

Heat recovery units

VENTBOX



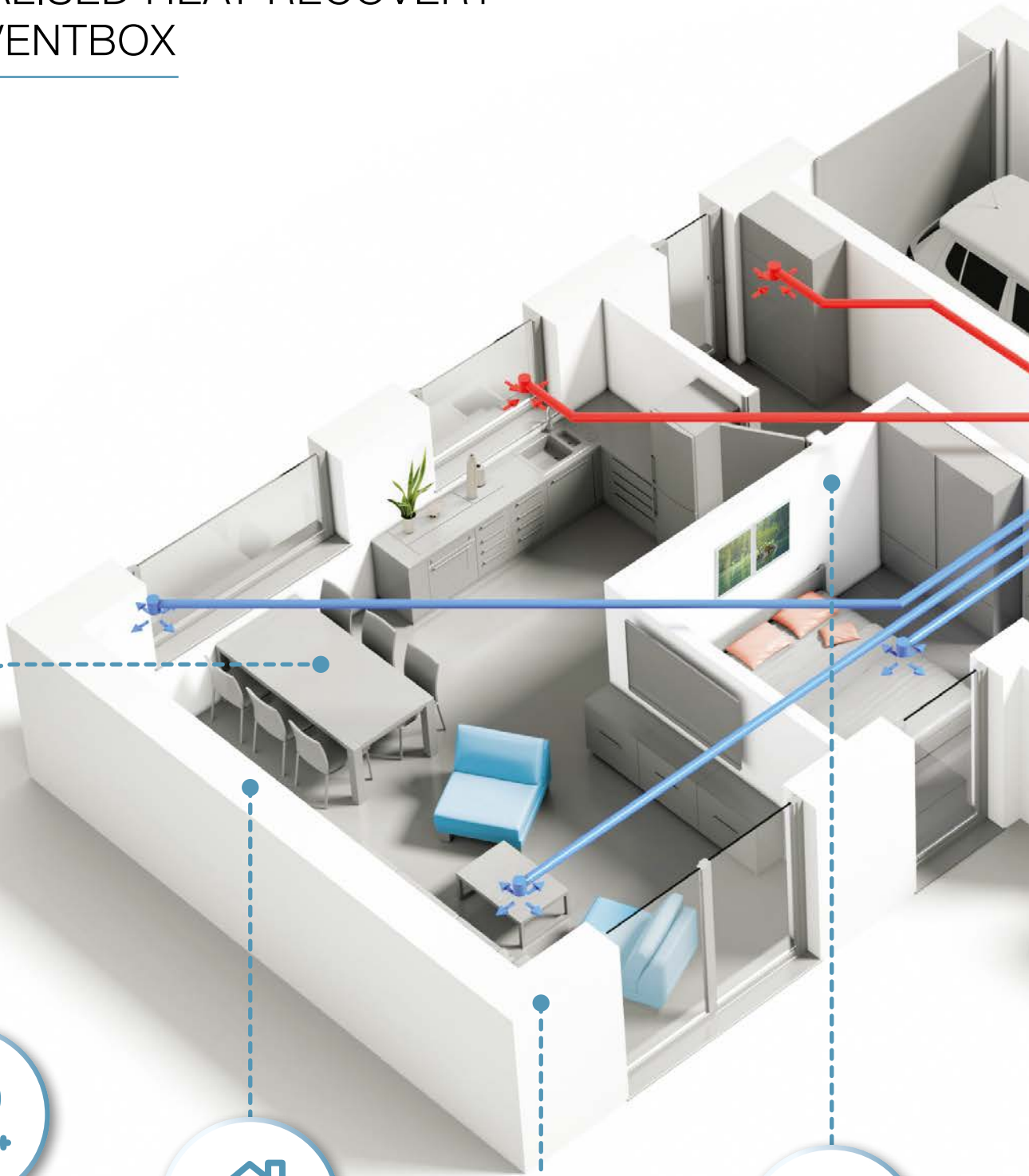
news



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CENTRALISED HEAT RECOVERY UNITS 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.



Flats, apartment buildings, family houses and larger spaces

Flats, apartment buildings, family houses, offices, schools, café and gyms up to 600 m².



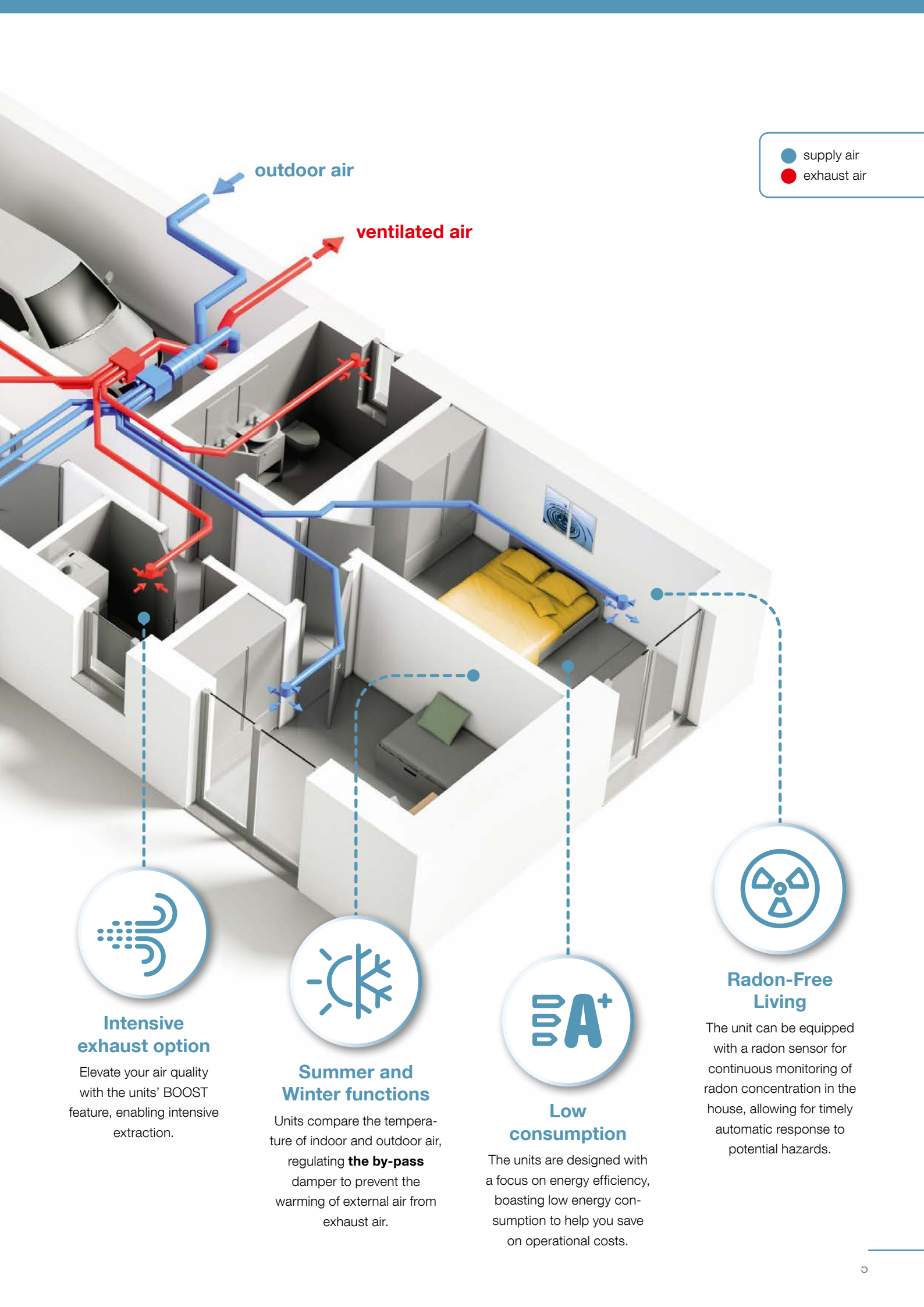
Mobile app control

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

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



● supply air
● exhaust air

outdoor air

ventilated air



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 by-pass 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 150 Thin

Heat recovery units for apartments



VENTBOX 150 Thin



The **VENTBOX 150 Thin** central heat recovery system provides a revolutionary and user-friendly solution for optimising the air quality in your home. This modern unit is designed with the latest technology and engineering developments in mind to provide optimum performance and comfort for residential and smaller family homes. Features of this unit include air purification from allergens and pollen, efficient exhaust air and water vapour extraction, low energy consumption, reduced excessive CO₂ and can be controlled via a web interface. With the VENTBOX 150 Thin you can be sure that your home will always have fresh and healthy air.



Specifications

Version	Optimum	Premium
Recommended area	up to 100 m ²	
Energy class	A	
Dimensions (h x w x d)	192 x 593 x 1 248 mm	
Weight	20 kg	
Voltage	230 V/ 50 Hz	
Electric current without preheating	0.3 A	
Electric current including preheating	3.7 A	
Max. input power without preheating	72 W	
Max. preheating input power	1 024 W	
IP coverage	30	
Air flow	30–150 m ³ /h	
Maximum airflow in boost setting	200 m ³ /h	
Displacement pressure	50–350 Pa	
Acoustic energy L_{WA}	105 m ³ /h/50 Pa/46.9 dB	
Heat transfer efficiency/Flow rate	78 %/150 m ³ /h 83 %/105 m ³ /h 88 %/50 m ³ /h	
Electrical input (without preheating)	55 W/150 m ³ /h 29 W/105 m ³ /h 17 W/50 m ³ /h	
Ø of the connection necks	125 mm	
Type of pipe for condensate drainage	HT DN 32 mm	
Specific power consumption SPI*	0.29 W/m ³ /h	
Ordering code**	VB1-0150-TC-OHR(L)	VB1-0150-TC-PHR(L)

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.

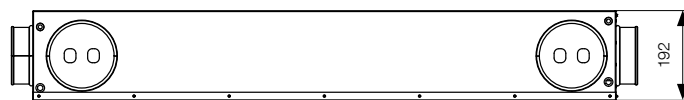
Premium version

The unit is additionally equipped with **unrivalled motors with constant flow function**. These unique fans compensate for pressure losses (e.g. in case of flow blockage at the inlet). With these premium EC motors, the unit can operate more efficiently and economically; this has a positive effect on the overall dynamics and also the economy when using the heat recovery system. Compensation for changes in pressure losses in the system, e.g. when the filters gradually become clogged. Ensuring uniform ventilation and high efficiency of heat recovery. The unit is more sophisticated.

* at reference airflow 105 m³/h and disposition pressure of 50 Pa
** for ordering codes see p. 18.

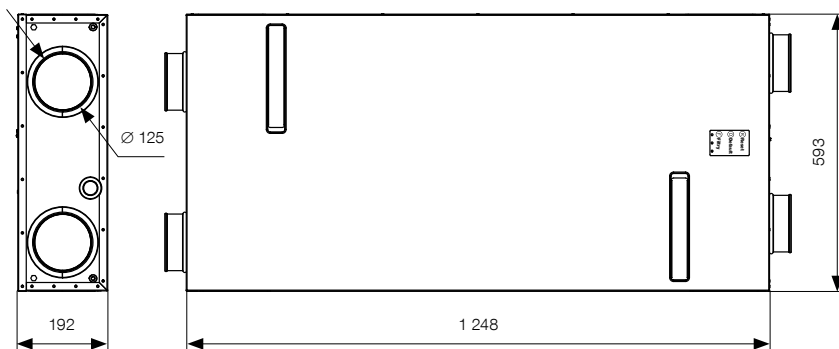
Thanks to its universal design, the **VENTBOX 150 Thin** unit has very little installation space requirements and can be installed in almost any position required, whether on the wall, floor, or ceiling. Installation is also possible in very small installation spaces where a standard heat recovery unit would not fit, like the ceiling above the kitchen, or in a wall/recess in a WC or bathroom.

Dimensions of the unit



Basic specifications

- VENTBOX 150 Thin ventilation unit with white galvanised sheet metal on one side
- control and information panel
- 2x analog inputs
- 1x digital input
- holes for connection of necks
- connection hole covers
- outlet for condensate discharge
- plate counterflow heat exchanger HRV
- fans with efficient EC motor
- connector for connecting fire sensor or electrical fire alarm system (EPS)
- temperature sensors
- separate temperature sensor for preheating
- filter SUPPLY (Optimum/Premium) M5 (ePM10 55 %)* / F7 (ePM1 70 %)* – pollen
- EXHAUST filter (Optimum/Premium) M5 (ePM10 55 %)* / F7 (ePM1 70 %)* – pollen
- 230 V mains power cable
- wedge for directing air flow
- air duct connection necks
- anchoring/fixing sheet metal hinges with included fasteners
- mounting template
- energy label, package leaflet
- assembly and installation instructions



Dimensions in mm. **Attention!** These are not mounting dimensions. Technical changes reserved.

Optional specification

- enthalpy counterflow heat exchanger ERV (see p. 15)
- continuous variable manual control (see p. 15)
- CO₂ sensors
- relative humidity (RH) sensor
- radon concentration sensors
- TVOC and HCHO (volatile substances and formaldehyde) sensor
- filter clogging indicator based on filter pressure drop
- filter clogging indicator based on time interval
- INPUT filters (Optimum) F7 (ePM1 70 %)* – pollen
- EXHAUST filters (Optimum) F7 (ePM1 70 %)* – pollen
- insulation box (place the unit in a place with lower temperature)

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

Basic software functions

- automatic frost protection
- by-pass function (exchanger by-pass)
- control via a web interface (see p. 65)
- weekly time mode
- Modbus RTU communication
- measuring energy consumption
- BOOST shock ventilation
- language versions CZ, EN, DE, FR



Up to 9 sensors can be connected in total.



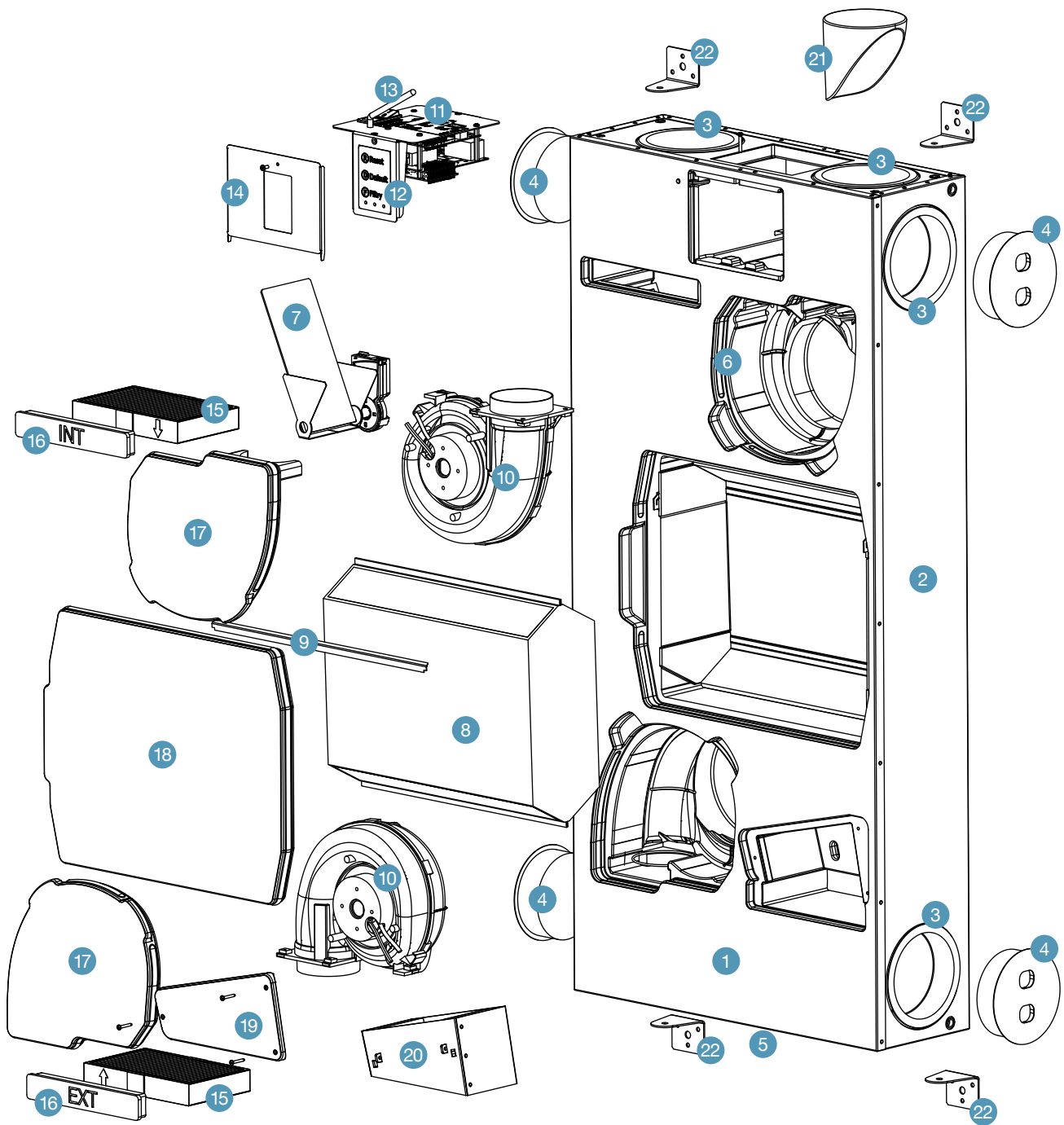
Horizontal mounting (see p. 12)

Installation under the ceiling (e.g. drop ceiling) – always the left variant of the heat recovery unit! Floor mounting (e.g. attic) – always the right variant of the heat recovery unit!

Vertical mounting (see p. 13)

Wall mounting – mounting of both right and left variants of the heat recovery unit

UNIT BREAKDOWN



- 1 back cover of the device (casing not removable)
- 2 casing of the device
- 3 air duct connection necks \varnothing 125 mm
- 4 connection caps
- 5 outlet for condensate discharge
- 6 unit body
- 7 by-pass damper including actuator (see p. 65)
- 8 plate counterflow heat exchanger HRV
- 9 fixing rail
- 10 fans with efficient EC motor
- 11 control electronics and power supply of the unit
- 12 control and information panel
- 13 external Wi-Fi antenna
- 14 control electronics cover
- 15 air filters
- 16 filter closing caps
- 17 fan cover
- 18 heat exchanger cover
- 19 preheating cover
- 20 preheating
- 21 wedge for directing the airflow (when using side outlets)
- 22 anchoring/fixing sheet metal hinges with included fasteners
- power cord 230 V AC/ 10 A

ELECTRICAL CONNECTION

The electrical power connection of the VENTBOX 150 Thin is by means of a 1.5 metre power cable. All connector connections are located on the **Control Panel**, which is located between the interior necks. This is also the location of the unit's main switch.

