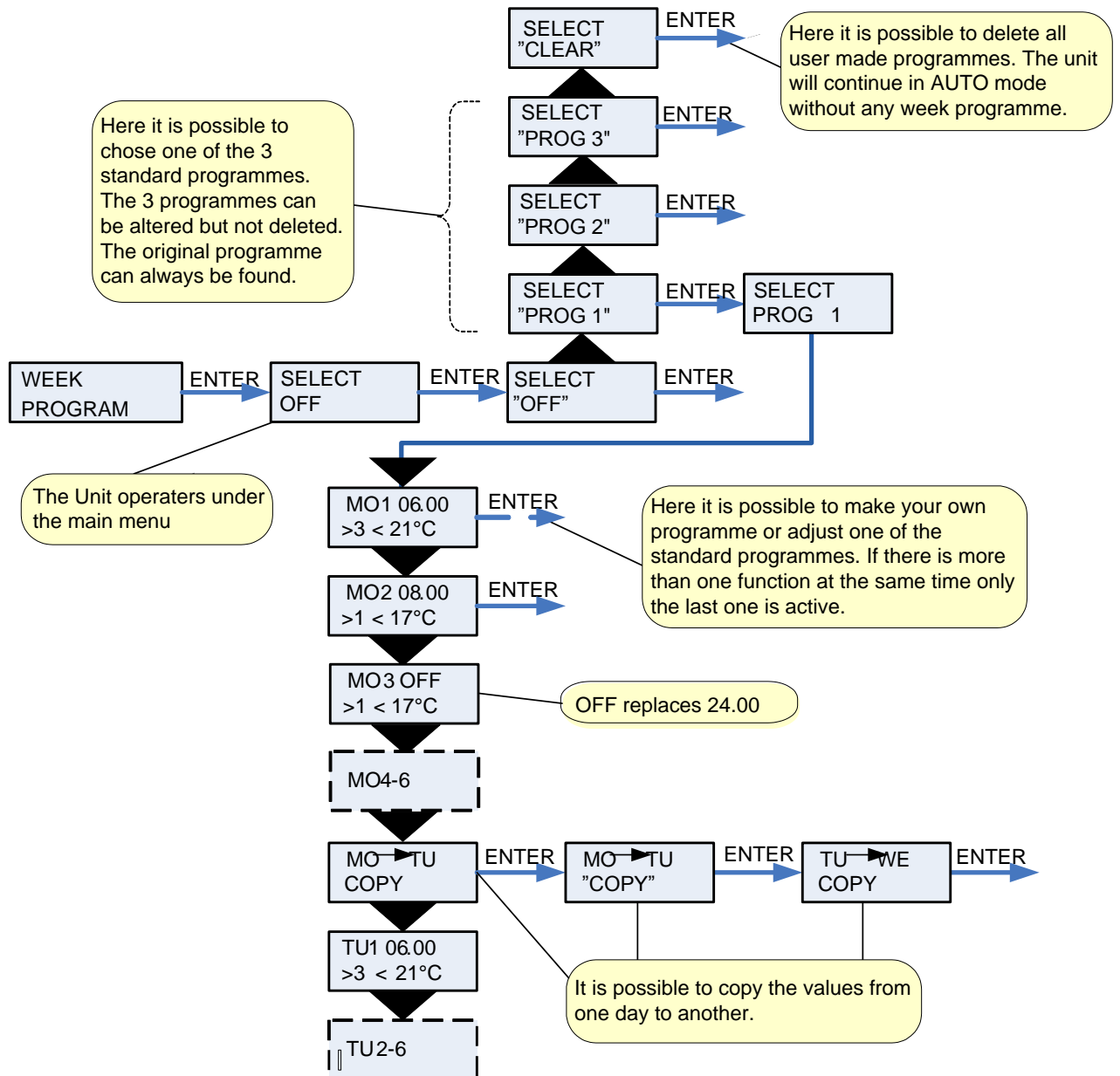


Figure 14: The "Week program" menu

Inlet heating

The menu is only shown if a waterheating surface is integrated into the system.

The inlet temperature is automatically controlled on the basis of a selected curve. Inlet temperature is controlled as a function of outdoor temperature, i.e. the lower the outdoor temperature, the higher the inlet temperature

INLET MIN: The setting overrides any lower setting calculated by the curve control.

INLET MAX: The setting overrides any higher setting calculated by the curve control.

When room temperature is below set point the compressor starts to heat the inlet air. It is possible to use the heat pump for heating the inlet air by delaying the start of the electrical heating surface.

OFFSET T15 (sensor in control panel) is the deviation below room temperature where the electrical heating surface is allowed to function. **DELAY** determines for how long the deviation may last before the electrical heating surface is activated.

