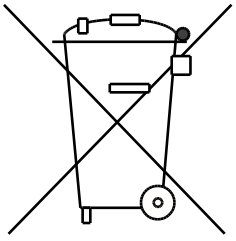
Dantherm®
CONTROL YOUR CLIMATE

DanX 1/2/3 WEB

User manual
Rev. 2.2 – 090650
en

Dantherm®
CONTROL YOUR CLIMATE



[redacted]

Der tages forbehold for trykfejl og ændringer
Dantherm can accept no responsibility for possible errors and changes
Irrtümer und Änderungen vorbehalten
Dantherm n’assume aucune responsabilité pour erreurs et modifications éventuelles

0. TABLE OF CONTENTS

1.1 Introduction

The DanX 1/2/3 type HP and XD equipment is designed for the use for ventilation, humidity and temperature control in private and hotel swimming pool areas. The use of the unit includes the required inspection and maintenance for these units, which is described in the final chapter of this manual.

Unloading, transportation, assembly and connecting of the DanX 1/2/3 should only be carried out by trained professionals or by people supervised by authorized staff. It is the responsibility of the fitter to read and understand this guide and other given information.

1.2 Foundation for the unit

The DanX 1/2/3 unit must be installed in a location that meets the following requirements:

- The supporting structure must be level, stable and vibration-free.
- The supporting structure must be able to bear the weight of the unit (up to 500 kg).
- The deflection of the substructure should be max. 1 mm/m.
- For the connection of the condensate drain, it is necessary that the height between condense outlet of the unit and the substructure is at least the required height for the water trap.

1.3 Minimum distances

For the operation, maintenance and servicing of parts as heating coils, dampers, filters and others a minimum clearance of 850/850/1100 mm (DanX 1/2/3) between inspection side of the unit and the wall should be foreseen. It is also recommended to have a minimum clearance of 200 mm between the wall and the side of the unit were the water outlet is located.

2.1 Unloading

The unit is delivered in one module placed on wooden cross beams and wrapped in protective packing. The following steps should be followed when unloading the modules:

- Find a suitable place for unloading, as the unit can be heavy (up to 500 kg).
- Unload the modules with a forklift or crane (see instructions below).
- Do not tilt or lay down the unit with an integrated refrigeration system (DanX 1/2/3 HP).
- Check packing and unit for damage in transit and report any damage to the driver and to Dantherm Air Handling immediately.
- Retain packing until the unit is placed on the mounting location to avoid damages on cabinet parts or connecting pieces.
- As the unit is delivered with a built in control panel, it should be handled with caution and stored in a safe and dry location until installation is carried out.

2.2 Lifting with a forklift or crane

If a fork-lift is used, it must be ensured that the forks are long enough to fully reach under the unit, so that the bottom of the cabinet is not damaged. Rough and incorrect handling can damage the unit and hereby result in glitch. Make sure that the unit's centre of gravity is as near as possible to the centre of the two forks, so the module can be transported stable.

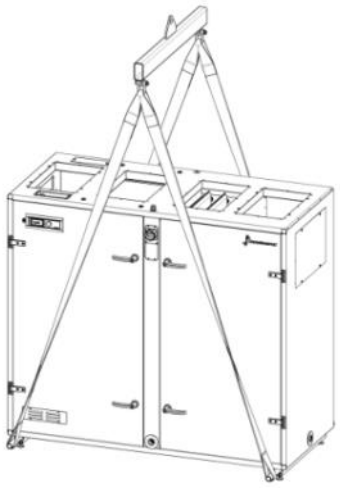
When using a crane for lifting, please be aware of the following general points:

- Only use a hoist that can manage the weight of the unit!
- Never use a hoist which is damaged!
- Use soft straps!
- Lift the module cautiously, without jerky movements!
- Do not touch down hard!

Never walk under a module when it is lifted with a crane. There is always a risk that the crane or helping material may break and cause serious injury or death.

Lifting is carried out as follows:

- Insert 2 bars of round iron (min. 1") in the holes of the base frame and secure them.
- Use four soft straps, push them over the iron bars and put them together in the crane hook.



2.3 Storage

If the unit is not installed at once but should be stored, note the permissible storage conditions:

- Do not leave the unit standing outside, but in a building.
- Do not remove the original packaging.
- Protect the unit until the installation from dust, dirt and damage.
- The air temperature in storage should be between 5 °C to 40 °C.
- The storage should be in a dry non-condensing atmosphere.

3.1 Introduction

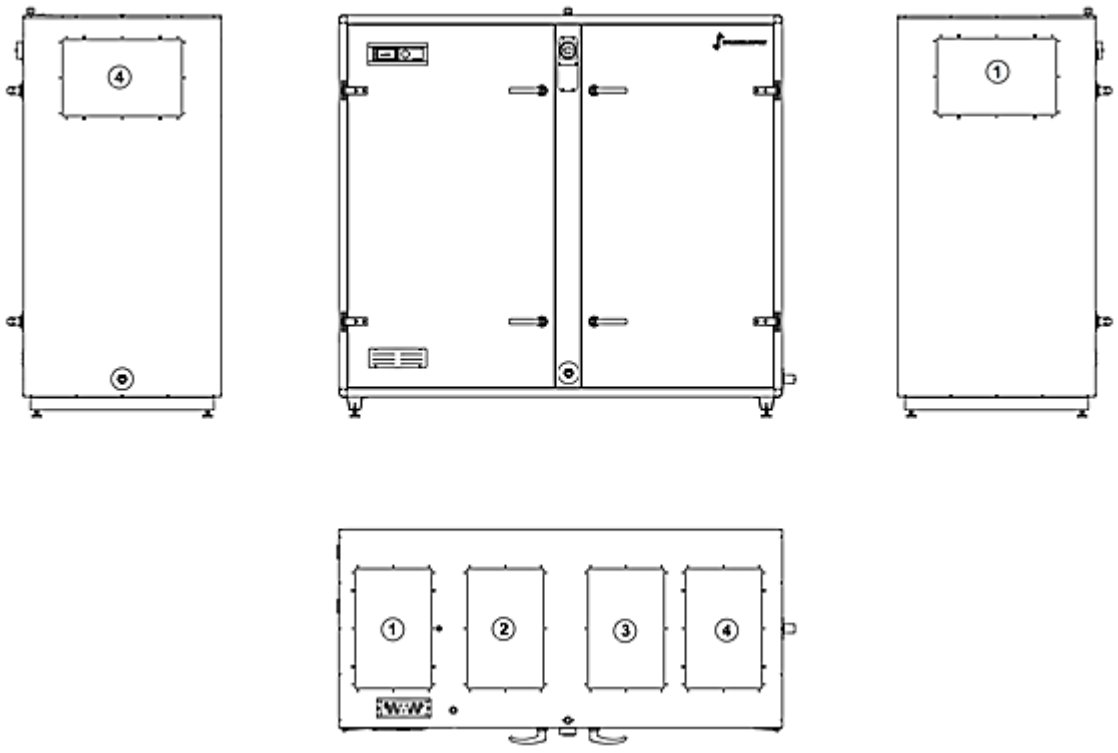
There are two types of DanX 1/2/3 units for swimming pool ventilation; the HP and XD version, which are both installed in the same way.

The units shown in the drawing in this manual are always left hand, with the outdoor air coming from the right hand side. If you have a right hand unit, all components of the unit are the other way around.

Assembly of the DanX 1/2/3 unit should only be carried out by trained professionals or by people supervised by authorized staff. It is the responsibility of the fitter to read and understand this guide and other given information.

3.2 Unit construction

The DanX 1/2/3 HP and XD consist of a double cross flow heat exchanger in combination with a built in mixing box and direct driven EC fans. The HP model is further more equipped with a compressor driven heat pump. The cooling circuit is filled with refrigerant and does not need any extra installation.



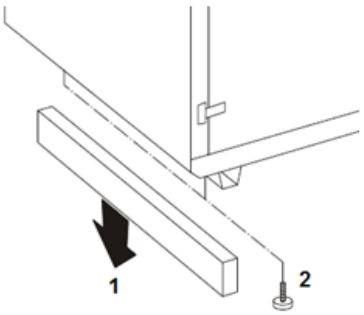
The units duct connections are as follows (left hand unit):

1) Return air connection, either top or side.
2) Supply air connection, only top.
3) Outdoor air connection, only top.
4) Exhaust air connection, either top or side.

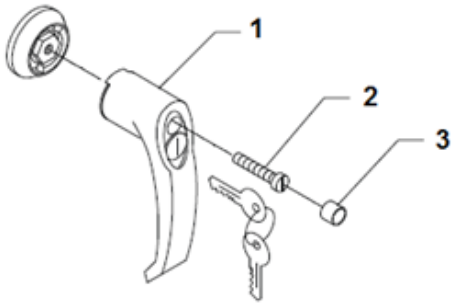
3.3 Installation of unit

Before placing the unit, the wooden pallet has to be removed and the separate delivered feet mounted on the base frame. To do so the following has to be done:

- Unwrap the module, open the inspection door and take out the separate box with the feet.
- Lift the unit with a fork lift or pallet lift and unscrew the wooden pallet (1).
- Screw the feet (2) on the base frame and place the unit where it should be installed.



- For transport reasons the handles are not fitted from the factory. Find the handles inside the unit and fit one handle with lock and one without in each door. The handle (1) is fixed to the lock with a screw (2) and the plastic blinder (3) is pressed into the handle.



3.4 Duct mounting

The ducts connected to the unit must be suspended or underpinned with support elements, if you fit the ducts on the side of the unit, as the duct connection panels are not strong enough to hold the duct work.

The ducts can be connected to the DanX 1/2/3 directly, or with flexible connections to suppress vibrations of the unit. For the flexible connection to work probably, it is important that it is not totally stretched. When a flexible connection is used, an earth connection must be mounted between unit and duct work.

3.5 Installation and connection of components

All components and duct work of the air handling unit must be installed correctly before starting up and commissioning the DanX unit.

Installation and connection work should only be carried out by trained professionals or by people supervised by authorized staff. It is the responsibility of the fitter to read and understand this guide and other given information.

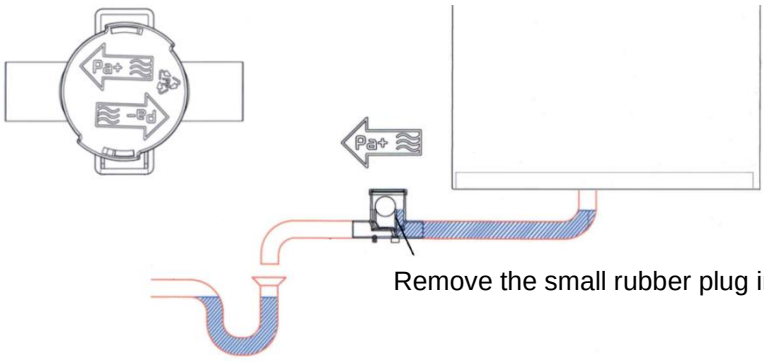
All temperature sensors are ready mounted and wired to the control panel, just the supply air temperature sensor and return air temperature / humidity sensor have to be installed in the duct system.

3.5.1 Condensed water outlets

Drainage from the condensate tray (1") takes place in two outlets, one on the exhaust side (positive pressure, outlet on the side) and one on the supply side (negative pressure, outlet in the front).

Normally it is only necessary to connect the drainage from the exhaust air side. We recommend using our special ball valve to avoid that humid air is blown through the outlet into the technical room.

It is very important to remove the small rubber plug inside the valve; otherwise the valve cannot work with overpressure! Secondly the arrow with PA+ has to show in the direction of the drainage!



Remove the small rubber plug inside the valve!

The drainage on the front of the unit (supply side) has been blocked by the factory as only very little condensate will appear on that side of the heat exchanger and this small amount of condense will then evaporate again into the airstream. If it should show that more condense then normal is produced, it is possible to remove the plug from the outlet and connected the outlet with the help of a ball valve to the drain. If you connect a ball valve to this outlet it is important that the arrow with PA- has to show in the direction of the drainage, as the supply side works with under pressure!

When using a ball valve on the under pressure side the small rubber plug inside the valve should not be removed!

3.5.2 Supply air temperature duct sensor

The supply air duct sensor has to be installed after connecting the DanX 1/2/3 unit to the duct system. You find the coiled up (10m) sensor on the top deck of the unit.

