VORT NRG

Heat recovery solutions
for commercial ventilation

VORTICE.COM

VORT NGR FLAT

VORT NGR FLAT EVO

VORT NGR MEGA

VORT NGR MEGA-R

VORTICE

VORTICE S.p.A is part of a multinational group, **VORTICE GROUP**, which operates through its own companies or local distributors in over 90 countries worldwide and has a rich product portfolio that guarantees air quality and climate comfort. The headquarters of VORTICE S.p.A are in Tribiano (Milan).

VORTICE GROUP also includes:

[1]
VORTICE UK Ltd, English branch of VORTICE S.p.A. established in 1977 and based in Burton on Trent.

[2]
VORTICE INDUSTRIAL, born from the acquisition in 2010 of Loran srl, based in Isola della Scala (VR).

[3]
VORTICE Ventilation System, a company inaugurated in 2013 with headquarters in Changzhou, China.

[4]
VORTICE Latam, based in Alajuela in Costa Rica, since in 2012.

[5]
CASALS VENTILACIÓN AIR INDUSTRIAL S.L. historic Spanish brand, based in Sant Joan de les Abadesses, Girona, acquired in 2019.

CONTROLLED MECHANICAL VENTILATION

The sick building syndrome is a disease recognized by the World Health Organization that presents a series of symptoms due to the presence of toxic elements in the workplace. The main sources of pollution originate both from factors inside and outside the building.
Replacing the air, not wasting energy, is the solution. Thanks to the installation of Controlled Mechanical Ventilation systems it is possible to guarantee the correct air exchange and filtration.

The heat recovery units provide the air exchange together with the recovery of a part of the thermal energy of the extracted air which is given to the fresh air at practically no cost; therefore a pre-heating in winter or a pre-cooling in summer of the introduced air is obtained, moreover they bring other advantages such as air filtration and a smaller sizing of the heating and cooling systems, allowing savings both during the purchase and the conduction of the same.

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VORT NRG range - Certifications

Safety:
EN 60204
EN 12100
EN ISO 13857
EN ISO 12499
EN 60335-1
EN 60335-2-80
EN 60529
EN 62233

Standards for the performance aeraulic:
EN 308
EN 13141-7

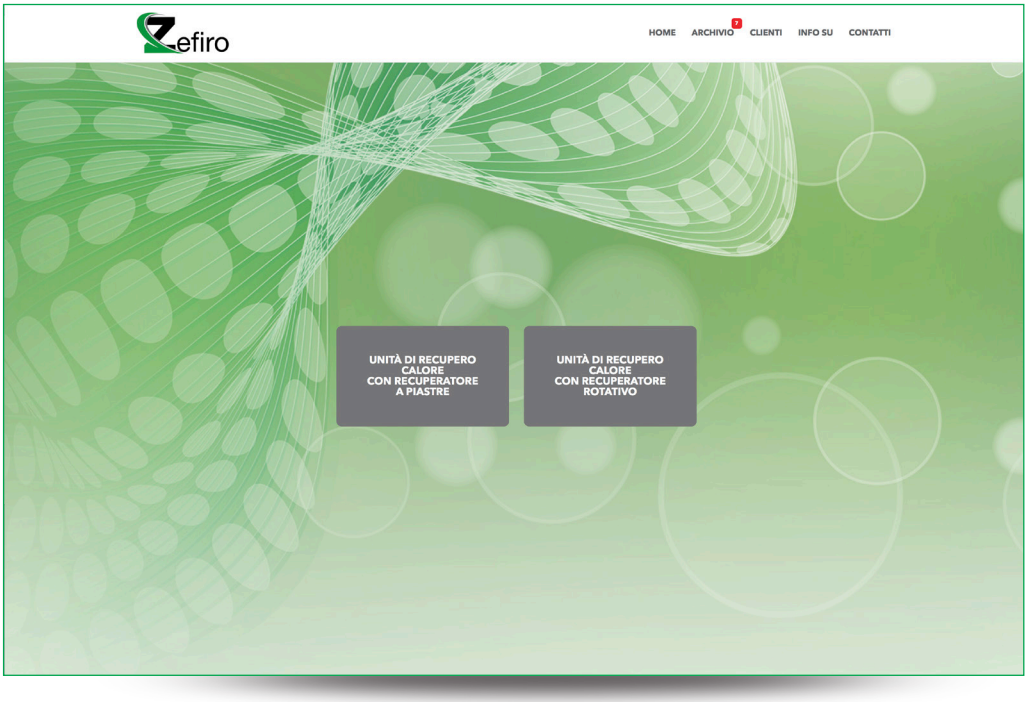
Electromagnetic Compatibility
- EN 55014–1
- EN 55014-2
- EN 61000-3-2
- EN 61000-3-3

NRG Range appliances conform to the following European Directives:
- 2006/42/CE Machines Directive
- 2004/108/CE Electromagnetic Compatibility Directive
- Ecodesign regulation (2009/125/CE)
- EU regulation 327/2011/UE
- EU regulation 1253/2014/UE
- EU regulation 1254/2014/UE

DEDICATED SELECTION SOFTWARE

GENNAIO 2021 - REV. 02

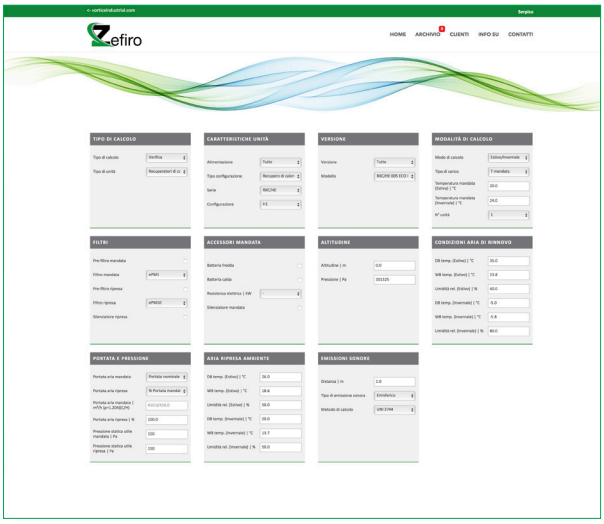
Zefiro is an online selection software dedicated to VORTICE customers who want to select a heat recovery unit that meets their needs.



If you did not find a product suitable for you among the proposals in the list (VORT NRG FLAT 400, 600, 1000, 1500, 2000, 3000, 4000), you can configure it, deciding which features it should have.

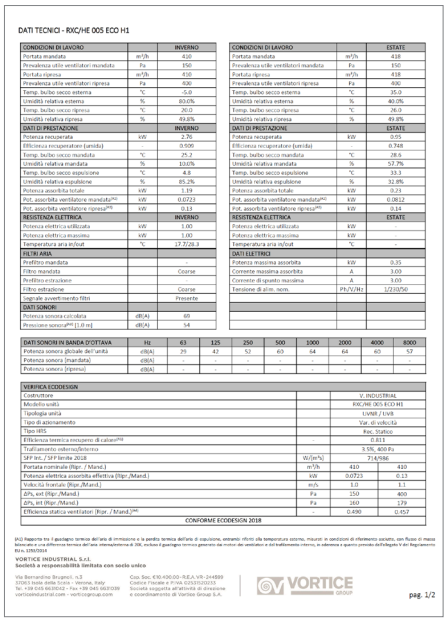
IT IS POSSIBLE TO SELECT:

- **Type of heat exchanger:** you can decide among plate and rotating exchangers;
- **Air flow rates up to 4000 m³/h or 8000 m³/h;**
- **Efficiency of the static heat exchanger:** if you include your desired efficiency among the parameters, the machine that is most suitable to meet your needs will be configured;
- **Type of fan motor unit:** centrifugal with forward blades or plug fan;
- **Type of installation:** horizontal or vertical;



- **Type of panel:** it is possible to choose the thickness of the casing panel according to the ambient temperatures in which the installation will occur.
- **Different levels of filtration:** grease filters, pre-filters, medium or high efficiency filters.
- **Different configurations of delivery and return air flows;**
- **Available models: operating at constant pressure, at constant flow rate and with control of the CO_2 level;**
- **Type of control display:** standard LCD segment or graphic display;
- **Possibility to combine the selected machine with accessories** such as: pre-treatment or post-treatment coils, silencers, manual or power-operated dampers, defrosting systems.

From the software home page, that is available via WEB application and does not require installation, it is possible to access the recovery unit selection.
The software automatically calculates the machine performance in summer or winter mode - as temperature and relative humidity values of indoor and outdoor air, altitudes and possible limits of noise emission change.
You will obtain a complete quotation and a specific technical data sheet for the selected product, complete with data such as technical description and data, energy indices and technical drawing.
The quotation and technical data sheet can be downloaded and printed in various formats.


DATI TECNICI - RXC/HE 005 ECO H1

CONDIZIONI DI LAVORO		INVERNO
Portata mandata	m³/h	410
Prevalenza utile ventilatori mandata	Pa	150
Portata ripresa	m³/h	410
Prevalenza utile ventilatori ripresa	Pa	100
Temp. bulbo secco esterna	°C	-5.0
Umidità relativa esterna	%	80.0%
Temp. bulbo secco ripresa	°C	20.0
Umidità relativa ripresa	%	49.8%
DATI DI PRESTAZIONE		INVERNO
Potenza recuperata	kW	2.76
Efficienza recuperatore (umida)		0.926
Temp. bulbo secco mandata	°C	25.2
Umidità relativa mandata	%	10.6%
Temp. bulbo secco espulsione	°C	4.8
Umidità relativa espulsione	%	85.2%
Potenza assorbita totale	kW	1.19
Pot. assorbita ventilatore mandata[AC]	kW	0.0723
Pot. assorbita ventilatore ripresa[AR]	kW	0.13
RESISTENZA ELETTRICA		INVERNO
Potenza elettrica utilizzata	kW	1.00
Potenza elettrica massima	kW	1.00
Temperatura aria in/out	°C	17.7/28.3
FILTRI ARIA		
Prefiltro mandata		-
Filtro mandata		Coarse
Prefiltro estrazione		-
Filtro estrazione		Coarse
Segnale avvertimento filtri		Presente
DATI SONORI		
Potenza sonora calcolata	dB(A)	69
Pressione sonora[AR] [1.0 m]	dB(A)	54

CONDIZIONI DI LAVORO		ESTATE
Portata mandata	m³/h	418
Prevalenza utile ventilatori mandata	Pa	150
Portata ripresa	m³/h	418
Prevalenza utile ventilatori ripresa	Pa	100
Temp. bulbo secco esterna	°C	35.0
Umidità relativa esterna	%	40.0%
Temp. bulbo secco ripresa	°C	26.0
Umidità relativa ripresa	%	49.8%
DATI DI PRESTAZIONE		ESTATE
Potenza recuperata	kW	0.55
Efficienza recuperatore (umida)		0.748
Temp. bulbo secco mandata	°C	28.6
Umidità relativa mandata	%	57.7%
Temp. bulbo secco espulsione	°C	33.3
Umidità relativa espulsione	%	32.8%
Potenza assorbita totale	kW	0.23
Pot. assorbita ventilatore mandata[AC]	kW	0.0812
Pot. assorbita ventilatore ripresa[AR]	kW	0.14
RESISTENZA ELETTRICA		ESTATE
Potenza elettrica utilizzata	kW	-
Potenza elettrica massima	kW	-
Temperatura aria in/out	°C	-
DATI ELETTRICI		
Potenza massima assorbita	kW	0.35
Corrente massima assorbita	A	3.00
Corrente di spunto massima	A	3.00
Tensione di alim. nom.	Ph/V/Hz	1/230/50

DATI SONORI IN BANDA D'OTTAVA	Hz	63	125	250	500	1000	2000	4000	8000
Potenza sonora globale dell'unità	dB(A)	39	42	52	60	64	64	60	57
Potenza sonora (mandata)	dB(A)	-	-	-	-	-	-	-	-
Potenza sonora (ripresa)	dB(A)	-	-	-	-	-	-	-	-

