

MANUAL

HCV 300-400-460-500-700

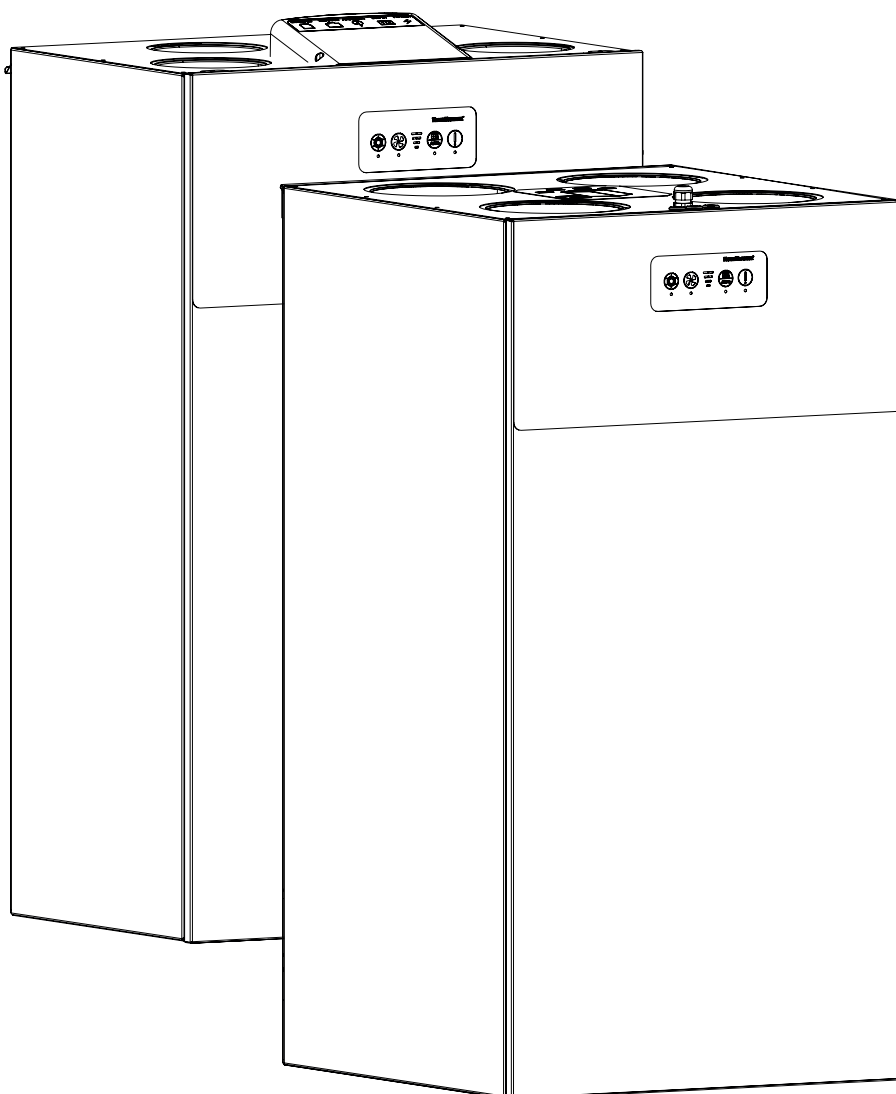


Table of contents

This manual covers the following topics:

Introduction	4
About this Manual	4

USER MANUAL

Introduction	6
Overview	6
Operation	7
Control panel - overview	7
Main operating modes	8
Temporary modes (override)	9
Maintenance and care	11
Inspection of the filter	11

INSTALLATION & SERVICE MANUAL FOR PROFESSIONALS

Introduction	12
Overview	12
Transport and unpacking	13
Unpacking	13
Declaration of Conformity	14
Product description	15
General description	15
Component descriptions	19
Accessories	21
Electronic control	23
Control system strategy	25
Installation Options	26
Switching between modes A and B	26
Use the bottom outlet (HCV 300/400/460)	29
Installation	31
Location Considerations	31
Mounting the device	32
External connections	36
Calibration of airflow	37
Maintenance and care	40
Preventive maintenance	40
Troubleshooting	43
Error list	44
Spare parts	50
Appendix	51
Technical data	51
Illustrations	54
Cabinet dimensions	55

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Introduction

About this Manual

Manual

This is the service manual for the Dantherm HCV product range, including residential ventilation units HCV 300/400/460/500/700.

The manual contains information targetted at:

- Product users and
- 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 HCV 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.

Copyright

Copying this service manual, or parts thereof, is not permitted without the prior written consent of Dantherm.

Reservations

Dantherm reserves the right to change and improve the product and service 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
S1	Temperature sensor no 1
S2	Temperature sensor no 2
S3	Temperature sensor no 3
S4	Temperature sensor no 4
Mode A	Indicates operating mode A. See more on page 17
Mode B	Indicates operating mode B See more on page 17
G4	Standard air filter according to EN779; corresponds to ISO Coarse according to ISO 16890
F7	Filter class (corresponds to ePM1 in accordance with ISO 16890), better than and absorbs finer particles than G4 filter
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

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**Symbols
this manual**

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

Symbols Used	
 WARNING	This symbol used with the word "Warning", indicates a risk of serious injury.
 CAUTION	This symbol used with the word "Caution", indicates a risk of minor or moderate injury or damage to property.
 NOTE	This symbol indicates further tips and information regarding the use of the device.

The warning and caution symbols are described as follows:


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.

USER MANUAL

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.



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. .

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

Membrane keypad The membrane keypad 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.

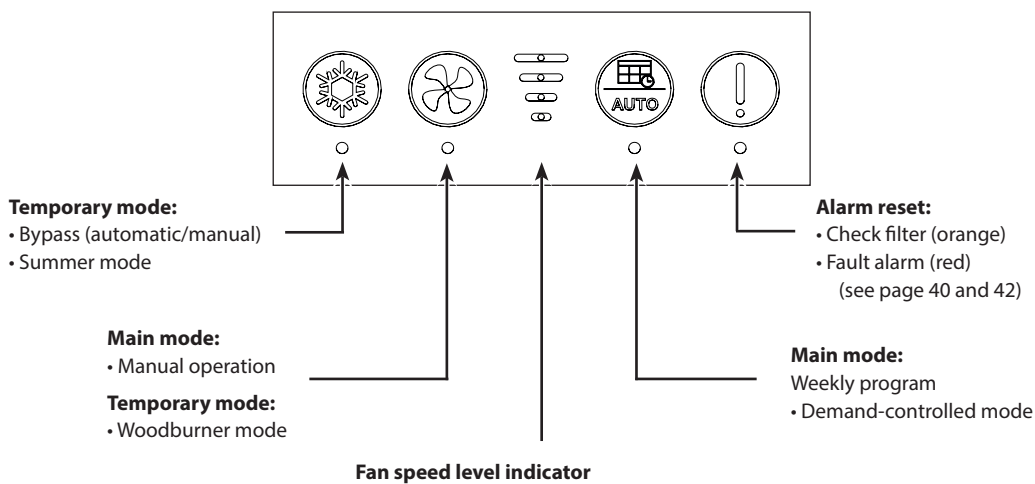


Fig. 1

Main operating modes



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.
-

Introduction

Decide which of the three main operating modes you want your HCV unit to run in and adjust the settings as desired via Dantherm PC Tool, Dantherm Residentialapp 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) will automatically return to level 3 (nominal mode) after four hours.
- 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

Weekly 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 Danthermapp, the HRC3 remote control or a PC Tool.



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 CO₂ sensors to control the indoor air quality. It is therefore necessary for the associated sensors to be connected during demand-controlled operation. The CO₂ 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

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 (cooling)

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 HRC3remote 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.

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.



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:

- Outdoor air temp. is min. 2 °C lower than the exhaust air temperature.
- AND outdoor temp. is higher than setpoint (Tmin)

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

Woodburner mode

Activation of the woodburner 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 woodburner mode is not deactivated manually, it will automatically stop after seven minutes.

NOTE: The woodburning stove mode is only activated as long as the supply air temperature is above 9 °C.

Minimum outdoor air temperature?



Long press (five seconds) - activates/deactivates woodburner mode.

Active woodburner mode is indicated by flashing in the three fan speed LEDs

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.

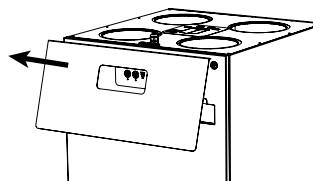
Summary of intervals

Maintenance 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

Preparation for inspection

Remove the upper part of the front cover.



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 42.)



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 dirty, 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 dirty or an alarm has been triggered.	
3	When the filters have been replaced, the filter alarm must be reset by briefly pressing the alarm button. A short beep will sound, indicating that the filter alarm has been reset correctly.	

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.



WARNING

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 HCV unit.



WARNING

Risk of damage to equipment or property or personal injury

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



CAUTION

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.

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	HCV Unit	-
1	bag incl. <ul style="list-style-type: none"> • 1 m water hose • 1x water hose clip 	
1	bag incl. <ul style="list-style-type: none"> • 2x spacers • 1x wall rail • 1 x vibration damper 	
1	bag incl. <ul style="list-style-type: none"> • 1 x manual • Labels, data sheets, etc. • 1 x cable clamp (HCV 400/460 only) 	

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Declaration of Conformity

Dantherm hereby declares that the unit mentioned below:

No.: 352480 Type: HCV 400 P1, P2, E1, P1/E1, HCV 460 P2

No.: 352441, 352442, 352443 Type: HCV 300, HCV 500, HCV 700

– complies with the following directives:

2014/35/EU	Low Voltage Directive
2014/30/EU	EMC Directive
2014/53/EU	Radio Equipment Directive
2009/125/EC	Eco Design Directive
2011/65/EU	RoHS Directive (Restriction of hazardous substances)
1907/2006/EC	REACH Regulation

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

EN 60335-1:2012 Household and similar electrical appliances – Safety – Part 1
EN 60335-2-40:2003 Household and similar electrical appliances Safety - Part 2-40

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
EN 61000-6-3:2007 Electromagnetic compatibility (EMC) - Part 6-3
EN 60730-1:2011 Automatic electrical controls for household and similar use – Part 1
EN 62233: 2008 Methods for measuring electromagnetic fields in 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 301489-1 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 300220-1 V2.4.1 Electromagnetic compatibility & Radio Spectrum Matters (ERM);
Short Range Devices
EN 300220-2 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

Skive, 13-11-2020



Product Manager



Managing Director Jakob Bonde Jessen

Product description

General description

Introduction

The HCV 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 dry environments with temperatures >12 °C, i.e. utility rooms or similar heated rooms.

The airflow direction can be changed electronically to allow the connected ducts to be routed either to the right or to the left.

Product illustration HCV 400/460

This illustration shows the HCV 400/460 unit without cover.

