member of KORADO Group

VENTBOX 300, VENTBOX 400

Heat recovery units for apartments and family houses

news

KORADO

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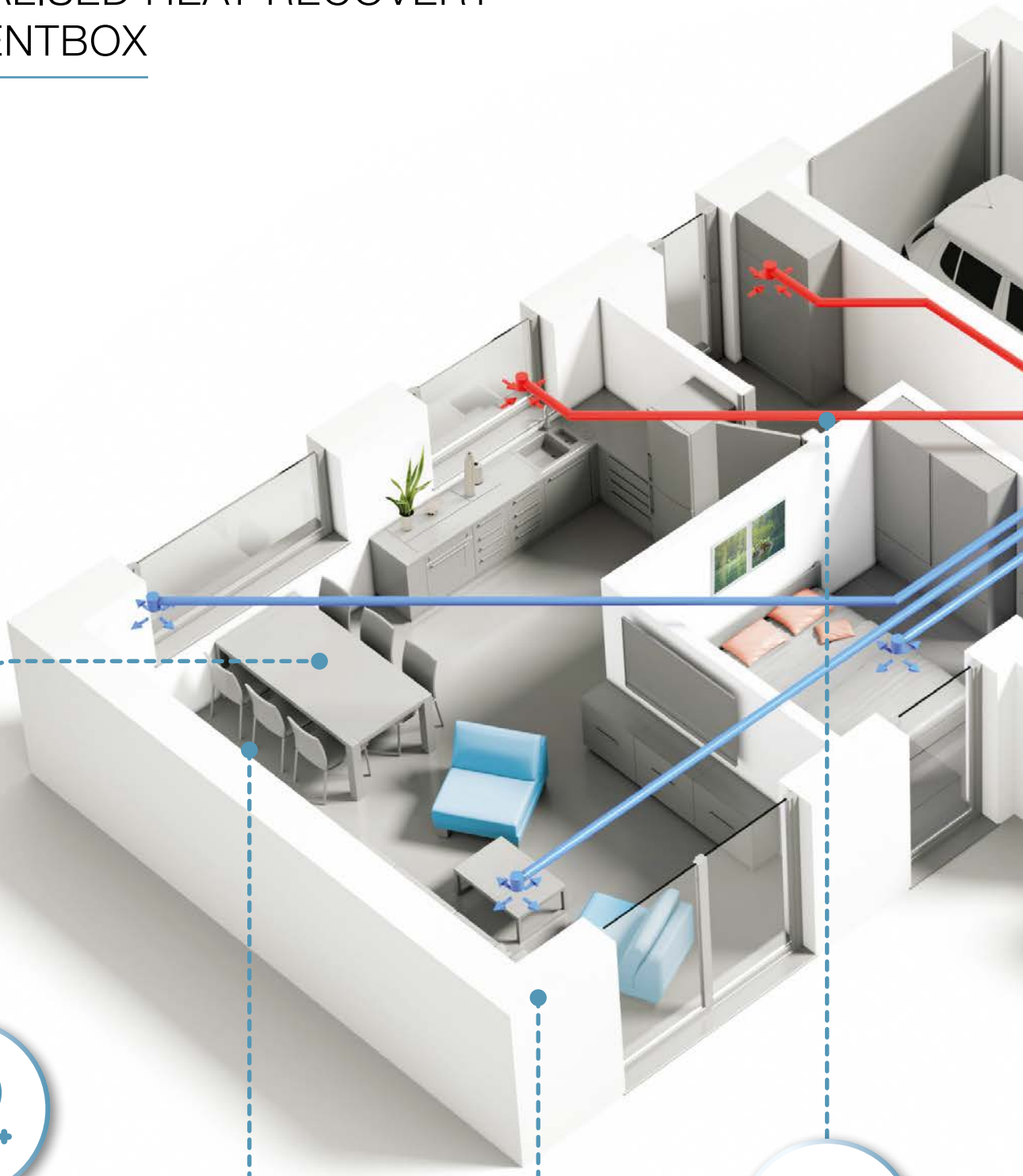
CENTRALISED HEAT RECOVERY UNIT VENTBOX



Fresh air without allergens and pollen

The system efficiently filters air, removing allergens, pollen, and impurities. Therefore, the air at your home is healthy and clean.

Suitable for family houses

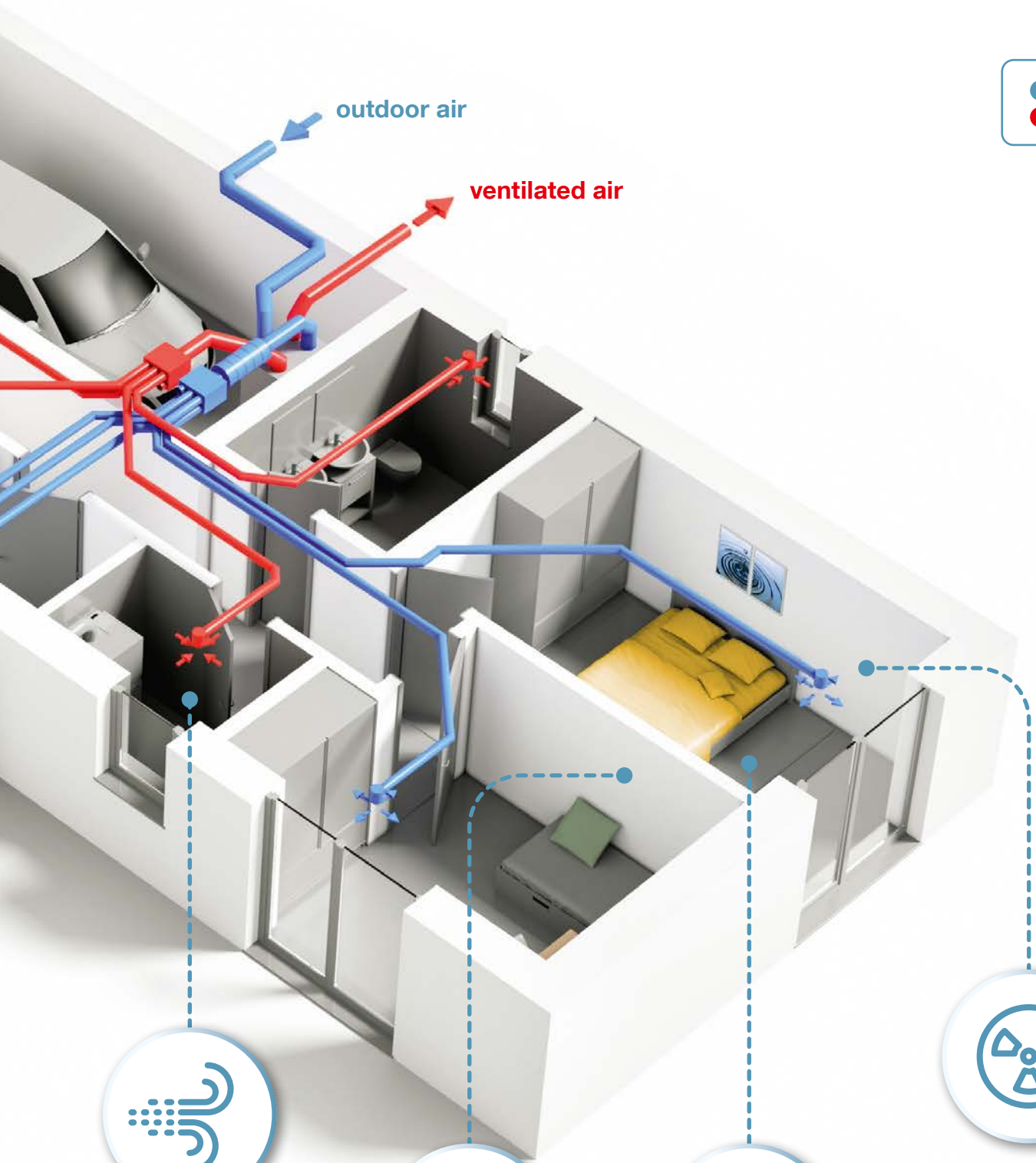
Flats and apartment buildings up to 300 m².

Mobile app control

LICON units can be controlled and monitored through a mobile application, providing you with a convenient way to adjust settings according to your needs.

Moisture removal

CHRV systems feature an integrated mechanism to eliminate excess humidity, contributing to a more comfortable and healthier environment.



Intensive exhaust option

Elevate your air quality with the units' BOOST feature, enabling intensive extraction.

Summer and Winter functions

Units compare the temperature of indoor and outdoor air, regulating the bypass damper to prevent the warming of external air from exhaust air.

Low consumption

The units are designed with a focus on energy efficiency, boasting low energy consumption to help you save on operational costs.

Radon-Free Living

The unit can be equipped with a radon sensor for continuous monitoring of radon concentration in the house, allowing for timely automatic response to potential hazards.

VENTBOX 300

94%
Heat recovery efficiency – 50 m³/h

The **VENTBOX 300** central heat recovery system is designed with an emphasis on modern technology, including a user-friendly solution for keeping the air in your home fresh and healthy. The unit achieves ideal parameters and is suitable for providing optimum performance and comfort in family houses **up to 200 m²**. The unit is equipped with an advanced air purification system that effectively removes allergens and pollen from the air. It also ensures efficient exhaust air extraction with the possibility of dehumidifying the air from water vapour. The unit has low energy consumption. It also reduces the excessive presence of CO_2 in the room.

