FRESHBOX 100

SINGLE-ROOM AIR HANDLING UNITS

Features

- Efficient solution for supply and exhaust ventilation of enclosed spaces.
- Electric preheating or post-heating is available for cold climate conditions.
- Units with enthalpy heat exchangers are available for use in hot and wet climates.
- Low-energy EC fans.
- Silent operation.
- Supply air purification ensured by two built-in G4 and F8 filters (optionally H13).
- Upgradeable with an exhaust duct to provide air extraction from the bathroom.
- Easy installation.
- Compact size.

Air flow:
up to 100 m³/h
28 l/s

Heat recovery efficiency:
up to 96 %

Power:
from 12 W

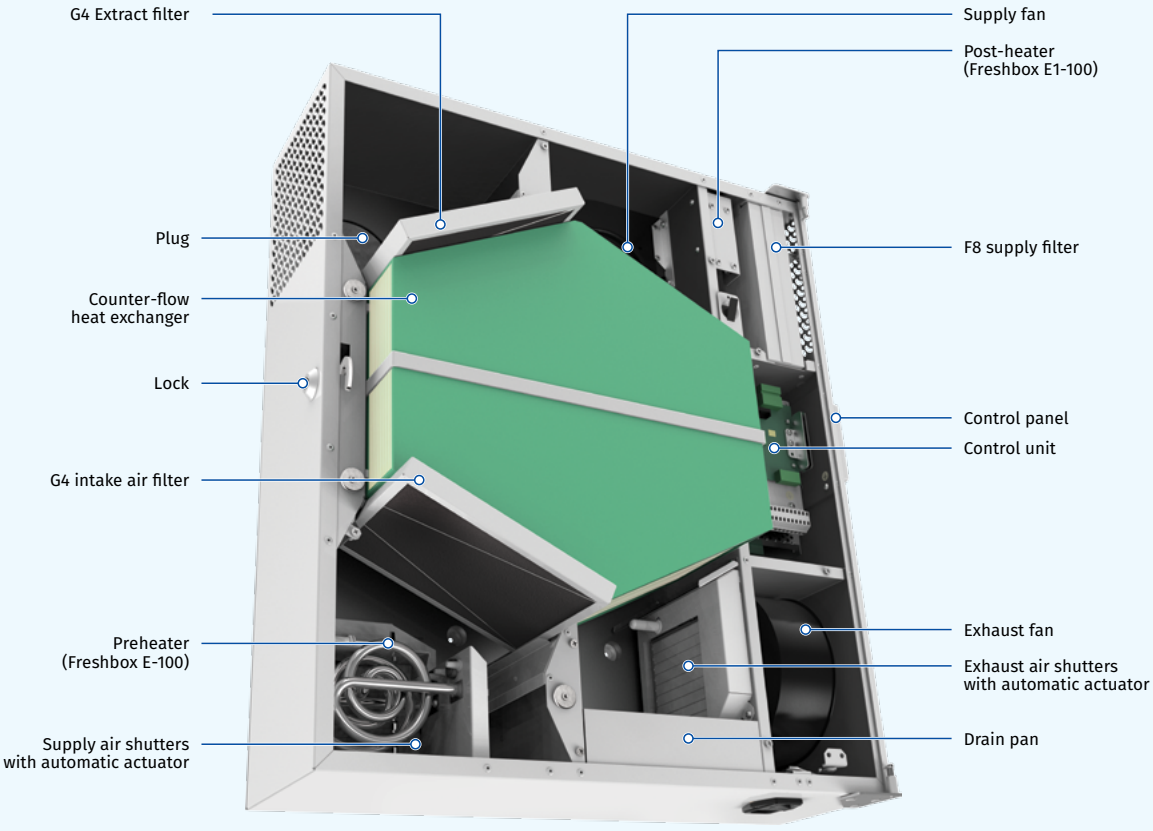
Noise level:
from 13 dBA

Design

- Polymer coated metal casing decorated with an acrylic front panel. Heat and noise insulation is ensured by a layer of 10 mm cellular synthetic rubber.
- The front panel provides convenient access for filter maintenance and has a lock for extra security.
- The unit has two Ø100 mm pipes for fresh air intake and stale air extraction outside. The third Ø100 mm pipe (included in the scope of delivery) can be additionally fitted to the unit to connect the exhaust air duct from the bathroom.

Fans

- The units feature efficient electronically commutated (EC) motors with an external rotor and impellers with forward curved blades. These state-of-the-art motors are the most advanced solution in energy efficiency today.
- EC motors are characterised with high performance and optimum control across the entire speed range. In addition to that the efficiency of electronically commutated motors reaches very impressive levels of up to 90 %.