The duct sensor is installed in the ***supply air duct*** of the swimming pool, after the heating coil in the following way.

- Drill an 8 mm hole in the supply air duct at least 1.5 m from the last component of the unit.
- Place the sensor in the hole.
- Fasten the sensor housing to the duct with two screws and close the sensor.

3.5.3 Return air humidity / temperature duct sensor

The return air temperature and humidity sensor has to be installed after connecting the DanX 1/2/3 unit to duct system. You find the coiled up (10m) sensor on the top deck of the unit.

The duct temperature / humidistat sensor is installed in the ***return air duct*** from the swimming pool. Please follow the instructions, following with the duct sensor.

3.5.4 Room air humidity / temperature sensor

If you have ordered a room thermostat / humidistat sensor instead of a duct mounted on, this will only be connected to the terminal strip of the unit with a short cable to test the function. When installing the unit you have to replace this cable with a cable of the right length, to connect the room temperature / humidistat sensor between the pool room and the unit.

The room temperature/humidistat sensor should be installed at a height of minimum 2,5m and not above doors where people entering or leaving the pool hall. Secondly the sensor should not be placed where heating, ventilation or the sun can have an influence on the measuring result. Otherwise please follow the instructions, following with the room sensor.

It is not possible to change from a duct sensor to a room sensor, or the other way around.

If you wish to change the sensor, you need a software update for the controller!

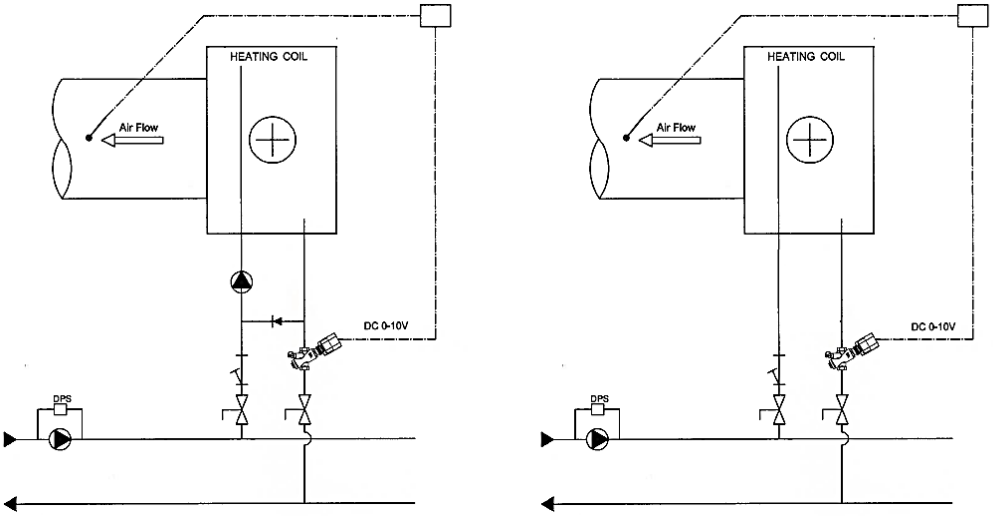
3.5.5 Separate outdoor sensor

If there is ordered a separate outdoor temperature sensor, you will find the sensor separately in the unit without cabling. Install the sensor outside the building where there is no direct sunlight. Disconnect the standard outdoor sensor which is installed inside the DanX 1/2/3 unit (see electrical diagram) and connect the new outdoor sensor to the two terminals.

3.5.6 LPHW coil

The LPHW coil is connected in the following way:

- Connect the water supply to the inlet of the coil.
- Connect the water return to the outlet of the coil, so the water flow is always counter flow.
- Connect the two way valve outside the unit to the water system, as shown in the drawings.



- After mounting the water valve, set the maximum flow for the coil on the valve (see also separate instructions).
- Install the actuator to the valve and connect it to the electrical panel (se electrical diagram)

NB!
When connecting the heat exchanger, counter hold with a suitable tool in order to avoid any damage to the pipes.

3.5.7 Frost thermostat for LPHW coil

In case a frost thermostat is installed, it is easier to do so before installing the supply air duct. You will find the thermostat delivered separately in a plastic bag together with all brackets needed.

- Mount the frost thermostat on the top deck of the unit with the bracket delivered with the thermostat.
- Mount the bracket for the bulb after the heating coil in the duct outlet.
- Take the duct and drill a hole, run the bulb with the capillary tube through the hole and fasten the bulb to the bulb holder. Then mount the duct on the DanX unit.
- The thermostat is prewired and the wire only has to be connected to the main terminal strip of the unit (see wiring diagram).

3.5.8 Water cooled condenser

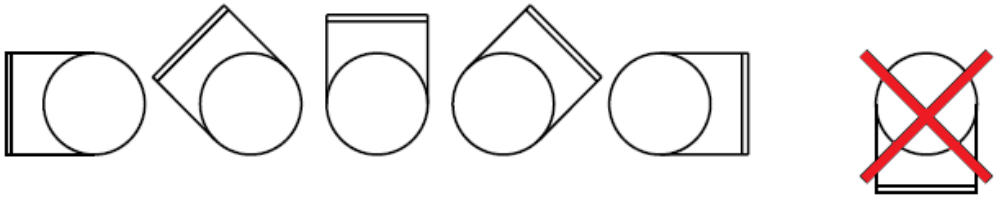
The heat pump in a DanX 2/3 HP may be fitted with a water-cooled condenser for transfer of surplus heat, which is not used for heating the supply air for the pool or sanitary water. The entry for the water pipes is at the bottom of the unit, where the condenser is placed. The piping has then to be connected to the water cooled condenser inside the compressor cabinet.

NB!
Piping material must be suitable for chlorine water. Please be aware of the maximum water volume, which is 800 l/h, as a to high water velocity can destroy the water cooled condenser and cooling circuit of the DanX unit.

3.5.9 Electrical heating coil

The heater is designed for insertion into standard spiral ducting and is fixed to the ducting with screws. When installing the heater, the following has to be taken care of:

- The air must flow through the heater in the direction of the arrow (located on the side of the heater close to the connection box).
- The heater can be fitted in either horizontal or vertical ducting.
- The electrical connection cabinet can be placed freely facing upwards or sideways to a maximum angle of 90°. Fitting with the box facing downwards is NOT allowed.



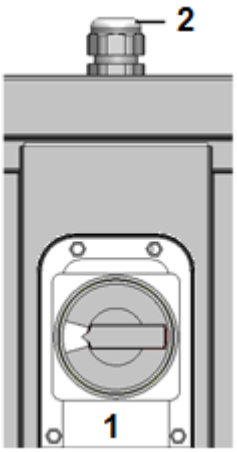
- The distance from (to) the heater to (from) a duct bend, valve, filter, etc. should correspond to at least twice the duct diameter; otherwise there is a risk that the airflow through the heater is uneven which can cause activation of the overheating cut-out.
- The heaters may be insulated in accordance with valid regulations for ventilation ducting. However, the insulation material must be incombustible. The cover of the heater must be free from insulation, so that the type plate is visible and the cover can be removed.
- The distance from the heater's metal casing to any wood or other combustible material must NOT be less than 30 mm.
- The maximum ambient temperature allowed is 30°C.

3.6 Electrical connection

The installation of the DanX control panel should only be carried out by professional electricians! When working on the electric panel, always switch of the electric power before opening the panel door!

For the exact connection of the unit and its components, please refer to the separate electrical diagrams.

3.6.1 Main current



The main current of the unit is installed in the following way:

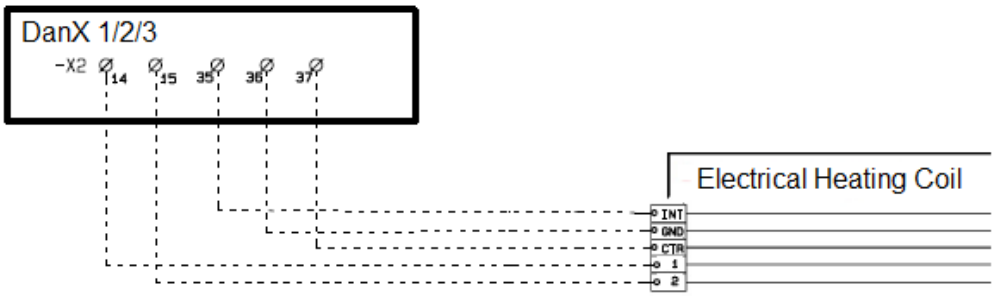
- Remove the small panel together with the main service breaker (1) at the front of the unit.
- Run the main current cable through the gland (2) on the top of the unit.
- Connect the cable to the main service breaker, according to the electrical diagram in chapter 9, and the earth wire to the unit.
- Reinstall the main service breaker panel on the unit.

3.6.2 Components

Most of the components and sensors are already connected to the electric panel by the factory. But a few, which are accessories, or are installed at the building site (for example pumps), have to be connected on site according to the electrical diagrams. To connect these components to the electrical panel, you can run the wiring through the glands on top of the unit into the electrical panel and connect them to the terminals.

3.6.3 Electrical heating coil

The power supply to the electrical heating coil will not be delivered by the DanX 1/2/3, but have to come separately from the building site. The 2-10V control signal (INT/GND/CTR) has to be connected to the electrical panel, where the valve actuator is normally installed and the alarm contact (1/2) where the frost thermostat is connected. See also the electrical diagram delivered with the electrical heating coil.



4.1 Introduction

A complete DanX 1/2/3 ventilation system for swimming pools requires a control system that corresponds to the actual unit configuration in the most energy efficient way possible. The controls are built into the unit and factory tested before delivery thereby providing the most reliable and energy efficient operation possible. This chapter gives you an introduction how to set the control system for exactly your swimming pool.

4.1.1 Unit function DanX 1/2/3 HP

The DanX 1/2/3 HP consists of a double cross flow heat exchanger in combination with a compressor driven heat pump and a mixing box.

The DanX 1/2/3 HP uses a minimum of outdoor air required for hygienic reasons in the pool hall. To keep pressure drop low and the dehumidification capacity of the heat pump high, only a part of the humid swimming pool air is run through the heat exchanger and evaporator.
Part of the exhaust air is leaves the unit and part of the exhaust air is re-circulated to join the outdoor air. These two airstreams are then preheated in the double cross flow heat exchanger and afterwards heated in the heat pumps condenser. If the supply air temperature is too low, the re-heater is activated. In this operation mode the dehumidification is obtained with the dry outdoor air and heat pump. If the dehumidification capacity is not sufficient, the amount of dry outdoor air automatically increases.

If the unit is running in night/closed mode, the outdoor and exhaust air damper are fully closed and the dehumidification is only done with the heat pump.

4.1.2 Unit function DanX 1/2/3 XD

The DanX 1/2/3 XD consists of a double cross flow heat exchanger and a mixing box.

The DanX 1/2/3 XD is uses a minimum of outdoor air required for hygienic reasons in the pool hall. To keep pressure drops low, only part of the outdoor air is run through the heat exchanger. The rest is re-circulated and heated in the re-heater. If the dehumidification capacity is not sufficient, the amount of dry outdoor air automatically increases.

If the unit is running in night/closed mode, the outdoor and exhaust air damper are fully closed and opens only partly if dehumidification is needed.

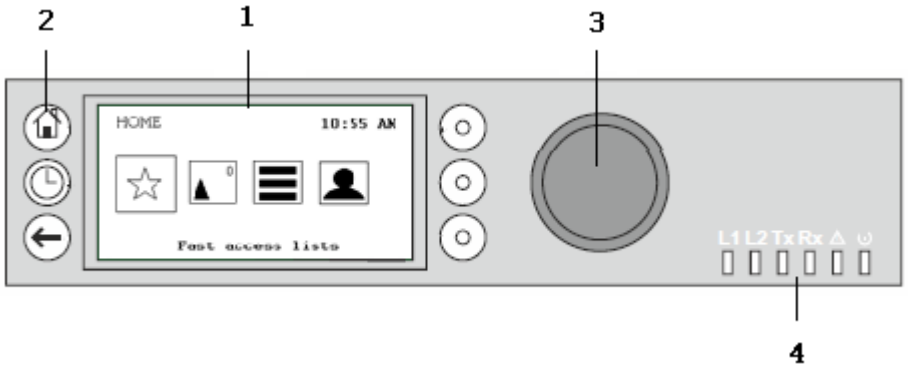
4.1.3 Controls in general

At the front of the unit you will find the main service breaker. This breaker disconnects all power to the unit and control panel, so no safety function like a frost thermostat is active any longer! Neither outdoor/exhaust air damper will be closed, which will lead cooled air the pool room. Therefore do not stop the unit with this switch! Always stop the unit with the help of the controller!

