

# TECHNICAL INFORMATION

## **HCV 300 - 400<sub>p1</sub> - 500 - 700**

RESIDENTIAL VENTILATION UNIT FOR WALL INSTALLATION



**Dantherm®**



# **HCV 300 - 400<sub>P1</sub> - 500 - 700**

## **Residential ventilation**

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HCV 300-400-500-700 range

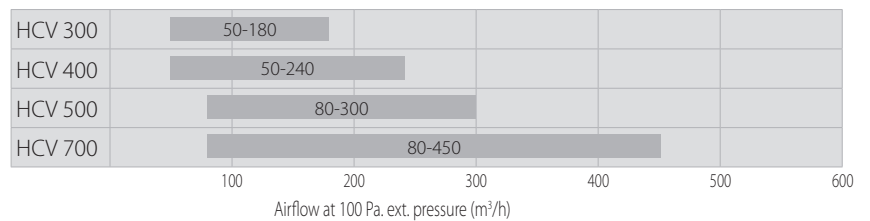
GENERAL DESCRIPTION

The HCV 300-400-500-700 residential ventilation units are primarily designed for 1 and 2 family houses. The units are supplied as packaged basic ventilation units complete with built-in control panel, and includes needed parts for wall installation.

A wide range of additional accessories, internally as well as externally fitted, are available in order to cover any specific need for ventilation.

The residential ventilation units are fitted with highly efficient counter-flow heat exchangers, which are optimized to a high efficiency level thus achieving a low power consumption (SPI value) for the entire unit.

For a quick selection you can use the selection chart below. The selection chart shows the air volumes at 100 Pa pressure loss.



**Model range**

The HCV residential ventilation units are vertical models designed for wall-mounting. They fulfill ventilation requirements of houses up to 450 m<sup>2</sup> or more, depending on national requirements and the actual pressure loss in the installation.

The HCV 300 unit is perfect for concealed installation instead of a 60x60 cm cupboard modules, e.g. in a modern utility room environment, where everything is hidden behind doors. All ducts are connected to the top of the unit. On the HCV 300 and HCV 400 it is also possible to connect the supply duct to the base if ducts are to run beneath the floor.

HCV 400 fits into a standard 60x60 cm cupboard module.

The HCV 500-700 are ideal for free wall installation with minimum 700 mm. space. A standard wall rail is supplied with the HCV 300, HCV 400 and HCV 500, and a larger adjustable wall console is supplied with the HCV 700.

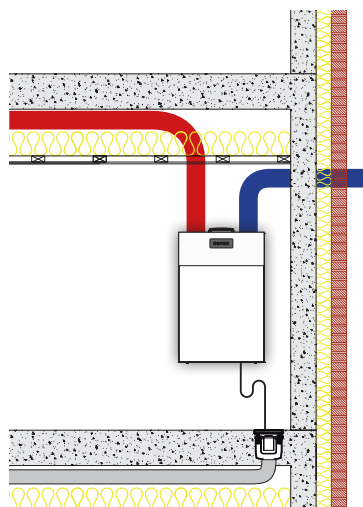
All units are equipped with easy-access filter slots behind the upper front cover. In an opening in the front cover you find the control panel with LED light indicators.

**Cabinet**

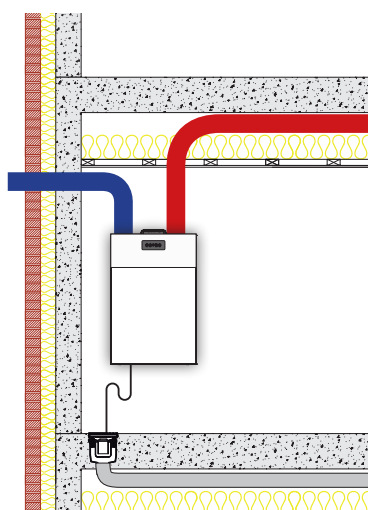
The HCV series are made from expanded polystyrene (EPS) components with a minimum wall thickness of 32 mm. This insulation thickness allows the units to be placed in rooms with temperatures as low as +12°C.

The entire EPS body is clad in 0.8 mm Aluzink coated sheet metal, painted in RAL 9016. The HCV series complies with European fire safety requirements as specified in EN 13501 class E.

The leakage rate of the unit (internal and external) is <2% as specified in EN13141-7 leakage class A1.



Left setup (A)



Right setup (B)

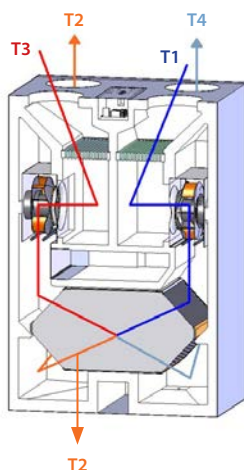
### Duct connections

By default the inside duct connections are placed on the left of the top cover plate on the unit. The unit can be electronically swapped, interchanging the duct connections, so that the inside air duct connection changes to the right hand side of the top cover plate.

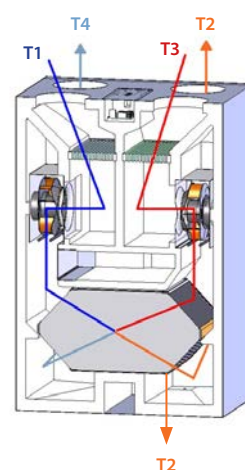
This swapping functionality allows the unit to be mounted with the outside ducts connected to either the right or the left hand side of the unit, covering all installation demands, with only one type unit.

On HCV 300 and 400 supply air duct can be connected below the unit.

Left setup (A)



Right setup (B)



T1 Outdoor air  
T2 Supply air  
T3 Extract air  
T4 Exhaust air

### Function

The unit will ventilate residential homes by extracting the inside humid air, and replacing it with fresh outside air, which has been heated with the heat energy of the extracted air. This results in efficient, residential ventilation with a low energy loss.

The air volume can be controlled by:

- ▶ Selecting a fixed fan speed from 0-4.
- ▶ Demand mode, in which a built in RH sensor continuously adjusts the fan speed depending on any immediate demand, determined by the humidity of the extracted air.
- ▶ Week timer program - the fan speed will increase or decrease according to an hourly time schedule, or specific demand.

When very humid inside air is extracted, the humidity will condensate inside the heat exchanger, and collected by the embedded drip tray. This water is drained from the unit with the enclosed hose, and disposed of to a nearby drainage.



Filter change



EC fan



RH% demand sensor

**Key Features**

- ▶ Demand mode in which a built-in RH sensor continuously adjusts the fan speed depending on any immediate demand, determined by the quality of the extracted air.
- ▶ 10 different pre-programmed week programs and one available for customized programming. Configuration via PC Tool.
- ▶ Bypass cooling.
- ▶ Summer mode, in which the supply fan is stopped, and any open window will supply cooler outside air, lowering the room temperature.
- ▶ Fireplace mode, creating a temporary inside overpressure, to enhance chimney functionality.
- ▶ High efficiency heat recovery – up to 96%.
- ▶ Available with built-in electric heating coil.
- ▶ EC fan motors with extremely low energy consumption (low SPI).
- ▶ Easy-to-install and commission solution with built -in air pressure spigots for easy calibration.
- ▶ Dantherm App - optional accessory for all models.
- ▶ Highly customizable units, by adding a high variety of internal as well as external accessories. See more in the accessory section.

**Filters**

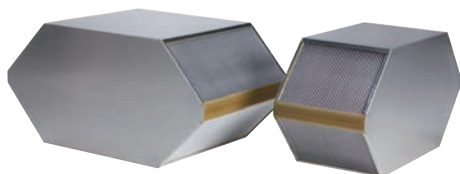
All models use 50 mm G4 cartridge filters as standard for both supply air and extract air. This will cater for the majority of air cleaning needs. The advantage of compact filters is that they have a considerably larger filter surface area than fibrous filters and small bag-filters. The filter thus works for longer and under normal conditions it will not need changing more often than twice a year, equivalent to the filter timer setting. If necessary, F7 filters (pollen filters) are available as accessories, which ensure that allergens do not enter the home through the ventilation system.

**Fans**

The entire HCV series uses the latest EC (Electromagnetic Commutation) fan motor technology. I.e., use of modern motors and fan rotors which offer the very best in air technology and electrical efficiency. Thanks to the EC technology the bearings are the only moving parts to produce resistance and therefore the lifetime of these fans is approx.

**RH% demand sensor**

The residential ventilation unit are fitted with a humidity sensor (RH%). This sensor will continuously monitor the humidity of the extract air and adjust the air flow level accordingly. This operation is named demand mode. If a wireless remote control is connected, the level will be shown in the display using a 3 level icon. Using demand mode will result in the correct level of ventilation with lowest possible electrical power consumption. If both VOC and RH% sensors are fitted, the ventilation level is set by the highest demand from just any one of the sensors.