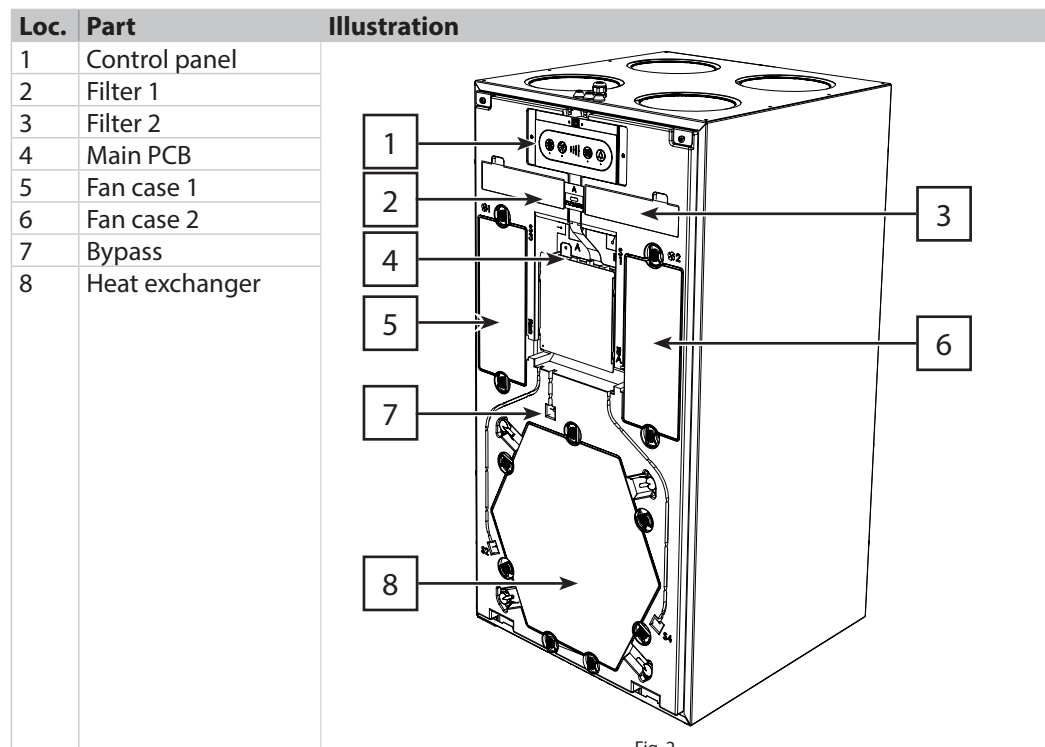
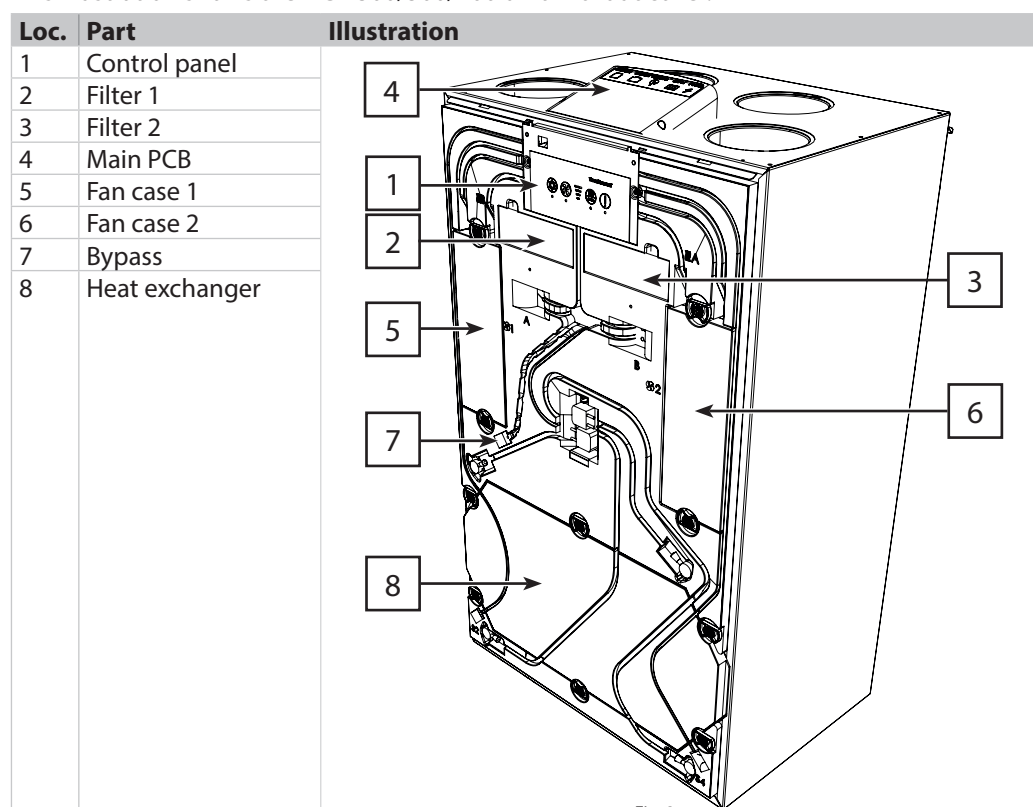


Fig. 2

Product illustration
HCV 300/500/700

This illustration shows the HCV 300/500/700 unit without cover.



Variant description The HCV units are available in different variants. The functionality and installation of the variants are exactly the same. The variants only differ according to their heat exchanger and fan or built-in accessories, which affects the performance of the unit.

This variant name is just an example (describing the syntax) and is not necessarily identical to your HCV unit (see Fig. 4 for the exact variant name of your unit):

1 2 3 4 5 6
HCV 400 E1-A-BP-RH-PH

Loc.	Description	Options
1	Product name	HCV 300 HCV 400 HCV 460 HCV 500 HCV 700
2	Heat exchanger	ALU (aluminium) P1 (plastic 1) P2 (plastic 2) P1/E1 (enthalpy) (P1 heat exchanger can be replaced by enthalpy heat exchanger)
3	Mode A/B (factory default)	A
4	Equipped with bypass	BP
5	Equipped with moisture sensor	RH
6	Equipped with pre-heater	PH (If this part is missing, the unit is not equipped with a preheater)

Product label

The product label showing the variant and serial number is located next to the USB connection.

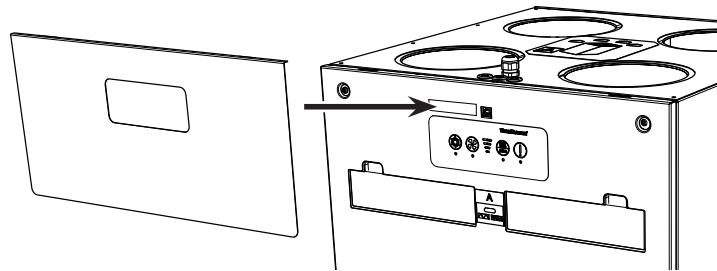


Fig. 4

Description of drain mode A/B

This section shows the functions of the different parts in drain mode A/B. A is the default mode.

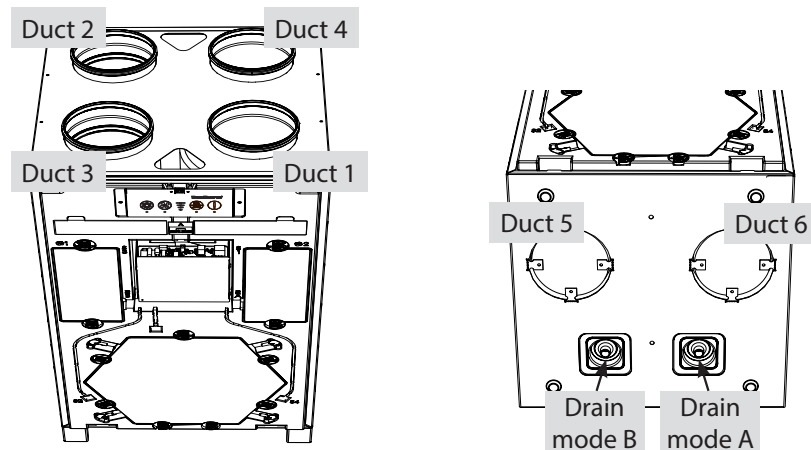


Fig. 5

Part	Mode A	Mode B
Duct connection 1 (Fig. 5)	Outdoor air - T1	Extract air - T3
Duct connection 2 (Fig. 5)	Supply air - T2	Exhaust air - T4
Duct connection 3 (Fig. 5)	Extract air - T3	Outdoor air - T1
Duct connection 4 (Fig. 5)	Exhaust air - T4	Supply air - T2
Filter 1 (Fig. 3)	Exhaust air filter G4	Supply air filter G4 or F7
Filter 2 (Fig. 3)	Supply air filter G4 or F7	Exhaust air filter G4
Fan case 1 (Fig. 3)	Extract air fan	Supply air fan*
Fan case 2 (Fig. 3)	Supply air fan*	Extract air fan

* Supply fan case may be fitted with an electrical preheater (option)

Bottom outlet in mode A/B

HCV 300, 400 and 460 have additional ducts in the bottom (ducts 5 and 6) (Fig. 5) which are closed by default but can be used as a bottom outlet for supply air (T2). The table below shows which duct is used as the bottom outlet in mode A/B and which corresponding duct can be closed at the top of the unit. Both ducts can be used simultaneously if desired.

Option for HCV 300/400/460 only:

Drain mode	Bottom outlet	Duct may be closed
Mode A	Duct 5	Duct 2
Mode B	Duct 6	Duct 4

**Airflow direction
in mode A/B**

This illustration shows the two directions of airflow through the unit. The airflow direction can be changed by changing the operating mode as described on page 26.

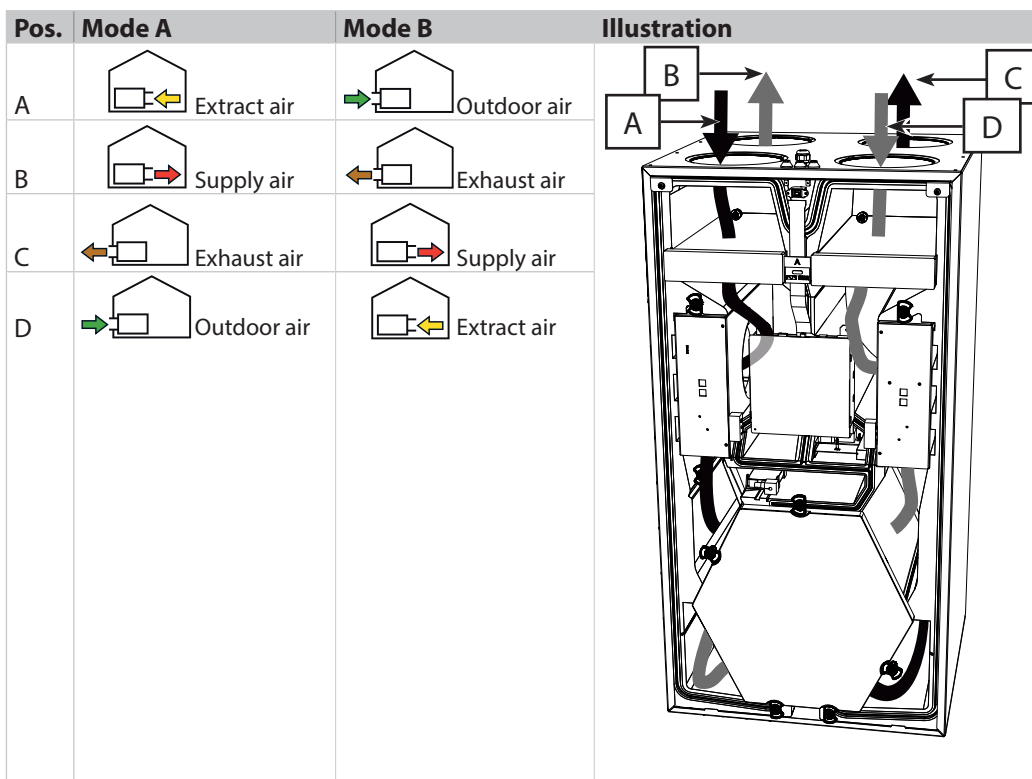


Fig. 6

Component descriptions

Introduction	This section describes the individual components of the HCV units included in the standard delivery.
Cabinet	The external parts of the cabinet are made of powder-coated, AZ-coated iron sheet. The internal parts of the cabinet are made of polystyrene (EPS). Accessories are installed after the steel front and EPS doors 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 50 °C.
Filters	The unit is equipped with a class G4 cassette filter as standard. These filters protect the heat exchanger and improve the indoor climate by filtering dust and other particles from the air. An F7 filter (pollen filter) is available as an accessory. The F7 filter is always located on the supply side - as shown at the top of the unit.
Heat exchanger	In the counter flow heat exchanger, heat energy is transferred from the extract air to the supply air, thus saving energy for heating
Fans	The supply fan passes fresh air from outside through the heat exchanger to the ventilated rooms inside. The extract air fan extracts vitiated humid air from the wet rooms in the home.
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 two outlets for condensate. One of these must be connected to the drain hose (1 m drain hose is included in the delivery) so that condensate can be led to a drain. The correct connection to the condensate outlet is shown at the top of the unit and on page 33 of this service manual.
Wall bracket	The unit is equipped with a wall bracket, for use when the unit is to be mounted on the wall.
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 electricity consumption.
Membrane panel	The desired operating mode can be selected and changed via the membrane panel located on the front of the unit.