Specifications

Version	Optimum	Premium
Recommended area	up to 200 m²	
Installation options	wall and floor	
Design variants	left, right	
Energy class	A+	
Dimensions (h × w × d)	750 × 790 × 625 mm	
Weight	30.2 kg	32.5 kg
Voltage	230 V AC / 50 Hz	
Electric current without preheating	0.7 A	
Electric current including preheating	4.6 A	
Max. input power of the unit without preheating	150 W	
Max. preheating input power	800 W	
IP coverage	30	
Air flow	60–300 m³/h	
Max. airflow in BOOST setting	300 m³/h	
Displacement pressure	50–400 Pa	
Acoustic energy L_{WA}	210 m³/h / 50 Pa / 42.9 dB	
Heat transfer efficiency / Flow rate	86 % / 300 m³/h 88 % / 210 m³/h 93 % / 60 m³/h	
Power input (without preheating) at displacement pressure 50 Pa	88 W / 300 m³/h 31 W / 210 m³/h 16 W / 60 m³/h	
∅ of the connection necks	180 mm	
Type of condensate drain pipe (5/4" thread)	HT DN 32 mm	
Specific power consumption SPI*	0.20 W / m³/h	
Ordering code**	VB2-0300-BC-OHR(L)	VB2-0300-BC-PHR(L)

* at reference airflow 210 m³/h and disposition pressure of 50 Paa
** for ordering codes see p. 23

Optimum version

This is an innovative and powerful heat recovery unit designed to optimally achieve **maximum performance while ensuring economic efficiency**. The unit is equipped with all the necessary technical equipment to ensure efficient operation and optimization of all performance parameters.

Premium version

This is a more sophisticated version of the unit, which is equipped with unique **EC motors with a constant flow function to compensate for pressure losses** (e.g. when air filters become clogged). With these EC motors, the unit can operate more efficiently and economically; this has a positive effect on the overall dynamics as well as the economy when using the heat recovery system. The Premium version unit can automatically compensate for pressure loss in the system, e.g. when the air filters become clogged. At the same time, it ensures uniform ventilation and high heat recovery efficiency. The Premium unit is equipped with a front design cover.

VENTBOX 400

90%
Heat recovery efficiency – 50 m³/h

The **VENTBOX 400** is an innovative and user-friendly solution for optimizing the air quality in your home. This unit has been designed with an emphasis on the latest technology and engineering developments to provide optimum performance and comfort for family homes **up to 300 m²**. Features of this unit include an advanced allergen and pollen air purification system, efficient exhaust air and water vapour extraction, low energy consumption and reduction of excess CO_2. The unit can be controlled via a web interface, making it user friendly and simple to set parameters.

Specifications

Version	Optimum	Premium	Comfort
Recommended area	up to 300 m²		
Installation options	wall and floor		
Design variants	left, right		
Energy class	A+		
Dimensions (h × w × d)	750 × 790 × 625 mm		
Weight	30.2 kg	32.5 kg	34.5 kg
Voltage	230 V AC / 50 Hz		
Electric current without preheating	1.3 A		
Electric current including preheating	5.1 A		
Max. input power of the unit without preheating	260 W		
Max. preheating input power	800 W		
IP coverage	30		
Air flow	80–400 m³/h		
Max. airflow in boost setting	400 m³/h		
Displacement pressure	50–450 Pa		
Acoustic energy L_{WA}	280 m³/h / 50 Pa / 46.3 dB		
Heat transfer efficiency / Flow rate	84 % / 400 m³/h 87 % / 280 m³/h 92 % / 80 m³/h		
Power input (without preheating) at displacement pressure 50 Pa	135 W / 400 m³/h 65 W / 280 m³/h 18 W / 80 m³/h		
∅ of the connection necks	180 mm		
Type of condensate drain pipe (5/4" thread)	HT DN 32 mm		
Specific power consumption SPI*	0.23 W / m³/h		
Ordering code**	VB2-0400-BC-OHR(L)	VB2-0400-BC-PHR(L)	VB2-0400-BC-CHR(L)

* at reference airflow 280 m³/h and disposition pressure of 50 Paa
** for ordering codes see p. 23

Heating and cooling capacity for the Comfort version on request from the manufacturer.

Optimum version

This is an innovative and powerful heat recovery unit designed to optimally achieve **maximum performance while ensuring economic efficiency**. The unit is equipped with all the necessary technical equipment to ensure efficient operation and optimization of all performance parameters.

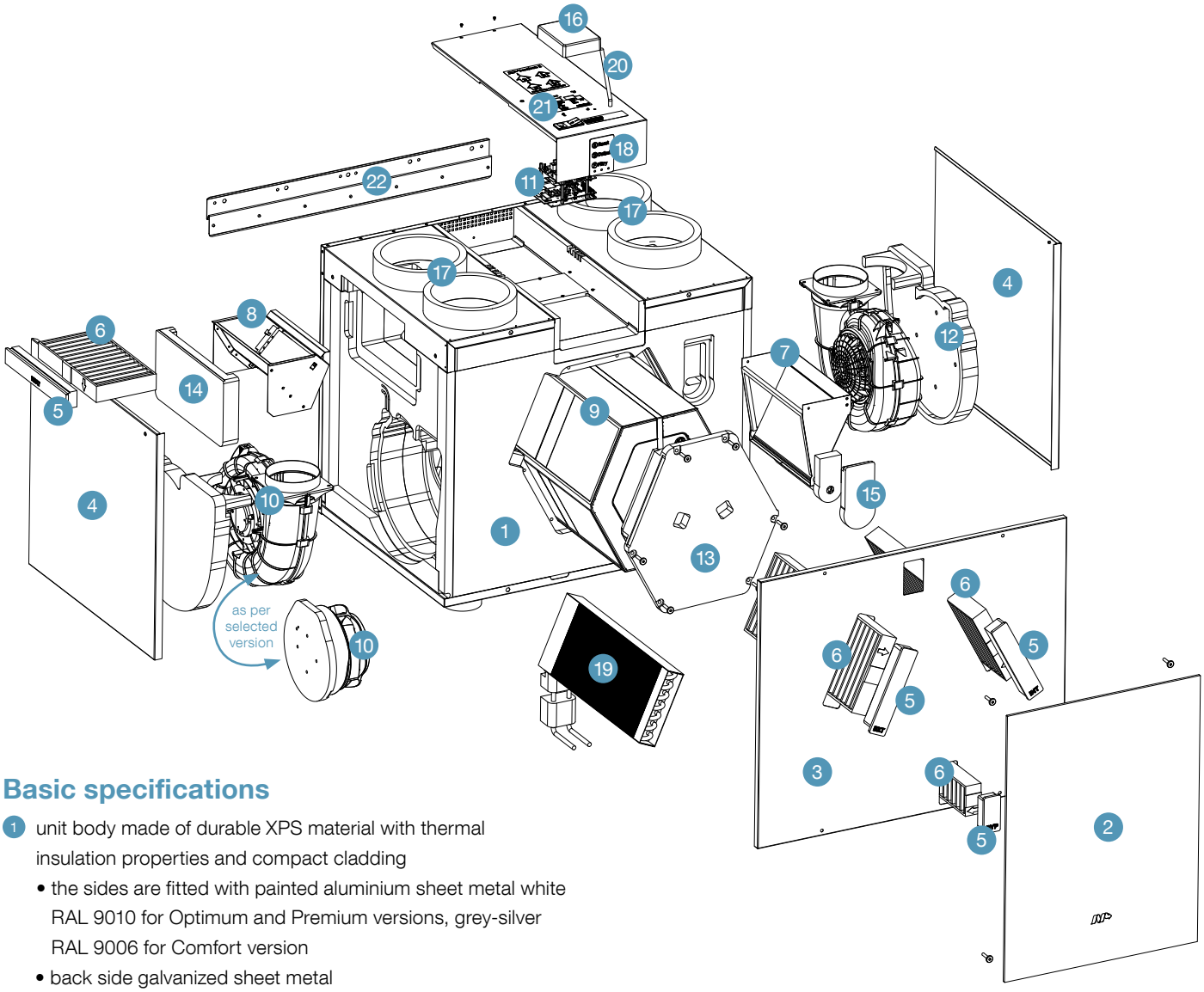
Premium version

This is a more sophisticated version of the unit, which is equipped with unique **EC motors with a constant flow function to compensate for pressure losses** (e.g. when air filters become clogged). With these EC motors, the unit can operate more efficiently and economically; this has a positive effect on the overall dynamics as well as the economy when using the heat recovery system. The Premium version unit can automatically compensate for pressure loss in the system, e.g. when the air filters become clogged. At the same time, it ensures uniform ventilation and high heat recovery efficiency. The Premium unit is equipped with a front design cover.

Comfort version

The unit with the highest possible configuration is also **equipped with a direct evaporator on the supply air side, which is connected to the outdoor compressor unit**. This assembly thus forms a unique ventilation system with heat recovery, with the option of setting the desired target indoor air temperature including automatic humidity adjustment of the living space according to the current outdoor conditions. The required parameters can be conveniently set in the control menu. In the winter, the system allows the supply air to be heated, while in the summer it is possible to cool the supply air and dehumidify it at the same time. These features contribute significantly to improving the indoor comfort of living spaces. The system is suitable for low-energy and passive houses, where it supplements or partially replaces the basic heating system – especially in the transitional period such as autumn or spring, when the outside temperatures are still low.