Designation key

Model	Heater		Nominal air flow [m³/h]	Heat exchanger type	Colour
Freshbox	_: no heater **E:** preheater **E1:** post-heater	–	100	_: standard type **ERV:** enthalpy type	_: white casing **Black:** black casing

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Air dampers

- The unit is equipped with supply and exhaust air dampers which activate automatically to prevent drafts while the unit is off.

Air filtration

- Supply air cleaning is provided by the G4 and F8 panel filters (PM2.5 > 75 %). To meet more stringent air purity requirements the F8 filter can be replaced with an H13 (PM2.5 > 95 %) (purchased separately). Exhaust air is cleaned by the panel filter G4.

Heaters

PREHEATING

- **Freshbox E-100** units are equipped with an electric preheater which protects the heat exchanger from freezing.

POST-HEATING

- **Freshbox E1-100** units feature an electric post-heater to raise the supply air temperature as necessary.

HEATER FOR CONDENSATE FREEZE PROTECTION

- Operation in a cold climate may result in condensate freezing in the exhaust air duct and the external hood. Therefore, it is recommended to install the **EH Freshbox 100** (optional) heater (purchased separately) to prevent icing.

Operating principle

- The cold outdoor air passes through the filters and the heat exchanger and then is delivered to the serviced space by the supply centrifugal fan.
- Warm stale air from indoors passes through the filter and the heat exchanger and is discharged outdoors by the centrifugal fan.
- The supply and exhaust air flows are fully separated which helps eliminate the possibility of odour or microbial transfer between the streams.

Operating principle with extra spigot for bathroom exhaust ventilation

Heat exchanger

- The **Freshbox 100** units are equipped with a counter-flow heat exchanger with a polystyrene core.
  - In the cold season the exhaust air heat is captured and transferred to the supply air stream which reduces the ventilation-generated heat losses.
  - Some condensate may form during heat recovery. The condensate is collected in the drain pan and is removed from the exhaust air duct.
  - In the warm season the intake air heat is transferred to the extract air stream. This allows for a considerable reduction of the supply air temperature which, in turn, reduces the air conditioning load.

- The **Freshbox 100 ERV** units are equipped with a counter-flow heat exchanger with an enthalpy membrane at the core.
  - In the cold season the exhaust air heat and moisture are transferred to the supply air stream through the enthalpy membrane reducing the heat losses through ventilation.
  - Consequently, it is the intake air heat and moisture transferred to the extract air stream through the enthalpy membrane in the warm season. This allows for a considerable reduction of the supply air temperature and humidity which, in turn, reduces the air conditioning load.

Control

- The unit is equipped with a control panel.
- The remote control is supplied as standard.

FUNCTIONS

	Freshbox 100 Freshbox E-100	Freshbox E1-100
Speed changeover	•	•
Filter replacement indication	•	•
Alarm indication	•	•
Speed setting	•	•
Timer	•	•
Weekly schedule	•	•
Post-heating enabled/disabled		•
Supply air temperature setup		•

FREEZE PROTECTION

- There are two types of freeze protection available to protect the heat exchangers in the cold season.
- **Freshbox 100** features an exhaust air temperature sensor downstream of the heat exchanger which disables the supply fan to let the warm extract air warm up the heat exchanger. After that the supply fan is turned on and the unit reverts to the normal operation mode.
- The **Freshbox E-100** units are equipped with an electric preheater which warms up the supply air upstream of the heat exchanger to prevent its freezing.
- These features ensure a continuous balanced air exchange regardless of ambient air temperature variations.

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SINGLE-ROOM AIR HANDLING UNITS

