

## Technical file Healthbox® II and Healthbox® II compact

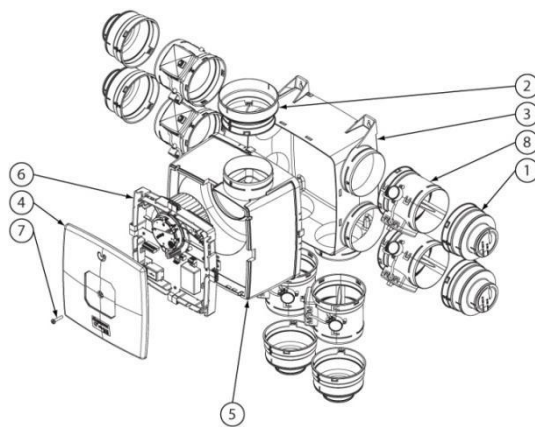
## Technical file Healthbox<sup>®</sup> II and Healthbox<sup>®</sup> II compact

The Healthbox<sup>®</sup> II (Compact) is a demand controlled mechanical extraction system ensuring direct extraction of polluted air from wet rooms and optionally from the bedrooms.

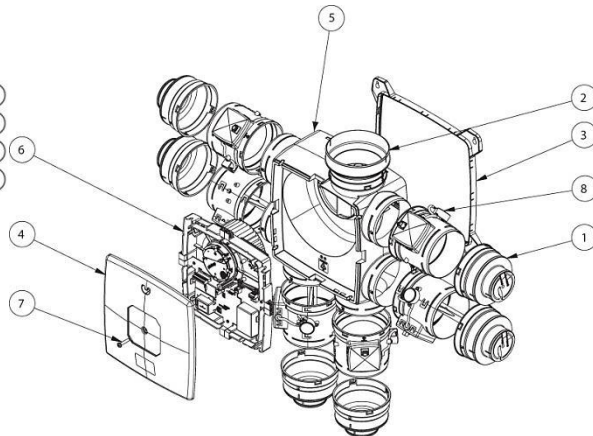


### Exploded view:

#### Healthbox<sup>®</sup> II:



#### Healthbox<sup>®</sup> II compact:

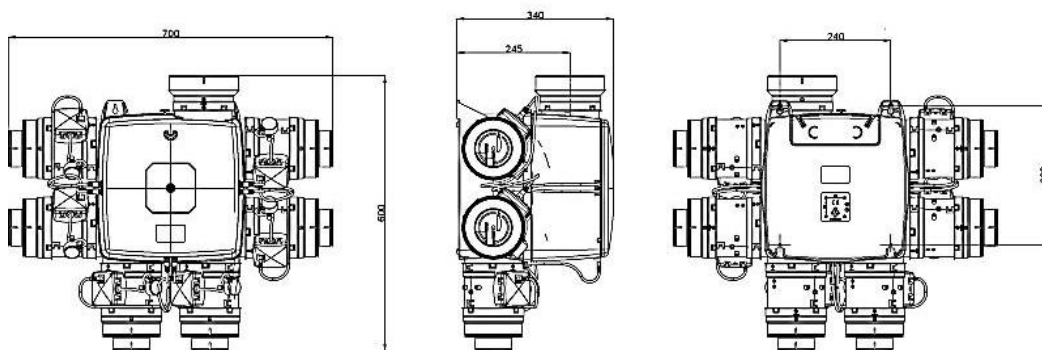


N°	Part
1	Sealing cap and/or reduction $\phi 125 \rightarrow \phi 80$ mm
2	Adaptor $\phi 125-150$ mm (exhaust)
3	Ventilator plenum
4	Ventilator cover
5	Mounting frame ventilator
6	Assembly motor plate
7	Cross recessed raised cheese head screw (Phillips) - M6x30
8	Control valve with sensors (depending on the type of valve)