UNIT BREAKDOWN



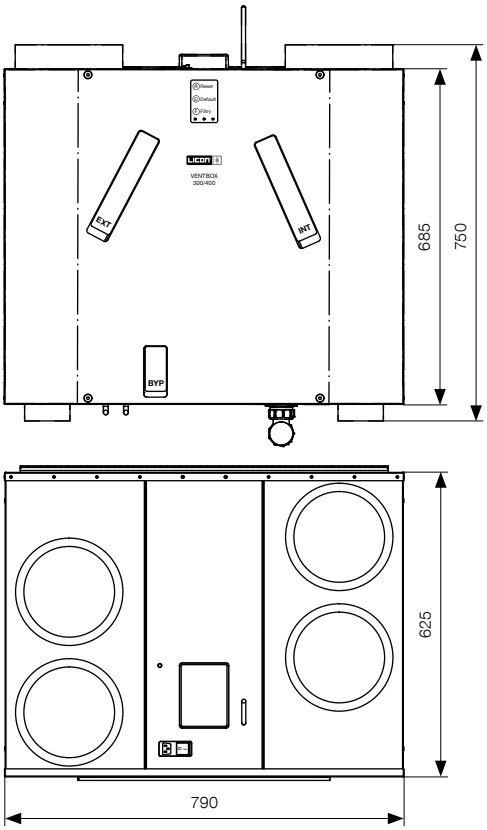
Basic specifications

1. unit body made of durable XPS material with thermal insulation properties and compact cladding
   - the sides are fitted with painted aluminium sheet metal white RAL 9010 for Optimum and Premium versions, grey-silver RAL 9006 for Comfort version
   - back side galvanized sheet metal
2. front wall design cover (Premium and Comfort versions)
3. front door made of painted Al sheet metal white RAL 9010
4. side door – service fan covers
5. filter closing caps
6. filters for air purification (see p. 10)
7. bypass damper including actuator
8. PTC cell for air preheating
9. plate counterflow heat exchanger
10. **premium and Comfort versions** – fans with economical EC motor and constant flow
    Optimum version – EC fans
11. control electronics and power supply of the unit
12. fan cover
13. heat exchanger cover
14. preheating cover
15. bypass damper actuator cover
16. control electronics cover
17. air duct connection necks (∅ 180 mm)
18. control and information panel with keypad and LED indication
19. direct evaporator in conjunction with an outdoor heat pump unit*
20. external Wi-fi antenna
21. analog and digital inputs
22. hanging anchor rail

- filter clogging indicator based on time interval
- condensate drain outlet on the bottom of the unit with 5/4" connection thread
- dry trap WHB1 – DN 32 mm (for Comfort 2× version)
- separate temperature sensor for monitoring the preheating function
- temperature sensors for monitoring the air temperature at the outlets and inlets of the ventilation unity
- power cord 250 V AC / 10 A
- energy label, package leaflet
- assembly and installation instructions

* supply air heating/cooling (dehumidification) – option to install a direct evaporator in the unit in conjunction with an outdoor air-to-air heat pump unit (according to manufacturer's specification) – Comfort version only

The **VENTBOX 300** and **400** units are available in right or left-hand versions and can be installed on the wall or on the floor. In the case of floor mounting, we recommend that the unit be fitted with floor mounting spacer stands due to the installation of a dry trap in the bottom.



Basic software functions

- automatic frost protection
- display of the current preheating performance
- automatic by-pass function (exchanger by-pass)
- manual by-pass control (in summer mode)
- option of manual defrosting of the heat exchanger (in winter mode)
- option to connect a fire sensor or electric fire alarm system (EPS)
- control via web interface in local network
- weekly time mode
- Modbus RTU communication
- control of ventilation power also in the application interface
- leaving the premises / holiday function
- Modbus communication with a higher-level system (e.g. LOXONE)
- indicative information on current electricity consumption
- BOOST shock ventilation
- user configurable connected sensors (CO_2, relative humidity, total volatile concentration)
- language versions CZ, EN, DE, FR

Regular and free software updates are available at **www.licon.cz**

Optional specification

- enthalpy counterflow heat exchanger
- continuous manual P.R.T. control with wall-mounted remote control
- CO_2 concentration sensor
- relative humidity (RH) sensor
- radon concentration sensors
- TVOC and HCHO (volatile substances and formaldehyde) sensor
- INPUT filters (Optimum) F7 (ePM1 70 %)*
- EXHAUST filters (Optimum) F7 (ePM1 70 %)*
- by-pass filters for Optimum F7 (ePM1 70%)*
- carbon odour filters INPUT F7 (ePM1 70%)*
- insulation box (must be used if the unit is operated in an area where the ambient temperature reaches max. 5 °C)
- spacer stands for floor mounting
- Fujitsu AOYG-07KMCC outdoor air/air heat pump unit (Comfort version)

* the figure in (%) tells how many particles in a given filter class the filter "captures"

outdoor air / air heat pump unit for Comfort version

Up to 9 sensors can be connected in total.

ACCESSORIES

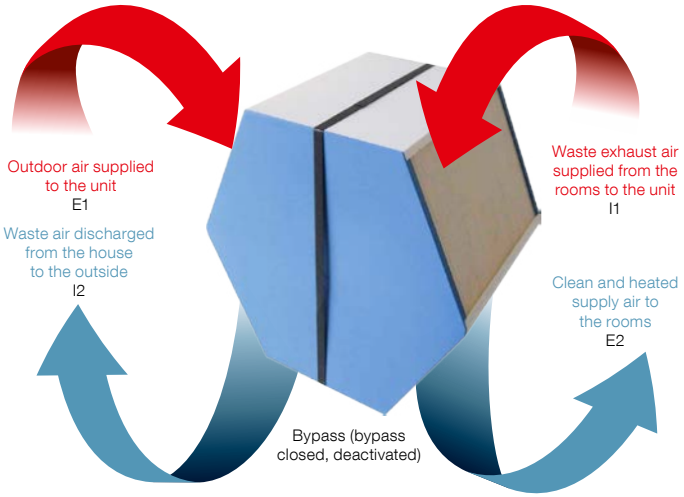
Enthalpy counterflow heat exchanger

The enthalpy counterflow heat exchanger is an optional part of the heat recovery system which, in addition to heat recovery, also allows moisture recovery, thus supporting the maintenance of optimal indoor air humidity and thus improving the user comfort of apartments and residential buildings. These systems bring many benefits, including energy efficiency, reduced heating costs, and improved indoor air quality.

Main features and benefits

- **Heat exchange** – an enthalpy heat exchanger allows heat energy to be transferred from warmer exhaust air to cooler outdoor air, thereby increasing the temperature of the air entering the building in winter. This helps to reduce heating costs because the fresh air is heated passively during the exchange.
- **Moisture exchange** – in addition to heat, the enthalpy heat exchanger allows moisture transfer. This is important for maintaining optimum humidity indoors. The moisture in the exhaust air is transferred to the supply air, which can be useful in areas with extreme climatic conditions.
- **Reduction of losses and pollution** – the enthalpy heat exchanger also serves to separate the supply and extract air, preventing the transfer of pollution, dirt and unwanted odours from the outside into the building. This improves the indoor air quality.

Working principle of the counterflow exchanger (right-hand connection option)



The enthalpy heat exchanger can be ordered separately or later; after a very simple installation, the entire unit is upgraded with advanced technology. **Ordering code:** Z-CRJ-P-018

Specifications with enthalpy exchanger

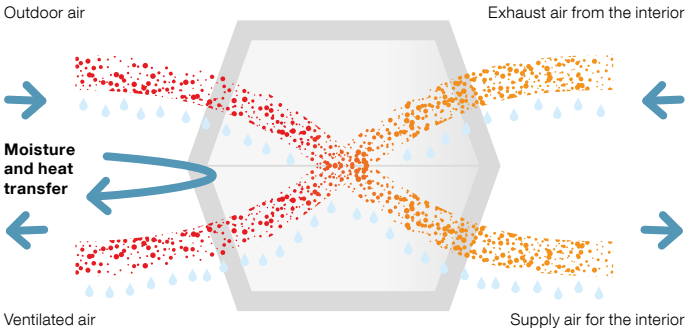
VENTBOX 300	Optimum	Premium
Weight of the entire unit	33.7 kg	36 kg
Heat transfer efficiency / Flow rate	76 % / 300 m³/h 80 % / 210 m³/h 90 % / 60 m³/h	
Moisture transfer efficiency / Flow rate	54 % / 300 m³/h 58 % / 210 m³/h 75 % / 60 m³/h	

VENTBOX 400	Optimum	Premium	Comfort
Weight of the entire unit	33.7 kg	36 kg	38 kg
Heat transfer efficiency / Flow rate	73 % / 400 m³/h 77 % / 280 m³/h 90 % / 80 m³/h		
Moisture transfer efficiency / Flow rate	48 % / 400 m³/h 56 % / 280 m³/h 74 % / 80 m³/h		

Pleasant indoor climate during both summer and winter

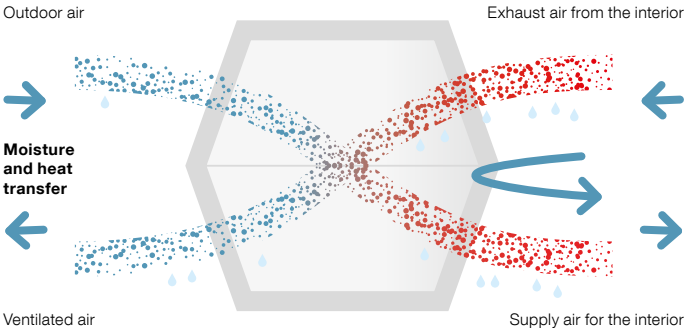
What happens in summer?

Relatively humid air seems warmer in summer than it actually is, so heat and moisture are removed from the warm and humid outside air before fresh air is brought into the house.



How does it work in winter?

In winter, valuable heat is recovered and remains inside. With humidity recuperation, more of the necessary moisture is transferred to the dry outside air.



CONTROL

Control and information panel

The VENTBOX 300/400 can normally be operated via the web interface, but all basic service operations can also be performed manually (by pressing the appropriate button) on the control panel located on the front of the device:

- R a short press of the button to perform a **reboot**, which preserves all user and service settings of the device.
- D a longer press of the button (5 s) to enter the **factory settings**, where the ventilation unit runs permanently at reduced power. At the same time, all user settings will be lost, including weekly program settings and network connections if previously made. The ventilation unit goes back to AP mode including the login password set by the manufacturer.
- F press the button (2 s) to set the new **filter change** interval. Use this only for filter changes!

Information LED

- **green** – power – flashing – connected to power (Standby mode), lit – device in operation
- **blue** – filters – lit or flashing request for filter change
- **red** – error – must check “Error messages”

Unit control via web interface

The home screen is used to view information, control and set up the VENTBOX 300/400. The middle part displays the current power of the unit; information and status icons are below, then the current values are measured by the room sensors used by the unit (provided that the sensors are connected to the heat recovery unit). The lower part contains buttons for operating and setting the heat recovery unit.