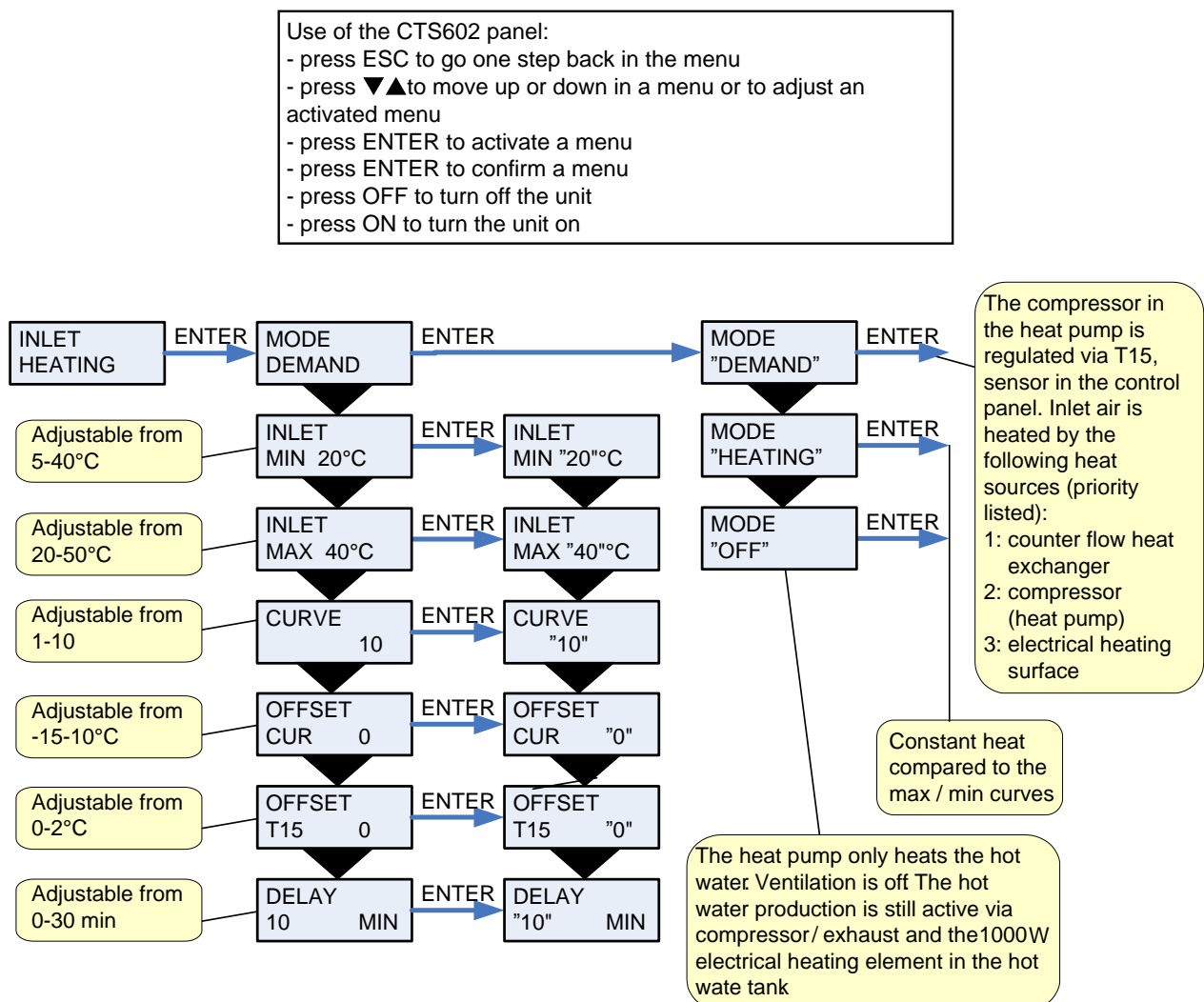


Figure 15: The „Inlet heating“ menu

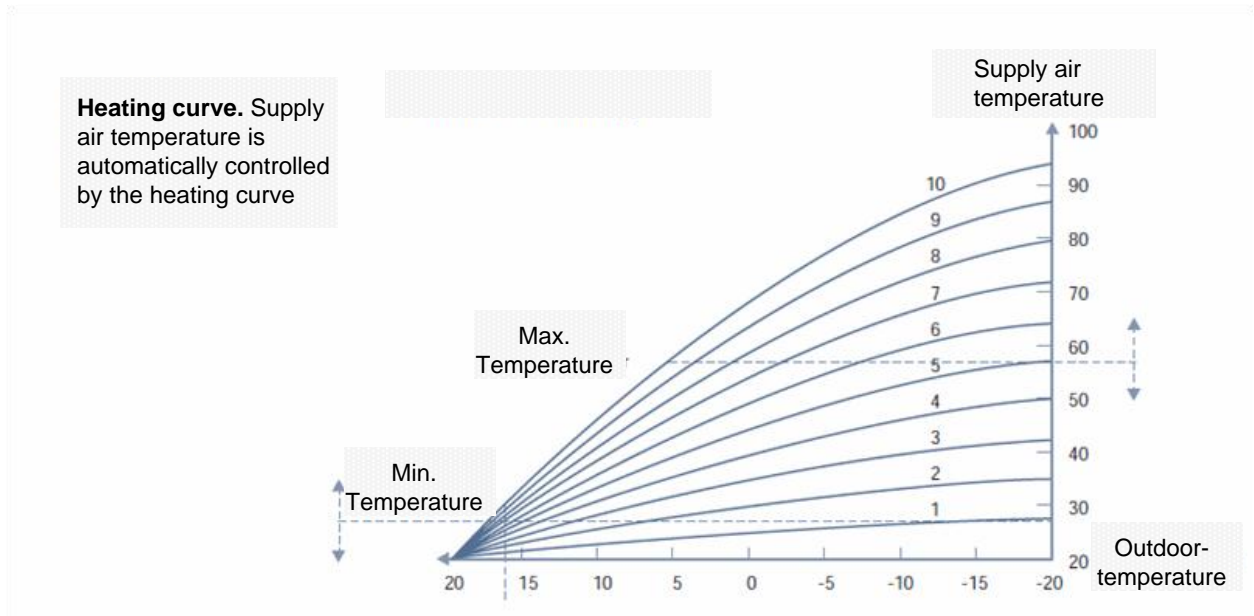


Figure 15a: " Heating curve"

Hot water

The "Hot water" menu shows the data for production of hot water.