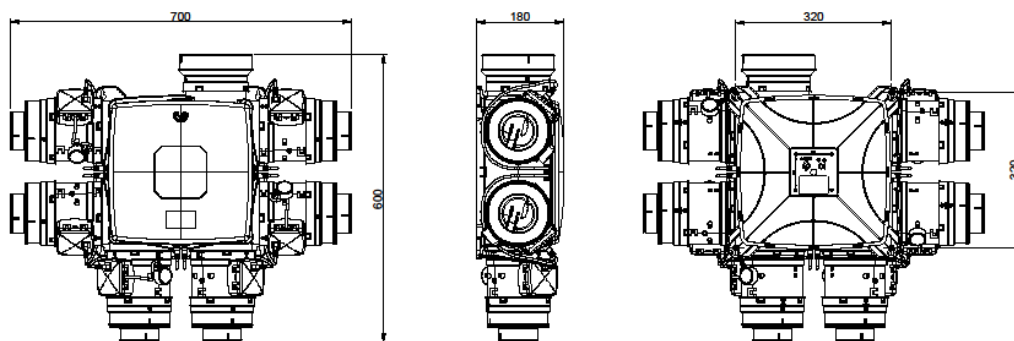
## Dimensions & weight:

	Healthbox® II	Healthbox® II compact
<b>L x W x H</b>	700 x 600 x 340 mm	700 x 600 x 180 mm
<b>Weight with 6 valves</b>	5 kg	4 kg
<b>Weight without valves</b>	3,5 kg	2,5 kg
<b>Weight per valve</b>	0,25 kg	0,25 kg

### Healthbox® II:



### Healthbox® II compact:



## Electrical supply:

The appliance needs 230V ~ 50Hz, single phase with grounding.

## Ventilator:

The constant pressure fan contains an energy efficient EC motor that is electronically controlled by PWM control.

The pressure level of the system is automatically determined during the calibration process. It allows for a maximum pressure of 260 Pa.

## Calibration:

The system performs the calibration automatically according to a patented process. The pressure of the system and the nominal position of the vane is determined depending on the preconfigured extraction airflow on the control valves and the pressure loss in the ventilation ducts

The nominal airflow (according to the configuration) is achieved immediately after the system calibration.

## Demand control:

The demand control of the system is based on the operation of the control valves of the Healthbox® II. Sensors are integrated within the control valves. The position of the vane is determined by the measured values as detected by the sensors. The vane is positioned between 15% and 100% of the nominal airflow. This way the **extraction airflow is controlled by the sensor(s) present.**

	Extraction airflow	Opening of the valve
<b>RH Sensor</b> (relative humidity)	Dynamic control process according to the relative humidity level	Immediate change from 15% to 100% of the nominal airflow
<b>VOC Sensor</b> (odour)	Dynamic control process according to the VOC level	Immediate change from 15% to 100% of the nominal airflow
<b>CO<sub>2</sub> Sensor</b>	Linear control process according to the pre-set CO <sub>2</sub> threshold.	Proportional according to the pre-set CO <sub>2</sub> threshold

## Control valves:

RENSON® defines one type of control valve per type of room depending on the integrated sensors.



- The different types of valves are:



**Toilet**



**Bathroom/  
laundry room**



**Bathroom  
+ toilet**



**Bedroom**



**bedrooms**



**Cooking**



**Kitchen**

Each control valve contains 8 dipswitches that on the one hand set the parameters for the type of detection (RH, VOC, CO<sub>2</sub>) and on the other hand set the threshold for the nominal extraction airflow.

The diameter of a valve is 125mm.

When you have to connect a ventilation duct of ø80, a reduction of ø125 -> ø80 can be put onto the valve. The reduction caps standardly come with the Healthbox® II (compact).

- integration van sensoren per type klep:

	RH Sensor	CO <sub>2</sub> Sensor	VOC Sensor
<b>Toilet</b>	-	-	•
<b>Bathroom / laundry room</b>	•	-	-
<b>Bathroom with toilet</b>	•	-	•
<b>Kitchen</b>	-	•	-
<b>Bedroom</b>	-	•	-
<b>Bedrooms</b>	-	•	-
<b>Cooking</b>	-	-	-

