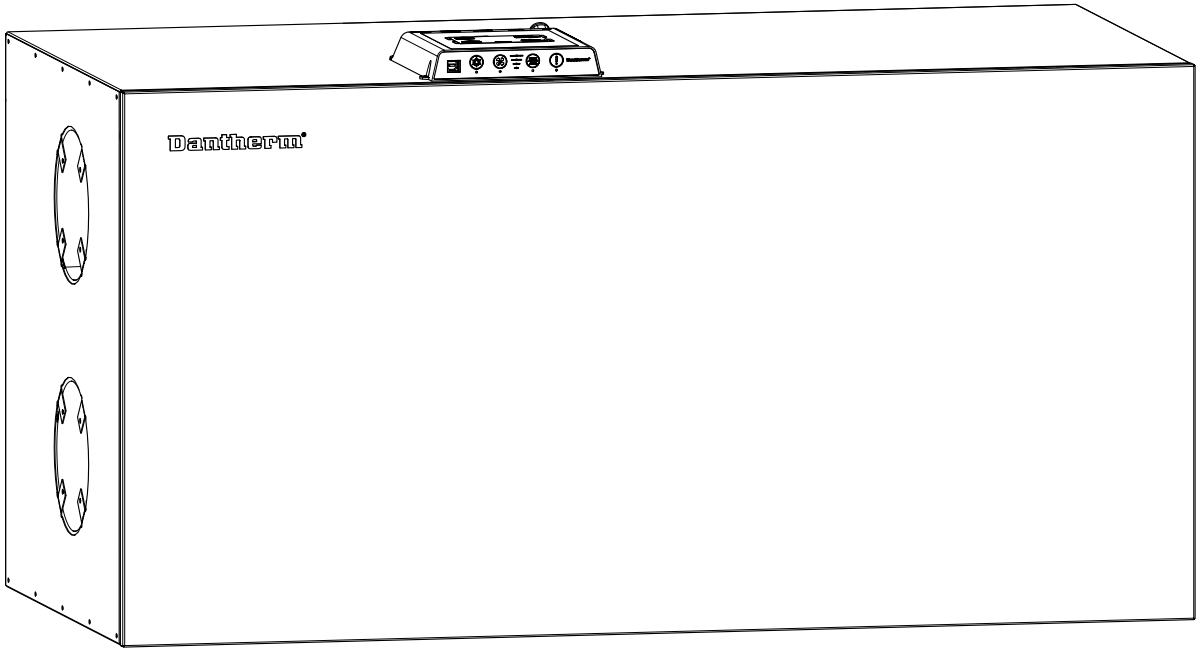
Dantherm®
CONTROL YOUR CLIMATE

MANUAL

HCH 5 MKII



Dantherm CLIMATE SOLUTIONS

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Table of contents

This manual covers the following topics:

USER MANUAL

INSTALLATION & SERVICE MANUAL FOR PROFESSIONALS

Introduction

About this Manual

Target group

This is the manual for the Dantherm residential ventilation units HCH5 MKII.
The manual contains information targeted at:

- Product users
- Professionals such as installers and service technicians

This manual is intended for both installers and users of the product.
Installation and repair of the unit must be carried out by qualified personnel only. It is the responsibility of the installer to read and understand this service manual prior to initial start and setup of the HCH unit. The warranty is limited to devices installed by trained personnel.

The USER MANUAL contains information that may be relevant to professional technicians.
The INSTALLATION & SERVICE MANUAL is intended for trained personnel only.

The appliance shall be installed in accordance with national wiring regulations.

NOTE The equipment is intended only for indoor use.

Guide, part no. Part number of this manual is 112513

Reservations Dantherm reserves the right to change and improve the product and manual at any time without prior notice or obligation.

Abbreviations in this manual

This manual uses the following abbreviations in connection with ventilation terminology.

Abbr.	Description
T1	Outside air enters the unit
T2	Supply air from the unit into the home
T3	Extract air from home to unit
T4	Exhaust air from the unit
ISO Coarse 75%	Standard air filter according to ISO 16890. Corresponds to G4 filter according to EN 779 (outdated standard)
ePM1>50%	Pollen filter according to ISO 16890 - absorbing finer particles than ISO Coarse 75%. Corresponds to F7 filter according to EN779 (outdated standard)
BP	Bypass damper (makes it possible to supply fresh filtered air to the dwelling without heat recovery in heat exchanger)
IP	Unique address for Ethernet port.
DHCP	Automatic setting of an Ethernet address supplied by an external network component (if the device is connected to the Ethernet)
PC	Personal computer running MS Windows
USB	Universal serial bus connection
LAN	Local area network
WAN	Wide area network (Internet)
BMS	Building Management System
PCB	Printed Circuit Board
FFC	Flat Flexible Cable

Symbols in this manual

The following symbols are used in this manual to draw attention to hazards and additional information of particular relevance.

Category	Symbols Used	Risks/ meaning
General warning symbols	 WARNING	Risk of serious injury.
	 CAUTION	Risk of minor or moderate injury or damage to property.
Specific warning symbols	 WARNING	Risk of serious injury due to sharp elements/ edges.
	 WARNING	Risk of serious injury as e.g. electric shock due to electricity.
	 WARNING	Risk of serious injury due to hot surfaces
General note	 NOTE	Further tips and information regarding the use of the device.
Mandatory action signs		Read and understand this service manual
		Disconnect mains plug from electrical outlet
		Wear gloves

The warning and caution symbols are described as follows:


WARNING
CAUTION

Type and source of hazard
Further clarification, if applicable.

- Measures to remedy the hazard or immediate measures if the risk becomes acute are described in this way

Recycling

This unit is designed to have a long life. At the end of its useful life, the unit should be recycled in accordance with national regulations, with particular regard to the protection of the environment.

Declaration of conformity

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Dantherm CONTROL YOUR CLIMATE

Declaration of Conformity

Residential Ventilation

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Declaration of following products:

Product name:	**Dantherm HCH5 (all variants included)**
Product no.:	**352426**

The product is in conformity with the following directives:

2014/35/EU	Low Voltage Directive
2014/30/EU	EMC Directive
2014/53/EU	RED
2009/125/EC	Eco Design Directive (incl. Regulation 2014/1253)
2011/65/EU	RoHS Directiv (incl. Directive 2015/863)
1907/2006/EC	REACH Regulation

and is manufactured in conformity with the following standards:

EN 60335-1:2012	Household and similar electrical appliances - Safety - Part 1 (+AC:2014 + A11:2014 + A13:2017 + A1:2019 + A2:2019 + A14:2019)
EN 60335-2-40:2003	Household and similar electrical appliances - Safety - Part 2-40 (+A11:2004 + A12:2005 + A1:2006 + AC/2006 + A2:2009 +AC:2010 + A13:2012 + A13/AC:2013)
EN 61000-3-2:2014	Electromagnetic compatibility (EMC) - Part 3-2
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) - Part 3-3
EN 61000-6-2:2005	Electromagnetic compatibility (EMC) - Part 6-2 (+AC:2005)
EN 61000-6-3:2007	Electromagnetic compatibility (EMC) - Part 6-3 (+A1:2011 + A1/AC:2012)
EN 60730-1:2011	Automatic electrical controls for household and similar use - Part 1
EN 62233:2008	Measurement methods for electromagnetic fields of household appliances
EN 55014-1:2006	Electromagnetic compatibility - Requirements for household appliances - Part 1
EN 55014-2:1997	Electromagnetic compatibility - Requirements for household appliances - Part 2
EN 301 489-1 V1.9.2	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1
EN 301489-3 V1.6.1	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3
EN 300 220-1 V2.4.1	ElectroMagnetic compatibility & Radio spectrum Matters (ERM); Short Range Devices
EN 300 220-2 V3.1.1	ElectroMagnetic compatibility & Radio spectrum Matters (ERM); Short Range Devices
EN 13141-7:2010	Ventilation for buildings - performance testing of components/products for residential ventilation
EN 63000:2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Skive 28/03, 2022

Product manager Muhamed Ziga

Managing director Jakob Bonde Jessen

Dantherm CLIMATE SOLUTIONS

USER MANUAL

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Introduction

Overview

Target group

This part of the manual, entitled the USER MANUAL, is intended for users of the product.
All instructions described in the INSTALLATION & SERVICE MANUAL FOR PROFESSIONALS must be carried out by trained technicians.

Serial number

For any future inquiries regarding e.g. spare parts we kindly ask you to make a note of the serial numbers of the units here: _____
This guide covers HCH5 MKII.

WARNING

This device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, unless they are under supervision or have been instructed in the use of the device by a person responsible for their safety.
Children should be supervised to ensure that they do not play with the appliance.
Apart from replacing air filters and cleaning the system externally, all maintenance must be carried out by trained personnel. .

WARNING

The ducting system must not be mounted until the unit is ready to operate. The power must not be connected until the ducting system has been mounted.
The ventilation unit should not be used to dry newly built houses during construction or immediately after construction.
The ducts must be dimmed and the units must not be connected until the house is ready for occupation, which means that the house is clean and dry. This is to prevent any construction dust and condensed water from depositing in the ducting system and to prevent any sanitation inconveniences from the ventilation units later on.
If above mentioned warnings are disrespected, the warranty of the unit will be annulled and any kind of maintenance will be done at the customers own expense.

Safety precautions

It is important to know the correct operating procedure for the residential ventilation system and all its safety measures. Dantherm accepts no liability with regard to lost business or personal injury as a result of non-compliance with safety measures.

Operation

Control panel - overview

Interface

The control panel has four buttons (two on the left side and two on the right side) with corresponding LEDs underneath. An LED light with four levels indicating the fan speed is situated in the middle. It will always indicate the current fan speed regardless of the operating mode.

This illustration shows an overview of the different modes (three main modes and three temporary override modes) and other functions that can be displayed in the control panel and activated via the buttons.

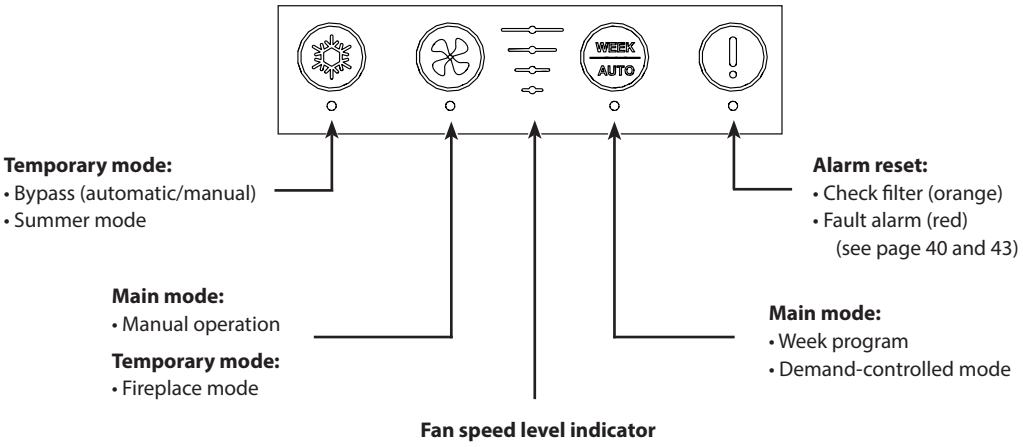

Fig. 1

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Main operating modes

CAUTION

Risk of water damage

- The ventilation system must always be operating!
- Besides the four hours where the unit can be stopped by the control panel, it is not advisable to stop the unit. This may cause condensation and subsequent leaks from the duct system and in the ventilation unit with the risk of water damage in the building construction, damages on the unit and sanitary problems.
- Hence it is not advisable to stop ventilation – also during longer holidays. If necessary, turn the unit to Fan Step 2 or 1 in Manual Operation instead.

Function

The unit supplies fresh outside air into the house.
Polluted and moist air is evacuated out of kitchen, living room, bathroom etc. and led through the unit. The heat exchanger uses this air to heat up new, fresh air, before the fresh air is supplied into the house.

Introduction

Decide which of the three main operating modes you want your HCH5 MKII to run in and adjust the settings as desired via Dantherm PC Tool, Dantherm Residential app or HRC3 remote control. Please note, however, that legislation may prescribe minimum levels of ventilation speed.

Manual operation

Check the fan speed manually. In manual operating mode, the ventilation unit will run at the selected ventilation speed until this is changed manually.

Short press – activates manual operating mode. Each time the button is pressed, the fan speed is increased by one level (level 0–4). After level 4, the fan speed will start from level 0 again.