In the front door you will find the DanX 1/2/3 control system, which is based on a Honeywell MVC WEB controller. On the left or right hand side of the controller you will see a RJ45 connection, which is used to connect the controller to local network.

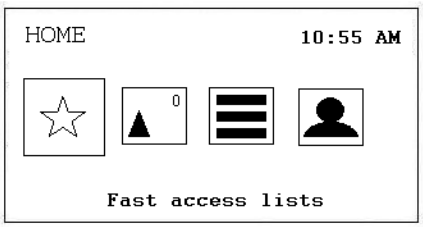
4.2 MVC WEB controller

The DanX 1/2/3 control system is based on a Honeywell MVC WEB controller, with a software program by Dantherm to perform control strategies and functions in the most energy efficient way.



(1) LCD display.

Generally, when the display has not been in use, the display will show the following information. For easier reading press any button to light up the display.



The four icons shown on the display are providing the following functions:

Login / User options, here you log in into the controller. See more under chapter 4.3. Login and User Options.

Fast access lists calls up the Setpoint menu, Unit Status menu and Unit Configuration menu. See more under chapter 4.4 Fast Access Lists.

Alarms will show you Points in Alarm, the Alarm List and Alarm Status LED. The number in the right corner shows you how many alarms there are. See more under chapter 4.5 Alarms.

Main menu shows you Points in Manual, the Data Point List, Settings and Information. See more under chapter 4.6 Main Menu.

(2) Operating keys. These keys provide the following functions:

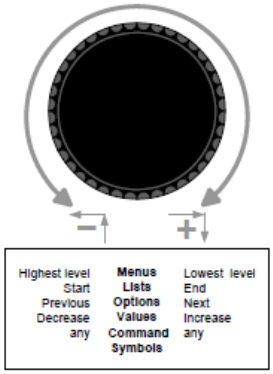
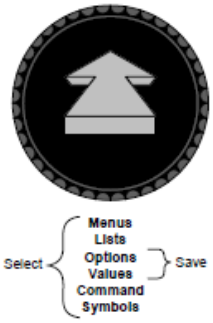
Home key calls up the Home menu, which provides information about the unit status. The Home menu is displayed by default if no operating key has been pressed for 10 minutes.

Time program key opens the different time programs in the controller. See more under chapter 4.7 Time Programs.

Cancel key returns to the previous screen, discards current inputs and confirms alarm messages

Function keys, which can be used when an icon is shown in the display, left from the key. Depending on the icon these keys can have different functions.

(2) **Rotate & Push button**, which works as follows:

Turning the button	Navigate – Highlight - Adjust
• **Navigates** through menus and lists • **Highlights** items (menu, list, option, value, command symbol) • **Adjust** options (On, Off, etc.) and values (temperature, humidity, etc.)	
Pushing the button	**Select - Save**
• **Selects** items (menu, list, option, value, command symbol) • **Saves** options and values	

(4) **LED´s**, which indicate the operational status of the controller. In the DanX2 application only the Power LED and the Alarm LED are in function.

Power LED (Green)

	Power LED behaviour	Reason
1	ON	Normal operation
2	OFF	Power supply not OK

Alarm LED (red)

	Alarm LED behaviour	Reason
1	OFF after power up	Normal operation
2	Lit continuously after power up	Controller has encountered a hardware problem.
3	Flashes continuously 4 x ON/OFF followed by pause	Sensor failure of analog input

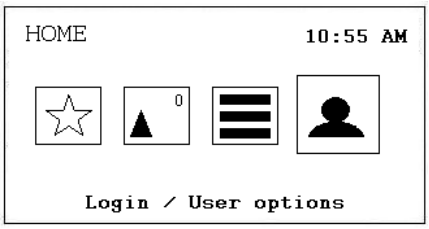
4.3 Login and user options

Under this icon you have the following possibility:

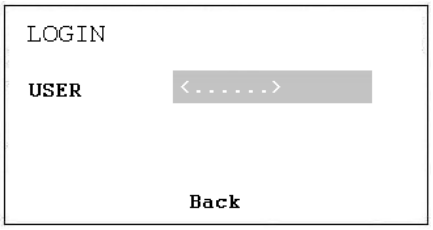
- Login with your password
- Change your password
- Change the delay for the auto logout
- See the current user details
- Logout manually

4.3.1 Login

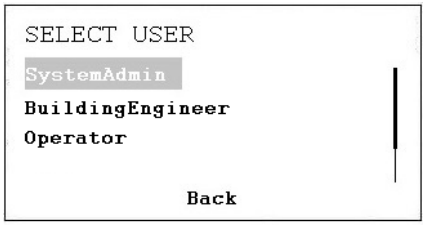
Scroll with the **Rotate button** to the Login / User Option icon and press the **Rotate button**.



You will now see the following display.

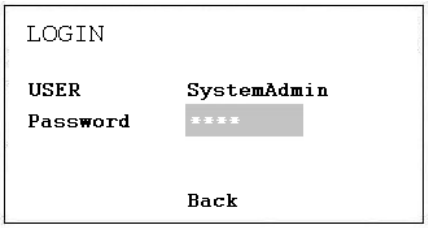


Press the button and you can now choose between the following users:



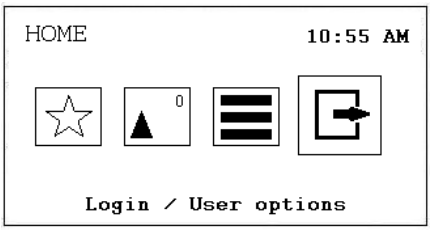
a. System Administrator
b. Building Engineer
c. Operator

After having chosen the right user you have to give in the password:



See chapter password handling which possibilities the different users can get.

When you have entered the correct password the display now will change and show a different Login icon.



4.3.1.1 Password handling

There are four different access levels in the program. In Level 0 (no password needed) values can only be seen, not changed.

To change set points in the Time Program or set point, you have to use the level 1 password for the operator to get access. With level 2, some points can be set into manual to test the unit. All points can be changed on access level 3 by entering a service password, which your Dantherm service technician has.

User	Access level	Password	Possibilities
Operator	1	2222	Time Program, set point changes
BuildingEngineer	2	3333	Points can be changed to manual
SystemAdmin	3	*	Passwords can be changed

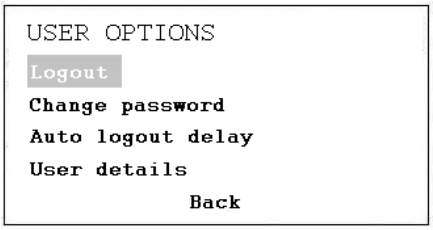
* Please ask Dantherm

Important!

The passwords for entering the MVC WEB through the display are different from the passwords used to access the controller through the network/browser. For these passwords see chapter 4.10.3.

4.3.2 User options

After you have been logged into the controller you have now different options when pressing the Login icon, which you can see here:



Logout
If you want to leave the controller you just press Logout. If you forget this the controller will automatically log you out after 10 minutes.

Change password
It is possible to change the password, but it is not recommended by Dantherm, as new software has to be uploaded to the controller if the password has been forgotten. So only change the password if you are totally sure about it! Password can only be changed with the level 3 password.

Auto logout delay
Here you can change the standard time (10 minutes) for the automatic log out of the controller.

User details
Here you can see who is currently logged into the controller.

4.3.3 Changing language

If you want to change the language of the controller from English into your language, please go to chapter 4.6.3 Settings, where you can see how to change the language.

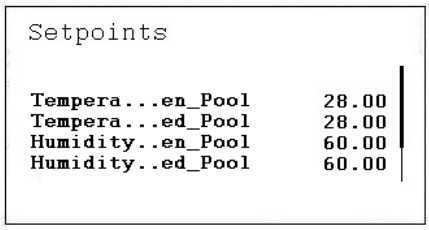
4.4 Fast access lists

Under this icon you have the following possibility:

- Change the Set points
- See the Unit Status
- Change the Unit Configuration
- Modify Control Loops

4.4.3 Set point menu

When pressing the **Rotate button** with “Setpoints” highlighted you will enter the following display.



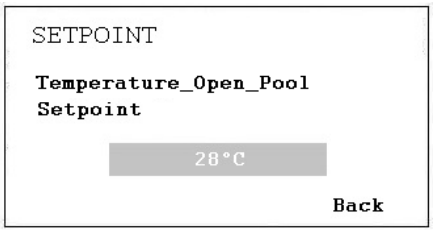
Here you will find the following set points (if you cannot see them please scroll down by rotating the **Rotate button**):

- Temperature_Open_Pool (Setpoint temperature in the pool hall when pool open)
- Temperature_Closed_Pool (Setpoint temperature in pool hall when pool closed)
- Humidity_Open_Pool (Setpoint humidity in the pool hall when pool open)
- Humidity_Closed_Pool (Setpoint humidity in pool hall when pool closed)
- Supply_Fan_Low_Airvolume (Setpoint low air volume)
- Supply_Fan_High_Airvolume (Setpoint high air volume)
- Return_Fan_Low_Airvolume (Setpoint low air volume)
- Return_Fan_High_Airvolume (Setpoint high air volume)
- Min_Fresh_Air (Setpoint minimum fresh air amount)
- Min_Supply_Temperature (Setpoint minimum supply air temperature)
- Max_Supply_Temperature (Setpoint maximum supply air temperature)

All points are read only for the Guest and can only be set into manual with the Operator / System Administrator password.

4.4.3.1 Set Point change

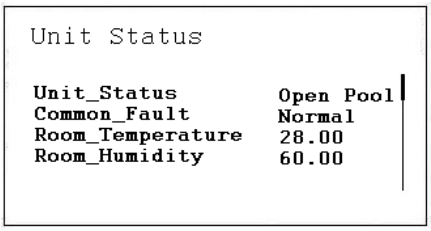
To enter one of the set points, highlight it and press the **Rotate button**. You will enter the following display now:



Push the **Rotate button** and you can now change the value by turning the **Rotate button** and then push the button again. Now the set point is changed.

4.4.4 Unit Status Menu

When Unit Status is highlighted, press the **Rotate button** to see following display:



Here you will find the following unit status points (Scroll down with the **Rotate button**):

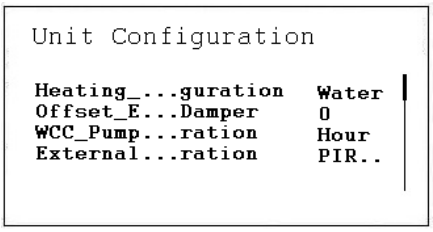
- Unit_Status (Actual status of the Unit)
- Common Fault (Actual fault status)
- Room_Temperature (Actual pool room air temperature)
- Room_Humidity (Actual pool room humidity)
- Supply_Air_Volume (Actual supply air volume)
- Return_Air_Volume (Actual return air volume)
- Supply_Air_Temperature (Actual supply air temperature)
- Outdoor_Air_Temperature (Actual outdoor temperature)
- Evaporator_Temperature (Actual temperature on the evaporator surface, only on heat pump units)
- Compressor_Status (Actual status of the compressor, only on heat pump units)
- Compressor_Test (Compressor test function)
- Compressor_Stop (Compressor stop function)
- HP_LP_Alarm (Status of the HP/LP pressure switch)
- WCC_Pump (Actual status if pump is running, only on units with WCC)
- WCC_Heat_Demand (Water heating needed or not, only on units with WCC)
- Heating_Signal (Actual position of heating coil actuator, signal to electrical heating coil)

- Heating_Coil_Pump (Actual status if pump is running)
- DX_Cooling (Actual status for signal to DX cooling coil)
- Duct_Dampers (Actual duct damper position)
- Bypass_Damper (Actual by pass damper position)
- Heat_Demand (Actual demand for heating in %. A demand < 50% means cooling demand, > 50% means heating demand)
- Dehumidify_Demand (Actual demand for dehumidification in %)
- Room_Temp_CalcSet (Actual room temperature set point)
- Supply_Air_Temp_CalcSet (Actual supply air temperature set point)
- Room_Humidity_CalcSet (Actual room humidity set point)
- External_Signal (Actual status for external signal)

The points under Unit Status give an overall view of the actual running situation of the unit. All points are read only for the Guest / Operator and can only be set into manual with the System Administrator password.