Heat Exchanger

**Heat exchanger HCV 300-500-700**

Heat recovery takes place in a highly efficient counter-flow heat exchanger made of aluminium, customised by Dantherm to achieve optimum efficiency with the least possible loss of pressure in connection with the low air volumes used in housing.

**Heat exchanger HCV 400**

In the HCV 400 heat recovery takes place in a counter-flow plastic heat exchanger. Thanks to the cube layout of this heat exchanger, the HCV 400 has a width of only 540 mm.

**Bypass cooling****Automatic bypass function**

The HCV residential ventilation units are fitted with a bypass module as a standard, that is regulated automatically and exploits the colder outdoor air to cool down the home, e.g. after a hot summer's day, when the outdoor night time temperature falls below the temperature of the house. The bypass module leads all the warm exhaust air past the heat exchanger in order to achieve the best possible cooling effect. In order for the unit automatically to open the bypass module, the extract temperature (T3) must be  $\geq 24^{\circ}\text{C}^*$ , and the outdoor air (T1)  $\geq 15^{\circ}\text{C}^*$ . The outdoor air (T1) must also be  $2^{\circ}\text{C}$  colder than the extract temperature (T3).

*\*These factory settings can be adjusted from the remote control or the PC tool.*

**Manual bypass function**

In addition to the system providing cooling by means of the automatic bypass function, there is also a manual bypass function which can be activated by the user whenever required from any of the control interfaces. In manual bypass function cooling is activated for six hours, provided that the outdoor temperature is min.  $9^{\circ}\text{C}$  and that it is colder than the extract air temperature. At outdoor temperatures below  $9^{\circ}\text{C}$  the bypass is blocked due to the risk of condensation.

**Frost protection of the heat exchanger**

The intelligent control system of the HCV systems ensures that the heat exchanger does not ice up. Frost protection is activated if the exhaust air temperature (T4) is  $< +2^{\circ}\text{C}$ , which will usually occur when the outdoor air temperature (T1) falls below approx.  $-3^{\circ}\text{C}$ .

When the exhaust temperature (T4) falls to  $+2^{\circ}\text{C}$ , the system reduces the volume of supply air (T2) so that the final exhaust temperature (T4) is maintained at minimum  $+2^{\circ}\text{C}$ . If it is particularly cold, the supply air volume will be turned down to  $0\text{ m}^3/\text{h}$  for short intervals in order to keep the heat exchanger frost-free. If the outdoor air (T1) is lower than  $-20^{\circ}\text{C}$  for a longer period (more than 4 minutes), the unit will be stopped for 30 minutes to prevent icing.

In areas where the outdoor temperatures are often lower than  $-6^{\circ}\text{C}$ , we recommend to mount preheating. In other areas, where the outdoor temperature may fall below  $-10^{\circ}\text{C}$ , preheating is a must for obtaining a balanced and reliable solution.



Calibration via PC Tool



Calibration using control panel



Filter timer reset

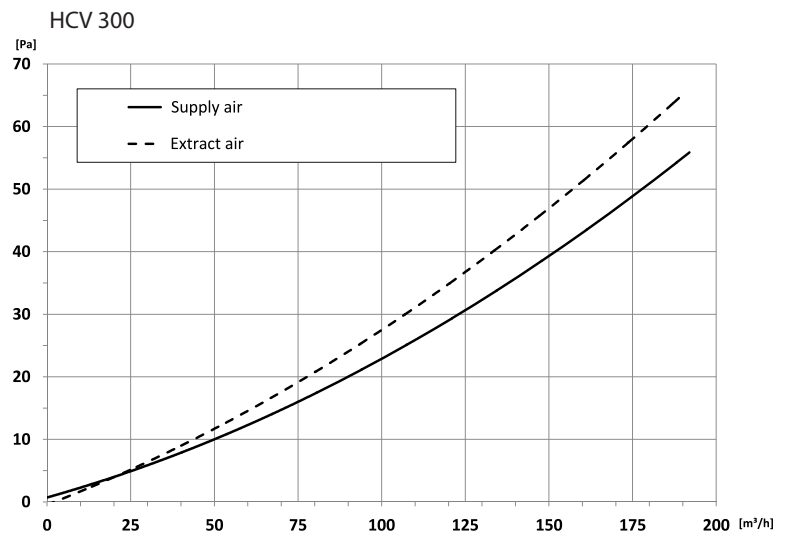
**Installation**

After installation of the unit, ducts and condensate hose, the unit needs to be calibrated to the specific environment.

Measurements of air volumes are carried out via built-in air pressure spigots.

Appropriate initial adjustments are performed directly on the control panel or with Dantherm PC Tool.

An air flow diagram is present on the front cover, showing the pressure and air volumes the installer must use to calibrate the two air flows (see example below).



**Maintenance**

In general, the only regular maintenance required by the HCV residential ventilation units, is to check/change the air filters twice a year, when the alarm appears on the unit, by a flashing LED and acoustic alarm.

The user changes the filter by opening the filter cover, changing the filters and resetting the filter timer on the built-in control panel.

Apart from changing the air filters and cleaning the outside of the unit, any other form of service will have to be carried out by qualified personnel.

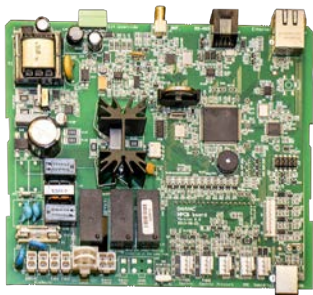
Local Dantherm partners are always available with support to solve any problem with the unit that might arise.

Any kind of service, user or installer, is done by removing the front cover.





Embedded controller HCV 300 - 500 - 700



Controller PCB HCV 400



HCV 400

## CONTROL

### Controller

The unit's main controller measures and adjusts all parameters continuously in order to maintain a correct ventilation level, with the lowest possible energy consumption.

The controller has a wide range of connections, for both internal and external accessories.

For external connections you will find:

- ▶ Wired LAN interface, that supplies data communication to ModBus over TCP/IP. This is useful for connecting this unit range to external building management systems.
- ▶ ModBus over RS485, used for the HAC accessory control or wired control HCP 10.
- ▶ Antenna socket for the wireless remote control antenna.
- ▶ 2 additional digital inputs, that can be programmed to specific forced operations i.e. controlled by the hygrostat, cooker hood, fire protection, away etc.

Please see the chapter "Accessories" for more details about the wide variety of options for internal accessories.

For the professional installer, this controller offers a USB connection, from which all settings and adjustments can be done safely, with the Dantherm PC Tool. This PC-tool can also display live as well as historical raw data, for all of the unit components, ensuring a high information knowledge in maintenance situations.

The USB port offers firmware update option.

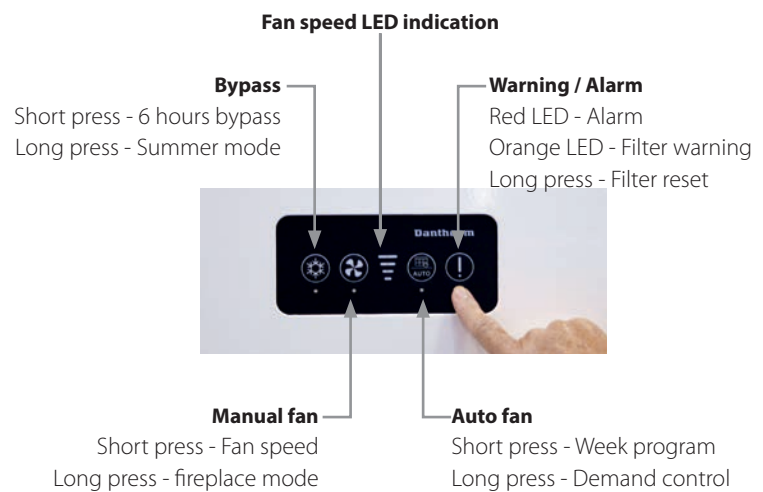
**Control strategies**

The installation is always secured against incorrect and uneconomical operation over a longer period. This is because several of the functions return to default after 4 hours. This prevents inconvenient excessive energy consumption if you forget that you have set the unit to full speed or manual bypass. If you switch off the installation it will automatically restart after 4 hours, so you can be sure that your home will be properly ventilated and that condensation will not form in the ducts or in the unit.

In emergency situations where there is a warning message about switching off ventilation systems and closing doors and windows, the supply current to the system must be interrupted by a safety switch or the like.

**Control panel**

The HCV unit has a built-in control panel with four buttons for controls, and nine LED feedback signals.



**Fan control**

During initial calibration, fan speed no. 3 is set on the control panel to the nominal air volume the house requires under normal usage.

The correlation between the four fan speeds on the control panel is as follows:

- ▶ Fan speed 0 = both fans stopped for 4 hours.
- ▶ Fan speed 1 = 30 % lower than fan speed 2.
- ▶ Fan speed 2 = 30 % lower than fan speed 3.
- ▶ Fan speed 3 = Nominal air change, set by installer during the initial calibration.
- ▶ Fan speed 4 = 30% higher than fan speed 3 (4 hours time out).