Illustration of control parts

This illustration shows the HCV units' control section.

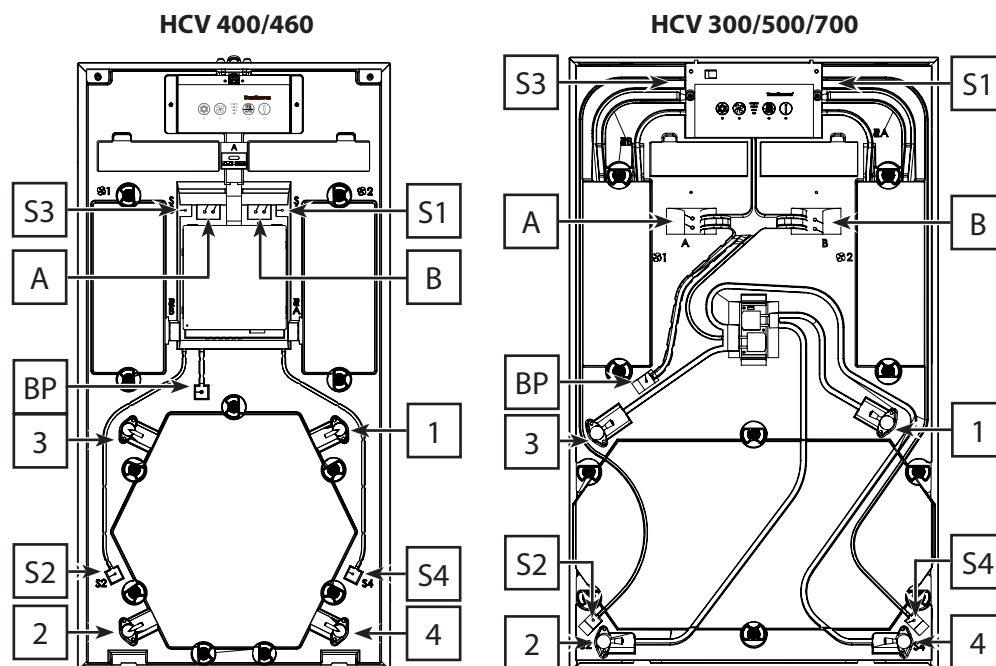


Fig. 7

Loc.	Mode A	Mode B
S1	T1 temperature sensor - outdoor air	T3 temperature sensor - extract air
S2	T2 temperature sensor - supply air	T4 temperature sensor - exhaust air
S3	T3 temperature sensor - extract air	T1 temperature sensor - outdoor air
S4	T4 temperature sensor - exhaust air	T2 temperature sensor - supply air
A	VOC and RH% sensor (accessory)	N/A (blocked)
B	N/A (blocked)	VOC and RH% sensor (accessory)
1	P1 pressure connection - outdoor air	P3 pressure connection - extract air
2	P2 pressure connection - supply air	P4 pressure connection - exhaust air
3	P3 pressure connection - extract air	P1 pressure connection - outdoor air
4	P4 pressure connection - exhaust air	P2 pressure connection - supply air
BP	Cable for bypass	Cable for bypass

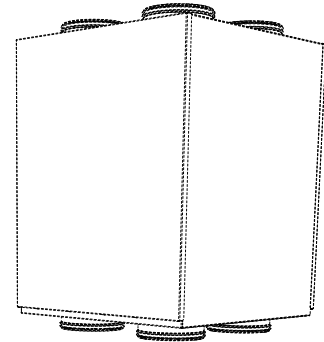
Accessories

Introduction

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

Silencer (HCV 400/460 only)

The HCV 400/460 unit can be equipped with a silencer.



Electrical pre-heating

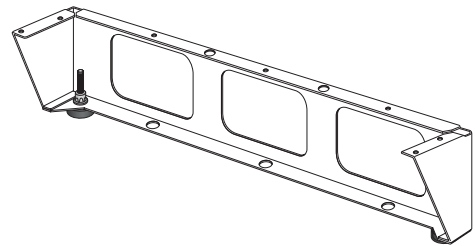
The unit can be equipped with an electrical preheating element that preheats the incoming air. The preheater increases the outside air temperature going into the heat exchanger, and thereby reduces the risk of ice in the heat exchanger in very cold conditions.

Heating coil

The water heating coil is controlled by the HAC 2 control unit (accessory).
The water heating coil increases the supply air temperature.

Floor bracket (HCV 400/460 only)

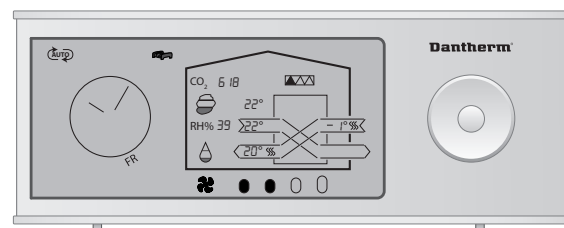
The unit can be raised up on a floor bracket for easy access to the drain.



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.

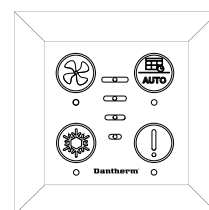
Activate cooling function/bypass (if installed in the HCV unit). Select the steps for manual ventilation or relevant weekly programs or set the controller to automatic control.



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

**Wired remote control
(HCP 10/11)**

A wired remote control (HCP 10/11) *without display* can be connected to the unit if the unit's location makes it difficult to reach the control panel.
The HCP 10/11 provides the same functionality as the control panel.



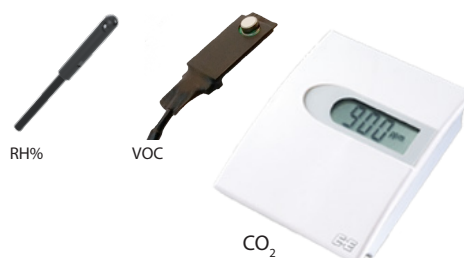
**Optional control
unit (HAC 2)**

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



**VOC, humidity and
CO₂ sensor**

The unit can be equipped with a VOC (air quality), humidity or CO₂ 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 correct ventilation level with the lowest possible electricity consumption.

Filters

Replacement filters in sets of two standard filters (G4) or of one standard filter plus one F7 filter (pollen filter).

Electronic control

Function

The main control system for the unit is located on the main PCB together with other outputs and inputs.
The membrane 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:

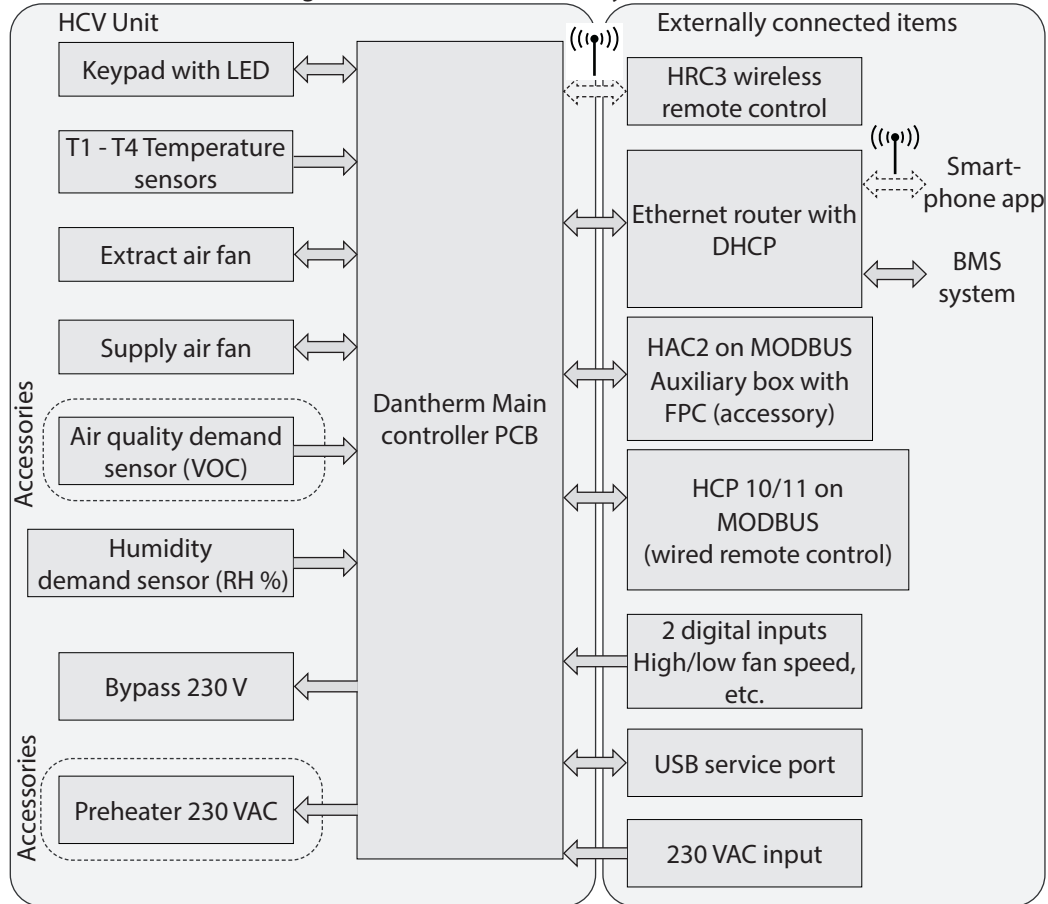


Fig. 8

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Illustration of unit's control area

This illustration shows the main PCB and the control panel on the HCV units.

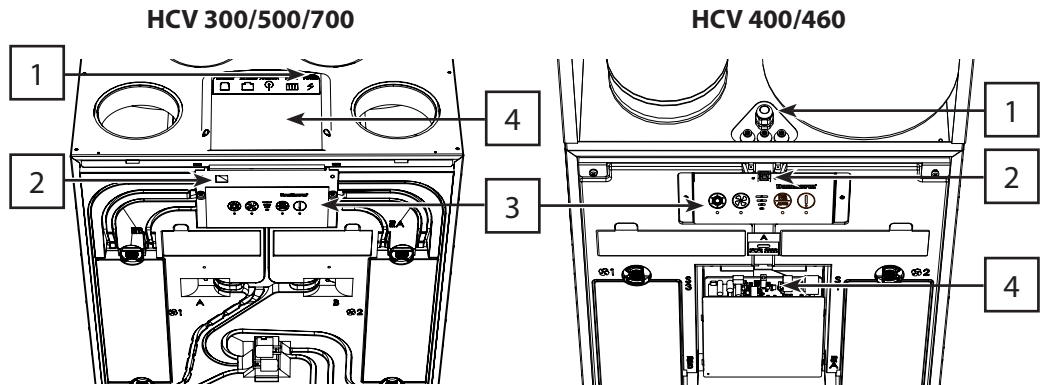


Fig. 9

Loc.	Part
1	Power
2	USB connection for: <ul style="list-style-type: none"> • Use of PC Tool for calibration purposes, software update, change of settings, etc. • Readout of error list
3	Control panel
4	Main PCB

External connections

This drawing shows the external connections of the main PCB. See also the wiring diagram on page 54, when connecting to the different ports.