- **NOTE:** If the unit is running in manual operating mode - level 4 (fan boost) or level 0 (off) it will automatically return to level 3 (nominal mode) after four hours. The function of the auto setback can be customized via PC Tool.
- The fan speed at level 0 can be locked via PC Tool. When level 0 is locked, the fan speed will jump from level 4 to 1 as it increases.

Active manual operating mode is indicated by constant light in the corresponding LED

Week program

When the week program is activated, the unit will automatically adjust the ventilation speed according to a predefined week schedule.

You can activate the week program via the control panel on the unit, but you cannot choose which week program you want to run. Selection between the 11 weekly programs (10 set programs + one adjustable in PC Tool) can only be done using the Dantherm app, the HRC3 remote control or a text for which program is selected/set by default.

Short press – activates the selected weekly program.
The active weekly program is indicated by a constant light in the corresponding LED

Demand-controlled mode

Enable demand-controlled operation for automatic control of indoor air quality. This mode uses readings from VOC, RH and/or CO_2 sensors to control the indoor air quality. It is therefore necessary for the associated sensors to be connected during demand-controlled operation. The CO_2 sensor can only be connected via an installed Accessory Controller (HAC).

Long press (five seconds) - activates demand-controlled operation.
Active demand-controlled operation is indicated by a slow flashing light in the corresponding LED every 5 sec.

Temporary modes (override)

Introduction

The temporary modes are activated manually, except for the automatic bypass, and will temporarily override the settings for the selected main mode. The temporary modes are automatically stopped by a timer, but they can also be deactivated manually (except for the automatic bypass).

Bypass mode (Free cooling)

The purpose of bypass is to cool down the house by leading the cold outside air flow directly into the house avoiding it is heated up in the heat exchanger.
During normal operation (when manual bypass is not activated) the unit cools down by the means of automatic bypass control, when the inside as well as the outside tempera-tures allows it, which is the reason why in most cases manual bypass is not necessary.
In houses with large fronts of glass facing south, which causes a large amount of heat-ing, it can be necessary to activate manual bypass in the early spring or in the autumn, because the automatic bypass does not automatically activate refrigeration with outside air since the outside temperature is below 15 °C.
When using manual bypass the unit supplies cool outside air directly to the house for six hours. Information regarding set points for manual and automatic bypass is found in the installation guide.
Bypass mode opens the bypass damper, which directs the airflow around the heat exchanger. The outdoor air will thus be supplied to the house without heat recovery. Bypass mode can be activated in two ways:

- Automatic bypass
- Manual bypass

Automatic bypass

The automatic bypass opens/closes the bypass damper automatically when the conditions for automatic bypass are met.
You can change the setpoints for min. outdoor temperature (Tmin) (default setting: 15°C) and max. indoor temperature (Tmax) (default setting: 24°C) via PC Tool or the Dantherm HRC3 remote control.

If the conditions for automatic bypass are present, an open damper is indicated by a constant light in the corresponding LED

NOTE

Mandatory conditions for allowing activation of automatic bypass:

- Outdoor air temperature is at least 2 °C lower than the exhaust air temperature
- AND the outdoor temperature is higher than the setpoint (Tmin)
- AND the exhaust air temperature is higher than the set point (Tmax).

If one of the following conditions is met, the bypass will be deactivated:

- Outdoor air temperature is higher than the exhaust air temperature
- Outdoor air temperature is at least 2°C lower than setpoint (Tmin)
- Exhaust air temperature is at least 1 °C lower than setpoint (Tmax)

Energy wasting:
If the bypass temperature settings are set too low, there is a risk that the unit will open the bypass while the central heating system in the house is active.

NOTE

When the automatic bypass is active in the demand-controlled mode the air volume will be adjusted according to the actual cooling need which is decided by the exhaust temperature.

Manual bypass

If bypass/cooling is desired and automatic bypass is not active, the bypass can be activated manually.
The bypass will open if the conditions for manual bypass are met within the defined time period (default setting is six hours). The time period can be changed via PC Tool.

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Short press – activates/deactivates manual bypass mode.
Active bypass mode (open damper) is indicated by constant light in the corresponding LED.
NOTE: If bypass mode is activated, but the conditions for open bypass damper are not present, the activated bypass mode will not be visible from the LED.

NOTE Mandatory conditions for allowing activation of manual bypass (all conditions must be present at the same time. The bypass will otherwise be deactivated):

- Outdoor air temperature is at least 2 °C lower than the exhaust air temperature
- AND outdoor temperature is higher than 9 °C

Summer mode

When summer mode is active, this will stop the supply air fan and only the extract air fan will be in operation. In this case, a fresh air supply can be ensured by opening windows, doors, etc.
NOTE: Summer mode will be deactivated automatically when the outdoor temperature drops below 14 °C.

Long press (five seconds) - activate/deactivate summer mode
Active summer mode is indicated by a flashing light in the corresponding LED

Fireplace mode

Activation of the fireplace mode can be used when you light up the stove. The unit will then run with positive pressure for seven minutes to prevent smoke in the living room. If the fireplace mode is not deactivated manually, it will automatically stop after seven minutes.
d: The fireplace mode is only activated as long as the supply air temperature is above 9 °C.

Long press (five seconds) - activates/deactivates fireplace mode.
Active fireplace mode is indicated by flashing in the three fan speed LEDs

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Maintenance and care

Inspection of the filter

Introduction

Preventive maintenance is necessary at regular intervals if the unit is to operate efficiently and optimally without unintended stoppages, and to ensure the expected service life of at least 10 years.
It is important to notice that intervals between filter maintenance can vary according to the specific environment, and that moving parts are wearing parts, and will need replacement when worn.

The factory warranty only applies if it can be documented that regular preventive maintenance has been carried out as prescribed. The documentation can be a written logbook containing a company stamp or equivalent.

Filters

The purpose with the filters is to remove dust and other impurities from the outside air before it is supplied into the house, and to protect both the heat exchanger and the fans from any dirt and impurities coming from the house.
As a standard the unit is delivered with G4 filters on both the supply air and the extract air sides. It is possible to buy F7-pollen filters (accessories) for the supply air, which strains even more, especially suited for people with pollen allergy.
The filters must be changed at regular intervals, more information regarding change of filters in the section "Preventive maintenance", on page 14.

Summary of intervals

The filters are the only parts that the user can maintain himself.
Maintenance of the filter must as a minimum be carried out as shown here:

Interval	Task	To be carried out by:
Six months	Check filters. Replace if necessary	User
Annual	Change filters	User

Other components must be inspected at least every second year by trained professionals (see page 39). Remember to contact a trained professional for a service check regularly.

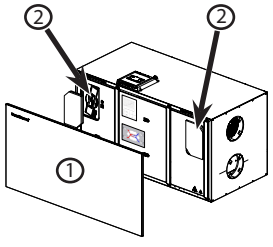
Filters - alarm and inspection (6 months - 1 year)

The unit has a built-in timer for its filter alarm (every six months as standard). The timer period for the filter alarm can be changed via the remote control or PC Tool, or it can be reset via the alarm button

When the timer expires, a filter alarm is triggered. A buzzer will sound and the LED "!" will light up orange. (if the LED lights up red, please see Troubleshooting section on page 52.


Press for 5 sec. Resets the filter alarm when the alarm is triggered.
Resets the filter timer without the timer having expired.

A short beep will sound, indicating that the filter alaram has been reset correctly.

Step	Action	Illustration
1	Disconnect the power to the unit	
2	Remove the front door (1)	
3	Remove the insulating cover plates in front of the filters. (2) Note that the smooth side of the sheet must be turned towards the front door.	

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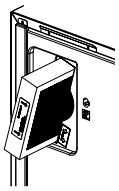
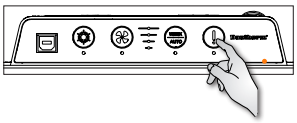
4	Change the filters and discard the old filters in an environment-friendly way (flammable material). Note the arrows on the filters – they must point down! **The filter opening areas are for filters only!**	
5	Set back the filter insulating cover plates. It is important that they face the hard, side outwards and the soft side inward.	
6	Reconnect power supply	
7	When the filters have been replaced, the filter alarm must be reset by pressing the alarm button for 5 seconds. A short beep will sound, indicating that the filter alarm has been reset correctly.	

Cleaning

Keep the unit clean to ensure perfect operation and good hygiene.
If the unit is soiled, e.g. around filter openings, clean with a firmly wrung dishcloth with tepid water and detergent.

Important: Chemical solvents are not allowed!

Terms of warranty

The factory warranty is only valid when preventive maintenance can be proven. Preventive maintenance must be carried out with a minimum interval of six months.
Documentation of maintenance should be a written log/journal. Regarding which services needed, see the section "Preventive maintenance" in the installation guide.

INSTALLATION & SERVICE MANUAL FOR PROFESSIONALS

Introduction

Overview

Target group

This part of the manual, titled INSTALLATION & SERVICE MANUAL, is intended for qualified personnel only.

Safety precautions

It is important to know the correct operating procedure for the residential ventilation system and all its safety measures. Dantherm accepts no liability with regard to lost business or personal injury as a result of non-compliance with safety measures.

Risk of injury

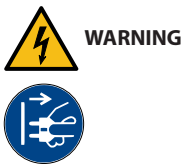
- Installation and repair of the unit must be carried out by qualified personnel only.
- It is the responsibility of the installer to read and understand this service manual prior to initial startup and setup of the HCH unit.

Risk of damage to equipment or property or personal injury

- The HCH MUST be earthed with cables WITH earth wire and an earthed power supply.

Risk of water damage

- Never turn off the ventilation unit to save energy, as this may cause condensation and subsequent leaks from the duct system, with the risk of water damage.



Injury caused by electric shock and risk of damage to the device

Disconnect mains plug from electrical outlet before you perform one of the following actions:

- remove the front cover
- open into the main PCB
  (eg. in order to change operating mode using the A-B function switch)
- install, maintain, repair or dismantle the unit

Transport and unpacking

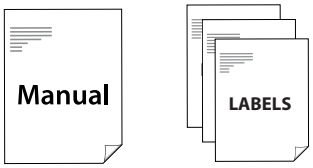
Unpacking

Check for transport damage

Step	Action
1	Report any obvious damage to the carrier, packing company, postal service, etc. immediately after delivery, and note the damage in the consignment or transport documents.
2	Remove the packaging completely (**without using a knife**) and dispose of the material according to local regulations.
3	Check the contents of the box:
4	If transport damage is detected after unpacking the device or if the delivery is incomplete, contact the responsible sales representative or specialised distributor immediately.

Content of the box

Scope of delivery:

Quantity	Description	Illustration
1	HCH Unit	
1	bag incl. • 1 x manual • Labels, data sheets, etc. • 1m drain hose	

Product description

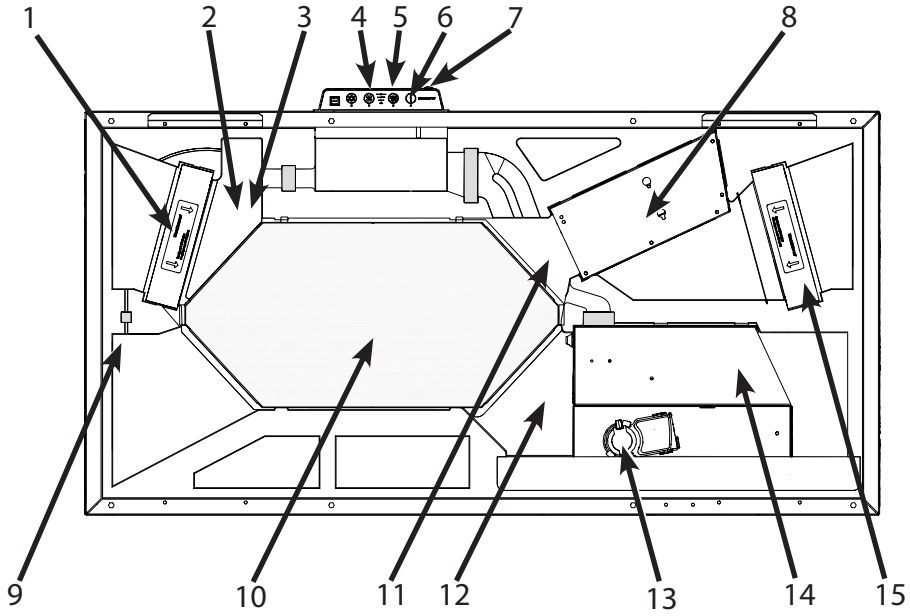
General description

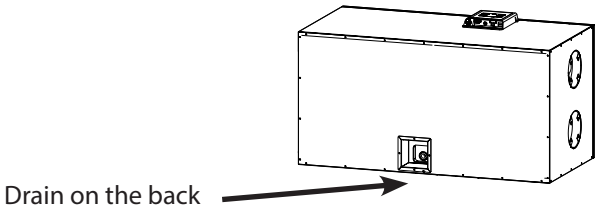
Introduction

The HCH product range from Dantherm is a residential ventilation system designed to supply homes with fresh and filtered air, and where the heat in the extract air is transferred to the supply air without mixing the two airflows. This results in energy-efficient ventilation with low heat energy loss.