- *Integrated*
- *Not integrated*

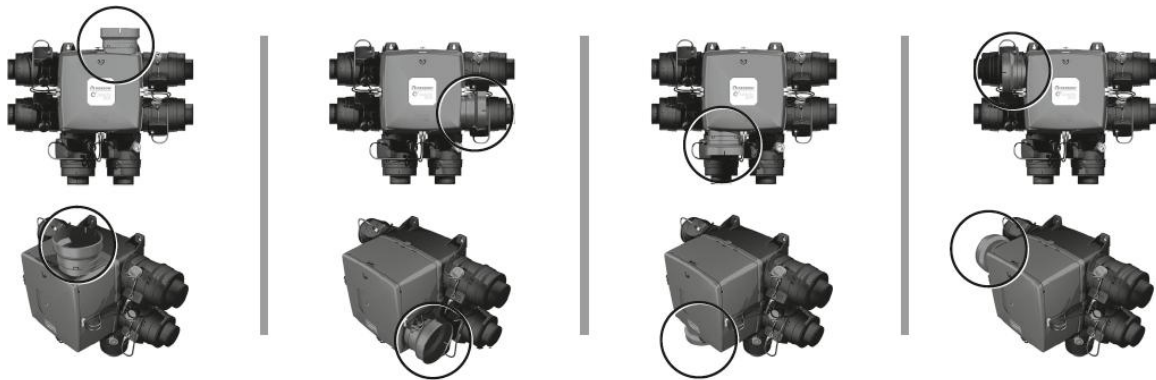
## Mounting:

The appliance is preferably installed:

- Within the isolated volume (cfr. Limitation of condensation)
- Near 'wet rooms' such as bathrooms, toilets, ... (cfr. Limitation on length of ducts)
- Not above a bedroom (cfr. Limitation of noise transference)

The mounting is done to the wall/ceiling or by suspension from the ceiling by the included cord.

- Install the healthbox® II (Compact) so that the ventilation ducts make as few bends as possible.
- The valves can be connected to the Healthbox® II (Compact) at random. Every room is connected to the corresponding valve by means of a ventilation duct.
- Position the valves with the valve's PCB facing up to prevent dust collection on the sensors.
- The appliance can be put in any position.  
The exhaust of the Healthbox® II can be positioned in any direction thanks to the rotatable fan housing. This is not possible for the Healthbox® II Compact.



## Connecting the ventilation ducts:

- The dimensions of the needed air ducts are dependent on the extraction airflow. The extraction ducts preferably have a diameter of  $\varnothing 125$  or minimally  $\varnothing 80$ mm. It is advised to connect the rigid ducts to the Healthbox® II (Compact) and to the extraction grills by means of a flexible air duct (min. 0,5m). The rigid ducts are used to cross distance while flexible ducts are used to limit noise and vibration. An extraction duct has to have a minimal length of 1,5m. Try to avoid making sharp corners in order to limit the resistance within the air duct.

### Guideline extraction ducts:

- Duct  $\varnothing 80$ : max  $50\text{m}^3/\text{h}$ , max 8m duct with 2 corners of  $90^\circ$  (\*)
- Duct  $\varnothing 125$ : max  $75\text{m}^3/\text{h}$ , max 15m duct with 2 corners van  $90^\circ$  (\*)

- (\*) - total length of the duct = combined duct flexible + rigid  
- not including corner at the Healthbox® II (compact) and the extraction grill.

Make use of isolated ducts (Isodec) when the ducts are put outside of the isolated volume of the house. This in order to prevent condensation within the ducts.

- It is advised to use an isolated and flexible exhaust duct of  $\varnothing 150$  mm of max 3m in length. The extraction of air via the fan has to be directed outside by means of a roof or wall grill. It is allowed to use an exhaust duct of  $\varnothing 125$  in blocks of flats when the Healthbox<sup>®</sup> II (compact) is located near the central extraction unit.
- In certain situations it is advised to use acoustic silencers. Acoustic silencers can be obtained at RENSON<sup>®</sup> in  $\varnothing 80$  and  $\varnothing 125$ .



*Figure: silencer  $\varnothing 80$*

- The number of control valves that can be connected to the Healthbox<sup>®</sup> II (Compact) is restricted to 6 with a minimum of 2.

## Airflow:

### Maximum

	Max. airflow at 200Pa
Healthbox® II	375m <sup>3</sup> /h
Healthbox® II compact	325m <sup>3</sup> /h

The actual airflow depends on the resistance within the ventilation duct system.