4.4.5 Unit Configuration menu

When entering the Unit Configuration you will see the following start display in the program:



Here you will find the following unit configuration points:

- Filter_Check_Date (see 4.3.5.1)
- Heating_Coil_Configuration (see 4.3.5.2)
- Wake_Up_Temperature_Configuration (see 4.3.5.3)
- Wake_Up_Humidity_Configuration (see 4.3.5.3)
- Signal_External_Configuration (see 4.3.5.4)
- WCC_Pump_Exercice_Configuration (see 4.3.5.5)
- Closed_Mode_Cooling (see 4.3.5.6)

The points under Unit Configuration should be set once when the unit is commissioned and not be changed afterwards. All points are read only for the Guest / Operator and can only be changed with the System Administrator password.

4.4.5.1 Filter check date

Under Filter Check Date the date for the annual filter check can be given in. The first or two figures indicate the month, the next two figures indicate the day, when the filter check should appear on the display. 912 for example stand for September the 12th.

4.4.5.2 Heating coil

Under the point Heating Coil you can configure if your unit is equipped either with water or electrical heating coil.

4.4.5.3 Wake up function

If using the Wake Up function it is essential that the standard humidity and temperature duct sensor is being placed directly after the return air duct grill to be able to measure the humidity and temperature in the room without any air movement (fans stopped). If this is not possible, the duct sensor has to be placed directly in the room or replaced by a room humidistat / temperature sensor.

With the wake up function you can choose if the unit should start up automatically at too high humidity or too low temperature, if you have set the unit to be stopped in the time program. If you have chosen YES, the unit will run as long as it takes to reach the wanted set point. When the set point is reached the unit will then automatically stop again. If you choose NO the unit will not start up, even if the room conditions not correspond to the wanted set points.

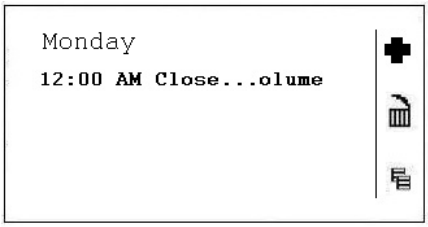
4.4.5.4 External Signal (PIR sensor or pool cover switch)

If you want to start or stop the unit with the help of an external contact you can define this under External Signal configuration. Here you can choose between the following possibilities when the external signal is activated:

- PIR Open Low (When there is a signal from the PIR sensor the unit will go in Open Pool mode with the fans in low speed)
- PIR Open High (When there is a signal from the PIR sensor the unit will go in Open Pool mode with the fans in high speed)
- Cover Closed Low (When there is a signal from the pool cover switch the unit will go in Closed Pool mode with the fans in low speed)
- Cover Closed High (When there is a signal from the pool cover switch the unit will go in Closed Pool mode with the fans in high speed)
- Cover Closed Stop (When there is a signal from the pool cover switch the unit will go in Closed Pool mode with the fans stopped)

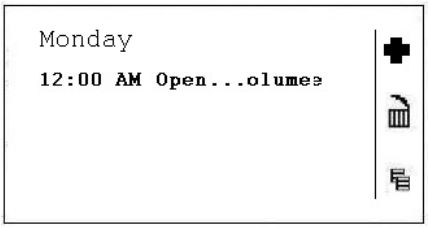
With a PIR sensor:

Enter the time program and change the standard two points (Open Pool and Closed Pool time) to only Closed Pool with the start time 00:00 (afterwards it will be shown as 12:00 AM in the display) and delete the Open Pool time completely from the program. Be aware that you have to do that for every day. Under Closed Pool you can then set the wanted fan speed for closed mode (high, low or stop).



With a pool cover switch:

Enter the time program and change the standard two points (Open Pool and Closed Pool time) to only Open Pool with the start time 00:00 (afterwards it will be shown as 12:00 AM in the display) and delete the Closed Pool time completely from the program. Be aware that you have to do that for every day. Under Open Pool you can then set the wanted fan speed for open mode (high, or low).



See also chapter 4.7.1 how you make the changes in the Unit Time Program.

4.4.5.5 WCC pump exercise

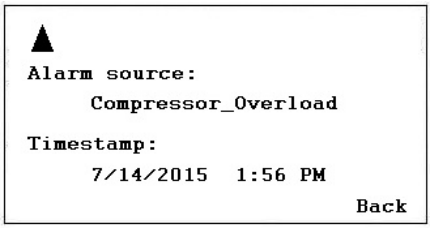
Under the point WCC Pump exercise you can configure how often the pump for the water cooled condenser should run for a few minutes to get the still standing water exchanged in the condenser. You have the possibility to set it once an hour, day or week.

4.4.5.6 Closed Mode Cooling

Under the point Closed Mode Cooling you can configure if your unit should cool (free and active cooling) when the pool is closed or not. Normally this point is set to NO, but for example in therapy pools, or hot countries it will be set to YES.

4.5 Alarms

If there is a current alarm and the unit has stopped, the actual alarm will be shown in the display like this compressor overload.



When the unit has stopped, because of a critical fault you have to do the following:

- Switch off the unit at the repair breaker.
- Locate the fault and correct it (see chapter 4.2).
- Switch on the unit again and see if the alarm has switched over to normal again.

4.5.1 Alarm menu

Under this icon you have the following possibility:

- See Points in Alarm
- See Alarm List
- See Alarm Status of LED

4.5.1.1 Points in alarm

Here all current critical and non-critical alarms can be read. The first one will be identical with the alarm in the normal display, but there can be more alarms at the same time, which can then only be read in this point.

4.5.1.2 Alarm list

In the alarm list, you can find the last 99 alarms with the last one on top. You can see on the right side of the alarm at which day and when pressing the **Rotate button** at what time the alarm has appeared.

4.5.1.3 Alarm status of LED

Here it is possible for the System Administrator to configure at which fault the red LED lamp at the front of the controller should light. Standard configuration is for sensor fault and Panel Bus error.

4.5.2 Critical alarms

A critical alarm will either stop the total unit (heat pump and fans) or just the heat pump. The unit can first be started up again when the alarm has been acknowledged. Critical alarms are:

Alarm point	Description
Heating_Coil	Frost danger for LPHW coil, or OT for electrical heating coil
Fire_Alarm	Fire thermostat on supply or return air side has switched off
Fan_Alarm	Return or supply fan overload
HP_LP_Alarm	HP/LP pressure compressor alarm (Only units with HP)

4.5.3 Non Critical alarms

A non-critical alarm will not stop the unit, but it is a reminder to check the part (filter) which is in alarm. Non critical alarms are:

Alarm point	Description
Filter_Dirty	Outdoor or exhaust air filter should be checked

4.6 Main menu

Under this icon you have the following points and functions:

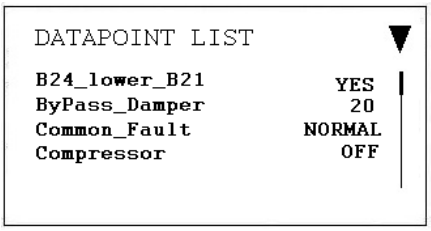
- Points in Manual
- Data Point List
- Settings
- Information

4.6.1 Points in manual

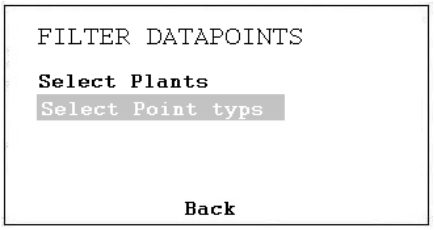
In this menu you will find all the points which have been set in Manual mode. Normally points are only set in Manual mode when testing some functions of the unit and these points should be set back to automatic immediately after the test has been finished. Before leaving a unit it is always a good idea to look into this menu to make sure that it is empty. I there is still a point in Manual you can change this point directly back to automatic in this menu.

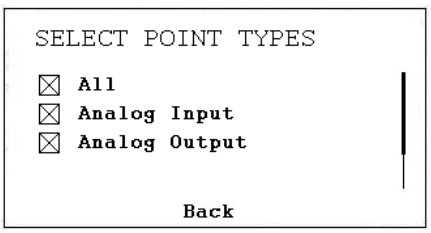
4.6.2 Data point list

In this menu you will find all data points of the controller in alphabetic order.

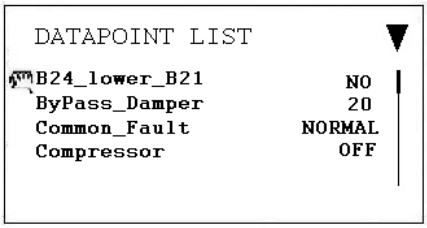


If you are looking for a specific data point you can press the function button on the left side of the display beside the triangle in the display. You will then the possibility to select some special points like analog inputs, digital outputs and so on. This will make your data point list shorter and easier to work with.





If you have logged in as System Administrator you have also the possibility to set values in Manual mode for testing purpose. When the data point is in Manual mode a hand icon will be shown in front of the data point and the data point will also be shown in the menu Points in Manual.

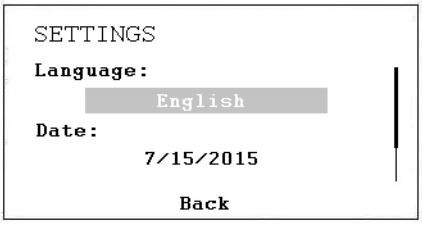


It is very important to set back the data point to automatic after testing!

As the operator of the unit you should normally not change a point from Auto mode into Manual mode. This should only be done by professional service technicians!

4.6.3 Settings

In this menu you will find the most important settings for the controller.



Here you can change the language, the date, the time and the time zone. To change the settings no password is needed. You can chose between most of the European languages, but the names of data points and the description of them will stay always in English.

4.6.4 Information

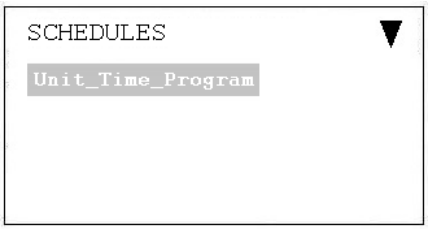
Under Information you can find mostly information's about the controller's software some for example which program and firmware version is used, which IP address the controller has, serial number and much more.

4.7 Time programs

When pressing the Clock Button of the controller the following points will appear on the display:

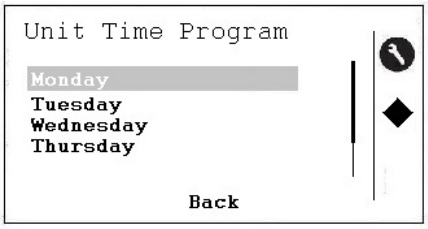
- Calendars (not used in this application)
- Schedules

When pressing the **Rotate button** on Schedules the following display will appear.

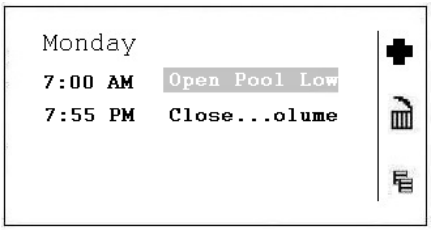


4.7.1 Unit Time Program

When opening the Unit Time Program the following display will appear:



Now the time program can be changed for Monday and the following display will appear:



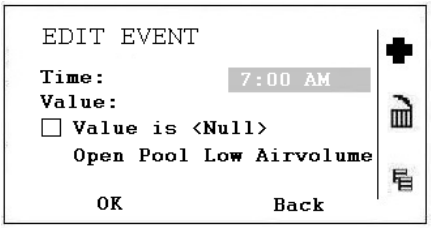
To activate the three icons on the right side of the display you have to press the button on the controller which is beside the icon. The three icons are having the following functions:

 With this icon you can add a new line in the time program of the day

 With this icon you can delete the line you are standing on with the cursor

 With this icon you can copy the program for this day to other days

To change a start time or the setting set the cursor on the line you will change and the following display will appear:



Now you can change the start time. If you want to change the setting of this time program line scroll further down:

You can now change the settings of this line. There are the following possibilities:

- Open Pool Low Air Volume
- Open Pool High Air Volume
- Closed Pool Low Air Volume
- Closed Pool High Air Volume
- Unit Stopped

For more explanations of this five settings see the next chapter.