These units are designed to be installed in environments with temperatures >-12 °C. The compact design allows the HCH unit to be placed in e.g. utility rooms with only a little space or in the attic.

Product illustration





1	Exhaust filter (G4)	9	Temperature sensor, T2
2	Temperature sensor, T3	10	Heat exchanger
3	Humidity sensor	11	Temperature sensor, T1
4	Data plate	12	Temperature sensor, T4
5	Control	13	Bypass module
6	Reset button for filter timer	14	Exhaust fan module
7	Connection of power	15	Supply air filter (G4/F7) G4 filter is standard, F7 filter for pollen is accessory
8	Supply air fan module		

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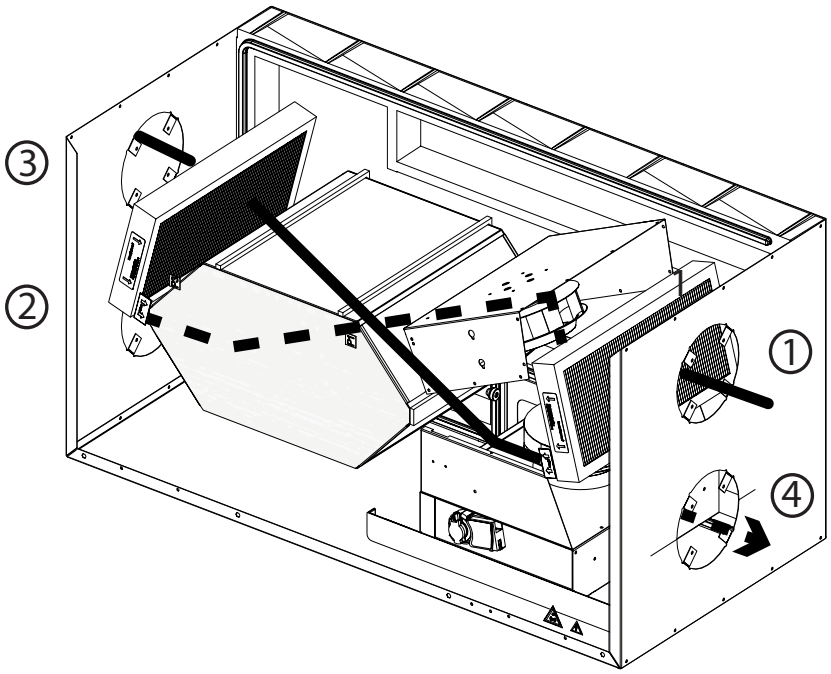
Product description, *continued*

Air flow

The following describes and illustrates the air flow in a HCH5 MKII:



1	Outdoor air (T1)	Outdoor air which enters the heat exchanger is ready to be heated by the extract air from the house. (3)
2	Supply air (T2)	The supply air is heated by the means of heat transfer from the extract air. (3)
3	Extract air (T3)	Stale and warm extract air is used to heat up the outside air (1) by the means of heat exchange in the heat exchanger.
4	Exhaust air (T4)	The exhaust air is led out of the house.

Component descriptions

Introduction

This section describes the individual components of the HCH units included in the standard delivery.

Cabinet

The external parts of the cabinet are made of aluzink sheet metal. The internal parts of the cabinet are made of polystyrene (EPS). Accessories are installed after the steel front have been removed. The cabinet is sound and heat insulated with fire retardant polystyrene foam. The unit is designed for installation in locations with ambient temperatures ranging from -12 °C to 45 °C.The unit is designed for installation in locations with ambient temperatures ranging from +12 °C to 45 °C.

Filters

The unit is equipped with an ISO Coarse 75% filter as standard. These filters protect the heat exchanger and improve the indoor climate by filtering dust and other particles from the air. An ePM1>50% filter (pollen filter) is available as an accessory. The pollen filter is always located on the outdoor - see also page 16.

Heat exchanger

In the counterflow heat exchanger, heat energy is transferred from the extract air to the supply air, thus saving energy for heating.

Fans

The supply fan brings fresh air from outside through the heat exchanger to the ventilated rooms inside.
The extract air fan extracts stale humid air from the wet rooms in the dwelling.

Bypass damper

The motorised bypass damper overrides the heat exchanger functionality. It is used in summer in warm conditions where the cooler outdoor air can be used to reduce the indoor temperature when the indoor temperature exceeds an upper temperature limit.

Condensate drain and drain hose

The unit is equipped with an outlet for condensate.
It must be connected to the drain hose, so that condensate can be led to a drain.

Humidity sensor

The humidity sensor will continuously monitor the quality of the extract air and adjust the airflow accordingly. This mode of operation is called demand-controlled mode. If an HRC Remote Control is connected, the level will be shown in the display using the Level 3 icon. Demand-controlled operation will result in the correct ventilation level with the lowest possible power consumption.

Control panel

The control panel located on the front of the unit shows the operating mode and the fan speed level in which the HCH is running. Both can be selected and changed via the control panel. The control panel also has other functions as e.g. reset of filter alarm.

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Accessories

Introduction

The unit is supplied without mounted accessories.
If additional functionality is requested, an accessory must be installed prior to the first installation of the unit or, alternatively, after commissioning.

Electrical preheating

The unit can be equipped with an electrical preheating element that preheats the incoming air. The preheater increases the outside air temperature before entering the heat exchanger, and thereby reduces the risk of ice in the heat exchanger in very cold conditions.

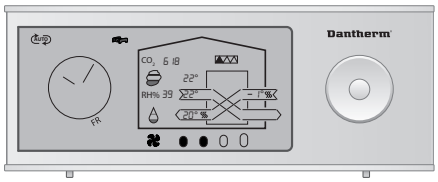
Accesory	Illustration	Description	Item no.
Water trap		Ensures a safe drain connection	062737
Heater cable		3 m heater cable, 230 V, incl. thermostat, approx. 10 Watt/meter	064807
Reheating coil (water)		Reheating coil, complete set, Ø 125. Controlled from HAC 1.	063843
		Reheating coil, complete set, Ø 160. Controlled from HAC 1.	063851
		Reheating coil, complete set, Ø 250. Controlled from HAC 1.	063852
Transformer		Transformer 230/240 C, complete set	066620

Heating coil

Accesory	Illustration	Description	Item no.
Pre/re heating kit (electrical)		Pre/re heating kit, 900 W, Ø 125 mm, 0-10 V controlled. Controlled from HAC 1	063898
		Pre/re heating kit, 1200 W, Ø 160 mm, 0-10 V controlled. Controlled from HAC 1	063899
		Pre/re heating kit, 1800 W, Ø 250 mm, 0-10 V controlled. Controlled from HAC 1	063900
		Pre/re heating kit, 900 W, Ø 125 mm, stand alone	063853
		Pre/re heating kit, 1200 W, Ø 160 mm, stand alone	063854
		Pre/re heating kit, 1800 W, Ø 250 mm, stand alone	063855

The water heating coil is controlled by the control unit (accessory).
The water heating coil increases the supply air temperatur

Handheld remote control (HRC 3)

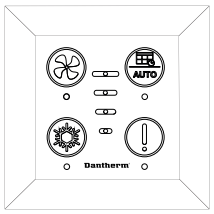


Adjust the ventilation and keep track of the home's humidity and temperature using the large LCD screen on the handheld remote control.

Activate cooling function/bypass. Select the steps for manual ventilation or relevant weekly programs or set the controller to automatic control.

The remote control can communicate with an HCH unit at a distance of up to 30 metres. The remote control can be placed on horizontal surfaces or hang on the wall.

Wired remote control (HCP 11)

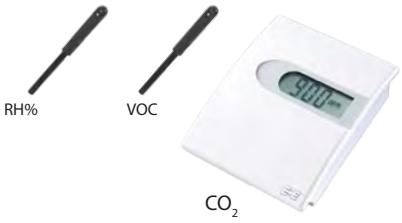


A wired remote control (HCP 11) without display can be connected to the unit if the unit's location makes it difficult to reach the control panel.
The HCP 11 provides the same functionality as the control panel.

Optional control unit (HAC 2)

Additional accessories can be connected to the HCH unit via an accessory controller: HAC2

VOC, humidity and CO_2 sensor

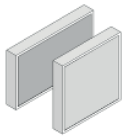


The unit can be equipped with a VOC (air quality) or CO_2 sensor. Mounted sensors will continuously monitor the extract air and adjust the airflow accordingly. This mode of operation is called demand-controlled mode. If an HRC Remote Control is connected, the level will be shown in the display using the Level 3 icon.

Demand-controlled operation will result in the desired ventilation rate with the lowest possible electricity consumption.

Filters

Replacement filters in sets of two standard filters (ISO Coarse 75%) or of one standard filter plus one ePM1>50% (pollen filter).

Accesory	Illustration	Description		Item no.
G4 filter set		Standard filter, delivered in package with two pcs.	HCH 5 HCH 8	063470 063471
F7 pollen filter set		Superfine filters which filters smaller particles e.g. pollen. Two piece of F7 is delivered with one piece of G4.	HCH 5 HCH 8	063448 063449

en

Electronic control

Function

The main control system for the unit is located on the main PCB together with other outputs and inputs.
The control panel with LED display is connected to the main PCB with a flat cable.

Illustration

This illustration shows the general architecture of the system control:

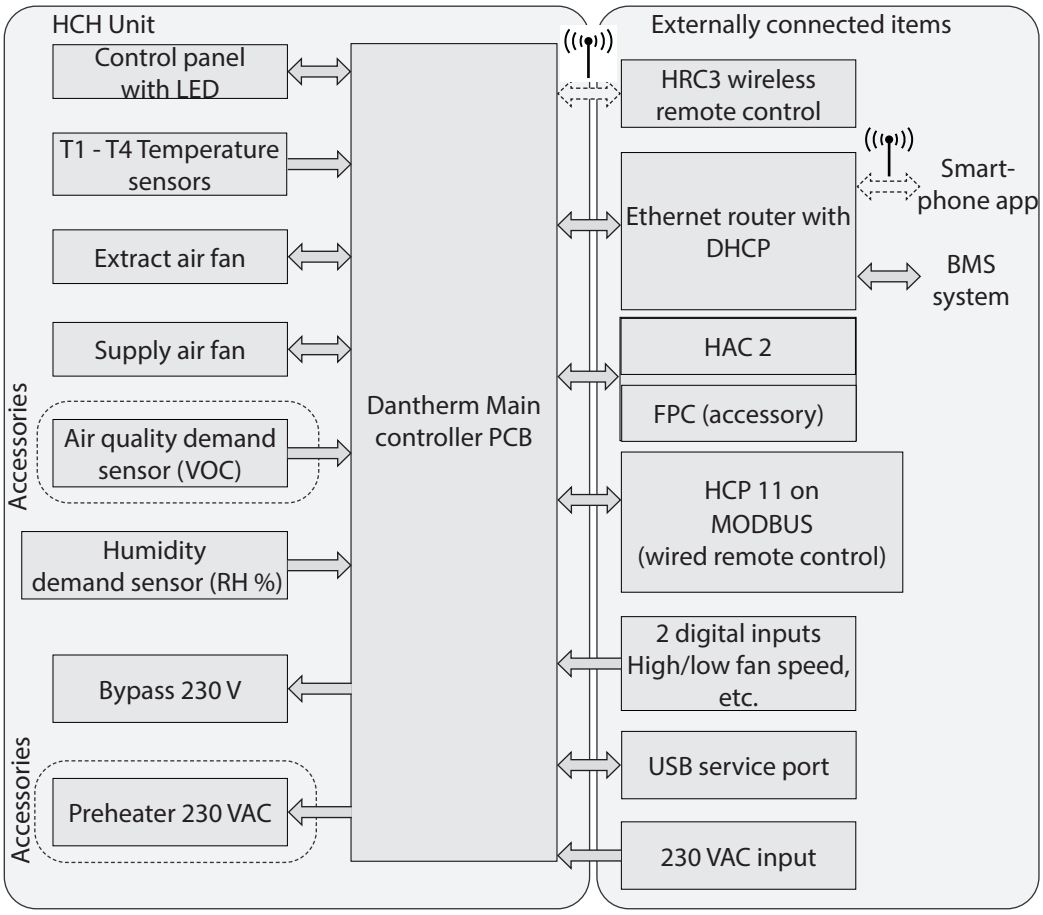


Fig. 2

Illustration of unit's control area

This illustration shows the main PCB and the control panel on the HCH5 MKII.