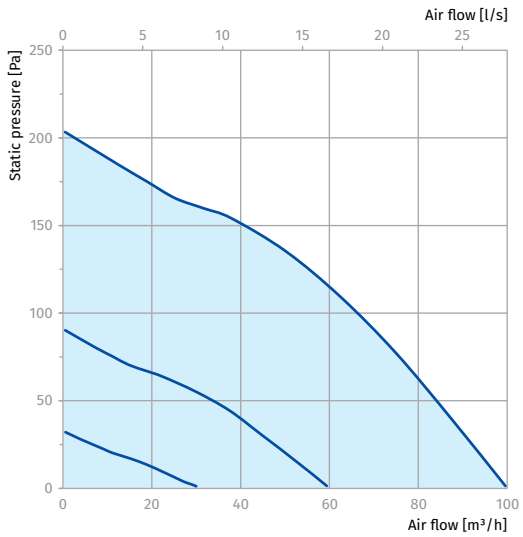
Technical data

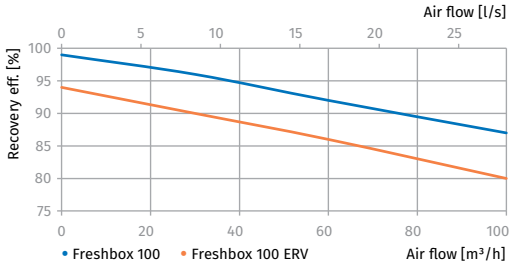
Parameters	Freshbox 100			Freshbox 100 ERV			Freshbox E-100			Freshbox E-100 ERV			Freshbox E1-100			Freshbox E1-100 ERV		
Speed	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III	I	II	III
Voltage [V / 50 (60) Hz]	1~230																	
Max. power without heater [W]	20	29	53	20	29	53	20	29	53	20	29	53	20	29	53	20	29	53
Preheater power consumption [W]	–			–			600			600			–			–		
Reheater power consumption [W]	–			–			–			–			350			350		
Max. current consumption without heater(s) [A]	0.4			0.4			0.4			0.4			0.4			0.4		
Max. current consumption with heater(s) [A]	–			–			3.08			3.08			1.94			1.94		
Maximum air flow [m³/h (l/s)]	30 (8)	60 (17)	100 (28)	30 (8)	60 (17)	100 (28)	30 (8)	60 (17)	100 (28)	30 (8)	60 (17)	100 (28)	30 (8)	60 (17)	100 (28)	30 (8)	60 (17)	100 (28)
RPM [min⁻¹]	max 2200																	
Sound pressure level at 3 m [dBA]	13	27	39	13	27	39	13	27	39	13	27	39	13	27	39	13	27	39
Transported air temperature [°C]	-25...+50																	
Casing material	polymer coated steel																	
Insulation thikness [mm]	10																	
Extract filter	G4																	
Supply filter	G4 + F8 (Option: F8 Carbon; H13)																	
Connected air duct diameter [mm]	100																	
Weight [kg]	31																	
Heat recovery efficiency [%]*	96	92	87	90	86	80	96	92	87	90	86	80	96	92	87	90	86	80
Heat exchanger type	counter-flow																	
Heat exchanger material	polystyrene			enthalpic membrane			polystyrene			enthalpic membrane			polystyrene			enthalpic membrane		
SEC class	A																	

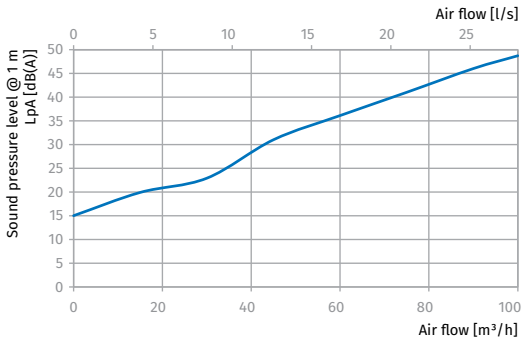
*Heat recovery efficiency is specified in compliance with EN 13141-8.

Sound power level, A-filter applied.

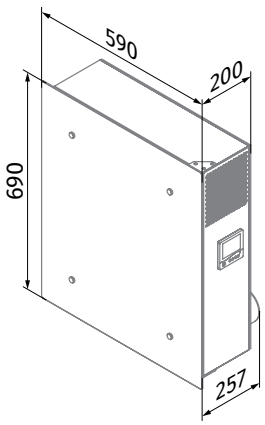
Sound-power level, A - weighted	General	Octave frequency band [Hz] 63	125	250	500	1000	2000	4000	8000	Sound pressure level at 3 m., A-filter applied	Sound pressure level at 1 m., A-filter applied
L_{WA} to environment [dBA]	**4000**	45	40	44	38	33	29	27	22	**28**	**38**

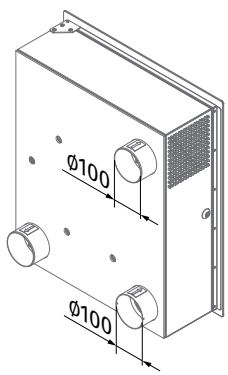






Overall dimensions [mm]





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Accessories

Name		Description
MS Freshbox 100 chrome		Mounting kit: Two Ø 100 mm air ducts, 500 mm long Ventilation outer hood made of polished steel Cardboard template
MS Freshbox 100 white		Mounting kit: Two Ø 100 mm air ducts, 500 mm long Ventilation outer hood, painted white Cardboard template
AH Freshbox 100 chrome		Ventilation outer hood made of polished steel.
AH Freshbox 100 white		Ventilation outer hood, painted white
EH Freshbox 100		Heater to prevent condensate freezing in the drain pipe and outer ventilation hood
FP 193x158x18 G4 PPI		G4 Filter
FP 193x158x47 F8		F8 Filter
FP 193x158x47 F8 C		F8 Carbon Filter
FP 193x158x47 H13		H13 Hepa Filter
HR-S		Humidity sensor
CD-1		CO_2 Sensor with LED lights for indication of CO_2 concentration and a touch button for operation mode switching
CD-2		CO_2 Sensor