Control panel with connection for connectors

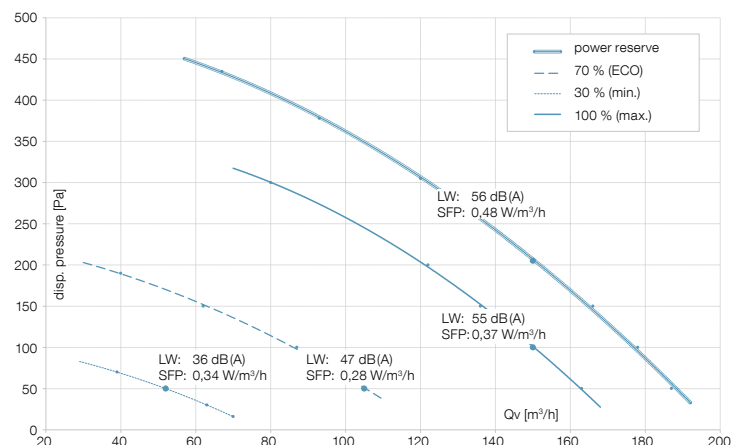


- 1 The unit's main power switch with a socket for 230 V mains cable connection and FST 5x 20 10 A/250 V fuse
- 4 Modbus – connection of RH, CO₂, TVOC, Radon, P.R.T. sensors
- 3 P.R.T. – analogue input for connection of external ventilation output controller P.R.T.
- 4 AI2 – analogue input
- 5 DI1 – digital input for intensive exhaust buttons (bathroom, kitchen, WC)
- 6 Antenna used for wireless communication (connection to Wi-fi network)

VENTILATION PERFORMANCE

Unit power [%]	External pressure [Pa]	Airflow [m ³ /h]	Power input [W]	SFP [W/m ³ /h]	Heat recovery efficiency	
					Heat nt [%]	Humidity ηx [%]
With standard heat exchanger according to EN 13141-7						
30	50	50	17	0.34	87.5	-
70	50	105	29	0.28	82.5	-
100	100	150	55	0.37	78.0	-
100	200	150	72	0.48	78.2	-
With enthalpy heat exchanger according to EN 13141-7:2011						
30	50	50	17	0.34	81.5	63.2
70	50	105	29	0.28	74.2	53.2
100	100	150	55	0.37	69.6	47.8
100	200	150	71	0.47	69.7	47.8

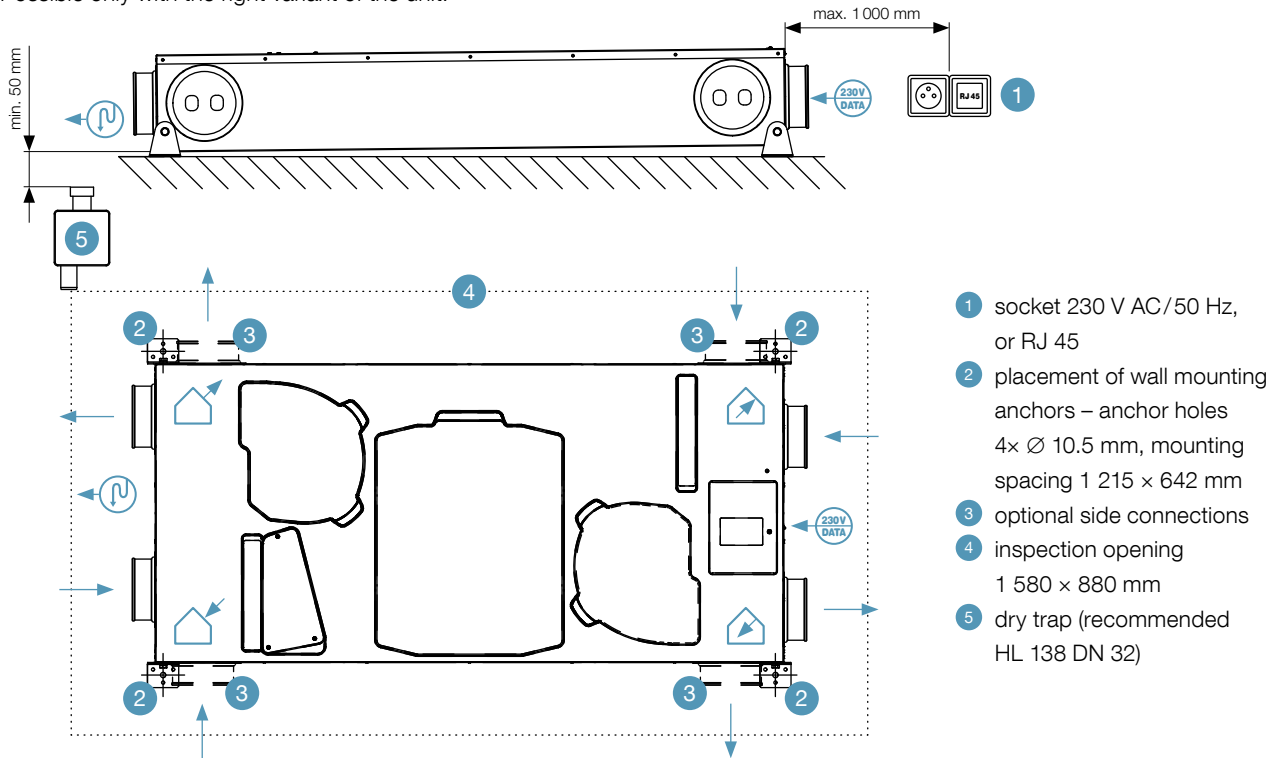
VENTBOX 150 Optimum – available ventilation capacity



ASSEMBLY

Floor mounting

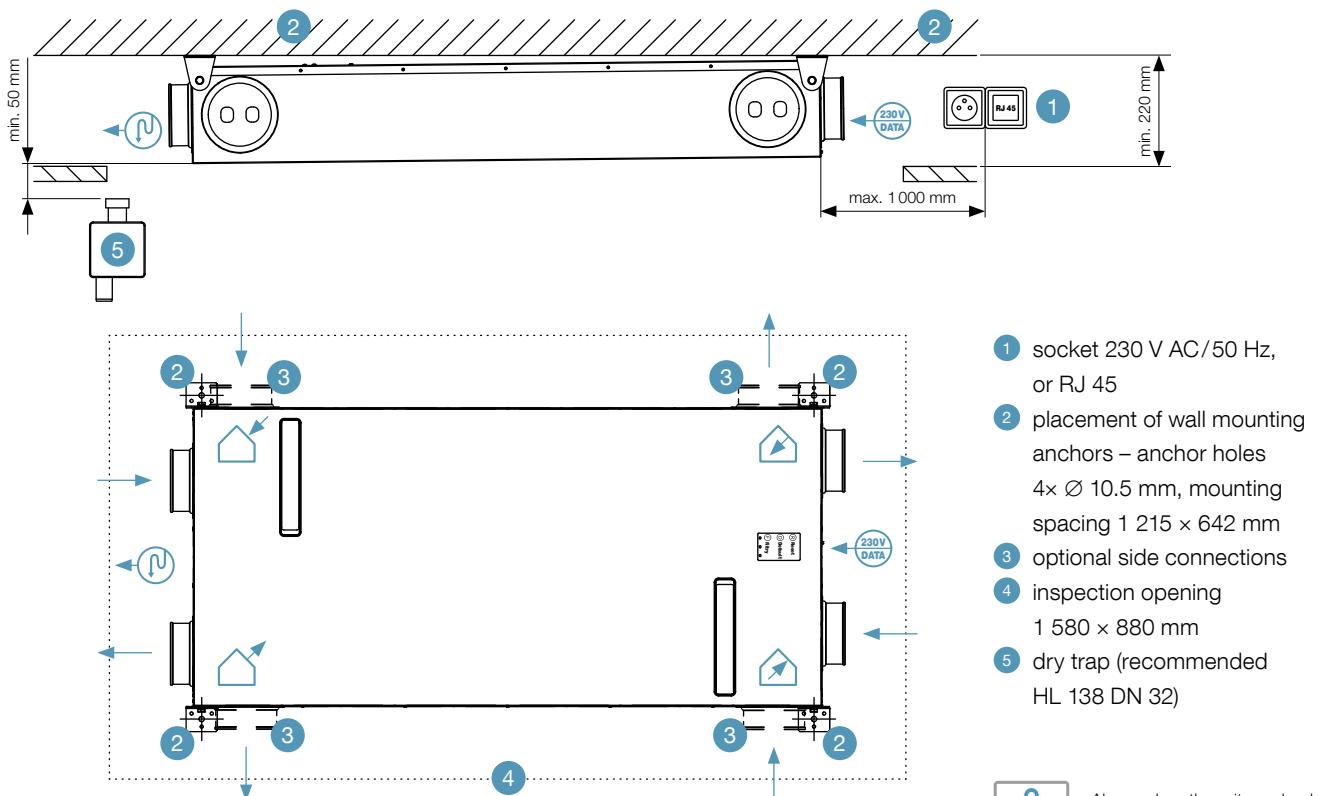
Caution! Possible only with the right variant of the unit.



- 1 socket 230 V AC/50 Hz, or RJ 45
- 2 placement of wall mounting anchors – anchor holes 4x Ø 10.5 mm, mounting spacing 1 215 x 642 mm
- 3 optional side connections
- 4 inspection opening 1 580 x 880 mm
- 5 dry trap (recommended HL 138 DN 32)

Installation under the ceiling

Caution! Possible only with the left variant of the unit.

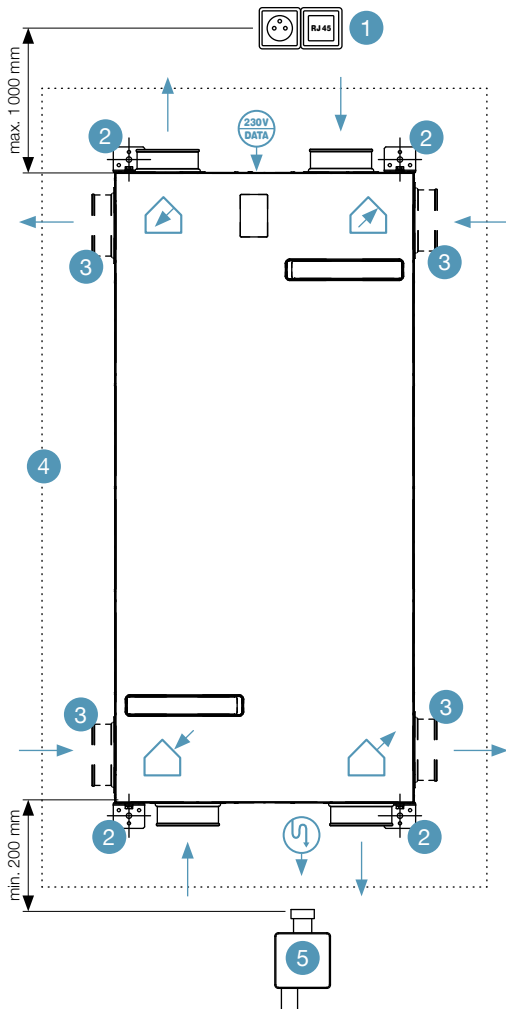


- 1 socket 230 V AC/50 Hz, or RJ 45
- 2 placement of wall mounting anchors – anchor holes 4x Ø 10.5 mm, mounting spacing 1 215 x 642 mm
- 3 optional side connections
- 4 inspection opening 1 580 x 880 mm
- 5 dry trap (recommended HL 138 DN 32)

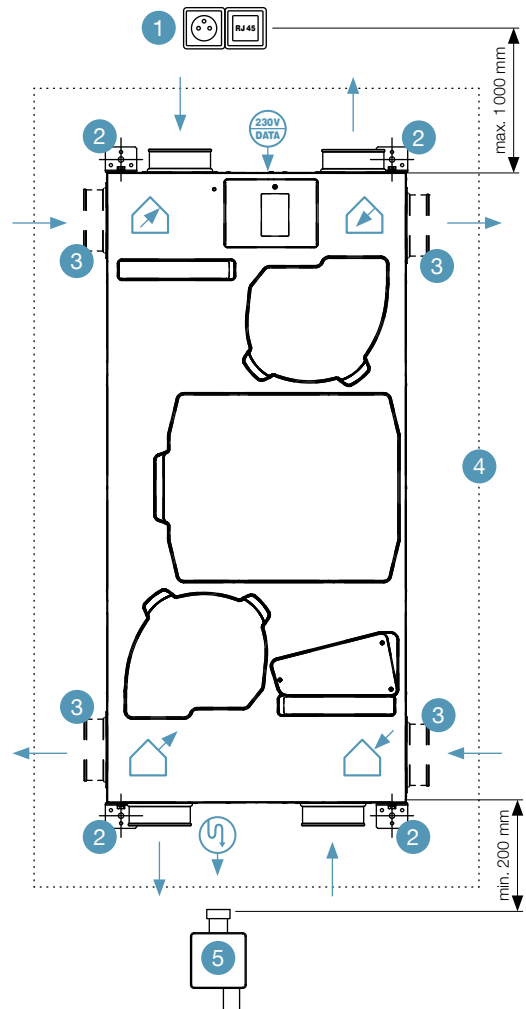


Always place the unit on a level surface, and ensure it is correct orientation and overall gradient!

Wall mounting – left variant



Wall mounting – right variant



- 1 socket 230 V AC/50 Hz, or RJ 45
- 2 placement of wall mounting anchors – anchor holes 4x Ø 10.5 mm, mounting spacing 1 298 x 536 mm

- 3 optional side connections
- 4 min. inspection opening 1 580 x 880 mm
- 5 dry trap (recommended HL 138 DN 32)

Dimensions in mm. Technical changes reserved.

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



Power socket (230 V AC/50 Hz), peripherals



Condensate discharge (HT waste pipe – DN 32 mm)



Air duct connection

REQUIREMENTS FOR OTHER PROFESSIONS

Electrical requirements

Mandatory preparation

Fixed power cables 3x2.5 with circuit breaker 16 A char. B from the switchboard to the heat recovery unit

- Terminate with an AC 230 V/50 Hz socket no further than 1 m from the power socket of the heat recovery unit (the power socket of the heat recovery unit is located between the necks facing the interior).
- Marking of the circuit breaker with the label "heat recovery".
- **Do not block – bulk remote control!**

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 2x2x0.8 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 position.

CO₂ and RH sensors and continuous control panel (P.R.T.)

- Bring UTP cable or J-Y(ST)Y 2x2x0.8 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 CO₂ 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.

Requirements for water installation

Mandatory preparation

HT waste pipe – DN 32 mm

- Fit with a dry siphon and terminate it near the outlet of the condensate drain from the recovery unit (the condensate drain is always located between the outlet of the recovery unit that faces the exterior).
- Keep in mind the required "inspection opening" and the possibility of disconnecting the recovery unit from the waste.
- It is necessary to ensure that the outlet has free flow, considering the overall gradient of the waste system (min. 3 %).

Vertical wall mounting

- Terminate the drain at least 20 cm below the bottom edge of the recovery unit.

Horizontal mounting on the ceiling or floor

- Terminate the drain at least 5 cm from the bottom edge of the recovery unit.

Requirements for construction

Mandatory preparation

Air ducts Ø 125 mm

- Supply air ducts according to the selected configuration of the rec. unit (right/left variant) and the location of air inlets (front/side outlet). Keep in mind the overall location of the heat recovery unit in the building (wall/drop ceiling/floor mounting).

Revision opening (min. 1 580 × 880 mm)

- Ensure sufficient space for installation and servicing with regard to the location of the heat recovery unit.
- The minimum required installation depth of the heat recovery unit is 220 mm.

Anchor holes

- With regard to the chosen mounting variant and it's weight.

Horizontal mounting

(see p. 12)

- Installation under the ceiling (e.g. drop ceiling) – always the **left** variant of the heat recovery unit!
- Floor mounting (e.g. attic) – always the **right** variant of the heat recovery unit!

Vertical mounting

(see p. 13)

- Wall mounting – mounting of **both right and left** variants of the heat recovery unit



ACCESSORIES

	Name	Description	Ordering code
	RH sensor	Humidity sensor, analogue/digital 12–24 V DC, plaster box	P-001
	CO ₂ sensor	CO ₂ concentration sensor, analogue/digital, 12–24 V DC, plaster box	P-002
	TVOC sensor	Volatile and formaldehyde concentration sensor, analogue/digital, 12–24 V DC, plaster box	P-023
	Radon sensor	Radon concentration sensor	P-022
	Continuous manual control of relative P.R.T.	0–100 % continuous control with intensive exhaust	P-003
	Directional wedge	Directional wedge – supply – interior/exterior	P-032
	Air duct connection necks	Set of air duct connection necks, 4x	P-037
	Counterflow plate heat exchanger HRV	Counterflow plate heat exchanger	P-030
	Enthalpy counterflow heat exchanger ERV	Enthalpy counterflow heat exchanger	P-019
	Insulation box	Insulation box to uninsulated areas	P-021
	Filter class M5 inlet/exhaust	Folded M5 class filter (ePM10 55 %) 204 × 127 × 29 mm	P-012
	Filter class F7 inlet/exhaust	Folded M7 class filter (ePM1 70 %) 204 × 127 × 29 mm	P-013
	Annual filter set M5	Filter set M5 (ePM10 55 %) 2x inlet, 2x exhaust	P-014
	Annual filter set F7	Filter set F7 (ePM1 70 %) 2x inlet, 2x exhaust	P-015
	VENTBOX 150 Thin Optimum	VENTBOX 150 Thin Optimum HRV with standard heat exchanger	VB1-0150-TC-OHR(L)
	VENTBOX 150 Thin Premium	VENTBOX 150 Thin Premium HRV with standard heat exchanger	VB1-0150-TC-PHR(L)
	VENTBOX 150 Thin Optimum	VENTBOX 150 Thin Optimum ERV with enthalpy exchanger	VB1-0150-TC-OER(L)
	VENTBOX 150 Thin Premium	VENTBOX 150 Thin Premium ERV with enthalpy exchanger	VB1-0150-TC-PER(L)

ACOUSTIC PARAMETERS

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 [m ³ /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	50	35.6	28.4	40.1	35.8	28.4	18.5	7.9	2.5	35.6
70	50	105	42.3	37.5	51.3	44.4	37.8	30.3	21.9	15.9	46.9
100	100	150	41.8	42.2	48.4	57.6	46.7	39.1	31.3	9.8	54.7
100	200	150	44.8	46.4	50.8	57.7	50.2	40.3	33.2	14.5	56.3

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 [m ³ /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	50	61.0	56.4	55.9	48.4	44.6	36.2	26.7	17.2	50.7
70	50	105	65.5	62.3	66.6	56.4	54.5	48.6	42.4	30.0	62.0
100	100	150	72.0	67.5	64.7	73.4	65.3	57.5	51.4	41.7	70.9
100	200	150	73.7	69.0	66.8	72.6	67.3	60.8	55.7	47.1	72.3

Acoustic energy L_{WA} – discharge to the pipe – I2											
Unit power [%]	External pressure [Pa]	Air flow [m ³ /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	50	61.6	58.3	53.6	48.2	43.6	34.2	25.2	18.6	50.1
70	50	105	65.5	64.3	63.6	58.1	54.0	46.9	39.4	29.6	60.4
100	100	150	73.2	71.5	66.0	73.2	62.7	56.0	51.6	43.7	70.5
100	200	150	76.2	71.3	67.7	72.2	64.3	57.2	55.4	48.5	71.1

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 [m ³ /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	50	51.3	44.2	44.5	39	29.9	13.9	4.7	4.7	39.2
70	50	105	56.4	50.2	55.0	46.6	39.9	25.1	9.3	4.7	50.0
100	100	150	62.5	55.9	53.4	63.3	49.3	34.8	23.2	10.3	59.5
100	200	150	64.3	59.2	53.0	60.8	52.9	37.7	23.1	15.5	59.2

Acoustic energy L_{WA} – suction into the duct – I1											
Unit power [%]	External pressure [Pa]	Air flow [m ³ /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	50	52.8	47.7	41.6	36.3	26.1	12.5	4.7	4.7	37.6
70	50	105	57.5	52.7	53.0	45.3	35.8	24.0	13.5	4.7	48.2
100	100	150	65.4	60.0	51.6	57.4	44.6	33.9	23.9	10.4	54.8
100	200	150	66.6	61.2	52.7	59.0	47.9	35.9	25.0	15.6	57.2

TECHNICAL PARAMETERS VENTBOX 150 Thin

	Optimum version	Premium version
Recommended area	up to 100 m ² *	
Height	192 mm	
Width	593 mm	
Length/depth	1 248 mm	
Weight	20 kg	
Weight with enthalpy heat exchanger	21.5 kg	
Electric current (including preheating)	0.3 (3.7) A	
Air flow	30–150 m ³ /h	
Maximum air flow in BOOST mode	200 m ³ /h	
Reference air flow	105 m ³ /h	
Displacement pressure (at reference flow)	50 Pa	
Acoustic energy L_{WA} to the surroundings (at reference flow and a pressure of 50 Pa)	46.9 dB (A)	
Heat transfer efficiency with standard heat exchanger (%/air flow)	78 % / 150 m ³ /h; 83 % / 105 m ³ /h; 88 % / 50 m ³ /h	
Heat transfer efficiency with ent. exchanger (%/air flow)	70 % / 150 m ³ /h; 74 % / 105 m ³ /h; 82 % / 50 m ³ /h	
Moisture transfer efficiency with standard heat exchanger	–	
Moisture transfer efficiency with ent. exchanger (%/air flow)	48 % / 150 m ³ /h; 53 % / 105 m ³ /h; 63 % / 50 m ³ /h	
Electrical input without preheating at external pressure 50 Pa	55 W / 150 m ³ /h; 29 W / 105 m ³ /h; 17 W / 50 m ³ /h	
SPI specific energy consumption	0.29 W (at reference flow 105 m ³ /h and disp. pressure 50 Pa)	
Energy class	A	
Max. number of all sensors (CO₂/RH/radon ...)	9	
Connector for fire sensor or EPS connection	Yes	
Automatic frost protection	Yes	
Max. power without preheating	72 W	
Max. preheating input power	1 024 W	
Total power consumption	1 096 W	
By-pass function (exchanger by-pass)	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	125 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 optional)	F7 ePM1 70 %
Filters exhaust (% of particles captured in a given filter class)	M5 ePM10 55 % (F7 optional)	F7 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 150 Thin

Climate zone	hot	moderate	cool	hot	moderate	cool
Specific energy consumption SEC kWh/(m².a)	-17.95	-41.12	-79.14	-16.16	-39.4	-75.77
SEC climate class	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		
Thermal efficiency, dry non-condensing %	82.5			74.2		
Maximum air flow m³/h	150			150		
Electrical input at maximum air flow W	55			55		
Acoustic energy level L_{WA} dB(A)	47			47		
Reference flow rate m³/h	105			105		
Reference displacement pressure Pa	50			50		
SPI W/m³/h	0.288			0.288		
Control factor and control typology (if fitted with sensors)	0.65	local control		0.65	local control	
Declared maximum unit air leakage %	internal		0.9	internal		0.9
	external		0.7	external		0.7
Method of location and description of the optical filter change message	user manual					
Internet address of user and installation instructions	www.licon.cz					
Annual electricity consumption AEC kWh/(m².a)	–	0.687	8.888	–	0.687	8.888
Annual heat savings AHS kWh/(m².a)	20.759	45.381	88.777	19.973	43.663	85.416

ORDERING CODES

VENTBOX 150

VENTBOX	Generation	Volume flow	Design	Heat recovery unit type	Model/Type	Exchanger type	Connection option
VB	1	- 0150	- T Thin	C centralized	- O Optimum P Premium	H standard E enthalpy	R right L left

Example of ordering code: VB1-0150-TC-OHR

VENTBOX 150 Thin first generation, with central heat recovery, standard EC fans version Optimum, standard heat exchanger with right-hand side connection.