In demand-controlled mode with integrated humidity sensor the max. speed is step 3. In demand-controlled mode with integrated VOC sensor or CO<sub>2</sub> sensor connected to the HAC 2 the max. speed is step 4.

**Filter control**

Because filter pressure is expected to increase thus reducing air volumes during the period preceding a filter change, this is compensated for by the two fans running faster and faster, until the filter alarm sounds/lights up and the filter timer is reset.

## TECHNICAL DATA

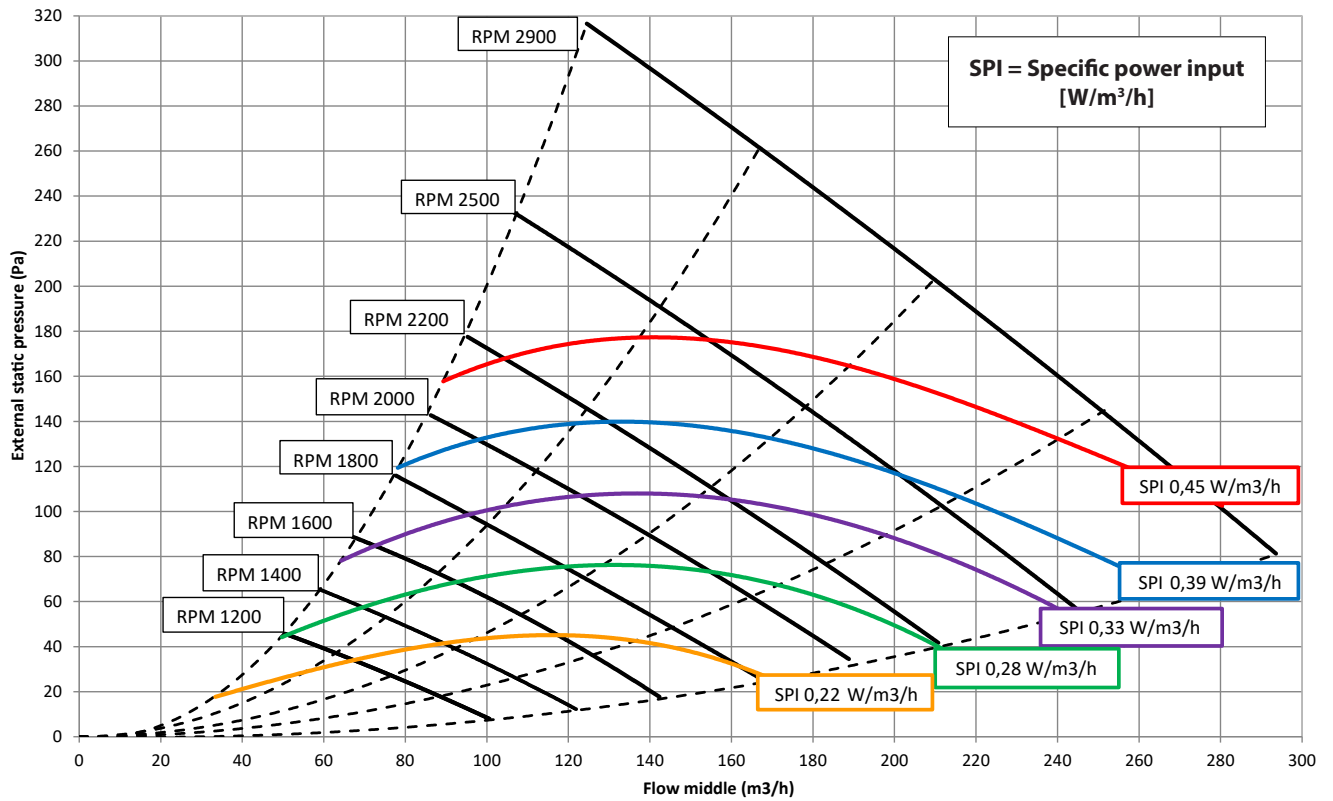
## HCV 300 - 400 - 500 - 700

MODEL			HCV 300	HCV 400 <sub>P1</sub>	HCV 500	HCV 700
<b>SPECIFICATION</b>						
Operating range (min. - max. @100Pa)		m <sup>3</sup> /h	50 to 180	50 to 240	80 to 300	80 to 450
<b>PERFORMANCE</b>						
Efficiency EN13141-7 dry up to	$\eta_{SUP}$	%	86	96	86	85
Cabinet sound pressure / cabinet sound power	LpA /LwA	dB(A)	46/51 @ 140 m <sup>3</sup> /h; 100Pa	42/48 @150 m <sup>3</sup> /h; 100Pa	46/51 @ 230 m <sup>3</sup> /h; 100Pa	53/58 @ 350 m <sup>3</sup> /h; 100Pa
Sound power - ducts (extract/supply)	LwA	dB(A)	58/52 @ 140 m <sup>3</sup> /h; 100Pa	56/49 @150 m <sup>3</sup> /h; 100Pa	61/55 @ 230 m <sup>3</sup> /h; 100Pa	64/59 @ 350 m <sup>3</sup> /h; 100Pa
Filters according to EN779 (extract/outdoor)	class	-	G4/G4 (F7 option)			
Installation surrounding temperature		°C	+12 to +50			
Outdoor temperature without preheater installed	t <sub>ODA</sub>	°C	-12* to +50			
Outdoor temperature with preheater installed	t <sub>ODA</sub>	°C	-25 to +50			
Max. absolute humidity in extract air	RH	g/kg	10			
<b>CABINET</b>						
Dimensions (without bracket)	WxHxD	mm	600 x 1000 x 430	540x1050x549**	700 x 1050 x 603	700 x 1050 x 750
Ducts	Ø	mm	125 - female	160 – female	160 - female	200 - female
Weight		kg	36	42	49,5	70
Heat conductivity of the polystyrene insulation	$\lambda$	W/ (mK)	0,031			
Heat transfer coefficient of the polystyrene insulation	U	W/ (m <sup>2</sup> K)	<1			
Fire classification of the polystyrene insulation	class	-	DIN 4102-1 class B2; EN 13501 class E			
Drainage hose included	Ø/length	" / m	3/4" - 1m			
Cabinet colour	RAL	-	9016			
<b>ELECTRICAL</b>						
Voltage		V	230			
Max. power consumption		W	170/870	170/1570	170/1370	234/1834
Frequency		Hz	50			
IP-class	class	-	21			

\* Preheater is recommended when outdoor temperature is below -5°C, to ensure balanced ventilation

\*\* +5 mm suspension bracket

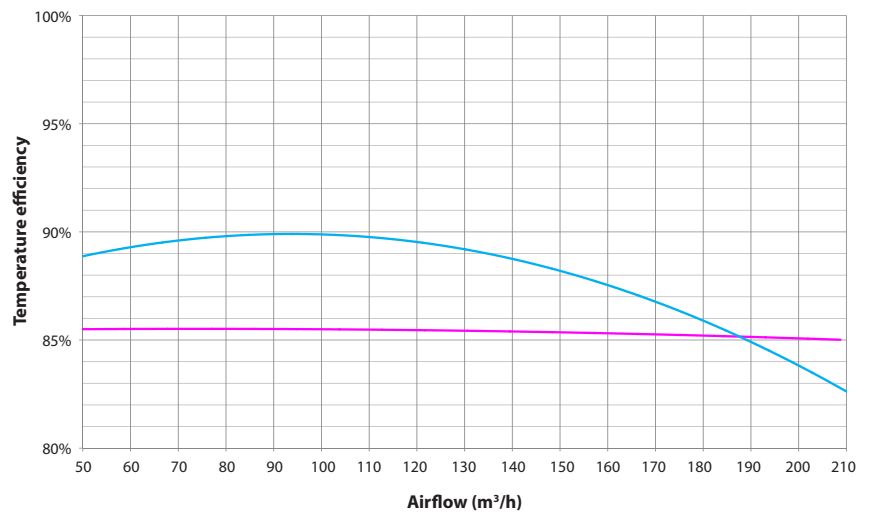
**HCV 300 capacity and SPI curves**



**HVC 300 temperature efficiency curves**

— Temperature ratio acc. to EN 13141-7 dry  
 Balanced flow  
 Outdoor air: 7°C / RH 85%  
 Extract air: 20°C / RH 38%

— Temperature ratio acc. to EN 13141-7 with condensate  
 Balanced flow  
 Outdoor air: 2°C / RH 80%  
 Extract air: 20°C / RH 60%