4.8 Control description DanX 1/2/3 HP

The control strategy for a swimming pool unit is quite complex, therefore this user manual will only descript the basic functions of the control system. In generally the humidity control has always the highest preference, before the temperature control.

4.8.1 Humidity control

Humidity level in the pool hall is lower or equals the set point:

- The compressor will be stopped. If the compressor runs, the temperature control has taken over.
- The outdoor / exhaust air dampers are partly open in day time (Set point Fresh air amount - Minimum_Fresh_Air) and will be closed in night time.

Humidity level in the swimming pool hall is higher than the set point:

- The compressor will start to dehumidify.
- If the dehumidification capacity of the compressor is not efficient enough, the outdoor / exhaust air dampers will open more to get more dry outdoor air to the pool hall (overriding the set point Fresh air amount - Minimum_Fresh_Air)

If in summertime the outdoor air temperature is higher than 23°C, condense in the pool hall is no longer an issue. Therefore the humidity set point will be moved upwards with 1% for each °C above 23°C outside, but maximum by 5%. This means with a set point of 55% R.H. the maximum possible relative humidity is 60% at an outdoor temperature of 28°C.

IMPORTANT
If the compressor does not start, even if the humidity in the pool hall is above the set point there can be the following reasons:

- The outdoor / exhaust air damper is open >90% (normally in summertime).
- The temperature control has taken over with free or active cooling.

4.8.2 Temperature control

Temperature level in the swimming pool hall equals the set point:

- The compressor will be stopped. If the compressor runs, the humidity control, or a build in water cooled condenser has taken over.
- The heating coil will be stopped.
- The outdoor / exhaust air dampers are partly open in day time (Set point Fresh air amount - Minimum_Fresh_Air) and will be closed in night time.

Temperature level in the pool hall is lower than the set point:

- The compressor will be running.
- The heating coil is running, if the compressor capacity is not large enough or the compressor is not running (normally night time).
- The outdoor / exhaust air dampers are partly open in day time (Set point Fresh air amount - Minimum_Fresh_Air) and will be closed in night time.

IMPORTANT
If the compressor does not start, even if the temperature in the pool hall is below the set point there can be the following reasons:

- The unit runs in night mode (Closed Pool High / Closed Pool Low or STOP)
- The outdoor / exhaust air damper setting (Minimum_Fresh_Air) is <10%.

Temperature level in the swimming pool hall is higher than the set point:

- The compressor will be stopped. If the compressor runs, the humidity control, or a build in water cooled condenser has taken over.
- The heating coil will be stopped.
- The outdoor / exhaust air dampers will open more to get more cooled outdoor air to the pool hall (overriding the set point Fresh air amount - Minimum_Fresh_Air). Secondly the by-pass damper will slowly open to avoided heating the outdoor air in the heat exchanger.
- The controller will give a digital signal to an optional cooling unit.

4.8.3 Evaporator de-icing

If the evaporator sensor (B26) is measuring a temperature <+2°C for more than 20 minutes the compressor will be stopped and the outdoor / exhaust air dampers closed. At the same time the fan speed goes up to full speed. When the evaporator has been de-iced, all functions are going back to normal.

4.8.4 Fan control

Normally the fans are running at the speed set in the Time Program, but if the speed is set to low speed (Open Pool Low or Closed Pool Low) there can be the following reasons, why the unit is running still on full speed.

- If the calculated dehumidification demand is >50%, which means there is a larger difference between the actual humidity and the set point, the fans will go to full speed, until the calculated dehumidification is again <50%.
- If there is a demand for free cooling (Outdoor_Air_Temperature < Room_Temperature) the fans will go over to full speed until the set point temperature has been reached again.
- If there is a larger difference between the actual hall temperature and the set point than 2°C the fans will go to high speed, until the difference is lower than 2°C.
- If the supply air temperature is above the set point (Max_Supply_Temperature).
- If the evaporator is been de-iced. The de-icing stops when the evaporator temperature (Evaporator_Temperature) is >+2°C.

4.9 Control description DanX 1/2/3 XD

The control strategy for a swimming pool unit is quite complex, therefore this user manual will only descript the basic functions of the control system. In generally the humidity control has always the highest preference, before the temperature control.

4.9.1 Humidity control

Humidity level in the pool hall is lower or equals the set point:

- The outdoor / exhaust air dampers are partly open in day time (Set point Fresh air amount - Minimum_Fresh_Air) and will be closed in night time.

Humidity level in the swimming pool hall is higher than the set point:

- The outdoor / exhaust air dampers will open more to get more dry outdoor air to the pool hall (overriding the set point Fresh air amount - Minimum_Fresh_Air).

If in summertime the outdoor air temperature is higher than 23°C, condense in the pool hall is no longer an issue. Therefore the humidity set point will be moved upwards with 1% for each °C above 23°C outside, but maximum by 5%. This means with a set point of 55% R.H. the maximum possible relative humidity is 60% at an outdoor temperature of 28°C.

4.9.2 Temperature control

Temperature level in the swimming pool hall equals the set point:

- The heating coil will be stopped.
- The outdoor / exhaust air dampers are partly open in day time (Set point Fresh air amount - Minimum_Fresh_Air) and will be closed in night time.

Temperature level in the pool hall is lower than the set point:

- The heating coil is running.
- The outdoor / exhaust air dampers are partly open in day time (Set point Fresh air amount - Minimum_Fresh_Air) and will be closed in night time.

Temperature level in the swimming pool hall is higher than the set point:

- The heating coil will be stopped.
- The outdoor / exhaust air dampers will open more to get more cooled outdoor air to the pool hall (overriding the set point Fresh air amount - Minimum_Fresh_Air). Secondly the by-pass damper will slowly open to avoided heating the outdoor air in the heat exchanger.
- The controller will give a digital signal to an optional cooling unit.

4.9.3 Fan control

Normally the fans are running at the speed set in the Time Program, but if the speed is set to low speed (Open Pool Low or Closed Pool Low) there can be the following reasons why the unit is running still on full speed.

- If the calculated dehumidification demand is >5%, the fans will go to full speed, until the calculated dehumidification demand is again <5%.
- If there is a demand for free cooling (Outdoor_Air_Temperature < Room_Temperature) the fans will go over to full speed until the set point temperature has been reached again.
- If there is a larger difference between the actual hall temperature and the set point than 2°C the fans will go to high speed, until the difference is lower than 2°C.
- If the supply air temperature is above the set point (Max_Supply_Temperature).

4.10 WEB operator interface

The MVC WEB controller is operated via a standard web browser. By default, an integrated web server provides all operation pages for a full browser-based operation. Through the consequent use of software standards, any PC platform can be used as an operator interface (client). Other than the operating system and Internet Explorer, Chrome or Firefox, no software needs to be installed on the client PCs. Any MVC WEB controller on the network can be accessed via the browser-based MVC Web Interface, both locally and remotely. The local access is normally only used to change the LAN IP address of the controller and for service reasons. The costumer access is normally remotely over the LAN network.

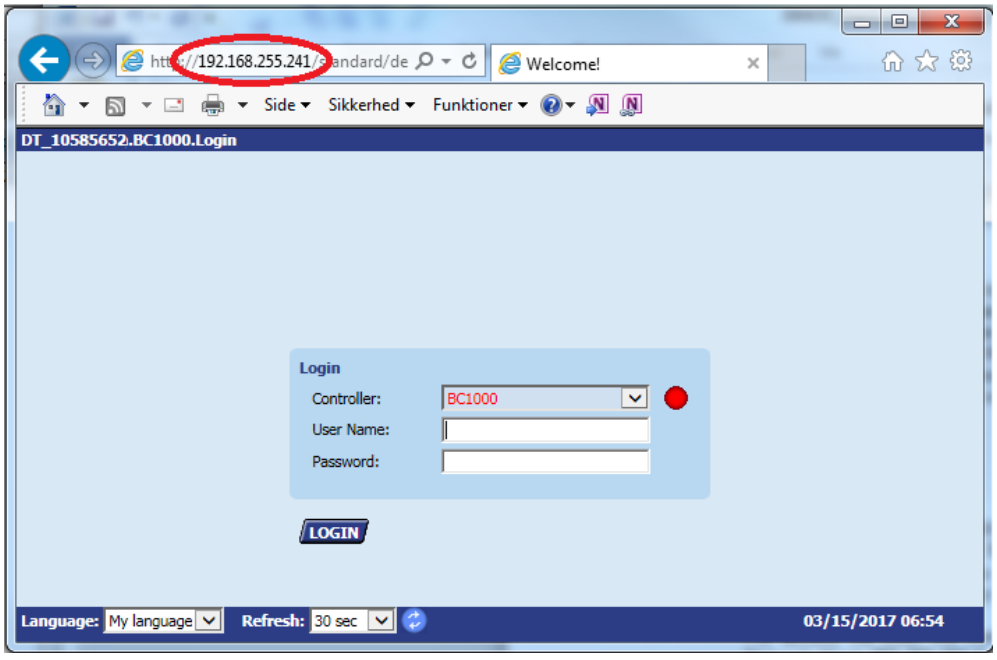
4.10.1 Local access

To locally connect to the MVC WEB controller via USB interface, an USB cable of type B standard has to be used. The USB connection / local access type is mandatory for the initial setup of the controller and the LAN IP address.

For access via the USB connection, the controller has a factory default IP address **192.168.255.241** and Network Mask **255.255.255.0**.

To connect your computer locally for the first time, do the following:

- Copy the directory with the MVC WEB drivers on your computer.
- Connected your computer and the MVC WEB controller with the USB cable.
- Power up the MVC WEB controller. Depending on your Windows system your computer will automatically search for a driver, or you have to install the driver manually.
- Open now the browser on your computer. Enter the IP address for the USB connection which is always **192.168.255.241** and you will see the following picture and be ready to enter the controller.



4.10.2 Remote access

The MVC WEB is operated via a standard web browser. By default, an integrated web server provides all operation pages for a full browser-based operation. Through the consequent use of software standards, any PC platform can be used as an operator interface (client). Other than the operating system and Internet Explorer, Chrome or Firefox, no software needs to be installed on the client PCs.

To access the MVC WEB controller through a LAN network you have to allocate a valid and permanent IP address to the controller, which is reachable within the LAN.

4.10.3 LAN password

To enter the controller through a browser you need a password as if you would enter through the display (see chapter 4.4.1.1).

There are three different access levels in the program, depending on the username and password. To change the Time Program or set point, you have to use the level 1 password for the operator to get access. With level 2, all points can be set into manual to test the unit. On access level 3 you can change passwords, users and the IP address. Furthermore you can set up alarm e-mails.

User Name	Access level	Password	Possibilities
Operator	1	operator	Time Program, set point changes
BuildingEngineer	2	honeywell	Points can be set to manual
SystemAdmin	3	*	IP address and password change. E-mail set up

* Please ask Dantherm

4.10.4 Change of LAN IP address

The LAN IP address of the MVC WEB controller is from the factory set up with the following address:

IP:	192.168.1.202
Subnet Mask:	255.255.255.0
Gateway:	192.168.1.1

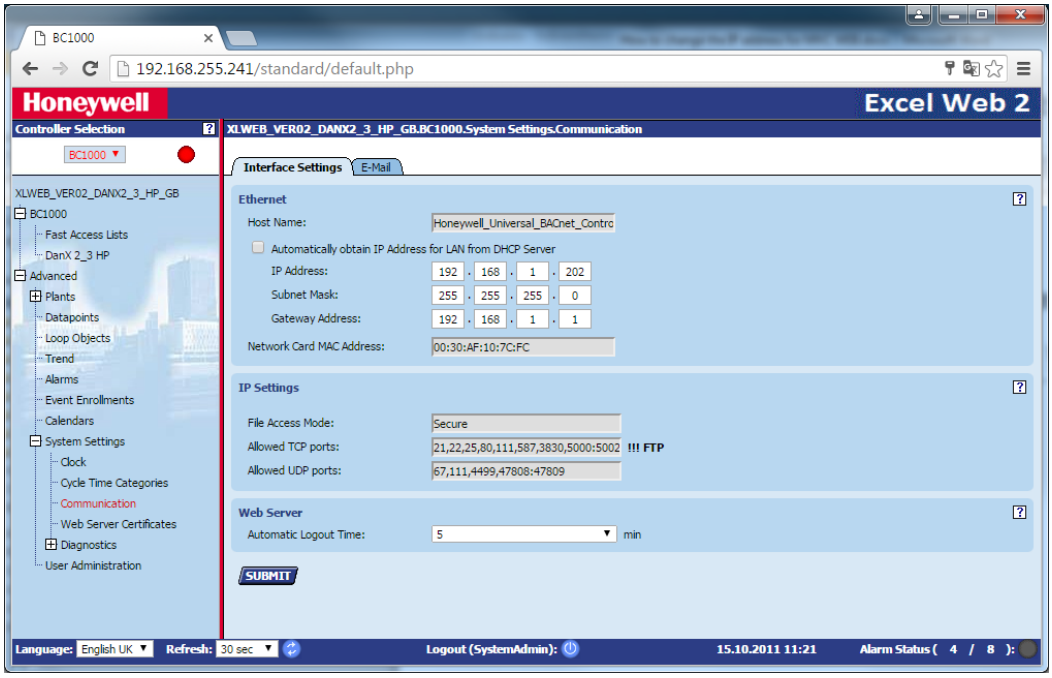
This address will maybe work in some smaller home networks, but if you have a larger network you surly have to change the LAN IP address. This you do in the following way:

- Make a local connection to the MVC WEB controller (see chapter 4.10.1)
- Open a browser on your computer. Enter the IP address for the USB connection which is always 192.168.255.241 and enter the password for the System Administrator which you can get from your Dantherm dealer (see chapter 4.10.3)
- After Login you will see the flow diagram of the unit (see chapter 4.10.5)

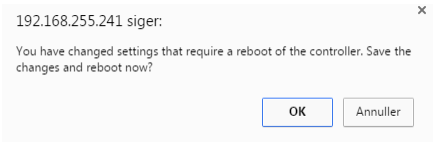
- Click on Communication in the left tree and you will now be able to change IP address, subnet mask and gateway address.