User functions that you can control

- ventilation shutdown – Standby mode (unit is not disconnected from a power supply)
- switching between automatic and manual mode (A/M)
- one-time reduction of ventilation power when leaving the building (holiday)
- short-term increase of ventilation intensity (BOOST mode)
- manual bypass flap switching (summer only)
- user device settings

FILTERS

Fresh and clean air for good health
LICON's original filters ensure a fresh and clean air supply to living rooms and significantly reduce the number of unhealthy particles.

More efficient operation reduces operating costs
With the original filters, developed specially for the specific purposes of VENTBOX ventilation units, they achieve lower energy consumption. They guarantee perfect operation and maximum energy efficiency, resulting in cost savings.

Low noise increases living comfort
Thanks to the original filters, VENTBOX heat recovery units are almost inaudible. They contribute to the already very quiet controlled ventilation operation and increase the comfort of living.

Particle sizes and filter classifications
As of 1 July 2018, the ISO 16890 filter standard is in force throughout Europe. It divides filters into four classes according to their ability to filter different sizes of particles in the air. To be classified in a particular class, a filter must capture at least 50% of the particles of a given size.

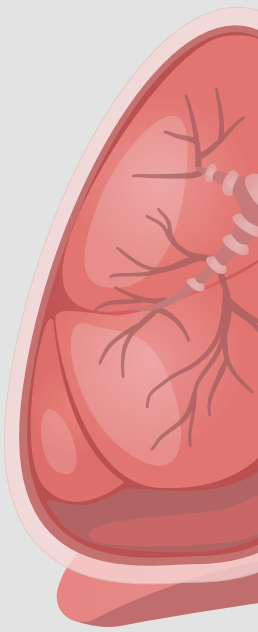
The service life of the filters is always dependent on the quality of the environment in which the VENTBOX is operated. In some locations, the service life may be significantly shorter than normal (e.g. due to high dust levels). We therefore recommend paying close attention to their service. 6 months is the normal filter lifetime, while 12 months is the maximum filter lifetime. New filters can be easily ordered at **www.licon.cz** in the **Heat recovery unit** section.

Types of filters

	M5	F7	F7 carbon
Filtration class – inlet	ePM10	ePM1	ePM1
Percentage capture of particles in a given filtration class – inlet	55 %	70 %	70 %
Filtration class – exhaust	ePM10	ePM1	ePM1
Percentage capture of particles in a given filtration class – exhaust	55 %	70 %	70 %
Dimensions (h × w × d)	513 × 194 × 39 mm	513 × 194 × 39 mm	513 × 194 × 39 mm
Ordering code	Z-CRJ-P-016B	Z-CRJ-P-016A	Z-CRJ-P-016G

Efficiency of filters

EN 779	ISO ePM1	ISO ePM2,5	ISO ePM10	ISO Coarse
G2	–	–	–	>60 %
G3	–	–	–	>80 %
G4	–	–	–	>90 %
M5	–	–	>50 %	–
M6	–	50–65 %	>60 %	–
F7	>50 %	70–80 %	>85 %	–
F8	>80 %	>80 %	>90 %	–
F9	>80 %	>95 %	>95 %	–

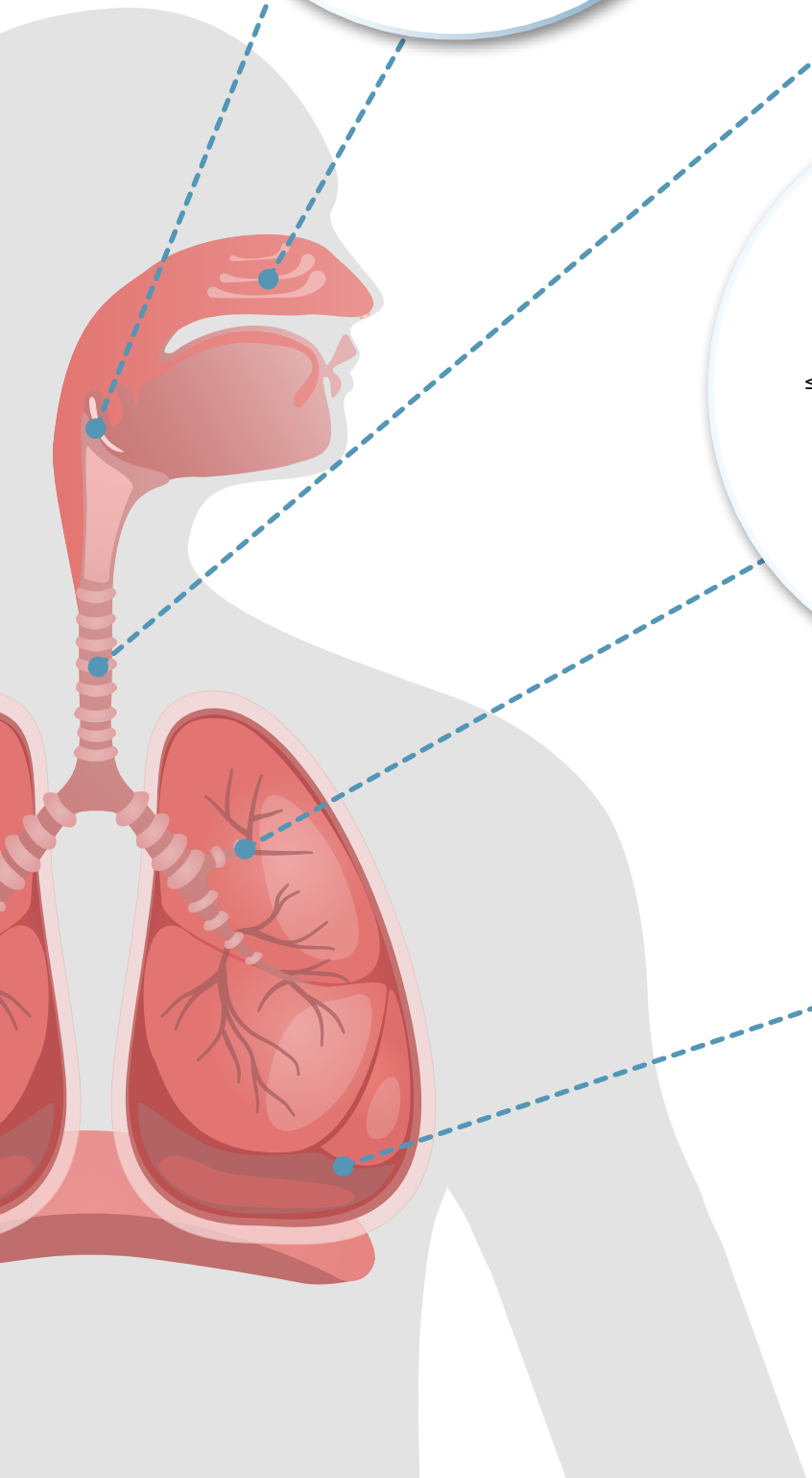


ISO Coarse
enters the nose and neck (coarse dirt)

> 10 µm sand, fluff, flying seeds, fine hair etc., most of which is already caught by filters classified in class G2. We use this filter in VENTBOX 300/400 units on the supply air mainly to protect the electric preheater and also to reduce clogging of the downstream filter.

ISO ePM10
enters the upper respiratory tract

≤ 10 µm pollen, stone dust, agricultural dust, etc., these particles are captured with an efficiency of 55 % by the filter with the original M5 designation. The minimum specified filter efficiency for these particles is > 50 %. With the F7 filter, they are probably captured up to 90 %.



ISO ePM2.5
penetrates into the lungs

≤ 2.5 µm mould spores, pollen, bacteria, toner powder, etc., these particles are captured by the F7 filter, probably with an efficiency of about 80 %.

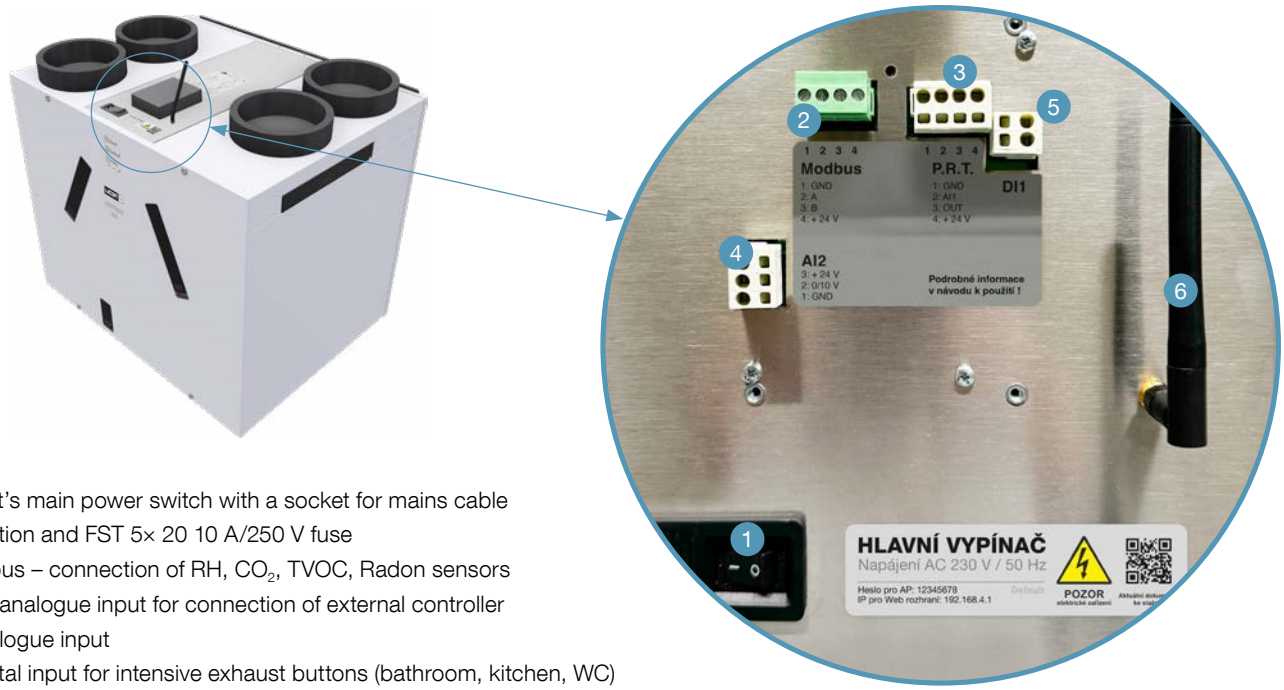
ISO ePM1
enters the bloodstream

≤ 1 µm bacteria, soot, etc., these particles are captured with an efficiency of 70 % by the filter with the original F7 designation. The min. specified filter efficiency for these particles is more than 50 %.