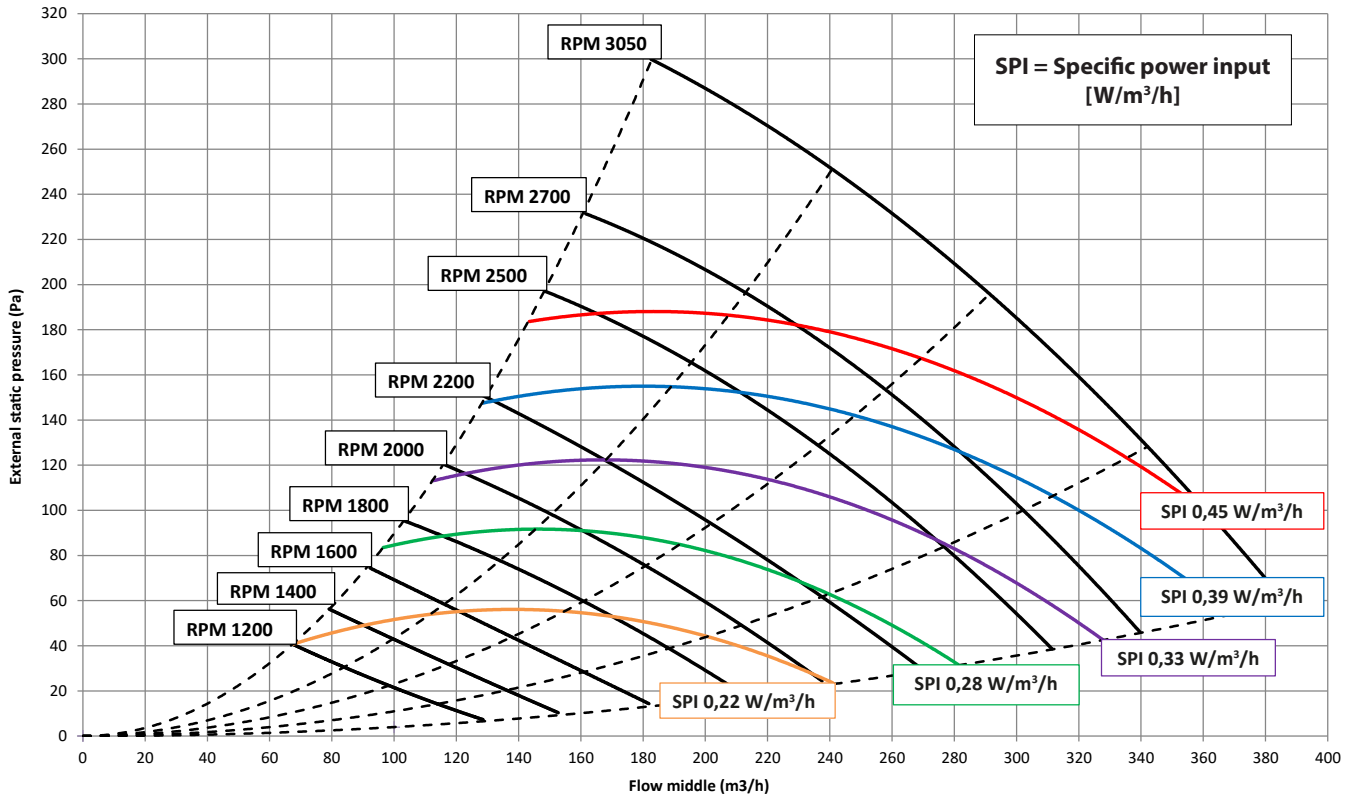


**HCV 300 Sound Data**

Air volume m³/h	Pressure Pa	Operational point	Frequency band sound power Lw(A) dB(A)								Total sound power Lw(A) dB(A)	Sound pressure standard room* Lp(A) dB(A)
			63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz		
140	100	Supply air	45	48	49	51	46	42	32	26	55,7	46
		Extract air	47	51	60	59	48	46	39	34	62,9	
		Cabinet	22	38	46	47	44	38	25	19	51,2	

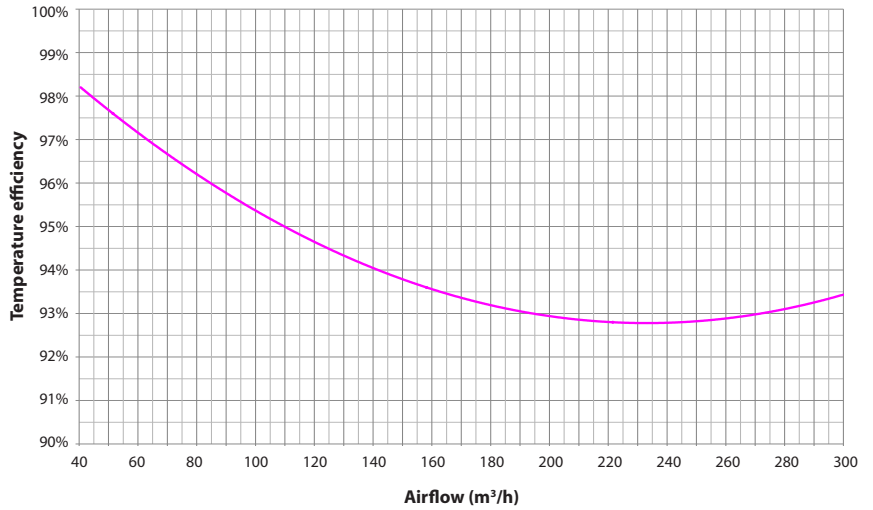
\*Standardroom = room with 10 m² floor, 2,4 m ceiling height, mean absorption 0,2

### HCV 400<sub>p1</sub> capacity and SPI curves



### HCV 400<sub>p1</sub> temperature efficiency curves

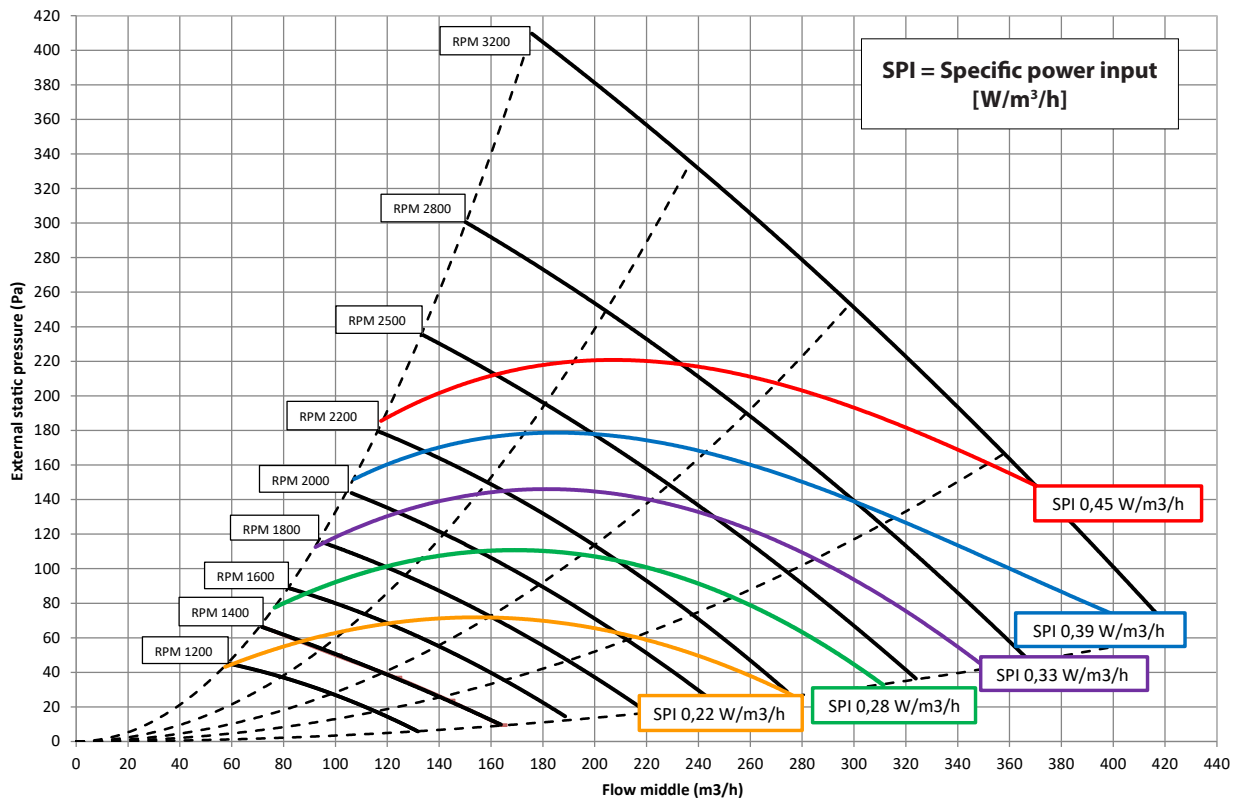
Temperature ratio acc. to EN 13141-7 dry:  
 Outdoor air: 7°C, 85% RF  
 Extract air: 20°C, 37% RF  
 Balanced flow