(Main PCB)

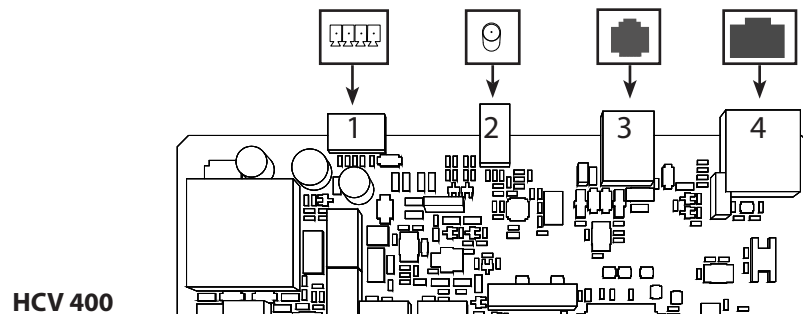


Fig. 10

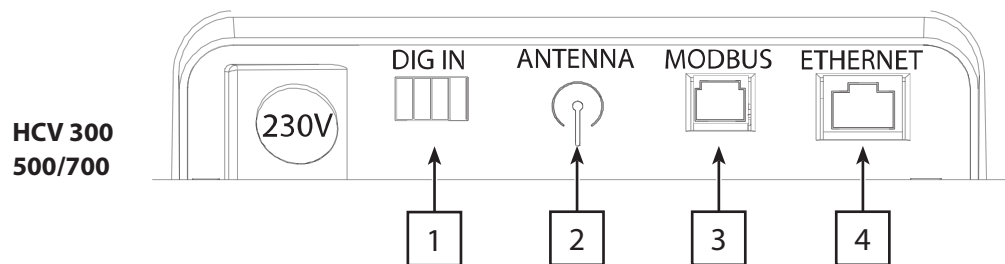


Fig. 11

Loc.	Connection (Part)	Description
1	Dig in	External digital input, to select specific operations.
2	Antenna	Wireless connection point for product-specific remote control - HRC3
3	Modbus	Modbus connection for HAC2 + HCP 10/11 + FPC
4	Ethernet	LAN connection

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.

- Preheating is applied after the T1 sensor.
- If the outdoor air is $< -3\text{ °C}$, or supply air is $< 16.5\text{ °C}$, the preheater will be activated at 10% of its maximum capacity.
- 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/wood-burner function

In cold conditions where T1 is below -3 °C , and exhaust air T4 is $< +2\text{ °C}$, condensate could build up as ice in the heat exchanger.

The following procedure is initiated to avoid this if preheating is not installed:

- The supply air fan speed will 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 T4 is $> +8\text{ °C}$ again, the supply air fan will start at minimum RPM and increase speed until the originally requested speed is reached.
- This procedure is repeated as long as necessary.
- If T1 is $\leq -13\text{ °C}$ for more than 4 minutes 25 seconds, even with defrost mode activated, the unit will stop all operation for 30 minutes and will then attempt to start under the previous operating conditions. If electrical preheating is connected, operation stop mode is disabled.

Defrosting operation will lead to a negative pressure inside the house. This may cause smoke, for example from a woodburning stove, to be drawn back into the house. If woodburner mode is activated and there is still a need for the defrosting function to be active, the unit will instead stop all operation for four hours. Setpoints for defrosting cannot be changed.

When defrosting is active HRC 3 will show "dEF" in the display.

When defrosting has shut down everything, the display will flash the T1 temperature

Bypass cooling and summer mode

See "Temporary Modes (Override)" section on page 9 and page 10.

Installation Options

Switching between modes A and B

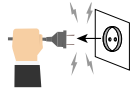
Introduction

The HCV series has the option of swapping the duct connections according to the description in section "Product description" - "General description". This section will guide you through the process of switching from operating mode A to B.



CAUTION

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



- Always ensure that the power is switched off before dismantling the unit and before changing the operating mode using the A-B function switch

Selection Mode

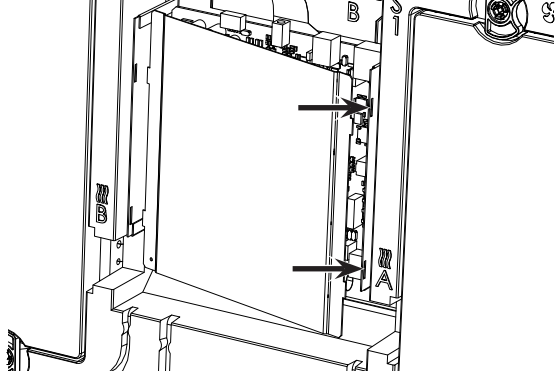
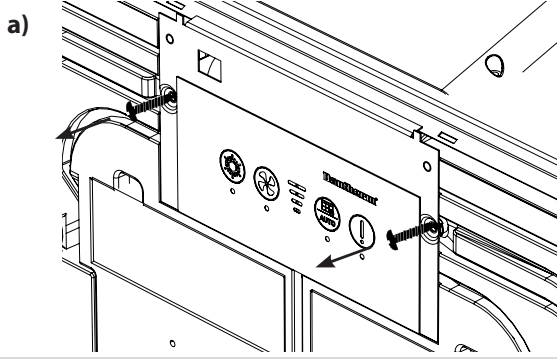
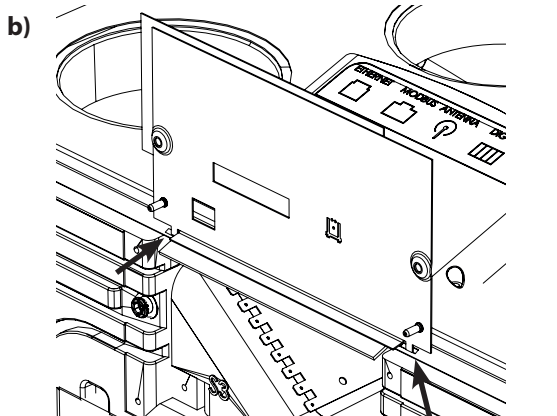
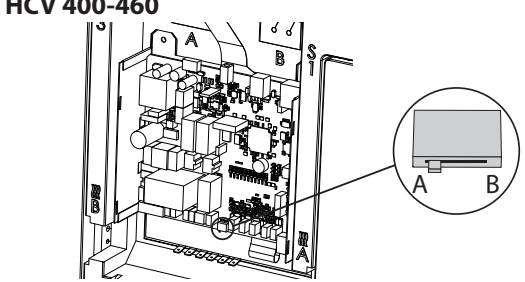
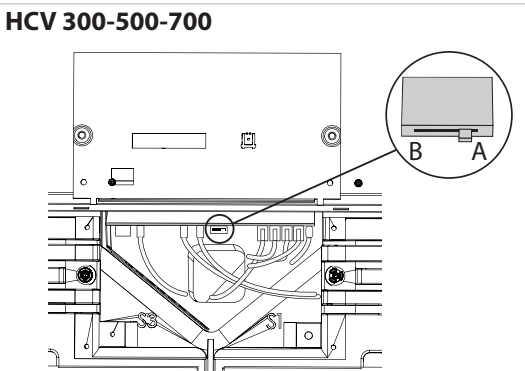
The air ducts leading the air into the house can be connected either on the right or left side at the top of the unit. Mode A is the default setting.


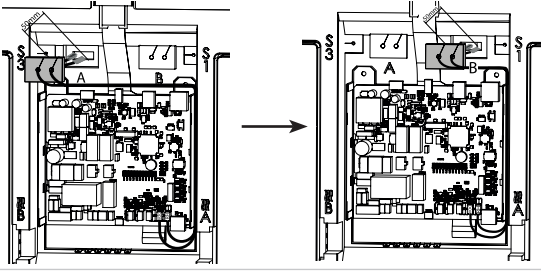
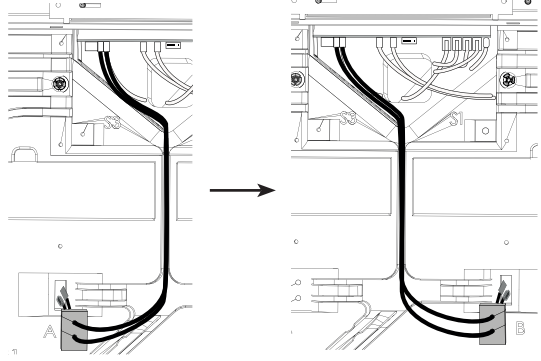
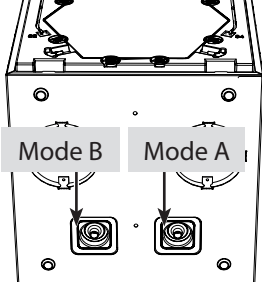
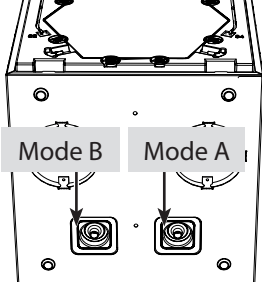
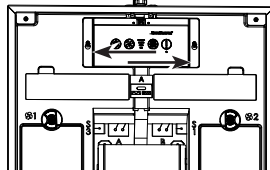
If the installation requires mode B, follow the procedure below AND check the label to make sure the water outlet is connected correctly.

Change to mode B

Follow these steps when switching the mode:

Step	Action	Illustration
1	Place the new B sticker on top of the unit.	
2	Remove the upper part of the front cover.	
3	Release the two screws at the upper left and right corners (underneath the upper part of the front cover).	
4	Remove the remaining part of the front cover.	
5	Place the new calibration sticker on the heat exchanger.	

<p>6</p>	<p>HCV 400-460: Remove the cover from the main PCB.</p>	
	<p>HCV 300-500-700: a. Loosen the two screws from the control panel. b. Put it in service position.</p>	<p>a)</p>  <p>b)</p> 
<p>7</p>	<p>Switch to mode B by using the A-B function switch on the main PCB.</p>	<p>HCV 400-460</p>  <p>HCV 300-500-700</p> 

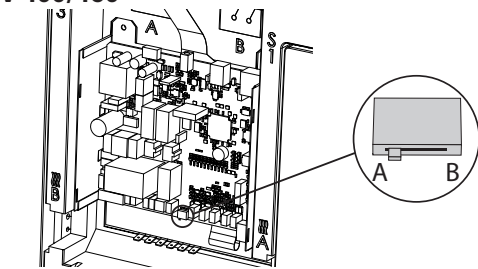
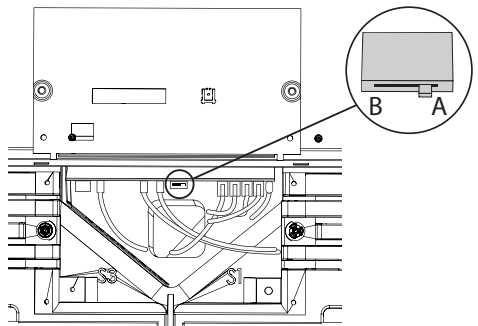
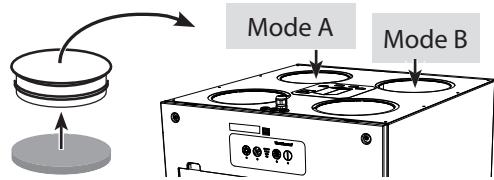
<p>8</p>  <p>CAUTION Insufficient device performance and ventilation effect To ensure optimal device performance, all wired accessories must be fitted correctly.</p> <ul style="list-style-type: none"> • Make sure that the distance between the sensor head and the cable port is 50 mm to ensure correct measurements of humidity level (and air quality). • All other wired accessories must be swapped/installed according to the current operating mode A/B. 	<p>Move the cable port, incl. humidity sensor (and VOC sensor, if present), to the sensor position for mode B.</p>	<p>HCV 400-460</p>  <p>HCV 300-500-700</p> 
<p>9</p>	<p>Refit the main PCB cover/control panel.</p>	
<p>10</p>	<p>Switch the drain hose and set it to mode B as indicated. For a further description of how to install the drain hose, see page 33.</p>	
<p>11</p>	<p>Change the filter (ONLY if the optional pollen filter F7 is used).</p> <ul style="list-style-type: none"> • Check the table on page 17 to determine the correct position of the F7 filter in mode A/B. 	
<p>12</p>	<p>Connect the 4 ducts as indicated on the label and as described on page 35.</p>	
<p>13</p>	<p>Calibrate the unit as described on page 37.</p>	
<p>14</p>	<p>Refit the front and top part of the front cover.</p>	

Use the bottom outlet (HCV 300/400/460)

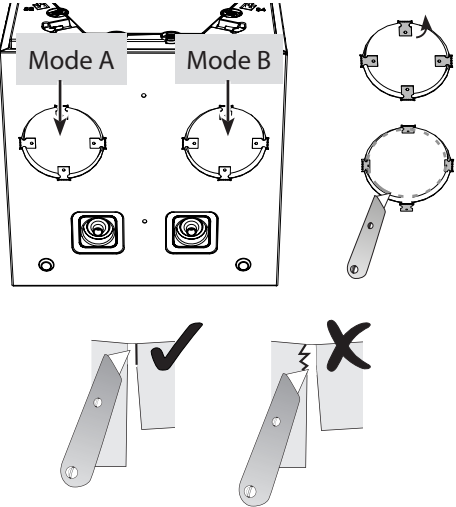
Introduction

It is possible to install the supply air duct at the bottom of the HCV 300 and HCV 400/460 units. This section will guide you through the process of opening the bottom outlet and closing the corresponding duct connection at the top.