ELECTRICAL CONNECTION

The electrical power connection of the VENTBOX 300/400 is by means of a 1.8 metre power cable. All connector connections are located on the **Control Panel**, which is located on the top side between the air duct necks. This is also where the main unit switch with fuse is located.

Control panel with connection for connectors



1. The unit's main power switch with a socket for mains cable connection and FST 5× 20 10 A/250 V fuse
2. 2 Modbus – connection of RH, CO_2, TVOC, Radon sensors
3. P. R. T. analogue input for connection of external controller
4. AI2 analogue input
5. DI1 digital input for intensive exhaust buttons (bathroom, kitchen, WC)
6. Antenna used for wireless communication (connection to Wi-fi network)

VENTILATION PERFORMANCE

VENTBOX 300 the values given refer to filtration class F7

Unit power [%]	External pressure [Pa]	Airflow [m³/h]	Filtration class F7		Heat recovery efficiency	
			Power input [W]	SFP [W/m³/h]	Heat ηt [%]	Humidity ηx [%]
With standard heat exchanger according to EN 13141-7:2011						
20	**50**	60	16	0.32	92.5	–
70	**50**	210	43	0.20	87.9	–
70	**50**	210	31	0.16*	87.9	–
100	**50**	300	88	0.29	86.4	–
With enthalpy heat exchanger according to EN 13141-7:2011						
20	**50**	60	16	0.32	90.3	75.1
70	**50**	210	42	0.20	80.1	58.0
70	**50**	210	31	0.16*	80.1	58.0
100	**50**	300	87	0.29	76.1	53.8

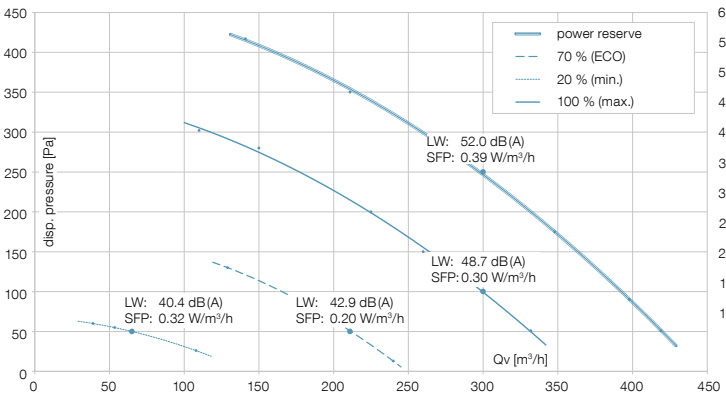
* the values given refer to filtration class F5

VENTBOX 400 the values given refer to filtration class F7

Unit power [%]	External pressure [Pa]	Airflow [m³/h]	Filtration class F7		Heat recovery efficiency	
			Power input [W]	SFP [W/m³/h]	Heat ηt [%]	Humidity ηx [%]
With standard heat exchanger according to EN 13141-7:2011						
20	**50**	80	18	0.23	91.9	–
70	**50**	280	65	0.23	86.9	–
70	**50**	280	47	0.17*	86.9	–
100	**50**	400	135	0.33	84.0	–
With enthalpy heat exchanger according to EN 13141-7:2011						
20	**50**	80	18	0.23	90.1	73.7
70	**50**	280	63	0.23	76.9	55.7
70	**50**	280	47	0.17*	76.9	55.7
100	**50**	400	128	0.32	73.0	47.8

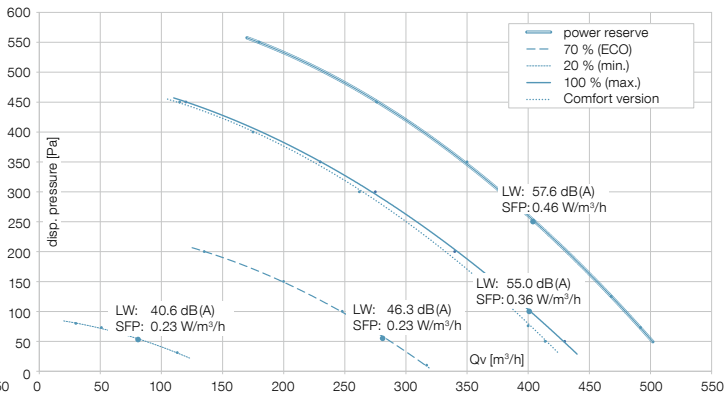
* the values given refer to filtration class F5

VENTBOX 300 – available ventilation capacity



The values given refer to filtration class F7.

VENTBOX 400 – available ventilation capacity

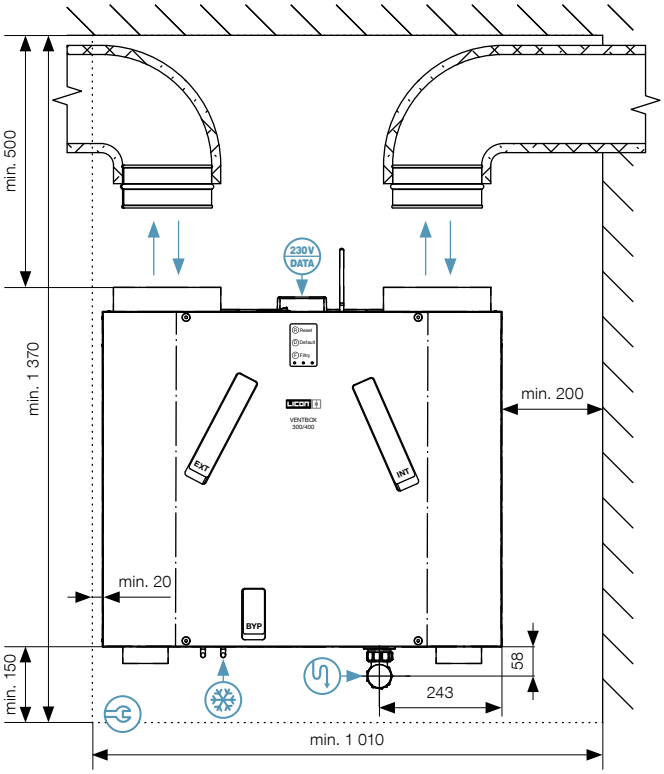


The values given refer to filtration class F7.

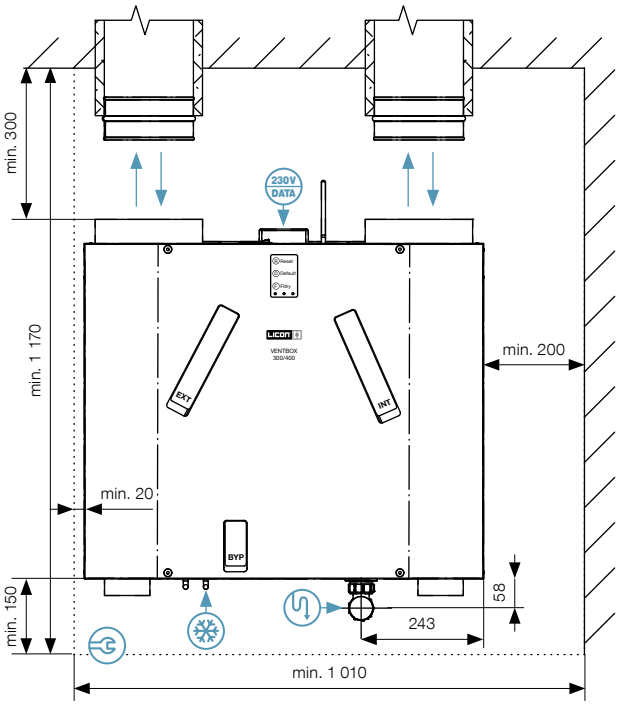
Cooling and heating outputs for the VENTBOX 400 Comfort unit are available on request from the manufacturer at LICON s.r.o.