### HCV 400 Sound Data

Air volume m³/h	Pressure Pa	Operational point	Frequency band sound power Lw(A) dB(A)								Total sound power Lw(A) dB(A)	Sound pressure	
			63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		(1 m distance) Lp(A) dB(A)	(2 m distance) Lp(A) dB(A)
150	100	Supply air	28,8	36,9	45,4	44,8	38,0	36,2	28,0	22,9	49,1	41,1	38,1
		Extract air	37,8	41,9	54,4	47,8	43,0	42,2	33,0	26,9			
		Cabinet											
225	100	Supply air	33,8	41,9	49,4	47,8	42,0	40,2	32,0	27,9	52,9	43,5	41,2
		Extract air	39,8	45,9	59,4	50,8	47,0	45,2	37,0	32,9			
		Cabinet											
300	100	Supply air	35,8	42,9	48,4	52,8	46,0	43,2	36,0	31,9	55,4	46,5	44,5
		Extract air	42,8	47,9	59,4	54,8	50,0	49,2	41,0	37,9			
		Cabinet											

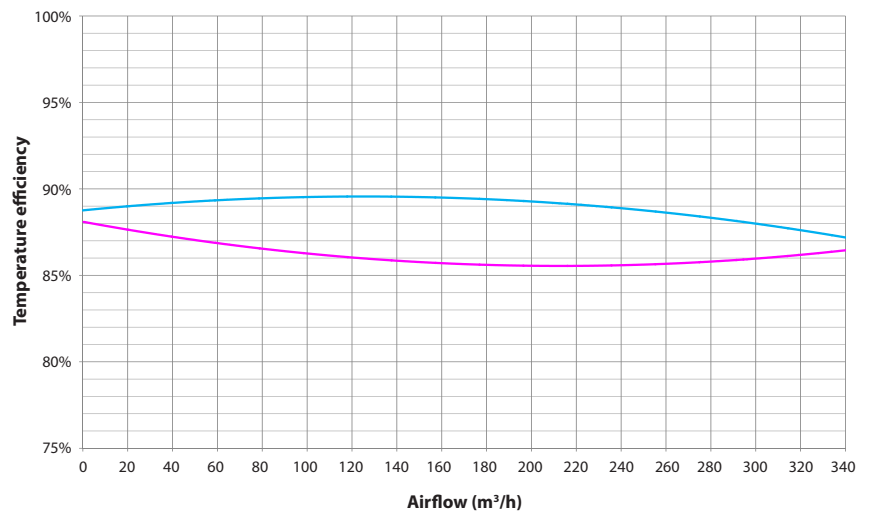
**HCV 500 capacity and SPI curves**



**HCV 500 temperature efficiency curves**

— Temperature ratio acc. to EN 13141-7 dry  
 Balanced flow  
 Outdoor air: 7°C / RH 88%  
 Extract air: 20°C / RH 38%

— Temperature ratio acc. to EN 13141-7 with condensate  
 Balanced flow  
 Outdoor air: 2°C / RH 87%  
 Extract air: 20°C / RH 60%

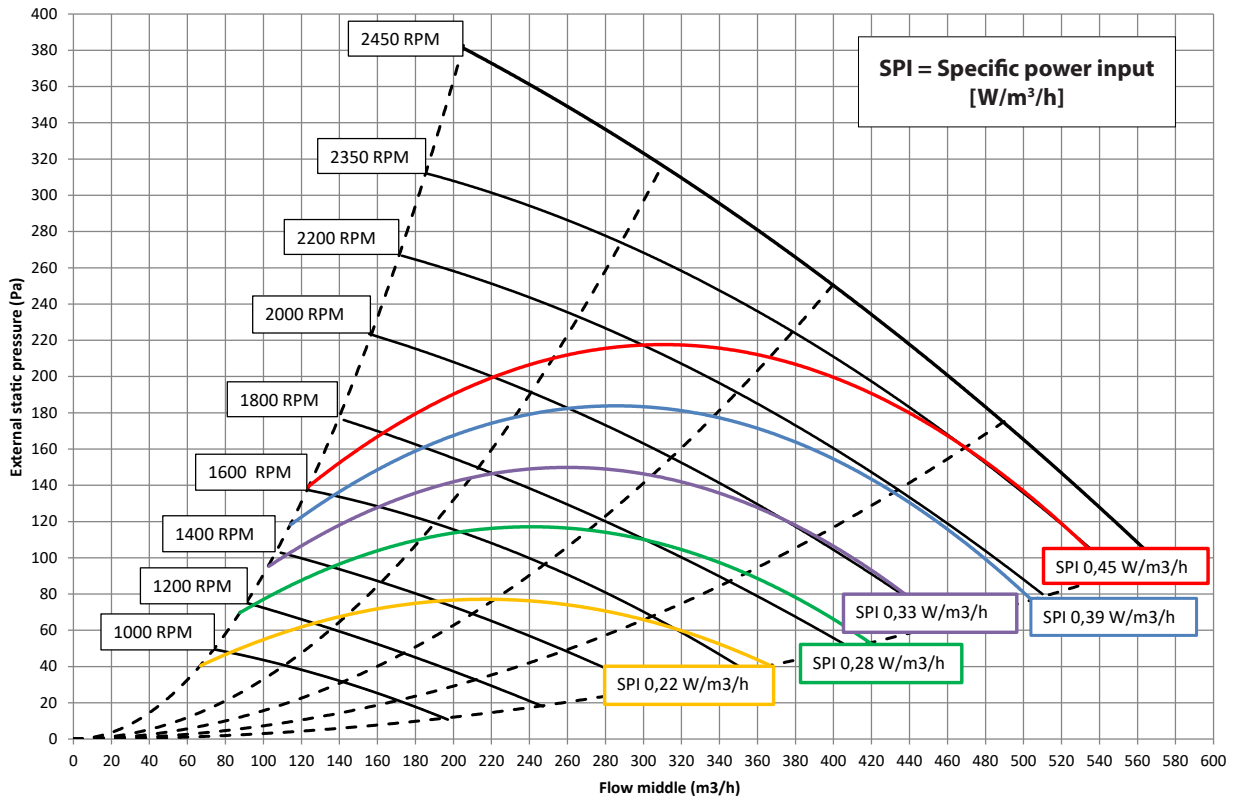


**HCV 500 Sound Data**

Air volume m³/h	Pres- sure Pa	Operational point	Frequency band sound power Lw(A) dB(A)								Total sound power Lw(A) dB(A)	Sound pressure standard room* Lp(A) dB(A)
			63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz		
230	100	Supply air	41	44	52	49	42	37	29	22	55	
		Extract air	49	50	59	54	46	44	37	27	61	
		Cabinet	30	41	46	48	42	37	25	19	51	46

\*Standardroom = room with 10 m² floor, 2,4 m ceiling height, mean absorption 0,2

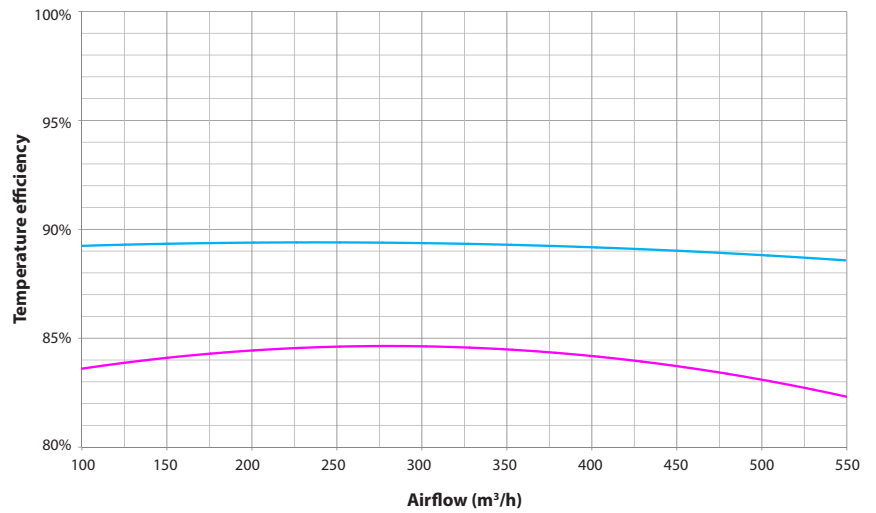
### HCV 700 capacity and SPI curves



### HCV 700 temperature efficiency curves

— Temperature ratio acc. to EN 13141-7 dry  
 Balanced flow  
 Outdoor air: 7°C / RH 85%  
 Extract air: 20°C / RH 37%

— Temperature ratio acc. to EN 13141-7 with condensate  
 Balanced flow  
 Outdoor air: 2°C / RH 87%  
 Extract air: 20°C / RH 60%