VERIFICA ECODESIGN		
Costruttore		V. INDUSTRIAL
Modello unità		RXC/HE 005 ECO H1
Tipologia unità		UVMR / UVR
Tipo di azionamento		Var. di velocità
Tipo HRS		Rec. Statico
Efficienza termica recupero di calore[HR]	-	0.811
Trafilamento esterno/interno	-	3.5% , 400 Pa
SPF Int. / SPF limite 2018	W/(m³/s)	714/986
Portata nominale (Rip. / Mand.)	m³/h	410 410
Potenza elettrica assorbita effettiva (Rip./Mand.)	kW	0.0723 0.13
Velocità frontale (Rip./Mand.)	m/s	1.0 1.1
ΔPs, ext (Rip./Mand.)	Pa	150 400
ΔPs, int (Rip./Mand.)	Pa	160 179
Efficienza statica ventilatori (Rip. / Mand.)[AR]	-	0.490 0.457
CONFORME ECODESIGN 2018		

(A2) Rapporto tra il guadagno termico dell'aria di immissione e la perdita termica dell'aria di ospitazione, ambiente riferito alla temperatura esterna, misurati in condizioni di riferimento asciutte, con flusso di massa bilanciato e una differenza termica dell'aria internazionalmente di 20K, esclusi il guadagno termico generato dai motori dei ventilatori e dall'trattamento interno, in adesione a quanto previsto dall'Allegato VI del Regolamento EU n. 1253/2014

VORTICE INDUSTRIAL S.r.l.
Società a responsabilità limitata con socio unico

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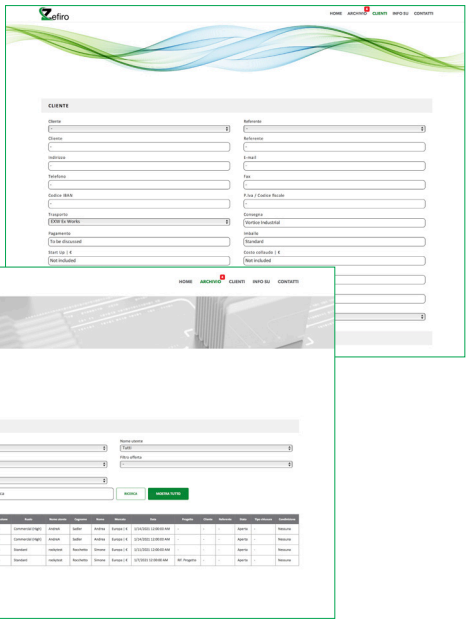
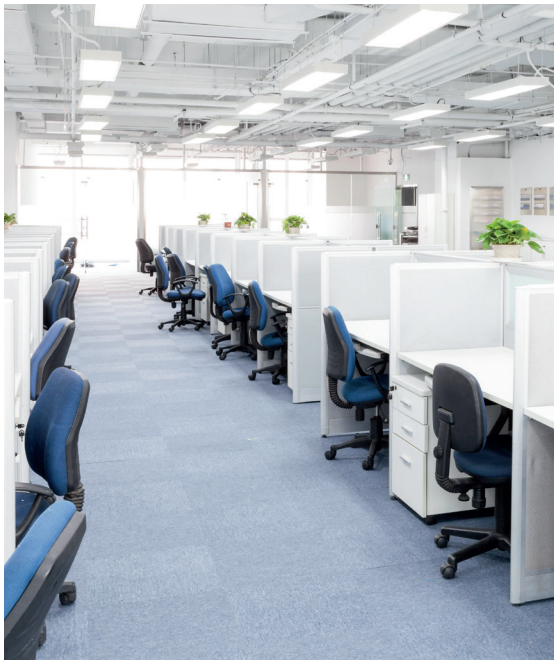
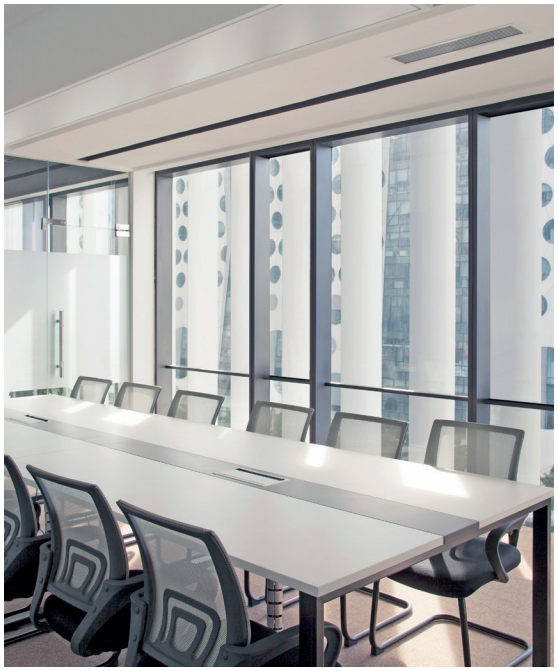


VORT NRG FLAT

Heat recovery units with plate heat exchanger

The recovery units of the VORT NRG FLAT are available in 7 sizes, with nominal air flow rates from 400 to 4000 m^3/h. The units have been designed for false ceiling installation (**H**) or ground installation (**V**) and are available in the **ECO**, **PLUS**, **TOP**. version.





MAIN CHARACTERISTICS

01 STRUCTURE

Self-supporting structure in sandwich panels with internal insulation made of high density polyurethane foam (40 kg/m^3). The panels are 25 mm thick and are made of 6/10" thick steel sheets, the external side is pre-painted RAL 9010, the internal side is hot-dip galvanized Z140. The structure is made according to the EN1886 standard, class D1 mechanical resistance. A particularly adaptable and resilient neoprene gasket guarantee the air tightness. Screws that ensure an adequate and constant pressure on the gaskets fix the opening panels. In all areas subject to condensation is present a condensate drip tray, inclined internally and in compliance with EN 1.4301. All internal components are accessible from below by means of removable panels in order to guarantee the correct ordinary and extraordinary maintenance.

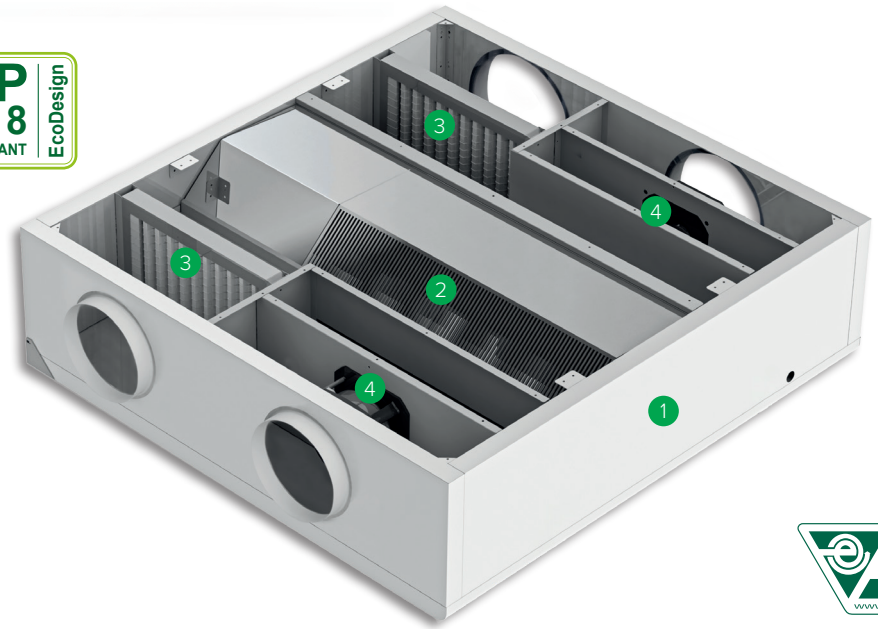
03 FILTERS

ePM10 60% (M5) filters in return air and ePM1 55% (F7) filters in fresh air. Both types of filters are mounted on slides equipped with gaskets to ensure effective sealing. Their position, upstream of the internal components, also guarantees their protection.

04 FANS

Independently controllable, they consist of aerodynamically balanced, statically and dynamically balanced forward blade centrifugal impellers with aerodynamic profile, made of galvanized steel. The impellers are directly coupled to EC brushless motors, with internal rotor, operating via a 0-10V signal.

ErP 2018 COMPLIANT EcoDesign



EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

02 HEAT RECOVERY

The units are equipped with an aluminium counter-flow heat exchanger used to transfer heat from the exhaust air to the fresh air. The heat exchange takes place in counter-flow with efficiency higher than 80% in dry air, according to the ECO Design and Eurovent approval. The spacing between the fins is optimised in order to reduce air side pressure drop and fan power consumption. The heat recovery is also equipped with an additional by-pass damper for the management of the free-cooling and free-heating mode as per ERP regulation. By-pass damper 100% of the airflow rate. The heat exchanger participates to the **Eurovent Certification** program and it is sized according to the **ECO Design specification**.

ADDITIONALS COILS

(optional + external module)

External module that can accommodate heating and/or cooling coils with a high number of rows. The module can also accommodate combined coils (water cooling, water and/or electric heating).

DEFROST SYSTEM

(optional)

The automatic defrost system (optional) supplied with the units consists of a self-regulating electric coil in PWM mode of the input power, installed on the return air intake. The system is controlled by a special temperature probe positioned on the exhaust air and guarantees a considerable reduction of the input power compared to the traditional systems available on the market.

VORTICE

Technical Data

MODEL		005	006	010	015	020	030	040
Type of ventilation unit		UVNR-B (Non Residential Ventilation Units - Bidirectional)						
Type of drive installed		Analog signal on EC fan (0-10Vdc)						
Type of fans	type/n°	EC/2	EC/2	EC/4	EC/2	EC/2	EC/2	EC/2
Type of heat recovery system (HRS)	type/n°	static counter-flow / 1						
Winter Thermal Efficiency (ηt_nrvu) [1]	%	77.4	78.6	77.5	77.7	78.2	78.3	77.8
Winter Thermal Efficiency [2]	%	84.5	85.6	84.6	85.7	86.1	86.9	86.6
Nominal airflow rate	m³/h	410	650	1000	1620	2150	3040	3980
Electrical power consumption	kW	0.24	0.33	0.60	0.95	1.33	1.47	1.84
Installed electrical power	kW	0.36	0.36	0.72	1.45	1.50	2.06	2.06
SFP_{int}	W/(m³/h)	1121	907	1171	1159	1151	881	1032
SFP_{lim} 2018	W/(m³/h)	1215	1252	1194	1174	1166	1132	1078
Front speed at design range	m/s	2.18	1.61	2.03	2.14	1.93	2.21	2.41
External nominal pressure $\Delta p_{s,\ ext}$ [3]	Pa	150	150	150	150	150	150	150
Internal pressure drop $\Delta p_{s,\ int}$ Ret./Supp.	Pa	161/171	110/122	165/185	178/194	169/190	186/207	228/259
Fans static efficiency (UE) n.327/2011	%	29.1	27.6	29.1	31.2	30.7	43.0	45.0
Max. external / internal leakage percentage	%	max 3.5 % a -400 Pa I max 5.0 % a +250 Pa						
Energy classification filters		ePM1 55% (F7) I ePM10 60% (M5)						
Filter pressure switch		present						
Sound power level [4]	in dB(A)	73.3	75.1	77.3	79.9	82.0	82.3	82.8
Sound pressure level [5]	in dB(A)	57.8	59.6	61.8	64.4	66.5	66.8	67.3
Power supply	V/ph/Hz	230/1/50					400/3/50	

[1] ratio between the thermal gain of the inlet air and the thermal loss of the exhaust air, both referred to the external temperature, measured under dry reference conditions, with balanced mass flow and a thermal difference of the internal/external air of 20K, excluding the thermal gain generated by the fan motors and the internal leakage, in accordance with the provisions of attached V of EU Regulation No 1253/2014

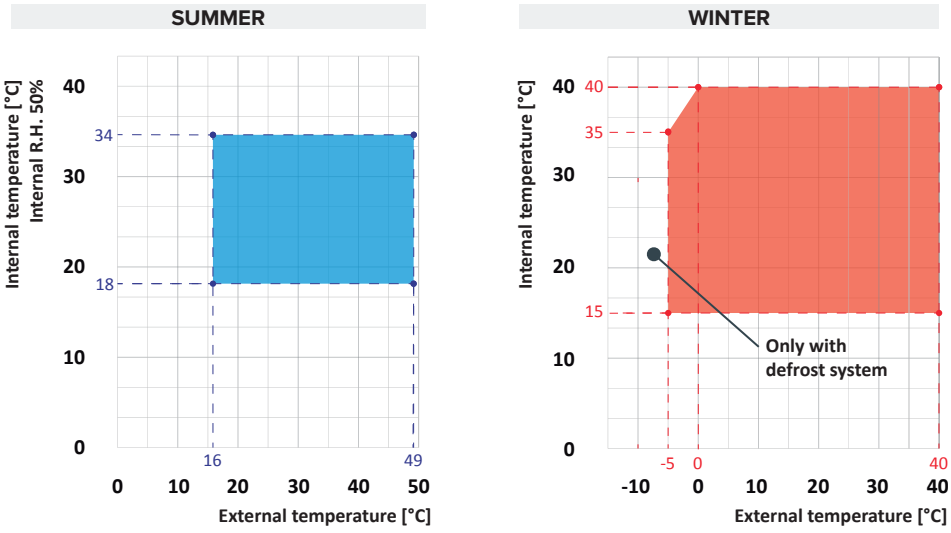
[2] outside air: -5 °C / 80 % RH - Inside air: 20 °C / 50 % RH

[3] performance with clean filters

[4] sound power level calculated in accordance with EN 3744

[5] sound pressure level measured at 1 m free field distance, in accordance with EN 3744

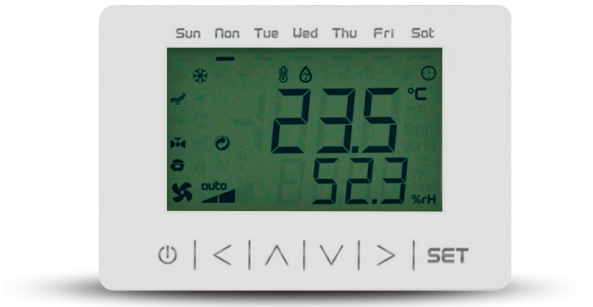
Operating limits



Control

The units are supplied complete with control system and available in the version **ECO, PLUS** and **TOP**.