VENTBOX 300 VENTBOX 400

Heat recovery units for apartments
and family houses

VENTBOX 300



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 CO₂ in the room.

Specifications

Version	Optimum	Premium
Recommended area	up to 200 m ²	
Installation options	wall and floor	
Design variants	left, right	
Energy class	A+	
Dimensions (h x w x d)	750 x 790 x 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	118 W	
Max. preheating input power	850 W	
IP coverage	30	
Air flow	60–300 m ³ /h	
Max. airflow in BOOST setting	300 m ³ /h	
Displacement pressure	50–400 Pa	
Acoustic energy L_{WA}	210 m ³ /h/50 Pa/42.9 dB	
Heat transfer efficiency/Flow rate	86 %/300 m ³ /h 88 %/210 m ³ /h 93 %/60 m ³ /h	
Power input (without preheating) at displacement pressure 50 Pa	88 W/300 m ³ /h 31 W/210 m ³ /h 16 W/60 m ³ /h	
Ø 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/m ³ /h	
Ordering code**	VB2-0300-BC-0HR(L)	VB2-0300-BC-PHR(L)

* at reference airflow 210 m³/h and disposition pressure of 50 Pa

** for ordering codes see p. 35



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; 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



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 CO₂. 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 m ²		
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	184 W		
Max. preheating input power	850 W		
IP coverage	30		
Air flow	80–400 m ³ /h		
Max. airflow in boost setting	400 m ³ /h		
Displacement pressure	50–450 Pa		
Acoustic energy L_{WA}	280 m ³ /h/50 Pa/46.3 dB		
Heat transfer efficiency/Flow rate	84 %/400 m ³ /h 87 %/280 m ³ /h 92 %/80 m ³ /h		
Power input (without preheating) at displacement pressure 50 Pa	135 W/400 m ³ /h 65 W/280 m ³ /h 18 W/80 m ³ /h		
Ø 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/m ³ /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 displacement pressure of 50 Pa

** for ordering codes see p. 35

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

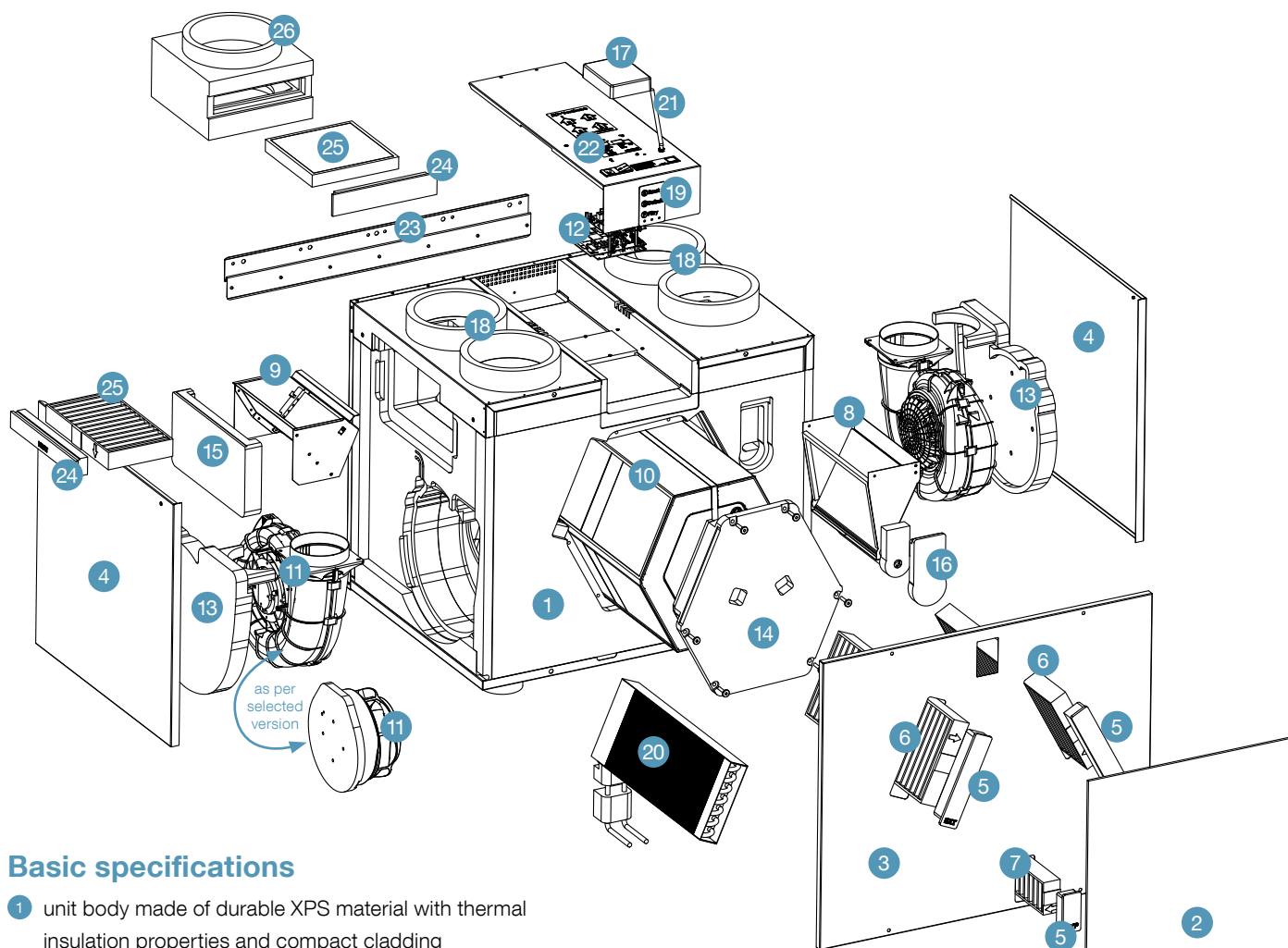
This is a more sophisticated version of the unit, which is equipped with unique **EC motors with a constant flow function to compensate for pressure losses** (e.g. when air filters become clogged). With these EC motors, the unit can operate more efficiently; this has a positive effect on the overall 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

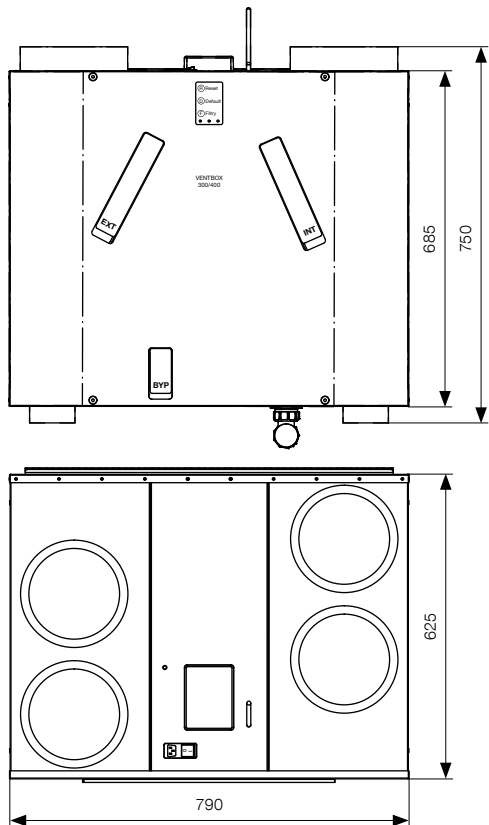


Basic specifications

- 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. 29)
- 7 bypass filter (see p. 29)
- 8 bypass damper including actuator
- 9 PTC cell for air preheating
- 10 plate counterflow heat exchanger HRV
- 11 **premium and Comfort versions** – fans with economical EC motor and constant flow
Optimum version – EC fans
- 12 control electronics and power supply of the unit
- 13 fan cover
- 14 heat exchanger cover
- 15 preheating cover
- 16 bypass damper actuator cover
- 17 control electronics cover
- 18 air duct connection necks (Ø 180 mm)
- 19 control and information panel with keypad and LED indication
- 20 direct evaporator in conjunction with an outdoor heat pump unit*
- 21 external Wi-fi antenna
- 22 analog and digital inputs
- 23 hanging anchor rail
- 24 closing cover of pre-filters
- 25 pre-filters G2 for air cleaning
- 26 external filter box –optional specification (see p. 29)

* 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

- smooth control of air performance (flow volume) of the unit in both automatic and manual modes
- 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 (CO₂, 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 ERV (see p. 29)
- external filter box (see p. 29)
- continuous manual P.R.T. control with wall-mounted remote control
- CO₂ concentration sensor
- relative humidity (RH) sensor
- radon concentration sensors
- combined 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
- outdoor air/air heat pump unit (Comfort version)

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



Up to 9 sensors can be connected in total.

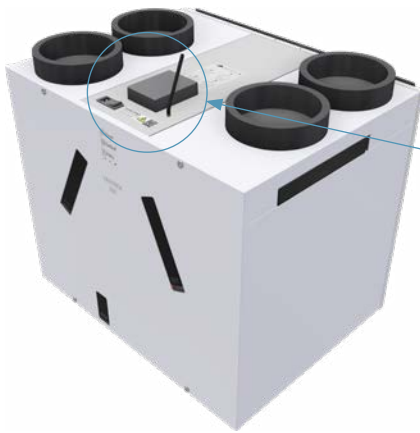


outdoor air/air heat pump unit for Comfort version

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 5x 20 10 A/250 V fus
- 2 Modbus – connection of RH, CO₂, TVOC, Radon, P.R.T. sensors
- 3 P.R.T. – analogue input for connection of external ventilation output controller P.R.T.
- 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)

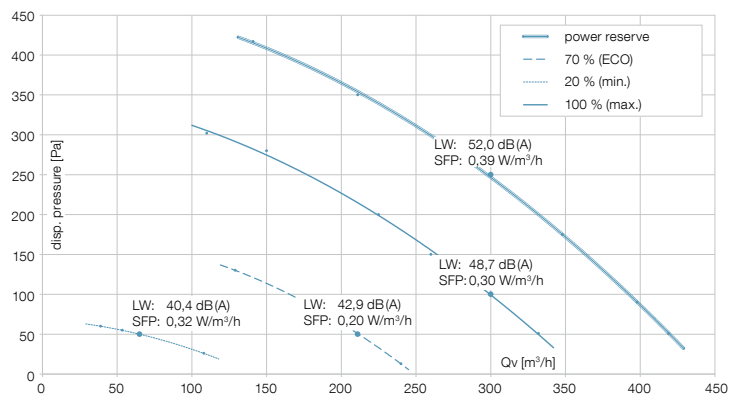
VENTILATION PERFORMANCE – VENTBOX 300

Available ventilation capacity

VENTBOX 300 the values given refer to filtration class F7

Unit power [%]	External pressure [Pa]	Airflow [m ³ /h]	Filtration class F7		Heat recovery efficiency	
			Power input [W]	SFP [W/m ³ /h]	Heat nt [%]	Humidity η _x [%]
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	100	300	88	0.30	86.4	–
100	250	300	118	0.39	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	100	300	87	0.30	76.1	53.8
100	250	300	118	0.39	76.1	53.8

* the values given refer to filtration class F5



The values given refer to filtration class F7.

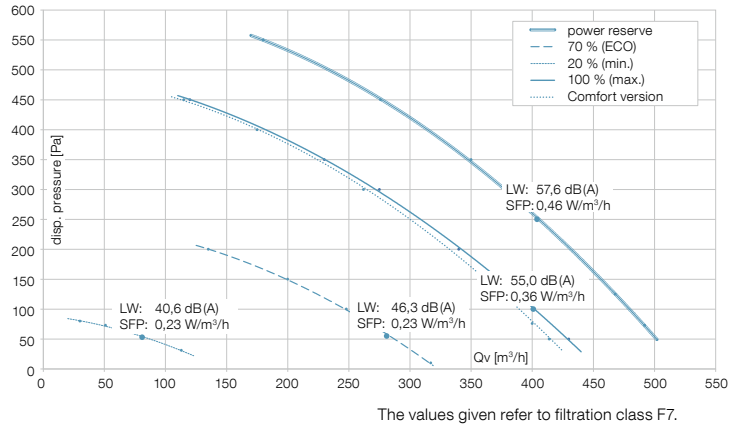
VENTILATION PERFORMANCE – VENTBOX 400

Available ventilation capacity

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 nt [%]	Humidity rx [%]
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	100	400	135	0.36	84.0	-
100	250	400	184	0.46	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	100	400	128	0.36	73.0	47.8
100	250	400	184	0.46	73.0	47.8

The values given refer to filtration class F5.



Available cooling and heating outputs

Example of real measurement

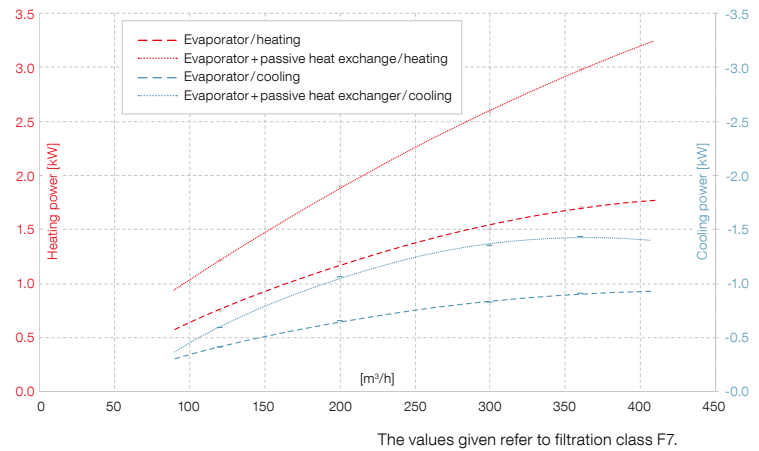
The heating/cooling curves show the usable range of thermal output of the **VENTBOX 400 Comfort** unit at its output outlet to ensure stable conditions inside a two-story residential house with living area of 160 m², whose heat loss is 2.3 kW. The indoor temperature is maintained at 22–23 °C throughout the year with air humidity of RH 55 %.

Outdoor conditions for reheating (spring and autumn periods)

Outdoor temperature 0–10 °C with air humidity RH 80 %

Outdoor conditions for cooling (summer period)

Outdoor temperature 28–35 °C with air humidity RH 45 %

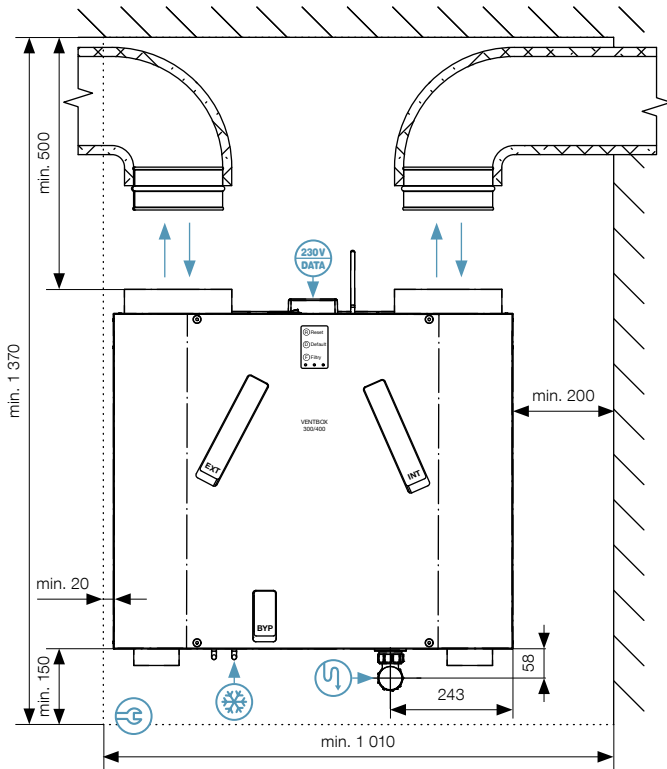


VENTBOX 400 Comfort the values given refer to filtration class F7

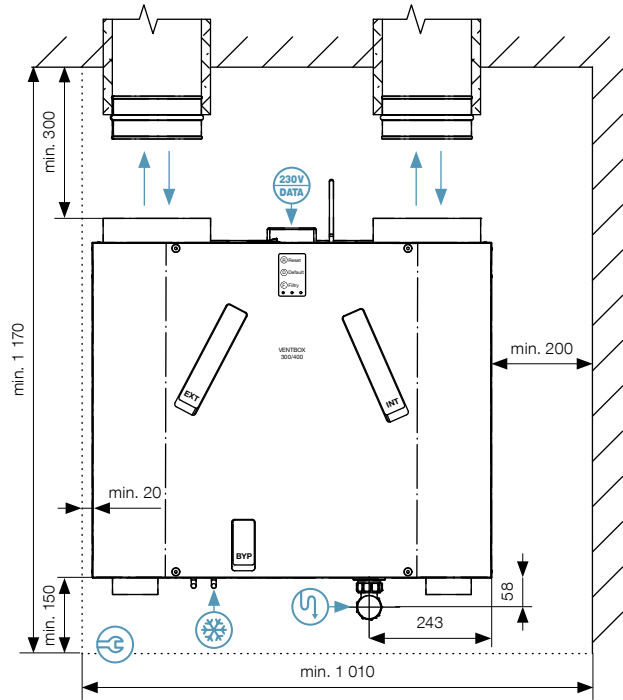
Air flow [m³/h]	Heating		Cooling	
	Min. [W]	Max. [W]	Min. [W]	Max. [W]
120	0.772	1.213	-0.410	-0.589
200	1.207	1.903	-0.656	-1.061
300	1.512	2.586	-0.826	-1.353
360	1.719	2.984	-0.907	-1.432

ASSEMBLY

Connection under the ceiling – left variant

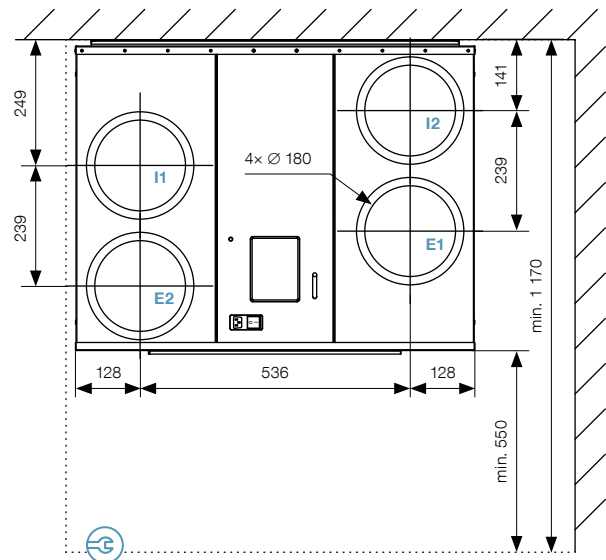
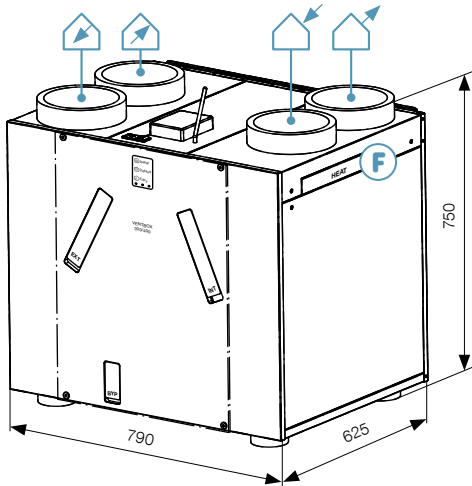