Using bottom outlet

Step	Action	Illustration
1	Remove the front cover and check the ventilation unit mode (A/B) on the main PCB.	<p>HCV 400/460</p>  <p>HCV 300</p> 
2	<p>You can use the duct connection at the top and at the bottom at the same time. If you only want to use duct connection at the bottom, then the duct connection at the top must be closed.</p> <ul style="list-style-type: none"> • Place an insulating block in a closure cap. • Close the duct connection at the top of the unit according to mode A or B with the insulating closure cap. 	

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<p>3</p> <p>!</p>	<p>Open the duct connection (bottom)</p> <ul style="list-style-type: none"> • Locate the correct duct connection at the bottom of the unit (mode A or B) and bend all four metal clamps. • Cut a hole along the indentation (dotted line) to create an opening into the unit. <p>Try to cut along the inside line of the indentation to avoid damaging the duct connection. Do not attempt to break the indentation and ensure a complete cut through the material has been achieved.</p>	 <p>The diagram illustrates the correct procedure for opening the duct connection. It shows the bottom of the unit with two modes, Mode A and Mode B, each having a circular duct connection. A dotted line indicates the indentation where a hole should be cut. A warning icon (exclamation mark in a circle) is placed next to the text. Below the main diagram, two smaller illustrations show a hand using a utility knife to cut along the inside line of the indentation, marked with a checkmark for the correct method and an 'X' for the incorrect method of cutting through the indentation.</p>
<p>4</p>	<p>Connect the duct with a coupling as described on page 35 and secure both screws with blind rivets to the metal clamps.</p>	
<p>5</p>	<p>Calibrate the unit as described on page 37.</p>	

Installation

Location Considerations

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.

Location requirements

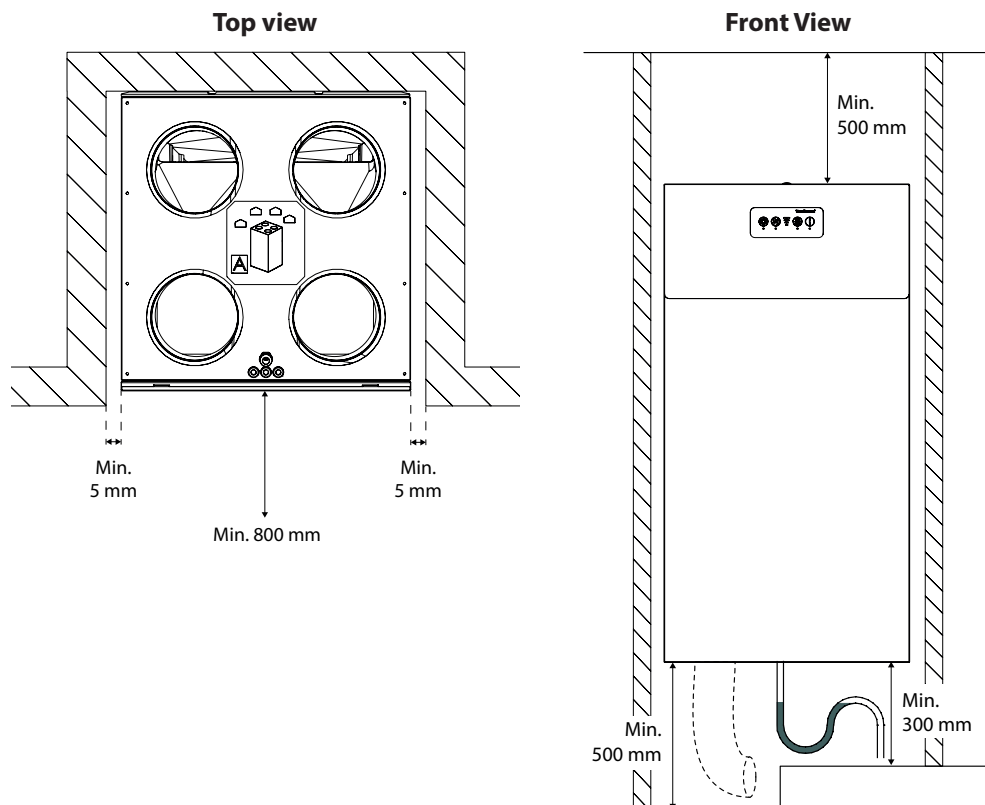
The following should be considered when selecting the appropriate location for installation:

- Confirm whether installation mode A (default) or B (optional) is possible at the installation site. If mode B is preferred, follow the replacement procedure on page 26.
Note: The function for switching between modes A and B allows the duct pair (outside or inside) to be directed towards the unit from the left OR right according to the construction of the building and room. See the difference between the two modes in the “General description” on page 17.
- HCV units are designed to be installed in dry environments with temperatures of >12 °C, in utility rooms or similar heated rooms.
- Provide additional space to ensure proper installation and service access (see “Positioning the device” on page 31).
- Ensure that the wall structure is sufficient to support the weight of the unit regardless of the wall bracket type.

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Positioning the device

Minimum space required for service access:

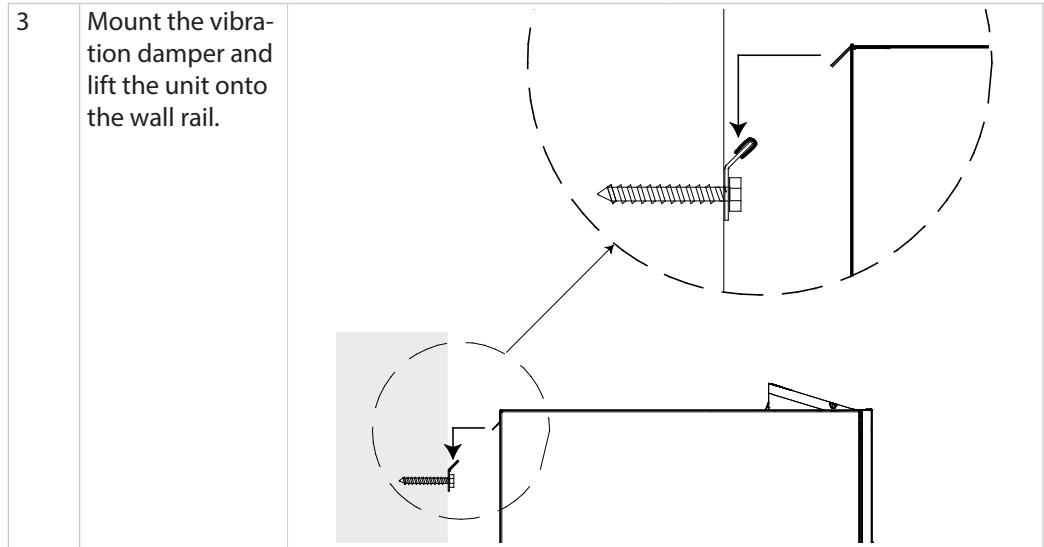


Mounting the device

Wall mounting

Follow these steps when mounting the HCV unit on the wall.

Step	Action	Illustration
1	<p>Fix the wall bracket using these measurements.</p> <p>Make sure that you use appropriate screws and rawl plugs.</p>	<p>HCV 400/460</p> <p>HCV 300/500</p> <p>HCV 700</p>
2	<p>Mount the two spacers at the bottom and rear of the unit.</p>	<p>HCV 400/460</p> <p>HCV 300/500/700</p>

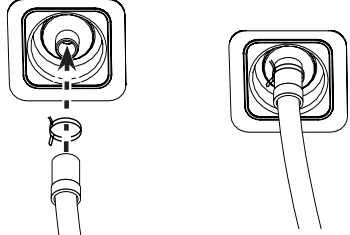
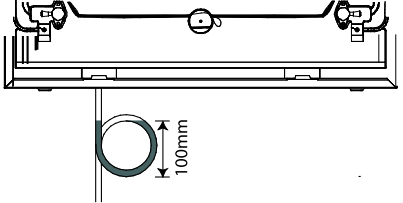
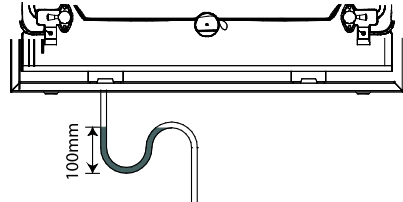
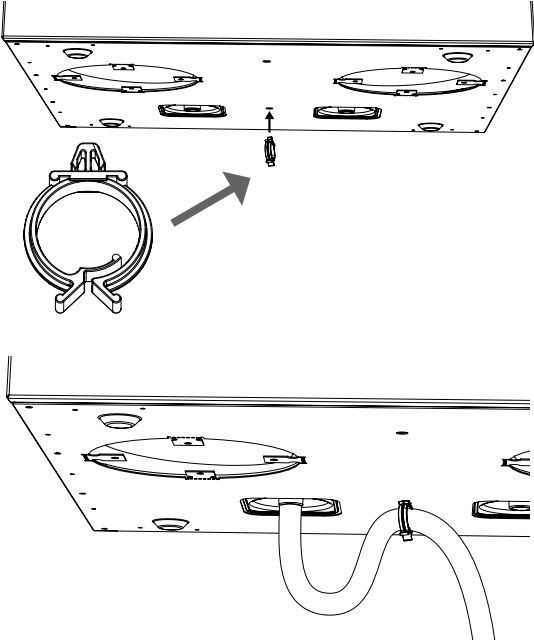


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Drain/condensate drain

The unit is equipped with a blanked-off drain. Connect the drain hose to the correct condensate outlet at the bottom of the unit.

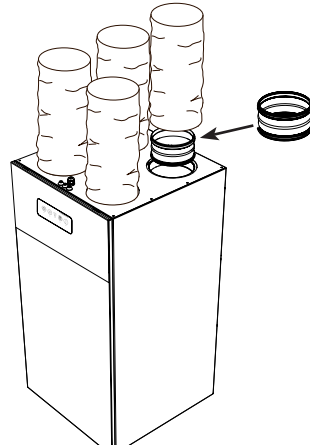
Step	Action	Illustration
1	Check the ventilation system's mode (A/B) on the main PCB.	<p>HCV 400/460</p> <p>HCV 300</p>
2	<p>Make sure that the plug is fitted in the unused condensate outlet.</p> <p> Otherwise, condensation water cannot be drained from the unit and this will result in an inadvisable accumulation of water in the unit with the risk of water entering the house!</p>	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Drain outlet in use (open)</p> </div> <div style="text-align: center;"> <p>The CLOSED drain outlet (plug must be fitted)</p> </div> </div>

3	<p>Connect the drain hose to the drain outlet in use and secure the connection with a hose clamp.</p>	
4	<p>The drain hose must be fitted with a water trap of min. 100 mm (option A or B).</p> <ul style="list-style-type: none"> Route the hose to a drain and ensure that it is not exposed to frost. Fill the water trap with min. 0.5 L water. 	<p>A</p>  <p>B</p> 
5	<p>HCV 400/460 only</p> <ul style="list-style-type: none"> Mount the cable clamp in the hole in the bottom of the unit Pass the drain hose through the cable clamp to form a water trap. 	
<p>Material damage (e.g. water damage) Heat recovery of air with a high moisture content leads to condensation in the heat exchanger. Condensate must be led into a drain, as it otherwise may damage the floor under the unit.</p> <ul style="list-style-type: none"> Make sure that the drain hose is installed according to the current operating mode. Check the water trap regularly, especially during the summer, and make sure it is filled with water as recommended. 		