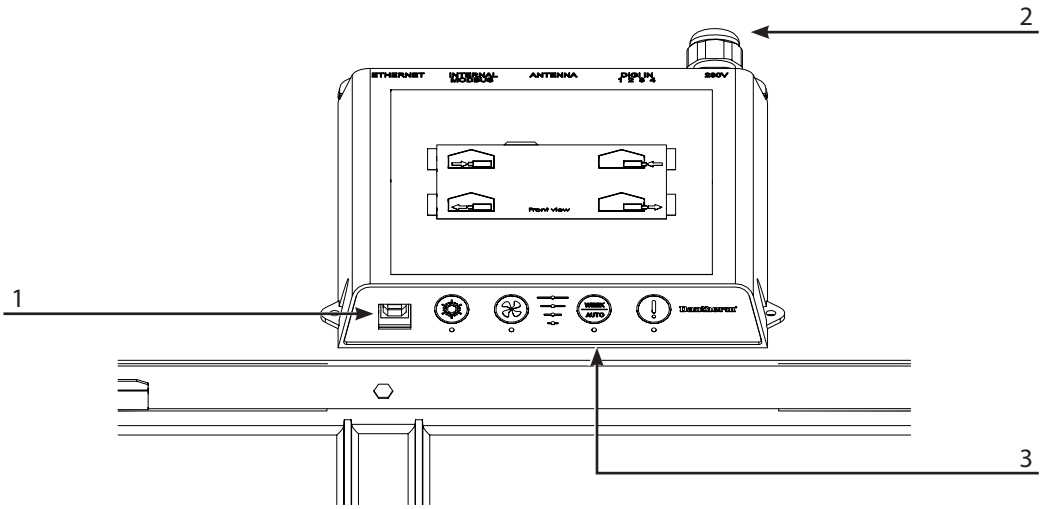


Fig. 3

Loc.	Part
1	USB connection for: • Use of PC Tool for calibration purposes, software update, change of settings, etc. • Readout of error list
2	Power and external connections
3	Main PCB (inside the housing) and control panel.

External connections (Main PCB)

This drawing shows the external connections of the main PCB. Further explanations of how to use the external connections can be found in the section "External connections" on page 38. See also the wiring diagram on page 52, when connecting to the different ports.

Available ports:

- **Dig in:** External digital input, to select specific operations.
- **Antenna:** Wireless connection point for product-specific remote control - HRC3
- **Modbus:** Modbus RTU connection is for internal communication between unit and Dantherm accessories (HAC2 + HCP 11 + FPC) only.
- **Ethernet:** LAN connection

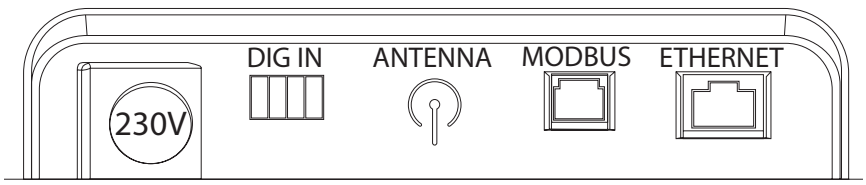


Fig. 4

en

Accessing the main PCB

Introduction

Depending on the installation site and your preferences, you have three options of accessing the main PCB (see in this section).

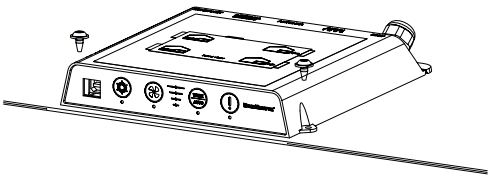
WARNING

Injury caused by electric shock and risk of damage to the device

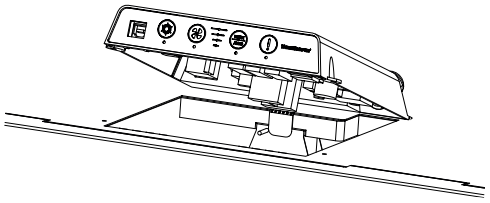
- Always ensure that the mains plug is disconnected from the electrical outlet before getting access to the main PCB.

Option 1

Tilt the housing



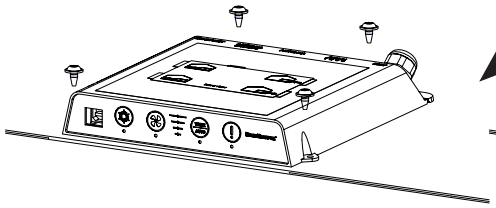
Release the two screws at both sides of the housing.



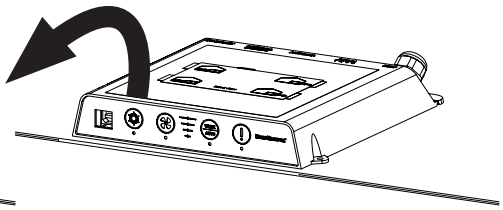
Tilt the housing up in order to get access to the main PCB.

Option 2

Disassemble the complete housing



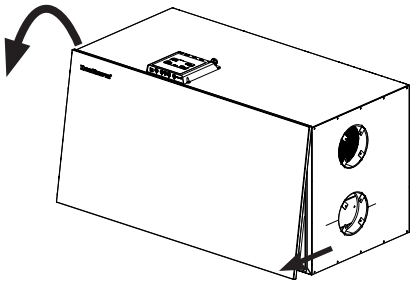
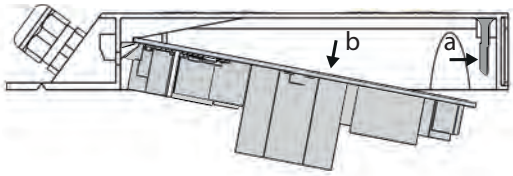
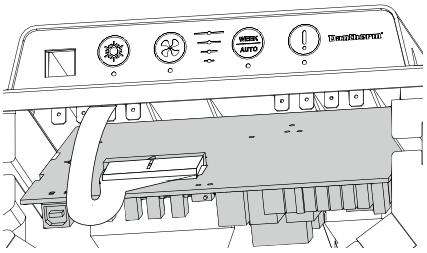
Disassemble the housing from the unit by releasing the four screws.



Turn around the housing in order to get access to the main PCB.

Option 3

Access to the main PCB through the inside of the unit

Step	Action	Illustration
1	Release the three magnets from the front at the bottom of the unit and remove the front cover.	
2	Behind the control panel you find a pin/ lock, which keeps the main PCB in place. a) Push in the pin/ lock in order to b) release the main PCB from the housing.	 

Control system strategy

Introduction

This section describes the control system strategy under different conditions.

Preheat

If a preheater is installed, the unit can add electrical heating to T1 outdoor air to reduce defrosting situations and increase the supply air temperature. However, in situations where the preheater is not able to keep the heat exchanger frost proof, the unit will start defrosting.

- Preheating is controlled according to a complex algorithm where, e.g several sensors are involved. They constantly measure the temperatures, while the system limits the energy consumption to a minimum.
- The outdoor air is raised just enough to maintain the air flow and avoid defrosting if possible.
- The preheating effect will increase/decrease by 10% every 60 seconds depending on temperature conditions.

The set points for the temperatures during operation with an active preheating surface are fixed and cannot be changed.

Defrosting mode

In cold conditions where T1 outdoor air is below -3 °C, and condensate could build up ice in the heat exchanger, the unit will start defrosting.

NOTE

The defrost operating mode is a safety mode, and during defrost the unit cannot switch to another operating mode until the defrost has ended. When defrosting is active HRC 3 will show "dEF" in the display.

There are two different defrosting strategies:

1. No fireplace in house (default setting)
2. Fireplace in house

You can change the defrosting strategy via PC Tool. However set points for defrosting cannot be changed.

Default defrosting strategy

1. No fireplace in house is the default defrosting strategy:

- The supply air fan speed will slowly decrease until the minimum RPM is reached
- After 10 seconds, the supply air fan will stop completely while the extract air fan continues to run continuously to remove any ice.
- When the defrosting is done, the supply air fan will start at minimum RPM and increase speed until the originally requested speed is reached.

NOTE

The defrost operation will lead to a negative pressure inside the house. Depending on the airtightness of the building envelope it will lead to the following:

1. When the building envelope **is not completely airtight** the "missing" supply air will enter through small leaks in the building envelope.
2. When the building envelope **is completely airtight** and the "missing" supply air cannot enter through alternative ways, the defrosting will not be as efficient and only work under conditions with low freezing temperatures.
   NOTE: Under such conditions we highly recommend a preheater.

Alternative defrosting strategy

2. Fireplace in house is the alternative defrosting strategy, that can be chosen via PC Tool.

- Both the supply and exhaust air fan speed will slowly decrease until the minimum RPM is reached
- After 10 seconds both fans will stop completely for four hours.
- When the defrosting is done both fans will start at minimum RPM and increase speed until the originally requested speed is reached.

Operation stop

If the outdoor temperature is ≤ -13 °C for more than 4 minutes 25 seconds and you do not have a preheater installed, the unit will stop all operation for 30 minutes. This will happen even with defrost mode activated.
After 30 minutes the unit will attempt to start up - activating the previous operating mode.

If however an electrical preheater is installed, this safety operation stop is automatically disabled.