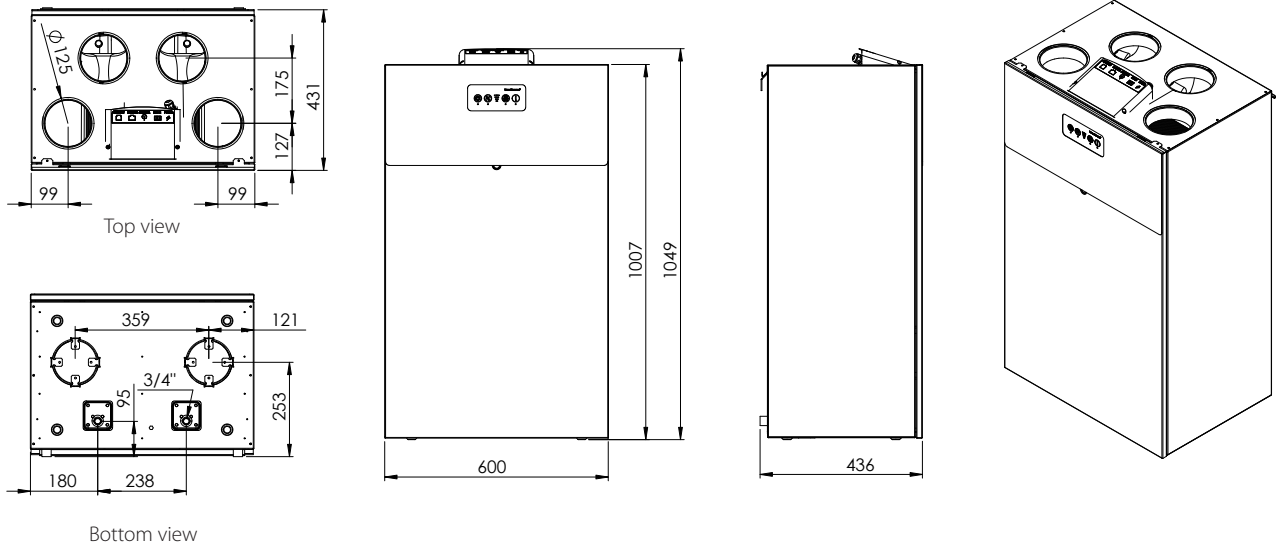
### HCV 700 Sound Data

Air volume m³/h	Pres- sure Pa	Operational point	Frequency band sound power Lw(A) dB(A)								Total sound power Lw(A) dB(A)	Sound pressure standard room* Lp(A) dB(A)
			63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz		
350	100	Supply air	54	55	64	57	53	45	35	27	65,5	
		Extract air	63	62	68	63	56	52	44	34	71,1	
		Cabinet	36	45	55	52	50	43	28	20	57,8	53

\*Standardroom = room with 10 m² floor, 2,4 m ceiling hight, mean absorption 0,2

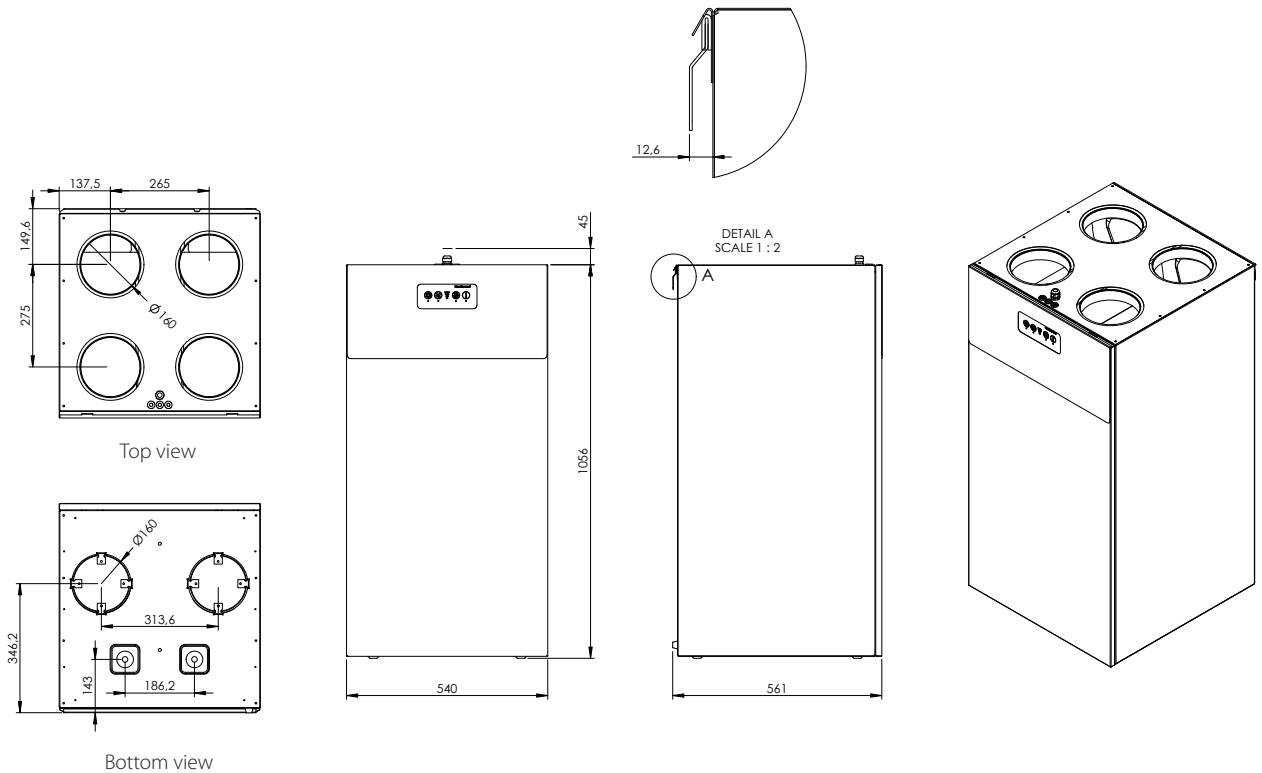
**HCV 300 dimensions**

On the HCV 300 it is possible to connect the supply duct to the bottom if the ducts are to run beneath the floor.



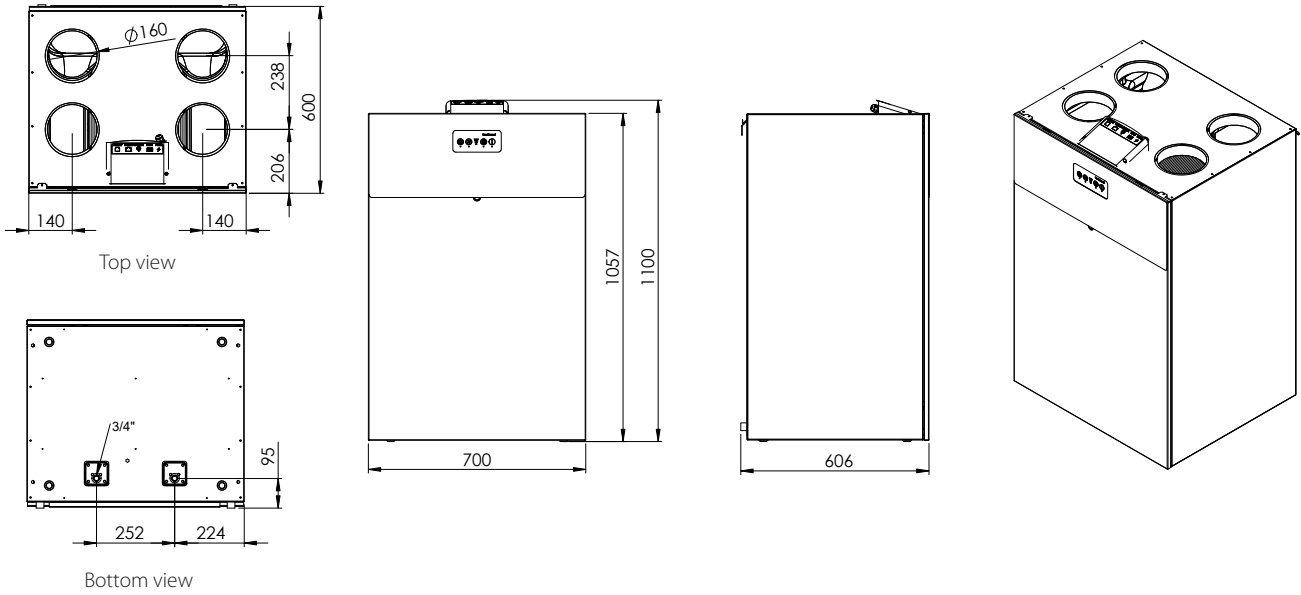
**HCV 400 dimensions**

On the HCV 400 it is possible to connect the supply duct to the bottom if the ducts are to run beneath the floor.