Connection through the ceiling – left variant



Connecting air ducts – left variant

view from above



In case of insufficient installation space on the side of the unit, it is necessary to attach an external filter box to air duct inlet E1 – see optional accessories on page 29

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

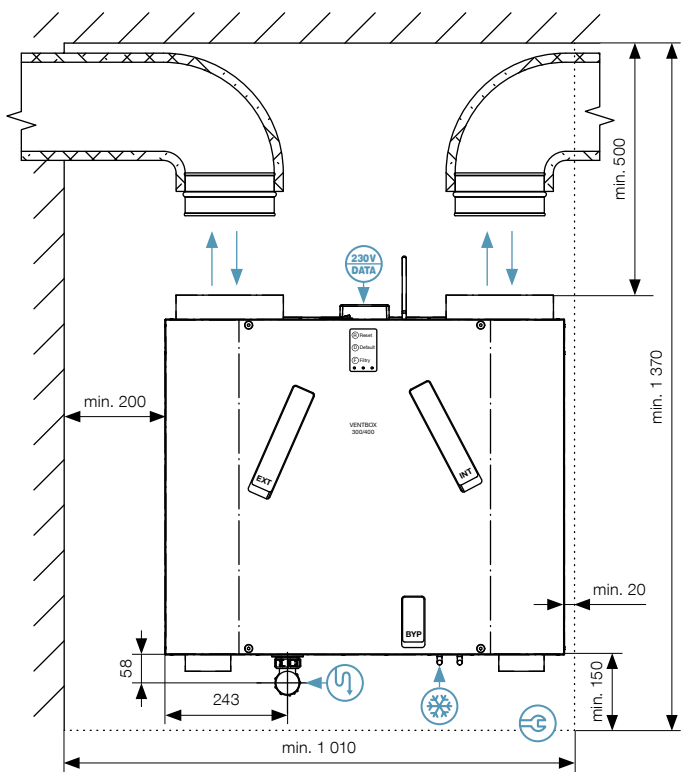


Exhaust I1
of used air from
living areas to the unit

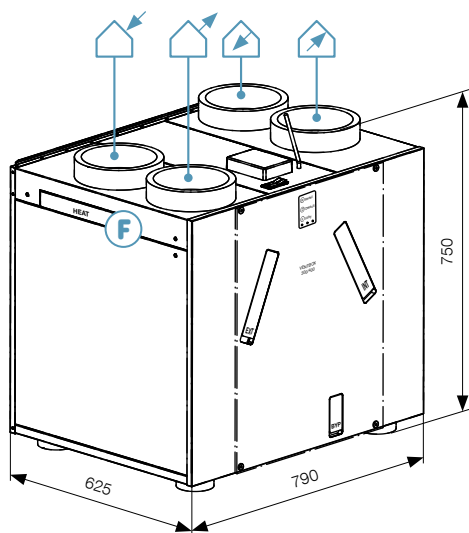
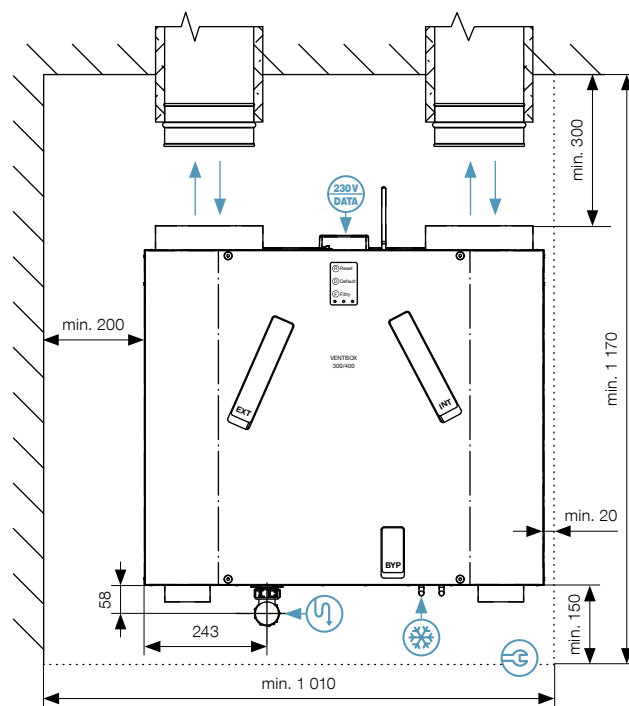


**Air duct
connection**
4x Ø 180 mm

Connection through the ceiling – right variant



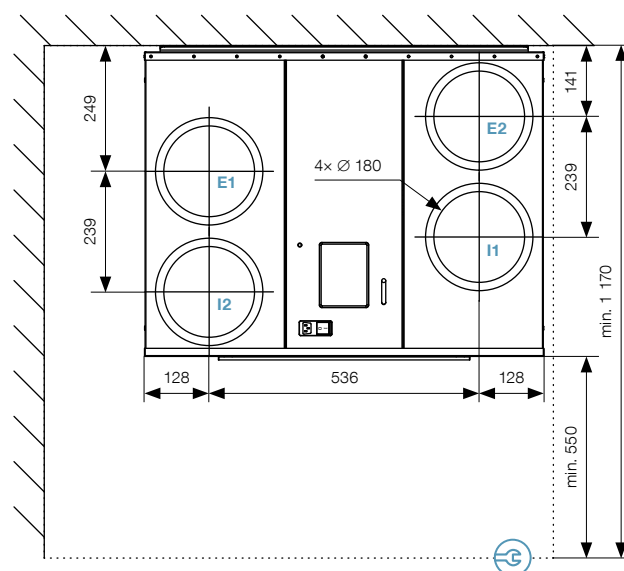
Connection through the ceiling – right variant



Dimensions in mm. Technical changes reserved.

Connecting air ducts – right variant

view from above



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



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



Connection for refrigerant
lines Ø 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

CO₂ and RH 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 CO₂ 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 Ø 180 mm or Ø 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. The requirements for the outdoor air conditioning unit are governed documentation.

ACCESSORIES

	Name	Description	Order code		Name	Description	Order code
	RH sensor	Humidity sensor, analogue/digital 12–24 V DC, plaster box	P-001		Class F7 AC carbon filter, inlet	Folded carbon filter class F7 AC (ePM1 70 %) 513 × 194 × 39 mm	P-016G
	CO ₂ sensor	CO ₂ concentration sensor, analogue/digital, 12–24 V DC, plaster box	P-002		Filter class M5 by-pass	Folded M5 class filter (ePM1 55 %) by-pass 535 × 74 × 39 mm	P-016C
	TVOC sensor	Volatile and formaldehyde concentration sensor, analogue/digital, 12–24 V DC, plaster box	P-023		Filter class F7 by-pass	Folded F7 class filter (ePM1 70 %) by-pass 535 × 74 × 39 mm	P-016E
	Radon sensor	Radon concentration sensor	P-022		Pleated pre-filter class M5 (ePM1 55 %) 276 × 154 × 28 mm		P-016H
	Continuous manual control of relative P.R.T.	0–100 % continuous control with intensive exhaust	P-003		Wire pre-filter G2	Wire pre-filter 276 × 154 × 28 mm	P-016D
	Counterflow plate heat exchanger HRV	Counterflow plate heat exchanger	P-027		Wire pre-filter G2	Wire pre-filter for filtration box 208 × 208 × 28 mm	P-016I
	Enthalpy counterflow heat exchanger ERV	Enthalpy counterflow heat exchanger	P-018		Annual filter set M5 3x	Filter set 2× inlet/exhaust M5, 1× by-pass M5 (ePM10 55 %)	P-017A
	Insulation box	Insulation box to uninsulated areas	P-020		Annual filter set F7 5x	Filter set 4× inlet/exhaust F7, 1× by-pass F7 (ePM1 70 %)	P-017B
	Spacer stands	Spacer stands for floor mounting (in 4x pack)	P-026		Annual filter set 7x	Filter set 2× inlet F7 AC, 2× exhaust F7, 2× pre-filter M5, 1× by-pass F7	P-017U
	Filter box	Filter box	P-031		Transition insulated XPS	Single axis transition 180 mm to EPE pipe Ø 160 mm	P-023160
	Outdoor heat pump unit	Air/air Comfort version	P-035		Transition insulated XPS	Single axis transition 180 mm to EPE pipe Ø 200 mm	P-023200
	Communication module	For the outdoor heat pump unit for Comfort version	P-036		Transition insulated XPS	Double 180 mm transition on EPE pipe Ø 160 mm pitch for combination blind	P-024160
	Filter class M5, inlet/exhaust	Folded M5 class filter (ePM10 55 %) 513 × 194 × 39 mm	P-016B		Transition insulated XPS	Double 180 mm transition on EPE pipe Ø 200 mm pitch for combination blind	P-024200
	Filter class F7, inlet/exhaust	Folded F7 class filter (ePM1 70 %) 513 × 194 × 39 mm	P-016A				

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 [m ³ /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 [m ³ /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 [m ³ /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 [m ³ /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 [m ³ /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 [m ³ /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 [m ³ /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 [m ³ /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 [m ³ /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 [m ³ /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 m ² *	
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 m ³ /h	
Maximum air flow in BOOST mode	300 m ³ /h	
Reference air flow	210 m ³ /h	
Displacement pressure (at reference flow)	50 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 m ³ /h; 88 % / 210 m ³ /h; 93 % / 60 m ³ /h	
Heat transfer efficiency with ent. exchanger (% / air flow)	76 % / 300 m ³ /h; 80 % / 210 m ³ /h; 90 % / 60 m ³ /h	
Moisture transfer efficiency with ent. exchanger (% / air flow)	54 % / 300 m ³ /h; 58 % / 210 m ³ /h; 75 % / 60 m ³ /h	
El. input without preheating at external pressure 50 Pa	88 W / 300 m ³ /h; 31 W / 210 m ³ /h; 16 W / 60 m ³ /h	
El. input without preheating with ent. exchanger at external pressure 50 Pa	87 W / 300 m ³ /h; 31 W / 210 m ³ /h; 60 W / 60 m ³ /h	
SPI specific energy consumption W / m³ / h	0.20 W (at reference airflow 210 m ³ /h and disposition pressure of 50 Pa)	
Energy class standard / enthalpy heat exchanger	A+ / A	
Max. number of all sensors (CO₂ / RH / radon ...)	9	
Connector for fire sensor or EPS connection	Yes	
Automatic frost protection	Yes	
Max. power without preheating	118 W	
Max. preheating input power	850 W	
Total power consumption	968 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, F7 AC optional)	F7 ePM1 70 % (F7 AC optional)
Filters exhaust (% of particles captured in a given filter class)	M5 ePM10 55 % (F7 optional)	F7 AC 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 m ² *		
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 m ³ /h		
Maximum air flow in BOOST mode	400 m ³ /h		
Reference air flow	280 m ³ /h		
Displacement pressure (at reference flow)	50 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 m ³ /h; 87 % / 280 m ³ /h; 92 % / 80 m ³ /h		
Heat transfer efficiency with ent. exchanger (% / air flow)	73 % / 400 m ³ /h; 77 % / 210 m ³ /h; 90 % / 80 m ³ /h		
Moisture transfer efficiency with ent. exchanger (% / air flow)	48 % / 400 m ³ /h; 56 % / 280 m ³ /h; 74 % / 80 m ³ /h		
El. input without preheating at external pressure 50 Pa	135 W / 400 m ³ /h; 65 W / 280 m ³ /h; 18 W / 80 m ³ /h		
El. input without preheating with ent. exchanger at external pressure 50 Pa	128 W / 400 m ³ /h; 63 W / 280 m ³ /h; 18 W / 80 m ³ /h		
SPI specific energy consumption W / m³ / h	0.23 W (at reference airflow 280 m ³ /h and disposition pressure of 50 Pa)		
Energy class standard/enthalpy heat exchanger	A+ / A		
Max. number of all sensors (CO₂/RH/radon ...)	9		
Connector for fire sensor or EPS connection	Yes		
Automatic frost protection	Yes		
Max. power without preheating	184 W		
Max. preheating input power	850 W		
Total power consumption	1 034 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, F7 AC optional)	F7 ePM1 70 % (F7 AC optional)	F7 ePM1 70 % (F7 AC optional)
Filters exhaust (% of particles captured in a given filter class)	M5 ePM10 55 % (F7 optional)	F7 ePM1 70 %	F7 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

Climate zone	VENTBOX 300						VENTBOX 400					
	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
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					
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, with central heat recovery, with standard EC motors of the Optimum version, standard heat exchanger and right-hand side 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, with central heat recovery, EC motors with constant flow Premium version, enthalpy counterflow heat exchanger and right-hand side connection.



VENTBOX 800

Heat recovery units for residential
and multi-purpose areas

VENTBOX 800



The **VENTBOX 800** central heat recovery unit provides controlled ventilation with air recovery and also serves as an effective tool for perfect filtration and removal of dust and various allergens from fresh incoming air. The heat recuperation unit also contributes to improvement of the building thermal performance. The use of sensors makes it possible to effectively ventilate radon, control CO₂ levels, or remove excessive moisture building in the house. This version is one of the most efficient ventilators on the market with the A+ energy class.

Specifications

Version	Premium
Recommended area	up to 600 m ²
Installation options	wall and floor
Energy class	A+
Dimensions (h x w x d)	1 270 x 1 005 x 745 mm
Weight	112 kg
Voltage	230 V AC/50 Hz
Electric current without preheating	1.5 A
Electric current including preheating	12 A
Max. input power of the unit without preheating	318 W
Max. preheating input power	2 550 W
IP coverage	30
Air flow	120–800 m ³ /h
Max. airflow in BOOST setting	800 m ³ /h
Displacement pressure	50–200 Pa
Acoustic energy L _{WA}	560 m ³ /h/50 Pa/49 dB
Heat transfer efficiency/ Flow rate	82 %/800 m ³ /h 82 %/560 m ³ /h 81 %/120 m ³ /h
Power input (without preheating)	263 W/800 m ³ /h 105 W/560 m ³ /h 20 W/120 m ³ /h
Ø of the connection necks	250 mm
Type of condensate drain pipe	HT DN 32 mm
Specific power consumption SPI*	0.19 W/m ³ /h
Ordering code**	VB1-0800-BC-PHR

* at reference airflow 560 m³/h and disposition pressure of 50 Pa

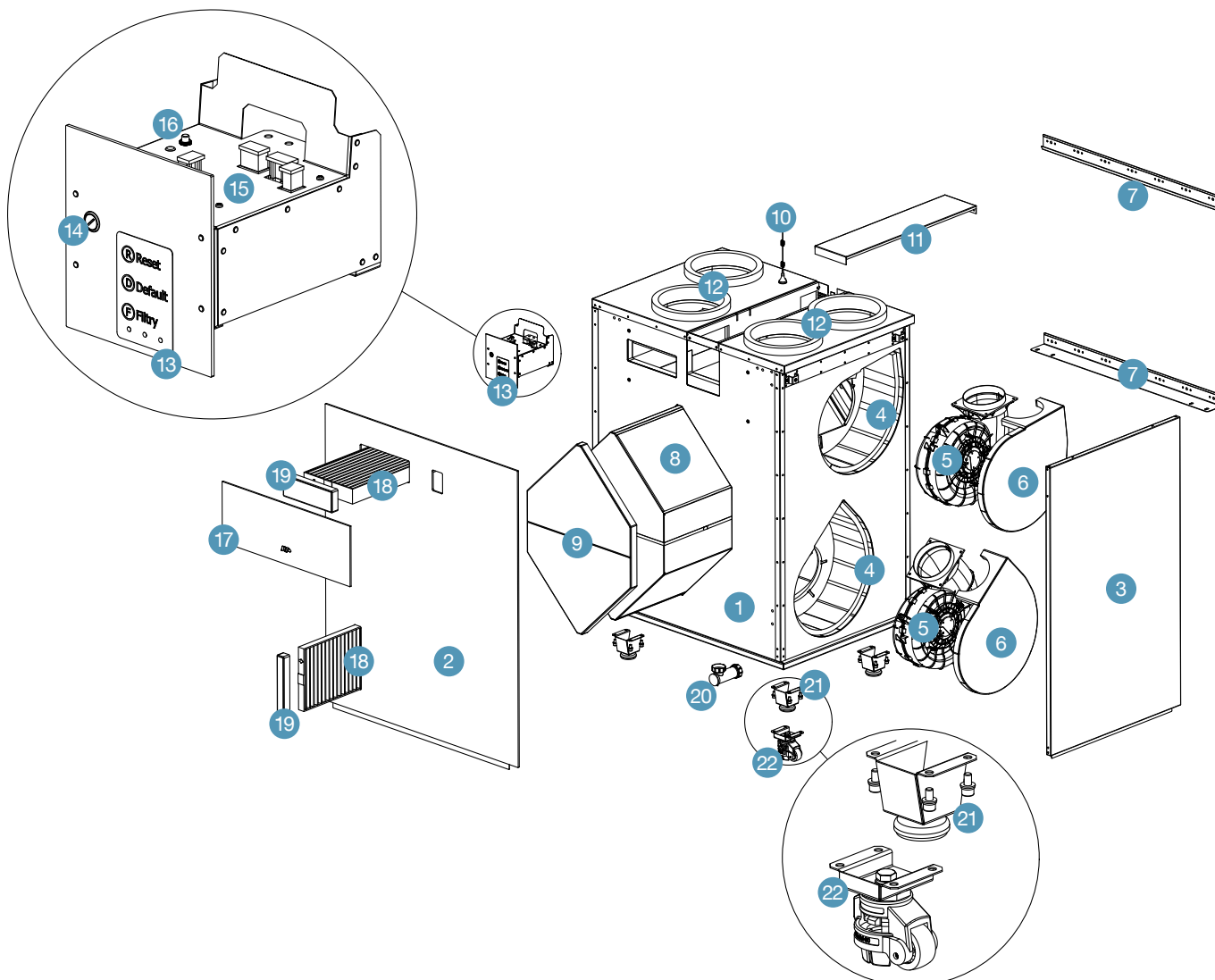
** for ordering codes see p. 48



Premium Version

The unit is equipped with unique **EC motors with constant flow function**. These unique motors compensate for pressure losses when the supply air flow is reduced, e.g. when the air filters become clogged. With these premium EC motors, the unit can operate more efficiently and economically; which positively affects the overall dynamics and also the economy of the heat recovery system use. The unit is provided with frost protection, and performance setting according to the current need and temperature. The unit is also equipped with an automatic by-pass function, where it compares the temperature of the indoor and outdoor air and switches on the by-pass damper as required. This prevents the outdoor air from being heated by the exhaust air. The heat recovery unit can also be operated via a web interface from a computer, smartphone, or tablet connected to the local network in the house.