" " 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

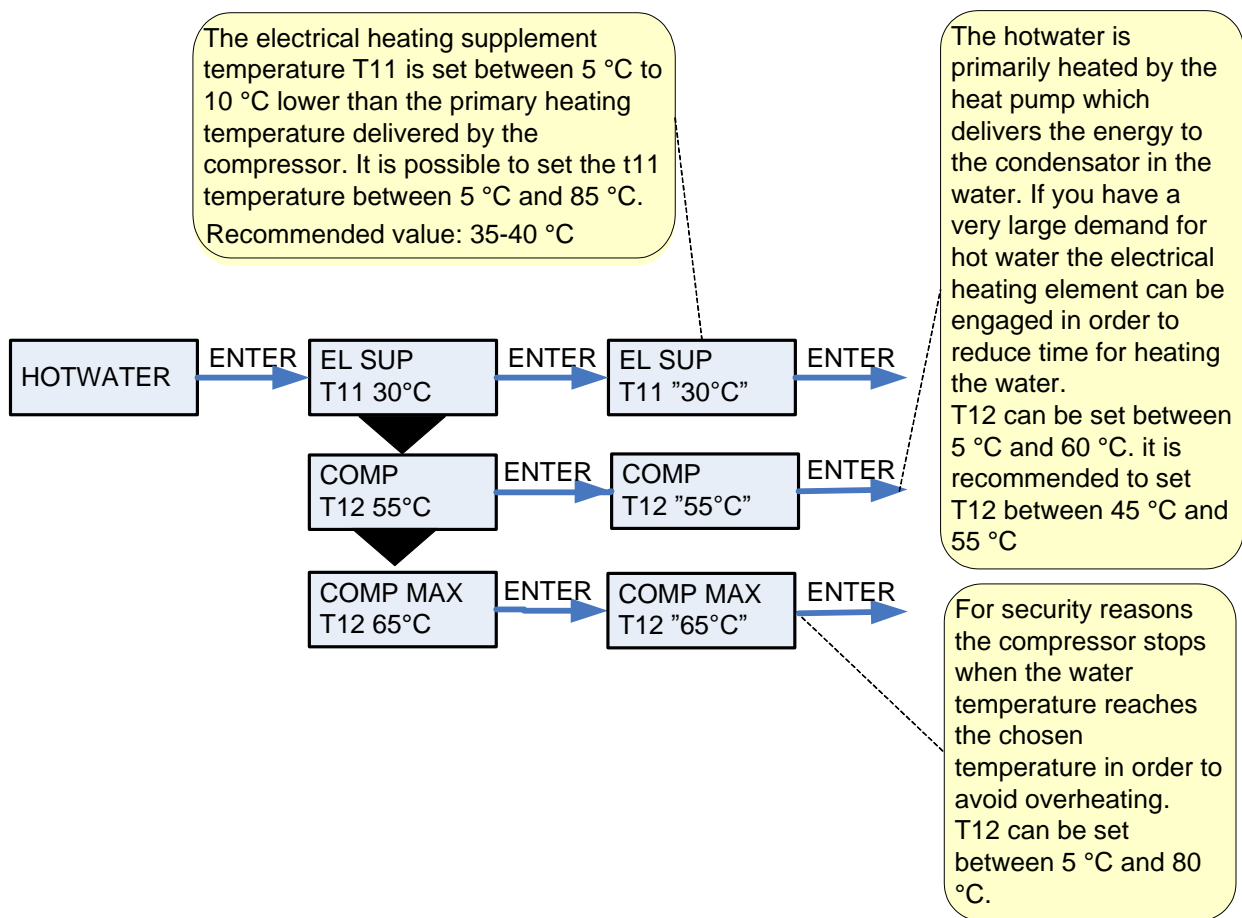


Figure 16: The "Hot water" menu

Cooling

In the “Cooling” menu it is possible to cool the inlet air by bypassing the inlet air around the counter flow heat exchanger. See figure 18a

If the unit has active cooling via compressor see figure 17b.

The COOLING menu gives the possibility of automatic high fan speed when high outside temperatures.