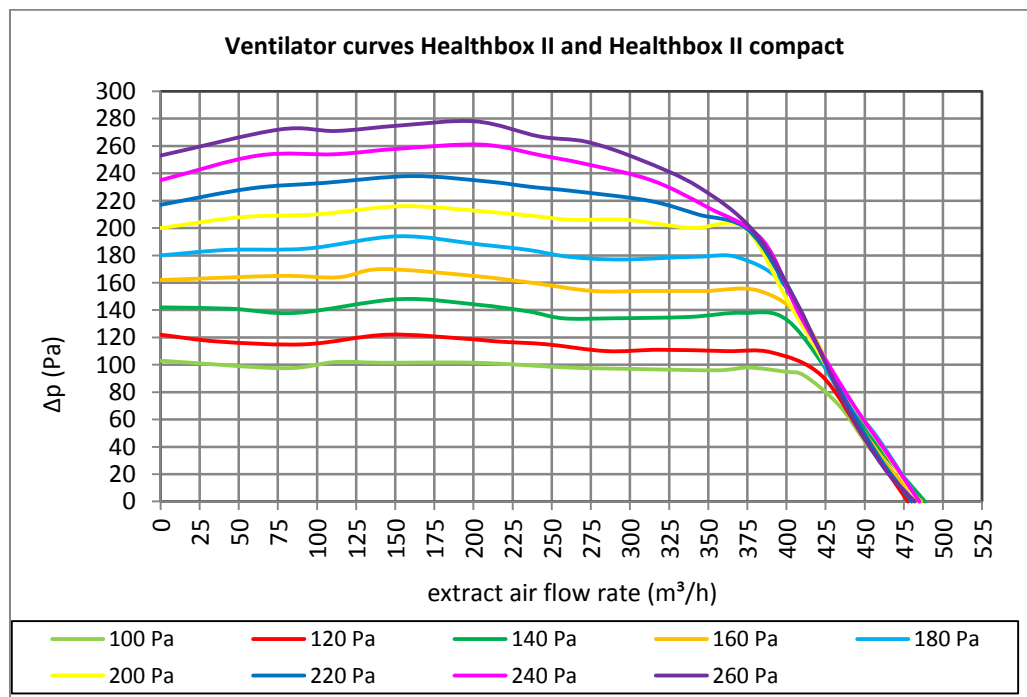
### In use

DIP switches on the control valve are used to set the nominal airflow for each room  
 Tolerance per valve: 2,5m<sup>3</sup>/ h

The actual airflow is controlled by:

- The sensors in the control valves
- The chosen ventilation mode on the main control

### Graph: system pressure in relation to extraction airflow





## Ventilation modes:

The main control allows you to choose the ventilation mode for the Healthbox® II (compact).

### Eco Mode:

*Demand controlled system at lower system pressure. Airflow is controlled by the sensors in the valves.*

### HDC Mode (Healthy Domestic Concept®):

*Demand controlled system at nominal system pressure. Airflow is controlled by the sensors in the valves.*

### Boost Mode:

*Non-demand controlled system at higher system pressure. All valves in nominal position.*

### Empty House Mode:

*Non-demand controlled system at lower system pressure. All valves in nominal position.*

### NightMode:

*System with partial demand control operating at lower system pressure;*

*- VOC- and humidity-controlled valves: in nominal position*

*- CO2-controlled valves: Airflow is controlled by the sensors in the valves.*

### KitchenMode:

*Enables the ventilation system to use nearly its full capacity to extract polluted air (in the kitchen).*

You can choose between different ventilation modes depending on the type of control that is chosen. The TouchDisplay has a time indication allowing programming of the ventilation system.