UNIT BREAKDOWN



Basic Specifications

- 1 the unit's enclosure is made of durable material with thermal insulation properties and a compact enclosure
- 2 front service plate
- 3 fan service door
- 4 acoustic panels
- 5 fans with efficient EC motors
- 6 fan covers
- 7 unit suspension system
- 8 plate counterflow heat exchanger HRV
- 9 heat exchanger cover
- 10 external Wi-Fi antenna
- 11 cable route cover
- 12 air duct sockets
- 13 control and information panel (see p. 65)
- 14 fuse case with fuse
- 15 control panel – analogue and digital inputs
- 16 external Wi-Fi antenna terminal
- 17 design front cover
- 18 air purification filters
- 19 filter closing caps
- 20 dry rap – condensate drain outlet at the bottom of the unit with 5/4" connection thread
- 21 height-adjustable legs
- 22 adjustable travel – optional accessories (see p. 45)
- filter clogging indicator based on time interval
- air preheating (3 PTC cells)
- filter clogging indicator based on time interval
- filter clogging indicator based on filter pressure drop
- separate temperature sensor for monitoring the preheating function
- temperature sensors for monitoring the air temperature at the outlets and inlets of the ventilation unit
- connector for connecting fire sensor or electrical fire alarm system (EFS)
- power cord 230 V AC/16 A
- energy label, package leaflet
- assembly and installation instructions, assembly template

Optional Specification

- enthalpy counter-flow plate heat exchanger ERV (see p. 45)
- continuous manual P.R.T. control with wall-mounted remote controller (see p. 45)
- CO₂ concentration sensor
- relative humidity (RH) sensor
- radon concentration sensor
- combined TVOC and HCHO (volatile substances and formaldehyde) sensor
- carbon odour filters INPUT F7 AC (ePM1 70 %)*
- sheet metal air duct inserts
- adjustable travel

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



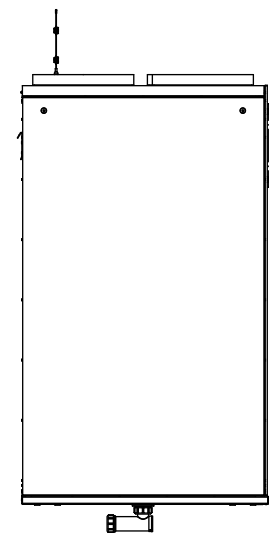
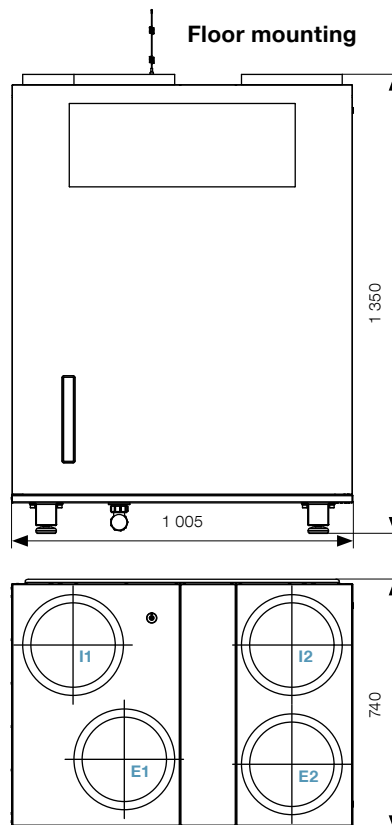
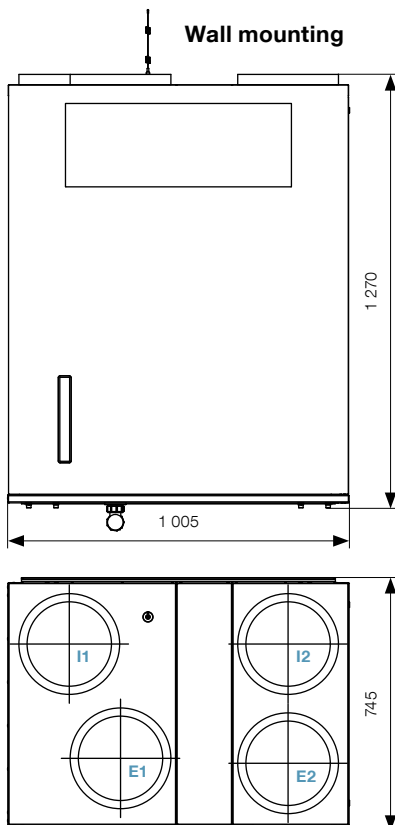
Up to 9 sensors can be connected in total.

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)
- optional manual defrosting of the heat exchanger (in winter mode)
- optional connection of a fire sensor or electric fire alarm system (EFS)
- user configurable connected sensors (CO₂, relative humidity, total volatile concentration)
- Modbus communication with a higher-level system (e.g. LOXONE)
- communication with Modbus RTU sensors
- control including ventilation performance via local network web
- application interface
- weekly time mode
- leaving the premises/holiday function
- indicative information on current electricity consumption
- BOOST shock ventilation
- language versions CZ, EN, DE, FR

The **VENTBOX 800** unit is available in the right version and can be installed on the wall or on the floor. In the case of floor mounting, it is necessary to fit the unit with adjustable legs or travel gear due to the installation of a dry trap in the lower part.

Unit Dimensions by Mounting Type

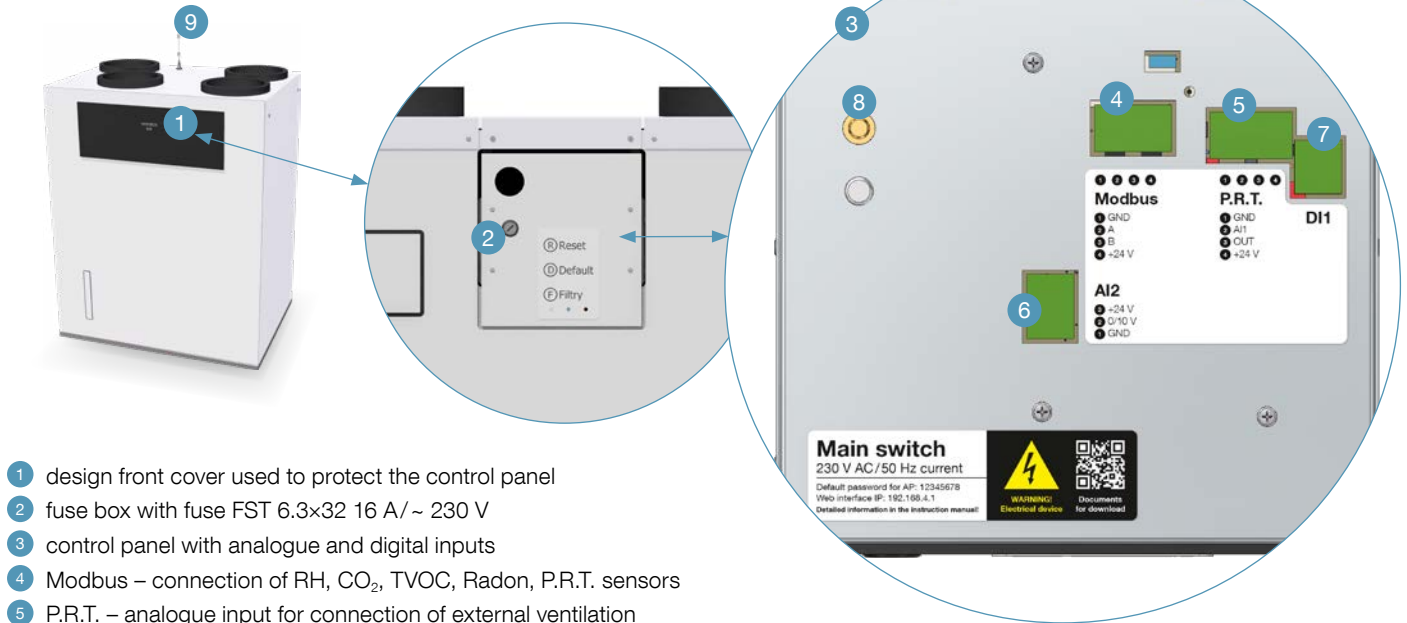


Dimensions in mm.
Attention! These are not installation dimensions. Technical changes reserved.

ELECTRICAL CONNECTION

The electrical power connection of the VENTBOX 800 is via a 2.5 metre power cable. All connector connections are located on the **Control Panel**, which can be found under the design cover on the unit front. The power supply fuse and the main power supply module are also located here.

Control Panel with Connection for Connectors

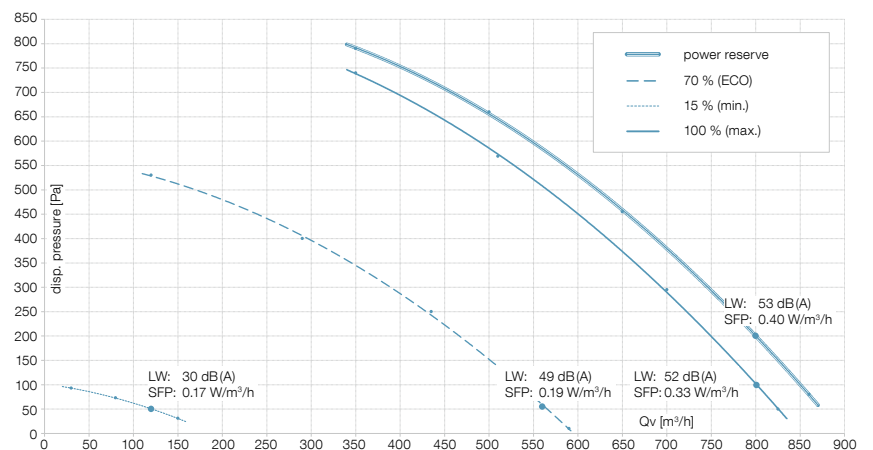


- 1 design front cover used to protect the control panel
- 2 fuse box with fuse FST 6.3x32 16 A/~ 230 V
- 3 control panel with analogue and digital inputs
- 4 Modbus – connection of RH, CO₂, TVOC, Radon, P.R.T. sensors
- 5 P.R.T. – analogue input for connection of external ventilation output controller P.R.T.
- 6 AI2 – analogue input
- 7 DI1 – digital input for intensive extraction buttons (to the required rooms)
- 8 sMA connector for external Wi-Fi antenna connection
- 9 antenna used for wireless communication (connection to Wi-Fi network)

VENTILATION PERFORMANCE

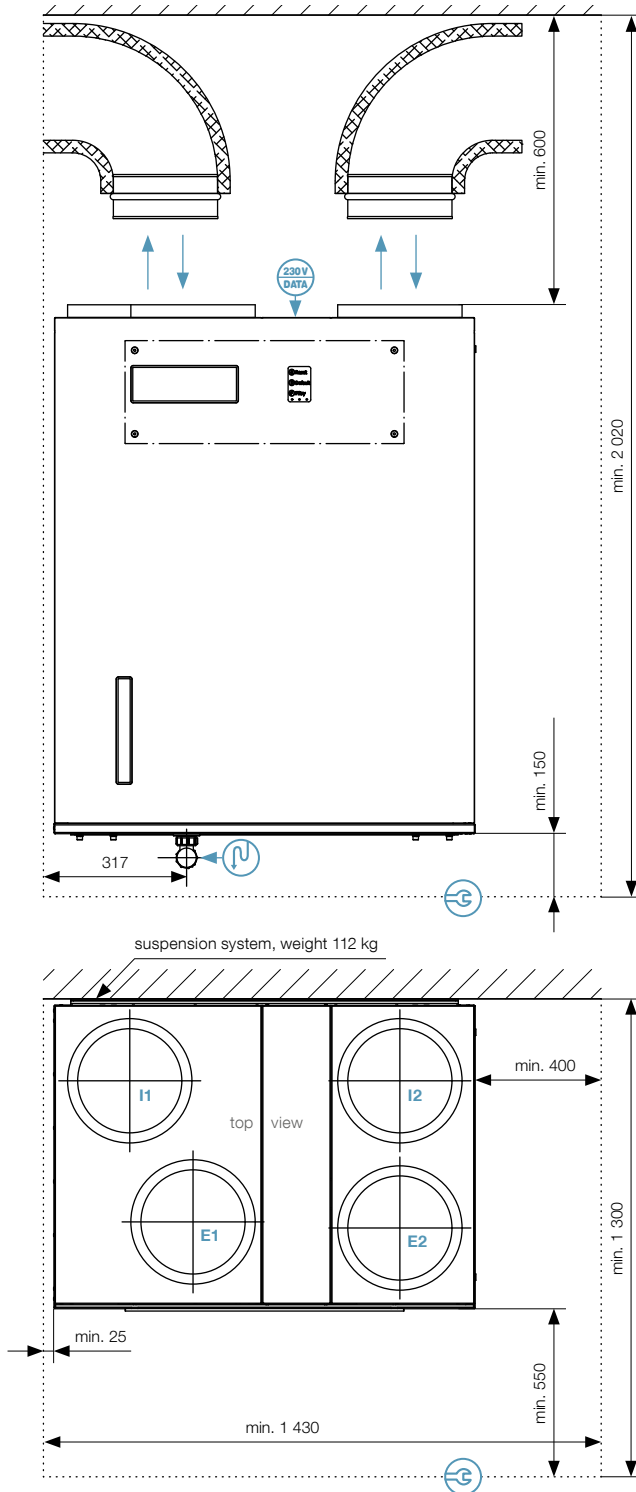
Unit power [%]	External pressure [Pa]	Airflow [m ³ /h]	Power input [W]	SFP [W/m ³ /h]	Heat recovery efficiency	
					Heat ηt [%]	Humidity ηx [%]
With standard heat exchanger according to EN 13141-7						
15	50	120	20	0.17	80.8	–
70	50	560	105	0.19	81.8	–
100	100	800	263	0.33	81.6	–
100	200	800	318	0.40	81.6	–
With enthalpy heat exchanger according to EN 13141-7:2011						
15	50	120	19	0.16	84.0	77.8
70	50	560	106	0.19	77.7	62.5
100	100	800	263	0.33	75.5	56.3
100	200	800	318	0.40	75.5	56.3

VENTBOX 800 Premium – available ventilation capacity

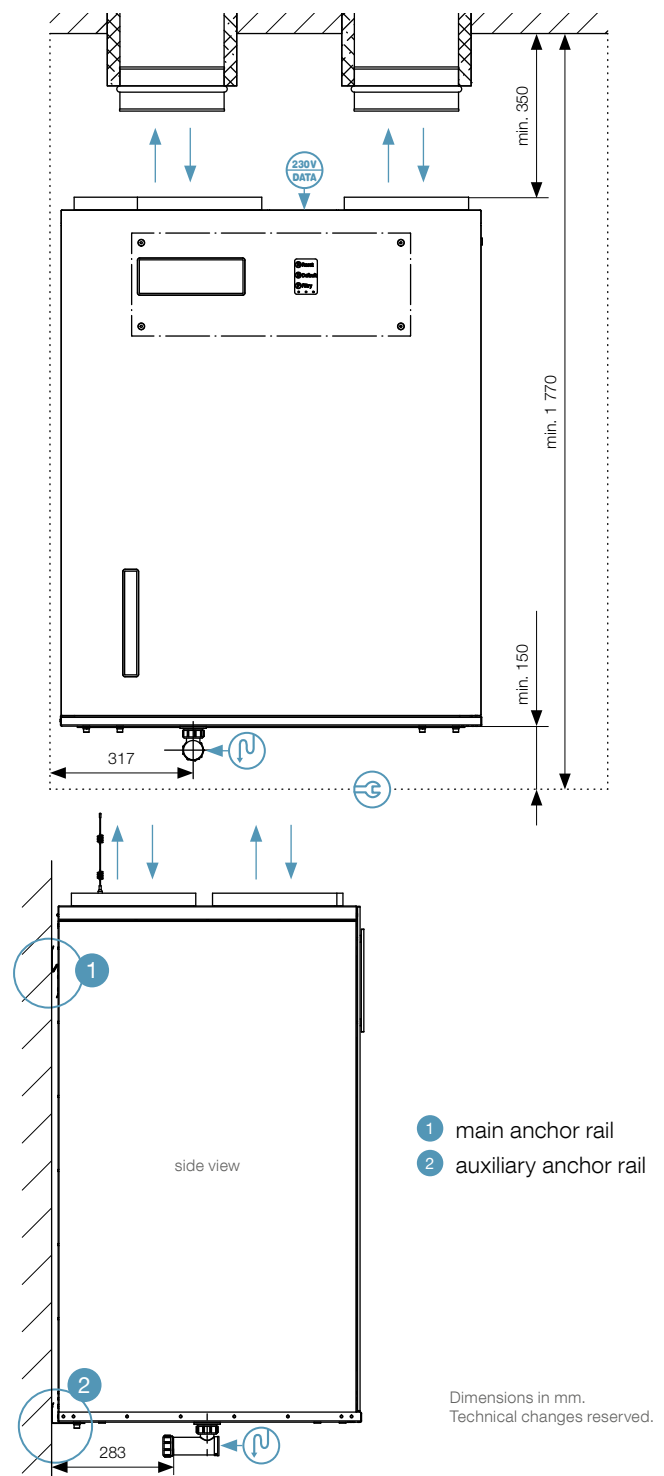


ASSEMBLY

Wall Mounting connection under the ceiling beam



Wall Mounting connection through the ceiling beam



Legend



Supply E1
of fresh outdoor
air to the unit



Exhaust I2
of used air from the
unit to the outside

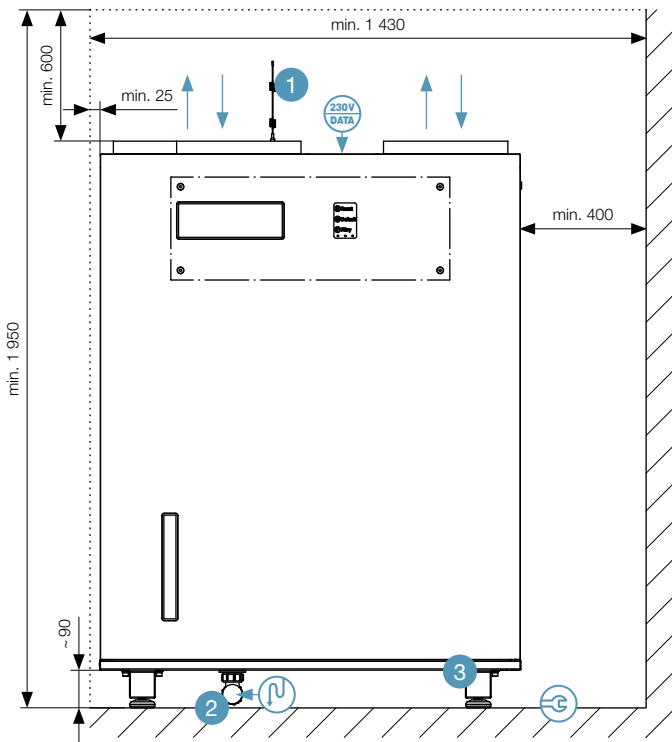


Distribution E2
of fresh air from the
unit to living areas



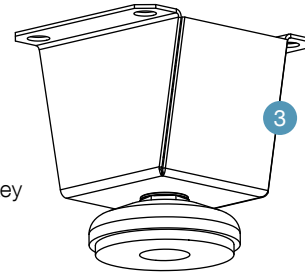
Exhaust I1
of used air from
living areas to the unit

Floor Mounting



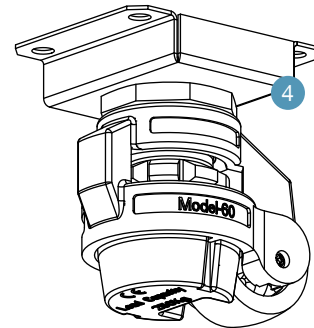
Adjustable leg

- rubber foot
- levelling \odot with a key

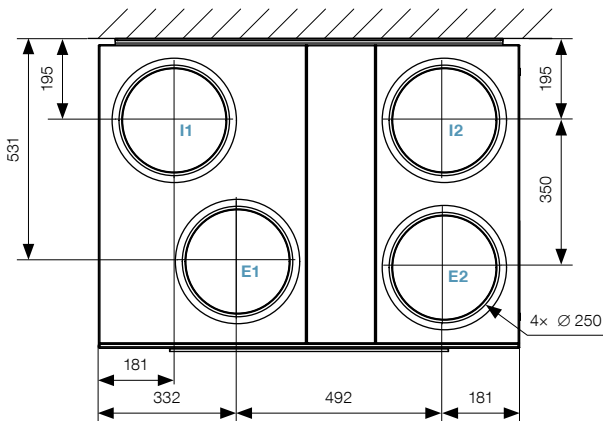


Adjustable travel

- rubber foot
- manual levelling
- travel wheel



Connecting Air Ducts



- 1 wireless communication antenna (Wi-Fi)
- 2 dry trap – outlet for condensate drainage (waste pipe HT DN 32 mm / thread 5/4")
- 3 adjustable legs or 4 adjustable travel gear (optional accessories see p. 45)



The air duct connection procedure applies to all installation methods. An air duct connection template is included in the instructions/packaging.



The unit must always be placed on a flat surface with sufficient load capacity, ensure its correct orientation with respect to the air ducts and the overall resulting gradient of the waste removal system (min. 3°).