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

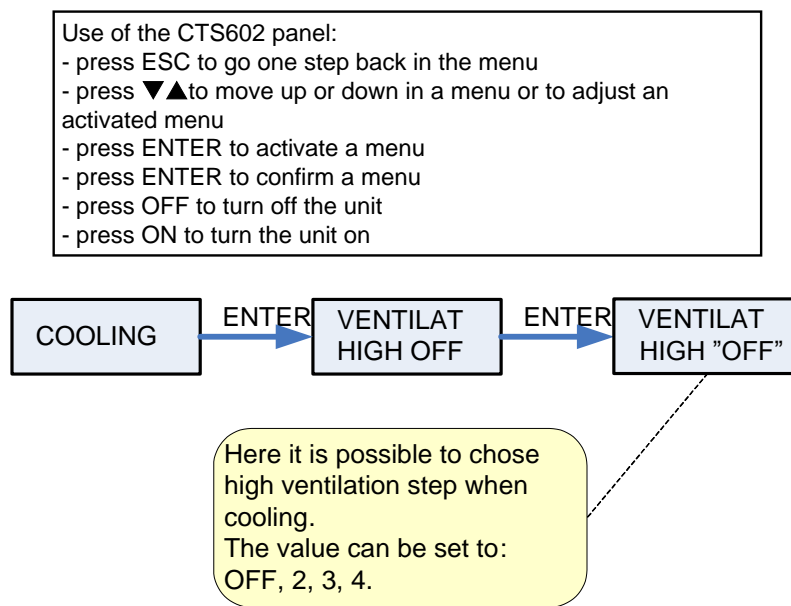


Figure 17a: The “Cooling” menu

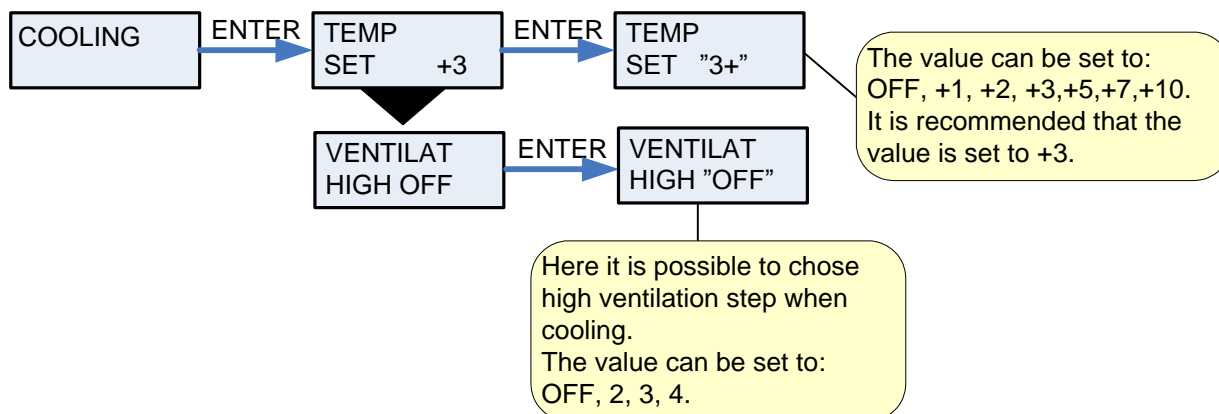


Figure 17b: The “Cooling” menu

Humidity

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

The menu is only displayed if a moisture sensor is installed in the system.

Low ventilation step is only active in wintertime and at humidity levels below 30%. High ventilation step is activated when the humidity rises 10% or more compared to the average humidity level 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.

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

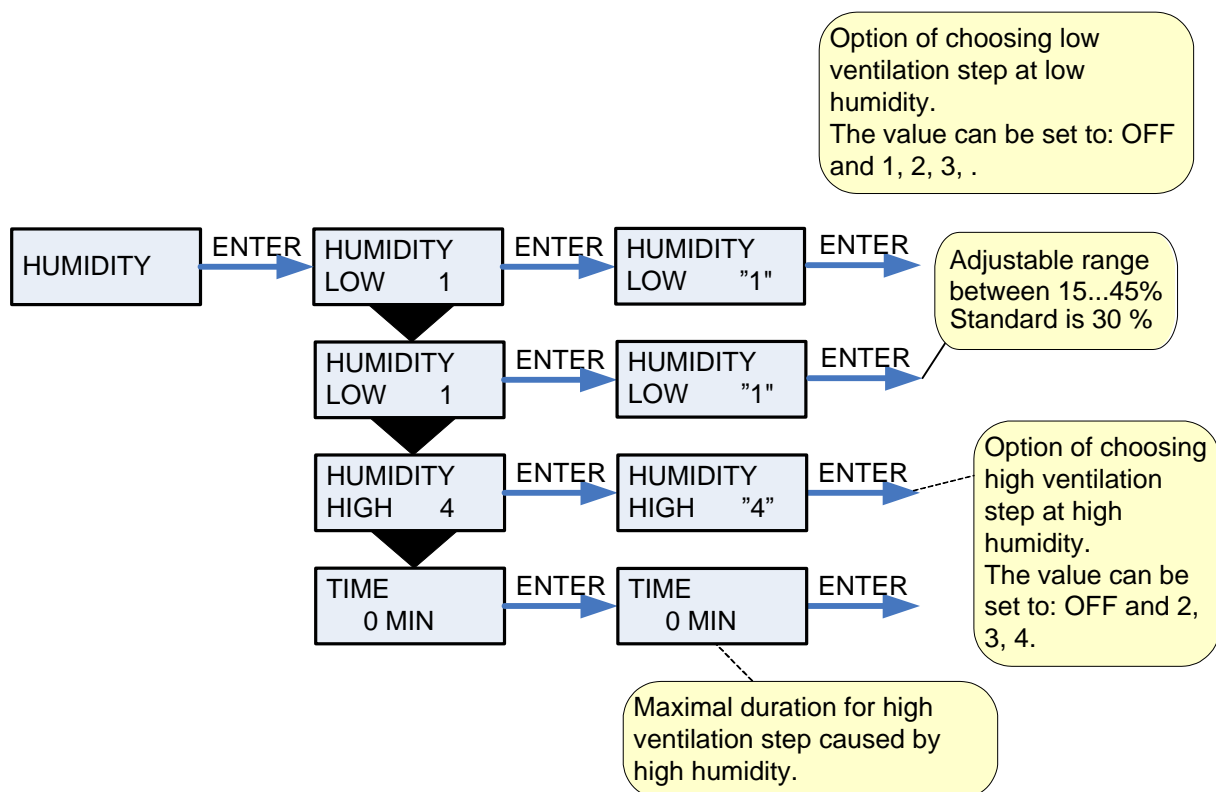


Figure 18: The "Humidity" menu

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.