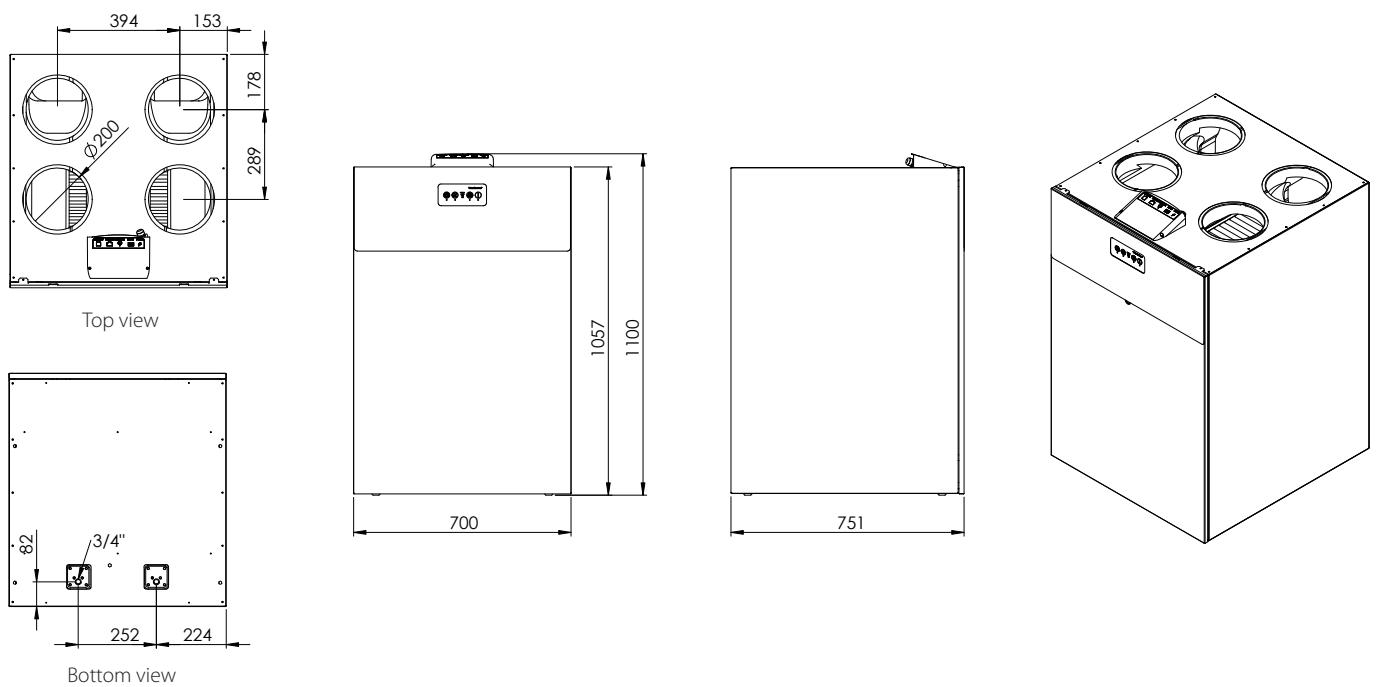




**HCV 500 dimensions**



**HCV 700 dimensions**





Wireless remote control

ACCESSORIES

**Wireless remote control**

Dantherm offers a wireless remote control, designed either to be mounted on the wall, or to be placed standing on a table or cabinet.

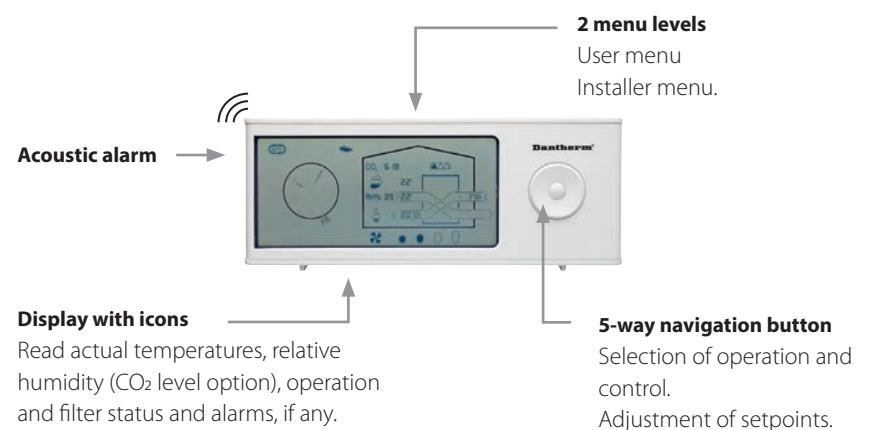
This remote control is designed for the user, but also includes a special installer menu, where it is possible for the installer to do extensive settings, without the use of the PC-tool.

The user features are:

- ▶ Select fan speed in manual mode.
- ▶ Select demand mode.
- ▶ Select week mode, as well as selecting week program 1-11.
- ▶ Manually activated by-pass.
- ▶ Enable fireplace boost mode. 7 minutes with overpressure inside the house, for easy ignition of a fireplace.
- ▶ Enable/disable away mode, in which the unit decreases permanently to speed 1
- ▶ Enable/disable night mode, in which the unit increases to fan speed 1
- ▶ The hour for enable/disable can be adjusted.
- ▶ Adjust filter timer duration.
- ▶ Reset filter timer after filter exchange.
- ▶ Reading air temperatures in the duct connections, including the remote controls embedded temperature sensor.
- ▶ Setting time and date.

The remote control has an acoustic alarm, that will sound when filter needs to be inspected or replaced. This insures correct maintenance even when the unit is set to demand mode, and regular attention is not towards the remote control.

The wireless remote control uses 2 AAA alkaline batteries. Battery lifetime up to 2 years is possible, as the display and remote goes into hibernation mode after 2 minutes without user interaction, and shut down during night.





Wired control



Dantherm App



Hygrostat



Power supply

CO<sub>2</sub> sensor

### Wired control (HCP 10)

This wired control comes with a white plastic frame and a metal frame for fastening into a standard junction box. Plus a 6 m communication cable.

Alternatively Dantherm can supply a box for fixing to the wall in an appropriate place.

The HCP 10 wired control gives the user the following possibilities :

- ▶ Manual control of air change (step 0-4).
- ▶ Control of air change with week program.
- ▶ Demand controlled air change (when RH and VOC sensors are connected).
- ▶ Enable summer mode (only extract air).
- ▶ Enable manual bypass.
- ▶ Enable fireplace mode.
- ▶ Reading and resetting of alarms, including filter alarm.

The wired HCP 10 control offers to the installer the possibility of adjusting the air volumes during commissioning.

### Dantherm App

The Dantherm app, which is available for iOS and Android via the App store and Google play, offers a user-friendly and intuitive way to control the residential ventilation unit. The app is connected to the wifi router of the house.

- ▶ Demand control operation.
- ▶ Manual operation.
- ▶ Week program operation.
- ▶ Night operation.
- ▶ Manual bypass cooling.
- ▶ Summer cooling.
- ▶ Fireplace mode.
- ▶ Alarms.
- ▶ Settings menu.

### Hygrostat, Sauter HSC 120 F001

The hygrostat can be connected to the digital input plug. In case that a higher air change rate is required in rooms with high humidity.

Can be used for installation in bathrooms to control the ventilation based and high humidity.

### Power supply 230VAC – 24VDC, for duct control

Power supply to be mounted in the accessory control (HAC 2) if the ventilation unit controls duct dampers.

### CO<sub>2</sub> sensor

The CO<sub>2</sub> sensor is connected to the accessory control (HAC 2) if the air change has to be controlled in accordance with the CO<sub>2</sub> level in a given room.



USB cable, 3 m



PC Tool Kit



VOC air quality demand sensor



Accessory control HAC 2

**USB cable, 3 m**

USB cable to be used in connection with software update and Dantherm PC Tool (HPT 1).

**Dantherm PC Tool Kit (HPT 1)**

The PC Tool Kit contains a USB plug with program and quick guide + USB cable. The Dantherm PC Tool has an installer menu, where the installer can adjust the unit, connect extra accessories, adjust various user settings, read and reset alarms, if any.

It also has a user menu, where the user can read and adjust various settings, such as week programs, set points, alarms and historical data about temperatures and air quality (accessory).

**VOC air quality demand sensor**

The unit can be fitted with a VOC air quality sensor. This sensor will continuously monitor the level of artificial as well as natural organic fumes in the air. Examples of included fumes:

- ▶ Natural fumes, e.g. formaldehyde from building materials.
- ▶ Chemical fumes from sprays, e.g. hair spray or perfumes.
- ▶ Indoor pollution e.g. from smoking and printing with laser printer.
- ▶ Fumes from fire retardant substances in carpets, paint and furniture.

Using the VOC sensor in demand mode will result in the correct level of ventilation with lowest possible electrical power consumption. If a wireless remote control or App is connected, the actual VOC level will be shown in the display using a 3 level icon. If both VOC and HR sensors are connected, the ventilation will be adjusted after the highest registered value.