Air duct connection
4x Ø 250 mm



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



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



Minimum assembly/
handling space

REQUIREMENTS FOR OTHER PROFESSIONS

Electrical Requirements

Mandatory preparation

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

- Terminate with a 230 V AC/50 Hz socket not farther than 1.5 m from the power supply module of the heat recovery unit (the power supply module is located on the top of the unit, between the air duct sockets).
- Mark the circuit breaker with a “heat recovery” label.
- **Do not block – bulk remote control!**

Optional preparation

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

- Terminate with a RJ45 socket at the location of the heat recovery unit. This is only used 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).

Buttons for intensive extraction (BOOST) to the desired rooms

- Lead a UTP or J-Y(ST)Y 2×2×0.8 cable to all rooms with exhaust requirement (bathroom, WC, kitchen, storage room, reception, server room 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 peripheral heat recovery unit and mark the button “Storage”, “WC”, “Bathroom”, etc.
- In the rooms, install a push button with return to original position.

CO₂ and RH sensors and continuous control panel (P.R.T.)

- Lead a UTP or J-Y(ST)Y 2×2×0.8 cable 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 RS485 bus – sensors communicate using Modbus RTU.
- Terminate the cable with a margin of min. 2 m, not farther than 0.5 m from the data terminal of the heat recovery unit (peripheral data terminals are always located between the sockets facing the interior).

Recommendations

- The CO₂ sensor (for places with a higher concentration of people) 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 a UTP or J-Y(ST)Y 2×2×0.8 cable to the required room with air pressure or smoke detection requirements (room with fireplace, boiler room, etc.).
- Terminate the cable with a reserve of min. 2 m, not farther 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 connectors) 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

HT waste pipe – DN 32 mm, or 5/4" thread

- Lead the HT DN 32 mm waste pipe, fit it with WHB1-32 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).
- Keep in mind the required “inspection opening” and the possibility to disconnect the recovery unit from the waste.
- It is necessary to ensure a free outflow with respect to the overall gradient of the waste water system (min. 3 %).

Requirements for Construction

Mandatory preparation

Air ducts Ø 250 mm

- Lead air ducts according to the selected configuration of the heat recovery unit and the corresponding positioning of air duct connections.
- Keep in mind the overall location of the heat recovery unit in the building (wall/drop ceiling/floor mounting).
- Ensure sufficient handling space for installation and servicing with regard to the location of the heat recovery unit according to the selected variant and connection.

Anchor holes

- With regard to the chosen mounting variant and weight.

General Requirements

Other requirements are governed by the project documentation.

ACCESSORIES

	Name	Description	Ordering code
	RH sensor	Humidity sensor, analogue/digital 12–24 V DC, plaster box	P-001
	CO ₂ sensor	CO ₂ concentration sensor, analogue/digital, 12–24 V DC, plaster box	P-002
	TVOC sensor	Volatile and formaldehyde concentration sensor, analogue/digital, 12–24 V DC, plaster box	P-023
	Radon sensor	Radon concentration sensor	P-022
	Continuous manual control of relative P.R.T.	0–100 % continuous control with intensive exhaust	P-003
	Standard counterflow HRV heat exchanger	Temperature counterflow plate heat exchanger	P-028
	Enthalpy counterflow ERV heat exchanger	Enthalpy counterflow plate heat exchanger	P-029
	Class F7 filter inlet	Collapsible filter – F7 (ePM1 70%) – inlet 450 × 253 × 50 mm)	P-024B
	Class F7 AC carbon filter inlet	Carbon filter, collapsible – F7 AC (ePM1 70%) – inlet 450 × 253 × 50 mm	P-024U
	Class F7 filter exhaust – by-pass	Collapsible filter – F7 (ePM1 70%) – exhaust/by-pass 642 × 254 × 28 mm	P-024D
	Adjustable legs	Height adjustable legs (4 in the package)	P-033
	Adjustable travel	Adjustable travel (4 in the package)	P-034
	Self-closing trap	Low basin trap with self-closing silicone diaphragm DN 1 ¼" 32 mm	P-025
	VENTBOX 800 Premium	VENTBOX 800 Premium with standard HRV heat exchanger	VB1-0800-BC-PHR
	VENTBOX 800 Premium	VENTBOX 800 Premium with ERV enthalpy heat exchanger	VB1-0800-BC-PER

ACOUSTIC PARAMETERS

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 [m ³ /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)]
15	50	120	50.2	37.6	32.6	22.1	20.0	21.4	10.5	9.0	29.9
70	50	560	50.9	46.1	58.0	35.9	27.5	27.6	17.1	14.5	49.6
100	100	800	56.6	50.3	58.7	46.1	33.3	28.1	24.4	17.3	52.4
100	200	800	57.7	52.6	59.2	47.1	34.2	28.9	25.0	17.6	53.4

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 [m ³ /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)]
15	50	120	59.5	43.8	41.2	31.3	9.4	4.8	4.8	4.8	37.1
70	50	560	71.0	67.8	75.0	58.8	45.4	35.3	30.9	25.0	66.9
100	100	800	76.9	73.7	78.7	68.0	54.7	43.4	41.1	36.4	72.8
100	200	800	77.7	74.8	79.5	69.8	55.3	44.5	42.2	37.1	74.8

Acoustic energy L_{WA} – discharge to the pipe – I2											
Unit power [%]	External pressure [Pa]	Air flow [m ³ /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)]
15	50	120	60.6	47.8	45.8	34.9	18.6	13.4	5.5	5.5	40.1
70	50	560	72.4	69.2	78.0	61.6	57.4	58.4	48.7	42.8	70.5
100	100	800	78.7	74.9	82.1	71.5	63.9	64.7	58.1	54.4	76.8
100	200	800	79.3	75.9	83.5	72.6	64.8	65.6	59.1	55.1	78.1

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 [m ³ /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)]
15	50	120	46.2	36.7	35.4	16.5	6.9	4.8	4.8	4.8	28.4
70	50	560	72.6	66.8	69.0	51.0	42.3	34.0	27.6	18.1	61.2
100	100	800	82.7	78.9	73.4	65.9	57.3	49.9	40.0	30.7	68.6
100	200	800	83.5	79.8	74.8	66.8	58.4	50.8	41.2	31.4	70.0

Acoustic energy L_{WA} – suction into the duct – I1											
Unit power [%]	External pressure [Pa]	Air flow [m ³ /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)]
15	50	120	47.3	31.3	32.3	7.9	4.8	4.8	4.8	4.8	26.0
70	50	560	76.6	69.8	66.2	53.0	41.4	31.9	26.5	16.4	59.8
100	100	800	85.6	80.8	75.7	69.4	61.0	49.7	39.0	36.6	71.3
100	200	800	86.8	81.7	76.9	70.6	62.2	50.4	40.2	37.1	72.9

TECHNICAL PARAMETERS VENTBOX 800

	Premium version
Recommended area	up to 600 m ² *
Height	1 270 mm
Width	1 005 mm
Length/depth	745 mm
Weight	112 kg
Weight with enthalpy heat exchanger	106.5 kg
Electric current (including preheating)	1.5 (12) A
Air flow	120–800 m ³ /h
Maximum air flow in BOOST mode	800 m ³ /h
Reference air flow	560 m ³ /h
Displacement pressure (at reference flow)	50 Pa
Acoustic energy L _{WA} to the surroundings (at reference flow and a pressure of 50 Pa)	49 dB (A)
Heat transfer efficiency with standard heat exchanger (% / air flow)	82 % / 800 m ³ /h; 82 % / 560 m ³ /h; 81 % / 120 m ³ /h
Heat transfer efficiency with ent. exchanger (% / air flow)	76 % / 800 m ³ /h; 78 % / 560 m ³ /h; 84 % / 120 m ³ /h
Moisture transfer efficiency with ent. exchanger (% / air flow)	56 % / 800 m ³ /h; 63 % / 560 m ³ /h; 78 % / 120 m ³ /h
El. input without preheating at external pressure 50 Pa	263 W / 800 m ³ /h; 105 W / 560 m ³ /h; 20 W / 120 m ³ /h
SPI specific energy consumption W / m ³ / h	0.19 W (at reference airflow 560 m ³ /h and disposition pressure of 50 Pa)
Energy class standard heat exchanger	A+
Energy class enthalpy heat exchanger	A
Max. number of all sensors (CO ₂ /RH/radon ...)	9
Connector for fire sensor or EPS connection	Yes
Automatic frost protection	Yes
Max. power without preheating	318 W
Max. preheating input power	2 550 W
Total power consumption	2 868 W
By-pass function (exchanger by-pass)	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	250 mm
Motors with constant flow function	Yes
Filter clogging indicator based on filter pressure drop	Yes
Filter clogging indicator based on time interval	Yes
Filters supply/exhaust (% of particles captured in a given filter class)	F7 ePM1 70% (F7 AC optional)

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 800

Climate zone	hot	moderate	cool	hot	moderate	cool
Specific energy consumption SEC kWh/(m².a)	-18.19	-42.28	-80.16	-16.36	-38.28	-72.34
SEC climate class	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		
Thermal efficiency, dry non-condensing %	81.8			77.7		
Maximum air flow m³/h	800			800		
Electrical input at maximum air flow W	263			263		
Acoustic energy level L_{WA} dB(A)	49			49		
Reference flow rate m³/h	560			560		
Reference displacement pressure Pa	50			50		
SPI W/m³/h	0.19			0.19		
Control factor and control typology (if fitted with sensors)	0.65	local control		0.65	local control	
Declared maximum unit air leakage %	internal		0.9	internal		1.1
	external		1.2	external		1.2
Method of location and description of the optical filter change message	user manual					
Internet address of user and installation instructions	www.licon.cz					
Annual electricity consumption AEC kWh/(m².a)	–	0.452	5.842	–	0.452	5.842
Annual heat savings AHS kWh/(m².a)	20.693	45.236	88.494	18.865	41.240	80.677

ORDERING CODES

VENTBOX 800

VENTBOX	Generation	Volume flow	Design	Heat recovery unit type	Model/Type	Exchanger type	Connection option
VB	1	- 0800	- B box	C centralized	- P Premium	H standard E enthalpy	R right

Example of ordering code: VB1-0800-BC-PHR

First generation VENTBOX 800 unit, with central heat recovery, EC constant flow motors Premium version, with standard counterflow plate heat exchanger and right-hand side connection.



VENTBOX 800 Public

Decentralized heat recovery units
for residential and multi-purpose areas

VENTBOX 800 Public



The **VENTBOX 800 Public** ventilation unit has its own solution for connecting exterior air inlets, for example through a window infill. The termination of air ducts on the outside of the building is always done with a requirement for aesthetic appearance and functionality. The ventilation unit is equipped with an efficient heat exchanger and reduces heat losses that occur during conventional ventilation 'only by opening windows' or other economically and technically unsuitable methods of ventilation. **It ensures a permanent reduction in CO₂ concentration and maximum elimination of outdoor odors using carbon filters and brings the comfort of fresh clean air.** The installation of a unit with an enthalpy exchanger does not require connection to a waste pipe for condensate drainage.

Specifications

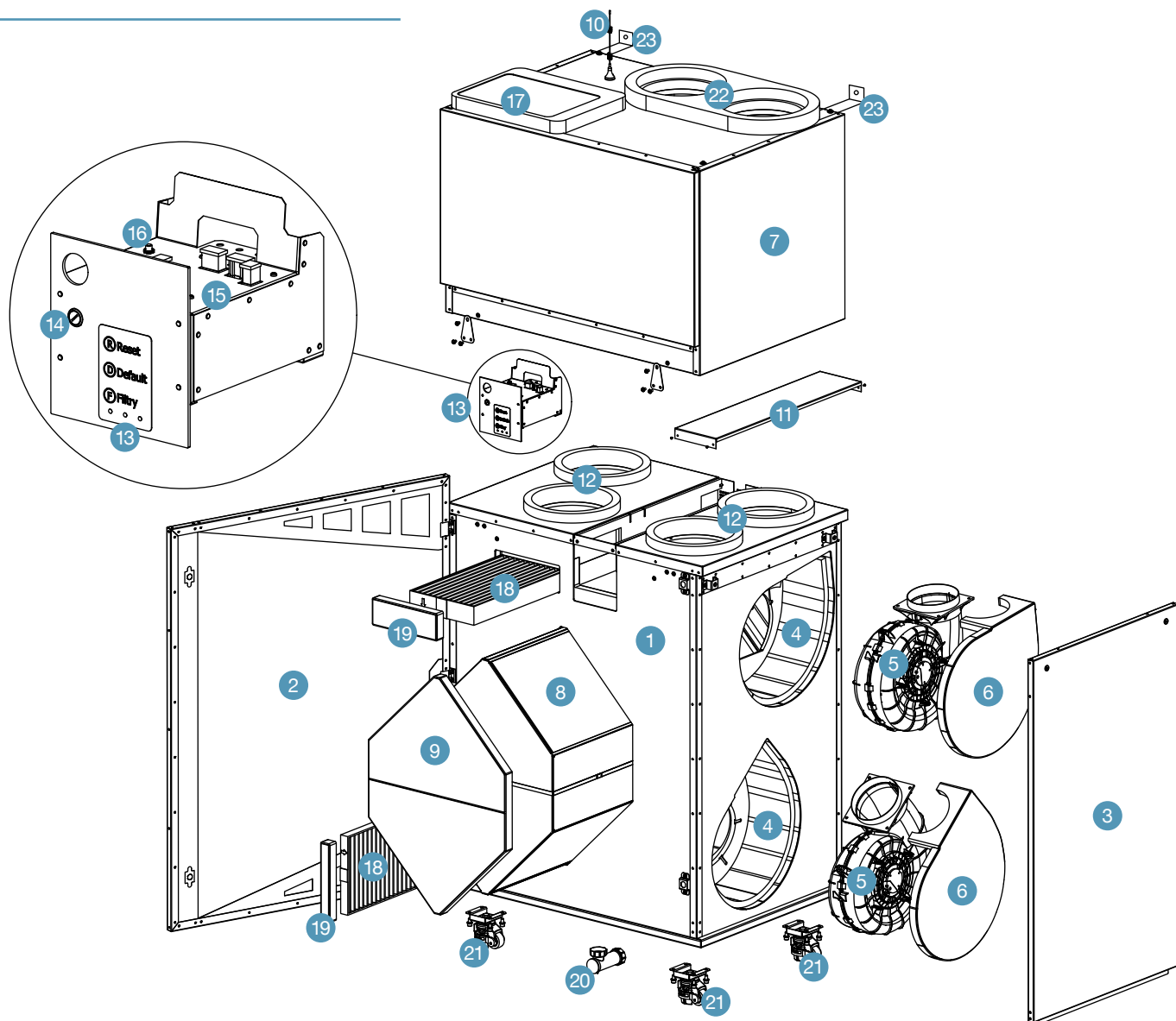
Version	Premium
Recommended area	up to 600 m ²
Installation options	floor
Energy class	A+
Dimensions (h x w x d)	2 050 x 1 005 x 740 mm
Weight	152 kg
Voltage	230 V AC/50 Hz
Electric current without preheating	1.5 A
Electric current including preheating	1.5 (12) A
Max. input power of the unit without preheating	318 W
Max. preheating input power	2 550 W
IP coverage	30
Air flow	120–800 m ³ /h
Max. airflow in BOOST setting	800 m ³ /h
Displacement pressure	50–100 Pa
Acoustic energy L _{WA}	560 m ³ /h/50 Pa/39 dB
Heat transfer efficiency/Flow rate	82 %/800 m ³ /h 82 %/560 m ³ /h 81 %/120 m ³ /h
Power input (without preheating)	263 W/800 m ³ /h 105 W/560 m ³ /h 20 W/120 m ³ /h
Ø of the connection necks	250 mm
Type of condensate drain pipe (5/4" thread)	HT DN 32 mm
Specific power consumption SPI	0.19 W/m ³ /h
Ordering code	VB1-0800-PD-PHL



Decentralized heat recovery unit variant

- suitable for schools, kindergartens, halls, training centers, libraries, and offices up to 600 m²
- low noise (integrated noise suppressor for interior and exterior)
- high efficiency of heat recovery up to 88 %
- version Premium – a more sophisticated version of the unit, equipped with unique EC motors with constant flow function, compensating for pressure losses including filter clogging indication
- decentralized solution – simple installation without the need for duct installation
- low weight, easy handling (the top part of the silencer can be separated from the motor part)
- optional enthalpy exchanger with heat and humidity recovery, without the need for condensate drainage and the need for electric preheating (operation down to -10 °C)
- standard exchanger equipped with automatic frost protection with intelligent control of the PTC heater
- F7 class filters with a large filtration range – pollen, odor, bacteria, mold
- automatic bypass

UNIT BREAKDOWN



Basic Specifications

- 1 compact casing
- 2 front service door with handles and locks
- 3 fan service door
- 4 acoustic panels
- 5 fans with efficient EC motors
- 6 fan covers
- 7 noise dampener
- 8 plate counterflow heat exchanger HRV
- 9 heat exchanger cover
- 10 external Wi-Fi antenna
- 11 cable route cover
- 12 air duct sockets
- 13 control and information panel (see p. 65)
- 14 fuse case with fuse
- 15 control panel – analogue and digital inputs
- 16 external Wi-Fi antenna terminal
- 17 directional nozzle for air exhaust with coarse debris screen
- 18 air purification filters
- 19 filter closing caps
- 20 dry rap – condensate drain outlet at the bottom of the unit with 5/4" connection thread
- 21 adjustable travel (optional specification – see p. 52)
- 22 exterior connection fittings
- 23 fixing anchors
- bypass damper including actuator
- air preheating (3 PTC cells)
- filter clogging indicator based on time interval
- filter clogging indicator based on filter pressure drop
- separate temperature sensor for monitoring the preheating function
- temperature sensors for monitoring the air temperature at the outlets and inlets of the ventilation unit
- connector for connecting fire sensor or electrical fire alarm system (EFS)
- air exhaust with a screen to prevent foreign objects from entering
- power cord 230 V AC/ 16 A
- package leaflet
- assembly and installation instructions

Optional Specification

- enthalpy counter-flow plate heat exchanger ERV (see p. 57)
- continuous manual P.R.T. control with wall-mounted remote controller (see p. 57)
- CO₂ concentration sensor
- relative humidity (RH) sensor
- radon concentration sensor
- combined TVOC and HCHO (volatile substances and formaldehyde) sensor
- carbon odour filters INPUT F7 AC (ePM1 70 %)*
- sheet metal air duct inserts
- adjustable travel

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

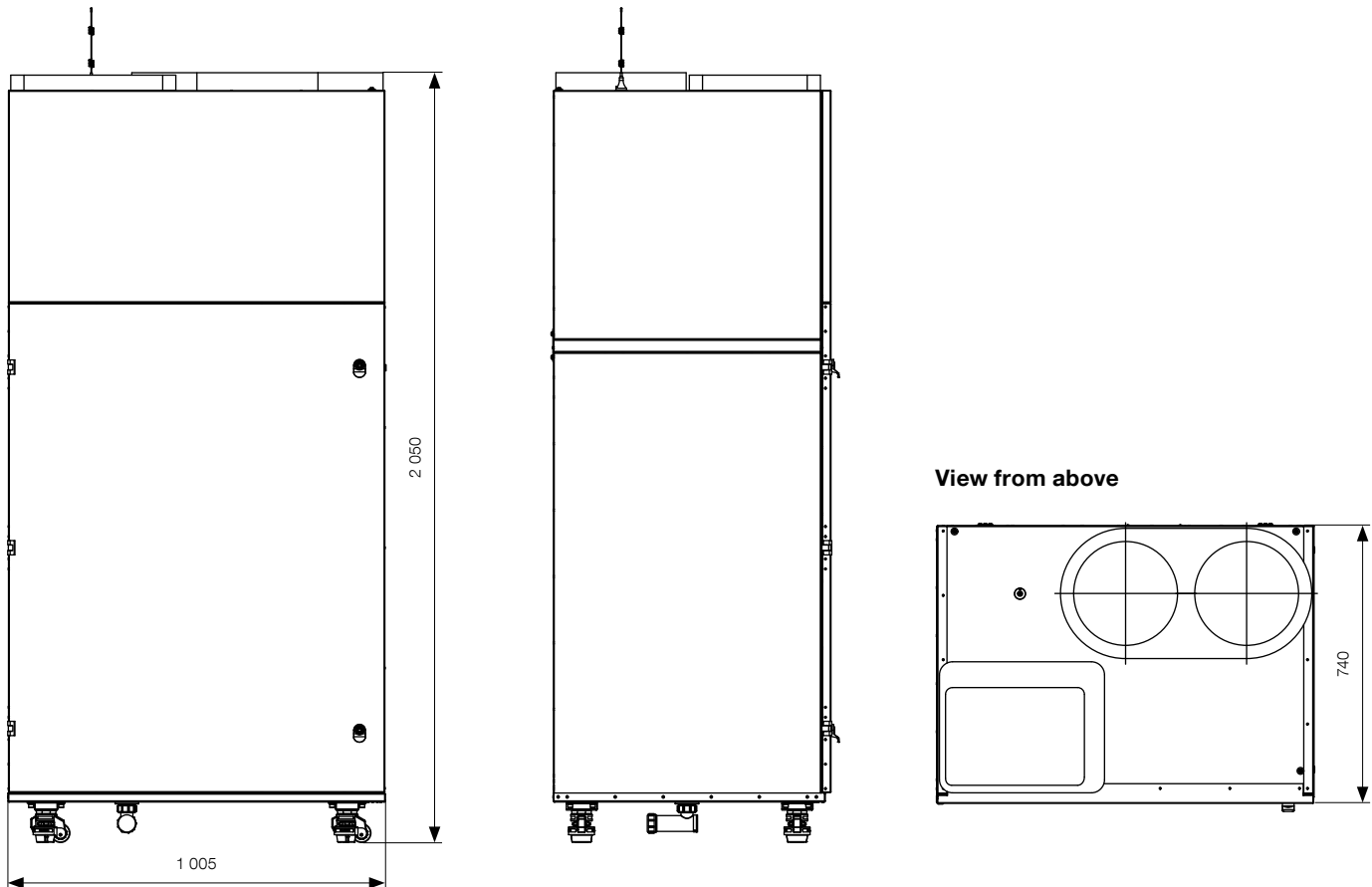


Up to 9 sensors can be connected in total.