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

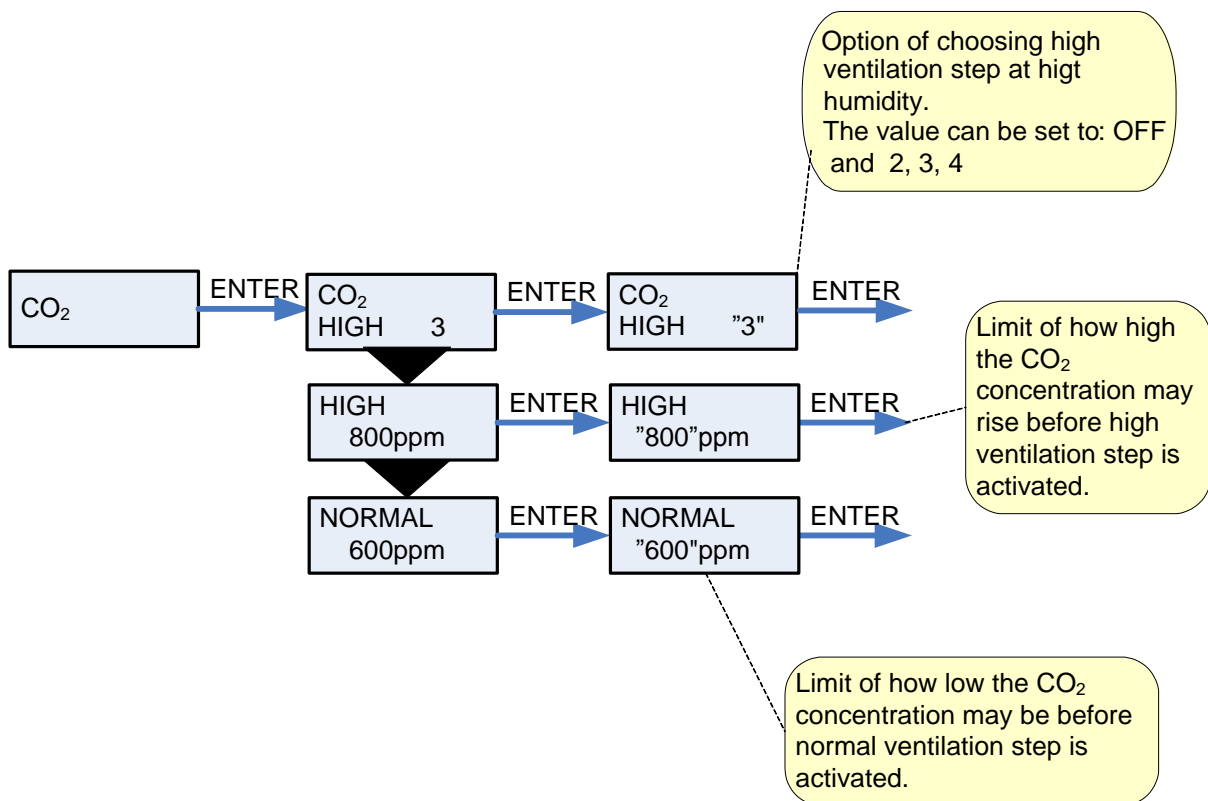


Figure 19: The "CO₂" menu

Air exchange

In the "Air exchange" menu it is possible to regulate the airflow in wintertime

" " 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

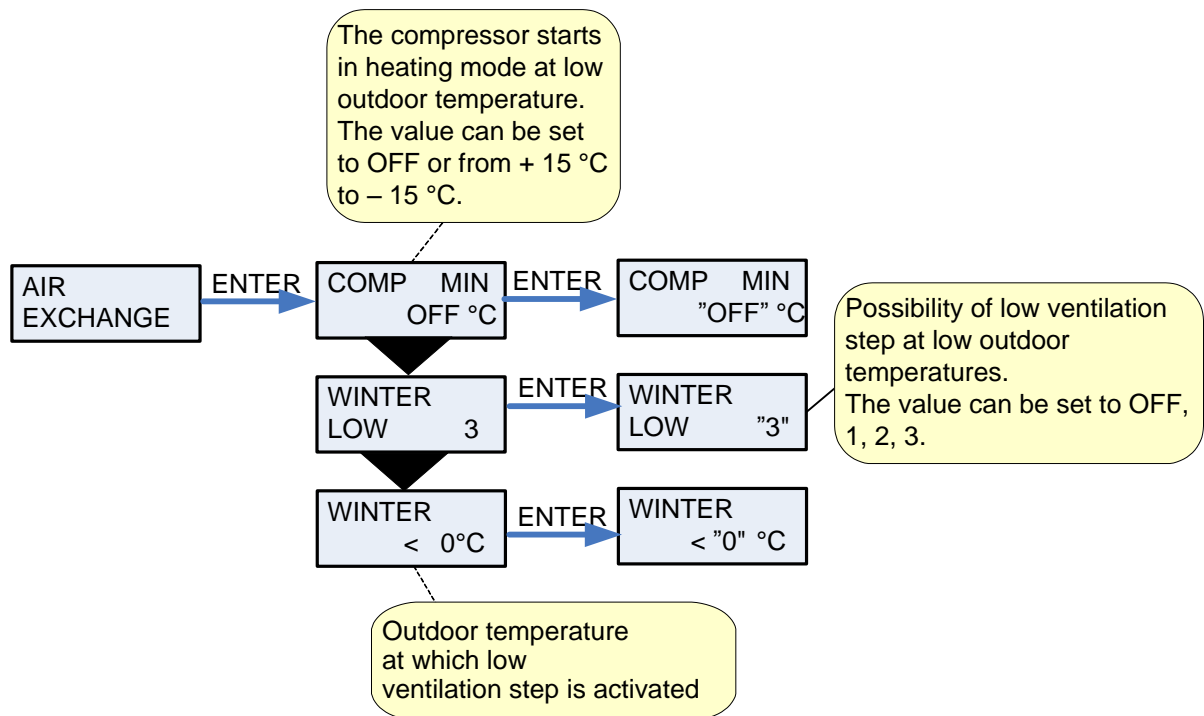


Figure 20: The "Air exchange" menu