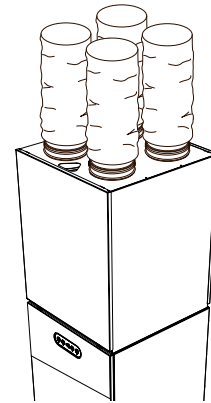


Connecting the ducts

Step	Description
1	Make sure that the ducts connected to the unit have the same or a larger diameter in comparison with the connector. The measurements can be seen in the Technical Data section on page 51.
2	Refer to the product description on page 17 to determine the correct duct connection (A/B mode).
3	Check whether the unit is to be installed with or without a silencer and connect the ducts accordingly (see illustration below).
4	All four ducts must be wrapped in a minimum of 50 mm insulation.



W/o Silencer:
Connect ducts via (NPU) nipple



With silencer (HCV 400/460 only):
Connect ducts to the spigots on the silencer
(The silencer is already fitted with spigots)

Noise control

Duct dimensions and sound absorbers must be in accordance with national standards and building regulations. Contact your Dantherm distributor for further information.



WARNING

Dust hazard

Ducts and connectors must be protected and kept closed until the house is ready to be occupied. This is to ensure that no moisture, dirt or dust enters the ducts, which may cause problems at a later stage.

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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	Description
allocation status	
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 (UVC card) and Dantherm's accessories (HAC, FPC, or HCP11)
Connects via RS485 port
Important! External BMS cannot be connected as Modbus RTU via the RS485 port or via Dantherm accessories. (HAC, FPC, or HCP11)

Modbus TCP/IP
Controllers in Dantherm's ventilation units have the option of communicating 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:

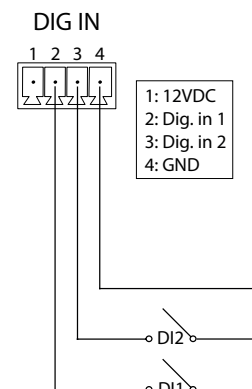
- Dig. input 1: Ventilation step 2
- Dig. input 2: Ventilation step 4

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.

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.

Calibration tools

Calibration of the airflow can be done in two ways:

1. via the membrane keypad on the unit (see description below)
2. via PC Tool (follow the step-by-step description in PC Tool)

In both procedures, the airflow must be calibrated by measuring ΔPa over the heat exchanger using the pressure nozzles behind the front plate.

Dantherm recommends a handheld manometer, such as Testo 510 or similar.


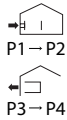
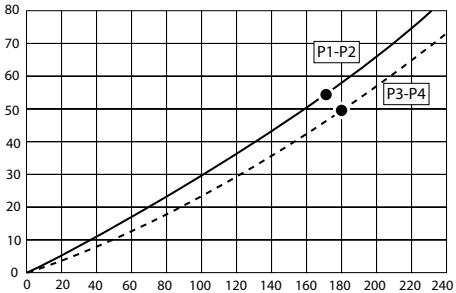
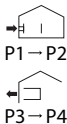


NOTE

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

Use of graph


Follow these steps in preparation for calibrating the device.

Step	Action	Illustration				
1	Use the desired airflow rate according to national regulations that corresponds to the size and pressure drop of the house.					
	 The supply airflow must under no circumstances be higher than the exhaust airflow, as this can lead to humid air being pressed into the building structure with harmful, negative effects on the building.					
2	Note the desired values for supply and exhaust airflow rates on the label located on the cover of the heat exchanger. (The values shown are examples for illustrative purposes only)	Einstellwerte / Calibration / Calibrazione  <table style="margin-left: 100px;"> <tr> <td>_____ [Pa]</td> <td><u>171</u> [m³]</td> </tr> <tr> <td>_____ [Pa]</td> <td><u>180</u> [m³]</td> </tr> </table>	_____ [Pa]	<u>171</u> [m ³]	_____ [Pa]	<u>180</u> [m ³]
_____ [Pa]	<u>171</u> [m ³]					
_____ [Pa]	<u>180</u> [m ³]					
3	Locate the corresponding pressure drop on the airflow graph on the heat exchanger and note the value as shown.	 Einstellwerte / Calibration / Calibrazione  <table style="margin-left: 100px;"> <tr> <td><u>54</u> [Pa]</td> <td><u>171</u> [m³]</td> </tr> <tr> <td><u>50</u> [Pa]</td> <td><u>180</u> [m³]</td> </tr> </table>	<u>54</u> [Pa]	<u>171</u> [m ³]	<u>50</u> [Pa]	<u>180</u> [m ³]
<u>54</u> [Pa]	<u>171</u> [m ³]					
<u>50</u> [Pa]	<u>180</u> [m ³]					

Calibration using membrane keyboard

Calibrate the fan speed using the membrane keypad on the front of the unit.

Step	Action	Illustration									
1	<p>Press and hold the fan button (B) and weekly program (D) for five seconds until both LEDs flash. The fan speed will now change to level 3.</p> <p>The unit is now in "installer mode" for one hour.</p>										
2	<p>Connect the ΔPa meter (manometer) across the direction P1 -> P2 of the supply air.</p> <p>Check P1 and P2 positions according to operating mode on page 20.</p> <p>NOTE: This example shows P1 and P2 in operating mode A. A drawing of "Mode B" calibration is on the label for Mode B included in the delivery.</p>	<p>Example of Mode A.</p>									
3	<p>Compare the ΔPa value on the manometer with the P1 -> P2 value, noted as described on page 37.</p>	<table border="1"> <thead> <tr> <th colspan="3">Einstellwerte / Calibration / Calibrazione</th> </tr> </thead> <tbody> <tr> <td>P1 - P2</td> <td>54 [Pa]</td> <td>171 [m]</td> </tr> <tr> <td>P3 - P4</td> <td>50 [Pa]</td> <td>180 [m]</td> </tr> </tbody> </table>	Einstellwerte / Calibration / Calibrazione			P1 - P2	54 [Pa]	171 [m]	P3 - P4	50 [Pa]	180 [m]
Einstellwerte / Calibration / Calibrazione											
P1 - P2	54 [Pa]	171 [m]									
P3 - P4	50 [Pa]	180 [m]									
4	<p>Press and hold the bypass switch (A) and adjust the supply air up (D) or down (B) until the measured ΔPa value approaches as close as possible the P1 -> P2 value noted on the label.</p> <p>! Strong wind against the building may affect the adjustment of the unit.</p>										
5	<p>Disconnect the manometer from P1 -> P2 and connect the manometer across the extract air direction P3 -> P4.</p> <p>Check the positions of P3 and P4 according to the operating mode on page 20.</p> <p>NOTE: This example shows P3 and P4 in operating mode A. A drawing of "Mode B" calibration is on the label for Mode B included in the delivery.</p>	<p>Example of Mode A.</p>									

6	<p>Compare the ΔPa value on the manometer with the P3 - > P4 value, noted as described on page 37.</p>	
7	<p>Press and hold the alarm reset (E) and adjust the exhaust air up (D) or down (B) until the measured ΔPa value approaches as closely as possible the P3 - > P4 value noted on the label.</p> <p> Strong wind buffeting the building may affect the adjustment of the unit.</p>	
8	<p>Connect the ΔPa meter (manometer) across the exhaust air direction P1 - > P2 one more time. Check the measured ΔPa value as it may have changed due to the adjustment on the exhaust side. Make an adjustment if necessary.</p>	
9	<p>Check the airflow in all rooms and adjust the airflow rate by opening/closing the valves in the different rooms.</p>	
10	<p>Reconnect the ΔPa meter (manometer) to check the measured ΔPa value on both the supply and exhaustsides.</p> <p>Note the measured values on the label.</p>	
11	<p>Press and hold the fan button (B) and weekly program button (D) for five seconds until the LED stops flashing.</p> <p>The unit is now calibrated.</p>	

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Note:

The adjustment routine above only describes the first, indicative part of the system's adjustment. The following must also be taken into account:

- adjust the valves in all rooms until the required airflow for each room has been achieved.
- check the main airflows according to the instructions earlier in this procedure, as major valve adjustment may greatly affect the main airflow.
- during regulation, it must be ensured that the extract airflow is always at least 5% higher than the supply airflow in order to create conditions for mass balance in the system.

Operation

Operating the device

See user manual section "Operation" on page 7.

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 a written 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
	Clean the internal air direction	Trained professionals
	Inspect and clean heat exchanger	Trained professionals
	Inspect and clean drip tray, drain and drain hose	Trained professionals



CAUTION

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.
- Turn off the unit when inspecting the unit's internal parts.
- 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.

Preparation for inspection

Remove the front plate for inspection.

Step	Action	Illustration
1	Remove the upper part of the front cover.	
2	Release the two screws at the upper left and right corners (underneath the upper part of the front cover).	
3	Remove the remaining part of 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 42.)



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 dirty, 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 dirty or an alarm has been triggered.	
3	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.	

Fans and electric preheater (2 years)

Step	Action	Illustration
1	Remove one of the fan cases.	
2	Carefully clean the fan's blades with compressed air or a brush through the opening at the base of the fan case. 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	If the unit is equipped with a heating element: Clean as much as possible without dismantling the fan case. Inspect the heating elements for visible damage.	
5	Refit the fan case and repeat steps 1–5 with the other fan case.	

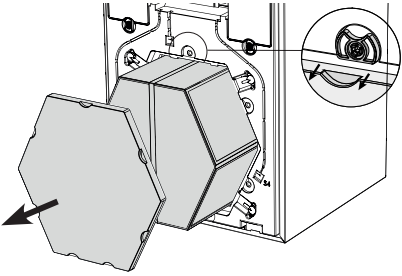
Internal cleaning (2 years)

Remove the fan cases 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 cases and filters when you have finished cleaning.

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**Heat exchanger
(2 years)**

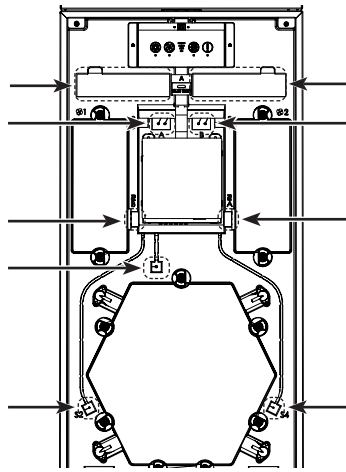
Step	Action	Illustration
1	Remove the heat exchanger from the unit.	
2	Clean the heat exchanger with a soft brush and a vacuum cleaner at all four inlets. In special cases, for example, if there are clear traces of accumulated, dirty condensed water in the heat exchanger, it will be necessary to clean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

**Drain and drip tray
(2 years)**

Step	Action	Illustration
1	Remove the heat exchanger to inspect the drip tray. <ul style="list-style-type: none"> • Check that the condensation outlet is not blocked in the drip tray. • Clean the drip tray with soapy water and a brush/cloth. Reinstall the heat exchanger.	
2	Check drain hoses and valves for damage and correct installation. See the optimum installation on page 33. <ul style="list-style-type: none"> • 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 hose's water trap. 	