Basic Software Functions

- automatic or manual performance setting
- automatic frost protection
- display of the current preheating performance
- automatic by-pass function (exchanger by-pass)
- manual by-pass control (in summer mode)
- optional manual defrosting of the heat exchanger (in winter mode)
- optional connection of a fire sensor or electric fire alarm system (EFS)
- user configurable connected sensors (CO₂, relative humidity, total volatile concentration)
- Modbus communication with a higher-level system (e.g. LOXONE)
- communication with Modbus RTU sensors
- control including ventilation performance via local network web application interface
- weekly time mode
- leaving the premises/holiday function
- indicative information on current electricity consumption
- BOOST shock ventilation
- language versions CZ, EN, DE, FR

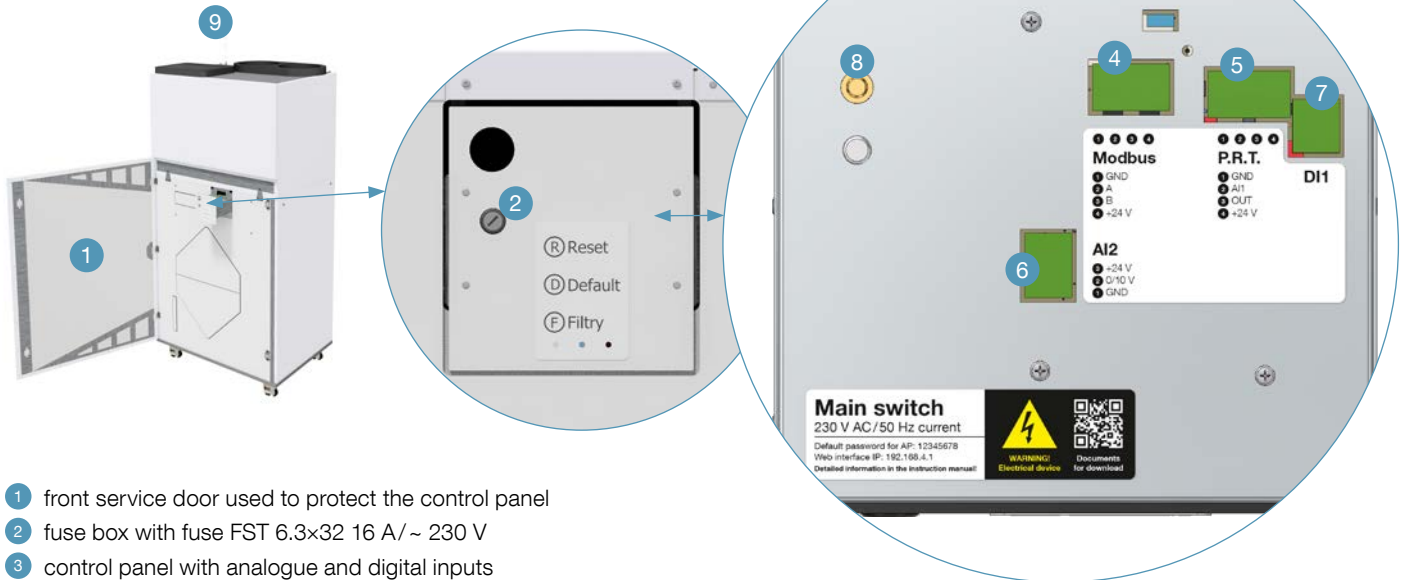
Unit Dimensions



ELECTRICAL CONNECTION

The electrical power connection of the VENTBOX 800 Public is via a 2.5 metre power cable. All connector connections are located on the **Control Panel**, which can be found under the service door on the front of the unit. The power supply fuse and the main power supply module are also located here.

Control Panel with Connection for Connectors

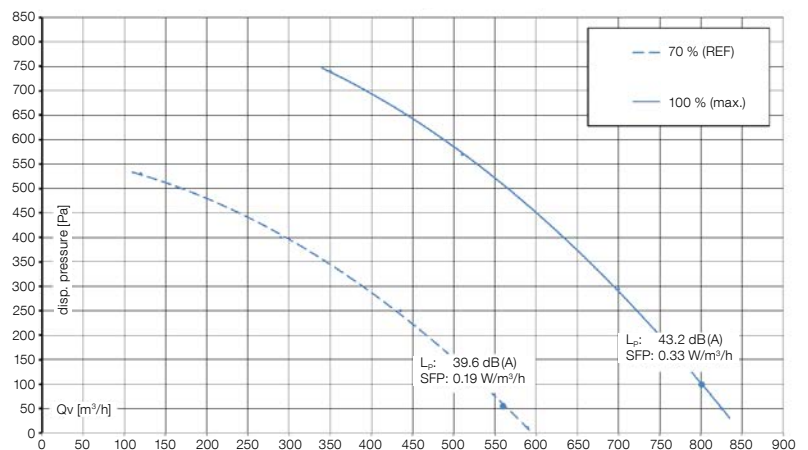


- 1 front service door used to protect the control panel
- 2 fuse box with fuse FST 6.3x32 16 A/~ 230 V
- 3 control panel with analogue and digital inputs
- 4 Modbus – connection of RH, CO₂, TVOC, Radon, P.R.T. sensors
- 5 P.R.T. – analogue input for connection of external ventilation output controller P.R.T.
- 6 AI2 – analogue input
- 7 DI1 – digital input for intensive extraction buttons (to the required rooms)
- 8 SMA connector for external Wi-Fi antenna connection
- 9 antenna used for wireless communication (connection to Wi-Fi network)

VENTILATION PERFORMANCE

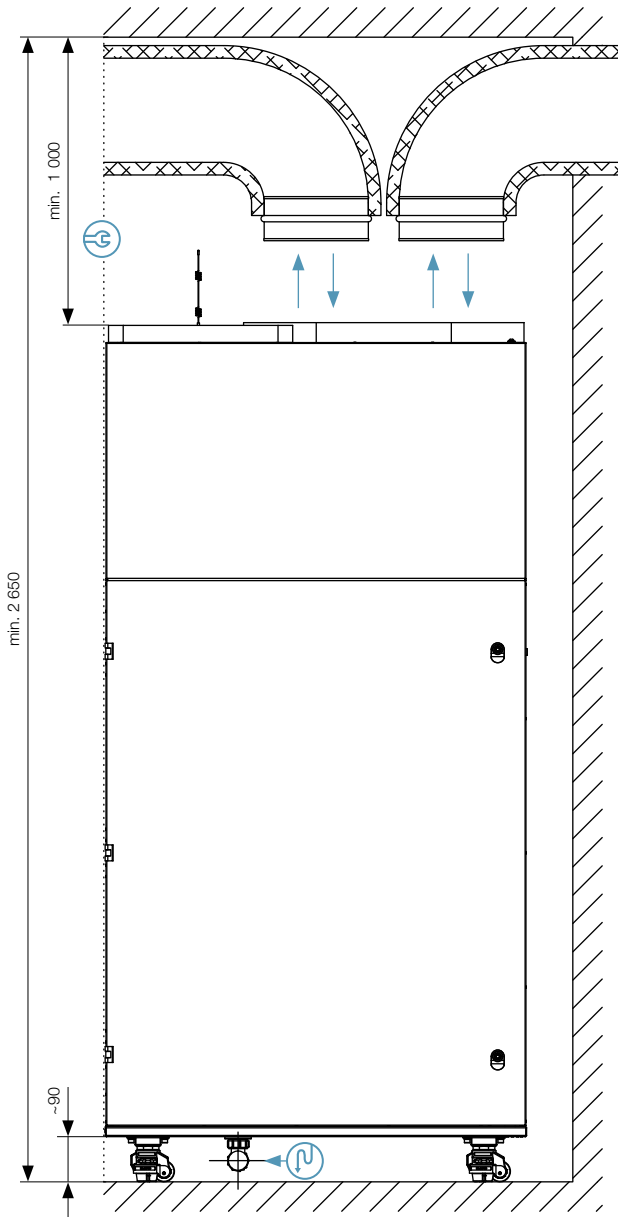
Unit power [%]	External pressure [Pa]	Airflow [m ³ /h]	Power input [W]	SFP [W/m ³ /h]	Heat recovery efficiency	
					Heat ηt [%]	Humidity ηx [%]
With standard heat exchanger according to EN 13141-7						
70	50	560	105	0.19	81.8	–
100	100	800	240	0.30	81.6	–
With enthalpy heat exchanger according to EN 13141-7:2011						
70	50	560	106	0.19	77.7	62.5
100	100	800	238	0.30	75.5	56.3

VENTBOX 800 Public Premium – available ventilation capacity



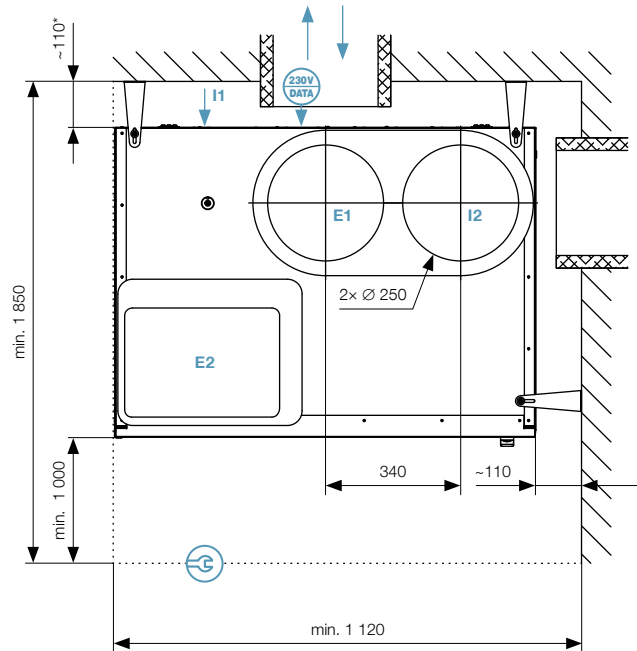
ASSEMBLY

Floor Mounting – connection under the ceiling beam



View from above

Installation in the corner of the room with a direct elbow connection



* The distance of the anchoring element required for safe placement is 110 mm. This must be taken into account during installation.

Dimensions in mm.
Technical changes reserved.

Legend



Supply E1
of fresh outdoor
air to the unit



Exhaust I2
of used air from the
unit to the outside

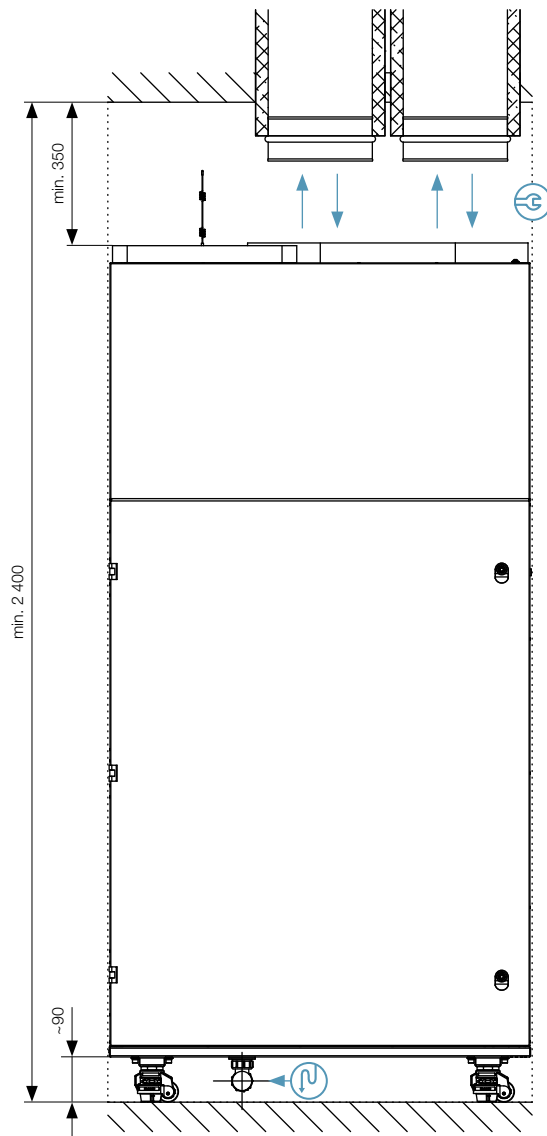


Distribution E2
of fresh air from the
unit to living areas



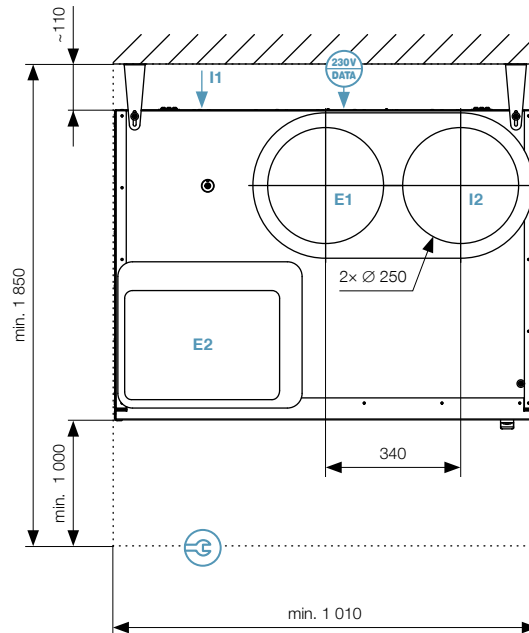
Exhaust I1
of used air from
living areas to the unit

Floor Mounting – connection through the ceiling beam



View from above

Free installation in the space with a flexible supply



The unit must always be placed on a flat surface with sufficient load capacity, ensure its correct orientation with respect to the air ducts and the overall resulting gradient of the waste removal system (min. 3°).



Air duct connection
2x Ø 250 mm



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



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



Minimum assembly/
handling space

REQUIREMENTS FOR OTHER PROFESSIONS

Electrical Requirements

Mandatory preparation

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

- Terminate with a 230 V AC/50 Hz socket not farther than 1.5 m from the power supply module of the heat recovery unit (the power supply module is located on the top of the unit, between the air duct sockets).
- Mark the circuit breaker with a “heat recovery” label.
- **Do not block – bulk remote control!**

Optional preparation

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

- Terminate with a RJ45 socket at the location of the heat recovery unit. This is only used 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).

Buttons for intensive extraction (BOOST) to the desired rooms

- Lead a UTP or J-Y(ST)Y 2×2×0.8 cable to all rooms with exhaust requirement (bathroom, WC, kitchen, storage room, reception, server room 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 peripheral heat recovery unit and mark the button “Storage”, “WC”, “Bathroom”, etc.
- In the rooms, install a push button with return to original position.

CO₂ and RH sensors and continuous control panel (P.R.T.)

- Lead a UTP or J-Y(ST)Y 2×2×0.8 cable 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 RS485 bus – sensors communicate using Modbus RTU.
- Terminate the cable with a margin of min. 2 m, not farther than 0.5 m from the data terminal of the heat recovery unit (peripheral data terminals are always located between the sockets facing the interior).

Recommendations

- The CO₂ sensor (for places with a higher concentration of people) 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 a UTP or J-Y(ST)Y 2×2×0.8 cable to the required room with air pressure or smoke detection requirements (room with fireplace, boiler room, etc.).
- Terminate the cable with a reserve of min. 2 m, not farther than 0.5 m from the terminal block of the heat recovery unit 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

HT waste pipe – DN 32 mm, or 5/4" thread

- Lead the HT DN 32 mm waste pipe, fit it with WHB1-32 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).
- Keep in mind the required “inspection opening” and the possibility to disconnect the recovery unit from the waste.
- It is necessary to ensure a free outflow with respect to the overall gradient of the waste water system (min. 3 %).

Requirements for Construction

Mandatory preparation

Air ducts Ø 250 mm

- Lead air ducts according to the selected configuration of the heat recovery unit and the corresponding positioning of air duct connections.
- Keep in mind the overall location of the heat recovery unit in the building (wall/drop ceiling/floor mounting).
- Ensure sufficient handling space for installation and servicing with regard to the location of the heat recovery unit according to the selected variant and connection.

Anchor holes

- With regard to the chosen mounting variant and weight.

General Requirements

Other requirements are governed by the project documentation.