ECO: complete with air temperature sensors installed on the fresh air intake and on room return air. The control allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control, summer/winter seasonal change over, and programming for daily time zones.
An optional hot water or cold water coil may also be managed, controlled by a 3-way modulating valve through the room return air sensor. The optional electric post-heating coil is also managed in modulating mode (always via the room return air sensor). The control alerts the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm; this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.



LCD REMOTE DISPLAY
(ECO version only)

PLUS: this control option is set to operate at constant pressure, it is supplied complete with pressure transducer and air temperature sensors installed on the fresh air intake and room return air.
The control system allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control.
It also manages the summer/winter seasonal change over and programming for daily time zones.The control can also manage an optional hot water or cold water coil through a 3-way modulating valve and an additional supply air sensor in order to maintain a fixed point operating logic.
The same logic can also be used to manage an electric post-heating coil, if present. The control alerts the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm; this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.

TOP: this control option is set to operate at constant air-flow, it is supplied complete with pressure transducer and air temperature sensors installed on the fresh air intake and room return air.
The control system allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control.
It also manages the summer/winter seasonal change over and programming for daily time zones.
The control can also manage an optional hot water or cold water coil through a 3-way modulating valve and an additional supply air sensor in order to maintain a fixed point operating logic.
The same logic can also be used to manage an electric post-heating coil, if present.
The system alerts to the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm and this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.

LCD REMOTE GRAPHIC DISPLAY
(PLUS and TOP versions only)

Accessories

Grease ISO coarse 40% (G2) air pre-filter
The filter is used in the presence of dust and large pollutants suspended in the air or in case of filtration of oily mists. It may be installed as pre-filter in combination with the ePM10 55% (M5), ePM1 55% (F7) or ePM1 80% (F9) filters, located on the room air return side.

ePM10 50% (G4) air pre-filter
The filter media has a low pressure drop and it may be installed as pre-filter in combination with the ePM10 60% (M5), ePM1 55% (F7) or ePM1 80% (F9).

ePM10 60% (M5) air filter
The filter media has an ePM10 60% (M5) filtering degree, according to ISO 16890 and has a large filtering surface area that guarantees long operating life and less frequent replacements.

eMP1 55% (F7) air filter
The filter media has an ePM1 55% (F7) filtering degree, according to ISO 16890 and has a large filtering surface area that guarantees long operating life and less frequent replacements.

ePM1 80% (F9) air filter
The filter media has an ePM1 80% (F9) filtering degree, according to ISO 16890 and has a large filtering surface area that guarantees long operating life and less frequent replacements.

Defrost system
The automatic defrost system consists of a self-regulating electric coil in PWM mode of the input power, installed on the return air intake.
The system is controlled by a special temperature probe positioned on the exhaust air and guarantees a considerable reduction of the input power compared to the traditional systems available on the market.

Electric re-heating battery (internal)
All units may be equipped with an internal re-heating electric battery, made up of armoured steel electric heaters, supplied complete with PWM control system, safety thermostat already wired and installed on board.

Hot water coil (external)
The hot water coils are supplied in a dedicated section to be installed in the supply air-flow line. The casing has the same sizes and features of the main unit and it is fixed with a dedicated installation kit supplied with it.
The coil is manufactured with copper pipes thickness 0,4 mm and aluminium fins thickness 0,11 mm. The pipes are mechanically expanded in the aluminium fins to increase the thermal exchange rate. On request, it is possible to install coils with different capacities from the standard ones, when previously agreed with the factory.

Cold water coil (external)
The coil is manufactured with copper pipes thickness 0,40 mm and aluminium fins thickness 0,11 mm.
The pipes are mechanically expanded in the aluminium fins to increase the thermal exchange rate. On request, it is possible to install coils with thermal performances different from the standard ones, when previously agreed with the factory. The cooling coil section is supplied complete with condensate drain pan with side water discharge.

Water control valve
It consists of a kit including the 3-way valve for the control of the water flow, to be combined with the hot and/or cold water coil, and its modulating electric actuator.
Connection and fitting devices not included (to be arrange for by the installer).

Air damper with actuator
It is installed on board the unit and operate to exclude the fresh air intake and/or the room return air flow.
This option is particularly useful in areas with very cold winter temperatures, where it is necessary to avoid dangerous self-induced cold air flows by the installation itself, during the stand-by period of the unit, with the risk of freezing the water contained in the water coils, if any.
The damper is controlled by On/Off actuators for the opening or the closing, or with return closing spring.

Sound attenuator
The sound attenuator consists of a cylindrical section made in galvanized steel sheet, containing a mineral wool sound proofing material covered with glass wool jacket and perforated galvanized steel sheet containment. The soundproofing material is class M0. The construction avoids any risk of mineral wool fraying even at high air speeds. The cylindrical section is fixed to the unit by screws.

CO_2 probe
ECO version units can be equipped with air quality CO2 probe. This accessory is installed and wired in the factory. If it's installed on the return air duct it allows to determine the quantity of carbon dioxide present in the environment, increasing the quantity of external air to dilute its content.

ATTENTION: The CO_2 probe is not available in PLUS and TOP versions.

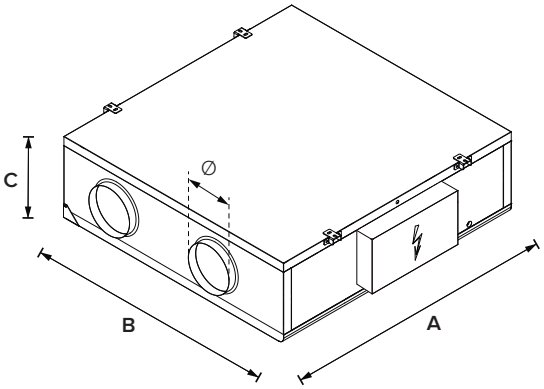
	MODEL	005	006	010	015	020	030	040
ECO	EC Brushless supply and return fans	■	■	■	■	■	■	■
	ePM1 55% (F7) filter on supply	■	■	■	■	■	■	■
	ePM10 60% (M5) filter on return	■	■	■	■	■	■	■
	Supply and return differential pressure switches	■	■	■	■	■	■	■
	100% by-pass damper with electric actuator	■	■	■	■	■	■	■
	Microprocessor control	■	■	■	■	■	■	■
	Remotable control panel with LCD segments display (2)	■	■	■	■	■	■	■
	Built-in control sensors	■	■	■	■	■	■	■
	MODBUS RS485 serial interface card	■	■	■	■	■	■	■
PLUS	EC Brushless supply and return fans	■	■	■	■	■	■	■
	ePM$_1$ 55% (F7) filter on supply	■	■	■	■	■	■	■
	ePM$_{10}$ 60% (M5) filter on return	■	■	■	■	■	■	■
	Supply and return differential pressure switches	■	■	■	■	■	■	■
	Fans differential pressure transducers	■	■	■	■	■	■	■
	100% by-pass damper with electric actuator	■	■	■	■	■	■	■
	Microprocessor control	■	■	■	■	■	■	■
	Remotable control panel with LCD graphic display (2)	■	■	■	■	■	■	■
	Built-in control sensors	■	■	■	■	■	■	■
	MODBUS RS485 serial interface card	■	■	■	■	■	■	■
	Constant PRESSURE version	■	■	■	■	■	■	■
TOP	EC Brushless supply and return fans	■	■	■	■	■	■	■
	ePM$_1$ 55% (F7) filter on supply	■	■	■	■	■	■	■
	ePM$_{10}$ 60% (M5) filter on return	■	■	■	■	■	■	■
	Supply and return differential pressure switches	■	■	■	■	■	■	■
	Fans differential pressure transducers	■	■	■	■	■	■	■
	100% by-pass damper with electric actuator	■	■	■	■	■	■	■
	Microprocessor control	■	■	■	■	■	■	■
	Remotable control panel with LCD graphic display (2)	■	■	■	■	■	■	■
	Built-in control sensors	■	■	■	■	■	■	■
	MODBUS RS485 serial interface card	■	■	■	■	■	■	■
	Constant FLOW version	■	■	■	■	■	■	■
Accessories	Return grease ISO Coarse 40% (G2) filter	□	□	□	□	□	□	□
	ePM$_{10}$ 50% (G4) pre-filters on supply and return	□	□	□	□	□	□	□
	ePM$_1$ 55% (F7) filter on return	□	□	□	□	□	□	□
	ePM$_1$ 80% (F9) filter on supply and return	□	□	□	□	□	□	□
	Defrost system	□	□	□	□	□	□	□
	Electric post-heating coil	□	□	□	□	□	□	□
	Hot water coil (1)	□	□	□	□	□	□	□
	Cold water coil (1)	□	□	□	□	□	□	□
	3 way modulating valve (2)	□	□	□	□	□	□	□
	Fresh air / Exhaust air damper	□	□	□	□	□	□	□
	On/Off damper actuator	□	□	□	□	□	□	□
	Sound attenuator (1)	□	□	□	□	□	□	□
	CO_2 probe (available only for ECO version)	□	□	□	□	□	□	□

■ Standard □ Optional – Not available

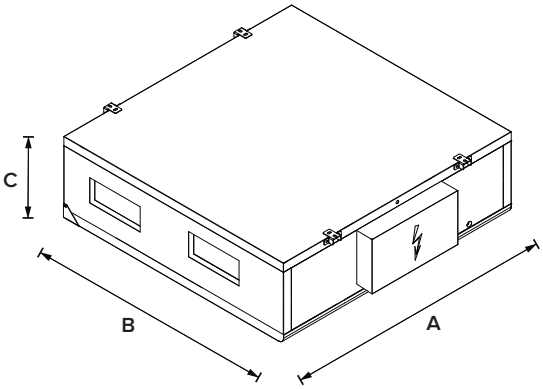
(1) Mounted in a separate box
(2) Supplied loose