**Accessory control HAC 2**

One or more of the following functions can be connected to the accessory control:

- ▶ After heating coils for water or electricity.
- ▶ Geothermal preheating/precooling coils.
- ▶ 24 VDC duct damper outlet.
- ▶ Stop function input.
- ▶ Fire/smoke detector input.
- ▶ External CO<sub>2</sub> sensor for demand control.
- ▶ External hygrostat.
- ▶ Filter alarm output.
- ▶ General alarm output.

HAC 2 comes with 3 m cable.



Built-in electric heating coil

Circular electric duct heater,  
0-10 VCircular electric duct heater,  
direct control

#### Built-in electric heating coil

The electric heating coil protects the heat exchanger against icing up at low temperatures and ensures balanced ventilation down to approx. -15°C. The heating coil can be mounted inside the cabinet. It is powered and controlled by the embedded controller, so no accessory control is needed.

#### Circular electric duct heaters for reheating of supply air

The electric duct heaters are designed for installation in the supply air duct. The duct heater is provided with duct connections with a rubber sealing gasket. The duct heater is not suitable for outdoor installation. The control current is connected to the accessory control HAC 2. Connection to supply voltage 230V is made separately. The duct heater is controlled by a stepless regulation via the accessory control HAC 2.

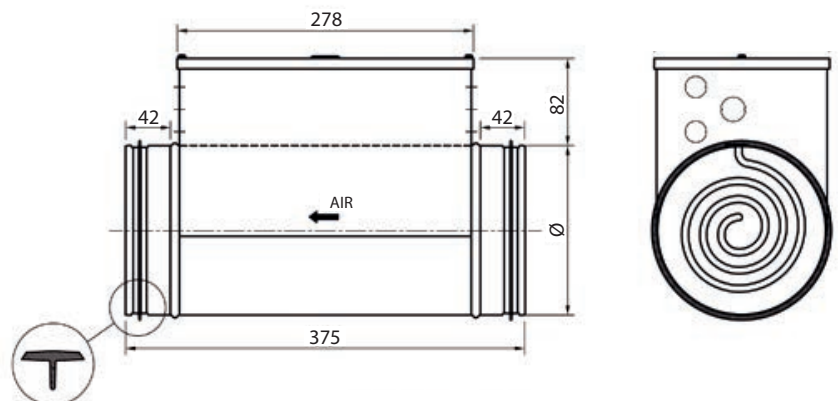
#### Circular electric duct heater, direct control by the built-in thermostat

This duct heater is controlled by the built-in thermostat. Both heaters are supplied with a duct sensor.

#### Capacity, dimensions and weight

The duct heaters are un-finned and therefore the resulting air pressure loss is negligible.

		HCV 300	HCV 400/500	HCV 700
Air volume	m <sup>3</sup> /h	180	300	450
Heat output	kW	0,9	1,2	1,8
Temperature rise	°C	16,8	14,2	13,4
Power consumption, 1x230V	A	4,1	5,5	8,2
Duct connection	Ø mm	125	160	250
Weight	Kg	3,0	3,5	5,0





Water heating coil



Servo motor



2-way water valve



230/24 V AC trafo

**Water heating coils**

The water heating coil kit includes 2RR, 2-way water valve, 0-10V servo motor, 230/24VAC trafo, duct sensor and tube sensor for frost protection. It is controlled by the accessory control HAC 2.

HCV300 (CWW 125-2-2.5)		Max. capacity						Supply air temperature 21°C					
		80°C/60°C			60°C/40°C			80°C/60°C			60°C/40°C		
Air volume	m³/h	85	150	215	85	150	215	85	150	215	85	150	215
Air temp. out*	°C	40	36	34	28	25	23	21	21	21	21	21	21
Pressure loss	Pa	11	28	51	11	28	51	11	28	51	11	28	51
Capacity	kW	0,7	1,1	1,4	0,4	0,5	0,6	0,2	0,3	0,5	0,2	0,3	0,5
Water flow	L/h	36	36	72	36	36	36	9	10	23	17	22	28
Pressure loss, max.	KPa	0,5	0,5	1	0,5	0,5	0,5	0,2	0,2	0,4	0,3	0,4	0,5

HCV 400/500/ 700 (CWW 160-2-2.5)**		Max. capacity						Supply air temperature 21°C					
		80°C/60°C			60°C/40°C			80°C/60°C			60°C/40°C		
Air volume	m³/h	145	250	355	145	250	355	145	250	355	145	250	355
Air temp. out*	°C	47	43	40	33	31	29	21	21	21	21	21	21
Pressure loss	Pa	6	15	27	6	15	27	6	15	27	6	15	27
Capacity	kW	1,6	2,4	3,0	0,9	1,3	1,7	0,3	0,5	0,7	0,3	0,5	0,7
Water flow	L/h	72	108	144	36	72	72	14	24	35	12	28	30
Pressure loss, max.	KPa	1	3	4	0,5	1	2	0,2	0,4	0,5	0,1	0,4	0,5

HCV 700 (CWW 250-2-2.5)***		Max. capacity				Supply air temperature 21°C			
		80°C/60°C		60°C/40°C		80°C/60°C		60°C/40°C	
Air volume	m³/h	360	630	360	630	360	630	360	630
Air temp. out*	°C	44	40	31	29	21	21	21	21
Pressure loss	Pa	10	25	10	25	10	25	10	25
Capacity	kW	3,6	5,3	2,0	3,0	0,74	1,29	0,74	1,28
Water flow	L/h	144	252	108	144	30	61	40	61
Pressure loss, max.	KPa	1	3	1	2	0,5	1,0	0,7	1,0

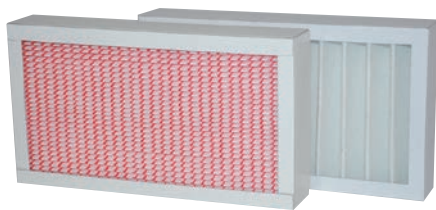
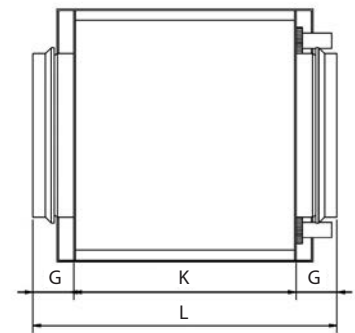
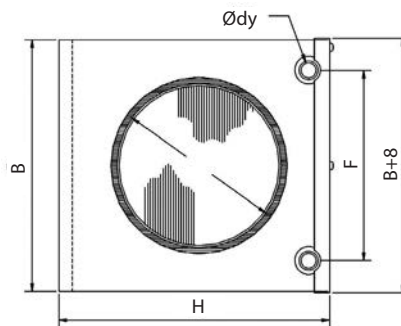
\* Air in 15°C

\*\* Please be aware that this heater coil has 160 mm duct connections, so 2 pcs of Ø160/200 mmm duct reduction parts are needed for installation with a HCV 700 (Ø200)

\*\*\* Please be aware that this heater coil has 250 mm duct connections, so 2 pcs of Ø200/250 mmm duct reduction parts are needed for installation with a HCV 700 (Ø200)

**Water heating coils (continued)****Dimensions and weight**

	$\varnothing d$	B	H	$\varnothing dy$	F	G	K	L	Weight
	mm								
<b>HCV 300 (CWW 125-2-2.5)</b>	125	238	180	10	137	40	276	356	3,5
<b>HCV 400/500 (CWW 160-2-2.5)</b>	160	313	255	10	212	40	276	356	5,4
<b>HCV 700 (CWW 250-2-2.5)</b>	250	398	330	10	250	40	276	356	7,7



Panel filters

**Panel filters**

Panel filters are supplied as a set with either two G4 filters or one G4 filter and one F7 filter. G4 is standard. F7 filters can be used on the supply air as a pollen filter.

# ABOUT THE DANTHERM GROUP

## Control your climate

The Dantherm Group is a leading provider of climate control products and solutions. The group companies have more than 60 years of experience in designing and manufacturing high-quality and energy-efficient equipment for heating, cooling, drying and ventilation for a wide range of mobile and fixed applications.

Every year, Dantherm Group uses significant resources on product development to stay in the forefront and is constantly adapting the products to changing market demands and legislation.

The Dantherm Group has a number of strong brands with well-established market positions in the mobile, pool, commercial/industrial and residential markets.

Dantherm Group customers benefit from our comprehensive knowledge base and the experience and expertise that we have gained from more than three million climate control products and solutions sold worldwide.

## Global reach

The Dantherm Group is headquartered in Skive, Denmark and has its own market presence in Norway, Sweden, United Kingdom, Germany, Switzerland, Italy, Spain, Poland, Russia, China and United Arab Emirates.

In 2016 the Dantherm Group was acquired by the Swedish equity fund Procuritas Capital Investors V LP – a strong owner with the ambition to continue the development and growth of the company.

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CLIMATE SOLUTIONS

## Dantherm A/S

Marienlystvej 65 | DK-7800 Skive

Tel. +45 96 14 37 00 | Fax +45 96 14 38 20

info@dantherm.com | www.dantherm.com