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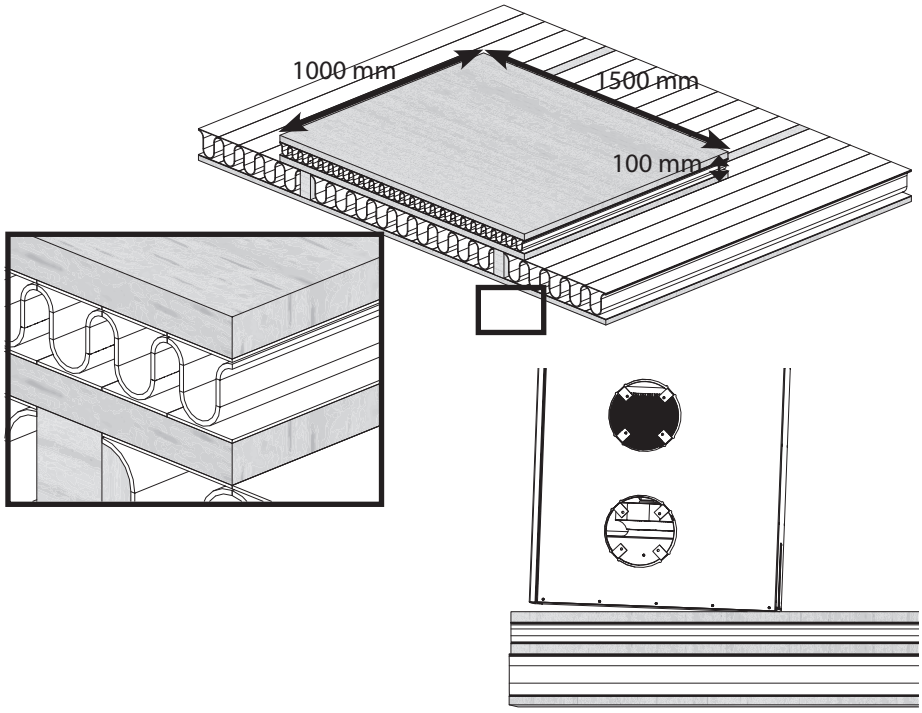
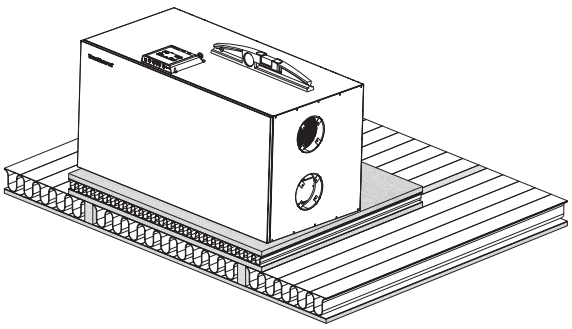
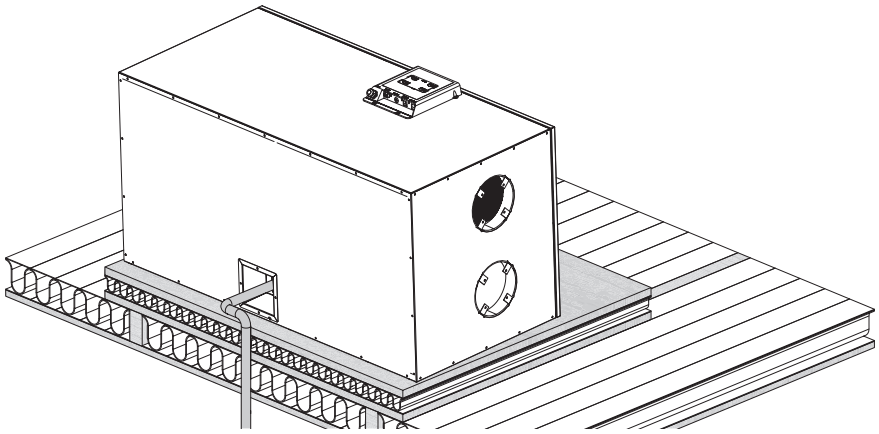
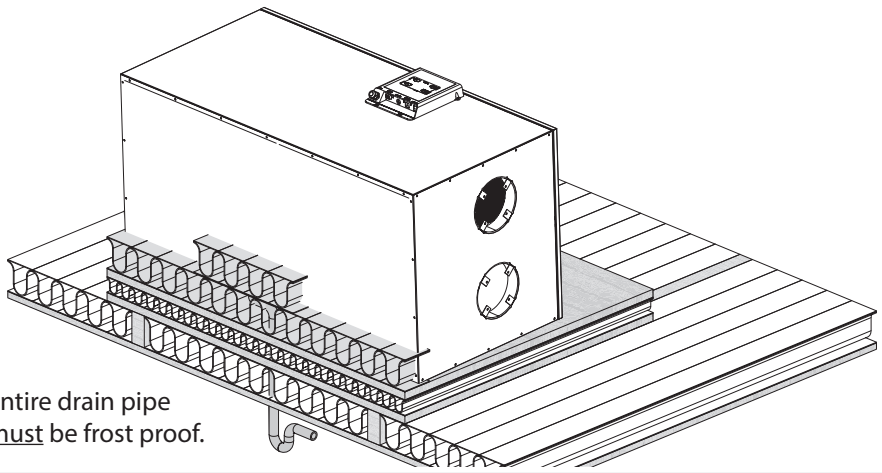
Mounting the unit, ***continued***

Step	Action
3	Build a wood construction which is levelled in both directions according to the illustrations. The construction must be constructed of plates that can sustain the weight of the unit (HCH5 MKII = 52 kg and HCH 8 = 70 kg). Make sure that there is minimum 50 mm compressed insulation between the two plates to prevent any vibrations from the unit to be transferred to the building. Make the construction so that the unit slopes backwards against the drain. Place a 20 mm rise below the front of the unit as shown: 
4	Place the unit on the construction and make sure it is levelled as illus-trated 

Mounting the unit, *continued*

Step	Action
5	Mount the drainage hose*) on the connection piece. The hose can be difficult to connect to the connection piece. When the hose is about to be mounted it can be helpful to warm up the hose prior to mounting, thereby it will be more flexible to work with. Use lubricant on the hose if necessary, so that it can smooth over the connection piece and maybe a hose clamp (not delivered)  *) Drainage hose is not supplied. Use a 3/4" reinforced hose, which cannot be bro-ken or crushed flat. Dantherm recommends a transparent type with iron wire, so it is possible to inspect the water trap
6	Lead the drainage hose through the ceiling construction and insulate up above the hose connection piece: Make sure that the drainage and drain pipe are always complete frost proof. A frozen drain pipe can lead to damage. If it cannot be assured to keep the drainage and drain pipe frost proof, Dantherm recommends connecting a heating cable around the drain pipe. See more about this in the accessories list in the sec-tion "Accessories" in the user's guide.  Entire drain pipe must be frost proof.

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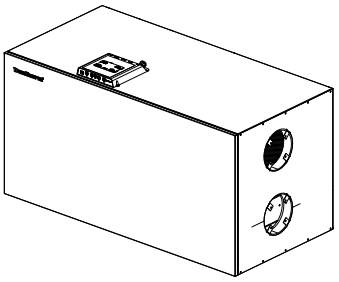
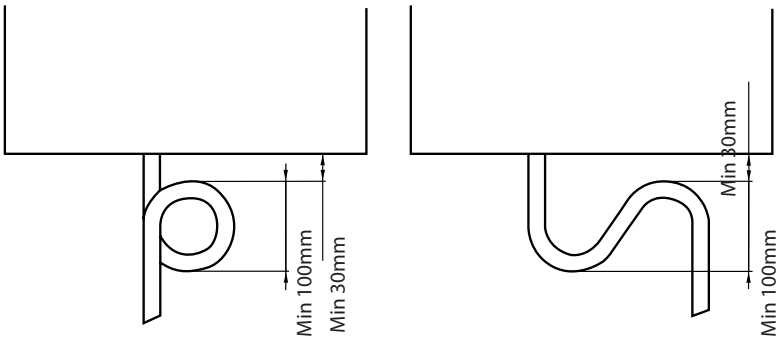
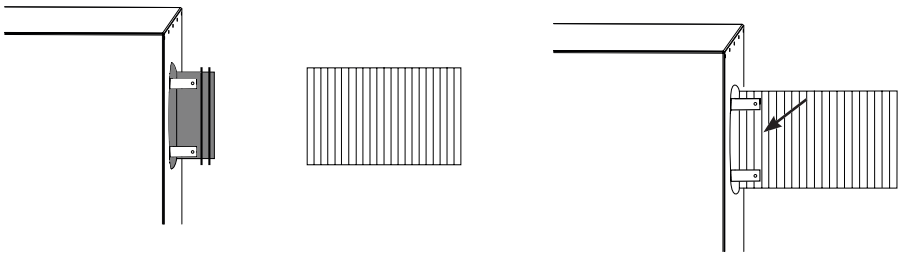
Mounting the unit, ***continued***

Step	Action
7	Mount the front cover again 
8	Make a water trap which meets the measurements on the picture and pour water in it. Alternatively you can use the water trap from Dantherm (accessories): 
9	Connect the hose to the drain – The drain pipe must be kept frost proof all the way, to ensure that the water can run unhindered. The drain pipe must at least fall by 1 % all the way from the unit to the drain outlet.
10	Dantherm A/S recommends insulated flex ducts when connecting to connectors/ coupling connectors. The ducts must be completely stretched to avoid un-neces-sary loss of pressure. Make sure you connect the ducts to the right connectors: The ducts must not "hang" from the unit without support. Dantherm recommends that the ducts are mounted with a flexible hose con-nec-tion, to make the connection easier and to attenuate noise and vibrations from the installation. 

Mounting the unit, *continued*

Step	Action
11	Insulate the entire duct system with 100 mm insulation. For example, place the ducts below the insulation of the ceiling. If the insulation is wrapped around the tube, it is recommended to apply two layers of foil.
12	Wrap the two layers staggered, and tape the area where the two layers meet until air tight.
13	Insulate all flex ducts as well as the entire duct system. It is important that es-pecial-ly the exhaust air duct is insulated, to avoid the possibility of conden-sate inside the duct, which can lead to water in the unit.
14	Choose the right power supply cable matching the regulation in the actual country and connect the cable's IEC plug to the unit. Afterwards connect the unit to 230 V AC.
15	Balance the unit by following the instructions on page 12.

Mounting the unit, *continued*

Air inlets and outlets T1 and T4 must be mounted with ducts falling at least fall 1 % away from the unit to prevent drifting snow, driving rain and condensation from entering the unit causing faults and further damaging the installation and the building.
The warranty does not cover damages to the unit/building parts/insulation, which is caused by accumulated snow/water in the ducts.

Accesories

In order to mount and install accesories from Dantherm A/S, follow the instruction delivered with the accessory

Installation

Warranty claims

Use of an appliance outside the specified conditions and contrary to its intended use will result in loss of all warranty claims. The warranty is limited to devices installed solely by trained and certified personnel.

Ducts

The ducts connected to the units must at minimum be on the same size as the duct connectors or bigger. The measurements can be seen on page 30.
Dimensioning of the ducts and sound mufflers must be in conformity with national standards and guidelines directives in applicable current building act. For any kind of support and instructions contact your Dantherm-distributor.
Noise and vibrations from the unit to the ducts must be minimized. This can be done by installing sound attenuators on both supply and exhaust air sides.
Hanging ducts. The ducts must not ”hang” from the unit without support.

The ducts must be dimmed and the units must not be connected until the house is ready for occupation, which means that the house is clean and dry. This is to pre-vent any construction dust and condensed water from depositing in the ducting system and to prevent any sanitation inconvenience from the ventilation units later on.

Calibration of airflow

Introduction

This section will guide you through balancing of HCH5 MKII.

Important

Only trained and certified technicians are allowed to balance the unit!

Legislation

Regulation of the air flow rates must always be carried out according to the national legislation.
Only nominal air flow rate must be balanced. The nominal air flow rate corresponds to the calibration done on the unit. See the other set points in the section "Set points and control strategies" on page 16 and "Description of the con-trol panel" in the user's guide.

When

Regulation of the unit must take place in the following situations:

- Before the first operation of the unit
- If the size of the house has been changed
- If the house is renovated and the ducting system is affected by it
- If the filter type is changed e.g. in connection with the pollen season

Before you start

All air dampers in the ducting system must be installed according to manufacturer rec-ommendations before the regulation of HCH5 MKII should take place.
Make sure that you have the following equipment ready before the installation starts:

- Pressure manometer with approx. 5 mm diameter hose matching the pressure adapter on the unit, which is 6 mm in diameter
- Screwdriver with hexalobular pan head 25

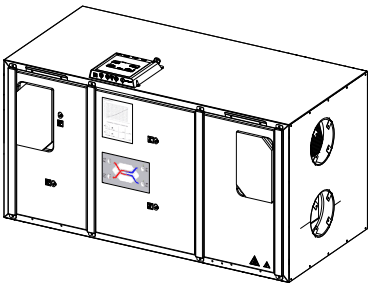
Balancing the air flows

When balancing the air volumes of HCH5 MKII it is important to ensure that the airflows are of equal mass flow!

⚠ Important:
The supply air flow (T2) must under no circumstances be higher than the extract air flow (T3), as this can cause humid air to be pressed into the building construction, with destructive, negative, effects on the building, if the vapour shield it not 100 % air tight

Procedure

Follow this procedure to balance the unit:

Step	Action	
1	Dismount the front door. Make sure that the insulating cover plates in front of the filters are correctly mounted with the soft side towards the filter. Push the sheets against the filter to avoid any air being sucked in that way.	