Dimensions

Mod. 005 - 006 - 010 - 015 - 020



Mod. 030 - 040

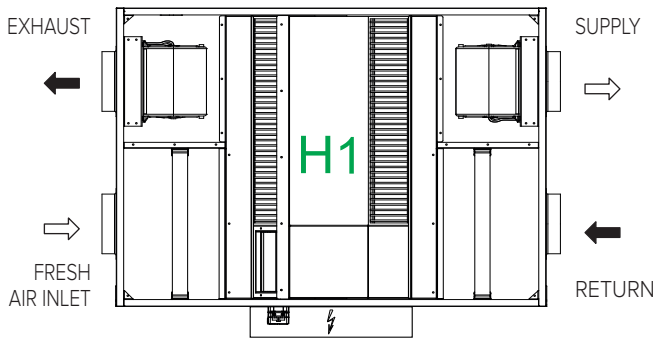


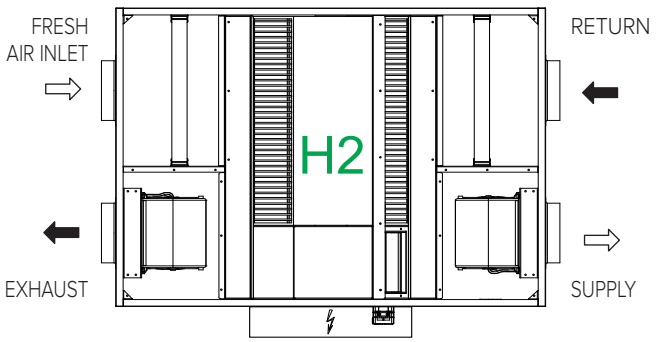
	Model	005	006	010	015	020	030	040
QUOTES	A	1250	1350	1350	1600	1600	1900	1900
	B	700	1000	1300	1300	1550	1650	1900
	C	340	380	380	500	500	580	580
	Ø	150	200	250	250	250	-	-
	*Kg	117	89	108	138	172	212	354

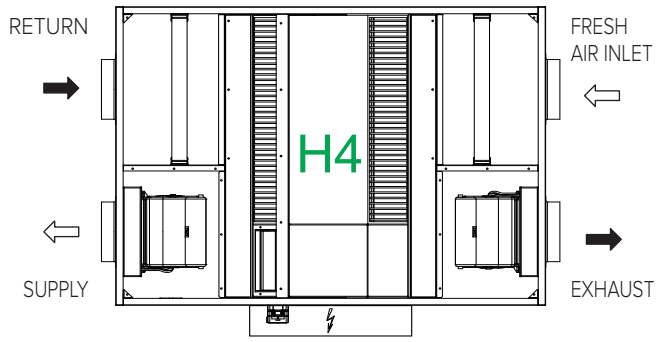
Dimensions in mm

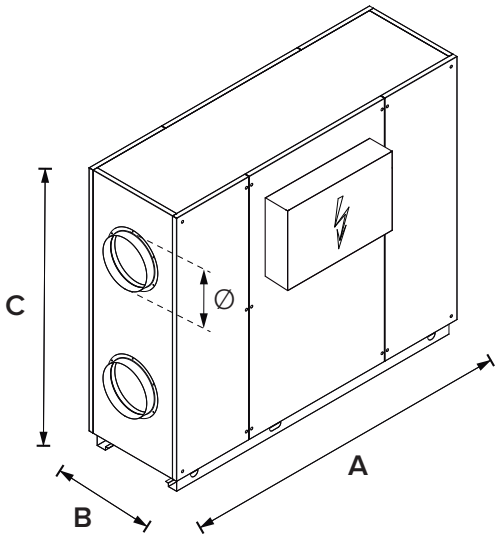
** Weight is referred to the basic configuration*

Configurations (plan view) - false ceiling version







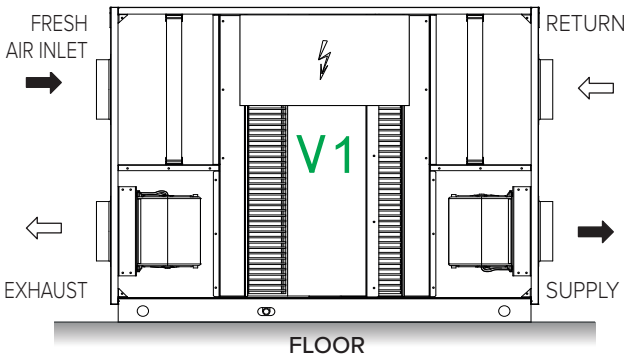


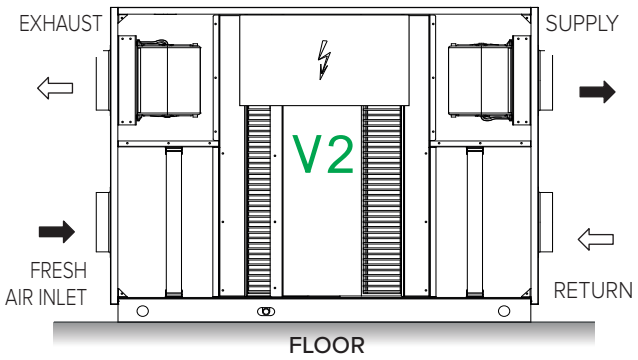
	Model	005	006	010	015	020	030	040
QUOTES	A	1250	1350	1350	1600	1600	-	-
	B	340	380	380	500	500	-	-
	C	772	1072	1372	1372	1622	-	-
	Ø	150	200	250	250	250	-	-
	*Kg	92	112	142	178	218	-	-

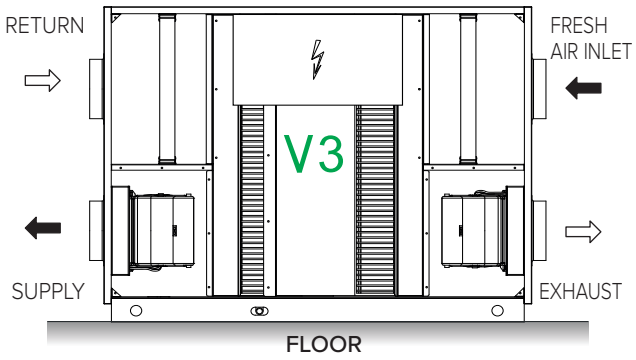
Dimensions in mm

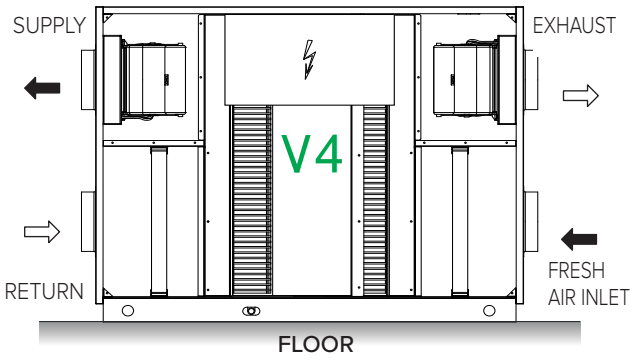
** Weight is referred to the basic configuration*

Configurations (front view) - vertical base version









VORT NRG FLAT EVO

Heat recovery units with plate heat exchanger

The recovery units of the VORT NRG FLAT EVO series are available in 7 sizes, with nominal air flow rates from 400 to 4000 m3/h. The units have been designed for false ceiling installation (**H**) or ground installation (**V**) and are available in the **ECO**, **PLUS**, **TOP** versions.

MAIN CHARACTERISTICS

01 STRUCTURE

Structure in RAL 9010 steel profiles, pre-painted at 180°C with polyurethane powder paint and 50 mm thick panels. Sheets with 6/10" thickness covered with protective film, in galvanized steel. The internal insulation is made of high density polyurethane foam (40 kg/m^3). The casing is made according to EN1886 standard, class D1 mechanical strength. The air tightness is guaranteed by a particularly adaptable and resilient neoprene gasket, the tightening of the opening panels is made by means of push screws that ensure an adequate and constant pressure on the gaskets. In all areas subject to condensation there is a condensation tray, inclined internally and in compliance with EN 1.4301.

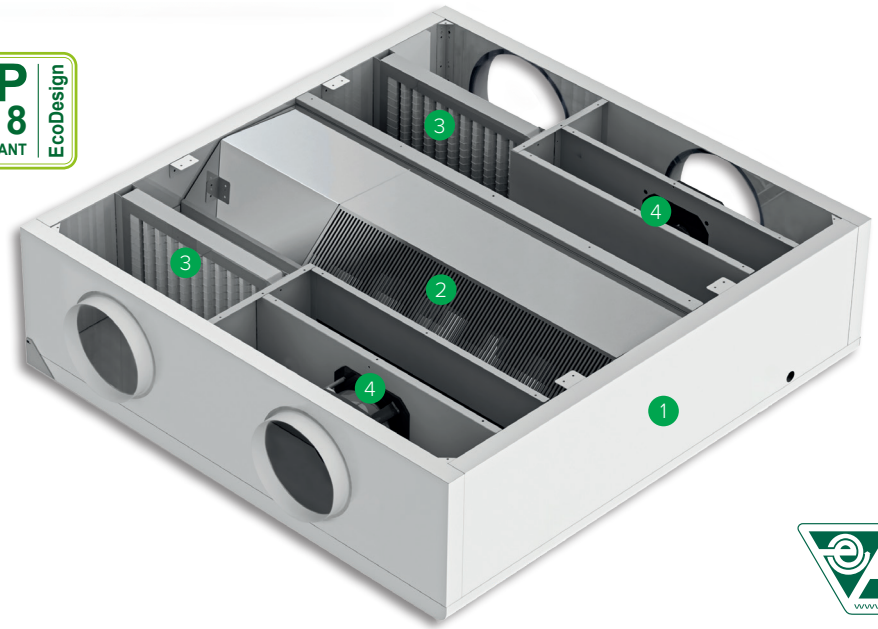
03 FILTERS

ePM10 60% filters in return air and ePM1 55% filters in fresh air. Both types of filters are mounted on slides equipped with gaskets to ensure effective sealing. Their position, upstream of the internal components, also guarantees their protection.

04 FANS

Independently controllable, they are made up of centrifugal impellers with reversed blades, directly coupled to electronically commuted bearing motors (EC brushless), external rotor, single-phase or three-phase (depending on the model), integral thermal protectors and able to adapt the performance to the needs of the moment (modulating air flow regulation), ensuring low consumption and reduced noise emissions.

ErP 2018 COMPLIANT EcoDesign



EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

02 HEAT RECOVERY

The units are equipped with an aluminium counter-flow heat exchanger used to transfer heat from the exhaust air to the fresh air. The heat exchange takes place in counter-flow with efficiency higher than 80% in dry air, according to the ECO Design and Eurovent approval. The spacing between the fins is optimised in order to reduce air side pressure drop and fan power consumption. The heat recovery is also equipped with an additional by-pass damper for the management of the free-cooling and free-heating mode as per ERP regulation. By-pass damper 100% of the airflow rate. The heat exchanger participates to the **Eurovent Certification program** and it is sized according to the **ECO Design** specification.

ADDITIONALS COILS

(optional + external module)

External module that can accommodate heating and/or cooling coils with a high number of rows. The module can also accommodate combined coils (water cooling, water and/or electric heating).

DEFROST SYSTEM

(optional)

The automatic defrost system (optional) supplied with the units consists of a self-regulating electric coil in PWM mode of the input power, installed on the return air intake. The system is controlled by a special temperature probe positioned on the exhaust air and guarantees a considerable reduction of the input power compared to the traditional systems available on the market.