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.

After the deadline you will see "Filter" as an information alert

" " 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

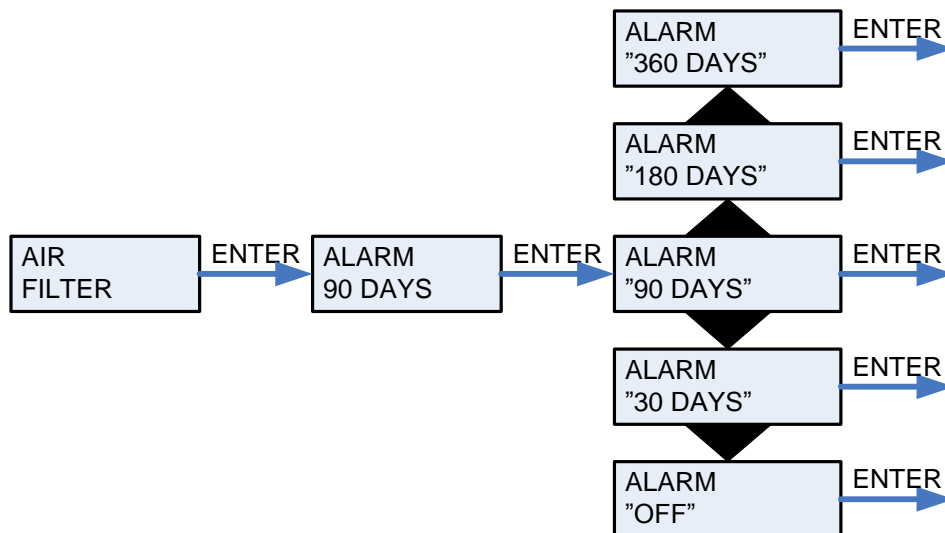


Figure 21: The "Air filter" menu

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 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