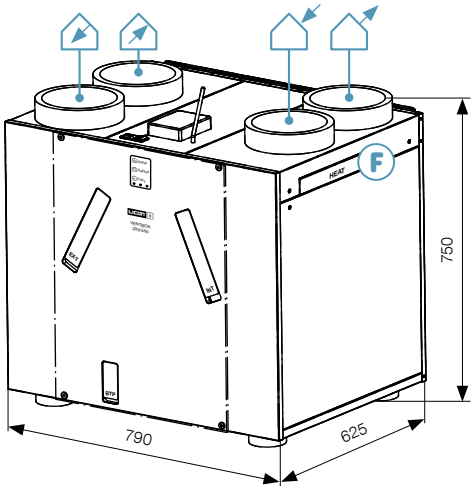
ASSEMBLY

Connection under the ceiling – left variant



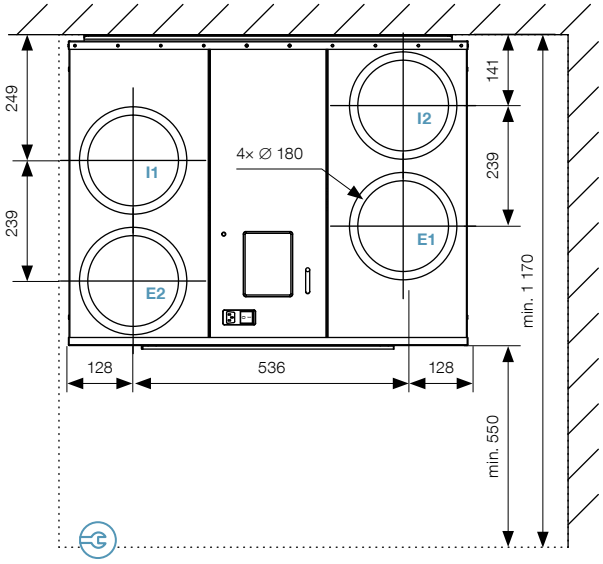
Connection through the ceiling – left variant





Connecting air ducts – left variant

view from above



Legend

Supply E1
of fresh outdoor air to the unit

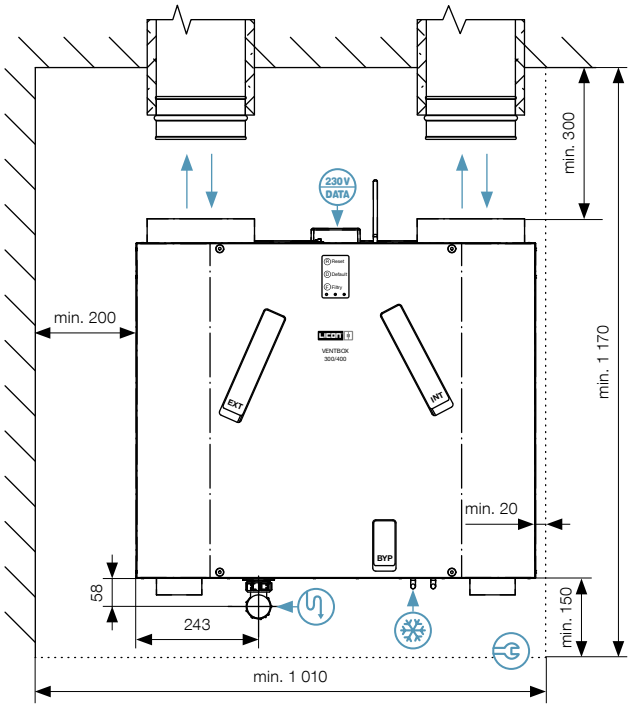
Exhaust I2
of used air from the unit to the outside

Distribution E2
of fresh air from the unit to living areas

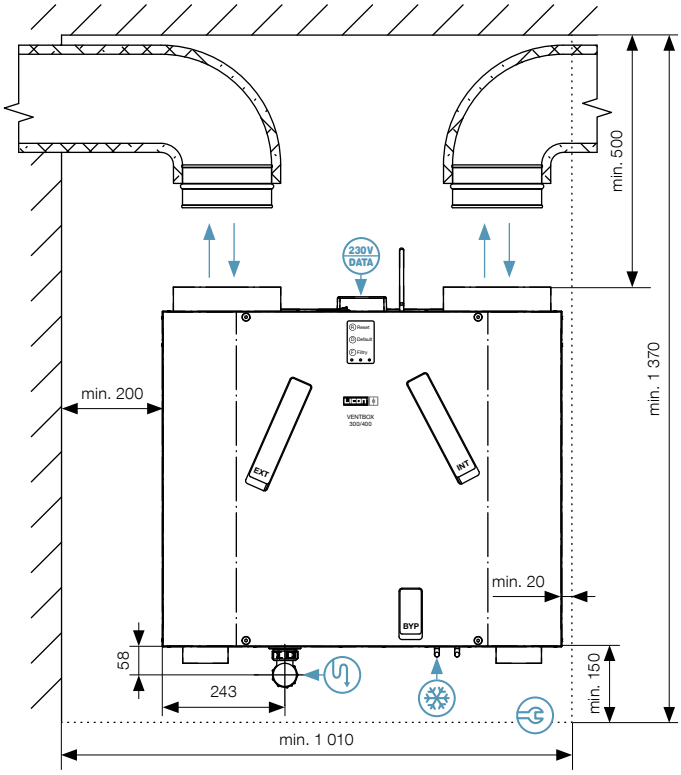
Exhaust I1
of used air from living areas to the unit

Air duct connection 4× ∅ 180 mm

Connection through the ceiling – right variant

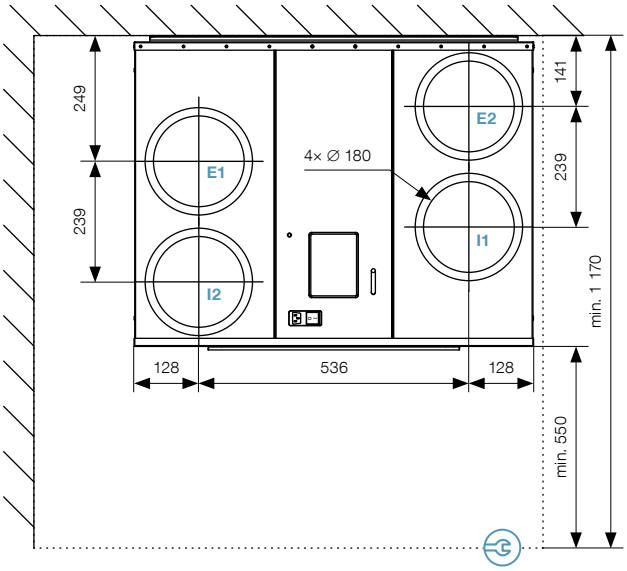


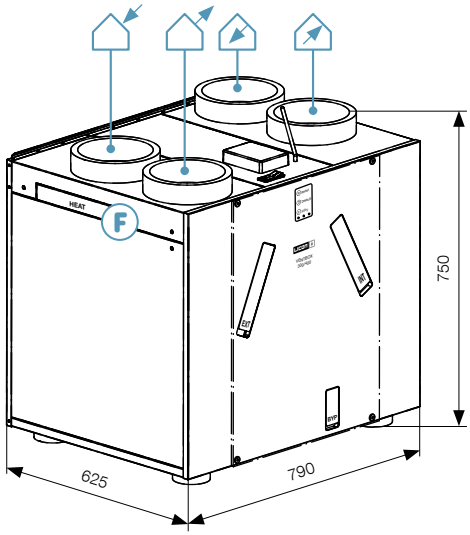
Connection through the ceiling – right variant



Connecting air ducts – right variant

view from above





Dimensions in mm. Technical changes reserved.

Power socket (230 V AC/50 Hz), peripheral terminals

Condensate discharge (HT waste pipe – DN 32 mm)/5/4" thread)

Connection for refrigerant lines ∅ 6,35/9,52 mm (Comfort version)

Minimum assembly/handling space

Filter service hole

REQUIREMENTS FOR OTHER PROFESSIONS

Electrical requirements

Mandatory preparation

Fixed power cables 3×2.5 with circuit breaker 16 A char. B from the switchboard to the heat recovery unit

- Terminate with a 230 V AC/50 Hz socket no further than 1 m from the power socket of the heat recovery unit (the power socket is located on the top side, at the front edge of the heat recovery unit between the air duct connection necks).
- Marking of the circuit breaker with the label *"heat recovery"*.
- **Do not block – bulk remote control!**

– In addition, preparation is mandatory for the Comfort version

Fixed power cables 3×2.5 with circuit breaker 16 A char. B from the switchboard to the outdoor heat pump unit

- Terminate with a free cable with a reserve of min. 1.5 m, in the immediate place of installation of the outdoor heat pump unit and mark the cable with the label *"Heat pump-Recuperation"*.
- Marking the circuit breaker with the *"Heat pump-Recuperation"* label.

Fixed power cables 5×1.5 from the heat recovery unit to the outdoor heat pump unit

- Terminate with a free cable with a reserve of min. 1.5 m, in the immediate place of installation of the outdoor heat pump unit and mark the cable with the label *"Heat pump-Communication"*.
- Terminate the cable with a reserve of min. 2 m, no further than 0.5 m from the peripheral terminal of the heat recovery unit (the peripheral terminals are always located on the upper side at the front edge of the heat recovery unit between the air duct connection necks) and mark as *"Heat pump-Communication"*.

Optional preparation

UTP cable from the home Wi-fi router to the heat recovery unit

- Terminate with RJ 45 socket at the location of the heat recovery unit. This is used only in case of a weak Wi-fi signal, for possible connection of a Wi-fi router, and for Wi-fi signal amplification (it is not used for physical connection of the heat recovery unit).

Intensive exhaust buttons *"WC, Bathroom, Kitchen"*

- Bring UTP cable or J-Y(ST)Y 2×2×0.8 to all rooms with exhaust requirement (WC, bathroom, kitchen and other optional rooms).
- Connect all wires from the intensive exhaust buttons in parallel and connect them to the recovery unit.
- Terminate with a free cable with a reserve of min. 2 m, not farther than 0.5 m from the data terminal of the heat recovery unit and mark *"WC button, Bathroom, Kitchen"*, etc.
- In the rooms, install a push button with a return to the original

CO_2 and HYG sensors and continuous control panel (P.R.T.)

- Bring UTP cable or J-Y(ST)Y 2×2×0.8 for sensors and P.R.T. to the required rooms, the wires must be connected in series according to the requirements of the technical design of the RS 485 bus – sensors communicate using Modbus RTU!
- Terminate the cable with a margin of min. 2 m, at the furthest 0.5 m from the data terminal of the heat recovery unit (data terminals are always located between the necks facing the interior

Recommendations

- The CO_2 sensor for bedrooms or living rooms should be placed at the height of the switches.
- Humidity sensors for bathrooms should be placed on the wall 10 cm below the ceiling.
- Always leave a margin of at least 0.3 m on the continuous cables that connect the individual sensors in series.