Technical Data

MODEL		005	006	010	015	020	030	040
Type of ventilation unit		UVNR-B (Non Residential Ventilation Units - Bidirectional)						
Type of drive installed		Analog signal on EC fan (0-10Vdc)						
Type of fans	type/n°	EC/2	EC/2	EC/4	EC/4	EC/2	EC/2	EC/2
Type of heat recovery system (HRS)	type/n°							
Winter Thermal Efficiency (ηt_nrvu) [1]	%	81.2	82.5	81.4	81.6	82.1	82.1	81.7
Winter Thermal Efficiency [2]	%	87.7	88.8	87.8	88.9	89.3	90.2	89.9
Nominal airflow rate	m³/h	410	650	1000	1620	2150	3040	3980
Electrical power consumption	kW	0.155	0.219	0.374	0.637	0.888	1.348	1.754
Installed electrical power	kW	0.33	0.33	0.67	0.67	1.00	1.50	2.46
SFP_{int}	W/(m³/h)	749	554	752	862	913	1016	1076
SFP_{lim} 2018	W/(m³/h)	1329	1358	1311	1291	1283	1246	1195
Front speed at design range	m/s	2.17	1.61	2.03	2.14	1.93	2.22	2.42
External nominal pressure $\Delta p_{s,\ ext}$ [3]	Pa	150	150	150	150	150	150	150
Internal pressure drop $\Delta p_{s,\ int}$ Ret./Supp.	Pa	179/186	120/132	177/199	224/242	221/255	256/269	303/328
Fans static efficiency (UE) n.327/2011	%	47.5	44.0	48.7	52.6	50.9	49.9	57.2
Max. external / internal leakage percentage	%	max 3.5 % a -400 Pa I max 5.0 % a +250 Pa						
Energy classification filters		ePM1 55% (F7) I ePM10 60% (M5)						
Filter pressure switch		present						
Sound power level [4]	in dB(A)	68.6	72.5	73.0	73.8	79.0	83.2	83.4
Sound pressure level [5]	in dB(A)	53.1	57.0	57.5	58.3	63.5	67.7	67.9
Power supply	V/ph/Hz	230/1/50						400/3/50

[1] ratio between the thermal gain of the inlet air and the thermal loss of the exhaust air, both referred to the external temperature, measured under dry reference conditions, with balanced mass flow and a thermal difference of the internal/external air of 20K, excluding the thermal gain generated by the fan motors and the internal leakage, in accordance with the provisions of attached V of EU Regulation No 1253/2014

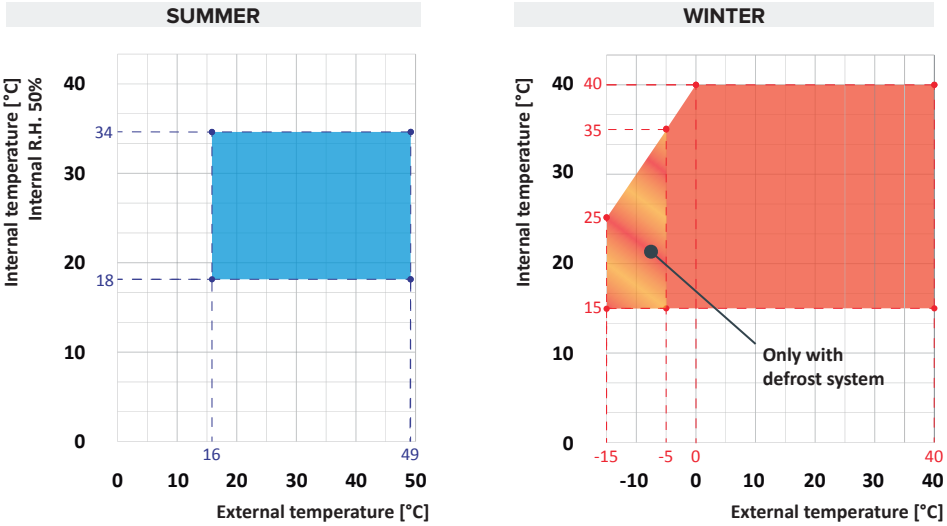
[2] outside air: -5 °C / 80 % RH - Inside air: 20 °C / 50 % RH

[3] performance with clean filters

[4] sound power level calculated in accordance with EN 3744

[5] sound pressure level measured at 1 m free field distance, in accordance with EN 3744

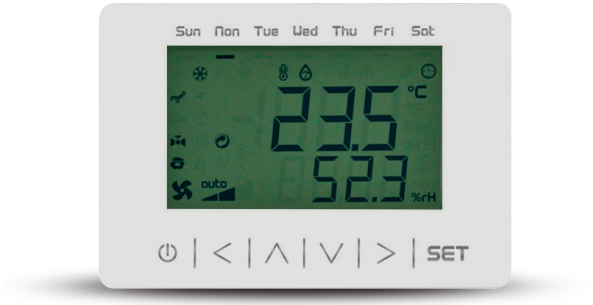
Operating limits



Control

The units are supplied complete with control system and available in the versions **ECO**, **PLUS** and **TOP**.

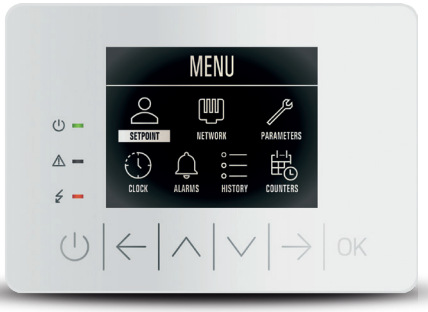
ECO: complete with air temperature sensors installed on the fresh air intake and on room return air. The control allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control, summer/winter seasonal change over, and programming for daily time zones. An optional hot water or cold water coil may also be managed, controlled by a 3-way modulating valve through the room return air sensor.
The optional electric post-heating coil is also managed in modulating mode (always via the room return air sensor). The control alerts the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm; this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.



LCD REMOTE DISPLAY
(ECO version only)

PLUS: this control option is set to operate at constant pressure, it is supplied complete with pressure transducer and air temperature sensors installed on the fresh air intake and room return air.
The control system allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control.
It also manages the summer/winter seasonal change over and programming for daily time zones.
The control can also manage an optional hot water or cold water coil through a 3-way modulating valve and an additional supply air sensor in order to maintain a fixed point operating logic.
The same logic can also be used to manage an electric post-heating coil, if present. The control alerts the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm; this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.

TOP: this control option is set to operate at constant air-flow, it is supplied complete with pressure transducer and air temperature sensors installed on the fresh air intake and room return air.
The control system allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control.
It also manages the summer/winter seasonal change over and programming for daily time zones.
The control can also manage an optional hot water or cold water coil through a 3-way modulating valve and an additional supply air sensor in order to maintain a fixed point operating logic.
The same logic can also be used to manage an electric post-heating coil, if present.
The system alerts to the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm and this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.



LCD REMOTE GRAPHIC DISPLAY
(PLUS and TOP versions only)

Accessories

Grease ISO coarse 40% (G2) air pre-filter
The filter is used in the presence of dust and large pollutants suspended in the air or in case of filtration of oily mists. It may be installed as pre-filter in combination with the ePM10 55% (M5), ePM1 55% (F7) or ePM1 80% (F9) filters, located on the room air return side.

ePM10 50% (G4) air pre-filter
The filter media has a low pressure drop and it may be installed as pre-filter in combination with the ePM10 60% (M5), ePM1 55% (F7) or ePM1 80% (F9).

ePM10 60% (M5) air filter
The filter media has an ePM10 60% (M5) filtering degree, according to ISO 16890 and has a large filtering surface area that guarantees long operating life and less frequent replacements.

eMP1 55% (F7) air filter
The filter media has an ePM1 55% (F7) filtering degree, according to ISO 16890 and has a large filtering surface area that guarantees long operating life and less frequent replacements.

ePM1 80% (F9) air filter
The filter media has an ePM1 80% (F9) filtering degree, according to ISO 16890 and has a large filtering surface area that guarantees long operating life and less frequent replacements.

Defrost system
The automatic defrost system consists of a self-regulating electric coil in PWM mode of the input power, installed on the return air intake.
The system is controlled by a special temperature probe positioned on the exhaust air and guarantees a considerable reduction of the input power compared to the traditional systems available on the market.

Electric re-heating battery (internal)
All units may be equipped with an internal re-heating electric battery, made up of armoured steel electric heaters, supplied complete with PWM control system, safety thermostat already wired and installed on board.

Hot water coil (external)
The hot water coils are supplied in a dedicated section to be installed in the supply air-flow line. The casing has the same sizes and features of the main unit and it is fixed with a dedicated installation kit supplied with it.
The coil is manufactured with copper pipes thickness 0,4 mm and aluminium fins thickness 0,11 mm. The pipes are mechanically expanded in the aluminium fins to increase the thermal exchange rate. On request, it is possible to install coils with different capacities from the standard ones, when previously agreed with the factory.

Cold water coil (external)
The coil is manufactured with copper pipes thickness 0,40 mm and aluminium fins thickness 0,11 mm.
The pipes are mechanically expanded in the aluminium fins to increase the thermal exchange rate. On request, it is possible to install coils with thermal performances different from the standard ones, when previously agreed with the factory. The cooling coil section is supplied complete with condensate drain pan with side water discharge.

Water control valve
It consists of a kit including the 3-way valve for the control of the water flow, to be combined with the hot and/or cold water coil, and its modulating electric actuator.
Connection and fitting devices not included (to be arrange for by the installer).

Air damper with actuator
It is installed on board the unit and operate to exclude the fresh air intake and/or the room return air flow.
This option is particularly useful in areas with very cold winter temperatures, where it is necessary to avoid dangerous self-induced cold air flows by the installation itself, during the stand-by period of the unit, with the risk of freezing the water contained in the water coils, if any.
The damper is controlled by On/Off actuators for the opening or the closing, or with return closing spring.

Sound attenuator
The sound attenuator consists of a cylindrical section made in galvanized steel sheet, containing a mineral wool sound proofing material covered with glass wool jacket and perforated galvanized steel sheet containment. The soundproofing material is class M0. The construction avoids any risk of mineral wool fraying even at high air speeds. The cylindrical section is fixed to the unit by screws.

CO_2 probe
ECO version units can be equipped with air quality CO2 probe. This accessory is installed and wired in the factory. If it's installed on the return air duct it allows to determine the quantity of carbon dioxide present in the environment, increasing the quantity of external air to dilute its content.

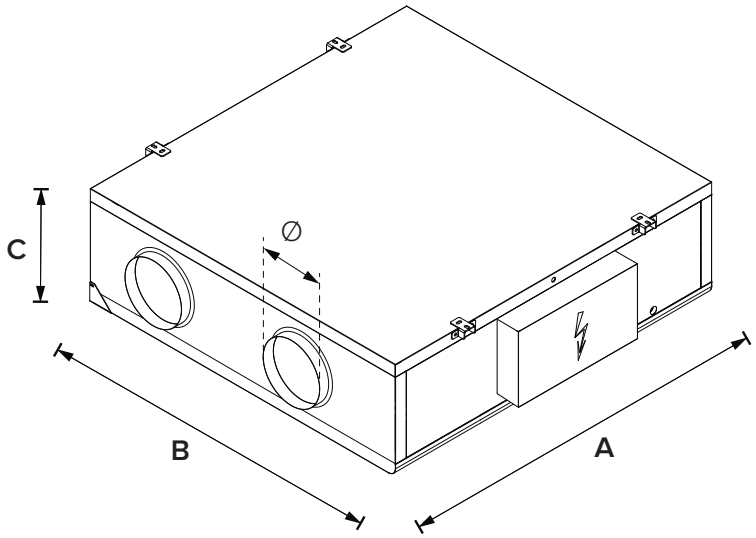
ATTENTION: The CO_2 probe is not available in PLUS and TOP versions.

	MODEL	005	006	010	015	020	030	040
ECO	EC Brushless supply and return fans	■	■	■	■	■	■	■
	ePM1 55% (F7) filter on supply	■	■	■	■	■	■	■
	ePM10 60% (M5) filter on return	■	■	■	■	■	■	■
	Supply and return differential pressure switches	■	■	■	■	■	■	■
	100% by-pass damper with electric actuator	■	■	■	■	■	■	■
	Microprocessor control	■	■	■	■	■	■	■
	Remotable control panel with LCD segments display (2)	■	■	■	■	■	■	■
	Built-in control sensors	■	■	■	■	■	■	■
	MODBUS RS485 serial interface card	■	■	■	■	■	■	■
PLUS	EC Brushless supply and return fans	■	■	■	■	■	■	■
	ePM$_1$ 55% (F7) filter on supply	■	■	■	■	■	■	■
	ePM$_{10}$ 60% (M5) filter on return	■	■	■	■	■	■	■
	Supply and return differential pressure switches	■	■	■	■	■	■	■
	Fans differential pressure transducers	■	■	■	■	■	■	■
	100% by-pass damper with electric actuator	■	■	■	■	■	■	■
	Microprocessor control	■	■	■	■	■	■	■
	Remotable control panel with LCD graphic display (2)	■	■	■	■	■	■	■
	Built-in control sensors	■	■	■	■	■	■	■
	MODBUS RS485 serial interface card	■	■	■	■	■	■	■
	Constant PRESSURE version	■	■	■	■	■	■	■
TOP	EC Brushless supply and return fans	■	■	■	■	■	■	■
	ePM$_1$ 55% (F7) filter on supply	■	■	■	■	■	■	■
	ePM$_{10}$ 60% (M5) filter on return	■	■	■	■	■	■	■
	Supply and return differential pressure switches	■	■	■	■	■	■	■
	Fans differential pressure transducers	■	■	■	■	■	■	■
	100% by-pass damper with electric actuator	■	■	■	■	■	■	■
	Microprocessor control	■	■	■	■	■	■	■
	Remotable control panel with LCD graphic display (2)	■	■	■	■	■	■	■
	Built-in control sensors	■	■	■	■	■	■	■
	MODBUS RS485 serial interface card	■	■	■	■	■	■	■
	Constant FLOW version	■	■	■	■	■	■	■
Accessories	Return grease ISO Coarse 40% (G2) filter	□	□	□	□	□	□	□
	ePM$_{10}$ 50% (G4) pre-filters on supply and return	□	□	□	□	□	□	□
	ePM$_1$ 55% (F7) filter on return	□	□	□	□	□	□	□
	ePM$_1$ 80% (F9) filter on supply and return	□	□	□	□	□	□	□
	Defrost system	□	□	□	□	□	□	□
	Electric post-heating coil	□	□	□	□	□	□	□
	Hot water coil (1)	□	□	□	□	□	□	□
	Cold water coil (1)	□	□	□	□	□	□	□
	3 way modulating valve (2)	□	□	□	□	□	□	□
	Fresh air / Exhaust air damper	□	□	□	□	□	□	□
	On/Off damper actuator	□	□	□	□	□	□	□
	Sound attenuator (1)	□	□	□	□	□	□	□
	CO_2 probe (available only for ECO version)	□	□	□	□	□	□	□