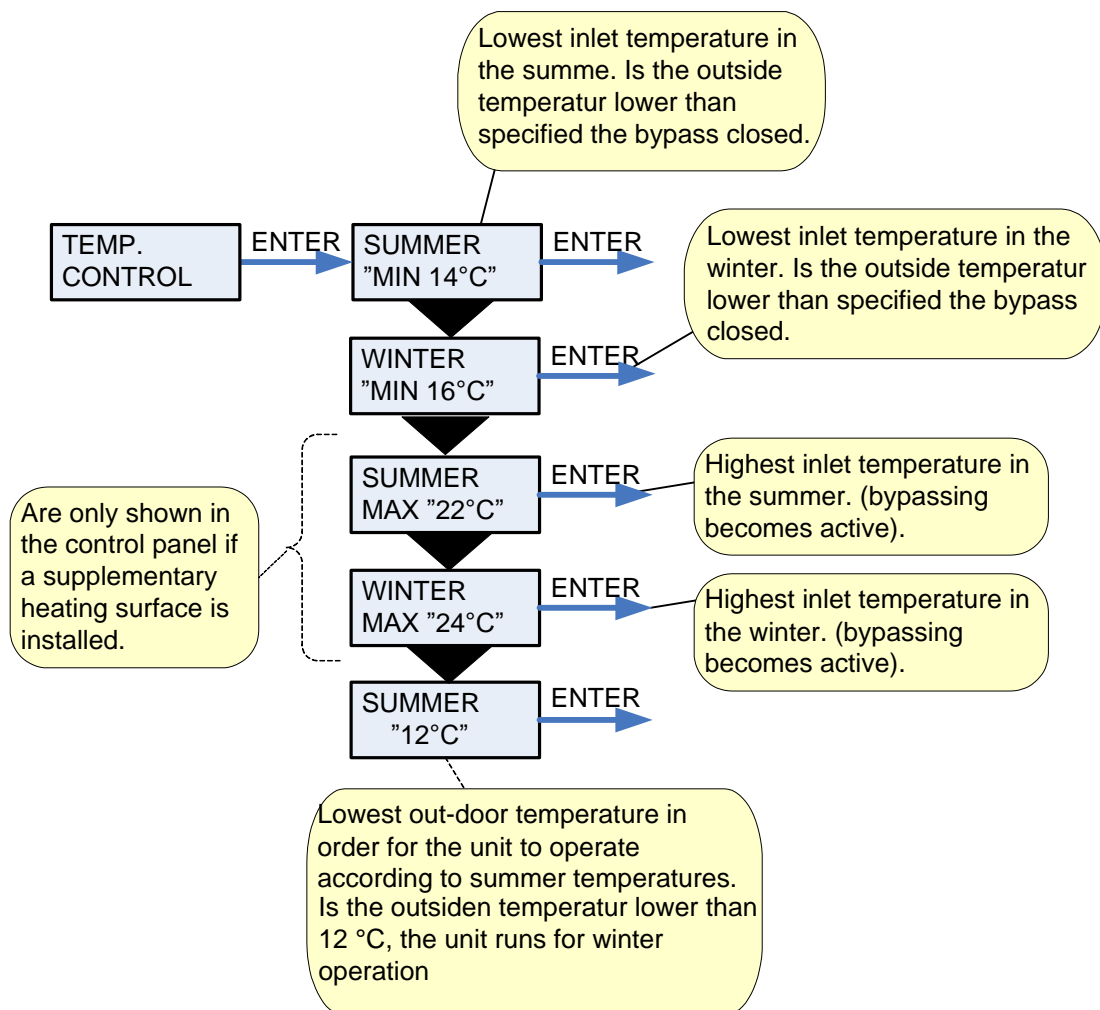


Figure 22: The "Temp. control" menu

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 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

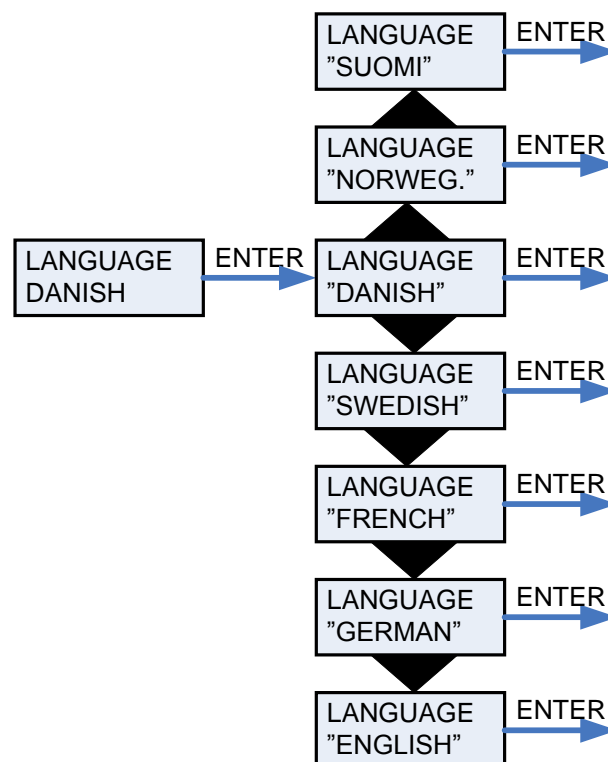


Figure 23: The „Language" menu

Faultfinding

If there should be any operating errors please inspect the following before contacting your service mechanic:

Check if the alarm diode on the CTS 602 panel is flashing. If this is the case please read the alarm in the “Show alarms” menu and correct the fault. If necessary please contact your local service mechanic. Alarm codes and directions for correcting alarms can be found in the CTS 602 directions (delivered together with the VP 18 Compact).

- **VP 18 Compact is functioning but with reduced output.**

Please inspect if the unit is supplied with enough air. Check the filters and control that the air valves are sufficiently opened. In 98% of the cases the fault derives from obstructed filters. The ventilators can be set on a higher speed if necessary. Any draught controls to the outside should be closed at outside temperatures below 6°C.

- **VP 18 Compact is functioning but there is no hot water.**

Please check if the hot water tank is emptied. If the unit is supplied with hot-water circulation and the pipes are not insulated there can be a significant heat-loss which can cause a reduced output of the VP 18 Compact.

Is the water temperature adjusted correctly in the CTS 602 control? (T12). The temperature should normally be set to 45–55°C. How to adjust the temperature please see the CTS 602 directions (delivered together with the VP 18).

Is the air supply too cold or is the air flow too little? Please check the filters and valves and if the insulation of the ducts is sufficient and dense.

- **VP 18 Compact is not functioning.**

Please inspect the fuse. Check if the safety thermostat for hot water has disengaged the electricity. If this is the case please press the button and the thermostat will connect when the water temperature has dropped 10-15°C. If the thermostat disengages the electricity several times please contact your service mechanic.

Maintenance

At least every 3 months:

The filters should be cleaned and renewed when needed. Usually the filters need to be renewed once a year. The filter guard in the CTS 602 control can be used in order to make sure that the filters are checked. The filters can be cleaned by vacuuming or shaking them.