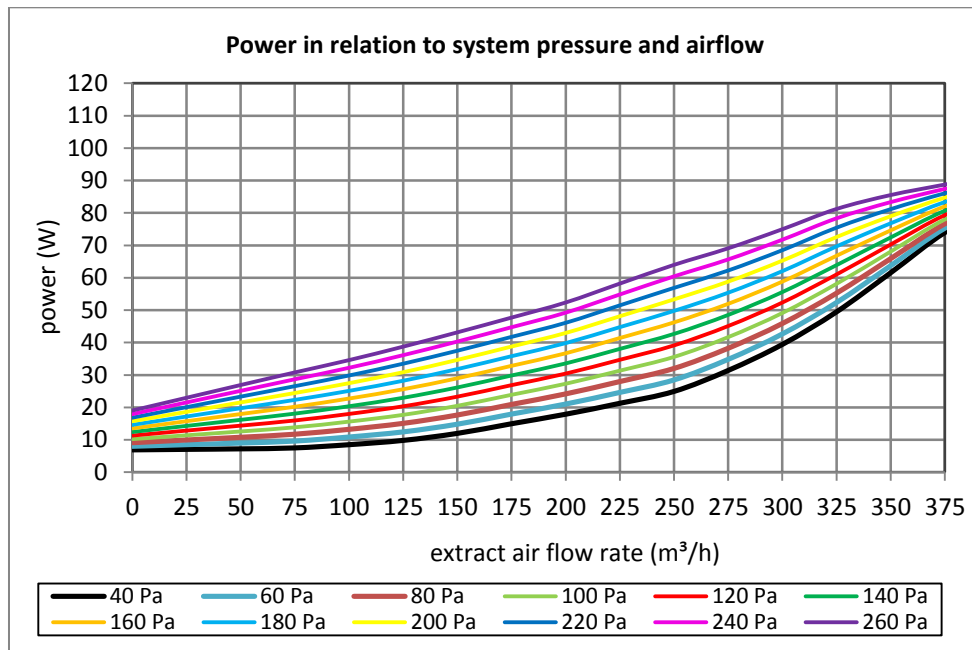
	4-position switch (XVK4)	TouchDisplay	
		Time indication	Manual
<b>EcoMode</b>	•	•	•
<b>HDC-Mode</b>	•	•	•
<b>NightMode</b>	• *	•	•
<b>EmptyHouseMode</b>	• *	•	•
<b>BoostMode</b>	•	•	•
<b>KitchenMode</b>			•
<b>C-mode**</b>	•		•

\* only 1 of the 2 modes (EmptyHouseMode or NightMode) can be activated depending on the configuration of the DIP switches on the fan.