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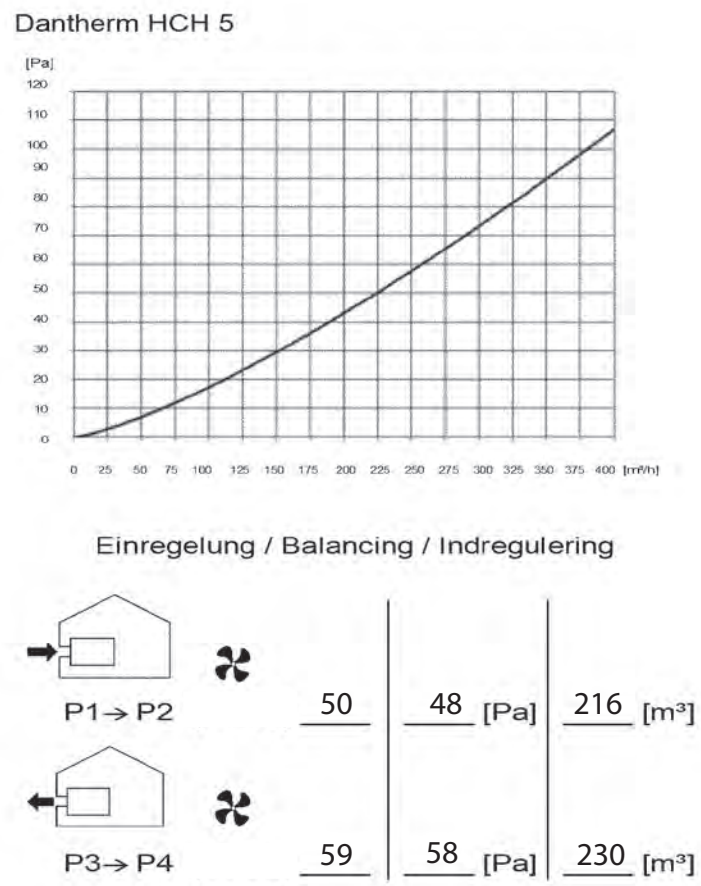
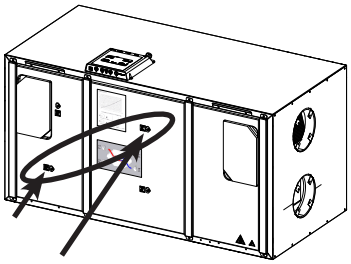
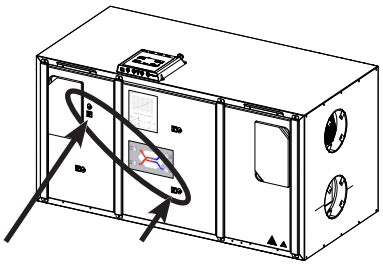
Procedure,
continued

Step	Action
2	Turn off the power supply to the unit and wait for ten seconds. Then turn the power supply back on.
3	Activate Installation Mode by pressing Manual + Auto for 6 seconds. After this, Fan Step 3 illuminates constantly. NB: Installation Mode is active for one hour. In Installation Mode are bypass, protection against frost and compensation of filter flocculation switched off in order to prevent interruption during balancing the unit on Fan Step 3.
4	 Set a desired air flow rate according to national regulations, which corre-sponds to the size and air usage of the house:

Step	Action
1	Write down the values of supply and exhaust air flow rates in the graph above
2	Read and write down the corresponding pressure loss through the heat exchanger
3	Balance the unit
4	Write down the settings of the two potentiometers in the table, later in this procedure

Procedure, ***continued***

Step	Action
5	Connect the pressure manometer to pressure adapter P1 and P2 and measure the pressure difference on the supply air side over the heat exchanger. 
6	Balance the nominal air flow rate on the supply air side. Wait approximately two minutes before the next adjustment of potentiometers, in order to let the unit stabilise the air flows. ⚠ Strong wind against the building might affect balancing the unit.
7	Connect the pressure manometer to pressure adapter P3 and P4 and measure the pressure loss on the exhaust air side over the heat exchanger. 
8	Balance the nominal air flow rate on the exhaust air side. Wait approximately two minutes before the next adjustment of potentiometers, in order to let the unit stabilise the air flows. ⚠ Strong wind against the building might affect balancing the unit.
9	Check the pressure difference over heat exchanger on the supply air side one more time, as it might has changed due to the adjustment on the exhaust air side. Make an adjustment if necessary.
10	Adjust the balancing of the valves in every room in order to make sure that the desired air flow rate can be supplied in every room.
11	Check the nominal air flow rates based on earlier instructions in this procedure as radical adjustments (balancing) will influence the nominal air flow rates.

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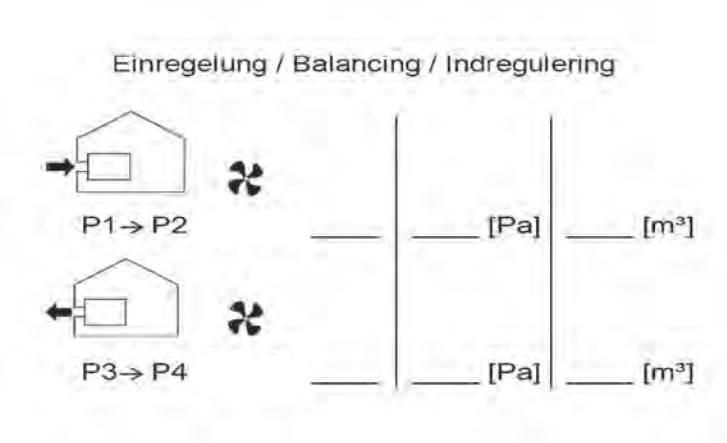
Procedure,
continued

Step	Action
12	Write down the final set-ups for the pressure losses over the heat exchanger and air flow rates in the table on the unit:

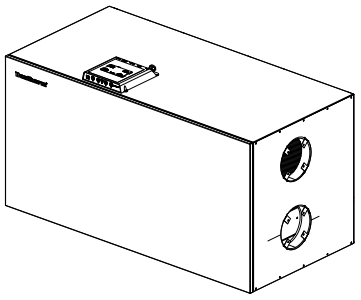
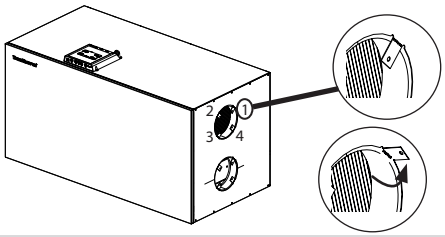
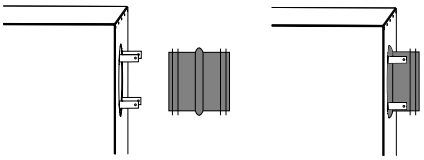


After balancing

Deactivate Installation Mode by pressing Manual + Auto for 6 seconds.
The operational modes are described closely in the user's guide.

Mounting the device

Mounting the unit Follow this procedure to mount the unit:

Step	Action	
1	Remove the front cover to make sure that it does not fall off during the mounting process unintentionally. Be aware that the styrene front panel is made of a porous material which is why any bumps must be avoided.	
2	Follow the procedure below depending on the type of your unit.	
	HCH5 MKII 1. Bend the four flaps with 90° at both the air in- and outlets as illustrated.	
	2. Connect four NPU coupling con-nectors (not included in the delivery) to all 4 spigots.	

Calibration of airflow

Introduction

In order to achieve the correct comfort level, as well as to control humidity levels, it is important to adjust the amount of supply air entering the house, as well as the exhaust air from the house.
This is done by adjusting the fan speed level in a nominal mode corresponding to level 3.

NOTE

Pour 0.5 L water into the siphon to prevent leakage from the drain prior to calibration.

Calibration process

During the initial part of the calibration process, the total (main) airflow must be measured on the external duct system with suitable equipment and simultaneously adjusted to target value by using either PCTool or control panel.

In the main and vital part of the calibration, the valves in all rooms have to be adjusted until the required airflow for respective rooms has been achieved.

NOTE

Please be aware of the following:

- The required airflow for each room has to be in accordance with national ventilation standards and/or building regulations.
- Major valve adjustments may greatly affect the main flow and therefore the main flows need to be checked and if necessary adjusted. It is of crucial importance for stabile operation to ensure that the final total extract airflow achieved under the calibration is at least 5% higher than the achieved total supply airflow in order to create conditions for mass balance in the system as a whole.

External connections

Connecting to LAN

Connect the unit to a LAN connection using a standard Ethernet cable fitted with an RJ45 connector.
If a non-prefabricated cable is used, first run sufficient cable length through the house. Mount the RJ45 connector using the standard Ethernet cable crossover terminology as specified in T568B.
These mounting instructions can be found on the internet, for example on Wikipedia.

The device will be accessible via the smartphone app (IOS and Android) if your device is connected to the same network via WiFi.

IP address allocation status	Description
Dynamic IP	If the unit is connected to a router with built-in DHCP server it will fetch the IP address itself from the router when the unit starts up.
Static IP	With PC Tool it is possible to allocate a static IP address to the device.

MODBUS

MODBUS RTU is only for internal communication between the unit (main PCB) and Dantherm accessories (HAC, FPC, or HCP11). Modbus RTU connects via the RS485 port.

NOTE

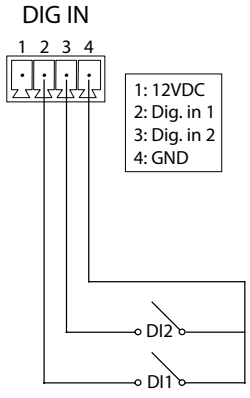
Important! External BMS cannot be connected as Modbus RTU via the RS485 port or via Dantherm accessories. (HAC, FPC, or HCP11)

Modbus TCP/IP: The Dantherm ventilation units have the opportunity to communicate Modbus TCP/IP via the Ethernet port. This is used for Building Management Systems (BMS) or communication with smartphone apps.

Dig. input

The unit is fitted with two override inputs, also called digital inputs. These inputs can be used to select a different fan speed or to activate alarms. The default setting for digital input is:

- Dig. input 1: Ventilation step 2
- Dig. input 2: Ventilation step 4



How it works (example to the right):

- Switch DI1 between pin 2 and 4 will activate input 1
- Switch DI2 between pin 3 and 4 will activate input 2

Dig. input can be used for:

- Ventilation steps from 0 - 4
- Safety shutdown
- High water level sensor.
- Kitchen hood boost
- Other options

Find relevant information and settings in PC Tool under External Control System.

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Operation

Operating the device

See user manual section "Operation" on page 8.

Maintenance and care

Preventive maintenance

Introduction

Preventive maintenance is necessary at regular intervals if the unit is to operate efficiently and optimally without unintended downtime and to ensure the expected service life of at least 10 years.
It is important to notice that intervals between filter maintenance can vary according to the specific environment, and that moving parts are wearing parts, and will need replacement when worn.

The factory warranty only applies if it can be documented that regular preventive maintenance has been carried out as prescribed. The documentation can be written in a logbook containing a company stamp or equivalent.

Summary of intervals

Maintenance must at minimum be carried out as shown here:

Interval	Task	To be carried out by:
Six months	Check filters. Replace if necessary	User
Annual	Change filters	User
2 years	Inspect and clean fans	Trained professionals
	Inspect and clean electrical preheater	Trained professionals
	Inspect and clean heat exchanger	Trained professionals
	Clean the internal air direction	Trained professionals
	Inspect and clean drip tray, drain and drain hose	Trained professionals
	Inspect and clean bypass	Trained professionals

Electric preheater (2 years)

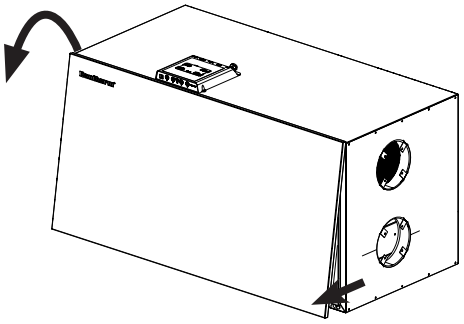
WARNING

Injury caused by electric shock and risk of damage to the device

- An inspection must be carried out every two years by trained professionals only.
- Disconnect mains plug from electrical outlet before carrying out maintenance or repair.
- If the power supply cable is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Make sure that all work has finished and that styrene front lid and metal front cover are fully mounted before turning on the power supply again

Preparation for inspection

Remove the front cover for inspection.

Step	Action	Illustration
1	Release the three screws from the front at the bottom of the unit and remove the front cover.	

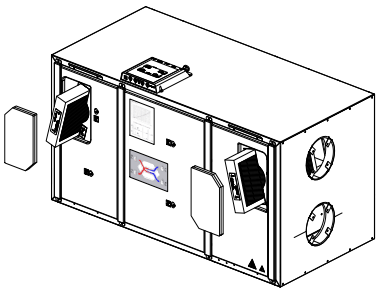
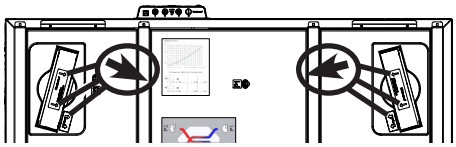
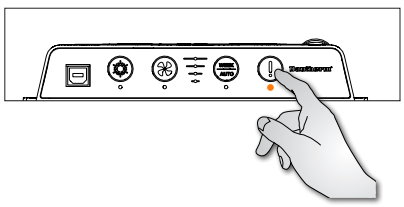
Filters - alarm and inspection (6 months - 1 year)

The unit has a built-in filter alarm timer (every six months as standard). The timer period for the filter alarm can be changed via the remote control or PC Tool, or it can be reset via the alarm button

When the timer expires, a filter alarm is triggered. A buzzer will sound and the LED "!" will light up orange. (If the LED lights up RED, please see Troubleshooting on page 43.)