■ Standard □ Optional – Not available

(1) Mounted in a separate box
(2) Supplied loose

Dimensions

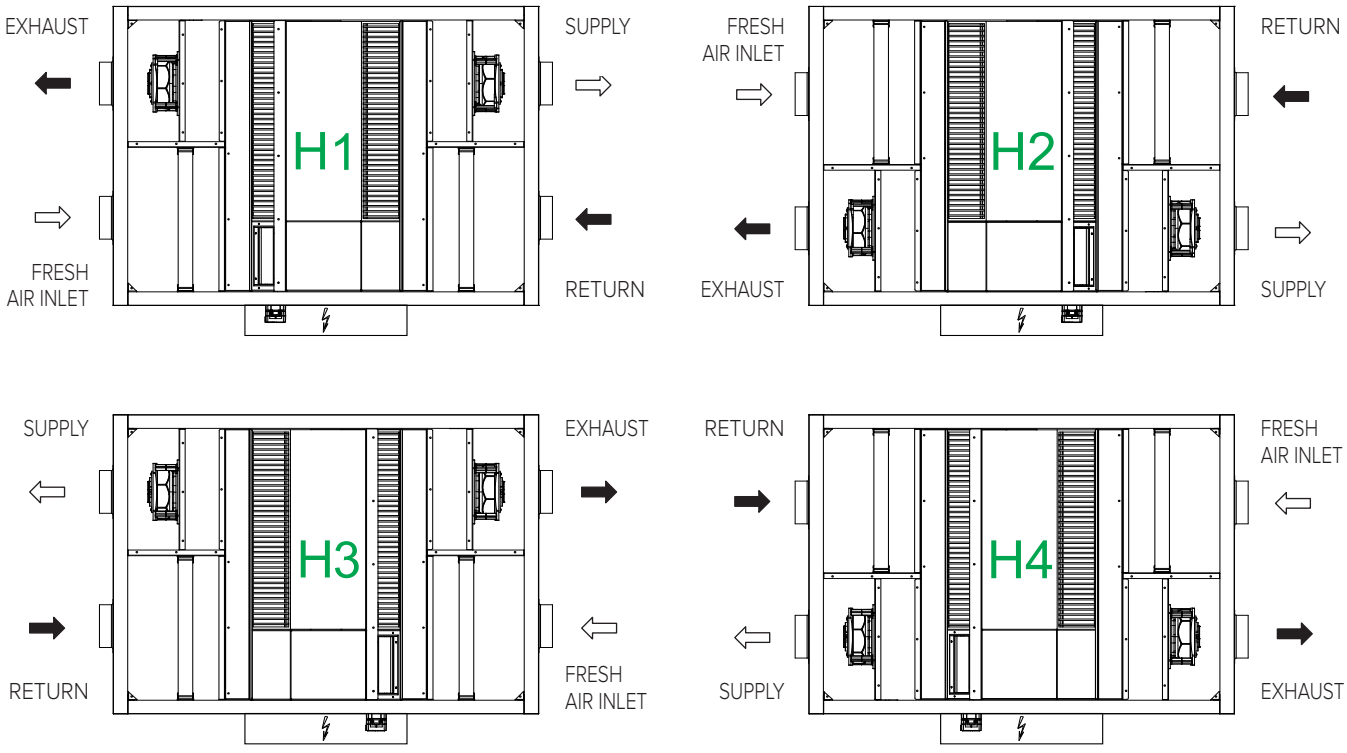


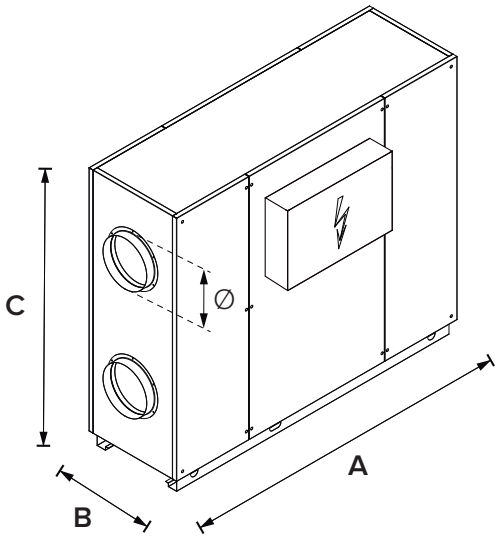
	Model	005	006	010	015	020	030	040
QUOTES	A	1300	1400	1400	1650	1650	1950	1950
	B	750	1050	1350	1350	1600	1700	1950
	C	390	430	430	550	550	630	630
	Ø	150	200	250	250	250	315	315
	*Kg	117	133	180	226	288	338	369

Dimensions in mm

** Weight is referred to the basic configuration*

Configurations (plan view) - false ceiling version



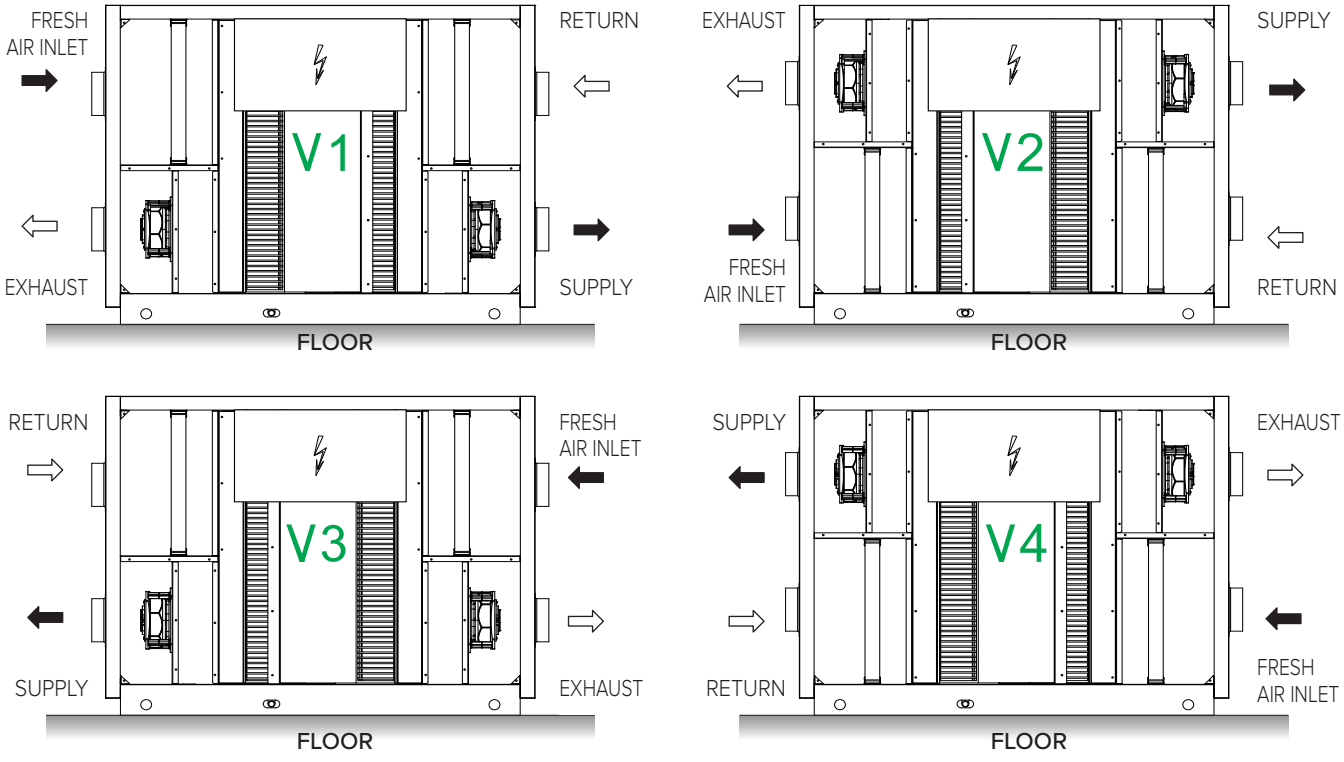


	Model	005	006	010	015	020	030	040
QUOTES	A	1300	1400	1400	1650	1650	-	-
	B	390	430	430	550	550	-	-
	C	822	1122	1422	1422	1672	-	-
	Ø	150	200	250	250	250	-	-
	*Kg	120	137	184	232	294	-	-

Dimensions in mm

** Weight is referred to the basic configuration*

Configurations (front view) - vertical base version



VORT NRG MEGA

Heat recovery units with plate heat exchanger

VORT NRG MEGA-R

Heat recovery units with rotary wheel

Any occupied room requires the correct supply of fresh air and, at the same time, the control of the internal thermo-hygrometric conditions, through the recovery of energy from the air extracted from the room, by means of static counter-flow heat recoveries, the level of well-being of the occupants is guaranteed, both in summer and winter.

For buildings that require air changes and are not equipped with dedicated air conditioning systems, the installation of such units allows the supply of primary air at controlled temperature without substantially changing the internal conditions in the occupied spaces.

These units also make it possible to guarantee support for the air conditioning system in the intermediate seasons using free-cooling or free-heating modes.

These units, if installed on existing buildings, guarantee the energy requalification of the system through the management of the air change without additional charges; in the case of new installations, instead, the air change is completely carried out allowing to reduce the size of the main air conditioning system.

In the intermediate seasons the building will benefit from free or partially-generated cooling from these units, which during the partial load phases allow the main system to operate with higher efficiency.

MAIN CHARACTERISTICS

STRUCURE AND PANELS

The structure of the units can be realized in two versions:

VERSION 1

Profiles 50 x 50 mm in self-supporting extruded anodized aluminium, with mechanical strength requirements in accordance with EN 1886: D1 (M). 50 mm thick double-walled sandwich type paneling with exterior in pre-painted RAL 9010 galvanized sheet steel and interior in hot-dip galvanized sheet steel with interposed insulation made of polyurethane foam with a density of 40 kg/m^3.
This structure has a seal class L1 while the thermal transmittance and the thermal bridge characteristic is class T3/TB4 according to EN1886.

VERSION 2

Thermal break profiles 60 x 60 mm in self-supporting extruded anodized aluminium, with mechanical strength requirements in accordance with EN 1886: D1 (M). 63 mm thermal break sandwich-type double-walled sandwich type panels with exterior in pre-painted RAL 9010 galvanized sheet steel and interior in hot-dip galvanized sheet steel with interposed insulation made of polyurethane foam with a density of 40 kg/m^3.
This structure has a seal class L1 while the thermal transmittance and the thermal bridge characteristic is class T2/TB2 according to EN1886.
Safety microswitches are applied to the inspection doors to allow internal access to the various compartments of the unit only when the unit is completely switched off.
The main access and inspection panels consist of inspection doors with perimeter hinges made of non-corrosive polyamide and handles.
All units can be supplied in both monobloc and modular sections for on-site assembly when required.

FILTERS

ePM10 60% (M5) filters in return air and ePM1 55% (F7) rigid bag filters in fresh air. Both types of filters are mounted on slides equipped with gaskets to ensure effective sealing. Their position, upstream of the internal components, also guarantees their protection.

FANS

The units are equipped with high efficiency plug-fan type fans with built-in brushless EC motor. In this way it is possible to guarantee an accurate regulation of the airflow both in the supply and extract section, ensuring that all regulatory requirements such as SFP are met with. The airflow rate of the fan is managed through the integrated electronic control system thus ensuring, according to the needs of the system, that the correct operation of the unit is maintained with consequent saving of the energy absorbed by the unit.
The fans are fixed to the frame by means of selfcentering brackets to ensure the correct distance between the impeller and the nozzle, thus optimizing performance.