  Alternatively it is possible that the controller will obtain an IP address automatically. In this case the controller has of course been connected to the local network through a LAN cable to get the IP address automatically.

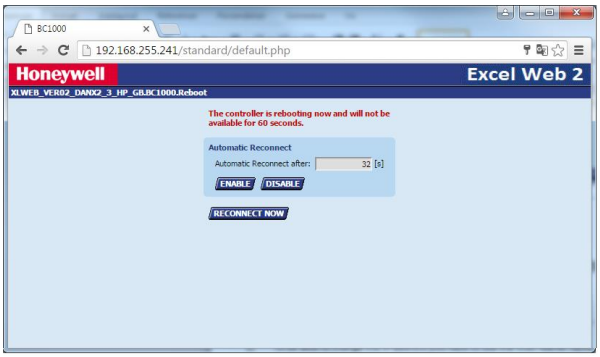
  Be aware of that if you use an automatically obtained IP address that the IP address will change whenever you switch the controller OFF and ON! You can always find the new IP address the network has given to the controller by entering the Main Menu directly in the MVC WEB controller.



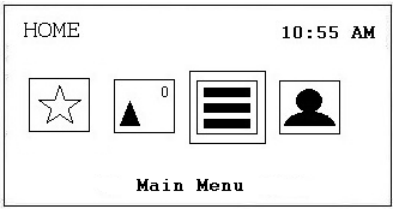
- Click on SUBMIT. You will be asked if you want to change the settings and you press OK.

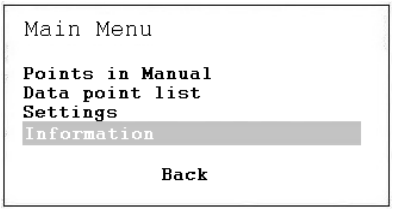


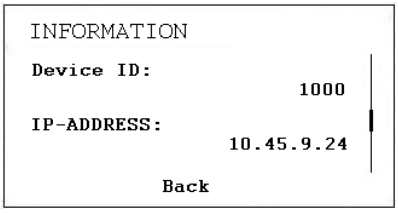
The controller will now reboot and will be ready after about 60 seconds.



- You can now check in the Honeywell WEB controller if the correct IP address has been downloaded under Main Menu / Information / IP-Address.

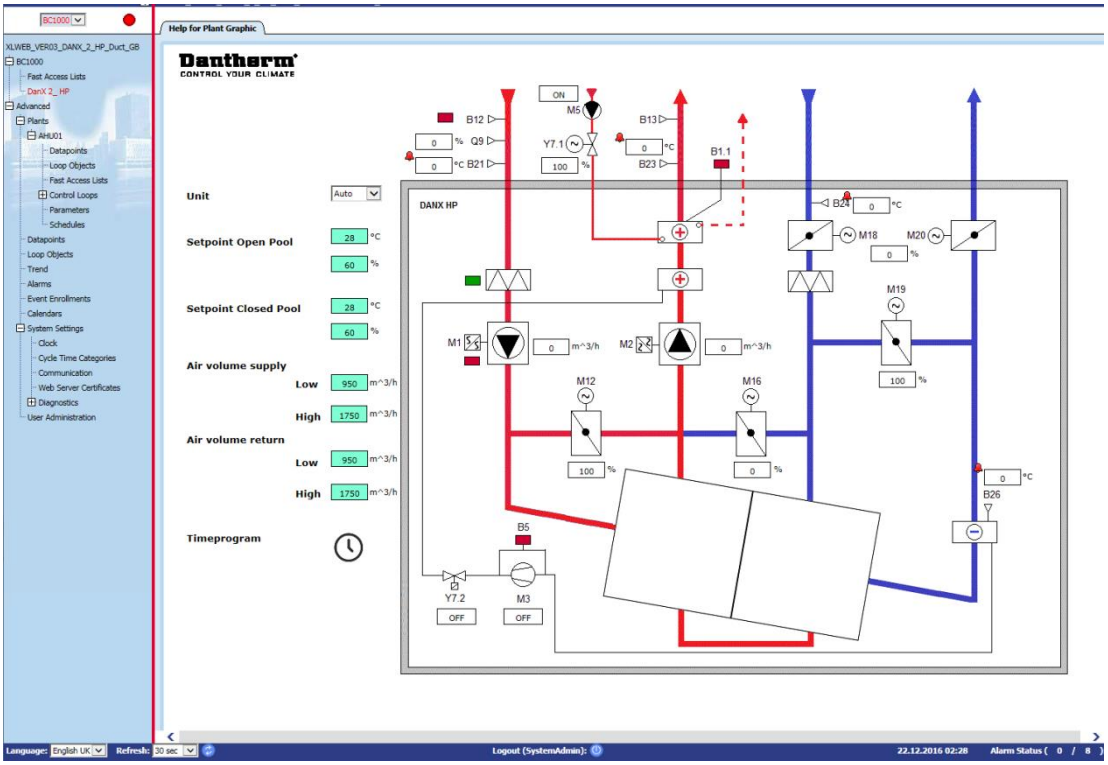






- Now connect the Honeywell WEB controller to the local network with a LAN cable. Start a browser on your networks computer and give in the new LAN IP address. If the controller has automatically obtained an IP address you can find the IP address in the controller under Main Menu / Information / IP-Address. Now you can open the controller over your LAN network.

4.10.5 Operation



When opening the WEB controller through a browser the first page you will always see shows the flow diagram of the unit with all the important values. Secondly you can access set points, the time program and stop the unit from this page.

The controller selection pane on the left displays the application of the current controller in a hierarchical tree structure. The alarm indicator icon next to the drop-down listbox indicates whether alarms exist (red) or not (green).

In the tree structure the following most important points can be chosen:

- BC1000 / Fast Access Lists: Here you find the Setpoint and Unit Status menu.
- Advanced / Plants / AHU01 / Fast Access Lists: Here you find the Unit Configuration list, where you configure the unit for your needs.
- Advanced / Plants / AHU01 / Schedules: Here you find the Timeprogram where you can set the units start/stop times and night/day running times.
- Advanced / Plants / Datapoints: Here you find all data points of the program and in SystemAdmin mode you can set these from automatic to manual.
- Advanced / Plants / Alarms: Here you find the alarm buffer for the controller with all recorded alarms.
- Advanced / System Settings / Clock: Here you set the time and date.
- Advanced / System Settings / Communication: Here you set the IP address for the LAN network. Secondly you can setup e-mails for different users which will be send in the case of an alarm.
- Advanced / System Settings / User Administration: Here you change user passwords, create new user and configure the access level for each user.

For further and deeper information's, there is an English Honeywell user guide available from Dantherms FTP server.

5.1 Introduction

When servicing air handling units always switch off the electricity on the main *and* the repair switch (complete shutdown) *and* secure from reconnection from unauthorized persons. Only open the inspection doors when the unit is totally stopped and the fans have come to a stop. After switching off the unit, the fan impeller will run for about 1 to 3 minutes before stopping totally. The fan wheel must never be stopped by hand or with an object.

Commissioning, maintenance and repair work should only be carried out by trained professionals or by people supervised by authorized staff. It is the responsibility of the fitter to read and understand this guide and other given information.

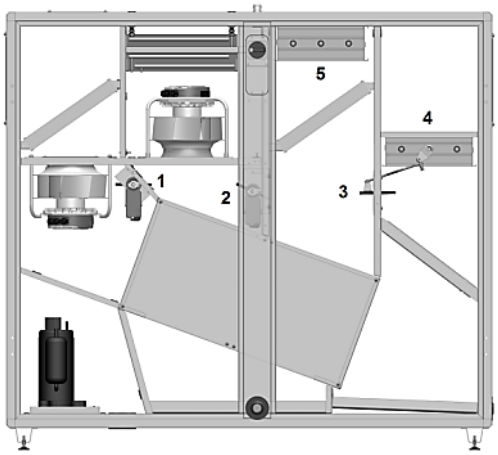
To commission the DanX1/2/3 for the first time, the following actions have to be taken:

- Check if the drain pipes are installed correctly and if the drip trays inside the unit are clean.
- Check that all loose parts/accessories have been removed from the inside of the unit.

5.2 Dampers DanX 1/2/3 HP

You will find the following 5 dampers installed in a DanX 1/2/3 HP:

1. Recirculation damper
2. By-pass damper
3. Mixing damper
4. Exhaust air damper
5. Outdoor air damper



Before starting up the unit, make sure that the dampers are opening/closing in the right direction.

To check this, set the controls to **Close** (no outdoor air) and the dampers should be in the following positions:

- Recirculation damper half open (1) and mixing damper (3) fully open.
- Outdoor damper (5) and exhaust air damper (4) fully closed.

Now change the program to **Open** and see if damper 4 and 5 start to open and if damper 1 and 3 start to close. Now set the outside air to 100%, wait a few minutes and check if the dampers have taken the following positions:

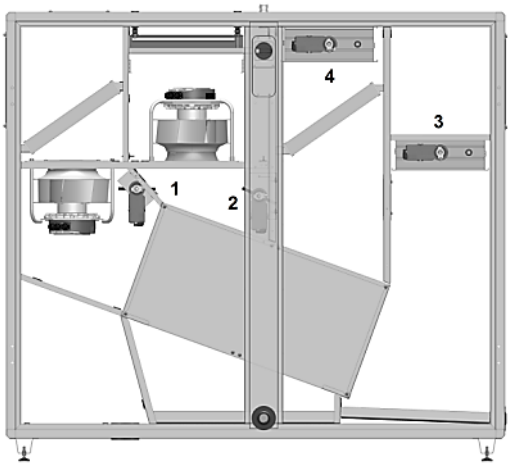
- Recirculation damper (1) and mixing damper (3) fully closed.
- Outdoor damper (5) and exhaust air damper (4) fully open.

Now check the operation of the by-pass damper (2). Make sure that there is a temperature difference between the swimming pool hall temperature set point and the outdoor air temperature of at least 10°C, so that the unit runs in heat recovery mode. Now the by-pass damper (2) should be fully closed.

5.3 Dampers DanX 1/2/3 XD

You will find the following 4 dampers installed in the DanX 1/2/3 XD:

1. Recirculation / mixing damper
2. By-pass damper
3. Exhaust air damper
4. Outdoor air damper



Before starting up the unit, make sure that the dampers are opening/closing in the right direction:

Set the controls to **Close** (no outdoor air) and the dampers will be in the following positions:

- Recirculation / mixing damper (1) fully open.
- Outdoor damper (4) and exhaust air damper (3) fully closed.