End inspection

When the service is completed, close the unit again.

Step	Action	Illustration
8	Make sure that all gaskets are completely tight before mounting the front cover.	
9	Check that all connections are securely fixed to the PCB.	
10	Mount the front cover with the two screws, and then put the top part of the front cover back in place.	

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 signalling

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 (HCP 10/11)	Audible buzzer signal and flashing LED. The number of flashes corresponds to an error code followed by a pause of 5 seconds. See Airflow direction in mode A/B.
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 membrane 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 dirty, so the filter period is too short	Extend the filter timer period	
					The filters are dirty	Replace filters and reset alarm	
					Filters are very dirty, 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 membrane 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 Fan defective	Decrease fan speed setpoint Replace fan	Automatic reset after 140 seconds, but the alarm reappears if the problem is still present
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 membrane 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 Fan defective	Decrease fan speed setpoint Replace fan	Automatic reset after 140 seconds, but alarm reappears if problem persists

A	B	C	Error code	Error	Possible cause	Action required	Reset	
3	R	0	E3	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	Dirty extract air filter	Change filters		Automatic reset if efficiency is high enough for 30 seconds
				Reduced heat recovery due to low exhaust airflow	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	Dirty supply air filter	Change filters		
					Poor balancing of airflows	Adjust the system		

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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 restart after 1800 seconds

A	B	C	Error code	Error	Possible cause	Action required	Reset
11	R	0	E 11	Supply air temperature < +5 °C	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 membrane 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 extract air temperature	Dirty 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 dirty. Raise the minimum airflow setting if necessary	

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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)	Fire or smoke sensor connected to this input is active	Check for smoke or fire Check if sensor and connection are OK	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
				Input is normally closed (NC) but is now open	Nothing connected to this input	Install short circuit accessory	
15	R	1	E 15	High water level sensor (accessory)	Water outlet is clogged	Clean the water outlet	Automatic reset when input is closed again
				Water level too high	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.			Perform a manual reset by pressing the alarm button on the membrane panel or by turning the unit off/on
				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	
				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	

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Spare parts

Introduction

Spare parts for the HCVunits described in this manual are available via the webshop: shop.dantherm.com.

Appendix

Technical data

**Data sheet
HCV 400**

Specification	Abbr.	Unit	HCV 400 P1	HCV 400 P2	HCV 400 E1
Operating range (min. @ 50Pa - max. @ 100Pa)	V	m ³ /h	80 to 250	50 to 240	50 to 240
EN 13141-7 reference flow (@ 50Pa)	V _{REF}	m ³ /h	175	168	168
Performance					
Temperature efficiency in accordance with EN13141-7	η_{SUP}	%	from 91% to 97%	from 89% to 96%	from 79% to 94%
Specific power consumption in accordance with EN13141-7 (@ ref. flow)	SEL/SPI	W/(m ³ /h)	0.23	0.19	0.20
Leakage (external and internal) in accordance with EN13141-7	-	%	< 2 (Class A1)		
Filters in accordance with ISO16890 / EN779	-	-	ISO Coarse 75% / G4 (optional: ePM1 55% / F7)		
Ambient temperature for installation	t _{SURR}	°C	from +12 to +50		
Outdoor temperature range without installed preheater	t _{ODA}	°C	from -12 to +50		
Outdoor temperature range with installed preheater	t _{ODA}	°C	from -25 to +50		
Maximum absolute humidity in extract air	x	g/kg	10		
Cabinet:					
Exterior dimensions (without wall bracket)	W x H x D	mm	540 x 1051 x 549		
Spigots/duct connections	Ø	mm	160 - female		
Weight	m	kg	39		
Thermal conductivity - polystyrene insulation	λ	W/(mK)	0.031		
Heat transfer coefficient - polystyrene insulation	U	W/(m ² K)	< 1		
Fire class - polystyrene insulation	-	-	DIN 4102-1 Class B2 EN 13501 Class E		
Drainage hose	Ø/length	" / m	3/4" – 1 m		
Cabinet colour	RAL	-	9016		
Electrical					
Voltage	U	V	230		
Max. power consumption (without/with preheater)	P	W	170/1,570		
Frequency	f	Hz	50		
IP class	class	-	21		

* The use of the preheating coil is recommended at outdoor temperatures below -3°C to ensure balanced operation

**Data sheet
HCV 460**

Specification	Abbr.	Unit	HCV 460 P2
Max. flow at 100Pa	V_{100Pa}	m ³ /h	460
Max. rated flow at 100Pa	$V_{max\ nom.}$	m ³ /h	360
Operating range DIBt	V_{DIBt}	m ³ /h	70 - 360
Working range Passivhaus at 100Pa	V_{PHI}	m ³ /h	106 - 270
EN 13141-7 reference flow @50Pa	V_{REF}	m ³ /h	252
Performance			
Temperature efficiency in accordance with EN13141-7I	η_{SUP}	%	86
Filters in accordance with EN779: 2012	class	-	G4/G4 (F7 optional)
Filters in accordance with ISO 16890	class	-	ISO Coarse (epM1 > 50% optional)
Ambient temperature for installation	t_{SURR}	°C	from +12 to +40
Outdoor temperature range without installed preheater	t_{ODA}	°C	from -12 to +50
Outdoor temperature with pre-heater installed	t_{ODA}	°C	from -25 to +50
Maximum absolute humidity of extract air	x	g/kg	10
Cabinet:			
Dimensions (without brackets)	W x H x D	mm	540 x 1050x549 **
Spigots/duct connections	Ø	mm	Ø160 - female
Weight	m	kg	40
Thermal conductivity - polystyrene insulation	λ	W/(mK)	0.031
Heat transfer coefficient - polystyrene insulation	U	W/(m ² K)	U<1
Fire class - polystyrene insulation	-	-	DIN 4102 Class B2 EN 13501 Class E
Leakage (outside and inside) in accordance with EN 13141-7			< 2 % (Class A1)
Drainage hose	Ø/length	" / m	3/4" - 2 m
Cabinet colour	RAL	-	9016
Electrical			
Voltage	U	V	230
Max. power consumption (without/with preheater)	P	W	230/2080
Frequency	f	Hz	50
IP class	class	-	21

* The use of the preheating coil is recommended at outdoor temperatures below -3°C to ensure balanced operation

** +20mm fitting

Data sheet
HCV 300/500/700

Specification	Abbr.	Unit	HCV 300	HCV 500	HCV 700
Operating range (min. @ 50Pa - max. @ 100Pa)	V	m ³ /h	50 to 180	80 to 300	80 to 450
Reference flow (@ 50Pa)	V _{REF}	m ³ /h	126	210	315
Performance					
Temperature efficiency in accordance with EN13141-7	η_{SUP}	%	from 85% to 86%	from 85% to 88%	from 85% to 88%
Specific power consumption in accordance with EN13141-7	SEL/SPI	m ³ /h	0.28	0.21	0.22
Leakage (external and internal) in accordance with EN13141-7	-	%	< 2 (Class A1)		
Filters in accordance with ISO16890 / EN779	-	-	ISO Coarse 75% / G4 (optional: ePM1 55% / F7)		
Ambient temperature for installation	t _{SURR}	°C	from +12 to +50		
Outdoor temperature without pre-heater installed	t _{ODA}	°C	from -12 to +50		
Outdoor temperature with pre-heater installed	t _{ODA}	°C	from -25 to +50		
Maximum absolute humidity of extract air	x	g/kg	10		
Cabinet:					
Exterior dimensions without wall brackets)	W x H x D	mm	600 x 1000 x 430	700 x 1050 x 603	700 x 1050 x 750
Spigots/duct connections	∅	mm	125 - female	160 - female	200 - female
Weight	m	kg	36	49.5	70
Heat conductivity of the polystyrene insulation	λ	W/(mK)	0.031		
Heat transition figures - polystyrene insulation	U	W/(m ² K)	< 1		
Fire class - polystyrene insulation	-	-	DIN 4102-1 Class B2 EN 13501 Class E		
Drainage hose	∅/length	" / m	3/4" – 1 m		
Cabinet colour	RAL	-	9016		
Electrical					
Voltage	U	V	230		
Max. power consumption (without/with preheater)	P	W	170/870	170/1370	234/1834
Frequency	f	Hz	50		
IP class	-	-	21		

* The use of the preheating coil is recommended at outdoor temperatures below -3°C to ensure balanced operation