HEAT RECOVERY UNITS WITH PLATE HEAT EXCHANGE (VORT NRG MEGA)

The units are equipped with an aluminium counter-flow heat exchanger used to transfer heat from the exhaust air to the fresh air. The heat exchange takes place in counter-flow with efficiency higher than 80% in dry air. The spacing between the fins is optimised in order to reduce air-side pressure drop and fan power consumption. In some conditions of low outside air temperature and high humidity, the exchanger may start to frost. The units are equipped with a defrost system required in case of very low ambient conditions. The defrost system can either be electric or by hot water. The heat recovery is also equipped with an additional by-pass damper for the management of the free-cooling and free-heating mode. The heat exchanger participates to the **Eurovent Certification** program and it is sized according to the **ECO Design specification**.

ROTARTING HEAT RECOVERY (VORT NRG MEGA-R)

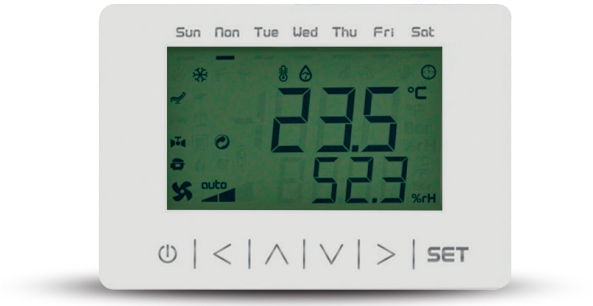
The units are equipped with an air-to-air rotary heat recovery unit, consisting by a cylindrical rotor containing thousands of channels and characterised by an extremely elevate surface development, a supporting frame, and an eletric motor drive system. The heat exchange surface, very high in relation to the volume, allows very high thermal performances when compared to other types of heat recovery systems, reaching efficiencies even above 80%. In rotary wheel heat recovery units the heat exchange takes place by accumulating the heat in the rotor; as a matter of fact while the cylinder rotates slowly, the exhaust air volume crosses half of the casing and gives its heat to the rotor matrix, which accumulates it. The fresh air, crossing the other half, absorbs the accumulated heat. The parts absorbing and releasing the heat are continuosly inverted, as the rotation proceeds, and the process may continue indefinitely. The heat exchanger participates to the **Eurovent Certification** program and it is sized according to the **ECO Design**.

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

Control

The units are supplied complete with control system and available in the versions **ECO**, **PLUS** and **TOP**.

ECO: complete with air temperature sensors installed on the fresh air intake and on room return air. The control allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control, summer/winter seasonal change over, and programming for daily time zones. An optional hot water or cold water coil may also be managed, controlled by a 3-way modulating valve through the room return air sensor. The optional electric post-heating coil is also managed in modulating mode (always via the room return air sensor). The control alerts the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm; this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.



LCD REMOTE DISPLAY
(ECO version only)

PLUS: this control option is set to operate at constant pressure, it is supplied complete with pressure transducer and air temperature sensors installed on the fresh air intake and room return air. The control system allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control. It also manages the summer/winter seasonal change over and programming for daily time zones.

The control can also manage an optional hot water or cold water coil through a 3-way modulating valve and an additional supply air sensor in order to maintain a fixed point operating logic.

The same logic can also be used to manage an electric post-heating coil, if present. The control alerts the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm; this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.

TOP: this control option is set to operate at constant air-flow, it is supplied complete with pressure transducer and air temperature sensors installed on the fresh air intake and room return air.
The control system allows to select, in stepless mode, the supply and return fan speeds and automatically manages the heat recovery by-pass damper through the motorized On/Off control.
It also manages the summer/winter seasonal change over and programming for daily time zones. The control can also manage an optional hot water or cold water coil through a 3-way modulating valve and an additional supply air sensor in order to maintain a fixed point operating logic. The same logic can also be used to manage an electric post-heating coil, if present.
The system alerts to the user when filters need replacing (the clogged state of the filters is monitored by a pair of differential pressure switches supplied as standard) or the onset of any alarm and this may also be integrated into modern home automation systems via RS485 serial port with Modbus protocol.

LCD REMOTE GRAPHIC DISPLAY
(PLUS and TOP versions only)

VORT NRG MEGA
Heat recovery units with plate heat exchanger

Technical Data

MODEL		010	020	030	045	060	080
Type of ventilation unit		UVNR-B (Non Residential Ventilation Units - Bidirectional)					
Type of drive installed		Analog signal on EC fan (0-10Vdc)					
Type of fans	type/n°	EC/2	EC/2	EC/2	EC/2	EC/2	EC/2
Type of heat recovery system (HRS)	type/n°	static counter-flow / 1					
Winter Thermal Efficiency (ηt_nrvu) [1]	%	80.7	81.1	80.5	81.4	81.3	81.0
Winter Thermal Efficiency [2]	%	89.5	90.7	90.2	91.8	91.9	91.6
Nominal airflow rate	m³/h	1000	2000	3000	4500	6000	8000
Electrical power consumption	kW	0.45	0.86	1.30	2.10	2.78	3.92
Installed electrical power	kW	1.00	1.50	2.46	3.80	5.00	5.80
SFP_{int}	W/(m³/h)	770	782	816	910	944	1021
SFP_{lim} 2018	W/(m³/h)	1289	1260	1200	1165	1099	1040
Front speed at design range	m/s	1.07	1.24	1.21	1.67	1.67	1.65
External nominal pressure $\Delta p_{s,\ ext}$ [3]	Pa	250	250	250	250	250	250
Internal pressure drop $\Delta p_{s,\ int}$ Ret./Supp.	Pa	191 / 212	220 / 245	238 / 256	246 / 275	277 / 311	304 / 342
Fans static efficiency (UE) n.327/2011	%	47.5	44.0	48.7	52.6	50.9	62.9
Max. external / internal leakage percentage	%	L1 I max 5,0 % at +250 Pa					
Energy classification filters		ePM1 55% (F7) I ePM10 60% (M5)					
Filter pressure switch		present					
Sound power level [4]	in dB(A)	63.0	66.0	63.0	69.0	69.0	72.0
Sound pressure level [5]	in dB(A)	51.0	54.0	51.0	57.0	57.0	60.0
Power supply	V/ph/Hz	230/1/50		400/3/50			

[1] ratio between the thermal gain of the inlet air and the thermal loss of the exhaust air, both referred to the external temperature, measured under dry reference conditions, with balanced mass flow and a thermal difference of the internal/external air of 20K, excluding the thermal gain generated by the fan motors and the internal leakage, in accordance with the provisions of attached V of EU Regulation No 1253/2014

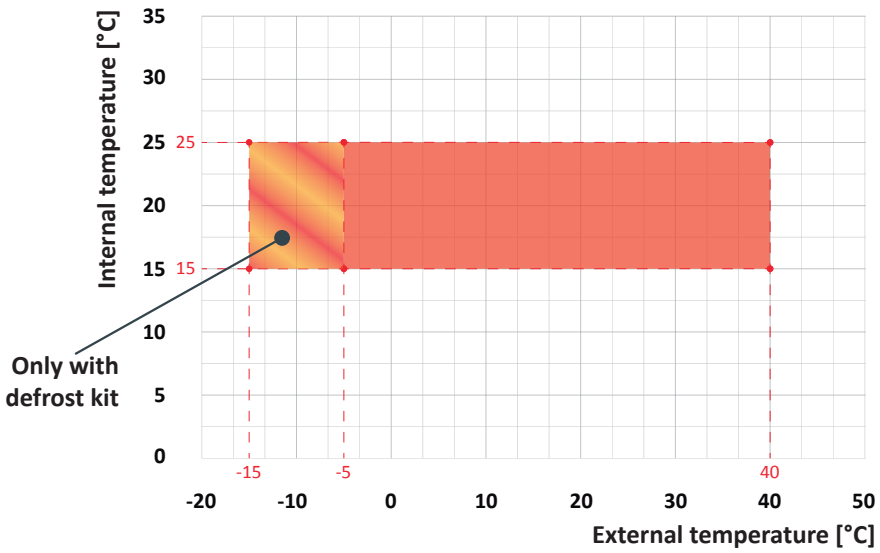
[2] outside air: -5 °C / 80 % RH - Inside air: 20 °C / 50 % RH

[3] performance with clean filters

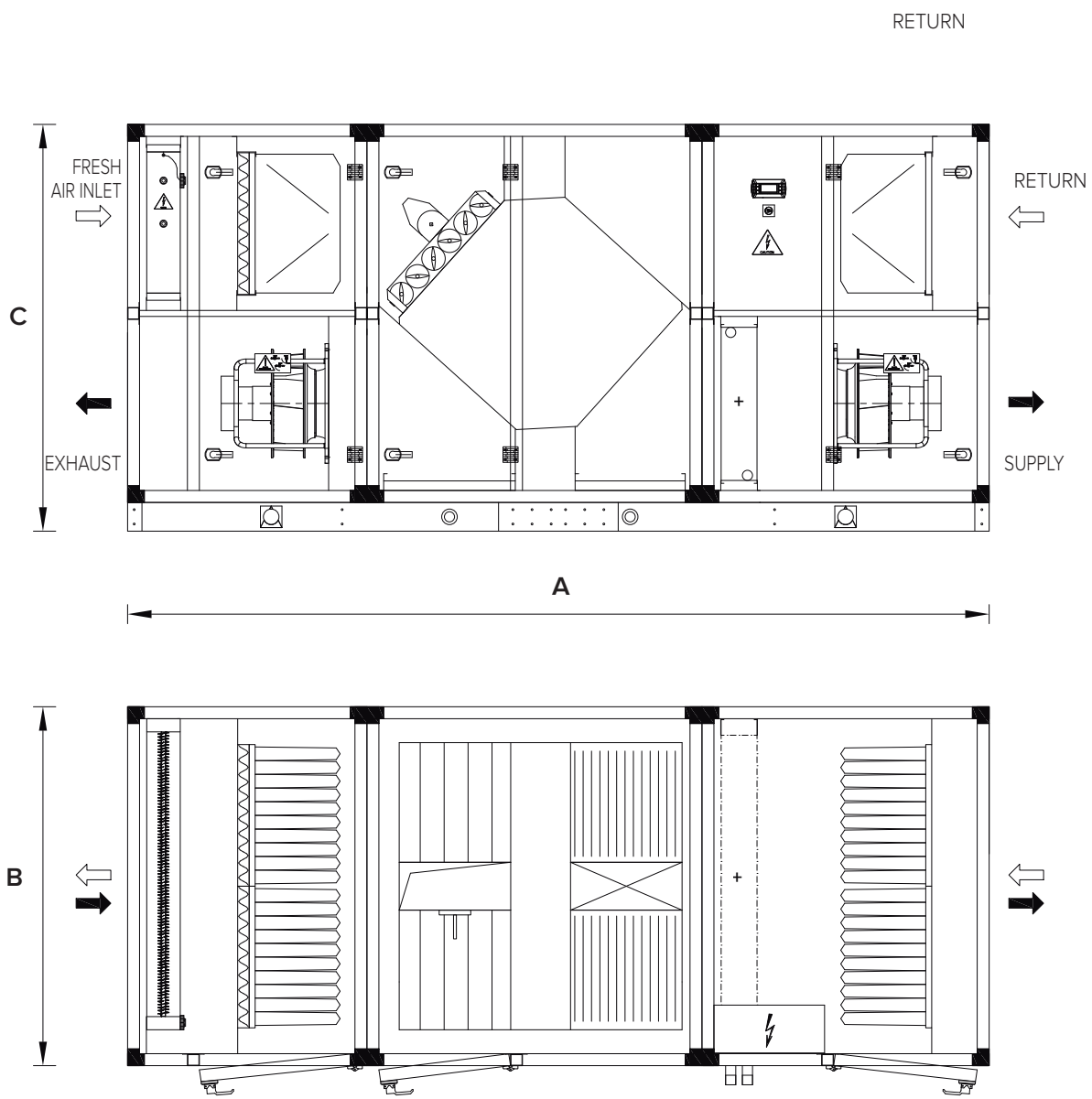
[4] sound power level calculated in accordance with EN 3744

[5] sound pressure level measured at 1 m free field distance, in accordance with EN 3744