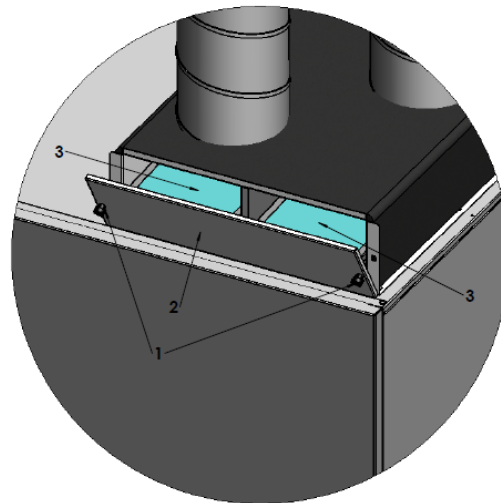


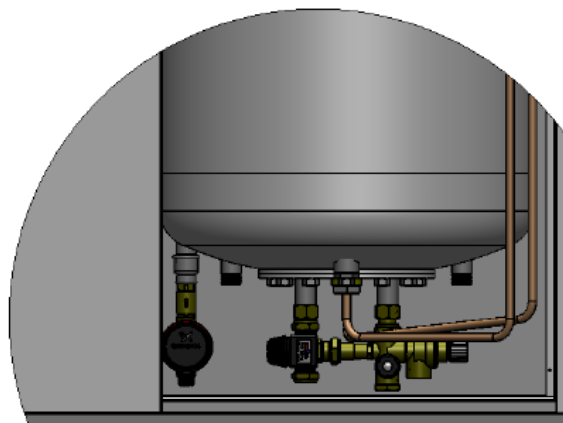
Figure 24: Air Filter change

Changing filters:

1. Loosen screws
2. Remove the filter hatch
3. Pull out the two filter frames for change/vacuuming

Once a year:

- The sacrificial anode should be inspected and renewed if it is much corroded. The hot-water tank can corrode if the anode is left unchanged.
- The intake should be inspected and any uncleanness should be removed.
- The evaporator should be inspected and cleaned.
- It should be checked that the condensate has free passage through the water seal and the condensation drain.
- The safety switch for the hot water tank should be controlled.
- It is recommended to take out a subscription for service.



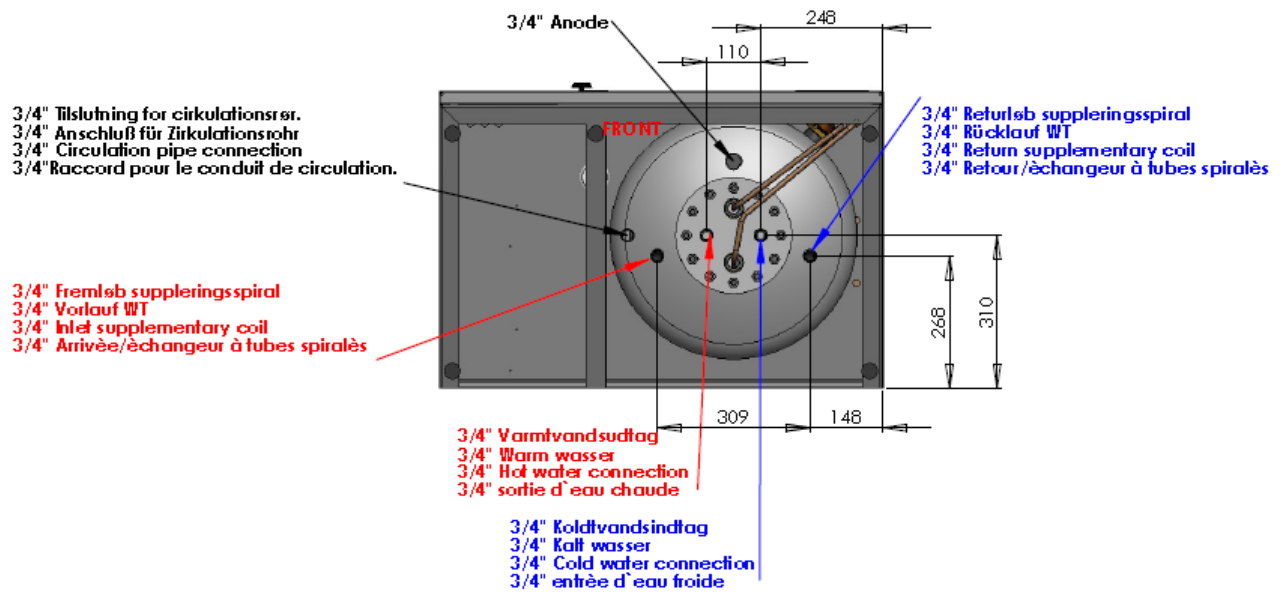


Figure 25: Placement of the safety switch and the sacrificial anode

Energy saving

- Keep the hot-water at a low temperature. Try with 45°C.
- The auxiliary heating element should be cut off and only be used at very large hot-water demands. Please see CTS 602 directions
- The ventilation speed should not be set higher than necessary.
- Avoid hot-water circulation.
- Spread out the bathing times as the VP 18 Compact needs 6-7 hours to heat the 180L water.
- Insulate the ducting as prescribed.
- Do not cool during winter time.

Accessories / spare parts

Filters		
<i>Type</i>	<i>Antal</i>	<i>Nilan varenummer</i>
Filter (1pair = 2pcs.)	1	39167
Pollen filter F7	1	39545

Accessories / spare parts		
<i>Type</i>	<i>Antal</i>	<i>Nilan varenummer</i>
Compressor (heat pump)(electrical) 0,9kW	1	764131
Compressor (heat pump)(electrical) 2,0kW	1	76431
Sensor for relative humidity (Humidity sensor)	1	23997
Sensor for CO ₂ in the air (CO ₂ -Sensor)	1	239995
Hygrostat	1	3637
CTS 602, control PCB	1	23991
CTS 602, control panel complete	1	2398
Heating Cable for condensate drain (frost protection)	1	2172
Security group that boil protection (in line pressure to 10 bar)	1	3690
Security group that boil protection (at line pressure up to 6 bar)	1	3691
Sacrificial anode ¾ "x510mm	1	1920
PEX Pipe (for use with a hot water-circulation)	1	9825

Figure 26: Accessories/ spare parts