\*\* extraction with nominal airflows

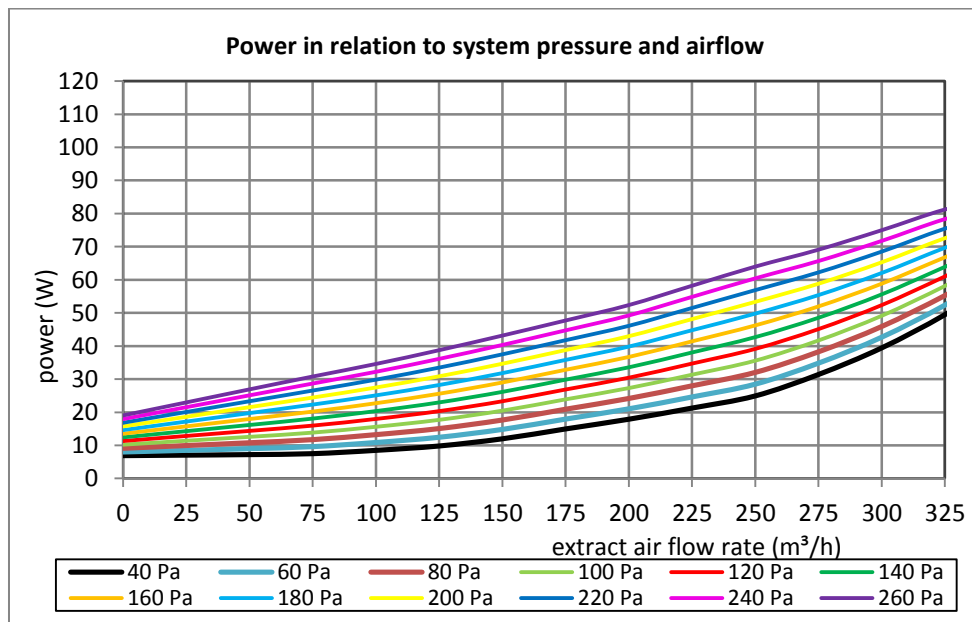
**power consumption:**

**Healthbox® II:**



**SFP: 0,14 W / (m³/h)** (at pressure 100Pa and airflow 250m³/h)

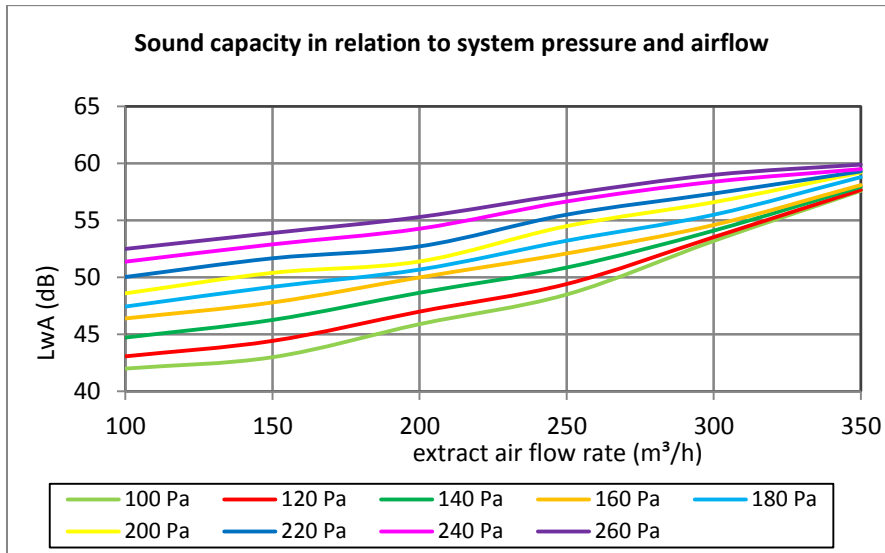
**Healthbox® II compact:**



**SFP: 0,14 W / (m³/h)** (at pressure 100Pa and airflow 250m³/h)

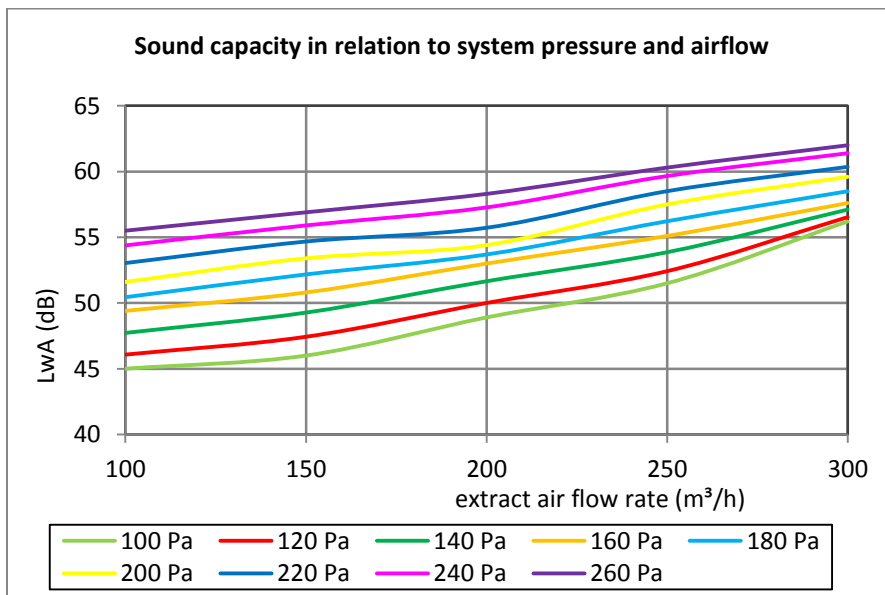
**Sound level:**

**Healthbox® II:**



Configuration: 4x extraction duct ø80 mm, 2x ø125 mm and exhaust ø150 mm

**Healthbox® II compact:**



Configuration: 4x extraction duct ø80 mm, 2x ø125 mm and exhaust ø150 mm

## Fire protection:

It is vital that in case of fire, the spread of the fire over various compartments is prevented. If the Healthbox® II (Compact) detects a temperature of  $\geq 72^{\circ}\text{C}$  for more than 180 seconds, it will close all control valves and shut down the fan.

Remark: in order to activate this security measure you have to configure the dipswitch on the main PCB as follows:  
(put DIP 2 on ON)



## Warning:

If an error occurs in the system, it is automatically displayed on the main control.

## Maintenance:

The fan is equipped with maintenance-free bearings and can operate for a long time without any problems. The fan needs to be cleaned every two years. The fan needs to be cleaned every year if a motorless cooker hood is attached to the system.

It is advised to regularly check whether there is any dust build-up around the sensors and to clean the housing of the sensor if so.

A visual control of the valve movement can be performed on a regular basis.

Any errors that may occur in the system can be consulted by an SD-card.