ACOUSTIC PARAMETERS

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

Sound pressure level L _p (A) – within 1m											
Unit power [%]	External pressure [Pa]	Air flow [m ³ /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)]
50	50	400	39.5	41.1	32.6	18.6	7.8	1.4	0.0	0.0	28.8
		500	42.7	39.4	48.0	25.4	16.1	9.1	0.0	0.0	37.7
70		560	44.2	40.6	49.0	27.9	19.5	15.2	4.5	0.0	39.6
		600	41.7	39.9	50.2	27.4	17.6	11.9	1.4	0.0	40.2
100	100	800	50.6	44.9	50.0	34.1	25.9	21.5	12.8	0.5	43.2

TECHNICAL PARAMETERS VENTBOX 800 Public

	Premium version
Recommended area	up to 600 m ² *
Height	2 050 mm
Width	1 005 mm
Length/depth	740 mm
Weight	152 kg
Weight with enthalpy heat exchanger	146.5 kg
Electric current (including preheating)	1.5 (12) A
Air flow	120–800 m ³ /h
Maximum air flow in BOOST mode	800 m ³ /h
Reference air flow	560 m ³ /h
Displacement pressure (at reference flow)	50 Pa
Acoustic energy L_{WA} to the surroundings (at reference flow and a pressure of 50 Pa)	39 dB (A)
Heat transfer efficiency with standard heat exchanger (% / air flow)	82 % / 800 m ³ /h; 82 % / 560 m ³ /h
Heat transfer efficiency with ent. exchanger (% / air flow)	76 % / 800 m ³ /h; 78 % / 560 m ³ /h
Moisture transfer efficiency with ent. exchanger (% / air flow)	56 % / 800 m ³ /h; 63 % / 560 m ³ /h
El. input without preheating at external pressure 50 Pa	263 W / 800 m ³ /h; 105 W / 560 m ³ /h
SPI specific energy consumption W / m³ / h	0.19 W (at reference airflow 560 m ³ /h and disposition pressure of 50 Pa)
Max. number of all sensors (CO₂/RH/radon ...)	9
Connector for fire sensor or EPS connection	Yes
Automatic frost protection	Yes
Max. power without preheating	318 W
Max. preheating input power	2 550 W
Total power consumption	2 868 W
By-pass function (exchanger by-pass)	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	250 mm
Motors with constant flow function	Yes
Filter clogging indicator based on filter pressure drop	Yes
Filter clogging indicator based on time interval	Yes
Filters supply/exhaust (% of particles captured in a given filter class)	F7 ePM1 70% (F7 AC optional)

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

ACCESSORIES

	Name	Description	Ordering code
	RH sensor	Humidity sensor, analogue/digital 12–24 V DC, plaster box	P-001
	CO ₂ sensor	CO ₂ concentration sensor, analogue/digital, 12–24 V DC, plaster box	P-002
	TVOC sensor	Volatile and formaldehyde concentration sensor, analogue/digital, 12–24 V DC, plaster box	P-023
	Radon sensor	Radon concentration sensor	P-022
	Continuous manual control of relative P.R.T.	0–100 % continuous control with intensive exhaust	P-003
	Standard counterflow HRV heat exchanger	Temperature counterflow plate heat exchanger	P-028
	Enthalpy counterflow ERV heat exchanger	Enthalpy counterflow plate heat exchanger	P-029
	Class F7 filter inlet	Collapsible filter – F7 (ePM1 70%) – inlet 450 × 253 × 50 mm)	P-024B
	Class F7 AC carbon filter inlet	Carbon filter, collapsible – F7 AC (ePM1 70%) – inlet 450 × 253 × 50 mm	P-024U
	Class F7 filter exhaust – by-pass	Collapsible filter – F7 (ePM1 70%) – exhaust/by-pass 642 × 254 × 28 mm	P-024D
	Adjustable travel	Adjustable travel (4 in the package)	P-034
	Self-closing trap	Low basin trap with self-closing silicone diaphragm DN 1 ¼" 32 mm	P-025
	VENTBOX 800 Public Premium	VENTBOX 800 Public Premium with standard HRV heat exchanger	VB1-0800-BC-PHL
	VENTBOX 800 Public Premium	VENTBOX 800 Public Premium with ERV enthalpy heat exchanger	VB1-0800-BC-PEL

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 800 Public

Type of ventilation unit	BUV – bidirectional			
Installed drive type	multi-speed			
Heat recovery system	recuperative/ standard		recuperative/ enthalpy	
Thermal efficiency, dry non-condensing %	81.8		77.7	
Maximum air flow m³/h	800		800	
Electrical input at maximum air flow W	263		263	
Sound pressure level L_p dB(A)	39		39	
Reference flow rate m³/h	560		560	
Reference displacement pressure Pa	50		50	
SPI W/m³/h	0.19		0.19	
Control factor and control typology (if fitted with sensors)	0.65	local control	0.65	local control
Declared maximum unit air leakage %	internal	0.9	internal	1.1
	external	1.2	external	1.2
Method of location and description of the optical filter change message	user manual			
Internet address of user and installation instructions	www.licon.cz			

ORDERING CODES

VENTBOX 800 Public

VENTBOX	Generation	Volume flow	Design	Heat recovery unit type	Model/Type	Exchanger type	Connection option
VB	1	- 0800	- P public	D decentralized	- P Premium	H standard E enthalpy	L left

Example of ordering code: VB1-0800-PD-PHL

VENTBOX 800 Public, a first-generation unit for decentralized air distribution, EC constant flow motors Premium version, with standard counterflow plate heat exchanger and left-hand side connection.

Other accessories

Filters, enthalpy counterflow heat exchanger, controls and functions

FILTERS

Fresh and clean air for good health

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.

Efficiency of filters

EN 779	ISO ePM1 bacteria, soot etc.	ISO ePM2,5 mold spores, pollen, bacteria etc.	ISO ePM10 pollen, agricultural and stone dust etc.	ISO Coarse coarse dirt – sand, fluff, fine hair, etc.
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 %	–

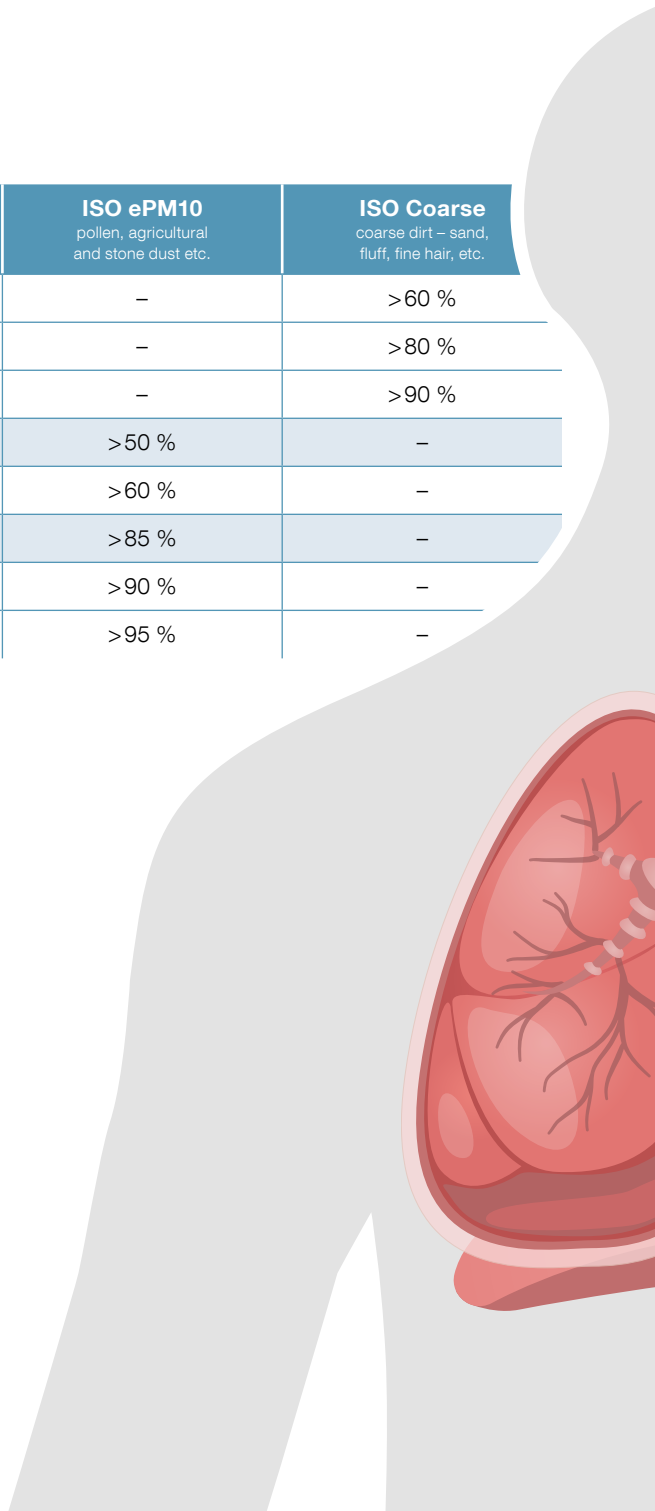
Filters for different types of units

VENTBOX 150 Thin see p. 15

VENTBOX 300, VENTBOX 400 see p. 29

VENTBOX 800 see p. 45

VENTBOX 800 Public see p. 57





**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 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 %.

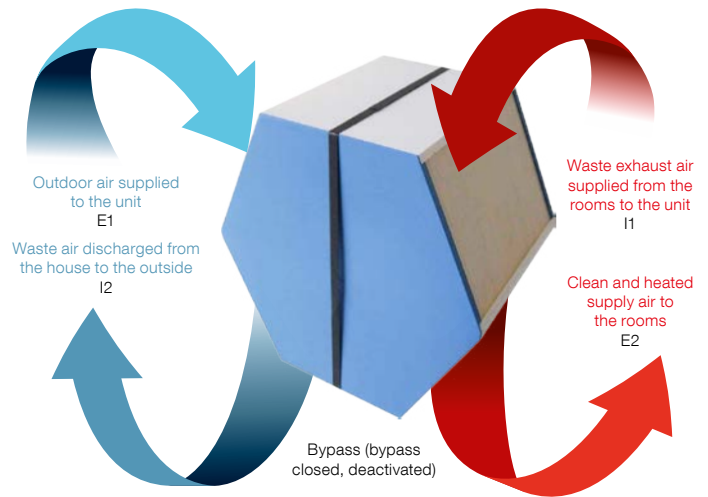
ENTHALPY COUNTERFLOW HEAT EXCHANGER

The enthalpy counterflow heat exchanger (ERV) 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.
- **Energy savings** – operation without the need to preheat the incoming air down to $-5\text{ }^{\circ}\text{C}$.

Working principle of the counterflow exchanger



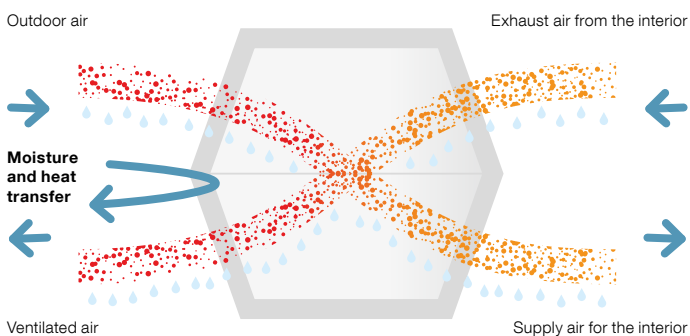
The enthalpy heat exchanger can be ordered separately or later; after a very simple installation, the entire unit is upgraded with advanced technology.

By default, the unit is supplied with a counterflow heat exchanger (HRV).

Pleasant indoor climate during both summer and winter

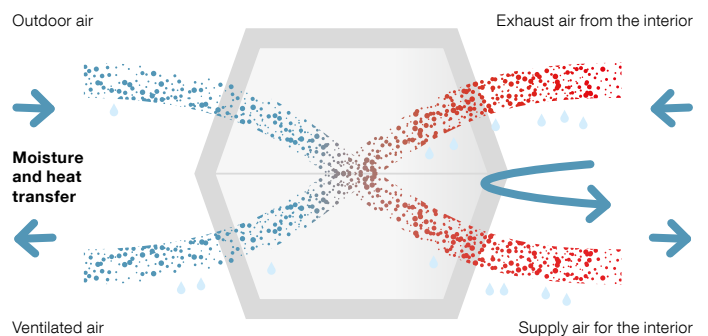
What happens in summer?

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.



CONTROLS AND FUNCTIONS

Unit control via web interface

The home screen is used to view information, control and set up the VENTBOX. 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.

Control and information panel

The VENTBOX 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 **R** to perform a **reboot**, which preserves all user and service settings of the device.
- D** a longer press of the button (5 s) **D** 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 settings for the type of exchanger (ERV/HRV) and fan corrections remain unchanged. The ventilation unit goes back to AP mode including the login password set by the manufacturer.
- F** press the button (2 s) **F** to set the new **filter change** interval. Use this only for filter changes!

By-pass mode

Bypass mode is one of the key components of VENTBOX central heat recovery units. This mode is enabled by a bypass flap equipped with a servo drive. In case of manual or automatic activation and based on defined temperatures in the web interface, the bypass flap allows bypassing the heat exchanger. The air extracted from the interior is deflected by the bypass flap, so that it does not pass through the heat exchanger, after which it is directly discharged outside the building and does not transfer thermal energy to the outdoor air brought into the unit. Bypass mode is commonly used during summer operation, especially at night when the outdoor air is naturally cooler. This allows the temperature of the interior spaces to be effectively reduced without the need for active cooling. The bypass thus provides an effective way to ensure optimal thermal comfort in the interior during the warm summer months.

The principle of the by-pass model

In active mode, warm air from the interior is directly discharged outside without heat exchange. The heat exchanger is deactivated in this mode with the help of a bypass flap, which prevents unwanted heating of the fresh air being supplied. Fresh cool air is blown into the interior.



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



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”

Activation conditions

Bypass is activated automatically if the temperature in the interior rises above the desired value set in the web interface. Once the desired temperature in the interior is reached, the bypass mode is deactivated and the unit switches back to the standard recovery mode. The web interface can also define the lowest possible temperature of the air supplied to the interior.

Protection and filtration

For the correct function and protection of the system, the bypass flap is supplemented with a bypass filter. This protects the fan from dust with impurities that may be contained in the air diverted from the interior when there is no air flow through the standard exhaust filter. The bypass filter is necessary to ensure long-term reliability and efficiency of the recovery unit.

Advantages of the bypass flap

- Energy savings** – reduces the need for active interior cooling in the summer.
- Increased comfort** – allows the use of naturally cooler outdoor air to improve the indoor climate.

Radon

What is RADON? Health risks associated with radon. How does radon enter our homes? Increased radon concentration.

What is RADON?

Radon is a naturally occurring invisible radioactive gas produced by the decay of uranium, thorium, and radium found in soil, rocks, and underground water. It is colorless, tasteless, and odorless, making it undetectable without special instruments.



Health risks associated with radon

Radon is the second leading cause of lung cancer after smoking. Inhaling it causes radioactive particles to settle in the lungs and damage lung tissue, which can eventually lead to cancer. Long-term exposure to high concentrations of radon can significantly increase the risk of the disease.

The World Health Organization (WHO) estimates that radon accounts for approximately 14% of lung cancer cases each year. In Europe, radon contributes to approximately 20,000 deaths from this disease each year.



Safe Radon Concentration

Radon is measured in **becquerels per cubic meter** (Bq/m³). The World Health Organization recommends keeping radon concentrations below 100 Bq/m³, as the risk of health problems begins to increase above this threshold.



How does radon enter our homes?

Radon accumulates primarily in enclosed spaces such as homes, schools, kindergartens, and offices, where it can reach dangerous concentrations. Its presence indoors is hazardous in the long term, so it is important to measure radon concentrations in buildings and take measures to reduce its infiltration.

Cracks in walls and foundations

Radon often enters buildings through cracks and fissures in the foundation slab, walls, or floor. These areas then become the main entry points.

Gaps around pipes

Another risk area is the unsealed gaps around water, electricity, or sewage pipes that are not perfectly sealed and can lead to unwanted gas infiltration into living spaces.

Building joints and seams

Joints between different parts of the building are another weak point, such as where the foundations meet the exterior walls.

Covered spaces and basements

The underground parts of buildings are particularly susceptible to radon accumulation, as they are in direct contact with the soil where radon is naturally released, and there is a higher risk of its concentration.

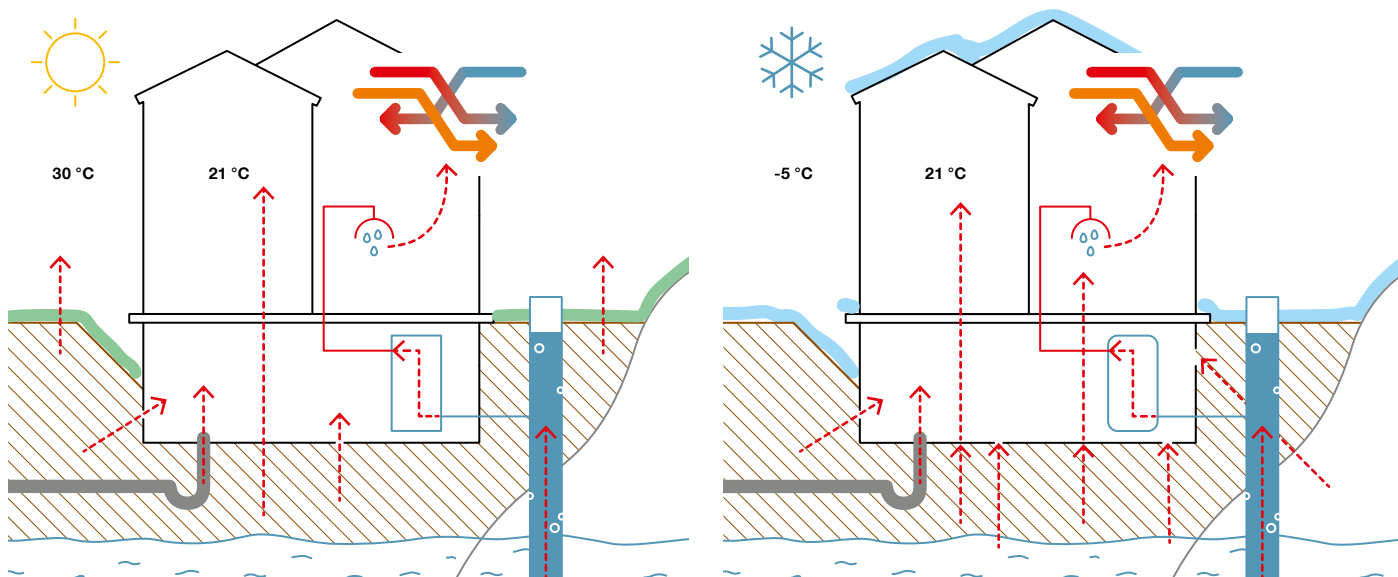
Groundwater

In some areas, radon is also found in water, especially in water drawn from deep wells. Using such water releases radon into the air, contributing to increased concentration.

Building materials

These are materials commonly used in older residential construction, where building materials with higher uranium content, particularly radium, were often found. This increased content can be of natural origin (e.g., granite) or technological origin (e.g., slag, fly ash).

Radon ventilation using controlled ventilation



--- The penetration and flow of radon change throughout the year due to external factors such as snow, ice, wind, rain, or temperature. Therefore, we can measure different radon levels in different seasons. The greatest influence on radon intake is the so-called chimney effect, where the building actively draws radon from the ground. This effect intensifies with the increasing difference between indoor and outdoor temperatures, leading to an increase in the negative pressure inside the building.

Increased radon concentration

Increased concentrations of radon and carbon dioxide (CO₂) in a classroom or workplace can have several negative consequences for people's health and well-being.

Health risks

Inhaling radon particles can lead to lung tissue damage and increase the likelihood of developing respiratory diseases or lung cancer.

Mental and physical health

High levels of radon can cause anxiety and stress due to health concerns, which can affect overall well-being and productivity.



When radon concentrations are elevated, it is important to take measures to reduce them and ensure a healthy indoor environment.



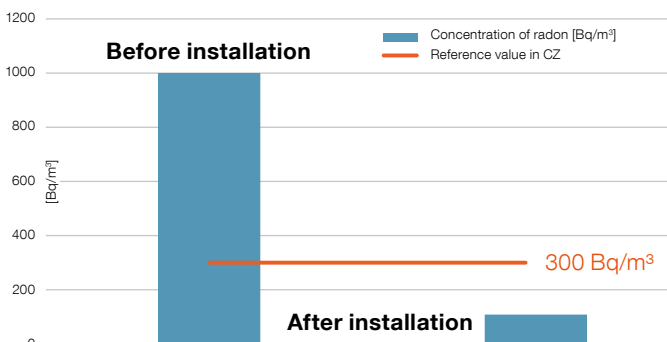
Improving Ventilation

- **Natural ventilation** – ensures that spaces are well-ventilated. Opening windows and ensuring air flow can help reduce radon concentration.
- **Mechanical Ventilation** – installing heat recovery systems and fans can help exchange CO₂-laden air in rooms and reduce radon levels.

Radon and VENTBOX ventilation units

- Heat recovery units VENTBOX are an effective solution for ensuring a healthy environment in homes and workplaces. These units can be equipped with a radon sensor that automatically monitors the indoor radon concentration.
- Thanks to this technology, the unit can respond promptly and continuously to potential dangers associated with elevated radon levels. It automatically adjusts its ventilation mode, thereby reducing the risk of radon accumulation in enclosed spaces.
- VENTBOX systems contribute to better air quality and the protection of residents' health in every season, ensuring a safe and comfortable environment. These systems allow for effective ventilation without the need to open windows and lose valuable heat from the interior. VENTBOX thus enables efficient energy consumption control, monitoring heating costs, and ensuring economical operation.

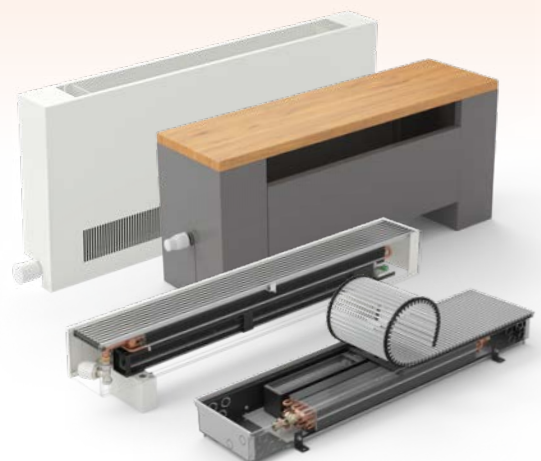
Example of radon concentration measurement in an apartment in Czech Republic before and after the installation of VENTBOX heat recovery ventilation units.



The measurement was conducted by a certified expert, and the results were independently verified by SÚRO (National Radiation Protection Institute in Czech Republic).

CONVECTORS

WITH NATURAL
AND FORCED CONVECTION



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