Smoke detector and supply air overpressure control

- Lead UTP or J-Y(ST)Y 2×2×0.8 cables to the required room with air excess pressure or smoke detection requirements (room with fireplace, boiler room, etc.)
- Terminate the cable with a reserve of min. 2 m, no further than 0.5 m from the terminal block of the heat recovery unit (terminal blocks are located on the top side at the front edge of the heat recovery unit between the connection necks) and mark as *"smoke detector(s), air pressure relief"*.
- When installing smoke detectors, follow strictly the smoke detector manufacturer's recommendations.
- When selecting the push button air pressure control, a push button with ON/OFF function must be fitted.

Requirements for water installation

Mandatory preparation

Drain pipes HT DN 32 mm, 5/4" thread

- Lead the HT DN 32 mm waste pipe, fit it with a dry trap and terminate it near the condensate drain of the heat recovery unit (the condensate drain is located on the bottom side of the heat recovery unit).
- It is necessary to ensure a free outflow with respect to the overall gradient of the waste water system (min. 3 %).
- For the Comfort version, double mounting of the dry trap to drain the condensate collected from the evaporator of the heat recovery unit and connect it to one line, then continue with the standard waste pipe DN 32 mm.

Optional preparation for Comfort version

- Waste pipe for condensate drainage of the external air conditioning unit.
- Lead the waste pipe outside the building under the air conditioning unit.

Requirements for construction

Mandatory preparation

- Supply optional air ducts ∅ 180 mm or ∅ 160 mm (when using reducer).
- Make the necessary penetrations through walls, floors and ceilings.
- **Ensure sufficient handling space according to the chosen right/left variant and the connection (to the ceiling/under the ceiling)!**

– In addition, preparation is mandatory for the Comfort version

Lead the refrigerant pipe from the external air conditioning unit according to specification, max. length 15 m. Route the refrigerant pipe together with the waste pipe under the underside of the heat recovery unit.

General requirements

Further requirements are governed by the project documentation of the Comfort version. The requirements for the outdoor air conditioning unit are governed by its Fujitsu AOYG-07KMCCI documentation.

ACCESSORIES

	Name	Description	Ordering code
	RH sensor	Humidity sensor, analogue/digital 12–24 V DC, plaster box	Z-CRJ-P-001
	CO_2 sensor	CO_2 concentration sensor, analogue/digital, 12–24 V DC, plaster box	Z-CRJ-P-002
	TVOC sensor	Volatile and formaldehyde concentration sensor, analogue/digital, 12–24 V DC, plaster box	Z-CRJ-P-023
	Radon sensor	Radon concentration sensor	Z-CRJ-P-022
	Continuous manual control of relative P.R.T.	0–100 % continuous control with intensive exhaust	Z-CRJ-P-003
	Enthalpy counterflow heat exchanger	Enthalpy counterflow heat exchanger	Z-CRJ-P-018
	Insulation box	Insulation box to uninsulated areas	Z-CRJ-P-020
	Spacer stands	Spacer stands for floor mounting (in 4× pack)	Z-CRJ-P-26
	Filter class M5 (ePM10 55 %) inlet/exhaust	Folded M5 class filter (ePM10 55 %), 513 × 194 × 39 mm	Z-CRJ-P-016B
	Filter class F7 (ePM1 70 %) inlet/exhaust	Folded F7 class filter (ePM1 70 %), 513 × 194 × 39 mm	Z-CRJ-P-016A
	Class F7 carbon filter (ePM1 70 %) inlet/exhaust	Folded carbon filter class F7 (ePM1 70 %), 513 × 194 × 39 mm	Z-CRJ-P-016G
	Filter class M5 by-pass	Folded M5 class filter, by-pass 535 × 74 × 39 mm	Z-CRJ-P-016C
	Filter class F7 by-pass	Folded F7 class filter, by-pass 535 × 74 × 39 mm	Z-CRJ-P-016E
	Wire pre-filter	Wire pre-filter, 276 × 154 × 28 mm	Z-CRJ-P-016D
	Pleated pre-filter M5	Pleated pre-filter class M5 (ePM1 70 %), 276 × 154 × 28 mm	Z-CRJ-P-016H
	Annual filter set M5 (ePM10 55 %)	Filter set 2× inlet/exhaust M5, 1× by-pass M5	Z-CRJ-P-017A
	Annual filter set F7 (ePM1 70 %)	Filter set 4× inlet/exhaust F7, 1× by-pass F7	Z-CRJ-P-017B
	Transition insulated XPS simple	Single axis transition 180 mm to EPE pipe ∅ 160 mm	Z-CRJ-P-023160
	Transition insulated XPS simple	Single axis transition 180 mm to EPE pipe ∅ 200 mm	Z-CRJ-P-023200
	Transition insulated XPS double	Double 180 mm transition on EPE pipe ∅ 160 mm pitch for combination blind Z-CRJ-ER-00216	Z-CRJ-P-024160
	Transition insulated XPS double	Double 180 mm transition on EPE pipe ∅ 200 mm pitch for combination blind Z-CRJ-ER-00216	Z-CRJ-P-024200

ACOUSTIC PARAMETERS

VENTBOX 300

Noise emitted from the unit to the surroundings according to EN ISO 9614-2

Acoustic energy L_{WA} – to the surroundings											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	60	44.8	40.7	48.6	36.1	24.8	23.4	15.8	6.5	40.4
70	**50**	210	46.4	43.1	48.9	40.5	33.9	29.1	11.8	5.3	42.9
100	**100**	300	43.1	46.0	54.6	44.5	39.5	37.9	24.7	9.2	48.7
100	**250**	300	45.8	46.8	57.4	48.5	42.5	39.9	27.1	14.0	52.0

Noise emitted into the duct according to EN ISO 5136 – at the discharge to the pipe

Acoustic energy L_{WA} – discharge to the pipe – E2											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	60	64.6	65.3	52.0	45.9	38.6	30.3	16.7	12.6	51.2
70	**50**	210	63.4	62.6	65.4	55.1	49.8	44.3	35.1	27.6	58.4
100	**100**	300	69.9	67.5	75.2	61.7	56.4	52.2	47.3	40.0	69.2
100	**250**	300	74.2	70.9	72.8	68.4	60.0	57.6	50.7	44.1	69.3

Acoustic energy L_{WA} – discharge to the pipe – I2											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	60	64.9	64.0	51.9	45.2	36.1	27.9	13.8	9.4	50.1
70	**50**	210	62.5	60.7	65.5	54.0	48.1	44.0	33.6	20.3	57.5
100	**100**	300	68.0	67.0	68.2	59.9	55.1	52.0	45.2	35.2	63.3
100	**250**	300	73.0	71.1	69.4	64.6	59.0	56.4	48.9	41.5	66.7

Noise emitted from the unit into the duct (according to EN ISO 5136) – for suction into the duct

Acoustic energy L_{WA} – intake to the duct – E1											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	60	51.7	51.3	44.4	31.6	20.7	10.3	4.6	4.6	38.8
70	**50**	210	55.3	54.0	54.7	41.9	32.6	22.3	11.6	4.6	46.6
100	**100**	300	63.5	62.3	60.2	51.1	42.0	35.5	23.8	12.0	54.6
100	**250**	300	70.6	70.6	60.5	52.8	47.5	45.5	37.3	26.6	58.0

Acoustic energy L_{WA} – suction into the duct – I1											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	60	50.9	51.5	44.7	32.0	20.8	15.2	4.6	4.6	39.1
70	**50**	210	56.3	54.6	56.6	40.3	33.0	30.3	17.3	5.9	47.7
100	**100**	300	61.9	61.2	59.6	47.0	40.9	38.1	25.3	12.9	53.4
100	**250**	300	76.2	76.5	62.8	54.5	44.8	39.2	32.8	26.9	61.6

VENTBOX 400

Noise emitted from the unit to the surroundings according to EN ISO 9614-2

Acoustic energy L_{WA} – to the surroundings											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	80	42.3	38.3	48.5	35.0	25.1	17.7	10.6	7.6	40.6
70	**50**	280	47.4	44.7	52.1	42.6	37.4	35.4	21.5	6.1	46.3
100	**100**	400	50.9	52.2	60.2	52.6	44.5	44.0	32.5	18.9	55.0
100	**250**	400	51.9	51.4	57.3	60.9	45.8	44.6	33.1	19.5	57.6

Noise emitted into the duct according to EN ISO 5136 – at the discharge to the pipe

Acoustic energy L_{WA} – discharge to the pipe – E2											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	80	64.6	64.0	53.6	47.8	40.7	32.3	18.7	14.2	51.8
70	**50**	280	70.0	66.4	71.9	59.9	55.2	51.5	44.6	36.6	65.6
100	**100**	400	76.6	72.9	70.9	80.5	63.2	61.9	58.5	50.0	76.6
100	**250**	400	76.0	72.7	71.1	80.7	63.6	61.1	55.9	49.7	76.7

Acoustic energy L_{WA} – discharge to the pipe – I2											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	80	62.8	63.6	52.5	47.5	38.3	30.4	16.4	10.3	50.7
70	**50**	280	67.2	65.1	67.6	58.2	53.3	51.5	43.8	31.2	62.1
100	**100**	400	72.8	71.6	77.9	71.2	60.8	59.5	54.9	46.1	73.2
100	**250**	400	75.7	73.0	70.7	79.2	62.3	58.9	54.4	49.1	75.3

Noise emitted from the unit into the duct (according to EN ISO 5136) – for suction into the duct

Acoustic energy L_{WA} – intake to the duct – E1											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	80	52.2	53.6	45.1	34.9	26.7	21.0	12.8	5.3	40.9
70	**50**	280	61.4	59.8	57.9	47.1	38.6	30.1	23.7	10.1	51.6
100	**100**	400	69.0	68.0	62.1	60.0	48.8	42.4	36.1	27.6	59.3
100	**250**	400	70.0	69.0	61.4	61.9	50.3	46.6	37.1	28.7	60.4