Press for 5 sec.	Resets the filter alarm when the alarm is triggered. Resets the filter timer without the timer having expired.

A short beep will sound, indicating that the filter alarm has been reset correctly.

Step	Action	Illustration
1	Remove the filters and inspect them after the filter alarm has been triggered.	
2	Even if only one filter is clogged, we recommend replacing both filters to avoid imbalance in the airflow through the unit. **NOTE:** Replace the filters at least once a year, regardless of whether they are clogged or an alarm has been triggered.	
3	Make sure that the filters are inserted the right way. The arrows on the filter must point in the direction shown here.	
4	When the filters have been replaced, the filter alarm must be reset by pressing the alarm button for 5 seconds. A short beep will sound, indicating that the filter alarm has been reset correctly.	

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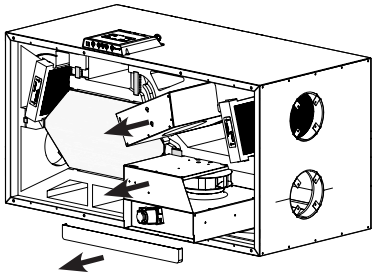
Fans (2 years)

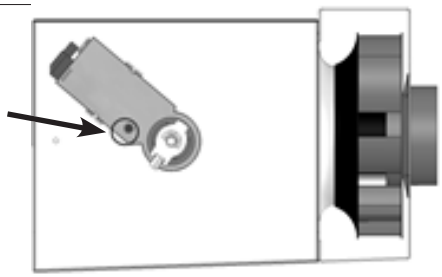
Step	Action	Illustration
	**WARNING** **There might be sharp edges on the fan boxes, which implies a risk of cutting yourself.** • Wear protective gloves while inspecting and cleaning the fan boxes.	
1	Remove one of the fan boxes. • Carefully remove rail for the drip tray • Pull out the left with a pincer • Pull out the right with the hand (remember to wear gloves).	
2	Carefully clean the fan's blades with compressed air or a brush through the opening at the base of the fan box. All blades must be clean to maintain ventilator balance. Be careful not to remove the small metal balancing pieces on the fan blades as this may cause vibrations.	
3	Turn the fan with your fingers and listen for buzzing sounds from the bearing. If this occurs, the fan probably needs replacing.	
4	Refit the fan box and repeat steps 1–5 with the other fan box.	

Follow this procedure, if the unit is equipped with a heating element:

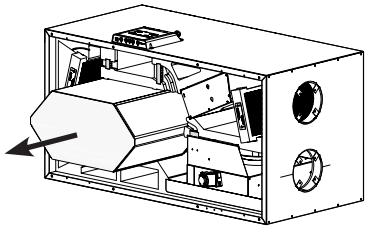
Step	Action	Illustration
1 	Make sure the heating element is completely cooled down before cleaning. **WARNING** **The heating element can become very hot. If it does not cool down completely, there is a risk of severe skin burns.** • Disconnect mains plug from electrical outlet and wait for 10 minutes in order to ensure that the heating element is completely cooled.	
2	Remove the heating element.	
3	Clean with a brush and inspect for visible damage.	
4	Refit the heating element.	

Bypass (2 years)

Inspect and clean the bypass with a brush, if needed.
The bypass module shall only be checked when an eerror occurs or if the unit is open e.g. in connection with another service.
Check that the bypass module is well functioning.
Try to open/close the damper manually with the trigger (requires a magnet) to check functionality.



Heat exchanger (2 years)

Step	Action	Illustration
1	Remove the heat exchanger from the unit.	
2	Clean the heat exchanger with a soft brush and a vacuum cleaner at all four inlets. In special cases, for example, if there are clear traces of accumulated, dirty condensed water in the heat exchanger, it will be necessary to clean the heat exchanger with soapy water (max. 40dg.) outside the unit.	
3	Wait until the heat exchanger is completely dry and reinstall it.	

Internal cleaning (2 years)

Remove the fan boxes, heat exchanger and filters and visually inspect the ducts and internal surfaces inside the unit for dirt. If the ducts or surfaces are dirty, clean them with a wet cloth, brush, vacuum cleaner or similar.
Refit the fan boxes, heat exchanger and filters when you have finished cleaning.

Drain and drip tray (2 years)

Step	Action	Illustration
1	If necessary remove the extract air fan box and bypass, to inspect the drip tray. • Check that the condensation outlet is not blocked in the drip tray. • Clean the drip tray with soapy water and a brush/cloth to ensure good hygiene inside the unit. Reinstall the fan box (and bypass) - if removed.	
2	Check drain hoses for damage and correct installation. See the optimum installation on page 29. • Make sure that the water hose has a minimum fall of 1% towards the drain • Ensure that the water hose is protected against frost from the unit to the drain • Ensure that there is water in the siphon. • Check the siphon regularly, especially during the summer, and make sure it is filled with water as recommended.	

End inspection

Step	Action	Illustration
1	Check that all connections are securely fixed to the PCB.	
2	Mount the front cover.	

When the service is completed, close the unit again.

Troubleshooting

Introduction

This section shows you how to recognize and understand possible operating errors.
For correct fault tracing Dantherm strongly recommends connecting a remote control or PC with installed PC Tool or the Dantherm App, that works with the unit.

Error messages on the remote control LCD panel

Errors are displayed on the HRC3 remote control with "E" + a number. The issue can then be looked up in the troubleshooting overview and in the control panel manual to correct the fault.

PC Tool

Operation warnings and faults are logged in the controller memory. Connect a computer with PC Tool installed via USB to get detailed information from the log file.

Error signaling

Possible faults are shown on:

Appliance	Signal
Unit	Acoustic buzzer signal from the main PCB. Connect a remote tool or PC Tool to view the specific error. Filter reset LED
Handheld remote control	Acoustic buzzer signal and display of a specific error code.
Wired remote control (HCP11)	Audible buzzer signal and flashing LED. The number of flashes corresponds to an error code followed by a pause of 5 seconds.
PC Tool	Display of error numbers and ability to log specific operation over a longer period of time.
Smart phone app	Display of a specific error code.

Error list

Errors shown on the display contain three numbers or letters. E.g. "E12" means error number 12.

How to read the error list:

Column	Description	Code	Meaning
A	Number of flashes on the display (wired control)	-	-
B	LED on control panel	Y	Yellow LED flashes
		R	Red LED flashes
C	Noise	0	No beep
		1	One beep/hour
		2	One beep/sec.

Resetting errors

After completed inspection or repair of possible faults, the unit can be reset by disconnecting/reconnecting the 230 V AC power supply. This resets the controller and the unit starts normal operation and also restarts a new search for possible errors.
This can take up to 15 minutes.

Error list

See the list below for a complete description:

A	B	C	Error code	Error	Possible cause	Action required	Reset
-	Y	1	-	Filter alarm	Filter period expired	Dismount filters and inspect for dirt Replace filters and reset alarm	Reset alarm and reset filter by pressing and holding alarm button for 5 seconds Press and hold the centre button on the wireless remote control for 10 seconds The same procedure can be used to reset the filter before the alarm is triggered.
					The filters are not soiled, so the filter period is too short	Extend the filter timer period	
					The filters are soiled	Replace filters and reset alarm	
					Filters are clogged, filter period is too long	Replace filters and reset alarm Shorten the filter timer period	
1	R	1	E 1	Extract air fan No feedback about rotational speed (tacho) from extract air fan	Extract fan power cable not connected	Connect the power cable to the extract air fan	Perform a manual reset by pressing the alarm button on the control panel or by turning the unit off/on
					Extract air fan control cable not connected	Connect control cable to extract air fan	
					Extract air fan not working	Replace extract air fan	
				Extract air fan unable to operate at the desired speed	Fan speed setpoint too high	Decrease fan speed setpoint	Automatic reset after 140 seconds, but the alarm reappears if the problem is still present
					Fan defective	Replace fan	
2	R	1	E 2	Supply air fan No feedback about rotational speed (tacho) from supply air fan	Power cable to supply air fan not connected	Connect the power cable to the supply air fan	Perform a manual reset by pressing the alarm button on the control panel or by turning the unit off/on
					Supply air fan control cable not connected	Connect the supply air fan control cable	
					Supply air fan not working	Replace supply air fan	
				Supply air fan unable to run at desired speed	Fan speed setpoint too high	Decrease fan speed setpoint	Automatic reset after 140 seconds, but alarm reappears if problem persists
					Fan defective	Replace fan	

A	B	C	Error code	Error	Possible cause	Action required	Reset
3	R	0	E 3	Bypass damper does not close as expected	Selector switch position A: Bypass is closed, but supply air temperature is lower than expected	Check if Bypass is enabled in PC Tool	Automatic reset if efficiency is high enough for 30 seconds
						Check if bypass is blocked	
						Check the mechanical connection between the bypass actuator and the bypass valve	
					Selector switch position B: Bypass is closed, but exhaust air temperature is higher than expected	Check electrical connection between controller and bypass	
						Check controller output	
				Bypass damper Reduced heat recovery due to low exhaust airflow	A clogged extract air filter	Change filters	Automatic reset if efficiency is high enough for 30 seconds
					Poor balancing of airflows	Adjust the system	
					An extract fan in the bathroom is creating negative pressure in the house	Remove extract fan from the bathroom and instead connect the extract air from the bathroom to the fan system	
					An extract air fan in the kitchen is creating negative pressure in the house	Ensure that warm make-up air can reach the cooker hood. If this is not possible, open a window/door while the cooker hood is running	
					A cooker fan is creating negative pressure in the house	Contact your flue/ stove supplier for information about safety precautions	
3	R	0	E3	Bypass is closed, but supply air temperature is lower than expected The airflows are out of balance. There is more extract air than supply air	A clogged supply air filter	Change filters	
					Poor balancing of airflows	Adjust the system	

A	B	C	Error code	Error	Possible cause	Action required	Reset
4	R	1	E 4	Extract air temperature sensor (T1) The control panel measures that the temperature sensor is either open or short-circuited	Temperature sensors are not mounted correctly	Mount temperature sensors correctly	Automatic reset if temperature is within normal range for 30 seconds
					Resistance in one of the temperature sensors is too low or too high	Replace temperature sensors	
					Temperature sensor resistance is OK	Replace control panel	
5	R	1	E 5	Supply air temperature sensor (T2) The control panel measures that the temperature sensor is either open or short-circuited	Temperature sensors are not mounted correctly	Mount temperature sensors correctly	Automatic reset if temperature is within normal range for 30 seconds
					Resistance in one of the temperature sensors is too low or too high	Replace temperature sensors	
					Temperature sensor resistance is OK	Replace control panel	
6	R	1	E 6	Extract air temperature sensor (T3) The control panel measures that the temperature sensor is either open or short-circuited	Temperature sensors are not mounted correctly	Mount temperature sensors correctly	Automatic reset if temperature is within normal range for 30 seconds
					Resistance in one of the temperature sensors is too low or too high	Replace temperature sensors	
					Temperature sensor resistance is OK	Replace control panel	
7	R	1	E 7	Exhaust air temperature sensor (T4) The control panel measures that the temperature sensor is either open or short-circuited	Temperature sensors are not mounted correctly	Fit temperature sensors correctly	Automatic reset if temperature is within normal range for 30 seconds
					Resistance in one of the temperature sensors is too low or too high.	Replace temperature sensors	
					Resistance in temperature sensors is OK	Replace control panel	
8	-	0	E 8	Room air temperature sensor (T5)	Shown only on wireless remote control		Automatic reset
9	-	-	E 9	Not used			
10	R	0	E 10	Outdoor air temperature < -13°C	-	-	Automatic re-start after 1800 seconds

A	B	C	Error code	Error	Possible cause	Action required	Reset
11	R	0	E 11	Supply air temperature < +5 °C Reduced heat recovery due to low extract air temperature	Low temperatures pulled out of unheated rooms	Ensure all ventilated rooms are heated Alternatively, close the dampers in unheated rooms	Perform a manual reset by pressing the alarm button on the control panel or by switching the unit on/off Firmware version 2.9 and up also has automatic restart after 600 seconds
					Poorly insulated ducts in cold environments	Improve duct insulation	
				Reduced heat recovery due to low exhaust airflow	Clogged extract air filter	Change filters	
					Poor balancing of airflows	Adjust the system	
					An extract fan in the bathroom is creating negative pressure in the house	Remove extract fan from the bathroom and connect extract air from bathroom to ventilation system	
					An extract air fan in the kitchen is creating negative pressure in the house	Ensure that warm make-up air can reach the cooker hood. If this is not possible, open a window/door while the cooker hood is running	
					A cooker fan is creating negative pressure in the house	Contact your chimney/stove supplier for safety precautions	
12	R	2	E 12	Overheating One of the internal sensors is measuring a temperature > 70 °C.	Overtemperature caused by fire inside or outside the ventilation system	Check ventilation system and surroundings for fire	The alarm display can be reset by pressing the alarm button or by turning the unit off/on. However, the unit cannot be started until the alarm conditions have disappeared
					Overtemperature caused by the combination of a preheater or afterheater and too low an airflow	Check ventilation system and surroundings for fire	
						Check which sensor is measuring a high temperature. Check if the airflow is blocked and if the filters are clogged. Raise the minimum airflow setting if necessary	