Operating limits



Dimensions



	Model	010	020	030	045	060	080
QUOTES	A	2700	2700	2950	3350	3600	3850
	B	750	950	1300	1300	1500	1750
	C	1070	1320	1420	1520	1700	1900
	*Kg	278	342	455	537	670	870

Dimensions in mm

** Weight is referred to the basic configuration*

Accessories

MODEL	010	020	030	045	060	080
Filters ePM10 60% (M5) on return / ePM1 55% (F7) on supply	■	■	■	■	■	■
EC brushless fans on supply/return	■	■	■	■	■	■
Filters differential pressure switches	■	■	■	■	■	■
Fans differential pressure transducers	■	■	■	■	■	■
Microprocessor control system with display	■	■	■	■	■	■
RS-485 serial port Modbus protocol	■	■	■	■	■	■
50 mm frame or 60 mm thermal break frame	□	□	□	□	□	□
40 kg/m³ polyurethane panels thermal insulation	□	□	□	□	□	□
90 kg/m³ mineral wool panels thermal insulation	□	□	□	□	□	□
Filters ePM1 55% (F7) return and/or ePM1 80% (F9) supply/return	□	□	□	□	□	□
Pre-filters ePM10 50% (G4) on supply/return	□	□	□	□	□	□
Return grease ISO Coarse 40% (G2) filter	□	□	□	□	□	□
Electric frost coil protection	□	□	□	□	□	□
Electric / Water heating coil	□	□	□	□	□	□
Cold water/direct expansion coil [1]	□	□	□	□	□	□
3 way modulating valve [1]	□	□	□	□	□	□
Circular duct flanges (4 pcs)	□	□	□	□	□	□
Exhaust/Fresh air damper	□	□	□	□	□	□
ON/OFF damper actuator	□	□	□	□	□	□
Sound attenuator [1]	□	□	□	□	□	□
Roof for outdoor installation	□	□	□	□	□	□
45° hoods with bird trap (2 pcs)	□	□	□	□	□	□
Flexible joints for duct connections (4 pcs)	□	□	□	□	□	□
Remote control panel [2]	□	□	□	□	□	□
CO_2 probe (available only for ECO version)	□	□	□	□	□	□

■ Standard □ Optional – Not available

[1] Mounted in a separated box

[2] Supplied loose

VORT NRG MEGA-R
Heat recovery units
with rotary wheel

Technical Data

MODEL		010	020	030	045	060	080
Type of ventilation unit		UVNR-B (Non Residential Ventilation Units - Bidirectional)					
Type of drive installed		Analog signal on EC fan (0-10Vdc)					
Type of fans	type/n°	EC/2	EC/2	EC/2	EC/2	EC/2	EC/2
Type of heat recovery system (HRS)	type/n°	Rotating / 1					
Winter Thermal Efficiency (ηt_nrvu) [1]	%	81.1	80.9	80.7	80.7	80.9	80.7
Nominal airflow rate	m³/h	1000	2000	3000	4500	6000	8000
Electrical power consumption	kW	0.49	0.91	1.29	2.28	2.82	3.79
Installed electrical power	kW	1.03	1.54	2.50	3.84	5.18	5.98
SFP_{int}	W/(m³/h)	822	802	750	1031	829	890
SFP_{lim} 2018	W/(m³/h)	1301	1254	1206	1144	1087	1031
Front speed at design range	m/s	1.07	1.24	1.21	1.67	1.67	1.65
External nominal pressure $\Delta p_{s,\ ext}$ [2]	Pa	250	250	250	250	250	250
Internal pressure drop $\Delta p_{s,\ int}$ Ret./Supp.	Pa	205 / 226	226 / 251	216 / 234	290 / 319	240 / 274	253 / 291
Fans static efficiency (UE) n.327/2011	%	52.3	59.8	60.8	60.1	62.5	62.5
Max. external / internal leakage percentage	%	L1 I max 5,0% +250 Pa					
Energy classification filters		ePM1 55% (F7) I ePM10 60% (M5)					
Filter pressure switch		present					
Sound power level [3]	in dB(A)	64.0	66.0	63.0	69.0	69.0	70.0
Sound pressure level [4]	in dB(A)	52.0	52.0	54.0	51.0	57.0	58.0
Power supply	V/ph/Hz	230/1/50		400/3/50			

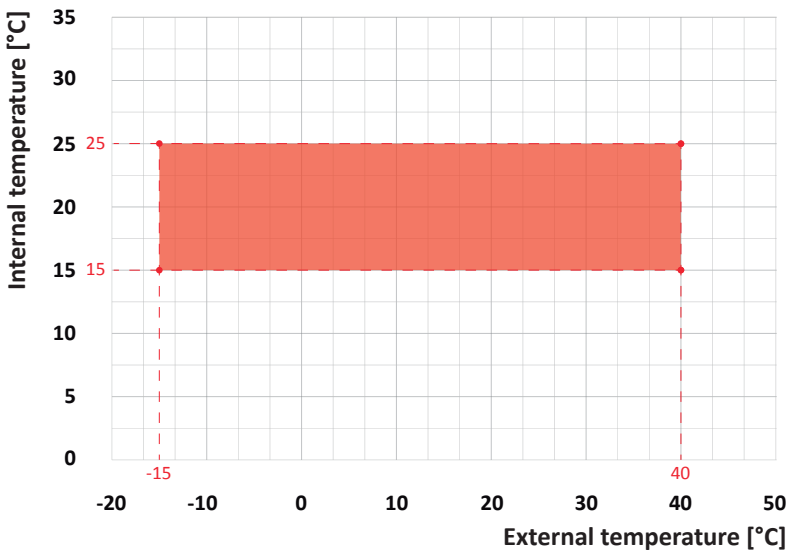
[1] Ratio between the thermal gain of the inlet air (0 °C) and the thermal loss of the exhaust air (20 °C), both referred to the external temperature, measured under dry reference conditions, with balanced mass flow and a thermal difference of the internal/external air of 20K, excluding the thermal gain generated by the fan motors and the internal leakage, in accordance with the provisions of attached V of EU Regulation No 1253/2014.

[2] Performance with clean filtersR.

[3] Sound power level calculated in accordance with EN 3744

[4] Sound pressure level measured at 1 m free field distance, in accordance with EN 3744

Operating limits



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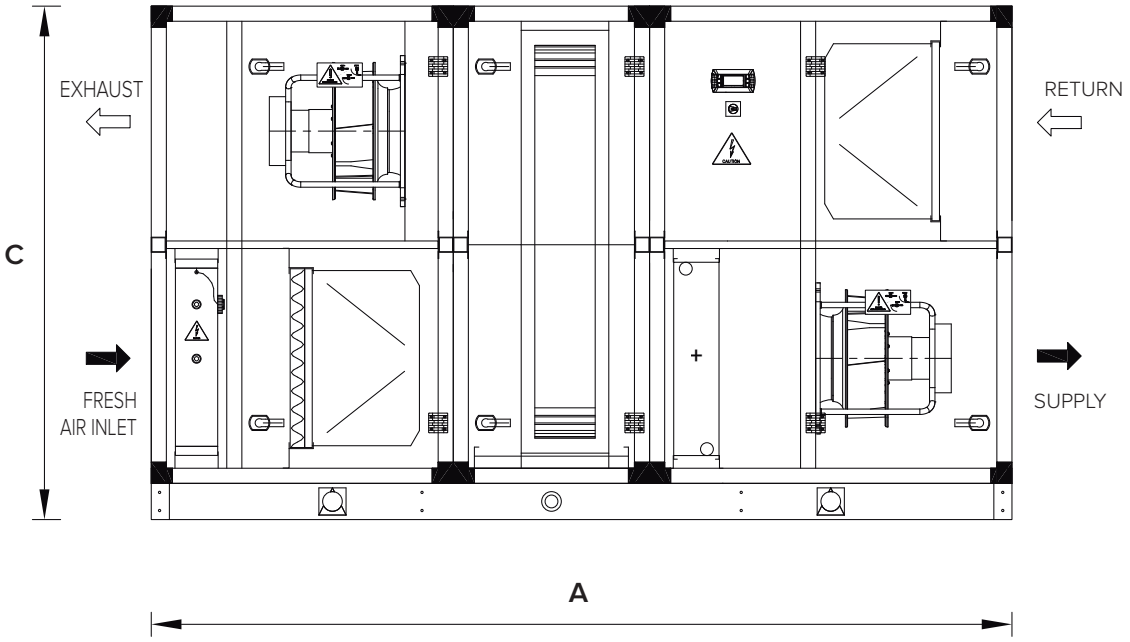

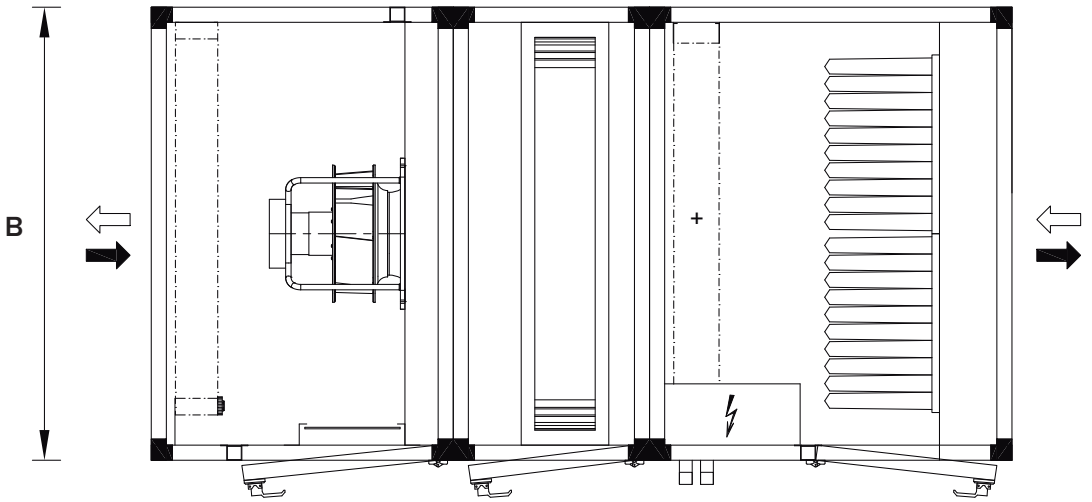

	Model	010	020	030	045	060	080
QUOTES	A	2250	2250	2550	2550	2850	3100
	B	750	950	1300	1300	1500	1750
	C	1070	1320	1420	1520	1700	1900
	*Kg	245	300	410	455	565	760

Dimensions in mm

** Weight is referred to the basic configuration*

Accessories

MODEL	010	020	030	045	060	080
Filters ePM$_{10}$ 60% (M5) on return / ePM$_1$ 55% (F7) on supply	■	■	■	■	■	■
EC brushless fans on supply/return	■	■	■	■	■	■
Filters differential pressure switches	■	■	■	■	■	■
Fans differential pressure transducers	■	■	■	■	■	■
Microprocessor control system with display	■	■	■	■	■	■
RS-485 serial port Modbus protocol	■	■	■	■	■	■
50 mm frame or 60 mm thermal break frame	□	□	□	□	□	□
40 kg/m^3 polyurethane panels thermal insulation	□	□	□	□	□	□
90 kg/m^3 mineral wool panels thermal insulation	□	□	□	□	□	□
Filters ePM1 55% (F7) return and/or ePM1 80% (F9) supply/return	□	□	□	□	□	□
Pre-filters ePM$_{10}$ 50% (G4) on supply/return	□	□	□	□	□	□
Return grease ISO Coarse 40% (G2) filter	□	□	□	□	□	□
Electric frost coil protection	□	□	□	□	□	□
Electric / Water heating coil	□	□	□	□	□	□
Cold water/direct expansion coil [1]	□	□	□	□	□	□
3 way modulating valve [1]	□	□	□	□	□	□
Circular duct flanges (4 pcs)	□	□	□	□	□	□
Exhaust/Fresh air damper	□	□	□	□	□	□
ON/OFF damper actuator	□	□	□	□	□	□
Sound attenuator [1]	□	□	□	□	□	□
Roof for outdoor installation	□	□	□	□	□	□
45° hoods with bird trap (2 pcs)	□	□	□	□	□	□
Flexible joints for duct connections (4 pcs)	□	□	□	□	□	□
Remote control panel [2]	□	□	□	□	□	□
CO_2 probe (available only for ECO version)	□	□	□	□	□	□

■ Standard □ Optional – Not available

[1] Mounted in a separated box

[2] Supplied loose

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