Now change the controls to **Open** and see if damper 4 and 3 start to open and if damper 1 start to close. Now set the outdoor air to 100%, wait a few minutes and check if the dampers are in the following positions:

- Recirculation / mixing damper (1) fully closed.
- Outdoor damper (4) and exhaust air damper (3) fully open.

Now check the operation of the by-pass damper (2). Make sure that there is a temperature difference between the swimming pool hall temperature set point and the outside air temperature of at least of 10°C, so that the unit runs in heat recovery mode. Now the by-pass damper (2) should be fully closed.

5.4 Fans

To commission the fans for the first time, the following actions have to be taken:

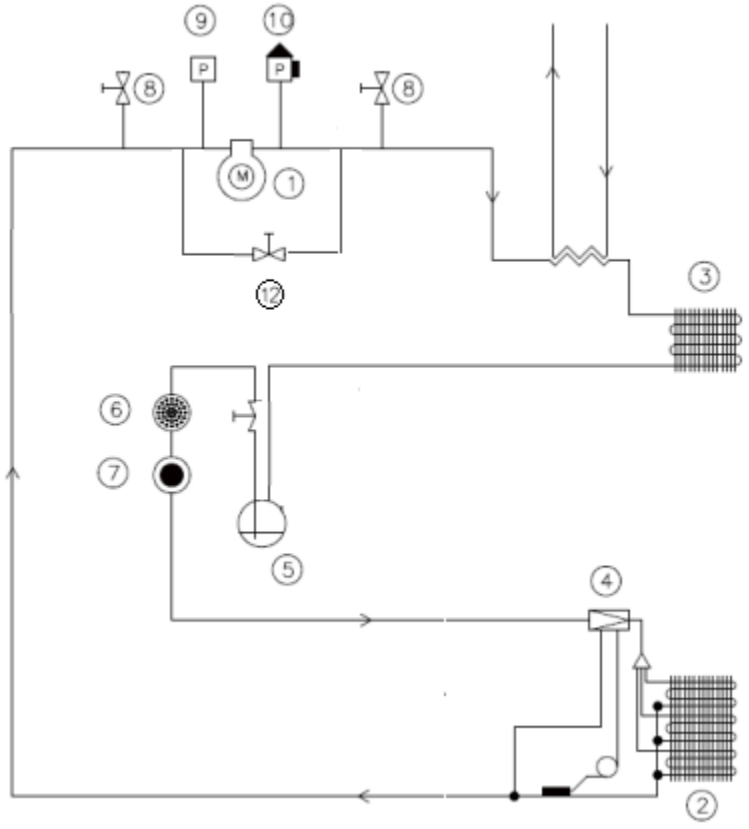
- Check by hand if the fan wheel is turning freely.
- Check that all dampers are open in the right way (see chapter 5.2 and 5.3)
- Check if the duct system is clean and not blocked by any parts.

5.5 Frost thermostat

If a frost thermostat is installed, check if it is set to the correct temperature. The factory setting is +8°C.

5.6 Cooling circuit DanX 1/2/3 HP

When starting the compressor of the cooling circuit for the first time, let the compressor run for about 5 minutes and then check the sight glass of the cooling circuit to see if there is enough refrigerant in the unit (no bubbles). If refrigerant is missing, stop the compressor at once and check for a leakage.



1. Compressor
2. Evaporator
3. Condenser
4. Expansion valve
5. Receiver
6. Dry filter
7. Sight glass
8. Schrader valve
9. LP pressostat
10. HP pressostat
11. Water cooled condenser (option)
12. Magnetic valve for compressor start

6.1 Introduction

For optimum operation conditions and a long product life, it is necessary to perform preventive maintenance on various parts within the stipulated intervals (see 6.2).

When servicing on air-handling unit, always switch off the electricity on the main and repair switch (complete shutdown) and secure from reconnection from unauthorized persons. Only open the inspection doors when the unit is stopped and the fans have come to a standstill. After switching off the unit the fan impeller will run for about 1 to 3 minutes before stopping totally. The fan wheel must never be stopped by hand or with an object.

Commissioning, maintenance and repair work should only be carried out by trained professionals or by people supervised by authorized staff. It is the responsibility of the fitter to read and understand this guide and other given information.

6.2 Maintenance plan

Component	Ref	Every 3. month	Every 6. month	Every 12. month
Cabinet	6.3	X		X
Fans	6.4	X	X	X
Filter	6.5		X	X
Heating coil	6.6			X
Heat exchanger	6.7			X
Dampers	6.8		X	X
Cooling circuit DanX 1/2/3 HP	6.9			X

6.3 Cabinet

The following steps should be taken to maintain the cabinet of the unit:

- Check the inside of the cabinet for dust or dirt. If necessary, clean either dry or wet (every 3 months).
- Clean all drip trays, either dry or wet, and check if condense water can run out freely (every 3 months).
- Check for paint damage and rust. Clean the damaged/rusting part and protect it with new paint (every 3 months).
- Check all gaskets on the service doors for leaks and damage. Replace damaged gaskets where necessary (every 12 months).
- Lubricate door locks and hinges (every 12 months).

Do not under any circumstances use strong solvents or solutions containing, chlorinated Hydrocarbons, esters, ketones or abrasive cleaner or polish.

6.4 Fans

The following steps should be taken to maintain the fans:

- Check the fan wheel for unbalance (every 3 months).
- Check the fan and motor bearings for unusual noise (every 3 months).
- Check the fan for dust or dirt. If necessary, clean the fan wheel either dry or wet (every 3 months).

6.5 Filter

Every 6 months:

- Take out the filters.
- Check the filters for dirt and damage.
- Clean the filter rail and reinstall the old/new filters.

Every 12 month (or if Filter Check appears on the display):

- Take out the filters.
- Clean the filter rail and reinstall new filters.
- Press the C **Cancel** key to reset the service interval in the control

6.6 Heating coil

The following steps should be taken to maintain the heating coil:

- Check the coils for dust or dirt. If necessary, clean the aluminium fins with a soft brush or a vacuum cleaner.
- Check for water leakages.
- Air the coil circuits through the exhaust valves of the pipe system (air in the pipe system may reduce the capacity)
- Check that the frost sensor (if installed) is properly fixed.

6.7 Double cross flow heat exchanger

The double cross flow heat exchanger has no mechanical part, therefore only the plates should be checked and cleaned if necessary. Clean the plates with a soft brush or use a high pressure cleaner with compressed air and blow against the air stream.

6.8 Dampers

The following steps should be taken to maintain the dampers of the unit.

- Check that the damper setting is in accordance with the current operation mode (every 6 months).
- Check that the damper louvers can rotate when the damper motor is running and that they close/open completely (every 6 months).
- Check the fixing of the motor/damper shaft (every 12 months).
- If necessary, clean the damper louvers either dry or wet (every 12 months).
- Check the rubber gaskets for damage (every 12 months).

6.9 Cooling circuit

The following steps should be taken to maintain the evaporator and condenser coil of the cooling circuit:

- Check the coils for dust or dirt. If necessary, clean the aluminium fins with a soft brush or a vacuum cleaner.
- Straighten any bent slats using appropriate tools.
- Check that the frost sensor is properly fixed in the evaporator coil.

The following steps should be taken to check the cooling circuit:

- Remove the air grill of the inspection door and run the tubes of your HP/LP manometers through the opening. Now connect your manometers to the high and low pressure side of the cooling circuit.
- Close all inspection doors and start up the unit. Wait a few minutes and check the LP/HP manometers. The HP gauge should show between 40-50 °C and the LP gauge about 0-10°C, depending on the running and outside conditions.
- Keep the unit running, open the right inspection door and check if the sight glass of the refrigerant circuit is free of bubbles.

If you are in doubt about the condition of the cooling circuit, stop the compressor at once to avoid damage and call a cooling technician or the Dantherm service.

7.1 Introduction

Normally an operation fault will give an alarm in the display of the control panel. For details, please refer to section 4 Controls in this manual.

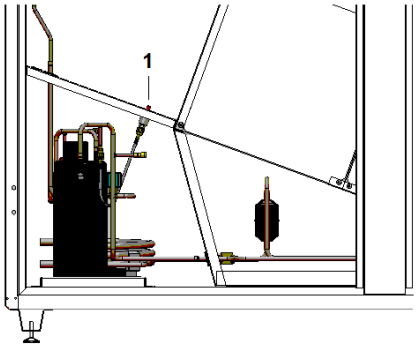
7.2 Fault finding

Alarm	Problem	Cause	Action
Service	Filter is dirty	• Filter blocked	• Change filter
Fan	Fan stopped	• Thermal overload	• Wait until motor has cooled down. Start the unit. If fan stops quickly again change/repair motor
Frost [1]	Valve not opening	• Defect actuator • Valve stuck	• Change/Repair actuator • Change/Repair valve
	No hot water	• Pump not working • Boiler problem	• Change/Repair pump • See boiler manual
Fire [2]	Return air temperature > 40°C	• Fire in the building	• Check reason for high temperature in return air duct
	Supply air temperature > 70°C	• After heating coil not working correct at low air volume • Fire in the unit	• Check heating coil controls
HP/ LP [3] Compressor	HP pressure over 24 bar	• Air volume too small • Blockage in cooling circuit • Outside temperature too high	• Check air volume • Check/repair cooling circuit • Reset pressure switch
	LP pressure under 1.5 bar	• Leakage in the cooling circuit • Evaporator iced up	• Repair cooling circuit • De-ice evaporator/check de-icing function

[1] If the frost thermostat is manual, you have to reset the thermostat before starting the unit. The thermostat is normally located on the upper deck of the unit near the heating coil.

[2] The fire thermostat must be reset before the unit is started again. Press the red button on the thermostat to reset. The thermostats are located in the exhaust (70°C thermostat) and supply (40°C) air.

[3] The HP pressostat has to be reset before the compressor can start again. The red reset button (1) is placed inside the unit, just above the compressor.



8.1 Disposal of the unit

Removal and disposal of the unit may only be performed by professionals.

All supply lines such as electricity and hot water must be shut down before decommissioning and dismantling the equipment. Make sure that no water-glycol mixture is leaking.

Empty the heating coil for the water-glycol mixture before removing it from the unit.

Empty the refrigerant circuit for oil and refrigerant before dismantling.

Recycle all material according to national rules and procedures to protect the environment.

9.1 Declaration of the unit

EU Declaration of Conformity

CE

Dantherm Air Handling A/S, Marienlystvej 65, DK-7800 Skive hereby declare that the unit mentioned below:

DanX 1 XD
DanX 1 HP
DanX 2 XD
DanX 2 HP
DanX 3 XD
DanX 3 HP

- complies with the following directives:

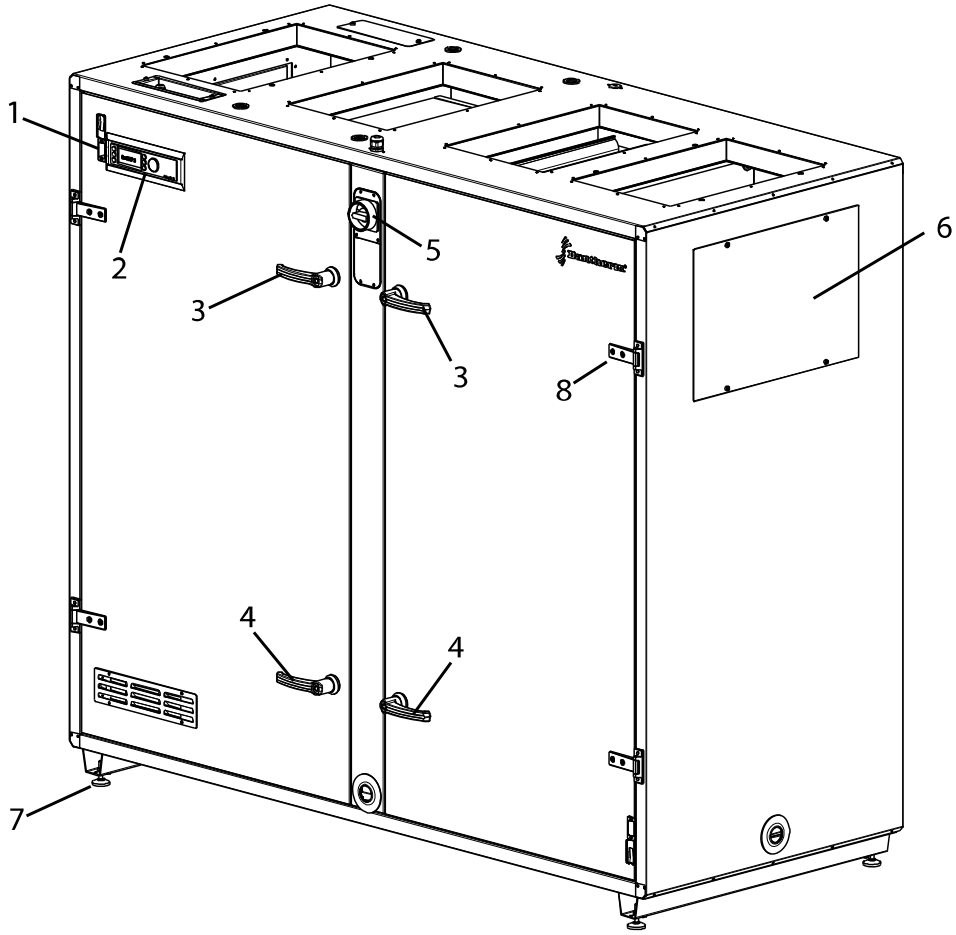
2006/42/EF ..... Directive on the safety of machines
2006/95/EC ..... Low Voltage Directive
2004/1 08/EF ..... EMC Directive
97/23/EEC ..... The Pressure Equipment Directive, class 1
2002/95/EEC ..... RoHs Directive
2002/96/EEC ..... Weee Directive
2004/12/EC ..... Packaging Directive