A	B	C	Error code	Error	Possible cause	Action required	Reset
13	-	0	E 13	Communication error / poor signal Shown only on wireless remote control			Try again every 5 minutes or if a button is pressed
				No wireless signal	The ventilation unit is switched off	Turn on the ventilation system	
				Wireless signal is too weak	Antenna not mounted on unit	Install antenna	
					The remote control is too far from the ventilation system	Move it closer to the ventilation system	
						Install antenna extension cable	
14	R	2	E 14	Fire alarm Duct-connected fire thermostat (accessory) Input is normally closed (NC) but is now open	Fire or smoke sensor connected to this input is active	Check for smoke or fire	The alarm display can be reset by pressing the alarm button or by turning the unit off/on. However, the unit cannot be started until the alarm conditions have disappeared
						Check if sensor and connection are OK	
					Nothing connected to this input	Install short circuit accessory	
15	R	1	E 15	High water level sensor (accessory) Water level too high	Water outlet is clogged	Clean the water outlet	Automatic reset when input is closed again
					The water outlet is installed incorrectly	Check that the water outlet is mounted on the correct side and that the pipes are not above the drain level.	
					Auxiliary drain pump not running.	Check the pump	
						Inspect fuse	
				The water level is not too high	Water level sensor disconnected	Check wiring	
					Water level sensor normally open (NO)	Configure or replace the water level sensor so it is normally closed (NC).	
					Digital input configured incorrectly	Check the configuration of the digital input using PC Tool	

A	B	C	Error code	Error	Possible cause	Action required	Reset
16	R	2	E16	Firmware 2.9 and up: FPC fault (option) Only active if the "Fire Protection Controller" accessory is connected to the unit. No communication with the fire protection controller	Fire protection controller with this address has previously been installed but can no longer be reached	Check connection to fire protection controller	Perform a manual reset by pressing the alarm button on the control panel or by turning the unit off/on
				There is no position feedback for fire dampers	A fire damper is closed, but should be open	Check power supply to fire dampers	
						Check fire dampers internal fire detector	
				Error in monthly, weekly or manual test of fire dampers	Fire damper stuck in either open or closed position	The fire damper is blocked.	
						Fire dampers are connected incorrectly	
						Fire damper defective	

Spare parts

Introduction

Spare parts for the HCH5 MKII are available via the webshop: shop.dantherm.com.

Appendix

Technical data

Data sheet HCH5 MKII

Specification	Abbr.	Unit	HCH5 MKII
Max. recommended flow at 100Pa	V_{100Pa}	m³/h	360
Max. rated flow at 100Pa	$V_{max.nom}$	m³/h	300
Operating range Passivhaus at 100Pa	V_{PHI}	m³/h	99-220
EN 13141-7 reference flow at 50Pa	V_{ref}	m³/h	210
Performance			
Thermal efficiency in accordance with EN13141-7	η_{SUP}	%	88
Leakage (external and internal) in accordance with EN 13141-7	$L_W(A)$	dB(A)	<2% (Class A1)
Filters in accordance with ISO16890	class	-	ISO Coarse 75% (optional on supply: ePM1>50%)
Filters in accordance with EN779:2012	-	-	G4 (optional on supply: F7)
Installation surrounding temperature	t_{SURR}	°C	-12 to +45
Outdoor temperature without preheater installed	t_{ODA}	°C	-12* to +45
Outdoor temperature with preheater installed	t_{ODA}	°C	-20 to +45
Maximum absolute humidity of extract air	x	g/kg	10
Cabinet:			
Dimensions (with wall bracket)	w x h x d	mm	1180 x 633 x 580
Spigots/ducts connections	Ø	mm	ø160 - female
Weight		kg	52
Thermal conductivity - polystyrene insulation	λ	W/(mK)	0.031
Heat transition figures- polystyrene insulation	U	W/(m²K)	U<1
Fire classification of the polystyrene insulation	-	-	DIN 4102-1 class B2 EN13501 class E
Cabinet colour	RAL	-	galvanized steel
Electrical			
Voltage	U	V	230
Max. power consumption (without/ with preheater)	P	W	170/1570
Frequency	f	Hz	50
Protection class	-	-	IP20

* The use of preheating coil is recommended when outdoor temperature is below -3°C to ensure balanced operation.

Illustrations

Illustration with wiring diagram

This illustration shows the wiring diagram for the unit

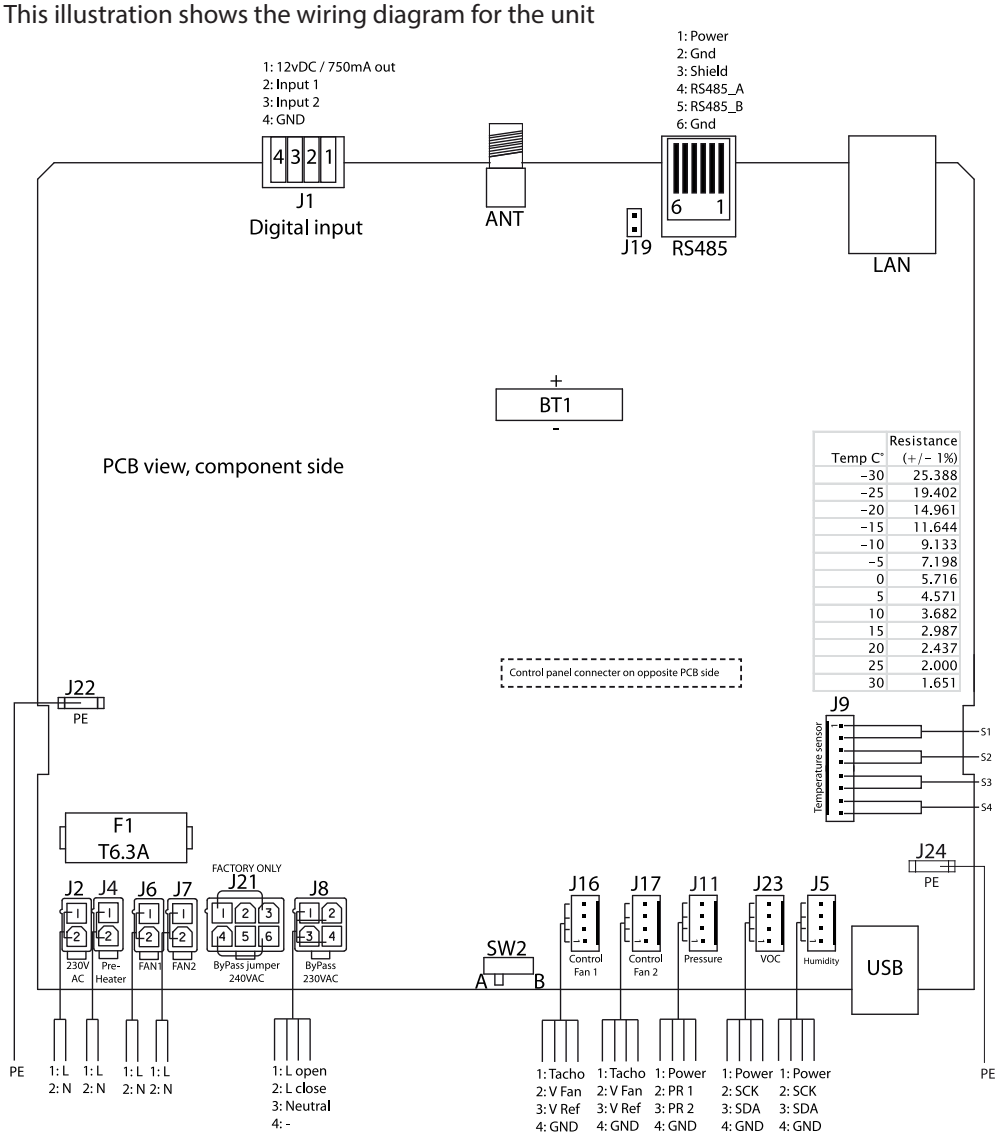


Fig. 5

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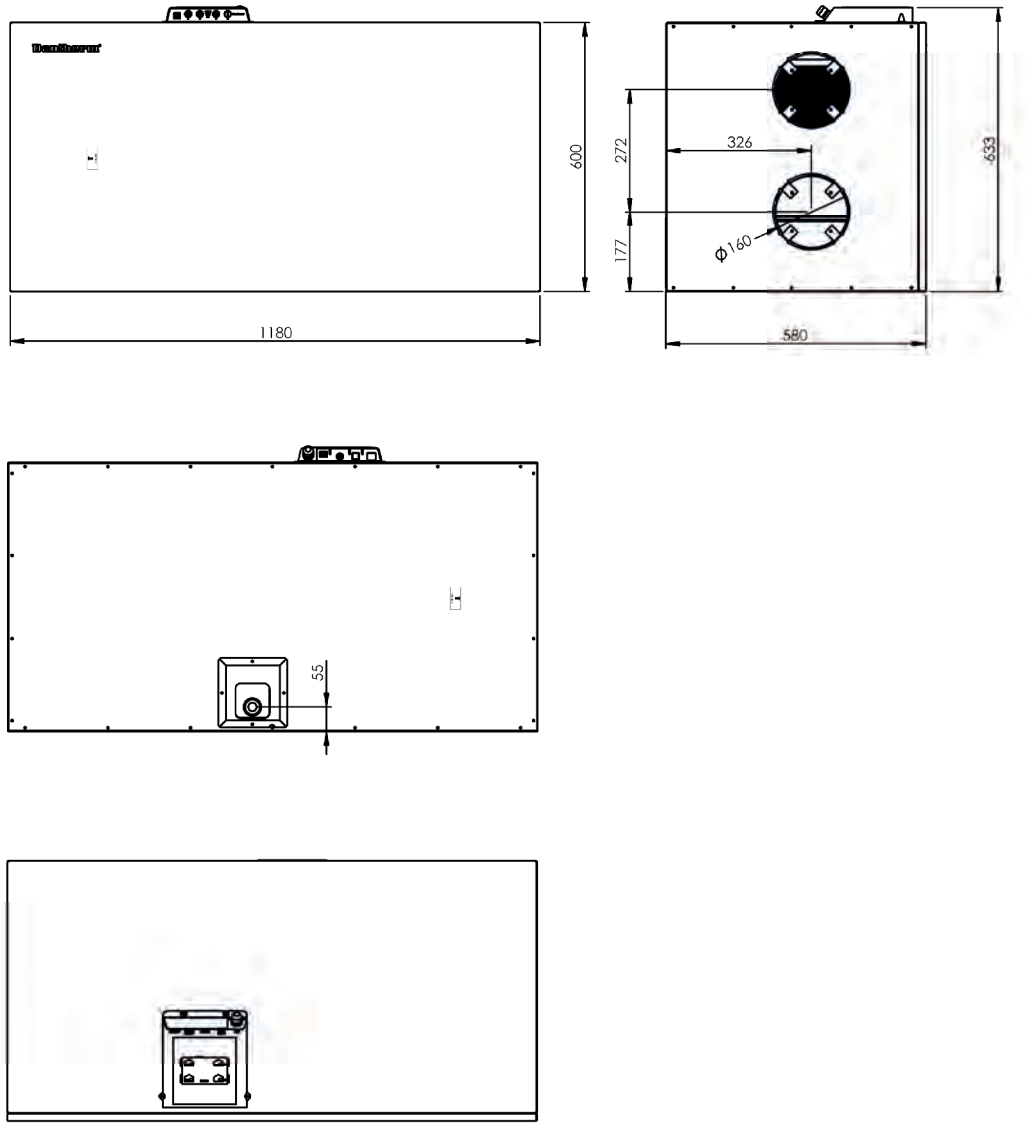
Cabinet dimensions

HCH5 MKII
Dimensions

The illustration shows the dimensions on a HCH5 MKII:



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