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Illustrations

Illustration with wiring diagram

This illustration shows the wiring diagram for the unit

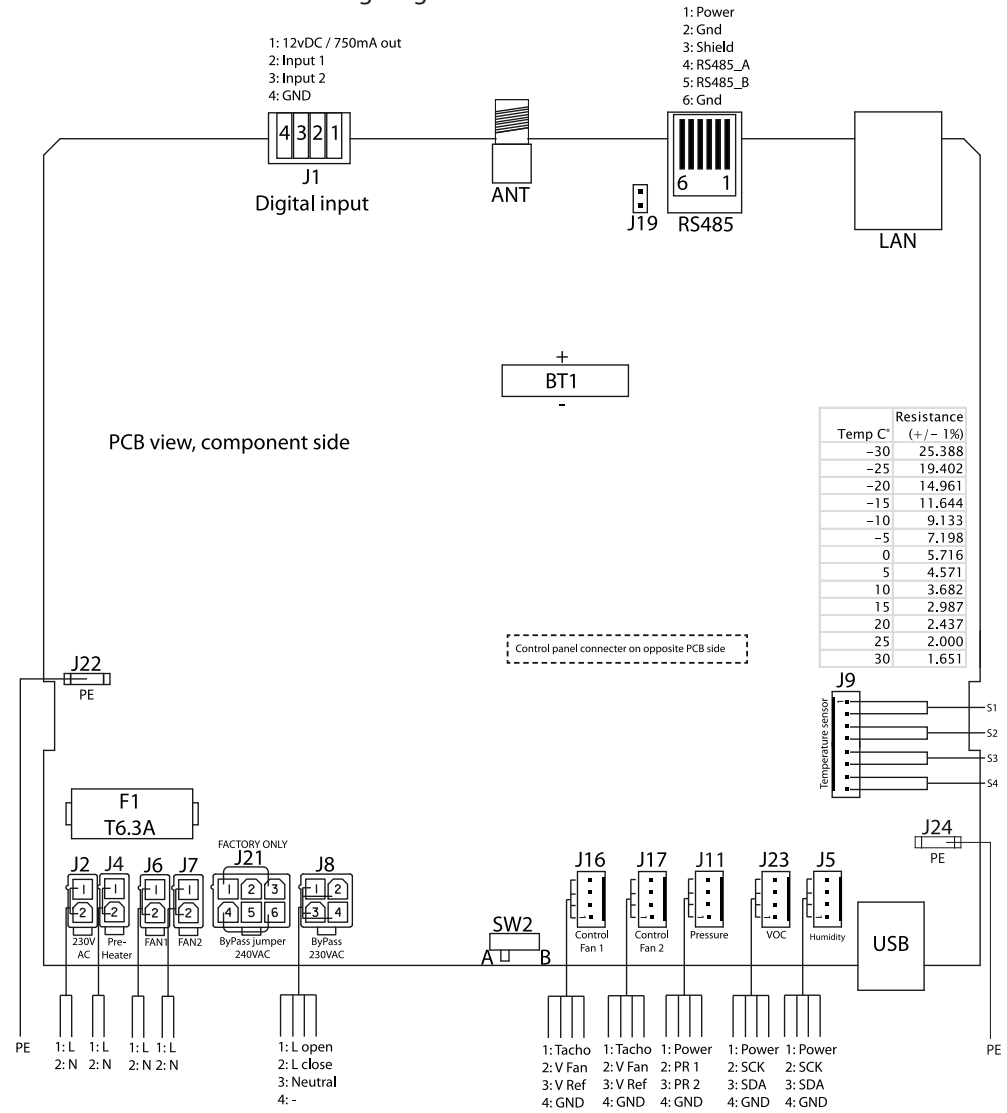
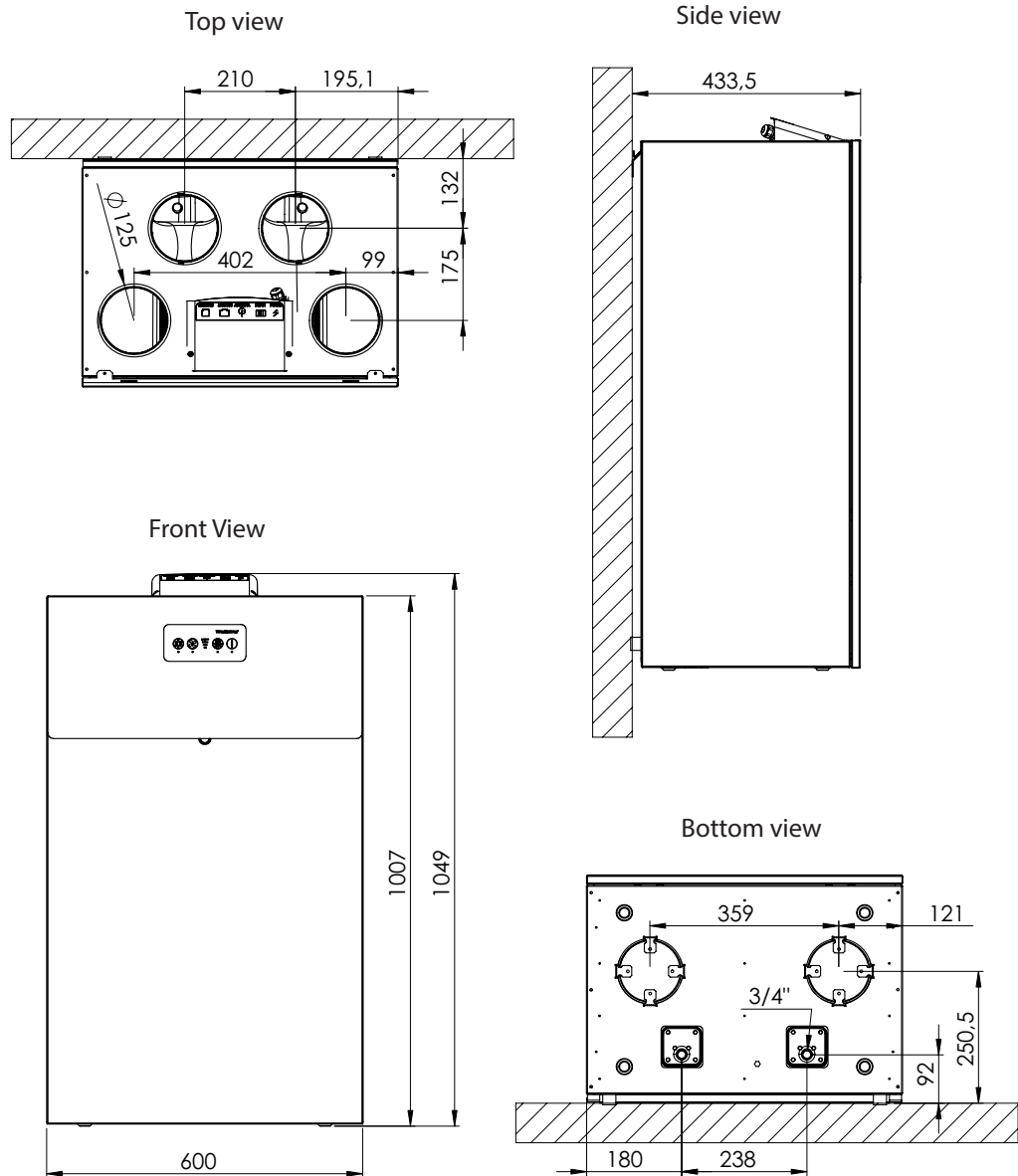


Fig. 12

Cabinet dimensions

HCV 300

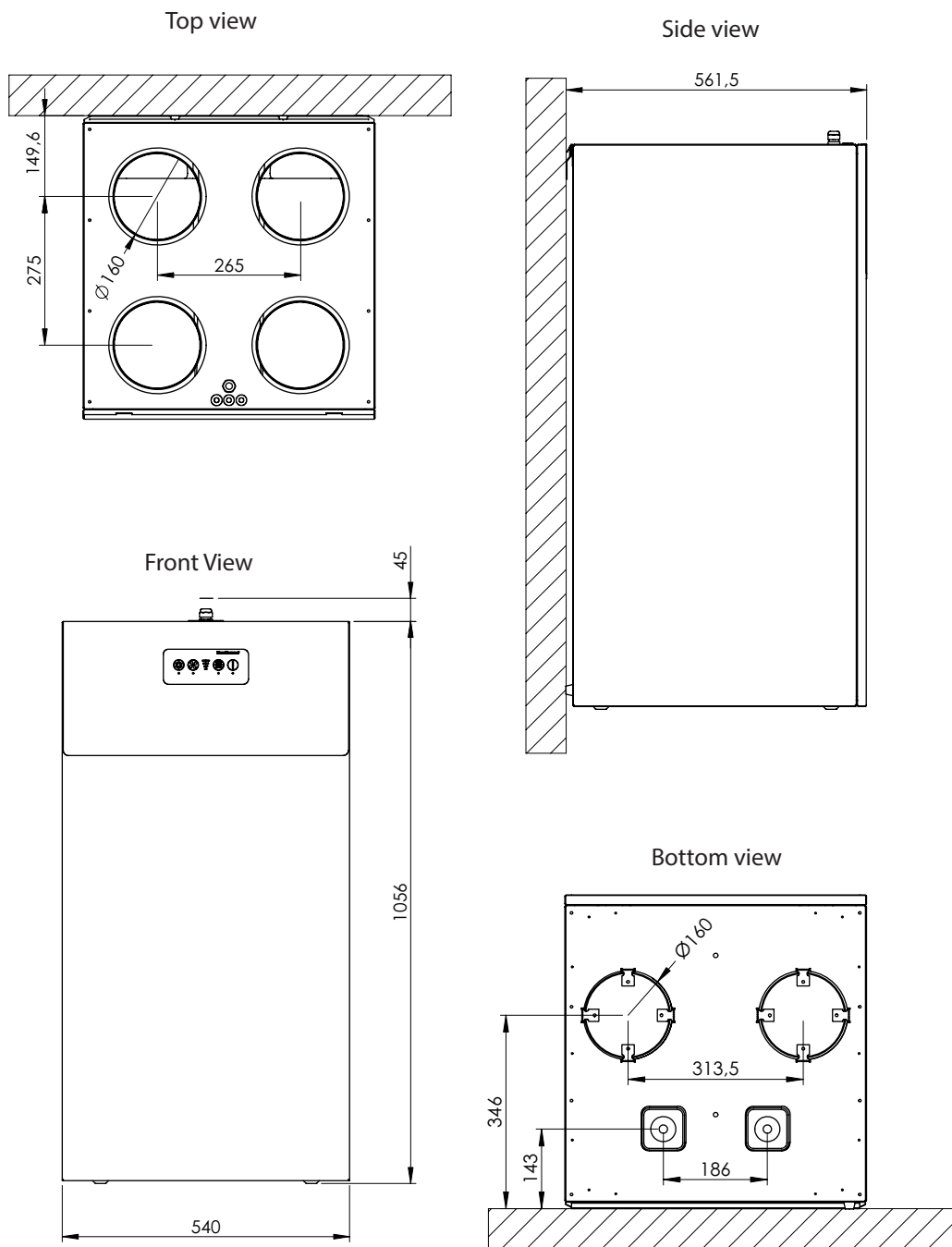
Dimensions



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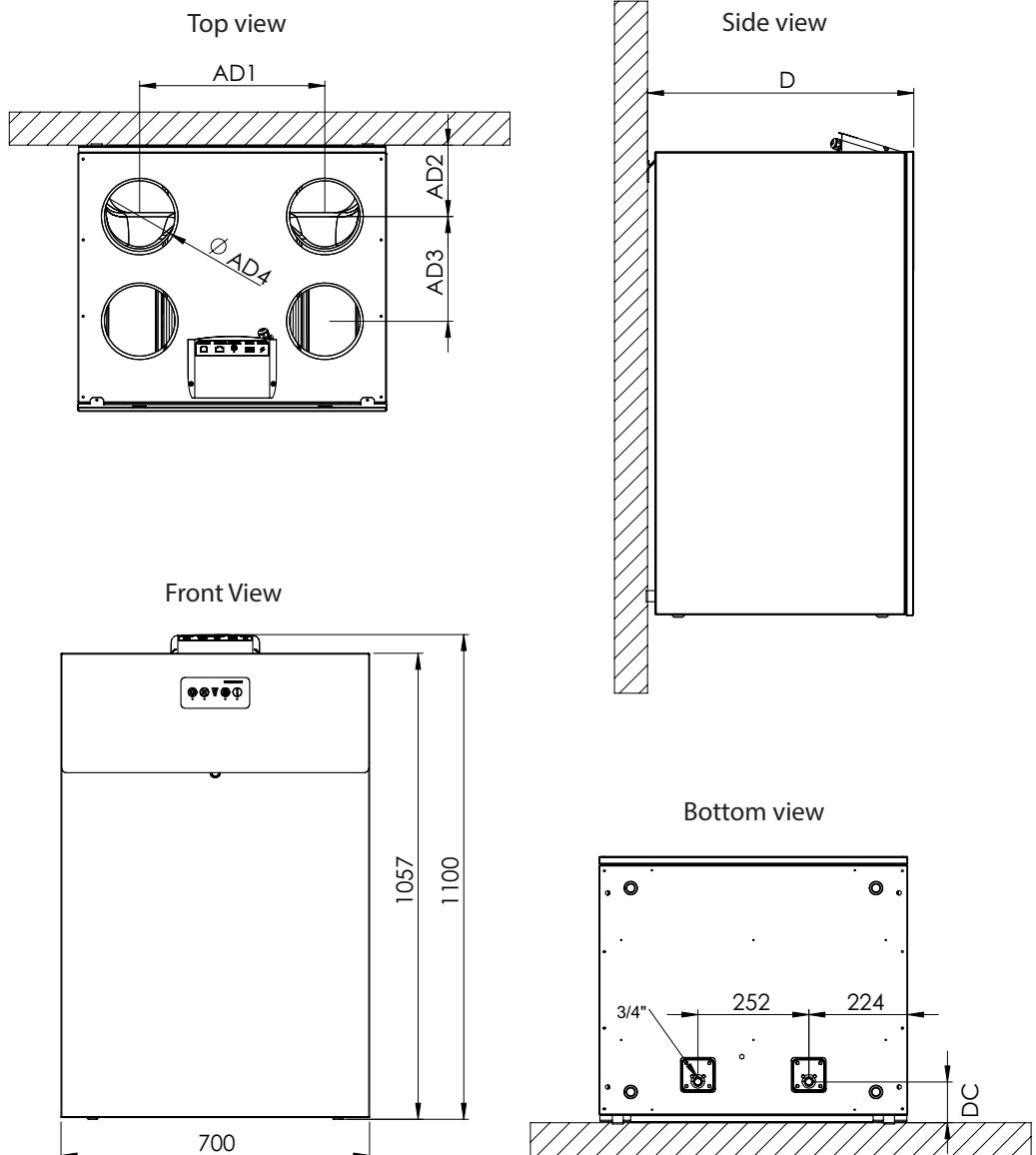
HCV 400/460

Dimensions



HCV 500/700

Dimensions



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Viewing	Loc.	HCV 500	HCV 700
Top view	AD1	420	394
	AD2	162	196
	AD3	237.5	289
	AD4	Ø 160	Ø 200
Side view	D	604	770
Bottom view	DC:	93	98



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