Acoustic energy L_{WA} – suction into the duct – I1											
Unit power [%]	**External pressure [Pa]**	**Air flow [m³/h]**	**63 [dB(A)]**	**125 [dB(A)]**	**250 [dB(A)]**	**500 [dB(A)]**	**1 000 [dB(A)]**	**2 000 [dB(A)]**	**4 000 [dB(A)]**	**8 000 [dB(A)]**	**Total [dB(A)]**
20	**50**	80	52.2	53.8	45.4	34.3	23.4	14.0	4.6	4.6	41.0
70	**50**	280	58.5	58.2	59.0	44.4	38.8	36.7	25.9	14.9	51.9
100	**100**	400	67.6	66.8	61.9	59.6	47.5	42.2	32.0	23.9	58.9
100	**250**	400	80.2	78.7	63.2	62.1	48.2	42.8	34.7	28.1	64.4

TECHNICAL PARAMETERS VENTBOX 300

	Optimum version	Premium version
Recommended area	up to 200 m²*	
Height	750 mm (overall height including supports and aid duct bends)	
Width	790 mm	
Length/depth	625 mm	
Weight	30.2 kg	32.5 kg
Weight with enthalpy heat exchanger	33.7 kg	36 kg
Electric current (including preheating)	0.7 (4.6) A	
Air flow	60–300 m³/h	
Maximum air flow in BOOST mode	300 m³/h	
Reference air flow	210 m³/h	
Displacement pressure (at reference flow)	400 Pa	
Acoustic energy L_{WA} to the surroundings (at reference flow and a pressure of 50 Pa)	42.9 dB (A)	
Heat transfer efficiency with standard heat exchanger (%/air flow)	86 %/300 m³/h; 88 %/210 m³/h; 93 %/60 m³/h	
Heat transfer efficiency with ent. exchanger (%/air flow)	76 %/300 m³/h; 80 %/210 m³/h; 90 %/60 m³/h	
Moisture transfer efficiency with standard heat exchanger	–	
Moisture transfer efficiency with ent. exchanger (%/air flow)	54 %/300 m³/h; 58 %/210 m³/h; 75 %/60 m³/h	
El. input without preheating (W/m³/h) at external pressure 50 Pa	88 W/300 m³/h; 31 W/210 m³/h; 16 W/60 m³/h	
El. input without preheating with ent. exchanger (W/m³/h) at external pressure 50 Pa	87 W/300 m³/h; 31 W/210 m³/h; 60 W/60 m³/h	
SPI specific energy consumption W/m³/h	0.20 W/at reference flow and disp. pressure for filter class F7	
Energy class standard/enthalpy heat exchanger	A+/A	
Max. number of all sensors (CO_2/RH/RADON ...)	9	
Connector for fire sensor or EPS connection	Yes	
Automatic frost protection	Yes	
Max. preheating input power	800 W	
Bypass function (exchanger bypass)	Yes	
Shock ventilation	Yes	
Weekly time mode	Yes	
Measuring energy consumption	Yes	
Modbus TCP/IP communication	Yes	
Modbus RTU communication	Yes	
Analogue input	2	
Digital input	1	
Diameter of the connection necks	180 mm	
Motors with constant flow function	No	Yes
Filter clogging indicator based on filter pressure drop	No	Yes
Filter clogging indicator based on time interval	Yes	
Filters supply (% of particles captured in a given filter class)	M5 ePM10 55 % (F7 pollen/odour optional)	F7 pollen/odour ePM1 70 % (F7 odour optional)
Filters exhaust (% of particles captured in a given filter class)	M5 ePM10 55 % (F7 pollen optional)	F7 odour ePM1 70 %

values with enthalpy heat exchanger * with regard to the total internal volume of the building

TECHNICAL PARAMETERS VENTBOX 400

	Optimum version	Premium version	Comfort version
Recommended area	up to 300 m²*		
Height	750 mm (overall height including supports and aid duct bends)		
Width	790 mm		
Length/depth	625 mm		
Weight	30.2 kg	32.5 kg	34.5 kg
Weight with enthalpy heat exchanger	33.7 kg	36 kg	38 kg
Electric current (including preheating)	1.3 (5.1) A		
Air flow	80–400 m³/h		
Maximum air flow in BOOST mode	400 m³/h		
Reference air flow	280 m³/h		
Displacement pressure (at reference flow)	450 Pa		
Acoustic energy L_{WA} to the surroundings (at reference flow and a pressure of 50 Pa)	46.3 dB (A)		
Heat transfer efficiency with standard heat exchanger (%/air flow)	84 %/400 m³/h; 87 %/280 m³/h; 92 %/80 m³/h		
Heat transfer efficiency with ent. exchanger (%/air flow)	73 %/400 m³/h; 77 %/210 m³/h; 90 %/80 m³/h		
Moisture transfer efficiency with standard heat exchanger	–		
Moisture transfer efficiency with ent. exchanger (%/air flow)	48 %/400 m³/h; 56 %/280 m³/h; 74 %/80 m³/h		
El. input without preheating (W/m³/h) at external pressure 50 Pa	135 W/400 m³/h; 65 W/280 m³/h; 18 W/80 m³/h		
El. input without preheating with ent. exchanger (W/m³/h) at external pressure 50 Pa	128 W/400 m³/h; 63 W/280 m³/h; 18 W/80 m³/h		
SPI specific energy consumption W/m³/h	0.23 W/at reference flow and disp. pressure for filter class F7		
Energy class standard/enthalpy heat exchanger	A+/A		
Max. number of all sensors (CO_2/RH/RADON ...)	9		
Connector for fire sensor or EPS connection	Yes		
Automatic frost protection	Yes		
Max. preheating input power	800 W		
Bypass function (exchanger bypass)	Yes		
Shock ventilation	Yes		
Weekly time mode	Yes		
Measuring energy consumption	Yes		
Modbus TCP/IP communication	Yes		
Modbus RTU communication	Yes		
Analogue input	2		
Digital input	1		
Diameter of the connection necks	180 mm		
Motors with constant flow function	No	Yes	Yes
Filter clogging indicator based on filter pressure drop	No	Yes	Yes
Filter clogging indicator based on time interval	Yes		
Filters supply (% of particles captured in a given filter class)	M5 ePM10 55 % (F7 pollen/odour optional)	F7 pollen/odour ePM1 70 % (F7 odour optional)	F7 pollen/odour ePM1 70 % (F7 odour optional)
Filters exhaust (% of particles captured in a given filter class)	M5 ePM10 55 % (F7 pollen optional)	F7 pollen ePM1 70 %	F7 pollen ePM1 70 %

values with enthalpy heat exchanger * with regard to the total internal volume of the building

TECHNICAL INFORMATION

Compliance with the regulation on the display of energy consumption information for ventilation units for residential buildings
(according to EU Commission Regulation No 1254/2014 and supplementing EU Directive 2010/30/EU)

Name / trademark of the manufacturer: LICON s.r.o.
Model designation: VENTBOX 300 and VENTBOX 400

	VENTBOX 300						VENTBOX 400					
Climate zone	hot	moderate	cool	hot	moderate	cool	hot	moderate	cool	hot	moderate	cool
Specific energy consumption SEC kWh/(m².a)	-18.56	-43.34	-82.42	-17.82	-41.72	-79.26	-17.58	-42.24	-81.13	-16.63	-40.17	-77.08
SEC climate class	E	A+	A+	E	A	A+	E	A+	A+	E	A	A+
Type of ventilation unit	BUV – bidirectional						BUV – bidirectional					
Installed drive type	multi-speed						multi-speed					
Heat recovery system	recuperative/standard			recuperative/enthalpy			recuperative/standard			recuperative/enthalpy		
Thermal efficiency, dry non-condensing %	87.9			80.1			86.9			76.9		
Maximum air flow m³/h	300			300			400			400		
Electrical input at maximum air flow W	88			87			135			128		
Acoustic energy level L_{WA} dB(A)	43			43			46			46		
Reference flow rate m³/h	210			210			280			280		
Reference displacement pressure Pa	50			50			50			50		
SPI W/m³/h	0.20			0.20			0.23			0.23		
Control factor and control typology (if fitted with sensors)	0.65	local control		0.65	local control		0.65	local control		0.65	local control	
Declared maximum unit air leakage %	internal		0.51	internal		0.51	internal		0.75	internal		0.75
	external		1.20	external		1.20	external		1.48	external		1.48
Mixing ratio of ductless BUV units	–						–					
Method of location and description of the optical filter change message	user manual						user manual					
Internet address of user and installation instructions	www.licon.cz						www.licon.cz					
Airflow sensitivity to pressure fluctuations %	–						–					
Outdoor leakage of ductless BUV units %	–						–					
Annual electricity consumption AEC kWh/(m².a)	–	0.489	6.319	–	0.489	6.319	–	0.649	8.399	–	0.649	8.399
Annual heat savings AHS kWh/(m².a)	21.271	46.499	90.940	20.532	44.884	87.805	21.176	46.292	90.559	20.229	44.222	86.509

ORDERING CODES

VENTBOX 300

VENTBOX	Generation		Volume flow		Design	Heat recovery unit type		Model/Type	Exchanger type	Connection option
VB	2	-	0300	-	B box	C centralized	-	O Optimum P Premium	H standard E enthalpy	R right L left

Example of ordering code: VB2-0300-BC-OHR
Second generation VENTBOX 300 unit for central air distribution, with standard EC motors of the Optimum version, standard heat exchanger and right-hand connection.

VENTBOX 400

VENTBOX	Generation		Volume flow		Design	Heat recovery unit type		Model/Type	Exchanger type	Connection option
VB	2	-	0400	-	B box	C centralized	-	O Optimum P Premium C Comfort	H standard E enthalpy	R right L left

Example of ordering code: VB2-0400-BC-PER
Second generation VENTBOX 400 unit for central air distribution, EC motors with constant flow Premium version, enthalpy counterflow heat exchanger and righthand connection.

CONVECTORS

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