- and is manufactured in compliance with the following harmonized standards:

DS/EN ISO 12100 ..... Safety of machinery
EN 60204-1 ..... Electrical equipment of machines, Part 1: General requirements

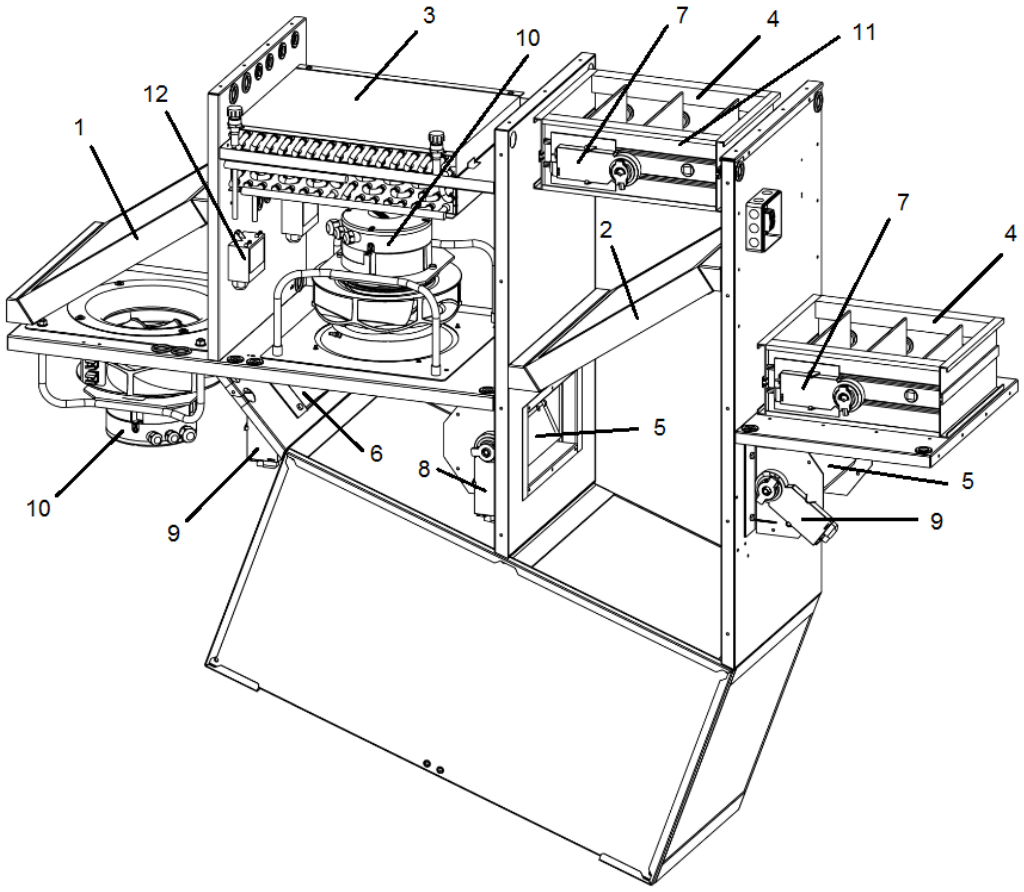
Skive, 26.08.2016

9.2 External spare parts



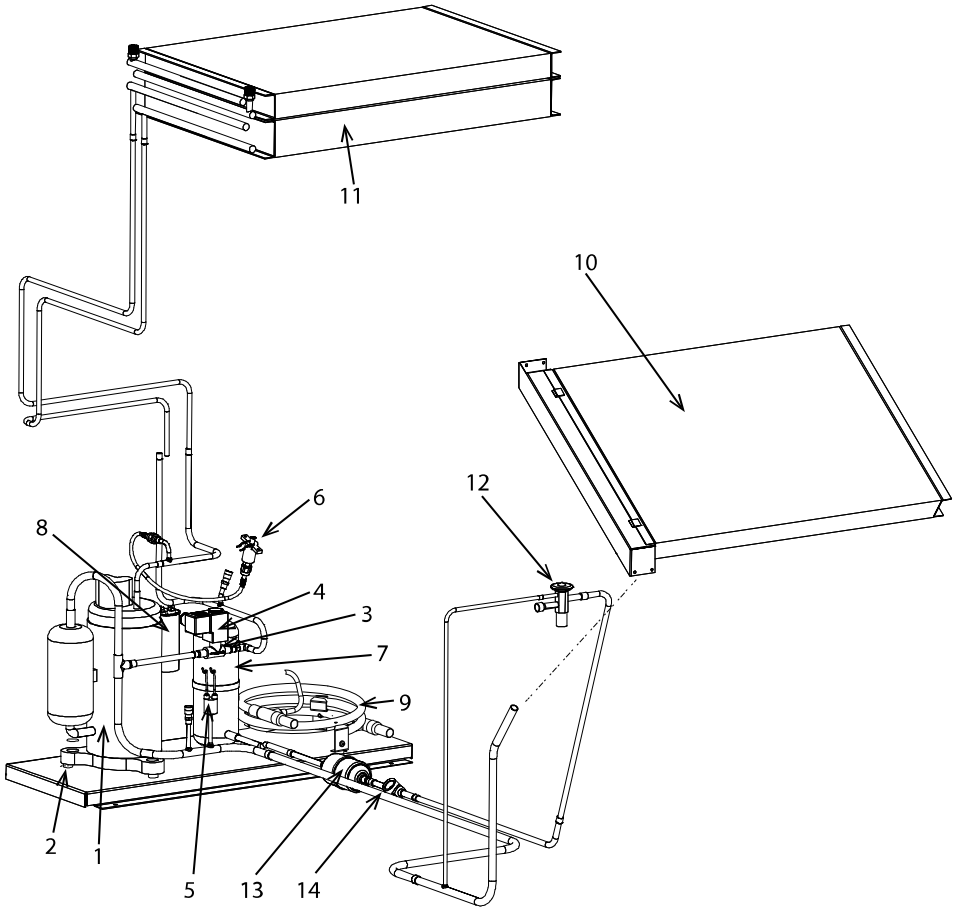
Pos.	DanX 1	DanX 2	DanX 3	Description
1	071014			RJ 45 connector
2	090680			MVC WEB controller
3	071016			Handle with key
4	071017			Handle without key
5	071019			Service breaker
6	093982	071020	081861	Duct cover panel
7	163068			Adjustable feet, 4. pcs.
8	071018			Door hinge, 1.pcs.
-	071022			Return duct humidity / temperature sensor
-	071023			Supply air duct sensor

9.3 Internal spare parts



Pos.	DanX 1	DanX 2	DanX 3	Description
1	093983	071024	081862	Return air filter M5 / ePM10 70%
2	093984	071025	081863	Outdoor air filter F7 / ePM1 55%
3	093995	071026	081864	2RR Heating coil
OR	093996	071027	081865	3RR Heating coil
4	093997	071028	081866	Fresh air / Exhaust air damper
5	093998	071029	071029	By Pass / Mixing damper
6	093999	093998	071029	Recirculation damper
7	071030			Duct damper actuator modulating
OR	071031			Duct damper actuator modulating spring / return
8	071032			By Pass damper actuator
9	071030			Recirculation / Mixing damper actuator
10	093986	071034	081867	Return / Supply air fan with motor
11	071035			Fresh air sensor
12	094721			Pressure transmitter

9.4 Spare parts, cooling circuit



Pos.	DanX 1	DanX 2	DanX 3	Description
1	036961	071036	081869	Compressor
2	071037		-	Vibration absorber for compressor, 1. pcs.
3	037136			Solenoid valve
4	077188			Coil for solenoid valve
5	071038			LP Pressostat, 1,5 bar
6	071039			HP Pressostat, 24 bar
7	071040		081870	Receiver
8	093987	071041	081874	Compressor running capacitor
9	-	071042		Water cooled condenser
10	093988	071043	081871	Evaporator
11	093989	071044	081872	Condenser
12	093990	071045	081873	Expansion valve
13	071046			Filter drier
14	071047			Sight glass
-	071035			Evaporator sensor

9.5 Technical data DanX 1

General

Air volume range high speed	m^3/h	500 – 1250
Air volume nominal	m^3/h	1000

Supply air filter		F7 / ePM1 55%
Exhaust air filter		M5 / ePM10 70%

Heating coil	RR	2 / 3
Coil connection	“	3/8

Drip tray connection	“	1

DanX 1 XD

Length	mm	1570
Width	mm	515
Height	mm	1750
Weight	kg	254

Electrical connection	V	1 x 230 + N
Max full load current	A	5.0
Max. power consumption	kW	1.2
Max. main fuse	A	10

DanX 1 HP

Length	mm	1570
Width	mm	515
Height	mm	1750
Weight	kg	279

Refrigerant	kg	1.0 / R407c
GWP		1653
PED		1

Electrical connection	V	1 x 230 + N
Max full load current	A	8.7
Max. power consumption	kW	1.9
Max. main fuse	A	10

9.6 Technical data DanX 2

General

Air volume range high speed	m^3/h	1000 – 2000
Air volume nominal	m^3/h	1750

Supply air filter		F7 / ePM1 55%
Exhaust air filter		M5 / ePM10 70%

Heating coil	RR	2 / 3
Coil connection	“	3/8

Drip tray connection	“	1

DanX 2 XD

Length	mm	1570
Width	mm	780
Height	mm	1750
Weight	kg	344

Electrical connection	V	1 x 230 + N
Max full load current	A	6.6
Max. power consumption	kW	1.5
Max. main fuse	A	10

DanX 2 HP

Lemgth	mm	1570
Width	mm	780
Height	mm	1750
Weight	kg	379

Refrigerant	kg	1.6 / R407c
GWP		1653
PED		1

WCC max flow	l/h	800

Electrical connection	V	2 x 400 + N
Max full load current	A	7.0
Max. power consumption	kW	1.6
Max. main fuse	A	10

9.7 Technical data DanX 3

General

Air volume range high speed	m^3/h	1500 – 3500
Air volume nominal	m^3/h	2750

Supply air filter		F7 / ePM1 55%
Exhaust air filter		M5 / ePM10 70%

Heating coil	RR	2 / 3
Coil connection	“	3/8

Drip tray connection	“	1

DanX 3 XD

Length	mm	1920
Width	mm	890
Height	mm	2250
Weight	kg	465

Electrical connection	V	1 x 230 + N
Max full load current	A	12.2
Max. power consumption	kW	2.9
Max. main fuse	A	16

DanX 3 HP

Length	mm	1920
Width	mm	890
Height	mm	2250
Weight	kg	500

Refrigerant	kg	4.0 / R407c
GWP		1653
PED		1

WCC max flow	l/h	800

Electrical connection	V	2 x 400 + N
Max full load current	A	12.6
Max. power consumption	kW	2.9
Max. main fuse	A	16

Dantherm A/S
Marienlystvej 65
7800 Skive
Denmark
service@dantherm.com

090650

Dantherm®
CONTROL YOUR CLIMATE